

**1900 Body Toward Ground High with Headset C1**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.561$  S/m;  $\epsilon_r = 51.882$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

Communication System: GSM Frequency: 1910 MHz Duty Cycle: 1:8.30042

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground High \_Speech C1/Area Scan (51x101x1):** Interpolated grid:  
dx=1.500 mm, dy=1.500 mm

Reference Value = 6.845 V/m; Power Drift = 0.07 dB

Maximum value of SAR (interpolated) = 0.558 W/kg

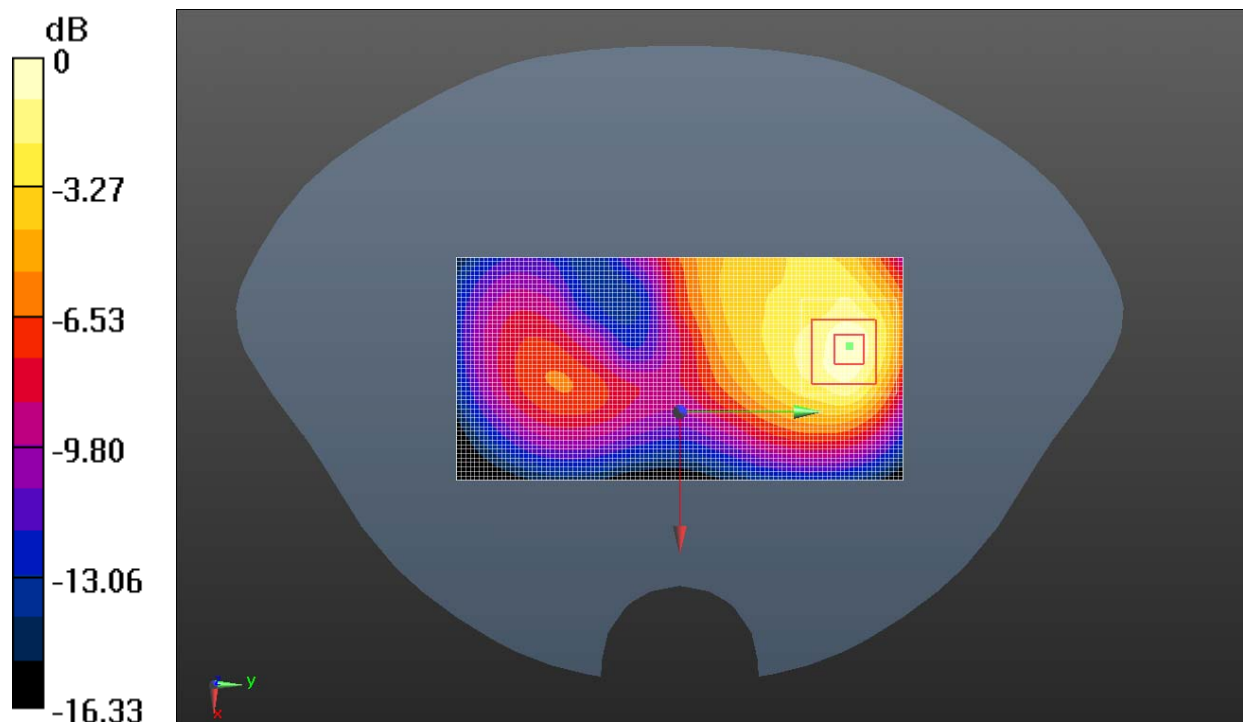
**Towards Ground High \_Speech C1/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  
dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.845 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.736 W/kg

**SAR(1 g) = 0.473 W/kg; SAR(10 g) = 0.274 W/kg**

Maximum value of SAR (measured) = 0.528 W/kg



0 dB = 0.528 W/kg = -2.77 dBW/kg

**Fig. 42 1900 MHz CH512**

**1900 Body Toward Ground Low with Headset C4**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1910 \text{ MHz}$ ;  $\sigma = 1.561 \text{ S/m}$ ;  $\epsilon_r = 51.882$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.9^\circ\text{C}$

Communication System: GSM Frequency: 1910 MHz Duty Cycle: 1:8.30042

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground High \_Speech C4/Area Scan (51x101x1):** Interpolated grid:  
dx=1.500 mm, dy=1.500 mm

Reference Value = 6.753 V/m; Power Drift = 0.09 dB

Maximum value of SAR (interpolated) = 0.560 W/kg

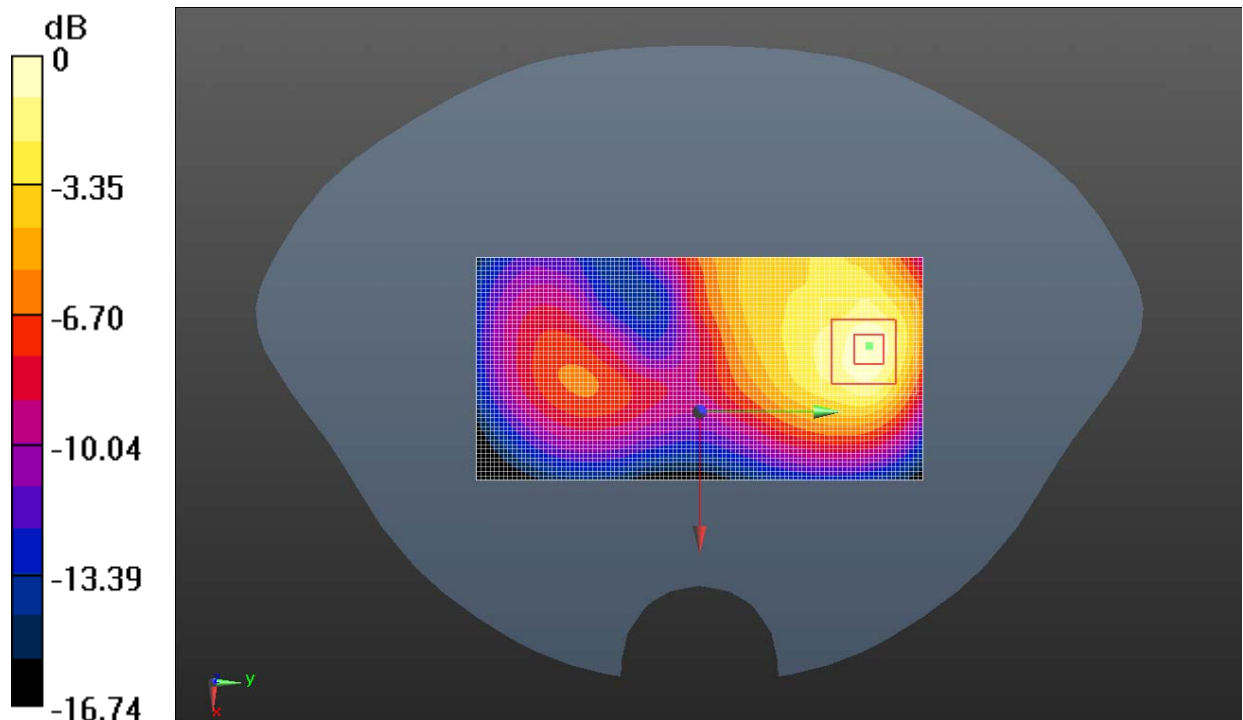
**Towards Ground High \_Speech C4/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  
dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.753 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.754 W/kg

**SAR(1 g) = 0.477 W/kg; SAR(10 g) = 0.275 W/kg**

Maximum value of SAR (measured) = 0.532 W/kg



0 dB = 0.532 W/kg = -2.74 dBW/kg

**Fig. 43 1900 MHz CH512**

### W850 Left Cheek High

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 846.6$  MHz;  $\sigma = 0.926$  S/m;  $\epsilon_r = 43.024$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Left Cheek High/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.535 V/m; Power Drift = -0.00 dB

