

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_PCS Ch810_NB Bottom Touch_GPRS12

DUT: 821323

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:2

Medium: MSL_1900 Medium parameters used: $f = 1910$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch810/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00667 mW/g

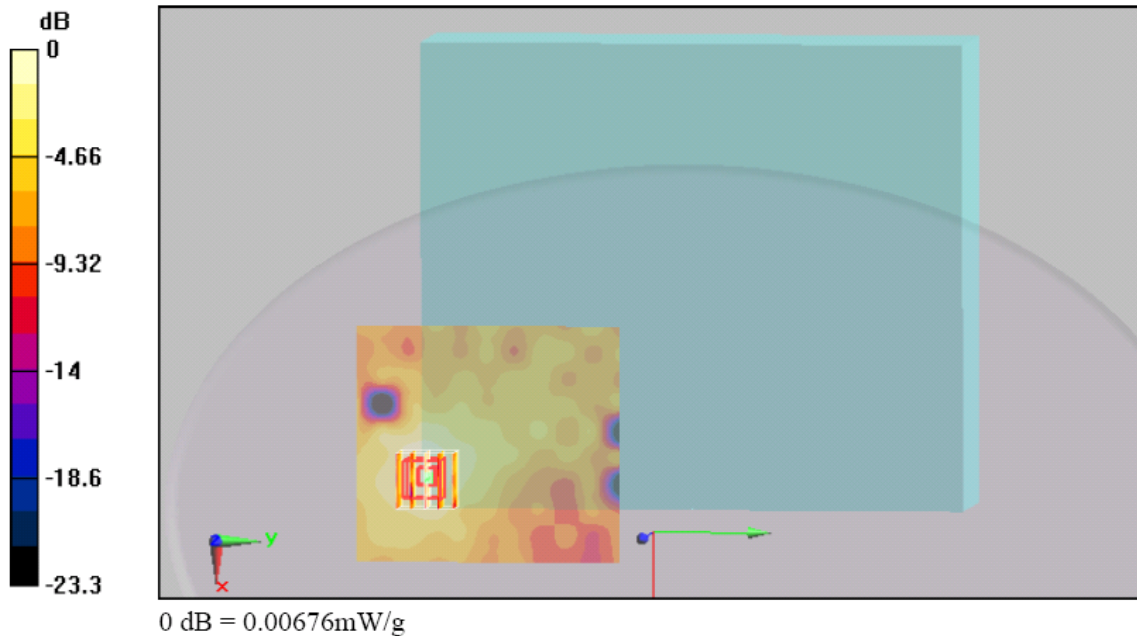
Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.717 V/m; Power Drift = -0.168 dB

Peak SAR (extrapolated) = 0.00985 W/kg

SAR(1 g) = 0.00608 mW/g; SAR(10 g) = 0.00376 mW/g

Maximum value of SAR (measured) = 0.00676 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_PCS Ch810_NB Bottom Touch_GPRS12_Bluetooth

DUT: 821323

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:2

Medium: MSL_1900 Medium parameters used: $f = 1910 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch810/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00676 mW/g

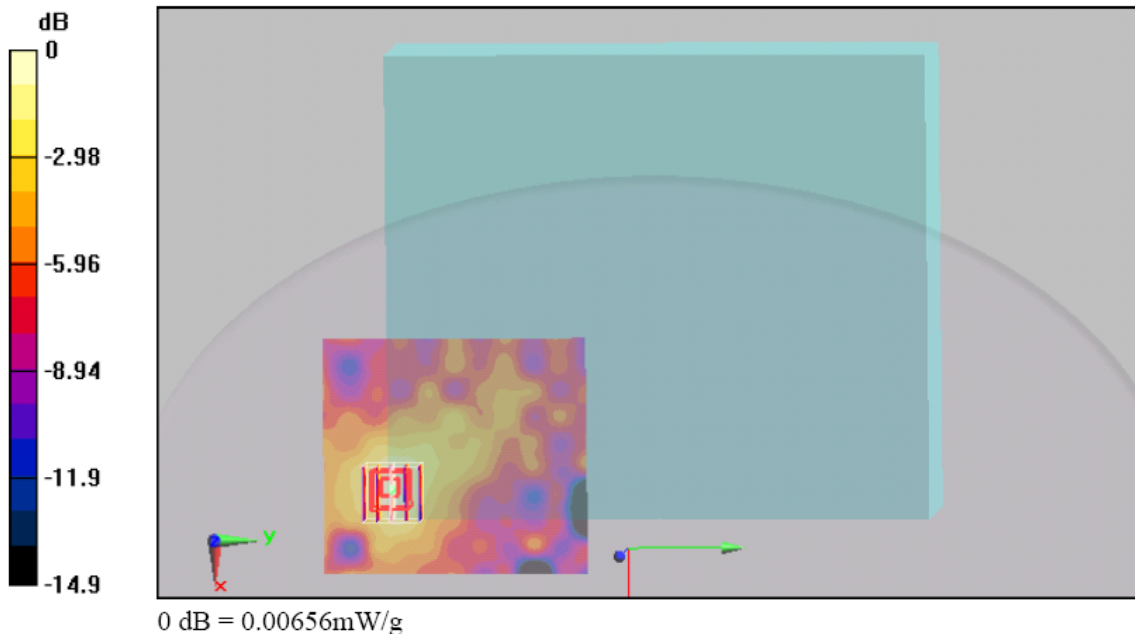
Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.656 V/m; Power Drift = -0.185 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.00601 mW/g; SAR(10 g) = 0.00357 mW/g

Maximum value of SAR (measured) = 0.00656 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_PCS Ch661_NB Bottom Touch_EDGE12

DUT: 821323

Communication System: PCS; Frequency: 1880 MHz; Duty Cycle: 1:2

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.5$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch661/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00463 mW/g

Ch661/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.649 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.015 W/kg

SAR(1 g) = 0.00405 mW/g; SAR(10 g) = 0.000911 mW

Maximum value of SAR (measured) = 0.00446 mW/g

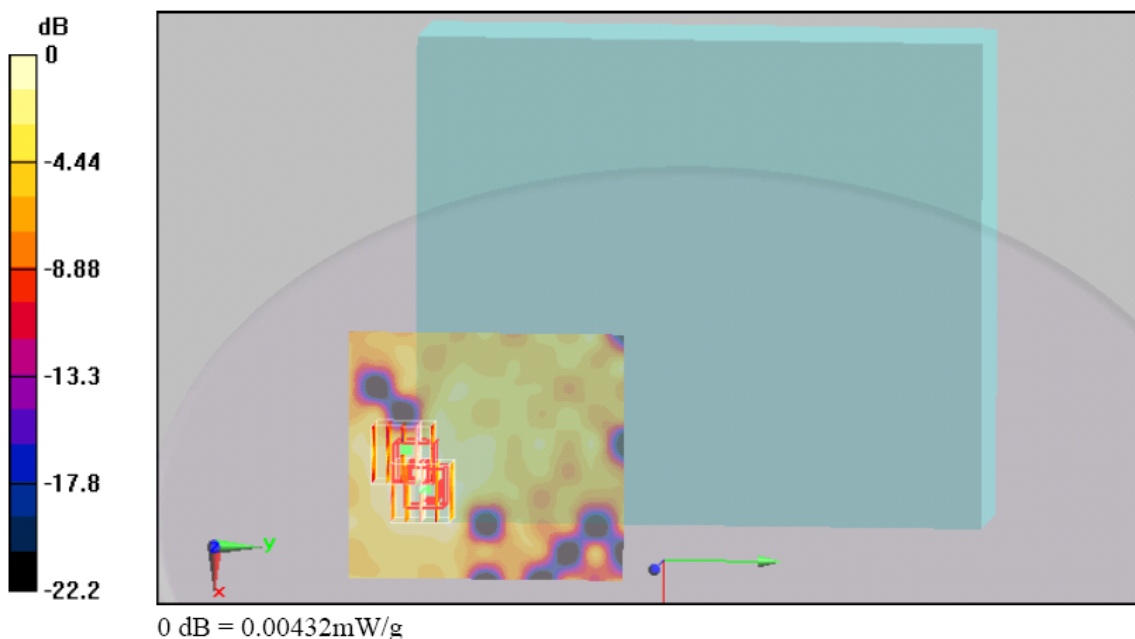
Ch661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.649 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.00914 W/kg

