APPENDIX A: SYSTEM CHECKING SCANS

Plot 1

Date/Time: 2015-07-20 11:00:27 AM

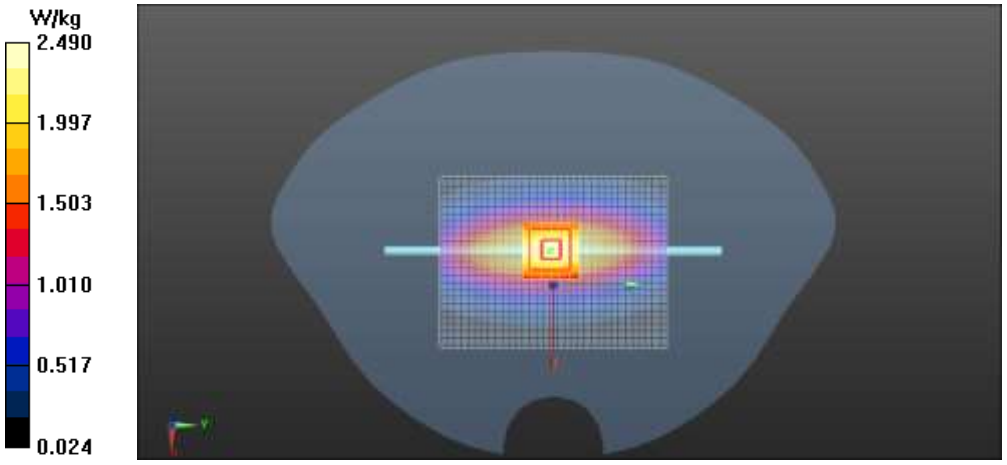
Test Laboratory: TCC Microsoft
Type: D750V3; Serial: D750V3 - SN:1048

Communication System: CW 750MHz
Frequency: **750 MHz**; Duty Cycle: 1:1
Medium: Head 750 SAR5; Medium Notes: Medium Temperature: t=20.6C
Medium parameters used: f = 750 MHz; σ = 0.923 S/m; ε_r = 40.983; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.95, 8.95, 8.95); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAM 3; Type: SM 000 T01 DA; Serial: TP - 1563
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 50.61 V/m
Fast SAR: SAR(1 g) = 2.18 W/kg
Fast SAR(10 g) = 1.49 W/kg
Maximum value of SAR (interpolated) = 2.49 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.61 V/m
Peak SAR (extrapolated) = 3.18 W/kg
SAR(1 g) = 2.16 W/kg
SAR(10 g) = 1.42 W/kg
Power Drift = -0.00 dB
Maximum value of SAR (measured) = 2.51 W/kg



Plot 2

Date/Time: 2015-07-16 9:42:00 AM

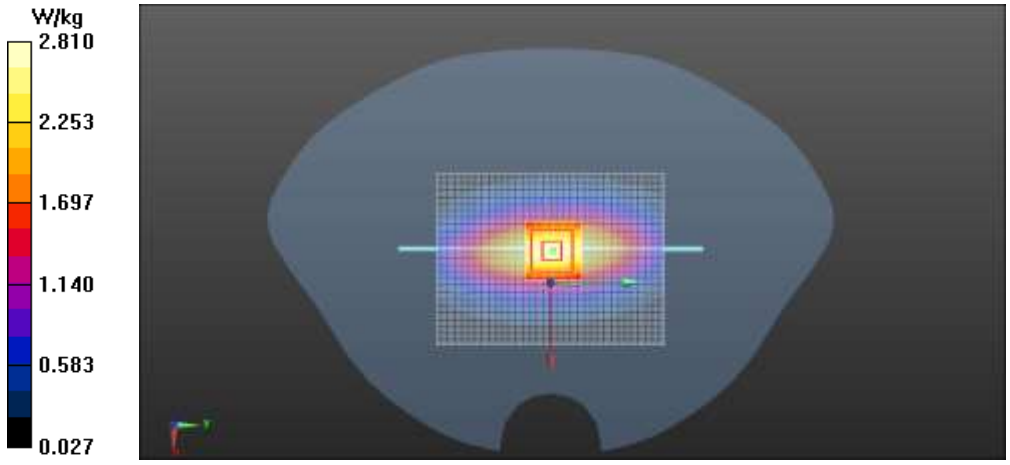
Test Laboratory: TCC Microsoft
Type: D835V2; Serial: 4d005

Communication System: CW 835MHz
Frequency: **835 MHz**; Duty Cycle: 1:1
Medium: Head 835 SAR1; Medium Notes: Medium Temperature: t=20.9
Medium parameters used: f = 835 MHz; σ = 0.916 S/m; ε_r = 42.188; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.88, 8.88, 8.88); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - SAM1; Type: TP - 01097; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 53.42 V/m
Fast SAR: SAR(1 g) = 2.44 W/kg
Fast SAR(10 g) = 1.65 W/kg
Maximum value of SAR (interpolated) = 2.81 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.42 V/m
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.42 W/kg
SAR(10 g) = 1.58 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 2.82 W/kg



Plot 3

Date/Time: 2015-07-17 9:32:17 AM

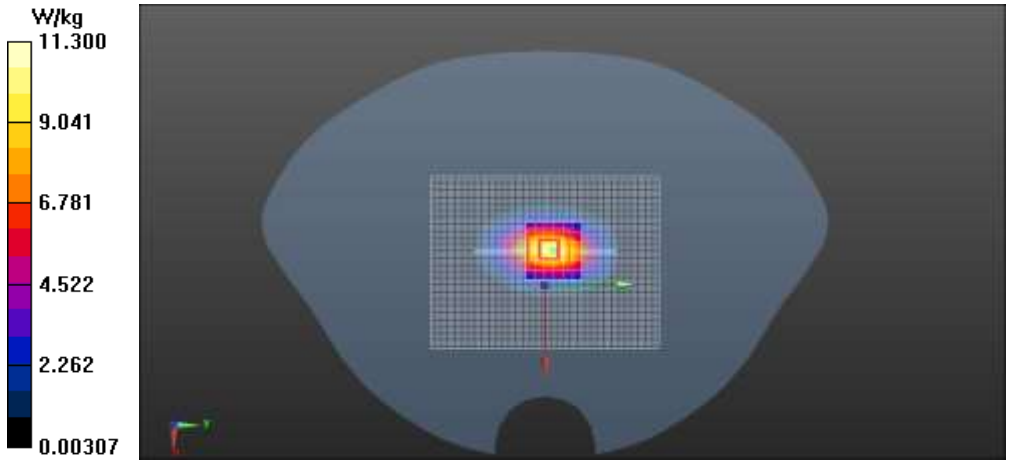
Test Laboratory: TCC Microsoft
Type: D1750V2; Serial: D1750V2 - SN:1086

Communication System: CW 1750MHz
Frequency: **1750 MHz**; Duty Cycle: 1:1
Medium: Head 1750 SAR3; Medium Notes: Medium Temperature: t= 22.5 C
Medium parameters used: f = 1750 MHz; σ = 1.343 S/m; ε_r = 39.221; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.77, 7.77, 7.77); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - SAM1; Type: QD 000 P40 CD; Serial: TP - 1770
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 84.37 V/m
Fast SAR: SAR(1 g) = 8.75 W/kg
Fast SAR(10 g) = 4.78 W/kg
Maximum value of SAR (interpolated) = 11.3 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 84.37 V/m
Peak SAR (extrapolated) = 15.7 W/kg
SAR(1 g) = 8.64 W/kg
SAR(10 g) = 4.61 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 10.8 W/kg



Plot 4

Date/Time: 2015-07-17 9:33:15 AM

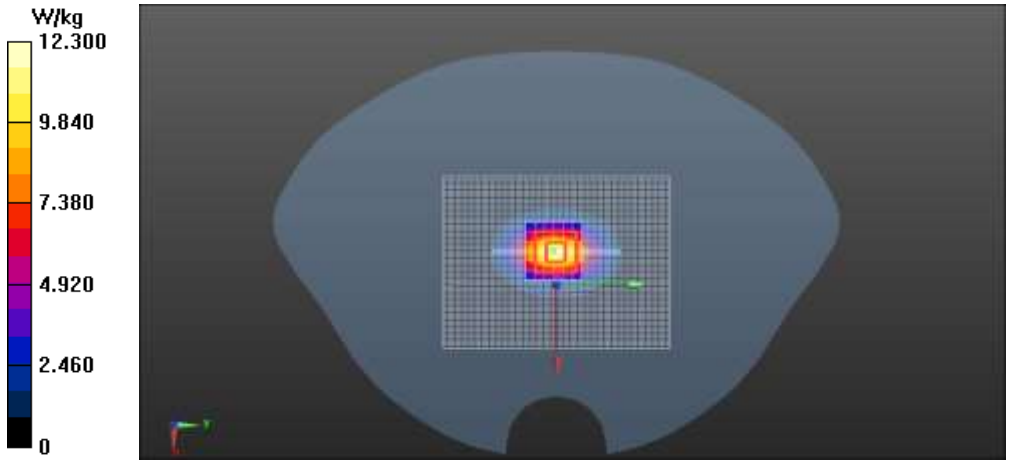
Test Laboratory: TCC Microsoft
Type: D1900V2; Serial: 509

Communication System: CW 1900MHz
Frequency: **1900 MHz**; Duty Cycle: 1:1
Medium: Head 1900 SAR4; Medium Notes: Medium Temperature: t=20.9 C
Medium parameters used: f = 1900 MHz; σ = 1.369 S/m; ε_r = 41.506; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.83, 7.83, 7.83); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - SAM1; Type: QD000 P40 CA; Serial: TP - 1274
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (61x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 89.75 V/m
Fast SAR: SAR(1 g) = 9.5 W/kg
Fast SAR(10 g) = 4.99 W/kg
Maximum value of SAR (interpolated) = 12.3 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.75 V/m
Peak SAR (extrapolated) = 17.6 W/kg
SAR(1 g) = 9.62 W/kg
SAR(10 g) = 5.02 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 12.2 W/kg



Plot 5

Date/Time: 2015-07-20 9:28:13 AM

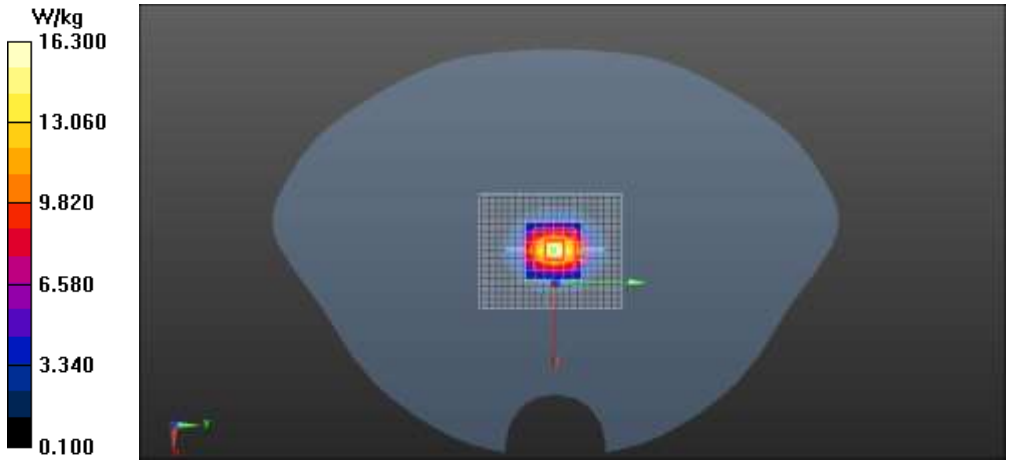
Test Laboratory: TCC Microsoft
Type: D2450V2; Serial: D2450V2 - SN:883

Communication System: CW 2450MHz
Frequency: **2450 MHz**; Duty Cycle: 1:1
Medium: Head 2450 SAR2; Medium Notes: Medium Temperature: t=20.8C
Medium parameters used: f = 2450 MHz; σ = 1.802 S/m; ε_r = 38.012; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3823
- ConvF(6.95, 6.95, 6.95); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - SAM2; Type: QD 000P40 CD; Serial: TP - 1771
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (41x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 88.95 V/m
Fast SAR: SAR(1 g) = 12.4 W/kg
Fast SAR(10 g) = 5.23 W/kg
Maximum value of SAR (interpolated) = 18.2 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.95 V/m
Peak SAR (extrapolated) = 25.7 W/kg
SAR(1 g) = 12.3 W/kg
SAR(10 g) = 5.71 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 16.3 W/kg



Plot 6

Date/Time: 2015-07-21 9:14:51 AM

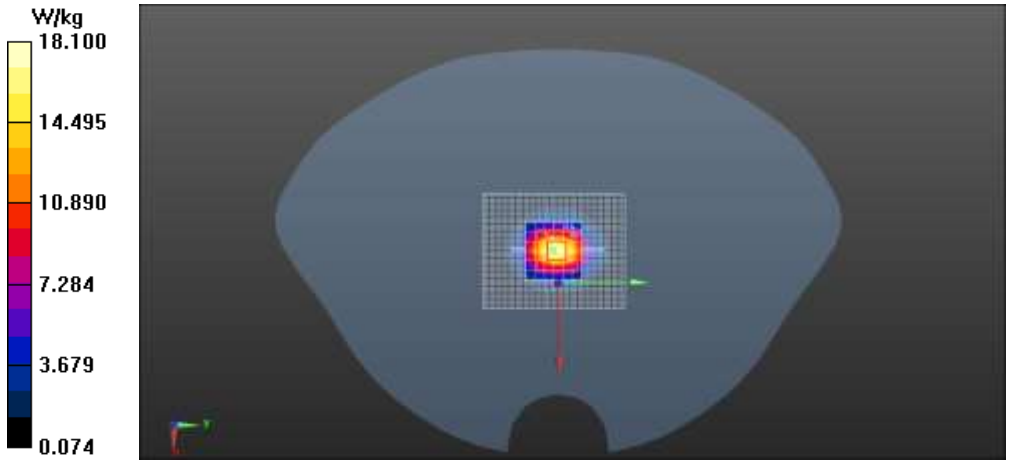
Test Laboratory: TCC Microsoft
Type: D2600V2; Serial: D2600V2 - SN:1082

Communication System: CW 2600MHz
Frequency: **2600 MHz**; Duty Cycle: 1:1
Medium: Head 2450 SAR2; Medium Notes: Medium Temperature: t=20.9C
Medium parameters used: f = 2600 MHz; σ = 1.96 S/m; ε_r = 38.661; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:
- Probe: EX3DV4 - SN3837
- ConvF(6.91, 6.91, 6.91); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - SAM2; Type: QD 000P40 CD; Serial: TP - 1771
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (41x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 89.72 V/m
Fast SAR: SAR(1 g) = 13.8 W/kg
Fast SAR(10 g) = 5.89 W/kg
Maximum value of SAR (interpolated) = 20.2 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.72 V/m
Peak SAR (extrapolated) = 29.3 W/kg
SAR(1 g) = 13.6 W/kg
SAR(10 g) = 6.08 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 18.1 W/kg



Plot 7

Date/Time: 2015-07-24 9:46:46 AM

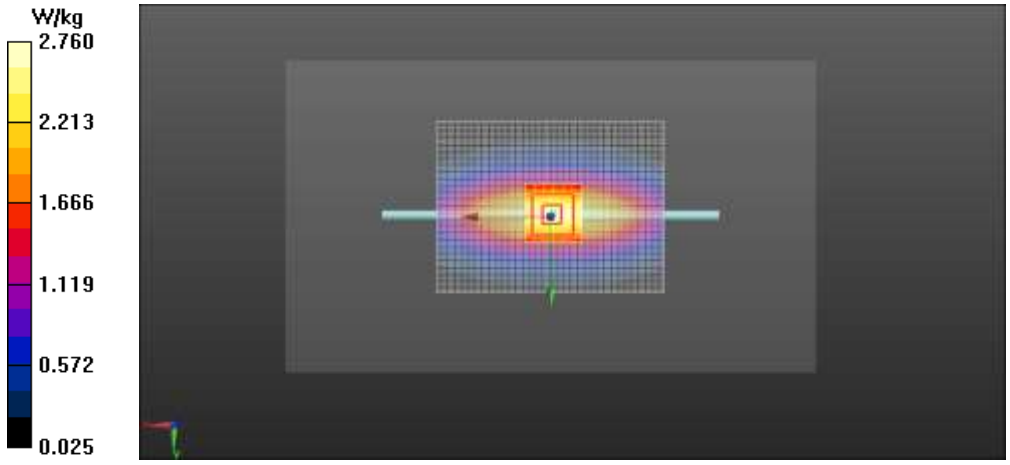
Test Laboratory: TCC Microsoft
Type: D750V3; Serial: D750V3 - SN:1048

Communication System: CW 750MHz
Frequency: **750 MHz**; Duty Cycle: 1:1
Medium: Body 750 SAR5; Medium Notes: Medium Temperature: t=20.9C
Medium parameters used: f = 750 MHz; σ = 1.005 S/m; ε_r = 53.097; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.75, 8.75, 8.75); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAR5 - TFP; Type: QD 000 P51 CA; Serial: 1130/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 50.56 V/m
Fast SAR: SAR(1 g) = 2.4 W/kg
Fast SAR(10 g) = 1.63 W/kg
Maximum value of SAR (interpolated) = 2.76 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.56 V/m
Peak SAR (extrapolated) = 3.44 W/kg
SAR(1 g) = 2.35 W/kg
SAR(10 g) = 1.56 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 2.73 W/kg



Plot 8

Date/Time: 2015-07-22 7:17:07 PM

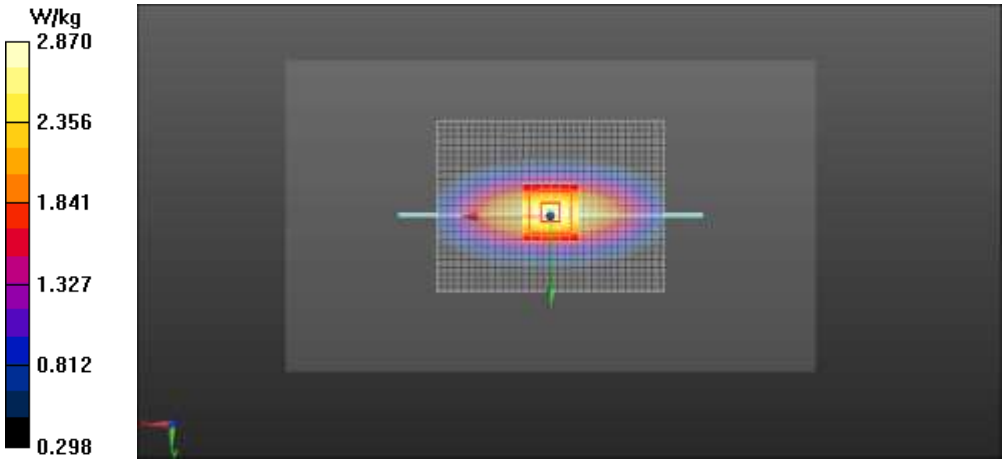
Test Laboratory: TCC Microsoft
Type: D835V2; Serial: 4d005

Communication System: CW 835MHz
Frequency: **835 MHz**; Duty Cycle: 1:1
Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=20.8
Medium parameters used: f = 835 MHz; σ = 0.944 S/m; ε_r = 53.432; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.84, 8.84, 8.84); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - TFP; Type: QD 000 P51 CA; Serial: 1125/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=15mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 52.91 V/m
Fast SAR: SAR(1 g) = 2.48 W/kg
Fast SAR(10 g) = 1.67 W/kg
Maximum value of SAR (interpolated) = 2.86 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.91 V/m
Peak SAR (extrapolated) = 3.61 W/kg
SAR(1 g) = 2.46 W/kg
SAR(10 g) = 1.64 W/kg
Power Drift = -0.00 dB
Maximum value of SAR (measured) = 2.87 W/kg



Plot 9

Date/Time: 2015-07-14 11:36:32 AM

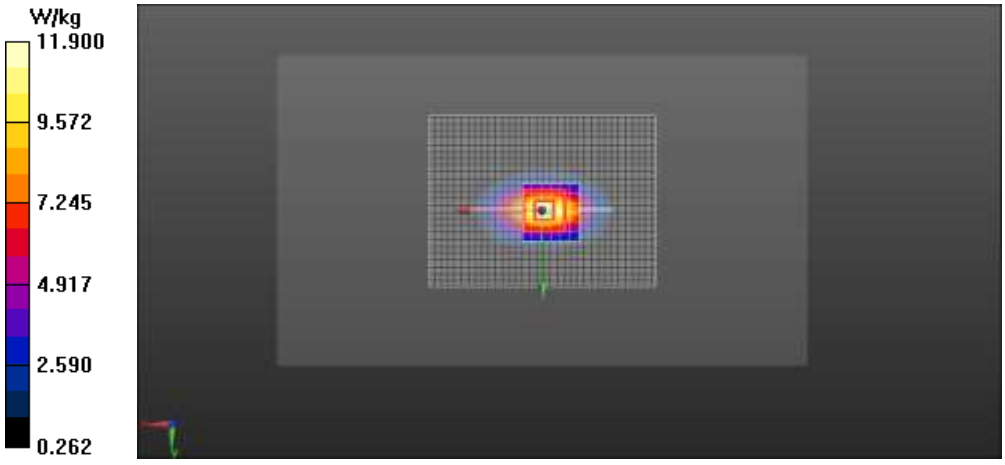
Test Laboratory: TCC Microsoft
Type: D1750V2; Serial: D1750V2 - SN:1086

Communication System: CW 1750MHz
Frequency: **1750 MHz**; Duty Cycle: 1:1
Medium: Body 1750 SAR3; Medium Notes: Medium Temperature: t= 20.5
Medium parameters used: f = 1750 MHz; σ = 1.438 S/m; ε_r = 50.91; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.48, 7.48, 7.48); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - TFP; Type: QD 000 P51 CA; Serial: TP - 1125/2
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 86.27 V/m
Fast SAR: SAR(1 g) = 9.54 W/kg
Fast SAR(10 g) = 5.11 W/kg
Maximum value of SAR (interpolated) = 12.4 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 86.27 V/m
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.51 W/kg
SAR(10 g) = 5.11 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 11.9 W/kg



Plot 10

Date/Time: 2015-07-14 9:29:59 AM

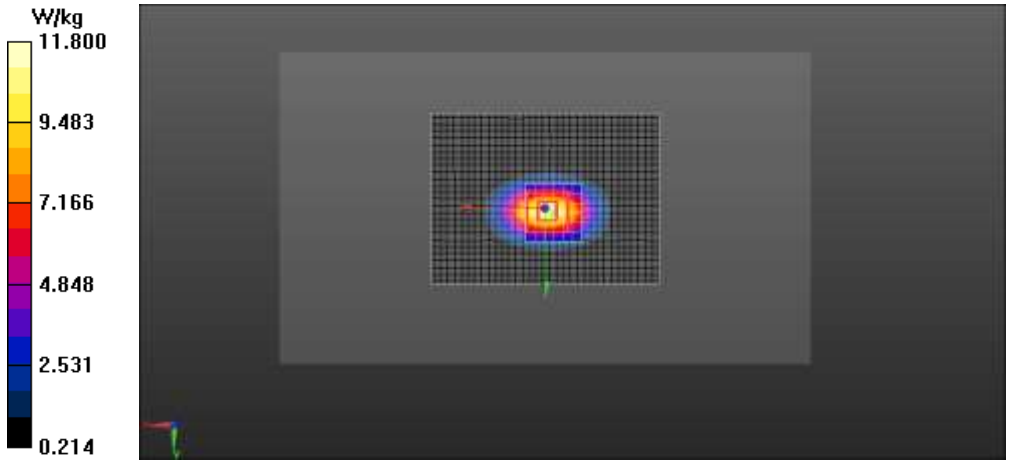
Test Laboratory: TCC Microsoft
Type: D1900V2; Serial: 509

Communication System: CW 1900MHz
Frequency: **1900 MHz**; Duty Cycle: 1:1
Medium: Body 1900 SAR4; Medium Notes: Medium Temperature: t=21.3 C
Medium parameters used: f = 1900 MHz; σ = 1.508 S/m; ε_r = 53.741; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.41, 7.41, 7.41); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - TFP; Type: QD000 P51 CA; Serial: S/N 1148/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 82.94 V/m
Fast SAR: SAR(1 g) = 9.29 W/kg
Fast SAR(10 g) = 4.82 W/kg
Maximum value of SAR (interpolated) = 12.3 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 82.94 V/m
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.34 W/kg
SAR(10 g) = 4.9 W/kg
Power Drift = -0.00 dB
Maximum value of SAR (measured) = 11.8 W/kg



Plot 11

Date/Time: 2015-07-24 2:51:18 PM

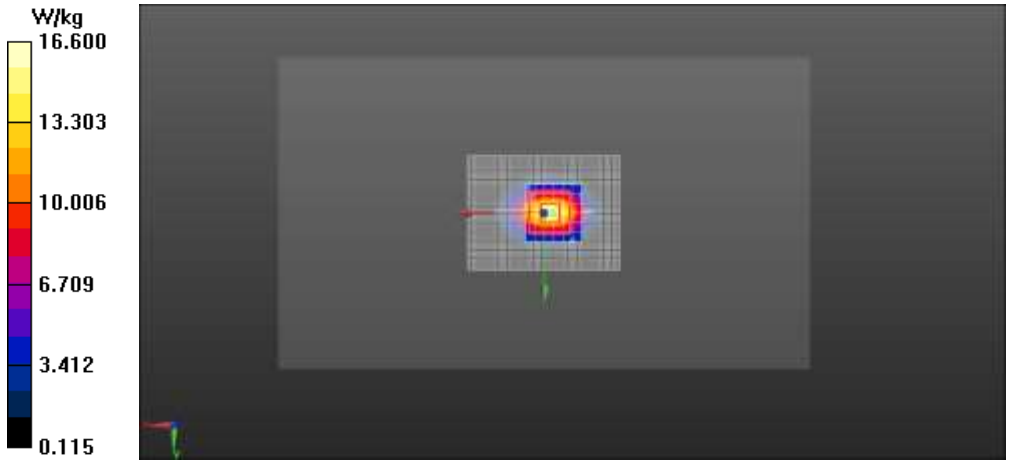
Test Laboratory: TCC Microsoft
Type: D2450V2; Serial: D2450V2 - SN:883

Communication System: CW 2450MHz
Frequency: **2450 MHz**; Duty Cycle: 1:1
Medium: Body 2600 SAR2; Medium Notes: Medium Temperature: t=21.5C
Medium parameters used: f = 2450 MHz; σ = 1.963 S/m; ε_r = 50.898; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3823
- ConvF(6.95, 6.95, 6.95); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - TFP ; Type: QD 000 P51 CA; Serial: TP - 1130/2
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 85.00 V/m
Fast SAR: SAR(1 g) = 12.9 W/kg
Fast SAR(10 g) = 5.88 W/kg
Maximum value of SAR (interpolated) = 17.3 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.00 V/m
Peak SAR (extrapolated) = 26.0 W/kg
SAR(1 g) = 12.8 W/kg
SAR(10 g) = 5.98 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 16.6 W/kg



Plot 12

Date/Time: 2015-08-03 6:04:10 PM

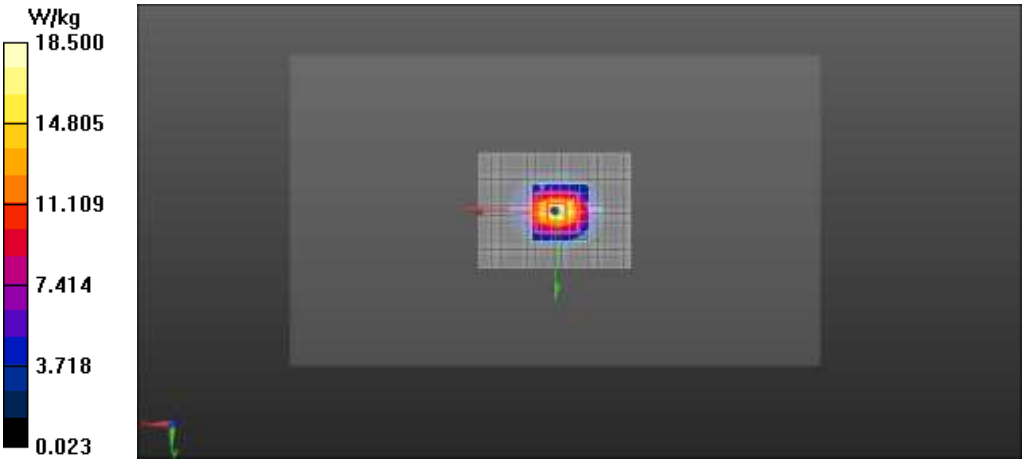
Test Laboratory: TCC Microsoft
Type: D2600V2; Serial: D2600V2 - SN:1082

Communication System: CW 2600MHz
Frequency: **2600 MHz**; Duty Cycle: 1:1
Medium: Body 2600 SAR2; Medium Notes: Medium Temperature: t=20.7C
Medium parameters used: f = 2600 MHz; σ = 2.168 S/m; ε_r = 50.363; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3837
- ConvF(7, 7, 7); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - TFP ; Type: QD 000 P51 CA; Serial: TP - 1130/2
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

d=10mm, Pin=250mW/Area Scan (81x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 85.04 V/m
Fast SAR: SAR(1 g) = 13.8 W/kg
Fast SAR(10 g) = 6.06 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 = 85.04 V/m
Peak SAR (extrapolated) = 28.9 W/kg
SAR(1 g) = 13.6 W/kg
SAR(10 g) = 6.08 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 18.1 W/kg



APPENDIX B: MEASUREMENT SCANS
Plot H1

Date/Time: 2015-07-20 4:35:17 PM

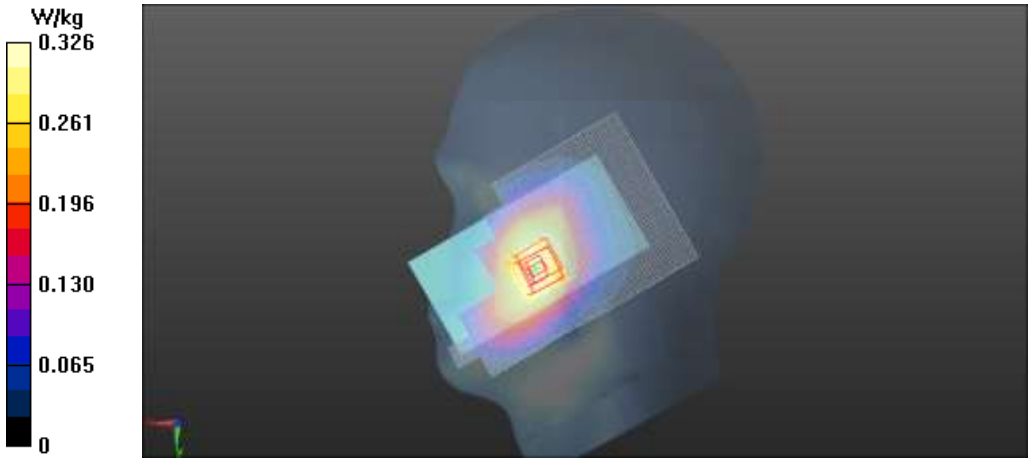
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235266/3

Communication System: LTE700 (Band 12)
Frequency: **711 MHz**; Duty Cycle: 1:1
Medium: Head 750 SAR5; Medium Notes: Medium Temperature: t=20.6C
Medium parameters used: f = 711 MHz; σ = 0.886 S/m; ε_r = 41.53; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.95, 8.95, 8.95); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAM 3; Type: SM 000 T01 DA; Serial: TP - 1563
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE750 (Band 12) - Right/Cheek - CH 23130 - 10MHz - QPSK - 1 RB - Offset 49 - Antenna 1/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 20.11 V/m
Fast SAR: SAR(1 g) = 0.290 W/kg
Fast SAR(10 g) = 0.208 W/kg
Maximum value of SAR (interpolated) = 0.326 W/kg

LTE750 (Band 12) - Right/Cheek - CH 23130 - 10MHz - QPSK - 1 RB - Offset 49 - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.11 V/m
Peak SAR (extrapolated) = 0.364 W/kg
SAR(1 g) = 0.297 W/kg
SAR(10 g) = 0.232 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 0.323 W/kg



Plot H2

Date/Time: 2015-07-22 11:00:52 AM

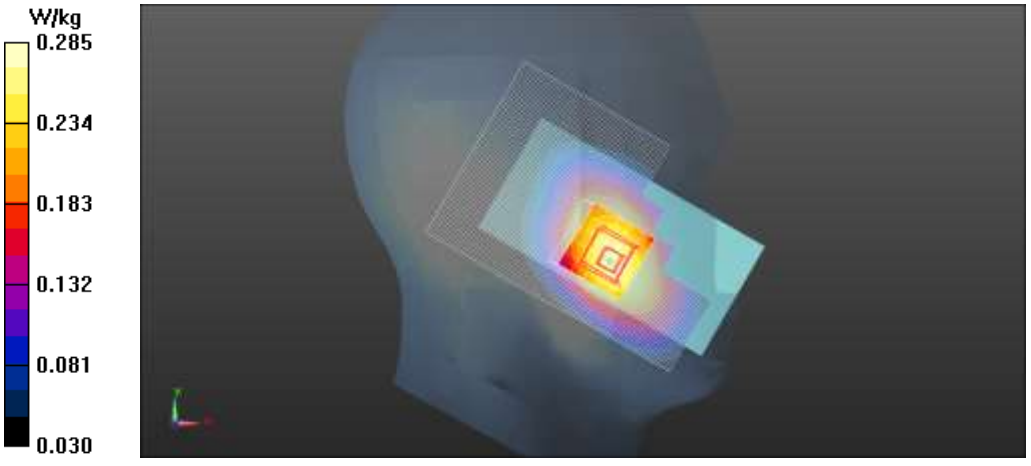
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235266/3

