

On March 29, 2013 the Federal Communications Commission (FCC) released a document that includes a First Report and Order (R&O), a Further Notice of Proposed Rule Making (Further Notice), and a Notice of Inquiry (NOI). All concern human exposure to Radio Frequency (RF) electromagnetic fields and the related FCC's rules and policies. The R&O and the Further Notice are based on ET Docket No. 03-137, started in 2003. A new docket, 13-84, has been created for the NOI.

Summary

Sitesafe's initial review covers how this document affects regulations and the assessment of exposure at fixed transmitter sites.

The R&O rule changes are described as "procedural" and do not greatly change how RF safety is currently assessed and managed. We see the significant change as the definition of "transient" individuals that may move through areas that exceed the documented General Public exposure limits as opposed to workers that may spend an extended time in such areas. This and additional language guides how access controls, barriers, and signs should be installed and who should be trained. The document also reaffirms the 5% rule relating to multi-transmitter sites stands.

The Further Notice proposed to change the categorical exclusion rules and make them applicable for all licensees. More details on implementing site RF safety plans are included and help give guidance now on what the FCC thinks is appropriate usage of signage and barriers. The comments received on this notice will drive what rules are actually enacted. We anticipate the process of rulemaking based on the Further Notice to take a minimum of one year.

The NOI will only have an impact if drastic changes to the exposure limits are adopted.

Report and Order

The R&O makes immediate changes to the current FCC regulations. The largest change is that it now allows the evaluation of RF Exposure using specific absorption rate (SAR), which previously was allowed only for mobile and portable devices. It also clarifies the mitigation procedures for areas near antennas that exceed General Public exposure limits.

Specific Absorption Rate

Even though SAR methodology is now allowed, it may not be used extensively at fixed transmitter sites. Those sites are too complicated for this methodology to be applied at a reasonable cost. However, in some specific instances it may be useful.

The FCC indicates that the currently used Maximum Permissible Exposure (MPE) methodology continues to be acceptable, "as long as compliance with both the whole-body and localized SAR limits are ensured." The FCC points out that an MPE assessment will typically be more conservative than one made using the more expensive SAR methodology. But there may be savings if mitigation is less costly because SAR methodology can identify smaller areas requiring mitigation. One interesting point is that if a licensee shows a site to be compliant based on MPE but the site is subsequently assessed non-compliant based on MPE, the licensee is not permitted to go back and show the site is compliant based on a SAR assessment.

Mitigation

For sites with accessible areas that exceed General Public limits, or where the Occupational limits apply, the FCC is adopting a two-tiered approach. This approach separates transient individuals from workers who are not transient. The R&O clearly states that “transient individuals” are visitors and people traversing the site, not third-party workers performing maintenance on the site for an extended period. Transient individuals simply need to be given verbal instruction and/or be presented with written information (signs) while workers must also be trained so they are “fully aware of the potential for exposure and can exercise control over their exposure.”

As far as specifics of the information and signage, the FCC intends to update OET Bulletin 65 to provide specifics and incorporate information from the Institute of Electrical and Electronics Engineers, Inc. (IEEE) C95.7 Recommended Practice for RF Safety Programs. Additional specifics are proposed in the Further Notice.

Fixed Sites with Multiple Transmitters – 5% Rule

The regulations continue to require that all licensees that contribute 5% of the exposure standard in areas that exceed 100% of the standard are responsible for mitigation. There is a note that “it is in the interest of these licensees to share information about power and other operating characteristics in order to achieve accurate representations of the RF environment.” These regulations are also addressed in the Further Notice. Details will be included in a future version of the Office of Engineering and Technology (OET) Bulletin 65.

Effective Date

Because the proposed rule changes are “generally procedural” they will go into effect 60 days from their publication in the Federal Register.

Further Notice of Proposed Rulemaking

In the Further Notice, the FCC proposes to “streamline and harmonize procedures.” For fixed transmitter sites, the Further Notice clarifies the requirements for signage and barriers and proposes a full revision of the categorical exclusion limits so that they will apply to all services. The proposed changes contain questions requesting opinions on cost and efficacy.

Exclusion from Routine Evaluation

The Further Notice proposes criteria for routine evaluation based on distance to, frequency of, and the ERP of the antenna. These criteria apply as long as there is at least $\lambda/2\pi$ separation (about 2.5 inches at 700 MHz and less at higher frequencies) between the antenna and any person. These criteria are designed to replace the categorical exemption sections and will apply to all services. It proposes a summation technique for assessing multiple transmitters / licensees at a single location.

Mitigation

Transient exposure is further defined in these proposed rules. Additionally, the proposed rules provide guidance on training, access restrictions, and signage for areas that may or do exceed exposure limits. Specifics from IEEE C95.7 are incorporated into the rules to detail what signage and barriers are required based on 4 ranges of exposure conditions.

The proposed rules include details for when “positive restriction on access” or barriers are necessary.

Sign content has been a perennial issue with RF safety programs and this proposal details what information should be included on signs:

- Appropriate signal word and associated color in accord with IEEE Std C95.2-1999 (e.g., “DANGER,” “WARNING,” “CAUTION,” or “NOTICE”)
- RF energy advisory symbol (Figure A.3 of C95.2-1999)
- An explanation of the RF source (e.g., transmitting antennas)
- Behavior necessary to comply with the exposure limits (e.g., do not climb tower while antennas are energized)
- Contact information (e.g., phone number or email address resulting in a timely response)

There is language that outlines where signs are and are not appropriate. If someone walks toward a source of RF energy, “only at the point where that individual approaches the general population exposure limit should there be information on how to remain in areas where RF field levels are less than the public limit.”

Notice of Inquiry

Finally the NOI requests comments on changes to exposure limits with emphasis on reviewing more recent standards. Both the IEEE and the International Commission on Non-Ionizing Radiation Protection (ICNIRP), which is supported by the World Health Organization (WHO), have published updated standards since the FCC adopted theirs in 1997. Of course any change in exposure limits could have a large impact on RF safety evaluations in general.

We recommend a discussion of the NOI in Forbes:

<http://www.forbes.com/sites/geoffreykabat/2013/04/04/should-the-fcc-re-examine-cell-phone-radiation/>

One additional observation is that Appendix H discusses, among other topics, spatial average measurements. This section indicates that spatial peak measurements are an acceptable method of showing compliance. It also discusses how spatial averages may not show compliance due to the possibility that localized SAR limits have been exceeded. It also discusses repeatability issues with spatial average measurements. It indicates that a future version of OET-65 may provide additional guidance.

Sitesafe will continue to review this document and provide further details. We welcome questions, comments and suggestions.

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