



but to the entire 3 kHz to 10 MHz segment. Doing so would overlay the existing radiofrequency exposure limits with the new requirement on frequencies up to 10 MHz. The Commission also proposes to apply localized exposure limits for all frequencies above 6 GHz.

The ARRL's principle concern with the Commission's proposals for below 10 MHz and above 6 GHz is that there be clear and practical means for radio amateurs to determine compliance of their stations. Any measures adopted should be straight-forward and accessible to the radio amateur operators using the bands at issue by applying MPE levels for station evaluations.

## **Background**

The ARRL actively supports the safe use of radio by its members and all Amateur Radio licensees. We spend considerable effort and expense providing information and resources to Amateur Radio operators informing them about the importance of complying with the Commission's RF safety requirements and providing information on the requirements to ensure their own well-being and that of their families and neighbors. The ARRL maintains a Board-level RF Safety Committee to advise it on RF safety issues and assist in providing accurate information on RF safety in the most effective manner possible.<sup>3</sup> The ARRL's efforts include publication of articles and books on RF safety specifically directed to the Radio Amateur community.

ARRL staff and members of its advisory committee serve government and industry in active leadership roles on committees that develop EMC and RF-safety standards. ARRL staff and volunteers worked on development of the IEEE C95.1-2019 standard that forms the historical basis of the existing rules above 300 kHz. A senior member of the ARRL's technical

---

<sup>3</sup> A list of information and resources is maintained on the ARRL website at this link: <http://www.arrl.org/rf-exposure>.

staff also holds elected leadership positions on the ANSI-ASC C63® committee and serves on the Board of Directors of the IEEE EMC Society.<sup>4</sup>

The Amateur Radio Service has an excellent track record of compliance with the existing RF safety rules. If new rules are adopted for some of the Amateur Radio as proposed in this proceeding we believe that performing the appropriate station evaluations must be reasonably within the technical capabilities of most amateurs.

### **Commission's Proposals to Adopt New Evaluation Requirements Below 10 MHz**

The Commission proposes to apply new requirements for RF exposure compliance on frequencies that include the amateur bands from 2200 meters (135.7 kHz) to 40 meters (7.3 MHz) related mostly to electrostimulation concerns. As the Commission notes, above approximately 100 kHz the only type of modulation subject to these concerns are transmissions consisting of extremely short pulses measured in hundreds of microseconds.<sup>5</sup>

There is no known modulation technique used by amateurs of which we are aware under FCC rules Part 97 that approaches pulse lengths of this short duration. However, for the Radio Amateur service, adoption of this rule could needlessly cause confusion when evaluating a station's RF exposure compliance. While we have no basis upon which to express an opinion on whether this proposal should or should not be adopted, we do request that if adopted for frequencies up to 10 MHz as proposed, that its adoption be accompanied by language clarifying that only stations employing the very short pulse modulation(s) of concern need conduct a station evaluation under the new limits for this purpose.

---

<sup>4</sup> A former Chair of the C95 committee that drafted the standard on which the present rules are based serves as a member of the ARRL RF Safety Committee, an ARRL Board-level committee that advises ARRL on RF-safety issues. The ARRL Laboratory Manager serves as ARRL's primary representative on the ANSI ASC C63 committee, and is the current Chair of its Subcommittee 5 (EMC Immunity). He also is serving as the IEEE EMC Society Vice President for Standards, working with a wide range of IEEE working groups to develop international EMC standards.

<sup>5</sup> See Proposed Rule, *supra* note 1, 34 FCC Rcd 11687 at n. 331 (2019).

## **Amateur Evaluation Methods Below 300 kHz Based on MPE**

On May 8, 2020, the ARRL filed a Petition for Clarification (“Petition”) of RF Exposure rules adopted in ET Docket 13-84 in which it addressed in part evaluation methods for amateur stations that utilize the 2200-meter band (135.7-137.8 kHz). As noted in in the Petition, for RF exposure evaluation purposes, most Radio Amateurs use the Maximum Permissible Exposure (“MPE”) limits published in Table 1 at Section 1.1310(e)(1) of the Commission’s Rules because of their ease of use. Table 1, however, was based on NCRP guidelines that extended only to 300 kHz at the time of adoption so there is doubt that use of MPE by amateurs for the 2200-meter band would comply with the letter of the regulation notwithstanding the validity of doing so.

As noted in our Petition, the latest ICNIRP guidelines and IEEE C95.1 standard under consideration in this proceeding provide for applying MPE (renamed Exposure Reference Level (“ERL”) in the latest IEEE standard) or its equivalent in the spectrum below 300 kHz. Therefore adoption of regulations based on either the guidelines or the standard, or both, for frequencies that include the amateur 2200-meter band would appear to resolve measurement techniques by extending MPE or equivalent measurements to that band.

Revision of Table 1, cited above, would be expected to include frequencies down to at least 100 kHz and make this extension clear. However, the amendments proposed to Table 1 in the Appendix, under Part 1, do *not* implement this change. We request that the proposed Table include MPE (or ERL) limits down to at least 100 kHz, as provided for in the guidelines and standard upon which the proposals in the Commission’s Notice are based. Section 1310(d)(2) also should be amended to reflect the extension.

Finally, we request that before the two-year period for new evaluations ends on May 31, 2022, that MPE (or its equivalent) be explicitly permitted for evaluations of stations operating in

the 2200-meter band. This can be accomplished by making the clarification requested in the Petition, by implementing changes in Table 1 as a result of rules that may be adopted in this proceeding, or by some other means. As a practical matter, using MPE or its equivalent is important to ensuring that Radio Amateurs have a valid and workable method to perform their station RF exposure evaluations.

### **Amateur Evaluation Methods Above 6 GHz**

The Commission in this proceeding is proposing to apply to portable devices operating above 6 GHz an additional limit for localized RF exposure and the associated methodology. These requirements would be in addition to the existing limits. The existing MPE limits also would be extended up to 3 THz. The MPE limits are proposed to be added to Table 1, *supra*, and we support their addition as a reasonable means of ensuring RF safety.

### **Conclusion**

The ARRL's principal concern in this proceeding is to ensure that Radio Amateur compliance with the Commission's RF safety requirements can reasonably be achieved under the Commission's rules. Consistent with the Commission's proposals and the ARRL's earlier Petition, we therefore request that (1) MPE limits be included in Table 1 down to 100 kHz based on the guideline or standard used as a basis for the Commission's regulation and be included in amendments to the associated rule, as set forth above; and (2) that the Commission clarify that any new requirements intended to address electrostimulation apply only insofar as the intended very short pulse modulation schemes are employed.

Respectfully submitted,

225 Main Street  
Newington, CT 06111

ARRL, THE NATIONAL ASSOCIATION  
FOR AMATEUR RADIO

By:

A handwritten signature in blue ink that reads "DR Siddall". The initials "DR" are written in a stylized, cursive font, followed by the name "Siddall" in a similar cursive script.

DS LAW PLLC  
1629 K St. NW, Suite 300  
Washington, DC 20006

David R. Siddall  
ARRL Washington Counsel

June 17, 2020