APPENDIX A: SAR DISTRIBUTION COMPARISON FOR ACCURACY VERIFICATION

Test Laboratory: RTS

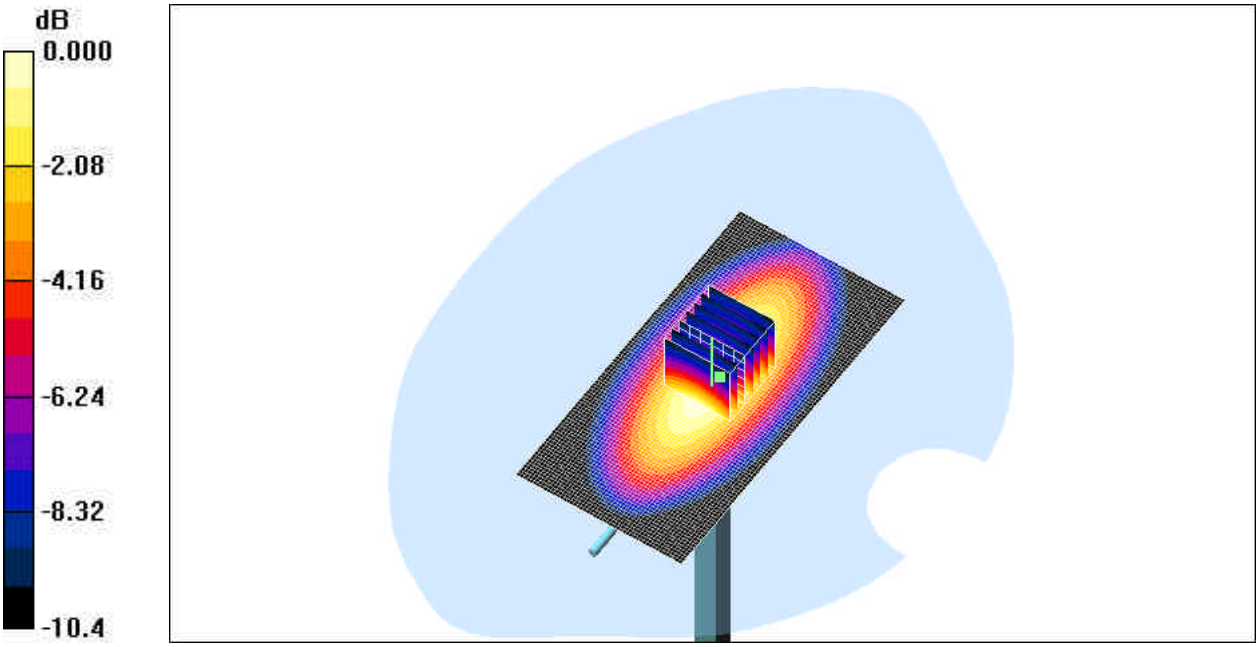
DipoleValidation_835MHz_Amb_Tem_24_6_Liq_Tem_23_8_Deg. Cel. 13_Nov_06

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:446
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; s = 0.874 mho/m; e, = 41.6; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(6.42, 6.42, 6.42); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, Pin=1000mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.5 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 13.6 W/kg
SAR(1 g) = 9.05 mW/g; SAR(10 g) = 5.89 mW/g
Maximum value of SAR (measured) = 9.76 mW/g

d=15mm, Pin=1000mW/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 9.79 mW/g



0 dB = 9.76mW/g

Test Laboratory: RTS

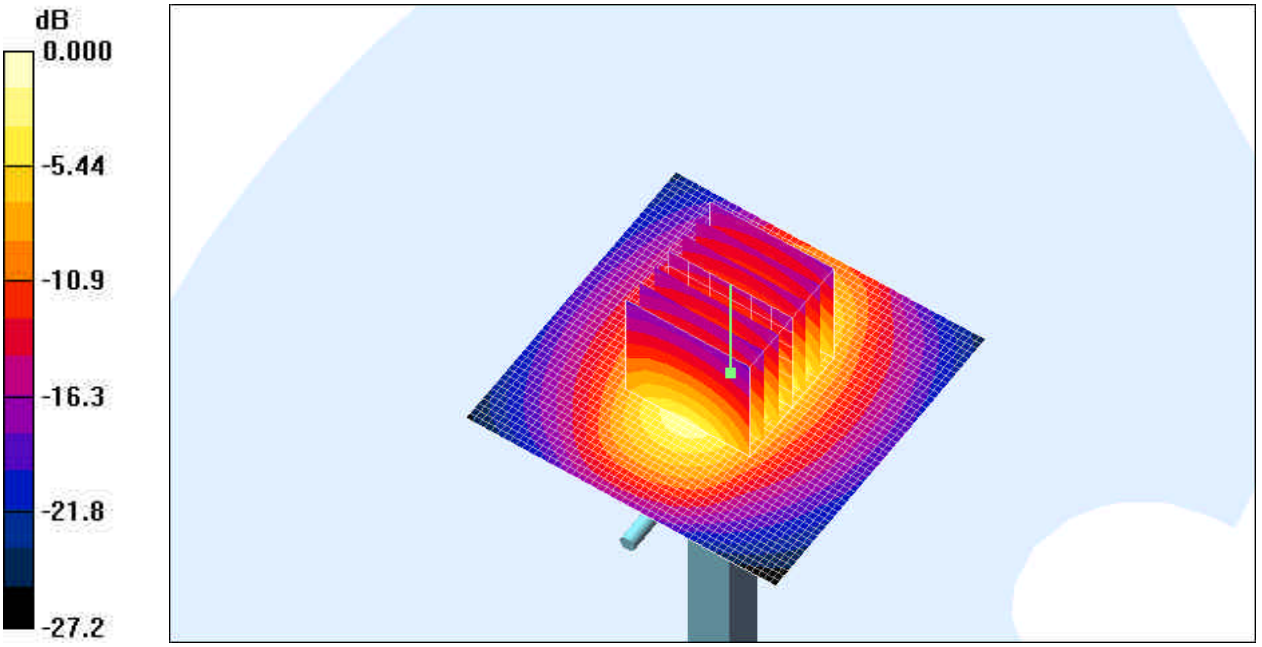
DipoleValidation_1900MHz_Amb_Tem_24.2_Liq_Tem_23_8 Deg. Cel. 09_Nov_06

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:545
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; s = 1.45 mho/m; e_r = 38.3; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(5.18, 5.18, 5.18); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, Pin=1000mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 180.5 V/m; Power Drift = 0.029 dB
Peak SAR (extrapolated) = 70.1 W/kg
SAR(1 g) = 39.3 mW/g; SAR(10 g) = 20.5 mW/g
Maximum value of SAR (measured) = 44.0 mW/g

d=15mm, Pin=1000mW/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 52.9 mW/g



0 dB = 52.9mW/g

APPENDIX B: SAR DISTRIBUTION PLOTS FOR HEAD CONFIGURATION

Test Laboratory: RTS

P1528_LeftHandSide_GSM850_Mid_Chan_Amb_Tem_24_7_Liq_Tem_23_5_Deg_Cel_13_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.876 mho/m; e_r = 41.6; ? = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(6.42, 6.42, 6.42); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

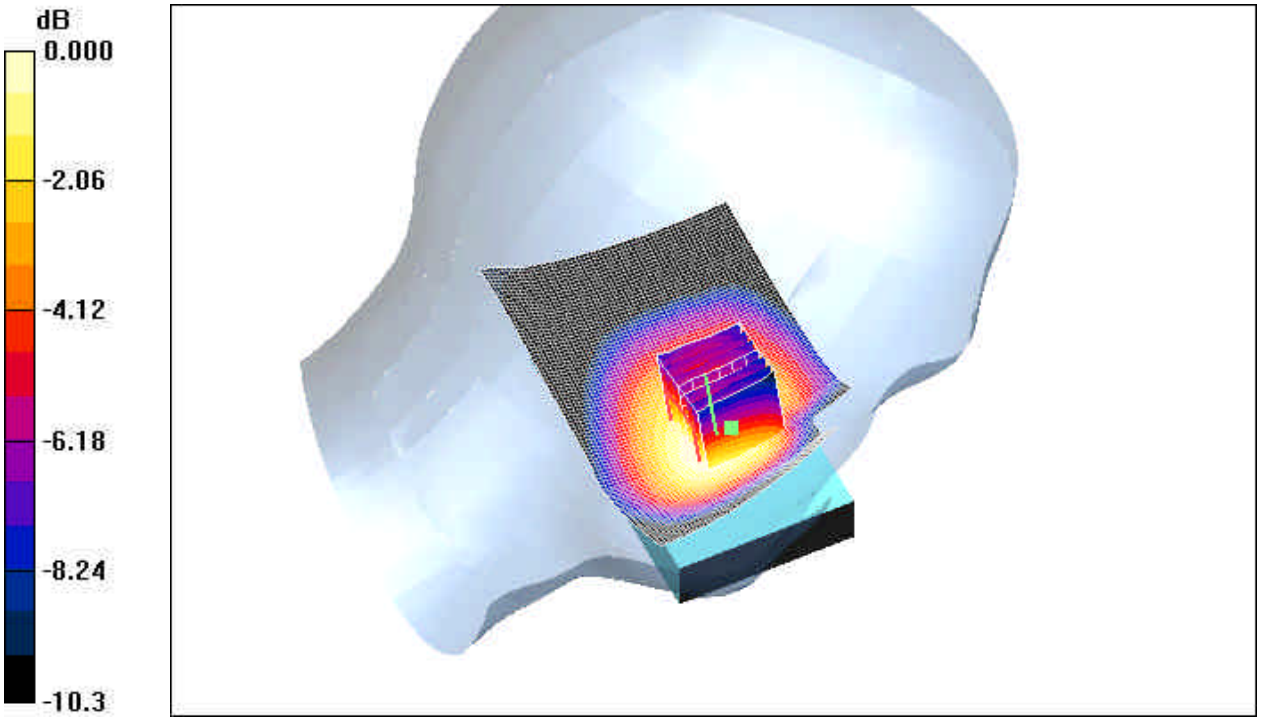
Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.9 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 0.990 W/kg
SAR(1 g) = 0.772 mW/g; SAR(10 g) = 0.571 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.820 mW/g

Touch position - Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.832 mW/g



0 dB = 0.820mW/g

Test Laboratory: RTS

P1528_LeftHandSide_Tilt_GSM850_Mid_Chan_Amb_Tem_25_0_Liq_Tem_23_5 Deg_Cel_13_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.876 mho/m; e_r = 41.6; ? = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

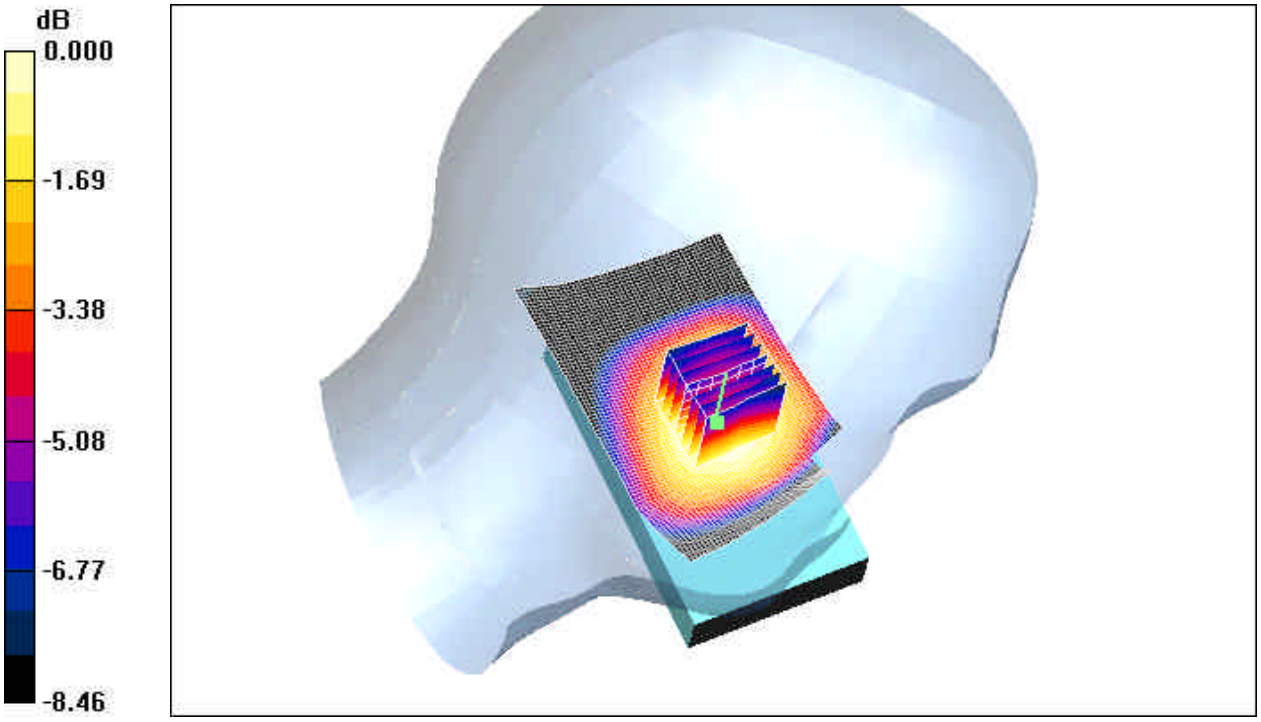
- Probe: ET3DV6 - SN1643; ConvF(6.42, 6.42, 6.42); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.7 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 0.572 W/kg
SAR(1 g) = 0.458 mW/g; SAR(10 g) = 0.346 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.480 mW/g

