

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)
)
RECCO AB Request for Waiver of Location) **WT Docket No. 14-176**
and Monitoring Service Rules to Permit)
Certification and Use of an Avalanche Rescue)
System)

To: The Chief, Wireless Telecommunications Bureau

**COMMENTS OF ARRL,
THE NATIONAL ASSOCIATION FOR AMATEUR RADIO**

ARRL, the national association for Amateur Radio, formally known as the American Radio Relay League, Incorporated (ARRL), by counsel and pursuant to the *Public Notice*, DA 14-1488, released October 14, 2014 (the Public Notice),¹ hereby respectfully submits its comments relative to the *Petition for Waiver* filed on or about September 9, 2014 by RECCO AB (RECCO). The Recco Petition seeks a waiver of the Part 90 rules governing the Location and Monitoring Service (LMS) to permit grants of equipment authorization and licensing of RECCO’s avalanche rescue system. For its comments in response to the Public Notice and the RECCO Petition, ARRL states as follows:

1. RECCO’s avalanche rescue system technology is rather straightforward. It consists of a handheld detector that transmits a narrow-bandwidth (1.2 kHz), AM modulated, pulsed signal at approximately 3 watts ERP (35 dBm) operating in a frequency range of 902.85-902.95 MHz that is received and reradiated on the doubled frequency of approximately 1805.7 MHz. The signal from the detector is passively reflected from the reflector incorporated in articles of

¹The Public Notice originally specified a comment date of November 13, 2014. On November 12, 2014, however, the Deputy Chief, Mobility Division, Wireless Telecommunications Bureau released a second *Public Notice*, DA 14-1636 in this proceeding extending the comment date to and including December 5, 2014. Therefore, these comments are timely filed.

clothing, helmets and the like worn by skiers and outdoorsmen on a frequency-doubling principle. The operator of the detector can hear the buried reflector after an avalanche and is thus directed to the buried person equipped with the reflector. The detector operating at 902 MHz uses a yagi directional antenna incorporated in the device and a directional patch antenna for the 1805.7 MHz receiver.

2. The apparent reason that RECCO chose the 902 MHz band for the operation of this device in the United States is that it is used in Europe at 866.9 MHz but that frequency is not licensable in the United States for this purpose. RECCO asserts that because the passive reflectors are the same all over the world, it is necessary to use a frequency as close to 866.9 MHz, the design frequency, as possible.

3. RECCO claims that the device has a low interference potential for several reasons. First, the device has what RECCO describes as a “low duty cycle” consisting of 20% on time and 80% off time. However, the on time is repeated transmission for 20 milliseconds alternating with silence for 80 milliseconds. Because the pulse repetition rate is so high, however, this cannot be an interference avoidance factor. Second, RECCO states that given the geographic areas and environments in which the device would be deployed, it is unlikely that other radio services will be operating in the area. As discussed hereinbelow, that is not an accurate assessment of the RF environment where the RECCO system will be deployed. Finally, RECCO claims that the interference potential is low because the RECCO system uses directional antennas with an approximate beamwidth of 50 degrees, and when in operation, the antennas are pointed at the ground. However, RECCO’s web site notes that the detectors are “intended for use from a helicopter,” thus potentially expanding the footprint of the detector substantially.

4. Domestically, the band 902–928 MHz is allocated on a primary basis to Government Radiolocation, and in the Private Land Mobile Service, Multilateration LMS is authorized subject to protection of Government Radiolocation. Pursuant to US Footnote 275, the Amateur Radio Service is authorized to operate (with minor geographic limitations) in the band, subject to protection of LMS and subject to the obligation to tolerate interference from Industrial, Scientific and Medical (ISM) devices operating pursuant to Part 18 rules. The Amateur Service has had access to the band 902-928 MHz since 1985. The band is used by a myriad of FCC Part 15 and Part 18 devices including microwave ovens and other ISM applications. Increasingly, it is used by Part 90 LMS. The band is actively used by Amateur Radio Service licensees, most especially for weak signal experiments and for FM repeaters. Most of these repeaters have inputs in the range of 902.7 MHz and outputs near 927 MHz, but some, located in high mountainous areas are reversed, with outputs in the 902 MHz band and inputs near 927 MHz.

