IOT Systems, LLC®

Propagation Models and Measurements

Propagation Services

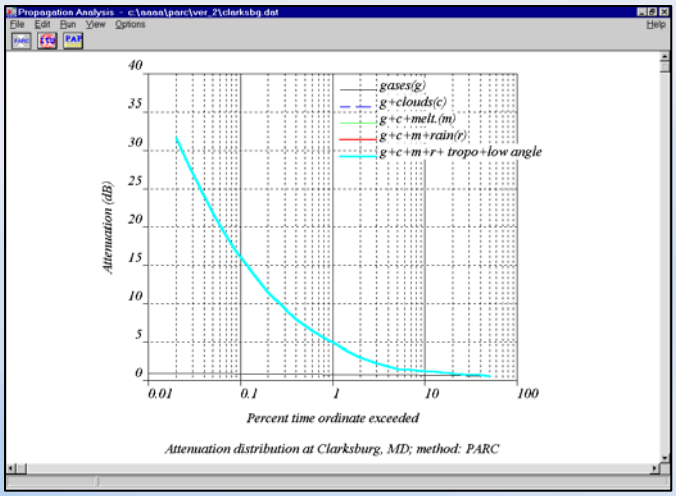
Propagation Models

IOT Systems personnel has developed propagation models which are capable of providing accurate propagation predictions for satellite systems up to V-band frequencies. Models developed by IOT Systems personnel include:

- Rain attenuation (DAH model)
-Cloud attenuation
- melting layer attenuation
- low-angle fading
- combining of different impairments

The method developed for combining different impairments is the only available currently and provides a comprehensive method of predicting the overall degradation on satellite link, especially for Ka- and V-band applications.

All propagation models are available in a software package for IBM-PC compatibles and comes with extensive databases on world wide distribution of rain and other meteorological parameters.



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IOT Systems, LLC is a complete satellite services company continuing the mission begun over 40 years ago with the launch of Early Bird: fostering the growth of the commercial communications satellite industry.

IOT Systems, LLC®

Propagation Services

Propagation Measurements

IOT Systems has extensive experience in developing propagation measurement systems and conducting propagation measurements in diverse parts of the world including Africa (Cameroon, Kenya, Nigeria), India, Australia and New Zealand, South America, Europe, and USA. Measurements have been conducted at L-, C-, Ku-, and Ka-band frequencies.

Product related to propagation measurement include

- beacon receivers
- radiometers
- hybrid beacon/radiometer receivers
- meteorological radars

Data analysis software for these instruments are also available.

Fade Mitigation

Introduction of higher frequency bands such as the 20/30 GHz frequency band calls for rain fade mitigation as a way of providing an acceptable level of service availability. Fade mitigation techniques normally used for satellite systems include

- Power control
- Site diversity
- Resource sharing

IOT Systems has conducted investigation into these fade mitigation techniques and successfully developed up-link power control and diversity switching algorithms. Investigations have been carried at both Ka- and Ku-band frequencies. Our personnel were instrumental in carrying out several Ka-band fade mitigation experiments using the NASA ACTS satellite. The experiments included power control, site diversity, and networked diversity.

Propagation Services also includes:

Ka-Band Radiometer Systems

Beacon Measurement Systems

Dynamic Atmospheric Calibration for IOT

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