SAR(1 g) = 0.00385 mW/g; SAR(10 g) = 0.002 mW/g

Maximum value of SAR (measured) = 0.00432 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/5

Body_WCDMA Ch4182_NB Bottom Touch_RMC12.2K

DUT: 821323

Communication System: WCDMA; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 836.4$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 56.4$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.8 °C; Liquid Temperature : 21.5 °C

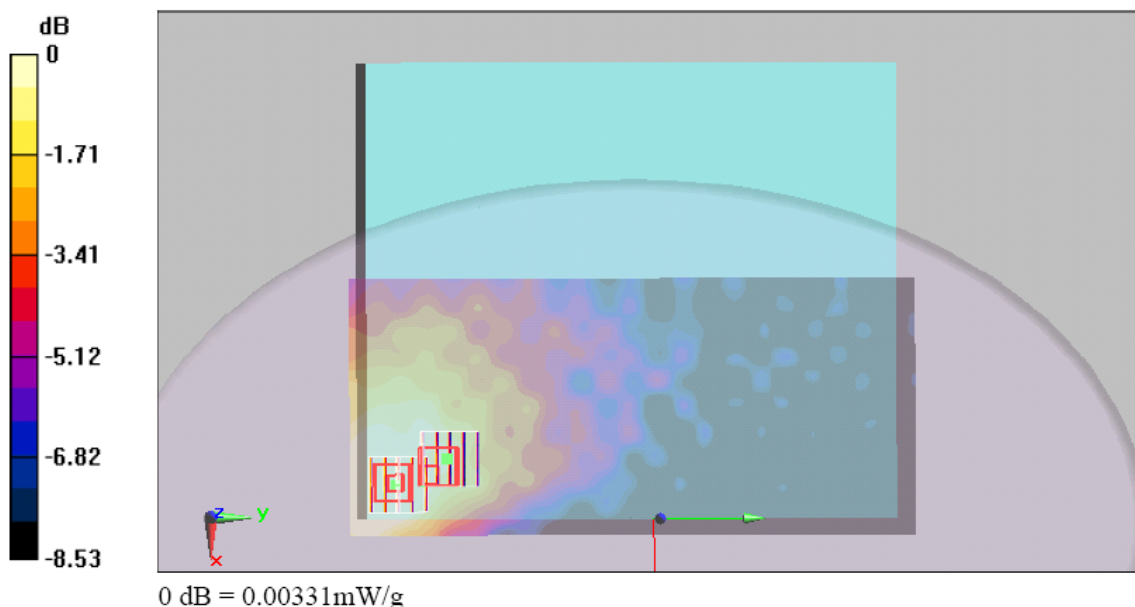
DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch4182/Area Scan (101x221x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.0049 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 0.360 V/m; Power Drift = 0.194 dB
 Peak SAR (extrapolated) = 0.00734 W/kg
SAR(1 g) = 0.00472 mW/g; SAR(10 g) = 0.00316 mW/g
 Maximum value of SAR (measured) = 0.00511 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 0.360 V/m; Power Drift = 0.194 dB
 Peak SAR (extrapolated) = 0.00353 W/kg
SAR(1 g) = 0.00289 mW/g; SAR(10 g) = 0.0022 mW/g
 Maximum value of SAR (measured) = 0.00331 mW/g



Body_WCDMA Ch4182_NB Bottom Touch_RMC144K

DUT: 821323

Communication System: WCDMA; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 836.4 \text{ MHz}$; $\sigma = 0.95 \text{ mho/m}$; $\epsilon_r = 56.4$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.7 °C ; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch4182/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00583 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.382 V/m; Power Drift = 0.198 dB

Peak SAR (extrapolated) = 0.00786 W/kg

SAR(1 g) = 0.00544 mW/g; SAR(10 g) = 0.00359 mW/g

Maximum value of SAR (measured) = 0.00599 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/5

Body_WCDMA Ch4233_NB Bottom Touch_RMC64K

DUT: 821323

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 847$ MHz; $\sigma = 0.958$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.8 °C; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch4233/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00612 mW/g

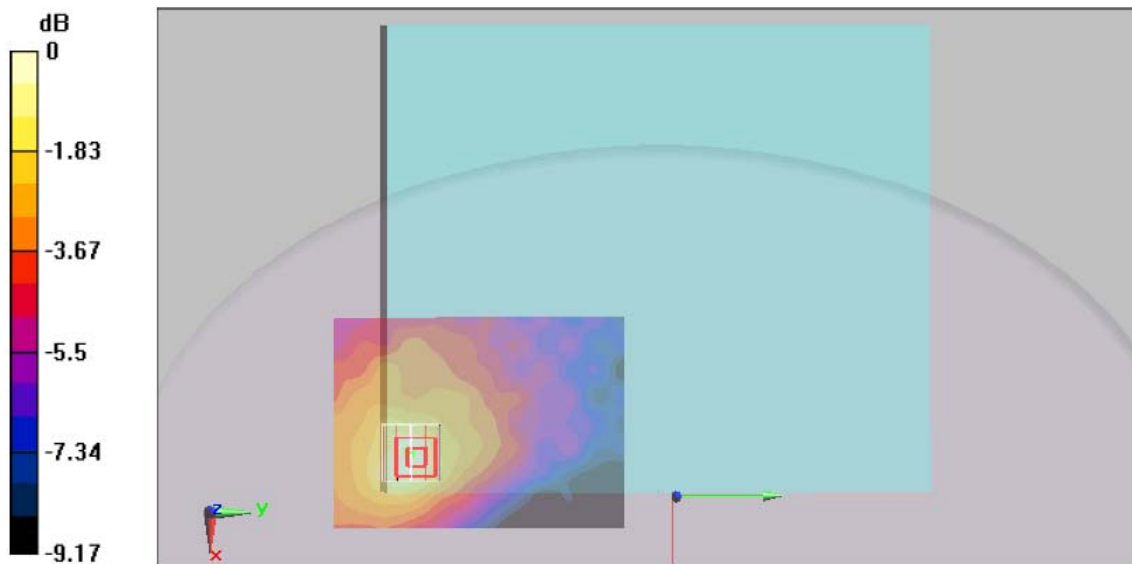
Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.424 V/m; Power Drift = -0.119 dB

Peak SAR (extrapolated) = 0.00879 W/kg

SAR(1 g) = 0.00554 mW/g; SAR(10 g) = 0.00356 mW/g

Maximum value of SAR (measured) = 0.00586 mW/g



0 dB = 0.00586mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/5

Body_WCDMA Ch4233_NB Bottom Touch_RMC64K_Bluetooth**DUT: 821323**

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 847$ MHz; $\sigma = 0.958$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.8 °C ; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch4233/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00603 mW/g

