12.2. System Check Plots

This appendix contains the following system check distribution scans.

Scan Reference Number	Title
001	System Performance Check 900MHz Head 19 08 15
002	System Performance Check 900MHz Body 17 08 15
003	System Performance Check 900MHz Body 24 08 15

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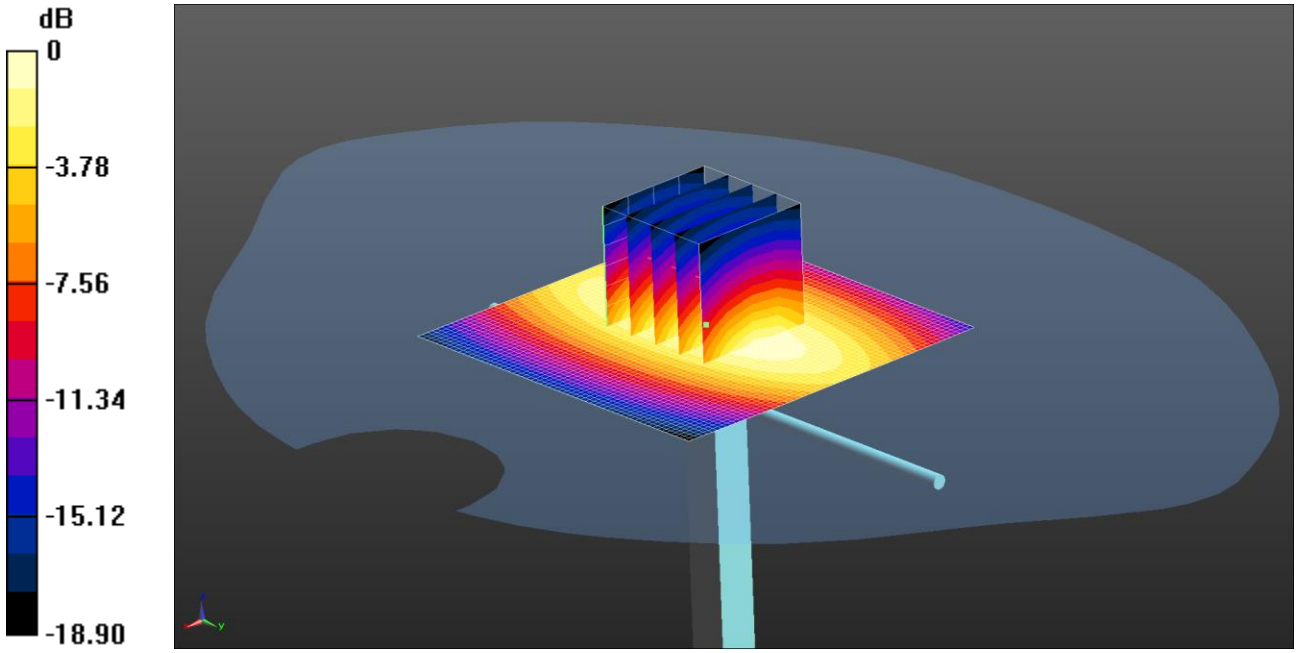
001: System Performance Check 900MHz Head 19 08 15
Date: 19/8/2015
DUT: Dipole 900 MHz D900V2; Type: D900V2; Serial: D900V2 - SN:035



0 dB = 2.87 W/kg = 4.58 dBW/kg

Communication System: UID 0, CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used: f = 900 MHz; σ = 0.952 S/m; ε_r = 41.135; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.17, 6.17, 6.17); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM A (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)
SAR/d=15mm, Pin=250 mW, dist=10.0mm (ET-Probe) 2/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.87 W/kg
SAR/d=15mm, Pin=250 mW, dist=10.0mm (ET-Probe) 2/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 57.71 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 3.60 W/kg
SAR(1 g) = 2.62 W/kg; SAR(10 g) = 1.73 W/kg
Maximum value of SAR (measured) = 2.84 W/kg

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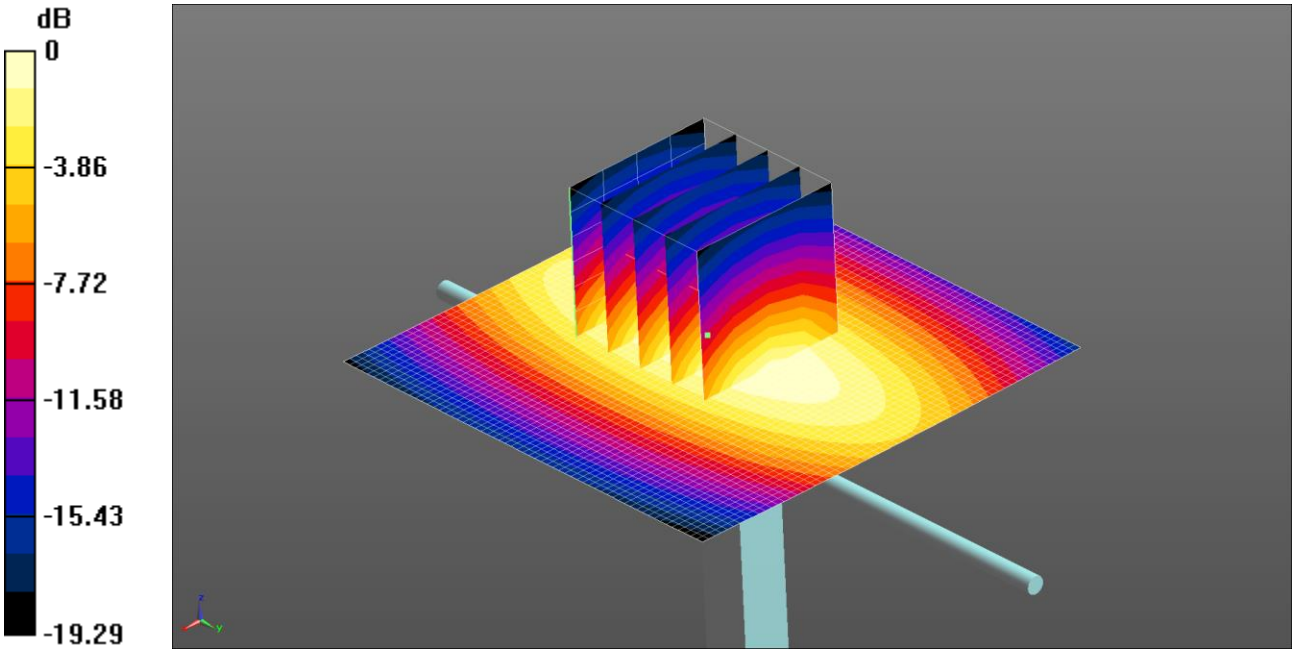
002: System Performance Check 900MHz Body 17 08 15
Date: 17/8/2015
DUT: Dipole 900 MHz D900V2; Type: D900V2; Serial: D900V2 - SN:035



0 dB = 2.82 W/kg = 4.50 dBW/kg

Communication System: UID 0, CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used: f = 900 MHz; σ = 1.033 S/m; ε_r = 53.253; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.06, 6.06, 6.06); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: ELI v5.0 (30deg probe tilt); Type: QDOVA002AA; Serial: TP:xxxx
- ; SEMCAD X Version 14.6.10 (7331)

SAR/d=15mm, Pin=250 mW, dist=10.0mm (ET-Probe) 2 2 2/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.82 W/kg
SAR/d=15mm, Pin=250 mW, dist=10.0mm (ET-Probe) 2 2 2/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 54.39 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 2.59 W/kg; SAR(10 g) = 1.71 W/kg
Maximum value of SAR (measured) = 2.82 W/kg

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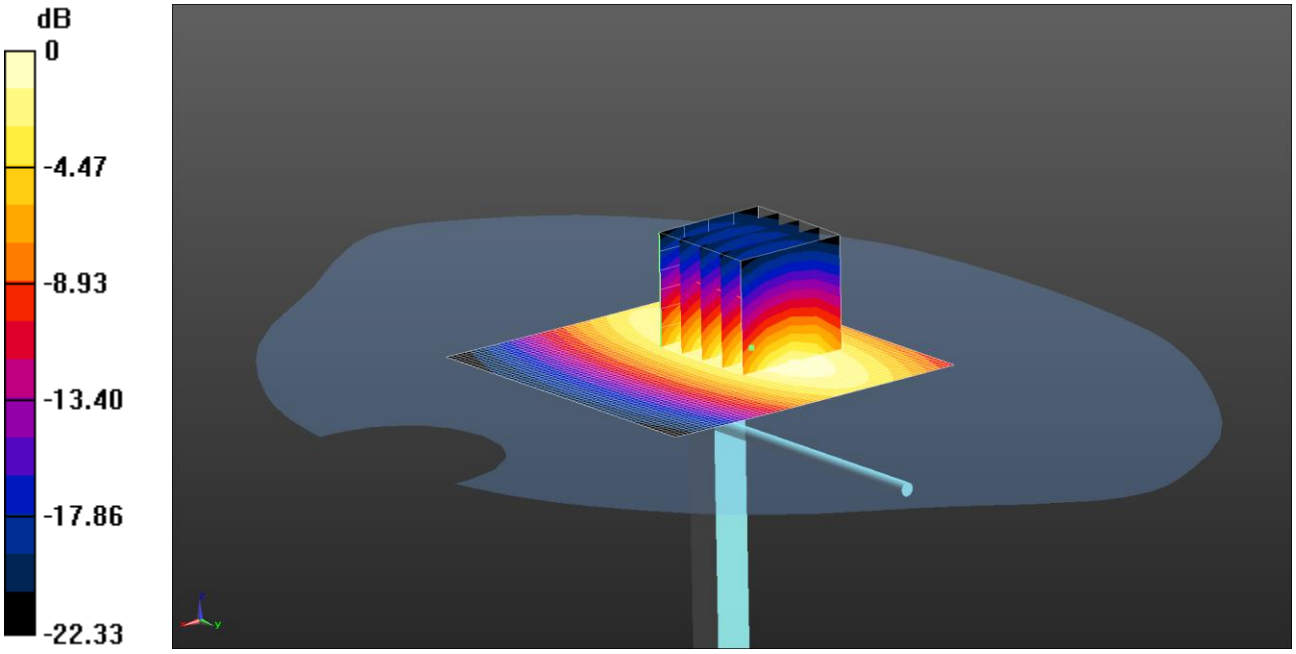
003: System Performance Check 900MHz Body 24 08 15
Date: 24/8/2015
DUT: Dipole 900 MHz D900V2; Type: D900V2; Serial: D900V2 - SN:035



0 dB = 2.88 W/kg = 4.59 dBW/kg

Communication System: UID 0, CW; Frequency: 900 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used: f = 900 MHz; σ = 1.069 S/m; ε_r = 54.054; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.06, 6.06, 6.06); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)
SAR/d=15mm, Pin=250 mW, dist=10.0mm (ET-Probe) 2 2 2 2/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.88 W/kg
SAR/d=15mm, Pin=250 mW, dist=10.0mm (ET-Probe) 2 2 2 2/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 46.02 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 3.69 W/kg
SAR(1 g) = 2.66 W/kg; SAR(10 g) = 1.75 W/kg
Maximum value of SAR (measured) = 2.88 W/kg

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12.3. SAR Test Plots

This appendix contains the following SAR distribution scans.

