Plot 29 Date/Time: 25.05.2016 13:39:56

Test Laboratory: Verkotan Oy

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: 4 slots 850; Frequency: 836.4 MHz;Duty Cycle: 1:2.2
Medium parameters used (interpolated): f = 836.4 MHz; σ = 1.01 mho/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

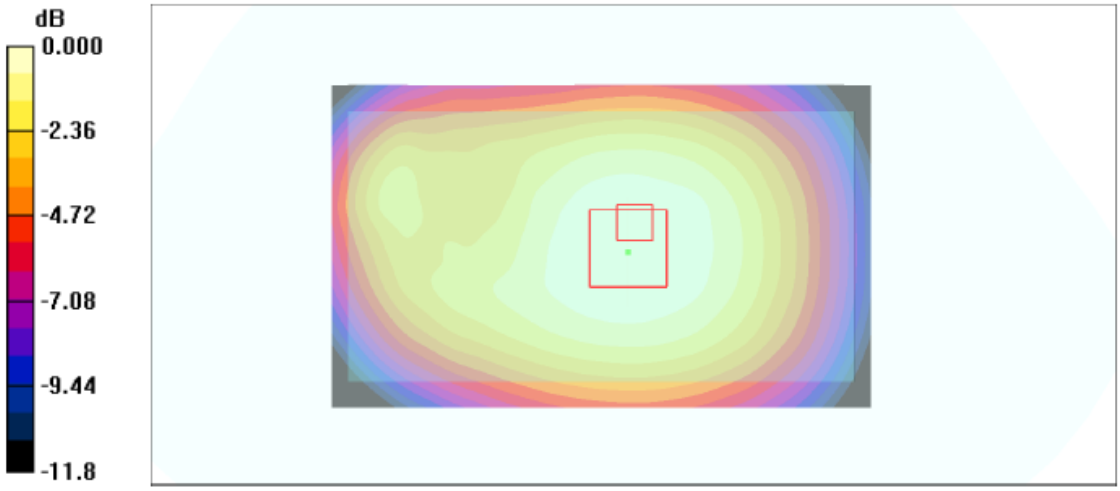
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(8.17, 8.17, 8.17); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.383 mW/g

Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.5 V/m; Power Drift = -0.105 dB
Peak SAR (extrapolated) = 0.508 W/kg
SAR(1 g) = 0.378 mW/g; SAR(10 g) = 0.278 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.376 mW/g



0 dB = 0.376mW/g

Plot 30 Date/Time: 24.05.2016 21:39:01

Test Laboratory: Verkotan Oy

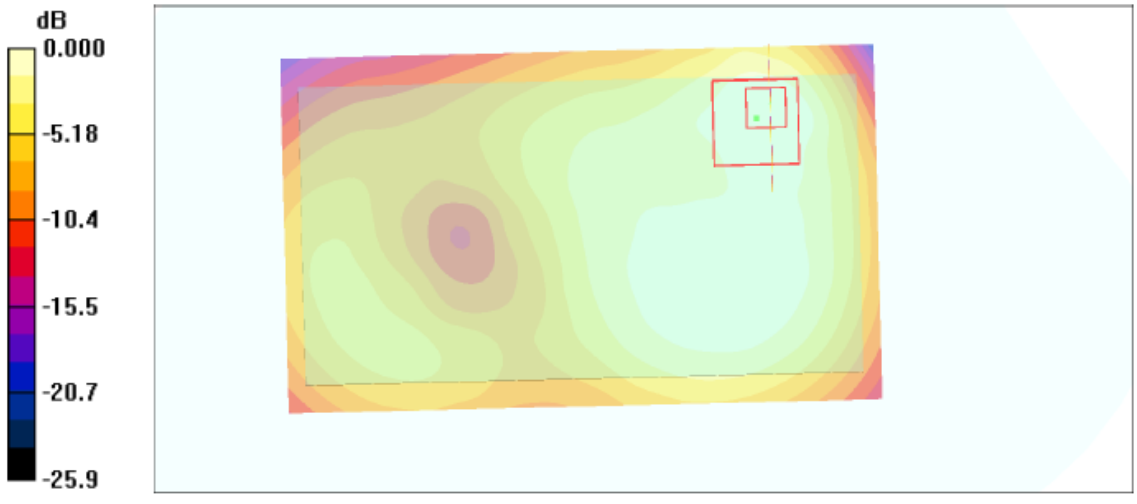
DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: 4slots 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:2.2
Medium parameters used: f = 1909.87 MHz; σ = 1.56 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.77, 6.77, 6.77); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.318 mW/g

Body/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 9.44 V/m; Power Drift = -0.005 dB
Peak SAR (extrapolated) = 0.503 W/kg
SAR(1 g) = 0.270 mW/g; SAR(10 g) = 0.147 mW/g
Maximum value of SAR (measured) = 0.300 mW/g



0 dB = 0.300mW/g

Plot 31 Date/Time: 24.05.2016 22:54:39

Test Laboratory: Verkotan Oy

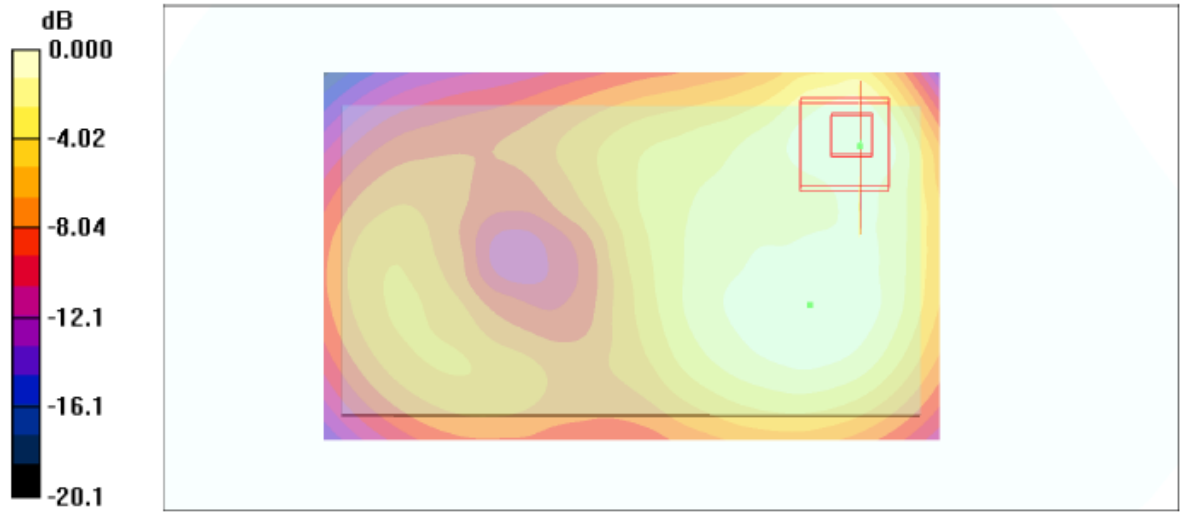
DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: WCDMA 1900; Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1907.68 MHz; σ = 1.56 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.77, 6.77, 6.77); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.813 mW/g

