

Measurement and Analysis of Building Penetration Loss for Mobile Networks in Tripoli Area

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Abstract : The investigation of Buildings Penetration Loss (BPL) of radio signal is getting more and more important. It plays an important role in calculating the indoor coverage for wireless communication networks. In this paper, the theory behind BPL and its mechanisms have been reviewed. The operating frequency, coverage area type, climate condition, time of measurement, and other factors affecting the values of BPL have been discussed. The practical part of this work was conducting 4000 measurements of BPL in different areas in the Libyan capital, Tripoli, to get empirical model for this loss. The measurements were taken for 2 different types of wireless communication networks; mobile telephone network (for Almadar company), which operates at 900 MHz and WiMAX network (LTT company) which operates at 2500 MHz. The results for each network were summarized and presented in several graphs. The graphs are showing how the BPL affected by: time of measurement, morphology (type of area), and climatic environment.

Keywords : building penetration loss, wireless network, mobile network, link budget, indoor network performance

Conference Title : ICMCCB 2014 : International Conference on Mobile Communications and Computing in Business

Conference Location : Istanbul, Türkiye

Conference Dates : September 29-30, 2014