Appendix 1

SAR Distribution Plots for Test System Verification

System Accuracy Verification Measurements for Head SAR Measurements

Date/Time: 1/4/2014 7:01:45 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D835V2 - SN:422tr

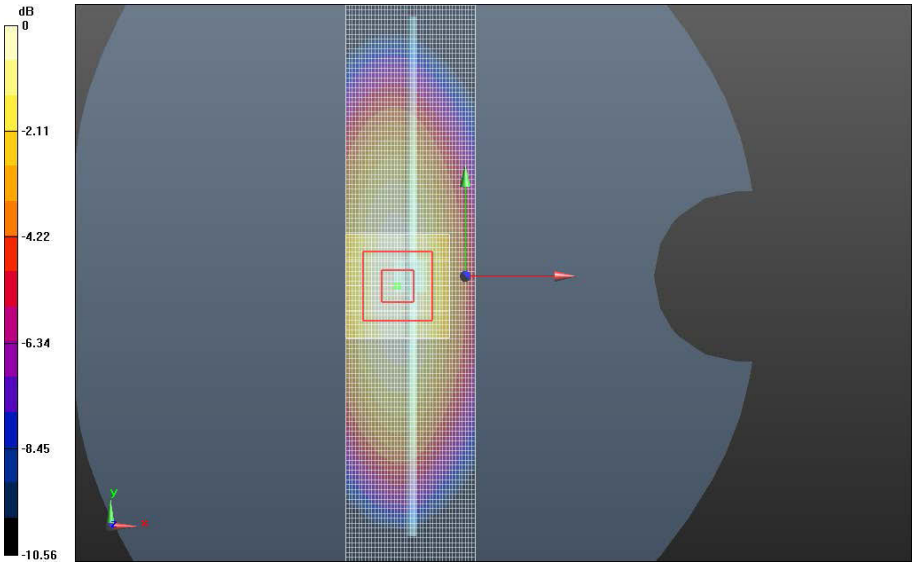
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(6.2,6.2,6.2); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#1 - Sugar SAM (extended range), Rev.2 (24-Feb-12);
  Type: SAM v4.0; Serial: TP-1156
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 835.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=835 MHz; σ = 0.9237; ε_r = 40.57 mho/m; ρ = 1.000 kg/m^3

<2 GHz, SAM Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 1.94 W/kg; SAR(10g) = 1.30 W/kg

<2 GHz, SAM Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 47.838 V/m, Power Drift = -0.00622 dB
Averaged SAR: SAR(1g) = 1.94 W/kg; SAR(10g) = 1.27 W/kg



Daily SPC Check

Date/Time: 1/6/2014 8:42:42 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D835V2 - SN:422tr

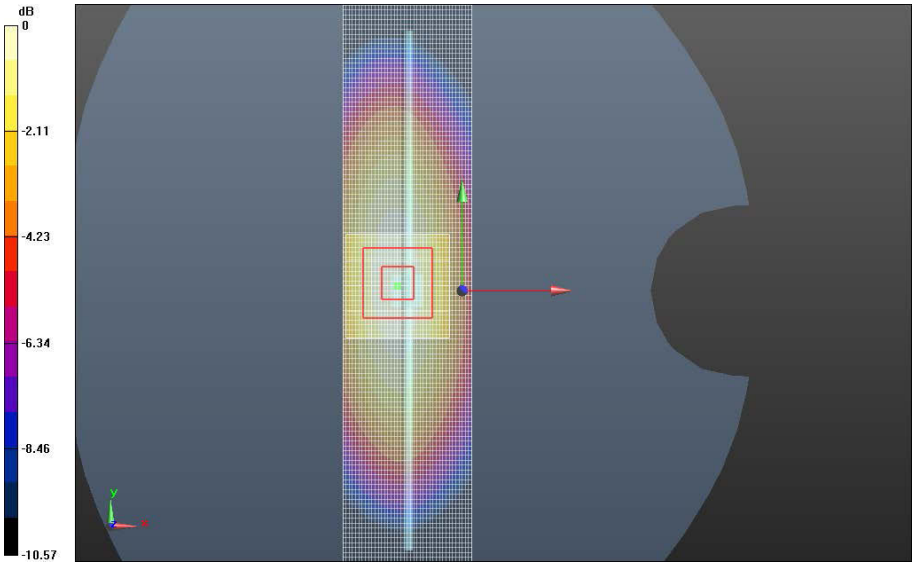
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(6.2,6.2,6.2); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#1 - Sugar SAM (extended range), Rev.2 (24-Feb-12);
  Type: SAM v4.0; Serial: TP-1156
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 835.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=835 MHz; σ = 0.9087; ε_r = 39.84 mho/m; ρ = 1.000 kg/m^3

<2 GHz, SAM Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 1.92 W/kg; SAR(10g) = 1.28 W/kg

<2 GHz, SAM Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 48.219 V/m, Power Drift = 0.00119 dB
Averaged SAR: SAR(1g) = 1.92 W/kg; SAR(10g) = 1.26 W/kg



Daily SPC Check

Date/Time: 1/7/2014 7:13:15 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:281tr

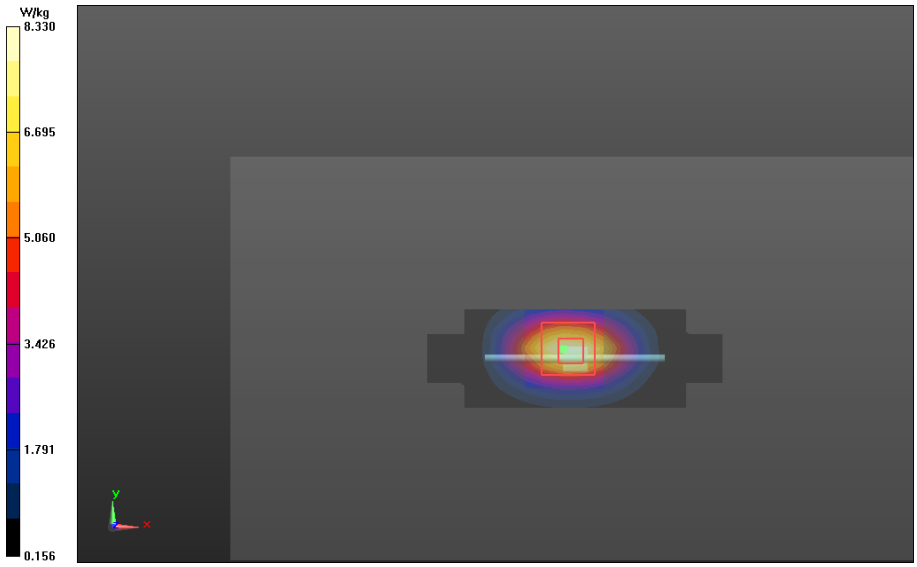
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(5.15,5.15,5.15); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.352; ε_r = 37.03 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.60 W/kg; SAR(10g) = 4.13 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 78.619 V/m, Power Drift = -0.0065 dB
Averaged SAR: SAR(1g) = 7.50 W/kg; SAR(10g) = 3.97 W/kg



Daily SPC Check

Date/Time: 1/14/2014 7:13:32 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:281tr

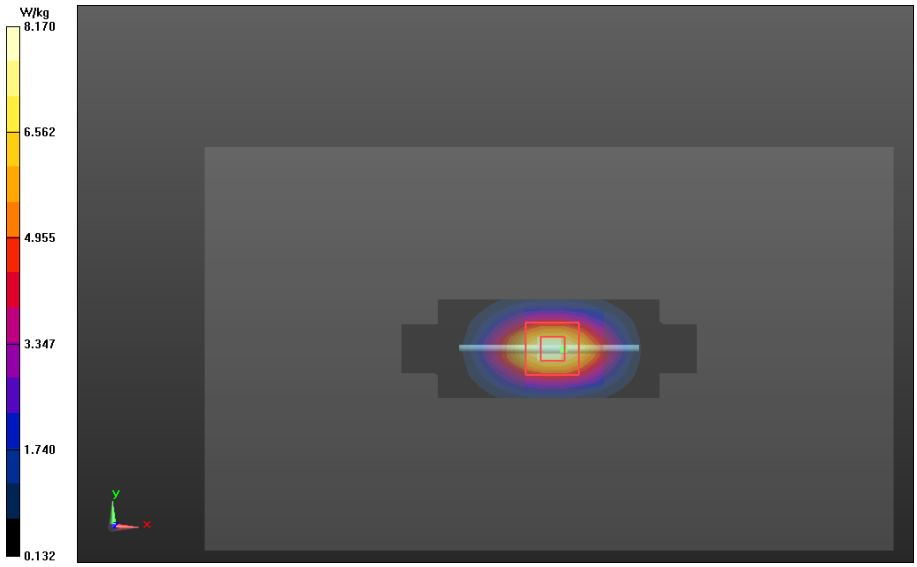
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(5.15,5.15,5.15); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.349; ε_r = 37.98 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.56 W/kg; SAR(10g) = 4.10 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 79.632 V/m, Power Drift = -0.011 dB
Averaged SAR: SAR(1g) = 7.49 W/kg; SAR(10g) = 3.96 W/kg



Daily SPC Check

Date/Time: 12/18/2013 6:12:07 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D750V3 - SN:1040

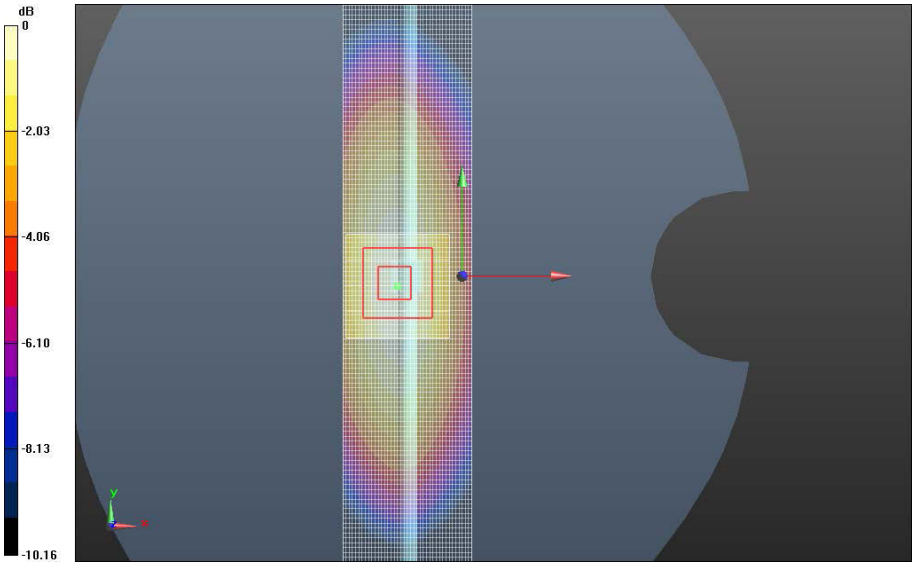
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(6.72,6.72,6.72); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Glycol SAM (extended range), Rev.2 (24-Feb-12);
  Type: SAM v4.0; Serial: TP-1136
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 750.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=750 MHz; σ = 0.8821; ε_r = 41.55 mho/m; ρ = 1.000 kg/m^3

<2 GHz, SAM Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 1.62 W/kg; SAR(10g) = 1.09 W/kg

<2 GHz, SAM Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 44.428 V/m, Power Drift = -0.011 dB
Averaged SAR: SAR(1g) = 1.61 W/kg; SAR(10g) = 1.07 W/kg



Daily SPC Check

Date/Time: 1/9/2014 2:39:27 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D835V2 - SN:436tr

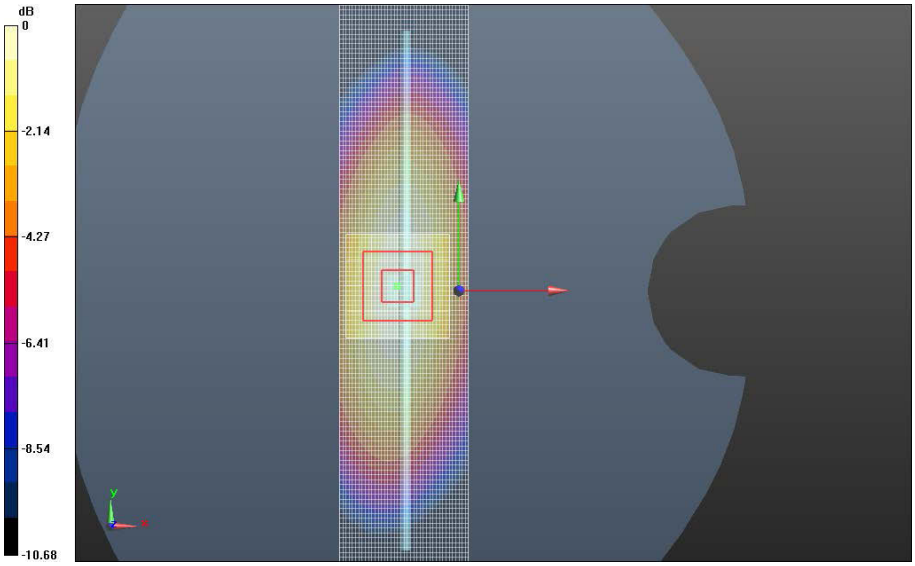
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(6.24,6.24,6.24); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Sugar SAM (extended range), Rev.2 (24-Feb-12);
  Type: SAM v4.0; Serial: TP-1235
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 835.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=835 MHz; σ = 0.9472; ε_r = 42.17 mho/m; ρ = 1.000 kg/m^3

<2 GHz, SAM Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 2.03 W/kg; SAR(10g) = 1.35 W/kg

<2 GHz, SAM Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 49.613 V/m, Power Drift = -0.021 dB
Averaged SAR: SAR(1g) = 2.01 W/kg; SAR(10g) = 1.33 W/kg



Daily SPC Check

Date/Time: 12/19/2013 7:13:04 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

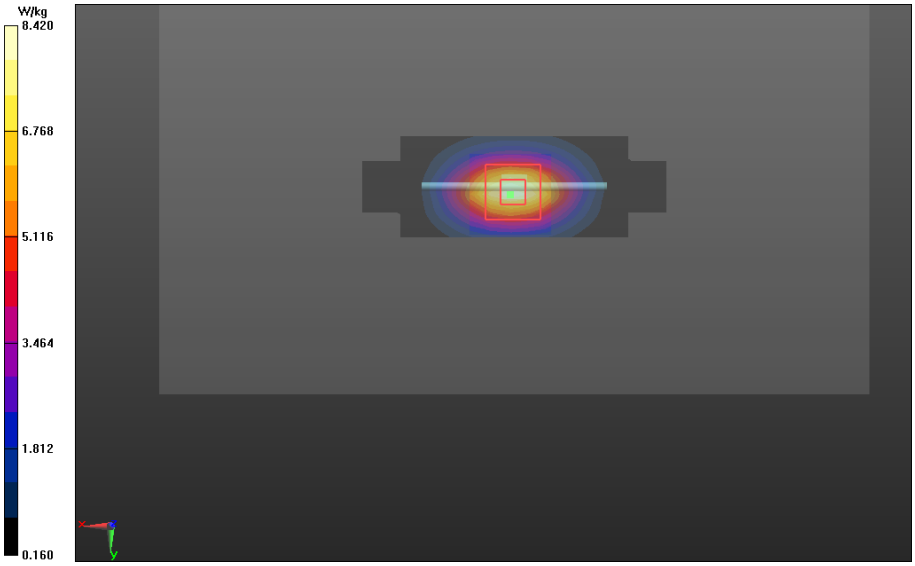
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.29,5.29,5.29); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.351; ε_r = 37.21 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.70 W/kg; SAR(10g) = 4.16 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 79.302 V/m, Power Drift = 0.033 dB
Averaged SAR: SAR(1g) = 7.60 W/kg; SAR(10g) = 4.01 W/kg



Daily SPC Check

Date/Time: 12/30/2013 11:42:48 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

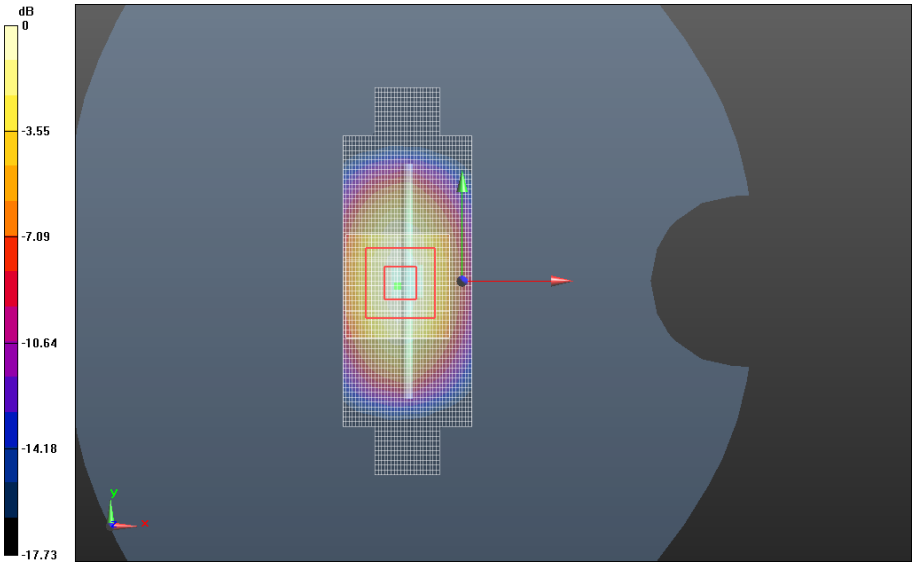
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.29,5.29,5.29); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Glycol SAM (extended range), Rev.2 (24-Feb-12);
  Type: SAM v4.0; Serial: TP-1136
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.406; ε_r = 37.65 mho/m; ρ = 1.000 kg/m^3

<2 GHz, SAM Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.75 W/kg; SAR(10g) = 4.22 W/kg

<2 GHz, SAM Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 79.042 V/m, Power Drift = -8.36e-005 dB
Averaged SAR: SAR(1g) = 7.68 W/kg; SAR(10g) = 4.02 W/kg



Daily SPC Check

Date/Time: 1/15/2014 6:32:53 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D2450V2 - SN:740

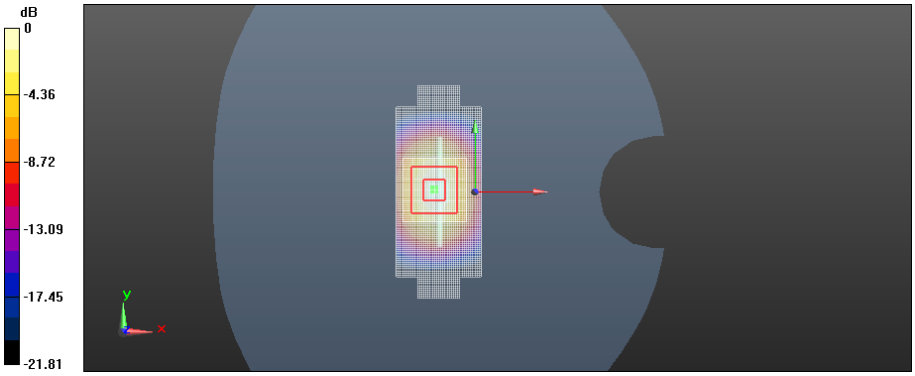
DASY Configuration:

- Probe: EX3DV4 - SN3728; ConvF(6.91,6.91,6.91); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn784; Calibrated: 3/6/2013
- Phantom: R#3, 2450 WiFi SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1153
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 2450 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=2450 MHz; σ = 1.765; ε_r = 36.61 mho/m; ρ = 1.000 kg/m^3

2-3 GHz, SAM Daily SPC Check/fastSAR, Dipole Area Scan (41x221x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 5.26 W/kg; SAR(10g) = 2.48 W/kg

2-3 GHz, SAM Daily SPC Check/CUBE SAR, 7x7x7 (31x31x36)/Cube 0:
Interpolated grid: dx=1.000 mm, dy=1.000 mm, dz=1.000 mm
Reference Value = 58.380 V/m, Power Drift = -0.043 dB
Averaged SAR: SAR(1g) = 5.27 W/kg; SAR(10g) = 2.43 W/kg



Daily SPC Check

System Accuracy Verification Measurements for Body SAR Measurements

Date/Time: 12/26/2013 11:54:38 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D750V3 - SN:1040

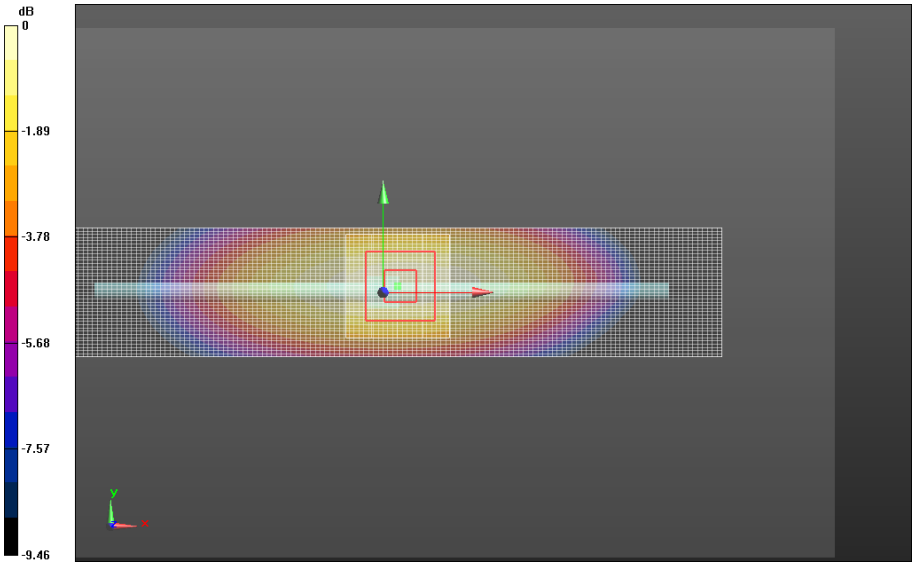
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(5.97,5.97,5.97); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 750.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=750 MHz; σ = 0.9236; ε_r = 55.35 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 1.81 W/kg; SAR(10g) = 1.20 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 45.269 V/m, Power Drift = 0.00504 dB
Averaged SAR: SAR(1g) = 1.79 W/kg; SAR(10g) = 1.20 W/kg



Daily SPC Check

Date/Time: 12/23/2013 12:23:59 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D835V2 - SN:422tr

