



Solution Brief

VADATECH SELECTED FOR AIRBORNE RADAR SIGNAL PROCESSING AND DATA RECORDING APPLICATION

A military prime contractor in the USA has chosen MicroTCA for its airborne RADAR application. The system combines the functionality of A/D & D/A Conversion, data processing, and storage in two rugged 1U rackmount systems. Both the “transceiver” system and the “storage” system utilize the same rugged chassis, but with vastly different payloads.

The customer required a high-performance, compact, rugged solution that could be used across multiple platforms. The architecture also needed to provide excellent SWaP-C (Size, Weight, Power, and Cost) and be highly versatile. This includes the ability to provide swappable modules for signal processing, data conversion, storage, and graphics in systems that are high-reliability.

SYSTEM REQUIREMENTS

VadaTech’s new line of rugged 1U chassis platforms were selected for the enclosure. They provide up to 6 AMC slots, an integrated 40G MCH, and dual redundant power supplies. The MCH offers special features such as an on-board jitter cleaner, and GPS/SyncE/IEEE 1588 clocking provisions with time-stamping and clock holdover. The 1U chassis is designed to meet MIL-STD-810F for shock and vibration and MIL-STD-461 E for EMI.

The “transceiver” enclosure includes a dual channel high speed DAC and dual ADC based on leading-edge technologies. Vadatech offers a wide variety of ADC and DAC modules to meet customer specific needs. There is also an FPGA carrier and a 40GbE FMC (FPGA Mezzanine Card) per VITA 57, as well as multiple Intel® Xeon-based PrAMCs for control and



processing. The backplane has dedicated ports to directly connect the FPGA transceiver for very high throughput.

The “storage” enclosure is a dedicated solution with SAS/SATA Drive and RAID controller AMCs and a JBOD carrier holding up to 8 mSATA disks. With a Host Bus Adapter, the storage can go across the PCIe bus on backplane for 2x to x4 the back-end transfer rate. The striping RAID system can perform sustained writes at 30 Gbps. There is also a high-speed FPGA for heavy data processing. Thus, the FPGA can process high amounts of data and quickly access storage at a very rapid rate. Similar to the transceiver enclosure, the backplane has dedicated ports for additional direct connections for the SAS/SATA ports, providing massive throughput. Data can quickly move to/from the SAS/SATA Solid State Disks to the mSATA storage bay. The storage bay has a separately removable tray for the mSATA disks.

Together, these high-performance RADAR signal processing and data recording systems take up only

2U of 19” rackmount space. VadaTech also offers ATR and rackmount enclosures in the MicroTCA.3 format for hardened conduction-cooled applications. Please contact VadaTech for more information on other Mil/Aero, Communications, High-Energy Physics, and Industrial applications.

ABOUT VADATECH

VadaTech provides innovative embedded computing solutions from board-level products, chassis-level platforms, to configurable application-ready systems. With a focus on MicroTCA and AdvancedTCA solutions, the company offers unmatched product selection and expertise in the full xTCA ecosystem. With our unique combination of electrical, mechanical, software, and system-level expertise, VadaTech can provide customized commercial or rugged computing solutions to meet the most complex customer requirements. VadaTech also offers specialized product solutions for VPX/VME, CompactPCI, and other architectures. A member of PICMG and VITA, VadaTech is headquartered in Henderson, NV with offices in Europe and Asia Pacific.



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