Communication System: LTE700 (Band 17)
Frequency: **711 MHz**; Duty Cycle: 1:1
Medium: Head 750 SAR5; Medium Notes: Medium Temperature: t=21.1C
Medium parameters used: f = 711 MHz; σ = 0.871 S/m; ε_r = 41.249; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.95, 8.95, 8.95); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAM 3; Type: SM 000 T01 DA; Serial: TP - 1563
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE750 (Band 17) - Left/Cheek - CH 23800 - 10MHz - QPSK - 1 RB - Offset 24 - Antenna 1/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 18.80 V/m
Fast SAR: SAR(1 g) = 0.262 W/kg
Fast SAR(10 g) = 0.186 W/kg
Maximum value of SAR (interpolated) = 0.298 W/kg

LTE750 (Band 17) - Left/Cheek - CH 23800 - 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 = 18.80 V/m
Peak SAR (extrapolated) = 0.342 W/kg
SAR(1 g) = 0.271 W/kg
SAR(10 g) = 0.208 W/kg
Power Drift = 0.09 dB
Maximum value of SAR (measured) = 0.285 W/kg



Plot H3

Date/Time: 2015-07-16 10:08:55 AM

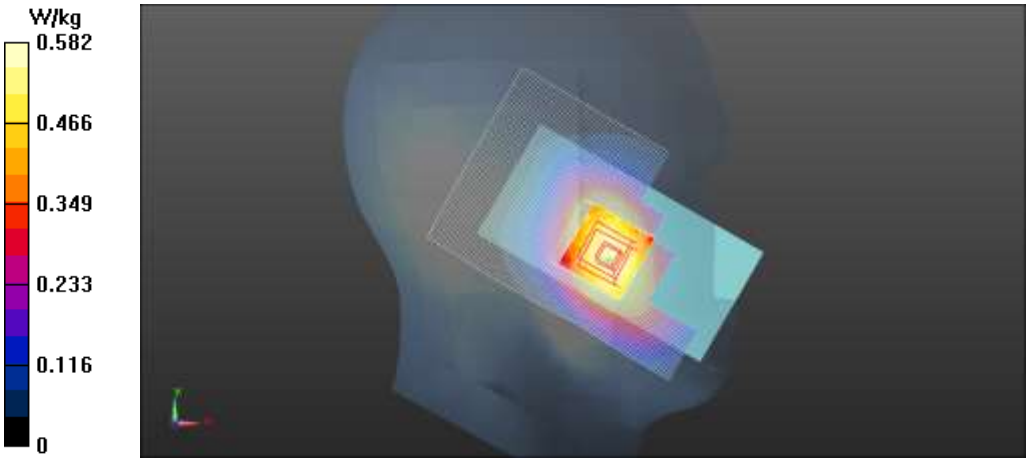
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: 2-slot GPRS850
Frequency: **848.8 MHz**; Duty Cycle: 1:4.19952
Medium: Head 835 SAR1; Medium Notes: Medium Temperature: t=20.9
Medium parameters used: f = 849 MHz; σ = 0.929 S/m; ε_r = 42.038; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.88, 8.88, 8.88); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - SAM1; Type: TP - 01097; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-slot GPRS850 - Left/Cheek - CH 251 Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 24.39 V/m
Fast SAR: SAR(1 g) = 0.513 W/kg
Fast SAR(10 g) = 0.359 W/kg
Maximum value of SAR (interpolated) = 0.582 W/kg

2-slot GPRS850 - Left/Cheek - CH 251 Antenna 2/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 24.39 V/m
Peak SAR (extrapolated) = 0.657 W/kg
SAR(1 g) = 0.527 W/kg
SAR(10 g) = 0.403 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 0.576 W/kg



Plot H4

Date/Time: 2015-07-16 10:52:41 AM

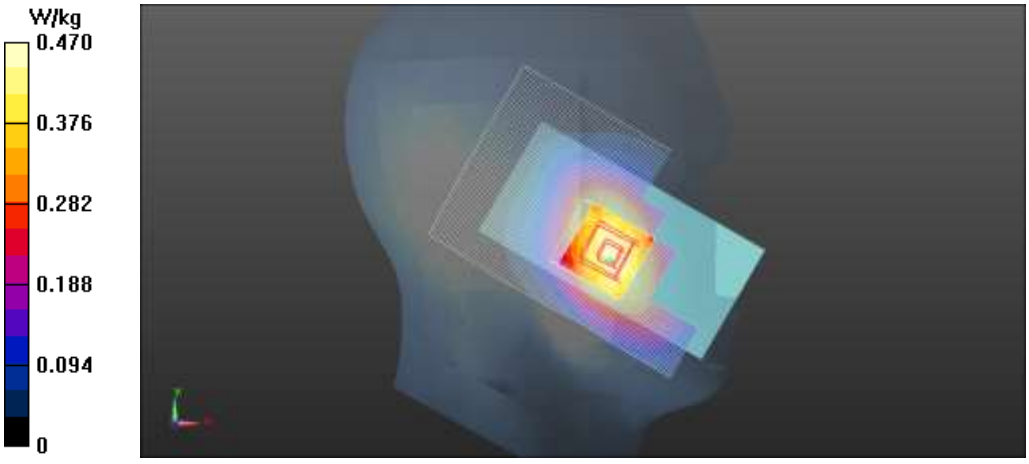
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: WCDMA850 (Band 5)
Frequency: **846.6 MHz**; Duty Cycle: 1:1
Medium: Head 835 SAR1; Medium Notes: Medium Temperature: t=20.9
Medium parameters used: f = 847 MHz; σ = 0.927 S/m; ε_r = 42.058; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.88, 8.88, 8.88); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - SAM1; Type: TP - 01097; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA850 - Left/Cheek - CH 4233 Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.19 V/m
Fast SAR: SAR(1 g) = 0.414 W/kg
Fast SAR(10 g) = 0.290 W/kg
Maximum value of SAR (interpolated) = 0.470 W/kg

WCDMA850 - Left/Cheek - CH 4233 Antenna 2/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.19 V/m
Peak SAR (extrapolated) = 0.525 W/kg
SAR(1 g) = 0.422 W/kg
SAR(10 g) = 0.322 W/kg
Power Drift = -0.04 dB
Maximum value of SAR (measured) = 0.459 W/kg



Plot H5

Date/Time: 2015-07-17 3:06:13 PM

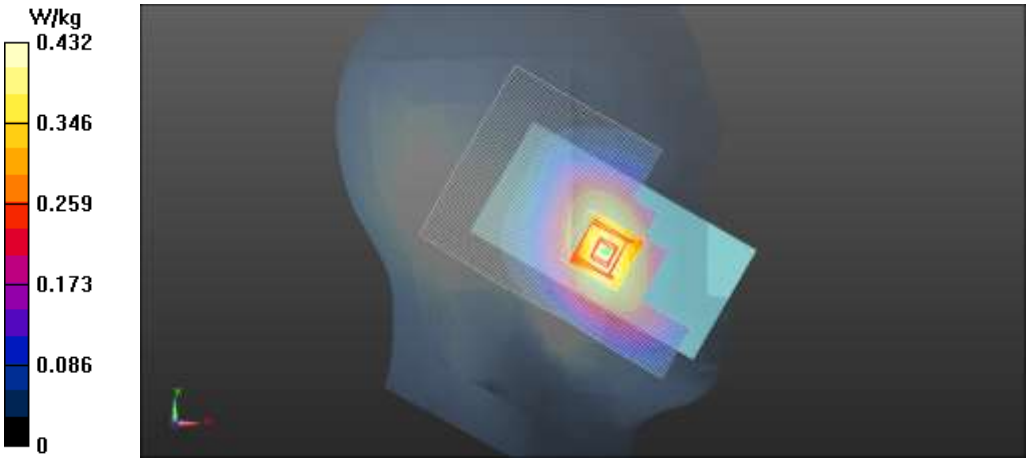
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: LTE850 (Band 5)
Frequency: **836.5 MHz**; Duty Cycle: 1:1
Medium: Head 835 SAR1; Medium Notes: Medium Temperature: t=20.9
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.898 S/m; ε_r = 40.887; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.88, 8.88, 8.88); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - SAM1; Type: TP - 01097; Serial: Not Specified
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE850 - Left/Cheek - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24- Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.10 V/m
Fast SAR: SAR(1 g) = 0.379 W/kg
Fast SAR(10 g) = 0.263 W/kg
Maximum value of SAR (interpolated) = 0.432 W/kg

LTE850 - Left/Cheek - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24- Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.10 V/m
Peak SAR (extrapolated) = 0.492 W/kg
SAR(1 g) = 0.388 W/kg
SAR(10 g) = 0.295 W/kg
Power Drift = -0.06 dB
Maximum value of SAR (measured) = 0.426 W/kg



Plot H6

Date/Time: 2015-07-10 2:18:00 PM

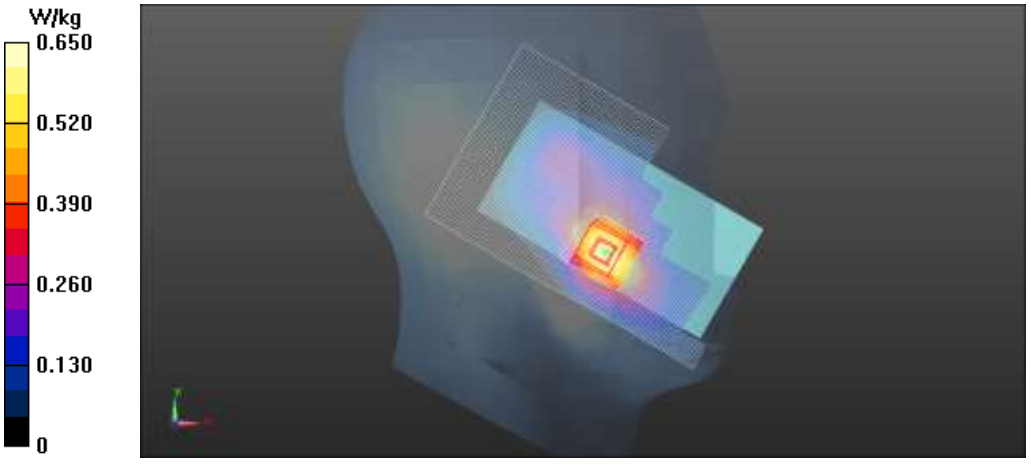
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235201/0

Communication System: WCDMA1700/2100 (Band 4)
Frequency: **1732.4 MHz**; Duty Cycle: 1:1
Medium: Head 1750 SAR3; Medium Notes: Medium Temperature: t= 20.5 C
Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.343 S/m; ε_r = 38.936; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.77, 7.77, 7.77); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - SAM1; Type: QD 000 P40 CD; Serial: TP - 1770
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA1700-2100 (Band 4) - Left/Cheek - CH 1412 Antenna 2/Area Scan (71x121x1): Interpolated grid:
dx=1.500 mm, dy=1.500 mm
Reference Value = 20.24 V/m
Fast SAR: SAR(1 g) = 0.538 W/kg
Fast SAR(10 g) = 0.321 W/kg
Maximum value of SAR (interpolated) = 0.650 W/kg

WCDMA1700-2100 (Band 4) - Left/Cheek - CH 1412 Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid:
dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.24 V/m
Peak SAR (extrapolated) = 0.729 W/kg
SAR(1 g) = 0.497 W/kg
SAR(10 g) = 0.324 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.573 W/kg



Plot H7

Date/Time: 2015-07-16 3:19:14 PM

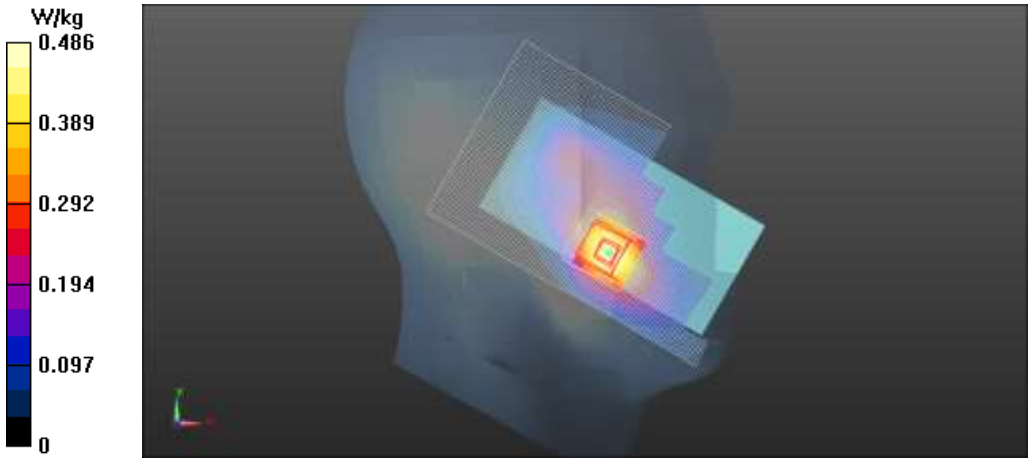
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235201/0

Communication System: LTE1700/2100 (Band 4)
Frequency: **1732.5 MHz**; Duty Cycle: 1:1
Medium: Head 1750 SAR3; Medium Notes: Medium Temperature: t= 21.5 C
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.326 S/m; ε_r = 39.467; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.77, 7.77, 7.77); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - SAM1; Type: QD 000 P40 CD; Serial: TP - 1770
- 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 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 17.80 V/m
Fast SAR: SAR(1 g) = 0.402 W/kg
Fast SAR(10 g) = 0.242 W/kg
Maximum value of SAR (interpolated) = 0.486 W/kg

LTE1700-2100 (Band 4) - Left/Cheek - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.80 V/m
Peak SAR (extrapolated) = 0.574 W/kg
SAR(1 g) = 0.391 W/kg
SAR(10 g) = 0.255 W/kg
Power Drift = 0.09 dB
Maximum value of SAR (measured) = 0.455 W/kg



Plot H8

Date/Time: 2015-07-16 2:32:16 PM

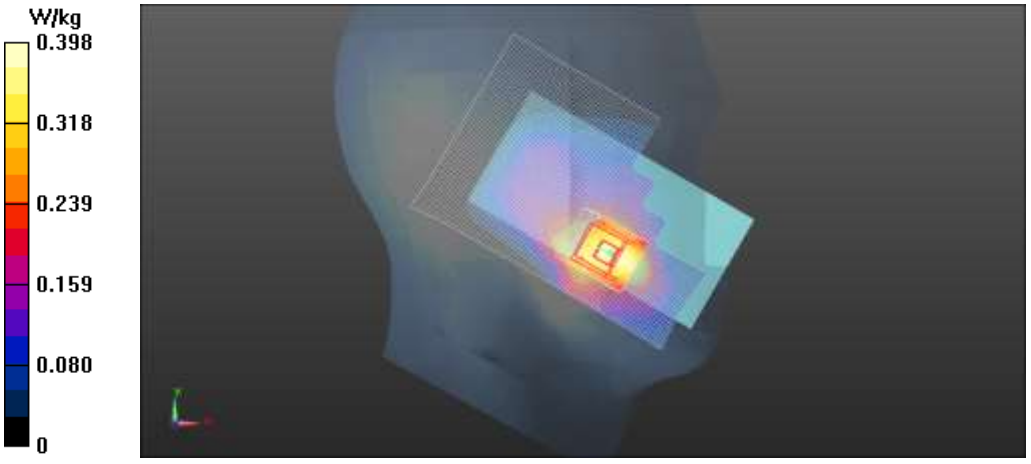
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235206/9

Communication System: 4-slot GPRS1900
Frequency: **1909.8 MHz**; Duty Cycle: 1:2.09991
Medium: Head 1900 SAR4; Medium Notes: Medium Temperature: t=21.0 C
Medium parameters used: f = 1910 MHz; σ = 1.376 S/m; ε_r = 40.292; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.83, 7.83, 7.83); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - SAM1; Type: QD000 P40 CA; Serial: TP - 1274
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

4-slot GPRS 1900 (Band 2) - Left/Cheek - CH 810 - Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 16.15 V/m
Fast SAR: SAR(1 g) = 0.326 W/kg
Fast SAR(10 g) = 0.192 W/kg
Maximum value of SAR (interpolated) = 0.398 W/kg

4-slot GPRS 1900 (Band 2) - Left/Cheek - CH 810 - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.15 V/m
Peak SAR (extrapolated) = 0.499 W/kg
SAR(1 g) = 0.331 W/kg
SAR(10 g) = 0.212 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 0.386 W/kg



Plot H9

Date/Time: 2015-07-20 2:09:41 PM

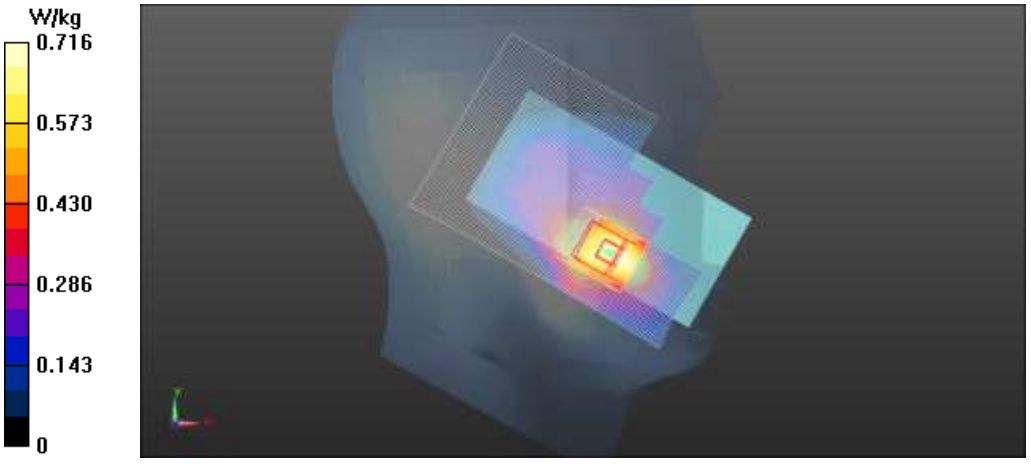
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235206/9

Communication System: WCDMA1900 (Band 2)
Frequency: **1880 MHz**; Duty Cycle: 1:1
Medium: Head 1900 SAR4; Medium Notes: Medium Temperature: t=21.1 C
Medium parameters used: f = 1880 MHz; σ = 1.35 S/m; ε_r = 41.266; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.83, 7.83, 7.83); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - SAM1; Type: QD000 P40 CA; Serial: TP - 1274
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 1900 (Band 2) - Left/Cheek - CH 9400 - Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.09 V/m
Fast SAR: SAR(1 g) = 0.589 W/kg
Fast SAR(10 g) = 0.347 W/kg
Maximum value of SAR (interpolated) = 0.716 W/kg

WCDMA 1900 (Band 2) - Left/Cheek - CH 9400 - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.09 V/m
Peak SAR (extrapolated) = 0.872 W/kg
SAR(1 g) = 0.586 W/kg
SAR(10 g) = 0.383 W/kg
Power Drift = 0.16 dB
Maximum value of SAR (measured) = 0.681 W/kg



Plot H10

Date/Time: 2015-07-17 3:10:18 PM

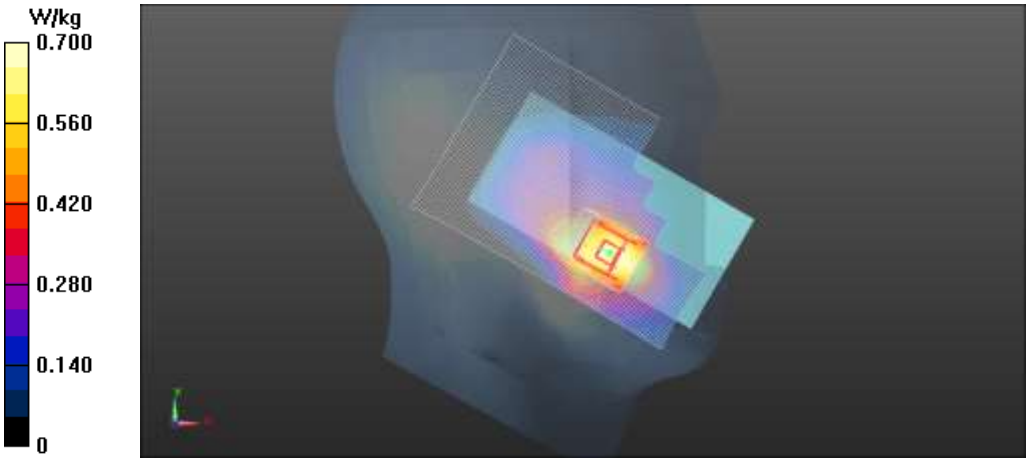
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235206/9

Communication System: LTE1900 (Band 2)
Frequency: **1880 MHz**; Duty Cycle: 1:1
Medium: Head 1900 SAR4; Medium Notes: Medium Temperature: t=20.9 C
Medium parameters used: f = 1880 MHz; σ = 1.35 S/m; ε_r = 41.541; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.83, 7.83, 7.83); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - SAM1; Type: QD000 P40 CA; Serial: TP - 1274
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 1900 (Band 2) - Left/Cheek - CH 18900 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.89 V/m
Fast SAR: SAR(1 g) = 0.574 W/kg
Fast SAR(10 g) = 0.341 W/kg
Maximum value of SAR (interpolated) = 0.700 W/kg

LTE 1900 (Band 2) - Left/Cheek - CH 18900 - 20MHz - QPSK - 1 RB - Offset 0 - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.89 V/m
Peak SAR (extrapolated) = 0.844 W/kg
SAR(1 g) = 0.578 W/kg
SAR(10 g) = 0.382 W/kg
Power Drift = 0.01 dB
Maximum value of SAR (measured) = 0.668 W/kg



Plot H11

Date/Time: 2015-07-21 12:26:57 PM

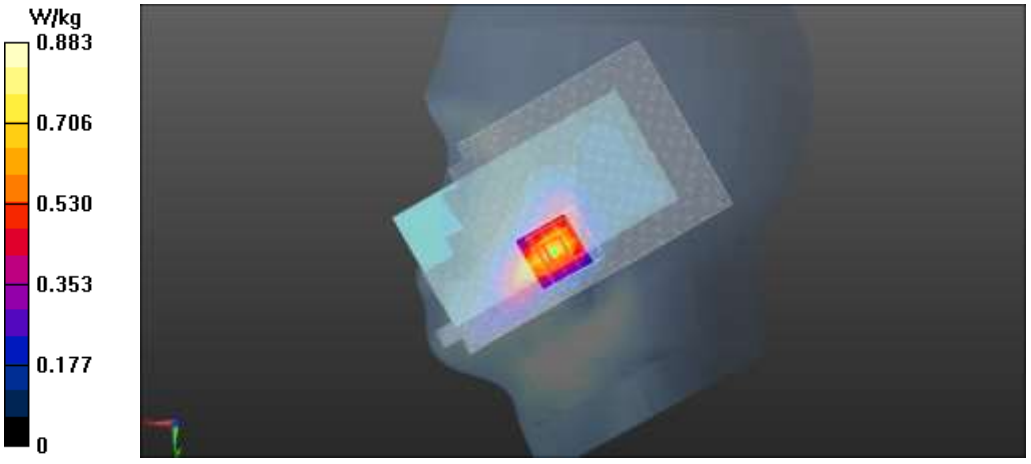
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235265/5

Communication System: LTE2500 (Band 7)
Frequency: **2535 MHz**; Duty Cycle: 1:1
Medium: Head 2450 SAR2; Medium Notes: Medium Temperature: t=20.9C
Medium parameters used: f = 2535 MHz; σ = 1.89 S/m; ε_r = 38.875; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY Configuration:
- Probe: EX3DV4 - SN3837
- ConvF(6.91, 6.91, 6.91); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - SAM2; Type: QD 000P40 CD; Serial: TP - 1771
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE2700 - Right/Cheek - CH 21100 - 20MHz - QPSK - 1 RB - Offset 99 - Antenna 1/Area Scan (101x181x1):
Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 20.68 V/m
Fast SAR: SAR(1 g) = 0.683 W/kg
Fast SAR(10 g) = 0.353 W/kg
Maximum value of SAR (interpolated) = 0.883 W/kg

LTE2700 - Right/Cheek - CH 21100 - 20MHz - QPSK - 1 RB - Offset 99 - Antenna 1/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.68 V/m
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.685 W/kg
SAR(10 g) = 0.368 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.764 W/kg



Plot H12

Date/Time: 2015-07-17 12:13:21 PM

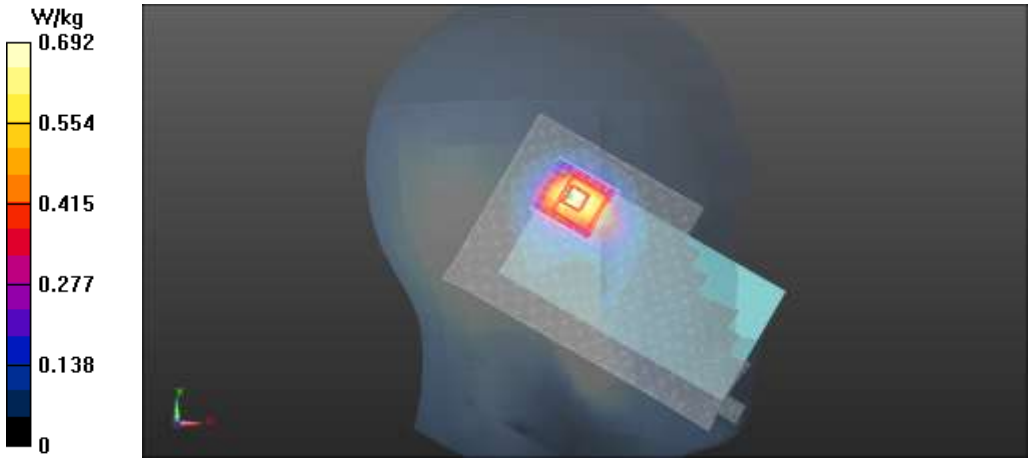
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235205/1

Communication System: WLAN2450
Frequency: **2437 MHz**; Duty Cycle: 1:1
Medium: Head 2450 SAR2; Medium Notes: Medium Temperature: t=21.0C
Medium parameters used: f = 2437 MHz; σ = 1.783 S/m; ε_r = 38.353; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:
- Probe: EX3DV4 - SN3823
- ConvF(6.95, 6.95, 6.95); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - SAM2; Type: QD 000P40 CD; Serial: TP - 1771
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN2450 b-mode - Left/Cheek - CH 6 - QPSK 11 Mbps - Antenna 1/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 17.41 V/m
Fast SAR: SAR(1 g) = 0.538 W/kg
Fast SAR(10 g) = 0.268 W/kg
Maximum value of SAR (interpolated) = 0.692 W/kg

WLAN2450 b-mode - Left/Cheek - CH 6 - QPSK 11 Mbps - Antenna 1/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.41 V/m
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.558 W/kg
SAR(10 g) = 0.286 W/kg
Power Drift = -0.13 dB
Maximum value of SAR (measured) = 0.696 W/kg



Plot B1

Date/Time: 2015-07-23 4:22:18 PM

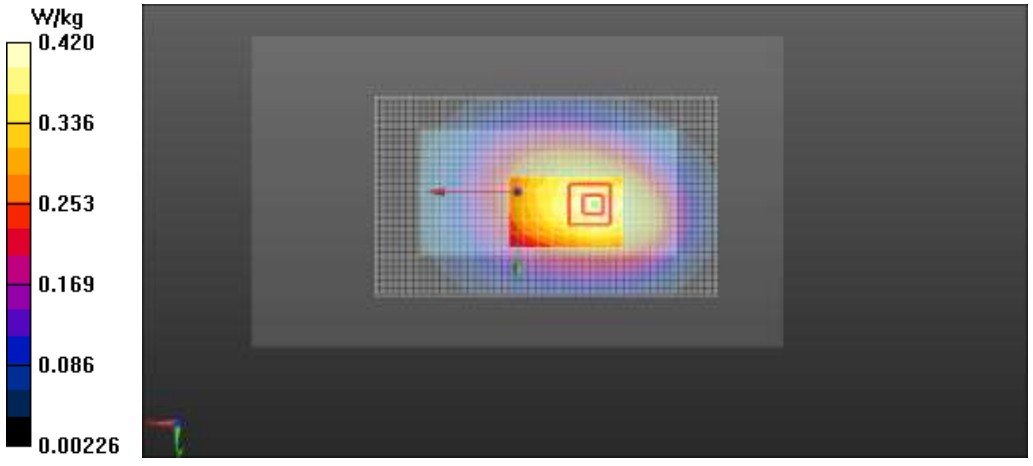
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235266/3

Communication System: LTE700 (Band 12)
Frequency: **711 MHz**; Duty Cycle: 1:1
Medium: Body 750 SAR5; Medium Notes: Medium Temperature: t=21.9C
Medium parameters used: f = 711 MHz; σ = 0.954 S/m; ε_r = 53.368; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.75, 8.75, 8.75); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAR5 - TFP; Type: QD 000 P51 CA; Serial: 1130/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 750(Band 12)/Body - CH 23130 - 15MHz - QPSK - 1 RB - Offset 49 - 15 mm - No Headset - Back - Antenna 1/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 20.35 V/m
Fast SAR: SAR(1 g) = 0.375 W/kg
Fast SAR(10 g) = 0.271 W/kg
Maximum value of SAR (interpolated) = 0.420 W/kg

LTE 750(Band 12)/Body - CH 23130 - 15MHz - QPSK - 1 RB - Offset 49 - 15 mm - No Headset - Back - Antenna 1/Zoom Scan (6x9x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.35 V/m
Peak SAR (extrapolated) = 0.468 W/kg
SAR(1 g) = 0.370 W/kg
SAR(10 g) = 0.281 W/kg
Power Drift = 0.11 dB
Maximum value of SAR (measured) = 0.408 W/kg



Plot B2

Date/Time: 2015-07-24 11:14:49 AM

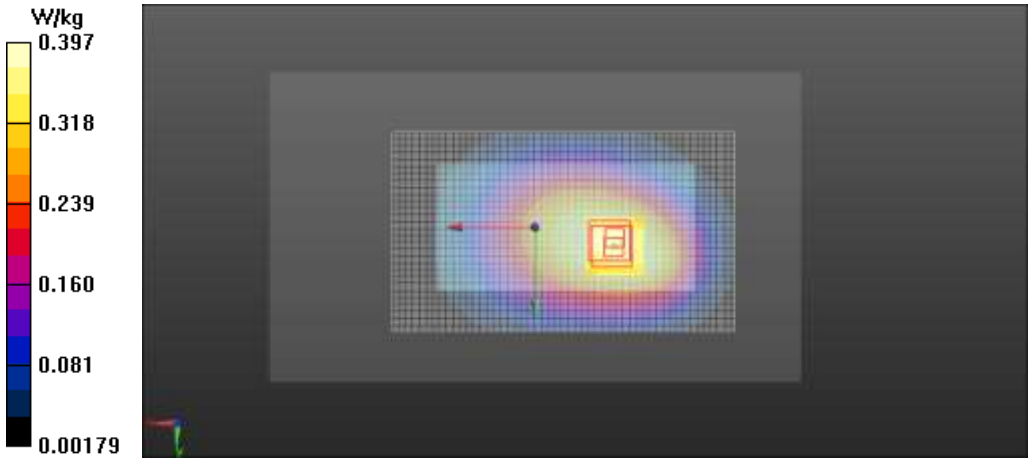
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235266/3

Communication System: LTE700 (Band 17)
Frequency: **711 MHz**; Duty Cycle: 1:1
Medium: Body 750 SAR5; Medium Notes: Medium Temperature: t=20.9C
Medium parameters used: f = 711 MHz; σ = 0.966 S/m; ε_r = 53.524; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.75, 8.75, 8.75); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAR5 - TFP; Type: QD 000 P51 CA; Serial: 1130/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 750(Band 17)/Body - CH 23800 - 15MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Back - Antenna 1/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 17.63 V/m
Fast SAR: SAR(1 g) = 0.354 W/kg
Fast SAR(10 g) = 0.257 W/kg
Maximum value of SAR (interpolated) = 0.397 W/kg

LTE 750(Band 17)/Body - CH 23800 - 15MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Back - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.63 V/m
Peak SAR (extrapolated) = 0.455 W/kg
SAR(1 g) = 0.358 W/kg
SAR(10 g) = 0.269 W/kg
Power Drift = -0.13 dB
Maximum value of SAR (measured) = 0.394 W/kg