Scan Reference Number	Title
001	Touch Left of DUT Open WCDMA 5 CH4183
002	Tilt Left of DUT Open WCDMA 5 CH4183
003	Touch Right of DUT Open WCDMA 5 CH4183
004	Tilt Right of DUT Open WCDMA 5 CH4183
005	Front of DUT Open WCDMA 5 CH4183
006	Back of DUT Open WCDMA 5 CH4183
007	Back of DUT Open WCDMA 5 CH4132
008	Back of DUT Open WCDMA 5 CH4233
009	Front of DUT Closed WCDMA 5 CH4183
010	Back of DUT Closed WCDMA 5 CH4183
011	Back of DUT Closed WCDMA 5 CH4132
012	Back of DUT Closed WCDMA 5 CH4233
013	Back of DUT Closed with PHF Kit WCDMA 5 CH4233
014	Back of DUT Closed WCDMA 5 RMC + HSDPA CH4233
015	Back of DUT Closed WCDMA 5 RMC + HSUPA CH4233

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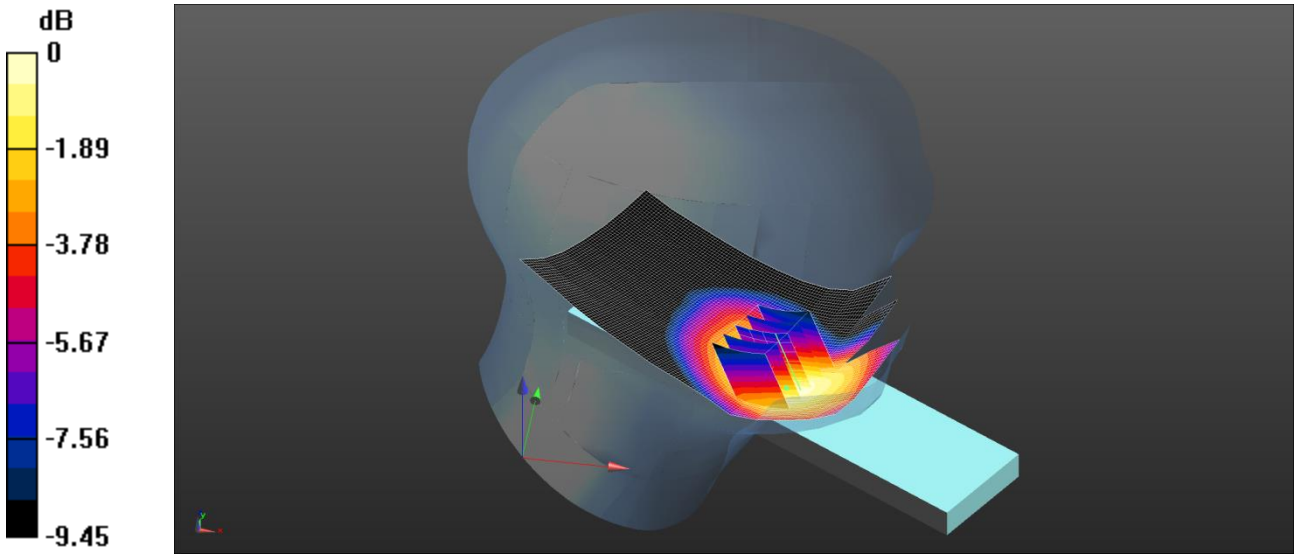
001: Touch Left of DUT Open WCDMA 5 CH4183
Date: 19/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.571 W/kg = -2.43 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.903 S/m; ε_r = 41.538; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.31, 6.31, 6.31); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM A (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Touch Left - Middle/Area Scan (61x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.580 W/kg
Configuration/Touch Left - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 26.67 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.697 W/kg
SAR(1 g) = 0.533 W/kg; SAR(10 g) = 0.378 W/kg
Maximum value of SAR (measured) = 0.571 W/kg

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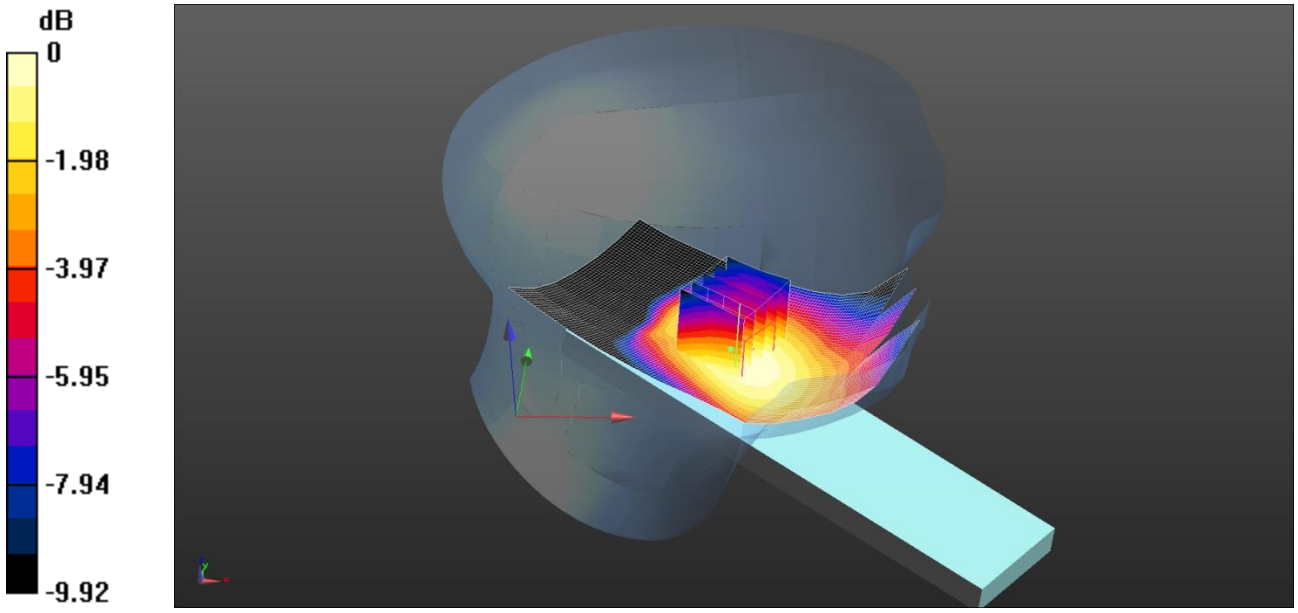
002: Tilt Left of DUT Open WCDMA 5 CH4183
Date: 19/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.239 W/kg = -6.22 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.903 S/m; ε_r = 41.538; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.31, 6.31, 6.31); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM A (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Tilt Left - Middle/Area Scan (61x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.239 W/kg
Configuration/Tilt Left - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.97 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 0.275 W/kg
SAR(1 g) = 0.227 W/kg; SAR(10 g) = 0.171 W/kg
Maximum value of SAR (measured) = 0.239 W/kg

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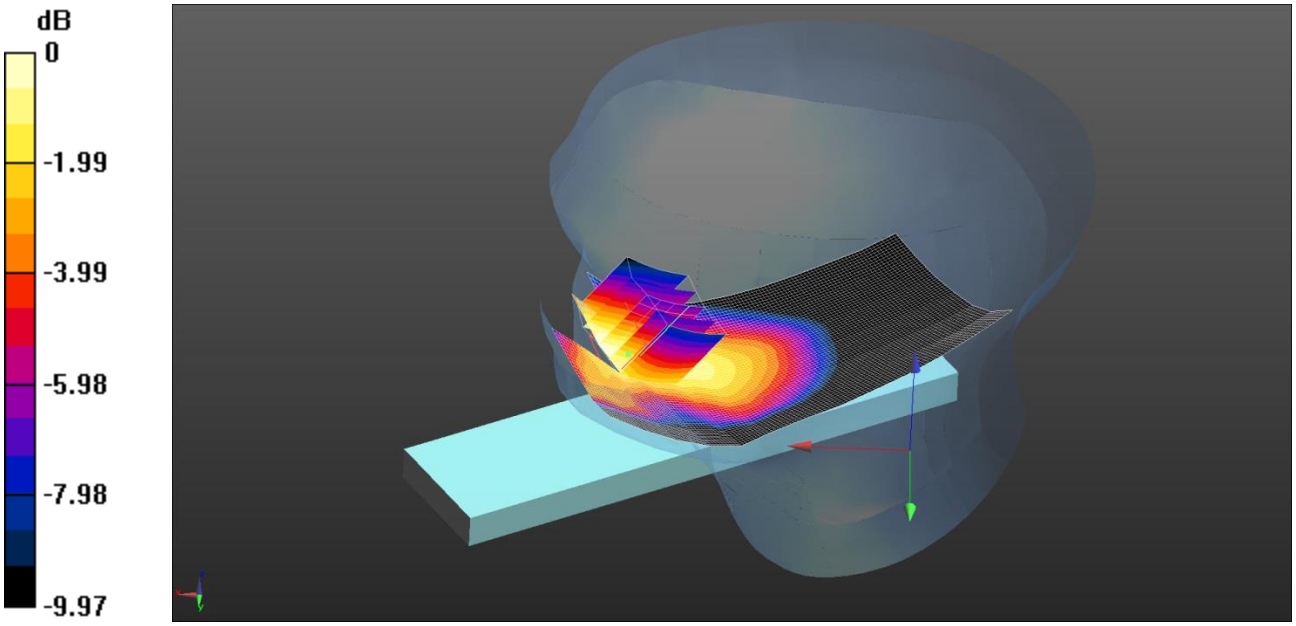
003: Touch Right of DUT Open WCDMA 5 CH4183
Date: 20/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.530 W/kg = -2.76 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.903 S/m; ε_r = 41.538; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.31, 6.31, 6.31); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM A (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Touch Right - Middle 2/Area Scan (61x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.530 W/kg
Configuration/Touch Right - Middle 2/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.28 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.635 W/kg
SAR(1 g) = 0.494 W/kg; SAR(10 g) = 0.352 W/kg
Maximum value of SAR (measured) = 0.530 W/kg

