APPENDIX A: SYSTEM CHECKING SCANS

Plot 1

Date/Time: 2015-07-28 13:40:28

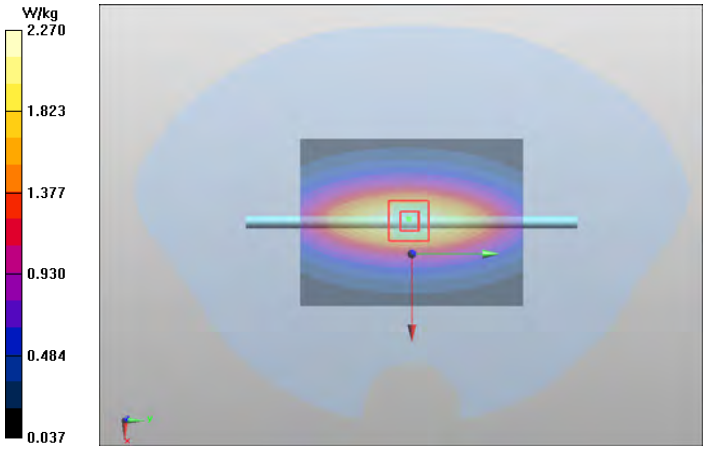
Test Laboratory: TCC Microsoft
Type: D750V3; Serial: D750V3 - SN:1075

Communication System: CW
Frequency: **750 MHz**; Duty Cycle: 1:1
Medium: HSL750; Medium Notes: t= 22 C
Medium parameters used: f = 750 MHz; σ = 0.872 S/m; ε_r = 40.954; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(9.14, 9.14, 9.14); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #1 SAM, SAR4; Type: SAM; Serial: TP-1018
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=15mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 49.270 V/m
Fast SAR: SAR(1 g) = 1.98 W/kg
Fast SAR(10 g) = 1.35 W/kg
Maximum value of SAR (interpolated) = 2.27 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 49.270 V/m
Peak SAR (extrapolated) = 2.87 W/kg
SAR(1 g) = 1.94 W/kg
SAR(10 g) = 1.28 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 2.26 W/kg



Plot 2

Date/Time: 2015-07-18 08:50:34

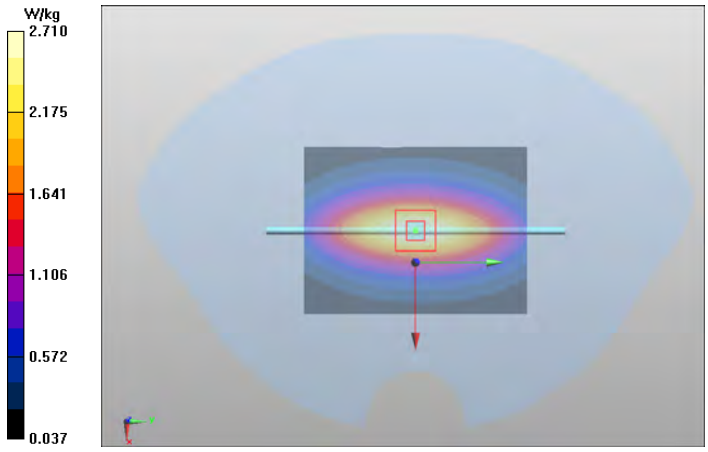
Test Laboratory: TCC Microsoft
Type: D835V2; Serial: D835V2 - SN:480

Communication System: CW
Frequency: **835 MHz**; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 23.0 C
Medium parameters used: f = 835 MHz; σ = 0.911 S/m; ε_r = 40.569; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(6.04, 6.04, 6.04); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=15mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 53.176 V/m
Fast SAR: SAR(1 g) = 2.36 W/kg
Fast SAR(10 g) = 1.59 W/kg
Maximum value of SAR (interpolated) = 2.71 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 53.176 V/m
Peak SAR (extrapolated) = 3.44 W/kg
SAR(1 g) = 2.31 W/kg
SAR(10 g) = 1.51 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 2.71 W/kg



Plot 3

Date/Time: 2015-07-15 09:22:18

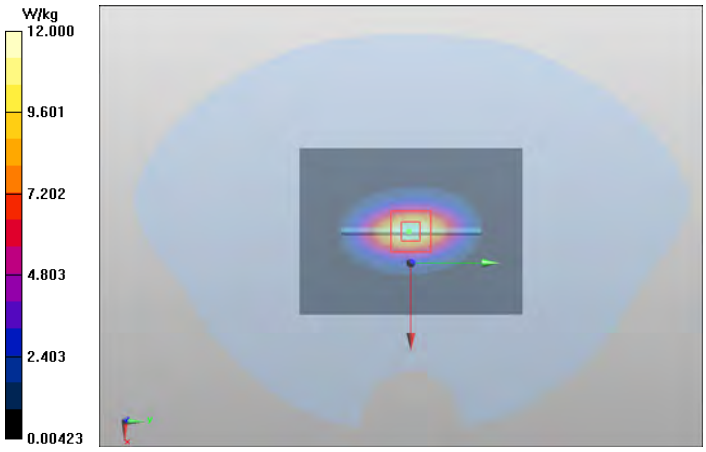
Test Laboratory: TCC Microsoft
Type: D1750V2; Serial: D1750V2 - SN:1082

Communication System: CW
Frequency: **1750 MHz**; Duty Cycle: 1:1
Medium: HSL1800; Medium Notes: t= 21.8 C
Medium parameters used: f = 1750 MHz; σ = 1.355 S/m; ε_r = 38.937; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(5.22, 5.22, 5.22); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: SAM 1; Type: SAM; Serial: TP-1167
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (91x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 90.411 V/m
Fast SAR: SAR(1 g) = 9.66 W/kg
Fast SAR(10 g) = 5.24 W/kg
Maximum value of SAR (interpolated) = 12.0 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 90.411 V/m
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.51 W/kg
SAR(10 g) = 5.04 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 12.1 W/kg



Plot 4

Date/Time: 2015-07-24 08:45:28

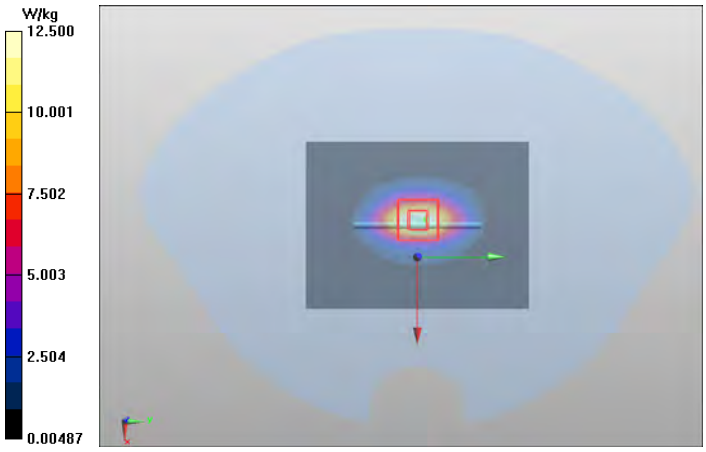
Test Laboratory: TCC Microsoft
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW
Frequency: **1900 MHz**; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 22.1 C
Medium parameters used: f = 1900 MHz; σ = 1.379 S/m; ε_r = 38.57; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.85, 4.85, 4.85); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: SAM 1; Type: Twin Phantom GF-VE 20; Serial: TP-1736
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 89.758 V/m
Fast SAR: SAR(1 g) = 9.91 W/kg
Fast SAR(10 g) = 5.17 W/kg
Maximum value of SAR (interpolated) = 12.5 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 89.758 V/m
Peak SAR (extrapolated) = 18.2 W/kg
SAR(1 g) = 9.88 W/kg
SAR(10 g) = 5.14 W/kg
Power Drift = -0.09 dB
Maximum value of SAR (measured) = 12.4 W/kg



Plot 5

Date/Time: 2015-06-25 07:53:36

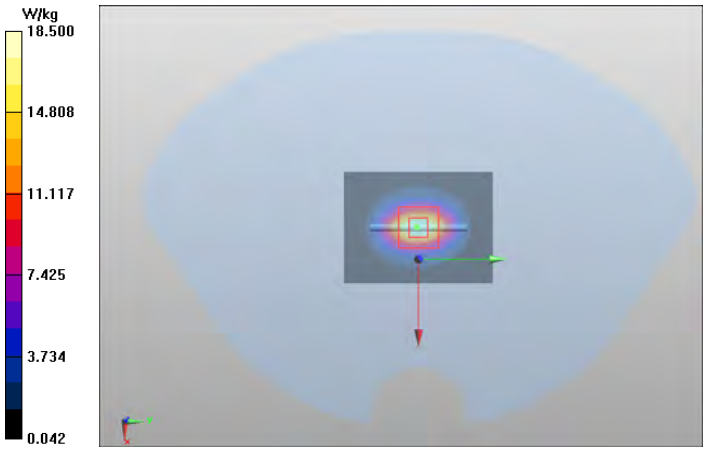
Test Laboratory: TCC Microsoft
Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW
Frequency: **2450 MHz**; Duty Cycle: 1:1
Medium: HSL2450-2600; Medium Notes: t= 19.8 C
Medium parameters used: f = 2450 MHz; σ = 1.868 S/m; ε_r = 37.46; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(6.86, 6.86, 6.86); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: ROBOSAM 2.4GHz; Type: SAM; Serial: 0001
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 92.155 V/m
Fast SAR: SAR(1 g) = 14.1 W/kg
Fast SAR(10 g) = 6.24 W/kg
Maximum value of SAR (interpolated) = 18.5 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.155 V/m
Peak SAR (extrapolated) = 30.4 W/kg
SAR(1 g) = 14.1 W/kg
SAR(10 g) = 6.43 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 18.7 W/kg



Plot 6

Date/Time: 2015-07-12 14:25:42

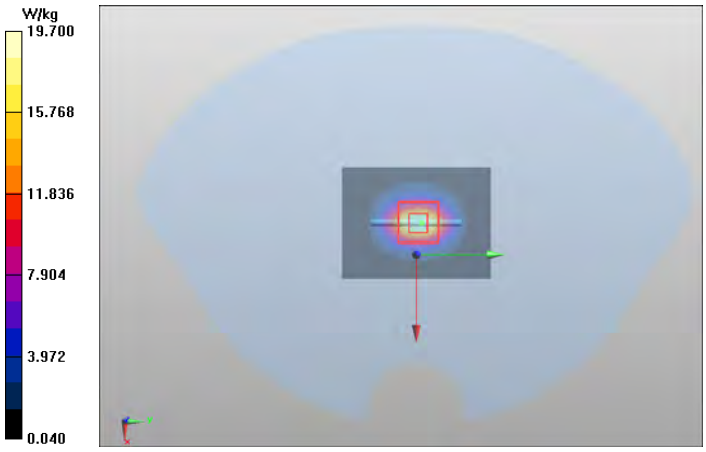
Test Laboratory: TCC Microsoft
Type: D2600V2; Serial: D2600V2 - SN:1056

Communication System: CW
Frequency: **2600 MHz**; Duty Cycle: 1:1
Medium: HSL2600; Medium Notes: t= 22,8 C
Medium parameters used: f = 2600 MHz; σ = 1.929 S/m; ε_r = 37.728; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(7.13, 7.13, 7.13); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2015-04-20
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 93.786 V/m
Fast SAR: SAR(1 g) = 14.9 W/kg
Fast SAR(10 g) = 6.66 W/kg
Maximum value of SAR (interpolated) = 19.7 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.786 V/m
Peak SAR (extrapolated) = 31.3 W/kg
SAR(1 g) = 14.6 W/kg
SAR(10 g) = 6.53 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 19.4 W/kg



Plot 7

Date/Time: 2015-06-26 07:03:42

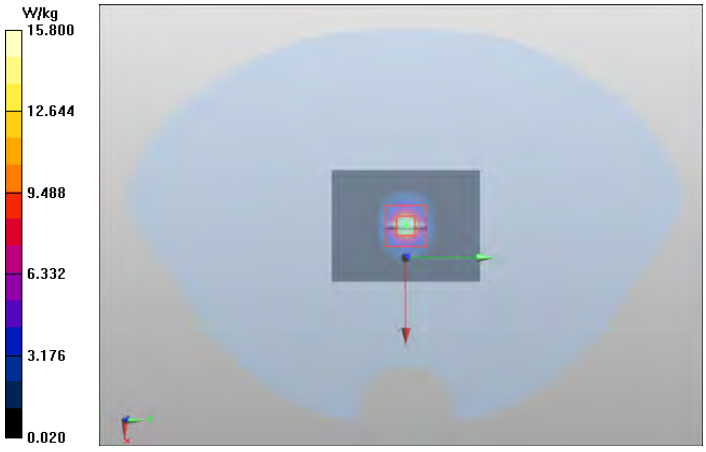
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5300 MHz**; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t=21.5 C
Medium parameters used: f = 5300 MHz; σ = 4.737 S/m; ε_r = 36.77; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.68, 4.68, 4.68); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: ROBOSAM 5.0GHz; Type: SAM; Serial: 0001
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5300/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.8 W/kg

d=10mm, Pin=100mW 5300/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.536 V/m
Peak SAR (extrapolated) = 34.4 W/kg
SAR(1 g) = 8.05 W/kg
SAR(10 g) = 2.29 W/kg
Power Drift = 0.06 dB
Maximum value of SAR (measured) = 15.5 W/kg



Plot 8

Date/Time: 2015-06-26 07:34:37

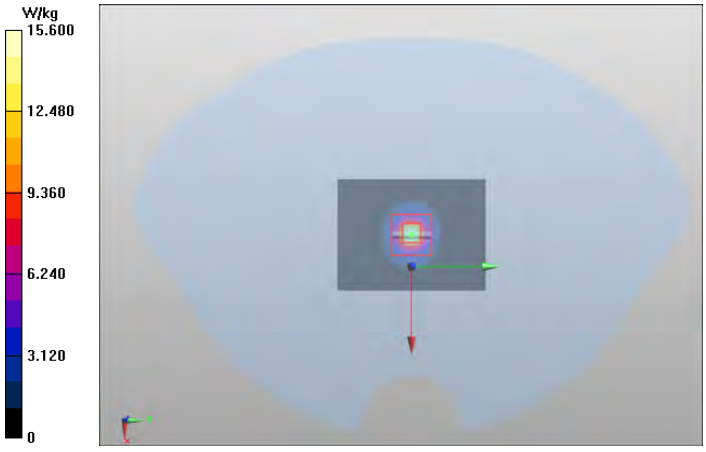
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5500 MHz**; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t=21.5 C
Medium parameters used: f = 5500 MHz; σ = 4.929 S/m; ε_r = 36.516; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.7, 4.7, 4.7); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: ROBOSAM 5.0GHz; Type: SAM; Serial: 0001
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5500/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.6 W/kg

d=10mm, Pin=100mW 5500/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 61.225 V/m
Peak SAR (extrapolated) = 33.3 W/kg
SAR(1 g) = 7.63 W/kg
SAR(10 g) = 2.15 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 15.1 W/kg



Plot 9

Date/Time: 2015-06-29 06:40:44

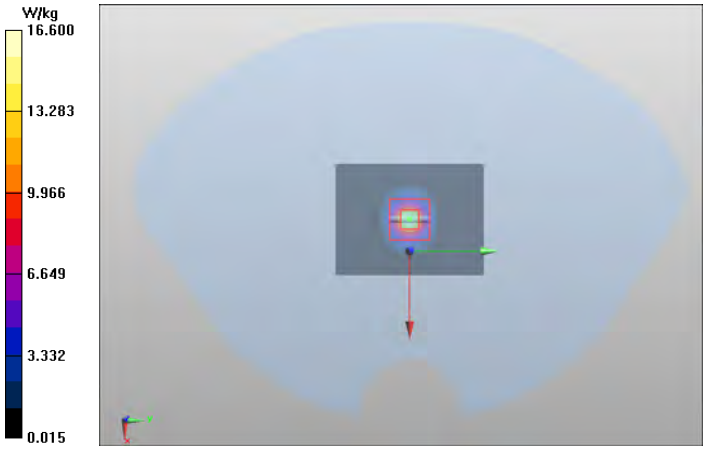
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5600 MHz**; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t=21.7 C
Medium parameters used: f = 5600 MHz; σ = 5.013 S/m; ε_r = 36.058; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.53, 4.53, 4.53); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: ROBOSAM 5.0GHz; Type: SAM; Serial: 0001
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5600/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 16.6 W/kg

d=10mm, Pin=100mW 5600/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 62.113 V/m
Peak SAR (extrapolated) = 37.1 W/kg
SAR(1 g) = 8.34 W/kg
SAR(10 g) = 2.35 W/kg
Power Drift = 0.12 dB
Maximum value of SAR (measured) = 16.4 W/kg



Plot 10

Date/Time: 2015-07-06 11:52:23

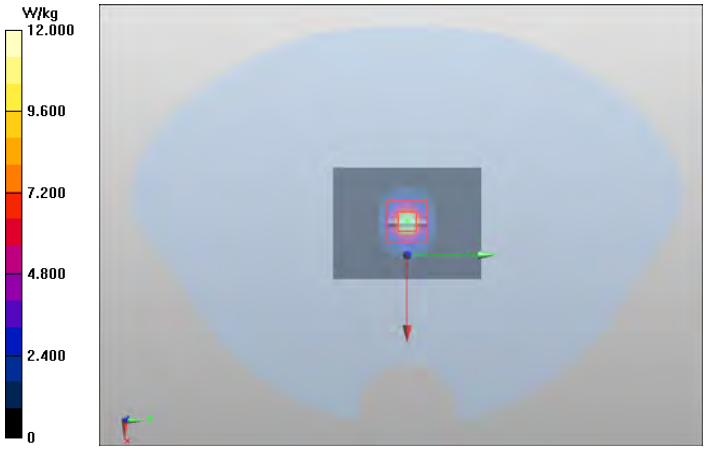
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5800 MHz**; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t=21.6 C
Medium parameters used: f = 5800 MHz; σ = 5.26 S/m; ε_r = 35.807; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.5, 4.5, 4.5); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: ROBOSAM 5.0GHz; Type: SAM; Serial: 0001
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5800/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.0 W/kg

d=10mm, Pin=100mW 5800/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 57.012 V/m
Peak SAR (extrapolated) = 33.4 W/kg
SAR(1 g) = 7.2 W/kg
SAR(10 g) = 2.03 W/kg
Power Drift = 0.12 dB
Maximum value of SAR (measured) = 14.0 W/kg



Plot 11

Date/Time: 2015-07-07 06:42:58

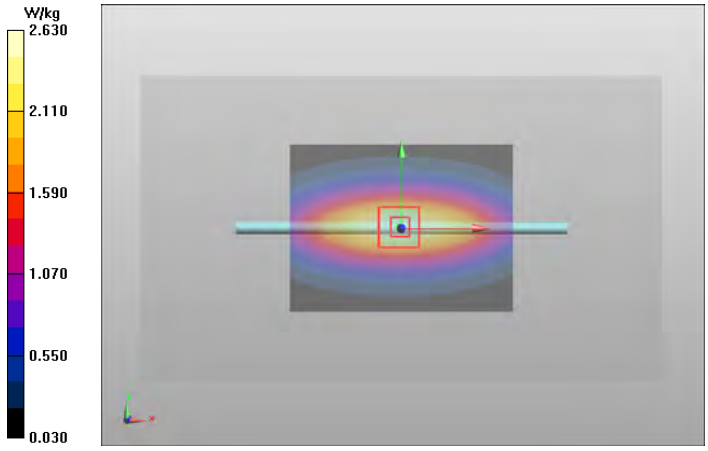
Test Laboratory: TCC Microsoft
Type: D750V3; Serial: D750V3 - SN:1075

Communication System: CW
Frequency: **750 MHz**; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.0 C
Medium parameters used: f = 750 MHz; σ = 0.982 S/m; ε_r = 54.197; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(8.8, 8.8, 8.8); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 50.292 V/m
Fast SAR: SAR(1 g) = 2.3 W/kg
Fast SAR(10 g) = 1.56 W/kg
Maximum value of SAR (interpolated) = 2.63 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 50.292 V/m
Peak SAR (extrapolated) = 3.29 W/kg
SAR(1 g) = 2.26 W/kg
SAR(10 g) = 1.5 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 2.63 W/kg



Plot 12

Date/Time: 2015-07-15 08:04:08

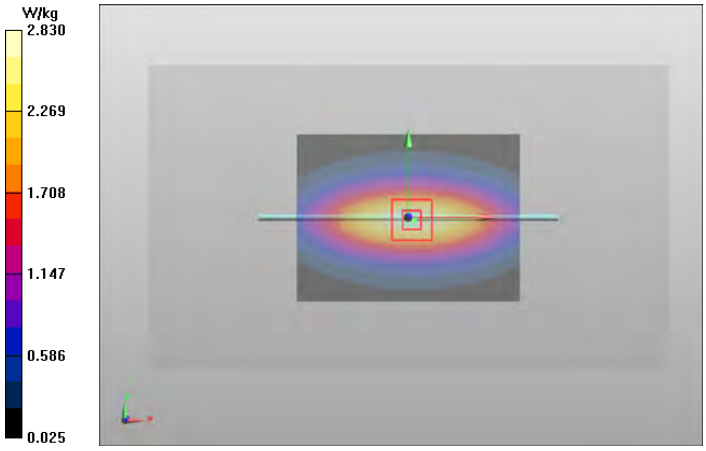
Test Laboratory: TCC Microsoft
Type: D835V2; Serial: D835V2 - SN:480

Communication System: CW
Frequency: **835 MHz**; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 21,9 C
Medium parameters used: f = 835 MHz; σ = 0.983 S/m; ε_r = 53.626; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(5.96, 5.96, 5.96); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 52.242 V/m
Fast SAR: SAR(1 g) = 2.46 W/kg
Fast SAR(10 g) = 1.65 W/kg
Maximum value of SAR (interpolated) = 2.83 W/kg

d=15mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 52.242 V/m
Peak SAR (extrapolated) = 3.57 W/kg
SAR(1 g) = 2.43 W/kg
SAR(10 g) = 1.6 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 2.84 W/kg



Plot 13

Date/Time: 2015-07-25 09:00:33

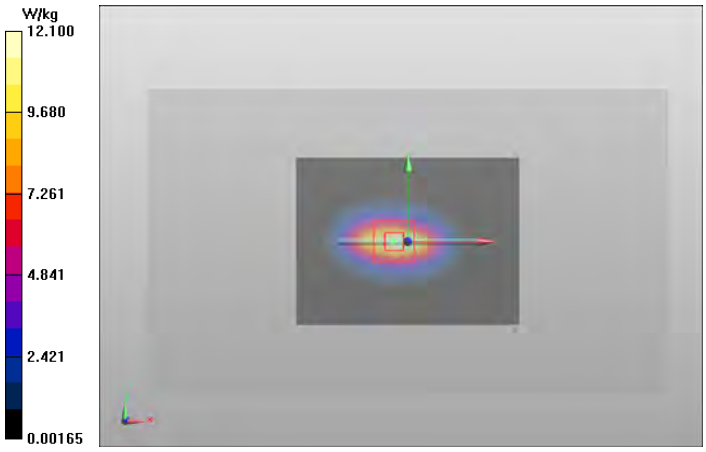
Test Laboratory: TCC Microsoft
Type: D1750V2; Serial: D1750V2 - SN:1082

Communication System: CW
Frequency: **1750 MHz**; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t=22,65 C
Medium parameters used: f = 1750 MHz; σ = 1.446 S/m; ε_r = 51.449; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(4.92, 4.92, 4.92); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 82.107 V/m
Fast SAR: SAR(1 g) = 9.21 W/kg
Fast SAR(10 g) = 4.76 W/kg
Maximum value of SAR (interpolated) = 12.1 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 82.107 V/m
Peak SAR (extrapolated) = 15.7 W/kg
SAR(1 g) = 9.02 W/kg
SAR(10 g) = 4.84 W/kg
Power Drift = -0.00 dB
Maximum value of SAR (measured) = 11.3 W/kg



Plot 14

Date/Time: 2015-07-15 08:46:00

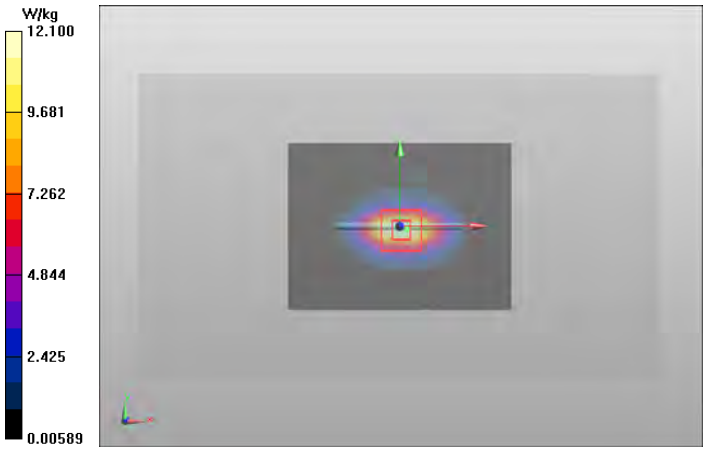
Test Laboratory: TCC Microsoft
Type: D1900V2; Serial: D1900V2 - SN:5d013

Communication System: CW
Frequency: **1900 MHz**; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 22.5 C
Medium parameters used: f = 1900 MHz; σ = 1.516 S/m; ε_r = 52.102; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 85.099 V/m
Fast SAR: SAR(1 g) = 9.4 W/kg
Fast SAR(10 g) = 4.72 W/kg
Maximum value of SAR (interpolated) = 12.1 W/kg

d=10mm, Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 85.099 V/m
Peak SAR (extrapolated) = 16.4 W/kg
SAR(1 g) = 9.49 W/kg
SAR(10 g) = 4.98 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 11.8 W/kg



Plot 15

Date/Time: 2015-07-03 06:14:39

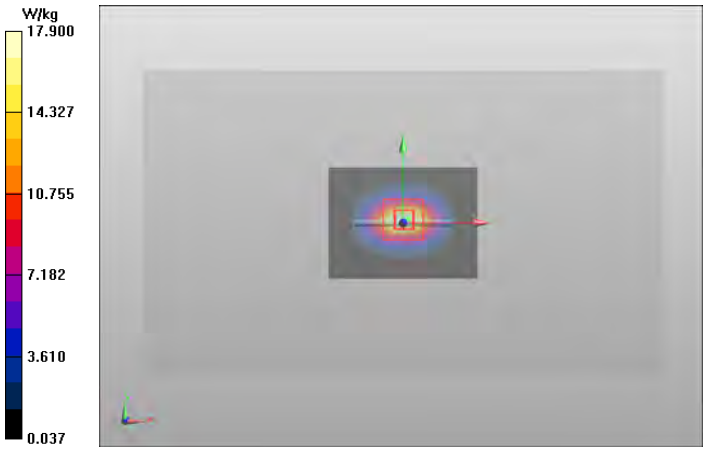
Test Laboratory: TCC Microsoft
Type: D2450V2; Serial: D2450V2 - SN:749

Communication System: CW
Frequency: **2450 MHz**; Duty Cycle: 1:1
Medium: BSL2450; Medium Notes: t= 21.2 C
Medium parameters used: f = 2450 MHz; σ = 1.958 S/m; ε_r = 52.529; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 88.153 V/m
Fast SAR: SAR(1 g) = 13.4 W/kg
Fast SAR(10 g) = 5.85 W/kg
Maximum value of SAR (interpolated) = 17.9 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.153 V/m
Peak SAR (extrapolated) = 26.6 W/kg
SAR(1 g) = 13.6 W/kg
SAR(10 g) = 6.44 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 17.6 W/kg



Plot 16

Date/Time: 2015-07-23 12:27:19

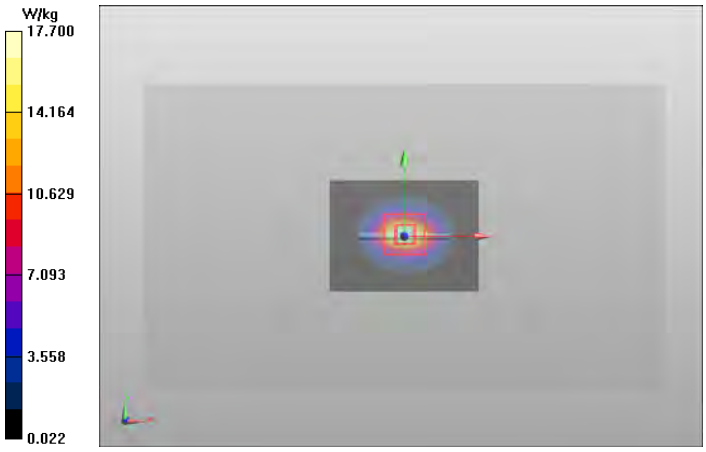
Test Laboratory: TCC Microsoft
Type: D2600V2; Serial: D2600V2 - SN:1056

Communication System: CW
Frequency: **2600 MHz**; Duty Cycle: 1:1
Medium: BSL2600; Medium Notes: t= 22.6 C
Medium parameters used: f = 2600 MHz; σ = 2.087 S/m; ε_r = 50.894; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2015-04-20
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 86.265 V/m
Fast SAR: SAR(1 g) = 13.4 W/kg
Fast SAR(10 g) = 5.91 W/kg
Maximum value of SAR (interpolated) = 17.7 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 86.265 V/m
Peak SAR (extrapolated) = 27.3 W/kg
SAR(1 g) = 13.2 W/kg
SAR(10 g) = 5.97 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 17.6 W/kg



Plot 17

Date/Time: 2015-07-08 06:14:31

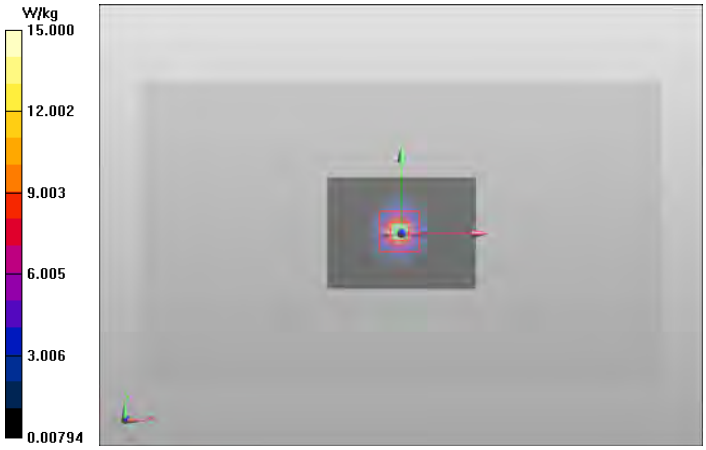
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5200 MHz**; Duty Cycle: 1:1
Medium: BSL5000; Medium Notes: 21.3 C
Medium parameters used: f = 5200 MHz; σ = 5.387 S/m; ε_r = 46.978; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.51, 4.51, 4.51); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5200/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.0 W/kg

d=10mm, Pin=100mW 5200/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.084 V/m
Peak SAR (extrapolated) = 30.1 W/kg
SAR(1 g) = 7.24 W/kg
SAR(10 g) = 2.04 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 14.1 W/kg