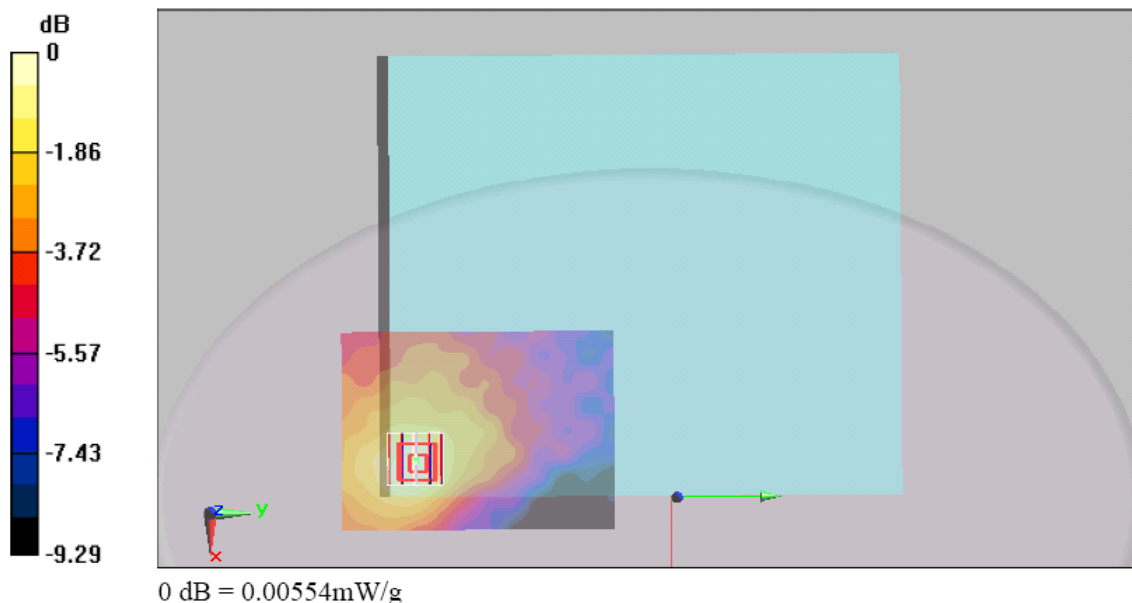
Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.656 V/m; Power Drift = -0.136 dB

Peak SAR (extrapolated) = 0.00793 W/kg

SAR(1 g) = 0.00527 mW/g; SAR(10 g) = 0.00354 mW/g

Maximum value of SAR (measured) = 0.00554 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/5

Body_WCDMA Ch4182_NB Bottom Touch_RMC384K

DUT: 821323

Communication System: WCDMA; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 836.4$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 56.4$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.8 °C ; Liquid Temperature : 21.5 °C

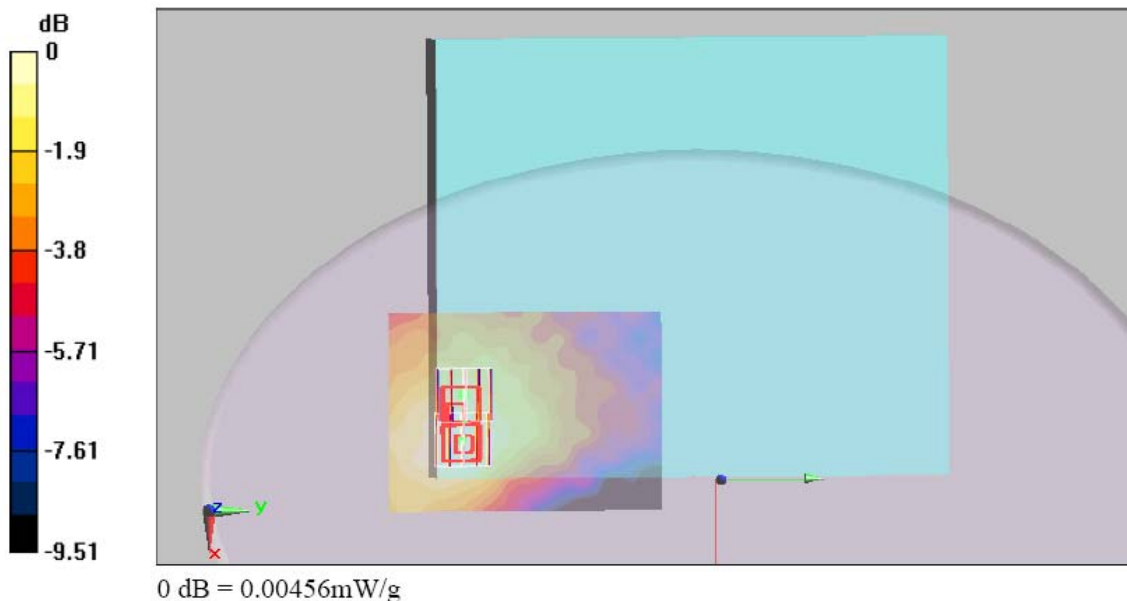
DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch4182/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.00578 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 0.417 V/m; Power Drift = -0.122 dB
 Peak SAR (extrapolated) = 0.00797 W/kg
SAR(1 g) = 0.00541 mW/g; SAR(10 g) = 0.00366 mW/g
 Maximum value of SAR (measured) = 0.00583 mW/g

Ch4182/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 0.417 V/m; Power Drift = -0.122 dB
 Peak SAR (extrapolated) = 0.00541 W/kg
SAR(1 g) = 0.00399 mW/g; SAR(10 g) = 0.00284 mW/g
 Maximum value of SAR (measured) = 0.00456 mW/g



Body_WCDMA Ch4182_NB Bottom Touch_RMC12.2K+HSDPA

DUT: 821323

Communication System: WCDMA; Frequency: 836.4 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 836.4$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 56.4$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.8 °C ; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch4182/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00598 mW/g

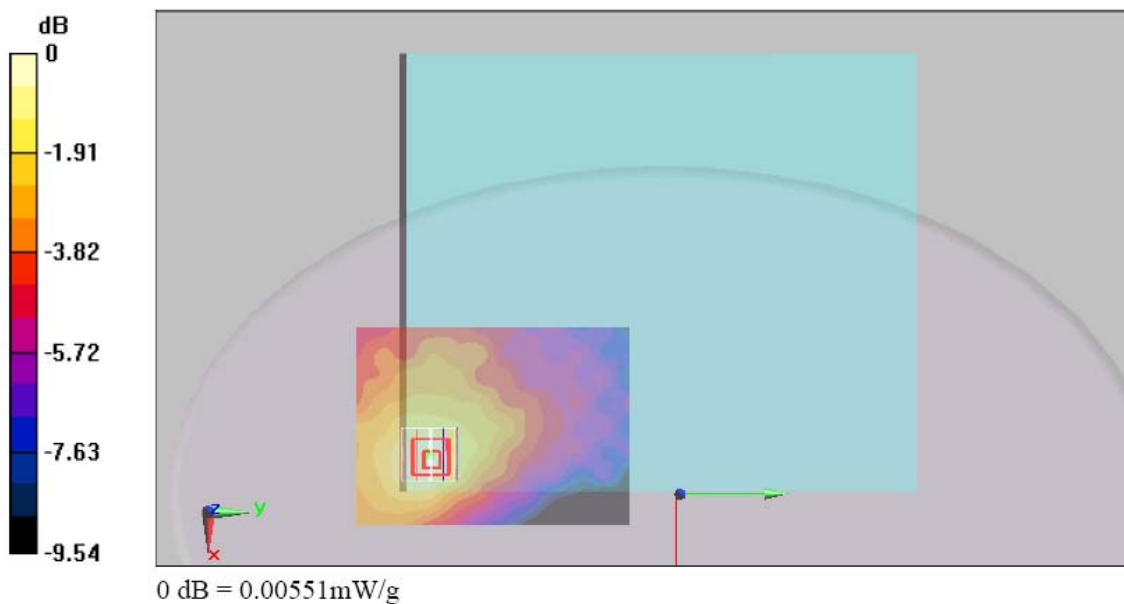
Ch4182/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.595 V/m; Power Drift = -0.108 dB

Peak SAR (extrapolated) = 0.00778 W/kg

SAR(1 g) = 0.00518 mW/g; SAR(10 g) = 0.00345 mW/g

Maximum value of SAR (measured) = 0.00551 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_WCDMA Ch9400_NB Bottom Touch_RMC12.2K

DUT: 821323

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.5$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch9400/Area Scan (91x231x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00649 mW/g

Ch9400/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.754 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 0.00887 W/kg

