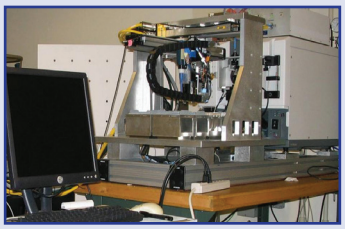
Science & Engineering Services, Inc. - Food Safety Security Module

GENERAL DESCRIPTION:



The Food-Safety Security Module (FSSM) is a scalable, integrated package that utilizes a commercial mass spectrometer, commercial AP-MALDI, and commercial databases to detect and identify food-borne pathogens in less than 24-hours total time; including enrichment. Processing can be either manual or automated with use of the supplemental auto-processing module. In terms of logistics, the consumables cost per sample is less than one dollar and train-up for non-technical users is one day.

TECHNICAL DESCRIPTION:

The Food-Safety Security Module (FSSM) builds on our Wide-Spectrum Bio-ID technologies and uses a commercial ion-trap mass spectrometer in which MS/MS is conducted via AP-MALDI of biological samples after enrichment. Biological materials undergo single-spot proteomic processing and MS/MS targeted bio-marker analysis to sift rapidly thru clutter against a commercial internet-accessible database such as MASCOT.

CONTACT INFORMATION

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COST

- $60,000/manual system; $150,000/automated system
- <$1/analysis

Tier Selection

Final tier assignment is based on overall product score.

Top Tier | Second Tier | Third Tier | Fourth Tier | Bottom Tier

RANKINGS

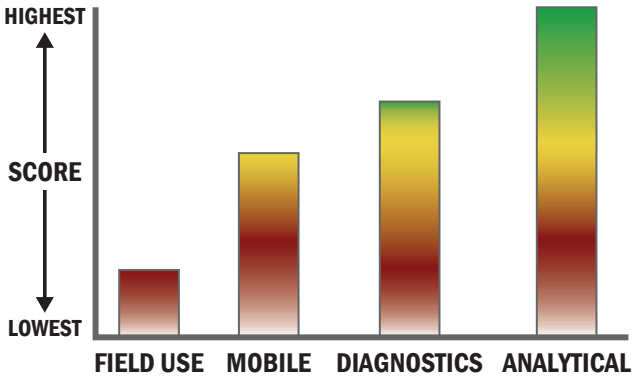
	Biological	Chemical	Radiological
FIELD USE System	Fourth Tier	N/A	N/A
MOBILE Laboratory	Fourth Tier	N/A	N/A
DIAGNOSTIC Laboratory	Third Tier	N/A	N/A
ANALYTICAL Laboratory	Second Tier	N/A	N/A

Survey Source

Vendor and Internet Supplied Information

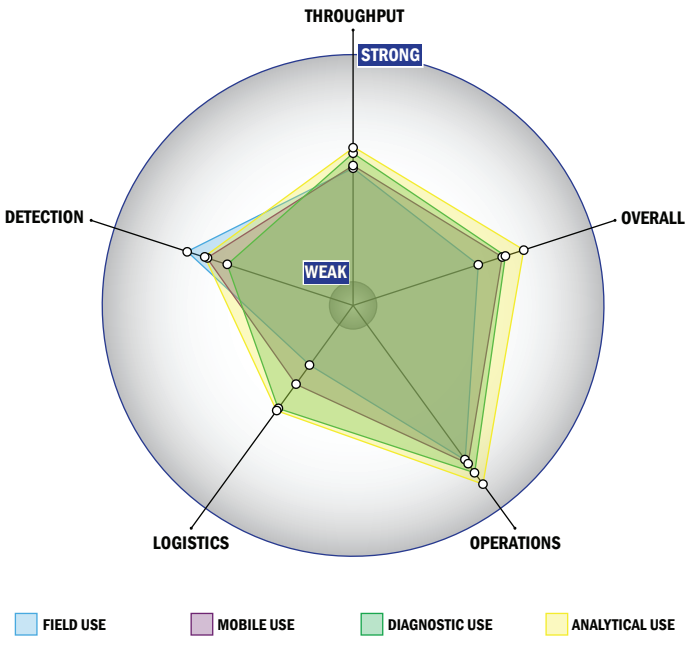
Scoring Analysis

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.



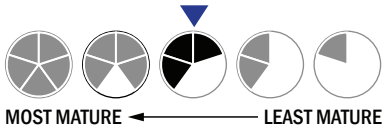
Evaluation Criteria

Throughput:

- Between 2 and 15 minutes for detection
- Multiple samples, multiple tests/sample per run
- 95-32 samples every 2 hours
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 3 solutions, buffer, eluents, and/or reagents
- 1 component
- 10-20 minutes is required for set-up
- 3-5 steps are required for detection

Logistics:

- An afternoon of training and some technical skills required
- Approximately the size of a home dishwasher
- More than 50 kg
- Wireless and wired connections are available
- System or device has 110V electrical requirement



Operations:

- Can be used from 25°C to 37°C
- Components must be stored at 4°C
- Performance is not influenced by relative humidity
- Between 1 to 3 years shelf life
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system is not capable of autonomy
- The system software is open and available for modification
- 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 10 µL
- Excellent specificity. System has occasional false alarms under certain conditions (<2%)
- 1,000-10,000 CFU per mL
- 1,000-10,000 PFU per mL
- 10-100 ng per mL
- Fully automated spore lysis