

EFFECT OF RAIN ON SATELLITE TELEVISION TRANSMISSION

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ABSTRACT

Heavy rainfall has a strong negative impact on the transmission and reception of satellite television signals. This is due to the propagation effect caused by absorption of the wave signal by atmospheric rain. This work investigates the impact of rain on satellite television transmission and reception processes. This investigation was actualized from the analysis of the data obtained for the values of rainfall rate in the eastern part of Nigeria for a period of 3 years. The frequency of operation of interest is the KU band frequency; which could relatively be applied to other satellite frequency band within the specified range (12GHz-18GHz). Simulations were carried out with Matlab software. The graphical results presented the attenuation of signals obtained against rain rate values. The simulation results reveal that; attenuation increases with increase in frequency bands on high rain rate. The significance of this study is relevant for satellite TV providers to understudy the consequence of the result and take adequate measures to avoid signal interference during heavy rainfall.

Keywords: Satellite TV transmission, attenuation, interference, rain rate.