TXMISSION

Quest™ UAV C-band Transceiver

Overview

To complement our Quest™ UAV Onboard Modem, we have designed a compact, C-band transceiver, including high-isolation duplexer.

The Quest™ C-band Transceiver, which comprises an LNA, one watt SSPA and duplexer filters (for transmit/receive isolation), is suitable for use with airborne applications (UAVs, drones, High Altitude Pseudo Satellites, etc.) at heights up to and including the stratosphere.

The Quest™ UAV Onboard Modem together with the Quest™ UAV C-band Transceiver provide all that is needed, apart from an antenna, for the airborne side of a complete bidirectional C-band communications system.

The onboard system is compatible with our ground station solution consisting of the Connect™ UAV Ground Station Modem and Connect™ UAV C-band Ground Transceiver (consisting of SSPA, LNA and duplexer filters) again requiring only an antenna for a complete system.

The Quest™ UAV C-band Transceiver can also be used with compatible third-party modems.

All parts are suited to the harsh environment represented by the stratosphere - boards are conformally coated and the assembly, which is resistant to ozone corrosion, can operate in a wide range of temperatures and pressures.

All TXMission solutions can be customized to meet customer-specific requirements, including different frequency bands and transmit power levels. Please contact us for more details.

Features

- Low size, weight & power
- SSPA, LNA & high-isolation duplexer
- C-band operation
- Dimensions: 172 x 137 x 23mm
- Weight: 560 grams
- Power consumption: < 10 watts
- Single port to antenna
- Compatible with Quest UAV modem
- Transmit passband: 4500to 4800MHz
- Receive passband: 4500 to 4800MHz
- Suitable for use at heights up to 21km
- 12V (+/-0.5V) supply voltage
- -40ºC to +50ºC operation; -40ºC to +85ºC storage

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Transmit Specification

Passband	4500 to 4800MHz
Gain	30.9 +/- 2.6dB
Gain Flatness (over passband)	+/- 0.4dB
Gain Variation (over temp)	+/- 2dB
Gain Stability (over 24 hours)	< +/- 0.3dB
Third Order Intermod Distortion	-21dBc
AM to PM Conversion at P1(-0.5dB) at P1(-1.5dB) at P1(-2.5dB)	 3.5 °/dB 1.5 °/dB 1.0 °/dB
Spurious @ P1dB	< -65dBc
2nd, 3rd Harmonics @P1-3dB	< -10dBc
Input Return Loss (VSWR)	> 13.9 (1.5) dB (17.7dB typical)
Output Return Loss (VSWR)	> 13.9 (1.5) dB
Isolation to Rx	> 60dB
Power Out at Saturation 60°C 20°C	 29.4dBm 30.0dBm
Power Out at P1dB 60°C 20°C	 28.4dBm 29.0dBm
Group Delay Variation CF +/- 12.2MHz	< 5ns
Group Delay Variation CF +/- 15MHz	< 12ns
Residual AM Noise 0-10kHz 10 to 500kHz 0.5 to 1MHz	 -45dBc -20 * (1.25 + log F)dBc -80dBc
Supply Current	< 730mA

Receive Specification

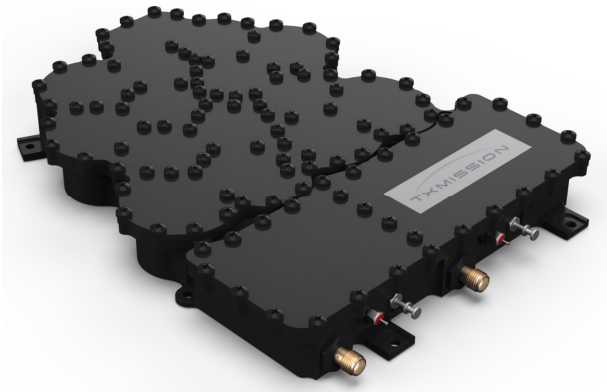
Passband	4500 to 4800MHz
Small Signal Gain	34.4 +/- 2.6dB
Gain Flatness (over passband)	+/- 0.4dB
Gain Variation (over temp)	+/- 2dB
Gain Stability (over 24 hours)	< +/- 0.2dB
Third Order Output Intercept	23dBm typical
AM to PM Conversion	0.05°/dB
Spurious @ P1dB	< -65dBc
2nd, 3rd Harmonics @P1-3dB	< -10dBc
Input Return Loss (VSWR)	> 13.9 (1.5) dB
Output Return Loss (VSWR)	> 13.9 (1.5) dB
Isolation to Tx	> 80dB
Power Out at P1dB	10dBm (13dBm typical)
Group Delay Variation (full band)	< 10ns
Noise Figure 60°C 20°C	 3.5dB 4dB
Max Power input (no damage)	-9dBm
Desen Threshold (at input)	-35dBm
Tx Carrier Level at Rx Output	< -18 dBm
LNA Noise Floor Increase due to Tx Noise	< 0.1dB
Supply Current	< 220mA

General Description

C-band transceiver & duplexer; suitable for airborne applications up to and including the stratosphere

Mechanical/Environmental

Size	172mm x 137mm x 23mm
Weight	560g
Power Consumption	< 10W
Input Voltage	12 +/- 0.5V
Temperature	Operation: -40 to +50°C Storage: -40 to +85°C
Altitude	0 to 21.6km
Shock	5-g p-p 1mSec pulses
Vibration	3g rms 30mins 5-2000Hz
Connectors	RF: SMA female DC: Solder feedthrough & earth post
Housing	Material: Silver plated aluminium Finish: Black polyurethane paint
Conformal Coating	PCBs are conformally coated to protect against moisture and chemicals in the environment; unit is sealed
Environmental Testing	Temperature (operation): -40 to +50°C Temperature (survival): -40 to +85°C Pressure (operation): 1000 to 40mbar



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