Body/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.350 mW/g
Maximum value of SAR (measured) = 0.673 mW/g



0 dB = 0.673mW/g

Plot 32 Date/Time: 24.05.2016 23:26:09

Test Laboratory: Verkotan Oy

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: WCDMA 1700; Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1712.4 MHz; σ = 1.47 mho/m; ε_r = 52; ρ = 1000 kg/m^3
Phantom section: Flat Section

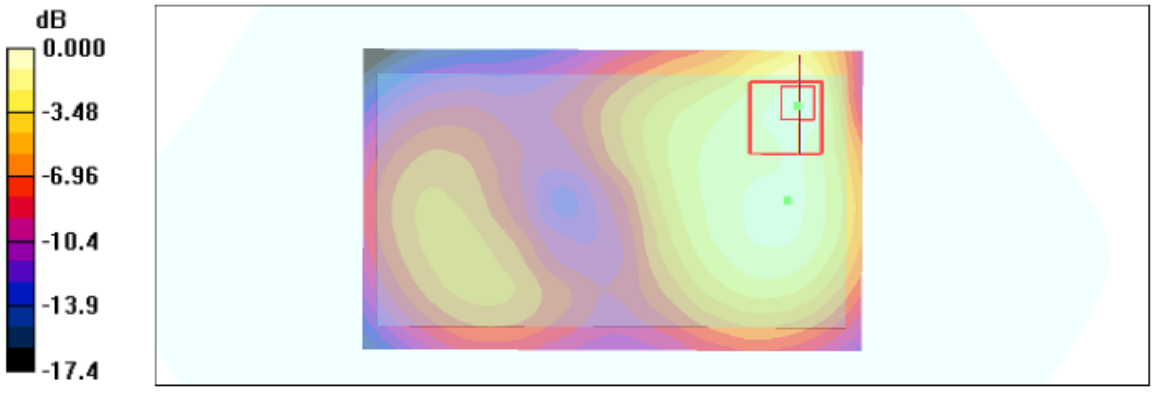
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.96, 6.96, 6.96); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.737 mW/g

Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 7.77 V/m; Power Drift = 0.081 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.599 mW/g; SAR(10 g) = 0.336 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.677 mW/g



0 dB = 0.677mW/g

Plot 33 Date/Time: 25.05.2016 14:20:49

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: WCDMA 850; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.4 MHz; σ = 1.01 mho/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

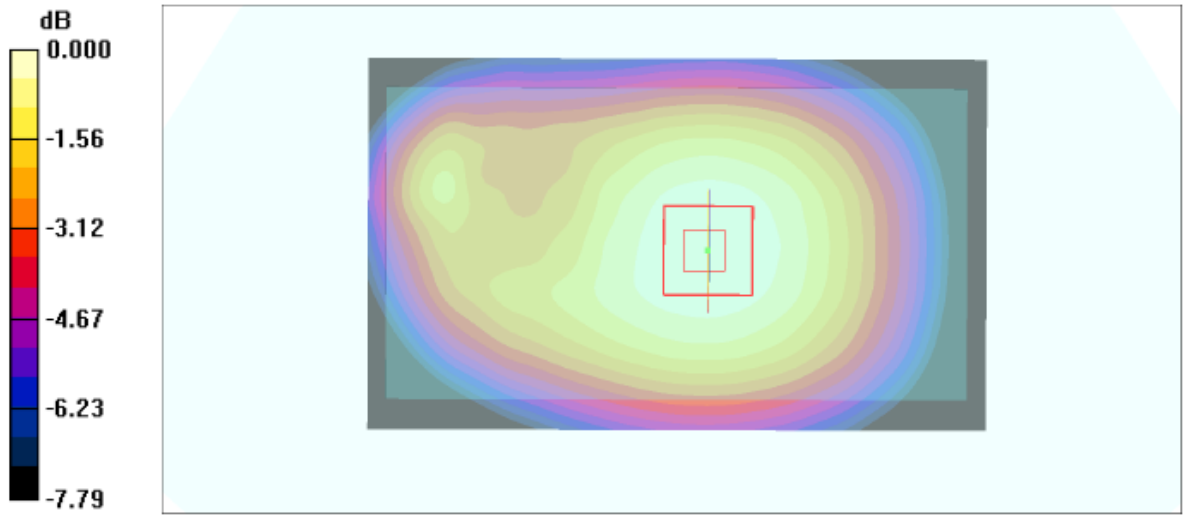
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(8.17, 8.17, 8.17); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.365 mW/g

Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 19.0 V/m; Power Drift = 0.014 dB
Peak SAR (extrapolated) = 0.435 W/kg
SAR(1 g) = 0.350 mW/g; SAR(10 g) = 0.268 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.367 mW/g



0 dB = 0.367mW/g

Plot 34 Date/Time: 24.05.2016 23:44:34

Test Laboratory: Verkotan Oy

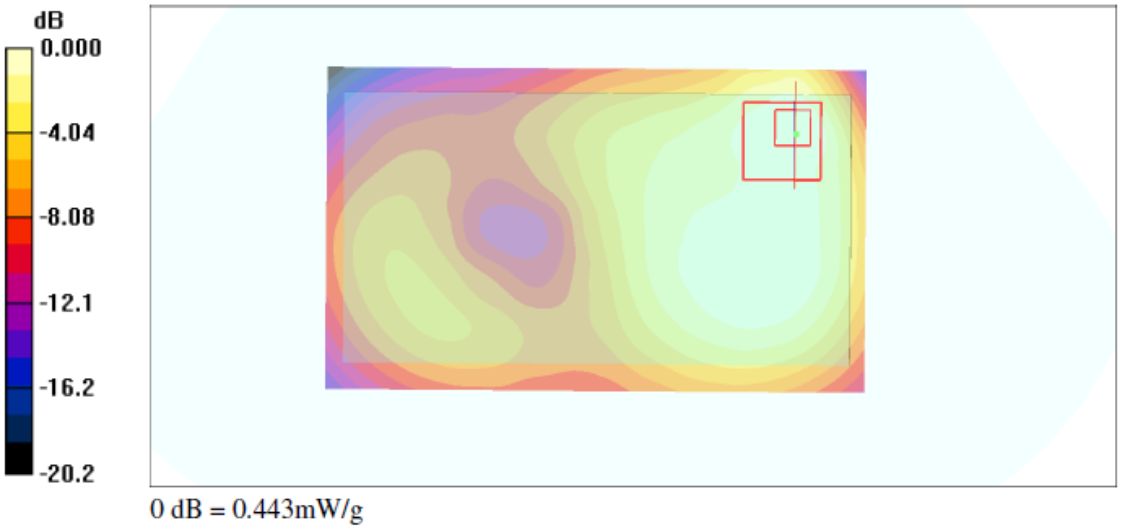
DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 2; Frequency: 1860 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1860.02 MHz; σ = 1.54 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.77, 6.77, 6.77); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.533 mW/g

Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 8.89 V/m; Power Drift = -0.068 dB
Peak SAR (extrapolated) = 0.749 W/kg
SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.229 mW/g
Maximum value of SAR (measured) = 0.443 mW/g



0 dB = 0.443mW/g

Plot 35 Date/Time: 25.05.2016 00:03:40

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 4; Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.35 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

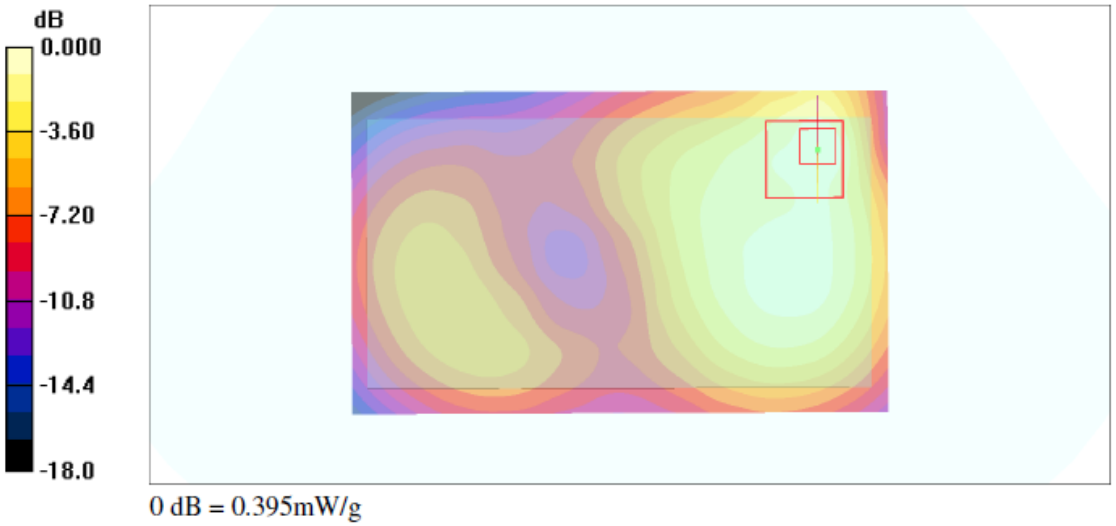
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(7.19, 7.19, 7.19); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.443 mW/g

Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 6.68 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.654 W/kg
SAR(1 g) = 0.351 mW/g; SAR(10 g) = 0.195 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.395 mW/g



0 dB = 0.395mW/g

Plot 36 Date/Time: 25.05.2016 14:56:05

Test Laboratory: Verkotan Oy

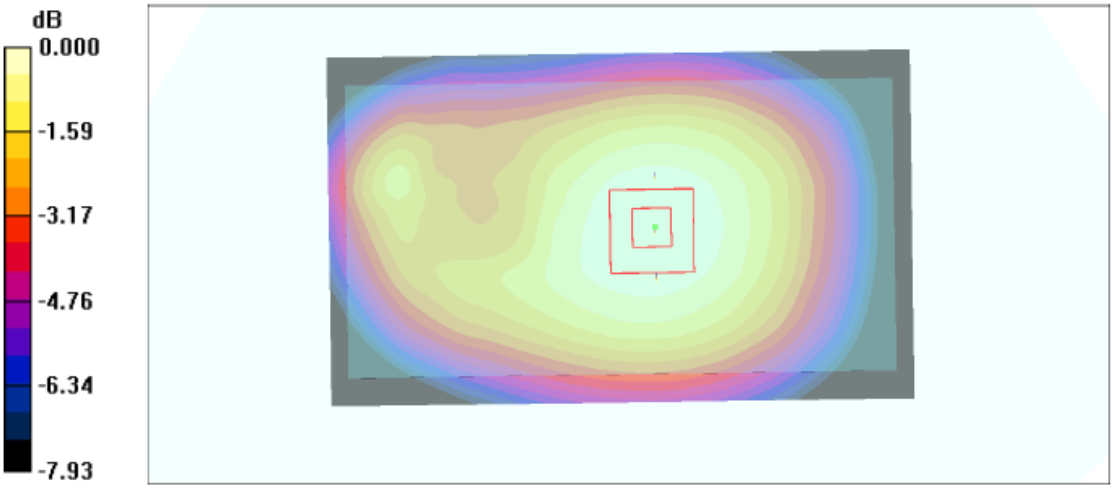
DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 5; Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used: f = 836.593 MHz; σ = 1.01 mho/m; ε_r = 53.9; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(8.17, 8.17, 8.17); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.260 mW/g

Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 16.0 V/m; Power Drift = -0.028 dB
Peak SAR (extrapolated) = 0.308 W/kg
SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.189 mW/g
Maximum value of SAR (measured) = 0.260 mW/g



0 dB = 0.260mW/g

Plot 37 Date/Time: 25.05.2016 11:49:56

Test Laboratory: Verkotan Oy

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 7; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2560 MHz; σ = 2.17 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

