IOT Systems, LLC

Antenna Verification Program

Antenna Verification

The COMSAT Antenna Verification Program is a software program developed by our personnel at COMSAT Laboratories to fully characterize antenna RF performance. This provides an accurate and efficient method for verifying the performance of earth station antennas. The AVP system measures antenna parameters such as radiation patterns, gain, system temperature profiles, radio star gain-to-noise temperature ratio (G/T) and gain, cross-polarization isolation contours, and effective isotropically radiated power (EIRP) stability. A PC is used to monitor, control, and record data from a variety of commonly available test equipment. The system displays results and plots graphs for all measured data. Other helpful features include satellite and star ephemeris, and bus address search capability.

System Requirements

► ISA PC or notebook, with the minimum configuration being a 386/33 processor with 8-MB RAM and a VGA display. (This configuration is also compatible with higher-resolution monitors.)

► Microsoft Windows® 3.1. (Windows XP® compatibility planned.)

► IEEE 488.2 interface bus over an ISA, EISA, or PCMCIA card. Parallel and serial port interfaces may also be used.

► Test equipment, including a spectrum analyzer and power meter, with appropriate interface cables.

Advantages

► Employs a user-friendly interface running under Microsoft Windows.

► Built-in equations and calculations facilitate the measurement process.

► Provides early detection of test configuration problems.

► Ensures accurate processing of data.

► Allows immediate graphical display of results, which may also be plotted for test reports. (Data are stored as ASCII files.)

► Facilitates data collection at multiple frequencies, leading to a more complete characterization of the antenna under test.

► Lowers testing costs by reducing the time required to perform measurements and analysis.

► Facilitates antenna certification by INTELSAT and other space segment providers.

The AVP software running on commonly available customer equipment. Shown is a cold load setup for measuring the noise temperature of an amplifier (LNA or LNB). The user may also measure the noise temperature of an uncalibrated amplifier by comparing it against a calibrated amplifier of known noise temperature. This feature is helpful if a cold-load is unavailable.

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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.

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Applications

► Ideal for performing INTELSAT earth station certification tests.

► Permits rapid collection of data for submission to space segment providers for operational acceptance.

► Verifies RF performance of antennas and subsystem components.

Antenna Parameters Measured & Displayed

► Radiation patterns with specification envelopes.

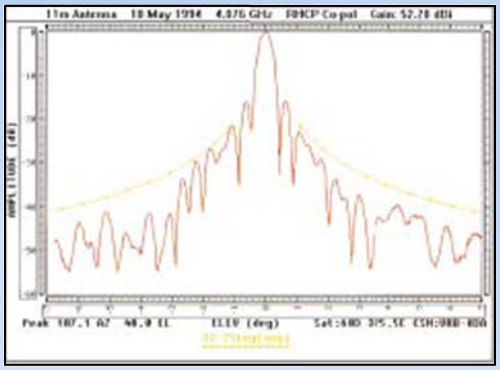
► Low-noise amplifier/low-noise block converter (LNA/LNB) noise temperature.

► System/antenna temperature profiles.

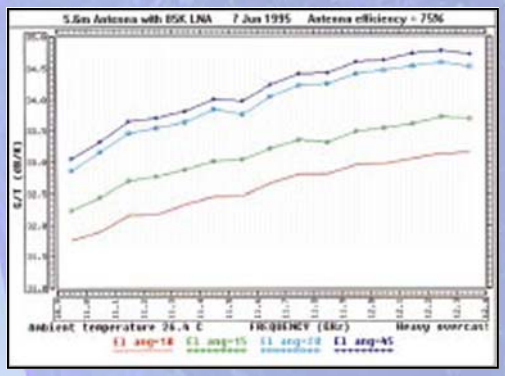
► Radio star G/T and gain.

► Cross-polarization isolation contours.

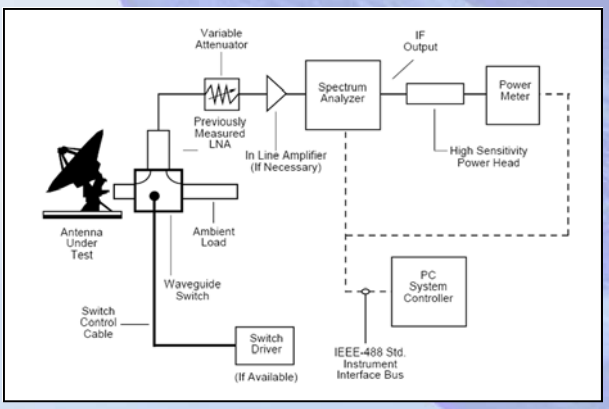
► EIRP stability over time.



Sample Antenna Pattern with Specification Envelope



Sample Antenna System G/T Profile



Equipment Configuration for System Temperature and Radio Star G/T

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