


Microfluidic Systems - Microfluidic - Bioagent Autonomous Networked Detector (M-BAND)



GENERAL DESCRIPTION:
 The Microfluidic - Bioagent Autonomous Networked Detector (M-BAND) is a fully automated, wirelessly networked airborne pathogen detection and identification system designed to run for up to 1 month continuously without human intervention. It can specifically identify bacteria, viruses, and toxins at threat levels indoors and outdoors. It has been field tested for over 2 years by several independent agencies domestically and internationally.

TECHNICAL DESCRIPTION:
 The M-BAND is a modular and fully integrated system that includes a high volume air collector, sample purification, Taqman PCR for bacteria and viruses, and chemiluminescence immunoassays for toxins. It includes 16 multiplexed PCR signatures for 6 bio-threat agents, and immunoassays for 3 toxins. It has extra capacity designed into the system for additional bio-threat agents to be included in detection. It is fully networked and remotely operable.



CONTACT INFORMATION
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COST

- \$190,000/system
- \$35/analysis

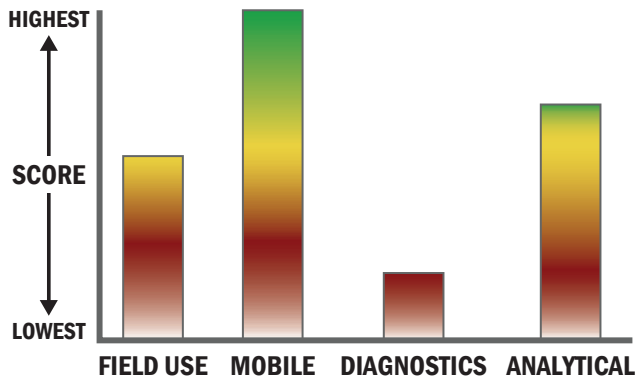
Tier Selection			
Final tier assignment is based on overall product score.			
<input checked="" type="radio"/> Top Tier <input checked="" type="radio"/> Second Tier <input type="radio"/> Third Tier <input type="radio"/> Fourth Tier <input checked="" type="radio"/> Bottom Tier			
RANKINGS			
	Biological	Chemical	Radiological
FIELD USE System	<input checked="" type="radio"/>	<input type="radio"/> N/A	<input type="radio"/> N/A
MOBILE Laboratory	<input type="radio"/> N/A	<input type="radio"/> N/A	<input type="radio"/> N/A
DIAGNOSTIC Laboratory	<input checked="" type="radio"/>	<input type="radio"/> N/A	<input type="radio"/> N/A
ANALYTICAL Laboratory	<input type="radio"/> N/A	<input type="radio"/> N/A	<input type="radio"/> N/A

Survey Source
 Vendor and Internet Supplied Information



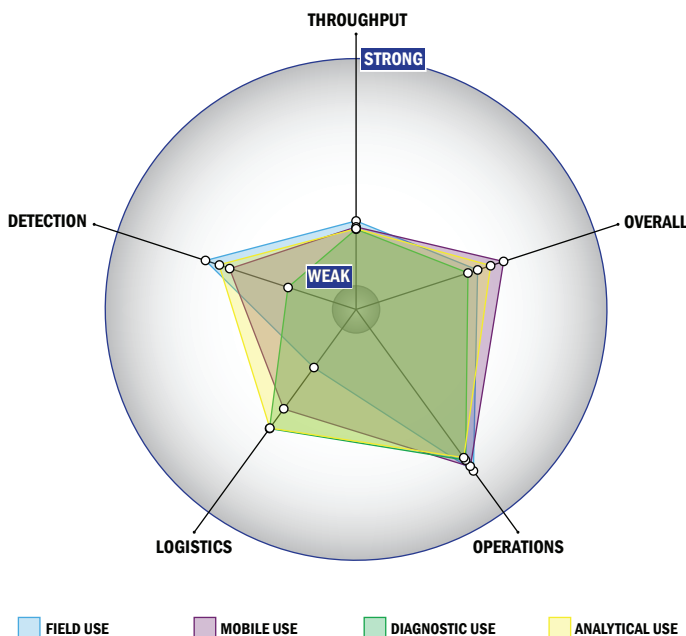
Scoring Analysis

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.



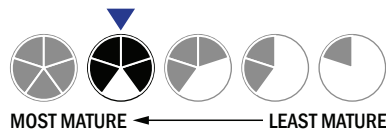
Evaluation Criteria

Throughput:

- Between 60 minutes and 8 hours for detection
- 1 sample, >10 tests/sample per run
- Less than 32 samples every 2 hours
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 5 or more solutions, buffer, eluents, and/or reagents
- 1 component
- Greater than 20 minutes is required for set-up
- Automatic detection

Logistics:

- A day of training and technical skills are required
- Larger than a home dishwasher
- More than 50 kg
- Wireless and wired connections are available
- System or device requires multiple outlets or a dedicated circuit breaker



Operations:

- Can be used from -21°C to 42°C (All temperatures)
- Components must be stored at 4°C
- Performance is not influenced by relative humidity
- Between 1 to 3 years shelf life
- 5-10 years expected life
- Results cannot be viewed in real-time
- The system or device is currently fully autonomous
- The system software is open and available for modification
- The system hardware is open and available for modification

Detection:

- Greater than $250\ \mu\text{L}$
- Superior specificity. System has a false alarm rate approaching zero ($\sim 0\%$)
- 100-1,000 CFU per mL
- 100-1,000 PFU per mL
- 1-10 ng per mL
- Fully automated spore lysis