Miscellaneous Part 15 Rule Updates

TCB Workshop
October 14th, 2020

§15.255 Field Disturbance/Radar Sensors

- FCC- 16-89 Report and Order (R&O) expanded the frequency range available under §15.255 from the original 64-71 GHz band to 57-71 GHz, providing a total of 14 GHz intended primarily to support unlicensed Wi-Fi-like "WiGig" operations
- §15.255 previously prohibited field disturbance/radar sensors in the 57-64 GHz band with a narrow exception for reduced-power operations in certain fixed-installation applications.
  - The R&O retained this exception for fixed field disturbance/radar sensor operation over the extended frequency band with the same power restrictions, but declined to open the band to mobile radars, with a very narrow exception for "short-range interactive motion sensing" operations where a radar is used to detect hand gestures very close to a device to control a smart phone, tablet or similar personal device without having to physically touch it.

§15.255 Field Disturbance/Radar Sensors
(continued)

- The OET lab has been fielding numerous requests *via* the KDB inquiry system to use §15.255 to support a variety of mobile radar operations in the 57-71 GHz frequency band, in particular for vehicular in-cabin sensing applications, under this narrow exception for short-range interactive motion sensing.
- The current FCC position is as stated in the R&O in that mobile radar applications are not permitted under §15.255 except for the very narrow exception defined therein (*i.e.*, to support very short-range hand gesticulation interactions with a personal device) and that in-cabin sensing applications do not fall within the scope of what is permissible.
- To date there has been no change to this policy and thus, these type of mobile radar devices cannot be approved.

Spectrum Horizons §15.258

- §15.258 became effective on August 24th, 2020 as announced in the Federal Register.
- This rule part was created by the Spectrum Horizons rulemaking that was adopted by the Commission in 2019.
- It makes available 21.2 GHz of spectrum for unlicensed operations in the 116-123 GHz, 174.8-182 GHz, 185-190 GHz, and 244-246 GHz frequency bands.

§15.258 Technical Requirements

- Output Power Limits:
  - General Average EIRP Limit: 40 dBm over the operational bandwidth as measured during the transmit interval
  - General Peak EIRP Limit: 43 dBm within the operational bandwidth
  - Fixed P2P Average EIRP Limit: 82 dBm over the operational bandwidth as measured during the transmit interval
  - Fixed P2P Peak EIRP Limit: 85 dBm within the operational bandwidth
  - Minimum Fixed P2P Antenna Gain: 51 dBi with a 2 dB EIRP reduction for each dB below 51 dBi

§15.258 Technical Requirements (continued)

- Unwanted Emissions Limits:
  - Radiated emissions below 40 GHz shall not exceed the general limits as specified in §15.209
  - At 40 GHz and above the unwanted emissions level shall not exceed 90 pW/cm^2 when measured at a distance of 3-meters (equivalent to an EIRP ≤ 10 dBm).
  - Spurious emissions levels shall at no time exceed the level of the fundamental emission
  - Unwanted emissions to be measured up to the third harmonic of the highest fundamental frequency or to 750 GHz, whichever is lower

§15.258 Technical Requirements (continued)

- Emission Bandwidth:
  - Transmitters with emission bandwidth of less than 100 MHz must limit EIRP to the product of the maximum permissible EIRP (in milliwatts) and the emission bandwidth divided by 100 MHz.
  - The emission bandwidth is defined as the instantaneous frequency range occupied by a steady state radiated signal with modulation, outside of which the radiated power spectral density never exceeds 6 dB below the maximum radiated power spectral density in the band, as measured with a 100 kHz resolution bandwidth

§15.258 Technical Requirements (continued)

- Frequency stability:
  - Fundamental emissions must be contained within the frequency bands specified in this section during all conditions of operation.
  - Equipment presumed to operate over a temperature range of −20 to + 50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage, unless justification is presented to demonstrate otherwise.
- Other Restrictions:
  - Operation on board aircraft or satellite is prohibited

Questions?