APPENDIX A: SAR DISTRIBUTION COMPARISON FOR ACCURACY VERIFICATION

Date/Time: 03/03/2006 12:32:00 PM

Test Laboratory: RTS

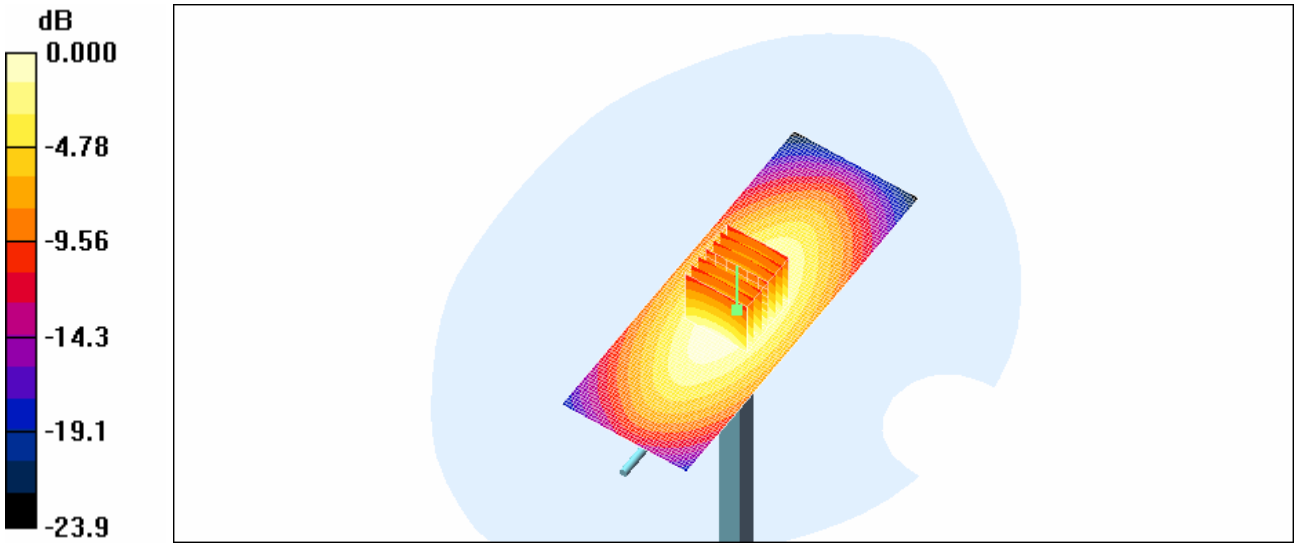
Dipole_Validation_835 MHz_Amb_Temp. 24.6_Liq_Temp. 23.1_03_03_06

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; σ = 0.86 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 105.1 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 12.5 W/kg
SAR(1 g) = 8.29 mW/g; SAR(10 g) = 5.36 mW/g
Maximum value of SAR (measured) = 8.98 mW/g

d=15mm, Pin=250mW/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 8.90 mW/g



0 dB = 8.90mW/g

Date/Time: 06/03/2006 11:20:34 AM

Test Laboratory: RTS

Dipole_Validation_835 MHz_Amb_Temp. 24_5_Liq_Temp. 24_0_03_06_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; σ = 0.87 mho/m; ε_r = 40.7; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.5 V/m; Power Drift = -0.056 dB

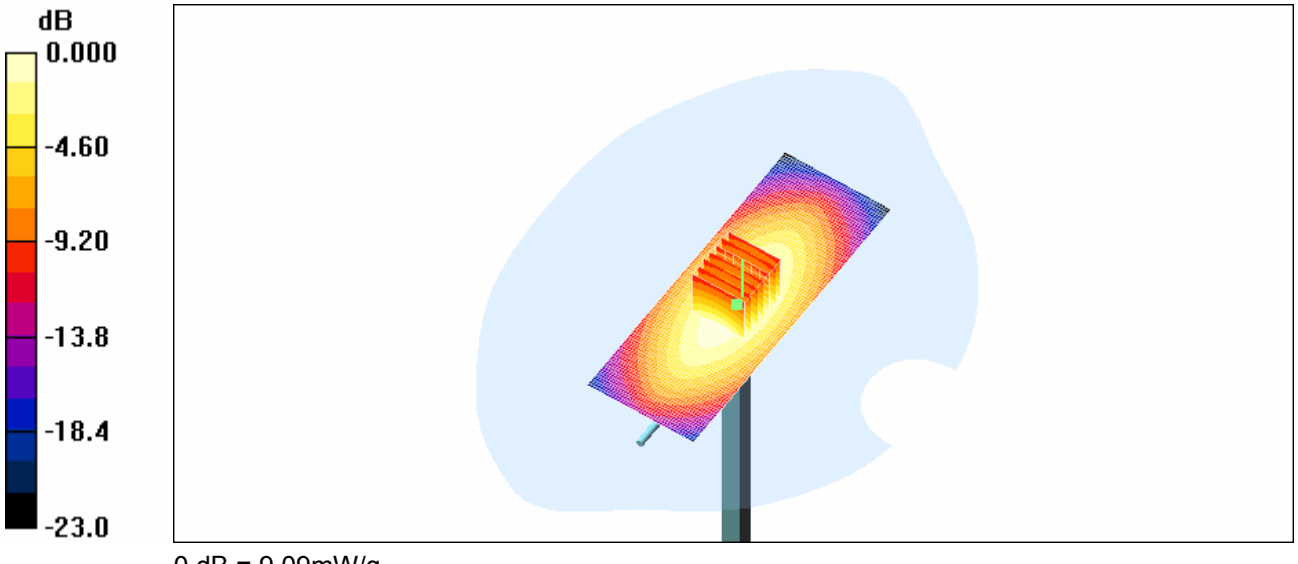
Peak SAR (extrapolated) = 12.7 W/kg

SAR(1 g) = 8.4 mW/g; SAR(10 g) = 5.44 mW/g

Maximum value of SAR (measured) = 9.05 mW/g

d=15mm, Pin=250mW/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 9.09 mW/g



0 dB = 9.09mW/g

Date/Time: 14/03/2006 5:20:53 PM

Test Laboratory: RTS

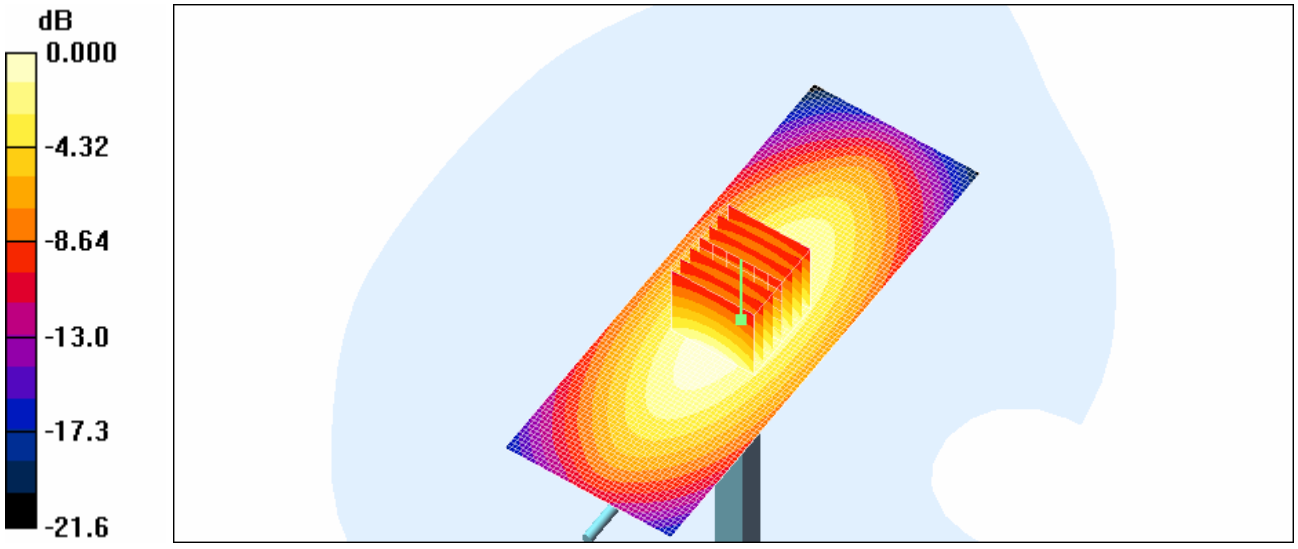
Dipole_Validation_835 MHz_Amb_Temp 25_4_Liq_Temp 23-8_03_14_06

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; σ = 0.91 mho/m; ε_r = 42.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 109.8 V/m; Power Drift = -0.008 dB
Peak SAR (extrapolated) = 14.4 W/kg
SAR(1 g) = 9.58 mW/g; SAR(10 g) = 6.22 mW/g
Maximum value of SAR (measured) = 10.3 mW/g

d=15mm, Pin=250mW/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.4 mW/g



0 dB = 10.4mW/g

Date/Time: 10/04/2006 11:50:39 AM

Test Laboratory: RTS

Dipole_Validation_835 MHz_Amb_Temp 24_2_Liq_Temp 22_8_04_10_06

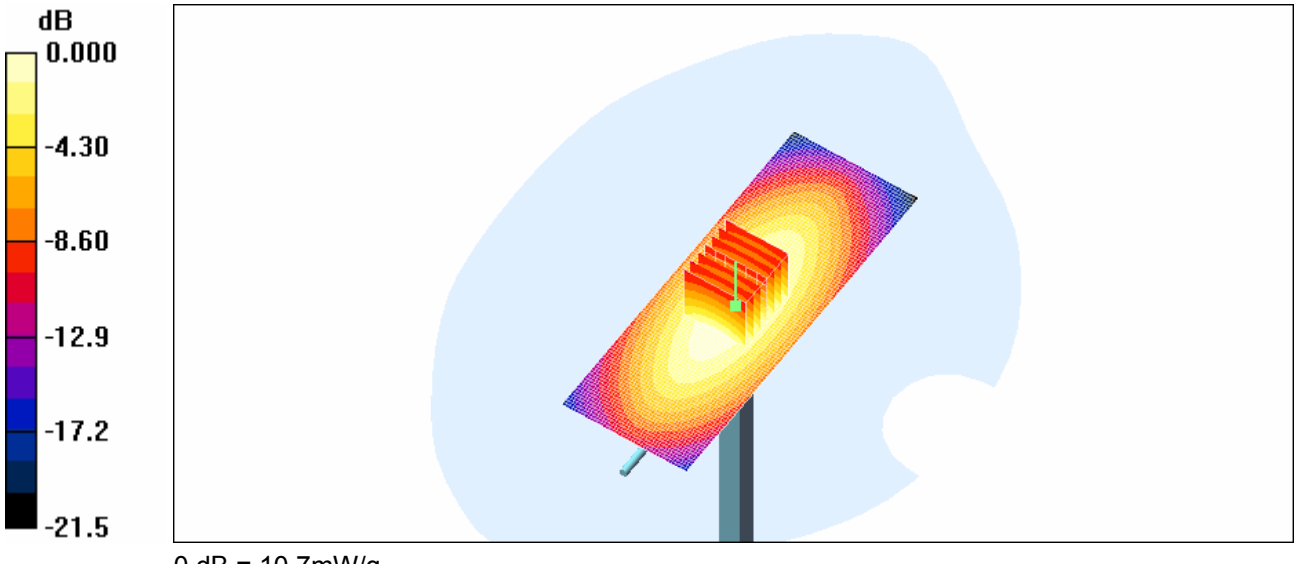
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:446

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.93 mho/m; ε_r = 43.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 110.4 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 15.0 W/kg
SAR(1 g) = 9.89 mW/g; SAR(10 g) = 6.4 mW/g
Maximum value of SAR (measured) = 10.7 mW/g

d=15mm, Pin=250mW/Area Scan (41x111x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 10.7 mW/g



0 dB = 10.7mW/g

Date/Time: 09/03/2006 2:26:51 PM

Test Laboratory: RTS

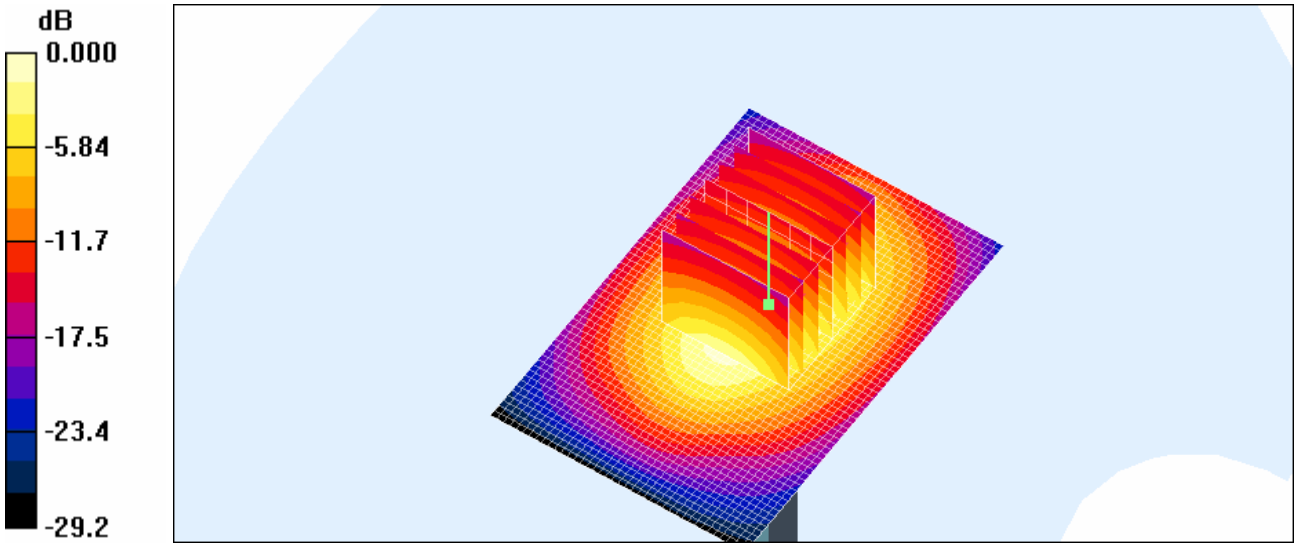
1900MHz_Validation_Ambient_Temp_24_6_C_Liq_Temp_23_8_C

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; σ = 1.4 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(5.25, 5.25, 5.25); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Dipole Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 184.9 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 63.5 W/kg
SAR(1 g) = 37.6 mW/g; SAR(10 g) = 19.9 mW/g
Maximum value of SAR (measured) = 42.4 mW/g

Dipole Validation/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 45.4 mW/g



0 dB = 45.4mW/g

Date/Time: 13/03/2006 4:58:05 PM

Test Laboratory: RTS

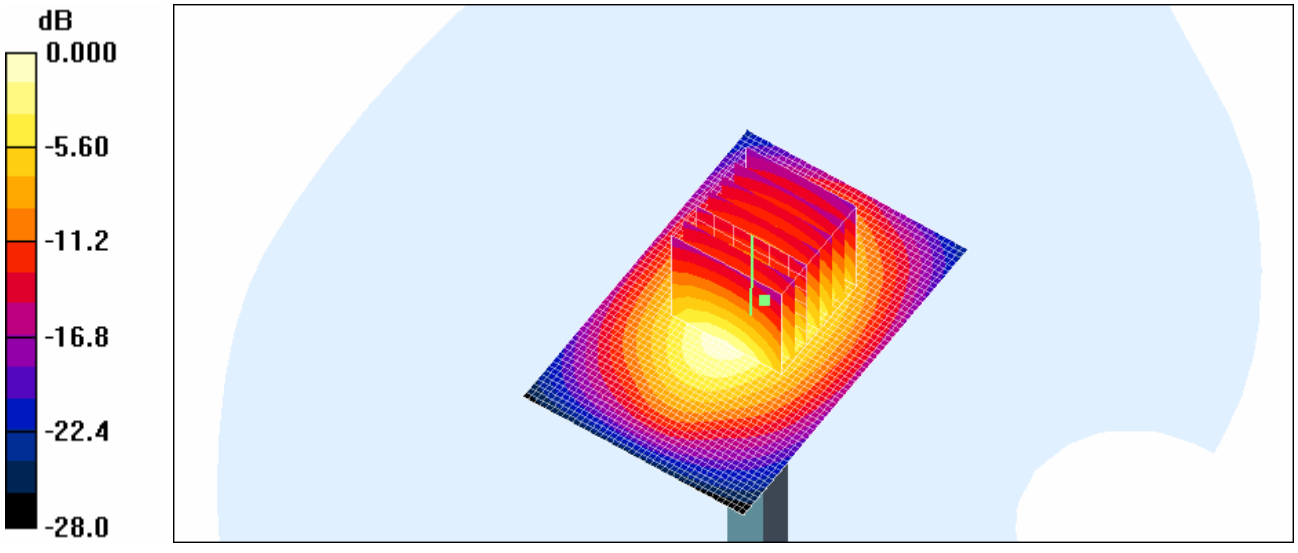
1900MHz_Validation_Amb_Temp_25_0_C_Liq_Temp_24_0_C