Plot 18

Date/Time: 2015-07-07 06:54:23

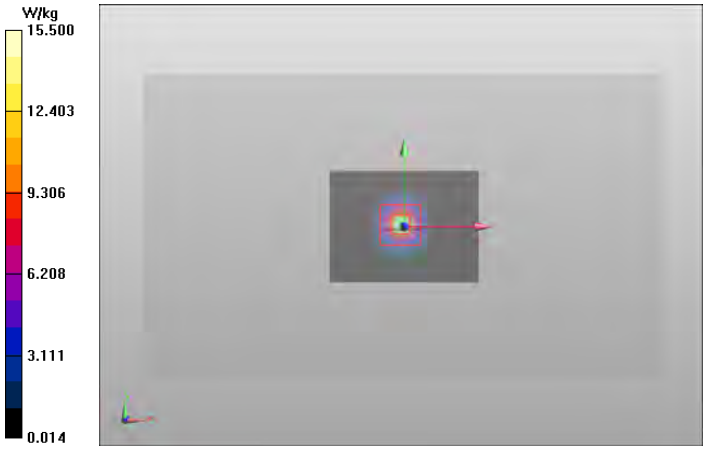
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5300 MHz**; Duty Cycle: 1:1
Medium: BSL5000; Medium Notes: 21.7 C
Medium parameters used: f = 5300 MHz; σ = 5.598 S/m; ε_r = 47.314; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.35, 4.35, 4.35); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5300/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.5 W/kg

d=10mm, Pin=100mW 5300/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 56.597 V/m
Peak SAR (extrapolated) = 33.9 W/kg
SAR(1 g) = 8.1 W/kg
SAR(10 g) = 2.27 W/kg
Power Drift = 0.12 dB
Maximum value of SAR (measured) = 15.9 W/kg



Plot 19

Date/Time: 2015-07-07 07:26:23

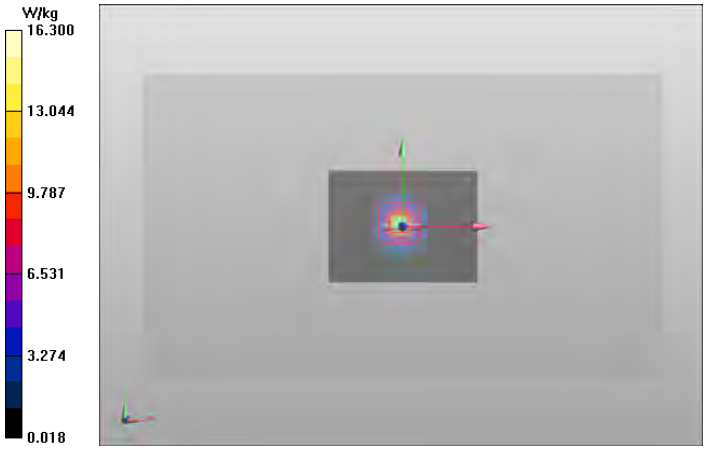
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5600 MHz**; Duty Cycle: 1:1
Medium: BSL5000; Medium Notes: 21.7 C
Medium parameters used: f = 5600 MHz; σ = 5.989 S/m; ε_r = 46.748; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(3.65, 3.65, 3.65); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5600/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 16.3 W/kg

d=10mm, Pin=100mW 5600/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 59.252 V/m
Peak SAR (extrapolated) = 35.5 W/kg
SAR(1 g) = 8.52 W/kg
SAR(10 g) = 2.37 W/kg
Power Drift = -0.17 dB
Maximum value of SAR (measured) = 16.7 W/kg



Plot 20

Date/Time: 2015-07-07 06:20:37

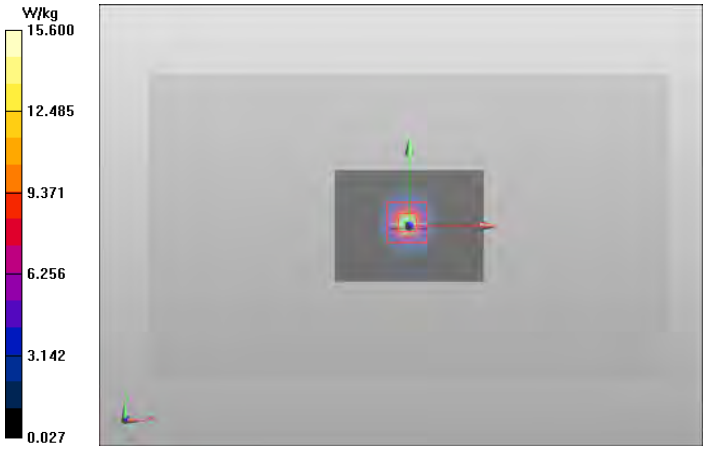
Test Laboratory: TCC Microsoft
Type: D5GHzV2; Serial: D5GHzV2 - SN: 1048

Communication System: CW
Frequency: **5800 MHz**; Duty Cycle: 1:1
Medium: BSL5000; Medium Notes: 21.7 C
Medium parameters used: f = 5800 MHz; σ = 6.264 S/m; ε_r = 46.449; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.1, 4.1, 4.1); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.9 (7117)

d=10mm, Pin=100mW 5800/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 15.6 W/kg

d=10mm, Pin=100mW 5800/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 52.780 V/m
Peak SAR (extrapolated) = 31.6 W/kg
SAR(1 g) = 7.35 W/kg
SAR(10 g) = 2.04 W/kg
Power Drift = 0.15 dB
Maximum value of SAR (measured) = 14.8 W/kg



APPENDIX B: MEASUREMENT SCANS

Plot H1

Date/Time: 2015-07-12 12:57:08

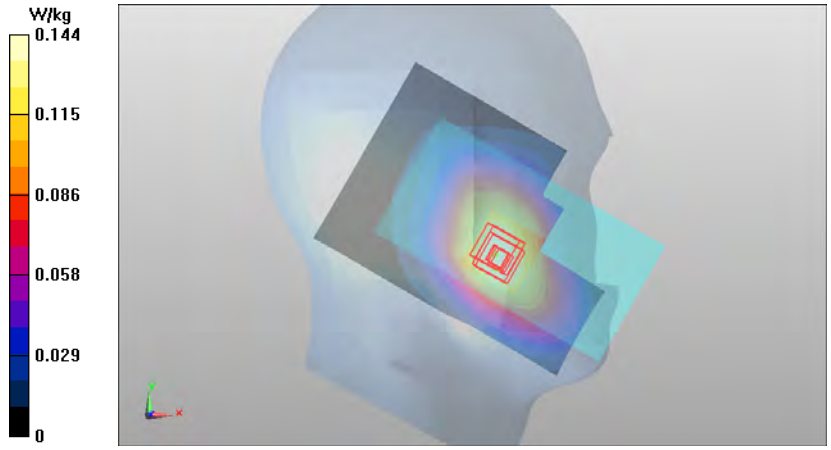
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230892/1

Communication System: LTE700 (Band 12)
Frequency: **704 MHz**; Duty Cycle: 1:1
Medium: HSL750; Medium Notes: t= 22 C
Medium parameters used: f = 704 MHz; σ = 0.892 S/m; ε_r = 42.439; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(9.14, 9.14, 9.14); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #1 SAM, SAR4; Type: SAM; Serial: TP-1018
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE700 (Band 12) - Left/Cheek - CH 23060 - 10MHz - QPSK - 1 RB - Offset 24 - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 12.53 V/m
Fast SAR: SAR(1 g) = 0.129 W/kg
Fast SAR(10 g) = 0.093 W/kg
Maximum value of SAR (interpolated) = 0.144 W/kg

LTE700 (Band 12) - Left/Cheek - CH 23060 - 10MHz - QPSK - 1 RB - Offset 24 - Antenna 1/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 12.53 V/m
Peak SAR (extrapolated) = 0.164 W/kg
SAR(1 g) = 0.129 W/kg
SAR(10 g) = 0.102 W/kg
Power Drift = 0.15 dB
Maximum value of SAR (measured) = 0.141 W/kg



Plot H2

Date/Time: 2015-07-28 16:53:47

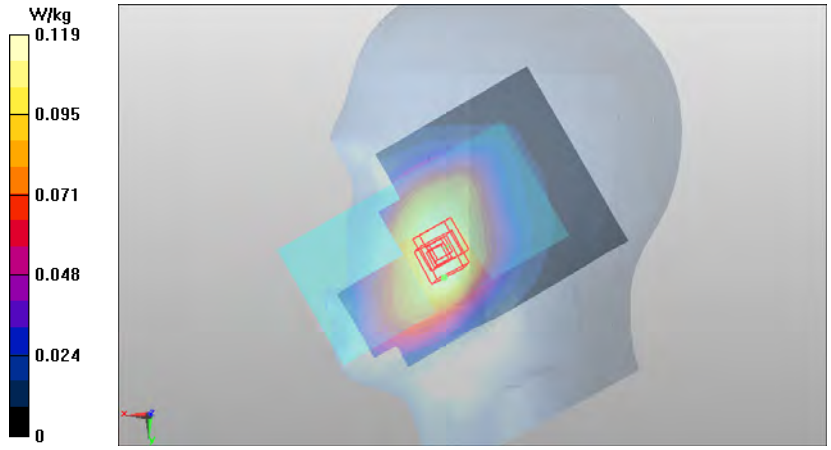
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230892/1

Communication System: LTE700 (Band 17)
Frequency: **709 MHz**; Duty Cycle: 1:1
Medium: HSL750; Medium Notes: t= 22 C
Medium parameters used: f = 709 MHz; σ = 0.847 S/m; ε_r = 41.205; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(9.14, 9.14, 9.14); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #1 SAM, SAR4; Type: SAM; Serial: TP-1018
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE700 (Band 17) - Right/Cheek - CH 23780 - 10MHz - QPSK - 1 RB - Offset 49 - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 11.70 V/m
Fast SAR: SAR(1 g) = 0.105 W/kg
Fast SAR(10 g) = 0.077 W/kg
Maximum value of SAR (interpolated) = 0.119 W/kg

LTE700 (Band 17) - Right/Cheek - CH 23780 - 10MHz - QPSK - 1 RB - Offset 49 - Antenna 2/Zoom Scan (7x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.74 V/m
Peak SAR (extrapolated) = 0.125 W/kg
SAR(1 g) = 0.105 W/kg
SAR(10 g) = 0.084 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 0.108 W/kg



Plot H3

Date/Time: 2015-07-18 10:55:37

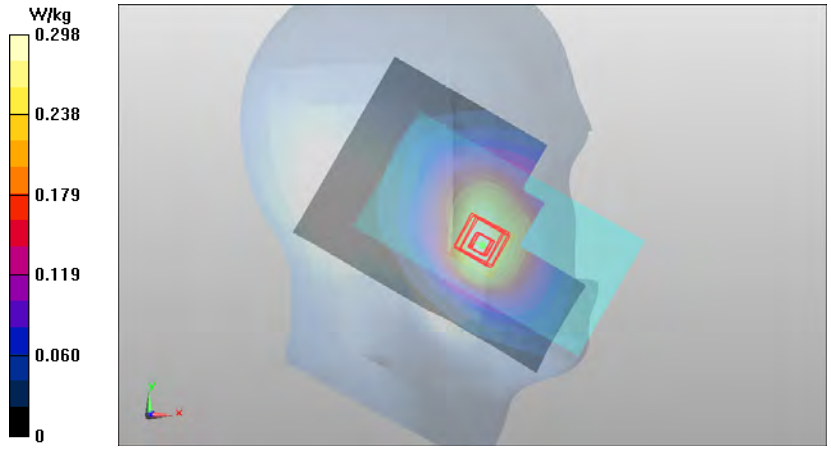
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: 2-slot GPRS850
Frequency: **836.6 MHz**; Duty Cycle: 1:4.19952
Medium: HSL835; Medium Notes: t= 23.0 C
Medium parameters used: f = 837 MHz; σ = 0.912 S/m; ε_r = 40.544; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(6.04, 6.04, 6.04); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-slot GPRS850 - Left/Cheek - CH 190 - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 15.33 V/m
Fast SAR: SAR(1 g) = 0.263 W/kg
Fast SAR(10 g) = 0.184 W/kg
Maximum value of SAR (interpolated) = 0.298 W/kg

2-slot GPRS850 - Left/Cheek - CH 190 - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 12.72 V/m
Peak SAR (extrapolated) = 0.248 W/kg
SAR(1 g) = 0.195 W/kg
SAR(10 g) = 0.149 W/kg
Power Drift = 0.10 dB
Maximum value of SAR (measured) = 0.214 W/kg



Plot H4

Date/Time: 2015-07-14 13:13:57

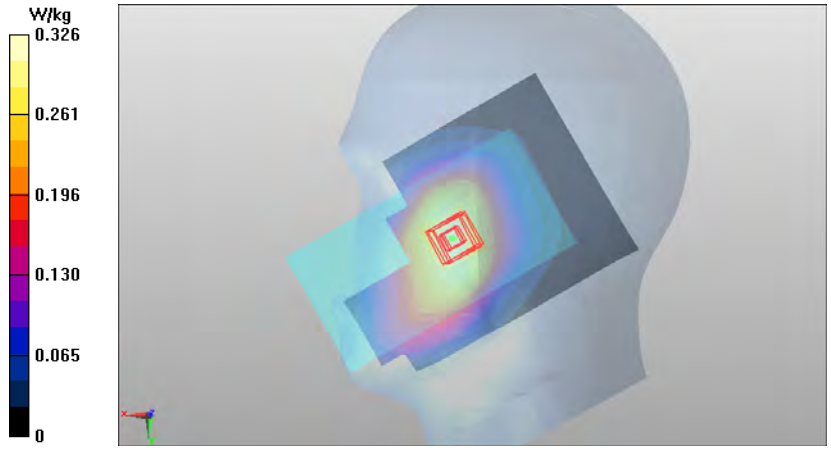
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: WCDMA850 (Band 5)
Frequency: **835 MHz**; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 22.2 C
Medium parameters used: f = 835 MHz; σ = 0.906 S/m; ε_r = 40.788; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(6.04, 6.04, 6.04); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA850 (Band 5) - Right/Cheek - CH 4175 - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 18.21 V/m
Fast SAR: SAR(1 g) = 0.287 W/kg
Fast SAR(10 g) = 0.204 W/kg
Maximum value of SAR (interpolated) = 0.326 W/kg

WCDMA850 (Band 5) - Right/Cheek - CH 4175 - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 18.05 V/m
Peak SAR (extrapolated) = 0.363 W/kg
SAR(1 g) = 0.300 W/kg
SAR(10 g) = 0.236 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.327 W/kg



Plot H5

Date/Time: 2015-07-21 14:40:36

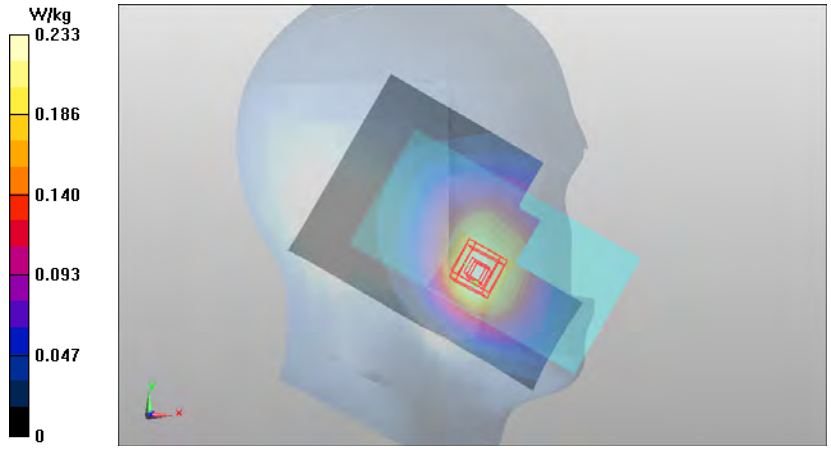
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: LTE850 (Band 5)
Frequency: **836.5 MHz**; Duty Cycle: 1:1
Medium: HSL835; Medium Notes: t= 23.2 C
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.913 S/m; ε_r = 40.352; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(6.04, 6.04, 6.04); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE850 (Band 5) - Left/Cheek - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - Antenna 2/Area Scan (81x141x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.39 V/m
Fast SAR: SAR(1 g) = 0.206 W/kg
Fast SAR(10 g) = 0.145 W/kg
Maximum value of SAR (interpolated) = 0.233 W/kg

LTE850 (Band 5) - Left/Cheek - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - Antenna 2/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.43 V/m
Peak SAR (extrapolated) = 0.268 W/kg
SAR(1 g) = 0.213 W/kg
SAR(10 g) = 0.163 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.230 W/kg



Plot H6

Date/Time: 2015-07-11 18:28:40

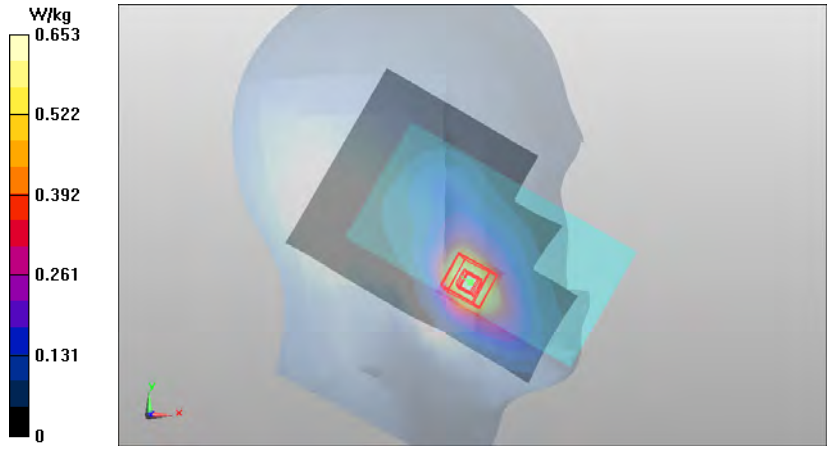
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230902/8

Communication System: WCDMA1700/2100 (Band 4)
Frequency: **1752.6 MHz**; Duty Cycle: 1:1
Medium: HSL1750; Medium Notes: t= 22,9 C
Medium parameters used: f = 1753 MHz; σ = 1.345 S/m; ε_r = 39.054; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(5.22, 5.22, 5.22); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: SAM 1; Type: SAM; Serial: TP-1167
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA1700_2100 (Band 4) - Left/Cheek - CH 1513 - Antenna 1/Area Scan (81x141x1): Interpolated grid:
dx=1.500 mm, dy=1.500 mm
Reference Value = 21.69 V/m
Fast SAR: SAR(1 g) = 0.511 W/kg
Fast SAR(10 g) = 0.303 W/kg
Maximum value of SAR (interpolated) = 0.653 W/kg

WCDMA1700_2100 (Band 4) - Left/Cheek - CH 1513 - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.60 V/m
Peak SAR (extrapolated) = 0.780 W/kg
SAR(1 g) = 0.526 W/kg
SAR(10 g) = 0.336 W/kg
Power Drift = 0.07 dB
Maximum value of SAR (measured) = 0.611 W/kg



Plot H7

Date/Time: 2015-07-24 10:37:44

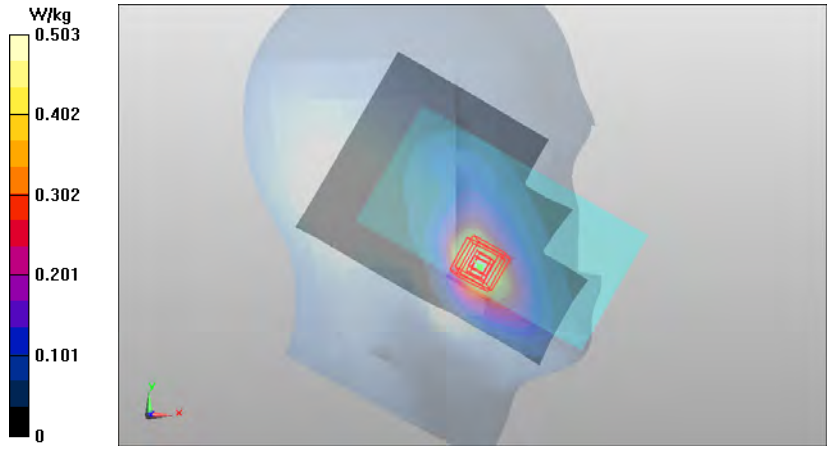
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/231011/7

Communication System: LTE1700/2100 (Band 4)
Frequency: **1732.5 MHz**; Duty Cycle: 1:1
Medium: HSL1750; Medium Notes: t= 22,2 C
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.303 S/m; ε_r = 39.245; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(5.22, 5.22, 5.22); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: SAM 1; Type: SAM; Serial: TP-1167
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE1700_2100 (Band 4) - Left/Cheek - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.67 V/m
Fast SAR: SAR(1 g) = 0.401 W/kg
Fast SAR(10 g) = 0.239 W/kg
Maximum value of SAR (interpolated) = 0.503 W/kg

LTE1700_2100 (Band 4) - Left/Cheek - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.91 V/m
Peak SAR (extrapolated) = 0.641 W/kg
SAR(1 g) = 0.437 W/kg
SAR(10 g) = 0.280 W/kg
Power Drift = 0.08 dB
Maximum value of SAR (measured) = 0.506 W/kg



Plot H8

Date/Time: 2015-07-08 11:01:07

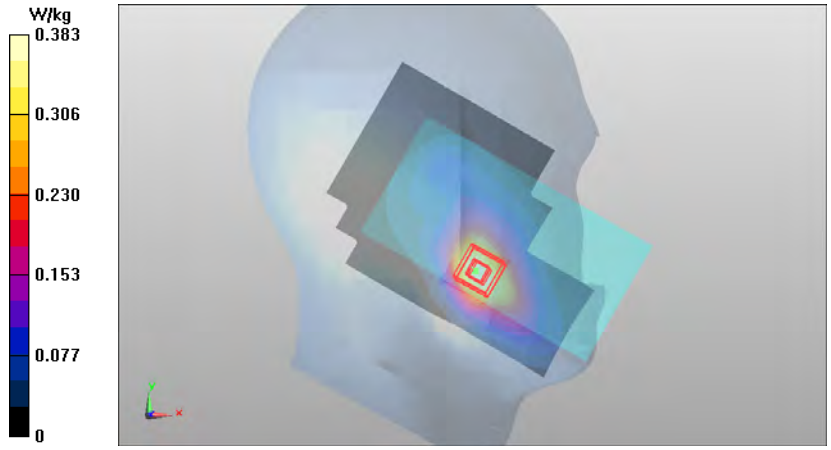
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: 2-slot GPRS1900
Frequency: **1850.2 MHz**; Duty Cycle: 1:4.19952
Medium: HSL1900; Medium Notes: t= 21,6 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.353 S/m; ε_r = 38.848; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.85, 4.85, 4.85); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: SAM 1; Type: Twin Phantom GF-VE 20; Serial: TP-1736
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-slot GPRS1900 - Left/Cheek - CH 512 - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.80 V/m
Fast SAR: SAR(1 g) = 0.314 W/kg
Fast SAR(10 g) = 0.186 W/kg
Maximum value of SAR (interpolated) = 0.383 W/kg

2-slot GPRS1900 - Left/Cheek - CH 512 - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.74 V/m
Peak SAR (extrapolated) = 0.520 W/kg
SAR(1 g) = 0.351 W/kg
SAR(10 g) = 0.224 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 0.409 W/kg



Plot H9

Date/Time: 2015-07-08 19:38:48

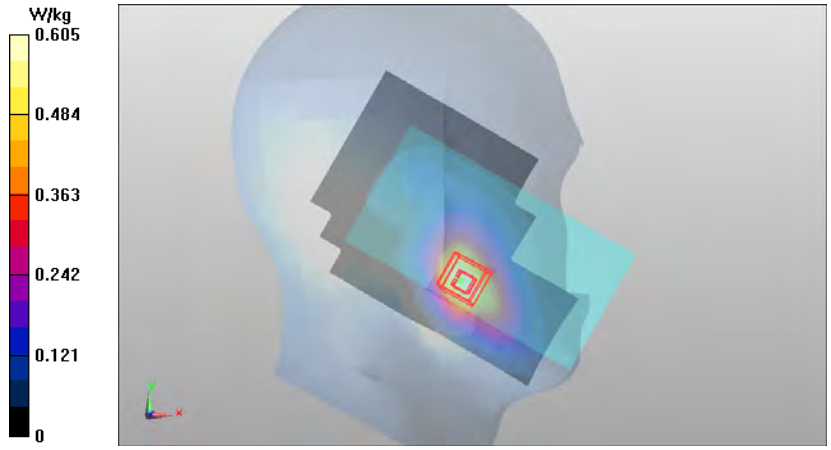
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: WCDMA1900 (Band 2)
Frequency: **1852.4 MHz**; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 21,6 C
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.355 S/m; ε_r = 38.842; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.85, 4.85, 4.85); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: SAM 1; Type: Twin Phantom GF-VE 20; Serial: TP-1736
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA1900 (Band 2) - Left/Cheek - CH 9262 - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.26 V/m
Fast SAR: SAR(1 g) = 0.496 W/kg
Fast SAR(10 g) = 0.292 W/kg
Maximum value of SAR (interpolated) = 0.605 W/kg

WCDMA1900 (Band 2) - Left/Cheek - CH 9262 - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.29 V/m
Peak SAR (extrapolated) = 0.768 W/kg
SAR(1 g) = 0.500 W/kg
SAR(10 g) = 0.315 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 0.585 W/kg



Plot H10

Date/Time: 2015-07-24 09:09:37

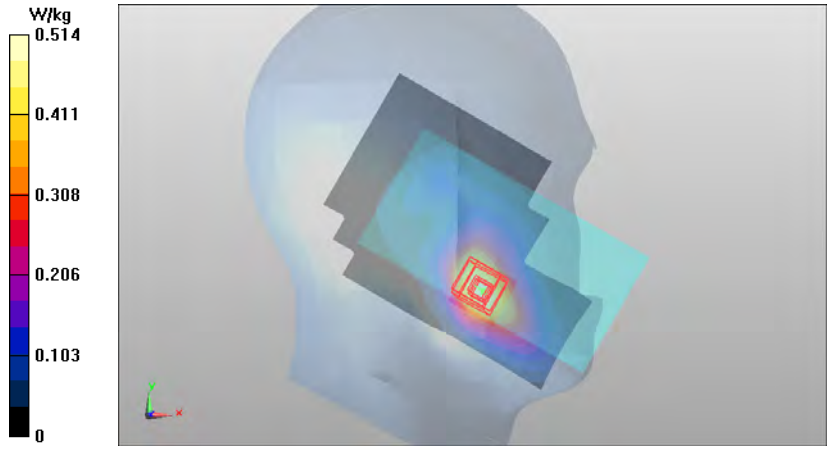
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/231010/9

Communication System: LTE1900 (Band 2)
Frequency: **1860 MHz**; Duty Cycle: 1:1
Medium: HSL1900; Medium Notes: t= 22.1 C
Medium parameters used: f = 1860 MHz; σ = 1.339 S/m; ε_r = 38.716; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.85, 4.85, 4.85); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: SAM 1; Type: Twin Phantom GF-VE 20; Serial: TP-1736
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE1900 (Band 2) - Left/Cheek - CH 18700 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 1/Area Scan (81x141x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.58 V/m
Fast SAR: SAR(1 g) = 0.424 W/kg
Fast SAR(10 g) = 0.248 W/kg
Maximum value of SAR (interpolated) = 0.514 W/kg

LTE1900 (Band 2) - Left/Cheek - CH 18700 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 15.90 V/m
Peak SAR (extrapolated) = 0.605 W/kg
SAR(1 g) = 0.413 W/kg
SAR(10 g) = 0.267 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.481 W/kg



Plot H11

Date/Time: 2015-07-22 14:53:15

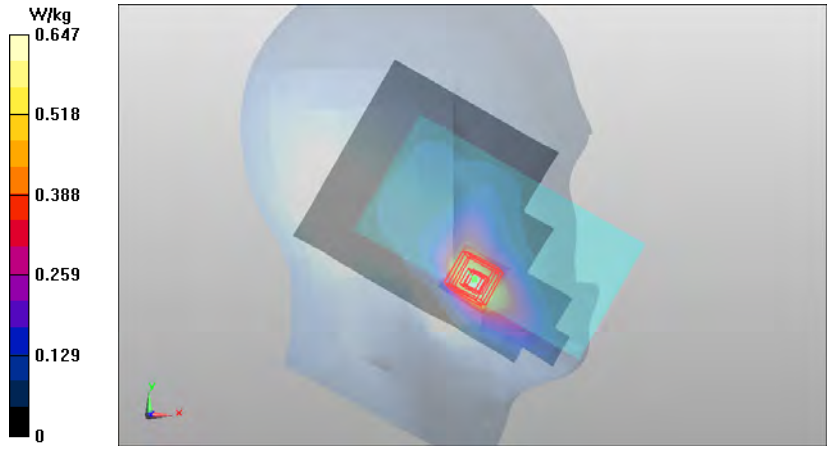
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230817/8

Communication System: LTE2500 (Band 7)
Frequency: **2535 MHz**; Duty Cycle: 1:1
Medium: HSL2600; Medium Notes: t= 22.3 C
Medium parameters used: f = 2535 MHz; σ = 1.82 S/m; ε_r = 37.972; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(7.13, 7.13, 7.13); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2015-04-20
- Phantom: SAM2; Type: SAM; Serial: TP-1570
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE2500 (Band 7) - Left/Cheek - CH 21100 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 1/Area Scan 2 (121x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 12.74 V/m
Fast SAR: SAR(1 g) = 0.507 W/kg
Fast SAR(10 g) = 0.267 W/kg
Maximum value of SAR (interpolated) = 0.647 W/kg

LTE2500 (Band 7) - Left/Cheek - CH 21100 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.12 V/m
Peak SAR (extrapolated) = 0.883 W/kg
SAR(1 g) = 0.498 W/kg
SAR(10 g) = 0.271 W/kg
Power Drift = 0.15 dB
Maximum value of SAR (measured) = 0.606 W/kg



Plot H12

Date/Time: 2015-06-25 18:11:10

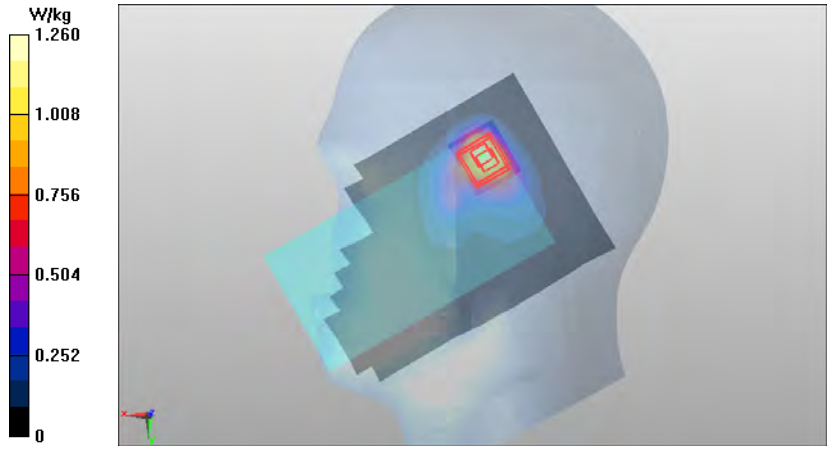
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 0044702/74/230809/5

Communication System: WLAN2450
Frequency: **2462 MHz**; Duty Cycle: 1:1
Medium: HSL2450-2600; Medium Notes: t= 19.8 C
Medium parameters used: f = 2462 MHz; σ = 1.875 S/m; ε_r = 37.398; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(6.86, 6.86, 6.86); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: ROBOSAM 2.4GHz; Type: SAM; Serial: 0001
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN2450 b-mode - Right/Cheek - CH 11 - 20 MHz DSSS QPSK 2 Mbps SS 1 - Antenna 1 and 2 - Repeated/Area Scan (121x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 25.67 V/m
Fast SAR: SAR(1 g) = 0.936 W/kg
Fast SAR(10 g) = 0.461 W/kg
Maximum value of SAR (interpolated) = 1.26 W/kg

