# Adaptive Methods - Rapid Portable Biosensor

## GENERAL DESCRIPTION:

Economical, rapid (i.e., near real time), sensitive, and specific detection or diagnosis of exposure to biowarfare agents (i.e., bacteria, virus, toxins). With little or no sample-prep and minimal training required, the shirt-pocket size "reader" with disposable sample cartridge facilitates use in the field (including austere environments) or point-of-care settings. Supports single analyte or multiplex testing, in complex matrices including environmental or human derived samples.

## TECHNICAL DESCRIPTION:

Our device is based on surface acoustic wave (SAW)-based sensor technology that directly detects virus, bacteria, or toxin through binding of the target agent to an antibody or peptide coupled to a piezoelectric surface. This binding results in a change to the electrical transfer function of the device which can be measured at its output. Sensitivity and selectivity are conferred through the use of selected ligands.

## CONTACT INFORMATION

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## COST

- $1,000/system
- $10/analysis

## Tier Selection

Final tier assignment is based on overall product score.

Top Tier  Second Tier  Third Tier  Fourth Tier  Bottom Tier

**RANKINGS**

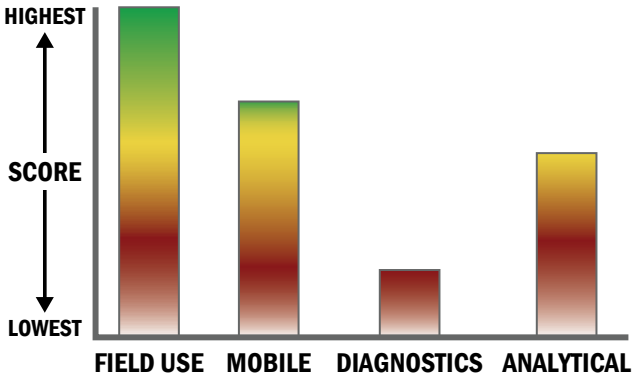
| | Biological | Chemical | Radiological |
|---|---|---|---|
| **FIELD USE** System | Second Tier | N/A | N/A |
| **MOBILE** Laboratory | Second Tier | N/A | N/A |
| **DIAGNOSTIC** Laboratory | Third Tier | N/A | N/A |
| **ANALYTICAL** Laboratory | Second Tier | N/A | N/A |

## Survey Source

Vendor Supplied Information

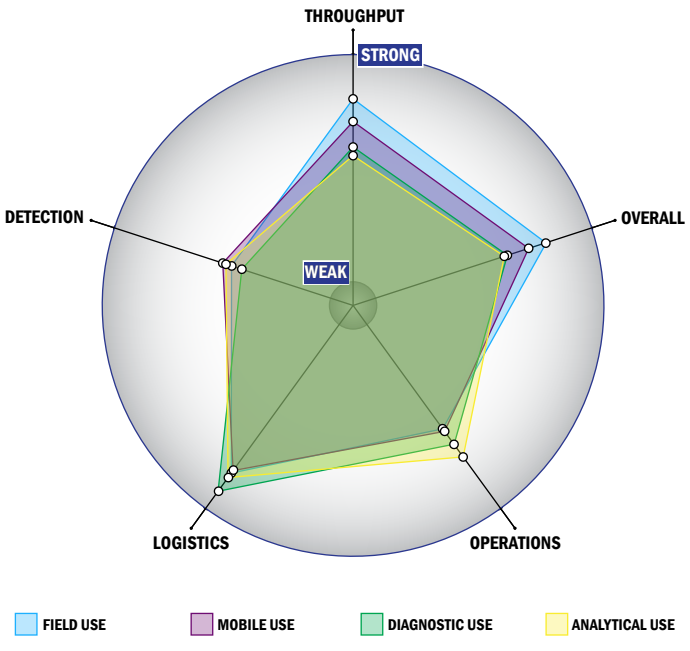
## Scoring Analysis

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.



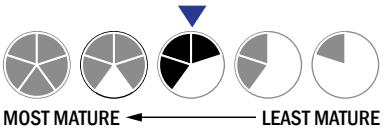

## Evaluation Criteria

### Throughput:

- 2 minutes or less 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
- 1 component
- Less than 5 minutes is required for set-up
- 1-2 steps are required for detection

### Logistics:

- Very brief (minutes-hours) training and minimal technical skills
- Approximately the size of a toaster
- Between 1 and 5 kg
- Wireless and wired connections are available
- System or device uses batteries
- 4-8 hours battery life




### Operations:

- Can be used from 4 °C to 41 °C
- Components must be stored at room temperature (27 °C)
- Between 1 to 6 months shelf life
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system could be adapted to a fully autonomous system with significant effort
- The system software is closed and not available for modification
- The system hardware is closed and not 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
- 1-100 CFU per mL
- 100-1,000 PFU per mL
- Spore lysis not necessary for detection by system