

## APPENDIX B: SAR DIPOLE VERIFICATION PLOTS

# ELEMENT

**DUT: Dipole 13.0 MHz; Type: CLA-13 - SN1004**

Communication System: UID: 0, CW; Frequency: 13.0 MHz  
Medium: 30 Head; Medium parameters used:  
 $f = 13.0$  MHz;  $\text{cond} = 0.727$  S/m;  $\text{perm} = 53.5$ ;  $\text{density} = 1000$  kg/m<sup>3</sup>  
Phantom Section: Flat; Space: 0 mm

Test Date: 02/14/2024; Ambient Temp: 22.6°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7360; ConvF:(17.98,17.98,17.98); Calibrated: 2023-03-16  
Sensor-Surface: 1.4mm (All points)  
Electronics: DAE4 Sn534; Calibrated: 2023-03-15  
Phantom: ELI V6.0; Serial: 2044  
Measurement SW: DASY Module SAR V16.2.0.1425

## 13.0 MHz System Verification at 30.0 dBm (1000 mW)

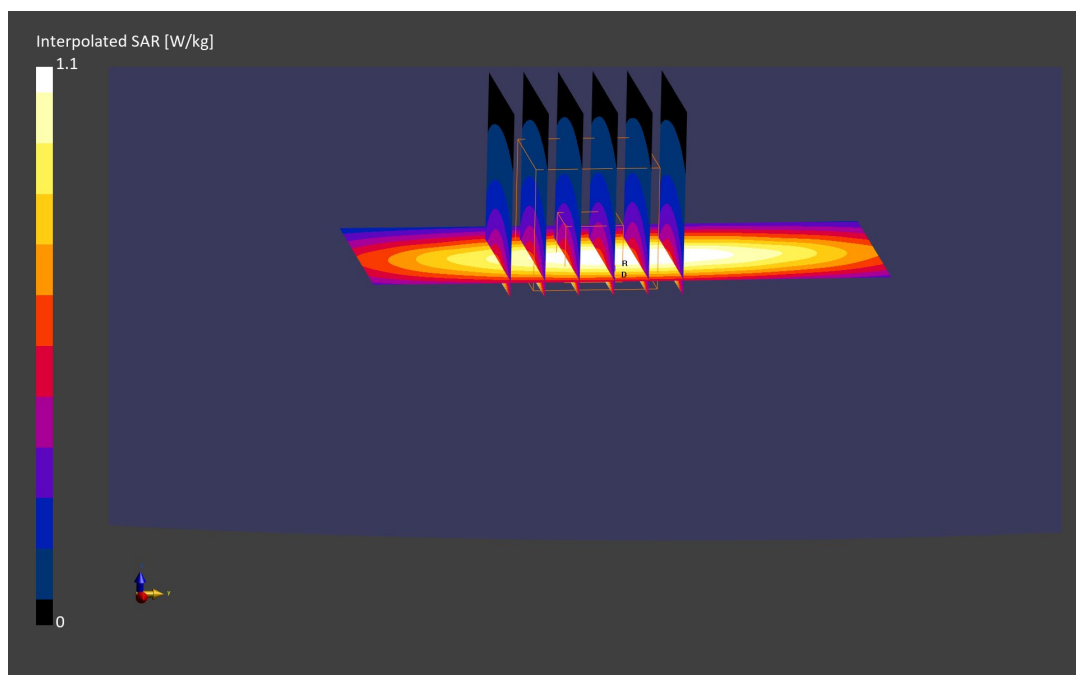
**Area Scan (40.0 x 90.0):** Measurement grid:  $\text{dx}=10.0$  mm,  $\text{dy}=15.0$  mm

**Zoom Scan (30.0 x 30.0 x 30.0):** Measurement grid:  $\text{dx}=6.0$  mm,  $\text{dy}=6.0$  mm,  $\text{dz}=1.5$  mm; Graded Ratio: 1.5

Peak SAR (extrapolated) = 1.10 W/kg

**SAR(1 g) = 0.552 W/kg; SAR(10 g) = 0.341 W/kg**

Deviation (1 g) = -4.50%; Deviation (10 g) = -4.21%



# ELEMENT

**DUT: Dipole 2450.0 MHz; Type: D2450V2 - SN921**

Communication System: UID: 0, CW; Frequency: 2450.0 MHz

Medium: 2450 Head; Medium parameters used:

f = 2450.0 MHz; cond = 1.76 S/m; perm = 40.0; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/08/2024; Ambient Temp: 19.9°C; Tissue Temp: 19.2°C

Probe: EX3DV4 - SN7421; ConvF:(7.45,7.45,7.45); Calibrated: 2023-03-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn604; Calibrated: 2023-03-15