WLAN2450 b-mode - Right/Cheek - CH 11 - 20 MHz DSSS QPSK 2 Mbps SS 1 - Antenna 1 and 2 - Repeated/Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.35 V/m
Peak SAR (extrapolated) = 2.17 W/kg
SAR(1 g) = 0.990 W/kg
SAR(10 g) = 0.483 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 1.31 W/kg



Plot H13

Date/Time: 2015-06-26 14:51:48

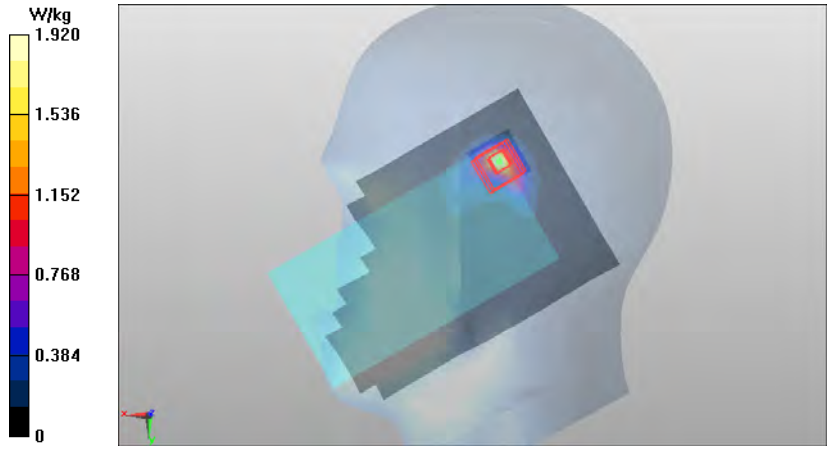
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 0044702/74/230809/5

Communication System: WLAN5000
Frequency: **5290 MHz**; Duty Cycle: 1:1
Medium: HSL5000; Medium Notes: t=21.5 C
Medium parameters used: f = 5290 MHz; σ = 4.726 S/m; ε_r = 36.785; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.68, 4.68, 4.68); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: ROBOSAM 5.0GHz; Type: SAM; Serial: 0001
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN5000 ac-mode - Right/Cheek - CH 58 - 80 MHz OFDM BPSK MCS0 SS 1 - Antenna 1 and 2/Area Scan (121x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 18.13 V/m
Fast SAR: SAR(1 g) = 0.832 W/kg
Fast SAR(10 g) = 0.273 W/kg
Maximum value of SAR (interpolated) = 1.92 W/kg

WLAN5000 ac-mode - Right/Cheek - CH 58 - 80 MHz OFDM BPSK MCS0 SS 1 - Antenna 1 and 2/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.99 V/m
Peak SAR (extrapolated) = 3.42 W/kg
SAR(1 g) = 0.859 W/kg
SAR(10 g) = 0.280 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 1.70 W/kg



Plot H14

Date/Time: 2015-06-25 18:11:10

DASY Configuration for WLAN2450 b-mode - Right/Cheek - CH 11 - 20 MHz DSSS QPSK 2 Mbps SS 1 - Antenna 1 and 2 - Repeated/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 0044702/74/230809/5

Communication System: WLAN2450; Frequency: 2462 MHz; Duty Cycle: 1:1; PMF: 1

Medium: HSL2450-2600 Medium parameters used: f = 2462 MHz; σ = 1.875 S/m; ε_r = 37.398; ρ = 1000 kg/m^3

Phantom section: Right Section

Probe: EX3DV4 - SN3852; ConvF(6.86, 6.86, 6.86); Calibrated: 2015-04-24;
Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn756; Calibrated: 2015-04-20
Phantom: ROBOSAM 2.4GHz; Type: SAM; Serial: 0001
Measurement SW: DASY52, Version 52.8 (8)

Date/Time: 2015-07-14 13:13:57

DASY Configuration for WCDMA850 (Band 5) - Right/Cheek - CH 4175 - Antenna 2/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: WCDMA850 (Band 5); Frequency: 835 MHz; Duty Cycle: 1:1; PMF: 1

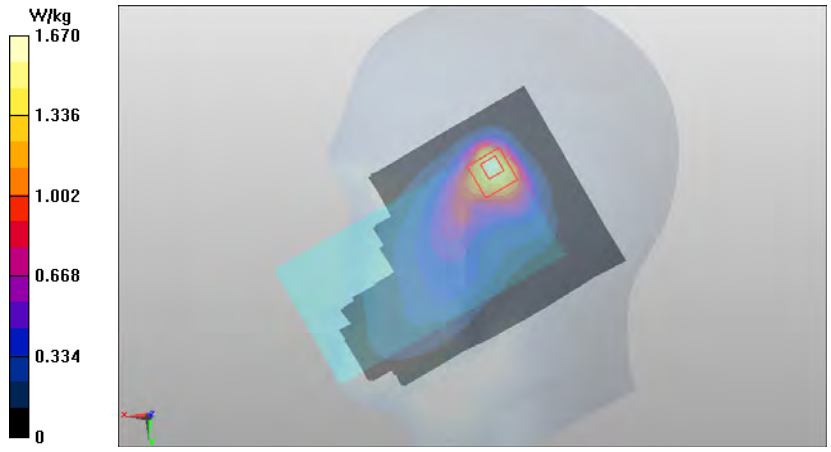
Medium: HSL835 Medium parameters used: f = 835 MHz; σ = 0.906 S/m; ε_r = 40.788; ρ = 1000 kg/m^3

Phantom section: Right Section

Probe: ES3DV3 - SN3131; ConvF(6.04, 6.04, 6.04); Calibrated: 2014-10-21;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn793; Calibrated: 2014-10-14
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
Measurement SW: DASY52, Version 52.8 (8)

Fast SAR of Combined Scans: SAR(1 g) = 1.28 W/kg; SAR(10 g) = 0.646 W/kg

Maximum value of SAR (interpolated) = 1.67 W/kg



WLAN2450 b-mode was scaled with factor 1.29 and WCDMA850 (Band 5) with factor 1.15 before combining in SEMCAD SW.

Plot H15

Date/Time: 2015-06-26 14:51:48

DASY Configuration for WLAN5000 ac-mode - Right/Cheek - CH 58 - 80 MHz OFDM BPSK MCS0 SS 1 - Antenna 1 and 2/Area Scan:
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 0044702/74/230809/5
Communication System: WLAN5000; Frequency: 5290 MHz; Duty Cycle: 1:1; PMF: 1
Medium: HSL5000 Medium parameters used: f = 5290 MHz; σ = 4.726 S/m; ε_r = 36.785; ρ = 1000 kg/m^3
Phantom section: Right Section

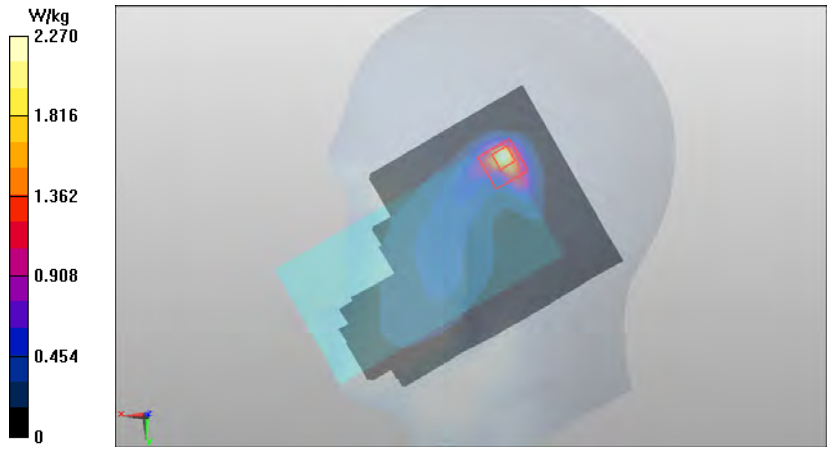
Probe: EX3DV4 - SN3852; ConvF(4.68, 4.68, 4.68); Calibrated: 2015-04-24;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn756; Calibrated: 2015-04-20
Phantom: ROBOSAM 5.0GHz; Type: SAM; Serial: 0001
Measurement SW: DASY52, Version 52.8 (8)

Date/Time: 2015-07-14 13:13:57

DASY Configuration for WCDMA850 (Band 5) - Right/Cheek - CH 4175 - Antenna 2/Area Scan:
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1
Communication System: WCDMA850 (Band 5); Frequency: 835 MHz; Duty Cycle: 1:1; PMF: 1
Medium: HSL835 Medium parameters used: f = 835 MHz; σ = 0.906 S/m; ε_r = 40.788; ρ = 1000 kg/m^3
Phantom section: Right Section

Probe: ES3DV3 - SN3131; ConvF(6.04, 6.04, 6.04); Calibrated: 2014-10-21;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn793; Calibrated: 2014-10-14
Phantom: SAM 1; Type: Twin SAM 040 CA; Serial: TP-1596
Measurement SW: DASY52, Version 52.8 (8)

Fast SAR of Combined Scans: SAR(1 g) = 1.1 W/kg; SAR(10 g) = 0.373 W/kg
Maximum value of SAR (interpolated) = 2.27 W/kg



WLAN5000 ac-mode was scaled with factor 1.26 and WCDMA850 (Band 5) with factor 1.15 before combining in SEMCAD SW.

Plot B1

Date/Time: 2015-07-08 15:12:10

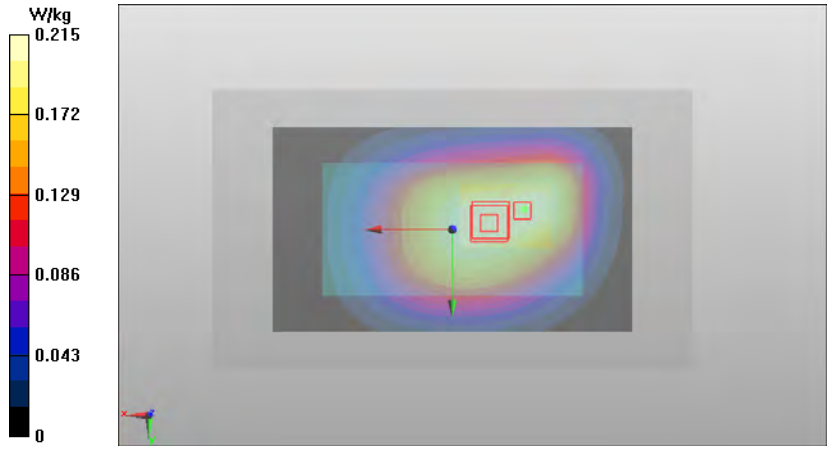
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230892/1

Communication System: LTE700 (Band 12)
Frequency: **704 MHz**; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.1 C
Medium parameters used: f = 704 MHz; σ = 0.957 S/m; ε_r = 54.224; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(8.8, 8.8, 8.8); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE700 (Band 12)/Body - CH 23060 - 10MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Display - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 15.08 V/m
Fast SAR: SAR(1 g) = 0.193 W/kg
Fast SAR(10 g) = 0.141 W/kg
Maximum value of SAR (interpolated) = 0.215 W/kg

LTE700 (Band 12)/Body - CH 23060 - 10MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Display - Antenna 2/Zoom Scan (6x8x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 15.04 V/m
Peak SAR (extrapolated) = 0.246 W/kg
SAR(1 g) = 0.198 W/kg
SAR(10 g) = 0.155 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.214 W/kg



Plot B2

Date/Time: 2015-07-08 14:33:38

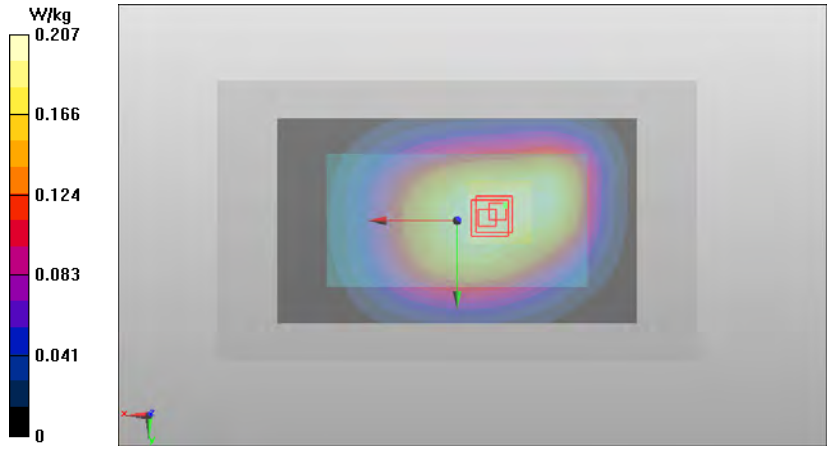
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230892/1

Communication System: LTE700 (Band 17)
Frequency: **709 MHz**; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.1 C
Medium parameters used: f = 709 MHz; σ = 0.959 S/m; ε_r = 54.187; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(8.8, 8.8, 8.8); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE700 (Band 17)/Body - CH 23780 - 10MHz - QPSK - 1 RB - Offset 49 - 15 mm - No Headset - Display - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 14.58 V/m
Fast SAR: SAR(1 g) = 0.186 W/kg
Fast SAR(10 g) = 0.136 W/kg
Maximum value of SAR (interpolated) = 0.207 W/kg

LTE700 (Band 17)/Body - CH 23780 - 10MHz - QPSK - 1 RB - Offset 49 - 15 mm - No Headset - Display - Antenna 2/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 14.43 V/m
Peak SAR (extrapolated) = 0.230 W/kg
SAR(1 g) = 0.188 W/kg
SAR(10 g) = 0.148 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 0.205 W/kg



Plot B3

Date/Time: 2015-07-16 10:32:24

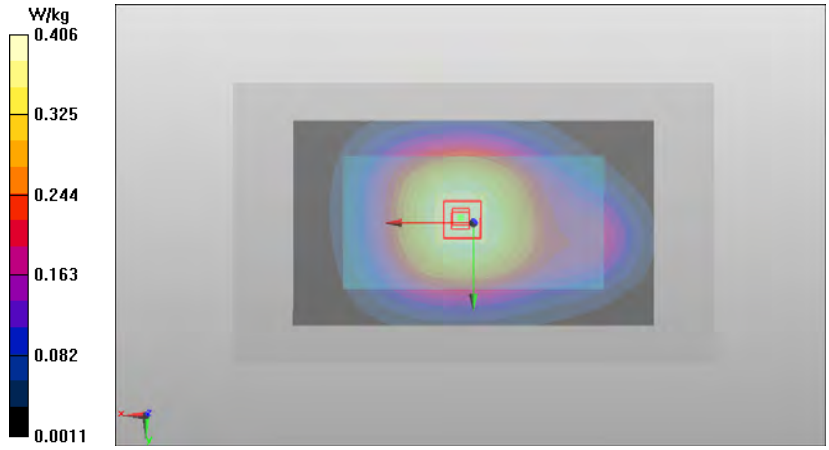
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: 2-slot GPRS850
Frequency: **824.2 MHz**; Duty Cycle: 1:4.19952
Medium: BSL835; Medium Notes: t= 21.6 C
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.972 S/m; ε_r = 53.945; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(5.96, 5.96, 5.96); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-Slot GPRS850/Body - CH 128 - 15 mm - No Headset - Display - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 20.82 V/m
Fast SAR: SAR(1 g) = 0.363 W/kg
Fast SAR(10 g) = 0.264 W/kg
Maximum value of SAR (interpolated) = 0.406 W/kg

2-Slot GPRS850/Body - CH 128 - 15 mm - No Headset - Display - Antenna 1/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.70 V/m
Peak SAR (extrapolated) = 0.454 W/kg
SAR(1 g) = 0.371 W/kg
SAR(10 g) = 0.288 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.389 W/kg



Plot B4

Date/Time: 2015-07-15 10:33:00

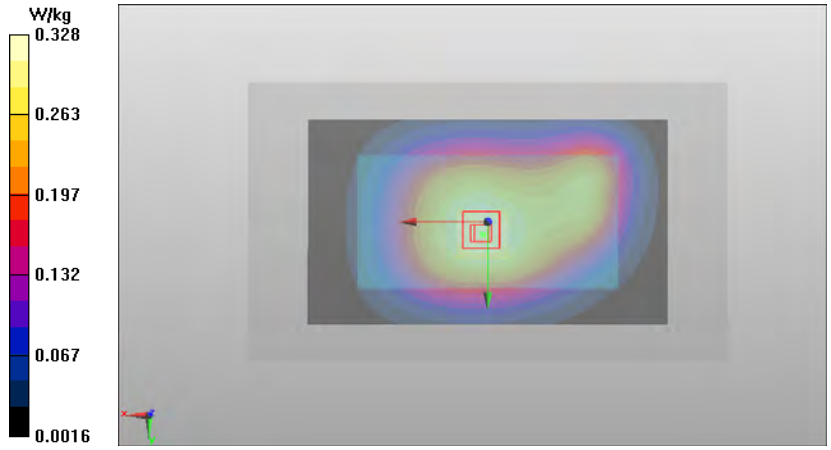
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: WCDMA850 (Band 5)
Frequency: **826.4 MHz**; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 21,9 C
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.978 S/m; ε_r = 53.684; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(5.96, 5.96, 5.96); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA850 (Band 5)/Body - CH 4132 - 15 mm - No Headset - Display - Antenna 2/Area Scan (81x141x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 18.98 V/m
Fast SAR: SAR(1 g) = 0.293 W/kg
Fast SAR(10 g) = 0.212 W/kg
Maximum value of SAR (interpolated) = 0.328 W/kg

WCDMA850 (Band 5)/Body - CH 4132 - 15 mm - No Headset - Display - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 18.97 V/m
Peak SAR (extrapolated) = 0.379 W/kg
SAR(1 g) = 0.301 W/kg
SAR(10 g) = 0.232 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.330 W/kg



Plot B5

Date/Time: 2015-07-17 14:31:06

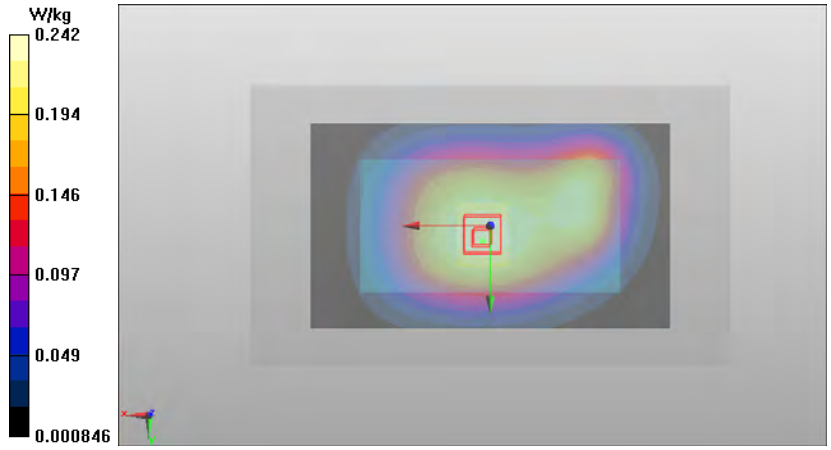
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: LTE850 (Band 5)
Frequency: **836.5 MHz**; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 22.3 C
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.985 S/m; ε_r = 53.779; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(5.96, 5.96, 5.96); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Display - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.23 V/m
Fast SAR: SAR(1 g) = 0.215 W/kg
Fast SAR(10 g) = 0.156 W/kg
Maximum value of SAR (interpolated) = 0.242 W/kg

LTE850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Display - Antenna 2/Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.12 V/m
Peak SAR (extrapolated) = 0.278 W/kg
SAR(1 g) = 0.221 W/kg
SAR(10 g) = 0.170 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.241 W/kg



Plot B6

Date/Time: 2015-07-11 11:45:15

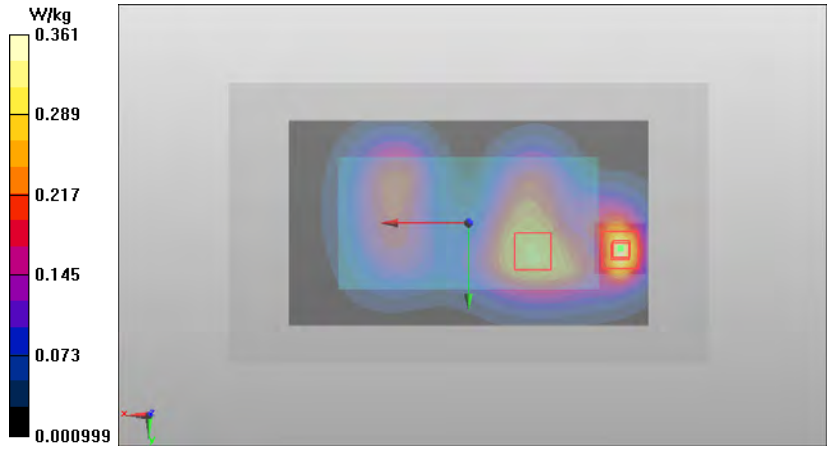
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230902/8

Communication System: WCDMA1700/2100 (Band 4)
Frequency: **1752.6 MHz**; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t= 23,0 C
Medium parameters used: f = 1753 MHz; σ = 1.461 S/m; ε_r = 51.528; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(4.92, 4.92, 4.92); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA1700_2100 (Band 4)/Body - CH 1513 - 15 mm - No Headset - Display - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 14.53 V/m
Fast SAR: SAR(1 g) = 0.281 W/kg
Fast SAR(10 g) = 0.160 W/kg
Maximum value of SAR (interpolated) = 0.361 W/kg

WCDMA1700_2100 (Band 4)/Body - CH 1513 - 15 mm - No Headset - Display - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 14.50 V/m
Peak SAR (extrapolated) = 0.495 W/kg
SAR(1 g) = 0.293 W/kg
SAR(10 g) = 0.163 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.363 W/kg



Plot B7

Date/Time: 2015-07-26 12:04:41

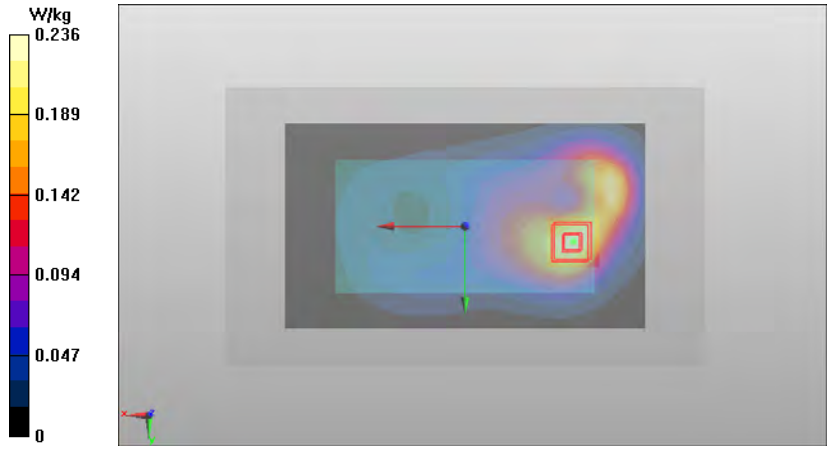
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/231011/7

Communication System: LTE1700/2100 (Band 4)
Frequency: **1732.5 MHz**; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t= 22,8 C
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.426 S/m; ε_r = 51.078; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(4.92, 4.92, 4.92); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE1700_2100 (Band 4)/Body - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - 15 mm - No Headset - Display - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 8.279 V/m
Fast SAR: SAR(1 g) = 0.197 W/kg
Fast SAR(10 g) = 0.122 W/kg
Maximum value of SAR (interpolated) = 0.236 W/kg

LTE1700_2100 (Band 4)/Body - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - 15 mm - No Headset - Display - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.314 V/m
Peak SAR (extrapolated) = 0.305 W/kg
SAR(1 g) = 0.203 W/kg
SAR(10 g) = 0.131 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 0.236 W/kg



Plot B8

Date/Time: 2015-07-13 14:17:24

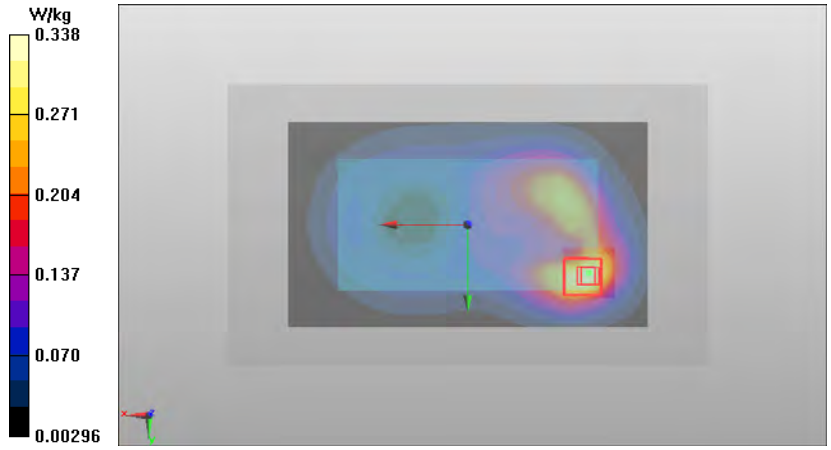
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: 2-slot GPRS1900
Frequency: **1880 MHz**; Duty Cycle: 1:4.19952
Medium: BSL1900; Medium Notes: t= 22.6 C
Medium parameters used: f = 1880 MHz; σ = 1.494 S/m; ε_r = 51.669; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-slot GPRS1900/Body - CH 661 - 15 mm - No Headset - Back - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 13.91 V/m
Fast SAR: SAR(1 g) = 0.269 W/kg
Fast SAR(10 g) = 0.154 W/kg
Maximum value of SAR (interpolated) = 0.338 W/kg

2-slot GPRS1900/Body - CH 661 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 13.77 V/m
Peak SAR (extrapolated) = 0.423 W/kg
SAR(1 g) = 0.253 W/kg
SAR(10 g) = 0.150 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.302 W/kg



Plot B9

Date/Time: 2015-07-16 10:01:30

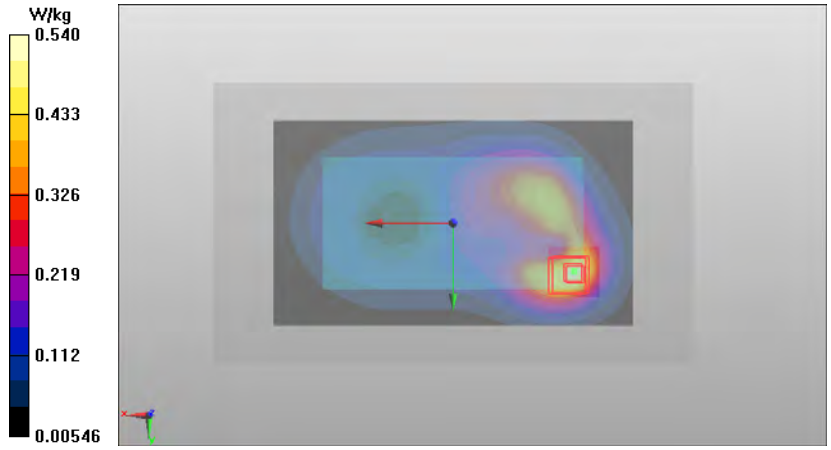
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: WCDMA1900 (Band 2)
Frequency: **1852.4 MHz**; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 22.5 C
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.463 S/m; ε_r = 51.92; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA1900 (Band 2)/Body - CH 9262 - 15 mm - No Headset - Back - Antenna 2/Area Scan (81x141x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 17.16 V/m
Fast SAR: SAR(1 g) = 0.422 W/kg
Fast SAR(10 g) = 0.240 W/kg
Maximum value of SAR (interpolated) = 0.540 W/kg

WCDMA1900 (Band 2)/Body - CH 9262 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.10 V/m
Peak SAR (extrapolated) = 0.673 W/kg
SAR(1 g) = 0.414 W/kg
SAR(10 g) = 0.246 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.495 W/kg



Plot B10

Date/Time: 2015-07-26 08:59:54

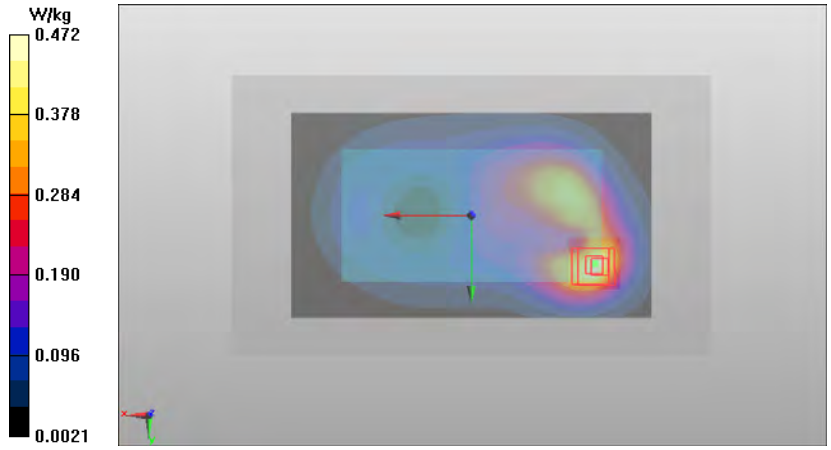
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/231010/9

Communication System: LTE1900 (Band 2)
Frequency: **1860 MHz**; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 22.8 C
Medium parameters used: f = 1860 MHz; σ = 1.458 S/m; ε_r = 51.868; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE1900 (Band 2)/Body - CH 18700 - 20MHz - QPSK - 1 RB - Offset 0 - 15 mm - No Headset - Back - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.92 V/m
Fast SAR: SAR(1 g) = 0.377 W/kg
Fast SAR(10 g) = 0.215 W/kg
Maximum value of SAR (interpolated) = 0.472 W/kg

LTE1900 (Band 2)/Body - CH 18700 - 20MHz - QPSK - 1 RB - Offset 0 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.05 V/m
Peak SAR (extrapolated) = 0.584 W/kg
SAR(1 g) = 0.367 W/kg
SAR(10 g) = 0.217 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 0.431 W/kg



Plot B11

Date/Time: 2015-07-23 17:56:09

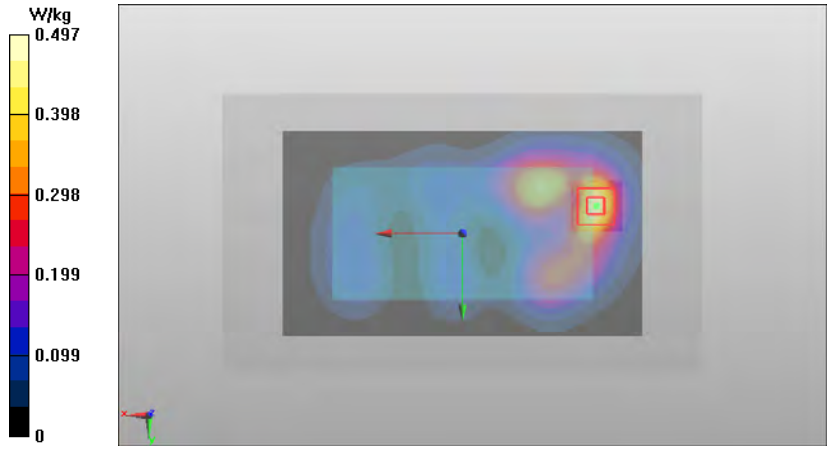
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230817/8