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; σ = 1.43 mho/m; ε_r = 38.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(5.25, 5.25, 5.25); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Dipole Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 185.8 V/m; Power Drift = 0.023 dB
Peak SAR (extrapolated) = 65.9 W/kg
SAR(1 g) = 38.5 mW/g; SAR(10 g) = 20.3 mW/g
Maximum value of SAR (measured) = 43.8 mW/g

Dipole Validation/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 46.5 mW/g



0 dB = 46.5mW/g

APPENDIX B: SAR DISTRIBUTION PLOTS FOR HEAD CONFIGURATION

Date/Time: 03/03/2006 2:44:37 PM

Test Laboratory: RTS

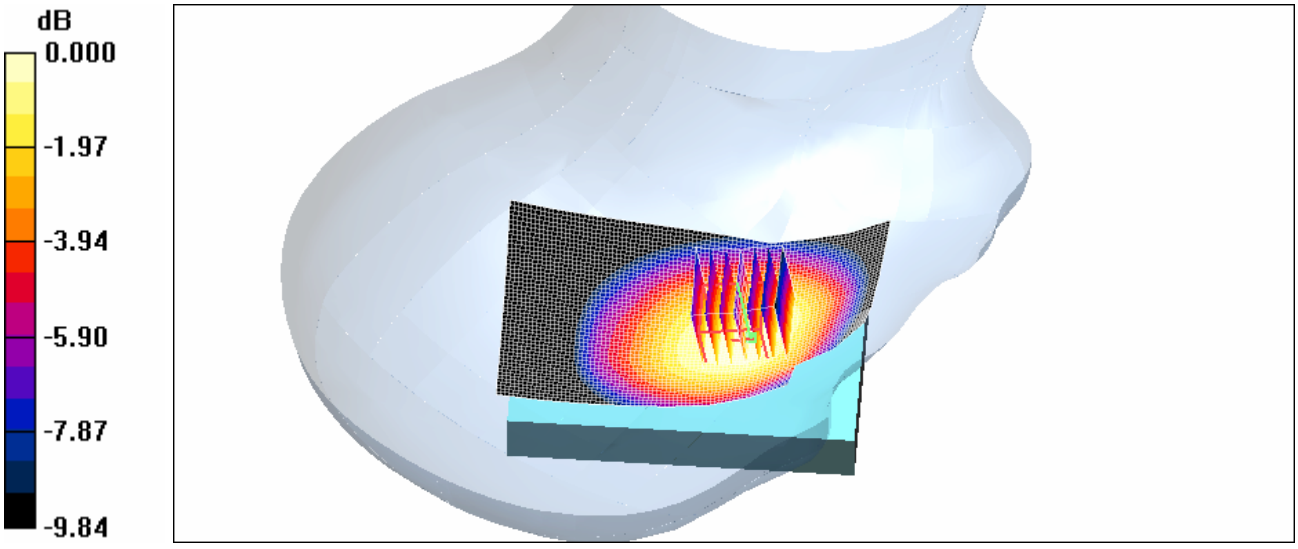
RightHandSide_Touch_GSM850_High_Chan_Amb_Temp_24_5_Liq_Temp_23_1

DUT: BlackBerry Wireless Handheld; Type: Sample
Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 848.8 MHz; σ = 0.86 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.965 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.070 dB
Peak SAR (extrapolated) = 1.14 W/kg
SAR(1 g) = 0.893 mW/g; SAR(10 g) = 0.663 mW/g
Maximum value of SAR (measured) = 0.958 mW/g



0 dB = 0.958mW/g

Date/Time: 10/04/2006 12:40:09 PM

Test Laboratory: RTS

RightHandSide_Touch_GSM850_High_Chan_LCD2_Amb_Temp_23_5_Liq_Temp_22_7

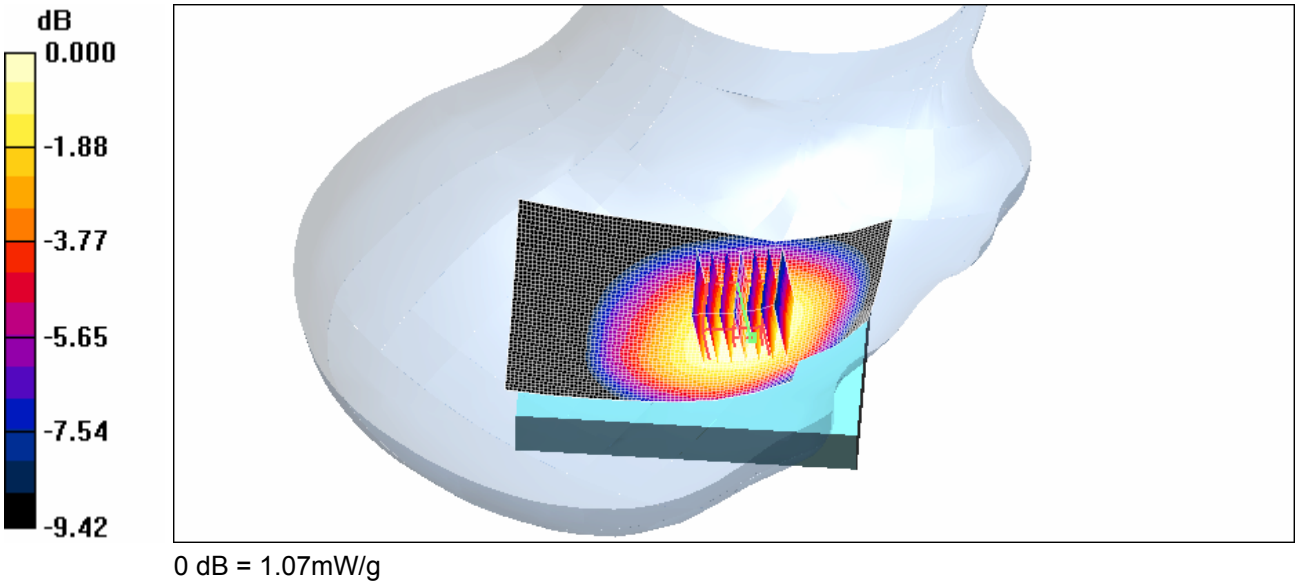
DUT: BlackBerry Wireless Handheld Model R6230GN; Type: Sample

Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 848.8 MHz; σ = 0.93 mho/m; ε_r = 43.6; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.08 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.0 V/m; Power Drift = -0.073 dB
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.749 mW/g
Maximum value of SAR (measured) = 1.07 mW/g



0 dB = 1.07mW/g

Date/Time: 10/04/2006 1:19:11 PM

Test Laboratory: RTS

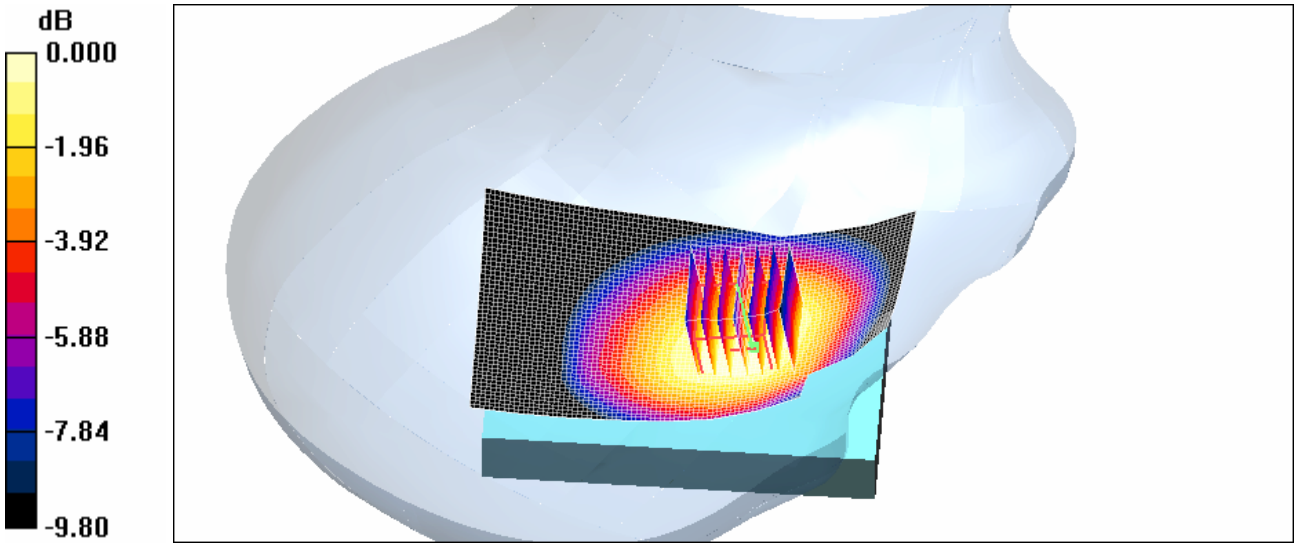
RightHandSide_Touch_GSM850_High_Chan_RBA42GW__Amb_Temp_24_2_Liq_Temp_23_0

DUT: BlackBerry Wireless Handheld Model R6230GN; Type: Sample
Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 848.8 MHz; σ = 0.93 mho/m; ε_r = 43.6; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.18 mW/g

Touch position - High/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.7 V/m; Power Drift = -0.227 dB
Peak SAR (extrapolated) = 1.41 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.798 mW/g
Maximum value of SAR (measured) = 1.16 mW/g



0 dB = 1.16mW/g

Date/Time: 03/03/2006 3:08:54 PM

Test Laboratory: RTS

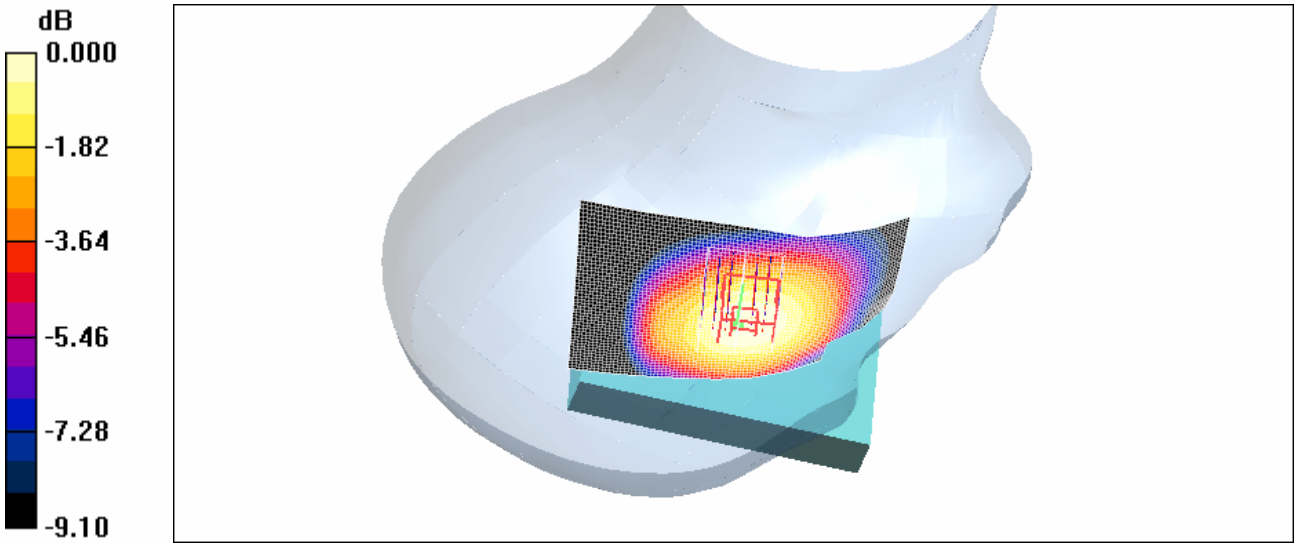
RightHandSide_Tilted_GSM850_Mid_Chan_Amb_Temp_24_3_Liq_Temp_23_0

DUT: BlackBerry Wireless Handheld; Type: Sample
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 836.8 MHz; σ = 0.86 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.472 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.8 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 0.565 W/kg
SAR(1 g) = 0.443 mW/g; SAR(10 g) = 0.330 mW/g
Maximum value of SAR (measured) = 0.470 mW/g



0 dB = 0.470mW/g

Date/Time: 03/03/2006 4:50:33 PM

Test Laboratory: RTS

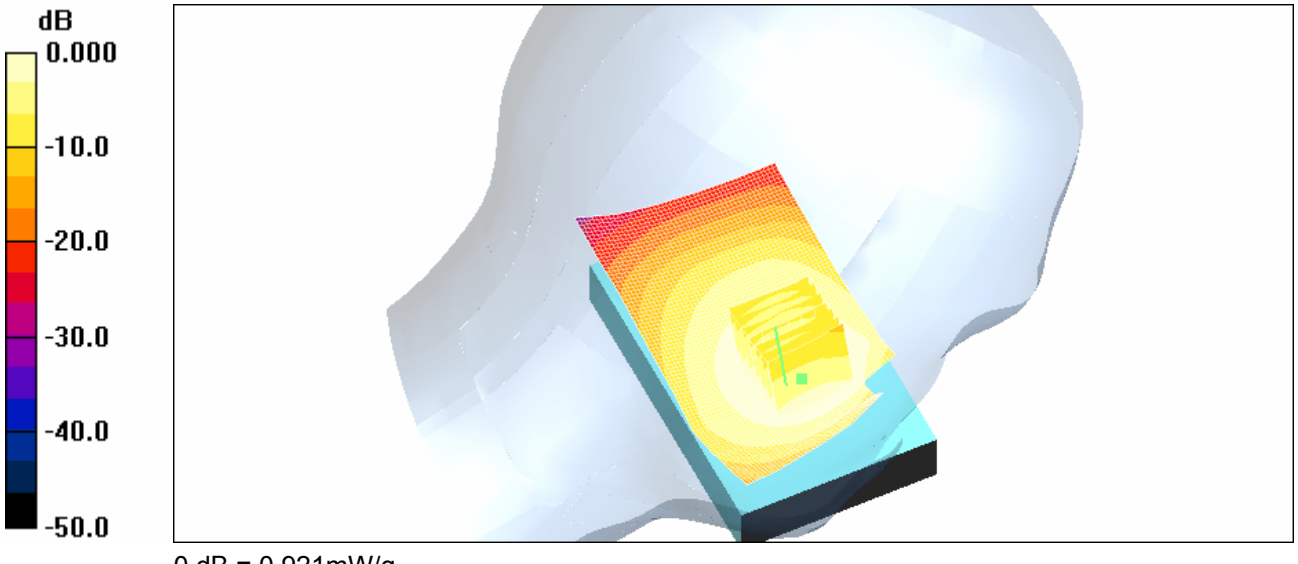
LeftHandSide_Touch_GSM850_High_Chan_Amb_Temp_24_4_Liq_Temp_23_0

DUT: BlackBerry Wireless Handheld; Type: Sample
Communication System: GSM 850; Frequency: 848.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 848.8 MHz; σ = 0.86 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; 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 = 13.7 V/m; Power Drift = -0.181 dB
Peak SAR (extrapolated) = 1.10 W/kg
SAR(1 g) = 0.835 mW/g; SAR(10 g) = 0.613 mW/g
Maximum value of SAR (measured) = 0.879 mW/g

