UMTS Band II with Stereo Headset 2 Towards Ground High(Battery 1)

Date/Time: 8/18/2012 5:48:12 PM

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

Medium parameters used: f = 1908 MHz; σ = 1.52 mho/m; $ε_r$ = 53.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: ES3DV3 - SN3189; ConvF(4.36, 4.36, 4.36); Calibrated: 6/22/2012

Electronics: DAE4 Sn1317; Calibrated: 1/23/2012

Phantom: SAM2; Type: SAM; Serial: TP-1524

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Ground High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.634 mW/g

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

Reference Value = 12.1 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 0.876 W/kg

SAR(1 g) = 0.551 mW/g; SAR(10 g) = 0.350 mW/g

Maximum value of SAR (measured) = 0.596 mW/g

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

Reference Value = 12.1 V/m; Power Drift = 0.035 dB

Peak SAR (extrapolated) = 0.911 W/kg

SAR(1 g) = 0.563 mW/g; SAR(10 g) = 0.353 mW/g

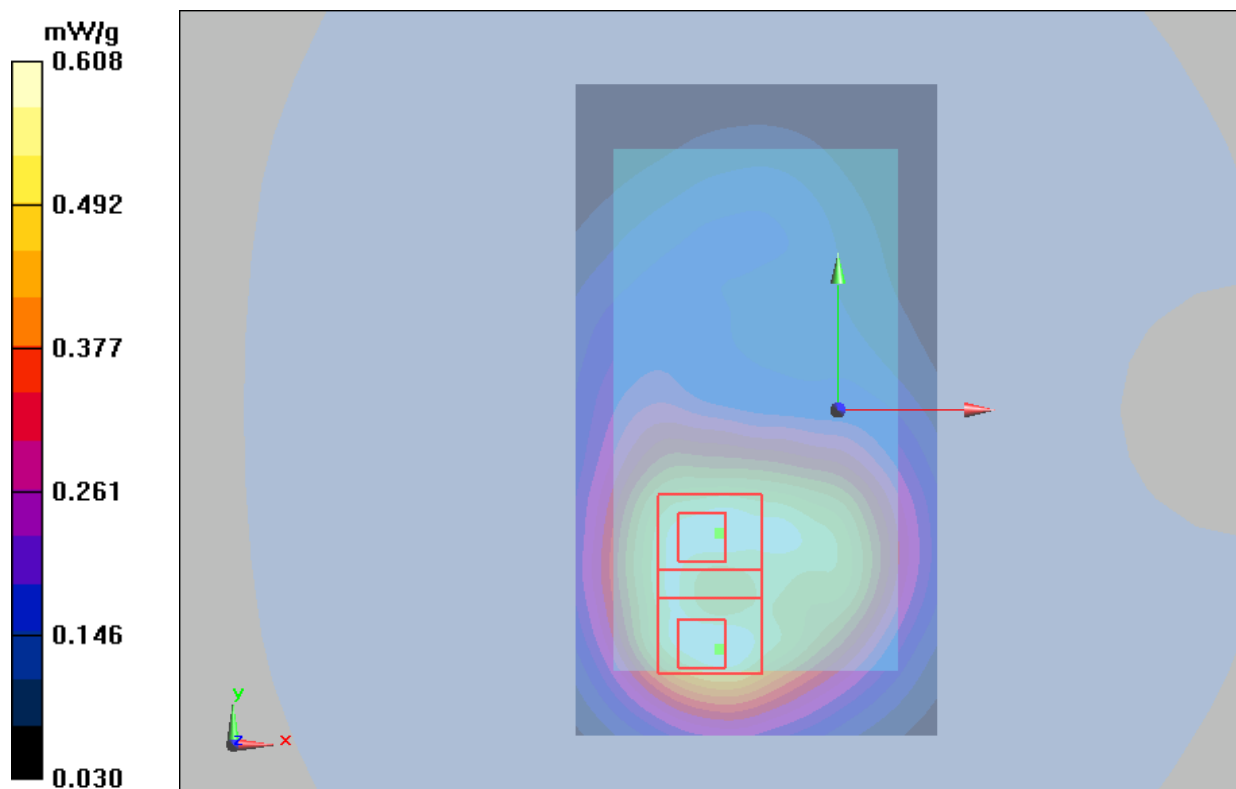Maximum value of SAR (measured) = 0.608 mW/g

Figure 78 Body with Earphone 2, Towards Ground, UMTS Band II Channel 9538

UMTS Band V Left Cheek High (Battery 1)

Date/Time: 4/24/2012 1:54:39 AM

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

Medium parameters used: f = 847 MHz; σ = 0.911 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Cheek High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.905 mW/g

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

Reference Value = 11.7 V/m; Power Drift = 0.041 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.864 mW/g; SAR(10 g) = 0.644 mW/g

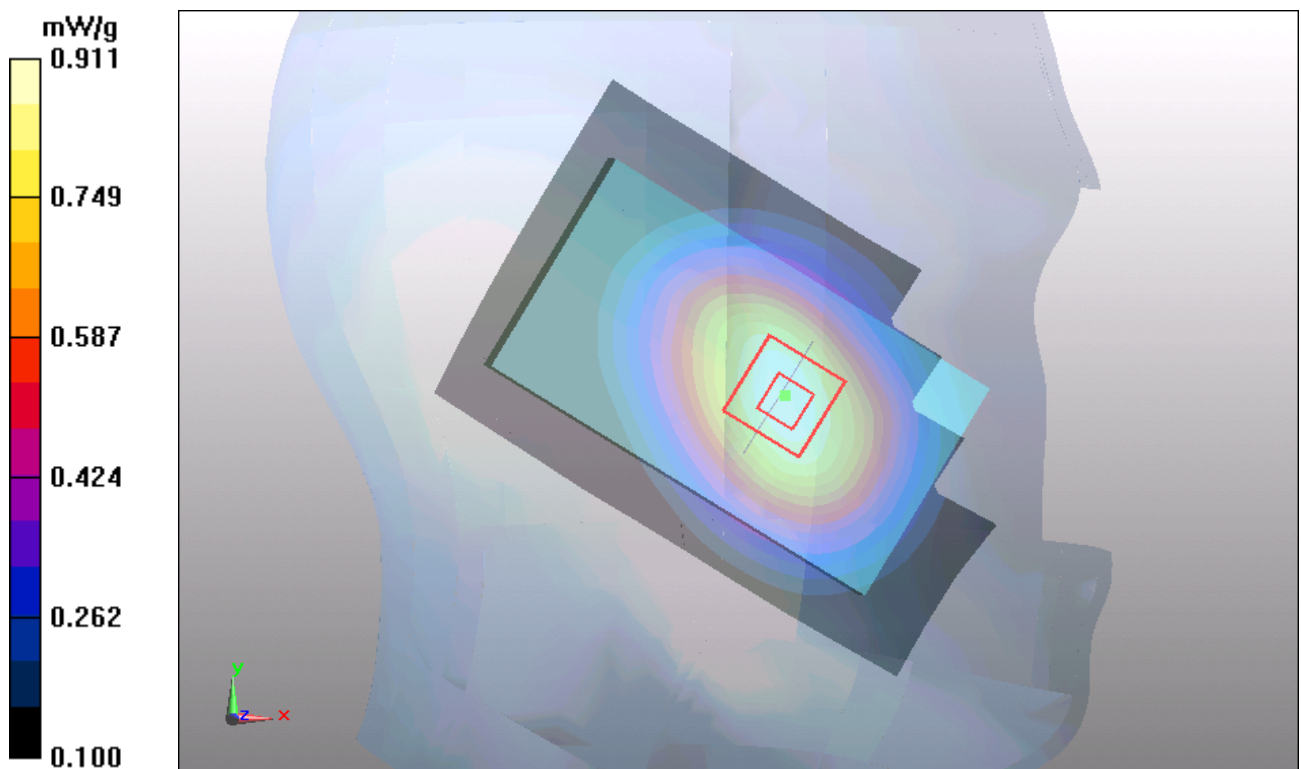Maximum value of SAR (measured) = 0.911 mW/g

Figure 79 Left Hand Touch Cheek UMTS Band V Channel 4233

UMTS Band V Left Cheek Middle (Battery 1)

Date/Time: 4/24/2012 12:39:31 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.9 mho/m; ε_r = 41.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

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

Maximum value of SAR (interpolated) = 0.709 mW/g

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

Reference Value = 12.7 V/m; Power Drift = 0.021 dB

Peak SAR (extrapolated) = 0.843 W/kg

SAR(1 g) = 0.674 mW/g; SAR(10 g) = 0.501 mW/g

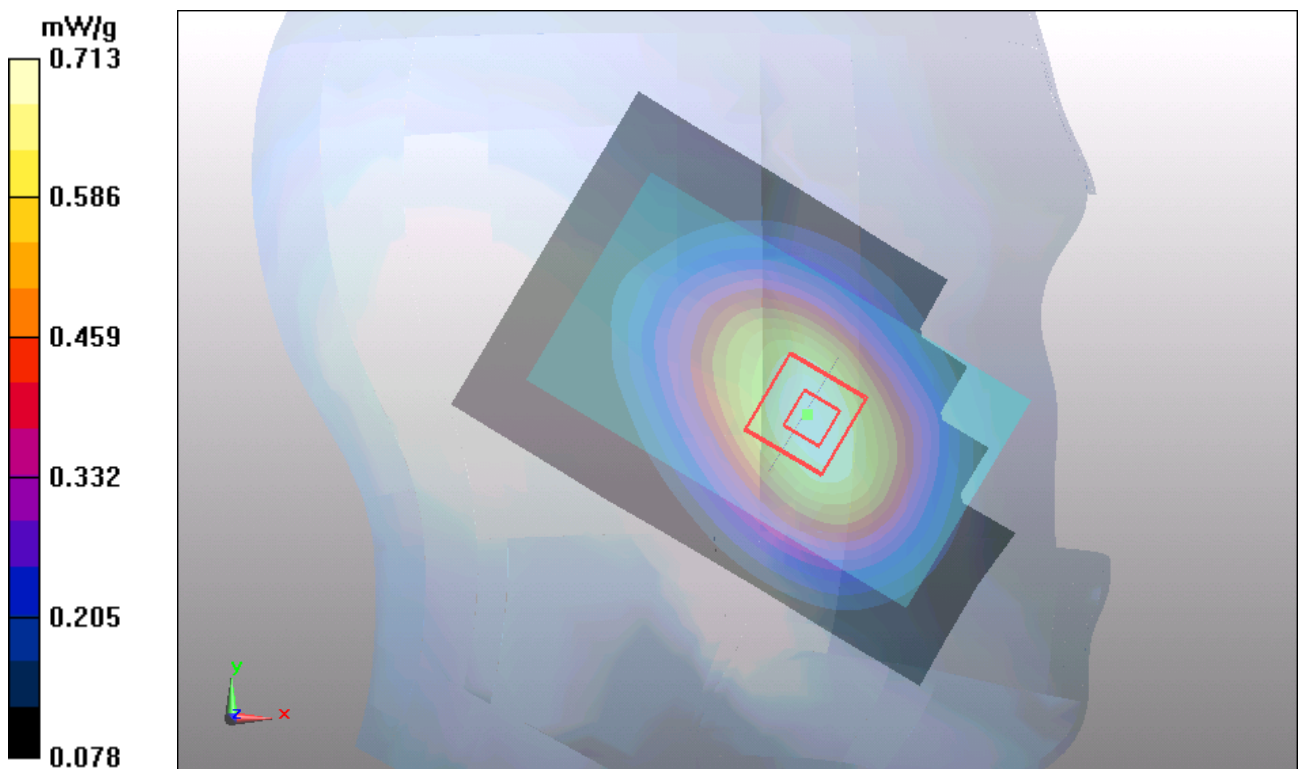Maximum value of SAR (measured) = 0.713 mW/g

Figure 80 Left Hand Touch Cheek UMTS Band V Channel 4183

UMTS Band V Left Cheek Low (Battery 1)

Date/Time: 4/24/2012 12:58:13 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.888 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Cheek Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.757 mW/g

