

## **APPENDIX A: SYSTEM CHECKING SCANS**

## SystemPerformanceCheck-D835 for Head

Date: 2015.09.28

**DUT: Dipole 835 MHz D835V2; Type: D835V2 SN:4d141;**

Communication System: CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.91$  mho/m;  $\epsilon_r = 41.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3203; ConvF(6.55, 6.55, 6.55); Calibrated: 2014.12.19.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Head/Dipole835 /Area Scan (61x131x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 52.933 V/m; Power Drift = -0.01 dB

**Fast SAR: SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.52 mW/g**

Maximum value of SAR (interpolated) = 2.51 W/kg

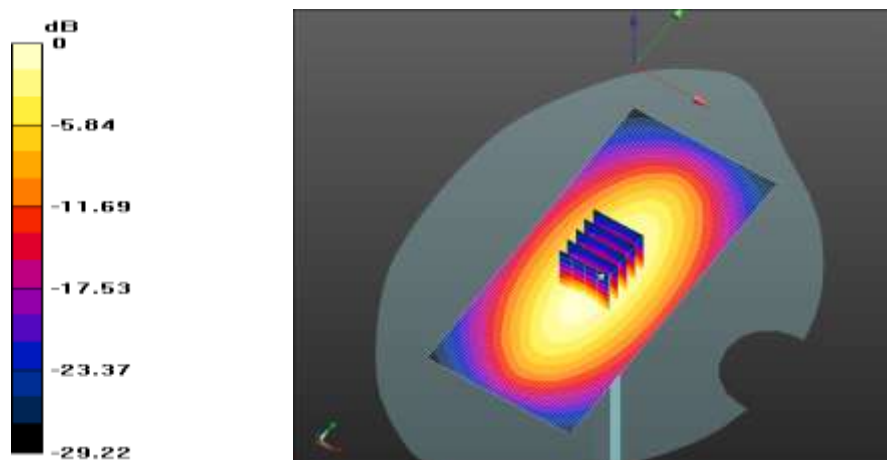
**Head/Dipole835 /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 52.933 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.527 mW/g

**SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.5 mW/g**

Maximum value of SAR (measured) = 2.50 W/kg



0 dB = 2.51 W/kg = 7.98 dB W/kg

SystemPerformanceCheck-D835 for Body

Date: 2015.09.28

**DUT: Dipole 835 MHz D835V2; Type: D835V2 SN:4d141;**

Communication System: CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 835$  MHz;  $\sigma = 0.99$  mho/m;  $\epsilon_r = 55.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3203; ConvF(6.2, 6.2, 6.2); Calibrated: 2014.12.19.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Body/Dipole835/Area Scan (61x131x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 55.902 V/m; Power Drift = -0.52 dB

**Fast SAR: SAR(1 g) = 2.55 mW/g; SAR(10 g) = 1.67 mW/g**

Maximum value of SAR (interpolated) = 2.76 W/kg

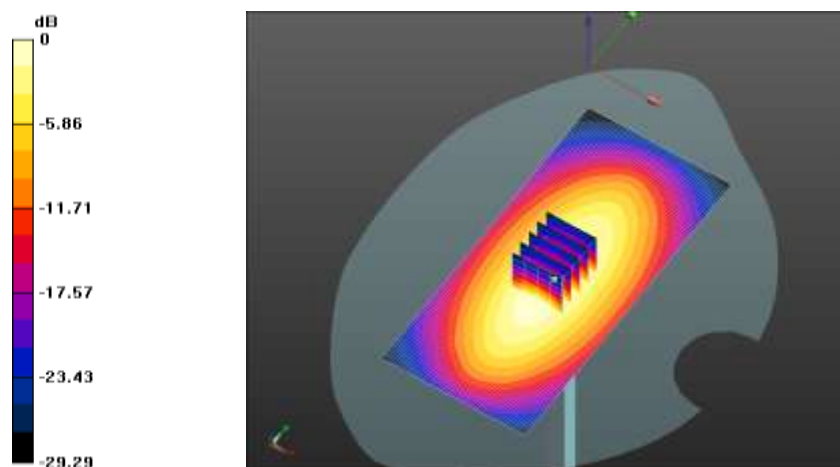
**Body/Dipole835/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 55.902 V/m; Power Drift = -0.52 dB

