

Spatial and Temporal Characterization of 60 GHz Indoor Channels

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Abstract:

This paper presents measurement results and models for 60 GHz channels. Multipath components were resolved in time by using a sliding correlator with 10 ns resolution, and in space by sweeping a directional antenna with 7° half power azimuthal beamwidth around the azimuth. Power delay profiles (PDPs) and power angle profiles (PAPs) were measured in various indoor and short-range outdoor environments. Detailed multipath structure was retrieved from PDPs and PAPs, and compared with site-specific environments. Results show an excellent correlation between the propagation environments and the multi-path channel structures. The measurement results confirm that the majority of the multipath components can be determined from image based ray tracing techniques for LOS applications. For NLOS propagation through walls, the metallic structure of composite walls must be considered for propagation predictions. From the recorded PDPs and PAPs, received signal power and statistical parameters of angle-of-arrival (AOA) and time-of-arrival (TOA) were also calculated.