Communication System: LTE2500 (Band 7)
Frequency: **2535 MHz**; Duty Cycle: 1:1
Medium: BSL2600; Medium Notes: t= 22.6 C
Medium parameters used: f = 2535 MHz; σ = 2.003 S/m; ε_r = 51.053; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2015-04-20
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE2500 (Band 7)/Body - CH 21100 - 20MHz - QPSK - 1 RB - Offset 0 - 15 mm - No Headset - Back - Antenna 1/Area Scan (121x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 11.52 V/m
Fast SAR: SAR(1 g) = 0.384 W/kg
Fast SAR(10 g) = 0.198 W/kg
Maximum value of SAR (interpolated) = 0.497 W/kg

LTE2500 (Band 7)/Body - CH 21100 - 20MHz - QPSK - 1 RB - Offset 0 - 15 mm - No Headset - Back - Antenna 1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.47 V/m
Peak SAR (extrapolated) = 0.751 W/kg
SAR(1 g) = 0.400 W/kg
SAR(10 g) = 0.206 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 0.508 W/kg



Plot B12

Date/Time: 2015-07-03 14:04:45

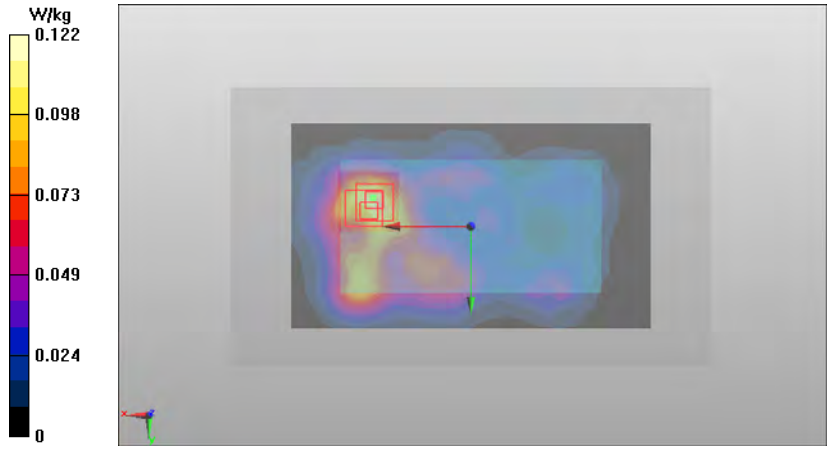
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230809/5

Communication System: WLAN2450
Frequency: **2462 MHz**; Duty Cycle: 1:1
Medium: BSL2450; Medium Notes: t= 21.2 C
Medium parameters used: f = 2462 MHz; σ = 1.971 S/m; ε_r = 52.495; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN2450 b-mode/Body - CH 11 - 20 MHz DSSS BPSK 1Mbps SS 1 - 15mm - No Headset - Display - Antenna 1 and 2/Area Scan (121x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 6.844 V/m
Fast SAR: SAR(1 g) = 0.095 W/kg
Fast SAR(10 g) = 0.049 W/kg
Maximum value of SAR (interpolated) = 0.122 W/kg

WLAN2450 b-mode/Body - CH 11 - 20 MHz DSSS BPSK 1Mbps SS 1 - 15mm - No Headset - Display - Antenna 1 and 2/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.639 V/m
Peak SAR (extrapolated) = 0.196 W/kg
SAR(1 g) = 0.097 W/kg
SAR(10 g) = 0.056 W/kg
Power Drift = 0.04 dB
Maximum value of SAR (measured) = 0.138 W/kg



Plot B13

Date/Time: 2015-07-07 13:10:01

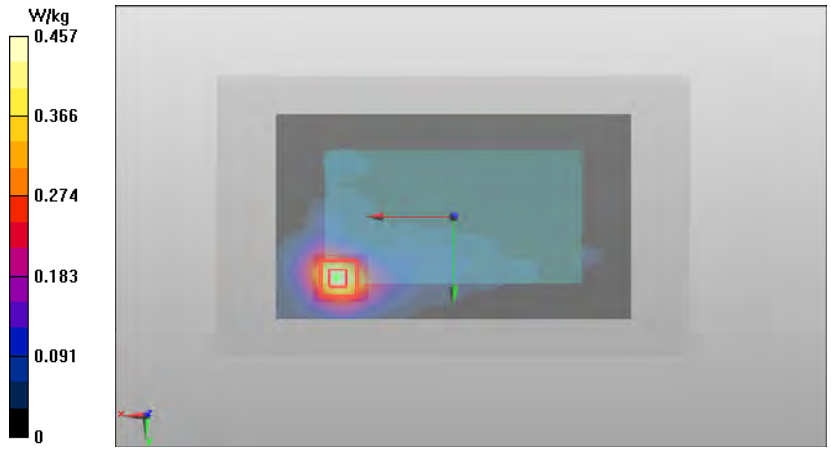
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230809/5

Communication System: WLAN5000
Frequency: **5785 MHz**; Duty Cycle: 1:1
Medium: BSL5000; Medium Notes: 21.7 C
Medium parameters used: f = 5785 MHz; σ = 6.247 S/m; ε_r = 46.493; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.1, 4.1, 4.1); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN5000 ac-mode/Body - CH 157 - 20 MHz OFDM BPSK MCS0 SS 1 - 15mm - No Headset - Display - Antenna 1 and 2/Area Scan (121x211x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1 g) = 0.240 W/kg
Fast SAR(10 g) = 0.098 W/kg
Maximum value of SAR (interpolated) = 0.457 W/kg

WLAN5000 ac-mode/Body - CH 157 - 20 MHz OFDM BPSK MCS0 SS 1 - 15mm - No Headset - Display - Antenna 1 and 2/Zoom Scan (8x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 9.232 V/m
Peak SAR (extrapolated) = 0.961 W/kg
SAR(1 g) = 0.246 W/kg
SAR(10 g) = 0.093 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 0.464 W/kg



Plot B14

Date/Time: 2015-07-03 13:00:37

DASY Configuration for WLAN2450 b-mode/Body - CH 6 - 20 MHz DSSS BPSK 1Mbps SS 1 - 15mm - No Headset - Back - Antenna 1 and 2/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 004402/74/230809/5

Communication System: WLAN2450; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL2450 Medium parameters used: f = 2437 MHz; σ = 1.942 S/m; ε_r = 52.61; ρ = 1000 kg/m^3

Phantom section: Center Section

Probe: EX3DV4 - SN3852; ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn756; Calibrated: 2015-04-20
Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
Measurement SW: DASY52, Version 52.8 (8)

Date/Time: 2015-07-16 10:01:30

DASY Configuration for WCDMA1900 (Band 2)/Body - CH 9262 - 15 mm - No Headset - Back - Antenna 2/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: WCDMA1900 (Band 2); Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

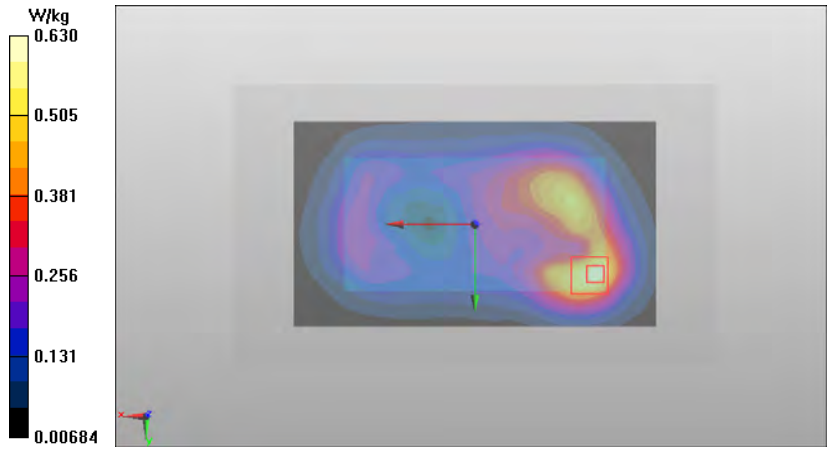
Medium: BSL1900 Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.463 S/m; ε_r = 51.92; ρ = 1000 kg/m^3

Phantom section: Center Section

Probe: ES3DV3 - SN3275; ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
Measurement SW: DASY52, Version 52.8 (8)

Fast SAR of Combined Scans: SAR(1 g) = 0.505 W/kg; SAR(10 g) = 0.286 W/kg

Maximum value of SAR (interpolated) = 0.630 W/kg



WLAN2450 b-mode was scaled with factor 1.32 and WCDMA1900 (Band 2) with factor 1.15 before combining in SEMCAD SW.

Plot B15

Date/Time: 2015-07-07 08:32:43

DASY Configuration for WLAN5000 ac-mode/Body - CH 60 - 20 MHz OFDM BPSK MCS0 SS 1 - 15mm - No Headset - Back - Antenna 1 and 2/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 004402/74/230809/5

Communication System: WLAN5000; Frequency: 5300 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL5000 Medium parameters used: f = 5300 MHz; σ = 5.598 S/m; ε_r = 47.314; ρ = 1000 kg/m^3

Phantom section: Center Section

Probe: EX3DV4 - SN3852; ConvF(4.35, 4.35, 4.35); Calibrated: 2015-04-24;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn756; Calibrated: 2015-04-20
Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
Measurement SW: DASY52, Version 52.8 (8)

Date/Time: 2015-07-16 10:01:30

DASY Configuration for WCDMA1900 (Band 2)/Body - CH 9262 - 15 mm - No Headset - Back - Antenna 2/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: WCDMA1900 (Band 2); Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

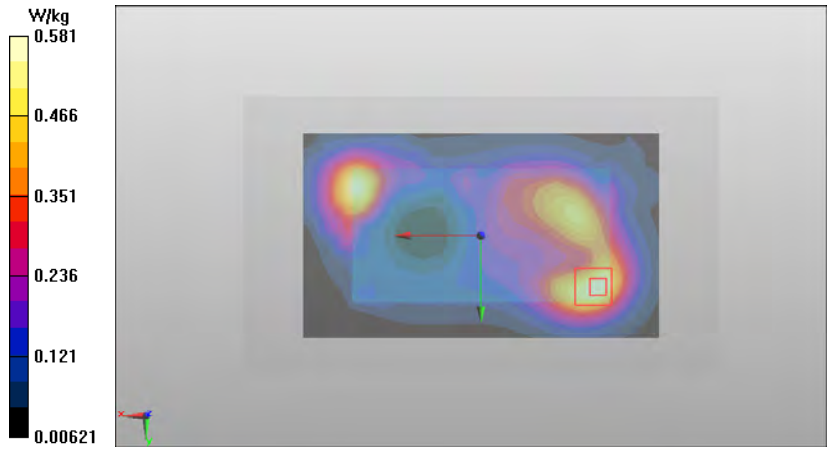
Medium: BSL1900 Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.463 S/m; ε_r = 51.92; ρ = 1000 kg/m^3

Phantom section: Center Section

Probe: ES3DV3 - SN3275; ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
Measurement SW: DASY52, Version 52.8 (8)

Fast SAR of Combined Scans: SAR(1 g) = 0.475 W/kg; SAR(10 g) = 0.274 W/kg

Maximum value of SAR (interpolated) = 0.581 W/kg



WLAN5000 ac-mode was scaled with factor 1.29 and WCDMA1900 (Band 2) with factor 1.15 before combining in SEMCAD SW.

Plot W1

Date/Time: 2015-07-10 13:12:06

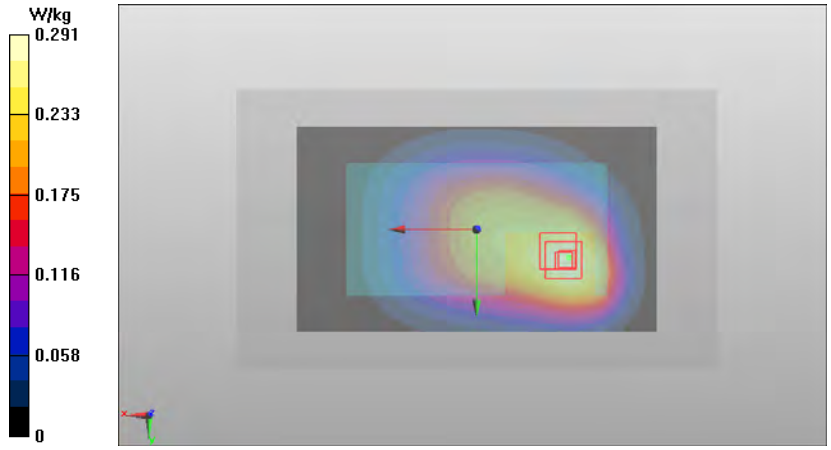
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230892/1

Communication System: LTE700 (Band 12)
Frequency: **704 MHz**; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.2 C
Medium parameters used: f = 704 MHz; σ = 0.952 S/m; ε_r = 53.988; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(8.8, 8.8, 8.8); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE700 (Band 12)/Body - CH 23060 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Back - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 17.33 V/m
Fast SAR: SAR(1 g) = 0.260 W/kg
Fast SAR(10 g) = 0.187 W/kg
Maximum value of SAR (interpolated) = 0.291 W/kg

LTE700 (Band 12)/Body - CH 23060 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (6x8x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.33 V/m
Peak SAR (extrapolated) = 0.363 W/kg
SAR(1 g) = 0.265 W/kg
SAR(10 g) = 0.194 W/kg
Power Drift = -0.08 dB
Maximum value of SAR (measured) = 0.297 W/kg



Plot W2

Date/Time: 2015-07-10 12:48:19

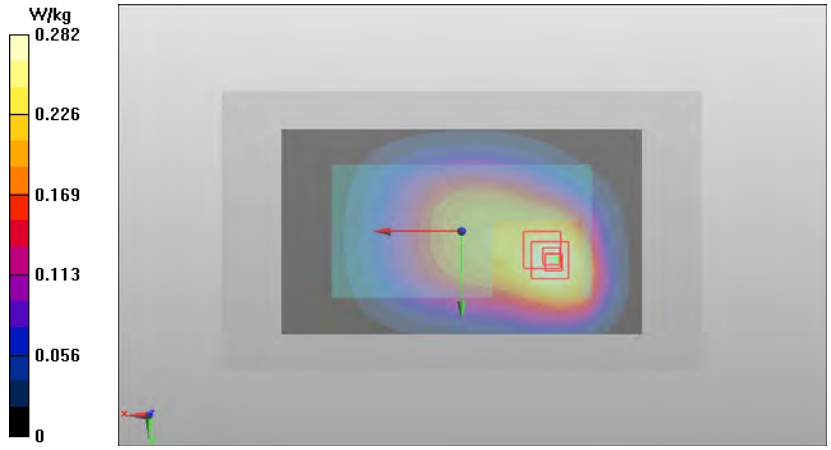
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230892/1

Communication System: LTE700 (Band 17)
Frequency: **709 MHz**; Duty Cycle: 1:1
Medium: BSL750; Medium Notes: t= 22.2 C
Medium parameters used: f = 709 MHz; σ = 0.956 S/m; ε_r = 53.973; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3835
- ConvF(8.8, 8.8, 8.8); Calibrated: 2014-10-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1213; Calibrated: 2014-10-14
- Phantom: #2 Triple, SAR4; Type: QD 000 P51 CA; Serial: TP-1123/1 (750 MHz), TP-1124/1 (2450 MHz)
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE700 (Band 17)/Body - CH 23780 - 10MHz - QPSK - 1 RB - Offset 49 - 10 mm - No Headset - Back - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.84 V/m
Fast SAR: SAR(1 g) = 0.252 W/kg
Fast SAR(10 g) = 0.182 W/kg
Maximum value of SAR (interpolated) = 0.282 W/kg

LTE700 (Band 17)/Body - CH 23780 - 10MHz - QPSK - 1 RB - Offset 49 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.84 V/m
Peak SAR (extrapolated) = 0.339 W/kg
SAR(1 g) = 0.251 W/kg
SAR(10 g) = 0.186 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 0.280 W/kg



Plot W3

Date/Time: 2015-07-16 14:20:28

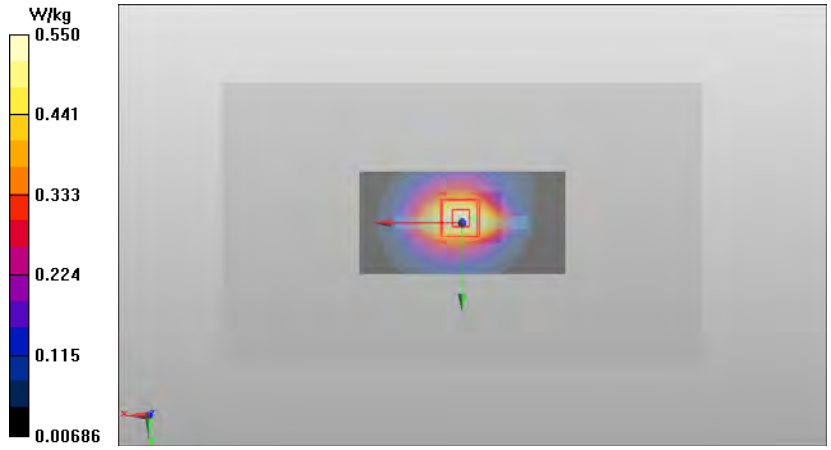
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: 2-slot GPRS850
Frequency: **848.8 MHz**; Duty Cycle: 1:4.19952
Medium: BSL835; Medium Notes: t= 21.6 C
Medium parameters used: f = 849 MHz; σ = 0.986 S/m; ε_r = 53.792; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(5.96, 5.96, 5.96); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-Slot GPRS850 (Band 5) - Top_Bottom/Body - CH 251 - 10 mm - No Headset - Bottom - Antenna 2/Area Scan (41x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 23.81 V/m
Fast SAR: SAR(1 g) = 0.481 W/kg
Fast SAR(10 g) = 0.323 W/kg
Maximum value of SAR (interpolated) = 0.550 W/kg

2-Slot GPRS850 (Band 5) - Top_Bottom/Body - CH 251 - 10 mm - No Headset - Bottom - Antenna 2/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 23.75 V/m
Peak SAR (extrapolated) = 0.653 W/kg
SAR(1 g) = 0.466 W/kg
SAR(10 g) = 0.311 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.499 W/kg



Plot W4

Date/Time: 2015-07-15 11:59:10

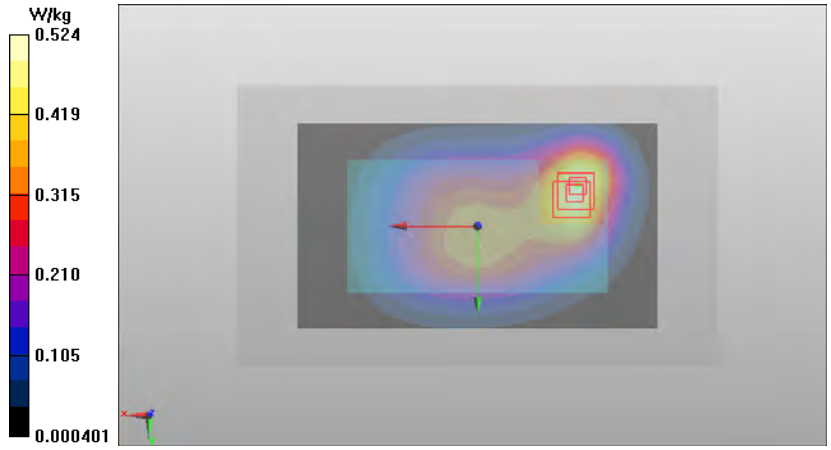
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: WCDMA850 (Band 5)
Frequency: **846.6 MHz**; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 21,9 C
Medium parameters used: f = 847 MHz; σ = 0.99 S/m; ε_r = 53.555; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(5.96, 5.96, 5.96); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA850 (Band 5)/Body - CH 4233 - 10 mm - No Headset - Display - Antenna 2/Area Scan (81x141x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.95 V/m
Fast SAR: SAR(1 g) = 0.457 W/kg
Fast SAR(10 g) = 0.314 W/kg
Maximum value of SAR (interpolated) = 0.524 W/kg

WCDMA850 (Band 5)/Body - CH 4233 - 10 mm - No Headset - Display - Antenna 2/Zoom Scan (6x6x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.61 V/m
Peak SAR (extrapolated) = 0.632 W/kg
SAR(1 g) = 0.422 W/kg
SAR(10 g) = 0.287 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.487 W/kg



Plot W5

Date/Time: 2015-07-20 14:25:44

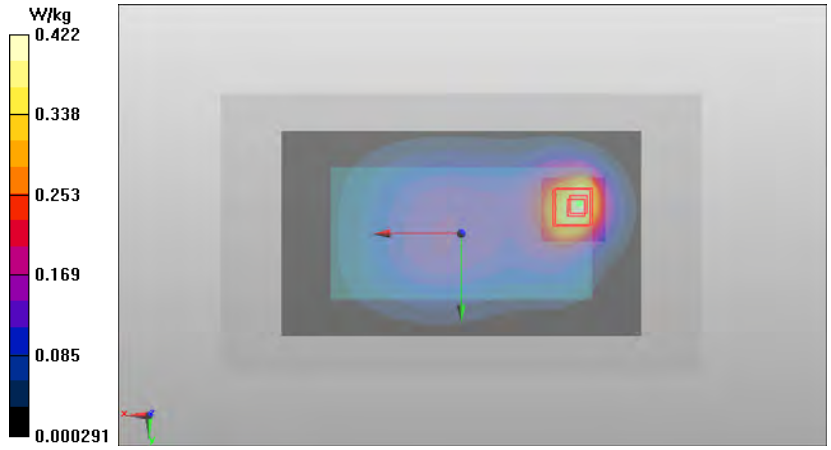
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230905/1

Communication System: LTE850 (Band 5)
Frequency: **836.5 MHz**; Duty Cycle: 1:1
Medium: BSL835; Medium Notes: t= 22.8 C
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.995 S/m; ε_r = 53.555; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3131
- ConvF(5.96, 5.96, 5.96); Calibrated: 2014-10-21;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn793; Calibrated: 2014-10-14
- Phantom: SAM 3 Triple Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1123/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Back - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 19.76 V/m
Fast SAR: SAR(1 g) = 0.356 W/kg
Fast SAR(10 g) = 0.237 W/kg
Maximum value of SAR (interpolated) = 0.422 W/kg

LTE850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Back - Antenna 1/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.73 V/m
Peak SAR (extrapolated) = 0.556 W/kg
SAR(1 g) = 0.344 W/kg
SAR(10 g) = 0.216 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.406 W/kg



Plot W6

Date/Time: 2015-07-08 17:46:35

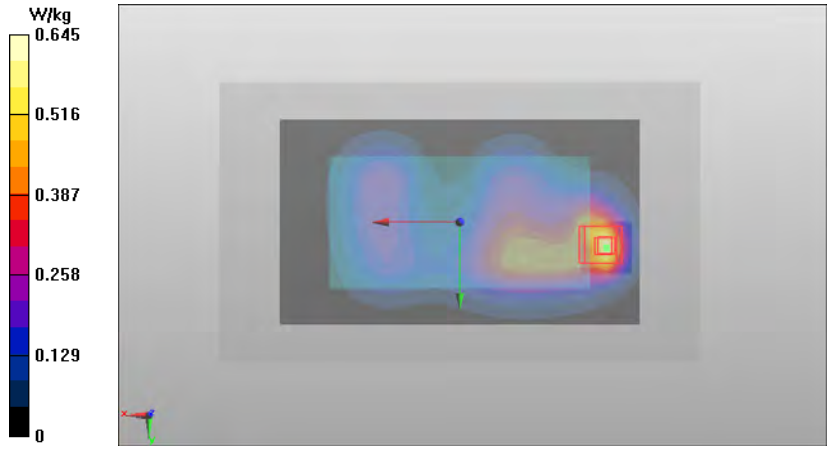
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230902/8

Communication System: WCDMA1700/2100 (Band 4)
Frequency: **1752.6 MHz**; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t= 23.0 C
Medium parameters used: f = 1753 MHz; σ = 1.46 S/m; ε_r = 52.168; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(4.92, 4.92, 4.92); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA1700_2100 (Band 4)/Body - CH 1513 - 10 mm - No Headset - Display - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 17.08 V/m
Fast SAR: SAR(1 g) = 0.493 W/kg
Fast SAR(10 g) = 0.281 W/kg
Maximum value of SAR (interpolated) = 0.645 W/kg

WCDMA1700_2100 (Band 4)/Body - CH 1513 - 10 mm - No Headset - Display - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.05 V/m
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.569 W/kg
SAR(10 g) = 0.300 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.717 W/kg



Plot W7

Date/Time: 2015-07-25 15:16:03

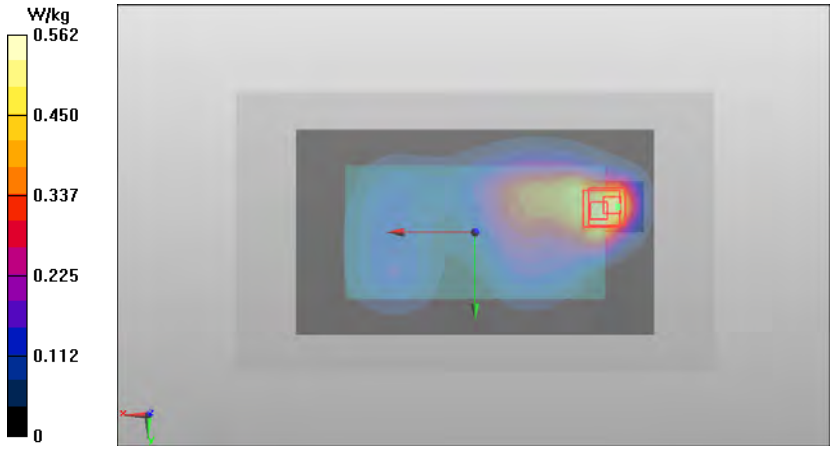
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/231011/7

Communication System: LTE1700/2100 (Band 4)
Frequency: **1732.5 MHz**; Duty Cycle: 1:1
Medium: BSL1750; Medium Notes: t=22,65 C
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.433 S/m; ε_r = 51.476; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3194
- ConvF(4.92, 4.92, 4.92); Calibrated: 2015-01-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn555; Calibrated: 2014-11-03
- Phantom: Triple Flat Phantom 5.1C; Type: SN 000 T01 DA; Serial: xxxx
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE1700_2100 (Band 4)/Body - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 1/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 2.407 V/m
Fast SAR: SAR(1 g) = 0.467 W/kg
Fast SAR(10 g) = 0.289 W/kg
Maximum value of SAR (interpolated) = 0.562 W/kg

LTE1700_2100 (Band 4)/Body - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 1/Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 1.571 V/m
Peak SAR (extrapolated) = 0.909 W/kg
SAR(1 g) = 0.477 W/kg
SAR(10 g) = 0.250 W/kg
Power Drift = -0.11 dB
Maximum value of SAR (measured) = 0.584 W/kg



Plot W8

Date/Time: 2015-07-13 13:36:16

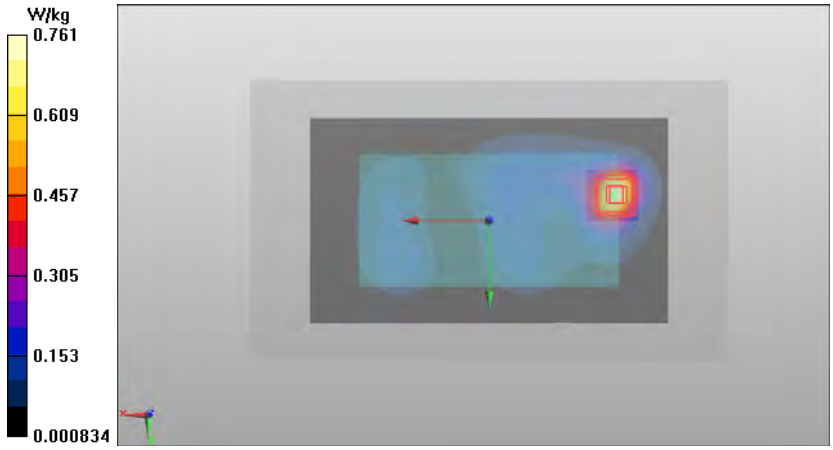
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: 2-slot GPRS1900
Frequency: **1850.2 MHz**; Duty Cycle: 1:4.19952
Medium: BSL1900; Medium Notes: t= 22.6 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.465 S/m; ε_r = 51.756; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-slot GPRS1900/Body - CH 512 - 10 mm - No Headset - Display - Antenna 1/Area Scan (81x141x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 23.90 V/m
Fast SAR: SAR(1 g) = 0.593 W/kg
Fast SAR(10 g) = 0.307 W/kg
Maximum value of SAR (interpolated) = 0.761 W/kg

2-slot GPRS1900/Body - CH 512 - 10 mm - No Headset - Display - Antenna 1/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 23.97 V/m
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.586 W/kg
SAR(10 g) = 0.302 W/kg
Power Drift = -0.05 dB
Maximum value of SAR (measured) = 0.702 W/kg



Plot W9

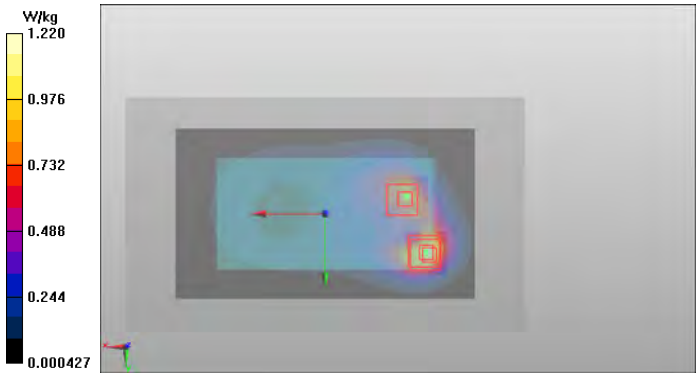
Date/Time: 2015-07-22 10:18:42

Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230887/1
Communication System: WCDMA1900 (Band 2)
Frequency: **1880 MHz**; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 22.8 C
Medium parameters used: f = 1880 MHz; σ = 1.494 S/m; ε_r = 51.797; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA1900 (Band 2)/Body - CH 9400 - 10 mm - No Headset - Back - Antenna 2 - Repeated/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 23.48 V/m
Fast SAR: SAR(1 g) = 0.923 W/kg
Fast SAR(10 g) = 0.491 W/kg
Maximum value of SAR (interpolated) = 1.22 W/kg

WCDMA1900 (Band 2)/Body - CH 9400 - 10 mm - No Headset - Back - Antenna 2 - Repeated/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.60 V/m
Peak SAR (extrapolated) = 1.54 W/kg
SAR(1 g) = 0.898 W/kg
SAR(10 g) = 0.485 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 1.06 W/kg



