The μTx-200 Wide Band Transmitter Unit (WBTx) is a state-of-the-art, high-reliability X-Band transmitter developed to meet the demanding radiation requirements of long-term space missions and the high data rates for supporting advanced digital modulation schemes. Based on the uKa-Tx architecture, the WBTx is capable of data rates up to 1.2 Gbps and is available with multiple modulation and encoding options.

**Features**

- Radiation Tolerant Design for Space Applications
- Ruggedized for Launch and Deployment
- Convolutional Encoding, standard
- Mates to Industry COMSEC
- Various Parts Levels Available
- MIL-STD-461 EMI
- B.I.T. & Key Parameter Monitoring
- Fully Re-Configurable In-Orbit
  - RF Frequency
  - RF Output Power
  - Data Rate/Modulation
  - Forward Error Correction On/Off

**Specifications**

**RF Output Characteristics**

<table>
<thead>
<tr>
<th>Output Frequency Range</th>
<th>X-Band, 8.025-8.5GHz (Frequency Agile) Selectable Pre/Post-Delivery or In-Orbit</th>
</tr>
</thead>
</table>

**Frequency Stability**

**Short Term (1 second)**

<table>
<thead>
<tr>
<th>Temperature (-24°C to +61°C):</th>
<th>(1x10⁻⁹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aging</td>
<td>±4 ppm maximum</td>
</tr>
<tr>
<td>First year</td>
<td>±2 ppm maximum</td>
</tr>
<tr>
<td>Following Year</td>
<td>±1 ppm maximum</td>
</tr>
</tbody>
</table>

**RF Output Power**

1mW - 1.4 W

**Modulation Formats**

BPSK, QPSK, OQPSK

**Modulation Imbalance**

Phase: ±2°
Amplitude: ±0.1dB
I/Q Offset (stagger) Ratio: 50±5%
## Specifications

### Input Interface
- Parallel or Serial Data and Clock: RS-485, RS-422, LVDS 8/16 bit, LVDS Serial
- Optional User Specified Commands: SEI (Flexible, Single Ended Interface), TX Power ON/OFF, LDPC or Reed-Solomon Encode/Bypass, Randomize Encode/Bypass, Data Input Select, RF Power Adjust, Data rate Select, NRZ-L to M Conversion Select, Playback Enable/Disable

### Data Rate (Optional)
- 100kbps – 3.2Gbps

### Telemetry Output Interface
- Power: FSEI
- Encoding Mode: (Analog)
- Converter Secondary Voltage: (Analog)
- RF Output Power: (Analog)

### Power Requirements
- Input Voltage: +28 ±6Vdc
- DC Power Consumption:
  - 5W Output Power: 60W
  - 8W Output Power: 80W
  - 10W Output Power: 95W

### Physical Characteristics
- Dimensions: 8.2” x 6.0” x 2.6” (128”³)
- Mass: 5lbs.
- Operating Temperature: -24°C to +65°C
- Random Vibration: > 14.1 Grms, 3-axis
- Thermal Cycles: > 23,000
- EMI/EMC: Tailored MIL-STD-461

### Radiation
- Total Dose: 100 krad (chassis)
- Latch-up: Immune

### Part Level Screening
- EM – Engineering Model
- FMB – Flight Model Class B
- FM2 - Flight Model NASA Level II
- FM1 - Flight Model NASA Level I