

EVALUATION OF SITE-SPECIFIC PROPAGATION MODELS

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ABSTRACT

This paper will discuss evaluation of site-specific propagation models used in the VHF and UHF range of frequencies, which are needed for prediction of coverage and interference, especially for wireless communication applications. It will involve two ongoing tasks, one at the organizational level in United States and the other at the International Telecommunication Union's Radiocommunication Study group 3 (ITU-R SG 3) on propagation. In United States, two major deterministic site-specific propagation models have been used for a long time: the Terrain Integrated Rough Earth Model (TIREM) developed by the IIT Research Institute (IITRI) for Joint Spectrum Center (JSC) of the Department of Defense and the Irregular Terrain Model (ITM) developed by the Institute of Telecommunication Sciences (ITS) of the National Telecommunication and Information Administration (NTIA). About two years ago, the Office of Spectrum Management (OSM) of NTIA started a task for comparison and harmonization of the two models TIREM and ITM. Both ITS and OSM are working on this task in cooperation with JSC/IITRI. Predicted propagation losses from both models have been compared with large numbers of measured data. Even though the harmonization work is not complete yet, the statistical comparisons have yielded interesting results. The first order statistical results, such as, mean error and standard deviation are similar for the two models. However, errors for individual paths for two models sometimes differ by 20 dB or more. Some of the results of the comparison task and possible explanations for the discrepancies will be presented. At ITU, two site-specific propagation models ITM and a "general" model submitted from Germany have been considered for a possible new recommendation on site-specific propagation models. In 2000, a Working Party 3K Correspondence Group was formed to study these two models and compare the results with the results obtained from ITU-R Rec. P.452 for calculations of interference for frequencies above 700 MHz. The work of the Correspondence group will be discussed.

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