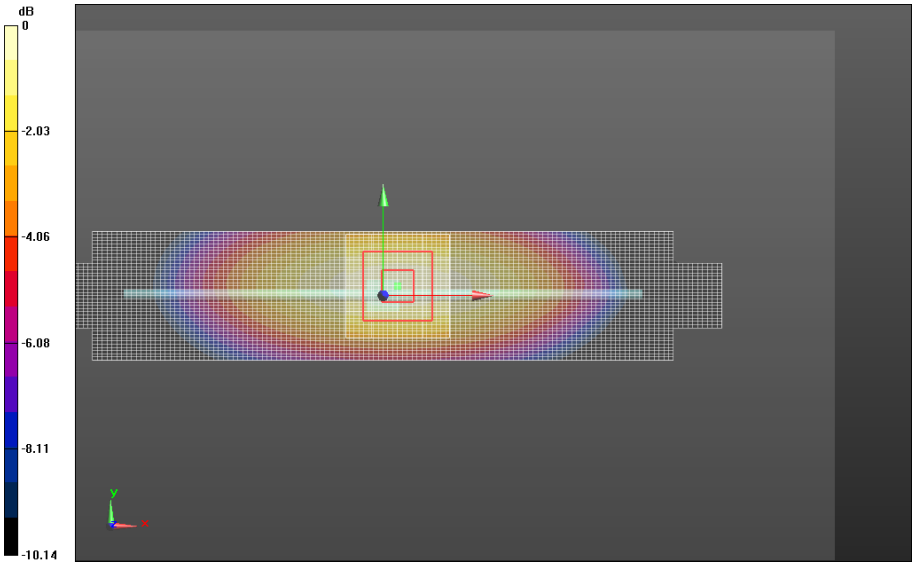
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 835.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=835 MHz; σ = 0.9998; ε_r = 54.23 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 2.04 W/kg; SAR(10g) = 1.35 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 47.751 V/m, Power Drift = -0.00264 dB
Averaged SAR: SAR(1g) = 2.05 W/kg; SAR(10g) = 1.36 W/kg



Daily SPC Check

Date/Time: 1/3/2014 12:20:11 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D835V2 - SN:422tr

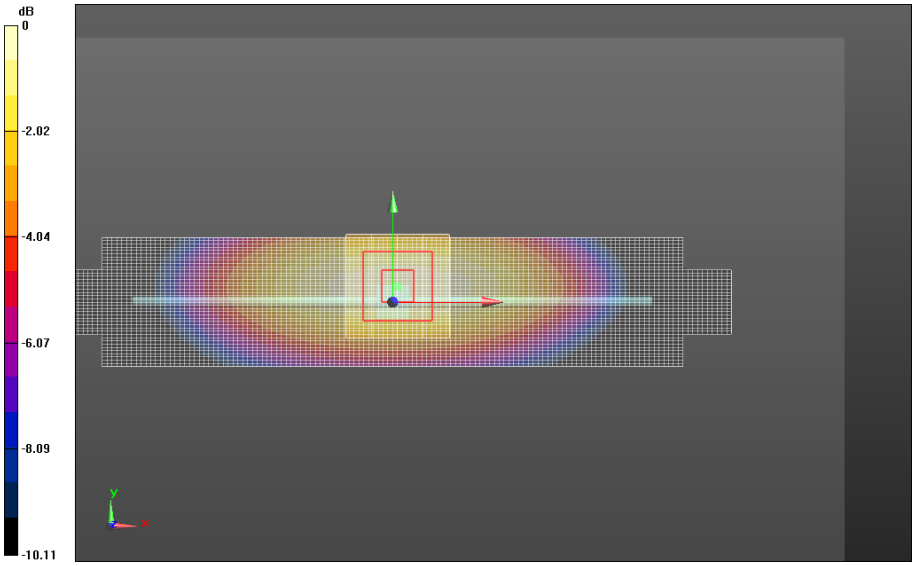
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 835.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=835 MHz; σ = 1.002; ε_r = 54.26 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 2.02 W/kg; SAR(10g) = 1.34 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 47.589 V/m, Power Drift = -0.029 dB
Averaged SAR: SAR(1g) = 2.01 W/kg; SAR(10g) = 1.34 W/kg



Daily SPC Check

Date/Time: 1/7/2014 7:40:10 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D835V2 - SN:422tr

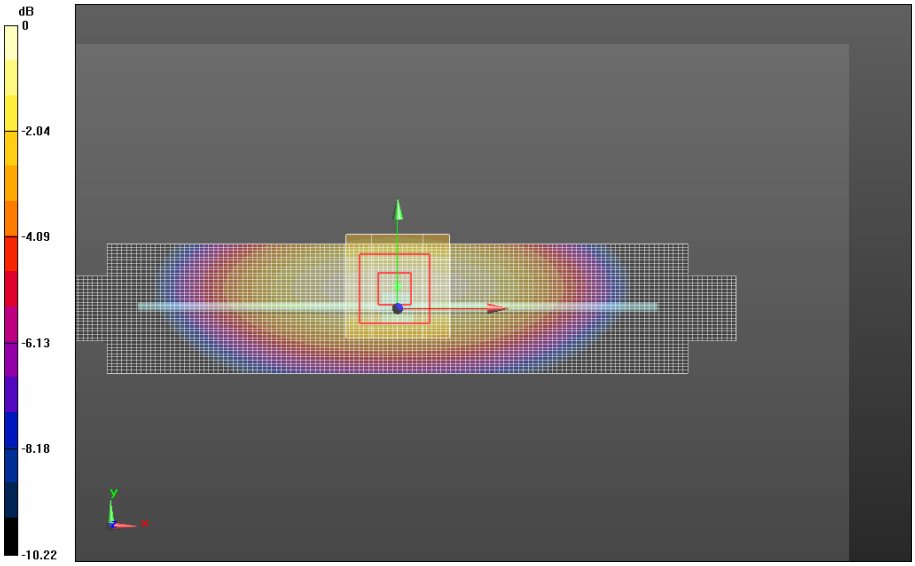
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 835.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=835 MHz; σ = 1.004; ε_r = 53.60 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 2.01 W/kg; SAR(10g) = 1.34 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 46.319 V/m, Power Drift = -0.020 dB
Averaged SAR: SAR(1g) = 2.00 W/kg; SAR(10g) = 1.33 W/kg



Daily SPC Check

Date/Time: 1/10/2014 1:38:05 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D835V2 - SN:422tr

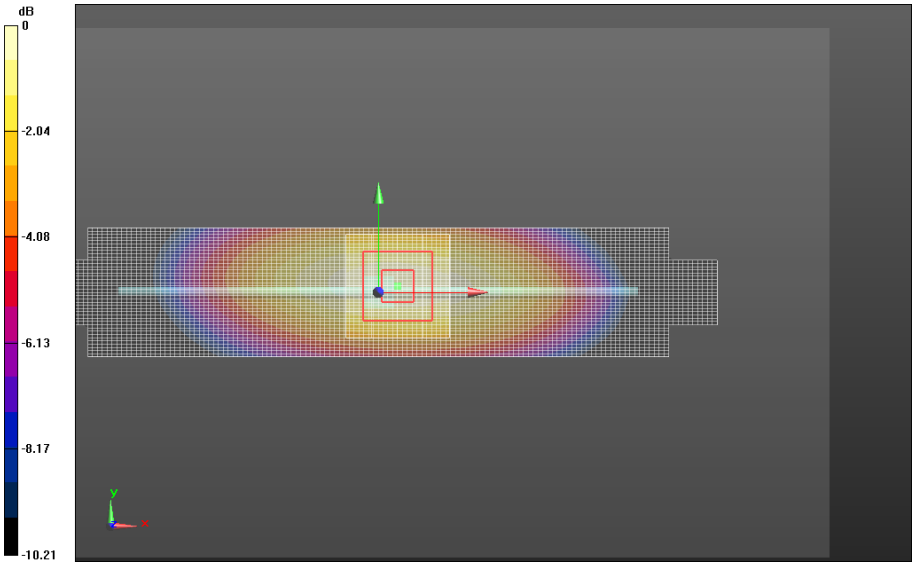
DASY Configuration:

- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 835.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=835 MHz; σ = 1.003; ε_r = 53.57 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 2.02 W/kg; SAR(10g) = 1.35 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 47.624 V/m, Power Drift = -0.029 dB
Averaged SAR: SAR(1g) = 2.02 W/kg; SAR(10g) = 1.34 W/kg



Daily SPC Check

Date/Time: 12/18/2013 6:34:34 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D750V3 - SN:1040

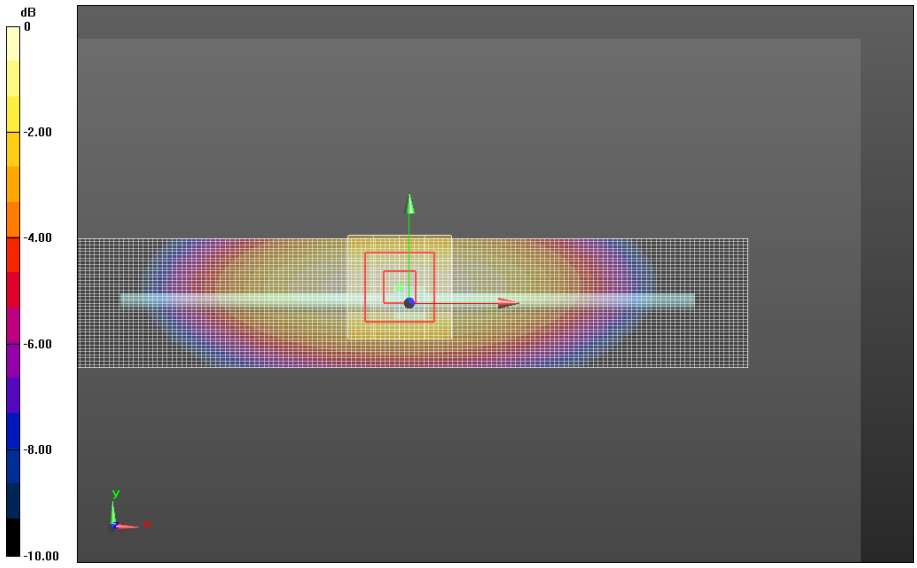
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(6.45,6.45,6.45); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 750.0 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=750 MHz; σ = 0.9772; ε_r = 52.36 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 1.71 W/kg; SAR(10g) = 1.15 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 43.451 V/m, Power Drift = -0.029 dB
Averaged SAR: SAR(1g) = 1.70 W/kg; SAR(10g) = 1.13 W/kg



Daily SPC Check

Date/Time: 12/23/2013 8:13:45 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

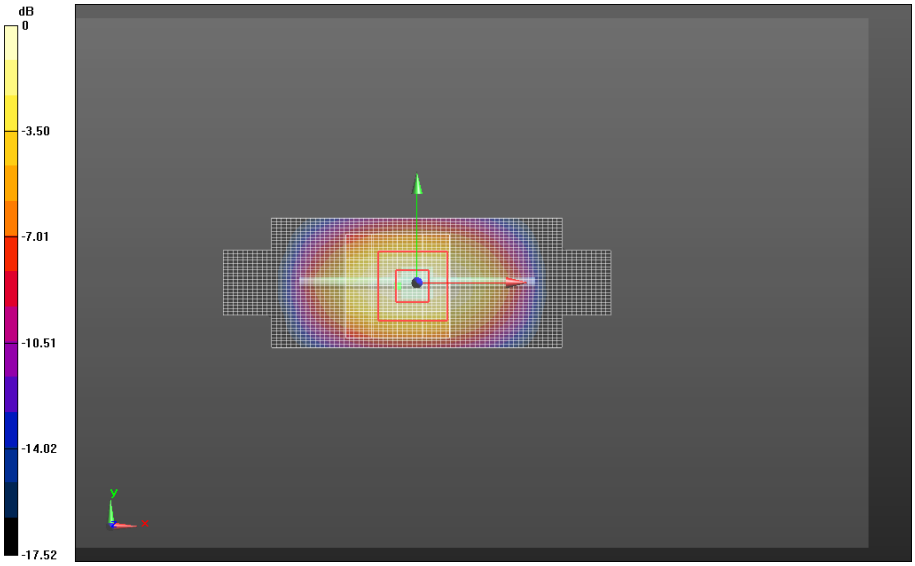
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.485; ε_r = 49.80 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.92 W/kg; SAR(10g) = 4.23 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 76.169 V/m, Power Drift = 0.018 dB
Averaged SAR: SAR(1g) = 7.79 W/kg; SAR(10g) = 4.14 W/kg



Daily SPC Check

Date/Time: 12/27/2013 8:56:16 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

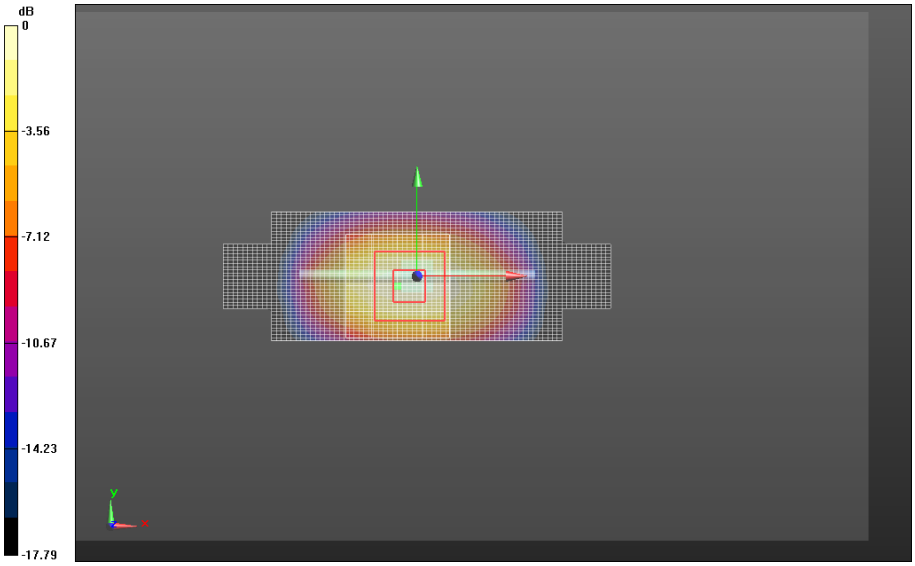
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.529; ε_r = 49.52 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.78 W/kg; SAR(10g) = 4.17 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 71.397 V/m, Power Drift = 0.064 dB
Averaged SAR: SAR(1g) = 7.62 W/kg; SAR(10g) = 4.04 W/kg



Daily SPC Check

Date/Time: 12/28/2013 7:39:56 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

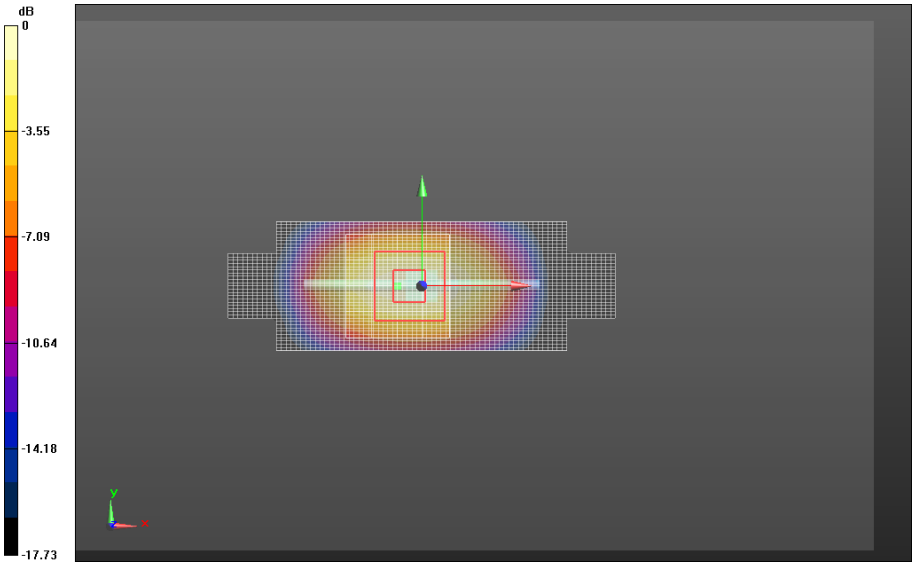
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.532; ε_r = 49.34 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.69 W/kg; SAR(10g) = 4.11 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 75.170 V/m, Power Drift = 0.032 dB
Averaged SAR: SAR(1g) = 7.55 W/kg; SAR(10g) = 4.00 W/kg



Daily SPC Check

Date/Time: 12/29/2013 5:38:36 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

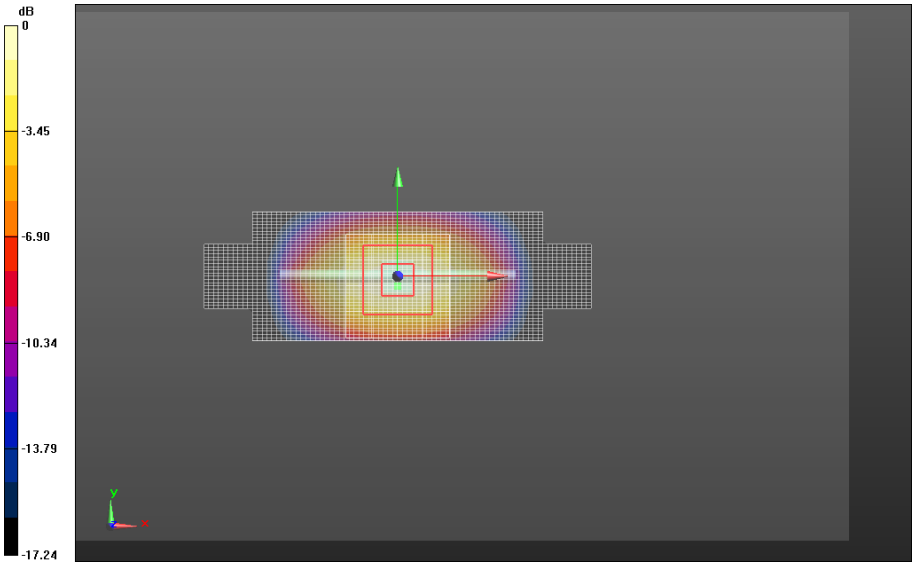
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.531; ε_r = 49.40 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.72 W/kg; SAR(10g) = 4.17 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 74.220 V/m, Power Drift = 0.054 dB
Averaged SAR: SAR(1g) = 7.64 W/kg; SAR(10g) = 4.04 W/kg



Daily SPC Check

Date/Time: 12/30/2013 8:04:44 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

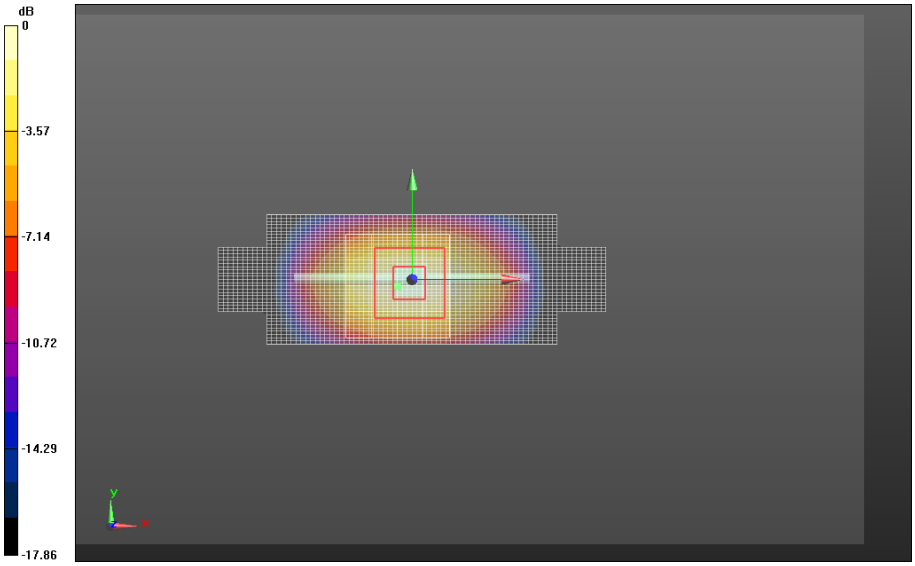
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.534; ε_r = 49.37 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.74 W/kg; SAR(10g) = 4.17 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 74.276 V/m, Power Drift = 0.029 dB
Averaged SAR: SAR(1g) = 7.62 W/kg; SAR(10g) = 4.04 W/kg



Daily SPC Check

Date/Time: 1/4/2014 6:39:41 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

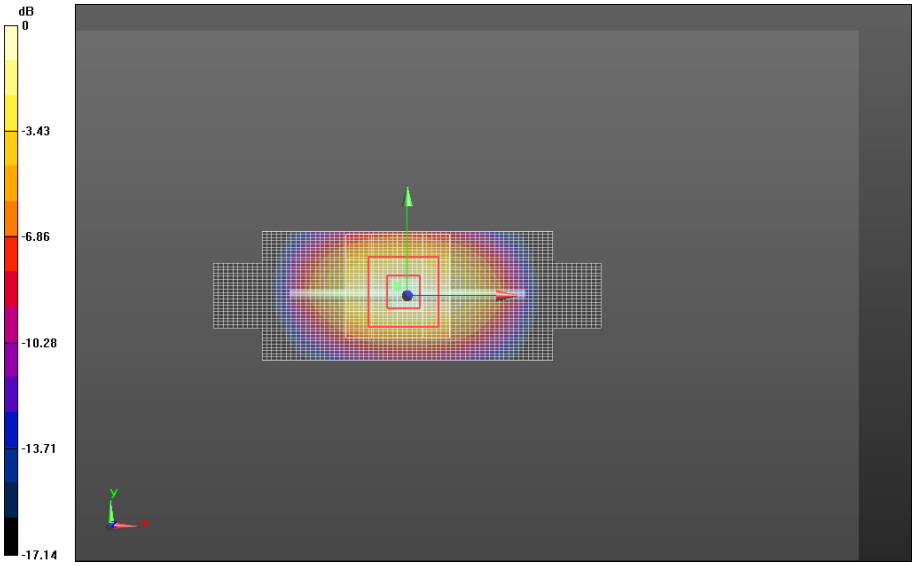
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.471; ε_r = 49.55 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.67 W/kg; SAR(10g) = 4.10 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 77.107 V/m, Power Drift = -0.023 dB
Averaged SAR: SAR(1g) = 7.58 W/kg; SAR(10g) = 4.02 W/kg



Daily SPC Check

Date/Time: 1/6/2014 9:34:53 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

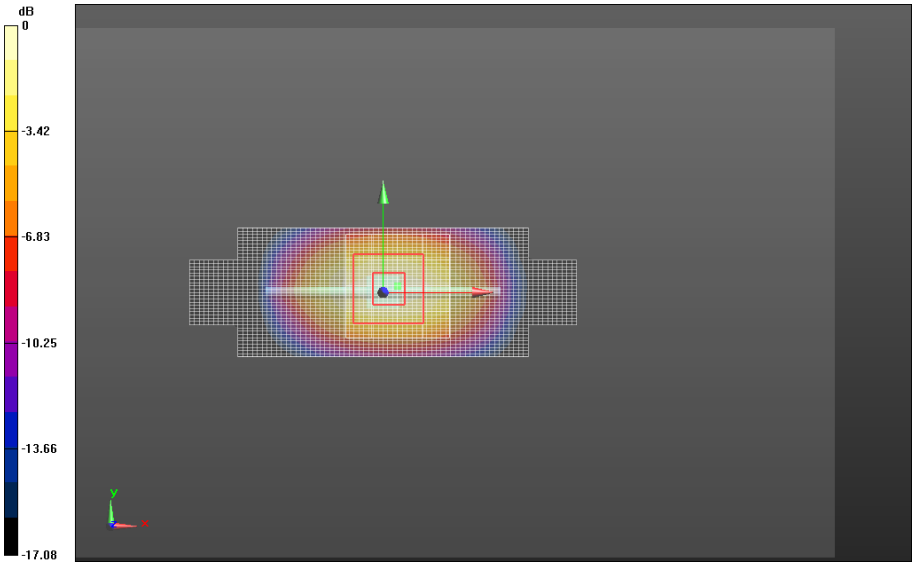
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.469; ε_r = 49.34 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.77 W/kg; SAR(10g) = 4.14 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 77.103 V/m, Power Drift = 0.032 dB
Averaged SAR: SAR(1g) = 7.70 W/kg; SAR(10g) = 4.08 W/kg



