

Smiths Detection - RespondeR RCI



GENERAL DESCRIPTION:

The RespondeR RCI (Raman Chemical Identifier) is a lightweight, portable spectrometer that identifies unknown solids and liquids such as explosives, white powders, WMDs, and toxic industrial chemicals. The device offers both an integrated sample compartment as well as external, point-and-shoot capability to eliminate direct contact with a sample. The RespondeR RCI is waterproof and ruggedized. It is simple to operate and features an integrated computer with a touch-screen interface. Raman technology is often used as a confirmatory technique with FT-IR



to aid in on-scene chemical analysis. Spectra from the RespondeR RCI can be wirelessly transmitted to the HazMatID™ FT-IR chemical identifier or an external laptop to aid in user interpretation between these complementary technologies. The RespondeR RCI is backed by first rated service, training and support to ensure optimum product performance.

TECHNICAL DESCRIPTION:

Raman spectroscopy measures how a single frequency of radiation is scattered into different frequencies as it impinges upon a chemical medium. The scattered radiation is exposed onto a detector to obtain the identity of the unknown based on its chemical structure. Raman spectroscopy is well suited for analysis of aqueous solutions and liquid and solid samples through clear or translucent containers.

CONTACT INFORMATION

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COST

- \$30,000/system
- N/A/analysis

Tier Selection

Final tier assignment is based on overall product score.

- Top Tier
- Second Tier
- Third Tier
- ◐ Fourth Tier
- Bottom Tier

RANKINGS

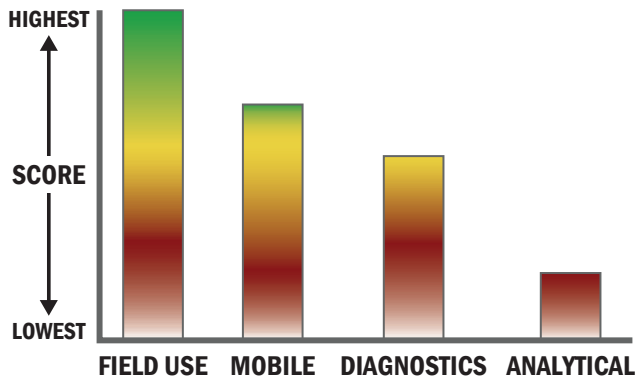
	Biological	Chemical	Radiological
FIELD USE System	N/A	○	N/A
MOBILE Laboratory	N/A	○	N/A
DIAGNOSTIC Laboratory	N/A	◐	N/A
ANALYTICAL Laboratory	N/A	◐	N/A

Survey Source

Vendor Supplied Information

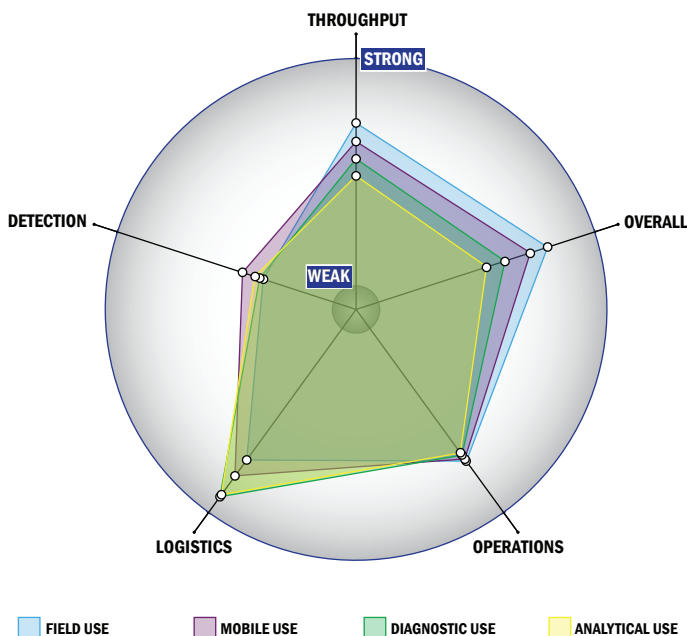
Scoring Analysis

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.



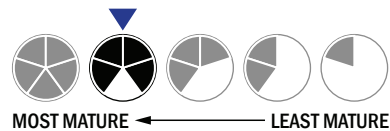
Evaluation Criteria

Throughput:

- 2 minutes or less for detection
- 1 sample, single test/sample per run
- 95-32 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
- 10-20 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
- Performance is not influenced by relative humidity
- Greater than 3 years shelf life
- 5-10 years expected life
- Results cannot be viewed in real-time
- The system is not capable of autonomy
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

Detection:

- Less than 10 µL
- Good specificity. System has a consistently low level of false alarms (2-5%)
- > 1 ppt
- Possible system could identify aerosolized chemical agent
- System currently can identify liquid chemical agent

