



Bertin Technologies - Second Sight

GENERAL DESCRIPTION:

Second Sight® MS is a stand-off real time gas cloud detector, designed for chemical area surveillance in open field and harsh conditions. Second Sight® MS automatically detect, identify and monitor all known clouds of dangerous gases (nerve gazes or vesicants) at a distance up to 5 km. In case of detection, it raises an alarm and displays real-time visualization of the scene. This enables efficient management of the chemical event. Its patented infrared process allows a wide field of view with a very high detection probability with night and day surveillance capability. Second Sight can be used by CBRN team on the field (battery), for base surveillance or mounted on vehicles or ships.



TECHNICAL DESCRIPTION:

Second Sight® MS uses an uncooled IR microbolometer device. Its technology relies on different absorption lines of gases in the IR spectrum. The equipment continuously analyses the absorption of the scene compared with the background. Each gas has its own absorption spectrum and can present typical absorption lines in infra-red bands II (3 to 5 µm MWIR) and bands III (8 to 14 µm LWIR). Second Sight® operates in band III, in order to use the particular lines which enable them to be identified from several gases. The Second Sight® allows real time visualization of gas cloud: the image processing algorithms highlights the presence of a gas cloud on the targeted line. The evaluation of the quantity of gas is carried out by a three differential infra-red imaging process: spatial, spectral, and temporal fields. Spectral differentiation exploits the spectral nature of the gas, which is isolated through the successive utilization of several filters. The comparison of channels enables a value corresponding to the gas cloud concentration. In particular, spatial differentiation enables the luminescence of the gas cloud to be eliminated and to only take its transmission into account. This characteristic enables Second Sight® to detect the gas even when it is at an ambient temperature.

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

CONTACT INFORMATION

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COST

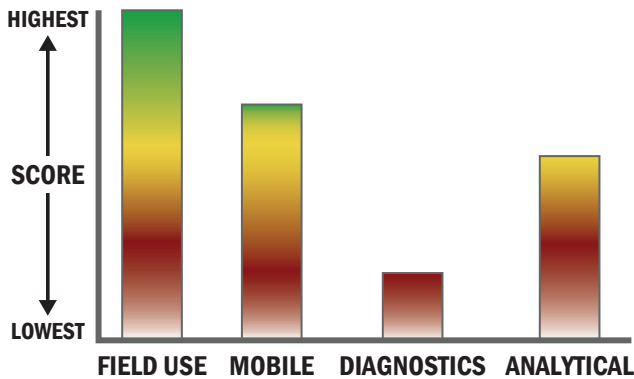
- \$319,800/system
- N/A/analysis

Survey Source

Vendor Supplied Information

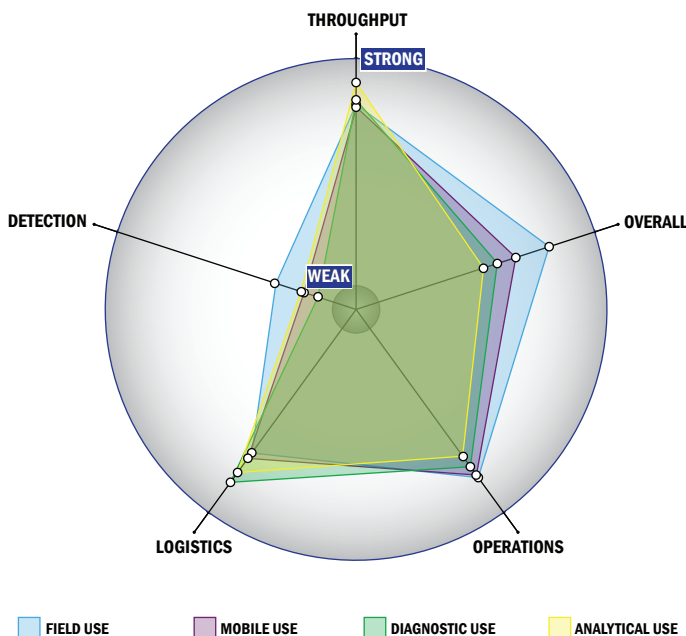
Scoring Analysis

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.



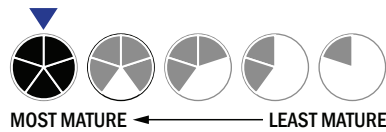
Evaluation Criteria

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
- 5-10 minutes is required for set-up
- Automatic detection

Logistics:

- A day of training and technical skills are required
- Approximately the size of a carry-on luggage suitcase
- Between 25 and 50 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 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%)
- System currently can identify aerosolized chemical agent

