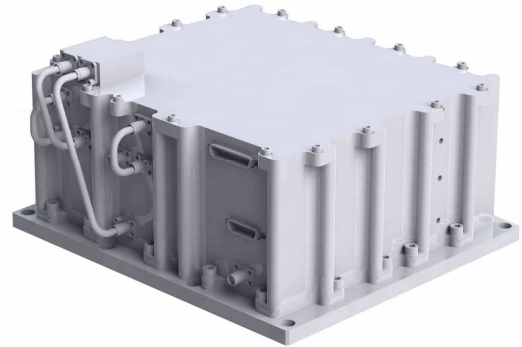


μX^{TM} X-Band Transmitter

X-band radio in the battle field is robust in adverse environmental conditions such as rain, dust, jungle and commercial air waves. This is as opposed to Ku, Ka and C band that are in the commercial spectrums. The Military finds itself in contention with commercial users — CNN, NBC, Citibank, etc. just to name a few examples. X-band is forecasted to offer less potential contention for spectrum for some time. For DoD, X-Band is a valuable asset.



Space Micro offers a Radiation Hardened front end assembly with newer components that will be available for some time to come. The Transmitter is based on the NASA IRIS requirement and the power amplifier is a version of the TacSat-4 flight power amplifier (PA) delivered to NASA for flight in 2010.

Features for Space

- Radiation Hardened:
 - TID Range 30 to 100 krad per requirement
 - No SEL (>120MeV/mg/cm²)
 - No SEFI (>120MeV/mg/cm²)
- Reconfigurable Center Frequency
- NTIA GSFC Mask (DSP Option Only)
- Upon request PA Options to 25W
- DSP Modulation/Mask Options:
 - Analog Modulation and Filtering High Data Rates (NTIA Mask Only)
 - DSP Filtered For Lower Data Rates, Excellent Carrier Suppression, IQ Balance
 - High Data Rate DSP Filtered, Excellent Carrier Suppression, IQ Balance
 - 8PSK 600 Mbps Available with DSP Option

Space Micro Inc

μX^{TM} -Tx-XXX-XX

10237 Flanders Court
San Diego, CA 92121
www.spacemicro.com

Phone: 858-332-0700
Fax: 858-332-0709



μ X™ X-Band Transmitter

General Specifications

RF Output Characteristics

Output Frequency Range	X-band, 7.7 to 8.5 GHz
Frequency Stability	
Short Term (1 second 1×10^{-9})	
Temperature	
(-24 C to +65 C):	± 4 ppm maximum
Aging	
First year	± 2 ppm maximum
Following year	± 1 ppm maximum
Output Power	5 Watts to 20 Watts
	(Factory selectable, custom models to 25W)

Operating Modes

QPSK, OQPSK, BPSK

Modulation

Analog Modulator Modulation imbalance	
Phase	± 5.5
Amplitude	1.2dB
I/Q Offset (stagger) Ratio	$50 \pm 5\%$

Input Interface

Parallel or Serial Data and Clock
RS-485, RS-422, LVDS 8/16 bit

Optional User Specified Commands

- FSEI (Flexible, Single Ended Interface)
- TX Power ON/OFF
- LDPD or Reed-Solomon Encode/Bypass
- Randomize Encode/Bypass
- Data Input Select
- RF Power Adjust
- ASES Key Upload
- Data rate Select
- NRZ-L to M Conversion Select
- Playback Enable/Disable

Telemetry Output Interface

Power	FSEI
Encoding Mode	FSEI
Converter Secondary Voltage	(Analog)
RF Output Power	(Analog)
Temperature	(Analog)

Power Requirements

Input Voltage	1-40Vdc
Input Power	75-150W

Standard Connectors

RF-Female SMA according to MIL-C-39012
9 pin Filtered D-Sub for Power
15 pin High Density D-Sub for Telemetry
15 pin High Density D-Sub for Command
44 pin High Density D-Sub for Primary Signals
44 pin High Density D-Sub for Secondary Signals

Physical

Dimensions	8''(W) x 7''(D) x 4''(H)
Weight	<7.0 lbs.

Environmental Specifications

Operating Temperature	-24C to +60C
Random Vibration	> 14.1 Grms, 3-axis
Thermal Cycles	> 23,000

Radiation

Total Dose	100 krad
Latch-up	Immune

μX^{TM} X-Band Transmitter

Detailed Options

Option	Part Number:	μX -Tx-10-LR-ZZZ
	Modulation:	OQPSK
	Data Rate:	1-10 Mbps
	ECC:	LDPC; Reed-Solomon Encoder
	RF Power Out:	10 Watts minimum

Option	Part Number:	μX -Tx-50-L-ZZZ
	Modulation:	OQPSK
	Data Rate:	10-50 Mbps
	ECC:	LDPC; Reed-Solomon Encoder
	RF Power Out:	10 Watts minimum

Part Number Details

μX -Tx-X-Y-ZZZ

X =	10	1-10 Mbps
	50	10-50 Mbps
	100	50-100 Mbps

μX -Tx-X-Y-ZZZ

Y =	L	LDPC
	R	Reed-Solomon

μX -Tx-X-Y-ZZZ

ZZZ =	EM	Engineering Model
	FMB	Flight Model, Class B Parts
	FM2	Flight Model, Grade 2 Parts
	FM3	Flight Model, Grade 3 Parts
	FM5	Flight Model, Grade 5 Parts