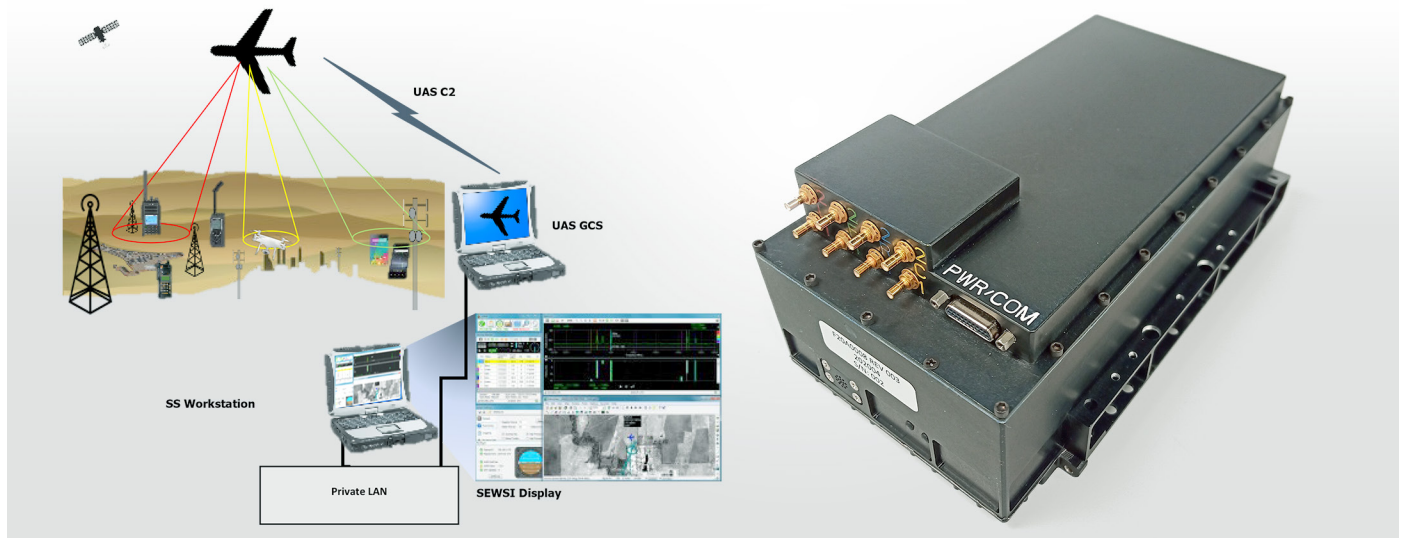


# Spectral Sieve EW/ISR Payload



Spectral Sieve, part of CACI's 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 (SOUs). Spectral Sieve integrates with groups 1-3 UASes, manned platforms, and terrestrial systems. Spectral Sieve systems are operational at technology readiness level (TRL) 9 and are deployed in combat areas of operation (AO).

Radio-frequency integrated circuits (RFICs) are the enabling technology for Spectral Sieve. Our specialized RFIC is a miniature, wideband, software-programmable radio on a chip that provides continuous tuning across the spectrum. The small size of the RFIC allows us to implement 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 the fifth independently tunable radio available for other waveform captures.

With this core technology, and the latest in commercial field-programmable gate array (FPGA) and ARM/digital signal processing technologies, Spectral Sieve hardware has impressively low size, weight, and power (SWaP) that enables it to operate across a variety of platforms, from group 1 UASes to man-packable configurations. Its small SWaP also enables simultaneous operation with other sensor packages.

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## Spectral Sieve Features

- Compatible with more than 16 platforms
- Real-time signals of interest (SOI) processing with metadata display
- Mission-specific antenna arrays and mounts
- Spectral Sieve's SEWSI graphical user interface (GUI)
- Mission recording and playback
- Compatible with ROVER and RaptorX software suites
- Ruggedized field-ready receiver, storage and signal analysis system
- Flexible broadband radio frequency (RF) data acquisition
- Expanded tuning: 3 MHz to 6 GHz
- 30 MHz instantaneous bandwidth (IBW)
- 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.
- Onboard data storage; signal and data processing
- Waveform recording
- USSOCOM modular payload compliant. (Modular payload packaged Spectral Sieve shown on previous page.)
- Size (modular payload configuration): 7.0 x 4.3 x 2.8 in
- Weight (modular payload configuration): 874 g (1.93 lbs)
- Spectral Sieve 5.0 configuration for Puma AE available March 2021

Notes:

\*Future product offering. Additional development needed.

\*\*Wave Relay® is a registered trademark of Persistent Systems

## Spectral Sieve 5.0 Stackup

- 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 (HF – 6 GHz) and instantaneous bandwidth (30 MHz) by upgrading the RFIC
  - Architecture allows three arrayed inputs with two independent channels or four arrayed inputs with one independent channel
- Universal filter board
  - Coherent and continuous coverage from 100 MHz to 6GHz
  - Factory configurable with customized fixed filters to address more challenging environments

## Spectral Sieve Applications

- Geolocation
- Direction finding
- Spectrum analyzer
- Audio demodulation
- Protocol processing
- CACI SNARE survey
- Tagging, tracking, locating (TTL) mission support (special Waveform processing)
- Joint Interface Control Document (JICD) 4.2 compatibility
- National connectivity
- Multi-channel processing
- Decryption
- Open Language Interface for Voice Exploitation (OLIVE) compatibility (previously known as RATS)

General Specifications	
Standard Frequency Range	100 MHz – 6 GHz
Expanded Frequency Range*	3 MHz – 6 GHz
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	6.6 x 3.0 x 1.6 inches
Weight – core stackup	370 g (0.8 lbs.)
Power Consumption	16W
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/Wave Relay**/others
DC Voltage Input	11 – 32V (regulated)
Serial Interface	RS232

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. (PR ID388) (9/16/2021)



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