Phantom: Twin-SAM V8.0; Serial: 2070

Measurement SW: DASY Module SAR V16.2.0.1425

## 2450.0 MHz System Verification at 20.0 dBm (100 mW)

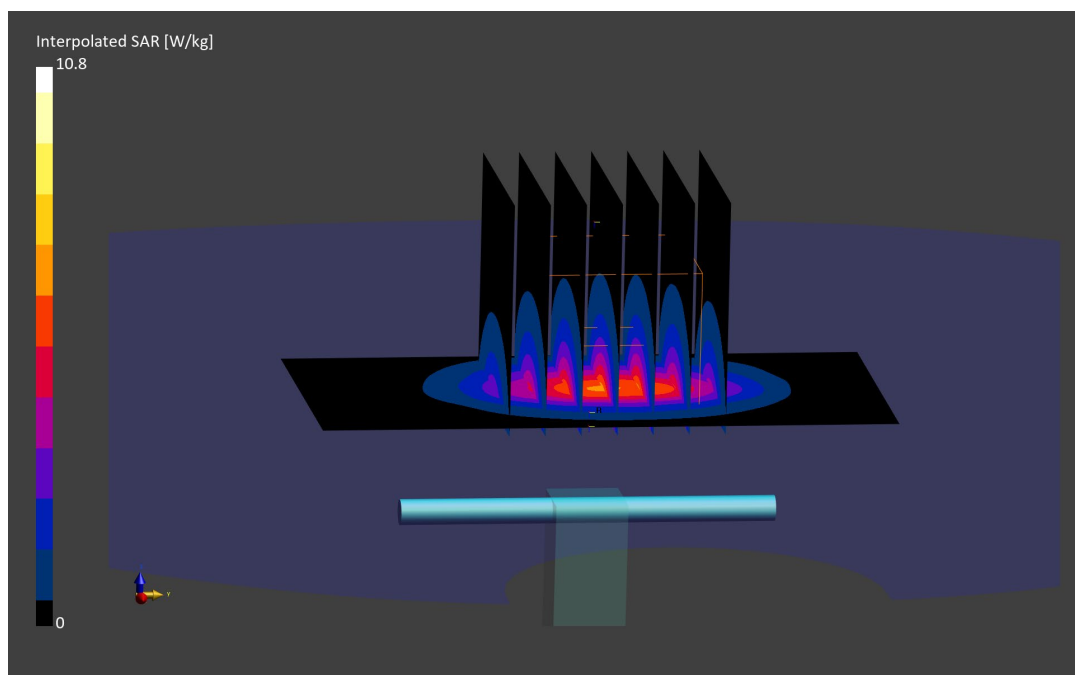
**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (30.0 x 30.0 x 30.0):** Measurement grid: dx=5.0 mm, dy=5.0 mm, dz=1.5 mm; Graded Ratio: 1.5

Peak SAR (extrapolated) = 10.8 W/kg

**SAR(1 g) = 5.16 W/kg; SAR(10 g) = 2.42 W/kg**

Deviation (1 g) = -4.80%; Deviation (10 g) = -5.10%



# ELEMENT

**DUT: Dipole 2450.0 MHz; Type: D2450V2 - SN921**

Communication System: UID: 0, CW; Frequency: 2450.0 MHz

Medium: 2450 Head; Medium parameters used:

f = 2450.0 MHz; cond = 1.76 S/m; perm = 40.2; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/16/2024; Ambient Temp: 20.6°C; Tissue Temp: 19.6°C

Probe: EX3DV4 - SN7421; ConvF:(7.45,7.45,7.45); Calibrated: 2023-03-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn604; Calibrated: 2023-03-15

Phantom: Twin-SAM V8.0; Serial: 2070

Measurement SW: DASY Module SAR V16.2.0.1425

## 2450.0 MHz System Verification at 20.0 dBm (100 mW)

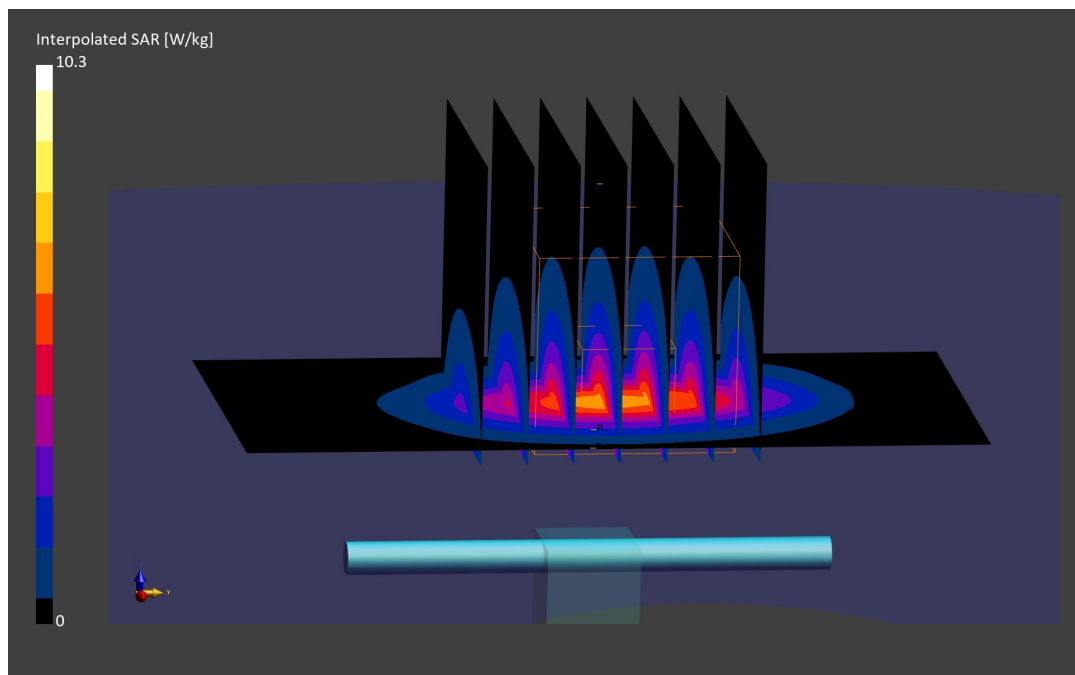
**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (30.0 x 30.0 x 30.0):** Measurement grid: dx=5.0 mm, dy=5.0 mm, dz=1.5 mm; Graded Ratio: 1.5

