

*American Radio Relay  
League*

Annual Meeting

of the

Board of Directors

January 20 – 21, 2017

Windsor, Connecticut

**DRAFT AGENDA – 2017 ANNUAL MEETING  
ARRL BOARD OF DIRECTORS  
January 20-21, 2017**

- 1) Roll Call (**Friday, January 20, 9:00 A.M.**) and announcement that meeting is being recorded
- 2) Moment of Silence
- 3) Courtesies
  - a) Introduction and welcome of first-time participants and guests
  - b) Remarks/greetings from IARU
  - c) Remarks/greetings from Radio Amateurs of Canada
  - d) Remarks/greetings from ARRL Foundation
- Doc. #1 4) Consideration of the agenda of the meeting
- 5) Elections
  - a) Executive Committee
  - b) ARRL Foundation Directors
- Doc. #6 6) Receipt and consideration of financial reports
- Doc. #8
  - a) Treasurer's report, Mr. Niswander
  - b) Chief Financial Officer's report, Mr. Shelley
- 7) Motion to Adopt Consent Agenda (**Any Board member may request that any item on the Consent Agenda be removed and discussed separately. Otherwise, the listed items will be considered as a whole without debate or amendment. Receipt of a report does not include approval of any recommendations contained in the report. Consideration of such recommendations comes later on in the agenda. Listed reports that are not received and distributed prior to the meeting will be removed from the Consent Agenda.**)
  - a) Receipt of other officers' reports
    - Doc. #2 i) President Roderick
    - Doc. #3 ii) First Vice President Widin
    - Doc. #4 iii) Second Vice President Mileskosky
    - Doc. #5 iv) International Affairs Vice President Bellows
    - Doc. #7 v) Chief Executive Officer Gallagher
    - Doc. #9
  - b) Receipt of General Counsel's report, Mr. Imlay
  - c) Receipt of committee and coordinator reports
    - Doc. #10 i) Executive Committee, Mr. Roderick, Chairman
    - Doc. #11 ii) Administration & Finance Committee, Mr. Pace, Chairman

- Doc. #12 iii) Programs & Services Committee, Dr. Boehner, Chairman  
 Doc. #13 iv) Ethics & Elections Committee, Mr. Williams, Chairman  
 Doc. #14 v) Amateur Radio Legal Defense & Assistance Committee, Mr. Raisbeck, Chairman
- Doc. #15 vi) RF Safety Committee, Mr. Delaney, Liaison  
 Doc. #16 vii) EMC Committee, Mr. Carlson, Chairman  
 Doc. #17 viii) Public Relations Committee, Mr. Ryan, Liaison  
 Doc. #18 ix) Historical Committee, Mr. Blocksome, Chairman  
 Doc. #19 x) Ad Hoc HF Band Planning Committee, Mr. Mileskosky, Chairman
- Doc. #20 xi) Ad Hoc LoTW Committee, Mr. Widin, Chairman  
 Doc. #21 xii) ARDF Coordinator Joe Moell, K0OV  
 Doc. #22 xiii) Contest Advisory Committee, Dr. Boehner, PSC Chairman  
 Doc. #23 xiv) DX Advisory Committee, Mr. Allen, Liaison  
 Doc. #24 xv) Legislative Advocacy Committee, Mr. Lisenco, Chairman  
 (includes report of The Keelen Group)
- Doc, #25 xvi) Membership, Diane Petrilli, Membership Manager  
 Doc, #26 xvii) Entry Level License Committee, Mr. Frenaye, Chairman

**[END OF CONSENT AGENDA]**

- 8) Consideration of items removed from Consent Agenda
- 9) Consider recommendations of the Standing Committees (**Additional recommendations as contained in the reports will be added to this agenda item as the reports are received.**)
- a) Executive Committee
  - b) Administration & Finance Committee
  - c) Programs & Services Committee
- 10) Consider additional recommendations as contained in reports (**to be added to this agenda item as the reports are received**)
- 11) Proposals for amendments to Articles of Association and Bylaws, if any
- 12) Directors' motions:
- a) Mr. Pace                      Northwestern Division
  - b) Mr. Vallio                    Pacific Division
  - c) Dr. Boehner                 Roanoke Division
  - d) Mr. Allen                     Rocky Mountain Division
  - e) Mr. Sarratt                  Southeastern Division
  - f) Mr. Norton                  Southwestern Division
  - g) Dr. Woolweaver             West Gulf Division
  - h) Mr. Abernethy              Atlantic Division
  - i) Mr. Carlson                 Central Division
  - j) Mr. Olson                     Dakota Division

- k) Mr. Norris Delta Division
- l) Mr. Williams Great Lakes Division
- m) Mr. Lisenco Hudson Division
- n) Mr. Blocksome Midwest Division
- o) Mr. Frenaye New England Division

13) Any other business

14) Closing courtesies

15) Adjournment



**Report of the President  
ARRL Board of Directors  
January 2017**

Ladies and Gentlemen:

It is my pleasure to provide this Report to you as President. It continues to be a great honor to serve as an Officer of the League.

**2016 - The past - Let's Move Forward**

We just came through a very challenging year, no doubt the most challenging year that I have encountered in my 25 years on the Board. With the transition to a new CEO, organizational realignment, legal matters, a dues increase, and various other challenges, the year tested all of us to the limit. As difficult as it was, I believe that we emerged stronger as a Board. What I saw in this Board was a resolve and a will to move forward on extremely tough issues. Let's now take that resolve, determination and leadership, and move this organization to new levels to advance the greatest hobby in the world, Amateur Radio. It's on us to do that, and I believe we can and I believe we will.

**Membership Totals**

We need to get our membership numbers back up. We've gone through the year of the dues increase, now let's move those numbers back to positive. Pull out that list of things of what the League offers and why a ham should be a member, dust it off, and let's go recruiting. Last year, every Division had negative membership growth. Each of us should make it a personal goal not to let that happen this year. Let's work to make every Division go positive in 2017.

**Official Observer Study**

I'm excited about this project. It's encouraging that we also have an opportunity to work with the FCC to revamp and revitalize the OO program. What we all need to understand at this stage is that it will likely take significant effort and resources to study and implement. But we must do it. This is even more critical now that the FCC has closed field offices and reduced personnel.

The EC will monitor progress, and to assure that we have coordination across the different areas, I am going to appoint a member from the PSC and a member from A&F to act as liaisons to the study group to assure that we have all bases covered. Once we get the committee assignments made at the January Board meeting, I'll discuss with the respective Chairs and select the individuals.

## **NPOTA**

The National Parks on the Air event was a huge success! Almost all of the 489 eligible units were activated. 460 of 489 units were on the air and most of the ones that were not activated were remote sites in Alaska. Almost 1.1 million QSO's were entered in LoTW and there were 20,844 activations.

Thanks to all who helped make it such a great event. Staff did a super job in developing, organizing, coordinating, and also participating in the event. It promoted Amateur Radio and gave the League some good PR.

I've received a number of emails from hams with favorable comments about our operating events such as NPOTA and the Centennial QSO Party, and many of them want to know what we have on the drawing board for the next big operating event. Hams get excited about these events, and they get on the air, which is great, so hopefully Staff will come up with another idea in the near future.

## **Amateur Radio Parity Act**

The game ain't over! We may not have scored yet, but perhaps it's only half time.

Look at how far we have come with the Amateur Radio Parity Act. That's something all Amateurs can be proud of. We had two separate email campaigns and with specific emails targeted at Florida since the last Board meeting. The result was over 110,000 emails generated from all states to all senate offices. Talk about grassroots!

I've asked our Legislative team to assess where we are, to look specifically at strategy to address Florida, and to report to the Board at the January meeting.

## **National Broadband Plan**

In my Executive Committee Report, I mentioned the National Broadband Plan. Several years ago, we had a National Broadband Plan committee perform a comprehensive study, but not much was done after that even though it fell back to the EC to monitor. As you know, technology moves fast nowadays and we need to get back in the game on this matter. I've asked IAVP Bellows, Director Blocksome and General Counsel Imlay to review and update the plan, and take charge of keeping the Board informed of broadband issues. The EC will carry this matter as an open agenda item to assure that we stay on top of this important task.

## **International Community**

Let's not forget our obligation to the international Amateur Radio community. As IAVP Bellows is quick to point out, it is our "16th Division" and it has more members than six of our Divisions. We are leaders of Amateur Radio, and with that comes the responsibility to contribute our efforts and resources to our international societies and members. Part of our strategic plan has an international component. Let's not forget that as we go forward with our initiatives in 2017.

## **Our Members**

We have some difficult issues facing us this year, not the least of which is the budget. We can't just look at the bottom line dollars alone, or look at certain programs as profit centers or being revenue neutral perhaps. As part of our fiduciary responsibility we have to assess where best to allocate money and resources. That's not easy being a member-driven organization that has a wide variety of programs and services. But let's do our best to keep our members in mind, even if it requires some work on our part to find the proper balance.

## **Staff**

I want to thank Staff and all of our volunteers for their hard work and devotion to the League and Amateur Radio. You do a remarkable job. THANK YOU!

Respectfully submitted,

Rick Roderick - K5UR  
President

**Report of the First Vice President  
ARRL Board of Directors  
January 2017**

Thank you for the opportunity to serve as First Vice President. Below is a brief summary of my activities during 2016.

**Executive Committee**

I have been an active participant in the issues considered by the EC, both at the in-person meeting and via e-mail, particularly with regard to the Amateur Radio Parity Act, and to filings with the FCC. I have also served as the informal liaison between the EC and the Administration and Finance Committee.

**LoTW Study Committee**

I have continued in 2016 as Chair of the Logbook Study Committee (LSC). The committee meets face-to-face preceding each Board meeting, and before the quarterly meetings of A&F, and also meets via webinar in other months. The committee's report is available as Board Document 21.

As a result of the ARRL IT initiative to update the DXCC Database, I called a sub-committee of the LSC to meet in early September to formulate a 5-year plan for the evolution of LoTW and Awards at ARRL. The results of that meeting are also discussed in the LoTW report.

**Due Diligence**

During the second half of 2016, there were several business opportunities which I investigated. These topics were brought to the Executive Committee for approval and direction. At time of writing, both topics remain open.

**Conventions and Meetings**

I attended the following ARRL meetings and conventions in 2016:

- November – LoTW Study Committee and A&F Committee (Newington)
- October – Executive Committee meeting (Chicago)
- September – Logbook Study Committee 5-year planning meeting (Newington)
- July – Utah State Convention, Keynote Speaker – Sandy, UT (Rocky Mtn Div)
- April – LoTW Study Committee and A&F Committee (Newington)
- March – Executive Committee meeting (Dallas)
- February – ARRL National Convention at Orlando Hamcation
- Attended local hamfests and club meetings

Respectfully submitted,  
Gregory P. Widin, K0GW  
First Vice President

## Report of the ARRL Second Vice President Board of Directors – January 2017

2016 was one of the most challenging years we've endured in a very long time, having moved us – *if you don't mind an RF engineering reference* – further from the center of the Smith chart than I think any of us wanted to be. 2017 will undoubtedly present its own challenges, but the turn of a new year grants us an opportunity to start afresh and rededicate ourselves to certain ideals, chief among them operating as the cohesive, unflappable, and enthusiastic team that we *absolutely need to be* in order to best lead our organization, our members, and the greater amateur radio community. Let us all seize this opportunity and do our part, individually and collectively, to get our team back to the center of the chart.

Over the previous six months, it has continued to be a privilege to work with our officers, members of the board, management, and staff on a number of fronts. I have liaised closely with the Programs and Services Committee, providing assistance to Chairman Boehner and its members whenever called upon.

I have also been leading ARRL's HF Band Planning Committee. Earlier in 2016 the committee, with the help of headquarters staff, solicited input from across the United States amateur radio community regarding IARU Region 2's band plan, which was due for formal review. Last October I traveled to the triennial IARU Region 2 General Assembly as a member of ARRL's delegation, and was elected to lead its HF and VHF band planning committee. Committee B/C, as it was referred to, was charged with reviewing and considering a large number of band plan modifications proposed by national societies across the region. Recommendations adopted by Committee B/C were packaged and presented to the delegates and representatives of the 24 voting societies attending the Assembly plenary session. *Please refer to Document #20 and its companion document for additional detail.* It was an honor to help represent ARRL before the international community, and to work closely with IARU and national society leaders on band planning and other matters.

At the request of President Roderick and our Executive Committee, I am also overseeing a comprehensive study of ARRL's Official Observer program, taking deep dives into a number of topics including functional improvement, training, recruitment, as well as ensuring its future interface and value to the FCC will remain as optimal as possible. An excellent team consisting of headquarters staff and management as well as our general counsel has been built and the study is underway. CEO Tom Gallagher and I look forward to discussing the particulars of this effort with you on Thursday evening.

Over the previous six months, I have also participated in the following activities and events:

- July – HF Band Planning Committee meeting (Webinar)
- August – ARRL New Mexico State Convention
- October – IARU Region 2 General Assembly; Chairman of Region 2 Committee B/C (HF/VHF Band planning)
- October – Executive Committee Meeting
- November – Programs and Services Committee Meeting
- December – Official Observer Study coordination meeting with Tom Gallagher
- January – Official Observer Study team meeting

I remain grateful for the honor and privilege of serving as our League's Second Vice President, and look forward to a productive meeting and start to the new year.

Respectfully submitted,

*Brian Mileschosky N5ZGT*

**Report to the ARRL Board of Directors  
International Affairs Vice President  
January 2017**

Thank you for the privilege of serving as ARRL IAVP. It is my pleasure to report to the ARRL Board and detail my activities on behalf of ARRL since the July 2016 Board meeting.

**Summary of Meetings and Conventions Attended**

**IARU Region 2 General Assembly** – Vina del Mar, Chile - October 10-14  
**ARRL Executive Committee Meeting** — Chicago, IL - October 22  
**ARRL A&F Committee Meeting** — Teleconference Report - November 19

**IARU Region 2**

**General Assembly**

The IARU Region 2 Member Societies held their triennial General Assembly from October 10 through October 14 this year in Vina del Mar, a twin city of Valpariso, Chile. The General Assembly is an opportunity for representatives of IARU Member Societies to meet to address current issues and other matters that may affect amateur radio between assemblies. Additionally, the General Assembly is a forum to prepare for the next round of ITU and regional telecommunications meetings and prepare common Amateur Radio proposals for those meetings. Finally the Member Societies elect the Region 2 officers and executive committee that will be responsible for administration of Region 2 affairs between General Assemblies.

The General Assembly meets in Plenary Sessions for final action and voting but the bulk of the work is done in committees. The following is a summary of the committee and General Assembly work.

Monday, October 10<sup>th</sup> - 1<sup>st</sup> Plenary Session focused on the selection of committee chairs and secretaries. President Roderick was appointed secretary of the Election Committee, 2<sup>nd</sup> VP Milesosky appointed Chair of Committee A/B HF/VHF Band. Plan Committee and I was a member of the Committee D Finance.

The IARU hosted a dinner Monday evening. Rod Stafford, W6ROD, retiring IARU Secretary, former ARRL President and former President of IARU Region 2, was awarded IARU Michael Owens award for his long and valuable service to IARU.

That evening I spoke with Carlos Bevigilia, LU1BCE, President, Radio Club Argentina and Jorge Sierra, LU1AS, EMCOR Region 2. Carlos expressed his appreciation for the help Fred Laun, K3ZO in assisting RCA with restructuring its QSL Bureau.

Tuesday, October 11<sup>th</sup> was devoted to committee working sessions.

Sometimes it is difficult to convey the less visible ways in which IARU and Member Societies outside the U.S., work with governments and Telecommunications Authorities who represent the interests of Amateur Radio. A good example occurred on Wednesday morning of the Assembly. While the committees continued their work, members of the Region 2 Executive Committee and a few others were given a private tour of the Chilean Senate and House of Delegates in Valparaiso by Chilean Senador Baldo Prokurica, CE1JIU. The key event was a meeting with Senador Ricardo Lago Weber, President of the Chilean Senate. Thanks to the work of Senador Prokurica, Senador Weber was well aware of the work of Chilean Radio Amateurs in emergency communications. His sincere interest in the work of Radio Amateurs was evidenced by scope of his questions. Our meeting with Senador Weber lasted nearly 45 minutes. At the end Senador Weber offered his assistance in working with IARU on telecommunications issues, particularly after he moves from his present position of Senate President to Head of the Senate Foreign Relations Committee in 2017.

A press account (in Spanish) of the meeting is attached as Document 5A. .

The Second Plenary was held that afternoon where Committees reported on progress and candidates for Officer or Area Representative (Executive Committee) each candidate provided e a brief oral presentation to the delegates.

On Thursday those participants whose Committee work was essentially finished joined a tour of the Casablanca Valley, a prime agricultural area that is becoming the center of the Chilean wine industry.

All committee reports were uploaded to the Conference Document page prior to the final Plenary Session on Friday. The final Plenary involved review of the committee reports and an opportunity for questions and final changes, At the conclusion each report was accepted.

The full list of Recommendations and actions can be found on the Region 2 Web Page. The Recommendations and actions of most interest to United States amateurs are:

#### **Working Group A Administration**

The Mexican Authority has determined that Amateur Radio is a concession not a internationally permitted activity. As a result they have established a set of rules and regulations that constrain amateur licensing and activity, particularly activity by foreign operators.

#### **Recomendation EC-A-01**

That R2 EC submit to CITELE request for uniform Technical Treatment under ITU Rules specifically pointing out the problems in Mexico. (Note the Authority is attempting to correct some of the problems but this change was a legislative change.

**Recommendation EC-A-03** The R2 EC ask CITELE and the countries that comprise it to look the adopting the CEPT standardized technical requirements to permit operation between R1 and R2 countries according to CEPT Regulation T/R 61. (T/R 61 is a basic set of technical and operating standards in licensing that are approximately equivalent to the US General Class license). The idea is that if a country accepts the standard, it



would permit operation by any CEPT country amateur meeting those standards and vice-versa.

**Recommendation EC-A-04**

1. Request IARU AC retain current regulation re QSL Bureau.
2. Encourage use of LOTW
3. Request Member Society provide a standardized annual Statistical Report of incoming and outgoing QSL's to enable a broad analysis of QSL Bureau use and operation.

**Committee B/C HF and VHF Band Planning was Chaired By 2nd Vice President Milesosky.** I will leave the discussion of the Committee's work to him, except to say that I was told by several participants, including individuals who have worked at the regional and ITU level, that his work as chairman was excellent.

**Finance Committee Recommendations to the General Assembly**

1. Reevaluate bad debts and set a more accurate reserve for doubtful debts
2. Budget amounts for representation at CITELE, ITU and CTU meetings based upon experience
3. Simplify the process for funding requests from the Promotion of Amateur Radio Fund (PARF). Improve the current application so that requests for additional information and unnecessary delays are minimized. Promote appropriate fund usage and establish a response goal of 90 days.
4. Recommend future General Assemblies operate on a three day schedule to reduce costs and encourage participation by more member societies. The four day, if any, should follow conclusion of the GA.

**Election of Region 2 Officers and Executive Committee**

The last item was election of the Region 2 officers and Area Representatives who will hold office until the 2019 General Assembly. With the exception of the Treasurer the current officers were re-elected. The current Treasurer decided not to stand for reelection and I was elected as Region 2 Treasurer for a three year term.

The IARU Region 2 Officers and Executive Committee are:

President - Reinaldo Leandro, YV5AM	Venezuela
Vice President - Ramon Santoyo V, XE1KK	Mexico
Secretary - Jose Arturo Molina, YS1MS	El Salvador
Treasurer - Jay Bellows, K0QB	USA

The Area Representatives (EC Members) are:

Area A, George Gorsline, VE3YV	Canada
Area B, Jay Bellows, K0QB,	USA
Area C, Ramon Santoyo V, XE1KK	Mexico
Area D, Jose Arturo Molina, YS1MS	El Salvador
Area E, Noel Donawa, 9Y4X	Trinidad & Tobago
Area F, Gustavo de Faria Franco, PT2ADM	Brazil
Area G, Ernesto Syrians, LU4AUE	Argentina

### **Executive Committee**

Between General Assemblies, the administration of Region 2 activities is the responsibility of the Executive Committee elected by the member societies. The EC meets in person once per year and maintains communications between meetings using email and virtual meetings using Skype.

### **Other ARRL Activities**

#### **ARRL EC**

I attended the EC meeting in Chicago, IL, at the request of President Roderick this past October to provide the EC with an update on upcoming international matters, the recent Region 2 General Assembly and Region 2 financial matters.

#### **A& F Committee**

At the request of Chairman Pace, I participated by telephone conference call in the A& F Committee meeting on November 19, 2015. I briefed the committee and answered their questions regarding international matters, the recent Region 2 General Assembly and particularly Region 2 financial matters.

### **Foreign Members**

During my tenure as IAVP, I have reminded the Board of the significant number of ARRL members who do not live in any of the 15 domestic ARRL Divisions. As of June 30, 2015 there are 9687 ARRL foreign members. This number has decreased by more than 5 percent in the past year about twice the rate of the decline in domestic membership. The most likely reasons are the increase in dues, the extremely strong dollar and drop in solar activity. Even with this decrease there are more foreign members than reside in 6 of our 15 Divisions. Our foreign members are a valuable part of ARRL and provide significant support to our operations and activities. We would be wise to listen to their views.

Please let me know if you have any questions about ARRL in Region 2 or my efforts on behalf of ARRL as IAVP.

Respectfully,

Jay Bellows, KØQB

The President of the Senate and Senator Prokurica received the representatives of Radio Club Chile and the international delegations of the XIX General Assembly and they emphasized the fundamental social role that they fulfill in case of emergencies



Photo of Meeting with Senador Ricardo Largo Weber, President of the Senate of the Republic of Chile. Clockwise from top left, George Gorsline, VE3YV, Galdino Besimo, CE3PG, Senador Baldo Prokurica Prokurica, CE1JIU, Senate President Ricardo Lago Weber, Jay Bellows, KØQB, David Smner, K1ZZ, Glenn MacDonell, VE3XRA, President RAC.

Radioaficionados: el voluntariado de las comunicaciones se da cita en su XIX Asamblea General Presidente del Senado y senador Prokurica recibieron a los representantes de Radio Club Chile y las delegaciones

internacionales y destacaron el rol social fundamental que cumplen en caso de emergencias.

Un compromiso para solicitar al Ejecutivo el envío al Congreso de acuerdos internacionales que faciliten la función que desempeñan los radioaficionados, expresó el Presidente del Senado, Ricardo Lagos Weber, en el marco de la audiencia que sostuvo con los delegados de la **XIX Asamblea General de la IARU (Internacional Amateur Radio Union)** que se realizó en Viña del Mar.

Así lo expresó el senador Lagos Weber quien relevó la importancia que tienen los radioaficionados en momentos difíciles, como son, la ocurrencia de diversos desastres naturales que han azotado a nuestro país.

“Ellos no reciben remuneración, trabajan con recursos propios, no pasan comerciales y cumplen un tremendo rol social”, dijo el titular del Senado, al tiempo que agregó “les ofrecimos el apoyo para poder tramitar a la brevedad un par de tratados internacionales para la regulación de la función que realizan los radioaficionados con el fin de empujar estos proyectos”.

Cabe señalar que Chile ha firmado diversos tratados internacionales sobre la actividad de los radioaficionados pero no han sido enviados al Congreso para su ratificación.

Por su parte, el senador Baldo Prokurica, uno de los impulsores y cultores de esta actividad destacó “la importancia de tener reunidos en Chile a representantes de todas las áreas de los radioaficionados a nivel mundial, porque somos un país que lamentablemente, está expuesto a la ocurrencia de terremotos y otros desastres naturales”.

Asimismo coincidió con su par en el sentido que “como Congreso vamos a sacar adelante algunos de estos tratados internacional para poder incorporarlos a la legislación chilena y contribuir al desarrollo de la radiodifusión en Chile, ya que no es solo un hobby sino una eficaz herramienta para la comunicación vital en tiempos de desastres naturales, tal como quedó demostrado en el terremoto de 2010, porque cuando todo falla, los radioaficionados permiten mantener contacto vital para miles de personas”.

La XIX Asamblea General de IARU Región 2 se lleva a cabo en Viña del Mar, del 10 al 14 de Octubre y Radio Club de Chile (RCCh) es la sociedad anfitriona.

En la oportunidad, se abordaron diversos aspectos sobre la promoción y defensa de la radioafición, plan de bandas para HF, VHF y bandas superiores y otros asuntos de importancia para las Sociedades Miembro en la Región 2.

**American Radio Relay League**  
**Treasurer's Report**  
**Rick Niswander, K7GM**  
**For the year ended December 31, 2016**

The 2016 equity and bond markets were a tail of two halves – the first half good for bonds, and the last half good for stocks. For the year, domestic stocks returned 12.74%, with about ¾ of that gain occurring in the last half of the year. The 1-5 year bond market returned 1.65% for the year, but that return was all from the first half, as the last half return was a small loss.

Our portfolio return versus the benchmark was also like the overall markets – a tail of two halves. We outperformed the benchmark in the first half and underperformed in the last half. In the first half, our portfolio outperformed the benchmark by 0.69% in the first quarter and 0.77% in the second. In the second half, we gave it all back with underperformance of 1.13% in the third quarter and 0.50% in the fourth.

For the year, our portfolio returned 6.49% versus our benchmark of 6.66%, a 0.17% (17 basis point) underperformance. Remember that the benchmark does not include any holding costs. While our portfolio has very low costs, they are not zero. Almost all of that full-year underperformance was due to a small underweight in equities and overweight in bonds. That helped in the first half when stocks generally underperformed bonds, but hurt us in the second half when stocks were the dominant asset class.

In 2016, we started the year with \$21,826,857, earned \$1,424,271, added contributions of \$1,023,137, transferred \$500,000 to the general account, and ended the year with \$23,774,265.

Here is a little more information on our stock returns for 2016. The chart below shows our best and worst holdings in terms of total return percentage change for 2016.

2016 Top Five Percentage Stock Winners and Losers (Total Return)					
Top Five Percentage Increases			Bottom Five Percentage Decreases		
Stock	Percent Change	End Balance	Stock	Percent Change	End Balance
Spectra Energy	78.4%	\$ 41,090	Novo Nordisk	(35.8%)	\$ 35,860
Apache Corp	45.0%	95,205	Gilead Sciences	(27.4%)	71,610
Devon Energy	44.0%	68,505	Express Scripts	(21.3%)	137,580
CSX Corp	41.2%	125,755	Bristol Myers Squibb	(13.4%)	48,739
Texas Instruments	35.6%	72,970	Novartis	(12.2%)	109,260

The gainers and losers reflect the shifting fortunes of equity sectors. For the most part, stocks in industries that topped the charts in 2016 had less-than-stellar returns in 2015 and the industries that suffered in 2016 did relatively well in 2015. Our top three percentage gainers are in the energy sector which had a great 2016 (following a horrible 2015). All of the biggest decliners are in the biotech or health care industry. In 2016, the NYSE biotech index was down over 19%, pharma was down over 11%, and healthcare was down almost 4%. In 2015, these three indices were all firmly in positive territory even though overall markets were essentially flat.

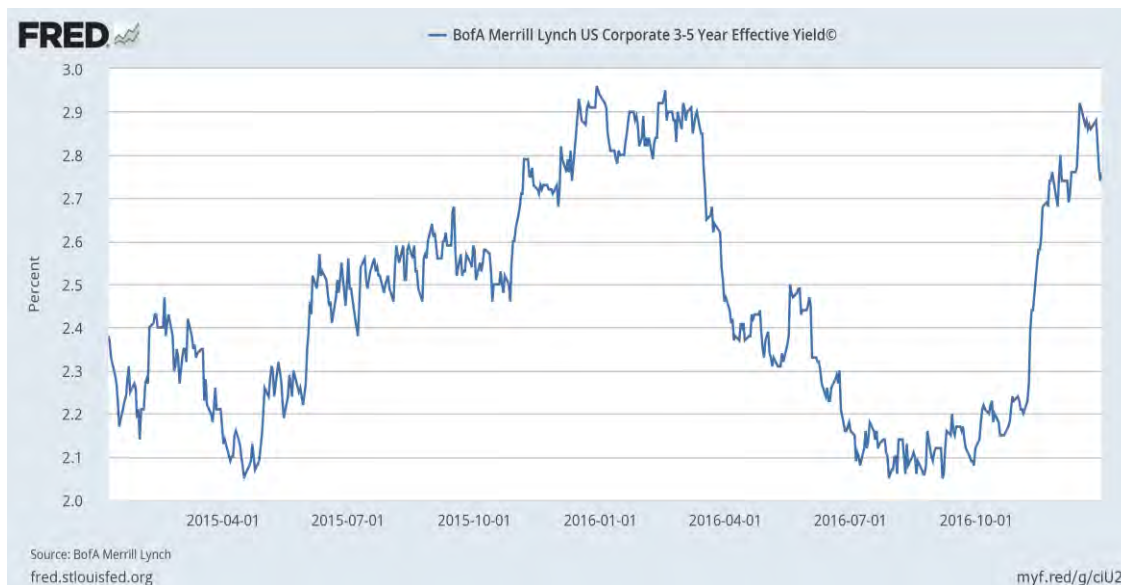
The following chart looks at 2016 total returns on our largest (dollar-value) stock and ETF holdings. In general, our ETFs are all broadly based and had returns which approximated the market. Our large-holding individual stocks did well with the exception of Disney. It had a very good 2015 (up 13% in a flat market) but in 2016 was hampered by concerns related to the long term strength of ESPN.

2016 Total Return on Top Five Largest Stock and ETF Holdings					
Total Return on Largest Five Stock Holdings			Total Return on Largest Five ETF Holdings		
Stock	Percent Change	End Balance	ETF	Percent Change	End Balance
Berkshire Hathaway	23.4%	\$ 325,960	VG Total Stock Mkt	12.8%	\$ 2,260,272
United Technologies	16.8%	274,050	VG Dividend Apprec.	12.0%	889,279
Johnson & Johnson	15.2%	230,420	VG S&P 500	12.2%	847,930
Pepsico	7.7%	209,260	VG Mega Cap	11.9%	671,792
Disney	0.6%	208,440	ISh Min Volatility	10.6%	411,502

Here is a little more info about the bond market.

The chart below shows the effective yield on 3-5 year corporate debt over the last two years. In the first half of 2016, yields dropped from 2.94% to 2.18% - fairly significant for short term debt. In the last half, yields increased to 2.76%, making up most of the first half decline. The steep down movement and subsequent steep up movement over the short periods of time is unusual, although not unheard of.

Because bond prices move in the opposite direction of yields, overall prices went up in the first half (1.58% in the first quarter and 0.96% in the second quarter) and went down in the second half (up 0.21% in the third quarter when yields did not change much and -1.09% in the fourth quarter when rates rose fairly steeply).



In our bond portfolio, we own about \$1.53 million of bond ETFs as well as \$9.8 million face value of individual bonds. Our practice is to buy bonds of about 5 year maturity as existing bonds mature. It is important to monitor the average maturity and credit quality of the bond portfolio. A portfolio with longer maturities and/or poorer credit ratings will realize higher interest income but will have an increased exposure to interest rate risk (as rates rise, prices fall and that effect increases as maturities increase) as well as increased credit risk (poorer credit ratings translate into higher probability of default). Because we hold our bonds to maturity, the credit risk component is more important to us.

We have a portfolio that adheres to the five-year time horizon with very good credit quality. Here are two charts. One shows maturities over the next five years and the other shows credit quality (high to low). We do not own any bonds with credit quality lower than investment grade.

Bond Maturities by Year	
2017	\$ 2,300,000
2018	2,700,000
2019	1,700,000
2020	1,600,000
2021	1,500,000
Total	\$ 9,800,000

Bond Credit Ratings (S&P)	
AA+	\$ 400,000
AA	900,000
AA-	1,800,000
A+	800,000
A	1,500,000
A-	1,400,000
BBB+	2,000,000
BBB	800,000
BBB-	200,000
Below BBB-	0
Total	\$ 9,800,000

From the above, we can deduce that our \$9.8 million individual bond portfolio has an average maturity of about 2 years and average S&P rating of A. Our \$1.53 million of ETFs are about 57% governmental (AAA rated) with an average A rating on the remainder. Average ETF maturity is about 2.7 years.

At some point in the future, as interest rates rise, we will likely start to replace maturing bonds with bonds with maturities longer than 5 years (assuming we will be able to continue to hold bonds to maturity). We have a large enough bond portfolio to move towards a 10-year ladder (replacing maturing bonds with 10 year bonds) which will increase the average interest income of the portfolio.

**Appendix A**

**American Radio Relay League  
Portfolio Flow**

Page 1  
de K7GM

	Investment Portfolio Market Value
<b>Balance, December 31, 2014</b>	21,754,511
Additions from contributions	182,444
Subtractions	(50,000)
Total Return	143,499
<b>Balance, March 31, 2015</b>	<u>22,030,454</u>
<b>Balance, March 31, 2015</b>	22,030,454
Additions from contributions	96,327
Subtractions	0
Total Return	(77,797)
<b>Balance, June 30, 2015</b>	<u>22,048,984</u>
<b>Balance, June 30, 2015</b>	22,048,984
Additions from contributions	300,262
Subtractions	(500,000)
Total Return	(733,318)
<b>Balance, September 30, 2015</b>	<u>21,115,928</u>
<b>Balance, September 30, 2015</b>	21,115,928
Additions from contributions	204,205
Subtractions	0
Total Return	506,724
<b>Balance, December 31, 2015</b>	<u>21,826,857</u>
<b>Balance, December 31, 2015</b>	21,826,857
Additions from contributions	158,943
Subtractions	0
Total Return	396,174
<b>Balance, March 31, 2016</b>	<u>22,381,974</u>
<b>Balance, March 31, 2016</b>	22,381,974
Additions from contributions	362,370
Subtractions	0
Total Return	529,807
<b>Balance, June 30, 2016</b>	<u>23,274,151</u>
<b>Balance, June 30, 2016</b>	23,274,151
Additions from contributions	340,124
Subtractions	(500,000)
Total Return	297,996
<b>Balance, September 30, 2016</b>	<u>23,412,271</u>
<b>Balance, September 30, 2016</b>	23,412,271
Additions from contributions	161,700
Subtractions	0
Total Return	200,294
<b>Balance, December 30, 2016</b>	<u>23,774,265</u>

<b>Two-Year Summary</b>	
Beginning Balance, December 31, 2014	21,754,511
Cumulative Additions from contributions	1,806,375
Cumulative Subtractions	(1,050,000)
Cumulative Market Returns	1,263,379
Ending Balance, December 31, 2016	<u>23,774,265</u>



## Appendix B

### American Radio Relay League Portfolio Composition as of December 31, 2016

de K7GM

	Fair Value	Percentage	Amortized Cost
Investment Portfolio			
Stock (of which \$928,464 is international)	11,349,811	47.7%	8,182,904
Bond	11,334,639	47.7%	11,349,032
Cash	1,089,815	4.6%	1,089,815
Total Investment Portfolio	<u>23,774,265</u>	<u>100.0%</u>	<u>20,621,751</u>

### American Radio Relay League Portfolio Return and Total Return Metrics

	2016 1st Quarter	2016 2nd Quarter	2016 3rd Quarter	2016 4th Quarter	Calendar Year 2016	Calendar Year 2015	Calendar Year 2014	Calendar Year 2013	Calendar Year 2012
Applicable Total Return Indices									
US Stock - Russell 3000 TR	0.97%	2.63%	4.40%	4.21%	12.74%	0.48%	12.56%	33.55%	16.42%
Foreign Stock - FTSE AW Ex US TR	-0.36%	-0.35%	6.94%	-0.99%	5.12%	-4.46%	-3.04%	15.63%	17.80%
Bonds - Barclays US Agg 1-5Yr TR	1.58%	0.96%	0.21%	-1.09%	1.65%	1.07%	1.69%	0.25%	2.21%
VG Prime Money Market	0.01%	0.01%	0.01%	0.01%	0.04%	0.04%	0.04%	0.04%	0.04%
Benchmark Blended Total Return (45% us, 5% intl, 45% bonds, 5% mmkt)	1.13%	1.60%	2.42%	1.36%	6.66%	0.48%	6.26%	15.99%	9.28%
Benchmark Bended Total Return (above)	1.13%	1.60%	2.42%	1.36%	6.66%	0.48%	6.26%	15.99%	9.28%
Actual Total Return									
In Percent	1.82%	2.37%	1.29%	0.86%	6.49%	-0.74%	5.77%	14.66%	11.04%
In Dollars (from page 1)	396,174	529,807	297,996	200,294	1,424,271	(160,892)	1,220,626	2,654,016	1,769,299

#### Notes:

Returns for greater than one quarter will be different than the sum of the quarterly returns because of compounding

The Russell 3000 Index is a measure of the total US stock market.

The FTSE index measures the World (AW) stock market, minus the US market

The Barclays index measures the aggregate US bond market for maturities of 1-5 years (the type of bonds in which we invest)

The Vanguard Prime Money Market is a proxy for the overall US money market

The Benchmark Blended Total Return is calculated from the above indexes in the proportions noted. It represents the expected return on the portfolio.

The Actual Total Return is calculated based on the dollar amount of Total Return relative to the original principal amount for the period calculated.

If there are significant increases or decreases to the investment portfolio in the period, the calculated Actual Total Return is adjusted accordingly.



### CEO's Report to the Board of Directors January 2017

This report supplements the CFO's Report of same date. In addition, I have attached a listing of tasks, project and initiatives for the period 4/18/16 to 12/31/16. I will attempt to highlight especially activities in the 4<sup>th</sup> quarter not covered in prior reports or that of the CFO.

The business plan (formerly referred to as "the budget") completed in 2016's fourth quarter represents an enormous undertaking for the staff this year. Headwinds of declining advertising revenues (between 2015 actual and 2017 plan, revenues are off by roughly \$400,000), membership losses, increased operating costs and significant investment in new and existing programs and services, placed a heavy load on the organization's finances. The 2017 plan consists not only of numbers but also of descriptive narrative explicating intermediate goals and objectives and tying these to the ARRL 2015 Strategic Plan. I was very pleased that in several iterations, the staff reduced an initial proposal with a \$400,000 deficit to an essentially break-even \$63,000 surplus. This required a great deal of discipline, analysis, thoughtful choices and inter-departmental cooperation on their parts, and I feel justifiably proud of their efforts. If we can achieve break-even this year, it will be the first time in four years.

There are several features of the planning process that depart somewhat from prior planning, which are worth noting:

- Planning was bottoms up, not top down (*IT'S YOUR PLAN, NOT JUST MINE*);
- Managers were encouraged to think in terms of 3-5 years out (*THINK FORWARD*);
- Managers were encouraged to set bold, audacious goals for the 3-5-year horizon (*LEAN FORWARD*);
- Collaboration in planning and decision-making among peers was encouraged and will be rewarded (*THERE IS NO "I" IN TEAM*);
- At all times, accompanying narratives must collaborate and explain budget numbers (*SHOW THE NUMBERS BUT TELL THE STORY*).

To assist in implementing and monitoring the plan going forward, all department managers will meet with CEO/CFO on an (initially) monthly basis to maintain continuous focus on goals, review progress to date, and promptly identify variances occurring or expected to occur. To complement the review process, we have incorporated a more disciplined day-to-day decision process. For example, whenever decisions about which publications to support or decline, which replacement platform is most suitable for Digital QST, or which IT vendor should be selected, we bring together the interested parties, identify risks and opportunities, analyze the cost/benefit, document the decision and assign accountability. This year's write-off of \$49,000 of unsold 2015 and 2016 Handbooks is a painful reminder of what auto-pilot decisions cost.

In October, we outlined for the EC and A&F five big things we seek to accomplish in 2017. Topically, these relate to stabilizing finances, growing individual and corporate funding, expanding outreach, updating legacy systems, and improving business processes and decision making.

1. With a focus on revenue growth, we have likely seen only the first wave of advertising declines. Breaking a two-year cold spell, Yaesu came back at year-end to add a premium additional page to the issue in response to some intense high level cultivation. DX Engineering renewed for six-months its sponsorship of the very successful podcast. More advertising revenue requires more and varied media offerings—and significantly more content. We are definitely short of relevant, fresh content.

At the specific behest of the Executive Committee's October meeting and in response to the alarming, declining retention of new ham members after one year, over the last several months, a Headquarters working group came together and has been involved in exploring the challenges the organization faces in the years ahead. These challenges arise from shifting demographics, but also from changing interests among those who become radio amateurs. The group conducted an extensive analysis of data obtained from the ReadEx Research 2015 Market Study, as well as prior ReadEx studies (back to the year 2003). ReadEx Research, with over 65 years of experience, is a full-service research company specializing in survey management support to publishers, media and associations. For the first time, ReadEx data was placed on a SharePoint server and made more widely available to staff for analysis and decision-making purposes.

The working group's analysis concentrated on the largest segment of the amateur population: Technicians who have never joined the ARRL. This segment, while quite large, is not the wellspring of new members that many believe. For example, only 39% of this population is currently active in Amateur Radio. The top answer given as the primary reason for getting involved in Amateur Radio by all Technicians was "to support communications during disasters and other emergencies." But because public service activities are episodic in nature, and require less continuous learning, overall engagement has suffered over time. This marks a shift from the social aspects of Amateur Radio among this group to a more practical one.

The membership department has begun monthly follow-up email surveys with discontinuing members. With a 15% return rate on the 1,772 surveys sent, we are building an archive of data, based on the fresh recollections of lapsed members. Diane Petrilli will present these findings along with the ReadEx data to date to the board on Thursday evening.

Always searching for new revenue sources, we explored two potential acquisition/joint ventures. One with Handi-Hams (confidential—covered by an NDA—please do not disclose) which we rejected because the requirements would not be supported by the accompanying endowment. A second foray with *CQ Magazine* to collaborate which is still in the most preliminary discussion phase. We open initial discussions with the new owners of the venerable HeathKit Co. on the topic of co-publishing.

2. Corporate and institutional funding remains critical to achieving our most aggressive education and discovery outreach goals. We are constrained by our elected board from achieving the balance which most institutional donors demand; yet through Director Frenaye's efforts, we are attempting to achieve satisfactory standing by adding to the diversity of the Foundation board as an alternative. Director Frenaye will be interviewing an outside candidate at month's end. A

newly created initiative for College Amateur Radio has attracted a family foundation initial grant of \$100,000 from a Yale faculty member. This experience demonstrates that programs tailored to the donor's interests are most easily fundable. The donor has indicated his willingness to increase his support based on how we can leverage his donation. In the future, acquiring successful institutional support will require the addition of more experienced staff (ours is individual and member-oriented) as well as the gradual dispersion of recent public relations issues.

3. In our outreach efforts, we continue to experience acceptable results in education outreach, GOTA events and direct contact with Amateurs through attendance at club meetings. Education remains our most powerful tool to attack 2015 Strategic Plan goals of growth, diversity and recruitment. Offerings at Grace Academy in Hartford where we are piloting our first round of curriculum have been well received by students, but scaling up the model nationally will become a significant challenge in the absence of outside funding. Teachers Institute continues to attract applicants, and this year we expect to be more selective in acceptances to achieve better diversity of backgrounds and to require tracking post-graduation activity to evaluate the effectiveness of TI.

The ARRL College Radio Initiative began modestly but spontaneously at Boxboro in October now has 400+ participants in its Facebook group. A second forum event is scheduled at HamCation (organized by University of Florida, Gator Amateur Radio Club, W4DFU) and we would expect to support such activities-- given the funding we have received--at any major ham fest with the assistance of local college radio clubs. College Amateur Radio can be viewed as a sustaining bridge between high school interest and adult and professional activities, as well as an entry point for new hams.

In the fourth quarter I visited with more than 900 hams at 17 ARRL-affiliated radio clubs and DX associations from the Midwest and western Pennsylvania to New Hampshire, Connecticut, New York and New Jersey. The visits included a 20-minute "Report from Headquarters" followed by a town meeting-style Q&A session. Director Lisenco and I attended the NYC Marathon Captains meeting to personally thank 100 volunteers in November. For the most part, club members were highly engaged and clearly appreciate attention from the League.

Higher levels of member engagement are reflected in the continuing growth of social media statistics. Facebook crossed 70,000. A Phil Gildersleeve cartoon earned 141 "likes" on Instagram last Wednesday, many from hams who aren't old enough to recall the original; we produced our first professional grade video (W1T special events station from Mark Twain's Home).

Members enjoy GOTA events: NPOTA crossed 1 million QSO's. The transatlantic N1BCG event garnered 500 QSO's on a pre-Christmas Sunday afternoon and made the 6 AM newscast on BBC. We're planning an AM event to celebrate 75 years of phone privileges to coincide with Marconi Day; a 100<sup>th</sup> *Anniversary of CW* event; and beginning the major planning for an international scale event like NPOTA centered on the 100<sup>th</sup> anniversary of the 1918 Armistice. Staff would welcome greater interest and input from PSC on these types of events.

4. We continue to make significant investment in replacing legacy IT systems, as the CFO's report details. There is nothing that I should or could add to the CFO's reportage. However, from an investment analysis perspective, it is important to recognize that our new RadioSport investment (DXCC) or continued higher level maintenance IT work (LoTW) is concentrated in member services which continue to experience declining activity and revenues, both in 2016 and trending down in prior years. Some *but not all* of the decline can be attributed to near-term band conditions and sunspot activity. Ordinarily, it is considered imprudent to increase investment in declining markets; however, we must recognize that these activities are hallmarks of ARRL. As we make this investment, the return on investment will very likely not begin for five or six years.

I should also point out that it has recently come to the attention of the CEO and CFO that much if not all of the software used to process and adjudicate ARRL contests was developed by contest volunteers and remains in their control. While this may have been generally known in the past, there is no evidence that its implications have been analyzed or discussed by staff. Since ARRL holds neither title nor possession, we are at risk in the event of the death, disability, or retirement of volunteers because we don't have control of the software that drives our contest activity, nor do we control the work product (results). While estimates are difficult at this point, we believe that re-creating and up-dating this software would require an investment in the low-six-figures amount.

5. The last of the five big things we wish to accomplish addresses the 2015 Strategic Plan's goal #6 of "Practicing good governance and organizational management." We have developed five familiar but essential precepts for governance, organizational management and decision-making:
  - a. Develop specific evaluative criteria for business decision making (it's good for the hobby is not a valid criterion in the absence of any other);
  - b. Practice inclusive, consensus decision-making with access to the fullest data sources and document accountability;
  - c. Employ a rigorous business planning process with specific individual goal setting and conduct quarterly (monthly) review of results;
  - d. Deploy ARRL's existing HR personnel evaluation methodology consistently and fairly across the entire organization;
  - e. Create an organization that is able to attract, develop and retain quality people in the future.

Applying these precepts broadly and consistently across the organization will promote better decision-making and enable a higher degree of accountability.

Attached to this report is a listing of 23 tasks and activities with which I have been engaged over the past eight months. I prefer to think of them as our (board, staff and volunteers) collective accomplishments because I could not have completed them without your support, encouragement and direction.

I am especially grateful to Barry Shelley whose competence, continuity, leadership, cheerful demeanor and good-natured nagging made coming in day-after-day possible.

Although I probably don't say it often enough, I am deeply grateful for such an opportunity to serve this organization at this stage of my life. The past year has been particularly difficult for all of us, and I would be disingenuous if I didn't say that I don't look forward to repeating it, ever. But the good times were really good, enjoyable and rewarding.

Respectfully,

Thomas J. Gallagher  
Chief Executive Officer

[Please see appendix next page: **Twenty-three Tasks and Activities in 2016**]

## Appendix:

### Twenty-three Tasks and Activities in 2016:

1. Reorganization of Headquarters departments:
  - a. Began right-sizing of the organization, matching resources with demand requirements.
  - b. Eliminated 5 positions, three through attrition.
  - c. Reduced staffing run rate costs by \$460,000 annually.
  - d. Reduced CEO span of control to critical functions and delegated more routine functions to CFO.
2. Produced a comprehensive business plan for 2017, with rigorous attention to expense control and realistic revenue forecasting, closing an initial projected deficit of \$463,000 to a \$63,000 operating surplus. If successful, ARRL will balance its budget for the first time in 4 years. Plan keyed to 2015 Strategic Plan. Presented to ExCom and A&F.
3. Instituted monthly performance review meetings, department by department for each manager to maintain continuous focus on goals, objectives and progress against them (beginning with December 2016).
4. Implemented a new, focused business decision making processes for day-to-day decisions in publishing, contesting, awards and other member services. Process includes more inclusive participation among responsible parties, pre-decision analysis of cost/benefit, documented expectations and documented accountability.
5. Successfully defended the law suit filed by Joseph Ames, former SM Eastern PA versus ARRL, Roderick, Boehner, Gallagher; selected best choice law firm to represent ARRL in Eastern Pennsylvania; assisted GC in preparation of the defense; suit dismissed by Federal Judge C. Darnell Jones with prejudice. Ames filed an appeal on 1/10/17.
6. Other governance matters handled:
  - a. Conflict of interest situation (M. Lee and ICOM America).
  - b. Doug Rehman's eligibility as a director candidate in the Southeastern division.
  - c. Representation and response in the matter of former director Rehman's allegations that GC Imlay was acting improperly in Connecticut and Maryland, which complaints were summarily dismissed by the relevant jurisdictions.
7. Reviewed and evaluated three potential acquisition/joint venture possibilities:
  - a. CQ Magazine collaboration (still active, not enough data yet) begun with a meeting at CQ HQ with publisher in June 2016.
  - b. Handi-Hams (declined, not a good fit and overall resource drain) subject of a NDA.
  - c. Various miscellaneous co-publishing opportunities.

8. Transitioned Digital QST to new platform (PageSuite) providing better service especially to older versions of Android application. Quicker down-loads, smaller files, cost savings of \$6,000 per annum to ARRL. Also allows greater graphic content for advertising in ARRL email letters for which there is currently a backlog of advertisers.
  
9. Consummated RFinder arrangement to support expanded Repeater Directory (improved gross margin, reduce up-front costs, lower risks). The expanded directory (almost twice the size of prior offerings) will be published in a limited run of 5,000 copies with the flexibility to republish an updated and revised issue in the late summer. We believe that the interactive ARRL-RFinder on-line app will contribute significantly to the quality and timeliness of the data published by ARRL, both on-line and in the RD directory, and it will eventually supplant printed directories. ARRL has a 30% of revenue interest in RFinder application.
  
10. Initiated successful education project (course guide, curriculum, collateral materials) at the Grace Academy (Hartford, CT). Expect to standardize the program elements as a national model and expand the reach of this program in 2017. Created preliminary (common core indexed) curriculum, first in ARRL's history.
  
11. Created the College Amateur Radio Initiative (400 members and growing) with nearly zero funds investment using a Facebook users group formerly belonging to a similar, non-ARRL affiliated group. Program hopes to bridge between high school and post college graduate by sustaining interest.
  - a. Successfully solicited a \$105,000 donation to endow the program from Edward Snyder, MD, W1YSM, Yale faculty and his family foundation.
  - b. Organized two college events to date (Boxboro 9/16 and HamCation scheduled for 2/17).
  
12. Conducted fourth-quarter personal outreach campaign to members and clubs throughout the Northeast and Midwest. Visited 17 ARRL-affiliated radio clubs and DX associations from New Hampshire to Western Pennsylvania to central NJ; spoke to, and met with, more than 900 hams; presented "Report from HQ," a 20-minute slide show followed by a popular "town meeting-style" Q&A session.
  
13. Created special operating event in Greenwich, CT re-enacting first transatlantic short wave signals. Special event calls (N1BCG, GB2ZE).
  
14. Hired new Administrative Assistant for the CEO.
  
15. Implemented corporate-wide SharePoint application and dedicated server (both purchased several years ago but never used) to help promote operating efficiencies, internal information sharing, and archival of important organizational documents.



16. Mobilized staff committee to study adverse membership trends/data both from existing Readex data and newly commissioned market research (request from the ExCom). First report at January Board meeting.
17. Staff negotiated health insurance renewal with 11% increase.
18. Eliminated several long-standing recurring services costing thousands of dollars annually, for example the answering service, after review of cost/benefit
19. Produced 1<sup>st</sup> video cast of a special event station specifically designed for social media (W1T, The Mark Twain 181<sup>st</sup> Anniversary Special Event Station); produced 1<sup>st</sup> audio podcast series of ***DR. is In***, with 208,000 downloads and 10,000 unique listeners. All social media statistics continue to rise sharply (Facebook, Twitter and Instagram) and surprisingly a good following with older, established traditional hams. Activity follows national population centers with California, Florida, New York leading.
20. Attended NAB convention and identified several potential corporate patrons.
21. Contacted two corporate and institutional development consulting firms, solicited proposals; determined that they were unsuitable since they could not demonstrate access to the appropriate institutional givers.
22. Maintained high level of senior attention on Yaesu Corporation resulting in the placement of a premium additional full page in the January 2017 DIY issue, the first incremental placement in two years. Maintained high-level contact with ICOM, Heil, HRO and DX Engineering at Ham Fests and commercial events (NAB, APCO).
23. Opened initial discussions with Heath Company on possible shared ventures including co-branding and co-publishing.

**ARRL**  
**FINANCIAL RESULTS PACKAGE**  
**December 31, 2016**

<b>AMERICAN RADIO RELAY LEAGUE, INC.</b>		
<b>BALANCE SHEET</b>		
<b>As of December 31, 2016 and December 31, 2015</b>		
	<b>2016</b>	<b>2015</b>
<b>ASSETS</b>		
Cash & Short Term Investments	\$2,465,027	\$2,296,671
Accounts Receivable, Net	306,568	422,955
Contributions Receivable, Net	692,576	810,931
Inventory, Net of Reserve	666,894	794,350
Prepaid Expenses	229,059	261,187
Investments at Market	22,684,451	20,487,711
Land, Building & Equipment, Net of Accumulated Depreciation	1,427,728	1,594,851
<b>TOTAL ASSETS</b>	<b>\$28,472,303</b>	<b>\$26,668,656</b>
<b>LIABILITIES &amp; FUNDS</b>		
<b>Liabilities:</b>		
Accounts Payable	\$246,931	\$299,913
Other Accrued Liabilities	368,910	385,646
Deferred Membership Dues - Term	4,079,030	3,976,982
Deferred Membership Dues - Life	7,258,309	7,195,471
<b>TOTAL LIABILITIES</b>	<b>11,953,180</b>	<b>11,858,012</b>
<b>Fund Balances:</b>		
Unrestricted	4,939,133	4,254,309
Designated Unrestricted	5,380,081	4,550,713
Temporarily Restricted	1,760,275	1,626,700
Permanently Restricted	4,439,634	4,378,922
<b>TOTAL FUND BALANCES</b>	<b>16,519,123</b>	<b>14,810,644</b>
<b>TOTAL LIABILITIES &amp; FUND BALANCES</b>	<b>\$28,472,303</b>	<b>\$26,668,656</b>

**AMERICAN RADIO RELAY LEAGUE, INC.**

**SUMMARY**

**December 31, 2016**

	December			Year-To-Date			2015
	Actual	Plan	Variance	Actual	Plan	Variance	Actual YTD
REVENUES	\$1,202,125	\$1,294,517	(\$92,392)	\$13,906,129	\$14,271,207	(\$365,078)	\$13,719,781
EXPENSES	908,975	836,070	(72,905)	10,989,465	10,933,910	(55,555)	11,163,715
NET AVAILABLE INCOME	293,150	458,447	(165,297)	2,916,664	3,337,297	(420,633)	2,556,066
MEMBER PROGRAM							
EXPENDITURES	372,116	385,741	13,625	4,168,390	4,189,673	21,283	4,102,948
SUB-TOTAL	(78,966)	72,706	(151,672)	(1,251,726)	(852,376)	(399,350)	(1,546,882)
CONTRIBUTIONS	158,165	181,580	(23,415)	1,016,538	1,049,145	(32,607)	1,102,350
INCOME FROM OPERATIONS	79,199	254,286	(175,087)	(235,188)	196,769	(431,957)	(444,532)
NATIONAL PARKS ON THE AIR	870	1,665	(\$795)	231	8,360	(\$8,129)	0
GAIN/(LOSS) ON INVESTMENT	531	0	531	24,298	0	24,298	31,454
NET EXCESS (DEFICIT)	\$80,600	\$255,951	(\$175,351)	(\$210,659)	\$205,129	(\$415,788)	(\$413,078)
UNREALIZED GAIN (LOSS)	\$138,392			\$895,484			(\$688,240)

**AMERICAN RADIO RELAY LEAGUE, INC.**

**INCOME**

**December 31, 2016**

	December			Year-To-Date			2015
	Actual	Plan	Variance	Actual	Plan	Variance	Actual YTD
<b>REVENUES</b>	<b>\$1,202,995</b>	<b>\$1,296,342</b>	<b>(\$93,347)</b>	<b>\$13,908,101</b>	<b>\$14,282,142</b>	<b>(\$374,041)</b>	<b>\$13,719,781</b>
Product Sales	319,370	364,617	(45,247)	3,728,783	3,639,331	89,452	3,558,496
QST and Magazines	16,924	19,423	(2,499)	217,028	219,358	(2,330)	224,972
Advertising	173,349	188,381	(15,032)	2,202,765	2,392,577	(189,812)	2,451,633
Membership Dues	560,528	590,947	(30,419)	6,380,112	6,580,999	(200,887)	5,996,103
Program Fees	79,224	89,440	(10,216)	1,023,713	1,117,260	(93,547)	1,066,525
Interest/Dividends	30,171	29,134	1,037	187,260	182,087	5,173	185,356
Centennial Activities	192	0	192	2,379	3,095	(716)	115,612
National Parks on the Air	870	1,825	(955)	1,972	10,935	(8,963)	0
Other	22,367	12,575	9,792	164,089	136,500	27,589	121,084
<b>EXPENSES</b>	<b>\$908,975</b>	<b>\$836,230</b>	<b>(\$72,745)</b>	<b>\$10,991,206</b>	<b>\$10,936,485</b>	<b>(\$54,721)</b>	<b>\$11,163,715</b>
Product Sales	268,592	260,162	(8,430)	2,820,424	2,781,125	(39,299)	2,834,149
QST and Magazines	238,534	220,324	(18,210)	2,540,795	2,554,050	13,255	2,693,297
Advertising	26,343	31,439	5,097	276,641	282,452	5,811	270,948
Membership Dues	90,798	86,004	(4,794)	939,335	1,026,114	86,779	974,524
Investment Fees	13	200	187	2,388	2,400	12	2,263
Centennial Activities	0	0	0	68,447	0	(68,447)	102,146
National Parks on the Air	0	160	160	1,741	2,575	834	2,101
Support:	<b>\$284,695</b>	<b>\$237,941</b>	<b>(\$46,754)</b>	<b>\$4,341,434</b>	<b>\$4,287,768</b>	<b>(\$53,666)</b>	<b>\$4,284,287</b>
Administration	87,082	94,245	7,163	909,205	888,368	(20,837)	919,585
Development/Fundraising	30,235	27,619	(2,616)	408,403	384,001	(24,402)	379,990
Controller	79,553	85,214	5,661	956,835	959,827	2,992	1,008,073
Information Technology	128,651	130,876	2,225	1,211,972	1,271,726	59,754	1,174,008
Administrative Services	28,043	25,859	(2,184)	235,150	239,707	4,557	238,246
Personnel	(118,590)	(171,225)	(52,635)	97,003	27,160	(69,843)	40,194
Building	49,721	45,353	(4,368)	522,866	516,979	(5,887)	524,191
<b>NET AVAILABLE INCOME</b>	<b>\$294,020</b>	<b>\$460,112</b>	<b>(\$166,092)</b>	<b>\$2,916,895</b>	<b>\$3,345,657</b>	<b>(\$428,762)</b>	<b>\$2,556,066</b>
Product Sales	50,778	104,455	(53,677)	908,359	858,206	50,153	724,347
QST and Magazines	(221,610)	(200,901)	(20,709)	(2,323,767)	(2,334,692)	10,925	(2,468,325)
Advertising	147,006	156,942	(9,935)	1,926,124	2,110,125	(184,001)	2,180,685
Membership Dues	469,730	504,943	(35,213)	5,440,777	5,554,885	(114,108)	5,021,579
Program Fees	79,224	89,440	(10,216)	1,023,713	1,117,260	(93,547)	1,066,525
Investment Income	30,158	28,934	1,224	184,872	179,687	5,185	183,093
Centennial Activities	192	0	192	(66,068)	3,095	(69,163)	13,466
National Parks on the Air	870	1,665	(1,115)	231	8,360	(9,797)	(2,101)
Other and Support	(262,328)	(225,366)	(36,962)	(4,177,345)	(4,151,268)	(26,077)	(4,163,203)

**AMERICAN RADIO RELAY LEAGUE, INC.**

**SPENDING**

**December 31, 2016**

	December			Year-To-Date			2015
	Actual	Plan	Variance	Actual	Plan	Variance	Actual YTD
<b>MEMBER PROGRAM</b>							
<b>EXPENDITURES</b>	<b>\$372,116</b>	<b>\$385,741</b>	<b>\$13,625</b>	<b>\$4,168,390</b>	<b>\$4,189,673</b>	<b>\$21,283</b>	<b>\$4,102,948</b>
<b>Advocacy</b>	<b>\$45,881</b>	<b>\$81,886</b>	<b>\$36,005</b>	<b>\$906,834</b>	<b>\$890,402</b>	<b>(\$16,432)</b>	<b>\$952,404</b>
Washington	31,413	56,681	25,268	644,148	612,748	(31,400)	658,418
International/IARU	1,738	11,717	9,979	126,235	132,610	6,375	157,809
Public Relations	12,128	12,738	610	127,456	133,044	5,588	136,177
Outreach Through Discovery	602	750	148	8,995	12,000	3,005	0
<b>Field Services &amp; Radiosport</b>	<b>\$189,242</b>	<b>\$177,232</b>	<b>(\$12,010)</b>	<b>\$1,783,725</b>	<b>\$1,846,371</b>	<b>\$62,646</b>	<b>\$1,739,402</b>
Administration	30,978	29,918	(1,060)	280,832	277,668	(3,164)	280,300
Contest	19,101	17,524	(1,577)	195,892	189,686	(6,206)	155,559
DXCC/Awards	36,819	46,193	9,374	466,211	529,159	62,948	477,425
QSL Bureau	9,636	12,362	2,726	77,235	102,466	25,231	83,191
W1AW	15,464	14,951	(513)	147,008	150,489	3,481	145,459
Field Services	34,150	29,966	(4,184)	331,981	311,210	(20,771)	319,801
Emergency Preparedness & Response	17,486	16,191	(1,295)	168,734	164,169	(4,565)	165,746
Section Expenses	25,608	10,127	(15,481)	115,832	121,524	5,692	111,921
<b>Educational Programs</b>	<b>\$17,850</b>	<b>\$14,278</b>	<b>(\$3,572)</b>	<b>\$217,703</b>	<b>\$230,996</b>	<b>\$13,293</b>	<b>\$200,995</b>
Education Services	14,564	10,913	(3,651)	112,521	113,535	1,014	89,373
Educ & Technology	3,286	3,365	79	105,182	117,461	12,279	111,622
<b>VEC</b>	<b>\$35,063</b>	<b>\$38,132</b>	<b>\$3,069</b>	<b>\$423,454</b>	<b>\$397,728</b>	<b>(\$25,726)</b>	<b>\$422,109</b>
<b>LAB</b>	<b>\$46,567</b>	<b>\$49,419</b>	<b>\$2,852</b>	<b>\$432,909</b>	<b>\$458,649</b>	<b>\$25,740</b>	<b>\$428,033</b>
<b>Governance</b>	<b>\$37,513</b>	<b>\$24,794</b>	<b>(\$12,719)</b>	<b>\$403,765</b>	<b>\$365,527</b>	<b>(\$38,238)</b>	<b>\$360,005</b>
Divisions	10,377	11,294	917	151,231	135,527	(15,704)	112,479
Officers	1,981	3,000	1,019	36,844	35,000	(1,844)	35,135
Board Meetings	7,415	2,000	(5,415)	119,083	120,000	917	120,707
Committees	17,740	8,500	(9,240)	96,607	75,000	(21,607)	91,684

**AMERICAN RADIO RELAY LEAGUE, INC.**  
**CONTRIBUTIONS / INVESTMENT ACTIVITY**  
**December 31, 2016**

	December			Year-To-Date			2015
	Actual	Plan	Variance	Actual	Plan	Variance	Actual YTD
<b>CONTRIBUTIONS AND</b>							
<b>SUPPORT</b>	<b>\$158,165</b>	<b>\$181,580</b>	<b>(\$23,415)</b>	<b>\$1,016,538</b>	<b>\$1,049,145</b>	<b>(\$32,607)</b>	<b>\$1,102,350</b>
<b>Unrestricted</b>	<b>\$67,117</b>	<b>\$102,097</b>	<b>(\$34,980)</b>	<b>\$483,564</b>	<b>\$452,620</b>	<b>\$30,944</b>	<b>\$477,736</b>
Diamond Club	56,219	58,000	(1,781)	367,594	335,000	32,594	323,644
Miscellaneous	10,898	44,097	(33,199)	115,970	117,620	(1,650)	154,092
Member Loyalty	65	0	65	1,127	0	1,127	349
<b>Donor-Restricted: "Uses"</b>	<b>\$91,048</b>	<b>\$79,483</b>	<b>\$11,565</b>	<b>\$532,974</b>	<b>\$596,525</b>	<b>(\$63,551)</b>	<b>\$624,614</b>
Capital Campaign Earnings	\$9,108	\$8,107	1,001	\$62,139	\$50,667	11,472	\$59,771
Dave Bell, W6AQ Earnings	\$3,584	\$0	3,584	\$3,584	\$0	3,584	\$0
Defense:	\$67,916	\$62,800	\$5,116	\$259,647	\$310,000	(\$50,353)	\$311,670
Advocacy	66,223	62,532	3,691	191,215	250,247	(59,032)	244,278
Fundraising	1,693	268	1,425	68,432	59,753	8,679	67,392
Education & Technology:	\$4,979	\$3,391	\$1,588	\$120,095	\$144,947	(\$24,852)	\$131,821
Program	4,891	3,365	1,526	106,786	119,902	(13,116)	111,541
Fundraising	88	26	62	13,309	25,045	(11,736)	20,280
Legislative Issues Advocacy Fund	\$521	\$0	\$521	\$27,261	\$16,691	\$10,570	\$16,154
Program	\$521	(\$8)	529	\$8,782	\$0	8,782	16,154
Fundraising	\$0	\$8	(8)	\$18,479	\$16,691	1,788	0
Legal Research & Resource	440	585	(145)	1,770	7,020	(5,250)	11,351
Lab Fund	1,500	0	1,500	1,500	0	1,500	2,169
Preservation of Artifacts	0	100	(100)	688	1,200	(512)	1,728
W1AW Earnings	0	0	0	9,230	24,500	(15,270)	40,750
Ham Aid	0	0	0	2,388	0	2,388	0
ARDF	0	1,500	(1,500)	0	1,500	(1,500)	0
E. Smith Earnings	3,000	3,000	0	40,000	40,000	0	40,000
Colvin Award	0	0	0	1,500	0	1,500	9,200
Hiram Percy Fund	0	0	0	1,500	0	1,500	0
Project Goodwill	\$0	\$0	0	\$1,672	\$0	1,672	0
<b>GAIN/(LOSS) ON SALE</b>							
<b>OF INVESTMENTS</b>	<b>\$531</b>	<b>\$0</b>	<b>\$531</b>	<b>\$24,298</b>	<b>\$0</b>	<b>\$24,298</b>	<b>\$31,454</b>

American Radio Relay League								
Detailed Income Statement								
December 31, 2016								
	Month of December			Year-to-date			2015	2016
	Actual	Plan	Variance	Actual	Plan	Variance	YTD Actual	Total Plan
<b>RECONCILIATION BY TOTALS</b>								
<b>REVENUES</b>								
PUBLICATIONS & PRODUCTS	\$319,370	\$364,617	(\$45,247)	\$3,728,783	\$3,639,331	\$89,452	\$3,558,496	\$3,639,331
ADVERTISING	173,349	188,381	(15,032)	2,202,765	2,392,577	(189,812)	2,451,633	2,392,577
DUES & SUBSCRIPTIONS	577,451	610,370	(32,919)	6,597,140	6,800,357	(203,217)	6,221,076	6,800,357
PROGRAM & SERVICE FEES	79,224	89,440	(10,216)	1,023,713	1,117,260	(93,547)	1,066,524	1,117,260
INVESTMENT INCOME	30,702	29,134	1,568	211,559	182,087	29,472	216,810	182,087
CONTRIBUTIONS & SUPPORT	158,165	181,580	(23,415)	1,016,538	1,049,145	(32,607)	1,102,350	1,049,145
SPECIAL OPERATING AWARDS	1,062	1,825	(763)	4,351	14,030	(9,679)	115,612	14,030
OTHER	22,368	12,575	9,793	164,088	136,500	27,588	121,084	136,500
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<b>TOTAL REVENUES</b>	<b>1,361,691</b>	<b>1,477,922</b>	<b>(116,231)</b>	<b>14,948,937</b>	<b>15,331,287</b>	<b>(382,350)</b>	<b>14,853,585</b>	<b>15,331,287</b>
<b>DIRECT COSTS</b>								
PUBLICATIONS & PRODUCTS	158,710	151,614	7,096	1,681,654	1,598,591	83,063	1,672,803	1,598,591
MEMBERSHIP & SUBS	183,160	166,414	16,746	2,036,613	2,039,937	(3,324)	2,058,379	2,039,937
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<b>TOTAL DIRECT COSTS</b>	<b>341,870</b>	<b>318,028</b>	<b>23,842</b>	<b>3,718,267</b>	<b>3,638,528</b>	<b>79,739</b>	<b>3,731,182</b>	<b>3,638,528</b>
<b>ADMINISTRATIVE EXPENSES</b>								
HEADQUARTERS	876,101	869,022	7,079	10,921,733	11,000,579	(78,846)	11,063,556	11,000,579
BOARD OF DIRECTORS, OFFICERS & COMMITTEES	37,512	24,794	12,718	403,764	365,527	38,237	360,005	365,527
SECTION LEVEL	25,608	10,127	15,481	115,832	121,524	(5,692)	111,921	121,524
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<b>TOTAL ADMIN EXPENSES</b>	<b>939,221</b>	<b>903,943</b>	<b>35,278</b>	<b>11,441,329</b>	<b>11,487,630</b>	<b>(46,301)</b>	<b>11,535,482</b>	<b>11,487,630</b>
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<b>TOTAL EXPENSES</b>	<b>1,281,091</b>	<b>1,221,971</b>	<b>59,120</b>	<b>15,159,596</b>	<b>15,126,158</b>	<b>33,438</b>	<b>15,266,664</b>	<b>15,126,158</b>
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<b>NET EXCESS (DEFICIT) FROM OPERATIONS</b>	<b>80,600</b>	<b>255,951</b>	<b>(175,351)</b>	<b>(210,659)</b>	<b>205,129</b>	<b>(415,788)</b>	<b>(413,079)</b>	<b>205,129</b>
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American Radio Relay League								
Detailed Income Statement								
December 31, 2016								
	Month of December			Year-to-date			2015	2016
	Actual	Plan	Variance	Actual	Plan	Variance	YTD Actual	Total Plan
<b>REVENUES:</b>								
<b>PUBLICATION AND PRODUCT SALES:</b>								
ARRL Handbook	\$45,235	\$66,313	(\$21,078)	\$340,280	\$462,265	(\$121,985)	\$395,717	\$462,265
Repeater Directory	5,717	7,663	(1,946)	140,061	162,719	(22,658)	166,967	162,719
Ham Radio License Manual	41,944	58,156	(16,212)	595,049	529,654	65,395	538,221	529,654
Training Aids	30,454	34,663	(4,209)	523,665	452,646	71,019	408,007	452,646
Non-ARRL Publications	14,477	20,000	(5,523)	168,818	163,514	5,304	174,522	163,514
Royalty Items	16,873	20,635	(3,762)	270,630	234,261	36,369	159,586	234,261
Other Books	96,861	88,483	8,378	815,245	820,495	(5,249)	908,123	820,495
RSGB	3,938	5,457	(1,519)	46,202	61,892	(15,691)	60,193	61,892
Other Pubs/Product Sales	188	0	188	5,103	0	5,103	5,732	0
Membership Supplies	9,783	16,000	(6,217)	275,807	260,000	15,807	274,389	260,000
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	265,470	317,370	(51,900)	3,180,860	3,147,446	33,414	3,091,457	3,147,446
Apparel Commissions	450	0	450	2,370	3,000	(630)	2,867	3,000
e-Book Royalties	7,622	7,500	122	98,743	90,000	8,743	53,638	90,000
Other Products: Publishing Rights	0	0	0	14,277	9,000	5,277	15,133	9,000
On-line Courses	807	1,320	(513)	11,147	14,690	(3,543)	13,478	14,690
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	8,879	8,820	59	126,537	116,690	9,847	85,116	116,690
Postage/Handling Fees	44,027	41,427	2,600	437,479	411,195	26,284	411,329	411,195
Sales Returns and Allow.	994	(3,000)	3,994	(16,093)	(36,000)	19,907	(29,406)	(36,000)
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<b>TOTAL PUBLICATION AND PRODUCT SALES</b>	<b>319,370</b>	<b>364,617</b>	<b>(45,247)</b>	<b>3,728,783</b>	<b>3,639,331</b>	<b>89,452</b>	<b>3,558,496</b>	<b>3,639,331</b>
<b>ADVERTISING</b>								
QST	156,209	170,436	(14,227)	1,884,536	2,058,557	(174,020)	2,145,984	2,058,557
QST Specialty	0	0	0	30,508	54,500	(23,993)	47,759	54,500
Electronic Advertising	3,858	3,700	158	49,802	44,400	5,402	47,150	44,400
Ham Ads	756	700	56	6,825	8,400	(1,575)	8,493	8,400
QEX	789	2,000	(1,211)	8,908	12,000	(3,092)	12,770	12,000
NCJ	3,212	2,995	217	19,426	17,970	1,456	18,683	17,970
WEB Banner Ads	4,325	5,300	(975)	63,024	63,600	(576)	66,879	63,600
LoTW Banner Ads	2,210	2,000	210	28,405	22,000	6,405	0	22,000
Special Program Ads-NPOTA	1,100	1,250	(150)	13,800	15,000	(1,200)	0	15,000
Podcast Advertising	890	0	890	8,010	0	8,010	0	0
All Other Advertising	0	0	0	89,521	96,150	(6,629)	103,915	96,150
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<b>TOTAL ADVERTISING</b>	<b>173,349</b>	<b>188,381</b>	<b>(15,032)</b>	<b>2,202,765</b>	<b>2,392,577</b>	<b>(189,812)</b>	<b>2,451,633</b>	<b>2,392,577</b>
<b>MEMBERSHIP DUES AND SUBSCRIPTIONS</b>								
Term Membership Dues	517,489	548,347	(30,857)	5,862,793	6,069,799	(207,006)	5,484,206	6,069,799
Life Membership Dues	43,038	42,600	438	517,319	511,200	6,119	511,898	511,200
QST: Dealer	1,283	1,300	(17)	16,222	15,600	622	13,956	15,600
QEX Subscriptions	12,235	14,117	(1,883)	151,306	155,653	(4,347)	159,839	155,653
NCJ Subscriptions	3,406	4,006	(600)	49,500	48,105	1,395	51,177	48,105
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<b>TOTAL DUES &amp; SUBSCRIPTIONS</b>	<b>577,451</b>	<b>610,370</b>	<b>(32,919)</b>	<b>6,597,140</b>	<b>6,800,357</b>	<b>(203,217)</b>	<b>6,221,076</b>	<b>6,800,357</b>

American Radio Relay League								
Detailed Income Statement								
December 31, 2016								
	Month of December			Year-to-date			2015	2016
	Actual	Plan	Variance	Actual	Plan	Variance	YTD Actual	Total Plan
<b>REVENUES:</b>								
<b>PROGRAMS &amp; SERVICE FEES</b>								
QSL Bureau Service	\$4,391	\$5,340	(\$949)	\$40,304	\$53,150	(\$12,846)	\$41,109	\$53,150
DXCC Fees and Receipts	42,847	51,275	(8,427)	468,647	570,850	(102,203)	491,018	570,850
CQ Awards	2,619	2,240	379	23,173	25,045	(1,872)	25,547	25,045
W1AW Cert Fees	28	0	28	28	0	28	242	0
Contest Fees	936	2,160	(1,225)	16,185	20,115	(3,930)	21,464	20,115
Lab Fees	0	50	(50)	20	600	(580)	278	600
Volunteer Exam Fees	27,844	27,350	494	464,896	435,000	29,896	472,002	435,000
VEC Certificate Fees	344	750	(406)	6,327	9,000	(2,673)	7,449	9,000
IARP Fees	105	150	(45)	2,335	2,000	335	2,185	2,000
Vanity Renewal Fees	0	0	0	0	0	0	3,730	0
Non-Member FCC changes	110	125	(15)	1,798	1,500	298	1,500	1,500
<b>TOTAL FEES</b>	<b>79,224</b>	<b>89,440</b>	<b>(10,216)</b>	<b>1,023,713</b>	<b>1,117,260</b>	<b>(93,547)</b>	<b>1,066,524</b>	<b>1,117,260</b>
<b>INVESTMENT INCOME</b>								
Interest/Dividend Income	30,171	29,134	1,037	187,261	182,087	5,174	185,356	182,087
Gain/(Loss) from Sale of Investments	531	0	531	24,298	0	24,298	31,454	0
<b>TOTAL INVESTMENT INCOME</b>	<b>30,702</b>	<b>29,134</b>	<b>1,568</b>	<b>211,559</b>	<b>182,087</b>	<b>29,472</b>	<b>216,810</b>	<b>182,087</b>
<b>CONTRIBUTIONS &amp; SUPPORT</b>								
Contributions - Unrestricted	10,833	44,097	(33,264)	114,843	117,620	(2,777)	153,743	117,620
Contributions - Diamond Club	56,219	58,000	(1,781)	367,594	335,000	32,594	323,645	335,000
Contributions - Member Loyalty	65	0	65	1,127	0	1,127	349	0
Contributions - Restricted	91,048	79,483	11,565	532,974	596,525	(63,551)	624,613	596,525
<b>TOTAL CONTRIBUTIONS &amp; SUPPORT</b>	<b>158,165</b>	<b>181,580</b>	<b>(23,415)</b>	<b>1,016,538</b>	<b>1,049,145</b>	<b>(32,607)</b>	<b>1,102,350</b>	<b>1,049,145</b>
<b>SPECIAL OPERATING AWARDS:</b>								
DXCC - Centennial Fees	192	0	192	2,379	3,095	(716)	115,612	3,095
DXCC - National Parks on the Air	870	1,825	(955)	1,972	10,935	(8,963)	0	10,935
<b>TOTAL SPECIAL OPERATING AWARDS</b>	<b>1,062</b>	<b>1,825</b>	<b>(763)</b>	<b>4,351</b>	<b>14,030</b>	<b>(9,679)</b>	<b>115,612</b>	<b>14,030</b>
<b>OTHER REVENUES</b>								
Royalties	145	400	(255)	1,029	4,800	(3,771)	3,431	4,800
Affinity Credit Card	3,468	3,900	(432)	48,803	46,800	2,003	41,563	46,800
Insurance Commission	0	0	0	14,457	14,800	(343)	15,679	14,800
Affinity Insurance Royalty	576	775	(199)	8,300	9,300	(1,000)	9,106	9,300
Gain/(Loss) from Sale of Assets	428	0	428	(4,381)	0	(4,381)	2,513	0
Auction Revenue	1,132	0	1,132	30,673	12,500	18,173	5,567	12,500
Misc. Other Income	16,619	7,500	9,119	65,207	48,300	16,907	43,225	48,300
<b>TOTAL OTHER REVENUES</b>	<b>22,368</b>	<b>12,575</b>	<b>9,793</b>	<b>164,088</b>	<b>136,500</b>	<b>27,588</b>	<b>121,084</b>	<b>136,500</b>

American Radio Relay League								
Detailed Income Statement								
December 31, 2016								
	Month of December			Year-to-date			2015	2016
	Actual	Plan	Variance	Actual	Plan	Variance	YTD Actual	Total Plan
<b>DIRECT COSTS:</b>								
<b>DIRECT COSTS OF PUBLICATIONS AND PRODUCTS:</b>								
ARRL Handbook	\$9,616	\$14,890	(\$5,274)	\$80,020	\$111,064	(\$31,044)	\$100,013	\$111,064
Repeater Directory	3,106	4,814	(1,708)	82,683	95,890	(13,207)	85,675	95,890
Ham Radio License Manual	6,246	9,994	(3,748)	96,571	92,540	4,031	91,998	92,540
Training Aids	7,177	8,617	(1,440)	127,991	106,918	21,073	94,465	106,918
Non-ARRL Publications	10,276	13,450	(3,174)	115,975	109,963	6,012	119,506	109,963
Royalty Items	5,372	7,786	(2,414)	74,226	78,669	(4,443)	30,682	78,669
Other Books	19,043	12,627	6,416	178,076	132,309	45,767	203,204	132,309
RSGB	2,434	3,424	(990)	32,632	40,702	(8,070)	45,534	40,702
Other Pubs/Product COGS	273	0	273	3,704	0	3,704	5,006	0
Membership Supplies	5,009	6,880	(1,871)	123,168	111,800	11,368	128,801	111,800
On-line Course Expense	402	317	85	2,670	3,526	(856)	3,120	3,526
e-Book Expenses	198	0	198	8,423	6,500	1,923	6,987	6,500
Publications Forwarding Expense	62,918	57,127	5,791	604,749	566,541	38,208	588,902	566,541
Advertising/Promotion Expense	0	0	0	3,190	3,000	190	3,000	3,000
In-House Pub Use	6,782	9,688	(2,906)	105,718	115,169	(9,451)	106,415	115,169
Obsolete Inventory	19,858	2,000	17,858	41,858	24,000	17,858	59,495	24,000
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<b>TOTAL DIRECT PUBLICATION AND PRODUCT SALES</b>	<b>158,710</b>	<b>151,614</b>	<b>7,096</b>	<b>1,681,654</b>	<b>1,598,591</b>	<b>83,063</b>	<b>1,672,803</b>	<b>1,598,591</b>
<b>DIRECT COSTS OF MEMBERSHIPS AND SUBSCRIPTIONS:</b>								
QST Publication Expense	91,919	79,236	12,683	981,749	994,848	(13,099)	980,531	994,848
QST Insertion Costs	0	6,500	(6,500)	4,990	26,000	(21,010)	20,899	26,000
QST Forwarding Expense	70,894	70,247	647	874,867	870,565	4,302	903,100	870,565
QST Electronic Production Exp.	4,500	3,000	1,500	38,104	36,000	2,104	35,437	36,000
Podcast Expense	601	0	601	3,526	0	3,526	0	0
QEX Publication Expense	7,453	0	7,453	59,552	41,196	18,356	45,855	41,196
QEX Forwarding Expense	4,528	4,809	(281)	28,143	30,174	(2,031)	29,739	30,174
NCJ Publication Expense	2,280	0	2,280	28,658	24,600	4,058	27,020	24,600
NCJ Forwarding Expense	985	2,622	(1,637)	17,024	16,554	470	15,798	16,554
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<b>TOTAL DIRECT MEMBERSHIP &amp; SUBSCRIPTION COSTS</b>	<b>183,160</b>	<b>166,414</b>	<b>16,746</b>	<b>2,036,613</b>	<b>2,039,937</b>	<b>(3,324)</b>	<b>2,058,379</b>	<b>2,039,937</b>
<b>DIRECT COSTS OF ADVERTISING:</b>								
Client On-line Services	0	0	0	0	0	0	0	0
	-----	-----	-----	-----	-----	-----	-----	-----
<b>TOTAL DIRECT ADVERTISING COSTS</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

American Radio Relay League								
Detailed Income Statement								
December 31, 2016								
	Month of December			Year-to-date			2015	2016
	Actual	Plan	Variance	Actual	Plan	Variance	YTD Actual	Total Plan
<b>HEADQUARTERS OPERATIONS:</b>								
Salaries Regular	\$474,184	\$486,169	(\$11,985)	\$5,593,578	\$5,674,757	(\$81,179)	\$5,554,293	\$5,674,757
Salaries Overtime	2,183	1,794	389	35,314	23,133	12,181	43,269	23,133
Commissions and Bonuses	1,000	2,750	(1,750)	38,000	14,500	23,500	8,350	14,500
Employee Recognition /Awards	3,290	4,340	(1,050)	7,569	8,430	(861)	8,417	8,430
Temporary Employees	0	0	0	817	0	817	7,829	0
Benefit Allocation	0	3	(3)	0	2	(2)	0	2
Employee Benefits	132,851	124,570	8,281	1,553,721	1,578,109	(24,388)	1,524,521	1,578,109
Employee Relocation	0	0	0	16,949	0	16,949	0	0
Recruiting Advertising	0	0	0	2,637	7,000	(4,363)	3,095	7,000
Legal and Professional	(3,955)	9,500	(13,455)	176,111	114,000	62,111	131,094	114,000
Accounting/Audit Fees	(300)	0	(300)	39,700	40,000	(300)	41,700	40,000
Other Consultants	23,929	22,907	1,022	232,471	263,764	(31,293)	313,914	263,764
Education Grants	0	0	0	3,799	4,500	(701)	2,648	4,500
Promotional Materials	0	0	0	1,443	3,000	(1,557)	719	3,000
Donor Recognition	793	421	372	49,930	43,975	5,955	30,733	43,975
Office Supplies	5,228	5,237	(9)	71,038	70,670	368	85,044	70,670
Stationery/Printing/Forms	31,589	14,323	17,266	327,961	332,296	(4,335)	322,973	332,296
Exhibit Expense	85	0	85	57,032	58,563	(1,531)	50,786	58,563
Expensed Equipment/Furniture	2,735	500	2,235	31,769	30,220	1,549	36,694	30,220
Computer Supplies	1,022	2,000	(978)	16,562	24,000	(7,438)	27,844	24,000
Purchased Software Packages	521	848	(327)	11,384	9,771	1,613	10,811	9,771
Telephone	2,395	2,233	162	27,808	26,796	1,012	34,341	26,796
Internet/ISP/Electronic Mail	4,055	2,558	1,497	27,598	30,696	(3,098)	27,519	30,696
ARRL.net	3,670	3,100	570	37,869	37,200	669	37,458	37,200
Postage	53,664	53,828	(164)	698,161	711,352	(13,191)	735,650	711,352
Dues and Subscriptions	4,152	4,693	(541)	51,572	61,814	(10,242)	54,022	61,814
IARU Dues	4,284	4,315	(31)	51,952	51,780	172	51,268	51,780
Business Travel	11,539	1,190	10,349	159,790	155,045	4,745	119,941	155,045
Overseas Travel	6,732	8,900	(2,168)	128,009	145,886	(17,877)	174,382	145,886
Member Contact Travel	57	3,225	(3,168)	37,155	39,800	(2,645)	44,663	39,800
Program Travel	0	0	0	37,499	50,830	(13,331)	44,190	50,830
Utilities	12,671	12,271	400	130,887	123,928	6,959	118,582	123,928
Insurance	12,709	9,838	2,871	121,099	116,410	4,689	116,174	116,410
Property Taxes	10,348	10,845	(497)	132,101	131,358	743	126,878	131,358
Building Maintenance	14,054	8,938	5,116	120,441	126,563	(6,122)	137,897	126,563
Computer Maintenance	2,882	2,680	202	27,383	32,160	(4,777)	19,213	32,160
Maintenance of Equipment	3,317	4,000	(683)	65,733	65,008	725	55,921	65,008
Rent/Leased - Equipment	3,618	4,610	(992)	54,613	56,440	(1,827)	64,401	56,440
Rent/Leased - Storage	4,865	4,265	600	53,729	51,180	2,549	53,266	51,180
Rent/Leased - Office Space	0	0	0	912	0	912	14,995	0
Vehicle Expenses	331	125	206	1,331	1,825	(494)	1,169	1,825
Overseas QSL Service	1,517	2,630	(1,114)	22,685	33,075	(10,390)	26,700	33,075
Awards Expense	1,504	1,475	29	80,275	73,550	6,725	155,618	73,550
CQ Award Expense	786	672	114	6,919	7,516	(597)	7,669	7,516
W1AW Station Expense	399	285	114	2,281	3,840	(1,559)	2,437	3,840
Product Review Expense	1,456	900	556	16,031	10,800	5,231	25,700	10,800
Lab Expense	898	525	373	6,617	8,175	(1,558)	6,121	8,175
Payroll Processing	1,301	1,252	49	12,507	11,800	707	12,395	11,800
Bank Service Charges	2,060	1,825	235	24,695	21,900	2,795	25,970	21,900
Credit Card Fees	23,808	20,309	3,499	259,697	243,708	15,989	240,687	243,708
Credit and Collections	0	50	(50)	1,498	600	898	674	600
Bad Debt Expense	(8,250)	750	(9,000)	0	9,000	(9,000)	49,811	9,000
Other Taxes and Permits	0	200	(200)	2,396	2,500	(104)	2,196	2,500
Depreciation and Amortization	20,131	21,173	(1,041)	251,030	256,154	(5,124)	269,440	256,154
Miscellaneous	(7)	0	(7)	1,675	1,200	475	1,474	1,200
<b>TOTAL HEADQUARTERS</b>								
<b>OPERATIONAL EXPENSES</b>	<b>876,101</b>	<b>869,022</b>	<b>7,079</b>	<b>10,921,733</b>	<b>11,000,579</b>	<b>(78,846)</b>	<b>11,063,556</b>	<b>11,000,579</b>

American Radio Relay League								
Detailed Income Statement								
December 31, 2016								
	Month of December			Year-to-date			2015	2016
	Actual	Plan	Variance	Actual	Plan	Variance	YTD Actual	Total Plan
<b>BOARD of DIRECTORS, OFFICERS &amp; COMMITTEES</b>								
Divisions	\$10,377	\$11,294	(\$917)	\$151,231	\$135,527	\$15,704	\$112,479	\$135,527
President and Officers	1,980	3,000	(1,020)	36,844	35,000	1,844	35,135	35,000
BOD Meetings	7,415	2,000	5,415	119,084	120,000	(916)	120,707	120,000
Committees	17,740	8,500	9,240	96,607	75,000	21,607	91,684	75,000
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	37,512	24,794	12,718	403,766	365,527	38,239	360,005	365,527
Section Level Administrative Exp.	25,608	10,127	15,481	115,832	121,524	(5,692)	111,921	121,524
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<b>TOTAL BOARD DIRECT AUTHORIZATIONS</b>	<b>63,120</b>	<b>34,921</b>	<b>28,199</b>	<b>519,598</b>	<b>487,051</b>	<b>32,547</b>	<b>471,926</b>	<b>487,051</b>

<b>The American Radio Relay League, Inc.</b>		
<b>Statement of Changes in Financial Position</b>		
<b>December 31, 2016</b>		
Excess (deficit) of revenues over expenses		\$ (210,659)
Operating items not using/(providing) cash:		
Depreciation	251,031	
Decrease (increase) in accounts receivable	234,742	
Decrease (increase) in inventory	127,456	
Decrease (increase) in prepaid expenses	32,128	
Increase (decrease) in accounts payable	(52,990)	
Increase (decrease) in other accrued liabilities	(16,736)	
Increase (decrease) in deferred		
membership dues - term	102,048	
membership dues - life	62,838	
		<u>740,517</u>
Gross cash from operations		529,858
Other sources (uses) of cash:		
Net sales (purchases) of investments	(1,301,255)	
Capital purchases	(83,902)	
Increase (decrease) in designated unrestricted funds	829,368	
Increase (decrease) in temporarily restricted funds	133,575	
Increase (decrease) in permanently restricted funds	60,712	
		<u>(361,502)</u>
Net Increase (decrease) in Cash and		
Cash Equivalents before Investment Market Adjustment		168,356
Increase (decrease) in Market Value of Investments		895,484
Net Increase (decrease) in Cash and		
Cash Equivalents		<u>\$ 1,063,840</u>

American Radio Relay League, Inc.							
Fund Activity - Contributions Received and Used							
As of December 31, 2016							
				Realized			
		Beg Bal.		Interest	Pledges	Funds	Ending Bal.
Fund	Acct #	January 1, 2016	Contributions	& Capital	Received	Used	December 31, 2016
				Gains (Loss)			
<b>Designated Unrestricted:</b>							
Defense Functioning as Endowment	32010-000-00	21,500	328,015	-	-	-	349,515
Preservation of Artifacts	32011-000-00	24,795	12,550			(688)	36,656
General Fund Functioning as Endowment	34100-000-00	4,504,419	489,492				4,993,911
		<b>4,550,713</b>	<b>830,056</b>	<b>-</b>	<b>-</b>	<b>(688)</b>	<b>5,380,081</b>
<b>Temporarily Restricted:</b>							
Hiram Percy Maxim Award	33001-000-00	41,741		988		(1,500)	41,229
Project Goodwill	33003-000-00	1,672				(1,672)	-
Exceptional Merit	33004-000-00	1,060,304		24,710		(40,000)	1,045,014
Legal Research & Resource	33005-000-00	168,912	11,584			(1,770)	178,726
Starr Technology Fund	33006-000-00	2,719					2,719
Rinaldo Technology Fund	33007-000-00	1,000					1,000
ARRL SAREX Fund	33008-000-00	6,710					6,710
Defense of Frequencies	33009-000-00	-	257,314	2,334		(259,647)	-
Ham Aid Fund	33010-000-00	15,550	879			(2,389)	14,040
Fred Fish Awards Fund	33011-000-00	1,320					1,320
Legislative Issues Advocacy Fund	33012-000-00	14,201	54,573			(27,261)	41,513
Colvin Investment Earnings	33030-000-00	1,974		4,101		(1,500)	4,576
Dave Bell, W6AQ Earnings Fund	33032-000-00	-		3,584		(3,584)	-
Capital Campaign Earnings	33040-000-00	-		62,138		(62,138)	-
DX Log Archive Earnings	33041-000-00	11,046		6,054			17,099
Educational Activities	33051-000-00	3,581					3,581
Lab Contributions	33052-000-00	6,985	4,725			(1,500)	10,210
W1AW Fund	33053-000-00	100,991		15,549		(9,230)	107,310
Education & Technology Fund	33054-000-00	176,661	211,654	5,674		(120,094)	273,895
Fund for ARDF	33055-000-00	1,334	-	-	-	-	1,334
Steven Rich Fund	33058-000-00	10,000	-	-	-	-	10,000
<b>Total Temporarily Restricted</b>		<b>1,626,700</b>	<b>540,729</b>	<b>125,131</b>	<b>-</b>	<b>(532,286)</b>	<b>1,760,275</b>
<b>Permanently Restricted:</b>							
Colvin Fund	34005-000-00	154,340	-	-	-	-	154,340
Dave Bell, W6AQ Endowment Fund	34006-000-00	134,864	-	-	-	-	134,864
W1AW Endowment	34010-000-00	582,668	5,916	-	-	-	588,585
Youth and Education Endowment	34015-000-00	72,177	-	-	-	-	72,177
Capital Campaign-2nd Century	34020-000-00	2,289,390	153,150	-	-	-	2,442,541
CC-2nd Century-DX Log Archive	34016-000-00	229,390	-	-	-	-	229,390
CC-2nd Century-Youth & Education		105,012	20,000	-	-	-	125,012
CC-2nd Century-W1AW		150	-	-	-	-	150
Capital Campaign-2nd Century-Pledges	34020-563-50	810,931	22,645	-	(141,000)	-	692,576
<b>Total Permanently Restricted</b>		<b>4,378,922</b>	<b>201,712</b>	<b>-</b>	<b>(141,000)</b>	<b>-</b>	<b>4,439,634</b>
<b>Total Fund Activity</b>		<b>10,556,336</b>	<b>1,572,498</b>	<b>125,131</b>	<b>(141,000)</b>	<b>(532,974)</b>	<b>11,579,991</b>

<b>American Radio Relay League, Inc.</b>			
<b>Cash Flow</b>			
<b>December 31, 2016</b>			
<u>Operations</u>		<u>Investments</u>	
<b>Beginning Balance</b>	<b>\$1,250,851</b>	<b>Beginning Balance</b>	<b>\$890,033</b>
<b>Receipts:</b>		<b>Receipts:</b>	
Publication Sales	405,928	Interest	27,070
Membership Dues	608,113	Dividends	61,160
Advertising	139,989	Sales	651,101
Program Fees	79,224		
Contributions	284,735		
Other Revenue	33,448	Other Revenue	
<b>Total Receipts:</b>	<b>\$1,551,437</b>	<b>Total Receipts:</b>	<b>\$739,331</b>
<b>Transfer from (to) Investments</b>	<b>(\$125,263)</b>	<b>Transfer from (to) Operations</b>	<b>\$125,263</b>
<b>Disbursements:</b>		<b>Disbursements:</b>	
Payroll and Taxes	(539,820)	Purchases	(664,799)
Operating Expenses	(755,176)	Other	(13)
Capital Expenses	(6,818)		
<b>Total Disbursements:</b>	<b>(\$1,301,814)</b>	<b>Total Disbursements:</b>	<b>(\$664,812)</b>
<b>Ending Balance</b>	<b>\$1,375,211</b>	<b>Ending Balance</b>	<b>\$1,089,815</b>
<b>Monthly Inc(Dec) in Cash</b>	<b>\$124,360</b>	<b>Monthly Inc(Dec) in Cash</b>	<b>\$199,782</b>
<b>YTD Inc(Dec) in Cash</b>	<b>\$417,686</b>	<b>YTD Inc(Dec) in Cash</b>	<b>(\$249,331)</b>



**2017 Annual Meeting  
ARRL BOARD OF DIRECTORS  
Windsor, CT  
January 20-21, 2017**

**Report of the Chief Financial Officer**

As I reflect on 2016, the first word that comes to mind is “*change*”. Changes in the organization chart, changes in the Amateur Radio industry and changes in our overall financial picture. The organizational changes have been well documented, including the retirement of the long-time CEO and the hiring of Tom Gallagher, NY2RF, changes in the Board officers last January and a reorganization of the HQ staff in the fourth quarter. For his part, Tom brought new approaches to many of the organization’s fundamental decision making and general business processes. But as many of you know, change is never easy and changes of this magnitude, even less so. The ability of the organization, from top to bottom, to adapt to these new ways of approaching the business of the League, ways that are necessary if we are going to survive and flourish in the future, should not be underestimated.

In another example of the organizational changes and as a result of the reorganization of HQ responsibilities, for the first time this report will encompass information regarding three new areas for which I assumed responsibility in November. But the good news is that we have three seasoned managers in Business Services, Sales and Marketing and VEC so the transition was very smooth and there was little, if any, disruption in the day-to-day operations. In addition, there are highlights from other areas of Headquarters, not solely those reporting through the CFO. We decided to put the summary in this report to allow the CEO’s report to concentrate on the bigger picture and the larger issues we face.

The Amateur Radio industry also continued to change in the past 12 months. In 2016 we saw the loss of more companies from the industry, including some long time, prominent names. Companies that either left the business or experienced significant restructurings (i.e. downsizing) included Amateur Electronic Supply, Xpert Amps USA, RKR Designs and Ten Tec. And in another indication of the condition of the industry, several other companies decreased their advertising commitments in QST, mostly due to financial considerations. All told, between the companies that went out of business and those that reduced their advertising, we lost over \$400,000 in annualized advertising revenues which, for the most part, cannot be made up.

Unfortunately, the loss of advertising revenues wasn’t the only challenge we faced, financially, in 2016. Despite our financial objective for 2016 of trying to return the organization to a positive gain from operations, revenue decreases in several areas and unplanned expenses resulted in an overall loss from operations for the third year in a row. The financial challenges we face continue to stem, in part, from our organizational desire to maintain and expand member benefits and services in the face of level or, in some cases, decreasing revenue streams. As noted above,

we have been dealing with a loss of advertisers as the industry shrinks and/or consolidates, and, in addition, decreases in fees from programs like DXCC as activity levels drop and fewer voluntary contributions from campaigns like the Defense Fund.