Peak SAR (extrapolated) = 3.791 mW/g

**SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.61 mW/g**

Maximum value of SAR (measured) = 2.69 W/kg



0 dB = 2.76 W/kg = 8.82 dB W/kg

## SystemPerformanceCheck-D1900 for Head

Date: 2015.09.29

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2 SN:5d162;**

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.42$  mho/m;  $\epsilon_r = 40.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV4 - SN3881; ConvF(7.96, 7.96, 7.96); Calibrated: 2015.07.24.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Head/Dipole1900 /Area Scan (61x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 87.529 V/m; Power Drift = 0.06 dB

**Fast SAR: SAR(1 g) = 10 mW/g; SAR(10 g) = 5.27 mW/g**

Maximum value of SAR (interpolated) = 11.5 W/kg

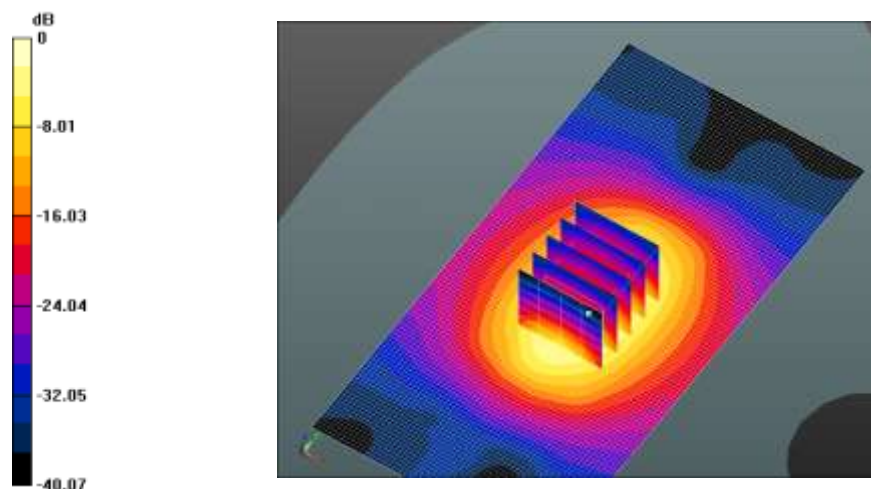
**Head/Dipole1900 /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.529 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 19.113 mW/g

**SAR(1 g) = 9.94 mW/g; SAR(10 g) = 5.02 mW/g**

Maximum value of SAR (measured) = 11.1 W/kg



0 dB = 11.5 W/kg = 21.24 dB W/kg

## SystemPerformanceCheck-D1900 for Body

Date: 2015.09.29

**DUT: Dipole 1900 MHz D1900V2; Type: D1900V2 SN:5d162;**

Communication System: CW; Communication System Band: D1900 (1900.0 MHz); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.5$  mho/m;  $\epsilon_r = 53.0$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV4 - SN3881; ConvF(7.6, 7.6, 7.6); Calibrated: 2015.07.24.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Body/Dipole1900/Area Scan (61x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 87.333 V/m; Power Drift = 0.06 dB

**Fast SAR: SAR(1 g) = 11 mW/g; SAR(10 g) = 5.38 mW/g**

Maximum value of SAR (interpolated) = 13.0 W/kg

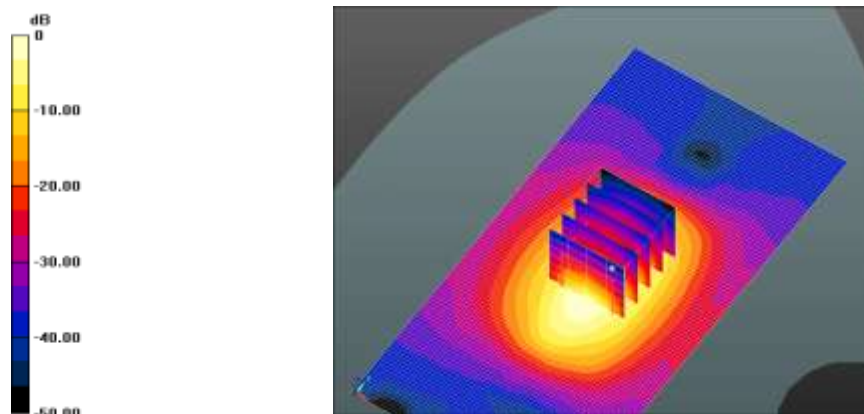
**Body/Dipole1900/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.333 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 21.434 mW/g