Peak SAR (extrapolated) = 10.3 W/kg

**SAR(1 g) = 5.09 W/kg; SAR(10 g) = 2.41 W/kg**

Deviation (1 g) = -6.09%; Deviation (10 g) = -5.49%



# ELEMENT

**DUT: Dipole 2450.0 MHz; Type: D2450V2 - SN750**

Communication System: UID: 0, CW; Frequency: 2450.0 MHz

Medium: 2450 Head; Medium parameters used:

f = 2450.0 MHz; cond = 1.74 S/m; perm = 40.4; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 02/28/2024; Ambient Temp: 19.0-C; Tissue Temp: 19.5-C

Probe: EX3DV4 - SN7416; ConvF:(7.27,7.27,7.27); Calibrated: 2023-05-08

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn701; Calibrated: 2023-05-11

Phantom: Twin-SAM V8.0; Serial: 2029

Measurement SW: DASY Module SAR V16.2.0.1425

## 2450.0 MHz System Verification at 20.0 dBm (100 mW)

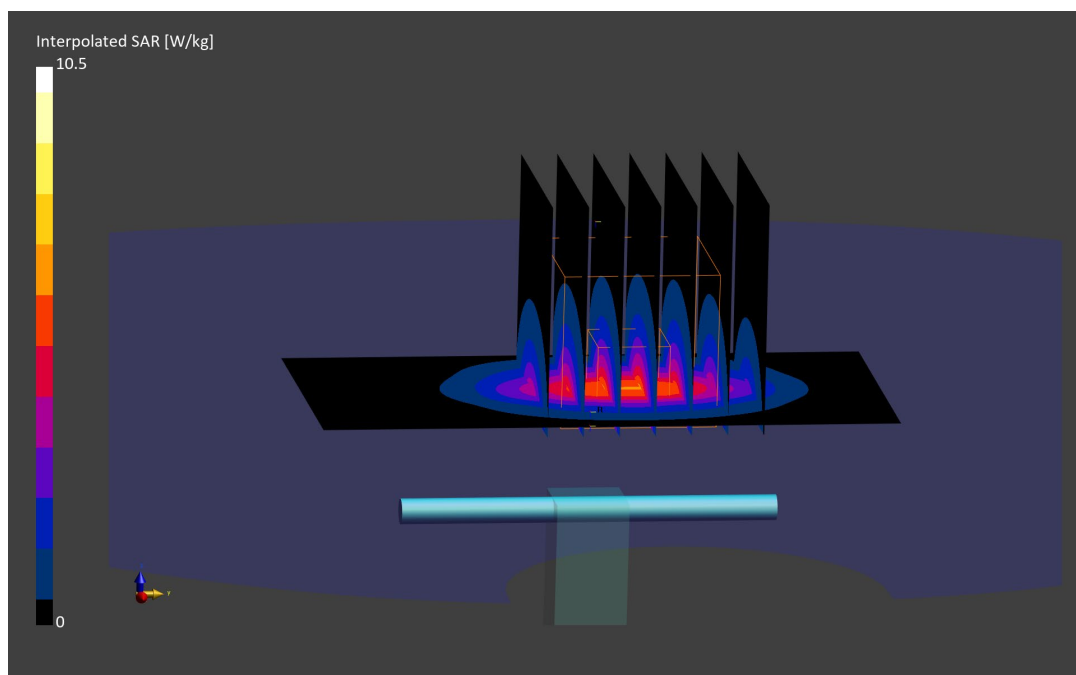
**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (30.0 x 30.0 x 30.0):** Measurement grid: dx=5.0 mm, dy=5.0 mm, dz=1.5 mm; Graded Ratio: 1.5

Peak SAR (extrapolated) = 10.5 W/kg

**SAR(1 g) = 4.95 W/kg; SAR(10 g) = 2.32 W/kg**

Deviation (1 g) = -5.89%; Deviation (10 g) = -5.31%



# ELEMENT

**DUT: Dipole 5250.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5250.0 MHz

Medium: 5200-5800 Head; Medium parameters used:

f = 5250.0 MHz; cond = 4.49 S/m; perm = 35.8; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/08/2024; Ambient Temp: 19.0°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN3746; ConvF:(5.12,5.12,5.12); Calibrated: 2023-10-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn1237; Calibrated: 2023-10-18

Phantom: Twin-SAM V8.0; Serial: 2027

Measurement SW: DASY Module SAR V16.2.0.1425

## 5250.0 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid: dx=4.0 mm, dy=4.0 mm, dz=1.4 mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 13.8 W/kg

**SAR(1 g) = 3.76 W/kg; SAR(10 g) = 1.08 W/kg**

Deviation (1 g) = -6.58%; Deviation (10 g) = -5.68%



# ELEMENT

**DUT: Dipole 5250.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5250.0 MHz

Medium: 5200-5800 Head; Medium parameters used:

f = 5250.0 MHz; cond = 4.59 S/m; perm = 36.0; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/18/2024; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN3746; ConvF:(5.12,5.12,5.12); Calibrated: 2023-10-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn1237; Calibrated: 2023-10-18