Maximum value of SAR (interpolated) = 0.420 W/kg

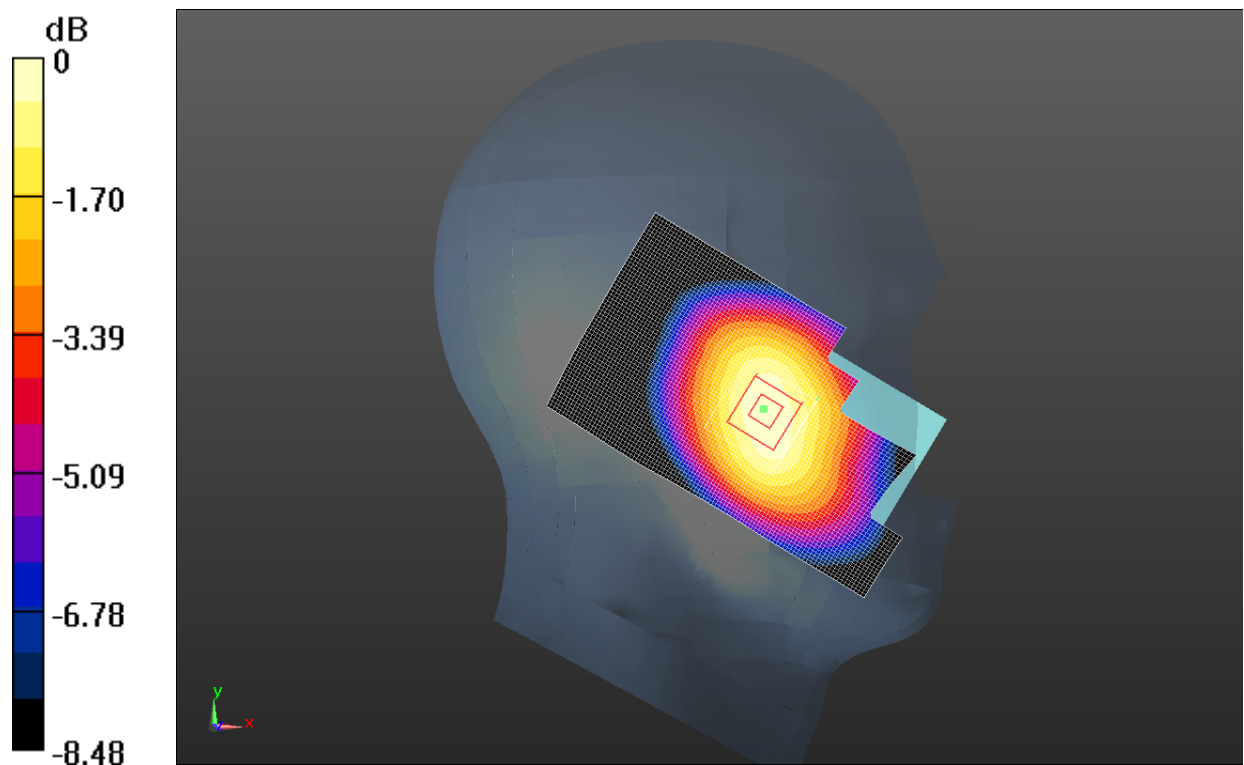
**Left Cheek High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.535 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 0.485 W/kg

**SAR(1 g) = 0.409 W/kg; SAR(10 g) = 0.315 W/kg**

Maximum value of SAR (measured) = 0.432 W/kg



0 dB = 0.432 W/kg = -3.65 dBW/kg

Fig. 44 W850 MHz CH4233

### W850 Left Cheek Middle

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.916$  S/m;  $\epsilon_r = 43.154$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Left Cheek Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.156 V/m; Power Drift = 0.00 dB

Maximum value of SAR (interpolated) = 0.371 W/kg

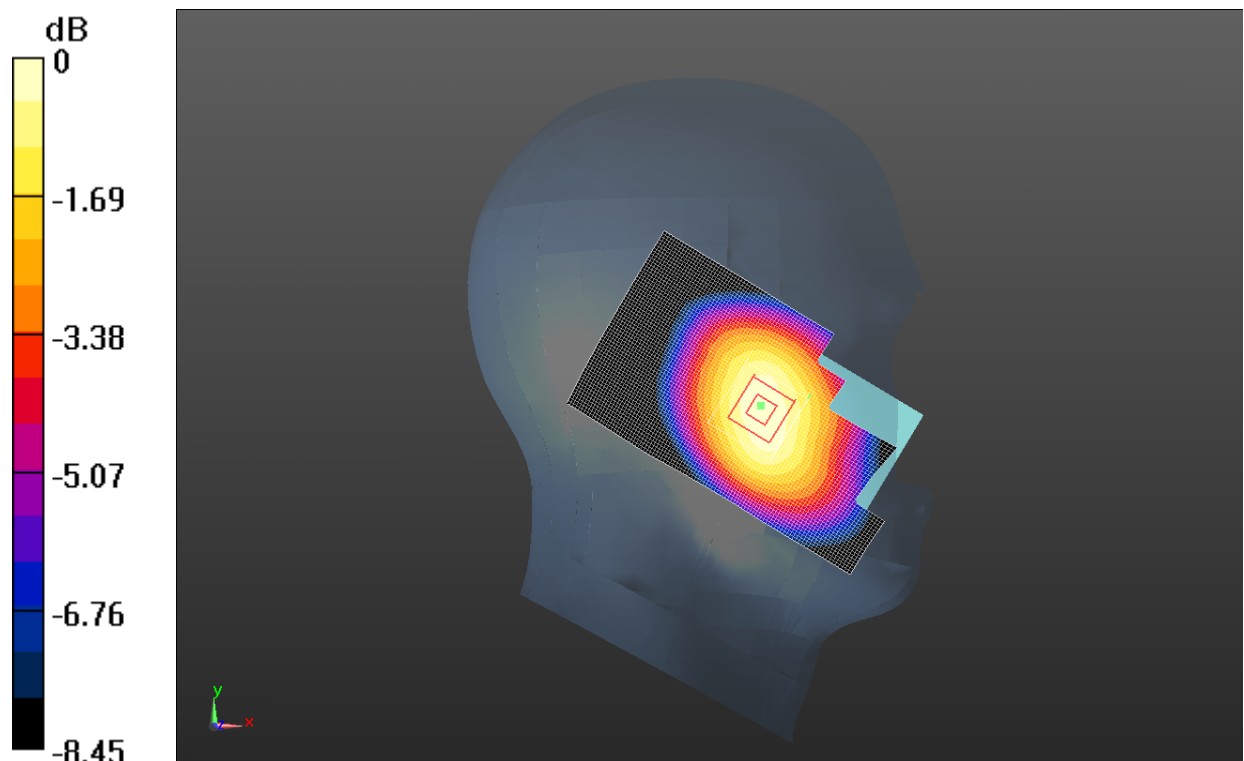
**Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.156 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.428 W/kg

**SAR(1 g) = 0.360 W/kg; SAR(10 g) = 0.277 W/kg**

Maximum value of SAR (measured) = 0.379 W/kg



0 dB = 0.379 W/kg = -4.21 dBW/kg

Fig. 45 W850 MHz CH4183

**W850 Left Cheek Low**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.907$  S/m;  $\epsilon_r = 43.285$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Left Cheek Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.295 V/m; Power Drift = -0.17 dB

Maximum value of SAR (interpolated) = 0.357 W/kg

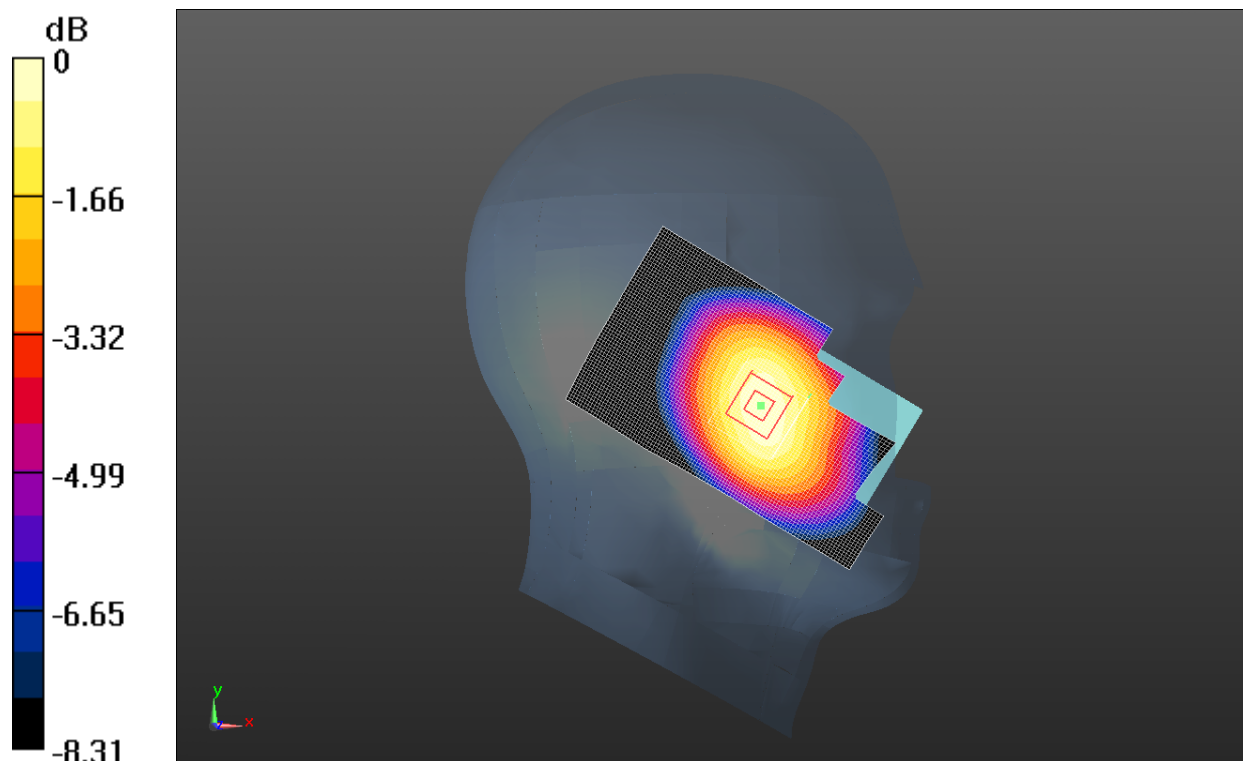
**Left Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.295 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 0.416 W/kg

