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Rain Attenuation Investigation for Ka band Satellite Transmission in Tropical Region
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Abstract

Growing demands in satellite communication are driving a shift towards higher frequency bands, as lower bands become oversaturated. It is crucial to explore higher frequency bands beyond 10 GHz in order to satisfy the rapidly increasing demand for dependable and high-capacity satellite communication. But to explore into higher frequency bands, a problem has been encountered where there is a significant deterioration of Ka-Band signal quality caused by continuous heavy rainfall in the tropical regions. Rain attenuation caused a great loss in signal compared to other attenuation. The objective of this study is to determine the fade margin estimation for the measured data. This research compares and analyses a set of data from 2022 measured in Cyberjaya. This study also conducted a comparison of rain attenuation estimation utilizing ITU-R model. Fade margin estimation at 99.9% availability obtained from this research is 20 dB at Ka-band frequency. Copyright © 2024 by Author/s and Licensed by JISEM.

Author Keywords

Fade Margin; Ka-band; Rain attenuation; Satellite Link.

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