

Sieve HF

Low SWaP High Frequency Direction Finding System



Sieve High Frequency (HF) is a size weight and power (SWaP) optimized HF direction finding (DF) system able to prosecute both groundwave and skywave/near vertical incidence skywave (NVIS) signals. The mission-focused design features an easy to use interface for either man-packed, or static deployment concept of operations (CONOPs).

Sieve HF is a TRL 8 Intelligence, Surveillance, and Reconnaissance (ISR) system designed for ground-based and body-worn high-accuracy direction finding DF applications. The system prosecutes HF (2 MHz to 30 MHz) and below groundwave and skywave/NVIS signals.

The Sieve HF array is a full six-channel compact vector sensor which allows it to fully characterize any incoming signal. It has been successfully tested against a variety of transmit antenna geometries and propagation modes. For static deployments a larger array configuration is available that offers a greater than 10dB sensitivity improvement and atmospheric-noise-limited operation. The larger array can be realized by simply installing the larger loops on the common array center body.

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Features

- HF detection
 - 200 kHz to 30 MHz (reduced sensitivity below 2 MHz)
- Man-packable, compact array is built with high-flex nitinol loops
- Static mounting via optional tripod mast kit or easily adaptable to user supplied masts
- Fully integrated GPS and inertial positioning system
- IPx7 rating
- Low Size, weight, and power (SWaP)
 - Greater than 12-hour runtime on 2590 battery
 - Less than 12lbs assembled system weight
- Easy-to-use Android graphical user interface (GUI), Windows GUI also available
- Integrates with other CACI equipment via HADES ICD
- Compatible with other mission planning/situational awareness tools such as ATAK, Rover, EWPMT

Use Cases

- Short/Medium range (ground wave, NVIS) tactical DF
- Long range, long baseline networked geolocation
- HF and below spectrum analysis, survey, and demodulation (outputs can be routed to other decoding tools)

About Sieve HF

Sieve HF enables a new concept of CONOPs for how HF signals are handled. For example, these signals can now be addressed at the unit level in a tactically relevant fashion. The small size and durability of the array allow for inconspicuous placement and installation. This allows for more nodes to be placed in geometrically preferred locations. Each system can function fully independently, or systems can be networked together to tip/cue and aggregate results in a common operating picture.

Sieve HF provides real-time direction finding of HF signals. Operators can choose from MSEWSI on Android devices or rely on SEWSI for desktop operation. Both provide real-time DF results, a spectrum display with waterfall, fast scanning across user-defined frequency bands, and real-time results mapping. Users can build custom SOI lists as well as export mission data for additional analysis.

Sieve HF Specifications

General Specifications

Frequency Range (Array)	100 kHz to 30MHz
Frequency Range (Payload)	50 kHz to 30 MHz (reduced sensitivity below 2 MHz)

Application Specifications

Performance	Real-time results, path-limited accuracy
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Size, Weight and Power Specifications (SWaP)

Array Dimensions	19.25" L x 19.25" W x 15.25"H (compact array) 52" L x 52" W x 41"H (full-size array)
Array Weight	2.75 lbs. (compact array) 5.5 lbs. (full-size array)
System Weight	< 12 lbs. (includes compact array, body-worn mast, payload, cabling, EUD, 2590 battery)
Power	18W (payload and array) 1.5W (array only)

Environmental Specifications

Array Ingress Protection Rating	IPx7
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Preliminary information included; specifications subject to change without notice

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