

# ANSI N42.17A-1989 TEST RESULTS

## MODEL 2350-1 DATA LOGGER

### TEST NOTES

- Test groups included five or more instrument sets.
- NT = Not Tested
- N/A = Not Applicable

### GENERAL CHARACTERISTICS

| Characteristics Under Test                | Range of Values of Influence Quantities                                    | Limits of Variation                                 | Pass / Fail |
|---|--|---|-------------|
| AC Power                                  | 102-132 VAC<br>178-238 VAC   | Reading cannot vary by more than plus or minus 5%   | N/A         |
| Battery Power                             | 0 - 100 hours  | Reading cannot vary by more than plus or minus 10%  | NT          |
| Battery Power Indicator                   | Test performed at the voltage that triggers the battery failure indication | Reading cannot vary by more than plus or minus 10%  | Pass        |
| AC powered instrument with battery backup | Instrument must be marked for battery endpoint                             |   | N/A         |
|   | Test performed at the voltage that triggers the battery failure indication | Readings cannot vary by more than plus or minus 10% | N/A         |

### ELECTRONIC AND MECHANICAL TESTS

| Characteristics Under Test | Range of Values of Influence Quantities | Limits of Variation  | Pass / Fail |
|----------------------------|---|--|-------------|
| Check Circuits             | Per manufacturer's recommendations      |  |             |
| Alarms (reset)             | Dose rate to activate alarm             | See section 5.2.1  | NT          |
| Alarms (delay)             | Dose rate to activate alarm             | Alarm must be indicated within 1 - 60 seconds                                    | NT          |
| Alarm (threshold drift)    | Dose rate to activate alarm             | Alarm setpoint must not drift more than plus or minus 10% over a 500 hour period | NT          |
| Stability                  | 3 hours (battery powered instruments)   | Reading cannot change by more than plus or minus 6%                              | Pass        |

|                                  |   |  |       |
|----------------------------------|---|--|-------|
| <b>Stability</b>                 | 24 hours (AC powered instruments)                             | Reading cannot change by more than plus or minus 6%  | N/A   |
|                                  | 500 hours (AC powered instruments)                            | Reading cannot change by more than plus or minus 15% | N/A   |
| <b>Geotropism</b>                | Tested in three mutually perpendicular orientations           | Reading cannot vary by more than plus or minus 6%    | Pass  |
| <b>Response Time</b>             | See Table 1 of Standard                                       | See Table 1 of Standard                              | Pass  |
| <b>Coefficient of Variation</b>  | Greater than or equal to 1 mR/h, 1 mrd/h, 10 mrem/h, 2000 dpm | Reading cannot change by more than plus or minus 10% | Pass  |
|                                  | Less than or equal to 1 mR/h, 1 mrd/h, 10 mrem/h, 2000 dpm    | Reading cannot change by more than plus or minus 15% | Pass* |
| <b>Line Noise Susceptibility</b> | See table 2 of standard                                       | Reading cannot change by more than plus or minus 15% | N/A   |

### RADIATION RESPONSE

| <b>Characteristics Under Test</b>                       | <b>Range of Values of Influence Quantities</b> | <b>Limits of Variation</b>  | <b>Pass / Fail</b> |
|---|--|---|--------------------|
| <b>Accuracy (photon dose rate)</b>                      | 0.1 mrd/h - 1000 rd/h                          | Cannot vary by more than plus or minus 15% of conventionally true value | N/A                |
| <b>Accuracy (count rate and contamination monitors)</b> | 50 dpm/square cm to 100,000 dpm/square cm      | Cannot vary by more than plus or minus 15% of conventionally true value | N/A                |
| <b>Accuracy (beta or neutron dose rate)</b>             | 0.1 mrem/h - 1000 rem/h                        | Cannot vary by more than plus or minus 15% of conventionally true value | N/A                |
| <b>Probe surface sensitivity</b>                        | Stated by manufacturer                         |   | N/A                |
| <b>Photon energy dependence</b>                         | 80 keV - 1.25 MeV                              | See equation in section 6.3 of standard                                 | N/A                |
|   | 20 keV - 3.0 MeV                               |   | N/A                |
| <b>Beta Energy Dependence</b>                           | 0.5 MeV - 3.5 MeV (Emax)                       | See equation in section 6.3 of standard                                 | N/A                |
|   | 0.2 MeV - 3.5 MeV (Emax)                       |   | N/A                |
| <b>Neutron Energy Dependence</b>                        | 0.025 eV - 14 MeV                              | See equation in section 6.3 of standard                                 | N/A                |
| <b>Photon Radiation Overload</b>                        | 100X upper limit less than or equal to 10 rd/h | Correct response within 2 minutes                                       | N/A                |
|   | 10X upper limit greater than 10 rd/h           |   | N/A                |
| <b>Angular Dependence</b>                               | 0 - 45 degrees (photon)                        | Instrument reading must not vary by more than plus or minus 20%         | N/A                |
|   | 45 - 90 degrees                                |   | N/A                |

