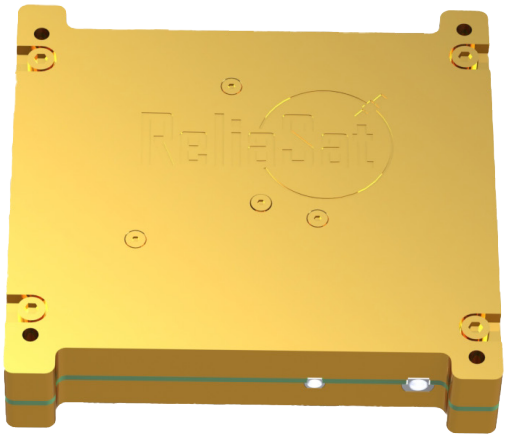
Transmit Module
17-21 GHz

Product Datasheet

BUC400
Integrated Ka-Band Block Upconverter (BUC).

Overview
The BUC400 is a fully integrated transceiver module tailored for Ka-band communication systems, capable of operating as a wideband up/down converter. It is designed to work seamlessly with modems or Software Defined Radios (SDRs) to provide a robust communication system for Low Earth Orbit (LEO) applications.



Features
- TX Output Frequency: 17-21 GHz
- TX IF Frequency: 1-5 GHz
- TX Output Power: Up to 26 dBm at P1dB compression
- Conversion Gain: 38-43 dB
- Gain Flatness: ±1 dB over a 250 MHz channel bandwidth from SDR
- Phase Noise: As low as -124 dBc/Hz at 1 MHz

Applications
- Satellite communications
- High speed data communications
- IoT Solutions
- Security Systems
- 5G

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ReliaSat™

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Specification Overview

Transmitter

Parameter		Typical		Unit
TX Output Frequency Range		17-21		GHz
TX Saturated Output Power (Pin=-15 dBm)		27		dBm
TX Output Power at P1dB Compression (Pin=-14 dBm)		26		dBm
IF Input Frequency Range		1-5		GHz
IF Input Power		-40 to -15		dBm
Reference Frequency		10 or 100 (on-board or external)		MHz
Reference Stability		±0.28 (-40 °C to +85 °C)		PPM
Conversion Gain		38-43		dB
Gain Flatness Across Full 1 - 5 GHz Band		±2.5		dB
Gain Flatness Over 250 MHz Channel bandwidth from SDR		±1		dB
Typical Phase Noise		10 MHz	100 MHz	dBc/Hz
	1 kHz	-80	-94	dBc/Hz
	10 kHz	-81	-95	dBc/Hz
	100 kHz	-104	-110	dBc/Hz
	1 MHz	-124	-120	dBc/Hz
Spurious (in band 1-5 GHz)		-50		dBc
Supply Voltage Range		7-42		Vdc
DC Power @ 12 VDC		<11.5		W
DC Current @ 12 VDC		1		A

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Mechanical and Environmental

Mechanical

Parameter	Typical	Unit
PCB Dimensions	96 x 91 x 1 (max)	mm
Mechanical Enclosure Required	Yes	
Mechanical Enclosure Dimensions	95.89 x 90.17 x 90.03	mm
Total Mass	<1	kg
Form Factor Requirement	Cube Sat	
Enclosure Material Requirement	>2.4 mm thick aluminium	mm
Enclosure Planting Requirement	Gold or Nickel	
RF Connector Types	SMPM edge mount	
DC Connector Types	DC flying leads	
IF Signal Connector Types	SMP edge mounts	
Current Sensor, Temperature Sensor, Frequency Synthesiser Lock & DC Power Enable Connections	6-pin Pico-Lock Connector	

Environmental

Parameter	Typical
Operating Temperature Range	-40 °C to +85 °C
Operating Environment	
Radiation Tolerance (kRad)	
Vibration Requirement	
Vacuum Requirement	
Compliance Standards	

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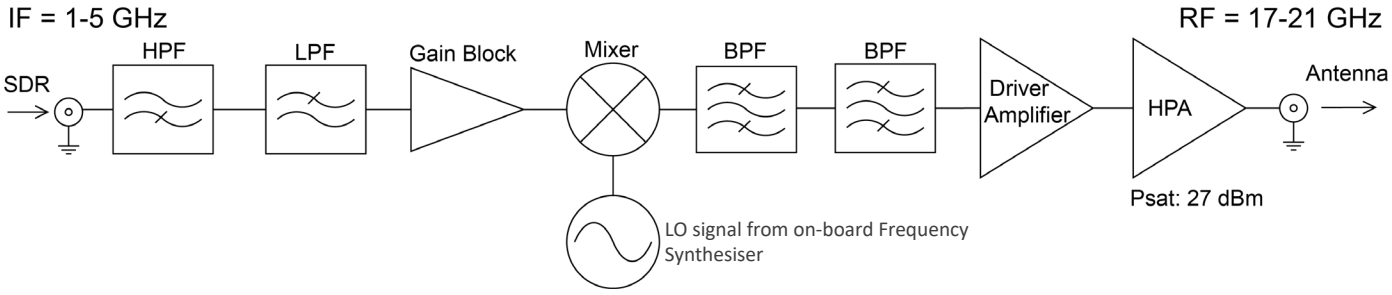
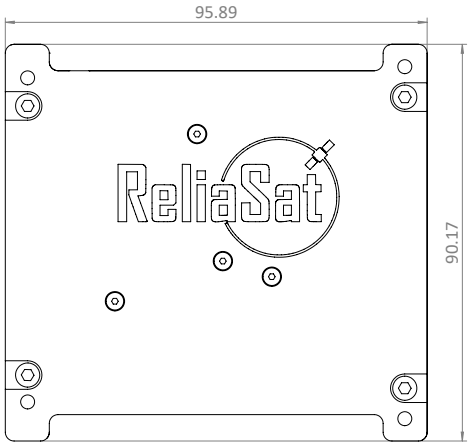
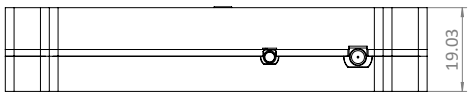
Simplified Schematic Diagram

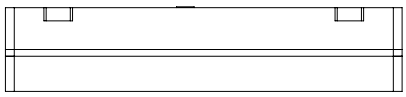
Upconverter K-band 17-21



Mechanical Enclosure Preliminary Dimensions







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