Membership declined in 2016, predictably, as the result of the first dues increase in 14 years. But dues revenues increased which was also predicted. The challenge going forward will be to retain our current members while attracting new members from groups of Amateurs who have, to this point, not traditionally joined the ARRL. Dues is our largest revenue source, by far and we need to maximize it so that the organization can continue to serve the members and the Amateur Radio community. It is my opinion that this will require more changes in how we view the membership and the nature of services we offer.

The financial reports are included as Addendum #1 to this document. As always, at this point in our year-end cycle, they are to be considered "*preliminary and unaudited*". While we have included all the known transactions to this point, there will be additional invoices, etc. received before the books are finally closed for the year and the year-end audit is completed sometime in April.

## **Financial Results**

### **Overall**

While December produced a gain from operations, continuing revenue shortfalls made it much smaller than originally anticipated. Even so, the gain of \$79,000 for the month helped to narrow the year-to-date operating loss. For the full year, despite our original objective to produce a gain from operations, revenue shortfalls in three significant areas (Dues, Advertising Sales and Program Fees) resulted in the League recording an operating loss of \$235,000. This was well below the original objective for the year, a gain of \$197,000, and more than the full year loss forecasted in the middle of the year (\$155,000). With total expenses roughly on target to the Plan despite several large unplanned items, this was truly a revenue driven result and highlights the concerns regarding the changing Amateur Radio industry and our sources of funding in the future.

As a result of the revenue shortfalls noted above, our internal measure of Net Available Income, was less than planned by almost \$421,000 which was consistent with our overall shortfall from the projected operating gain as well.

Voluntary contributions (including amounts used to offset expenses) were down in 2016 in comparison to the prior year as unrestricted contributions plus those used to offset spending in specific areas totaled \$1.02 million for the year. This was \$33,000 less than originally planned and about \$86,000 less than the prior year. We had strong results in the areas of unrestricted contributions with a good year from the Diamond Club which saw an increase of 14% over 2015. However, contributions to the Defense Fund were down by \$52,000 (17%) from the 2015 results. It should be noted that there was an unplanned and unrestricted amount of \$3,600 from the earnings on the Dave Bell, W6AQ, Fund. This was the first year of the fund, established from the

sale of the Andy Warhol print donated by W6AQ prior to his passing. Total funds contributed to the organization this year, including permanently endowed funds, was \$1.57 million.

The investment markets produced positive results in our investment portfolio as noted in the Treasurer's report. The overall portfolio generated income and unrealized investment gains of over \$1.4 million, approximately \$900,000 of which represents unrealized gains. This helped increase our total net assets for the year, despite the operating loss.

## **Balance Sheet**

The ARRL's balance sheet at December 31<sup>st</sup> remains very good. Total cash and investments top \$25 million, accounts receivable are in very good shape (only \$38,000 or 13% over 60 days) and our accounts payable/accrued liabilities (excluding reserves for term and Life dues) are down from a year ago. Total assets increased by \$1.8 million and total net assets are up by \$1.7 million.

## **Income**

Total revenues for 2016 fell well short of our original expectations. We finished with \$374,000 less total revenue than last planned. Revenues for the year, excluding contributions, stood at \$13.91 million, an increase of \$188,000 over the prior year.

Revenues from publication sales, although not meeting our December targets, finished the year at \$3.73 million, about \$89,000 more than originally planned. These results were led by strong sales in the areas of training materials, royalty titles and membership supplies. The *Ham Radio License Manual* produced \$595,000 in revenues, up 11% over the prior year. Other training materials produced an additional \$524,000, a 28% increase over 2015. These strong results offset shortfalls from our expectations for sales of (a) the Handbook (totaled \$340,000, \$122,000 less than planned), (b) the Repeater Directory which was primarily due to the decision to eliminate several electronic products in the line and (c) Other Books and RSGB titles. Of the total sales revenues, sales to wholesalers/dealers was \$1.3 million in 2016, of which \$823,000 were sales to Amazon. Sales to Amazon were up \$136,000 over 2015 while total sales to wholesalers were up only \$30,000, even with the loss of sales to AES. This provides some indication that there is a significant amount of transfer sales going on, away from some of our traditional dealers towards sales through Amazon.com.

2016 also saw a small decrease in revenues from subscriptions to our two other periodicals, QEX and NCJ. Total revenues from these sources in 2016 were \$217,000 versus \$225,000 a year ago. We had anticipated some decline in interest but were still \$2,000 short of our reduced goal for the year.

Needless to say, 2016 was a very challenging year for Advertising sales revenues and the Business Services Group as we strive to maintain advertising revenues in the face of a declining market. As discussed earlier in this report, the Business Services Group saw a continuing decline of advertisers (or cutbacks from existing advertisers) throughout the year. The most discouraging was the loss of Amateur Electronic Supply who, in July, simply closed their doors without any

real warning and without any of the usual indications of a failing business. This was apparently a decision based solely on an analysis of the future of their business. Not a ringing endorsement for the Amateur Radio industry. Total advertising sales revenues for 2016 were \$2.2 million, a decrease of \$249,000 from the prior year and \$190,000 short of our target for 2016.

Membership dropped in 2016 as has historically been the case in the year of a dues increase. And certainly not surprising since the last time we had a dues increase was 14 years ago. Total ARRL membership on December 31, 2016 was 164,070, a 3.8% decrease from the end of 2015. This was slightly less than our 4% assumption which was in keeping with historical trends. Despite slightly better membership numbers than we predicted, dues revenues were off by \$201,000 from the amounts projected, primarily due to a much smaller number of member transactions in 2016 than in prior years. Part of that is the large number of members who renewed early in the latter part of 2015 to beat the dues increase and the impact this has going forward. It remains to be seen if these people will actually renew in 2017 which will be their first opportunity to renew at the new rate. Total dues revenues were up by \$384,000 (6.4%) in 2016, even with the decrease in membership.

Program fees finished the year as it started, with total fees collected running behind our plans. The shortfall was almost all in the Awards branch, primarily DXCC fees which finished the year 18% below the 2016 Plan (shortfall of \$102,000) and \$23,000 less than last year. Other revenue sources in this category that fell short of the Plan for this year were QSL Bureau (\$13,000), CQ awards (\$2,000) and Contest fees (\$4,000). As has been the case throughout the year, the ARRL VEC continued to beat its original projections and, as a result, the total fees received for the year outpaced our expectations by about 7%. This translates into VEC fees of \$465,000, \$30,000 more than planned although this was slightly less than 2015.

Investment income allocated to the regular operations of the League totaled \$187,000 in 2016, slightly above our expectations and about \$2,000 more than planned. It remains to be seen where interest rates go in the near future although every indication from the Fed is that that will rise.

Revenues from the National Parks on the Air (NPOTA) operating event were not expected to be significant this year as the assumption was that most people would wait until the event was fully complete and entries closed before they would apply (and pay) for certificates. But even our conservative assumptions proved more optimistic than the reality. Only about \$2,000 was received in 2016, despite the event being a rousing success. We expect that we will pick up the "shortfall" from Plan in the coming year.

The total of our Other Income categories was \$164,000 which was ahead of Plan by almost \$28,000 due, primarily, to two items. The results of the ARRL Auction provided net revenues of \$31,000, \$18,000 more than planned.

Expenses in the Income segment totaled \$10.99 million for the year which was about \$55,000 (0.5%) over budget for the year. In addition to cost of goods sold which was over budget as a result of better than planned sales, there were several functional areas contributing to the overage. We had unplanned expenses of \$68,000 for the completion of the Centennial operating event, much of which was for the final printing and dissemination of QSL cards for the event.

There were unplanned costs for bonuses (outgoing CEO), Connecticut corporate counsel as well as counsel for the defamation suit and the Longevity Award program. Last but not least, we had additional costs in Personnel which resulted from the downsizing effort (unemployment compensation) and costs for the CEO transition. Even with those items, costs in this segment were down about \$173,000 from the prior year. This represented a decrease of 1.5%.

## **Spend**

Despite the late rush of expense reports from volunteers (an annual occurrence), spending on member programs, advocacy and governance was under budget in the month of December which resulted in total spending to be just under budget for the full year. Spending in these areas for the entirety of 2016 stood at \$4.17 million, \$21,000 under budget for the year and also a slight increase (1.6%) over 2015.

Some notable items in this segment included the Washington Office being \$31,000 over budget for the year but this was the result of a combination of the severance package for the former CTO and legal fees paid to attorneys including the General Counsel. The latter was up slightly from last year and more than planned primarily due to legislative activities. Field Services was over budget for the year as well with unplanned severance costs and additional printing and postage for an unexpected number of Section elections. VEC was also over budget but this was solely the result of more activity and exams than originally planned. Offsetting these overages were areas that were significantly under budget like the Lab (\$26,000 or 5.6%), DXCC (\$63,000 or 11.9%) and the QSL Bureau (\$25,000 or 25%).

Total Governance spending finished the year at \$404,000 which was \$38,000 over our projections and an increase of \$44,000 (12%) over the prior year. The biggest increases in spending came in the Division spending which can be attributed to the increase in Division budgets voted at the January meeting and a combination of having an National Convention and the change of the reimbursement rule for the Dayton Hamvention®.

## **Cash Flow**

Operational cash flow was good in 2016. With a strong month of December, total cash flow from operations for the year was a positive. We only had one transfer of cash from the portfolio and that was less than the total amount of Life member income allocations and investment income. This means we helped grow the portfolio, despite the accrual basis operating loss.

## **Operational Results**

Dealing with the changes discussed earlier in this report, while continuing to move the operations forward and, in one person's definition, "keeping the trains running" was a challenge this year. But one that we embraced and at which, I believe, we generally succeeded.

The ARRL VEC Department had another successful year, despite some turnover in the staff and a prolonged leave of the Department's assistant manager. We continue to maintain our position

as the largest VEC in the nation. Our market share of total Amateur Radio exams administered remained stable at 75%. The total number of US Amateurs has continued to grow each year since the FCC license class restructure in 2000 and as of December 31, 2016 licensees reached an all-time high of 742,787.

As reported by VEC Manager Maria Somma, AB1FM, the following were the highlights for the ARRL VEC in 2016:

- For the third year in a row, we conducted more than 7,000 Amateur Radio exam sessions, an important milestone for the ARRL VEC.
- New amateur licenses issued were up by 1% over last year. This is the third year in a row the total has been over 30,000. (32,552 in 2016, 32,077 in 2015, and 33,241 in 2014).
- Upgraded licenses were down 5% compared to last year (10,617 vs. 11,224). A new Extra class pool took effect on July 1, 2016 which impacted upgrade totals in the second half of the year.
- 45,706 total license application forms were filed, compared to 44,155 in 2015.
- A total of 7,494 exam sessions were conducted in 2016, up slightly from 7,371 in 2015.
- 38,097 exam applicants were served in 2016, compared to 38,261 in 2015.
- Exam elements administered increased from 49,971 last year to 50,081 this year.
- 2,103 new Volunteer Examiners (VEs) have been added to our program.

The financial results produced by the Business Services Group headed by Deb Jahnke, K1DAJ, are discussed in the appropriate financial sections above. As revenues from this group decreased, and as part of the reorganization in the fall, we eliminated one full-time position from the group. The staffer was transferred to an open position in the Controller's Department. In addition, as they do every year, the Business Services Group also manages the annual ARRL Auction. This year's auction produced "net" revenues (gross revenues less the cost of the items auctioned) of almost \$31,000.

The Sales and Marketing Department headed by Bob Inderbitzen, NQ1R, as noted above, were able to beat the publication sales targets for the year. In addition to this important metric, some of the other accomplishments of the department in 2016 included:

- Revenues from e-book sales continued to expand and increased 84% over 2015. This is the result of our strategy to follow parallel print-and-digital publishing tracks for the majority of our new publication introductions.
- ARRL earned royalties of \$47,910 in 2016 for the ARRL Visa Credit Card program (\$44,717 in 2015). The affinity benefit was introduced to members in 2005.

- Our warehouse team fulfilled 47,491 paid orders in 2016 (45,644 in 2015).

Diane Petrilli, KB1RNF, Membership Manager, reports that, after a 25% dues increase (the first in 15 years), we have come in remarkably close to membership forecast. We ended December with 164,070 members -- 252 members *ahead* of the year-end goal. The annual membership loss was 3.79%; slightly less than the 4.0% loss forecast. We had a net loss of 6,458 members; 6,710 was forecast.

Below is a comparison of acquisition for last year vs. this year. Field-based recruitment is down to 3% of our total, annual acquisition.

	2016	2015
Direct Mail - 120 days	23%	24%
E-mailings	9%	11%
Web site	27%	26%
Field-based Recruitment	3%	4%
Renewal notices	11%	10%
Phone	5%	5%
New Ham Mailings	13%	11%
All other sources	10%	9%

The on-time renewal rate for December was 68.74% vs. 72.59% last December.

New Radiosport Manager Norm Fusaro, N3IZ, reports that for the year 2016, the Radiosport Department had forecast an operating loss of \$418,363. The actual operating loss was even greater (\$537,156) representing an unfavorable a variance of \$118,793. This resulted in part from unanticipated expenses relating to closing out the Centennial and DXCC fees in 2016 were 18% below the original Plan. In addition, the department suffered from a recurring overestimation of planned revenues dating back before the Centennial. Lower activity has also impacted revenues: contest logs submitted for 2016 (HF + VHF) were 26,080 or 9.2% fewer than the previous year. Overall, contest logs submitted for the period 2011 – 2016 are lower by 6%. However, DXCC applications have climbed 9% over a five-year period.

The Editorial and Production Department, managed by Steve Ford, WB8IMY, reported that 2016 brought considerable changes to ARRL media, including such highlights as the transition to the new PageSuite electronic publishing platform. In addition to being more cost effective, the new platform provides a better reader experience, plus vastly improved apps for Android devices and the Kindle Fire. The biweekly *Doctor is In* audio podcast, launched on April 7, enjoyed more than 210,000 downloads in 2016. Finally, a number of new books rolled off the presses including *Work the World with JT65 and JT9*, *Mesh Networking for Amateur Radio*, *Digital Oscilloscopes*,

and *Antenna Physics: An Introduction*. The editorial team continues to search for fresh, relevant and diverse content to satisfy a growing demand from its traditional print and well as its new media channels. QST continued its 100% on-time publishing record.

The Field Services Department saw the completion of the massive Centennial QSLing project, with over 800,000 cards distributed. W1AW maintained on-air activity with better than 99 percent up-time while hosting about 200 visitors. The Field Services database shows 7,634 Field Organization appointees (including 71 elected Section Managers) down from 7,678 appointees at the end of 2015. Field reporting improved dramatically (36%) with only 23 section failing to file reports. In addition, Field Services staff managed six balloted elections in 2016. The rejuvenated Section Manager workshop held in October hosted 15 SMs.

The revamp of the Official Observer/Amateur Auxiliary program began in 2016 in response to renewed FCC interest in the program. On the Emergency Preparedness front, staff worked with the Guayaquil Radio Club with support after the Ecuador earthquake, including a Ham Aid deployment). In addition, they supported the Hurricane Watch Net, National Hurricane Center, VOIP Hurricane Net, and FEMA. The HQ Emergency Response Team participated in the Cascadia Rising exercise along with other special projects including various National VOAD activities and the National Weather Service on hurricane Matthew.

The informal group working on improvements and revisions to Field Service report forms made good progress – reducing ARES forms to four with projected release in February, 2017. Additionally, EP staff raised reporting rates from the field from 33 sections in 2015, to 48 in 2016 using increased, leveraged communications with the section leadership. EP staff hosted six public-service-related webinars in 2016. The EC-001 course participation was essentially the same as occurred in 2015. In 2016, 179 people registered for the online course, with 123 finishing, while 204 registered and passed the EC-001 Field Course. And finally, Field Services staff completed a study of Twenty-first Century emergency communications with the help of served agencies that produced some surprising conclusions about the role of emergency communications, which Mike Corey will present to the board on Thursday evening.

The Lab, managed by Ed Hare, W1RFI, continues to burnish its preeminent reputation as the subject matter expert in EMC and RFI matters as well as remaining the arbiter of taste in the Amateur Radio product review field. The Lab's contributions are well-publicized, and its staff frequently recognized. One staffer spent the fall of 2016 tracking down, testing and validating the illegal operations of a marketed-to-hams and commercially-available drone aircraft which poses significant hazard to aircraft in flight by virtue of its downlink frequencies. The Lab prepared, and General Counsel Imlay filed with the FCC, an "urgent complaint of equipment authorizations and importation violations." Late this summer, Lab staff spent a day training the Air Force Space Command's Pave Paws operation four junior officers on protecting the commands large 70 centimeter radars on Cape Cod.

The Development Office headed by Lauren Clarke, KB1YDD, finished 2016 with good overall results. Diamond Club promotions encouraged new members through targeted mailings. Results for the Diamond Club also included a one-time gift of \$10,000 from a family who placed



a bench in the Diamond Terrace in memory of their son. The Education & Technology Fund results include a one-time contribution of \$29,000 from the Don Wallace Museum.

Development also produced the first mail solicitation to promote the Legislative Issues Advocacy Fund. ARRL also benefited from the Internal Revenue Service's IRA charity ruling, which made the deduction for contributions from IRAs permanent. The results for the Spectrum Defense Fund fell short of the goal for 2016.

### Performance Metrics

	12-mos. 12/31/16 Actual	12-mos. 12/31/16 Plan
Diamond Club	\$367,593	\$335,000
Unrestricted	114,842	70,000
Education & Technology Fund	211,654	130,000
Spectrum Defense Fund	257,314	310,000
Legislative Issues Advocacy Fund	54,573	35,000
Misc. Funds (see above)	9,926	9000
W1AW Endowment	5,916	0
ARRL Endowment (including undesignated estate gifts)	489,492	0
Second Century Fund (primarily fulfilled pledges)	173,151	60,204

As is always the case, the Information Technology Department headed by Michael Keane, K1MK, has been busy in the second half of 2016. It helped that we were able to fill the remaining open position on the development staff. Scott St. Onge joined the League in May, bringing the staff to full complement. I should say here that the term "development" can be a little misleading. Most of what Scott has done so far has been under the heading of "keeping the trains running" as he has shouldered many of the daily issues surrounding the web site (along with Dennis Budd, K3DGB) that present themselves on a regular basis. In addition, the development team was able to:

- Move the Volunteer Instructor Database project into production. Some additional "bugs" were discovered and are being resolved.
- Complete the specifications for the DXCC system replacement, put an RFP out for bid and select a vendor to complete the project. We are currently working through the design phase of the project with the vendor and expect a final proposal for the system in February.
- Provide on-going support for the NPOTA operating event.

- Continued the development of specifications for the Membership and Development module of AIS (ARRL Information System) with user groups.
- Implemented a single sign on for use with PageSuite's version of Digital QST.
- Transitioned the VEC module from Siebel to AIS. Currently in testing.
- Added support for HTML5 based web ads.

Logbook of the World developers, working with the LoTW Study Committee:

- Upgraded LoTW ESXi servers from 5.1 to 6.0.
- Completed alpha test and begun beta test of ODBC-based interface to LoTW database.
- Begun beta testing of support for primary and secondary administrative of Japan with JA testers.
- Added support for "localized" (non-English) LoTW Help pages.

And it would be a mistake not to recognize some of the accomplishments of the IT staff charged with implementing and maintaining our corporate IT infrastructure. An infrastructure which is substantial, from the over 100 desktop installations to a wide array of servers and storage devices that provide support across the entire organization. Some of the accomplishments of this group in the second half of the year included:

- Implemented off-site (Barracuda) backups for Logbook of the World development and production servers.
- Expanded storage array for Advertising and Production data.
- Upgraded emergency generator for equipment changes in the closet containing the system routers, switches and phone system equipment.
- Install new monitor/display in executive conference room.
- Dealt with a variety of malware and other attempts at unauthorized access to our infrastructure. This is becoming the norm for any computer installation and the ARRL is not immune to it. We have done the right things and are working hard to keep up with the ever changing technology.

Most of the true administrative operations in the organization happen behind the scenes and, as I've mentioned several times in reports over the years, if things are going well, no one ever hears about them. The Controller's Department, the Mailroom (organizationally within the Controller's responsibilities), Purchasing Department (also in Controller's), all managed by Controller Diane Middleton, KC1BQF, the Human Resources function and the Building

Department, all work to support the overall operations of the League. Some of the accomplishments of these areas in the second half of the year included:

- Switched to a FedEx international shipping program which will save the organization over \$15,000/year.
- Completed the annual tax return (Form 990).
- Helped negotiate the annual benefits insurance renewal for 2017. Although it sounds incongruous with other financial measures, we were able to keep the health insurance premium “down” to an increase of 11%, even with some adverse claim experience.
- Helped develop the 2017-2018 Plan and financial projections.
- Implemented a Roth provision for the ARRL 403(b) Pension Plan.
- Completed a revision of the ARRL Personnel Handbook.
- Completed a variety of minor, but necessary building related repairs and maintenance.

While none of these accomplishments seems outstanding, in and of itself, it represents a significant amount of staff time and effort in total and usually goes on without much, if any, recognition from outside parties.

### **In Summary**

As I said at the beginning of this report, the driving force in 2016 was “change”, both for the organization and the organization’s finances. 2016 was a year to reflect, study and begin to revise our approaches and processes. 2017 will be a year to begin taking concrete actions. Changes in the Amateur Radio industry will have a direct impact on our overall resources and what we will be able to achieve. Decisions regarding how to attract a different group of members need to be made and implemented. The future is exciting if we’re willing to embrace “change”. We need to be able to consider and accept changes to the organization, the services we provide members and, our overall approach to the Amateur Radio service. The Amateurs of today may not be interested in the same things that past generations found exciting. We have to discover what the new generation finds exciting and build that into the ARRL’s offering of benefits and services. If we choose to continue on the same path, I fear we are doomed to the recent downward trends of membership and its inevitable impact on our financial well-being.

The achievements of the past year represent the hard work of staff and volunteers alike. The list of people who I need to recognize personally is long. From the work of the entire staff, to the support and guidance provided by the Administration and Finance Committee and ultimately the Board of Directors, all contributed to, and should take some pride in the results. But our work is just beginning.

Everyone was excited about the change represented by the hiring of our new CEO last year. I believe we need to look past some of the hurdles presented by outside forces in the past year, embrace that feeling of excitement and carry it forward into 2017 so that we can begin the next era of the ARRL.

If anyone has any questions about this report, I would be more than happy to discuss them with you prior to the Board meeting or once you arrive in Connecticut.

Respectfully Submitted,

Barry J. Shelley, N1VXY  
Chief Financial Officer

Document No. 9

# REPORT OF THE GENERAL COUNSEL TO THE BOARD OF DIRECTORS

January, 2017  
Windsor, Connecticut



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*Greetings. It is my privilege to submit the following report to the Board of Directors on legal and regulatory matters in which this office has been involved since the last meeting of the Board in July of 2016 in Windsor. The following comments are attorney-client privileged information and work-product, and should be considered confidential, restricted to Board members, Vice Directors, and Board meeting attendees only. Please do not disclose this document or any part of it otherwise.*

## **I. FCC and Regulatory Matters**

### **A. Overview of Legal and Regulatory Matters.**

I want to discuss in this initial overview part of this briefing memo our legislative effort on H.R. 1301; the status of our effort to improve FCC enforcement; and ARRL governance issues.

**1. Legislation.** Mike Lisenco is reporting to you on the Parity Act initiative separately and I defer largely to Mike on this. No ARRL Board member during my tenure with ARRL has been more devoted and dedicated to any advocacy initiative of ARRL. We worked extremely hard to obtain passage of a reasonable Bill to help protect large numbers of radio Amateurs from the cancerous spread of private land use regulations, and no one put in more effort than Mike did. ARRL did a spectacular job trying to get our Bill passed, and we darn near did it. I am reminded of a statement from the Staff Counsel for Senator Hirono of Hawaii about the Parity Act. When Mike and I told her that we appeared to be very close to getting this legislation passed, she said that would be nothing less than a “miracle in this Congress.” She said that almost no one in this past Congress could say that they have gotten as close as we had at the time to getting legislation passed and that we should consider ourselves to be extremely fortunate and proud of what we have accomplished to date, regardless of what happened at the end of this Congress. I agree with that, having been very close to this for the last 2.5 years.

So the issue before the Board now is whether to carry on with the effort in the 115<sup>th</sup> Congress. At the last session of the A&F Committee in the course of briefing the Committee about several regulatory issues which have budget implications, I noted that one issue for that Committee to consider is whether or not the money is available to duplicate the effort that we have made in the last two years. That is for the Board and the A&F to decide. However, that is not by any means the only factor to consider. I would recommend to you that the following factors *amply* justify a renewed effort in the 115<sup>th</sup> Congress to pass the compromise Bill that unanimously passed in the House in the 114<sup>th</sup> Congress and which had but one hold put on it by one Senator when the Bill was hotlined in the Senate.

(a) We have a Bill that would offer a great deal of relief to a very large number of hams from absolute prohibitions on outdoor antennas. It would guarantee every ham the entitlement to install an effective outdoor antenna, regardless of the language used in deed restrictions. It is a good solid bill that cannot be improved upon as a practical matter, and I would argue that it is stronger than our original PRB-1 carryover bill for several reasons. It would also counter the deadly fact that 90 percent of housing starts in the United States are in deed-restricted

communities. Nothing will kill Amateur Radio faster than CC&Rs except spectrum losses and the latter is not happening now.

(b) The Bill would have no effect at all on hams that already have antennas in deed-restricted communities that they are happy with.

(c) The Bill already has the support (in writing) from CAI, the only organization that represents the interests of HOAs.

(d) The groundswell of support for the Bill in the last Congress and from grassroots membership will carry over to a great extent in the new Congress, and the leadership in the House and Senate are intact. Representative Walden is now the Chair of the full Energy and Commerce Committee in the House, and Senator Thune still governs the Commerce Committee in the Senate.

(e) Senators Wicker and Blumenthal will doubtless reintroduce our Bill in the Senate and our House cosponsors will almost certainly remain intact as well. Because of the level of support in both the House and Senate that we mustered last session, the need for boots on the ground advocacy is reduced and a lot less costly than heretofore.

(f) There are numerous strategies to get around Senator Nelson. One is to find a legislative vehicle for the Parity Act that is a must-pass bill that Nelson can't fail to support. Another is to renew our strategy of having Walden, now E&C Committee chair, to contact the new Republican FCC Chairman and ask him to enact the terms of the Parity Act directly and bypass Nelson entirely. And it may not be necessary to work around him anyway. At the end of the last session, he told Senator Blumenthal that he would work with Blumenthal to resolve his residual concerns with the Bill. So the fact that Nelson is still there in the Senate is not a valid reason to abandon our effort on the Parity Act, and to give up on that basis is foolish.

(g) We have, I am convinced, the best advocacy strategists there are for our purposes working on this. The Keelen Group is well-situated in this Republican congress to get our Bill through. They have worked hard for us.

(h) Finally, and probably most importantly, if we were to abandon the legislative effort now, after getting so close the last time, we would lose forever the momentum and recognition that we have built up for the last two years plus, and our chances of revisiting this again later would be slim or none. We still have our support base in place but that won't always be the case.

For the above reasons, I strongly urge that we stay the course. Mike Lisenco has raised, almost single-handedly, but with help from the Development Office at HQ, well more than \$70,000 to offset costs and expenses of the effort. And for a project of this magnitude, the costs are not that high at all.

If we are to proceed with this effort, however, I would once again urge that, publicly, each member of the Board and vice directors absolutely avoid taking public positions or actions contrary to the Board-supported legislative advocacy effort. If the Board votes to proceed with this, then it is your obligation to avoid disparaging it. ARRL organizationally is entitled to your



loyalty and you are not at liberty to withhold it. Once policy is determined by the Board, individual Board members and vice directors are not at liberty to thereafter disparage the Board's approved initiatives, despite any personal reservations about them. That is not debatable.

**2. Enforcement.** You will hear from Vice President Milesosky about the EC-initiated study of the revitalization of the OO program at this upcoming meeting. We are cognizant of Minute 39 of the July, 2015 Board meeting, which states the Board's policy that substantial, timely improvement in enforcement is an issue of the highest urgency. The CEO and this office were directed to develop and, under the supervision of the Executive Committee, execute a plan to improve timely and visible enforcement in the Amateur Radio Service. We developed such a plan in 2015 and submitted it to the Executive Committee but there have been very, very substantial changes in the Spectrum Enforcement Division of the FCC Enforcement Bureau since then. There have also been some positive and some very negative developments at FCC that cause us to be somewhat reactive rather than proactive in our effectuating the Board's enforcement policy. As the result of the supervening FCC Field Office closures and staff reductions at FCC, there is very little that is in that Minute 39 report that is still relevant. The Executive Committee at its March, 2016 meeting ordered that a study be conducted of the OO program and options for improvement of it. This was presumably pursuant to the oversight authority conveyed to the EC by Board Minute 39. It is notable that the initial concern of the EC was that, though it was necessary and timely to review the OO program and fix the problems with it as a component of executing the Minute 39 instruction, the EC was adamant, and properly so, that we not attempt to revitalize the rather moribund OO program unless and until we were absolutely sure that FCC would, in exchange, make use of the work of the volunteers and not allow them to become demoralized through FCC's failure to validate their work in some reasonable fashion. It was not, honestly, until about October of 2016 that this occurred.

At the July Board Meeting I reported to the Board about a meeting that Dan Henderson, various lab staff, Mike Lisenco and I had with Laura Smith in June at ARRL HQ. Among the discussions at that meeting was an in-depth discussion about the revitalization of the OO program. Since then, on October 7, 2016 we had a second meeting with Laura and with Dave Dombrowski, a very helpful and dynamic member of the FCC's Spectrum Enforcement Division staff.

Both meetings dealt principally with FCC's perception of the urgent need to revitalize the Official Observer/Amateur Auxiliary to the FCC program. Now, that program is largely dormant, as the result of several principal factors: (1) neglect by FCC and FCC's failure to utilize evidentiary materials gathered by OOs; (2) our failure to adequately re-educate our OOs periodically, to police the program so as to make sure our OO-gathered materials are useful to FCC, and our failure to manage their expectations appropriately; and (3) FCC's recent "poaching" of Laura Smith, our only source of Amateur Radio enforcement, for other, non-amateur enforcement work. There are other causes of the somewhat moribund state of the program as well. Meeting notes of those two meetings are attached hereto as **Appendix A**.

Draconian field office reductions (a second or third round of them) take effect this month, January of 2017. Laura Smith and David Dombrowski (who has been very helpful in triggering some badly needed responsive enforcement activities including the Delise case in New York)

have made it quite clear to us that a critical first step in improving the quantity and timeliness of Amateur enforcement actions begins with a revitalized OO program because of the FCC field office closures. We are assured that if newly appointed or reappointed OOs are recruited, trained adequately and periodically retrained and updated, and if their output is “patterned” as discussed in the **Appendix A** memo attached to this report, we can expect, *at least*, immediate warning notices from FCC to the repeat violators. Further enforcement actions will require FCC field office involvement and evidence gathering and that field office time is increasingly scarce. But OO patterning will enable precise, targeted FCC Field office monitoring and evidence gathering and then NALs, Forfeiture Orders and the full panoply of remedies. That is the theory anyway.

With the recent jailing and monetary forfeiture issued to unlicensed Danny Delise in New York; the issuance of at least one forfeiture issued July 29, 2016 in the 14.313 MHz case, and a few large forfeitures issued recently in the WARFA net situation, frankly it is a lot quieter now in terms of complaints (that we have heard about) than in past recent years. Laura Smith claims that this lull will not last and I am sure she is right. But we might consider the fact that there have been some enforcement actions that are visible and the forfeitures are in good solid amounts, and that these factors may have some correlation with the fact that the level of complaints seems to have slowed somewhat. Whether we are achieving deterrence is unclear but we are hopeful.

We are being asked now by FCC to prepare and submit to them two Memoranda of Understanding; one having to do with the revitalized OO program (to replace the 1994 Agreement between ARRL and FCC) and the other having to do with RFI (including power line interference, RF lighting issues and the like) basically setting forth the now-unwritten, informal plan that Ed Hare and Mike Gruber and Kermit Carlson have been working under for years without documentation.

We are also being asked to reform the OO program. We would, as Laura envisions it, ask OO candidates for a written exam/application and also a telephonic interview from HQ of each candidate to assess their temperament and suitability for the job. We are also being asked to screen the “patterned” submissions from OOs to HQ and to forward those in proper form to the FCC for immediate action, starting with a warning letter from FCC.

Finally, we are being asked to hold periodic but continuous webinars for teaching, updating and keeping our OO volunteers interested and engaged. Laura Smith offers to participate in those.

We will never get FCC to agree to use our OO evidence directly in enforcement cases. The OO’s “patterning” will be used as predictive information only for the few FCC field enforcement staff that is left. At this point, however, we have very little choice but to do as asked, because the Board wants improved Amateur Radio enforcement, and FCC needs our help to fill in for the field office gutting that took place during 2016 and just now, starting in January.

At Pacificon in October of 2016, Laura Smith announced the revitalization of the OO program as a “given”. That was an overcommitment on her part. We had earlier, affirmatively told her that any such effort was subject to approval by our Administration and Finance Committee and by our Executive Committee. We did not commit to anything at the October FCC

meeting. Laura needs a revitalized OO program though in order to do her job, and so the work of Vice President Mileskosky's committee is important and urgent. Laura was taken off of Amateur Radio enforcement for a long time prior to October of last year, but she is back working on Amateur Radio enforcement full time now, and we are told that will be the case for the foreseeable future.

We have been impressed this year with what seems to be a renewed sense of duty on Laura's part. Her allegiance to Amateur Radio was not obvious in previous years. It is much more pronounced now. Perhaps this is due to her perception that in order for her to be effective in her job, she needs ARRL's help and support, or some other reason. In any case, it is a much more helpful Special Counsel for Amateur Radio Enforcement that has appeared in the last eight months or so than we have had since Riley Hollingsworth retired.

**3. Internal Dissent.** I have no prerogative to speak to the Board about the proper level of civility in its functions. I am simply an independent contractor with ARRL and not a member of the Board. However, for better or worse, I now have a longer tenure working with ARRL and its Board than anyone else, either at HQ or within the Board family. This gives me no additional authority at all, but it does give me a certain perspective borne of experience, even as I approach the end of my career as a communications lawyer.

A good deal of the work of this office during the past six months has been in addressing and responding to unnecessary and useless distractions that took time and cost money but did not benefit ARRL members one iota. These include the Ames litigation, and former Director Rehman's complaints to the Maryland Bar, the Connecticut Bar Grievance Committee, and apparently to other irrelevant authorities in Connecticut alleging that my work with ARRL over the past 37 years was unlawful because I am not a member of the Connecticut Bar. It was not only my time that was spent on what have been since found to be frivolous distractions. It was also the valuable time of our President, our CEO, and a member of our Board who were (frivolously in my opinion) named as defendants in the Ames case.

No further time should be spent thinking about these distractions. It is enough that the United States District Court for the Eastern District of Pennsylvania, in a well-reasoned opinion, summarily dismissed the poorly drafted and poorly conceived Ames suit against ARRL (on a preliminary motion, without a hearing). In doing so, the Court *thoroughly validated* (1) the news release that was the sole basis for the court litigation against ARRL, President Roderick, CEO Gallagher and Director Boehner; and (2) as an incidental matter, the entirety of ARRL's actions involving Mr. Ames. It is also gratifying (albeit expected) that both the State of Maryland and the State of Connecticut summarily dismissed Mr. Rehman's complaints alleging the unauthorized practice of law in Connecticut by me. (See **Appendix B**, attached).

There has been an unprecedented lack of civility exhibited within the Board family during the past year. With any luck, that period has now passed and the members' interests, and ARRL's organizational interests will be re-elevated by all of us, individually and collectively, to a proper level, and civility will once again govern our collective actions. We act best when we act as a team. We won't always agree on matters of substance, but we can treat each other with a

modicum of respect and value each other's contributions a lot better than we have while getting to the truth.

## **B. Spectrum Allocation Issues.**

### **1. ET Docket No. 15-99; Amendment of Parts 1, 2, 15, 74, 78, 87, 90 & 97 of the Commission's Rules Regarding Implementation of the Final Acts of the World Radiocommunication Conference (Geneva 2012), Other Allocation Issues, and Related Issues.**

We are still waiting for a Report and Order adopting service rules for the 2200-meter band and firming up an allocation and service rules for the 630-meter band. On January 6, 2017 FCC placed a draft OET Report and Order on the list of Items on Circulation among the (currently four) FCC Commissioners. So this long-awaited new LF and MF allocation proceeding is on final approach.

We were first told to expect a Report and Order in this proceeding in the 4<sup>th</sup> calendar quarter of 2015, and then the first calendar quarter of 2016, and now OET has still not send a draft Report and Order to the Commissioners in this proceeding. I met with OET on behalf of another client after Thanksgiving and asked about this proceeding. I was told that, given the change of administrations and the changes in the Chairman and some Commissioner positions at FCC that it was unlikely that a Report and Order in this (or any other) open docket proceeding would be decided before the new Chairman (or at least an acting Republican Chairman) is appointed. This OET announcement to me sounded at the time like a red herring because OET had not yet generated a report and order draft to go on circulation among the Commissioners, so there was nothing for them to decide at that time. I thought that OET was taking advantage of the change in administrations to justify their frequently encountered sloth in resolving docket proceedings. In fairness to OET however, they work at the schedule set for them by the FCC Chairman, and Wheeler has been all about the reverse TV Band Auction that OET has been running for most of 2016. Our lower-level docket proceedings are not of sufficient magnitude to cause OET to alter the priority list given them by the Chairman's office.

Unless this long-delayed proceeding is resolved quickly now, then as soon as an interim, Republican FCC Chairman is appointed, either Pai or O'Rielly (probably Pai, according to FCC-watchers' collective assumptions), we should approach that office and note the unreasonably long time we have had to wait for these new bands.

The remaining issue a year ago at FCC was the prior notification requirement for utilities before Amateur operation commences on either or both of these bands due to the unlikely potential of interference to Power Line Carrier systems. We filed on March 10, 2016 a strongly worded *ex parte* statement arguing that it would be vast regulatory overkill to impose what FCC told us was their intention: to require each and every radio amateur who intends to operate in either or both of these bands to notify UTC, the Utilities Telecom Council, and to await a negative-option determination that there won't be interference. UTC did not respond to this filing of ours, and the docket has been silent since.

## **2. ET Docket No. 15-170; Equipment Authorization Rule Change Proposals.**

FCC released a Notice of Proposed Rulemaking July 21, 2015 proposing to update the rules that govern the evaluation and approval of radiofrequency (RF) devices. ARRL comments were filed October 9, 2015. No reply comments were necessary and none were filed. In our comments, ARRL asked FCC to clarify that Amateur Radio licensees may modify non-amateur equipment for use on Amateur Radio frequencies. Some hams expressed concerns that the proposed rules would inhibit post-sale modification of Wi-Fi equipment, which is often altered for use on Amateur Radio frequencies. We said that proposed rules requiring manufacturers to include security features to prevent network devices from being modified were problematic, to the extent that they would preclude hams from adapting network equipment for ham radio applications and that licensees should be permitted to modify any previously authorized equipment for use under Amateur Service rules.

In fact, the proposed rules differ only slightly from the current rules. Our comments also urged FCC to not apply any limitations for Software Defined Radios to SDRs intended for use exclusively in the Amateur Radio Service, as has been the policy for the past 10 years. We also made miscellaneous arguments regarding proposed changes to the FCC's equipment authorization rules, and expressed concern about abuse by unscrupulous importers and manufacturers of unintentional emitters. The only opportunity to preclude widespread sale and deployment of non-compliant RF devices, including unintentional emitters, is via the equipment authorization process. Some RF devices, such as RF "grow lights," now subject to the more informal Verification process should be subject to Certification, owing to their substantial interference potential. Finally, we argued for additional labeling requirements for certain Part 15 and Part 18 devices. We discussed our FCC complaint about the marketing practices of various "big box" retailers, where non-consumer-rated lighting ballasts have been mixed in with consumer ballasts and other consumer products on display with no explanatory signage. Ballasts intended for industrial applications have higher permitted conducted emission limits in the Amateur Radio HF spectrum. We called on FCC to include a definition in Part 18 for the term "consumer RF lighting device," to provide a way to differentiate consumer devices from those intended for industrial or commercial environments. And we argued that FCC should consider reducing its Part 15 limits for lighting devices to correspond with the Part 18 lighting device limits between 3 and 30 MHz to reduce the RFI potential of LED bulbs now being widely marketed. LED lamps operate under Part 15 rules.

There has not been any resolution of this Docket and it is still open, though the comment periods are long past. On April 1, 2016 FCC issued a public notice in this proceeding acknowledging the publication of ANSI C63.26-2015 "American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services" and asked for comment on incorporating it into the Commission's rules by reference as part of this still-open rulemaking proceeding. The comment periods are closed on this supplemental notice as well. No FCC action is imminent and ARRL filed no comments on the April Public Notice because nothing in it

appeared to affect Amateur Radio equipment and the ANSI standard did not address the Part 15 and Part 18 test procedures.

### **3. ET Docket 13-213, Terrestrial Use of the 2473-2495 MHz Band for Low-Power Mobile Broadband Networks; Amendments to Rules for the Ancillary Terrestrial Component of Mobile Satellite Service Systems.**

FCC issued a Report and Order in this proceeding and from the Amateur Radio perspective, the docket became moot. We filed comments May 5, 2014 in response to an FCC Notice of Proposed Rule Making released November 1, 2013. FCC's NPRM was responsive to a proposal by Globalstar, Inc. The Notice proposed rules for the operation of the Ancillary Terrestrial Component (ATC) of the single Mobile-Satellite Service (MSS) system operating in the Big LEO (Low-Earth Orbit) S band. The proposed rules would permit Globalstar to provide low-power ATC using its licensed spectrum at 2483.5-2495 MHz under certain parameters, and also, using the same equipment, to access spectrum in the adjacent 2473-2483.5 MHz band "pursuant to the applicable technical rules for unlicensed operations in that band." The Notice also proposed, without justification, to depart from the consistent and longstanding rules governing interference from unlicensed devices to licensed radio services. Specifically, the Notice proposes that ATC, a component of a licensed radio service, would not be subject to interference protection from incumbent or future unlicensed devices in the same or adjacent spectrum. It is this reversal of longstanding FCC policy that ARRL's comments addressed. A licensed service cannot be subjected to a lack of interference protection from unlicensed RF devices.

We had a good argument but at the end, in November, Globalstar withdrew its proposal for ATC in the 2473-2483.5 MHz band, thus eliminating any prioritization between Part 15 equipment and MSS ATC licensed services in that band. So, our argument became, at the last minute, moot. The likely reason why Globalstar backed off its ATC allocation proposal is that, late in the proceeding, there have been attacks from Microsoft and Nintendo alleging potential serious interference to video game consoles and other Part 15 devices from this proposed allocation. This matter is now closed.

### **4. ET Docket 14-177, Provision of Mobile Services in the Bands above 24 GHz.**

This "millimeter wave" docket drew the interest of major players in the mobile broadband industry. It was the subject of a Report and Order and Further Notice of Proposed Rulemaking issued last July, and there are now multiple petitions for reconsideration pending. However, no action was taken in the proceeding that is harmful to Amateur Radio at 24 GHz or above.

We filed comments January 15, 2015 in response to an FCC Notice of Inquiry examining the potential for the provision of mobile radio services in frequency bands above 24 GHz. The NOI asked for comment on the potential for use of millimeter wave (mmW) bands for mobile use, thus to develop technical standards for Fifth Generation (5G) mobile services. FCC asked what frequency bands above 24.0 GHz would be most suitable for this purpose. Our comments on the NOI were intended to head off any proposal to share Amateur mmW spectrum or give

way to 5G mobile services or backhaul in support of 5G mobile services, but no Amateur spectrum was specifically targeted by the NOI at all. FCC released a Notice of Proposed Rule Making on October 23, 2015, comments on which were due January 26, 2016. The NPRM identified specific bands above 24 GHz that appear to be suitable for mobile service, and asks for comment on proposed service rules that would authorize mobile and other operations in those bands. There was no proposal that included an Amateur allocation and no proposal that appeared to warrant any comment by ARRL.

However, there were more than 100 large filings by major corporations in the docket. Our review did not reveal any major threat to our allocations, so we made no *ex parte* filing. We were concerned about our 47-47.2 GHz amateur allocation, which was under consideration for allocation to the mobile service and has been identified for IMT (broadband) at WRC-19, so it was important to monitor it in this FCC docket. ARRL should consider this proceeding closed from our perspective, as none of the Petitions for Reconsideration are relevant to any Amateur spectrum.

#### **5. ET Docket 13-49; Revision of Part 15 of the Commission's Rules to permit unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band.**

We continue to monitor this still-open FCC Docket, in the hopes of protecting Amateur Radio access to what has become known as the U-NII-4 band, (5850-5925 MHz). It is an old docket now but the debates about the extent to which short-range vehicle to vehicle and vehicle to roadside communications (intelligent transportation systems) can share with low-power, short range, high data rate broadband devices are ongoing and very active indeed, through December of 2016. In the last year, FCC has encouraged interference testing of low power U-NII-4 devices in the band for compatibility with intelligent transportation technology. *Indeed, we are hanging on to our secondary allocation in this band by fingernails.*

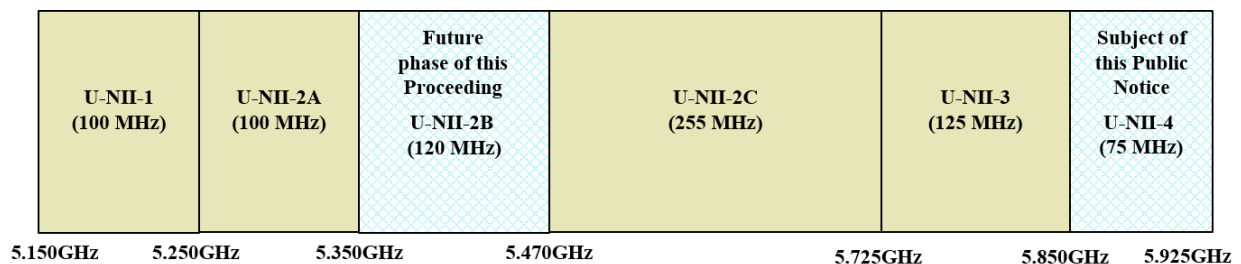
ARRL comments were filed May 28, 2013 in this proceeding. FCC's Notice of Proposed Rulemaking, released February 20, 2013 proposed to revise the Part 15 rules governing Unlicensed National Information Infrastructure (U-NII) devices in the 5 GHz band. These devices use wideband digital modulation techniques to provide a wide array of high data rate mobile and fixed communications for individuals, businesses and institutions including Wi-Fi-enabled radio local networks, cordless telephones, and fixed outdoor broadband transceivers used by wireless internet providers. FCC proposed two additional bands totaling 195 MHz for unlicensed operation: 5.35-5.47 GHz and 5.85-5.925 GHz. The Amateur Radio Service has a secondary allocation at 5.65-5.925 GHz, including an Amateur Satellite Service uplink allocation of 5.65-5.67 GHz and a downlink allocation of 5.83-5.85 GHz. FCC proposed to modify certain technical requirements for U-NII devices to ensure that the devices do not cause harmful interference and thus can continue to operate in the 5 GHz band and make broadband technologies available for consumers and businesses.

There have been negotiations ongoing between mobile service providers and Intelligent Transportation Service entities about settling the dispute about 5850-5925 MHz. Our effort in this proceeding has been to retain the Amateur secondary allocation *in that segment*. On April 1, 2014, FCC released a First Report and Order in the Docket, which increased the utility of the 5

GHz band where U-NII devices operate, and modified certain U-NII rules and testing procedures to ensure that U-NII devices do not cause harmful interference to authorized users of the band. The FCC extended the upper edge of the 5.725-5.825 GHz (the so-called U-NII-3) band to 5.850 GHz and consolidated the provisions applicable to digitally modulated devices so that all digitally modulated devices operating in the U-NII-3 band will operate under the same set of rules and be subject to the new device security requirement. The consolidated rules require the more stringent out-of-band emissions limit formerly applicable only to U-NII-3 devices in order to protect Doppler Weather Radar and other radar facilities from inference. We are still waiting for a decision on 5850-5925 MHz.

By a June 1, 2016 Public Notice, the Commission invited interested parties to update and refresh the record on the status of potential sharing solutions between proposed U-NII devices and Dedicated Short Range Communications (DSRC) operations in the 5.850-5.925 GHz (U-NII-4) band. DSRC uses short-range wireless communication links to facilitate information transfer between appropriately-equipped vehicles and appropriately-equipped roadside systems (“vehicle to infrastructure” or “V2I”) and between appropriately-equipped vehicles (“vehicle to vehicle” or “V2V”). In the Public Notice, FCC discussed efforts to date by the Commission, the Department of Transportation (DoT), and the automotive and communications industries to evaluate potential sharing techniques. In August 2015, the DoT released a DSRC-Unlicensed Device Test Plan that described tests to characterize the existing radio frequency signal environment and identify the impacts to DSRC operations if unlicensed devices operate in the 5.850-5.925 GHz band. FCC wants updated comment on the U-NII and DSRC sharing options.

The following graph shows the current 5 GHz U-NII bandplan:



What is at issue now is only the 5.850-5.925 GHz band, but of course there is an Amateur allocation in the entirety of 5650-5925 MHz. The 5850-5925 MHz segment is allocated on a primary basis to the Mobile and Fixed Satellite Services for non-Federal operations, and to the Radiolocation Service for Federal operations. The band is also allocated on a secondary basis to the Amateur Service. FCC doesn't say much about Amateur use of the band except the following reference to the allocation status and cites Part 97 rules as well:

*Amateur Radio.* Amateur service stations are permitted to transmit in the 5.850-5.925 GHz frequency band on a secondary basis. Amateur stations transmitting in this frequency band must not cause harmful interference to, and must accept interference from, stations authorized by the Commission and other nations in the mobile and fixed satellite services, and also stations authorized by other nations in the fixed service.



The comment period for the “refreshing of the record” ended June 7, 2016. We had no input on the DSRC/U-NII-4 sharing issue and have already done what we could to preserve Amateur access to the band.

#### **6. Pave Paws Radar and Amateur Interaction, 70 cm.**

No reportable events have occurred with respect to our ongoing liaison with the Air Force Space Command (AFSPC) concerning interference between Pave Paws defensive radar installations and Amateur Radio UHF repeaters. The upgrade of the Cape Cod Pave Paws radar site is ongoing, with a targeted completion date in 2017. This will bring the Cape Cod facility to the same operational standards as the Beale AFB site in northern California. The Air Force planned to schedule testing sessions at the Beale site in late 2016 to try to determine the source of new interference in the band. During 2016 testing at Cape Cod, ARRL was contacted by AFSPC to see if amateurs could assist in identifying a new type of interference. The ARRL provided some information which helped the testing unit on base identify a local, non-amateur source of interference. CEO Gallagher has visited the Cape Cod AFB Pave Paws site to meet the new commander, and our relationship with the Air Force Spectrum Managers remains very good indeed.

#### **7. ET Docket 15-26, Vehicular Radars in the 76-81 GHz band.**

FCC has taken no action in this proceeding dealing with the 77-81 GHz Amateur allocation since the last Board meeting. There have been extensive *ex parte* presentations by Mercedes Benz USA and other automobile manufacturers and manufacturer organizations and other automotive equipment manufacturers active in vehicular radars about this FCC open docket on automotive radars in the 76-81 GHz band. However, the arguments recently submitted have nothing to do with the allocation of 77-81 GHz for vehicular radars which is assumed to be a “given”. Instead, the issue is the time within which automobile manufacturers must stop using the 22-29 GHz band for automotive radars. That has nothing to do with Amateur Radio.

There were other *ex parte* filings earlier in 2016, one from a company called Trex which has a chip for millimeter-wave radar applications at 77-81 GHz and wants it available ubiquitously, and one from Uber Technologies that says they support the automotive radar allocation plan. They don't say much else.

OET told me recently that they anticipated getting a draft Report and Order to the Commissioners before the end of 2016. There is, however, nothing on circulation among the Commissioners as of this writing.

As background, FCC proposed to create a new Part 95, license-by-rule service for automotive radars operating at 76-81 GHz. The NPRM was issued February 5, 2015. It was based on RM-11666, a petition filed by my office on behalf of Robert Bosch, GmbH. Though there has been at all times a complete identity of interest between ARRL and Robert Bosch in this proceeding, the docket turned into a potential problem for the Amateur Service relative to our primary allocation at 77.5-78 GHz and our secondary allocations at 76-77.5 and 78-81 GHz.

The FCC NPRM did *not* track the Bosch Petition well at all, and as it was released it is a problem for both Bosch and for ARRL. The Bosch comments I filed in response to the NPRM were completely supportive of retaining the entirety of the allocation status that Amateurs have now domestically, and they strongly opposed the authorization of fixed radars in the band 76-81 GHz.

FCC proposed in the NPRM to adopt rules that will accommodate the commercial development and use of various radar technologies (fixed and mobile) in the 76-81 GHz band *under Part 95 of the Rules* instead of Part 15 as Bosch had proposed. The NPRM includes allocation changes to the band as well as sharing provisions. Specifically, the NPRM asked for comment on the proposals to: (1) Expand radar operations in the 76-81 GHz band to include various fixed and mobile uses; (2) To modify the Table of Frequency Allocations to provide an allocation for the radiolocation service in the 77.5-78 GHz band; (3) Authorize the expanded radar operations on a licensed basis under Part 95; (4) Shift vehicular and other users away from the existing Part 15 unlicensed operating model; and (5) Evaluate the compatibility of incumbent operations, including Amateur Radio, with radar applications in the 77-81 GHz band.

Bosch asked that all Amateur Radio allocations be kept intact and in fact asked FCC to consider *adding* an Amateur allocation at 75.5-76 GHz to compensate for any potential reduction in utility to the Amateur Service of the band 77-81 GHz if automotive radars were allowed into that band under Part 15 (not Part 95). Allowing fixed radars in the band 76-81 GHz, especially on a licensed basis is a huge problem for automotive radar manufacturers as the only studies to date from Europe indicate that there is *not* compatibility between fixed and automotive radars. Nor is there compatibility between fixed radars and Amateur Radio. There is, however, according to an ITU study (ITU-R Report M.2322), compatibility between automotive radar and Amateur Radio.

ARRL comments and reply comments, and the Bosch comments and reply comments as filed were consistent with the defense of Amateur Radio in this band. Part 95 status does nothing for automotive radar manufacturers which have been using the 76-77 GHz band for many years pursuant to Part 15 in the United States without any difficulty at all. Bosch distanced itself from some individual automobile manufacturers who filed joint comments suggesting relocation of the Amateur allocation, and argued aggressively against that proposal. It could be midyear 2017 before this is resolved.

## **8. ET Docket 14-99, Model City for Demonstrating and Evaluating Advanced Sharing Technologies.**

No action in this docket has occurred since the last Board meeting. ARRL filed comments in this proceeding on August 29, 2014. In this docket, FCC and NTIA jointly proposed to establish, via a public/private partnership, a "model city" (i.e. an urban environment) that is considered a test bed for spectrum sharing and technology development and initial rollout and evaluation. The original idea came from the President's Council of Advisors on Science and Technology (PCAST) in 2012. The basic premise of our comments is that there can't be a model city for technological development and spectrum sharing without integrating Amateur Radio in it due to the pervasiveness of shared Amateur Radio allocations above 450 MHz and because of the ubiquity of Amateur Radio operation. There is also an argument at the end about

the inherent inequity and failure of the concept of a Model City for technological rollout and testing if some of the services in the model city are saddled with public, private or environmental antenna regulations which preclude the creation of a realistic environment. This proceeding may not result in any action at all; there has been no action save for a 2015 workshop to discuss the idea sponsored by FCC.

**9. ET Docket 13-101; Receiver Performance Standards; Technological Advisory Council (TAC) White Paper.**

There has been no action taken in this proceeding since ARRL comments were filed in July of 2013 on a TAC proposal to establish receiver performance (i.e. interference rejection) standards in order to permit greater sharing of spectrum.

**10. ET Docket 16-191; Technological Advisory Council (TAC) investigation of changes and trends to the radio spectrum noise floor; of increasing radio frequency (RF) noise problem; scope and quantitative evidence of the problem; and conduct of a noise study.**

ARRL comments were filed August 11, 2016 in response to the Public Notice in this proceeding.

On June 15, 2016 the Commission issued a Public Notice, DA 16-676 announcing that its Technological Advisory Council (TAC), an FCC advisory group on which ARRL has been very effectively represented for many years by Greg Lapin, N9GL, would investigate changes and trends to the radio spectrum noise floor to determine if there is an increasing noise problem. Greg is the leader of this group and this is a very large step forward in our effort to deal with ambient noise in the HF, MF, LF and VHF ranges especially. If the TAC finds that there is an increasing problem, the TAC will investigate its scope and the quantitative evidence available. Initially, FCC on behalf of the TAC asked for comments about how a noise study should be performed. Comments were prepared and filed with the assistance of the ARRL EMC Committee and the Executive Committee. The comments were intended to help the TAC determine the scope of the study. The TAC seeks to determine changes to the spectrum noise floor over the past 20 years. It is not frequency-limited, though most of the complaints in ARRL's experience typically concern ambient, man-made noise in the Medium Frequency, High Frequency and VHF bands. Noise in this context is defined as unwanted radio frequency energy from man-made sources. The FCC Public Notice indicated that the expectation of the TAC is a finding that the noise floor in the radio spectrum is rising. This assumption is based on the fact that the number of unlicensed, intentional and unintentional RF radiators and industrial, scientific and medical devices in use that emit radio energy increase. However, FCC cites a dearth of what it terms "concrete evidence" of increased noise floors and a lack of quantitative data to support the presumption.

The TAC asked for help in strategizing how the available data can be added to, in order to advise FCC. This study is long overdue and very welcome. FCC does not have a working knowledge of ambient RF levels in different environments and has not had such for years. Without this, it is impossible to know whether the Part 15 radiated and conducted emissions

limits for intentional, unintentional and incidental radiators are adequate. Because FCC has neither the resources nor the inclination to address individual cases of interference attributable to, for example, RF devices, power lines, switching power supplies, RF lighting systems and the vast array of other noise contributors in the field, it is critical that ambient RF be regulated *prior* to the point of retail sale. The results of this study will clearly help evaluate the adequacy of the current Part 15 and Part 18 regulations. The TAC asked a very wide-ranging series of specific and general questions and many sub-questions about how an ambient noise study should be conducted and how noise should be evaluated, including the following: 1. Is there a noise problem? If so, what are the expected major sources of noise that are of concern? What services are being most impacted by a rising spectrum noise floor? 2. Where does the problem exist? What frequency bands are of the most interest? In what environments? 3. Is there quantitative evidence of the overall increase in the noise floor across various segments of the radio frequency spectrum? At what levels does the noise floor cause harmful interference to particular radio services? What RF environment data from the past 20 years is available, showing the contribution of the major sources of noise? 4. How should a noise study be performed? Would receiver noise measurements commonly logged by certain users (e.g. radio astronomers, cellular, and broadcast auxiliary licensees) be available and useful for noise floor studies? How much data must be collected to reach a conclusion? We noted in our comments that the Amateur Radio community is both uniquely affected by increases in ambient noise, and uniquely qualified to participate in this study. The geographic distribution of ARRL members in all RF environments makes ARRL an asset to the TAC in the conduct of this study. We owe a major debt of gratitude to Greg Lapin for initiating this as ARRL's representative on the TAC.

Frankly, our 38 pages of comments filed in response to FCC's public notice were quite impressive. I say that with humility because the vast bulk of our input on RF noise to the TAC came originally from Ed Hare in particular, and the ARRL Lab staff in general. We have a great ally in the broadcast community in encouraging the conduct of a competent RF noise study due to the current focus on revitalizing the AM broadcast service. CEO Gallagher has done a fine job cultivating the broadcast community by his courting of the Society of Broadcast Engineers, and by his attendance at the NAB convention last April. We also have a huge advantage in that Greg Lapin, ARRL's delegate to the TAC, and NAB Technology VP Lynn Claudy, are the two co-sponsors of the TAC noise study. We of course have direct access to Greg Lapin, N9GL, and Ed Hare is in regular contact with him.

There were 95 comments filed in the docket, including some electrical manufacturers and RF lighting manufacturers, though most all of the commenters urged the conduct of the study. NAB urged that FCC itself should be more responsible in regulation of Part 15 devices. *We should consider what should be done at this stage to ensure that the FCC intends to push the TAC to do this study that has been promised for years, and also to ensure that FCC addresses the results of a competent TAC study by updating its Part 15 rules to reflect trends in ambient man-made noise in at least the MF and HF bands.*

**11. MITRE Corporation Experimental License WH2XCI, File No. 1062-EX-PL-2014, granted October 1, 2014.**

This FCC Experimental License has been renewed for an additional period through June of 2018. Apparently, there has not been any *reported* interference to Amateur Radio communications during the previous term, or to date. Nevertheless, it remains a very frustrating situation in terms of potential HF interference on a large number of Amateur allocations.

On October 1, 2014, MITRE Corporation (a government contractor and research firm) was granted an experimental license for a two-year period to operate a total of 21 transmitters at each of ten discrete, fixed locations in New York State and Massachusetts for the purpose of testing high frequency (HF) communications in a variety of frequency bands from 2.5 MHz to 16 MHz. The call sign is WH2XCI. It authorizes MITRE's operation in, among others, the bands 2505-4100 kHz, 5005- 6210 kHz, 6320-8250 kHz, 10.005-12.200 MHz and 13.500-14.990 MHz. These bands of course include the Amateur allocation at 3500-4000 kHz; the 2.8 kilohertz bandwidth channels allocated to the Amateur Service centered at 5332 kHz, 5348 kHz, 5358.5 kHz, 5373 kHz and 5405 kHz; and the Amateur allocations at 7.0-7.3 MHz, 10.100-10.150 MHz and 14.0-14.350 MHz. We negotiated with MITRE to inform us of times and days of experimental operation at each of the authorized sites, but they effectively refused. They also refused to avoid use of Amateur spectrum.

The emissions authorized by WH2XCI are maximum bandwidths of 5 kHz, 500 kHz and 1 MHz. The authorized effective radiated power levels range among 6 Watts, 24 Watts or 122 Watts. The purpose of MITRE's experimental operation is to test the "capability of higher bandwidth and higher data rate communications in the HF bands applying polarization diversity MIMO (multiple input, multiple output) concepts" for beyond line-of-sight propagation including ionospheric propagation. This is for "critical communications," apparently. It sounds a lot like an experiment being conducted for a government agency.

We argued that regardless of bandwidth, there is no chance of avoiding interference to ongoing HF Amateur Radio operation, and that when the interference from MITRE's wide bandwidth transmitters inevitably occurs in the narrow bandwidth, sensitive receivers used by Amateur Radio operators, *there is no way that the victim Amateurs will able to determine the source of the interference or know to whom they might complain about it.* Brennan Price and Dave Sumner had contacted a ham in the area near where several of these transmitters were to operate, but as far as I know we never heard any noise complaints from that person.

## **12. RM-11715; Mimosa Networks, Inc. Petition for Rule Making, proposing a Part 90 Fixed and Mobile allocation in the 10.000-10.500 GHz band.**

There has been no action taken by FCC in this proceeding since ARRL comments on the Petition for Rule Making were filed at FCC April 11, 2014. The petition remains pending but somewhat dormant.

ARRL opposed the effort of Mimosa Networks of Los Gatos, CA to reallocate the 10-10.5 GHz band for fixed broadband. Mimosa, a wireless broadband products manufacturer filed a Petition for Rule Making May 1, 2013 seeking a Part 90 mobile allocation in the 10.000-10.500 GHz band, and service rules permitting Part 90 licensing of mobile wireless service providers in that band. It was placed on Public Notice March 11, 2014. Our comments attempted to protect

the Amateur secondary allocation at 10.0-10.5 GHz and the Amateur Satellite Service secondary allocation at 10.45-10.5 GHz. Both the Amateur Service and Amateur-Satellite Service allocations are secondary only to Federal Government radiolocation. By footnote, NON-government radiolocation has to share with Amateur Radio on a non-interference basis (i.e. they cannot interfere with us). That same U.S. footnote, however, apparently denies FCC the authority to make the allocation that Mimosa is asking for:

US128 In the band 10-10.5 GHz, pulsed emissions are prohibited, except for weather radars on board meteorological satellites in the sub-band 10-10.025 GHz. The amateur service, the amateur-satellite service, and the non-Federal radiolocation service, which shall not cause harmful interference to the Federal radiolocation service, are the only non-Federal services permitted in this band. The non-Federal radiolocation service is limited to survey operations as specified in footnote US108.

Our argument is that the FCC is without the jurisdiction to make this allocation, at least without some buy-in from NTIA. So we have kept in touch with NTIA to make sure that they continue to protect military airborne radars at 10 GHz and retain the footnote US128 to the Table of Allocations that precludes any new allocations (other than the Earth Exploration Satellite Service that is proposed to be added to this band at WRC-15 and which is compatible with Amateur Radio to an acceptable extent). So far, so good. The Petition seems to be quite stalled at FCC.

### **13. Petition for Rule Making to implement 5 MHz allocation from WRC-15.**

The Executive Committee in March of 2016 ordered, at the recommendation of Brennan Price, that a Petition for Rule Making be filed to implement the 5 MHz allocation that was obtained at WRC-15. I have prepared and expect to file that Petition before the Board meeting. It is now under review by the Executive Committee, and I expect to file it during the week of January 9.

*This petition is highly problematic for a number of reasons.* First, there is no FCC proceeding to implement the final acts of WRC-15. The filing of a petition now is not likely to trigger anything but a yawn from FCC. However, it at least gives us a place in the queue. Second, the power limitation decided on at WRC-15 for ITU Region 2 for this 15 kHz allocation is *exceptionally* low, and our argument is for a 100-watt power limit for the United States. The 100 watt limit is critical for us because the purpose of the 60-meter channels in the first place was to be able to facilitate a propagation gap between 80 and 40 meters for the purpose of disaster relief communications between the continental U.S. and the Caribbean basin. The band will be in use during the hurricane seasons when static crashes and high noise levels prevail on those paths. The power level is critical to a successful domestic implementation of the allocation.

This will require some serious justification since the United States was not a supporter of an allocation for the Amateur Service at 60 meters anyway. Third, we also want to keep the channels we have at 60 meters (at the power level that we have). Actually, one of those channels is within the contiguous band at 5351.5-5366.5 kilohertz, so our proposal is to retain four of the five channels and to have the band allocated to Amateurs domestically, at 100 watts, with all of

the emissions now permitted for the five channels and for access by General Class and above licensees.

Advocating for this Petition is going to be a challenge. It will require marshaling all of the support for it that we can get. This is probably the most important FCC filing that we will do this year.

#### **14. National Broadband Plan Review. (Consideration of current spectrum threats relative to broadband implementation and continuation of review of former ARRL Broadband Plan Committee Report).**

At the March, 2016 EC meeting, Dave Sumner reported that Brennan Price had commenced an editing of the National Broadband Plan Committee Report dated July of 2011. Though the NBP Committee was dismissed after submitting that Report, earlier EC instructions were for Sumner, Price and Imlay to update it. Collectively, the three of us did not complete this updating prior to Sumner's and Price's departures from ARRL. No work was done on that effort. The Executive Committee, at its October meeting, discussed this and President Roderick asked Vice President Bellows, Director Blocksome and this office (all members of the original NBP Committee) to conduct a review and update the 2011 NBP Report and provide that to the EC. That work will be ongoing and a report will be delivered to the EC at its Spring meeting.

While there are no acute threats of broadband reallocation of Amateur Spectrum, there remain issues surrounding the 3400-3500 MHz band and the 5850-5925 MHz band and new broadband allocations under consideration. The updating of the 2011 Report is overdue, but not in our view an urgent priority relative to other regulatory initiatives. Risking bad Karma by saying this, the Amateur Service has done exceptionally well relative to some other radio services in avoiding disruption in allocations from new broadband spectrum access.

### **C. Non-Allocation FCC Regulatory Issues**

#### **1. RM-11759; ARRL Petition for Rule Making to effect changes in the 80 and 75-meter RTTY/data and phone/image subbands; to restore 80-meter frequency privileges for certain license classes; to shift the 80-meter automatically controlled digital station band segment; and to authorize Novice and Technician class licensees to utilize RTTY/data emissions in certain bands.**

There are now 283 comments in this proceeding. We timely filed our comments and reply comments. Most of the comments filed are "cookie-cutter" *oppositions* to any reduction of the extra class telephony subband, and oppose ARRL's effort to encourage RTTY/data emissions in the band. The number of comments overall is not, in general, alarming at all and only about 20 late-filed, *ex parte* comments have been filed since the July Board meeting. The number of extra class commenters was anticipated. They generally reject any rebalancing of the 80-meter telephony subband. There is no pending item before the Commissioners and Scot Stone has advised us that this Petition will be consolidated with the Expert Linears petition to delete the 15

dB gain limit on Amateur linear amplifiers. So no item is expected anytime soon, frankly. The Board should consider strategies for addressing the generally negative comments on this Petition, perhaps via an oral ex parte presentation to FCC about this (and other items). Because ARRL's reconsideration petition on the overexpansion of the 80-meter subband a few years ago when Bill Cross mismanaged that effort was not well-received at FCC, we might anticipate a difficult sell for the expansion of the RTTY/data subband to 3650 kHz instead of 3600 kHz absent some active advocacy.

As background for newcomers to the Board, this Petition for Rulemaking was called for by Minute 32 of the July, 2015 Board Meeting. It was filed January 8, 2016 and placed on Public Notice February 22, 2016. Comments were due March 23, 2016, and reply comments were due April 7, 2016.

We filed comments on our own petition in this proceeding on March 23, 2016, the due date. A few CW operators and others support the proposal, most without stating firm reasons for their support. However, a majority of comments are from Extra Class licensees who object to having their exclusive segment reduced. These are one-sentence comments in large part but there is enough volume here that we felt that a restatement of the justification for the petition, and for the proposed reduction in the exclusive Amateur extra class subband at 75 meters should be provided by ARRL, hence the comments filed on our own petition.

The Petition includes the following points, per the Board's instruction:

- (A) To modify the 80-meter RTTY/Data subband defined in Rule Sections 97.301 and 97.305 so that it extends from 3500 kHz to 3650 kHz;
- (B) To modify the 75-meter Phone/Image subband defined in Rule Sections 97.301 and 97.305 so that it extends from 3650 kHz to 4000 kHz;
- (C) To provide that the 3600-3650 kHz segment of the 80-meter band will be made available for General and Advanced Class licensees, as was the case prior to 2006;
- (D) To provide that the band segment 3600-3650 kHz will also be available to Novice and Technician Class licensees for telegraphy (consistent with the existing rules that now permit Novice and Technician Class licensees to use telegraphy in the General and Advanced Class RTTY/data subbands at 80, 40, and 15 Meters);
- (E) To modify Section 97.221(b) of the Commission's Rules governing automatically controlled digital stations, so that the segment of the 80-meter band that is available for automatically controlled digital operation shifts from 3585-3600 kHz (as per the existing rules) to 3600-3615 kHz (consistent with the IARU Region 1 and Region 2 band plans); and



(F) To provide RTTY/data privileges to Novice and Technician licensees in their 15-meter band segment and their 80-meter band segment, the latter contingent on the rule changes at (A) and (B) hereinabove.

In the petition, with respect to the effect of the “rebanding” on Extra Class 75-meter phone operators, we stated as follows:

While ARRL received overwhelming support for the proposed 50 kilohertz expansion of the 80-meter band, concern was expressed by a few Extra Class licensees about the proposal, inasmuch as those licensees enjoy the inordinately large, exclusive 3600-3700 kHz segment for phone/image operation. Extra Class licensees, however, should be reminded that the 3700-3800 kHz segment of the 75-meter band is and would continue under ARRL's proposal to be available only to Extra and Advanced Class licensees. Only 7 percent of the Commission's licensees hold Advanced Class licenses, and that number will continue to decline toward zero as this license class is no longer being issued. Even if the phone/image subband at 75 meters is reduced in size from 400 kilohertz to 350 kilohertz as herein proposed, it will still be the largest phone/image subband among all of the HF Amateur allocations.

While this seems a reasonable justification for the proposed rearrangement of the 75/80 meter band, the vocal minority of Extra Class licensees that the ARRL HF Band Plan Committee heard from when the surveys were conducted are repeating their concerns to the FCC now.

**2. RM-11767, Expert Linears America, LLC Petition for Rule Making to Eliminate the 15 dB gain rule for Amateur Linear Amplifiers; and WT Docket No. 16-243, Request for Waiver filed by Expert Linears America LLC: to eliminate (and temporarily, to waive) the 15 dB gain limitation on Amateur amplifiers currently in Section 97.317(a)(2) of the Commission's Rules.**

There are 76 comments filed in response to the Petition for Rule Making, including ARRL's comments. We and almost all other comment filers support the elimination of the 15 dB gain rule. Several opposed the Petition for Rule Making, believing that Amateur linear amps still find their way into the hands of CB and freeband users. However, this rule is unnecessary to prevent that and those who make illegal use of amplifiers do so in violation of other, more relevant rules.

Separately, FCC asked for comment on the Request for (temporary) Waiver of the same rule for Expert Linears only, and FCC dismissed that Request on December 27, 2016. We did not at the Executive Committee's instruction file comments on the Expert Linears waiver request which pertained only to Expert's products on an interim basis until FCC addresses the rulemaking petition. It was proper for ARRL to stand down on the waiver request and let Expert handle that part on their own. FCC, however, is now under some pressure from N3JT, the attorney for Expert Linears, to move the rulemaking and Expert is getting some pushback from FCC about the timetable for this. We may be asked to join the battle to move this along,

especially since two of ARRL's other proceedings (the 80-meter band PRM and the Symbol Rate Petition) might be batched together with this rulemaking.

As background, we filed comments May 26, 2016 in strong support of the Petition for Rulemaking filed on April 7, 2016 by Expert Linears America, LLC. The Petition proposed that the Commission amend Section 97.317(a)(2) of the Amateur Service rules in order to eliminate the requirement that, for a manufacturer of external RF power amplifiers to receive a grant of certification therefor, the amplifier must not be capable of amplifying the input RF power (driving signal) by more than 15 dB of gain.

This petition continues the effort that Bill Cross initiated in 2006 in Docket 04-140 which eliminated the 50-watt minimum drive power requirement for amplifiers and modified the ban on amplifiers that exhibited amplification between 24 and 35 MHz. the rule now requires zero amplification between 26 and 28 MHz. But in 2006 FCC left in the 15 dB limit on amplification. Now, that rule makes it impossible for, for example, SDR low power output transmitters to be amplified to full legal power without an intermediate amplification stage added. The 15 dB rule is a relic from the CB days that was never necessary. There is a Part 95 rule that prohibits using in the CB service an amplifier capable of more than 15 dB of gain. If the Part 97 rule is eliminated, there will still remain a certification rule for Amateur amplifiers that prohibits certification if the amplifier has more than 0 dB of gain between 26 and 28 MHz. That alone is sufficient to preclude CB or freeband use of Amateur amplifiers. All Amateur amplifiers must be certified.

So, this is the last vestige of the FCC's ill-conceived linear amplifier ban. The FCC overregulated Amateur amplifiers terribly in 1978 and only now is the last major piece of that being addressed. The Expert Linear petition was prepared by our good friend Jim Talens, N3JT, a PVRC guy, excellent CW operator, and former FCC staffer.

We have for some time heard the concerns of several linear amplifier manufacturers about the effect of Section 97.317(a)(2) of the FCC rules on their ability to market their products. The EC discussed the rule at a recent meeting in Dallas but decided not to take the initiative on ARRL's part to eliminate this rule. It was reasonable to expect that manufacturers, who have never carried their own oars very well on linear amp rules, should be the ones to pursue this on their own. Now, one manufacturer has done so.

**3. RM-11769, Petition for Rule Making filed on or about November 12, 2015 by James Edwin Whedbee to modify Part 97 of the Commission's Rules and Regulations to redesignate subbands from exclusively Morse code to narrowband modes, including CW and for other purposes.**

FCC placed on public notice on May 11, 2016 a May 2, 2016 Petition for Rulemaking filed by Edwin Whedbee, a perennial filer of petitions and comments that are often very much off-the-wall. This one is no exception. RM-11769 ostensibly urges that the CW subbands in bands below 220 MHz, which he believes now permit only CW emissions (150HA1A) be modified to permit data communications as well. The problem is that Whedbee's premise, that the CW segments in the HF bands do not permit data, is simply wrong. The RTTY/data subbands

are delineated in Section 97.305(c) and data can be transmitted in the RTTY/data subbands. The other problems with the Whedbee petition are that (1) he includes no appendix with the rule changes he wants to implement, and (2) he offers no justification for the rule changes he proposes except to note that CW is not deserving of special subbands only for that emission (which is fine since there are none).

There are other proposals in the petition which generally urge that bandwidth limitations rather than emission types should be defined in the rules. For example, in the voice and image segments below 1.8 MHz, the 20 dB bandwidths should be limited to 1300 Hz; between 1.8 and 29.5 MHz, the 20 dB bandwidths should be limited to 8000 Hz; and between 29.5 and 220 MHz the limit should be 20 kHz, etc. No justification is offered for these numbers. He proposes to leave 60 meters alone.

There are as of this writing 414 comments, mostly against the petition, and most failing to grasp the fact that the petition is based on a misconception about what the current rules provide. So they defend CW and urge that the "exclusive CW subbands" be left alone. Comments on this Petition were due June 10, 2016. The Executive Committee decided to not file any comments on this Petition as it is fatally flawed.

#### **4. WT Docket No. 16-239; RM-11708; Deletion of restrictions on symbol rates for data communications and ARRL proposal to establish a 2.8 kilohertz maximum occupied bandwidth for data emissions below 29.7 MHz.**

ARRL comments were filed October 11, 2016 in response to FCC's July 28, 2016 NPRM. Reply comments due November 10, 2016. We filed our comments in this docket proceeding on time and received some compliments on them, including a very complimentary e-mail from Larry Price, W4RA who, as many of you know is not prone to many statements of approval or compliments.

The comments continued to support the deletion of the symbol rate limitation on data communications in the RTTY/data subbands but argued that such deletion was not sufficient; there must be a bandwidth limit, on the order of 2.8 kilohertz imposed on such emissions, else there is a serious potential of usurpation of the band. The comments in this proceeding thus far (numbering 216) have been largely opposed to the elimination of the symbol rate limit without also imposing a bandwidth limitation. Some opposed both actions, but the more thoughtful ones supported adding back in a bandwidth limit. There remains a great deal of opposition to a wide bandwidth limit, however and a great many commenters (all individuals) suggest that 2.8 kHz or any such bandwidth limit approximating an SSB signal bandwidth should be prohibited. They fear the squeezing out of CW, RTTY, PSK31 and other narrower bandwidth modes. We did not file reply comments addressing this, but we had argued the point numerous times in comments, reply comments and ex parte filings before the NPRM was issued.

An additional problem with this proceeding, in addition to its unpopularity among CW and RTTY aficionados, is that it also is, conceptually, a very difficult sell at FCC. For many years, and more aggressively in recent years, FCC is moving away from micro-regulation of Amateur allocations in service rules. They want Amateurs to self-regulate subband issues and

resolve compatibility among conflicting emission modes ourselves. The self-regulated subband model is in use in many other countries but United States amateurs want their emission type of choice carefully protected by FCC regulation. It is predicted that this is a failed regulatory model going forward.

The opposition to 2.8 kilohertz is difficult to change minds about when the real issue is a dislike of data emissions by users of more traditional emissions in these subbands. Change comes hard to HF-active hams.

Another consideration is the age of this proceeding. It was on November 14, 2013 that ARRL filed a Petition for Rule Making which proposed to modify the Commission's Amateur Radio Service rules so as to eliminate the symbol rate limit in those rules relative to data emissions in the Amateur allocations below 29.7 MHz; and to establish a 2.8 kilohertz maximum occupied bandwidth for data emissions in those bands. The Petition was placed on Public Notice right away, on November 21, 2013.

**5. RF Lighting Device Complaints to FCC (Initiative to generate FCC enforcement of overpower RF lighting ballast devices; filed and planned future complaints aimed at ballast importers and retailers and large consumer retailers of RF lighting devices intended for industrial applications only).**

FCC has still taken no action that we know of in response to a complaint filed with FCC on March 12, 2014 regarding a Lumatek RF Lighting Ballast that failed the FCC's conducted emission limit by a large amount. In mid-June, 2015 we filed three additional complaints about a second Lumatek Ballast and two other devices. One was manufactured by Quantum Horticulture and the other by Galaxy Legacy. In every case, as tested by ARRL's Laboratory, these devices (which the ARRL Laboratory purchased at retail) fail the FCC Part 15 conducted emission limitations. There are several associated marketing rule violations with each device. We also filed on July 14, 2015 a complaint about marketing practices of Home Depot relative to their marketing of RF lighting products intended to be used only in industrial applications, but which are being marketed to consumers for residential use with the full advice and consent of Home Depot. Most recently, we prepared and filed similar complaints about Lowe's and WalMart, in a comprehensive effort to keep the pressure on FCC to take some action with respect to these devices.

We have developed with the Society of Broadcast Engineers and the substantially disenfranchised AM broadcast community allies in the effort against RF noise. However, the focus of AM revitalization is not on ambient RF conditions because fixing that is a long-term effort and AM broadcasters have very short term economic concerns. The FCC's order and further NPRM concerning AM revitalization, released in November of 2015 was a huge disappointment in that it made no reference to the need to regulate ambient noise in the MF and HF bands, nor did it address Part 15 and Part 18 device marketing. The SBE had argued that such is a major obstacle to revitalization of AM broadcasting. The broadcast engineers will continue to advocate for regulation and study of ambient noise levels.

Our discussions with Laura Smith in 2016 revealed to us (not at all surprisingly) that the culprit in the dearth of enforcement proceedings against either Part 15 users or Part 15 manufacturers is the FCC Office of Engineering and Technology. They are behind the absolute refusal by FCC in Washington, D.C. to adjudicate and proceed with a monetary forfeiture against an end-user of an RF lighting device in Washington State; a case in which the now-closed FCC Seattle office investigated and prepared a Notice of Apparent Liability against the user of the device, which was causing interference to Amateur Radio. OET reportedly is taking the position that once FCC issues the first NAL against a Part 15 device user (or apparently manufacturer) there will be a never-ending stream of complaints that FCC will have to adjudicate or else be accused of treating similarly situated individuals differently. We will have to develop strategies to address this at FCC or learn to live with it. It extends too far to simply live with it, as I see the matter. If we accept OET's rationale, we can't expect any power line noise enforcement at all.

#### **6. WT Dockets 03-187 and 08-61; Effects of Communications Towers on Migratory Birds.**

There has been no FCC action in this proceeding or on this topic since a March, 2012 FCC report, and there have been few contributions to the literature on this subject since 2013. However, of course bird kills remain a constant source of objection to towers. It is clearly the lighting of tall towers, and especially bad weather conditions that apparently create the conditions under which migratory birds become confused and fly into towers and guy wires. Therefore, this is not a proper concern of radio amateurs who generally speaking do not use painted, lit towers over 200 feet, but it is useful to compile the literature on this and other related subject that continue to arise in tower litigation. This is a project of the ARLDAC going forward.

#### **7. ET Docket 13-84; Reexamination of RF exposure regulations.**

There has been no action since the last Board meeting on this FCC proposal to subject the Amateur Service to a "general exemption" table for conducting a routine environmental review of a proposed new or modified station configuration, and to use the exemption criteria as the preemptive standard as against more stringent state or local criteria since the last Board meeting. ARRL comments were filed September 3, 2013 and an oral Ex Parte presentation to the FCC's Wireless Telecommunications Bureau was made by Dave Sumner and me on May 13, 2014. *This remains a very dangerous proceeding, and we continue to be vigilant with respect to it.*

In the past, FCC has categorically exempted Amateur stations from routine RF exposure evaluation. In this proceeding, however, there is an intention to avoid specific exemptions for particular services, so as to ensure a consistent set of rules without exceptions. So, FCC has proposed to delete the categorical exemption from RF evaluation in the Amateur Radio Service in Section 97.13(c) of the Amateur Service rules. FCC says that Amateur Radio operators "are knowledgeable about the appropriate use of their equipment, such that separation distances are likely to be maintained to ensure compliance with our exposure limits..." but because the existing amateur exemptions "are based only on transmitter power and do not consider separation distance or antenna gain, exempt transmitting antennas that are unusually close to people could potentially lead to non-compliant exposure levels." Our comments stated that the proposal to eliminate the "special exemption" (as the Notice put it) from routine RF exposure

evaluation for the Amateur Service now set forth in Section 97.13(c) of the Commission's rules would *substantially* complicate the process of RF exposure evaluation requirements for Amateur Radio licensees.

The problem is the very significant increase in the number of Amateur stations that would be subject to routine environmental processing due to the wide variety (and size) of residential station installations; HF mobile stations; and the effect of these new rules on the ability of radio Amateurs to obtain and maintain land use authorizations for their stations. The FCC's goal of uniformity in RF exposure evaluation thresholds creates uneven regulatory burdens which disproportionately prejudice Amateur Radio licensees due to the unique considerations applicable to residential and mobile antenna installations utilized by radio Amateurs.

The general exemption table for single RF sources would require, *regardless of ERP*, a routine evaluation "if the separation distance  $R$  is less than  $\lambda/2\pi$  from the radiating structure, where  $\lambda$  is the free-space operating wavelength, unless the available maximum time-averaged power is less than one milliwatt." This would subject virtually all mobile and portable Amateur Radio operations to routine environmental analyses, without a factual predicate for the additional regulatory burden, and without taking into account a number of factors, including the shielding effect of car bodies, etc. Furthermore, the separation distances using the radian sphere  $\lambda/2\pi$  would require a great many radio Amateurs who live on smaller real estate lots, and those who must reside in multiple unit dwellings to do an environmental analysis in order to operate in the 160, 80 and 40-meter Amateur bands *regardless of the power level used*. As to the formula for calculating ERP at the radian sphere  $\lambda/2\pi$  distance for those three bands in particular, the ERP is higher than that which is achievable with a standard half-wave dipole at full legal power for the Amateur Service. Many, probably most, radio Amateurs utilize simple antennas for those frequency bands (i.e. some sort of dipole or random wire antenna). It is arguable therefore that for operation on Amateur frequencies below 14 MHz, the  $\lambda/2\pi$  separation distance threshold, if adopted as proposed, should be waived for radio Amateurs.

#### **8. WT Docket No. 15-81, Amendment of FCC Rules Concerning Electronically Stored Application and Licensing Data.**

No action has been taken in this proceeding since the last Board meeting in January.

ARRL comments were filed June 16, 2015 in response to an FCC proposal to delete historical licensee address data in ULS for privacy reasons. Specifically, FCC proposed to amend the Commission's rules to specify that historical amateur radio licensee address information will not be routinely available for public inspection and to remove from public view in the ULS amateur radio licensee address information that is not associated with a current license or pending application. FCC also asked about removing address information from current licenses in the ULS as well, but didn't propose that.

In October of 2015, I received a call from Scot Stone at FCC "inviting" ARRL to submit some additional comment in this Docket. Scot asked for additional information about our statement in our comments that:

"A very important use of historical licensee data not associated with a current license is

by the Volunteer Examiner Coordinators (VECs) in researching the entitlement of a candidate for an upgraded Amateur Radio operator license to examination credit for a license previously held by that candidate. The Commission decided one year ago in docket 12-283 to afford examination credit to certain former licensees for examination elements 3 and 4. See, 47 C.F.R. §97.505(a). This placed an additional burden on the VECs and the Volunteer Examiner (VE) teams that volunteer their services in examination administration. ARRL noted that in order to provide examination credit to license candidates for licenses previously held (which may have expired many years previously), the VEs or VECs would be called upon to authenticate old documents and to generally validate the entitlement to the alleged former licensee to the claimed examination element credit. Authentication of documents and the research necessary to such validation did not fall within the skill sets of administering VEs or VECs. However, the rules are now in place and it is, for better or worse, the VEC's obligation to make sure that examination credit is granted only where the applicant is entitled to it. Using ULS historical licensing data is a principal means of verifying that an examination candidate who claims credit for examination elements 3 and 4 is actually the person who formerly held a license that would entitle him or her to the credit provided for by Section 505(a) of the Rules. Having placed a difficult authentication / verification burden on VECs and/or VEs a year ago, it is not now reasonable to deprive the VECs and VEs of the ability to ensure the integrity of the volunteer examination program by revoking access to information by which, at least in part, a VEC might verify an applicant's claim of entitlement to examination credit."

WTB asked for statistics on how many hams are looking for lifetime credit for licenses previously held and any other further explanation of the burden on VECs from deleting historical license data. We had suggested that an alternative might be to allow VECs access to that data but not the general public.

Thanks to some quick and efficient work by Maria Somma, we filed some good *ex parte* supplemental comments, in which we provided some statistics, including the following:

The ARRL-VEC currently transmits to the Commission, on average, 5 applicants with expired license credits per week. Therefore, the ARRL-VEC has handled approximately 300 such applications since July of 2014. ARRL handles a large majority of the Amateur Radio examinations administered and applications for new and upgraded Amateur licenses, but the experience of the other VECs with respect to expired license credit applications is not specifically known. There is no good means of determining how many former licensees may take advantage of prior license examination credit in future years because there is no way to alert previous licensees of the still-new program. Applicants that have used the prior license credit mostly learned of the opportunity to regain an Amateur license by word-of-mouth from acquaintances or from relatives who are licensees. Others stumbled upon it having decided to get back into Amateur Radio. Though there is no way to predict future numbers, it may be expected that as more former licensees hear of the availability of lifetime examination credit, more will decide to regain their licenses. The Commission, having obligated VECs to validate claims of former licensee status and the data associated therewith, cannot fairly take away a key resource for objectively evaluating the validity of applicants' claims and documentation. To do so decreases substantially the ability of VECs to maintain the historically high degree of integrity of the Amateur Radio licensing process. Since the Commission clearly has no intention of assuming any of the burden of the validation process (and is ill-equipped to do so in any case), the instant proposal is, from the perspective of the ARRL-VEC, both unfair and illogical.

The docket is still open with no resolution date known so far.

## **II. Noteworthy Pending Antenna and RFI Cases.**

### **1. Myles Landstein, N2EHG v. Town of LaGrangeville, NY. 2015 NY Slip Op 51260(U).**

I reported to the Board in July about the outcome of the trial court decision in this case, released in August of 2015. Since then, we were told that Myles Landstein, N2EHG had instructed his attorney, Jon Adams to note an appeal. I received a draft brief that Adams prepared and commented on it early last year. I am not aware of the status of the final brief and my efforts to find out the status of this case from Myles have not been responded to. If there was an appeal filed, it is not yet adjudicated. The trial court decision will not be published.

### **2. Jeffrey DePolo, W3NA v. Board of Supervisors of Treddyfrin Township et al. (3<sup>rd</sup> Circuit United States Court of Appeals affirmation of USDC dismissal of Amateur PRB-1 complaint; Amicus Brief filed for ARRL August 17, 2015).**

Vice Director Famiglio has recently offered the Board his view of the outcome of this case thus far. Though my view of the significance of and the nature of the appellate decision in this case is quite different from Bob's, I would urge that you review Bob's ODV e-mail recently about this case and decide for yourself what the significance is of the Third Circuit opinion. Bob worked on this case at the zoning board level, the trial court level and in the 3<sup>rd</sup> Circuit United States Court of Appeals with co-counsel Fred Hopengarten, K1VR. ARRL's Amicus Curiae Brief was accepted by the Court, but the Court of Appeals decided the case on grounds far different from the rationale of the District Court judge, and the decision does not reflect much of our argument. My analysis of this case follows, but as I say, Bob's view differs substantially from the following. I attach as **Appendix C** the decision of the Court of Common Pleas of Chester County, PA denying DePolo's effort to reinstate an appeal in the State Court, which I believe is the most recent court decision affecting DePolo.

You will recall that this was an appeal by Jeff DePolo, WN3A from the decision of the United States District Court for the Eastern District of Pennsylvania. The District Court dismissed the case filed by DePolo challenging the 35-foot height limit of the township and the denial of DePolo's application for a 180-foot antenna system. The Court granted a Section 12(b)(6) preliminary motion to dismiss the case, which motion had been filed by the Township. We were concerned that the finding of the District Court, if not reversed in the Court of Appeals, would stand for the proposition that a well-pled PRB-1 argument could be dismissed for failure to state a claim on which relief might be granted. Our brief Amicus Curiae argued to the contrary. The Court of Appeals rendered its decision on August 30, 2016, affirming the District Court's dismissal of the case, but it did so based upon a very different ground than did the District Court. Rather than finding that the DePolo complaint failed to state a claim on which relief may be granted, the Court held that DePolo did not appeal the decision of the zoning board of the Township to the Court of Common Pleas of Chester County (i.e. the state court) as is called for under state law. Instead, DePolo pursued no appeal in the state court, but filed the U.S.



District Court suit claiming that the Township's zoning ordinance, which prohibited any building taller than 35 feet, is preempted under PRB-1. Whereas the District Court dismissed the case, finding that the Township's alleged offer of a 65 foot antenna via a variance was a reasonable accommodation and that the Township's ordinance was not preempted by PRB-1, the Court of Appeals held something *completely different*: That DePolo erred as a matter of procedure by failing to appeal the zoning board decision to the State Court and, "given the unique procedural history of this case" the Court of Appeals had to find that the zoning board's decision became final and that the zoning board decision had to be given the same preclusive effect it would have had in the State Court had DePolo proceeded as he should have. Therefore, the Court of Appeals said, the decision of the zoning board became unreviewable in the Federal Court. The Court of Appeals said that DePolo could have appealed the zoning board decision in the state court, moved to stay that proceeding, and proceeded to litigate his Federal claims in the Federal court. But the failure to follow the proper procedure in the State court made it impossible to pursue the Federal court claim because the zoning board decision became final and unreviewable.

The early part of the Court's opinion is a fair and even favorable recitation of the history of PRB-1 and it upholds the basic principle that PRB-1 limits local land use jurisdiction. However, the Court of Appeals said that DePolo's failure to appeal the zoning board's decision to the state court within 30 days of the decision as called for by a Pennsylvania statute allowed the findings of the zoning board to become final. Instead, DePolo filed the suit in Federal Court, allowing the 30-day appeals period of the State statute to expire. This, the Court said was "fatal to his ability to obtain federal review of his claim." The Court of Appeals was NOT saying that DePolo could not have his claim that the zoning ordinance was preempted adjudicated in Federal Court. At footnote 18 of the Court of Appeals decision, the Court said that "We acknowledge that this decision leaves amateur radio enthusiasts with limited avenues into Federal court. DePolo could have appealed the ZHBA's decision and stayed the matter in state court, while his federal claims were resolved. That would have allowed the District Court to narrowly address the question of preemption." Instead of doing that, the Court said, "DePolo actually withdrew his request for a variance before the ZHBA and then failed to challenge the factual findings and legal conclusions in the forum provided under state law. He is therefore now bound by the final judgment of the ZHBA. Its ruling is a final judgment on the merits that is entitled to preclusive effect in federal court." Accordingly, the Court dismissed the appeal.

This was, as I read it, a very narrow, very specific holding that most certainly does not invalidate PRB-1 at all. While the case is instructive to antenna litigators to make sure that the correct procedures are followed, the fear that we had about this case based on the District Court's opinion, which was potentially damaging, was avoided since the Court of Appeals rather deftly avoided the problem by resolving the case on other grounds completely and carefully, it appears, crafted an opinion that preserves PRB-1 in other cases.

Vice Director Famiglio's view of this case is far more pessimistic than mine. There is no reason as I see it to blame the current status of PRB-1, its codification, or the recent case law interpreting it for the decision in this case. There is not in my view any basis for blaming Section 97.15(b) or the case law interpreting it for the decision in this case. Rather, this case was narrowly decided on procedural grounds based on a State statute in Pennsylvania. One could suggest that this case never should have been brought in the first place (indeed, that was Dave

Sumner's view of the matter). It is in my view impossible to attempt to justify the need for a 180-foot tower in any height zone on the basis of PRB-1. But, having done so for better or worse, the outcome in this case, I would argue, was not harmful to PRB-1 or to amateurs generally, in the third circuit or elsewhere.

As a postscript, DePolo attempted after the Court of Appeals decision had been issued to ask that the Court transfer the case to state court to be litigated there on the basis of erroneous filing or a finding that the Federal court had determined that it lacked jurisdiction to adjudicate the zoning board decision. The Court of Appeals allowed briefing of the matter and ultimately determined that it was not possible, given the intentional failure to appeal to the state court on a timely basis, to find that there was any remaining opportunity to transfer the case to state court. The Court of Common Pleas of Chester County, PA in the attached opinion, held precisely the same thing.

### **III. Other Legal Matters.**

#### **1. U.S. Forest Service Renewal Fee and Bond Requirement for Transmitter Sites.**

Vice director Marty Woll brought to our attention the issue of U.S. Forest Service fees and requirements for telecommunications users of Forest Service land. Apparently, the U.S. Forest Service is piloting a new program in at least one National Forest, in which lessees (including Amateur repeater site lessees) will be required to post substantial (\$30k to \$100k or more) bonds to guarantee the dismantling and removal of all equipment and improvements and restoration of the leased sites to pre-development condition at the end of their respective renewal lease terms. The first area subject to this pilot program is the Angeles National Forest. Several Los Angeles-area sites are the first to be subject to these requirements. The bonds are unlikely to be commercially available at all, let alone at a reasonable cost, and no repeater groups can put \$100,000 in escrow on demand. If USFS implements this program, it will affect amateur repeaters around the country.

Furthermore, the Forest Service is refusing to negotiate or find a workable solution. Dan Henderson and I have communicated with the Forest Service and apparently these concerns are well-founded. Though the first area in which this program is being rolled out is the Angeles National Forest in Southern California, it may be applied to all Forest Service transmitter site lessees in the country and possibly to sites leased from the Bureau of Land Management after that. We are discussing this with an attorney in the U.S. Forest Service and will be advocating exemptions for non-commercial entities.

#### **2. FAA Reauthorization Act, H.R. 636 and Painting and Lighting requirement for Short Towers.**

At the July Board meeting I reported the then-recent passage of H.R. 636, the FAA Reauthorization Act. We were blindsided by the provision in this Bill instructing FAA to enact rules similar to statutory provisions that we have been dealing with at the State level which we collectively refer to as "crop duster" statutes. States, principally western States, have in the past few years enacted statutes attempting to protect meteorological evaluation towers. These are

between 50 and 200 feet. They are typically located in rural agricultural areas and they tend to be very low-profile towers, hard for crop dusting aircraft to see in certain circumstances.

We had been of the view that these statutes were preempted by FAA's exclusive authority over aviation safety, even though, in areas not near airports or heliports, FAA did not typically regulate towers less than 200 feet in height. We have made some efforts with the help of the Keelen Group to ask FAA to clarify its jurisdictional intent but FAA has been reluctant to do so. Now, they don't have to, because Congress has instructed FAA to develop regulations to protect these towers. This is good and bad at once; it is good because this will stem the tide of State cropduster statutes, some of which exempt Amateur antennas and some of which do not. Some of the State statutes are more onerous than what Congress has just enacted.

