Ku-band Frequency Agile Transceiver

10.7-12.75 & 12.7-14.8 GHz

ReliaSat™

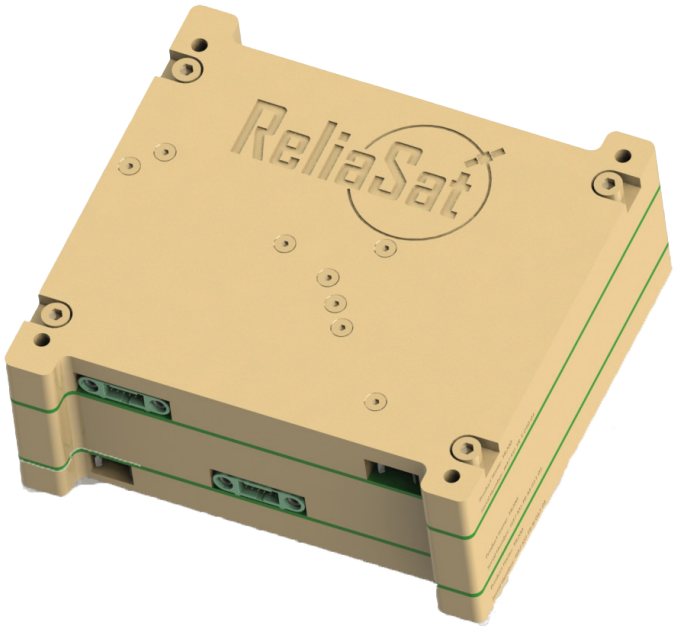
Product Datasheet

TR200

A fully Integrated transceiver downlink module with programmable local oscillators for Ku-band frequencies.

Overview

The TR200 is a compact and fully integrated transceiver module designed for Ku-band frequencies, specifically tailored for satellite communications. This module features a TX output frequency range of 10.7-12.75 GHz and an RX input frequency range of 12.7-14.8 GHz, ensuring versatile high-speed data transmission capabilities for applications like IoT and security. Equipped with programmable local oscillators and advanced phase noise characteristics, the TR200 maintains signal integrity and stability across extreme temperatures ranging from -40 to 85°C. Enclosed in a 1U stackable housing, this transceiver is ideally suited for demanding space communication environments.



Features

- Tx output frequency range 10.7 - 12.75 GHz
- Rx input frequency range 12.7 - 14.8 GHz

Applications

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

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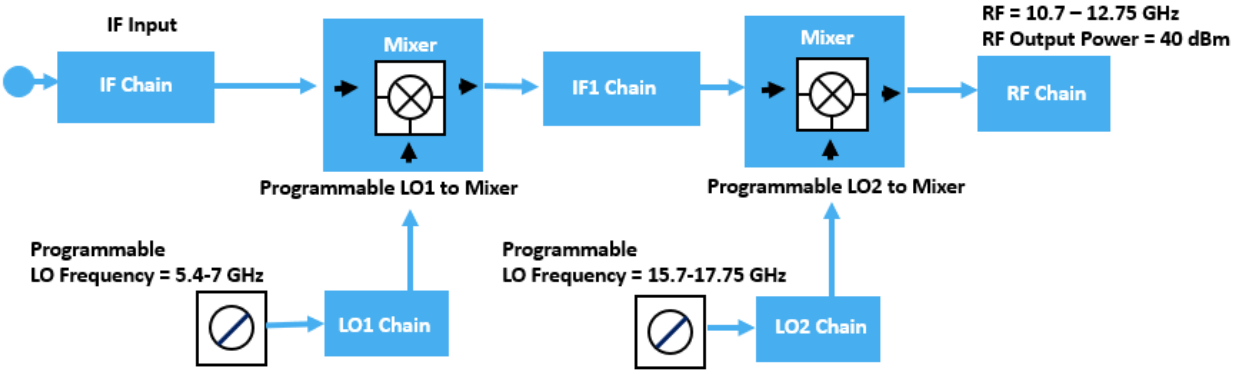
Requirements Specification

