

Microwave signal propagation on oil palm trees: measurements and analysis

ABSTRACT

This paper presents the study of microwave signal attenuation on oil palm trees at 0.9 GHz, 1.8 GHz and 2.3 GHz frequencies. The main objective is to investigate the characteristics of propagation phenomenon by analysing the received signal strength. The experiments were made at the estate where there are straight line uniform canopies of mature oil palm trees. The measurements were carried out on the same transmission paths with different number of trees and height at trunk, leaves and fruits which obstructing the signal paths. The results have shown that excessive attenuation is due to scattering, depolarisation, fluctuation and absorption. It is strongly agrees with the previous studies. Further studies on other types of vegetation and environments, and its seasonal differences are important as future research.

Keyword: Attenuation; Frequency; Microwave; Oil palm tree; Propagation