Phantom: Twin-SAM V8.0; Serial: 2027

Measurement SW: DASY Module SAR V16.2.0.1425

## 5250.0 MHz System Verification at 17.0 dBm (50 mW)

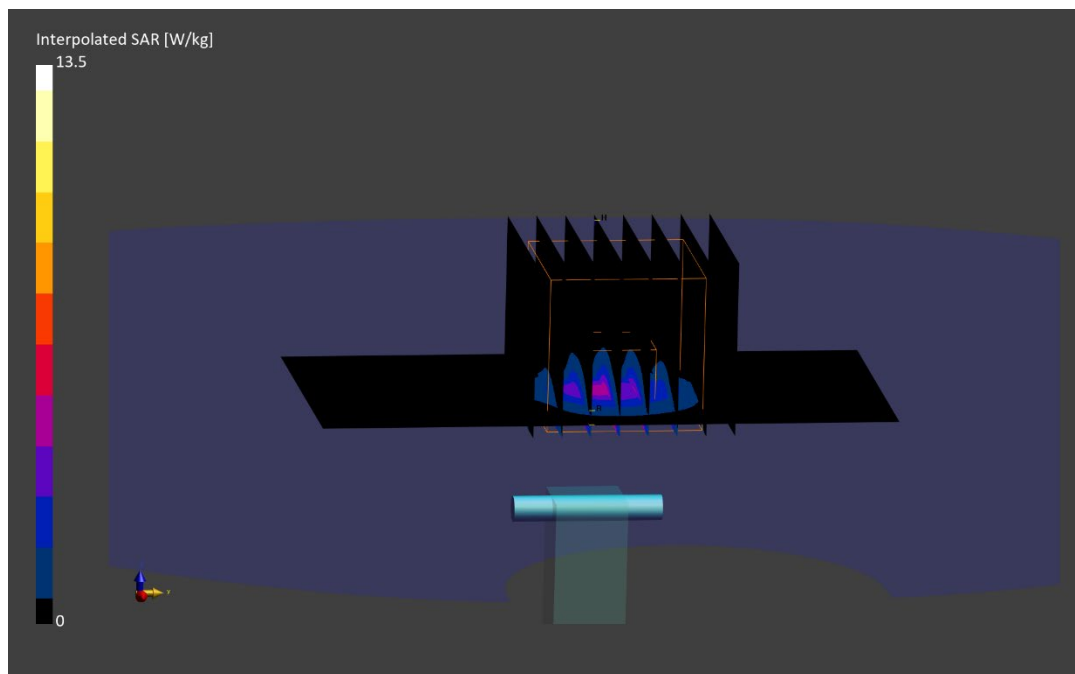
**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid: dx=4.0 mm, dy=4.0 mm, dz=1.4 mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 13.5 W/kg

**SAR(1 g) = 3.71 W/kg; SAR(10 g) = 1.07 W/kg**

Deviation (1 g) = -7.83%; Deviation (10 g) = -6.55%



# ELEMENT

**DUT: Dipole 5600.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5600.0 MHz

Medium: 5200-5800 Head; Medium parameters used:

f = 5600.0 MHz; cond = 4.88 S/m; perm = 35.2; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/08/2024; Ambient Temp: 19.0°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN3746; ConvF:(4.45,4.45,4.45); Calibrated: 2023-10-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn1237; Calibrated: 2023-10-18

Phantom: Twin-SAM V8.0; Serial: 2027

Measurement SW: DASY Module SAR V16.2.0.1425

## 5600.0 MHz System Verification at 17.0 dBm (50 mW)

**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid: dx=4.0 mm, dy=4.0 mm, dz=1.4 mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.9 W/kg

**SAR(1 g) = 4.26 W/kg; SAR(10 g) = 1.21 W/kg**

Deviation (1 g) = 1.79%; Deviation (10 g) = 2.11%



# ELEMENT

**DUT: Dipole 5600.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5600.0 MHz

Medium: 5200-5800 Head; Medium parameters used:

f = 5600.0 MHz; cond = 4.98 S/m; perm = 35.4; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/18/2024; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN3746; ConvF:(4.45,4.45,4.45); Calibrated: 2023-10-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn1237; Calibrated: 2023-10-18

Phantom: Twin-SAM V8.0; Serial: 2027

Measurement SW: DASY Module SAR V16.2.0.1425

## 5600.0 MHz System Verification at 17.0 dBm (50 mW)

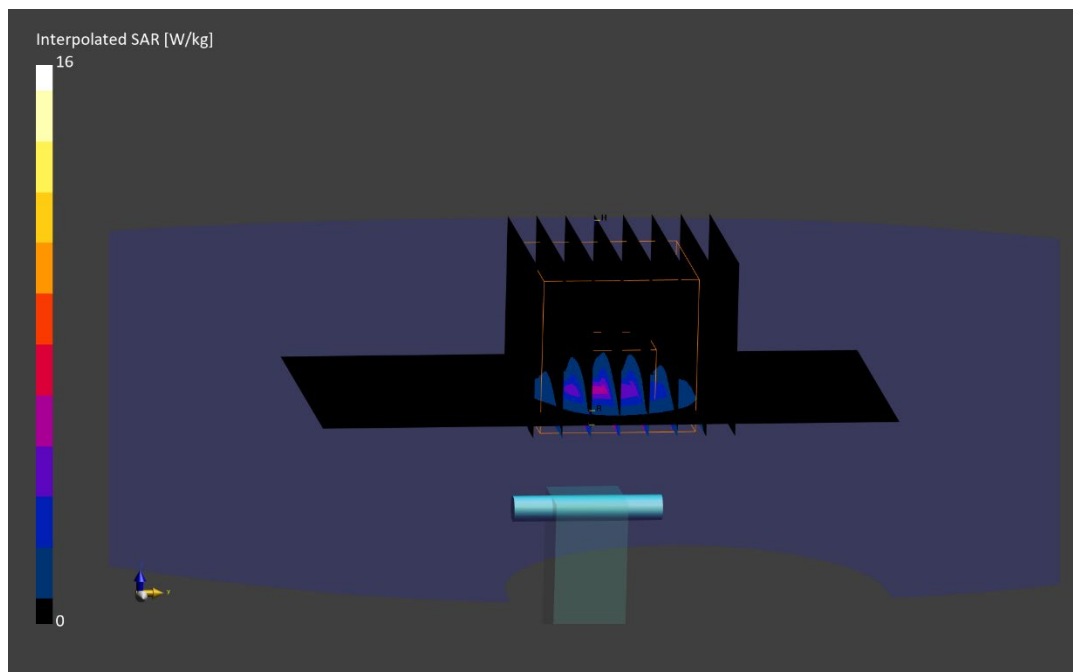
**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid: dx=4.0 mm, dy=4.0 mm, dz=1.4 mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 16.0 W/kg

