

Calibration of propagation models for DVB-H/SH radio network planning

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Radio Network Planning (RNP) procedures determine the network topology (The number of transmitters, their location and their respective transmitting power) needed for the provisioning of wireless communication services. RNP has a direct impact into the socio-economic benefits obtained from Radio Spectrum resources and therefore requires careful treatment.

State-of-the-art Mobile Broadcast Multimedia Systems, such as DVB-H or DVB-SH, build on existing digital broadcast systems and require of additional infrastructure to cope with the inherent difficulties of mobile reception, since digital broadcast systems are designed for rooftop or indoor reception by stationary receivers. In this paper, the authors describe a methodology in which the mobile coverage of current infrastructure is assessed through field measurements campaigns. The results of the measurements are latter used to calibrate the propagation models of a Geographic Information System (GIS) based Radio Network Simulation tool. This provides with the means to perform very cost efficient, scalable Radio Network Planning procedures for the introduction of Mobile Mass Media Services, since it makes it possible to predict very accurately the optimal location of future transmitters given the specific requirements of the service under study.

The paper emphasizes the process of calibrating the propagation model. It describes thoroughly the acquisition and the treatment of measurement data, how this data is used to adjust the parameters of the propagation model and the metrics used to compare the performance of the calibrated propagation model against other empirical models. As a case study, the paper presents the results for a test transmission in Gävle, Sweden.