

The RAM GENE-1 monitor

Gamma Contamination and Dose Rate Monitor

Selected by the British National Health Service for an ergonomic, sturdy and accurate monitor.

The National Health Service in Britain has identified the need to provide a sturdy, accurate and easy-to-use monitor to all its hospitals. The RAM GENE-1 was picked after passing the specifications laid out by the NRPB and testing by a large number of Hospitals.

90% of the Hospital staff preferred the RAM GENE-1 over the competition.

The RAM GENE-1 features a specially designed energy filter embedded in the cap for dose rate radiation monitoring according to Ambient Dose Equivalent, with the additional flexibility of a contamination meter.

The RAM GENE-1 is equipped with a recessed, internal GM pancake detector using a thin mica window protected by a stainless steel screen. The transition between measuring dose rate radiation and contamination is achieved by simply removing or placing the plastic cap.



Features

- Large, four digit, continuous ranging, LCD display
- Simple, three key operation
- Large 1.75" pancake GM detector
- Suitable for alpha, beta or gamma contamination detection
- Unit readouts of count rate (CPS in contamination mode and ($\mu\text{Sv/hr}$) in dose mode.
- Audible and visual (LED) count rate indication
- Smart software provides fast, yet stable response
- Dead time correction
- Alarms for overflow, low battery and detector failure
- Automatic self diagnostic routines
- Durable case with splash resistant keypad



ROTEM
RADIATION MONITORING EQUIPMENT LTD.

Technical Data

| | |
|--------------------|--|
| Display | Large, four digit, continuous ranging LCD readout for display of count rate, dose rate, overflow, low battery, and detector failure |
| LED | Flashing count rate indication |
| Audio | Piezo electric element synchronised with count LED |
| Units | Counts per second (cps) or counts per minute (cpm) and $\mu\text{Sv/hr}$ or mR/hr |
| Controls | Three key keypad with positive feedback for ON/OFF Key combinations for selecting count rate or dose rate unit displays |
| Power | Standard 9V alkaline battery - provides approximately 50 hours continuous use with speaker off. Automatic battery check under full load. |
| Detector | 1.75" Pancake GM tube - LND73118 or equivalent |
| Window | Mica, 1.5 - 2.0 mg/cm^2 protected by stainless steel mesh |
| Count Range | 0 - 42,000 cps |
| Sensitivity | Approximately 5.8 $\text{cps}/\mu\text{Sv/hr}$ (58 cps/mR/hr) - ^{137}Cs |
| Measuring Range | 5 $\mu\text{R/hr}$ to 700 mR/hr (0.05 $\mu\text{Sv/hr}$ to 7 mSv/hr) |
| Display Resolution | 0.001 mR/hr (0.01 $\mu\text{Sv/hr}$) |
| Background | 0 - 1 cps |
| Temperature Range | Operation: -10°C to $+50^\circ\text{C}$ (15°F to 122°F) Storage: -20°C to $+60^\circ\text{C}$ (-5°F to 140°F) |
| Humidity Range | 40% to 95% RH (non condensing) |
| Case | High impact ABS |
| Dimensions | 11cm x 6.7cm x 7.4cm (4.3" x 2.6" x 2.9") |
| Weight | 0.340 Kg (0.75 lbs) |

Variation of Response with Particle Energy

- $E_{\text{max}} < 0.2 \text{ MeV}$ – ^{14}C
- E_{max} between 0.2 MeV and 0.5 MeV – ^{147}Pm and ^{60}Co
- $E_{\text{max}} > 0.5 \text{ MeV}$ - ^{36}Cl and $^{90}\text{Sr}/^{90}\text{Y}$

| Nuclide | Activity (Bq cm^{-2}) | Instrument Indication (counts s^{-1}) | Response Factor | Uncertainty |
|----------------------------------|-------------------------------------|---|--------------------|-------------|
| $^{90}\text{Sr} + ^{90}\text{Y}$ | 70.55 | 277 | 3.92 | $\pm 10\%$ |
| ^{36}Cl | 35.84 | 135 | 3.78 | $\pm 10\%$ |
| ^{60}Co | 34.62 | 56 | 1.63 | $\pm 10\%$ |
| ^{147}Pm | 18.65 | 19.6 | 1.05 | $\pm 10\%$ |
| ^{14}C | 142.64 | 143 | 1.00 | $\pm 10\%$ |
| ^{241}Am | 21.57 | 27.2 | 1.26 | $\pm 10\%$ |
| ^{238}Pu | 21.54 | 27.9 | 1.30 | $\pm 10\%$ |