Plot B3

Date/Time: 2015-07-23 1:16:51 PM

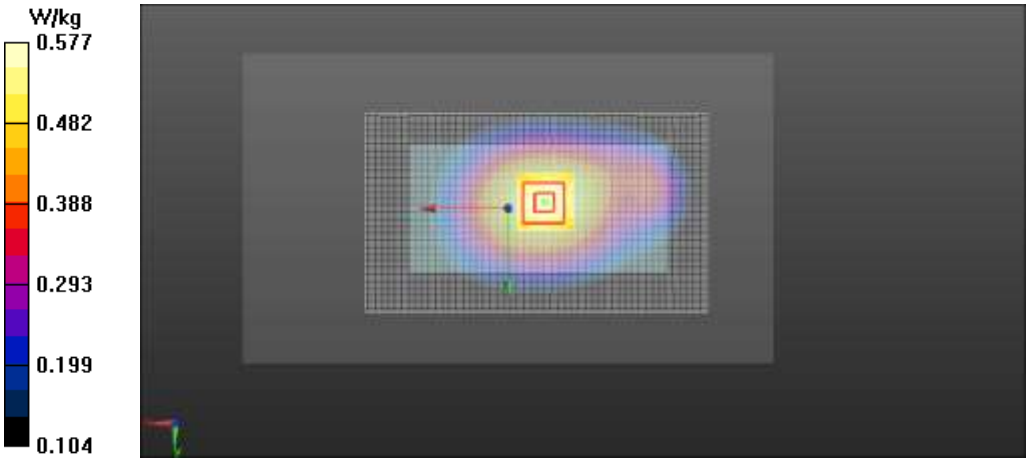
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: 2-slot GPRS850
Frequency: **824.2 MHz**; Duty Cycle: 1:4.19952
Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=20.8
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.934 S/m; ε_r = 53.525; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.84, 8.84, 8.84); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - TFP; Type: QD 000 P51 CA; Serial: 1125/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-slot GPRS 850 (Band 5)/Body - CH 128 - 15 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 23.99 V/m
Fast SAR: SAR(1 g) = 0.512 W/kg
Fast SAR(10 g) = 0.367 W/kg
Maximum value of SAR (interpolated) = 0.576 W/kg

2-slot GPRS 850 (Band 5)/Body - CH 128 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 23.99 V/m
Peak SAR (extrapolated) = 0.654 W/kg
SAR(1 g) = 0.526 W/kg
SAR(10 g) = 0.403 W/kg
Power Drift = -0.09 dB
Maximum value of SAR (measured) = 0.577 W/kg



Plot B4

Date/Time: 2015-07-22 9:33:36 PM

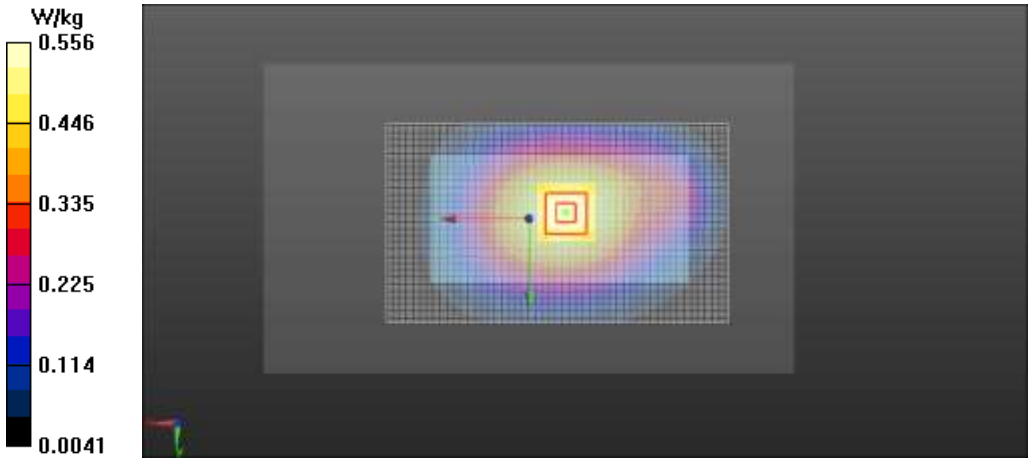
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: WCDMA850 (Band 5)
Frequency: **826.4 MHz**; Duty Cycle: 1:1
Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=20.8
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.936 S/m; ε_r = 53.504; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.84, 8.84, 8.84); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - TFP; Type: QD 000 P51 CA; Serial: 1125/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 850 (Band 5)/Body - CH 4132 - 15 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 23.26 V/m
Fast SAR: SAR(1 g) = 0.495 W/kg
Fast SAR(10 g) = 0.355 W/kg
Maximum value of SAR (interpolated) = 0.556 W/kg

WCDMA 850 (Band 5)/Body - CH 4132 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 23.26 V/m
Peak SAR (extrapolated) = 0.627 W/kg
SAR(1 g) = 0.503 W/kg
SAR(10 g) = 0.383 W/kg
Power Drift = 0.08 dB
Maximum value of SAR (measured) = 0.551 W/kg



Plot B5

Date/Time: 2015-07-24 3:22:21 PM

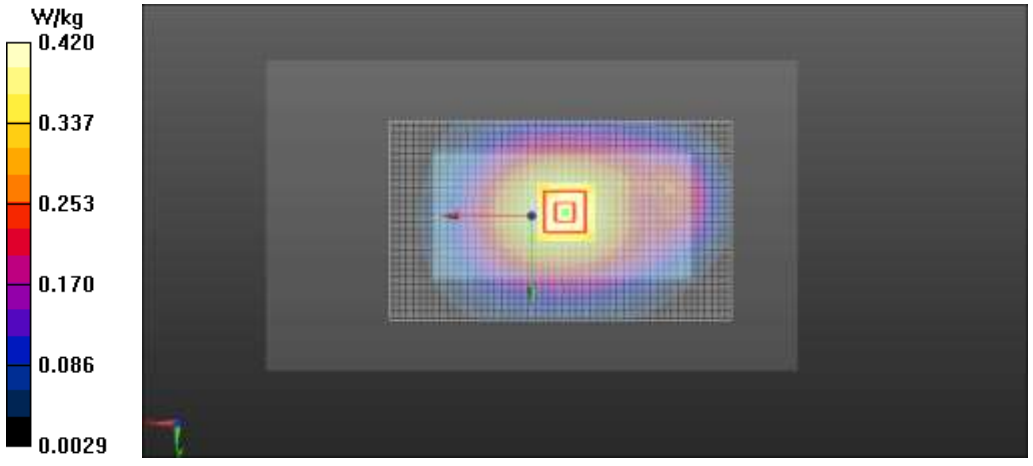
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: LTE850 (Band 5)
Frequency: **836.5 MHz**; Duty Cycle: 1:1
Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=20.9
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.944 S/m; ε_r = 53.579; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.84, 8.84, 8.84); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - TFP; Type: QD 000 P51 CA; Serial: 1125/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 20.45 V/m
Fast SAR: SAR(1 g) = 0.374 W/kg
Fast SAR(10 g) = 0.268 W/kg
Maximum value of SAR (interpolated) = 0.420 W/kg

LTE 850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.45 V/m
Peak SAR (extrapolated) = 0.479 W/kg
SAR(1 g) = 0.380 W/kg
SAR(10 g) = 0.290 W/kg
Power Drift = -0.03 dB
Maximum value of SAR (measured) = 0.419 W/kg



Plot B6

Date/Time: 2015-07-14 12:13:42 PM

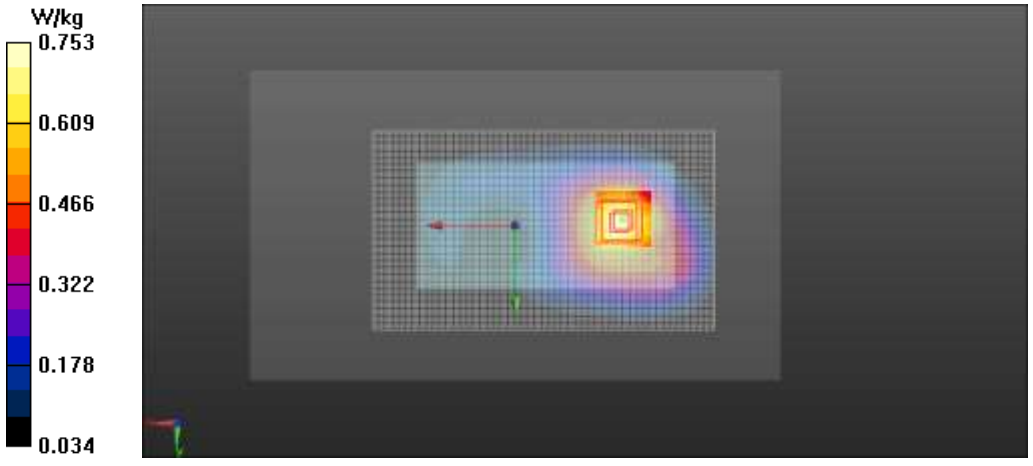
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235201/0

Communication System: WCDMA1700/2100 (Band 4)
Frequency: **1732.4 MHz**; Duty Cycle: 1:1
Medium: Body 1750 SAR3; Medium Notes: Medium Temperature: t= 20.5
Medium parameters used (interpolated): f = 1732.4 MHz; σ = 1.421 S/m; ε_r = 50.95; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.48, 7.48, 7.48); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - TFP; Type: QD 000 P51 CA; Serial: TP - 1125/2
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 1700-2100 (Band 4)/Body - CH 1412- 15 mm - No Headset - Back - Antenna 1/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 21.12 V/m
Fast SAR: SAR(1 g) = 0.675 W/kg
Fast SAR(10 g) = 0.414 W/kg
Maximum value of SAR (interpolated) = 0.810 W/kg

WCDMA 1700-2100 (Band 4)/Body - CH 1412- 15 mm - No Headset - Back - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 21.12 V/m
Peak SAR (extrapolated) = 0.961 W/kg
SAR(1 g) = 0.653 W/kg
SAR(10 g) = 0.424 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 0.753 W/kg



Plot B7

Date/Time: 2015-07-15 11:56:51 AM

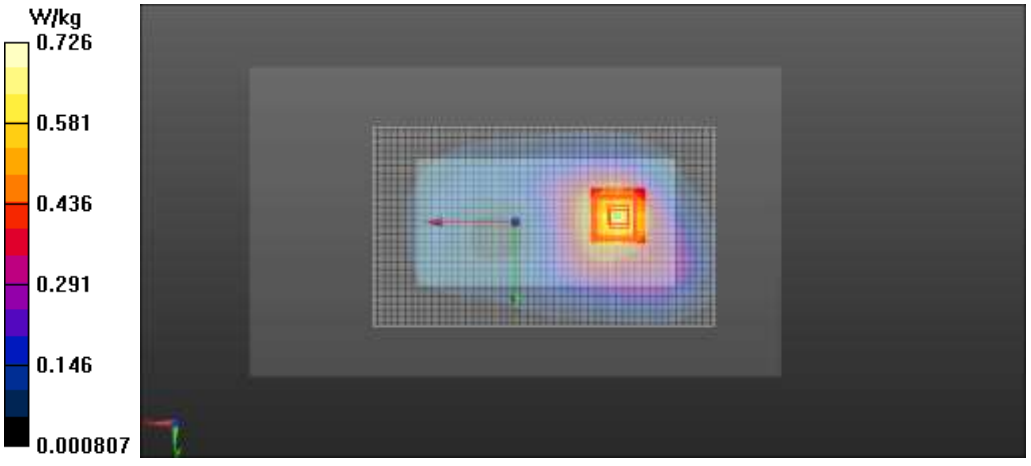
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235201/0

Communication System: LTE1700/2100 (Band 4)
Frequency: **1732.5 MHz**; Duty Cycle: 1:1
Medium: Body 1750 SAR3; Medium Notes: Medium Temperature: t= 21.8
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.42 S/m; ε_r = 52.404; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.48, 7.48, 7.48); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - TFP; Type: QD 000 P51 CA; Serial: TP - 1125/2
- 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 - Back - Antenna 1/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 19.64 V/m
Fast SAR: SAR(1 g) = 0.602 W/kg
Fast SAR(10 g) = 0.368 W/kg
Maximum value of SAR (interpolated) = 0.726 W/kg

LTE1700-2100 (Band 4)/Body - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - 15 mm - No Headset - Back - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.64 V/m
Peak SAR (extrapolated) = 0.890 W/kg
SAR(1 g) = 0.610 W/kg
SAR(10 g) = 0.393 W/kg
Power Drift = 0.06 dB
Maximum value of SAR (measured) = 0.652 W/kg



Plot B8

Date/Time: 2015-07-10 2:15:24 PM

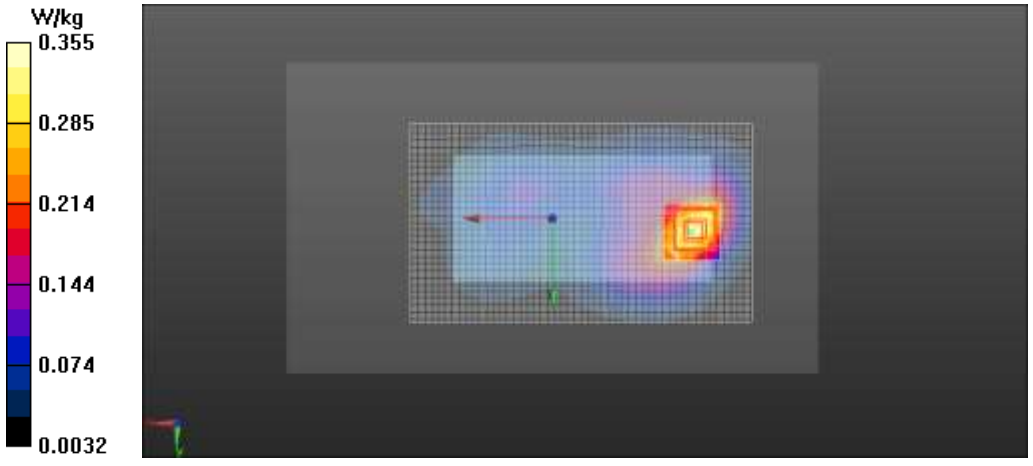
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235206/9

Communication System: 4-slot GPRS1900
Frequency: **1850.2 MHz**; Duty Cycle: 1:2.09991
Medium: Body 1900 SAR4; Medium Notes: Medium Temperature: t=21.2 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.437 S/m; ε_r = 52.249; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.41, 7.41, 7.41); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - TFP; Type: QD000 P51 CA; Serial: S/N 1148/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

4-GPRS 1900 (Band 2)/Body - CH 512 - 15 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 14.37 V/m
Fast SAR: SAR(1 g) = 0.284 W/kg
Fast SAR(10 g) = 0.162 W/kg
Maximum value of SAR (interpolated) = 0.355 W/kg

4-GPRS 1900 (Band 2)/Body - CH 512 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 14.37 V/m
Peak SAR (extrapolated) = 0.485 W/kg
SAR(1 g) = 0.291 W/kg
SAR(10 g) = 0.168 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.350 W/kg



Plot B9

Date/Time: 2015-07-15 11:40:30 AM

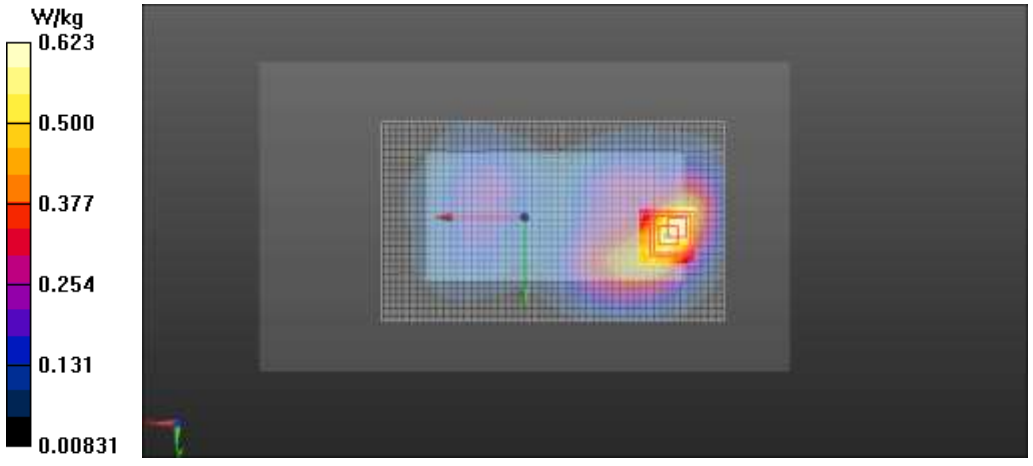
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235206/9

Communication System: WCDMA1900 (Band 2)
Frequency: **1880 MHz**; Duty Cycle: 1:1
Medium: Body 1900 SAR4; Medium Notes: Medium Temperature: t=21.2 C
Medium parameters used: f = 1880 MHz; σ = 1.502 S/m; ε_r = 53.062; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.41, 7.41, 7.41); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - TFP; Type: QD000 P51 CA; Serial: S/N 1148/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 1900 (Band 2)/Body - CH 9400 - 15 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 20.34 V/m
Fast SAR: SAR(1 g) = 0.509 W/kg
Fast SAR(10 g) = 0.297 W/kg
Maximum value of SAR (interpolated) = 0.623 W/kg

WCDMA 1900 (Band 2)/Body - CH 9400 - 15 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.34 V/m
Peak SAR (extrapolated) = 0.908 W/kg
SAR(1 g) = 0.535 W/kg
SAR(10 g) = 0.309 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.650 W/kg



Plot B10

Date/Time: 2015-07-14 11:20:03 AM

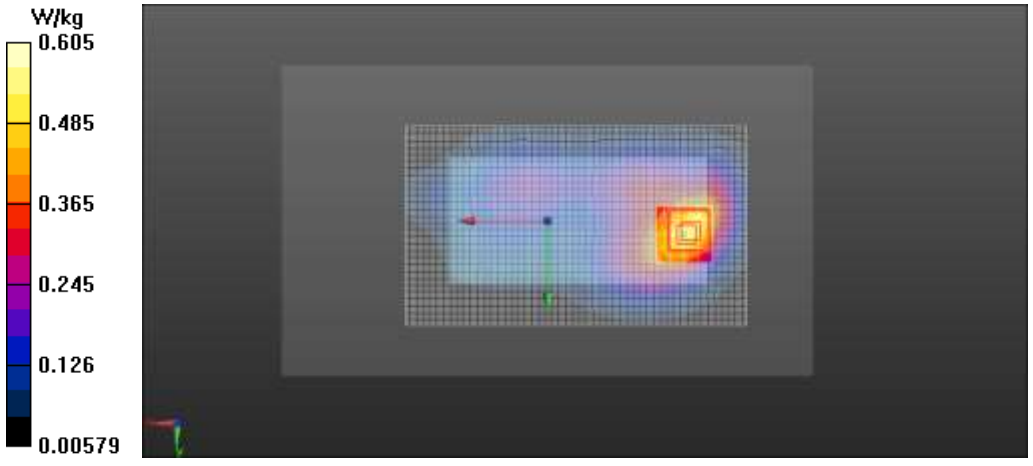
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235206/9

Communication System: LTE1900 (Band 2)
Frequency: **1880 MHz**; Duty Cycle: 1:1
Medium: Body 1900 SAR4; Medium Notes: Medium Temperature: t=21.3 C
Medium parameters used: f = 1880 MHz; σ = 1.489 S/m; ε_r = 53.783; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.41, 7.41, 7.41); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - TFP; Type: QD000 P51 CA; Serial: S/N 1148/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 1900 (Band 2)/Body - CH 18900 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 18.37 V/m
Fast SAR: SAR(1 g) = 0.488 W/kg
Fast SAR(10 g) = 0.282 W/kg
Maximum value of SAR (interpolated) = 0.605 W/kg

LTE 1900 (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 = 18.37 V/m
Peak SAR (extrapolated) = 0.806 W/kg
SAR(1 g) = 0.488 W/kg
SAR(10 g) = 0.290 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.581 W/kg



Plot B11

Date/Time: 2015-07-23 10:13:01 AM

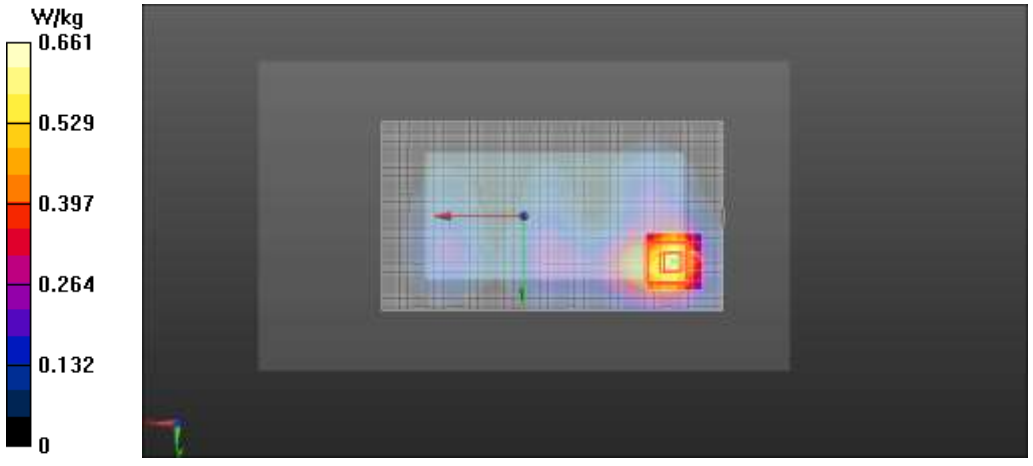
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235265/5

Communication System: LTE2500 (Band 7)
Frequency: **2535 MHz**; Duty Cycle: 1:1
Medium: Body 2600 SAR2; Medium Notes: Medium Temperature: t=20.7C
Medium parameters used: f = 2535 MHz; σ = 2.087 S/m; ε_r = 50.809; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3837
- ConvF(7, 7, 7); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - TFP ; Type: QD 000 P51 CA; Serial: TP - 1130/2
- 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 99 - 15 mm - No Headset - Back - Antenna 1/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 16.25 V/m
Fast SAR: SAR(1 g) = 0.529 W/kg
Fast SAR(10 g) = 0.286 W/kg
Maximum value of SAR (interpolated) = 0.661 W/kg

LTE2500 (Band 7)/Body - CH 21100 - 20MHz - QPSK - 1 RB - Offset 99 - 15 mm - No Headset - Back - Antenna 1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.25 V/m
Peak SAR (extrapolated) = 0.968 W/kg
SAR(1 g) = 0.519 W/kg
SAR(10 g) = 0.280 W/kg
Power Drift = -0.09 dB
Maximum value of SAR (measured) = 0.663 W/kg



Plot B12

Date/Time: 2015-07-24 6:36:16 PM

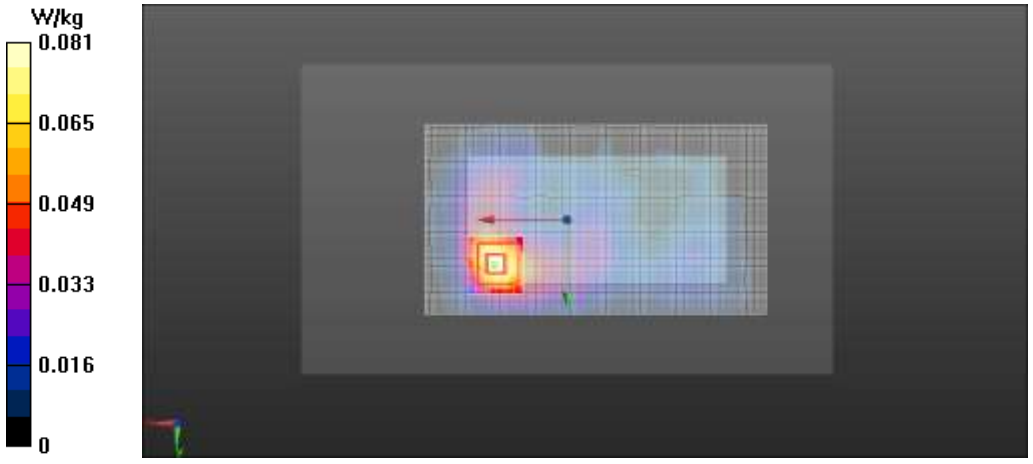
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235205/1

Communication System: WLAN2450
Frequency: **2412 MHz**; Duty Cycle: 1:1
Medium: Body 2600 SAR2; Medium Notes: Medium Temperature: t=21.5C
Medium parameters used: f = 2412 MHz; σ = 1.916 S/m; ε_r = 50.953; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3823
- ConvF(6.95, 6.95, 6.95); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - TFP ; Type: QD 000 P51 CA; Serial: TP - 1130/2
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN2450 b-mode/Body - CH 1 - BPSK 1 Mbps - 15mm - No Headset - Back - Antenna 1/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 4.185 V/m
Fast SAR: SAR(1 g) = 0.065 W/kg
Fast SAR(10 g) = 0.035 W/kg
Maximum value of SAR (interpolated) = 0.0813 W/kg

WLAN2450 b-mode/Body - CH 1 - BPSK 1 Mbps - 15mm - No Headset - Back - Antenna 1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.185 V/m
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.065 W/kg
SAR(10 g) = 0.035 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 0.0813 W/kg



Plot W1

Date/Time: 2015-07-23 2:49:03 PM

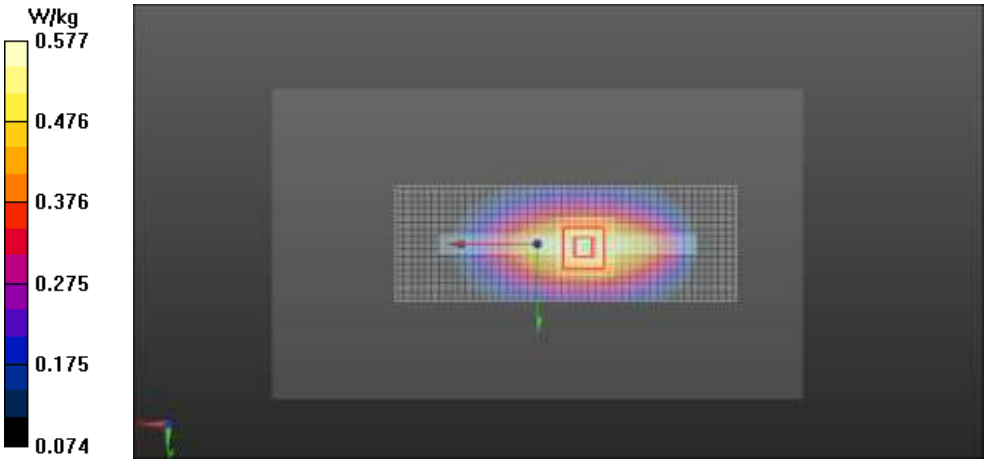
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235266/3

Communication System: LTE700 (Band 12)
Frequency: **711 MHz**; Duty Cycle: 1:1
Medium: Body 750 SAR5; Medium Notes: Medium Temperature: t=21.9C
Medium parameters used: f = 711 MHz; σ = 0.954 S/m; ε_r = 53.368; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.75, 8.75, 8.75); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAR5 - TFP; Type: QD 000 P51; Serial: 1130/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 750 (Band 12) - Left_Right/Body - CH 23130 - 10MHz - QPSK - 1 RB - Offset 49 - 10 mm - No Headset - Right - Antenna 1/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 24.91 V/m
Fast SAR: SAR(1 g) = 0.507 W/kg
Fast SAR(10 g) = 0.356 W/kg
Maximum value of SAR (interpolated) = 0.574 W/kg

LTE 750 (Band 12) - Left_Right/Body - CH 23130 - 10MHz - QPSK - 1 RB - Offset 49 - 10 mm - No Headset - Right - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 24.91 V/m
Peak SAR (extrapolated) = 0.697 W/kg
SAR(1 g) = 0.506 W/kg
SAR(10 g) = 0.353 W/kg
Power Drift = 0.00 dB
Maximum value of SAR (measured) = 0.577 W/kg



Plot W2

Date/Time: 2015-07-24 4:19:19 PM

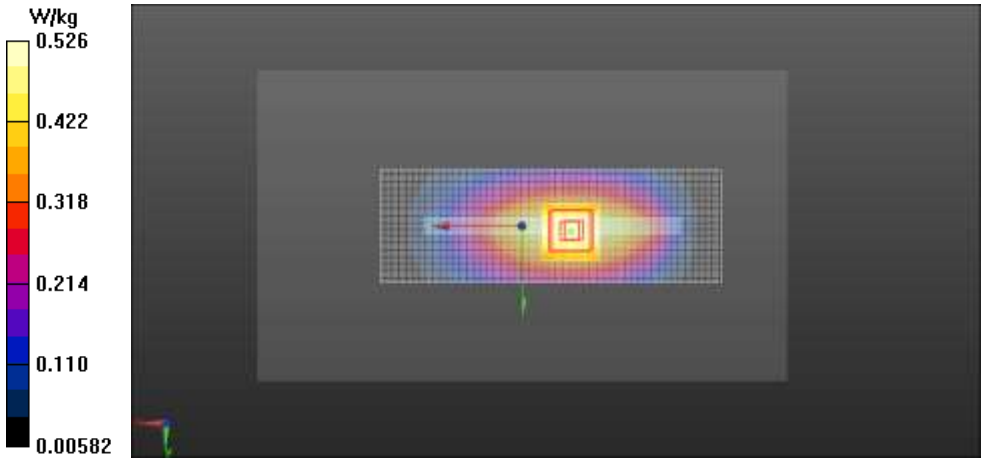
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235266/3

Communication System: LTE700 (Band 17)
Frequency: **711 MHz**; Duty Cycle: 1:1
Medium: Body 750 SAR5; Medium Notes: Medium Temperature: t=20.9C
Medium parameters used: f = 711 MHz; σ = 0.966 S/m; ε_r = 53.524; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3836
- ConvF(8.75, 8.75, 8.75); Calibrated: 2015-03-23;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn887; Calibrated: 2015-03-13
- Phantom: SAR5 - TFP; Type: QD 000 P51; Serial: 1130/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 750 (Band 12) - Left_Right/Body - CH 23800 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Right - Antenna 1/Area Scan (41x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 24.22 V/m
Fast SAR: SAR(1 g) = 0.466 W/kg
Fast SAR(10 g) = 0.329 W/kg
Maximum value of SAR (interpolated) = 0.526 W/kg

LTE 750 (Band 12) - Left_Right/Body - CH 23800 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Right - Antenna 1/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 24.22 V/m
Peak SAR (extrapolated) = 0.679 W/kg
SAR(1 g) = 0.489 W/kg
SAR(10 g) = 0.339 W/kg
Power Drift = 0.02 dB
Maximum value of SAR (measured) = 0.565 W/kg



Plot W3

Date/Time: 2015-07-23 2:48:27 PM

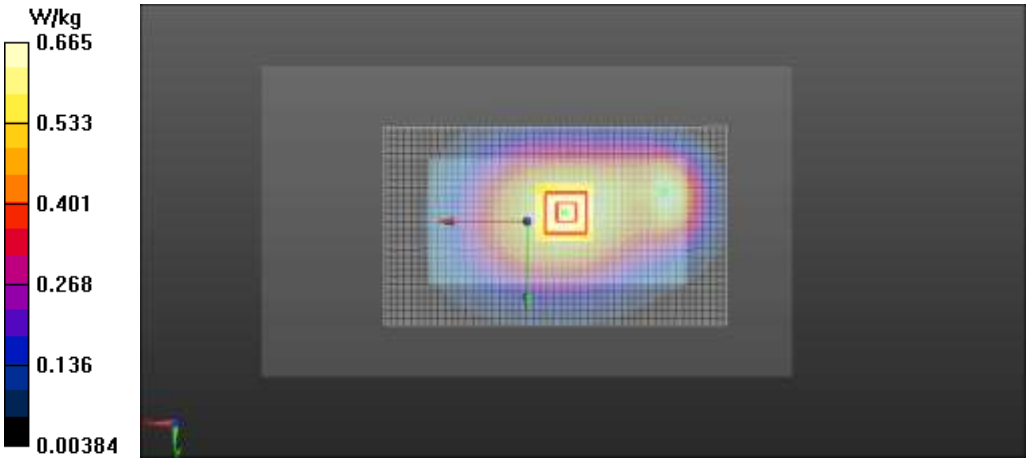
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: 2-slot GPRS850
Frequency: **824.2 MHz**; Duty Cycle: 1:4.19952
Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=20.8
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.934 S/m; ε_r = 53.525; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.84, 8.84, 8.84); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - TFP; Type: QD 000 P51 CA; Serial: 1125/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

2-slot GPRS 850 (Band 5)/Body - CH 128 - 10 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 26.66 V/m
Fast SAR: SAR(1 g) = 0.592 W/kg
Fast SAR(10 g) = 0.425 W/kg
Maximum value of SAR (interpolated) = 0.665 W/kg

2-slot GPRS 850 (Band 5)/Body - CH 128 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 26.66 V/m
Peak SAR (extrapolated) = 0.748 W/kg
SAR(1 g) = 0.604 W/kg
SAR(10 g) = 0.465 W/kg
Power Drift = -0.02 dB
Maximum value of SAR (measured) = 0.657 W/kg



