

μ STDN™ Transponder

The μ STDN™ S-Band Transponder design has significant and successful flight heritage based upon several transponders developed for U.S. Space programs. This compact, low current implementation is the “next-generation” system. μ STDN™ is available with Commercial Aerospace, Class B, and upon request, Class S screened components.



The unit operates at a single frequency within the 2200–2300 telemetry band, and adheres to the standard STDN 240/221 turnaround ratio for compatibility with established ground stations. The transmit frequency is controlled by an internal crystal oscillator circuit meeting the stability requirements defined in the specifications and phase locked to the carrier of the uplink signal in a ratio of 240/221.

A VCO operating at the transmit frequency is internally locked to the crystal oscillator and linear phase modulated to enable a cleaner and more compact design solution. The receiver is a dual conversion approach with demodulation occurring at a low IF using a low power analog I and Q demodulator for demodulation and carrier tracking.

Features for Space

- Radiation Hardened:
 - TID from 30 to 100 krad
 - No SEL or SEFI (>120MeV/mg/cm²)
- Ruggedized: against vibration /shock/ thermal
- Temperature: -24 to +61 °C

Elements

- S-Band , CCSDS compliant
- Transmit: 1.5 Mbps@2200–2290 MHz
- Receive: 4.0 Kbps@2025–2120 MHz
- RF Output: 5W
- Input Power: <16W, 12V to 40V

Space Micro Inc

μ STDN100

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Specifications

Power Input	12 to 40V with a single point ground
DC power consumption	<16W
Monitors:	<ul style="list-style-type: none">▪ Loop Stress▪ RF power monitor 0-5V range▪ Case temperature (via thermister output)▪ Carrier Lock▪ Subcarrier lock

Transmitter Section

Operating Frequency	2200-2290 MHz
Stability	+/- 20ppm @ -10 to +35C
RF Power Output	5W min into VSWR of less than 1.5:1
Modulation	Suppressed Carrier BPSK
Data Rate	up to 1.5 Mbps
Spurious Emission	<-60 dBc
Spurious (2100-2200MHz)	<-73 dBc
Spurious 4.5 - 6.0MHz	<-40 dBc
Data Input	Serial RS-422
Transmitter Control	TTL command ON/OFF
Transmitter Level Control	TTL controllable (5W, 3W, 2W, 0.5W)
Inrush Current	< 1.0A 200ms

Receiver Section

Operating Frequency	2025-2120 MHz
Carrier Acquisition	-125 dBm @ +/- 60KHz with 30 kHz/s sweep
Demodulation	PM carrier, suppressed carrier BPSK on 16 kHz
Subcarrier	CCSDS compliant
Data Rate	Up to 4 Kbps
Inrush Current	<750mA, total energy <200mJ
Size	175mm x 110mm x 50mm
Weight	1.0 Kg

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