Daily SPC Check

Date/Time: 1/7/2014 7:41:08 AM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D1800V2 - SN:2d190

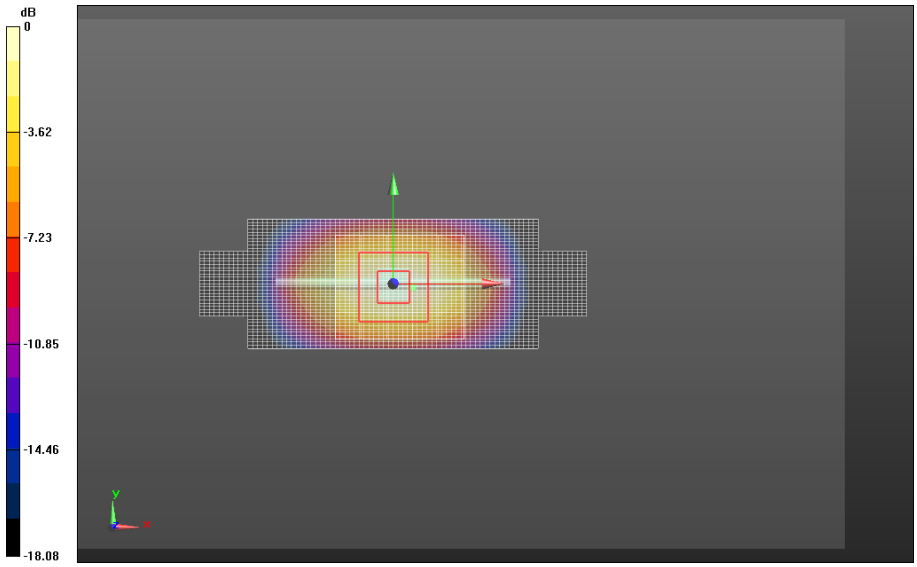
DASY Configuration:

- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 1800 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=1800 MHz; σ = 1.505; ε_r = 49.57 mho/m; ρ = 1.000 kg/m^3

< 2GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x141x1):
Interpolated grid: dx=1.000 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 7.72 W/kg; SAR(10g) = 4.15 W/kg

< 2GHz, Daily SPC Check/CUBE SAR, 5x5x7 (21x26x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 77.198 V/m, Power Drift = -0.012 dB
Averaged SAR: SAR(1g) = 7.61 W/kg; SAR(10g) = 4.06 W/kg



Daily SPC Check

Date/Time: 1/15/2014 7:08:43 PM

Test Lab: Motorola Mobility - CW System Verification for SAR using Dipoles

DUT Serial: D2450V2 - SN:740

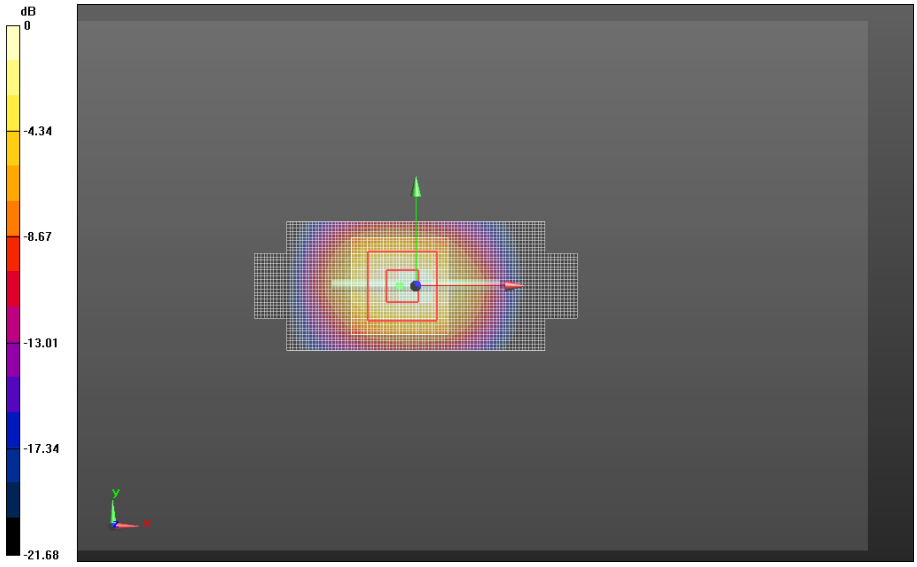
DASY Configuration:

- Probe: EX3DV4 - SN3728; ConvF(7.13,7.13,7.13); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn784; Calibrated: 3/6/2013
- Phantom: R#-3, Triple Flat Phantom 5.1C (Rev.4);
  Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: CW for SAR Dipoles; Frequency: 2450 MHz; Duty Cycle: 1:1.000
Medium Parameters used: f=2450 MHz; σ = 1.977; ε_r = 48.89 mho/m; ρ = 1.000 kg/m^3

2-3GHz, Daily SPC Check/fastSAR, Dipole Area Scan (41x221x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 5.00 W/kg; SAR(10g) = 2.32 W/kg

2-3GHz, Daily SPC Check/CUBE SAR, 7x7x7 (31x31x36)/Cube 0:
Interpolated grid: dx=1.000 mm, dy=1.000 mm, dz=1.000 mm
Reference Value = 53.778 V/m, Power Drift = -0.136 dB
Averaged SAR: SAR(1g) = 4.98 W/kg; SAR(10g) = 2.32 W/kg



Daily SPC Check

Appendix 2

SAR Distribution Plots for Head-Adjacent Test Results

Date/Time: 12/18/2013 8:26:50 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0013;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

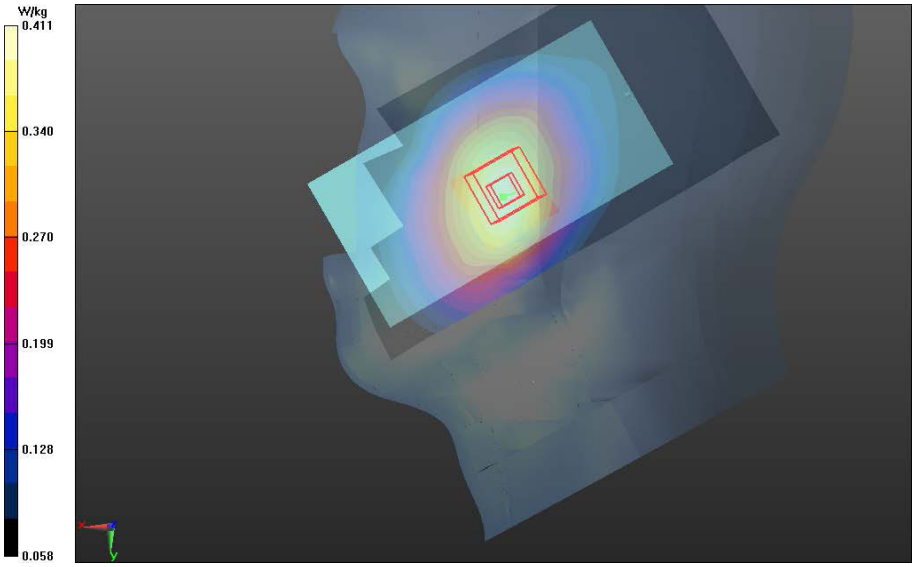
- Probe: ES3DV3 - SN3184; ConvF(6.72,6.72,6.72); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Glycol SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1136
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 17 (0); Communication System Band: Band 17: 10 MHz BW; Frequency: 710.0 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=710 MHz; σ = 0.8532; ε_r = 41.85 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Right Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.400 W/kg; SAR(10g) = 0.277 W/kg

0.6-2GHz Right Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 21.539 V/m, Power Drift = 0.0046 dB
Averaged SAR: SAR(1g) = 0.404 W/kg; SAR(10g) = 0.311 W/kg



0.6-2GHz Right Head Template

Date/Time: 1/9/2014 4:33:41 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0013;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

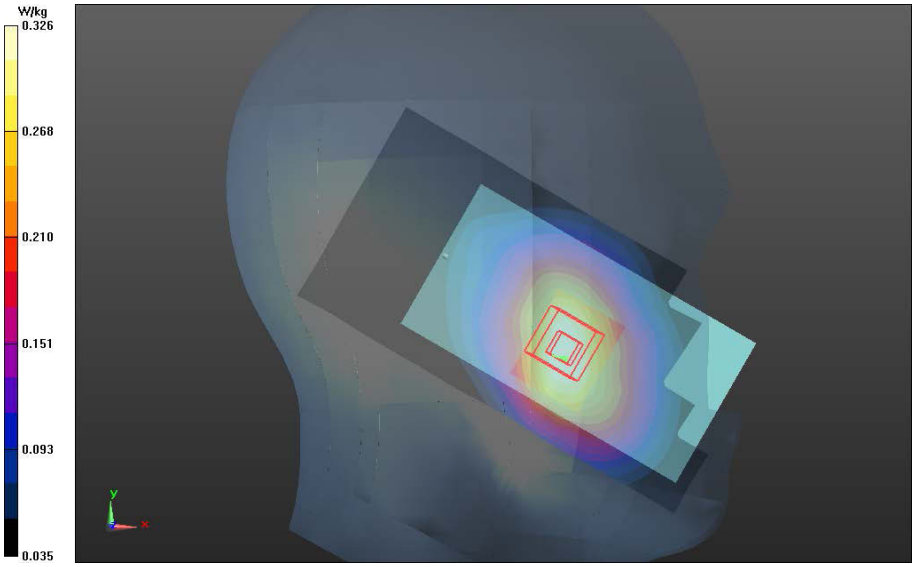
- Probe: ES3DV3 - SN3184; ConvF(6.24,6.24,6.24); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Sugar SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1235
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 05 (0); Communication System Band: Band 5: 10 MHz BW; Frequency: 836.5 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=836.5 MHz; σ = 0.9488; ε_r = 42.15 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.313 W/kg; SAR(10g) = 0.213 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (26x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 18.980 V/m, Power Drift = -0.038 dB
Averaged SAR: SAR(1g) = 0.312 W/kg; SAR(10g) = 0.233 W/kg



0.6-2GHz, Left Head Template

Date/Time: 1/14/2014 6:50:15 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0009;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

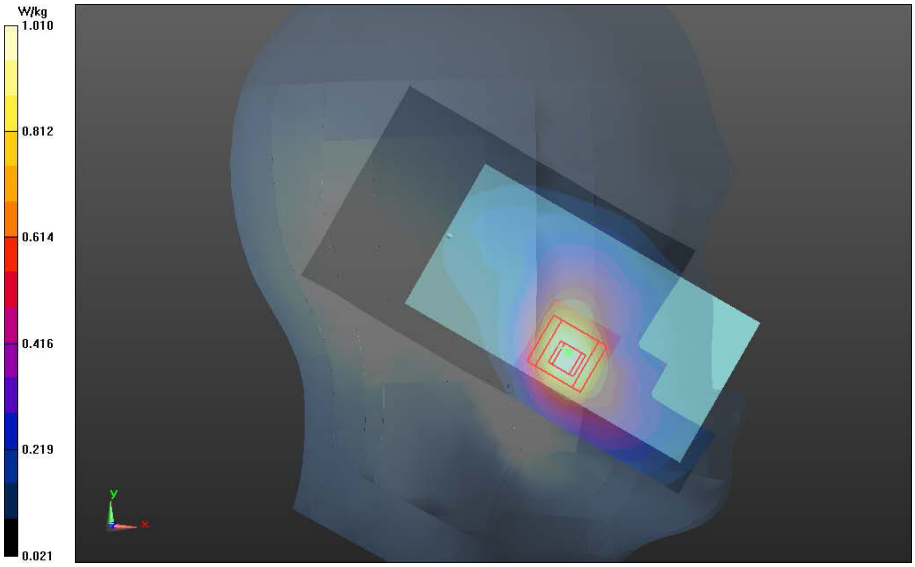
- Probe: ES3DV3 - SN3283; ConvF(5.15,5.15,5.15); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#1 - Glycol SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1319
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 04 (0); Communication System Band: Band 4: 20 MHz BW; Frequency: 1733 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1732.5 MHz; σ = 1.322; ε_r = 37.04 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.952 W/kg; SAR(10g) = 0.562 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 25.937 V/m, Power Drift = 0.037 dB
Averaged SAR: SAR(1g) = 0.950 W/kg; SAR(10g) = 0.596 W/kg



0.6-2GHz, Left Head Template

Date/Time: 12/19/2013 5:05:10 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0009;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

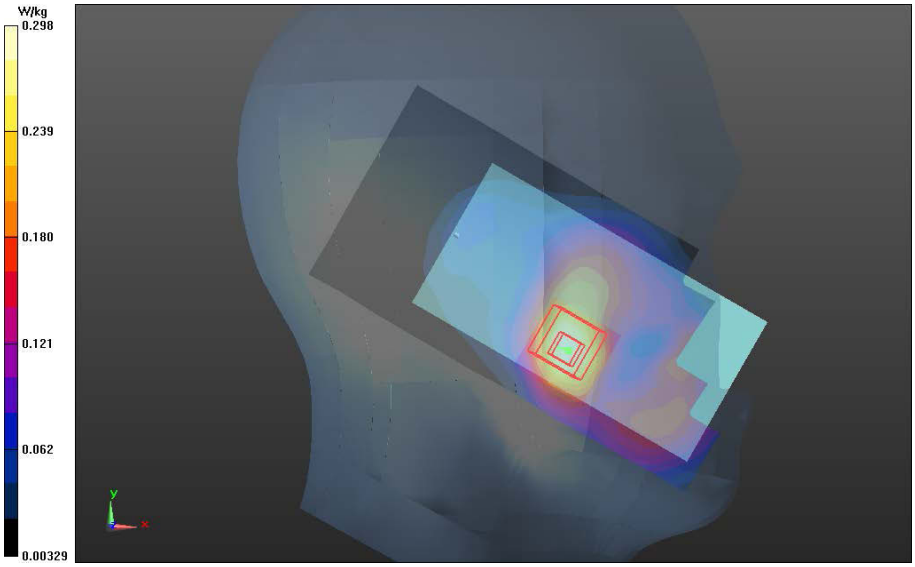
- Probe: ES3DV3 - SN3184; ConvF(5.29,5.29,5.29); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Glycol SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1136
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 02 (0); Communication System Band: Band 2: 20 MHz BW; Frequency: 1880 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1880 MHz; σ = 1.433; ε_r = 36.86 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.282 W/kg; SAR(10g) = 0.161 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 14.192 V/m, Power Drift = -0.087 dB
Averaged SAR: SAR(1g) = 0.275 W/kg; SAR(10g) = 0.170 W/kg



0.6-2GHz, Left Head Template

Date/Time: 1/6/2014 2:52:47 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0002;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

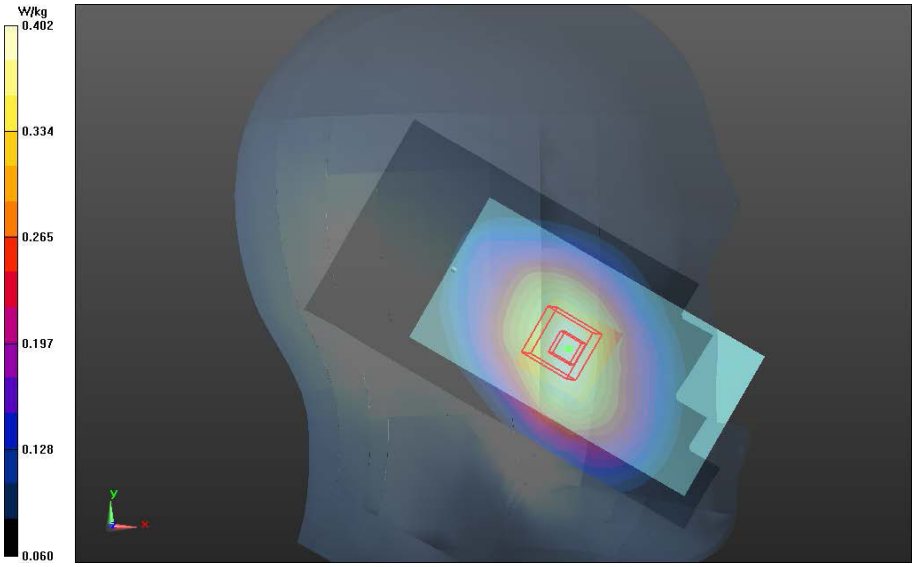
- Probe: ES3DV3 - SN3283; ConvF(6.2,6.2,6.2); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#1 - Sugar SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1156
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _GPRS Class 10 (0); Communication System Band: 850 MHz; Frequency: 824.2 MHz; Duty Cycle: 1:4.150

Medium Parameters used: f=824.2 MHz; σ = 0.8994; ε_r = 39.97 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.378 W/kg; SAR(10g) = 0.262 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 21.420 V/m, Power Drift = -0.056 dB
Averaged SAR: SAR(1g) = 0.381 W/kg; SAR(10g) = 0.297 W/kg



0.6-2GHz, Left Head Template

Date/Time: 1/7/2014 9:49:20 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0002;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

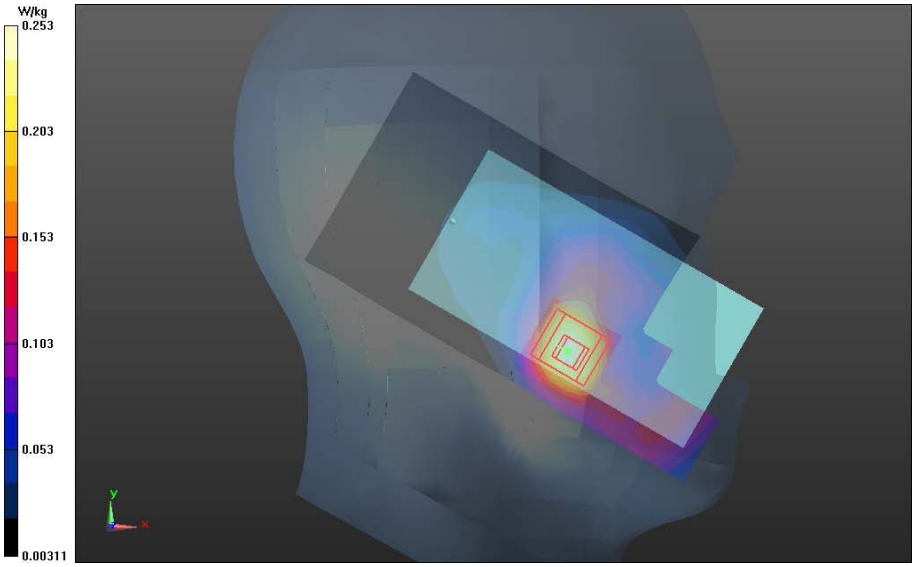
- Probe: ES3DV3 - SN3283; ConvF(5.15,5.15,5.15); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#1 - Glycol SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1319
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _GPRS Class 10 (0); Communication System Band: 1900 MHz; Frequency: 1880 MHz; Duty Cycle: 1:4.150

Medium Parameters used: f=1880 MHz; σ = 1.439; ε_r = 36.63 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.224 W/kg; SAR(10g) = 0.131 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 11.696 V/m, Power Drift = 0.056 dB
Averaged SAR: SAR(1g) = 0.231 W/kg; SAR(10g) = 0.140 W/kg



0.6-2GHz, Left Head Template

Date/Time: 1/4/2014 7:58:52 AM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

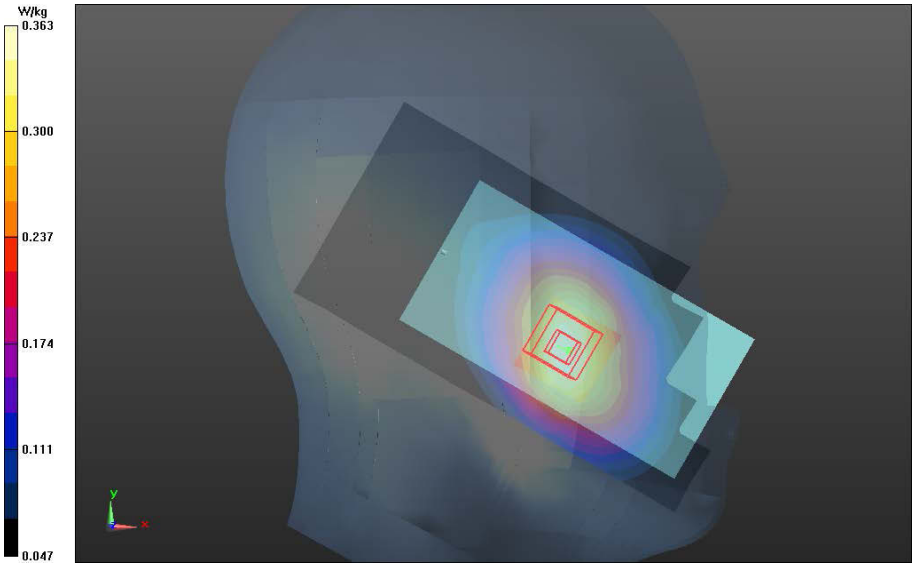
- Probe: ES3DV3 - SN3283; ConvF(6.2,6.2,6.2); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#1 - Sugar SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1156
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-850, Band 5; Frequency: 826.4 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=826.4 MHz; σ = 0.9151; ε_r = 40.69 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.338 W/kg; SAR(10g) = 0.232 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 20.196 V/m, Power Drift = -0.013 dB
Averaged SAR: SAR(1g) = 0.345 W/kg; SAR(10g) = 0.257 W/kg



0.6-2GHz, Left Head Template

Date/Time: 12/30/2013 12:06:57 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

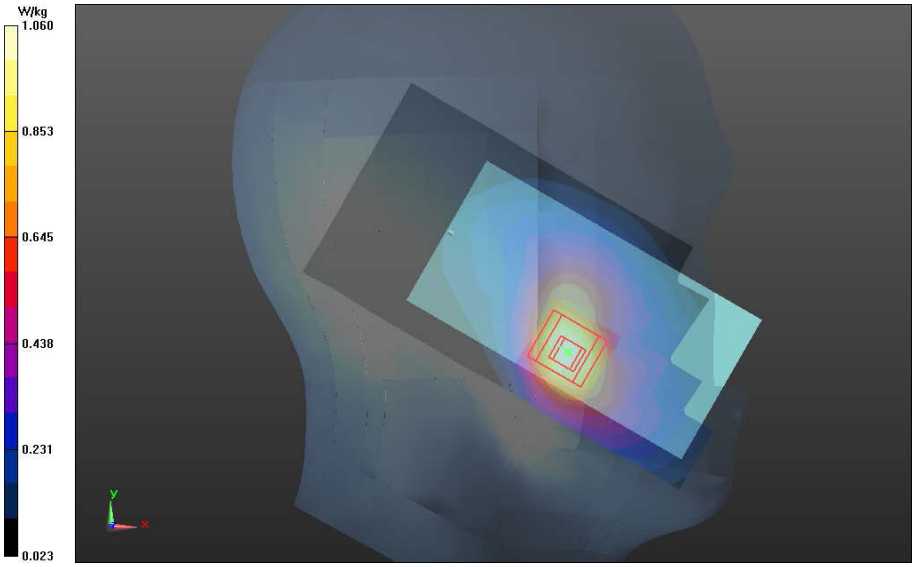
- Probe: ES3DV3 - SN3184; ConvF(5.29,5.29,5.29); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Glycol SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1136
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-1700, Band 4; Frequency: 1712 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1712 MHz; σ = 1.316; ε_r = 38.07 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.973 W/kg; SAR(10g) = 0.582 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 26.949 V/m, Power Drift = -0.081 dB
Averaged SAR: SAR(1g) = 0.989 W/kg; SAR(10g) = 0.631 W/kg



