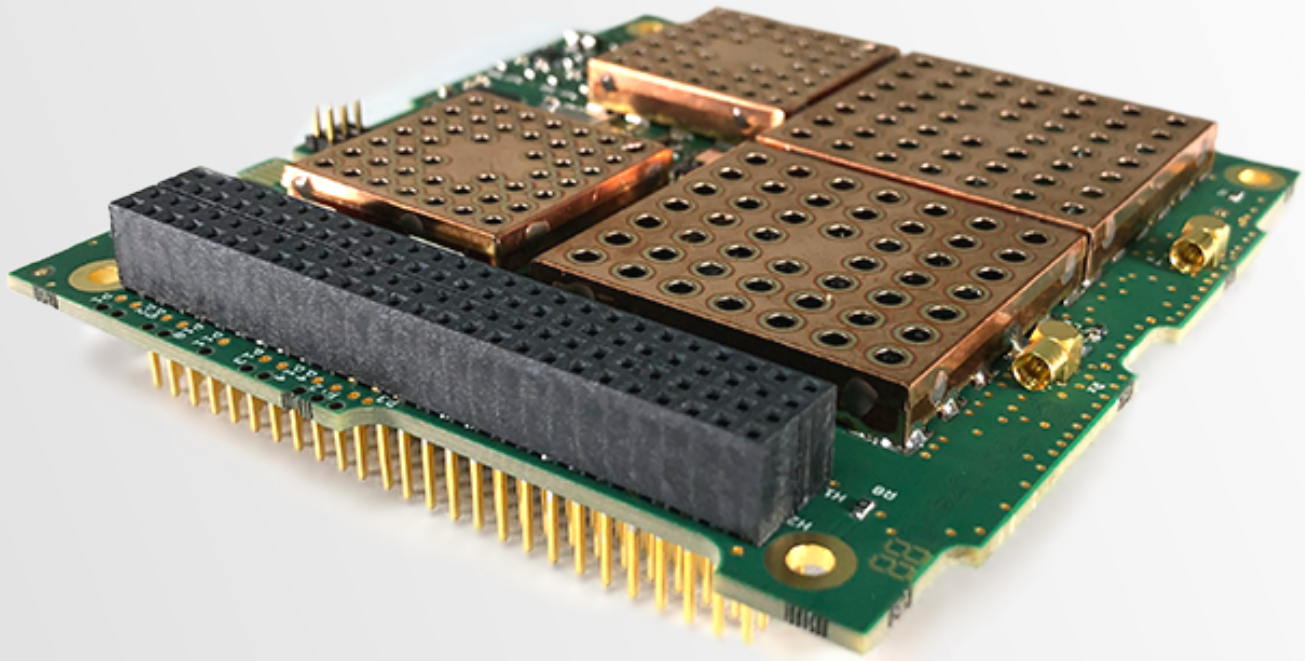
VHF/UHF duplex transceiver

Flight heritage since 2016



DESCRIPTION

The ISIS VHF uplink/UHF downlink transceiver is a full duplex communication system for CubeSat TT&C applications. The radio can operate in commercial and amateur bands of the VHF/UHF frequency spectrum. It is low power, low mass, and highly configurable, offering the flexibility of changing data rates and frequencies in flight. This radio is tailored for CubeSat missions and cross-compatible with other subsystems such as onboard computers and antenna systems.

FEATURES

- Full duplex communication
- Data rate re-configurable in-flight
- FM transponder mode available
- Safety watchdog
- Low power consumption
- Single PCB radio
- Single board Telemetry, Telecommand and Beacon capabilities

PRODUCT PROPERTIES

Dimensions:	90 x 96 x 15 mm
Mass:	75g
Supply voltage range:	6.5 – 20 V DC
Power consumption:	0.48W (receiver only) 4 W (transmitter on)
Operating temperature:	-20 to +60 deg C
RF interfaces:	MMCX (50 ohm)
Data interfaces:	I²C

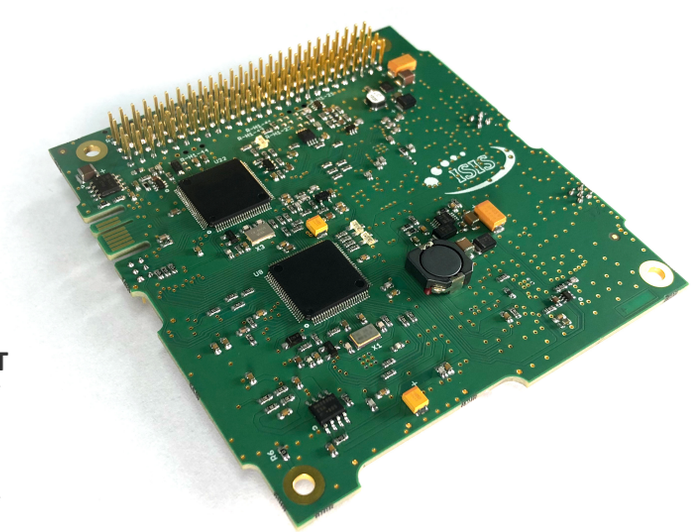
PERFORMANCE

Transmitter	
Frequency range:	435 – 438 MHz (amateur-satellite UHF allocation). Other ranges are available on request
Transmit power: Modulation options:	27 dBm Binary Phase Shift Keying (BPSK) with G3RUH scrambling Gaussian Minimum Shift Keying (GMSK) with G3RUH scrambling
Data rate selectable:	1200, 2400, 4800 and 9600 bps
Data link layer protocol:	AX.25 or HDLC

Receiver	
Frequency range:	145.8 MHz – 146 MHz
Modulation:	Frequency Shift Keying (FSK) with G3RUH scrambling
Data rate:	1200, 9600 bps
Sensitivity:	-104 dBm Sensitivity for BER 1E-5
Data link layer protocol:	AX.25

CONFIGURATION

- Receiver/Transmitter operating frequency
- Downlink data rate
- Custom beacon message (AX.25)
- CSKB connector type and location
- RF connector position and orientation
- I²C watchdog implementation



QUALIFICATION AND ACCEPTANCE TESTING

Test	QT	AT
Functional	✓	✓
Vibration	✓	-
Mechanical Shock	✓	-
Thermal Cycling	✓	✓
Thermal Vacuum	✓	-

*QT is performed on the design/qualification model
*AT is performed on the unit to be shipped

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