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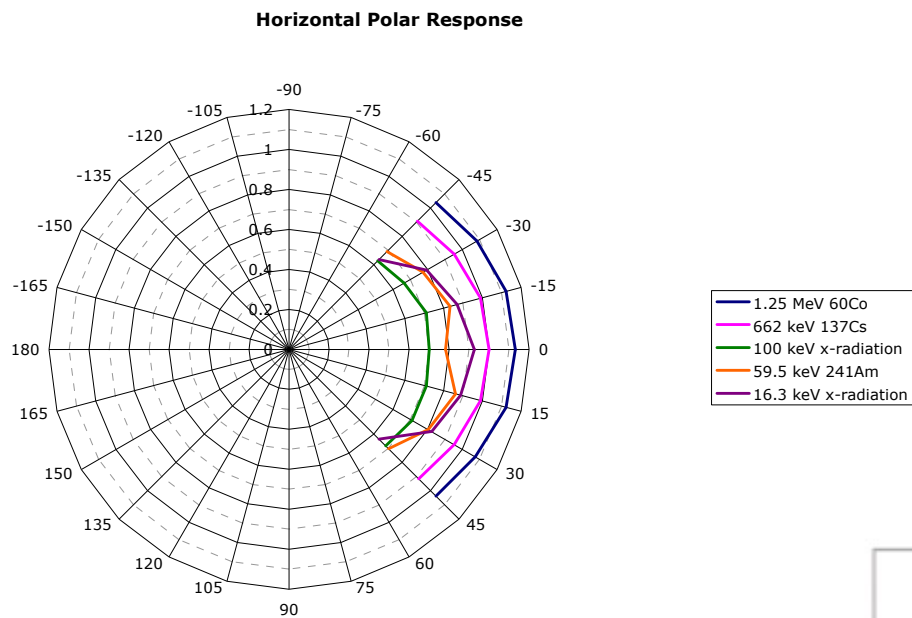
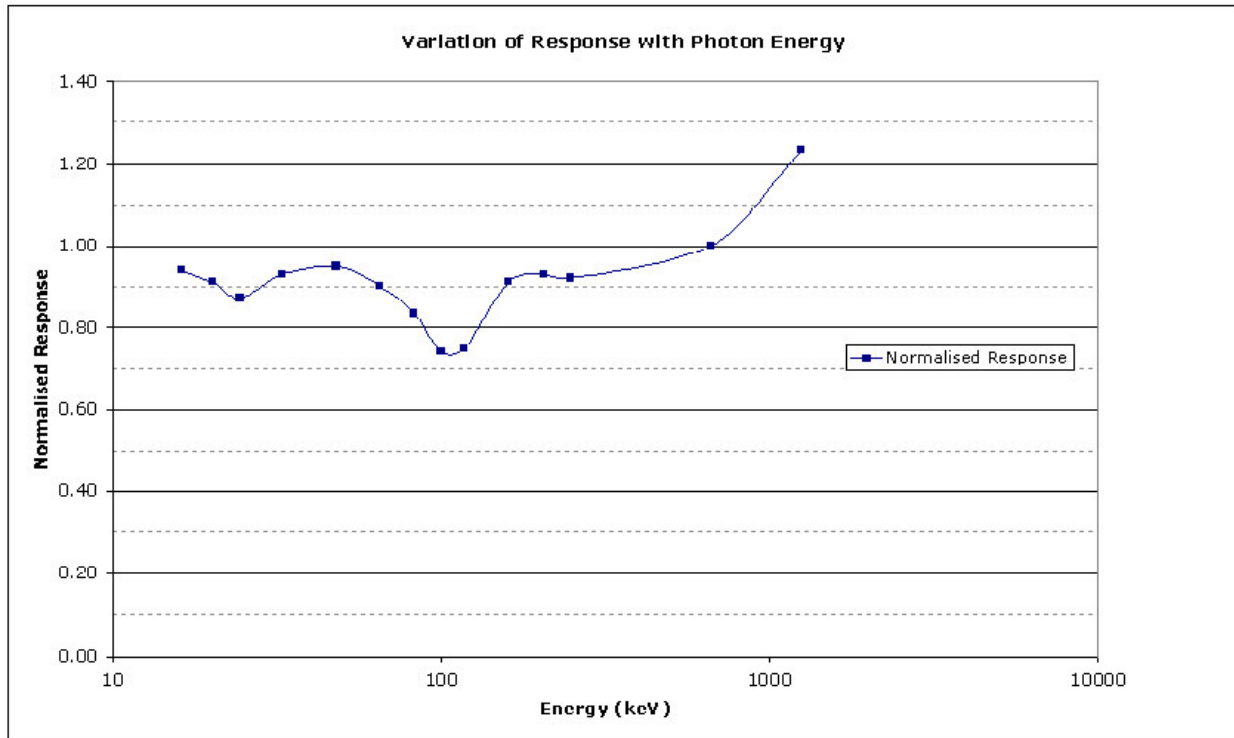
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Compliant to IEC 60846 and IEC 60325 for ambient dose equivalent and contamination monitoring