Tilt position - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.481 mW/g



0 dB = 0.480mW/g

Test Laboratory: RTS

P1528-RightHandSide_GSM850_Mid Chan_Amb_Tem_24_8_Liq_Tem_23_2 Deg_Cel_13_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.876 mho/m; e_r = 41.6; ? = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

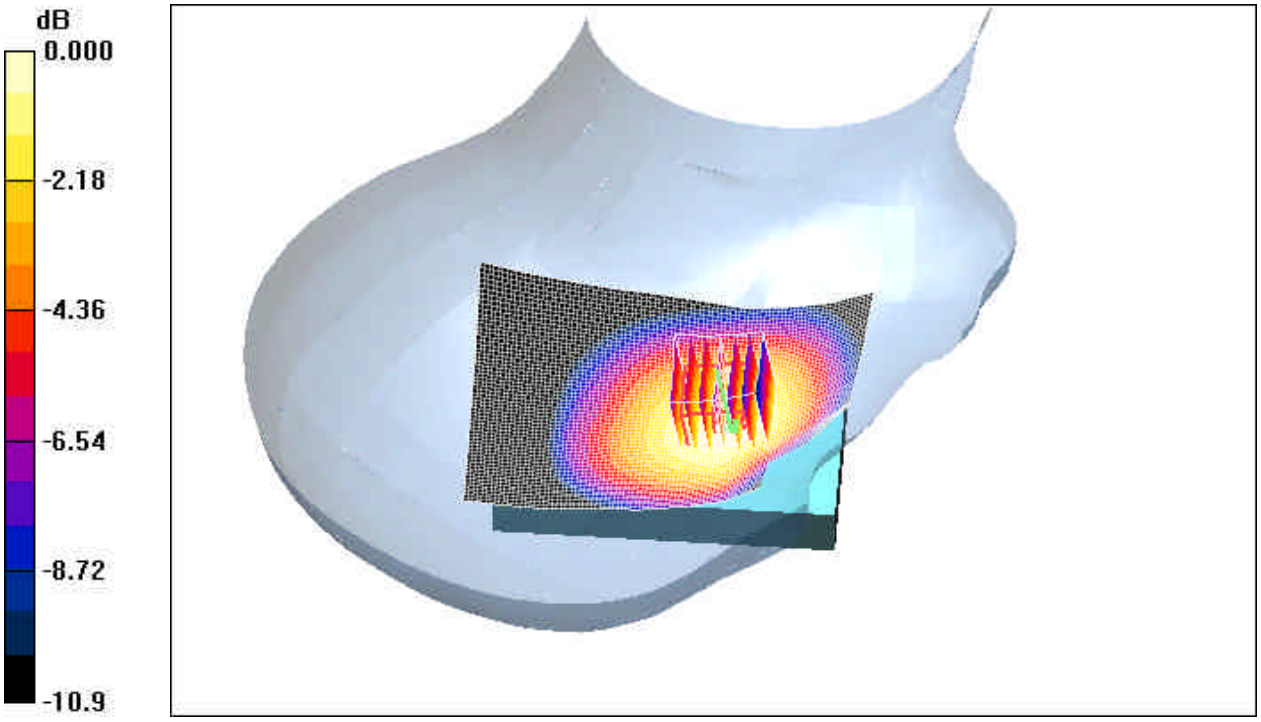
- Probe: ET3DV6 - SN1643; ConvF(6.42, 6.42, 6.42); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.790 mW/g

Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.0 V/m; Power Drift = 0.045 dB
Peak SAR (extrapolated) = 0.964 W/kg
SAR(1 g) = 0.751 mW/g; SAR(10 g) = 0.560 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.797 mW/g



0 dB = 0.797mW/g

Test Laboratory: RTS

P1528-RightHandSide_Tilt_GSM850_Mid Chan_Amb_Tem_24_0_Liq_Tem_22_9 Deg_Cel_13_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.876 mho/m; e_r = 41.6; ? = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

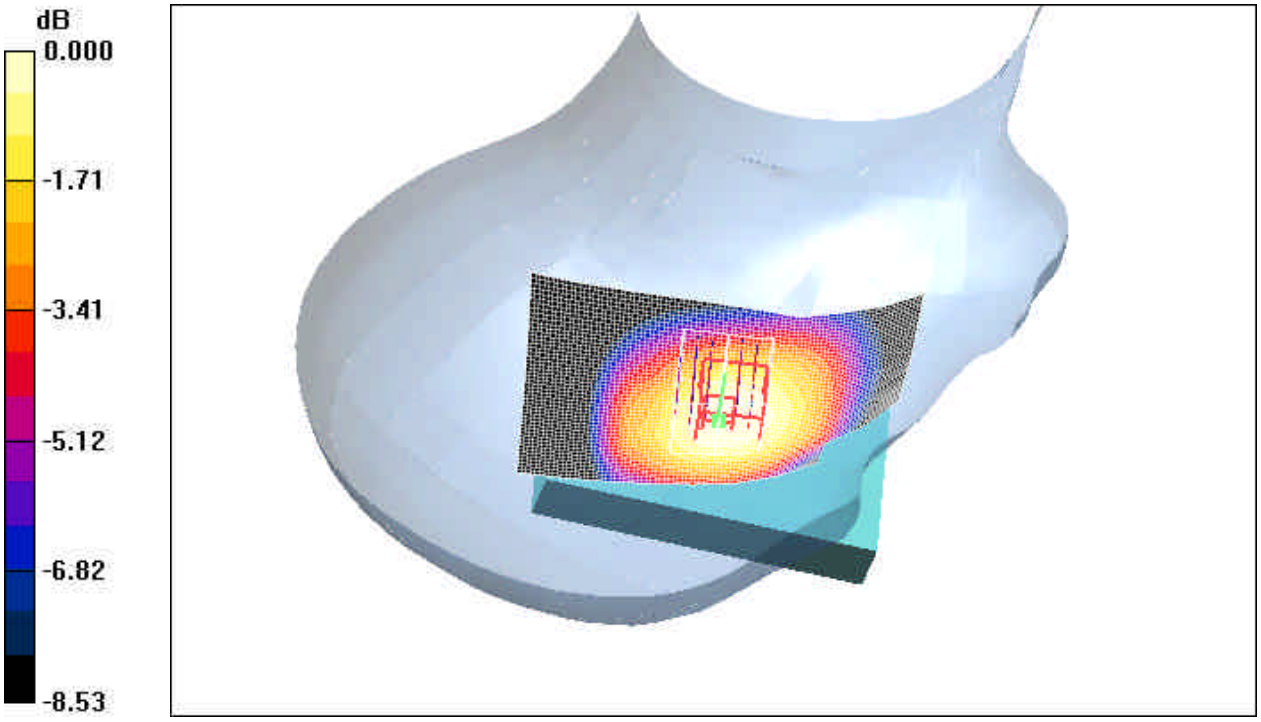
- Probe: ET3DV6 - SN1643; ConvF(6.42, 6.42, 6.42); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.066 dB
Peak SAR (extrapolated) = 0.577 W/kg
SAR(1 g) = 0.459 mW/g; SAR(10 g) = 0.349 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.487 mW/g

Tilt position - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.486 mW/g



0 dB = 0.487mW/g

Date/Time: 10/11/2006 10:24:56 AM

Test Laboratory: RTS

P1528-LeftHandSide_GSM1900_Low_Chan_Amb_Tem_24_3_Liq_Tem_23_2 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.4 mho/m; e, = 38.5; ? = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

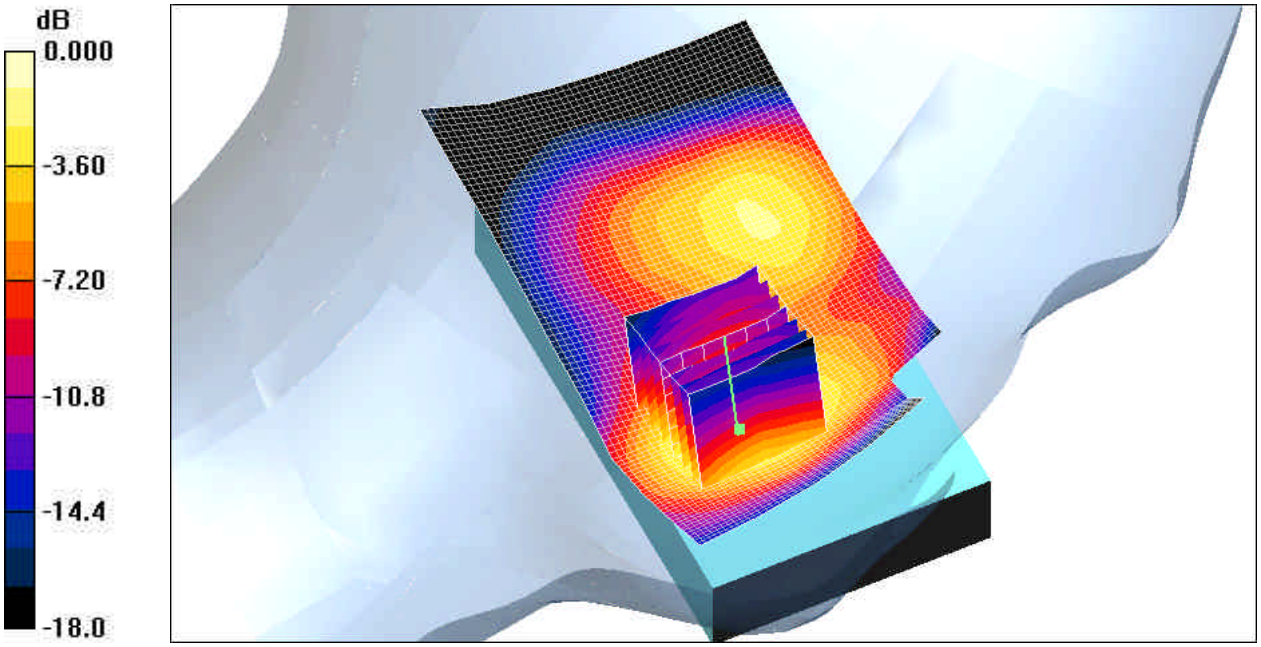
- Probe: ET3DV6 - SN1643; ConvF(5.18, 5.18, 5.18); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.2 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.918 mW/g; SAR(10 g) = 0.551 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.00 mW/g

Touch position - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.07 mW/g



0 dB = 1.00mW/g

Test Laboratory: RTS

P1528-LeftHandSide_Tilt_GSM1900_Low_Chan_Amb_Tem_24.1_Liq_Tem_22_9 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.4 mho/m; e, = 38.5; ? = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