Touch position - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.921 mW/g



0 dB = 0.921mW/g

Date/Time: 03/03/2006 5:20:43 PM

Test Laboratory: RTS

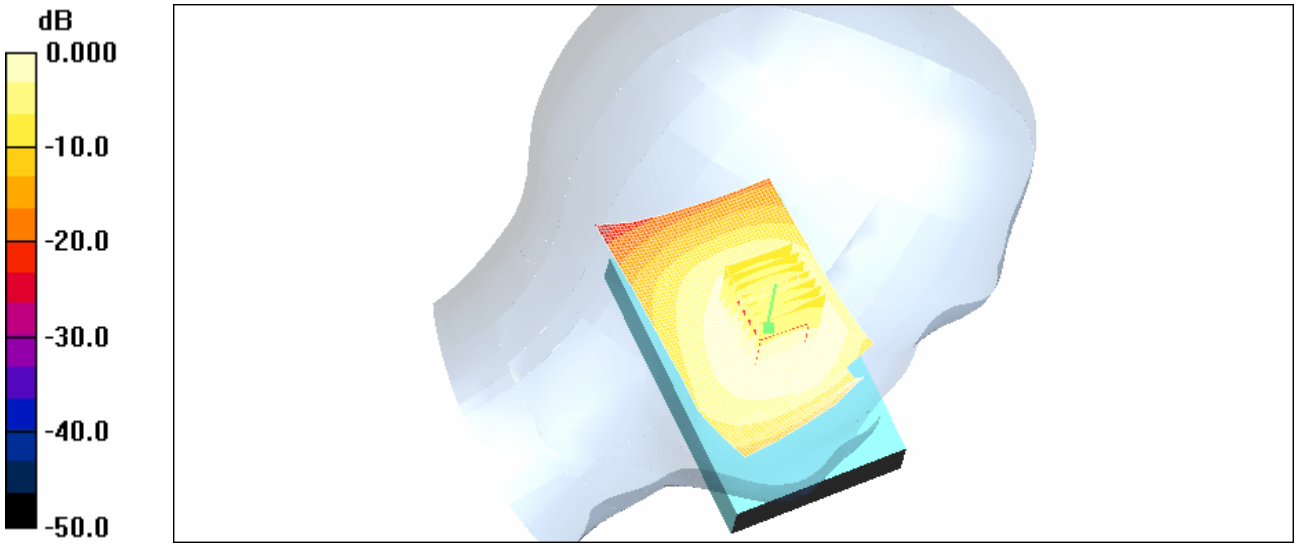
LeftHandSide_Tilted_GSM850_Mid_Chan_Amb_Temp_24_4_Liq_Temp_22_9

DUT: BlackBerry Wireless Handheld Model R6230GN; Type: Sample
Communication System: GSM 850; Frequency: 836.8 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 836.8 MHz; σ = 0.86 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.27, 6.27, 6.27); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; 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 = 16.2 V/m; Power Drift = -0.089 dB
Peak SAR (extrapolated) = 0.622 W/kg
SAR(1 g) = 0.483 mW/g; SAR(10 g) = 0.361 mW/g
Maximum value of SAR (measured) = 0.508 mW/g

Touch position - Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.521 mW/g



0 dB = 0.521mW/g

Date/Time: 09/03/2006 3:24:31 PM

Test Laboratory: RTS

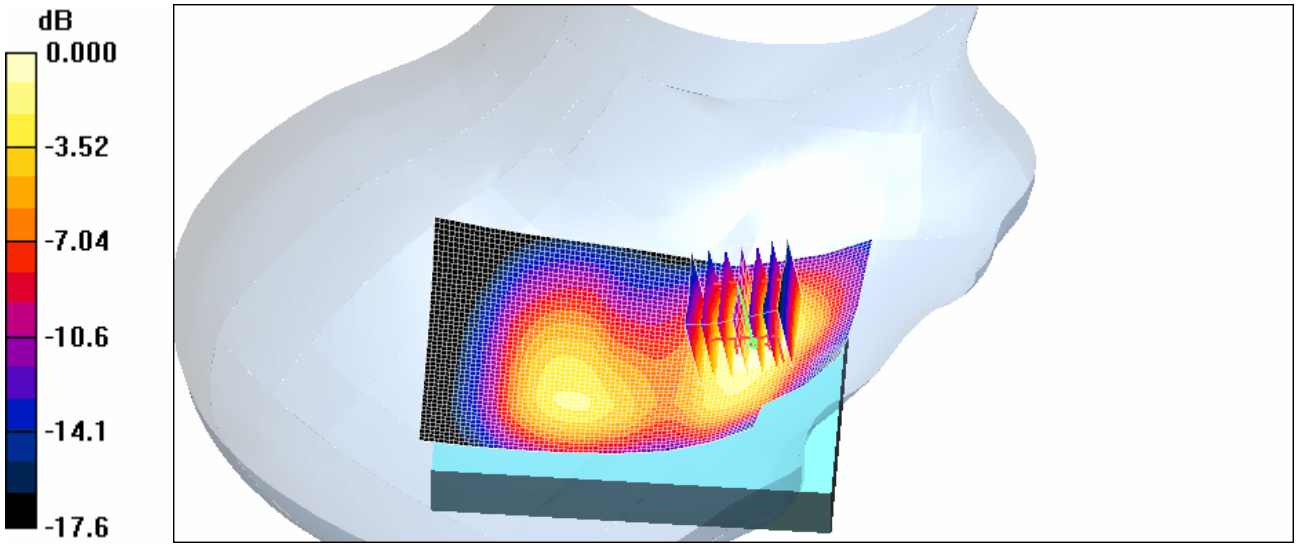
RightHandSide_Touch_GSM1900_Mid_Chan_Amb_Temp_24_8_Liq_Temp_23_9

DUT: BlackBerry Wireless Handheld; Type: Sample
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(5.25, 5.25, 5.25); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.827 mW/g

Touch position - Low/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.5 V/m; Power Drift = -0.326 dB
Peak SAR (extrapolated) = 0.984 W/kg
SAR(1 g) = 0.684 mW/g; SAR(10 g) = 0.399 mW/g
Maximum value of SAR (measured) = 0.753 mW/g



0 dB = 0.753mW/g

Date/Time: 09/03/2006 3:50:19 PM

Test Laboratory: RTS

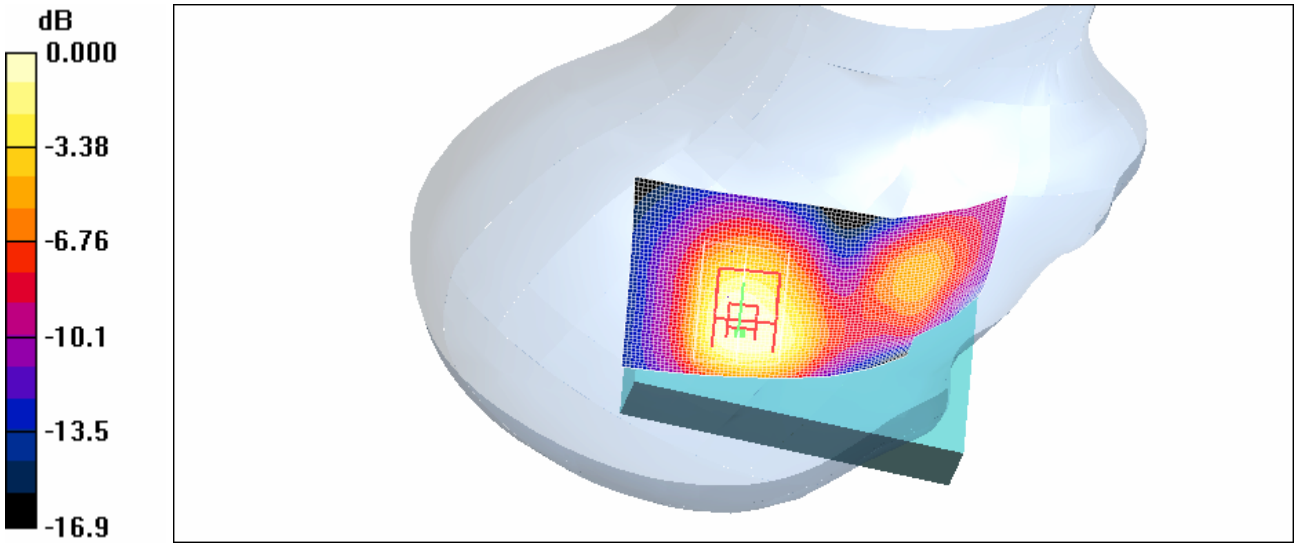
RightHandSide_Tilted_GSM1900_Mid_Chan_Amb_Temp_24_6_Liq_Temp_24_0

DUT: BlackBerry Wireless Handheld; Type: Sample
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Right Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(5.25, 5.25, 5.25); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Mid/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.399 mW/g

Touch position - Mid/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.5 V/m; Power Drift = 0.025 dB
Peak SAR (extrapolated) = 0.473 W/kg
SAR(1 g) = 0.334 mW/g; SAR(10 g) = 0.208 mW/g
Maximum value of SAR (measured) = 0.366 mW/g



0 dB = 0.366mW/g

Date/Time: 09/03/2006 4:30:29 PM

Test Laboratory: RTS

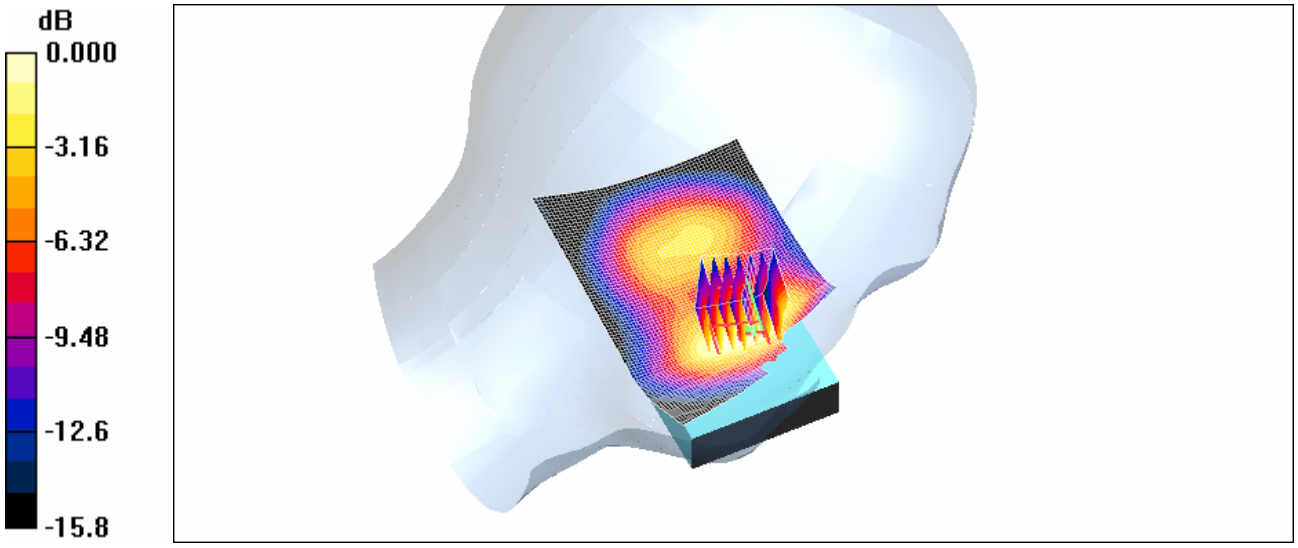
Left_Touch_GSM1900_Mid_Chan_Amb_Temp_24_7_C_Liq_Temp_23_8_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(5.25, 5.25, 5.25); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.684 mW/g

Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.1 V/m; Power Drift = -0.099 dB
Peak SAR (extrapolated) = 0.819 W/kg
SAR(1 g) = 0.581 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.636 mW/g



0 dB = 0.636mW/g

Date/Time: 09/03/2006 4:58:25 PM

Test Laboratory: RTS

Left_Tilted_GSM1900_Mid_Chan_Amb_Temp_24_6_C_Liq_Temp_23_9_C

DUT: BlackBerry Wireless Handheld ; Type: Sample

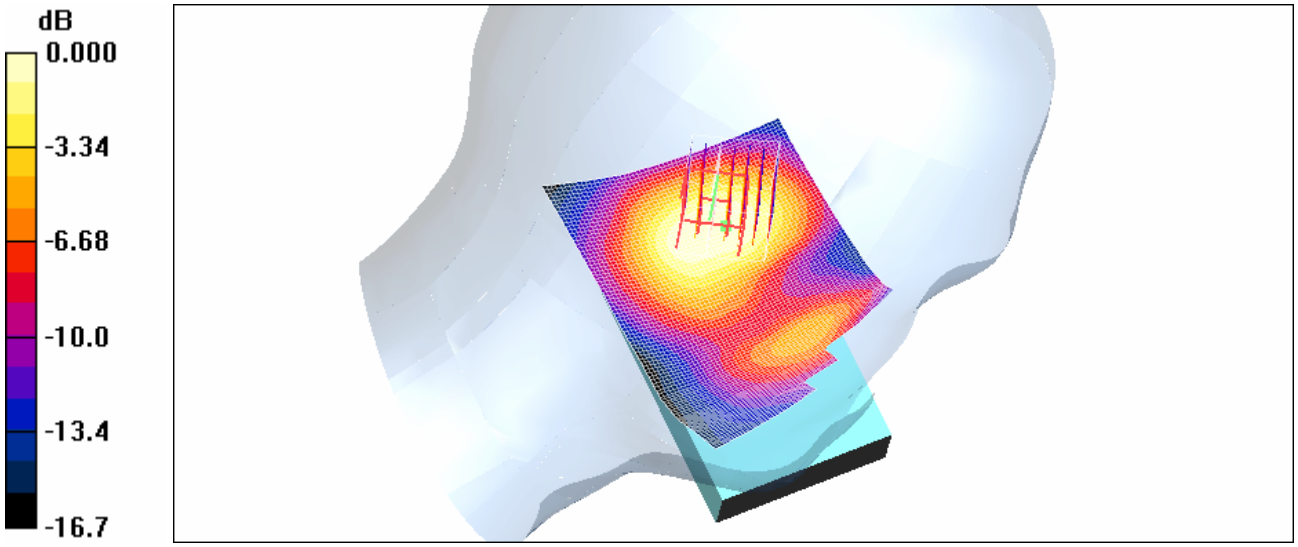
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 38.8; ρ = 1000 kg/m^3
Phantom section: Left Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(5.25, 5.25, 5.25); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Touch position - Middle/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.361 mW/g

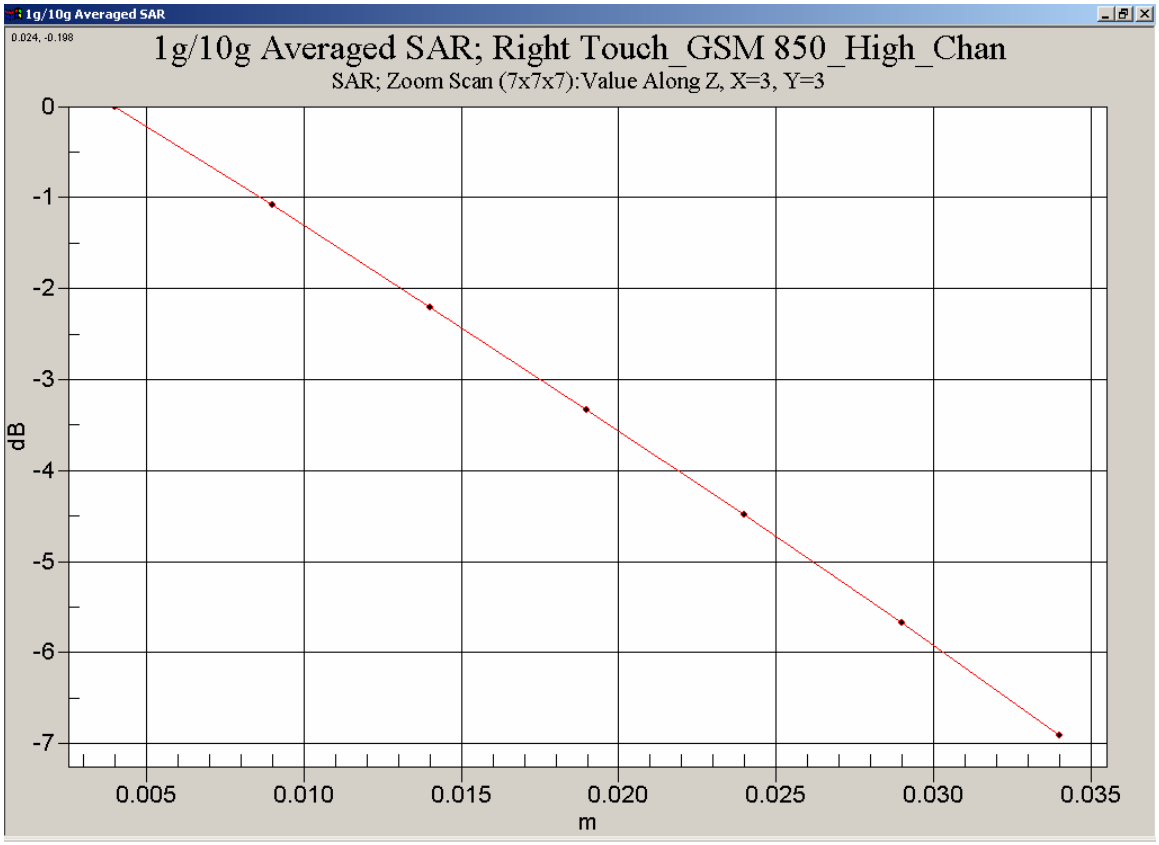
Touch position - Middle/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = -0.006 dB
Peak SAR (extrapolated) = 0.432 W/kg
SAR(1 g) = 0.313 mW/g; SAR(10 g) = 0.200 mW/g