SAR(1 g) = 0.0054 mW/g; SAR(10 g) = 0.00301 mW/g

Maximum value of SAR (measured) = 0.00578 mW/g

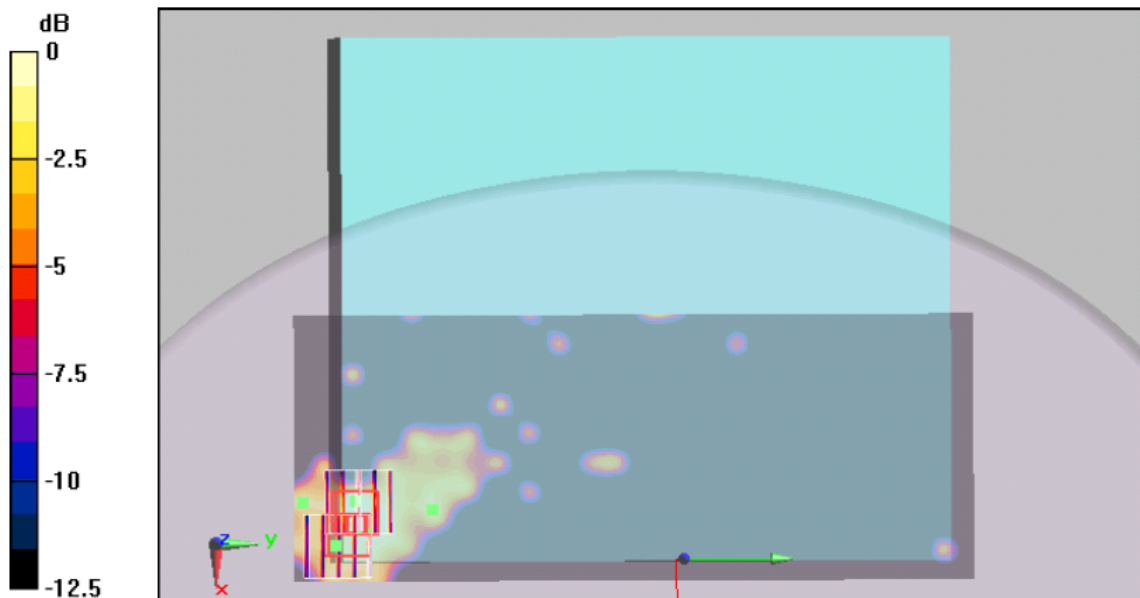
Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.754 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 0.014 W/kg

SAR(1 g) = 0.00519 mW/g; SAR(10 g) = 0.00275 mW/g

Maximum value of SAR (measured) = 0.00583 mW/g



0 dB = 0.00583mW/g

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_WCDMA Ch9400_NB Bottom Touch_RMC144K

DUT: 821323

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.5$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch9400/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00667 mW/g

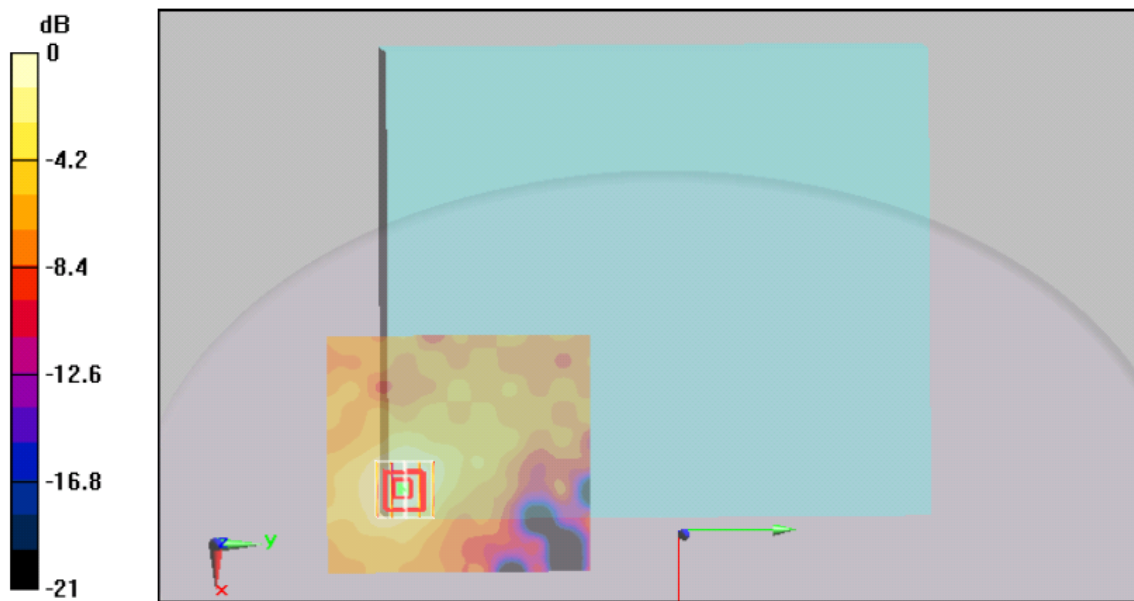
Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.329 V/m; Power Drift = -0.175 dB

Peak SAR (extrapolated) = 0.00813 W/kg

SAR(1 g) = 0.00576 mW/g; SAR(10 g) = 0.00338 mW/g

Maximum value of SAR (measured) = 0.00641 mW/g



0 dB = 0.00641mW/g

Body_WCDMA Ch9538_NB Bottom Touch_RMC64K

DUT: 821323

Communication System: WCDMA; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1908$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch9538/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00926 mW/g

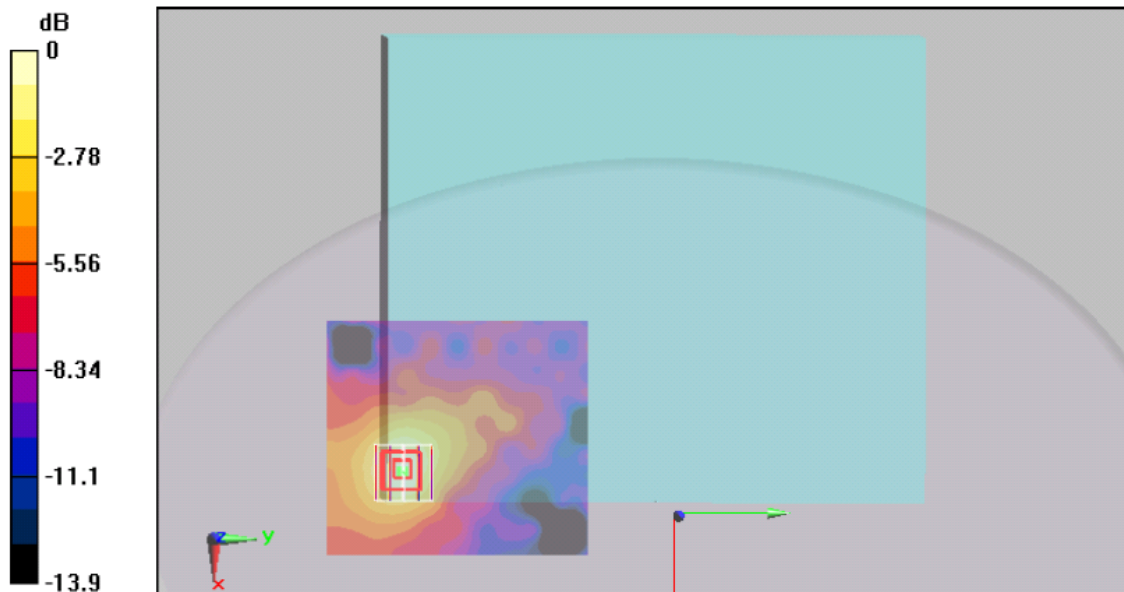
Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.698 V/m; Power Drift = -0.105 dB

Peak SAR (extrapolated) = 0.014 W/kg

SAR(1 g) = 0.00757 mW/g; SAR(10 g) = 0.00467 mW/g

Maximum value of SAR (measured) = 0.00825 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_WCDMA Ch9538_NB Bottom Touch_RMC64K_Bluetooth

DUT: 821323

Communication System: WCDMA; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1908 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch9538/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00846 mW/g

