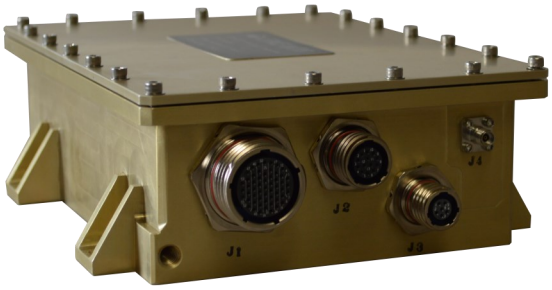
# μKaTx-300 Ka-Band Transmitter

SPACE MICRO



## Features

- Radiation Tolerant Design for Space Missions
- Ruggedized for Launch and Deployment
- Various Parts Levels Available
- MIL-STD-461 EMI (Tailored)
- B.I.T. & Key Parameter Monitoring
- Fully Re-Configurable In-Orbit
  - RF Frequency
  - RF Output Power
  - Data Rate/Modulation
  - Forward Error Correction On/Off
- FM Units shipped
- Optional Ka-Band Receiver Available
- OQPSK, QPSK, 8-PSK, 16 APSK, 32 APSK
- Filter Roll-off α: 1.2 to 1.35 (1.05, 1.1 Option)
- Convolutional Encoding, Standard
  - Reed-Soloman & BCH
  - LPDC (7136, 8158)

## Physical Characteristics

| | |
|---|---|
| Dimensions | 8.2” x 6.0” x 2.6” |
| Mass | 5.5lbs. |
| Operating Temperature | -24ºC to +65ºC |
| 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 |
| **Parts Level** | Commercial Space<br>NASA Levels I, II, III<br>Military Grade B/S |



15378 Avenue of Science, Suite 200, San Diego, CA 92128
858.332.0700 | sales@spacemicro.com | www.spacemicro.com

# µKaTx-300 Ka-Band Transmitter

SPACE MICRO

## SPECIFICATIONS

### RF Output Characteristics

| | |
|---|---|
| Output Frequency Range | 25.25-27.5GHz (Frequency Agile)<br>Occupied bandwidth up to 850 MHz |
| **Frequency Stability** | Selectable Pre/Post-Delivery or In-Orbit |
| Short Term (1 second) | ($1x10^{-9}$) |
| Over 8 years (option) | < ±5 ppm maximum |

**Output Power Options**

| RF Power Out | Power Dissipated |
|---|---|
| 3 mW | 28 W |
| 100 mW | 31 W |
| 2 W | 45 W |
| 5 W | 68 W |

| | |
|---|---|
| **Forward Error Correction** | LDPC 7/8, Reed Solomon, Serial Concatenated |
| **Modulation Formats** | QPSK, OQPSK, 8APSK (16APSK & 32QAM Optional) |
| **Modulation Imbalance** | |
| Phase | ±2º |
| Amplitude | ±0.1dB |
| I/Q Offset (stagger) Ratio | 50±5% |

### 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)<br>TX Power ON/OFF<br>LDPC or Reed-Solomon Encode/Bypass<br>Randomize Encode/Bypass<br>Data Input Select<br>RF Power Adjust<br>Data rate Select<br>NRZ-L to M Conversion Select<br>Playback Enable/Disable |
| **Data Rate** | 100kbps – 4.0Gbps |

### Telemetry Output Interface

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

### Power Requirements

| | |
|---|---|
| Input Voltage | +18 to ±40 Vdc |



15378 Avenue of Science, Suite 200, San Diego, CA 92128
858.332.0700 | sales@spacemicro.com | www.spacemicro.com