Plot W10

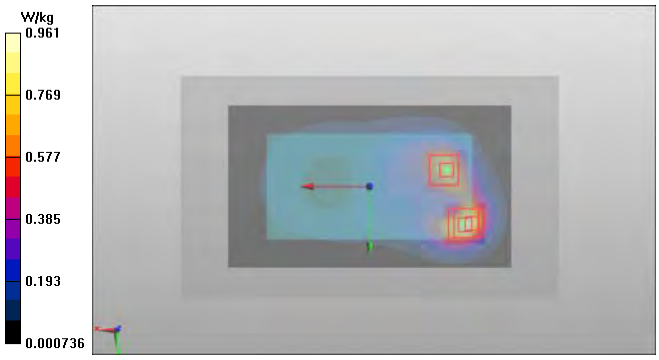
Date/Time: 2015-07-23 10:03:38

Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/231010/9
Communication System: LTE1900 (Band 2)
Frequency: **1880 MHz**; Duty Cycle: 1:1
Medium: BSL1900; Medium Notes: t= 22.6 C
Medium parameters used: f = 1880 MHz; σ = 1.481 S/m; ε_r = 51.52; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: ES3DV3 - SN3275
- ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
- Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE1900 (Band 2)/Body - CH 18900 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 2/Area Scan (81x141x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 25.67 V/m
Fast SAR: SAR(1 g) = 0.730 W/kg
Fast SAR(10 g) = 0.389 W/kg
Maximum value of SAR (interpolated) = 0.961 W/kg

LTE1900 (Band 2)/Body - CH 18900 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 26.38 V/m
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.708 W/kg
SAR(10 g) = 0.390 W/kg
Power Drift = -0.19 dB
Maximum value of SAR (measured) = 0.884 W/kg



Plot W11

Date/Time: 2015-07-18 20:46:57

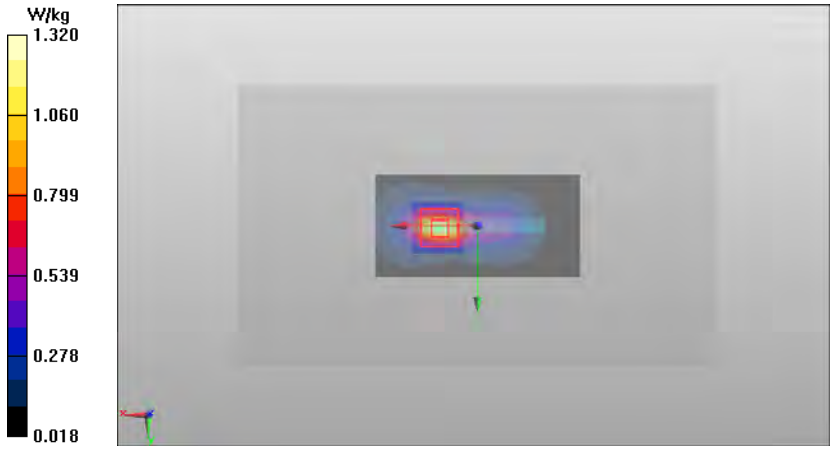
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230817/8

Communication System: LTE2500 (Band 7)
Frequency: **2560 MHz**; Duty Cycle: 1:1
Medium: BSL2600; Medium Notes: t= 22.8C
Medium parameters used: f = 2560 MHz; σ = 2.04 S/m; ε_r = 51.226; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3892
- ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn538; Calibrated: 2015-04-20
- Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/3
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE2500 (Band 7) - Top_Bottom/Body - CH 21350 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Bottom - Antenna 1/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 24.65 V/m
Fast SAR: SAR(1 g) = 0.966 W/kg
Fast SAR(10 g) = 0.426 W/kg
Maximum value of SAR (interpolated) = 1.32 W/kg

LTE2500 (Band 7) - Top_Bottom/Body - CH 21350 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Bottom - Antenna 1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.64 V/m
Peak SAR (extrapolated) = 1.98 W/kg
SAR(1 g) = 1.01 W/kg
SAR(10 g) = 0.460 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 1.34 W/kg



Plot W12

Date/Time: 2015-07-03 16:40:32

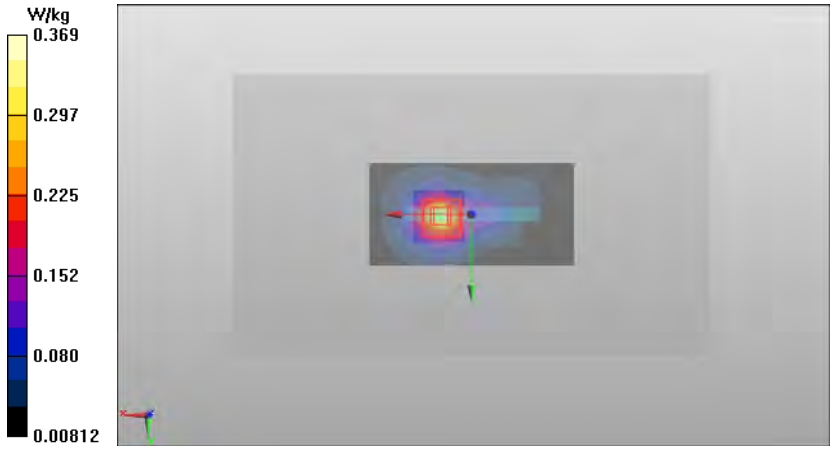
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230809/5

Communication System: WLAN2450
Frequency: **2462 MHz**; Duty Cycle: 1:1
Medium: BSL2450; Medium Notes: t= 21.2 C
Medium parameters used: f = 2462 MHz; σ = 1.971 S/m; ε_r = 52.495; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN2450 b-mode - Top_Bottom/Body - CH 11 - 20 MHz DSSS BPSK 1Mbps SS 1 - 10mm - No Headset - Top - Antenna 1 and 2/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 9.519 V/m
Fast SAR: SAR(1 g) = 0.258 W/kg
Fast SAR(10 g) = 0.111 W/kg
Maximum value of SAR (interpolated) = 0.369 W/kg

WLAN2450 b-mode - Top_Bottom/Body - CH 11 - 20 MHz DSSS BPSK 1Mbps SS 1 - 10mm - No Headset - Top - Antenna 1 and 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.486 V/m
Peak SAR (extrapolated) = 0.600 W/kg
SAR(1 g) = 0.235 W/kg
SAR(10 g) = 0.125 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 0.310 W/kg



Plot W13

Date/Time: 2015-07-08 12:40:09

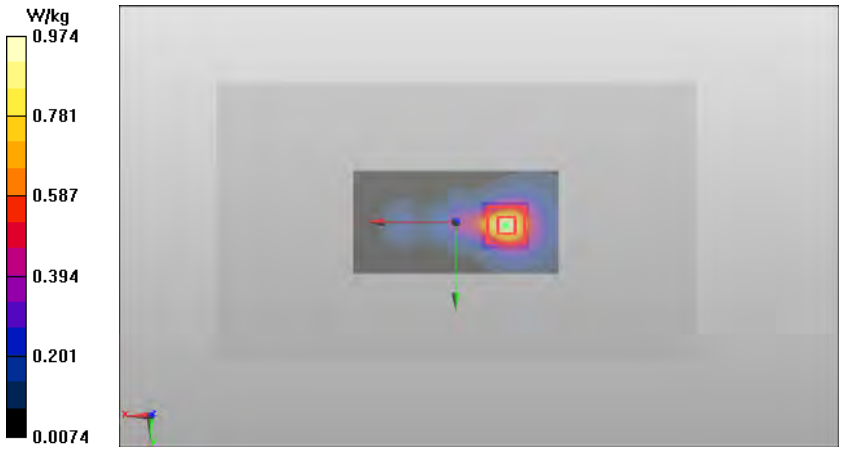
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230809/5

Communication System: WLAN5000
Frequency: **5220 MHz**; Duty Cycle: 1:1
Medium: BSL5000; Medium Notes: 21.3 C
Medium parameters used: f = 5220 MHz; σ = 5.41 S/m; ε_r = 46.918; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3852
- ConvF(4.51, 4.51, 4.51); Calibrated: 2015-04-24;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn756; Calibrated: 2015-04-20
- Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN5000 ac-mode - Top_Bottom/Body - CH 44 - 20 MHz OFDM BPSK MCS0 SS 1 - 10mm - No Headset - Top - Antenna 1 and 2/Area Scan (61x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Fast SAR: SAR(1 g) = 0.516 W/kg
Fast SAR(10 g) = 0.198 W/kg
Maximum value of SAR (interpolated) = 0.974 W/kg

WLAN5000 ac-mode - Top_Bottom/Body - CH 44 - 20 MHz OFDM BPSK MCS0 SS 1 - 10mm - No Headset - Top - Antenna 1 and 2/Zoom Scan (8x8x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 12.12 V/m
Peak SAR (extrapolated) = 1.72 W/kg
SAR(1 g) = 0.533 W/kg
SAR(10 g) = 0.207 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.961 W/kg



Plot W14

Date/Time: 2015-07-03 16:58:46

DASY Configuration for WLAN2450 b-mode - Top_Bottom/Body - CH 6 - 20 MHz DSSS BPSK 1Mbps SS 1 - 10mm - No Headset - Bottom - Antenna 1 and 2/Area Scan:
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230809/5
Communication System: WLAN2450; Frequency: 2437 MHz; Duty Cycle: 1:1; PMF: 1
Medium: BSL2450 Medium parameters used: f = 2437 MHz; σ = 1.942 S/m; ε_r = 52.61; ρ = 1000 kg/m^3
Phantom section: Center Section

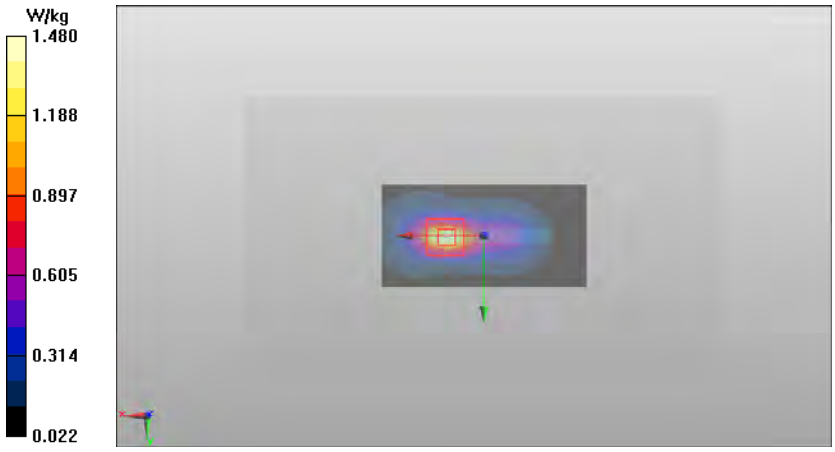
Probe: EX3DV4 - SN3852; ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn756; Calibrated: 2015-04-20
Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
Measurement SW: DASY52, Version 52.8 (8)

Date/Time: 2015-07-18 20:46:57

DASY Configuration for LTE2500 (Band 7) - Top_Bottom/Body - CH 21350 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Bottom - Antenna 1/Area Scan:
Test Laboratory: TCC Microsoft
Type: RM-1085, HW:2110; Serial: 004402/74/230817/8
Communication System: LTE2500 (Band 7); Frequency: 2560 MHz; Duty Cycle: 1:1; PMF: 1
Medium: BSL2600 Medium parameters used: f = 2560 MHz; σ = 2.04 S/m; ε_r = 51.226; ρ = 1000 kg/m^3
Phantom section: Center Section

Probe: EX3DV4 - SN3892; ConvF(7.04, 7.04, 7.04); Calibrated: 2015-04-24;
Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used))
Electronics: DAE4 Sn538; Calibrated: 2015-04-20
Phantom: 1. Triple Flat Phantom 5.1C; Type: QD 000 P51 CA; Serial: TP-1124/3
Measurement SW: DASY52, Version 52.8 (8)

Fast SAR of Combined Scans: SAR(1 g) = 1.1 W/kg; SAR(10 g) = 0.486 W/kg
Maximum value of SAR (interpolated) = 1.48 W/kg



WLAN2450 b-mode was scaled with factor 1.32 and LTE2500 (Band 7) with factor 1.12 before combining in SEMCAD SW.

Plot W15

Date/Time: 2015-07-07 13:55:34

DASY Configuration for WLAN5000 ac-mode/Body - CH 157 - 20 MHz OFDM BPSK MCS0 SS 1 - 10mm - No Headset - Display - Antenna 1 and 2/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 004402/74/230809/5

Communication System: WLAN5000; Frequency: 5785 MHz; Duty Cycle: 1:1; PMF: 1

Medium: BSL5000 Medium parameters used: f = 5785 MHz; σ = 6.247 S/m; ε_r = 46.493; ρ = 1000 kg/m^3

Phantom section: Center Section

Probe: EX3DV4 - SN3852; ConvF(4.1, 4.1, 4.1); Calibrated: 2015-04-24;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn756; Calibrated: 2015-04-20
Phantom: Triple, SAR-8; Type: QD 000 P51 CA; Serial: -
Measurement SW: DASY52, Version 52.8 (8)

Date/Time: 2015-07-22 10:38:04

DASY Configuration for WCDMA1900 (Band 2)/Body - CH 9262 - 10 mm - No Headset - Display - Antenna 2/Area Scan:

Test Laboratory: TCC Microsoft

Type: RM-1085, HW:2110; Serial: 004402/74/230887/1

Communication System: WCDMA1900 (Band 2); Frequency: 1852.4 MHz; Duty Cycle: 1:1; PMF: 1

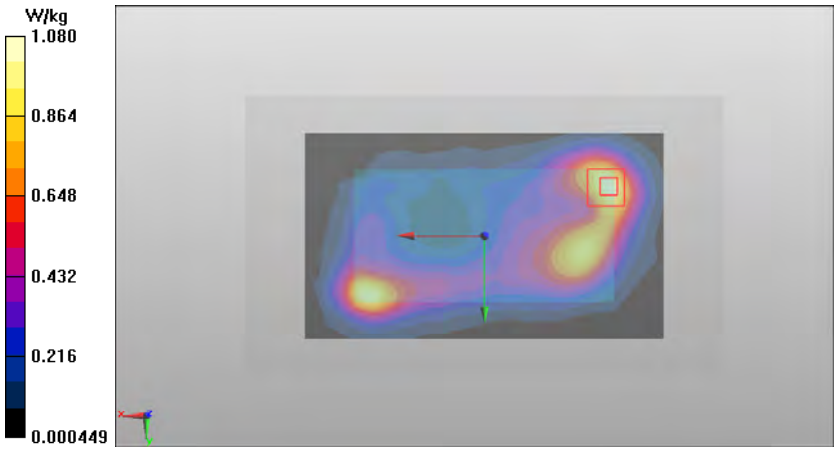
Medium: BSL1900 Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.46 S/m; ε_r = 51.858; ρ = 1000 kg/m^3

Phantom section: Center Section

Probe: ES3DV3 - SN3275; ConvF(4.63, 4.63, 4.63); Calibrated: 2015-04-27;
Sensor-Surface: 3mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1302; Calibrated: 2015-04-21
Phantom: Triple, SAR6; Type: QD 000 P51 CA; Serial: 1124/1
Measurement SW: DASY52, Version 52.8 (8)

Fast SAR of Combined Scans: SAR(1 g) = 0.864 W/kg; SAR(10 g) = 0.480 W/kg

Maximum value of SAR (interpolated) = 1.08 W/kg



WLAN5000 ac-mode was scaled with factor 1.29 and WCDMA1900 (Band 2) with factor 1.15 before combining in SEMCAD SW.

APPENDIX C: DIELECTRIC PARAMETERS OF THE TISSUE SIMULANTS

Head tissue simulant dielectric parameters used in the measurements:

f (MHz)	LTE700 (Band 12)	Dielectric Parameters					
	Date	CH 23060 704.0 MHz		CH 23095 707.5 MHz		CH 23130 711.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
707	2015-07-11	40.5	0.85	40.5	0.86	40.4	0.86
	2015-07-12	42.4	0.89	42.4	0.89	42.4	0.90
	2015-07-13	42.1	0.88	42.1	0.89	42.0	0.89
	2015-07-16	42.1	0.89	42.0	0.89	42.0	0.89
	2015-07-17	41.4	0.87	41.4	0.88	41.3	0.88
	2015-07-28	41.2	0.84	41.2	0.85	41.2	0.85
f (MHz)	LTE700 (Band 17)	Dielectric Parameters					
	Date	CH 23780 709.0 MHz		CH 23790 710.0 MHz		CH 23800 711.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
710	2015-07-11	40.5	0.86	40.4	0.86	40.4	0.86
	2015-07-12	42.4	0.89	42.4	0.89	42.4	0.90
	2015-07-13	42.1	0.89	42.1	0.89	42.0	0.89
	2015-07-16	42.0	0.89	42.0	0.89	42.0	0.89
	2015-07-17	41.3	0.88	41.3	0.88	41.3	0.88
	2015-07-28	41.2	0.85	41.2	0.85	41.2	0.85
f (MHz)	GSM850	Dielectric Parameters					
	Date	CH 128 824.2 MHz		CH 190 836.6 MHz		CH 251 848.8 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
836	2015-07-14	40.9	0.90	40.8	0.91	40.7	0.91
	2015-07-18	40.6	0.90	40.5	0.91	40.4	0.92
	2015-07-19	40.5	0.90	40.3	0.91	40.2	0.92
	2015-07-21	40.5	0.91	40.4	0.91	40.2	0.92
	2015-07-22	40.3	0.90	40.1	0.91	40.0	0.92
	2015-07-23	40.1	0.89	40.1	0.90	40.0	0.91
f (MHz)	WCDMA850 (Band 5)	Dielectric Parameters					
	Date	CH 4132 826.4 MHz		CH 4175 835.0 MHz		CH 4233 846.6 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
835	2015-07-14	40.9	0.90	40.8	0.91	40.7	0.91
	2015-07-18	40.6	0.91	40.6	0.91	40.4	0.92
	2015-07-19	40.4	0.90	40.4	0.91	40.3	0.92
	2015-07-21	40.5	0.91	40.4	0.91	40.3	0.92
	2015-07-22	40.2	0.90	40.1	0.91	40.0	0.91
	2015-07-23	40.1	0.89	40.1	0.90	40.0	0.91

(Head tissue simulant table continues)

(Head tissue simulant table continues)

f (MHz)	LTE850 (Band 5)	Dielectric Parameters					
	Date	CH 20450 829.0 MHz		CH 20525 836.5 MHz		CH 20600 844.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
836	2015-07-14	40.8	0.90	40.8	0.91	40.7	0.91
	2015-07-18	40.6	0.91	40.5	0.91	40.5	0.92
	2015-07-19	40.4	0.91	40.3	0.91	40.3	0.91
	2015-07-21	40.4	0.91	40.4	0.91	40.3	0.92
	2015-07-22	40.2	0.90	40.1	0.91	40.0	0.91
	2015-07-23	40.1	0.90	40.1	0.90	40.0	0.91
f (MHz)	WCDMA1700/2100 (Band 4)	Dielectric Parameters					
	Date	CH 1312 1712.4 MHz		CH 1412 1732.4 MHz		CH 1513 1752.6 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1732	2015-07-11	39.3	1.31	39.2	1.32	39.1	1.34
	2015-07-12	39.0	1.32	38.9	1.33	38.8	1.35
	2015-07-13	38.7	1.31	38.6	1.33	38.5	1.35
	2015-07-14	39.5	1.31	39.4	1.33	39.3	1.35
	2015-07-15	39.1	1.32	39.0	1.34	38.9	1.36
	2015-07-23	38.7	1.29	38.6	1.31	38.6	1.33
	2015-07-24	39.3	1.28	39.2	1.30	39.2	1.32
	2015-07-28	38.7	1.29	38.6	1.31	38.6	1.32
f (MHz)	LTE1700/2100 (Band 4)	Dielectric Parameters					
	Date	CH 20050 1720.0 MHz		CH 20175 1732.5 MHz		CH 20300 1745.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1732	2015-07-11	39.2	1.31	39.2	1.32	39.1	1.34
	2015-07-12	39.0	1.32	38.9	1.33	38.8	1.34
	2015-07-13	38.7	1.32	38.6	1.33	38.6	1.34
	2015-07-14	39.5	1.32	39.4	1.33	39.4	1.34
	2015-07-15	39.1	1.33	39.0	1.34	39.0	1.35
	2015-07-23	38.7	1.30	38.6	1.31	38.6	1.32
	2015-07-24	39.3	1.29	39.2	1.30	39.2	1.31
	2015-07-28	38.7	1.30	38.6	1.31	38.6	1.32
f (MHz)	GSM1900	Dielectric Parameters					
	Date	CH 512 1850.2 MHz		CH 661 1880.0 MHz		CH 810 1909.8 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1880	2015-07-08	38.8	1.35	38.7	1.39	38.6	1.42
	2015-07-09	39.2	1.36	39.1	1.40	39.0	1.43
	2015-07-10	39.2	1.35	39.0	1.38	39.0	1.41
	2015-07-11	38.9	1.36	38.8	1.39	38.6	1.42
	2015-07-12	39.1	1.36	39.0	1.38	38.9	1.41
	2015-07-24	38.7	1.32	38.7	1.35	38.5	1.38
	2015-07-25	38.8	1.33	38.8	1.35	38.6	1.38

(Head tissue simulant table continues)

(Head tissue simulant table continues)

f (MHz)	WCDMA1900 (Band 2)	Dielectric Parameters					
	Date	CH 9262 1852.4 MHz		CH 9400 1880.0 MHz		CH 9538 1907.6 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1880	2015-07-08	38.8	1.35	38.7	1.39	38.6	1.42
	2015-07-09	39.2	1.36	39.1	1.40	39.0	1.42
	2015-07-10	39.2	1.35	39.0	1.38	39.0	1.41
	2015-07-11	38.9	1.36	38.8	1.39	38.7	1.41
	2015-07-12	39.2	1.36	39.0	1.38	38.9	1.41
	2015-07-24	38.7	1.33	38.7	1.35	38.5	1.38
	2015-07-25	38.8	1.33	38.8	1.35	38.6	1.38
f (MHz)	LTE1900 (Band 2)	Dielectric Parameters					
	Date	CH 18700 1860.0 MHz		CH 18900 1880.0 MHz		CH 19100 1900.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1880	2015-07-08	38.8	1.36	38.7	1.39	38.7	1.41
	2015-07-09	39.2	1.37	39.1	1.40	39.0	1.42
	2015-07-10	39.1	1.36	39.0	1.38	39.0	1.40
	2015-07-11	38.9	1.37	38.8	1.39	38.7	1.41
	2015-07-12	39.1	1.37	39.0	1.38	39.0	1.41
	2015-07-24	38.7	1.34	38.7	1.35	38.6	1.38
	2015-07-25	38.8	1.34	38.8	1.35	38.7	1.37
f (MHz)	WLAN2450	Dielectric Parameters					
	Date	CH 1 2412.0 MHz		CH 6 2437.0 MHz		CH 11 2462.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
2437	2015-06-24	38.1	1.78	38.0	1.80	37.9	1.83
	2015-06-25	37.6	1.82	37.5	1.85	37.4	1.87
f (MHz)	LTE2500 (Band 7)	Dielectric Parameters					
	Date	CH 20850 2510.0 MHz		CH 21100 2535.0 MHz		CH 21350 2560.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
2535	2015-07-12	38.1	1.82	37.9	1.85	37.8	1.88
	2015-07-19	37.7	1.82	37.5	1.84	37.4	1.87
	2015-07-20	37.4	1.82	37.3	1.84	37.1	1.88
	2015-07-21	37.8	1.84	37.7	1.86	37.5	1.89
	2015-07-22	38.1	1.79	38.0	1.82	37.8	1.85
	2015-07-24	38.6	1.82	38.5	1.84	38.4	1.88

Head tissue simulant dielectric parameters used in the measurements 5180 – 5805 MHz

f	WLAN5300	Dielectric Parameters									
	Date	5260.0		5290.0		5300.0		5310.0		5320.0	
(MHz)		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
5290	2015-06-26	36.9	4.69	36.8	4.72	36.8	4.73	36.8	4.74	36.7	4.76
	2015-06-30	36.5	4.70	36.5	4.74	36.4	4.75	36.4	4.76	36.4	4.77
	2015-07-06	36.6	4.68	36.5	4.71	36.5	4.72	36.5	4.73	36.5	4.74
	2015-07-15	36.4	4.67	36.4	4.71	36.4	4.72	36.4	4.73	36.3	4.74
f	WLAN5500-5600	Dielectric Parameters									
	Date	5520.0		5600.0		5620.0		5640.0		5700.0	
(MHz)		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
5520 5620	2015-06-26	36.5	4.94	36.4	5.04	36.3	5.05	36.3	5.07	36.3	5.16
	2015-06-29	36.1	4.91	36.1	5.01	36.0	5.01	35.9	5.03	35.9	5.13
	2015-06-30	36.1	4.97	36.1	5.06	36.0	5.08	36.0	5.10	35.9	5.18
	2015-07-06	36.2	4.95	36.1	5.03	36.1	5.06	36.0	5.08	36.0	5.14
	2015-07-15	36.0	4.94	35.9	5.02	35.9	5.05	35.9	5.07	35.8	5.14
f	WLAN5800	Dielectric Parameters									
	Date	5745.0		5760.0		5785.0		5805.0		5815.0	
(MHz)		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
5760	2015-06-26	36.2	5.17	36.1	5.20	36.0	5.26	36.1	5.29	36.1	5.29
	2015-06-29	35.8	5.14	35.8	5.16	35.7	5.21	35.7	5.25	35.7	5.25
	2015-07-06	35.9	5.19	35.9	5.21	35.8	5.24	35.8	5.26	35.8	5.26
	2015-07-15	35.7	5.19	35.7	5.20	35.7	5.23	35.6	5.25	35.6	5.26

Body tissue simulant dielectric parameters used in the measurements:

f (MHz)	LTE700 (Band 12)	Dielectric Parameters					
	Date	CH 23060 704.0 MHz		CH 23095 707.5 MHz		CH 23130 711.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
707	2015-07-07	54.5	0.95	54.5	0.96	54.5	0.96
	2015-07-08	54.2	0.96	54.2	0.96	54.2	0.96
	2015-07-09	54.2	0.96	54.2	0.96	54.2	0.96
	2015-07-10	54.0	0.95	54.0	0.95	54.0	0.96
f (MHz)	LTE700 (Band 17)	Dielectric Parameters					
	Date	CH 23780 709.0 MHz		CH 23790 710.0 MHz		CH 23800 711.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
710	2015-07-07	54.5	0.96	54.5	0.96	54.5	0.96
	2015-07-08	54.2	0.96	54.2	0.96	54.2	0.96
	2015-07-09	54.2	0.96	54.1	0.96	54.2	0.96
	2015-07-10	54.0	0.95	54.0	0.96	54.0	0.96
f (MHz)	GSM850	Dielectric Parameters					
	Date	CH 128 824.2 MHz		CH 190 836.6 MHz		CH 251 848.8 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
836	2015-07-15	53.7	0.98	53.6	0.98	53.6	0.99
	2015-07-16	53.9	0.97	53.9	0.98	53.8	0.98
	2015-07-17	53.9	0.98	53.8	0.98	53.7	0.99
	2015-07-20	53.7	0.99	53.6	0.99	53.5	1.00
f (MHz)	WCDMA850 (Band 5)	Dielectric Parameters					
	Date	CH 4132 826.4 MHz		CH 4175 835.0 MHz		CH 4233 846.6 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
835	2015-07-15	53.7	0.98	53.6	0.98	53.6	0.99
	2015-07-16	53.9	0.97	53.9	0.98	53.8	0.98
	2015-07-17	53.9	0.98	53.8	0.98	53.7	0.99
	2015-07-20	53.6	0.99	53.6	0.99	53.5	1.00
f (MHz)	LTE850 (Band 5)	Dielectric Parameters					
	Date	CH 20450 829.0 MHz		CH 20525 836.5 MHz		CH 20600 844.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
836	2015-07-15	53.7	0.98	53.6	0.98	53.6	0.99
	2015-07-16	53.9	0.97	53.9	0.98	53.8	0.98
	2015-07-17	53.8	0.98	53.8	0.98	53.7	0.99
	2015-07-20	53.6	0.99	53.6	0.99	53.5	1.00

(Body tissue simulant table continues)

(Body tissue simulant table continues)

f (MHz)	WCDMA1700/2100 (Band 4) Date	Dielectric Parameters					
		CH 1312 1712.4 MHz		CH 1412 1732.4 MHz		CH 1513 1752.6 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1732	2015-07-07	52.4	1.41	52.3	1.43	52.2	1.45
	2015-07-08	52.3	1.42	52.2	1.44	52.2	1.46
	2015-07-10	52.1	1.42	52.0	1.44	52.0	1.46
	2015-07-11	51.7	1.42	51.6	1.44	51.5	1.46
	2015-07-25	51.5	1.41	51.5	1.43	51.4	1.44
	2015-07-26	51.1	1.40	51.1	1.42	51.1	1.44
f (MHz)	LTE1700/2100 (Band 4) Date	Dielectric Parameters					
		CH 20050 1720.0 MHz		CH 20175 1732.5 MHz		CH 20300 1745.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1732	2015-07-07	52.4	1.42	52.3	1.43	52.3	1.44
	2015-07-08	52.3	1.43	52.2	1.44	52.2	1.45
	2015-07-10	52.1	1.43	52.0	1.44	52.0	1.44
	2015-07-11	51.7	1.43	51.6	1.44	51.6	1.45
	2015-07-25	51.5	1.42	51.5	1.43	51.5	1.44
	2015-07-26	51.1	1.41	51.1	1.42	51.1	1.44
f (MHz)	GSM1900 Date	Dielectric Parameters					
		CH 512 1850.2 MHz		CH 661 1880.0 MHz		CH 810 1909.8 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1880	2015-07-13	51.7	1.46	51.7	1.49	51.6	1.52
	2015-07-14	52.1	1.46	52.0	1.50	51.9	1.52
	2015-07-15	52.2	1.46	52.1	1.49	52.1	1.52
	2015-07-16	51.9	1.46	51.9	1.49	51.8	1.52
	2015-07-22	51.9	1.46	51.8	1.49	51.8	1.52
	2015-07-23	51.5	1.45	51.5	1.48	51.4	1.51
	2015-07-26	51.9	1.45	51.8	1.47	51.7	1.50
f (MHz)	WCDMA1900 (Band 2) Date	Dielectric Parameters					
		CH 9262 1852.4 MHz		CH 9400 1880.0 MHz		CH 9538 1907.6 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1880	2015-07-13	51.7	1.46	51.7	1.49	51.6	1.52
	2015-07-14	52.1	1.47	52.0	1.50	51.9	1.52
	2015-07-15	52.2	1.46	52.1	1.49	52.1	1.52
	2015-07-16	51.9	1.46	51.9	1.49	51.8	1.52
	2015-07-22	51.9	1.46	51.8	1.49	51.8	1.52
	2015-07-23	51.6	1.45	51.5	1.48	51.4	1.51
	2015-07-26	51.9	1.45	51.8	1.47	51.7	1.50

(Body tissue simulant table continues)

(Body tissue simulant table continues)

f (MHz)	LTE1900 (Band 2)	Dielectric Parameters					
	Date	CH 18700 1860.0 MHz		CH 18900 1880.0 MHz		CH 19100 1900.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
1880	2015-07-13	51.7	1.47	51.7	1.49	51.7	1.51
	2015-07-14	52.1	1.47	52.0	1.50	52.0	1.52
	2015-07-15	52.2	1.47	52.1	1.49	52.1	1.51
	2015-07-16	51.9	1.47	51.9	1.49	51.8	1.51
	2015-07-22	51.8	1.47	51.8	1.49	51.8	1.52
	2015-07-23	51.6	1.46	51.5	1.48	51.4	1.50
	2015-07-26	51.9	1.46	51.8	1.47	51.8	1.49
f (MHz)	WLAN2450	Dielectric Parameters					
	Date	CH 1 2412.0 MHz		CH 6 2437.0 MHz		CH 11 2462.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
2437	2015-07-03	52.6	1.91	52.6	1.94	52.5	1.97
f (MHz)	LTE2500 (Band 7)	Dielectric Parameters					
	Date	CH 20850 2510.0 MHz		CH 21100 2535.0 MHz		CH 21350 2560.0 MHz	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
2535	2015-07-11	51.9	2.00	51.8	2.03	51.8	2.06
	2015-07-12	51.3	2.01	51.3	2.04	51.2	2.07
	2015-07-18	51.5	1.97	51.3	2.00	51.2	2.04
	2015-07-23	51.1	1.97	51.1	2.00	51.0	2.03

