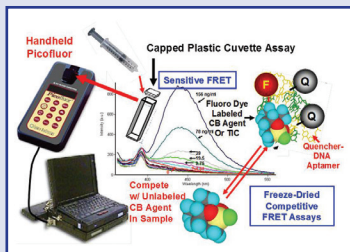


Operational Technologies Corporation - Handheld FRET-Aptamer Sensor for CB Detection



GENERAL DESCRIPTION:

The Handheld Fluorescence Resonance Energy Transfer (FRET)-DNA Aptamer Sensor is a highly mobile, rugged, waterproof, and 4X AA battery-operated sensor for specific CB agents. The system enables one-step homogeneous or "lights on" FRET assays with the affinity (sensitivity), specificity, and reproducibility of DNA aptamers (instead of antibodies) using lyophilized intrachain or competitive FRET-aptamer reagents with long shelf-lives in capped plastic cuvettes. The handheld fluorometer OEM is Turner Biosystems or Promega and OpTech produces the patented FRET-aptamer reagents (US Patent No. 7,906,280).



TECHNICAL DESCRIPTION:

The best way to describe the FRET-aptamer technology is for interested parties to review the following publications:

- J. Fluorescence. 22:915-924, 2012.
- Biosensors & Bioelectronics. 31:240-243, 2012.
- J. Fluorescence. 21:2021-2033, 2011.
- J. Fluorescence. 20:1211-1223, 2010.
- J. Molecular Recognition. 22:197-204, 2009.
- J. Biomolecular Techniques. 19:311-321, 2008.
- J. Fluorescence. 18:867-876, 2008.
- J. Biomolecular Techniques. 19:109-115, 2008.
- Combinational Chemistry & High Throughput Screening. 14:622-630, 2011.

CONTACT INFORMATION

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COST

- \$2,000-\$3,000/system
- \$5-\$15/analysis

Tier Selection

Final tier assignment is based on overall product score.

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

RANKINGS

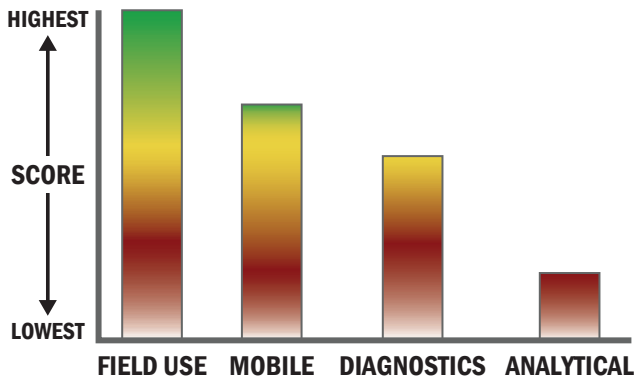
| | Biological | Chemical | Radiological |
|------------------------------|------------|----------|--------------|
| FIELD USE System | | | |
| MOBILE Laboratory | | | |
| DIAGNOSTIC Laboratory | | | |
| ANALYTICAL Laboratory | | | |

Survey Source

Vendor Supplied Information

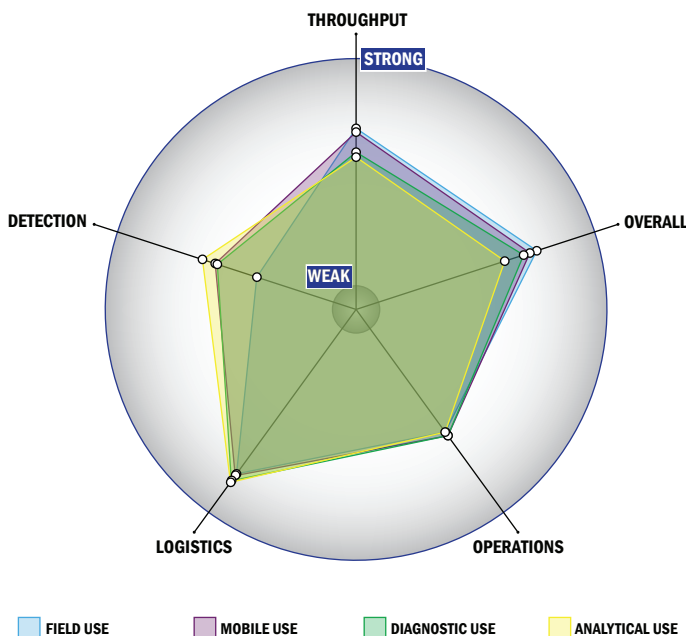
Scoring Analysis

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.



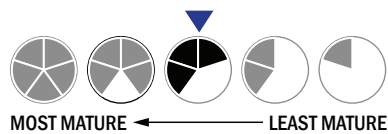
Evaluation Criteria

Throughput:

- Between 2 and 15 minutes for detection
- Multiple samples, single tests/sample per run
- 349-96 samples every 2 hours
- The system could be adapted to a fully automated system with some effort
- Device or system is intended for multiple detection assays
- 0-1 solutions, buffer, eluents, and/or reagents
- 3 components
- Less than 5 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 soda can
- Between 1 and 5 kg
- This system is not capable of transmitting data
- System or device uses batteries
- 4-8 hours battery life



Operations:

- Can be used from 4 °C to 37 °C
- Components must be stored at room temperature (27 °C)
- Device must be used in a temperature stable, dry environment for optimum performance
- Between 1 to 3 years shelf life
- Greater than 10 years expected life
- The system could be adapted to a fully autonomous system with significant effort
- The system software is closed and not available for modification
- The system hardware is open but modification requires licensing

Detection:

- Possible the system could receive 510K clearance, no current efforts at this time
- Possible the system could receive FDA approval, no current efforts at this time
- Greater than 250 µL
- Good specificity. Consistently low level of false alarms (2-5%)
- 100-1,000 PFU per mL
- 1-10 ng per mL
- Spore lysis not necessary for detection by system
- 1 ppb – 1 ppm