**SAR(1 g) = 10.9 mW/g; SAR(10 g) = 5.54 mW/g**

Maximum value of SAR (measured) = 12.7 W/kg



0 dB = 13.0 W/kg = 22.31 dB W/kg

## SystemPerformanceCheck-D2450 for Head

Date: 2015.09.30

**DUT: Dipole 2450 MHz D2450V2; Type: D2450V2 SN:818;**

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.82$  mho/m;  $\epsilon_r = 39.0$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3203; ConvF(4.55, 4.55, 4.55); Calibrated: 2014.12.19.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:xxxx
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Head/Dipole2450 /Area Scan (91x161x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 94.311 V/m; Power Drift = -0.32 dB

**Fast SAR: SAR(1 g) = 13.9 mW/g; SAR(10 g) = 5.91 mW/g**

Maximum value of SAR (interpolated) = 17.6 W/kg

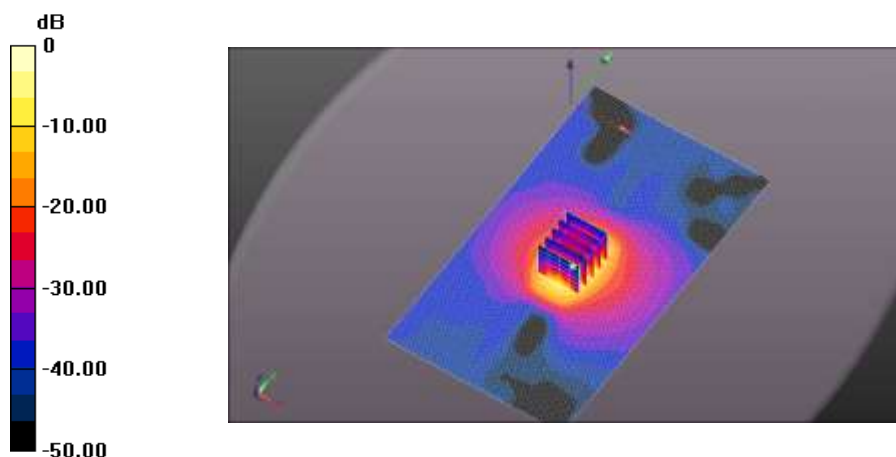
**Head/Dipole2450 /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 94.311 V/m; Power Drift = -0.32 dB

Peak SAR (extrapolated) = 33.836 mW/g

**SAR(1 g) = 13.6 mW/g; SAR(10 g) = 5.85 mW/g**

Maximum value of SAR (measured) = 15.4 W/kg



$$0 \text{ dB} = 17.6 \text{ W/kg} = 24.93 \text{ dB W/kg}$$

## SystemPerformanceCheck-D2450 for Body

Date: 2015.09.30

**DUT: Dipole 2450 MHz D2450V2; Type: D2450V2 SN:818;**

Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.98$  mho/m;  $\epsilon_r = 53.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3203; ConvF(4.47, 4.47, 4.47); Calibrated: 2014.12.19.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:xxxx
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Body/Dipole2450/Area Scan (91x161x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 92.292 V/m; Power Drift = 0.01 dB

**Fast SAR: SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.21 mW/g**

Maximum value of SAR (interpolated) = 17.3 W/kg

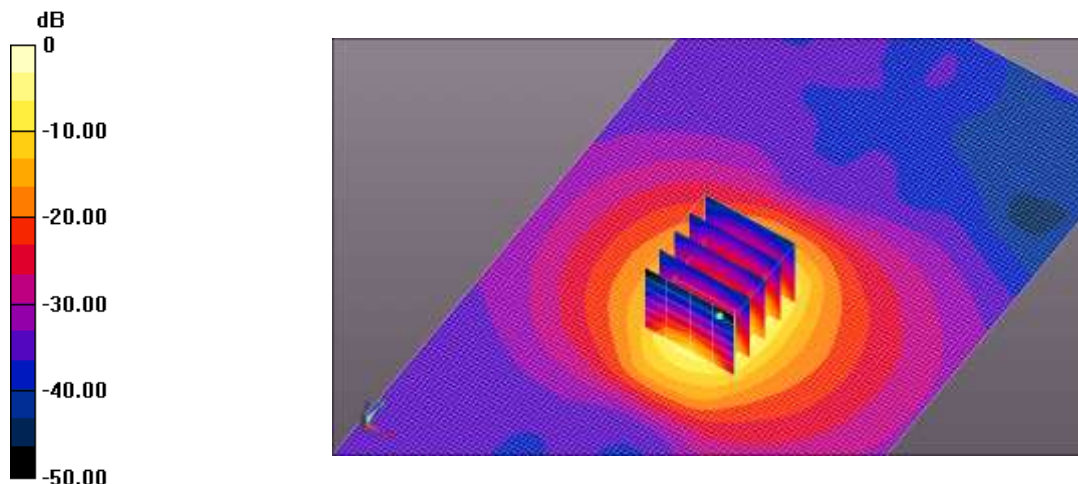
**Body/Dipole2450/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 92.292 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 33.353 mW/g

