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APPENDIX A: SAR DISTRIBUTION COMPARISON FOR ACCURACY VERIFICATION

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Date/Time: 11/19/2014 10:02:46 AM

Test Laboratory: BlackBerry RTS

DipoleValidation_750MHz_11_19_14_Amb_Tem_24.4C_Liq_Tem_22.0C

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1021

Communication System: UID 0, CW (0); Frequency: 750 MHz

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.91 \text{ S/m}$; $\epsilon_r = 42.122$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY Configuration:

- Probe: ES3DV3 - SN3225; ConvF(6.36, 6.36, 6.36); Calibrated: 1/22/2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection), $z = 2.0, 32.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASYS 52.8.8(1222); SEMCAD X 14.6.10(7331)

System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=1000mW, dist=3.0mm (ES-Probe)/Area Scan (41x121x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Reference Value = 104.5 V/m; Power Drift = -0.00 dB

Fast SAR: SAR(1 g) = 8.23 W/kg; SAR(10 g) = 5.54 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 9.44 W/kg

System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=1000mW, dist=3.0mm (ES-Probe)/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 104.5 V/m; Power Drift = -0.00 dB

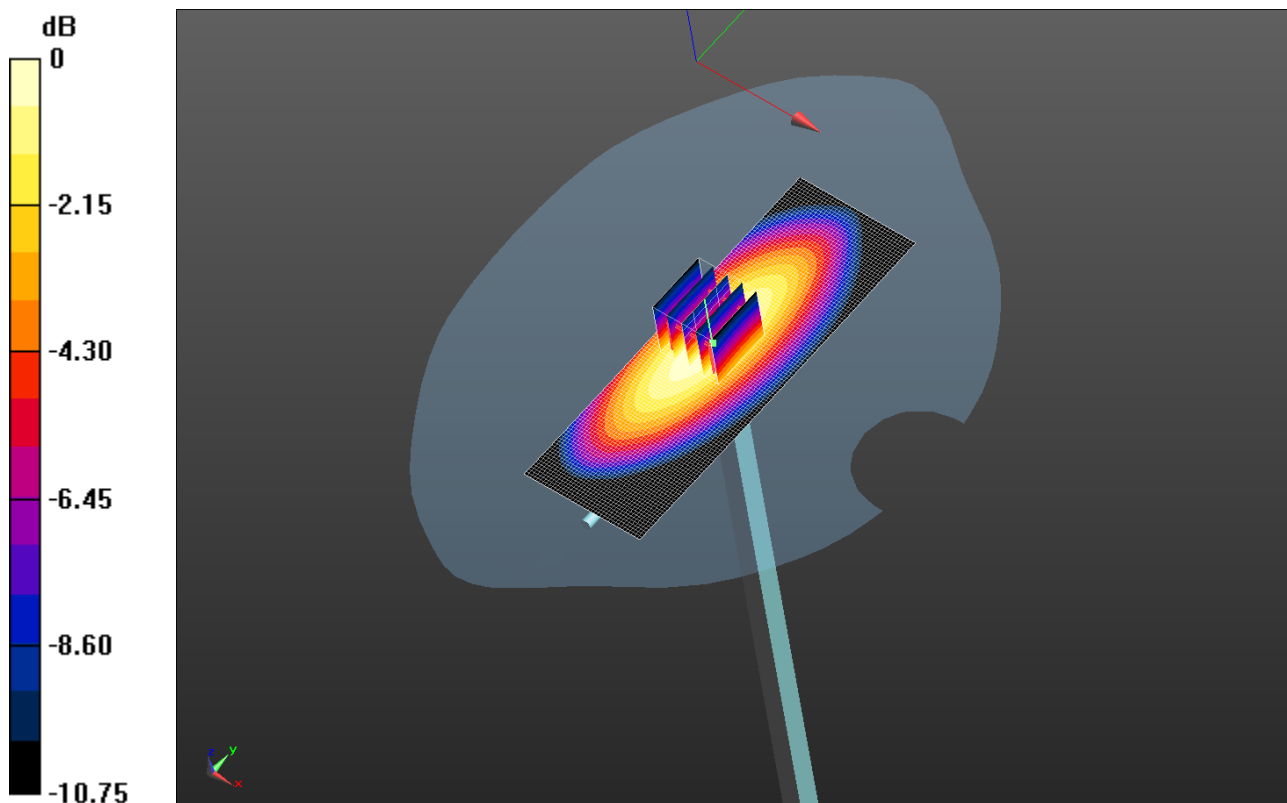
Peak SAR (extrapolated) = 12.5 W/kg

