

12.2. System Check Plots

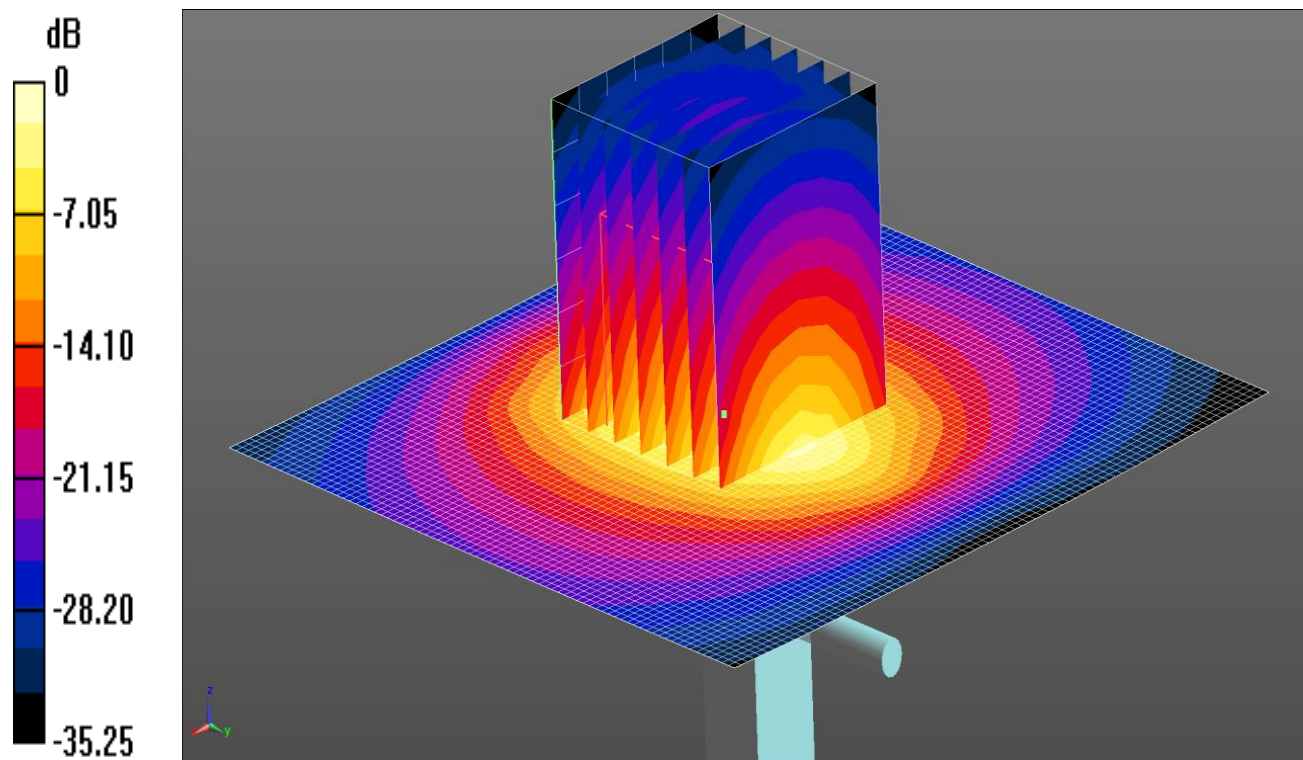
This appendix contains the following system validation distribution scans.

Scan Reference Number	Title
SYS/001	System Check 2450MHz Body 27 03 18
SYS/002	System Check 2450MHz Body 27 03 18
SYS/003	System Check 2450MHz Body 09 04 18
SYS/004	System Check 5250MHz Body 28 03 18
SYS/005	System Check 5250MHz Body 03 04 18
SYS/006	System Check 5600MHz Body 04 04 18
SYS/007	System Check 5600MHz Body 09 04 18
SYS/008	System Check 5600MHz Body 09 04 18
SYS/009	System Check 5750MHz Body 04 04 18
SYS/010	System Check 5750MHz Body 09 04 18

SYS/001: System Check 2450MHz Body 27 03 18

Date: 27/03/2018

DUT: D2450V2 - SN725; Type: D2450V2; Serial: SN725



0 dB = 19.4 W/kg = 12.88 dBW/kg

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used (interpolated): $f = 2450$ MHz; $\sigma = 2.011$ S/m; $\epsilon_r = 52.577$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3341; ConvF(4.5, 4.5, 4.5); Calibrated: 14/08/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/d=10mm, Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 19.4 W/kg

Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 85.45 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 26.7 W/kg

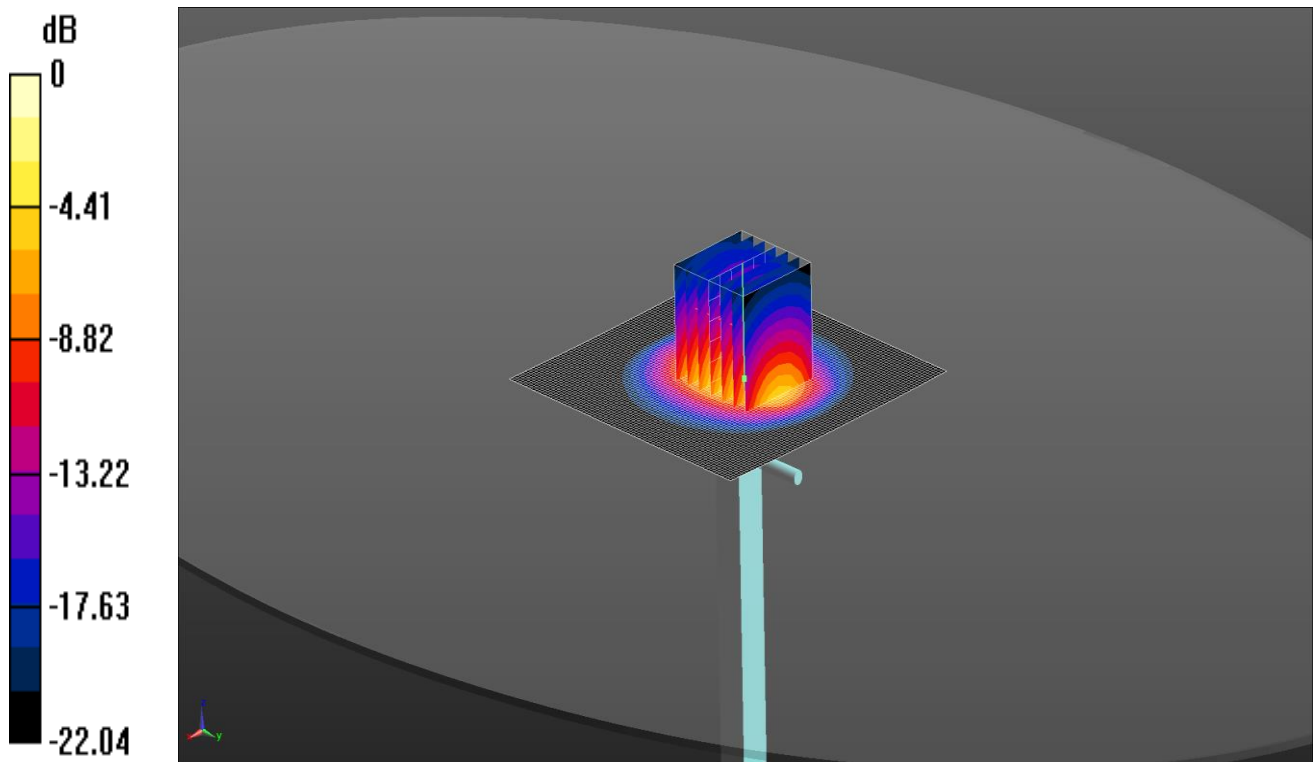
SAR(1 g) = 12.6 W/kg; SAR(10 g) = 5.83 W/kg

Maximum value of SAR (measured) = 19.2 W/kg

SYS/002: System Check 2450MHz Body 27 03 18

Date: 27/03/2018

DUT: D2440V2 - SN701; Type: D2440V2; Serial: SN701



0 dB = 19.7 W/kg = 12.94 dBW/kg

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used: $f = 2450$ MHz; $\sigma = 1.906$ S/m; $\epsilon_r = 52.238$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3814; ConvF(7.2, 7.2, 7.2); Calibrated: 28/09/2017;
- Sensor-Surface: 4mm (Mechanical Surface Detection), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn431; Calibrated: 08/11/2017
- Phantom: ELI v4.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/d=10mm, Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 15.3 W/kg

Configuration/d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 87.99 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 26.5 W/kg

