

## Pacific Advanced Technology - Warlock



### GENERAL DESCRIPTION:

The Warlock was designed to detect contaminated surfaces with chemical agents as well as remotely detecting chemical agent and biological agents that have been aerosolized and dispersed in the atmosphere. The Warlock can be used both in the field and in a laboratory environment to analysis chemical and biological warfare agents. The system is versatile and adaptive for many applications within the Chemical and Biological agent warfare. The Warlock is an imaging spectrometer that operates in the short, mid and long-wave infrared to give the operator an image of the chemical or biological agent on a surface or in a cloud that has been dispersed at an extended range up to many kilometers.



### TECHNICAL DESCRIPTION:

The Warlock is based on an embedded diffractive optical assembly that images in many spectral bands creating an hyper-spectral data cube. Using any number of software tools, some provided with the Warlock and other typical used by the Hyper-spectral community, allows for analysis of the spectral of any object in the field of view of the camera. Various algorithms can be implemented in real-time in an embedded processor in the Warlock or in post processing using PC computers.

### CONTACT INFORMATION

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### COST

- \$150,000/system
- \$0/analysis

### Tier Selection

Final tier assignment is based on overall product score.

- Top Tier   ● Second Tier   ● Third Tier  
● Fourth Tier   ● Bottom Tier

#### RANKINGS

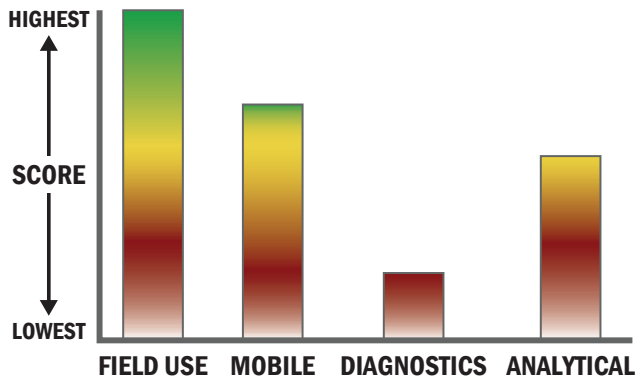
	Biological	Chemical	Radiological
FIELD USE System	N/A		N/A
MOBILE Laboratory	N/A		N/A
DIAGNOSTIC Laboratory	N/A		N/A
ANALYTICAL Laboratory	N/A		N/A

### Survey Source

Vendor and Internet Supplied Information

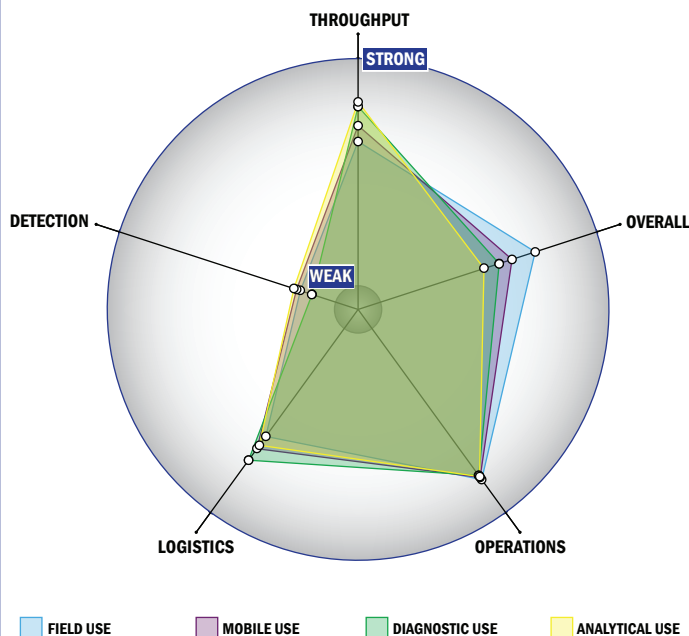
## Scoring Analysis

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.



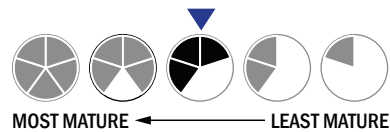
## Evaluation Criteria

### Throughput:

- 2 minutes or less for detection
- Multiple samples, multiple tests/sample per run
- System is continuous and provides real time analysis with no defined tests/samples
- The system could easily be adapted into a fully automated system
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 5-10 minutes is required for set-up
- 1-2 steps are required for detection

### Logistics:

- A day of training and technical skills are required
- Approximately the size of a carry-on luggage suitcase
- Between 5 and 25 kg
- Wired connections are available
- System or device uses batteries
- 4-8 hours battery life



### Operations:

- Can be used from -21 °C to 41 °C
- Components must be stored at room temperature (27 °C)
- Performance is not influenced by relative humidity
- Greater than 3 years shelf life
- 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 open but modification requires licensing
- The system hardware is open but modification requires licensing

### Detection:

- Less than 10 µL
- $>1 \times 10^{-3} \text{ mg/m}^3$
- 100 ppm-1 ppt
- Possible the system could identify aerosolized chemical agent
- Possible system could identify liquid chemical agent