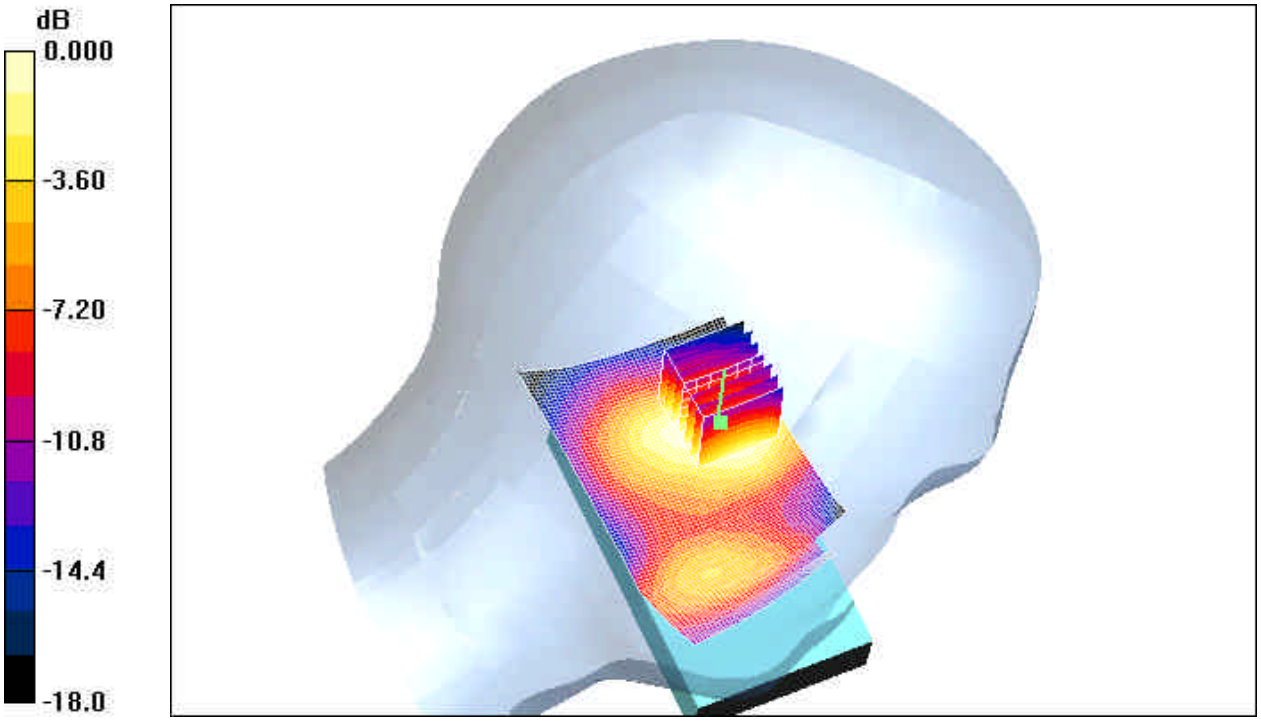
- Probe: ET3DV6 - SN1643; ConvF(5.18, 5.18, 5.18); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

Tilt position - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.545 mW/g

Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.7 V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 0.623 W/kg
SAR(1 g) = 0.437 mW/g; SAR(10 g) = 0.278 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.471 mW/g



0 dB = 0.471mW/g

Date/Time: 09/11/2006 3:19:42 PM

Test Laboratory: RTS

P1528-RightHandSide-GSM1900_Low_Chan_Amb_Tem_24_6_Liq_Tem_23_3 Deg_Cel_09_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.4 mho/m; e = 38.5; ? = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

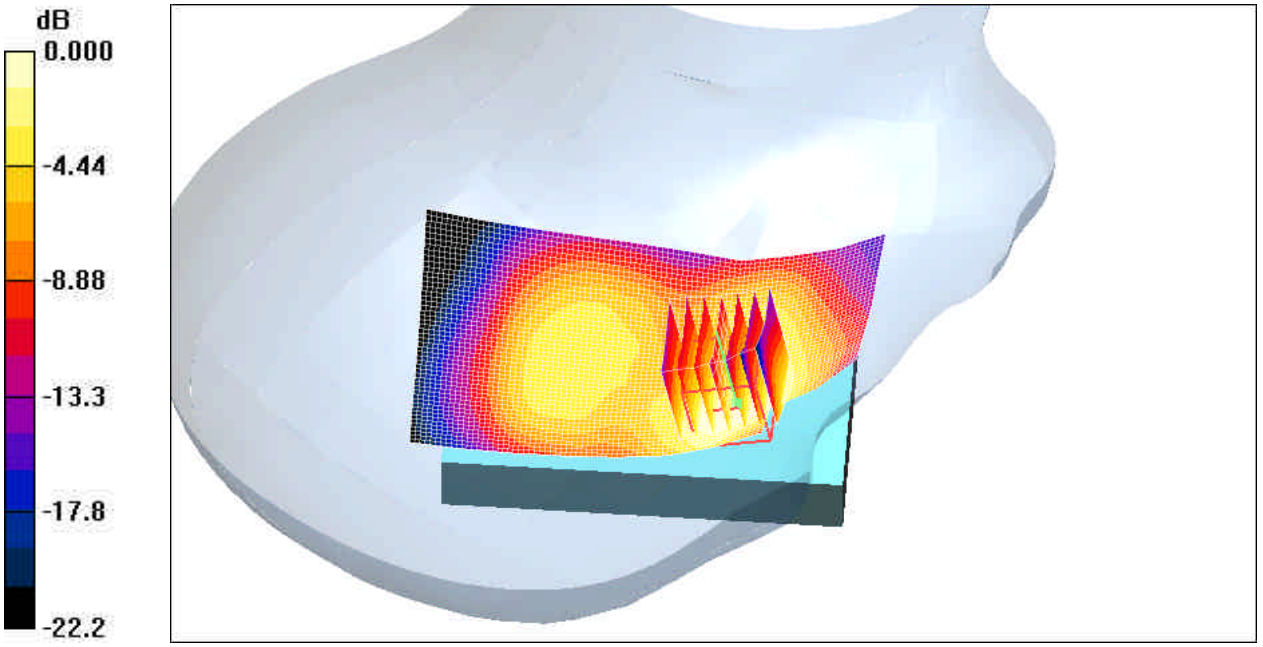
- Probe: ET3DV6 - SN1643; ConvF(5.18, 5.18, 5.18); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

Touch position - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.856 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.6 V/m; Power Drift = -0.127 dB
Peak SAR (extrapolated) = 1.02 W/kg
SAR(1 g) = 0.717 mW/g; SAR(10 g) = 0.444 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.774 mW/g



0 dB = 0.774mW/g

Test Laboratory: RTS

P1528-RightHandSide_Tilt_GSM1900_Low_Chan_Amb_Tem_24_6_Liq_Tem_23_3 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium parameters used (interpolated): f = 1850.2 MHz; s = 1.4 mho/m; e, = 38.5; ? = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(5.18, 5.18, 5.18); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

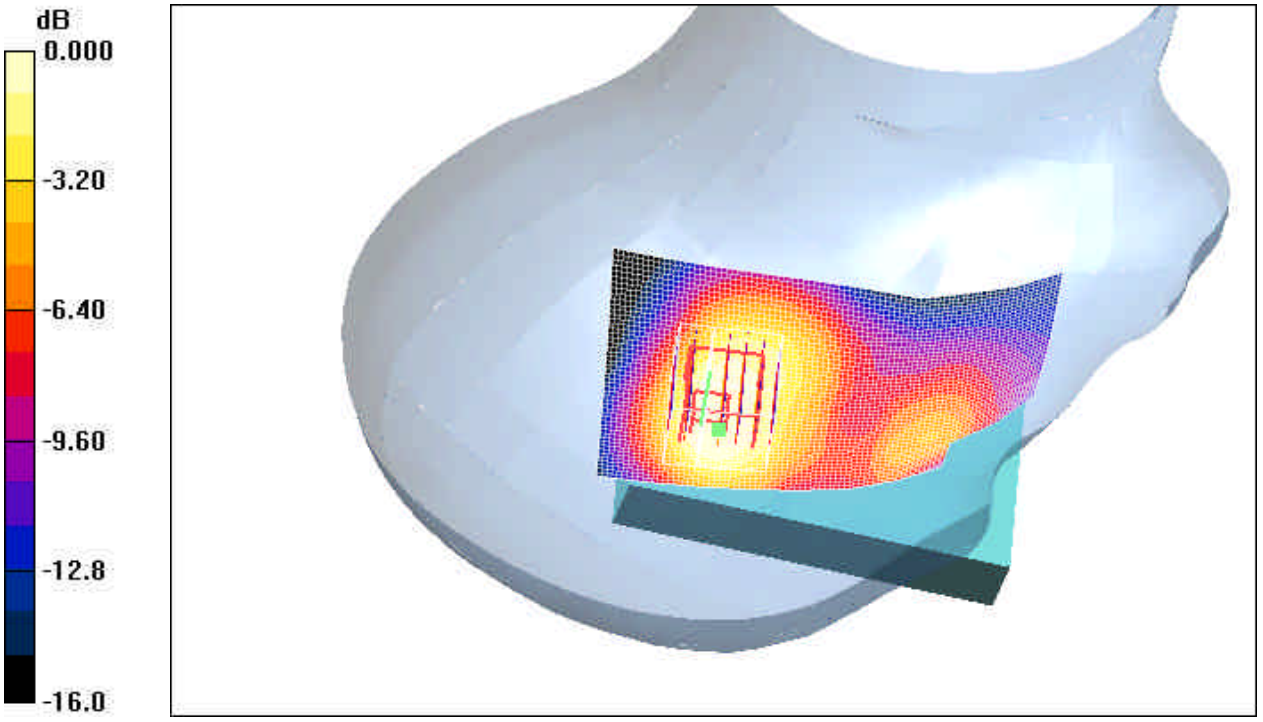
Tilt position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.2 V/m; Power Drift = -0.039 dB
Peak SAR (extrapolated) = 0.548 W/kg
SAR(1 g) = 0.381 mW/g; SAR(10 g) = 0.240 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.409 mW/g

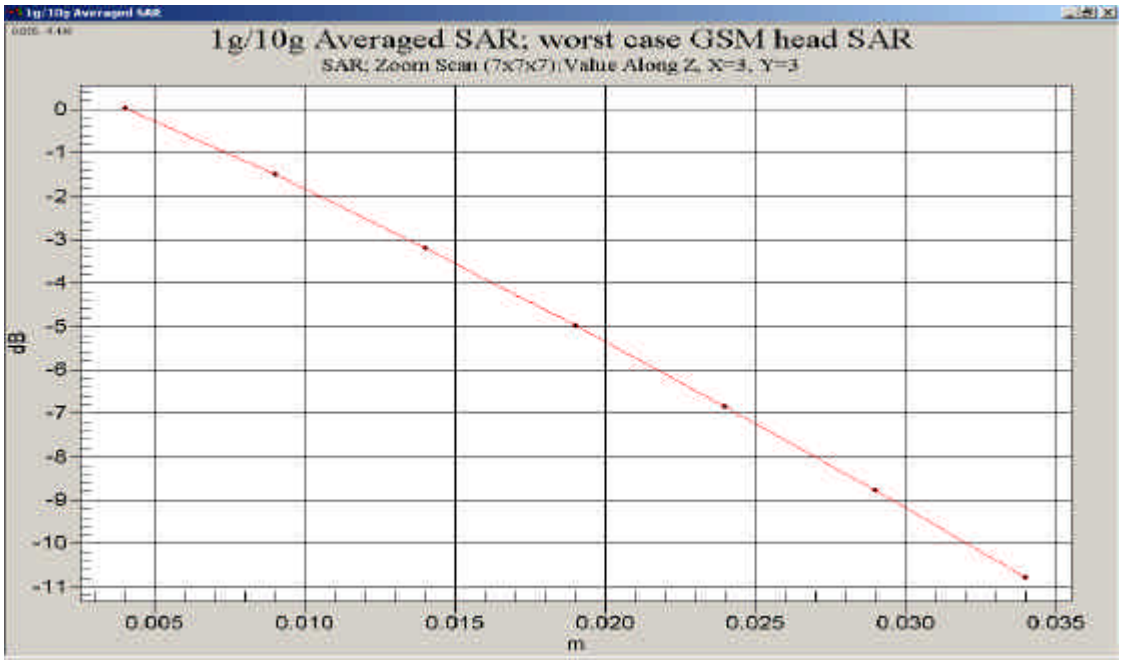
Tilt position - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.456 mW/g



0 dB = 0.409mW/g

Z axis plot for the worst case head configuration:



APPENDIX C: SAR DISTRIBUTION PLOTS FOR BODY-WORN CONFIGURATION

Test Laboratory: RTS

Body_Holster1_Back_GPRS850_Mid_Chan_Amb_Tem_25_0_Liq_Tem_23_5 Deg_Cel_13_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 850; Frequency: 836.8 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.991 mho/m; e, = 52.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

