



## X-Transmitter

### Product Overview

The X-Transmitter is a cutting-edge solution designed to meet the rigorous demands of LEO satellite missions. Built on a robust Microchip Flash-Based SoC platform, it leverages advanced SEU resilience, sophisticated modulation techniques, and durable construction. This system ensures secure, reliable, and high-speed data transmission, making it an ideal choice for diverse space applications.

### Technical Specifications

#### RF Characteristics

- **Frequency Range:** 8.0–8.4 GHz
- **Modulation:** QPSK, OQPSK, optional LDPC
- **Data Rate:**
  - **Uncoded:** 12–75 Mbps
  - **Coded:** 10–60 Mbps
- **RF Output Power:** 10W (40 dBm)
- **Frequency Stability:**  $\leq 5$  ppm
- **Spectral Purity:** Spurious outputs  $\leq -60$  dBc

#### Electrical Specifications

- **Power Supply:** 28VDC unregulated
- **Power Consumption:**  $\leq 50$ W

#### Interfaces

- **Data Interfaces:** LVDS, SpaceWire, Ethernet
- **Control Interfaces:** CAN, RS422
- **Connector:** Micro-D
- **RF Output Connector:** SMA 50 $\Omega$

#### Environmental Specifications

- **Operating Temperature:**  $-25^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$
- **Inactive Temperature:**  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
- **Vibration:** 20–2000 Hz @ 14g(rms)
- **Shock:** 20 g, 11ms
- **Radiation Tolerance:** TID  $> 25$  kRad
- **EMI/EMC Compliance:** ECSS-E-ST-20-07C

# Built For Space Missions

## Mechanical Specifications

- **Dimensions:** 160 mm x 160 mm x 35 mm
- **Mass:** 1300 g



## Key Features

### High Performance

Achieves data rates up to 75 Mbps, enabling real-time telemetry and high-resolution image transfer. Advanced coding with CCSDS-compliant LDPC, BCH, and Reed-Solomon ensures reliable data integrity.

### Compact and Lightweight

Optimized for nanosatellites and microsatellites with a space-saving design.

### Energy Efficient

Designed for low power consumption while delivering powerful data transmission capabilities.

### Customizable

Fully adaptable to mission-specific requirements, including redundant data and control interfaces.

### Built for Space

SEU resilience, latch-up protection, and thermal management ensure uninterrupted operation over a 3–5 year LEO mission lifespan.

## Applications

### The X-Transmitter is tailored for

- High-resolution Earth imaging missions.
- Real-time telemetry and scientific payload data downlink.
- Satellite constellations requiring efficient communication systems.

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