SAR(1 g) = 8.25 W/kg; SAR(10 g) = 5.37 W/kg (SAR corrected for target

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medium)

Maximum value of SAR (measured) = 9.70 W/kg



0 dB = 9.70 W/kg = 9.87 dBW/kg

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Date/Time: 11/17/2014 10:25:27 AM

Test Laboratory: BlackBerry RTS

DipoleValidation_835MHz_11_17_14_Amb_Tem_23.9C_Liq_Tem_22.5C

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:446

Communication System: UID 0, CW (0); Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.879 \text{ S/m}$; $\epsilon_r = 40.98$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY Configuration:

- Probe: ES3DV3 - SN3225; ConvF(6.05, 6.05, 6.05); Calibrated: 1/22/2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection), $z = 2.0, 32.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASYS 52.8.8(1222); SEMCAD X 14.6.10(7331)

System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=1000mW, dist=3.0mm (ES-Probe)/Area Scan (41x121x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Reference Value = 115.1 V/m; Power Drift = -0.01 dB

Fast SAR: SAR(1 g) = 9.55 W/kg; SAR(10 g) = 6.27 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 10.9 W/kg

System Performance Check at Frequencies below 1 GHz/d=15mm, Pin=1000mW, dist=3.0mm (ES-Probe)/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 115.1 V/m; Power Drift = -0.01 dB

