

GENERAL PURPOSE CES 2001™ COMPACT EARTH STATION



SERVICES AND FEATURES

Globecomm Systems has developed a family of cost-effective General Purpose Compact Earth Stations (CES) to provide full-time service in either point-to-point or remote-to-hub (star) configurations. The terminals employ highly integrated state-of-the-art subsystems to provide flexibility and reliability for many types of services including:

- *Data, Voice and Fax Trunking*
- *Videoconferencing*
- *Financial Services*
- *Dedicated Business Networks*
- *Publishing*
- *Computer Downloading*
- *Internet Host Connections*
- *Intelsat, Eutelsat, AsiaSat, PanAmSat, Orion and Regional satcom configurations*

The CES 2001™ Terminal family offered by Globecomm Systems provides unique features due to its integrated RF/Modem Earth Terminal design and the use of type approved antenna systems. These features include:

- *Power and data connection at Antenna simplifies installation*
- *Environmental Stress Screening (ESS) to assure highly reliable service*
- *Multiple data interfaces available*
- *No adjustments required*
- *Single electronics package integrated on Antenna simplifies maintenance*
- *Complete monitor and control system available for SCPC network applications*



GLOBECOMM SYSTEMS INC.

Telecommunications Solutions for the Global Community

*Highly integrated
complete earth station*



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RF Specifications

	C-band	Ku-band
Receive Frequency	3.625-4.200 GHz	10.95-12.75 GHz
Transmit Frequency	5.850-6.425 GHz	14.0-14.50 GHz
Output Power	1-8 Watts	1-5 Watts
LNB Noise Temperature	40 Kelvin	110 Kelvin
Output VSWR	1.25:1	1.25:1
Gain Flatness	±0.5 dB/36 MHz	±0.5 dB/36 MHz
Frequency Stability	2×10^{-7}	2×10^{-7}
Phase Noise	I ESS 308/309	I ESS 308/309
IF Frequency	950-1525 MHz	950-1450 MHz

RFT Performance

	G/T (dB/K)	EIRP (dBW)	G/T (dB/K)	EIRP (dBW)
Antenna Size				
1.2 Meters	12.0	44.5	19.0	49.0
1.8 Meters	15.5	48.0	23.0	53.0
2.4 Meters	18.0	50.5	25.0	55.0
3.7 Meters	22.0	54.5	29.0	59.0

Modem Specifications

System

IF Tuning	100 Hz steps
Data Rates	9.6 to 384 kbps 64 to 2,048 kbps
Modulation	BPSK and QPSK
Forward Error Correction	Convolutional Encoding Viterbi Decoding Rates 1/2, 3/4, 7/8, and Reed Solomon (optional)
Data Interfaces	RS 422, RS 232, V.35
Control Interfaces	RS 232, RS 485, AT Bus

Modulator

Output Power	Variable -5 to -25 dBm in 0.1 dB steps
Spurious	-55 dBc
Output Impedance	75 or 50 Ohm
Return Loss	>20 dB
Transmitter on/off Isolation	60 dB
Spectral Mask	I ESS 308
Phase Noise	I ESS 308
Data Clock Source	Internal or External
Internal Clock Stability	±2.5 ppm

Demodulator

Input Level Range	-30 to -60 dBm
Maximum Composite Input Level	-5 dBm or +30 dBc
Adjacent Signals	1.4 times the symbol rate on each side of the carrier; 14 dB higher in level than the desired carrier
Frequency Acquisition Range	±30 kHz maximum
Input Impedance	75 or 50 Ohm
Return Loss	>20 dB

Demodulator BER Performance vs. Eb/No Using Viterbi Decoder

Maximum Bit Error Rate	R=7/8	R=3/4	R=1/2
10^{-3}	6.4	5.4	4.3
10^{-4}	7.3	6.2	4.8
10^{-5}	8.1	7.0	5.5
10^{-6}	8.8	7.7	6.2
10^{-7}	9.5	8.4	6.8

Antenna Specifications

Mount Type	Azimuth over elevation
Wind Speed	
Operational	50 mph
Survival	125 mph
Elevation Range	5 to 90° continuous
Azimuth Range	360° continuous
Cross Pol. Isolation	30 dB minimum on axis
VSWR	1.3:1 maximum
Sidelobe Envelope	
Mainbeam	29-25 Log θ
$7^\circ < \theta < 9.2^\circ$	8 dBi
$9.2^\circ < \theta < 48^\circ$	32-25 Log θ
$48^\circ < \theta < 180^\circ$	-10 dBi

Control and Status Parameters

Raw BER Estimation

Corrected BER Estimation

Eb/No Estimation

Rx Signal Level

Rx Carrier Detect

Programmable Parameters

Data Rate

Modulation Type

Code Rate

Transmit Output Power

Transmit Frequency

Receive Frequency

Tx Clock Source

Rx Clock Source

Rx Buffer Size

Acquisition Bandwidth

Scrambling On/Off

Descrambling On/Off

Differential Encoding On/Off

Differential Decoding On/Off

Loopback Mode

General Specifications

Input Power	85 to 265 Vac, 50/60 Hz
Environmental	-20 to 50°C operating -20 to 70°C storage Up to 100% relative humidity 10,000 ft. altitude

Globecomm Systems Products Include

- **Intelsat Standard A Satellite Gateways**
- **Modular Building Block Satellite Terminals**
- **Digital Satellite Communications Terminals**
- **Military and Commercial Portable Communications Systems**
- **Network Monitor and Control**
- **Hub Earth Stations**
- **General Purpose Compact Earth Stations**
- **Explorer™ Portable Satphone with ISDN Capabilities**
- **NetSat Express High-speed Internet Access**
- **Long Island International Teleport™**