**SAR(1 g) = 0.351 W/kg; SAR(10 g) = 0.270 W/kg**

Maximum value of SAR (measured) = 0.369 W/kg



0 dB = 0.369 W/kg = -4.33 dBW/kg

**Fig. 46 W850 MHz CH4132**

### W850 Left Tilt High

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 846.6$  MHz;  $\sigma = 0.926$  S/m;  $\epsilon_r = 43.024$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Left Tilt High/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.338 V/m; Power Drift = -0.06 dB

Maximum value of SAR (interpolated) = 0.315 W/kg

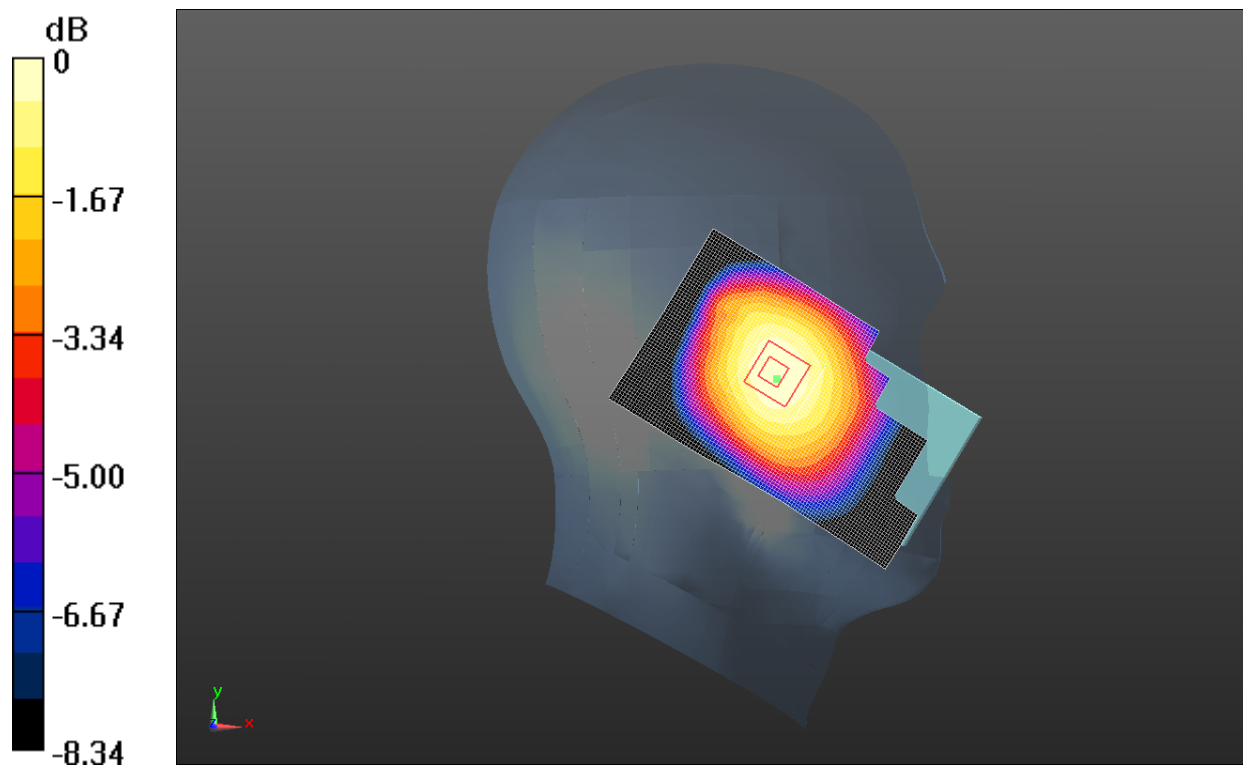
**Left Tilt High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.338 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.360 W/kg

**SAR(1 g) = 0.301 W/kg; SAR(10 g) = 0.232 W/kg**

Maximum value of SAR (measured) = 0.315 W/kg



0 dB = 0.315 W/kg = -5.02 dBW/kg

**Fig. 47 W850 MHz CH4233**

### W850 Left Tilt Middle

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.916$  S/m;  $\epsilon_r = 43.154$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Left Tilt Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.190 V/m; Power Drift = 0.07 dB

Maximum value of SAR (interpolated) = 0.270 W/kg

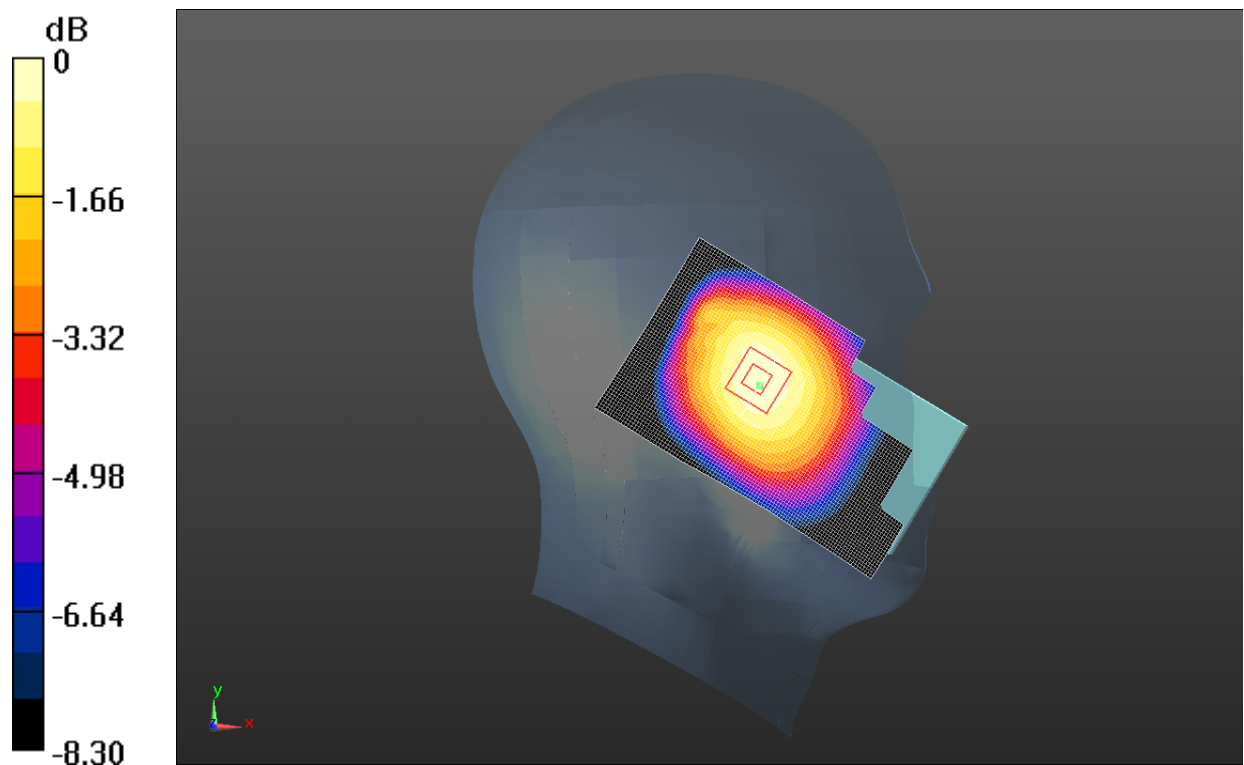
**Left Tilt Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.190 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.311 W/kg

**SAR(1 g) = 0.260 W/kg; SAR(10 g) = 0.201 W/kg**

Maximum value of SAR (measured) = 0.273 W/kg



0 dB = 0.273 W/kg = -5.64 dBW/kg

Fig. 48 W850 MHz CH4183



**W850 Left Tilt Low**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.907$  S/m;  $\epsilon_r = 43.285$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Left Tilt Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.358 V/m; Power Drift = 0.03 dB

