

# **BANDWIDTH-LIMITED MEASUREMENTS OF ULTRAWIDEBAND DEVICE EMISSIONS**

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This talk addresses the challenge of performing bandwidth-limited measurements on UWB device emissions. Measurement techniques are described that may be generally applied with commercial, off-the-shelf (COTS) equipment. COTS-compatible methods for measuring the following UWB emission parameters are described. These include:

- emission spectra as a function of IF measurement bandwidth;
- pulse width estimation;
- pulse shape as a function of IF measurement bandwidth;
- pulse repetition rates, sequences, and gating;
- amplitude probability distributions as a function of IF measurement bandwidth;
- peak power;
- average power.

Guidance is provided for other laboratories in the implementation of UWB emission measurement techniques. Techniques are described both generically and as performed specifically at the ITS laboratory using COTS equipment. Based upon experience gained at the ITS laboratory, the technical strengths and weaknesses of each approach are described. Particular problems that other laboratories may encounter with these techniques are noted, along with practicable solutions developed by ITS measurement personnel.