On the downside, this legislation does not exempt Amateur Radio. However, the legislation is not too bad as regards application to Amateur antennas, and we will have an opportunity to influence the final FAA rules by participating in the rulemaking process. We have not yet but will soon schedule some meetings with FAA in Washington which will help clarify their intentions and bring our concerns to FAA ahead of time. Toward the end of the congressional lame duck session in November, Mike Lisenco was contacted by a staff member of Senator Inhof of Oklahoma. Mike was contacted because Inhof's office was familiar with ARRL and its interest in towers due to the Parity Act work we have done. Inhof's staff had been visited by the National Association of Broadcasters which complained about this legislation (which would have a large adverse effect on short broadcast towers) and NAB suggested that ARRL might not appreciate this legislation either. The last we heard, Inhof (himself a pilot) thought this legislation was overkill and was going to work toward exemption of both broadcasters and Amateur Radio antennas. We have attempted to follow up since, but have not yet received an update from Inhof's office.

The Act's provisions regarding tower marking include the following:

1. Within 1 year after the date of enactment of the Act (i.e. by July of 2017), FAA must issue regulations to require the marking of the towers covered by the legislation.
2. The marking required will be painting and lighting in accordance with current FAA guidelines (i.e. the Advisory Circular issued December 4, 2015).
3. The new rules cover towers constructed on or after the effective date of the rules, and towers constructed before the effective date of the new rules will have to come into compliance within a year after the date of the new rules.
4. Covered towers are those which are "self-standing or supported by guy wires and ground anchors"; which are 10 feet or less in diameter at the above-ground base, excluding concrete footings; are between 50 feet above ground level at the highest point and not more than 200 feet above ground level; which has accessory facilities on which an antenna, sensor, camera, meteorological instrument, or other equipment

is mounted; and is located outside the boundaries of an incorporated city or town; or on land that is undeveloped; or used for agricultural purposes.

5. Towers that are excluded are those: (a) “adjacent” to a house, barn, electric utility station, or other building; (b) within the curtilage of a farmstead; (c) which support electric utility transmission or distribution lines; (d) wind-powered electrical generators with a rotor blade radius that exceeds 6 feet; or (e) street lights erected or maintained by a Federal, State, local, or tribal entity.

6. The term “undeveloped” land means a defined geographic area where the FAA determines low-flying aircraft are operated on a routine basis, such as low-lying forested areas with predominant tree cover under 200 feet and pasture and range land.

7. FAA will develop a database that contains the location and height of each covered tower which can be used only for aviation safety purposes. It may not be disclosed for purposes other than aviation safety.

While it is a fair concern that exemption language such as the meaning of the word “adjacent” to residences and buildings is undefined, the Bill says that the FAA will provide a definition. We do not anticipate that a large number of Amateur towers will be subject to these rules but there is a good deal of concern about it. We also have an NTSB document isolating the problem calling for a solution as being limited to meteorological evaluation towers.

FAA has not yet issued a proposed rulemaking and only recently determined which FAA office should work on this. We will follow up with both Inhof and FAA.

### **3. California Mobile Cellular Statute Revision AB.1785; redefinition of “electronic wireless communications device” and elimination of Amateur Exemption in California statute.**

We have heard from a large number of California hams who are most concerned about a new California statute that was enacted and sent to the Governor’s office for signature -- before we heard about it. There are two aspects about this that are of concern: (1) the fact that the prior Amateur Radio exemption from the earlier California mobile cellular bill was eliminated in this new legislation (which completely replaces the earlier legislation); and (2) how it was enacted without being picked up earlier by our state legislation monitoring service that is administered at HQ now only by Dan Henderson. The new legislation reads as follows:

- (a) A person shall not drive a motor vehicle while holding and operating a handheld wireless telephone or an electronic wireless communications device unless the wireless telephone or electronic wireless communications device is specifically designed and configured to allow voice-operated and hands-free operation, and it is used in that manner while driving.
- (b) This section shall not apply to manufacturer-installed systems that are embedded in the vehicle.

(c) A handheld wireless telephone or electronic wireless communications device may be operated in a manner requiring the use of the driver's hand while the driver is operating the vehicle only if both of the following conditions are satisfied:

1) The handheld wireless telephone or electronic wireless communications device is mounted on a vehicle's windshield in the same manner a portable Global Positioning System (GPS) is mounted pursuant to paragraph (12) of subdivision (b) of Section 26708 or is mounted on or affixed to a vehicle's dashboard or center console in a manner that does not hinder the driver's view of the road.

(2) The driver's hand is used to activate or deactivate a feature or function of the handheld wireless telephone or wireless communications device with the motion of a single swipe or tap of the driver's finger.

(d) A violation of this section is an infraction punishable by a base fine of twenty dollars (\$20) for a first offense and fifty dollars (\$50) for each subsequent offense.

Here is the definition of an electronic wireless communications device in the Bill:

(f) For the purposes of this section, "electronic wireless communications device" includes, but is not limited to, a broadband personal communication device, a specialized mobile radio device, a handheld device or laptop computer with mobile data access, a pager, or a two-way messaging devices.

In my view, the concern about the application of this new statute is quite a bit overstated. While AB 1785 does eliminate the mobile exemption for Amateur Radio from the prior statute, *there is no indication in this definition of any intention to preclude either two-way private land mobile voice communications or Amateur Radio communications*. The specific reference to SMRs and pagers is exclusionary rather than inclusive. They are CMRS facilities, as are broadband PCS devices and two-way messaging devices. *It would be impossible to include Amateur HTs here unless those were actually being used for mobile data access*. Of course, the principal use of mobile Amateur HTs is for two-way voice communications. I initially suggested that we may be better off asking for an interpretation of this new statute and looking at the legislative history before drawing any conclusions. Unfortunately, some California hams decided to unilaterally approach the State Attorney General's office and ask for an interpretation of this statute relative to Amateur Radio. The State Attorney General's office responded that they don't offer such opinions and the inquirer should get their own attorney to provide them an opinion.

Under the circumstances, the ARLDAC in a recent conference call decided that we should do precisely that; I will shortly write a letter to the California Attorney General stating ARRL's interpretation of the Statute as inapplicable to Amateur Radio. We will ask them to get back to us if their interpretation differs. A first traffic offense for violating this statute carries a \$20.00 fine. Thus far, we have not heard of any Amateur Radio operator being stopped for violating this statute or being issued a traffic citation for violating it.

It is certainly true that law enforcement officers might interpret the new Vehicle Code language more broadly than we believe was intended. While law enforcement paints with a very broad brush and can't, and shouldn't have to discern specific terms as used in telecommunications jurisprudence, and the definition in this legislation is not entirely clear and

not at all helpful to police, the intent is to address handheld phones and mobile data and they aren't looking at PMRS dispatch radios or mobile radios for voice communications with handheld mics. Furthermore, the definitions in mobile cellular and mobile texting laws do make a difference. There are two ways to protect Amateur Radio here: one is by sufficiently narrowly defining prohibited activity so as to exclude Amateur Radio. The other is to create specific exemptions where the definitions are confusing. *This statute is an example of bad legislative draftsmanship. It creates a motor vehicle law with citations issued for certain activity that includes the words "but is not limited to" in the language defining the violation.* However, what is included does not proscribe use of mobile Amateur Radio equipment for voice communications. At the very least, it gives us a good basis for (1) a legislative fix for this in the medium term; and/or (2) a good defense for the first ham cited for violation of this new statute.

As to why we didn't hear about this long before we did, that may be something for CEO Gallagher to consider. Dan Henderson says that he did notice the Bill when it was first introduced but he reports that he determined that it was radically different from the form in which it appears now and wasn't a threat now. We may need to review our current SOP for monitoring state legislation, which of course changes quickly from time to time. Mobile cellular legislation calls for periodic monitoring. State legislative sessions are short and these things change often. It is not clear why the California SGL didn't hear about it, and so our SOP should be reviewed.

I will be pleased to address any questions you may have about the substance of this report before or during the Board meeting. It remains my greatest professional privilege to serve the Board of Directors of ARRL.

Respectfully submitted,

*Christopher D. Imlay*

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Christopher D. Imlay  
General Counsel

# APPENDIX A

## MEMORANDUM

**To:** Brian Mileschosky, N5ZGT  
**From:** Chris Imlay, W3KD  
**Copy:** ARRL Executive Committee  
**Re:** Revitalizing the OO/Amateur Auxiliary Program  
**Date:** October 13, 2016

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### CONFIDENTIAL, ATTORNEY-CLIENT PRIVILEGED COMMUNICATION AND WORK-PRODUCT, NOT FOR DISCLOSURE.

**Greetings.** The following are my notes from two meetings with FCC Special Counsel for Amateur Radio Enforcement Laura Smith. Both meetings were arranged by Dan Henderson for the purpose of discussing changes to the Official Observer/Amateur Auxiliary program. The meetings stemmed from discussions at the Spring EC meeting at which Vice President Mileschosky was tasked with overseeing the reconfiguration of the OO program in order to make it more responsive to and useful to the FCC's Amateur Radio enforcement program, especially in light of the draconian FCC Field Office closings and reduction of field staff. My interest in this project was due to the fact that the EC decided that as a precondition of this revitalization effort, we had to have a buy-in from FCC; a commitment to use the volunteer services. We could not proceed with any representations to our now largely moribund group of OO volunteers that their work will be valuable and used by FCC if there was not a firm agreement by FCC to use their on-air monitoring information before we do it.

#### June 2016 Laura Smith Meeting

The first meeting took place on June 17, 2016 at Headquarters. Present for the whole meeting were Dan, Mike Lisenco and myself. Present for portions were Chuck Skolaut, Ed Hare, Bob Allison and Mike Gruber. Following are my notes from that meeting:

Bruce Jacobs is the new Division Chief of the Spectrum Enforcement Division at the Enforcement Bureau at FCC. Laura said that the OO program is viewed by Bruce as important. Soon, Travis LeBlanc will be out of FCC as Bureau Chief of EB.

There are 13 senior staff in the Field who have retired from FCC in 2016 to date. All are senior engineers. Laura recommends a new MOU (not an agreement, an MOU) between ARRL and FCC for a revamped OO program. It should cover only Amateur-to-Amateur interference cases. With the reduction in Field Offices and field office staff, there is increased need for the OO program.

There should be a separate MOU drafted and presented to Bruce by ARRL dealing with Part 15 interference cases that will involve the work of the ARRL laboratory staff (heretofore informal,

unwritten SOP and unwritten policy about coordination with FCC EB. About this, Laura suggested a meeting with Julius Knapp at OET since OET handles Part 15 rule administration and policy issues in conjunction with EB. For example, the Woodinville RF lighting case, which was ready for a large NAL written by the Portland field office, was killed by Knapp. The OET argument is that even one Part 15 NAL would create the expectation that thousands of complaints should be adjudicated individually by FCC. They have no resources to do that.

Laura suggested that ARRL should file comments in response to the TAC Noise Study public notice, to establish the need for deterrence-level Part 15 enforcement.

Gruber complained to Laura that complaints e-filed through the FCC's online complaint system fell into a black hole. Laura said that OOs, and Gruber and Hare, will bypass the online complaint filing system and that OO reports will flow to Laura after being filtered by HQ staff.

It was suggested that there should be an ARRL webinar on power line interference. Laura urged that we pair with UTC on such a webinar regarding Power Line Interference resolution, due to identity of interest; educating utilities on how to do this will help getting them to do it.

Laura said that the image of Amateur Radio at the FCC is not positive; it is formed by some overtly bad experiences from a small number of individual hams who are "fringe crazies" who have made threats against Laura, LeBlanc and even FCC Chairman Wheeler. We should act to frame the image of hams better at the agency. Upper level management at FCC has this negative view, and perhaps meeting with Tom Gallagher directly would be helpful. Meeting directly with Bureau Chiefs and Commissioners to talk about good achievements of hams.

In terms of a revitalized OO program, Laura had the following suggestions:

1. OOs should all be re-examined and given not only a written application and a copy of a revised OO training manual, but also a verbal interview. The question should be asked "Why are you here?" Why does one wish to become an OO? This process will give better insights into whether the candidate has the proper discretion and demeanor to be a dispassionate OO.
2. Enforcement is about compliance, not about sanctions or penalties, and that should be taught to OOs. What does it take to achieve compliance in a given case? That is the question to be asked in each monitoring case.
3. There should be as even distribution of OOs throughout the U.S. and territories as possible to fill in for the few remaining FCC Field offices and staff.
4. OO appointments should be time-limited, and applications to re-up should be required periodically.
5. There should be accountability and a sense that the OOs are fulfilling an important function by providing information on which scarce FCC field staff will be relying.



6. There should be periodic webinars and briefings for educating and re-educating OOs and keeping them motivated. Laura will participate in these. OOs should be required to participate in some minimum percentage of these. There might be a two-hour block twice per year. These will be private to OOs only.
7. Critical to the new OO program is anonymity. OOs should be assigned numbers rather than using names.
8. Enforcement is not personal to FCC and it should not be personal to OOs. They should, if in any way personally involved in a monitoring situation, they should hand off the matter (via HQ) to another OO.
9. If a chronic rule violator is “patterned” correctly, there will upon referral of the case from the OO through HQ to Laura, she will immediately issue a warning letter. Beyond that, the decision whether or not to issue a Notice of Apparent Liability is from SED and if an NAL goes out there will be a Foreiture Order.
10. OOs should be educated on rules (simplified for teaching purposes); especially on primary rules that are for compliance. We should ask what rules are enforceable. What is interference and what is not should be discussed. Rules on network operations and repeaters are not typically enforceable, for example. There are no universal interpretations of the Part 97 rules. There is no interference-free operation entitlement.
11. “Patterned” behavior reports are useful and the only kind that a warning letter can be predicated on. One-off events are absolutely not actionable. Neither are interference reports during contest weekends.
12. Spectral purity complaints are a waste of time also.
13. OOs should all be tenured licensees. They should be articulate in English and should be literate and be able to prepare and submit to HQ readable, well-stated complaints.
14. The OOs should issue more good-guy notices, using OO assigned numbers and not names.
15. OOs should not normally monitor profanity, indecency, and obscenity at the present time because those rules are in a state of flux at the moment.
16. FCC does not intend to act on repeater-to-repeater interference cases. The coordinators need to sort that out. ARRL’s ADR program is a fine candidate for these types of cases and should be better publicized.
17. FCC publicity can only be given with respect to final actions of the Commission.
18. Most of all, ARRL should manage the expectation of the cadre of new OOs. Do not allow them to think that FCC will act and immediately the case that they have “patterned” will not be resolved immediately.

## **October 7, 2016 Meeting, Laura Smith and David Dombrowski.**

The second meeting occurred October 7 in the conference room at FCC Gettysburg. Attending for ARRL were Mike Lisenco (at both meetings relative to the New York malicious interference matter in Queens, Long Island and northern New Jersey), Dan Henderson and myself. Laura called this meeting and invited both Bruce Jacobs and David Dombrowski who has been extremely helpful as a field agent with Amateur high-profile cases such as the Delise matter in New York.

Laura began with the news that in January of 2017, there will be an additional 11 Field Offices closing. There will be 33 current field staff lost, 14 of which are in the New England region alone. It is unclear how many additional staff will retire of their own volition. Laura will be the only Amateur Radio Service enforcement person. With public safety a priority among the surviving Field offices, there will be very little time available for Amateur Radio enforcement in the field offices.

Bruce Jacobs announced that he is leaving the Commission shortly. Ricardo Duran of the Spectrum Enforcement Division will be the acting Division chief and will handle any MOUs that we generate.

FCC asks for a new program, to be rolled out as close to January 1, 2017 as possible. Laura will announce the concept at Pacificon. The program should be structured to have as close a relationship to Laura as possible.

Going forward, Laura committed to issuing warning letters immediately to violators based solely on OO reports sent to her through ARRL, provided that they are **“patterned”**: that means that the violator has been monitored over a period of a month or more to establish consistency. One-off violations are not actionable at FCC; only repeated behavior, which establishes predictability, is actionable. Laura can issue warning letters on her own, without any prior approval from higher-ups. She cannot issue other than warning letters without prior approval.

Laura's plan for the new OO program is for OOs to have no contact with her or other FCC EB offices until the “patterning” is done and the report is delivered to HQ. Nor does Laura want our new OOs to have any contact with the field offices at all. ARRL HQ would determine in every case whether the patterning has been done correctly and the reports are legible and presented properly. The patterning may reveal that a case is not actionable, such as cases in which the perpetrator is not under FCC jurisdiction. But she wants those reported anyway.

The patterning should be formulaic. There should be a watch sheet with data in tabular form. Start time of a violation, stop time. Recordings (such as video of an OO's receiver showing a clock and the receiver's frequency readout) are fine. DF'ing is OK, to the residence of the violator, but there should be no contact with the violator. More information is better. It is OK to use non-OO DFers for purposes of patterning. But under no circumstances should any contact

with the perpetrator be allowed by anyone, ever. All patterning reports are to go directly to ARRL HQ.

There is no perceived need for OOC functions any longer, other than perhaps to prevent multiple OOs patterning the same perpetrator. If ARRL HQ has sufficient staff resources to administer the program, no need for OOCs. If one OO is patterning a rule violation, even at HF, others should be discouraged from doing so.

Laura is of the view that when the patterning plan is rolled out there will not be a large number of complaints filed through HQ at any one time. OO data could result in a large number of warning notices going out each month, however.

The new FCC online complaint database does not typically provide Laura with any useful information.

Interviews with new potential OOs should include the following questions: “Why are you involved with the OO program?” “Why are you involved in Amateur Radio?” Let them talk so that their intention can be discerned. The interviewer should ask only broad questions and then shut up.

Rule sections that OOs should be educated about include Part 97 and Part 1 relative to general licensee obligations: current address requirements, requirement to be truthful with FCC, etc. Also highlights of the Communications Act.

If OOs don’t understand certain rules, they should be encouraged to ask HQ for info. Also, some Amateur Rules are cumulative and work interactively.

We discussed whether or not OOs could be used in enforcement relative to other radio services such as pirate broadcast DFing and certain broadcast violations. David D. said yes. Need to check statutory authority.

The two MOUs that ARRL should draft should be flexible and non-rigid, statements of understanding only.

As to the number of OOs, not even 500 would be required, said Laura. Most of those that we have now are inactive.

As a To-Do list for ARRL, we should prepare two draft MOUs, training plans for OOs going forward, create a new OO training manual, and prepare exam/OO info forms and a script for oral interviews. The MOUs should be for Ricardo Duran’s and Charles Cooper’s signatures.

For pursuit of our RF lighting complaints, send those to Neil MacNeill at SED and Solomon, who was at Columbia Office but is now at SED.

There are now three field counsels in D.C., none in the regions. Laura is not getting poached for any non-Amateur enforcement efforts except for CB equipment cases.

Equipment enforcement issues should go to Laura through Ed Hare and Mike Gruber. No truck stop investigations of freeband equipment. FCC wants to hit the manufacturers and importers.

For statistics, there are 8 new Power Line Interference cases since June, all submitted through Ed and Mike.

The Woodinville RF lighting case is still dead. OET says no Part 15 interference enforcement cases at all.

End of notes.

## **APPENDIX B**

**(copies of Maryland and Connecticut Bar Decisions)**

## **APPENDIX C**

**(Copy of Court Decision, Court of Common Pleas, Chester County,  
PA in DePolo v. Treddyfrin Township Antenna Case)**

**ATTORNEY GRIEVANCE COMMISSION  
OF MARYLAND**

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C. SHEA MCSPADEN

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JENNIFER L. THOMPSON

AMANDA A. MCCARTHY

SHARA HENDLER

November 2, 2016

**PRIVATE AND CONFIDENTIAL**

D. Douglas Rehman  
34646 Rust Road  
Eustis, FL 32736

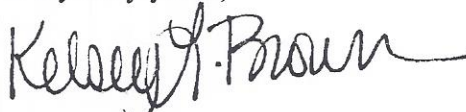
**RE: *File No. 2016-1902***  
***Christopher D. Imlay, Esquire***

Dear Mr. Rehman:

Enclosed you will find a copy of a letter dated October 18, 2016 from Christopher D. Imlay. This letter responds to our inquiry concerning your complaint.

The jurisdiction of this office is generally limited to reviewing conduct that may be in violation of the Maryland Attorneys' Rules of Professional Conduct, established for lawyers who practice in Maryland. I have considered your complaint and the attorney's response. I do not find a sufficient basis for this office to take further action. I am therefore constrained to close the file at this time.

Very truly yours,



Kelsey L. Brown  
Staff Attorney

KLB

Enclosure:

cc: Christopher D. Imlay, Esquire ✓

RECEIVED NOV 14 2016



STATE OF CONNECTICUT  
JUDICIAL BRANCH

LITCHFIELD JUDICIAL DISTRICT  
GRIEVANCE PANEL

Gail S. Kotowski, *Grievance Counsel*

*P.O. Box 37  
Guilford, CT 06437-0037  
(203) 453-6030*

December 15, 2016

Mr. Doug Rehman  
34646 Rust Road  
Eustis, FL 32736

Attorney Christopher D. Imlay  
14356 Cape May Road  
Silver Spring, MD 20904-6011

Re: Rehman vs. Imlay Grievance Complaint No. 16-0632  
Litchfield Grievance Panel

**NO PROBABLE CAUSE DETERMINATION  
AND NOTICE OF DISMISSAL**

Dear Mr. Rehman and Attorney Imlay:

Pursuant to Practice Book Section 2-32 and Rule 1 of the Grievance Panel Rules of Procedure, the Litchfield Grievance Panel (hereinafter, "Grievance Panel") has completed its investigation of the above referenced grievance complaint. At a meeting of the Grievance Panel held on December 15, 2016, the Grievance Panel determined that the record did not support a finding of probable cause that the Respondent engaged in misconduct. Accordingly, the grievance complaint is dismissed. The Grievance Panel made its determination based upon the written record and without the need for a hearing.

The Grievance Panel determined that the Complainant is a member of the Board of the ARRL. ARRL is a Connecticut non-stock membership association. The Complainant alleges the unauthorized practice of law on the Respondent's part, as he is not admitted in Connecticut, but rather the District of Columbia and Maryland. The Respondent is General Counsel for the ARRL and has the primary responsibility as an advocate for ARRL and addressing FCC matters in Washington. ARRL has Connecticut counsel, the firm of Day Pitney LLP.



Page Two  
December 15, 2016

The Complainant's eligibility to run for re-election has been denied by the Ethics and Elections Committee of the ARRL. It appears that this is the motivation of the present grievance. Contrary to the Complainant's allegations, attendance by the Respondent at two (2) meetings a year does not equate to the unauthorized practice of law.

The Grievance Panel cannot make a finding that Attorney Imlay violated Rule 5.5 of the Rules of Professional Conduct.

Pursuant to Practice Book Section 2-32(i), this letter and a copy of the Grievance Panel's record are being filed with the Statewide Grievance Committee. Please note that the dismissal of this complaint is a final decision and that there is no right to appeal, review or reconsideration of this decision by any disciplinary authority. You may contact the undersigned for assistance in understanding the reasons for the dismissal. I am available most afternoons by telephone at (203) 453-6030.

Very truly yours,

Gail S. Kotowski  
GSK: cg

cc: Statewide Grievance Committee  
Litchfield Grievance Panel

JEFFREY J. DEPOLO

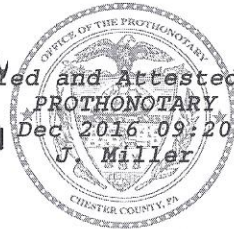
vs.

BOARD OF SUPERVISORS OF  
TREDYFFRIN TOWNSHIP, and  
MICHAEL C. HEABERG, KRISTEN K.  
MAYOCK, PAUL OLSON, EVELYN  
RICHTER, JOHN P.  
DIBUONAVENTURO, MARK FREED  
and MURPH WYSOCKI, in their  
capacities as members of the Board of  
Supervisors of Tredyffrin Township

and

TREDYFFRIN TOWNSHIP ZONING  
HEARING BOARD OF APPEALS, and  
ARNOLD BORISH, DANIEL  
McLAUGHLIN and NEILL KLING, in  
their capacities as members of the  
Zoning Hearing Board of Appeals of  
Tredyffrin Township

IN THE COURT OF COMMON PLEAS  
CHESTER COUNTY, PENN



NO. 2016-10648-ZB  
CIVIL ACTION

Robert B. Famiglio, Esquire on behalf of Plaintiff/Appellant Jeffrey J. DePolo  
Maureen M. McBride, Esquire and Vincent T. Donohue, Esquire on behalf of the Board  
of Supervisors of Tredyffrin Township, Michael Heaberg, Kristin Mayock, Paul  
Olson, Evelyn Richter, John DiBuonaventuro, Mark Freed and Murph Wysocki  
Stacy L. Fuller, Esquire and John E.D. Larkin, Esquire on behalf of the Tredyffrin  
Township Zoning Hearing Board of Appeals, Arnold Borish, Daniel McLaughlin and  
Neill Kling

**ORDER OF COURT**

AND NOW, this 20<sup>th</sup> day of December, 2016, upon review and consideration  
of the Preliminary Objections to Plaintiff/Appellant's Complaint/Transfer, and Plaintiff's  
Response thereto, said Preliminary Objections are SUSTAINED.<sup>1</sup>

It is hereby ORDERED and DECREED that Plaintiff's Complaint is DISMISSED  
with prejudice.

BY THE COURT:

*Jeffrey R. Sommer*  
Jeffrey R. Sommer J.



<sup>1</sup> Jeffrey DePolo (hereinafter "DePolo"), an amateur radio enthusiast, had on his property, two seventeen-foot antennae, one of which was atop a ten-foot basketball hoop. On November 25, 2013, DePolo applied to the Township for a variance to construct a 180-foot amateur radio tower and antenna in his backyard. Such a construction would allow DePolo to expand his communication abilities as he desired. However, the Township Zoning Officer denied DePolo's application, relying on §208-18.G of the Tredyffrin Township Zoning Ordinance which limits the height of structures in the R-1/2 Residential Zoning District to 35 feet.

This section of the zoning ordinance was in an apparent conflict with existing state law which provides that no "ordinance, regulation, plan or any other action shall restrict amateur radio antenna height to less than 65 feet above ground level." See, 53 Pa.C.S. §302(b). This conflict was acknowledged by the zoning officer as was an exception to the law for historic districts. The Township contends that the property is situated in a historic district, yet DePolo denies the classification. DePolo was offered a compromise whereby he could construct a 65-foot antenna and tower. Depolo rejected this offer and took an appeal to the Zoning Hearing Board.

A hearing was held and proper notice was provided. The hearing lasted five days, during which testimony was taken from DePolo, a radio antenna expert, and neighbors claiming they would be adversely impacted by the erection of the tower. At the hearing, DePolo argued that the Code of Federal Regulations permits the construction of radio towers of unlimited height and that the Township's 35-foot limitation is preempted and void. By a decision issued on October 23, 2014, the Zoning Hearing Board rejected this argument but, in the alternative, did grant a variance to permit the construction of a 65-foot tower.

Unhappy with this result, DePolo chose to file a Complaint on November 21, 2014 before the United States Federal Court for the Eastern District of Pennsylvania. DePolo did not file an appeal of the decision with the Court of Common Pleas as required by Section 1102-A(a) of the Pennsylvania Municipalities Planning Code. See, 53 P.S. §11001-A generally; 53 P.S. §11002-A(a). DePolo's Federal Court Complaint named the Zoning Hearing Board, certain of its members, the Tredyffrin Township Board of Supervisors and its members, and certain of his neighbors. His Complaint alleged that DePolo is the owner of property located at 1240 Horseshoe Trail in Tredyffrin Township (hereinafter "the Property"). The Property is located in Tredyffrin's R-1/2 Residential District and near the Valley Forge National Historic Park

The Complaint contains three counts in which DePolo sought declaratory relief. In it, DePolo alleges violations of (1) 47 CFR §97.15(B), (2) 53 Pa.C.S. §302, and (3) Pennsylvania zoning laws generally. In the federal action, the Defendants filed a Motion to Dismiss under Fed.R.Civ. 12(b)(6). The Court granted the Motion on May 18, 2015, dismissed DePolo's federal claims, and declined to exercise supplemental jurisdiction over the state-law claims. DePolo appealed the decision to the Third Circuit on June 15, 2015. The Third Circuit affirmed dismissal of the Complaint, albeit



on other grounds, on August 30, 2016 in a precedential opinion. Importantly, in the Third Circuit's decision, the Court noted:

[DePolo] had adequate opportunity to litigate the matter beyond the ZHBA [sic] by appealing to the appropriate Court of Common Pleas within thirty days of the ZHBA's [sic] decision. Rather than do that, DePolo filed this suit in the District Court, and allowed the thirty-day appeal period under state law to expire. This was fatal to his ability to obtain federal review of his claim.... He is therefore now bound by the final judgment of the ZHBA [sic]. Its ruling is a final judgment on the merits that is entitled to preclusive effect in federal court.

On September 12, 2016, DePolo filed a motion for transfer in the Third Circuit, seeking to transfer the matter to this Court under 42 Pa.C.S. §5103 related to the transfer of erroneously-filed matters. Following briefing and argument, the Third Circuit denied the motion for transfer on October 6, 2016. DePolo then initiated the instant action in this Court, which has been filed as an appeal from the Zoning Hearing Board's decision.

The issue here is one of collateral estoppel. Collateral estoppel acts to foreclose litigation in a subsequent action where issues of law or fact were actually litigated and necessary to a previous final judgment. *Henion v. Workers' Compensation Appeal Board (Firpo & Sons, Inc.)*, 776 A.2d 362 (Pa. Cmwlth. 2001). Collateral estoppel bars a subsequent lawsuit where (1) an issue decided in a prior action is identical to one presented in a later action, (2) the prior action resulted in a final judgment on the merits, (3) the party against whom collateral estoppel is asserted was a party to the prior action, or is in privity with a party to the prior action, and (4), the party against whom collateral estoppel is asserted had a full and fair opportunity to litigate the issue in the prior action. *Rue v. K-Mart Corp.*, 552 Pa. 13, 713 A.2d 82 (1998).

Here, DePolo seeks to transfer this matter from federal court, where the action was first filed, to the Court of Common Pleas, where the action should have been filed. Collateral estoppel bars our review of this matter. The question of whether transfer was appropriate under 42 Pa.C.S. §5103 was explicitly considered by the Third Circuit in ruling on DePolo's motion for transfer and answered in the negative. Section 5103 provides that a case erroneously filed in federal court but which should have been brought in state court, may be transferred to state court and treated as if it was first filed there when federal court lacked jurisdiction over suit. 42 Pa.C.S. §5103; see also, *Suburban Roofing Co. v. Day & Zimmerman, Inc.*, 578 F. Supp. 374, 375 (E.D. Pa. 1984); *Elec. Lab Supply Co. v. Cullen*, 782 F. Supp. 1016, 1021 (E.D. Pa. 1991), *aff'd sub nom. Elec. Lab. Supply Co. v. Cullen*, 977 F.2d 798 (3d Cir. 1992) (under Pennsylvania law, federal court may transfer case to state court when federal court has dismissed matter for lack of jurisdiction.). In the instant matter, DePolo did not file in a court without jurisdiction. On the contrary, the District Court and Third Circuit



opinions held that the federal courts did have jurisdiction under *Izzo v. Borough of River Edge*, 843 F.2d 765 (3d Cir. 1988) and 28 U.S.C. §1291, respectively. See, Memorandum, Dalzell, J., May 18, 2015, at 15, and Opinion, Aug. 30, 2016, at 10. The District Court did not lack jurisdiction to hear the state-law claims, but rather declined to exercise supplemental jurisdiction over them. *Id.* Thus, it does not qualify for transfer under 42 Pa.C.S. §5103.

The other three factors are present as well. The District Court's decision was a final judgment on the merits. DePolo briefed and argued his position before the District Court and a ruling was issued on substantive, rather than procedural, grounds. Next, the party against whom collateral estoppel is asserted (here, DePolo) was a party to the prior action. Finally, DePolo had a full and fair opportunity to litigate the issue and did so in federal court. We, therefore, find that collateral estoppel bars our review of this matter and the action must be dismissed with prejudice.

To the extent that DePolo's filing is considered an appeal from the Zoning Hearing Board's decision of October 23, 2014, the appeal is untimely. Pursuant to 53 P.S. § 11002-A(a), an appeal to the Court of Common Pleas must be filed within thirty (30) days after entry of the decision of the Zoning Hearing Board. The instant "appeal" has been filed more than two (2) years late. Moreover, DePolo has failed to follow the procedure required by the Chester County Local Rules of Civil Procedure related to an appeal from a Zoning Hearing Board decision. No notice of appeal from the decision of the Zoning Hearing Board has been filed as required by C.C.R.C.P. 5002(c).

However, were we to accept this transfer and review the matter raised, we would likely find that the issue is similarly precluded as above under the doctrine of collateral estoppel. The Third Circuit concluded that the Zoning Hearing Board's determination was a final judgment on the merits which is not reviewable due to DePolo's failure to follow proper procedure under this Commonwealth's Rules of Civil Procedure. The parties are the same and the issues are the same in the federal action as in the instant matter. Moreover, it is clear that DePolo has been afforded a full and fair opportunity to litigate this dispute, including appellate review. This attempt to transfer is simply an attempt at a second bite of the apple which we cannot indulge for the reasons set forth herein.

**Report of the Executive Committee  
ARRL Board of Directors  
January 2017**

Ladies and Gentlemen:

Following are noteworthy actions of the Executive Committee since the July Board Meeting.

The Executive Committee (EC) met in Rosemont, Illinois on October 22. The minutes were distributed to the Board in ODV:25911.

At the October EC meeting, Mr. Gallagher gave an informative presentation on where ARRL is at the moment and the state of the Amateur Radio industry. He discussed the budgetary challenges facing the League, organizational changes, an update on the strategic plan and major goals for 2017.

The EC reviewed a comprehensive response to FCC's ET Docket 16-191, the RF noise study by the Technological Advisory Council (TAC). Thanks to General Counsel Imlay, Ed Hare and the ARRL Lab Staff for an impressive study. Future strategy and action necessary on our part to push the FCC and TAC study is an open issue that needs to be addressed, especially given the ever-increasing problems with ambient man-made noise on the bands.

The EC worked on the League's response on the Symbol Rate WT Docket 16-239 after soliciting Board input and filed comments on October 11. Those comments reinforced our position for the deletion of the symbol rate limitation on data communications in the RTTY/data subbands and with a strong argument that there must be a bandwidth limit of 2.8 kHz on such emissions.

The EC evaluated whether to provide additional comments on WT Docket 16-243, the Petition for Rulemaking by Expert Linears America LLC to eliminate (and temporarily waive) the 15 dB gain limitation on Amateur power amplifiers. The League's initial comments were filed last year in May. After consideration, the EC decided not to file additional comments.

The EC instructed Mr. Imlay to develop a Petition for Rule Making to implement the WRC-15 5 MHz band allocation while retaining the existing domestic channels. The EC is currently reviewing a draft of the Petition.

Mr. Imlay reported to the EC on meetings with FCC concerning the Amateur Auxiliary program. This is a particularly serious topic given the closing of FCC field offices and the reduction in personnel. Vice President Milesosky heads the

Official Observer Study Committee charged with the responsibility of the review and revitalization of the program. This task will require significant effort and resources to implement, but is necessary to achieve improved FCC enforcement in the Amateur Radio Service. I plan to appoint representatives from both PSC and A&F as liaisons to the OO Study Committee to assure a coordinated effort. This project will also be carried as an open item with the EC.

A comprehensive study on broadband issues was done back in 2011 by the National Broadband Plan Committee. After that Committee was dismissed, the EC had the responsibility for monitoring this effort on an ongoing basis but, unfortunately, little attention was given to it. We need to get back on track and be proactive in addressing broadband spectrum issues. I've asked International Affairs Vice President Bellows, Director Blocksome and Mr. Imlay to update the study and prepare a plan. The EC will carry this is an open item to track progress.

I have asked Mr. Bellows, Mr. Imlay and Mr. Gallagher to work on a Code of Conduct and to review the By-laws for changes that may need to be made. The EC will review recommendations along with Day Pitney to assure compliance with Connecticut corporate law.

Respectfully submitted,

Rick Roderick - K5UR

Chair

**REPORT OF THE Administration and Finance Committee**

**January 2017**

**2016 A&F Committee Members:** James D Pace, K7CEX, Northwestern Division Director, Chairman, Richard J. Norton, N6AA, Southwestern Division Director, Tom Frenaye, K1KI, Central Division Director, Rod Blocksome, K0DAS, Midwest Division Director, Kermit Carlson, W9XA, Central Division Director, Bill Morine, N2COP Roanoke Division Vice Director, Rick Niswander, K7GM, Treasurer. President Rick Roderick, K5UR (ex officio)

**Staff Participants:** CEO Tom Gallagher, NY2RF, CFO Barry Shelley, N1VXY and Controller Diane Middleton, KC1BQF.

**Activity:** The committee had before it many issues, this year, including but not limited to the 2017-18 Financial plan. After some staff changes, budget reductions and conservative forecasts, the plan was approved and is to be recommended to the Board of Directors, at the January 2017 meeting.

A Bylaw change has been suggested by the committee, and will be forwarded to the Board of Directors for consideration. The subject of the recommendation is to remove from the Bylaws, by way of Resolution, the offices of Chief Operating Officer (COO), Chief Development Officer (CDO) and Chief Technology Officer (CTO).

Beyond the topics presented to the Board of Directors in the Treasurer's Report, the committee considered efficient use of 'cash reserves'. The matter is still being considered as the 2017-18 plan is implemented.

Much progress has been accomplished by the Logbook of The World Committee, as activities are reported and discussed with the A&F Committee. A work in progress with technical debt decreasing steadily.

The A&F Committee is reviewing 'membership benefits' to make certain that membership includes viable and useable benefits, for all ARRL members.



Financial support of International Affairs was reviewed by the Committee. International Affairs Vice President Bellows, addressed the Committee with details of International activity and the benefit to Amateur Radio and the ARRL. After discussion, the Committee made a recommendation on funding that is reflected in the 2017-18 plan.

Discussions on the Repeater Directory/Frequency Coordinator activities, Official Observer Program and Legislative Activities – with regard to financial impact – will continue into 2017.

The Committee continues to pursue ways to increase revenues and limit expenditures, with an eye on financial efficiency, leading to the successful future of the ARRL, as it serves all the Amateur Radio hobby.

Respectfully Submitted

James D. (Jim) Pace, K7CEX

Chair

## **ARRL Program and Services Committee (PSC) Report to the Board – January 2017**

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**ARRL Bylaw 39.** The Programs and Services Committee shall: Guide development of service delivery mechanisms, evaluate services, and recommend program priorities; Advise Chief Executive Officer on services provided to individual members other than publications, including but not limited to contests and awards, information services including Logbook of the World and W1AW, and incoming and outgoing QSL bureau services; Advise Chief Executive Officer on volunteer programs, including but not limited to the field organization, affiliated clubs, volunteer examiners, Volunteer Counsel/Consulting Engineers, and educational initiatives; and Evaluate and recommend awards recipients to the Board for outstanding volunteer service or outstanding achievement.

**PSC Committee members:** Tom Abernethy W3TOM, Dwayne Allen WY7FD, Kent Olson KA0LDG, Doug Rehman K4AC, Art Zygielbaum K0AIZ, ARRL Field Services Manager Dave Patton NN1N and ARRL Radiosport Manager Norm Fusaro W3IZ (Staff Liaisons), and Jim Bohner N2ZZ (Chairman)

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The Programs and Service Committee (PSC) is pleased to provide this report to highlight activities and accomplishments over the last six months.

The committee gathered formally at ARRL headquarters last July and via teleconference in November to conduct business and address a variety of topics. ARRL Assistant Secretary and PSC Secretary Dan Henderson N1ND provided much appreciated assistance as recording secretary to the committee.

**DX Advisory Committee (DXAC):** PSC tasked DXAC with researching the feasibility of a Mobile DXCC award. Their recommendations received in December 2015 were favorable, and Staff was tasked with determining needed resources, budget and schedule to roll out this award. The one-time non-endorsable mobile DXCC recognition award was approved at the July 2016 board meeting, minute 28. The PSC will be anticipating a progress report from Radiosport Manager Fusaro as to the progress and anticipated date of implementation. Although the DXAC has no current taskings, a number of DXCC issues are on the January PSC agenda, and future projects will be considered. Dwayne Allen WY7FD serves as the DXAC board liaison.

**Contest Advisory Committee (CAC):** The entire CAC report by Chairman George Wagner K5KG is included in your board books. In January 2016, PSC requested the CAC to undertake a study of Youth in radio contesting. This was to be carried out as a two part effort, to first conduct research and report findings, followed by analyzing the findings and making specific recommendations. A Youth in Radiosport Survey was begun in mid-April and completed on August 31, 2016. Recommendations have

been received from the CAC, completing phase I. We are now in phase II; the PSC will now begin its analysis of the CAC's findings, and plan recommendations based on those findings.

In May of 2016, PSC requested that the CAC undertake a project to consolidate "The General Rules of all ARRL Contests", the "General Rules for all ARRL contests Below 30 MHz" and individual contest rules into a single rule set for each of the ARRL HF Contests. Significant progress has been made in this effort.

A revision of the ARRL CAC handbook was undertaken by Director Rehman and expanded to cover all advisory committees. The revised document was approved by the PSC pending transcription, and the final copy will be evaluated at the January PSC meeting. Doug Rehman K4AC served as the CAC board liaison throughout 2016.

**VHF and Above Contest Revitalization working group:** Composed of Kermit Carlson W9XA (Chairman), Dave Patton NN1N (Staff liaison), Rod Blocksome KODAS, and Matt Holden K0BBC, PSC's VHF and Above Contest Revitalization working group continues its thorough review of ARRL's VHF and above contesting program and development of key recommendations to increase the level and breadth of participation in these contests. Recommendation was that a new format for the UHF contest be considered, entitled "The ARRL 222 MHz and Up Distance Contest", and rules for the new contest were provided with this recommendation. The PSC adopted the committee's report, and recommended implementation of this new contest, codified by the board at its July 2016 meeting, minute 31.

Mr. Janke (ARRL Contest Manager), Mr. Patton and Mr. Carlson have been consulted on several occasions for clarification to the rules for the new contest, but no changes have been required. Answers for the questions which require clarification will be handled through explanations in the upcoming QST article that introduces the new competition.

Members of the Committee continue to receive positive reviews about the decision to allow real-time spotting and scheduling during contests on the higher bands. This rule change has helped increase participation and interest in contesting on the bands of VHF and above.

The committee would especially like to thank outgoing members Doug Rehman K4AC and Marty Woll N6VI for their excellent work with the Committee.

**DXCC Card Checking Program Modernization working group.** Composed of Tom Abernethy W3TOM (Chairman), Dave Norris K5UZ, Dale Williams WA8EFK, and Dave Patton NN1N, PSC's DXCC Card Checking Program Modernization working group is conducting a top-to-bottom review of the League's card checking rules, procedures, etc. and has presented a preliminary report at the PSC's November web meeting. Comments and suggestions were entertained, and a final report aimed at modernizing and improving this important program is anticipated at the January PSC meeting.

**Public Service Enhancement Working Group:** Composed of Dale Williams WA8EFK (Chairman) Jim Pace K7CEX, Jim Tiemstra K6JAT, Steve Ewald, WV1X, Ken Bailey KI1U and Mike Corey, K1FUG, multiple issues are being evaluated. Alignment of ARES® with the operational structure of our partner agencies was evaluated, and found to be inconsistent with the structure of the National Incident Management System

(NIMS). Recommendation was that the Emergency Coordinator (EC) functions as the equivalent position of the NIMS Incident Commander during an activation. Elimination of the Official Emergency Station (OES) appointment was recommended, as all ARES members would serve that function. Lack of reporting by the EC's to ARRL HQ was evaluated, and attributed mainly to the lack of a simple electronic reporting process. Areas of the country who have developed their own reporting systems find substantially that EC's report on a regular basis. *(PSC Chair Note: Designing of a web based reporting system to gather information on activities performed by field volunteers has been on the PSC agenda for some time, approved by the board in January 2014, minute 43, but no definitive action has been found. This will be on the agenda for the January PSC meeting.)* The issue of ARES training was evaluated, and partner agencies are calling for all ARES operators to meet training standards, particularly those offered by FEMA. Concern was raised in regards to the need to revise and update our own training material (FSD 100 series). Bud Hippisley W2RU and Marcia Forde KW1U participated in the October teleconference. Both have had extensive experience with the National Traffic System™ (NTS™), and after just one teleconference, Bud offered a very thoughtful drawn three-page commentary that addressed most, if not all of the issues facing NTS. It is considered unfortunate that Bud's recent resignation from the NTS Eastern Area Chair position will reduce, if not end, his participation with the working group.

**PSC Subcommittee on Education:** Composed of Dr. David Woolweaver K5RAV (Chairman), Kermit Carlson W9XA, Bonnie Altus AB7ZQ, Debra Johnson K1DMJ, David Cockrum Ph.D. N5DO, Tommy Gober N5DUX, with consultants Austin Mongillo N1UIS and Matthew Shea AA1CT. Dr. Woolweaver reports that the subcommittee has been given three new tasks, which are all challenging and exciting. First, the committee will be charged with the updating and improvement of the existing power point programs that are used for Technician and General Class instruction; second, to examine and report on the status of the ARRL Teachers Institute on Wireless Technology; third, to examine and review the present arrangements that the ARRL has with AMSAT and the ARISS programs. The completion of these projects is slated for the end of 2017.

**Volunteer Instructor Database:** The Volunteer database requested by the Education Committee has been turned over to the Education Department and is currently in beta testing. Beta testing has resulted in a few improvements, and a final version is being completed at this time. During this process, discovery was made that the beta testing could not be made available outside of ARRL headquarters.

**ARRL Award Recommendations:** One award nominee for the 2016 ARRL International Humanitarian Award was sent for consideration by the committee from Steve Ewald WV1X, and will be addressed by the PSC on January 19<sup>th</sup>. Steve Ford has indicated that the winner of the Doug DeMaw W1FB Technical Excellence award for 2016 is the article: "Open Source Soft-Decision Decoder for the JT65 (63,12) Reed Solomon Code" by Stephen J. Franke, K9AN and Joseph H. Taylor, K1JT, published in the May/June issue of QEX. The Public Relations Committee has recommended nominees for the Bill Leonard, W2SKE, Professional Media Awards, which include print, audio and video. These nominees will be presented to the PSC for consideration.

**National Traffic System™ (NTS™) issues:** At the July 2016 board meeting, the board recognized the tireless efforts of the National Traffic System participants, thanking and congratulating them for their outstanding service (Minute 34). Also at that meeting, it was decided that the NTS area staff chairmen would, at least temporarily, be appointed by, and serve at the pleasure of the ARRL President, aligned and consistent with the manner by which all other voluntary ARRL chairmen and coordinators of regional or national scope are authorized (minute 33). The PSC had previously reached out to Bud Hippius W2RU for his consideration of returning to the Eastern Area Chair. Our President Rick Roderick K5UR contacted Bud, and after discussion, Bud accepted the position. Bud has a distinguished resume of nearly a half century of service to the ARRL, being active in NTS and ARES since 1955. He has served as a Section Communication Manager (now referred to as Section Manager) of the Western New York Section and as a Vice Director of the Atlantic Division. He was uniquely qualified for that position. Rick then reached out to the current Central and Pacific Area Chairs and asked them to continue in their leadership positions. They elected not to do so, and no other candidates at this time have come forth. Citing a number of reasons, Bud resigned his position in mid-November, and was thanked for his excellent service to the ARRL during these difficult times. The ARRL continues to encourage experienced NTS participants to apply for these three leadership positions. Looking forward, the PSC, as well as the entire board, is anxiously awaiting the unveiling of the Second Century Communications plan, which has been developed in partnership between ARRL Headquarters staff and the Federal Emergency Management Agency (FEMA). It is hoped that those communication professionals within NTS that desire to do so will have a place within the plan to participate.

**Section Manager Training/Workshops:** The PSC was requested to review the curriculum for the annual Section Manager Workshops. Workshop agendas from 2015 and 2016 were reviewed, and were considered comprehensive. Feedback from the 2016 workshop by the Section Manager attendees was very favorable. The PSC thanked Mr. Patton NN1N and Steve Ewald WV1X for providing the information to the PSC and their continued work with the SM workshops. This topic is now considered closed.

**DXCC Honor Roll Certificate:** By consensus, the Committee directed the Field Services and Radiosport (FSR) Department to prepare a plan to develop a DXCC Honor Roll certificate, including the determination of needed resources, budget and schedule to roll out this award. Development of an additional certificate, the DXCC #1 Honor Roll, was suggested by the FSR department. The PSC agreed, and introduced this motion to the board at their July 2016 meeting. The motion was adopted, minute 30. The PSC will be anticipating a progress report from Radiosport Manager Fusaro as to the progress and anticipated date of implementation.

**Amateur Auxiliary Program:** The PSC stands ready to provide a representative to the Official Observer Study Committee headed by Vice President Brian Milesosky N5ZGT, per future appointment by President Rick Roderick K5UR.

As Chairman, I would like to thank all of the PSC members, the working groups, our League's advisory committees, and ARRL's staff for the dedication and energy they have poured in to our many deliberations, research of solutions and decision-making. I would especially like to thank my

predecessor, Second Vice President Brian Milesosky N5ZGT for his continued advice and counsel throughout my tenure as PSC chair.

Respectfully Submitted,

Jim Bohner N2ZZ  
Chairman, ARRL Programs and Services Committee  
ARRL Director, Roanoke Division

**Report to the ARRL Board of Directors  
Ethics and Elections Committee  
Calendar Year 2016**

We are pleased to provide this report to the ARRL Board covering activities of the Ethics and Elections Committee for calendar year 2016.

Early in 2016, the committee verified the proper procedure for immediately replacing 645 ballots that went missing en route to members.

**Routine Actions:**

The Committee ruled on eligibility of two candidates for Vice Director positions, answered a question about election cycle dates affected by By Law 18, and received an election ethics violation complaint against a Section Manager Candidate and found it to be without foundation. The Committee also received and approved four potential conflict-of-interest advisory notices.

In April, the Committee approved the resending of the Alabama Section manager ballots with a detailed explanation to correct a misspelling.

In June, we ruled on an appropriate method of acknowledging an unsolicited equipment donation to an ARRL officer without offending the donor.

In July, the committee considered a question about information requested on a candidate's application form that when answered could potentially violate attorney-client privilege. We ruled that the question was answered appropriately and met the intent of the question. It is this Committee's recommendation that this form be reviewed and the unexpected effect of this question be reviewed.

In late fall, a complaint was received about a Section Manager candidate challenging his ability to serve based upon a YouTube video and the offensive language it contained. The candidate, his Division Director and others were interviewed by the E&E chairman. The YouTube posting was in excess of 2 ½ years old, the candidate fully explained the reasons for its original posting, and agreed to block it. In further discussion, the committee agreed to allow the candidate's election process to continue.

The Committee appointed election tellers to monitor elections routinely during the year, and wishes to express its thanks to Director Tom Frenaye, K1KI, for representing the Board during the ballot counting processes.

**Complex Actions:**

The Committee spent considerable time discussing the material contained in a press release from a Director while analyzing the balance between our members need to know and the propriety of protecting information during a negotiation process. We found our By Laws and Guidelines both unclear and in conflict and urge a review and possible rewrite of both for clarity.

Therefore, E&E could not fault the writer for keeping his constituents informed about his opinion, but urged extreme caution in the future to insure that the information released has no impact upon current negotiations.

We were contacted by a Vice Director to discuss a commercial Van Wrap provided by the Private Land Mobile division of an amateur radio equipment vendor. Assurances were given that this venture was to promote the vendor's Land Mobile equipment and the presence of amateur radio gear in the van was incidental and of no significant import. At that time the Committee considered the details acceptable and found no cause for conflict of interest. Later, the van was displayed at a large hamfest where it was visited by ARRL staff and facts revealed that there clearly was the appearance of a conflict of interest and these findings were presented to the owner. The van owner chose his commercial interests over those of ARRL and opted to withdraw from the Vice Director election process.

Certain specific campaign statements and actions by a candidate for Director were challenged by an ARRL member and reviewed by the Committee. The E&E Committee members found that the alleged actions and statements were in violation of League election standards. A request for the removal of the statements was extended to the candidate as well as an advisory to refrain from those certain specific actions. The advisories were defiantly not heeded and the candidate was declared disqualified. The former candidate then requested a review by the full Board of Directors and the Board exercised their option to decline the request. An applicable document is attached to this report.

Respectfully submitted,

Kent Olson KA0LDG  
Rod Blocksome KØDAS  
Dale Williams WA8EFK, Chairman

Attached: No Probable Cause Determination and Dismissal





STATE OF CONNECTICUT  
JUDICIAL BRANCH

LITCHFIELD JUDICIAL DISTRICT  
GRIEVANCE PANEL

Gail S. Kotowski, *Grievance Counsel*

*P.O. Box 37*  
*Guilford, CT 06437-0037*  
*(203) 453-6030*

December 15, 2016

Mr. Doug Rehman  
34646 Rust Road  
Eustis, FL 32736

Attorney Christopher D. Imlay  
14356 Cape May Road  
Silver Spring, MD 20904-6011

Re: Rehman vs. Imlay Grievance Complaint No. 16-0632  
Litchfield Grievance Panel

**NO PROBABLE CAUSE DETERMINATION  
AND NOTICE OF DISMISSAL**

Dear Mr. Rehman and Attorney Imlay:

Pursuant to Practice Book Section 2-32 and Rule 1 of the Grievance Panel Rules of Procedure, the Litchfield Grievance Panel (hereinafter, "Grievance Panel") has completed its investigation of the above referenced grievance complaint. At a meeting of the Grievance Panel held on December 15, 2016, the Grievance Panel determined that the record did not support a finding of probable cause that the Respondent engaged in misconduct. Accordingly, the grievance complaint is dismissed. The Grievance Panel made its determination based upon the written record and without the need for a hearing.

The Grievance Panel determined that the Complainant is a member of the Board of the ARRL. ARRL is a Connecticut non-stock membership association. The Complainant alleges the unauthorized practice of law on the Respondent's part, as he is not admitted in Connecticut, but rather the District of Columbia and Maryland. The Respondent is General Counsel for the ARRL and has the primary responsibility as an advocate for ARRL and addressing FCC matters in Washington. ARRL has Connecticut counsel, the firm of Day Pitney LLP.

Page Two  
December 15, 2016

The Complainant's eligibility to run for re-election has been denied by the Ethics and Elections Committee of the ARRL. It appears that this is the motivation of the present grievance. Contrary to the Complainant's allegations, attendance by the Respondent at two (2) meetings a year does not equate to the unauthorized practice of law.

The Grievance Panel cannot make a finding that Attorney Imlay violated Rule 5.5 of the Rules of Professional Conduct.

Pursuant to Practice Book Section 2-32(i), this letter and a copy of the Grievance Panel's record are being filed with the Statewide Grievance Committee. Please note that the dismissal of this complaint is a final decision and that there is no right to appeal, review or reconsideration of this decision by any disciplinary authority. You may contact the undersigned for assistance in understanding the reasons for the dismissal. I am available most afternoons by telephone at (203) 453-6030.

Very truly yours,

Gail S. Kotowski  
GSK: cg

cc: Statewide Grievance Committee  
Litchfield Grievance Panel

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**Report of the Legal Defense and Assistance Committee (ARLDAC)**

**January 2017**

The Legal Defense and Assistance Committee has had only modest case activity since July. No requests for assistance have been received, and current cases are stalled.

So, the committee has focused on other areas. Earlier this January the committee met to discuss several topics:

A. Handling potential new laws and regulations concerning CCR's and HOA's

At the top of the list has been a discussion of CCR and Homeowner Association (HOA) related cases in light of possible congressional (or FCC) action in 2017. Several points have come up, most of which will require further thought and clarification. These center on the key question "What will constitute 'reasonable accommodation' in the context of closely packed homes and apartments subject to CC&R's?" Some points to ponder:

- What sort of language might be good in HOA documents? The committee should prepare something that HOA's can incorporate into their documents and bylaws
- We have considerable material, some dated, to support the classic suburban tower permit requests, but in light of the nature of condominium complexes and other tightly packed communities, we need to develop some materials for "small antenna" situations.
- The committee believes that some of this material has been developed already by several attorneys active in the field, and we are currently canvassing them to see what they might be able to contribute
- The committee will take a stab at some short articles on "small antenna" situations for possible publishing in QST

B. General upgrading of materials that are made available to hams dealing with tower siting.

Many of the materials that we supply to our members are getting long in the tooth. For example, the report we have on the effect of towers on real estate value is very old. While it is probably completely valid, its value as convincing evidence is compromised by its age. The actions outlined in the previous paragraph should help address this issue. When we have seen what we can gather, the committee should consider what additional work it might want to sponsor.

Another topic that comes up often when defending towers and antennas at the lower levels (ie., Zoning Board, building inspector, etc.) is RF safety. While it is true from a legal perspective that this subject matter area is completely preempted by federal law, it cannot be glibly ignored when faced with a roomful of upset neighbors. We could use something here aimed at the general public.

Migratory bird issues come up from time to time as well. Materials on this topic are a bit more current.

C. Current cases

Not much to say here. The DePolo case did not go well, and it is unclear what if anything can be done to save it, though we understand that some efforts are being made.

The Landstein case (Legrange, NY), into which this committee has invested some money, has been quiet for some time now. Chris is endeavoring to get us good current status.

D. Distracted driving

It is the sense of this committee that monitoring of state legislative activity has not been as good since we changed legislative consultants in DC. We need to beef this effort up in light of the California bill that passed recently. Insofar as the California statute is concerned, we looked at the following avenue of attack:

- Chris is willing to draft a short article on the California statute for QST
- We could send a letter to the California Attorney General seeking clarification
- We should talk to the California SGL
- If these don't get us where we need to get, we should consider funding an action for declaratory judgement in California

Bills like this are popping up everywhere (one is in the works in Washington now), and we need to get ahead of these a bit better.

D. Finances for 2016 were as follows:

**American Radio Relay League  
Legal Research Fund  
As of 12/31/2016**

12/31/15 Balance	\$ 168,912
Contributions	11,584

DePolo antenna case	(1,090)
Research Armstrong V Exceptional Child	(200)
Landstein antenna case	(40)
Greenville, TX Antenna Ordinance	(370)

12/31/16 Balance	<u>\$ 178,796</u>
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My thanks to the committee, which includes:

- o Mike Raisbeck, K1TWF, New England Division Vice Director
- o Marty Woll, N6VI, Southwestern Division Vice Director
- o Jim Tiemstra, K6JAT, Pacific Division Vice Director
- o Mike Lisenco, N2YBB, Hudson Division Director
- o James O'Connell, W9WU, Member
- o Jim Pace, K7CEX, Northwestern Division Director
- o Chris Imlay, W3KD, General Counsel

Marty and Jim Pace have both asked to step down for various reasons. I would like to heartily thank both of them for their help and support.

Respectfully submitted,

Mike Raisbeck, K1TWF

New England Vice Director

ARLDAC Chair

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**REPORT OF THE RF SAFETY COMMITTEE  
TO THE  
ARRL BOARD OF DIRECTORS**

January 2017

The RF Safety Committee participated in the following areas over the past six months:

1. RF Safety Committee Activities.
2. Monitoring recent scientific studies regarding RF Safety.
3. Participation in the scientific RF Safety community.
4. Administrative issues.

1 RF Safety Committee Activities

- 1.1 Dr. Lapin is coordinating an RF noise study for the FCC Technological Advisory Council that issued a Technical Inquiry (EC 16-191) to gain insight into noise sources and effects that are being experienced. Interestingly, there was a significant number of responses that misinterpreted the questions in the study and complained of “dirty electricity.” There are people who believe that power lines pick up RF energy from the air and deposit it in their homes, harming their health. The committee has discussed this claim in the past and agreed that there is no veracity to it. Some of these people make a living by selling meters to measure how “dirty” their electricity is and filters that can be plugged into AC outlets in the home in the hope of removing this RF energy. People in this vein also believe that devices that use power lines to transmit RF signals, such as smart meters, are injuring their health. There was a total of 101 responses to the TAC Technical Inquiry and 21 of them wrote about health effects from “dirty electricity.”

2 Monitoring Scientific Studies

- 2.1 Dariusz Leszczynski, PhD, adjunct professor of Chemistry at the University of Helsinki, Finland, wrote a paper in which he presented a hypothesis that while RF energy does not cause cancer in tissue it may enhance the effects of other cancer-causing substances. Dr. Leszczynski believes that this effect, which he calls, “cocarcinogenicity,” would explain the seemingly contradictory results of the many studies on RF effects. Dr. Leszczynski was a member of the IARC working group that classified RF energy as category 2B (possibly carcinogenic) and he feels that the cocarcinogen hypothesis is compatible with this classification. The hypothesis was reviewed by two experts that disagreed with it. John Moulder, PhD, professor of radiation biology at the Medical College of Wisconsin, pointed out that this is hardly a new hypothesis. The modern terminology for cocarcinogen is “epigenetic carcinogen,” which was examined by a number of major animal brain tumor studies in the 2000s; no effect was found in any of these. Other studies looked at other forms of cancer between 1997 and 2003 and most of them were negative. Epigenetic activity was studied in cell culture from 1985 through 2010 and some effects were found but could not be confirmed. Joel Moskowitz, PhD, at the school of public health at

University of California at Berkeley also disagreed with the cocarcinogenicity hypothesis because he believes that RF energy causes cancer.

- 2.2 IEEE Committee on Man and Radiation (COMAR) is considering making a response to a series of YouTube videos put out by Dr. Devra Davis that talk about the dangers of cell phones and portable computing devices. Dr. Davis recycles many of the arguments made more than 20 years ago, for being concerned about cell phone exposure especially in children, without considering the many studies that have been performed since then.

### 3 Participation in the Scientific RF Safety Community

- 3.1 Mr. Hare continues to serve on the ICES (IEEE) SCC-28 RF Safety Standards Committee.
- 3.2 Dr. Lapin continues to serve as a member of the IEEE Committee on Man and Radiation, COMAR.
- 3.3 Dr. Siwiak serves as a consultant to the Q-Track Corporation on matters of RF exposure related to body mounted small MF and HF transmitting loops.
- 3.4 Dr. Siwiak developed the accredited continuing education course, "Cell Phone and RF Exposure Awareness," which is offered online by SunCam Corporation.

### 4 Administrative Issues

- 4.1 Dr. Siwiak is a contributing editor for QST and Editor of QEX, and he shares any submitted RF Safety-related articles with the Committee.

Gregory Lapin, Ph.D., P.E., N9GL  
Chair, ARRL RF Safety Committee

**The ARRL RF Safety Committee**

Chair

Gregory D. Lapin, Ph.D., P.E., N9GL  
1206 Somerset Ave  
Deerfield, IL 60015-2819

Committee Members

Robert E. Gold, M.D., W0KIZ  
9197 N. Clydesdale Rd  
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Kai Siwiak, P.E., Ph.D., KE4PT  
10988 NW 14th St  
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4599 Black Rail Ct  
Providence Forge, VA 23140-3733

Guy L. (Bud) Tribble, M.D., Ph.D., N6SN  
101 Fallen Leaf Dr  
Hillsborough, CA 94010-6918

Emeritus Committee Members

Gerald Griffin, M.D., K6MD  
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William Raskoff, M.D., K6SQL  
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Burlingame, CA 94010-5807

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Cincinnati, OH 45238-4504

ARRL HQ Staff Liaison

Ed Hare, W1RFI  
ARRL Headquarters  
225 Main St  
Newington, CT 06111-1400

ARRL HQ Administrative Liaison

Lisa Kustosik, KA1UFZ  
ARRL Headquarters  
225 Main St  
Newington, CT 06111-1400



## **Appendix 1A**

# BOOTH, FRERET & IMLAY, LLC

ATTORNEYS AT LAW

---

ROBERT M. BOOTH, JR. (1911-1981)  
JULIAN P. FRERET (1918-1999)  
CHRISTOPHER D. IMLAY

4356 CAPE MAY ROAD  
SILVER SPRING, MD 20904-6011  
WWW.IMLAYLAW.COM

TELEPHONE: (301) 384-5525  
FACSIMILE: (301) 384-6384  
CHRIS@IMLAYLAW.COM

June 30, 2015

Via E-mail and U.S. Mail  
[bruce.jacobs@fcc.gov](mailto:bruce.jacobs@fcc.gov)  
[rashmi.doshi@fcc.gov](mailto:rashmi.doshi@fcc.gov)

Bruce Jacobs, Chief  
Spectrum Enforcement Division  
Enforcement Bureau  
Federal Communications Commission  
445-12th Street, S.W.  
Washington, D.C. 20554

Dr. Rashmi Doshi, Chief  
Laboratory Division  
Office of Engineering and Technology  
Federal Communications Commission  
7435 Oakland Mills Rd  
Columbia MD 21046-1609

Re: Violation of Part 18 Regulations; Lumatek Dial-a-Watt/ Air Cooled  
1000-Watt, 120-240 Volt RF Lighting Device (Electronic Ballast);  
Conducted Emission Limit, Labeling and Marketing Violations.

Dear Mr. Jacobs and Dr. Doshi:

This office represents ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated. The purpose of this letter and the attached Conducted Emissions Test Report is to request on behalf of ARRL that the Commission investigate and commence an enforcement proceeding in order to halt immediately the marketing and retail sale of an RF lighting device in the United States known as the Lumatek Electronic Ballast. This device is intended for agricultural/horticultural deployment and is known as a "grow light." The device has been thoroughly tested by ARRL's laboratory as per the attached Test Report and has been found to grossly exceed the Conducted Emission limits set forth in Section 18.307(c) of the Commission's Rules. As well, the device is also being imported, marketed and sold in violation of, at least, Sections 18.203 and 18.213 of the Commission's Rules at numerous local and nationwide retail outlets in the United States

including Amazon (from which ARRL purchased the unit used for testing in ARRL's laboratory).

The instant complaint pertains to a different Lumatek RF lighting ballast than that which was the subject an ARRL complaint to your offices dated March 12, 2014, and about which apparently nothing has been done to date. The Lumatek device that is the subject of the instant complaint is actively being marketed to date and presumably deployed.

ARRL has received numerous complaints from amateur radio operators of significant noise in the Medium (MF) and High Frequency (HF) bands between 1.8 MHz and 30 MHz from "grow lights" and other RF lighting devices generally. In response to these complaints, among other things, ARRL purchased the Lumatek grow light at retail from Sears (i.e. Sears Holdings Corporation) through its web site. ARRL tested the device in its laboratory. The results of the tests made by ARRL are in the attached Conducted Emissions Test Report (the "Report"). These devices are easily capable of emitting RF noise sufficient to preclude Amateur Radio MF and HF communications (and as well AM Broadcast station reception) throughout entire communities.

The Lumatek grow light has been imported by Lumatek itself, a company located in Novato, California. See, <http://www.lumatekballast.com> . In addition to Amazon, the device is apparently available at retail sources including but not necessarily limited to those listed at page 1 of the attached Test Report.

As can be seen from the Report, ARRL tested the conducted emissions from this device according to the IEEE C63.4-2009 standard for Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment. At page 5, the Report concludes from the conducted emissions tests that the six highest emissions from the device in the HF band *vastly* exceed the Quasi-Peak limit specified in Section 18.307(c) of the Rules. For example, the Quasi-Peak limit in the bands between 3.0 and 30 MHz is 48 dB $\mu$ V. The Lumatek device has a Quasi-Peak Interference Voltage at 6.1MHz of 99 dB $\mu$ V. At 14.9 MHz, the Quasi-Peak Interference Voltage is 72 dB $\mu$ V. As per Appendix C of the Test Report, in both phase-to-ground and neutral-to-ground operating conditions, the conducted emissions limits are exceeded, sometimes by extreme margins, throughout the *entire* HF frequency range.

The level of conducted emissions from this device is so high that, as a practical matter, one RF ballast operated in a residential environment would create preclusive interference to Amateur radio HF communications throughout entire neighborhoods.

As discussed in Appendix B of the Report, there are, in addition to the blatantly excessive conducted emissions from this device, substantive marketing violations associated with this device. The Report indicates that there no FCC label or sticker on the device, as called for by Section 18.209(b) of the Rules for devices subject to Declarations of Conformity or certification. Nor is there any FCC compliance information anywhere in the documentation for the device, or in or on the box, or on the device itself. Marketing of

the device therefore does not comply with, at least, Sections 18.203 or 18.213(d) of the Commission's rules, which requires that RF lighting devices must provide an advisory statement, either on the packaging or with other user documentation, notifying the user that the operation of the device might cause interference to radio equipment operating between 0.45 MHz and 30 MHz. Variations of the language are permitted but presentation in a legible font or text style is required. No such notice is included with this device. Pursuant to Section 2.909 of the Commission's rules, the party responsible for FCC compliance with rules governing RF devices is, in the case of devices that are subject to a grant of equipment authorization, the equipment authorization grantee. Or, in the case of a device subject to a grant of a Declaration of Conformity, the responsible party is the importer. In this case, because there is no apparent grantee of equipment authorization, the Commission should look to the importer of the device as the responsible party.

ARRL respectfully requests that all such devices be removed from retail sale and marketing. Those devices that have been sold to consumers, or which are available for retail sale should be tracked and recalled. It is also requested that the importer of this device be subjected to a forfeiture proceeding commensurate with the Commission's enforcement policies.

Given the foregoing, on behalf of the more than 730,000 licensed radio amateurs in the United States, who have a significant interest in avoiding interference from these noncompliant devices, ARRL respectfully requests that your office take the appropriate action with respect to this device without delay.

Should any additional information be called for, please contact either the undersigned, General Counsel for ARRL, or Mr. Mike Gruber of the ARRL's staff, whose contact information is listed on the attached Report. Thank you very much for your consideration of this request.

Sincerely,

*q).* 

Christopher D. Imlay  
General Counsel, ARRL

Attachment

Copies to: Growers House Hydroponic  
Supplies  
1501 East 21st Street  
Tucson, AZ 85719

Sunlight Supply, Inc.  
5408 N.E. 88th Street, Bldg. A  
Vancouver, WA 98665

## **Appendix 1B**



**ARRL** The national association for  
**AMATEUR RADIO™**

ADMINISTRATIVE HEADQUARTERS  
225 Main Street, Newington, Connecticut, USA 06111-1494  
Telephone: 860-594-0200 ■ FAX: 860-594-0259  
www.arrl.org

04/04/2014

## Conducted Emissions Test Report

STANDARD	TITLE
IEEE C63.4 - 2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

REVIEW	SIGNATURE	DATE
Performed By:	Mike Gruber – W1MG	4/4/14
Results Reviewed By:	Edward Hare – W1RFI	4/4/14

Summary of Test Results: **Fail**

EUT CONFIGURATION	
Manufacturer	Lumatek
Model Number	N/A
Model	Lumatek Electronic Ballast Dial-A-Watt / Air Cooled 1000W/120-240V
Serial Number	N/A
Importer	Lumatek
Retailers	<b>Amazon Mail Order</b> (purchased here) <a href="http://www.amazon.com">www.amazon.com</a>  <b>See Appendix A for additional details. Other Sources include but not limited to:</b>  <b>Growers House Hydroponics Supplies</b> 1501 E 21 <sup>st</sup> St. Tuscon, AZ 85719 Tel: 855-289-1441 Email: <a href="mailto:staff@growershouse.com">staff@growershouse.com</a>  <b>Sunlight Supply, Inc.</b> Vancouver, WA (Corporate Headquarters) 5408 NE 88th Street, Bldg A Vancouver, WA 98665 Tel: 360-883-8846 Fax: 360-883-5395  <b>SLS California</b> Livermore, CA Tel: 925-337-8070 Fax: 925-454-1535



## GENERAL INFORMATION

### OBJECT

This document outlines the conducted emissions requirements applicable to lighting equipment covered under **47CFR18**. This procedure will be used for the testing of lighting products in the ARRL EMC laboratory.

### EUT PASS CRITERIA (Consumer)

Table 1

Test Location	Test	Frequency Range	Limits
Power Supply	Conducted Emissions	0.45 MHz - 2.51 MHz	250 $\mu$ V / 48 dB( $\mu$ V) quasi peak
		2.51 MHz - 3 MHz	3,000 $\mu$ V / 70 dB( $\mu$ V) quasi peak
		3 MHz - 30 MHz	250 $\mu$ V / 48 dB( $\mu$ V) quasi peak

### SETUP CHECKLIST

Initials	Setup
MG	The EUT should be in new condition, built to production specifications, using production parts and using production processes. (commercially available)
MG	Schedule EMC facility time with the ARRL Laboratory. (This test is performed by formally trained users of the EMC facility)
MG	Complete Equipment List Table.
MG	Connect output of LISN to input of EMC Receiver.
MG	Apply rated voltage to input of LISN.
MG	Connect the EUT to the LISN using a standard power cord supplied with the product. (approx. 1.2m in length)
MG	The Reference Ground Plane on the floor should be at least 2m x 2m in size and shall extend 0.5m beyond the footprint of the EUT.
MG	For measuring table-top devices, mount onto a table 0.8m high and use a vertical conducting plane at least 2m x 2m in size located 40cm to the rear of the EUT and bonded to the reference ground plane with 3cm-wide straps at intervals less than 1m.
MG	Test each EUT model number at its nominal (rated) voltage.
MG	Photograph the test setup and include in this test report.



**TEST SETUP (insert photo)**



**EQUIPMENT LIST**

Use the following equipment (or equivalent) in executing this procedure. If an equivalent piece of test equipment is used, then a note with the make, model, serial number, and calibration due date of the equipment must be made in the table.

Manufacturer	Description	Model Number	Serial Number	Cal Due
N/A	Conducted Emissions test area	N/A	N/A	N/A
R&S	EMC Spectrum Analyzer/EMI Receiver	FSH3	102393	06-21-14
N/A	Measurement Cable	N/A	N/A	N/A
R&S	Line Impedance Stabilization Network (LISN)	ENV216	100057	Self

## CONDUCTED EMISSIONS TEST

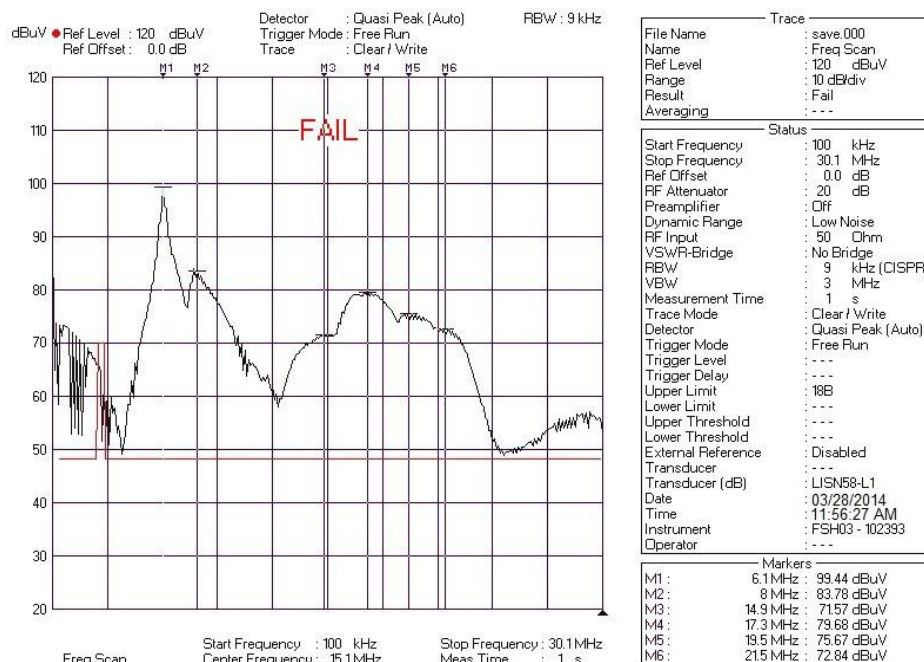
1. Bond the LISN to the ground plane of the test area using a grounding cable that is as short as possible.
2. Connect the EUT power cable to the Line Impedance Stabilization Network (LISN).
3. Measure the conducted emissions from the EUT using the LISN and a quasi-peak detector.
4. Record the six highest emissions from the EUT and compare the voltage to the limits specified in Table 1.
5. Attach emissions plots to this procedure.

Six Highest Emissions	Nominal Line Voltage	Interference Voltage (Quasi Peak)	Limit (Quasi Peak)	PASS / FAIL
6.1 MHz	120VAC	99 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
8.0 MHz	120VAC	84 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
14.9 MHz	120VAC	72 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
17.3 MHz	120VAC	80 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
19.5 MHz	120VAC	76 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
21.5 MHz	120VAC	73 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>

(See Appendix B for additional rules violations.)

## PLOT OF CONDUCTED EMISSIONS (PHASE TO GROUND)

NOTE: The Neutral conductor to ground spectra was very similar.



### Lumatek Air Cooled Ballast at 400 Watt Setting

All Power Settings Are Similar. See Appendix C for supplemental data.

## Appendix A

### **Lumatek Air Cooled Ballast Purchasing Info**

On Ed Hare, ARRL Laboratory Manager, placed an on-line order with Amazon for the subject LumatekAir Cooled Ballast for grow lights. This order was placed through the ordering system at Amazon and shipped to ARRL from Grower's House Hydroponic Supplies in Tucson, AZ.

Supplemental and supporting documents are included as follows:

- 1) Amazon order
- 2) Email shipping notification
- 3) Contact information for Hydroponic Supplies

Hare, Ed W1RFI

**From:** Amazon.com [ship-confirm@amazon.com]  
**Sent:** Tuesday, March 11, 2014 7:26 PM  
**To:** Hare, Ed W1RFI  
**Subject:** Your Amazon.com order of "NEW! LUMATEK LK1000AC..." has shipped!



[Your Orders](#) | [Your Account](#) | [Amazon.com](#)

## Shipping Confirmation

Order #105-6269533-5786645

Hello Edward Hare,


Thank you for shopping with us. We thought you'd like to know that Growers House Com Hydroponics Supplies shipped your item, and that this completes your order. Your order is on its way, and can no longer be changed. If you need to return an item from this shipment or manage other orders, please visit [Your Orders](#) on Amazon.com.

Your estimated delivery date is:  
**Monday, March 17, 2014 -**  
**Thursday, March 20, 2014**

[Track Your Package](#)

Your order was sent to:  
**Edward Hare**  
**ARRL**  
**225 Main St**  
**Newington, CT 06111**  
**United States**

Depending on the ship speed you chose, it may take 24 hours for tracking information to be available in your account.

GET A \$10 GIFT CARD upon approval for the Amazon.com Store Card  [Learn more](#)

## Shipment Details



**NEW! LUMATEK LK1000AC**  
**1000W/600W/400W HPS/MH Digital Dimmable**  
**Air-Cooled Ballast**  
Sold by Growers House Com Hydroponics Supplies  
Condition: New



**\$210.00**

Item Subtotal:	\$210.00
Shipping & Handling:	\$0.00
Total Before Tax:	\$210.00
<b>Shipment Total:</b>	<b>\$210.00</b>
Paid by Amex:	\$210.00

**Hare, Ed W1R**

---

From: Growers House Com Hydroponics Supplies - Amazon Marketplace [43tp83c9z8dfsp1@marketplace.amazon.com]  
Sent: Tuesday, March 11, 2014 7:24 PM  
To: Hare, Ed W1RFI  
Subj...: Your Growers House Order #26768 has shipped

Date: 11-Mar-2014

Shipped to:

EDWARD HARE  
225 MAIN ST  
ARRL  
NEWINGTON CT 06111-1400  
CONNECTICUT STATES

---

Ordered: 1 I WO-P09Y-IJW3 Lumak Ballast Dual Air Cooled use 400/600/1 000 w/1ttt HPS  
or 1HBI;LBS PLL:S SCPER LCMENS **VI** i/ S210.00  
Ordered: 1 ILKJOOAC Lutnao:K JOOOW Air Cooled Dial A Watt Dimmable Ballast \$0.00

---

To track your package, click the link below.  
[Federal Express Tracking Link](#)

Thanks for your order! Happy Growing :)

**For Your Information:** To help arbitrate disputes and preserve trust and safety, we retain all messages buyers and sellers send through Amazon.com for two years. This includes your response to the message above. Amazon.com uses filtering technology to protect buyers and sellers from possible fraud. Messages that fail this filtering will not be transmitted.

We want you to buy with confidence anytime you purchase products on Amazon.com. Learn more about Safe Online Shopping (<http://www.amazon.com/gp/help/customer/display.html?nodeId=551434>) and our safe buying guarantee (<http://www.amazon.com/gp/help/customer/display.html?nodeId=337868>).

[commMgrTok:A4U6CTSW7Z5RL]

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**Welcome to Growers House ([GrowersHouse.com](#)) -- Let us help you grow the best plants you've ever seen.**

Growers House is a family owned and operated hydroponics supply and indoor gardening center. We have both a retail and online store based out of Tucson, AZ to service our customers locally and globally. It is our belief that old business practices are becoming a scarce commodity today. Our goal is to provide our customers a large selection, [wholesale pricing](#), expert advice, [comparison tests](#), and most importantly, customer service. There are no automated phones, robots, or drone-like employees here. We answer the phone all the time when we're open and respond to emails usually within the hour.

If you need help getting started, we have a knowledgeable staff to help walk you through your first setup. Do you have experience but need some pointers on a [large-scale operation](#)? We've built numerous successful large gardens and work on a personal basis to make sure our customers' efforts succeed.

At Growers House we believe if you're not happy, then we haven't done our job.

Visit and shop at Growers House today if you're interested in price, advice, service, and selection. Happy Growing :)

**Address:**  
1501 E 21ST Street  
Tucson, AZ 85719

**Phone:** 855-289-1441  
**Fax:** 520-333-3250  
**Email:** [staff@growershouse.com](mailto:staff@growershouse.com)

**We're Open (MST Time Zones):**  
M-F: 10 am to 7 pm  
Sat: 10 am to 6 pm  
Sun: 11 am to 5 pm

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[Buyers Guides](#)

[Privacy Policy](#)

[Returns Policy](#)

[Contacts](#)

[Send Us A Message](#)

[Our Contact Info](#)

[Store Location](#)

[Visit Growers House](#)

[1501 E 21st St](#)

[Tucson, AZ 85719](#)

[1.855.289.1441](#)

[get directions](#)





**Hare, Ed W1RFI**

**From:** Growers House Com Hydroponics Supplies - Amazon Marketplace [43tp83c9z8dfsp1@marketplace.amazon.com]  
**Sent:** Tuesday, March 11, 2014 7:24 PM  
**To:** Hare, Ed W1RFI  
**Subject:** Your Growers House Order #26768 has shipped



Date: 11-Mar-2014

**Shipped to:**

EDWARD HARE  
225 MAIN ST  
ARRL  
NEWINGTON CT 06111-1400  
UNITED STATES

Ordered: 1 Shipped: 1 W0-PO9Y-IJW3 Lumatek Digital Ballast Dual Air Cooled use 400/600/1000 watt HPS or MH BULBS PLUS SUPER LUMENS (NEW ON MARKET) \$210.00  
Ordered: 1 Shipped: 1 LK1000AC Lumatek 1000W Air Cooled Dial A Watt Dimmable Ballast \$0.00

To track your package, click the link below:

[Federal Express Tracking Link](#)

Thanks for your order! Happy Growing :)

**For Your Information: To help arbitrate disputes and preserve trust and safety, we retain all messages buyers and sellers send through Amazon.com for two years. This includes your response to the message above. Amazon.com uses filtering technology to protect buyers and sellers from possible fraud. Messages that fail this filtering will not be transmitted.**

We want you to buy with confidence anytime you purchase products on Amazon.com. Learn more about Safe Online Shopping (<http://www.amazon.com/gp/help/customer/display.html?nodeId=551434>) and our safe buying guarantee (<http://www.amazon.com/gp/help/customer/display.html?nodeId=537868>).

[commMgrTok:A4U6CTSW7Z5RL]

## **APPENDIX B**

### **Failure to Meet FCC Labeling Requirements**

As the photos in this report show, there is no FCC label or sticker on this device. Furthermore, there is no FCC information included anywhere on the device, box or documentation. There is no reference to either Part 18 or Part 15 of the FCC rules.<sup>1</sup> This lack of proper labeling and documentation is an additional Part 18 rules violation.

Specifically, some of the more important rules that apply in this case are as follows. Please note that paragraph § 18.213 (d) specifically applies to RF Lighting Devices. In addition, some rules regarding equipment authorization under § 18.203 are included for reference purposes:

#### **§ 18.203 Equipment authorization.**

(a) ) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

- (1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.
- (2) A technical report pursuant to §§ 18.207 and 18.311.

#### **§ 18.213 Information to the user.**

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system
- (b) Maintenance of the system
- (c) ) Simple measures that can be taken by the user to correct interference.
- (d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45–30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.

---

<sup>1</sup> While not necessarily an FCC matter, we also note that the device does not have a UL label.  
Conducted Emissions



Furthermore, there isn't a UL label anywhere in the packaging material or documentation.



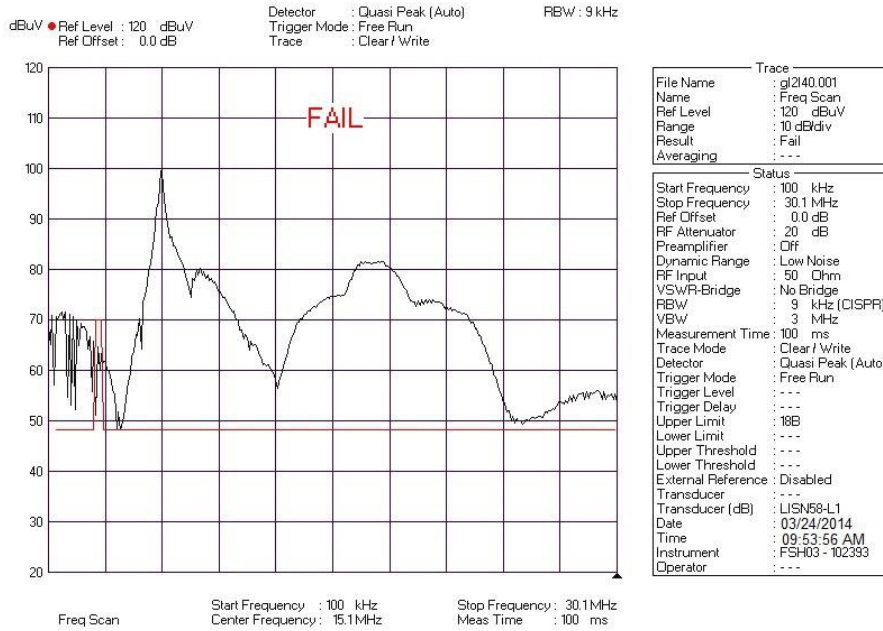
## **APPENDIX C**

### **Lumatek Air-Cooled Ballast Conducted Emissions Testing Supplemental Data**

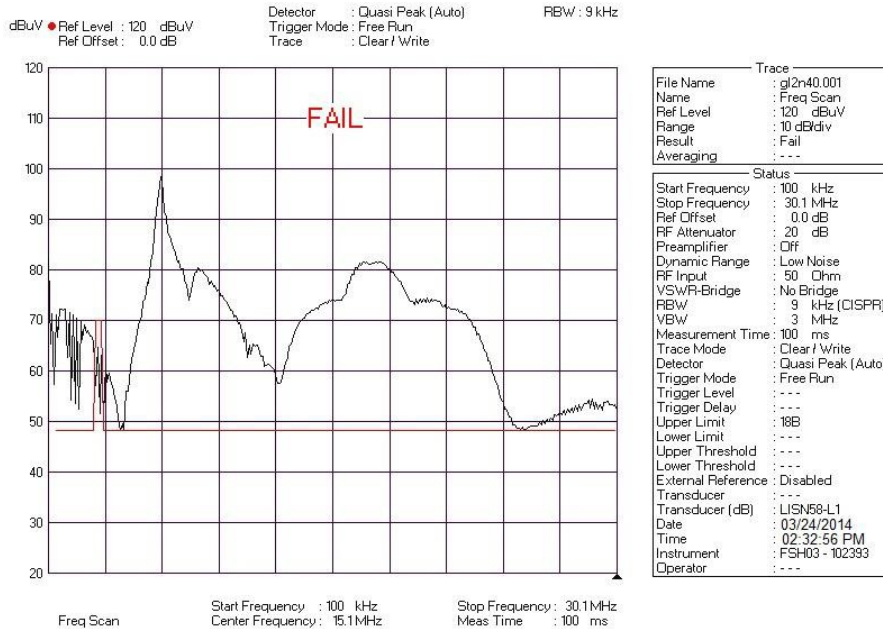
The Quasi Peak graphs in this Appendix show that the Lumatek Air-Cooled ballast significantly exceeds all FCC Part 18 limits under all operating conditions.

# Lumatek Air-Cooled Ballast

## 400 Watt Setting 0.10 to 30.1 MHz



### Phase to Ground

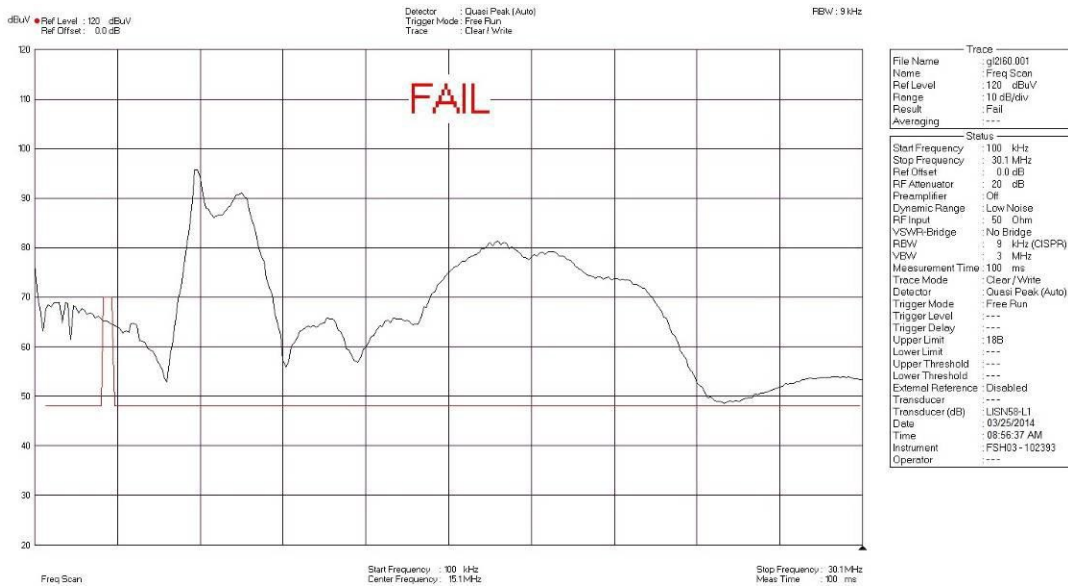


### Neutral to Ground

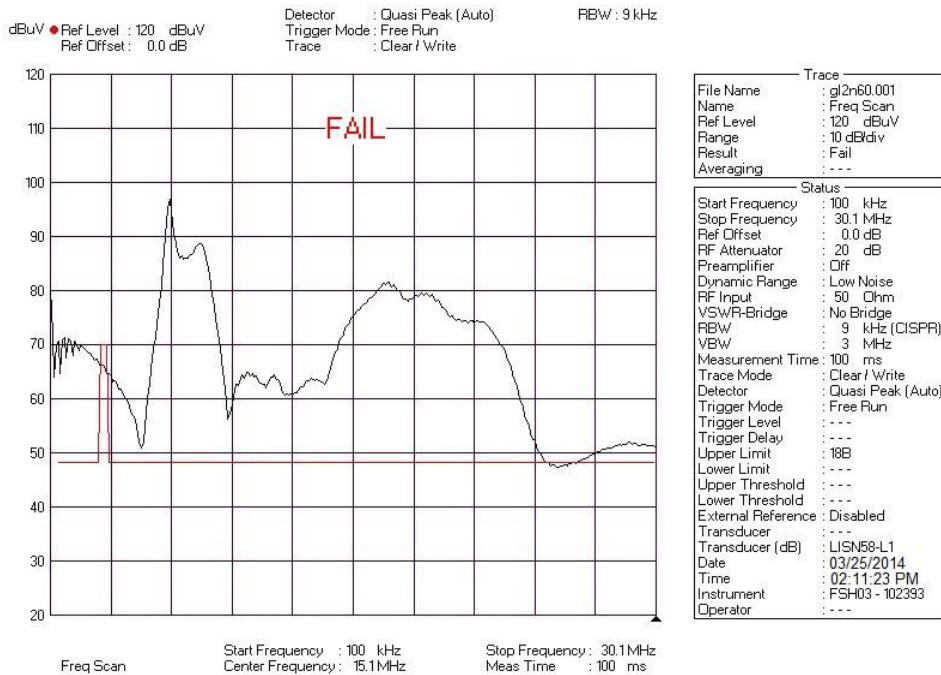
# Lumatek Air-Cooled Ballast

## 600 Watt Setting

### 0.10 to 30.1 MHz

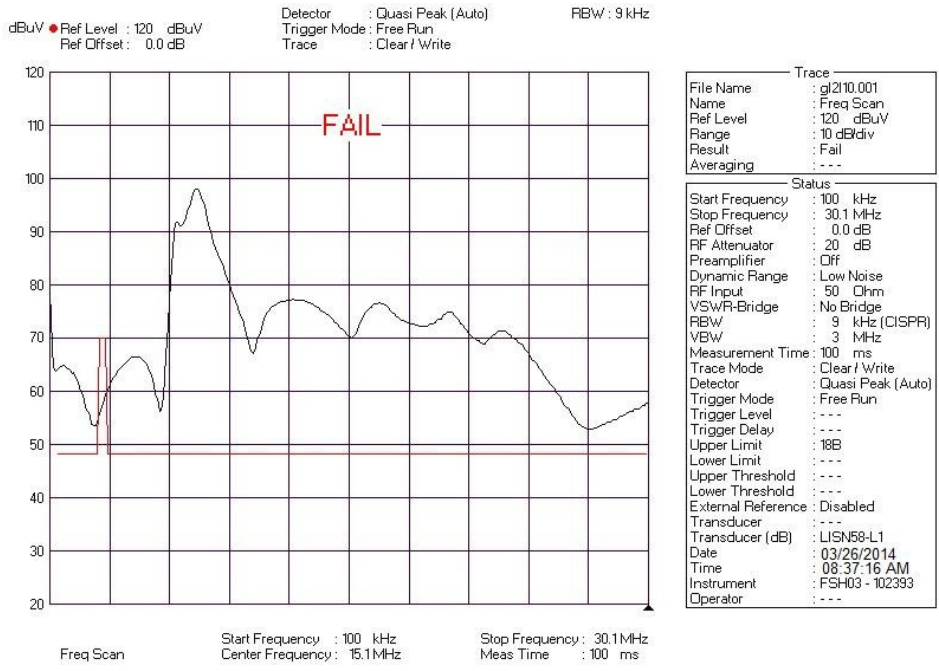


### Phase to Ground

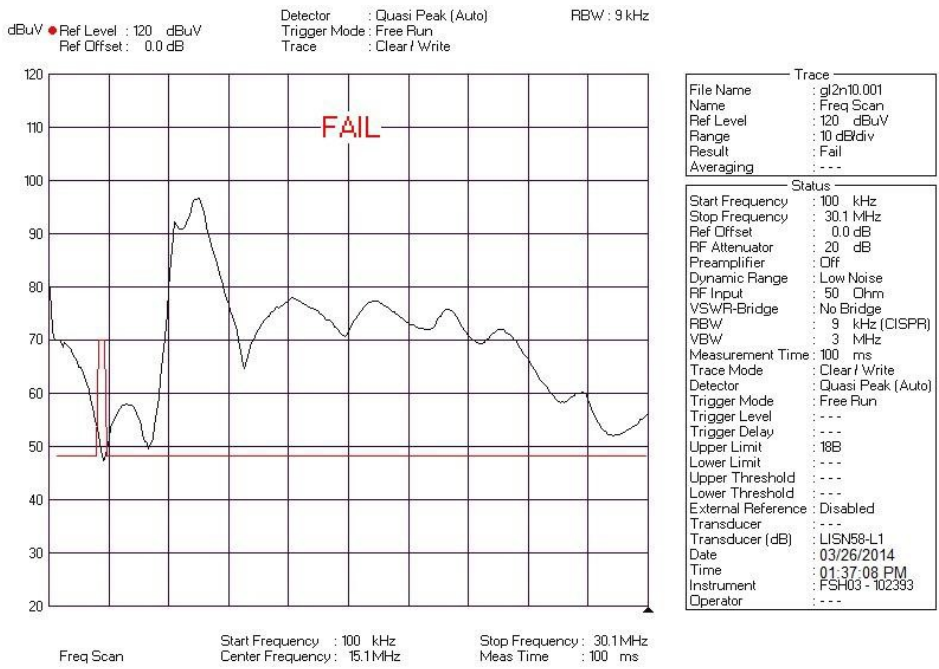


### Neutral to Ground

**Lumatek Air-Cooled Ballast**  
**1,000 Watt Setting**  
**0.10 to 30.1 MHz**

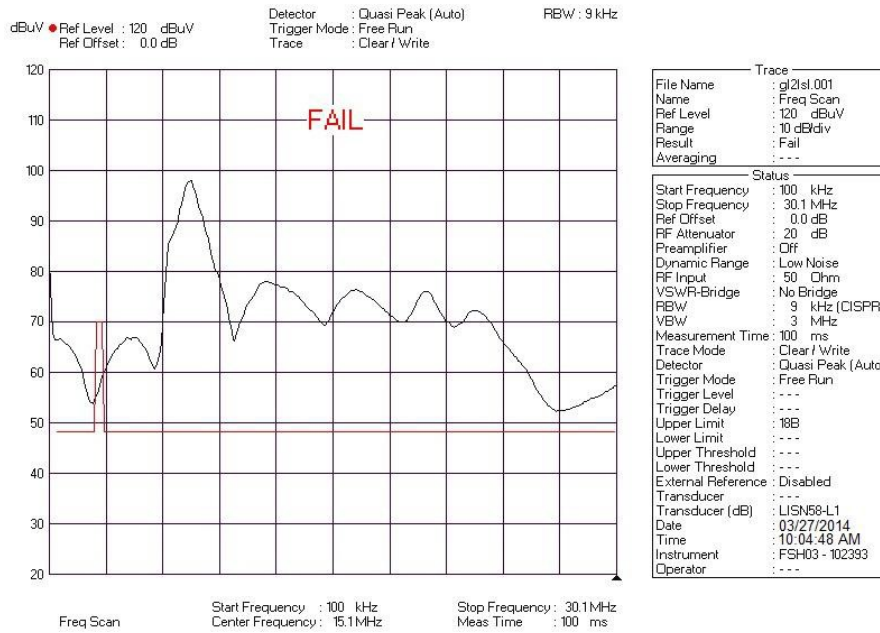


**Phase to Ground**

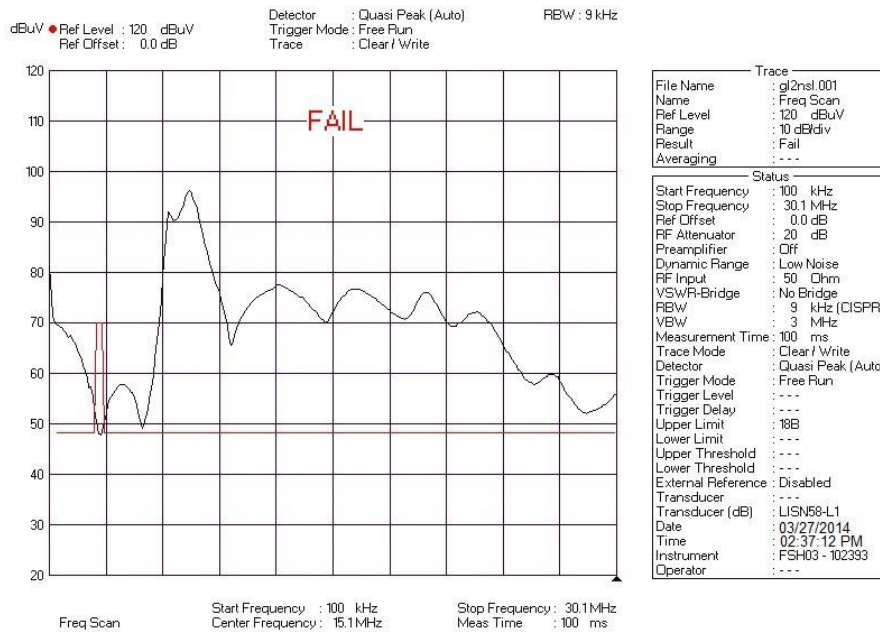


**Neutral to Ground**

## Lumatek Air-Cooled Ballast Super Lumens Setting 0.10 to 30.1 MHz



### Phase to Ground



### Neutral to Ground

## **Appendix 2A**



# BOOTH, FRERET & IMLAY, LLC

ATTORNEYS AT LAW

---

ROBERT M. BOOTH, JR. (1911-1981)  
JULIAN P. FRERET (1918-1999)  
CHRISTOPHER D. IMLAY

4356 CAPE MAY ROAD  
SILVER SPRING, MD 20904-6011  
WWW.IMLAYLAW.COM

TELEPHONE: (301) 384-5525  
FACSIMILE: (301) 384-6384  
CHRIS@IMLAYLAW.COM

June 30, 2015

Via E-mail and U.S. Mail

[bruce\\_jacobs@fcc.gov](mailto:bruce_jacobs@fcc.gov)

[rashmi.doshi@fcc.gov](mailto:rashmi.doshi@fcc.gov)

Bruce Jacobs, Chief  
Spectrum Enforcement Division  
Enforcement Bureau  
Federal Communications Commission  
445-11th Street, S.W.  
Washington, D.C. 20554

Dr. Rashmi Doshi, Chief  
Laboratory Division  
Office of Engineering and Technology  
Federal Communications Commission  
7435 Oakland Mills Rd  
Columbia MD 21046-1609

Re: Violation of Part 18 Regulations; Galaxy Legacy Selective Wattage  
RF Lighting Device (Electronic Ballast); Conducted Emission Limit,  
Labeling and Marketing Violations.