**SAR(1 g) = 4.05 W/kg; SAR(10 g) = 1.14 W/kg**

Deviation (1 g) = -3.23%; Deviation (10 g) = -3.80%



# ELEMENT

**DUT: Dipole 5750.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5750.0 MHz

Medium: 5200-5800 Head; Medium parameters used:

$f = 5750.0$  MHz;  $\text{cond} = 5.06$  S/m;  $\text{perm} = 34.9$ ;  $\text{density} = 1000$  kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/08/2024; Ambient Temp: 19.0°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN3746; ConvF:(4.59,4.59,4.59); Calibrated: 2023-10-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn1237; Calibrated: 2023-10-18

Phantom: Twin-SAM V8.0; Serial: 2027

Measurement SW: DASY Module SAR V16.2.0.1425

## 5750.0 MHz System Verification at 17.0 dBm (50 mW)

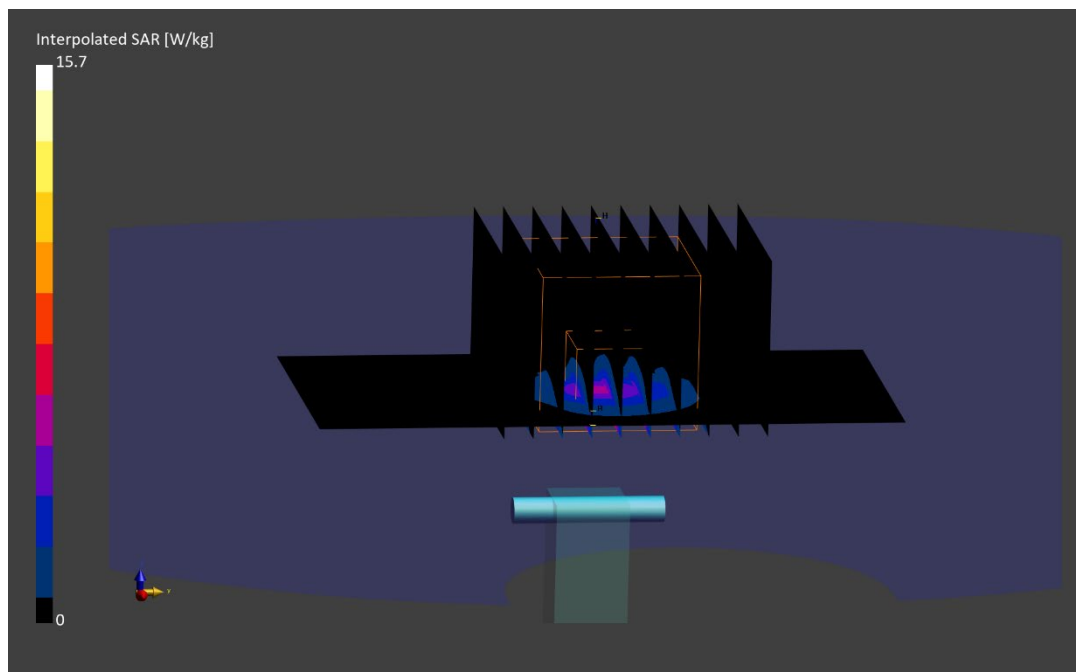
**Area Scan (40.0 x 80.0):** Measurement grid:  $dx=10.0$  mm,  $dy=10.0$  mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid:  $dx=4.0$  mm,  $dy=4.0$  mm,  $dz=1.4$  mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 15.7 W/kg

**SAR(1 g) = 3.86 W/kg; SAR(10 g) = 1.11 W/kg**

Deviation (1 g) = -4.10%; Deviation (10 g) = -2.20%



# ELEMENT

**DUT: Dipole 5750.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5750.0 MHz

Medium: 5200-5800 Head; Medium parameters used:

f = 5750.0 MHz; cond = 5.16 S/m; perm = 35.1; density = 1000 kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/18/2024; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN3746; ConvF:(4.59,4.59,4.59); Calibrated: 2023-10-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn1237; Calibrated: 2023-10-18