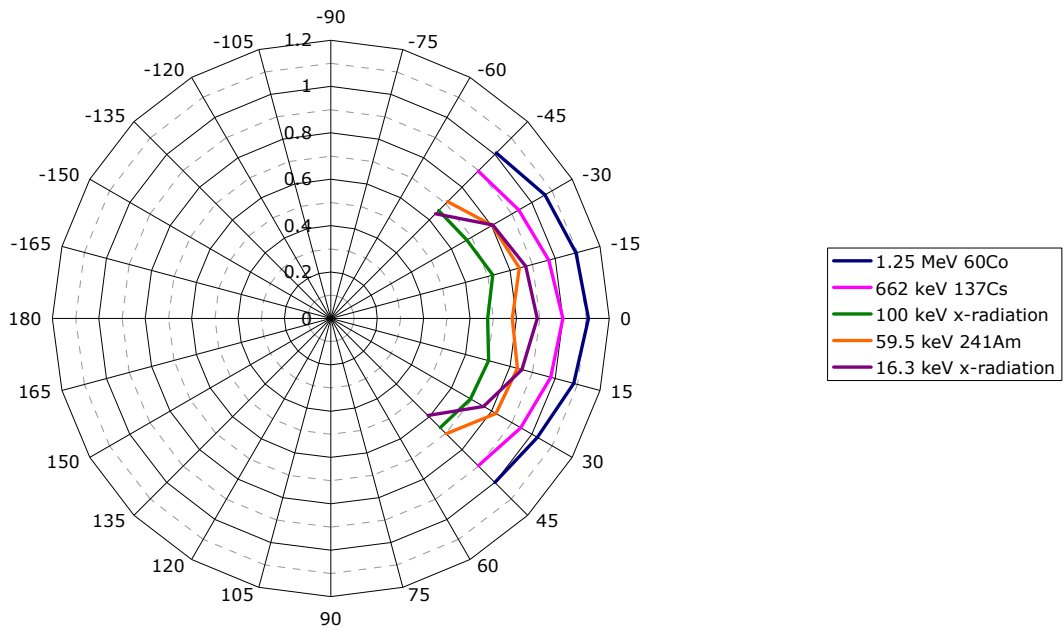


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Vertical Polar Response



Full Energy Response Data

| Radiation Quantity | Energy (keV) | Normalized Response | Uncertainty |
|--------------------------------------|--------------|---------------------|-------------|
| ⁶⁰ Co γ radiation | 1250 | 1.17 | $\pm 10\%$ |
| ¹³⁷ Cs γ radiation | 662 | 1 | $\pm 10\%$ |
| ISO Low series x-radiation | 248 | 0.92 | $\pm 10\%$ |
| ISO Low series x-radiation | 205 | 0.93 | $\pm 10\%$ |
| ISO Low series x-radiation | 161 | 0.91 | $\pm 10\%$ |
| ISO Low series x-radiation | 118 | 0.75 | $\pm 10\%$ |
| ISO Low series x-radiation | 100 | 0.74 | $\pm 10\%$ |
| ISO Low series x-radiation | 83 | 0.83 | $\pm 10\%$ |
| ISO Low series x-radiation | 65 | 0.9 | $\pm 10\%$ |
| ²⁴¹ Am γ radiation | 59.5 | 0.94 | $\pm 10\%$ |
| ISO Low series x-radiation | 48 | 0.95 | $\pm 10\%$ |
| ISO Low series x-radiation | 33 | 0.93 | $\pm 10\%$ |
| ISO Low series x-radiation | 24.5 | 0.87 | $\pm 10\%$ |
| ISO Low series x-radiation | 20.2 | 0.91 | $\pm 10\%$ |
| ISO Low series x-radiation | 16.3 | 0.94 | $\pm 10\%$ |

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