

This paper presents a 3-D statistical channel impulse response (IR) model for urban line of sight (LOS) and non-LOS channels developed from 28- and 73-GHz ultrawideband propagation measurements in New York City, useful in the design of 5G wireless systems that will operate in both the ultra-high frequency/microwave and millimeter-wave (mmWave) spectrum to increase channel capacities. A 3GPP-like stochastic IR channel model is developed from measured power delay profiles, angle of departure, and angle of arrival power spectra. The extracted statistics are used to implement a channel model and simulator capable of generating 3-D mmWave temporal and spatial channel parameters for arbitrary mmWave carrier frequency, signal bandwidth, and antenna beamwidth. The model presented here faithfully reproduces realistic IRs of measured urban channels, supporting air interface design of mmWave transceivers, filters, and multi-element antenna arrays.