

Transceiver Downlink Module 37.5-42 & 47.2-51.4 GHz

QV-TR-DL-4049

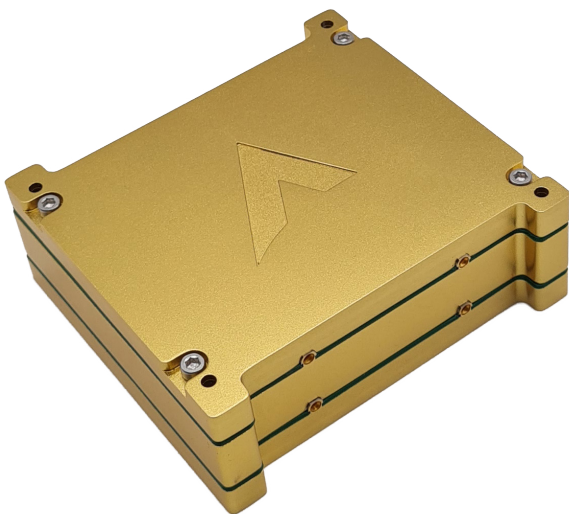
Integrated transceiver downlink module for Q/V-band frequencies.

Overview

The QV-TR-DL-4049 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.

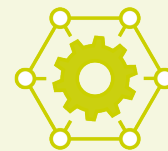
It also includes a high-precision clock for LO generation; this clock can be used as a reference for other modules, or lock to an external system reference.

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) |