Maximum value of SAR (interpolated) = 0.272 W/kg

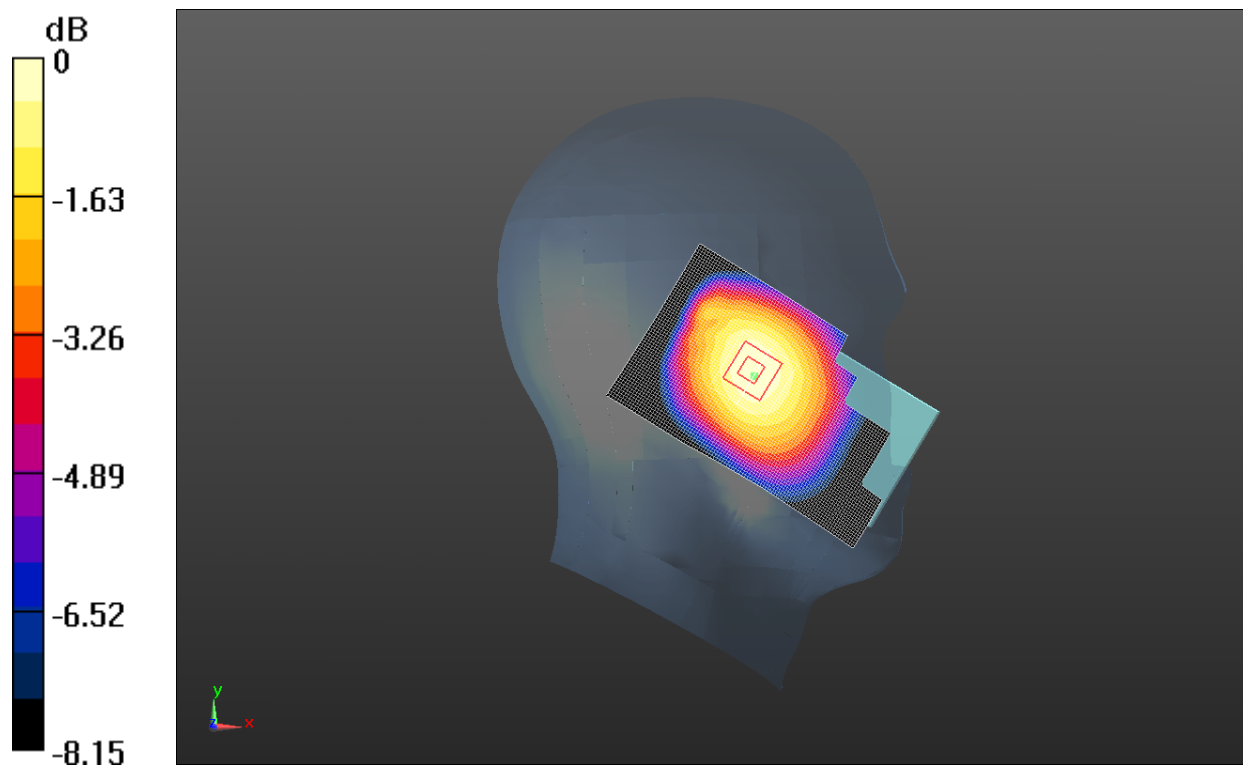
**Left Tilt Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.358 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.313 W/kg

**SAR(1 g) = 0.262 W/kg; SAR(10 g) = 0.204 W/kg**

Maximum value of SAR (measured) = 0.275 W/kg



0 dB = 0.275 W/kg = -5.61 dBW/kg

**Fig. 49 W850 MHz CH4132**



### W850 Right Cheek High

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 846.6$  MHz;  $\sigma = 0.926$  S/m;  $\epsilon_r = 43.024$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Right Cheek High/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 9.299 V/m; Power Drift = 0.06 dB

Maximum value of SAR (interpolated) = 0.466 W/kg

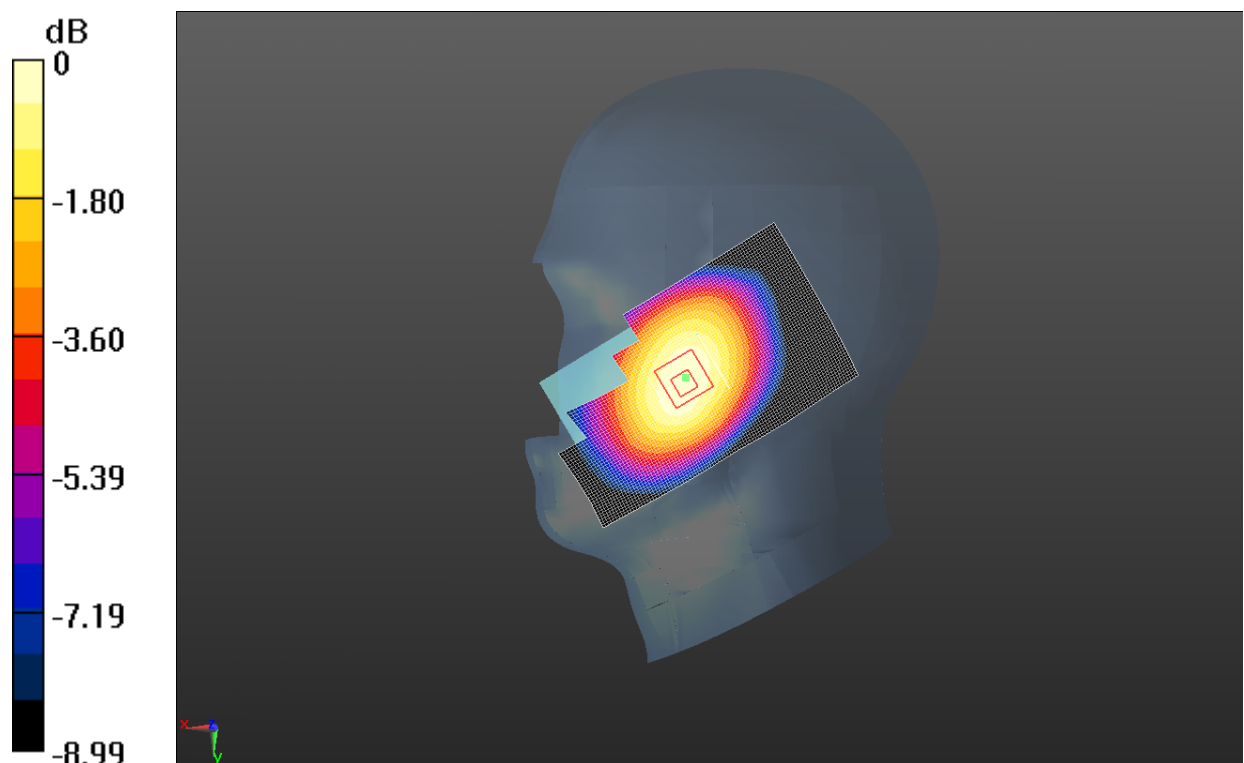
**Right Cheek High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.299 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.526 W/kg

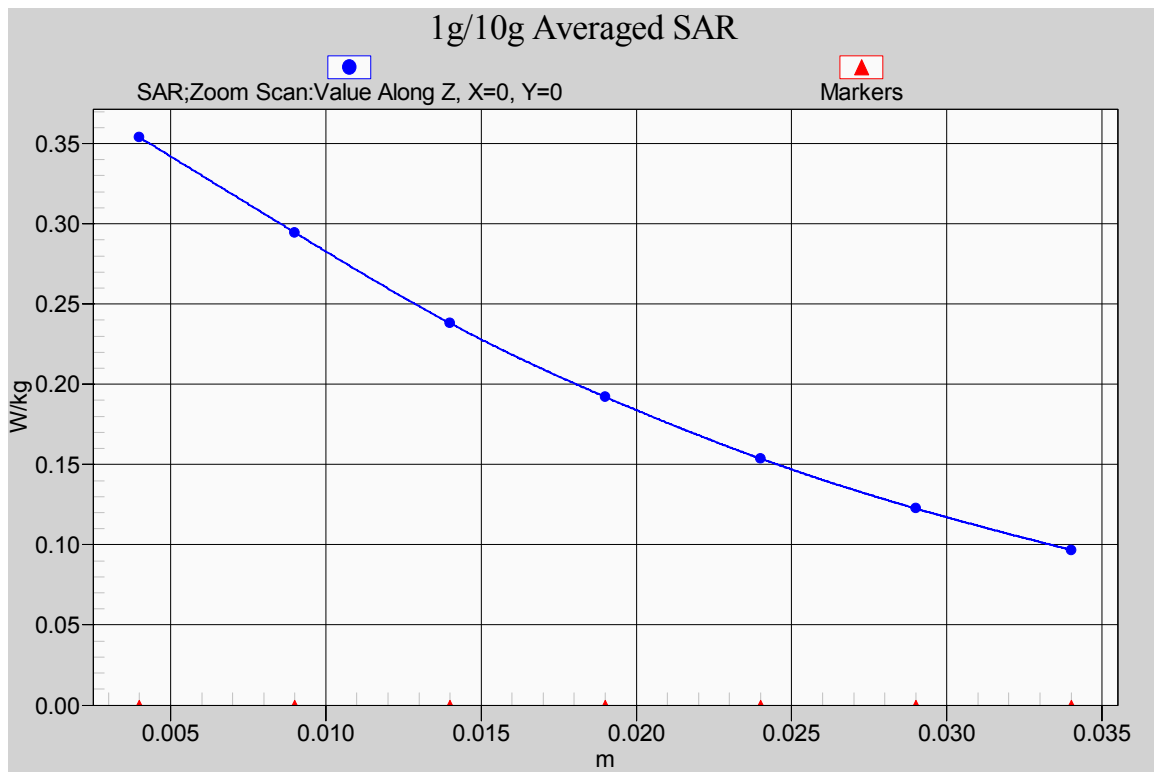
**SAR(1 g) = 0.444 W/kg; SAR(10 g) = 0.345 W/kg**

