

Transceiver Downlink Module

10.7-12.7 & 12.75-14.75 GHz



Product Datasheet

TR200

Integrated transceiver downlink module for Ku-band frequencies.

Overview

TR200 is a fully integrated stand-alone transceiver module designed for Ku band communications systems. Designed to operate in Low Earth Orbit (LEO) with an on-board a 1U stackable enclosure.

The transmitter has an IF input frequency range of 1 - 3GHz with an output range of 10.7 - 12.7GHz, having an LO Frequency of 13.7GHz and Output Power of >20dBm.

The receiver has an IF output frequency range of 1 - 3GHz with an input range of 12.75 - 14.75 GHz, having an LO Frequency of 11.7GHz and LO Power of >15dBm.



*Gold and other plating options available on request



Features

- Tx output frequency range 10.7 - 12.7 GHz
- Rx input frequency range 12.75 - 14.75 GHz
- Tx LO frequency 13.7 GHz
- Rx LO frequency 11.75 GHz



Applications

- High speed data communications
- Space communications
- IOT
- Security

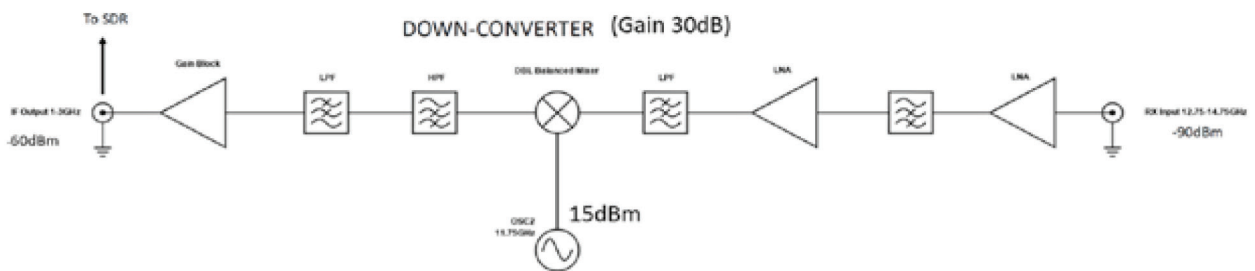
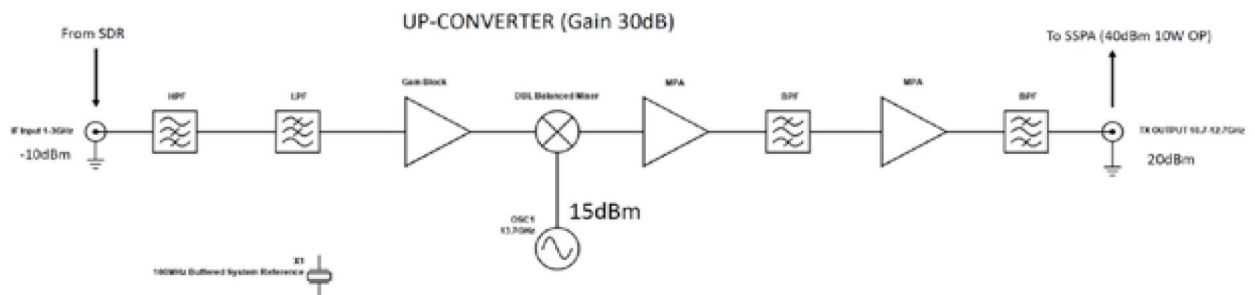
Transceiver Downlink Module