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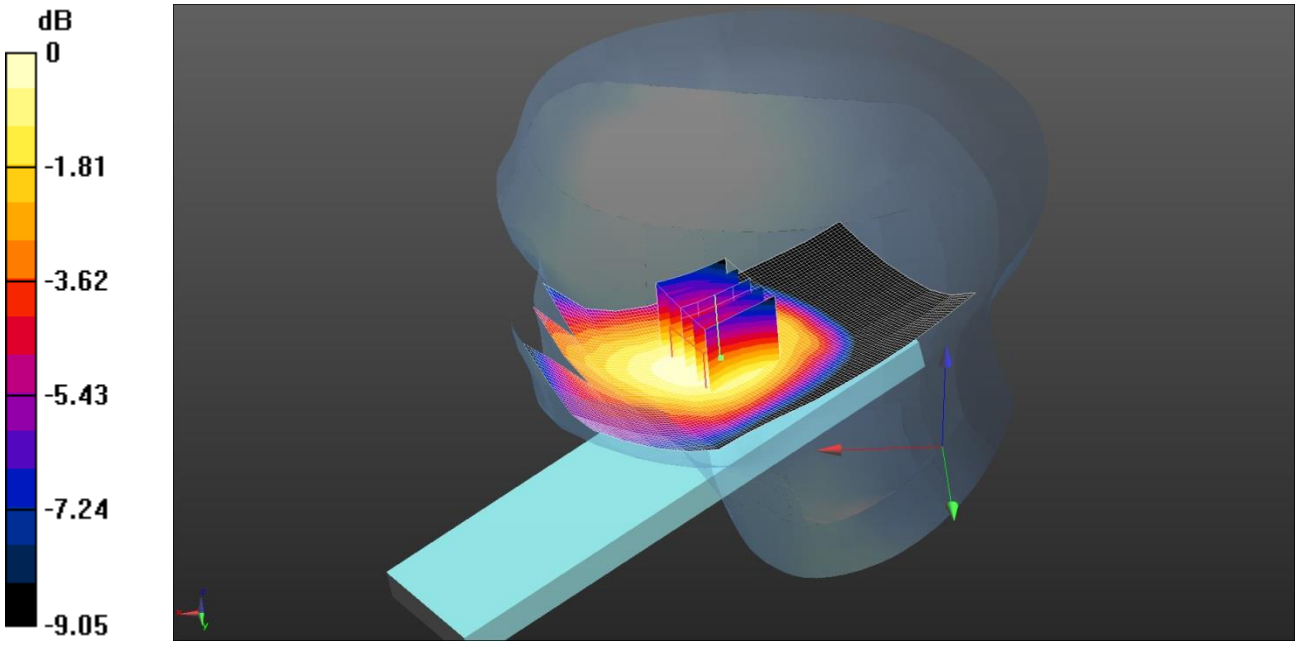
004: Tilt Right of DUT Open WCDMA 5 CH4183
Date: 20/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.216 W/kg = -6.66 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz HSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.903 S/m; ε_r = 41.538; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.31, 6.31, 6.31); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM A (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Touch Right - Middle 2/Area Scan (61x161x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm.
Maximum value of SAR (interpolated) = 0.224 W/kg
Configuration/Touch Right - Middle 2/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 15.88 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.248 W/kg
SAR(1 g) = 0.206 W/kg; SAR(10 g) = 0.158 W/kg
Maximum value of SAR (measured) = 0.216 W/kg

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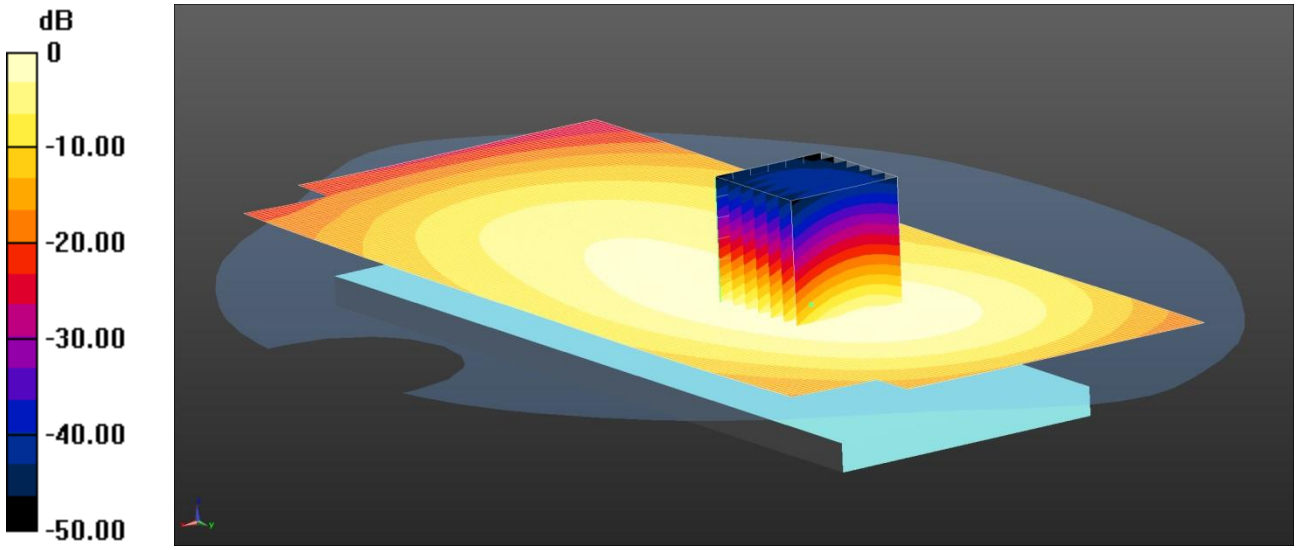
005: Front of DUT Open WCDMA 5 CH4183
Date: 20/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.465 W/kg = -3.33 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.993 S/m; ε_r = 53.522; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Front of EUT - Middle 2 2 2/Area Scan (91x201x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.465 W/kg
Configuration/Front of EUT - Middle 2 2 2/Zoom Scan (5x5x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.59 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 0.561 W/kg
SAR(1 g) = 0.439 W/kg; SAR(10 g) = 0.319 W/kg
Maximum value of SAR (measured) = 0.466 W/kg

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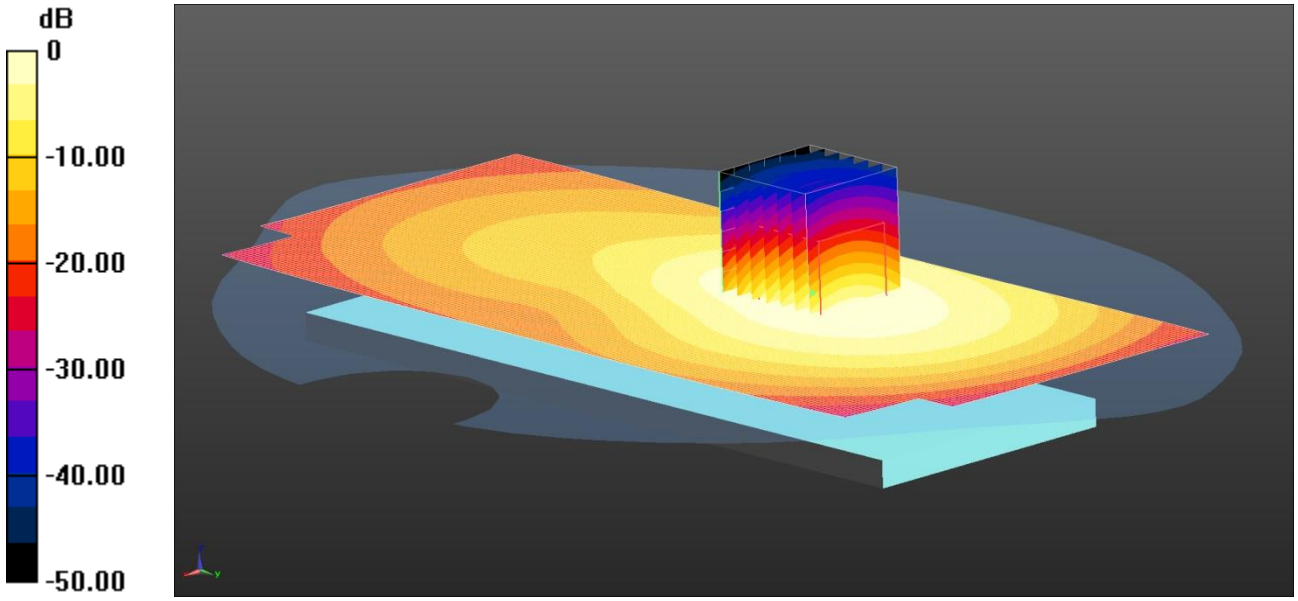
006: Back of DUT Open WCDMA 5 CH4183
Date: 20/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.907 W/kg = -0.42 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.993 S/m; ε_r = 53.522; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle 2/Area Scan (91x201x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.907 W/kg
Configuration/Back of EUT - Middle 2/Zoom Scan (5x5x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.48 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.852 W/kg; SAR(10 g) = 0.601 W/kg
Maximum value of SAR (measured) = 0.911 W/kg

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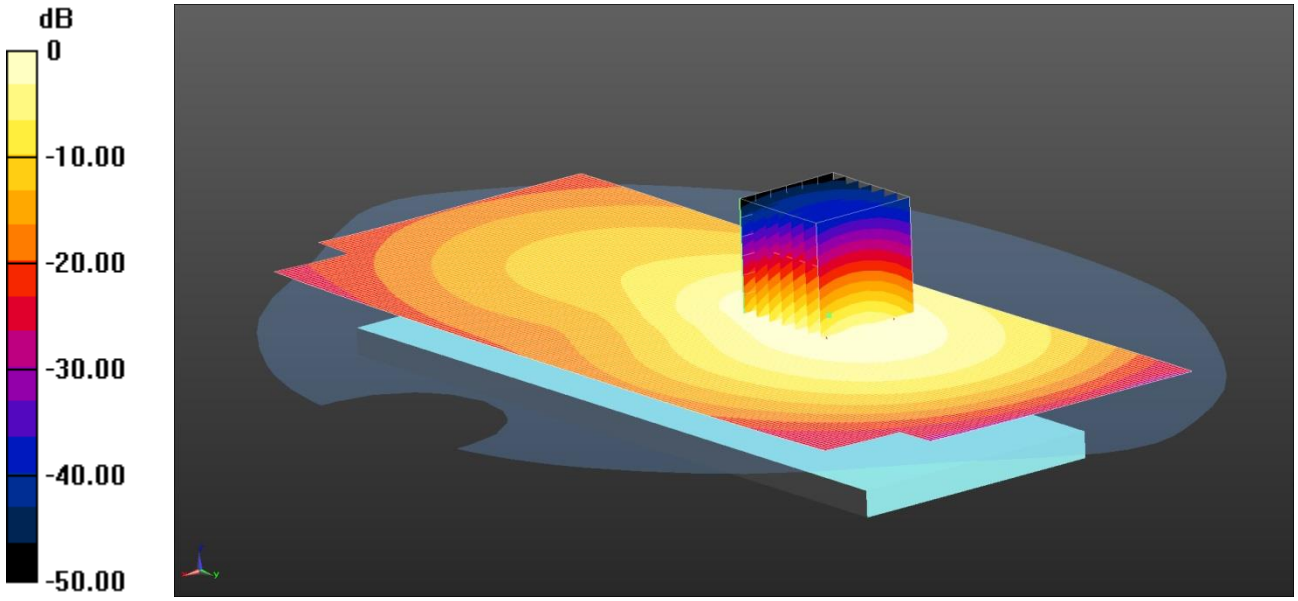
007: Back of DUT Open WCDMA 5 CH4132
Date: 24/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.886 W/kg = -0.52 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 826.4 MHz; σ = 1.022 S/m; ε_r = 54.448; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle 2/Area Scan (91x201x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.886 W/kg
Configuration/Back of EUT - Middle 2/Zoom Scan (5x5x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.16 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.833 W/kg; SAR(10 g) = 0.584 W/kg
Maximum value of SAR (measured) = 0.891 W/kg