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

Reference Value = 12.6 V/m; Power Drift = 0.034 dB

Peak SAR (extrapolated) = 0.910 W/kg

SAR(1 g) = 0.725 mW/g; SAR(10 g) = 0.540 mW/g

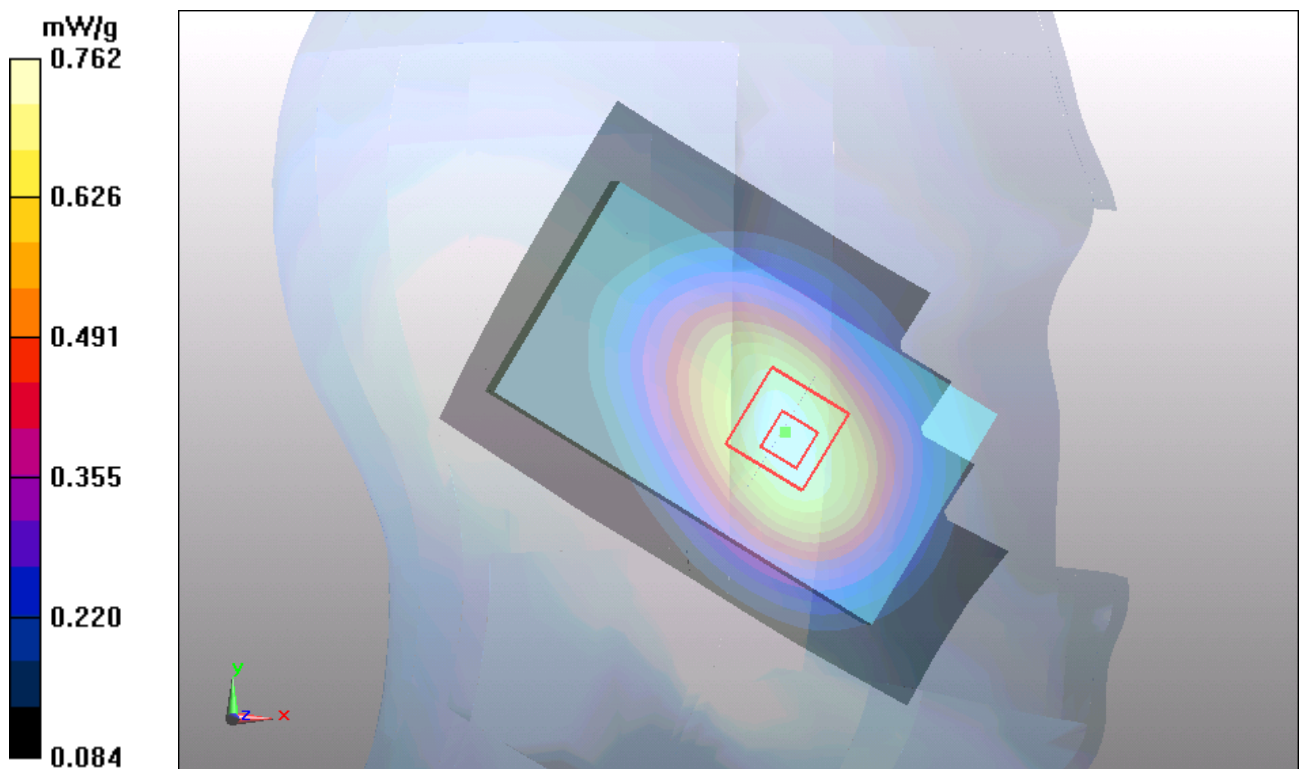Maximum value of SAR (measured) = 0.762 mW/g

Figure 81 Left Hand Touch Cheek UMTS Band V Channel 4132

UMTS Band V Left Tilt High (Battery 1)

Date/Time: 4/24/2012 2:12:50 AM

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

Medium parameters used: f = 847 MHz; σ = 0.911 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Tilt High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.513 mW/g

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

Reference Value = 16.3 V/m; Power Drift = 0.084 dB

Peak SAR (extrapolated) = 0.617 W/kg

SAR(1 g) = 0.488 mW/g; SAR(10 g) = 0.366 mW/g

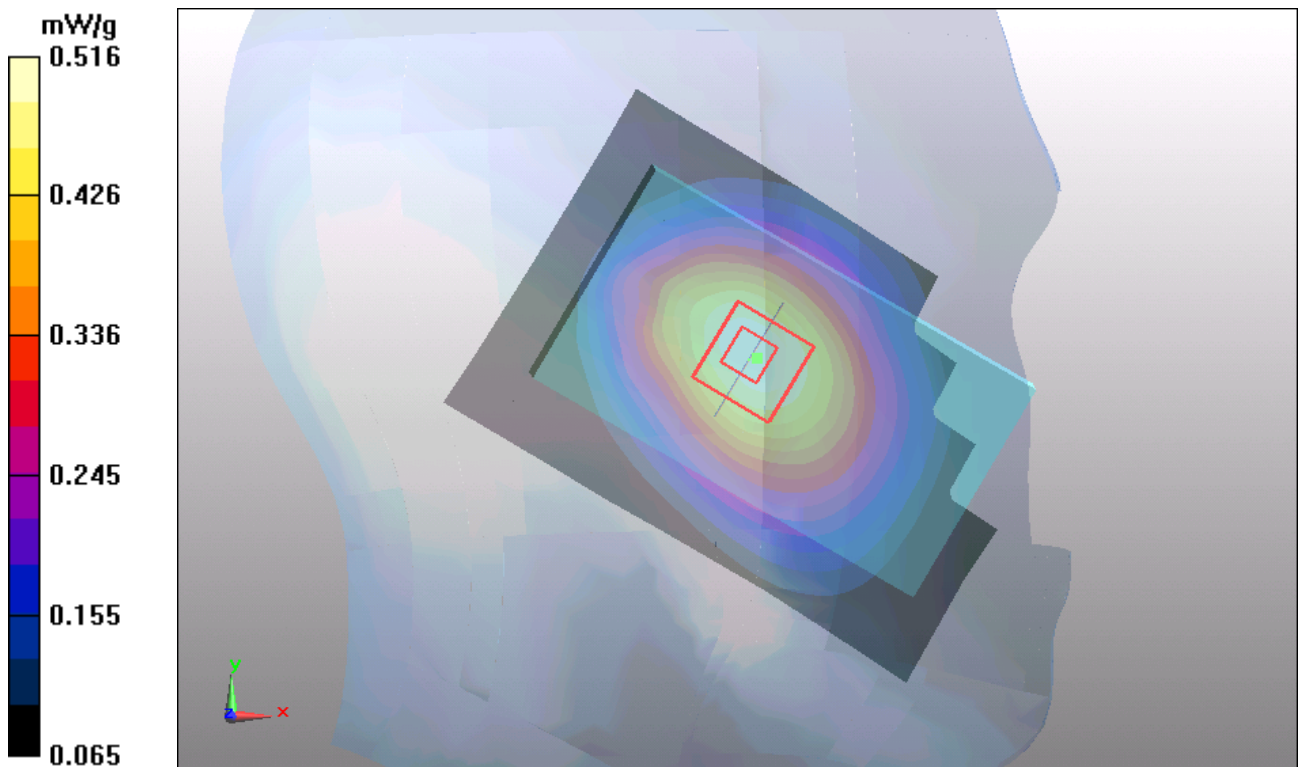Maximum value of SAR (measured) = 0.516 mW/g

Figure 82 Left Hand Tilt 15° UMTS Band V Channel 4233

UMTS Band V Left Tilt Middle (Battery 1)

Date/Time: 4/24/2012 2:32:11 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.9 mho/m; ε_r = 41.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

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

Maximum value of SAR (interpolated) = 0.410 mW/g

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

Reference Value = 14.8 V/m; Power Drift = 0.008 dB

Peak SAR (extrapolated) = 0.489 W/kg

SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.293 mW/g

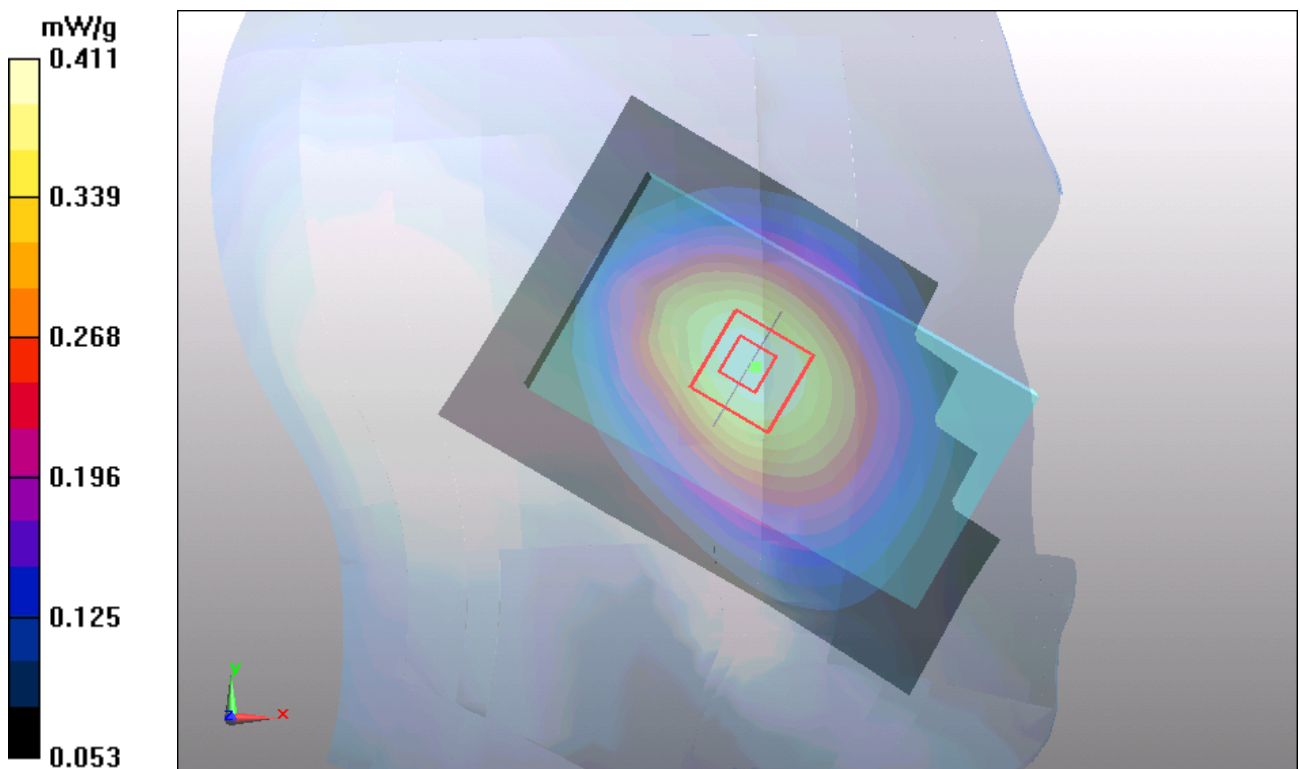Maximum value of SAR (measured) = 0.411 mW/g

Figure 83 Left Hand Tilt 15° UMTS Band V Channel 4183

UMTS Band V Left Tilt Low (Battery 1)

Date/Time: 4/24/2012 5:41:30 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.888 mho/m; $ε_r$ = 41.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Left Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Tilt Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.374 mW/g