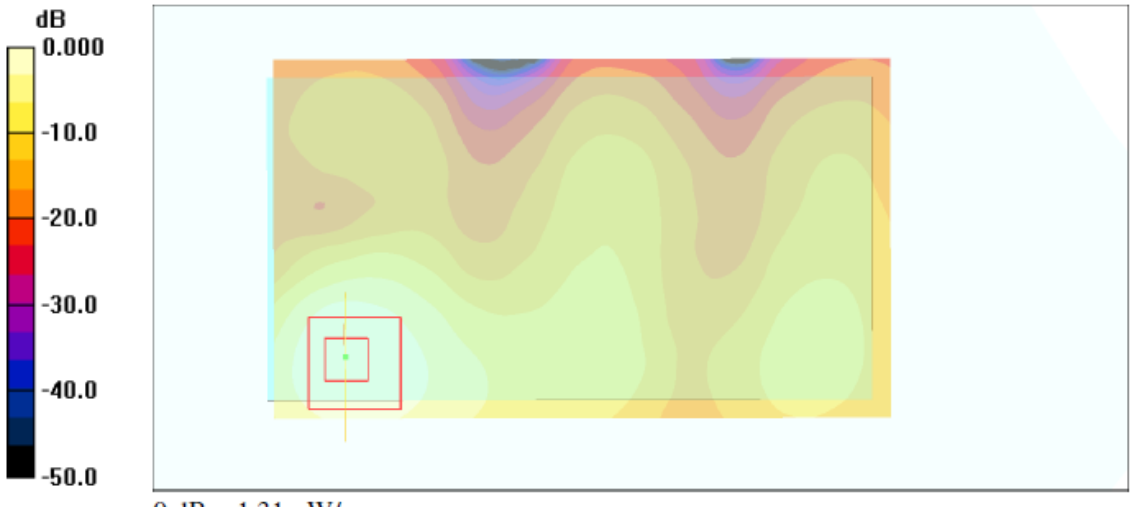
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.26, 6.26, 6.26); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_1; Type: SAM Twin; Serial: TP-1128
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body 2/Area Scan (71x121x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.36 mW/g

Body 2/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.73 V/m; Power Drift = 0.076 dB
Peak SAR (extrapolated) = 2.18 W/kg
SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.583 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.31 mW/g



0 dB = 1.31mW/g

Plot 38 Date/Time: 25.05.2016 15:17:56

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 14; Frequency: 793 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 793 MHz; σ = 0.98 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

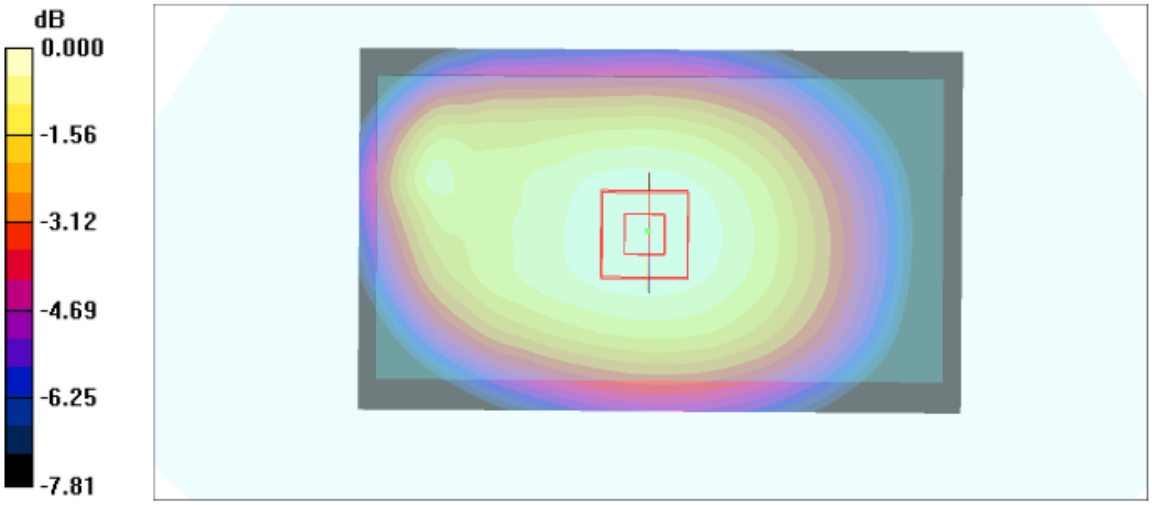
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(8.41, 8.41, 8.41); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Rear face 1 0/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.294 mW/g

Rear face 1 0/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 17.3 V/m; Power Drift = -0.036 dB
Peak SAR (extrapolated) = 0.347 W/kg
SAR(1 g) = 0.280 mW/g; SAR(10 g) = 0.214 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.293 mW/g



0 dB = 0.293mW/g

Plot 39 Date/Time: 25.05.2016 09:35:05

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.88 mho/m; ε_r = 50.3; ρ = 1000 kg/m^3
Phantom section: Flat Section

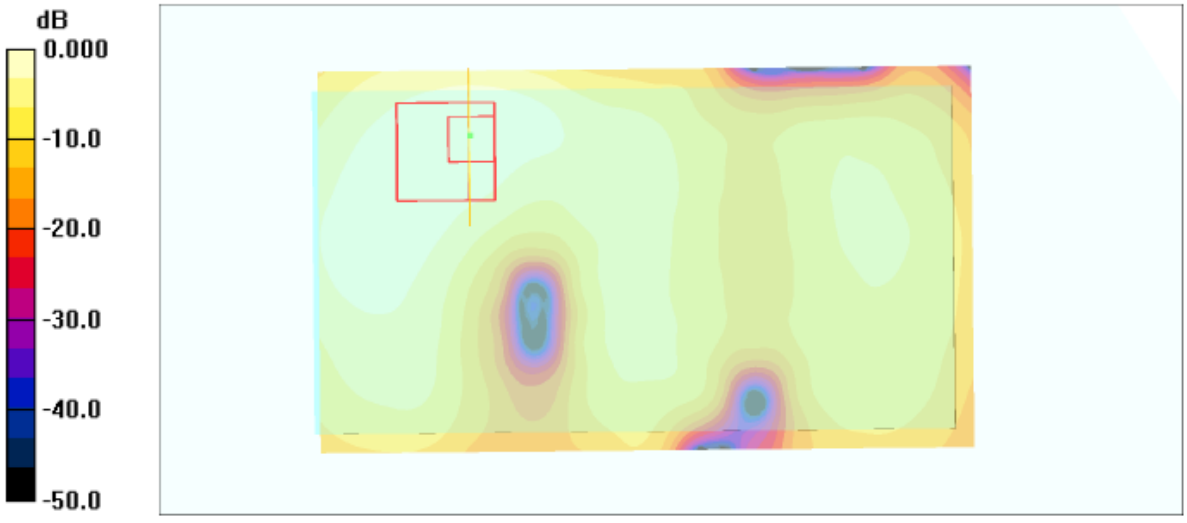
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.5, 6.5, 6.5); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_1; Type: SAM Twin; Serial: TP-1128
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body/Area Scan (71x121x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.139 mW/g

