



# Bruker Detection Corporation - Radiation Backpack Sentry

## GENERAL DESCRIPTION:

Radiation Backpack Sentry is a self-contained radiological detection and isotope identification instrument. This mobile unit provides the means to screen objects, people, and areas either covertly or visibly. High sensitivity and real time analyses allow an operator to detect and identify low level threats by simply walking through an area. Using the Radiation Backpack Sentry an operator can monitor the surrounding environment by viewing the handheld high resolution TFT LCD monitor or by simply listening to a synthesized voice via a wireless earpiece. Communication between the Radiation Backpack Sentry and user interface handheld is maintained through either wired USB or wireless Bluetooth connection. The instrument can be powered from onboard battery or external source and deployed in either mobile screening and surveillance or stationary local area monitoring roles. The identification algorithms differentiate classes of isotopes to simplify CONOPS. The system identifies the isotope and informs an operator both visually and by voice if the source is from medical treatments, naturally occurring radiation, industrial isotopes, or special nuclear materials.



## TECHNICAL DESCRIPTION:

Bruker Radiation Backpack Sentry uses highly sensitive 3" x 3" NaI(Tl) gamma detector. The instrument is automatically self-calibrated and continuously stabilized based on integrated reference source and an array of environmental sensors. Gamma spectra analyses and isotope identification algorithms are based on the template matching technique.

## CONTACT INFORMATION

Bruker Detection Corporation  
 40 Manning Rd  
 Billerica, MA 01821  
 POC: Frank Thibodeau  
 978-663-3660 x1308  
 fnt@bdal.com  
 www.bruker.com/detection

## COST

- \$25,000/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

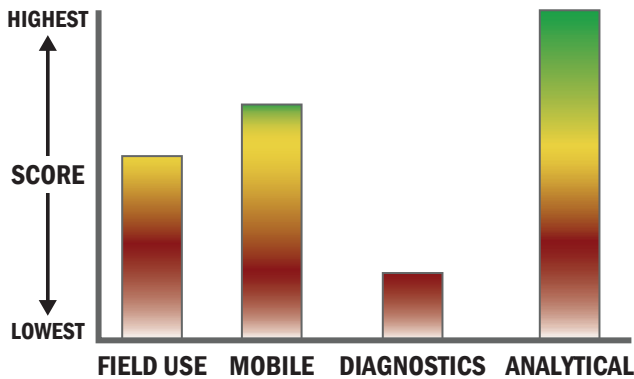
	Biological	Chemical	Radiological
<b>FIELD USE System</b>	N/A	N/A	●
<b>MOBILE Laboratory</b>	N/A	N/A	●
<b>DIAGNOSTIC Laboratory</b>	N/A	N/A	●
<b>ANALYTICAL Laboratory</b>	N/A	N/A	●

## Survey Source

Vendor Supplied Information

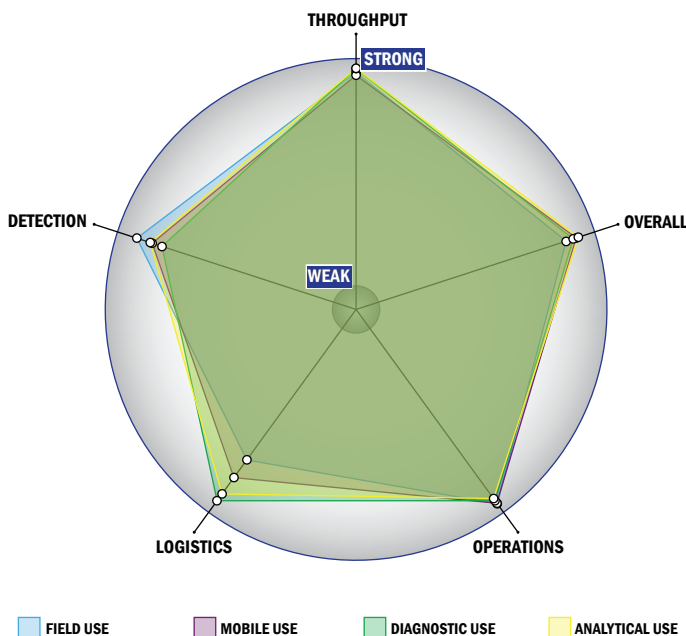
## Scoring Analysis

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.



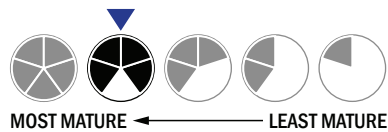
## Evaluation Criteria

### Throughput:

- Detection is instantaneous
- Continuous operation with no defined runs
- System is continuous and provides real time analysis with no defined tests/samples
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 0 components
- Less than 5 minutes is required for set-up
- Automatic detection

### Logistics:

- Very brief (minutes-hours) training and minimal technical skills
- Approximately the size of a carry-on luggage suitcase
- Between 5 and 25 kg
- Wireless and wired connections are available
- System or device uses batteries
- 4-8 hours battery life



### Operations:

- Can be used from  $-21^{\circ}\text{C}$  to  $42^{\circ}\text{C}$  (All temperatures)
- Performance is not influenced by relative humidity
- Greater than 3 years shelf life
- 5-10 years expected life
- Results can be viewed in real-time
- The system or device is currently fully autonomous
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

### Detection:

- This system does not test liquids
- Superior specificity. System has a false alarm rate approaching zero (~0%)
- Total dose, dose rate and count rate with operator selection to show the display, may differentiate between types of radiation
- Down to background level radiation for dose rate
- Down to background level radiation for count rate
- System is used for surveying

