

Unlicensed National Information Infrastructure

Devices (UNII)-Part 15 Subpart E

- Test procedures for UNII devices are, as of yet, undetermined. When a "recommended" test procedure is released by the OET Lab, guidance will be provided as to what is considered "acceptable test procedures".
- Acceptable procedures

Peak conducted transmit output power.

* Method #2 is more accurate than #1 as compared to what is specified for the peak transmit power. Compliance with either method is acceptable.

1) Use a peak power meter.

2) Use an analyzer with RBW greater than emission bandwidth. Use a reduced video filter e.g. VBW = emission bandwidth/30.(Video filter). No video averaging. Use a Peak detector on max hold.

* For Broadband emissions where the available analyzer bandwidth is less than emission bandwidth. Set the RBW=1MHz,VBW= 30kHz. You can use a bandwidth correction factor of $10 \log(\text{emission BW}) / 1\text{MHz}$ with the 1 MHz capturing the peak of the emission. Use a Peak detector on max hold.

Emission Bandwidth "B"MHz.

* Use a RBW = 1% of the emission bandwidth.

* Set the VBW > RBW

* Use a peak detector.

* Do not use the Max Hold function. Rather, use the view button to capture the emission.

* Measure the widest width of the emission that is 26 dB down from the peak of the emission.

Peak power spectral density(PPSD).

* Method #3 is more accurate than #1 as compared to what is specified for the PPSD limit.

Compliance with either method is acceptable.

*Antenna conducted measurement

1) * Use a peak detector on max hold.

time of installation, then professional installation of this transmitter is required. The installation manual must contain adequate instructions such that the correct transmit power can be chosen for any antenna being used.

Does the measured peak power spectral density, in conjunction with the stated antenna gain, comply with the *de facto* +40 dBm EIRPsd limit for all proposed antennas to be used solely in point-to-point applications?

- Note that the psd limit is reduced in order to comply with the *de facto* EIRPsd limit. If the measured psd is already below the limit a reduction may not be necessary.

Does the proposed point-to-point system meet the appropriate requirements, and do the installation instructions contain the correct language?

- Understand the intent behind allowing the EIRP relaxation for point-to-point applications only.
- When multiple antennas are listed in the installation manual, those that may only be used in point-to-point applications should be clearly indicated.

15.407(a)(6):

Does the ratio of peak modulation envelope excursion to peak transmit power meet the 13 dB/MHz limit?

- The comparison between the two measured levels is made within the same 1 MHz segment.

15.407(b)(1)-(3):

Were acceptable test procedures and instrument settings used to measure the EIRP of emissions outside of the frequency bands of operation, both within and outside of the passband of all proposed antennas?

Do the measured unwanted emission EIRP levels comply with the appropriate limits, as determined by the frequency band of operation and the frequency of the spurious emission, up to 40 GHz, for all proposed antennas?

- These limits are on the Effective Isotropic Radiated Transmit Power. The same measurement settings used to measure the transmit power of the fundamental emission may be used here.
- Within the passband of the antenna an RF conducted measurement may be made. This level, added to the stated antenna gain for each proposed antenna, must comply with the limit.
- Outside of the passband of the antenna a radiated measurement must be made, as the gain of the antenna outside of its passband is uncertain, or, the emission may radiate from the case of the EUT. This measured field strength must then be converted to an equivalent EIRP for comparison to the limit.
- It is likely that compliance with the unwanted emission EIRP limit, particularly at the bandedges, will determine the maximum transmit power allowable at bandedge channels for each antenna. The installation manual must make this clear.

15.407(b)(5):

Were acceptable test procedures and instrument settings used to measure unwanted radiated emission levels below 1 GHz, and AC line conducted emissions?

- Use ANSI C63.4 as a guide.

Do the measured unwanted radiated emission levels comply with the Section 15.209 field strength limit?

- In order to demonstrate compliance with this particular requirement, measurements may be performed on the highest gain antenna of each "type". In other words, if multiple yagi, patch, and dish antennas are proposed, only the highest gain yagi, patch, and dish must be tested.
- Measurements should also be made on the lowest gain antenna, so that the EUT is operating at its highest available output power, in order to test for case radiation.