Maximum value of SAR (measured) = 0.339 mW/g



0 dB = 0.339mW/g

Z-axis plot for worst-case head configuration:



APPENDIX C: SAR DISTRIBUTION PLOTS FOR BODY-WORN CONFIGURATION

Date/Time: 07/03/2006 10:16:55 AM

Test Laboratory: RTS

Body_worn_Holster1_GPRS850_Low_Chan_Back_Amb_Temp_24_7_C_Liquid_Temp_23_3_C

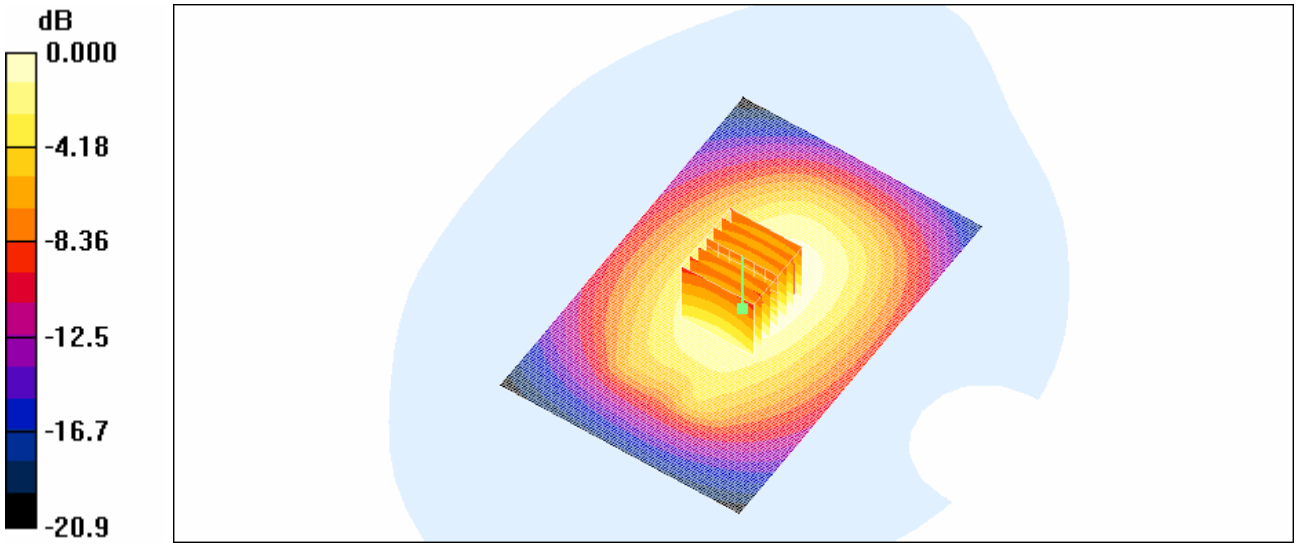
DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.95 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 39.4 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.916 mW/g

Maximum value of SAR (measured) = 1.36 mW/g

Unnamed procedure/Area Scan (101x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.37 mW/g



0 dB = 1.37mW/g

Date/Time: 15/03/2006 11:04:29 AM

Test Laboratory: RTS

Body_worn_Holster2_GPRS850_Low_Chan_Back_Amb_Temp_24_5_C_Liq_Temp_23_1_C

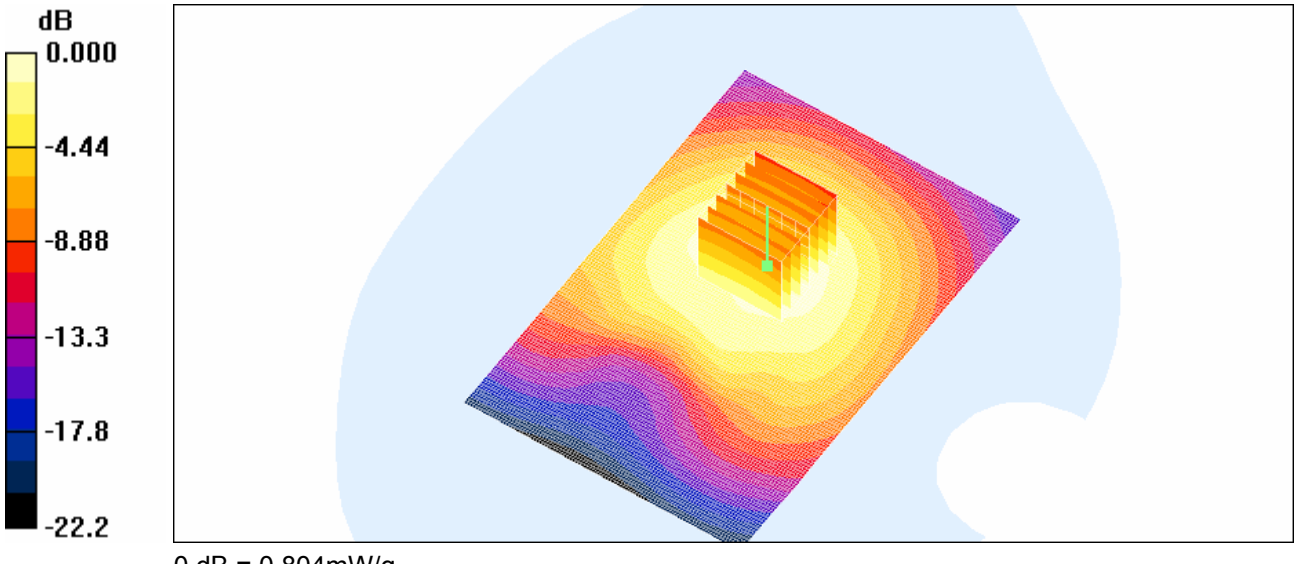
DUT: BlackBerry Wireless Handheld ; Type: Sample

Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.97 mho/m; ε_r = 53.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.5 V/m; Power Drift = 0.013 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.746 mW/g; SAR(10 g) = 0.515 mW/g
Maximum value of SAR (measured) = 0.805 mW/g

Unnamed procedure/Area Scan (101x151x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.804 mW/g



0 dB = 0.804mW/g

Date/Time: 07/03/2006 2:11:45 PM

Test Laboratory: RTS

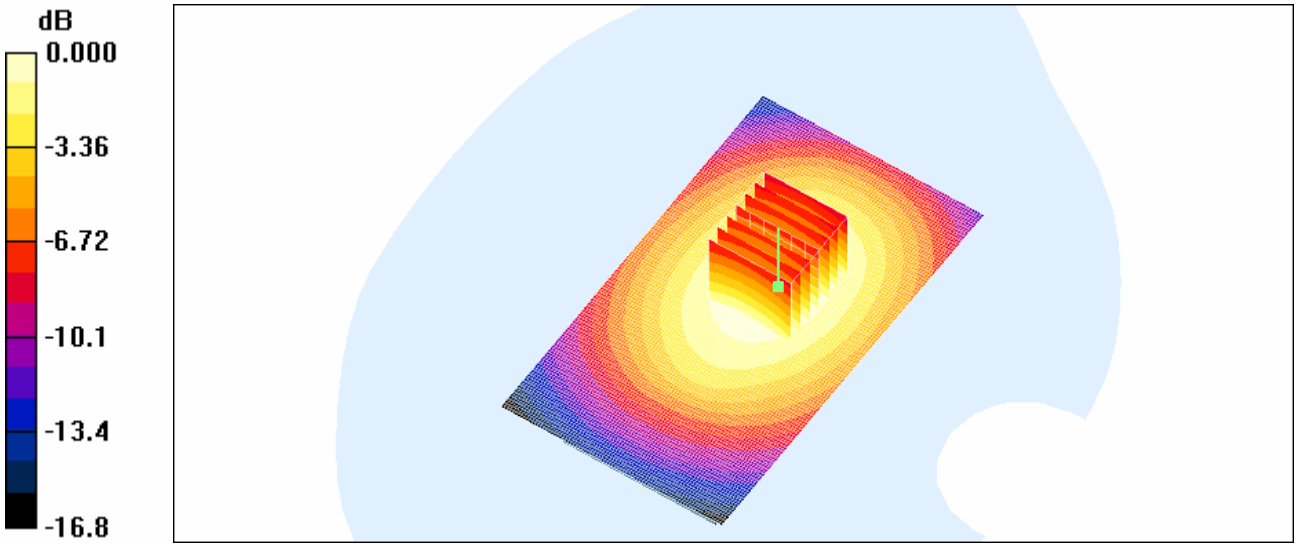
Body_worn_Holster3_GPRS850_Low_Chan_Back_Amb_Temp_25_0_C_Liquid_Temp_23_3_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.95 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 33.0 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.980 mW/g; SAR(10 g) = 0.711 mW/g
Maximum value of SAR (measured) = 1.04 mW/g

Unnamed procedure/Area Scan (81x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.04 mW/g



0 dB = 1.04mW/g

Date/Time: 15/03/2006 11:40:30 AM

Test Laboratory: RTS

Body_worn_Holster4_GPRS850_Low_Chan_Back_Amb_Temp_24_6_C_Liq_Temp_23_2_C

DUT: BlackBerry Wireless Handheld ; Type: Sample

Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2

Medium parameters used: f = 824.2 MHz; σ = 0.97 mho/m; ε_r = 53.4; ρ = 1000 kg/m^3

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.3 V/m; Power Drift = 0.034 dB

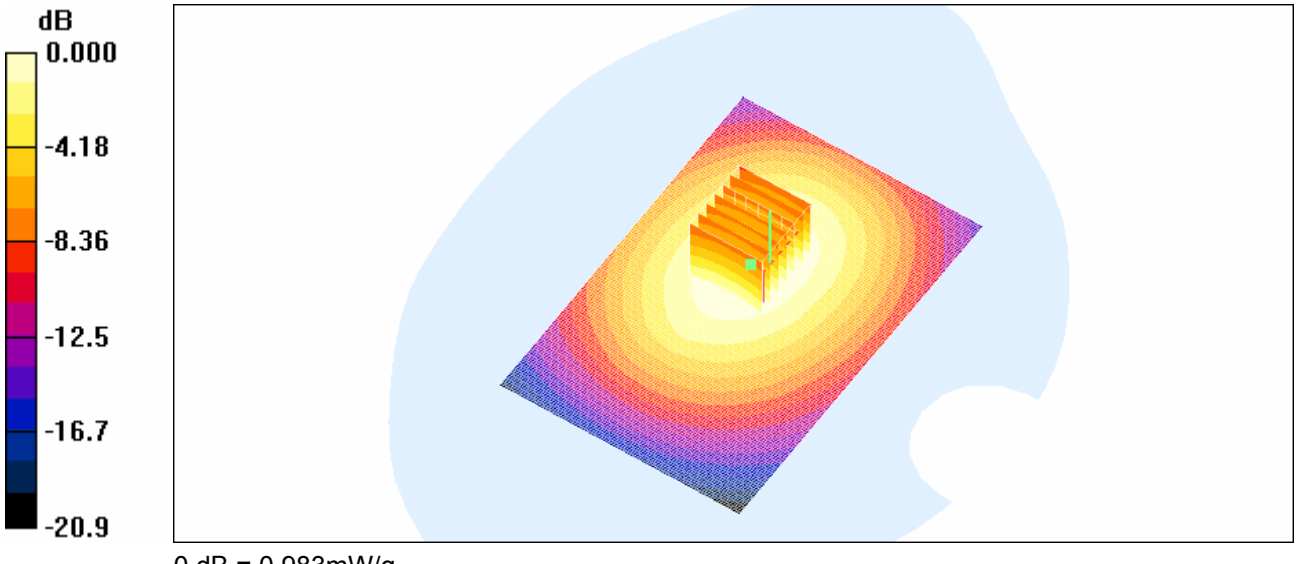
Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.921 mW/g; SAR(10 g) = 0.672 mW/g

Maximum value of SAR (measured) = 0.975 mW/g

Unnamed procedure/Area Scan (101x151x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.983 mW/g



0 dB = 0.983mW/g

Date/Time: 07/03/2006 4:14:17 PM

Test Laboratory: RTS

Body_worn_Holster1_GPRS850_Low_Chan_Back_Batt2_Amb_Temp_25_0_C_Liquid_Temp_23_4_C

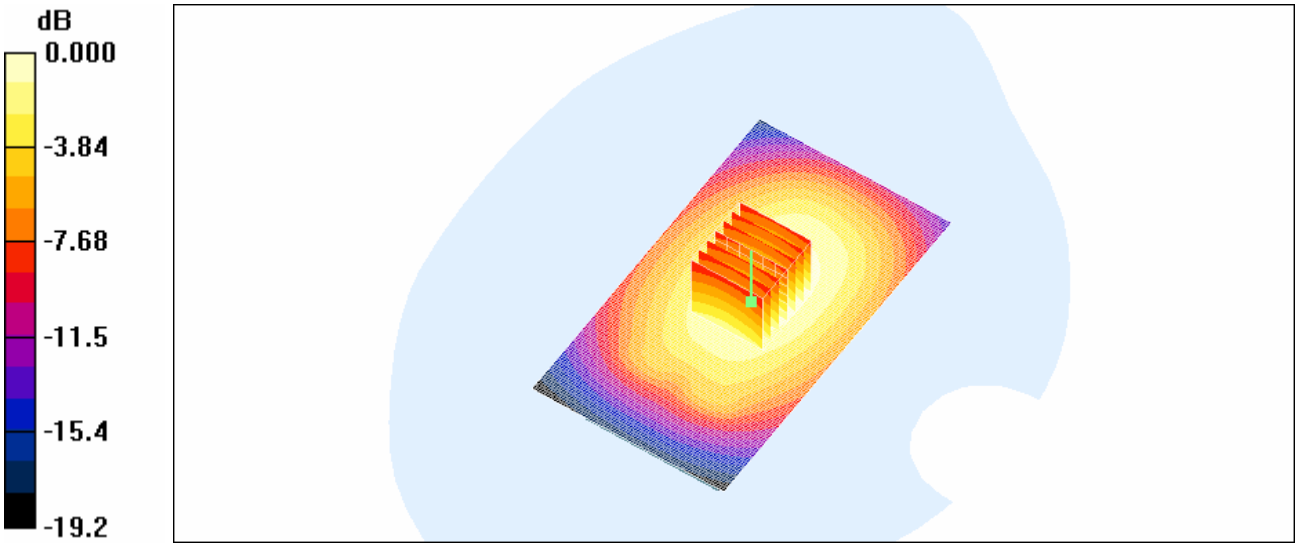
DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.95 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 39.7 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.933 mW/g

Maximum value of SAR (measured) = 1.40 mW/g

Unnamed procedure/Area Scan (81x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.44 mW/g



0 dB = 1.44mW/g

Date/Time: 10/04/2006 3:51:50 PM

Test Laboratory: RTS

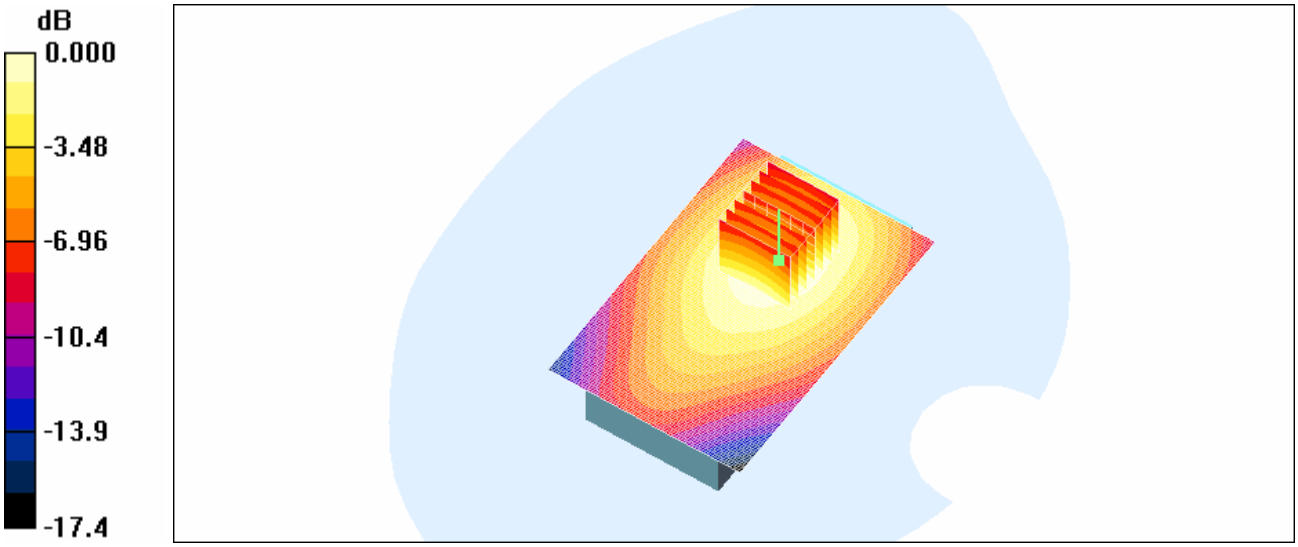
Body_worn_Holster1_GPRS850_Low_Chan_LCD2_Back_Amb_Temp_24_0_C_Liq_Temp_23_1_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.94 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 34.2 V/m; Power Drift = -0.076 dB
Peak SAR (extrapolated) = 1.60 W/kg
SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.885 mW/g
Maximum value of SAR (measured) = 1.31 mW/g

