FCC Issues New Radio Frequency Safety Rules, Seeks Comment on Additional Measures

Friday, December 6, 2019

The proliferation of wireless devices in our world has raised varying levels of concern about possible harmful effects to human health, engendering strong opinions. One key question is what amount of exposure to radio frequency ("RF") energy emitted by these devices is "safe" for humans. Another is how to ensure that this level of exposure is not exceeded or, if exceeded, is mitigated.

While the Federal Communications Commission ("FCC") does not alone decide what is "safe" for human health – health and safety agencies, including the FDA, provide guidance and recommendations – the FCC does determine what exposure limits should be met to ensure safety and how parties responsible for FCC-regulated devices should demonstrate compliance with these limits. In short, the FCC's focus is ensuring that devices that enter the U.S. marketplace have been sufficiently reviewed to ensure that potentially harmful exposure will not occur. Thus, the FCC's rules are important for both manufacturers and those responsible for regulated devices due to the importation, marketing or sale of these devices.

In general, the FCC has two sets of guidelines. Devices that are handheld or portable, and therefore tend to be located close to bodies, must meet specific absorption rate ("SAR") criteria, while larger transmitters such as cell towers and FM radio antennas must meet maximum permissible

exposure ("MPE") criteria. Many devices are exempt from testing on the basis that they are not likely to cause harm, whether because they do not emit much energy or because they can be located away from humans (*i.e.*, high on a tower, on rooftops, or behind protective fences).

For a number of reasons, the FCC's rules needed to be revisited. One major issue, with the 5G industry especially, was that the SAR levels are not established for operations above 6 GHz, yet smartphones and other handheld devices are being designed in abundance for use on much higher frequency bands. Also, the present MPE limits were adopted only up to 100 GHz, but the Commission recently opened use of frequency bands above 100 GHz. Additionally, international standards-setting bodies have been working to update their standards for testing methodologies to reflect new technologies, and, for U.S. manufacturers to stay competitive, U.S. regulations need to stay current.

The FCC proposed modifications to its rules in 2013, and finally released its decision, along with a Notice of Proposed Rulemaking, on December 4, 2019. Key highlights of what is in the densely technical order are as follows:

No Changes to the Actual Exposure Limits: As FCC Chairman Pai announced months ago, based on input from the safety agencies (EPA, FDA and OSHA), the FCC has determined that no changes to the allowable exposure limits are necessary. While this may be a disappointment to certain activists, it is not a major decision for manufacturers, which did not anticipate changes (for which they could have been required to undertake costly redesign).

Three Categories of Exemptions: The greatest concerns for device manufacturers relate to what devices are subject to testing and how they may be tested. While ordinarily not a huge regulatory burden for most

devices, RF safety testing does increase development costs, as well as time to market, for manufacturers, so consistency in the rules is important. The FCC attempts to simplify its rules by setting out three categories of devices that are exempt from testing, based on formulas that consider a device's power level and its separation distance from humans. Because the same rules will apply for any emitter in a given category, the exposure requirements become more consistent across services so that similar devices operating at similar frequency ranges are subject to the same treatment. While devices with existing authorizations need not be reevaluated, existing facilities (with fixed transmitters) may need to be evaluated during the course of a two-year transition period.

Fixed RF Sources: Of concern to installers, tower companies, and other parties responsible for antenna structures, the FCC excludes many fixed RF sources from exposure testing because the transmitters are located away from people. In lieu of testing, the FCC requires mitigation procedures to control and limit exposure, such as signage and fencing. The FCC now has set out specific rules for access restriction, signage, and training requirements for these transmitter sites, including the creation of four categories of RF safety programs. For sites that do require evaluation, the FCC provides for more flexibility in terms of how that may be accomplished.

In the Notice of Proposed Rulemaking, the FCC seeks comment on proposed rules addressing two areas:

SAR Below 100 kHz and Above 6 GHz: One of the most pressing issues related to the Commission's RF exposure program has been the lack of rules for the smaller mobile devices (those that fall into the SAR category) when they operate above 6 GHz. The FCC also does not have rules for technologies operating below 100 kHz and above 100 GHz. As the FCC opens more of the mmWave bands for mobile use, and industry is beginning

to roll out 5G products, this issue has become urgent. The FCC therefore seeks comment on proposed standards and exposure limits for technologies used in frequency ranges below 100 kHz and above 6 GHz, to include those above 100 GHz.

Wireless Power Transfer ("WPT"): One of the key technologies that will support the Internet of Things, including Manufacturing 4.0, the burgeoning robotics and drone industries, and healthcare and residential IoT is wireless charging, especially at a distance (across a room or within a warehouse floor). The WPT industry has struggled because of the FCC's lack of clear regulatory standards that would allow WPT technologies into the U.S. marketplace. The Commission thus proposes changes to Part 18 (and perhaps to even add a new rule part) to pave the way for regulatory approvals of wireless power transfer systems, both those that are "local" (within 50 cm) and those that charge over greater distances.