Phantom: Twin-SAM V8.0; Serial: 2027

Measurement SW: DASY Module SAR V16.2.0.1425

## 5750.0 MHz System Verification at 17.0 dBm (50 mW)

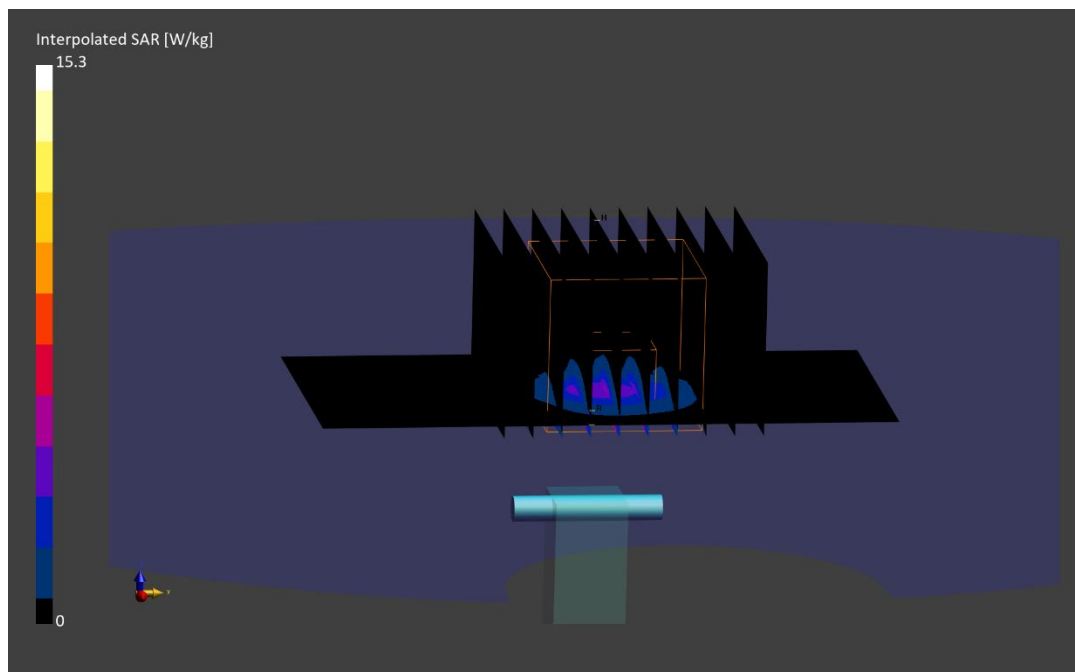
**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid: dx=4.0 mm, dy=4.0 mm, dz=1.4 mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 15.3 W/kg

**SAR(1 g) = 3.75 W/kg; SAR(10 g) = 1.08 W/kg**

Deviation (1 g) = -6.83%; Deviation (10 g) = -4.85%



# ELEMENT

**DUT: Dipole 5800.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5800.0 MHz  
Medium: 5200-5800 Head; Medium parameters used:  
f = 5800.0 MHz; cond = 5.11 S/m; perm = 34.8; density = 1000 kg/m<sup>3</sup>  
Phantom Section: Flat; Space: 10 mm

Test Date: 01/08/2024; Ambient Temp: 19.0°C; Tissue Temp: 20.0°C

Probe: EX3DV4 - SN3746; ConvF:(4.5,4.5,4.5); Calibrated: 2023-10-16  
Sensor-Surface: 1.4mm (VMS + 6p)  
Electronics: DAE4 Sn1237; Calibrated: 2023-10-18  
Phantom: Twin-SAM V8.0; Serial: 2027  
Measurement SW: DASY Module SAR V16.2.0.1425

## 5800.0 MHz System Verification at 17.0 dBm (50 mW)

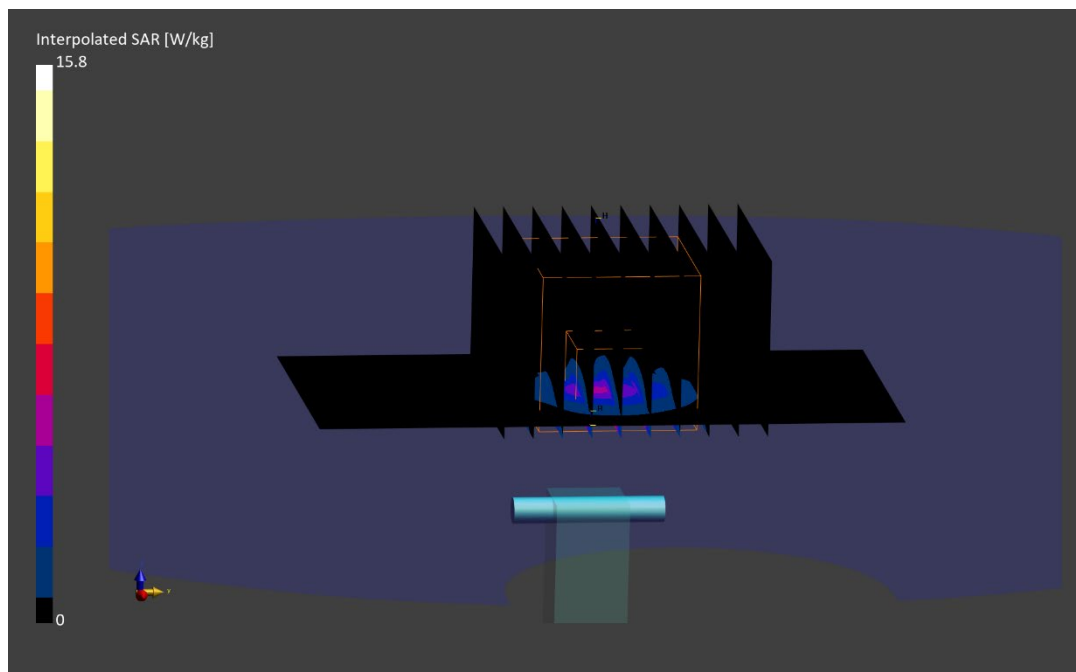
**Area Scan (40.0 x 80.0):** Measurement grid: dx=10.0 mm, dy=10.0 mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid: dx=4.0 mm, dy=4.0 mm, dz=1.4 mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 15.8 W/kg

**SAR(1 g) = 3.82 W/kg; SAR(10 g) = 1.09 W/kg**

Deviation (1 g) = -5.09%; Deviation (10 g) = -3.11%



# ELEMENT

**DUT: Dipole 5800.0 MHz; Type: D5GHzV2 - SN1123**

Communication System: UID: 0, CW; Frequency: 5800.0 MHz

Medium: 5200-5800 Head; Medium parameters used:

