

Statistical Analysis of UHF RFID Bulk Measurements

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Abstract

This paper presents a detailed analysis of RFID bulk measurement data. In comparison to other studies the number of identifiers and the test sample size are very high. The test pallet consisting of 128 carrier boxes with a total number of 768 transponders can also be used as a bulk stress test to compare different readers. With the large sample size of 1600 gate passages it is possible to distinguish very small differences between two test cases with a certainty of 99 %. The impact of reader type, antenna configuration, tag properties, passage speed and carrier content were analysed. In the tests only one parameter at a time was changed to have the chance to find the underlying reasons of the found differences in the hypothesis tests. The study led to very accurate distinctions of the main parameters in RFID systems and the basis for 3D visualisation of the large amount of data was developed.