Maximum value of SAR (measured) = 0.464 W/kg



0 dB = 0.464 W/kg = -3.33 dBW/kg

Fig. 50 W850 MHz CH4233



**Fig. 50-1 Z-Scan at power reference point (850 MHz CH4233)**

### W850 Right Cheek Middle

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.916$  S/m;  $\epsilon_r = 43.154$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Right Cheek Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.778 V/m; Power Drift = 0.06 dB

Maximum value of SAR (interpolated) = 0.432 W/kg

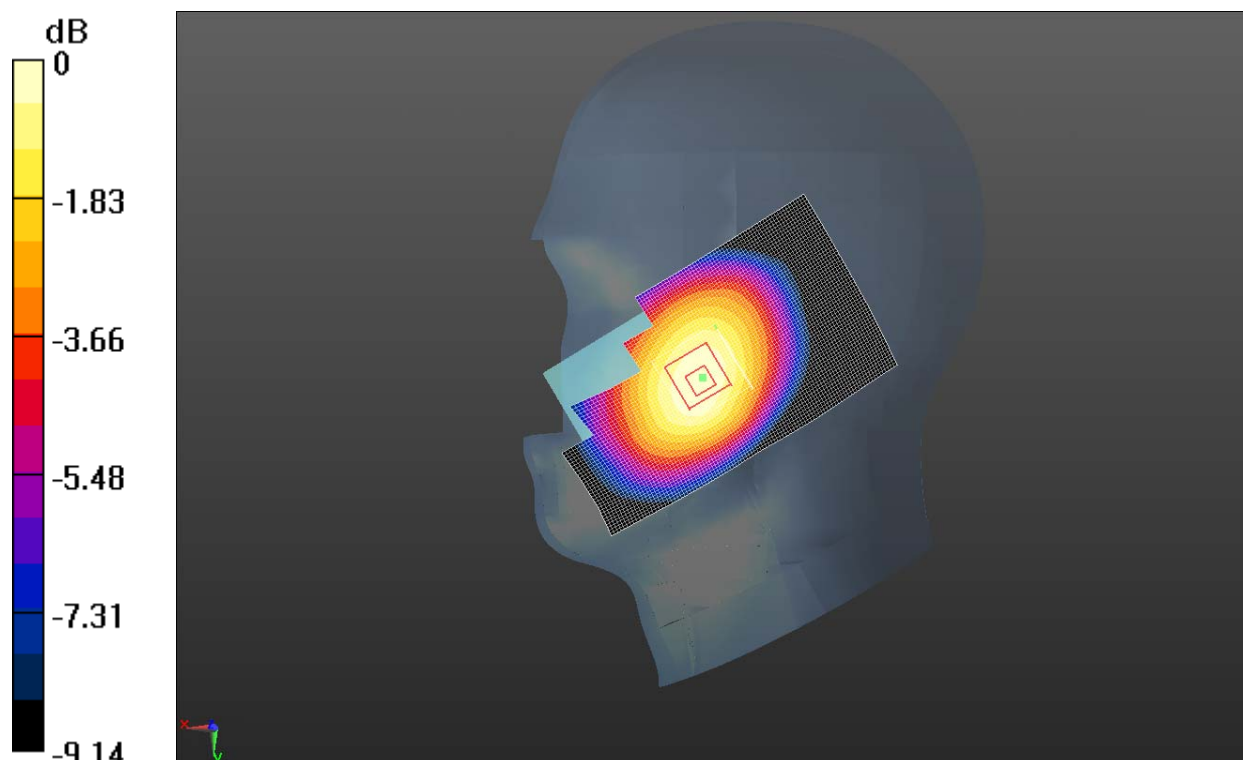
**Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.778 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.502 W/kg

**SAR(1 g) = 0.413 W/kg; SAR(10 g) = 0.316 W/kg**

Maximum value of SAR (measured) = 0.435 W/kg



0 dB = 0.435 W/kg = -3.61 dBW/kg

Fig. 51 W850 MHz CH4183

### W850 Right Cheek Low

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.907$  S/m;  $\epsilon_r = 43.285$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Right Cheek Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.661 V/m; Power Drift = 0.09 dB

Maximum value of SAR (interpolated) = 0.407 W/kg

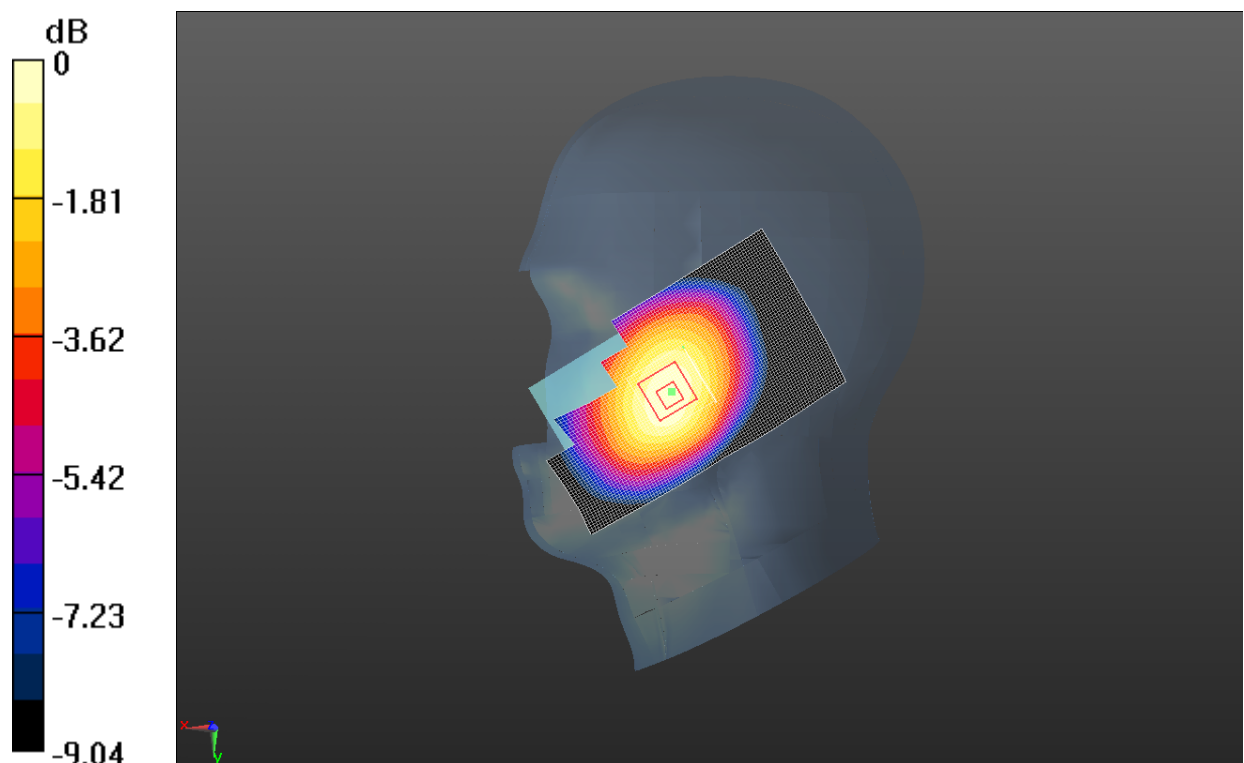
**Right Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.661 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.475 W/kg

**SAR(1 g) = 0.392 W/kg; SAR(10 g) = 0.301 W/kg**

Maximum value of SAR (measured) = 0.413 W/kg



0 dB = 0.413 W/kg = -3.84 dBW/kg

Fig. 52 W850 MHz CH4132

### W850 Right Tilt High

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 846.6$  MHz;  $\sigma = 0.926$  S/m;  $\epsilon_r = 43.024$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Right Tilt High/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 13.315 V/m; Power Drift = 0.04 dB