$f = 5800.0$  MHz;  $\text{cond} = 5.21$  S/m;  $\text{perm} = 35.0$ ;  $\text{density} = 1000$  kg/m<sup>3</sup>

Phantom Section: Flat; Space: 10 mm

Test Date: 01/18/2024; Ambient Temp: 23.0°C; Tissue Temp: 20.1°C

Probe: EX3DV4 - SN3746; ConvF:(4.5,4.5,4.5); Calibrated: 2023-10-16

Sensor-Surface: 1.4mm (VMS + 6p)

Electronics: DAE4 Sn1237; Calibrated: 2023-10-18

Phantom: Twin-SAM V8.0; Serial: 2027

Measurement SW: DASY Module SAR V16.2.0.1425

## 5800.0 MHz System Verification at 17.0 dBm (50 mW)

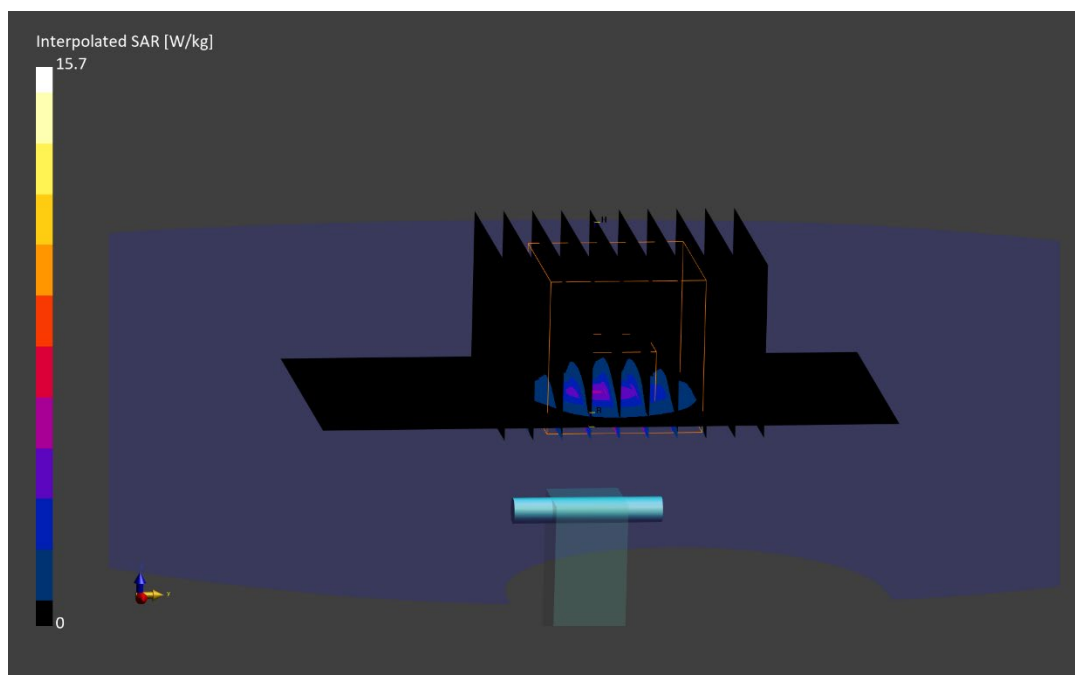
**Area Scan (40.0 x 80.0):** Measurement grid:  $dx=10.0$  mm,  $dy=10.0$  mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid:  $dx=4.0$  mm,  $dy=4.0$  mm,  $dz=1.4$  mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 15.7 W/kg

**SAR(1 g) = 3.81 W/kg; SAR(10 g) = 1.08 W/kg**

Deviation (1 g) = -5.34%; Deviation (10 g) = -4.00%



# ELEMENT

**DUT: Dipole 6500.000 MHz; Type: D6.5GHzV2 - SN1019**

Communication System: UID: 0, CW; Frequency: 6500.000 MHz  
Medium: 6000 Head; Medium parameters used:  
 $f = 6500.000$  MHz;  $\text{cond} = 5.97$  S/m;  $\text{perm} = 33.6$ ;  $\text{density} = 1000$  kg/m<sup>3</sup>  
Phantom Section: Flat; Space: 5 mm

