FlexSpec Backpack

GENERAL DESCRIPTION:

The FlexSpec Backpack offers users a state-of-the-art, portable, directional system for detection, identification, and localization of radioactive sources. The lightweight, rugged, weatherproof detection unit connects wirelessly to a smartphone or tablet. The detection unit can be transferred to different backpacks or other carriers and can be used as a standalone module, for example in a wall-mounted application. Multiple detection units can be networked together to create a FlexLink network with improved detection sensitivity.

The system provides rapid and reliable isotope identification and alarm categorization (threat, suspect, industrial, medical, naturally occurring), using field-proven analysis software. It also features field-hardened, dynamic background compensation to automatically adjust for background variability in urban and rural environments. GPS tagging provides the location of the alarm and the integrated Wi-Fi network enables secure, remote operation through an authorized smartphone or tablet. The user interface, which is implemented on the smartphone or tablet, is ideally suited for radiation detection and localization missions. Rapid transmission of data to reachback centers is enabled using the available cellular connection on the smartphone or tablet.

TECHNICAL DESCRIPTION:

The FlexSpec Backpack includes two sodium iodide (NaI) detectors, one on each side of the detection module, providing left vs. right directionality for localization of gamma sources. Each NaI detector is 2" in diameter and 4" long, with energy resolution <8% at 662 keV, enabling radionuclide identification and source categorization. Geiger-Mueller tubes are included for operation at extremely high dose rates up to 500 R/h. Neutron detection is accomplished using optional He-3 or non-He-3 neutron detectors, with integrated moderators.

The system performs automatic energy calibration using background radiation, eliminating the need for radioactive check sources. It also features dynamic background compensation to automatically adjust for background variability, providing optimum performance in real field conditions. Advanced algorithms analyze the data stream continuously, producing identification and classification results that are presented to the user at the user interface on the mobile device.

CONTACT INFORMATION

Bubble Technology Industries Inc.
31278 Highway 17, P.O. Box 100
Chalk River, Ontario
Canada K0J 1J0
Tel: 613-589-2456   Fax: 613-589-2763
Email: sales@bubbletech.ca
Web: www.bubbletech.ca
Martin Smith
smithm@bubbletech.ca

COST
- N/A/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

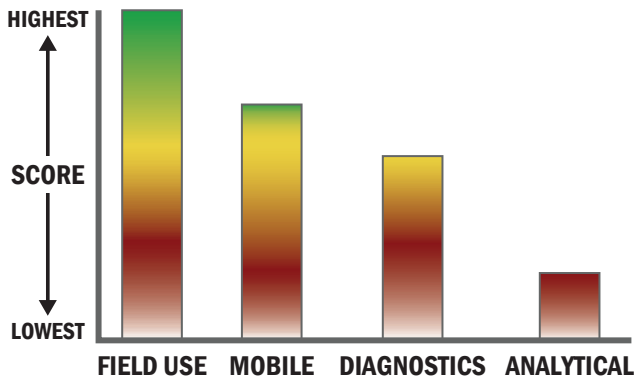|	Biological	Chemical	Radiological
FIELD USE System	N/A	N/A	⚪
MOBILE Laboratory	N/A	N/A	⚪
DIAGNOSTIC Laboratory	N/A	N/A	⚪
ANALYTICAL Laboratory	N/A	N/A	🔴

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.
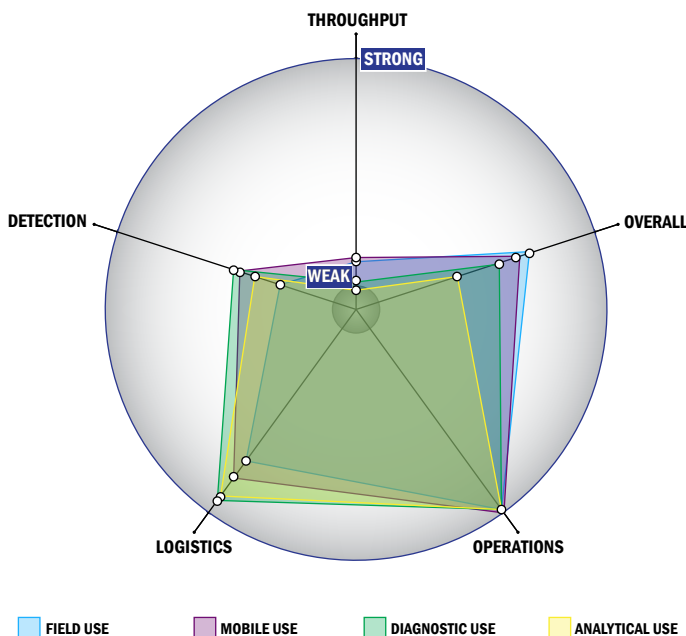

Evaluation Criteria

Throughput:
• Device or system is intended for multiple detection assays

Logistics:
• Very brief (minutes-hours) training and minimal technical skills
• Approximately the size of a carry-on luggage suitcase
• Approximately the size of a carry-on luggage suitcase
• Wireless and wired connections are available
• System or device uses batteries
• 4–8 Hours battery life

MOST MATURE ◄─────── LEAST MATURE
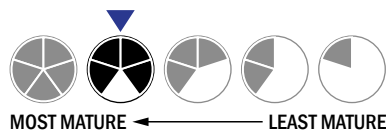
Operations:
• Can be used from -21°C to 41°C
• This system does not require consumable components
• Performance is not influenced by relative humidity
• Greater than 10 years expected life
• Results can be viewed in real-time
• The system or device is currently fully autonomous
• The system software is open but modification requires licensing
• The system hardware is open but modification requires licensing

Detection:
• Not possible to achieve 510K clearance
• Not possible to achieve FDA approval
• Superior specificity. System has a false alarm rate approaching zero (~0%)
• Total dose, dose rate and count rate with simultaneous display readout and automatic differentiation between types of radiation detected (e.g., gamma vs. neutrons)
• Down to background level radiation (i.e., gamma 1 μR/hr)
• Down to background level radiation, expressed in cpm or similar units