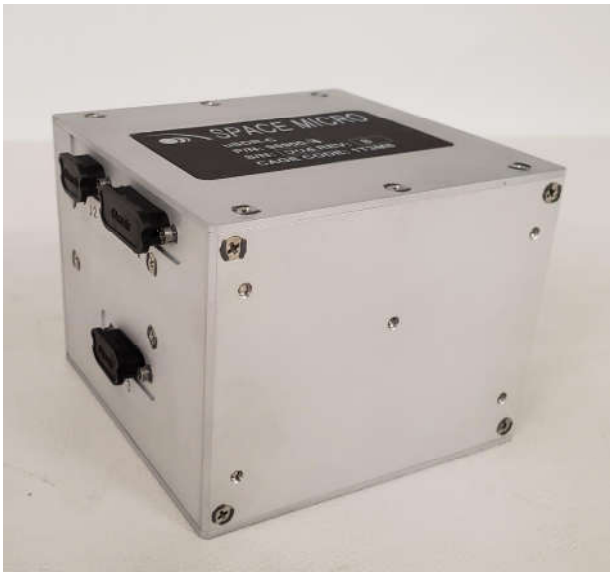
µSDR-C™ Software Defined Radio

SPACE MICRO

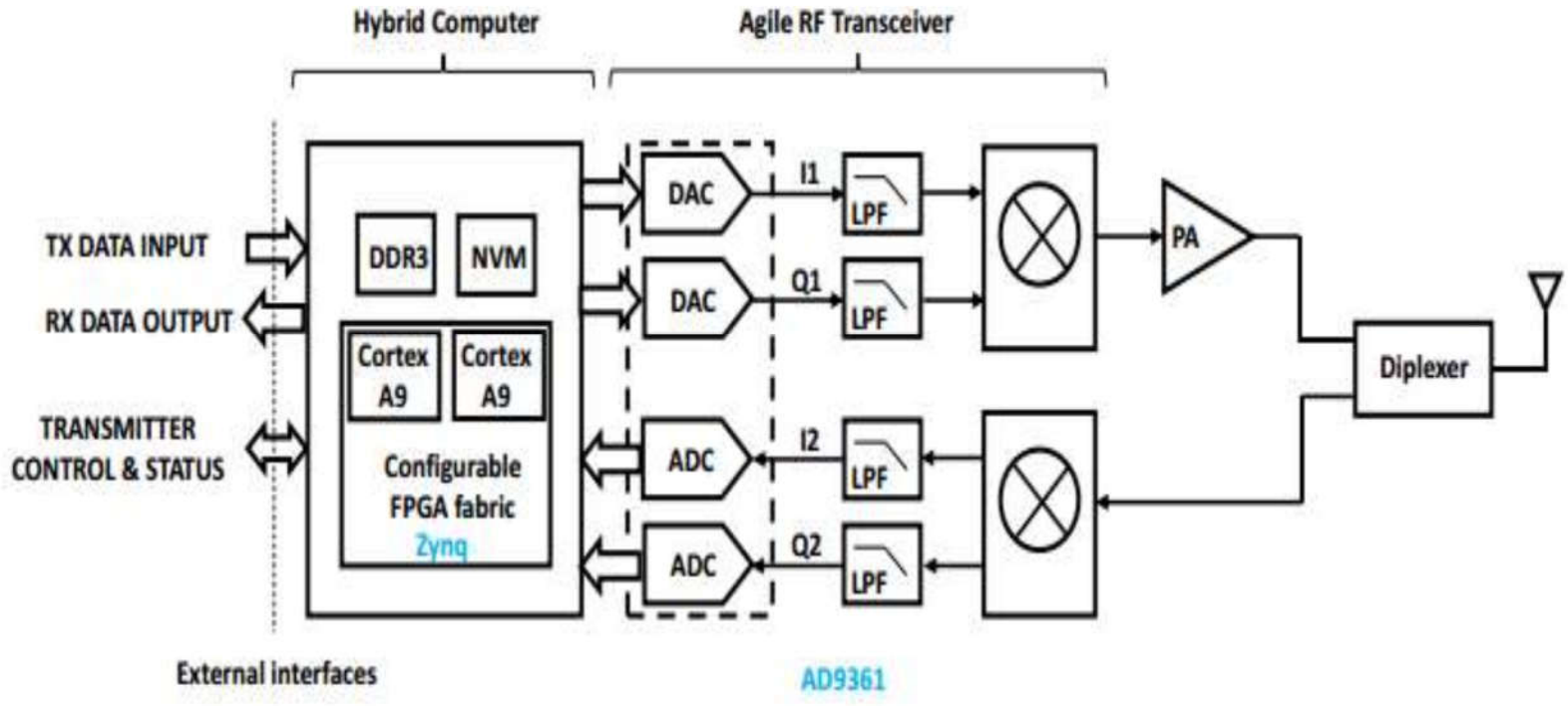


µSDR-C Dimensions: 10 cm x 10 cm x 8 cm

Key Features

- Small Form Factor Software Defined Radio
- Radiation Hardened
- Suitable for LEO, GEO
- FPGA Reconfigurable Resources, Transceiver Chip
- Base µSDR-C using 2 Board Set (DPS + RF Transceiver) provides 70 MHz to 3 GHz operation
- Optional Up/Down Converter Board with Low Noise Amplifier (LNA), Power Amplifier (PA) available
- Interfaced with KG-250 NSA Type 1 Cryptographic Unit (Option)

Block Diagram of Standard uSDR-C



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Transceiver Features

Carrier Frequency	70 MHz — 3 GHz
Tunable Channel Bandwidth	<200kHz to 56 MHz
Data rate	1 kbps to 42 Mbps using Higher Modulation Codes
RF Output Power Varies at Different LO Selections	User configurable: 6.5 dBm to 8 dBm from RF Transceiver Optional Power Amplifier: 1 to 10 Watts RF Power
LO step size	< 2.4 Hz
Encoding	CCSDS ReedSolomon(255,223), Interleave=5, CONVO (7,1/2), LDPC and User Provided Options Available
Modulation	BPSK, OQPSK, 8PSK, 16APSK, FSK
Framing	IP over CCSDS Standard
ADC/DAC	12-bits, Optimized Sample Rate of 30.72 Msps Optional Sample Rate up to 61.44 Msps
Maximum Input Power	2.5dBm

Receiver Section

Noise Figure	UHF: < 2.5 dB S-band: 3 dB C-band: 3.8 dB
