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Fade margin estimation technique using radar data for satellite link

(Conference Paper)

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Abstract

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The fade margin is an important parameter used by the operator to measure the link availability for a given time. Fade margin is a parameter that is used in the design of satellite links to ensure optimal performance of the link. A new technique is proposed where the fade margin of a satellite link can be estimated using attenuation statistics of radar data. Data set acquired from Malaysian meteorological radar for the year 2009 is used in the study. Radar return or reflectivity is used in the process of generating the attenuation values. The reflectivity is first converted into rainfall rate value and the specific attenuation is then calculated. The rain attenuation values can be derived by the multiplication of the specific attenuation and the path length affected. The rainfall rate derived from radar information is used in calculating the slant path attenuation of the satellite link. The databases of rain attenuation is then compiled with the time duration to acquire the cumulative distribution function (CDF) for the specified link. The satellite link investigated are based on the RazakSAT link in relation to its ground station located at Sg Lang, Banting, Selangor, Malaysia for X-band and MEASAT-3 satellite in relation to its ground station at Cyberjaya, Selangor, Malaysia for Ku-band. © Springer International Publishing Switzerland 2015.

Indexed keywords

Engineering controlled terms: Distribution functions, Electromagnetic wave attenuation, Radar, Rain, Reflection, Satellite ground stations, Satellite links, Satellites, Space-based radar

Attenuation statistics, Cumulative distribution function, Estimation techniques, Link availability, Optimal performance, Radar information, Slant path attenuations, Specific attenuation

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1 Ismail, A.F., Watson, P.A.
Characteristics of fading and fade countermeasures on a satellite-Earth link operating in an equatorial climate, with reference to broadcast applications
(2000) *IEE Proceedings: Microwaves, Antennas and Propagation*, 147 (5), pp. 369-373. Cited 40 times.
doi: 10.1049/ip-map:20000704
View at Publisher

2 Badron, K., Ismail, A.F., Islam, M.R., Abdullah, K., Din, J., Tharek, A.R.
Rain fade characteristics analyses for V-band link in tropical region
(2010) *2010 International Conference on Microwave and Millimeter Wave Technology, ICMMT 2010*, art. no. 5525273, pp. 121-124. Cited 4 times.
ISBN: 978-142445705-2
doi: 10.1109/ICMMT.2010.5525273
View at Publisher

3 Marshal, J.S., Palmer, W., Mc, K.
The distribution of raindrops with size
(1948) *J. Meteorol*, 5, pp. 165-166. Cited 1936 times.

4 Olsen, R.L., Rogers, D.V., Hodge, D.B.
The aRb Relation in the Calculation of Rain Attenuation
(1978) *IEEE Transactions on Antennas and Propagation*, 26 (2), pp. 318-329. Cited 403 times.
doi: 10.1109/TAP.1978.1141845
View at Publisher

5 (2005) *Specific Attenuation Model for Rain for Use in Prediction Methods, Recommendation*. Cited 328 times.
ITUR P. 838-3, Geneva

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