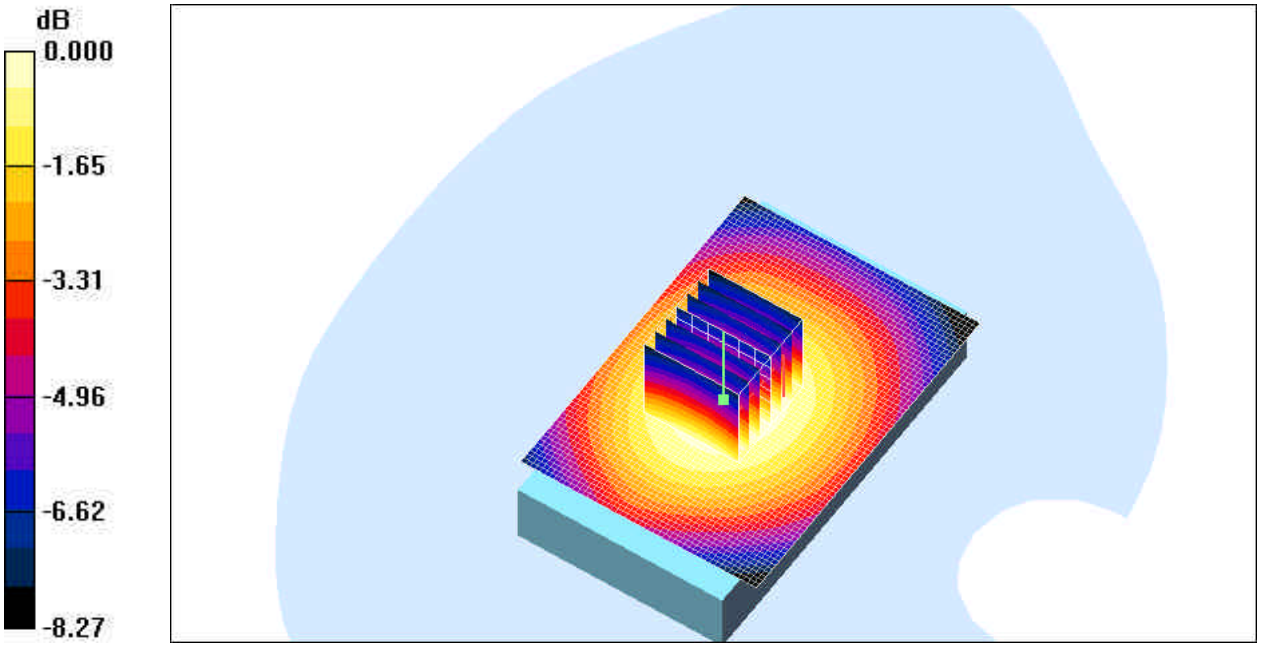
- Probe: ET3DV6 - SN1643; ConvF(6.03, 6.03, 6.03); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.0 V/m; Power Drift = -0.106 dB
Peak SAR (extrapolated) = 0.635 W/kg
SAR(1 g) = 0.493 mW/g; SAR(10 g) = 0.368 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.519 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.522 mW/g



0 dB = 0.519mW/g

Test Laboratory: RTS

Body_Holster1_Front_ GPRS850_Mid_Chan_Amb_Tem_25_2_Liq_Tem_23_5 Deg_Cel_13_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 850; Frequency: 836.8 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.991 mho/m; e$_r$ = 52.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

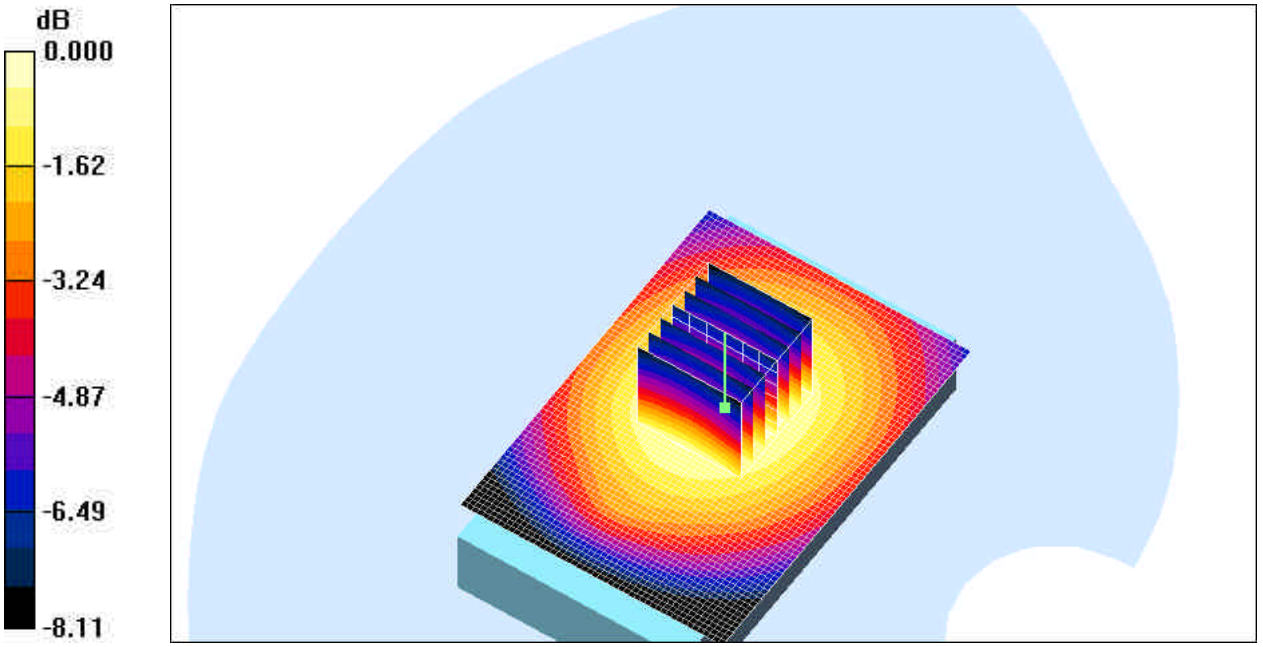
- Probe: ET3DV6 - SN1643; ConvF(6.03, 6.03, 6.03); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.7 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 0.608 W/kg
SAR(1 g) = 0.467 mW/g; SAR(10 g) = 0.348 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.495 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.487 mW/g



0 dB = 0.495mW/g

Test Laboratory: RTS

Body_Holster2_Back_ GPRS850_Mid_Chan_Amb_Tem_24_5_Liq_Tem_23_2 Deg_Cel_14_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 850; Frequency: 836.8 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.991 mho/m; e_r = 52.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

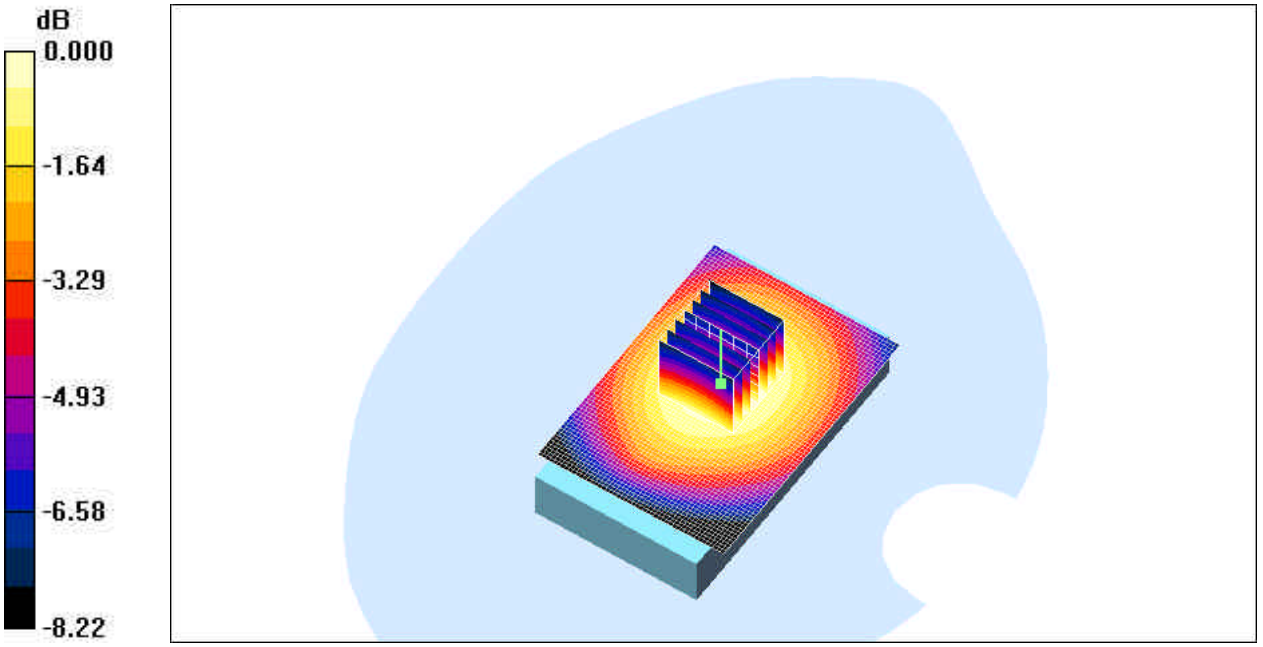
- Probe: ET3DV6 - SN1643; ConvF(6.03, 6.03, 6.03); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.8 V/m; Power Drift = 0.065 dB
Peak SAR (extrapolated) = 0.645 W/kg
SAR(1 g) = 0.506 mW/g; SAR(10 g) = 0.378 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.531 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.529 mW/g



0 dB = 0.531mW/g

Test Laboratory: RTS

Body_Holster2_Back_Headset1_ GPRS850_Mid_Chan_Amb_Tem_24_0_Liq_Tem_23_1 Deg_Cel_14_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 850; Frequency: 836.8 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.991 mho/m; e_r = 52.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

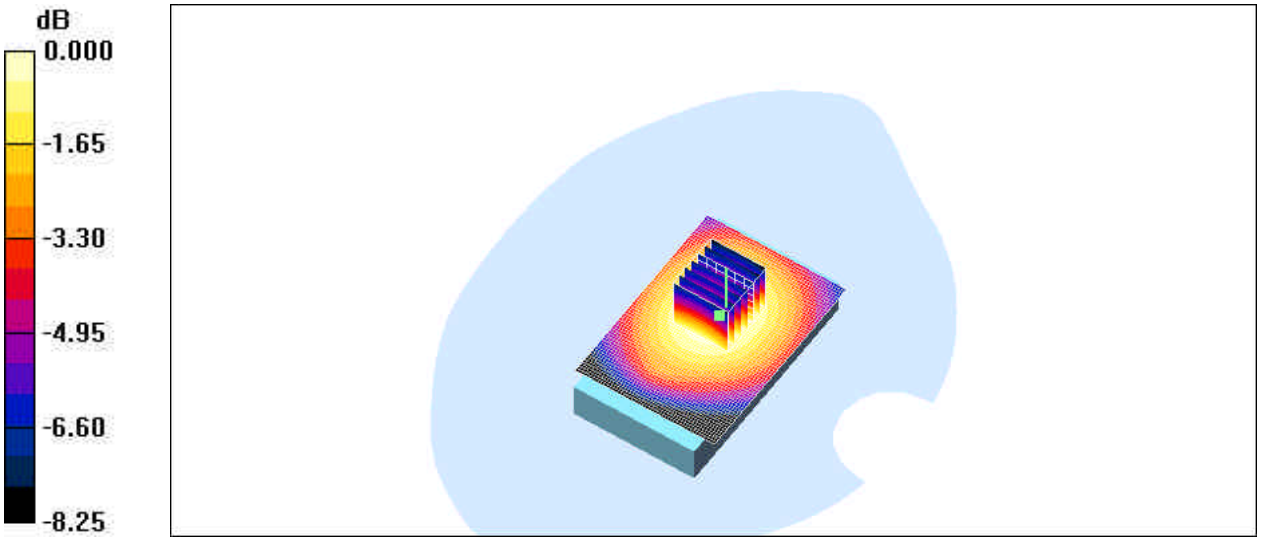
- Probe: ET3DV6 - SN1643; ConvF(6.03, 6.03, 6.03); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.0 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 0.508 W/kg
SAR(1 g) = 0.404 mW/g; SAR(10 g) = 0.301 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.424 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.426 mW/g