5. ARRL is obviously not opposed to the deployment of an avalanche rescue system to be used by search and rescue personnel or first responders. Amateur Radio is integrated into search and rescue planning and is often a primary communications source for search and rescue efforts. Amateur Radio is consistently deployed after natural disasters to provide communications for first responders of all types. ARRL is supportive of the use of the technology similar to that advocated by RECCO, provided that the system is compatible with incumbent licensed uses of the band. However, there are questions relative to compatibility that are left unanswered by the RECCO Petition, and ARRL has concerns about the RECCO Petition that call for resolution before the Commission should grant a permanent waiver to RECCO.

6. First of all, it is unclear why a Petition for Waiver is the proper procedural route to authorize this system, assuming that it should be authorized at 902 MHz at all. This is not a

temporary waiver sought by RECCO, but a permanent one. Non-vehicular LMS systems are not permitted now in the 902-904 MHz band pursuant to Section 90.953(h) of the Rules. There is no emergency relative to the deployment of these systems that would justify granting a permanent waiver of Section 90.953(h) instead of requiring RECCO to file a Petition for Rule Making in the normal course to authorize these systems on an ongoing basis. The Commission is required to take a “hard look” at this waiver request.² What that “hard look” reveals is that the sole basis for this waiver is the manufacturer’s choice of frequency bands. *See, e.g. Terry Mahn, Esquire*, DA-06-2501, released December 13, 2006 (Part 90 waiver request for indoor positioning system for medical applications at 433 MHz denied).³ There is nothing in the four corners of the Petition showing that other frequency bands are unavailable. Instead, there is only a claim that it is useful to have the United States operating frequency near 866.9 MHz, the European operating frequency, so that the passive reflectors used in Europe can be used in the United States as well. Section 1.925 of the Commission’s Rules provides that the Commission can grant a waiver if it is shown that (a) the underlying purpose of the rule(s) would not be served or would be frustrated by application to the instant case, and that grant of the requested waiver would be in the public interest; or (b) in view of unique or unusual factual circumstances of the instant case, application of the rule(s) would be inequitable, unduly burdensome or contrary to the public interest, or the applicant has no reasonable alternative. Neither of these alternative showings was made by the Petitioner. It is suggested that a normal procedure for modifying the Commission’s land mobile service rules, by a Petition for Rule Making (including a justification of the choice of frequency

² *See WAIT Radio v. FCC*, 418 F.2d 1153, 1158 (D.C. Cir. 1969), *cert. denied*, 409 U.S. 1027 (1972); *see also* *Family Stations, Inc. v. DirecTV, Inc.*, *Order on Reconsideration*, 19 FCC Rcd 14777, 14780 (MB 2004).

³ In that case, the Commission held that: “we do not believe that the public interest requires grant of a waiver merely to accommodate a manufacturer’s choice of a specific frequency when others are available.”

band relative to incumbent users and an evaluation of alternative bands) would be entirely proper in this case.

7. Second, it is admitted but unexplained why, according to RECCO, “in the USA the RECCO System is used by around 120 resorts and Search and Rescue Groups.”⁴ RECCO states at page 2 of its Petition that there are 250 units in operation in the United States, all “owned by RECCO”⁵ and used for emergencies and training of staff. It is unstated whether this deployment is pursuant to a granted experimental authorization⁶ or whether RECCO is responsible for the deployment of 250 transmitters in the United States operating in the 902 MHz band without an instrument of authorization from the Commission. It is possible that RECCO AB or its agents have marketed and sold the system to the customer base listed in its deployment areas or else, as it claims, it has retained ownership of the transmitters. It is also unclear who is actually operating these systems for training purposes. In any case, it is urged that RECCO AB be sanctioned for operating, or permitting others to operate a large number of radio transmitters without an instrument of authorization. As well, RECCO should be instructed to inform each of its United States customers which have already received the systems that the devices cannot be legally used in the United States unless and until (1) a grant of equipment authorization is issued to RECCO or to the customer; and (2) the devices are properly licensed to each customer.