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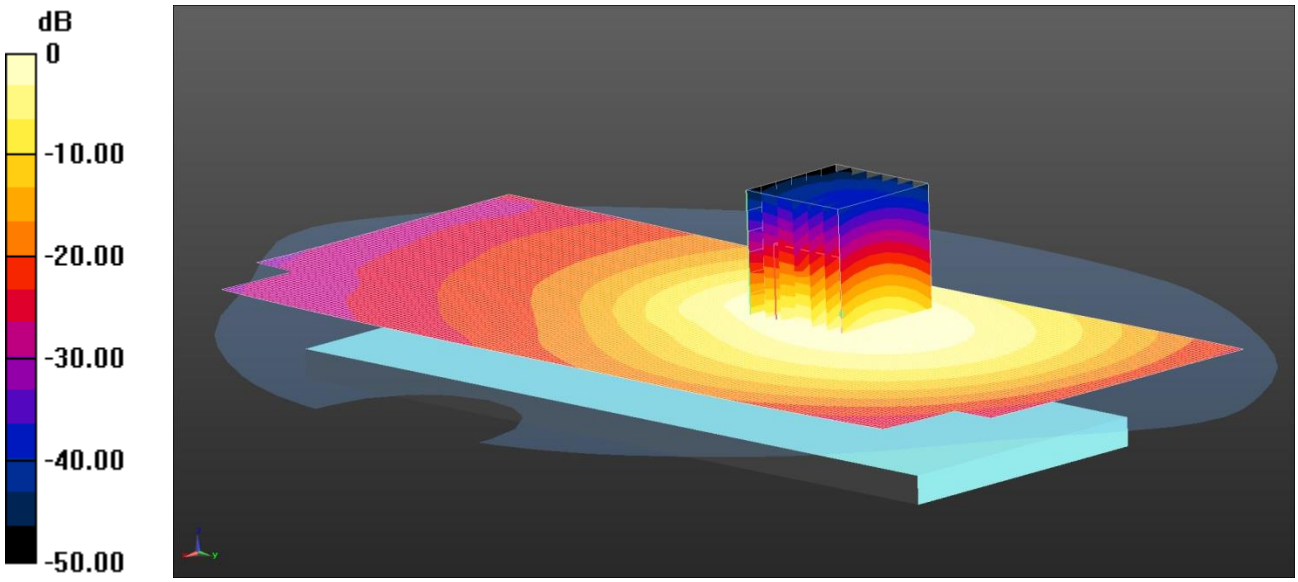
008: Back of DUT Open WCDMA 5 CH4233
Date: 20/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.986 W/kg = -0.06 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 846.6 MHz; σ = 1 S/m; ε_r = 53.48; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle 2 2/Area Scan (91x201x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.986 W/kg
Configuration/Back of EUT - Middle 2 2/Zoom Scan (5x5x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.71 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.762 W/kg; SAR(10 g) = 0.533 W/kg
Maximum value of SAR (measured) = 0.815 W/kg

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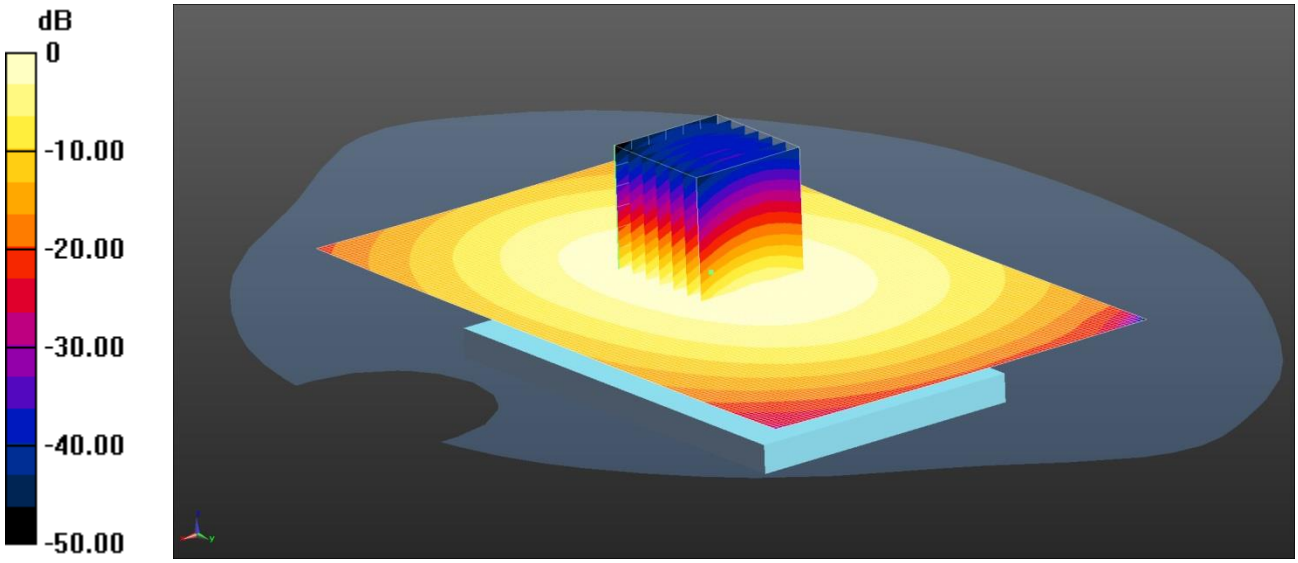
009: Front of DUT Closed WCDMA 5 CH4183
Date: 24/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.352 W/kg = -4.53 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 1.029 S/m; ε_r = 54.412; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Front of EUT - Middle 2/Area Scan (91x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.352 W/kg
Configuration/Front of EUT - Middle 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.11 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.420 W/kg
SAR(1 g) = 0.330 W/kg; SAR(10 g) = 0.242 W/kg
Maximum value of SAR (measured) = 0.350 W/kg

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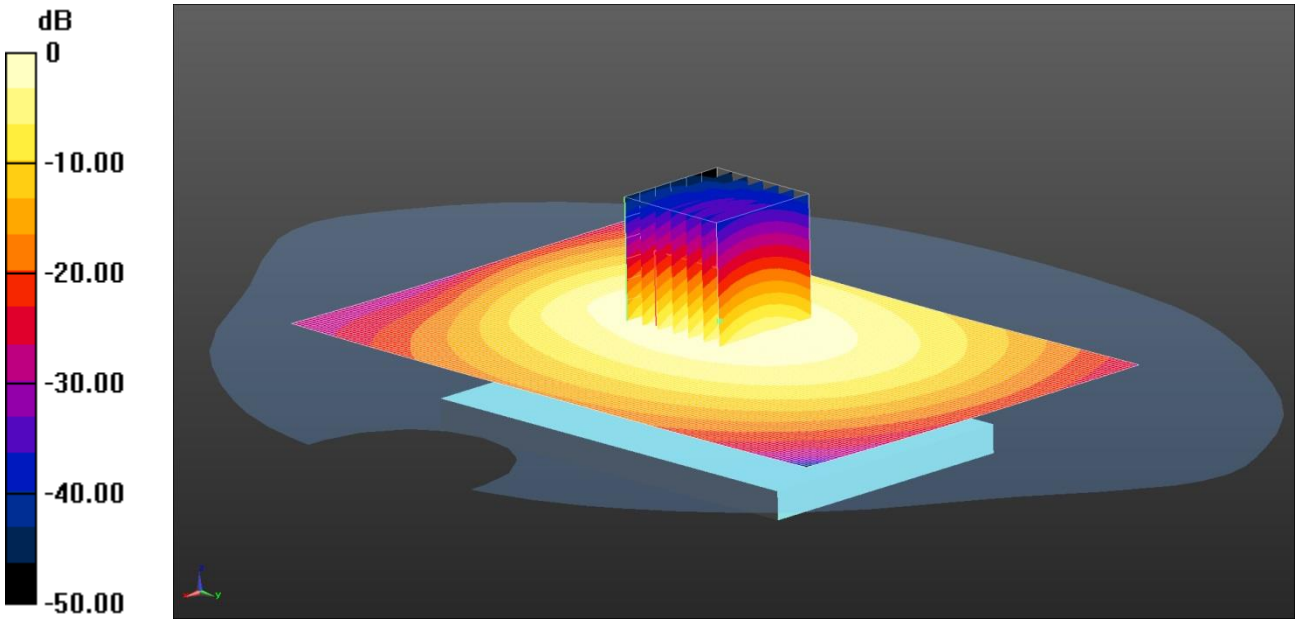
010: Back of DUT Closed WCDMA 5 CH4183
Date: 24/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.817 W/kg = -0.88 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 836.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 836.6 MHz; σ = 1.029 S/m; ε_r = 54.412; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)
Configuration/Back of EUT - Middle 2/Area Scan (91x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.817 W/kg
Configuration/Back of EUT - Middle 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.19 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.765 W/kg; SAR(10 g) = 0.544 W/kg
Maximum value of SAR (measured) = 0.817 W/kg

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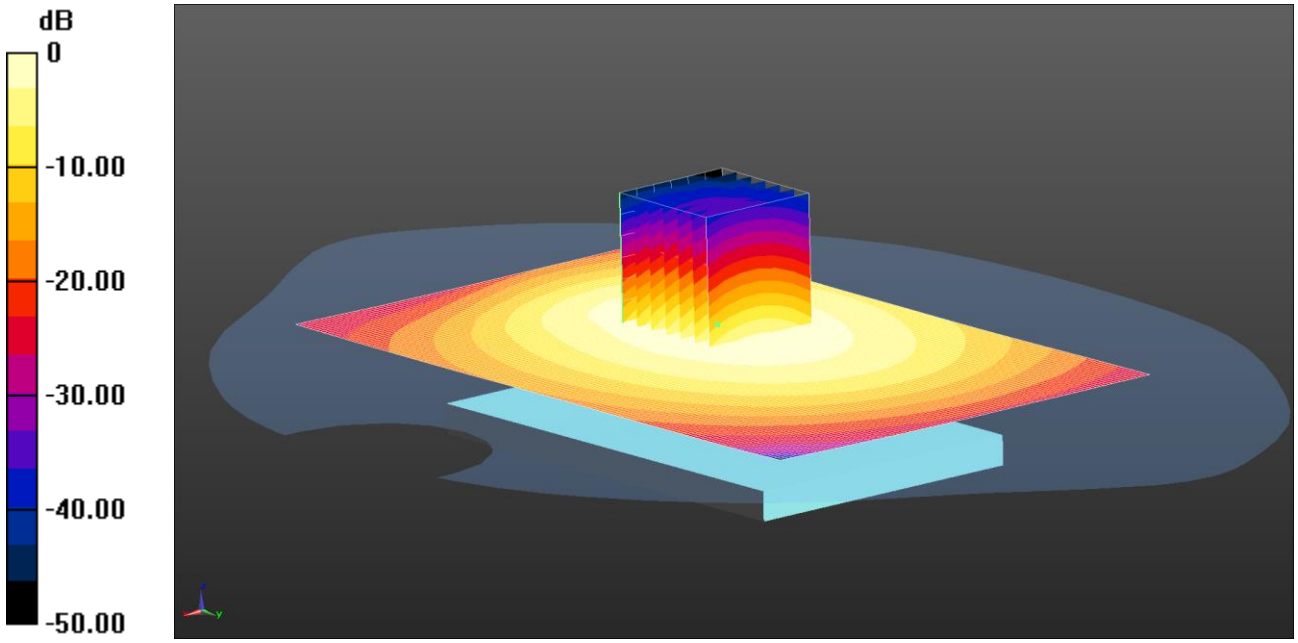
011: Back of DUT Closed WCDMA 5 CH4132
Date: 19/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.858 W/kg = -0.66 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.987 S/m; ε_r = 53.565; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle/Area Scan (91x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.858 W/kg
Configuration/Back of EUT - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.28 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.790 W/kg; SAR(10 g) = 0.562 W/kg
Maximum value of SAR (measured) = 0.841 W/kg