0.6-2GHz, Left Head Template

Date/Time: 12/30/2013 12:58:52 PM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

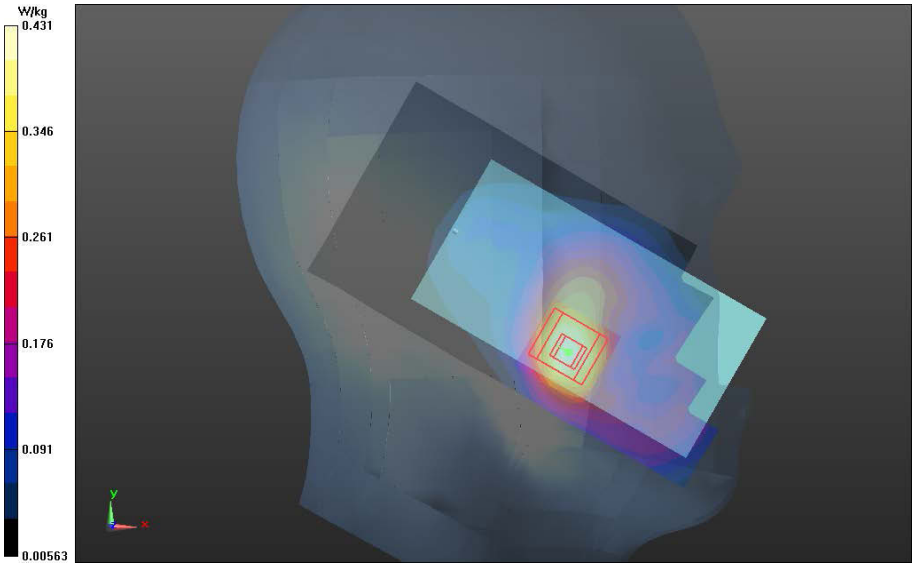
- Probe: ES3DV3 - SN3184; ConvF(5.29,5.29,5.29); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Glycol SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1136
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-1900, Band 2; Frequency: 1852 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1852.4 MHz; σ = 1.459; ε_r = 37.37 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz, Left Head Template/15mm, Area Scan (61x161x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.403 W/kg; SAR(10g) = 0.235 W/kg

0.6-2GHz, Left Head Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 16.381 V/m, Power Drift = -0.021 dB
Averaged SAR: SAR(1g) = 0.399 W/kg; SAR(10g) = 0.247 W/kg



0.6-2GHz, Left Head Template

Date/Time: 1/16/2014 9:09:54 AM

Test Lab: Motorola Mobility - Head

DUT Serial: LDGB2D0026;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Cheek

DASY Configuration:

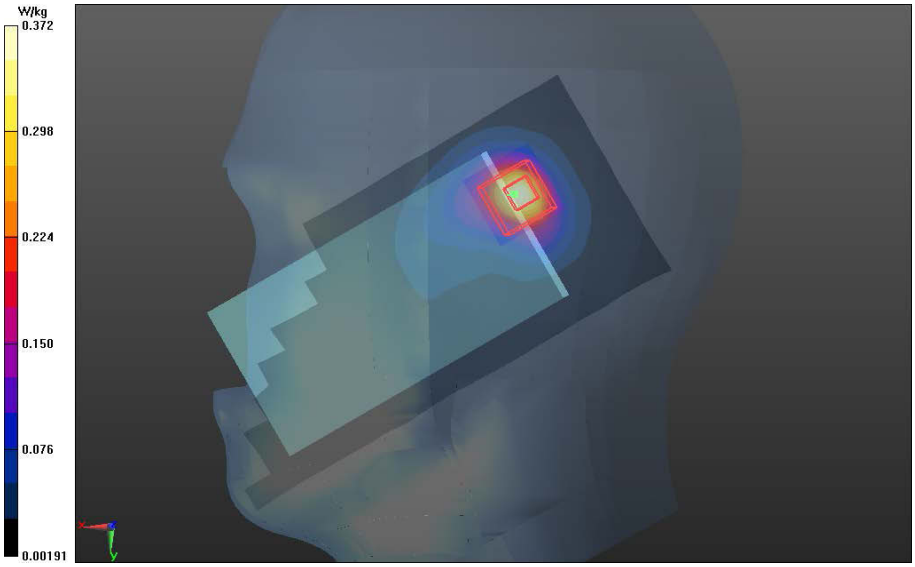
- Probe: EX3DV4 - SN3728; ConvF(6.91,6.91,6.91); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn784; Calibrated: 3/6/2013
- Phantom: R#3, 2450 WiFi SAM (extended range), Rev.2 (24-Feb-12); Type: SAM v4.0; Serial: TP-1153
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _Wi-Fi 2450MHz (0); Communication System Band: 2450MHz WIFI; Frequency: 2412 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=2412 MHz; σ = 1.727; ε_r = 36.73 mho/m; ρ = 1.000 kg/m^3

2-3GHz Right Head Template/10mm, Area Scan (91x241x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.324 W/kg; SAR(10g) = 0.153 W/kg

2-3GHz Right Head Template/7x7x7 Zoom Scan (2-3GHz) (31x31x36)/Cube 0:
Interpolated grid: dx=1.000 mm, dy=1.000 mm, dz=1.000 mm
Reference Value = 14.804 V/m, Power Drift = 0.058 dB
Averaged SAR: SAR(1g) = 0.336 W/kg; SAR(10g) = 0.152 W/kg



2-3GHz Right Head Template

Appendix 3

SAR Distribution Plots for Body-Worn Accessory Test Results

Date/Time: 12/18/2013 9:54:23 PM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0013;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Front of Phone 15 mm from Phantom

DASY Configuration:

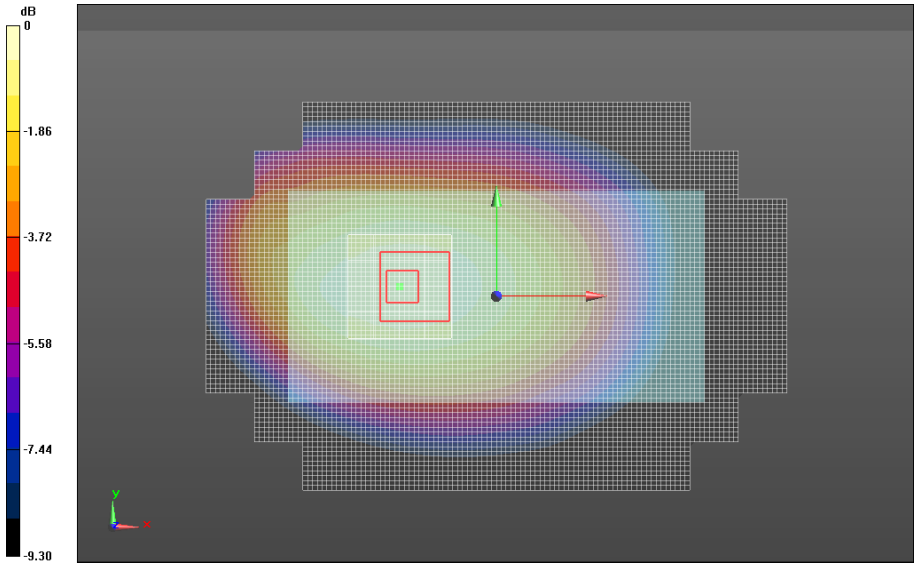
- Probe: ES3DV3 - SN3184; ConvF(6.45,6.45,6.45); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 17 (0); Communication System Band: Band 17: 10 MHz BW; Frequency: 710.0 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=710 MHz; σ = 0.9486; ε_r = 52.56 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.354 W/kg; SAR(10g) = 0.250 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 19.896 V/m, Power Drift = -0.237 dB
Averaged SAR: SAR(1g) = 0.348 W/kg; SAR(10g) = 0.260 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/23/2013 2:12:31 PM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0013;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

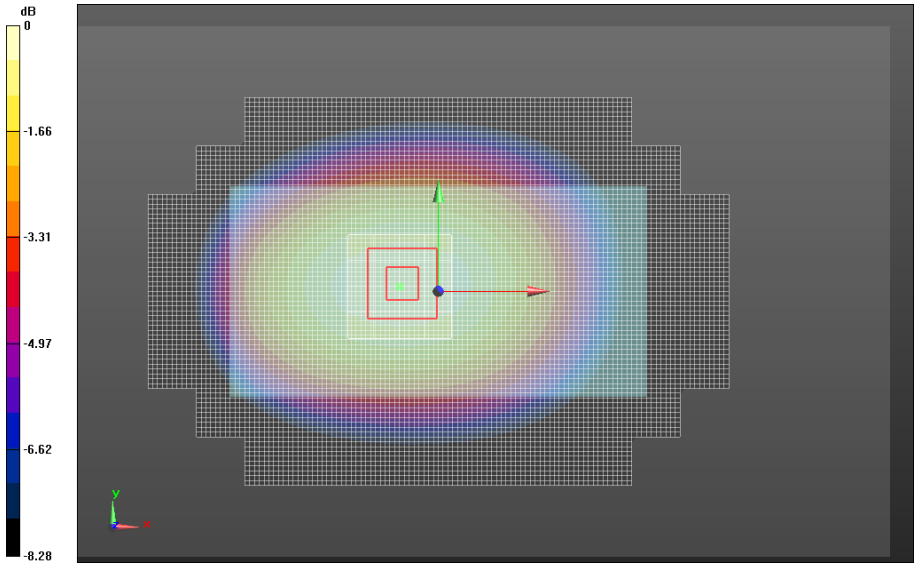
- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 05 (0); Communication System Band: Band 5: 10 MHz BW; Frequency: 836.5 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=836.5 MHz; σ = 1.001; ε_r = 54.22 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.373 W/kg; SAR(10g) = 0.261 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 20.161 V/m, Power Drift = -0.088 dB
Averaged SAR: SAR(1g) = 0.371 W/kg; SAR(10g) = 0.279 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/28/2013 9:43:40 AM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0009;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

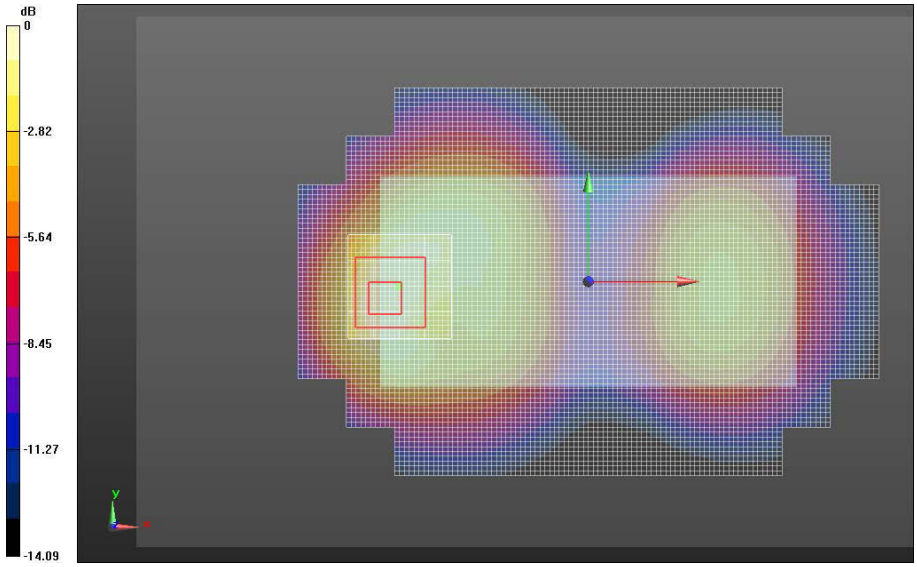
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 04 (0); Communication System Band: Band 4: 20 MHz BW; Frequency: 1733 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1732.5 MHz; σ = 1.458; ε_r = 49.63 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.792 W/kg; SAR(10g) = 0.472 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 21.181 V/m, Power Drift = -0.142 dB
Averaged SAR: SAR(1g) = 0.816 W/kg; SAR(10g) = 0.480 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/23/2013 8:48:29 AM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0009;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

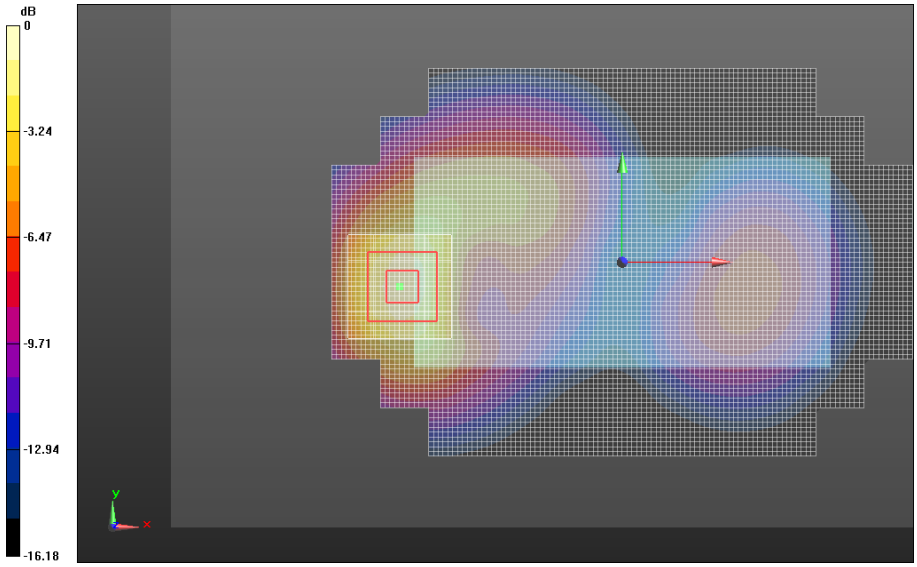
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 02 (0); Communication System Band: Band 2: 20 MHz BW; Frequency: 1880 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1880 MHz; σ = 1.574; ε_r = 49.54 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 1.02 W/kg; SAR(10g) = 0.566 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 23.636 V/m, Power Drift = -0.164 dB
Averaged SAR: SAR(1g) = 1.08 W/kg; SAR(10g) = 0.596 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/7/2014 10:14:15 AM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0002;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

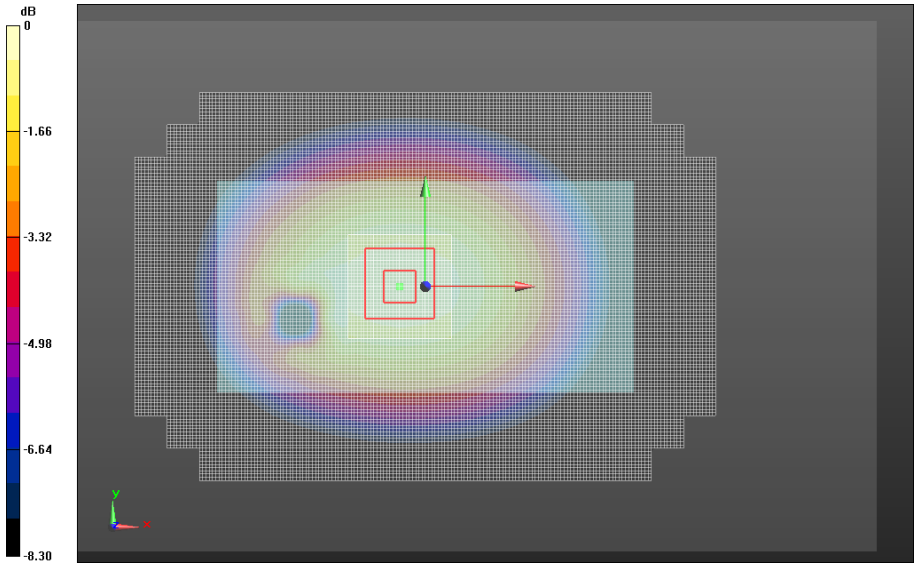
- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _GPRS Class 10 (0); Communication System Band: 850 MHz; Frequency: 848.8 MHz; Duty Cycle: 1:4.150

Medium Parameters used: f=848.8 MHz; σ = 1.020; ε_r = 53.44 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.801 W/kg; SAR(10g) = 0.561 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 28.998 V/m, Power Drift = 0.00668 dB
Averaged SAR: SAR(1g) = 0.811 W/kg; SAR(10g) = 0.604 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/4/2014 8:18:42 AM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0002;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

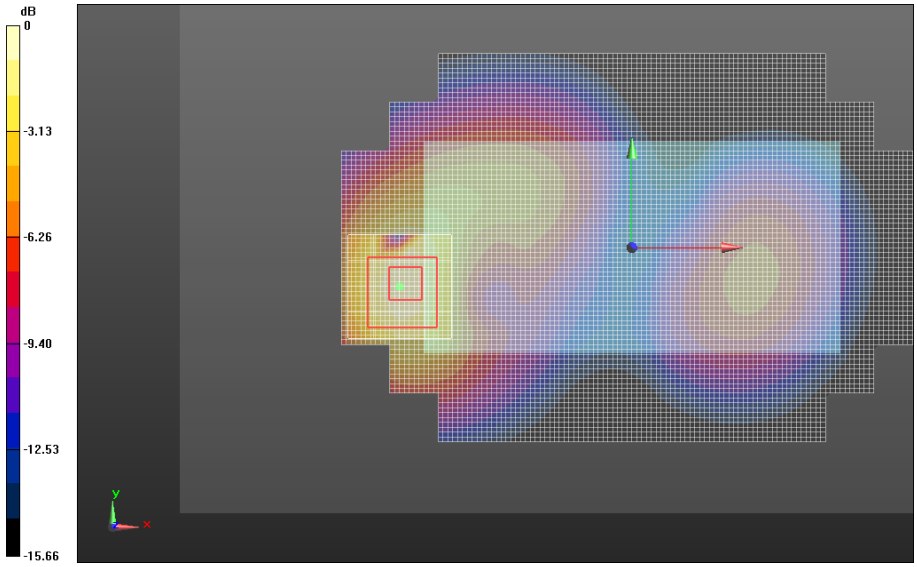
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _GPRS Class 10 (0); Communication System Band: 1900 MHz; Frequency: 1880 MHz; Duty Cycle: 1:4.150

Medium Parameters used: f=1880 MHz; σ = 1.566; ε_r = 49.19 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.468 W/kg; SAR(10g) = 0.261 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 16.537 V/m, Power Drift = -0.093 dB
Averaged SAR: SAR(1g) = 0.506 W/kg; SAR(10g) = 0.279 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/3/2014 2:08:36 PM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

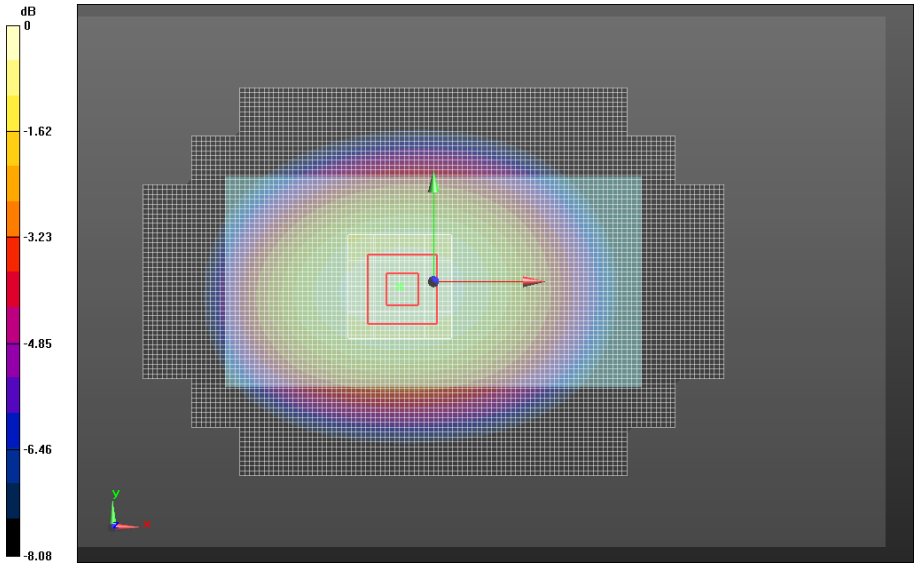
- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-850, Band 5; Frequency: 826.4 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=826.4 MHz; σ = 0.9919; ε_r = 54.37 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.639 W/kg; SAR(10g) = 0.447 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 26.388 V/m, Power Drift = -0.027 dB
Averaged SAR: SAR(1g) = 0.641 W/kg; SAR(10g) = 0.482 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/29/2013 7:06:30 AM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

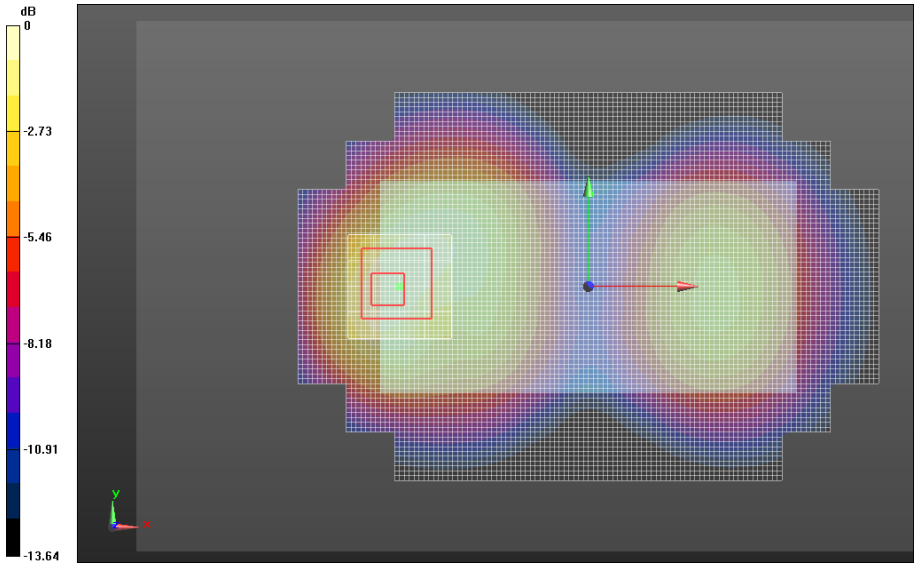
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-1700, Band 4; Frequency: 1712 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1712 MHz; σ = 1.431; ε_r = 49.78 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.774 W/kg; SAR(10g) = 0.467 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 21.145 V/m, Power Drift = 0.017 dB
Averaged SAR: SAR(1g) = 0.775 W/kg; SAR(10g) = 0.470 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/28/2013 10:54:59 AM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

