Dynamic Dose Measurements for Brachytherapy Dosimetry

The Linear 5ive MOSFET Array™, when used in combination with the mobileMOSFET™, is the first and only commercially available combination that allows for the real-time quality assurance of all brachytherapy procedures, without a significant investment in extra time.

Real-time dose profiling is provided by the in-vivo use of a mobileMOSFET Wireless Dosimetry System. The Linear Array is used for various HDR applications such as prostate and gynecological Brachytherapy using model TN-252LA5.

When placed on the surface of the breast, the array can also validate MammoSite™ treatments. Implant and LDR dosimetry is performed using the higher sensitivity model TN-502LA5.

When inserted directly into a urethral catheter, the dose results provide immediate assessment of post-implant base and apex dose coverage, as well as the dose to organs at risk such as the urethra, rectum or bladder. This real-time dose feedback allows assessing the quality of the seed implant program in LDR and HDR brachytherapy. Absolute dose measurements or dose rate measurements are obtained in real-time. This will help validate the quality of treatment, and ultimately the quality of life for the patient.
Radiation Characteristics:
- 20,000 mV lifetime (~20,000 cGy on standard sensitivity setting)
- Five active detection points (0.04 mm² each)
- Suitable for photon and electron modalities
- Isotropic response (± 3% for 360 degrees)
- Visible under CT or Fluoroscopy with a radio-opaque tungsten marker at tip

Dimensions
- 1.5 mm wide
- 46 cm long
- 1.3 mm thick
- 2 cm inter-MOSFET spacing

Compatibility
- mobileMOSFET Dose Verification System (TN-RD-70-W)
- AutoSense Dose Verification System (TN-RD-60) and Dual Bias Supply for Linear 5ive Array (TN-RD-24)

Reimbursement
- Reimbursement under CPT Code 77331 (Special Dosimetry). Typically this is $100 per dose point.
- May require prescription by treating physician.

Additional Applications
- IMRT, IGRT, IORT QA and in vivo
- Rectal Dose Measurements
- Skin Dosimetry
- Beam Profiling
- Fluoroscopy / CT Dose Verification
- External beam radiotherapy / TBI

Thomson Nielsen, a division of Best Medical, offers three linear arrays with different sensitivities to accommodate all clinical and research applications.

<table>
<thead>
<tr>
<th>Linear 5ive Array</th>
<th>Common Use</th>
<th>Standard Sensitivity Bias</th>
<th>High Sensitivity Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN-252LA5</td>
<td>HDR brachytherapy, MammoSite</td>
<td>0.98 mV/cGy (for 192Ir)</td>
<td>1.38 mV/cGy (for 192Ir)</td>
</tr>
<tr>
<td>TN-502LA5</td>
<td>LDR brachytherapy</td>
<td>11.1 mV/cGy (for 125I)</td>
<td>15.2 mV/cGy (for 125I)</td>
</tr>
<tr>
<td>TN-1002LA5</td>
<td>LDR brachytherapy, diagnostic x-rays</td>
<td>25.8 mV/cGy (for 125I)</td>
<td>37.2 mV/cGy (for 125I)</td>
</tr>
</tbody>
</table>

Note: sensitivities noted above are under full build-up.

All of these arrays continue to yield dose reproducibility at standard sensitivity bias at 1σ.

<table>
<thead>
<tr>
<th>Linear 5ive Array</th>
<th>20 cGy</th>
<th>200 cGy</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN-252LA5</td>
<td>&lt; 2%</td>
<td>&lt; 1%</td>
</tr>
<tr>
<td>TN-502LA5</td>
<td>&lt; 2%</td>
<td>&lt; 1.5%</td>
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Select Publications:

Radiation response of a new Linear MOSFET Array Dosimeter

Contact us for a more extensive list of publications.