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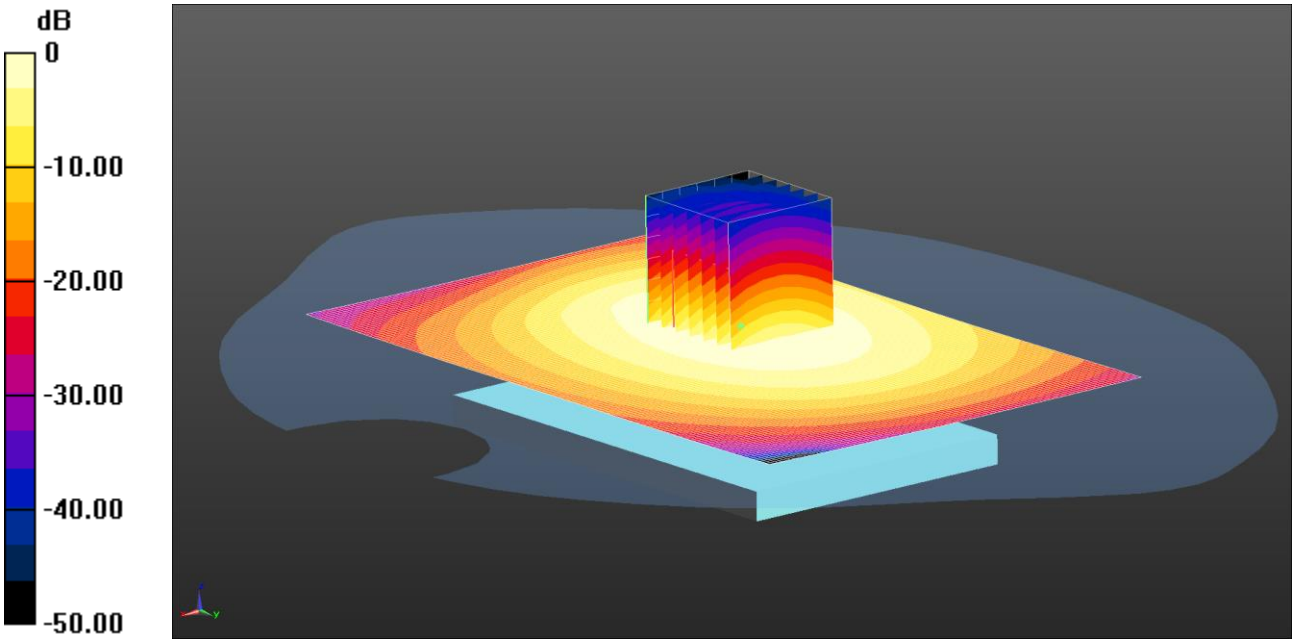
012: Back of DUT Closed WCDMA 5 CH4233
Date: 25/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 1.10 W/kg = 0.43 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 846.6 MHz; σ = 1.036 S/m; ε_r = 54.376; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle 2/Area Scan (91x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.10 W/kg
Configuration/Back of EUT - Middle 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.93 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.742 W/kg
Maximum value of SAR (measured) = 1.10 W/kg

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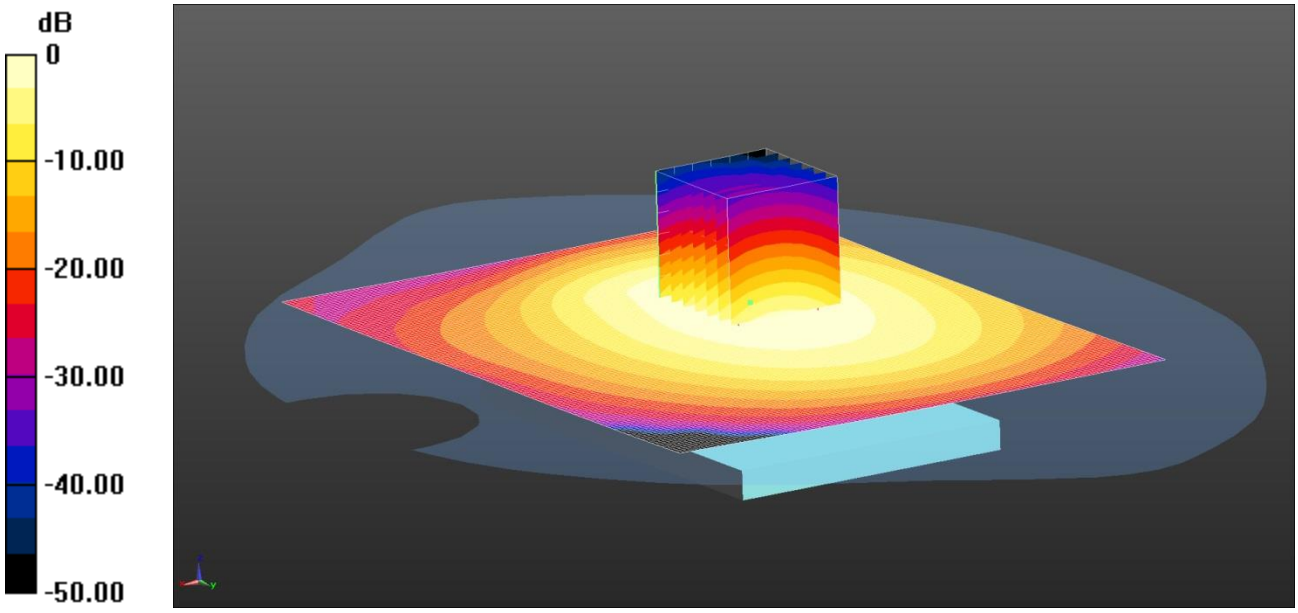
013: Back of DUT Closed with PHF Kit WCDMA 5 CH4233
Date: 25/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 0.865 W/kg = -0.63 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 846.6 MHz; σ = 1.036 S/m; ε_r = 54.376; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle 2/Area Scan (111x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.865 W/kg
Configuration/Back of EUT - Middle 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.95 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.815 W/kg; SAR(10 g) = 0.574 W/kg
Maximum value of SAR (measured) = 0.870 W/kg

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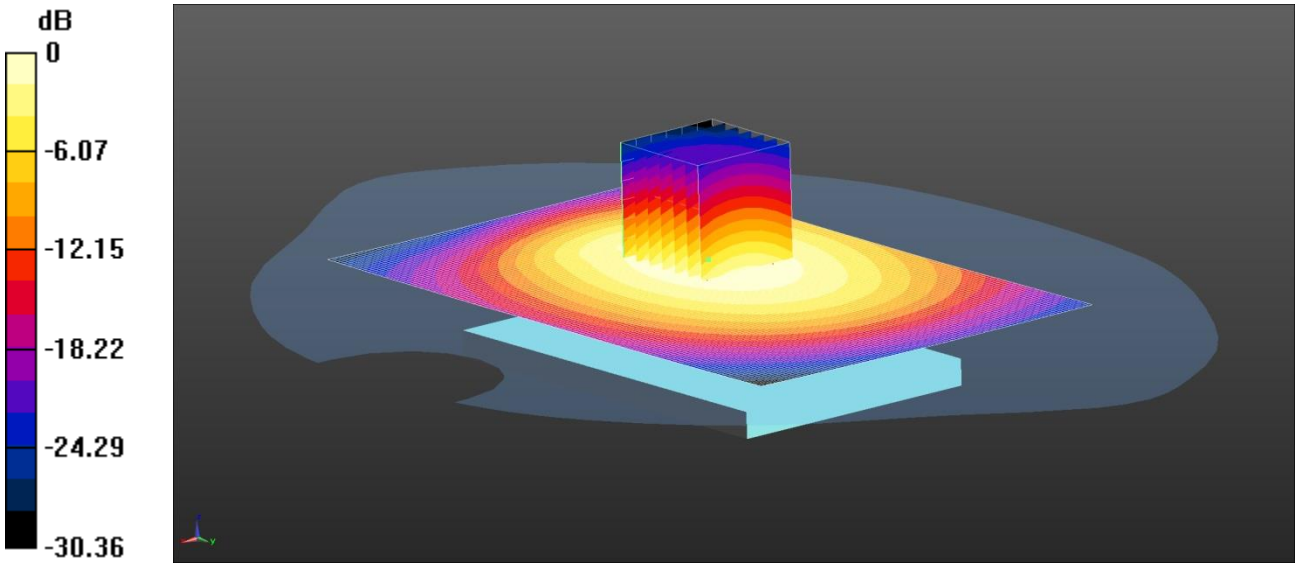
014: Back of DUT Closed WCDMA 5 RMC + HSDPA CH4233
Date: 20/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 1.04 W/kg = 0.19 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 846.6 MHz; σ = 1 S/m; ε_r = 53.48; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle 2/Area Scan (91x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.04 W/kg
Configuration/Back of EUT - Middle 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.39 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.972 W/kg; SAR(10 g) = 0.693 W/kg
Maximum value of SAR (measured) = 1.03 W/kg

