

Apartment Building RF Penetration Measurements Using an Ultra-Wideband Measurement System

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Abstract: This paper describes the use of a newly-developed ultra-wideband transmission measurement system that was used to perform electromagnetic penetration measurements of a local apartment building. Measurements were performed using a NIST-developed system in the 30 MHz - 18 GHz frequency range. Phase-coherent transmission measurements were performed at over 48,000 frequencies, and the data obtained were used to evaluate building penetration at 26 different locations inside the building. In addition, the data were post processed to obtain high-fidelity time-domain waveforms to facilitate the extraction of useful propagation parameters. This talk will provide a detailed summary of the measurement system, test procedures, and the results obtained. The data should be of great interest to the first-responder and wireless network systems design communities.