

RF Exposure Limits—Signs of the Times—Part One



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Friday, February 9, 2018

This is the first entry of three regarding the FCC’s ongoing proceeding addressing human exposure to radio-frequency (RF) fields. Although the FCC proceeding has been pending for some time, Chairman Pai has informed Congress that further action is a Commission priority. Thus, we expect the FCC to adopt one or more orders in this proceeding in 2018.

Exposure to RF emissions is a persistent concern for segments of the public and some public health and workplace safety advocates. With ever-increasing consumer adoption of wireless communications including unlicensed operations and in-building Wi-Fi, the emergence of small cells, the Internet of Things (IoT), and 5G implementation, a review of existing rules, largely unchanged for over 20 years, is warranted to consider more current research and studies and to maintain the credibility of the FCC’s regulations regarding RF exposure limits.

The FCC regulations on RF exposure limits impact a wide range of business interests—companies which manufacture equipment, including wireless medical devices, businesses which use radio equipment in their delivery of other goods and services, public safety organizations of all types, and the general public—both as cell phone or other wireless device users and as beneficiaries of countless wireless applications. Any change in the current RF emission limits could cause significant expense for these groups, especially if there are changes in the limits governing devices having high numbers of consumer adoption—smart phones, tablets and WiFi routers.

The long-pending FCC proceeding addresses a very broad range of issues. The FCC re-states its confidence in the current exposure limits adopted in 1996. However, it acknowledges that intervening research, the ubiquity of device adoption, advances in technology, and developments in international standards warrant a far more current and up-to-date record on these matters.

The current FCC limits differentiate between general public and occupational/controlled exposure limits. The latter apply to personnel with expertise and training regarding RF exposure safety. For that reason, the exposure levels are higher than for the general public. In today's increasingly wireless world, a closer look at exposure levels for the general public appears warranted.

2013 First Report and Order

The current FCC proceeding actually dates back to March 2003, when the FCC issued a Notice of Proposed Rule Making (NPRM) to “provide more efficient, practical, and consistent application of compliance procedures” relating to rules “to ensure that the public is appropriately protected from any potential adverse effects from RF exposure” In March 2013, the FCC adopted a First Report and Order (R&O), Further NPRM, and Notice of Inquiry (NOI).

In the First R&O, the FCC clarified power evaluation procedures and references to determine compliance with FCC limits and made changes to its regulations regarding labeling of RF devices. Key changes include:

1. Amending the rules to reference the underlying whole-body and partial-body exposure limits for SAR (Specific Absorption Rate) and to allow evaluation of SAR instead of power density or field strength for demonstrating compliance for fixed and mobile RF sources below 6 GHz.
2. Maintaining use of maximum permissible exposure (MPE) as a basis for evaluation subject to certain conditions.
3. Discontinuing Supplement C of OET Bulletin 65, which provided guidance on RF limits for portable and mobile devices because more updated information is available in OET's “Knowledge Database” (KDB).
4. Classifying the outer ear (“Pinna”) as an “extremity” and subject to exceptions for localized SAR limits for “extremities.”
5. Adopting more specific labeling requirements for occupational/controlled exposure to mobile and portable devices. The occupational/controlled limits apply when individuals are “fully aware” and can “exercise control” over exposure. For these situations there is a two-tiered approach: (1) written and/or verbal information must be provided to an individual that exposure is part of their employment, and (2) appropriate training regarding work practices to ensure awareness and control must be provided.
6. For fixed sites with multiple transmitters, noting that failure to comply with the rules can result in penalties for all transmitter operators whose systems contribute significantly to the exposure.

7. Declining to require a new evaluation for existing sites that were excluded from evaluation under its prior evaluation criteria.

The regulated community did not raise significant objections to these rules largely because there were few substantive changes from existing requirements. The next phases of the proceeding may prove more challenging for device manufacturers and services providers.

Part Two will review the changes proposed by the FCC in its Further Notice of Proposed Rulemaking.

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