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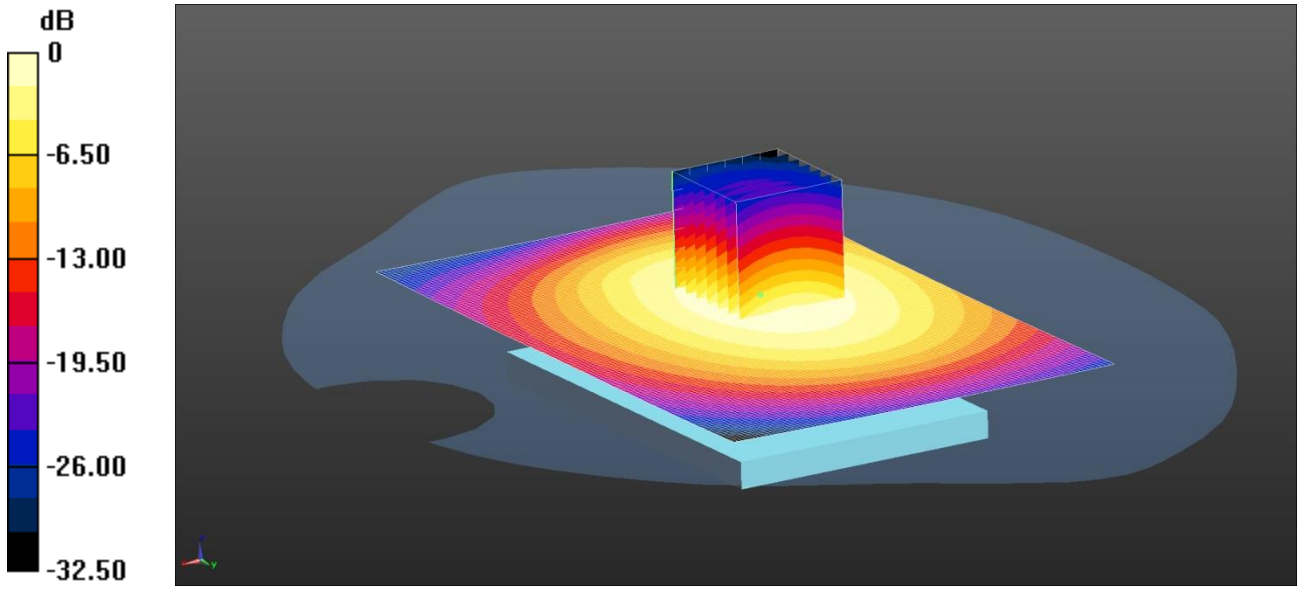
015: Back of DUT Closed WCDMA 5 RMC + HSUPA CH4233
Date: 24/8/2015
DUT: Panasonic; Type: P-01H; Serial: 351772070005110



0 dB = 1.07 W/kg = 0.28 dBW/kg

Communication System: UID 0, UMTS FDD (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: 900 MHz MSL Medium parameters used (interpolated): f = 846.6 MHz; σ = 1.036 S/m; ε_r = 54.376; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:
- Probe: ET3DV6 - SN1586; ConvF(6.22, 6.22, 6.22); Calibrated: 22/5/2015;
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1438; Calibrated: 29/4/2015
- Phantom: SAM B (30deg probe tilt) with CRP v5.0; Type: QD000P40CD; Serial: TP:1836
- ; SEMCAD X Version 14.6.10 (7331)

Configuration/Back of EUT - Middle 2/Area Scan (91x141x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.07 W/kg
Configuration/Back of EUT - Middle 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.85 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.991 W/kg; SAR(10 g) = 0.707 W/kg
Maximum value of SAR (measured) = 1.05 W/kg

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12.4. Calibration Certificate for E-Field Probe

This sub-section contains Cal Certificates for E-Field Probes, and is not included in the total number of pages for this report.

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A2112

Checked
M. Nacer
05/06/2015

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 0108

Client UL RFI UK

Certificate No: ET3-1586_May15

CALIBRATION CERTIFICATE

Object: ET3DV6 - SN:1586

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

Calibration date: May 22, 2015

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16
Power sensor E4412A	MY41498087	01-Apr-15 (No. 217-02128)	Mar-16
Reference 3 dB Attenuator	SN: S5054 (3c)	01-Apr-15 (No. 217-02129)	Mar-16
Reference 20 dB Attenuator	SN: S5277 (20x)	01-Apr-15 (No. 217-02132)	Mar-16
Reference 30 dB Attenuator	SN: S5129 (30b)	01-Apr-15 (No. 217-02133)	Mar-16
Reference Probe ES3DV2	SN: 3013	30-Dec-14 (No. ES3-3013_Dec14)	Dec-15
DAE4	SN: 660	14-Jan-15 (No. DAE4-660_Jan15)	Jan-16
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-13)	In house check: Apr-16
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-14)	In house check: Oct-15

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

Issued: May 25, 2015

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

Glossary:

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

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 ET3DV6

SN:1586

Manufactured: May 7, 2001
Calibrated: May 22, 2015

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

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1586

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.86	1.91	1.95	± 10.1 %
DCP (mV)[B]	98.8	99.0	100.7	

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	223.5	±3.5 %
		Y	0.0	0.0	1.0		226.6	
		Z	0.0	0.0	1.0		225.9	

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: ET3DV6 - SN:1586

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
750	41.9	0.89	6.60	6.60	6.60	0.31	3.00	± 12.0 %
835	41.5	0.90	6.31	6.31	6.31	0.36	3.00	± 12.0 %
900	41.5	0.97	6.17	6.17	6.17	0.38	3.00	± 12.0 %
1450	40.5	1.20	5.36	5.36	5.36	0.56	2.32	± 12.0 %
1750	40.1	1.37	5.28	5.28	5.28	0.72	2.13	± 12.0 %
1900	40.0	1.40	5.07	5.07	5.07	0.80	2.07	± 12.0 %
2100	39.8	1.49	5.11	5.11	5.11	0.80	1.94	± 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: ET3DV6 - SN:1586

Calibration Parameter Determined in Body Tissue Simulating Media

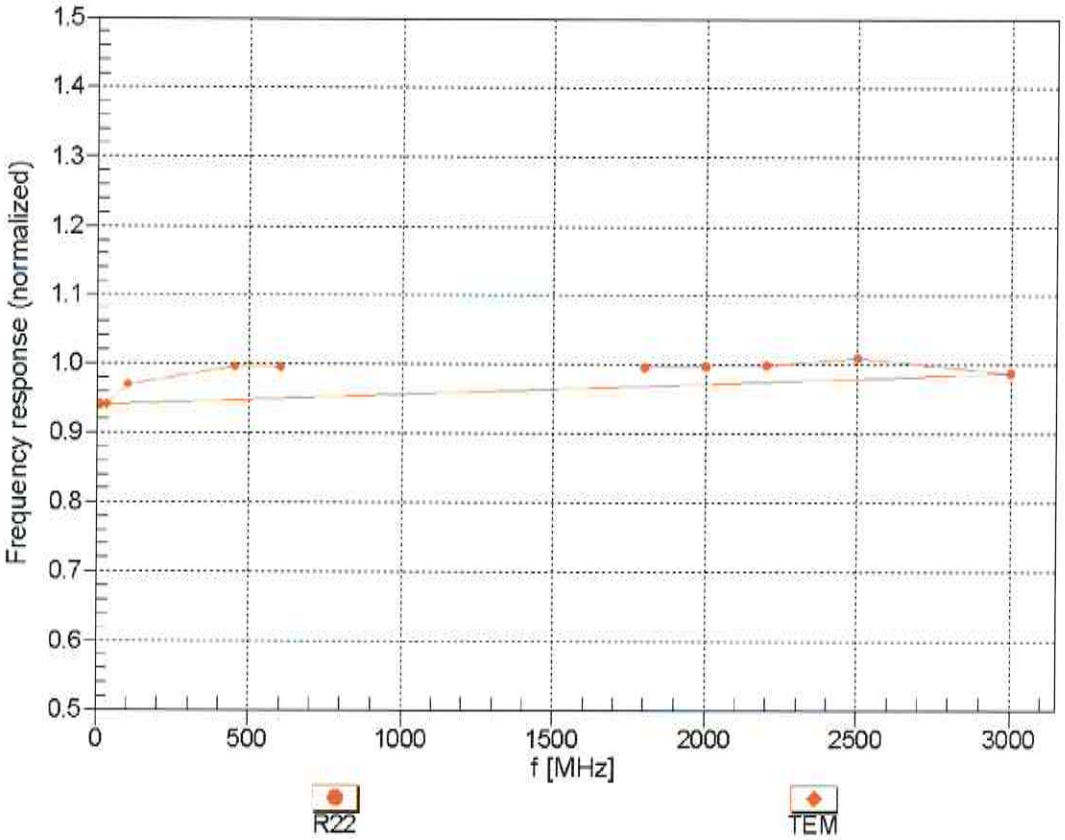
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unct. (k=2)
750	55.5	0.96	6.36	6.36	6.36	0.29	3.00	± 12.0 %
835	55.2	0.97	6.22	6.22	6.22	0.31	3.00	± 12.0 %
900	55.0	1.05	6.06	6.06	6.06	0.34	3.00	± 12.0 %
1450	54.0	1.30	5.07	5.07	5.07	0.57	2.38	± 12.0 %
1750	53.4	1.49	4.81	4.81	4.81	0.76	2.56	± 12.0 %
1900	53.3	1.52	4.64	4.64	4.64	0.80	2.43	± 12.0 %
2100	53.2	1.62	4.77	4.77	4.77	0.80	2.06	± 12.0 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At 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.

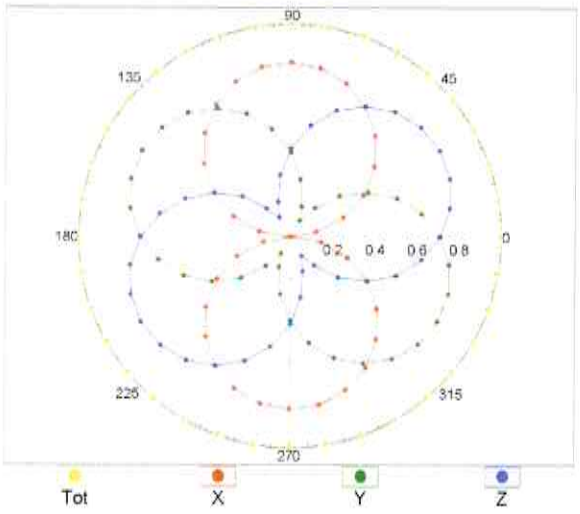
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



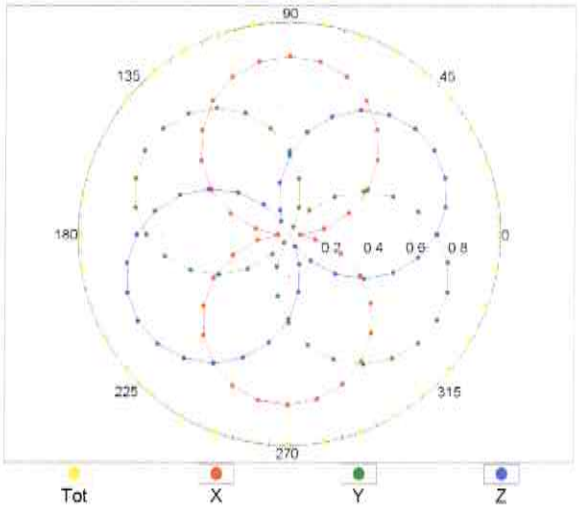
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

