Space Telemetry Transmitter
Model STTS-4800-5W-BPSK

Range Qualified GPS Metric Tracking Transmitter

The Future In Launch Vehicle Range Tracking

The GPS MT Transmitter

Selected, Designed-In, Qualification Tested, and Approved for Range Use, the Microwave Innovations GPS MTS 5 Watt BPSK Transmitter is now entering the EELV fleet as a key component for the next generation cost effective launch vehicle (LV) range tracking technology designed to reduce costs and improve overall range tracking performance.

The United States Air Force has undertaken an initiative called Launch Enterprise Transformation (LET) to significantly reduce Test Range Operations and Maintenance (O&M) cost by closing facilities and decommissioning ground assets, specifically C-Band Range Tracking Radars. An important phase of the LET initiative has been the implementation of the Global Positioning System Metric Tracking (GPS MT) or Space Based Range. Leading the introduction of GPS MT system are ranges such as Vandenberg and Cape Canaveral AFB, with adoption by all US launch facilities in the very near future.

The GPS MT system is a way to leverage the existing GPS system to significantly reduce the costs of Test Range O&M. United Launch Alliance (ULA) in partnership with the US Government developed a GPS based, Space Based Range system, for their Atlas and Delta rocket programs. ULA worked closely with the USAF to define and document the requirements for a GPS MT System for an EELV Class launch vehicle in the Range Commanders Council RCC324-1 document (RCC 324-01T-EELV, Global Positioning and Inertial Measurement Range Safety Tracking Systems' Commonality Tailored for EELV).

The GPS MT System satisfies those requirements by establishing a common and now qualified set of components to be used on Atlas V and Delta IV and similar sized launch vehicles. The GPS MT system data output is as per USAF Test Range control document to provide the maximum mission flexibility and to provide precise position, velocity and timing information that can replace C-Band ground tracking radar assets. Initially, the GPS MT system will provide independent position and velocity via the Microwave Innovations transmitter to support the current man-in-the-loop ground-based command destruct of anomalous flight.

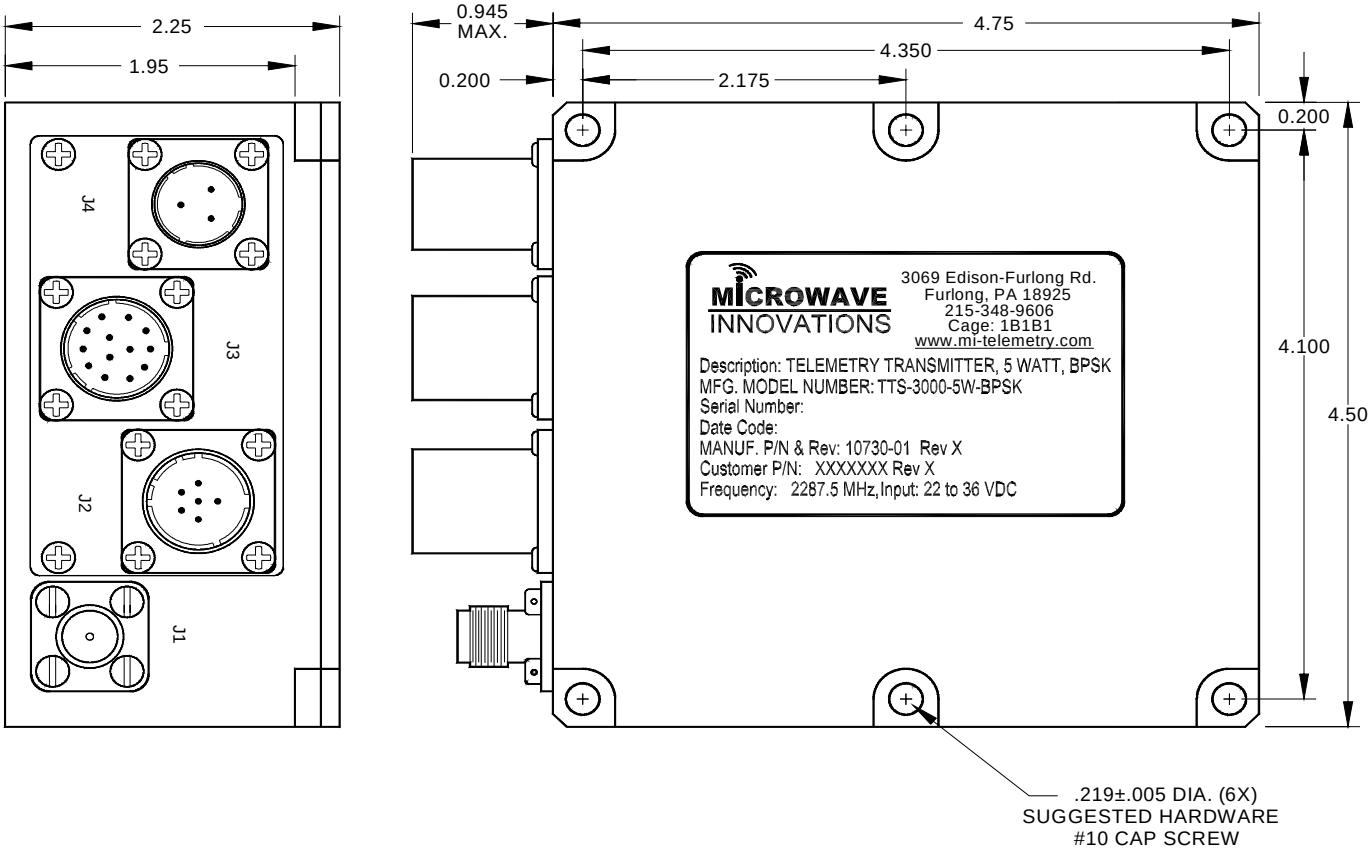
To enhance cost effectiveness the GPS MT system each component such as transmitter is designed to use existing commercial parts that are up-screened, along with common test requirements to provide shared system performance for each component. Whether with the qualified GPS MT system or in support of alternative system let Microwave Innovations adapt its transmitter for your unique mission needs with confidence and proven performance.