Body tissue simulant dielectric parameters used in the measurements 5180 – 5805 MHz

f (MHz)	WLAN5200	Dielectric Parameters									
	Date	5200.0		5210.0		5220.0		5230.0		5240.0	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
2510	2015-07-08	47.0	5.38	46.9	5.39	46.9	5.40	46.9	5.42	46.9	5.44
f (MHz)	WLAN5300	Dielectric Parameters									
	Date	5260.0		5290.0		5300.0		5310.0		5320.0	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
5290	2015-07-07	47.3	5.53	47.3	5.58	47.3	5.59	47.3	5.60	47.3	5.61
f (MHz)	WLAN5500-5600	Dielectric Parameters									
	Date	5520.0		5600.0		5620.0		5640.0		5700.0	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
5520 5620	2015-07-07	46.9	5.88	46.7	5.98	46.7	6.02	46.7	6.05	46.6	6.12
f (MHz)	WLAN5800	Dielectric Parameters									
	Date	5745.0		5760.0		5785.0		5805.0		5815.0	
		e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]	e_r	s [S/m]
5760	2015-07-07	46.5	6.20	46.5	6.22	46.5	6.24	46.4	6.26	46.4	6.28

APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

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

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C Service suisse d'étalonnage
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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 **TCC Microsoft**

Certificate No: ES3-3131_Oct14

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3131

Calibration procedure(s): QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: October 21, 2014

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	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Probe ES3DV2	SN: 3013	30-Dec-13 (No. ES3-3013_Dec13)	Dec-14
DAE4	SN: 660	13-Dec-13 (No. DAE4-660_Dec13)	Dec-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-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 21, 2014

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3131

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	6.29	6.29	6.29	0.58	1.27	± 12.0 %
835	41.5	0.90	6.04	6.04	6.04	0.62	1.27	± 12.0 %
1750	40.1	1.37	5.10	5.10	5.10	0.43	1.55	± 12.0 %
1900	40.0	1.40	4.92	4.92	4.92	0.58	1.32	± 12.0 %
2300	39.5	1.67	4.62	4.62	4.62	0.78	1.17	± 12.0 %
2450	39.2	1.80	4.39	4.39	4.39	0.65	1.33	± 12.0 %
2600	39.0	1.96	4.25	4.25	4.25	0.79	1.22	± 12.0 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3131

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	5.97	5.97	5.97	0.27	2.03	± 12.0 %
835	55.2	0.97	5.96	5.96	5.96	0.54	1.37	± 12.0 %
1750	53.4	1.49	4.79	4.79	4.79	0.43	1.72	± 12.0 %
1900	53.3	1.52	4.58	4.58	4.58	0.65	1.40	± 12.0 %
2300	52.9	1.81	4.33	4.33	4.33	0.76	1.21	± 12.0 %
2450	52.7	1.95	4.14	4.14	4.14	0.80	1.11	± 12.0 %
2600	52.5	2.16	4.03	4.03	4.03	0.80	1.06	± 12.0 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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 frequencias 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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

Calibration Laboratory of
Schmid & Partner
Engineering AG
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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 0108

Client **TCC Microsoft**

Certificate No: EX3-3892_Apr15

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3892

Calibration procedure(s) QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: April 24, 2015

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	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
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-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 27, 2015

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3892

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	10.14	10.14	10.14	0.23	1.36	± 12.0 %
835	41.5	0.90	9.65	9.65	9.65	0.21	1.36	± 12.0 %
1750	40.1	1.37	8.13	8.13	8.13	0.35	0.80	± 12.0 %
1900	40.0	1.40	7.92	7.92	7.92	0.35	0.80	± 12.0 %
2300	39.5	1.67	7.47	7.47	7.47	0.21	1.14	± 12.0 %
2450	39.2	1.80	7.24	7.24	7.24	0.24	0.97	± 12.0 %
2600	39.0	1.96	7.13	7.13	7.13	0.35	0.95	± 12.0 %
5200	36.0	4.66	5.07	5.07	5.07	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.84	4.84	4.84	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.78	4.78	4.78	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.60	4.60	4.60	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.52	4.52	4.52	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3892

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	9.62	9.62	9.62	0.41	0.92	± 12.0 %
835	55.2	0.97	9.55	9.55	9.55	0.36	1.05	± 12.0 %
1750	53.4	1.49	7.90	7.90	7.90	0.29	0.96	± 12.0 %
1900	53.3	1.52	7.68	7.68	7.68	0.41	0.80	± 12.0 %
2300	52.9	1.81	7.44	7.44	7.44	0.37	0.85	± 12.0 %
2450	52.7	1.95	7.32	7.32	7.32	0.35	0.90	± 12.0 %
2600	52.5	2.16	7.04	7.04	7.04	0.35	0.90	± 12.0 %
5200	49.0	5.30	4.54	4.54	4.54	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.33	4.33	4.33	0.40	1.90	± 13.1 %
5500	48.6	5.65	4.01	4.01	4.01	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.93	3.93	3.93	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.05	4.05	4.05	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Accreditation No.: SCS 108

Client **TCC Microsoft**

Certificate No: EX3-3835_Oct14

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3835

Calibration procedure(s): QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: October 20, 2014

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	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Probe ES3DV2	SN: 3013	30-Dec-13 (No. ES3-3013_Dec13)	Dec-14
DAE4	SN: 660	13-Dec-13 (No. DAE4-660_Dec13)	Dec-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-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

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

Issued: October 21, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3835

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	9.14	9.14	9.14	0.28	1.12	± 12.0 %
835	41.5	0.90	8.87	8.87	8.87	0.29	1.03	± 12.0 %
1750	40.1	1.37	7.73	7.73	7.73	0.50	0.72	± 12.0 %
1900	40.0	1.40	7.52	7.52	7.52	0.76	0.57	± 12.0 %
2300	39.5	1.67	7.23	7.23	7.23	0.50	0.70	± 12.0 %
2450	39.2	1.80	6.92	6.92	6.92	0.41	0.80	± 12.0 %
2600	39.0	1.96	6.79	6.79	6.79	0.40	0.84	± 12.0 %
5200	36.0	4.66	4.91	4.91	4.91	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.73	4.73	4.73	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.52	4.52	4.52	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.32	4.32	4.32	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.36	4.36	4.36	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3835

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	8.80	8.80	8.80	0.24	1.33	± 12.0 %
835	55.2	0.97	8.90	8.90	8.90	0.63	0.67	± 12.0 %
1750	53.4	1.49	7.46	7.46	7.46	0.78	0.63	± 12.0 %
1900	53.3	1.52	7.17	7.17	7.17	0.43	0.80	± 12.0 %
2300	52.9	1.81	7.03	7.03	7.03	0.80	0.61	± 12.0 %
2450	52.7	1.95	6.87	6.87	6.87	0.80	0.58	± 12.0 %
2600	52.5	2.16	6.74	6.74	6.74	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.20	4.20	4.20	0.45	1.90	± 13.1 %
5300	48.9	5.42	4.03	4.03	4.03	0.45	1.90	± 13.1 %
5500	48.6	5.65	3.79	3.79	3.79	0.45	1.90	± 13.1 %
5600	48.5	5.77	3.63	3.63	3.63	0.45	1.90	± 13.1 %
5800	48.2	6.00	3.80	3.80	3.80	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Accreditation No.: SCS 0108

Client TCC Microsoft

Certificate No: ES3-3194_Jan15

CALIBRATION CERTIFICATE

Object: ES3DV3 - SN:3194

Calibration procedure(s): QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: January 20, 2015

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	03-Apr-14 (No. 217-01911)	Apr-15
Power sensor E4412A	MY41498087	03-Apr-14 (No. 217-01911)	Apr-15
Reference 3 dB Attenuator	SN: S5054 (3c)	03-Apr-14 (No. 217-01915)	Apr-15
Reference 20 dB Attenuator	SN: S5277 (20x)	03-Apr-14 (No. 217-01919)	Apr-15
Reference 30 dB Attenuator	SN: S5129 (30b)	03-Apr-14 (No. 217-01920)	Apr-15
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
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-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

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

Issued: January 22, 2015

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3194

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	6.52	6.52	6.52	0.56	1.42	± 12.0 %
835	41.5	0.90	6.34	6.34	6.34	0.59	1.36	± 12.0 %
1750	40.1	1.37	5.22	5.22	5.22	0.73	1.26	± 12.0 %
1900	40.0	1.40	5.09	5.09	5.09	0.80	1.16	± 12.0 %
2300	39.5	1.67	4.71	4.71	4.71	0.79	1.19	± 12.0 %
2450	39.2	1.80	4.50	4.50	4.50	0.75	1.30	± 12.0 %
2600	39.0	1.96	4.31	4.31	4.31	0.80	1.30	± 12.0 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3194

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	6.08	6.08	6.08	0.46	1.57	± 12.0 %
835	55.2	0.97	6.11	6.11	6.11	0.49	1.56	± 12.0 %
1750	53.4	1.49	4.92	4.92	4.92	0.80	1.23	± 12.0 %
1900	53.3	1.52	4.75	4.75	4.75	0.78	1.28	± 12.0 %
2300	52.9	1.81	4.46	4.46	4.46	0.80	1.26	± 12.0 %
2450	52.7	1.95	4.35	4.35	4.35	0.68	1.20	± 12.0 %
2600	52.5	2.16	4.19	4.19	4.19	0.73	1.18	± 12.0 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Accreditation No.: SCS 0108

Client **TCC Microsoft** Certificate No: **ES3-3275_Apr15**

CALIBRATION CERTIFICATE

Object ES3DV3 - SN:3275

Calibration procedure(s) QA CAL-01.v9, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: April 27, 2015

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	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
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-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

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

Issued: April 29, 2015

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3275

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	6.19	6.19	6.19	0.31	2.01	± 12.0 %
835	41.5	0.90	5.95	5.95	5.95	0.29	2.09	± 12.0 %
1750	40.1	1.37	4.99	4.99	4.99	0.49	1.47	± 12.0 %
1900	40.0	1.40	4.85	4.85	4.85	0.61	1.32	± 12.0 %
2300	39.5	1.67	4.55	4.55	4.55	0.69	1.30	± 12.0 %
2450	39.2	1.80	4.33	4.33	4.33	0.80	1.35	± 12.0 %
2600	39.0	1.96	4.22	4.22	4.22	0.80	1.26	± 12.0 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3275

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	6.04	6.04	6.04	0.54	1.43	± 12.0 %
835	55.2	0.97	5.93	5.93	5.93	0.36	1.83	± 12.0 %
1750	53.4	1.49	4.78	4.78	4.78	0.52	1.60	± 12.0 %
1900	53.3	1.52	4.63	4.63	4.63	0.73	1.36	± 12.0 %
2300	52.9	1.81	4.38	4.38	4.38	0.77	1.23	± 12.0 %
2450	52.7	1.95	4.25	4.25	4.25	0.80	1.11	± 12.0 %
2600	52.5	2.16	4.07	4.07	4.07	0.85	1.35	± 12.0 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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Accreditation No.: SCS 0108

Client **TCC Microsoft** **Certificate No: EX3-3852_Apr15**

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3852

Calibration procedure(s) QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6
Calibration procedure for dosimetric E-field probes

Calibration date: April 24, 2015

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	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
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-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: April 27, 2015

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3852

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	9.36	9.36	9.36	0.35	0.99	± 12.0 %
835	41.5	0.90	8.96	8.96	8.96	0.23	1.28	± 12.0 %
1750	40.1	1.37	7.69	7.69	7.69	0.40	0.80	± 12.0 %
1900	40.0	1.40	7.49	7.49	7.49	0.32	0.80	± 12.0 %
2300	39.5	1.67	7.15	7.15	7.15	0.36	0.80	± 12.0 %
2450	39.2	1.80	6.86	6.86	6.86	0.37	0.83	± 12.0 %
2600	39.0	1.96	6.67	6.67	6.67	0.25	1.11	± 12.0 %
5200	36.0	4.66	4.87	4.87	4.87	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.68	4.68	4.68	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.70	4.70	4.70	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.53	4.53	4.53	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.50	4.50	4.50	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3852

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 [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	9.31	9.31	9.31	0.35	1.02	± 12.0 %
835	55.2	0.97	9.11	9.11	9.11	0.25	1.21	± 12.0 %
1750	53.4	1.49	7.50	7.50	7.50	0.43	0.85	± 12.0 %
1900	53.3	1.52	7.31	7.31	7.31	0.42	0.82	± 12.0 %
2300	52.9	1.81	7.18	7.18	7.18	0.41	0.80	± 12.0 %
2450	52.7	1.95	7.04	7.04	7.04	0.39	0.95	± 12.0 %
2600	52.5	2.16	6.83	6.83	6.83	0.40	0.95	± 12.0 %
5200	49.0	5.30	4.51	4.51	4.51	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.35	4.35	4.35	0.40	1.90	± 13.1 %
5500	48.6	5.65	3.82	3.82	3.82	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.65	3.65	3.65	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.10	4.10	4.10	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz 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. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[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.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORTS

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

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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 0108

Client **TCC Microsoft**

Certificate No: D750V3-1075_Jan15

CALIBRATION CERTIFICATE

Object	D750V3 - SN: 1075
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	January 16, 2015

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	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 19, 2015

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
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	41.7 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.13 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.36 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.36 W/kg ± 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	56.0 ± 6 %	0.99 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.17 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.50 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.62 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.2 Ω + 0.6 jΩ
Return Loss	- 27.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.2 Ω - 1.1 jΩ
Return Loss	- 37.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.033 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	September 04, 2012

Date: 16.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1075

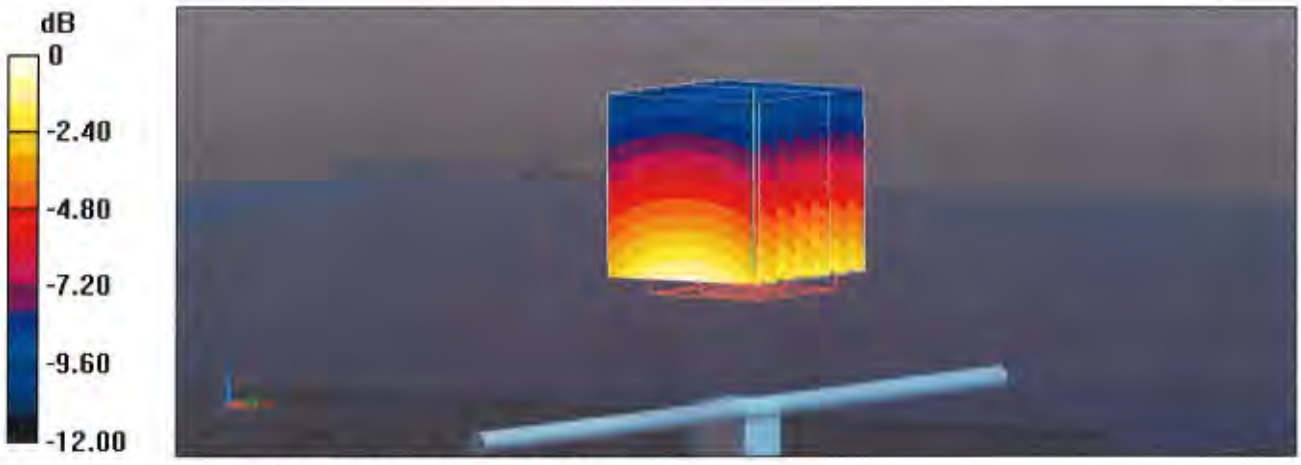
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.91 S/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.44, 6.44, 6.44); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

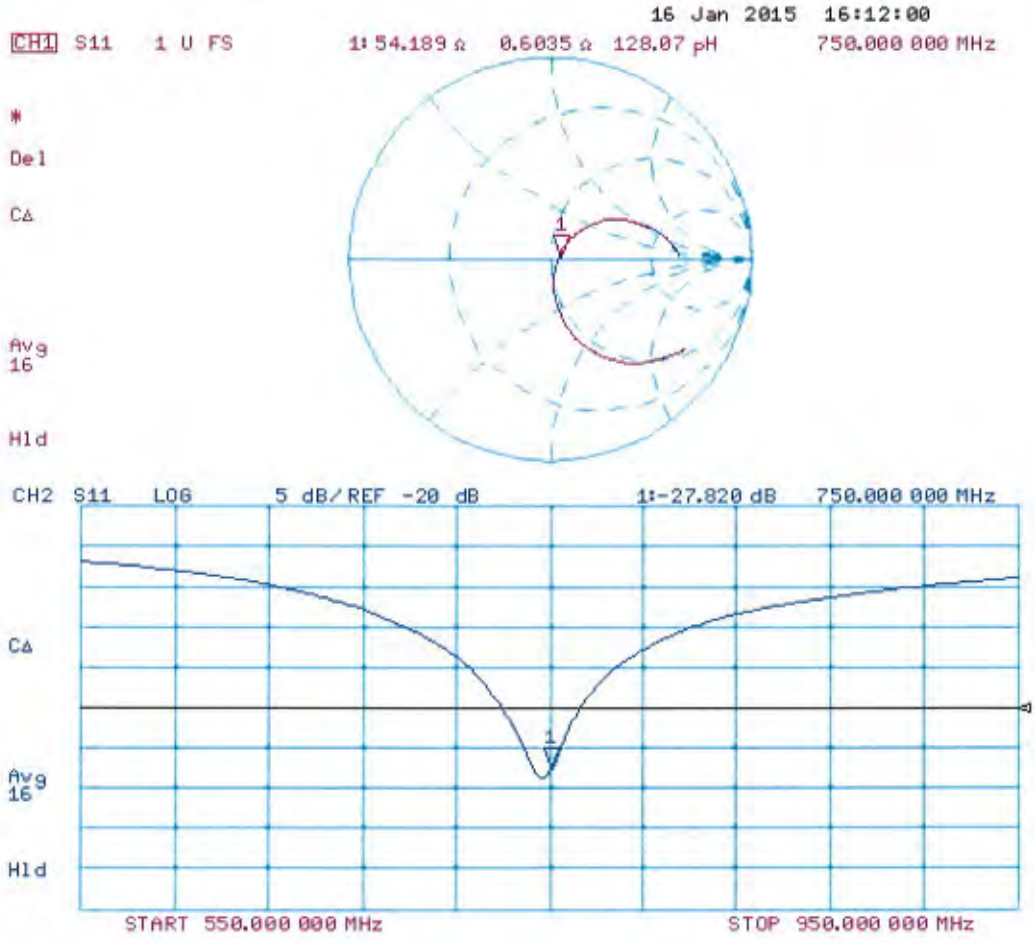
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.09 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.06 W/kg
SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.36 W/kg
Maximum value of SAR (measured) = 2.41 W/kg



0 dB = 2.41 W/kg = 3.82 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 16.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1075

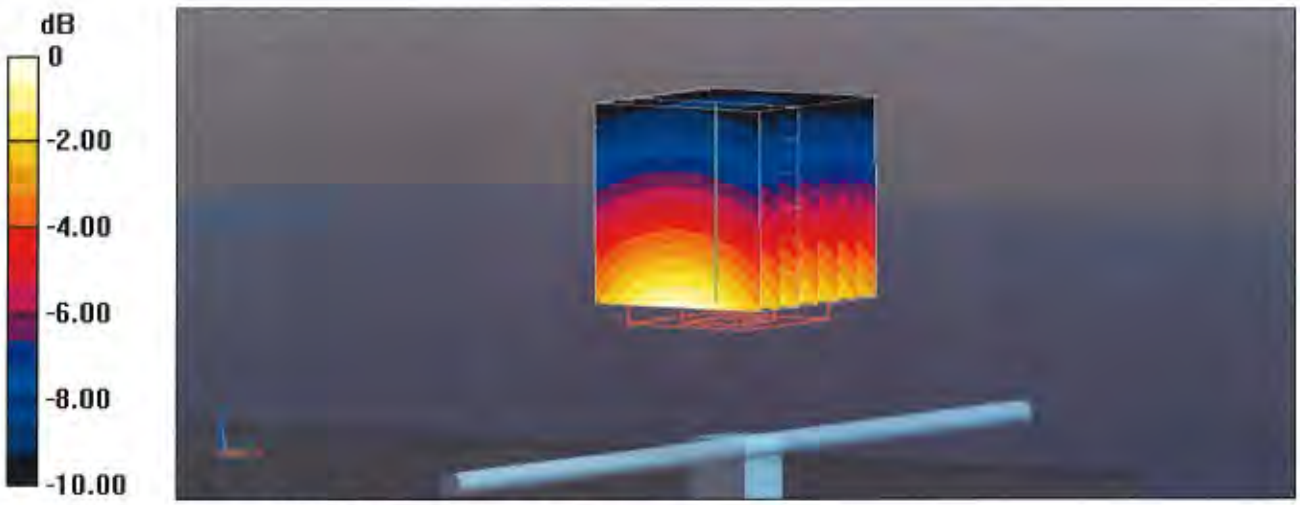
Communication System: UID 0 - CW; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.99 S/m; ε_r = 56; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.21, 6.21, 6.21); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

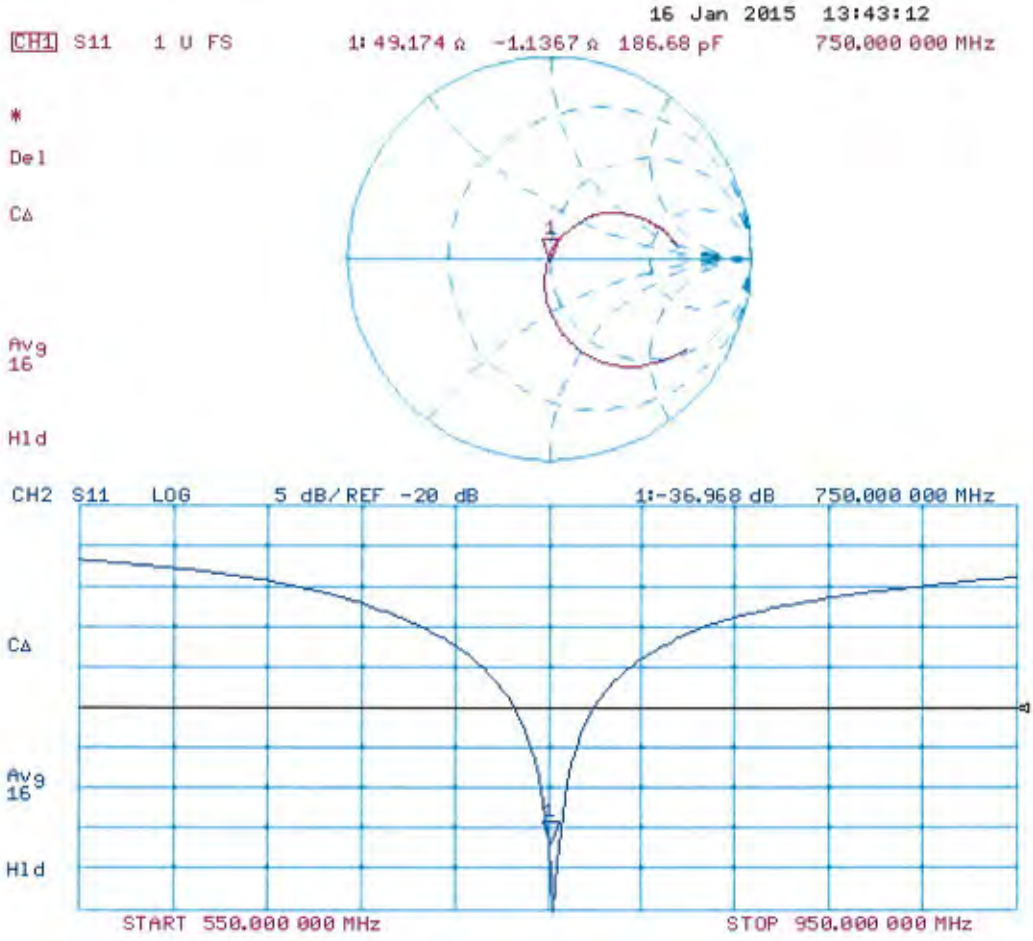
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.44 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.17 W/kg
SAR(1 g) = 2.17 W/kg; SAR(10 g) = 1.43 W/kg
Maximum value of SAR (measured) = 2.53 W/kg



0 dB = 2.53 W/kg = 4.03 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client **TCC Microsoft**

Certificate No: D835V2-480_Jan15

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 480

Calibration procedure(s): QA CAL-05.v9
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: January 16, 2015

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	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 19, 2015

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.5 ± 6 %	0.93 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.13 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.53 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.00 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.8 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.32 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.02 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.52 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.95 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.9 Ω - 2.3 jΩ
Return Loss	- 30.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 Ω - 4.1 jΩ
Return Loss	- 26.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.389 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	January 28, 2003

Date: 16.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 480

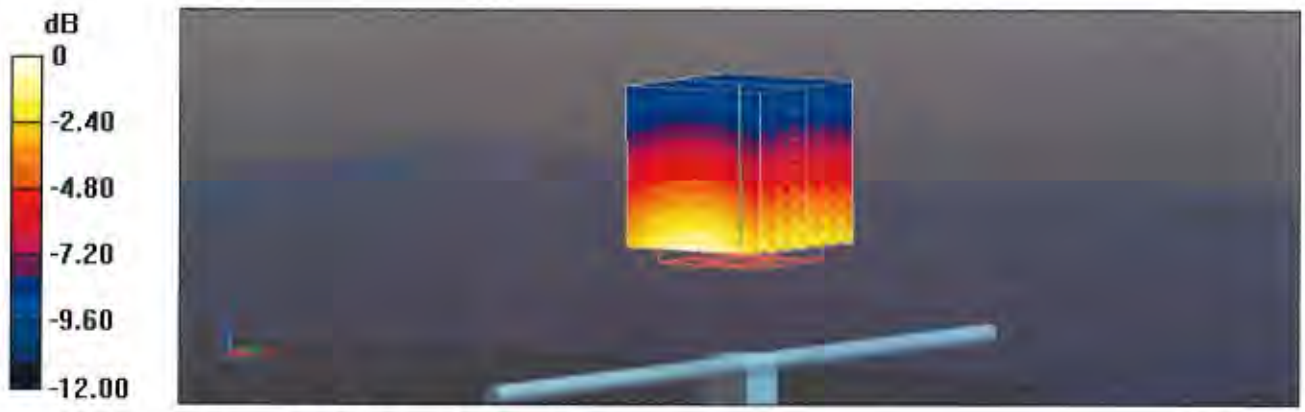
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.93 S/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.2, 6.2, 6.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

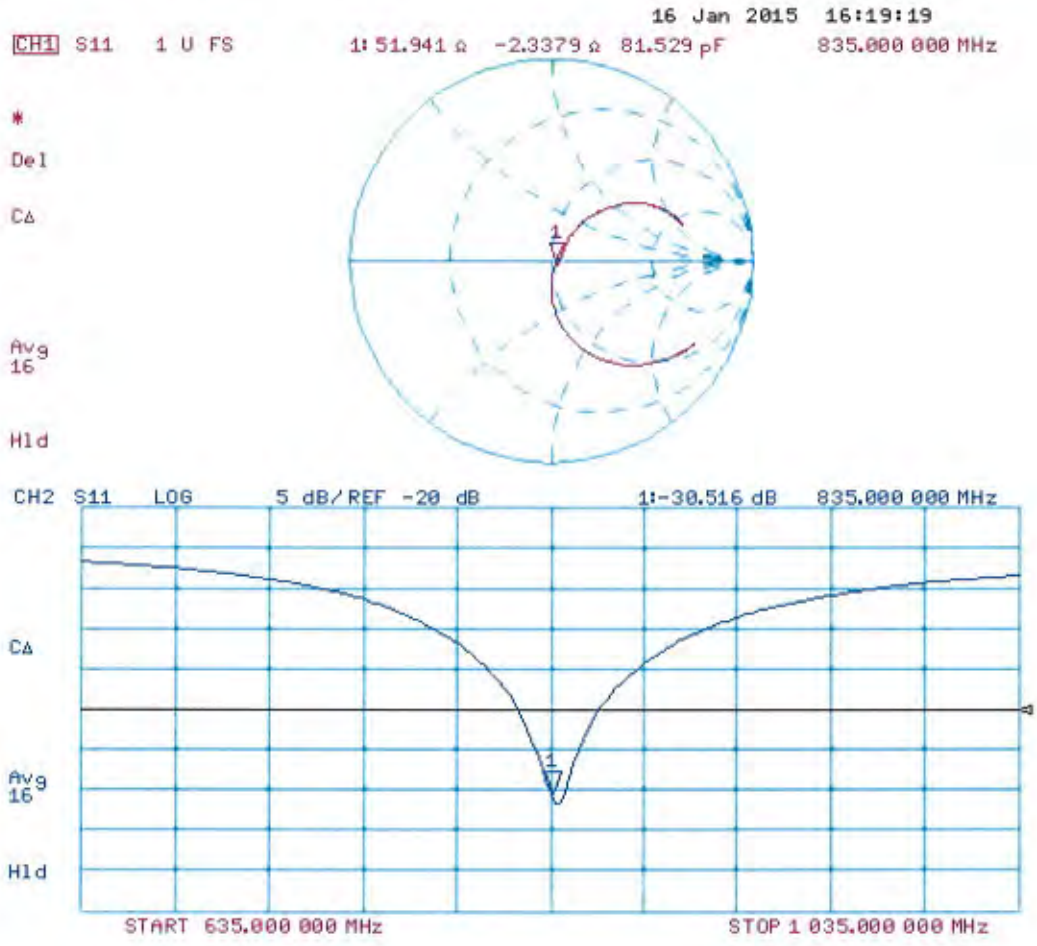
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.08 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 3.47 W/kg
SAR(1 g) = 2.34 W/kg; SAR(10 g) = 1.53 W/kg
Maximum value of SAR (measured) = 2.74 W/kg



0 dB = 2.74 W/kg = 4.38 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 16.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 480

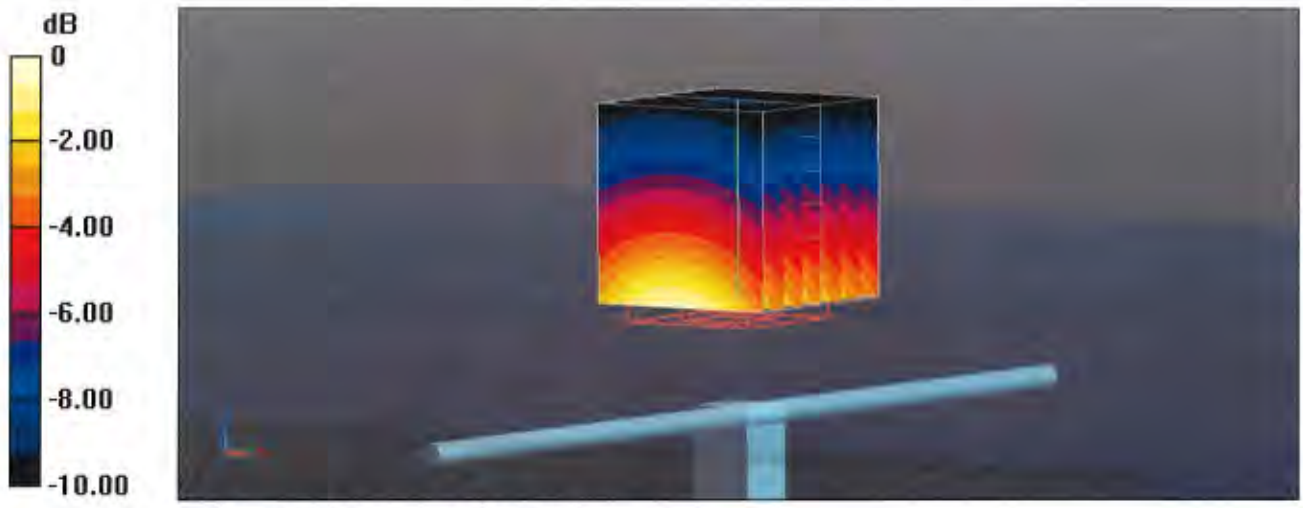
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.01 S/m; ε_r = 55.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.17, 6.17, 6.17); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