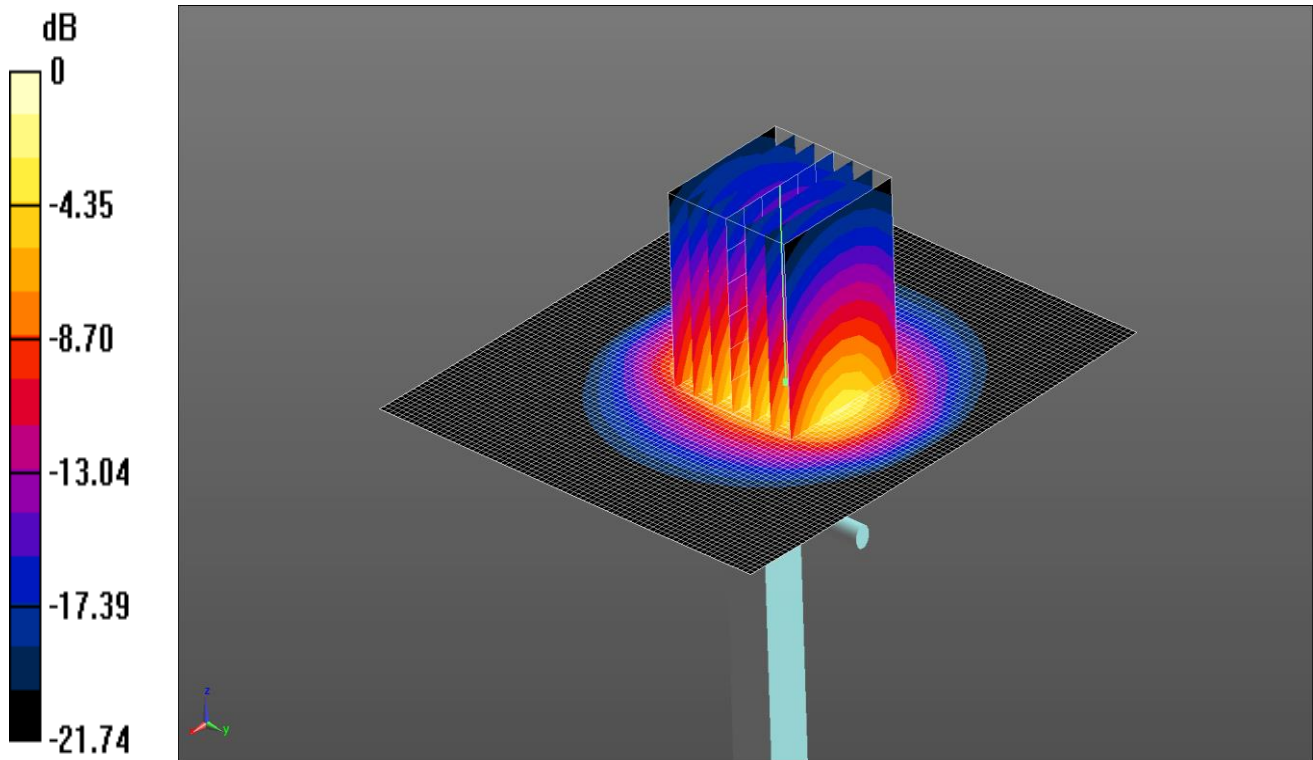
SAR(1 g) = 13 W/kg; SAR(10 g) = 5.98 W/kg

Maximum value of SAR (measured) = 19.7 W/kg

SYS/003: System Check 2450MHz Body 09 04 18

Date: 09/04/2018

DUT: D2450V2 - SN725; Type: D2450V2; Serial: SN725



0 dB = 14.2 W/kg = 11.52 dBW/kg

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used: $f = 2450$ MHz; $\sigma = 2.009$ S/m; $\epsilon_r = 51.499$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(7.76, 7.76, 7.76); Calibrated: 04/05/2017;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Pin=250 mW, dist=10.0mm (ET-Probe)/Area Scan (91x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 16.0 W/kg

Configuration/Pin=250 mW, dist=10.0mm (ET-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 81.45 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 25.2 W/kg

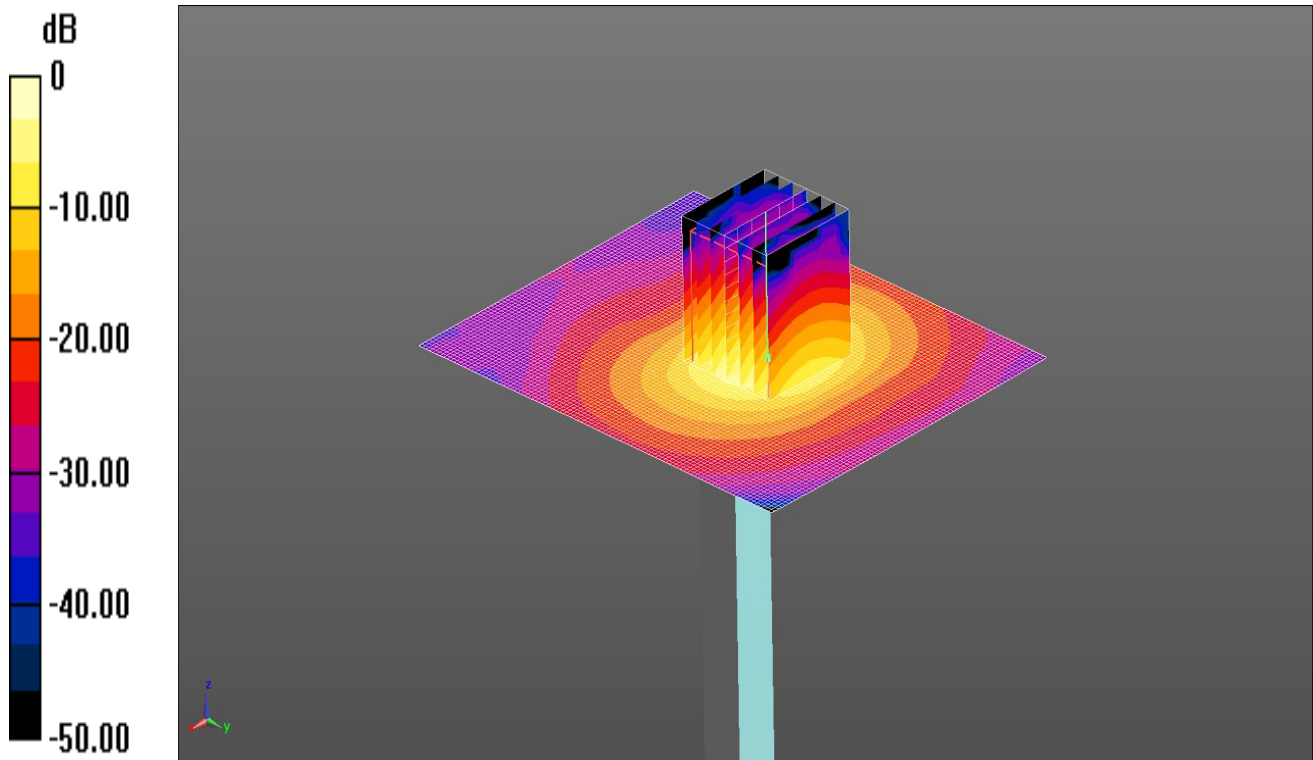
SAR(1 g) = 12.3 W/kg; SAR(10 g) = 5.69 W/kg

Maximum value of SAR (measured) = 14.2 W/kg

SYS/004: System Check 5250MHz Body 28 03 18

Date: 28/03/2018

DUT: 5GHz Dipole SN:1016; Type: D5GHzV2; Serial: SN 1016



0 dB = 15.4 W/kg = 11.88 dBW/kg

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 2450,5250 MHz MSL Medium parameters used: $f = 5250$ MHz; $\sigma = 5.298$ S/m; $\epsilon_r = 47.02$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(4.97, 4.97, 4.97); Calibrated: 04/05/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/d=10mm, Pin=100mW/Area Scan (81x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 15.6 W/kg

Configuration/d=10mm, Pin=100mW/Zoom Scan (7x7x12) 2 (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 41.06 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 31.1 W/kg

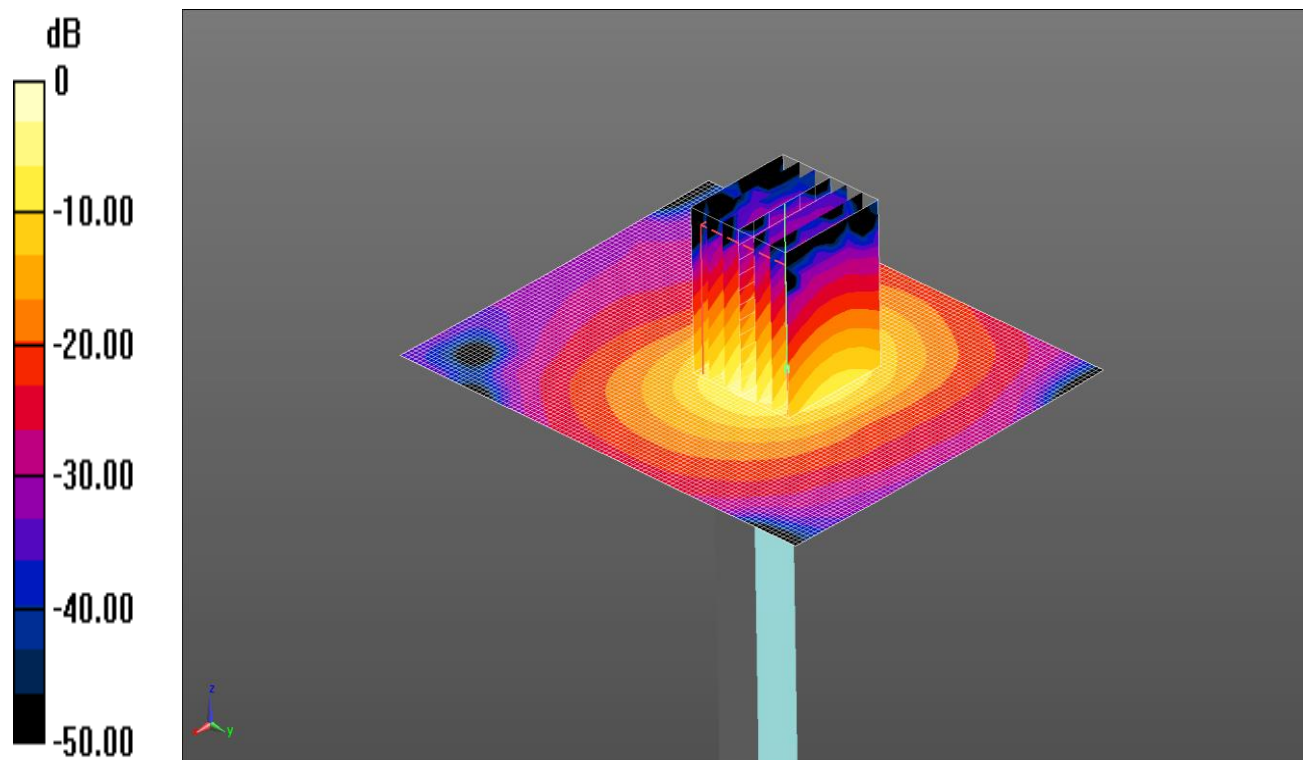
SAR(1 g) = 7.44 W/kg; SAR(10 g) = 2.1 W/kg

