MapCHECK®2 & 3DVH®

The Gold Standard for 2D Arrays

SUN NUCLEAR corporation

Your Most Valuable QA and Dosimetry Tools
THE GOLD STANDARD FOR 2D ARRAYS

The MapCHECK 2 is the world’s most selected independent 2D measurement array. MapCHECK set the standard for modern, efficient and stringent QA, and enabled a new era of attainable IMRT. With MapCHECK 2 simply connect the single cable which supplies both power and data, and measure in high resolution 2D. It’s that simple, and that powerful.
Independent Measurement QA for Patient Plan, Dose, and Machine Testing

MapCHECK 2 is the successor to the original MapCHECK and remains the world's most chosen 2D array.

MapCHECK 2 provides the highest detector density, smallest detector size, and largest field size of any 2D array for IMRT QA. Over 1527 SunPoint® Diode Detectors measure only 0.64 mm each, and measure up to a 32 x 26 cm field. SNC Patient™ software allows rapid analysis of QA measurements against plan, and 3DVH promotes those measurements to clinical 3D patient dose for comparison to the 3D patient plan.

Patient Plan QA
Stringent, fully independent measurement QA of patient plan and delivery with SNC Patient software

Dose and DVH QA
Full 3D Dose reconstruction for target and OAR DVH QA with 3DVH® software

Machine QA
Machine QA for a wide variety of tests can be accomplished with MapCHECK 2 and PROFILER software
MapCHECK® 2
The Gold Standard for 2D Patient QA

Features and Benefits

- 2D patient plan QA
  - Conventional IMRT and 3D conformal
- 1,527 SunPoint® Diode Detectors
  - Smallest detector (0.019 mm³)
  - High sensitivity
  - Less drift
  - No dose volume average
- Field Size: 32.0 x 26.0 cm

- Real time electrometer measures every pulse with 50 ms updates
- Includes SNC Patient™ software
  - Compare measured dose to planned dose with a single click
  - Compare relative or absolute dose data using Distance-to-Agreement or Gamma Analysis
- Quick and reproducible isocentric measurements at any gantry angle with IMF or GMF
SNC Patient™ Software

With a single mouse click, SNC Patient software compares measured dose points to planned dose points. Users can compare relative or absolute dose data using Distance-To-Agreement (DTA) or Gamma Analysis. Measured points that do not fit within the acceptance criteria are highlighted red for high dose and blue for low dose.

Ease of Use

- Single power/data cable
  - Manages all power and data in one connection
- Integrated electronics
  - Self-contained with no separate electronics to set up
- Lightweight (7.1 kg)

- Patented user calibration
  - Clinically proven Wide-field Calibration™ (WFC) is performed on site and does not require disassembly of the MapCHECK device
- No pre-irradiation or warm-up required for absolute dose measurements
3DVH®
Clinically Relevant and Patient-Specific QA

3DVH transforms the field of patient-specific dose QA by generating clinically-relevant and intuitive analyses of complex IMRT and VMAT plans.

With proven accuracy, and powered by the patented Planned Dose Perturbation (PDP™) algorithm, 3DVH uses existing QA measurements to estimate 3D dose to the patient geometry. Clinicians can use the same methods to QA treatment plans as those which were used to create them.

Features and Benefits

- Transform 2D measurements to 3D dose volume for advanced analysis
- Perform 3D dose and DVH QA analysis on patient – not phantom – geometry
- Supports coplanar and non-coplanar beams
- Identify TPS and beam delivery errors
- Intuitive and familiar presentation of dose and DVH with statistics per anatomical structure
- Fast results with automated tools – Quick Stat Templates, Quick Dose Profiles, DICOM compliant workflow
- No forward dose calculation into the patient CT
- No commissioning
- Uses existing measurements and devices
MapPHAN™

A water equivalent phantom that adapts any MapCHECK 2 for RapidArc®, VMAT, and TomoTherapy®. Setup time is fast and measurement may occur in coronal and sagittal orientations.

<table>
<thead>
<tr>
<th>Construction:</th>
<th>Virtual Water™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Depths (cm):</td>
<td>5.0, 10.0</td>
</tr>
<tr>
<td>Area: (cm²)</td>
<td>35.0 x 38.0</td>
</tr>
</tbody>
</table>

Weight without MapCHECK 2:
- 5 cm MapPHAN 8.0 kg
- 10 cm MapPHAN 21.0 kg

IMF™ / GMF™

- Measure at any gantry angle
- Fast, efficient, reproducible setup
- Measure at 100 cm SDD ± 0.5 mm
- Compatible with electron cones (GMF)
- Aluminum alloy construction
- Adjustable buildup clamps

SRS Film QA

Co-developed with Accuray® for CyberKnife®, SRS Film QA provides film-based SRS, VMAT, and IMRT QA within SNC Patient™ software. Film images are converted to dose for any stereotactic modality, and compared against a treatment plan file.
- Analyze film as if it were MapCHECK measured data
- No H&D curve required
- Extract any arbitrary plane from a 3D dose object
- Verify phantom fiducials slice by slice
- EPSON flatbed scanner support
- Use with EBT film
### Specifications

- **Detector Type:** SunPoint® Diode Detectors
- **Detector Quantity:** 1527
- **Field Size:** 32.0 x 26.0 cm
- **Array Geometry:**
  - Detector spacing parallel to X and Y axes: 1.0
  - Row spacing offset: 0.5
- **Detector Spacing:** 7.07 mm (uniform throughout array)
- **Active Detector Area:** 0.64 mm²
- **Active Detector Volume:** 0.019 mm³
- **Detector Sensitivity:** 32 nC/Gy
- **Sampling Frequency:** 50 ms
- **Detector Stability:** 0.5%/kGy at 6 MV (photons)
- **Max Dose/Pulse:** 0.2 Gy
- **Dose Rate Dependence:** ± 1% over the range 50 - 1400 cGy/min
- **Inherent Buildup:** 2.0 ± 0.1 g/cm²
- **Inherent Backscatter:** 2.75 ± 0.1 g/cm²
- **Radiation Measured:**
  - Photons: Co-60 to 25 MV
  - Electrons: 6 MeV to 25 MeV
- **Number of Connection Cables:** Single power/data cable
- **Dimensions:** L/W/H (cm) 28.7 x 56.0 x 4.3
- **Weight:** 7.1 kg

### System Requirements (SNC Patient, EPI Dose, 3DVH)

- **Operating System:** Windows 7, Windows 8.1
- **CPU:** Recommended 2.4 GHz or better, multi-core (2 or more cores)
- **RAM:** Recommended 4 GB or more
- **Hard Drive Space:** Recommended 5 GB or more

### MapCHECK 2 Compatibility

- Rotational Therapy: RapidArc®, VMAT, TomoHelical™
- IMRT, TomoDirect™, 3D Conformal, Dynamic Wedge
- Treatment Planning Systems: Pinnacle®, Eclipse®, Monaco®, iPlan®, and any TPS system that can export DICOM data
- FFF & non-FFF Deliveries

### 3DVH Compatibility

- Hardware: ArcCHECK®, MapCHECK® 2,
- Software: EPI Dose™, SNC Patient (included)
- Static Gantry: IMRT
- Treatment Planning Systems: Pinnacle®, Eclipse®, TomoTherapy®, and most TPS systems that can export DICOM data
- FFF & non-FFF Deliveries

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