Plot W4

Date/Time: 2015-07-24 9:58:36 AM

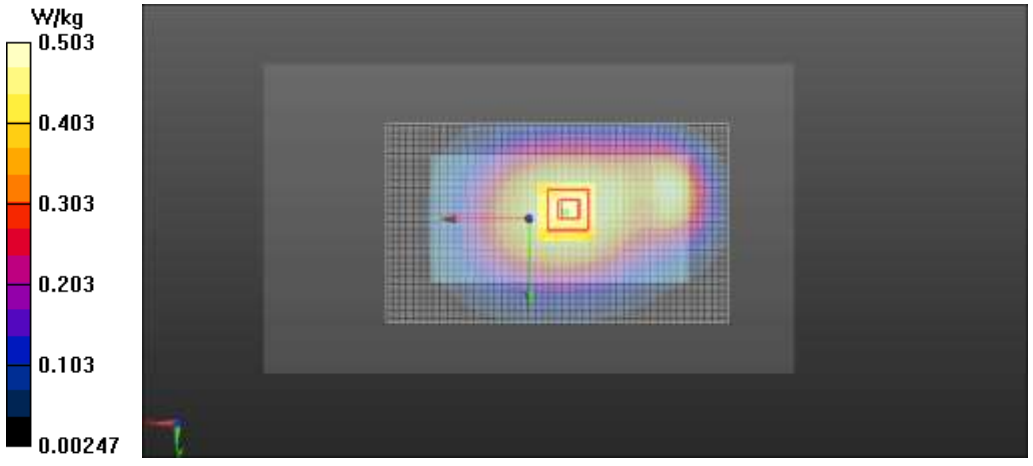
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: WCDMA850 (Band 5)
Frequency: **826.4 MHz**; Duty Cycle: 1:1
Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=20.9
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.935 S/m; ε_r = 53.669; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.84, 8.84, 8.84); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - TFP; Type: QD 000 P51 CA; Serial: 1125/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 850 (Band 5)/Body - CH 4132 - 10 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.91 V/m
Fast SAR: SAR(1 g) = 0.449 W/kg
Fast SAR(10 g) = 0.323 W/kg
Maximum value of SAR (interpolated) = 0.503 W/kg

WCDMA 850 (Band 5)/Body - CH 4132 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.91 V/m
Peak SAR (extrapolated) = 0.580 W/kg
SAR(1 g) = 0.469 W/kg
SAR(10 g) = 0.359 W/kg
Power Drift = 0.05 dB
Maximum value of SAR (measured) = 0.490 W/kg



Plot W5

Date/Time: 2015-07-24 3:48:20 PM

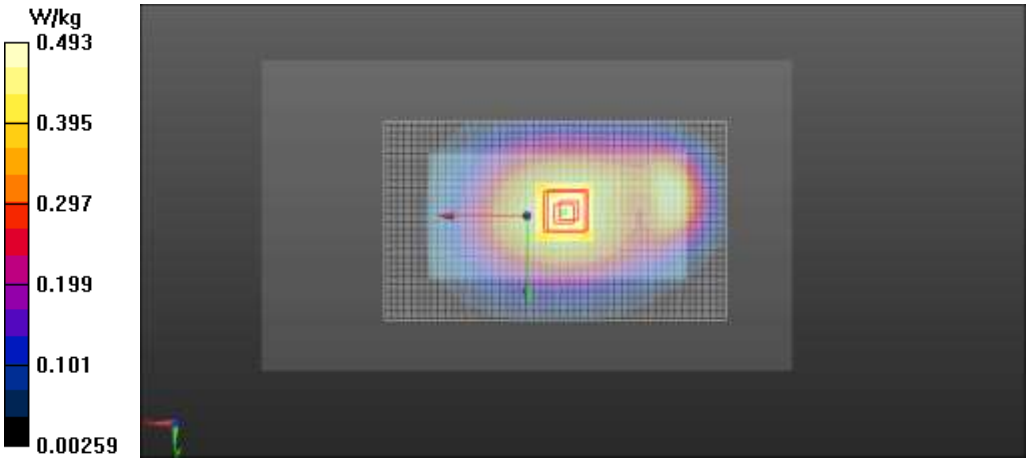
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235267/1

Communication System: LTE850 (Band 5)
Frequency: **836.5 MHz**; Duty Cycle: 1:1
Medium: Body 835 SAR1; Medium Notes: Medium Temperature: t=20.9
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.944 S/m; ε_r = 53.579; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3839
- ConvF(8.84, 8.84, 8.84); Calibrated: 2014-09-15;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn860; Calibrated: 2014-09-09
- Phantom: SAR1 - TFP; Type: QD 000 P51 CA; Serial: 1125/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.14 V/m
Fast SAR: SAR(1 g) = 0.440 W/kg
Fast SAR(10 g) = 0.315 W/kg
Maximum value of SAR (interpolated) = 0.493 W/kg

LTE 850 (Band 5)/Body - CH 20525 - 10MHz - QPSK - 1 RB - Offset 24 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.14 V/m
Peak SAR (extrapolated) = 0.557 W/kg
SAR(1 g) = 0.448 W/kg
SAR(10 g) = 0.342 W/kg
Power Drift = 0.15 dB
Maximum value of SAR (measured) = 0.491 W/kg



Plot W6

Date/Time: 2015-07-22 2:42:09 PM

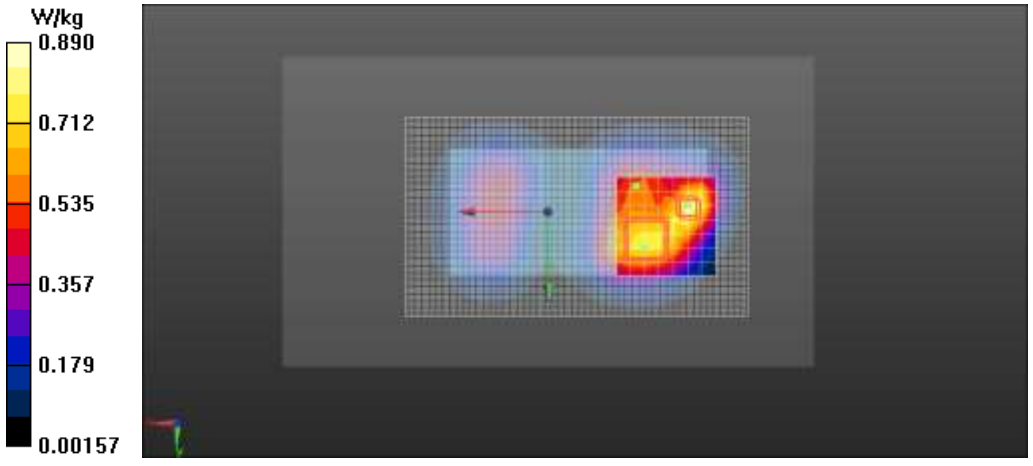
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235269/7

Communication System: WCDMA1700/2100 (Band 4)
Frequency: **1752.6 MHz**; Duty Cycle: 1:1
Medium: Body 1750 SAR3; Medium Notes: Medium Temperature: t= 22.1 C
Medium parameters used: f = 1753 MHz; σ = 1.441 S/m; ε_r = 52.639; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.48, 7.48, 7.48); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - TFP; Type: QD 000 P51 CA; Serial: TP - 1125/2
- 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 - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.78 V/m
Fast SAR: SAR(1 g) = 0.700 W/kg
Fast SAR(10 g) = 0.409 W/kg
Maximum value of SAR (interpolated) = 0.890 W/kg

WCDMA1700-2100 (Band 4)/Body - CH 1513 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.78 V/m
Peak SAR (extrapolated) = 1.24 W/kg
SAR(1 g) = 0.700 W/kg
SAR(10 g) = 0.426 W/kg
Power Drift = 0.03 dB
Maximum value of SAR (measured) = 0.859 W/kg



Plot W7

Date/Time: 2015-07-22 3:48:30 PM

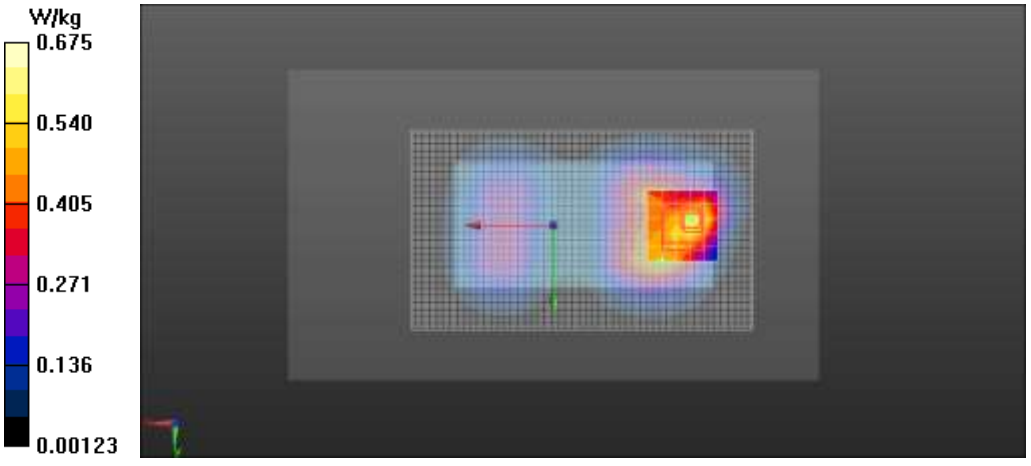
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235269/7

Communication System: LTE1700/2100 (Band 4)
Frequency: **1732.5 MHz**; Duty Cycle: 1:1
Medium: Body 1750 SAR3; Medium Notes: Medium Temperature: t= 22.1 C
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.422 S/m; ε_r = 52.684; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3838
- ConvF(7.48, 7.48, 7.48); Calibrated: 2015-03-20;
- Sensor-Surface: 3mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn710; Calibrated: 2015-03-13
- Phantom: SAR3 - TFP; Type: QD 000 P51 CA; Serial: TP - 1125/2
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 1700-2100 (Band 4)/Body - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 17.87 V/m
Fast SAR: SAR(1 g) = 0.527 W/kg
Fast SAR(10 g) = 0.299 W/kg
Maximum value of SAR (interpolated) = 0.675 W/kg

LTE 1700-2100 (Band 4)/Body - CH 20175 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.87 V/m
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.556 W/kg
SAR(10 g) = 0.310 W/kg
Power Drift = -0.00 dB
Maximum value of SAR (measured) = 0.597 W/kg



Plot W8

Date/Time: 2015-07-10 4:34:04 PM

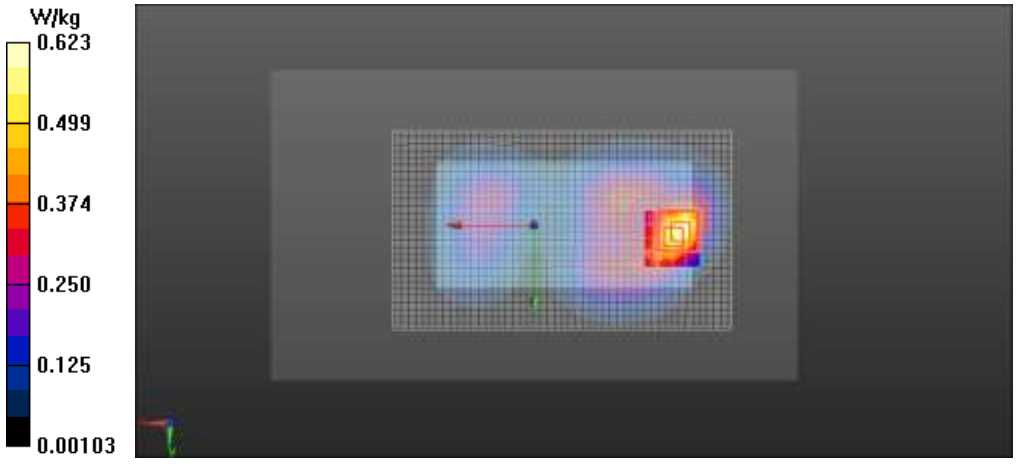
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235206/9

Communication System: 4-slot GPRS1900
Frequency: **1850.2 MHz**; Duty Cycle: 1:2.09991
Medium: Body 1900 SAR4; Medium Notes: Medium Temperature: t=21.2 C
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.437 S/m; ε_r = 52.249; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.41, 7.41, 7.41); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - TFP; Type: QD000 P51 CA; Serial: S/N 1148/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

4-slot GPRS 1900 (Band 2)/Body - CH 512 - 10 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 18.18 V/m
Fast SAR: SAR(1 g) = 0.477 W/kg
Fast SAR(10 g) = 0.263 W/kg
Maximum value of SAR (interpolated) = 0.623 W/kg

4-slot GPRS 1900 (Band 2)/Body - CH 512 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 18.18 V/m
Peak SAR (extrapolated) = 0.962 W/kg
SAR(1 g) = 0.525 W/kg
SAR(10 g) = 0.276 W/kg
Power Drift = -0.01 dB
Maximum value of SAR (measured) = 0.648 W/kg



Plot W9

Date/Time: 2015-07-15 3:57:38 PM

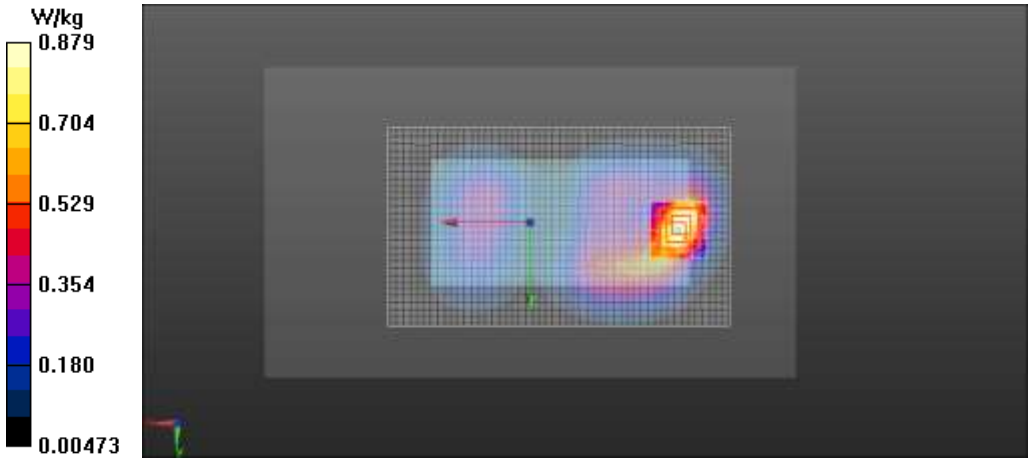
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235270/5

Communication System: WCDMA1900 (Band 2)
Frequency: **1880 MHz**; Duty Cycle: 1:1
Medium: Body 1900 SAR4; Medium Notes: Medium Temperature: t=21.2 C
Medium parameters used: f = 1880 MHz; σ = 1.502 S/m; ε_r = 53.062; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.41, 7.41, 7.41); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - TFP; Type: QD000 P51 CA; Serial: S/N 1148/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WCDMA 1900 (Band 2)/Body - CH 9400 - 10 mm - No Headset - Back - Antenna 2/Area Scan (71x121x1):
Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 22.37 V/m
Fast SAR: SAR(1 g) = 0.691 W/kg
Fast SAR(10 g) = 0.393 W/kg
Maximum value of SAR (interpolated) = 0.879 W/kg

WCDMA 1900 (Band 2)/Body - CH 9400 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (5x5x7)/Cube 0:
Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 22.37 V/m
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.769 W/kg
SAR(10 g) = 0.402 W/kg
Power Drift = 0.08 dB
Maximum value of SAR (measured) = 0.954 W/kg



Plot W10

Date/Time: 2015-07-14 3:05:32 PM

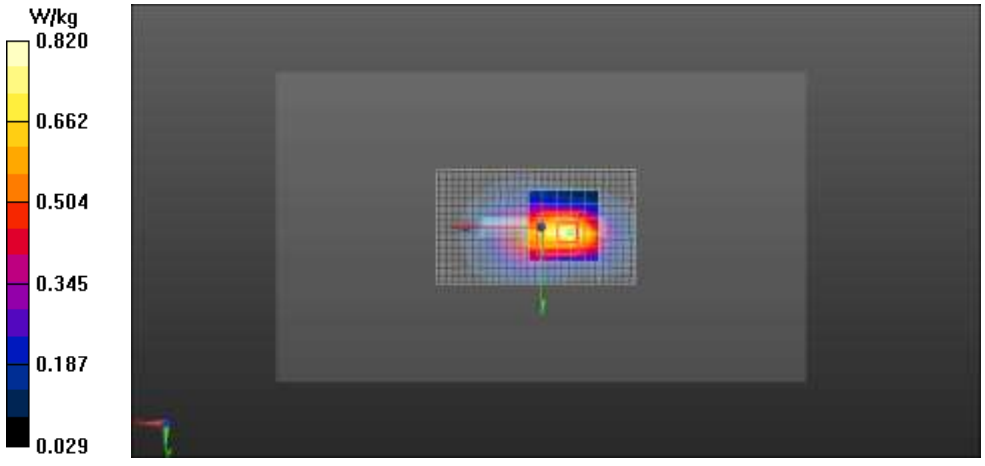
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235270/5

Communication System: LTE1900 (Band 2)
Frequency: **1860 MHz**; Duty Cycle: 1:1
Medium: Body 1900 SAR4; Medium Notes: Medium Temperature: t=21.3 C
Medium parameters used: f = 1860 MHz; σ = 1.471 S/m; ε_r = 53.841; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3574
- ConvF(7.41, 7.41, 7.41); Calibrated: 2014-09-24;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn480; Calibrated: 2014-09-18
- Phantom: SAR4 - TFP; Type: QD000 P51 CA; Serial: S/N 1148/1
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

LTE 1900 (Band 2) - Top_Bottom/Body - CH 18700 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Bottom - Antenna 1/Area Scan (41x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 20.44 V/m
Fast SAR: SAR(1 g) = 0.621 W/kg
Fast SAR(10 g) = 0.332 W/kg
Maximum value of SAR (interpolated) = 0.820 W/kg

LTE 1900 (Band 2) - Top_Bottom/Body - CH 18700 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Bottom - Antenna 1/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 20.44 V/m
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.665 W/kg
SAR(10 g) = 0.365 W/kg
Power Drift = 0.11 dB
Maximum value of SAR (measured) = 0.831 W/kg



Plot W11

Date/Time: 7/23/2015 3:05:17 PM

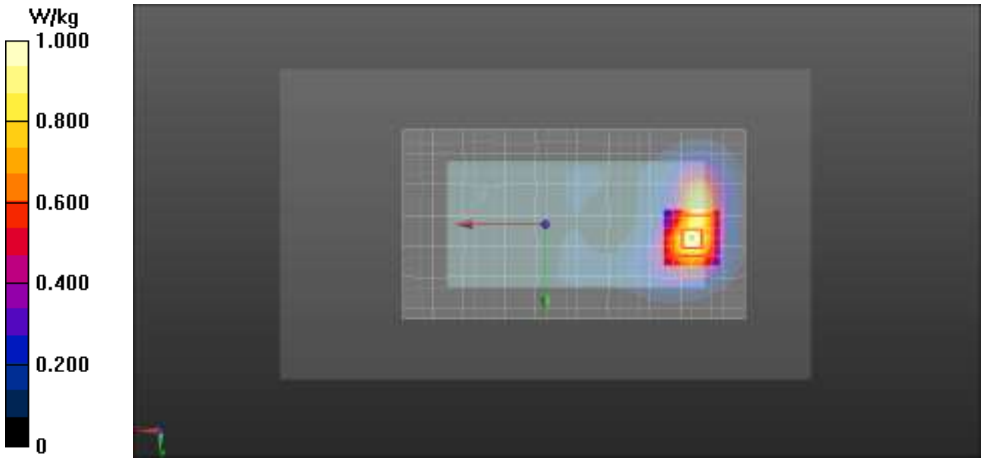
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235270/5

Communication System: LTE2500 (Band 7)
Frequency: **2535 MHz**; Duty Cycle: 1:1
Medium: Body 2600 SAR2; Medium Notes: Medium Temperature: t=20.7C
Medium parameters used: f = 2535 MHz; σ = 2.087 S/m; ε_r = 50.809; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3837
- ConvF(7, 7, 7); Calibrated: 9/10/2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 9/9/2014
- Phantom: SAR2 - TFP ; Type: QD 000 P51 CA; Serial: TP - 1130/2
- 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 - 10 mm - No Headset - Back - Antenna 2/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 21.14 V/m
Fast SAR: SAR(1 g) = 0.786 W/kg
Fast SAR(10 g) = 0.408 W/kg
Maximum value of SAR (interpolated) = 1.00 W/kg

LTE2500 (Band 7)/Body - CH 21100 - 20MHz - QPSK - 1 RB - Offset 0 - 10 mm - No Headset - Back - Antenna 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.14 V/m
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.792 W/kg
SAR(10 g) = 0.407 W/kg
Power Drift = 0.06 dB
Maximum value of SAR (measured) = 1.01 W/kg



Plot W12

Date/Time: 2015-07-24 9:35:57 PM

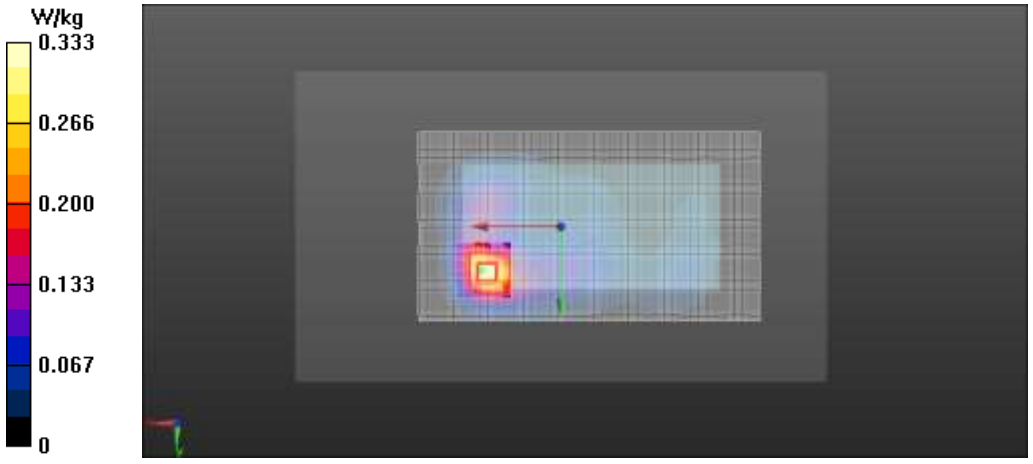
Test Laboratory: TCC Microsoft
Type: RM-1128, HW:1510; Serial: 004402/74/235205/1

Communication System: WLAN2450
Frequency: **2462 MHz**; Duty Cycle: 1:1
Medium: Body 2600 SAR2; Medium Notes: Medium Temperature: t=21.5C
Medium parameters used: f = 2462 MHz; σ = 1.975 S/m; ε_r = 50.865; ρ = 1000 kg/m^3
Phantom section: Center Section

DASY Configuration:
- Probe: EX3DV4 - SN3823
- ConvF(6.95, 6.95, 6.95); Calibrated: 2014-09-10;
- Sensor-Surface: 3mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1319; Calibrated: 2014-09-09
- Phantom: SAR2 - TFP ; Type: QD 000 P51 CA; Serial: TP - 1130/2
- Measurement SW: DASY52, Version 52.8 (8); SEMCAD X Version 14.6.10 (7331)

WLAN2450 b-mode/Body - CH 11 - QPSK 11 Mbps - 10 mm -No Headset - Back - Antenna 1/Area Scan (101x181x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 11.72 V/m
Fast SAR: SAR(1 g) = 0.251 W/kg
Fast SAR(10 g) = 0.123 W/kg
Maximum value of SAR (interpolated) = 0.333 W/kg

WLAN2450 b-mode/Body - CH 11 - QPSK 11 Mbps - 10 mm -No Headset - Back - Antenna 1/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.72 V/m
Peak SAR (extrapolated) = 0.504 W/kg
SAR(1 g) = 0.244 W/kg
SAR(10 g) = 0.117 W/kg
Power Drift = 0.14 dB
Maximum value of SAR (measured) = 0.316 W/kg



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	2015-07-20	41.6	0.88	41.6	0.88	41.5	0.89
	2015-07-21	41.7	0.87	41.6	0.87	41.6	0.87
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	2015-07-21	41.6	0.87	41.6	0.87	41.6	0.87
	2015-07-22	41.3	0.87	41.3	0.87	41.2	0.87
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	41.2	0.89	41.0	0.90	40.9	0.91
	2015-07-15	40.8	0.88	40.6	0.89	40.5	0.90
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	41.1	0.89	41.0	0.90	40.9	0.91
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	2015-07-16	42.3	0.91	42.2	0.92	42.1	0.92
	2015-07-17	41.0	0.89	40.9	0.90	40.8	0.90

(Head tissue simulant table continues)

(Head tissue simulant table continues)

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	2015-07-10	39.0	1.32	38.9	1.34	38.9	1.36
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	2015-07-16	39.5	1.31	39.5	1.32	39.4	1.33
	2015-07-17	39.3	1.31	39.3	1.33	39.2	1.34
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	2015-07-16	40.6	1.31	40.4	1.35	40.3	1.37
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	2015-07-16	40.6	1.32	40.4	1.35	40.3	1.37
	2015-07-20	41.4	1.32	41.3	1.35	41.2	1.37
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	2015-07-17	41.6	1.33	41.5	1.35	41.5	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	2015-07-17	38.4	1.75	38.4	1.78	38.3	1.81
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	2015-07-20	37.8	1.86	37.7	1.89	37.6	1.92
	2015-07-21	39.0	1.86	38.9	1.89	38.8	1.92
	2015-07-22	38.4	1.86	38.3	1.89	38.3	1.92

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	2015-07-22	53.4	0.95	53.4	0.95	53.4	0.95
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	2015-07-22	53.4	0.95	53.4	0.95	53.4	0.95
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	2015-07-22	53.5	0.93	53.4	0.94	53.4	0.96
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	2015-07-22	53.5	0.94	53.4	0.94	53.4	0.95
	2015-07-24	53.7	0.93	53.6	0.94	53.5	0.95
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	2015-07-24	53.6	0.94	53.6	0.94	53.6	0.95
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	2015-07-14	51.0	1.40	50.9	1.42	50.9	1.44
	2015-07-22	52.7	1.40	52.7	1.42	52.6	1.44

(Body tissue simulant table continues)

(Body tissue simulant table continues)

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	2015-07-14	51.0	1.41	51.0	1.42	50.9	1.43
	2015-07-15	52.4	1.41	52.4	1.42	52.4	1.43
	2015-07-22	52.7	1.41	52.7	1.42	52.7	1.43
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	2015-07-10	52.3	1.43	52.2	1.46	52.1	1.49
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	2015-07-15	53.2	1.47	53.1	1.50	53.0	1.53
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	53.2	1.46	53.1	1.48	53.1	1.50
	2015-07-14	53.8	1.47	53.8	1.49	53.7	1.51
	2015-07-15	53.2	1.48	53.1	1.50	53.0	1.52
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	2015-07-24	51.0	1.91	50.9	1.94	50.9	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	2015-07-22	50.9	2.05	50.8	2.08	50.8	2.11
	2015-07-23	50.7	2.05	50.7	2.08	50.6	2.11
	2015-08-03	50.7	2.05	50.6	2.08	50.5	2.11
	2015-08-12	51.2	2.10	51.1	2.13	51.1	2.16

APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

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

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

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

Accreditation No.: SCS 0108

Client Microsoft (China)

Certificate No: EX3-3836_Mar15

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3836

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

Calibration date: March 23, 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:	Israe Elnaouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 24, 2015

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3836

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.39	0.47	0.45	± 10.1 %
DCP (mV)[B]	93.7	106.8	100.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	133.5	±3.3 %
		Y	0.0	0.0	1.0		130.5	
		Z	0.0	0.0	1.0		143.0	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3836

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	8.95	8.95	8.95	0.24	1.40	± 12.0 %
835	41.5	0.90	8.58	8.58	8.58	0.38	0.99	± 12.0 %
1750	40.1	1.37	7.87	7.87	7.87	0.38	0.95	± 12.0 %
1900	40.0	1.40	7.64	7.64	7.64	0.35	0.90	± 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: EX3DV4 - SN:3836

Calibration Parameter Determined in Body Tissue Simulating Media

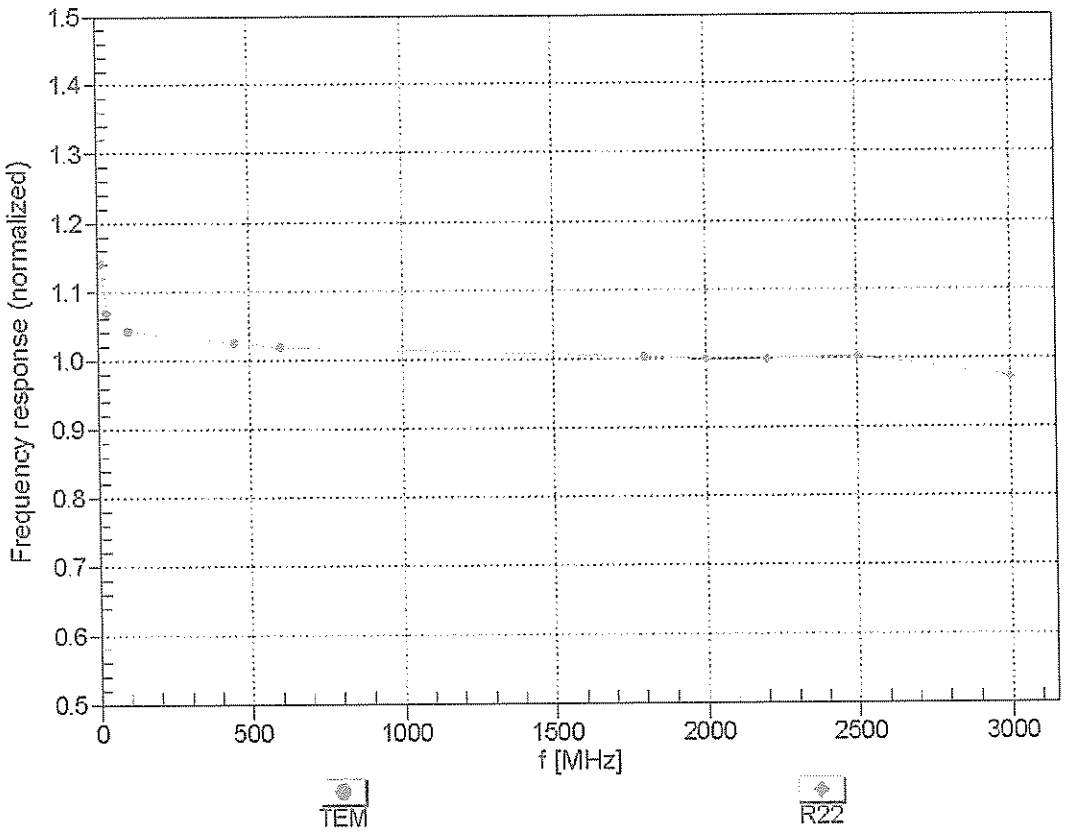
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	8.75	8.75	8.75	0.25	1.22	± 12.0 %
835	55.2	0.97	8.66	8.66	8.66	0.33	1.03	± 12.0 %
1750	53.4	1.49	7.40	7.40	7.40	0.36	0.93	± 12.0 %
1900	53.3	1.52	7.01	7.01	7.01	0.22	1.25	± 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.