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

SYS/005: System Check 5250MHz Body 03 04 18

Date: 03/04/2018

DUT: D5GHzV2 - SN1016; Type: D5GHzV2; Serial: SN1016



0 dB = 16.1 W/kg = 12.07 dBW/kg

Communication System: UID 0, CW (0); Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5250, 5600 & 5750 MHz MSL Medium parameters used: $f = 5250$ MHz; $\sigma = 5.425$ S/m; $\epsilon_r = 47.787$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(4.97, 4.97, 4.97); Calibrated: 04/05/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/d=10mm, Pin=100mW/Area Scan (81x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

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

Configuration/d=10mm, Pin=100mW/Zoom Scan (7x7x12) 2 (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 40.31 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 32.9 W/kg

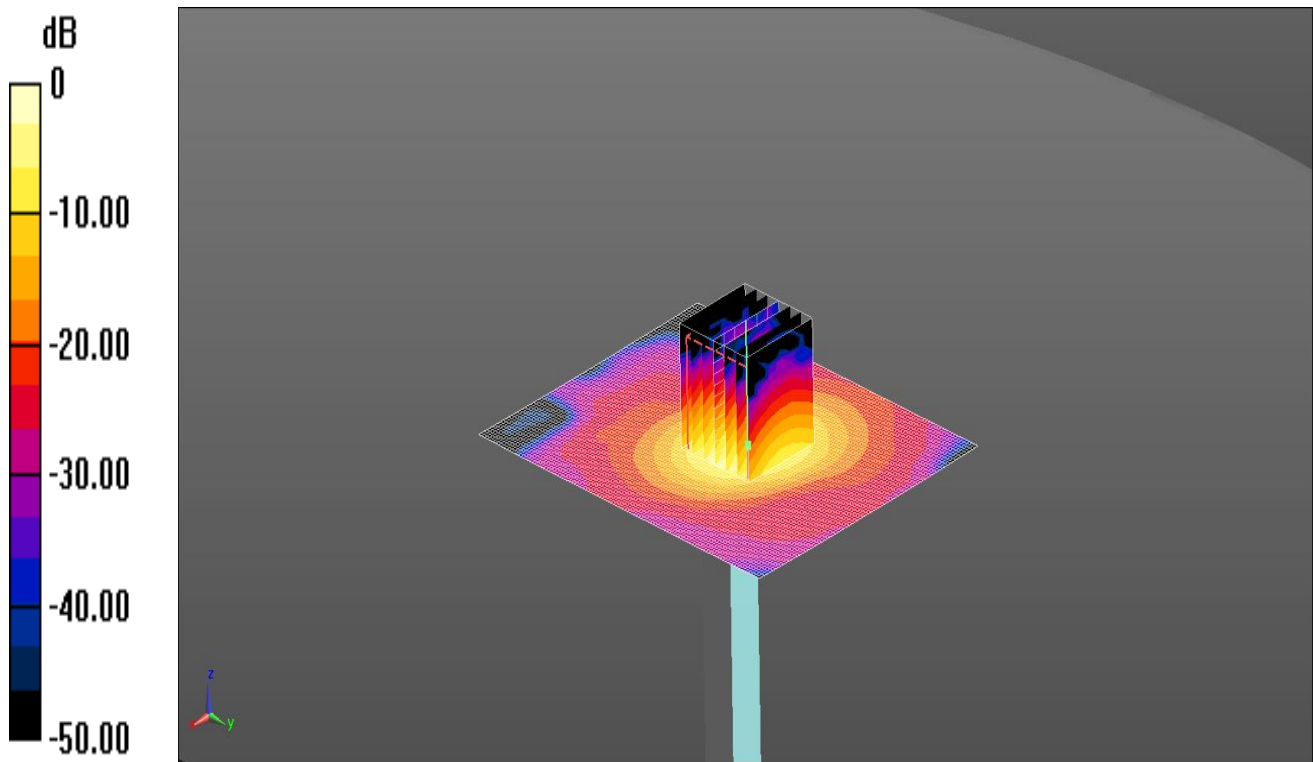
SAR(1 g) = 7.62 W/kg; SAR(10 g) = 2.14 W/kg

Maximum value of SAR (measured) = 16.1 W/kg

SYS/006: System Check 5600MHz Body 04 04 18

Date: 04/04/2018

DUT: 5GHz Dipole SN:1016; Type: D5GHzV2; Serial: SN 1016



0 dB = 16.9 W/kg = 12.28 dBW/kg

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5250, 5600 & 5750 MHz MSL Medium parameters used: $f = 5600$ MHz; $\sigma = 5.937$ S/m; $\epsilon_r = 47.251$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(4.4, 4.4, 4.4); Calibrated: 04/05/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/d=10mm, Pin=100mW/Area Scan (81x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 17.9 W/kg

Configuration/d=10mm, Pin=100mW/Zoom Scan (7x7x12) (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 32.66 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 35.2 W/kg

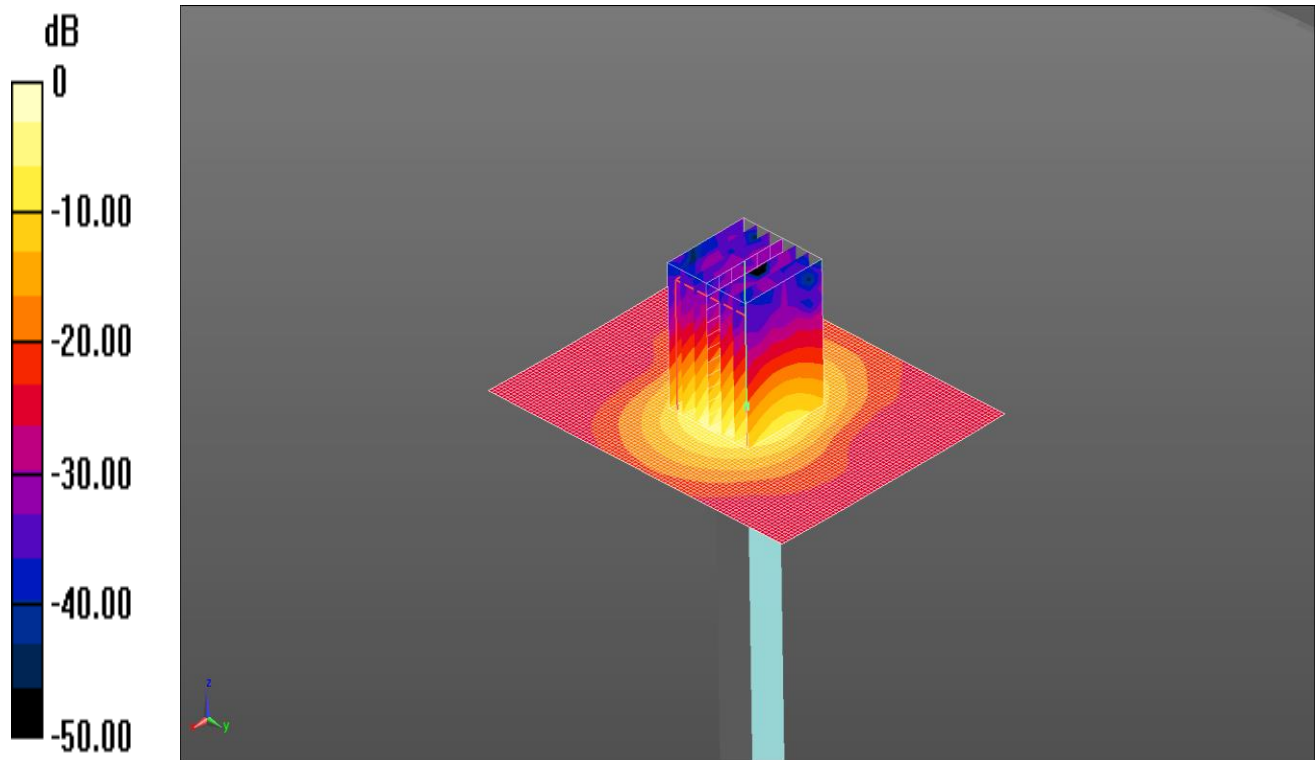
SAR(1 g) = 7.98 W/kg; SAR(10 g) = 2.2 W/kg

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

SYS/007: System Check 5600MHz Body 09 04 18

Date: 09/04/2018

DUT: D5GHzV2 - SN1222; Type: D5GHzV2; Serial: SN1222



0 dB = 19.8 W/kg = 12.97 dBW/kg

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5250 5600 5750 MHz MSL Medium parameters used: $f = 5600$ MHz; $\sigma = 5.933$ S/m; $\epsilon_r = 46.324$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3814; ConvF(4.22, 4.22, 4.22); Calibrated: 28/09/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn431; Calibrated: 08/11/2017
- Phantom: ELI v4.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/DNU d=10mm, Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 20.6 W/kg

Configuration/DNU d=10mm, Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 41.97 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 41.9 W/kg