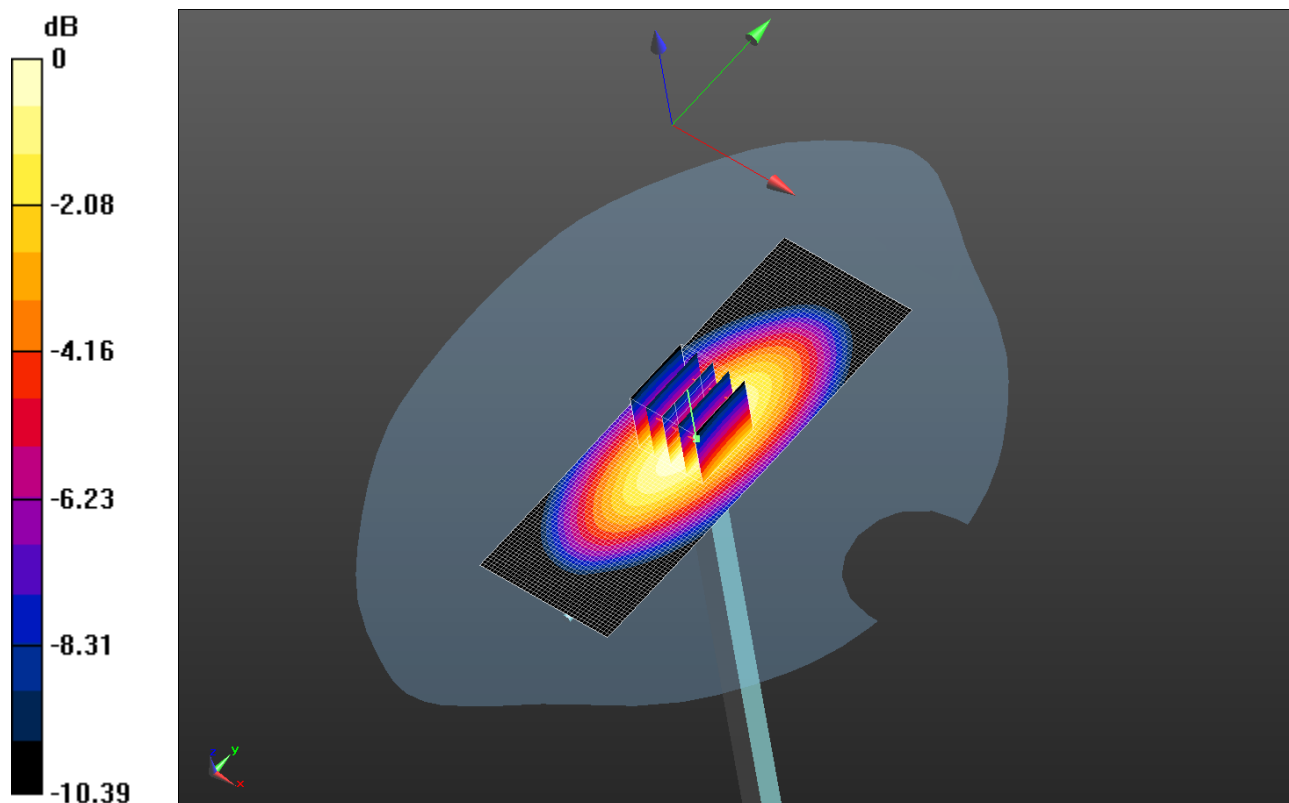
Peak SAR (extrapolated) = 13.9 W/kg

SAR(1 g) = 9.47 W/kg; SAR(10 g) = 6.19 W/kg (SAR corrected for target

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medium)

Maximum value of SAR (measured) = 10.9 W/kg



0 dB = 10.9 W/kg = 10.37 dBW/kg

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Date/Time: 11/13/2014 12:56:49 PM

Test Laboratory: BlackBerry RTS

DipoleValidation_1800MHz_11_13_14_Amb_Tem_24.7C_Liq_Tem_22.8C

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN:2d020

Communication System: UID 0, CW; Frequency: 1800 MHz

Medium parameters used: $f = 1800 \text{ MHz}$; $\sigma = 1.449 \text{ S/m}$; $\epsilon_r = 38.213$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY Configuration:

- Probe: ES3DV3 - SN3225; ConvF(5.24, 5.24, 5.24); Calibrated: 1/22/2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection), $z = 2.0, 32.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASYS 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Dipole Validation_CW 1800 MHz_d=10mm,

Pin=1000mW/Area Scan (51x81x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Reference Value = 188.1 V/m; Power Drift = -0.01 dB

Fast SAR: SAR(1 g) = 38.5 W/kg; SAR(10 g) = 20.6 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 51.4 W/kg

Configuration/Dipole Validation_CW 1800 MHz_d=10mm,

Pin=1000mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 188.1 V/m; Power Drift = -0.01 dB