0 dB = 0.424mW/g

Test Laboratory: RTS

Body_Holster2_Back_Headset2_BT_ON_
GPRS850_Mid_Chan_Amb_Tem_24_1_Liq_Tem_22_8 Deg_Cel_14_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 850; Frequency: 836.8 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.991 mho/m; e_r = 52.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

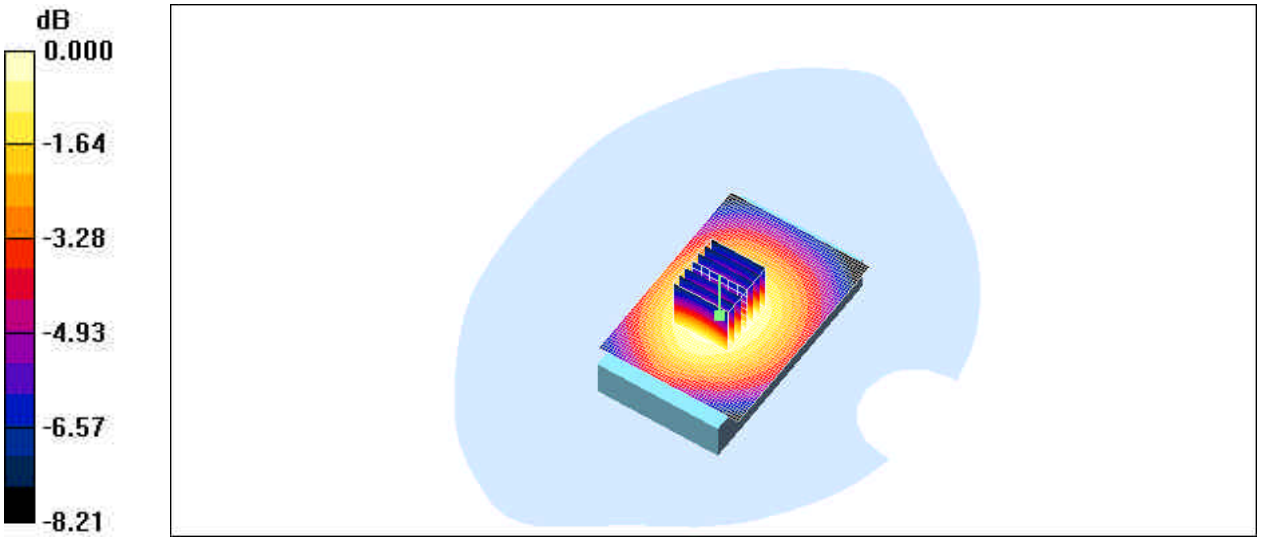
- Probe: ET3DV6 - SN1643; ConvF(6.03, 6.03, 6.03); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.634 W/kg
SAR(1 g) = 0.505 mW/g; SAR(10 g) = 0.376 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.530 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.533 mW/g



0 dB = 0.530mW/g

Test Laboratory: RTS

Body_25mm_Back_ GPRS850_Mid_Chan_Amb_Tem_24_1_Liq_Tem_23_0 Deg_Cel_14_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 850; Frequency: 836.8 MHz;Duty Cycle: 1:4.2
Medium parameters used (interpolated): f = 836.8 MHz; s = 0.991 mho/m; e_r = 52.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

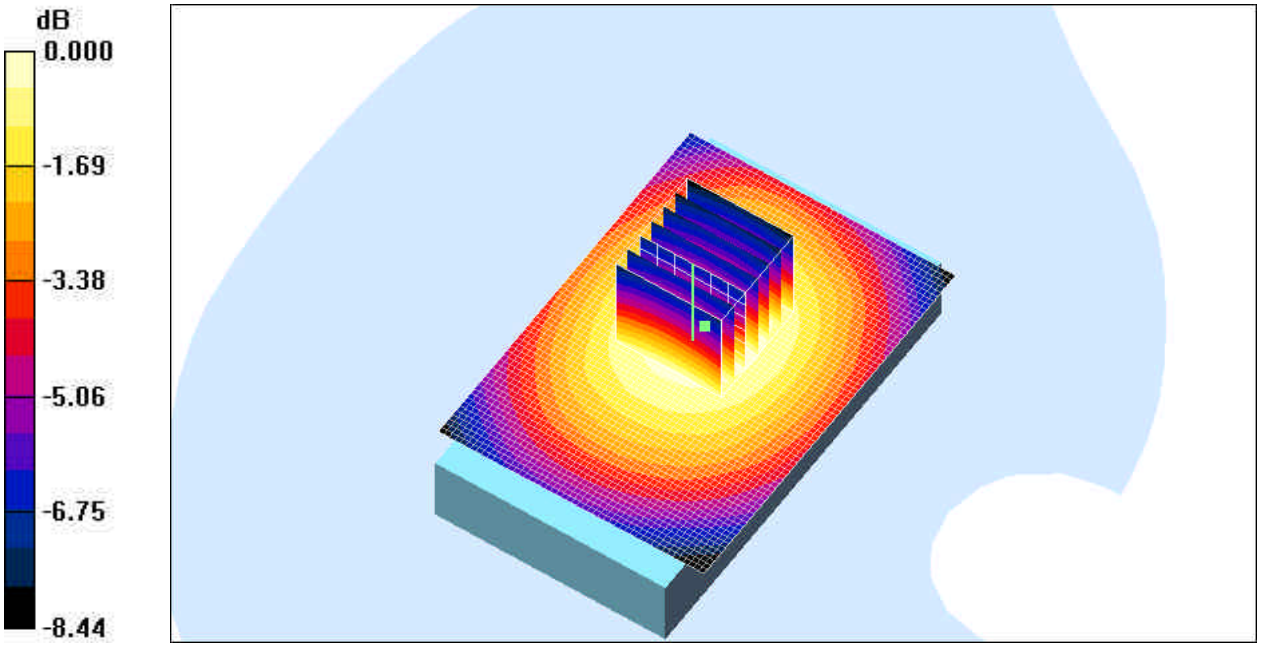
- Probe: ET3DV6 - SN1643; ConvF(6.03, 6.03, 6.03); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.3 V/m; Power Drift = 0.099 dB
Peak SAR (extrapolated) = 0.634 W/kg
SAR(1 g) = 0.496 mW/g; SAR(10 g) = 0.368 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.522 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.523 mW/g



0 dB = 0.522mW/g

Test Laboratory: RTS

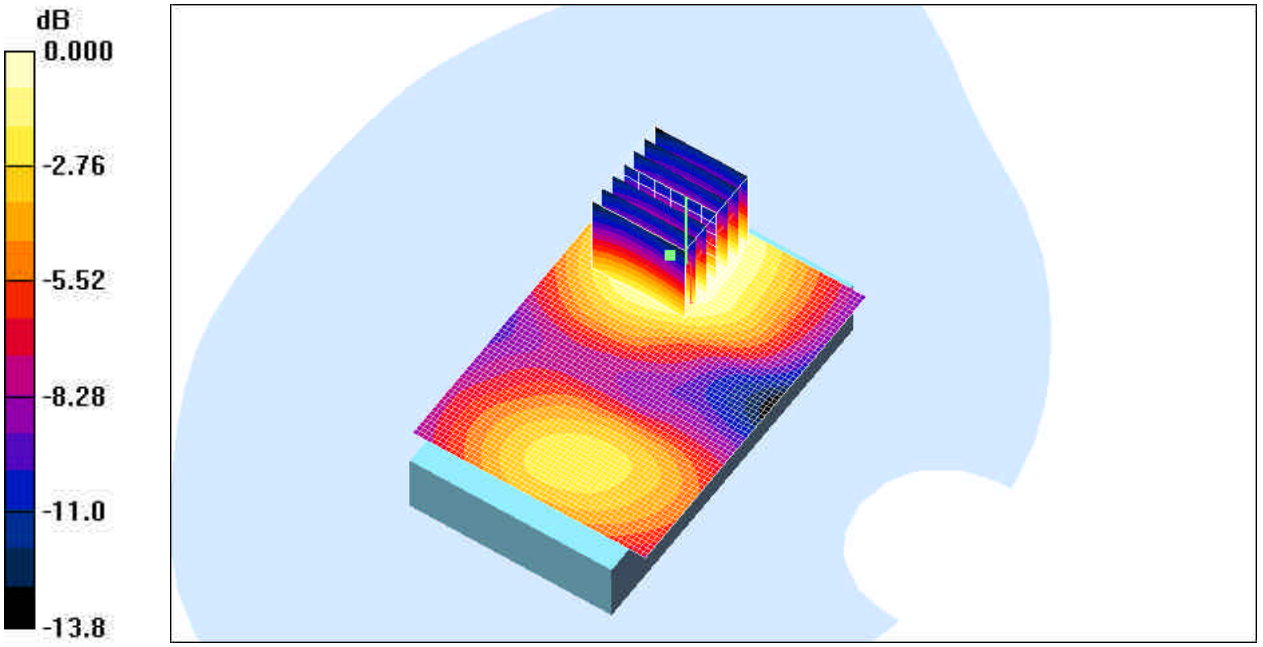
Body_Holster_Back_GPRS1900_Mid_Chan_Amb_Tem_24_4_Liq_Tem_22_8 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; s = 1.56 mho/m; e_r = 50.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(4.67, 4.67, 4.67); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.54 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.757 W/kg
SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.321 mW/g
Maximum value of SAR (measured) = 0.538 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.552 mW/g



0 dB = 0.538mW/g

Test Laboratory: RTS

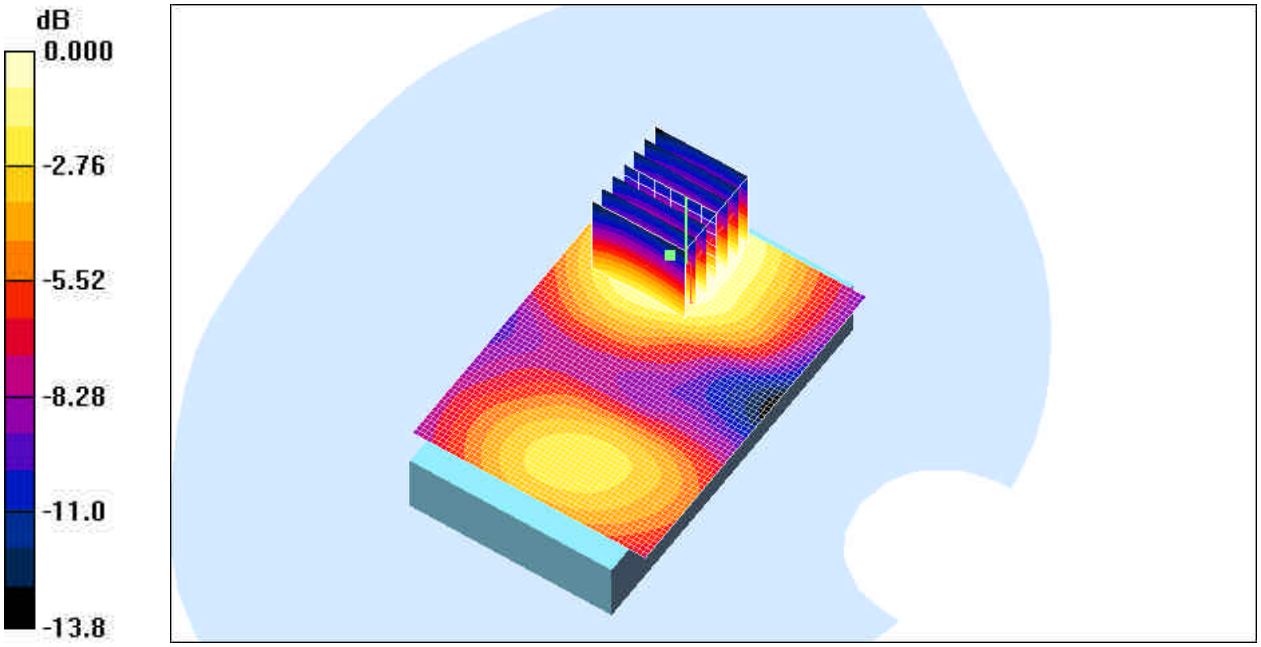
Body_Holster2_Back_ GPRS1900_Mid_Chan_Amb_Tem_24_4_Liq_Tem_22_8 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; s = 1.56 mho/m; e_r = 50.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(4.67, 4.67, 4.67); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.54 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.757 W/kg
SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.321 mW/g
Maximum value of SAR (measured) = 0.538 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.552 mW/g