Upconverter

Parameter		Specification	Units
TX Output Frequency Range		10.7 - 12.75	GHz
TX Output Power, P1dB		25-27	dBm
IF Input Frequency Range		0.4-2	GHz
IF Input Power Range		-40	dBm
LO Frequency		LO1 = 5.4 -7 GHz LO2 = 15.7-17.75 GHz	GHz
Reference Frequency		100	MHz
Reference Stability		± 0.3	PPM
Conversion Gain		0 to 66	dB
Gain Flatness (250 MHz RTBW)		<3	dB
Phase Noise			
	1 KHz	-93	dBc/Hz
	10 KHz	-106	dBc/Hz
	100 KHz	-110	dBc/Hz
	1 MHz	-120	dBc/Hz
Spurious		50	dBc
Supply Voltage Range		6-60	Vdc
DC Power (Watts)		12.8 (at 28 VDC)	W
Operating Temperature Range		-40 to 85	°C



IF (GHz)	Programmable LO1 (GHz)	IF1 (GHz)	Programmable LO2 (GHz)	RF (GHz)
0.95	5.95	5	15.7	10.7
1	6	5	16	11
2	7	5	17.75	12.75

** Programmable LO Frequencies LO1 and LO2 have a step size of 200 KHz*

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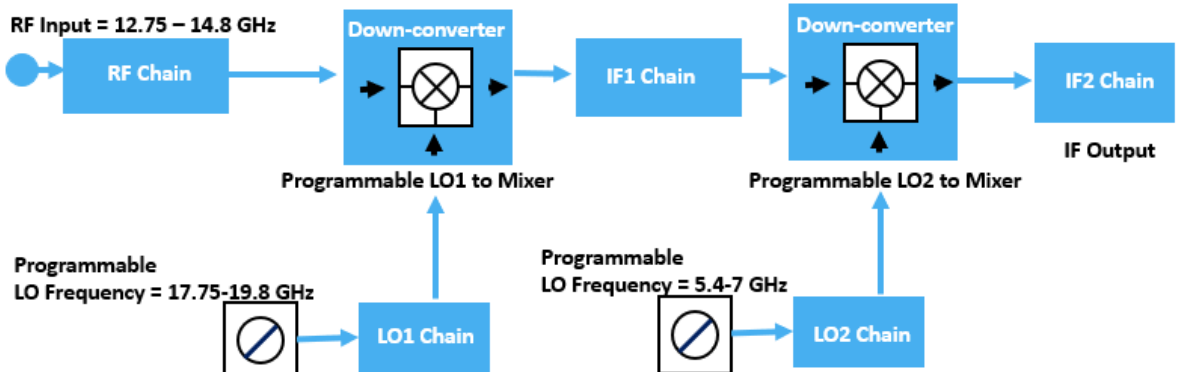
Downconverter

Parameter		Specification	Units
RX Input Frequency Range		12.7 - 14.8	GHz
IF Output Frequency Range		0.4-2	GHz
LO Frequency		LO1 = 17.7 -19.8 LO2 = 5.4-7	GHz
Noise Figure		<2	dB
Image Rejection		>60	dB
Input and Output Port Return Loss		<-10	dB
Input & Output Port VSWR		<1.5	
Reference Frequency		100	MHz
Reference Stability		<0.5	PPM
Conversion Gain		0 to 66	dB
Gain Flatness (250 MHz RTBW)		<5	dB
Phase Noise			
	1 KHz	-93	dBc/Hz
	10 KHz	-104	dBc/Hz
	100 KHz	-107	dBc/Hz
	1 MHz	-121	dBc/Hz
Spurious		<50	dBc
Supply Voltage Range		6-60	Vdc
DC Power		5.6 (at 28 VDC)	Watts
Operating Temperature Range		-40 to 85	°C



IF (GHz)	Programmable LO1 (GHz)	IF1 (GHz)	Programmable LO2 (GHz)	RF (GHz)
12.75	17.75	5	5.95	0.95
13	18	5	6	1
14.8	19.8	5	7	2