Dynamic Range	Threshold (Minimum) -21 dBm (Maximum)
Sensitivity **100 kbps, 16-ary FSK, 1E-6 BER**	-109 dBm (Maximum)
Range	Dependent on RF Power Output and Antenna Selection
DC Power Consumption — Receiver Only	7 W (Typical) 9 W (Maximum)

General Specifications

- Size: 10 x 10 x 8 cm (not including connector and RF cable protrusion)
- Weight: <0.75 kg (3 Board Model); < 0.80 kg (4 Board Model)
- Operating Temperature: -30º C to +60º C (contact factory for other temperature ranges)
- Storage Temperature: -50°C to + 85°C
- Vacuum Environment: 10E-5 Torr
- Power consumption (Standard): 10W
- Radiation
  - 30 krads (Si)
  - No SEL <70 MeV/mg/cm2
  - No unrecoverable SEFI

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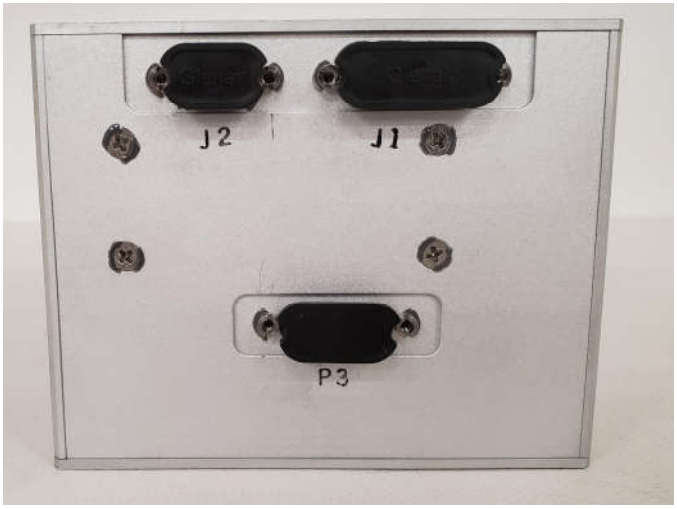
I/O and Interfaces



Telemetry Outputs

- Received Signal Strength Indicator (RSSI)
- Automatic Gain Control (AGC)
- Carrier and Demod Lock
- Frequency and Time Offset
- Critical Voltages
- Critical Temperatures

Programmable I/O

- UART
- Mock SpaceWire
- 1XRS 422
- 7 GPIO

Standards Available

- Standards available in Zynq EMIO
- SPI
- UART
- I2C
- CAN (Phy not on backplane)
- Mock SpaceWire
- EtherWire

Telemetry Interface User Defined/COSMOS

Input Voltage

Voltage +5.0V Nominal

Parts Program

Space Micro Commercial Space (Standard)
Customer Programs Available Upon Request

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