Body/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.27 V/m; Power Drift = -0.167 dB
Peak SAR (extrapolated) = 0.229 W/kg
SAR(1 g) = 0.118 mW/g; SAR(10 g) = 0.061 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.133 mW/g



0 dB = 0.133mW/g

Plot 40 Date/Time: 27.05.2016 09:52:01

Test Laboratory: Verkotan Oy

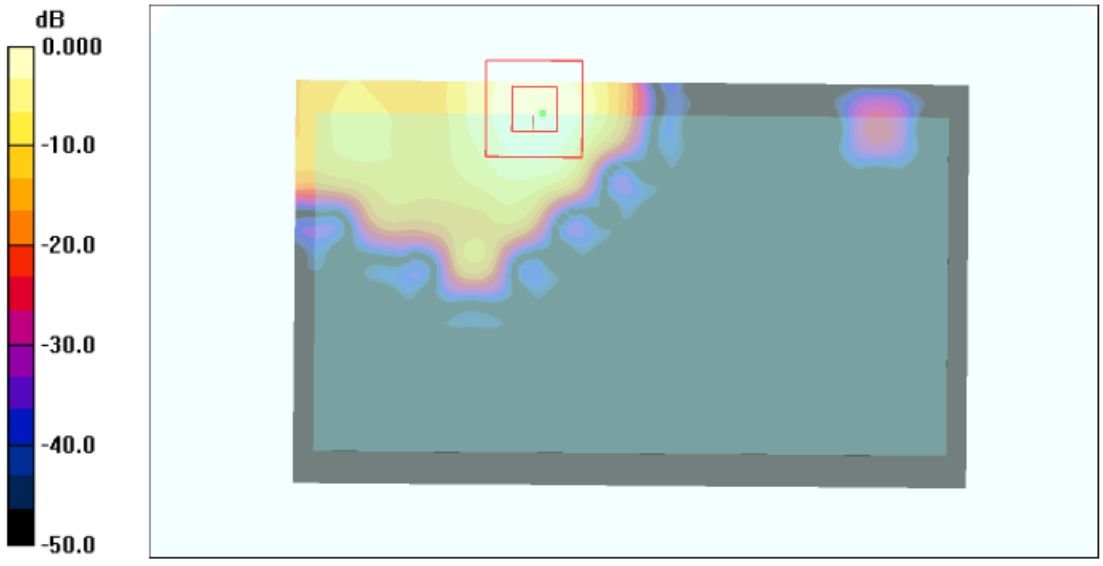
DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Condition

Communication System: WLAN 5GHz; Frequency: 5290 MHz;Duty Cycle: 1:1
Medium parameters used: f = 5290 MHz; σ = 5.23 mho/m; ε_r = 48; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(3.78, 3.78, 3.78); Calibrated: 15.01.2016
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

802.11ac 58/Area Scan (91x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.539 mW/g

802.11ac 58/Zoom Scan (4x4x1.4mm, graded) (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 8.74 V/m; Power Drift = -0.098 dB
Peak SAR (extrapolated) = 0.702 W/kg
SAR(1 g) = 0.191 mW/g; SAR(10 g) = 0.060 mW/g
Maximum value of SAR (measured) = 0.437 mW/g



0 dB = 0.437mW/g

Plot 41 Date/Time: 25.05.2016 12:30:59

Test Laboratory: Verkotan Oy

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 7; Frequency: 2560 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2560 MHz; σ = 2.17 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

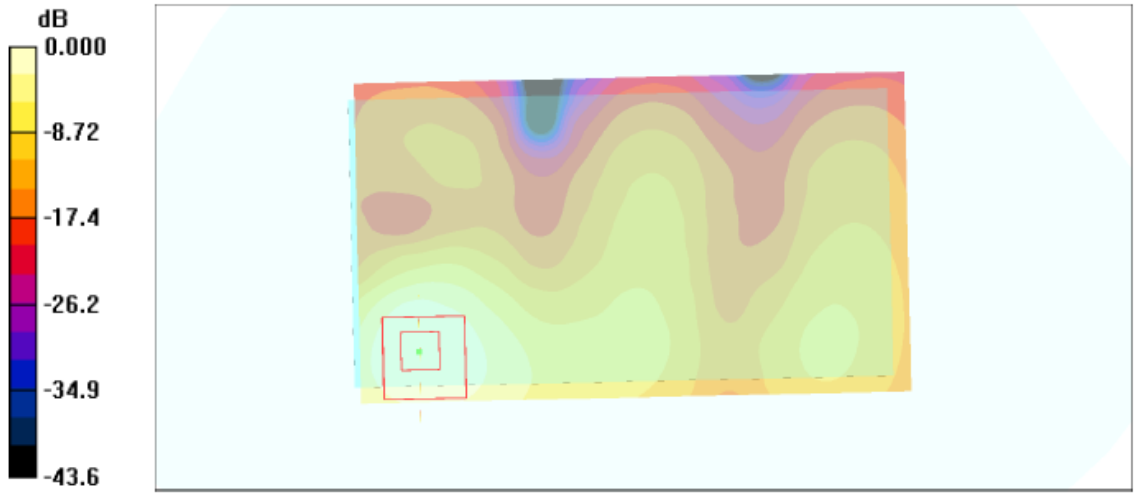
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.26, 6.26, 6.26); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_1; Type: SAM Twin; Serial: TP-1128
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body 3/Area Scan (71x121x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.42 mW/g

Body 3/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.10 V/m; Power Drift = -0.222 dB
Peak SAR (extrapolated) = 2.14 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.573 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.29 mW/g



0 dB = 1.29mW/g

Plot 42 Date/Time: 25.05.2016 17:02:16

Test Laboratory: Verkotan Oy

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 14; Frequency: 793 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 793 MHz; σ = 0.98 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