**SAR(1 g) = 13.4 mW/g; SAR(10 g) = 6.3 mW/g**

Maximum value of SAR (measured) = 16.9 W/kg



0 dB = 17.3 W/kg = 24.78 dB W/kg

## SystemPerformanceCheck-D2600 for Head

Date: 2015.10.08

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2 SN:1074;**

Communication System: CW; Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 1.94$  mho/m;  $\epsilon_r = 39.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3881; ConvF(6.91, 6.91, 6.91); Calibrated: 2014.11.06.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Head/Dipole2600MHz /Area Scan (61x91x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 87.436 V/m; Power Drift = 0.03 dB

**Fast SAR: SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.69 mW/g**

Maximum value of SAR (interpolated) = 16.4 W/kg

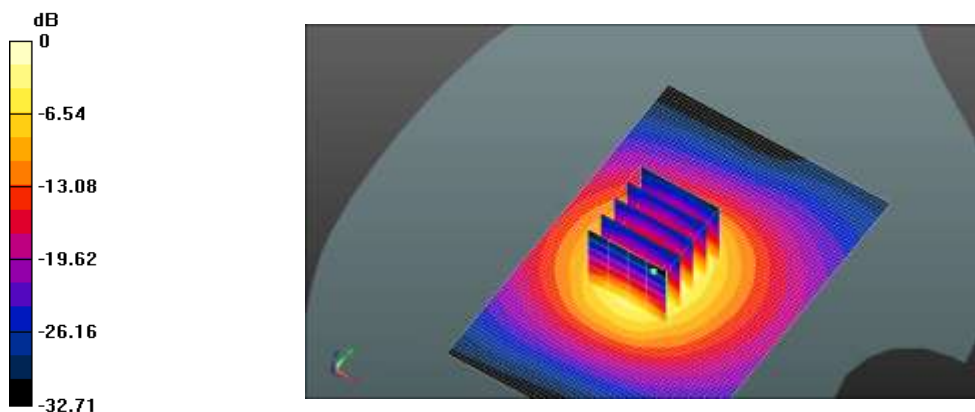
**Head/Dipole2600MHz /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 87.436 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 30.725 mW/g

**SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.46 mW/g**

Maximum value of SAR (measured) = 15.1 W/kg



0 dB = 16.4 W/kg = 24.31 dB W/kg



SystemPerformanceCheck-D2600 for Body

Date: 2015.10.08

**DUT: Dipole 2600 MHz D2600V2; Type: D2600V2 SN:1074;**

Communication System: CW; Communication System Band: D2600 (2600.0 MHz); Frequency: 2600 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 2600$  MHz;  $\sigma = 2.77$  mho/m;  $\epsilon_r = 52.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: EX3DV4 - SN3881; ConvF(7.19, 7.19, 7.19); Calibrated: 2014.11.06.;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn876; Calibrated: 2015.03.09.
- Phantom: SAM 1; Type: QD000P40CC; Serial: TP:1504
- Measurement SW: DASY52, Version 52.8 (2); SEMCAD X Version 14.6.6 (6824)

**Body/Dipole2600MHz/Area Scan (61x81x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 94.322 V/m; Power Drift = -0.28 dB