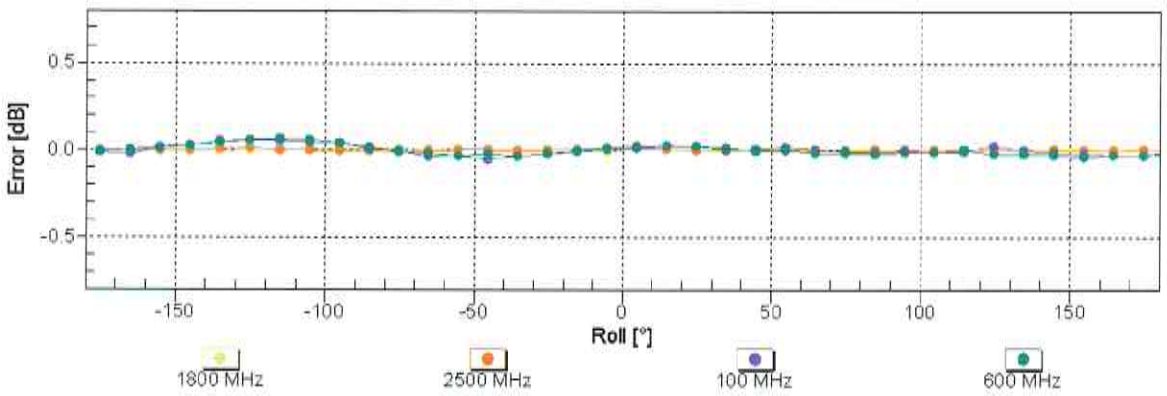
Receiving Pattern (ϕ), ϑ = 0°

f=1800 MHz,R22



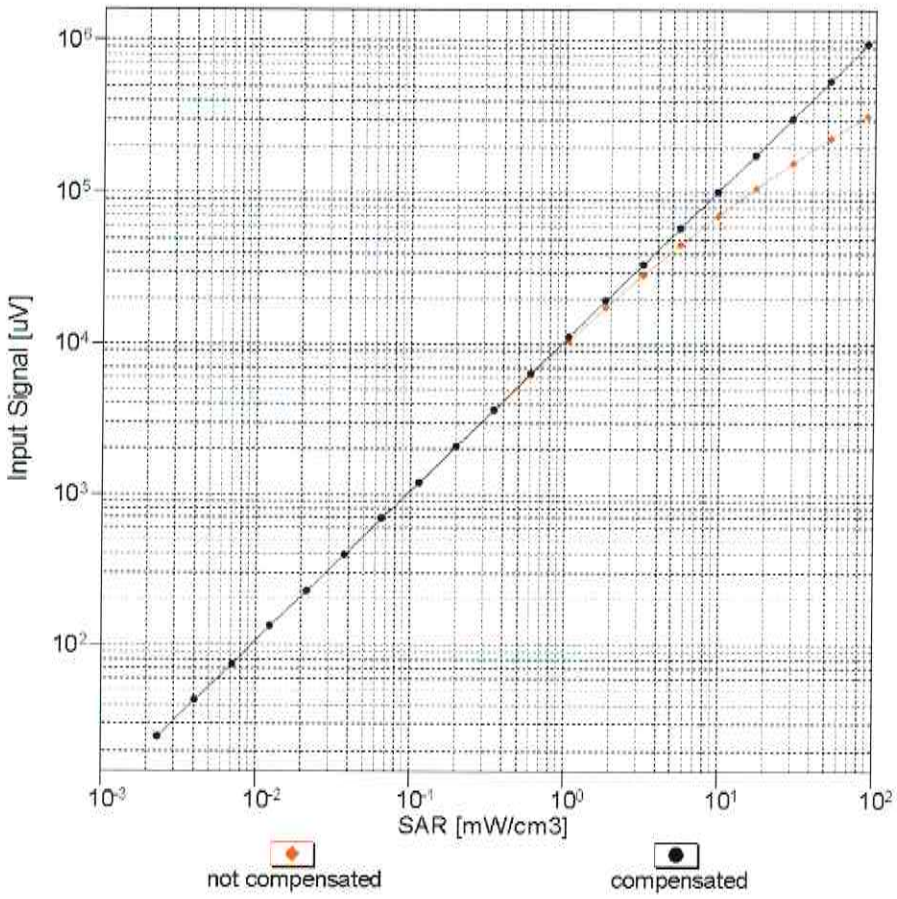
f=600 MHz,TEM

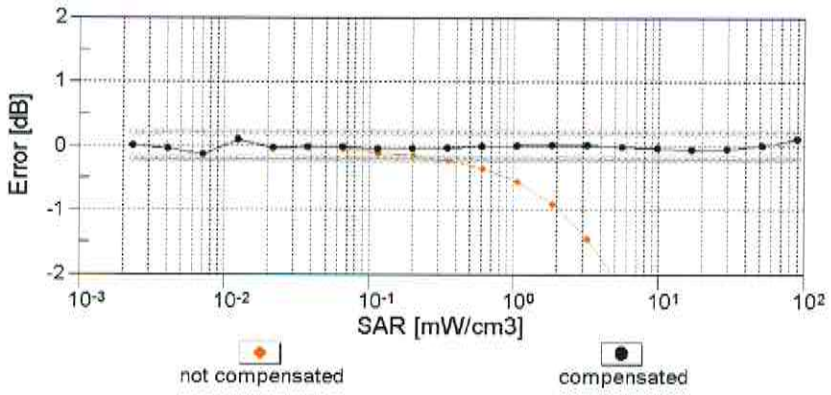




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

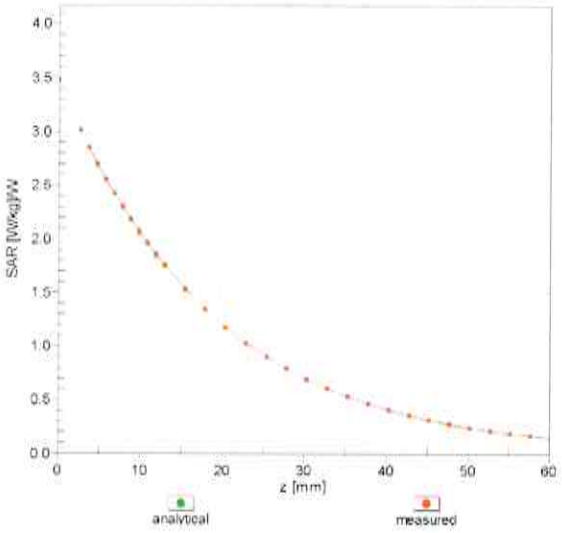




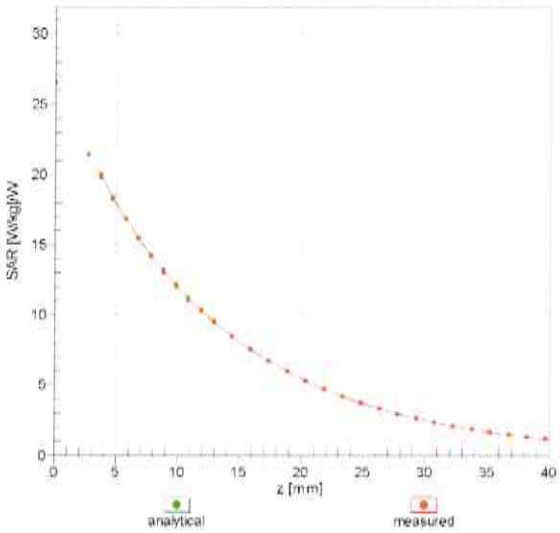
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 900 MHz,WGLS R9 (H_convF)

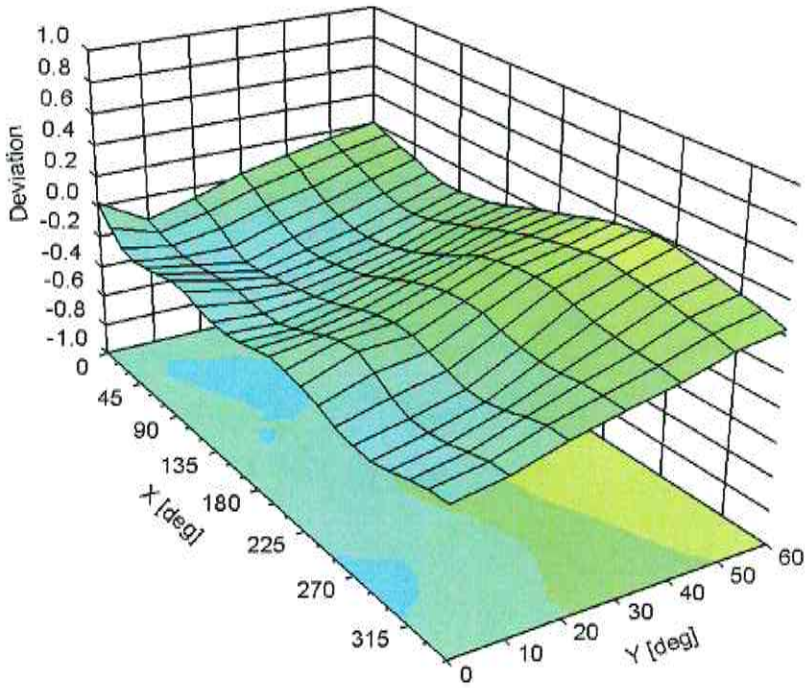


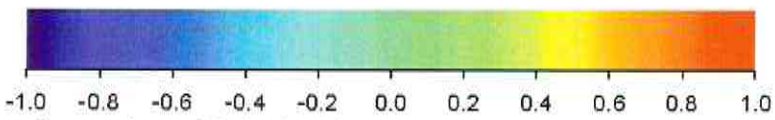
f = 1750 MHz,WGLS R22 (H_convF)



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: ET3DV6 - SN:1586

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	124.6
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

12.5. Calibration Certificate for Dipole

This sub-section contains Cal Certificates for Dipoles, and is not included in the total number of pages for this report.

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A2201

Checked. M Nlorec 09/2/15

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 0108

Client **UL RFI UK**

Certificate No: D900V2-035_Jan15

CALIBRATION CERTIFICATE

Object	D900V2 - SN: 035
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz
Calibration date:	January 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 EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	US37292783	07-Oct-14 (No. 217-02020)	Oct-15
Power sensor HP 8481A	MY41092317	07-Oct-14 (No. 217-02021)	Oct-15
Reference 20 dB Attenuator	SN: 5058 (20k)	03-Apr-14 (No. 217-01918)	Apr-15
Type-N mismatch combination	SN: 5047.2 / 06327	03-Apr-14 (No. 217-01921)	Apr-15
Reference Probe ES3DV3	SN: 3205	30-Dec-14 (No. ES3-3205_Dec14)	Dec-15
DAE4	SN: 601	18-Aug-14 (No. DAE4-601_Aug14)	Aug-15

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

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

Issued: January 26, 2015

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Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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S Swiss Calibration Service

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Accreditation No.: SCS 0108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "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) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 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	0.97 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.4 ± 6 %	0.95 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	2.65 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**10.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.70 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	**6.88 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	55.0	1.05 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.7 ± 6 %	1.03 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	2.65 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**10.8 W/kg ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.72 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	**6.97 W/kg ± 16.5 % (k=2)**

Appendix (Additional assessments outside the scope of SCS0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.9 Ω - 0.5 jΩ
Return Loss	- 34.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.4 Ω - 2.6 jΩ
Return Loss	- 30.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.403 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	February 26, 1998