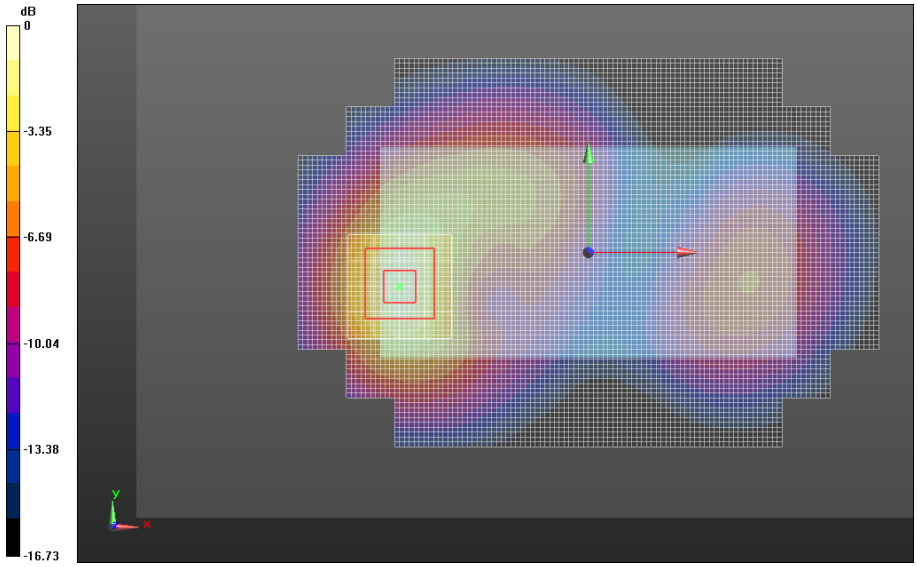
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-1900, Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1880 MHz; σ = 1.625; ε_r = 48.99 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 1.09 W/kg; SAR(10g) = 0.582 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 19.557 V/m, Power Drift = -0.077 dB
Averaged SAR: SAR(1g) = 1.15 W/kg; SAR(10g) = 0.628 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/15/2014 9:24:17 PM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0026;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

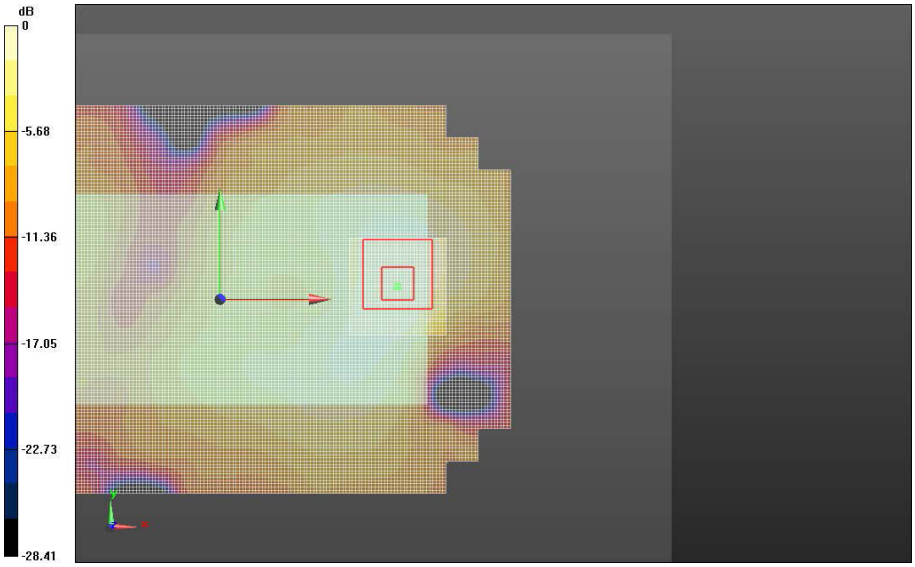
- Probe: EX3DV4 - SN3728; ConvF(7.13,7.13,7.13); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn784; Calibrated: 3/6/2013
- Phantom: R#-3, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _Wi-Fi 2450MHz (0); Communication System Band: 2450MHz WIFI; Frequency: 2412 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=2412 MHz; σ = 1.931; ε_r = 49.00 mho/m; ρ = 1.000 kg/m^3

2-3GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.0509 W/kg; SAR(10g) = 0.0282 W/kg

2-3GHz Triple Flat Phone Template/7x7x7 Zoom Scan (2-3GHz) (31x31x36)/Cube 0:
Interpolated grid: dx=1.000 mm, dy=1.000 mm, dz=1.000 mm
Reference Value = 4.813 V/m, Power Drift = 0.058 dB
Averaged SAR: SAR(1g) = 0.0513 W/kg; SAR(10g) = 0.0289 W/kg



2-3GHz Triple Flat Phone Template

Date/Time: 1/16/2014 3:10:35 PM

Test Lab: Motorola Mobility - Body-Worn

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Body Worn, Back of Phone 15 mm from Phantom

DASY Configuration:

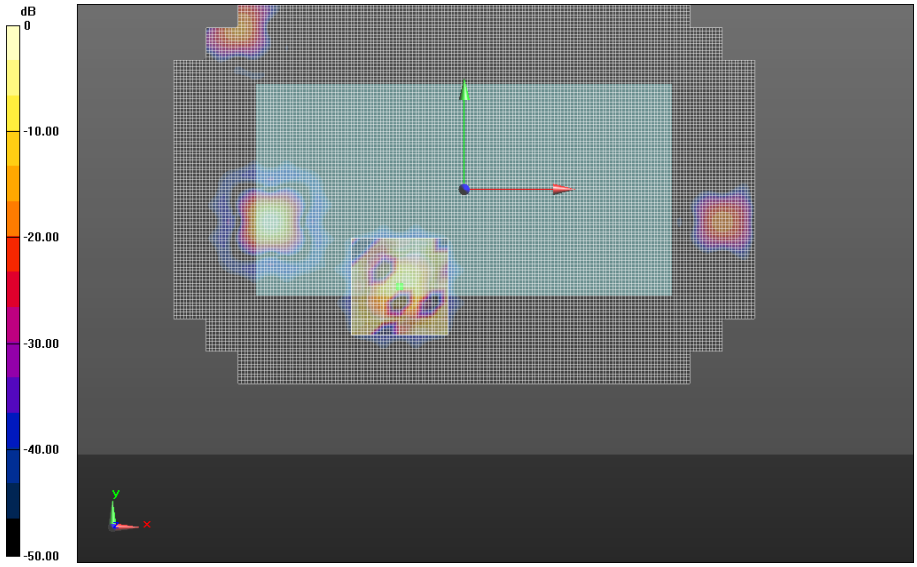
- Probe: EX3DV4 - SN3728; ConvF(7.13,7.13,7.13); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn784; Calibrated: 3/6/2013
- Phantom: R#-3, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _Bluetooth (0); Communication System Band: Bluetooth; Frequency: 2480 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=2480 MHz; σ = 2.012; ε_r = 48.77 mho/m; ρ = 1.000 kg/m^3

2-3GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.00274 W/kg; SAR(10g) = 0.000458 W/kg

2-3GHz Triple Flat Phone Template/7x7x7 Zoom Scan (2-3GHz) (31x31x36)/Cube 0:
Interpolated grid: dx=1.000 mm, dy=1.000 mm, dz=1.000 mm
Reference Value = 0.648 V/m, Power Drift = -4.523 dB
Averaged SAR: SAR(1g) = 0 W/kg; SAR(10g) = 0 W/kg



2-3GHz Triple Flat Phone Template

Appendix 4

SAR Distribution Plots for Mobile Hotspot Test Results

Date/Time: 12/26/2013 1:38:42 PM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0013;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Front of Phone 10 mm from Phantom

DASY Configuration:

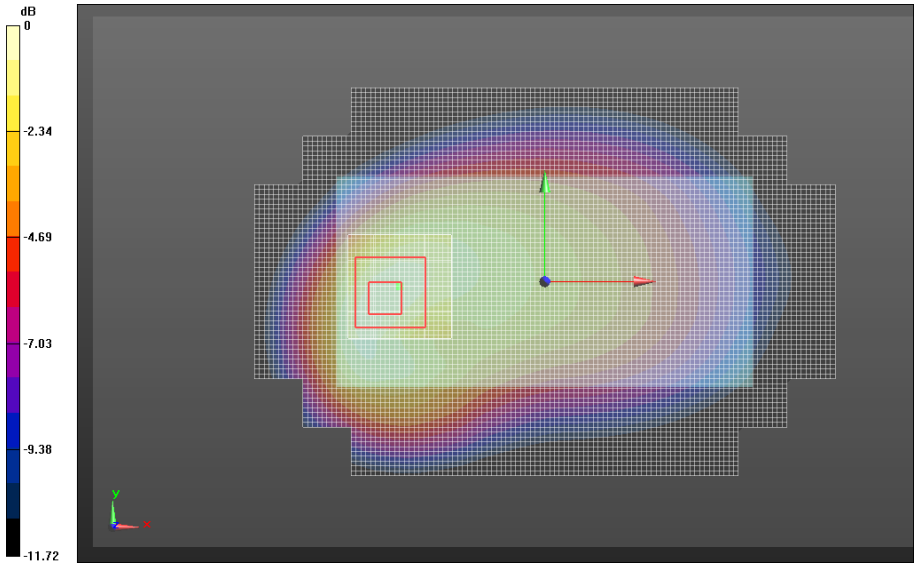
- Probe: ES3DV3 - SN3283; ConvF(5.97,5.97,5.97); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 17 (0); Communication System Band: Band 17: 10 MHz BW; Frequency: 710.0 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=710 MHz; σ = 0.8827; ε_r = 55.77 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.409 W/kg; SAR(10g) = 0.267 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 22.933 V/m, Power Drift = -0.457 dB
Averaged SAR: SAR(1g) = 0.414 W/kg; SAR(10g) = 0.245 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/24/2013 1:41:42 AM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0013;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Back of Phone 10 mm from Phantom

DASY Configuration:

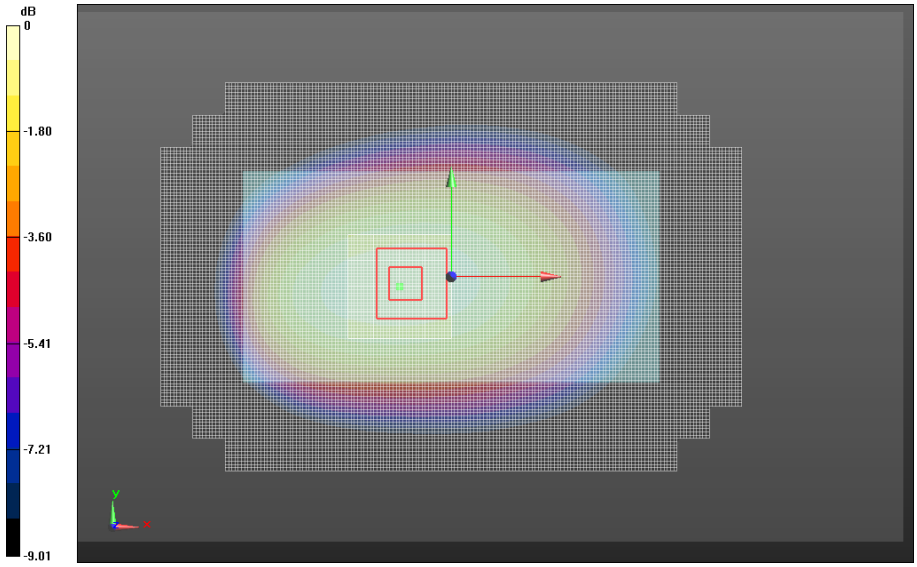
- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 05 (0); Communication System Band: Band 5: 10 MHz BW; Frequency: 836.5 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=836.5 MHz; σ = 1.001; ε_r = 54.22 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.356 W/kg; SAR(10g) = 0.249 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 19.755 V/m, Power Drift = -0.032 dB
Averaged SAR: SAR(1g) = 0.360 W/kg; SAR(10g) = 0.270 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/29/2013 10:38:53 AM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0009;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Bottom Edge of Phone 10 mm from Phantom

DASY Configuration:

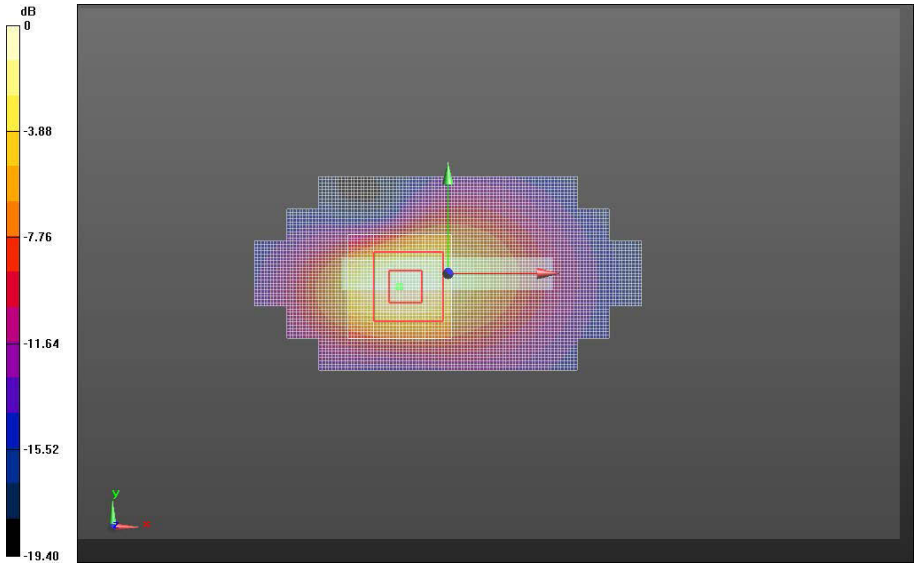
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 04 (0); Communication System Band: Band 4: 20 MHz BW; Frequency: 1733 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1732.5 MHz; σ = 1.454; ε_r = 49.71 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.893 W/kg; SAR(10g) = 0.445 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 24.759 V/m, Power Drift = 0.033 dB
Averaged SAR: SAR(1g) = 0.872 W/kg; SAR(10g) = 0.440 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/27/2013 2:04:37 PM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0009;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Bottom Edge of Phone 10 mm from Phantom

DASY Configuration:

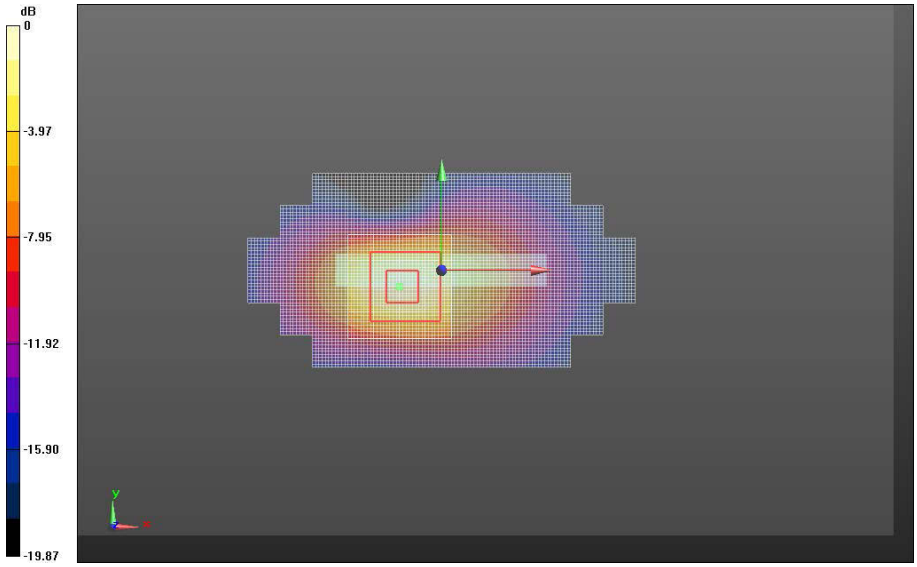
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _LTE Band 02 (0); Communication System Band: Band 2: 20 MHz BW; Frequency: 1880 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1880 MHz; σ = 1.622; ε_r = 49.16 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 1.14 W/kg; SAR(10g) = 0.546 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 25.788 V/m, Power Drift = -0.0059 dB
Averaged SAR: SAR(1g) = 1.12 W/kg; SAR(10g) = 0.540 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/10/2014 4:33:14 PM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0002;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Back of Phone 10 mm from Phantom

DASY Configuration:

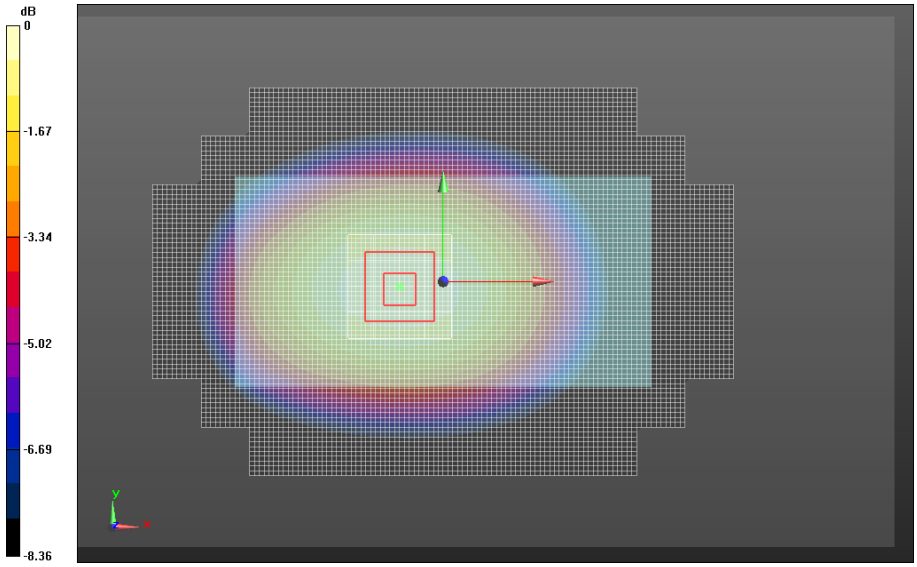
- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _GPRS Class 10 (0); Communication System Band: 850 MHz; Frequency: 848.8 MHz; Duty Cycle: 1:4.150

Medium Parameters used: f=848.8 MHz; σ = 1.018; ε_r = 53.42 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.935 W/kg; SAR(10g) = 0.653 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 31.705 V/m, Power Drift = -0.045 dB
Averaged SAR: SAR(1g) = 0.940 W/kg; SAR(10g) = 0.702 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/4/2014 11:20:02 AM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0002;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Bottom Edge of Phone 10 mm from Phantom

DASY Configuration:

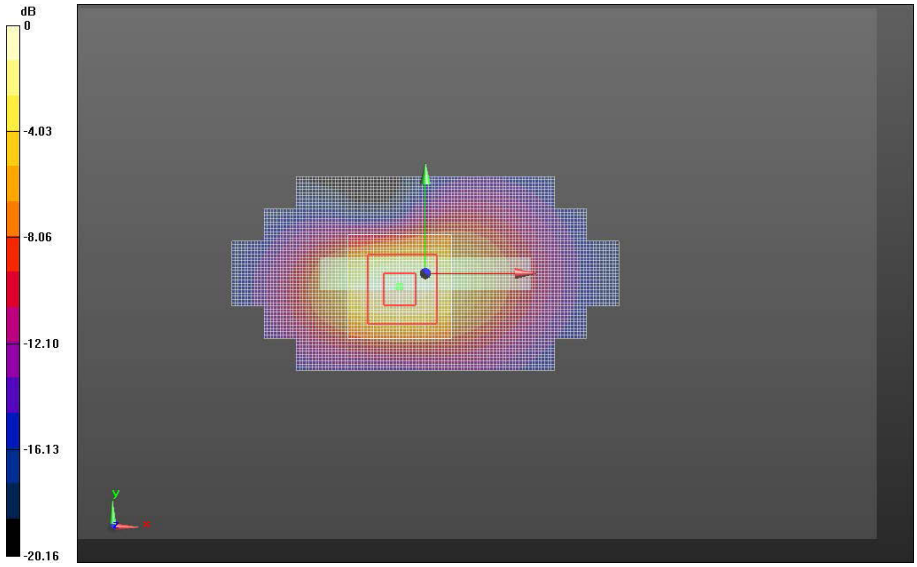
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _GPRS Class 10 (0); Communication System Band: 1900 MHz; Frequency: 1910 MHz; Duty Cycle: 1:4.150

Medium Parameters used: f=1910 MHz; σ = 1.603; ε_r = 49.03 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 1.27 W/kg; SAR(10g) = 0.613 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 26.136 V/m, Power Drift = -0.041 dB
Averaged SAR: SAR(1g) = 1.24 W/kg; SAR(10g) = 0.613 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/10/2014 8:08:28 PM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Back of Phone 10 mm from Phantom

DASY Configuration:

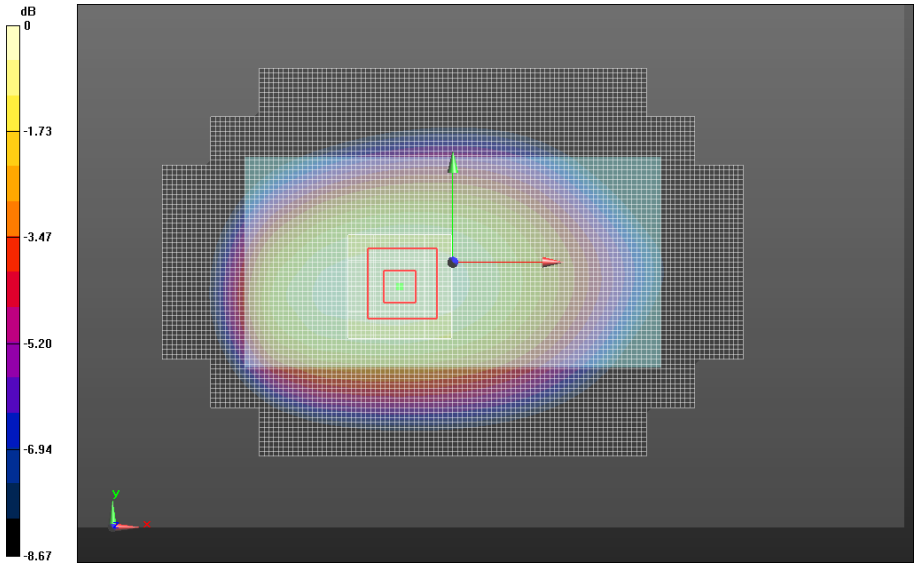
- Probe: ES3DV3 - SN3283; ConvF(6.01,6.01,6.01); Calibrated: 8/20/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn661; Calibrated: 5/21/2013
- Phantom: R#-1, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-850, Band 5; Frequency: 826.4 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=826.4 MHz; σ = 0.9946; ε_r = 53.65 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (15mm), not for EDGES (181x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Fast SAR: SAR(1g) = 0.481 W/kg; SAR(10g) = 0.336 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0: Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 22.506 V/m, Power Drift = -0.055 dB
Averaged SAR: SAR(1g) = 0.480 W/kg; SAR(10g) = 0.359 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/29/2013 12:33:56 PM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Bottom Edge of Phone 10 mm from Phantom

DASY Configuration:

