

“Performance analysis of UHF RFID systems for logistics applications using ray tracing predictions”

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Abstract – RFID technology in the UHF band is a rather new instrument of tracking goods in this sector. Usually, extensive field tests and case studies are performed to evaluate functionality of an RFID system under actual operation conditions. This article suggests a simple and efficient method of planning UHF RFID systems by using RF propagation results from ray tracing predictions. This is to reduce time of the testing phase prior to roll-out. Two showcase environments, i.e. a receiving area of consumer goods and a warehouse, are presented to be modeled with respect to relevant and realistic on-site conditions and properties. The ray tracing prediction results allow to analyze and evaluate wave propagation between RFID readers and transponders. From there, system functionality, for example read range and bit error ratio, can be deduced.