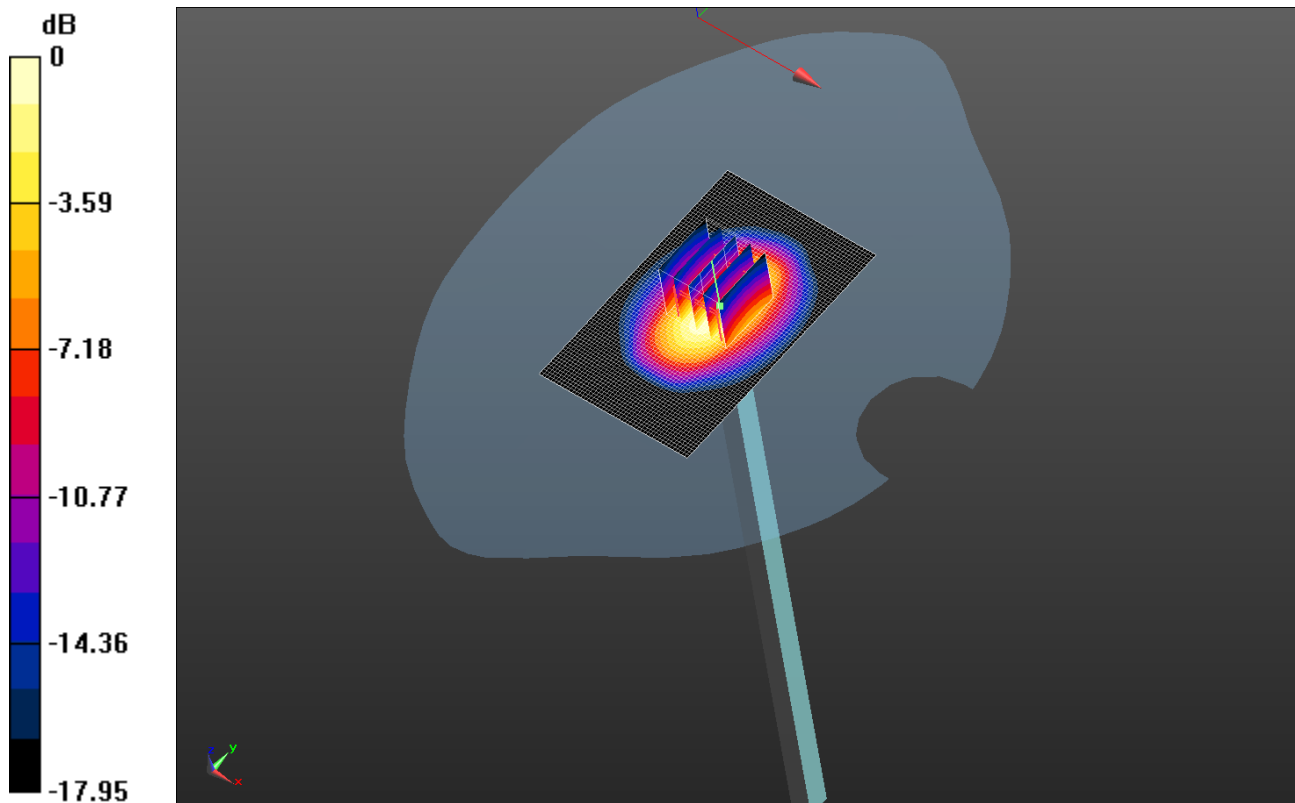
Peak SAR (extrapolated) = 70.6 W/kg

SAR(1 g) = 37.8 W/kg; SAR(10 g) = 19.5 W/kg (SAR corrected for target

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medium)

Maximum value of SAR (measured) = 48.2 W/kg



0 dB = 48.2 W/kg = 16.83 dBW/kg

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Date/Time: 11/11/2014 10:03:45 AM

Test Laboratory: BlackBerry RTS

DipoleValidation_1900MHz_11_11_14_Amb_Tem_24.0C_Liq_Tem_22.5C

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:545

Communication System: UID 0, CW; Frequency: 1900 MHz

Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.421 \text{ S/m}$; $\epsilon_r = 38.864$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY Configuration:

- Probe: ES3DV3 - SN3225; ConvF(5.24, 5.24, 5.24); Calibrated: 1/22/2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection), $z = 2.0, 32.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASYS 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/d=10mm, Pin=1000mW/Area Scan (41x81x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Reference Value = 177.3 V/m; Power Drift = 0.00 dB

Fast SAR: SAR(1 g) = 39.6 W/kg; SAR(10 g) = 20.6 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 49.9 W/kg