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

Reference Value = 13.7 V/m; Power Drift = 0.030 dB

Peak SAR (extrapolated) = 0.443 W/kg

SAR(1 g) = 0.355 mW/g; SAR(10 g) = 0.268 mW/g

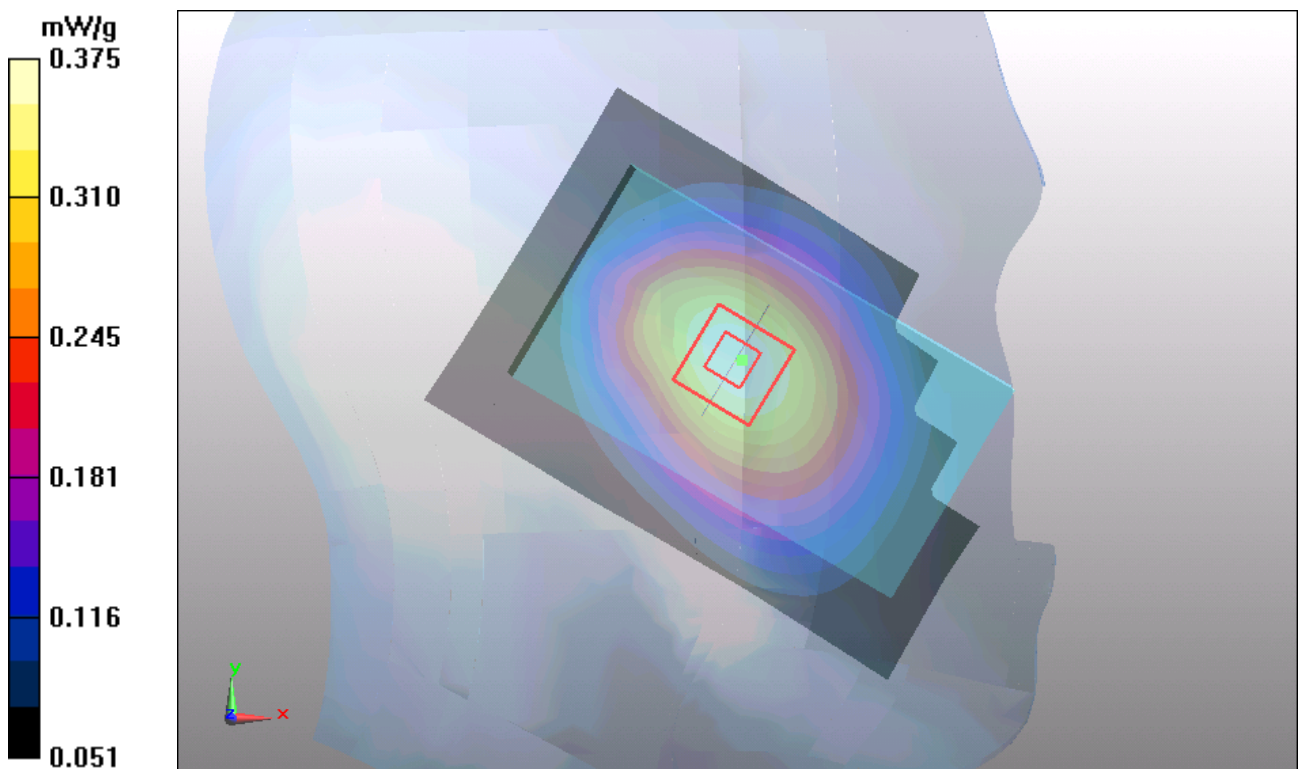Maximum value of SAR (measured) = 0.375 mW/g

Figure 84 Left Hand Tilt 15° UMTS Band V Channel 4132

UMTS Band V Right Cheek High (Battery 1)

Date/Time: 4/24/2012 6:03:52 AM

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

Medium parameters used: f = 847 MHz; σ = 0.911 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Cheek High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

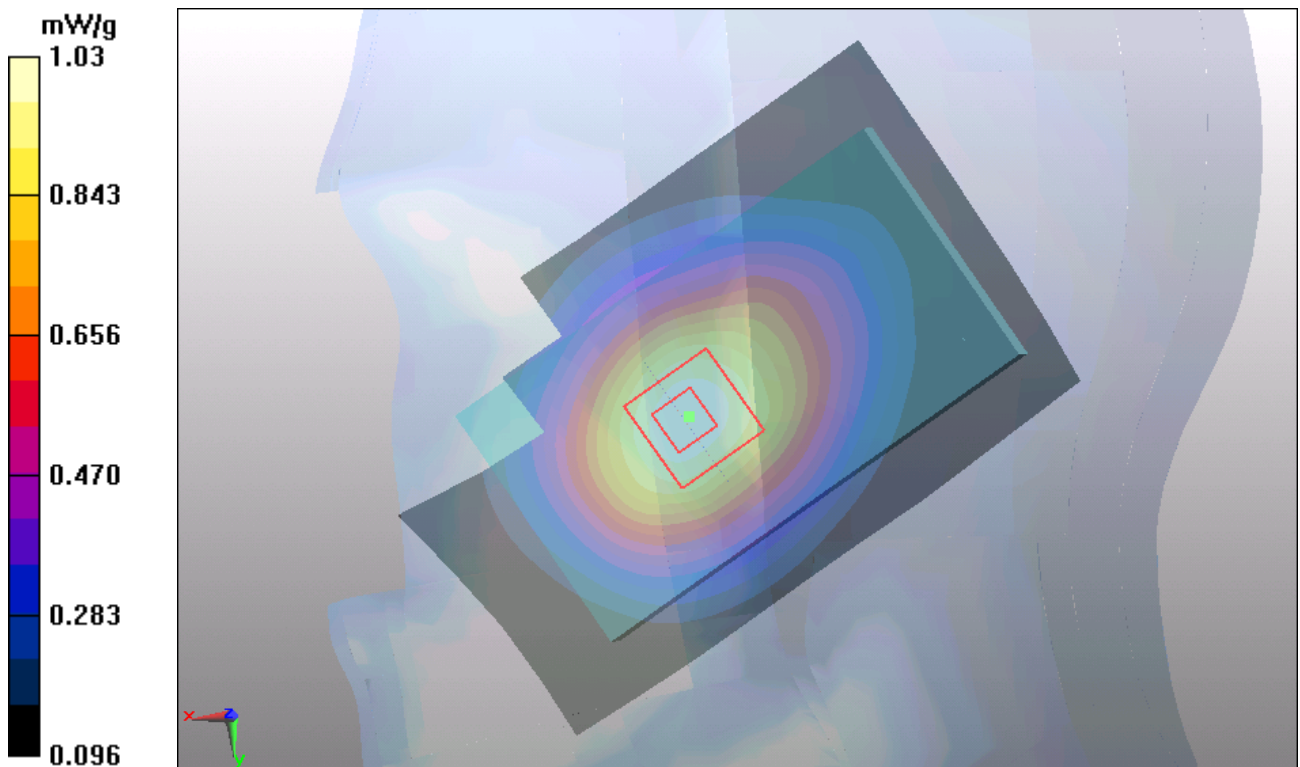Maximum value of SAR (interpolated) = 1.02 mW/g

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

Reference Value = 14.6 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.971 mW/g; SAR(10 g) = 0.733 mW/g

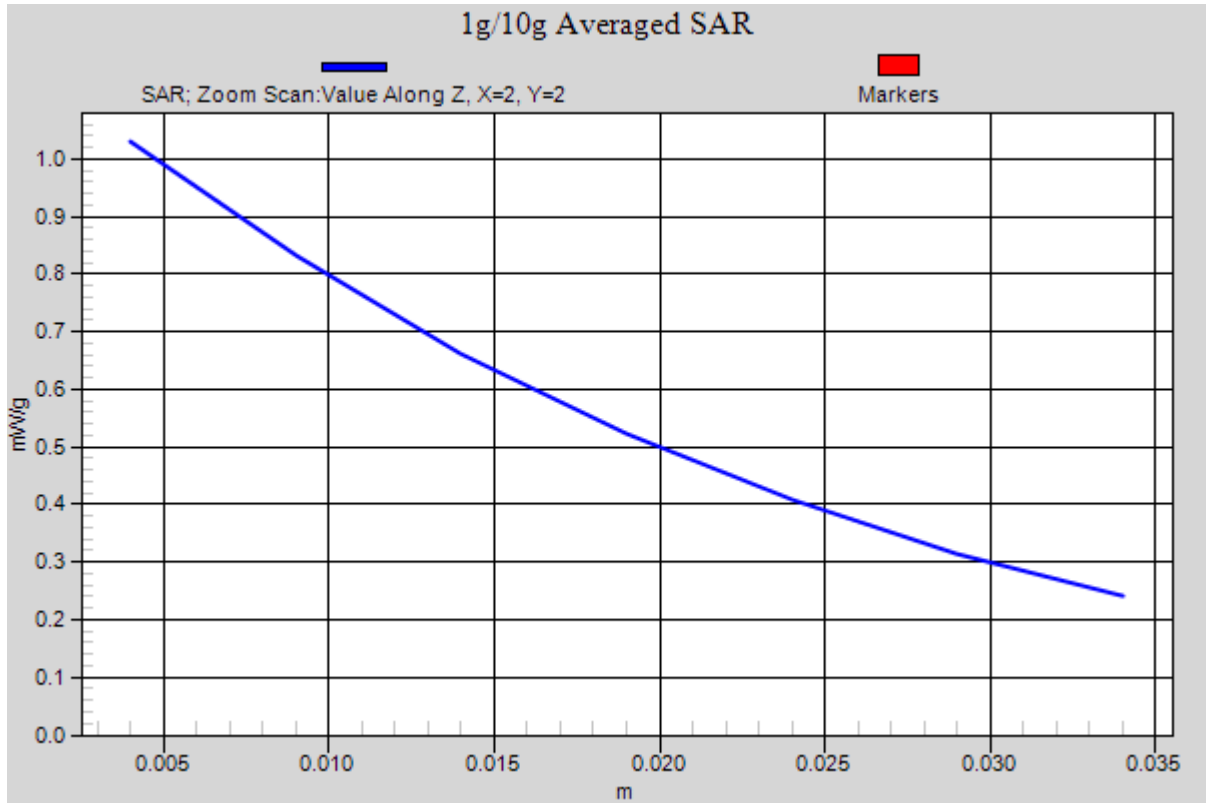Maximum value of SAR (measured) = 1.03 mW/g

Figure 85 Right Hand Touch Cheek UMTS Band V Channel 4233

UMTS Band V Right Cheek Middle (Battery 1)

Date/Time: 4/24/2012 1:19:28 PM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.9 mho/m; ε_r = 41.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

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

Maximum value of SAR (interpolated) = 0.803 mW/g

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

Reference Value = 13.6 V/m; Power Drift = -0.172 dB

Peak SAR (extrapolated) = 0.916 W/kg

SAR(1 g) = 0.741 mW/g; SAR(10 g) = 0.557 mW/g

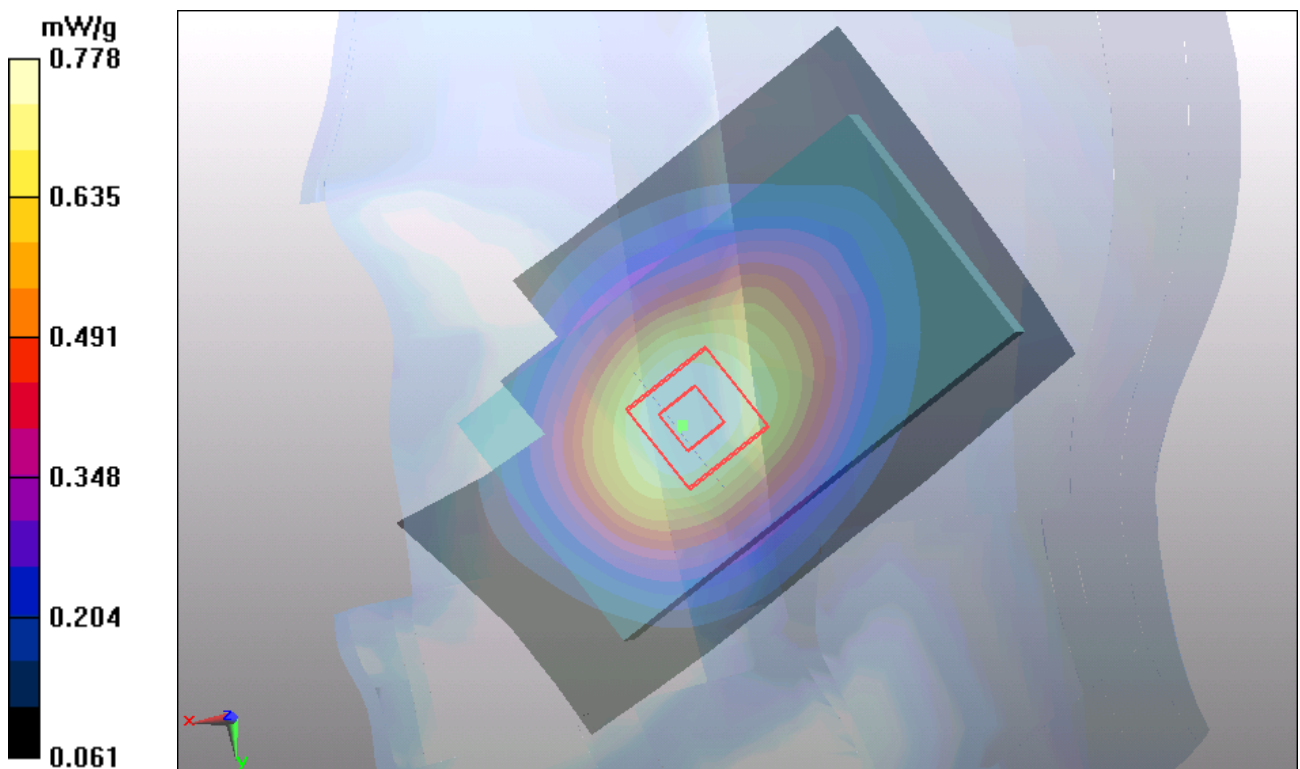Maximum value of SAR (measured) = 0.778 mW/g

