

Apollo



GENERAL DESCRIPTION:

Apollo is a high-efficiency radio-isotope identification device (RIID) with better than 1% FWHM energy resolution and gamma-ray imaging.



- Comparable resolution to HPGe, but go from storage to measurement in 90 s
- Detection times equivalent to 2" NaI(Tl) [M. Streicher et al., 2014 IEEE NSS/MIC, Seattle, WA, p.1-3.]
- Full imaging of each isotope's distribution over all directions
- Automated isotope-specific localization; pinpoint the location of each isotope
- Automated identification, and library selectable from full 3573-isotope ENDF library
- IP52 ingress protection for field use
- Wireless connectivity to optional base station with full oversight capability
- Data playback and post-processing tool included
- Works in high dose (500 mrem/hr) environments
- Full warranty and updates for 2 years

TECHNICAL DESCRIPTION:

The imaging gamma spectrometer is based on pixelated CdZnTe (CZT) detector technology. The ability to record the position and energy of the detected gamma ray allows for the simultaneous identification and location of a source.

CONTACT INFORMATION

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COST

- ~\$50,000
- 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	●

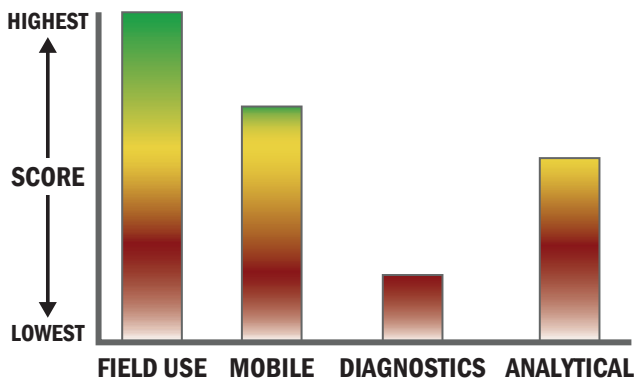
Survey Source

Open Source Internet/Subject Matter Expert



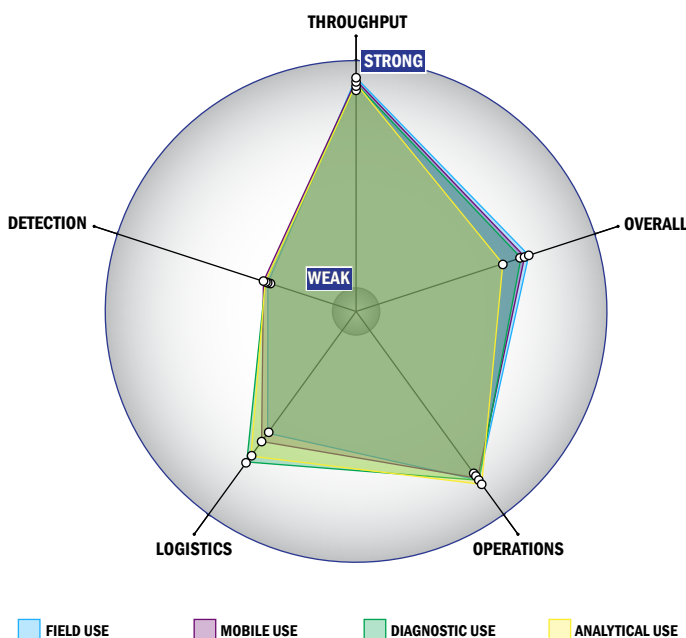
Scoring Analysis

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.



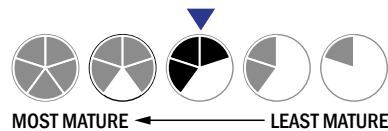
Evaluation Criteria

Throughput:

- Between 2 and 15 minutes for detection
- 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 semi-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:

- An afternoon of training and some technical skills required
- Approximately the size of a toaster
- Between 1 and 5 kg
- System or device uses batteries
- 4-8 Hours battery life



Operations:

- Can be used from 4 °C to 41 °C
- This system does not require consumable components
- Performance is not influenced by relative humidity
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system could easily be adapted into a fully autonomous system

Detection:

- This system does not test liquids and this question does not apply
- 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 (i.e., gamma 1 µR/hr)
- Down to background level radiation, expressed in cpm or similar units
- System is used for surveying