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.32 mW/g



0 dB = 1.32mW/g

Date/Time: 10/04/2006 3:23:26 PM

Test Laboratory: RTS

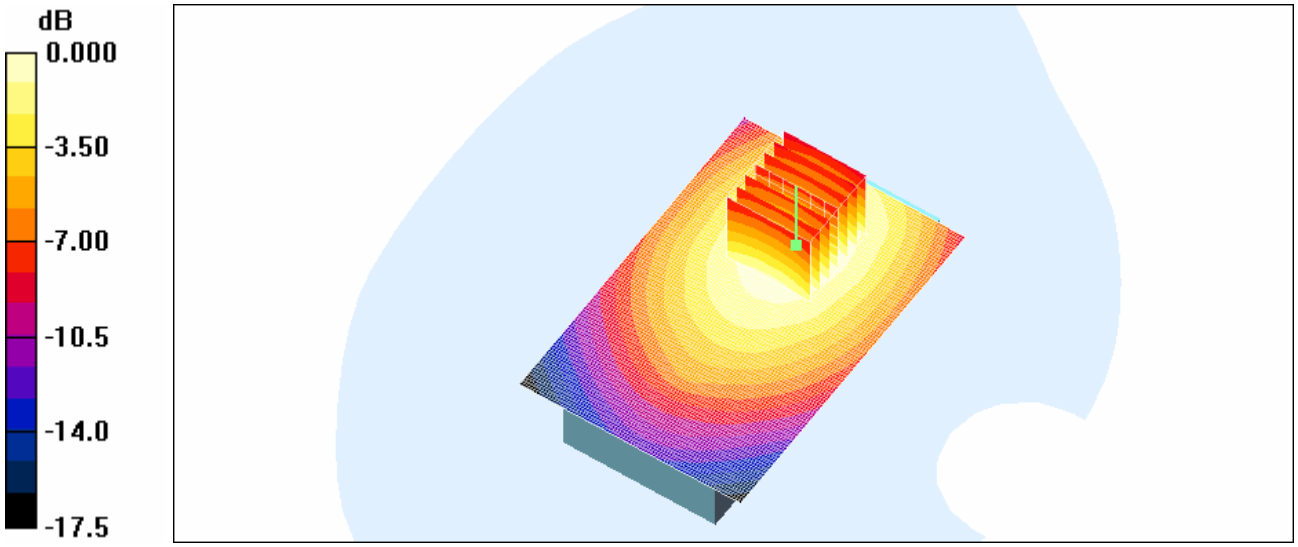
Body_worn_Holster1_GPRS850_Low_Chan_RBA42GW_Back_Amb_Temp_24_0_C_Liquid_Temp_23_1_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.94 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 32.8 V/m; Power Drift = -0.030 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.947 mW/g
Maximum value of SAR (measured) = 1.38 mW/g

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.39 mW/g



0 dB = 1.39mW/g

Date/Time: 07/03/2006 4:52:02 PM

Test Laboratory: RTS

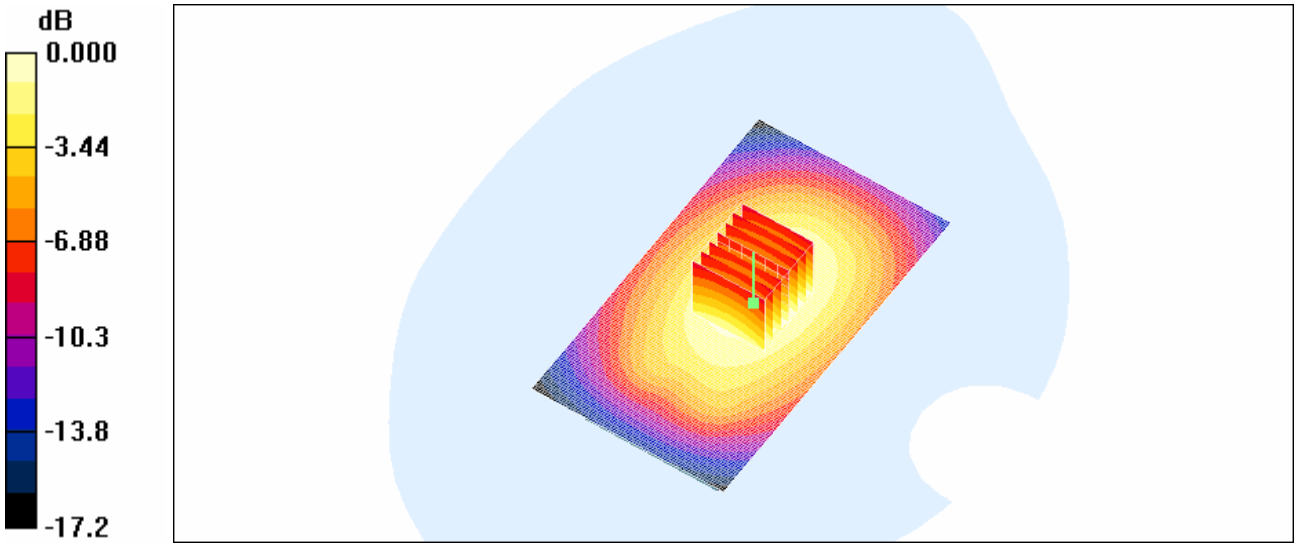
Body_worn_Holster1_GPRS850_Low_Chan_Back_Batt3_Amb_Temp_24_8_C_Liquid_Temp_23_3_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.95 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 36.7 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 1.13 mW/g; SAR(10 g) = 0.801 mW/g
Maximum value of SAR (measured) = 1.20 mW/g

Unnamed procedure/Area Scan (81x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.22 mW/g



0 dB = 1.22mW/g

Date/Time: 07/03/2006 5:24:52 PM

Test Laboratory: RTS

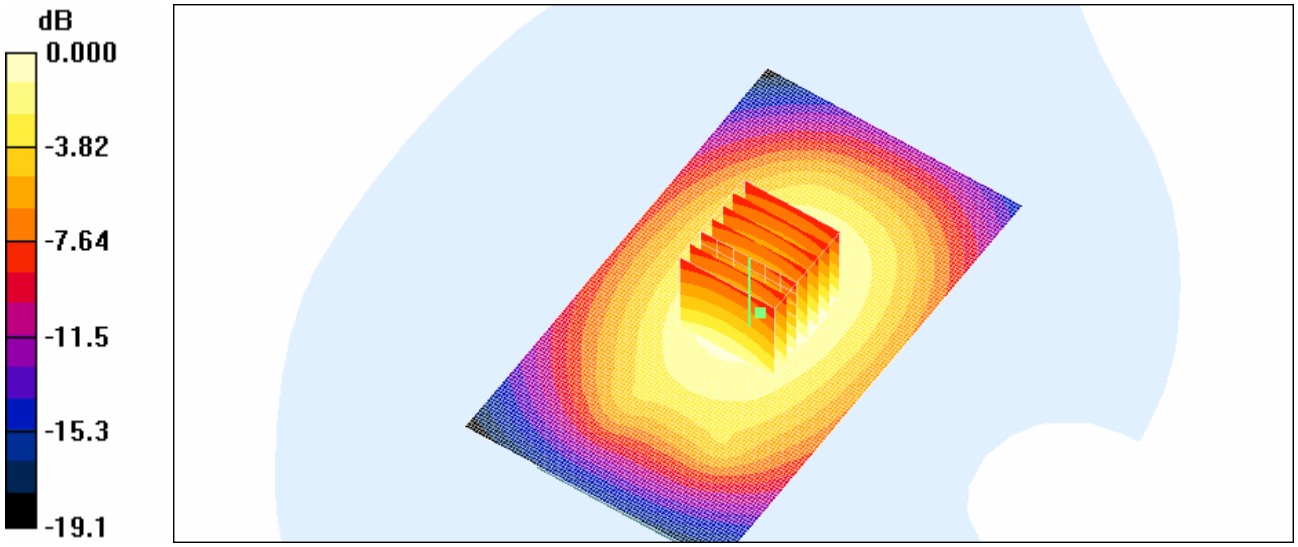
Body_worn_Holster1_GPRS850_Low_Chan_Back_Batt2_Headset_BT_ON_Amb_Temp_24_8_C_Liquid_Temp_23_3_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.95 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 36.7 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.785 mW/g
Maximum value of SAR (measured) = 1.20 mW/g

Unnamed procedure/Area Scan (81x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.20 mW/g



0 dB = 1.20mW/g

Date/Time: 07/03/2006 3:25:51 PM

Test Laboratory: RTS

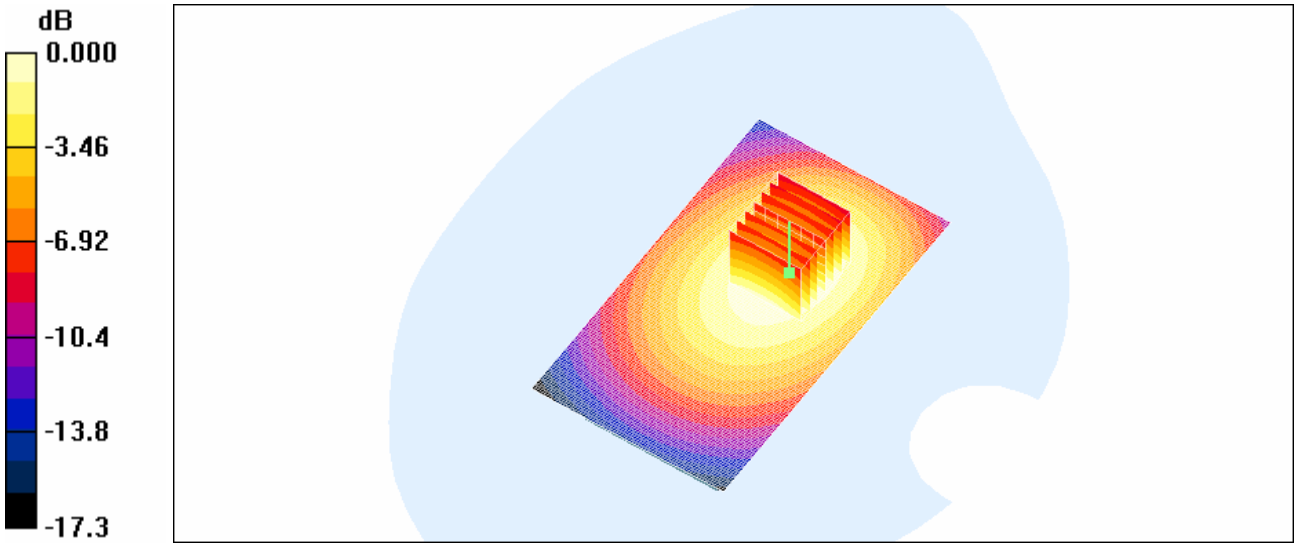
Body_worn_15mm_Distance_GPRS850_Low_Chan_Back_Amb_Temp_24_9_C_Liquid_Temp_23_5_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 850; Frequency: 824.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 824.2 MHz; σ = 0.95 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(6.16, 6.16, 6.16); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 2; Type: SAM 4.0; Serial: 1080
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 31.3 V/m; Power Drift = -0.045 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.960 mW/g; SAR(10 g) = 0.697 mW/g
Maximum value of SAR (measured) = 1.01 mW/g

Unnamed procedure/Area Scan (81x141x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.03 mW/g



0 dB = 1.03mW/g

Date/Time: 14/03/2006 9:19:10 AM

Test Laboratory: RTS

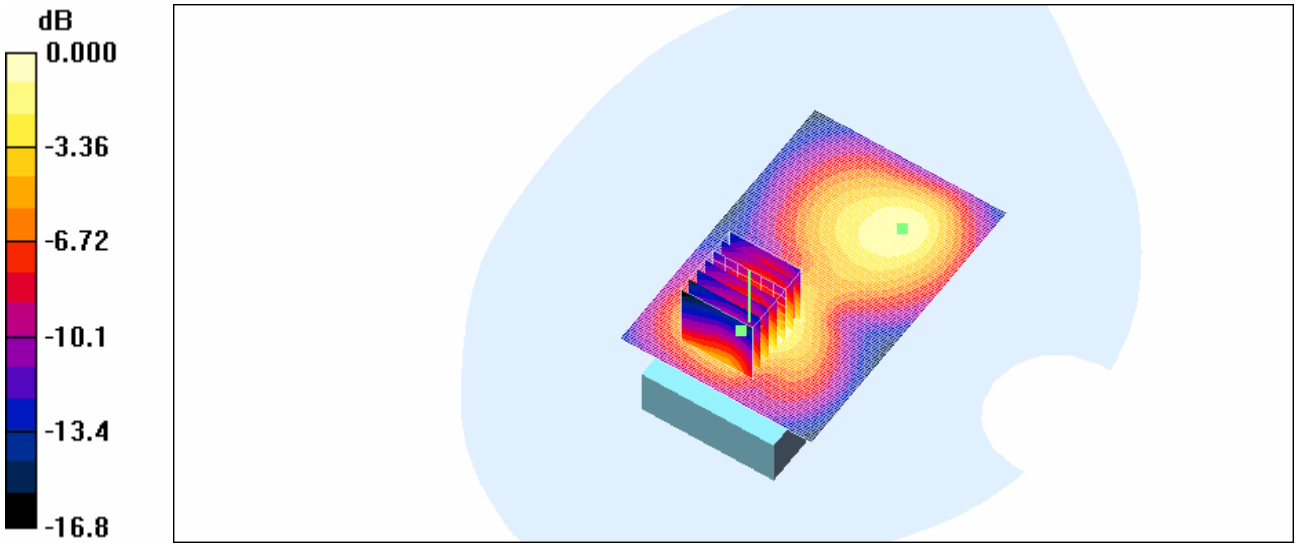
Body_Holster1_Back_GPRS1900_Low_Chan_Amb_Temp_24_5_C_Liq_Temp_23_2_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1850.2 MHz; σ = 1.53 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(4.51, 4.51, 4.51); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.26 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = -0.014 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.676 mW/g
Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

Date/Time: 14/03/2006 10:33:11 AM

Test Laboratory: RTS

Body_Holster1_Front_GPRS1900_Mid_Chan_Amb_Temp_24_7_C_Liq_Temp_23_0_C

DUT: BlackBerry Wireless Handheld ; Type: Sample

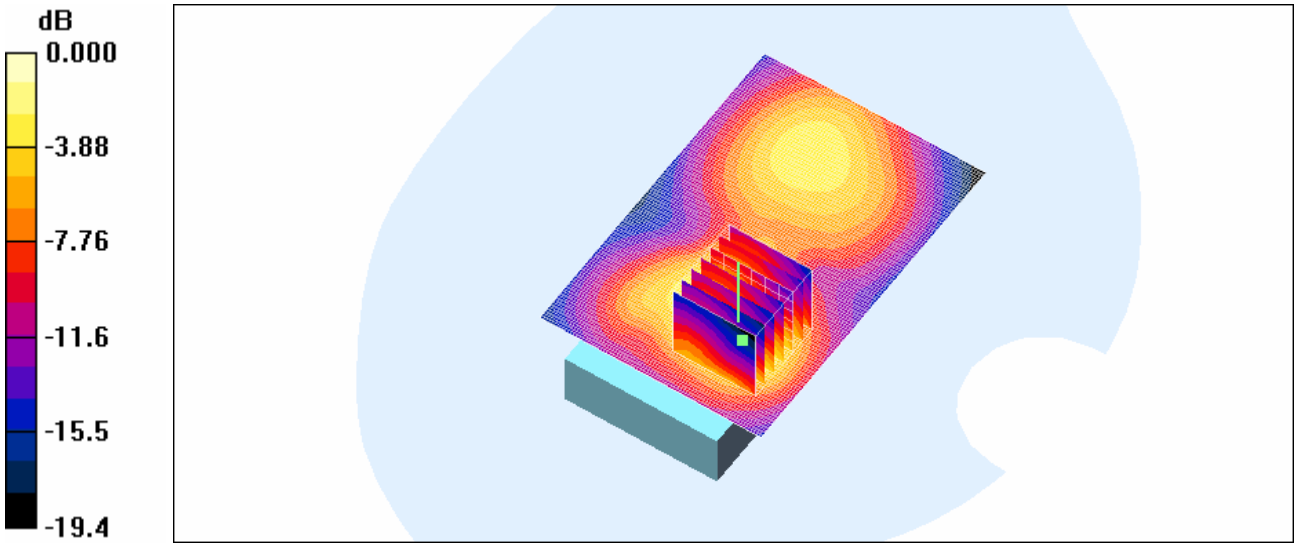
Communication System: GPRS 1900; Frequency: 1880 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(4.51, 4.51, 4.51); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.02 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.6 V/m; Power Drift = 0.068 dB
Peak SAR (extrapolated) = 1.41 W/kg
SAR(1 g) = 0.901 mW/g; SAR(10 g) = 0.563 mW/g