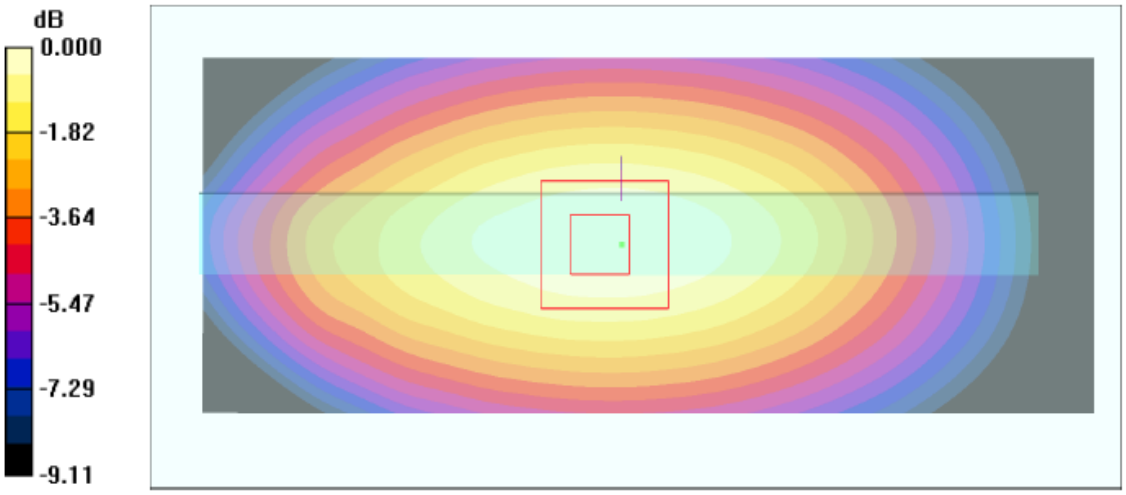
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(8.41, 8.41, 8.41); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right side 1 0/Area Scan (41x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.228 mW/g

Right side 1 0/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 15.3 V/m; Power Drift = -0.023 dB
Peak SAR (extrapolated) = 0.295 W/kg
SAR(1 g) = 0.214 mW/g; SAR(10 g) = 0.150 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.228 mW/g



0 dB = 0.228mW/g

Plot 43 Date/Time: 25.05.2016 18:12:38

Test Laboratory: Verkotan Oy

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: Body-Worn Configuration

Communication System: LTE 14; Frequency: 793 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 793 MHz; σ = 0.98 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Phantom section: Flat Section

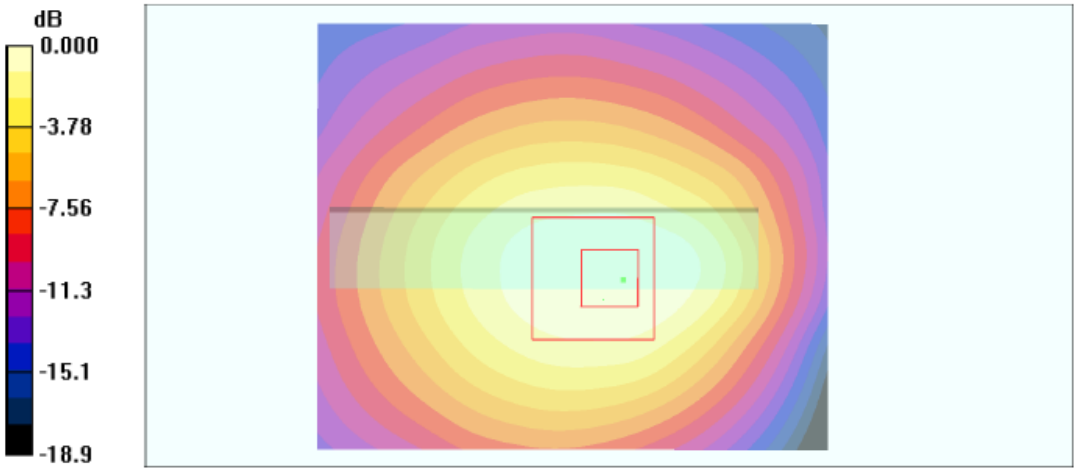
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(8.41, 8.41, 8.41); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_2; Type: SAM Twin; Serial: TP-1142
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Bottom side 1 0/Area Scan (51x61x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.134 mW/g

Bottom side 1 0/Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = 0.023 dB
Peak SAR (extrapolated) = 0.178 W/kg
SAR(1 g) = 0.113 mW/g; SAR(10 g) = 0.071 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.119 mW/g



0 dB = 0.119mW/g

Plot 44 Date/Time: 31.05.2016 13:55:30

Test Laboratory: Verkotan Oy

DUT: Tough Mobile; Type: Smartphone; Serial: 356244060009320
Program Name: body-Worn Condition

Communication System: WLAN; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 2437 MHz; σ = 1.89 mho/m; ε_r = 50.8; ρ = 1000 kg/m^3
Phantom section: Flat Section

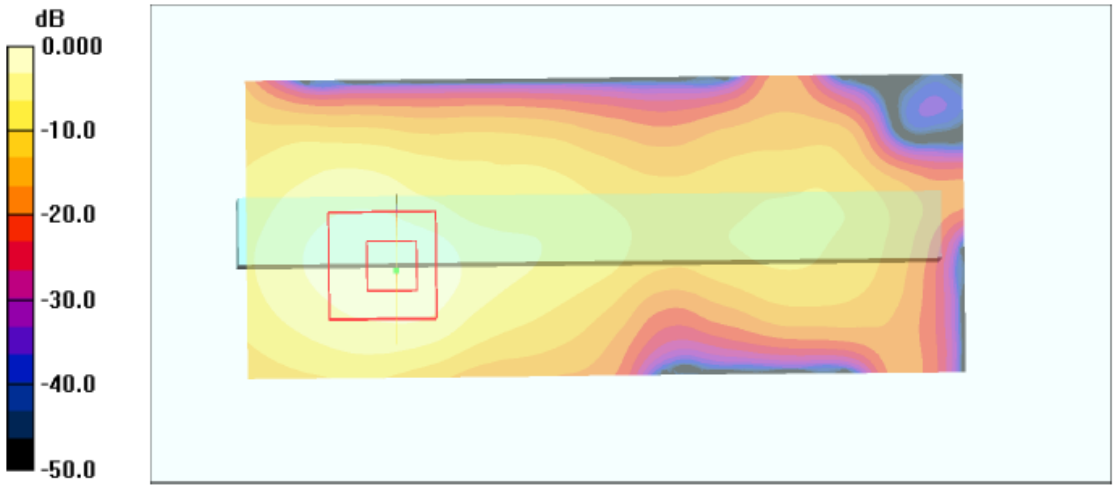
DASY4 Configuration:
- Probe: EX3DV4 - SN3570; ConvF(6.5, 6.5, 6.5); Calibrated: 15.01.2016
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn371; Calibrated: 22.04.2016
- Phantom: SAM_1; Type: SAM Twin; Serial: TP-1128
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Right Side/Area Scan (51x121x1): Measurement grid: dx=12mm, dy=12mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.156 mW/g

Right Side/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.80 V/m; Power Drift = 0.118 dB
Peak SAR (extrapolated) = 0.259 W/kg
SAR(1 g) = 0.139 mW/g; SAR(10 g) = 0.067 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.162 mW/g



