

Chemring Detection Systems - ATHINA Biological Security System (ABSS)



GENERAL DESCRIPTION:

The ATHINA Biological Security System (ABSS) is an integrated solution for biological security missions requiring detection, collection, sample preparation, and identification of biological threats. The ABSS utilizes CDS's All Threats and Hazards Identification and Notification Architecture (ATHINA) to integrate sensing and support components based on the Common CBRN Sensor Interface (CCSI) Standard. The system is ruggedized and suitable for on scene and site monitoring. The sensing components of ABSS have been partitioned into three physical packages: an intelligent collector module, a manual identification module, and an electronics module. The intelligent collector continuously samples the air, upon detection of a biological event the collector warns and performs an automatic sample collection. Modules can be networked for enhanced performance. The manual identification module provides the sample preparation and identification capabilities needed to identify potential threat material. Identification is achieved by utilizing PCR and immunoassay technologies with options for automated and guided manual sample preparation. The electronics module utilizes CDS's ATHINA to provide power management, operator interface, and networking infrastructure to operate the system.



TECHNICAL DESCRIPTION:

The intelligent collector is triggered by a UV LED Laser Induced Fluorescence (LIF) detector which runs continuously. Sample collection is accomplished with a high efficiency dry sampler developed for the collection of airborne particulates, especially pathogenic bacteria and spores. Liquid samples are extracted from the collector's electrets filter using a manual particle extractor to release the captured aerosols. Identification is accomplished by utilizing PCR and immunoassay technologies with options for automated and guided manual sample preparation. The system can be tailored or configured for mission-specific requirement simply by changing individual sensor modules.

CONTACT INFORMATION

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COST

N/A

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

Notes

This system can be combined with the Luminex MAGPIX and is being tested as part of the DoD's JUPITR ATD.

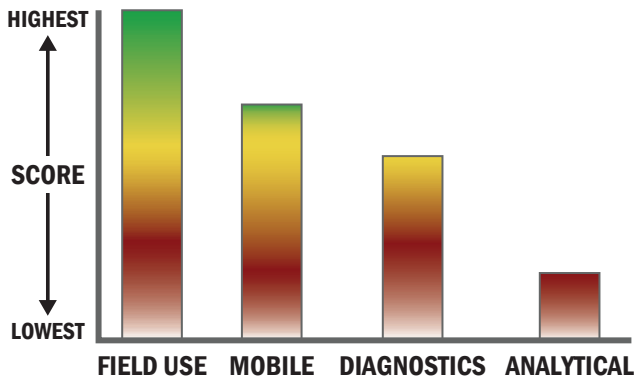
Survey Source

Vendor Supplied Information



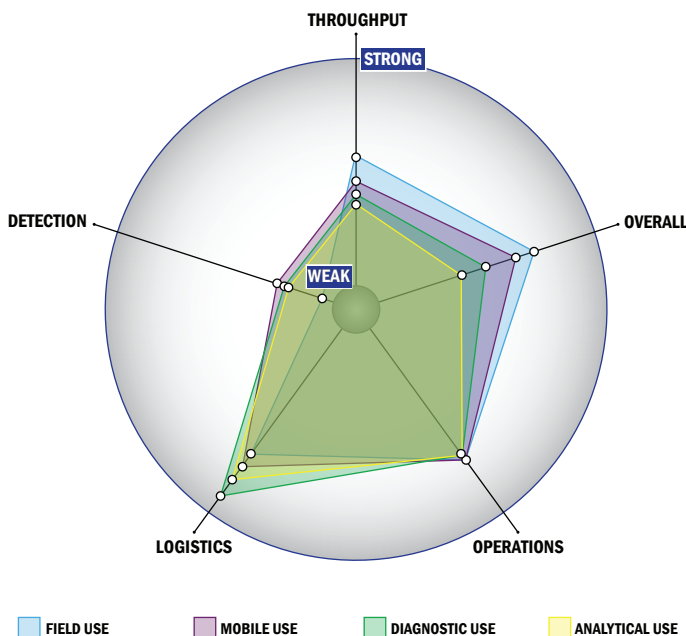
Scoring Analysis

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.



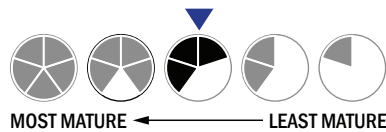
Evaluation Criteria

Throughput:

- Between 30 and 60 minutes for detection
- 1 sample, >10 tests/sample per run
- Less than 32 samples every 2 hours
- The system or device is currently semi-automated
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 2 components
- 5-10 minutes is required for setup
- 6-8 steps are required for detection

Logistics:

- An afternoon of training and some technical skills required
- Approximately the size of a carry-on luggage suitcase
- Between 25 and 50 kg
- Wireless and wired connections are available
- System or device uses batteries
- 4-8 hours battery life
- A few devices or systems exist (brass board)



Operations:

- Can be used from 4 °C to 37 °C
- Components must be stored at room temperature (27 °C)
- Performance is not influenced by relative humidity
- Between 1 to 3 years shelf life
- 5-10 years expected life
- Results can be viewed in real-time
- The system could be adapted to a fully autonomous system with some effort
- The system software is open but modification requires licensing
- The system hardware is open and available for modification

Detection:

- Possible the system could receive 510K clearance, no current efforts at this time
- Possible the system could receive FDA approval, no current efforts at this time
- Less than 250 µL
- Semi-automated spore lysis