Maximum value of SAR (interpolated) = 0.339 W/kg

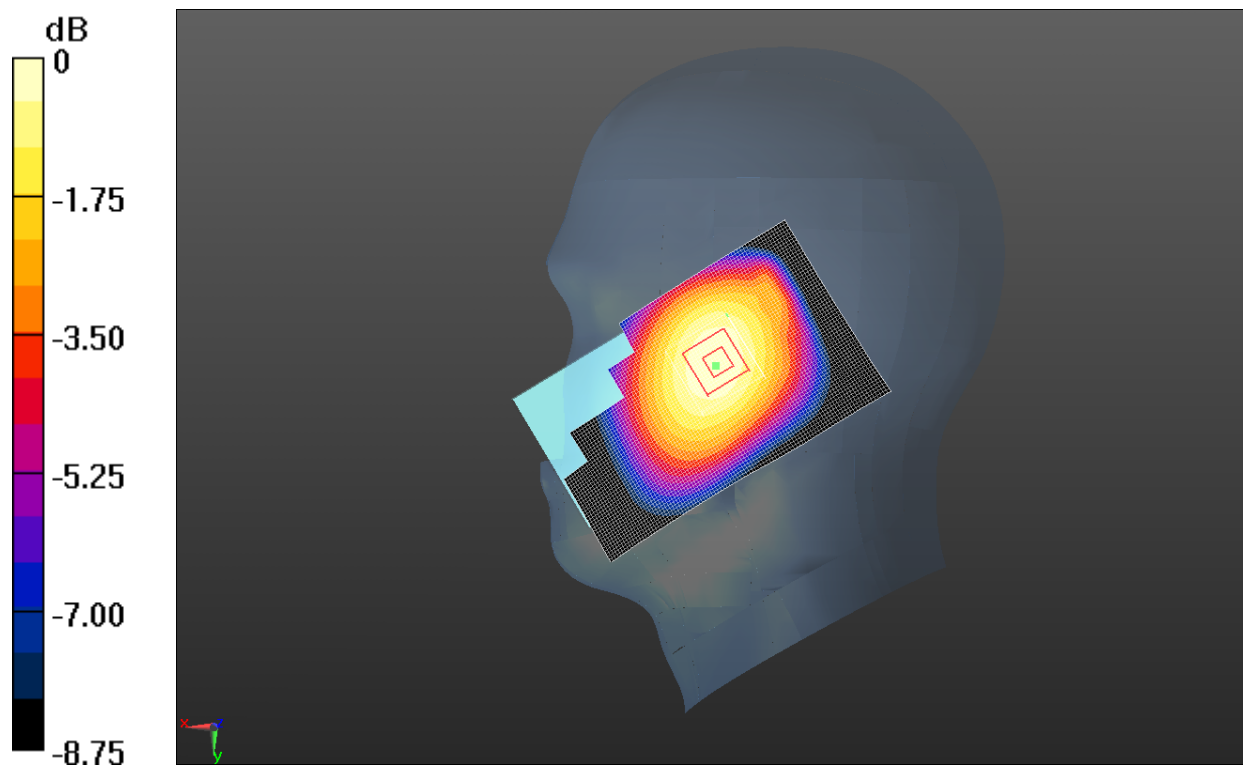
**Right Tilt High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.315 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.387 W/kg

**SAR(1 g) = 0.325 W/kg; SAR(10 g) = 0.250 W/kg**

Maximum value of SAR (measured) = 0.340 W/kg



0 dB = 0.340 W/kg = -4.68 dBW/kg

Fig. 53 W850 MHz CH4233

### W850 Right Tilt Middle

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.916$  S/m;  $\epsilon_r = 43.154$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Right Tilt Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.476 V/m; Power Drift = 0.04 dB

Maximum value of SAR (interpolated) = 0.292 W/kg

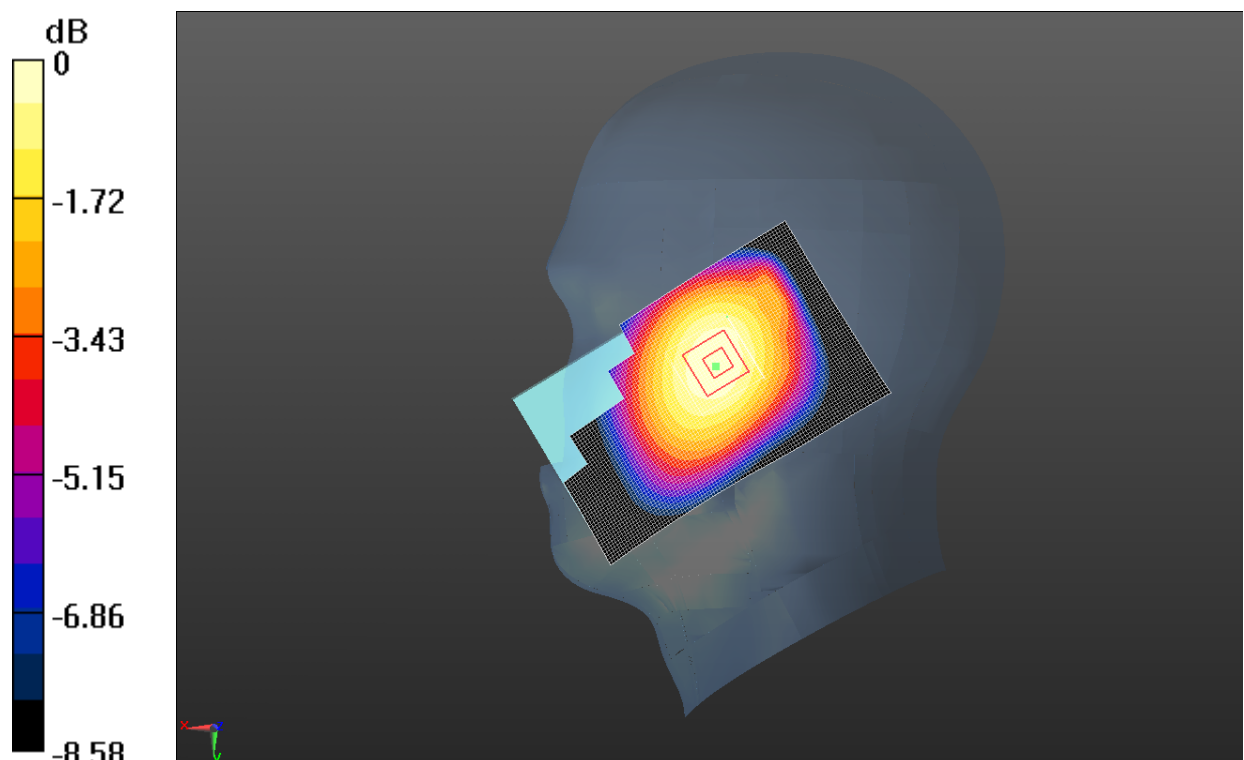
**Right Tilt Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.476 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.331 W/kg

**SAR(1 g) = 0.279 W/kg; SAR(10 g) = 0.216 W/kg**

Maximum value of SAR (measured) = 0.292 W/kg



0 dB = 0.292 W/kg = -5.34 dBW/kg

Fig. 54 W850 MHz CH4183

### W850 Right Tilt Low

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 850MHz

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.907$  S/m;  $\epsilon_r = 43.285$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6°C      Liquid Temperature: 21.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**Right TiltLow/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.550 V/m; Power Drift = 0.04 dB

Maximum value of SAR (interpolated) = 0.291 W/kg

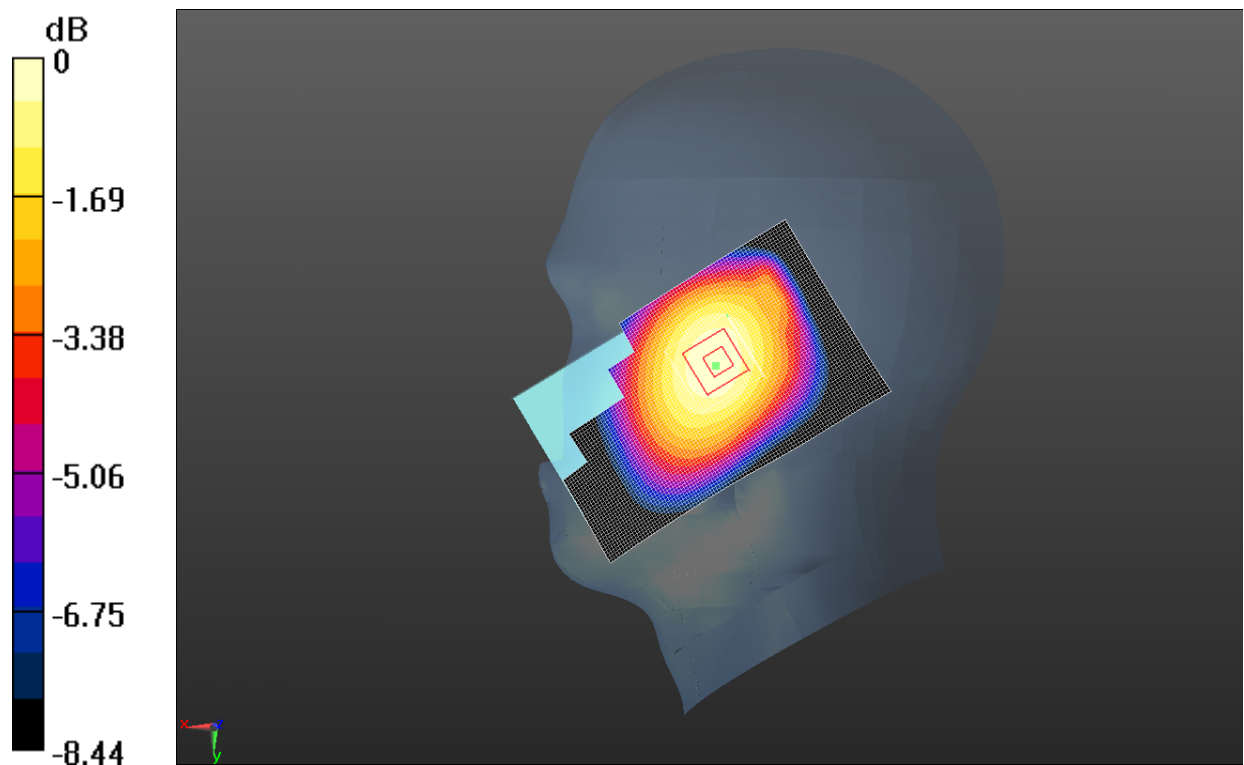
**Right TiltLow/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.550 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.329 W/kg