Maximum value of SAR (measured) = 0.998 mW/g



0 dB = 0.998mW/g

Date/Time: 14/03/2006 1:20:54 PM

Test Laboratory: RTS

Body_Holster2_Back_GPRS1900_Low_Chan_Amb_Temp_24_6_C_Liq_Temp_23_1_C

DUT: BlackBerry Wireless Handheld ; Type: Sample

Communication System: GPRS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:4.2

Medium parameters used: f = 1850.2 MHz; σ = 1.53 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3

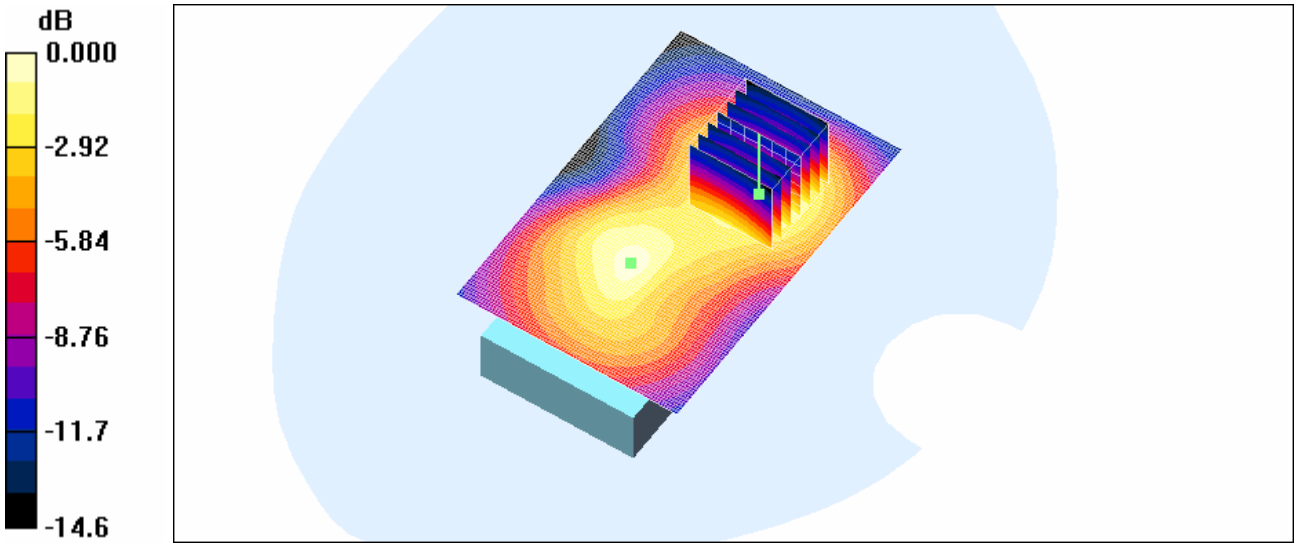
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(4.51, 4.51, 4.51); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.581 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.4 V/m; Power Drift = 0.043 dB
Peak SAR (extrapolated) = 0.899 W/kg
SAR(1 g) = 0.528 mW/g; SAR(10 g) = 0.316 mW/g
Maximum value of SAR (measured) = 0.577 mW/g



0 dB = 0.577mW/g

Date/Time: 14/03/2006 1:52:25 PM

Test Laboratory: RTS

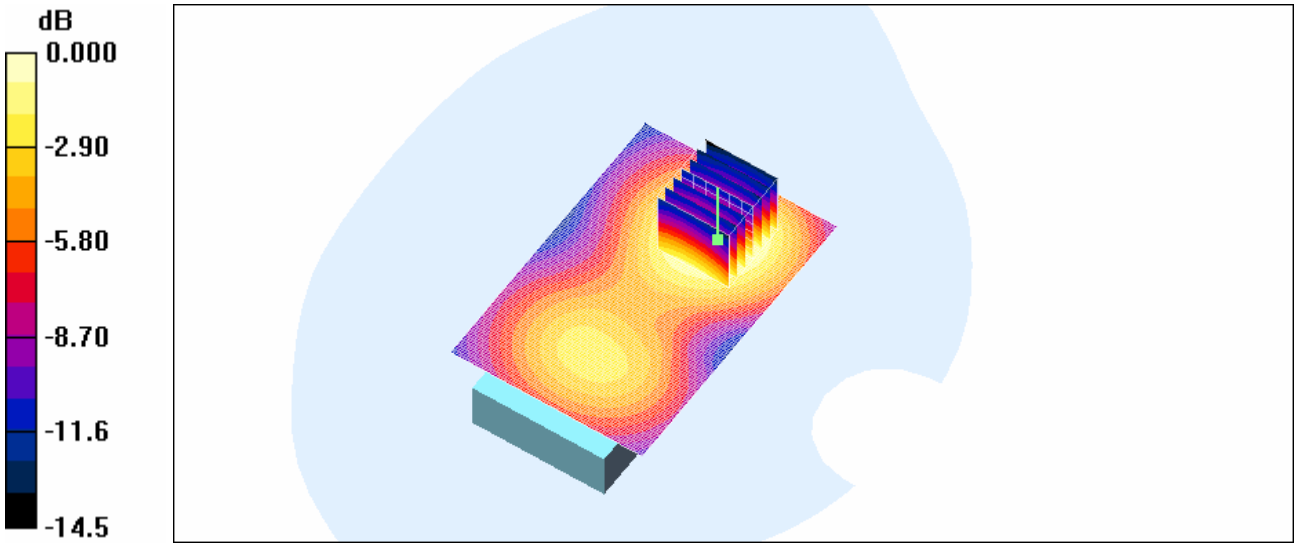
Body_Holster3_Back_GPRS1900_Low_Chan_Amb_Temp_25_0_C_Liq_Temp_23_0_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1850.2 MHz; σ = 1.53 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(4.51, 4.51, 4.51); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.507 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.1 V/m; Power Drift = -0.067 dB
Peak SAR (extrapolated) = 0.727 W/kg
SAR(1 g) = 0.463 mW/g; SAR(10 g) = 0.288 mW/g
Maximum value of SAR (measured) = 0.497 mW/g



0 dB = 0.497mW/g

Date/Time: 14/03/2006 2:20:19 PM

Test Laboratory: RTS

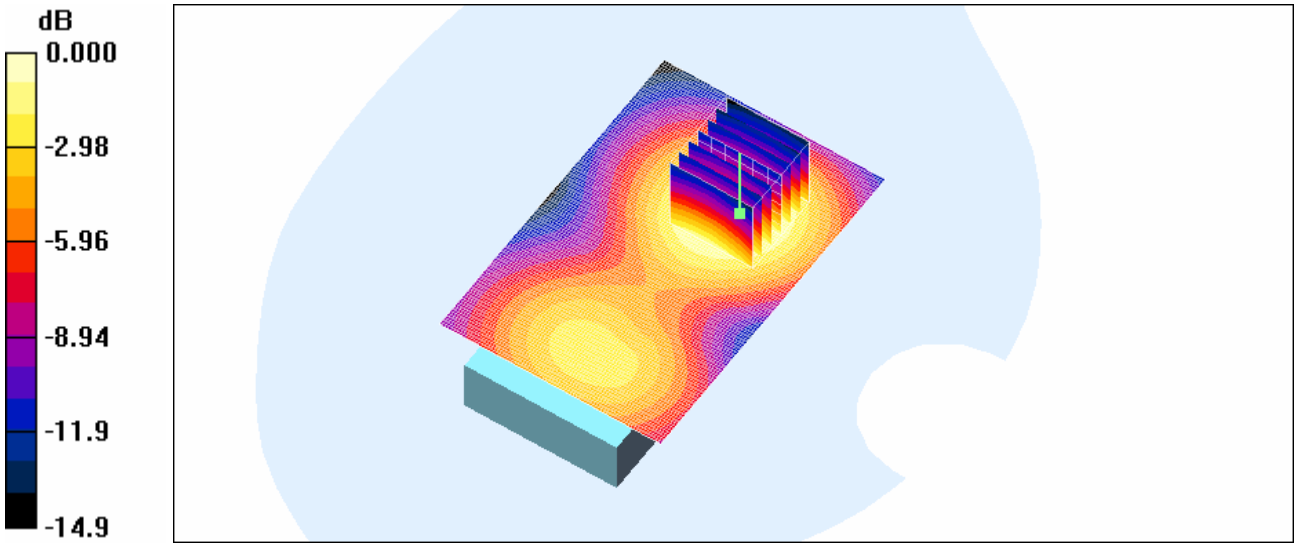
Body_Holster4_Back_GPRS1900_Low_Chan_Amb_Temp_24_5_C_Liq_Temp_23_1_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1850.2 MHz; σ = 1.53 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(4.51, 4.51, 4.51); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.516 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = 0.021 dB
Peak SAR (extrapolated) = 0.711 W/kg
SAR(1 g) = 0.473 mW/g; SAR(10 g) = 0.296 mW/g
Maximum value of SAR (measured) = 0.511 mW/g



0 dB = 0.511mW/g

Date/Time: 14/03/2006 2:52:17 PM

Test Laboratory: RTS

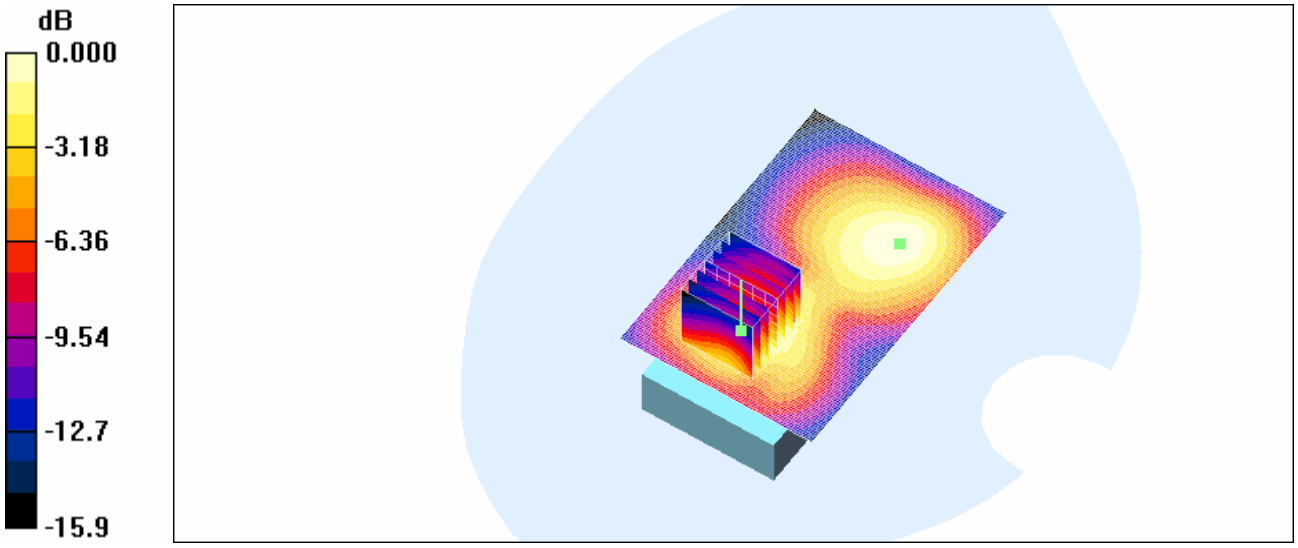
Body_Holster1_Back_GPRS1900_Headset_BT_ON_Low_Chan_Amb_Temp_24_4_C_Liq_Temp_23_2_C

DUT: BlackBerry Wireless Handheld ; Type: Sample
Communication System: GPRS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:4.2
Medium parameters used: f = 1850.2 MHz; σ = 1.53 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(4.51, 4.51, 4.51); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.929 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.3 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.831 mW/g; SAR(10 g) = 0.530 mW/g
Maximum value of SAR (measured) = 0.895 mW/g



0 dB = 0.895mW/g

Date/Time: 14/03/2006 3:21:06 PM

Test Laboratory: RTS

Body_15 mm_Back_GPRS1900_Low_Chan_Amb_Temp_24_4_C_Liq_Temp_23_0_C

DUT: BlackBerry Wireless Handheld ; Type: Sample

Communication System: GPRS 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:4.2

Medium parameters used: f = 1850.2 MHz; σ = 1.53 mho/m; ε_r = 51.1; ρ = 1000 kg/m^3

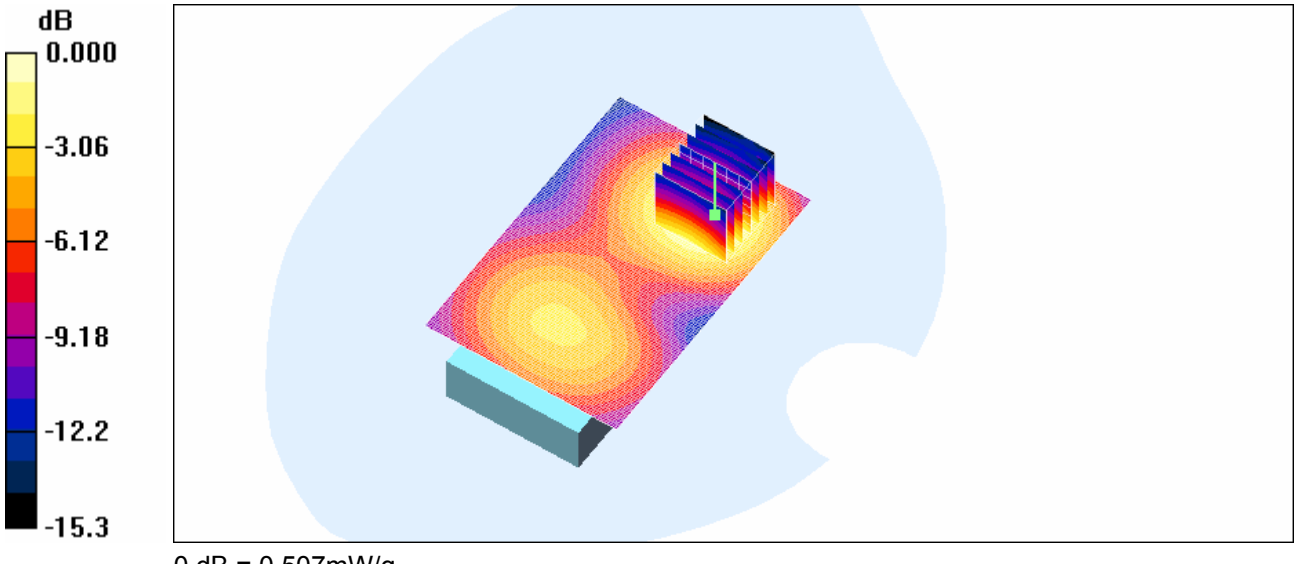
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1644; ConvF(4.51, 4.51, 4.51); Calibrated: 11/11/2005
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn472; Calibrated: 12/01/2006
- Phantom: SAM 1; Type: SAM 4.0; Serial: 1076
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 160

