Trident has translated its high performance multifunction digital RF architecture to the space environment, enabling implementation of RF and other advanced programmable multifunction RF capabilities.

Highly Flexible.

Trident’s SQDRT is based on our powerful, flexible multi-function processing architecture, providing programmability over all key RF features in a very small size, weight, and power footprint.

Highly Reliable.

A Single Event Effects aware FPGA design, coupled with radiation-tolerant components and a robust mechanical design, provide a high-reliability platform for operation in harsh orbital and interplanetary environments.

On orbit since 2019
Hardware & FPGA firmware customization available
Space Qualified Digital RF Transceiver

Specifications:

- Weight: < 800g
- Number of Channels: 1 Transmit, 2 Simultaneous Receive
- Digital Converters: 12 bits transmit, 12 bits receive; synchronization across multiple transceivers
- Sample Clock Range: Programmable up to 3.2 G samples/sec
- Instantaneous BW: Programmable up to 800MHz
- Power: < 50W (FPGA mode & duty cycle dependent)
- Shock/Vibration: packaging, materials, construction per NASA and DoD test methods
- Temperature: -20° C to +50 °C Operation (at wedge locks)
- Memory: 1Gbyte SDRAM, 16MB QDR II+ SRAM (with EDAC)
- Form Factor: 3U Eurocard (one inch pitch) per VITA 78
- Radiation Tolerance: All components selected for high latchup immunity and total dose
- Fault Tolerance: TMR program flow; SEU/SEFI fault detection/recovery; Configurable scrubbing
- Parts/Materials/Processes: Profiles suitable for orbital or planetary missions

Architecture:

- Base Processor Card: FPGA, SDRAM, QDR II+ SRAM
- Mezzanine Card: DAC, ADC and Sample Clock Management
- Mezzanine Interface: High-speed, high-density mezzanine connector for customizable HW interfaces

Interfaces:

- High-speed data: Serial RapidIO
- Control & low-speed data: SpaceWire
- General Purpose I/O: LVTTL and LVDS
- RF: 50 ohm single ended
- Reference & Sample Clocks: Internal or External
- Backplane Interface: SpaceVPX/OpenVPX per VITA 78/65
- Power: 3.3V/5V/12V per VITA 78

Contact Us: ES-BD@tridsys.com