Dear Mr. Jacobs and Dr. Doshi:

This office represents ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated. The purpose of this letter and the attached Conducted Emissions Test Report is to request on behalf of ARRL that the Commission investigate and commence an enforcement proceeding in order to halt immediately the marketing and retail sale of an RF lighting device in the United States known as the Galaxy Legacy Selective Wattage Ballast. This device is intended for agricultural/horticultural deployment and is known as a "grow light." The device has been thoroughly tested by ARRL's laboratory as per the attached Test Report and has been found to grossly exceed the Conducted Emission limits set forth in Section 18.307(c) of the Commission's Rules. As well, the device is also being imported, marketed and sold in violation of, at least, Section 18.213 of the Commission's Rules at numerous retail outlets in the United States including Liquid Sun of Holyoke,

Massachusetts (from which ARRL purchased the unit used for testing in ARRL's laboratory).

The instant complaint is one of several being filed contemporaneously pertaining to various RF lighting ballasts which have been tested by ARRL's laboratory. As well, ARRL previously filed a complaint dated March 12, 2014 against an RF lighting ballast device imported and marketed by a company called Lumatek, about which apparently nothing has been done to date.

ARRL has received numerous complaints from amateur radio operators of significant noise in the Medium (MF) and High Frequency (HF) bands between 1.8 MHz and 30 MHz from "grow lights" and other Part 15 and Part 18 RF lighting devices. In response to these complaints, among other things, ARRL purchased the Galaxy grow light at retail from a company called Liquid Sun, located at 8 Lynwood Avenue, Suite 105, Holyoke, Massachusetts. ARRL tested the device in its laboratory. The results of the tests made by ARRL are in the attached Conducted Emissions Test Report (the "Report"). These devices are easily capable of emitting RF noise sufficient to preclude Amateur Radio MF and HF communications (and as well AM Broadcast station reception) throughout entire communities.

The Galaxy grow light has been imported by Sunlight Supply, a company located in Vancouver, Washington. See, <http://www.sunlightsupply.com>. In addition to Liquid Sun in Massachusetts, the device is apparently available at retail sources including but not limited to those listed at page 1 of the attached Test Report and at [www.sunlightsupply.com/page/findretailer](http://www.sunlightsupply.com/page/findretailer).

As can be seen from the Report, ARRL tested the conducted emissions from this device according to the IEEE C63.4-2009 standard for Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment. At page 5, the Report concludes from the conducted emissions tests that the six highest emissions from the device in the HF band *vastly* exceed the Quasi-Peak limit specified in Section 18.307(c) of the Rules. For example, the Quasi-Peak limit in the bands between 3.0 and 30 MHz is 48 dB $\mu$ V. The Galaxy device has a Quasi-Peak Interference Voltage at 6.3 MHz of 106 dB $\mu$ V. At 12.9 MHz, the Quasi-Peak Interference Voltage is 63 dB $\mu$ V. As per Appendix C of the Test Report, in both phase-to-ground and neutral-to-ground operating conditions, the conducted emissions limits are exceeded, sometimes by extreme margins, throughout most of the HF frequency range.

The level of conducted emissions from this device is so high that, as a practical matter, one RF ballast operated in a residential environment would create preclusive interference to Amateur radio HF communications throughout entire neighborhoods.

As discussed in Appendix B of the Report, there are, in addition to the blatantly excessive conducted emissions from this device, substantive marketing violations associated with this device. The Report indicates that there no FCC label or sticker on the device, as called for by Section 18.209(b) of the Rules for devices subject to Declarations

of Conformity or certification. Nor is there any FCC compliance information anywhere in the documentation for the device, or in or on the box, or on the device itself. Marketing of the device therefore does not comply with, at least, Sections 18.209 or 18.213(d) of the Commission's rules, which requires that RF lighting devices must provide an advisory statement, either on the packaging or with other user documentation, notifying the user that the operation of the device might cause interference to radio equipment operating between 0.45 MHz and 30 MHz. Variations of the language are permitted but presentation in a legible font or text style is required. No such notice is included with this device. Pursuant to Section 2.909 of the Commission's rules, the party responsible for FCC compliance with rules governing RF devices is, in the case of devices that are subject to a grant of equipment authorization, the equipment authorization grantee. Or, in the case of a device subject to a grant of a Declaration of Conformity, the responsible party is the importer. In this case, because there is no apparent grantee of equipment authorization, the Commission should look to the importer of the device as the responsible party.

ARRL respectfully requests that all such devices be removed from retail sale and marketing. Those devices that have been sold to consumers, or which are available for retail sale should be tracked and recalled. It is also requested that the importer of this device be subjected to a forfeiture proceeding commensurate with the Commission's enforcement policies.

Given the foregoing, on behalf of the more than 730,000 licensed radio amateurs in the United States, who have a significant interest in avoiding interference from these noncompliant devices, ARRL respectfully requests that your office take the appropriate action with respect to this device without delay.

Should any additional information be called for, please contact either the undersigned, General Counsel for ARRL, or Mr. Mike Gruber of the ARRL's staff, whose contact information is listed on the attached Report. Thank you very much for your consideration of this request.

Sincerely,

*q).* 

Christopher D. Imlay  
General Counsel, ARRL

Attachment

Copies to: Liquid Sun Massachusetts  
8 Lynwood Avenue  
Suite 105  
Holyoke, MA 01040

Sunlight Supply, Inc.  
5408 N.E. 88th Street, Bldg. A  
Vancouver, WA 98665

## **Appendix 2B**



**ARRL** The national association for  
**AMATEUR RADIO™**

ADMINISTRATIVE HEADQUARTERS  
225 Main Street, Newington, Connecticut, USA 06111-1494  
Telephone: 860-594-0200 ■ FAX: 860-594-0259  
www.arrl.org

04/25/2014

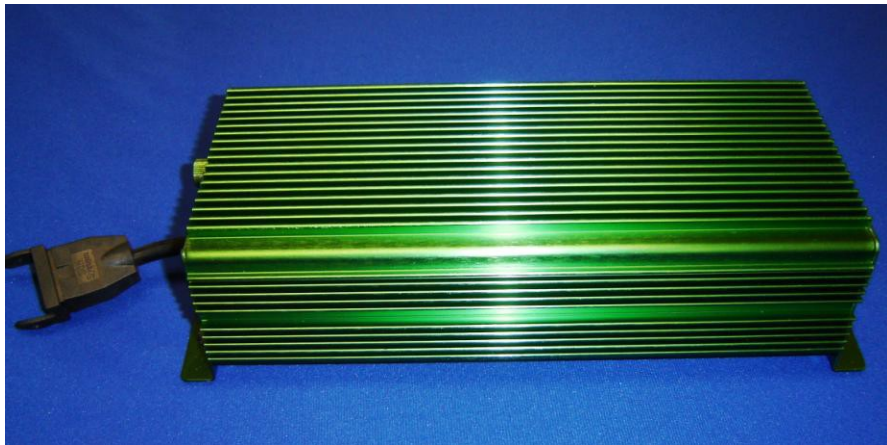
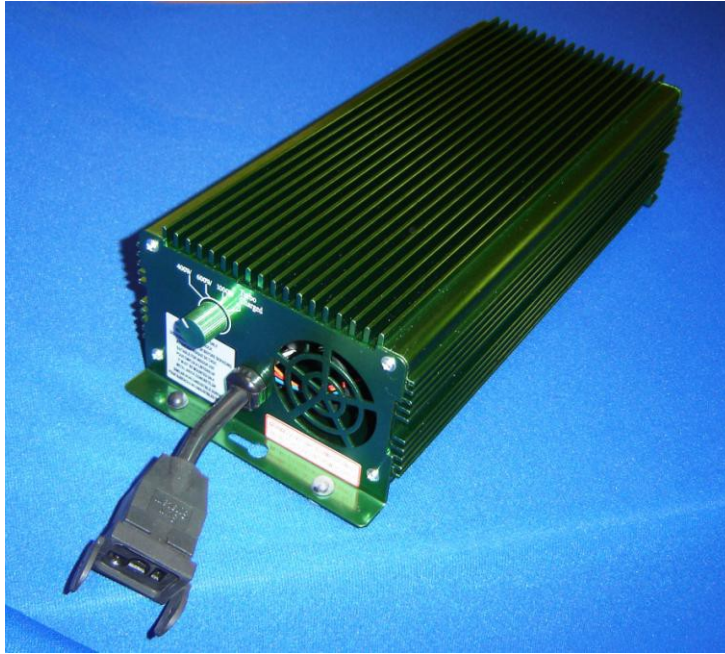
## Conducted Emissions Test Report

STANDARD	TITLE
IEEE C63.4 - 2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

REVIEW	SIGNATURE	DATE
Performed By:	Mike Gruber – W1MG	4/25/14
Results Reviewed By:	Edward Hare – W1RFI	4/25/14

Summary of Test Results: **Fail**

EUT CONFIGURATION	
Manufacturer	Galaxy
Model Number	N/A
Model	Legacy Selectable Wattage Ballast
Serial Number	N/A
Importer  (Note: This company also describes itself as a manufacturer, distributor and a wholesaler.)	<p><b>Sunlight Supply®</b>, Inc. 5408 NE 88th St. Vancouver, WA 98665 Tel: (360) 883-8846 Web: <a href="http://www.sunlightsupply.com">www.sunlightsupply.com</a></p> <p>Sunlight Supply® also has a close business association with: <b>National Garden Wholesale®</b> Web: <a href="http://www.n-g-w.com">www.n-g-w.com</a></p>
Retailers	<p><b>Liquid Sun – Massachusetts</b> (purchased here) 8 Lynwood Avenue Suite 105 Holyoke, MA 1040 Tel: (413) 732-3300 Web: <a href="http://liquidsun.bz">http://liquidsun.bz</a></p> <p>See Appendix A for additional details. Other sources include but not necessarily limited to Sunlight Supply® product distributors of record. This list is too extensive for inclusion in this report. The complete list is available at: <a href="http://www.sunlightsupply.com/page/findretailer">www.sunlightsupply.com/page/findretailer</a>.</p>





## GENERAL INFORMATION

### OBJECT

This document outlines the conducted emissions requirements applicable to lighting equipment covered under **47CFR18**. This procedure will be used for the testing of lighting products in the ARRL EMC laboratory.

### EUT PASS CRITERIA (Consumer)

Table 1

Test Location	Test	Frequency Range	Limits
Power Supply	Conducted Emissions	0.45 MHz - 2.51 MHz	250 $\mu$ V / 48 dB( $\mu$ V) quasi peak
		2.51 MHz - 3 MHz	3,000 $\mu$ V / 70 dB( $\mu$ V) quasi peak
		3 MHz - 30 MHz	250 $\mu$ V / 48 dB( $\mu$ V) quasi peak

### SETUP CHECKLIST

Initials	Setup
MG	The EUT should be in new condition, built to production specifications, using production parts and using production processes. (commercially available)
MG	Schedule EMC facility time with the ARRL Laboratory. (This test is performed by formally trained users of the EMC facility)
MG	Complete Equipment List Table.
MG	Connect output of LISN to input of EMC Receiver.
MG	Apply rated voltage to input of LISN.
MG	Connect the EUT to the LISN using a standard power cord supplied with the product. (approx. 1.2m in length)
MG	The Reference Ground Plane on the floor should be at least 2m x 2m in size and shall extend 0.5m beyond the footprint of the EUT.
MG	For measuring table-top devices, mount onto a table 0.8m high and use a vertical conducting plane at least 2m x 2m in size located 40cm to the rear of the EUT and bonded to the reference ground plane with 3cm-wide straps at intervals less than 1m.
MG	Test each EUT model number at its nominal (rated) voltage.
MG	Photograph the test setup and include in this test report.

**TEST SETUP (insert photo)**



**EQUIPMENT LIST**

Use the following equipment (or equivalent) in executing this procedure. If an equivalent piece of test equipment is used, then a note with the make, model, serial number, and calibration due date of the equipment must be made in the table.

Manufacturer	Description	Model Number	Serial Number	Cal Due
N/A	Conducted Emissions test area	N/A	N/A	N/A
R&S	EMC Spectrum Analyzer/EMI Receiver	FSH3	102393	06-21-14
N/A	Measurement Cable	N/A	N/A	N/A
R&S	Line Impedance Stabilization Network (LISN)	ENV216	100057	Self



# CONDUCTED EMISSIONS TEST

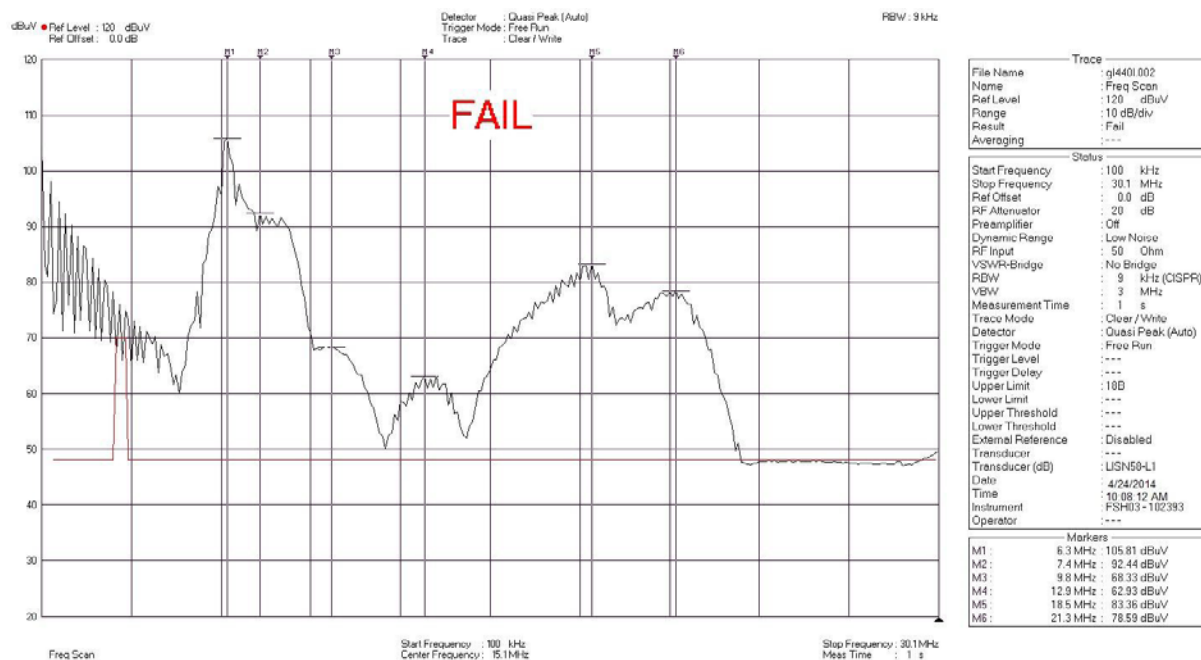
1. Bond the LISN to the ground plane of the test area using a grounding cable that is as short as possible.
2. Connect the EUT power cable to the Line Impedance Stabilization Network (LISN).
3. Measure the conducted emissions from the EUT using the LISN and a quasi-peak detector.
4. Record the six highest emissions from the EUT and compare the voltage to the limits specified in Table 1.
5. Attach emissions plots to this procedure.

Six Highest Emissions	Nominal Line Voltage	Interference Voltage (Quasi Peak)	Limit (Quasi Peak)	PASS / FAIL
6.3 MHz	120VAC	106 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
7.4 MHz	120VAC	92 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
9.8 MHz	120VAC	68 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
12.9 MHz	120VAC	63 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
18.5 MHz	120VAC	83 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
21.3 MHz	120VAC	79 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>

(See Appendix B for additional comments on required FCC product labeling.)

## PLOT OF CONDUCTED EMISSIONS (PHASE TO GROUND)

NOTE: The Neutral conductor to ground spectra was very similar.



**Galaxy Legacy 1000 Watt Dimmable Ballast at 400 Watt Setting**  
 All Power Settings Are Similar. See Appendix C for supplemental data.

# Appendix A

## Galaxy 1000 Watt Dimmable Ballast Purchasing Info

On April 23, 2014, an ARRL Laboratory Engineer used a personal credit card to purchase a Galaxy 1000 Watt Dimmable Ballast for grow lights. This purchase was made at the following nearby retail store:

**Liquid Sun – Massachusetts**  
8 Lynwood Avenue Suite 105  
Holyoke, MA 1040  
Tel: (413) 732-3300  
Web: <http://liquidsun.bz>

See the following sales receipt for supplemental and supporting documentation.

5571567  
LIQUID SUN INC  
8 LYNWOOD AVE  
HOLOKEE, MA 01040  
(413)539-6875

Term ID: 001 Ref #: 001

**Sale**

XXXXXXXXXXXX  
MASTERCARD Entry Method: Swiped

04/23/14 10:02:40  
Inv #: 000001 Appr Code: 02141Z  
Apprvd: Online Batch#: 113001

Total: \$ 265.00

Customer Copy

Date: 4/23/14

Address \_\_\_\_\_

Reg. No.	Clerk	Account Forward
1	Galaxy/KS	250
2		
3		
4		
5		250
6		
7		
8		265
9		
10		
11		
12		
13		
14		
15		

A-100035103530 Your Museum Stated to Date - If Error is Found, Return at Once  
I-45202/46202/46203

## **APPENDIX B**

### **Galaxy 1000 Watt Dimmable Ballast Fails to Meet FCC Labeling Requirements**

As the photos in this report show, there is no FCC label or sticker on this device. Furthermore, there is no FCC information included anywhere on the device, box or documentation. There is no reference to either Part 18 or Part 15 of the FCC rules.<sup>1</sup> This lack of proper labeling and documentation is an additional Part 18 rules violation.

Specifically, some of the more important rules that apply in this case are as follows. Please note that paragraph § 18.213 (d) specifically applies to RF Lighting Devices. In addition, some rules regarding equipment authorization under § 18.203 are included for reference purposes:

#### **§ 18.203 Equipment authorization.**

(a) ) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

- (1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.
- (2) A technical report pursuant to §§ 18.207 and 18.311.

#### **§ 18.213 Information to the user.**

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system
- (b) Maintenance of the system
- (c) ) Simple measures that can be taken by the user to correct interference.
- (d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45–30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.

---

<sup>1</sup> While not necessarily an FCC matter, we also note that the device does not have a UL logo, although  
Conducted Emissions

there is a label on the device with a UL reference.

# **APPENDIX C**

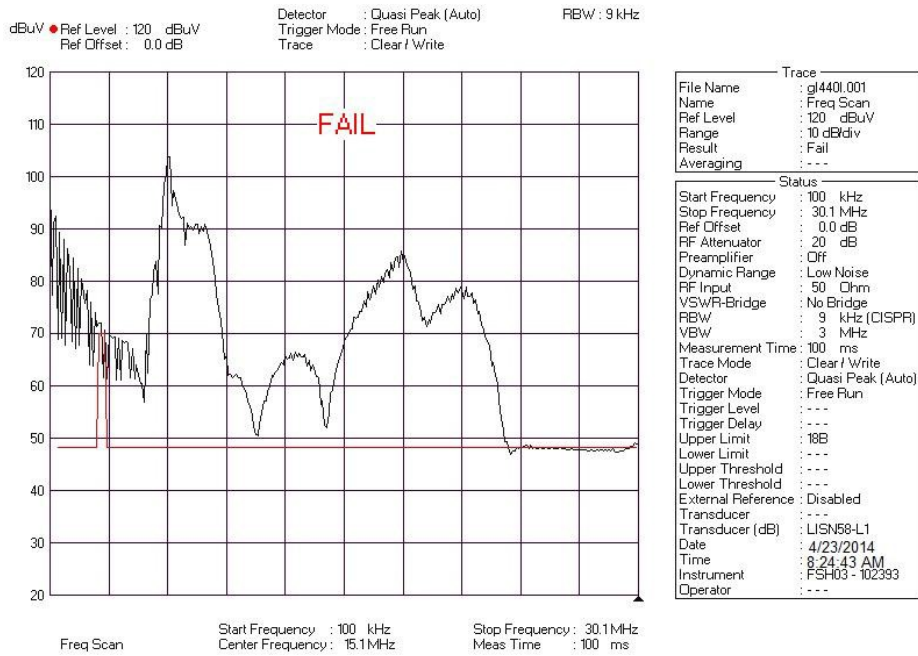
## **Galaxy Legacy 1000 Watt Dimmable Ballast Conducted Emissions Testing Supplemental Data**

The Quasi Peak graphs in this Appendix show that the Galaxy Legacy 1000 Dimmable ballast significantly exceeds all FCC Part 18 limits under all operating conditions.

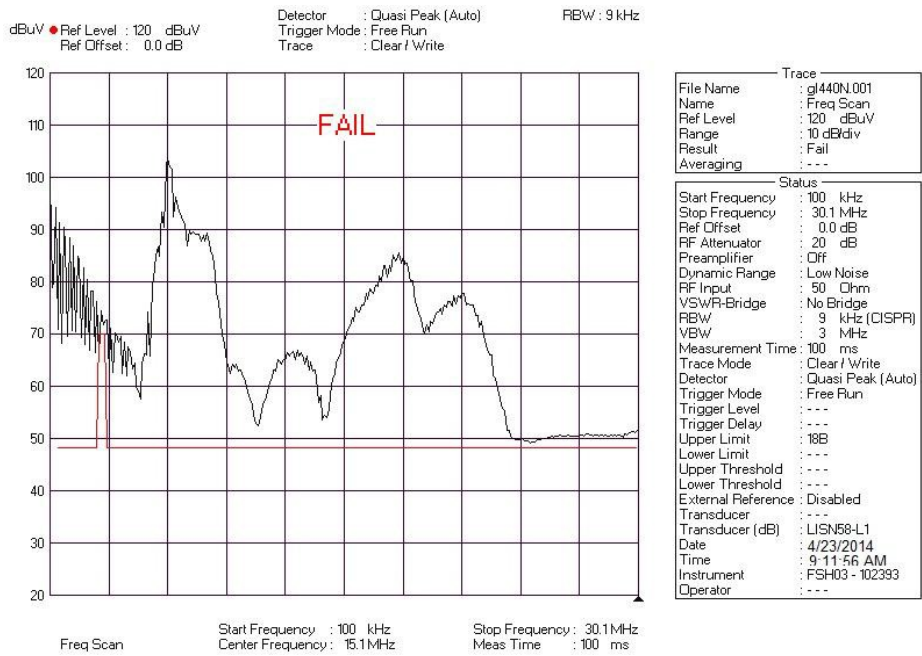
# Galaxy Legacy 1000W Dimmable Ballast

## 400 Watt Setting

### 0.10 to 30.1 MHz



**Phase to Ground**

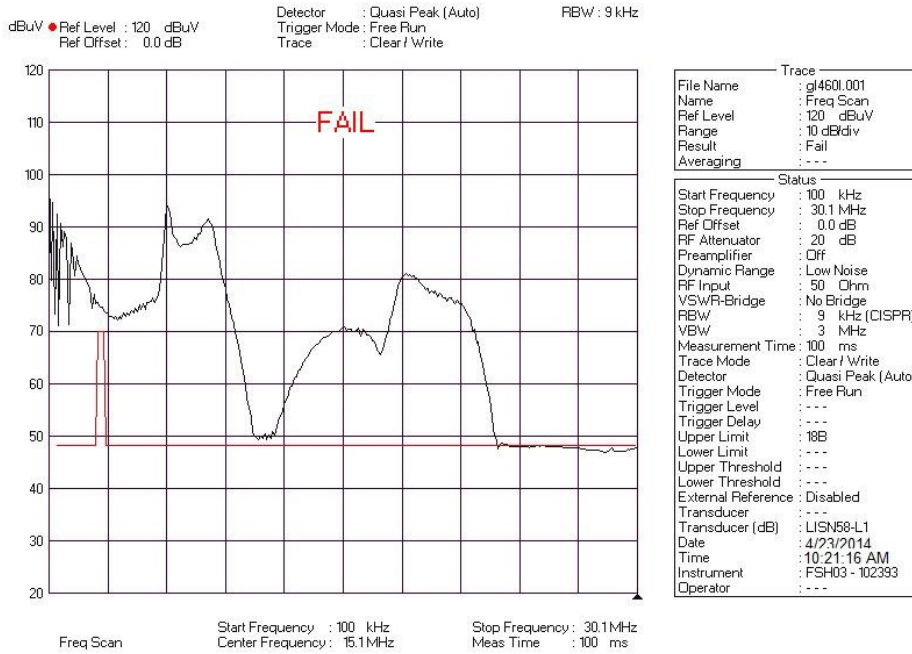


**Neutral to Ground**

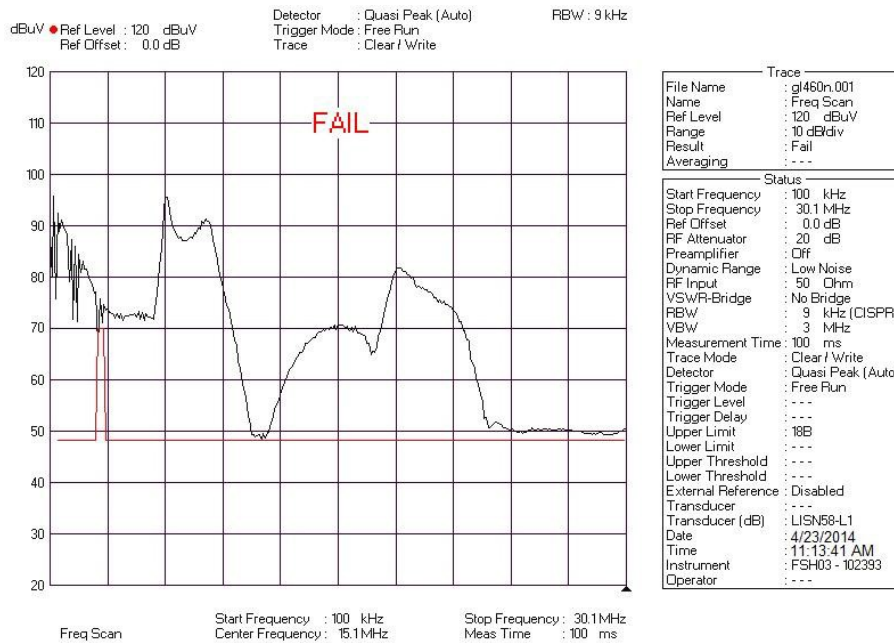
# Galaxy Legacy 1000W Dimmable Ballast

## 600 Watt Setting

### 0.10 to 30.1 MHz



### Phase to Ground



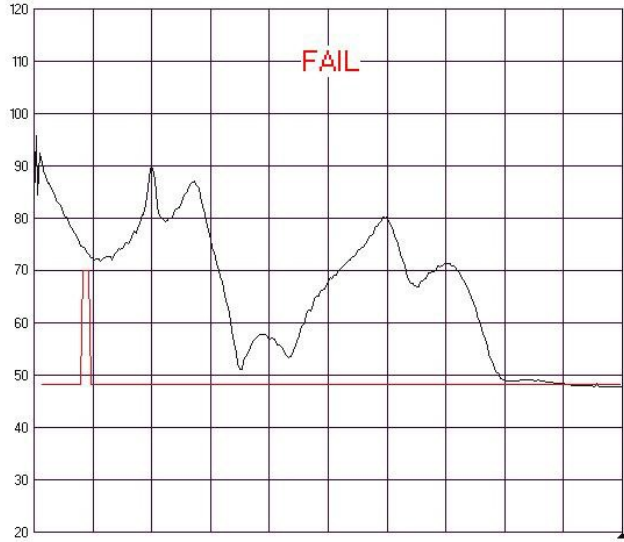
### Neutral to Ground

# Galaxy Legacy 1000W Dimmable Ballast

## 1000 Watt Setting

### 0.10 to 30.1 MHz

dBuV ● Ref Level : 120 dBuV      Detector : Quasi Peak (Auto)      RBW : 9 kHz  
 Ref Offset : 0.0 dB              Trigger Mode : Free Run  
    Trace : Clear / Write



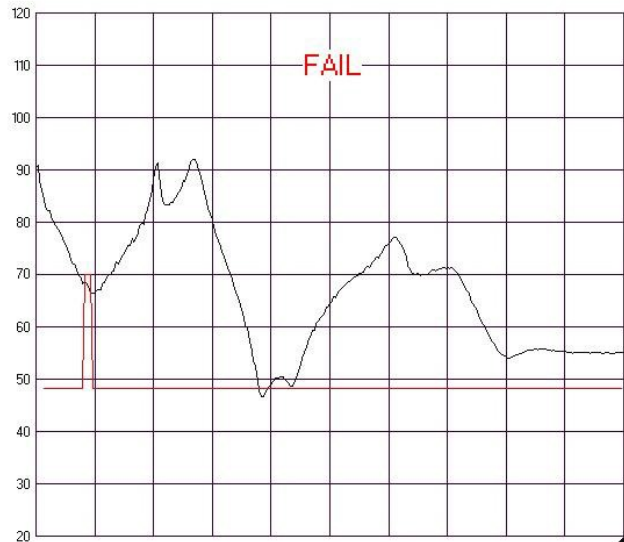
Trace	
File Name	: gl410i.001
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18B
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 4/23/2014
Time	: 1:12:37 PM
Instrument	: FSH03 - 102393
Operator	: ---

Freq Scan      Start Frequency : 100 kHz      Stop Frequency : 30.1 MHz  
    Center Frequency : 15.1 MHz      Meas Time : 100 ms

### Phase to Ground

dBuV ● Ref Level : 120 dBuV      Detector : Quasi Peak (Auto)      RBW : 9 kHz  
 Ref Offset : 0.0 dB              Trigger Mode : Free Run  
    Trace : Clear / Write



Trace	
File Name	: gl410n.001
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18B
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 4/23/2014
Time	: 2:19:21 PM
Instrument	: FSH03 - 102393
Operator	: ---

Freq Scan      Start Frequency : 100 kHz      Stop Frequency : 30.1 MHz  
    Center Frequency : 15.1 MHz      Meas Time : 100 ms

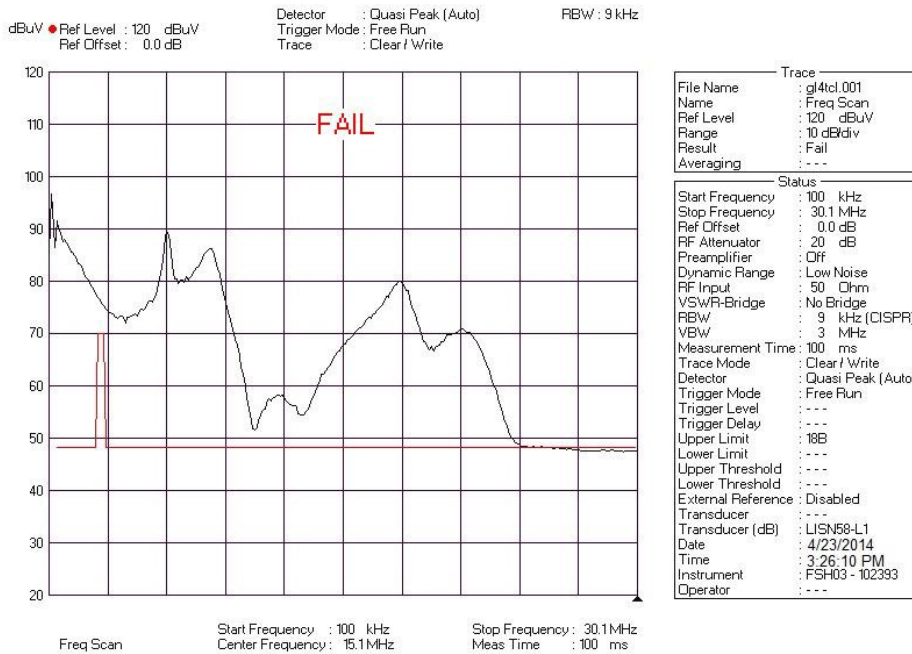
### Neutral to Ground



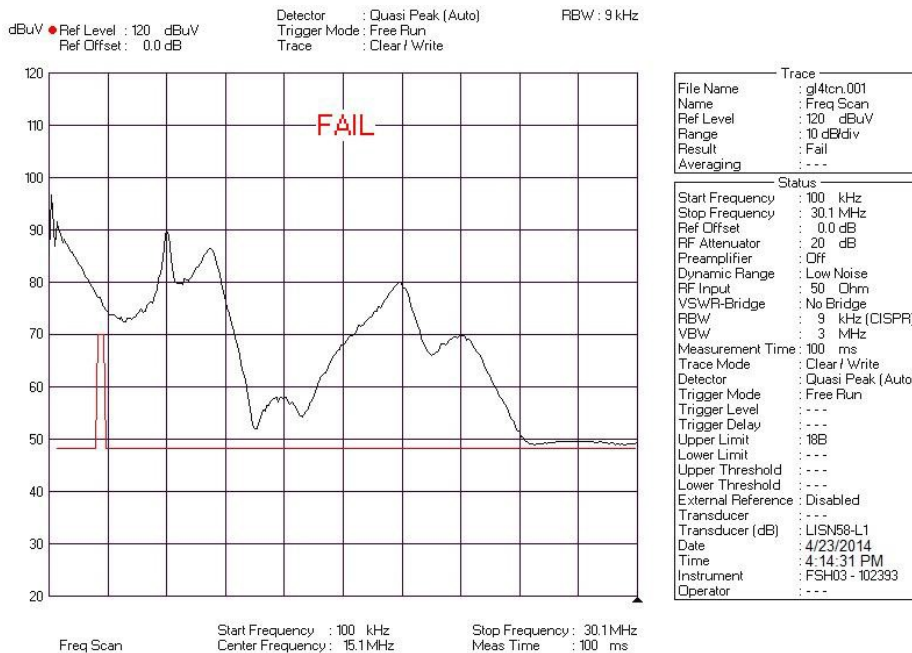
# Galaxy Legacy 1000W Dimmable Ballast

## Turbo Charged Setting

0.10 to 30.1 MHz



## Phase to Ground



## Neutral to Ground

## **Appendix 3A**

# BOOTH, FRERET & IMLAY, LLC

—ATTORNEYS AT LAW—

ROBERT M. BOOTH, JR. (1911-1981)  
JULIAN P. FRERET (1918-1999)  
CHRISTOPHER D. IMLAY

14356 CAPE MAY ROAD  
SILVER SPRING, MD 20904-6011  
WWW.IMLAYLAW.COM

TELEPHONE: (301) 384-5525  
FACSIMILE: (301) 384-6384  
CHRIS@IMLAYLAW.COM

June 30, 2015

Via E-mail and U.S. Mail

[bruce.jacobs@fcc.gov](mailto:bruce.jacobs@fcc.gov)

[rashmi.doshi@fcc.gov](mailto:rashmi.doshi@fcc.gov)

Bruce Jacobs, Chief  
Spectrum Enforcement Division  
Enforcement Bureau  
Federal Communications Commission  
445-lith Street, S.W.  
Washington, D.C. 20554

Dr. Rashmi Doshi, Chief  
Laboratory Division  
Office of Engineering and Technology  
Federal Communications Commission  
7435 Oakland Mills Rd  
Columbia MD 21046-1609

Re: Violation of Part 18 Regulations; Quantum Horticulture Model  
HPS/MH-600W RF Lighting Device (Electronic Ballast); Conducted  
Emission Limit, Labeling and Marketing Violations.

Dear Mr. Jacobs and Dr. Doshi:

This office represents ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated. The purpose of this letter and the attached Conducted Emissions Test Report is to request on behalf of ARRL that the Commission investigate and commence an enforcement proceeding in order to halt immediately the marketing and retail sale of an RF lighting device in the United States known as the Quantum Horticulture HPS/MH-600W RF Lighting Ballast. This device is intended for agricultural/horticultural deployment and is known as a "grow light." The device has been thoroughly tested by ARRL's laboratory as per the attached Test Report and has been found to grossly exceed the Conducted Emission limits set forth in Section 18.307(c) of the Commission's Rules. As well, the device is also being imported, marketed and sold in violation of, at least, Section 18.213 of the Commission's Rules at numerous retail outlets in the United States including Aquarius Hydroponics of

West Springfield, Massachusetts (from which ARRL purchased the *unit* used for testing in ARRL's laboratory).

The instant complaint is one of several being filed contemporaneously pertaining to various RF lighting ballasts which have been tested by ARRL's laboratory. As well, ARRL previously filed a complaint dated March 12, 2014 against an RF lighting ballast device imported and marketed by a company called Lumatek, about which apparently nothing has been done to date.

ARRL has received numerous complaints from amateur radio operators of significant noise in the Medium (MF) and High Frequency (HF) bands between 1.8 MHz and 30 MHz from "grow lights" and other Part 15 and Part 18 RF lighting devices. In response to these complaints, among other things, ARRL purchased the Quantum Horticulture grow light at retail from a company called Aquarius Hydroponics at 138 Memorial Avenue, West Springfield, Massachusetts 01089. ARRL tested the device in its laboratory. The results of the tests made by ARRL are in the attached Conducted Emissions Test Report (the "Report"). These devices are easily capable of emitting RF noise sufficient to preclude Amateur Radio MF and HF communications (and as well AM Broadcast station reception) throughout entire communities.

The Quantum Horticulture grow light has been imported by Hydrofarm Horticultural Products, a company located in Petaluma, California. See, [www.hydrofarm.com](http://www.hydrofarm.com). In addition to Aquarius Hydroponics in Massachusetts, the device is apparently available at retail sources including but not limited to those listed at page 1 of the attached Test Report and at [www.hydrofarm.com/where-to-buy/index.php](http://www.hydrofarm.com/where-to-buy/index.php).

As can be seen from the Report, ARRL tested the conducted emissions from this device according to the IEEE C63.4-2009 standard for Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment. At page 5, the Report concludes from the conducted emissions tests that the six highest emissions from the device in the HF band *substantially* exceed the Quasi-Peak limit specified in Section 18.307(c) of the Rules. For example, the Quasi-Peak limit in the bands between 3.0 and 30 MHz is 48 dB $\mu$ V. The Quantum Horticulture device has a Quasi-Peak Interference Voltage at 6.5 MHz of 79 dB $\mu$ V. At 16.9 MHz, the Quasi-Peak Interference Voltage is 59 dB $\mu$ V. As per Appendix C of the Test Report, in both phase-to-ground and neutral-to-ground operating conditions, the conducted emissions limits are significantly exceeded, sometimes by extreme margins, throughout the entire HF frequency range.

The level of conducted emissions from this device is so high that, as a practical matter, one RF ballast operated in a residential environment would create preclusive interference to Amateur radio HF communications throughout entire neighborhoods.

As discussed in Appendix B of the Report, there are, in addition to the blatantly excessive conducted emissions from this device, substantive marketing violations associated with this device. Although there is an FCC label on the device, as called for by Section 18.209(b) of the Rules for devices subject to Declarations of Conformity or

certification, the label and documentation claim compliance with Part 18 regulations which in the case of this device is false and misleading. Marketing of the device therefore does not comply with, at least, Section 18.213 of the Commission's rules. Pursuant to Section 2.909 of the Commission's rules, the party responsible for FCC compliance with rules governing RF devices is, in the case of devices that are subject to a grant of equipment authorization, the equipment authorization grantee. Or, in the case of a device subject to a grant of a Declaration of Conformity, the responsible party is the importer. In this case, because there is no apparent grantee of equipment authorization, the Commission should look to the importer of the device as the responsible party.

ARRL respectfully requests that all such devices be removed from retail sale and marketing. Those devices that have been sold to consumers, or which are available for retail sale should be tracked and recalled. It is also requested that the importer of this device be subjected to a forfeiture proceeding commensurate with the Commission's enforcement policies.

Given the foregoing, on behalf of the more than 730,000 licensed radio amateurs in the United States, who have a significant interest in avoiding interference from these noncompliant devices, ARRL respectfully requests that your office take the appropriate action with respect to this device without delay.

Should any additional information be called for, please contact either the undersigned, General Counsel for ARRL, or Mr. Mike Gruber of the ARRL's staff, whose contact information is listed on the attached Report. Thank you very much for your consideration of this request.

Sincerely,

*q).* 

Christopher D. Imlay  
General Counsel, ARRL

Attachment

Copies to: Hydrofarm Horticultural  
Products  
2249 S. McDowell Ext.  
Petaluma, CA 94954

Aquarius Hydroponics  
138 Memorial Avenue  
West Springfield, MA 01089

## **Appendix 3B**



**ARRL** The national association for  
**AMATEUR RADIO™**

ADMINISTRATIVE HEADQUARTERS  
225 Main Street, Newington, Connecticut, USA 06111-1494  
Telephone: 860-594-0200 ■ FAX: 860-594-0259  
www.arrl.org

04/10/2014

## Conducted Emissions Test Report

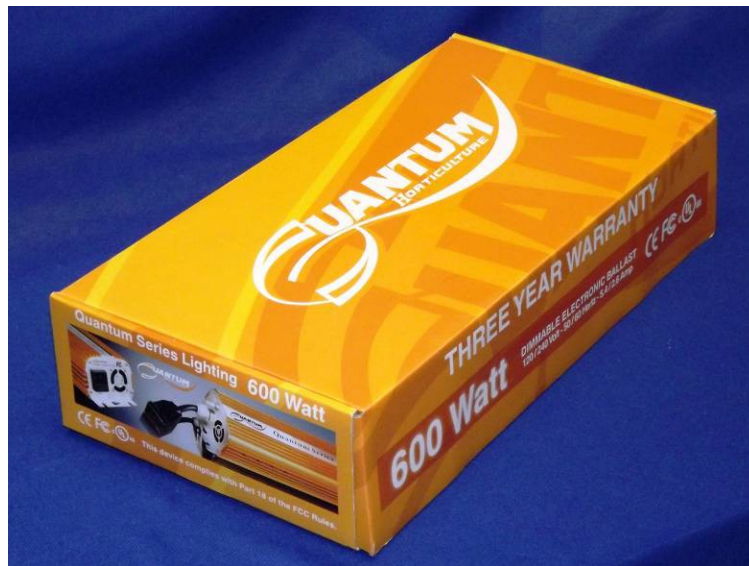
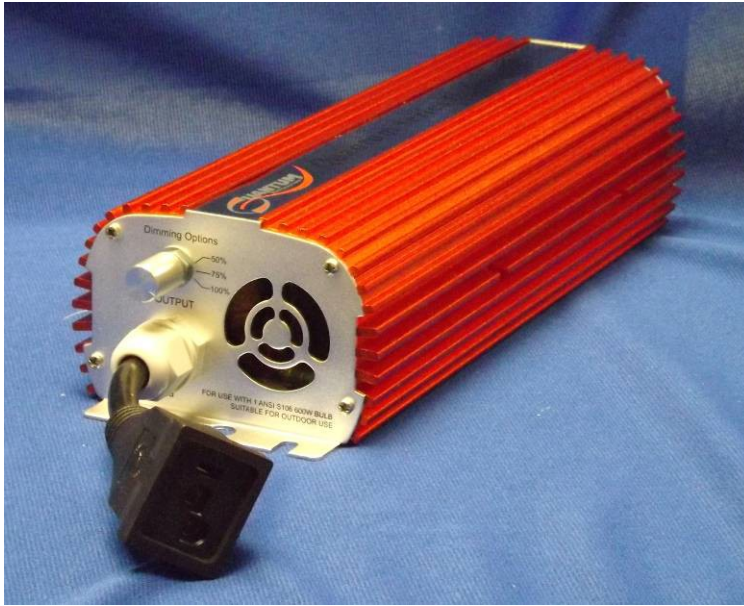
STANDARD	TITLE
IEEE C63.4 - 2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

REVIEW	SIGNATURE	DATE
<b>Performed By:</b>	Mike Gruber – W1MG Pete Turbide – W1PT	4/9/14
<b>Results Reviewed By:</b>	Edward Hare – W1RFI	4/10/14

Summary of Test Results: **Fail**

EUT CONFIGURATION	
Manufacturer	Quantum Horticulture
Model Number	N/A
Model	HPS/MH—600W
Serial Number	N/A
Importer	<b>Hydrofarm Horticultural Products</b> 2249 S. McDowell Ext. Petaluma CA 94954 Tel: (800) 634-9990 Web: <a href="http://www.hydrofarm.com">www.hydrofarm.com</a>  <b>Formerly:</b> R & M Supply, Inc. 420 Harley Knox Blvd Perris CA 92571
Retailers	<b>Aquarius Hydroponics</b> (purchased here) 138 Memorial Ave West Springfield, MA 01089 Tel: (413) 732-3300 Web: <a href="http://aquariushydro.com">http://aquariushydro.com</a>  See Appendix A for additional details. Other sources include but not necessarily limited to Hydrofarm Product distributors of record. This list is too extensive for inclusion in this report. The complete list is available at: <a href="http://www.hydrofarm.com/where-to-buy/index.php">www.hydrofarm.com/where-to-buy/index.php</a> .







## GENERAL INFORMATION

### OBJECT

This document outlines the conducted emissions requirements applicable to lighting equipment covered under **47CFR18**. This procedure will be used for the testing of lighting products in the ARRL EMC laboratory.

### EUT PASS CRITERIA (Consumer)

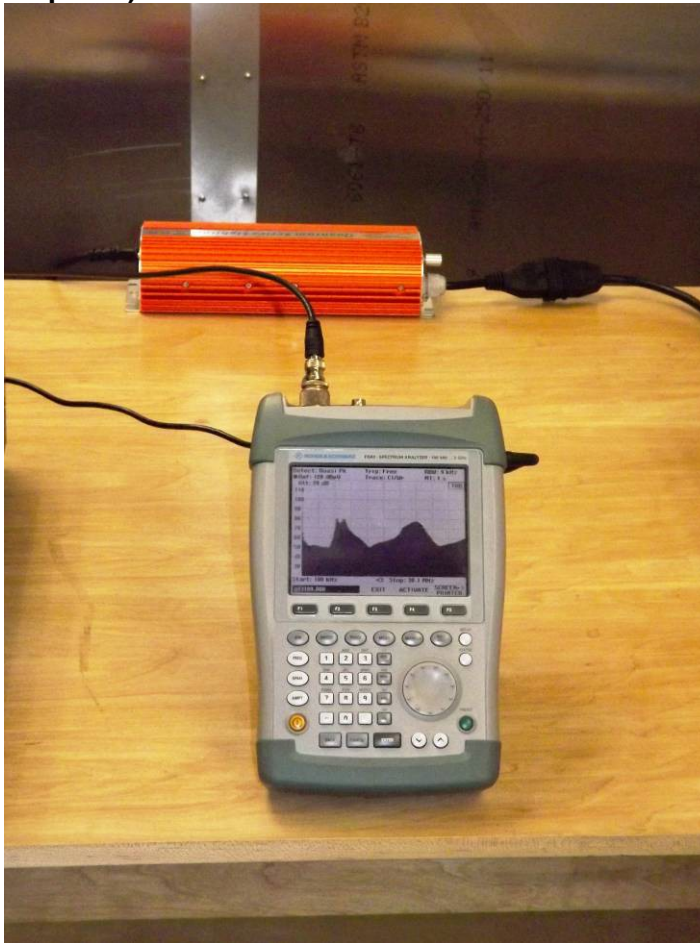
Table 1

Test Location	Test	Frequency Range	Limits
Power Supply	Conducted Emissions	0.45 MHz - 2.51 MHz	250 $\mu$ V / 48 dB( $\mu$ V) quasi peak
		2.51 MHz - 3 MHz	3,000 $\mu$ V / 70 dB( $\mu$ V) quasi peak
		3 MHz - 30 MHz	250 $\mu$ V / 48 dB( $\mu$ V) quasi peak

### SETUP CHECKLIST

Initials	Setup
MG	The EUT should be in new condition, built to production specifications, using production parts and using production processes. (commercially available)
MG	Schedule EMC facility time with the ARRL Laboratory. (This test is performed by formally trained users of the EMC facility)
MG	Complete Equipment List Table.
MG	Connect output of LISN to input of EMC Receiver.
MG	Apply rated voltage to input of LISN.
MG	Connect the EUT to the LISN using a standard power cord supplied with the product. (approx. 1.2m in length)
MG	The Reference Ground Plane on the floor should be at least 2m x 2m in size and shall extend 0.5m beyond the footprint of the EUT.
MG	For measuring table-top devices, mount onto a table 0.8m high and use a vertical conducting plane at least 2m x 2m in size located 40cm to the rear of the EUT and bonded to the reference ground plane with 3cm-wide straps at intervals less than 1m.
MG	Test each EUT model number at its nominal (rated) voltage.
MG	Photograph the test setup and include in this test report.

## TEST SETUP (insert photo)



## EQUIPMENT LIST

Use the following equipment (or equivalent) in executing this procedure. If an equivalent piece of test equipment is used, then a note with the make, model, serial number, and calibration due date of the equipment must be made in the table.

Manufacturer	Description	Model Number	Serial Number	Cal Due
N/A	Conducted Emissions test area	N/A	N/A	N/A
R&S	EMC Spectrum Analyzer/EMI Receiver	FSH3	102393	06-21-14
N/A	Measurement Cable	N/A	N/A	N/A
R&S	Line Impedance Stabilization Network (LISN)	ENV216	100057	Self

## CONDUCTED EMISSIONS TEST

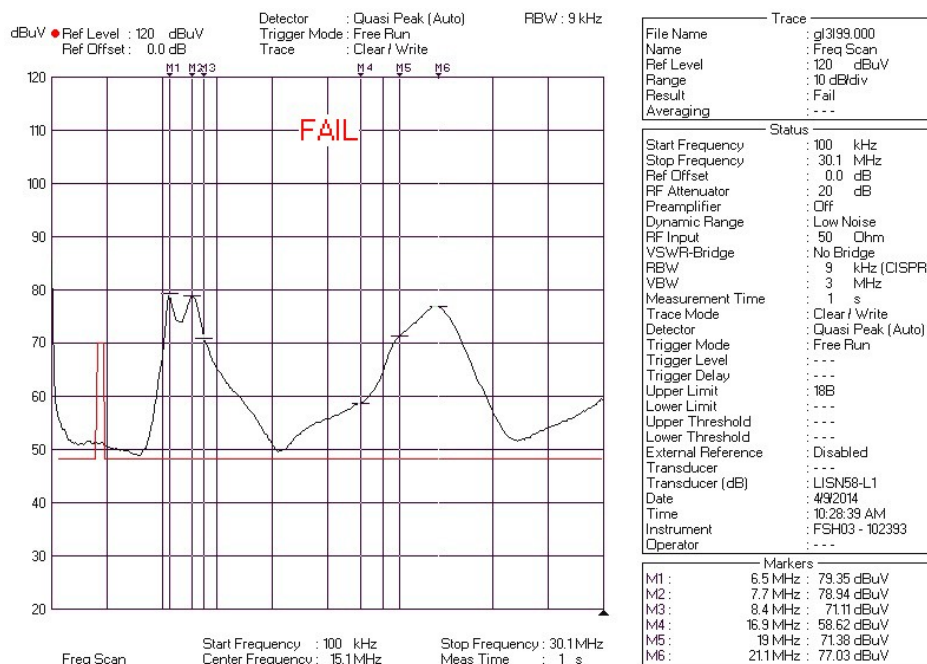
1. Bond the LISN to the ground plane of the test area using a grounding cable that is as short as possible.
2. Connect the EUT power cable to the Line Impedance Stabilization Network (LISN).
3. Measure the conducted emissions from the EUT using the LISN and a quasi-peak detector.
4. Record the six highest emissions from the EUT and compare the voltage to the limits specified in Table 1.
5. Attach emissions plots to this procedure.

Six Highest Emissions	Nominal Line Voltage	Interference Voltage (Quasi Peak)	Limit (Quasi Peak)	PASS / FAIL
6.5 MHz	120VAC	79 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
7.7 MHz	120VAC	79 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
8.4 MHz	120VAC	71 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
16.9 MHz	120VAC	59 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
19.0 MHz	120VAC	71 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>
21.1 MHz	120VAC	77 dB $\mu$ V	48 dB( $\mu$ V)	<b>FAIL</b>

(See Appendix B for additional comments on required FCC product labeling.)

## PLOT OF CONDUCTED EMISSIONS (PHASE TO GROUND)

NOTE: The Neutral conductor to ground spectra was very similar.



### Quantum 600 Watt Dimmable Ballast at 600 Watt Setting

All Power Settings Are Similar. See Appendix C for supplemental data.

# **Appendix A**

## **Quantum 600 Watt Dimmable Ballast Purchasing Info**

On April 8, 2014, an ARRL Laboratory Engineer used a personal credit card to purchase a Quantum 600 Watt Dimmable Ballast for grow lights. This purchase was made at the following nearby retail store:

**Aquarius Hydroponics**  
138 Memorial Ave  
West Springfield, MA 01089  
Tel: (413) 732-3300  
Web: <http://aquariushydro.com>

See the following sales receipt on next page for supplemental and supporting documentation.

Aquarius Hydroponics  
135 Memorial Ave  
West Springfield, MA 01103  
413-722-8250



**SOLD TO:**  
Retail Customer

**Date:** 2014-04-07 17:33:52  
**Payment Method:** Credit Card

Product	Part #	Tax	Price (net)	Price (net)	Price (net)	Total (net)
1 x Quantum 600w Dimmable Ballast	QT600	6.25%	\$189.00	\$189.00	\$189.00	\$189.00
Sub-Total:						\$189.00
Tax:						\$11.81
Discount: \$18.90 (-10%)						
Total:						\$181.91

# **APPENDIX B**

## **Product Meets FCC Labeling Requirements**

As the photos in this report show, this product has the required FCC RFI warning and labeling. **This device, however, does not meet the emissions limits.** We also note the following:

- 1) **On box**: FCC logo and statement, “This device complies with Part 18 of the FCC Rules.” **Device however, clearly does not meet Part 18 emissions limits.** CE and UL logos also noted.
- 2) **In documentation**: FCC logo and statement, “This device complies with section 18 of the FCC rules and regulations. This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Move your ballast should any interference occur.” **Device however, clearly does not meet Part 18 emissions limits.** CE and UL logos also noted.
- 3) **On unit**: FCC logo. CE and UL logos also noted.

Some of the more important rules that apply in this case are as follows. Please note that paragraph § 18.213 (d) specifically applies to RF Lighting Devices. In addition, some rules regarding equipment authorization under § 18.203 are included for reference purposes:

### **§ 18.203 Equipment authorization.**

(a) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

- (1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.
- (2) A technical report pursuant to §§ 18.207 and 18.311.

### **§ 18.213 Information to the user.**

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system
- (b) Maintenance of the system
- (c) Simple measures that can be taken by the user to correct interference.
- (d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45–30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.

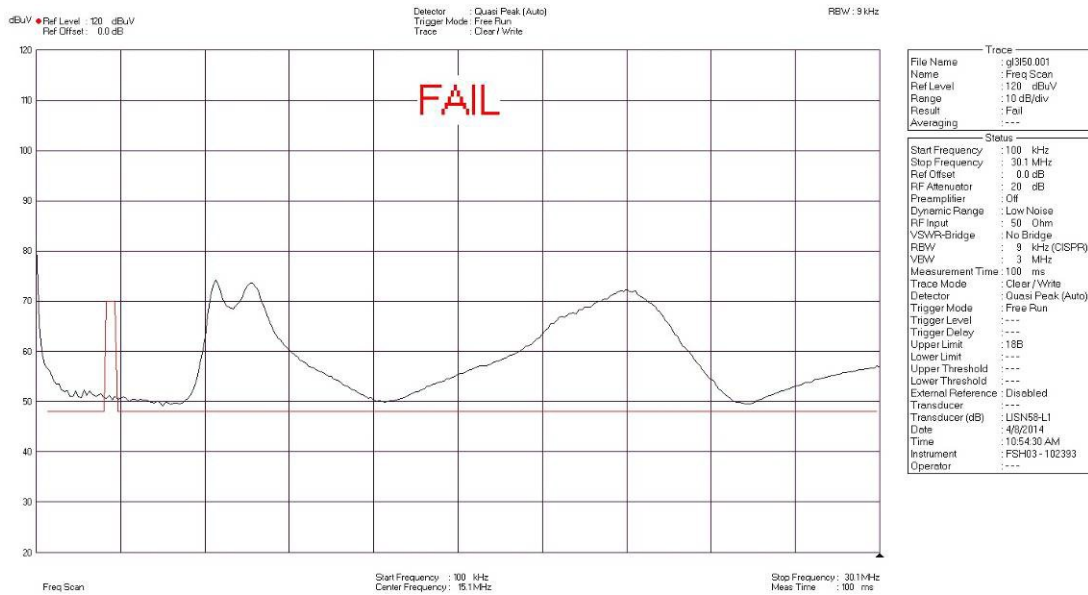
## **APPENDIX C**

### **Quantum 600 Dimmable Ballast Conducted Emissions Testing Supplemental Data**

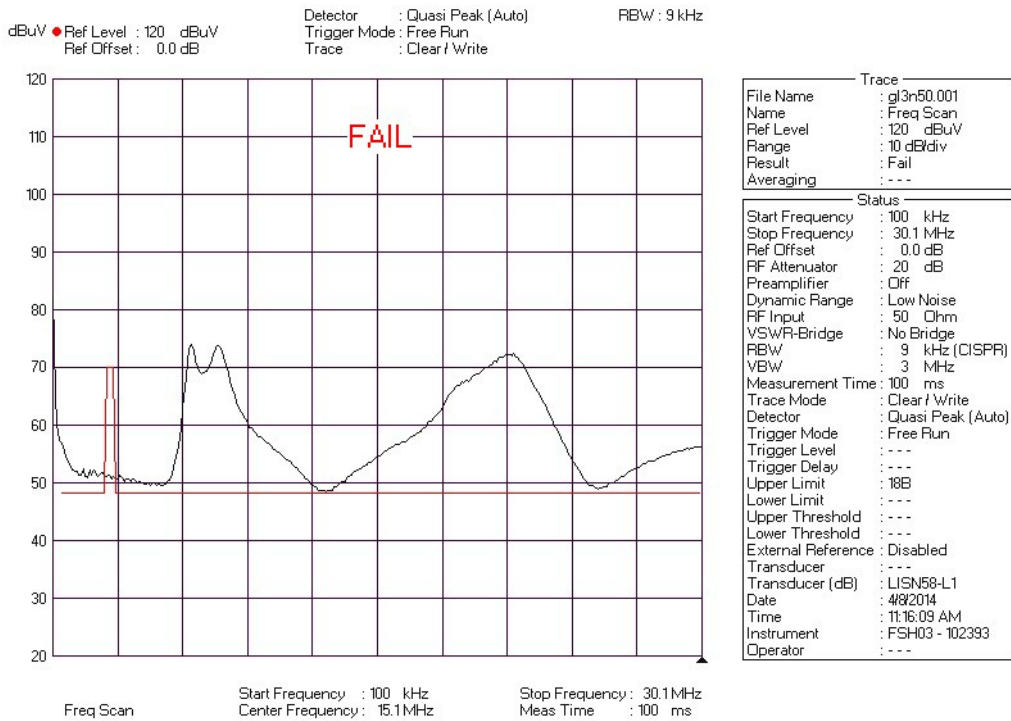
The Quasi Peak graphs in this Appendix show that the Quantum 600 Dimmable ballast significantly exceeds all FCC Part 18 limits under all operating conditions.

# Quantum Horticulture 600W Dimmable Ballast

50% Setting  
0.10 to 30.1 MHz



## Phase to Ground



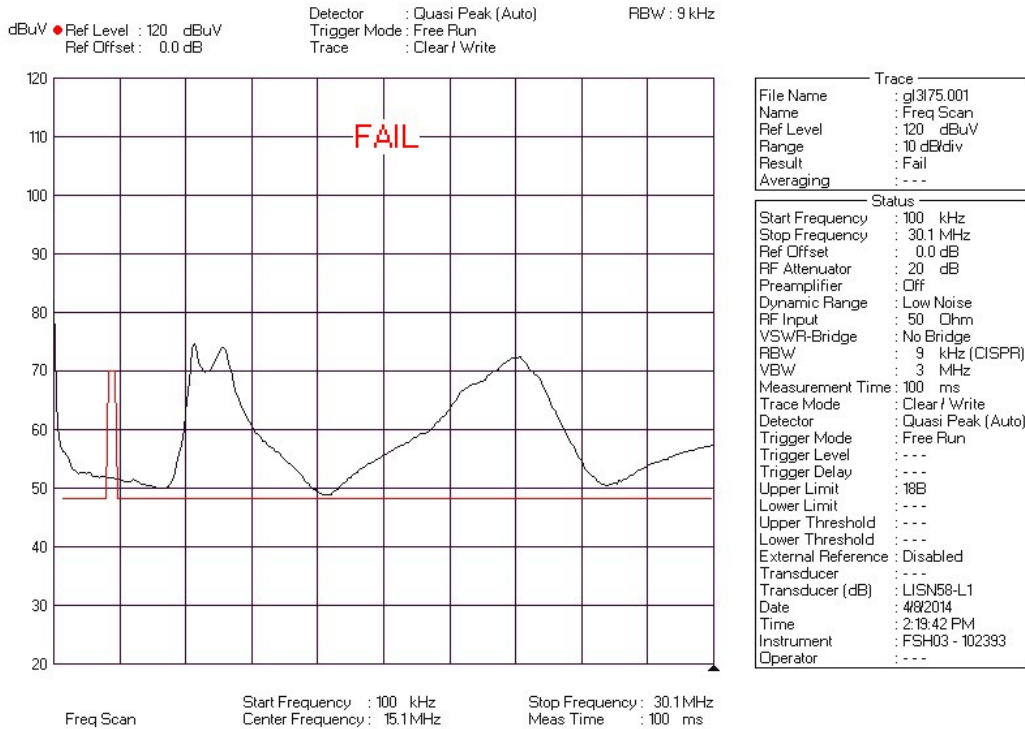
## Neutral to Ground



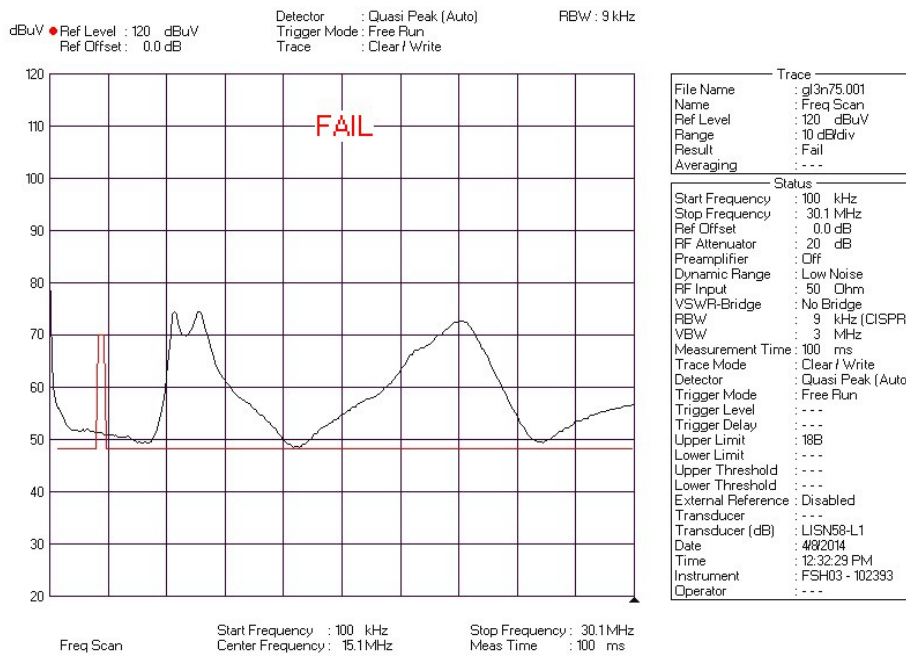
# Quantum Horticulture 600W Dimmable Ballast

## 75% Setting

### 0.10 to 30.1 MHz



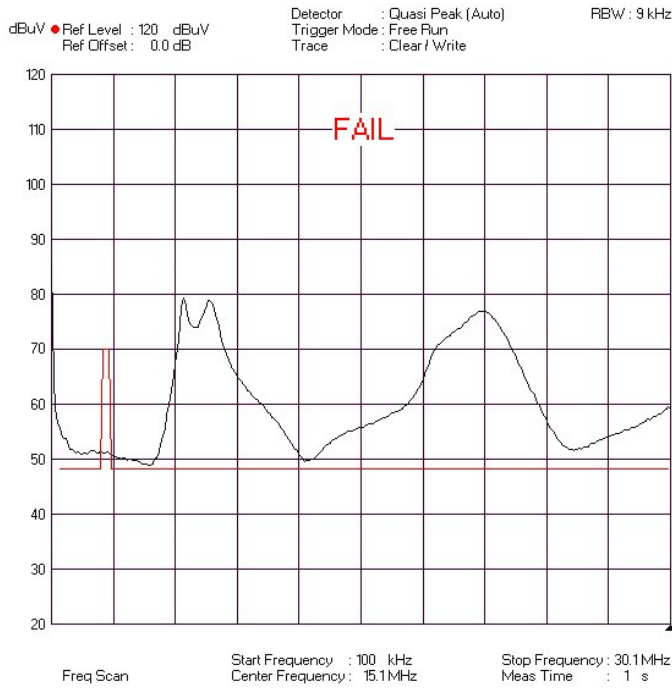
### Phase to Ground



### Neutral to Ground

# Quantum Horticulture 600W Dimmable Ballast

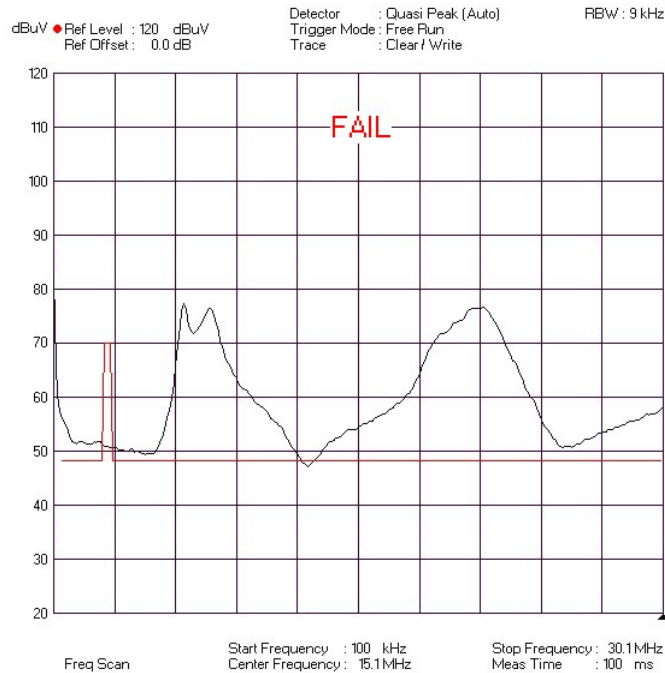
100% Setting  
0.10 to 30.1 MHz



Trace	
File Name	: g\3199.000
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 1 s
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18B
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 4/9/2014
Time	: 10:28:39 AM
Instrument	: FSH03 - 102393
Operator	: ---

## Phase to Ground



Trace	
File Name	: g\3n99.001
Name	: Freq Scan
Ref Level	: 120 dBuV
Range	: 10 dB/div
Result	: Fail
Averaging	: ---

Status	
Start Frequency	: 100 kHz
Stop Frequency	: 30.1 MHz
Ref Offset	: 0.0 dB
RF Attenuator	: 20 dB
Preamplifier	: Off
Dynamic Range	: Low Noise
RF Input	: 50 Ohm
VSWR-Bridge	: No Bridge
RBW	: 9 kHz (CISPR)
VBW	: 3 MHz
Measurement Time	: 100 ms
Trace Mode	: Clear / Write
Detector	: Quasi Peak (Auto)
Trigger Mode	: Free Run
Trigger Level	: ---
Trigger Delay	: ---
Upper Limit	: 18B
Lower Limit	: ---
Upper Threshold	: ---
Lower Threshold	: ---
External Reference	: Disabled
Transducer	: ---
Transducer (dB)	: LISN58-L1
Date	: 4/9/2014
Time	: 1:49:46 PM
Instrument	: FSH03 - 102393
Operator	: ---

## Neutral to Ground

## **Appendix 4**

# **FCC Part 18 Marketing Violations By Home Depot**

By Mike Gruber, W1MG

July 7, 2015

## **Introduction**

Non-electronic ballasts, which once dominated the fluorescent light market, operated under Part 15 as incidental radiators. Today they have been phased out in favor of newer electronic ballasts which, along with CFL bulbs, operate under Part 18 as “RF Lighting Devices.” In this case, the FCC considers these devices to be converting RF energy above 9 kHz directly into light, i.e., another form of energy. For this reason, the Commission classifies an electronic ballast as an ISM device.

Recent surveys conducted by the ARRL in several states, including California, Illinois, Massachusetts and Connecticut indicate that most electrical and lighting retail outlets are now primarily or exclusively stocking and selling electronic ballasts. In fact, it should be noted that non-electronic ballasts are no longer being sold by several “big box stores” that we surveyed. Presumably this is a nationwide phenomenon being driven, in part, by a Government mandate.

## **Part 18 Limits for RF Lighting Devices**

As shown by Appendix A, Part 18 has two sets of limits for RF Lighting Devices. Specifically, there is a separate set of limits for consumer vs. non-consumer lighting devices. The emissions limits are considerably lower for consumer rated devices. As an example, the conducted emissions limits for all present ham bands below 30 MHz are 22 dB less for consumer rated devices. It should also be noted that these are the only devices that should be used for a home or residential applications. Per § 18.107 (g), consumer ISM equipment is to be *“used or intended to be used by the general public in a residential environment, notwithstanding use in other areas.”*

Although non-consumer devices might be suitable for commercial and industrial environments, ARRL is now receiving reports of actual cases in which commercial devices are causing harmful interference in residential areas.

## **Illegal Marketing of Part 18 RF Lighting Devices**

The previously mentioned multi-state survey of fluorescent light ballasts showed an alarming number of non-consumer rated ballasts mixed in with consumer products. Furthermore, the display signage in many cases did not mention or adequately address FCC Part 18 requirements as they pertain to interference in a residential environment. In most of the stores that we surveyed, unsuspecting consumers have no way of knowing the significance of consumer vs. non-consumer ballasts. In some cases, “commercial” grade ballasts, with their associated non-consumer emissions limits, appeared to be a heavier

duty or superior product. The display signage implies, therefore, that commercial ballasts are also a product upgrade for home use. It typically does not include or mention or mention the applicable FCC requirements.

Although Part 18 only describes limits for consumer and non-consumer RF Lighting Devices, many ballasts are only labeled as either Part 18A or 18B. This nomenclature is clearly an adaptation from Part 15A and 15B, which pertains to commercial/industrial and residential digital devices, respectively. Part 18 does not include an A or B designation for RF lighting devices.

See Appendix B for pertinent definitions and rules in Part 18, particularly with regard to the marketing and sale of non-consumer devices to consumers. Additional information in Appendix C is taken from Part 2 of the FCC rules. Appendix D is for reference purposes only. It contains some of the equivalent rules with regard to Part 15A (non-consumer) and Part 15B (consumer) digital devices.

### **Sale of Non-Consumer RF Lighting Devices for Residential Purposes**

The following four cases highlight the marketing and sale of commercial light fixtures and ballasts by Home Depot to residential users. The device was actually purchased in each of the three ballast cases after consulting with a sales representative. Specifically, the sales representative was asked about the use of the ballast in a residential environment.

#### **Case 1 (Florescent Light Ballast)**

On July 3, 2015, Ms. Deborah Roy purchased a non-consumer rated GE UltraMax G-Series T8 ballast from a Home Depot located at the following address:

The Home Depot E Springfield - #2678  
2001 Boston Road  
Wilbraham, MA, 01095  
Tel: (413)543-8100

Before selecting the ballast, Ms. Roy reports that she asked the sales help for assistance. She asked if she could use the ballast in her home, even though it was labeled as a commercial device. The Home Depot representative only asked about the voltage for the intended application, then said that it would “work okay.” The help person gave no indication that this non-consumer ballast could not be used in a home environment. Ms. Roy then paid for this device using her MasterCard at the store’s check out. Again, this non-consumer item was in not flagged during check-out. After paying for it, she simply walked out of the store with it.

The consumer and non-consumer ballasts in this store were in no apparent order but differentiated by a color scheme. Blue was for residential environments, and red for commercial. (A quick survey of several samples showed the ratio to be about 50/50.) Although this color scheme made it easy to tell commercial from residential ballasts, it wasn't clear why a consumer would select one over the other. In fact, the commercial rating to most consumers might suggest a heavier duty or better quality product.

The particular ballast purchased by Ms. Roy was mixed in with both consumer and non-consumer ballasts. It was labeled in small print as "FCC Part 18, Non-Consumer" on the top part of the ballast. This particular unit was packaged in a cardboard box with an open top. The instruction sheet was not visible in the box without opening it. Once the ballast was purchased and the box opened, an instruction sheet was found to be folded and inserted inside. This sheet has the following warning:

**WARNING: PLEASE READ THE FOLLWING NOTICE BEFORE INSTALLING  
"CLASS A" ELECTRONIC FLOURESCENT BALLASTS!**

This equipment has been tested and found to comply with FCC 47 CFR Part 18, Non-Consumer RFI/EMI ("Class A") limits. This ballast should only be installed in a commercial environment. Do not install this ballast in a residential environment.

The ballasts in this particular store did not all come in a box. It is, therefore, not known if they all came with a similar instruction sheet and warning. Some of these ballasts were non-consumer rated, as indicted only by the Part 18 A labeling. It should also be pointed out that this labeling is most likely meaningless to most of the customers that purchase these devices. The typical consumer would not know the significance between Part 18A and Part 18B ratings.

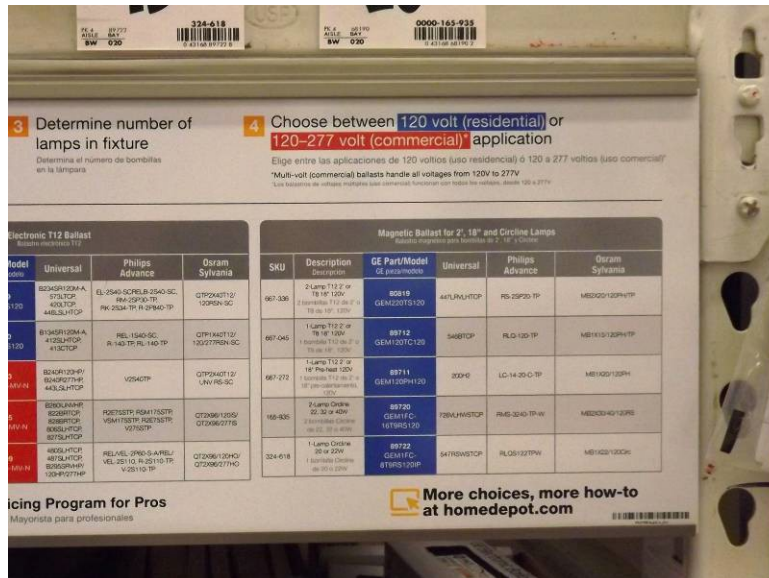
The store display is shown in Figure 1. There was no clear indication of Part 18 FCC requirements. A relatively small sign, shown in Figure 2, was attached to the display and about eye level. Although it contained instructions on how to select a ballast, it did not specifically address the FCC rules nor prohibit the use of non-consumer ballasts in a residential environment. Figure 3 shows a close-up of the only display instructions on how to select between commercial and non-consumer ballasts. It only references voltage requirements. Since 120 vac is typically available in both commercial and residential environments, the consumer in this case might logically conclude that the commercial ballast could be used in a home or residential environment.



Figure 1 - Store display.



Figure 2 - Close-up of store display signage with instructions on how to select a ballast.



**Figure 3 - Step 4 in previously depicted signage describes how to select between residential and commercial ballasts. This is the only such reference at the store display. It only mentions voltage differences. There is no reference to the FCC rules nor the potential for radio interference.**

## Conclusion

Home Depot is not only selling and marketing to commercial devices to consumers, their sales staff is not knowledgeable enough to properly advise their customers.

## Case 2 (Lighting Fixtures)

Mr. Jerry Ramie arrived at the Home Depot #1041 in Milpitas, CA at about 9:50AM on July 2, 2015. He looked at three fluorescent lighting fixtures for his garage. There were several sections for these fixtures; the first two were industrial, although there was one fixture for sale marked as “For Commercial or Residential Use.” The middle, residential display is shown in Figure 4.





**Figure 4 - The middle display containing both residential and commercial fluorescent light fixtures mixed together in no certain order.**

The bottom left, third stack of fixtures in Figure 4 is the 4x48” T8 fixture pulled forward, and the three pulled forward on the lower right of the bottom shelf are all 4x48” T8 fixtures marked “For commercial use.” They are shown in greater detail below in Figure 5.



**Figure 5 - Close-up of commercial fixtures in the residential section.**

The signage above the display is shown next in Figure 6.



**Figure 6 – Display signage for light fixtures shown in previous Figure 5.**

This sign, and others showing home scenes, is directly above the three commercial fixtures, as shown next in Figure 7.



**Figure 7 - Home scenes in vicinity of commercial lighting devices.**

Mr. Ramie asked an assistant for help and the lighting department manager came by. He asked which 48" four-light T8 fixture he should buy and he showed him the residential unit (lower left above) and the three commercial fixtures (lower right above). He asked him what the difference was. The department manager responded that all of them required hard wiring and that he (Mr. Ramie) might want to consider a different unit with a line cord instead. Mr. Ramie told him that he had an electrical box in his garage ceiling and didn't care.

Mr. Ramie then asked him which fixture was of better quality, the residential one or one of the three commercial ones. He said they were "all the same. They all come from China." He noted that the residential version was lower in cost. He recommended the corded residential fixture and suggested using LED lights instead of the fluorescent T8 tubes.

### **Conclusion:**

Although the advice that Mr. Ramie received was correct in that he should have chosen a residential version of the fixture for use in his garage, there were numerous issues with the marketing and display. The layout of the display was confusing with a mix of commercial fixtures under a banner suggesting the products were for residential applications. The marketing of these fixtures is such that a consumer could easily purchase a commercial device for a residential application. The signage was inadequate to properly inform the consumer.

Mr. Ramie also found one product mislabeled in the commercial section. The labeling in this case stated that the fixture was suitable for Commercial or Residential use. It was, however, a commercial fixture as indicated by the 120-277 vac input listed on the box.

### **Case 3 (Fluorescent Light Ballast)**

Mr. Ramie arrived at the Home Depot #6672 in San Jose, CA at about 11:15AM on 7/2/15. He spoke with a sales assistant in the lighting department. He told her that he had two 4x48" T8 fixtures in his garage and wanted to replace the ballast on the one that quit working. He was shown two Philips ballasts; the red one on the left "green tagged" for \$14.97 (Commercial) and the blue one on the right for \$17.97 (Residential).





Figure 8 - Ballasts on display at Home Depot store in San Jose.

Mr. Ramie asked the sales representative which one was “better” and she said they were the same. He asked her why he should “spend more on the blue one than on the red one.” He pointed out that both ballasts had the same number and colors of wires and the connection diagram was the same. She said that Mr. Ramie could save money by purchasing the red one (commercial device) and that “it will work fine for you.” A detail of the ballast she suggested that Mr. Ramie purchase and the receipt for it are shown below in Figure 9.

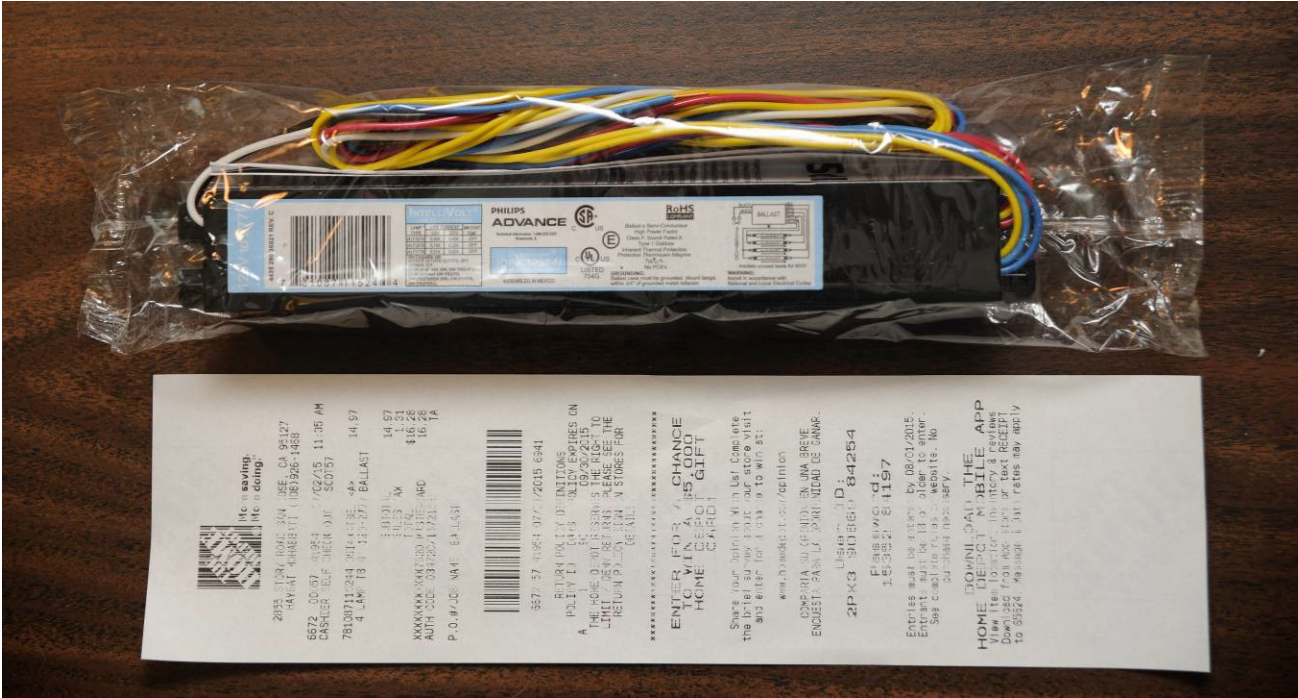


Figure 9 - Commercial ballast suggested by sales person for residential use, and the sales receipt from the resulting transaction.

## **Conclusion:**

The sales people in this case clearly did not understand the difference between the blue (residential) and the red (commercial) ballasts. In a consumer price-driven atmosphere like a big-box retailer named Home Depot, price is the selling point. You would also expect to see products for the Home, as suggested in the name of the store. The sales representative sold Mr. Ramie the lowest cost item she felt would work. The display mixed commercial and residential products together and there were no signs indicating what the differences might be.

## **Case 4 (Fluorescent Light Ballast)**

On July 22, 2013, Ms. Lori Kosior purchased a non-consumer rated GE PROLINE T8 ballast from a Home Depot located at the following address:

The Home Depot  
225 Berlin Turnpike  
Berlin, CT 06037

Before selecting the ballast, Ms. Kosior reports that she asked the sales help for assistance. She indicated that she was buying the ballast for her husband, who was attempting to fix a light in their basement, clearly a residential application. The Home Depot representative asked a few questions pertaining to the number of bulbs in the fixture, then said that it “should be okay.” The help person gave no indication that this non-consumer ballast could not be used in a home environment. Ms. Kosior then paid cash for this device at the store’s check out. Again, this non-consumer item was in no flagged during check-out. After paying for it, she simply walked out of the store with it.

This particular ballast was mixed in with both consumer and non-consumer ballasts, and in no apparent certain order. (A quick survey of several samples showed the ratio to be about 50/50.) It was labeled in small print as “FCC Part 18 Class A” on the top part of the ballast. This particular unit was wrapped in clear plastic. It also had an instruction sheet visible through the plastic wrap along the bottom of the ballast. This sheet has the following warning:

FOR COMMERCIAL USE ONLY. NOT FOR RESIDENTIAL (CONSUMER) USE.  
FCC 47 CFR Part 18 Class A, Non-Consumer Rated Product

Many ballasts in this particular store did not have such a plastic wrapping, and therefore, did not come with an instruction sheet. Some of these ballasts were non-consumer rated, as indicated only by the Part 18 A labeling. It should also be pointed out that this labeling is most likely meaningless to most of the customers that purchase these devices.

The store display is shown in Figure 10. There was no clear indication of Part 18 FCC requirements. A small sign, shown in Figure 11, was perpendicular to the display and

above eye level. Although it contained instructions on how to select a ballast, it did not specifically address the FCC rules nor prohibit the use of non-consumer ballasts in a residential environment. Figure 12 shows commercial ballasts included and mixed into store's display.



**Figure 10 - Main display.**



**Figure 11 - Fluorescent ballast sign.**



**Figure 12 - Commercial ballast on sale and marketed to consumers. There is no FCC warning to indicate that this product cannot be used for residential applications.**

## **Final Conclusion & Recommendation**

Clearly Home Depot's marketing and sale of non-consumer ballasts is not adequate to ensure compliance with FCC Part 18 requirements. This was demonstrated by the four cases described in this report, including the purchase of non-consumer ballasts after telling store personnel that the product was for residential purposes. Furthermore, since the first case (#4 in this report) occurred almost two years ago in July of 2013, it is clear that improper and misleading marketing of non-consumer devices by Home Depot has been occurring for a considerable period of time. It also appears to be a widespread problem in Home Depot stores across America, including California, Connecticut and Massachusetts. It is, therefore, recommended that Home Depot be reported to the FCC for the illegal and misleading market of Part 18 non-consumer ballasts.

## **List of Appendices**

- 1) Appendix A - Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)
- 2) Appendix B - Part 18 - Pertinent Definitions and Rules
- 3) Appendix C - Part 2 - Pertinent Definitions and Rules
- 4) Appendix D - Part 15 - Pertinent Definitions and Rules



## Appendix A

### Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)

**Table 1A - Part 18 Conducted Emissions Limits (For RF Lighting Devices, such as CFLs and Electronic Fluorescent Light Ballasts)**

Frequency (MHz)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)	Conducted limit (dBμV)
<b>Consumer equipment:</b>		
0.45 to 2.51	250	48
2.51 to 3.0	3,000	70
3.0 to 30	250	48
<b>Non-consumer equipment:</b>		
0.45 to 1.6	1,000	60
1.6 to 30	3,000	70

(d) If testing with a quasi-peak detector demonstrates that the equipment complies with the average

**Table 1B - Part 18 Radiated Emissions Limits for RF lighting devices**

Frequency (MHz)	Field strength limit at 30 meters (μV/m)
<b>Non-consumer equipment:</b>	
30-88	30
88-216	50
216-1000	70
<b>Consumer equipment:</b>	
30-88	10
88-216	15
216-1000	20

## Appendix B

### Part 18 - Pertinent Definitions and Rules

#### **§ 18.107 Definitions.**

(a) *Radio frequency (RF) energy.* Electromagnetic energy at any frequency in the radio spectrum from 9 kHz to 3 THz (3,000 GHz).

(b) *Harmful interference.* Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunication service operating in accordance with this chapter.

(c) *Industrial, scientific, and medical (ISM) equipment.* Equipment or appliances designed to generate and use locally RF energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication. Typical ISM applications are the production of physical, biological, or chemical effects such as heating, ionization of gases, mechanical vibrations, hair removal and acceleration of charged particles.

(g) *Consumer ISM equipment.* A category of ISM equipment used or intended to be used by the general public in a residential environment, notwithstanding use in other areas. Examples are domestic microwave ovens, jewelry cleaners for home use, ultrasonic humidifiers.

(i) *Marketing.* As used in this part, marketing shall include sale or lease, offer for sale or lease, advertising for sale or lease, the import or shipment or other distribution for the purpose of sale or lease or offer for sale or lease. See subpart I of part 2 of this chapter.

NOTE: In the foregoing, sale (or lease) shall mean sale (or lease) to the user or a vendor who in turn sells (or leases) to the user. Sale shall not be construed to apply to devices sold to a second party for manufacture or fabrication into a device which is subsequently sold (or leased) to the user.

#### **§ 18.203 Equipment authorization.**

(a) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

(1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.

(2) A technical report pursuant to §§ 18.207 and 18.311.

(b) Consumer ultrasonic equipment generating less than 500 watts and operating below 90 kHz, and non-consumer ISM equipment shall be subject to verification, in accordance with the relevant sections of part 2, subpart J of this chapter.

**§ 18.213 Information to the user.**

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system
- (b) Maintenance of the system
- (c) Simple measures that can be taken by the user to correct interference.

(d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.

## Appendix C

### Part 2 - Pertinent Definitions and Rules

#### **§ 2.1 Terms and definitions.**

*Interference.* The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. (RR)

#### **§ 2.801 Radiofrequency device defined.**

As used in this part, a radiofrequency device is any device which in its operation is capable of emitting radiofrequency energy by radiation, conduction, or other means. Radiofrequency devices include, but are not limited to:

(c) The industrial, scientific, and medical equipment described in part 18 of this chapter.

(d) Any part or component thereof which in use emits radiofrequency energy by radiation, conduction, or other means.

#### **§ 2.909 Responsible party.**

The following parties are responsible for the compliance of radio frequency equipment with the applicable standards:

(a) In the case of equipment which requires the issuance by the Commission of a grant of equipment authorization, the party to whom that grant of authorization is issued (the grantee) If the radio frequency equipment is modified by any party other than the grantee and that party is not working under the authorization of the grantee pursuant to § 2.929(b), the party performing the modification is responsible for compliance of the product with the applicable administrative and technical provisions in this chapter.

(b) In the case of equipment subject to authorization under the verification procedure, the manufacturer or, in the case of imported equipment, the importer. If subsequent to manufacture and importation, the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modification becomes the new responsible party.

(c) In the case of equipment subject to authorization under the Declaration of Conformity procedure:

(1) The manufacturer or, if the equipment is assembled from individual component parts and the resulting system is subject to authorization under a Declaration of Conformity, the assembler.

(2) If the equipment, by itself, is subject to a Declaration of Conformity and that equipment is imported, the importer.

(3) Retailers or original equipment manufacturers may enter into an agreement with the responsible party designated in paragraph (c)(1) or (c)(2) of this section to assume the responsibilities to ensure compliance of equipment and become the new responsible party.

(4) If the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modifications, if located within the U.S., or the importer, if the equipment is imported subsequent to the modifications, becomes the new responsible party.

(d) If, because of modifications performed subsequent to authorization, a new party becomes responsible for ensuring that a product complies with the technical standards and the new party does not obtain a new equipment authorization, the equipment shall be labelled, following the specifications in § 2.925(d), with the following: “This product has been modified by [insert name, address and telephone number of the party performing the modifications].”

[54 FR 17712, Apr. 25, 1989, as amended at 61 FR 31045, June 19, 1996; 62 FR 10470, Mar. 7, 1997; 62 FR 41880, Aug. 4, 1997]

## **Appendix D**

### **Part 15 - Pertinent Definitions and Rules**

#### **§ 15.105 Information to the user.**

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(c) The provisions of paragraphs (a) and (b) of this section do not apply to digital devices exempted from the technical standards under the provisions of § 15.103.

(d) For systems incorporating several digital devices, the statement shown in paragraph (a) or (b) of this section needs to be contained only in the instruction manual for the main control unit.

(e) In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

[54 FR 17714, Apr. 25, 1989, as amended at 68 FR 68546, Dec. 9, 2003]

## **Appendix 5**



# ARRL Again Complains to FCC about Illegal Marketing of Electronic Lighting Ballasts

12/29/2015

The ARRL has again complained to the FCC to allege illegal marketing of electronic RF lighting ballasts, operating under Part 18 of the Commission's rules, on the part of two major retailers. Letters went out this week to the FCC Enforcement Bureau and its Office of Engineering and Technology claiming Part 18 marketing regulations violations by Lowe's and by Walmart stores. At issue is the sale of non-consumer RF lighting ballasts to consumers who, in several instances, were told by store personnel that it was okay to install these in a residential setting. In addition, non-consumer and residential-class ballasts are intermixed in store displays with inadequate signage to direct consumers to the correct choice. Both letters asked the FCC to investigate and commence enforcement proceedings with respect to the two stores' marketing and retail sale of RF lighting devices in the US.

"ARRL purports to show that the [retailer] is...marketing and selling to consumers (by retail sale) non-consumer Part 18 RF lighting devices which are *not* intended for residential deployment, to consumers who have specifically noted their intention to deploy the devices in residential applications," ARRL Chief Counsel Chris Imlay, W3KD, said in similar complaint letters to the Commission on December 28 and December 29 (attached below). Part 18 emissions limits for consumer devices are far lower than those allowed for non-consumer devices.

"ARRL has received numerous complaints from Amateur Radio operators of significant noise in the medium (MF) and high frequency (HF) bands between 1.8 MHz and 30 MHz from 'grow lights' and other Part 15 and part 18 RF lighting devices," Imlay continued. "These devices are easily capable of emitting RF noise sufficient to preclude Amateur Radio MF and HF communications (and, as well, AM broadcast station reception) throughout entire communities."

Supporting both complaints are extensive and detailed reports by ARRL Laboratory EMC Specialist Mike Gruber, W1MG. The reports recount incidents of actual purchases of Part 18 RF lighting devices intended for commercial use to consumers who made clear to store personnel that they intended to use the devices at home. Gruber's report includes multiple photographs that depict in-store displays of the products in question and showing signage that does not adequately explain which devices may be sold to whom.

The ARRL has asked that all non-consumer devices be removed from retail sale and marketing at the stores and to track and recall non-consumer devices already sold to consumers.

In his report, Gruber concluded that retailers should require purchasers of non-consumer Part 18 RF lighting devices to provide a valid contractor's number. He also advised that the stores improve display signage to make it clear that non-consumer Part 18 devices may not be used in residential settings.

Earlier this year, the ARRL sent similar complaint letters to the FCC regarding the marketing of Part 18 RF lighting devices by The Home Depot. The League also has complained about specific RF lighting “grow light” devices that it has alleged exceed Part 18 emission limits.

December 28, 2015

Via E-mail and U.S. Mail

[bruce.jacobs@fcc.gov](mailto:bruce.jacobs@fcc.gov)

[rashmi.doshi@fcc.gov](mailto:rashmi.doshi@fcc.gov)

Bruce Jacobs, Chief  
Spectrum Enforcement Division  
Enforcement Bureau  
Federal Communications Commission  
445-12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

Dr. Rashmi Doshi, Chief  
Laboratory Division  
Office of Engineering and Technology  
Federal Communications Commission  
7435 Oakland Mills Rd  
Columbia MD 21046-1609

Re: Complaint of Violation of Part 18 Marketing Regulations  
By Lowe's Companies, Inc. with Respect to RF Lighting Devices.

Dear Mr. Jacobs and Dr. Doshi:

This office represents ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated. The purpose of this letter and the attached evidentiary document entitled "*FCC Part 18 Marketing Violations by Lowe's Companies, Inc.*" (the Report) prepared by ARRL Laboratory Staff member Mike Gruber is to request on behalf of ARRL that the Commission investigate and commence an enforcement proceeding with respect to Lowe's marketing and retail sale of radio frequency (RF) lighting devices in the United States. ARRL purports to show that the hardware and home improvement chain is, in at least three stores located in California, Connecticut and Massachusetts (and by inference in other stores nationwide) marketing and selling to consumers (by retail sale) non-consumer, Part 18 RF lighting devices which are *not* intended for residential deployment, to consumers who have specifically noted their intention to deploy the devices in residential applications.

As is noted in the attached Report, there are within the Part 18 ISM rules [See Sections 18.305(c) and 18.307(c)] two classes of Conducted and Radiated Emissions limits for RF lighting devices such as CFLs and Electronic Fluorescent Light Ballasts. One is for consumer equipment (defined at Section 18.107 as that category of ISM equipment which is used or intended to be used by the general public in a residential environment, notwithstanding its use in other areas). The other is for non-consumer equipment (which of necessity is intended for non-residential applications). These classes of limits are vastly different. For example, the conducted emission limits for Amateur Radio allocations below 30 megahertz are 22 dB different as between consumer and non-consumer applications. Section 18.213(d) states that "manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to

radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz.”

ARRL has received numerous complaints from amateur radio operators of significant noise in the Medium (MF) and High Frequency (HF) bands between 1.8 MHz and 30 MHz from “grow lights” and other Part 15 and Part 18 RF lighting devices. These devices are easily capable of emitting RF noise sufficient to preclude Amateur Radio MF and HF communications (and as well AM Broadcast station reception) throughout entire communities (and at distances of up to ½ mile from the device). ARRL has, as is noted in the attached Report, conducted studies in several states, including California, Massachusetts and Connecticut and has discovered an alarming number of instances of retail sale of electronic lighting ballasts, in which non-consumer-rated ballasts were mixed in with consumer ballasts and other consumer products and available for retail sale without guidance as to the proper deployment of them. Furthermore, the display signage in many cases did not mention or adequately address FCC Part 18 requirements as they pertain to interference in a residential environment. In most of the stores surveyed, unsuspecting consumers have no way of knowing the significance of consumer vs. non-consumer ballasts. In some cases, “commercial” grade ballasts, with their associated non-consumer emissions limits, appeared to be a merely heavier duty or longer lasting version of the same product. The display signage typically used implies, therefore, that commercial ballasts are also a product upgrade for home use. It typically does not include or mention the applicable FCC requirements.

Although Part 18 rules describe limits for consumer and non-consumer RF Lighting Devices, many ballasts are labeled only as either “Part 18A” or “18B”. This nomenclature is clearly an adaptation from Part 15A and 15B, which pertains to commercial/industrial and residential digital devices, respectively. Part 18 does not include an A or B designation for RF lighting devices and the labelling is not at all helpful to consumers and, as used, has no regulatory connotation at all.