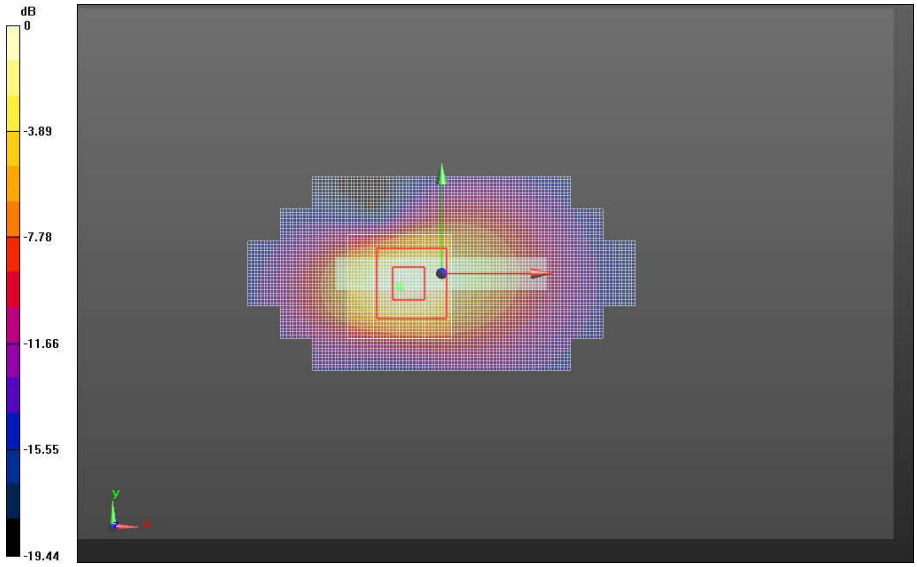
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-1700, Band 4; Frequency: 1752 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1752 MHz; σ = 1.477; ε_r = 49.62 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.914 W/kg; SAR(10g) = 0.450 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 24.981 V/m, Power Drift = -0.00918 dB
Averaged SAR: SAR(1g) = 0.896 W/kg; SAR(10g) = 0.447 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 12/28/2013 2:22:20 PM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0007;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Bottom Edge of Phone 10 mm from Phantom

DASY Configuration:

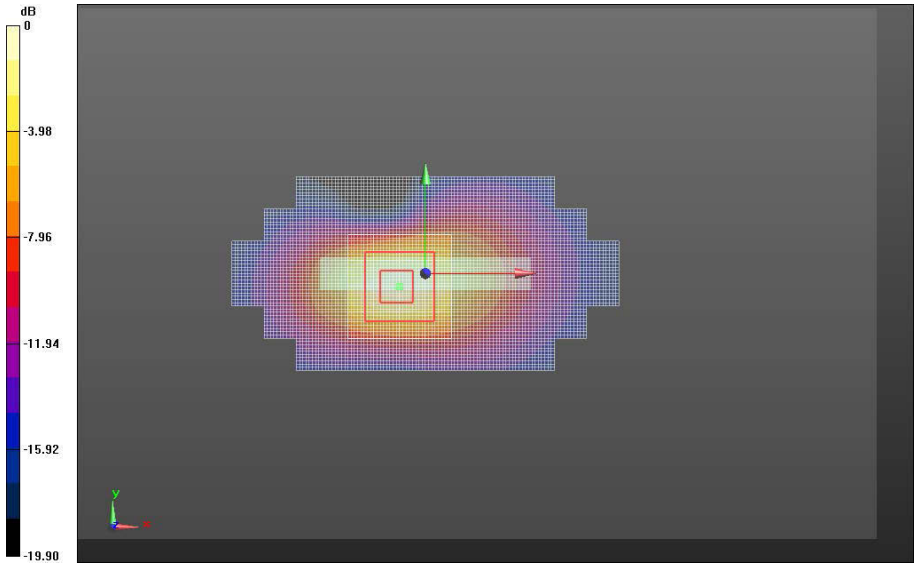
- Probe: ES3DV3 - SN3184; ConvF(5.05,5.05,5.05); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn378; Calibrated: 5/28/2013
- Phantom: R#2 Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _WCDMA (0); Communication System Band: WCDMA-1900, Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=1880 MHz; σ = 1.625; ε_r = 48.99 mho/m; ρ = 1.000 kg/m^3

0.6-2GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.973 W/kg; SAR(10g) = 0.468 W/kg

0.6-2GHz Triple Flat Phone Template/5x5x7 Zoom Scan (0.6-2GHz) (21x21x36)/Cube 0:
Interpolated grid: dx=1.600 mm, dy=1.600 mm, dz=1.000 mm
Reference Value = 23.678 V/m, Power Drift = 0.022 dB
Averaged SAR: SAR(1g) = 0.966 W/kg; SAR(10g) = 0.469 W/kg



0.6-2GHz Triple Flat Phone Template

Date/Time: 1/16/2014 1:17:34 AM

Test Lab: Motorola Mobility - Mobile Hotspot

DUT Serial: LDGB2D0026;
Antenna: Internal; Battery: SNN5932A
Test Configuration: Bottom Edge of Phone 10 mm from Phantom

DASY Configuration:

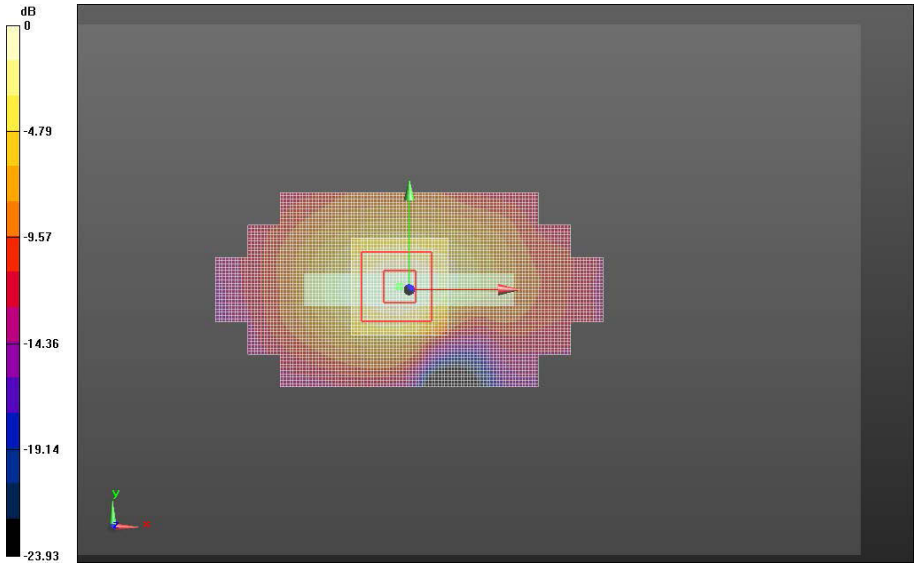
- Probe: EX3DV4 - SN3728; ConvF(7.13,7.13,7.13); Calibrated: 5/30/2013;
- Sensor-Surface: 4 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn784; Calibrated: 3/6/2013
- Phantom: R#-3, Triple Flat Phantom 5.1C (Rev.4); Type: QD 000 P51 CA; Serial: n/a
- DASY52 52.8.7(1137); SEMCAD X Version 14.6.10 (7164)

Communication System: _Wi-Fi 2450MHz (0); Communication System Band: 2450MHz WIFI; Frequency: 2412 MHz; Duty Cycle: 1:1.000

Medium Parameters used: f=2412 MHz; σ = 1.931; ε_r = 49.00 mho/m; ρ = 1.000 kg/m^3

2-3GHz Triple Flat Phone Template/Area Scan (10mm) (261x141x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1g) = 0.163 W/kg; SAR(10g) = 0.0809 W/kg

2-3GHz Triple Flat Phone Template/7x7x7 Zoom Scan (2-3GHz) (31x31x36)/Cube 0:
Interpolated grid: dx=1.000 mm, dy=1.000 mm, dz=1.000 mm
Reference Value = 8.203 V/m, Power Drift = 0.039 dB
Averaged SAR: SAR(1g) = 0.163 W/kg; SAR(10g) = 0.0824 W/kg



2-3GHz Triple Flat Phone Template

Appendix 5

Measurement Uncertainty Budget

Uncertainty Budget for Device Under Test, for 735 MHz to 3 GHz

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	Description IEEE 1528(2003) / IEC 62209-1(2005)	**Tol. (± %)**	**Prob Dist**	**Div.**	c_i **(1 g)**	c_i **(10 g)**	**1 g** u_i **(±%)**	**10 g** u_i **(±%)**	v_i
Measurement System									
Probe Calibration [ES3DV3]	E.2.1 / 7.2.1	6.0	N	1.00	1	1	6.0	6.0	∞
Axial Isotropy	E.2.2 / 7.2.1.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	E.2.2 / 7.2.1.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	E.2.3 / 7.2.1.5	1.0	R	1.73	1	1	0.6	0.6	∞
Linearity	E.2.4 / 7.2.1.3	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	E.2.5 / 7.2.1.4	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	E.2.6 / 7.2.1.6	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	E.2.7 / 7.2.1.7	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	E.2.8 / 7.2.1.8	1.1	R	1.73	1	1	0.6	0.6	∞
RF Ambient Conditions - Noise	E.6.1 / 7.2.3.6	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1 / 7.2.3.6	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mech. Tolerance	E.6.2 / 7.2.2.1	0.4	R	1.73	1	1	0.2	0.2	∞
Probe Positioning w.r.t Phantom	E.6.3 / 7.2.2.3	2.9	R	1.73	1	1	1.7	1.7	∞
Max. SAR Evaluation (ext., int., avg.)	E.5 / 7.2.4	3.4	R	1.73	1	1	2.0	2.0	∞
Test sample Related									
Test Sample Positioning	E.4.2 / 7.2.2.4	3.4	N	1.00	1	1	3.4	3.4	79
Device Holder Uncertainty	E.4.1 / 7.2.2.4.2	4.5	N	1.00	1	1	4.5	4.5	11
SAR drift	6.6.2 / 7.2.3.5	0.0	R	1.73	1	1	0.0	0.0	
Phantom and Tissue Parameters									
Phantom Uncertainty	E.3.1 / 7.2.2.2	6.1	R	1.73	1	1	3.5	3.5	∞
SAR Correction		1.9	R	1.73	1	0.84	1.1	0.9	∞
Liquid Conductivity (measurement)	E.3.3 / 7.2.3.3	1.3	N	1.00	0.64	0.43	0.9	0.6	6
Liquid Permittivity (measurement)	E.3.2 / 7.2.3.4	0.7	N	1.00	0.6	0.49	0.4	0.3	6
Combined Standard Uncertainty			RSS				11	11	390
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				22	22	

Uncertainty Budget for Device Under Test for 3 to 6 GHz

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g*	*h = c x f / e*	*i = c x g / e*	*k*
Uncertainty Component	Description IEC 62209-2 (2010)	**Tol. (± %)**	**Prob Dist**	**Div.**	c_i **(1 g)**	c_i **(10 g)**	**1 g** u_i **(±%)**	**10 g** u_i **(±%)**	v_i
Measurement System									
Probe Calibration [EX3DV4]	7.2.2.1	6.6	N	1.00	1	1	6.6	6.6	∞
Axial Isotropy	7.2.2.2	4.7	R	1.73	0.707	0.707	1.9	1.9	∞
Hemispherical Isotropy	7.2.2.2	9.6	R	1.73	0.707	0.707	3.9	3.9	∞
Boundary Effect	7.2.2.6	2.0	R	1.73	1	1	1.2	1.2	∞
Linearity	7.2.2.5	4.7	R	1.73	1	1	2.7	2.7	∞
System Detection Limits	7.2.2	1.0	R	1.73	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	N	1.00	1	1	0.3	0.3	∞
Response Time	7.2.2.8	1.1	R	1.73	1	1	0.6	0.6	∞
Integration Time	7.2.2.9	1.1	R	1.73	1	1	0.6	0.6	∞
RF Ambient Conditions - Noise	7.2.4.5	3.0	R	1.73	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	7.2.4.5	3.0	R	1.73	1	1	1.7	1.7	∞
Probe Positioner Mech. Tolerance	7.2.3.1	1.0	R	1.73	1	1	0.6	0.6	∞
Probe Positioning w.r.t Phantom	7.2.3.3	6.7	R	1.73	1	1	3.9	3.9	∞
Max. SAR Evaluation (ext., int., avg.)	7.2.5.3	4.0	R	1.73	1	1	2.3	2.3	∞
Test sample Related									
Test Sample Positioning	7.2.3.4	3.4	N	1.00	1	1	3.4	3.4	79
Device Holder Uncertainty	7.2.3.4	4.5	N	1.00	1	1	4.5	4.5	11
SAR drift	7.2.2.10	0.0	R	1.73	1	1	0.0	0.0	
Phantom and Tissue Parameters									
Phantom Uncertainty	7.2.3.2	6.6	R	1.73	1	1	3.8	3.8	∞
SAR Correction	7.2.4.3	1.9	R	1.73	1	0.84	1.1	0.9	∞
Liquid Conductivity (measurement)	7.2.4.3	1.4	N	1.00	0.64	0.43	0.9	0.6	6
Liquid Permittivity (measurement)	7.2.4.3	0.7	N	1.00	0.6	0.49	0.4	0.4	6
Combined Standard Uncertainty			RSS				12	12	557
Expanded Uncertainty (95% CONFIDENCE LEVEL)			*k*=2				24	24	

Appendix 6

Probe Calibration Certificates

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Motorola MDb

Certificate No: ES3-3283_Aug13

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3283
Calibration procedure(s)	QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes
Calibration date:	August 20, 2013

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 21, 2013

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ES3DV3

SN:3283

Manufactured: June 7, 2010
Calibrated: August 20, 2013

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3283

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.19	1.23	1.14	± 10.1 %
DCP (mV)[B]	101.5	97.9	104.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	150.9	±3.0 %
		Y	0.0	0.0	1.0		155.0	
		Z	0.0	0.0	1.0		145.1	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3283

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	6.39	6.39	6.39	0.31	1.86	± 12.0 %
835	41.5	0.90	6.20	6.20	6.20	0.77	1.17	± 12.0 %
1810	40.0	1.40	5.15	5.15	5.15	0.49	1.50	± 12.0 %
1950	40.0	1.40	4.96	4.96	4.96	0.60	1.36	± 12.0 %
2450	39.2	1.80	4.54	4.54	4.54	0.76	1.22	± 12.0 %
2600	39.0	1.96	4.36	4.36	4.36	0.64	1.37	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3283

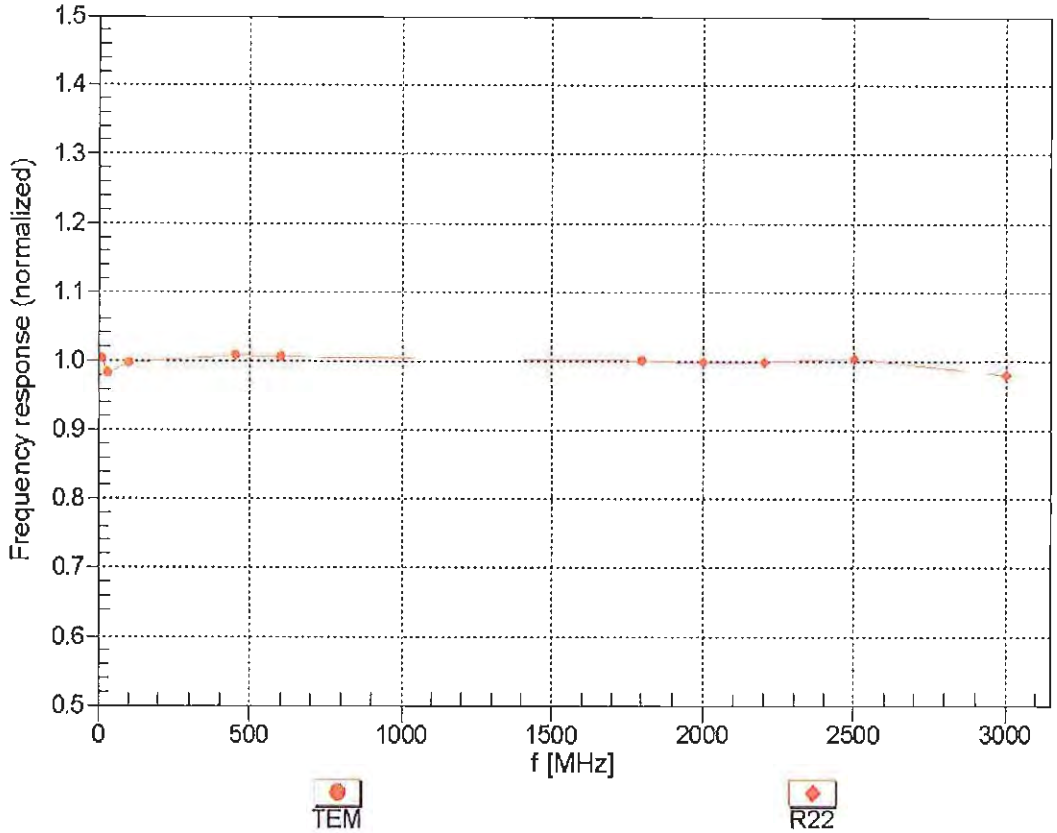
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	5.97	5.97	5.97	0.31	1.83	± 12.0 %
835	55.2	0.97	6.01	6.01	6.01	0.60	1.30	± 12.0 %
1810	53.3	1.52	4.76	4.76	4.76	0.48	1.58	± 12.0 %
1950	53.3	1.52	4.76	4.76	4.76	0.48	1.65	± 12.0 %
2450	52.7	1.95	4.21	4.21	4.21	0.80	1.09	± 12.0 %
2600	52.5	2.16	3.99	3.99	3.99	0.66	0.99	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Frequency Response of E-Field

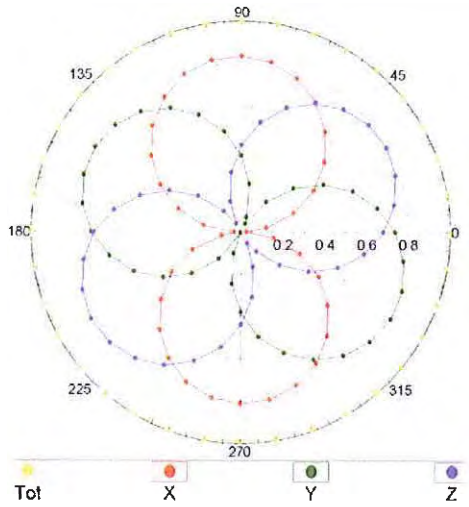
(TEM-Cell:ifi110 EXX, Waveguide: R22)



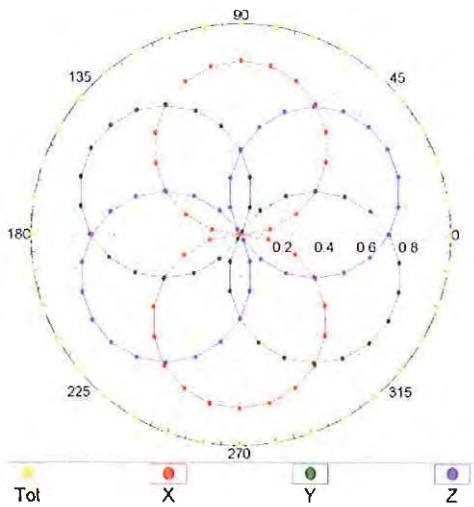
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

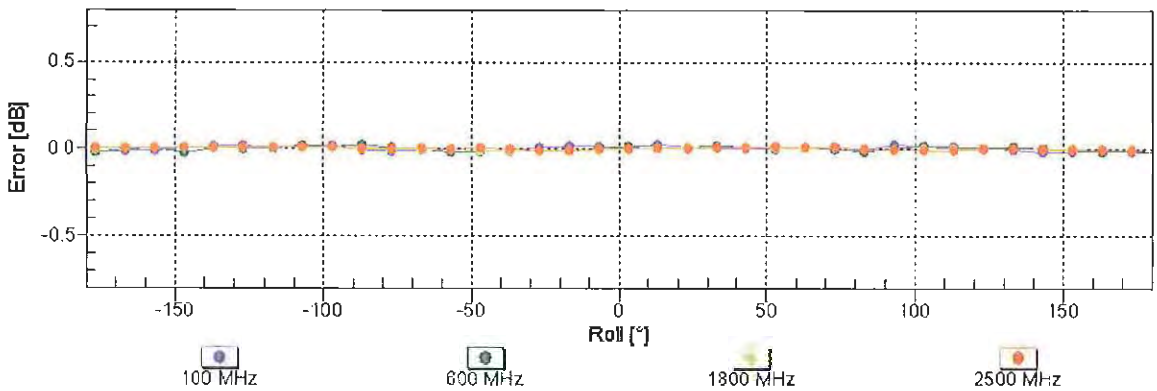
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



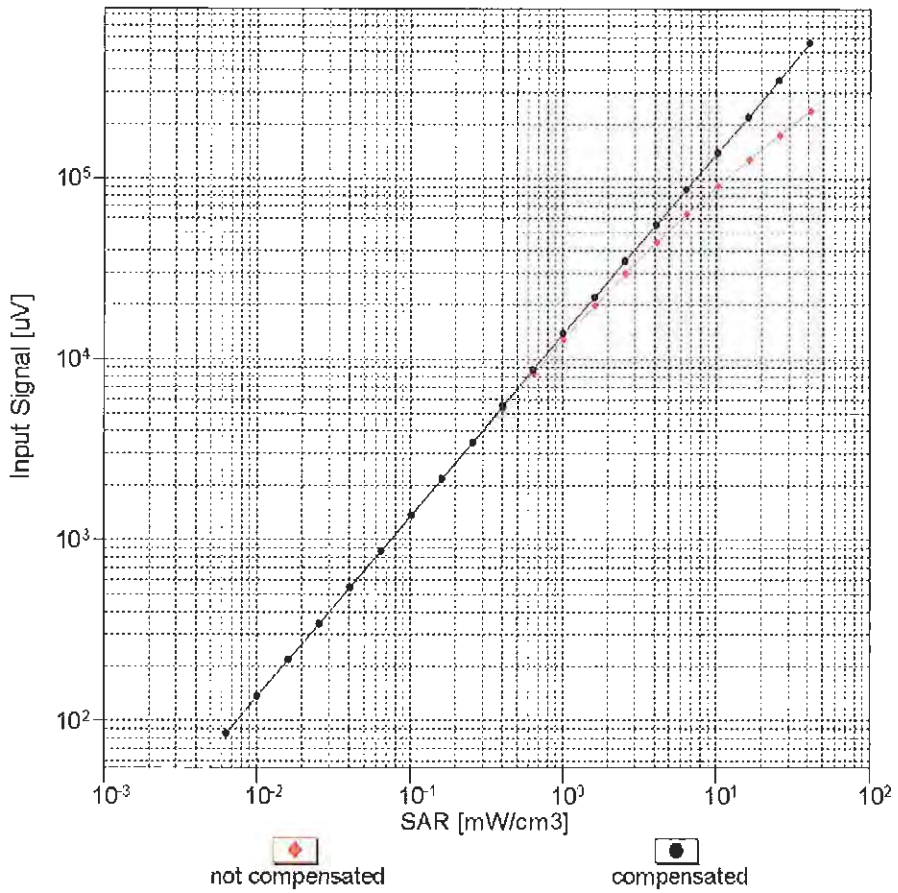
f=1800 MHz,R22

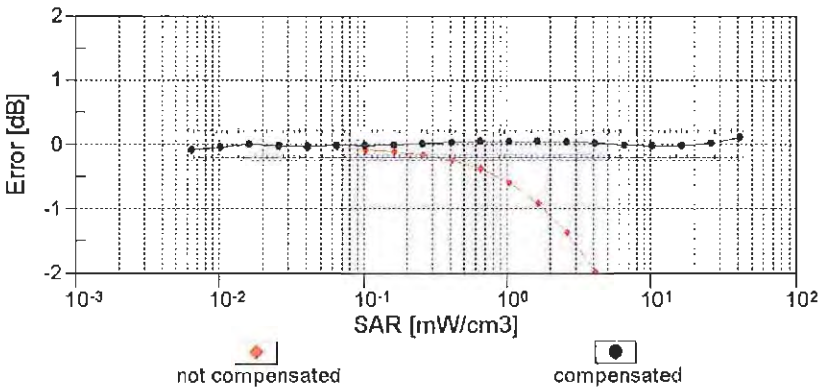




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

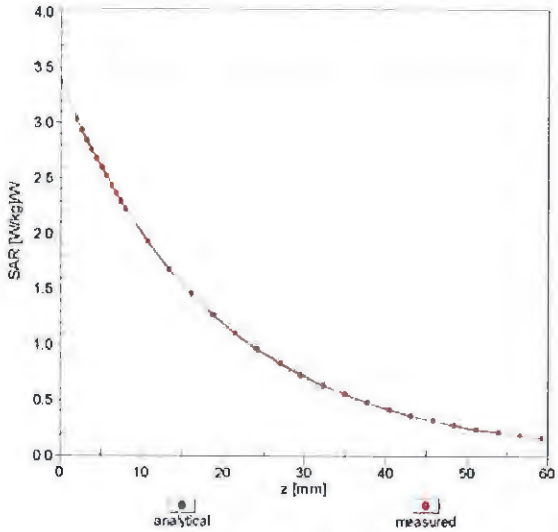




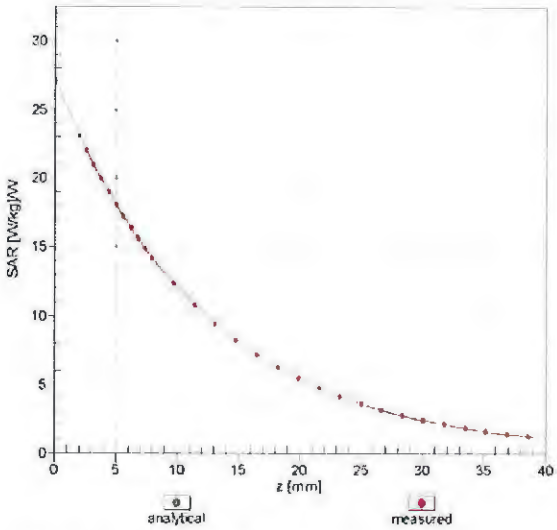
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