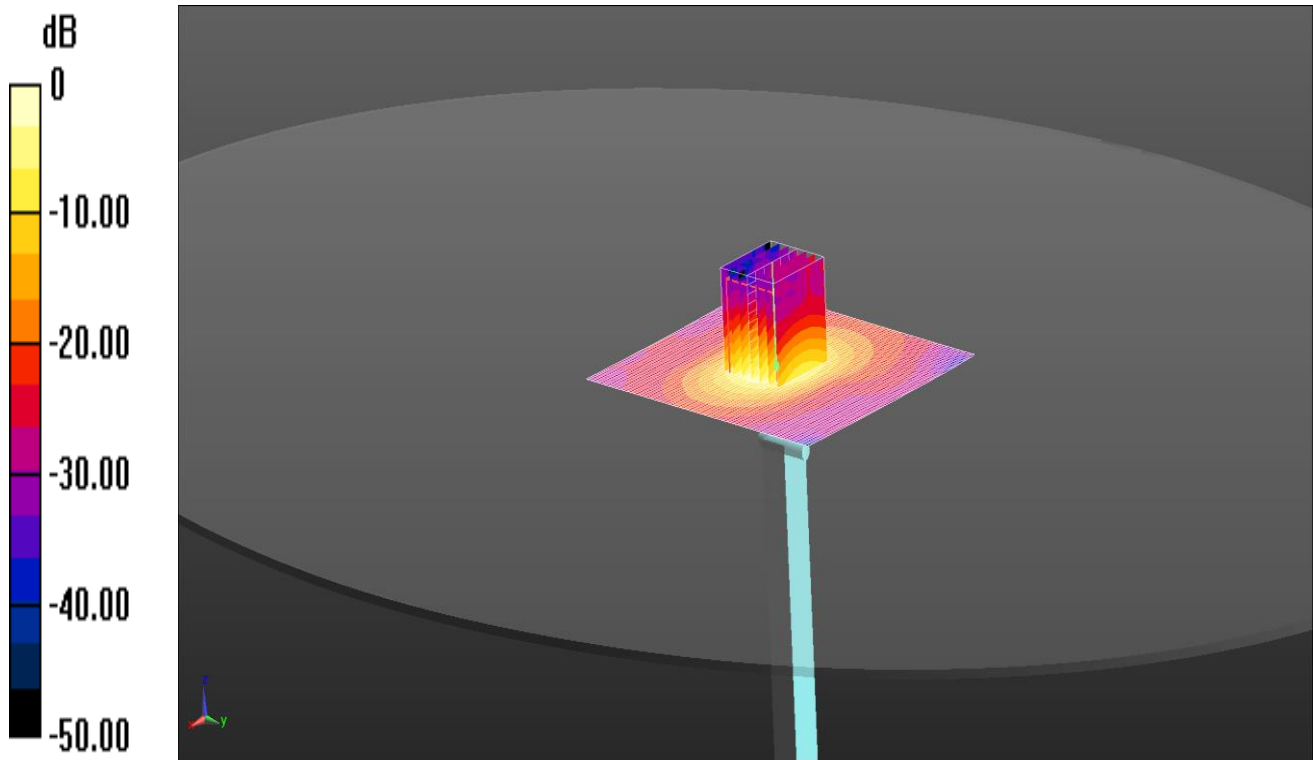
SAR(1 g) = 9.19 W/kg; SAR(10 g) = 2.55 W/kg

Maximum value of SAR (measured) = 19.8 W/kg

SYS/008: System Check 5600MHz Body 09 04 18

Date: 09/04/2018

DUT: 5GHz Dipole SN:1016; Type: D5GHzV2; Serial: SN 1016



0 dB = 15.9 W/kg = 12.01 dBW/kg

Communication System: UID 0, CW (0); Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 2450/5600/5750 MHz MSL Medium parameters used: $f = 5600$ MHz; $\sigma = 5.994$ S/m; $\epsilon_r = 46.499$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3994; ConvF(4.15, 4.15, 4.15); Calibrated: 19/03/2018;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/d=10mm, Pin=100mW/Area Scan (81x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 17.4 W/kg

Configuration/d=10mm, Pin=100mW/Zoom Scan (7x7x12) 2 (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 37.95 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 33.3 W/kg

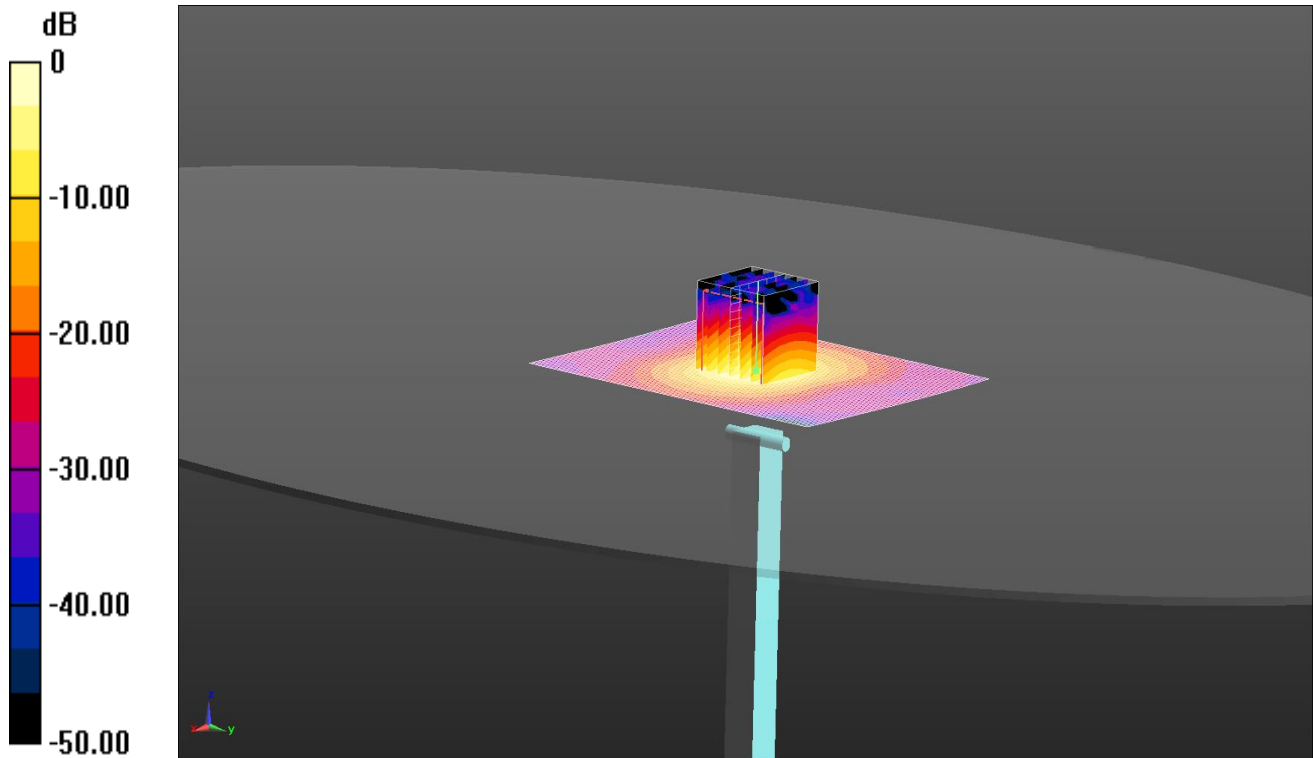
SAR(1 g) = 7.39 W/kg; SAR(10 g) = 2.05 W/kg

Maximum value of SAR (measured) = 15.9 W/kg

SYS/009: System Check 5750MHz Body 04 04 18

Date: 04/04/2018

DUT: D5GHzV2 - SN1222; Type: D5GHzV2; Serial: SN1222



0 dB = 16.1 W/kg = 12.07 dBW/kg

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 2450/5600/5750 MHz MSL Medium parameters used: $f = 5750$ MHz; $\sigma = 6.225$ S/m; $\epsilon_r = 46.386$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3994; ConvF(4.47, 4.47, 4.47); Calibrated: 19/03/2018;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/d=10mm, Pin=100mW/Area Scan (81x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 16.2 W/kg

Configuration/d=10mm, Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 36.36 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 33.5 W/kg

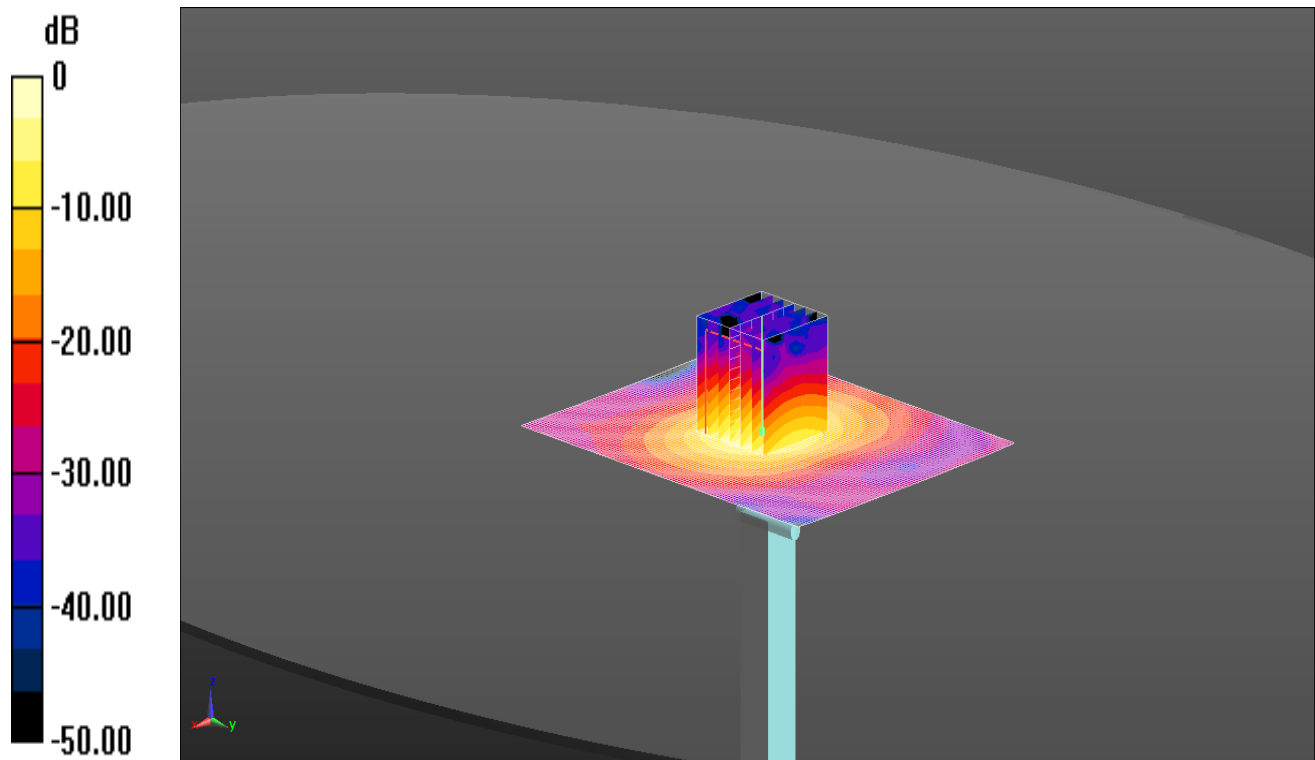
SAR(1 g) = 7.38 W/kg; SAR(10 g) = 2.07 W/kg

