



PLANNING ADVISORY NOTICE

RF Safety Part II - Federal Communications Commission, Office of Engineering & Technology

The Federal Communications Commission (FCC) has benefited the Telecommunications Industry, and the American people, significantly with the resources they provide for the understanding of Radio Frequency (RF). These resources endeavor to keep employers, workers, and the public safe by reviewing the rules that have been established concerning RF Safety.

technical analysis. The OET has a website and publishes resources that employers, manufacturers, end users, and even the general public can access for free. There are several divisions within the OET: Policy and Rules Division, Electromagnetic Compatibility Division, and Laboratory Division.

This Planning Advisory Notice (PAN) is intended to introduce Federal Communication Commission, Office of Engineering & Technology (OET), and make the general audience aware of the various resources the FCC offers regarding RF Safety.

The FCC has an important role in providing these applicable resources to the people responsible for on-site safety, the employer, and their employees. It is a best practice for a qualified person or engineer to disseminate RF Safety information and facilitate any necessary communication on the front end. An example would be an antenna installation occurring with two sets of omni antennas on a telecommunications structure. In this event, the qualified person or engineering firm could identify the end user that owns these antennas which would allow the structure owner and employer to communicate about hazards that may be present with these omni antennas, facilitating a safer and more effective install. The employer also has the responsibility to facilitate communication between all parties to ensure on-site safety.

The previously published PAN entitled “RF Safety” focused on defining RF, the effects of RF, and mitigating RF exposure. Here, we will seek to learn more about the FCC OET and their published resources for understanding RF. Also, the PAN reviews best practices for employers to utilize the resources provided by the FCC OET to promote a properly trained workforce in environments where employees may be exposed to RF.

One of the key publications is OET Bulletin 65, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields,” first published in 1985 and revised in 1997. This document helped determine if any transmitting facilities, operations, or devices comply with limits for human exposure to RF fields adopted by the FCC. Additionally, the bulletin offers guidelines and suggestions for evaluating compliance. These guidelines provide in-depth information about “controlled” and “uncontrolled” situations, limits for Maximum Permissible Exposure (MPE), and equations for predicting RF fields. OET Bulletin 65 is divided into four sections:

The FCC is an independent U.S. government agency overseen by Congress which regulates all types of wired or wireless communication in all 50 states, the District of Columbia, and U.S. territories. The OET is a special office within the FCC which advises on frequency allocation and spectrum usage, contributes to the development of technical standards and regulations, and conducts engineering and

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1. Background Information
2. Prediction Methods
3. Measuring RF Fields
4. Controlling Exposure to RF Fields

A summary of RF exposure guidelines can be found under OET Bulletin 65, Appendix A along with tables and figures related to MPE limits, evaluation of transmitters, etc. Additionally, OET Bulletin 65 has two Supplements; Supplement-A was published specifically to provide additional guidance about AM, FM, and Television broadcast stations and Supplement-B provides additional information on evaluating compliance with the FCC for amateur radio stations.

OET Bulletin 65 is currently under review (as of the date of this publication) to provide updated guidance regarding the rule changes of Commission's Order, FCC 19-126 that became effective May 3, 2021. However, much of the guidance in the 1997 edition of this bulletin remains applicable.

While awaiting further guidance regarding the rule changes of FCC 19-126, small entities such as businesses, organizations, and small governmental jurisdictions may refer to the Small Entity Compliance Guide published by the FCC for a summary of those changes and guidance intended to assist with compliance. This document has three major sections:

1. Exemptions from the RF exposure evaluation requirements
2. Evaluation of RF exposure
3. Mitigation measures to ensure compliance with exposure limits

Small entities may be exempt from a more thorough RF exposure evaluation if the organization is clearly compliant with the FCC exposure limits based on criteria in 47 C.F.R. § 1.1307 (b). If an exemption cannot be invoked, an evaluation will be performed to demonstrate compliance with the FCC's RF exposure limit. In the areas where RF exposure limits are exceeded, mitigation measures are implemented. Mitigation measures depend on the physical characteristics of the area and the level of exposure above the pertinent limits. Some of the mitigation measures also include access control, signage, and training requirements for transmitter sites where the RF exposure limit is exceeded.

Another important resource is OET Bulletin 56, "Questions and Answers about Biological Effects and Potential Hazards of Radiofrequency Electromagnetic Fields," which was and is a core portion of training programs related to RF safety, has been superseded by more current material on the same subject in the RF Safety FAQ page located at RF Safety FAQ | Federal Communications Commission (fcc.gov). This FAQ is easy to follow by any individual with a minimum knowledge of RF. The FAQ defines different types of radiation, discusses effects of radiation exposure, and clarifies safe levels of exposure to RF or microwave radiation among other questions. The FAQ page also addresses whether radiation emitted from devices like microwave ovens, televisions, radio walkie-talkies, cellular telephones, cordless telephones, pagers, mobile devices, and cellular towers are safe or not. Lastly, there is also a brief discussion about the role of the FCC in evaluating potential RF hazards.

All OET publications are available online at OET - Bulletins On-line | Federal Communications Commission (fcc.gov). The OET has various other resources to offer individuals and organizations related to RF safety within each division:

Policy and Rules Division

- White Space Devices
- Radio Spectrum Allocation
- Non-Federal License Applications Status (SCB API page)
- DSRC and U-NII-4 Prototype Device Testing
- Peer Review
- U-NII-1 band (5.15-5.25 GHz) Operator Filing Requirement
- Waivers to Part 15 of the Commission's Rules

Electromagnetic Compatibility Division

- FCC Policy on Human Exposure to Radiofrequency Fields
- Body Tissue Dielectric Parameters
- RF Safety Highlighted Releases
- FM Model

Laboratory Division

- Equipment Authorization Approval Guide
- Equipment Authorization Presentations

The FCC supports the general public as well as education for employers and employees. Employers and operators that interact with telecommunications equipment in any capacity need to be aware of and consider the impacts of RF radiation and plan for a safe work environment. Due to the expansion of telecommunications facilities onto structures with a different intended use such as rooftops, water tanks, and light poles, it is advisable that anyone performing work on these types of structures be aware that the structure may have telecommunications equipment and plan appropriately. It is strongly recommended that contractors who offer services such as HVAC, roofing, painting, and cleaning be aware of the resources provided by the FCC and take advantage of them.

Anyone working in an environment where they may be exposed to RF radiation should receive proper training by their employer to ensure they understand the risks and perform the work in a safe manner. Many employers

utilize OET Bulletins 56 and 65 to model their training programs after. Many employer programs meet these requirements and those programs may still be valid as the FCC has made communication of the information more effective. We highly advise that employers review their training programs regularly and visit the FCC website to ensure the most up to date info. ●



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