0 dB = 0.162mW/g

APPENDIX D: RELEVANT PAGES FROM PROBE CALIBRATION REPORTS

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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 0108

Client Verkotan

Certificate No: EX3-3570_Jan16

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3570
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:	January 15, 2016

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-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-15)	In house check: Oct-16

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

Issued: January 19, 2016

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

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Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3570

Manufactured: July 15, 2005
Calibrated: January 15, 2016

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3570

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.50	0.47	0.49	± 10.1 %
DCP (mV)[B]	102.5	99.6	99.8	

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	156.4	±2.5 %
		Y	0.0	0.0	1.0		150.7	
		Z	0.0	0.0	1.0		140.1	

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 Norm X,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:3570

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)	Unc (k=2)
750	41.9	0.89	8.68	8.68	8.68	0.48	0.80	± 12.0 %
835	41.5	0.90	8.08	8.08	8.08	0.21	1.45	± 12.0 %
1750	40.1	1.37	7.19	7.19	7.19	0.31	0.85	± 12.0 %
1900	40.0	1.40	6.99	6.99	6.99	0.30	0.87	± 12.0 %
2450	39.2	1.80	6.38	6.38	6.38	0.35	0.87	± 12.0 %
2600	39.0	1.96	6.19	6.19	6.19	0.39	0.85	± 12.0 %
5250	35.9	4.71	4.30	4.30	4.30	0.40	1.80	± 13.1 %
5600	35.5	5.07	3.70	3.70	3.70	0.50	1.80	± 13.1 %
5750	35.4	5.22	4.00	4.00	4.00	0.50	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:3570

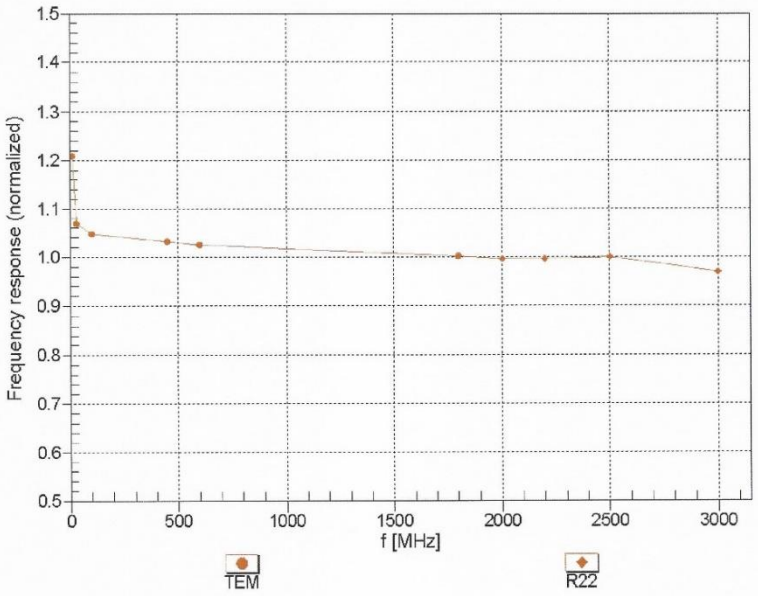
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	8.41	8.41	8.41	0.43	0.93	± 12.0 %
835	55.2	0.97	8.17	8.17	8.17	0.27	1.25	± 12.0 %
1750	53.4	1.49	6.96	6.96	6.96	0.39	0.83	± 12.0 %
1900	53.3	1.52	6.77	6.77	6.77	0.27	1.03	± 12.0 %
2450	52.7	1.95	6.50	6.50	6.50	0.35	0.86	± 12.0 %
2600	52.5	2.16	6.26	6.26	6.26	0.23	1.05	± 12.0 %
5250	48.9	5.36	3.78	3.78	3.78	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.25	3.25	3.25	0.55	1.90	± 13.1 %
5750	48.3	5.94	3.48	3.48	3.48	0.60	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.

EX3DV4– SN:3570 January 15, 2016

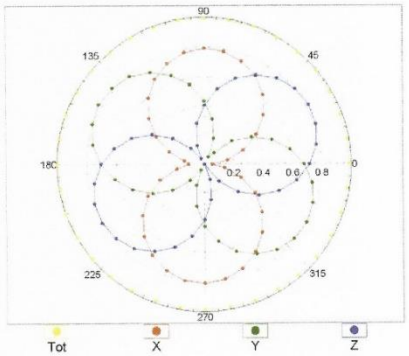
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



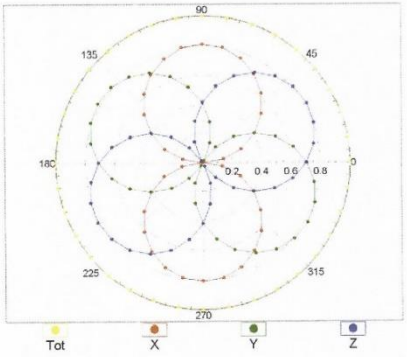
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

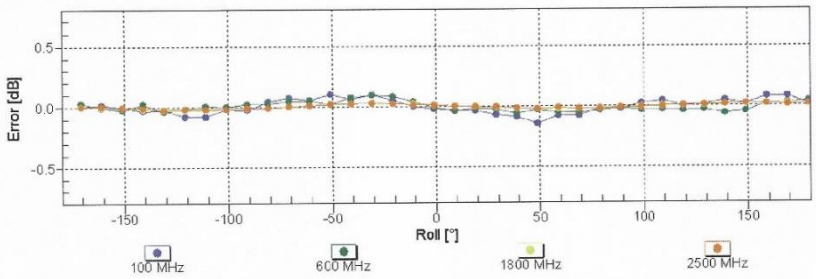
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