Maximum value of SAR (measured) = 16.1 W/kg

SYS/010: System Check 5750MHz Body 09 04 18

Date: 09/04/2018

DUT: 5GHz Dipole SN:1016; Type: D5GHzV2; Serial: SN 1016



0 dB = 16.7 W/kg = 12.23 dBW/kg

Communication System: UID 0, CW (0); Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 2450/5600/5750 MHz MSL Medium parameters used: $f = 5750$ MHz; $\sigma = 6.192$ S/m; $\epsilon_r = 46.188$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3994; ConvF(4.47, 4.47, 4.47); Calibrated: 19/03/2018;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/d=10mm, Pin=100mW/Area Scan (81x101x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 16.6 W/kg

Configuration/d=10mm, Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 36.29 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 36.4 W/kg

SAR(1 g) = 7.63 W/kg; SAR(10 g) = 2.12 W/kg

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

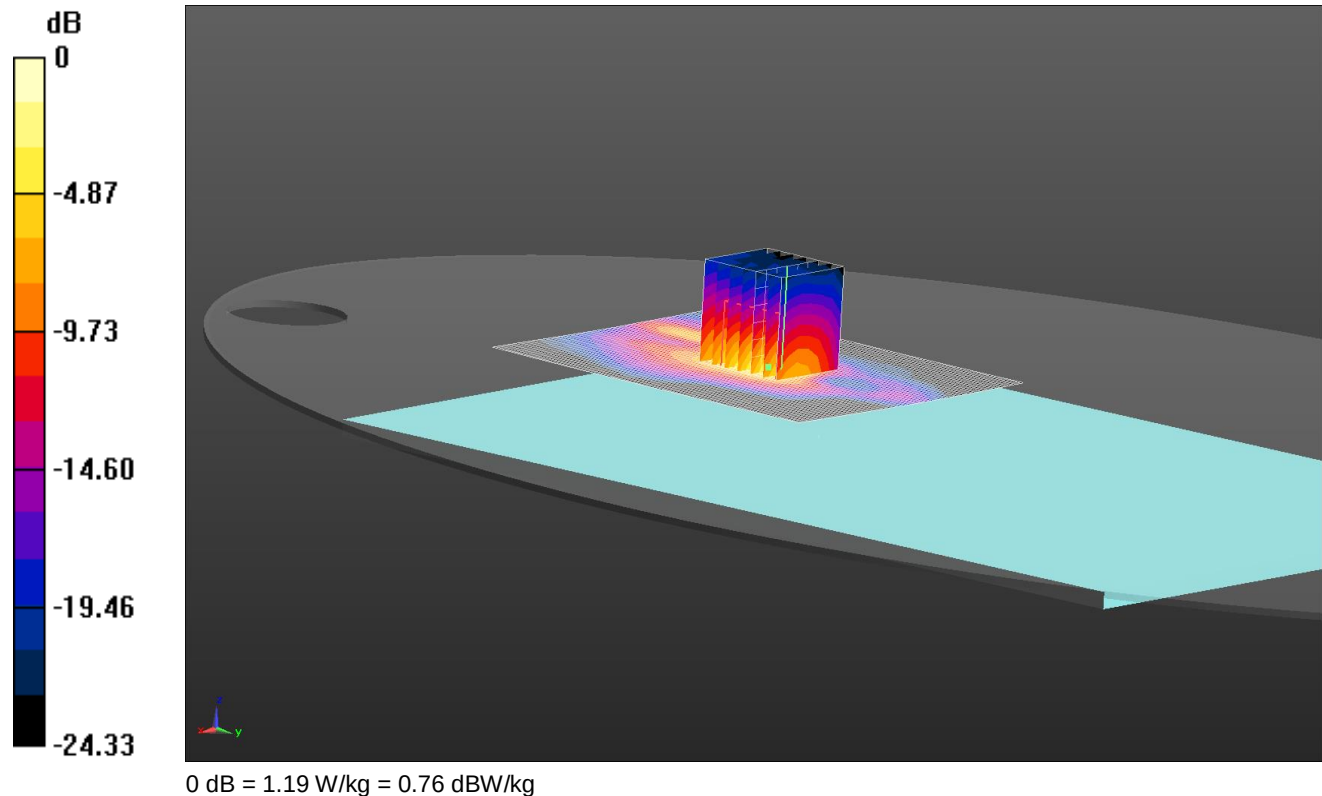
12.3. SAR Test Plots

Scan Reference Number	Title
SAR/001	Back 0mm WiFi 2.4 802.11b HT20 6Mbps SISO WF3 CH6
SAR/002	Back 0mm WiFi 5.2 802.11n HT40 MIMO WF1+WF2+WF3 CH46
SAR/003	Back 0mm WiFi 5.6 802.11n VHT80 MIMO WF1+WF3 CH122
SAR/004	Back 0mm WiFi 5.8 802.11ac VHT80 MIMO WF2+WF3 CH155
SAR/005	Back 0mm BT 2.4 DH5 SISO WF1 CH0
SAR/006	Back 0mm WiFi 2.4 Main 802.11b SDB WF3 CH6
SAR/007	Back 0mm WiFi 5.2 Main 802.11ac HT80 SDB WF3 CH42
SAR/008	Back 0mm WiFi 5.6 Aux 802.11ac VHT80 SDB WF3 CH106
SAR/009	Back 0mm WiFi 5.8 Main 802.11ac VHT80 SDB ANT3 CH155

SAR/001: Back 0mm WiFi 2.4 802.11b HT20 6Mbps SISO WF3 CH6

Date: 29/03/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, WLAN 802.11 (0); Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.997$ S/m; $\epsilon_r = 52.59$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ES3DV3 - SN3341; ConvF(4.5, 4.5, 4.5); Calibrated: 14/08/2017;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/Back 0mm/Area Scan (91x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 1.11 W/kg

Configuration/Back 0mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.44 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 2.68 W/kg

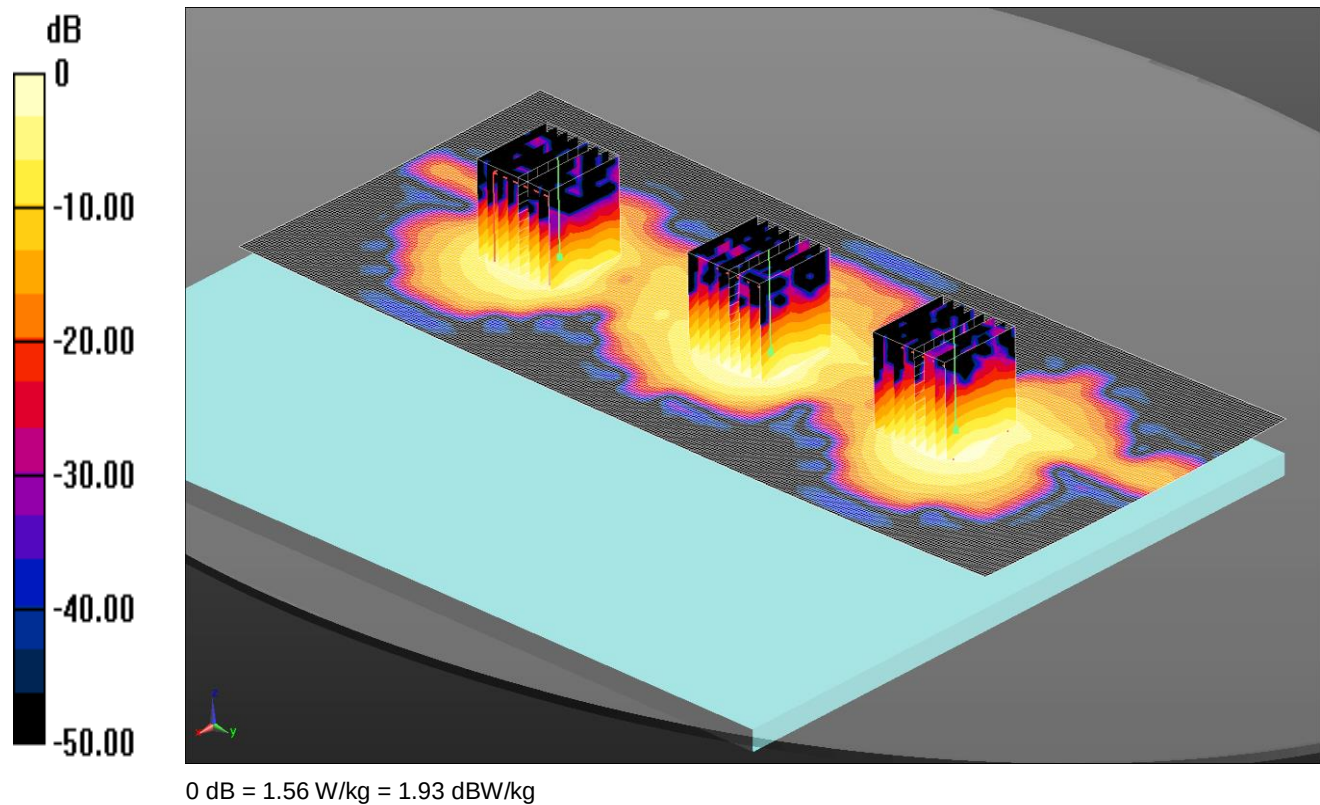
SAR(1 g) = 0.856 W/kg; SAR(10 g) = 0.316 W/kg

