TRIDENT SYSTEMS’
RECONFIGURABLE ADAPTIVE PROGRAMMABLE TACTICAL OPEN RF (RAPTOR)
Aerospace Radar and Multifunction RF Applications

• Affordable, small, modular spacecraft and UAV digital RF payload—Fully reprogrammable, supports all classes of UAVs and satellites
• Modular, expandable transmit, capture, processing and data storage architecture to support large area intelligence, surveillance, and reconnaissance (ISR), electronic warfare, (EW), and communications missions
• Open Architecture, Open Standard Design/Build (Non-Proprietary Interfaces and Data formats)
• Available Now
RAPTOR Multifunction RF (MFRF) UAV Payload

Overview:
- RAPTOR wideband programmable digital RF transceiver payload: High performance, low CSWaP solution for ISR/EW/Comms
- Based on a decade of advanced programmable system development supporting small form-factor platforms
- Demonstrated compact multi-channel L and Ku-Band SAR/GMTI systems, multiple flight test projects conducted supporting Navy and DoD programs
- Adapted as a Digital Radio Frequency Memory (DRFM) and communications transmitter for multifunction operation
- Active SW/FW/HW development adding increased capability for radar, EW, and other modalities
- Integrated on RQ-21A Blackjack and RQ-23 TigerShark platforms
- Development kits and payloads available now

Payload Characteristics:
- On-board real-time SAR image formation and moving target indication (MTI) detection for standalone operation and integration with bandwidth-constrained datalinks
- Trident ground station software for mission planning, control, and data exploitation
- Open architecture hardware/firmware/software enables rapid implementation/tailoring of a wide range of multifunction RF architectures and integration with larger systems
- FPGA-based framework for rapid (seconds) cross-cueing of multiple RF modalities (e.g. ELINT-cued radar and EA). Proprietary “multi-boot” approach enables full FPGA resource utilization to each modality

Key Features:
- Up to 4 simultaneous RX channels
- Up to 800MHz instantaneous RF bandwidth
- Arbitrary Waveform Generation-driven transmit waveforms for MIMO, LPD, and EA/EP
- Transmit and receive adaptability pulse-to-pulse
- Programmable range, resolution, swath
- Programmable waveforms, PRF, triggers
- Real-time processing, low latency kernel
- Integrated quad-core CPU supporting high-performance processing
- Integrated internal SSD storage (1TB) with external storage interface
- < 7 lbs., < 50 Watts, 12 – 32 VDC
- Rugged (IP54) conduction cooled assembly
- Standards-based interfaces & protocols:
  - Ethernet (GigE) Communication
  - SERDES for high-speed expansion
  - RS-232, USB, LVDS, RS-422 peripheral interfaces & real-time RF control
  - Standard GPS & IMU interfaces
- Built-In-Test, Calibration, Health Monitoring
- Integrated Ground Station SW suite for mission planning, payload operation, and results display
- DCGS-compatible SAR/GMTI data products: NITF, SICD, STANAG 4607
- SCA compatible

Options:
- Custom antennas, RF front ends
- Extended frequency bands/ranges
- Ground exploitation plug-in software

Contact Us: rs@tridsys.com

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