



X/KU/KA BAND EASILY DEPLOYABLE LIGHTWEIGHT TERMINAL

TST-301/B is a lightweight tri-band (X/Ku/Ka) satellite terminal, specifically designed for the needs of a dismounted soldier or first responder. The compact design and Backpack packaging facilitates operation in the tactical environment.

The lightweight carbon fibre manportable antenna and easily configurable RF section make this terminal particularly suitable for worldwide operations with military and commercial satellites.

Two TX/RX coaxial cables constitute the RF signal interface between baseband equipment and the Antenna System. The baseband section and antenna system are packaged within a bespoke rugged backpack to simplify deployment in the tactical environment.

The fully-operational terminal is contained within 2 backpacks. A set of hard transit cases and AirDrop Cargo Bags are available as options.

KEY FEATURES

- Lightweight carbon fibre 1 metre foldable antenna
- X, Ku, Ka RF capability, easy to switch by fast interchangeable integrated feed arms
- Manual satellite acquisition supported by rugged tablet PC and USB spectrum analyzer
- FDMA or DVB-RCS satellite access
- Backpack solution for tactical requirements
- Quick deploy (less than 5 minutes) and '100% Tool Free' assembly
- Easy and reliable operation
- Compliant to military standards
- AC or DC power device unit with 10 minutes UPS.

TST-301/B



SYSTEM PERFORMANCE

| RF PERFORMANCE | | | |
|--|-------------------|-------------------|-------------------|
| Operation band | X band | Ku band | Ka band |
| Polarization | Circular | Linear | Circular |
| Tx Frequency (GHz) | 7.9 to 8.4 | 13.75 to 14.5 | 29.0 to 31.0 |
| Tx antenna gain at flange feed (midband) | 35.6dBi | 40.7dBi | 46.8dBi |
| Tx BUC output power (more BUC sizes available) | 10W | 12W | 5W |
| EIRP typical (saturation) | 45.1dBW | 52.2dBW | 51.0dBW |
| Rx frequency (GHz) | 7.25 to 7.75 | 10.7 to 12.75 | 19.2 to 21.2 |
| Rx antenna gain at LNA input (midband) | 35.6dBi | 39.9dBi | 43dBi |
| G/T (clear sky, 23°C) typical | 13.6dB/K @10° El. | 17.6dB/K @20° El. | 20.2dB/K @20° El. |

| ANTENNA CONFIGURATION | | | |
|-----------------------|-----|--------------------------|-----|
| Polarization range | n/a | ±90° (Ku) | n/a |
| Reflector | | Five pieces carbon fibre | |
| Azimuth range | | 0° to 360° | |
| Elevation range | | 5° to 90° | |

DVB-RCS MODEM

TDM Receive (DVB-S2)

- Modulation: 1 to 45Msps
- MODCODs: QPSK, 8PSK, 16APSK with LDPC+BCH FEC rates
- FEC frames: Normal (64 Kbit) and Short (16 kbit)
- Roll-off factor: 20%, 25%, or 35%
- Modes: CCM, VCM, ACM (RX)

TDMA transmit and receive

- Symbol Rates: 125ksps to 8Msps (RTN)
- Symbol Rates: 200ksps to 3Msps (Mesh)
- MODCODs: QPSK, 8PSK with Turbo Code FEC: 8- and 16-state

TDMA mesh Rx

- Up to 8 simultaneous bursts, 44MHz (RCS QPSK only)

SCPC burst mode

- Dedicated carrier for Tx with full Constant Rate Access (CRA), no capacity requests required

Tx (BUC) interface

- N-type 50 Ohm; 24VDC, up to 4A, plus 10MHz reference under software control

Tx output

- 950MHz to 1700MHz, -35dBm to -10dBm

Rx (LNB) interface

- TNC-type 50 Ohm; 13/18VDC,
- Up to 0.5A, plus 10 MHz reference under software control

Rx input

- 950MHz to 2150MHz, -65dBm to -25dBm



FDMA MODEM

- FDMA PAMA Traffic Carriers (1 carrier per modem) 64kbps - 2Mbps, 4kbps step
- Modulation BPSK, QPSK, OQPSK, 8-PSK, 8- and 16-QAM
- IF Frequency: 950MHz to 2000MHz in 100Hz steps
- FEC:
 - Viterbi K=7, rate 1/2, 3/4, 7/8
 - Reed Solomon (Viterbi concatenated) rate 126/112, 219/201, 225/205, as for IESS-309
 - Turbo Code TPC 0.793
 - DoubleTalk Carrier-in-Carrier module
 - IP Packet Processor Board
 - 8-PTCM 2/3 with 8-PSK modulation (IESS-310)
 - Reference: High stability internal 10MHz ± 0.06 ppm, or external 10MHz
 - Tx output level:
 - 950MHz to 2000MHz: 0 to -40dBm, 0.1dB steps
 - Rx input level:
 - 950MHz to 2150MHz: $-130 + 10 \log(\text{symbol rate})$ to $-80 + 10 \log(\text{symbol rate})$ dBm
- LNB interface: 13/18VDC/0.5A, 10MHz reference and L band Rx signals muxed on RX IFL cable.

COMPONENTS

- Light-weight 1 metre antenna
- X and/or Ku and/or Ka band RF transceivers
- Baseband section (4U rack) with FDMA and DVB modems, power device unit with 10 minutes emergency UPS
- Rugged backpack set
- Rugged tablet PC and USB spectrum analyzer
- Cable kit
- Available options
 - 2kVA electric generator set
 - Hard transit case set
 - AirDrop cargo bag.

DEFAULT TRANSPORTATION AND WEIGHT

- x1 rugged backpack for antenna and one RF transceiver for one band
- x1 4RU rack rugged backpack for baseband equipments and cables
- x1 rugged backpack for other RF integrated feed arms
- x1 rugged backpack for ancillaries (transport configuration can be tailored on customer needs).

ENVIRONMENTAL CONDITIONS

- Operative temperature: -30°C to +50°C (antenna and transceiver)
- Storage temperature: -40°C to +70°C
- Relative humidity: 93% at +40°C condensing
- Operational altitude: 3000m
- Storage altitude: 9000m (transport)
- EMI/EMC: equipments are MIL-STD-461E or CE compliant.

PRIMARY POWER

- AC source
 - Voltage: 110 - 230 $\pm 10\%$ Vac, mono-phase
 - Frequency: 47Hz to 63Hz
- DC source
 - Voltage: 24 $\pm 10\%$ VDC
- Power consumption: 300W max