Maximum value of SAR (measured) = 1.19 W/kg

SAR/002: Back 0mm WiFi 5.2 802.11n HT40 MIMO WF1+WF2+WF3 CH46

Date: 06/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, WLAN 802.11 (0); Frequency: 5230 MHz; Duty Cycle: 1:1

Medium: 5250, 5600 & 5750 MHz MSL Medium parameters used (interpolated): $f = 5230$ MHz; $\sigma = 5.4$ S/m; $\epsilon_r = 47.823$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(4.97, 4.97, 4.97); Calibrated: 04/05/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Back 0mm WF1+WF2+WF3 2/Area Scan (121x291x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 2.35 W/kg

Configuration/Back 0mm WF1+WF2+WF3 2/Zoom Scan (8x8x12)/Cube 0: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=2$ mm

Reference Value = 16.87 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 4.96 W/kg

SAR(1 g) = 1.17 W/kg; SAR(10 g) = 0.388 W/kg

Maximum value of SAR (measured) = 2.29 W/kg

Configuration/Back 0mm WF1+WF2+WF3 2/Zoom Scan (8x8x12)/Cube 1: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=2$ mm

Reference Value = 16.87 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 4.38 W/kg

SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.359 W/kg

Maximum value of SAR (measured) = 2.06 W/kg

Configuration/Back 0mm WF1+WF2+WF3 2/Zoom Scan (8x8x12)/Cube 2: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=2$ mm

Reference Value = 16.87 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 3.32 W/kg

SAR(1 g) = 0.788 W/kg; SAR(10 g) = 0.264 W/kg

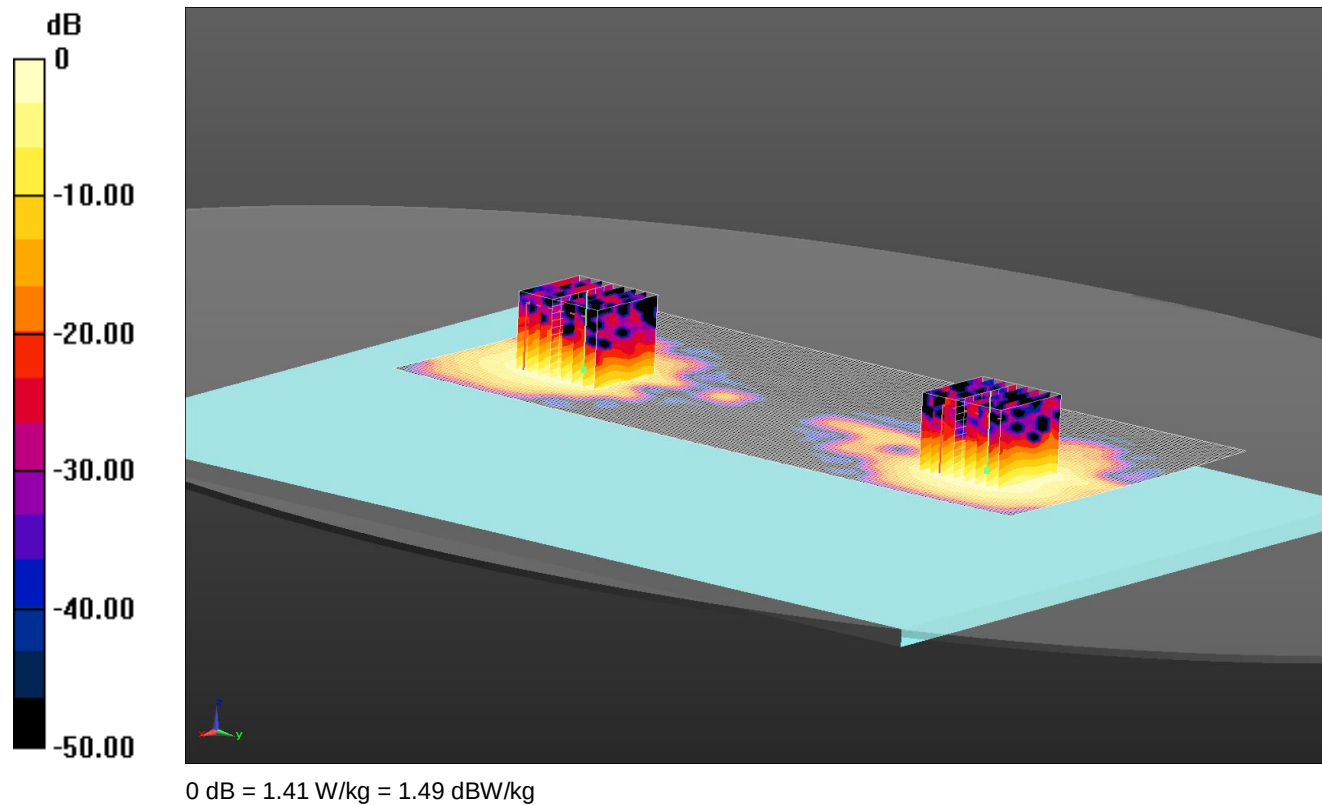
Maximum value of SAR (measured) = 1.56 W/kg

Note: DASY system is configured to measure any secondary maxima that are within 2dB of the measured SAR level.

SAR/003: Back 0mm WiFi5.6 802.11n VHT80 MIMO WF3+WF1 CH122

Date: 10/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, WLAN 802.11 (0); Frequency: 5610 MHz; Duty Cycle: 1:1

Medium: 2450/5600/5750 MHz MSL Medium parameters used (interpolated): $f = 5610$ MHz; $\sigma = 6.007$ S/m; $\epsilon_r = 46.478$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3994; ConvF(4.15, 4.15, 4.15); Calibrated: 19/03/2018;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/Back 0mm WF3&1/Area Scan (111x221x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.62 W/kg

Configuration/Back 0mm WF3&1/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 16.89 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 4.18 W/kg

SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.354 W/kg

Maximum value of SAR (measured) = 1.57 W/kg

Configuration/Back 0mm WF3&1/Zoom Scan (8x8x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 16.89 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 3.44 W/kg

SAR(1 g) = 0.909 W/kg; SAR(10 g) = 0.300 W/kg

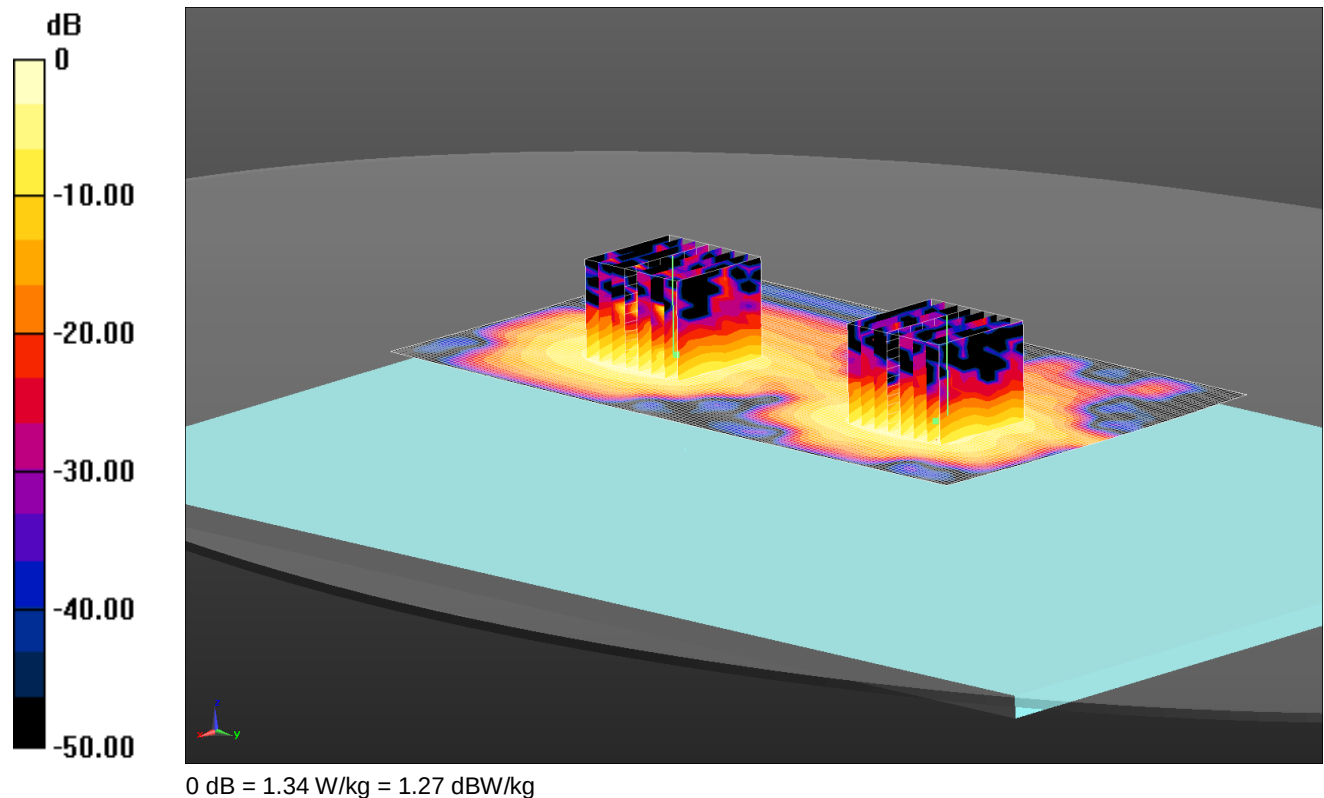
Maximum value of SAR (measured) = 1.41 W/kg

Note: DASY system is configured to measure any secondary maxima that are within 2dB of the measured SAR level.