**Fast SAR: SAR(1 g) = 14.3 mW/g; SAR(10 g) = 6.83 mW/g**

Maximum value of SAR (interpolated) = 18.2 W/kg

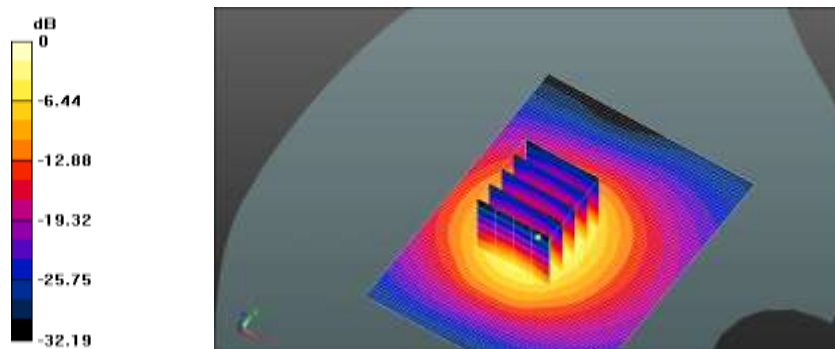
**Body/Dipole2600MHz/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 94.322 V/m; Power Drift = -0.28 dB

Peak SAR (extrapolated) = 33.740 mW/g

**SAR(1 g) = 14.2 mW/g; SAR(10 g) = 6.51 mW/g**

Maximum value of SAR (measured) = 16.7 W/kg



0 dB = 18.2 W/kg = 25.18 dB W/kg

## SystemPerformanceCheck-D5.2GHz for Head

Date: 2015.10.09

**DUT: Dipole 5GHz D5GHzV2; Type: D5GHzV2 SN:1185;**

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz);

Frequency: 5200 MHz;Duty Cycle: 1:1

Medium parameters used:  $f = 5200$  MHz;  $\sigma = 4.69$  mho/m;  $\epsilon_r = 36.3$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:Probe: EX3DV4 - SN3881; ConvF(5.44, 5.44, 5.44); Calibrated:

2014.11.03.; Electronics: DAE4 Sn876; Calibrated: 2015.03.09.

**Head/5.2G/Area Scan (81x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500

mm

Reference Value = 31.861 V/m; Power Drift = 0.19 dB

**Fast SAR: SAR(1 g) = 7.12 mW/g; SAR(10 g) = 2.21 mW/g**

Maximum value of SAR (interpolated) = 7.97 W/kg

**Head/5.2G/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,

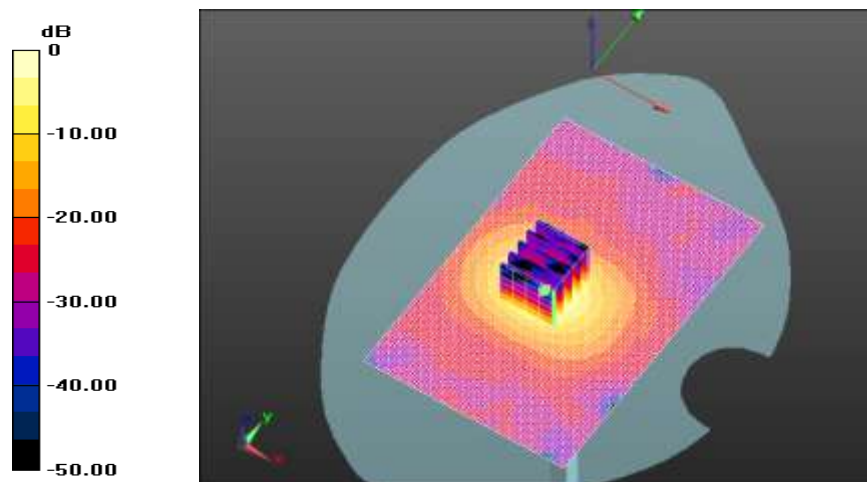
dz=5mm

Reference Value = 31.861 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 19.588 mW/g

**SAR(1 g) = 7.13 mW/g; SAR(10 g) = 2.19 mW/g**

Maximum value of SAR (measured) = 8.49 W/kg



$$0 \text{ dB} = 7.97 \text{ W/kg} = 18.03 \text{ dB W/kg}$$

## SystemPerformanceCheck-D5.2GHz for Body

Date: 2015.10.09

**DUT: Dipole 5GHz D5GHzV2; Type: D5GHzV2 SN:1185;**

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz);

Frequency: 5200 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 5200$  MHz;  $\sigma = 5.21$  mho/m;  $\epsilon_r = 49.0$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration: Probe: EX3DV4 - SN3881; ConvF(4.93, 4.93, 4.93); Calibrated:

2014.11.03.; Electronics: DAE4 Sn876; Calibrated: 2015.03.09.

