



- Portable radiation spectroscopy with radionuclide identification
- Compatible with all BTI advanced spectroscopic probes: gamma, X-ray, beta and neutron
- Accurate nuclide-specific, tissue equivalent dose and dose rate
- Simple, single key commands
- Ultra portable, lightweight
- Reduces work time and lab costs
- Multiple modes suitable for health physicists, radiation surveyors, emergency response teams

### SPECTROSCOPY

The Microspec is a powerful, portable spectroscopic survey system for the detection, identification and measurement of ionizing radiation. The system's on-board spectroscopy with isotope ID saves time, money and labour in radiation surveys. Contaminants are quickly identified and hot spots are easily distinguished from background anomalies. Even at levels below natural background, contaminants can be identified and their contribution to dose measured immediately, without the delays and expense of lab work – a feature that's particularly valuable in decommissioning surveys, decontamination inspections and emergency response applications.

At the heart of the MICROSPEC-2 system is a miniature multi-channel analyzer that acquires and stores spectra from the available probes. Spectroscopic gamma, X-ray, beta and neutron probes give MICROSPEC-2 a unique range of measurement capabilities.

A user-modifiable library of radionuclides is used with automatic peak search for easy and rapid nuclide identification. For dose rates above background, contamination can be measured to at least  $\pm 15\%$  with run times of a few seconds. Even at fractional dose levels of only one third of background, contaminants can be measured to better than  $\pm 15\%$  with run times of several minutes.

With the X-Probe, 3 Bq (81 pCi) of  $\text{Am}^{241}$  can be detected with 95% confidence in a ten-minute run. The E-Probe detects  $\text{Cs}^{137}$  under the same conditions at the 2 Bq (54 pCi) level.

### DOSIMETRY

Dose is computed directly from spectral information to give unprecedented accuracy and is displayed in a simple, easy to understand format. The response matrix and efficiency of the detector are stored in computer memory and the acquired spectrum is unfolded using this matrix to produce a pure incident spectrum. Absorbed dose and dose equivalent are then calculated from the spectrum using the ICRP dose equivalent factors. MICROSPEC-2's unique approach easily compensates for differences in response between the detector and tissue, giving it a response that is tissue equivalent and truly independent of photon energy. The dose response of the MICROSPEC-2 system over the energy range from below 3 keV to over 3 MeV is completely flat. Accumulated dose and dose rate are displayed in real time in conventional or SI units. An accumulated dose alarm, accompanied by an on-screen warning, can be set by the user.

### A POWERFUL COMBINATION - On-board Spectroscopy with Isotope ID

- Saves time, money and labour in radiation surveys
- Contaminants are quickly identified and hot spots are easily distinguished from background anomalies
- The presence of particular contaminants and their dose contributions can be identified at levels below natural background, without tedious and expensive lab analysis
- MICROSPEC-2's quick response, accurate dose and spectral information are particularly useful in emergency response situations, decommissioning surveys and decontamination inspections

# MICROSPEC-2™

## Technical Specifications

(Visit [www.bubbletech.ca](http://www.bubbletech.ca) for more information)

### PHYSICAL SIZE

Analyzer: 26.2 x 15.9 x 6.9 cm (10.3 x 6.3 x 2.7 in)  
1.9 kg (4.2 lb)

Probe: 1.5 to 4.0 kg (3.3 to 8.8 lb)  
(Varies with probe type)

### POWER

Type: 3 NiCad "D" cells (rechargeable)

Runtime: 14 hours

### TEMPERATURE

Operating: -20 °C to +40 °C

Storage: -40 °C to +70 °C

### DATA ACQUISITION AND STORAGE

- Number of spectral channels: 220
- Counts/Channel (Max.):  $4.3 \times 10^9$
- Dead time correction: Unique scaler method (accurate up to 95% deadtime)
- Data I/O: Up/Download capability to PC's through parallel port
- Data storage memory: 32 MB (> 20,000 spectra) on compact flash card (included)

### SOFTWARE

- Automatic system calibration
- Single key commands, on-board Help

### CASE

- High performance transport case with custom-cut protective foam liner

### DISPLAY

- 64x240 monochrome LCD

### SPECTROSCOPIC PROBES\*

Gamma: NaI (various sizes)  
50 keV to 3 MeV

X-ray: NaI with Be window  
5 keV to 200 keV

Beta: Phoswich scintillator  
100 keV to 3 MeV

Neutron: Liquid scintillator and  $^3\text{He}$  counter  
Thermal to 20 MeV

### OPERATING MODES

#### Dosimetry:

- Dose rate/cumulative dose in both mrem/mSv
- $H^*(10)$ ,  $H'(0.07,0^\circ)$ ,  $H'(3,0^\circ)$  dose conventions
- Region-of-interest (ROI) specific dose

#### Spectroscopy:

- Automatic peak search and nuclide identification
- 1 second spectrum update
- Dose and dose rate information
- Region-of-interest dose

### CALIBRATION

MICROSPEC-2 systems are calibrated with a  $^{137}\text{Cs}$  source in BTT's licensed calibration facility. BTT recommends annual instrument return for calibration/performance checks.

### OTHER MICROSPEC ANALYZERS:

#### MICROSPEC-3\*

The first hand-held spectroscopy system with on-board GPS receiver, the MICROSPEC-3 provides seamless integration of positional information with radiological data. The system features Spectroscopy, Dosimetry and Dose Rate Mapping modes. Total dose rate or nuclide-specific dose rate are available at any point on a user scalable grid.

#### MOBILE MICROSPEC\*

Specifically developed for military applications, the MOBILE MICROSPEC can be used from both air and ground based platforms. The system features dual input for simultaneous operation of two probes and offers remote operation by wireless link. The system operates in Dosimetry, Spectroscopy and Mapping modes and is hardened to meet military standards.

\*Detailed data sheets available

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