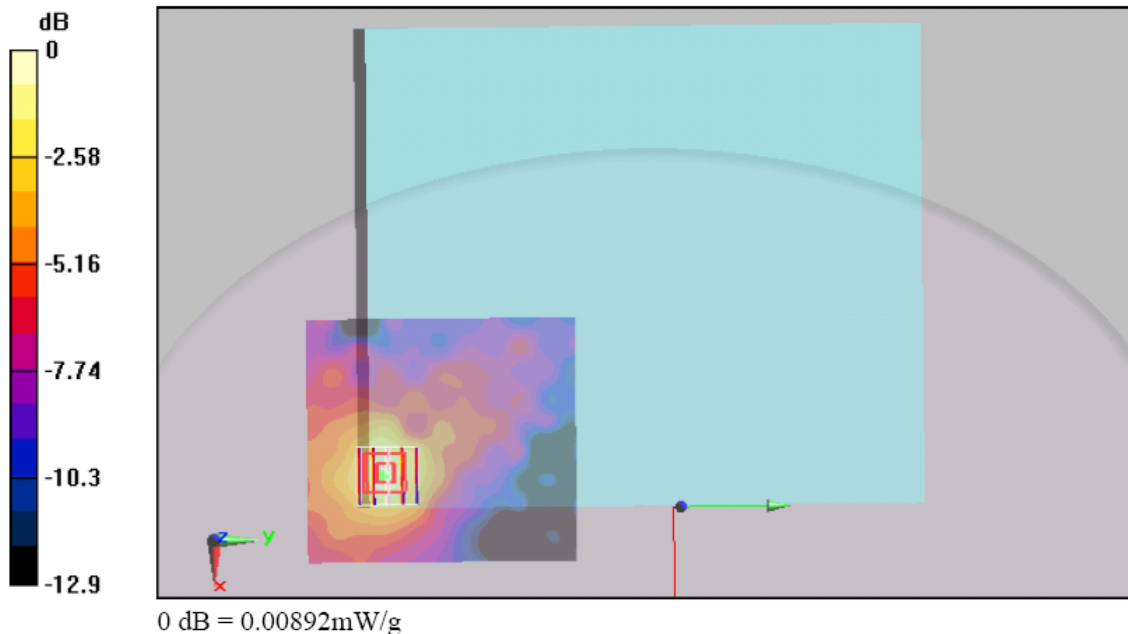
Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.427 V/m; Power Drift = -0.173 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.00787 mW/g; SAR(10 g) = 0.00493 mW/g

Maximum value of SAR (measured) = 0.00892 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_WCDMA Ch9400_NB Bottom Touch_RMC384K

DUT: 821323

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.5$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch9400/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00673 mW/g

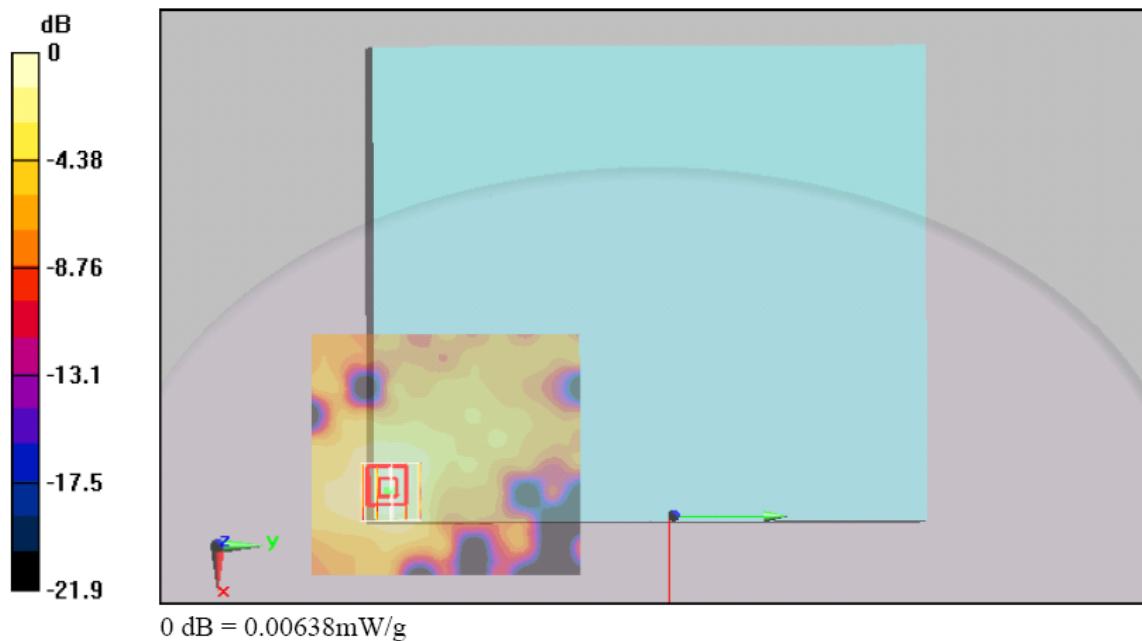
Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.671 V/m; Power Drift = -0.196 dB

Peak SAR (extrapolated) = 0.010 W/kg

SAR(1 g) = 0.00586 mW/g; SAR(10 g) = 0.0036 mW/g

Maximum value of SAR (measured) = 0.00638 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_WCDMA Ch9400_NB Bottom Touch_RMC12.2K+HSDPA

DUT: 821323

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1880$ MHz; $\sigma = 1.5$ mho/m; $\epsilon_r = 51.5$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch9400/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00649 mW/g

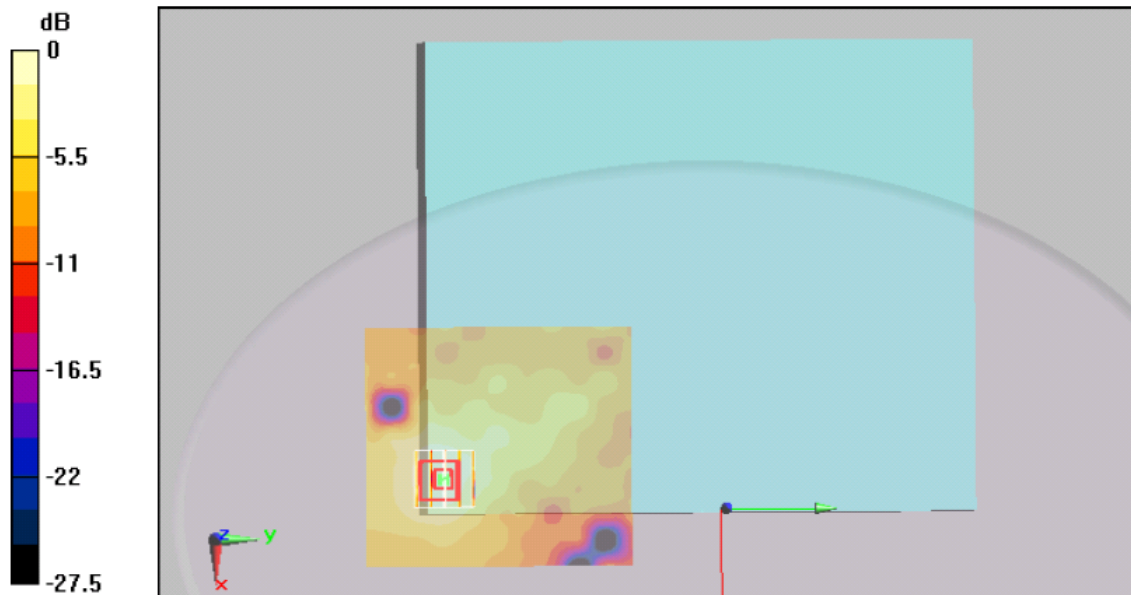
Ch9400/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.666 V/m; Power Drift = -0.108 dB