Figure 86 Right Hand Touch Cheek UMTS Band V Channel 4183

UMTS Band V Right Cheek Low (Battery 1)

Date/Time: 4/24/2012 6:25:23 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.888 mho/m; $ε_r$ = 41.5; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Cheek Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.864 mW/g

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

Reference Value = 13.5 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 1.03 W/kg

SAR(1 g) = 0.834 mW/g; SAR(10 g) = 0.630 mW/g

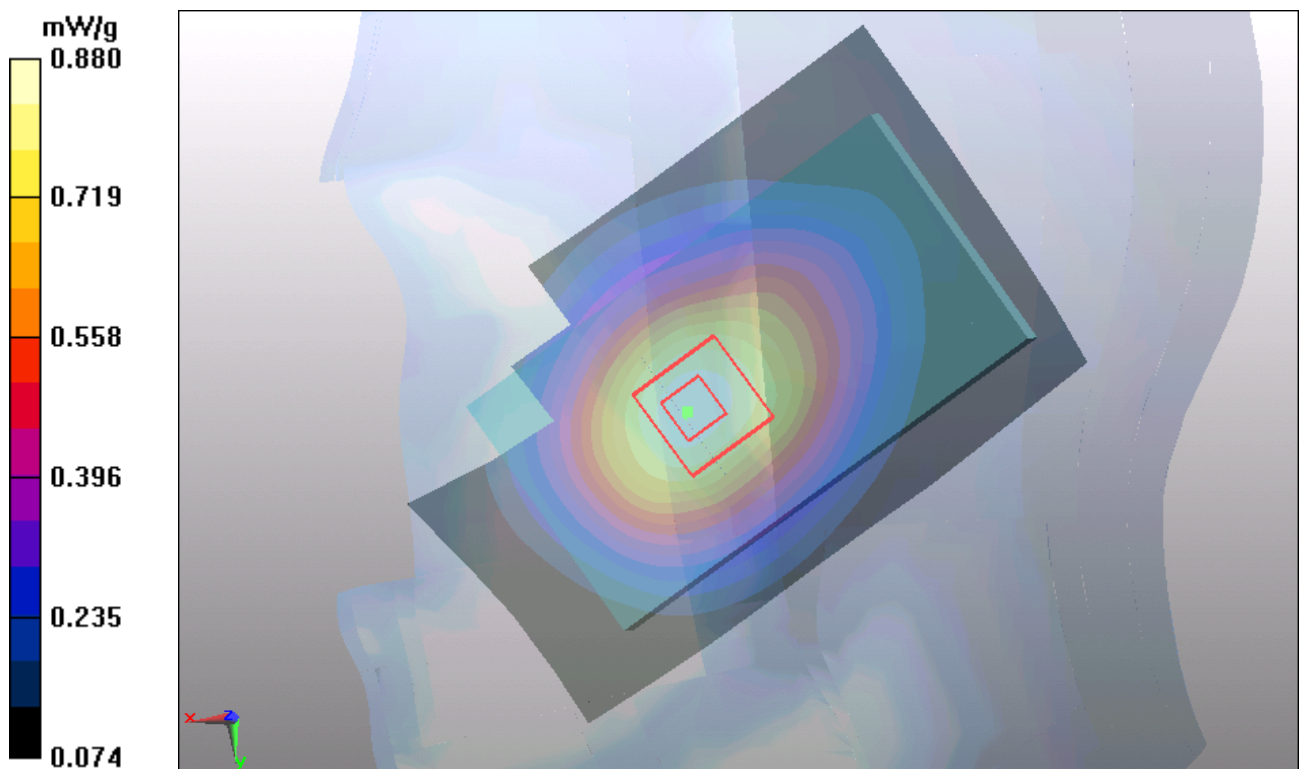Maximum value of SAR (measured) = 0.880 mW/g

Figure 87 Right Hand Touch Cheek UMTS Band V Channel 4132

UMTS Band V Right Tilt High (Battery 1)

Date/Time: 4/24/2012 9:14:50 AM

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

Medium parameters used: f = 847 MHz; σ = 0.911 mho/m; ε_r = 41.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Tilt High/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.527 mW/g

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

Reference Value = 17.4 V/m; Power Drift = 0.026 dB

Peak SAR (extrapolated) = 0.638 W/kg

SAR(1 g) = 0.503 mW/g; SAR(10 g) = 0.377 mW/g

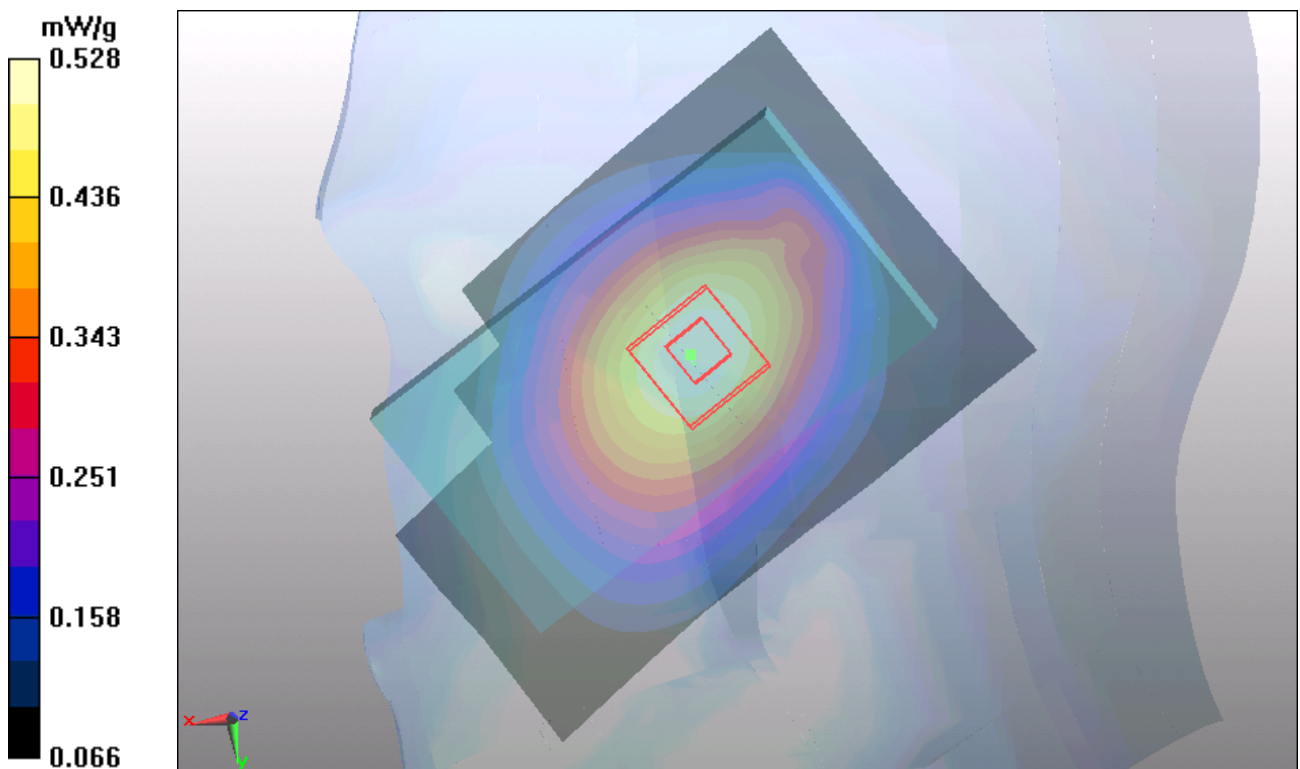Maximum value of SAR (measured) = 0.528 mW/g

Figure 88 Right Hand Tilt 15° UMTS Band V Channel 4233

UMTS Band V Right Tilt Middle (Battery 1)

Date/Time: 4/24/2012 8:57:47 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.9 mho/m; ε_r = 41.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

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

Maximum value of SAR (interpolated) = 0.425 mW/g

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

Reference Value = 15.7 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 0.512 W/kg

SAR(1 g) = 0.405 mW/g; SAR(10 g) = 0.305 mW/g

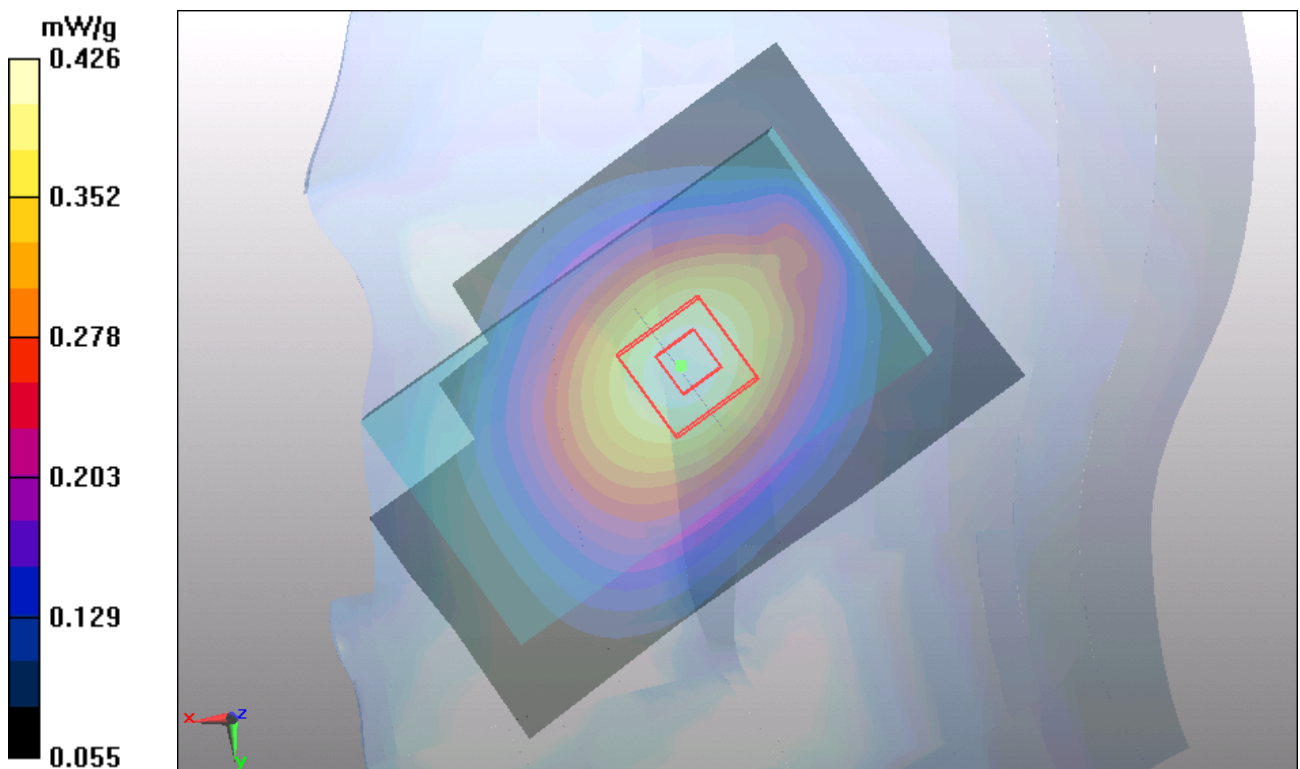Maximum value of SAR (measured) = 0.426 mW/g