10.7-12.7 & 12.75-14.75 GHz



Product Datasheet

System Diagrams



Transceiver Downlink Module

10.7-12.7 & 12.75-14.75 GHz



Product Datasheet

Requirements Specification

Transmitter

Parameter	Typical	Units
TX Output Frequency Range	10.7 - 12.7	GHz
TX Output Linear Power	20+	dBm
IF Input Frequency Range	1 - 3	GHz
IF Input Power	-30 - 0	dBm
Reference Frequency*	100 (onboard or external)	MHz
Reference Phase Noise	-145	dBc/Hz
Reference Signal Characteristics	Square Input: 0.6Vpp (min)/ 2.5Vpp (max)- Slew Rate>0.5V/ns Sinewave:+5dBm (min)/+15dBm (max)	dB
Reference Stability	< 25	PPM
Conversion Gain	30 (extended 50 50dB with SSPA)	dB
Gain Flatness	(speciified over max channel bandwidth (250MHz) accross entire 4GHz) RX bandwidth. (SDR input channel band)	dB
Overtypical Channel Bandwidth from SDR (250MHz)	3	
Phase Noise		
10Hz	-40	dBc/Hz
100Hz	-60	dBc/Hz
1kHz	-70	dBc/Hz
10kHz	-80	dBc/Hz
100kHz	-100	dBc/Hz
1MHz	-123	dBc/Hz
10MHz	-140	dBc/Hz
Spurious	-50	dBc
Supply Voltage Range	8 - 42	Vdc
DC Current	1	Amp
DC Power	<6	Watts

Transceiver Downlink Module

10.7-12.7 & 12.75-14.75 GHz



Product Datasheet

Requirements Specification

Receiver

Parameter	Typical	Units
RX Input Frequency Range	12.75 - 14.75	GHz
RX Input Power Range	-90 to -300 (LNA dependant)	dBm
IF Output Frequency Range	1 - 3	GHz
IF Output Range	-60 to 0	dBm
Reference Frequency	100 (onboard or external)	MHz
Reference Phase Noise	-100	dBc/Hz
Reference Signal Characteristics	Square Input: 0.6Vpp (min)/ 2.5Vpp (max)- Slew Rate>0.5V/ns Sinewave:+5dBm (min)/+15dBm (max)	
Reference Stability	< 25	PPM
Conversion Gain	30 (extended 50 50dB with SSPA)	dB
Gain Flatness Over Typical Channel Bandwidth from SDR (250MHz)	3 (speciified over max channel bandwidth (250MHz) accross entire 4GHz) RX bandwidth. (SDR input channel band)	dB
Phase Noise		
10Hz	-40	dBc/Hz
100Hz	-40	dBc/Hz
1kHz	-70	dBc/Hz
10kHz	-80	dBc/Hz
100kHz	-100	dBc/Hz
1MHz	-123	dBc/Hz
10MHz	-140	dBc/Hz
Spurious	-60	dBc
Noise Figure	<2.5	dB
Supply Voltage Range	8 - 42	Vdc
DC Current	1	Amp
DC Power	<6	Watts

Transceiver Downlink Module

10.7-12.7 & 12.75-14.75 GHz



Product Datasheet

Mechanical and Environmental

Mechanical

Parameter	Typical	Units
PCB Dimensions	92 x 96 x 20 (PC-104 form factor)	mm
Mechanical Enclosure Required	Customer requirement	Yes/No
Mechanical Enclosure Dimensions	1U Cubesat (100 x 100 x 100)	mm
Total Mass	<1	kg
Form Factor Requirement	PC-104	
Enclosure Material Requirement	>2.54mm Aluminium	mm
Enclosure Material Requirement	Gold	
RF Connector Types	SMA	
DC Connector Types	DC Feedthrough or alt. high tel. panel mount	
IF Signal Connector Types	SMA	

Environmental

Parameter	Typical
Operating Temperature Range	-40°C to +70 °C
Operating Environment	-
Radiation Tolerance (kRad)	-
Vibration Requirement	-
Vacuum Requirement	-
Compliance Standards	-