Peak SAR (extrapolated) = 0.00894 W/kg

SAR(1 g) = 0.00564 mW/g; SAR(10 g) = 0.00353 mW/g

Maximum value of SAR (measured) = 0.0064 mW/g



0 dB = 0.0064mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/4

Body_GSM850 Ch251_NB Bottom Touch_GPRS10_Bluetooth_2D

DUT: 821323

Communication System: GSM850; Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium: MSL_850 Medium parameters used: $f = 849$ MHz; $\sigma = 0.959$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch251/Area Scan (91x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00851 mW/g

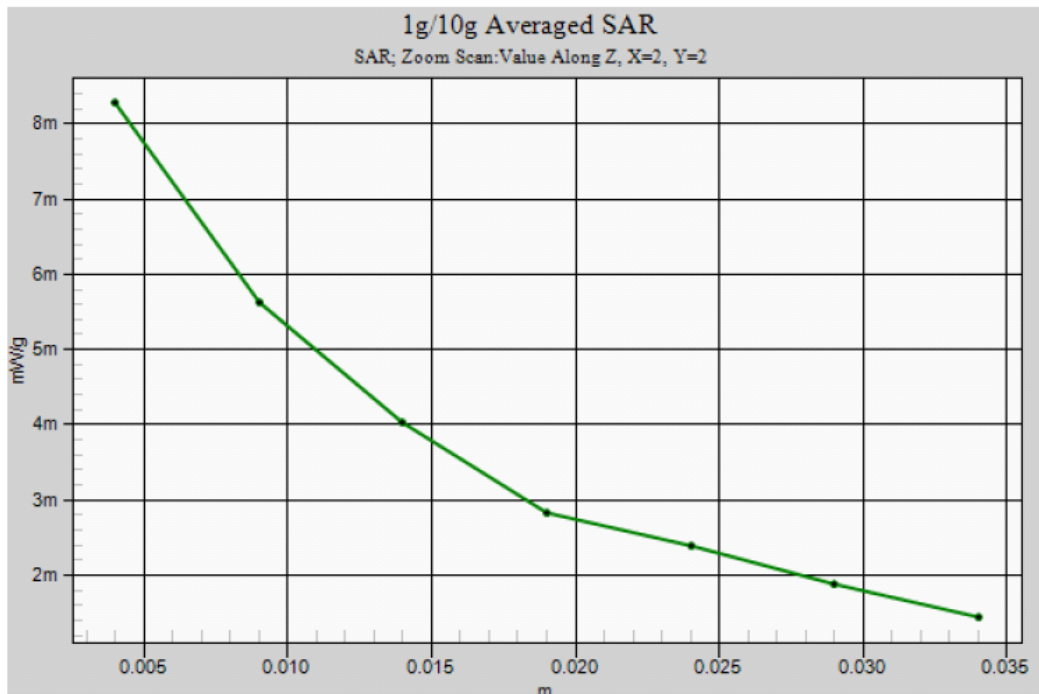
Ch251/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.730 V/m; Power Drift = -0.115 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.00763 mW/g; SAR(10 g) = 0.00511 mW/g

Maximum value of SAR (measured) = 0.00828 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_PCS Ch810_NB Bottom Touch_GPRS12_2D

DUT: 821323

Communication System: PCS; Frequency: 1909.8 MHz; Duty Cycle: 1:2

Medium: MSL_1900 Medium parameters used: $f = 1910$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.6 °C; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch810/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00667 mW/g

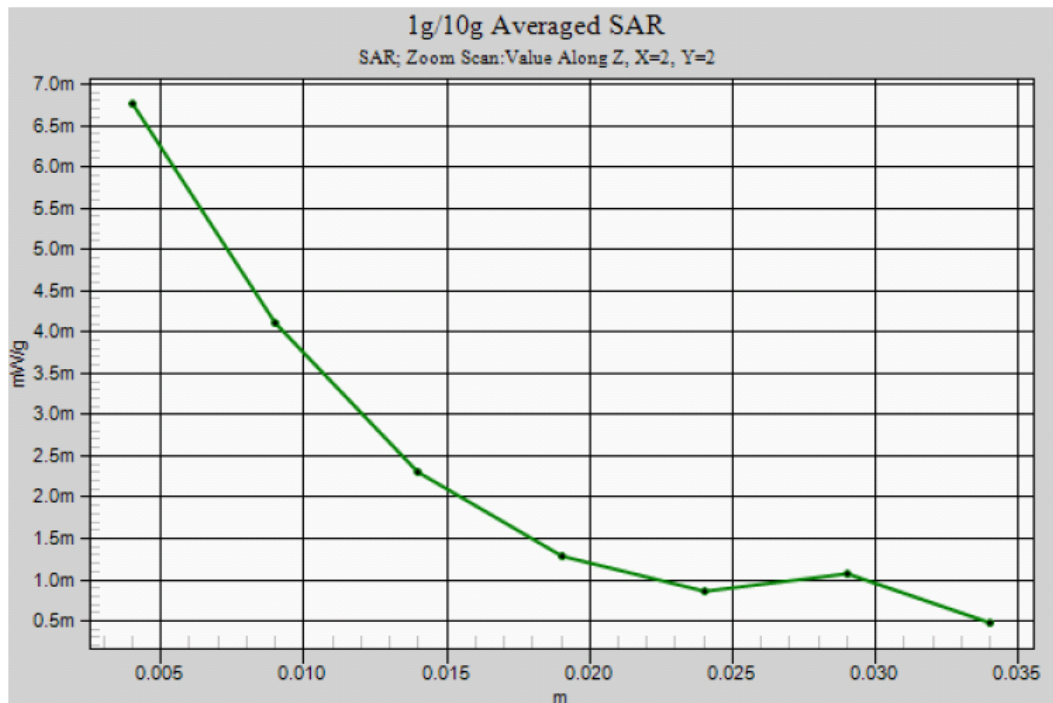
Ch810/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.717 V/m; Power Drift = -0.168 dB

Peak SAR (extrapolated) = 0.00985 W/kg

SAR(1 g) = 0.00608 mW/g; SAR(10 g) = 0.00376 mW/g

Maximum value of SAR (measured) = 0.00676 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/5

Body_WCDMA Ch4233_NB Bottom Touch_RMC64K_2D

DUT: 821323

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1

Medium: MSL_850 Medium parameters used: $f = 847$ MHz; $\sigma = 0.958$ mho/m; $\epsilon_r = 56.3$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.8 °C; Liquid Temperature : 21.5 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(6.37, 6.37, 6.37); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch4233/Area Scan (81x111x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00612 mW/g

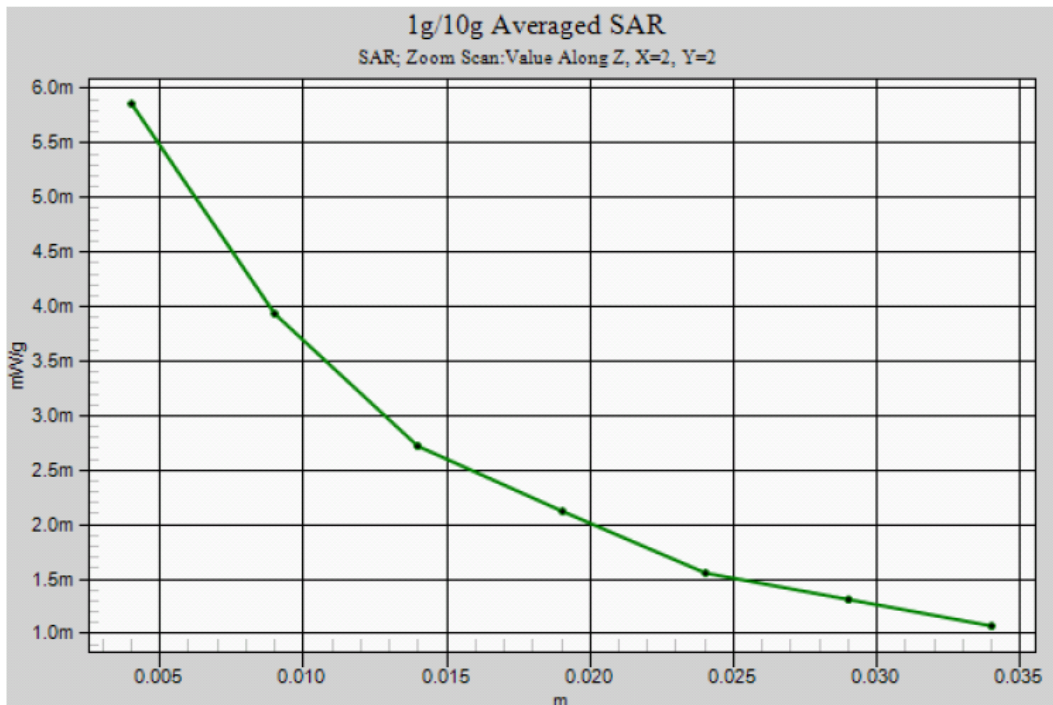
Ch4233/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.424 V/m; Power Drift = -0.119 dB