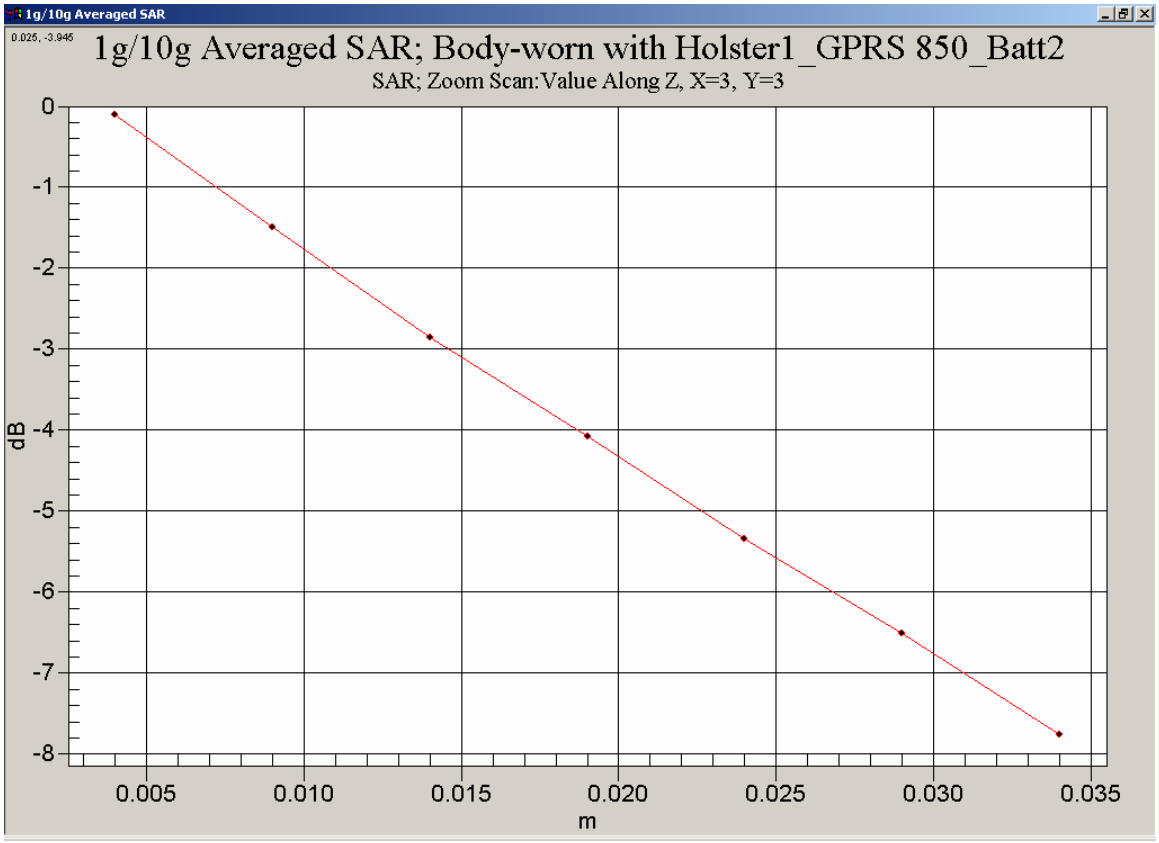
Unnamed procedure/Area Scan (81x121x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.519 mW/g

Unnamed procedure/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.63 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 0.731 W/kg
SAR(1 g) = 0.470 mW/g; SAR(10 g) = 0.283 mW/g
Maximum value of SAR (measured) = 0.507 mW/g



0 dB = 0.507mW/g

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

Accreditation No.: SCS 108

Client: RIM

Certificate No: ET3-1644_Nov05

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1644
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	November 11, 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 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	MY41498087	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	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
DAE4	SN: 654	27-Oct-05 (SPEAG, No. DAE4-654_Oct05)	Oct-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 12, 2005

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

Certificate No: ET3-1644_Nov05 Page 1 of 9

Calibration Laboratory of
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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:1644

Manufactured: November 7, 2001
Last calibrated: November 19, 2004
Recalibrated: November 11, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1644 **November 11, 2005**

DASY - Parameters of Probe: ET3DV6 SN:1644

Sensitivity in Free Space[A]

Diode Compression[B]

NormX	**1.81** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**92** mV
NormY	**1.97** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**92** mV
NormZ	**1.89** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**92** 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	4.3
SAR_{be} [%]	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	15.5	10.2
SAR_{be} [%]	With Correction Algorithm	0.5	0.2

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%.

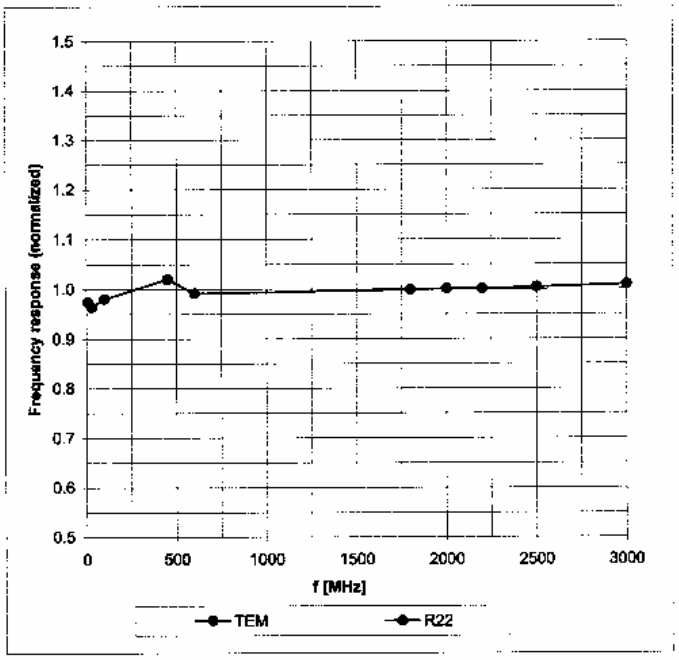
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1644 November 11, 2005

Frequency Response of E-Field

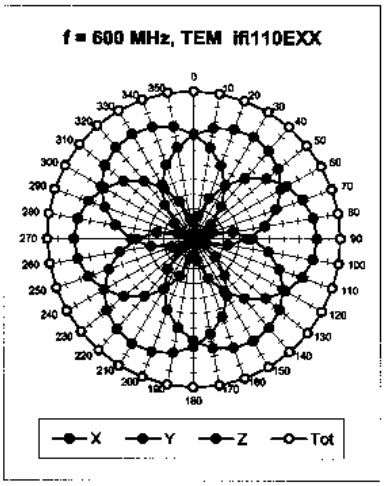
(TEM-Cell:ifi110 EXX, Waveguide: R22)

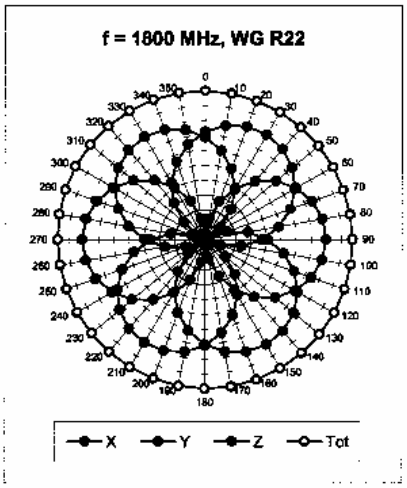


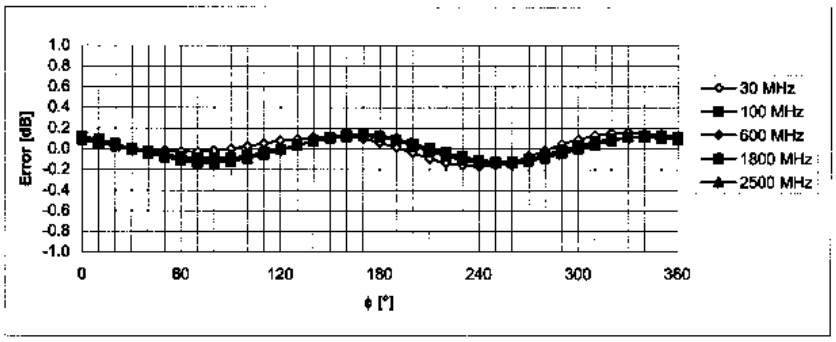
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6 SN:1644 **November 11, 2005**

Receiving Pattern (ϕ), ϑ = 0°





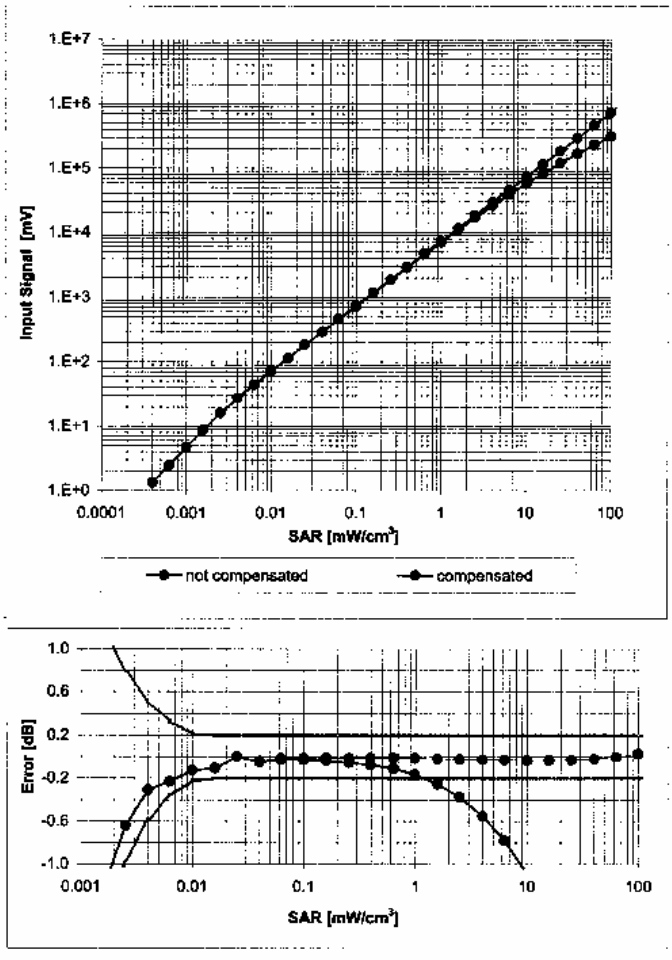


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ET3DV6 SN:1644 **November 11, 2005**

Dynamic Range f(SAR_{head})

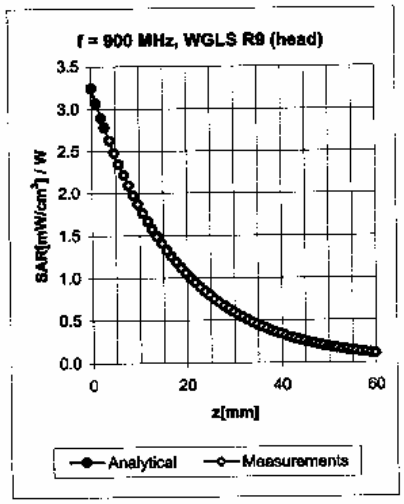
(Waveguide R22, f = 1800 MHz)

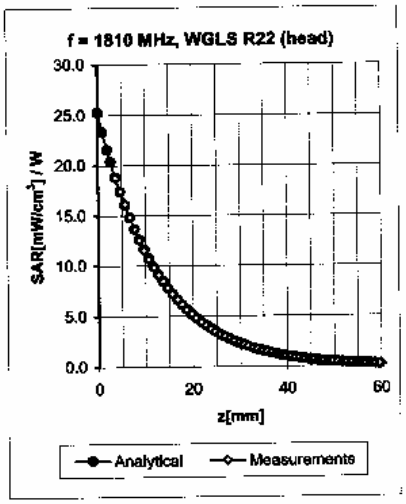


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ET3DV6 SN:1644 November 11, 2005

Conversion Factor Assessment





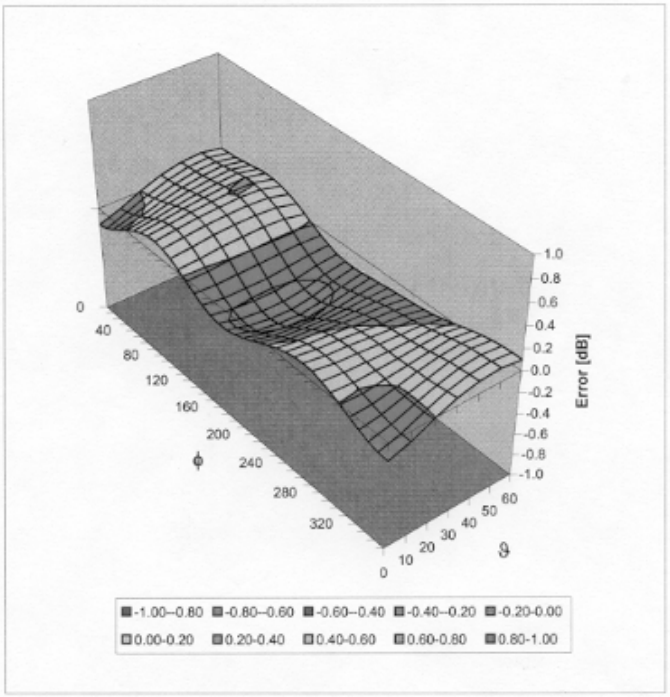
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.62	1.77	6.27 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.66	2.37	5.25 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.49	2.07	6.16 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.60	2.65	4.51 ± 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:1644 November 11, 2005

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

Certificate No: ET3-1644_Nov05 Page 9 of 9

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Accreditation No.: SCS 108

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 cm^3 (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 cm^3 (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

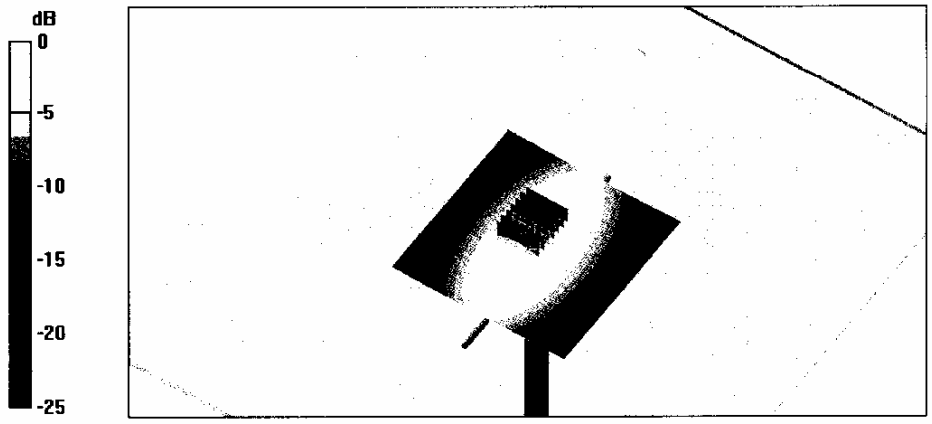
Communication System: CW-835; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL 900 MHz;
Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 42.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

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

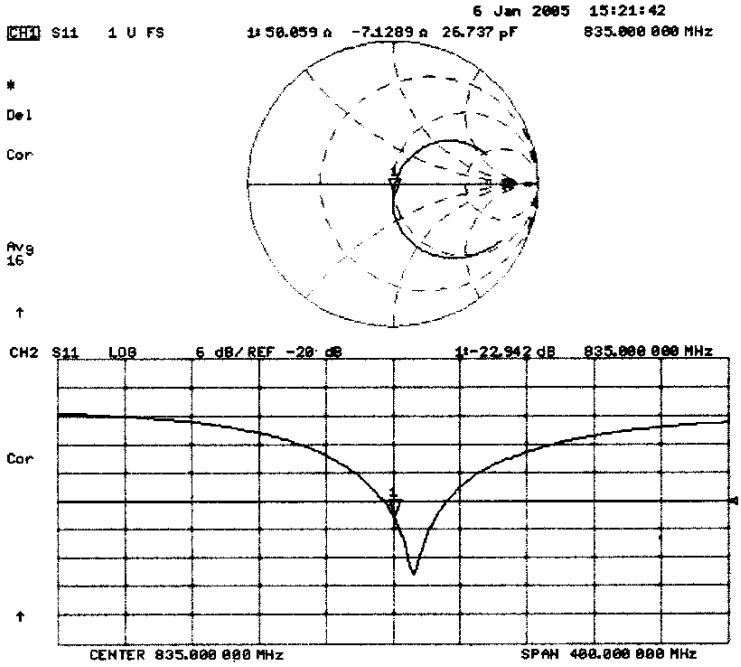
Pin = 250 mW; d = 15 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.44 mW/g