Transceiver Downlink Module

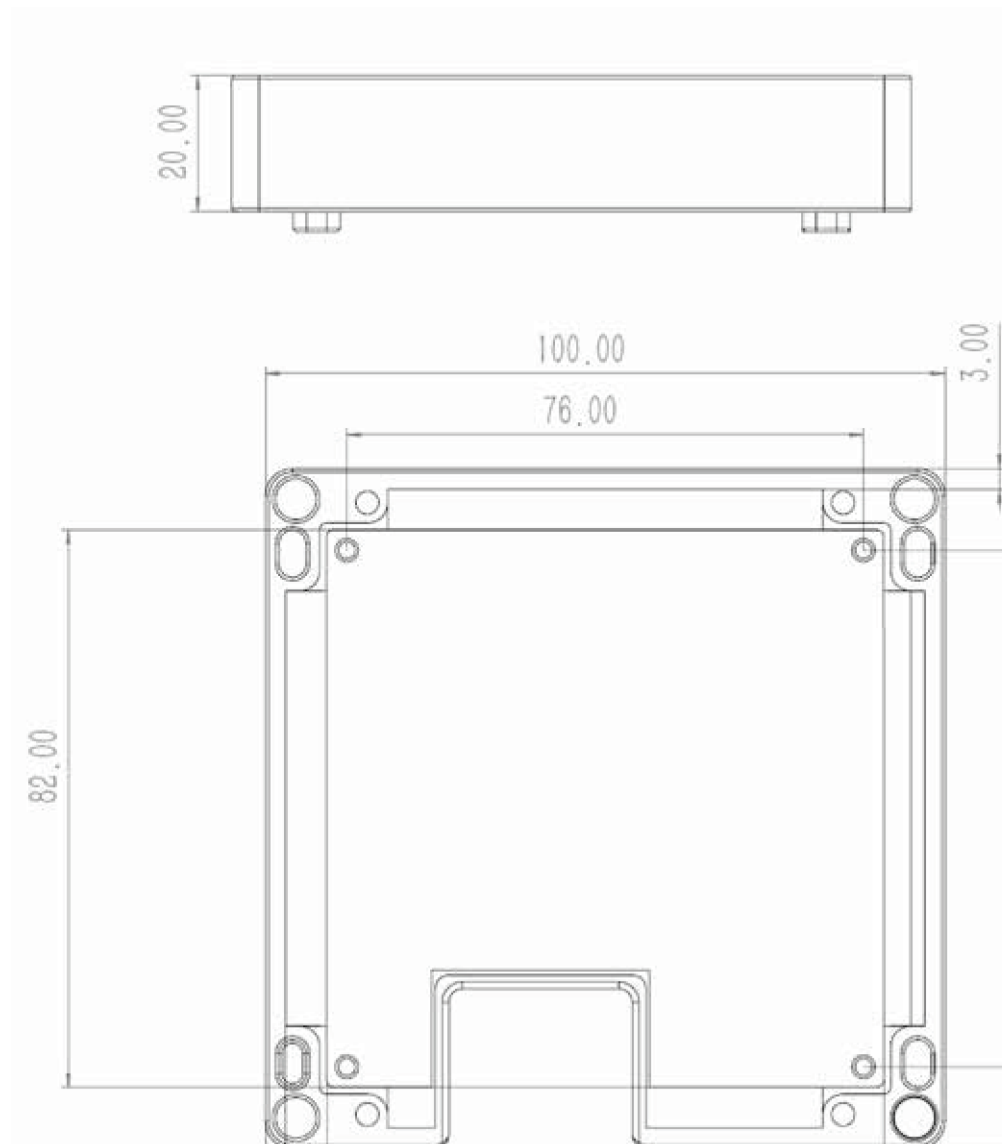
10.7-12.7 & 12.75-14.75 GHz



Product Datasheet

3. Requirements Specification

3.4 Mechanical Enclosure Preliminary Dimensions



Contact Information

ReliaSat European Offices

e: sales@reliasat.com

www.reliasat.com

TR200	Issue Date:12/07/2023	DOC REV 1	Page 6 of 6
-------	-----------------------	-----------	-------------

Information furnished by ReliaSat is believed to be accurate. No responsibility is assumed by ReliaSat for its use, nor for any infringements on the rights of other parties that may result for the use of the information herein. All specifications are subject to change without notice.