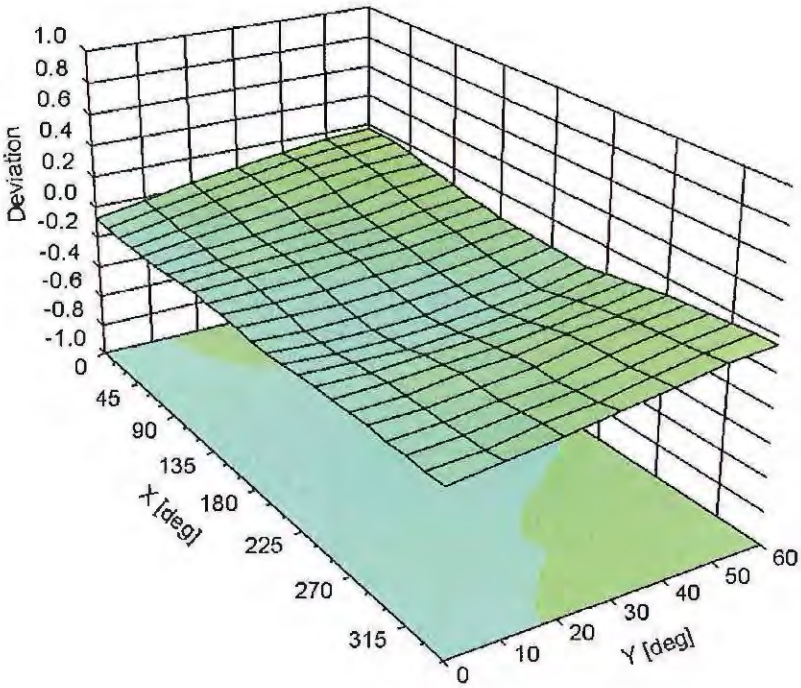


f = 1810 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3283

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-106.9
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Motorola MDb**

Certificate No: **ES3-3184_May13**

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3184
Calibration procedure(s)	QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	May 30, 2013

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 30, 2013

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ES3DV3

SN:3184

Manufactured: August 19, 2008
Calibrated: May 30, 2013

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3184

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.25	1.38	1.25	± 10.1 %
DCP (mV)[B]	100.1	97.9	97.6	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	117.6	±3.0 %
		Y	0.0	0.0	1.0		121.3	
		Z	0.0	0.0	1.0		158.5	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3184

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	6.72	6.72	6.72	0.32	1.83	± 12.0 %
835	41.5	0.90	6.24	6.24	6.24	0.25	2.08	± 12.0 %
1810	40.0	1.40	5.29	5.29	5.29	0.73	1.20	± 12.0 %
1950	40.0	1.40	4.98	4.98	4.98	0.64	1.32	± 12.0 %
2450	39.2	1.80	4.52	4.52	4.52	0.68	1.35	± 12.0 %
2600	39.0	1.96	4.34	4.34	4.34	0.80	1.25	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3184

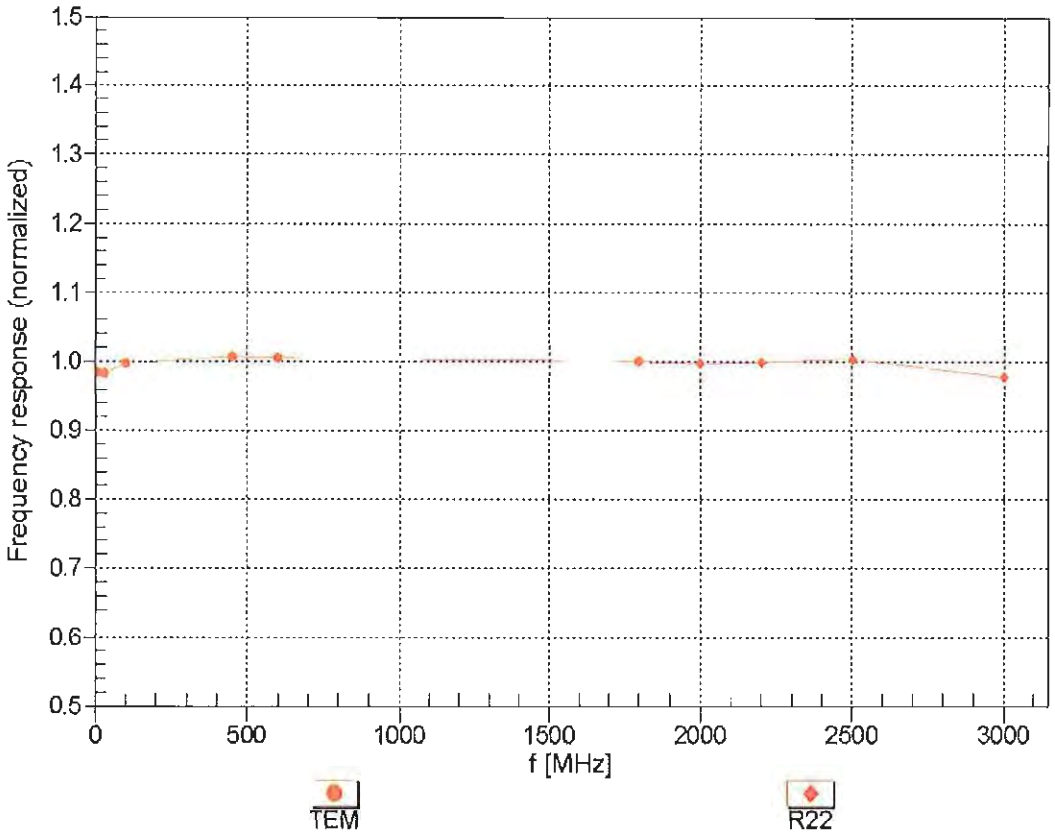
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	6.45	6.45	6.45	0.45	1.54	± 12.0 %
835	55.2	0.97	6.12	6.12	6.12	0.26	2.22	± 12.0 %
1810	53.3	1.52	5.05	5.05	5.05	0.63	1.45	± 12.0 %
1950	53.3	1.52	5.00	5.00	5.00	0.54	1.51	± 12.0 %
2450	52.7	1.95	4.50	4.50	4.50	0.65	1.17	± 12.0 %
2600	52.5	2.16	4.25	4.25	4.25	0.80	1.00	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Frequency Response of E-Field

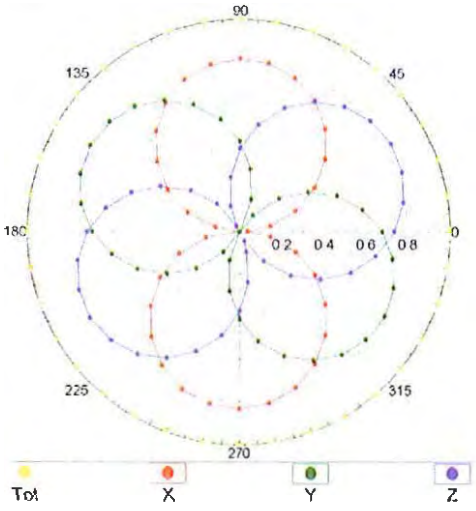
(TEM-Cell:ifi110 EXX, Waveguide: R22)



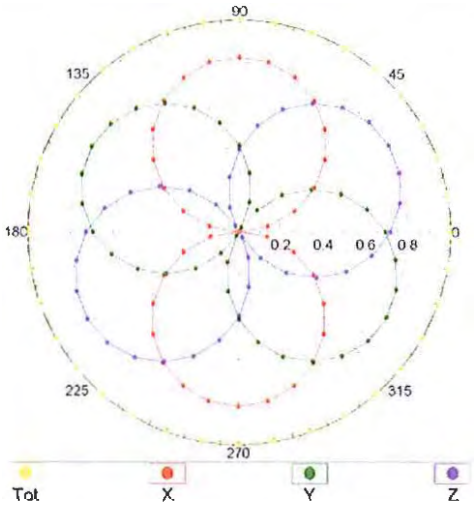
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

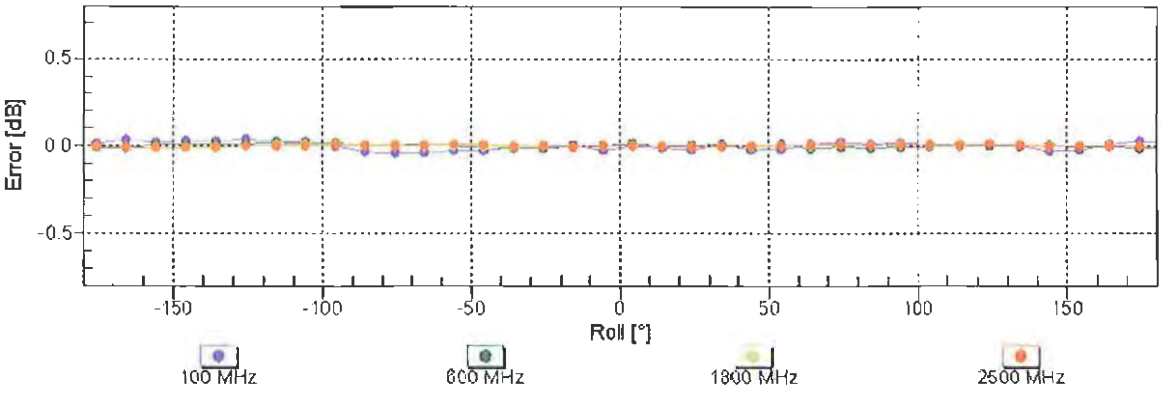
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



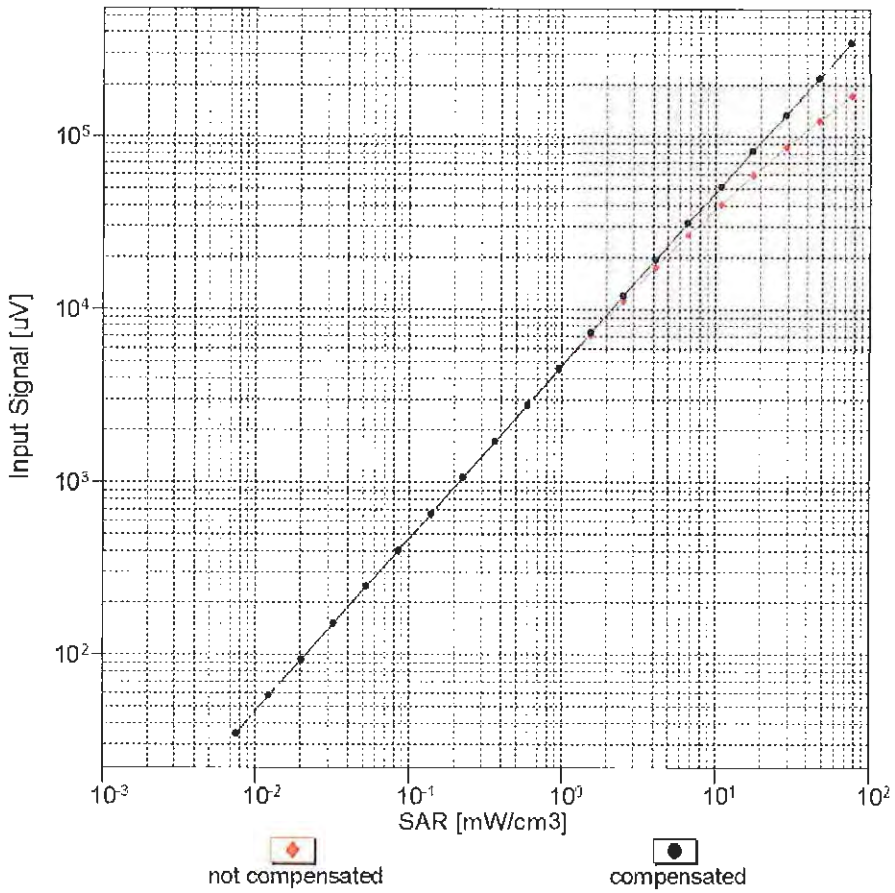
f=1800 MHz,R22

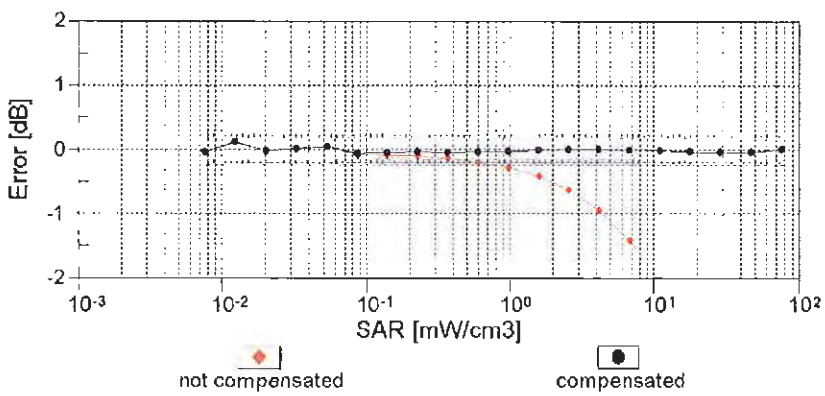




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

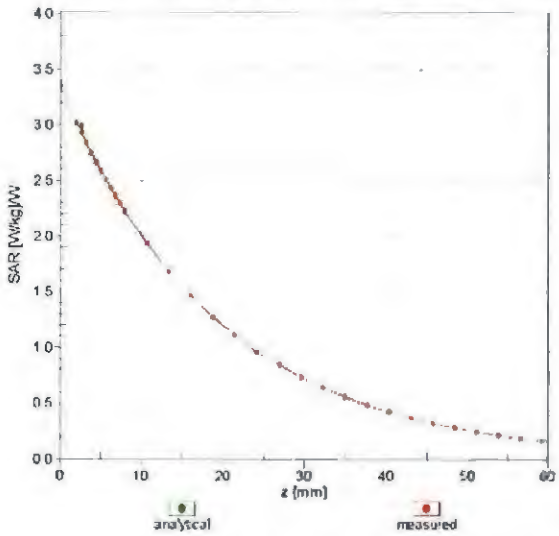




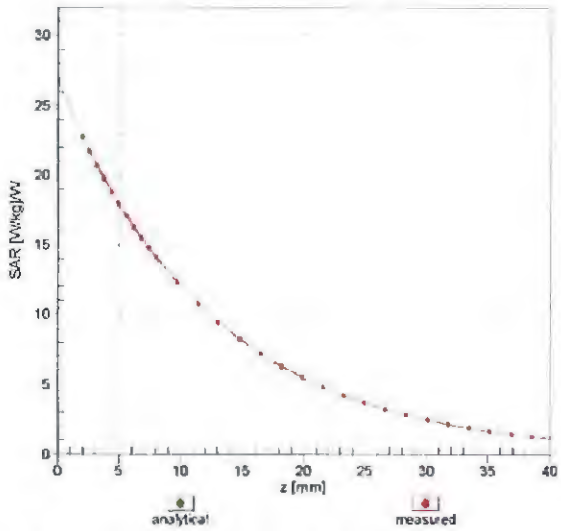
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

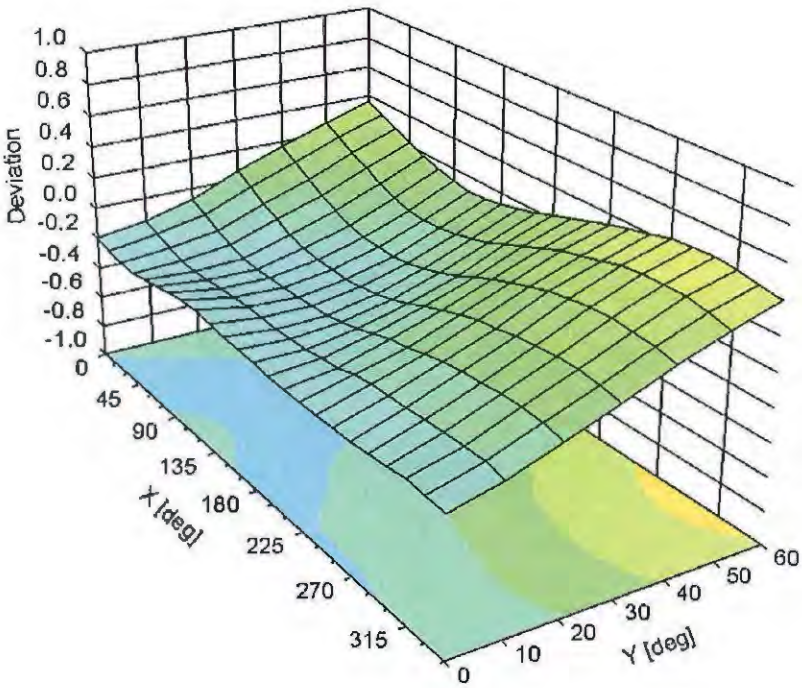


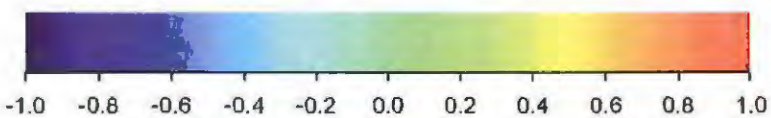
f = 1810 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3184

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-55.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	4 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Motorola MDb**

Certificate No: **EX3-3728_May13**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3728
Calibration procedure(s)	QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	May 30, 2013

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	04-Apr-13 (No. 217-01733)	Apr-14
Power sensor E4412A	MY41498087	04-Apr-13 (No. 217-01733)	Apr-14
Reference 3 dB Attenuator	SN: S5054 (3c)	04-Apr-13 (No. 217-01737)	Apr-14
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-13 (No. 217-01735)	Apr-14
Reference 30 dB Attenuator	SN: S5129 (30b)	04-Apr-13 (No. 217-01738)	Apr-14
Reference Probe ES3DV2	SN: 3013	28-Dec-12 (No. ES3-3013_Dec12)	Dec-13
DAE4	SN: 660	31-Jan-13 (No. DAE4-660_Jan13)	Jan-14
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-15
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 30, 2013

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3728

Manufactured: October 19, 2009
Calibrated: May 30, 2013

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3728

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.48	0.45	0.50	± 10.1 %
DCP (mV)[B]	102.3	105.8	102.1	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	158.1	±3.3 %
		Y	0.0	0.0	1.0		145.6	
		Z	0.0	0.0	1.0		117.3	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3728

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
2450	39.2	1.80	6.91	6.91	6.91	0.29	0.93	± 12.0 %
2600	39.0	1.96	6.81	6.81	6.81	0.40	0.80	± 12.0 %
5200	36.0	4.66	4.88	4.88	4.88	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.65	4.65	4.65	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.41	4.41	4.41	0.35	1.80	± 13.1 %
5800	35.3	5.27	4.28	4.28	4.28	0.40	1.80	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3728

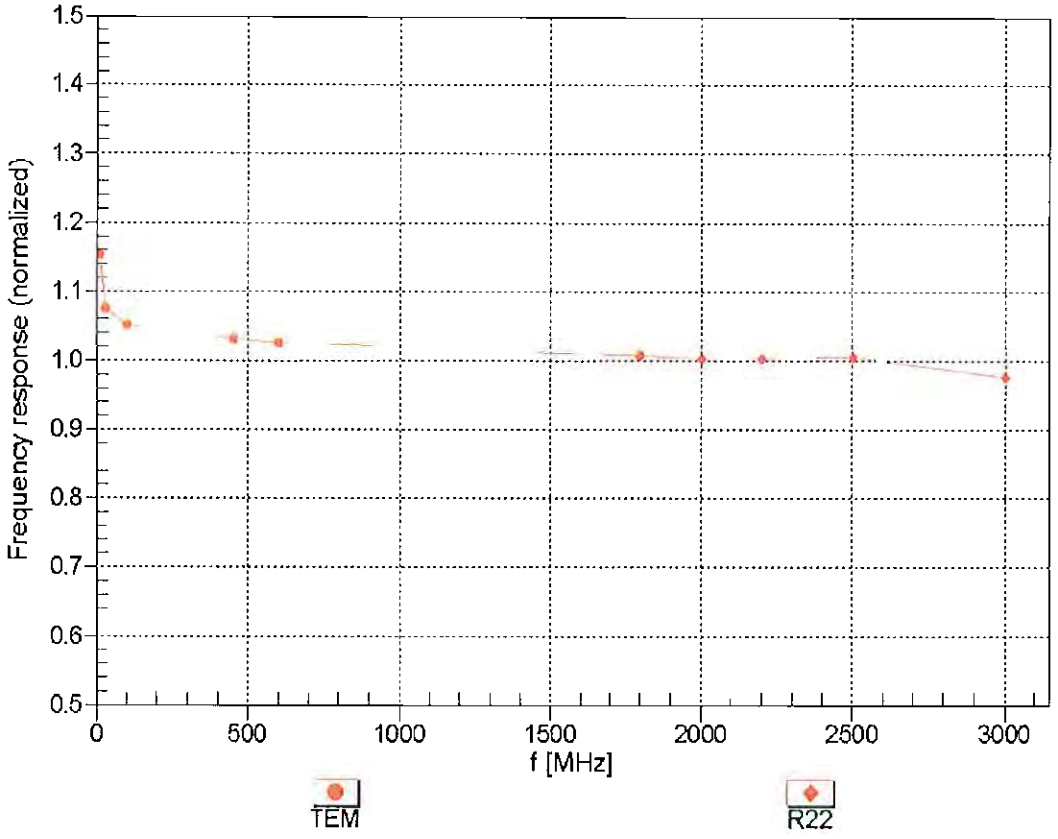
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
2450	52.7	1.95	7.13	7.13	7.13	0.77	0.60	± 12.0 %
2600	52.5	2.16	6.77	6.77	6.77	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.21	4.21	4.21	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.06	4.06	4.06	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.51	3.51	3.51	0.50	1.90	± 13.1 %
5800	48.2	6.00	3.86	3.86	3.86	0.50	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Frequency Response of E-Field