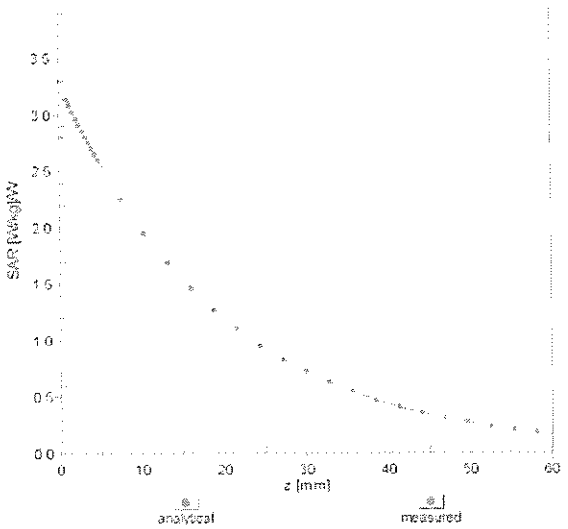
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



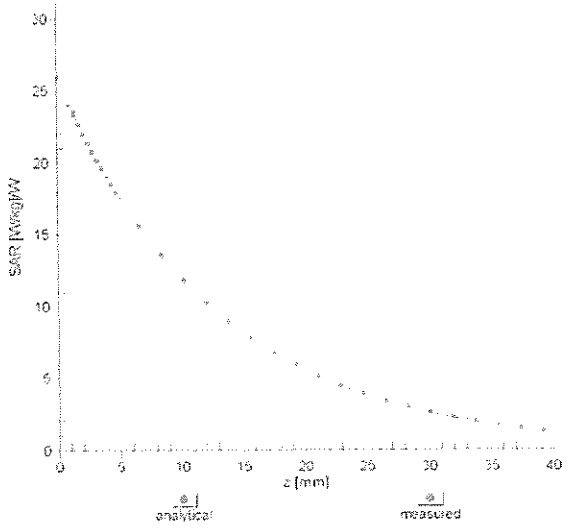
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

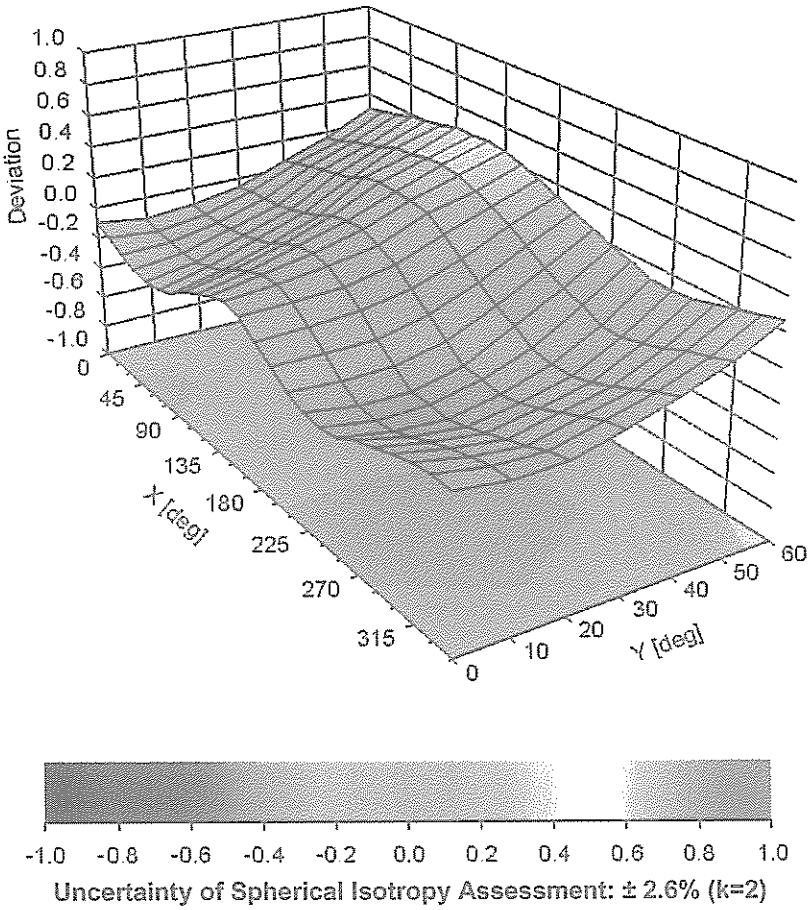


f = 1750 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3836

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-133.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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

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

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

Accreditation No.: SCS 108

Client TCC Microsoft Beijing

Certificate No: EX3-3839_Sep14

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3839

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: September 15, 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-13)	In house check: Oct-14

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

Issued: September 15, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3839

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.48	0.44	0.44	± 10.1 %
DCP (mV)[B]	98.7	98.6	100.0	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	136.4	±3.0 %
		Y	0.0	0.0	1.0		129.1	
		Z	0.0	0.0	1.0		146.1	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3839

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)
835	41.5	0.90	8.88	8.88	8.88	0.39	0.92	± 12.0 %
1750	40.1	1.37	7.62	7.62	7.62	0.76	0.56	± 12.0 %
1900	40.0	1.40	7.39	7.39	7.39	0.67	0.62	± 12.0 %
5200	36.0	4.66	5.06	5.06	5.06	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.82	4.82	4.82	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.58	4.58	4.58	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.47	4.47	4.47	0.35	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:3839

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)
835	55.2	0.97	8.84	8.84	8.84	0.34	0.96	± 12.0 %
1750	53.4	1.49	7.44	7.44	7.44	0.50	0.75	± 12.0 %
1900	53.3	1.52	7.03	7.03	7.03	0.24	1.07	± 12.0 %
5200	49.0	5.30	4.28	4.28	4.28	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.09	4.09	4.09	0.40	1.90	± 13.1 %
5500	48.6	5.65	3.90	3.90	3.90	0.45	1.90	± 13.1 %
5600	48.5	5.77	3.76	3.76	3.76	0.45	1.90	± 13.1 %
5800	48.2	6.00	4.09	4.09	4.09	0.50	1.90	± 13.1 %

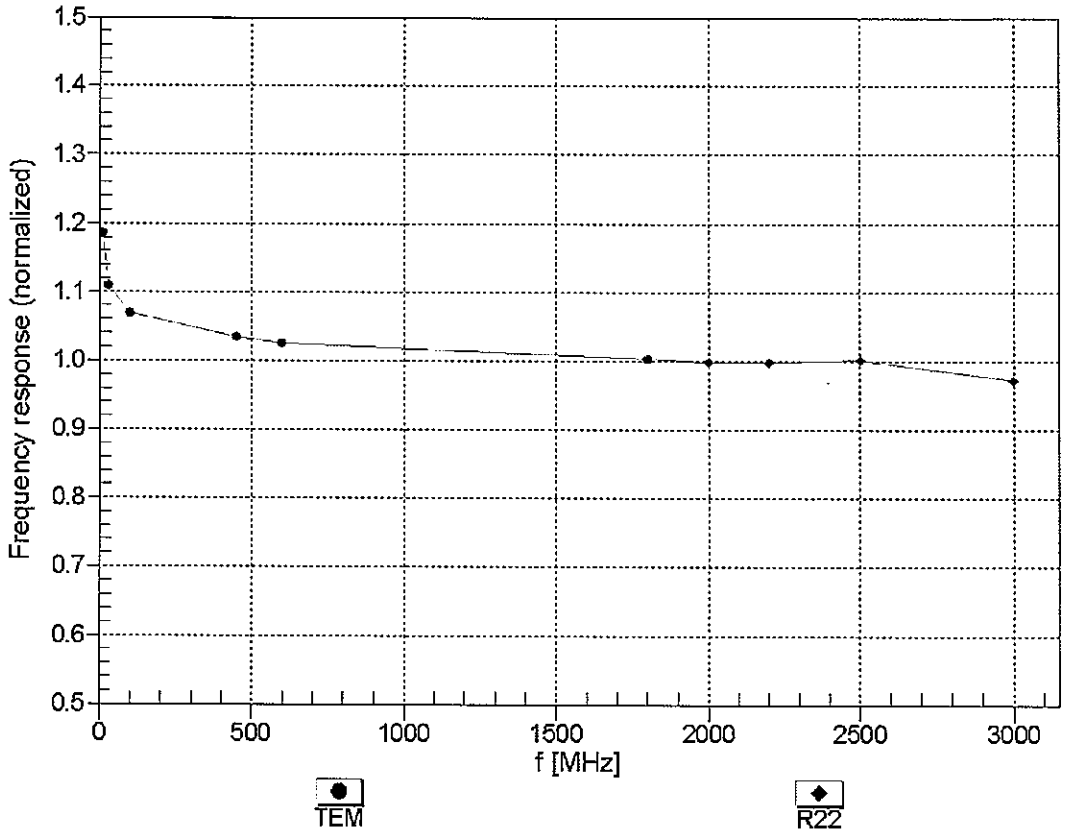
[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz 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.

Frequency Response of E-Field

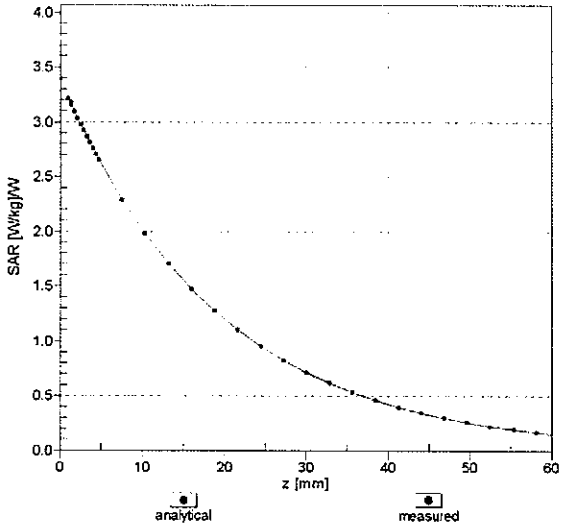
(TEM-Cell:ifi110 EXX, Waveguide: R22)



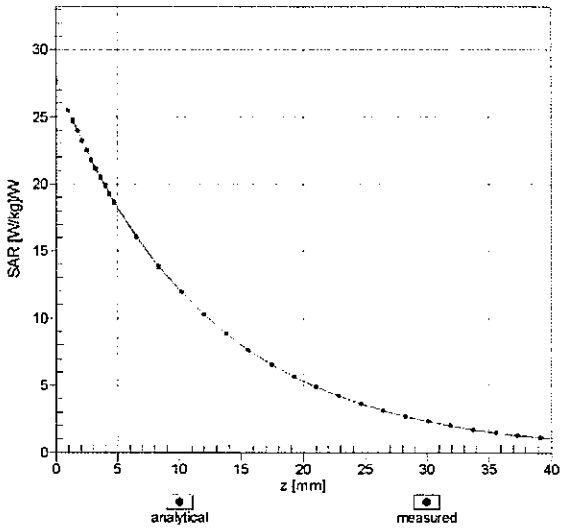
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

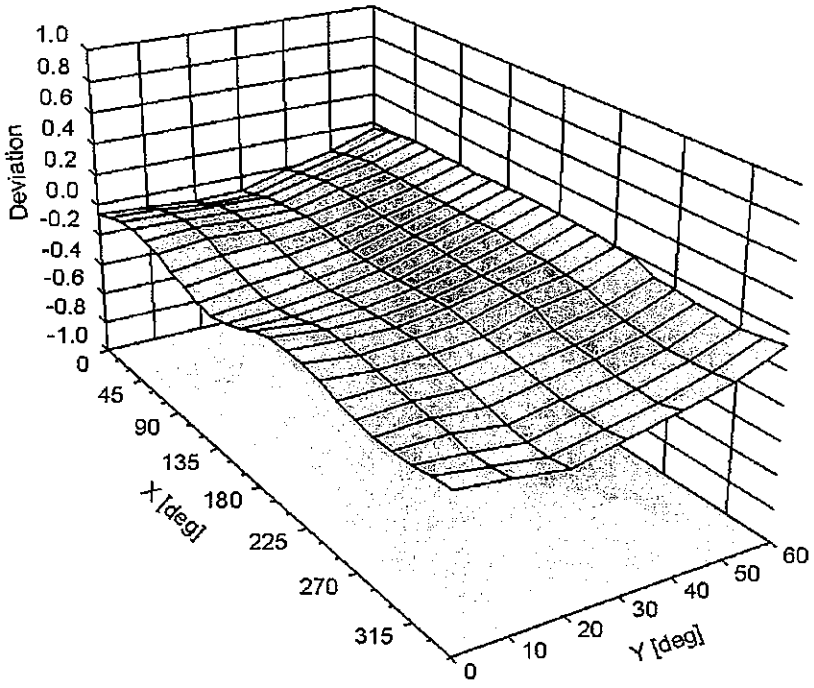


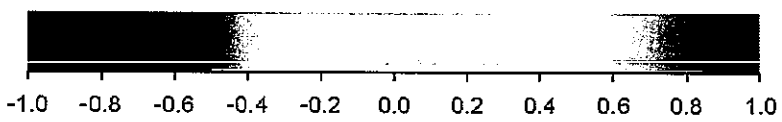
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3839

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	2.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Calibration Laboratory of
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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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

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

Accreditation No.: SCS 108

Client TCC Microsoft Beijing

Certificate No: EX3-3823_Sep14

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3823

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

Calibration date: September 10, 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-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 11, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3823

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.41	0.36	0.47	± 10.1 %
DCP (mV)[B]	101.2	100.2	98.8	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	160.0	±3.3 %
		Y	0.0	0.0	1.0		158.6	
		Z	0.0	0.0	1.0		151.9	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3823

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)
835	41.5	0.90	9.08	9.08	9.08	0.28	1.06	± 12.0 %
1750	40.1	1.37	7.87	7.87	7.87	0.41	0.75	± 12.0 %
1900	40.0	1.40	7.63	7.63	7.63	0.31	0.88	± 12.0 %
1950	40.0	1.40	7.46	7.46	7.46	0.47	0.71	± 12.0 %
2300	39.5	1.67	7.32	7.32	7.32	0.38	0.77	± 12.0 %
2450	39.2	1.80	6.95	6.95	6.95	0.41	0.75	± 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: EX3DV4 - SN:3823

Calibration Parameter Determined in Body Tissue Simulating Media

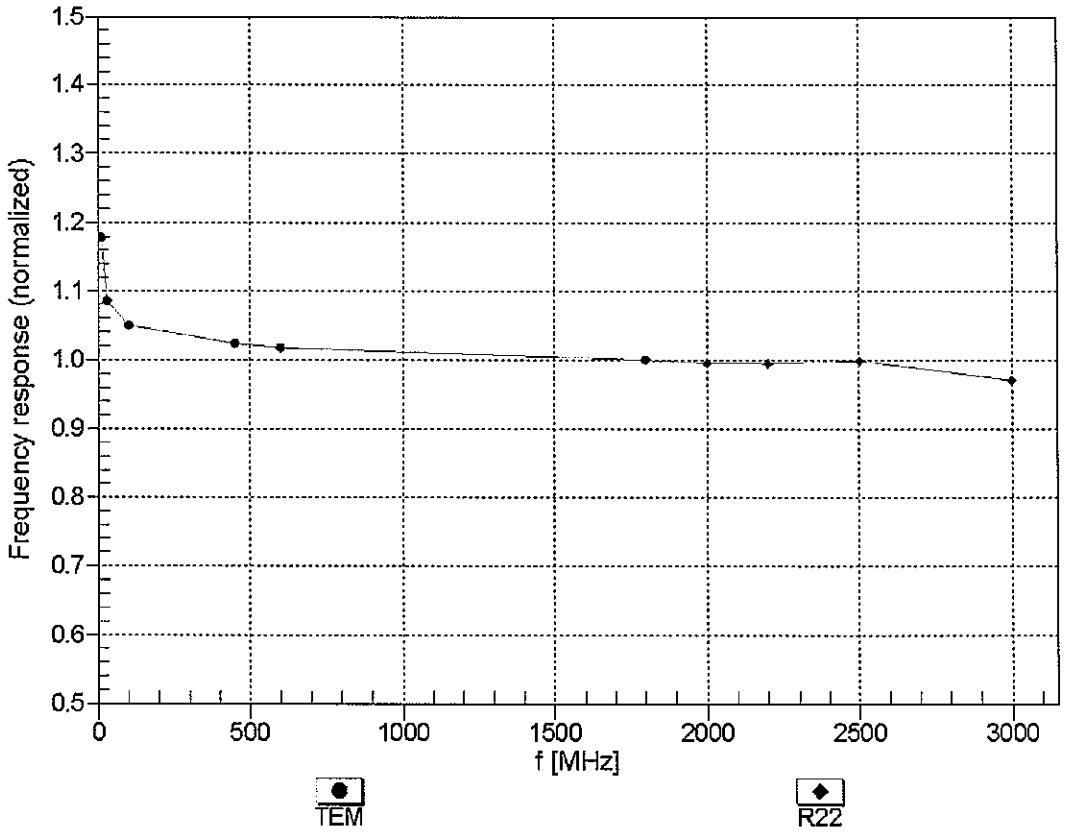
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
835	55.2	0.97	9.05	9.05	9.05	0.24	1.18	± 12.0 %
1750	53.4	1.49	7.54	7.54	7.54	0.43	0.75	± 12.0 %
1900	53.3	1.52	7.28	7.28	7.28	0.69	0.64	± 12.0 %
2450	52.7	1.95	6.95	6.95	6.95	0.80	0.50	± 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.

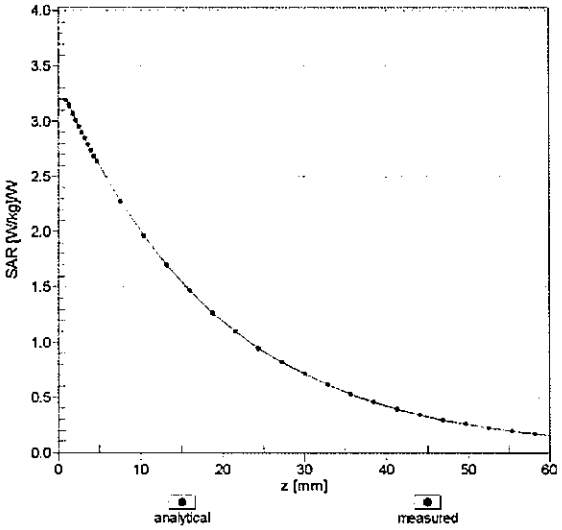
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



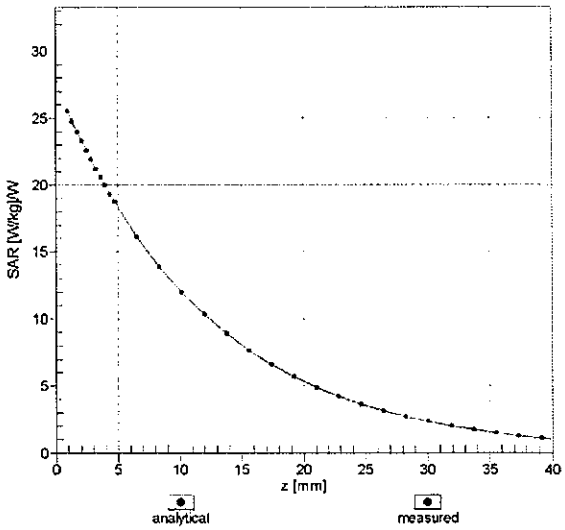
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

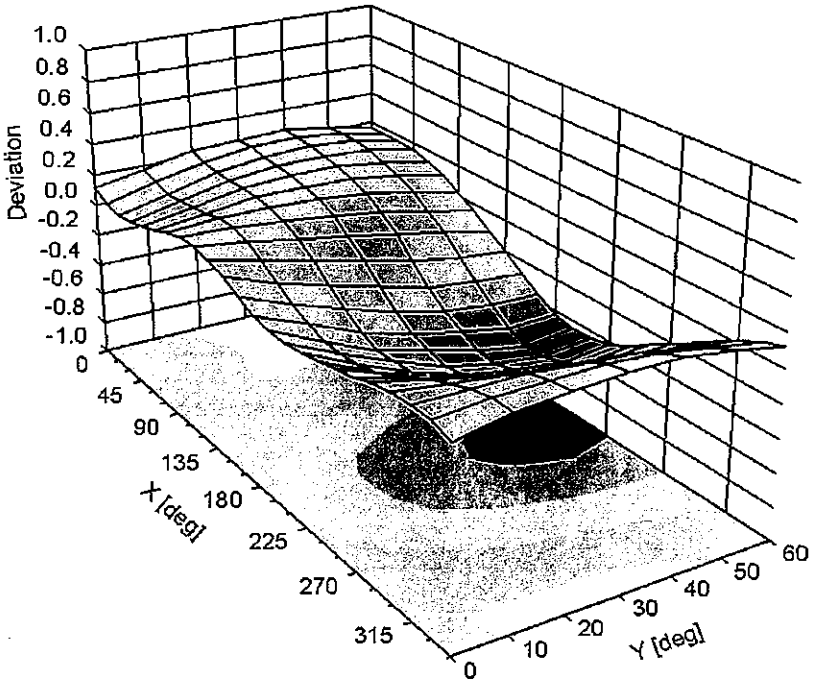


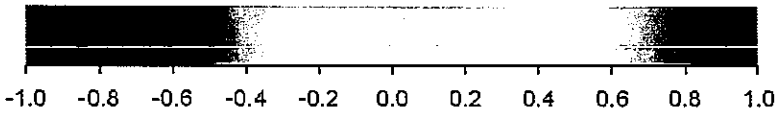
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3823

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-11.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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Accreditation No.: SCS 0108

Client: Microsoft (China)

Certificate No: EX3-3838_Mar15

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3838

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: March 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:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 23, 2015

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3838

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.37	0.60	0.53	± 10.1 %
DCP (mV)[B]	109.0	99.5	101.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	136.0	±3.3 %
		Y	0.0	0.0	1.0		136.8	
		Z	0.0	0.0	1.0		142.0	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3838

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)
835	41.5	0.90	8.91	8.91	8.91	0.22	1.48	± 12.0 %
1750	40.1	1.37	7.77	7.77	7.77	0.37	0.80	± 12.0 %
1900	40.0	1.40	7.56	7.56	7.56	0.37	0.80	± 12.0 %
5200	36.0	4.66	5.00	5.00	5.00	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.85	4.85	4.85	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.63	4.63	4.63	0.45	1.80	± 13.1 %
5600	35.5	5.07	4.39	4.39	4.39	0.45	1.80	± 13.1 %
5800	35.3	5.27	4.33	4.33	4.33	0.45	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:3838

Calibration Parameter Determined in Body Tissue Simulating Media

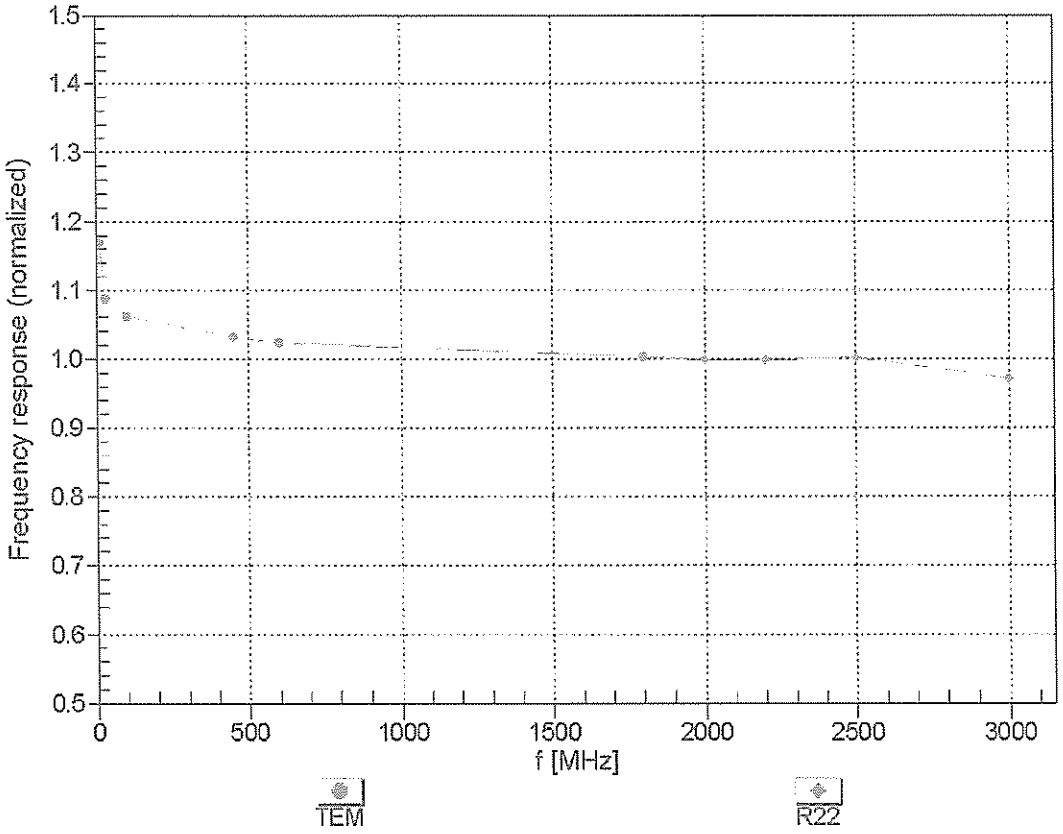
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
835	55.2	0.97	8.84	8.84	8.84	0.43	0.92	± 12.0 %
1750	53.4	1.49	7.48	7.48	7.48	0.43	0.80	± 12.0 %
1900	53.3	1.52	7.24	7.24	7.24	0.41	0.86	± 12.0 %
5200	49.0	5.30	4.36	4.36	4.36	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.29	4.29	4.29	0.50	1.90	± 13.1 %
5500	48.6	5.65	4.00	4.00	4.00	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.74	3.74	3.74	0.55	1.90	± 13.1 %
5800	48.2	6.00	3.99	3.99	3.99	0.55	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.

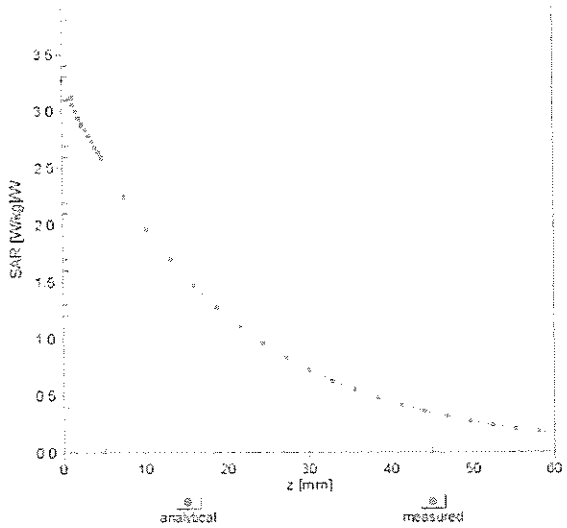
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



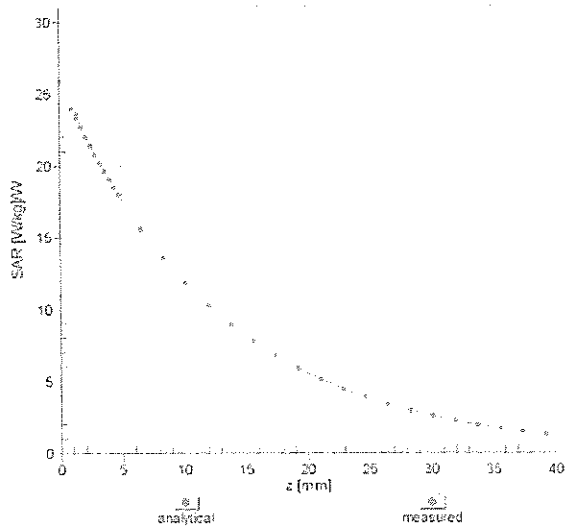
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

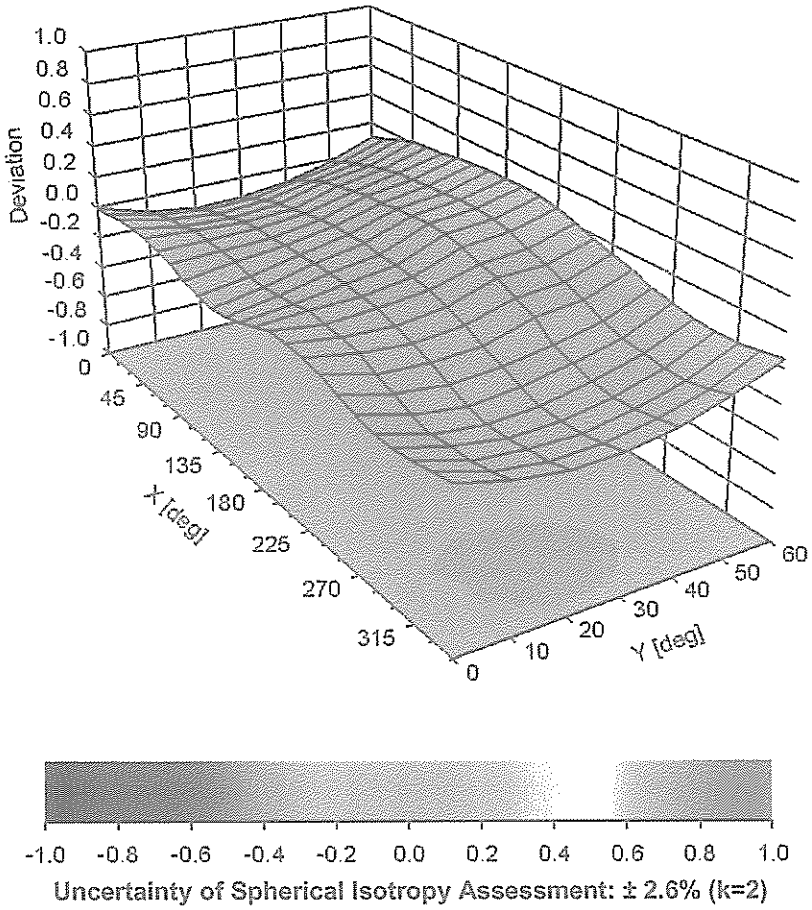


f = 1750 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3838

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-7.1
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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

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

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

Accreditation No.: SCS 108

Client TCC Microsoft Beijing

Certificate No: EX3-3574_Sep14

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3574

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

Calibration date: September 24, 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-13)	In house check: Oct-14

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

Issued: September 25, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3574

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.42	0.46	0.53	± 10.1 %
DCP (mV)[B]	99.7	95.2	96.3	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB$\sqrt{\mu V}$	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	131.8	±3.3 %
		Y	0.0	0.0	1.0		129.8	
		Z	0.0	0.0	1.0		137.5	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3574

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	10.39	10.39	10.39	0.63	0.69	± 12.0 %
835	41.5	0.90	10.12	10.12	10.12	0.80	0.58	± 12.0 %
1750	40.1	1.37	8.19	8.19	8.19	0.43	0.90	± 12.0 %
1900	40.0	1.40	7.83	7.83	7.83	0.44	0.84	± 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: EX3DV4 - SN:3574

Calibration Parameter Determined in Body Tissue Simulating Media

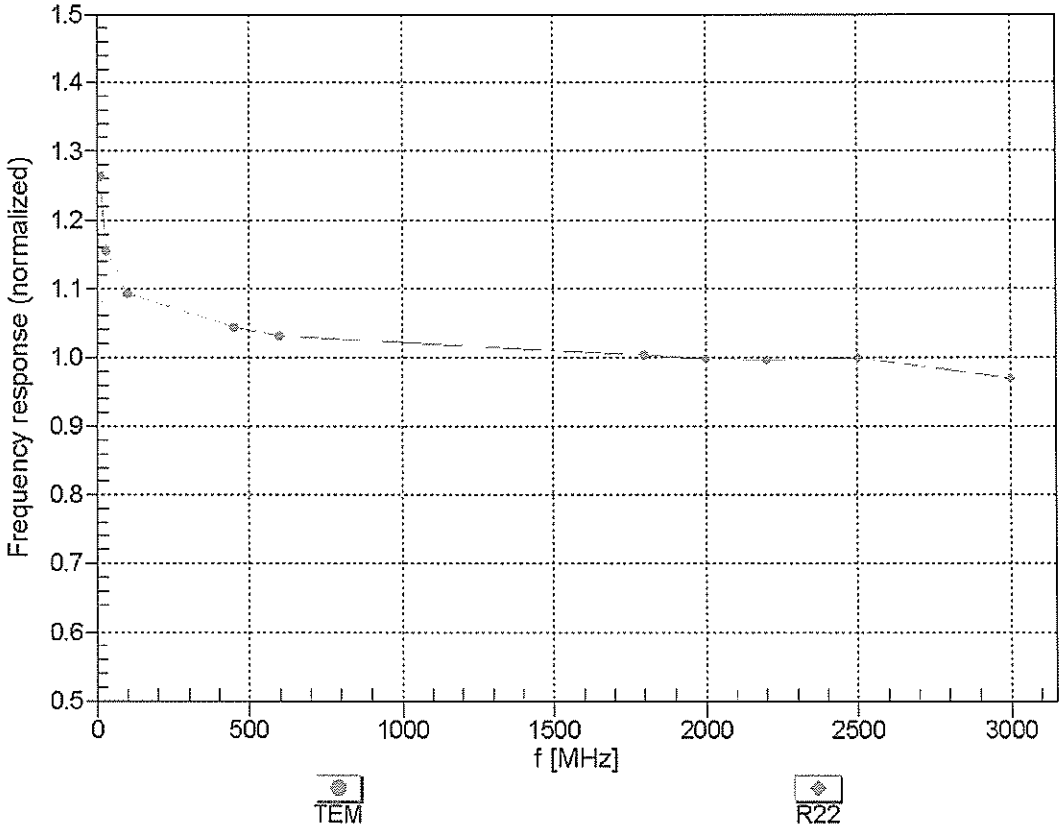
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	9.68	9.68	9.68	0.27	1.15	± 12.0 %
835	55.2	0.97	9.61	9.61	9.61	0.66	0.68	± 12.0 %
1750	53.4	1.49	7.78	7.78	7.78	0.39	0.85	± 12.0 %
1900	53.3	1.52	7.41	7.41	7.41	0.51	0.72	± 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.