SAR/004: Back 0mm WiFi5.8 802.11ac VHT80 MIMO WF2+WF3 CH155

Date: 06/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, WLAN 802.11 (0); Frequency: 5775 MHz; Duty Cycle: 1:1

Medium: 2450/5600/5750 MHz MSL Medium parameters used (interpolated): $f = 5775$ MHz; $\sigma = 6.258$ S/m; $\epsilon_r = 46.327$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3994; ConvF(4.47, 4.47, 4.47); Calibrated: 19/03/2018;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/Back 0mm WF2&3/Area Scan 2 (101x171x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 1.28 W/kg

Configuration/Back 0mm WF2&3/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 14.98 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 3.44 W/kg

SAR(1 g) = 0.817 W/kg; SAR(10 g) = 0.273 W/kg

Maximum value of SAR (measured) = 1.19 W/kg

Configuration/Back 0mm WF2&3/Zoom Scan (8x8x12)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 14.98 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 11.3 W/kg

SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.336 W/kg

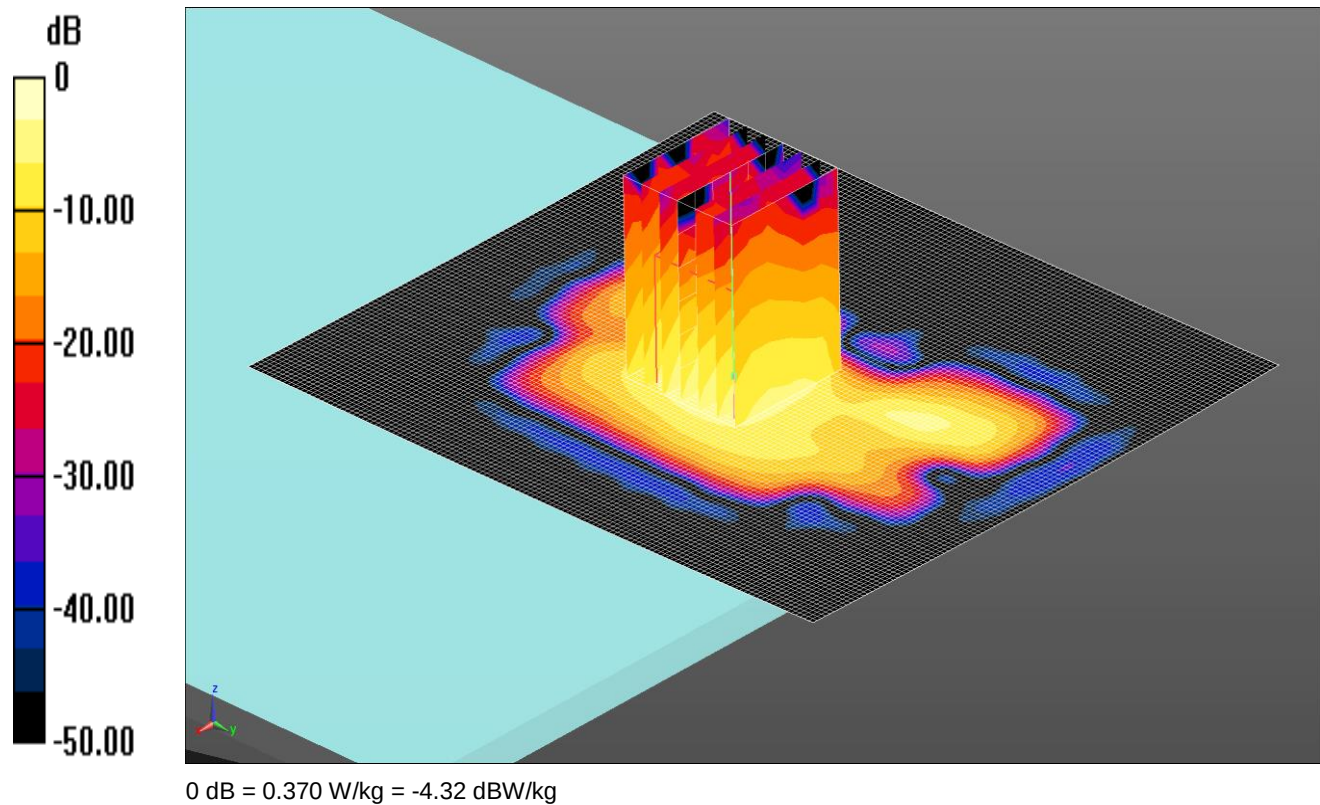
Maximum value of SAR (measured) = 1.34 W/kg

Note: DASY system is configured to measure any secondary maxima that are within 2dB of the measured SAR level.

SAR/005: Back 0mm BT 2.4 DH5 SISO WF1 CH0

Date: 10/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, Bluetooth (0); Frequency: 2402 MHz; Duty Cycle: 1:1.30617

Medium: 2450 MHz MSL Medium parameters used (interpolated): $f = 2402$ MHz; $\sigma = 1.968$ S/m; $\epsilon_r = 51.585$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(7.76, 7.76, 7.76); Calibrated: 04/05/2017;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Back 0mm 2/Area Scan (111x131x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.363 W/kg

Configuration/Back 0mm 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.67 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.742 W/kg

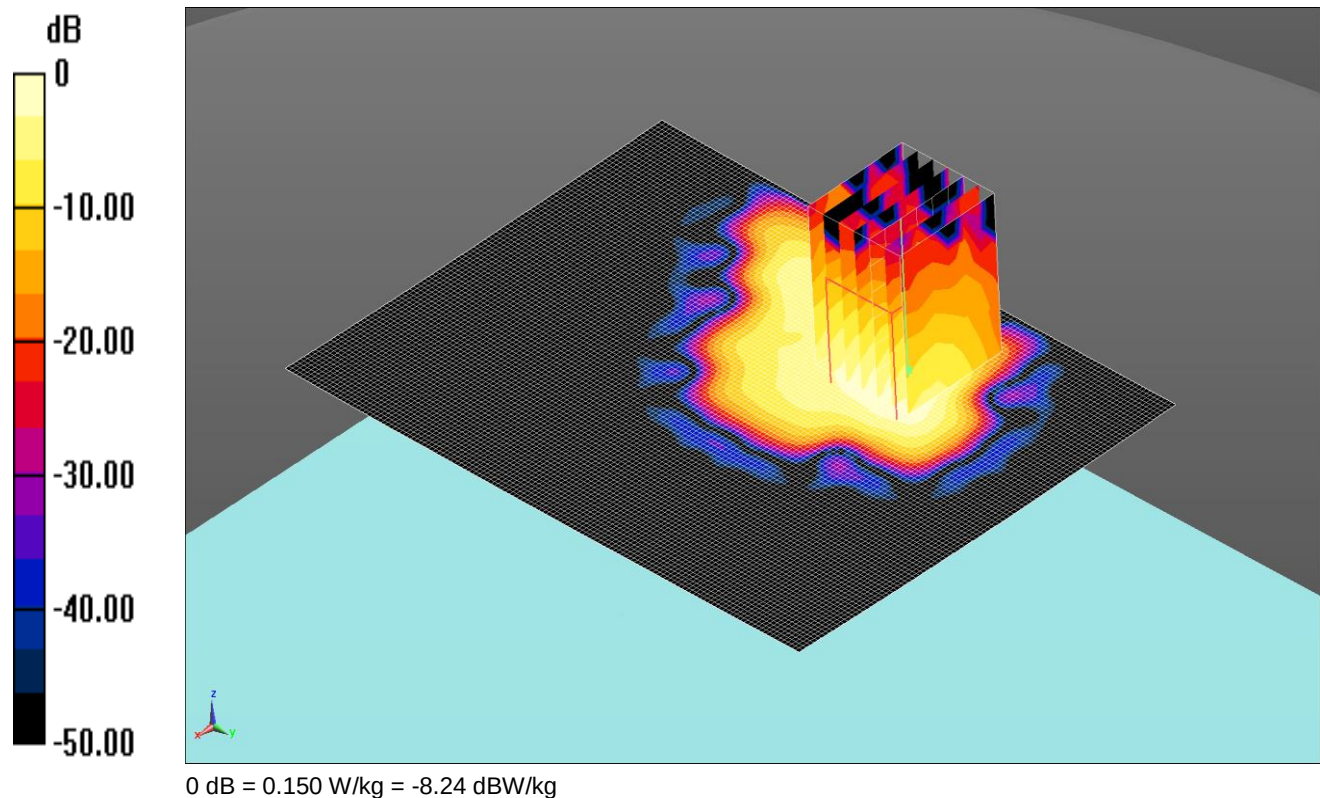
SAR(1 g) = 0.243 W/kg; SAR(10 g) = 0.092 W/kg

Maximum value of SAR (measured) = 0.370 W/kg

SAR/006: Back 0mm WiFi 2.4 Main 802.11b SDB WF3 CH6

Date: 09/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, WLAN 802.11 (0); Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 MHz MSL Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.998$ S/m; $\epsilon_r = 51.522$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(7.76, 7.76, 7.76); Calibrated: 04/05/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Back 0mm WF3 SDB/Area Scan 2 (101x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Maximum value of SAR (interpolated) = 0.309 W/kg

Configuration/Back 0mm WF3 SDB/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.61 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 0.420 W/kg