Peak SAR (extrapolated) = 0.00879 W/kg

SAR(1 g) = 0.00554 mW/g; SAR(10 g) = 0.00356 mW/g

Maximum value of SAR (measured) = 0.00586 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/3/6

Body_WCDMA Ch9538_NB Bottom Touch_RMC64K_Bluetooth_2D

DUT: 821323

Communication System: WCDMA; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: MSL_1900 Medium parameters used: $f = 1908$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.4$; $\rho = 1000$ kg/m³

Ambient Temperature : 22.5 °C ; Liquid Temperature : 21.0 °C

DASY5 Configuration:

- Probe: ET3DV6 - SN1788; ConvF(4.75, 4.75, 4.75); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn577; Calibrated: 2007/11/16
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: 1029
- Measurement SW: DASY5, V5.0 Build 91; SEMCAD X Version 12.4 Build 52

Ch9538/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.00846 mW/g

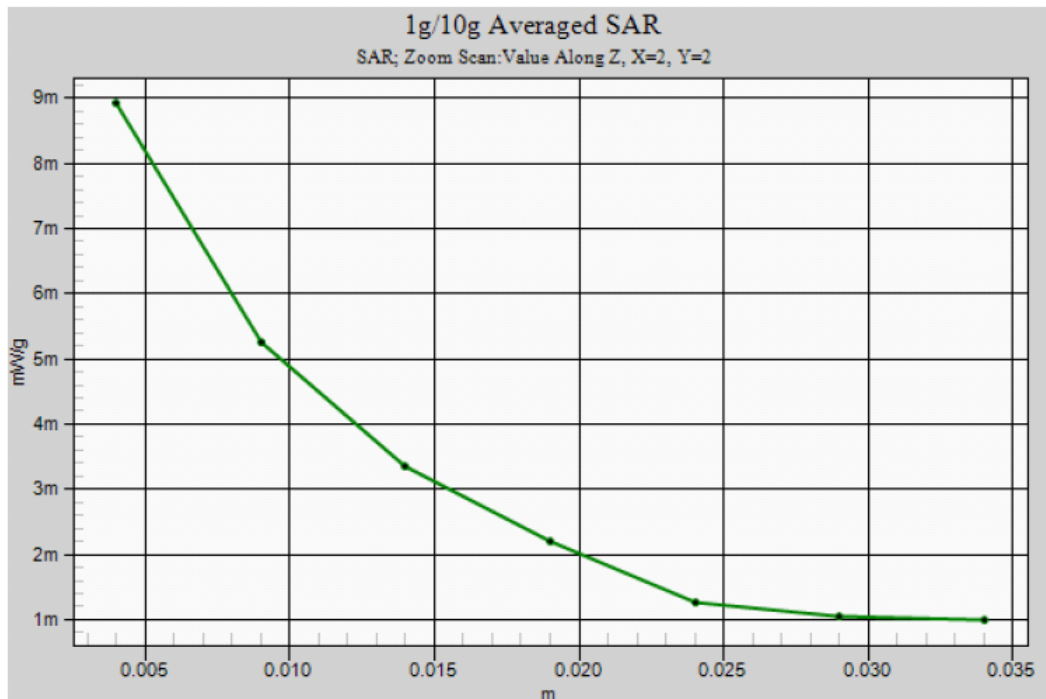
Ch9538/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.427 V/m; Power Drift = -0.173 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.00787 mW/g; SAR(10 g) = 0.00493 mW/g

Maximum value of SAR (measured) = 0.00892 mW/g





Appendix C – Calibration Data

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



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Accreditation No.: SCS 108

Client Sporton (Auden)

Certificate No: D835V2-499_Mar06

CALIBRATION CERTIFICATE

Object: D835V2 - SN: 499
Calibration procedure(s): QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date: March 15, 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)

Table with 4 columns: Primary Standards, ID #, Cal Date (Calibrated by, Certificate No.), Scheduled Calibration. Includes rows for Power meter EPM-442A, Power sensor HP 8481A, Reference 20 dB Attenuator, Reference 10 dB Attenuator, Reference Probe ET3DV6, DAE4, Secondary Standards, MY41092317, RF generator Agilent E4421B, Network Analyzer HP 8753E.

Calibrated by: Judith Müller, Laboratory Technician
Approved by: Katja Pokovic, Technical Manager

Issued: March 16, 2006

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



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

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	V4.7
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	42.1 ± 6 %	0.94mho/m ± 6 %
Head TSL temperature during test	(22.2 ± 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	2.35 mW / g
SAR normalized	normalized to 1W	9.40 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	9.24 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.53 mW / g
SAR normalized	normalized to 1W	6.12 mW / g
SAR for nominal Head TSL parameters ¹	normalized to 1W	6.07 mW / g ± 16.5 % (k=2)

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



Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	56.8 ± 6 %	0.98 mho/m ± 6 %
Body TSL temperature during test	(21.4 ± 0.2) °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	condition	
SAR measured	250 mW input power	2.45 mW / g
SAR normalized	normalized to 1W	9.80 mW / g
SAR for nominal Body TSL parameters ²	normalized to 1W	9.91 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 mW / g
SAR normalized	normalized to 1W	6.48 mW / g
SAR for nominal Body TSL parameters ²	normalized to 1W	6.55 mW / g ± 16.5 % (k=2)

² Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

DASY4 Validation Report for Head TSL

Date/Time: 15.03.2006 12:51:44

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:499

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL U10 BB;

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.942 \text{ mho/m}$; $\epsilon_r = 42.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(6.09, 6.09, 6.09); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 14; Postprocessing SW: SEMCAD, V1.8 Build 165

Pin = 250 mW; d = 10 mm/Area Scan (71x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 2.54 mW/g

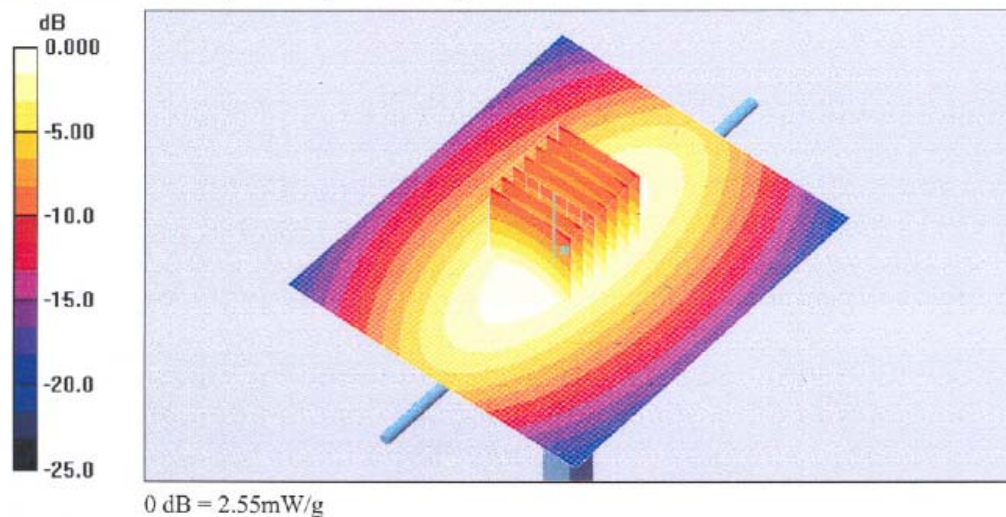
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.7 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 3.53 W/kg

SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.53 mW/g

Maximum value of SAR (measured) = 2.55 mW/g





Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.1 Ω - 2.9 j Ω
Return Loss	- 29.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.9 Ω - 5.1 j Ω
Return Loss	- 24.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.391ns
----------------------------------	---------

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.