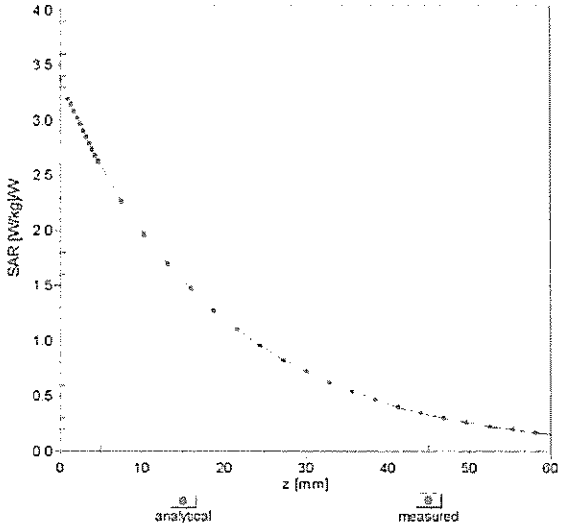
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



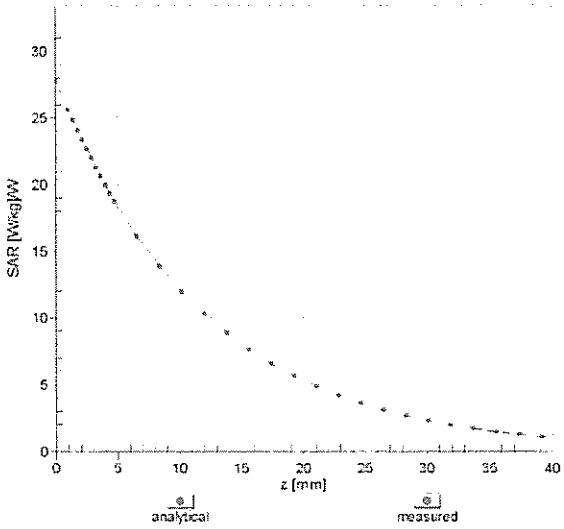
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

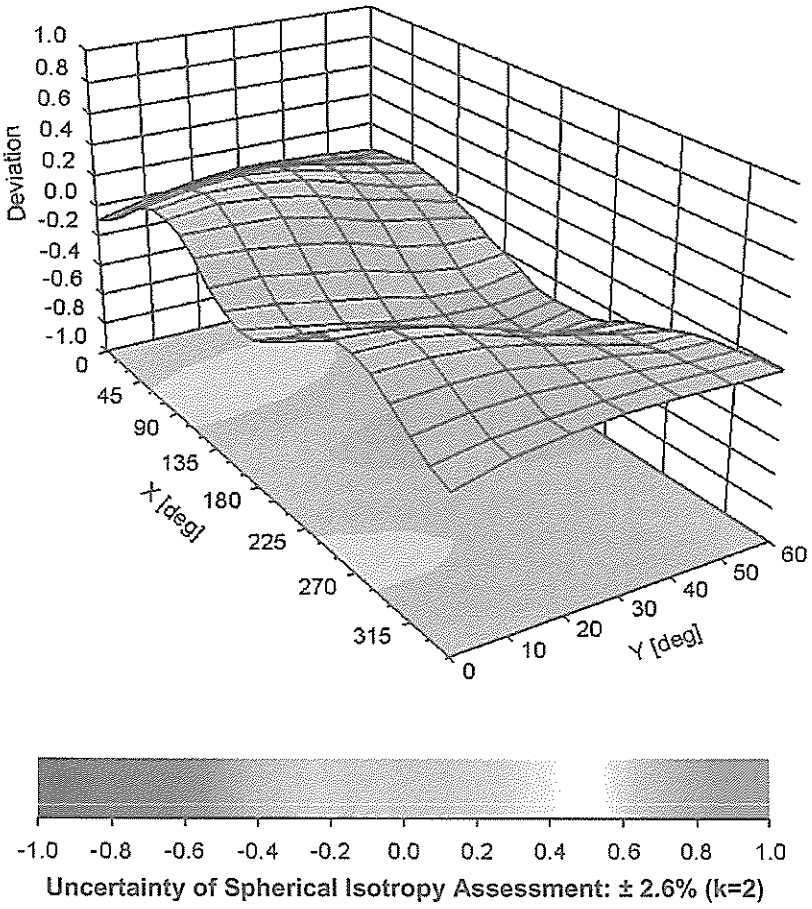


f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3574

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	22.9
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

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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 Beijing**

Certificate No: EX3-3837_Sep14

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3837

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

Calibration date: September 10, 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-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 11, 2014

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3837

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.47	0.47	0.25	± 10.1 %
DCP (mV)[B]	98.4	94.7	93.5	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	134.2	±3.5 %
		Y	0.0	0.0	1.0		132.8	
		Z	0.0	0.0	1.0		136.7	

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

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3837

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)
835	41.5	0.90	9.06	9.06	9.06	0.74	0.61	± 12.0 %
1750	40.1	1.37	7.90	7.90	7.90	0.60	0.64	± 12.0 %
1900	40.0	1.40	7.69	7.69	7.69	0.48	0.71	± 12.0 %
2450	39.2	1.80	7.02	7.02	7.02	0.35	0.85	± 12.0 %
2600	39.0	1.96	6.91	6.91	6.91	0.32	0.92	± 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: EX3DV4 - SN:3837

Calibration Parameter Determined in Body Tissue Simulating Media

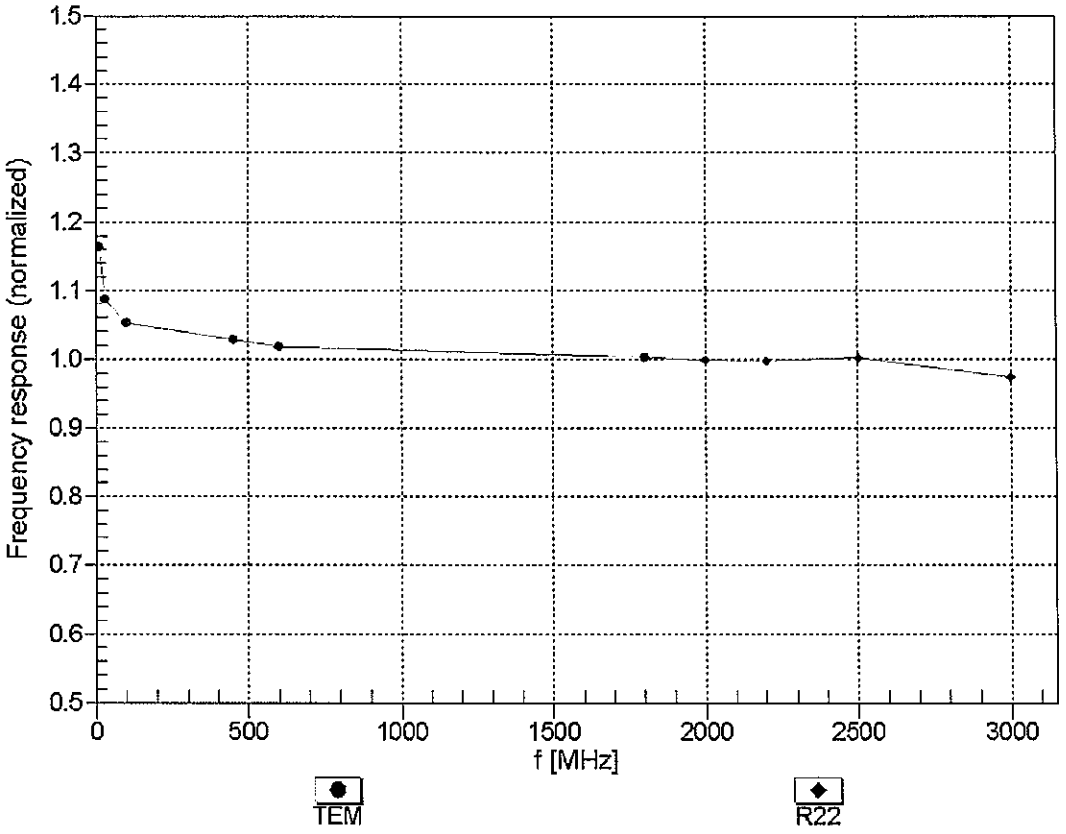
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
835	55.2	0.97	9.10	9.10	9.10	0.80	0.61	± 12.0 %
1750	53.4	1.49	7.62	7.62	7.62	0.52	0.75	± 12.0 %
1900	53.3	1.52	7.32	7.32	7.32	0.70	0.63	± 12.0 %
2450	52.7	1.95	7.15	7.15	7.15	0.80	0.50	± 12.0 %
2600	52.5	2.16	7.00	7.00	7.00	0.80	0.56	± 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.

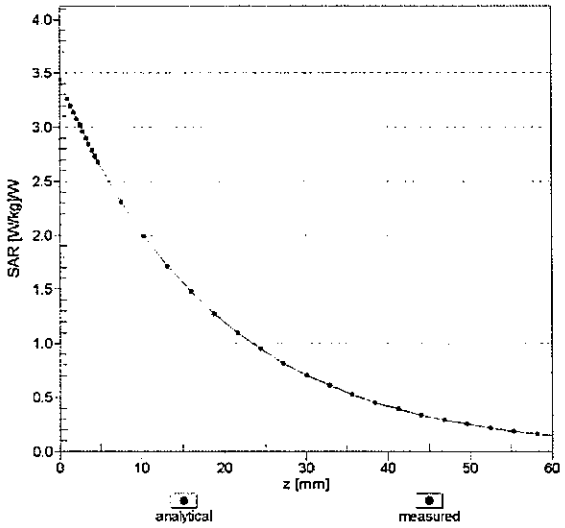
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



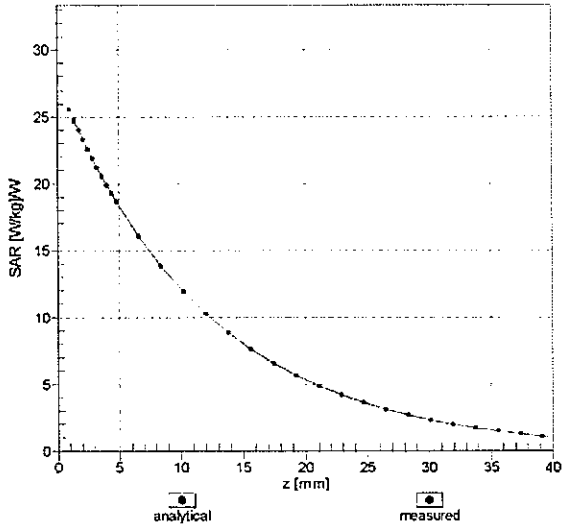
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

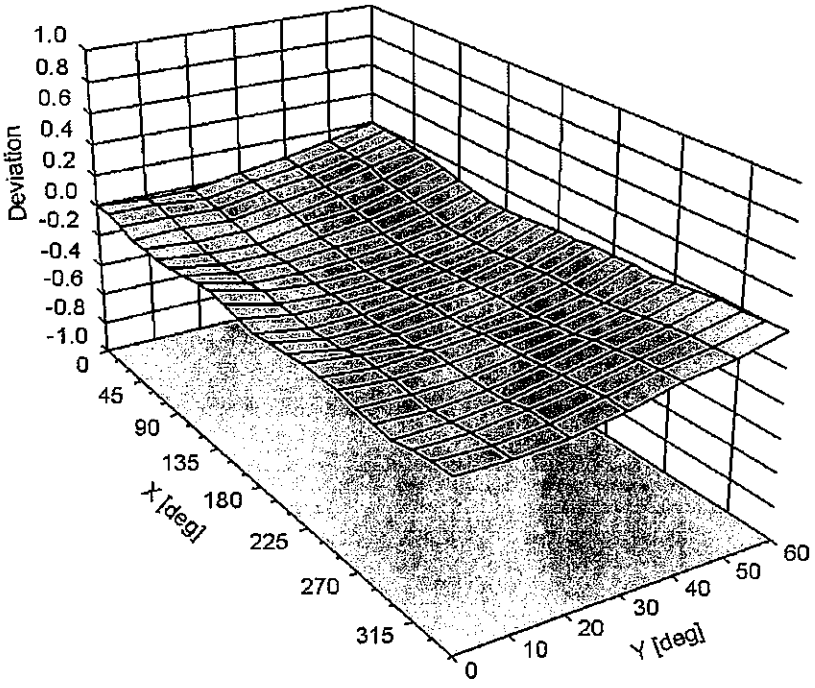


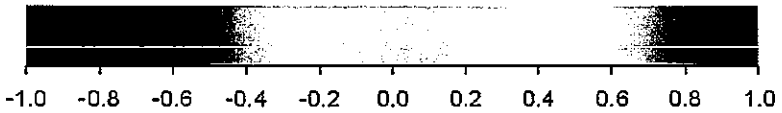
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3837

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-106.5
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

APPENDIX E: RELEVANT PAGES FROM DIPOLE VALIDATION KIT REPORTS

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

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

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

Accreditation No.: SCS 108

Client **Nokia Beijing TCC**

Certificate No: D750V3-1048_Sep13

CALIBRATION CERTIFICATE

Object D750V3 - SN: 1048

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

Calibration date: September 16, 2013

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	01-Nov-12 (No. 217-01640)	Oct-13
Power sensor HP 8481A	US37292783	01-Nov-12 (No. 217-01640)	Oct-13
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	28-Dec-12 (No. ES3-3205_Dec12)	Dec-13
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

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

Issued: September 16, 2013

Measurement Conditions

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

DASY Version	DASY5	V52.8.7
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	41.6 ± 6 %	0.90 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.13 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**8.43 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.39 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**5.52 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	54.4 ± 6 %	1.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.24 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**8.65 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**5.68 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.5 Ω + 0.7 jΩ
Return Loss	- 29.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.3 Ω - 2.8 jΩ
Return Loss	- 30.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.034 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	October 03, 2011

Date: 13.09.2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1048

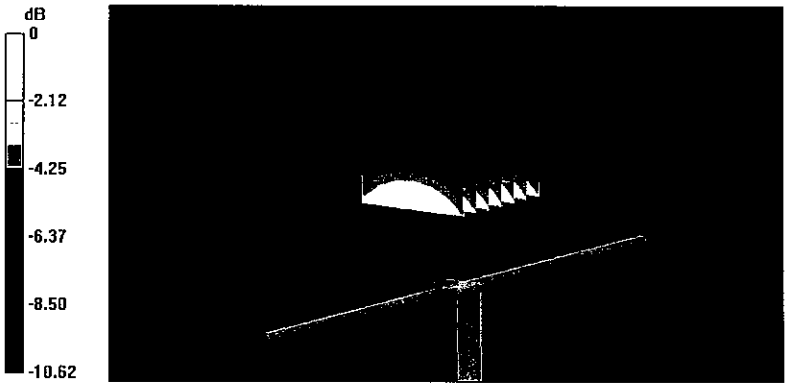
Communication System: UID 0 - CW ; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 0.9 S/m; ε_r = 41.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.28, 6.28, 6.28); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

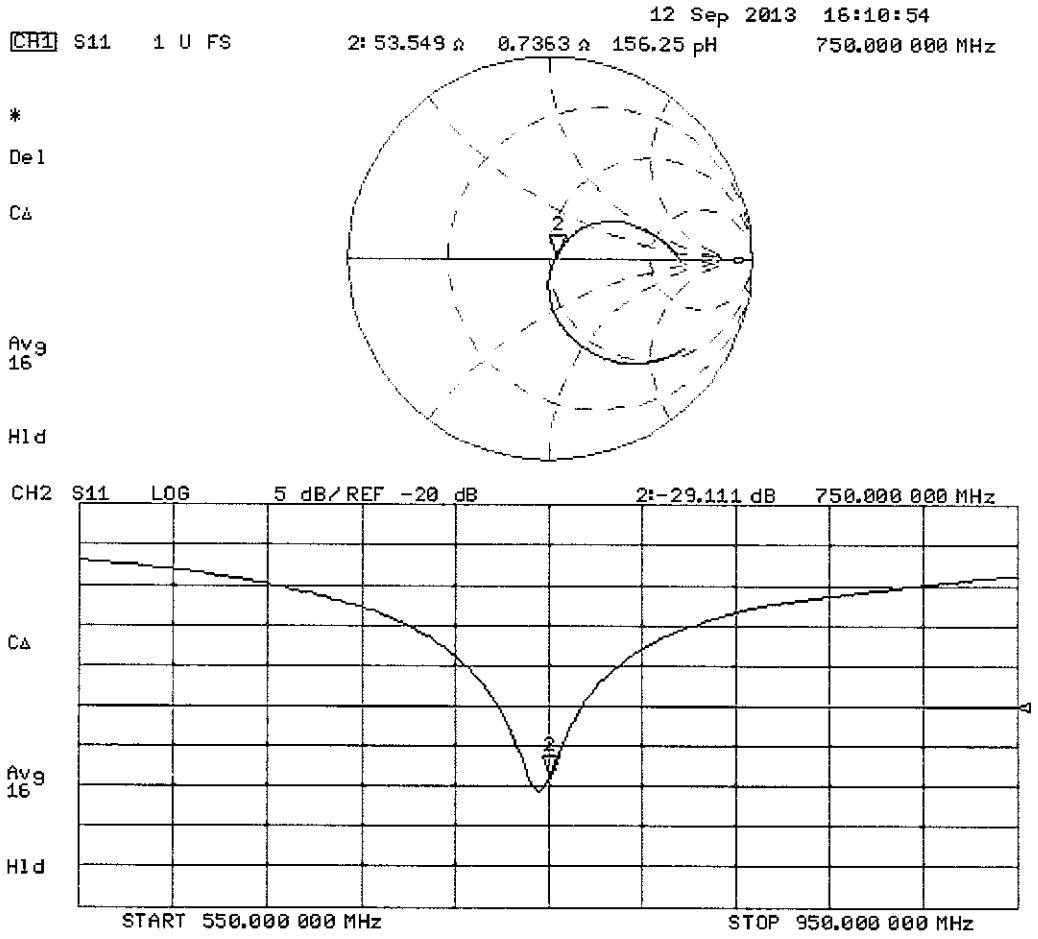
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.946 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.24 W/kg
SAR(1 g) = 2.13 W/kg; SAR(10 g) = 1.39 W/kg
Maximum value of SAR (measured) = 2.49 W/kg



0 dB = 2.49 W/kg = 3.96 dBW/kg

Impedance Measurement Plot for Head TSL



Date: 16.09.2013

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1048

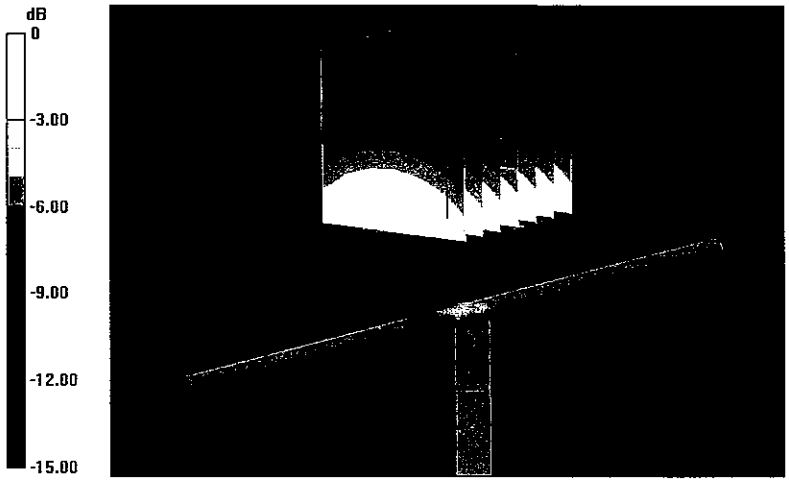
Communication System: UID 0 - CW ; Frequency: 750 MHz
Medium parameters used: f = 750 MHz; σ = 1 S/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.11, 6.11, 6.11); Calibrated: 28.12.2012;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

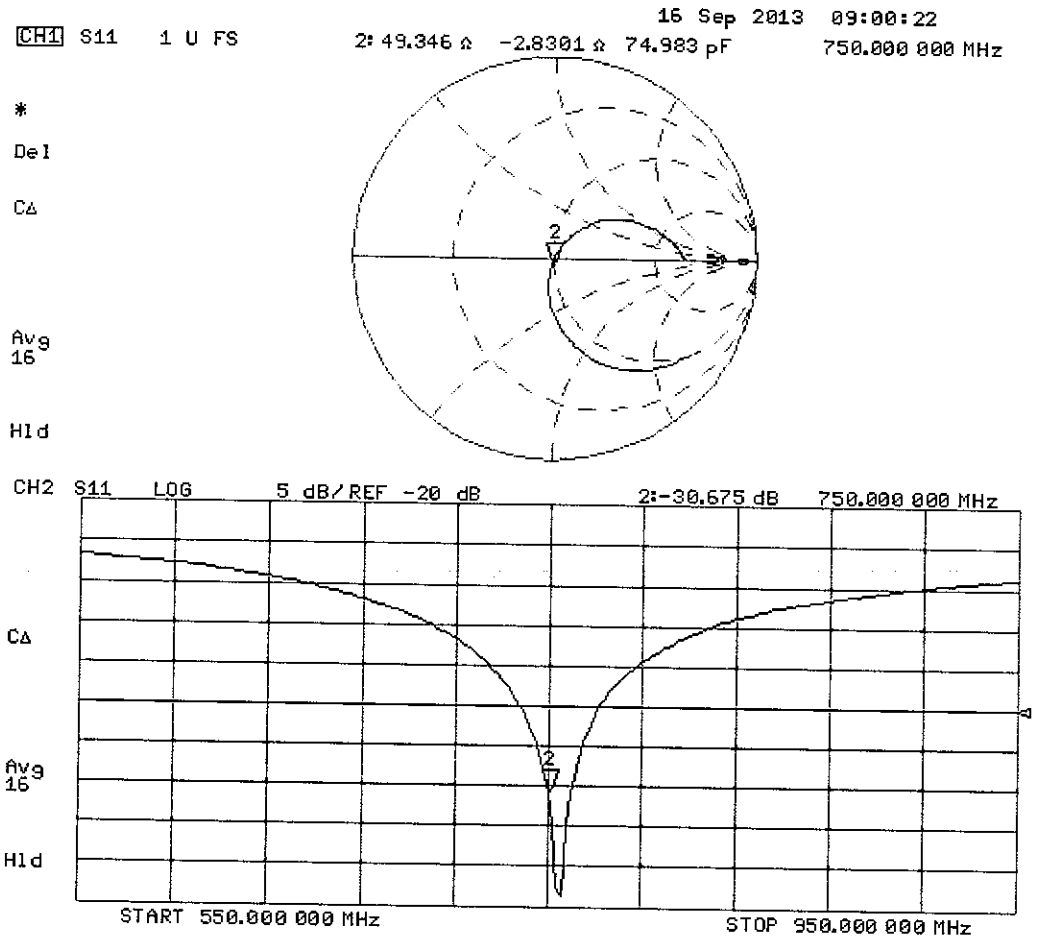
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.004 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.31 W/kg
SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.46 W/kg
Maximum value of SAR (measured) = 2.61 W/kg



0 dB = 2.61 W/kg = 4.17 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D750V3– SN: 1048 Antenna Parameters measured: 2015-10-14.

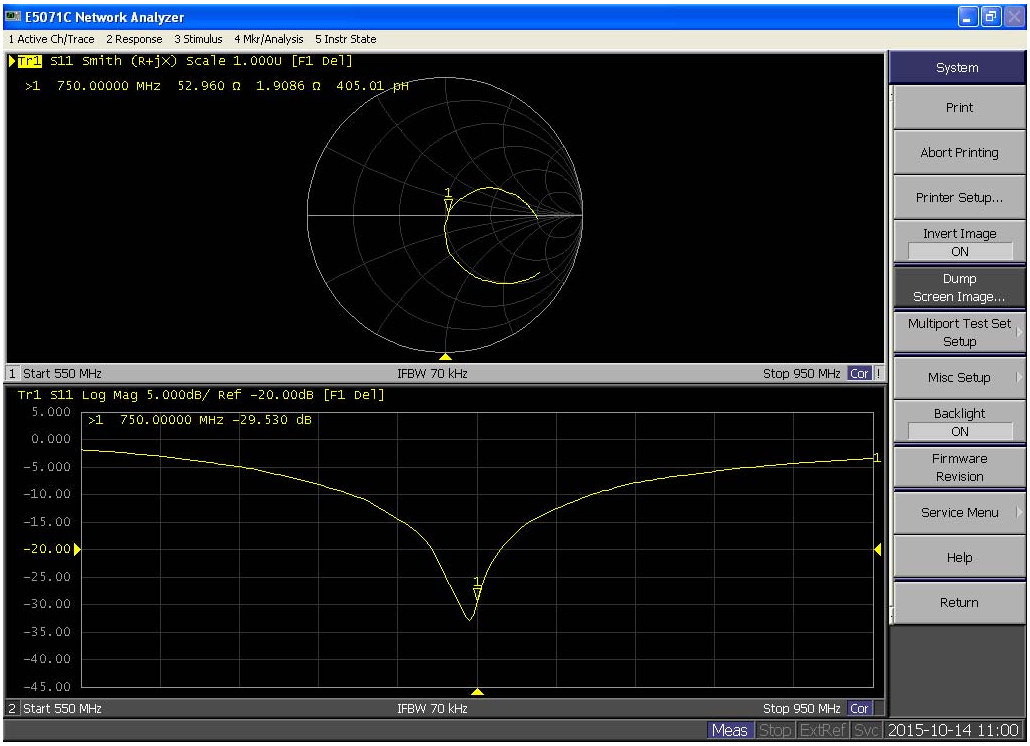
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	53.5 Ω + 0.7 jΩ	53.0 Ω + 1.9 jΩ
Return loss	-29.1 dB	-29.5 dB

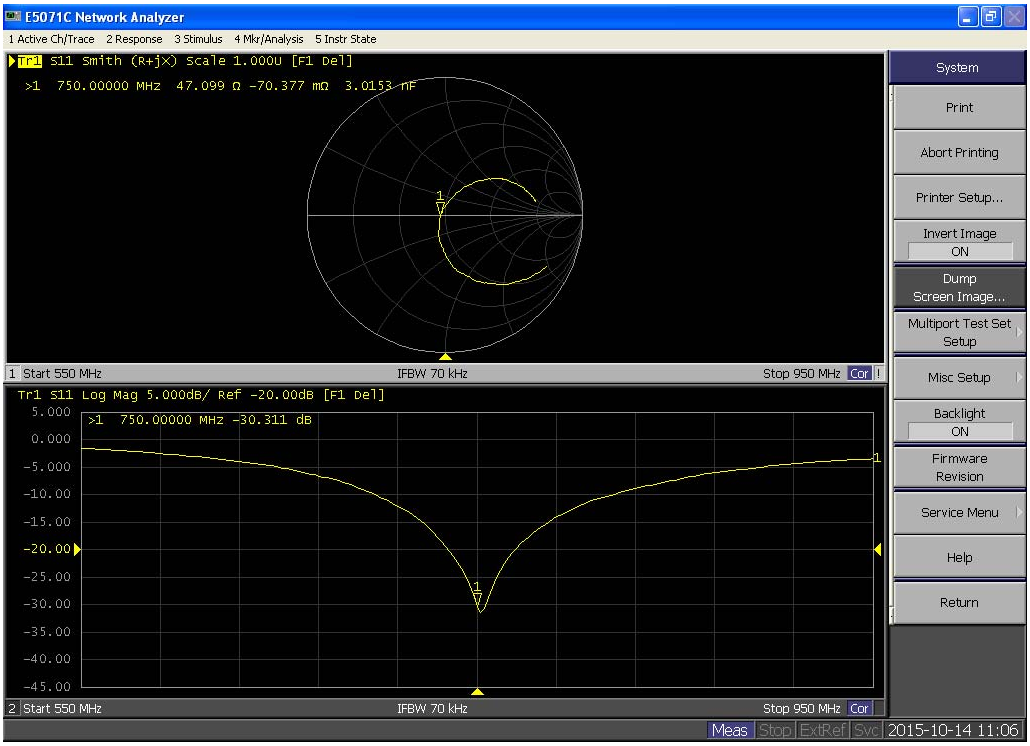
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	49.3 Ω - 2.8 jΩ	47.1Ω - 0.7 jΩ
Return loss	-30.7 dB	-30.3 dB

Impedance Measurement Plot for Head TSL 750



Impedance Measurement Plot for Body TSL 750



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

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

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

Accreditation No.: SCS 108

Client **Nokia Beijing TCC**

Certificate No: D835V2-4d005_Mar14

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d005
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	March 18, 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 EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

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-13)	In house check: Oct-14

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

Issued: March 18, 2014

Measurement Conditions

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

DASY Version	DASY5	V52.8.7
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	40.5 ± 6 %	0.94 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**9.32 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.56 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.06 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	55.0 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**9.31 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.56 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.09 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.0 Ω - 2.9 jΩ
Return Loss	- 29.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.3 Ω - 6.5 jΩ
Return Loss	- 22.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.395 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	July 11, 2003

DASY5 Validation Report for Head TSL

Date: 18.03.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d005

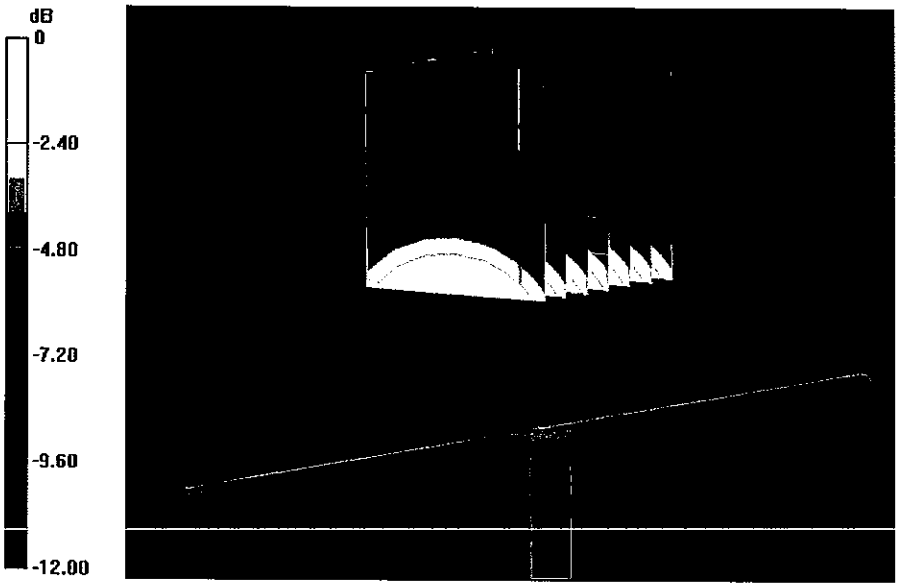
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.94 S/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.22, 6.22, 6.22); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

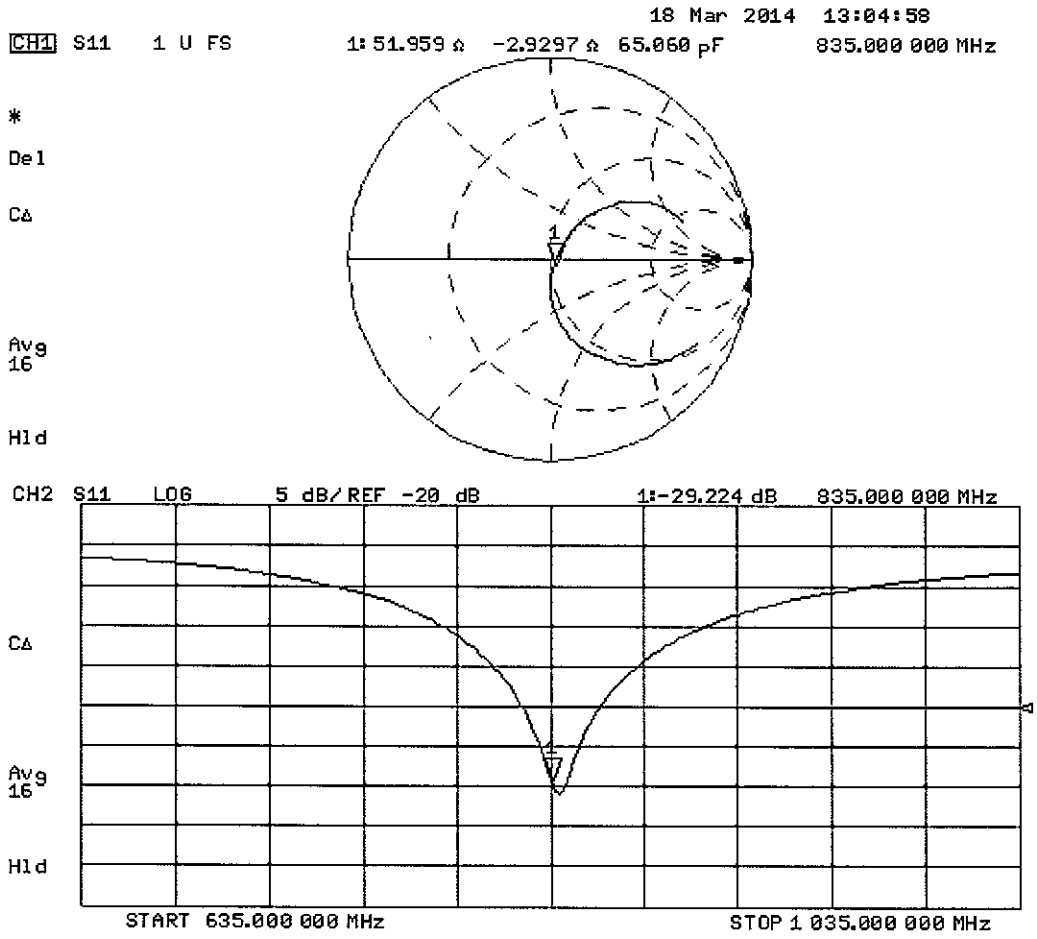
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.167 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.56 W/kg
Maximum value of SAR (measured) = 2.84 W/kg



0 dB = 2.84 W/kg = 4.53 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 14.03.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d005

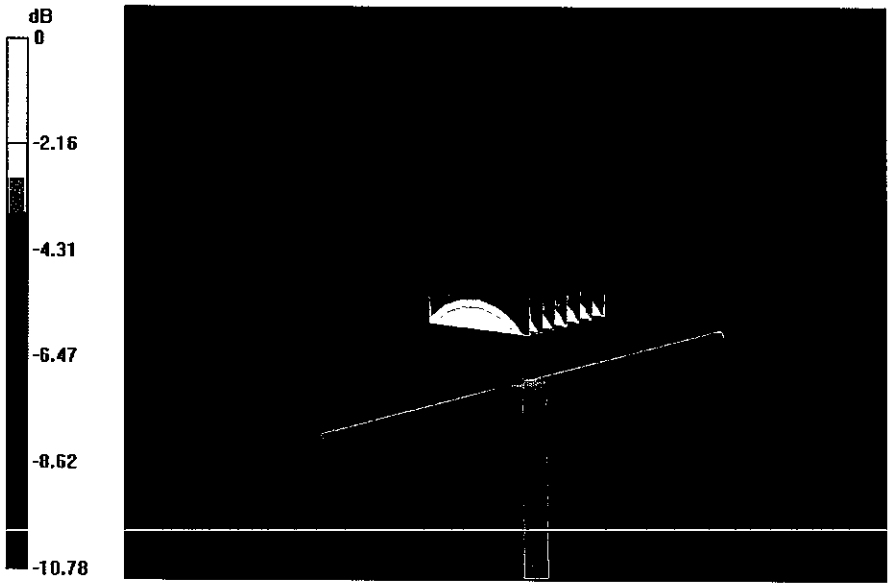
Communication System: UID 0 - CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1.01 S/m; ε_r = 55; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.09, 6.09, 6.09); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

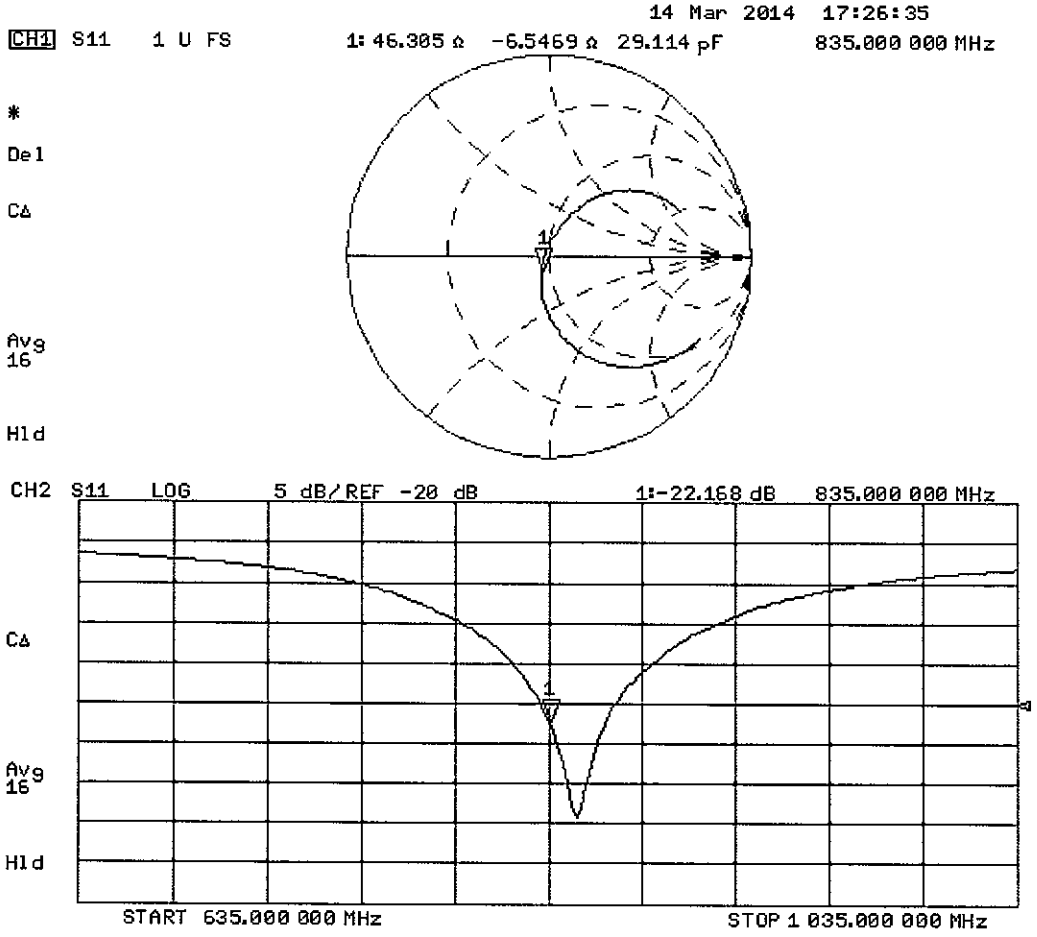
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.814 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 3.56 W/kg
SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.56 W/kg
Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D835V2– SN: 4d005 Antenna Parameters measured: 2015-10-10.

