

ORNL INSTRUMENT EVALUATION SUMMARY

BNC SAM-935

Description: The BNC SAM-935 is a radiation detection and identification system.

Ranges Tested: N/A

Report Date: May 29, 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).
2. The purpose of the test was to evaluate the instrument's performance as a radiation detection and identification system.

RADIATION RESPONSE

Probe Surface Sensitivity: N/A.

Energy Response: Performed using ^{241}Am , ^{137}Cs , and ^{60}Co . Specific information is available in ORNL/TM-2002/121.

Response Linearity: Not performed

ELECTRONIC and MECHANICAL REQUIREMENTS and TESTS

Line Noise: N/A

Power Line Variations: N/A

Conducted Radio Frequency: Not performed

INTERFERING RESPONSES TEST RESULTS

Radio Frequency/Microwave: No susceptibilities were observed when exposed to an RF scan from 100 kHz to 1000 MHz at 20 ± 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 both orientations relative to the magnetic field emission lines. Susceptibilities were indicated when

exposed to the 60 Hz (1.26 Gauss) AC field in two orientations. Specific results are available in ORNL/TM-2002/121.

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). The radionuclide identification process was affected during the temperature test. Specific results are available in ORNL/TM-2002/121.

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 ORNL/TM-2002/121.

Humidity: No susceptibilities were observed when exposed to a relative humidity level of 95% (non-condensing) for 24 hours. Specific results are available in ORNL/TM-2002/121.

Vibration: Not performed.