Spectral Sieve EW/ISR Payload

CACI's Spectral Sieve, part of the SkyTracker® Technology Suite, is the leading passive direction-finding/geolocation solution for tactical unmanned aircraft systems (UAS) and ground-based applications. It is a real-time, multi-function, multi-mission system that brings precision intelligence, surveillance, and reconnaissance (ISR) capabilities, including situational awareness and targeting data, to small operational units. Spectral Sieve integrates with groups 1-3 UAS platforms, manned platforms, and terrestrial systems. Spectral Sieve systems are operational at technology readiness level 9 and are deployed in combat areas of operation.

Radio-frequency integrated circuits (RFICs) are Spectral Sieve's enabling technology. Our specialized RFIC is a miniature, wideband, software-programmable radio on a chip that provides continuous tuning across the spectrum. The small RFIC allows the implementation of a five-channel radio within a 20-square-inch circuit board with supporting circuitry. Spectral Sieve uses these radios in conjunction with antenna arrays for coherent signal processing. Arrays of up to four elements are possible, with a fifth independently tunable radio available for additional waveform captures.

With the core RFIC technology, and the latest in commercial field-programmable gate array and ARM/digital signal processing technologies, the low size, weight, and power (SWaP) of Spectral Sieve's hardware enables it to operate across a variety of platforms, from group 1 UAS platforms to Air Launched Effects air vehicles. Spectral Sieve's low SWaP also enables simultaneous operation with other platform-hosted sensor packages.

A *Fortune* World's Most Admired Company

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For more on CACI's expertise and technology, visit:

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Spectral Sieve Features

- Compatible with more than 16 platforms.
- Real-time signals of interest processing with metadata display.
- Spectral Sieve's SEWSI graphical user interface with integrated Win-TAK mapping interface.
- Mission recording and playback.
- Compatible with ROVER and RaptorX software suites; interfaces to android team awareness kit and electronic warfare planning and management tool.
- Ruggedized field-ready receiver, storage, and signal analysis system.
- Flexible broadband RF data acquisition.
- Gigabit ethernet port with GbE Streaming App for Vita-49 radio data output to external general-purpose processor for expanded capabilities.
- Integrated baseband software-defined radio.
- Four-channel coherent receiver for array processing; one single-channel receiver for survey.
- Pre-selector filters for higher dynamic range.
- Switchable inputs to allow two arrays with up to four elements each.
- Mission-specific antenna arrays and mounts for platform integration.
- Onboard data storage; signal and data processing.
- Waveform recording.
- USSOCOM modular payload compliant (2U size; custom packaging options available).

Notes:
*Additional development required for production release.

Spectral Sieve 5.1 Electronics

- Spectral Sieve 5.0 digital board
  - Increased operations processing for more efficient channelization, faster signal processing, and video co-processing.
- Spectral Sieve 4.0 radio board
  - Increased signal coverage (high frequency into 4G band) and side instantaneous bandwidth.
  - Architecture allows three arrayed inputs with two independent channels or four arrayed inputs with one independent channel.
- Extended band universal filter board
  - Coherent and continuous coverage from ultra high frequency/very high frequency into 4G band.
  - Factory configurable with customized fixed filters to address more challenging environments.

Spectral Sieve Applications

- Geolocation.
- Direction finding.
- Spectrum analyzer.
- Protocol processing.
- CACI SNARE survey.
- Tagging, tracking, locating mission support.
- Joint Interface Control Document 4.2 compatibility.
- Multi-channel processing.
- Decryption.
- Open Language Interface for Voice Exploitation compatibility (previously known as RATS)*.

General Specifications	
Standard Frequency Range	Key bands in UHF/VHF
Tuning Resolution Sensitivity	Varies with deployment
Comms Link Bandwidth	~10 kbps (up) 30 - 300 kbps (down)
Application Specifications	
Operational Bands	Tactically relevant
Performance	Real-time, tactically relevant
Size, Weight and Power Specifications (SWaP)	
Dimensions – core stackup	7.0 x 4.3 x 3.0 in (with heatsink)
Weight – core stackup	918 g (2.0 lbs.)
Power Consumption	18W
Environmental Specifications	
Operating Temperature Range	-32 to 49°C (-25 to 120°F)
Shock	21G half-sine shock pulse
Vibration	<5 kHz w/o isolation mounts 3.7 Grms random, 20 − 2000 Hz
Environmental Exposure	Dust and sand resistant, submersible in some configurations
Interface Specifications	
Payload Communication	10/100 ethernet
Payload Data Link	UAS data link/MANET radio networks
DC Voltage Input	11 − 32V (regulated)
Serial Interface	RS232

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CACI's approximately 22,000 talented employees are vigilant in providing the unique expertise and distinctive technology that address our customers' greatest enterprise and mission challenges. Our culture of good character, innovation, and excellence drives our success and earns us recognition as a *Fortune* World's Most Admired Company. As a member of the *Fortune* 1000 Largest Companies, the Russell 1000 Index, and the S&P MidCap 400 Index, we consistently deliver strong shareholder value. Visit us at www.caci.com.