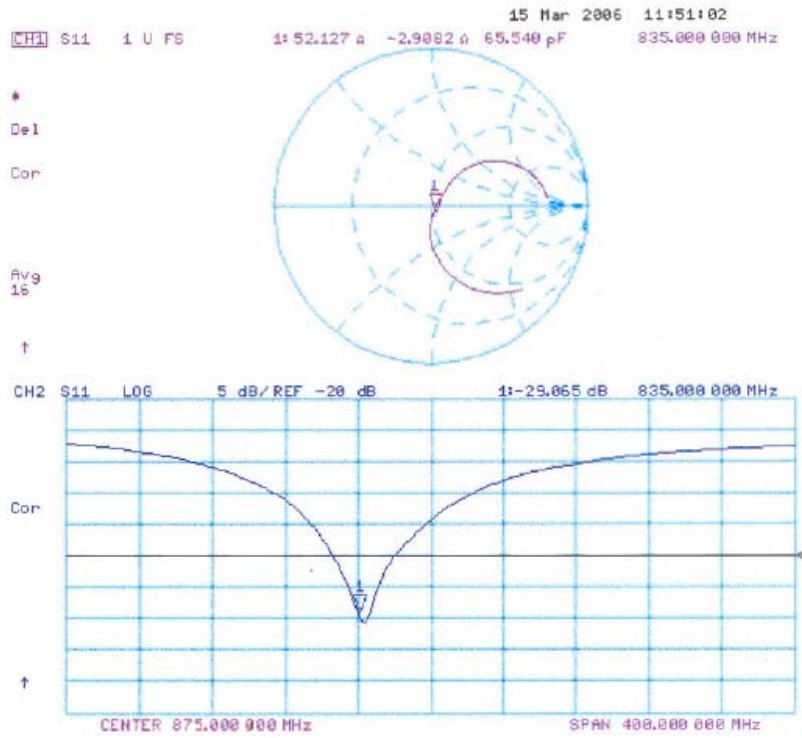
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 10, 2003



Impedance Measurement Plot for Head TSL



DASY4 Validation Report for Body TSL

Date/Time: 14.03.2006 12:37:15

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:499

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: MSL U10;

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.972 \text{ mho/m}$; $\epsilon_r = 56.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1507 (HF); ConvF(5.84, 5.84, 5.84); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; ;
- Measurement SW: DASY4, V4.7 Build 14; Postprocessing SW: SEMCAD, V1.8 Build 165

Pin = 250 mW; d = 10 mm/Area Scan (71x81x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 2.63 mW/g

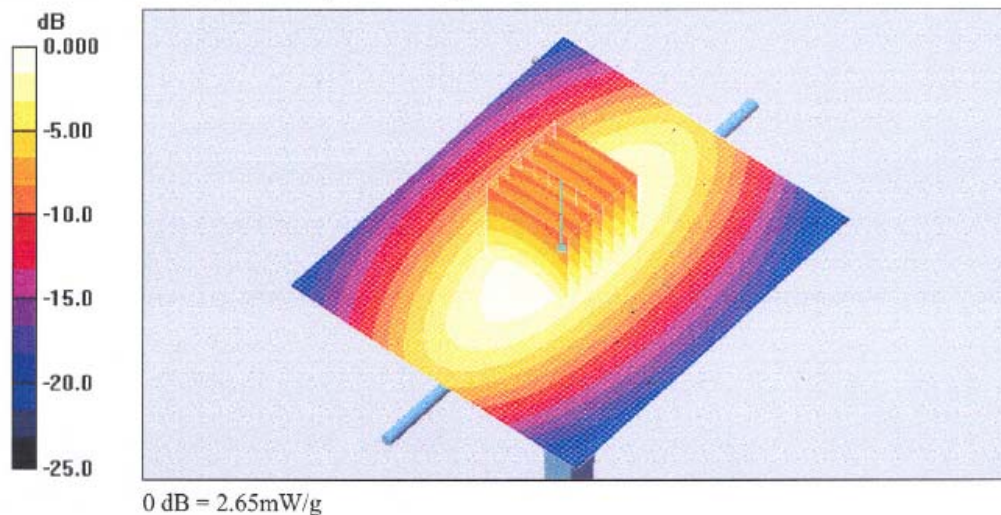
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 53.3 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 3.51 W/kg

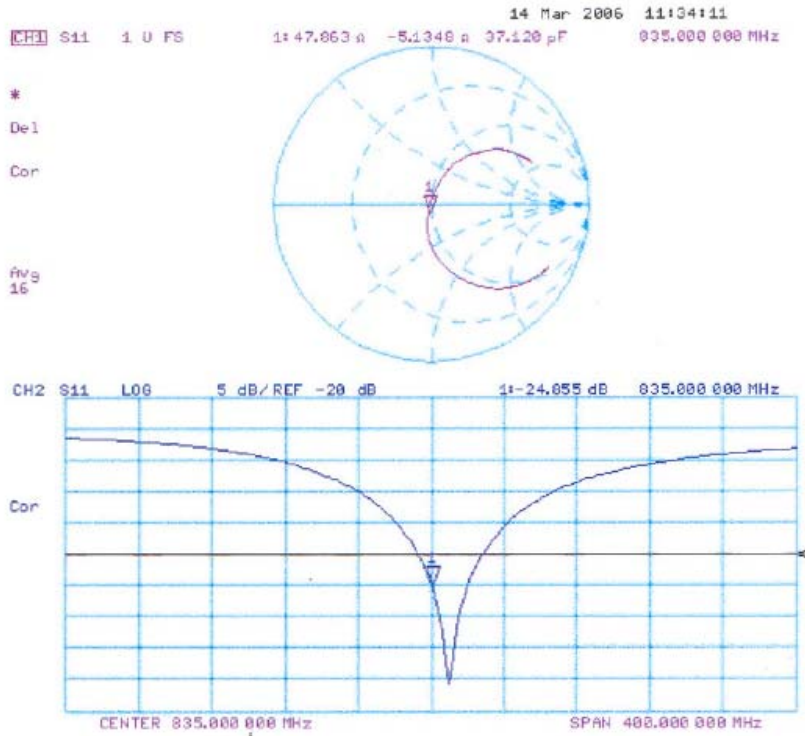
SAR(1 g) = 2.45 mW/g; SAR(10 g) = 1.62 mW/g

Maximum value of SAR (measured) = 2.65 mW/g





Impedance Measurement Plot Body TSL





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Accreditation No.: SCS 108

Client Sporton (Auden)

Certificate No: D1900V2-5d041_Mar06

CALIBRATION CERTIFICATE
Object: D1900V2 - SN: 5d041
Calibration procedure(s): QA CAL-05.v6
Calibration date: March 21, 2006
Condition of the calibrated item: In Tolerance
This calibration certificate documents the traceability to national standards...
All calibrations have been conducted in the closed laboratory facility...
Calibration Equipment used (M&TE critical for calibration)
Primary Standards table with columns: ID #, Cal Date, Scheduled Calibration
Secondary Standards table with columns: ID #, Check Date, Scheduled Check
Calibrated by: Judith Müller, Laboratory Technician
Approved by: Katja Pokovic, Technical Manager
Issued: March 22, 2006



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



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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.