**Body/5.2G/Area Scan (81x121x1):** Interpolated grid: dx=1.500 mm, dy=1.500

mm

Reference Value = 42.674 V/m; Power Drift = 0.01 dB

**Fast SAR: SAR(1 g) = 8.74 mW/g; SAR(10 g) = 2.41 mW/g**

Maximum value of SAR (interpolated) = 9.45 W/kg

**Body/5.2G/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,

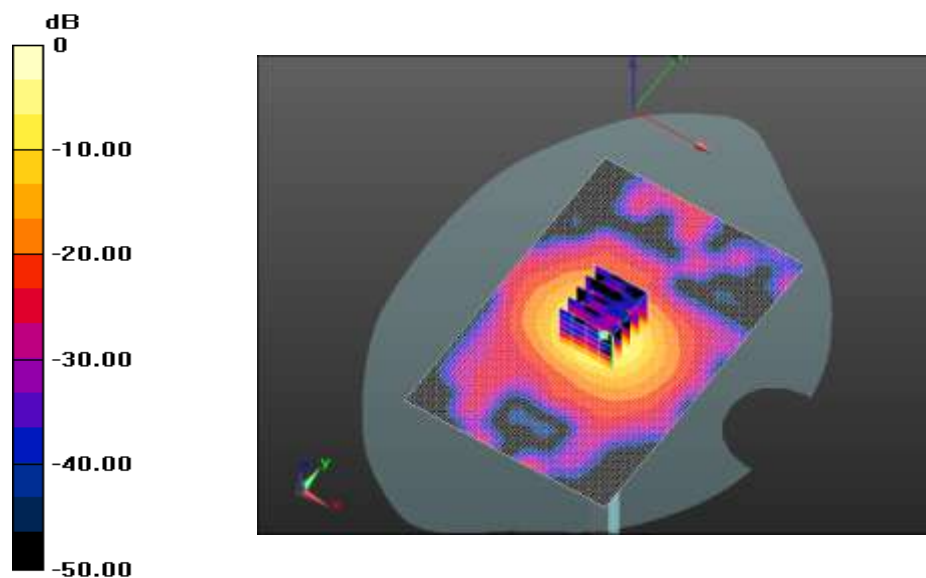
dz=5mm

Reference Value = 42.674 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 23.484 mW/g

**SAR(1 g) = 7.52 mW/g; SAR(10 g) = 2.23 mW/g**

Maximum value of SAR (measured) = 9.40 W/kg



$$0 \text{ dB} = 9.45 \text{ W/kg} = 19.51 \text{ dB W/kg}$$

## SystemPerformanceCheck-D5.8GHz for Head

Date: 2015.10.10

**DUT: Dipole 5GHz D5GHzV2; Type: D5GHzV2 SN:1185;**

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz);

Frequency: 5800 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 5.21$  mho/m;  $\epsilon_r = 35.8$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration: Probe: EX3DV4 - SN3881; ConvF(4.2, 4.2, 4.2); Calibrated:

2014.11.03.; Electronics: DAE4 Sn876; Calibrated: 2015.03.09.