|                       |                                |     |
|-----------------------|--------------------------------|-----|
| 0 - 45 degrees (beta) | by more than plus or minus 50% | N/A |
|-----------------------|--------------------------------|-----|

### INTERFERING RESPONSE

| Characteristics Under Test   | Range of Values of Influence Quantities | Limits of Variation                                   | Pass / Fail |
|------------------------------|---|---|-------------|
| <b>Extracameral Response</b> | Range of instrument                     | Reading cannot change by more than plus or minus 5%   | NT          |
| <b>RF Fields</b>             | Per user requirements                   | Readings cannot change by more than plus or minus 15% | NT          |
|                              | 100 V/m, 0.3 - 35 MHz                   |   | NT          |
|                              | 100 V/m at approx. 140 MHz              |   | NT          |
| <b>Microwave Fields</b>      | Per user requirements                   |   | NT          |
|                              | 100 W/square meter at 915 MHz, 2450 MHz |   | NT          |
| <b>Electric Fields</b>       | 5000 V/m                                |   | NT          |
|                              | 100 V/m at 60 Hz, 400 Hz                |   | NT          |
| <b>Magnetic Fields</b>       | 800 A/m                                 |   | Pass        |
| <b>Interfering Radiation</b> | See Table 3 of Standard                 |   |             |

### ENVIRONMENTAL FACTORS

| Characteristics Under Test | Range of Values of Influence Quantities  | Limits of Variation   | Pass / Fail |
|----------------------------|--|---|-------------|
| <b>Temperature</b>         | 0 to 40 degrees C  | Reading cannot vary by more than plus or minus 15% of reading at 22 degrees C | Pass        |
|                            | -10 to +50 degrees C   | Reading cannot vary by more than plus or minus 20% of reading at 22 degrees C | Pass        |
|                            | 10 to 35 degrees C   | Reading cannot vary by more than plus or minus 15% of reading at 22 degrees C | Pass        |
| <b>Temperature Shock</b>   | From -10% to 22 degrees C  |   | Pass        |
|                            | From 50 to 22 degrees C  |   | Pass        |
| <b>Humidity</b>            | 40 to 90% RH at 22 degrees C   | Readings cannot vary by more than plus or minus 15% of the reading at 40% RH  | Pass        |
| <b>Mechanical Shock</b>    | 50 g acceleration of 18 ms, half sine wave, test on 3 orthogonal axes (10 times) | Reading cannot vary by more than plus or minus 15%                            | NT          |
| <b>Vibration</b>           | 2 g acc., 10 - 33 Hz, test on 3 orthogonal axes for 15 min.                      |   | NT          |
| <b>Ambient Pressure</b>    | 70 - 106 kPa   |   | Pass        |

|                    |   |      |
|--------------------|---|------|
| <b>Splashproof</b> | 2 min. fine spray (4 L/min at 2 meters from nozzle) | Pass |
|--------------------|---|------|

\*Due to the relationship of the response time and the coefficient of variation, readings on the lowest scale were taken using SLOW response time (manufacturer's suggestion).



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