In the four cases of actual purchases of RF Lighting devices at retail from Lowe’s stores, the purchasers specifically asked about residential deployment of non-consumer RF lighting ballasts. The device was actually purchased in each case cited. It is readily apparent that Lowe’s (and, in ARRL’s experience, other similar hardware retail sellers) are actively and knowingly engaged on a daily basis in selling non-consumer, commercial RF lighting products to Lowe’s customers for residential deployment. If this activity is left unchecked, the Commission will continue to note a deterioration in ambient noise levels and preclusive interfering signals for both AM Broadcasters and Amateur Radio licensees in the entirety of the High Frequency bands.

ARRL respectfully requests that all non-consumer devices be removed from retail sale and marketing at Lowe’s. Those non-consumer devices that have been sold to consumers should be tracked and recalled.

Given the foregoing, on behalf of the more than 730,000 licensed radio amateurs in the United States who have a significant interest in avoiding interference in residential environments from RF lighting devices which were never intended to be deployed in a residential environment, ARRL respectfully requests that your offices take the appropriate action with respect to Lowe’s and other similar chains of retail sales of these devices without delay.

Should any additional information be called for, please contact the undersigned, General Counsel for ARRL, the national association for Amateur Radio. Thank you very much for your consideration of this request.

Sincerely,

Christopher D. Imlay  
General Counsel, ARRL

Attachment

Copy to: Lowe's Companies, Inc., 1000 Lowe's Boulevard, Mooresville, NC 28117  
(Attention: Ross W. McCanless, Esquire, Executive Vice President, General Counsel, Secretary  
and Chief Compliance Officer)

# **FCC Part 18 Marketing Violations by Lowe's Companies, Inc.**

By Mike Gruber, W1MG, ARRL Laboratory

September 8, 2015

## **Introduction**

Non-electronic ballasts, which once dominated the fluorescent light market, operated under Part 15 as incidental radiators. Today they have been phased out in favor of newer electronic ballasts which, along with CFL bulbs, operate under Part 18 as "RF Lighting Devices." In this case, the FCC considers these devices to be converting RF energy above 9 kHz directly into light, i.e., another form of energy. For this reason, the Commission classifies an electronic ballast as an ISM device.

Recent surveys conducted by ARRL, the national association for Amateur Radio in several states, including California, Illinois, Massachusetts and Connecticut indicate that most electrical and lighting retail outlets are now primarily or exclusively stocking and selling electronic ballasts. In fact, it should be noted that non-electronic ballasts are no longer being sold by several "big box stores" that we surveyed. Presumably this is a nationwide phenomenon being driven in part by government mandate.

## **Part 18 Limits for RF Lighting Devices**

As shown by Appendix A, Part 18 has two sets of limits for RF Lighting Devices: one limit for consumer devices, and one for non-consumer devices. The emissions limits are *considerably lower for consumer rated devices*. As an example, the conducted emissions limits for operation within all present Amateur Radio allocations below 30 MHz are 22 dB less for consumer-rated devices than for non-consumer-rated devices. It should also be noted that consumer-rated devices are the only RF lighting devices that should be used for a home or residential applications. Per § 18.107 (g), consumer ISM equipment is defined as that which is to be "*used or intended to be used by the general public in a residential environment, notwithstanding use in other areas.*"

Although non-consumer devices might be suitable for commercial and industrial environments, ARRL is now receiving a significant number of reports of actual cases in which commercial devices are being operated in and which are causing harmful interference to licensed Amateur Radio operation in residential areas.

## **Illegal Marketing by Lowe's of Part 18 RF Lighting Devices**

The previously mentioned multi-state survey of fluorescent light ballasts showed an alarming number of non-consumer rated ballasts mixed in or on display adjacent to consumer products. Furthermore, the display signage in every store that we surveyed did not adequately address or mention FCC Part 18 requirements as they pertain to interference in a residential environment. Unsuspecting consumers have no way of knowing the significance of consumer vs. non-consumer ballasts. It is apparent that most consumers assume the "commercial" grade ballasts, with their associated non-consumer emissions limits, would be a heavier duty or superior product. The display signage implies, therefore, that commercial ballasts might be a product upgrade for home use. In no case did the signage include or mention the applicable FCC requirements or

any limitations on deployment of the devices.

Although Part 18 only describes limits for consumer and non-consumer RF Lighting Devices, many ballasts are labeled only as either Part 18A or 18B without explanation. This nomenclature is clearly an adaptation from Part 15A and 15B, which pertains to commercial/industrial and residential digital devices, respectively. Part 18 does not include an A or B designation for RF lighting devices and so the labeling is (i) undefined and unexplained, and (ii) meaningless from a regulatory standpoint.

See Appendix B for pertinent definitions and rules in Part 18, particularly with regard to the marketing and sale of non-consumer devices to consumers. Additional information in Appendix C is taken from Part 2 of the FCC rules. Appendix D is for reference purposes only. It contains some of the equivalent rules with regard to Part 15A (non-consumer) and Part 15B (consumer) digital devices.

### **Sale of Non-Consumer RF Lighting Devices for Residential Purposes**

The following four cases highlight the marketing and sale of commercial light fixtures and ballasts by Lowe's to residential users. A non-consumer or "commercial" product was actually purchased in each case after consulting with a sales associate. Specifically, the sales associate was asked about the use of a commercial Part 18 non-consumer rated ballast in a residential environment.

#### **Case 1 (Florescent Light Ballast)**

On August 19, 2015, Ms. Deborah Roy purchased a non-consumer rated OSRAM QTP 2x32T8/UNV ISN-SC (50994) ballast from a Lowe's located at the following address:

Lowe's Store #0660 / E. Springfield, MA  
1600 Boston Road  
Springfield, MA 01129  
Tel: (413) 543-0601

Before selecting the ballast, Ms. Roy reports that she asked the sales associate for assistance. She pointed out that it was labelled as a commercial device and asked if she could use it in the basement of her home. The Lowe's associate responded, "Sure – yes – no problem. It's okay for use in a home." Ms. Roy then thanked him and paid for this device using her Visa Card at the store's check out. Again, this non-consumer item was in not flagged during check-out. After paying for it, she simply walked out of the store with it. See Figure 1.1 for photo of ballasts on display.



**Figure 1.1 - Ballasts on display. Commercial ballasts with orange stripe are on the left. Residential ballasts with blue labelling are on right.**

As can be seen in Figure 1.1, the consumer and non-consumer ballasts in this store were in a somewhat apparent order. Non-consumer ballasts were on the left. Consumer ballasts were on the same shelf and to the right of the non-consumer ballasts. The ballasts were adjacent to each other and differentiated by a color scheme. Packaging with blue labels with white lettering were for residential environments. An orange stripe on the box indicated a commercial device. (A quick survey of several samples showed the ratio to be about 50/50.) Although this color scheme made it easy to tell commercial from residential ballasts, it wasn't clear why a consumer would select one over the other. In fact, the commercial rating to most consumers might suggest a heavier duty or better quality product. See Figure 1.2 for photo of store display.

The particular ballast purchased by Ms. Roy was mixed in with non-consumer "commercial" ballasts. Although consumer ballasts are labeled for residential use only, there is no equivalent statement anywhere on the device packaging or store display. While the box label does include a statement "Complies with FCC 47 CFR Part 18, Non-Consumer No PCBs" it is in small print. Furthermore, unsuspecting consumers have no way of knowing what this means. There is no mention – anywhere – of radio interference or a warning against using it in a home environment.

Once home, Ms. Roy opened the box and was also surprised that there was no instruction sheet or documentation inside. There is only a statement printed on the ballast, which is identical to the one on the box, "Complies with FCC 47 CFR Part 18, Non-Consumer No PCBs." However, this does not comply with FCC rule § 18.213, particularly paragraph (d), which reads as follows:

*"(d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style"*

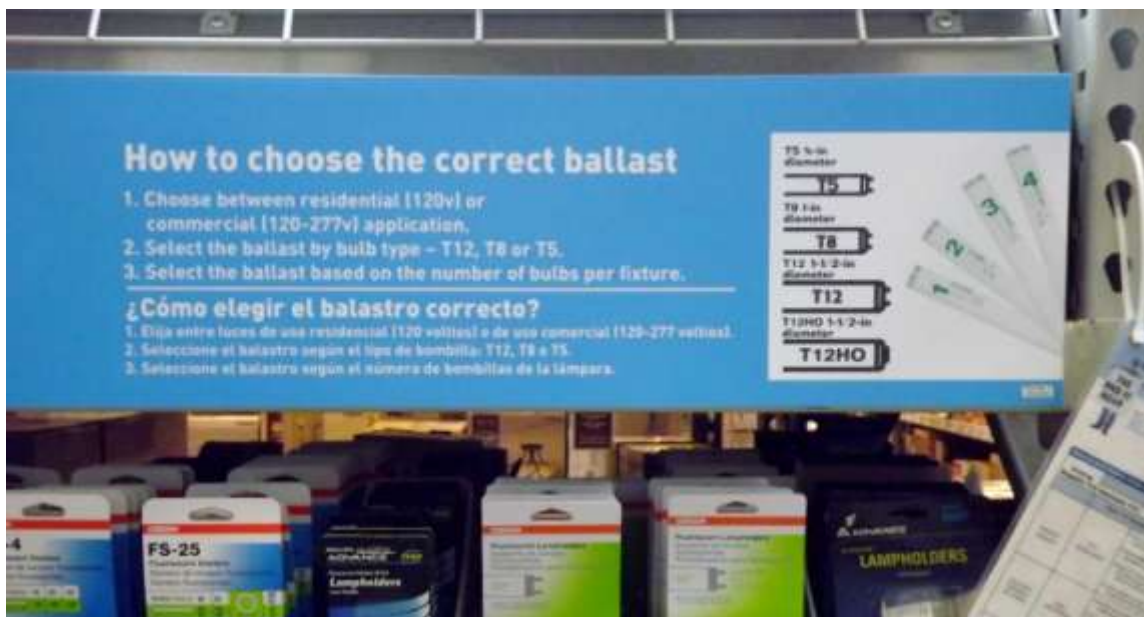
The ballasts in this particular store were all packaged in a box. It is, therefore, not known which, if any, ballasts came with an instruction sheet or had the proper FCC advisory statement required by § 18.213 (d). It should also be noted that the labeling provided is effectively



meaningless to most of the customers that purchase these devices. The typical consumer would not know the significance of the non-standard references to the Part 18A and Part 18B ratings.



**Figure 1.2 – The store display. The ballasts are on a shelf above the fixtures. The store signage on the right provides information on how to choose a ballast but makes no mention of the FCC rules, Part 18, or the potential to cause radio interference.**



**Figure 1.3 – Close-up of the signage pertaining to ballast selection. Although it mentions the difference between residential and commercial ballasts, the difference appears to be based only on voltage. It makes no mention of FCC Part 18 rules or the potential for radio interference. The consumer would have no way of knowing that a commercial device should not be used in a residential environment.**

The store display is shown in Figure 1.2. There is no indication of Part 18 FCC requirements. Figure 1.3 also shows a close-up of the display signage pertaining to the selection of ballasts. Although it tells customers to select commercial and residential ballasts accordingly, it does not

specifically tell them not to use a commercial ballast in a home. Consumer ballasts, on the other hand, are clearly labeled for residential use only. The customer is left with the impression that the commercial ballast is a superior or heavier duty product. A relatively small info sheet attached to the display provided a cross reference of magnetic ballasts to the newer electronic ballasts. See Figure 1.4.



**Figure 1.4 – This info sheet provides a cross reference for electronic ballasts when replacing older magnetic ballasts. It does not provide any information on the FCC rules pertaining to Part 18.**

Although the display had instructions on ballast selection, they did not specifically address the FCC rules nor prohibit the use of non-consumer ballasts in a residential environment. The store's display instructions on how to select between consumer and non-consumer ballasts are inadequate. As previously shown in Figure 1.3, the instructions only reference voltage requirements. Since 120 vac is typically available in both commercial and residential environments, the consumer in this case might logically conclude that the commercial ballast could be used in a home or residential environment.

The photo in Figures 1.5 shows the ballast that was ultimately purchased by Ms. Roy at this store. The photos in Figures 1.5 and 1.6 show the only references that she had concerning Part 18 rules and requirements.



Figure 1.5 – This is the non-consumer ballast purchased by Ms. Roy at the Lowe’s store in E. Springfield, MA.



Figure 1.6 – This is the only reference to Part 18 on the Packaging and visible at the time of purchase. Ms. Roy had no way of knowing that this device should not be used in her home. When she asked a Lowe’s associate, the advice he provided was incorrect.





**Figure 1.7 – When Ms. Roy opened the box at home, there was no information for the user as required by Part 18. In fact, there was no additional instruction sheet or documentation. The only reference to Part 18 inside the box was on the device itself and shown in this photo.**

### **Conclusion**

Lowe’s is not only selling and marketing commercial devices to consumers, their sales staff is not knowledgeable enough to properly advise its customers about FCC regulatory requirements for deployment of the products. In addition to this marketing violation by Lowe’s, a second Part 18 violation is also noted. Specifically, the manufacturer (OSRAM Sylvania, Inc.) failed to include the advisory statement required by § 18.213 (d) with the device purchased by Ms. Roy, and Lowe’s either knew or should have known that such is a violation of FCC rules governing marketing and sale of RF devices.

## **Case 2 (Lighting Fixtures)**

Mr. Jerry Ramie arrived at the Lowe's Home Improvement store on 775 Ridder Park Drive in San Jose, CA 95131 a little before 1:00PM on August 17, 2015. The fluorescent lighting section was a mixture of ballasts and fixtures, both residential and commercial intermingled.

Figure 2.1, at right, shows the right side of the lighting display at this store.

Ballasts are at the top of the display, with a mixture of residential and commercial fixtures below them. The "Universal Volt" reference is the only signage that differentiates commercial-grade from residential products, as can be seen on the top-right of the display. These voltage tags are also imprinted along the sides of the boxes shown below the sign.

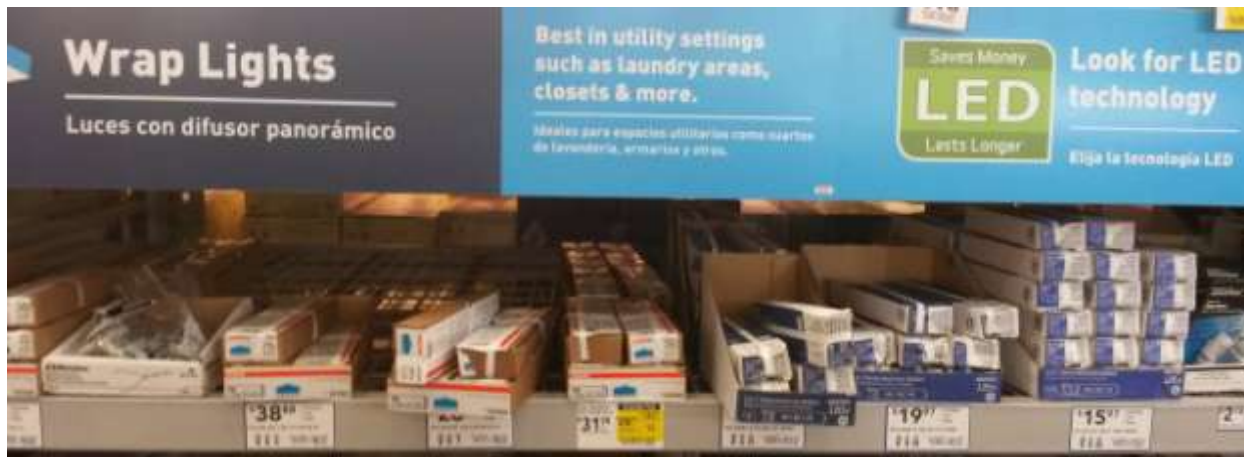
Commercial and residential lighting fixtures are also on the same shelf and adjacent to each other. Two blue Metatech commercial fixtures are pulled out at bottom-right. The red Utilitec residential fixtures are at the lower-left in the photo.



**Figure 2.1 - Right side of lighting display at Lowe's on Ridder Park Drive in San Jose, California. Commercial and consumer devices are mixed and intermingled. See text at left of photo for detailed description.**

The top-left area of the signage below shown in Figure 2.2 shows some of the commercial and

residential ballasts offered. The sign indicates that “Wrap Lights” in this section are “Best in utility settings such as laundry areas, closets & more.”



**Figure 2.2 – Left side of store signage.**

Also in Figure 2.2, the orange-striped ballasts are all commercial grade and the third-from-right box (pulled forward obscuring the price) holds the Osram (Sylvania) 50994 commercial T8 ballasts. Two stacks to the right of them are the blue GE residential T8 ballasts. (Also obscuring the price tag) The commercial ballasts cost more than the residential ballasts. There is no other differentiation shown regarding residential or commercial products.



The left side of the display is shown in Figure 2.3. Additional ballasts and starters are displayed at the top, with residential and commercial fixtures intermingled below them.

Note the green 4' long T8 fixtures pulled out at bottom right. These are Cooper commercial fixtures on sale for \$47.98. The Utilitec consumer T8 fixture is at lower-left and is not sale priced at \$54.98.

About this time, a Lowe’s associate from the electrical department asked if Mr. Ramie needed help. Mr. Ramie inquired as to which T8 fixture was appropriate for his garage at home. The Lowe’s associate immediately recommended the Cooper commercial fixture that was on sale. Mr. Ramie asked him what the difference was. The associate told Mr. Ramie that if he bought the Cooper he could “put it up once and it’ll last forever. Cooper is the best quality.” Mr. Ramie thanked him for his

advice and purchased the Cooper commercial fixture for his residential garage.

**Figure 2.3 – Left side of display. See text at right of photo for detailed description.**

Details of the product recommended by the Lowes associate are shown below in Figure 2.4. The middle photo in Figure 2.4B indicates compliance with Part 18 EMI/RFI regulations. “Meets FCC Part 18 (Class A) for EMI and RFI – Non-consumer limits”





Figure 2.4A – Back view.  
sales receipt.



Figure 2.4B – Front view.



Figure 2.4C – End view with  
sales receipt.

## Conclusion:

The display mixed Commercial and Residential products together and there were no signs indicating what the differences might be. The advice given to Mr. Ramie by the staff was not correct. It led to the purchase of the wrong product which may cause interference when used at home.

## Case 3 (Ballasts)

Mr. Jerry Ramie arrived at the Lowe's Home Improvement Store at 750 Newhall Drive in San Jose, CA 95110 a little after 1:00PM on August 17, 2015. He wanted to look at ballasts for lighting two T8-F32 tubes and found the display shown in Figure 3.1.



**Figure 3.1 – Fluorescent light ballasts on display at Lowe's on Newhall Drive in San Jose.**

As in the other Lowe's, the display intermingled residential and commercial ballasts and fixtures. The orange striped box at the left holds Osram (Sylvania) 50994 commercial T8 ballasts for powering two 4' T8 tubes at 32W each (F32) from 120-277VAC. The blue GE residential ballast at right powers the same compliment of tubes from 120VAC mains only for \$15.97 each.



**Figure 3.2 – This is the commercial ballast incorrectly recommended by a Lowe's associate for residential lighting purposes.**

When a Lowe's lighting associate came by, Mr. Ramie told him that he wanted to replace the



ballast in his home garage with a new one for powering two 4' F32 tubes. Mr. Ramie pointed out the two ballasts in the photo shown in Figure 3.1 and asked him what the difference was. The associate told Mr. Ramie that the commercial ballast shown in Figure 3.2 offered “faster turn-on in cold weather.” Mr. Ramie then asked if that was the only difference between the two. The associate told him that the commercial voltage range was wider and that “there aren’t any other differences.”

Mr. Ramie thanked him and told him that he liked the idea of the lights coming on quickly in his home garage. Mr. Ramie mentioned that the price of the GE residential ballast was half that of the commercial ballast, but he told the associate that he wanted “the best.” The associate agreed that the commercial ballast was “better” and Mr. Ramie purchased it for his home garage.

Details of this ballast are shown below in Figures 3.3 and 3.4.



**Figure 3.3 – Upon the recommendation of a Lowe’s lighting associate, Mr. Ramie purchased this commercial “FCC Part 18 non-consumer” ballast for residential purposes. Under the FCC rules, however, this device should not be used in a home environment. It is intended only for commercial and industrial environments. The box labelling indicates in small print, “Complies with FCC 47 CFR Part 18, Non-Consumer No PCBs.”**



**Figure 3.4 – Inside the box. FCC rule § 18.213 (d) requires manufacturers of RF lighting devices to include an advisory statement on product packaging or in documentation. This statement describes and addresses the device potential to cause radio interference. Although small print on the ballast indicates, “Complies with FCC 47 CFR Part 18, Non-Consumer No PCBs,” the required advisory statement was not included on the product packaging. There was no documentation included with the device in the box. This is a labelling violation on the part of the manufacturer.**

#### **Conclusion:**

The sales representatives at both Lowe’s locations did not understand the differences between commercial and residential fluorescent lighting. They both implied that additional features and quality advantages were available by using commercial lighting equipment in a residential setting. The displays were confusing and did not provide any information as to how a consumer might choose between residential and commercial ballasts and fixtures or what the differences might be.

The only way to stop such incorrect information coming from a sales person is with correct and complete information in the signage. If the sign gives useful information on the interference potential of commercial lighting equipment when used in residential settings, then the sales representatives and their customers may actually read it and purchase only residential rated devices for residential installations.

Another violation by the manufacturer involves § 18.213 (d). This rule requires information to the user “be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment.” The advisory statement required by the rule was previously quoted in Case 1. It was not included with the packaging or product documentation. See Appendix B for complete text of § 18.213.

## **Case 4 (Fluorescent Light Ballast)**

On September 1, 2015, Ms. Lori Kosior purchased a non-consumer rated OSRAM QTP 2x32T8/UNV ISN-SC (50994) ballast from a Lowe's located at the following address:

Lowe's Store #0623 / Newington, CT  
3270 Berlin Turnpike  
Newington, CT 06111, Store #0623  
Phone: (860) 667-7003

Before purchasing the ballast, Ms. Kosior reports that she asked the appropriate Lowe's associate for assistance. She indicated that she was buying the commercial ballast for her husband, who was attempting to use it in the basement of their home, clearly a residential application. The Lowe's associate asked some questions pertaining to the number and type of bulbs in the fixture. Ms. Kosior responded that she thought she had the right ballast in that regard, but wanted to know if it okay to use a commercial device in her home. The associate responded, "All that commercial means is that it can be used for 120 standard volts, or as high as 277 volts, as listed on the package."

The associate did not know and gave no indication that this commercial ballast should not be used in a home environment. Ms. Kosior then paid cash for this device at the store's check out. Again, this non-consumer item was not flagged during check-out. After paying for it, she simply walked out of the store with it.

As can be seen in Figure 4.1, the consumer and non-consumer ballasts in this store were in a somewhat apparent order. Non-consumer ballasts were on the left. Consumer ballasts were on the same shelf and to the right of the non-consumer ballasts. This is similar to other Lowe's stores that we investigated. The ballasts were adjacent to each other and differentiated by a color scheme.



**Figure 4.1 – Consumer and non-consumer ballasts on display at the Lowe's store in Newington, CT. This is similar to the other Lowe's stores in this report.**



The information provided by Lowe's to its customers is clearly inadequate to properly advise them with regard to Part 18 rules. This is similar to the other Lowe's stores in this report. There is no clear reference to FCC Part 18 requirements when selecting a ballast, and the package labeling only references compliance with Part 18A, which would be meaningless to most consumers and Lowe's customers.



**Figure 4.2 – The information provided by Lowe's at this Connecticut store is essentially the same as at other Lowe's stores that we investigated. Refer to Figures 1.3 and 1.4 for similar signage and info sheet that we found at the Massachusetts store in E. Springfield.**

Finally, after receiving incorrect advice from the Lowe's associate, Ms. Kosior purchased the non-consumer ballast shown in Figure 4.3.



**Figure 4.3 – The ballast purchased by Ms. Kosior at the Newington, CT store. This purchase was the result of the store's improper marketing and incorrect advice from a Lowe's associate. The only reference to Part 18 at the time of purchase is a reference to Part 18A compliance on the box.**

## **Conclusion**

The improper sale and marketing of Part 18 non-consumer devices to consumers at this location is similar to the other Lowe's stores detailed in this report. Furthermore, their sales staff is not knowledgeable enough to properly advise its customers. In addition to this marketing violation by Lowe's, the product purchased by Ms. Kosior also included a second Part 18 violation. Specifically, the manufacturer (OSRAM Sylvania, Inc.) failed to include the advisory statement required by § 18.213 (d) with the device that she purchased.

## **Final Conclusion & Recommendations**

Clearly Lowe's marketing and sale of non-consumer ballasts is not adequate to ensure compliance with FCC Part 18 requirements. This was demonstrated by the four cases described in this report, including the purchase of non-consumer ballasts after clearly telling store personnel that the product was intended for residential purposes. This appears to be a widespread problem in Lowe's stores throughout the United States, including California, Connecticut and Massachusetts. It is therefore recommended that an enforcement proceeding against Lowe's be commenced by the FCC for the illegal and misleading marketing of Part 18 non-consumer lighting devices.

Specific marketing recommendations include:

- 1) Non-consumer (Commercial) and consumer (Residential) products should be marketed from two different locations, with a clear line of separation between them.
- 2) Improved display signage clearly stating that commercial devices should not be used in a residential environments. Reference should be made to FCC Part 18 rules and the increased potential for commercial devices to cause radio interference.
- 3) Purchasers of commercial devices must provide a valid contractor's number at the time of purchase.

An additional FCC rule violation is also noted. Specifically, Osram Sylvania failed to include the advisory statement required by § 18.213 (d) of the Commission's Rules. See Appendix B for the entire text of § 18.213, including paragraph (d). It is therefore recommended that Osram Sylvania also be sanctioned by the Commission for repeated and willful failure to comply with § 18.213 (d).

## **List of Appendices**

- 1) Appendix A - Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)
- 2) Appendix B - Part 18 - Pertinent Definitions and Rules
- 3) Appendix C - Part 2 - Pertinent Definitions and Rules
- 4) Appendix D - Part 15 - Pertinent Definitions and Rules

## Appendix A

### Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)

**Table 1A - Part 18 Conducted Emissions Limits (For RF Lighting Devices, such as CFLs and Electronic Fluorescent Light Ballasts)**

Frequency (MHz)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)	Conducted limit (dBµV)
<b>Consumer equipment:</b>		
0.45 to 2.51	250	48
2.51 to 3.0	3,000	70
3.0 to 30	250	48
<b>Non-consumer equipment:</b>		
0.45 to 1.6	1,000	60
1.6 to 30	3,000	70

(d) If testing with a quasi-peak detector demonstrates that the equipment complies with the average

**Table 1B - Part 18 Radiated Emissions Limits for RF lighting devices**

Frequency (MHz)	Field strength limit at 30 meters (µV/m)
<b>Non-consumer equipment:</b>	
30-88	30
88-216	50
216-1000	70
<b>Consumer equipment:</b>	
30-88	10
88-216	15
216-1000	20

## Appendix B

### Part 18 - Pertinent Definitions and Rules

#### **§ 18.107 Definitions.**

(a) *Radio frequency (RF) energy.* Electromagnetic energy at any frequency in the radio spectrum from 9 kHz to 3 THz (3,000 GHz).

(b) *Harmful interference.* Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunication service operating in accordance with this chapter.

(c) *Industrial, scientific, and medical (ISM) equipment.* Equipment or appliances designed to generate and use locally RF energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication. Typical ISM applications are the production of physical, biological, or chemical effects such as heating, ionization of gases, mechanical vibrations, hair removal and acceleration of charged particles.

(g) *Consumer ISM equipment.* A category of ISM equipment used or intended to be used by the general public in a residential environment, notwithstanding use in other areas. Examples are domestic microwave ovens, jewelry cleaners for home use, ultrasonic humidifiers.

(i) *Marketing.* As used in this part, marketing shall include sale or lease, offer for sale or lease, advertising for sale or lease, the import or shipment or other distribution for the purpose of sale or lease or offer for sale or lease. See subpart I of part 2 of this chapter.

NOTE: In the foregoing, sale (or lease) shall mean sale (or lease) to the user or a vendor who in turn sells (or leases) to the user. Sale shall not be construed to apply to devices sold to a second party for manufacture or fabrication into a device which is subsequently sold (or leased) to the user.

#### **§ 18.203 Equipment authorization.**

(a) ) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

(1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.

(2) A technical report pursuant to §§ 18.207 and 18.311.

(b) Consumer ultrasonic equipment generating less than 500 watts and operating below 90 kHz, and non-consumer ISM equipment shall be subject to verification, in accordance with the relevant sections of part 2, subpart J of this chapter.

**§ 18.213 Information to the user.**

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system
- (b) Maintenance of the system
- (c) Simple measures that can be taken by the user to correct interference.

(d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.



## Appendix C

### Part 2 - Pertinent Definitions and Rules

#### **§ 2.1 Terms and definitions.**

*Interference.* The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. (RR)

#### **§ 2.801 Radiofrequency device defined.**

As used in this part, a radiofrequency device is any device which in its operation is capable of emitting radiofrequency energy by radiation, conduction, or other means. Radiofrequency devices include, but are not limited to:

- (c) The industrial, scientific, and medical equipment described in part 18 of this chapter.
- (d) Any part or component thereof which in use emits radiofrequency energy by radiation, conduction, or other means.

#### **§ 2.909 Responsible party.**

The following parties are responsible for the compliance of radio frequency equipment with the applicable standards:

(a) In the case of equipment which requires the issuance by the Commission of a grant of equipment authorization, the party to whom that grant of authorization is issued (the grantee) If the radio frequency equipment is modified by any party other than the grantee and that party is not working under the authorization of the grantee pursuant to § 2.929(b), the party performing the modification is responsible for compliance of the product with the applicable administrative and technical provisions in this chapter.

(b) In the case of equipment subject to authorization under the verification procedure, the manufacturer or, in the case of imported equipment, the importer. If subsequent to manufacture and importation, the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modification becomes the new responsible party.

(c) In the case of equipment subject to authorization under the Declaration of Conformity procedure:

(1) The manufacturer or, if the equipment is assembled from individual component parts and the resulting system is subject to authorization under a Declaration of Conformity, the assembler.

(2) If the equipment, by itself, is subject to a Declaration of Conformity and that equipment is imported, the importer.

(3) Retailers or original equipment manufacturers may enter into an agreement with the responsible party designated in paragraph (c)(1) or (c)(2) of this section to assume the responsibilities to ensure compliance of equipment and become the new responsible party.

(4) If the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modifications, if located within the U.S., or the importer, if the equipment is imported subsequent to the modifications, becomes the new responsible party.

(d) If, because of modifications performed subsequent to authorization, a new party becomes responsible for ensuring that a product complies with the technical standards and the new party does not obtain a new equipment authorization, the equipment shall be labelled, following the specifications in § 2.925(d), with the following: “This product has been modified by [insert name, address and telephone number of the party performing the modifications].”

[54 FR 17712, Apr. 25, 1989, as amended at 61 FR 31045, June 19, 1996; 62 FR 10470, Mar. 7, 1997; 62 FR 41880, Aug. 4, 1997]

## Appendix D

### Part 15 - Pertinent Definitions and Rules

#### **§ 15.105 Information to the user.**

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(c) The provisions of paragraphs (a) and (b) of this section do not apply to digital devices exempted from the technical standards under the provisions of § 15.103.

(d) For systems incorporating several digital devices, the statement shown in paragraph (a) or (b) of this section needs to be contained only in the instruction manual for the main control unit.

(e) In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

[54 FR 17714, Apr. 25, 1989, as amended at 68 FR 68546, Dec. 9, 2003]

## **Appendix 6**

December 29, 2015

Via E-mail and U.S. Mail

[bruce.jacobs@fcc.gov](mailto:bruce.jacobs@fcc.gov)

[rashmi.doshi@fcc.gov](mailto:rashmi.doshi@fcc.gov)

Bruce Jacobs, Chief  
Spectrum Enforcement Division  
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445-12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

Dr. Rashmi Doshi, Chief  
Laboratory Division  
Office of Engineering and Technology  
Federal Communications Commission  
7435 Oakland Mills Rd  
Columbia MD 21046-1609

Re: Complaint of Violation of Part 18 Marketing Regulations  
By Wal-Mart Stores, Inc. with Respect to RF Lighting Devices.

Dear Mr. Jacobs and Dr. Doshi:

This office represents ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated. The purpose of this letter and the attached evidentiary document entitled "*FCC Part 18 Marketing Violations by Wal-Mart Stores, Inc.*" (the Report) prepared by ARRL Laboratory Staff member Mike Gruber is to request on behalf of ARRL that the Commission investigate and commence an enforcement proceeding with respect to Walmart's marketing and retail sale of radio frequency (RF) lighting devices in the United States. ARRL purports to show that the hardware and home improvement chain is, in at least one store located in Connecticut (and by inference in other stores nationwide) marketing and selling to consumers (by retail sale) non-consumer, Part 18 RF lighting devices which are *not* intended for residential deployment, to consumers who have specifically noted their intention to deploy the devices in residential applications.

As is noted in the attached Report, there are within the Part 18 ISM rules [See Sections 18.305(c) and 18.307(c)] two classes of Conducted and Radiated Emissions limits for RF lighting devices such as CFLs and Electronic Fluorescent Light Ballasts. One is for consumer equipment (defined at Section 18.107 as that category of ISM equipment which is used or intended to be used by the general public in a residential environment, notwithstanding its use in other areas). The other is for non-consumer equipment (which of necessity is intended for non-residential applications). These classes of limits are vastly different. For example, the conducted emission limits for Amateur Radio allocations below 30 megahertz are 22 dB different as between consumer and non-consumer applications. Section 18.213(d) states that "manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz."

ARRL has received numerous complaints from amateur radio operators of significant noise in the Medium (MF) and High Frequency (HF) bands between 1.8 MHz and 30 MHz from “grow lights” and other Part 15 and Part 18 RF lighting devices. These devices are easily capable of emitting RF noise sufficient to preclude Amateur Radio MF and HF communications (and as well AM Broadcast station reception) throughout entire communities (and at distances of up to ½ mile from the device). ARRL has, as is noted in the attached Report, conducted studies in several states, including California, Massachusetts and Connecticut and has discovered an alarming number of instances of retail sale of electronic lighting ballasts, in which non-consumer-rated ballasts were mixed in with consumer ballasts and other consumer products and available for retail sale without guidance as to the proper deployment of them. Furthermore, the display signage in many cases did not mention or adequately address FCC Part 18 requirements as they pertain to interference in a residential environment. In most of the stores surveyed, unsuspecting consumers have no way of knowing the significance of consumer vs. non-consumer ballasts. In some cases, “commercial” grade ballasts, with their associated non-consumer emissions limits, appeared to be a merely heavier duty or longer lasting version of the same product. The display signage typically used implies, therefore, that commercial ballasts are also a product upgrade for home use. It typically does not include or mention the applicable FCC requirements or the radio interference potential of the device.

Although Part 18 rules describe limits for consumer and non-consumer RF Lighting Devices, many ballasts are labeled only as either “Part 18A” or “18B”. This nomenclature is clearly an adaptation from Part 15A and 15B, which pertains to commercial/industrial and residential digital devices, respectively. Part 18 does not include an A or B designation for RF lighting devices and the labelling is not at all helpful to consumers and, as used, has no regulatory connotation at all.

In the one case of actual purchases of an RF Lighting device at retail from a Walmart store, the purchaser specifically asked about residential deployment of non-consumer RF lighting ballasts. The device was actually purchased in each case cited. It is readily apparent that Walmart (and, in ARRL’s experience, other similar hardware retail sellers including Home Depot and Lowe’s have the same marketing practices) is actively and knowingly engaged on a daily basis in selling non-consumer, commercial RF lighting products to Walmart customers for residential deployment. If this activity is left unchecked, the Commission will continue to note a deterioration in ambient noise levels and preclusive interfering signals for both AM Broadcasters and Amateur Radio licensees in the entirety of the High Frequency bands.

ARRL respectfully requests that all non-consumer devices be removed from retail sale and marketing at Walmart, absent a more appropriate and informational marketing program. Those non-consumer devices that have been sold to consumers for residential installation should be tracked and recalled.

Given the foregoing, on behalf of the more than 730,000 licensed radio amateurs in the United States who have a significant interest in avoiding interference in residential environments from RF lighting devices which were never intended to be deployed in a residential environment, ARRL respectfully requests that your offices take the appropriate action with respect to Walmart and other similar chains of retail sales of these devices without delay.

Should any additional information be called for, please contact the undersigned, General Counsel for ARRL, the national association for Amateur Radio. Thank you very much for your consideration of this request.

Sincerely,

Christopher D. Imlay  
General Counsel, ARRL

Attachment

Copy to: Karen Roberts, Executive Vice President and General Counsel for Wal-Mart Stores, Inc. 702 SW 8th Street Bentonville, AR 72716-8611 Karen.Roberts@wal-mart.com (via U.S. Mail and e-mail)



# **FCC Part 18 Marketing Violations by Wal-Mart Stores, Inc.**

By Mike Gruber, ARRL Laboratory Staff

October 20, 2015

## **Introduction**

Non-electronic ballasts, which once dominated the fluorescent light market, operated under FCC Rule Part 15 as incidental radiators. Today they have been phased out in favor of newer electronic ballasts which, along with CFL bulbs, operate under Rule Part 18 as “RF Lighting Devices.” In this case, FCC considers these devices to be converting RF energy above 9 kHz directly into light, i.e., another form of energy. For this reason, the Commission classifies an electronic ballast as an ISM device.

## **Part 18 Limits for RF Lighting Devices**

As shown by Appendix A, Part 18 has two sets of limits for RF Lighting Devices. Specifically, there is a separate set of limits for consumer vs. non-consumer lighting devices. The emissions limits are considerably lower for consumer rated devices. As an example, the conducted emissions limits for all present ham bands below 30 MHz are 22 dB less for consumer rated devices. It should also be noted that these are the only devices that should be used for a home or residential applications. Per § 18.107 (g), consumer ISM equipment is to be “*used or intended to be used by the general public in a residential environment, notwithstanding use in other areas.*”

Although non-consumer devices might be suitable for commercial and industrial environments, ARRL is now receiving numerous reports of actual cases in which commercial RF lighting devices are causing harmful interference in residential areas.

## **Illegal Marketing by Walmart of Part 18 RF Lighting Devices**

A recent survey of fluorescent light ballasts on sale at a nearby Walmart store showed an alarming number of non-consumer rated ballasts mixed with or on display adjacent to consumer products. Furthermore, there is no display signage at the store to address or mention FCC Part 18 requirements as they pertain to interference in a residential environment. Unsuspecting consumers have no way of knowing the difference in interference potential of consumer vs. non-consumer ballasts. Most consumers would simply assume that any product available at a consumer retail store like Walmart would be suitable for residential consumer use.

As will be seen in the photos of Figure 1, there was no store signage that addressed or mentioned the applicable FCC requirements. Figure 4 shows the only product labeling available at the time of purchase. This is the only mention of or reference to Part 18 rules that would be available to the Walmart customer at the time of purchase. Even if the customer read the label, which is in small print, it would clearly not be reasonable to expect him or her to know or understand its meaning or significance.

Note: Although Part 18 only describes limits for consumer and non-consumer RF Lighting Devices, many ballasts are only labeled as either Part 18A or 18B. This nomenclature is clearly an adaptation from Part 15A and 15B, which pertains to commercial/industrial and residential digital devices, respectively. Part 18 rules, however, do not include an A or B designation for RF

lighting devices and therefore the nomenclature has no regulatory or informational meaning at all.



**Figure 1A** – The store display as viewed by a customer walking down the aisle. The ballasts are on the bottom shelf. There is no signage to provide customers with guidance in ballast selection. Furthermore, there is no mention of the FCC rules, FCC Rule Part 18, or the potential of these devices to cause radio interference.



**Figure 1B** – Ballasts as viewed from the center of the aisle.



**Figure 1C** – Ballast display.



**Figure 1D** – Ballasts as seen while looking down.

See Appendix B for pertinent definitions and rules in Part 18, particularly with regard to the marketing and sale of non-consumer devices to consumers. Additional information in Appendix C is taken from Part 2 of the FCC rules. Appendix D is for reference purposes only. It contains some of the equivalent rules with regard to Part 15A (non-consumer) and Part 15B (consumer) digital devices.

### **Walmart's Marketing and Sale of a Non-Consumer RF Lighting Device for Residential Purposes**

This case highlights the actual marketing and sale of a commercial ballast by Walmart to a residential user. Furthermore, the non-consumer or “commercial” product was actually purchased after consulting with a sales associate. Specifically, the customer asked the Walmart sales associate about the use of a commercial Part 18 non-consumer rated ballast in a residential environment.

### **The Investigation and Sale of a Non-Consumer Device at a Nearby Walmart**

On September 24, 2015, Ms. Lori Kosior purchased a non-consumer rated General Electric GE232MAX ballast from a Walmart located at the following address:

Walmart  
3164 Berlin Turnpike  
Newington, CT 06111  
Tel: (860) 667-7657

Before selecting the ballast, Ms. Kosior reports that she asked the sales associate for assistance. She pointed out that it was labelled as a “non-consumer” device and asked if she could use it in the basement of her home. The Walmart associate then asked if the ballast was a “light bulb.”

Once Ms. Kosior explained that it was a ballast and not a light bulb, the associate told her that she needed to speak to a person in the lighting department. That person, however, was at lunch. It was approximately 2 pm and Ms. Kosior didn't want to wait. Ms. Kosior then thanked the associate and paid for this device using a Master Card at the store's check out.

This non-consumer item was in not flagged during check-out. After paying for it, Ms. Kosior simply walked out of the store with it. See Figures 4 and 5 for photos.





**Figure 2** – Close-up of ballasts on display at a Walmart in Newington, CT. Although a few ballasts were initially in the wrong box, three different types of ballasts are included. On the right in a broken box are non-consumer ballasts for fixtures with two T8 bulbs. These ballasts are labeled Part 18A. In the center box are ballasts for T12 bulbs. These ballasts can be either a consumer or non-consumer device, depending on voltage. See Figure 3 for additional details. In the far left box are non-consumer ballasts for two T8 bulbs – probably the most common application for ballasts in a residence. See Figure 4 for close-up of label on this device.



**Figure 3** – Close-up of T12 ballasts in the center box shown in Figure 2. As can be seen in this photo, this ballast is labeled FCC Part 18 “Class A” (277V) and FCC Part 18 “Class B” (120V). It can be either a consumer or non-consumer device, depending on the voltage.



**Figure 4** – Close-up of label on a ballast from the left hand box depicted in Figure 2. This ballast is clearly labeled FCC Part 18, Non-Consumer. As such, it should not be marketed or sold to consumers for residential purposes. This is also the same ballast depicted in Figure 5 and purchased by Ms. Kosior. It is important to note that the label makes no mention of what the FCC Part 18 citation might signify to the consumer, and there is no reference to the potential for radio interference. The consumer would have no way of knowing that a commercial device should not be used in a residential environment.



**Figure 5** – This is the non-consumer ballast purchased by Ms. Kosior at the Walmart store in Newington, CT. A copy of the actual sales receipt is included.

The particular ballast purchased by Ms. Kosior was mixed in with consumer and non-consumer “commercial” ballasts. Other than what is shown in Figure 4, there is no additional store signage or product labeling for the consumer. Ms. Kosior was clearly not properly informed about the requirements of Part 18 or the additional interference potential when using this device at the time of purchase. While the device label does include a statement “FCC Part 18, Non-Consumer,” it is in small print and the purchaser has no way of knowing what this means. There is no mention – anywhere – of radio interference or a warning against using it in a home environment. It would be unreasonable to expect the typical customer to understand the significance of the label.

Once home, Ms. Kosior opened the box and found an instruction sheet inside. This documentation included the following warning:

**WARNING: PLEASE READ THE FOLLOWING NOTICE BEFORE INSTALLING  
“CLASS A” ELECTRONIC FLOURESCENT LIGHT BALLASTS!**

This equipment has been tested and found to comply with FCC 47 CFR Part 18, Non-Consumer RFI/EMI (“Class A”) limits. This Ballast should only be installed in a commercial environment. Do not install this ballast in a residential environment.

---

Also at the bottom of the sheet is the following statement:

**FOR COMMERCIAL USE ONLY. NOT FOR RESIDENTIAL (CONSUMER) USE**

FCC 47 CFR Part 18, Non-Consumer Rated Product.

---

Since neither statement specifically mentions radio equipment, maritime safety, communications equipment or critical navigation equipment, it should probably also be noted that these statements deviate considerably from the required warning per Part 18. See FCC rule § 18.213, particularly paragraph (d), which is as follows:

*“(d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style*

Since the ballasts in this particular store were all packaged in plastic, it is not known which, if any, came with an instruction sheet having the proper FCC advisory statement as required by § 18.213 (d).

## **Conclusion & Recommendations**

Clearly Walmart’s marketing and sale of non-consumer ballasts is not adequate to ensure compliance with FCC Part 18 requirements. This was demonstrated by the case described in this report, which includes the purchase of non-consumer ballasts after clearly telling store personnel

that a product was needed for residential use. Furthermore, there was no store signage or sales associate available at the time that could properly guide Ms. Kosior at the time of this purchase. The only labeling that she could see without opening the box is undoubtedly meaningless to most customers that would purchase such a device at a department store like Walmart. Even if a customer read the small print on this label, he or she should not be expected to know the significance of consumer vs. non-consumer ratings based solely on this vague and ambiguous reference.

Walmart is not only selling and marketing commercial devices to consumers, their sales staff is not knowledgeable or simply not available to properly advise its customers. It is, therefore, recommended that Walmart be reported to the FCC for the illegal and misleading marketing of Part 18 non-consumer lighting devices.

Since Walmart is primarily a consumer retail department store, it arguably should not be selling any non-consumer devices. However, should Walmart choose to continue to do so, some specific marketing recommendations would be as follows:

- 1) Non-consumer (Commercial) and consumer (Residential) products should be marketed from two different locations, with a clear separation between them.
- 2) Add clear and obvious display signage stating that commercial devices should not be used in a residential environments. Reference should be made to FCC Part 18 rules and the increased potential for commercial devices to cause radio interference if used in a residential environment.
- 3) Purchasers of commercial devices should be required to provide a valid contractor's number at the time of purchase.
- 4) Walmart should sell only Part 18 non-consumer lighting devices that:
  - a. Are clearly labeled as such and visible at the time of purchase. A suggested notice might include:  
"CAUTION: This is an FCC Part 18 Class A device and may cause harmful interference to radio communications. It should not be used in a home or residential environment. Any interference to authorized radio services caused by this device in a residential environment must be corrected by the user at his or her expense."
  - b. Include the proper and complete FCC warning per § 18.107 (g).

### **List of Appendices**

- 1) Appendix A - Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)
- 2) Appendix B - Part 18 - Pertinent Definitions and Rules
- 3) Appendix C - Part 2 - Pertinent Definitions and Rules
- 4) Appendix D - Part 15 - Pertinent Definitions and Rules



## Appendix A

### Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)

**Table 1A - Part 18 Conducted Emissions Limits (For RF Lighting Devices, such as CFLs and Electronic Fluorescent Light Ballasts)**

Frequency (MHz)	Maximum RF line voltage measured with a 50 $\mu$ H/50 ohm LISN ( $\mu$ V)	Conducted limit (dB $\mu$ V)
<b>Consumer equipment:</b>		
0.45 to 2.51	250	48
2.51 to 3.0	3,000	70
3.0 to 30	250	48
<b>Non-consumer equipment:</b>		
0.45 to 1.6	1,000	60
1.6 to 30	3,000	70

(d) If testing with a quasi-peak detector demonstrates that the equipment complies with the average

**Table 1B - Part 18 Radiated Emissions Limits for RF lighting devices**

Frequency (MHz)	Field strength limit at 30 meters ( $\mu$ V/m)
<b>Non-consumer equipment:</b>	
30-88	30
88-216	50
216-1000	70
<b>Consumer equipment:</b>	
30-88	10
88-216	15
216-1000	20

## Appendix B

### Part 18 - Pertinent Definitions and Rules

#### § 18.107 Definitions.

(a) *Radio frequency (RF) energy.* Electromagnetic energy at any frequency in the radio spectrum from 9 kHz to 3 THz (3,000 GHz).

(b) *Harmful interference.* Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunication service operating in accordance with this chapter.

(c) *Industrial, scientific, and medical (ISM) equipment.* Equipment or appliances designed to generate and use locally RF energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication. Typical ISM applications are the production of physical, biological, or chemical effects such as heating, ionization of gases, mechanical vibrations, hair removal and acceleration of charged particles.

(g) *Consumer ISM equipment.* A category of ISM equipment used or intended to be used by the general public in a residential environment, notwithstanding use in other areas. Examples are domestic microwave ovens, jewelry cleaners for home use, ultrasonic humidifiers.

(i) *Marketing.* As used in this part, marketing shall include sale or lease, offer for sale or lease, advertising for sale or lease, the import or shipment or other distribution for the purpose of sale or lease or offer for sale or lease. See subpart I of part 2 of this chapter.

NOTE: In the foregoing, sale (or lease) shall mean sale (or lease) to the user or a vendor who in turn sells (or leases) to the user. Sale shall not be construed to apply to devices sold to a second party for manufacture or fabrication into a device which is subsequently sold (or leased) to the user.

#### § 18.203 Equipment authorization.

(a) ) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

(1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.

(2) A technical report pursuant to §§ 18.207 and 18.311.

(b) Consumer ultrasonic equipment generating less than 500 watts and operating below 90 kHz, and non-consumer ISM equipment shall be subject to verification, in accordance with the relevant sections of part 2, subpart J of this chapter.

**§ 18.213 Information to the user.**

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

- (a) The interference potential of the device or system
- (b) Maintenance of the system
- (c) Simple measures that can be taken by the user to correct interference.
- (d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45-30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.

## Appendix C

### **Part 2 - Pertinent Definitions and Rules**

#### **§ 2.1 Terms and definitions.**

*Interference.* The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. (RR)

#### **§ 2.801 Radiofrequency device defined.**

As used in this part, a radiofrequency device is any device which in its operation is capable of emitting radiofrequency energy by radiation, conduction, or other means. Radiofrequency devices include, but are not limited to:

- (c) The industrial, scientific, and medical equipment described in part 18 of this chapter.
- (d) Any part or component thereof which in use emits radiofrequency energy by radiation, conduction, or other means.

#### **§ 2.909 Responsible party.**

The following parties are responsible for the compliance of radio frequency equipment with the applicable standards:

(a) In the case of equipment which requires the issuance by the Commission of a grant of equipment authorization, the party to whom that grant of authorization is issued (the grantee) If the radio frequency equipment is modified by any party other than the grantee and that party is not working under the authorization of the grantee pursuant to § 2.929(b), the party performing the modification is responsible for compliance of the product with the applicable administrative and technical provisions in this chapter.

(b) In the case of equipment subject to authorization under the verification procedure, the manufacturer or, in the case of imported equipment, the importer. If subsequent to manufacture and importation, the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modification becomes the new responsible party.

(c) In the case of equipment subject to authorization under the Declaration of Conformity procedure:

(1) The manufacturer or, if the equipment is assembled from individual component parts and the resulting system is subject to authorization under a Declaration of Conformity, the assembler.

(2) If the equipment, by itself, is subject to a Declaration of Conformity and that equipment is imported, the importer.

(3) Retailers or original equipment manufacturers may enter into an agreement with the responsible party designated in paragraph (c)(1) or (c)(2) of this section to assume the responsibilities to ensure compliance of equipment and become the new responsible party.

(4) If the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modifications, if located within the U.S., or the importer, if the equipment is imported subsequent to the modifications, becomes the new responsible party.

(d) If, because of modifications performed subsequent to authorization, a new party becomes responsible for ensuring that a product complies with the technical standards and the new party does not obtain a new equipment authorization, the equipment shall be labelled, following the specifications in § 2.925(d), with the following: “This product has been modified by [insert name, address and telephone number of the party performing the modifications].”

[54 FR 17712, Apr. 25, 1989, as amended at 61 FR 31045, June 19, 1996; 62 FR 10470, Mar. 7, 1997; 62 FR 41880, Aug. 4, 1997]

## Appendix D

### Part 15 - Pertinent Definitions and Rules

#### **§ 15.105 Information to the user.**

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(c) The provisions of paragraphs (a) and (b) of this section do not apply to digital devices exempted from the technical standards under the provisions of § 15.103.

(d) For systems incorporating several digital devices, the statement shown in paragraph (a) or (b) of this section needs to be contained only in the instruction manual for the main control unit.

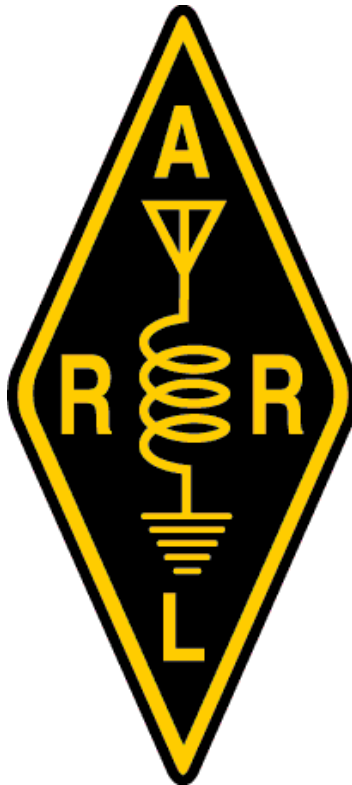
(e) In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

[54 FR 17714, Apr. 25, 1989, as amended at 68 FR 68546, Dec. 9, 2003]

## **Appendix 7**



**Power-Line Noise RFI Investigation Report**  
**Interference to Amateur Station KI6IBS in Pleasant Hill, CA**  
**From Pacific Gas & Electric Company**



*The National Association for Amateur Radio*

American Radio Relay League  
225 Main Street  
Newington, CT 06111  
Tel: (860) 594-0200

By:  
Michael E. Gruber, BSEE  
April 14, 2015

## 1) **Introduction**

### About the Author

Before joining the ARRL, Mr. Gruber was an electrical engineer in both the air traffic control and aerospace industry. He holds a B.S.E.E. degree from the University of Bridgeport and an A.S.E.T from Hartford State Technical Institute. First licensed in 1974 as WN1SVF, Mike now holds both an Extra class and a commercial radio license. While at the ARRL, Mike served as the Product Review Test Engineer for seven years. He's been an EMC Engineer with the ARRL since 2002, primarily assisting in power line noise and other Part 15 interference cases, writing articles and editing ARRL books pertaining to RFI.

Memberships include IEEE, IEEE EMC Committee, IEEE PES, IEEE Standards Association, ARRL, and the RSGB.

### The FCC / ARRL Cooperative Agreement

The FCC has established a cooperative agreement with the ARRL to help in complaints involving power-line noise, which is a problem that typically occurs as a result of arcing or sparking on power-lines or related hardware. Under the terms of this agreement, the ARRL provides information and other assistance to help utilities meet Part 15 FCC rules concerning radio interference.

### The ARRL Investigation

Under the terms of the cooperative agreement, it has been ARRL's experience that many power companies will correct the problem without FCC intervention. In some cases however, resolution has not been achieved even after an extended period of time. This report concerns one such case. As the record will show, this is a clear and well documented situation of repeated interference complaints spanning approximately four years. Furthermore, despite continued FCC intervention, there has been no significant if any reduction in the interfering noise since the time of the initial complaint.

Mr. Gruber and ARRL representative Jerry Ramie, KI6LGY visited the site of the subject noise in March 31, 2015. At the time of this visit, there did not appear to be any evidence of an ongoing effort to correct the problem.

The following report is an effort to document my findings during the investigation.

## 2) The Complainant

The complainant in this case is:

Mr. Eric S. Schreiber, KI6IBS  
523 Kiki Dr.  
Pleasant Hill, CA 94523  
Tel: (925) 451-1904

First licensed in March of 2007, Mr. Schreiber currently holds a General Amateur Class license. As a radio Amateur, he primarily operates sideband from 160 to 10 meters with occasional operation on 2 meters. Mr. Schreiber's primary interest is rag chewing but enjoys DX "when it comes along." He has lived at his current residence since July of 2004.

It is also important to note that the noise began on April 1, 2011. Before that, there were no significant interference issues. Once it started, however, there has been no appreciable relief from it.

See Figure 1 for photo of Mr. Schreiber's station.



**Figure 1 - The operating position at Amateur station KI6IBS.**

### **3) The KI6IBS Station Equipment**

The station equipment at KI6IBS for the HF Amateur bands is as follows:

- Transceiver - ICOM 756-PRO III
- Tuner - Palstar AT1500CV
- Amplifier - Ameritron AL811H  
Metron MA1000B
- Primary Power Supply – Batteries (500 lbs). Charged by solar and a La Marche A-46 commercial battery charger. This is kept at a constant 14.0v. An MFJ battery booster is also in the shack.
- Optional power supply (1) - Astron RS-70m. Dedicated to the Metron amp.
- Optional power supply (2) – 25A Radio Shack switching power supply.
- Antenna - 320' rectangle loop antenna at 40' high. Fed with window line from a 4:1 balun.

All station equipment appeared to be in good working order and properly installed using good engineering practice.

#### **4) The Utility**

The utility in the case is Pacific Gas and Electric Company, commonly known as PG&E:

PG&E Corporation  
One Market, Spear Tower, Suite 2400  
San Francisco, California 94105-1126

Pertinent contact information for the utility's CEO is as follows:

Mr. Anthony F. Earley Jr., Chairman of the Board, Chief Executive  
Officer and President of PG&E Corporation

## 5) Case History & Background

Mr. Schreiber reports he first noticed power-line-type noise on April 1, 2011. He reported the problem to the local utility company, PG&E shortly thereafter. Despite numerous complaints and FCC inquiries since that time, Mr. Schreiber reports there has never been any significant mitigation of the noise level. He also reports that there have been approximately ten visits by PG&E personnel to his station since his initial complaint. A technically competent RFI investigation, however, can often locate and correct such interference complaints in an afternoon or less.

Ever since his initial complaint, Mr. Schreiber reports the noise has been so strong at his house that two-way communications at his station has been severely impaired. When the noise is active, the interference on 7 MHz Amateur band is strong enough that communications with most stations is usually not possible.

To the best of his knowledge, the noise has not changed significantly in character or amplitude during the entire period since it started. While some noise is present most of the time, the primary sources of loud noise are active during the late afternoons and evenings, especially during the summer and warmer weather. Seasonal and weather changes have a significant impact on the noise level at KI6IBS. See Figure 2.



Figure 2 - The noise as it affected Mr. Schreiber's station during the initial phase of our investigation. It registered well over S9 on the S Meter.

There has been no activity by the utility in resolving this problem for some time and Mr. Schreiber's noise case now appears to be at a standstill. The following is a brief timeline history concerning this case:

**04-01-11** - Complainant reports noise started on this day.

**04-24-12** – As a result of an FCC referral, complainant contacts ARRL for first time regarding noise.

**05-07-12** – Mr. Gruber submits case directly to PG&E's attorney, Jonathan Pendleton, at [JJPc@pge.com](mailto:JJPc@pge.com).

**07-16-12** - 1st FCC Letter:

[http://transition.fcc.gov/eb/AmateurActions/files/PGE\\_-12\\_11\\_21\\_5339.html](http://transition.fcc.gov/eb/AmateurActions/files/PGE_-12_11_21_5339.html). See Appendix 1.

**09-19-12** – Mr. Gruber requested FCC follow-up in this matter, typically in the form of a second FCC Letter. However, this letter does not appear in the FCC log. ARRL is unable to confirm when this letter was sent.

**Present** – Case remains ongoing after four years. There has been over three years of ARRL/FCC involvement. There has been little or no improvement in the interference.

## 6) Current Status & Summary

PG&E claims to have done a lot of work to fix problem. The record also shows that there initially seemed to be some activity toward a resolution, although the lack of results was puzzling.

Mr. Gruber suspected and later confirmed that PG&E did not appear to be using technically competent locating methods and equipment to find the problem(s). Instead, they use a shotgun approach, or fix “any noise”, in order to address this complaint. They don’t appear to be using any credible means to identify the source or sources at the complainant’s station. Under FCC rules, it is not necessary to fix every problem – only those affecting the complainant’s station.

**Note:** Mr. Gruber has analyzed a number of recordings since this problem was initially reported to ARRL. He was typically able to see a primary noise source in at least some of them. Finding and fixing this source shouldn’t be too difficult using a technically competent approach to solving the problem. Considering the number of sources that have supposedly been fixed by PG&E so far, it doesn’t appear that they found the right one(s). Their “guess and hope” approach simply isn’t working. The reported number of repairs made by the utility has only added to the cost without producing any results.

Given the utility’s lack of results so far, it seems unlikely that there is any realistic end in sight. The utility lacks the capability to meet its obligation under the FCC rules, and (so far) they have expressed no interest in obtaining it. Several times Mr. Gruber suggested that they hire a consultant, but he never received a response.

In short, PG&E’s effort often appears to be more of a charade than a good faith effort to actually fix the problem. They do just enough to appease the FCC but meaningful results beyond that seem unlikely. While the utility may not be completely unresponsive to the complainant, the response is almost never timely and generally lacks commitment.

### “The Endless Loop”

So far, the FCC has not required the utility to use proper techniques or equipment to locate the sources. As a result, this case has fallen into what I call “the endless loop.” Here is the scenario:

1. The complainant calls ARRL.
2. ARRL calls FCC’s Laura Smith.
3. FCC’s Laura Smith calls the PG&E Attorney Jonathan Pendleton.
4. PG&E Attorney Jonathan Pendleton reports they will look into it.
5. PG&E will typically find and report “something,” but never actually fixes the problem. Note: Usually multiple repairs are reported, although Mr. Gruber typically only saw one or two primary sources.
6. Since PG&E never reports when or if the repairs are made, someone (typical Mr. Schreiber or ARRL) needs to contact Jonathan Pendleton for repair status.



7. Once the repairs are reported as complete, the whole process then repeats. Back to step 1 above.

So far, this case has gone on for years like this with no realistic end in sight. However, as we'll see, most of these cases can probably be solved in an afternoon by a competent RFI investigator using proper equipment.

**Note:** At the time of this report, Mr. Schreiber's last communication from PG&E was on January 7, 2015. It was from Shaun Rohmiller, the utility's Public Safety & Regulatory Supervisor. Mr. Rohmiller's email, quoted in full below, clearly demonstrates that they will be attempting repairs without using proper techniques or equipment:

**From:** "Shaun Rohmiller" <[S1R3@pge.com](mailto:S1R3@pge.com)>  
**To:** "Eric Schreiber" <[ki6ibs@comcast.net](mailto:ki6ibs@comcast.net)>, "Mike L Farinsky (Superintendent)" <[MLFa@pge.com](mailto:MLFa@pge.com)>, "Randy Dunkel" <[R3DH@pge.com](mailto:R3DH@pge.com)>  
**Cc:** "John Oldham" <[J1O9@pge.com](mailto:J1O9@pge.com)>  
**Sent:** Wednesday, January 7, 2015 7:40:53 AM  
**Subject:** RE: Pleasant Hill noise

Eric, I am going into our scheduling meeting today and I will see what we have for availability on Friday afternoon. I won't be bring a troubleman out, this will more than likely be a 3 person rubber glove crew so we can get up on the primary lines and replace ties and hardware. Good news is we will be able to make repairs on the spot, bad news is they won't have any noise detection equipment so if you have something that you use, it would be nice to have it on site. If this Friday doesn't work, is there a particular day of the week that works best for you?

Mike, with the new year, do you have any availability to come up and help us troubleshoot this neighborhood for RTVI noise?

Randy, I will discuss this job with you later this morning and if possible, I would like to have a solid date we can perform this work so we can let Eric know.

Thank you all for your help trying to solve this problem.

Shaun Rohmiller  
Public Safety & Regulatory Supervisor  
Diablo Division  
1030 Detroit Ave, Concord, CA 94518

Mobile: 925-337-9205  
Fax: 925-674-6412

## 7) The ARRL Investigation

As previously reported, Messer's Gruber and Ramie first visited the site of this complaint on March 31, 2015. The purpose of this visit was to better assess the noise, confirm it to be power line related, and better understand why it isn't corrected after more than three years of PG&E's effort to fix it. They both had experience locating power-line noise and using test equipment to identify "noise signatures."

### Noise Locating Equipment

The ARRL noise locating equipment meets all applicable calibration requirements. It is professional grade equipment and commonly used in the power industry. The specific equipment used in this investigation included the following items:

- Radar Engineers Model 240A HF-UHF RFI Locator. This is a portable battery powered radio receiver that features an oscilloscope display for observing noise signatures. It is tunable from 1.8 to 1,000 MHz and has a waveform memory for comparing noise patterns. See Figure 7.01 for photo.
- Radar Engineers 390-415 MHz Antenna. This is a portable hand-held Yagi useful from 390 to 415 MHz. It has eight elements.
- A handheld 4-element 144 MHz Yagi antenna used for RDFing purposes.
- A 144 MHz and 440 MHz dual-band mobile antenna.
- Radar Engineers Model 250 Parabolic Pinpointer. This is used for identify the precise offending hardware on a pole once the pole has been identified.



**Figure 3 - The Radar Engineers Model 240 HF-UHF RFI Locator is a professional grade receiver for locating RFI sources. It has a built-in oscilloscope display for recording and observing noise signatures. This receiver operates from 1.8 to 1000 MHz.**

### Investigation Procedures

The procedures used during the investigation were consistent with modern noise locating techniques and included signature matching, a technique for positively associating a suspect noise source with the noise heard at the licensed station. These techniques are described in greater detail in Appendix 2, which is an expansion from an article that appeared in the September 2004 issue of *Transmission & Distribution Magazine*. Specifically, this Appendix was written by Mike Martin<sup>1</sup> of RFI Services, a recognized authority in the field of power-line noise locating. Mr. Martin was also a coauthor of the original T&D article.

Messer's Gruber and Ramie began the subject RFI investigation shortly after meeting Mr. Schreiber at his residence. As dictated by standard procedure, they first observed the noise at Mr. Schreiber's station and took note of such things as:

- Frequency and bands at which the noise could be heard
- Noise strength
- Noise signatures
- General noise characteristics that suggest a possible source
- Weather conditions

While some interference was readily apparent once Mr. Schreiber turned on his receiver, although it was not initially as severe as expected. Mr. Schreiber had previously explained that the severe noise primarily occurred during warmer temperatures. It was most likely to occur during late afternoons and summertime. It was late morning, and temperatures on the last day of March were still too cool for the primary source or sources to become active.

Mr. Schreiber also did not have a rotatable directional antenna so they could not obtain noise headings with his antenna. All observed noise signatures were consistent with power-line noise with multiple sources. Mr. Gruber also noted that the interference could be heard across the spectrum, as one would expect with power line noise.

### Locating Noise Sources

As shown in Figure 4, Mr. Gruber first saved the noise signature using Mr. Schreiber's antenna in the Model 240's memory. This is an important and often crucial step toward success when locating power line noise. Since there were multiple sources, and the primary noise was not active at the time, Mr. Schreiber was asked to provide a length of coax in his yard that was connected to his antenna. Mr. Gruber could then access the antenna to his station for fresh signatures as the temperatures increased during the day. He would also know when the primary noises were active, which is critical if they were going to be found.

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<sup>1</sup> Mike Martin, RFI Services, 6469 Old Solomons Is. Road, Tracey's Landing, MD 20779  
[www.rfiservices.com](http://www.rfiservices.com)



**Figure 4 - Observing the noise as it affects a complainant's station is a critical step in the process. In this photo, the RFI Investigator is connecting his locating receiver to observe and record the noise that is the source of this complaint.**

Messer's Ramie and Gruber then proceeded to take some initial headings in front of Mr. Schreiber's residence. They obtained an initial heading on it at 146 MHz, and headed off in the direction of the noise. The source of this noise was found to be near the intersection of Fafnir Place and Odin Drive. This area is described as Area A in Figure 5.

NOTE: A second but intermittent gap noise was also briefly observed near the intersection of Kiki Odin Drive. This source was too intermittent to get a clear signature or determine the impact on Mr. Schreiber's radio reception.

As the investigation progressed, they took additional signatures at Mr. Schreiber's residence. They also noted that many of the observed sources were intermittent in nature. And as Mr. Schreiber had initially informed the ARRL investigators, the noise dramatically increased later in the afternoon as the day warmed up. Due to the intermittent nature of the sources, it was decided to return for two additional follow-up visits on Wednesday and Thursday of that week.

Here is a summary of what was found during the remainder of the investigation:

- A. One previously gap source near the intersection of Fafnir Place and Odin Drive. This source is described as Area A in Figure 5.
- B. Two gap sources were identified in the area near the intersection of Odin Drive and Freya Way. This area is described as Area B in Figure 5.
- C. A fourth gap source was located near the intersection of Morello Ave and Aleta Place. This area is described as Area C in Figure 5.
- D. Three more sources were located in Area D as depicted in Figure 5. All of these sources were intermittent and primarily occurred during the warmer temperatures of late afternoon. **These were determined to be the primary sources affecting Mr. Schreiber's station, i.e., the sources responsible for the severe interference as reported by Mr. Schreiber.**

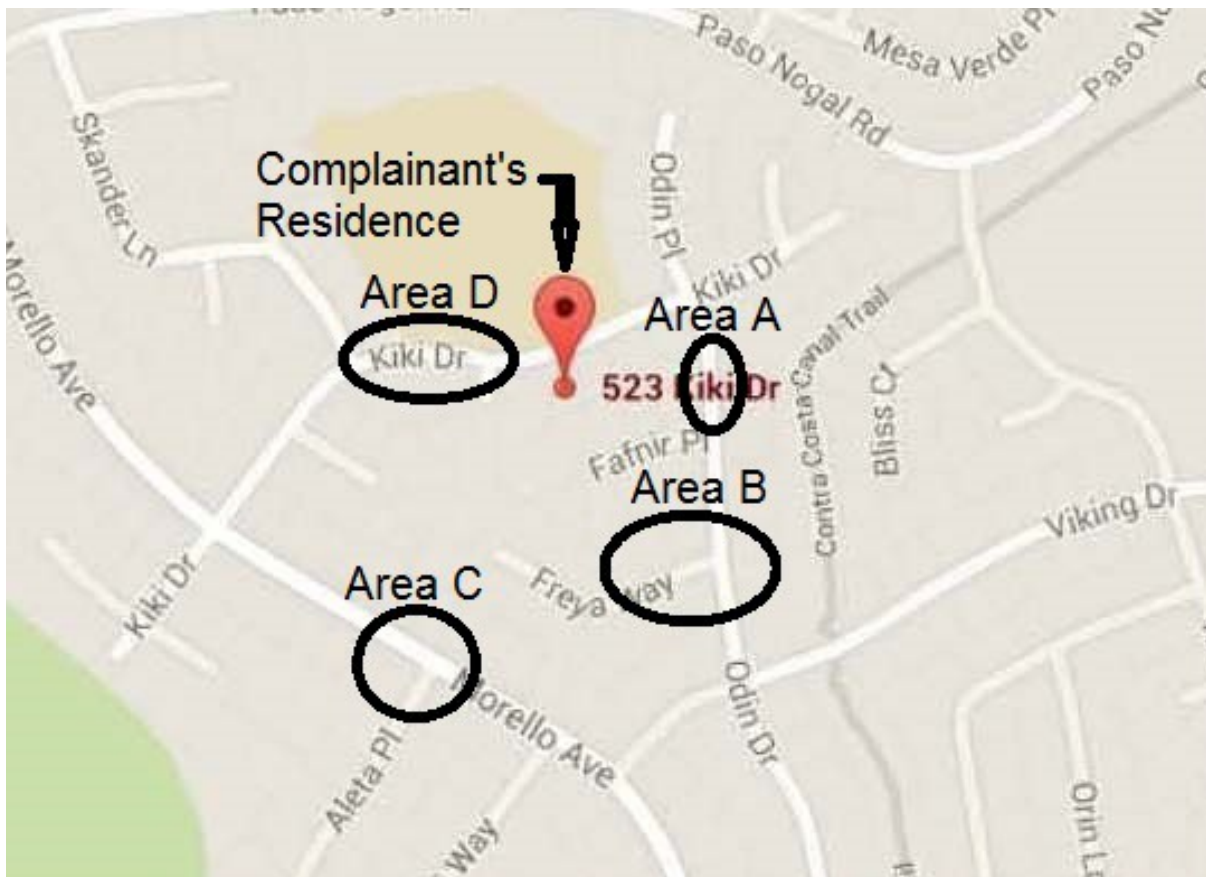


Figure 5 - This map shows the general areas in which the sources were located during this investigation.

## **8) Findings and Conclusions**

The noise at Mr. Schreiber's station at some times during the investigation was quite severe. The noise is clearly causing harmful interference to the operation of the licensed Amateur station. The interference was 10 to 20 dB over S9 or higher at 7 MHz, rendering communications on this Amateur band almost impossible in most cases. Noise could also be heard into the VHF spectrum and on the 50 MHz Amateur band.

As the results show, there were at least seven sources in four general areas that were located and documented. Two or three sources were identified as primary causes of the interference at Mr. Schreiber's station at the time of this investigation. Since one of these sources had been intermittent, it was difficult to assess due, especially in such a noisy environment as Area D.

Each of the sources that they found was clearly power line or gap noise from PG&E's equipment and system. Furthermore, this has been a problem for several years, and Mr. Schreiber reports the extreme noise levels have been present during PG&E RFI investigations.

Although PG&E claims to have afforded considerable effort in this matter, there has been a surprising lack of results in getting it resolved. Although the problem has been ongoing for approximately four years, none of the noise sources "corrected" by the utility has resulted in any significant changes in the noise level at Mr. Schreiber's station. It would seem that sources may have been misidentified and problems not affecting Mr. Schreiber's station were "fixed" at needless expense to the involved utility.

In most cases, a noise source can be located easily by trained personnel using the proper equipment. Noise signature techniques in a well-conducted RFI investigation can also determine an offending noise source from the multitude of sources typically encountered during the investigation. This technique, for example, can reduce or eliminate confusion with regard to such sources as non-offending power-line noise and consumer devices.

As previously discussed, obtaining the source pattern affecting his reception is an important step toward a successful and cost effective approach toward eliminating the source. Given the number of sources apparently encountered by PG&E during their investigation, signature matching techniques are probably the only practical and efficient way to resolve this problem. In the three to four years since this problem was first reported by Mr. Schreiber, PG&E has not been able to make any significant progress toward resolving the interference problem. However, excluding the time lost due to the intermittent nature of the severe noise in cool weather, Messer's Gruber and Ramie located the primary sources in probably less than an hour of becoming active.

There does not appear to be any reason why this problem could not have been corrected years ago if PG&E had properly trained personnel and modern noise locating equipment. Although it's not possible to determine when any particular noise source first became active, or even if it was active during a specific utility conducted RFI investigation, it was

relatively easy to find these sources using the techniques previously described in this report. Certainly, two primary sources that can be heard in the VHF spectrum, such as they found, should have been fixed had there been any technically correct attempt to do so.

**Note:** At least at one time, it is believed that PG&E actually had two sets of Radar Engineers equipment. This is partially confirmed by Mr. Schreiber, who reports that one of the PG&E RFI investigators (now retired) had one set at his residence while working on his case. However, the investigator did not take or look at a noise signature at his station. Although he had the right equipment, he did not know how to use it. PG&E had failed to provide proper training in its use.

It should also be noted that there are consultants that specialize in the field of locating radio interference and power-line noise sources. RFI Services<sup>2</sup> for example, is a nationally recognized company in the area of power-line noise locating that provides both consulting and training workshops for power company personnel. If PG&E had been serious about resolving this issue, they could have, and should have, sent their investigator(s) to a training workshop or hired a consultant. Although Mr. Gruber has suggested to PG&E's attorney (Jonathan Pendleton) on numerous occasions that they hire Mike Martin, he has not done so.

It should be emphasized that this report only includes the sources that were observed at the time of the investigation. Power-line noise sources can be intermittent. Other sources may have started since the investigation, and additional sources may become apparent once the primary source is repaired. **This report is not intended as a complete and sole summary of noise sources that are presently affecting Mr. Schreiber's station. Once repairs of known sources are made, a more complete and technically competent RFI investigation may still be required for PG&E to meet Part 15 of the FCC's rules.**

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<sup>2</sup> Mike Martin, RFI Services, 6469 Old Solomons Is. Road, Tracey's Landing, MD 20779  
[www.rfiservices.com](http://www.rfiservices.com)



## 9) Some Final Conclusions

It is clear that PG&E has been operating and continues to operate its equipment in a way that is not consistent with FCC Part 15 rules. While some RFI sources can be challenging to locate, even under the best of circumstances, most are not particularly difficult with modern equipment and techniques. Once active, Mr. Gruber was able to locate several sources, and identify some of them as primary sources of harmful interference in Mr. Schreiber's case in a relatively short period of time.

It would seem that finding these sources could and should have been done in the four or so years since this problem was first reported. Despite approximately four years of ongoing utility effort, at least one FCC notice, numerous letters, emails and telephone calls, PG&E has clearly failed to meet its obligation under the FCC rules. A technically competent RFI investigation should have uncovered the primary sources of interference, such as Mr. Gruber found, in a couple hours time or less. **The primary sources in this case were, in fact, relatively easy to locate.**

As previously discussed in this report, there are consultants in the field of power-line noise locating, not to mention hands-on training workshops and books. There is a clear and well documented case of repeated interference complaints by Mr. Schreiber in this matter. Furthermore, the utility at the time of this report has yet to even provide him with a credible and technically competent response to his complaint. Hopefully this report will help in that regard.



## **Appendix 8**

## **Illegal Drones Threaten Public Safety**

*By Mike Gruber and Jerry Ramie on behalf of  
ARRL, the national association for Amateur Radio*

### **Introduction**

Despite their relatively recent introduction to the consumer market, the surge in unmanned aircraft sales known as drones has been dramatic. The FAA predicts the combined total commercial and hobbyist sales to increase from 2.5 million in 2016 to 7 million by 2020. Of that total, sales for commercial purposes are expected to grow from 600,000 in 2016 to 2.7 million by 2020. Small hobbyist drone sales may grow from 1.9 million in 2016 to as many as 4.3 million by 2020.<sup>1</sup>

Hobbyist uses have so far included such things as racing and photography. These will no doubt continue to expand with such technologies as 4k cameras, Bluetooth and GPS.

### **Drones and FCC Rules**

Radio control of hobbyist drones and associated equipment is typically conducted pursuant to Part 15 of the Commission's Rules. As an example, the radio control signals from a typical consumer drone covered from 2.411 to 2.463 GHz when measured in the ARRL Laboratory. Part 15 allows up to 1 watt of peak envelope power for wideband digital signals in specified Part 18 ISM bands. In this case, 2.450 GHz +/- 50.0 MHz is an ISM band. It should be noted that Part 18 rules prohibit the transmission of intelligence. Drones must therefore still operate under Part 15 but are allowed by the Part 15 rules a higher output power if the Part 15 device is operating in an ISM band.

Some drones are also being sold as Amateur radio equipment operating under Part 97. Some Amateur frequencies are set aside for radio control purposes. However, the operator must have a valid Amateur radio license in order to use this equipment. Under the Commission's Part 97 rules, the maximum transmitter power must not exceed 1 W. Furthermore, there must be a label indicating the station call sign and the licensee's name and address on the station transmitter.

See Appendix A for some of the more important FCC Part 97 rules with regard to radio control operation conducted under Part 97.

Unfortunately some of the drones and associated equipment found by ARRL are blatantly illegal at multiple levels. Particularly alarming are some of the television transmitters for use on drones. Rated at six times over the legal power limit, *and on critical air navigation transponder frequencies*, these devices represent a real and dangerous threat to the safety of flight, especially when operated from a drone platform that can be hundreds of feet in the air. Other violations are described later in this document.

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<sup>1</sup> [www.faa.gov/news/updates/?newsId=85227](http://www.faa.gov/news/updates/?newsId=85227)

## **Illegal Marketing of Drone TV Transmitters that Operate on Amateur and FAA Radar Frequencies**

In November of 2015, the ARRL EMC Engineer Mike Gruber, W1MG became aware of the marketing of video transmitters for installation on airborne drones that operate on amateur radio frequencies. While the marketing of radio equipment that obviously is not tested for FCC rules compliance is nothing new, these devices are far more than a nuisance for the operators on the 23 cm (1240-1300 MHz) band. In fact, the operation of these transmitters does carry the distinct possibility of causing harmful interference which would result in a serious safety of flight issue for aircraft operations.

One example is the Lawmate 1.2 GHz, 8-channel 1000 mW (1-watt) AV transmitter for drones, which is now being marketed by several vendors. As Appendix B shows, these transmitters are capable of operating on the following frequencies: 1010, 1040, 1080, 1120, 1160, 1200 and 1280 MHz.

Although 1280 MHz is in an Amateur band, this channel would be in conflict with the GLONASS (Russian GPS) CDMA 1202.5 MHz channel. Here in the United States, Glonass is used by several government agencies for radiolocation. This frequency is also in commercial use within the US for the same purpose.

Operation on three of the other “channels” would have a far more significant impact. For example, 1010 MHz is used for aeronautical guidance in the TACAN/DME aircraft radio navigation band.<sup>2</sup> However, it is the potential use of 1040 and 1080 MHz that represents the greatest threat to the safety of flight. These two frequencies are in direct conflict with the ATC (Air Traffic Control) transponder frequencies. In this case, the transponder is interrogated at 1030 MHz with a response from the aircraft at 1090 MHz when those aircraft are operating in what is termed MODE-A or MODE-C transponder. **As noted in Appendix C, there is no shared spectrum with Amateur Radio below 1240 MHz.**

The use of transponders is required on these frequencies by all aircraft operating above 18,000 feet and within 30 miles of all major airports. Additionally, the newest form of digital ATC information for aircraft is transmitted at 1082 MHz. Since both the TACAN/DME and the ATC Transponder systems operate with a 10 MHz bandwidth, the use of an unlicensed drone transmitter can cause serious issues with the integrity of the ATC radar system.<sup>3</sup>

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<sup>2</sup> TACAN/DME is used for direction and distance measurement in military aircraft and the DME is used for distance measurement equipment in large commercial aircraft operating in the instrument flight environment. Most importantly TACAN/DME is used for approach to landing navigation at airports and it is used for navigation aids in the departure, en-route and arrival/approach segments of aeronautical instrument navigation. The Airman's Information Manual (AIM) has several chapters on the details of electronic navigation. Any interference to these aeronautical navigation systems creates a very serious safety of flight issue.

<sup>3</sup> While we do not have solid numbers for the sensitivity of the radar ground station on 1090 MHz, the 1030 aircraft receivers are typically -70dBm for 50% reply with 3 MHz bandwidth not less than -3 dB, -10 at 10 MHz and -50 at 25 MHz. The pulse from the transponder has a rise time of 0.1 us and the pulse from the ground station is less. Hence, a 10 MHz bandwidth for the receivers is a valid claim.

See Appendix C for pertinent spectrum information from the FAA and FCC concerning these frequencies. Appendix D also provides a more complete discussion of the potential impact to aircraft navigation systems caused by these devices.

The channels chosen for operation of these airborne transmitters demonstrate a disregard by the manufacturer of the established and legal assignments of frequency allocations. The Commission should take immediate action with respect to the marketing of these transmitters. Several facts supporting this complaint are:

- 1) The target market for these devices is the drone hobbyist - not the radio amateur. The device, due to the channel configuration, has no valid amateur radio application. And since transmitters operating in a ham band are being operated by non-hams, many of these devices are and will be used on an unlicensed basis in Amateur spectrum.
- 2) The use of these devices will cause undue interference to properly licensed amateur stations.
- 3) While these transmitters are marked as appropriate for “ham” use, they cannot be used legally for Amateur purposes.
- 4) Since these devices operate on critical aeronautical frequencies, Amateur Radio could be erroneously blamed if there is a problem.
- 5) The transmitter in this example (shown below) is not appropriate for unlicensed Part 15 use on any of the available channel settings.
- 6) It is quite obvious that these devices do not have proper FCC equipment authorization under Part 15. The rules require low power transmitters such as these to be Certified. While the state of FCC equipment authorization is not known for certain, the specified frequencies of operation would preclude the required FCC Certification by any knowledgeable TCB.
- 7) Finally and most importantly, given the capability of the devices to cripple the operation of the ATC secondary target/ transponder systems, these illegal transmitters represent a significant hazard to public safety in general and the safety of flight specifically.

These transmitters and amplifiers are being offered online by a number of internet vendors. A quick online perusal of vendors indicates that there is no shortage of suppliers of these devices:

- [www.getfpv.com/fpv.html](http://www.getfpv.com/fpv.html)
- [www.readymaderc.com/store/index.php?main\\_page=index&cPath=11&zenid=8be5bec447599f85ef884721a0c92d8e](http://www.readymaderc.com/store/index.php?main_page=index&cPath=11&zenid=8be5bec447599f85ef884721a0c92d8e)
- [www.hobbyking.com/hobbyking/store/\\_540\\_543\\_FPV\\_Aerial\\_Video\\_Telemetry-Video\\_Tx\\_Rx.html](http://www.hobbyking.com/hobbyking/store/_540_543_FPV_Aerial_Video_Telemetry-Video_Tx_Rx.html)

An example of the internet direct marketing of transmitters for drone television transmitters one only has to look as far as the “Hobbyking.com” website where the Lawmate transmitter is available for \$89, and a companion 6-watt amplifier is available for \$79.

[www.hobbyking.com/hobbyking/store/\\_77815\\_Lawmate\\_1\\_2GHz\\_8CH\\_1000mW\\_Wireless\\_AV\\_Transmitter\\_for\\_FPV\\_CCTV\\_Camera.html](http://www.hobbyking.com/hobbyking/store/_77815_Lawmate_1_2GHz_8CH_1000mW_Wireless_AV_Transmitter_for_FPV_CCTV_Camera.html)



**Figure 1** – The Lawmate 1.2 GHz 8CH Wireless AV Transmitter for FPV CCTV Cameras

This device is capable of operating at all four frequencies previously mentioned in this section 1010, 1040, 1080 and 1280 MHz. Consider that the maximum power allowed for this device is 1 watt under both Parts 15 and 97. This is six times the FCC limit when operated with the companion amplifier. When further you consider that this device will potentially be operating from a platform that is at high altitudes, the situation becomes alarming.

See Appendix E for additional drones that were for sale on the Internet at the time of this investigation.

### **ARRL Laboratory Measurements**

In order to fully assess these products, the ARRL Laboratory purchased two samples of the 1.08 - 1.26 GHz TV transmitters from Hobby King. Hobby King had them shipped by air from China, but readily sold them to Ed Hare, the ARRL Laboratory manager. See Appendix F for the paperwork, which in addition to everything else, clearly demonstrates a marketing violation.

Mr. Hare found that the product carried no FCC ID number. He couldn't find anything in the certification database that looked to be this product. Since it operates at 500 mw to 1000 mw on 8 channels, only two of which are in the ham bands, there is no way that this can be legal.

Each sample was then tested for spectral purity. See Figures 2 and 3. ATV 1 TX failed during this testing so only only ATV 2 TX (the larger of the two samples) was tested for frequency and power output. The rated power output for both transmitters is 1,000 mW.

<b>Channel</b>	<b>Channel Frequency</b>	<b>Measured frequency</b>	<b>Measured Output Power</b>
CH 1	1.080 GHz	1.079.970 GHz	400 mW
CH 2	1.120 GHz	1.119.967 GHz	430 mW
CH 3	1.160 GHz	1.159.965 GHz	500 mW
CH 4	1.200 GHz	1.199.964 GHz	750 mW
CH 5	1.010 GHz	1.009.971 GHz	710 mW
CH 6	1.040 GHz	1.039.970 GHz	710 mW
CH 7	1.280 GHz	1.226.506 GHz	600 mW
CH 8	1.280 GHz	1.224.000 GHz	500 mW (Unstable frequency)

**Conclusion: These devices are illegally operating at critical radio navigation frequencies. As such, they represent a real and significant threat to the safety of flight.**

## Spectral Plots

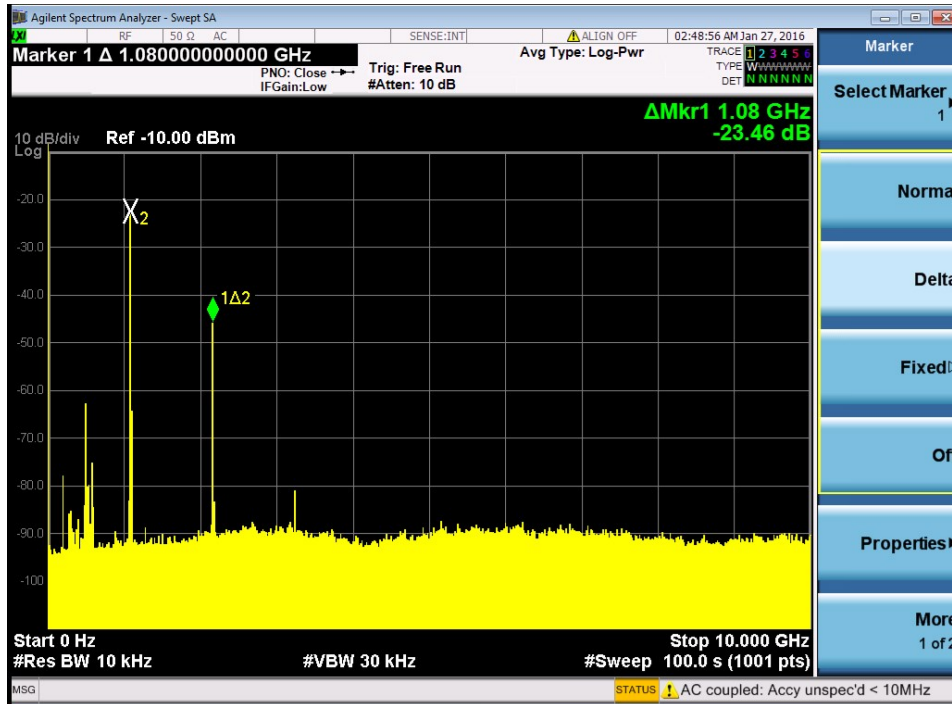


Figure 2 – Spectral plot of ATV transmitter sample 1. The harmonic is down by 23.5 dB.<sup>i</sup>

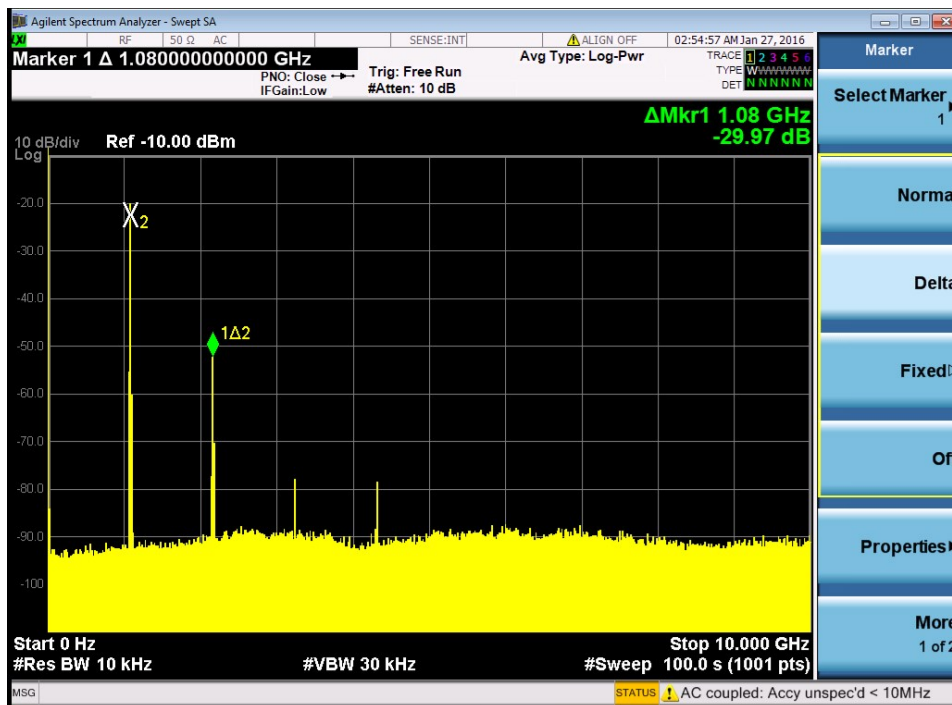


Figure 3 – Spectral plot of ATV transmitter sample 2. The harmonic is down by 30.0 dB.

Note: Regarding Figures 2 and 3, our step attenuator is not rated for the frequency of the harmonics measured. They may be higher than indicated on our spectrum analyzer.

## **Conclusion**

It is only a matter of time until Amateur operations will be affected in large numbers by these transmitters. Interference with the integrity of the FAA's ATC transponder radar system, however is far more likely now, with obvious public safety implications. Previous ARRL complaints concerning the improper marketing and sale of non-compliant devices have not been responded to, even when the subject devices dramatically exceeded the legal emissions limits. This situation, however is quite different. This product presents a serious risk to safety of air commerce and to the public. As such, this should be a matter of urgency by the Commission.

## **Recommendation**

**The Commission should take immediate steps to preclude the importation, sale and marketing of these devices as quickly as possible.**



## **List of Appendices**

- 1) **Appendix A** – Part 97 Rules Regarding Radio Control
- 2) **Appendix B** – Additional Examples of 1080 MHz and 1.2 GHz Transmitters for Drones
- 3) **Appendix C** – Pertinent FAA and FCC Frequency Allocations
- 4) **Appendix D** – The Potential Impact of Illegal to Aircraft Radio Navigation Systems
- 5) **Appendix E** – Hobby King Web Page Information for the Lawmate transmitter and companion 6-watt amplifier

## **Appendix A**

### **Part 97 Rules Regarding Radio Control**

#### **§97.215 Telecommand of model craft.**

An amateur station transmitting signals to control a model craft may be operated as follows:

- (a) The station identification procedure is not required for transmissions directed only to the model craft, provided that a label indicating the station call sign and the station licensee's name and address is affixed to the station transmitter.
- (b) The control signals are not considered codes or ciphers intended to obscure the meaning of the communication.
- (c) The transmitter power must not exceed 1 W.

[54 FR 25857, June 20, 1989, as amended at 56 FR 56171, Nov. 1, 1991]

#### **§97.217 Telemetry.**

Telemetry transmitted by an amateur station on or within 50 km of the Earth's surface is not considered to be codes or ciphers intended to obscure the meaning of communications.

[56 FR 56172, Nov. 1, 1991. Redesignated at 59 FR 18975, Apr. 21, 1994]

## **Appendix B**

### **Additional Examples of 1080 MHz and 1.2 GHz Transmitters for Drones**

At the time of this investigation, eBay has over 70 sellers of these devices. Some are the same as Hobbyking's offering - 1 watt output and several channels that cover 1280 MHz and the Aircraft ATC Transponder frequencies. A search using "fpv 1.2 GHz" found close to 100 online offerings:

[www.ebay.com/itm/1-2Ghz-800mW-Wireless-8CH-Transmitter-12-Receiver-for-Displayer-Moor-FPV-OSD-NEW-/361232990390?hash=item541b2a00b6:g:bCYAAOSwv0tU98Y-](http://www.ebay.com/itm/1-2Ghz-800mW-Wireless-8CH-Transmitter-12-Receiver-for-Displayer-Moor-FPV-OSD-NEW-/361232990390?hash=item541b2a00b6:g:bCYAAOSwv0tU98Y-)

[www.ebay.com/itm/LawMate-1-2GHz-8CH-1000mW-Wireless-AV-Transmitter-VTX-TM-121800-for-FPV-Camera-/181763666158?hash=item2a51f570ee:g:lk0AAOSwZVhWSvHZ](http://www.ebay.com/itm/LawMate-1-2GHz-8CH-1000mW-Wireless-AV-Transmitter-VTX-TM-121800-for-FPV-Camera-/181763666158?hash=item2a51f570ee:g:lk0AAOSwZVhWSvHZ)

[www.ebay.com/itm/1-2GHZ-200mW-4CH-Wireless-Transmitter-A-V-Video-Audio-FPV-Monitoring-Fr-RC-Quad-/252133261211?hash=item3ab4503f9b:g:Gt4AAOSwA4dWHwc~](http://www.ebay.com/itm/1-2GHZ-200mW-4CH-Wireless-Transmitter-A-V-Video-Audio-FPV-Monitoring-Fr-RC-Quad-/252133261211?hash=item3ab4503f9b:g:Gt4AAOSwA4dWHwc~)

At the time of this investigation, a search on Amazon.com for "1.2 GHz fpv transmitter" brings up over 900 matches. At least 10% of those were offering the 1-watt version that covers the ham band and transponder frequencies. The search was concluded after looking at the first 50 results that seemed to cover the frequencies of most concern. The ones we found do, in fact, have switch-programmable frequency selections for Amateur, DME-TACAN and ATC (air traffic control) "Radar."

It should be further noted that the vast majority of transmitters offered are only compliant to Part-15 in the proper 2.4 and 5.8 GHz bands, with the notable exception of these "1.2 GHz" models.

## Appendix C

### Pertinent FAA and FCC Frequency Allocations

#### 1. FAA Frequency Allocation for Spectrum Used by Illegal Drone Transmitters

The FAA's band and frequency allocation for the support of aviation can be found at the following FAA Web page:

[www.faa.gov/about/office\\_org/headquarters\\_offices/ato/service\\_units/techops/safety\\_ops\\_support/spec\\_management/engineering\\_office/rfb.cfm](http://www.faa.gov/about/office_org/headquarters_offices/ato/service_units/techops/safety_ops_support/spec_management/engineering_office/rfb.cfm)

In addition, the frequencies of concern and described in this report are provided in the following table. This information is taken from the above referenced FAA's Web page:

#### **Radio Frequency Bands Supporting Aviation**

Frequency	Band Name
960 - 1215 MHz	NAVAID (TACAN / DME, etc.)
1030 & 1090 MHz	Air Traffic Control Radar Beacon; Mode S; TCAS
1215 - 1390 MHz	Air Route Surveillance Radar; GPS and GLONASS L1

#### 2. FCC Part 97 Frequency Allocation for 23 cm Band

The 23 cm Amateur Radio Band shares some spectrum with the above FAA frequency allocations. Frequency sharing requirements are described in §97.303 paragraphs (b), (d) and (o) shown below. **There is no shared spectrum below 1240 MHz:**

Wavelength band	ITU Region 1	ITU Region 2	ITU Region 3	Sharing requirements, see §97.303, paragraph:
23 cm	1240-1300 MHz	1240-1300 MHz	1240-1300 MHz	(b), (d), (o)

#### **§97.303 Frequency sharing requirements.**

(b) Amateur stations transmitting in the 70 cm band, the 33 cm band, the 23 cm band, the 9 cm band, the 5 cm band, the 3 cm band, or the 24.05-24.25 GHz segment must not cause harmful interference to, and must accept interference from, stations authorized by the United States Government in the radiolocation service.

(d) Amateur stations transmitting in the 430-450 MHz segment, the 23 cm band, the 3.3-3.4 GHz segment, the 5.65-5.85 GHz segment, the 13 cm band, or the 24.05-24.25 GHz segment, must not cause harmful interference to, and must accept interference from, stations authorized by other nations in the radiolocation service.

(o) Amateur stations transmitting in the 23 cm band must not cause harmful interference to, and must accept interference from, stations authorized by:

(1) The United States Government in the aeronautical radionavigation, Earth exploration-satellite (active), or space research (active) services;

(2) The FCC in the aeronautical radionavigation service; and

(3) Other nations in the Earth exploration-satellite (active), radionavigation-satellite (space-to-Earth) (space-to-space), or space research (active) services.