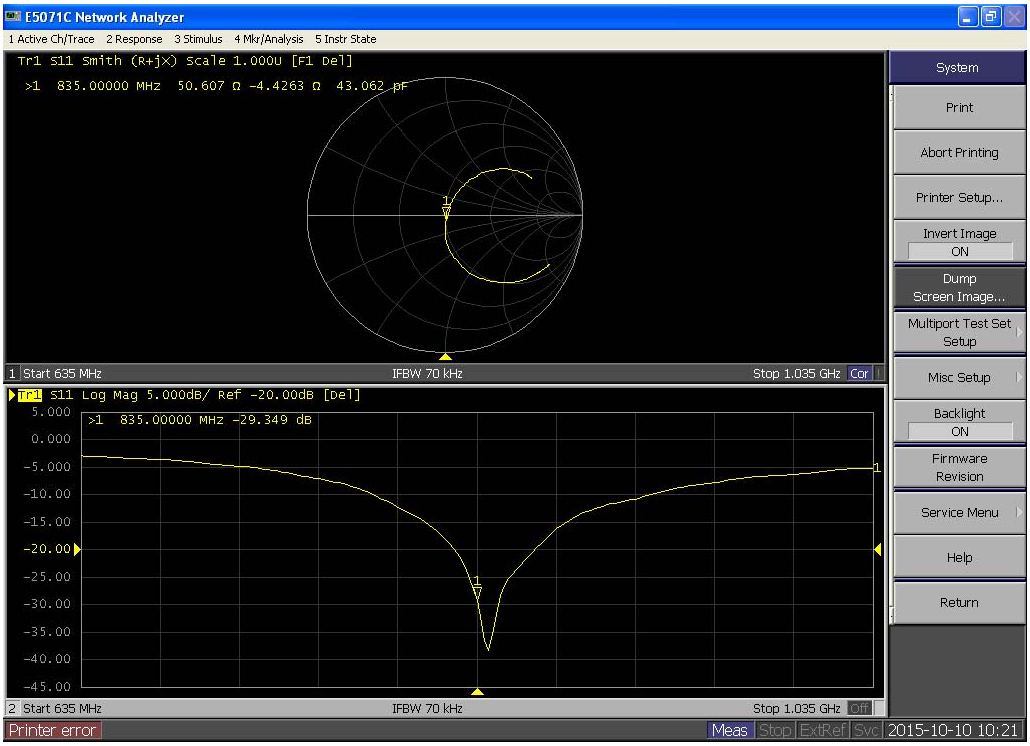
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	52.0 Ω - 2.9 jΩ	50.6 Ω - 4.4 jΩ
Return loss	-29.2 dB	-29.3 dB

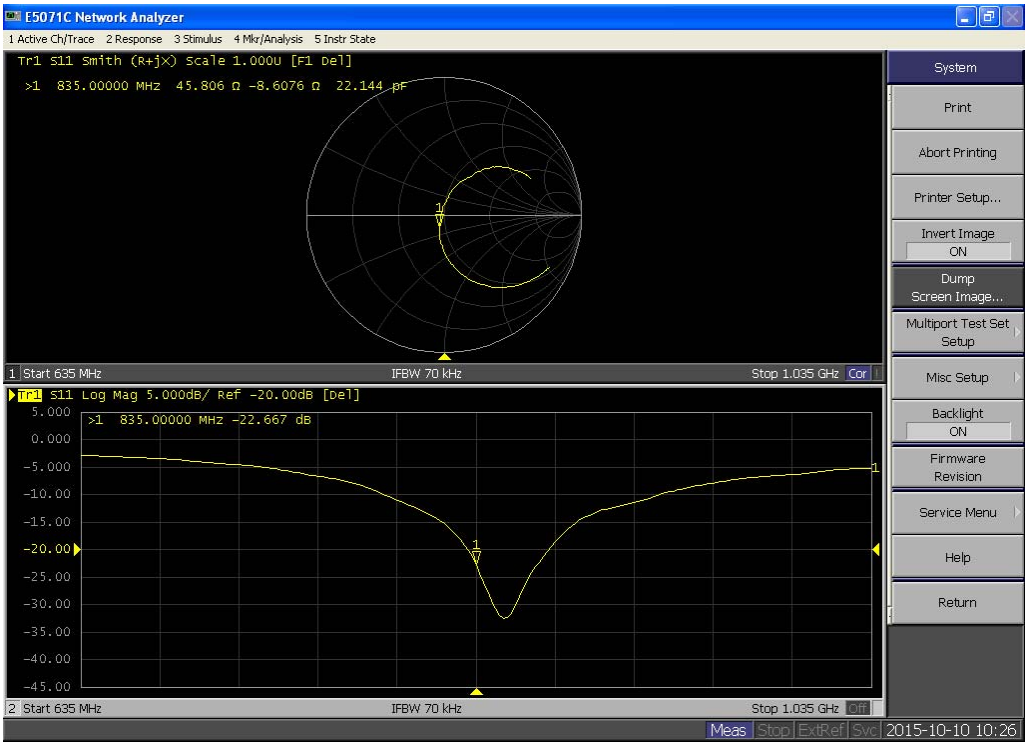
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	46.3 Ω - 6.5 jΩ	45.8 Ω - 8.6 jΩ
Return loss	-22.2 dB	-22.7 dB

Impedance Measurement Plot for Head TSL 835



Impedance Measurement Plot for Body TSL 835



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

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

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

Accreditation No.: **SCS 0108**

Client Microsoft (China)

Certificate No: **D1750V2-1086_Mar15**

CALIBRATION CERTIFICATE

Object	D1750V2 - SN: 1086
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	March 12, 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:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 13, 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	39.3 ± 6 %	1.37 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	9.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**36.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.85 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**19.3 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	51.5 ± 6 %	1.47 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	9.35 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**37.4 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.03 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.1 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.7 Ω - 0.6 jΩ
Return Loss	- 42.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.8 Ω + 0.8 jΩ
Return Loss	- 27.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.217 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	November 07, 2012

DASY5 Validation Report for Head TSL

Date: 12.03.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1086

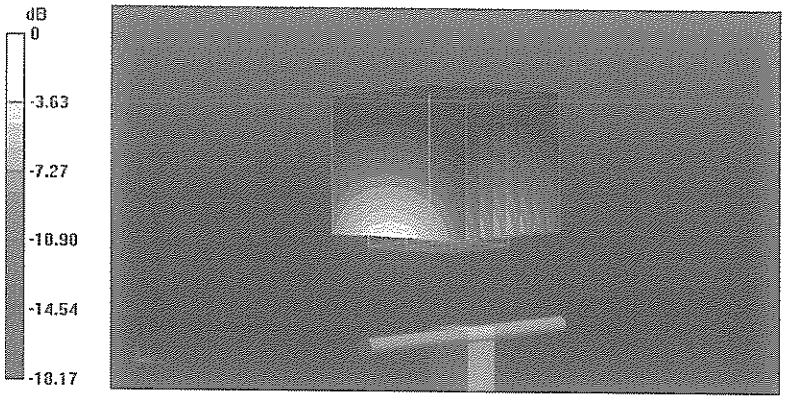
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.37 S/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(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)

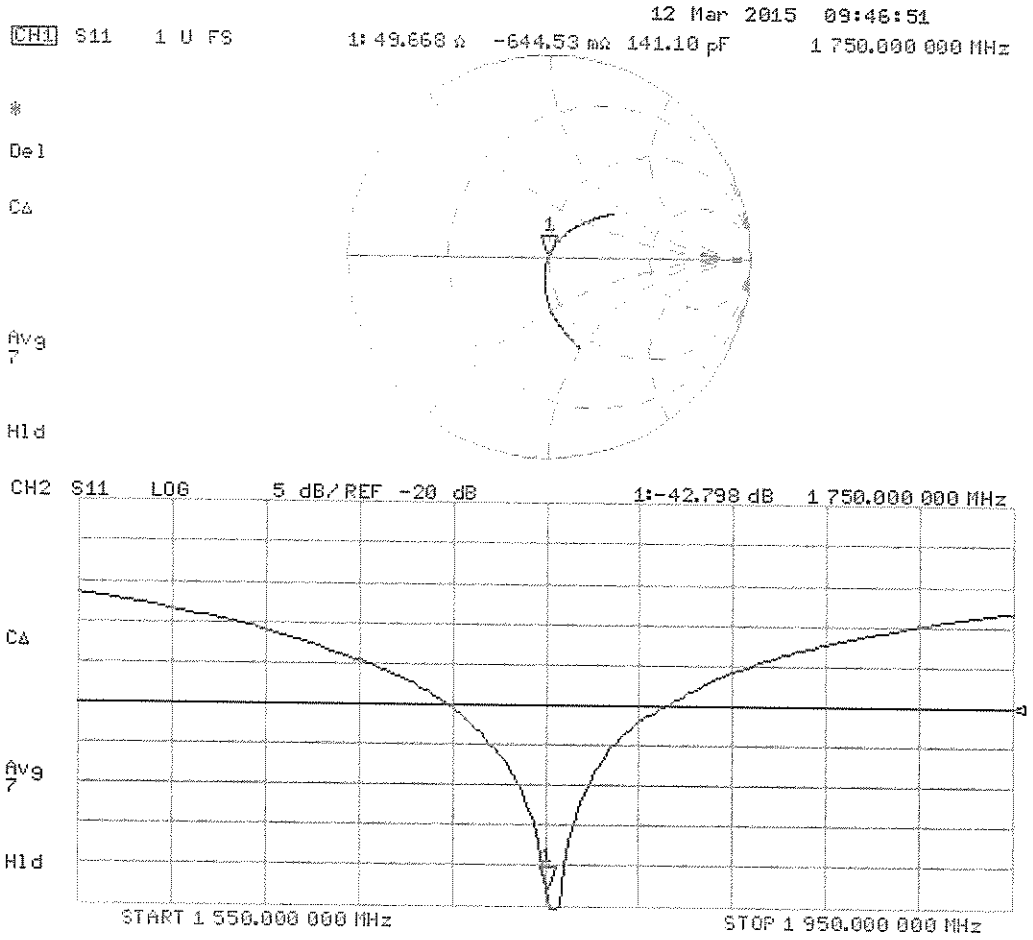
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (8x8x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.23 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 9.09 W/kg; SAR(10 g) = 4.85 W/kg
Maximum value of SAR (measured) = 11.4 W/kg



0 dB = 11.4 W/kg = 10.57 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 12.03.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN: 1086

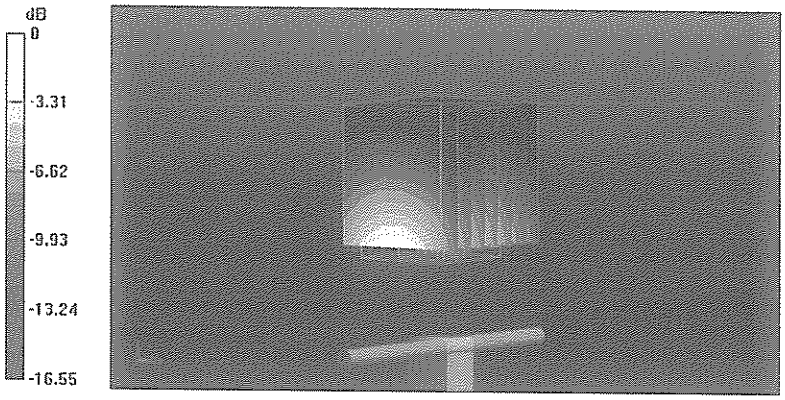
Communication System: UID 0 - CW; Frequency: 1750 MHz
Medium parameters used: f = 1750 MHz; σ = 1.47 S/m; ε_r = 51.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(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)

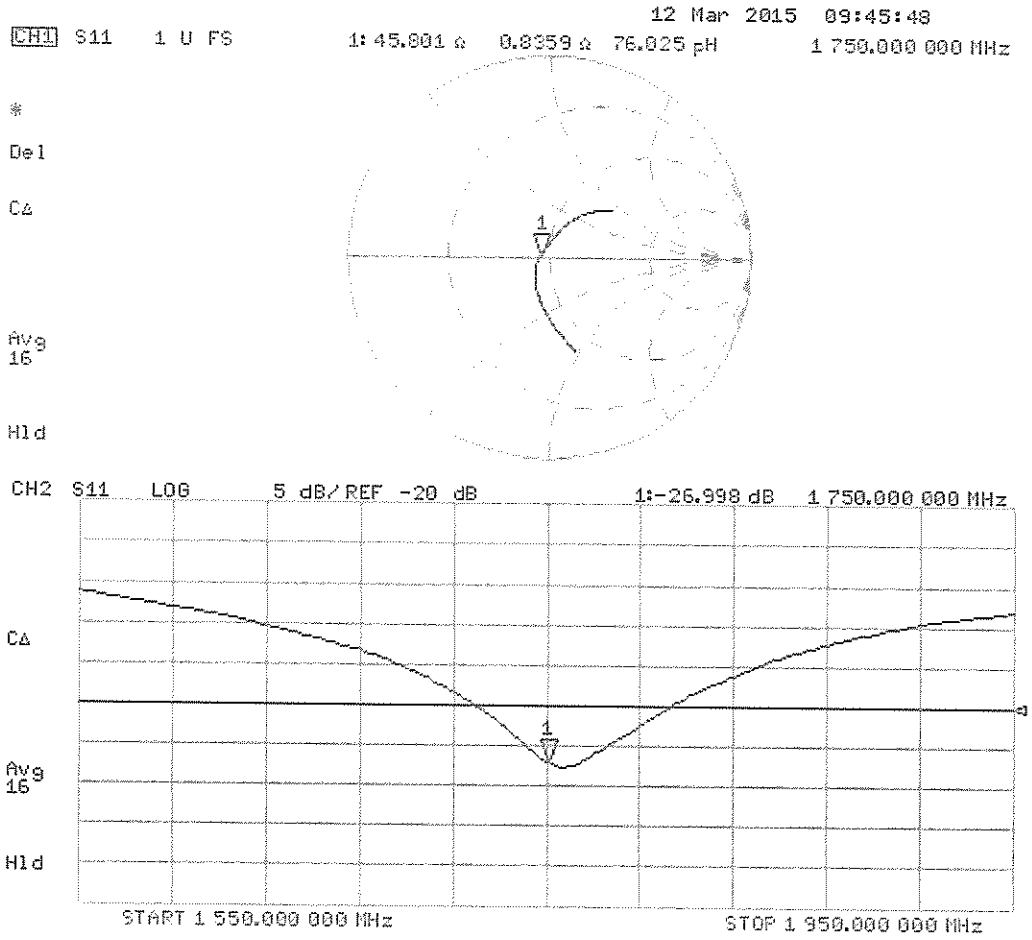
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 91.64 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 16.1 W/kg
SAR(1 g) = 9.35 W/kg; SAR(10 g) = 5.03 W/kg
Maximum value of SAR (measured) = 11.4 W/kg



0 dB = 11.4 W/kg = 10.57 dBW/kg

Impedance Measurement Plot for Body TSL



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

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

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

Accreditation No.: SCS 108

Client **TCC Microsoft Beijing**

Certificate No: D1900V2-509_Sep14

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 509
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	September 11, 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 EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
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-13 (No. ES3-3205_Dec13)	Dec-14
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-13)	In house check: Oct-14

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

Issued: September 11, 2014

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	39.5 ± 6 %	1.37 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	9.92 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**40.1 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**20.9 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	52.6 ± 6 %	1.50 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	9.63 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**38.7 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.08 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**20.4 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	46.7 Ω - 5.0 jΩ
Return Loss	- 24.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	43.3 Ω - 4.7 jΩ
Return Loss	- 21.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.192 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	October 20, 1999

DASY5 Validation Report for Head TSL

Date: 11.09.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 509

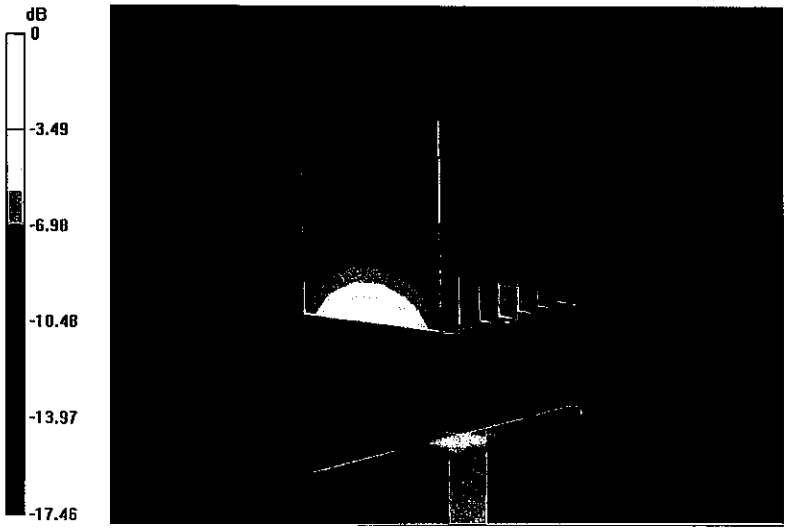
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.37 S/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.06, 5.06, 5.06); Calibrated: 30.12.2013;
- 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)

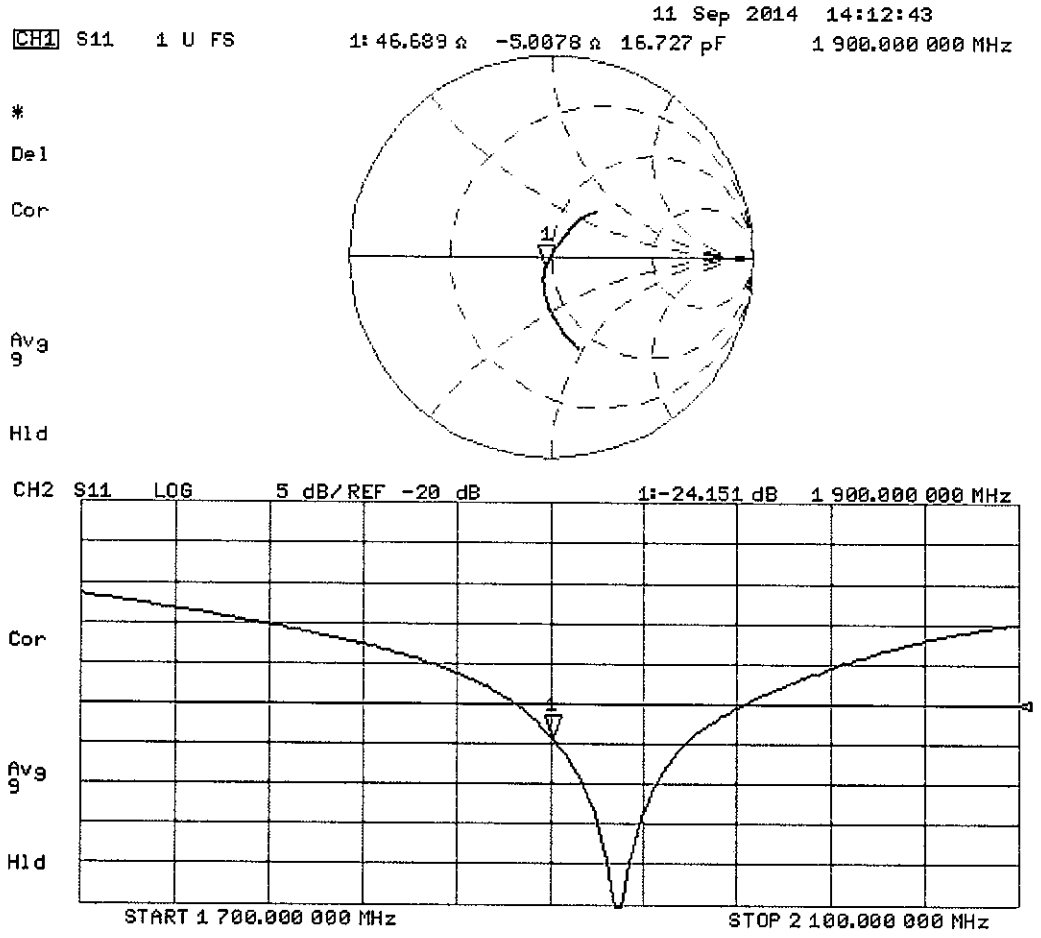
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 98.12 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 18.2 W/kg
SAR(1 g) = 9.92 W/kg; SAR(10 g) = 5.18 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 11.09.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 509

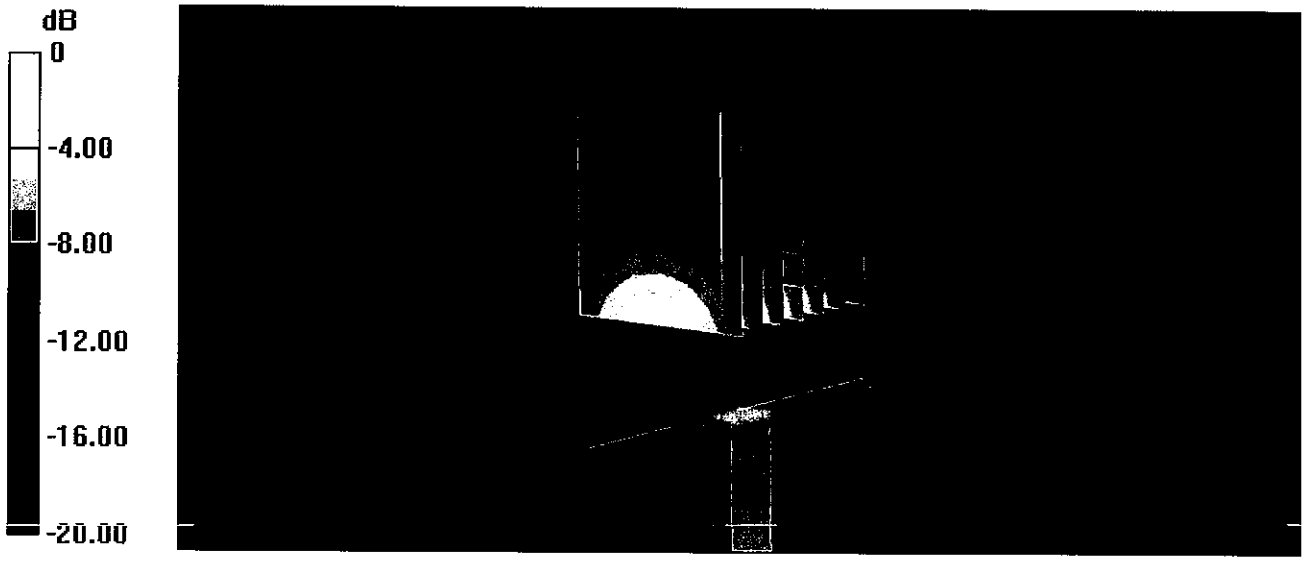
Communication System: UID 0 - CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.5 S/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.76, 4.76, 4.76); Calibrated: 30.12.2013;
- 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)

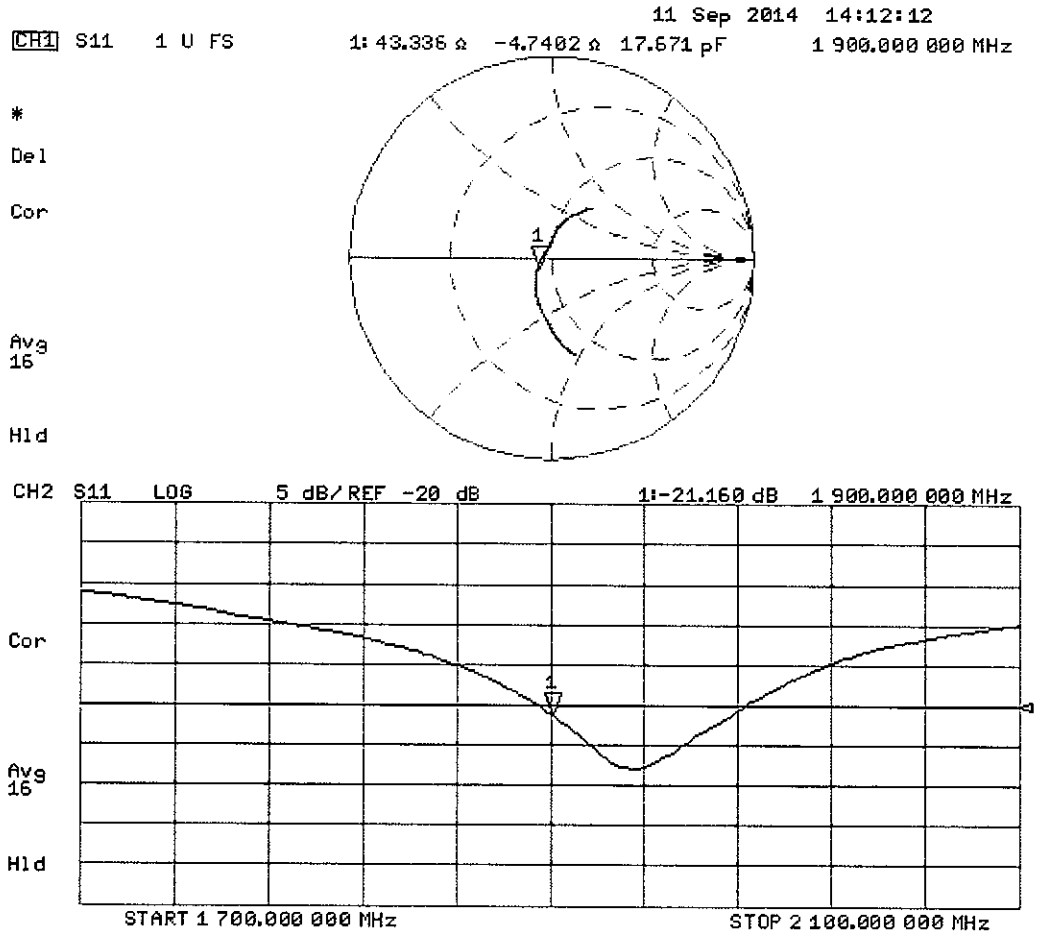
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 93.78 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.63 W/kg; SAR(10 g) = 5.08 W/kg
Maximum value of SAR (measured) = 12.2 W/kg



0 dB = 12.2 W/kg = 10.86 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D1900V2– SN: 509 Antenna Parameters measured: 2015-10-10.

