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DESCRIPTION

The VSAT Tri-Band Satellite Simulator System is a field-ready RF testing platform that enables full simulation of satellite communication links across C-band, Ku-band, and Ka-band frequencies — without requiring access to an actual satellite. Designed for ground station and VSAT terminal validation, the system delivers precise frequency translation, low phase noise, and wide instantaneous bandwidth, replicating realistic satellite link conditions in both laboratory and field environments.

Housed in a rugged IP65-rated weatherproof enclosure with field-replaceable modules, the system is engineered for long-term deployment reliability. Remote monitoring and control via SNMP v3 and a built-in HTTPS web server eliminates the need for on-site presence during routine operation, making it equally suited for permanent test facility installations and temporary field verification campaigns.

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APPLICATION

The VSAT Test Set supports the following measurement and test activities:

- VSAT ground terminal acceptance testing: End-to-end RF link simulation for C, Ku, and Ka-band terminals prior to satellite integration
- Ground station commissioning & validation: Verifying uplink and downlink RF performance without satellite coordination or access costs
- Antenna & feed system characterization: Flatness, gain, and polarization testing using flat panel (C-band) and horn antennas (Ku/Ka-band)
- Modem and waveform validation: Simulated satellite delay and link conditions for communication protocol and waveform testing
- Field deployment readiness testing: IP65-rated rugged enclosure supports on-site terminal verification in outdoor and remote environments
- Production & factory acceptance testing: Repeatable, controlled RF environment for manufacturing QA of VSAT terminals and satellite communication equipment

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SPECIFICATIONS

Parameter	Specification
Supported Bands	C-band · Ku-band · Ka-band
C-Band Frequency	Input: 5.85 – 6.425 GHz · Output: 3.625 – 4.20 GHz

Ku-Band Frequency	Input: 13.50 – 14.50 GHz · Output: 10.70 – 12.70 GHz
Ka-Band Frequency	Input: 30.00 – 31.00 GHz · Output: 20.20 – 21.20 GHz
Instantaneous Bandwidth	575 MHz (C-band) · 1,000 MHz (Ku/Ka-band)
Phase Noise	-75 dBc/Hz @ 100 Hz · -115 dBc/Hz @ 1 MHz (Ka-band)
Amplitude Flatness	±2.0 dB (full band) · ±0.5 dB (any 40 MHz segment)
Antenna Options	Flat panel — C-band · Horn antenna — Ku/Ka-band
Polarization	Circular and linear
Remote Control	Ethernet RJ45 · SNMP v3 · Built-in HTTPS web server · ETL TCP/IP protocol
Enclosure Rating	IP65 — weatherproof for indoor and outdoor deployment
Serviceability	Field-replaceable modules: TLT · 10 MHz reference · PSUs · CPUs
Power Supply	24 VDC with lightning protection
Operating Temperature	-10°C to +50°C
Altitude Rating	Up to 10,000 ft (3,000 m)