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

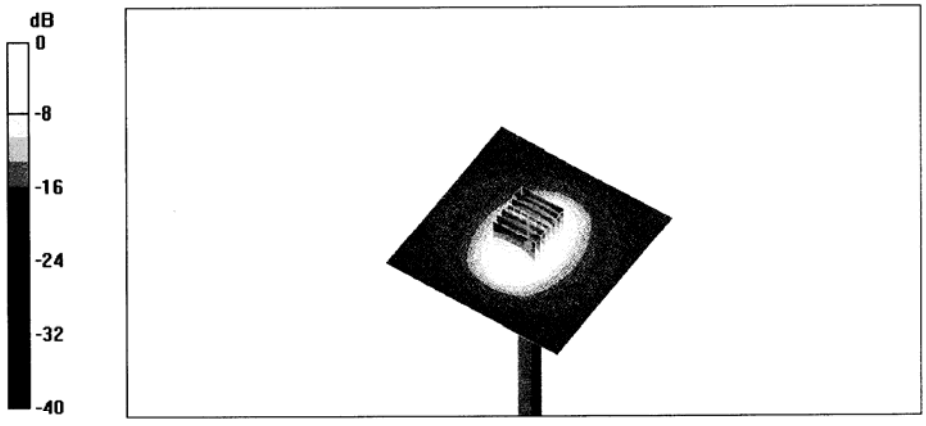
Communication System: CW-1900; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL 1900 MHz;
Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 39.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

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

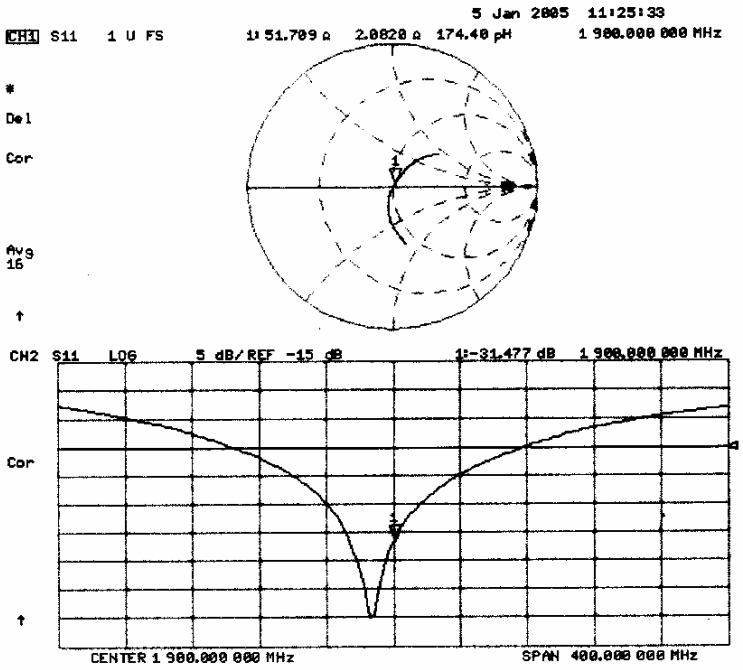
Pin = 250 mW; d = 10 mm/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.6 mW/g

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



APPENDIX E: SAR SET UP PHOTOS

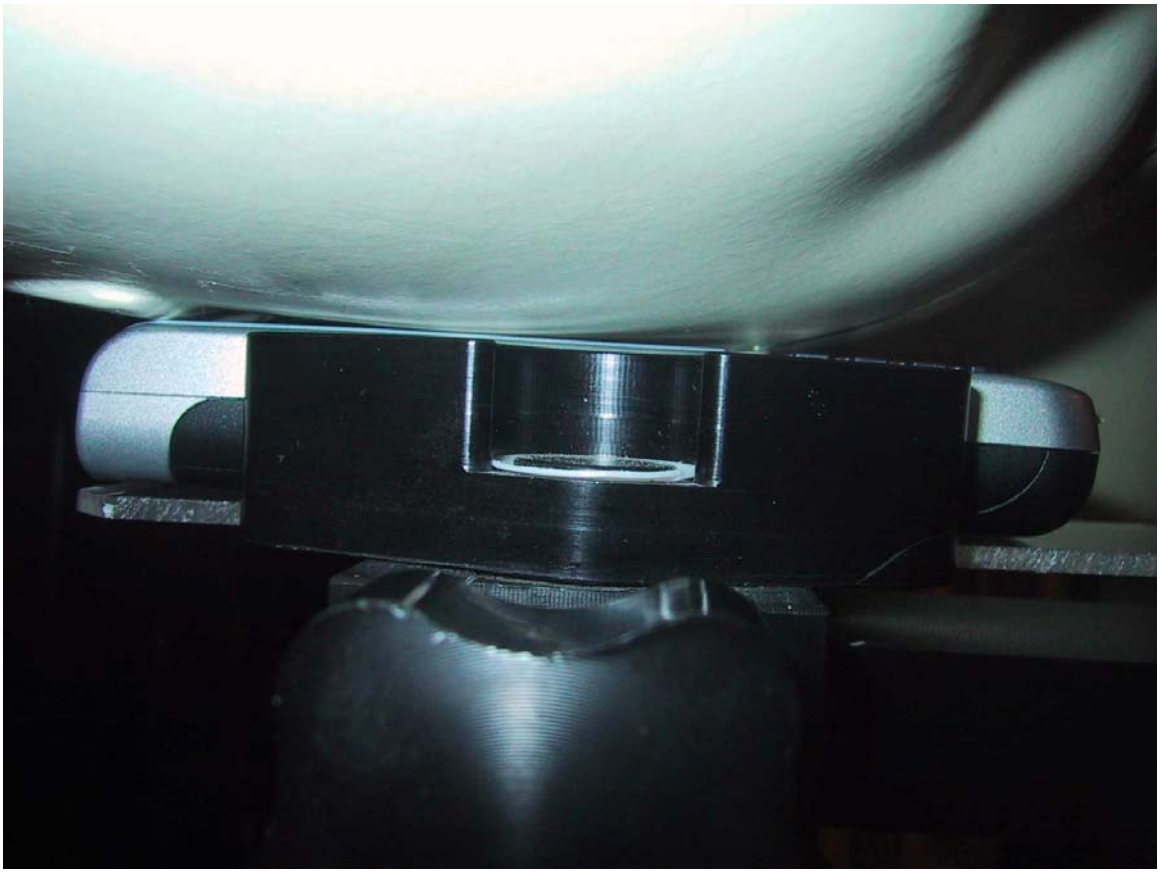


Figure E1. Right touch position

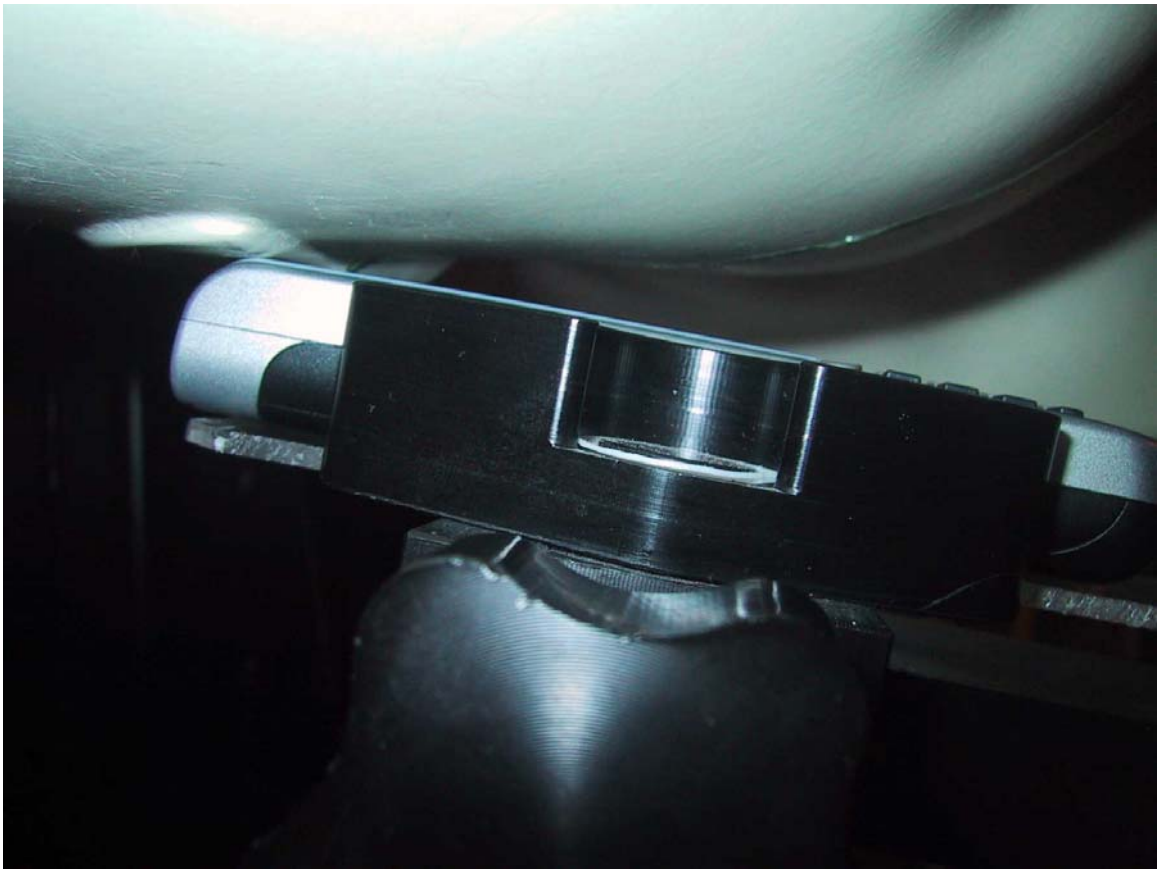
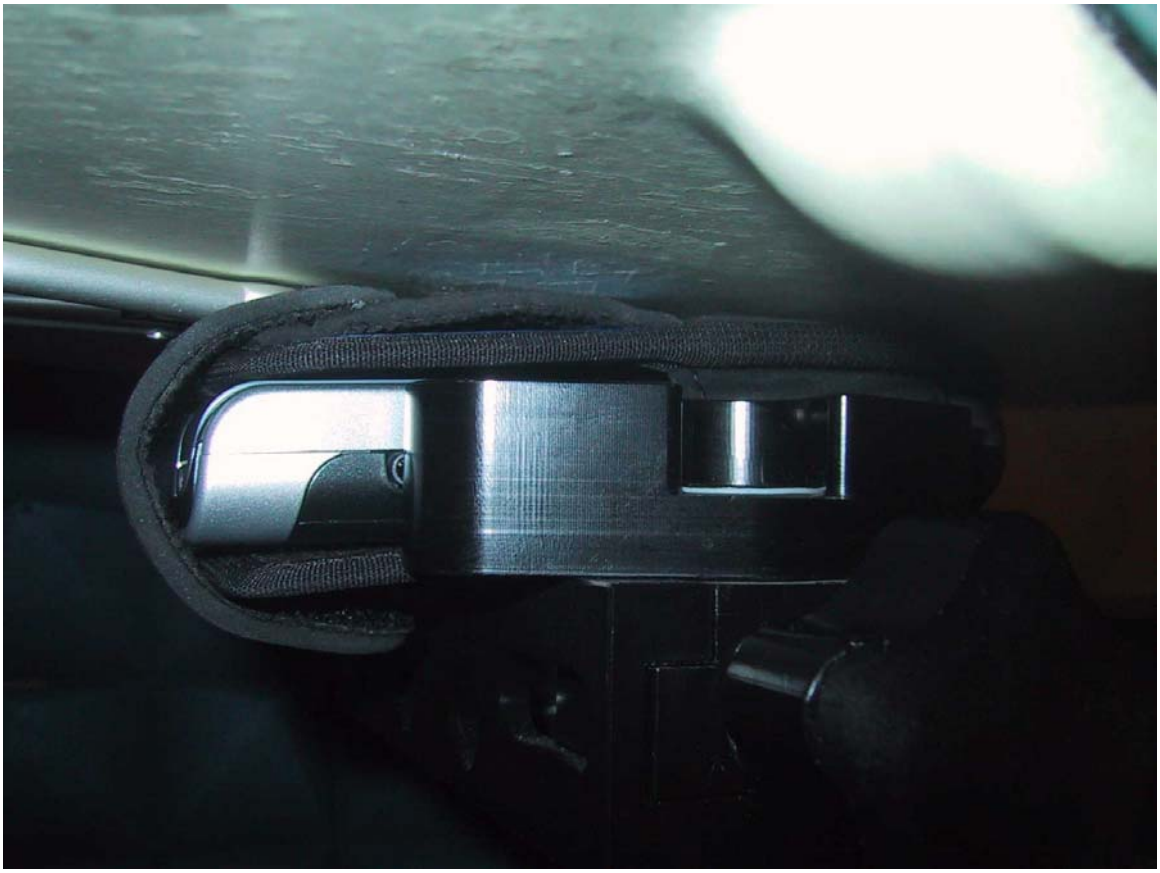


Figure E2. Right tilt position

Figure E3. Left touch position

Figure E4. Left tilt position



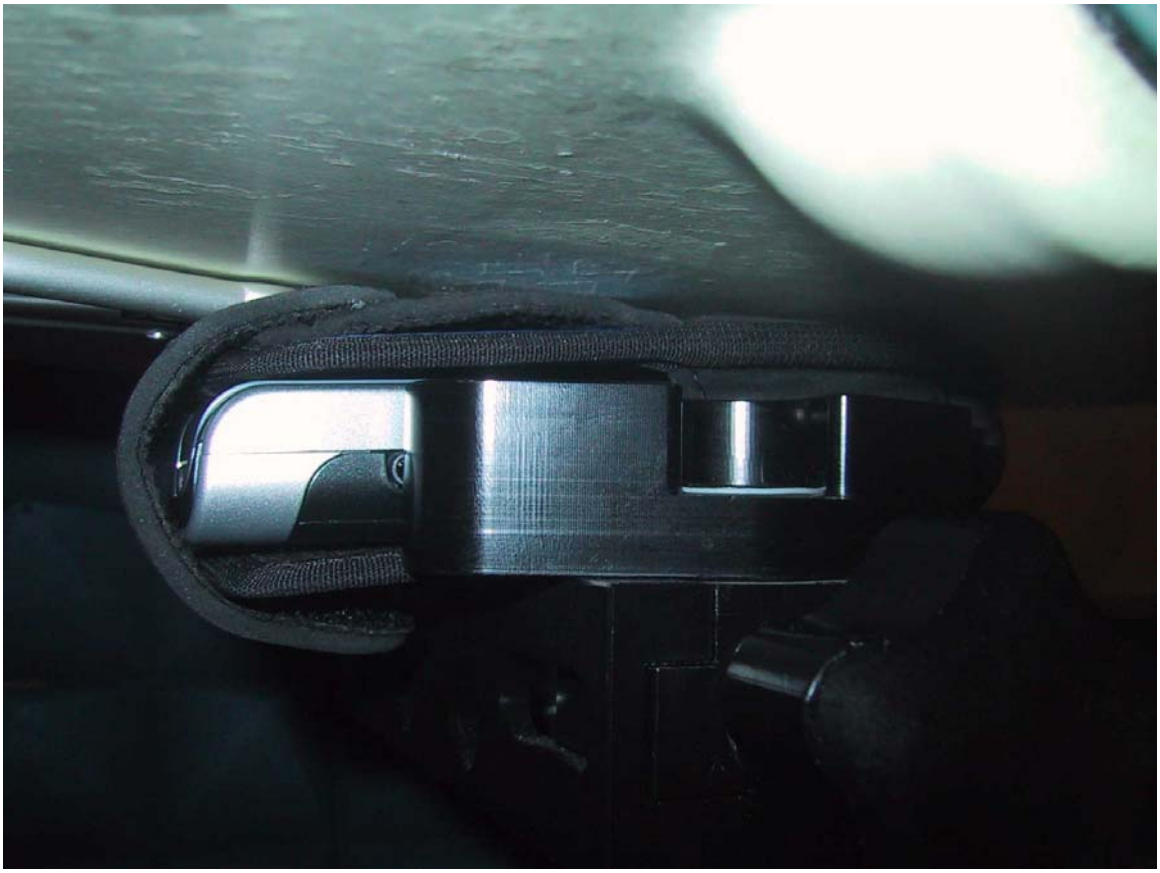


Figure E6. Body worn configuration (Holster 1)

Figure E7. Body worn configuration (Holster 2)

Figure E8. Body worn configuration (Holster 3)

Figure E9. Body worn configuration (Holster 4)

Figure E10. Body worn configuration with BT ON and headset attached (Holster 1)

Figure E12. Body worn configuration (15 mm distance)