DASY5 Validation Report for Head TSL

Date: 22.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN: 035

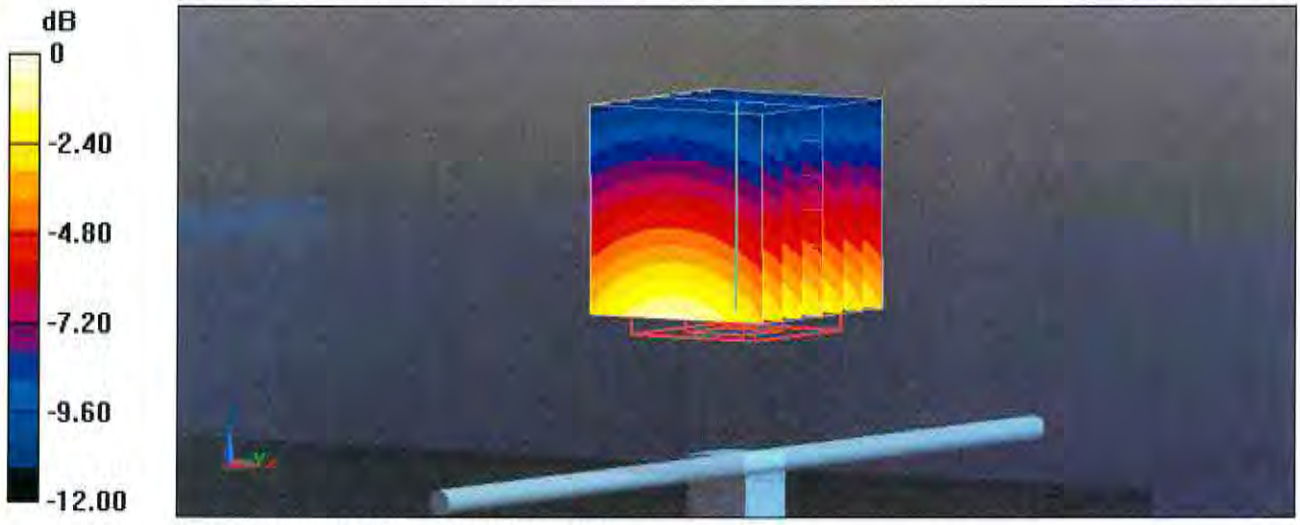
Communication System: UID 0 - CW; Frequency: 900 MHz
Medium parameters used: f = 900 MHz; σ = 0.95 S/m; ε_r = 41.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.94, 5.94, 5.94); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

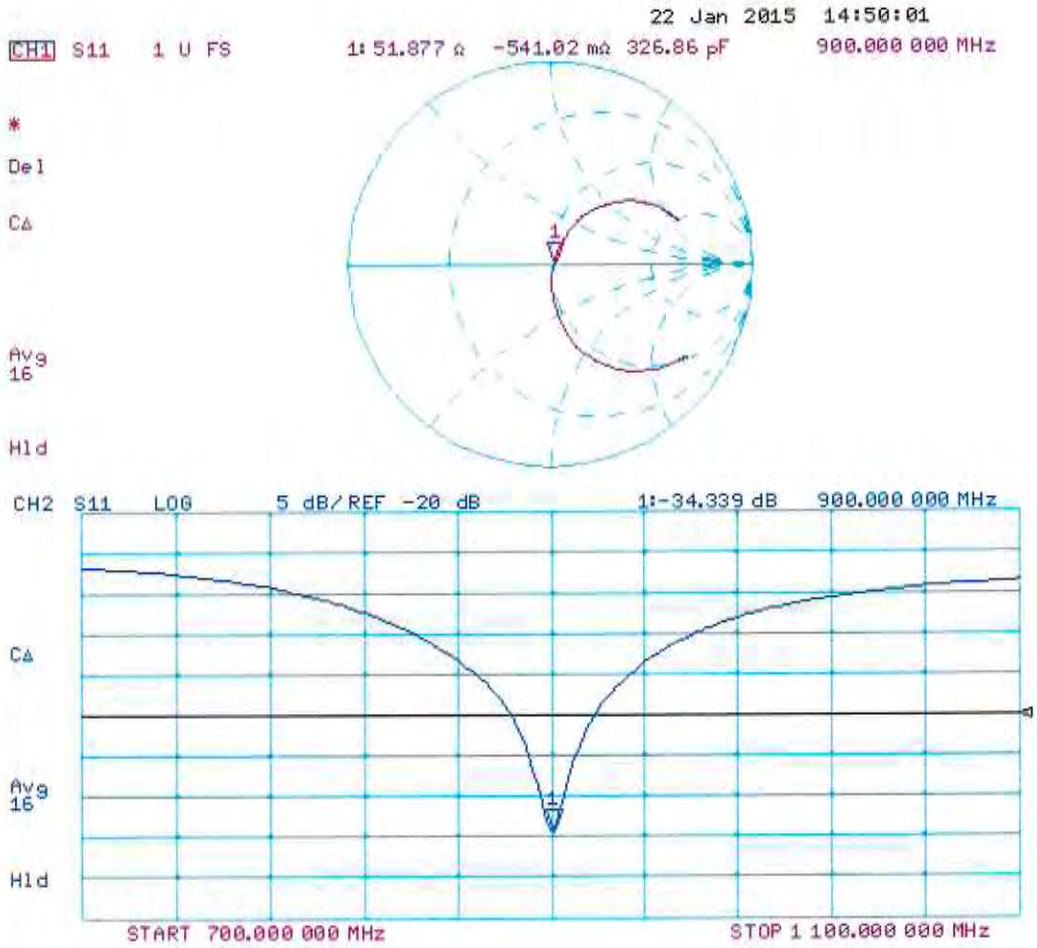
Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 59.12 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.96 W/kg
SAR(1 g) = 2.65 W/kg; SAR(10 g) = 1.7 W/kg
Maximum value of SAR (measured) = 3.11 W/kg



0 dB = 3.11 W/kg = 4.93 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 23.01.2015

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN: 035

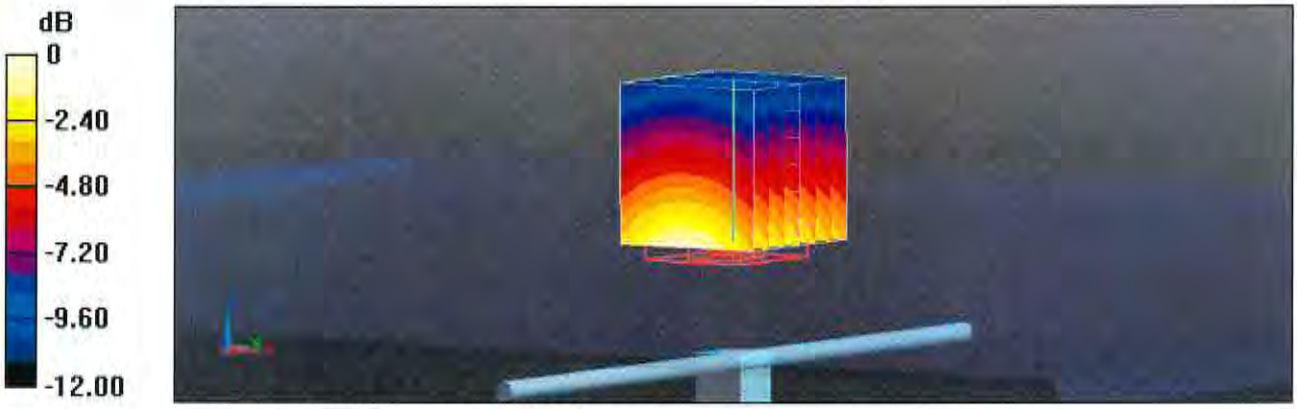
Communication System: UID 0 - CW; Frequency: 900 MHz
Medium parameters used: f = 900 MHz; σ = 1.03 S/m; ε_r = 55.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.95, 5.95, 5.95); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

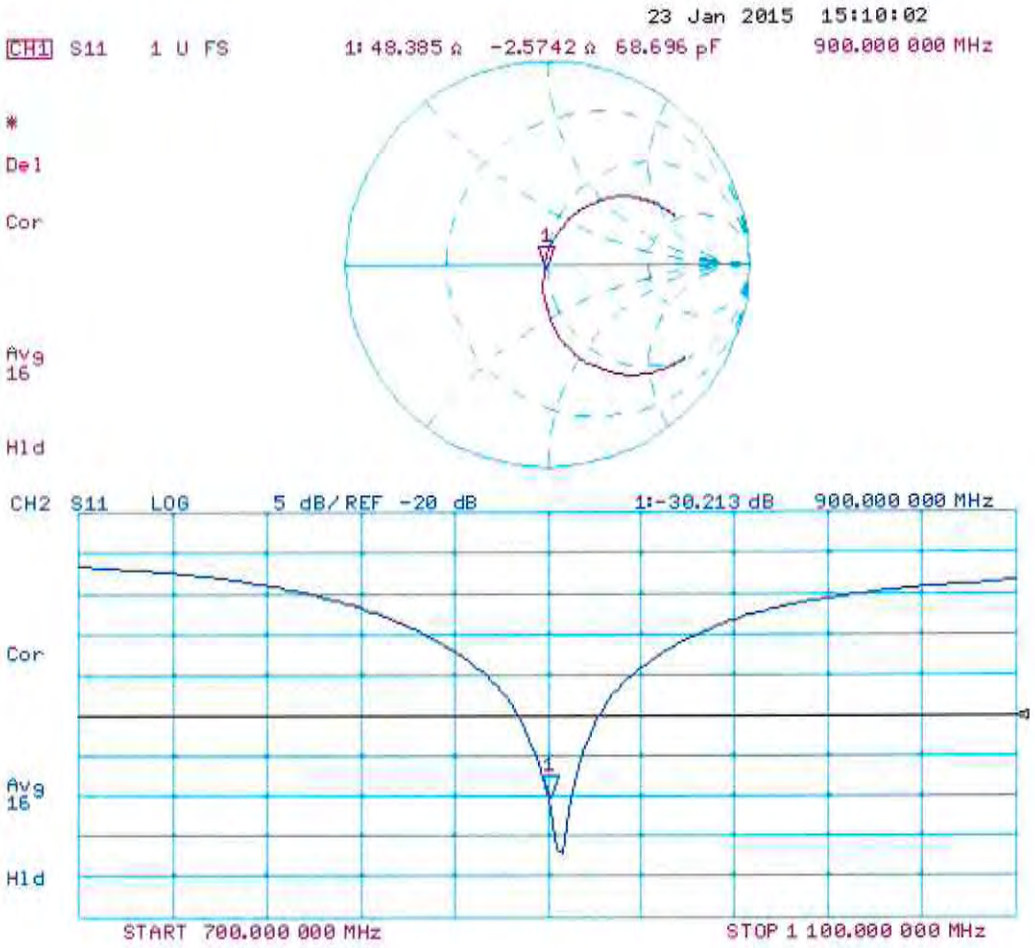
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.81 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.92 W/kg
SAR(1 g) = 2.65 W/kg; SAR(10 g) = 1.72 W/kg
Maximum value of SAR (measured) = 3.10 W/kg



0 dB = 3.10 W/kg = 4.91 dBW/kg

Impedance Measurement Plot for Body TSL



12.6. Tissues-Equivalent Media Recipes

The body mixture consists of water, Polysorbate (Tween 20) and salt. Visual inspection is made to ensure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the tissue.

Ingredient (% by weight)	**Frequency 835/850/900 MHz**	
	Head	**Head**
De-Ionized Water	52.87	52.87
Polysorbate 20	46.10	46.10
Salt	1.03	1.03

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