Millimeter-Wave Outdoor-to-Indoor Channel Measurements at 3, 10, 17 and 60 GHz

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Abstract—Millimeter-Wave (mmW) communication systems, capable of achieving high data rates thanks to the large bandwidth available in this frequency range, are a promising 5G technology. Studies in this paper investigate the radio propagation channel at 3, 10, 17 and 60 GHz in an Outdoor-to-Indoor (O2I) scenario. Measurements were conducted using a wideband channel sounder to derive channel parameters such as building penetration losses and channel delay spread values. It was observed that signal attenuation is strongly material-dependent and also, to some extent, frequency-dependent as well. However, the delay spread is weakly correlated with the frequency.