## **Appendix D**

### **The Potential Impact of Illegal Devices to Aircraft Radio Navigation Systems**

The antennas used on aircraft for these systems are basically 1/4 wave mounted to the bottom skin of the fuselage. In the case of an aircraft in close proximity to a drone, there is an additional interference issue caused by the Side-Lobe Suppression (SLS) portion of the system.

In the Secondary Aircraft Radar (SAR) system, the interrogation is sent at a 400-600 Hz rate from the radar ground station on 1030 MHz. The old system used 3 pulses for interrogation. However, the new upgraded system uses 4 pulses for the interrogation as follows:

- The first pulse (P-1) is sent from a sweep antenna.
- The second pulse (P-2) is sent -10db down from the first with an Omni antenna above the sweep antenna.
- The third pulse (P-3) varies between two possible spacing's:
  - P-0 which causes the transponder to send the 4 octal numbers from the front panel (Mode A or squawk code), or...
  - The 4 octal numbers from the encoding altimeter.
- The fourth pulse is sent when the interrogation is for a Mode-S transponder, which responds on the same frequency digitally with GPS and unique aircraft transponder ID data.

There are other details in the system - BUT if there is a signal present when the P-2 pulse is sent, this activates the SLS (side lobe suppression) which mutes the transponder reply. The transponder may then see the Omni antenna at the same level as the sweep antenna. The transponder is then in a side-lobe and should not respond.

IF a transponder sees a signal at the same time as the P-2 pulse, it will prevent the transponder from responding. These systems are very brittle and susceptible to poorly operating transponders. In fact, some manufacturer's designs have been problematic when their transponders are subject to the new P-4 signal for mode-S.

The -70 dBm level is the FAA-TSO standard for a 50/50 reply from the transponder. While this is a relatively strong signal, there should be no other signals on these frequencies, period.

## Appendix E

### Hobby King Web Page Information for the Lawmate transmitter and companion 6-watt amplifier

A compact 1000mW 1.2GHz A/V transmitter module designed for FPV use. An excellent quality unit that has 8 selectable frequencies and audio/video outputs. This transmitter will give you excellent range and very good video clarity.

It utilizes a "Digital Phase Lock-Loop Circuit" without temperature drifting problems. It also features a highly integrated circuit board for ultimate reliability.

**Selectable channels: 1080 1120 1160 1200 1010 1040 1280 1280GHz**

#### Features:

- Compact size
- Exceptional range
- Excellent video clarity
- Highly integrated circuit
- Uses "Digital Phase Lock-Loop Circuit" with no temperature drift.

#### Specs:

Transmission Frequency: 1.2GHz

Output Power: 1000mW

Channels: 8

Input Voltage: 5V

Modulation Deviation: 2.8MHz FM modulation

Sub-Carrier Frequency: 5.5MHz

Video Input: Impedance = 75ohms

Audio Input: Vp-p

Operating Temperature: -10C~+40C

Weight: 27.5g (transmitter only)

Weight: 76g (transmitter, antenna and supplied A/V lead)

RF Output Connector: SMA

Dimensions: 60 x 25 x 11mm

#### Note:

Please check with your local authorities regarding operation of this equipment before you purchase. Regulations on power output, usable frequencies and licenses to operate vary from region to region.

## Appendix F

### Hobby King Purchase documents



Hello, Edward Hare

This is an email to inform you that we have received your order and it has been sent to the warehouse print queue for dispatch.

**YOUR ORDER ID IS: 20013095673**

Your order will be shipped to;  
Edward Hare  
225 Main St  
Newington, CT 06111, US  
UNITED STATES  
Ph:8605940318

If you wish to check your address, please log into our website and click on the order in your account section.

You can contact support by logging into our website and submitting a ticket.

**ALWAYS QUOTE YOUR ORDER ID WHEN YOU EMAIL US**

To check on the status of your order please log into your account at [www.HobbyKing.com](http://www.HobbyKing.com)

Regards  
[www.HobbyKing.com](http://www.HobbyKing.com)



If you have any issues or questions regarding our products or service, please feel free to contact us at our [support center](#).



## **Appendix 9**

# AZL01011 - TT000060604165

Jeff Dudas / Craig Esler - Greater West RFME's

11/10/2016 – Tucson, AZ



## Summary

Measurements taken at Pole 183 have a level of -91.3 dbm that correlate to measurements taken at the Vermette residence (-119.9 dbm), and at an intermediate point between them (-114.7 dbm).

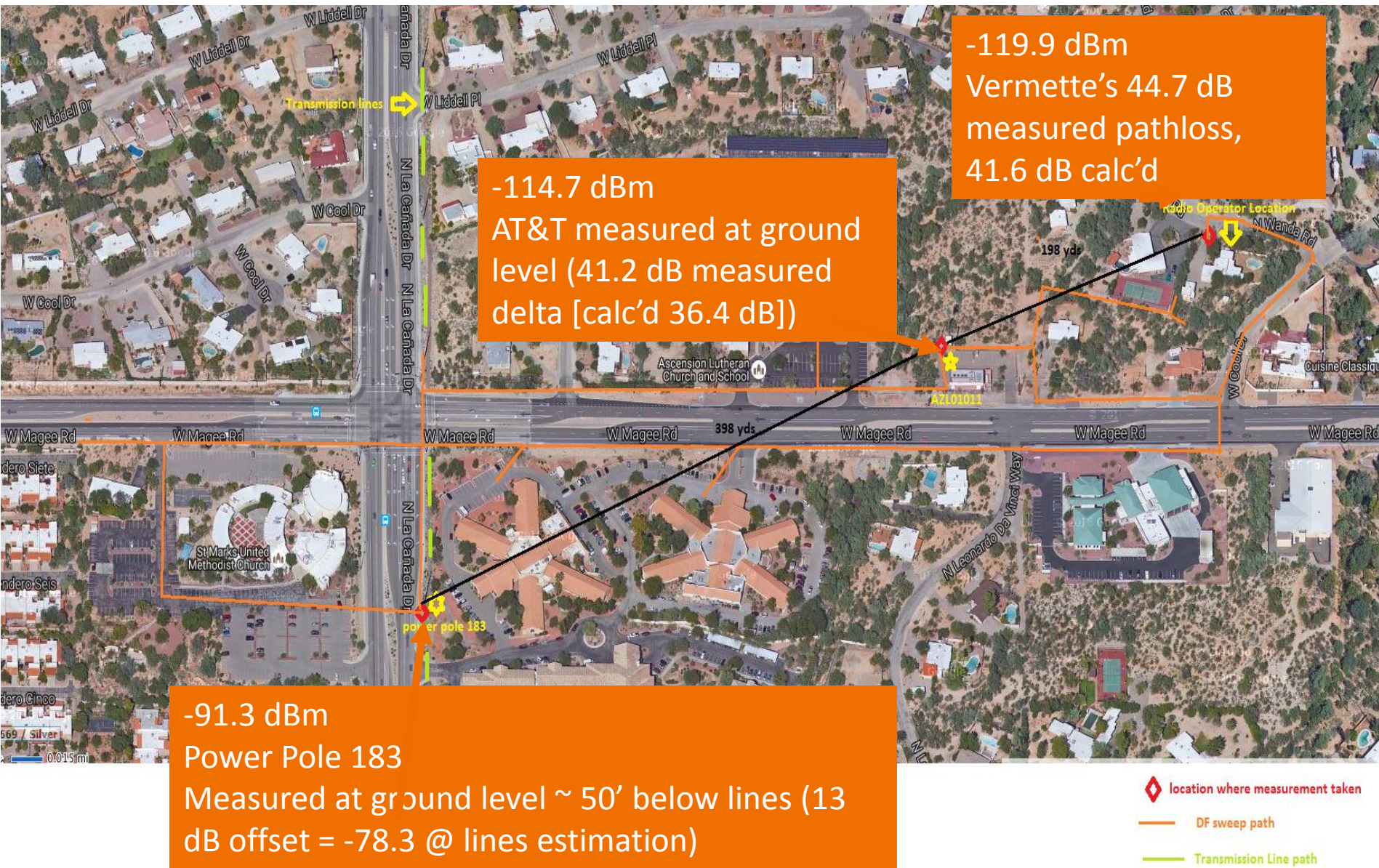
- These measurements and calculations are shown on slide 3.
- Slide 4 shows the exceptionally strong broadband noise emanating from Pole 183.
- Slide 5 shows the noteworthy signal measurement taken between Pole 183 and the Vermette residence.
- Slide 6 shows the correspondingly reduced signal measurement taken at the Vermette residence.

## Conclusion

Based on the field measurements made, and path loss calculations, we have determined that the likely source of the noise is Pole 183 or another element associated with the Tucson Electric Power grid.

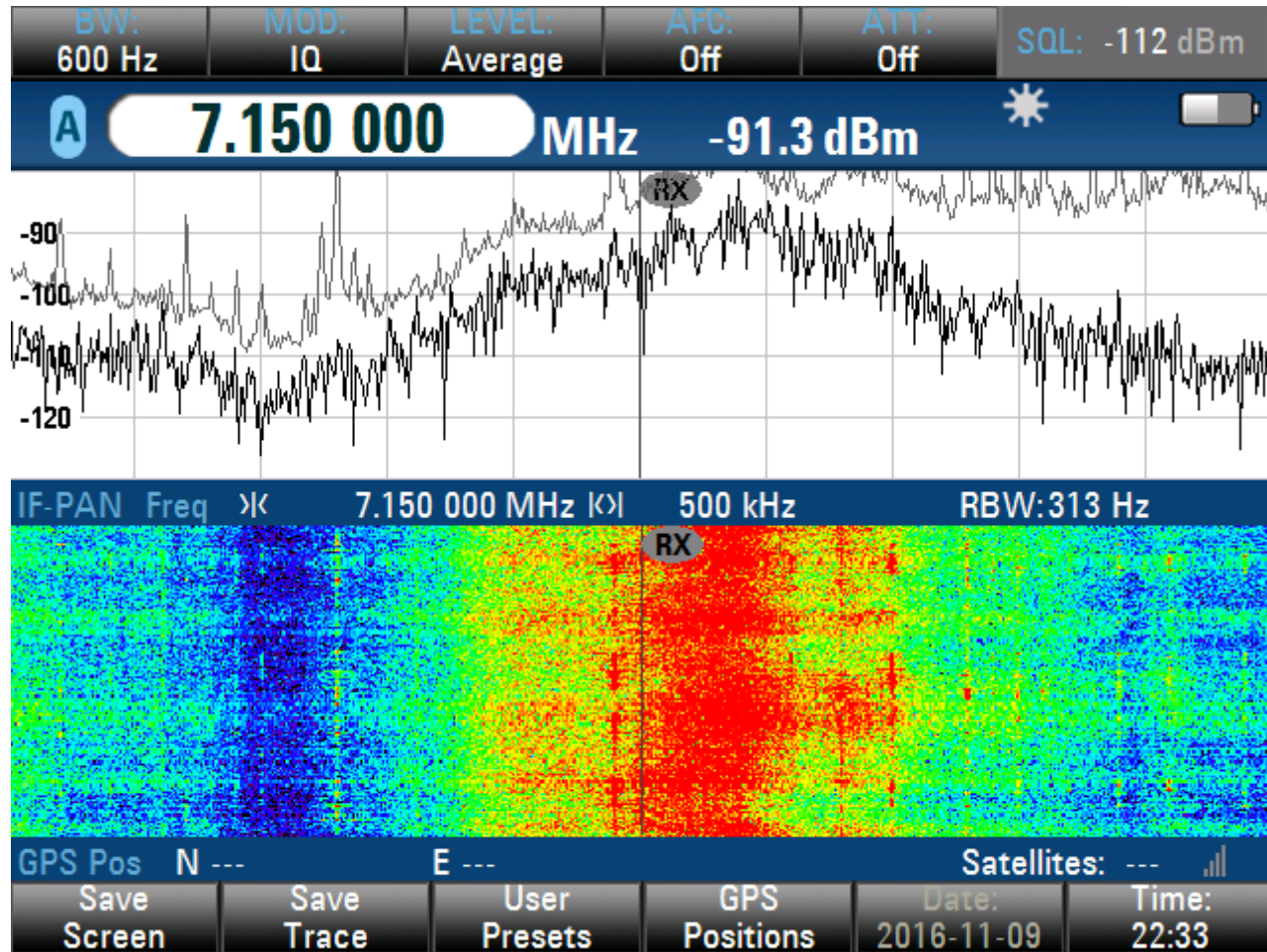
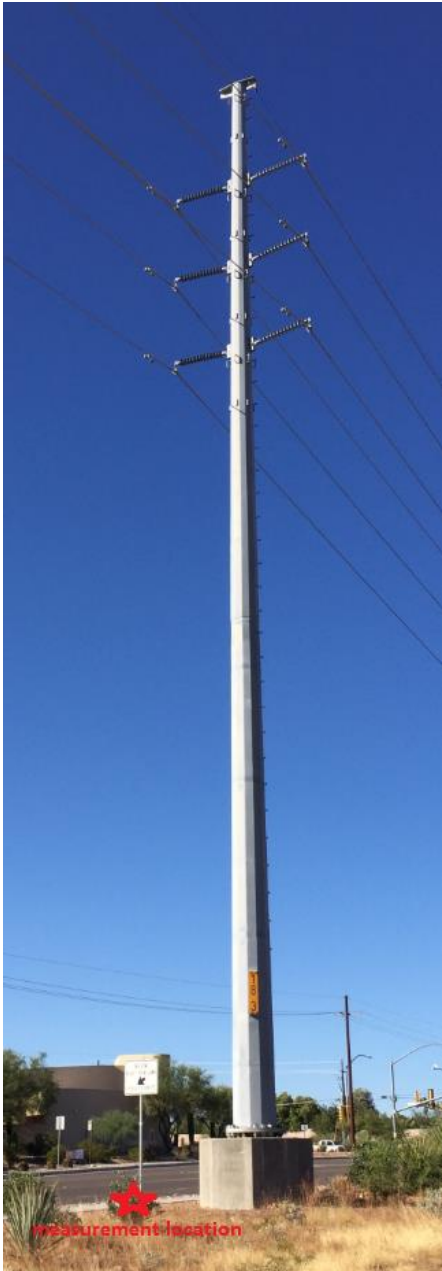


# Mapping

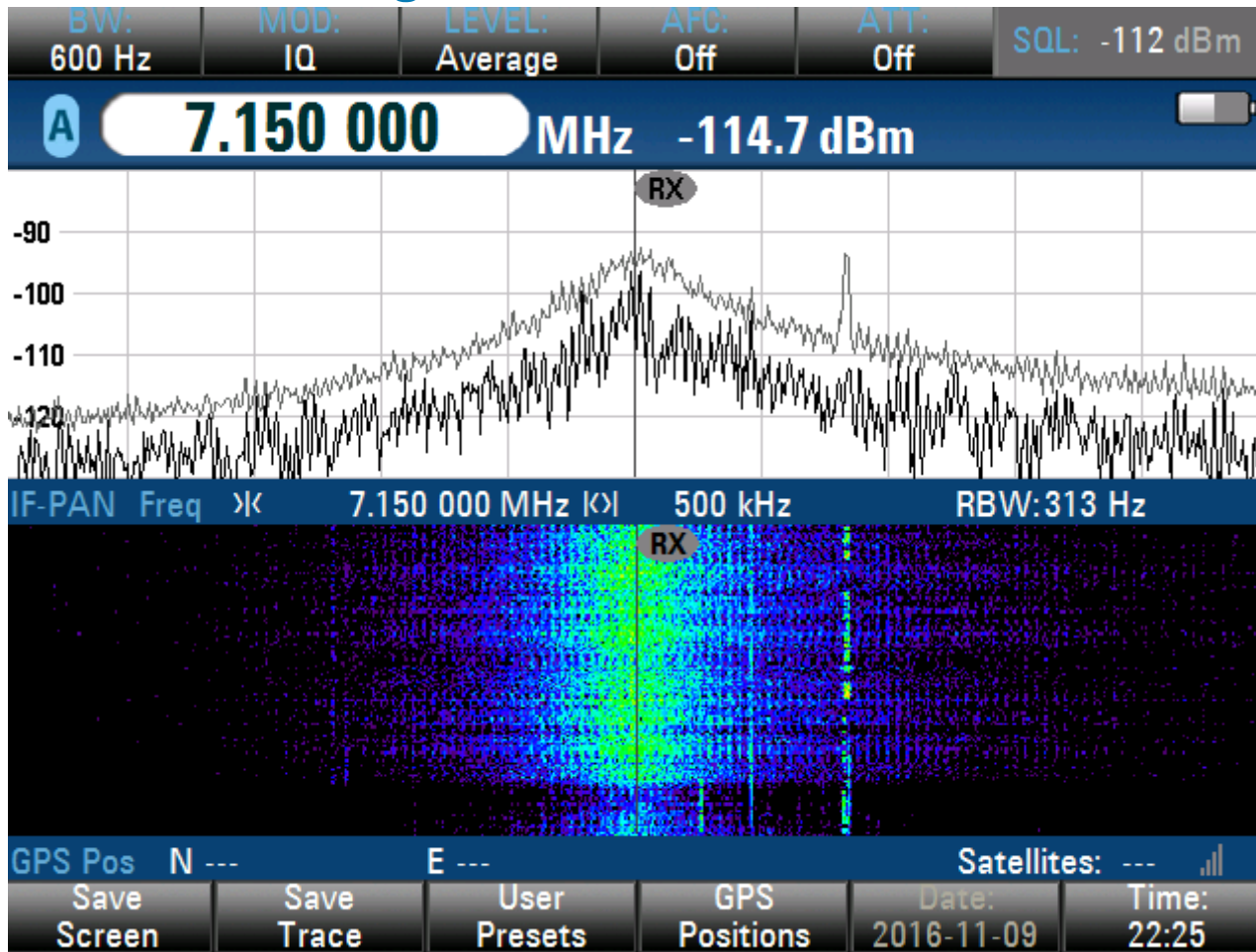




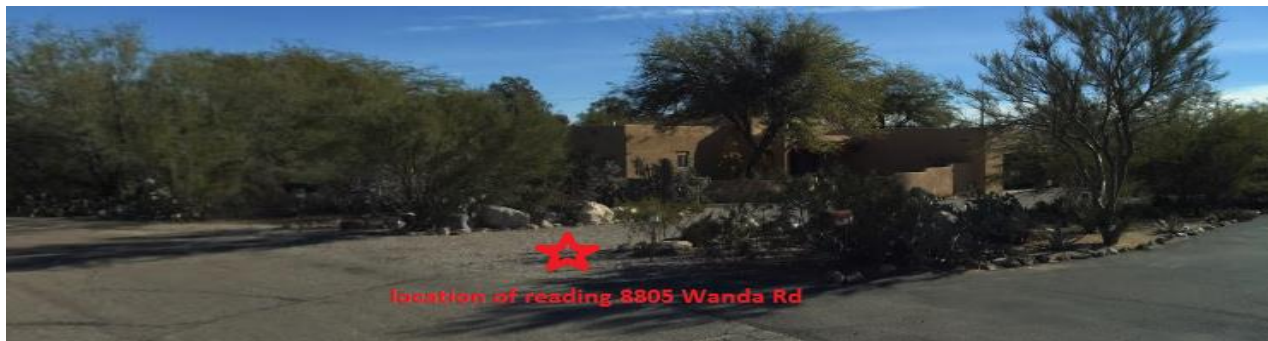
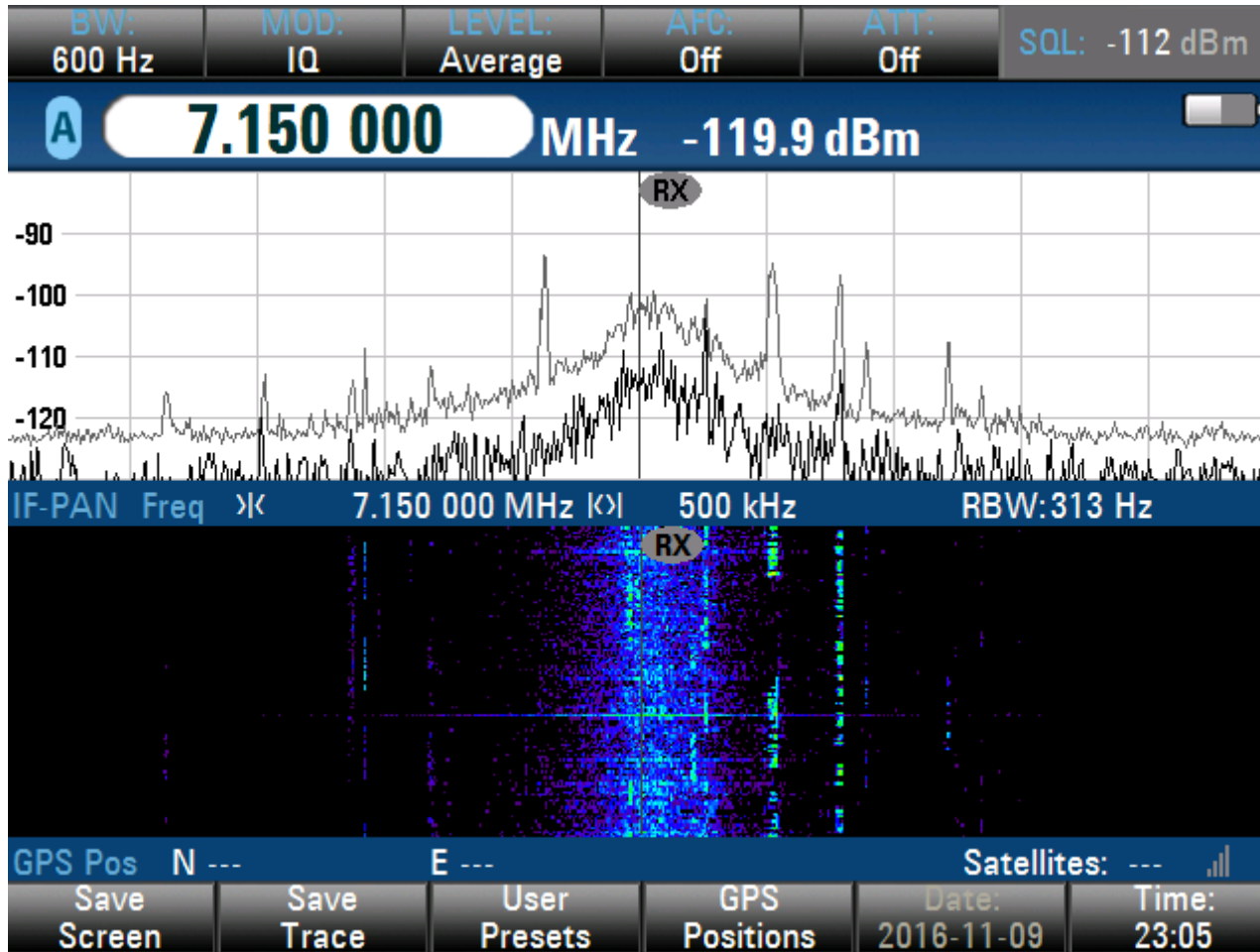
# Spectrum – Pole 183 located La Canada Dr. & Magee Rd.



# Spectrum – 1212 W. Magee Rd



# Spectrum – 8805 Wanda Rd.





## Chronology

AT&T was notified by National Performance Maintenance Center to investigate an interference case at John and Stephanie Vermette's residence.

AT&T site AZL01011 was previously identified by the Tucson Electric Power, Cruz Vega (TEP), via Mike Gruber (ARRL).

I went to the site in question and was unable to sufficiently validate yes or no if the problem was coming from AT&T. We obtained additional equipment to help identify issues in this particular frequency range of 7 MHz.

Our next visit was successful in identifying the noise in and around the site at 7.150 MHz. We did track it to at least one Tucson Electric Power pole, #183, on La Canada Drive near Magee Road.

Swept area with the center frequency set at 7.15MHz and a 500 kHz wide span. Measurements taken at the shelter's west power panel shows a -114.7 dBm reading at center frequency 7.15 MHz and a noise floor of -120 dBm across the span.



## Chronology (cont.)

Moved east to the Vermette's property and took readings at the front of the residence. The center frequency of 7.15 MHz shows a measurement of -119.9 dBm and noise floor of -130 dBm across the 500 kHz span.

Working back west, past the cell site towards La Canada Dr., the RF readings began rising. When reaching the crest of the hill, at the intersection of N. La Canada Dr. & W. Magee Rd., the RF signals had increased to the highest levels that had been recorded. (Located at this intersection are High Voltage transmission lines that run N/S along La Canada Dr.)

Continuing West , past the La Canada power lines for a distance of 260 yards, the RF signal levels were receding as we continued. Working back to the East, towards La Canada Dr. and the power poles, the RF levels again began rising and reached the highest levels when standing next to the power pole.

Measurements taken at power pole #183 shows the center frequency of 7.15 MHz reading -91.3 dBm and a noise floor of -103 dBm across the 500 kHz span.

[Device measurement capability is -130dBm. Waveform shape due to antenna pass band rollover.]



## **Appendix 10A**

# FCC's OET Clarifies Emissions Compliance Testing for RF LED Lighting Devices

06/30/2016

The FCC's Office of Engineering and Technology ([OET](#)) [has clarified](#) that all RF LED lighting devices falling under Part 15 rules as "unintentional radiators" must meet conducted and radiated emissions limits set forth in those rules.

"Operation of Part 15 unintentional radiators is subject to the condition that no harmful interference is caused," the OET reminded, in a knowledge database paper released on June 17. "Manufacturers and users should therefore note that lighting devices are required to cease operation, if harmful interference occurs."

The OET said radiated emissions measurements must be performed at least from 30 MHz to 1000 MHz to adequately demonstrate compliance with Part 15 (§15.109). Its guidance, the OET continued, applies to RF LED lighting devices that, in the past, have been considered to operate on frequencies below 1.705 MHz. Previously, devices operating between 9 kHz and 1705 kHz had to be tested only for radiated emissions up to 30 MHz, where no specified radiated emissions limits exist, and were exempt from testing from 30 MHz to 1000 MHz. The OET said it recognizes that routine radiated emissions measurements are needed under Part 15, based on the highest frequency generated or used in the device.

"[W]e have found that emissions from RF LED lighting devices are non-periodic, broadband in nature, and are produced as a byproduct of the internal driver circuitry within the RF LED lighting device," the OET "knowledge data base" paper said. "These types of emissions have adequate energy and potential to generate radiated emissions well above 30 MHz."

The ARRL Lab's Electromagnetic Compatibility Engineer Mike Gruber, W1MG, said he was pleased to see the FCC's OET clarify the test measurement requirements. He said ARRL is generally hearing more RFI complaints stemming from RF LED bulbs.

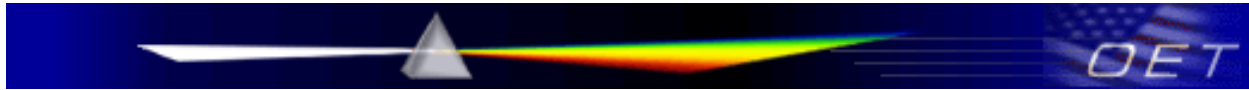
"Not only are the emissions limits higher for Part 15 LED bulbs — as opposed to Part 18 fluorescent and CFL bulbs, they seem to be winning out in terms of consumer popularity," Gruber said. "Higher limits and more bulbs probably make for more complaints." Gruber said the Lab has seen LED lighting devices causing problems in the 2 meter band. "Since conducted emissions limits do not apply above 30 MHz, radiated emissions limits can be the first line of defense against RFI at these higher frequencies."

Gruber pointed out that noise generated by street and traffic lighting can be widespread. In such instances, he suggested that Part 15b limits for residential areas should apply. "These limits are lower than Part 15a limits, which are intended only for commercial and industrial environments," he explained. "This is especially critical in cases where a pole transformer connected to the lighting device also feeds a home or residence. The 240 V split-phase secondary system can

conduct RF into a residence through the service entrance panel.” He suggested that the lower limits may benefit mobile users.

The OET noted that the ANSI Accredited Standards Committee C63® -EMC standards development committee is drafting measurement procedures for lighting devices. “When complete, we expect it will address in greater detail the measurement procedures and configurations to be used in determining compliance,” the OET said.

## **Appendix 10B**



**Federal Communications Commission  
Office of Engineering and Technology  
Laboratory Division**

June 17, 2016

**RADIO FREQUENCY LED LIGHTING PRODUCTS**

**INTRODUCTION**

Radio frequency (RF) light-emitting diode (LED) lighting products are subject to FCC rules to ensure that devices do not cause harmful interference to radiocommunications services.<sup>1</sup> This KDB publication clarifies how the FCC rules apply to these products, and outlines manufacturers' responsibilities for controlling interference. This publication does not address older legacy lighting technologies such as incandescent, fluorescent, and high intensity discharge (HID) lighting products.<sup>2</sup>

For the purpose of this publication, the term RF LED lighting is used for a device which has the primary function of generating light by electrically powering semiconductor materials. Such light generation is commonly intended for general illumination, and also includes other applications such as traffic signaling, roadway lighting, manufacturing processes, agriculture, etc. RF LED lighting devices intentionally generate RF energy via electronic power conversion or digital circuitry, but are not intended to radiate RF energy by radiation or induction and thus they are classified as unintentional radiators according to the FCC rules.<sup>3</sup> RF LED lighting products today employ single or multiple LED chips, but can also include organic LEDs (OLEDs), polymer OLEDs, quantum dots, etc.

In most cases, RF LED lighting devices employ either an independent or an integrated electronic driver that operates at RF frequencies similar to those used in digital electronic products. As such, RF LED lighting devices are subject to the Part 15 rules for unintentional radiators, and are subject to the "verification" equipment authorization procedure. These devices are required to meet the line-conducted and radiated emissions limits in Sections 15.107 and 15.109, respectively.

With this KDB publication, we further clarify that RF LED lighting devices are subject to Section 15.109 radiated emission limits from 30 MHz to 1000 MHz to ensure overall compliance with radiated emissions requirements.

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<sup>1</sup> See 47 CFR. § 15.3(m).

<sup>2</sup> Other lighting devices, such as fluorescent lighting devices, and LED retro-fit tubes intended to replace linear fluorescent tubes operated by RF ballasts, are subject to compliance with Part 18 and are not addressed in this guidance document. Incandescent lamps are not considered RF devices. Also, LED lamps powered by internal direct current (DC) power sources, without RF circuitry (operating at greater than 9 kHz), with a passive LED array load and delivering only DC current to LEDs, are not considered RF devices. Large LED digital displays are considered digital-device peripheral devices subject to FCC Part 15.

<sup>3</sup> For definitions of LED lighting products, see, e.g., Energy Star<sup>®</sup> Program Requirements, Product Specification for Luminaires, [https://www.energystar.gov/products/spec/luminaires\\_specification\\_version\\_2\\_0\\_pd](https://www.energystar.gov/products/spec/luminaires_specification_version_2_0_pd) and ANSI/IES RP-16-10.

## GENERAL CONDITIONS OF OPERATION

Operation of Part 15 unintentional radiators is subject to the condition that no harmful interference is caused.<sup>4</sup> Manufacturers and users should therefore note that lighting devices are required to cease operation if harmful interference occurs.<sup>5</sup>

To help mitigate interference from lighting devices into authorized radio services, responsible parties are encouraged to: use good engineering design and construction techniques, to meet and even exceed the required attenuation of unwanted emissions; extend compliance testing beyond the frequency range guidance traditionally required; and provide suggested interference mitigation techniques to users on how to resolve harmful interference problems.<sup>6</sup>

## MEASUREMENT GUIDANCE

**Measurement Procedure.** The AC power line conducted emissions and radiated emissions from the RF LED lighting device are to be measured in accordance with the procedures in ANSI C63.4-2014.<sup>7</sup>

**Frequency Range of Radiated Emissions Measurements.** Radiated emissions measurements shall be performed over the range of frequencies as specified in Section 15.33(b). We have found that in many interference cases involving RF LED lighting devices, the specified operating frequency of the lighting device is not consistent with the actual emissions, given the “broadband” nature of the radiated and conducted emissions generated by the device.

We recognize that Section 15.33(b) specifies when routine radiated emissions measurements are needed based on the highest frequency generated or used in the device. When the device’s internal frequency is less than 1.705 MHz, the rules stipulate the necessity to perform radiated emissions measurements only up to 30 MHz. However, we have found that emissions from RF LED lighting devices are non-periodic, broadband in nature, and are produced as a byproduct of the internal driver circuitry within the RF LED lighting device. These types of broadband, non-periodic emissions have adequate energy and potential to generate radiated emissions well above 30 MHz.

Accordingly, this guidance clarifies that all RF LED lighting devices, even those that have been considered to operate on frequencies below 1.705 MHz in the past, are required to have radiated emissions measurements performed at a minimum from 30 MHz to 1000 MHz, to adequately demonstrate compliance with the Section 15.109 radiated emission limits.

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<sup>4</sup> See 47 CFR § 15.5.

<sup>5</sup> For devices subject to the verification procedure, the manufacturer, or in the case of imported equipment, the importer, is responsible for ensuring compliance. See 47 CFR § 2.909(b).

<sup>6</sup> See 47 CFR § 15.15.

<sup>7</sup> ANSI-ASC C63®-Electromagnetic Compatibility standards development committee has a project to develop measurement procedures for lighting devices (C63.29). When complete, we expect it will address in greater detail the measurement procedures and configurations to be used in determining compliance. See: [http://www.c63.org/documents/misc/matrix/c63\\_standards.htm](http://www.c63.org/documents/misc/matrix/c63_standards.htm)



# ARRL EMC Committee Semi-Annual Report

Doc. # 16

**For The  
American Radio  
Relay League**

**Board of Directors Meeting  
January 20-21, 2017**

**Submitted By  
Kermit Carlson, W9XA  
Chairman, ARRL EMC Committee**

## **Mission Statement:**

The EMC Committee monitors developments in the Electromagnetic Compatibility (EMC) field and assesses their impact on the Amateur Radio Service. The Committee informs the ARRL Board of Directors about these activities and makes policy recommendations for further action, if appropriate.

The overall goals of the committee are:

- Advise the ARRL Board about issues related to radio-frequency interference
- Advise the ARRL HQ staff on the content of its publications
- Make recommendations to the ARRL Board and HQ staff
- Maintain contact with other organizations involved in EMC matters through established liaison individuals

## **Members of the Committee:**

- Mr. Kermit Carlson, W9XA, ARRL Central Division Director, EMC Committee Chairman
- Mr. Phil Barsky, K3EW, Engineering/Management Consultant, retired
- Mr. Gordon Beattie, W2TTT, Principal Technical Architect, AT&T Enterprise IT Service Assurance
- Mr. Jody Boucher, WA1ZBL, RFI troubleshooter, Eversource, retired
- Mr. Brian Cramer, PE, W9RFI, Electrical Interference Solutions, Inc.
- Mr. Mike Gruber, W1MG, ARRL Lab RFI Engineer, HQ Staff Liaison
- Mr. Ed Hare, W1RFI, ARRL Laboratory Manager
- Mr. Ron Hranac, N0IVN, Technical Leader, Cisco Systems; past member of the Board of Directors, Society of Cable Telecommunications Engineers
- Mr. Steve Jackson, KZ1X, VDSL and wireless communications
- Mr. John M. Krumenacker, KB3PJO Design Engineer
- Dr. Ron McConnell, W2IOL, T1E1.4 VDSL Standards Committee

- Mr. Jerry Ramie, KI6LGY, ARC Technical Resources, Inc.
- Mr. Cortland Richmond, KA5S, EMC Engineer
- Mr. James Roop, K9SE, past FCC District Director
- Mr. Mark Steffka, WW8MS, Automotive EMC engineer
- Dr. Steve Strauss, NY3B, Home Phone Networking Alliance Technical Committee
- Dr. Richard E. Dubroff, W9XW, Professor of Physics at Illinois State University

### **HQ Staff:**

The role of the ARRL HQ staff consists of the following:

- Answer individual inquiries from hams (and sometimes their neighbors) about RFI problems
- Write and publish articles about RFI
- Write and publish the ARRL RFI Book
- Design and update ARRL's RFI web pages
- Maintain a database at ARRL to facilitate EMC case tracking and reporting
- Work with ARRL's D.C. office on various spectrum and RFI-related filings
- Maintain contact with industry
- Participate in standards and industry groups, as a voting member or as a liaison. This includes ANSI accredited C63<sup>®</sup>, Society of Automotive Engineers EMC and EMR committees, Home Phone Networking Alliance, VDSL, HomePlug, FCC and individual companies.

Mr. Gruber handles the majority of the staff work on EMC matters. In the 2nd half of 2016, he also continued with work in a number of key areas:

- Adding updates and revisions to the ARRL RFI Web pages.
- Facilitating and providing assistance on resolving long standing power line noise cases with the FCC.
- Testing the conducted emissions of suspect consumer electronic and electrical devices. Devices that exceed FCC specified absolute limits can be identified and reported to the FCC. Of particular concern are:

- 1) Large grow lighting devices used for indoor gardening. Unfortunately complaints from these devices seem to be on the rise. As previously reported, Mr. Gruber tested a grow light in the Lab was labeled as a Part 18 non-consumer device. It generally met the limits. As such, these grow lights are not intended to be marketed or sold for residential purposes. While this continues to be an obvious marketing violation, the interference potential is much less than grow lights in previous FCC complaints. Mr. Gruber also tested a grow light that did meet the limits.

Also as previously reported, earlier grow lights grossly exceeded the FCC limits. The Lab has purchased and tested four separate ballast units and each

exceeds the applicable Part 18 consumer limits by a significant margin – nearly 60 dB in one case. The first of these cases was submitted as a complaint to the FCC March 12, 2014. The remaining three cases were submitted to the FCC by General Counsel Chris Imlay on June 30, 2015.

**Although these devices exceeded the limits by an incredible margin, and were reported to the FCC, so far there has been no visible enforcement action taken by the Commission. Furthermore, given the amount of time that has lapsed since these filing, enforcement action now seem unlikely.**

It must be emphasized that these devices are being heard at much greater distances than normally expected from an otherwise legal device. In some cases, we have received reports of interference from devices that were found to be over ½ mile away. Hams affected by grow light interference have found this problem to be particularly difficult to solve for several reasons:

1. Because of the abnormal distances over which this interference can propagate, hams often find it difficult to find the source. An otherwise legal device at the FCC limits is typically a few hundred feet or less, thus limiting the scope of the problem to one that can be located by sniffing with a portable shortwave receiver. This is often not practical in the case of a grow light.
2. Once the source residence is located, hams are often not comfortable approaching the homeowner or filing a complaint. He or she may no longer be a neighbor, and given the nature of what they might be growing, hams often fear for their personal safety.

It must be emphasized that these grow lights are not only the worst devices we've ever tested in the Lab for conducted emissions; they often are difficult if not impossible to resolve.

- 2) Although there has been a slight increase in complaints from LED Part 15 bulbs, they haven't been a significant source of RFI problems in household environments. Nonetheless, Mr. Gruber continues to recommend cautious optimism. These devices still have the potential to become a serious problem without a practical solution. If we consider bulbs that are at or near the FCC limits in a typical suburban environment, the affected ham could easily be within range of 150 or more bulbs from just two neighboring homes. Attempting to find and fix this many sources is obviously not a practical or realistic solution for the ham.

- 3) Non-consumer Part 18 electronic ballasts being marketed and sold for consumer and residential purposes. Note: Both the consumer and non-consumer limits Part 18 limits were exceeded in the case of all four ballasts tested by the ARRL Lab.
  - 4) Variable speed pulsed DC motors now appearing in such things as washing machines, HVAC systems and pool pumps. Furnaces and air conditioners seem to be particularly problematic and difficult to resolve.
- Working with AT&T engineering staff to help resolve RFI issues with U-Verse and other broad band systems.
  - Reviewing proposed EMC related material for ARRL publications.

### **EMC Meeting with the Chicago Chapter of the IEEE EMC Society**

Planning is underway for a meeting of the Chicago Chapter of the IEEE EMC Society that will invite all interested Amateur Radio operators to attend an evening presentation on Radio Noise. The speakers at the event will be Mr. Ed Hare, W1RFI of the ARRL Laboratory and Vice President of Standards for the IEEE EMC Society; and Dr Greg Lapin, the Chairman of the FCC Technical Advisory Committee. The April 19<sup>th</sup> event will be held at the Fermilab NAL in Batavia, Illinois. The emphasis of the presentation will be on the increasing radio noise environment and the impact on the radio communications environment.

### **Summary of Recent and Ongoing Lab Activities**

#### Working Group for Recommended Practice of Locating Power Line Noise

Mr. Gruber now serves as Chairman of a Working Group to develop a Recommended Practice for Location of Power Line Gap Noise. See **Committees** section for additional details. EMC Committee member Jerry Ramie, also serves as the Working Group's secretary.

#### Grow Lights

As previously reported in this document, Mr. Gruber tested four sample grow lights for conducted emissions. They were purchased from both local retailers and on-line sources. Three different manufacturers were included in this survey – Lumatek, Quantum and Galaxy. They were selected on the basis of complaints that from the field. Not surprisingly, each was also considerably over the FCC limits. The worst case measured 58 dB over the applicable Part 18 consumer limits.

ARRL General Counsel Chris Imlay used the resulting Lab report as the basis for an FCC complaint on March 12, 2014, which was covered in the ARRL News. See Appendix 1 in the July 2015 EMC Committee report for this article and Mr. Imlay's complaint. The three remaining FCC complaints were filed on June 30, 2015. See Appendices 2 and 3 of this report for copies of two of these filings.

Although the first complaint was submitted to the FCC over two years ago, and these devices measured way over the applicable FCC limit, there does not yet appear to have been any enforcement action taken by the FCC. Mr. Gruber believes that this lack of enforcement is simply unacceptable. He further advises that enforcement issues such as this be treated with a higher level of urgency within the ARRL.

**At this point, Mr. Gruber recommends that some official response or statement from the ARRL be issued in this matter. Members often ask what the ARRL is doing about this lack of FCC enforcement and he is not quite sure what to tell them.**

### Other Lighting Devices

As previously reported, Mr. Gruber tested a number of energy saving Part 15 & Part 18 Lighting Devices for conducted emissions. It should be emphasized that LED bulbs operate under are Part 15, while CFL's and electronic fluorescent light ballasts typically Part 18. In this case, there is an important distinction between these two rules - *Part 18 limits for consumer RF lighting device are considerably lower than applicable Part 15 limits*. As a consequence, the ARRL Board has previously asked us to consider a proposal to reduce Part 15 limits to Part 18 levels for lighting devices. This concern was included in FCC comments filed by ARRL on October 8 on a *Notice of Proposed Rule Making* (NPRM) in ET Docket 15-170 and RM-11673. The ARRL News covered the story on October 13, 2015. Here is the URL:

[www.arrl.org/news/arrl-asks-fcc-to-clarify-that-hams-may-modify-non-amateur-gear-for-amateur-use](http://www.arrl.org/news/arrl-asks-fcc-to-clarify-that-hams-may-modify-non-amateur-gear-for-amateur-use)

Mr. Gruber is happy to report that there continues to be relatively few complaints of RFI from these bulbs. However, these bulbs could still be legally marketed and sold if their emissions were close to the FCC limits. The emissions in this case would be high enough to create interference issues even from nearby residences in a typical suburban neighborhood. If and when such interference occurs, the burden then falls on the device *operator* to correct problem. While this rule may work on a case-by-case basis involving a small or limited number of sources, it is not practical should many bulbs in several houses be contributing to a wide spread problem. This concern was also included in the previously mentioned NPRM comments filed by ARRL on October 8, 2015.

An additional problem involves the sale and marketing of non-consumer rated ballasts to consumers in hardware and big box stores. These ballasts are being sold to unsuspecting consumers and have been the subject of interference complaints to the ARRL Lab. ARRL General Counsel Chris Imlay first filed a complaint concerning Home Depot on

July 14, 2015. This complaint concerned the improper marketing of such devices. See Appendix 4 for this report.

Two additional filings by Mr. Imlay occurred on December 28, 2015 against Lowes and Walmart. These complaints noted similar marketing issues as the one filed against Home Depot. The resulting news story and complaints are included as Appendices 5 and 6 in this report.

### Arc Fault Current Interrupter AFCI Breaker Immunity Issues

As previously reported, Mr. Gruber began receiving a few reports of “tripping breakers” from hams in early 2013. Specifically, these complaints concerned AFCI breakers, or Arc Fault Circuit Interrupter type breakers. These breakers are designed to trip if they sense an arc, and are now required by the electrical code in some specified rooms for residential wiring.

In response to these complaints, Mr. Gruber worked with Eaton to identify the problem and find a solution. As a result, Eaton began to provide replacement breakers at no cost to homeowners affected by this problem. Since that time, Eaton has developed several version of the “ham friendly” breaker. Unfortunately, not all the new breakers fixed the problem, at least up until early this year. The latest version, released around January, seems to have fixed these issues, at least to the extent that they are reported to ARRL.

Also as previously reported, a new Square D breaker is now being reported as problematic, at least in one case. Mr. Gruber, along with assistance from W1AW Station Manager Joe Carcia, tested two samples at W1AW. They did not appear to be trip during W1AW broadcast bulletins.

### **Status on FCC Enforcement and Outstanding EMC Cases**

Mr. Gruber reports that the FCC has been sending letters to utilities (and consumers) with some regularity. Meaningful enforcement beyond that, however, continues to be very disappointing. To the best of his knowledge, no previously reported longstanding power line noise case has been resolved during the second half of 2016 due to enforcement. While some cases have been closed, many cases can drag on indefinitely. Protracted cases are often caught in an endless loop or letter writing campaign. As a result, new cases can develop faster than old cases are resolved. There has been little or no change from the previously reported statics in this regard. The FCC has yet to issue even one NAL in a case of interference to Amateur Radio from a Part 15 or Part 18 device. Yet – some cases have dragged on for over a decade without resolution.

As previously reported, the FCC is not pursuing amateur related EMC enforcement issues in a meaningful way. At the present time, two non-power line examples of particular concern include:

1. On March 14, 2014, the following story appeared in the ARRL News: ARRL to FCC: “Grow Light” Ballast Causes HF Interference, Violates Rules.<sup>1</sup> This story reported a formal complaint made by the ARRL to the FCC concerning grow light ballasts that were considerably over the applicable FCC Part 18 limits. Since these devices are being marketed and sold in shops across America, and given the incredible margin by which they exceed the limits, this was a slam dunk case for FCC enforcement. Yet, at the time of this report, no enforcement has taken place. In fact, to the best of Mr. Gruber’s knowledge, the FCC has yet to even respond to the ARRL’s complaint.

While it may be understandable for the Commission not to comment on an ongoing investigation, it is clear that timely FCC enforcement is not happening. It has now been nearly three years since the ARRL’s news story on this matter. It would appear that the FCC is either unable or unwilling to provide timely and meaningful enforcement, even in a clear and egregious case such as this. Mr. Gruber now fears that situation has already compromised the FCC’s credibility as an enforcement body. Meaningful FCC enforcement when warranted is essential toward protection of all spectrum, not just the ham bands.

It has also been reported by EMC Committee members who are professionally employed electrical engineers in the cable-TV/cable-modem area that grow light ballast have been found to cause serious harmful interference to the operation of cable systems; Electro-Magnetic Interference from grow-light ballasts enters the cable system in the downstream end and causes interference to subscribers in a relatively large areas. As previously noted in the Summer-2014 EMC Committee report, emissions from some grow-light ballasts have measured 58 dB above the FCC limits. In other words, these devices are presenting problems to cable distribution systems often with coupling to the ground and power of residences with the conducted levels far in excess of what is encountered in typical amateur installations.

**Mr. Gruber now indicates that some ARRL response or follow-up take place at the Board level. At this point he has done all he can do and grow light complaints continue.**

2. On April 24, 2014, the following story appeared in the ARRL News: ARRL FCC Cites Washington Resident for Causing Interference on Amateur Frequencies.<sup>2</sup> This article describes a case in Woodinville, Washington in which the FCC conducted a field investigation. Although this investigation resulted in a finding of harmful interference from a nearby property, possibly caused by a lighting device, the property owner subsequently failed to respond to the Commission. As a result, the Commission released a Citation & Order on the 24<sup>th</sup> of April, the

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<sup>1</sup> The URL is [www.arrl.org/news/arrl-to-fcc-grow-light-ballast-causes-hf-interference-violates-rules](http://www.arrl.org/news/arrl-to-fcc-grow-light-ballast-causes-hf-interference-violates-rules).  
Included at the end of this report as Appendix XXA.

<sup>2</sup> The URL is [www.arrl.org/news/fcc-cites-washington-resident-for-causing-interference-on-amateur-frequencies](http://www.arrl.org/news/fcc-cites-washington-resident-for-causing-interference-on-amateur-frequencies).

same day as the ARRL News article<sup>3</sup>. However, as of early July, the interference was confirmed to be ongoing.

The noise in this matter is consistent with a grow light. At this point, the property owner has simply ignored the FCC's Citation and Order and no further FCC enforcement has taken place after almost three years. Instead of meaningful enforcement, the FCC has simply dropped the case. Given the FCC's own determination that harmful interference is occurring, and that a Citation & Order was issued, in the matter, Mr. Gruber believes that this is the best case for an NAL that he has seen in a decade.

**Mr. Gruber now recommends some ARRL response or follow-up take place at the Board level. At this point he has done all he can do. The complainant is asking for an update on his case and Mr. Gruber is at a loss as to tell him.**

Historically, meaningful FCC enforcement beyond an advisory letter has been and continues to be disappointing. So far, most cases involving Amateur radio have been argued on the basis of harmful interference as opposed to exceeding the FCC emissions limits. The FCC rules place the burden to correct harmful interference on the *operator* of the offending device – not the distributor or manufacturer. Device operators in a typical RFI case include a power company or neighbor.

In a typical case, one or more letters will be sent by the FCC in Gettysburg to an offending device operator. Beyond that, a typical case will be referred to the local FCC field office for an investigation. From what we've seen, most field investigations result in a conclusion of convenience. As a typical example, the agent may conclude that the noise is insufficient to meet the criteria for harmful interference, thus ending the case. Other complainants have reported a lack of follow-up after an investigation, especially if the source was not active during the initial field investigation

Also from what we've seen, FCC field agents often do not have the proper training or equipment to correctly identify and locate power line noise. Their equipment seems better suited for locating such things as transmitters. Even if the source is known, or if the source is a consumer device in a nearby home, we've yet to see one in which the FCC issued an NAL or forfeiture. Some cases like this have dragged on for a considerable period of time with no resolution.

Furthermore, from what we've seen so far, the FCC Field Office reduction has had a significant and negative impact on FCC field resources. Despite the Commission's enthusiastic claims for a centralized "Tiger Team" approach, it has only made matters worse. To the best of Mr. Gruber's knowledge, it has yet to be even one Amateur case investigated by a Tiger Team. It also appears that FCC enforcement issues have become problematic for other radio services as well.

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<sup>3</sup> The URL is [http://transition.fcc.gov/Daily\\_Releases/Daily\\_Business/2014/db0424/DA-14-536A1.pdf](http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0424/DA-14-536A1.pdf).



**Perhaps most alarming of all, Mr. Gruber now reports that he is not aware of any field investigations involving Amateur radio since the field offices were gutted in 2016. One non-Amateur example was also reported in the July 2016 EMC Committee report. In this case, a police officer from Evanston, Illinois requested ARRL help in a case involving cell phones, key FOBs and similar devices.**

### **FCC Enforcement Concerns**

While a lack of meaningful enforcement in cases involving device operators has been the norm for a considerable period of time, the two examples described in the previous section plus a third appear to demonstrate an alarming trend.

In summary:

1. The first involves grow light manufacturers. The ARRL has so far filed four complaints of devices that were grossly over the applicable FCC limits. Although the first complaint was filed on March 14, 2014, so far there has been no apparent enforcement action by the Commission. **In fact, the Commission has yet to even acknowledge or respond to any of these complaints.**
2. The second is an apparent lack of response to an FCC Citation & Order that was issued on April 24, 2014. The Citation and Order was ignored by the recipient and he interference continues unabated. **The FCC has yet to take any meaningful action in the matter after nearly three years.**
3. The third example concerns the three illegal marketing of Part 18 non-consumer lighting devices. The first Home Depot complaint was filed by the ARRL on July 14, 2015. The Lowe's and Walmart complaints were filed on December 28 and 29, respectively. Although the first complaint was filed one year ago, the FCC has failed to take any action problem continues. **In fact, the Commission has yet to even acknowledge or respond to any of these complaints. At the time of this report, the only response has been from Walmart seeking to rectify the problem.**

It must be emphasized that even if there is an ongoing FCC effort in any of these matters, they have now been ongoing for a considerable period of time with no known formal FCC action. Even if there was to be an FCC action at this point, it would not be timely enough to achieve maximum impact as a future deterrent.

With the proliferation of new types of lighting devices, including grow lights, not to mention such things as switching mode power supplies, battery chargers, pulsed dc motors in appliances, etc., meaningful enforcement is badly needed. A lack of it in RFI matters would no doubt be disastrous for both hams and other services as well. If the FCC does nothing about something as egregious as a grow light, proper follow-up it to a Citation & Order, or illegal marketing of industrial devices, it would fundamentally call into question the FCC's credibility as an enforcement body. It would also seem unlikely that t meaningful enforcement could be expected in other interference matters as well.

**Mr. Gruber now recommends some sort of visible Board level follow-up in these matters.**

**Second Half 2016 Year Total RFI-Case Statistics:**

New RFI Cases – 133

New electrical power-line cases – 29

- ARRL Letters sent – 12
- FCC 1st Letters submitted – 8 (Note: Laura Smith may have issued FCC letters based on need and input from the ARRL. These letters were not formally submitted by ARRL and therefore not included in this total. Many of these letters could possibly be follow-up in nature and therefore require custom legal language. The effectiveness of these letters has yet to be determined.)
- FCC 2nd Letters submitted – 0

**Electric Utilities:**

Power-line interference has continued to be the single number one known interference problem reported to ARRL HQ. It can also be one of the most difficult to solve. Fortunately, Laura Smith clearly remains interested in RFI matters and continuing with the Cooperative Agreement; and there has been no change to the process of processing cases presented through the Agreement. Although none of the previously reported cases have been successfully resolved as a result of FCC enforcement, the Committee is continuing in the process of addressing this issue.

KI6IBS Power Line Noise Investigation

In an effort to develop a power line noise case for ARRL consideration as a higher level FCC complaint, Messer's Gruber and Ramie investigated the case of Eric Schreiber, KI6IBS, in March and April of 2015. This case is located in Pleasant Hill, CA and first reported to ARRL on April 24, 2012. The utility in this matter is PG&E.

Since first reported to us, PG&E has responded to numerous FCC and ARRL communications. PG&E also claims to have made significant effort toward resolving it. Although the noise at KI6IBS is intermittent and primarily active at higher temperatures, it was severe and not particularly difficult to find when using proper modern methods and equipment. The people that PG&E were sending out did not have the right equipment, or if they did, they didn't know how to use it.

Complete details on this investigation appear as Appendix 7 of this report. Although Mr. Gruber has forwarded this report to PG&E's attorney Jonathan Pendleton on June 12, 2015, the problem remains ongoing. Laura Smith at the FCC was also a CC recipient of this report. While there was a subsequent attempt to fix this problem, it was

unsuccessful. PG&E failed to conduct a technically competent RFI investigation in response to Mr. Gruber's report.

Mr. Gruber reports that this case is solid. The only potential issue might be the intermittent nature of the noise in cooler weather. Given the extraordinary effort it requires to groom and develop a case to this level, Mr. Gruber recommends to the Board that it be used for a timely and higher level complaint at the FCC. He also notes that Mr. Schreiber continues to periodically ask about the status of his case with the ARRL. Since his case is being handled at a higher level within the ARRL, he has been unable to advise Mr. Schreiber in this regard.

**Since it has now been almost two years since his investigation, Mr. Gruber now recommends some ARRL response or follow-up take place at the Board level. At this point he has done all he can do. The complainant has periodically asked for an update on his case and Mr. Gruber is at a loss as to tell him.**

#### K7GMF Power Line Noise Complaint

Tom Lopez of Cochise Arizona first reported his power line noise problem to ARRL over ten years ago. Despite numerous FCC letters and an investigation by Mike Martin, the problem continues. A brief timeline is as follows:

- 02-18-04 – Complainant first reports interference problem to ARRL
- 03-20-06 – ARRL sends letter to Sulphur Springs Valley Electric Cooperative (SSVEC), the utility in this matter.
- 03-16-09 – FCC sends 1<sup>st</sup> FCC letter to utility.
- 08-17-09 – FCC sends 2<sup>nd</sup> FCC letter to utility.
- 05-10-10 – RFI investigator Mike Martin, whose services were obtained by the Utility, reports that he investigated the problem. There were numerous staples in a desert environment contributing to the problem. The primary source was found to be associated with 69 kV transmission lines about six miles away. This problem could not be fixed at the time of Mr. Martin's investigation.
- 03-01-11 – FCC sends 3<sup>rd</sup> FCC letter to utility.
- 07-08-14 – Mr. Carlson contacts Mr. Lopez to ascertain the current state of harmful interference to K7GMF from power line noise.
- 08-18-14 – Mr. Gruber requests 4<sup>th</sup> FCC letter.
- 12-05-14 – Laura Smith reports that she had sent the utility a letter in August but did not receive a reply. She indicated that she would send to the field if nothing after the Holidays.
- Present – Mr. Lopez reports the problem continues and he has not heard from the field. He asks Mr. Gruber for help and provides him with a package of recent documents related to his case.

Mr. Gruber reports that he did have contact with FCC staff about this particular case at the beginning of July, 2015. Later that month, Laura Smith responded that she had asked the Field Office to put it on their schedule. She also added that they can only make the site visit when they can bundle it with other Arizona matters. She noted that they are coming from CA and the FCC front office will only approve travel for a case like this if they can kill multiple birds with that one stone. She will let Mr. Gruber know once they have a trip planned. At this point, however, it has been almost two years and the field offices have been severely cut back.

Although Mr. Gruber has concerns about the complexity of the case with over five years since the professional investigation began, Mr. Gruber is now grooming this as one of the cases that the Committee still believes should be used as a higher level complaint with the FCC.

### **Additional ARRL RFI Investigations by Kermit Carlson**

ARRL Central Division Director and EMC Committee Chairman Kermit Carlson continues to perform follow-up on the status of the 74 open cases of power line noise that had been previously referred to the FCC. The purpose of this inquiry was to determine the status of harmful interference from Power Line Noise for cases that had been reported in the past 6 years but for which the League had an unknown remediation status.

Out of the 41 unresolved cases identified by the follow-up several cases have been selected for further preparation for presentation to the Commission as long-term unresolved problems; KI6IBS, Pleasant Hills, California and the K7GMF, Cochise, New Mexico have been identified as long outstanding cases of detrimental harmful interference from power line gap noise. Similar cases do exist in every Division of the ARRL.

Mr. Carlson continues to work on several new cases of gap noise and noise sources of unknown origin which are causing harmful interference to amateurs. Presently these cases are trying to be resolved by working directly with the owners of the noise generating sources. The purpose of his investigations is to gain insight into the practical efficacy of industry practices on remediation of harmful gap noise interference that impacts amateur radio installations and to discover practical methods that are effective in helping amateur operators eliminate EMC problems.

### **Ladd, Illinois**

Mr. Carlson visited the site of an amateur station in Ladd, Illinois where several points of powerline gap-noise interference were producing signal levels well above S9 on the victim receiver. With the help of the station operator and with the help of the local lineman for the Municipal power utility, a survey of 4 locations was conducted ranging in distances of 700 feet to 2500 feet from the amateur's station. Problems were located to the offending device on the powerline system over a period of 4 hours. The issues that

were discovered included a lightning arrestor that had completely opened and was arcing, two bad support insulators that were arcing and line dead-end support that was arcing. Over a period of two months the local utility has completed repairs on their equipment. The root problem remains that in many utilities that, although there is an interested to remediate problems, there is no budget for proper noise detection equipment.

### Mundelein, Illinois

Mr. Carlson investigated an HF noise complaint at the station of W9/ZL1TNC in the town of Mundelein, Illinois. Three devices were found to be producing powerline gap noise. The precise locating of the three items took just over one hour of time. The amateur filed a complaint with the Commonwealth Edison service desk and within one month a field survey had arrived and located two of the noise producing devices. These were then remedied in short order. The third item which continues to produce noise was not identified by the utility's surveyor. The newly installed pole-mounted capacitor continues to cause interference and is the subject of a re-filed work ticket with the utility. A complaint with the Illinois Commerce Commission is anticipated and will produce a repair of this final issue.

### Evanston, Illinois

A very interesting case of Electromagnetic Compatibility arose in Evanston, Illinois as the result of an inquiry from Officer Henderson of the Evanston, Illinois Police Department to Mr. Mike Gruber, the ARRL EMC Engineer in Newington. Although not directly an Amateur radio problem, the request for help in Evanston presented a very unusual fact pattern.

In this particular case, the six-hundred block of Dempster Avenue in the commercial down-town area of the North Chicago suburb was plagued with the strange problem. Wireless motor vehicle key-fob's wouldn't allow owners to open their vehicles, or in the case of some very expensive cars, some owners were unable to start their cars until it was towed to a point a block away. It was further reported that when this occurred, the affected drivers were unable to use their cellphones in order to summon for help. The location of this problem favored one set of eight on-street parallel parking spots in this Chicago suburb.



In response to this unusual request, Mr. Carlson, W9XA, acting as the ARRL-EMC Chair made the short trip to Evanston for a look at the EMC implications of the situation. Mr. Carlson met with two officers of the Evanston PD, an affected business owner and the owner of the building nearest the problem area in late June.

It was learned during the visit that the Evanston PD had requested help from the FCC but had been told that this was a car maker's problem and that this was not something that the Commission would investigate. Of some concern to the PD was possibility that this was a potential beginning or indication of some nefarious or illegal activity. But even more disconcerting was the increasingly common need to have the local gendarme's present for a police tow or assistance to the public for what seemed to have become a common occurrence.

During his visit, Mr. Carlson employed a Radar Engineers-240A Noise Signature Receiver and UHF Yagi antenna to survey the affected block of Dempster Avenue. Since Key-fob operation is typically around 315 MHz and 433 MHz, both sets of frequencies were used in the survey along the sidewalks of the block. Although several sources of noise generation were identified in the survey of the block, a particularly strong source was noted at either end of the block, and the directional antenna indicated the same central point in the middle of the block.

The source at the center of the block was identified as a neon sign transformer replacement power supply that provided a very significant radiated signal to the area of the on-street parking just across the sidewalk - a distance from eight to 40 feet to the affected parking spot locations.

Although the actual neon tube portion of the sign was over 40 years old, the power supply was relatively new. The building owner and the police officers were advised to have the business owner who owns the sign to turn-off the sign should this problem arise. The owner of the sign was made aware of the issue that his neon lighting device is causing a problem.

Since that visit, several other instances have been reported in other Chicagoland areas of unexplained key-fob problems that are resolved once the car has been towed from a location.



This situation demonstrates the electromagnetic compatibility problems that are evolving in an atmosphere of non-compliant imported unintentional RF emitting devices. The Ventex neon power supply did cause Mr. Carlson's Verizon cellphone to not work when closer than a few feet from the device, so it is anticipated that further investigation will show that this device given the extremely close proximity to a public way does cause harmful interference and disruption to licensed radio services. As a note the owner of the sign power supply was not the business owner who had met with Mr. Carlson during this visit.

An update of the story developed shortly after the publication of this story in the summer of 2016. Engineers from the Federal Communications Commission did visit the site and they conducted a search for a source of radio noise. That search was conducted after the Ventrex neon sign supply had been removed, and an additional source of excessive radio noise was reportedly identified as lighting fixtures within one of the businesses located along the affected parking area. The lighting had been installed as part of program by the local power utility, Commonwealth Edison as part of an energy conservation program. The manufacturer of the subject lighting fixtures did contact Mr. Carlson at his office. However, since the identification of the other fixtures was a result of a noise search by others, the manufacturer was referred to the FCC personnel who were involved with the Commission's noise survey of the block.

Another inquiry arose as news of the Evanston case spread through the internet media. An inquiry from a Chicago Television station's news operation was referred to Mr. Carlson by the Newington staff. The request was for an interview and comment about a similar problem at a location on Sheffield Avenue in the City of Chicago. A similar fact pattern of inoperable Car Key-fobs and dropped cellphone calls has plagued a certain intersection. Mr. Carlson conducted a preliminary noise survey of the area and found two significant sources of radio noise. Both sources were recently installed lighting in area business. The television news organization has not contacted Mr. Carlson since the original contact in December.

### **Marketing of Drone TV transmitters that operate on Amateur, Aeronautical Radio-Navigation and FAA radar frequencies.**

As previously reported, the ARRL EMC Engineer Mike Gruber and Mr. Carlson were sent information which revealed there is a serious potential problem with the marketing of video transmitters for installation on airborne drones that operate on amateur and aeronautical radio-navigation radio frequencies. The marketing of radio equipment which has obviously not been tested for FCC rules compliance is nothing new, but in addition to being a nuisance for the operators on the 23 cm band the operation of these transmitters does carry the distinct possibility of causing harmful interference which would result in a serious safety of flight issue for aircraft operations.

Messer's Gruber and Ramie wrote a report detailing numerous concerns regarding this matter September. It was subsequently submitted to General Counsel Chris Imlay on September 22, 2016 in an effort to facilitate an official FCC complaint. Although this report is included as Appendix 8 in this report, here are several highlights:

- These devices are highly illegal on a number of levels. **Most importantly, they represent a serious hazard to air traffic and the public safety.**
- Some of these devices are being marketed and sold as Amateur equipment but some of its channels conflict with air navigation equipment.

- The channels chosen for operation of these airborne transmitters demonstrate a complete disregard by the manufacturer of the established and legal assignments of frequency allocations.
- The specified output power can be several times legal Part 15 and Part 97 power output for such devices. Furthermore, given the fact that they operate from drones, can operate at relatively high altitudes, interference to aircraft navigation systems could potentially occur at greater than normal expected distances.
- These transmitters and amplifiers are being offered online by a number of internet vendors. A quick online perusal of vendors indicates that there is no shortage of suppliers of these devices.
- It is only a matter of time until amateur operations will be affected by these transmitters, but if such a device ever does interfere with the integrity of the FAA's ATC transponder radar system it would be beneficial to be able to show that we had warned the Commission of the nature and dangerous potential that these transmitters represent.

Marketing of various units continued unabated at the time of the ARRL Lab's report. Sampling of the offerings at that time could be found using any internet search engine with the search terms "1.2GHz, transmitter". A recent search of Amazon also provided hundreds of offerings of transmitters capable of power levels between one-quarter and six watts. The FCC has in the past addressed the marketing of similar unauthorized radio frequency devices but there have been no recent Commission actions against the marketing or operation of these unauthorized devices.

Although recent complaints concerning improper marketing of non-compliant devices have been ignored by the Commission, it remains the consensus of the ARRL-EMC Committee that the potential for serious problems does warrant consideration for filing a formal complaint. At the time of this report, Mr. Imlay is preparing a filing with the Federal Communications Commission that will outline the legal and technical basis for a complaint. It will also include a request for action to prevent the improper marketing of the non-compliant devices. Please note that not all drone television transmitters are at variance with the Commission's Rules and Regulations. The remediation of this situation could be easily remedied by a simple action by the Commission. Just over a decade ago, the Commission was able to stop the marketing of very similar illegal devices with a short letter to the offending marketers (Please see Appendix #8 to this report). It is hoped that the Commission will abate this problem with a similar action.

**Common sense alone would dictate that swift and meaningful FCC enforcement would result in this matter, including the vendors of these devices which can be easily found. It is only a matter of time until amateur operations will be affected by these transmitters, but if such a device ever does interfere with the integrity of the FAA's ATC transponder radar system it would be beneficial to be able to show that we had warned the Commission of the nature and dangerous potential that these transmitters represent.**



## Noise Monitoring Suggestion and Action Item

Dr. Greg Lapin, N9GL, the Chair of the ARRL RF Safety Committee contacted Mr. Hare and Mr. Carlson prior to the November EMC Committee meeting to suggest that the EMC Committee consider undertaking a the creation of a program to measure and monitor trends for background noise in the HF spectrum. Ed Hare has been working on the details of the formation of a crowd-sourced method of collecting background noise measurements.

This is very timely issue given the recent work by the FCC Technological Advisory Council which is an advisory group to the FCC which is investigating changes and trends to the radio spectrum noise floor to determine if there is an increasing noise problem, and, if so, its extent. The FCC Office of Engineering and Technology (OET) announced the TAC study in a *Public Notice* in mid-July which **invited comments** and answers to questions that the TAC has posed in the notice. The ARRL filed comment prior to the August 11<sup>th</sup> deadline. Please see Mr. Imlay's report for the January 2017 ARRL Board meeting for a copy of that filing. The TAC said it is trying to determine the scope of any noise issues and has invited "quantitative evidence" of noise problems, as well as recommendations on how to perform a noise study.

"The TAC is requesting input to help answer questions about the study of changes to the spectrum noise floor over the past 20 years," the announcement said. "Noise in this context denotes unwanted radio frequency (RF) energy from manmade sources. Like many spectrum users, TAC members expect that the noise floor in the radio spectrum is rising as the number of devices in use that emit radio energy grows."

The ARRL representative on the TAC, Greg Lapin, N9GL, co-chairs the TAC Spectrum and Receiver Performance Working Group with Lynn Claudy of the National Association of Broadcasters. Lapin also serves as chairman of the ARRL RF Safety Committee.

The TAC said that its search for "concrete evidence of increased noise floors" has turned up only "limited available quantitative data" to support its presumption of a rising noise floor. The TAC said it wants to find ways to add to the available data so it can "answer important questions" on the topic for the FCC.

The TAC noted that many types of devices generate radio spectrum noise. In the case of *incidental radiators* — devices not designed to emit RF but do so anyway — there is little regulation governing such noise. "Most electric motors, light dimmers, switching power supplies, utility transformers, and power lines are included in this category," the TAC announcement explained.

Devices designed to generate RF for internal use, or send RF signals to associated equipment via connected wiring, but which are not intended to emit RF energy, are called *unintentional radiators*. This category includes computers and many portable electronic devices, as well as many new high-efficiency lamps. FCC regulations limit the levels of emitted RF energy from these devices.

A third group of devices categorized as *intentional radiators* (unlicensed and licensed) and *industrial, scientific, and medical (ISM) radiators* — are designed to generate and emit RF energy by radiation or induction. Intentional radiators include cellular phones and base stations, unlicensed wireless routers, Bluetooth devices, broadcast TV and radio stations, and radar systems. Amateur Radio transmitters also fall into this category. Microwave ovens, arc welders, and fluorescent lighting are examples of ISM equipment.

“Such emitters contribute to the noise floor with emissions outside of their assigned frequencies,” the TAC said. “These are sometimes generated as spurious emissions, including, but not limited to, harmonics of desired frequencies and intermodulation products.” FCC regulations permitting the operation of these devices specify emission limits outside of the device’s licensed or permitted operating frequencies.

The TAC said that responses to the questions it has posed in the *Public Notice* will help it to “identify aspects of a study to determine trends in the radio spectrum noise floor. The ARRL is planning to comment. Please refer to Mr. Imlay’s July report to the ARRL Board for details on the response by the ARRL.

### **Smart Grid & EMC Standardization Efforts**

Mr. Ramie (KI6LGY) updates our efforts in these areas:

#### **1) IEEE-P1613 development**

Drafting of this document was completed in December and it has been submitted to the three sponsoring Committees within the Power & Energy Society for review. (Substations, T&D and Power Systems Relaying Committee) They will have a meeting in the next few weeks and it is expected that this document will be elevated to a "Consensus" ballot to move it to the IEEE for a formal Standards ballot. We're expecting a successful Consensus ballot.

Immunity testing will be run with the doors removed entirely, as it is assumed they will often be open when in use for servicing. My feeling is that this document will become IEEE-1613(2017) sometime during the upcoming year. When progress is more assured, I will begin updating a previous Presentation on the old IEEE-1613.2(2013) into a new Presentation to be given at EMC Society and Power/Energy Society meetings. I have speaking commitments from Tucson, Phoenix, Las Vegas, Reno, San Diego and Santa Clara already. I expect to speak in Seattle, Portland, Chicago, Minneapolis, Detroit, Indianapolis and possibly RTP and Austin as well. This will take over a year to complete the circuit.

#### **2) SGIP-EMI Issues Working Group**

Another area the League is supporting is continuing EMC work with the Smart Grid Interoperability Panel (SGIP) formerly under NIST (now a private non-profit). The EMI Issues Working Group did the original work defining the missing tests for utility

equipment that became IEEE-1613.1(2013). It was the vehicle that brought the American utilities into harmonization with the Europeans on specifying reliable equipment that could resist interference by demonstrating "immunity" to simulated interference during required type-testing.

Our next product will be a webinar presentation for the rest of the SGIP to be given January 17 at their upcoming meeting. The webinar is the visual presentation of our recent white paper on interference, geomagnetic storms and HEMP attacks.

### **3) IEEE-P1897 Recommended Practice for Powerline Noise Mitigation**

Mike Gruber is the Chair of this Working Group that's discussing the best practices for utilities to employ for resolving powerline noise complaints. The Vice Chair, Brian Cramer of Exelon, is also a member of the EMC Committee. Mr. Ramie, also with the EMC Committee, is the Secretary. Several other EMC Committee members are members of this working group as well. Our views are well represented. We want consensus with the utility industry and I feel it is attainable. I am assuming we can have text ready to ballot by the middle of 2017.

### **Automotive EMC:**

The Headquarters staff continues to send all reports of automotive EMC problems to interested people in the automotive industry. While these reports are advisory, they are helpful to the industry in planning for future designs. Mr. Steffka continues to help prepare automotive related responses to Technical Information Services (TIS) questions for ARRL members.

### **Cable Television:**

As a whole, the cable industry continues to do a good job at adhering to the FCC's regulations about signal leakage and interference. During the past six months, ARRL received no reports of problems. Our cable liaison, Mr. Ron Hranac (N0IVN), also noted that he received no reports or complaints directly, indicating that most cable systems are either clean or are addressing complaints effectively.

### **DSL, U-Verse & Home Phone Networking Alliance**

Mr. Beattie continues to assist with broadband service complaints to the ARRL. In addition, Mr. Beattie has been working toward formalizing the process that AT&T uses to address these issues with ARRL.

Based on a previously reported complaint from Arizona, Mr. Beattie also reported that CenturyLink is doing something different than other xDSL carriers. Specifically, they are increasing their DSLAM signal level in the specific spectrum where the interference

is occurring. If the source is an Amateur station in the transmit mode, the DSLAM can create interference to that same station when in the receive mode.

Mr. Gruber also reports that there has been a reduction in interference reports from CenturyLink DSL systems. As previously reported, the interference appears to be caused by radiation from the phone lines due to a fault or imbalance on the lines. The problem occurs in the upper portion of the 75 meter band above 3.8 MHz. One such complaint in Idaho was detailed in the last EMC Committee Report. Although CenturyLink to not directly respond to Mr. Gruber's letter, there was a significant and mostly successful effort to fix the problem. The complainant seemed happy with the results and Mr. Gruber may close the case. At the time of this report there are no other open cases involving CenturyLink.

In another case, Mr. Beattie and other AT&T personnel provided valuable troubleshooting support to a Tucson-area couple who had engaged Tucson Electric Power regarding power line noise interference to their 40m operation. Mr. Beattie and other AT&T personnel investigated TEP's suggestion that power supplies at an AT&T's cell site were causing interference to the couple's HF operation. While no relevant noise was found at the site, AT&T isolated the issue to one or more TEP transmission poles. The Amateur Radio operators are now waiting for a response from TEP. The FCC, ARRL and AT&T were copied on this latest communication and are standing by pending TEP's response. See Appendix 9.

### **Radio Frequency LED Lighting Products**

As previously reported, the FCC's Office of Engineering and Technology (OET) FCC issued a clarification concerning LED lighting products on June 17, 2016.

Previous to this notice, LED lighting devices with circuitry operating from 9 kHz to 1705 only needed to meet conducted emissions testing up to 30 MHz. While it also refers to radiated emission testing below 30 MHz, Mr. Gruber notes that there are no specified FCC limits for this. (He also suggests that radiated emissions testing below 30 MHz would be particularly difficult to implement.)

The FCC's notice reaffirms previous testing requirements but also adds a new requirement – radiated emissions testing from 30 to 1,000 MHz. While this requirement only applies to RF lighting devices with internal circuitry operating between 9 kHz to 1705 kHz, Mr. Gruber is pleased to see the FCC take this step. He's been generally hearing of more RFI issues from LED lighting in the 2 meter band, apparently caused by radiated emissions. See Appendix 10 for the ARRL News story and the FCC's notice.

## RFI-Case Database:

The ARRL HQ staff maintains a database of RFI reports and cases. This is used primarily as a case-management tool for the several hundred RFI cases ARRL handles every year, but the information the Lab staff are gathering about types of interference cases, involved equipment and frequencies will provide a wide range of reporting capability. Here are some statistics from the database for 2016 and compared to the previous four years:

Category of Case Reported to ARRL Lab/EMC Engineer	2011	2012	2013	2014	2015	2016
BPL	0	0	0	0	0	0
Unknown Unintentional Radiators	78	66	68	81	49	70
CABLE TV	7	3	4	4	4	2
Satellite TV			2	3	1	0
Computing Devices and Modems	7	3	5	6	8	3
Power Line Noise	65	53	52	51	43	47
Plasma TV Receivers	14	5	3	5	1	3
Other Broadcast Receivers	0	4	4	4	0	1
Other Receivers	3	1	1	4	1	6
Other Transmitters	9	2	2	4	3	3
Broadcast Transmitters	4	6	6	2	5	1
Lighting Devices	13	4	10	15	7	19
Confirmed & Suspect Grow Lights <sup>4</sup>	---	---	2	16	6	12
Fence Systems	2	0	3	3	0	2
Battery Chargers / Power Supplies	1	3	4	5	7	9
Wheelchair	1	0	0	0	0	0
Water Pump Systems	2	1	2	2	0	0
HVAC Systems	6	3	10	6	5	12
Alarm Systems including detectors	0	4	2	4	2	3
Other Appliances	8	7	7	4	3	10
GFIC / AFCI	1	5	7	25	6	5
AUTOMOBILE Systems	3	2	7	1	1	3
Manufacturing and Retail						
Generated Noise	0	0	1	2	0	0
AT&T U-Verse Systems	8	8	3	4	6	1
PV Systems	---	---	2	1	3	10
Doorbell Transformers	---	---	2	3	0	2
Other	---	36	16	16	15	30

<sup>4</sup> It can be difficult to confirm a Grow Light. As a result, a number of other grow lights may appear as Unknown Sources. Based on their signatures, a number of Unknown Sources are most likely Grow Lights but remain unconfirmed.

It is important to note that power line noise has consistently been the most reported and problematic RFI problem reported to the ARRL Lab. As Committee member Ed Hare indicated, *more hams suffer from power line noise right now than will ever suffer from BPL.*

### **ARRL RFI Forums:**

The two RFI forums remain ongoing in the ARRL forums pages. These forums provide self-help and discussion for members. They are monitored and moderated by HQ Lab staff and other volunteers. The pages are:

- RFI - Questions and Answers
  - RFI questions and are answered by other members and RFI experts. Members can post questions and read answers about solutions to an RFI problem they are having. The link is:  
[www.arrl.org/forum/categories/view/20](http://www.arrl.org/forum/categories/view/20)
- RFI - General Discussion
  - This forum is a place to discuss technical issues associated with RFI and Amateur Radio. The link is:  
[www.arrl.org/forum/categories/view/21ssion](http://www.arrl.org/forum/categories/view/21ssion)

### **Committees:**

ARRL continues to be represented on professional EMC committees. Messrs. Hare and Carlson continue to represent the interests of Amateur Radio on the ANSI ASC C63® EMC committee. The C63® committee is working on developing industry standards for immunity, emissions and testing of electronic devices. ARRL serves as a resource to the committee to protect the interests of Amateur Radio.

Mr. Hare is the Primary ARRL C63® representative; Mr. Carlson is the Alternate. Mr. Hare serves as the Chair of Subcommittee 5, Immunity. Mr. Hare also serves on Working Groups developing standards for the measurement of LF and HF wireless power-transfer devices, lighting devices and a Working Group writing recommended procedures to test various forms of Industrial, Scientific and Medical devices.

Mr. Ramie serves as the C63® Secretary and as a member of Subcommittee 5. Subcommittee 1 continues to work on a variety of EMC projects, primarily related to test site standardization. Subcommittee 5 deals with immunity and immunity measurement issues. Subcommittee 8 deals with various types of medical equipment. The multiple ARRL EMC Committee representation on C63 watches immunity and testing developments.

Mr. Hare also serves on the IEEE EMC Society Standards Development and Education Committee (SDECom). SDECom serves as the EMC Society standards board, overseeing the development of all IEEE EMC Standards. He was also elected to serve a two-year term, starting January 1, 2017, as the IEEE EMC Society Vice President of Standards.

Related to committee work, Mr. Hare also maintains informal contact with a number of industry groups, including HomePlug, Society of Cable Telecommunications Engineers, Society of Automotive Engineers and the Electric Power Research Institute, as a few examples.

A list of the planned, recent and ongoing EMC activities at the ARRL Laboratory includes:

- Continue to identify and test devices that operate above the FCC limits, including lighting devices.
- Develop standardized methods of locating RFI sources of harmful interference to Amateur Radio stations. Work with other Industry Groups to develop methods of best practices for location sources such as lighting controls, motor controls and power line noise.
- Test a number of devices that belong to staff and/or local hams that have caused instances of harmful interference.

Mr. Gruber continues as Chairman of a Working Group to develop a Recommended Practice for Location of Power Line Gap Noise. Additional EMC Committee members in this group include Messrs. Cramer as Co-chairman, Ramie, Carlson, Hare and Boucher. This P1897 Working Group is sponsored by the EMC Society. The first formal meeting was held on December 10, 2015 and development on a set of best practices continues with monthly meetings.

### **The Future of EMC and Amateur Radio:**

Interference to hams appears to be the present major work of the committee. Although immunity problems still do occur, this is being addressed at the national and international standards level. RFI from unlicensed devices poses a major real threat to Amateur Radio at this time. This will continue to require significant Committee and ARRL staff attention. To the extent possible with existing staff, or with additional resources, the ARRL should increase its contact with standards organization, industry groups and individual companies, and continue to work on all aspects of RFI problems and solutions.

ARRL's information about RFI can be read at:

[www.arrl.org/radio-frequency-interference-rfi](http://www.arrl.org/radio-frequency-interference-rfi).

I am pleased to report to the ARRL Board that ARRL EMC Committee Member Mr. Ed Hare, W1RFI, the ARRL Laboratory Manager, has been elected to the position of Vice-President of Standards for the IEEE EMC Society. Congratulations to Ed for his election to the important industry position.

As a note of personal thanks, I would like to recognize Mr. Hare, W1RFI, Mr. Ramie, KI6LGY; Mr. Gruber, W1MG; Mr. Roop, K9SE; Mr. Hranac N0IVN; Mr. Beattie W2TTT, for their authorship of material for this report. I would also like to thank all of the EMC Committee members for their ongoing service to the ARRL and the Amateur Radio community.

**Respectfully Submitted,**

**Kermit A Carlson W9XA  
EMC Committee Chairman  
Vice Director Central Division**



# List of Appendices

1. Appendix 1 Lumatek Dial-a-Watt ballast complaint
2. Appendix 2 Quantum Horticulture HPS/MH-600W ballast complaint
3. Appendix 3 Galaxy 1000 Watt Dimmable ballast complaint
4. Appendix 4 Home Depot marketing complaint.
5. Appendix 5 Lowe's marketing complaint
6. Appendix 6 Walmart marketing complaint
7. Appendix 7 KI6IBS RFI investigation report
8. Appendix 8 Drone Report
9. Appendix 9 AT&T RFI Investigation report
10. Appendix 10A and 10B – Radio Frequency LED Lighting Products

**ARRL Public Relations Committee  
Report to the Board of Directors, December 2016**

The 2016 Committee Members Are:

Committee Chair, Scott Westerman, W9WSW  
Katie Allen WY7YL  
Sid Caesar, NH7C  
Randy Hall, K7AGE  
Angel Santana, WP3GW  
Media & Public Relations Manager Sean Kutzko, KX9X  
Board Liaison, Jeff Ryan, KORM

**Mission, Purpose, and Scope**

*The Public Relations Committee's (PR-COM) mission is to ensure the ARRL's public relations practices and techniques are effective in presenting Amateur Radio and the ARRL to amateurs, served agencies, and the general public.*

*The committee's purpose is to advise the Board of Directors via the committee's Board Liaison on policy regarding public relations strategy, allocation of resources to public relations, and the structure of public relations activities. In addition, the committee works with the Public Relations Manager (PR MGR) to define, guide, and review public relations components.*

*The committee's scope includes media and messaging techniques, resources allocated to PR, policy governing PR activities and components, and evaluation of PR activities. The committee is not responsible for the creation or implementation of specific PR components.*

During the second half of 2016, the ARRL Public Relations Committee focused on the following primary objectives:

- 1) Completion of the ARRL Public Relations 101 manual rewrite**
- 2) Bring the National Parks on the Air (NPOTA) over the finish line**
- 3) Launch an ARRL Collegiate Amateur Radio Initiative**
- 4) Continue to promote the new ARRL "The Doctor is In" podcast**
- 5) Raise the ARRL staff profile across all social media platforms**
- 6) Facilitate the annual selection process for public relations oriented awards**

**Public Relations 101 Re-write**

After seeking input from PRC members and PIOs, the committee retained a professional writer to help complete the full rewrite of the Public Relations 101. This is nearly complete and should be released well before Hamvention in Xenia, Ohio.

**Activities in Support of National Parks on the Air (NPOTA)**

Aggressive engagement by PR Manager Sean Kutzko, Norm Fusaro and members of the PR committee in *QST*, on social media in general, and the NPOTA Facebook page in particular, contributed to one of the League's most successful initiatives. Amateur Radio operators made nearly 21,000 visits to 460 of the 489 eligible NPOTA units, resulting in 1.1 million contacts made for National Parks on the Air. Participants have great enthusiasm for the

event, and many Amateurs became active in portable operating for the first time since becoming licensed. Most NPS employees were happy to have Amateur Radio promoting their Centennial, NPOTA merchandise has sold well beyond projections, and certificates are now starting to be ordered by NPOTA participants. NPOTA is an unqualified success on several fronts, and ARRL can be proud to have created a fun on-air activity that was enjoyed by Amateurs worldwide.

### **The Collegiate Amateur Radio initiative**

At CEO Tom Gallagher's direction, the PR Committee undertook promotion of a nationwide Collegiate Amateur Radio Initiative(CARI), seeking input from college clubs and working to take control of an existing, private Facebook page dedicated to the project. PRC Committee Chair Scott Westerman, W9WSW, engaged in two outreach activities in support of the initiative, meeting with AB1DQ from the Yale Amateur Radio Club and K8HTC & N8FWY from Ohio State. An ARRL-sponsored collegiate event is being planned for the forthcoming Orlando HamCation as CARI continues to be expanded.

### **Podcasting and Video**

PRC has encouraged PR Manager Sean Kutzko, KX9X, in his efforts to expand ARRL content in "new" media streams. Kutzko has worked with PRC member Randy Hall, K7AGE, who has one of the most popular Amateur Radio-related channels on YouTube, in techniques for creating new video content with ARRL branding. The audio podcasts "ARRL The Doctor Is In" and "ARRL Audio News" have proven very popular additions to the ARRL content brand. PRC will continue to look for new promotions and avenues for ARRL-branded audio and video content.

### **Promoting ARRL Personalities**

Thanks to PR Manager Sean Kutzko, KX9X's vigorous social media efforts, several ARRL staffers are becoming the face of the organization. 2016 certainly saw Kutzko and Norm Fusaro, W3IZ, embraced as "the National Parks on the Air Guys" in all ARRL online media. ARRL Lab Assistant Manager Bob Allison, WB1GCM, has been the face of ARRL Product Review video for quite some time. And the success of the "ARRL The Doctor is In" podcast has made Joel Hallas, W1ZR, synonymous with ARRL technical expertise. These successes capitalize on ARRL's brand, and more examples such as these should be pursued, to help "humanize" ARRL and sustain ARRL's role as the leading authority on Amateur Radio online. .

### **2016 ARRL Leonard Award Nominations**

Upon review of Amateur Radio's media hits for 2016, the PR Committee recommends the following journalists should receive the ARRL Bill Leonard Award for Media Professionals:

**Print:** Wayne Rash, Senior Columnist, *eWEEK* and contributor to Yahoo Tech: "Why Modern Makers are Bringing Back Ham Radio." <https://www.yahoo.com/tech/why-modern-makers-are-bringing-1363811879927862.html>

**Audio:** Jamala Henderson, reporter for KUOW-FM Seattle: "Ham Radio Operators Could be Superheroes When the Earthquake Hits." <http://kuow.org/post/ham-radio-operators-could-be-superheroes-when-earthquake-hits>

**Video:** Derek Felton, Videographer/Editor, WGNO-TV, Metairie, LA: Field Day coverage of W5G, the Jefferson Amateur Radio Club in Metairie, LA, focusing on 12-year-old club member Bryant Rascoll, KG5HVO.

Respectfully submitted,

Scott Westerman – W9WSW  
ARRL PR Committee Chair

# Historical Committee Report

Document #18

January 2017 (Rev. A)

Significant ARRL historical preservation and display work continue at ARRL Headquarter under the leadership of Bob Allison, WB1GCM and Michael Marinaro, WN1M and several additional dedicated volunteers. The historical committee is consulted and kept informed of their work via email and occasional visits to ARRL HQ. The following detailed report of their volunteer activities was prepared by Michael Marinaro, WN1M.

Respectfully Submitted,

Rod Blocksom, K0DAS, Chair  
Tom Frenaye, K1KI  
Dick Norton, N6AA  
Bob Allison, WB1GCM, Staff Liaison  
Michael Marinaro, WN1M



HERITAGE MUSEUM PRESENTATION #4-"THE FIRST ARRL NATIONAL CONVENTION"-DELEGATES BADGE

## HISTORICAL GROUP ACTIVITIES AT HEADQUARTERS

### YEAR OF 2016

The period is marked by the inauguration of the Heritage Museum; several document discoveries and the completion of the initial phase of two projects.

#### DISCOVERIES

- Register of the *first* members of the ARRL initially maintained by Secretary Clarence D. Tuska. Loose bound school notebook with individual type written pages in alphabetical order by last name. Calls and names with membership numbers listed. Also found separately, in correspondence files - the original letter of conveyance by Tuska (at Atwater Kent) to K.B. Warner and copy of K.B. Warner response letter. Item is under study with initial effort to establish the correlation of entries with the listings in the first edition of *The List of Stations* of 1914.
- First edition, signed copy of Clinton D. DeSoto book-*Two Hundred Meters and Down*.
- Ledger maintained by K.B. Warner containing *Original ARRL Constitution* of 2/28/1917 ; revisions and amendments to 12/18/1923 and printed pamphlets of the *Constitution and By Laws* through 7/1/1954.
- Six envelopes of records of the QST Publishing Company.

#### ON GOING ACTIVITIES

- Document Archive maintenance (Phase I)–*Word* and *Access* programs.
  - Secretary Minutes -8 file drawers
  - *Word* programmed- 140 file drawers
- Executive Correspondence and Report Archive (Phase II) maintenance.
  - *Access* programmed -140 archival boxes, 1500 line entries, 12 fireproof file drawers and a safe. Program is in accumulation phase.
- Media-slide, video and film collection supplementation.
- Vintage Technical Library maintenance –shelving 700 *Excel* recorded volumes..
- Exhibitions and displays.
  - Lobby-vintage equipment displays. Currently the seventh consecutive display features the first Heathkit Amateur products-the AT-1 transmitter and AR-2 receiver kits.
  - Laboratory area-portion of equipment collection and period operating station setups arranged for viewing.
  - CEO Conference Room curated- Unique items of historical significance displayed and artifact safe stored (Maxim log books; Maxim key; Constitution and amendments; and various documents). Periodic updating intended.

- Museum Equipment Collection securely stored. 400 individual items have been recorded in an *Excel* database. Donations are accepted and included or auctioned.

### **NEW AND PLANNED ACTIVITIES**

- Initial postings to the new Heritage Museum section on the ARRL web site have been made with five narrative articles presented. Additional postings are in process and the format for the presentation of unique collection equipment is being evolved. The team members are learning the methods and process for posting.
- Resumption of identification and cataloging of the 35mm slide collection. The collection will be centralized on a separate hard drive with those currently on a external systems.
- Identification and approval of disposal of surplus telegraph equipment from the equipment collection is underway.
- Planning for the modernization of the Laboratory display area is underway with bids requested for lighting, shelving and glass replacement.
- Guidance is sought regarding the disposition of the considerable accumulation of ITU and IARU material which has not been cataloged as yet. Centralized but not organized.
- Preparation of a master directory of the archival, library and vintage equipment data bases maintained by the Archivist and Laboratory staff is in process. The intent is to have these programs accessible to all staff.

### **The Team**

- Operating Event Support. In various capacities team members participated in the planning and execution of the 1BCG Transatlantic reenactment. The Historian has been tasked to research and present the basis for other similar historically commemorative events.



The Historical Committee team at Headquarters presently consists of four principals – Bob Allison, WB1BCM Assistant Laboratory Manager who is liaison to the Committee; Michael Marinaro, WN1M volunteer acting as Historian, Archivist and Curator and a member of the Committee ; Jonathan Allen, K2KKH/1 volunteer acting as custodian of the Museum equipment and Archivist; and Pete Turbide, W1PT volunteer technical restorer and maintainer of the Museum and donated equipment. There are other occasional participants.

Organizationally Allison and Marinaro inform the CEO and Committee chairperson of their activities and interact directly with department managers to accomplish the prescribed objectives of the team on behalf of the Committee. The team aggressively pursues recruits as succession, continuance and knowledge of the activities is of concern.

Michael Marinaro  
Bob Allison  
12/27/2016

Rev A - Additional news of historical importance just arrived.

Tom Gallagher just received a treasure-trove of high definition scans from David Littleton, the grandson of Paul Godley, 2ZE of transatlantic fame. The scans include copies of Godley's logbooks compiled while in Scotland waiting for the transatlantic signals in December 1921.

Tom was able to inspect the logs in their original, but obviously not retain them. We would like the original at some point, but meanwhile the scans make good working copies.

**ARRL HF Band Planning Committee  
Report to the Board – January 2017**

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**HF Band Planning Committee members:** Dwayne Allen WY7FD, Tom Frenaye K1KI, David Norris K5UZ, Bill Hudzik W2UDT, Steve Ford WB8IMY (Staff Liaison), Dave Sumner K1ZZ, Brian Milesosky N5ZGT (Chairman)

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Activity within the HF Band Planning Committee has been light following the board's approval of the following three recommended modifications to the IARU Region 2 band last July:

1. *References to the 660-meter band be changed to 630-meters to more accurately describe the wavelength of the spectrum actually allocated for amateur radio use;*
2. *Update the 160-meter band plan to include an asterisk (“\*”) to acknowledge AM operations commonly encountered within the band; and*
3. *An exception be added to the band plan, appended to the definition of “USB/LSB” or appended elsewhere, which specifies that, in the event a 60-meter amateur radio allocation is added to the band plan, upper sideband (USB) is permissible.*

These recommendations were delivered to the Region 2 General Assembly last October and unanimously approved.

A document summarizing *all* approved modifications to the IARU Region 2 band plan is provided separately for review.

At present the committee is discussing the considerable growth in use of WSPR on the HF bands.

I would like to personally thank each member of the HF Band Planning Committee for the time and energy they have devoted to helping meet the objectives set forth by the Board. We stand ready to take on other band planning matters as needed.

Respectfully submitted,

*Brian Milesosky N5ZGT  
Chairman, ARRL HF Band Planning Committee*



# **Summary of Approved Revisions to IARU Region 2 Band Plan**

**Brian Mileschosky N5ZGT**  
*ARRL Second Vice President*

**Rev: 04 November 2016**

# Background

- The XIX General Assembly of IARU Region 2 took place 10-14 October in Viña del Mar, Chile
- Twenty four Region 2 member societies participated, either directly or via proxy
  - ARRL (USA), CRAG (Guatemala), CRAS (El Salvador), CREM (Nicaragua), FMRE (Mexico), GRC (Ecuador), JARA (Jamaica), LABRE (Brazil), LCRA (Colombia), LPRA (Panama), RAC (Canada), RCA (Argentina), RCB (Bolivia), RCCH (Chile), RCCR (Costa Rica), RCD (República Dominicana), RCH (Honduras), RCP (Peru), RCU (Uruguay), RCV (Venezuela), RSB (Bermuda), SVGARS (St. Vincent), TTARS (Trinidad & Tobago), and VERONA (Curacao)
- ARRL's delegation included President Rick Roderick K5UR, Second Vice President Brian Milesosky N5ZGT, and ARRL staff member Jon Siverling WB3ERA
  - ARRL International Affairs Vice President Jay Bellows K0QB was also in attendance in his IARU Director capacity
  - ARRL Emergency Preparedness Manager Mike Corey KI1U also attended to lead the parallel IARU Region 2 Emergency Communications Workshop
- IARU Region 2's B/C Committee was responsible for handling LF/MF/HF and VHF+ band planning matters and proposals
- ARRL delegate Brian Milesosky N5ZGT and LABRE (Brazil) delegate Flavio Archangelo PY2ZX were voted by attending Region 2 member societies to serve as Chairman and Secretary (respectively) of Committee B/C

# Background

- Committee B/C conducted three meetings, attended by delegates of Region 2 member societies and representatives from IARU Regions 1 and 3, to review, discuss, and reach consensus on band plan proposals submitted for consideration at the Assembly
- Numerous band plan proposals were formally proposed by ARRL (USA), FMRE (Mexico), LABRE (Brazil), and RAC (Canada)
- The band plan revisions summarized in the following slides – including all recommendations submitted by ARRL – were approved unanimously by voting Region 2 member societies
- The newly revised band plan document is published at <http://www.iaru-r2.org/band-plan>

# **IARU Region 2 Band Plan Revisions**

# General Revisions

- Alphabetized definitions section of band plan document for easier reference.
- Appended definition of **Bandwidth** with: “Unless specified will be no restrictions in respective segment. Best practice should be observed to avoid adjacent band interference.”
- Appended definition of **USB/LSB** with: “Exception: On 60 m band (5.3 MHz) use upper sideband (USB).”
- Amended definition of **Contests** to include: “60 m (5.3 MHz)”
- Changed 660 meter band reference to 630 meters
- Added footnote “(\*) DSB AM phone is allowed with maximum 6 kHz BW as exception.” below all band plans containing the “\*” reference for easier reference

# Revisions to the 2200 Meter Band Plan

- Added footnote (1) reference to 135.7-137.8 kHz
- Footnote (1) text: “1 – ACDS can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point and DX communications.”

# Revisions to the 660 Meter Band Plan

## 660 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
472 - 479	2700	All modes	

### Footnotes

1 – The operators should use the least bandwidth as much as possible.



## 630 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
472 - 479	500	CW, DM	(1)

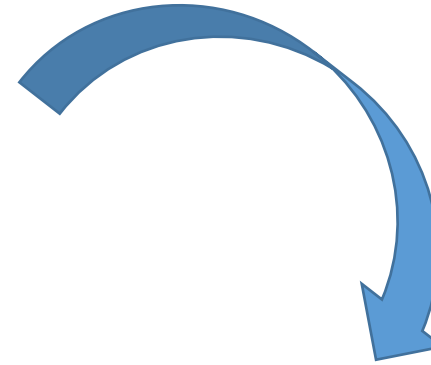
### Footnotes

1 – ACDS can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point and DX communications.