** Programmable LO Frequencies LO1 and LO2 have a step size of 200 KHz*

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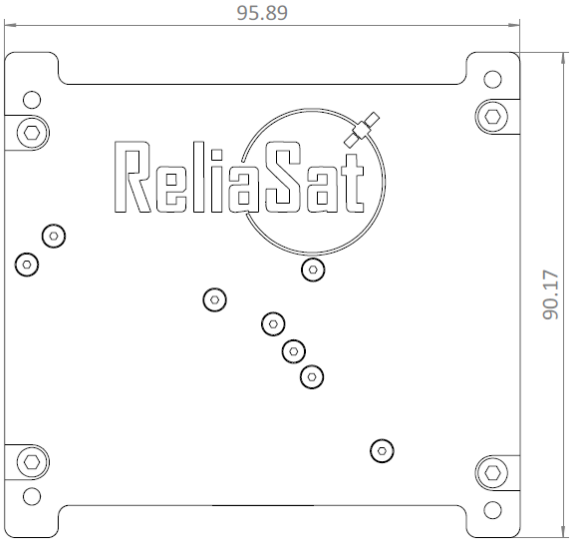
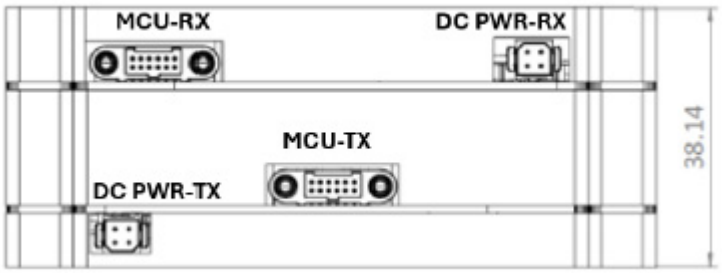
Mechanical

Parameter		Units
PCB Dimensions	92 x 96 x 20 (PC-104 form factor)	mm
Mechanical Enclosure Required	Customer requirement	Yes/No
Mechanical Enclosure Dimensions	95.89 x 90.17 x 38.14	mm
Total Mass	<1	kg
Form Factor Requirement	PC-104	
Enclosure Material Requirement	>2.54mm Aluminium	mm
Enclosure Material Requirement	Gold	
RF Connector Types	SMP edge mount	
DC Connector Types	Harwin 4-pin Connector	
IF Signal Connector Types	SMP edge mount	
Current Sensor, Temperature Sensor, Frequency Synthesiser Lock & DC Power Enable Connections to MCU	Harwin 12 pin Connectors	





Where
DC PWR-RX- DC power connection to Receiver
MCU-RX-DC power connection to Receiver
DC PWR-TX- DC power connection to Transmitter
MCU-RX-DC power connection to Receiver

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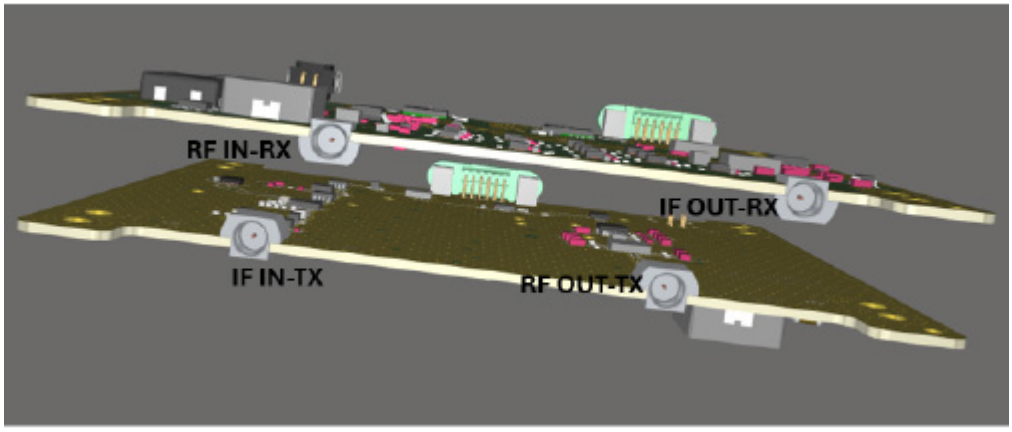

Where
RF IN-RX - RF Input to Receiver
IF OUT-RX- IF Output from Receiver
IF IN-TX - RF Input to Transmitter
RX OUT-TX- RF Output from Transmitter

Contact Information

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