UNIVERSITI TEKNOLOGI MARA

RELIABILITY LINE-OF-SIGHT MODELING PROPAGATION ON ACTUAL TERRISTRIAL LINK

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ABSTRACT

Malaysia is an enormous country with varied climatic weather environment. With the harsh climate encountered in areas, such as desert terrain to the rainfall, it is very difficult for Line-of-Sight (LOS) because of the frequent and large of reductions in received signal strength. Wave propagation with applied frequency is highly influenced by the participation of these conditions thus will degrade the total received signal quality. Since the electromagnetic waves propagates thorough Earth's atmosphere, the signal may experience intermittent losses in signal strength beyond normal path loss, thus effect in both short- and long-term.

In this paper, the performance analysis on microwave propagation signal quality, respectively with specified parameter have been done. The analysis is being done at two terrestrial microwave links, chosen with different meteorological condition. The actual data are compared with the outcome propagation reliability modeling and a comparison with PathLoss prediction model is done.

The fade margin and threshold are the important criteria in this analysis. The BER test is taken several times to monitor the link performance also the theoretical calculation is done to compare with actual threshold. The Bit-Error-Rate is a historical record of a system's actual bit error performance.

It is proven that the reliability propagation modeling can be used as a guideline for mobile network operator in producing the accurate link budget for their references. Nevertheless, the accurate parameter for each factor, including the topological condition with respect to the region rain shall first indicate the accuracy in order to generate the reliability propagation modeling.

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