3069 Edison Furlong Road
Furlong PA, 18925 USA
Phone: 215-348-9606

Space Telemetry Transmitter S-Band Model: STTS-4800-5W-BPSK

The Microwave Innovations Space Telemetry (ST), Transmitter S-Band (TS), 48 cubic inch, 5 Watt, Bi-Phase Shift Keyed (BPSK) transmitter designed to support launch vehicles (LV) from lift-off to orbit through all possible environments and vehicle conditions. The transmitter designed to meet high reliability requirements and all environments of the Evolved Expendable Launch Vehicle (EELV).

This is built upon an enhanced up-screened commercial-off-the-shelf (COTS) part program with full environmental and performance testing for production flight units. Key features include a low phase noise performance, fully isolated chassis ground from power return, RF Isolator Output protection, and GPS L1 and L2 receiver co-location capability.



Performance Features:

Frequency Range:	2200 to 2300 MHz (S-Band) Factory Set
Carrier Stability:	Within ±0.002%
Modulation:	Bi-Phase Shift Keyed (BPSK)
RF Power Output:	5 Watts (7 dBW) Minimum
Spectral Occupancy:	IRIG-106-96 Complaint
Spurious Harmonics:	MIL-STD-461C Compliant
L-Band Interference:	<-112 dBm at L1 and L2 Bands
VSWR:	Fully Fault Tolerant
Output Impedance:	50 Ohms Nominal
Data Input Type:	Differential Input, RS-422 Compliant
Data Format:	Async Bi-Phase M, PCM Data
Data Rate:	115.2 kbps (230.4 k samples/sec) Std (opt)
Bit Error Rate (BER):	<1x10E^{-6} BER Typical
DC Power:	+22 to +36 VDC (+28 Nominal)
Power Input:	<36 Watts @ +28 VDC
Grounding:	RTN >10 M Ohm Isolation
Telemetry Outputs:	Current, Voltage, RTD Temp Monitor

Mechanical Features:

Weight:	<60 Ounces (1700 grams)
Pressurization:	Vented Enclosure
Rec. Mounting:	#10 SHCS 2.25 inches (6 Places)
Dimensions:	2.25” H x 4.50” W x 4.75” L
Connectors:	D38999 (3, 6, 13 Pin)
RF Connector:	TNC Female (With Wire Lock Screws)

Environmental Features:

Operating Range:	-34°C to +85°C (Qual) -24°C to +75°C (ATP)
Humidity:	0 to 100% RH (Non-Condensing)
Altitude:	Unlimited
Acceleration:	Qual 20G
Vibration:	Random 32.4 Grms (Qual) Random 16.2 Grms (ATP) Sine 5-14 Hz (Qual)
Pyrotechnic Shock:	100 Hz 200G, 800 Hz 1250G, 1kHz 1300G, and 10kHz 1300G
EMC/EMI:	MIL-STD-461C

Options:

Connectors Types, PWR Non-Isolated, Enclosure Size, Data Rates Up to 4Mbps, RF Center Frequency & Power, and Telemetry Monitor

3069 Edison Furlong Road
Furlong PA, 18925 USA
Phone: 215-348-9606