**Head5.8/5.8G /Area Scan (81x121x1):** Interpolated grid: dx=1.500 mm,

dy=1.500 mm

Reference Value = 43.402 V/m; Power Drift = -0.02 dB

**Fast SAR: SAR(1 g) = 8.76 mW/g; SAR(10 g) = 2.42 mW/g**

Maximum value of SAR (interpolated) = 9.45 W/kg

**Head5.8/5.8G /Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm,

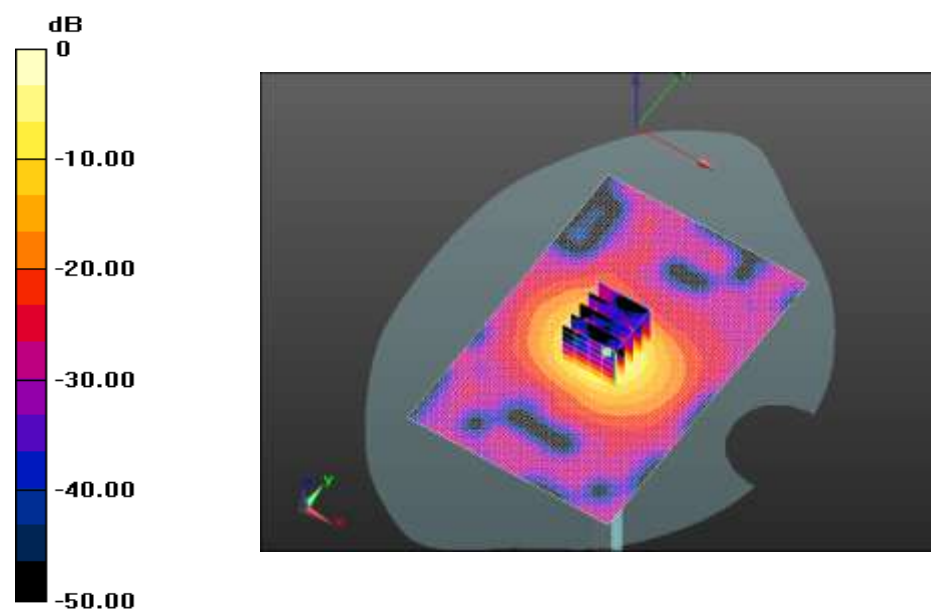
dz=5mm

Reference Value = 43.402 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 23.886 mW/g

**SAR(1 g) = 7.65 mW/g; SAR(10 g) = 2.27 mW/g**

Maximum value of SAR (measured) = 9.58 W/kg



$$0 \text{ dB} = 9.45 \text{ W/kg} = 19.51 \text{ dB W/kg}$$

## SystemPerformanceCheck-D5.8GHz for Body

Date: 2015.10.10

**DUT: Dipole 5GHz D5GHzV2; Type: D5GHzV2 SN:1185;**

Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz);

Frequency: 5800 MHz; Duty Cycle: 1:1

Medium parameters used:  $f = 5800$  MHz;  $\sigma = 6.05$  mho/m;  $\epsilon_r = 49.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASYS (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration: Probe: EX3DV4 - SN3881; ConvF(4.2, 4.2, 4.2); Calibrated:

2014.11.03.; Electronics: DAE4 Sn876; Calibrated: 2015.03.09.

## Body5.8/5.8G/Area Scan (81x121x1): Interpolated grid: dx=1.500 mm,

dy=1.500 mm

Reference Value = 39.938 V/m; Power Drift = 0.11 dB

**Fast SAR: SAR(1 g) = 8.56 mW/g; SAR(10 g) = 2.41 mW/g**

Maximum value of SAR (interpolated) = 9.26 W/kg

## Body5.8/5.8G/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm,

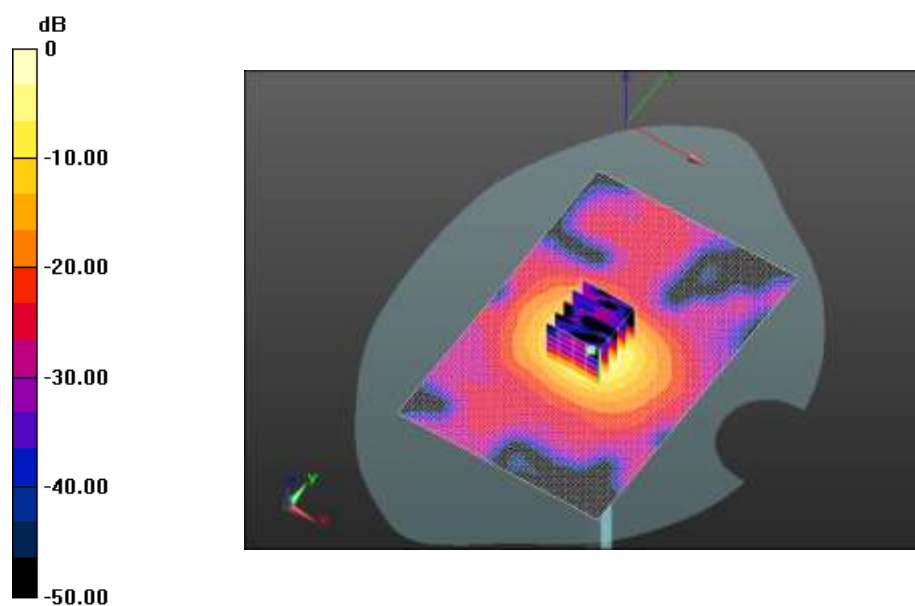
dz=5mm

Reference Value = 39.938 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 23.801 mW/g

**SAR(1 g) = 7.62 mW/g; SAR(10 g) = 2.21 mW/g**

Maximum value of SAR (measured) = 9.59 W/kg



$$0 \text{ dB} = 9.26 \text{ W/kg} = 19.33 \text{ dB W/kg}$$