Configuration/d=10mm, Pin=1000mW/Zoom Scan (5x5x7) (5x5x7)/Cube

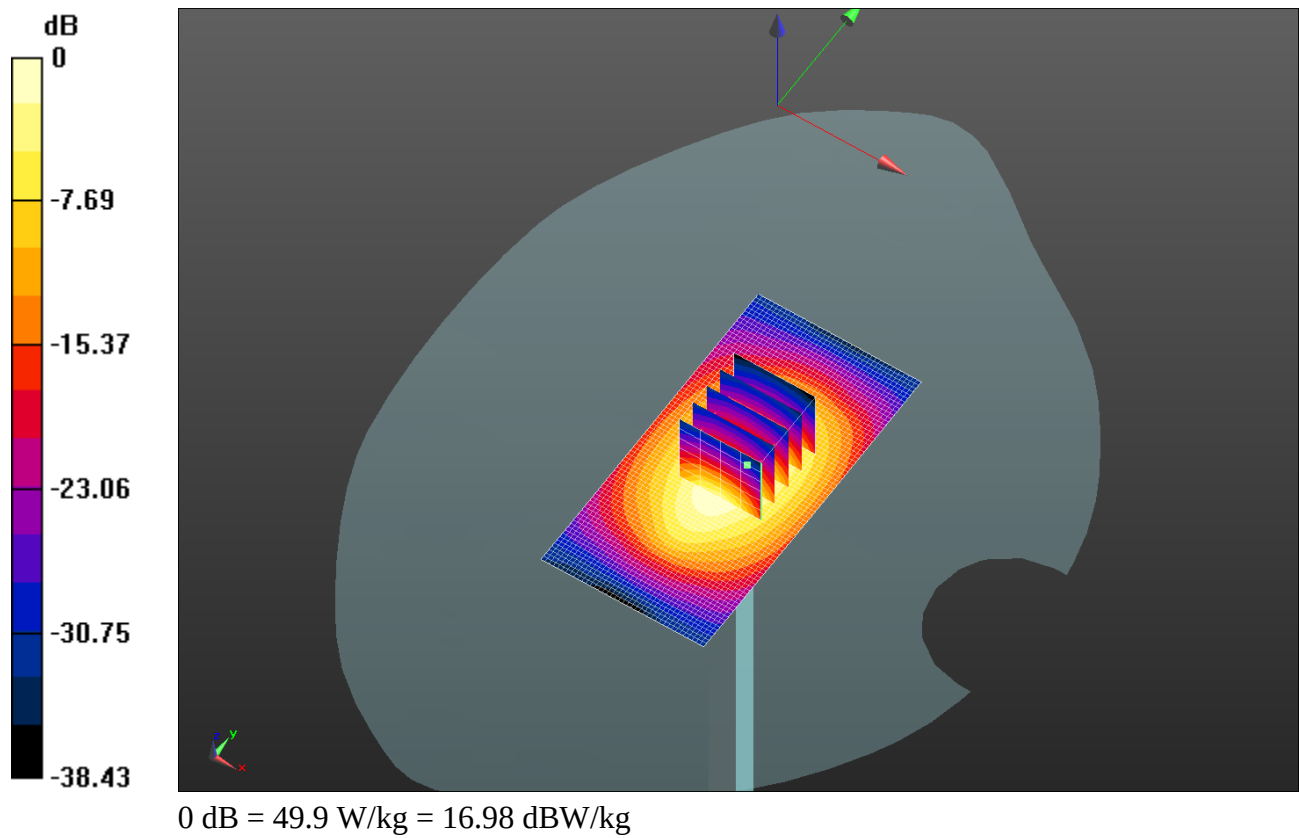
0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

Reference Value = 177.3 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 71.4 W/kg

SAR(1 g) = 39.2 W/kg; SAR(10 g) = 20.5 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 48.5 W/kg



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Date/Time: 11/20/2014 1:30:58 AM

Test Laboratory: BlackBerry RTS

DipoleValidation_2450MHz_11_20_14_Amb_Tem_24.4C_Liq_Tem_22.0C

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:791

Communication System: UID 0, CW; Frequency: 2450 MHz

Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.851 \text{ S/m}$; $\epsilon_r = 38.227$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY Configuration:

- Probe: ES3DV3 - SN3225; ConvF(4.64, 4.64, 4.64); Calibrated: 1/22/2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection), $z = 2.0, 32.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASYS 52.8.8(1222); SEMCAD X 14.6.10(7331)