0 dB = 0.538mW/g

Test Laboratory: RTS

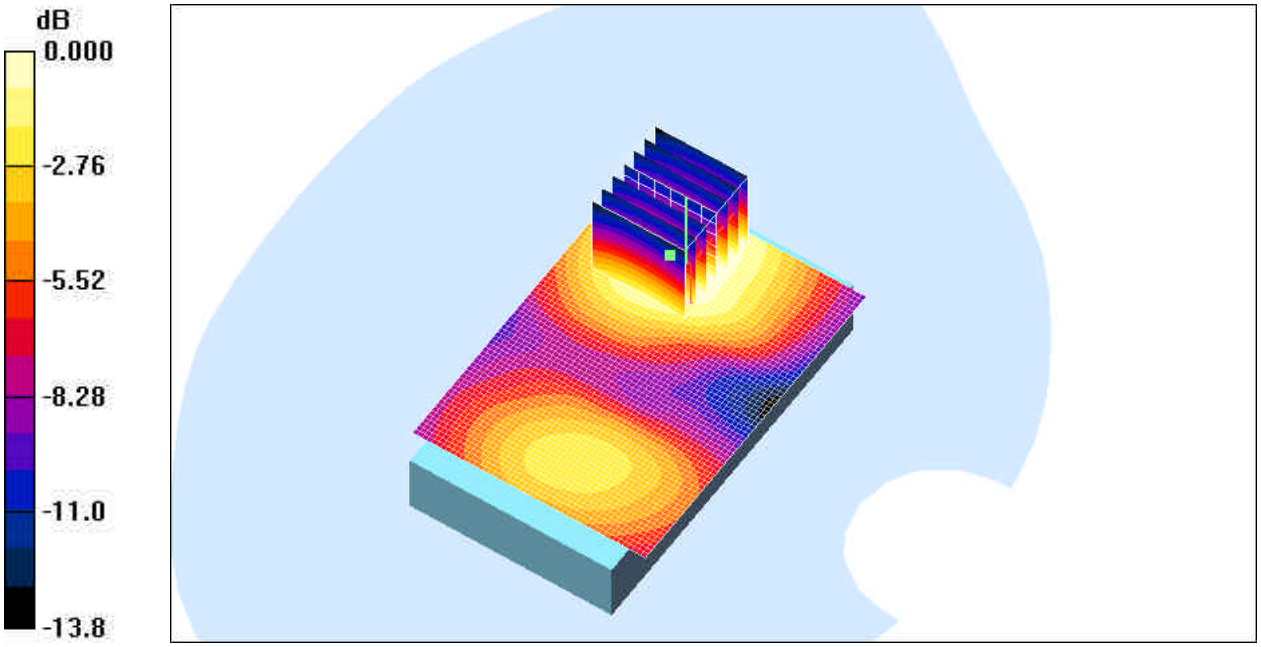
Body_Holster1_Back_ GPRS1900_Mid_Chan_Amb_Tem_24_4_Liq_Tem_22_8 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; s = 1.56 mho/m; e_r = 50.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(4.67, 4.67, 4.67); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.54 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.757 W/kg
SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.321 mW/g
Maximum value of SAR (measured) = 0.538 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.552 mW/g



0 dB = 0.538mW/g

Test Laboratory: RTS

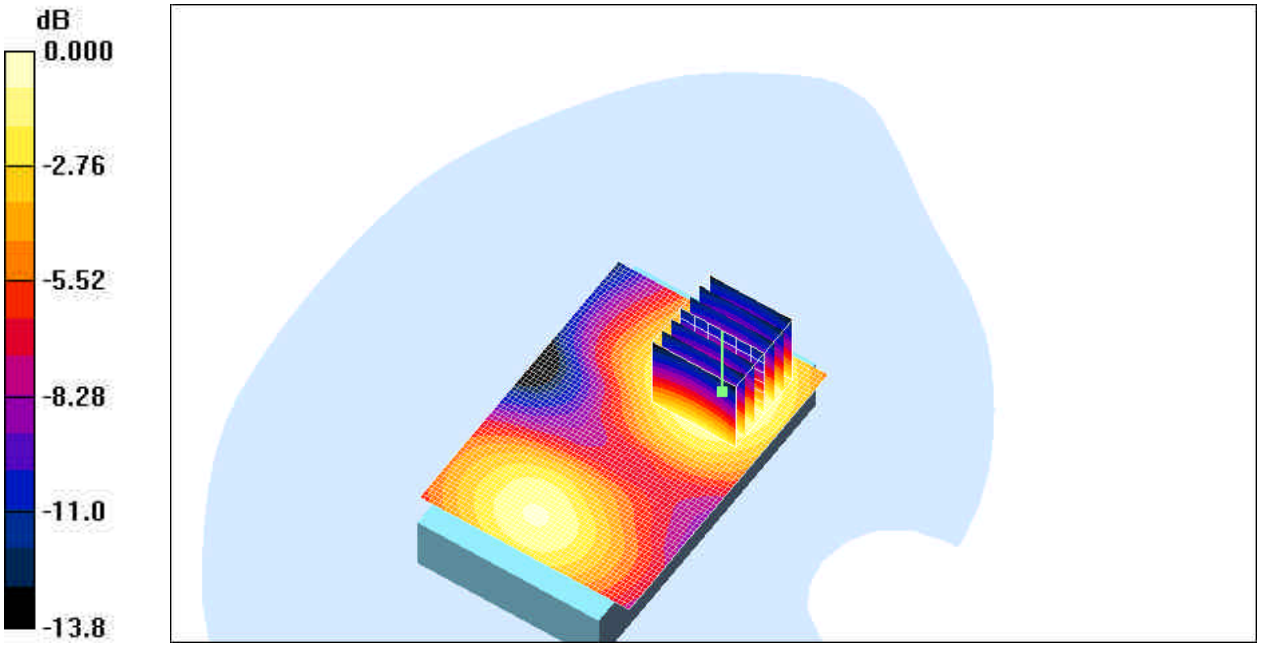
Body_Holster_Front_ GPRS1900_Mid_Chan_Amb_Tem_24_9_Liq_Tem_23_2 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; s = 1.56 mho/m; e_r = 50.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(4.67, 4.67, 4.67); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 170

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.93 V/m; Power Drift = 0.041 dB
Peak SAR (extrapolated) = 0.697 W/kg
SAR(1 g) = 0.437 mW/g; SAR(10 g) = 0.275 mW/g
Maximum value of SAR (measured) = 0.469 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.473 mW/g



0 dB = 0.469mW/g

Test Laboratory: RTS

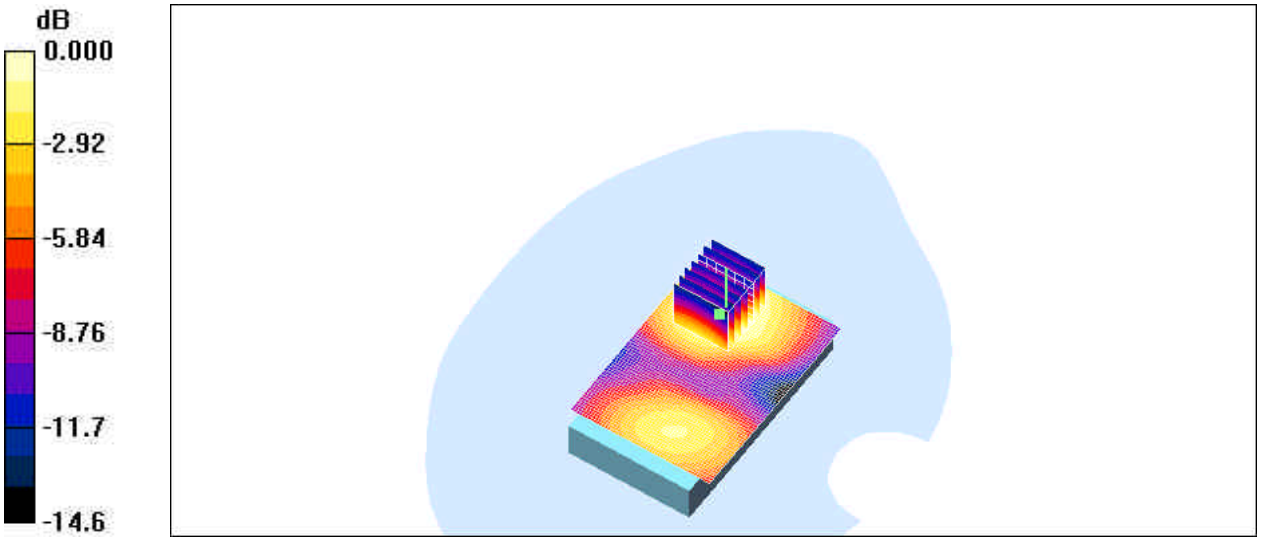
Body_Holster2_Headset1_BT_ON_Back_
GPRS1900_Mid_Chan_Amb_Tem_25_0_Liq_Tem_23_4 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; s = 1.56 mho/m; e_r = 50.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(4.67, 4.67, 4.67); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.49 V/m; Power Drift = -0.124 dB
Peak SAR (extrapolated) = 0.744 W/kg
SAR(1 g) = 0.496 mW/g; SAR(10 g) = 0.314 mW/g
Maximum value of SAR (measured) = 0.536 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.542 mW/g



0 dB = 0.536mW/g

Test Laboratory: RTS

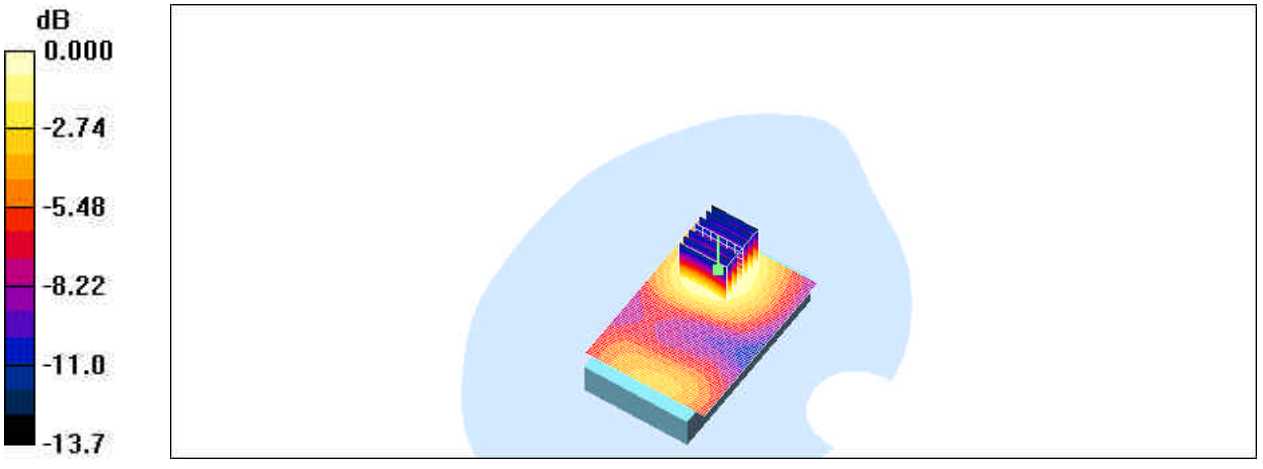
Body_25mm_Back_ GPRS1900_Mid_Chan_Amb_Tem_24_9_Liq_Tem_23_3 Deg_Cel_10_Nov_06

DUT: BlackBerry Wireless Handheld; Type: Sample ; Serial: Not Specified
Communication System: GPRS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; s = 1.56 mho/m; e_r = 50.9; ? = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1643; ConvF(4.67, 4.67, 4.67); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn473; Calibrated: 09/03/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 160

