OrbitLink Consulting

UNLOCKING THE POTENTIAL OF SPACECRAFT CONTROL AND COMMUNICATIONS

DEFENSE-ALIGNED SUPPLY CHAIN / S-BAND RADIO MODULE

A 5 W CCSDS S-band radio for aerospace and space.

A full-duplex software-defined radio for **aerospace and space applications**, including spacecraft, unmanned aircraft and test instrumentation. A **space-rated variant is available**. It fits a small metal box with a Micro-D bus connector, runs from a 15–40 V bus, connects over Ethernet, and uses parts selected with US defense supply-chain rules in mind.

130 Mbit/s
Peak user data target, 16APSK in 56 MHz

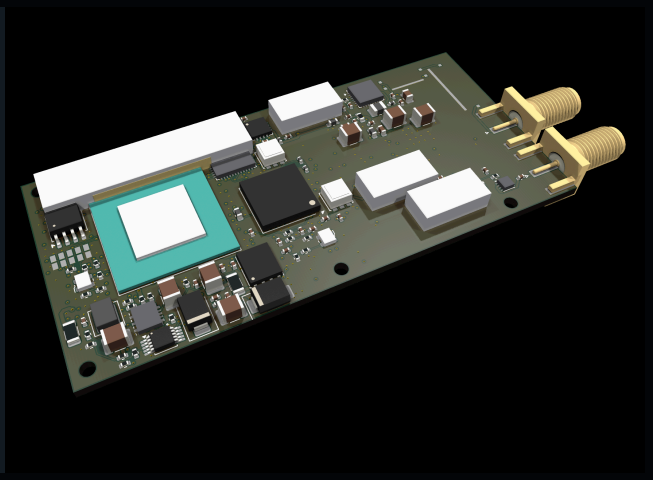
10.8 Mbit/s
User data target, 8PSK in 6.2 MHz

37 dBm
RF output estimate, QPSK at the port

1.4 dB
Receiver noise figure estimate

26.5 W
DC power estimate, QPSK at full output

15–40 V
DC bus input, with hot swap and inrush control



DESIGN RENDERING

01
Data and CCSDS

- **AD9364** transceiver with up to 56 MHz channel bandwidth
- Designed for **CCSDS** framing and coding in FPGA gateware
- Designed for **QPSK, 8PSK and 16APSK**, for narrow or wide spectrum plans

02
Full duplex

- **TX 2200–2290 MHz**, RX 2025–2110 MHz on separate ports
- Ceramic band filtering on both paths
- Full duplex with about **40 dB** between antennas

03
RF front end

- **GaN PA** on a regulated 28 V drain, with interlocked gate bias
- Forward and reverse **power detectors** for telemetry
- Low-noise amplifier ahead of the RX filters

04
Host interface

- **15–40 V DC** input with hot swap and inrush control
- **10/100/1000 Ethernet**, transformer isolated, on the Micro-D
- Current, voltage and temperature monitoring

05
Space and reliability

- **Space-rated variant available**
- **PolarFire FPGA**: Microchip documents configuration cells immune to single-event upsets
- No external FPGA boot memory
- Conduction cooled through the base

06
Defense-aligned sourcing

- Parts chosen from makers based **outside covered nations**
- Bill of materials avoids **tantalum** and magnet-based isolators
- Per-lot origin confirmed at purchase

■ NOTICES

Figures are design values or estimates, not measurements. Transmitting requires the appropriate spectrum authorization. Available for US Government use and as evaluation kits for product developers, software developers and system integrators. Defense-aligned describes part selection, not NDAA, TAA or DFARS compliance.

Flying S-band on your next program?

Request a quote for aerospace or space-rated units. Tell us your link, spectrum plan and host.

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