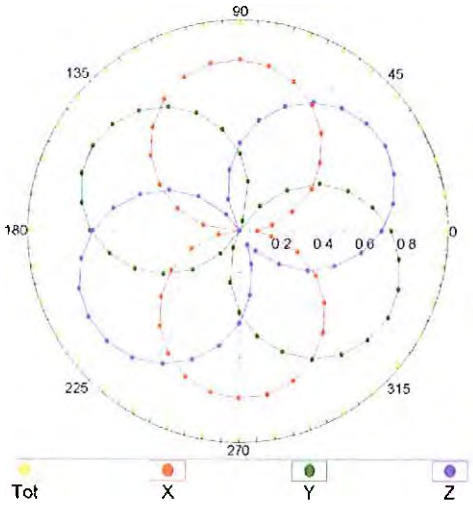
(TEM-Cell:ifi110 EXX, Waveguide: R22)



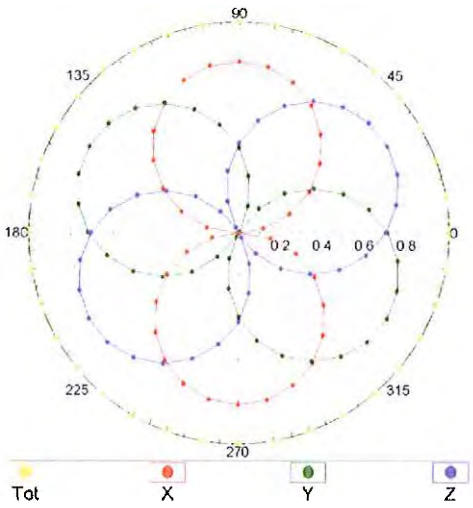
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

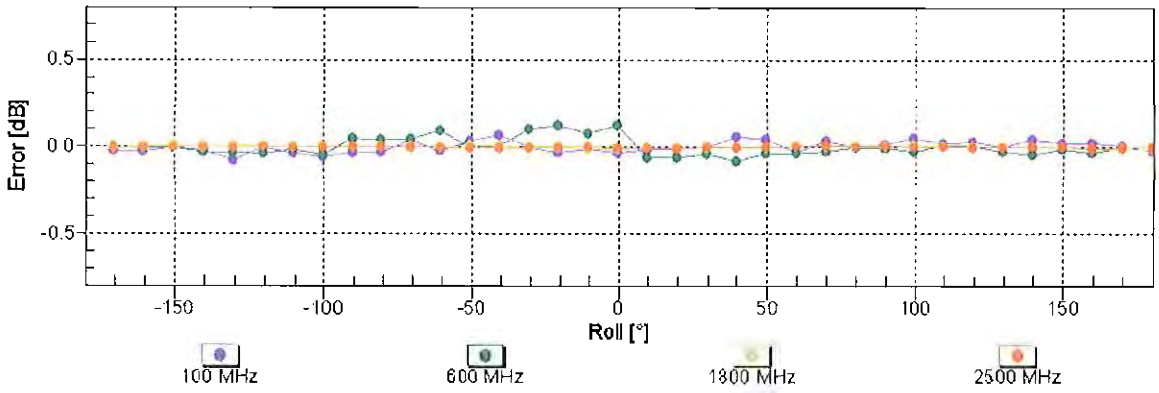
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



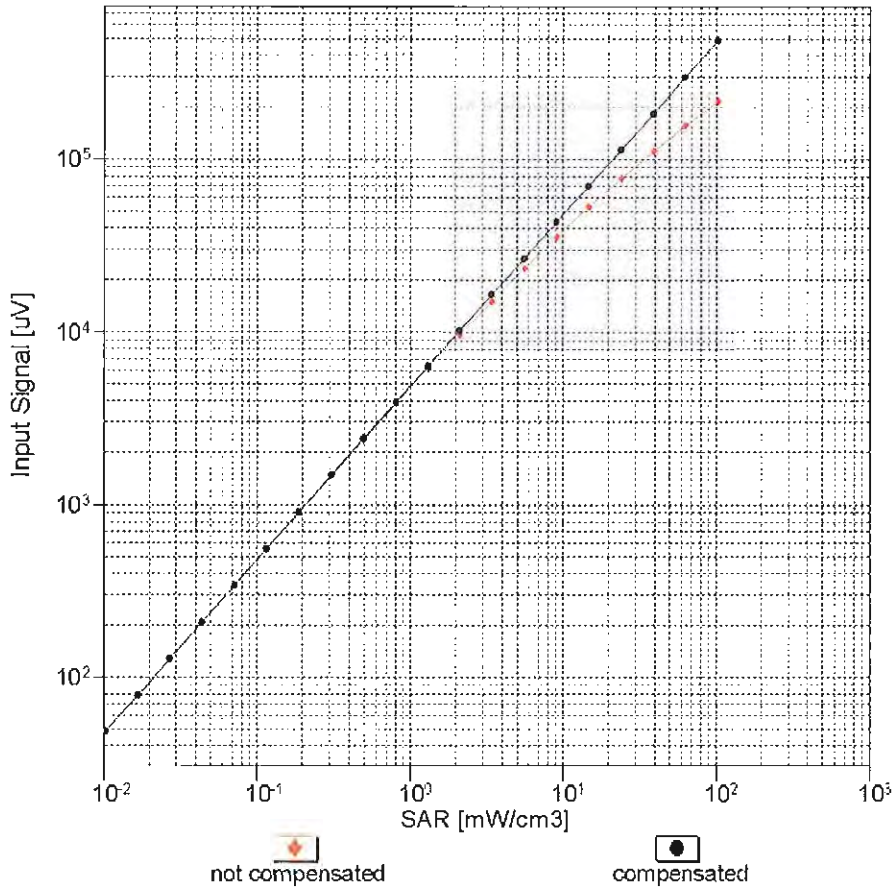
f=1800 MHz,R22

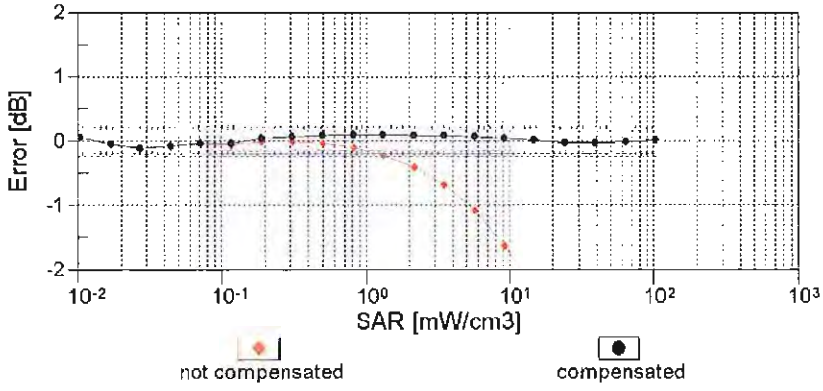




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)

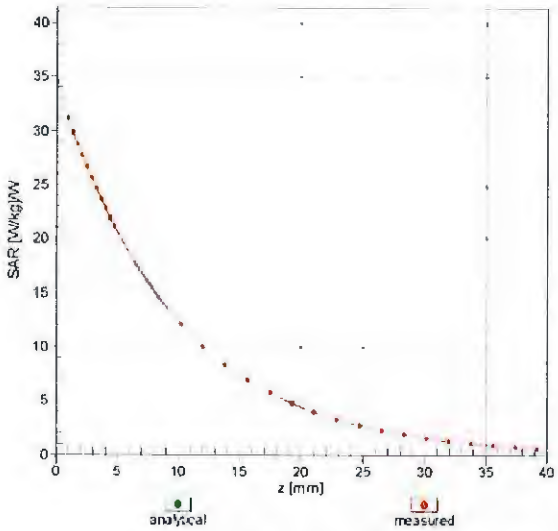




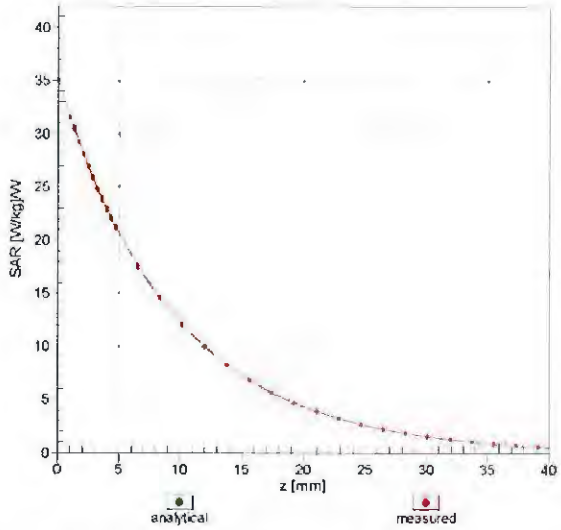
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 2450 MHz,WGLS R22 (H_convF)

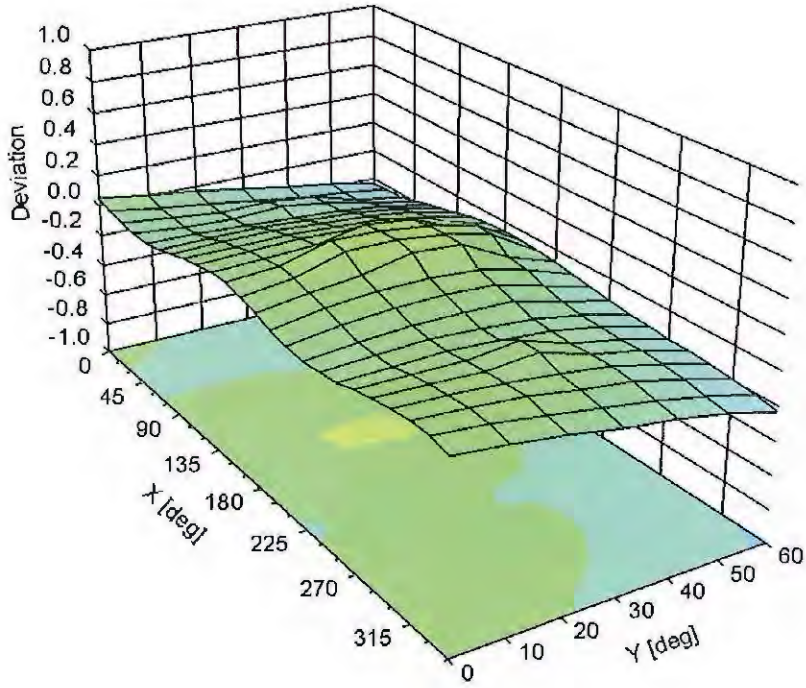


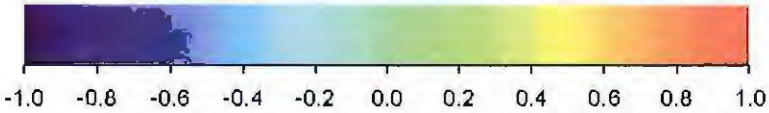
f = 2450 MHz,WGLS R22 (M_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3728

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-30.5
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

Appendix 7

Dipole Characterization Certificates

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Motorola MDb**

Certificate No: D750V3-1040_Aug11

CALIBRATION CERTIFICATE

Object	D750V3 - SN: 1040
Calibration procedure(s)	QA CAL-05.v8 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	August 10, 2011

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	29-Apr-11 (No. ES3-3205_Apr11)	Apr-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	D. Iliev
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 10, 2011

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.3 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.15 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**8.40 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.40 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**5.50 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.6 ± 6 %	0.96 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.20 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**8.80 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.45 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**5.80 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.9 Ω - 1.4 jΩ
Return Loss	- 30.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.5 Ω - 3.4 jΩ
Return Loss	- 28.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.039 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 28, 2011

DASY5 Validation Report for Head TSL

Date: 10.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1040

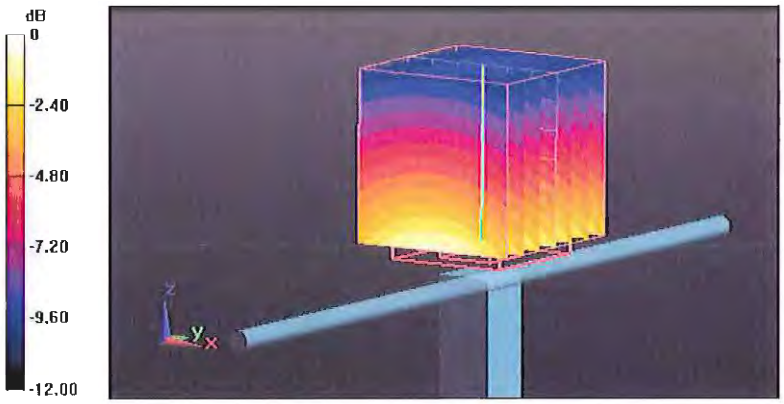
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.92 mho/m; ε_r = 42.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.33, 6.33, 6.33); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

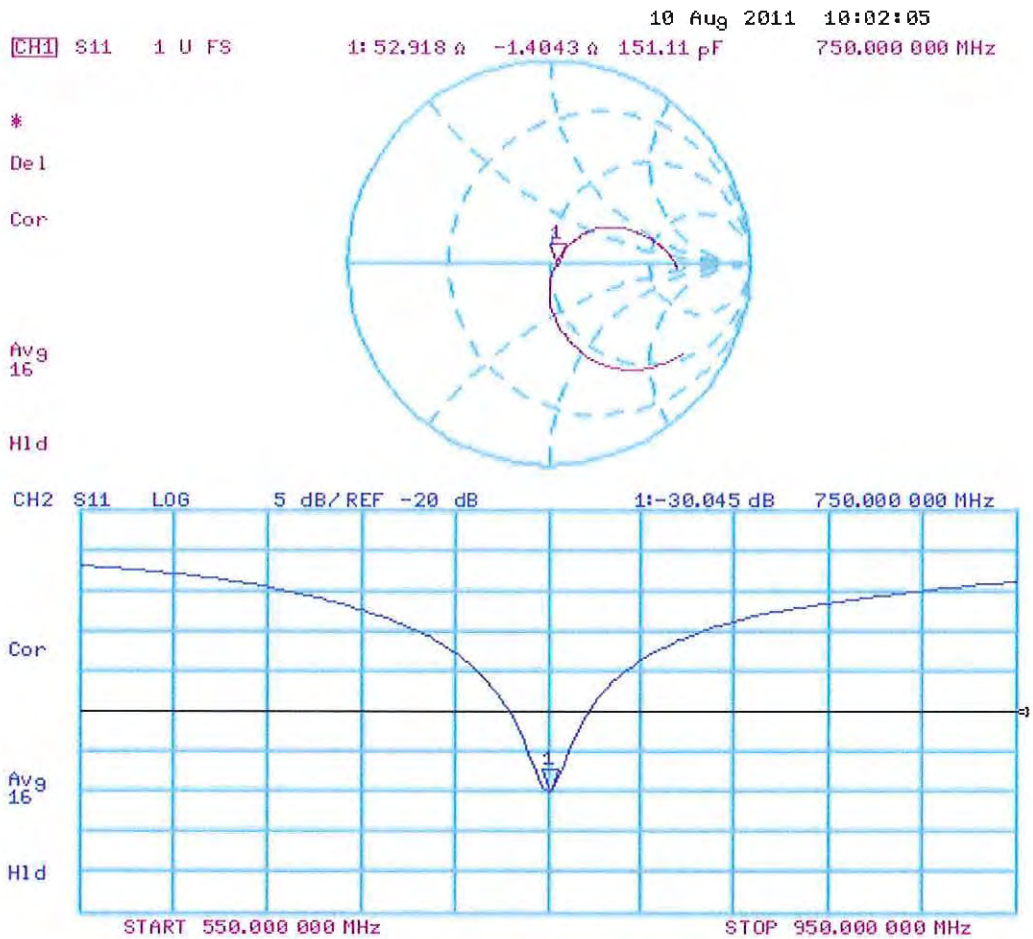
Dipole Calibration for Head Tissue/Pin=250mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.672 V/m; Power Drift = 0.0054 dB
Peak SAR (extrapolated) = 3.262 W/kg
SAR(1 g) = 2.15 mW/g; SAR(10 g) = 1.4 mW/g
Maximum value of SAR (measured) = 2.521 mW/g



0 dB = 2.520mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 10.08.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1040

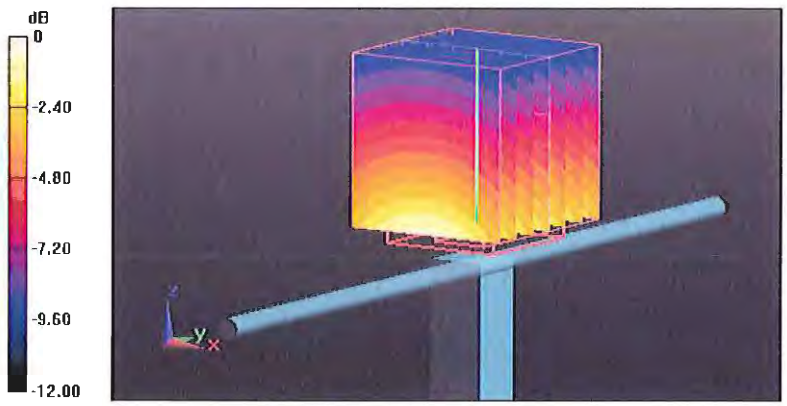
Communication System: CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.96 mho/m; ε_r = 55.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.12, 6.12, 6.12); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.6.2(482); SEMCAD X 14.4.5(3634)

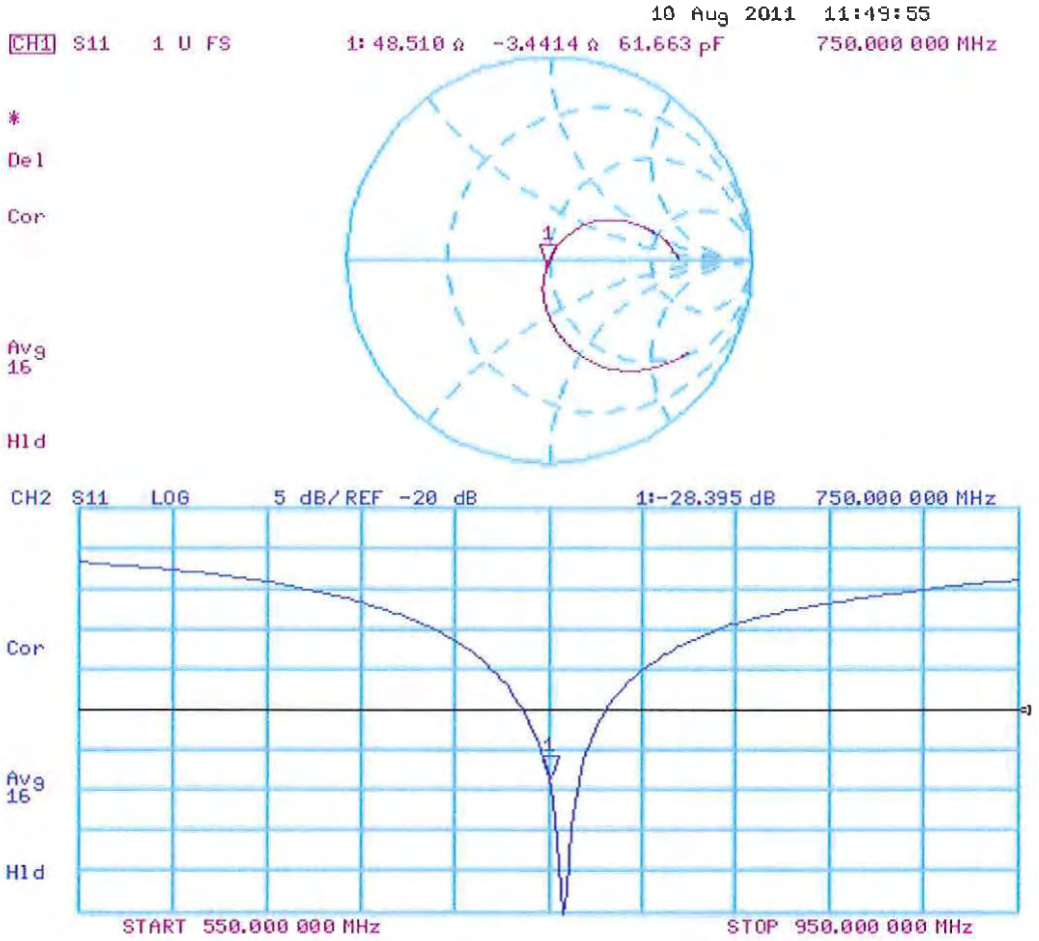
Dipole Calibration for Body Tissue/Pin=250mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.823 V/m; Power Drift = 0.0096 dB
Peak SAR (extrapolated) = 3.264 W/kg
SAR(1 g) = 2.2 mW/g; SAR(10 g) = 1.45 mW/g
Maximum value of SAR (measured) = 2.563 mW/g



0 dB = 2.560mW/g

Impedance Measurement Plot for Body TSL



MOTOROLA MOBILITY, EME Laboratories

Extension of Dipole Calibration Interval

FCD-1954, Rev.2

Dipole SN: 1040

Date of last external calibration: 8/10/2011

External calibration performed by: SPEAG

		1st Extension	2nd Extension	
	Original Calibration Data: 8/10/2011	Internal Verification: 8/8/2012	Internal Verification: 7/9/2013	Accept / Reject
Return loss (dB): *Verify < -20dB & within 20% of original*	-30	-27.2	-25.8	Accept
Impedance, Real (Ω): *Verify within +/-5 Ω of original*	52.9	55.3	50.5	Accept
Impedance, Imaginary (Ω): *Verify within +/-5 Ω of original*	-1.4	-3.2	-0.1	Accept

Conclusion:

Based on the requirements of KDB 865664 D01 SAR Measurement Requirements for 100MHz to 6GHz, it has been concluded that the dipole identified above has qualified for extension of its calibration interval for one additional year.

This review shall be repeated annually, but not to exceed a maximum 3 years from the most recent manufacturer's calibration.

First Extension Period:

Approved extension period: **1 Year**

Previous due date: 8/10/2012

NEW DUE DATE: **8/10/2013**

2 years from date of last external calibration

Authorized by: Marge Kaunas

Second Extension Period:

Approved extension period: **1 Year**

Previous due date: 8/10/2013

NEW DUE DATE: **8/10/2014**

3 years from date of last external calibration

Authorized by: Marge Kaunas