

# Physical Sciences, Inc. - Adaptive Infrared Imaging Spectroradiometer - Wide Area Detector (AIRIS-WAD)



## GENERAL DESCRIPTION:

The AIRIS-Wide Detector is a passive multispectral imaging system designed specifically to address the need to detect chemical agent and toxic industrial chemical releases from fixed site, ground mobile, and airborne platforms. The system incorporates advanced infrared focal plane array technology to enable high spatial resolution for the detection of smaller releases while affording the rapid data acquisition capability needed to operate from moving platforms without degradation of sensitivity. The system's real-time processor provides immediate identification, display, and geo-location of threats using integrated GPS and pointing systems. On board capability is present to transmit threat location via the Joint Warning and Reporting Network.



## TECHNICAL DESCRIPTION:

The system consists of a Fabry-Perot interferometer with 10 wavenumber spectral resolution and 8 to 11 micron tuning range. It incorporates an advanced low-noise 256 x 256 pixel HgCdTe focal plane array with integrated cooled optics and a FPGA/DSP based real-time signal processor incorporating multi-frame signal averaging for sensitivity enhancement. A MIL-STD-810E qualified operator display unit with simplified button-initiated pull-down window control is also included. Remote display and RS-232 based control is possible including air to ground telemetry.

## CONTACT INFORMATION

Physical Sciences, Inc.  
 20 New England Business Center  
 Andover, MA 01810  
 POC: William Marinelli  
 978-689-0003  
 marinelli@psicorp.com  
 www.psicorp.com

## COST

- \$425,000/system
- N/A/analysis

## Tier Selection

Final tier assignment is based on overall product score.

- Top Tier
- Second Tier
- Third Tier
- ◐ Fourth Tier
- Bottom Tier

### RANKINGS

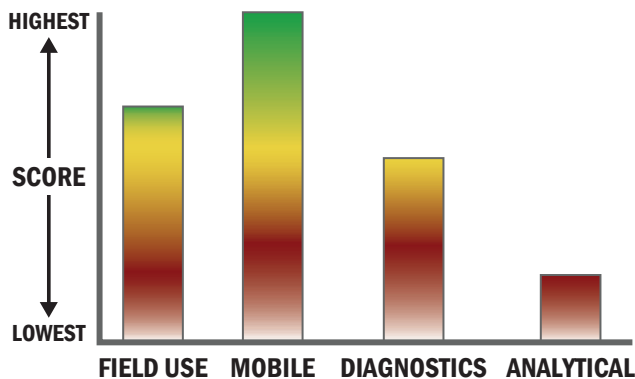
	Biological	Chemical	Radiological
<b>FIELD USE System</b>	N/A	<span style="color: red;">◐</span>	N/A
<b>MOBILE Laboratory</b>	N/A	<span style="color: red;">◐</span>	N/A
<b>DIAGNOSTIC Laboratory</b>	N/A	<span style="color: gray;">○</span>	N/A
<b>ANALYTICAL Laboratory</b>	N/A	<span style="color: gray;">○</span>	N/A

## Survey Source

Vendor Supplied Information

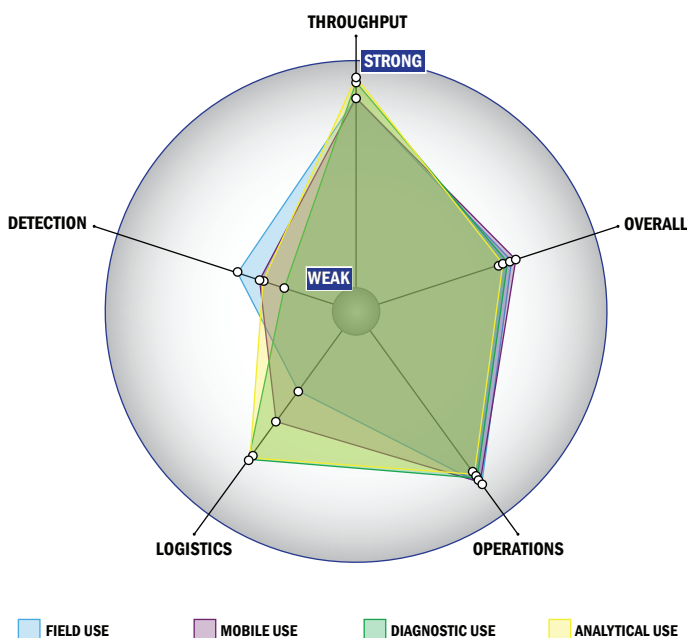
## Scoring Analysis

System scores are compared across the four scenarios and ranked from highest to lowest.



## Impact Chart

The Impact Chart is a spider graph representing specific categories and designed to give the reader a visual depiction of how a particular system is expected to operate across the four different scenarios. The score for each of the seven categories is presented as the percentage of the total possible score. Higher category scores extend the spokes of a graphic toward the outer edge of the chart. The area graphed for each of the four scenarios relates to how well the system performed in that scenario. Graphics for each of the four scenarios are super-imposed for ease of comparison.



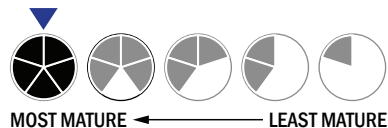
## Evaluation Criteria

### Throughput:

- Detection is instantaneous
- Continuous operation with no defined runs
- System is continuous and provides real time analysis with no defined tests/samples
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 0 components
- Greater than 20 minutes is required for setup
- Automatic detection

### Logistics:

- Approximately the size of a home dishwasher
- More than 50 kg
- Wireless and wired connections are available
- System or device has 110V electrical requirement
- The device is not intended for portable use



### Operations:

- Can be used from  $-21^{\circ}\text{C}$  to  $42^{\circ}\text{C}$  (All temperatures)
- This system does not require consumable components
- Performance is not influenced by relative humidity
- There are no system reagents or test kits
- 5-10 years expected life
- Results can be viewed in real-time
- The system could easily be adapted into a fully autonomous system
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

### Detection:

- This system does not test liquids and this question does not apply
- Superior specificity. System has a false alarm rate approaching zero ( $\sim 0\%$ )
- $> 1 \times 10^{-3} \text{ mg/m}^3$
- System currently can identify aerosolized chemical agent
- Not possible for the system to identify liquid chemical agent

