

Transceiver Downlink Module

37.5-42 & 47.2-51.4 GHz



Product Datasheet

TR600

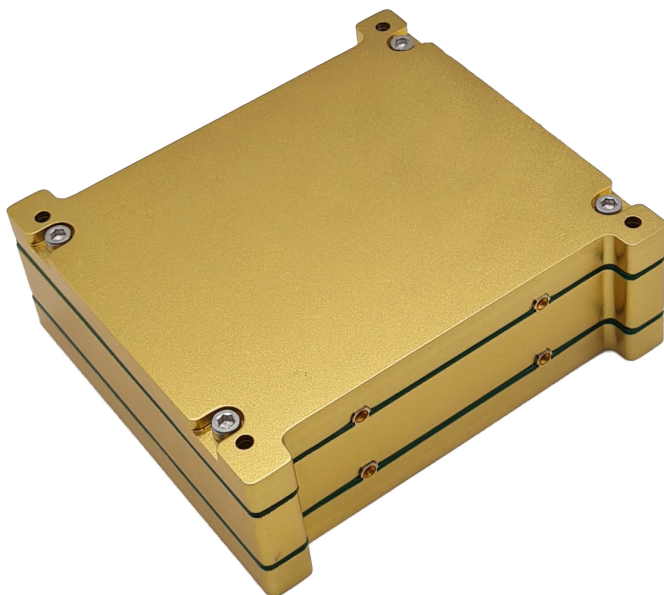
Integrated transceiver downlink module for Q/V-band frequencies.

Overview

The TR600 is a fully integrated stand-alone transceiver module designed for Q/V-band communication systems. The transceiver operates as a wideband up/down converter designed for use in Low Earth Orbit (LEO). It includes an on-board frequency synthesizer with low power consumption in a stackable enclosure.

It also includes a high-precision clock for LO generation; this clock can be used as a reference for other modules, or lock to an external system reference.

This transceiver can be used as a stand-alone up/down converter or combined with a modem/ Software Defined Radio (SDR) enabling a full-function Q/V-band satellite communication system.



Features

- TX output frequency 37.5-42 GHz
- RX input frequency 47.2-51.4 GHz
- TX IF frequency 1.5-6 GHz
- RX IF frequency 1.2-5.4 GHz



Applications

- High speed data communications
- Space communications
- IOT
- Earth Observation
- Security
- 5G

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Specification Overview

Transmitter

Parameter	Typical	Unit
TX Output Frequency Range	37.5-42	(GHz)
TX Output Linear Power	25	(dBm)
IF Input Frequency Range	1.5-6	(GHz)
IF Input Power	-30 to 0	(dBm)
Conversion Gain	30	(dB)
Gain Flatness	3 (specified over max channel bandwidth (250 MHz))	(dB)
In Band Spurious	-60	(dBc)
Out Band Spurious	-80	(dBm)

Receiver

Parameter	Typical	Unit
RX Input Frequency Range	47.2-51.4	(GHz)
RX Input Linear Power	25	(dBm)
IF Output Frequency Range	1.2-5.4	(GHz)
IF Input Power	-30 to 0	(dBm)
Gain Flatness	3 (specified over max channel bandwidth (250 MHz))	(dB)
In Band Spurious	-60	(dBc)
Out Band Spurious	-80	(dBm)
Noise Figure	4 (max)	(dB)
Image Rejection	60 (50 dB for some portion of the band (based on COTS filters))	(dB)

Electrical Specifications

Parameter	Requirement	Unit
External Reference Input	10	(MHz)
Internal Reference Output	10	(MHz)
Frequency Stability	None (± 1 max)	(ppm)
Typical Phase Noise		(dBc/Hz)
10 Hz	-40	(dBc/Hz)
100 Hz	-60	(dBc/Hz)
1 kHz	-70	(dBc/Hz)
10 kHz	-80	(dBc/Hz)
100 kHz	-100	(dBc/Hz)
1 MHz	-123	(dBc/Hz)
10 MHz	-140	(dBc/Hz)
DC Supply	9-36	(V)
Power Consumption	9 (max)	(Watts)