Figure 89 Right Hand Tilt 15° UMTS Band V Channel 4183

UMTS Band V Right Tilt Low (Battery 1)

Date/Time: 4/24/2012 8:40:56 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.888 mho/m; $ε_r$ = 41.5; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Right Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.02, 9.02, 9.02); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Tilt Low/Area Scan (61x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.450 mW/g

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

Reference Value = 16.5 V/m; Power Drift = 0.006 dB

Peak SAR (extrapolated) = 0.552 W/kg

SAR(1 g) = 0.435 mW/g; SAR(10 g) = 0.327 mW/g

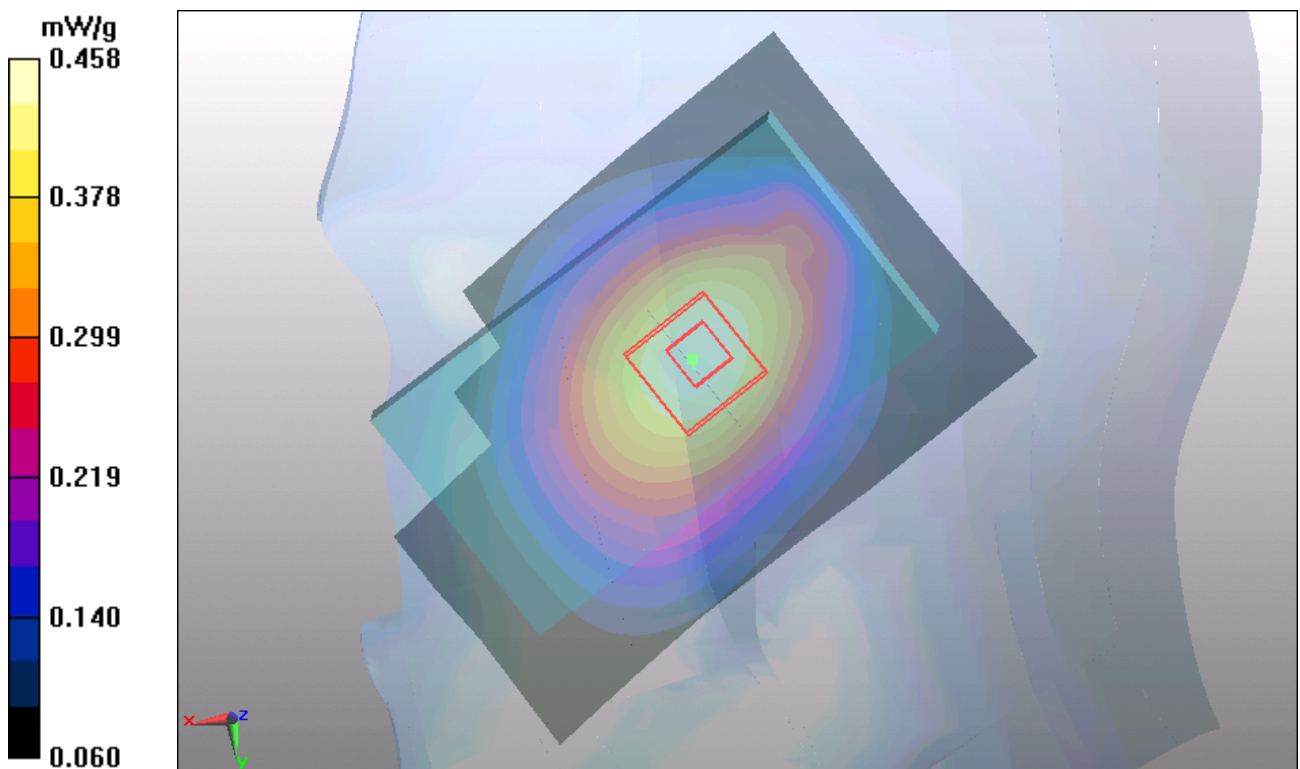Maximum value of SAR (measured) = 0.458 mW/g

Figure 90 Right Hand Tilt 15° UMTS Band V Channel 4132

UMTS Band V Towards Ground High (Battery 1)

Date/Time: 4/23/2012 7:41:29 AM

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

Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Ground High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

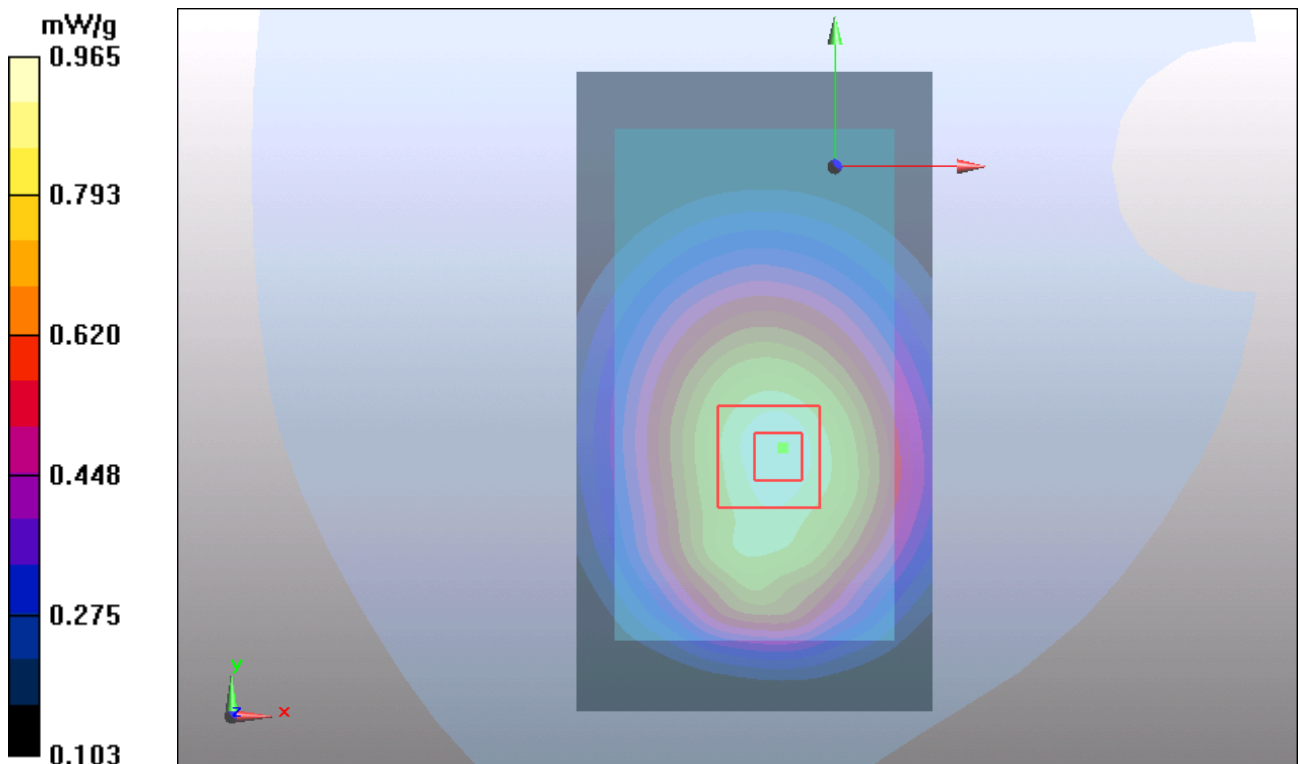Maximum value of SAR (interpolated) = 0.959 mW/g

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

Reference Value = 11 V/m; Power Drift = 0.033 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.917 mW/g; SAR(10 g) = 0.666 mW/g

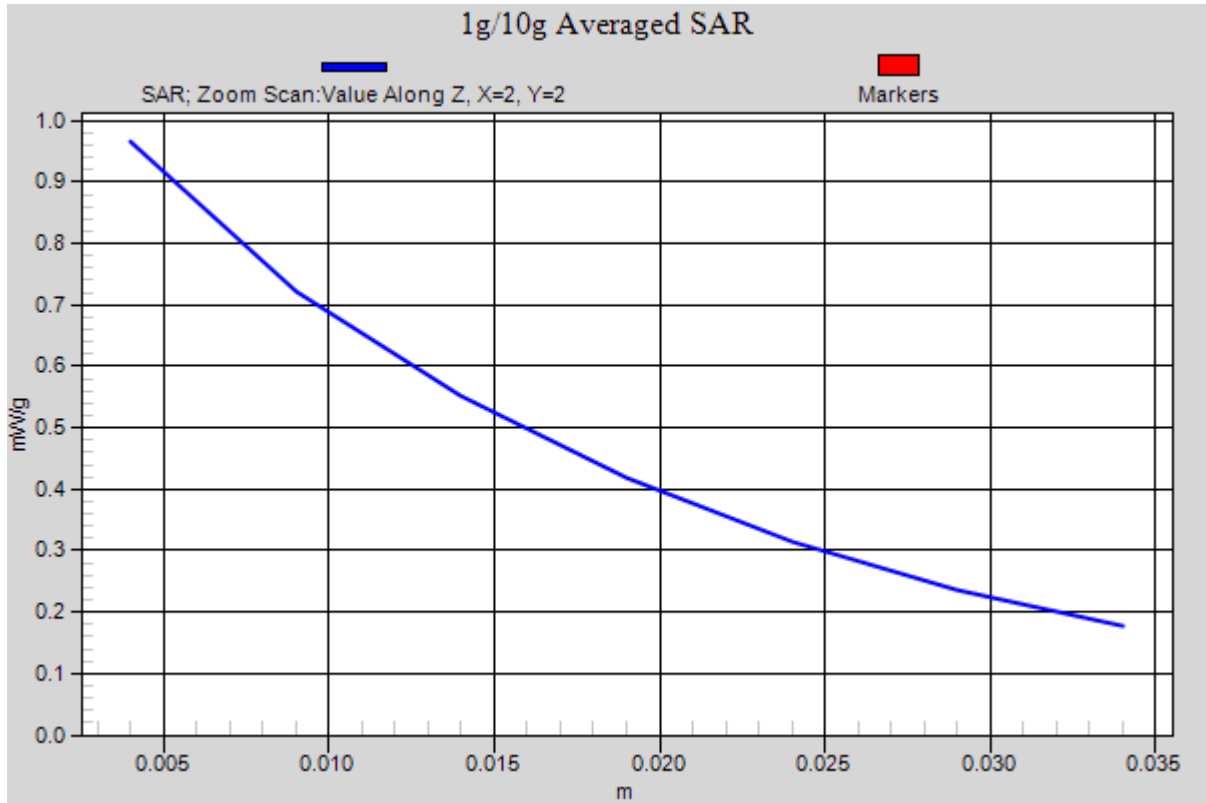Maximum value of SAR (measured) = 0.965 mW/g

Figure 91 Body, Towards Ground, UMTS Band V Channel 4233

UMTS Band V Towards Ground Middle (Battery 1)

Date/Time: 4/23/2012 7:10:52 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.988 mho/m; $ε_r$ = 54.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Ground Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.901 mW/g

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

Reference Value = 10.6 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.856 mW/g; SAR(10 g) = 0.621 mW/g

