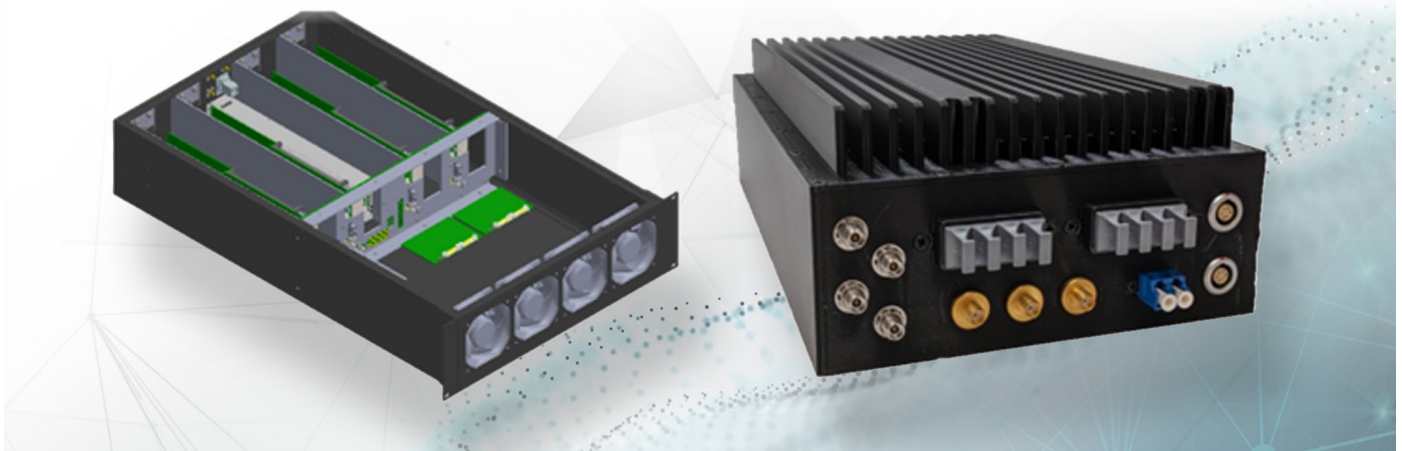# TwinFin

High–Performance Ultra–wideband Radio for ISR, EW, EA, and Communications

TwinFin is a next-generation ultra-wideband transceiver with multiple GHz of bandwidth that enables convergence of large-constellation communications intelligence (COMINT), high-performance electronic intelligence (ELINT), and ultra-wideband communications in a form-factor that scales to meet size, weight, and power (SWaP) requirements.

With rapid tune times, ultra-low phase noise, and wide bandwidths, TwinFin is ideally suited for the surveillance of emerging millimeter-wave radars and communications/PROFORMA/5G waveforms. In addition to intelligence, surveillance, and reconnaissance (ISR) tasks, TwinFin's transmit capability supports electronic attack (EA) and radio frequency (RF)-enabled non-kinetic effects for electronic warfare (EW) and offensive cyber operations.

CACI's next-generation architecture scales from small dismount systems to ships, and its digital signal processing chain supports dozens of simultaneous digital tuners that carve up the RF spectrum for consumption, recording, and distribution. TwinFin offers near-total awareness of the RF environment, and flexible onboard processing that permits the firmware to be reconfigured to serve diverse missions – using the same hardware for tasks like an initial survey, then ongoing collection and demodulation, and finally exfiltration of results.

TwinFin streams up to 800 gigabits of data per second over interoperable protocols like VITA 49 and keeps precise internal timestamp and frequency references. This enables it to serve as a node for time/frequency difference of arrival (TFDOA) and direction finding/geolocation of emitters. TwinFin also complements other CACI applications and is designed to make integration of mission-specific logic possible.