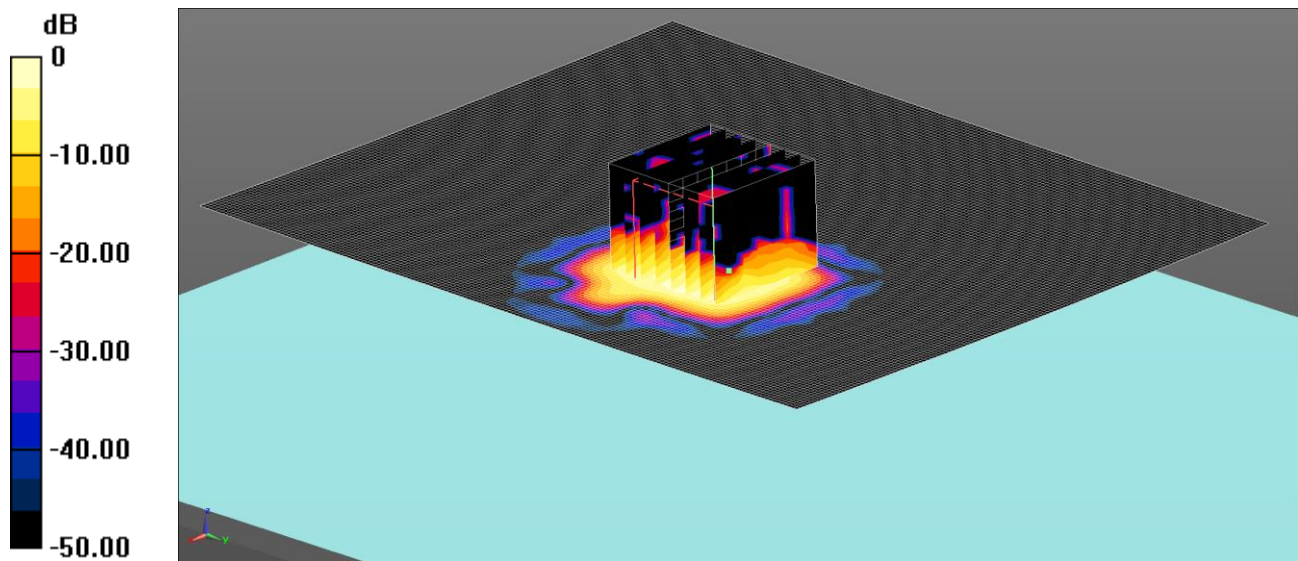
SAR(1 g) = 0.139 W/kg; SAR(10 g) = 0.053 W/kg

Maximum value of SAR (measured) = 0.150 W/kg

SAR/007: Back 0mm WiFi 5.2 Main 802.11ac HT80 SDB WF3 CH42

Date: 06/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



0 dB = 0.290 W/kg = -5.38 dBW/kg

Communication System: UID 0, WLAN 802.11 (0); Frequency: 5210 MHz; Duty Cycle: 1:1

Medium: 5250, 5600 & 5750 MHz MSL Medium parameters used (interpolated): $f = 5210$ MHz; $\sigma = 5.374$ S/m; $\epsilon_r = 47.86$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3995; ConvF(4.97, 4.97, 4.97); Calibrated: 04/05/2017;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 27/04/2017
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: 1253
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Back 0mm ANT 3 SDB/Area Scan (131x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.403 W/kg

Configuration/Back 0mm ANT 3 SDB/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.705 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.735 W/kg

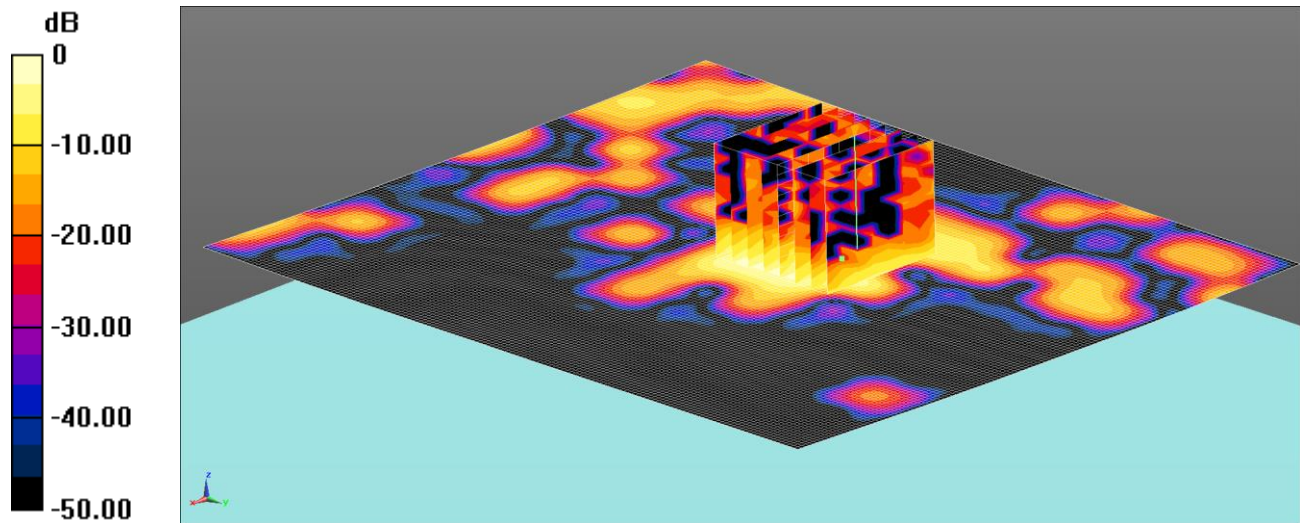
SAR(1 g) = 0.150 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.290 W/kg

SAR/008: Back 0mm WiFi 5.6 Aux 802.11ac VHT80 SDB WF3 CH106

Date: 09/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, WLAN 802.11 (0); Frequency: 5530 MHz; Duty Cycle: 1:1

Medium: 5250 5600 5750 MHz MSL Medium parameters used (interpolated): $f = 5530$ MHz; $\sigma = 5.835$ S/m; $\epsilon_r = 46.446$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3814; ConvF(4.22, 4.22, 4.22); Calibrated: 28/09/2017;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn431; Calibrated: 08/11/2017
- Phantom: ELI v4.0 (20deg probe tilt); Type: QDOVA001BB; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7372)

Configuration/Back 0mm/Area Scan (131x151x1): Interpolated grid: $dx=1.000$ mm, $dy=1.000$ mm

Maximum value of SAR (interpolated) = 0.312 W/kg

Configuration/Back 0mm/Zoom Scan (8x8x12)/Cube 0: Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=2$ mm

Reference Value = 7.031 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.579 W/kg

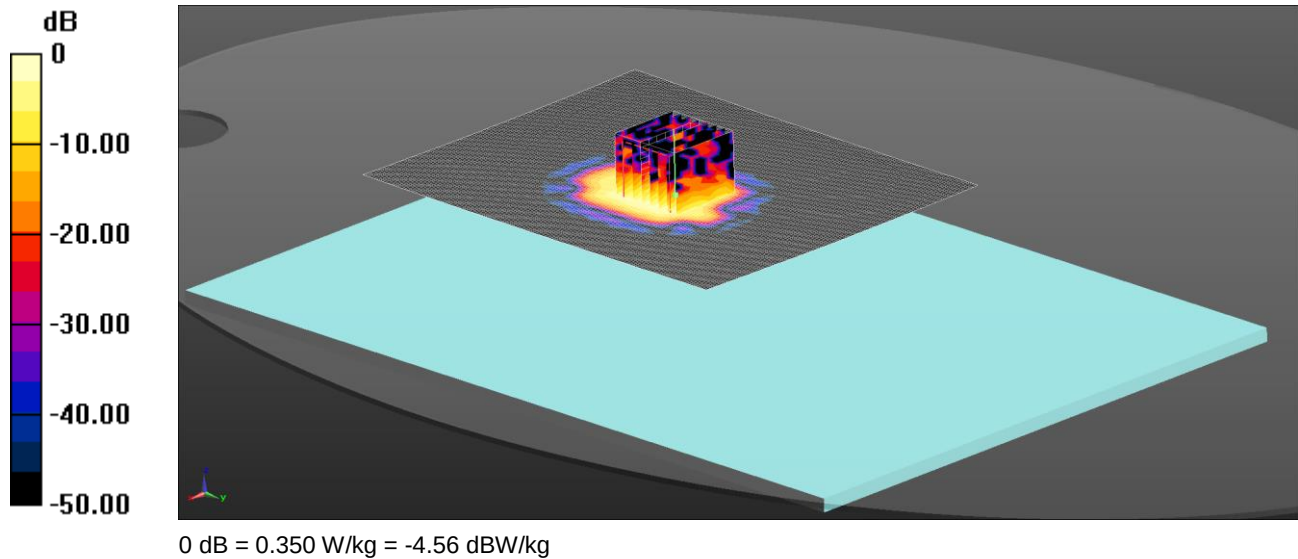
SAR(1 g) = 0.168 W/kg; SAR(10 g) = 0.053 W/kg

Maximum value of SAR (measured) = 0.258 W/kg

SAR/009: Back 0mm WiFi 5.8 Main 802.11ac VHT80 SDB ANT3 CH155

Date: 09/04/2018

DUT: Apple Inc.; Type: FCC ID: BCGA1989; Model No: A1989



Communication System: UID 0, WLAN 802.11 (0); Frequency: 5775 MHz; Duty Cycle: 1:1

Medium: 2450/5600/5750 MHz MSL Medium parameters used (interpolated): $f = 5775$ MHz; $\sigma = 6.227$ S/m; $\epsilon_r = 46.142$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: EX3DV4 - SN3994; ConvF(4.47, 4.47, 4.47); Calibrated: 19/03/2018;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn394; Calibrated: 12/05/2017
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7417)

Configuration/Back 0mm ANT 3 SDB Main/Area Scan (131x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 0.378 W/kg

Configuration/Back 0mm ANT 3 SDB Main/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 8.282 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.714 W/kg

SAR(1 g) = 0.163 W/kg; SAR(10 g) = 0.051 W/kg

Maximum value of SAR (measured) = 0.350 W/kg