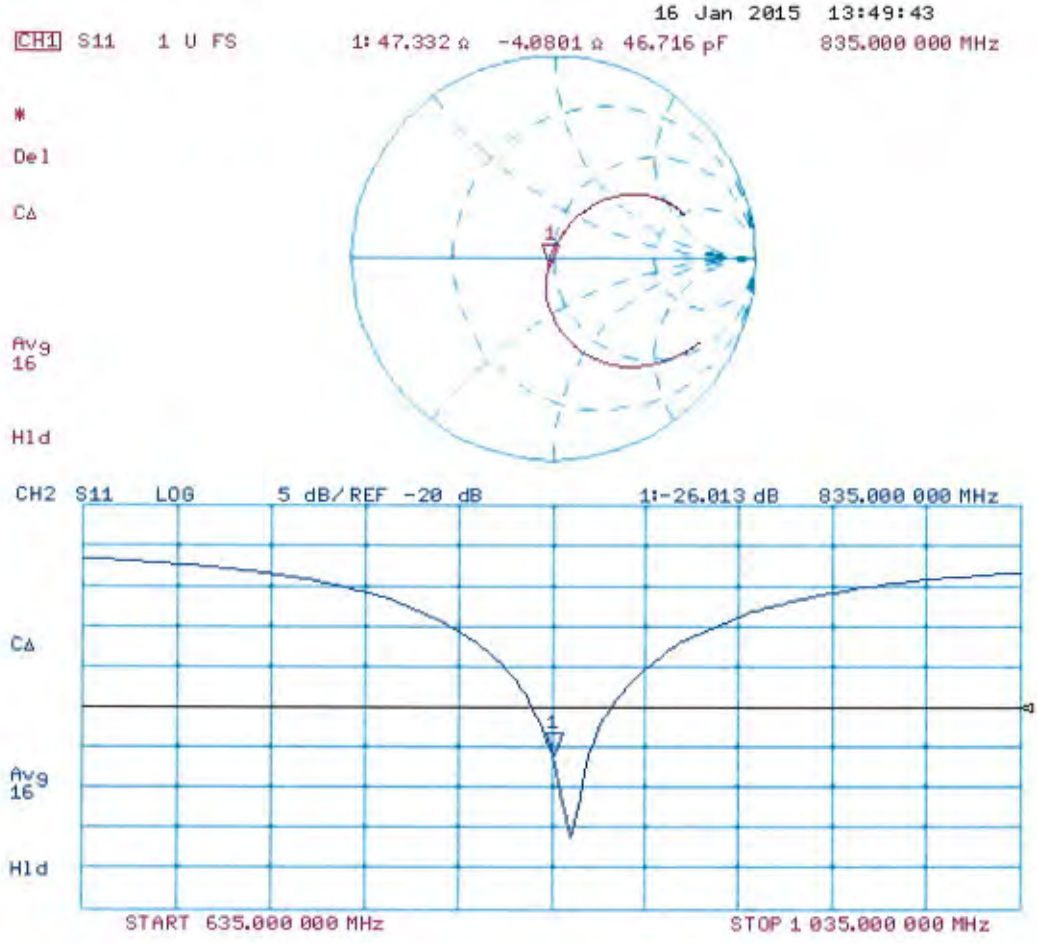
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.43 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.42 W/kg
SAR(1 g) = 2.32 W/kg; SAR(10 g) = 1.52 W/kg
Maximum value of SAR (measured) = 2.69 W/kg



0 dB = 2.69 W/kg = 4.30 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client TCC Microsoft

Certificate No: D1750V2-1082_Jan15

CALIBRATION CERTIFICATE

Object	D1750V2 - SN: 1082
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	January 14, 2015

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	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 15, 2015

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.0 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.24 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.6 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.5 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.8 ± 6 %	1.49 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.07 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.2 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.9 Ω + 0.5 jΩ
Return Loss	- 39.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω + 1.0 jΩ
Return Loss	- 28.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.219 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	January 19, 2011

Date: 14.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1082

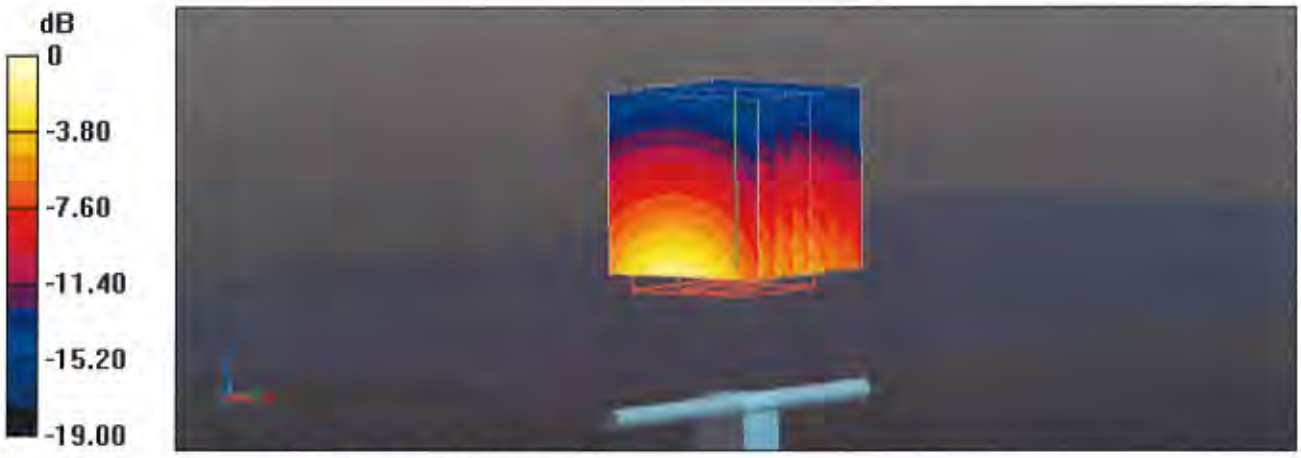
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.38 S/m; ε_r = 39; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.2, 5.2, 5.2); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

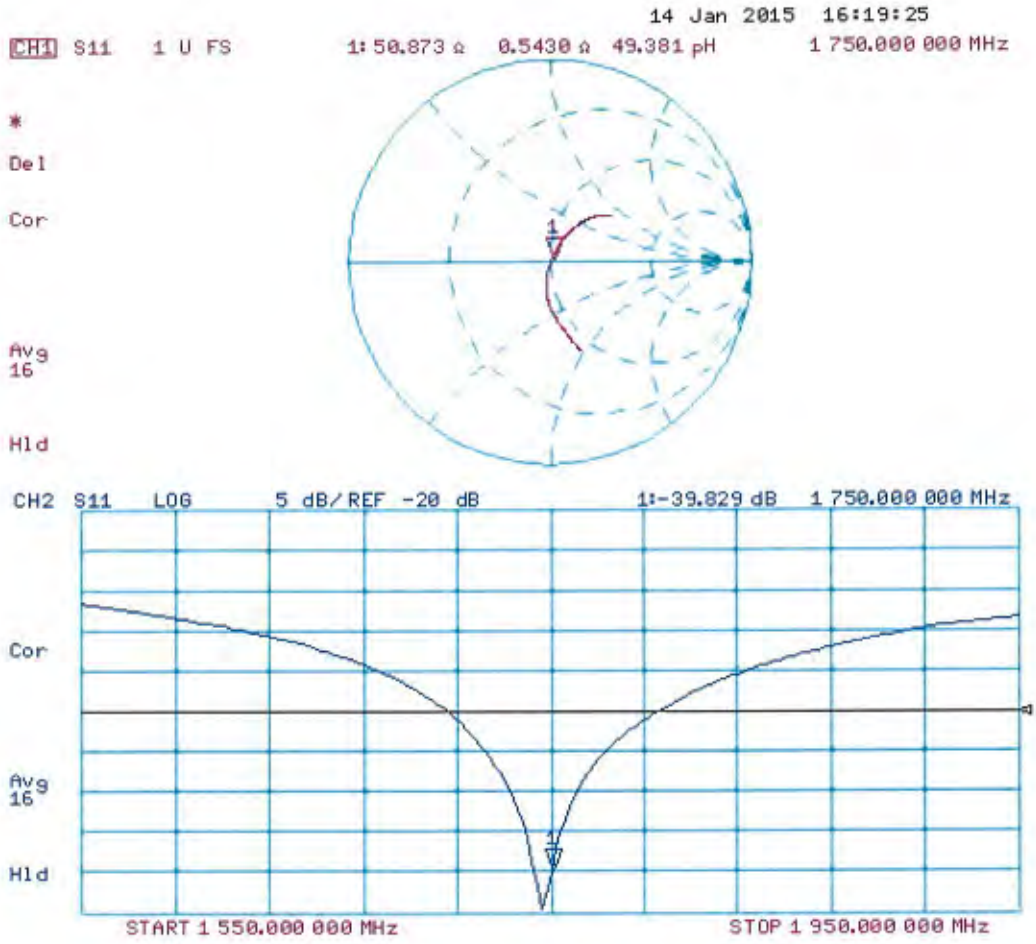
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.14 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 16.6 W/kg
SAR(1 g) = 9.24 W/kg; SAR(10 g) = 4.9 W/kg
Maximum value of SAR (measured) = 11.5 W/kg



0 dB = 11.5 W/kg = 10.61 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 14.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1082

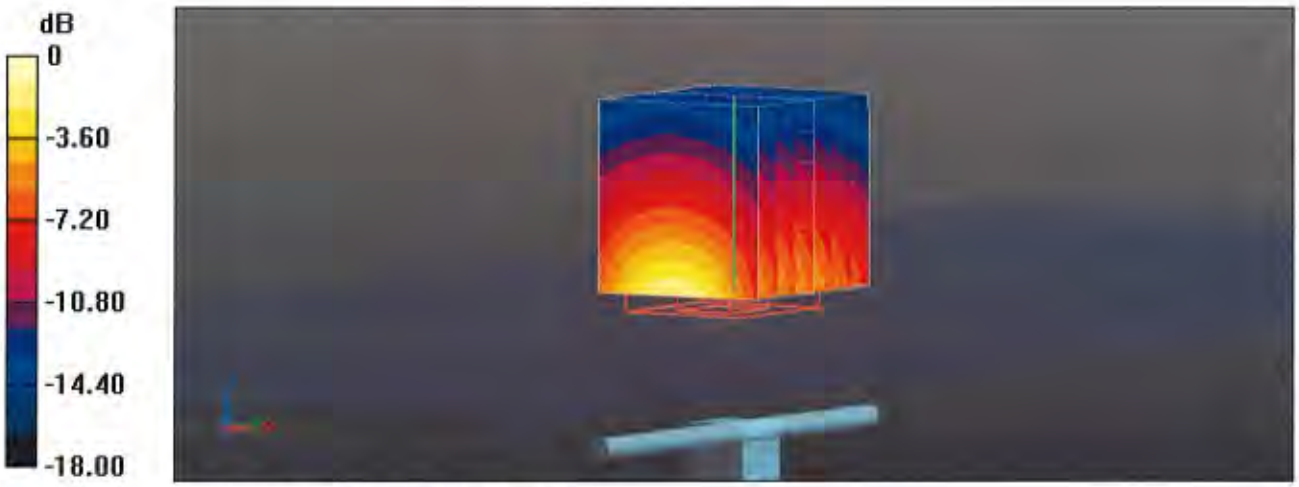
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.49 S/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.88, 4.88, 4.88); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

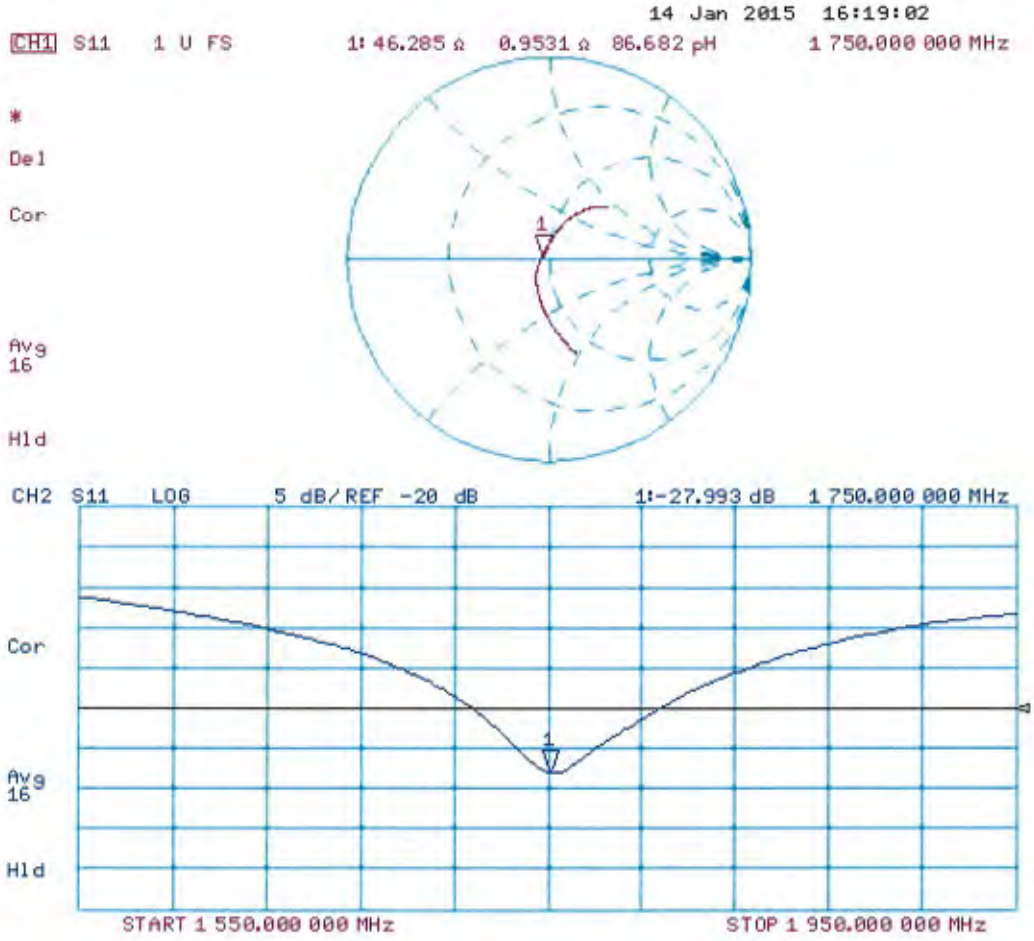
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.60 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 9.43 W/kg; SAR(10 g) = 5.07 W/kg
Maximum value of SAR (measured) = 11.7 W/kg



0 dB = 11.7 W/kg = 10.68 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client **TCC Microsoft**

Certificate No: D1900V2-5d013_Jan15

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 5d013
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	January 14, 2015

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	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M. Weber
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 15, 2015

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.4 ± 6 %	1.40 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	10.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**21.2 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.0 ± 6 %	1.51 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	10.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**40.5 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.38 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.6 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.5 Ω + 6.1 jΩ
Return Loss	- 23.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.1 Ω + 6.9 jΩ
Return Loss	- 22.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.194 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	April 30, 2002

Date: 14.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d013

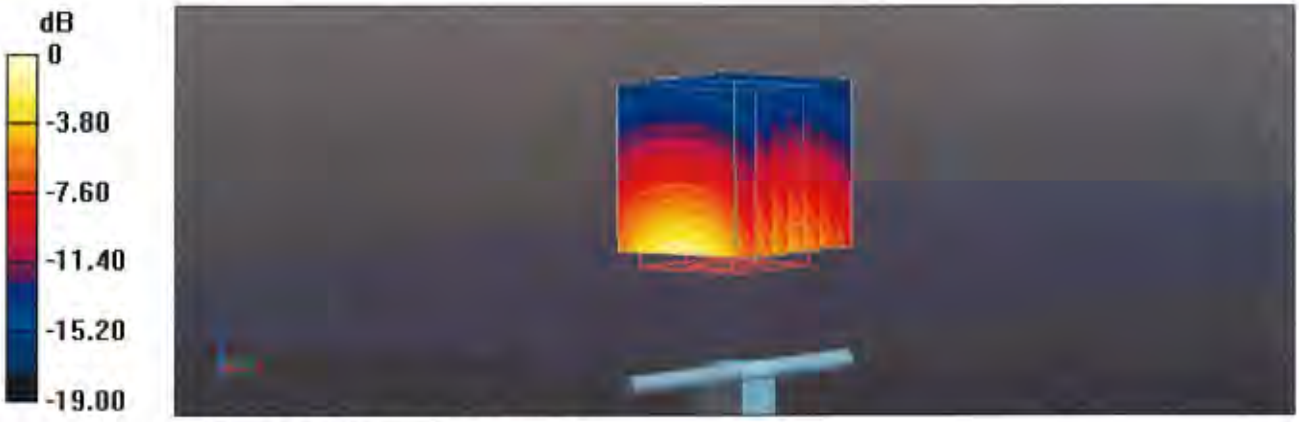
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.4 S/m; ε_r = 39.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5, 5, 5); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

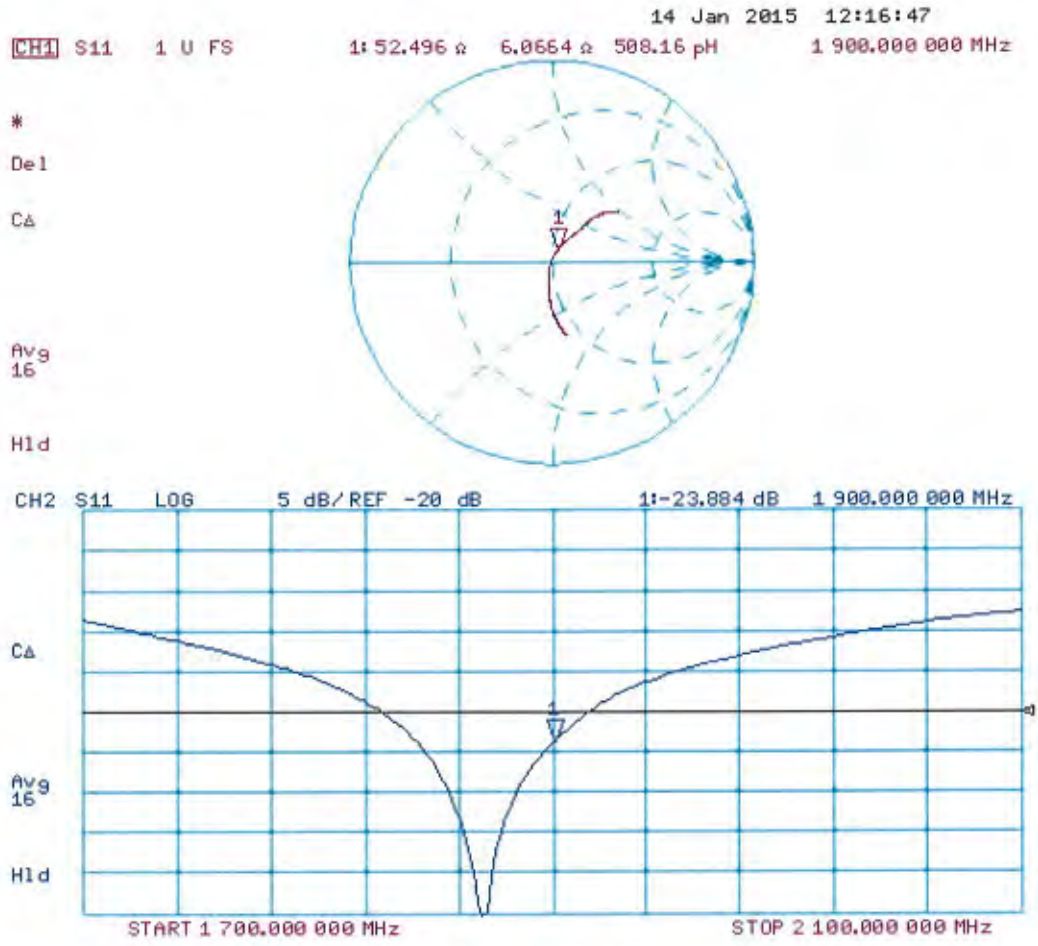
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.31 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 18.6 W/kg
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.3 W/kg
Maximum value of SAR (measured) = 12.8 W/kg



0 dB = 12.8 W/kg = 11.07 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 14.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d013

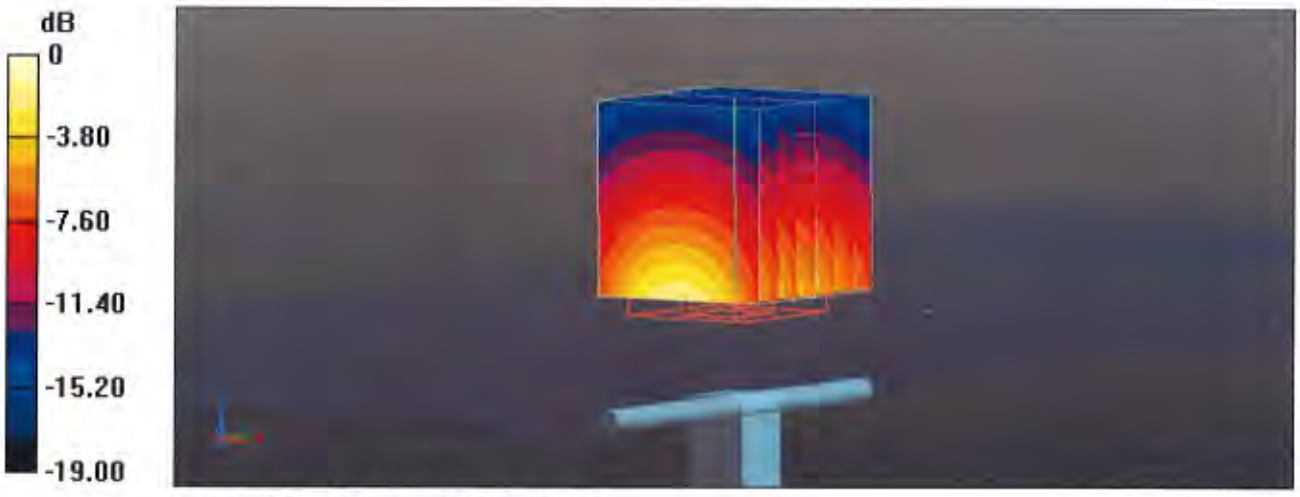
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.51 S/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

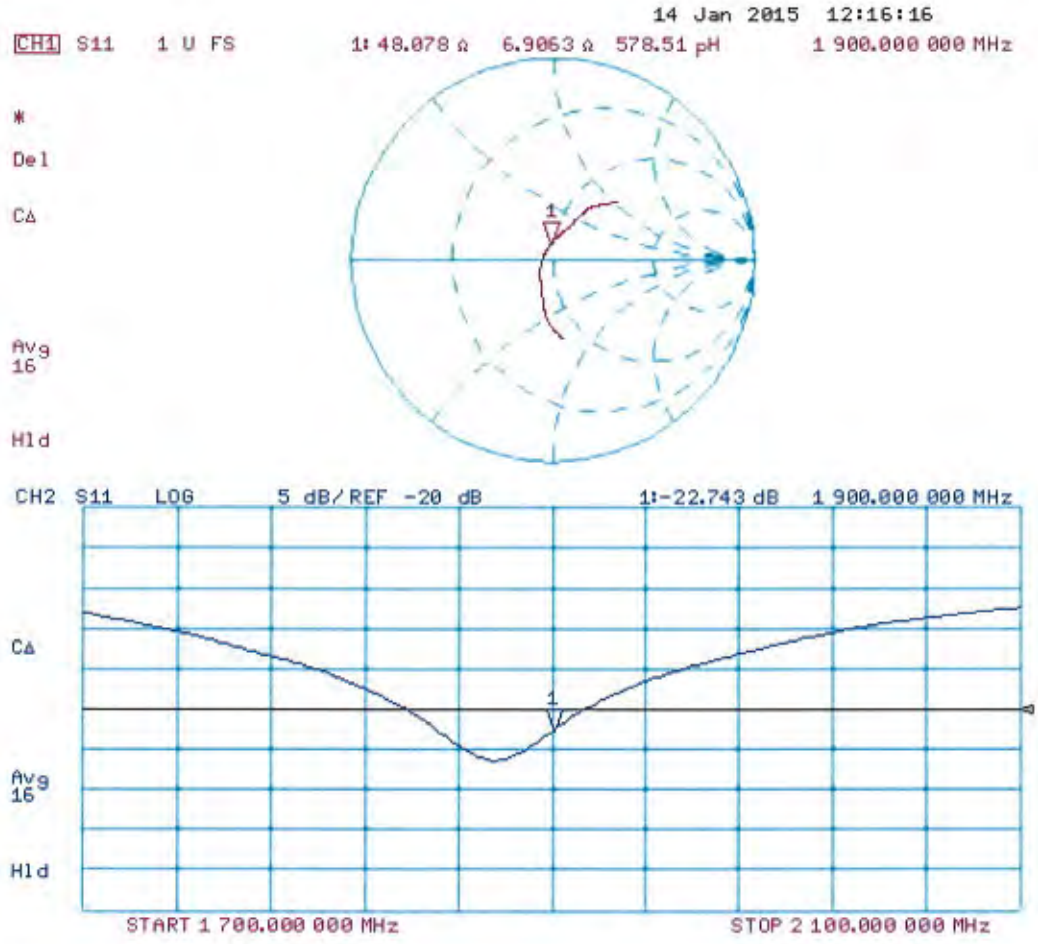
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.35 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.38 W/kg
Maximum value of SAR (measured) = 12.7 W/kg



0 dB = 12.7 W/kg = 11.04 dBW/kg

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client TCC Microsoft

Certificate No: D2450V2-749_Jan15

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 749
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	January 15, 2015

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	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

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

Issued: January 16, 2015

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.3 ± 6 %	1.88 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**52.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.17 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.4 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.6 ± 6 %	2.03 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.0 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**50.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.96 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.5 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.8 Ω + 3.4 jΩ
Return Loss	- 27.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.6 Ω + 4.6 jΩ
Return Loss	- 26.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.162 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	December 01, 2003

DASY5 Validation Report for Head TSL

Date: 15.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 749

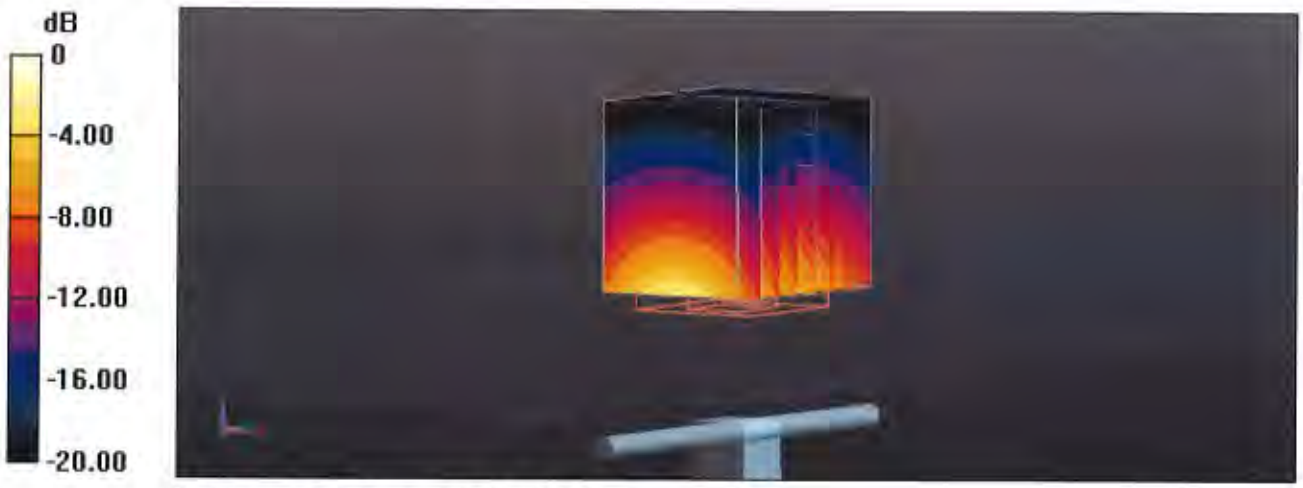
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.88 S/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.54, 4.54, 4.54); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

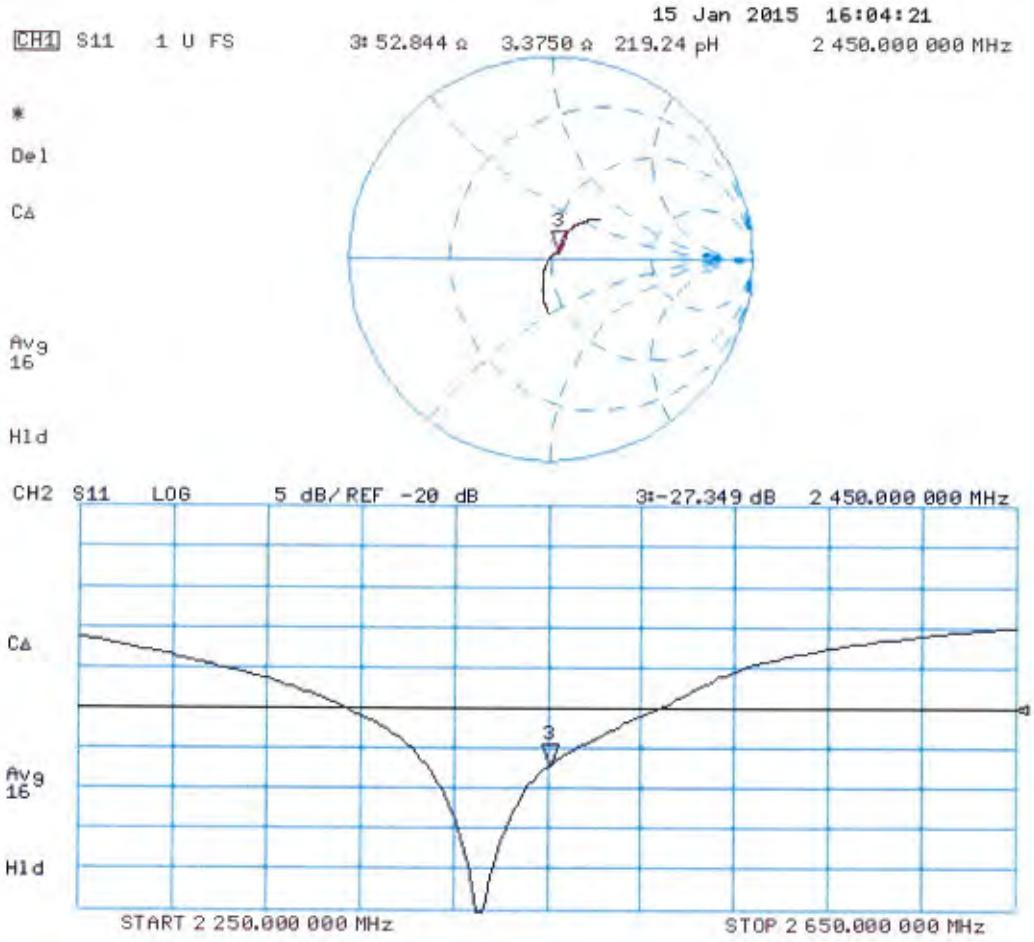
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.2 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 27.8 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.17 W/kg
Maximum value of SAR (measured) = 17.5 W/kg



