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Characterization and Modeling of the MIMO Radio channel in the W-band

Abstract - In this work, polarimetric MIMO matrices were measured in an indoor office at 94 GHz with a 3 GHz bandwidth using a VNA-based virtual radio channel sounder approach. Initial investigation of the polarimetric large-scale parameters such as the root mean square (rms) delay spread and path loss computed from the transfer functions is discussed for 15 Tx - Rx positions. In addition, the RiMAX framework, validated thanks to a ray-tracer tool developed at UPCT, was used to estimate the specular multipath components (MPC) and dense multipath components (DMC) from which the delay and angular RMS values, weighted mean delay and angles, number of MPC were computed. In addition, the reverberation time and DMC contribution to the radio channel total power is presented as a function of distance. This preliminary work will be used to build more advanced polarimetric path loss models and/or parametric/stochastic channel models which are missing in the literature for the W-band.

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