XLINK-SKa

S- and Ka-Band Transceiver with **SDR** for Small Satellites ⇢ Physical Layer according to **CCSDS**

HIGHLIGHTS

- **SDR** high-speed data links
- CubeSat and Small Satellite usage
- Bidirectional communication links
- Downlink: TM or Payload up to **200 Mbps**
- Uplink: TC **>56 kbps**

XLink-SKa is an advanced Software Defined Radio (SDR) transceiver system for high-speed Ka-Band communication downlinks. S-Band communication links for both uplink and downlink are supported as well. It is based on our flight-proven XLink SDR platform and is designed for small satellites in LEO environment. The mechanical dimensions are compatible with both CubeSats and larger satellites. The radio interface and radio protocol were developed according to standard CCSDS protocols.

The Ka-Band transmitter provides very high downlink data rates of up to 200 Mbps. Supported modulation schemes include BPSK, QPSK and higher order modulations with appropriate FEC coding schemes. Adaptive Modulation and Coding (AMC) schemes are applicable to maximize data throughput.

The **XLink-SKa** S-Band transceiver can be used for telemetry and telecommand (TM/TC) purposes. It is compliant with and designed for CCSDS standard and CCSDS communication links. The payload data interface is based on CCSDS transfer frames.

The **XLink-SKa** stands out through its unique combination of a Ka-Band high-speed data downlink transmitter and an S-Band TM/TC transceiver, all in a compact form factor.

FEATURES

- High speed Ka-Band downlink transmitter
- Fully featured and transparent bidirectional S-Band transceiver (SDR) in the same unit
- CCSDS compliant for physical and synchronisation layer
- Flight grade tested design
- Compact case and low power consumption
- Low-cost COTS design
- Short delivery time
- Additionally available: Extra flat patch antennas tuneable to customer specific frequencies

KEY SPECIFICATIONS

Ka-Band Tx operation
25.500-27.000 GHz

S-Band Tx operation
2.200-2.290 GHz

Data rate Sat2Ground
2kbps ... 200 Mbps

Linear RF output power
up to +30 dBm (S-Band)
up to +30 dBm (Ka-Band)

S-Band Rx operation
2.025-2.110 GHz

Data rate Ground2Sat
3.5 kbps ... 896 kbps

Automatic Doppler shift compensation in Rx
up to 200 kHz

Operational mode
FDD, Full-duplex, Half-Duplex

DC supply voltage
6 – 18 V / 28 V

Low power consumption
max. tbd W (Tx + Rx),
4 W (Rx S-Band),
tbd W (Tx Ka-Band)

Low mass
200 grams

Ultra-small volume
< 0.2U

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	Default Configuration	Optional Configuration
Tx Frequency Band	25.500-27.000 GHz 2.200-2.290 GHz	
Data Rate (Tx Payload Data)	500 kbps ... 100 Mbps	2 kbps ... 200 Mbps
Tx RF Bandwidth	Depending on the symbol rate	Maximum 56 MSymbols/s
RF Output Power	up to +30 dBm (Ka-Band) up to +30 dBm (S-Band)	Higher output power on request
Tx Modulation Schemes	BPSK, QPSK, OQPSK	GMSK, 8PSK, 16APSK
FEC Schemes	Convolutional code k = 7	Reed-Solomon
Rx Frequency Bands	2.025-2.110 GHz	
Data Rate (Rx Payload Data)	56 kbps	3.5 kbps ... 896 kbps
Doppler Shift Compensation	+/-200 kHz	
Rx Modulation Schemes	BPSK with BCH coding	Convolutional (CCSDS 131.0-B)
RF Connector Type	SMP, 50 Ω	
Data Interfaces	IEEE 802.3 1000BASE-T	SPI via RS422, UART via RS422
Connector Type	3 x Nano-D-Sub (Power, Ethernet, I/O)	
Applicable CCSDS Standards	CCSDS 231.0-B, 132.0-B, 131.0-B, 401.0-B	DVB-S2 via CCSDS 131.3-B
DC Supply	6 – 18 V	28 V – other on request
DC Power Consumption	tbd W Tx + Rx, <4 W Rx S-Band, tbd W Tx Ka-Band	
Mechanical Dimensions	90 x 65 x 25.3 mm³	Higher Radiation Tolerance: 96 x 71 x 32 mm³
Mass	200 grams (incl. housing)	Higher Radiation Tolerance: 365 grams (incl. housing)
Temperature Range	-20 ... +60 °C (operating) -40 ... +80 °C (non-operating)	
Case	Passivated aluminum	

Optional equipment

- Tx/Rx Ka- and S-Band patch antennas for satellite transceiver applications
- Customer-specific designs and turn-key solutions

Product specification may be subject to change without notification.

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