

Federal Communications Commission
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Laboratory Division Public Draft Review

Draft Laboratory Division Publication

Title: Linear vs. Log Average Detector for Measuring Intentional Radiators FAQ

Short Title: Linear vs. Log Average Detector

Reason: New Publication

Publication: 966099

Keyword/Subject: Linear vs. Log Average Detector

First Category: Administrative Requirements

Second Category: Measurement Procedures

Third Category:

Question: Can a log average detector be used to make average measurements on intentional radiators?

Answer:

The radiated emission limits for intentional radiators in Section 15.209 for measurements above 1000 MHz are based on the use of an average detector. For demonstration of compliance with the emission limits in Section 15.209, this must be a linear average measurement. Log average measurements are not acceptable. When making measurements in the frequency domain with a spectrum analyzer, linear average measurements are obtained by selecting the average detector and power average (RMS) as the average type. The values may be displayed in either linear or log scale. The choice of linear or log scale for the display does not affect the detector function or the displayed values.

The RMS average detector is recommended to be used for complex-modulated signals (video averaging is not an appropriate method for modern digitally-modulated signals). The sweep time should be set depending on the bandwidth of the signal being measured. For example, when measuring average power with a minimum of 1 ms per sample bucket averaging time, and a minimum of 1000 measurement/sample points, a minimum sweep time of 1 second would be required.