

CUBESAT S-BAND TRANSMITTER (STX & STXC)

PERFORMANCE

- Processing
 - Low-power Flash-based FPGA
 - V.35 IntelSAT scrambler
 - ½ rate convolutional encoding (K=7)
 - Differential encoding
 - Pulse shaping filter
- Interfaces
 - Low-speed I²C Bus – 400 kHz (telemetry and control)
 - High-speed SPI Bus – 4 MHz (payload data)
 - 50 Ω SMA connector
- Modulation
 - QPSK or OQPSK
 - IntelSAT IESS-308

CubeSat S-Band TX Overview

The STX and STXC are compact S-Band transmitters designed for CubeSat missions. The STX and STXC operate at amateur and commercial bands respectively. They are compatible with the CubeSat standard, with a CubeSat Kit PC/104 form factor. The transmitters implement QPSK modulation with transmission data rates of up to 2 Mbps.

The transmitters are ideal for space missions where a high data rate downlink is required. They implement an open network encoding scheme based on the IntelSAT IESS-308 specification which allows this product to be used with low-cost commercial satellite receivers.

A nadir facing S-Band patch antenna can also be incorporated into the CubeSat design. Its small size, low profile, rugged design and high directionality make it an excellent addition to the system.

MAIN FEATURES

- Low Power Consumption
 - Total power consumption < 5 W (for maximum RF power output)
 - Powered from unregulated battery bus or regulated 5V
- Transmission data rates up to 2 Mbps
 - With Full, ½, ¼ and ⅛ rate modes
- Support for commercial (2.2 – 2.3 GHz) and amateur (2.4 – 2.45 GHz) bands
 - User programmable within bands
- Industry standard encoding and modulation techniques
 - Compatible with low-cost commercial demodulators
 - Based on IntelSAT IESS-308
 - QPSK or OQPSK
- Transmit output power from 24 dBm to 30 dBm, adjustable in 2 dB steps

SPECIFICATIONS

Temperature	-25°C to +61°C
Power	< 5 W
Mass	< 100 g
Dimensions	96 mm x 90 mm
Voltage	6 V – 12 V (5 V alternative)

RF Section	
Frequency	2.2 GHz – 2.3 GHz (STXC) 2.4 GHz – 2.45 GHz (STX)
RF Power	1 Watt (30 dBm)
Channel Spacing	500 kHz
TX SNR	> 20 dB
Spurious Response	< -60 dBc

**2 Mbps S-band transmitter
1 Watt RF output power**



S-BAND PATCH ANTENNA

The S-Band patch antenna is designed to be mounted on the nadir facing side of a 3U CubeSat. A wide beamwidth ensures satellite communication through a wide range of elevation angles. It is machined from solid aluminium.

Frequency range: 2.2 – 2.3 GHz (SANTC),
2.4 – 2.45 GHz (SANT)
Temperature: -40°C to 85°C Mass: < 50 g
S₁₁: < -15 dB Gain: 7 dBi
Beamwidth: 60° Dimensions: 1U form factor
Connector: SMA female



SUPPLIED WITH:

- Flight Board
- User manual
- STEP model

PRODUCTION BY:



DISTRIBUTION BY:



Available from www.clyde.space

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