8. ARRL is substantively concerned, however, about interference to and from these devices. Amateur Radio repeaters are located on mountaintops routinely, very near potential avalanche areas. The RECCO detector, especially if operated from a helicopter at high elevations

⁴ Recco Petition, at p.1 and the list attached to the RECCO Petition listing deployment areas.

⁵ It is unclear whether or not each of these 250 units are operated by RECCO personnel. If not, RECCO has authorized transmitter operation by unlicensed persons in violation of Section 301 of the Communications Act of 1934.

⁶ A generic search of the Commission’s Experimental License database reveals no experimental authorizations or grants of special temporary authority in the name of RECCO AB.

near an Amateur Radio repeater (or where Amateur Radio weak-signal operation takes place) could interfere with Amateur Radio repeater input channels at or near 902.85-902.95 MHz [as the detectors transmit at approximately 3 watts (35 dBm) into a 9 dBi gain antenna]. However, the more urgent concern is that, in the 902-928 MHz band, Amateur Radio is secondary to LMS operation and must protect LMS operations. The request for waiver seeks to add RECCO's technology to Part 90 LMS rules. If that is done, radio Amateurs will be obligated to protect all RECCO devices from interference. If a repeater operating on a reverse split should, via brute-force overload, preclude the proper action of the RECCO system, making the system unable to detect an avalanche victim or otherwise, then the radio Amateur is exposed to potential civil liability for creating an environment that led to the inability of the search and rescue teams to conduct the rescue effort successfully.⁷ The RECCO petition is devoid of any information as to the interference susceptibility of its system to a nearby co-channel or adjacent channel signal at potentially much higher power than that of the RECCO detector. It is unclear, therefore, whether or not the public interest would be served by grant of the instant waiver request,⁸ or whether or not the 902 MHz band is a reasonable choice for the RECCO system. Under any circumstances, if the Commission is inclined to grant the waiver, it should condition any such grant on the absence of any interference protection in this band from other licensed or authorized services, because the band is heavily used by ISM and Part 15 devices, as well as by the Amateur Service.

9. Finally, the argument that the duty cycle of the RECCO system contributes to interference avoidance is unpersuasive. The device operates at relatively high power and while

⁷ In addition to the fixed amateur radio repeaters at high elevations, potentially in close geographic proximity to search-and-rescue (SAR) activities using the RECCO system, SAR activities that are being conducted typically incorporate Amateur Radio operators. Those Amateur Radio participants typically operate hand-held or mobile radios, which can include those which operate in the 902-928 MHz band, on repeater input channels.

⁸ This is an open issue, especially in view of the apparent illegal marketing and deployment of a very large number of units of the RECCO system.

the duty cycle is low in terms of the on times versus off times, the duty cycle is high in terms of the repetition rate of the cycle: the detector transmits in the 902 MHz band for 20% of each and every second when deployed.

10. In summary, the Petition for Waiver filed by RECCO AB is incomplete to the extent that it does not meet the standards for grant of a waiver of Part 90 rules, per the terms of Section 1.925(b)(3). Its showing as to the interference potential of the device is unavailing and the interference susceptibility of the RECCO system is not addressed at all. It is not clear what alternative frequency bands might be available and whether or not those might be better suited for this system. Finally, should the Commission decide to grant this waiver rather than (more properly) call on RECCO to file a Petition for Rule Making in the normal course, the waiver should be conditioned on non-interference to incumbent services and upon the obligation to tolerate any interference that might be received from incumbent licensees, including Amateur Radio licensees.

Therefore, the foregoing considered, ARRL, the national association for Amateur Radio

respectfully requests that the Commission address the instant waiver request in accordance with the recommendations contained in these comments, and not otherwise.

Respectfully submitted,

ARRL, the national association for Amateur Radio

225 Main Street
Newington, CT 06111-1494

By: *Christopher D. Imlay*
Christopher D. Imlay
Its General Counsel

Booth, Freret & Imlay LLC
14356 Cape May Road
Silver Spring, MD 20904-6011
(301) 384-5525

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