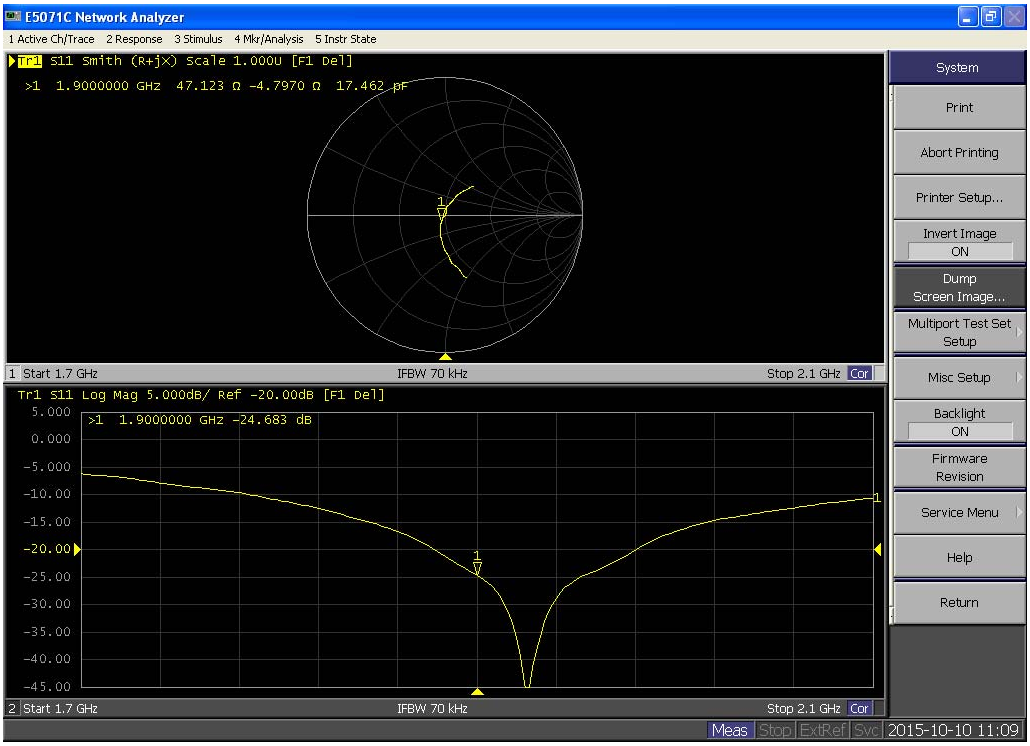
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	46.7 Ω - 5.0 jΩ	47.1 Ω - 4.8 jΩ
Return loss	-24.2 dB	-24.7 dB

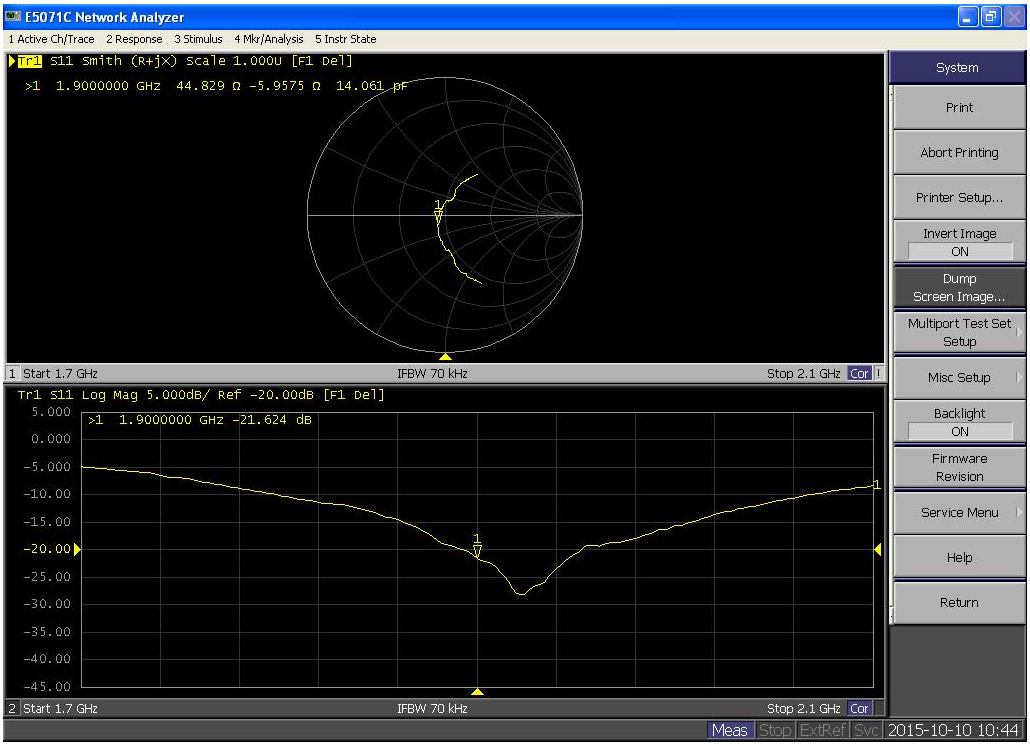
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	43.3 Ω - 4.7 jΩ	44.8 Ω - 6.0 jΩ
Return loss	-21.2 dB	-21.6 dB

Impedance Measurement Plot for Head TSL 1900



Impedance Measurement Plot for Body TSL 1900



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

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

Accreditation No.: SCS 108

Client **Nokia Beijing TCC**

Certificate No: D2450V2-883_Mar14

CALIBRATION CERTIFICATE

Object	D2450V2 - SN: 883
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	March 12, 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 EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-13 (No. 217-01736)	Apr-14
Type-N mismatch combination	SN: 5047.3 / 06327	04-Apr-13 (No. 217-01739)	Apr-14
Reference Probe ES3DV3	SN: 3205	30-Dec-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	25-Apr-13 (No. DAE4-601_Apr13)	Apr-14

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-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: March 12, 2014

Measurement Conditions

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

DASY Version	DASY5	V52.8.7
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	38.2 ± 6 %	1.86 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	13.6 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**53.2 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.30 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**24.9 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	50.6 ± 6 %	2.02 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	13.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**51.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.03 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**23.7 W/kg ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	54.1 Ω - 1.1 jΩ
Return Loss	- 27.9 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.5 Ω + 1.0 jΩ
Return Loss	- 38.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.167 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	October 06, 2011

DASY5 Validation Report for Head TSL

Date: 11.03.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 883

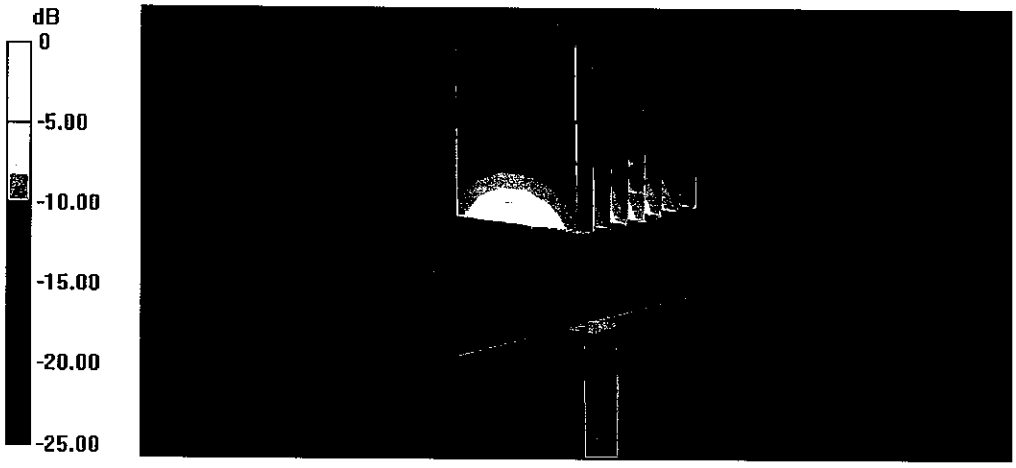
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.86 S/m; ε_r = 38.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.53, 4.53, 4.53); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

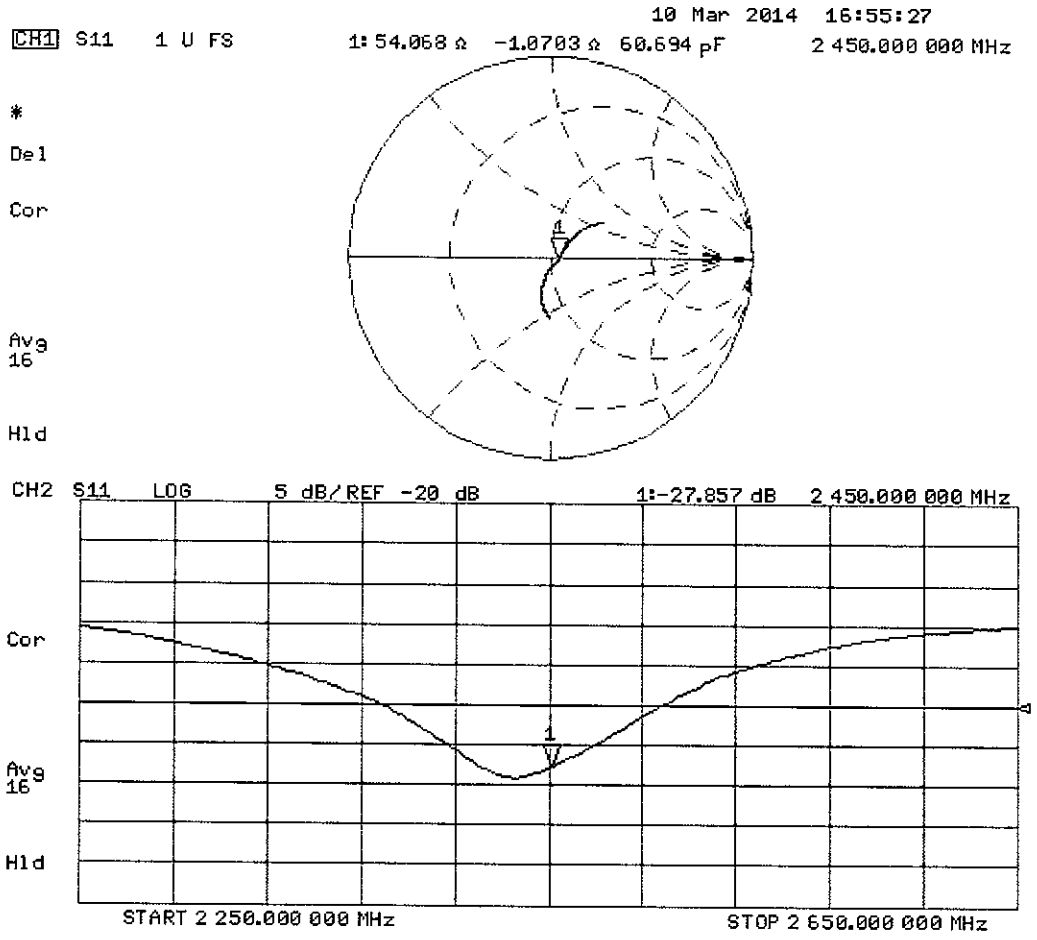
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.4 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6.3 W/kg
Maximum value of SAR (measured) = 17.4 W/kg



0 dB = 17.4 W/kg = 12.41 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 12.03.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 883

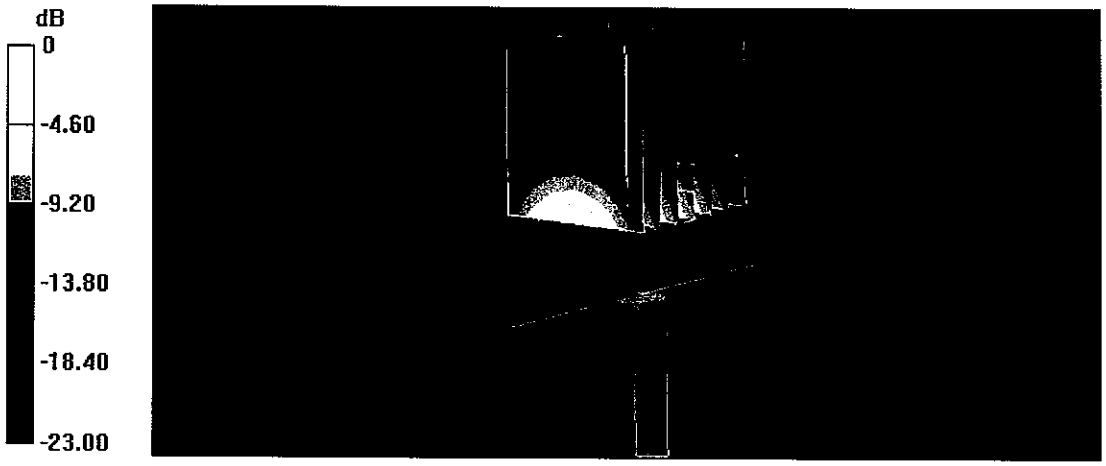
Communication System: UID 0 - CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.02 S/m; ε_r = 50.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.35, 4.35, 4.35); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 25.04.2013
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

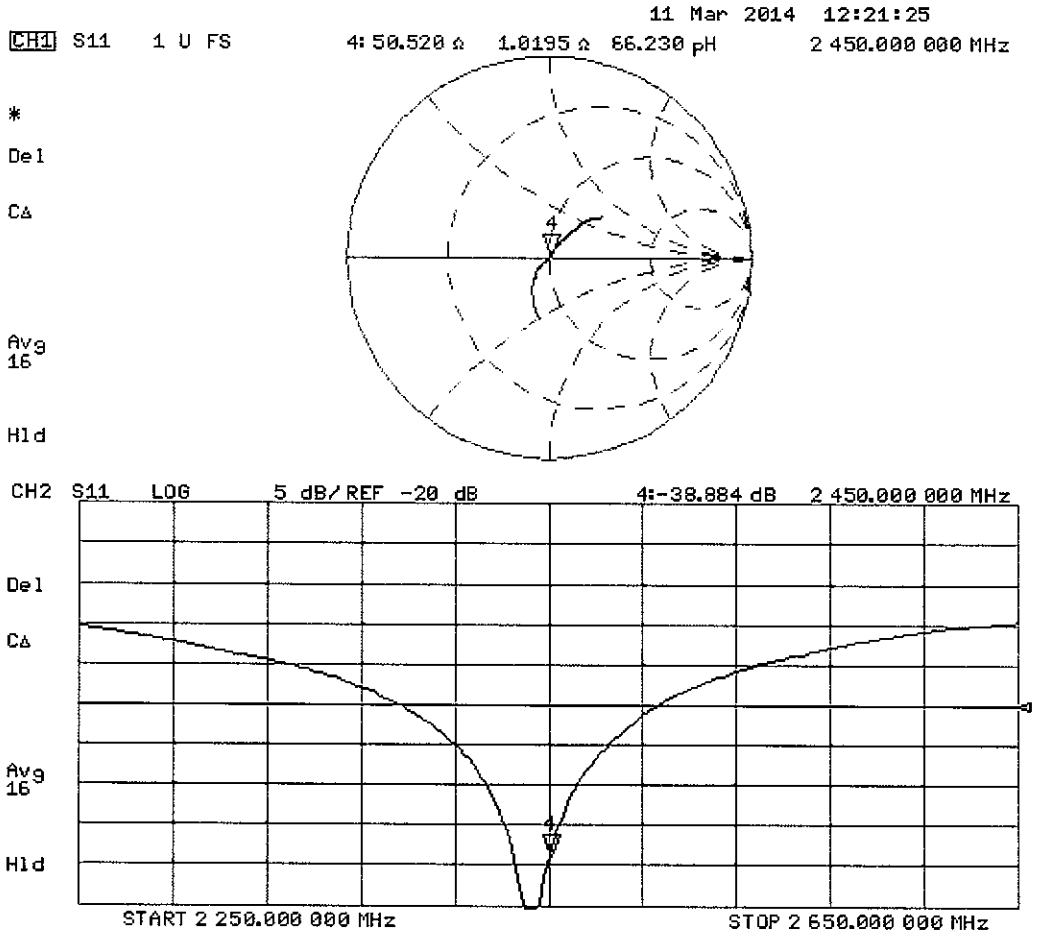
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.054 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 27.6 W/kg
SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.03 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 Body TSL



Dipole D2450V2– SN: 883 Antenna Parameters measured: 2015-10-10.

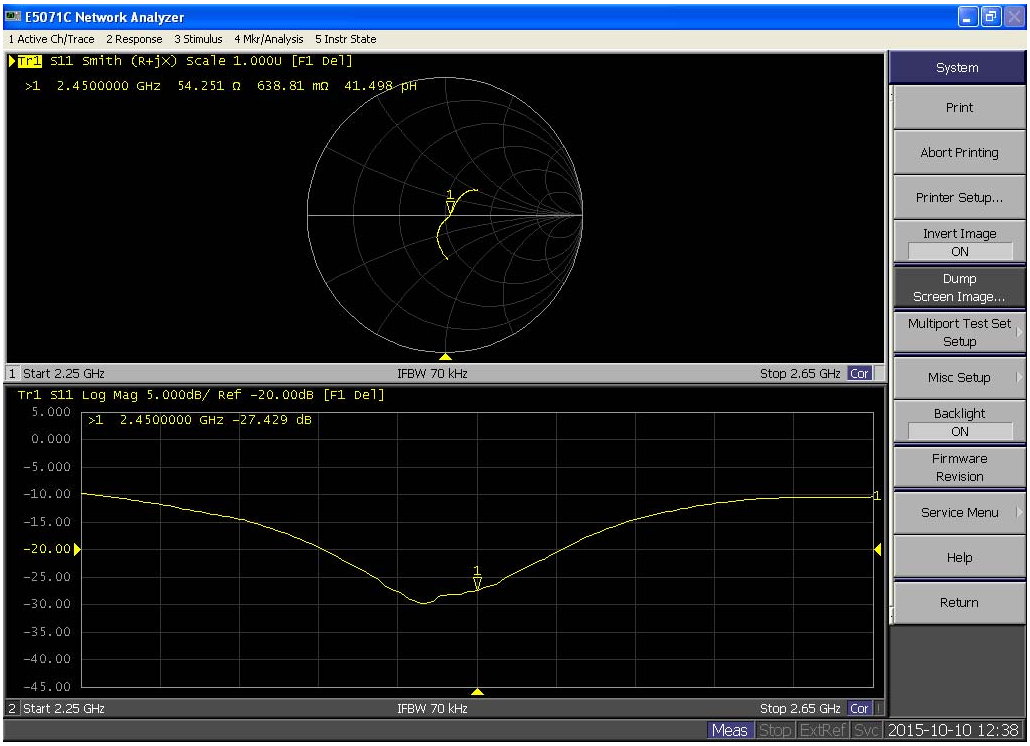
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	54.1 Ω - 1.1 jΩ	54.3 Ω + 0.6 jΩ
Return loss	-27.9 dB	-27.4 dB

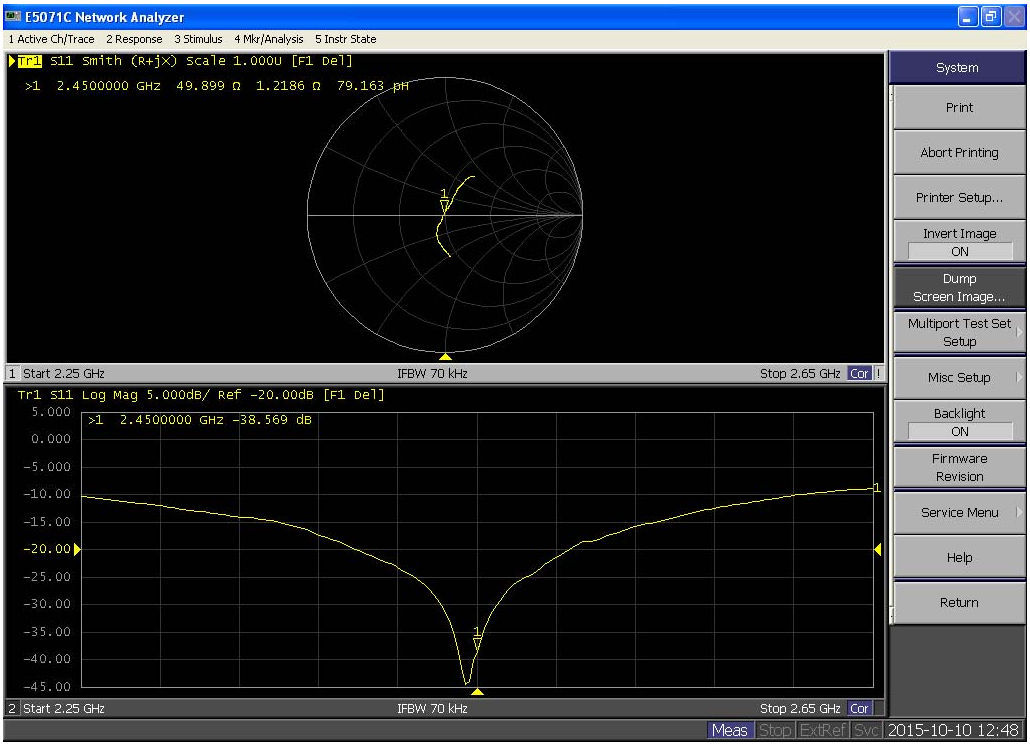
Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	50.5 Ω + 1.0 jΩ	49.9 Ω + 1.2 jΩ
Return loss	-38.9 dB	-38.6 dB

Impedance Measurement Plot for Head TSL 2450



Impedance Measurement Plot for Body TSL 2450



Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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S Swiss Calibration Service

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

Accreditation No.: SCS 108

Client **Nokia Beijing TCC**

Certificate No: D2600V2-1082_Jun14

CALIBRATION CERTIFICATE

Object	D2600V2 - SN: 1082
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	June 06, 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 EPM-442A	GB37480704	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	US37292783	09-Oct-13 (No. 217-01827)	Oct-14
Power sensor HP 8481A	MY41092317	09-Oct-13 (No. 217-01828)	Oct-14
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-13 (No. ES3-3205_Dec13)	Dec-14
DAE4	SN: 601	30-Apr-14 (No. DAE4-601_Apr14)	Apr-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-13)	In house check: Oct-14

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 6, 2014

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	38.0 ± 6 %	2.00 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	14.7 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**57.9 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.57 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**26.0 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	50.8 ± 6 %	2.19 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	14.2 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**56.0 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.29 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**24.9 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.9 Ω - 4.8 jΩ
Return Loss	- 26.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.6 Ω - 3.9 jΩ
Return Loss	- 26.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.151 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	March 14, 2014

DASY5 Validation Report for Head TSL

Date: 06.06.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1082

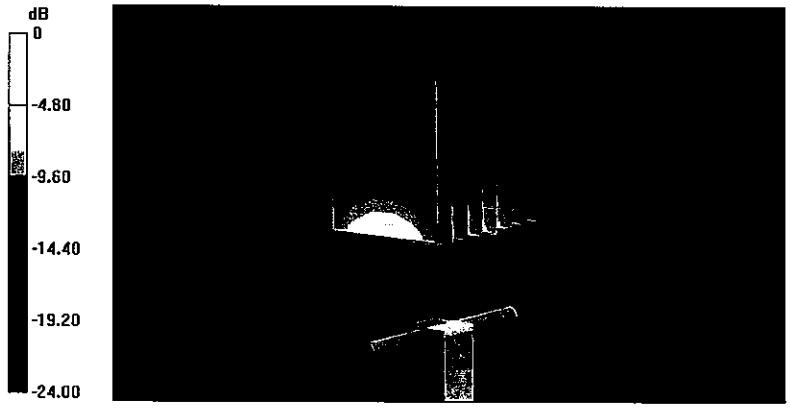
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2 S/m; ε_r = 38; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.46, 4.46, 4.46); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

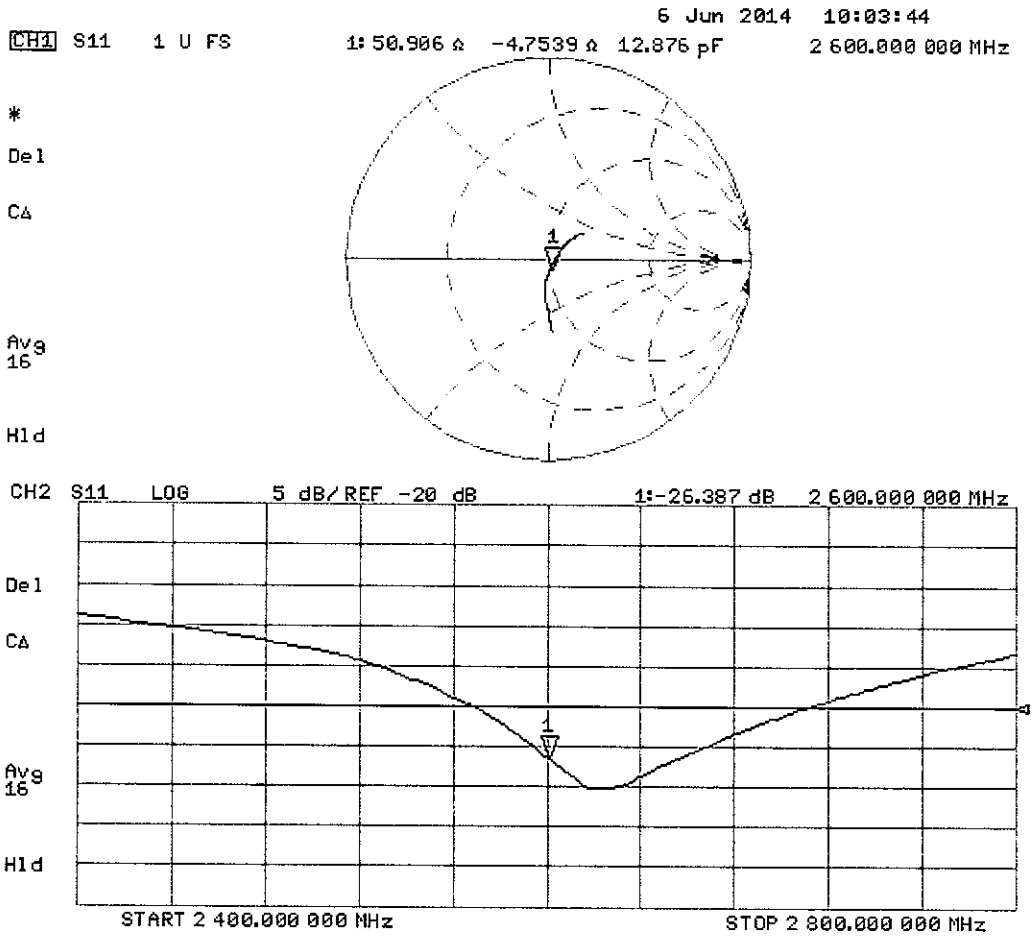
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 102.4 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 31.1 W/kg
SAR(1 g) = 14.7 W/kg; SAR(10 g) = 6.57 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



DASY5 Validation Report for Body TSL

Date: 06.06.2014

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1082

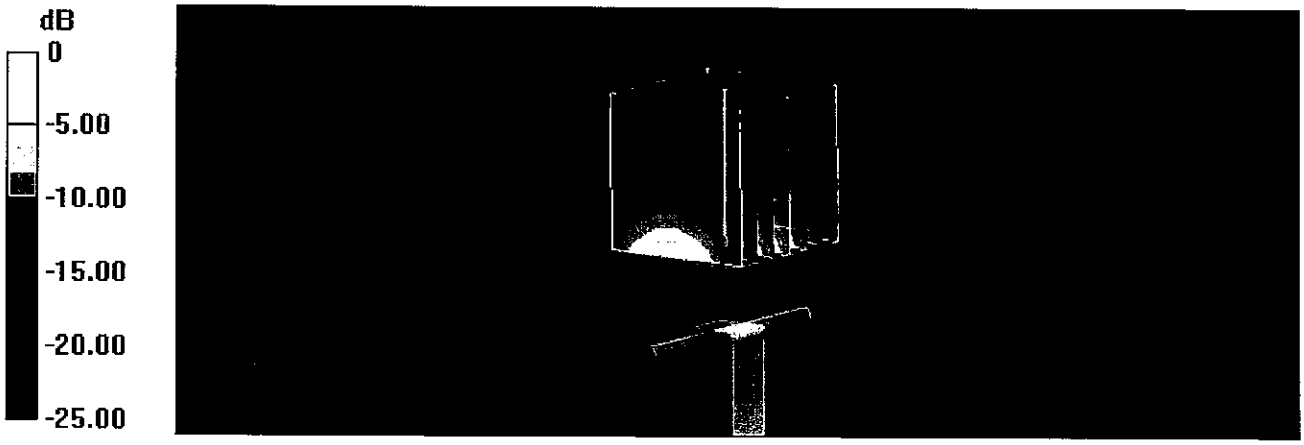
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.19 S/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.24, 4.24, 4.24); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

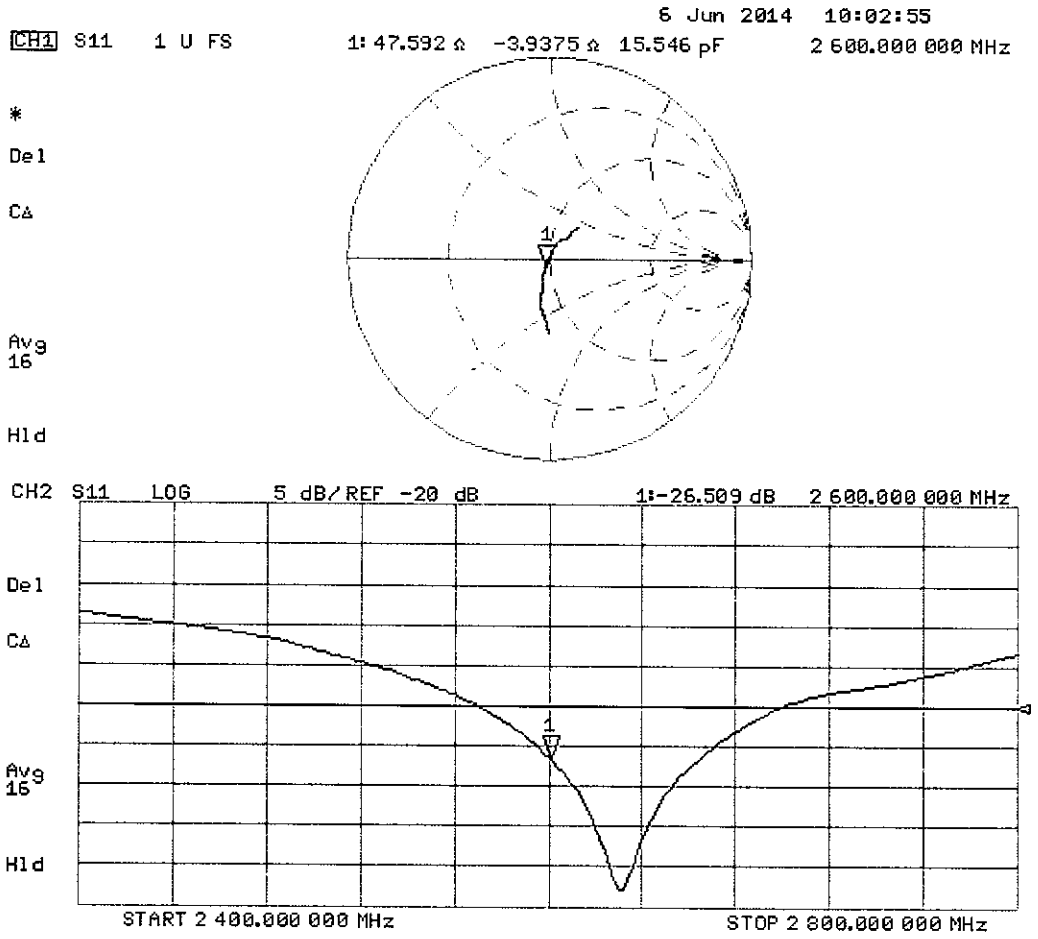
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.05 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 30.5 W/kg
SAR(1 g) = 14.2 W/kg; SAR(10 g) = 6.29 W/kg
Maximum value of SAR (measured) = 18.8 W/kg



0 dB = 18.8 W/kg = 12.74 dBW/kg

Impedance Measurement Plot for Body TSL



Dipole D2600V2– SN: 1082 Antenna Parameters measured: 2015-10-10.

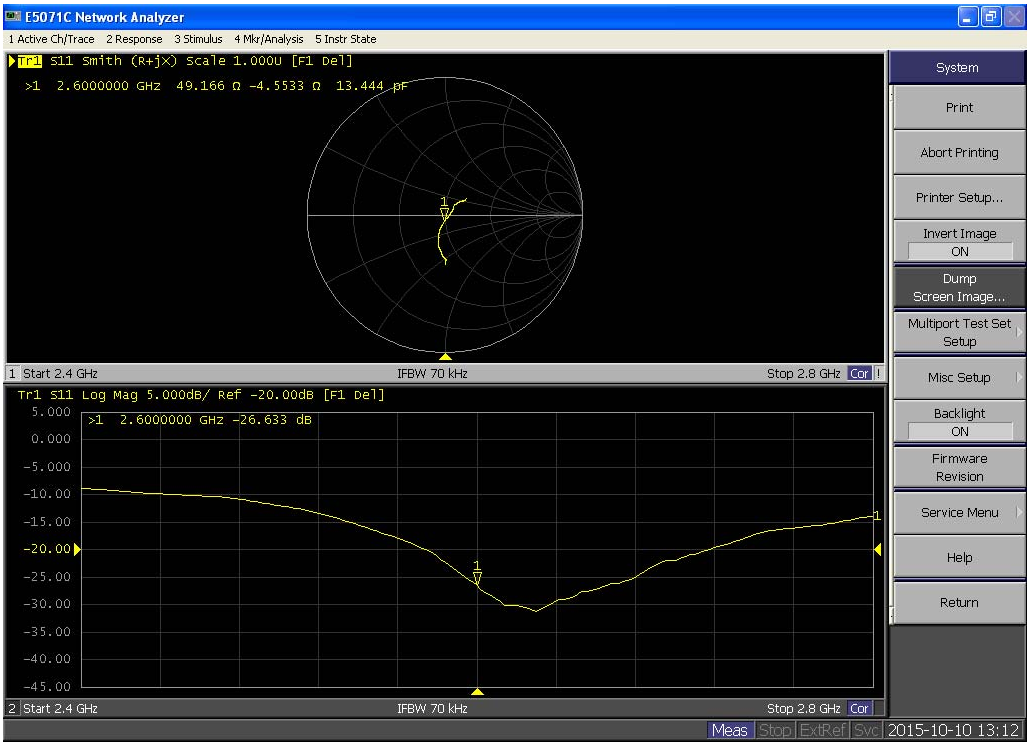
Antenna Parameters with Head TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	50.9 Ω - 4.8 jΩ	49.2 Ω - 4.6 jΩ
Return loss	-26.4 dB	-26.6 dB

Antenna Parameters with Body TSL

	Calibration certificate	Annual measurement
Impedance, transformed to feed point	47.6 Ω - 3.9 jΩ	46.5Ω - 3.1 jΩ
Return loss	-26.5 dB	-26.3 dB

Impedance Measurement Plot for Head TSL 2600



Impedance Measurement Plot for Body TSL 2600