**SAR(1 g) = 0.278 W/kg; SAR(10 g) = 0.216 W/kg**

Maximum value of SAR (measured) = 0.291 W/kg



0 dB = 0.291 W/kg = -5.36 dBW/kg

Fig. 55 W850 MHz CH4132



### W850 Body Toward Phantom Middle

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.978$  S/m;  $\epsilon_r = 54.315$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Phantom Middle/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 22.364 V/m; Power Drift = 0.05 dB

Maximum value of SAR (interpolated) = 0.552 W/kg

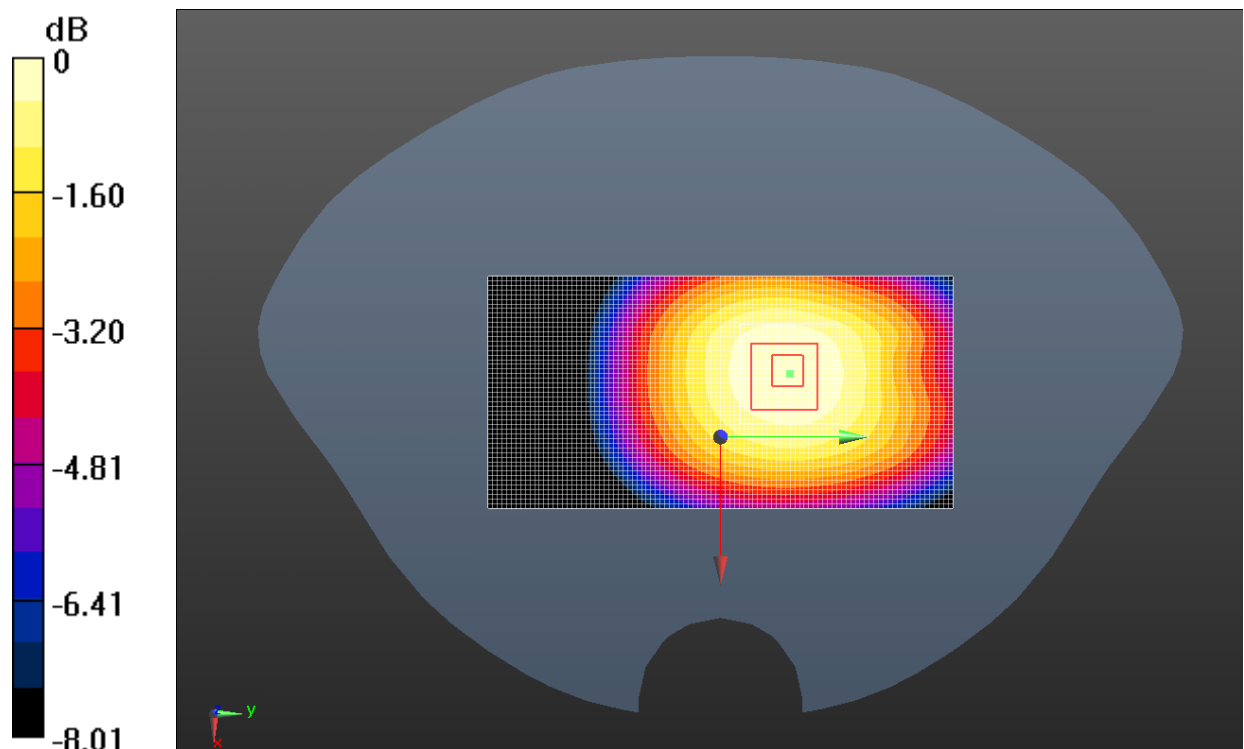
**Towards Phantom Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.364 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.651 W/kg

**SAR(1 g) = 0.532 W/kg; SAR(10 g) = 0.410 W/kg**

Maximum value of SAR (measured) = 0.555 W/kg



0 dB = 0.555 W/kg = -2.56 dBW/kg

Fig. 56 W850 MHz CH4183

### W850 Body Toward Ground High

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 846.6$  MHz;  $\sigma = 0.988$  S/m;  $\epsilon_r = 54.246$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Ground High/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 28.622 V/m; Power Drift = 0.00 dB

Maximum value of SAR (interpolated) = 0.927 W/kg

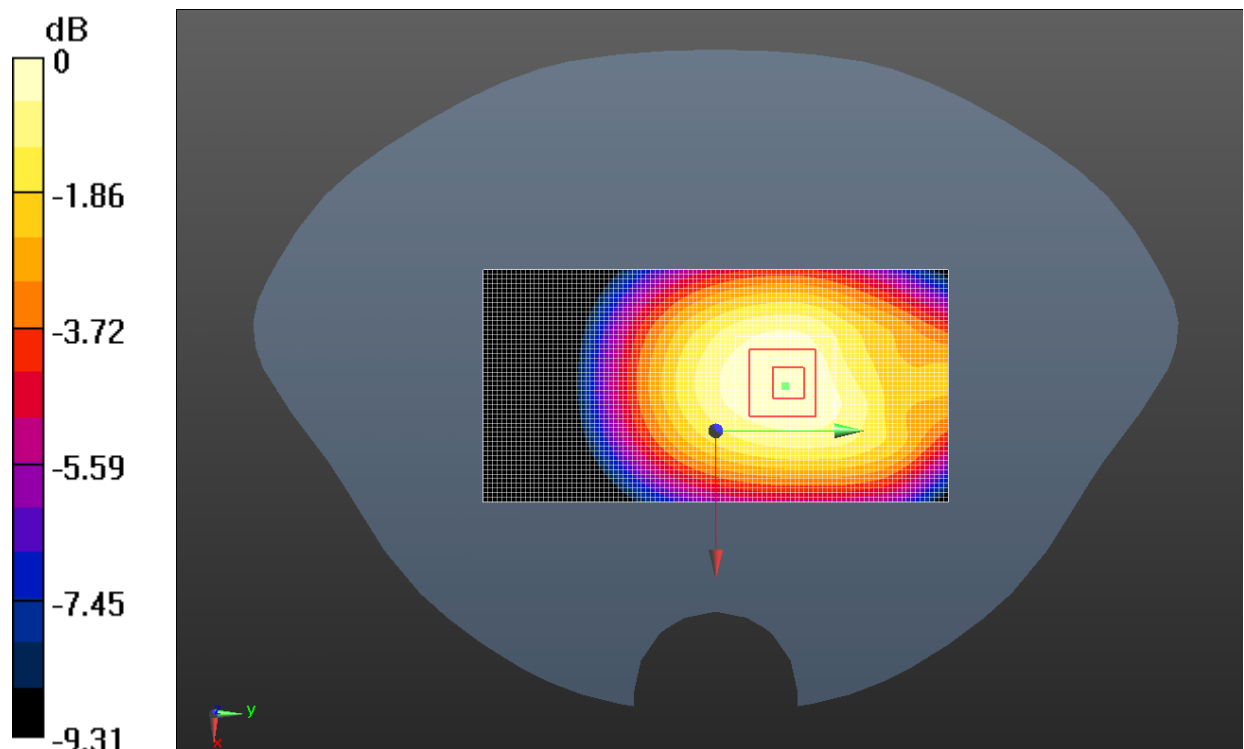
**Towards Ground High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.622 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 1.06 W/kg

