

# ORNL INSTRUMENT EVALUATION SUMMARY

## Target fieldSPEC-N Digital Gamma Spectrometer

**Description:** The Target fieldSPEC-N Digital Gamma Spectrometer is a handheld instrument designed to detect gamma radiation and identify radioactive nuclide(s).

**Ranges Tested:** N/A

**Report Date:** February 10, 2003

**General Comments:**

1. Confidence intervals used to ascertain whether results are conclusive or inconclusive are determined using the 0.95 quantile of the student's t distribution (95% confidence interval).

### RADIATION RESPONSE

**Probe Surface Sensitivity:** N/A

**Energy Response:** As part of the evaluation process, various radionuclides were used. The radionuclides included  $^{241}\text{Am}$ ,  $^{137}\text{Cs}$ , and  $^{60}\text{Co}$ .

**Response Linearity:** Not performed.

### ELECTRONIC and MECHANICAL REQUIREMENTS and TESTS

**Line Noise:** N/A

**Power Line Variations:** N/A

**Conducted Radio Frequency:** N/A

### INTERFERING RESPONSES TEST RESULTS

**Radio Frequency :** No susceptibilities were observed when exposed to an RF scan from 100 kHz to 1000 MHz at  $20\pm 2$  volts/meter amplitude modulated with 1 kHz at 80%.

**Electric Fields:** Not performed.

**Magnetic Fields:** Susceptibilities were observed when exposed to a 10 Gauss DC field in two orientations relative to the magnetic field emission lines. Specific results are available in the test report. No susceptibilities were indicated when exposed to the 60 Hz (1.26 Gauss) AC field in two orientations.

**Radio Frequency Emissions:** No emissions were observed over a frequency range from 10 MHz to 1 GHz.

**Interfering Ionizing Radiations:** Not performed.

## **ENVIRONMENTAL FACTORS**

**Temperature:** Susceptibilities were observed over the temperature test range of -10 to 50 °C (+14 to +122 °F). Specific results are available in the test report.

**Temperature Shock/Reduced Temperature Shock:** Susceptibilities were observed when exposed to rapid temperature changes from 22 to -10, -10 to 22, 22 to 50, and 50 to 22 (in °C). Each change was performed within five minutes. Specific results are available in the test report.

**Humidity:** Not performed.

**Vibration:** Not performed.