

Development of a Propagation Prediction Software Tool for VHF/UHF Terrestrial Wireless Communications Systems.

Phillip Maher

IPS Radio and Space Services, Sydney NSW

p-maher@ips.gov.au

Abstract

This paper describes the development of a propagation prediction software tool, for VHF/UHF terrestrial wireless communications systems. An essential input to the software is a Digital Elevation Model (DEM) for information on terrain heights and obstructions in applying empirical propagation and semi-deterministic diffraction models for initial pathloss estimates. Calculations for field strength, signal-to-noise ratio and coverage area can then be performed, incorporating full antenna gain pattern effects. As accurate co-ordinate, mapping and visualization features are required, Geographical Information System (GIS) issues and the usage of raster image techniques needed to be developed. Having a reliable physical layer model paves the way to incorporate more advanced network modeling components of a wireless communication system, which is the intended direction of this project. Simulation results are compared to estimates available from TV broadcast transmitters.