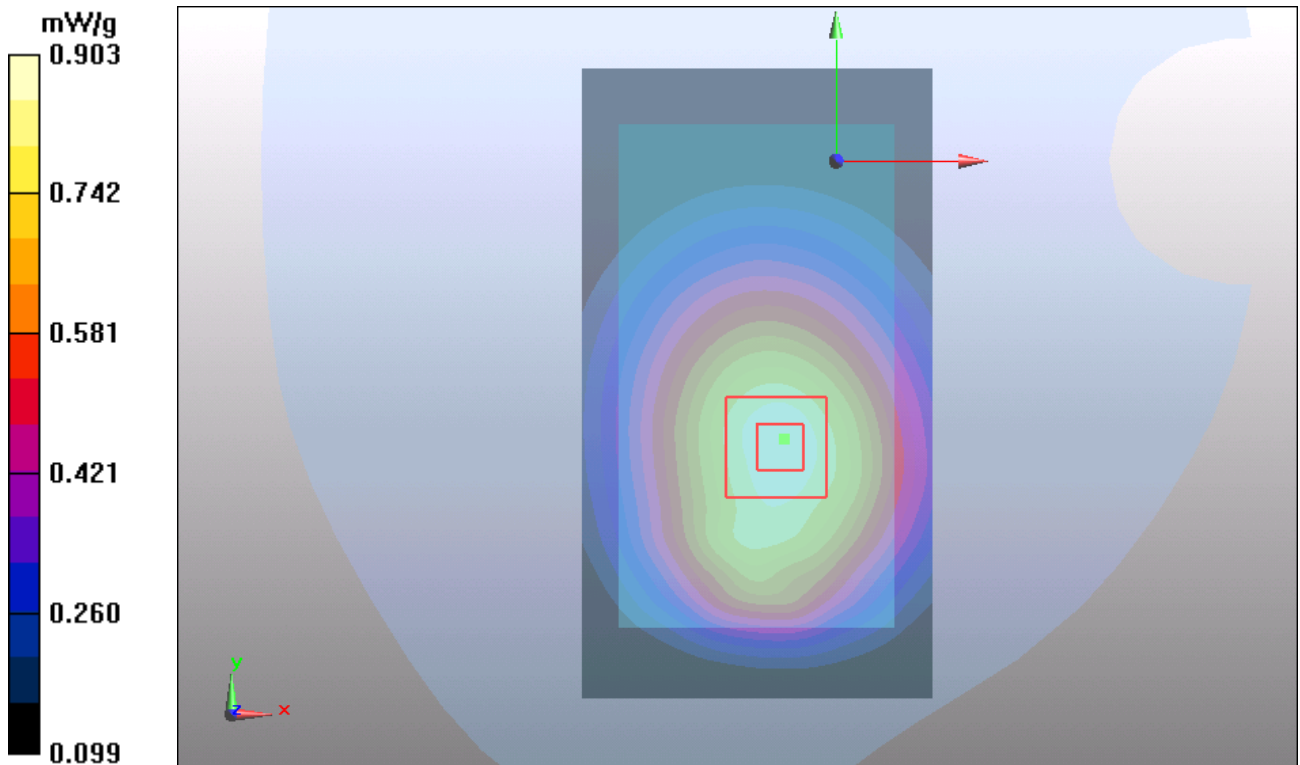Maximum value of SAR (measured) = 0.903 mW/g

Figure 92 Body, Towards Ground, UMTS Band V Channel 4183

UMTS Band V Towards Ground Low (Battery 1)

Date/Time: 4/23/2012 7:26:16 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.974 mho/m; ε_r = 54.3; ρ = 1000 kg/m³

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Ground Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.941 mW/g

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

Reference Value = 10.7 V/m; Power Drift = -0.007 dB

Peak SAR (extrapolated) = 1.2 W/kg

SAR(1 g) = 0.902 mW/g; SAR(10 g) = 0.653 mW/g

Maximum value of SAR (measured) = 0.947 mW/g

Figure 93 Body, Towards Ground, UMTS Band V Channel 4132

UMTS Band V Towards Phantom High (Battery 1)

Date/Time: 4/23/2012 3:20:37 AM

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

Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Phantom High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.634 mW/g

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

Reference Value = 10.8 V/m; Power Drift = 0.006 dB

Peak SAR (extrapolated) = 0.780 W/kg

SAR(1 g) = 0.602 mW/g; SAR(10 g) = 0.444 mW/g

Maximum value of SAR (measured) = 0.633 mW/g
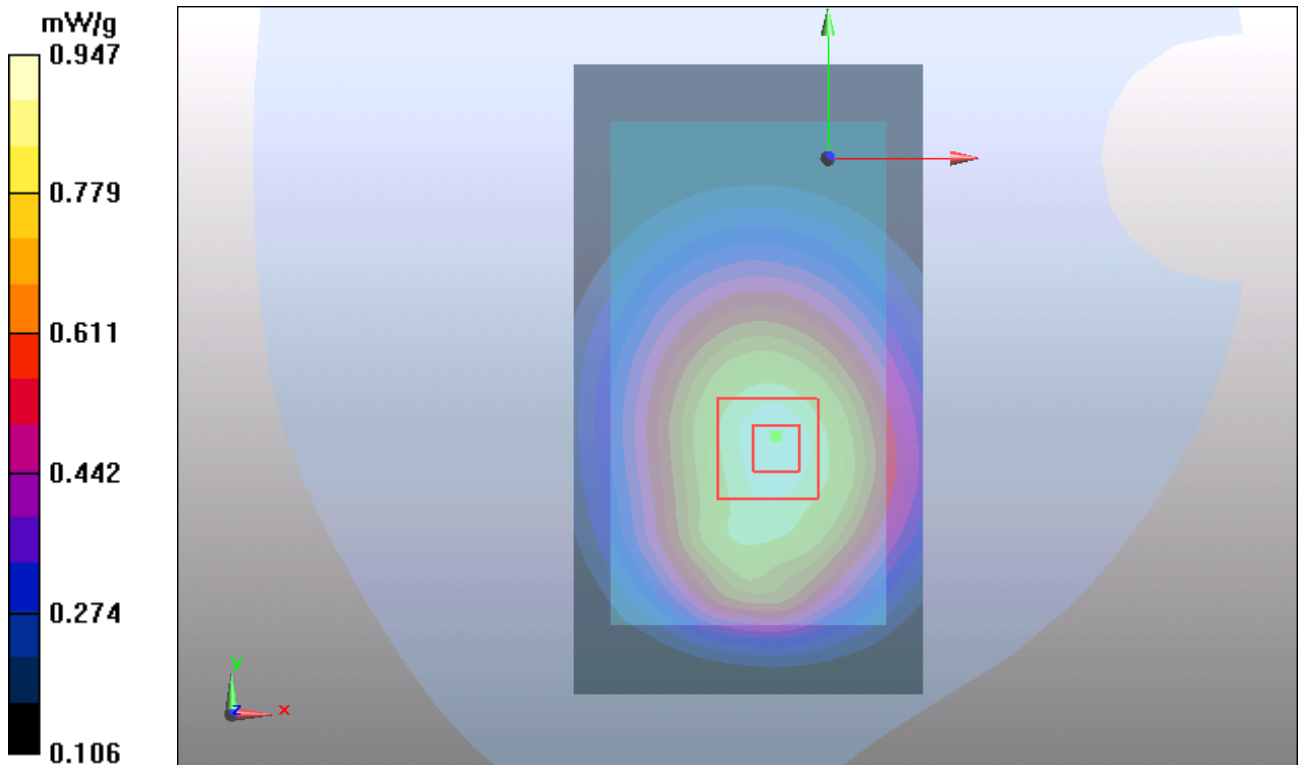

Figure 94 Body, Towards Phantom, UMTS Band V Channel 4233

UMTS Band V Towards Phantom Middle (Battery 1)

Date/Time: 4/23/2012 2:45:33 AM

Communication System: WCDMA ; Frequency: 836.6 MHz;Duty Cycle: 1:1

Medium parameters used: f = 837 MHz; σ = 0.988 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Phantom Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.516 mW/g

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

Reference Value = 9.75 V/m; Power Drift = 0.008 dB

Peak SAR (extrapolated) = 0.634 W/kg

SAR(1 g) = 0.491 mW/g; SAR(10 g) = 0.363 mW/g

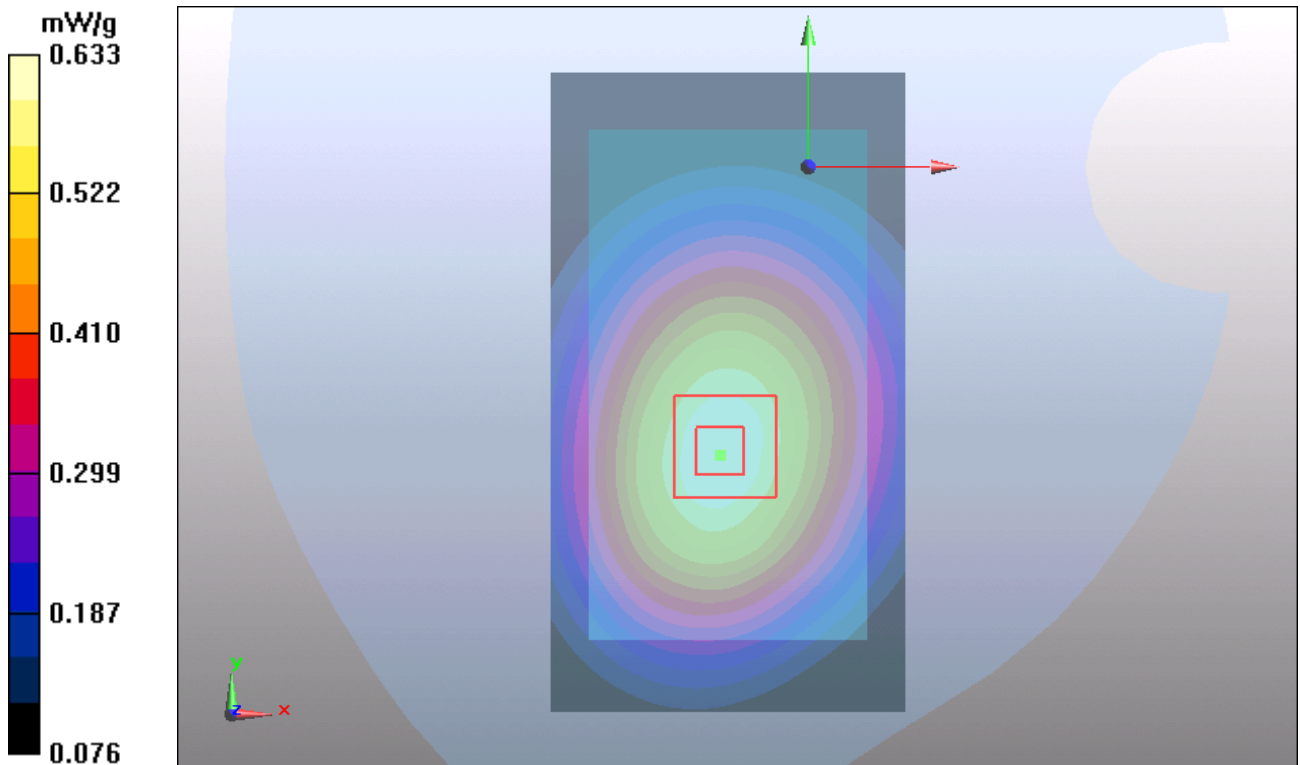Maximum value of SAR (measured) = 0.518 mW/g

Figure 95 Body, Towards Phantom, UMTS Band V Channel 4183

UMTS Band V Towards Phantom Low (Battery 1)

Date/Time: 4/23/2012 3:05:24 AM

Communication System: WCDMA ; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.974 mho/m; $ε_r$ = 54.3; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Phantom Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.559 mW/g