Test Date: 01/08/2024; Ambient Temp: 21.5°C; Tissue Temp: 19.0°C

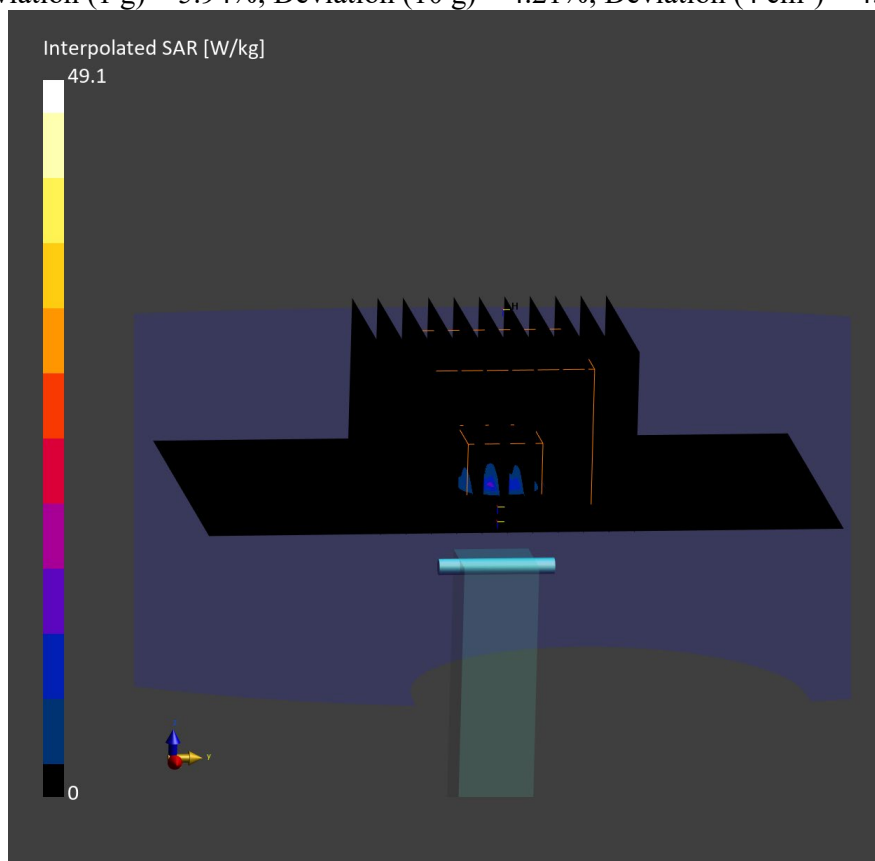
Probe: EX3DV4 - SN7420; ConvF:(5.21,5.12,5.28); Calibrated: 2023-10-16  
Sensor-Surface: 1.4mm (VMS + 6p)  
Electronics: DAE4 Sn1333; Calibrated: 2023-10-18  
Phantom: Twin-SAM V4.0; Serial: 1275  
Measurement SW: DASY Module SAR V16.2.4.2524

## 6500.0 MHz System Verification at 14.0 dBm (25 mW)

**Area Scan (51.0 x 85.0):** Measurement grid:  $dx=8.5$  mm,  $dy=8.5$  mm

**Zoom Scan (22.0 x 22.0 x 22.0):** Measurement grid:  $dx=3.4$  mm,  $dy=3.4$  mm,  $dz=1.4$  mm; Graded Ratio: 1.4  
Peak SAR (extrapolated) = 49.1 W/kg

**SAR(1 g) = 7.76 W/kg; SAR(10 g) = 1.41 W/kg; APD (4 cm<sup>2</sup>) = 34.5 W/m<sup>2</sup>**  
Deviation (1 g) = 5.94%; Deviation (10 g) = 4.21%; Deviation (4 cm<sup>2</sup>) = 4.55%



# ELEMENT

Date: 01/27/2024

10 GHz System Verification

## Device Under Test Properties

| DUT                        | Serial Number |
|----------------------------|---------------|
| 10 GHz Verification Source | 1002          |

## Exposure Conditions

| Phantom Section | Position | Test Distance [mm] | Band            | Frequency [MHz] |
|-----------------|----------|--------------------|-----------------|-----------------|
| 5G              | FRONT    | 10.00              | Validation band | 10000.0         |

## Hardware Setup

| Probe, Calibration Date      | DAE, Calibration Date    |
|------------------------------|--------------------------|
| EUmmWV3 – SN9407, 10/09/2023 | DAE4 – SN793, 10/18/2023 |

## Software Setup

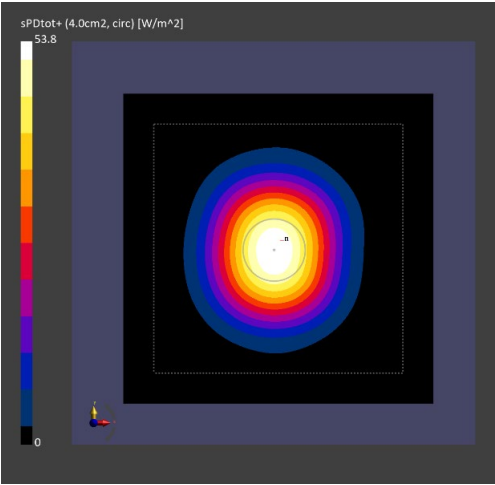
| Software             | Software Version |
|----------------------|------------------|
| cDASY6 Module mmWave | 3.2.0.1840       |

## Scans Setup

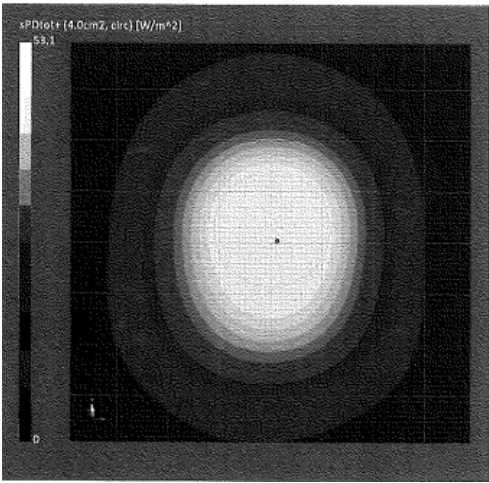
| Scan Type           | 5G Scan     |
|---------------------|-------------|
| Grid Extents [mm]   | 60.0 x 60.0 |
| Grid Steps [lambda] | 0.25 x 0.25 |
| Sensor Surface [mm] | 10.0        |

## Measurement Results

| Scan Type                        | 5G Scan |
|----------------------------------|---------|
| Avg. Area [cm²]                  | 4.00    |
| pS <sub>tot</sub> avg [W/m²]     | 53.8    |
| pS <sub>n</sub> avg [W/m²]       | 53.7    |
| E <sub>peak</sub> [V/m]          | 149     |
| Deviation [dB] pS <sub>tot</sub> | 0.06    |
| Deviation [dB] pS <sub>n</sub>   | 0.07    |



10 GHz System Verification



Calibration Certificate