System Performance Check at Frequencies between 2 GHz - 3 GHz/d=10mm, Pin=1000mW, dist=3.0mm (ES-Probe)/Area Scan (41x81x1): Interpolated grid: $dx=1.200 \text{ mm}$, $dy=1.200 \text{ mm}$

Reference Value = 200.0 V/m ; Power Drift = -0.20 dB

Fast SAR: SAR(1 g) = 52 W/kg ; SAR(10 g) = 24.2 W/kg (SAR corrected for target medium)

Maximum value of SAR (interpolated) = 67.3 W/kg

System Performance Check at Frequencies between 2 GHz - 3 GHz/d=10mm, Pin=1000mW, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 200.0 V/m ; Power Drift = -0.20 dB

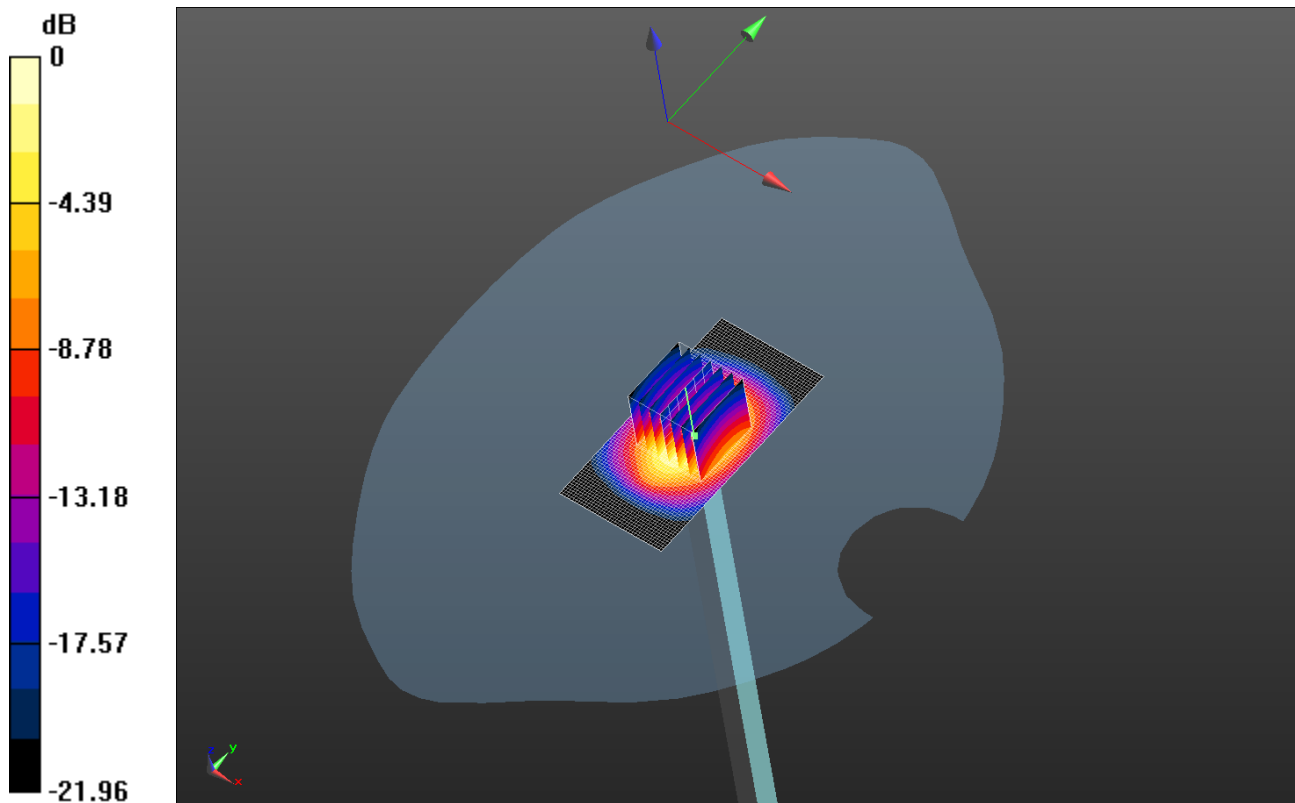
Peak SAR (extrapolated) = 108 W/kg

SAR(1 g) = 51.3 W/kg ; SAR(10 g) = 23.8 W/kg (SAR corrected for target

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medium)