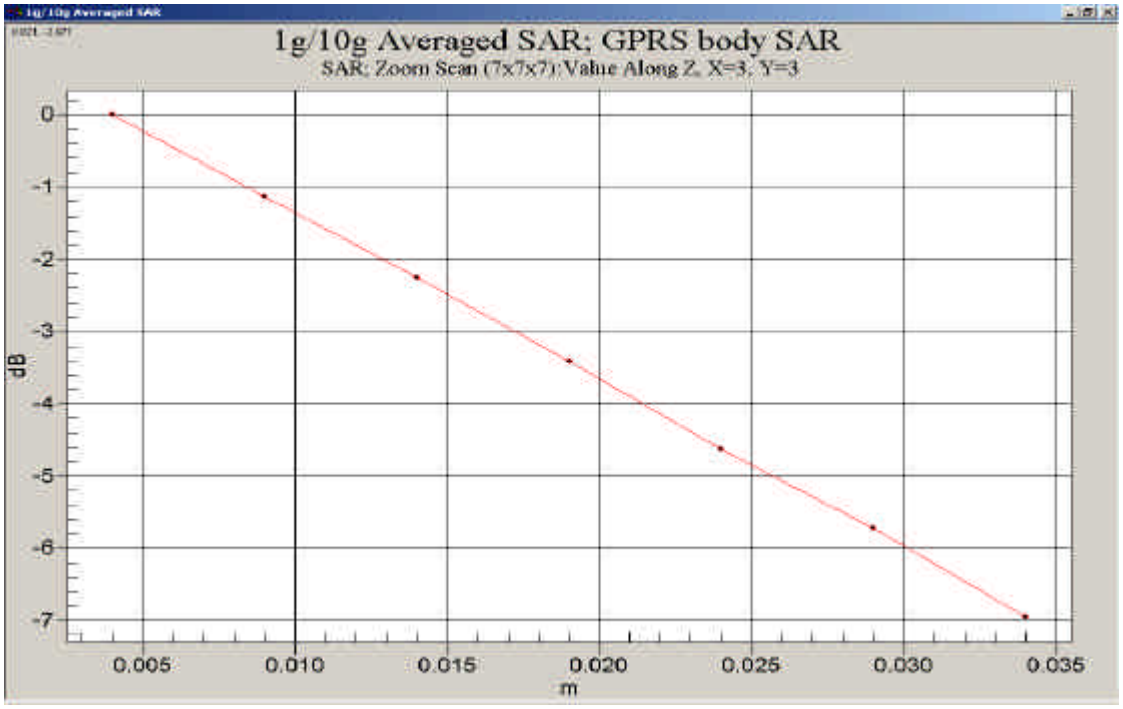
d=15mm, body SAR/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.76 V/m; Power Drift = -0.065 dB
Peak SAR (extrapolated) = 0.494 W/kg
SAR(1 g) = 0.329 mW/g; SAR(10 g) = 0.210 mW/g
Maximum value of SAR (measured) = 0.354 mW/g

d=15mm, body SAR/Area Scan (51x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.361 mW/g

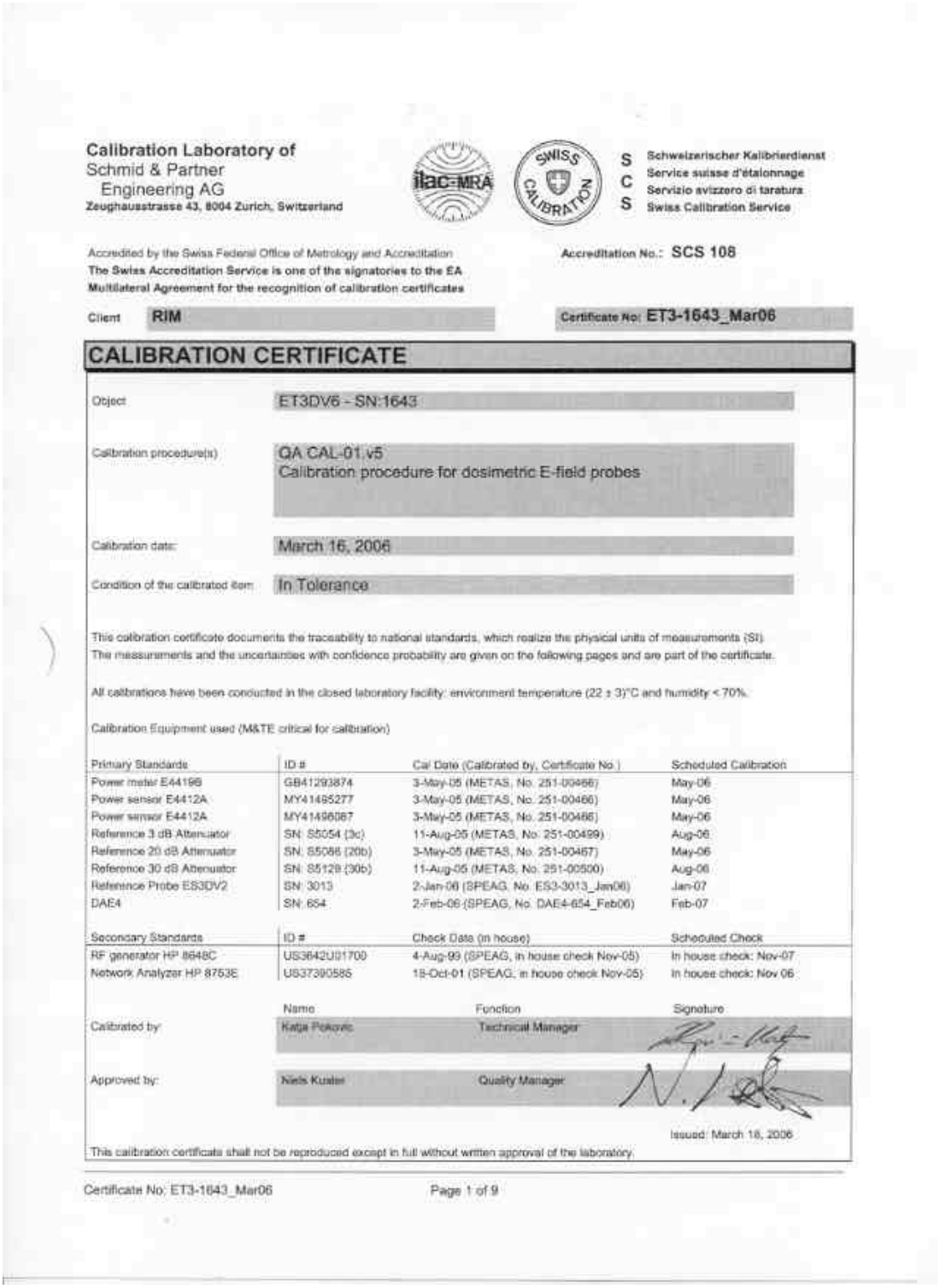


0 dB = 0.354mW/g

Z axis plots for the worst case body worn configuration:



APPENDIX D: PROBE & DIPOLE CALIBRATION DATA



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

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Accreditation No.: SCS 108

Client: RIM

Certificate No: ET3-1643_Mar06

CALIBRATION CERTIFICATE

Object: ET3DV6 - SN:1643

Calibration procedure(s): QA CAL-01.v5
Calibration procedure for dosimetric E-field probes

Calibration date: March 16, 2006

Condition of the calibrated item: In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41496087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	2-Jan-06 (SPEAG, No. ES3-3013_Jan06)	Jan-07
DAE4	SN: 654	2-Feb-06 (SPEAG, No. DAE4-654_Feb06)	Feb-07

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: March 16, 2006

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

Certificate No: ET3-1643_Mar06 Page 1 of 9

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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

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 effect 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 (no uncertainty required). DCP does not depend on frequency nor media.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ET3DV6

SN:1643

Manufactured: November 7, 2001
Last calibrated: March 15, 2005
Recalibrated: March 16, 2006

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1643 March 16, 2006

DASY - Parameters of Probe: ET3DV6 SN:1643

Sensitivity in Free Space[A]

Diode Compression[B]

NormX	1.78 ± 10.1%	$\mu V/(V/m)^2$	DCP X	94 mV
NormY	1.90 ± 10.1%	$\mu V/(V/m)^2$	DCP Y	94 mV
NormZ	1.79 ± 10.1%	$\mu V/(V/m)^2$	DCP Z	94 mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	8.3	4.4
SAR_{ba} [%]	With Correction Algorithm	0.0	0.2

TSL **1810 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	7.1	3.8
SAR_{ba} [%]	With Correction Algorithm	0.4	0.3

Sensor Offset

Probe Tip to Sensor Center	2.7 mm

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%.

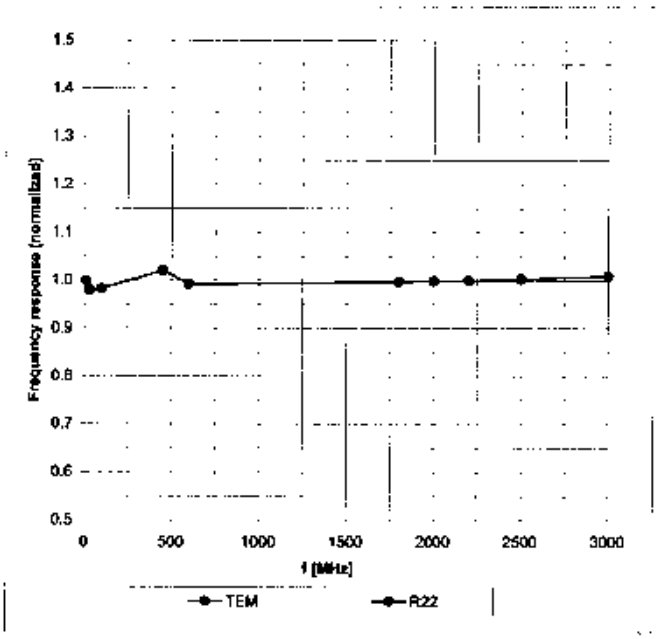
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 5).

[B] Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1643 March 16, 2006

Frequency Response of E-Field

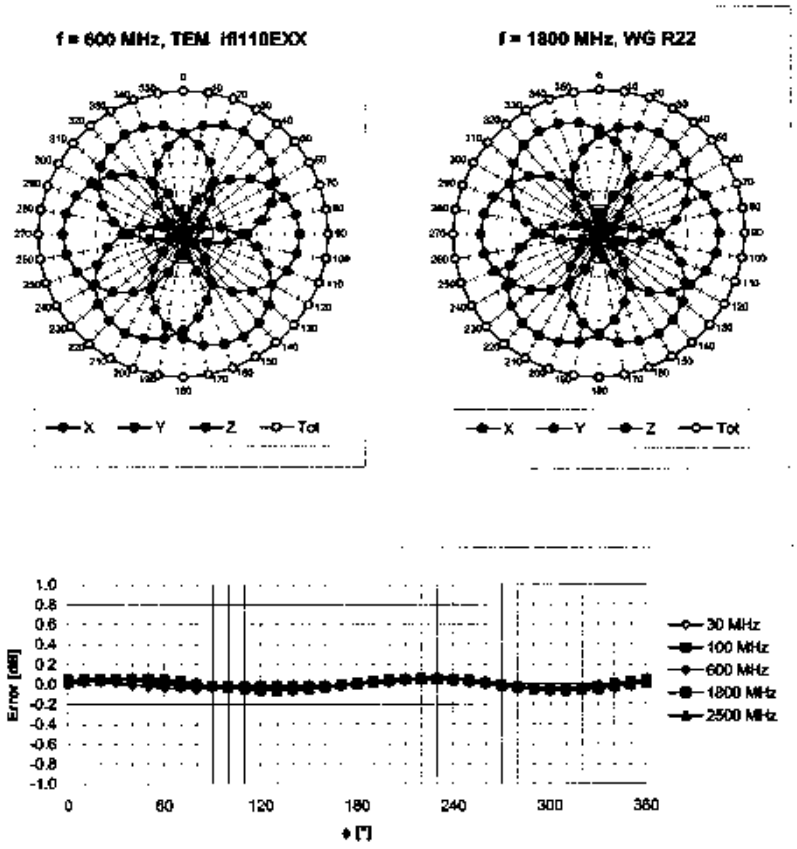
(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 8.3% (k=2)