# Revisions to the 160 Meter Band Plan

## 160 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
1800-1810	500	DM	
1810-1830	200	CW	CW QRP Center of Activity 1812 kHz
1830-1840	200	CW	CW Priority for intercontinental operation (DX window)
1840-1850	2700	CW, SSB	SSB Priority for intercontinental operation (DX window)
1850-1999	2700	All modes	SSB QRP Center of Activity 1910 kHz
1998-1999	500	CW, DM	ACDS
1999-2000	200	CW	Beacons



## 160 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
1800-1810	500	DM	
1810-1830	200	CW	CW QRP Center of Activity 1812 kHz
1830-1839	200	CW	CW Priority for intercontinental operation (DX window)
1839-1840	200	CW, DM	CW Priority for intercontinental operation (DX window), ACDS (1)
1840-1843	2700	CW, SSB, DM (2)	SSB Priority for intercontinental operation (DX window)
1843-1850	2700	CW, SSB	SSB Priority for intercontinental operation (DX window)
1850-2000	2700 (*)	All modes	SSB QRP Center of Activity 1910 kHz

### Footnotes

1 – ACDS can be used carefully on appropriate frequencies not to exceed the maximum bandwidth for the segment. ACDS should not cause interference on point-to-point and DX communications.

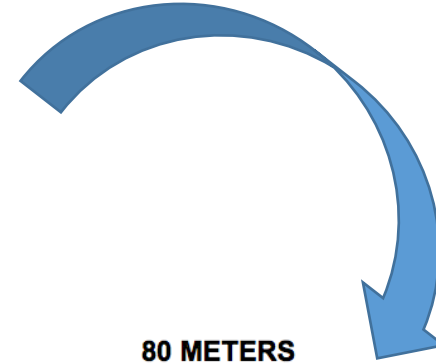
2 – For DM use maximum 200 Hz of BW.



# Revisions to the 80 Meter Band Plan

## 80 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
3500-3510	200	CW	Priority for intercontinental operation (DX window)
3510-3560	200	CW	CW QRS Center of Activity 3555 kHz, CW contest preferred
3560-3580	200	CW	CW QRP Center of Activity 3560 kHz
3580-3590	500	CW, DM	
3590-3600	500	CW, DM	ACDS
3600-3625	2700 (*)	All modes	ACDS
3600-3650	2700	All modes	SSB contest preferred
3650-3700	2700	All modes	SSB QRP Center of Activity 3690 kHz
3700-3775	2700	All modes	SSB contest preferred, Image Center of Activity 3735 kHz, Emergency Center of Activity 3750 kHz
3775-3800	2700	All modes	Priority for intercontinental operation (DX window)
3800-3875	2700	All modes	
3875-3900	2700 (*)	All modes	Image Center of Activity 3845 kHz, AM Center of Activity 3885 kHz, Emergency Center of Activity 3985 kHz
3900-4000	2700	All modes	



## 80 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
3500-3510	200	CW	Priority for intercontinental operation (DX window)
3510-3560	200	CW	CW QRS Center of Activity 3555 kHz, CW contest preferred
3560-3570	200	CW	CW QRP Center of Activity 3560 kHz
3570-3580	200	CW, DM	
3580-3590	500	CW, DM	
3590-3600	500	CW, DM	ACDS
3600-3625	2700 (*)	All modes	ACDS
3600-3650	2700	All modes	SSB contest preferred
3650-3700	2700	All modes	SSB QRP Center of Activity 3690 kHz
3700-3775	2700	All modes	SSB contest preferred, Image Center of Activity 3735 kHz, Emergency Center of Activity 3750 kHz
3775-3800	2700	All modes	Priority for intercontinental operation (DX window)
3800-3875	2700	All modes	
3875-3900	2700 (*)	All modes	Image Center of Activity 3845 kHz, AM Center of Activity 3885 kHz, Emergency Center of Activity 3985 kHz
3900-4000	2700	All modes	

# Revisions to the 60 Meter Band Plan

- Added 60 meter band to band plan as follows:

## 60 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
5351.5 - 5354	500	CW, DM	
5354 - 5366	2700	All Modes	
5366 – 5366.5	20	CW, DM	ACDS

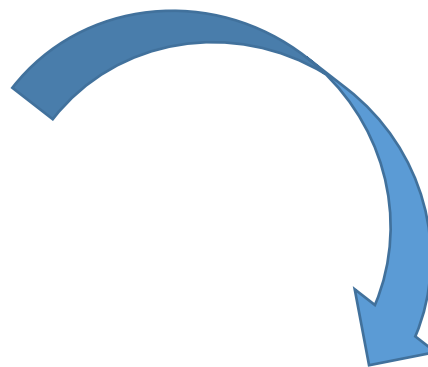
## Footnotes

1 – The band should be avoided for local nets, instead make use of adjacent amateur bands or alternative 5 MHz domestic channels (where available under ITU RR Article 4.4).

# Revisions to the 15 Meter Band Plan

## 15 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
21000-21070	200	CW	CW QRP Center of Activity 21060 kHz
21070-21090	500	CW, DM	
21090-21110	500	CW, DM	ACDS
21110-21120	2700	CW, DM	ACDS
21120-21149	500	All modes	
21149-21151	200	CW	IBP (exclusive)
21151-21450	2700	All modes	SSB QRP Center of Activity 21285 kHz, Image Center of Activity 21340 kHz, Global Emergency Center of Activity 21360 kHz



## 15 METERS

Frequencies (kHz)	BW (Hz)	Mode	Applications and observations
21000-21070	200	CW	CW QRP Center of Activity 21060 kHz
21070-21090	500	CW, DM	
21090-21110	500	CW, DM	ACDS
21110-21120	2700	CW, DM	ACDS
21120-21149	500	All modes	
21149-21151	200	CW	IBP (exclusive)
21151-21380	2700	All modes	SSB QRP Center of Activity 21285 kHz, Image Center of Activity 21340 kHz, Global Emergency Center of Activity 21360 kHz
21380-21450	2700 (*)	All modes	

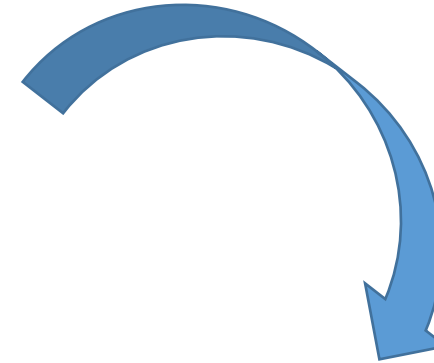
### Footnotes

(\*) DSB AM phone is allowed with maximum 6 kHz BW as exception.

# Revisions to the 2 Meter Band Plan

## 2 METERS

Frequencies (MHz)	BW (Hz)	Mode	Applications and observations
144,000-144,025	2700	All modes	Satellites (Note 1)
144,000-144,110	500	CW	EME and Weak Signal
144,110-144,150	2700	CW, DM	EME and Weak Signal
144,150-144,180	2700	CW, DM, SSB	Weak Signal
144,180-144,275	2700	CW, SSB	Weak Signal, Calling QRG (exclusive) 144,200 MHz
144,275-144,300	500	CW	Beacons
144,300-144,360	12000	All modes	
144,360-144,400	12000	DM	ACDS, APRS Center of Activity 144,390 MHz

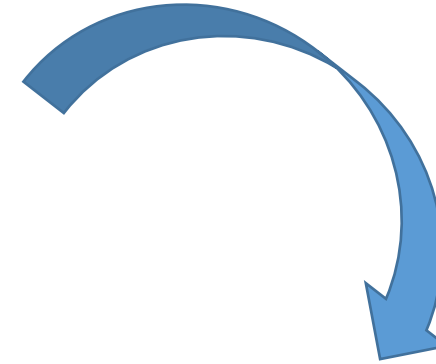


## 2 METERS

Frequencies (MHz)	BW (Hz)	Mode	Applications and observations
144.000-144.025	2700	All modes	Satellites (Note 1)
144.000-144.110	500	CW	EME and Weak Signal
144.110-144.150	2700	CW, DM	EME and Weak Signal
144.150-144.180	2700	CW, DM, SSB	Weak Signal
144.180-144.275	2700	CW, SSB	Weak Signal, Calling QRG (exclusive) 144.200 MHz
144.275-144.300	500	CW	Beacons
144.300-144.360	<b>2700</b>	<b>CW, SSB</b>	<b>Calling QRG 144.300 MHz</b>
144.360-144.400	12000	DM	ACDS, APRS Center of Activity 144.390 MHz

# Revisions to the 13 Centimeter Band Plan

2394,750-2395,000	50 kHz	All modes	Analog & Digital; paired with 2304,750 – 2305 MHz
2395,000-2400,000	1 MHz	All modes	Analog & Digital, including full duplex; paired with 2305- 2310 MHz
2400,000-2410,000	6000	All modes	Satellites
2410,000-2450,000	22 MHz	All modes	Broadband Applications



2394.750-2395.000	50 kHz	All modes	Analog & Digital; paired with 2304.750 – 2305 MHz
2395.000-2400.000	1 MHz	All modes	Analog & Digital, including full duplex; paired with 2305- 2310 MHz
2400.000-2450.000		All modes	Satellites (1)

## Footnotes

1 – Broadband applications can be used in 2410-2450 MHz with the maximum BW of 22 MHz. The broadband applications should not cause interference on satellites communications.

# Revisions to the 9 Centimeter Band Plan

- Added footnote (1) to bottom of table
- Footnote (1) text: “1 – There are no restrictions for modes and bandwidth for satellites communications. Care should be taken to avoid interference to adjacent segments.”

# Revisions to the 5 Centimeter Band Plan

- Added footnote (1) to bottom of table
- Footnote (1) text: “ACDS can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point and DX communications.”

# Revisions to the 3 Centimeter Band Plan

- Added footnote (1) to bottom of table
- Footnote (1) text: “ACDS can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point, satellite and DX communications.”



# Revisions to the 1.2 Centimeter Band Plan

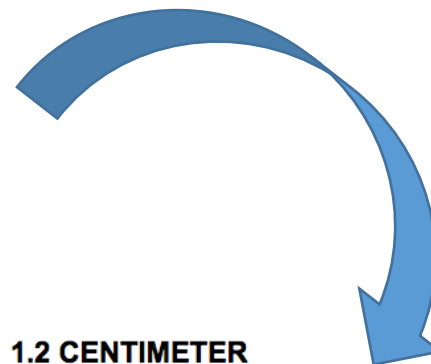
## 1,2 CENTIMETER

Frequencies (MHz)	BW (Hz)	Mode	Applications and observations
24000-24048		All mode	
24048-24048,75	2700	All mode	Narrow band center of activity 24,0482 GHz, Amateur Satellite Service
24048,75-24048,80	2700	All mode	Beacons, ACDS (Digital Beacons)
24048,80-24048,995	2700	All mode	Beacons
24049-24050	2700	All mode	Narrow band modes, Amateur Satellite Service
24050-24250		All mode	24,125 GHz Preferred operating frequency for wide-band

### Footnotes

1- Between 24 and 24,050 GHz the amateur and amateur satellite service have a primary/exclusive status, while the status is secondary in the remainder of the allocation. The all mode section in the secondary segment should only be used in case the preferred segment cannot be used.

2 – ACDS can be used carefully on appropriate frequencies with specified segment BW not to cause interference to other activities, such as point-to-point, satellite and DX communications.



## 1.2 CENTIMETER

Frequencies (MHz)	BW (Hz)	Mode	Applications and observations
24000-24048		All mode	
24048-24048.75	2700	All mode	Narrow band center of activity 24048.2 MHz, <b>Satellite (1)</b>
24048.75-24048.80	2700	All mode	Beacons, ACDS (Digital Beacons)
24048.80-24048.995	2700	All mode	Beacons
24049-24050	2700	All mode	Narrow band modes, <b>Satellite (1)</b>
24050-24250		All mode	24125 MHz Preferred operating frequency for wide-band

### Footnotes

1 – There are no restrictions for modes and bandwidth for satellites communications. Care should be taken to avoid interference to adjacent segments.

2- Between 24 and 24.050 GHz the amateur and amateur satellite service have a primary/exclusive status, while the status is secondary in the remainder of the allocation. The all mode section in the secondary segment should only be used in case the preferred segment cannot be used.

3 – ACDS can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point, satellite and DX communications.

# Revisions to the 6 Millimeter Band Plan

- Incremented previous footnote (1) to (2)
- Added new footnote (1) reference to 47.088-47.090 MHz
- New footnote (1) text: “There are no restrictions for modes and bandwidth for satellites communications. Care should be taken to avoid interference to adjacent segments.”
- Modified reading of new footnote (2) text as follows: “ACDS and beacons can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point, satellite and DX communications.”

# Revisions to the 4 Millimeter Band Plan

- Incremented previous footnote (1) to (2)
- Added new footnote (1) reference to 77.500-77.501 MHz
- New footnote (1) text: “There are no restrictions for modes and bandwidth for satellites communications. Care should be taken to avoid interference to adjacent segments.”
- Incremented previous footnote (2) to (3)
- Modified reading of new footnote (3) text as follows: “ACDS and beacons can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point, satellite and DX communications.”

# Revisions to the 2.5 Millimeter Band Plan

- Modified reading of footnote (1) text as follows: “ACDS and beacons can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point, satellite and DX communications.”

# Revisions to the 2 Millimeter Band Plan

- Modified reading of footnote (2) text as follows: “ACDS and beacons can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point, satellite and DX communications.”

# Revisions to the 1 Millimeter Band Plan

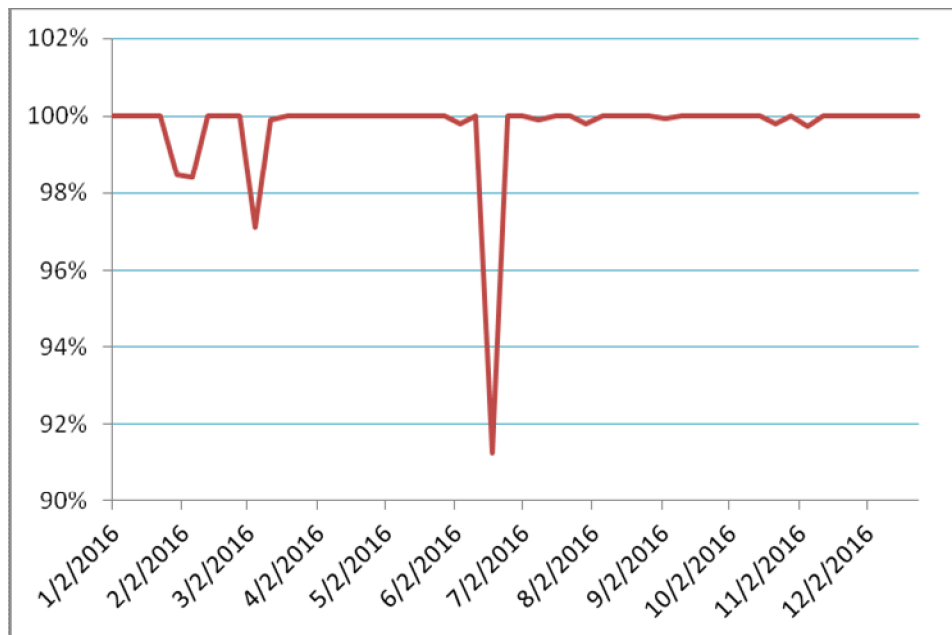
- Modified reading of footnote (2) text as follows: “ACDS and beacons can be used carefully on appropriate frequencies, not to exceed the maximum bandwidth specified for the segment. ACDS should not cause interference to point-to-point, satellite and DX communications.”

## LoTW report—20 January 2017

Ad Hoc Logbook Study Committee

Logbook of the World (LoTW) availability exceeds our 99% target almost all the time, with network availability being the primary limiting factor. As reported at the end of 2015, the number of issues reported by users and discussed on the Yahoo reflector ARRL-LoTW has been very low, and declining. LoTW continues to grow, with more than 805 million QSOs and more than 92K registered users.

### Availability



LoTW availability continued to be excellent in 2016. As the chart shows, availability has been at or above 99% except for three weeks in the charted period. The chart shows a 14-hour announced unavailability on 13 June for network maintenance on ARRL.ORG. No

serious unplanned unavailability occurred in 2016. Long waits for LoTW updating after contests are a thing of the past.

### NPOTA on LoTW

Early 2016 had some rocky patches as the NPOTA event began. But the experience of Sean Kutzko, Norm Fusaro and ARRL IT working on the Centennial QSO Party enabled many possible problems to be avoided. We discovered how difficult it can be to manage data definitions for hundreds of locations, including some which *partially* overlapped others, but updates were made quickly when discovered. LoTW handled the addition of over 1 million NPOTA QSOs. In keeping with the improved business footing we are establishing for LoTW, we will conduct a P&L analysis of NPOTA, and use it to improve the administration of LoTW and similar programs in the future.

### LoTW Second Instance

A key component of modernizing LoTW has been the update of the database and associated tools which run LoTW. A “second instance” has been completed, and is in beta test at this time. Not only does this permit the database engine to be updated, but it will provide a test bed for new LoTW developments without having to make changes in live production. It will also permit capacity testing to be performed offline, as well as provide a live failover capability for the production system.

### LoTW & Awards vision exercise

Among the three major objectives in ARRL’s IT initiative, the first is updating the DXCC database. The RFQ for this work was released in October. Back in August, the LoTW group questioned whether any changes would be needed in the DXCC database to accommodate and encourage future LoTW evolution. We realized that our future requirements could only be determined from a strategic vision for LoTW in the next several years, which had not been defined.

A small group met at ARRL HQ on 9 September to develop a 5-year vision for LoTW. It became clear that merely continuing our current approach would ultimately result in other non-ARRL systems overtaking LoTW. The result was a plan for aggressively moving LoTW forward, including the objective of making LoTW at-least revenue neutral.

The EC heard a summary of the plan so far, and gave LoTW permission to continue steps to develop a 5-year plan for the LoTW/Award vision.

### Additional award support in LoTW

After some informal communication with JARL, who indicated their interest, LoTW is now ready for beta testing for awards based on Japanese prefectures, etc. In general, adding award support (with associated fulfillment fees) is an important part of realizing the 5-year vision of LoTW enhancement. As reported previously, we continue to discuss these possibilities with other award sponsors.

### LoTW Trusted Partners

As noted in LSC’s July report to the Board, we continue to be concerned about third-party services that store users’ secure information to login to Logbook on their behalf. We have developed a document describing the requirements for appropriately secure storage, and sent it to two major online logbooks. One of the two has already committed to implementing the system. Those services following the guideline will be listed as LoTW Trusted Partners.



## TQSL

TQSL release 2.3 is now public. A short note in November 2016 QST, announced “Logbook of The World to No Longer Accept Contacts Signed by TQSL Versions Earlier Than 2.0” (p. 91). This reflects the fact that earlier versions of TQSL were much more likely to lead users into difficulty, and did not include the features of the new version which make it both more friendly and less easy to make mistakes. The new release has support for non-English languages, screen reading for low-sighted individuals, and improved dialogs for operations such as requesting a new certificate. The text in TQSL 2.3's windows, dialog boxes, and error messages can be presented in Chinese, English, French (via Google Translate), Italian, Japanese, German, Portuguese, Russian, or Spanish. The online help incorporated in TQSL is only available in English.

## Enhancing LoTW for DX stations

The value of LoTW to ARRL and users alike depends on the number of QSOs available for potential confirmation. This is one reason why users are not required to be members of ARRL in order to upload. More participants in LoTW likewise enhance LoTW's value. Recently, non-US DXCC card checkers have been allowed to verify DX stations' credentials. This gives DX stations a way to enroll without having to send documents concerning their licenses, which some stations objected to. While the top tier of DXers probably already have signed up for Logbook, we hope that local language in TQSL and local validation of users will encourage further DX participation.

## LoTW Help

An extensive project has been undertaken, principally by AA6YQ, to create Help entries for many common actions and Frequently Asked Questions for LoTW. Besides adding topics to aid users, Dave's Help project has uncovered outdated or incorrect advice to users, which has been corrected. As the Help files were reviewed, this also led to some simplifications in process, which benefit all users.

In addition to language localization in TQSL, work is in progress to make online Help available in several languages for LoTW itself. "Using LoTW" is available in English, and is currently undergoing translation to Russian; the navigation bar and a core set of topics are now publicly available in Russian. As for other enhancements for DX stations, the goal is to make LoTW easier to use for non-native speakers of English, thereby improving LoTW participation outside the United States. All non-English localizations in TQSL and LoTW have been created by volunteer amateurs.

True cost of LoTW

During our meetings in 2016, the LoTW group has developed a *pro forma* P&L for the Logbook operation. The Board of Directors had authorized the hire of two full-time programmers on the request of the LoTW committee. Reviewing the costs of LoTW, we discovered that the allocated cost consumed by Logbook is currently about 1.2 FTE, rather than the 2.0 originally applied. Adjusting this cost made a considerable positive difference to LoTW's *pro forma* P&L.

Submitted by,

Greg Widin, KØGW, Chair LSC 2016  
for the Logbook Study Committee

Members: KØGW, AA6YQ, N1VXY, NN1N, K1MK, K7GM, Doug Haney, K3DGB, N2ZZ, W3IZ,  
K1MU/4

As of 26 December 2016:

**805,619,601** QSO records have been entered into the system.

**139,918,203** QSL records have resulted.

**92,021** Users are registered in the system

**136,334** Certificates are active

**11,207,704** User files have been processed

**2017 Annual Meeting  
ARRL Board of Directors  
Windsor, Connecticut – January 20-21, 2017**

**Report of the ARDF Coordinator**

**To the Board of Directors:**

This report of the ARRL Amateur Radio Direction Finding (ARDF) Coordinator to the ARRL Board of Directors covers the period July 12, 2016 to January 5, 2017.

**Introduction and Purpose**

As defined by the Terms of Reference document of the International Amateur Radio Union (IARU) Region 1 ARDF Working Group, "ARDF is a technical sport activity within the framework of the amateur service. It deals with the taking of radio bearings and finding hidden transmitters, constructing relevant equipment, and the training of amateurs involved in and with the organizing of relevant sport and social events."

The purpose of the national ARDF Coordinator position is to promote the development of this sport within the country and to work with ARDF Coordinators of other IARU countries to organize ARDF events and activities. The focus is on international-rules on-foot foxhunting (also called foxtailing and radio-orienteeing), but not mobile hidden transmitter hunting.

**ARDF included in Scouting's Radio Merit Badge**

The 2017 update of Scouting's Radio Merit Badge (RMB) includes an option for Amateur Radio Direction Finding (ARDF) activities. Scouts and their leaders are being encouraged to experience the fun of on-foot hidden transmitter hunting as part of their introduction to the world of Amateur Radio.

The new RMB requirements are written at a level that is easy for Scouts to read and understand. There are nine things that Scouts must do or explain to earn the RMB. Item number nine lists four possible activities, of which the scout must do one. The newest activity choice is ARDF. It includes building a simple direction-finding antenna for either of the two bands that are used for competitive ARDF (2m and 80m) and then participating in a simple foxhunt with the antenna and a provided receiver.

Your ARDF Coordinator is pleased to have been one of USA's ARDF leaders who provided input regarding the new RMB requirements, collaborating with Jim Wilson K5ND. Jim is the

former Director of Communication Services at the BSA national office and president of the K2BSA Amateur Radio Association. He visited a training session at the 2016 USA ARDF Championships in Texas, where, he realized what an excellent activity that on-foot hidden transmitter hunting can be for Scouts. He then authored the new requirements, which were reviewed by members of the ARDF community.

At the 2017 National Scout Jamboree in West Virginia during July, an ARDF course and equipment will be available to Scouts of all ages. Leaders are expecting that 400 or more Scouts will qualify for the new RMB during the Jamboree.

## **IARU ARDF World Championships 2016**

The 18th IARU ARDF World Championships took place in Albena, Bulgaria from September 3 through 9, 2016. For the tenth time, a delegation of radio-orientees represented USA and ARRL at the World Championships and for the sixth time, USA's team was on the medal stand. There were separate classic ARDF events on separate days for each competitor on eighty meters and two meters, each with up to five transmitters scattered in a large forested area. In addition, there were ARDF sprints and foxoring competitions. Each IARU society is invited send up to three competitors in each of the eleven IARU age/gender categories to the World Championships. In addition, the ARDF World Cup took place just before the championships, a competition for individuals with no participation limits. In all, over 400 competitors representing 39 nations took to the courses.

Invitations to join Team USA 2016 were based on performances and standings in the Fifteenth USA ARDF Championships (Colorado, August 2015) and the Sixteenth USA ARDF Championships (Texas, April 2016). Nine men and six women traveled on this year's team, representing eight states and ranging in age from 27 to 74.

### **2016 ARDF Team USA Members:**

Name/Callsign	Cat	State
Vadim Afonkin KB1RLI	M40	MA
Alexandra Bondarenco	W21	PA
Natalia Bondarenco	W35	PA
Ruth Bromer WB4QZG	W60	NC
Robert Cooley KF6VSE	M70	CA
Kenneth Harker WM5R	M40	TX
Joseph Huberman K5JGH	M60	NC
Lori Huberman	W21	CA
Harley Leach KI7XF	M70	MT
Karla Leach KC7BLA	W60	MT
Nicolai Mejevoi	M50	IL
Alla Mezhevaya	W35	IL
Mike Schuh KF7QDZ	M60	WA
Bill Smathers KG6HXX	M60	CA
William Wright WB6CMD	M50	CA

On August 30 in the 80m classic competition of the ARDF World Cup, Vadim Afonkin, KB1RLI placed third in the M40 category. On August 31 in the 2m classic competition of the World Cup, Alla Mezhevaya was second in the W35 category. In the sprint event on September 1, KB1RLI took gold in M40 category. Also on that day, Ruth Bromer, WB4QZG took third place in the W60 category. On September 2, Ruth (who was USA's Team Captain) won another bronze in the foxoring event. Then on the 2m classic course of the World Championships on September 8, KB1RLI won an individual bronze medal. Also on that day, WB4QZG and Karla Leach, KC7BLA won a team bronze medal in W60 category on their 80m classic course.

Team members were responsible for their own registration/room/board fees and for transportation expenses to and from Bulgaria. As in years past, thanks are due to the ARRL CFO and Controller and his staff for executing the currency exchange and transfer of individual advance entry fees to the organizers.

### **USA ARDF Championships 2017**

Your ARDF Coordinator has selected the Cincinnati area for the site of the Seventeenth USA ARDF Championships. Members and associates of the OH-KY-IN Amateur Radio Club are now selecting competition sites and making other plans. By agreement with the ARDF Coordinators of Canada and IARU Region 2, this event will also be designated as the Ninth ARDF Championships of IARU Region 2.

The tentative schedule is for three optional practice days on July 31, August 1 and 2. The Foxoring and sprint competitions will be August 3 and 4, followed by the 2m and 80m classic competitions on the weekend of August 5 and 6. Awards will be presented at a banquet on Saturday night and at a luncheon on Sunday after the final competition.

OH-KY-IN ARC members organized the very successful USA ARDF Championships in 2003 and 2010. There are many excellent sites for ARDF in the Cincinnati area and it is expected that new sites will be selected for the 2017 competitions.

As always, the USA ARDF Championships are open to anyone, at any ARDF skill level. Medals will be awarded in IARU's six age categories for males and five categories for females. Visiting competitors from outside Region 2 are expected to attend.

Latest updates about these championships can be found at <http://www.homingin.com>. Competitor and visitor registration will begin in a few weeks, at which time I will send a news item for QST and the ARRL Web site. Attendance at USA's ARDF Championships by ARRL section and division leaders is welcomed and encouraged.

## **Conclusion**

Interest and participation in ARDF activities continues to grow. The encouragement and support of the ARRL Board of Directors for activities of ARDF Team USA and the ARRL ARDF Coordinator is greatly appreciated. Thanks also to ARRL Headquarters, especially ARRL Web and QST staff, for publicizing ARDF activities and events.

I firmly believe that radio-orienteeing is a magnet to our hobby for youth and for outdoor enthusiasts of all ages. I welcome efforts by Board members to encourage inclusion of on-foot transmitter hunting activities at local and regional events within their jurisdictions. It is also an excellent activity for outdoor Scouting events, including Jamboree-On-The-Air.

More information about ARDF in the USA, including details and photos of local events in the reporting period, can be found at <http://www.homingin.com>.

Respectfully submitted,

Joe Moell KØOV  
ARRL ARDF Coordinator  
[homingin@aol.com](mailto:homingin@aol.com)

**Contest Advisory Committee  
Semi-Annual Report**

**For the American Radio Relay League  
Board of Director's Meeting**

**January, 2017**

**George Wagner, K5KG  
Chairman, CAC**

## **2016 HIGHLIGHTS**

2016 was an active year for the Contest Advisory Committee. Two important initiatives were assigned to the CAC by the PSC early in the year. They were **Youth In Contesting (YIC)** and the **Rules Consolidation Project (RCP)**.

- 1.) The objective of the Youth In Contesting assignment was to undertake a study of youth and radio contesting, “Radiosport”. The YIC assignment was multifold, in that the CAC asked to do the following:
  - a. Find out whether young operators are under-represented in contesting particularly, or whether contesting's young operator demographics are just representative of the current ham population.
  - b. Engage in a broad survey of hams between 10 and 50 [years of age] to assess their interest levels and preferences for contests.
  - c. Research and report on what youth programs and approaches are successful in Europe.

The PSC requested that the YIC project be done in two parts: first to do the research, and second to analyze the information and make specific recommendations. The CAC conducted the first part of YIC in 2016 as Phase I, and plans to tackle the analysis and make recommendations in 2017 as Phase II.

- 2.) The objective of the Rules Consolidation Project (RCP) was to Consolidate the "General Rules for All ARRL Contests", the “General Rules for ARRL Contests Below 30 MHz”, and the individual contest rules into a single rule set for each of the nine ARRL HF contests.

Numerous benefits of this project include the elimination of confusing language and inconsistencies in the current three tiers of rules, and the establishment of rules for the ARRL HF contests that are easier to understand by the contest community, especially youth and others new to contesting.

- a. In the consolidation of the three tiers of rules documents, the project will only consider the rules for the HF contests to be those that are published in the Contests and Radiosport Section of ARRL.org.



- b. The project will not make any modifications or revisions to contest rules as they are currently written. However, the project will make recommendations for revisions to existing rules as deemed necessary or beneficial to the understanding of rules by the contest community at large.
- c. The project will NOT assess log checking (LCR) software.
- d. The project will NOT consolidate the rules for ARRL VHF/UHF contests:

## **2016 ACCOMPLISHMENTS AND PLANS FOR 2017**

### **Youth In Contesting**

A Youth Survey was designed to gather data regarding youth and their interest in Radiosport. Although the target of the survey was youth, hams and (non-hams) of all ages were asked to take the survey. It was launched in January 2016, and ran through August 2016. In excess of 1350 responses were received from the survey, and a thorough analysis was done of those results. A full review the survey results is planned with the PSC for early 2017.

Some of the high-level conclusions reached from the survey results included:

- Youth who responded mainly had General and Novice class licenses — contests must consider this fact.
- Very few females responded — this is an issue that goes beyond Radiosport
- Youth have limited experience in ham radio — make sure that anything we do for youth take this into consideration, such as contest bonuses for younger age groups.
- Predominant interest among youth is in HF and Phone
- Need to leverage the youths' outside interests (electronics, outdoor activities, social media, DIY, etc.). Create partnerships and collaborations with these other areas and activities.

As we move into 2017, the YIC effort will continue into its Phase II with this focus:

- Analyze and report on our findings regarding youth contesting activities in Europe.
- Propose a year-long YOUTH CHALLENGE event for 2018
  - Similar to the NPOTA and W1AW/x operations
- Explore the development of new contest events for youth
  - Youth Round Up – Similar to the old Novice Round up

- Analyze existing ARRL HF contests to identify ways of making these events more attractive for youth. Possible targets are:
  - Youth overlays for ARRL DX and SS
  - Rookie Round Up – a category for youth
  - Increased focus on Kid’s Day and School Club Round Up

The CAC members working on the YIC subcommittee are Don, K4ZA, Glenn, W0CG, Pat, NA0N, Stan, K5GO and Dennis, W1UE. Additionally, Bob Gerzoff, WK2Y, a retired statistician volunteered his services to do a statistical analysis and reporting of the Youth Survey responses.

### **Rules Consolidation Project**

By the end of 2016, the first stage of the project was completed by Bob Neece, K0KR, with the consolidation of the three tiers of rules into a single document using the ARRL DX Contest as a basis for the consolidation. The project has now been passed into the hands of a subcommittee comprised of Chas, K3WW, Dennis, W1UE, Dave, K8CC, and Pat, NA0N. The work for these four very accomplished contesters is to decide what redundancies, contradictions, and surplus verbiage to eliminate from the consolidated rules, and also to document their ideas as to which rules should be revised or perhaps even off-loaded a separate document.

The result of this work will then be presented to the PSC for their feedback and guidance on the continuation of the RCP. Assuming the support of the PSC to move forward with this project, the work will then continue with the consolidation of the rule sets in a similar fashion for the other eight ARRL HF contests, and a detailed cataloging of proposed rule changes.

### **CAC ADMINISTRATION**

As recommended in our 2015 review of CAC activities with the PSC, the CAC is now managing its assignments through the use of subcommittees. This is being done to make it easier to have group discussions and make operational decisions with fewer individuals than the full 16 member committee.

The CAC is routinely using GoToMeeting (GTM) for its full committee and subcommittee meetings. In addition to GTM, we also use the [cac-i@arrl.org](mailto:cac-i@arrl.org) email reflector for routine communications among our members.

As Chairman, I periodically issue updates of CAC activities to the full CAC to keep everyone informed of the progress on our projects.

### **CHANGES IN CAC MEMBERSHIP**

There were no changes in CAC membership during 2016. The CAC members at the end of 2016 are:

- Atlantic – Charles D. Fulp, Jr, K3WW; k3ww@fast.net
- Central – Greg W. Clark, K9IG; greg@k9ig.com
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- Delta – Stan Stockton, K5GO; wa5rtg@gmail.com
- Great Lakes – Dave Pruett, K8CC; k8cc@comcast.net
- Hudson – Dr. George Tranos, N2GA; n2ga@aol.com
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- Southeastern – Chairman – George Wagner, K5KG; georgek5kg@aol.com
- Southwestern – Glenn Rattmann, K6NA; k6na@cts.com
- West Gulf – James K. George, N3BB; n3bb@mindspring.com
- Radio Amateurs of Canada – Samuel A. Ferris, VE5SF; ve5sf@sasktel.net

January 3, 2017  
George Wagner, K5KG  
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941-400-1960

**DX Advisory Committee Report**

**December 20, 2016**

**to the**

**American Radio Relay League  
Board of Directors  
And Programs and Services Committee**

**Submitted by:**

**Dr. Gary E. Jones, W5FI  
Chairman, DX Advisory Committee**

To the Members of the PSC:

From: The DXAC – Prepared and submitted by Gary E. Jones, W5FI, Chairman

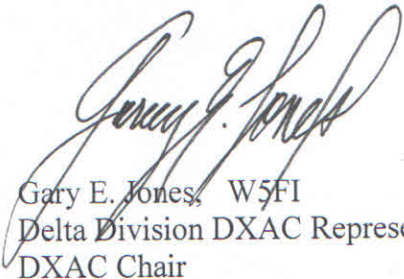
Date: December 20, 2016

Subject: Report on Tasking and Final year report

The past 12 months has been a very quiet time for the DXAC as we have had no formal taskings from the PSC or BOD. There have been several letters from at least 2 groups who felt that their particular situation merited consideration as an entity. As chair, I received copies of that correspondence but those issues were resolved at Headquarters. Other than continuing to deal with some frustration on the part of members of DXCC community over the issue of remote stations that come to my email mailbox and directly to me by phone or personal communication, and which indicate continuing unhappiness in some quarters with the possibility of cheating and unethical operation, the DXAC has not been formally tasked with any issue during 2016.

The DXAC remains available for any future task assignments from the PSC.

Respectfully submitted: 73



Gary E. Jones, W5FI  
Delta Division DXAC Representative  
DXAC Chair

## DX ADVISORY COMMITTEE

December 2016

There have been no formal changes in the membership of the DXAC

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Report #~~25-24~~ – ad-Hoc Legislative Advocacy Committee  
January 2017

I've been trying to write this report for days. It's a good thing I didn't choose a career as a novelist, else I'd be sitting at the computer just scratching my head and wondering where to begin.

I made an attempt at developing a time-line, but trying to cull through hundreds of emails written and received during the course of the past year regarding the Parity Act proved impossible. The process that led to the Bill's not passing on the final day of the 114<sup>th</sup> Congress was so fluid that events and times seemed to run into and through each other. There was just no way to comprehensively recite what happened on a daily basis.

I could say that Senator Nelson acted unfairly but that would not be an accurate statement. We could claim that we were outplayed, and that is partially true. We could say that we're such a small player with little political clout and no money to give to buy influence on the Hill, and that would be partially true. But none of these statements explain what happened, why we were successful beyond all expectations, why we weren't successful at the end, and what should we do about it going forward.

The fact is we were as completely successful as anyone could get without crossing the finish line. And while there never seemed to be enough time, our Bill and our effort went right down to the bitter end – the last day of the 114<sup>th</sup> Congress -- before we were taken out of the game. The fact is, however, that we had the support of 126 members of the House of Representatives (That's 30% of the total membership!) and our Bill passed in the House unanimously. Not too shabby.

We did ultimately, after a very frustrating period of negotiations, come to terms with the national association of home owners associations, CAI, which throughout the year attempted to thwart us at every turn on an increasingly aggressive basis.

And we did this in just 2 years time with tremendous effort on the part of the Board and the membership, and with the support of key members of Congress and their staff.

And we did this with little monetary expense.

So where did this go south? What did we do wrong?

First and foremost, we were outplayed by Senator Bill Nelson and his staff.

From the start, everyone knew that Senator Nelson had issues with the initial S.1635. In our early attempts to meet with his staff, we were put off and stonewalled. When the bill first came to the Senate Commerce Committee for mark-up, his staff was cool to our attempts to discuss the Bill. Nelson is the ranking minority member of the Senate Commerce Committee and his minority staff would not respond to ARRL, The Keelen Group, cosponsor and fellow Democrat Senator Blumenthal and even the Majority counsel's office, acting on behalf of Senator Thune, the Chairman of the Senate Commerce Committee. . Our concerns were realized at the markup in November 2015 when Senator Nelson publicly voted against S. 1685. We believe that this was due either to the large amount of HOAs in



Florida or to the fact that one or more retirement community developers have his ear. However, he has never articulated his opposition and so, today, we don't know what is driving him

We reached out to his office after the mark-up, but were unsuccessful in getting a meeting early on. We continued to visit Congressional offices looking for co-sponsors, focusing mostly at this point on Senate offices.

We learned that there is a completely different culture in the Senate than what we experienced in the House. Cosponsors don't grow on trees in the Senate. In the months following the Senate mark-up, we obtained 3 additional cosponsors. And we had little luck getting a meeting with Mr. Nelson's office. But in the Senate, cosponsorship is not a prerequisite for getting a Bill moving through.

The House bill was delayed getting out before the summer break. A sit-down in the House chamber delayed the bill by 2 precious weeks, moving the House mark-up to after July 4<sup>th</sup>. At the same time we were moving along in the House, we began a targeted email campaign to Florida. On June 22<sup>nd</sup>, the first 24 hours of the effort brought in over 1,000 emails to Senator Nelson.

The first mailings using the RallyCongress app brought a response from Senator Nelson to his constituents in which he wrote, "As this bill advances in the Senate, I believe it may be possible to find the right balance between the interests of amateur radio operators and preserving the rights of community associations. As such, I will continue working with my colleagues to try to reach a compromise."

This led us to believe that our efforts at negotiations were going to be fruitful as we saw this as an olive branch. This became part of his stock answer to the hams from Florida who wrote to him.

The Bill was successfully marked-up in the House in on July 13<sup>th</sup>, leaving us with a few months until the break for the election. We continued to visit Senate offices in anticipation of the full House vote, which took place on September 12<sup>th</sup>.

The next day we began a full email campaign to the Senate. The first round of emails brought over 55,000 total emails, with over 2,000 in Florida alone.

The Bill was sent to the Senate for consideration. We routinely found success with the amended bill. Some offices told us that they wouldn't have supported the bill in its original format, but had no problem at all with the amended bill. However, all efforts to reach out to Senator Nelson went unanswered for weeks. When we finally were finally granted an audience with his staff, we were met with a smokescreen.

We learned that the Senator had placed a hold on the bill during the hotlining procedure. This effectively stopped movement on the bill as, like a circuit set up in series, everything stops at the shorted circuit. The Senate adjourned for the election, leaving us with a low number of weeks to try to shake the bill loose.

We began a second email campaign just after the election as Congress returned to work. This time over 60,000 emails went out, including thousands more to Florida. We began a phone call campaign, asking all our members in Florida to call both Senator Nelson's Washington D.C. office as well as the closest local office to the member.

We had two final visits with Nelson's staff. No clear cut reason for his opposition was ever given. When a possible reason was given we had a viable rebuttal prepared. At our last meeting held just a few days before the end of the 114<sup>th</sup> Congress, his chief of staff suggested that we contact every HOA in Florida, including the "Florida branch of CAI", for their approval. This was a ridiculous request, and obviously one designed to be an impossible task in the time available. Another critique was that this was only the first time this Bill was considered. In other words, we haven't yet paid our dues; we hadn't been around long enough. This was insulting as well as irrelevant.

So, where do we go from here?

It would be a critical mistake if we were not to pursue the Parity Act in the 115<sup>th</sup> Congress. Over the past two and a half years we have learned a lot and have a much better understanding of the process than when we started out. We have established a positive brand for both Amateur Radio and the ARRL. We have since been sought out for our opinion on issues that are not specifically Amateur Radio issues. Our contacts on the Hill have also provided assistance to us on non-legislative issues. If we were to drop our presence on the Hill, we will lose whatever goodwill we have established, and would need to start from scratch in the future, which would be more costly and time-consuming.

There will be other issues that we will need to deal with in the future. Enforcement comes to mind, an issue that will most likely require Congressional intervention as the FCC has downsized their enforcement bureau and is unlikely to reestablish it bureaucratically. Spectrum protection is always necessary and sometimes our defense of Amateur allocations can come from Capitol Hill.

With a presence on the Hill, we have more value to other telecomm stakeholders. This should allow us to better develop our relationships with more influential groups like NAB, SBE, APCO, etc., so that we could reach out to them for help as well.

As to the Bill itself, we believe that we will have no trouble getting this passed in the House once again. The question is what strategies we can develop to get it through the Senate. We have strong support still with the Senate Commerce Committee leadership, and we expect that Senators Wicker and Blumenthal will once again sponsor the bill.

Last session we spent more time obtaining support in the House. This session, we need to redouble our efforts in the Senate. We can do that by first reaching out to Senator Nelson as a partner in bringing the bill forward. Another approach would be to reach out to CAI to join us in advocating with Senator Nelson. It may be unlikely that either approach would work, but an olive branch first might be the way to go. While we are moving ahead in Florida, we should also make mention of the fact that with the change of scenery in the House of Representatives, we will still have the support of Congressman Walden who is now the Chairman of the House Energy and Commerce Committee. We may be able to

return to the original strategy, this time having Representative Walden, reach out to the new, Republican FCC Chairman and persuade FCC to implement the terms of our Bill verbatim, leaving Nelson and the Senate out of the loop entirely.

We need to spend a good amount of time and effort in strengthening our grass-roots effort in Florida to create political pressure on Mr. Nelson. Unfortunately we received no support from ARRL Southeastern leadership the past two years. I expect that to change dramatically this year. We will need to reach out to the various Florida Section Managers to rally the troops. And we need to them to find those members in Florida who have access to Senator Nelson.

There is always the chance that we could tag onto a must pass, like a spending bill or an FCC reauthorization bill. We do have many supporters in Congress. The incoming Appropriations Chair is an original cosponsor of H.R. 1301.

In order for us to accomplish this task, we need the complete support of the entire Board. We cannot allow for a splintered group once the Board decides how it wants to proceed. Should the Board decide to support the continuation of the legislative agenda, there must be a 100% show of public support. Disparaging remarks made by individual Board members to the rank and file membership is devastating to our advocacy effort.

This cannot be allowed. The Board must maintain a policy of a united public face. Dissention outside of the Board room should be unacceptable. That is of the utmost importance when we lobby for the Parity Act – or any other legislative initiative for that matter. Behavior of this nature MUST be subject to sanction by the Board of Directors. If you can't accept adopted Board policy you have no business continuing to serve on the Board.

The ad-hoc Legislative Advocacy Committee performed its' tasks as required throughout the year. These tasks, as determined by the Board at the January 2016 meeting, were:

1. Implementation of the Board's Federal legislative program and goals.
2. Develop and evaluate strategies for passage of the Amateur Radio Parity Act.
3. Oversight of and coordination with legislative consultants and staff support efforts
4. Identification and recommendation to the Executive Committee of future legislative goals and strategies.

Over the past few weeks I've received a number of phone calls from devastated members in Florida, pleading that we continue our efforts to obtain passage of the Parity Act. These calls were unsolicited, and they make me even more resolute in my belief that we need to recommit ourselves to our efforts to obtain the passage of the Parity Act as the number one objective of ARRL Legislative Policy. To this end, the Committee will make the following proposal to the Board:

Be it moved the adoption of the following legislative objectives for the 115<sup>th</sup> Congress of the United States:

**Objective #1:** The ARRL seeks legislation instructing the FCC to amend its Part 97 rules to prohibit a private land use restriction from applying to amateur radio stations if the restriction:

- precludes communications in an amateur radio service,
- fails to permit a licensee of amateur radio service to install and maintain an effective outdoor antenna on property under its exclusive use or control, or
- is not the minimum practicable restriction to accomplish the lawful purposes of a community association seeking to enforce the restriction.

Objective #2: The ARRL opposes legislation that would lead to the reallocation of amateur spectrum or to sharing arrangements that reduce the utility of existing allocations.

Objective #3: The ARRL opposes legislation that diminishes the rights of federal licensees in favor of unlicensed emitters or encourages the deployment of spectrum-polluting technologies.

Objective #4: The ARRL seeks recognition of the unique resources, capabilities, and expertise of the Amateur Radio Service in any legislation addressing communications issues related to emergencies, disasters, or homeland security.

Objective #5: The ARRL supports the complementary legislative objectives of other radiocommunication services, particularly the public safety and scientific services that require spectrum access and protection from interference for noncommercial purposes that benefit the public.

I humbly ask for the support of the Board to allow us to continue our campaign for this most critical legislation.

Respectfully submitted,

Mike Lisenco, N2YBB

Chairman, ad hoc Legislative Advocacy Committee

ARRL - The national association for Amateur Radio™

**American Radio Relay League  
Annual Board Meeting, January 2017**

**MEMBERSHIP REPORT**

For the last several months, a Headquarters working group has been involved in an exploration of the challenges the organization faces in the years ahead. These challenges arise from shifting demographics, but also from changing interests among those who become radio amateurs.

The group conducted an extensive analysis of data obtained from the ReadEx Research 2015 Market Study, as well as prior ReadEx studies (back to the year 2003). ReadEx Research, with over 65 years of experience, is a full-service research company specializing in survey management support to publishers, media and associations.

The group's analysis concentrated on the largest segment of the amateur population: Technicians who have never joined the ARRL. This segment, while quite large, is not the wellspring of new members that many believe. For example, only 39% of this population is currently active in Amateur Radio. The top answer given as the primary reason for getting involved in Amateur Radio by all Technicians was "to support communications during disasters and other emergencies." But because public service activities are episodic in nature, and require less continuous learning, overall engagement has suffered over time. This marks a shift from the social aspects of Amateur Radio among this group to a more practical one.

Respectfully submitted by,  
Diane Petrilli, KB1RNF  
Membership Manager

## **Entry Level License Committee Report to the ARRL Board of Directors January 2017**

This is a preliminary report covering the areas the committee has reviewed since getting started in September. We expect to have a final report to the Board in July.

The Entry Level License (ELL) committee was created during the July 2016 Board Meeting with the following resolution:

41. Mr. Frenaye moved, seconded by Mr. Pace, that

WHEREAS the Novice Class examination was discontinued in 2000 and the Morse Code requirement was removed from all licenses a few years later, and the Technician Class license became the new entry point; and

WHEREAS, there was a considerable increase in difficulty for the new entry point, and new licensees were then accorded extensive privileges not appropriate for all newcomers, and

WHEREAS we now have more than 15 years of experience with the current FCC Technician Class license as that entry point; and

WHEREAS we need to improve upon our efforts to attract newcomers to Amateur Radio and pass along the tradition of emergency and communication communications support, developing interest in hands-on projects, and improving on science, technology, engineering, and mathematics educations;

THEREFORE BE IT RESOLVED that an ad hoc committee be established to examine the current license exam requirements for the Technician Class license and make recommendations for change, including consideration of a new entry license class, to the Board for possible changes that might be recommended to create a more targeted examination with a more limited set of privileges that would attract a new generation of amateurs.

After discussion, the proposal was ADOPTED.

Appointments to the committee were finalized in early September 2016 by President Roderick, and bi-weekly conference calls started on September 13<sup>th</sup>. We've had a total of eight conference calls since we started.

### **General Review**

We wanted to make sure our efforts were aligned with the ARRL Strategic Plan (adopted January 2016). Here is the most relevant section - near the beginning:

**GOAL 1: Grow Amateur Radio worldwide.**

ARRL, since its inception, has been of critical importance to the Amateur Radio Service. This goal is as important today as it has ever been. Today, Amateur Radio exists among many more modes of communication than it did a century ago. The growth of wireless technologies, such as cell phones and the Internet of Things\*, have had a profound effect on both spectrum competition and on the overall interest in and support for Amateur Radio. We must ensure that Amateur Radio is a vital and relevant service whose existence is justified by its contributions to society.

\* The “Internet of Things” is the networking of physical objects such as phones, automobiles, and other mass consumer products.

**Initiative 1.1: Encourage new entrants to Amateur Radio.**

**Initiative 1.2: Increase public awareness and knowledge of Amateur Radio.**

**Initiative 1.3: Support global interactions throughout Amateur Radio.**

**Initiative 1.4: Support and develop programs that prepare youth as the next generation of radio amateurs.**

We reviewed the Board motion and Strategic Plan, and adopted the following:

**What is the problem we're trying to solve?**

- Not enough new hams, especially under-30 new hams
- New hams are not getting involved enough to participate and renew
- Unable to compete with other technical hobbies available
- Need to be better at retaining and engaging Technician hams
- Amateur radio needs to embrace and develop new technologies

**The working mission:**

- Encourage students and young adults to learn about ham radio
- Train licensees for concepts necessary to be effective and successful
- Provide sufficient privileges to find value in ham radio
- Build in a strong incentive to upgrade to next license

**Other Countries**

We’ve looked at the entry level license requirements and privileges for a number of countries and focused on Australia, Canada and the United Kingdom who each have more than ten years experience with a revised examination and privileges. In general, the “Foundation” license parameters adopted by Australia and United Kingdom seem the most appealing. Basically they offer a low power entry level license with privileges on almost all bands and modes, and a relatively simple examination process.

**Requirements for Testing**

Testing requirements are set by guidelines from the ITU, as implemented by the FCC in the USA. The FCC gives fairly general guidance to the Volunteer Exam Coordinators on the examinations, who have a lot of latitude in the questions placed in the Question Pool for each license.

The FCC requires 35 question on the exam for Technician and General and 50 for the Extra, with the Question Pools having at least ten times more questions. They also specify ten topic areas that should be covered.

The Question Pools have more questions in them than required by the FCC. After the QP is finalized there are usually few (under ten) questions that may have to be removed because they are not clear enough or other reasons, so some extra questions are appropriate. The current Question Pool for Technician has 426 questions (76 extra), the General has 464 (114 extra) and the Extra has 713 (213 extra). Why would the exams be any more complicated than is necessary?

A readability review of the questions in the various question pools is enlightening. There are standard readability calculations to assess the reading level required to understand what is written. They are mostly based on the number of syllables in words and the number of words in sentences. Doing a review on the Question Pools results in a score of 50 in the Flesch scale, which equates to "fairly difficult to read" and "difficult to read" (12th grade to college level). That is not exactly a recipe for high school or middle school students except for the very brightest. To reach most audiences, a reading level of 7<sup>th</sup> or 8<sup>th</sup> grade is recommended by most sources.

## Recent ARRL Survey Data

We reviewed the relevant portions of the marketing survey ARRL conducted in 2015. Some primary items of interest from the survey showed:

The primary reason to get licensed for those licensed 2010 or later, influence significantly increased in these areas:

- website, online social networking, podcast, or blog
- community emergency manager/personnel
- to support communications during disasters and other emergencies
- to enhance personal safety
- to support wilderness, off-road, or other activity in remote areas

Those first licensed in the 2010 or later studied:

- by yourself 65%
- in a radio club-sponsored class 23
- under 10% each
  - with help from a friend, neighbor/co-worker
  - with help from a family member
  - with help from a local instructor not associated with a club or school
  - in a school-sponsored class

For those licensed 2010 or later, just 8% were under age 25, and only 20% were under age 35. The largest group of new licensees was in the 55-64 age range (27%), about the same for those licensed before 2010 (31%).



## **Review the History of License Class Changes**

We took a close look at the various changes in Amateur Radio licensing over the last 100 years, especially the last 25. **Appendix A** has a summary of relevant FCC actions and shows that action in the last ten years has been relatively quiet on this front. The last major changes were in 2006, after WRC-03 eliminated the requirement for Morse code testing.

## **Current ARRL ELL Policy Position**

The ARRL Board has been clearly on record that the Technician license is not a satisfactory entry level license since the FCC discontinued the Novice in late 1999 (FCC 98-143). After an ARRL proposal in 2002 for “refarming” the Novice bands by expanding the phone bands on 80/40/15m, the FCC made that specific change in 2006 (and more than we asked for on 80m phone).

In 2003 the World Radio Conference (WRC-03) removed the requirement for Morse code testing for any Amateur Radio license. In 2004 the ARRL petitioned the FCC (RM-10867) with an entry-level license proposal, consolidation of six license classes into three (Novice, General, Extra), and to retain the 5 wpm requirement for the Extra. The introductory text in that proceeding is in **Appendix B**.

The 2004 ARRL filing proposed merging the existing Technician/TechPlus into General, and Advanced into Extra. The new Novice would have a 25 question exam, allow 100w on General segments on 80/40/15, 50w on 10/6/2m, plus 222/430 MHz. They would not be able to use automatic control, be a control operator, operate beacons, or conduct remote space control.

A year and a half later, the FCC proposed (FCC 05-253) to simply drop the CW requirement for all license classes. They did not agree with new entry level license proposed by ARRL nor to consolidate license classes. ARRL commented again, forcefully pointing out why the Technician was not suitable as an entry level license and why combining some license classes would be a reasonable way to simplify FCC rules. In late 2005 the FCC chose to simply remove the CW requirement for all license classes (now just Technician, General and Extra).

## **Significant Influences**

Since the last major changes in license classes by the FCC there have been some significant changes to both the Amateur Radio world and the external world.

In the past dozen years, for example, the use of cell phone has become the norm, in 2014 64% of all adults had a smart phone, up from 35% in 2011. Of those 18-29 years old, the number was 85%. More than half of all smart phone users have used it to get help in an

emergency situation. (Pew research - <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>). That has taken some percentage of ham radio usage off the air, particularly at VHF where repeater activity has declined by almost all accounts.

There has been a significant increase in the educational focus on Science, Technology, Engineering and Mathematics fields. There is also a fast growing Maker movement that is based on hands-on, do-it-yourself hobbies and activities. Both of these trends should favor an increasing interest in Amateur Radio.

On the ham radio side, CW activity has remained high, even though not a required part of the exam, as has SSB, but digital activity has grown substantially. ARRL RTTY Contest activity has more than doubled since 2004. PSK-31 started to become popular around 2000, and Joe Taylor started his ham radio software career in 2001 with WSJT. Since then the number of digital modes has multiplied as has the amount of activity. For newcomers, it is way more popular than CW (which is the only mode allowed on HF bands below 10m by Technician licensees).

For all of these reasons, it is worth examining what the entry level license offers, what is required to get started, and recommend changes for improvement. Over the last 15 years, the world has changed, as has Amateur Radio, while the testing and operating privileges for an entry level license have become less relevant.

### **Current FCC Licensees**

Since the FCC rules change to eliminate CW testing (and not implement suggested ARRL changes) in 2006 went into effect in February 2007, the growth of ham radio has been relatively modest at best. (Date from AH0A.org)

	<b>Novice</b>	<b>Technician</b>	<b>General</b>	<b>Advanced</b>	<b>Extra</b>	<b>Total</b>
Feb 2007	22,891	323,493	131,463	69,025	108,605	655,477
Dec 2016	10,012	371,560	172,807	45,071	143,337	742,787
Pct Change	-56.3%	+14.9%	+31.4%	-34.7%	+32.0%	+13.3%

Over those almost 12 years, overall Amateur Radio growth has barely been 1% per year, in an environment of huge technological change with ubiquitous smart phones and Internet usage now commonplace. The peak of that growth was in 2009 (2.85%) and 2010 (1.98%) after the CW requirement was dropped – and that may have accounted for an extra 30-35k new licensees. In the previous ten years, the number of licenses peaked at 711k in 1996 and was steady or slowly dropping until 2007.

### **The Committee’s Entry-Level License Draft**

The committee looked at previous ARRL filings as well as entry licenses in several other countries.

We're looking at a couple of ways to accomplish a change, one is to add a new license class that offers low power use of all modes on most HF and VHF bands, but that has to be accompanied with changes in the Technician to allow the same access. The 2004 ARRL approach was to have a simple entry level license and merge the Technician into the General Class license. Both have merits and we'll be examining them carefully. Our initial thinking is that a new license class would be the best path. There is also consideration of special call signs, a limit on the length of the license, and a practical component of the exam.

### **Gathering Input from Members**

A draft survey of members to gather their input has been created but before moving forward we wanted to give a progress report to the Board on our work to date and gather any input on progress to date.

### **FCC Issues**

The FCC has been reluctant to make changes in the licensing system in the past, as shown is FCC 05-253 and earlier proceedings. Some of that appears to be a simple belief that removing the CW requirement would lead to a large increase in licensed amateurs. It didn't, though growth has resumed. Another consideration voiced was the cost and effort it would take to change the existing Universal License System used to track license holders.

This may be our toughest obstacle to any change, so we'll need to put in extra effort to make the best case possible if the ARRL proposes changes.

### **Amateur Community Questions**

The last time the FCC dealt with the license class issue, the controversial topic was the FCC's intention to eliminate the 5 wpm CW test from all license classes. After a lot of discussion and member input, the ARRL supported retaining the 5 wpm test for the Extra Class license only.

There were also a fair number of people who commented that they did not support the ARRL proposal for a new Novice license and combining the Novice/Tech/TechPlus into General or combining the Advanced into the Extra Class. It's unclear if member sentiment has significantly changed in the intervening 13 years.

## **Needed Improvements in the “Supply Chain”**

During our many discussions about the entry level license to date, it became clear from discussion by all committee members that the process for generating new hams that starts with educating the general public about Amateur Radio, through someone deciding to get licensed, studying for the exam, taking the examination, passing the exam, and finally getting on the air and experiencing the different facets of ham radio, has to work from end to end in order to keep Amateur Radio vibrant and growing.

Each part of that “supply chain” has to work, and work well, in order for us to generate new hams, and to attract the generations that will follow us. Here are some high level notes about it, and we expect to have some more refined input and recommendations in our final report.

- We need to better understand what will interest people in ham radio, and to target those individuals and groups with the most promise.
- Once someone expresses interest, do we have the right processes to match them with the tools and help needed to get licensed, and classroom opportunities?
- Today, most people study for the exam by themselves, how can we improve upon the tools we have available to them?
- Most people, particularly those under age 30, use smart phone or other electronic tools, not books, to access and learn about the world. We should be utilizing those tools to reach people who might be interested in being licensed.
- The FCC has not made aggregate data available on the age of those being licensed or the age profile of the current Amateur community so it is difficult to know where to make improvements in efforts to attract new hams.
- The current testing process is people and paperwork intensive, and has not changed significantly since it began 33 years ago. Online testing would be a huge boost.
- Getting people on the air after being licensed is an often overlooked area that needs concentration and effort and should be of prime importance to every radio club and local group.

## **What Can Be Done Now?**

- Work to better understand what non-hams think of Amateur Radio and what might attract them to work for a license.
- Look at ways to modernize the training and licensing process to make them more widely available.
- Get aggregate age data from the FCC so we can understand more about existing and new licensees.
- Improve upon what we have in place today to work with external marketing to find potential hams through getting them on the air once licensed.

## Next Major Steps

- Decide to go ahead with member survey
- Should there be a new license class or modify Technician?
- How receptive will the FCC be to change
- Should we recommend one or several options for an entry level license?
- What other suggestions to we have for the full process from learning about Amateur Radio to getting licensed and on the air works from end to end?
- Final report to ARRL Board in July

## Summary

Everyone on the Entry Level License Committee has been a great contributor and no one has been shy in expressing opinions and suggestions. They have made my job as Chairman easier as a result.

*Tom Frenaye*

## Committee members

Tom Frenaye, K1KI, chairman

Bonnie Altus, AB7ZQ

Tom Delaney, W8WTD

Maria Somma, AB1FM

Bruce Blain, K1BG

Andrea Wayward, KG4IUM

Paul Veal, N0AH

Ward Silver, N0AX

Appendix A – License Change Timetable

Appendix B – ARRL intro text in RM-10867 to create a new license plan

## APPENDIX A

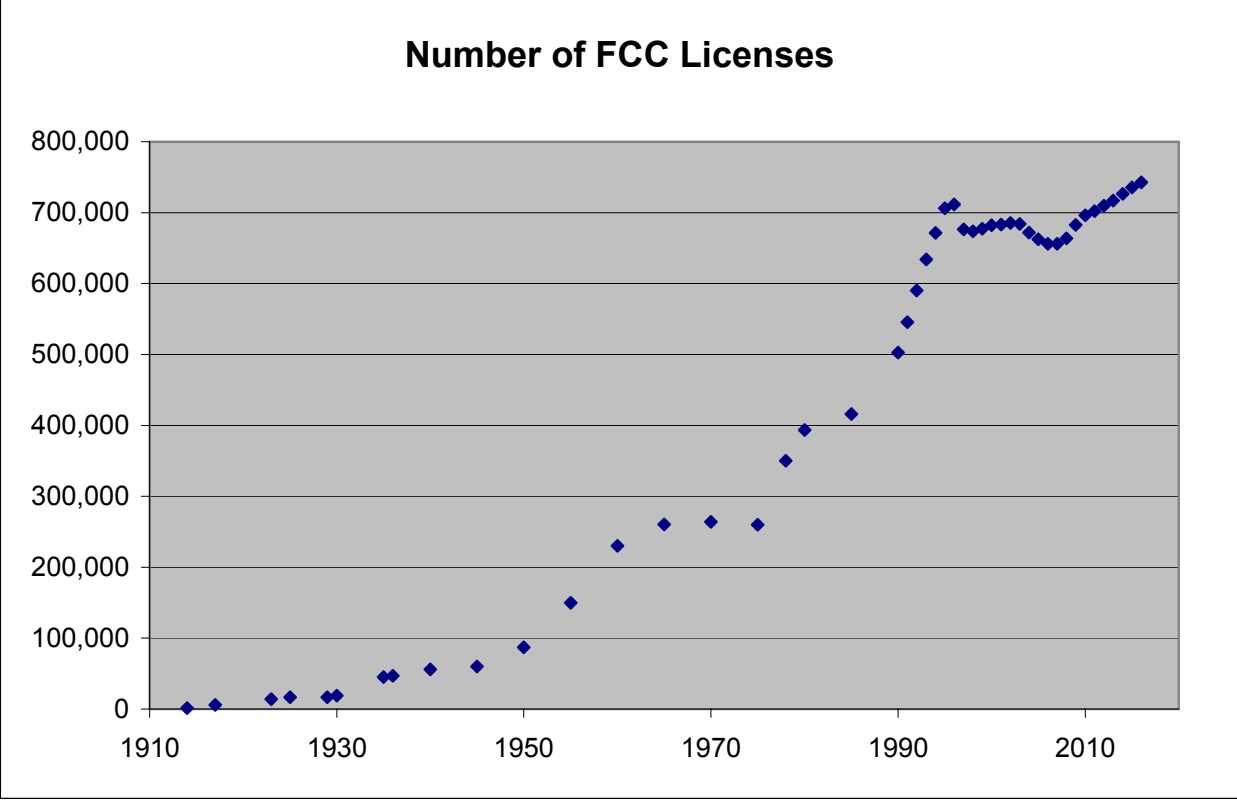
### License Timetable

#### Year # hams Licensing changes

2016	742,787	
2015	735,405	
2014	726,275	FCC (12-283) exam credits, remote exams
2013	717,201	
2012	709,575	
2011	702,056	FCC (09-209) issues new vanity and club callsign rules
2010	696,041	
2009	682,497	
2008	663,564	
<b>2007</b>	655,842	
2006	656,068	FCC (04-140) 80/40/15m SSB expansion, N/T get Gen CW on 80/40/15; N/T get 28-28.3 CW/digital; FCC (05-235) drops Morse Code requirement
2005	662,600	
2004	671,837	FCC (03-104/04-37) BPL approved; ARRL (RM-10867) proposes new entry level license
2003	684,059	ITU drops Morse Code requirement; FCC (02-98) grants access to 5 MHz;
2002	685,308	ARRL Novice refarming proposal RM-10413
2001	683,037	Club licenses now handled through VECs, FCC CORES license admin system established
<b>2000</b>	682,240	
1999	677,392	FCC (98-143) Restructuring. Licenses for Novice/TechnicianPlus/Advanced no longer issued, 20wpm Morse eliminated, General/Extra now 5wpm
1998	673,823	PSK-31 starts; US joins CEPT for international licensing
<b>1997</b>	676,506	FCC (95-57) RF safety questions(5 ea) added to Question Pools, 1x1 callsign program started; FCC license renewal online w/ULS
1996	711,759	FCC (93-62) new RF safety rules; VECs can now handle and send renewals, modifications, changes to FCC
1995	705,994	FCC (93-305) new vanity callsign program; FCC (94-59) new rules for digital modes; FCC (94-40) access to 219-220
1994	671,489	FCC (93-267) instant licensing after VE pass; VECs can send exam info to FCC electronically
1993	634,017	FCC (92-154) Novice exam added to VEC program FCC (93-62) RF safety rules
1992	590,088	
<b>1991</b>	545,548	FCC (90-55) splits Technician into Technician(no Morse Code) and TechnicianPlus
1990	502,677	
1989		FCC (88-467) Access to 18 Mhz; FCC (PRB-3) declines to est privatized callsign program; FCC rewrites Part 97; ARRL proposes Communicator no code license (RM-6995)
1988		FCC (87-14) removes 220-222
<b>1987</b>		FCC (86-161)Novice enhancement. Technician/General split into two 25 questions exams, Novice/Technician get 28.3-28.5 SSB access; FCC (85-196rev) requires one QP
1986		FCC (85-196) turns Question Pools over to VECs; FCC (85-22) rules on repeater coordination
1985	415,856	FCC (84-960) grants access to 24 and 902 mhz bands; ARRL (RM-5038) files for Novice enhancement; FCC (85-87) sat dish pre-emption (OTARD); FCC (PRB-1) pre-emption
<b>1984</b>		FCC (83-28) FCC proposes and drops CW elimination; ARRL joins FCC VEC program, FCC (82-83) HF phone bands expanded; FCC (83-337) licenses all 10-year now
1983		FCC (83-27) VEC program established; FCC (82-624) power limit now 1500w out; Congress passes bill allowing VEC reimbursement
1982		FCC (82-727) Novice exam process revised; Access to 10 Mhz granted
1981		
1980	393,353	FCC (80-739) implements some WARC-79 decisions
1979		Packet radio starts
1978	350,000	Novice now 5-years and renewable, Technicians get full access 50 Mhz and up, new callsign system
1977		Novices can run 250w, Conditional license eliminated
1976		
1975	260,091	
1974		
1973		
1972		Expanded Technician access to 2m, Novices can use VFO, HF phone band expanded
1971		
1970	263,918	Initial buildup of 2m FM repeaters
1969		ARRL proposes ful VHF for Techs, plus 10m and Novice CW

1968 SSTV authorized  
 1967 Novices lose 2m, now 2-year license  
 1966  
 1965 260,301 Novice changed to two years?  
 1964 Incentive licensing implemented  
 1963 63-67 - Incentive licensing debate  
 1962  
 1961 First Oscar satellite  
 1960 230,000  
 1959  
 1958 Access to 11m withdrawn, new CB license created  
 1957  
 1956  
 1955 150,000 SSB promoted over AM for HF voice; Technician gets 6m; 160m access  
 1954  
 1953 Novices get access to 40m  
 1952 Major changes in rules; new 15m band, voice allowed on 40m  
 1951 Licenses A B C turned into Novice Technician Conditional Advanced Extra; Novice is 1-year (80m, 11m, 2m)  
 1950 87,000  
 1949  
 1948  
 1947 Hams lose 29.7-30 and 14.350 to 14.400  
 1946 5 and 2.5 meters changed to 6 and 2 meters  
 1945 60,000 Ham radio back after WW2  
 1944  
 1943  
 1942  
 1941  
 1940 56,000 WW2 restrictions on ham radio start  
 1939  
 1938 New bands - 2.5m 1.25m  
 1937  
 1936 46,850  
 1935 45,000 FM defined by Armstrong, ARES started  
 1934 FCC established (replaces FRC)  
 1933 Field Day started, FRC requires hams to be tested in person; license name changed to A B C  
 1932 Amateur First Class (replaced Amateur Class)  
 1931  
 1930 19,000  
 1929 16,829  
 1928  
 1927 Federal Radio Commission established; Amateur Class (renamed from Amateur First Grade) Temporary Amateur (was Amateur Second Grade); international prefixes defined  
 1926  
 1925 16,500 IARU established  
 1924 New bands - 80 40 20 and 5m  
 1923 14,000 Extra Class license created; CW becoming dominant over sparkgap  
 1922  
 1921  
 1920  
 1919 WW1 restrictions end  
 1918  
 1917 6,000 WW1 restrictions start  
 1916

1915  
 1914 1,200 ARRL established  
 1913  
 1912 Licensing starts under Dept of Commerce; Amateur First and Second Grade  
 1911  
 1910  
 1909 First radio clubs started  
 1908  
 1907 Deforest - triode  
 1906  
 1905  
 1904 Fleming - vacuum tube  
 1903  
 1902  
 1901 Marconi - signals cross Atlantic  
 1900





**Appendix B**  
**Excepts from RM-10867**  
**filed by ARRL with the FCC 1/27/2004:**  
**pages 8-9-10**

10. ... ARRL suggests that consideration of Morse telegraphy and nothing more in the course of evaluation of license structure would be insufficient and short-sighted. The promotion of education, technical self-training, and advancement of interest in Amateur Radio technology requires consideration of other, interrelated issues at the same time. It is not sufficient to merely eliminate or retain Morse telegraphy as a licensing requirement, as there are other issues that, looking forward for the next ten or fifteen years, require consideration. There are three primary concerns now. These are: (1) the fact that the only current entry-level license class, the Technician class, because it offers operating privileges principally limited to the VHF bands and above, leaves newcomers to the Amateur Service in an isolated position of conducting only local, rather than worldwide, communications, and thus provides very little encouragement to progress and develop technical and operating skills; (2) the fact that the entry level Technician Class license examination is (of necessity) overly comprehensive in its subject matter,<sup>6</sup> and is therefore a deterrent to newcomers and inadequate as an entry-level license class; and (3) although the Commission has determined that three license classes is the proper number, that was not achieved in Docket 98-143. There remain officially six license classes at the present time, and there will be all six for the indefinite future, as the Novice and Advanced Class licenses are renewable, and the Technician Plus class is retained with different privileges from the Technician Class. Each of the above issues can and should be dealt with domestically, now that Article 25 of the Radio Regulations has been revised, and now that there is some experience with the rules adopted in WT Docket 98-143, and with the shortcomings of the current Technician Class license as an entry-level license class.

<sup>6</sup> This is not to suggest that the examination is overly difficult. However, a look at the test preparation materials for Technician class licensees reveals that the examination is overbroad in terms of the subject matter on which an entry-level examination candidate must be prepared to be examined, and hence the Technician license is inadequate as an entry-level license class. A recent survey commissioned by ARRL reveals that a large proportion of recent licensees feel that the examinations were not relevant to their Amateur Radio operations.

11. Those who advocate the elimination of the Element 1 examination requirement and nothing more may argue that theirs is a “simple” plan which could be implemented without much regulatory fanfare. That argument, however, misses the point. In fact, merely eliminating the Element 1 requirement leaves legacy license classes and unnecessary remnants of the old, 6-class license structure before the Docket 98-143 proceeding. It also fails to address the significant problem perceived by ARRL: that the Technician Class license is, for too many, a “dead end” to what might otherwise be an active, progressive interest in Amateur Radio, technical self-training, and incentive-based educational progress in the many facets of the avocation. ARRL has developed a comprehensive licensing plan which both simplifies the license structure, as the Commission intended to do in Docket 98-143, and which also makes Amateur Radio more relevant to newcomers and better preserves the incentive upgrade system. It does this by creating a true entry-level license class which at once requires a reasonable volume of material on which a candidate is examined, and which offers sufficient operating privileges as to expose the entry-level Amateur to a wider variety of the facets of the avocation than is available to current Technician Class licensees. It creates a balance between these two seemingly conflicting goals. Once implemented, the following licensing plan will prove far simpler than the present scheme, as well as one more consistent with the Commission’s goals and objectives for the Amateur Service. Finally, the proposal establishes for this entry-level license class a portfolio of operating privileges which are consistent with an examination that would not include material that is inappropriate or irrelevant at the entry level.

(For the full ARRL proposal, the full text of RM-10867 is at <https://ecfsapi.fcc.gov/file/6516083735.pdf> )

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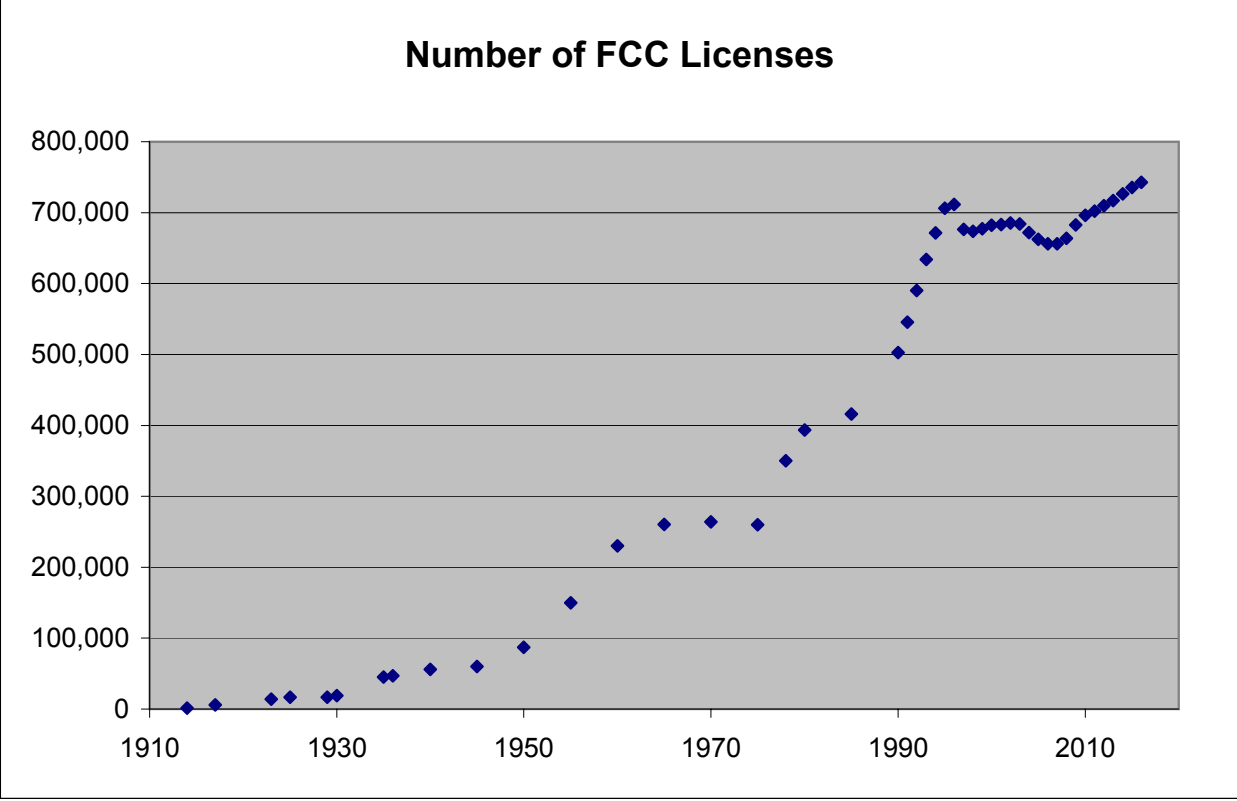
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2003	684,059	ITU drops Morse Code requirement; FCC (02-98) grants access to 5 MHz;
2002	685,308	ARRL Novice refarming proposal RM-10413
2001	683,037	Club licenses now handled through VECs, FCC CORES license admin system established
<b>2000</b>	682,240	
1999	677,392	FCC (98-143) Restructuring. Licenses for Novice/TechnicianPlus/Advanced no longer issued, 20wpm Morse eliminated, General/Extra now 5wpm
1998	673,823	PSK-31 starts; US joins CEPT for international licensing
<b>1997</b>	676,506	FCC (95-57) RF safety questions(5 ea) added to Question Pools, 1x1 callsign program started; FCC license renewal online w/ULS
1996	711,759	FCC (93-62) new RF safety rules; VECs can now handle and send renewals, modifications, changes to FCC
1995	705,994	FCC (93-305) new vanity callsign program; FCC (94-59) new rules for digital modes; FCC (94-40) access to 219-220
1994	671,489	FCC (93-267) instant licensing after VE pass; VECs can send exam info to FCC electronically
1993	634,017	FCC (92-154) Novice exam added to VEC program FCC (93-62) RF safety rules
1992	590,088	
<b>1991</b>	545,548	FCC (90-55) splits Technician into Technician(no Morse Code) and TechnicianPlus
1990	502,677	
1989		FCC (88-467) Access to 18 Mhz; FCC (PRB-3) declines to est privatized callsign program; FCC rewrites Part 97; ARRL proposes Communicator no code license (RM-6995)
1988		FCC (87-14) removes 220-222
<b>1987</b>		FCC (86-161)Novice enhancement. Technician/General split into two 25 questions exams, Novice/Technician get 28.3-28.5 SSB access; FCC (85-196rev) requires one QP
1986		FCC (85-196) turns Question Pools over to VECs; FCC (85-22) rules on repeater coordination
1985	415,856	FCC (84-960) grants access to 24 and 902 mhz bands; ARRL (RM-5038) files for Novice enhancement; FCC (85-87) sat dish pre-emption (OTARD); FCC (PRB-1) pre-emption
<b>1984</b>		FCC (83-28) FCC proposes and drops CW elimination; ARRL joins FCC VEC program, FCC (82-83) HF phone bands expanded; FCC (83-337) licenses all 10-year now
1983		FCC (83-27) VEC program established; FCC (82-624) power limit now 1500w out; Congress passes bill allowing VEC reimbursement
1982		FCC (82-727) Novice exam process revised; Access to 10 Mhz granted
1981		
1980	393,353	FCC (80-739) implements some WARC-79 decisions
1979		Packet radio starts
1978	350,000	Novice now 5-years and renewable, Technicians get full access 50 Mhz and up, new callsign system
1977		Novices can run 250w, Conditional license eliminated
1976		
1975	260,091	
1974		
1973		
1972		Expanded Technician access to 2m, Novices can use VFO, HF phone band expanded
1971		
1970	263,918	Initial buildup of 2m FM repeaters
1969		ARRL proposes ful VHF for Techs, plus 10m and Novice CW

1968 SSTV authorized  
 1967 Novices lose 2m, now 2-year license  
 1966  
 1965 260,301 Novice changed to two years?  
 1964 Incentive licensing implemented  
 1963 63-67 - Incentive licensing debate  
 1962  
 1961 First Oscar satellite  
 1960 230,000  
 1959  
 1958 Access to 11m withdrawn, new CB license created  
 1957  
 1956  
 1955 150,000 SSB promoted over AM for HF voice; Technician gets 6m; 160m access  
 1954  
 1953 Novices get access to 40m  
 1952 Major changes in rules; new 15m band, voice allowed on 40m  
 1951 Licenses A B C turned into Novice Technician Conditional Advanced Extra; Novice is 1-year (80m, 11m, 2m)  
 1950 87,000  
 1949  
 1948  
 1947 Hams lose 29.7-30 and 14.350 to 14.400  
 1946 5 and 2.5 meters changed to 6 and 2 meters  
 1945 60,000 Ham radio back after WW2  
 1944  
 1943  
 1942  
 1941  
 1940 56,000 WW2 restrictions on ham radio start  
 1939  
 1938 New bands - 2.5m 1.25m  
 1937  
 1936 46,850  
 1935 45,000 FM defined by Armstrong, ARES started  
 1934 FCC established (replaces FRC)  
 1933 Field Day started, FRC requires hams to be tested in person; license name changed to A B C  
 1932 Amateur First Class (replaced Amateur Class)  
 1931  
 1930 19,000  
 1929 16,829  
 1928  
 1927 Federal Radio Commission established; Amateur Class (renamed from Amateur First Grade) Temporary Amateur (was Amateur Second Grade); international prefixes defined  
 1926  
 1925 16,500 IARU established  
 1924 New bands - 80 40 20 and 5m  
 1923 14,000 Extra Class license created; CW becoming dominant over sparkgap  
 1922  
 1921  
 1920  
 1919 WW1 restrictions end  
 1918  
 1917 6,000 WW1 restrictions start  
 1916

1915  
 1914 1,200 ARRL established  
 1913  
 1912 Licensing starts under Dept of Commerce; Amateur First and Second Grade  
 1911  
 1910  
 1909 First radio clubs started  
 1908  
 1907 Deforest - triode  
 1906  
 1905  
 1904 Fleming - vacuum tube  
 1903  
 1902  
 1901 Marconi - signals cross Atlantic  
 1900



On Saturday January 16<sup>th</sup>, 2016, the board passed a motion to examine the current Divisions and investigate options to change them or leave them intact(see Item A – Motion).

A committee was formed comprised of the following Directors:

Dwayne Allen, WY7FD, Director, Rocky Mountain Division  
Jim Boehner, N2ZZ, Director, Roanoke Division  
Kent Olson, KAØLDG, Director, Dakota Division  
Doug Rehman, K4AC, Director, Southeastern Division  
Bob Vallio, W6RGG, Director, Pacific Division

We met both in person at the July 2016 Board Meeting as well as many times via Go To Meeting to discuss the task.

Here are some overall observations which are formed from research (see Item B – Historical Notes):

- Divisions increased over time for better representation.
- During the increasing of the divisions, there was never an “absorption” or removal of any division (existing divisions have always existed since they were formed). The BoD did reduce the size of some divisions (by forming new divisions) to better serve the membership and ease travel burdens on the respective directors.

Our discussions and conclusions revolved around the following reapportionment ideas as directed by the motion:

1. Realigning Division Boundaries – This solves a problem that would waste members money with no real benefit. The membership has not asked for this.
2. Decreasing the number of Divisions – This would be counterproductive since the divisions have evolved from six to fifteen over the years to better serve the membership.
3. Increasing the number of Divisions – While this would better serve the membership from the standpoint of Director travel (i.e easier for a Director to visit his/her Division), increasing the number on the Board would become unmanageable. For example, if we were to create 50 Directors who only served their respective state, decisions at the BoD meetings would be problematic at best, and the Board would be ineffective.
4. Weighing a Director's vote based upon the number of members they represent – The Board was never created as a “House of Representatives”. If that were the case, it would resemble #3 above and be ineffective. Should we create a bicameral BoD? Obviously silly.....
5. Do nothing – this is the easiest for numerous reasons since it answers many questions:
  1. Solves a problem that doesn't exist – why potentially create a new problem?
  2. Costs the membership nothing
    1. Costs of realignment are vastly under estimated; Division / Section alignment embedded in dozens of ARRL documents which would have to change, IT work etc.
    2. Would the costs incurred really solve anything other than silencing a topic that should never have been brought up?

3. Reapportioned of Divisions could disrupt existing relationships that have been in existence for decades (EmCom, etc.)
4. This was not brought to the Board by the membership as a concern or recommendation. The Board had not previously seen this report, and therefore we did not solicit the membership for comments as the motion indicates. We also did not continue with the other items listed due to our conclusions (there is no support for reapportionment so items 2-6 were deemed unnecessary to investigate).
5. Since we find ourselves embroiled in large issues, introducing such a recommendation would only make the membership question whether the Board is fit to serve them, and ask why we are wasting our time on an issue that they have no concern over. Most members don't know who their Director is and only care if the ARRL is making good decisions so amateur radio will continue on. In today's environment of instant communication, the membership enjoys the ability to communicate with their Director anytime they desire. Every member on this committee has entertained questions and concerns from hams they represent, and perhaps never met, via email. Hamfests and club meetings are small venues for our membership to discuss things with us and members who stop by and visit at the ARRL booth have never said that they can't contact us or you don't represent them based on the size of the division. This committee was formed from a motion at the January 2016 BoD meeting, and those minutes of that meeting were published both in QST and on our website yet none of the directors have heard from their constituents asking for reapportionment (in fact, some asked why we were discussing it). Not that this topic could reach the heights of the incentive licensing debacle years ago, but introducing and acting on this could prove detrimental to the ARRL.

In conclusion, on August 4<sup>th</sup>, 2016, the committee voted, (by a 4 to 1 vote - Director Rehman voted no) recommends to the Board to do nothing (leave the current Divisions intact as they are), and move on to more pressing issues that face amateur radio today (passing the Amateur Radio Parity Act, ensuring our frequencies are not gobbled up by industry, NTS issues, increasing membership, getting more youth involved, etc., etc., etc., ).

Respectfully submitted:

Dwayne Allen, WY7FD, Director, Rocky Mountain Division

Jim Boehner, N2ZZ, Director, Roanoke Division

Kent Olson, KAØLDG, Director, Dakota Division

Bob Vallio, W6RGG, Director, Pacific Division – Acting Committee Chairman

**Item A – Motion passed by the BoD, January 16<sup>th</sup>, 2016:**

43. On the motion of Mr. Rehman, seconded by Mr. Lisenco, the following was ADOPTED:

WHEREAS, the current Division boundary lines were established many decades ago and populations of amateurs have changed;

WHEREAS, the largest Division has close to five times the number of members of the smallest Division;

THEREFORE, the Board of Directors seeks an equitable means by which the members may be represented and hereby creates the Reapportionment Committee which shall consist of five members selected immediately following the passage of this motion using the following process:

The Fifteen Divisions are divided into five groups based upon the member population:

Group 1: Dakota, Hudson, and Midwest

Group 2: Rocky Mountain, Delta, and New England

Group 3: Central, Pacific, and Northwestern

Group 4: Great Lakes, West Gulf, and Roanoke

Group 5: Southwestern, Atlantic, and Southeastern

The three Directors from each Group will choose one from among themselves to serve on the Reapportionment Committee. Where a Director in the Group has been elected to an Officer position, the Vice Director for that Division shall participate in the selection process in that Director's stead and is eligible to be selected as the representative for that Group.

The five representatives selected by the five Groups will then select a Chairperson for the Reapportionment Committee.

The committee shall explore at minimum these possible means of reapportionment:

1. Realigning Division Boundaries,
2. Decreasing the Number of Divisions,
3. Increasing the Number of Divisions,
4. Weighting a Director's Vote Based Upon the Number of Members They Represent, and any other means they may determine.

Once the committee has reached its final list of possible means of reapportionment a preliminary report will be issued to the Board and then the membership will be solicited for their comments.

The committee shall make its report to the entire Board of Directors no later than the January 2017 Board of Directors Meeting.

The following information for each possible means of reapportionment shall be included in the report:

1. The relative level of support by the membership for that means of reapportionment
2. Potential positive and negative outcomes, both at the Division level and national level, created by that means of reapportionment
3. Potential issues with implementing that means of reapportionment
4. A chart for that means of reapportionment indicating the weight of a member's representation relative to members in other Divisions
5. A process and estimated timeline for implementing that means of reapportionment
6. An estimated cost for implementing that means of reapportionment (i.e. cost of elections if required, etc.)

The Reapportionment Committee may hold committee deliberations and votes independent of the times established for meetings of the Board of Directors or its standing committees.



The Reapportionment Committee shall conduct its work, to the greatest extent feasible using electronic means. In-person meetings are to be held only if the need for one overrides the cost consideration of the meeting. In-person meetings may be held in a manner that minimizes extra expense, such as in conjunction with meetings of the ARRL Board of Directors, or standing Board committee meetings at which one or more members of the committee would otherwise attend.

### **Item B – Historical notes:**

These notes are from information I harvested from various issues of QST that are found on the ARRL website. One difficulty and caveat of note is the fact that searching the back issues of QST is not an easy task. The search criteria must match either the title of the article or closely resemble it to get results, or search each respective issue. I have revisited this search a few times with differing success based on new search criteria. Some of the information in the minutes was informational only and not specifically described in detail, especially if a committee was tasked. For instance, “The XXX Committee's report was discussed”. This makes it hard to figure out what the Board was thinking and why they decided things. At some point in time, the “Canadian General Manager” was on the Board and considered a voting member. The Directors were also not the only voting members as the President, Vice President and others (not sure based on minutes) voted too. Obviously this has changed. Bottom line, there is probably information that I missed or have yet to find and some articles I did find did not include the additional pages when the article wasn't sequentially listed in QST (i.e. continued on page 127). I do have these excerpts from the various QSTs if anyone desires to see them. I hope this research is somewhat complete and accurate, but there probably is more out there to complete the picture buried deep in the ARRL archives.

### **Issue of QST:**

- May 1917
  - Six (6) Divisions exist– Atlantic, East Gulf, Central, West Gulf, Rocky Mountain, & Pacific
- June 1920
  - Six (6) new divisions created by the BoD: New England, Roanoke, Delta, Midwest, Dakota, & Northwestern – There are now twelve (12) divisions.
- Sept 1924
  - East Gulf changed to Southeastern
  - Interesting tidbit, Cuba and the Isle of Pines (??) were then in the SE Division
- April 1926
  - The first time all Directors present for BoD meeting (no airlines back then!)
- April 1927
  - Agreed to a one year study of division boundaries – nothing found in 1928 minutes of the study or conclusions
  - Another interesting tidbit, added the Philippines to the Pacific Division
- July 1928
  - Considered Division boundaries, made no changes

- 1929-1930
  - Hudson Division added at some point – I couldn't specifically find it, but articles indicate it exists in July 1930
  - Now there are thirteen (13) divisions
- July 1931
  - The BoD did nothing regarding a discussion regarding division boundaries, but asked the Executive Committee to study further.
- July 1932
  - Voted to print the minutes of the BoD meetings in QST
- June 1935
  - Southwestern Division created which includes Los Angeles, San Diego, and Arizona (taken from the Pacific Division).
  - Now there are fourteen (14) divisions
- June 1936
  - First discussed splitting the Central Division to form the Great Lakes Division – rejected.
- July 1939
  - “Alternate Director” position approved
- June 1941
  - Philippine Islands removed from the Pacific Division (WW 2)
- July 1946
  - Discussion and vote to create the Great Lakes Division and reduce the existing divisions to ten (10) based on the FCC's adding the tenth call district ( Ø ) - vote failed.
  - The minutes were not complete, but from a different article from the same QST issue, I found they did create the Great Lakes Division from the Central Division – now there are fifteen (15) Divisions as we know them.
  - A “Planning Committee” was established to study the desirability of reapportioning the divisions and a report was to be given at the next BoD meeting.
- May 1947
  - The Great Lakes Division now shows up in the BoD minutes
  - The “Planning Committee” report is accepted by the Board which was directed in the July 1946 minutes, but no details were provided (appears to be no action was taken).
- This is as far as I went.....

Kent Olson, KAØLDG

2016 - Northwestern Division Report  
To  
The ARRL Board of Directors

Director Jim Pace, K7CEX ----Vice Director Bonnie Altus, AB7ZQ

**Membership:** The Northwestern Division saw a decrease in new ARRL membership. Although there is an initiative coming before the Board in January 2017, to break up the Northwestern Division, we – along with our members – oppose such a move. A survey of the Section Managers in the Northwestern Division, reveals no support for such a gerrymandering. Such a move is seen as a punishment rather than reward for membership efforts.

**Committee Memberships:** Director Pace is now the chair of the Administration and Finance Committee, along with serving on the Amateur Radio Legal Defense & Assistance Committee and the ARRL Foundation Board. Vice Director Altus is serving on the Sub-Committee on Education and recently was appointed to the committee that is reviewing licensing.

**Hamfests and Club Meetings:** Director Pace and Vice Director Altus continue on an aggressive travel and meeting schedule within the division. From the Mat-Su Hamfest in Alaska to the Billings Montana Hamfest, meeting with members and advocating new and renewed membership is paramount in their presentations.

The Division Convention at Seaside Oregon, Idaho State Convention, Oregon Rickreall Hamfest and the Mike & Key Hamfest in Puyallup, took up a good portion of the first part of the year. Fairbanks, Washington State and Montana Conventions will be visited in the second half of the year. Rounding out the major travel will be the Pacific Northwest DX and VHF conferences.

**Cascadia Rising 2016:** After a two-year planning process with FEMA and the State/Provincial Emergency Management Offices in – Washington, Oregon, Idaho, Alaska, British Columbia and the Yukon Territories, the exercise known as ‘Cascadia Rising’ began June 7, 2016. The scenario for the exercise was the 9.0 earthquake, that is expected in the Cascade Seduction Zone, which runs from Northern California through British Columbia. The predicted quake is projected

trigger a huge Tsunami that would be devastating to Oregon, Washington, British Columbia and Alaska coastlines.

Although the exercise included Amateur Radio Operators from ARES and NTS teams in the Northwestern Division, it was not just an *Amateur Radio* event. This was a FEMA directed and evaluated exercise, which included National Guard, Coast Guard, Fire/Rescue, Law Enforcement, Department of Health and many other State Agencies. NGOs, such as Salvation Army and American Red Cross, Hospitals and other branches of the Armed Forces, were also involved.

Certainly a busy year, and an anticipation of more activity in 2017.

Respectfully Submitted

James D Pace, K7CEX  
ARRL Northwestern Division  
Director

## ROANOKE DIVISION REPORT – JANUARY, 2017

The second half of 2016 began on a somber note with services in Arlington, Virginia for former Roanoke Division Director and ARRL Honorary Vice President Dennis Bodson, W4PWF, who passed away July 1. Representing ARRL were President Rick Roderick, K5UR; former Chief Technology Officer Brennan Price, N4QX; and Roanoke Division Vice Director Bill Morine, N2COP. Roanoke Division Director Dr. Jim Boehner, N2ZZ, could not attend due to work commitments, and sent his condolences separately to Mr. Bodson's family.

On his way to Mr. Bodson's visitation, Vice Director Bill Morine, N2COP, stopped at the Science Museum of Virginia in Richmond on July 6<sup>th</sup> to observe a scheduled Amateur Radio on the International Space Station (ARISS) contact. This was Vice Director Morine's fourth attendance at an ARISS event, and he expressed his disappointment that more publicity was not generated by the museum nor by the local club in showcasing the event which was held primarily for disadvantaged youth who would normally not be exposed to this type of opportunity. This experience led Mr. Morine to concur with CEO Tom Gallagher's observations that the ARISS program needs public relations requirements and more coordination among the three ARISS partners – ARRL, AMSAT and NASA - as part of the obligation in hosting ARISS events.

The Roanoke Division sponsors two division awards. The first half of the year is the Roanoke Division Service Award, initiated by former Roanoke Division Director and later ARRL President Vic Clark, W4KFC (SK), and in the second half of the year, the Miriam Smith Award is traditionally bestowed at the Western Carolina Amateur Radio Society (WCARS) Hamfest in Waynesville, NC the last week in July. This year, Director Dr. Jim Boehner, N2ZZ, was present to give the award to Ralph Rognstad, W4RJJ, of Marshall, NC. The award is named in memory of Miriam Smith, KB4C (SK), former Amateur Radio Emergency Services® (ARES®) coordinator for Buncombe County (Asheville), NC, and recognizes a Ham who shows extraordinary dedication and service to Amateur Radio emergency communications in western North Carolina.

Emergency Communications was also at the forefront in the Roanoke Division this Fall, as South Carolina activated for Hurricane Matthew on October 7<sup>th</sup>. Widespread disasters like Hurricane Matthew are forcing government emergency officials to examine more closely the role and response of Amateur Radio. In South Carolina, and to a smaller extent in North Carolina, response organizations like the North Carolina and South Carolina AUXCOMM (Auxiliary Communications) Societies further cemented their positions as the preferred Amateur Radio units with which state and county agencies prefer to work, largely because of their required NIMS/ICS certification requirements. In Virginia, Section Manager Dr. Joe Palsa, K3WRY, was appointed to the state's Interoperability Council. Joe has been working hard to restore a unified ARES® presence across Virginia. However, without ICS courses as a requirement, the role of ARES® beyond public service is becoming increasingly cloudy in sections of the Roanoke Division.

Both Dr. Boehner and Mr. Morine attended the West Virginia Amateur Radio State Council (WVARSC) convention the weekend of August 19-21. The WV State Convention is a weekend event going from Friday dinner through Sunday breakfast, and is held at Jackson's Mill, WV, the ancestral home of Confederate General Thomas "Stonewall" Jackson and now the state retreat for West Virginia's 4-H program.

Labor Day weekend was the Shelby Hamfest, which was the 2016 Roanoke Division Convention. Strong rain dampened Friday attendance, but Saturday and Sunday morning had strong attendance and much interest at the ARRL booth about the Amateur Radio Parity Act.

JOTA, the annual Jamboree On-The-Air, held every full third weekend in October, received a dramatic boost in participation in North Carolina this year, thanks to the appointment of David Price, K4KDP, as Assistant Section Manager for Youth. He coordinated 28 stations statewide on the October 15-16 weekend, and tried to tie in badge requirements for Boy Scouts, Girl Scouts and Cub Scouts where possible.

The following hamfests were attended by either or both the Director and Vice Director.

WCARS Hamfest, Waynesville, NC\*  
WVARSC, Jackson's Mill, WV\*+  
Shelby Hamfest, Shelby, NC\*+  
Virginia Beach Hamfest, Virginia Beach, VA\*  
Rock Hill Hamfest, Rock Hill, SC\*  
JARSFest, Benson, NC+

\*attended by Director Boehner  
+attended by Vice Director Morine

We end our report with some sad news before we wrap it up with a positive event. On October 12, John Crockett, W3KH, succumbed to a long battle with cancer. John is a very large void to fill in the Roanoke Division. He was serving as the primary frequency coordinator for SERA, the Southeastern Repeater Association, which covers not only almost all of the Roanoke Division but also coordinates repeaters in four other states. He also leveraged his position in South Carolina Public Television to help build out the South Carolina Healthcare Emergency Amateur Radio Team, SCHEART, the Palmetto state's premier statewide repeater system. John leaves behind a powerful legacy which will benefit all South Carolinians and southeastern U.S. Hams for a long time.