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

Reference Value = 10.1 V/m; Power Drift = -0.001 dB

Peak SAR (extrapolated) = 0.686 W/kg

SAR(1 g) = 0.531 mW/g; SAR(10 g) = 0.392 mW/g
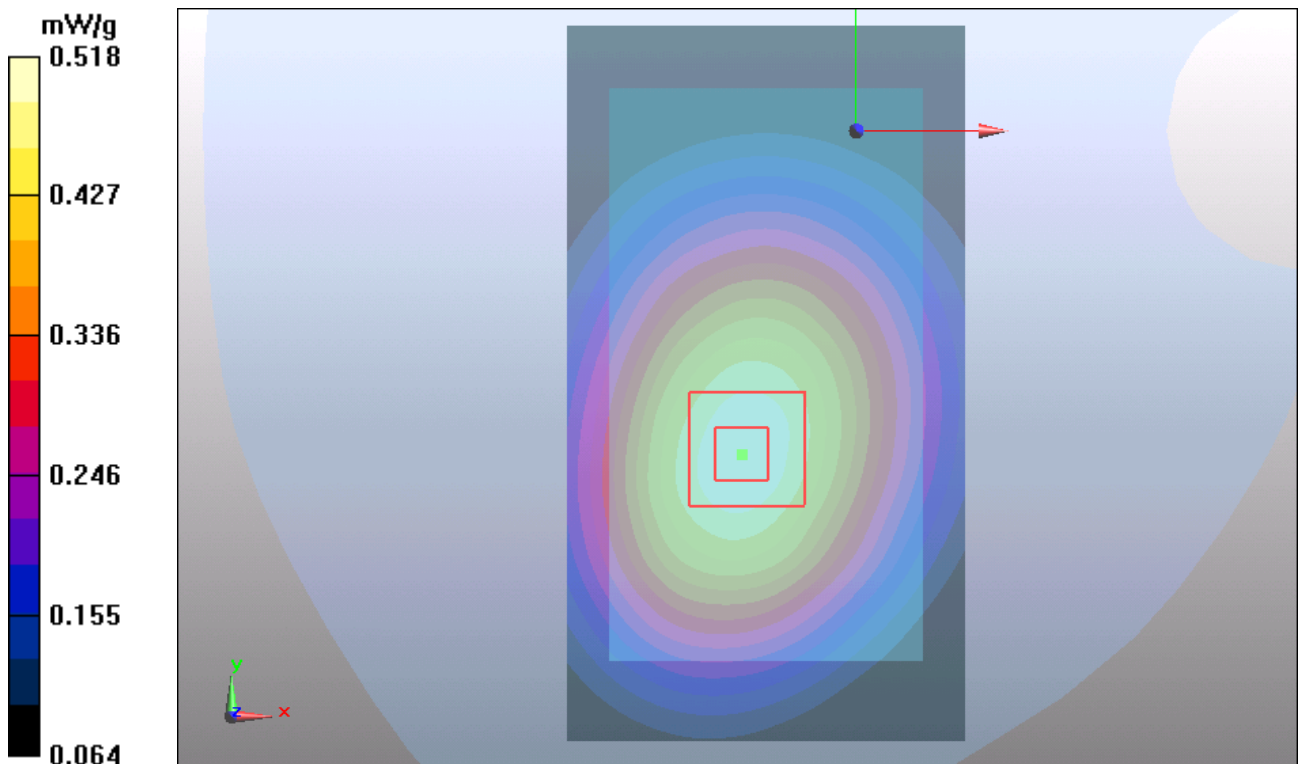
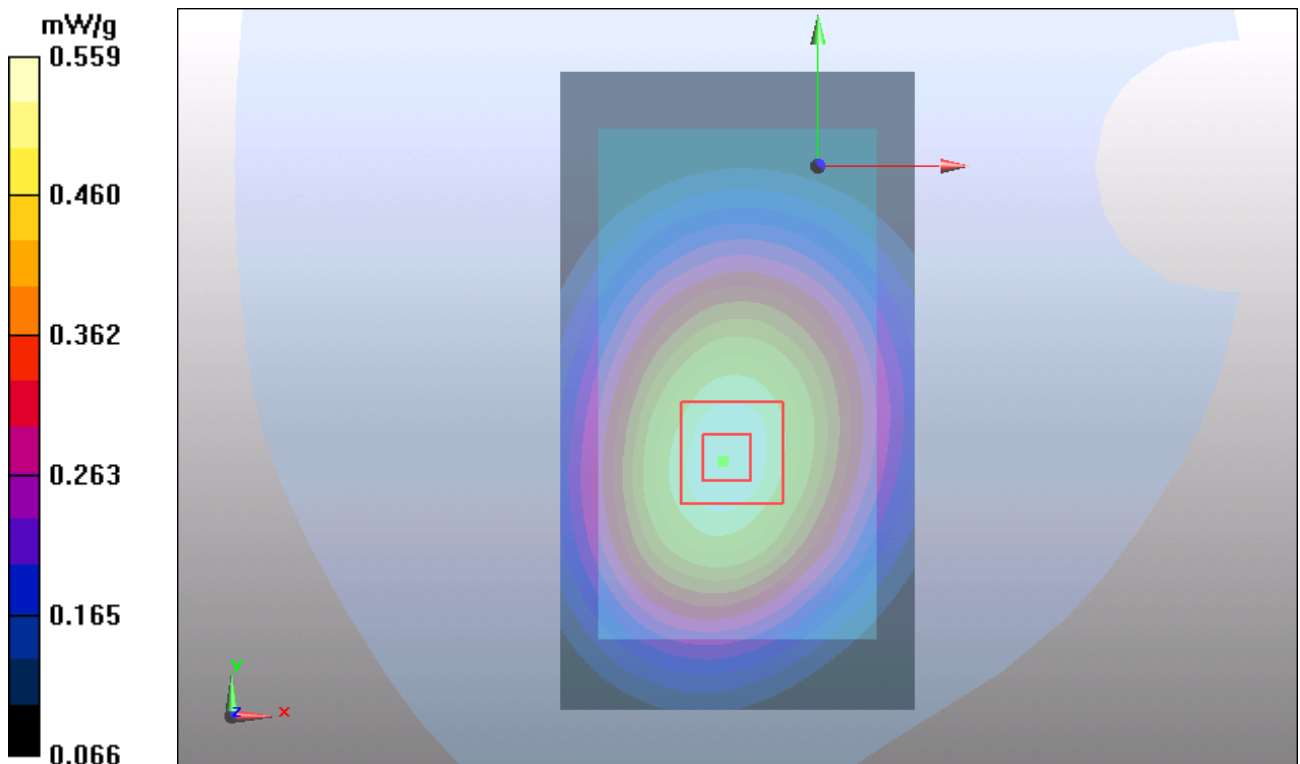Maximum value of SAR (measured) = 0.559 mW/g

Figure 96 Body, Towards Phantom, UMTS Band V Channel 4132

UMTS Band V with Stereo Headset 1 Towards Ground High (Battery 1)

Date/Time: 4/23/2012 6:44:22 PM

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

Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Ground High /Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.844 mW/g

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

Reference Value = 11.3 V/m; Power Drift = 0.038 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.797 mW/g; SAR(10 g) = 0.577 mW/g

Maximum value of SAR (measured) = 0.838 mW/g

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

Reference Value = 11.3 V/m; Power Drift = 0.038 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.743 mW/g; SAR(10 g) = 0.522 mW/g

Maximum value of SAR (measured) = 0.825 mW/g

Figure 97 Body with Earphone 1, Towards Ground, UMTS Band V Channel 4233

UMTS Band V with Stereo Headset 2 Towards Ground High (Battery 1)

Date/Time: 4/23/2012 10:48:09 AM

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

Medium parameters used: f = 847 MHz; σ = 1 mho/m; $ε_r$ = 54.1; ρ = 1000 kg/m^3

Ambient Temperature:22.3 ℃   Liquid Temperature: 21.5℃

Phantom section: Flat Section

DASY5 Configuration:

Probe: EX3DV4 - SN3753; ConvF(9.18, 9.18, 9.18); Calibrated: 1/4/2012

Electronics: DAE4 Sn871; Calibrated: 11/22/2011

Phantom: SAM1; Type: SAM; Serial: TP-1534

Measurement SW: DASY5, V5.2 Build 162; SEMCAD X Version 14.0 Build 59

Towards Ground High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.791 mW/g

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

Reference Value = 14.9 V/m; Power Drift = 0.027 dB

Peak SAR (extrapolated) = 0.937 W/kg

SAR(1 g) = 0.687 mW/g; SAR(10 g) = 0.478 mW/g

Maximum value of SAR (measured) = 0.752 mW/g

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

Reference Value = 14.9 V/m; Power Drift = 0.027 dB

Peak SAR (extrapolated) = 0.996 W/kg

SAR(1 g) = 0.753 mW/g; SAR(10 g) = 0.546 mW/g
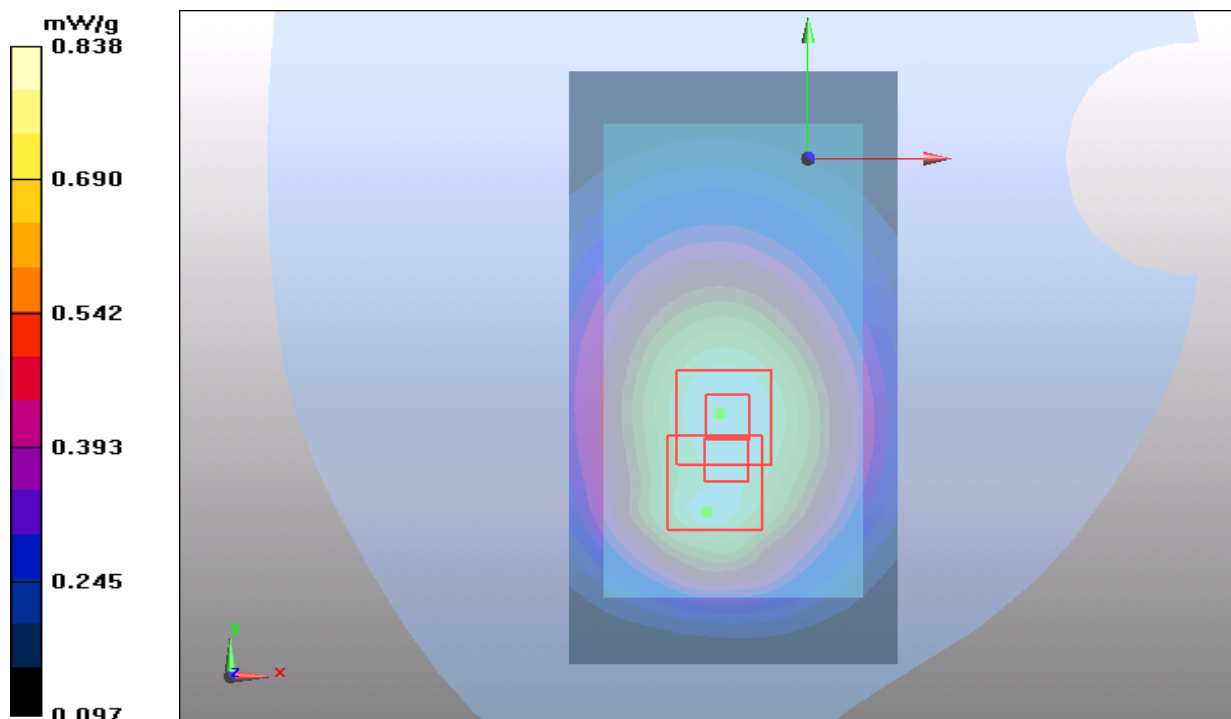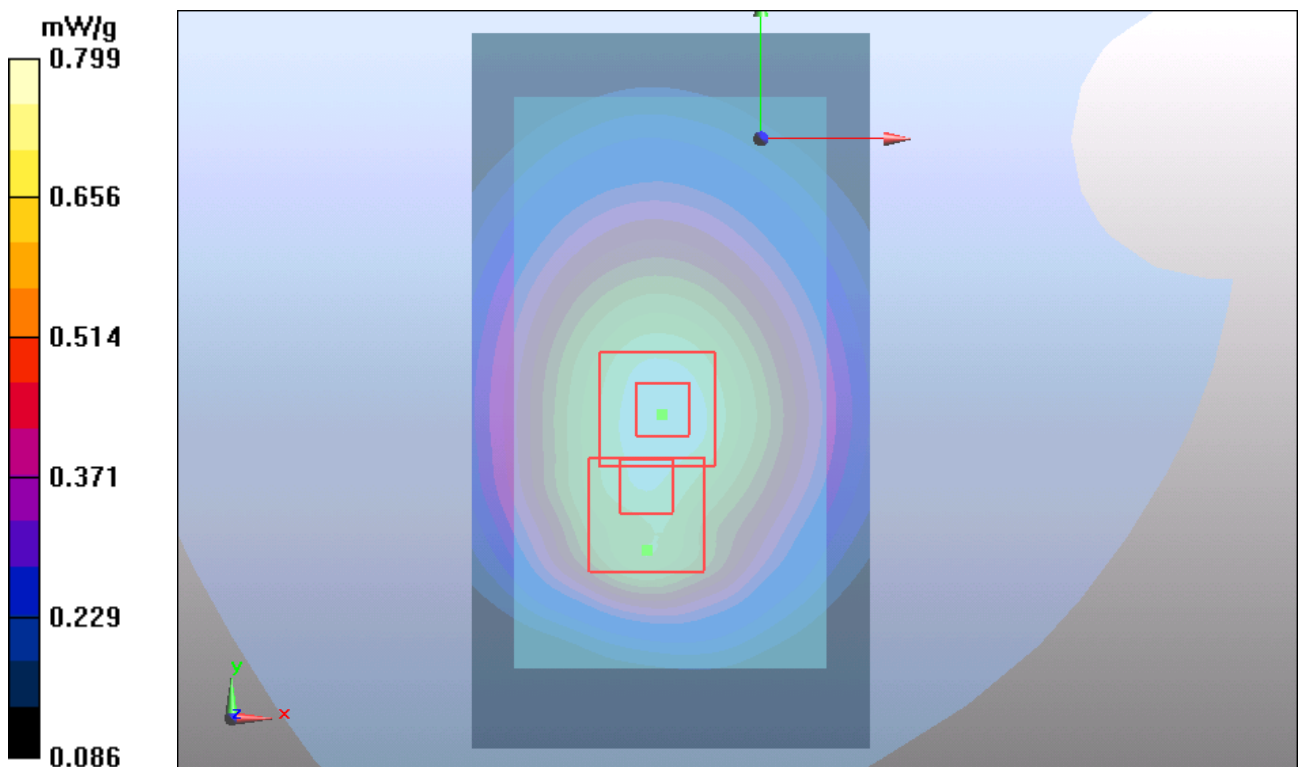
Maximum value of SAR (measured) = 0.799 mW/g