ET3DV6 SN:1643 March 16, 2006

Receiving Pattern (ϕ), ϑ = 0°



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

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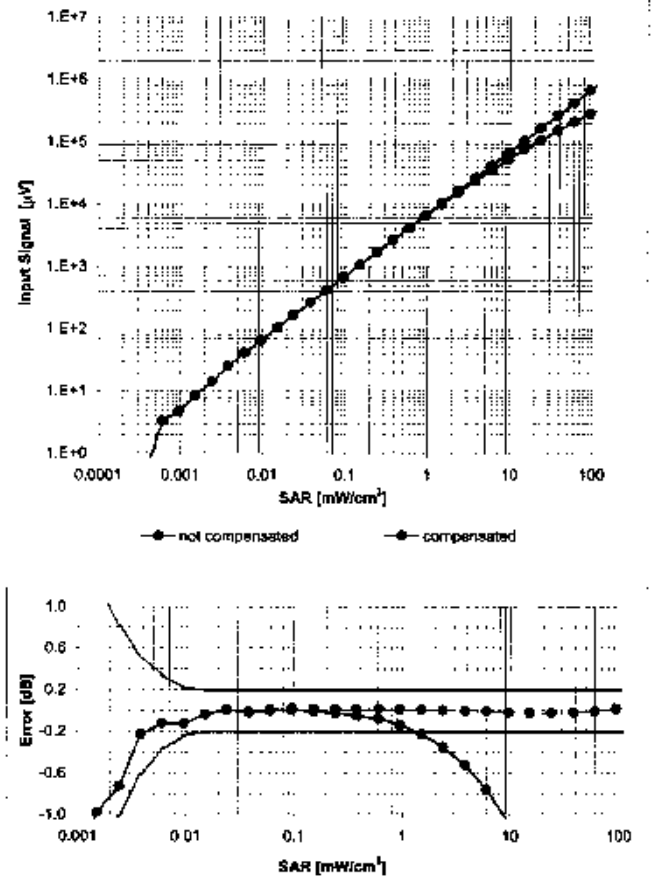
ET3DV6 SN:1643 March 16, 2006

Dynamic Range f(SAR$_{head}$)

(Waveguide R22, f = 1800 MHz)



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

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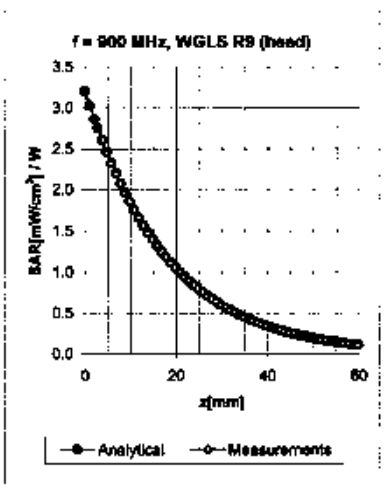
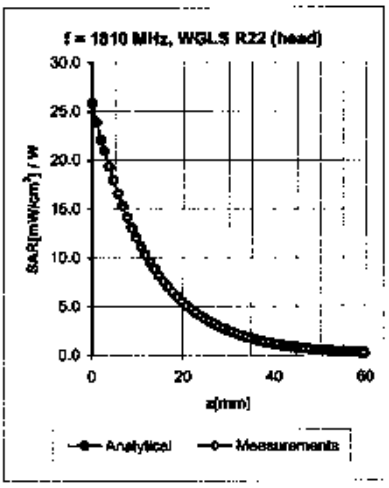
ET3DV6 SN:1643 **March 16, 2006**

Conversion Factor Assessment





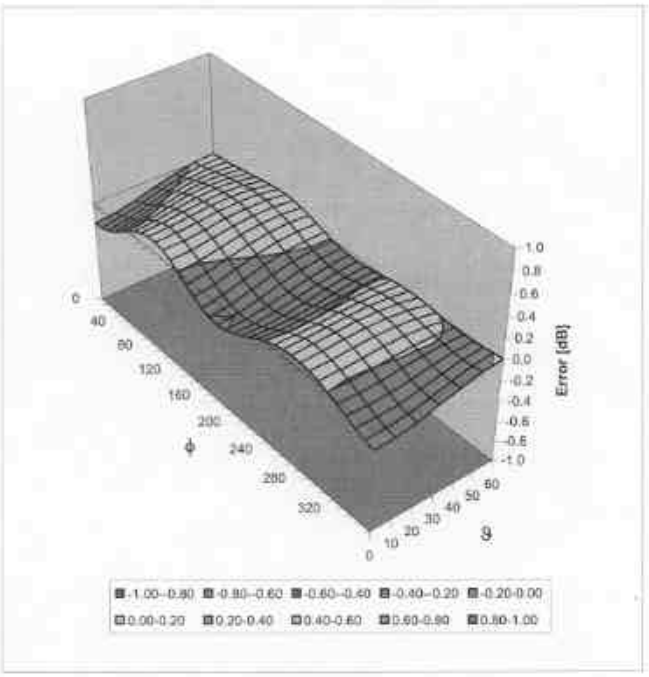
f [MHz]	Validity [MHz][c]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.56	1.80	6.42 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.52	2.47	5.16 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.47	2.12	6.03 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.52	2.67	4.67 ± 11.0% (k=2)

[c] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

ET3DV6 SN:1643 March 16, 2006

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

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Client RIM

Certificate No: D835V2-446_Jan05

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 446
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	January 7, 2005
Condition of the calibrated item	In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Power sensor HP 8481A	US37292783	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference Probe ET3DV6	SN 1507	26-Oct-04 (SPEAG, No. ET3-1507_Oct04)	Oct-05
DAE4	SN 907	03-May-04 (SPEAG, No. DAE4-907_May04)	May-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-03)	In house check: Oct-05
RF generator R&S SML-03	100698	27-Mar-02 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585 S4206	Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov-05

	Name	Function	Signature
Calibrated by:	Judith Müller	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 13, 2005

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Certificate No: D835V2-446_Jan05 Page 1 of 6

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY4	V4.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.2 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	condition	
SAR measured	250 mW input power	2.27 mW / g
SAR normalized	normalized to 1W	9.08 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**9.10 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.48 mW / g
SAR normalized	normalized to 1W	5.92 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**5.93 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.1 Ω - 7.1 jΩ
Return Loss	- 22.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.385 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 24, 2001

DASY4 Validation Report for Head TSL

Date/Time: 01/07/05 15:08:43

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN446

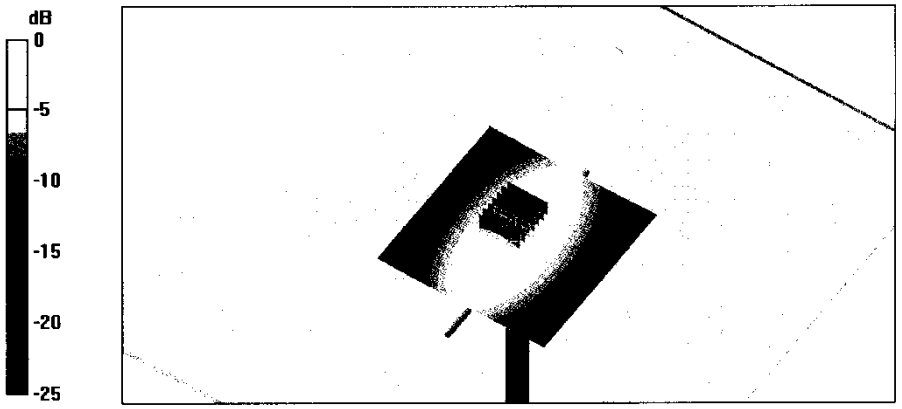
Communication System: CW-835; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 42.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(6.24, 6.24, 6.24); Calibrated: 26.10.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn907; Calibrated: 03.05.2004
- Phantom: Flat Phantom 4.9L; Type: QD000P50AA; Serial: SN:1001;
- Measurement SW: DASY4, V4.4 Build 10; Postprocessing SW: SEMCAD, V1.8 Build 133

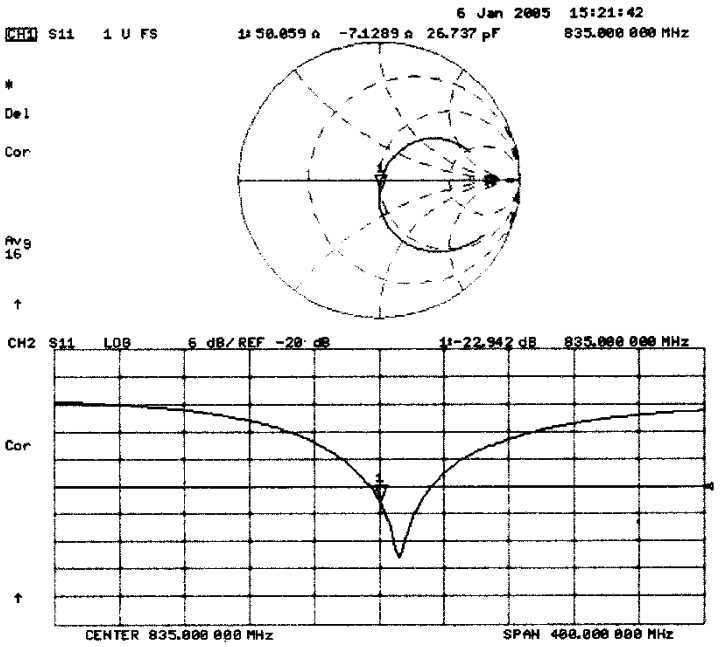
Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.44 mW/g

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.2 V/m; Power Drift = 0.0 dB
Peak SAR (extrapolated) = 3.36 W/kg
SAR(1 g) = 2.27 mW/g; SAR(10 g) = 1.48 mW/g
Maximum value of SAR (measured) = 2.45 mW/g



0 dB = 2.45mW/g

Impedance Measurement Plot for Head TSL



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Accreditation No.: SCS 108

Client RIM

Certificate No: D1900V2-545_Jan05

CALIBRATION CERTIFICATE

Object	D1900V2 - SN: 545
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	January 06, 2005
Condition of the calibrated item	In Tolerance

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 (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Power sensor HP 8481A	US37292783	12-Oct-04 (METAS, No. 251-00412)	Oct-05
Reference 20 dB Attenuator	SN: 5086 (20g)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference 10 dB Attenuator	SN: 5047.2 (10r)	10-Aug-04 (METAS, No 251-00402)	Aug-05
Reference Probe ET3DV6	SN 1507	26-Oct-04 (SPEAG, No. ET3-1507_Oct04)	Oct-05
DAE4	SN 907	03-May-04 (SPEAG, No. DAE4-907_May04)	May-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-03)	In house check: Oct-05
RF generator R&S SML-03	100698	27-Mar-02 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

	Name	Function	Signature
Calibrated by:	Judith Müller	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 13, 2005

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY4	V4.4
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.45 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	10.2 mW / g
SAR normalized	normalized to 1W	40.8 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**39.5 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.34 mW / g
SAR normalized	normalized to 1W	21.4 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**20.7 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.7 Ω + 2.1 jΩ
Return Loss	- 31.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.198 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 15, 2001

DASY4 Validation Report for Head TSL

Date/Time: 01/06/05 18:30:23

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN545

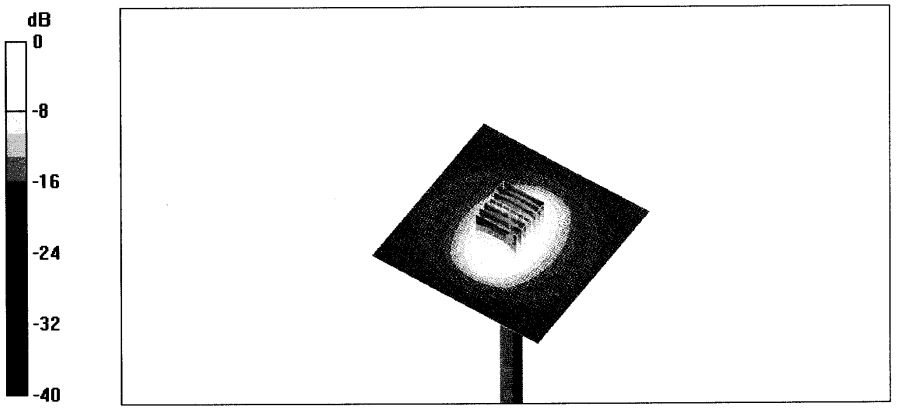
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 39.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507; ConvF(4.96, 4.96, 4.96); Calibrated: 26.10.2004
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn907; Calibrated: 03.05.2004
- Phantom: Flat Phantom quarter size; Type: QD000P50AA; Serial: SN:1001;
- Measurement SW: DASY4, V4.4 Build 10; Postprocessing SW: SEMCAD, V1.8 Build 133

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.6 mW/g

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.2 V/m; Power Drift = 0.007 dB
Peak SAR (extrapolated) = 18 W/kg
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.34 mW/g
Maximum value of SAR (measured) = 11.7 mW/g



0 dB = 11.7mW/g

Impedance Measurement Plot for Head TSL