

ORNL

INSTRUMENT EVALUATION SUMMARY

Ludlum Model 2360 with Model 43-93 Alpha/Beta Probe

Description: The Ludlum Model 2360 is a portable rate meter for use with various contamination probes. This summary describes the evaluation of an 2360 incorporated with a model 43-93 alpha/beta probe.

Ranges Evaluated: X10 and Scaler

Report Date: April 25, 2000

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: Not Performed.

ELECTRONIC and MECHANICAL REQUIREMENTS and TESTS

Line Noise: N/A

INTERFERING RESPONSES TEST RESULTS

Radio Frequency/Microwave: Response abnormalities were observed when each probe/instrument combination was exposed to the frequency scan from 10 kHz to 1000 MHz at 20 (± 2) volts/meter modulated with 1 kHz at 80%. Abnormalities included high response and alarm light activation. Specific information is available in the test report.

No susceptibility was observed when exposed to 1800 and 2450 MHz fields at 20 (± 2) volts/meter amplitude modulated with 1 kHz at 80%.

Electric Fields: Not Performed.

Magnetic Fields: Response abnormalities were observed when each instrument/probe combination was exposed to a 10 Gauss DC field. No abnormalities were observed at 60 Hz (1.26 Gauss) AC field.

Interfering Ionizing Radiations: Not performed.

ENVIRONMENTAL FACTORS

Temperature: Each instrument had acceptable results when exposed to temperatures from -10 to 50 °C (+14 to 122 °F) operating in the alpha mode and beta mode.

Temperature Shock: Each instrument had acceptable results when exposed to rapid temperature changes of 22 to -10, -10 to 22, 22 to 50, and 50 to 22. Testing was performed using the beta mode and alpha mode.

Humidity: When operated in the beta mode, the response went slightly low after exposure to a relative humidity level of 95% (non-condensing) for eight hours, and upon return to 40% for 4 hours at 30 ± 2 °C. When operated in the alpha mode, the response went out of tolerance low after exposure to a relative humidity level of 95% (non-condensing) for eight hours. The response became acceptable upon return to 40% for 4 hours at 30 ± 2 °C.

Vibration: Not Performed.