For more information, contact:

ISR Products
ISR-Products@caci.com

For more information about our expertise and technology visit:
www.caci.com

A *Fortune* World's Most Admired Company

EXPERTISE AND **TECHNOLOGY** FOR NATIONAL SECURITY
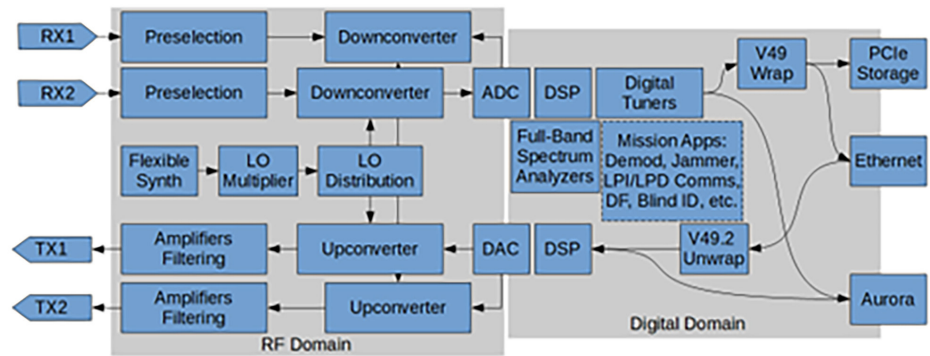
CACI
EVER VIGILANT

Features

- 2x receive and 2x transmit channels per slice
  - Modular configurations planned up to 8R8T.
- Frequency range: VHF to mmWave
  - 400MHz to 40/110 GHz with suboctave preselection
  - Down to 10 MHz with wideband preselection.
- Wide range of instantaneous BW
  - Up to 5 GHz analog per channel
  - 32x digital down converters (DDC)/digital up converters (DUC) per channel.
- Extremely low phase noise
  - Supports advanced modulations, such as multi-thousand-point quadrature amplitude modulation (kQAM) or orthogonal frequency division multiplexing (OFDM) with tens of thousands of subcarriers.
- 8x100Gbps links per slice
  - 100GbE for ISR/cyber
  - Aurora for real-time EW/EA.
- Form Factors:
  - 19" 3U Rackmount
  - Tactical standalone.

Use Cases

- 5G, point-to-point, (VSAT), and/or radar signal collection system over VITA-49.
- High-precision TDOA, FDOA, or TFDOA node.
- Wideband and low probability of intercept (LPI) / low probability of detection (LPD) comms with CACI's ULTRA-STAR secure comms waveform.
- ELINT collection, characterization, and direction finding with CACI's radar analysis tools.

TwinFin Overview

TwinFin Specifications

General Specifications

Number of Channels	2Rx/2Tx (portable) up to 8Rx/8Tx (rackmount) All channels cohere-able
Frequency Range	10 MHz to 40/110 GHz*
Phase Noise	0.2 deg RMS @ 26.5 GHz (10kHz to 40MHz, integrated) 0.33 deg RMS @ 40 GHz -70dbc @ 18GHz (10Hz offset)
Noise Figure	10db (<18GHz), 15db (<40GHz)
Linearity	0dbm IP1db, +10dbm IIP3
Supported Bandwidths	5000, 3500, 3050, 2625, 2150, 1750, 1300, 875, 750, 640, 500, 425, 215, 145, 105, 85, 60, 40, 25 MHz
Tune time	100 microseconds
Control Interfaces	1G/10G Ethernet, VITA-49.2 control
High-Speed Interfaces	Up to 8x 100G Fiber Links for data streaming
High-Speed Interface Protocols	Ethernet (100GBASE-SR4) + Aurora 64/66b 25G/lane
Memory	16GB (soldered) + up to 512GB for custom mission apps
Storage	None included; options in development up to 1PB

Size, Weight, and Power Specifications (SWaP)

Rackmount Chassis Size	3U, 24" depth (Contains up to 4 slices, 8T8R)
Rackmount Slice Size	4.75 x 3.5 x 12 inches
Tactical Unit Size	6.25 x 10.5 x 3.25 inches*
Tactical Unit Weight	8 pounds*
Power per Slice	40-250 Watts*

*Performance configurable based on specific application and is adjustable to platform or mission requirements. Preliminary information included; specifications subject to change without notice

This material consists of CACI International Inc general capabilities information that does not contain controlled technical data as defined within the International Traffic in Arms Regulations (ITAR), Part 120.10, or Export Administration Regulations (EAR), Part 734.7-10. (PRR ID749)