0 dB = 17.5 W/kg = 12.43 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 15.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 749

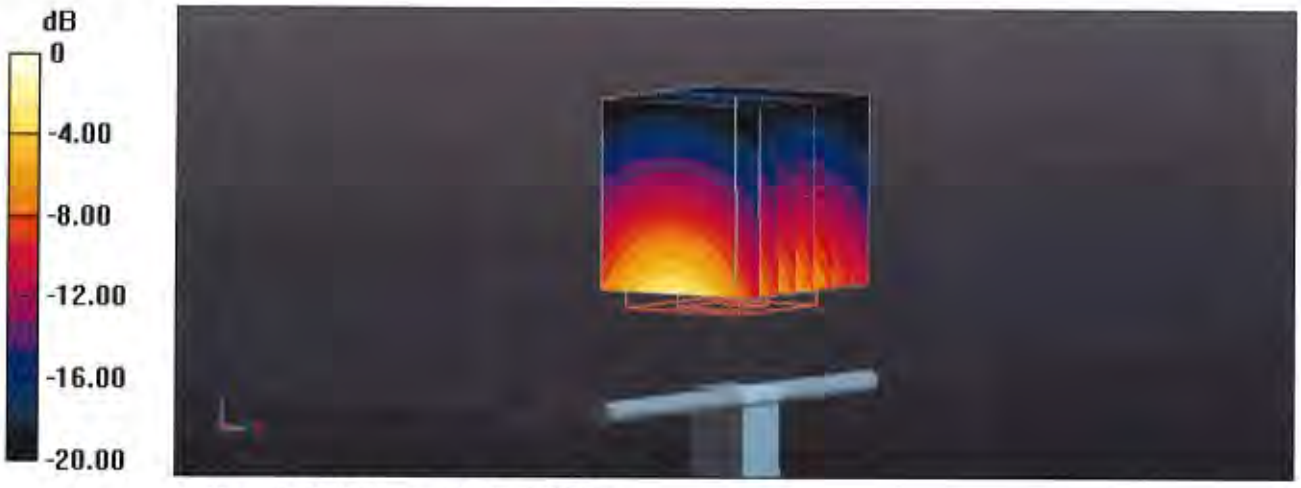
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.03 S/m; ε_r = 51.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

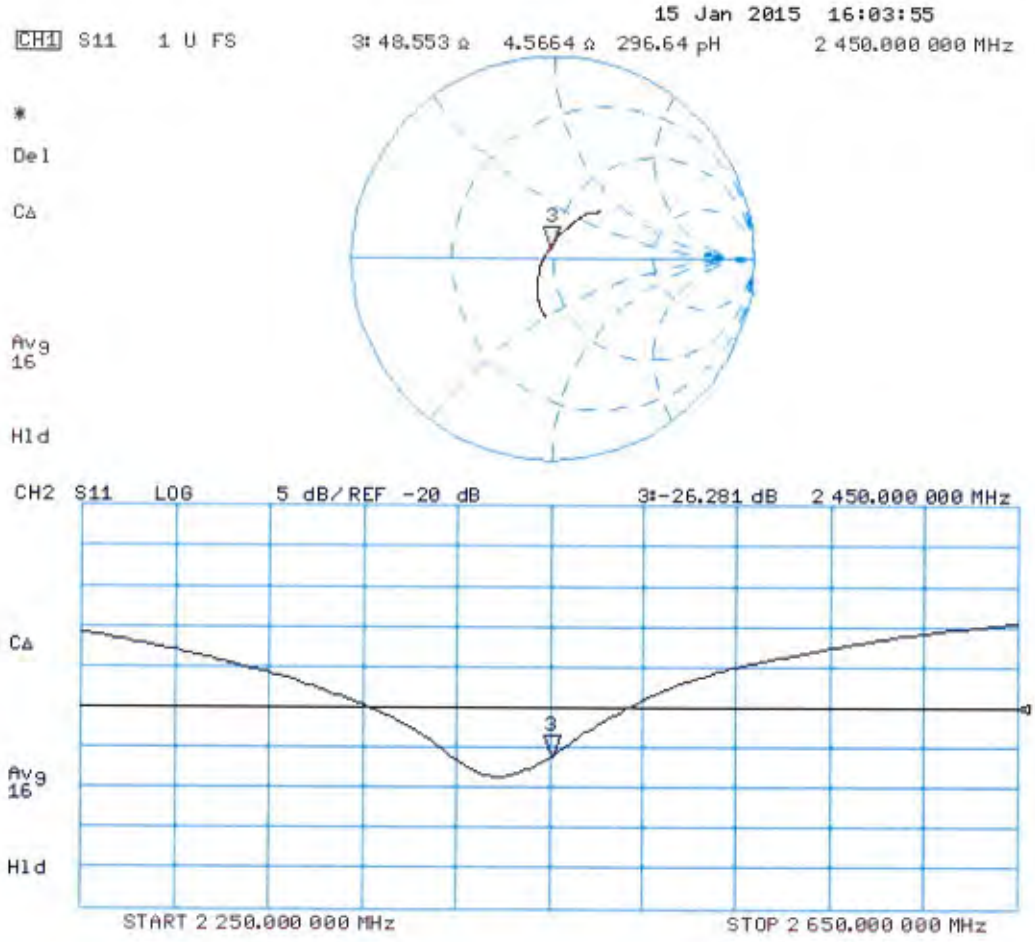
Dipole Calibration for Body Tissue 2/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.78 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 27.4 W/kg
SAR(1 g) = 13 W/kg; SAR(10 g) = 5.96 W/kg
Maximum value of SAR (measured) = 16.9 W/kg



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

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 0108

Client **TCC Microsoft**

Certificate No: D2600V2-1056_Jan15

CALIBRATION CERTIFICATE

Object	D2600V2 - SN: 1056
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	January 19, 2015

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	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 19, 2015

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.8 ± 6 %	2.05 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.5 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**56.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.44 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**25.5 W/kg ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.1 ± 6 %	2.21 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	14.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**55.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.8 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.4 Ω - 4.2 jΩ
Return Loss	- 27.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.9 Ω - 4.0 jΩ
Return Loss	- 25.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.150 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	August 14, 2012

Date: 19.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1056

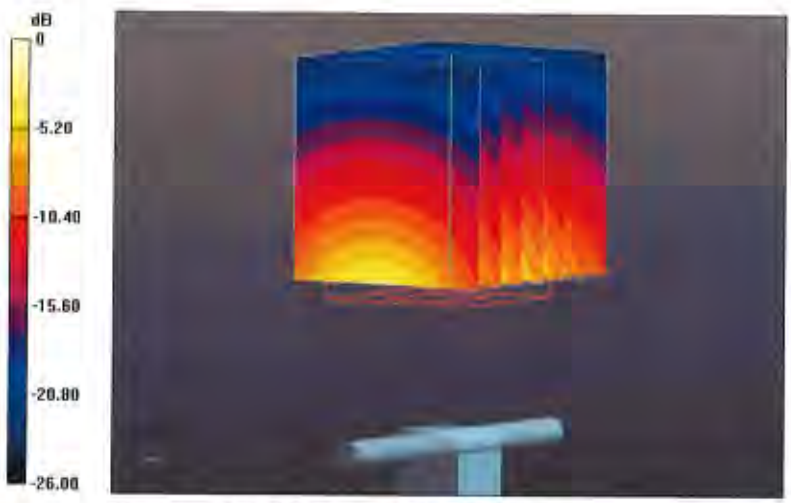
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.05 S/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.49, 4.49, 4.49); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

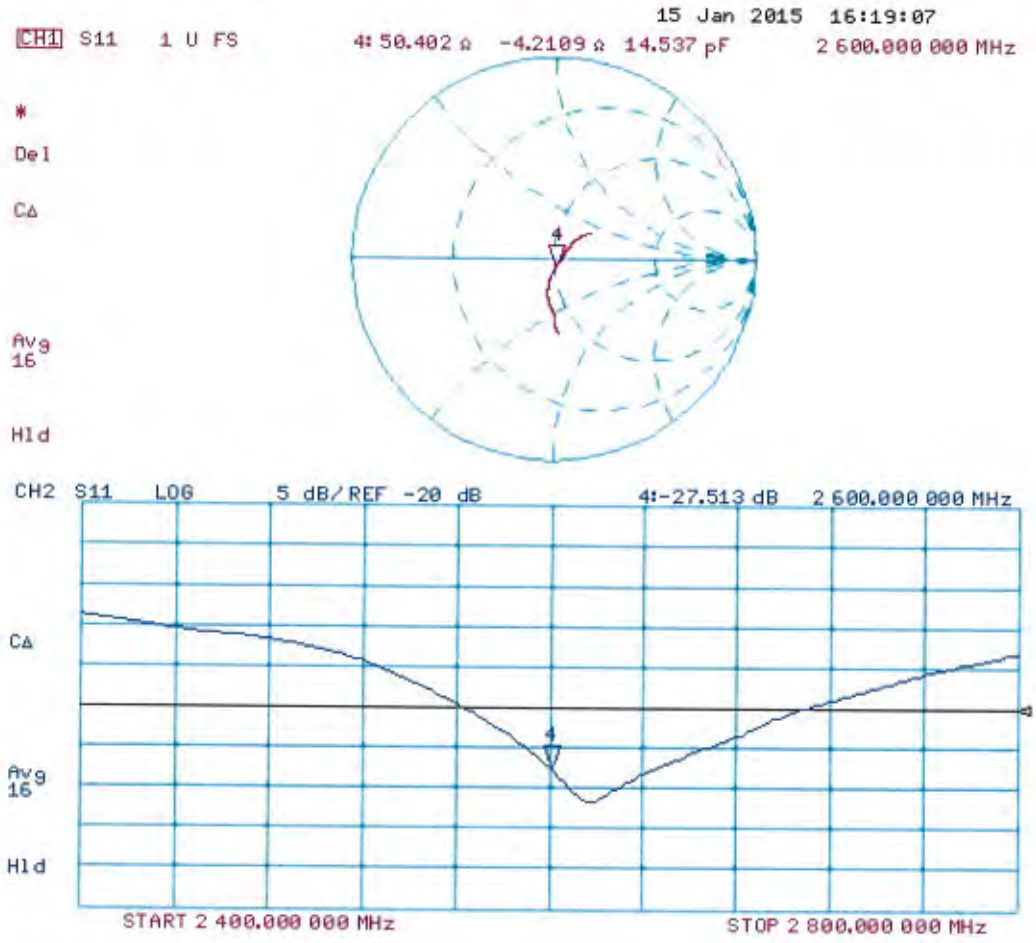
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 101.5 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 30.7 W/kg
SAR(1 g) = 14.5 W/kg; SAR(10 g) = 6.44 W/kg
Maximum value of SAR (measured) = 19.2 W/kg



0 dB = 19.2 W/kg = 12.83 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 15.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1056

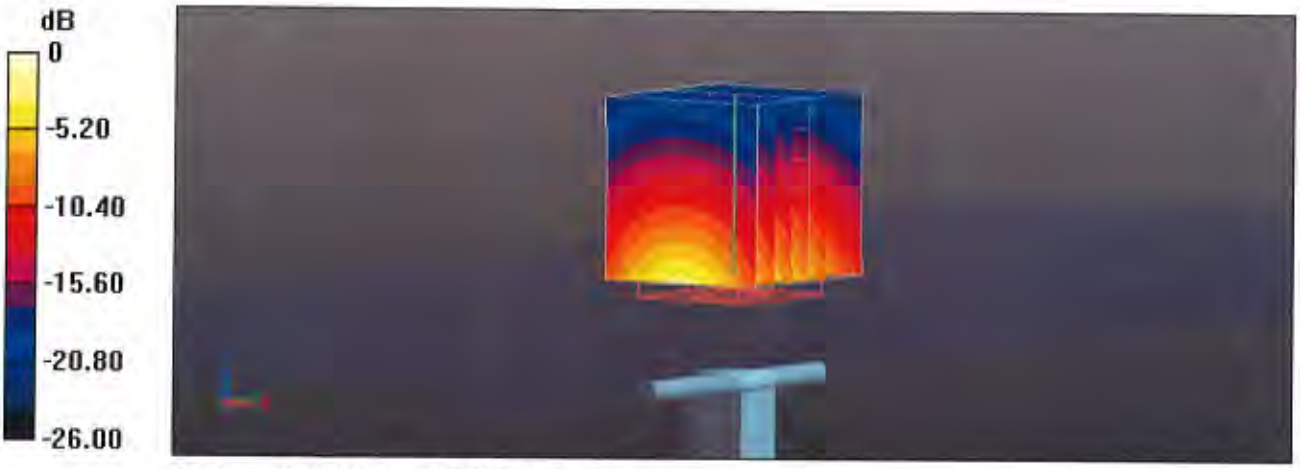
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.21 S/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.13, 4.13, 4.13); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

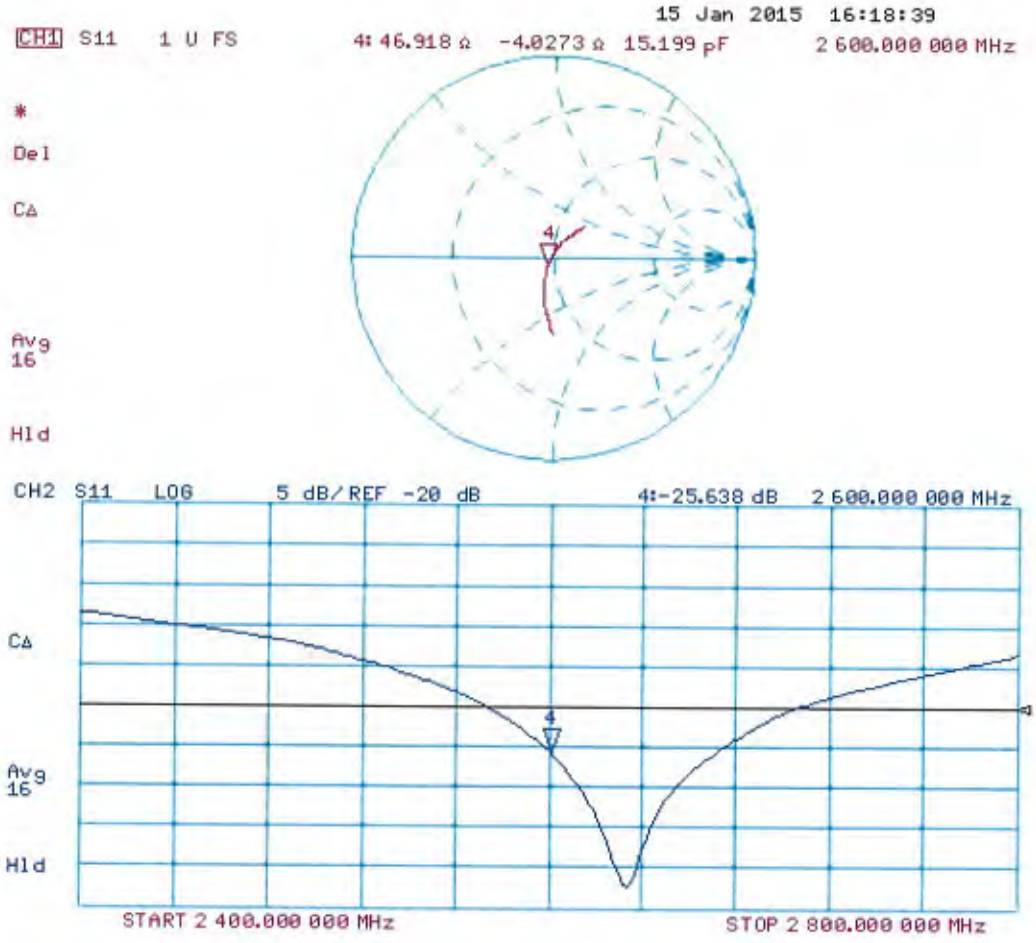
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 97.02 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 29.8 W/kg
SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.25 W/kg
Maximum value of SAR (measured) = 19.1 W/kg



0 dB = 19.1 W/kg = 12.81 dBW/kg

Impedance Measurement Plot for Body TSL



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

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Accreditation No.: SCS 0108

Client TCC Microsoft

Certificate No: D5GHzV2-1048_Jan15

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN:1048
Calibration procedure(s)	QA CAL-22.v2 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	January 13, 2015

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	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe EX3DV4	SN: 3503	30-Dec-14 (No. EX3-3503_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-13)	In house check: Oct-16
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

	Name	Function	Signature
Calibrated by:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 14, 2015

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5500 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.3 ± 6 %	4.56 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.89 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**79.0 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.25 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.5 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.1 ± 6 %	4.66 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.41 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**84.1 W / kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.41 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.1 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.9 ± 6 %	4.86 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.8 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.33 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.3 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.6 ± 6 %	4.97 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.14 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**81.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.31 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**23.1 W/kg ± 19.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.4 ± 6 %	5.18 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.89 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**78.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.24 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**22.4 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	49.4 ± 6 %	5.42 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.42 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**74.4 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.07 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.8 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	49.2 ± 6 %	5.55 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.49 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**75.0 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.0 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.9 ± 6 %	5.82 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.85 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**78.7 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.18 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.9 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5600 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.7 ± 6 %	5.96 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.77 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**77.9 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.15 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**21.6 W/kg ± 19.5 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.4 ± 6 %	6.25 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.58 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**76.0 W/kg ± 19.9 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.09 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.9 W/kg ± 19.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	50.9 Ω - 6.8 jΩ
Return Loss	- 21.2 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	51.0 Ω - 6.8 jΩ
Return Loss	- 23.4 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	55.9 Ω - 5.7 jΩ
Return Loss	- 22.3 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	58.5 Ω - 3.6 jΩ
Return Loss	- 21.4 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	57.6 Ω - 5.5 jΩ
Return Loss	- 21.2 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	53.8 Ω + 7.1 jΩ
Return Loss	- 22.2 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	53.7 Ω + 4.0 jΩ
Return Loss	- 25.6 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	50.4 Ω + 7.3 jΩ
Return Loss	- 22.7 dB

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	47.9 Ω + 8.6 jΩ
Return Loss	- 20.9 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	51.4 Ω + 9.0 jΩ
Return Loss	- 21.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.193 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. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
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	June 09, 2006

DASY5 Validation Report for Head TSL

Date: 12.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1048

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.56 S/m; ε_r = 36.3; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 4.66 S/m; ε_r = 36.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 4.86 S/m; ε_r = 35.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 4.97 S/m; ε_r = 35.6; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.18 S/m; ε_r = 35.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.51, 5.51, 5.51); Calibrated: 30.12.2014, ConvF(5.21, 5.21, 5.21); Calibrated: 30.12.2014, ConvF(5.12, 5.12, 5.12); Calibrated: 30.12.2014, ConvF(4.92, 4.92, 4.92); Calibrated: 30.12.2014, ConvF(4.9, 4.9, 4.9); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

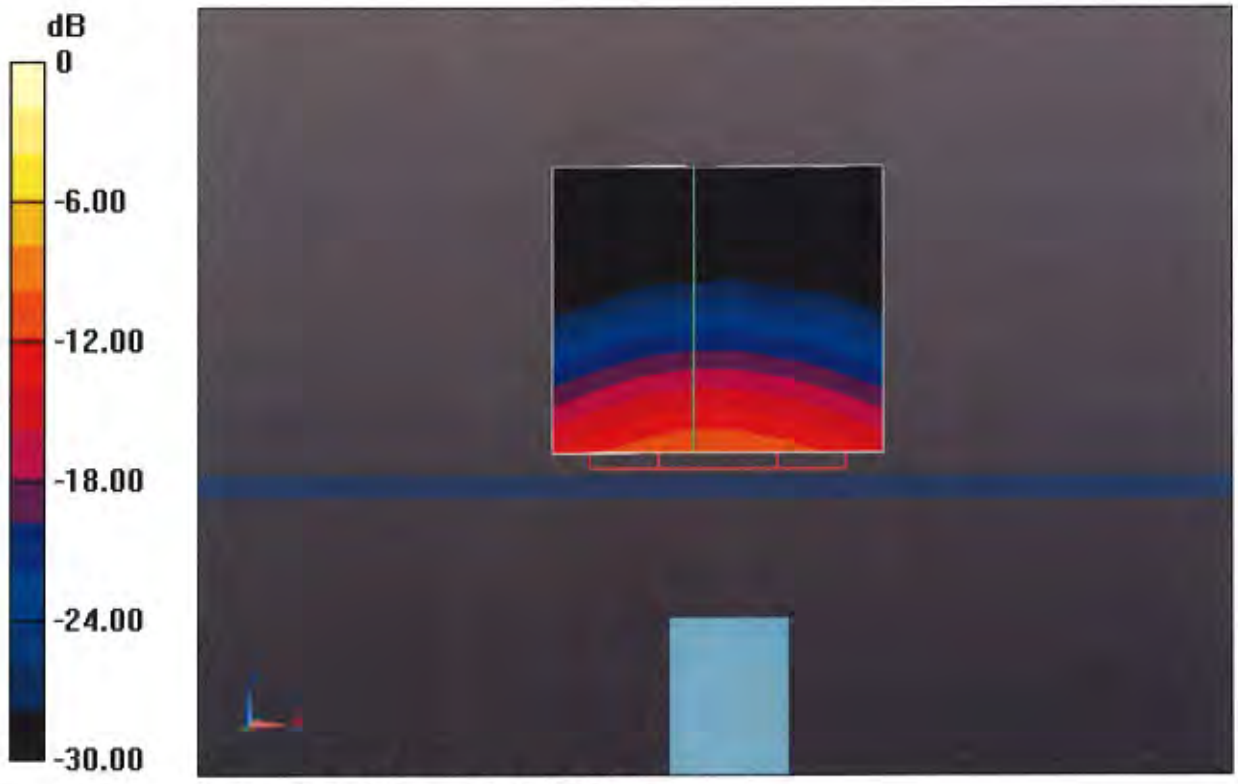
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.32 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 28.9 W/kg
SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.25 W/kg
Maximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 66.44 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 31.7 W/kg
SAR(1 g) = 8.41 W/kg; SAR(10 g) = 2.41 W/kg
Maximum value of SAR (measured) = 19.2 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.59 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 32.3 W/kg
SAR(1 g) = 8.18 W/kg; SAR(10 g) = 2.33 W/kg
Maximum value of SAR (measured) = 19.1 W/kg

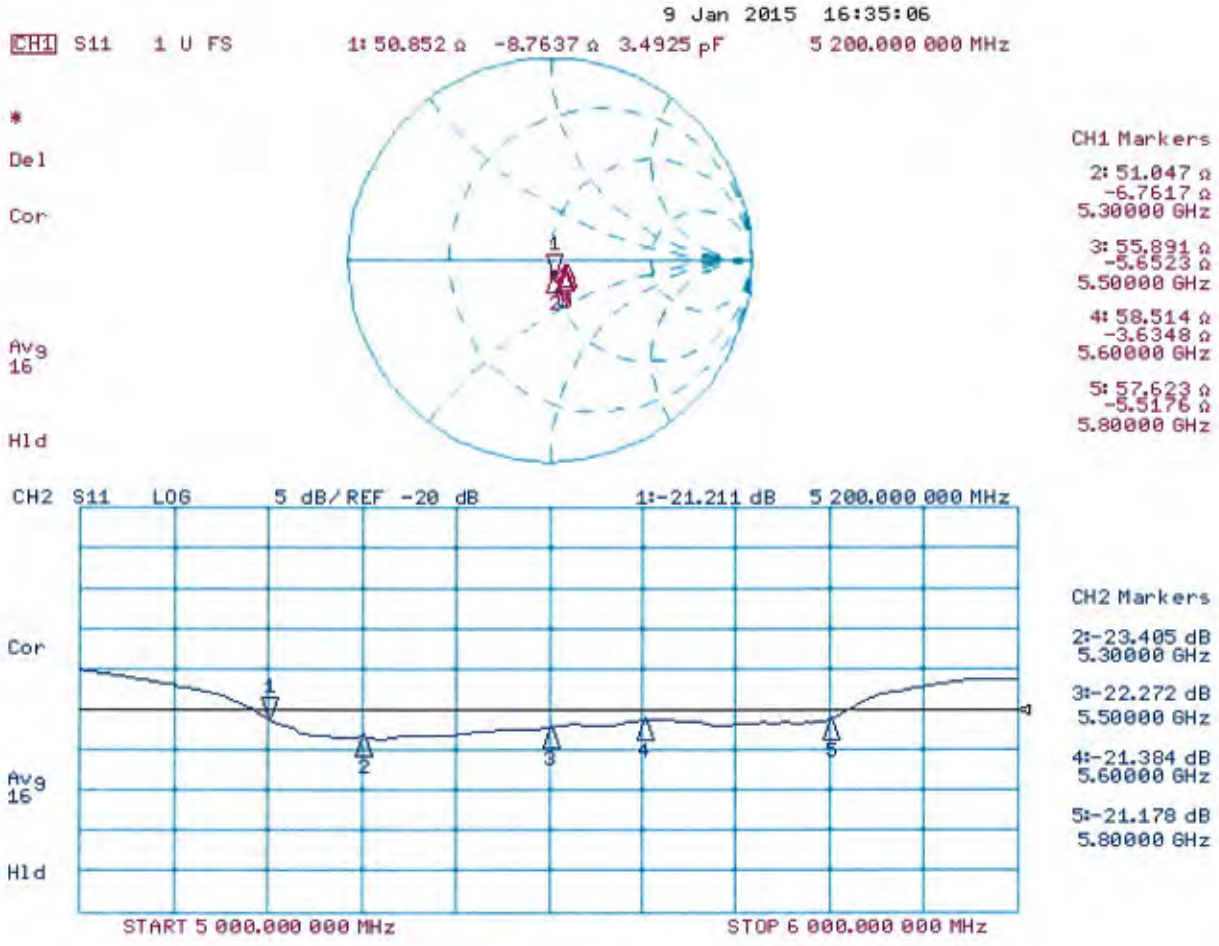
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.16 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 32.3 W/kg
SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.31 W/kg
Maximum value of SAR (measured) = 19.1 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.81 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 32.8 W/kg
SAR(1 g) = 7.89 W/kg; SAR(10 g) = 2.24 W/kg
Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 17.8 W/kg = 12.50 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN:1048

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.42 S/m; ε_r = 49.4; ρ = 1000 kg/m^3 , Medium parameters used: f = 5300 MHz; σ = 5.55 S/m; ε_r = 49.2; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 5.82 S/m; ε_r = 48.9; ρ = 1000 kg/m^3 , Medium parameters used: f = 5600 MHz; σ = 5.96 S/m; ε_r = 48.7; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.25 S/m; ε_r = 48.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.95, 4.95, 4.95); Calibrated: 30.12.2014, ConvF(4.78, 4.78, 4.78); Calibrated: 30.12.2014, ConvF(4.45, 4.45, 4.45); Calibrated: 30.12.2014, ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2014, ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

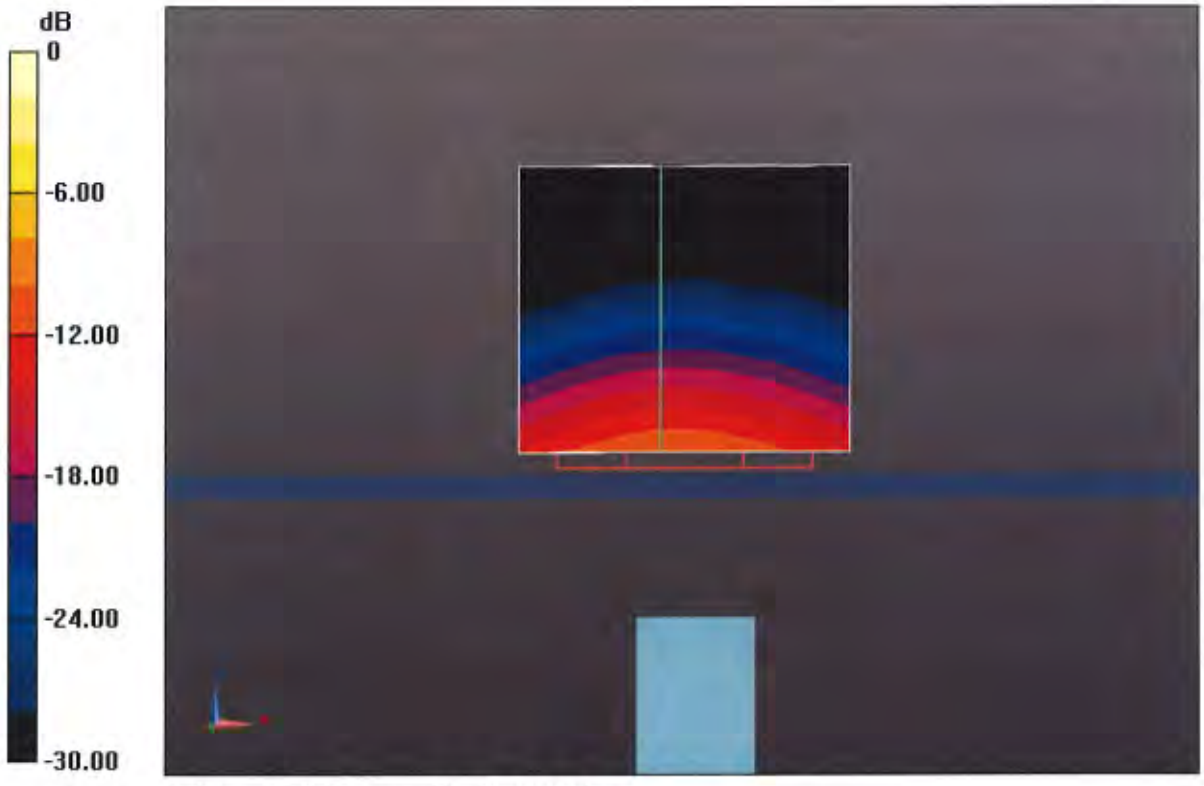
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.44 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 29.2 W/kg
SAR(1 g) = 7.42 W/kg; SAR(10 g) = 2.07 W/kg
Maximum value of SAR (measured) = 17.0 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.11 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 30.3 W/kg
SAR(1 g) = 7.49 W/kg; SAR(10 g) = 2.09 W/kg
Maximum value of SAR (measured) = 17.5 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.45 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 33.7 W/kg
SAR(1 g) = 7.85 W/kg; SAR(10 g) = 2.18 W/kg
Maximum value of SAR (measured) = 18.6 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 57.07 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 34.4 W/kg
SAR(1 g) = 7.77 W/kg; SAR(10 g) = 2.15 W/kg
Maximum value of SAR (measured) = 18.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 55.75 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 35.6 W/kg
SAR(1 g) = 7.58 W/kg; SAR(10 g) = 2.09 W/kg
Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 17.0 W/kg = 12.30 dBW/kg

Impedance Measurement Plot for Body TSL