Our final note is one of hope. The quadrennial Boy Scout National Jamboree will take place at the Summit Bechtel Family National Scout Reserve outside Beckley, WV, July 19-28, 2017. Vice Director Bill Morine, N2COP, is coordinating Roanoke Division resources to make the upcoming Jamboree a success in terms of radio. He is working

with team captain Jim Wilson, K5ND, who is heading up the 50-member squad for K2BSA, the official Jamboree station. Bill served on the staff of K2BSA at the 2001 and 2005 National Jamborees, and is dusting off his uniform again for the 2017 Jamboree. Our appreciation goes out to the many West Virginia ARRL members who help maintain the three WV8BSA repeaters on the 14,000 acre reserve. With Amateur Radio looking for more young people to enter our hobby and service, K2BSA is instrumental in showing Amateur Radio to an engaged audience.

Respectfully submitted,

Dr. Jim Boehner, N2ZZ  
Roanoke Division Director

Bill Morine, N2COP  
Roanoke Division Vice Director



# ARRL

## rockymountaindivision

### Division Report to the Board –2016

2016 went well for the Rocky Mountain Division. Both Vice-Director Ryan and I are having a great time representing our fine members. Here's a look back at 2016.

- Further improving communication across the Division, a Division Facebook page for our members has been created to ease access of division news.
- Our Division website ([www.RockyMountainDivision.org](http://www.RockyMountainDivision.org)) has been expanded to include additional information of interest.
- Rocky Mountain Division awards have been awarded for the Division Ham of the Year, Division Young Ham of the Year, and Division Technical Achievement awards.
- The 2016 Rocky Mountain Division Convention held in Keystone, CO was a fantastic success, thanks to all those who organized it. President Roderick, Second Vice-President Milesosky and Counselor Imlay were present.
- A legislative action in Colorado was signed into law that protects amateur radio operators while in volunteer service to the state.
- A whole bunch of clubs and groups organized and successfully offered hamfests and swapfests across our great Division so hams could buy/sell gear, learn new things at forums, upgrade licenses, and socialize with other dedicated hams.
- Above all else, Rocky Mountain Division members have been active Hams. We had a great year on the airwaves thus, chewing the rag, chasing DX, providing service to our communities in times of need, contesting, chipping away at awards, experimenting with newly built gear, mentoring others, serving within clubs, and more.

2017 promises to be a great year in the following ways:

- Vice Director Ryan and I will be attending hamfests and swapfests across the Division to spend time with our members in person.
- The 2017 Rocky Mountain Division Convention will be held May 26-28 in beautiful Cody, Wyoming...gateway to Yellowstone National Park. The fine folks of HamCon Wyoming are hard at work planning a great event.

Respectfully submitted

Dwayne Allen, WY7FD  
ARRL Director  
Rocky Mountain Division



## **ARRL Midwest Division Report - 2016**

2017 Annual Meeting of the Board of Directors - January 2017

Pursuant to ARRL By-Law 17, the following annual status report of the Midwest Division for the year 2016 is respectfully submitted to the ARRL Board of Directors.

### **Director Rod Blocksome attended the following Hamfests & Conventions:**

Jan. 23, 2016 - St. Louis, MO Hamfest  
Feb. 27, 2016 - Perry, Iowa Hamfest  
Mar. 25-26, 2016 - Ozark, MO Hamfest  
Apr. 16, 2016 - Ararat Shrine Hambash, Kansas City, MO  
Apr. 23, 2016 - Nebraska State ARRL Convention, Lincoln, NE  
May 14, 2016 - Iowa State ARRL Convention, Boone, IA  
May 19-22, 2016 - Dayton Hamvention & Donor Reception, Dayton, OH  
Aug. 7, 2016 - Cedar Valley ARC Hamfest, Cedar Rapids, IA  
Aug. 21, 2016 - Kansas State Convention, Salina, KS  
Aug. 27, 2015 - 27th Annual Joplin Hamfest, Joplin, MO  
Oct. 2, 2016 - Southeast Iowa Hamfest, West Liberty, IA  
Nov. 6, 2016 - W0BXR Hamfest, Davenport, IA

### **Vice-Director Art Zygielbaum attended the following Hamfests & Conventions:**

Apr. 16, 2016 - DMRAA Hamfest, Des Moines, IA  
Apr. 23, 2016 - Nebraska State Convention, Lincoln, NE  
Nov. 12, 2016 - Raytown, MO Hamfest

### **ARRL Forum Presentations were conducted at the following events by either Art or Rod:**

- Nebraska State Convention
- Kansas State Convention
- Iowa State Convention
- Joplin Missouri Hamfest
- Des Moines Hamfest
- Ararat Shrine Hamfest
- Cedar Valley ARC Hamfest
- W0BXR Hamfest

Art and I attend as many of the larger hamfests and conventions in the division as possible. We always have an ARRL booth, sell memberships, and conduct an ARRL Forum at each.

### **Active ARRL Affiliated Clubs in the Midwest Division**

The Midwest Division has a large number of amateur radio clubs affiliated with ARRL and more are added each year. Currently we have a total of 147 clubs broken down by section as follows:

- Iowa = 41 (2 are Special Service Clubs)
- Kansas = 31
- Missouri = 55 (1 is a Special Service Club)
- Nebraska = 20

A new Amateur Radio Club became affiliated with ARRL in 2016 - The Dakota County ARC in South Sioux City, Nebraska.

**Membership Decreases In the Midwest Division:**

The year ended with 6,961 ARRL Members in the Midwest Division. This is a disappointing decrease of 3.4 percent for the year. The 2016 decrease is nearly equals to the 2015 increase, thus putting division membership at about the same level as this time 2014. The membership dues increase that became effective Jan. 1, 2016 is largely the reason for the decrease this year. By comparison, overall total ARRL membership decreased 2.7 percent finishing the year with 164,453 members. (Figures are as of end of November)

**Division Newsletter**

I edit the division newsletter with contributions from Art, the Section Managers, Asst. Division Directors, and others. It's published monthly on the Division Web Site <http://www.arrlmidwest.org>. Over 4,000 ARRL members in the Midwest Division receive email notification upon publication of each issue.

**Director Blocksome ARRL Board Committee Service:**

- Ethics & Election Committee
- Administration & Finance Committee
- VHF/UHF Contest Revitalization Committee
- Historical Committee - Chair

**Vice-Director Zygielbaum ARRL Board Committee Service:**

- Programs and Services Committee

Rod Blocksome, K0DAS  
ARRL Midwest Division Director

## Dakota Division Report to the Board of Directors, ARRL – January 2017

Matt and I are proud and honored to serve as the Dakota Division's Vice- Director and Director respectively. Our emphasis has been to “spread the word” of the League by attending all hamfests and many club meetings around the division.

The second half of the year is light with respect to hamfests, but specifically those in the Division that we attended were:

- Central States VHF Society, Rochester, MN
- Northern Plains Regional Radio Club Hamfest, Worthington, MN
- North Dakota Section Convention, West Fargo, ND
- Last Chance Tailgate Hamfest, Plymouth, MN

Specifically during the ND State Convention, we processed a lot of hams through our booth and with the help of the Congressional letter generator, sent a lot of Amateur Radio Parity Act letters out to the various Senators.

We both have attended many club meetings and Matt ventured off to Pacificon (since his employer, Delta Airlines, allows him to travel for free) and helped at the ARRL booth. Matt attends many such events on his own which puts yet another “red badge” out for members to see and talk to (as well as costs the League nothing).

I would like to publicly commend Sean Kutzko, KX9X & Norm Fusaro, W3IZ as well as the countless others at Headquarters for their work with National Parks on the Air (NPOTA). In our opinion this event will go down as one of, if not the best, on-air ARRL activity in recent memory. Personally, I activated five times and Matt eight times. Both of us chased as well with me confirming 382 and Matt 215 at the time of this report (we're still waiting on a few more). NPOTA got hams out of their shacks and into the field not only to operate but to celebrate our Nation's National Parks with their 100<sup>th</sup> anniversary. NPOTA taught hams to operate from remote locations with minimal gear, remodel their shacks to be more ergonomically efficient, to learning new modes to make the contact. Almost 1.1 million QSOs from almost 21,000 activations over the year have been processed through LOTW. It has been stated many times, hams are looking for “what's next” and “how can anything top NPOTA?” We too feel the loss and wished it would have lasted longer. The best thing though, was NPOTA got hams on the air and injected a whole lot of fun into the hobby! We probably can't quantify what NPOTA did for the ARRL and amateur radio, but it clearly was outstanding!

I serve on the Programs & Services Committee, and the Ethics & Elections Committee while Matt serves on the VHF and Above Contest Revitalization working group. Our goals for the Division are to promote the ARRL, sign up / renew members, and have frequent communication with the Division's amateurs (our constituents). We are the little Division that could!

Respectfully submitted,

*Kent*

Kent Olson, KAØLDG  
Dakota Division Director

*MAT*

Matt Holden, KØBBC  
Dakota Division Vice Director

**Annual Report to the ARRL Board of Directors**  
Great Lakes Division  
2016

**Political actions:** Kentucky Section Manager Alan Morgan KY1O was honored to appoint Jenean M. Hampton, K5EIB the Lieutenant Governor of the Commonwealth of Kentucky as an ARRL State Government Liaison. The Lt Gov speaks regularly across Kentucky wearing her official ARRL Name/Call badge and actively promotes Amateur Radio. She has directed the Kentucky Emergency Management agency to work closer with KY ARES groups as well.

All three Great Lakes Division Section Managers were very active at hamfests and club meetings throughout the year promoting the Amateur Radio Parity Act.

Michigan ARPSC/Auxcomm personnel played a large role at the annual Michigan Public Service Communication System Interoperability Conference at Traverse City in February. MI ARPSC/Auxcomm personnel made significant progress installing antennas and setting up Auxcomm radio facilities at the new Michigan State Emergency Operating Center in Lansing, MI

The Michigan SGL and SM met with Michigan State Representative Howyrlak at his request, to assist with the wording of a distracted driving bill to keep law from potentially making mobile amateur radio operation illegal.

Ohio's ARES group was directly involved with the Republican National Convention and the NAACP National Convention. They provided vital voice and digital communications links between the Cuyahoga County Emergency Operations Center, the Cleveland Emergency Operations Center to the State of Ohio Emergency Operations Center in Columbus, to the Regional Operations Center in Cincinnati and the Red Cross Regional Operations Center in Akron.

**Emergencies: # ARES Activations.** During the week of January 18, some 8,100 water customers in Sebring, Ohio, were notified that they had problems with high lead content in their drinking water. On January 22, both Ohio and Mahoning County Emergency Management Agencies began passing out bottled water in Sebring. Mahoning County ARES was activated to help. And, they did just that! ARES volunteers joined others in moving and distributing pallets of bottled water, and another call went for weekend duty. ARES members from neighboring counties also volunteered. All told, the volunteers moved more than 166 pallets of water in 6 days. "This is a perfect example of being ready to serve in whatever capacity we can, in order to help our communities. Sometimes it doesn't involve only operating a radio"

ARES members in the Kentucky Section carried out several missions supporting communications including floods, other weather emergencies, and a missing/downed plane and pilot. They assisted CAP and SAR efforts where the plane was found in a heavily wooded area. They also participated in the Kentucky COMEX with improved participation this year.

Ohio ARES groups were active for assistance at the Cleveland Cavaliers Championship Celebration in Cleveland and communications for the Toledo Air Show. Ohio ARES group was also activated several times this year to provide communications for Algae Bloom situations for events taking place on Lake Erie and the Ohio River.

Ohio ARES also has contributed over 5,000 man-hours of service this year to the National Weather Service for Skywarn duties. So far this year they have had 10 tornadoes in Ohio, with numerous other weather related incidences effecting thousands of citizens.

**Major Events:** Michigan hams organized and coordinated the June 2016 “Light Up the Trail” weekend NPOTA event to activate the full length of the North Country Trail that travels through seven states. During the course of 2016, the SM and/or Section Staff attended 21 hamfests, 9 club meetings, a Section Staff meeting and a Section Family Outing in the woods of Northern Michigan that featured the annual Section EC meeting. Ohio held its annual Section Conference in August plus the annual Ohio State Parks on the Air Contest and the Ohio ARES Statewide Conference during September. The Ohio Section Cabinet and SM attended 27 hamfests, including the Dayton Hamvention, where they staffed the Ohio Section Booth within the ARRL EXPO. They also attended over 150 club meetings, picnics/parties and special events this year. The Ohio Section has gained nine new Affiliated Clubs this year and grown with three Special Service Clubs.

**Hamfests/Conventions:** There were 70 ARRL Sanctioned hamfests in the Great Lakes Division in 2016. ARRL was represented at all by a SM, Director, Vice Director or designee. State Conventions were held in Ohio and Kentucky this year, and plans are now in process for the Great Lakes Division Convention to be held in Michigan in 2017.

2016 ARRL Kentucky State Convention held in conjunction with the Greater Louisville Hamfest in Shepherdsville, KY was a huge success this year with attendance. Jenean M. Hampton, K5EIB the Lieutenant Governor of the Commonwealth of Kentucky was also a special guest and gave the official Welcome speech at the 2016 ARRL Kentucky State Convention.

**Clubs:** In Kentucky, several clubs have sponsored Technician Classes and with the help of a well-known guest, the Woodford County ARC actually had KY Lt Governor Hampton, K5EIB participate and make a presentation to motivate the students to get their licenses.

**The Division recognized the 75<sup>th</sup> Anniversary of three clubs during 2016:** Dial Radio Club, OH, Queen City Emergency Net, OH, and Monroe County Radio Communications Assn., MI

**Awards & Honors: Hiram Percy Maxim Award** – At a special presentation ceremony hosted by his local club, the Westchester Amateur Radio Assn., Christopher Brault, KD8YVJ received the plaque honoring him with ARRL's Hiram Percy Maxim Award. The **Allan Severson Memorial Award** (Ohio Amateur of the Year) honored John Myers, KD8MQ. The **Michigan Section Commendation Certification** was presented to Tim Crane, WM8A for his exceptional work rebuilding and improving the ARES/RACES organization in Genesee County, MI. **Ohio hosted its 24<sup>TH</sup> Annual Newsletter Contest Awards:** 1st Place *The Mike & Key*, 2nd Place: *The RADIOGRAM*, 3rd Place, a two way tie: *The Voice Coil* and *ATCO Newsletter*. Honorable Mentions went to: *The CARA Communicator* and *The Spirit of '76 and '88*. **Ohio extended Special Recognitions** to • David Sumner, K1ZZ – Honorary Ohio Section Life Member; • Norm

Fusaro, W3IZ and Sean Kutzko, KX9X – Special Recognition for their work with National Parks On The Air (NOPTA); • Dial Radio Club – Special Recognition for 75 years of ARRL Affiliation; • Arlin Bradford, KD8EVR and Tom Miller, N8TWM – Advancing Digital Mobile Radio (DMR) in the Ohio Section; • Christopher Brault, KD8YVJ – Outstanding Young Amateur in the Ohio Section; • Queen City Emergency Net – Special Recognition for 75 years of ARRL Affiliation; • Portage County Amateur Radio Service – Special Recognition for their more than 10 years of giving back to their local charities with cash donations exceeding \$3,000; • Bob Johnson, K3RC and Kitty Hevener, W8TDA – Special Recognition for their past service with the Ohio Section as Cabinet Members; • Nick Pittner, K8NAP – Special Recognition of his past service with the Ohio Section as a Cabinet Member and author of the Ohio Section Antenna Law.

Vice Director Delaney and I wish to extend an important **Thank You** to our Section Managers for their wonderful efforts in promoting amateur radio and ARRL in their respective Sections. Alan KY1O, Larry WB8R and Scott N8SY, you guys are the greatest!

Vice Director Tom Delaney W8WTD was appointed as Board Liaison to the ARRL RF Safety Committee, and also serves on the Entry Level License Committee. Dir. Williams was re-elected to the ARRL Executive Committee, appointed to Chair the Ethics and Elections Committee and serves as Chair of the Public Safety Enhancement Working Group. Dir. Williams also assisted the re-drafting of guidelines for the Card Checker program.

The Great Lakes Division ARRL membership has seen a slight decline in aggregate membership over the past 11 months, from 12,767 to 12,478. The figures are much in alignment with the 2016 rate experienced by other Divisions and reflect expectations of reductions caused by the dues increase.

73,

Dale Williams WA8EFK  
Director  
Great Lakes Division

**New England Division Report**  
**The American Radio Relay League**  
**2017 January Meeting of the Board of Directors**

[At least 14 days prior to each annual meeting of the Board of Directors each director is encouraged to file with the Secretary a written report on the status of the affairs of the League in his division, together with a statement of his recommendations as to any actions required for the effective administration of the objectives and affairs of the League.]

A New England Division Cabinet meeting was held on Saturday, January 7, 2017, with thirty one Section Managers, Field Organization members, affiliated Club Presidents and Advisory Committee leaders present. This is a summary of key issues brought up by them and others over the last six months.

### **Generating New Hams**

During the cabinet meeting the most significant themes surrounded the need to reach out to encourage new hams, run training classes and to get people involved with clubs once they are licensed. Successful clubs are using social media more and more to reach out, including inexpensive social media advertising. The VE program has been very successful in providing exam opportunities, now the focus should be on outreach and training to continue to find newcomers to ham radio. This is true whether there will eventually be revisions to the entry level license or not.

### **Field Organization**

There was not a significant discussion about the National Traffic System because on the local level, things are working fine within New England. But there is a lot of interest in what is happening nationally. Overall there is concern over the long term role of traffic handling and the large number of volunteers (1,000+) who participate in some way, including those with field appointments like ORS, Net Manager, and Section Traffic Manager. The group seemed open to a refresh of the OO program and is very interested in more information.

It appears that we are at a significant crossroads in our use of volunteers in the Field Organization. The number of FO volunteers is reported as 7,624, down 8% from 2010. More than half of that decline is in the Official Emergency Station appointment (1,433 to 1,067), and a PSC subcommittee has recommended that the OES appointment be discontinued in favor of ARES participation (but ARES isn't a FO appointment). We're

also considering a major change in the Official Observer/Amateur Auxiliary program, which looks likely to reduce the number of OOs from 754 to about half that number.

As we reduce the number of people in the Field Organization, we will also lose some of the political capital and clout we have by having and being able to point to those programs. Note that the actual number of volunteers in the Field Organization is not 7,624. Because members can hold multiple positions in the FO, the actual number is about 25% less, or currently about 5,700 volunteers.

My point in mentioning these actual and proposed changes is that we ought to be assessing all of this from a high level. Where can we use volunteers most effectively? How can we extend the organization and its goals through the field, etc.? Our efforts in Congress and with the FCC are directly and indirectly enhanced by having Field Organization volunteers.

## **Solar Power RFI**

I finally decided to look into the installation of solar power to reduce my electrical bill and to contribute to reduce the use of fossil fuels. So far I've only worked with Solar City, but that was very enlightening. Solar City is the largest installer (35%) of residential solar in the country, covering almost half of the states. The next ten companies only total 25%. Solar City has a pretty structured presentation and several possible options from outright purchase, to lease, or lease/purchase.

Based on the issues that K1KP described in his QST article published in early 2016, I asked Solar City about RFI issues and of course the sales person didn't know anything about it. "No, it doesn't make any noise." She did check into it and said they would work with us on any issues. They would not guarantee anything, and would not accept a modification to the contract to require an RFI quiet system. What they did offer was a metal shield to go around the inverter.

Based on my own experience and a growing number of indications from others in New England, solar power systems are expensive to fix (~10% of the system cost), and will impact neighbors. K1KP says he's helped roughly 50 other hams work through the process of retrofitting their systems or working with their installers. The issue can be individual inverters, micro-inverters at each panel, or combiners, or the system construction as a whole. I've passed along my input and other information to the ARRL Lab.

In general, we (ARRL) are treating solar panel issues one at a time and have taken the point of view that there are not that many problems so they are being worked on in a case by case basis as members contact us. I think we have to take a different view, because once installed, getting neighbors or vendors to fix them is a very steep uphill process. Have we tried working with the major installers so their systems are engineered for



minimum RFI potential? Add solar systems to the long list of other Part 15/18 RFI issues that we need to press the FCC on.

## **Logbook of the World**

In the last week I raised an issue with the LoTW committee. I'm concerned that we have different standards in how we match valid QSOs in our various programs. The issue comes up when people use portable or other identifiers (that are not required by the FCC) with their call signs, like K1AA/R, K1AA/m, K1AA/2 or K1AA/QRP. LoTW handles them one way, contest log checking handles them another way, and DXCC manual card checking handles them differently than LoTW matching.

Making a change in how the matching is handled in LoTW (or contest log checking) is not simple and questioning the status quo isn't well received but I'm concerned that we have programs that are not consistent, and have not been clear enough to members how they really work, or responsive enough to make them work in a way that matches the real world of hams making QSOs on the air and logging them.

## **Other**

Those present at the recent cabinet meeting were very supportive of the effort made in 2015-16 to get the Amateur Radio Parity Act passed, and were very willing to help out again this year as our effort to move the legislation forward continues.

A handwritten signature in black ink that reads "Tom Frenaye". The signature is written in a cursive, slightly slanted style.

Tom Frenaye, K1KI  
New England Division Director  
1/18/2017

## **Entry Level License Committee Report to the ARRL Board of Directors January 2017**

This is a preliminary report covering the areas the committee has reviewed since getting started in September. We expect to have a final report to the Board in July.

The Entry Level License (ELL) committee was created during the July 2016 Board Meeting with the following resolution:

41. Mr. Frenaye moved, seconded by Mr. Pace, that

WHEREAS the Novice Class examination was discontinued in 2000 and the Morse Code requirement was removed from all licenses a few years later, and the Technician Class license became the new entry point; and

WHEREAS, there was a considerable increase in difficulty for the new entry point, and new licensees were then accorded extensive privileges not appropriate for all newcomers, and

WHEREAS we now have more than 15 years of experience with the current FCC Technician Class license as that entry point; and

WHEREAS we need to improve upon our efforts to attract newcomers to Amateur Radio and pass along the tradition of emergency and communication communications support, developing interest in hands-on projects, and improving on science, technology, engineering, and mathematics educations;

THEREFORE BE IT RESOLVED that an ad hoc committee be established to examine the current license exam requirements for the Technician Class license and make recommendations for change, including consideration of a new entry license class, to the Board for possible changes that might be recommended to create a more targeted examination with a more limited set of privileges that would attract a new generation of amateurs.

After discussion, the proposal was ADOPTED.

Appointments to the committee were finalized in early September 2016 by President Roderick, and bi-weekly conference calls started on September 13<sup>th</sup>. We've had a total of eight conference calls since we started.

### **General Review**

We wanted to make sure our efforts were aligned with the ARRL Strategic Plan (adopted January 2016). Here is the most relevant section - near the beginning:

**GOAL 1: Grow Amateur Radio worldwide.**

ARRL, since its inception, has been of critical importance to the Amateur Radio Service. This goal is as important today as it has ever been. Today, Amateur Radio exists among many more modes of communication than it did a century ago. The growth of wireless technologies, such as cell phones and the Internet of Things\*, have had a profound effect on both spectrum competition and on the overall interest in and support for Amateur Radio. We must ensure that Amateur Radio is a vital and relevant service whose existence is justified by its contributions to society.

\* The “Internet of Things” is the networking of physical objects such as phones, automobiles, and other mass consumer products.

**Initiative 1.1: Encourage new entrants to Amateur Radio.**

**Initiative 1.2: Increase public awareness and knowledge of Amateur Radio.**

**Initiative 1.3: Support global interactions throughout Amateur Radio.**

**Initiative 1.4: Support and develop programs that prepare youth as the next generation of radio amateurs.**

We reviewed the Board motion and Strategic Plan, and adopted the following:

**What is the problem we're trying to solve?**

- Not enough new hams, especially under-30 new hams
- New hams are not getting involved enough to participate and renew
- Unable to compete with other technical hobbies available
- Need to be better at retaining and engaging Technician hams
- Amateur radio needs to embrace and develop new technologies

**The working mission:**

- Encourage students and young adults to learn about ham radio
- Train licensees for concepts necessary to be effective and successful
- Provide sufficient privileges to find value in ham radio
- Build in a strong incentive to upgrade to next license

**Other Countries**

We’ve looked at the entry level license requirements and privileges for a number of countries and focused on Australia, Canada and the United Kingdom who each have more than ten years experience with a revised examination and privileges. In general, the “Foundation” license parameters adopted by Australia and United Kingdom seem the most appealing. Basically they offer a low power entry level license with privileges on almost all bands and modes, and a relatively simple examination process.

**Requirements for Testing**

Testing requirements are set by guidelines from the ITU, as implemented by the FCC in the USA. The FCC gives fairly general guidance to the Volunteer Exam Coordinators on the examinations, who have a lot of latitude in the questions placed in the Question Pool for each license.

The FCC requires 35 question on the exam for Technician and General and 50 for the Extra, with the Question Pools having at least ten times more questions. They also specify ten topic areas that should be covered.

The Question Pools have more questions in them than required by the FCC. After the QP is finalized there are usually few (under ten) questions that may have to be removed because they are not clear enough or other reasons, so some extra questions are appropriate. The current Question Pool for Technician has 426 questions (76 extra), the General has 464 (114 extra) and the Extra has 713 (213 extra). Why would the exams be any more complicated than is necessary?

A readability review of the questions in the various question pools is enlightening. There are standard readability calculations to assess the reading level required to understand what is written. They are mostly based on the number of syllables in words and the number of words in sentences. Doing a review on the Question Pools results in a score of 50 in the Flesch scale, which equates to "fairly difficult to read" and "difficult to read" (12th grade to college level). That is not exactly a recipe for high school or middle school students except for the very brightest. To reach most audiences, a reading level of 7<sup>th</sup> or 8<sup>th</sup> grade is recommended by most sources.

## Recent ARRL Survey Data

We reviewed the relevant portions of the marketing survey ARRL conducted in 2015. Some primary items of interest from the survey showed:

The primary reason to get licensed for those licensed 2010 or later, influence significantly increased in these areas:

- website, online social networking, podcast, or blog
- community emergency manager/personnel
- to support communications during disasters and other emergencies
- to enhance personal safety
- to support wilderness, off-road, or other activity in remote areas

Those first licensed in the 2010 or later studied:

- by yourself 65%
- in a radio club-sponsored class 23
- under 10% each
  - with help from a friend, neighbor/co-worker
  - with help from a family member
  - with help from a local instructor not associated with a club or school
  - in a school-sponsored class

For those licensed 2010 or later, just 8% were under age 25, and only 20% were under age 35. The largest group of new licensees was in the 55-64 age range (27%), about the same for those licensed before 2010 (31%).

## **Review the History of License Class Changes**

We took a close look at the various changes in Amateur Radio licensing over the last 100 years, especially the last 25. **Appendix A** has a summary of relevant FCC actions and shows that action in the last ten years has been relatively quiet on this front. The last major changes were in 2006, after WRC-03 eliminated the requirement for Morse code testing.

## **Current ARRL ELL Policy Position**

The ARRL Board has been clearly on record that the Technician license is not a satisfactory entry level license since the FCC discontinued the Novice in late 1999 (FCC 98-143). After an ARRL proposal in 2002 for “refarming” the Novice bands by expanding the phone bands on 80/40/15m, the FCC made that specific change in 2006 (and more than we asked for on 80m phone).

In 2003 the World Radio Conference (WRC-03) removed the requirement for Morse code testing for any Amateur Radio license. In 2004 the ARRL petitioned the FCC (RM-10867) with an entry-level license proposal, consolidation of six license classes into three (Novice, General, Extra), and to retain the 5 wpm requirement for the Extra. The introductory text in that proceeding is in **Appendix B**.

The 2004 ARRL filing proposed merging the existing Technician/TechPlus into General, and Advanced into Extra. The new Novice would have a 25 question exam, allow 100w on General segments on 80/40/15, 50w on 10/6/2m, plus 222/430 MHz. They would not be able to use automatic control, be a control operator, operate beacons, or conduct remote space control.

A year and a half later, the FCC proposed (FCC 05-253) to simply drop the CW requirement for all license classes. They did not agree with new entry level license proposed by ARRL nor to consolidate license classes. ARRL commented again, forcefully pointing out why the Technician was not suitable as an entry level license and why combining some license classes would be a reasonable way to simplify FCC rules. In late 2005 the FCC chose to simply remove the CW requirement for all license classes (now just Technician, General and Extra).

## **Significant Influences**

Since the last major changes in license classes by the FCC there have been some significant changes to both the Amateur Radio world and the external world.

In the past dozen years, for example, the use of cell phone has become the norm, in 2014 64% of all adults had a smart phone, up from 35% in 2011. Of those 18-29 years old, the number was 85%. More than half of all smart phone users have used it to get help in an

emergency situation. (Pew research - <http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>). That has taken some percentage of ham radio usage off the air, particularly at VHF where repeater activity has declined by almost all accounts.

There has been a significant increase in the educational focus on Science, Technology, Engineering and Mathematics fields. There is also a fast growing Maker movement that is based on hands-on, do-it-yourself hobbies and activities. Both of these trends should favor an increasing interest in Amateur Radio.

On the ham radio side, CW activity has remained high, even though not a required part of the exam, as has SSB, but digital activity has grown substantially. ARRL RTTY Contest activity has more than doubled since 2004. PSK-31 started to become popular around 2000, and Joe Taylor started his ham radio software career in 2001 with WSJT. Since then the number of digital modes has multiplied as has the amount of activity. For newcomers, it is way more popular than CW (which is the only mode allowed on HF bands below 10m by Technician licensees).

For all of these reasons, it is worth examining what the entry level license offers, what is required to get started, and recommend changes for improvement. Over the last 15 years, the world has changed, as has Amateur Radio, while the testing and operating privileges for an entry level license have become less relevant.

### **Current FCC Licensees**

Since the FCC rules change to eliminate CW testing (and not implement suggested ARRL changes) in 2006 went into effect in February 2007, the growth of ham radio has been relatively modest at best. (Date from AH0A.org)

	<b>Novice</b>	<b>Technician</b>	<b>General</b>	<b>Advanced</b>	<b>Extra</b>	<b>Total</b>
Feb 2007	22,891	323,493	131,463	69,025	108,605	655,477
Dec 2016	10,012	371,560	172,807	45,071	143,337	742,787
Pct Change	-56.3%	+14.9%	+31.4%	-34.7%	+32.0%	+13.3%

Over those almost 12 years, overall Amateur Radio growth has barely been 1% per year, in an environment of huge technological change with ubiquitous smart phones and Internet usage now commonplace. The peak of that growth was in 2009 (2.85%) and 2010 (1.98%) after the CW requirement was dropped – and that may have accounted for an extra 30-35k new licensees. In the previous ten years, the number of licenses peaked at 711k in 1996 and was steady or slowly dropping until 2007.

### **The Committee’s Entry-Level License Draft**

The committee looked at previous ARRL filings as well as entry licenses in several other countries.

We're looking at a couple of ways to accomplish a change, one is to add a new license class that offers low power use of all modes on most HF and VHF bands, but that has to be accompanied with changes in the Technician to allow the same access. The 2004 ARRL approach was to have a simple entry level license and merge the Technician into the General Class license. Both have merits and we'll be examining them carefully. Our initial thinking is that a new license class would be the best path. There is also consideration of special call signs, a limit on the length of the license, and a practical component of the exam.

### **Gathering Input from Members**

A draft survey of members to gather their input has been created but before moving forward we wanted to give a progress report to the Board on our work to date and gather any input on progress to date.

### **FCC Issues**

The FCC has been reluctant to make changes in the licensing system in the past, as shown is FCC 05-253 and earlier proceedings. Some of that appears to be a simple belief that removing the CW requirement would lead to a large increase in licensed amateurs. It didn't, though growth has resumed. Another consideration voiced was the cost and effort it would take to change the existing Universal License System used to track license holders.

This may be our toughest obstacle to any change, so we'll need to put in extra effort to make the best case possible if the ARRL proposes changes.

### **Amateur Community Questions**

The last time the FCC dealt with the license class issue, the controversial topic was the FCC's intention to eliminate the 5 wpm CW test from all license classes. After a lot of discussion and member input, the ARRL supported retaining the 5 wpm test for the Extra Class license only.

There were also a fair number of people who commented that they did not support the ARRL proposal for a new Novice license and combining the Novice/Tech/TechPlus into General or combining the Advanced into the Extra Class. It's unclear if member sentiment has significantly changed in the intervening 13 years.

## **Needed Improvements in the “Supply Chain”**

During our many discussions about the entry level license to date, it became clear from discussion by all committee members that the process for generating new hams that starts with educating the general public about Amateur Radio, through someone deciding to get licensed, studying for the exam, taking the examination, passing the exam, and finally getting on the air and experiencing the different facets of ham radio, has to work from end to end in order to keep Amateur Radio vibrant and growing.

Each part of that “supply chain” has to work, and work well, in order for us to generate new hams, and to attract the generations that will follow us. Here are some high level notes about it, and we expect to have some more refined input and recommendations in our final report.

- We need to better understand what will interest people in ham radio, and to target those individuals and groups with the most promise.
- Once someone expresses interest, do we have the right processes to match them with the tools and help needed to get licensed, and classroom opportunities?
- Today, most people study for the exam by themselves, how can we improve upon the tools we have available to them?
- Most people, particularly those under age 30, use smart phone or other electronic tools, not books, to access and learn about the world. We should be utilizing those tools to reach people who might be interested in being licensed.
- The FCC has not made aggregate data available on the age of those being licensed or the age profile of the current Amateur community so it is difficult to know where to make improvements in efforts to attract new hams.
- The current testing process is people and paperwork intensive, and has not changed significantly since it began 33 years ago. Online testing would be a huge boost.
- Getting people on the air after being licensed is an often overlooked area that needs concentration and effort and should be of prime importance to every radio club and local group.

## **What Can Be Done Now?**

- Work to better understand what non-hams think of Amateur Radio and what might attract them to work for a license.
- Look at ways to modernize the training and licensing process to make them more widely available.
- Get aggregate age data from the FCC so we can understand more about existing and new licensees.
- Improve upon what we have in place today to work with external marketing to find potential hams through getting them on the air once licensed.



## Next Major Steps

- Decide to go ahead with member survey
- Should there be a new license class or modify Technician?
- How receptive will the FCC be to change
- Should we recommend one or several options for an entry level license?
- What other suggestions to we have for the full process from learning about Amateur Radio to getting licensed and on the air works from end to end?
- Final report to ARRL Board in July

## Summary

Everyone on the Entry Level License Committee has been a great contributor and no one has been shy in expressing opinions and suggestions. They have made my job as Chairman easier as a result.

*Tom Frenaye*

## Committee members

Tom Frenaye, K1KI, chairman

Bonnie Altus, AB7ZQ

Tom Delaney, W8WTD

Maria Somma, AB1FM

Bruce Blain, K1BG

Andrea Wayward, KG4IUM

Paul Veal, N0AH

Ward Silver, N0AX

Appendix A – License Change Timetable

Appendix B – ARRL intro text in RM-10867 to create a new license plan

## **ARRL Committee Appointments – 2016**

*As of 12/31/16 End of Year*

### **Executive Committee**

- Director Lisenco
- Director Norris
- Director Williams
- Director Woolweaver
- Director Vallio
- President Roderick
- First Vice President Widin
- CEO Sumner

### **Administrative and Finance**

- Director Pace (Chairman)
- Director Blocksome
- Director Frenaye
- Director Isely
- Director Norton
- Vice Director Morine
- Treasurer Niswander

### **Programs and Services**

- Director Boehner (Chairman)
- Mr. Patton (Staff Liaison)
- Director Abernethy
- Director Allen
- Director Olson
- Director Rehman
- Vice Director Zygielbaum

### **CAC Chairman**

- Mr. George Wagner K5KG (2<sup>nd</sup> year)

### **DXAC Chairman**

- Mr. Gary Jones W5FI (2<sup>nd</sup> year)

## **ARDF**

- Mr. Joe Moell K0OV (Coordinator)

## **Electromagnetic Compatibility (EMC)**

- Vice Director Carlson (Chairman)
- Mr. Gruber (Staff Liaison)
- Mr. Hare (Staff Liaison)
- Mr. Bob Allison (Lab Staff) Add
- Mr. Gordon Beattie W2TTT
- Ms. Jody Boucher WA1ZBL
- Mr. Brian Cramer W9RFI
- Mr. Ron Hranac N0IVN
- Mr. Richard Illman AH6EZ To retire
- Mr. Steve Jackson KZ1X Remove
- Mr. John Krumenacker KB3PJO Remove
- Mr. Philip Keebler (Non voting) Remove inactive
- Mr. Ron McConnell W2IOL Remove
- Mr. Jerry Ramie KI6LGY
- Mr. Cortland Richmond KA5S
- Mr. Steve Strauss NY3B Remove
- Mr. Mark Steffka WW8MS
- Mr. Phil Barsky K3EW
- Mr. James Roop K9SE
- Dr. Richard Dubroff W9XW

## **Ethics and Elections**

- Director Williams (Chairman)
- Director Blocksome
- Director Olson

## **HF Band Planning**

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- Mr. Steve Ford (Staff Liaison)
- Director Allen
- Director Frenaye
- Director Norris
- Vice Director Hudzik

## **Historical**

- Director Blocksome (Chairman)
- Mr. Allison (Staff Liaison)
- Director Frenaye
- Director Norton
- Mr. Michael Marinaro WN1M

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- Director Lisenco
- Director Pace
- Vice Director Tiemstra
- Vice Director Woll
- Mr. James O'Connell W9WU
- General Counsel Imlay

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- Director Woolweaver
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## **Logbook of the World Study Committee**

- First Vice President Widin (Chairman)
- CFO Shelley
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- Mr. Keane (Staff)
- Mr. Patton (Staff)
- Mr. Dave Bernstein AA6YQ
- Mr. Rick Murphy K1MU

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- Mr. Sean Kutzko KX9X (Staff Liaison)
- Mrs. Katie Allen WY7YL
- Mr. Sid Caesar NH7C
- Mr. Randy Hall K7AGE
- Angel Santana, WP3GW

- Tommy Gober, N5DUX
- Jeff Davis, KE9V
- Mr. Alan Griffith (RAC representative)
- Vice Director Jeff Ryan K0RM (Board Liaison)

### **RF Safety**

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- Vice Director Delaney (Board Liaison)
- Mr. Hare (Staff Liaison)
- Mr. Robert Gold W0KIZ
- Mr. William Kaune W7IEQ
- Mr. James Ross W4GHL
- Mr. Kai Siwiak KE4PT
- Mr. Bruce Small KM2L
- Mr. Guy "Bud" Tribble N6SN
- Mr. Gerald Griffin K6MD (Emeritus)
- Mr. William Raskoff K6SQL (Emeritus)

### **Entry Level License Committee**

- Mr. Tom Frenaye, K1KI (Chairman)
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- Mr. Tom Delaney, W8WTD
- Ms. Maria Somma, AB1FM
- Mr. Bruce Blain, K1BG
- Ms. Andrea Wayward, KG4IUM
- Mr. Paul Veal, N0AH
- Mr. Ward Silver, N0AX

**2017**  
2014

Atlantic  
Great Lakes  
Dakota  
Delta  
Midwest

**2018**  
2015

Central  
Hudson  
New England  
Northwestern  
Roanoke

**2019**  
2016

Rocky Mountain  
Southeastern  
Southwestern  
Pacific  
West Gulf

# ARRL Amateur Radio Public Service Communications

## The Second Century of Service

Confidential White Paper

For ARRL Board and Staff

### Abstract

#### Philosophy

Historically, the Amateur Radio Emergency Service (ARES) has taken the approach that the service provided is valuable only when an external entity, such as an emergency management agency, agrees to use the service. This has created a culture in which ARES is not seen as valuable on its own; and it is a difficult position to maintain. It is what has led to many of the current problems the program faces, including the lack of ownership taken by the organization that sponsors the program — ARRL. ARES participants look for identification, training, purpose, and to gain experience not from their relationship with ARRL but through the agencies and organizations they support. The relationship with partners is important, but so too is the relationship with the parent organization. ARES participants should look to ARRL for the support they need to accomplish the mission of providing communications capacity, bandwidth, and technical support to the entities that work to keep our communities safe.

The National Traffic System (NTS) has suffered far worse than ARES in lack of support from ARRL. Over time, less support for traffic handling has caused NTS participation to drop, and has led to a program leadership structure that operated in a vacuum with little or no support. In an effort to ensure relevancy, increase participation, and establish a clear role in times of emergency or disaster, NTS leadership acted independently, arguably out of necessity, and what resulted has been the near-total collapse of the program. The outcome could have been different, however, it has forced to the front three questions that must be answered:

1. Is the traditional form of traffic handling still relevant in emergency and disaster response?
2. Is it better for this program to operate independently from, but cooperatively with, ARRL?
3. Is a two-program approach necessary?

The approach taken in this document is for NTS to be understood as a program of ARRL that needs changes and stronger support, however, other options should be considered.

ARRL is little different than other non-profit, volunteer-based organizations. An organization may have many goals it seeks to achieve. ARRL's is defined in its five pillars, and in specific programs to provide benefit to the larger community. One of our pillars "ARRL is Public Service" and this is represented by the work of clubs, individuals, ARES, and NTS. This pillar has cracks, and for it to survive, changes have to be made in how we support these programs.

### **Structure of this Document**

The approach taken in this document focuses on where we are now and how we can improve not only our own programs, but ultimately how we can lead the way in improving all disciplines within Amateur Radio emergency communications.

We begin by looking at the current landscape — the status of our programs, current state of our partners within Amateur Radio, and our external partners. From there, we look at the emerging trends that we must be aware of, within the Amateur Radio Service and in the larger emergency communications context.

Our broad goals are organized into five key areas:

1. Leadership and High-Level Coordination: How we manage our public service activities better, and do so through coordination with others.
2. Training and Exercise: How we improve the way in which program participants are trained and the qualifications of field organization leadership.
3. Membership: Specific ways to improve the experience of program participants and ensure that they provide the highest quality of service to our partners at all levels.
4. Operations: How we adapt to new expectations of service and move beyond "When All Else Fails."
5. Regulatory: Ensuring that our ability to adhere to the basis of the Amateur Radio Service in respect to providing emergency communications is reasonably unhindered in the regulations of our service.

Finally, we will look at specific improvements that can be addressed in the short term, within the next 3 years. We will also address issues we must face in the near future — 3 to 5 years — and how organizationally we develop a system of program improvements that may prevent future problems similar to those we are addressing now.



## **ARRL Amateur Radio Public Service Communications Overview**

### **Preparing for a Second Century of Service**

#### **Background**

Since 1935, the ARRL has offered programs that add a public and civic benefit to the Amateur Radio Service. These programs, now known as the Amateur Radio Emergency Service (ARES) and the National Traffic System (NTS), are intended to meet the communications needs, during times of emergency or disaster, of those who entrust us with the spectrum we enjoy; in essence it is the return to the public on its investment in our service. Beyond ARES and NTS, the Amateur Radio community has further paid back the American public through offerings such as the Military Auxiliary Radio Service (MARS), the Salvation Army Team Emergency Radio Network (SATERN), and support for the missions of the National Weather Service and the National Hurricane Center. To adequately meet the needs of our partners at all levels, we have to periodically address the communications landscape, the threats facing critical infrastructure, and how advancements in the Amateur Radio Service may be leveraged to meet current and emerging needs.

Years have passed since ARRL has overhauled its offerings and made adaptations and changes as needed. We have the opportunity to expediently address critical issues, plan for improvements in the near future, and prepare for emerging communications needs recognized and needed internally and by our partners.

This document provides a high-level look at current ARRL programs, our relationship with other programs and agencies, and our place in the broader communications landscape. The document will also provide goals and recommendations for improvements. These improvements consider not just ARRL's current program offerings, but the overall role of the Amateur Radio Service in disaster and emergency communications support for partners and the public.

## ARRL 21st-Century Public Service Communications

### The Second Century of Service

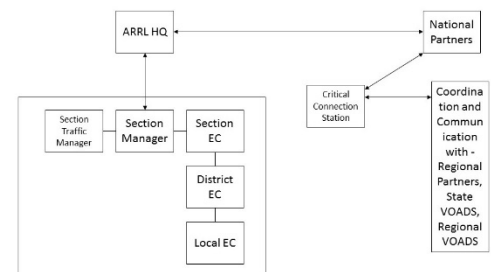
#### Goals and Recommendations

**1. Leadership and High-Level Coordination:** There is a need for a closer look at the leadership and coordination structure of the two ARRL programs — ARES and NTS. There is a distinct capability and coordination gap at the regional level and national level for ARRL emergency and disaster communications programs. Better coordination is also needed between Amateur Radio emergency communications programs.

- *Public Service Communications Strategy* — ARRL must establish a statement of our Public Service Communications Strategy that defines the goals and objectives of our program offerings.
- *New Reporting System for Field Organization* — The reporting structure for ARES and NTS has not produced information that is reliable in determining the status and activities of the programs. Field leadership needs an online and mobile reporting mechanism. In the short term, the data being requested on current forms also needs to be updated.

- *Critical Connection Program* — There is a noticeable gap in regional coordination for Amateur Radio. At the regional level there are two needs. First is a regional liaison that can assist the ARRL Emergency Preparedness Manager in coordination efforts with national partners at the regional level.

Secondly, access points for national partners to the wide range of Amateur Radio emergency communications networks need to be developed. See the attached document on Critical Connection Program for further discussion on this topic.



- *The Role of ARRL HQ Staff* — The primary staff function at ARRL HQ for ARES has been the Emergency Preparedness Manager. NTS has had a liaison at ARRL HQ in the Field Services Manager. During large-scale emergencies and disasters, the response efforts of the field organization have been supported through the ARRL HQ Emergency Response Team. The Emergency Preparedness Program has been effective in providing regular support to ARES and working with national-level

partners. Moving forward, NTS needs a stronger advocate at ARRL HQ, who will work closely with NTS leaders and provide support and training for NTS participants.

- *The Role of ARRL Leadership and the Board* — Oversight of ARRL staff that support ARES and NTS has been through the manager of the Field Services department, and Board oversight has been through the Programs and Services Committee. The primary concern for upper-level management and the committee should be ensuring that ARES and NTS continue to meet the needs of our partners, and that both programs are maintaining the highest standards for the services they provide. The Board and senior management must ensure that decades do not pass without assessing the needs and areas of improvement for both programs. This work can be facilitated through input from staff and the work of the Amateur Radio emergency communications coordinating group mentioned elsewhere in this document.
- *Training Requirements for Leadership* — All ARES and NTS leadership positions should have basic training and capability requirements. This should include training in incident command and volunteer management. New training modules should be developed for Emergency Coordinator and Section Emergency Coordinator. Additionally, for staff tasked with managing public service communications programs, appropriate professional continuing education coursework is critical.
- *Assessment of Current Field Organization Positions* — The ARRL field organization positions should be assessed for relevancy. See the supporting document for recommendations submitted to the ARRL Programs and Services Committee.
- *Amateur Radio Emergency Communications Coordination* — Over the recent past, several of the largest Amateur Radio emergency communications groups have come together to coordinate efforts. This first began with the organizations active in hurricane response — Hurricane Watch Net, WX4NHC, VOIP WX Net, and ARRL. Coordination focused on response activities, training activities at the National Hurricane Conference, and hurricane season preparedness activities. This team concept continued with the



“mass sheltering response” side when SATERN invited representatives from Army MARS and ARRL to serve as evaluators at a national-level exercise. The focus on collaboration and coordination has continued to evolve. In May 2016, representatives from each program came together at Dayton Hamvention and held a joint panel discussion on emergency communications. While a formal structure is not needed, ARRL should actively encourage this continued cooperative approach through exercises, training, in-person meetings at national conventions, development of best practices, and response coordination.

- *National-Level Relationships* — The relationships ARRL has with its national partners are critical toward providing emergency communications support. Without these relationships, our public service pillar cannot stand. These relationships set the example of partnership at the regional, section, and local levels, which is maintained by the ARRL field organization. A significant amount of work on the part of ARRL officers, directors, and staff has gone into these relationships. ARRL must not take a course that jeopardizes these relationships, and must continue the work to strengthen them and explore new ways to work with our partners in a cooperative and collaborative manner.
- *ITU Cached Equipment* — Over the last 7 years, several catastrophic disasters on the international level have been met with coordinated response from ARRL. Critical communications equipment was dispatched by ARRL for earthquakes in Haiti (2010), Nepal (2015), and Ecuador (2016). ARRL has also provided financial support through a donation to the Philippines Amateur Radio Association for response to typhoon Haiyan in 2014. ARRL has offered this kind of support for our sister national societies at great cost — a cost that is not sustainable. The International Telecommunications Union (ITU) has a program of cached telecommunications equipment for deployment during disaster. Unfortunately, there is no Amateur Radio equipment in the caches. ARRL, working through the IARU, should encourage the ITU to include Amateur Radio equipment in this program. ITU has expressed willingness to do so, but can only do so when equipment is donated to the program. Coordination with the Amateur Radio industry will be needed.
- *The Role of W1AW* — During a time when a “communications emergency” has been declared, W1AW will transmit news and information on all its standard frequencies per the following schedule: Voice on the hour, Digital at 15 minutes past the hour, and CW on the half hour. This schedule can be broken down

further, depending on the severity and location of an event that may require W1AW's participation.

#### I. National Level

A National-Level event may be any weather, geological, or manmade event affecting a large, widespread area of the country (more so than what may be affected by, say, a hurricane). At this level, the current communications emergency operating schedule should be implemented. In addition, W1AW should be expected to participate in a variety of nets, such as SHARES, MARS, and SATERN. EchoLink, IRLP, and Winlink2000 will be placed in standby mode. The station should also participate in any Amateur Radio nets that may be in operation that are directly/indirectly involved with emergency communications related to the National-Level event. During this time, the regular operating schedule is suspended. W1AW will be properly staffed, with accommodations to support extended stays of personnel at the station.

#### II. Regional Level

A Regional-Level event may generally be weather related, such as a hurricane. In this situation, W1AW should stand by and not participate in communications unless specifically requested to do so. If feasible, W1AW should monitor any nets that may be in operation in support of the event. During this time, the regular daily operating schedule is implemented, provided there is no conflict in frequency use by either W1AW or stations active in the affected area. If the need dictates, W1AW staff may extend their time at the station.



#### III. Local Level

A Local-Level event may be any weather, geological, or manmade event that threatens the immediate area in, near, or around W1AW. W1AW will be expected to participate in a variety of nets, such as SHARES, MARS, and SATERN that are in operation in support of the local event. EchoLink, IRLP, and Winlink2000 will be placed in standby mode. The station should also participate in any Amateur Radio nets that may be in operation that are directly/indirectly involved with the Local-Level event. During this time, the regular operating schedule is suspended on those bands/modes that are in use for emergency

communications. W1AW will be properly staffed, with accommodations to support extended stays of personnel at the station, should it be deemed necessary.

**2. Training and Exercise:** The ability to provide communications to our partners and served agencies depends on our individual skills as radio amateurs. The primary method of developing our skills is through on-air activity and participation in Amateur Radio programs. However, in order for radio amateurs to be of value during times of emergency or disaster more skill development is needed. ARRL must develop a training, education and exercise program for ARES and NTS that enables participants to provide the highest level of service to those needing assistance. This program should also be accessible to people in all Amateur Radio emergency communications programs.

- *Simulated Emergency Test* — The ARRL Simulated Emergency Test should be evaluated to determine how to align it with the annual National-Level Exercise (NLE). “Cascadia Rising 2016” was a great example of how Amateur Radio could be included. Closer coordination with the NLE would also be consistent with our memorandum of agreement with FEMA.
- *ARES and NTS Training Standards* — Training standards should be established for participation in ARES and NTS. Examples of such standards are available through several ARRL sections. The training table provided in the previous section covers recommended minimum training standards.
- *Continuing Education* — When ARRL began the emergency communications courses, they were part of a broader continuing education program. Over time these offerings were discontinued. The ARRL Education Services Department and Emergency Preparedness Program should assess a new offering of continuing education topics using platforms appropriate for members, topics that are relevant, and a means to track the progress of program participants.
- *Publications* — ARRL has historically offered several publications covering a wide range of topics related to emergency communications. These publications have been and continue to be quite popular, however there are two shortcomings that need to be assessed. First, our publications need to be kept up to date. Topics and trends in emergency communications come and go quickly and we need to factor this in to our publications. Second, making these publications available in Spanish would better serve our membership and radio amateurs throughout IARU Region 2. Spanish is the most widely spoken language in our



IARU region, and no other national society has the publishing capability that ARRL does, therefore radio amateurs throughout the Region come to ARRL for books and other publications. Specific publications to focus on include *The Amateur Radio Public Service Handbook*, *Storm Spotting and Amateur Radio*, *ARES Field Resources Manual*, *Emergency Coordinators Handbook*, *Section Emergency Coordinators Handbook*, and *Emergency Power for Radio Communications*.

- *Upgrading from Technician* — Many people who get licensed just for emergency situations tend to stop at Technician class and do not join ARRL. To encourage upgrading, we must focus on the concept that access to spectrum is part of the communications tool box. Beyond this, we must offer training to improve operator skills. We are the last communications service with an intimate understanding of HF communications, and this is a skill we need to encourage. We also must assess how to market membership to new radio amateurs, specifically those interested in emergency communications.
- *Youth* — The first exposure to Amateur Radio for many people is when they are young, generally in middle or high school. ARRL is focusing education efforts on this age range. Material needs to be developed, regarding both licensing and operating, that is suited for youth. Current offerings are clearly intended for an adult audience and are not suitable for younger potential amateurs. Public service communications opportunities for youth should also be explored. Including youth by utilizing their skills in social media to create a social media presence for Amateur Radio emergency communications and encouraging schools to adopt the FEMA Teen CERT program are starting points. Focus should also be directed on opportunities for college and university Amateur Radio clubs, partnering with local ARES groups as appropriate, to be involved in public service and emergency communications.



**3. Membership:** ARES and NTS have two different membership issues that must be addressed. The primary membership problem for ARES involves accounting for membership. There is no way to know how many program participants there are.

Additionally, and a far lesser problem, is bringing new radio amateurs into ARES. NTS is faced with a different problem — recruitment. ARRL must find a better way to recruit and train radio amateurs into NTS if the program is going to remain viable.

- *ARES Member Identification* — ARRL must reassess how it identifies ARES members. The current self-reporting method does not work. It should be kept in mind that this is not the same as credentialing, and that additional volunteer identification may be required by agencies and organizations with which we work.
- *ARES Group Identification* — ARRL has been able to identify clubs for quite some time, however no effort has been made to identify ARES groups. The infrastructure to do this may already be in place, so with some extra effort a database of known ARES groups can be established. This will help with coordinating assistance requests that come from national and regional partners, provide a method for offering incentives and recognitions, and provide one extra level of reportable information. Currently, ARRL membership is not required for participation in ARES. Through a group identification system, additional incentives could be offered for groups where at least 51% of members are also ARRL members (similar to the club affiliation program).
- *ARES membership* — Currently, there are two requirements for ARES membership: possession of an Amateur Radio license; and willingness to serve. This does not meet current standards for emergency and disaster volunteer work as it does not account in any way for training or experience. ARES membership requirements should be modified to account for an associate or introductory member and for a full member. Progression from one tier to the next should depend upon meeting local, section, and national training requirements, and time in service with approval of field leadership.

**4. Operations:** The change in the communications landscape in the United States has forced radio amateurs to think beyond the traditional communications services we have offered. Today the need is no longer limited to voice communications and message handling. Voice, data, high-resolution imagery, and text modes are some of the methods used to communicate. Radio amateurs have developed modern modes and protocols including mesh networking, radio e-mail, unmanned aerial vehicles, and digital voice. As communications technology continues to evolve, we are needed for more than our operator skills; our technical skills are also critical during times of emergency or disaster. ARRL must ensure that ARES and NTS can meet the communications needs of the 21st



century. While simple networks with limited or no infrastructure are valuable, they are not always the answer. And, beyond our operating and technical skills, we must also factor in our ability to deploy during large-scale disasters. Most VOADs have a means to deploy volunteers to areas impacted by disaster. ARES particularly must address the feasibility of developing a large-scale disaster response capability.

- *MESH* — Many radio amateurs have experimented with setting up mesh networks utilizing commercially available equipment modified to work on frequencies allocated to the Amateur Radio Service. These networks are ideally suited for providing last mile voice, data, and text communications in a manner that non-amateurs are familiar with. However, creating mesh networks and maintaining them can be incredibly complex. This has prevented many radio amateurs from utilizing this communications resource. ARRL took a first step in helping radio amateurs understand this mode of operating through the book *High Speed Multimedia for Amateur Radio*. ARRL should also develop training material on this topic and rebuild relationships with groups such as Amateur Radio Emergency Data Network (AREDN) and Broadband Hamnet that are experimenting with this mode and finding new ways for radio amateurs to get started.



- *Radio E-mail* — The ability to send e-mail via radio is one way in which radio amateurs have adapted available technology to meet modern communication expectations. The primary method of sending and receiving radio e-mail is through the WinLink and related platforms. The ability to do this depends upon a widespread network of users and gateways. The value of radio e-mail during disasters was tested with a remarkable level of success during the Cascadia Rising 2016 exercise. Radio e-mail is also considered a critical capability of the ARRL flagship station, W1AW. ARRL should find ways to encourage use of radio e-mail as a communications tool, address regulatory limits that hinder effective use while respecting the use of spectrum by others, and promote the development of a strong, widespread network of gateway stations.

- *Messaging* — The Amateur Radio Service has a long tradition of handling formal messages for partners when normal means of communication are down or overloaded. Our partners' need for formal messages and health and welfare traffic must be understood. We can no longer assume that traditional Radiogram

formatted messages are relevant to our partners. Further, with the availability of platforms such as “Red Cross Safe and Well” and social media resources, there are now better methods for sending health and welfare traffic out of a disaster area. We need to assess if we still have a role in handling this form of traffic during times of emergency or disaster.

- *National ARES Mutual Assistance Team (ARESMAT)* — During several meetings with officials from FEMA, interest was expressed in the development of a national-level ARES mutual assistance team or National ARESMAT. Such a team could be deployed during large-scale disasters to add capacity to local and section ARES groups and potentially work to support a FEMA mission. Most national-level VOADs have a method for volunteers to deploy to other parts of the country in support of disaster operations. At FEMA’s suggestion, ARRL should explore the feasibility of developing such a team.
- *ARRL PIC/PIO and Disaster Information* — As an emergency or disaster is unfolding, it is critical to get real-time reports on ARES activity in the affected area. Real-time information is a key component largely missing from ARRL section reporting. Reporting the activities of an ARES group is one of the major responsibilities of the Public Information Officer and the Public Information Coordinator. As the sponsoring organization of the ARES program, it goes without saying that ARRL must be provided with information, as quickly and efficiently as possible, about the response activities of responding ARES groups. Real-time reporting can be accomplished with numerous types of social media (Facebook, Twitter, and Instagram) or by relaying information out of the affected area via Amateur Radio. PIOs should be investing time in learning how to use social media, or delegate those responsibilities to a person in the group that can perform those functions. The ease of using social media to report Amateur Radio activity during an event benefits a groups’ local served agencies, elected officials, partner, their community, and ARRL Headquarters.
- *Challenging the Industry* — The many changes in the communications landscape — mesh networking, radio e-mail, smartphones and tablets, Bluetooth — have not been reflected very well in the Amateur Radio industry. Many products and services available to radio amateurs basically reflect legacy technology that is still useful but not familiar to many in today’s communications environment. Radio amateurs involved in emergency communications can play a key role, through ARRL programs and non-ARRL programs, in challenging manufacturers to develop cutting-edge technology for the Amateur Radio Service.

- *Best Practices* — A communications and training method used by the public safety community is the use of “best practice” papers to address specific needs, areas of interest, or operational activities. ARRL can learn from this practice and offer, through our virtual library, similar documents related to Amateur Radio emergency communications; input and contributions from Amateurs in the field will be helpful in making this happen. This is an opportunity for ARRL volunteers to help shape the overall Amateur Radio emergency communications discipline.
- *ARRL and SHARES* — Replace the ARRL memorandum of understanding with NCS (National Communications System) with a new memorandum of understanding with the Shared Resources HF Radio (SHARES) Program — or its parent organization, the National Coordinating Center for Communications (NCC). Provide visibility for the SHARES program within ARRL through *QST* and other media, emphasizing that SHARES is not recruiting for individual volunteers (SHARES authorizes stations at government agencies and critical infrastructure key resources. It does not seek additional home-based relay stations). Provide visibility of ARRL programs and services by having an ARRL representative participate in the monthly SHARES Interoperability Working Group meeting (this was done recently by Brennan Price, and before him by Paul Rinaldo). Participate in each organization’s training, exercises, and emergency operations to the extent possible. SHARES headquarters station KGD34 has a club station, K4NCS; ARRL Headquarters W1AW has SHARES station NCS310.

#### **5. Regulatory:**

- *60 Meters* — During 2016, the use of 60 meters in regional and national exercises came under great focus. This portion of the HF spectrum is well suited for regional and wide-area communications during a disaster, and for coordination with federal users. ARRL should seek three distinct goals in regard to 60 meters. First, the establishment of an Amateur Radio band at 5 MHz with operating limits conducive to providing emergency communications. Second, the maintenance of an interoperability channel for coordination with federal users. The current channelized format of 60 meters allows for this. And third, clarification from the FCC on when Amateur Radio operators may communicate directly with federal users on 60 meters.
- *Emergency Beacons* — During recent conversations with FEMA leadership, the subject came up of using low-power digital modes such as WSPR for emergency beacons. The possibilities are currently being explored, however, the regulatory limiting factors include unattended operation below 28 MHz, and lack of digital mode privileges for Technician class license holders.

- *ARRL and RACES* — Clearly explain in *QST* that RACES is a radio service, not an organization or federal program, to set the groundwork for eliminating the perceived competition between ARES and RACES. Secure from the FCC a Public Notice or other authoritative documentation clarifying the authority for amateur stations engaged in emergency communications (including tests and exercises) to communicate with federal radio stations on the five amateur secondary channels at 5 MHz. Jointly with appropriate representatives of the federal government, state government, tribal government, local government, and others establish a blue ribbon panel to study:
  1. What purpose does RACES serve?
  2. What purpose(s) should RACES serve?
  3. What changes, if any, should be made to the FCC rules regarding RACES?

**6. National Traffic System:** Considering the recent developments with NTS leadership and the formation of Radio Relay International (RRI), it is now time to consider what changes need to occur to keep NTS as a viable, relevant, and useful ARRL program. Before considering any changes, we have to understand some basic facts about the current traffic handling landscape.

- NTS currently has no national-level leadership, however, it still has dedicated participants.
- NTS has two distinct dimensions. First, it is an operating activity in which routine messages are sent, relayed, and received. Second, it is a network that can send, relay, and receive emergency and health and welfare traffic. Until recently, the mantra of NTS was, “we train in case one day we’re needed.” This mantra can help inform our approach to the future of NTS.
- RRI is putting the primary focus on traffic handling as a resource during times of emergency or disaster.
- The Amateur Radio Service is no longer the sole provider of health and welfare traffic handling. Platforms such as *Red Cross Safe and Well*, *Facebook Safety Check*, and *Twitter* provide multiple means for people to send this form of traffic on their own.
- Formal message handling has changed. The Radiogram, which has never been a universal message format, is now only used by a small number of traffic handlers. Modern formal messages are now sent by text or e-mail.
- While the need for long-haul, RF-only traffic handling is a remote one, the need for infrastructure-free traffic handling at the local, state, and regional levels is more likely.

- The redundancy, complexity, and diversity of the current communications infrastructure in the United States requires us to see traffic handling in a different way. When communications networks were relatively simple, an RF-only approach was acceptable. Today a hybrid approach is necessary.
- Today there are several national-level Amateur Radio public service communications programs that exist and work together: MARS, SATERN, WX4NHC, HWN, and VOIP WX Net. Each has a need for traffic handling standards and each brings unique capabilities to the table.
- The discipline of traffic handling is useful. When done well, it builds operator accuracy, efficiency, and station building skills. Participants learn about propagation, network theory, and rules and regulations. Most important though, NTS operations get people on the air.

Keeping these things in mind, our approach moving forward must put the focus of NTS on the concept of NTS as an **operating activity and training ground**. To do this means we will have to remove from NTS the functions of emergency/disaster and health and welfare traffic handling. This is not to say ARRL is out of the business of traffic handling during disasters; this focus will fall on other programs and protocols that better suit the needs of our partners and the public.

### **NTS as an Operating and Training Program**

As NTS participants know, the NTS network is an ideal platform for providing traffic handlers, both new and veteran, an environment for improving operator, station building, and network skills without the intensity or pressures of a disaster event. To revitalize participation in NTS in the 21st century, and in implementing this program philosophy, there are certain objectives we must meet.

- Establish a clear mission statement and set of goals for NTS as an operating activity and learning environment.
- Produce training materials for participants that focus on introduction, net control skills, digital traffic handling, and station building.
- Establish participation goals that can be achieved through training and activity, such as net control (local, section, region, area, and Trans Continental Corps (TCC)), basic membership, and instructor.
- Develop a new leadership structure supporting this focus.
- Increase participation through added traffic volume. This can be done through the W1AW bulletins by embedding a “traffic cookie” into the CW and digital bulletins. This concept will be described separately.
- An improved recognition and award program from ARRL for program participants.

- Develop a youth participation program within NTS.

Through participation with NTS traffic handling and training, amateurs will develop skills that may be useful to established Amateur Radio public service communications programs such as ARES, SATERN, and MARS. Additionally, participants will develop skills that will be helpful in a wide variety of Amateur Radio disciplines.

### **Emergency/Disaster and Health and Welfare Traffic Handling**

Amateur Radio's emergency communications and our national communications infrastructure have a shifting landscape. We must change our approach to how we handle this type of traffic. Through development of new resources, better utilization of available resources, and collaboration with partners from IARU Region 2, the Amateur Radio Service can rise to a new standard for our national partners and the public. Specifically, we should:

- Develop message handling protocols at the local, state, and regional levels. Regional communications capability will be enhanced through the Critical Connection Program being developed by the ARRL Emergency Preparedness Program in conjunction with several national partners.
- Long-haul, infrastructure-independent, secure emergency message handling can be handled through our Military Auxiliary Radio Service (MARS) partners. Their message handling skills and protocols are of the highest standard. Additionally, they offer dedicated traffic channels and can provide encryption.
- Health and welfare traffic is no longer something Amateur Radio needs to provide. Through programs such as *Red Cross Safe and Well*, *Facebook Safety Check*, and *Twitter*, the public has multiple means for communicating status following a disaster. These methods all utilize the internet and cellular networks, however, one system provides a unique opportunity for Amateur Radio to assist. *Red Cross Safe and Well* has a method to batch process input to the system using *WinLink*. A guidance document on how to do this will be developed for amateurs that provide shelter communications.
- *WinLink* has provided the Amateur Radio Service with a tremendous asset for handling emergency and disaster messaging. *WinLink*, in its many forms, is now in widespread use through the Americas. During the IARU Region 2 Emergency Communications Workshop, the concept of an IARU Region 2 *WinLink* Directory was discussed. This would provide Amateur Radio emergency communicators with a "phone book" of stations that could send and receive emergency traffic



through the radio e-mail system. This concept is under development by the IARU Region 2 emergency coordinators.

Through separating the two historical functions of NTS — placing the focus on operating and training and reassigning emergency and disaster communications to appropriate resources — we can provide NTS and its participants with a focused, goal-oriented program while providing better services to our partners. Many of the goals described here can be accomplished through the work of ARRL staff and volunteers. However, certain goals will require resource commitments that will likely need Board approval.

This approach may work if our ultimate goal is to keep NTS as an active ARRL program. However, other options should not be considered off the table. It appears that RRI has co-opted most of the NTS leadership and a large number of participants. An option, if ARRL only controls a small portion of what used to be NTS, is to sunset NTS as a program and let RRI focus on the traffic-handling discipline. Our relationships with national-level partners are such that doing so, as long as we have a protocol in place for message handling, would not adversely affect our partnerships. The idea of “Mission Accomplished” also cannot be ruled out. NTS succeeded with the task it was set up to do; the mission is over. Should we adopt this approach, it should be done in such a way as to not alienate the current program participants.

## **Next Steps**

This document and the supporting appendix lays out the ground work for steps to follow.

- Assemble a panel of representatives from the field organization who have expertise in public service communications. The panel will work with the ARRL Emergency Preparedness Manager to create a public service communications strategic plan for ARRL.
- Create a panel to discuss options for NTS and provide a recommended course of action to the ARRL Programs and Services Committee.
- Develop the ARRL Critical Connections Program.
- Create a document that provides an in-depth review of ARRL’s public service communications offerings and emergency preparedness program, including but not limited to: partner status, current MOUs, emerging issues. This document may be used by ARRL officers, Board, and staff to gain a clear understanding of this area.

## **Immediate Needs**

There are several recommendations that can be implemented with relative ease. These recommendations should be seen as the “low-hanging fruit” that can lead the way to larger program improvements.

- *Training Standards* — Change ARES policy to establish minimum training standards for ARES leadership at the section, district, and local levels, as well as for ARES membership.
- *Tiered Membership* — Change ARES policy to establish a tiered membership structure.
- *Regional Connection* — Adoption of the ARRL Critical Connection Program. This is covered in a separate document.
- *Secure Back-channel Link to Federal Partners* — Obtain a SHARES radio for W1AW and maintain regular presence on SHARES national and regional nets. This can be expanded through the Critical Connection Program.
- *Reporting* — Set goals for a new reporting mechanism, establish a budget for such a system, gather information from potential vendors.
- *Membership Identification* — Set goals for membership identification, systems for issuing identification, establish a budget, and assess implementation.
- *EC-001 Updates* — Currently under way and scheduled for completion in summer 2017.
- *Continuing Education Content* — Currently under way through regular training webinars. Additional content and delivery methods are being assessed.
- *Health and Welfare Traffic* — Establish a protocol for information input to the Red Cross Safe and Well system. The tools to do this are currently in place; instruction is needed.

## **The Next Five Years**

Within the next five years, assuming we make progress on short-term goals, there are other issues we will have to address. At the pace the communications landscape is changing, it is not easy to look much beyond five years.

- *Background Checks* — Nearly every volunteer-based response program has a requirement for a criminal history background check. Our approach of making no requirement and leaving background checks up to the entities that ARES groups work with is weak. It will be necessary to address the issue of background checks for the Critical Connection Program and the National ARESMAT.
- *VOAD Support* — As communications infrastructure for public safety and emergency management becomes more hardened and robust, we may be faced with a change in our customer base. The VOAD community will likely become where Amateur Radio support is needed. To prepare for this shift, we must stay connected with our fellow VOADs at the local, state, and national levels.



- *Volunteer Demographics and Drought* — We must prepare for a shift in how a new generation does volunteer work. As Baby Boomers give way to Generation Xers and Millennials, we must be ready with a program that is attractive to them. Additionally, we must be prepared to do more with less. The disaster response community is relying more and more on volunteers, to the point that there are not enough volunteers to meet the need. We will not be exempt from this, and should prepare for it.
- *Change in Media Consumption* — We are overly reliant on traditional forms of media as society moves away from books, magazines, and e-mail. To reach potential volunteers for public service, we must stay current with organizational communication trends. We must develop mobile apps, mobile-friendly websites, social media presences, and instant contact communications with field organization leadership. It is likely that in five years we will reassess how we communicate with our membership.

## Summary

Any changes to ARRL emergency communications programs will require a great deal of buy-in. Within the Amateur Radio community, the changes must be presented to those actively engaged with emergency communications programs. Changes need to be presented to ARRL membership and advertisers who support the overall mission of ARRL. Externally, our first-level of buy-in must come from partners at all levels; federal, regional, state, and local. Our partners are the ones who most visibly benefit from the services we offer. Finally, and far from last, the public that entrusts us with valuable spectrum must buy in. Typically, we have not considered the public a beneficiary of what we do in emergency communications; our focus has been on the served agency. Ultimately, it is the public that benefits from the work we do alongside our partners, it is the public that will elect those that can pave the way for loss of spectrum, and it is the public that can help or hinder our ability to build a station in the community.

Change is difficult, and some items discussed in this document may not initially be popular. We cannot be afraid to break some eggs in the process; there may be initial pushback, and we have to be prepared for that. If we refuse to improve, adapt, and rise to new challenges for fear of criticism, we will stagnate and die. The survivability of our emergency communications programs, and all radio amateurs that seek to serve the public, depend upon meeting the expectations of today, and proactively — not reactively — meeting the communications opportunities in the years ahead.

Although some of these recommendations are new, many have been stated before either in the National Emergency Response Planning Committee report (2007), the work of the Emergency Communications Advisory Committee (2012), and currently the work of the Public Service Enhancement Working Group. Despite the recommendations of these committees, input from members, input from our partners, and basic awareness of the changes in communications infrastructure, we are still struggling to implement any substantive changes to ARES or NTS. If this trend continues, we may need to take a completely different look at the future of both programs.

CONFIDENTIAL

# **ARRL POLICY ON BOARD GOVERNANCE AND CONDUCT OF MEMBERS OF THE BOARD OF DIRECTORS AND VICE DIRECTORS**

Being elected to serve on the ARRL Board of Directors is an honor and privilege bestowed by the membership. It is one that carries with it a serious responsibility to serve the interests of the ARRL and its members. Members of the Board of Directors and Vice Directors serve in a representative capacity relative to ARRL members, and in a fiduciary capacity relative to the organization as a whole. References below to Board members apply equally to Vice Directors.

Board members should conduct themselves and perform their duties with integrity, collegiality and care.

Board members, as fiduciaries, must always abide by, and are obligated to ARRL as an organization to follow, the three legal duties of good faith, care and loyalty during their tenure. The duty of good faith means that the Board member must act in compliance with the corporate mission, at Division and national levels, and not in a way that is inconsistent with ARRL's goals. The duty of care requires Board members to be informed as to ARRL matters and to conduct themselves in a manner reasonably believed to be in the best interests of the corporation. The duty of loyalty means that the Board member must act in the best interests of the corporation and its mission, rather than in the Board member's own interest or in the interest of another person or entity. Each Board member has basic responsibilities that derive from these three legal obligations:

- Supporting the mission and purpose of the ARRL, as reflected in its Articles of Association, and abiding by its Bylaws and policies;
- Diligently preparing for, attending, and participating in Board meetings, committee meetings and related activities;
- Ensuring that the financial and business affairs of the ARRL are, to the best of the Board member's awareness, managed in a responsible manner;
- Acting always in good faith and in the best interests of the ARRL organizationally, setting aside any personal interest and avoiding any conflicts of interest or actions taken in the interest of the Board member or of third parties rather than in the interest of ARRL;
- Cooperating with and respecting the opinions of fellow Board members and management, leaving personal prejudices out of all board discussions and showing respect and courteous conduct in all board and committee meetings;
- Maintaining the confidentiality of, and making no unauthorized disclosure of, sensitive or proprietary information obtained as a result of Board service;
- Representing the organization and its initiative and advocacy efforts in a positive and supportive manner at all times and in all places;

- Supporting actions taken by the Board even when the Board member personally did not or does not support the action taken, avoiding any adverse characterization of Board decisions that might bring the organization into disrepute;
- Taking no actions beyond the scope of the Board member's authority; and
- Refraining from intruding on administrative issues that are the responsibility of management, except to monitor the results and ensure that procedures are consistent with Board policy.

Board members must also recognize that the Board acts only as a collective entity. Success of ARRL and the success of Amateur Radio generally depends on the contributions of all Board members; their ability to work well together; and the fulfillment of the obligations listed above.

Based on the foregoing core principles and obligations of each Board member, this Policy establishes standards of conduct expected of each Board member and Vice Director.

## **STANDARDS OF CONDUCT**

- 1. INDIVIDUAL CONDUCT:** To properly serve the ARRL and its members, each Board member must at all times act with dignity and integrity, both inside and outside of Board meetings, reflecting the ARRL's high standards for ethical behavior and professionalism.
  - a. Each Board member sets the tone for ARRL, its members and volunteers by acting as a leader and serving as an example of dedication, integrity and professional conduct.
  - b. A Board member should take no action that could adversely affect the reputation or credibility of the ARRL, or discourage membership in the organization.
- 2. FINANCIAL RESPONSIBILITY:** Each Board member serves as a fiduciary of the ARRL's resources and is accountable to the members for prudent management of the ARRL's financial and business affairs.
  - a. A Board member should read and understand the ARRL's financial reports, committee reports and other documents pertaining to the operations of the ARRL.
  - b. A Board member should actively engage in decisions relating to the allocation of resources and monitoring of financial performance.
- 3. CONFLICTS OF INTEREST:** Each Board member must act in good faith and in the best interests of the ARRL, above any personal interest or the interests of any particular constituency.

Each Board member is subject to, must be familiar with, and must follow the ARRL's Conflict of Interest and Ethics policies as they may be amended from time to time. It is not a conflict of interest for Board members to be advocates for the collective interests of members in the Division they represent. Board members should, however, be open to the views and needs of all areas of interest in Amateur Radio, and should act and vote based on the overall good of the ARRL, without partisanship.

**4. BOARD COMMITMENTS:** Each Board member must devote the time and resources reasonably necessary to fulfilling his/her commitments to Board activities.

a. A Board member should demonstrate due diligence in preparation for and attendance at Board meetings, committee meetings and other activities on behalf of the ARRL.

b. A Board member should strive to be informed about the needs and opinions of the ARRL membership, and should ask any questions necessary to be fully informed about the issues being addressed by the Board, before making decisions.

c. A Board member should give open and fair consideration to diverse and opposing viewpoints.

d. A Board member should exercise independent judgment, and should not hesitate to express and discuss dissenting opinions in a candid, but appropriate and courteous manner during Board deliberations, such being the best way to develop sound policy.

**5. RELATIONS AMONG BOARD MEMBERS:** Each Board member must foster an environment of respect, cooperation and collegiality. A Board member must not unduly disrupt the Board or detract from its operating in an efficient and effective manner.

a. A Board member should treat other Board members with courtesy and allow other members of the Board to candidly express their views.

b. A Board member should respect the differing opinions of others. Board members may disagree on issues, but disagreements should be directed at the issue; personal, *ad hominem* attacks are not acceptable.

c. A Board member should never undermine, sabotage or falsely impugn another Board member or the organization as a whole. However, this is not intended to preclude a Board member, acting in good faith, from reporting a suspected violation of this Policy or the Conflict of Interest Policy set forth in the ARRL By-Laws to the ARRL's Ethics and Elections Committee.

**6. CONFIDENTIALITY:** Transparency in governance and input from ARRL membership are both important considerations for the Board. Board members must, however, balance those considerations against their legal and fiduciary obligations to maintain the confidentiality of sensitive or proprietary information obtained as a result of Board service. In addition, maintaining the confidentiality of the Board's deliberations (especially but not limited to those discussions held in executive sessions or committees of the whole) is essential to having full and frank discussions necessary for effective policymaking. Therefore, subject to the standards of this Code of Conduct relative to Public Statements, Support of Board Decisions and the exceptions noted below, a Board member may and should solicit input from ARRL members on policy matters being considered by the Board, and may informally share with ARRL members the final actions taken and the issues considered by the Board in reaching its decisions.

However:

- a. A Board member may not disclose any matters addressed in executive session to anyone not entitled to participate therein.
- b. A Board member may not disclose confidential or proprietary information, including draft documents or briefing materials identified as confidential, which were obtained as a result of ARRL Board service, to anyone outside the Board or authorized ARRL staff.
- c. A Board member may not, in disclosing anything about the Board's deliberations, discuss or disclose the votes of the Board or of individual Board members (including his/her own) unless the Board has previously made the votes public. Nor shall any Board member negatively or falsely characterize the positions, policies or decisions of the Board or the points of view taken by any member of the Board with respect to them.
- d. A Board member may not disclose anything about Board actions or deliberations if the Board has determined to defer announcement of that action or to control the dissemination of that information.

**7. PUBLIC STATEMENTS:** A Board member may not act or give the appearance of acting on behalf of the ARRL organizationally, unless specifically empowered to do so under the Bylaws or specifically authorized by the Board or by the President.

- a. A Board member who, by virtue of Board assignments or duties, or at events within the Division is asked to or is expected to communicate about ARRL affairs through an official ARRL communication channel or forum is authorized to speak in that capacity and for that purpose.
- b. Except where so empowered or authorized, a Board member speaking publicly to ARRL membership or in any other public forum must ensure that his/her statements are clearly identified as personal opinions and that he/she is not speaking on behalf of the ARRL in any official capacity or expressing the views or positions of the ARRL or any other ARRL Board Member. Even with such a disclaimer, a Board member may not make any adverse or false characterization of Board decisions that might bring the organization into disrepute.

**8. SUPPORT OF BOARD DECISIONS:** A Board member must accept and publicly support Board decisions.

- a. A Board member, as a leader in Amateur Radio, is encouraged to be an ambassador and an advocate for ARRL and, subject to the Confidentiality Standard of this Code of Conduct, to publicly promote the activities and actions of the organization with the ARRL membership. In doing so, a Board member must act at all times faithfully to the intent of the Board as expressed in its official statements, and should not reinterpret or re-characterize the Board's actions to reflect his/her own view or the views of any other Board Member.
- b. While having the right and responsibility to exercise independent judgment and to express dissenting opinions during Board deliberations, a Board member also has the obligation outside the Boardroom to respect and support final decisions of the Board, even when the Board member dissented from the majority view.

- c. A Board member who does not support a Board decision may express his/her opposition within the Board in an appropriate manner.
- d. A Board member must not take actions publicly or with respect to the ARRL membership that have the purpose or effect of undermining or discrediting the decisions or actions of the Board.
- e. If a Board member is ultimately unable to accept a Board decision and is unable to influence a change, the Board member should consider voluntarily resigning his/her position on the Board.
- f. A Board member may not publicly oppose a Board action prior to the effective date of his or her resignation from the Board.

**9. RELATIONS WITH STAFF:** A Board member must appreciate the strategic and policy role of the Board, and respect the separate and distinct roles of the CEO and ARRL staff to responsibly manage and administer ARRL's day-to-day activities. It is the role of the Officers and Staff, not the Directors, to implement Board policy.

- a. A Board Member should refrain from intruding on administrative issues that are the responsibility of Officers or management, except to monitor results and prohibit actions that conflict with Board policy. If a Board Member believes that staff is acting in a manner that is inconsistent with ARRL policies, the Board Member should raise the concern with the appropriate officers or with the Board.
- b. A Board member should treat employees of the organization courteously and professionally. Board members should never issue instructions to or obtain work commitments from staff directly. That is the proper role of the CEO.
- c. ARRL staff has the right to work in a professional atmosphere that prohibits discriminatory practices, including harassment. All relations between Board members and staff must be professional and free of bias, prejudice and harassment. Accordingly, Board policy forbids any unwelcome conduct that is based on an individual's race, color, religion, sex, age, creed, national origin, ancestry, disability, sexual orientation, or any other protected characteristic as established by law. ARRL will not tolerate any form of harassment or discrimination that violates this policy.
- d. Unwanted personal contact with, and unwelcome advances toward members of the staff are never acceptable.
- e. Board members should never conduct independent investigations; they should never attempt to influence the implementation of Board policy; and they should never interfere in the day-to-day operation of ARRL.
- f. Board members should never engage in harassing conduct, such as epithets, slurs or negative stereotyping; threatening, intimidating or hostile acts; denigrating jokes or display or circulation in the workplace of written or graphic material that denigrates or shows hostility or aversion toward an individual or group (including through e-mail).

g. Inappropriate bullying, either direct or indirect, whether verbal, physical, or otherwise, conducted against others in the course of Board service, will be handled with the same level of gravity as other harassment.

## **COMPLIANCE WITH THIS POLICY**

1. Board members are expected to use good faith efforts to comply with this Policy. A Board member who is unsure about the interpretation of a particular application of these Standards of Conduct should consult with the President of the ARRL or the Chair of the Ethics and Elections Committee. If a Board member is unable or unwilling to carry out the material responsibilities of his/her position or to conduct him/herself in a manner consistent with the Policy, the Board member should consider voluntarily resigning his/her position on the Board.

2. A Board member or members who wish to bring a complaint of violation of this Policy must do so in writing, addressed to the President of the ARRL or the Chair of the Ethics and Elections Committee. The Ethics and Elections Committee (excluding any member who is personally involved in the complaint) will then, with input as needed from the General Counsel and any complainant(s), determine a course of action for handling the complaint in accordance with Article XIII of the Bylaws.

3. Any complaint made under this Policy, any and all proceedings of the Ethics and Elections Committee involved in investigating and resolving it, and any outcome of such proceedings – other than a public reprimand, suspension, expulsion or other outcome that requires disclosure by ARRL – shall be considered Board confidential unless the subject of the complaint requests disclosure of those proceedings.

4. If the Ethics and Elections Committee determines that a Board member has violated this Policy, corrective measures may be required of the offending Board member and/or discipline may be imposed. Corrective measures or discipline should be appropriate to the facts and circumstances of the violation and, subject to the Bylaws and applicable law, may include the following:

- a. Admonishment or reprimand, whether privately by the Board or publicly by the ARRL.
- b. Requirement for remedial action to be taken.
- c. Removal from certain Board-related assignments and/or loss of certain Board duties or privileges.
- d. Actions initiated to seek removal from the Board or as an officer.

Appeals from the decisions of the Ethics and Elections Committee shall be conducted pursuant to the ARRL Bylaws.

\*\*\*End of Standards of Conduct\*\*\*



# 2015 Market Study Summary

Prepared by: Steve Ford, Deb Jahnke, Sean Kutzko, Diane Petrilli & Becky Schoenfeld –  
a group tasked with redefining ARRL's role in the Second Century



# Who is Readex?

- Full-service market research company
- 65 years experience
- Asks questions of target audience, produces data
- ARRL surveys via Readex in 2015, 2003, 1992



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# Key Radio Amateurs Quantified

Those most likely to have a strong relationship with ARRL

Research focused on smaller population of 323,000 key radio amateurs, not 720,000+ FCC licensees:

- Current license class: Technician, General or Extra
- Had permission to solicit
- Current members with e-mail address
- Lapsed/Never members with complete U.S. mailing address
- Lapsed members whose membership expire date was 5 years ago or less\*
- Never members whose FCC process date was 5 years ago or less\*

\* Prior marketing efforts & research show that hams in these groups are more likely to renew or join.



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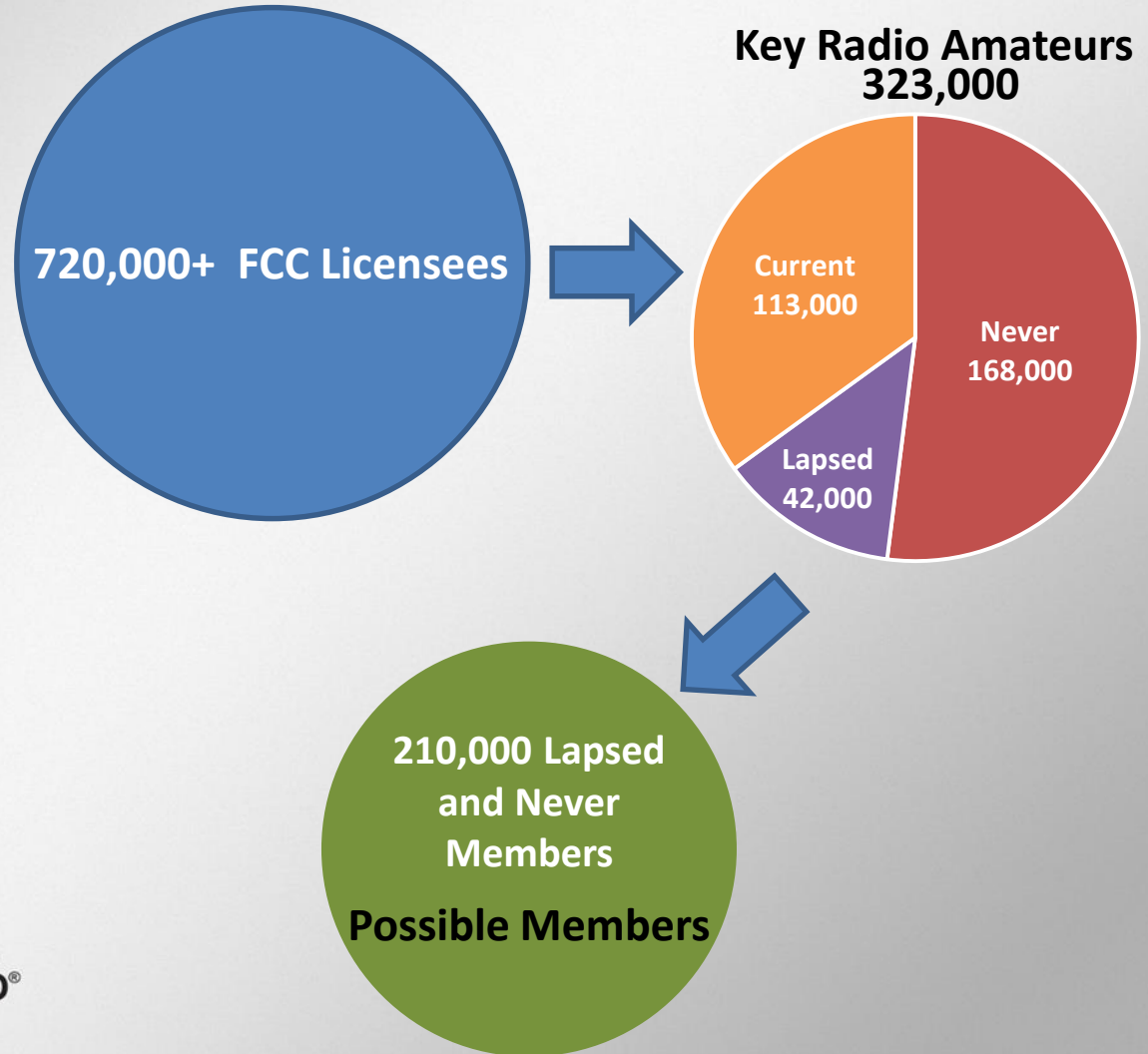
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# Breakdown of 210,000 “Lapsed” and “Never”

By license class and whether they are active in Amateur Radio

	Lapsed			Never			Total
	Tech	General	Extra	Tech	General	Extra	
# of Hams	15,000	15,000	12,000	126,000	30,000	12,000	210,000



The rest of this presentation focuses on the 126,000 Technician class licensees who have never been an ARRL member – the “never member technician.”

	Never Member Technician
% Claim to be Active in Amateur Radio	39%
# of Hams Active in Amateur Radio	49,140

Never active, 29%, 36,540  
Active in past, 32%, 40,320



Best target, most likely claimable as members



# Why They Got Licensed

The activities and people that influenced Technician licensees who have never been members of ARRL

## Q. 1 Who/What influenced you to become involved in Amateur Radio? (multiple answers allowed)

1. **28%** Friend or neighbor
2. **18%** Community emergency manager/personnel\*
3. **15%** Parent or grandparent
4. **14%** Spouse tie with Co-worker\*  
(5% & 7% for current member Techs)

\* When looking at whether a ham was active in Amateur Radio or not, the percentage of those *inactive* was greater than those *active*.

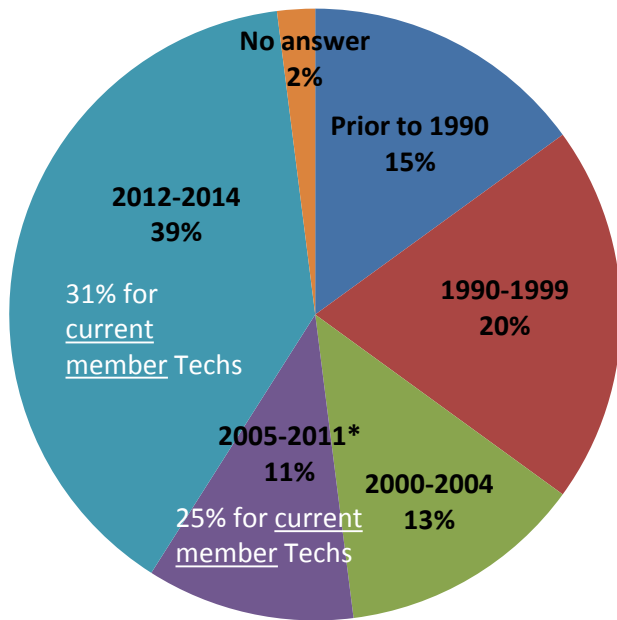
## Q. 2 Primary reasons for getting involved in Amateur Radio? (multiple answers allowed)

1. **48%** To support communications during disasters and other emergencies
2. **42%** Thought it would be a fun hobby
3. **38%** For personal communications with family and friends  
(19% for current member Techs)
4. **30%** To expand interest in electronics, communications and other technologies

# When Never Member Techs got Licensed

And when they stopped being active

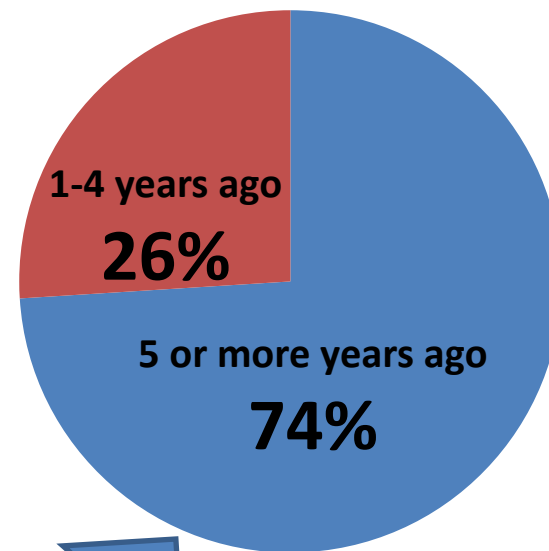
## Q. 3 Year earned first license?



\* Hurricanes Katrina and Irene, code requirement eliminated

## Q. 7 Years ago stopped being active?

(among those who were once active – 32% of Never Member Techs)



# What percent of Never Member Technicians are active?

Q. 6 Currently active in Amateur Radio?

39%

vs.

73% for current member Techs



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# Reasons for Inactivity

## among Never Member Techs

### And What Might Have Helped Prevent Inactivity

- Q. 10** What keeps you from becoming more active (or active)?  
(multiple answers allowed)
1. **33%** No time due to family
  2. **29%** No time due to work/school
  3. **26%** Use the Internet, smartphones and other mobile devices  
(15% for current member Techs)
  4. **24%** Too expensive
  5. **22%** Family and friends don't share interest
  6. **21%** Too many other hobbies

- Q. 8** What would have helped you get/stay active? (multiple answers allowed; among those inactive – 61% of Never Member Techs)
1. **23%** Nothing
  2. **19%** More active local radio club
  3. **17%** Support from local hams
  4. **15%** Help getting started/getting on air
  5. **13%** An elmer/mentor

For current member Techs

1. **35%** Help from mentor
2. **34%** Help with how to get started on the air
3. **28%** Support from local hams

# Perception of Hypothetical ARRL Member Benefits among Never Member Techs

Training and Support scored high

**Q. 29** ARRL is considering new programs, products and services. Whether or not you are currently a member, how valuable is each to you? (multiple answers allowed)

1. **79%** Training and support for newcomers (setting up first station, basic operating techniques, building basic antennas)
2. **78%** Tie: Courses for Amateur Radio licensing/upgrading & Practical radio operating training
3. **77%** Training for public service and emergency communication volunteers
4. **65%** Tie: Continuing education on technical topics & Online live help to get answers about ARRL and ham radio

# Average Age of Radio Amateurs

(from Readex Market Studies)

1980 – 46

1992 – 50

2003 – 54

2015 – 57



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# Key Points

- The group of key radio amateurs, and those claimable as members, is smaller than many believe.
- An aging demographic means more hams will be living on a fixed income.
- The largest potential for growth is within the “Never Member” Technician segment, but only 39% are active in Amateur Radio.
- “Training and support for newcomers” was the top answer when asked what new products and services “Never Member” Technicians would value most.



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# More Key Points

- The primary reason Technicians got involved in Amateur Radio was “to support communications during disasters and other emergencies.” Disasters and emergencies are episodic in nature and require less continuous learning. Overall engagement has suffered over time.
- Amateurs are coming to the hobby for different reasons than they have previously. There seems to be a migration of more recent licensees *toward* earning their license for emergency communication capabilities, to support off-road activities and personal safety, and *away* from the fun quality of the hobby, a way to make friends or to expand interest in electronics.



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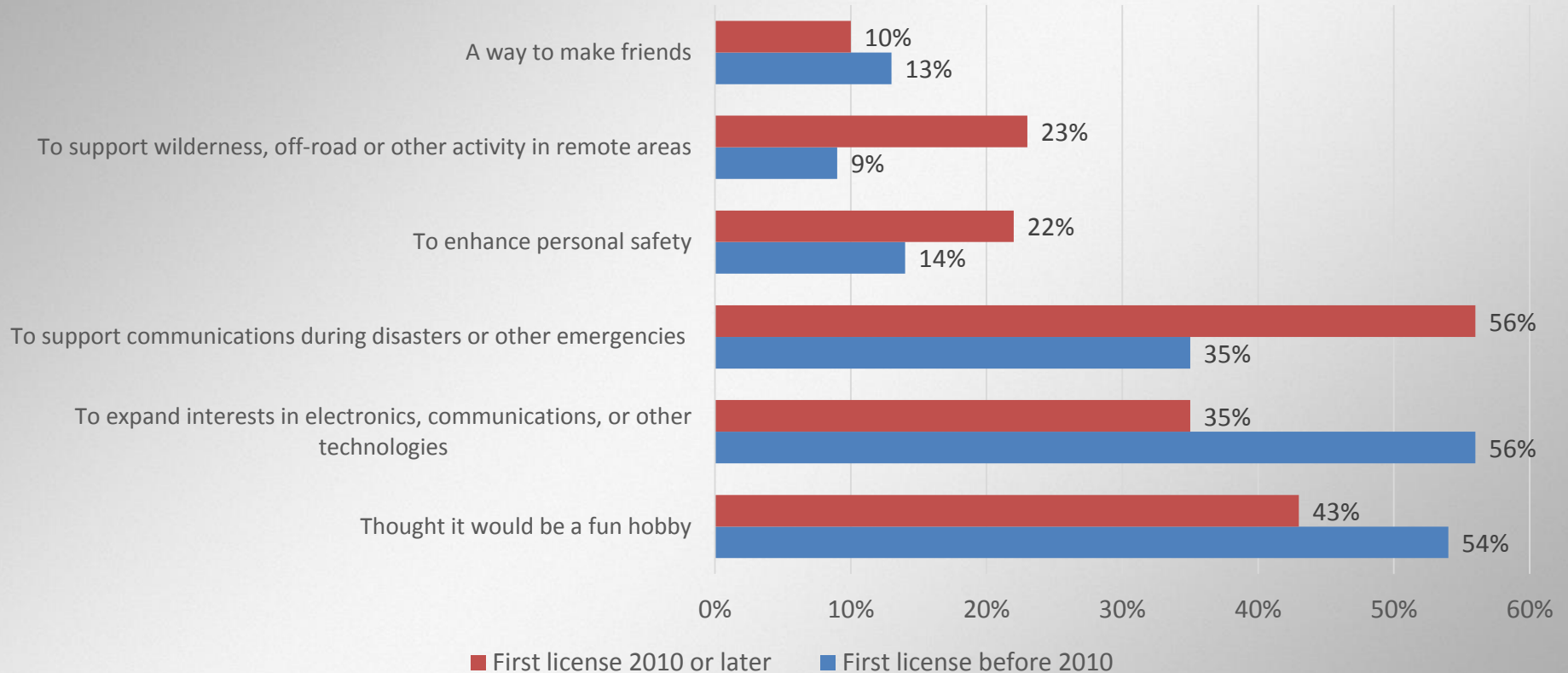




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# Primary reasons for getting involved in Amateur Radio

## By First License Date



# Membership Status & License Class

(Among those active in Amateur Radio)

