

We define Space Telemetry as product that are used in ballistic interceptors, launch and re-entry vehicles, and short-duration low earth orbit (LEO) flights, supporting data or video links. Each year we continue to expand our line of products that have flown or will be used in these environments, with an outstanding record of performance. In these applications, just as in our other product groups, we often work side-by-side with co-located GPS systems and additional telemetry links with only the best results.

Our line of ST products includes both data and video transmitters that can be used immediately in your design as Commercial-Off-The-Shelf (COTS) plug and play telemetry units, or we can custom design your telemetry unit to meet your unique needs. Our line of COTS transmitters have been selected to support multiple Delta II launches, passing qualifications testing, and performing to the highest standards possible while being both cost and schedule effective. Today, our ST product line includes both PCM/FM and our newly added BPSK modulation transmitters.

Our ST products and their designs have been tested to the highest standards of multiple launch vehicle programs; some of our successful testing has included radiation, RFI/EMI testing under IRIG 106 and MIL-STD-461C/E, Shock/Vibration, Thermal Vacuum, and Operating Temperatures from -35°C to +85°C. These are just some of the test conditions commonly applied our dependable and rugged transmitter products. If your test engineers or system integrators need a performance proven hardened telemetry transmitter, we have what you need. COTS product or design experience, we can support or mission.

#### High Reliability ST Transmitters

- 2 to 10 Watts Output (Higher available upon request)
- S-Band 2200 to 2400 MHz (L-Band available upon request)
- PCM/FM and BPSK Modulation available
- Date Rates Up To 20 MBPS
- Analog, PCM, Video, RS-422, RS-232 Interfaces Options



**8 Watt 4.8 Cubic Inch**



**10 Watt 9 Cubic Inch**



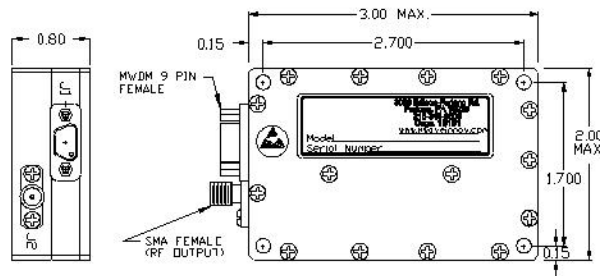
**5 Watt 12 Cubic Inch**

# Space Telemetry—Commonly Used TM Packages

## ST

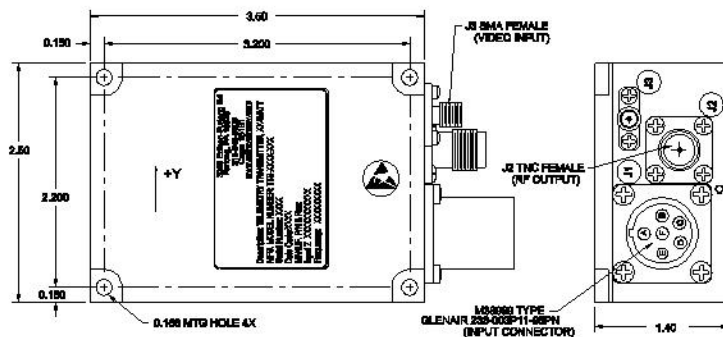
### PERFORMANCE PROVEN TELEMETRY PRODUCTS

Below are some of the ST products that we offer as proven, and ready for order “as-is” in support of your program today. These products have all been subjected to rigorous qualification testing and are deemed ready for flight by our most demanding customers. Some of this products tests have included: EMI/RFI, shock, vibration, thermal vacuum, and extended thermal cycles.



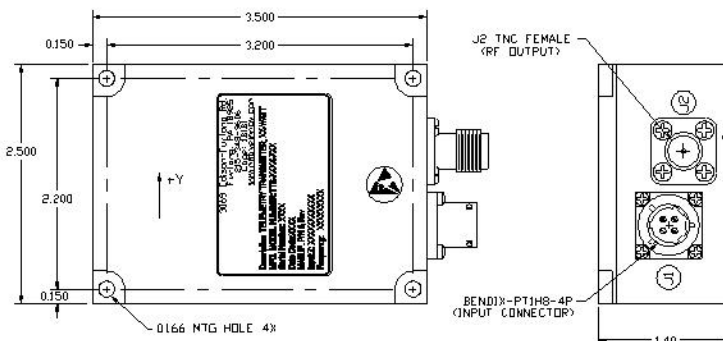
#### 8 Watt S-Band Transmitter—Fully Isolated

Special Feature: Isolated Power Return  
 Frequency: 2200.5 to 2399.5 MHz  
 RF Output: 8 Watts  
 Input: Video or Data Up to 20 MBPS  
 Power In: 22 to 36 VDC @ 1.5 to 1.8 A  
 Operating Temp: -40C to +85C  
 Shock & Acceleration: 100 Gs  
 Vibration: 20 Gs Random



#### 5 Watt S-Band Transmitter—Fully Isolated

Special Features: Isolated Power Return, Separate Power Connector and Modulation Input  
 Frequency: 2200.5 to 2399.5 MHz  
 RF Output: 5 Watts  
 Input: Video or Data Up to 20 MBPS  
 Power In: 22 to 35 VDC (24 Watts Max.)  
 Operating Temp: -34C to +85C  
 Shock & Acceleration: 700 Gs  
 Vibration 32.4 Grms



#### 5 Watt S-Band Transmitter—Fully Isolated

(See News Story Below)  
 Special Feature: Isolated Power Return  
 Frequency: 2200.5 to 2399.5 MHz  
 RF Output: 5 Watts  
 Input: RS-422, Data Up to 20 MBPS  
 Operating Temp: -30C to +75C  
 Shock & Acceleration: 707 Gs  
 Vibration: 21.3 Grms

**News 06/18/08:** Microwave Innovations announced today it's successful support of a series of recent Delta II launches for ULA/Boeing. ST transmitters were selected, underwent full qualification testing and were delivered on schedule for launch. Our products performed flawlessly all while providing a cost effective solution. Refer to the COTS 5 Watt S-Band transmitters (detailed above\*).



Delta II  
 DAWN  
 Date: 09-27-07  
 Launched from  
 Complex 17B  
 Cape Canaveral  
 AF Station



Delta II  
 GLAST  
 Date: 06-11-08  
 Launched from  
 Complex 17B  
 Cape Canaveral  
 AF Station



Delta II  
 Jason 2  
 Date: 06-17-08  
 Launched from  
 Vandenberg AFB