Maximum value of SAR (measured) = 68.2 W/kg



0 dB = 68.2 W/kg = 18.34 dBW/kg

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Date/Time: 11/24/2014 12:16:55 PM

Test Laboratory: BlackBerry RTS

**DipoleValidation_5200-5800MHz_11_24_14_Amb_Tem_24.0C_
Liq_Tem_22.6C**

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN 1033

Communication System: UID 0, CW (0); Frequency: 5200 MHz

Medium parameters used: $f = 5200$ MHz; $\sigma = 4.727$ S/m; $\epsilon_r = 35.009$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY Configuration:

- Probe: EX3DV4 - SN3592; ConvF(4.63, 4.63, 4.63); Calibrated: 11/10/2014;
- Sensor-Surface: 2mm (Mechanical Surface Detection), $z = 1.0, 23.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASYS 52.8.8(1222); SEMCAD X 14.6.10(7331)

**System Performance Check at Frequency 5.2 GHz/d=10mm,
Pin=1000mW, dist=2.0mm (EX-Probe)/Area Scan (61x91x1):** Interpolated
grid: $dx=1.000$ mm, $dy=1.000$ mm
Maximum value of SAR (interpolated) = 179 W/kg

**System Performance Check at Frequency 5.2 GHz/d=10mm,
Pin=1000mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x12)
(7x7x12)/Cube 0:** Measurement grid: $dx=4$ mm, $dy=4$ mm, $dz=2$ mm
Reference Value = 196.4 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 332 W/kg
SAR(1 g) = 83 W/kg; SAR(10 g) = 24.1 W/kg (SAR corrected for target
medium)
Maximum value of SAR (measured) = 168 W/kg

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Date/Time: 11/24/2014 12:44:30 PM

Test Laboratory: BlackBerry RTS

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN 1033

Communication System: UID 0, CW (0); Frequency: 5500 MHz

Medium parameters used: $f = 5500 \text{ MHz}$; $\sigma = 5.113 \text{ S/m}$; $\epsilon_r = 34.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

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

DASY Configuration:

- Probe: EX3DV4 - SN3592; ConvF(4.2, 4.2, 4.2); Calibrated: 11/10/2014;
- Sensor-Surface: 2mm (Mechanical Surface Detection), $z = 1.0, 23.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**System Performance Check at Frequency 5.5 GHz/d=10mm,
Pin=1000mW, dist=2.0mm (EX-Probe)/Area Scan (61x91x1):** Interpolated
grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 194 W/kg

**System Performance Check at Frequency 5.5 GHz/d=10mm,
Pin=1000mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x12)
(7x7x12)/Cube 0:** Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$
Reference Value = 199.5 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 372 W/kg
SAR(1 g) = 88.7 W/kg; SAR(10 g) = 25.5 W/kg (SAR corrected for target
medium)
Maximum value of SAR (measured) = 182 W/kg

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Date/Time: 11/24/2014 1:44:32 PM

Test Laboratory: BlackBerry RTS

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN 1033

Communication System: UID 0, CW (0); Frequency: 5800 MHz

Medium parameters used: $f = 5800 \text{ MHz}$; $\sigma = 5.457 \text{ S/m}$; $\epsilon_r = 33.712$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