Figure 98 Body with Earphone 2, Towards Ground, UMTS Band V Channel 4233

ANNEX D: Probe EX3DV4 Calibration Certificate

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

ilac-MRA

S C S

Schweizerischer Kalibrierdienst
Service suisse d'étalonnage
Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **Auden**   Certificate No: **EX3-3753_Jan12**

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3753
Calibration procedure(s)	QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	January 4, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12

Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: January 4, 2012

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ 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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below ConvF).

- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.

- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.

- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics

- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z:* A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.

- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.

- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.

- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Certificate No: EX3-3753_Jan12 Page 2 of 11

EX3DV4 – SN:3753

January 4, 2012

Probe EX3DV4

SN:3753

Manufactured: March 16, 2010
Calibrated: January 4, 2012

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

EX3DV4– SN:3753   January 4, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3753

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^A$	0.33	0.49	0.53	± 10.1 %
DCP $(mV)^B$	103.0	96.0	100.6	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc^E (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	119.0	±2.7 %
			Y	0.00	0.00	1.00	115.7	
			Z	0.00	0.00	1.00	116.2	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
^{B} Numerical linearization parameter: uncertainty not required.
^{E} Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

EX3DV4– SN:3753   January 4, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3753

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [c]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.43	9.43	9.43	0.39	0.87	± 12.0 %
835	41.5	0.90	9.02	9.02	9.02	0.39	0.79	± 12.0 %
1750	40.1	1.37	8.37	8.37	8.37	0.10	1.14	± 12.0 %
1900	40.0	1.40	8.05	8.05	8.05	0.54	0.70	± 12.0 %
2000	40.0	1.40	7.94	7.94	7.94	0.10	0.89	± 12.0 %
2450	39.2	1.80	6.89	6.89	6.89	0.34	0.90	± 12.0 %
5200	36.0	4.66	4.83	4.83	4.83	0.36	1.80	± 13.1 %
5300	35.9	4.76	4.58	4.58	4.58	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.63	4.63	4.63	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.23	4.23	4.23	0.50	1.80	± 13.1 %
5800	35.3	5.27	4.26	4.26	4.26	0.50	1.80	± 13.1 %

[c] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4– SN:3753   January 4, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3753

Calibration Parameter Determined in Body Tissue Simulating Media

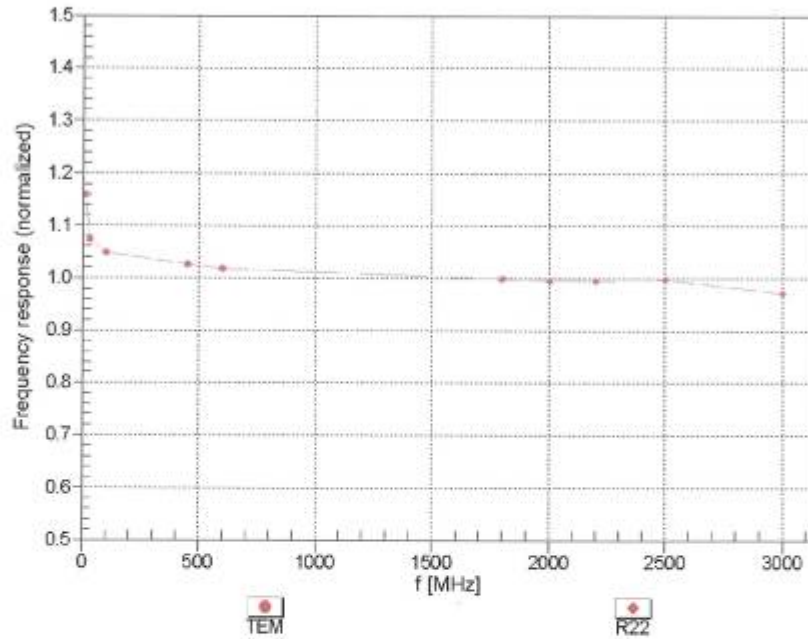| f (MHz) [c]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.29	9.29	9.29	0.30	1.11	± 12.0 %
835	55.2	0.97	9.18	9.18	9.18	0.47	0.85	± 12.0 %
1750	53.4	1.49	8.00	8.00	8.00	0.62	0.69	± 12.0 %
1900	53.3	1.52	7.57	7.57	7.57	0.31	0.93	± 12.0 %
2000	53.3	1.52	7.52	7.52	7.52	0.48	0.76	± 12.0 %
2300	52.9	1.81	7.20	7.20	7.20	0.49	0.75	± 12.0 %
2450	52.7	1.95	7.03	7.03	7.03	0.80	0.50	± 12.0 %
2600	52.5	2.16	6.75	6.75	6.75	0.80	0.50	± 12.0 %
3500	51.3	3.31	6.04	6.04	6.04	0.29	1.45	± 13.1 %
5200	49.0	5.30	4.30	4.30	4.30	0.50	1.90	± 13.1 %
5300	48.9	5.42	3.96	3.96	3.96	0.60	1.90	± 13.1 %
5500	48.6	5.65	3.67	3.67	3.67	0.60	1.90	± 13.1 %
5600	48.5	5.77	3.36	3.36	3.36	0.70	1.90	± 13.1 %
5800	48.2	6.00	3.86	3.86	3.86	0.60	1.90	± 13.1 %

[c] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

Certificate No: EX3-3753_Jan12   Page 6 of 11

EX3DV4– SN:3753

January 4, 2012

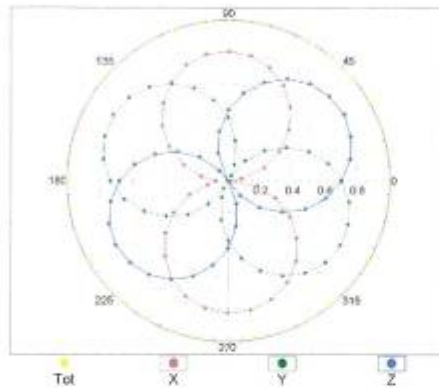## Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)

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

EX3DV4– SN:3753

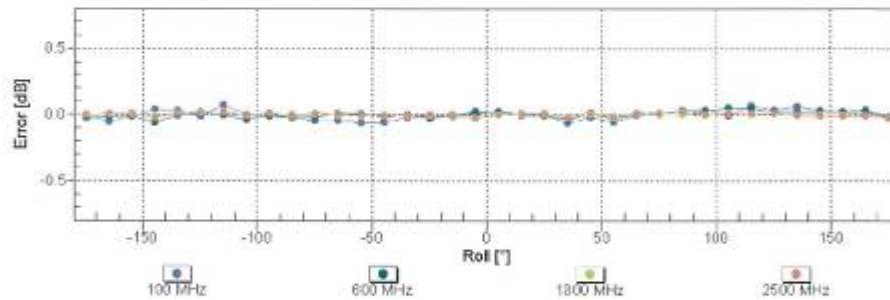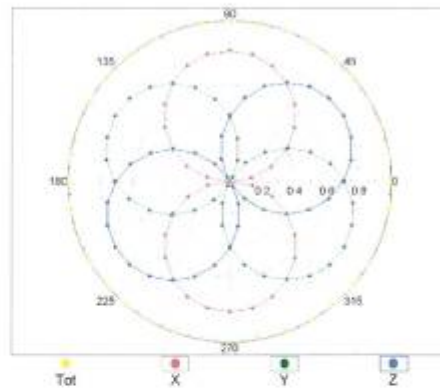January 4, 2012

Receiving Pattern (φ), ϑ = 0°

f=600 MHz,TEM

f=1800 MHz,R22

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

Certificate No: EX3-3753_Jan12

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EX3DV4– SN:3753

January 4, 2012

Dynamic Range f(SAR$_{head}$)
(TEM cell , f = 900 MHz)

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

EX3DV4– SN:3753   January 4, 2012

Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)   f = 1900 MHz,WGLS R22 (H_convF)

Deviation from Isotropy in Liquid
Error (φ, ϑ), f = 900 MHz

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

EX3DV4– SN:3753

January 4, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3753

Other Probe Parameters

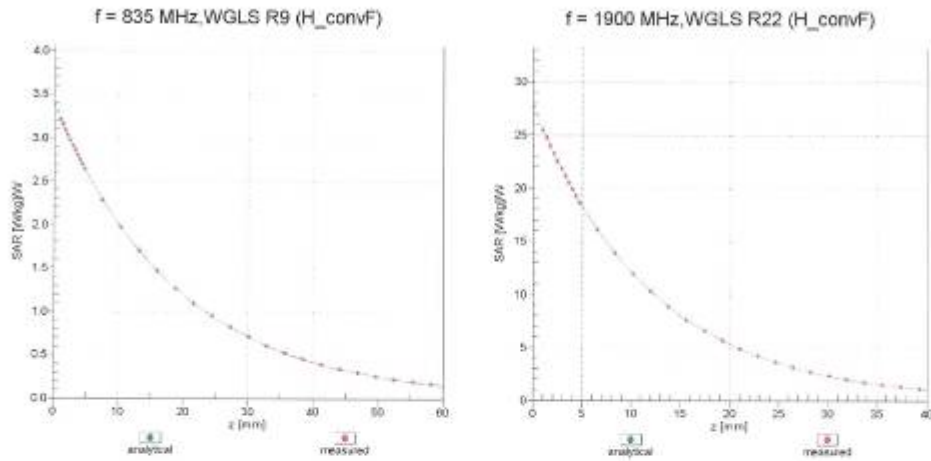| Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

ANNEX E: Probe ES3DV3 Calibration Certificate

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

ilac-MRA

SWISS CALIBRATION

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **TA-Shanghai (Auden)**

Certificate No: **ES3-3189_Jun12**

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3189
Calibration procedure(s)	QA CAL-01.v8, QA CAL-12.v7, QA CAL-23.v4, QA CAL-25.v4 Calibration procedure for dosimetric E-field probes
Calibration date:	June 22, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	10-Jan-12 (No. DAE4-660_Jan12)	Jan-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: June 22, 2012

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

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Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ 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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ (f $\leq$ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z*: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR*: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z*: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f $\leq$ 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 $\pm$ 50 MHz to $\pm$ 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.

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ES3DV3 – SN:3189   June 22, 2012

Probe ES3DV3

SN:3189

Manufactured: March 25, 2008
Calibrated: June 22, 2012

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

ES3DV3– SN:3189   June 22, 2012

DASY/EASY - Parameters of Probe: ES3DV3 - SN:3189

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^A$	1.32	1.35	1.05	± 10.1 %
DCP $(mV)^B$	99.5	100.6	100.2	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc^E (k=2)
0	CW	0.00	X	0.00	0.00	1.00	160.3	±3.8 %
			Y	0.00	0.00	1.00	164.9	
			Z	0.00	0.00	1.00	182.0	

> The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^{A} The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
^{B} Numerical linearization parameter: uncertainty not required.
^{E} Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.