Measurements of EM Field Levels and EM Coupling in a Complicated Networked Environment

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Abstract

The University of New Mexico (UNM) was recently awarded a contract under the auspices of the Defense Threat Reduction Agency (DTRA) University Strategic Partnership Program. One task associated with this program is a study of high power microwave (HPM) interactions with networked infrastructure. This presentation will describe the paradigm that is being developed for modeling various aspects of such interactions. The paradigm invokes the sequential use of modeling tools to characterize the propagation, coupling, and expected HPM field levels near critical assets using software techniques and packages designed for studying indoor propagation for wireless communications applications.

In this paper, we will describe the EM interaction measurements made in our testbed facilities. By probing the electromagnetic power densities in a complicated networked environment, we can assess the ability of computational electromagnetic software to predict field strengths at frequencies of interest. We will be using commercial propagation software packages such as JEM-RF, Wireless Insite, and RF-PROTEC to predict field levels in a laboratory environment, and we will be using traditional EM solvers to then predict coupling into devices of interest. The comparison of measurements to our hybrid modeling methods will allow us to assess the ability to predict susceptibility levels in complicated scenarios.