

## KEY FEATURES

- Internet of Things (IoT) payload radio for HeliosWire constellation
- TT&C or Crosslink options
- Optional networked crosslink capabilities
- Interfaced with KG-250 NSA Type 1 Cryptographic Unit
- FPGA reconfigurable resources: Zynq 7020
- Utilizes AD9361 transceiver chip
- Minimize SWAP
- Inter-Cubesat Communications
- LEO or GEO
- Radiation Hardened
- Parts Program: Commercial Space, Level I, II, III
- EM units delivered for HeliosWire
- FM units in production with Qualification ongoing



## TRANSCEIVER FEATURES

<b>Carrier Frequency</b>	70 MHz — 3 GHz
<b>Tunable Channel Bandwidth</b>	<200kHz to 56 MHz
<b>Data rate</b>	1 kbps to 42 Mbps using higher modulation codes
<b>RF Output Power</b>	User configurable
<b>LO step size</b>	< 2.4 Hz
<b>Encoding</b>	Concatenated Reed Solomon, Convolutional, User provided
<b>Modulation</b>	BPSK, OQPSK, 8PSK, 16APSK, FSK
<b>ADC/DAC</b>	12-bits, optimized sample rate of 30.72 Msps Optional sample rate up to 61.44 Msps

## TRANSCEIVER FEATURES

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<b>Telemetry Outputs</b>	Received Signal Strength Indicator (RSSI) Automatic Gain Control (AGC) Carrier and demod lock Frequency and time offset Critical voltages Critical temperatures
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## RECEIVER SECTION

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<b>Noise Figure</b>	UHF: < 2 dB S-band: 3 dB C-band: 3.8 dB
<b>Dynamic Range</b>	Threshold (Minimum)    -21 dBm (Maximum)
<b>Sensitivity</b> <b>100 kbps, 16-ary FSK, 1E-6 BER</b>	-109 dBm maximum
<b>Range</b>	Dependent on RF Power Output and Antenna Selection
<b>Power—Receiver Only</b>	4 W (Typical)                      5 W (Maximum) Transmitter Power determined by required output power needed

## PHYSICAL CHARACTERISTICS

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<b>Dimensions</b>	10.2 cm x 11.7 cm x 10 cm
<b>Mass</b>	0.75 kg
<b>Environmental Conditions</b>	
<b>Radiation Tolerance (TID)</b>	30 krad (Si); higher rates optional
<b>Operating Temperature</b>	-20°C to + 65°C