Mechanical

Parameter	Typical	Unit
PCB Dimensions	96 x 91 x 1 (max)	mm
Mechanical Enclosure Required	Yes	
Mechanical Enclosure Dimensions	96 x 91 x 38 (max)	mm
Total Mass	<1	kg
Form Factor Requirement	Cube Sat	
Enclosure Material Requirement	>2.4 mm thick aluminium	mm
Enclosure Plating Requirement	Gold or Nickel	

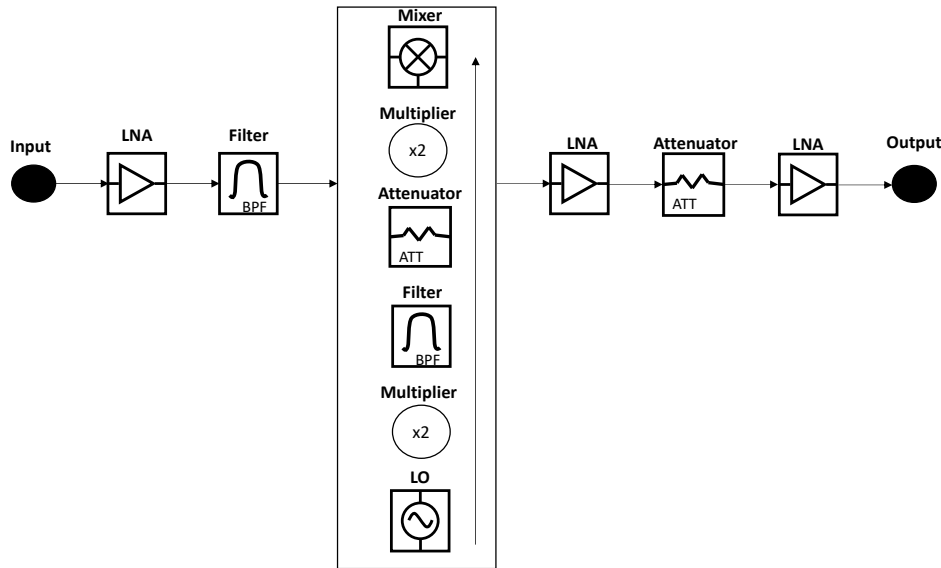
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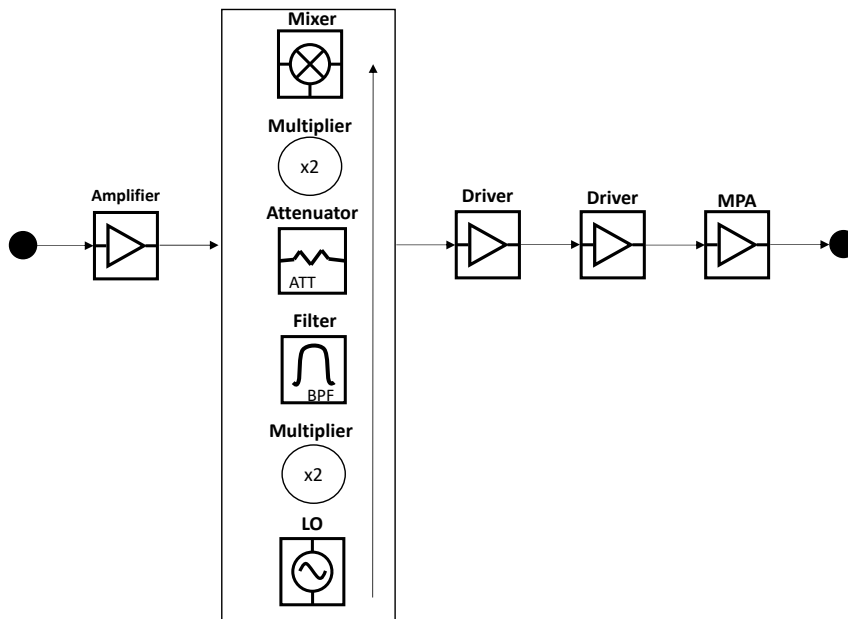
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Simplified Schematic Diagram

RX Architecture - Downconverter Block



TX Architecture - Downconverter Block



Contact Information

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