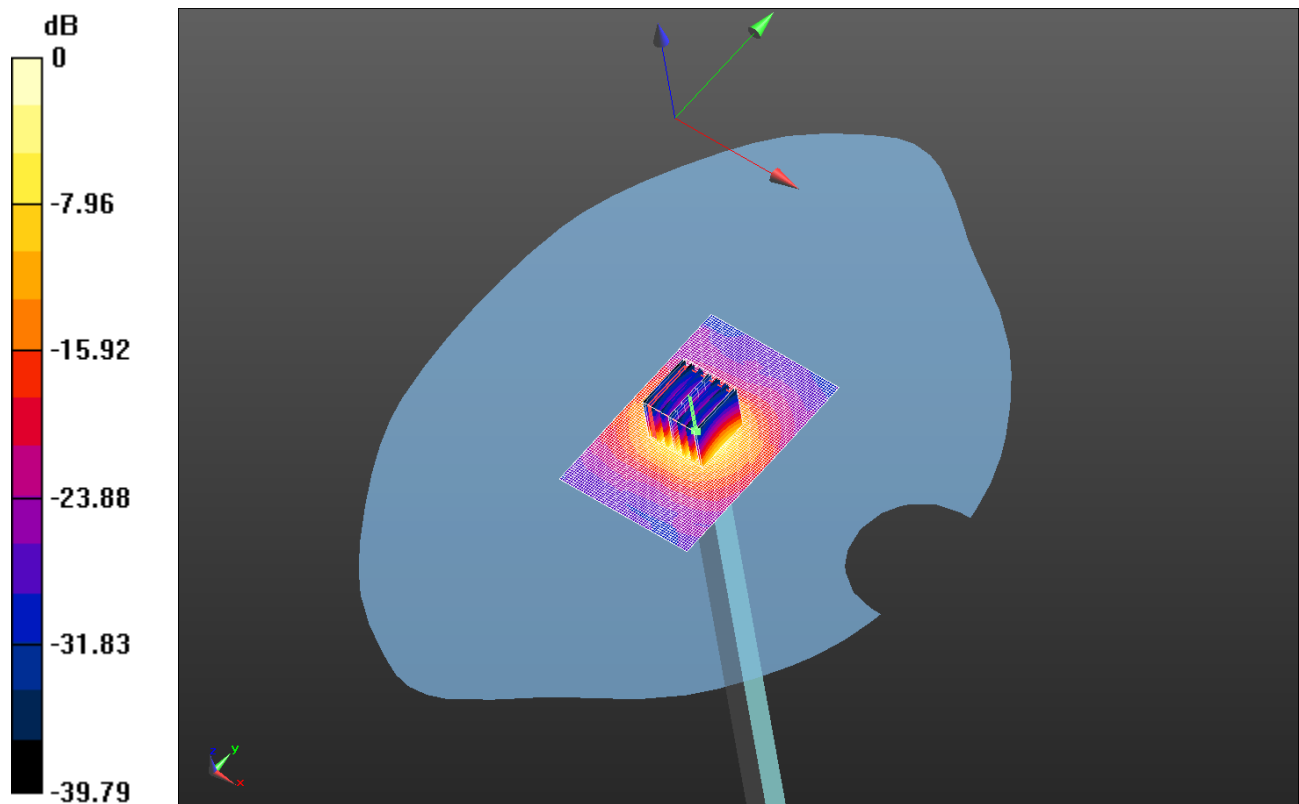
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY Configuration:

- Probe: EX3DV4 - SN3592; ConvF(4.34, 4.34, 4.34); Calibrated: 11/10/2014;
- Sensor-Surface: 2mm (Mechanical Surface Detection), $z = 1.0, 23.0$
- Electronics: DAE3 Sn472; Calibrated: 3/18/2014
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

System Performance Check at Frequency 5.8 GHz/d=10mm, Pin=1000mW, dist=2.0mm (EX-Probe)/Area Scan (61x91x1): Interpolated grid: $dx=1.000 \text{ mm}$, $dy=1.000 \text{ mm}$
Maximum value of SAR (interpolated) = 190 W/kg

System Performance Check at Frequency 5.8 GHz/d=10mm, Pin=1000mW, dist=2.0mm (EX-Probe)/Zoom Scan (7x7x12) (7x7x12)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$
Reference Value = 190.5 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 370 W/kg
SAR(1 g) = 84.3 W/kg; SAR(10 g) = 24.1 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 177 W/kg



0 dB = 177 W/kg = 22.48 dBW/kg