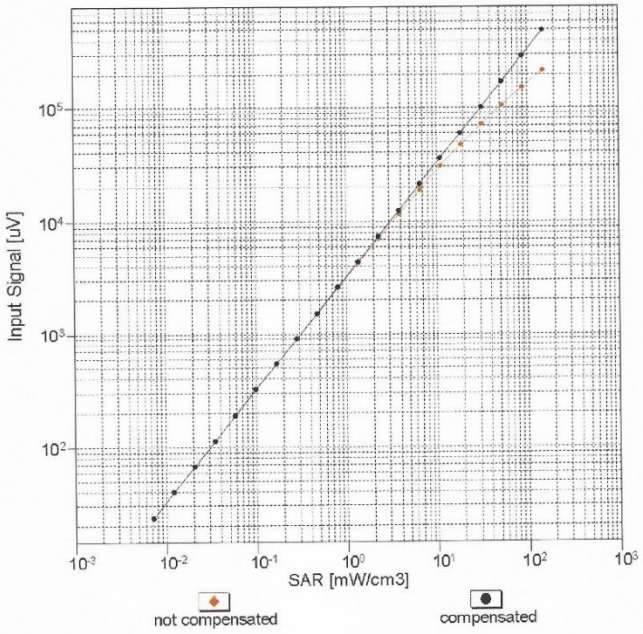
f=1800 MHz,R22

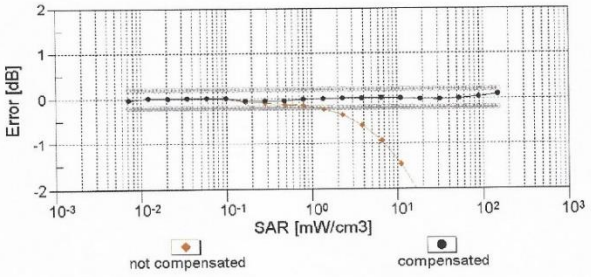




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)



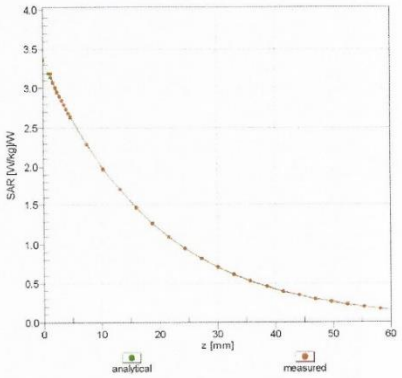


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

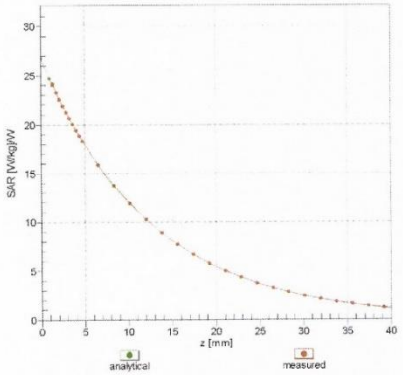
EX3DV4– SN:3570 January 15, 2016

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

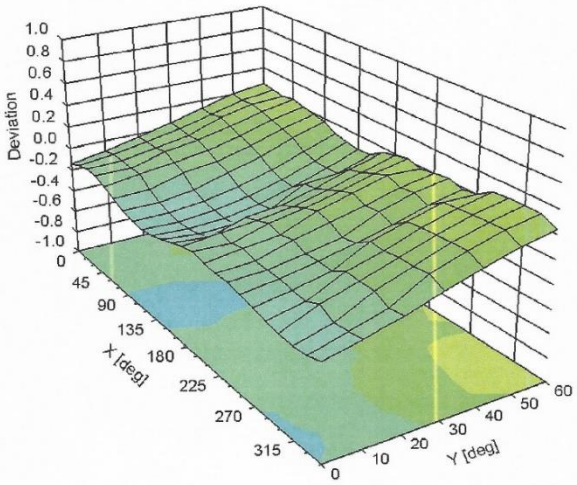


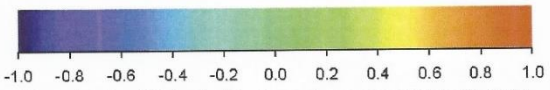
f = 1750 MHz,WGLS R22 (H_convF)



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:3570

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	119
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 **Verkotan**

Certificate No: DAE3-371_Apr16

CALIBRATION CERTIFICATE

Object	DAE3 - SD 000 D03 AA - SN: 371
Calibration procedure(s)	QA CAL-06.v29 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	April 22, 2016

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
Keithley Multimeter Type 2001	SN: 0810278	09-Sep-15 (No:17153)	Sep-16
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Auto DAE Calibration Unit	SE UWS 053 AA 1001	05-Jan-16 (in house check)	In house check: Jan-17
Calibrator Box V2.1	SE UMS 006 AA 1002	05-Jan-16 (in house check)	In house check: Jan-17

	Name	Function	Signature
Calibrated by:	Dominique Steffen	Technician	
Approved by:	Fin Bomholt	Deputy Technical Manager	

Issued: April 22, 2016

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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 0108

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
  - *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
  - *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
  - *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
  - *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
  - *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
  - *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
  - *Input resistance:* Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
  - *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
  - *Power consumption:* Typical value for information. Supply currents in various operating modes.

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100…+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1…….+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	404.958 ± 0.02% (k=2)	404.223 ± 0.02% (k=2)	404.292 ± 0.02% (k=2)
Low Range	3.95752 ± 1.50% (k=2)	3.95570 ± 1.50% (k=2)	3.97744 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	283.5 ° ± 1 °

Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	199994.09	0.74	0.00
Channel X	+ Input	20003.65	3.25	0.02
Channel X	- Input	-19996.83	4.70	-0.02
Channel Y	+ Input	199994.32	0.42	0.00
Channel Y	+ Input	20001.98	1.41	0.01
Channel Y	- Input	-19998.61	2.81	-0.01
Channel Z	+ Input	199993.62	-0.16	-0.00
Channel Z	+ Input	20001.46	0.94	0.00
Channel Z	- Input	-19999.93	1.52	-0.01

Low Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	2000.51	0.29	0.01
Channel X	+ Input	200.36	-0.40	-0.20
Channel X	- Input	-198.46	0.62	-0.31
Channel Y	+ Input	2000.02	-0.32	-0.02
Channel Y	+ Input	200.74	0.05	0.02
Channel Y	- Input	-199.38	-0.38	0.19
Channel Z	+ Input	2000.85	0.65	0.03
Channel Z	+ Input	199.75	-0.98	-0.49
Channel Z	- Input	-200.15	-1.03	0.52

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	-23.87	-25.33
	- 200	26.70	24.95
Channel Y	200	-21.41	-22.01
	- 200	22.08	21.70
Channel Z	200	-2.49	-2.44
	- 200	0.32	0.18

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200	-	4.15	-2.27
Channel Y	200	9.56	-	3.82
Channel Z	200	6.08	7.65	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16317	17034
Channel Y	15890	15790
Channel Z	15811	16517

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-1.54	-3.12	0.98	0.73
Channel Y	-2.51	-3.67	-1.10	0.55
Channel Z	-1.20	-2.42	0.46	0.54

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	–0.01	-8	-9