**SAR(1 g) = 0.879 W/kg; SAR(10 g) = 0.670 W/kg**

Maximum value of SAR (measured) = 0.920 W/kg



0 dB = 0.920 W/kg = -0.36 dBW/kg

Fig. 57 W850 MHz CH4233

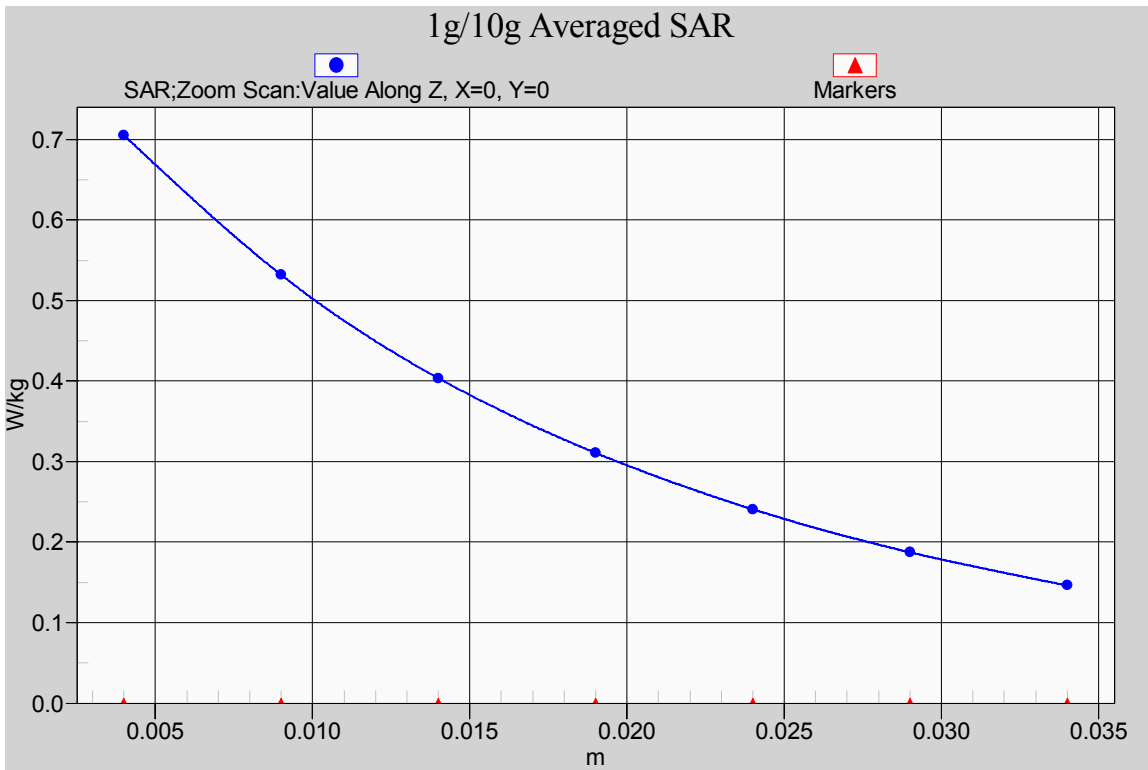


Fig. 57-1 Z-Scan at power reference point (850 MHz CH4233)

### W850 Body Toward Ground Middle

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.978$  S/m;  $\epsilon_r = 54.315$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Ground Middle/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 28.261 V/m; Power Drift = 0.01 dB.

Maximum value of SAR (interpolated) = 0.903 W/kg

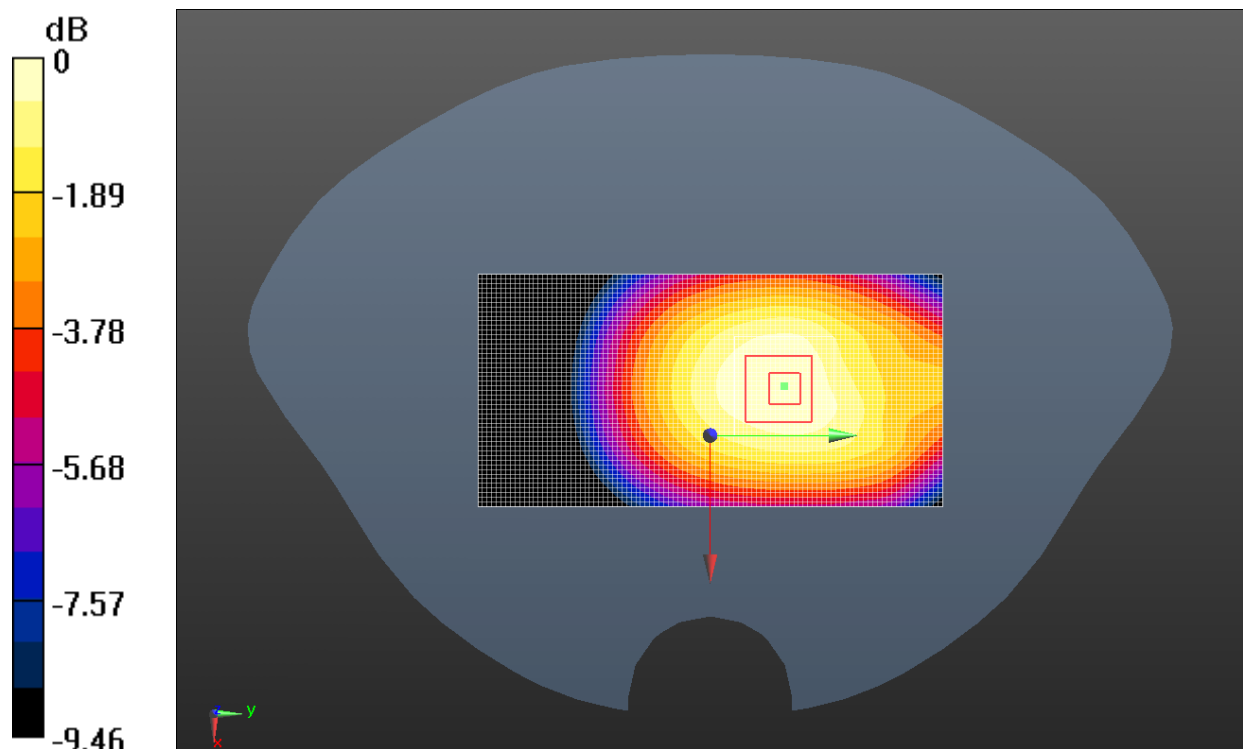
**Towards Ground Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.261 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.03 W/kg

**SAR(1 g) = 0.857 W/kg; SAR(10 g) = 0.655 W/kg**

Maximum value of SAR (measured) = 0.899 W/kg



0 dB = 0.899 W/kg = -0.46 dBW/kg

Fig. 58 W850 MHz CH4183

### W850 Body Toward Ground Low

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 826.4$  MHz;  $\sigma = 0.967$  S/m;  $\epsilon_r = 54.389$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Ground Low/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 28.160 V/m; Power Drift = 0.01 dB

Maximum value of SAR (interpolated) = 0.902 W/kg

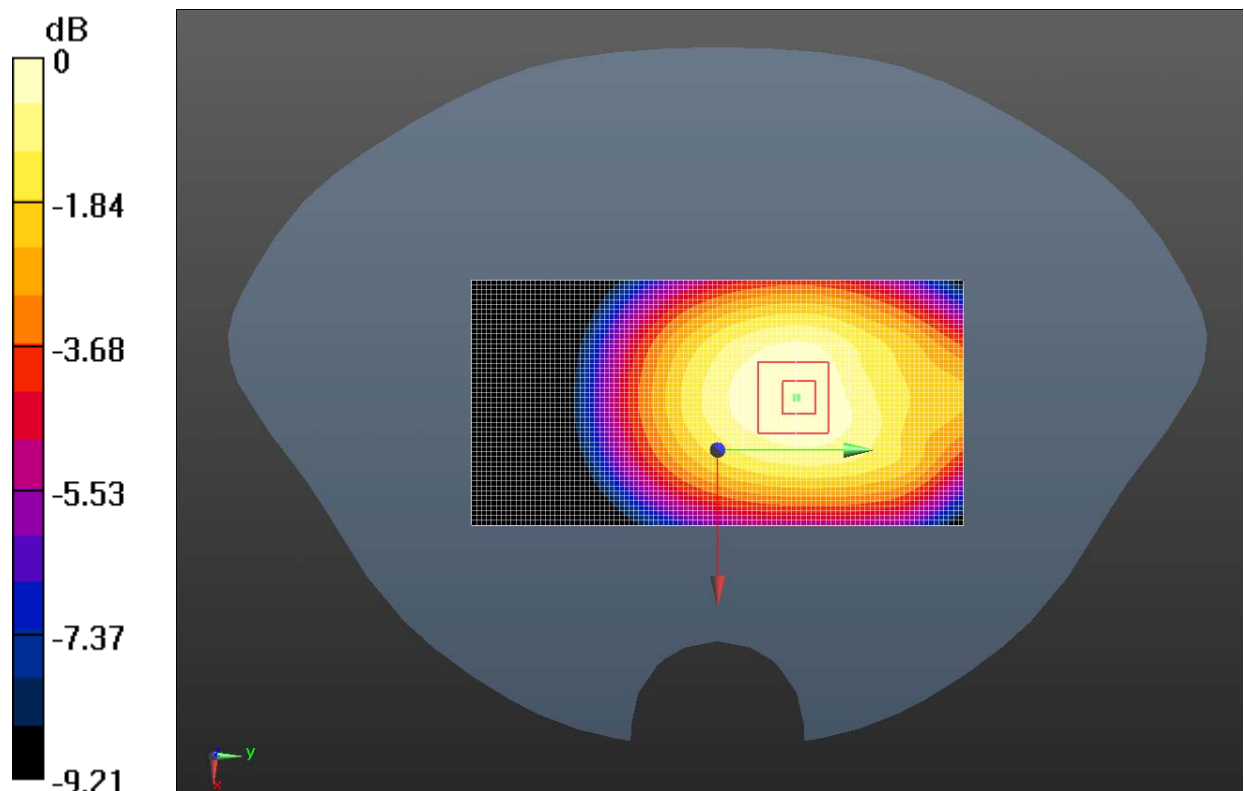
**Towards Ground Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 28.160 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.04 W/kg

**SAR(1 g) = 0.858 W/kg; SAR(10 g) = 0.655 W/kg**

Maximum value of SAR (measured) = 0.898 W/kg



0 dB = 0.898 W/kg = -0.47 dBW/kg

Fig. 59 W850 MHz CH4132

### W850 Body Left Side Middle

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.978$  S/m;  $\epsilon_r = 54.315$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Left Side Middle/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 13.564 V/m; Power Drift = -0.09 dB

Maximum value of SAR (interpolated) = 0.476 W/kg

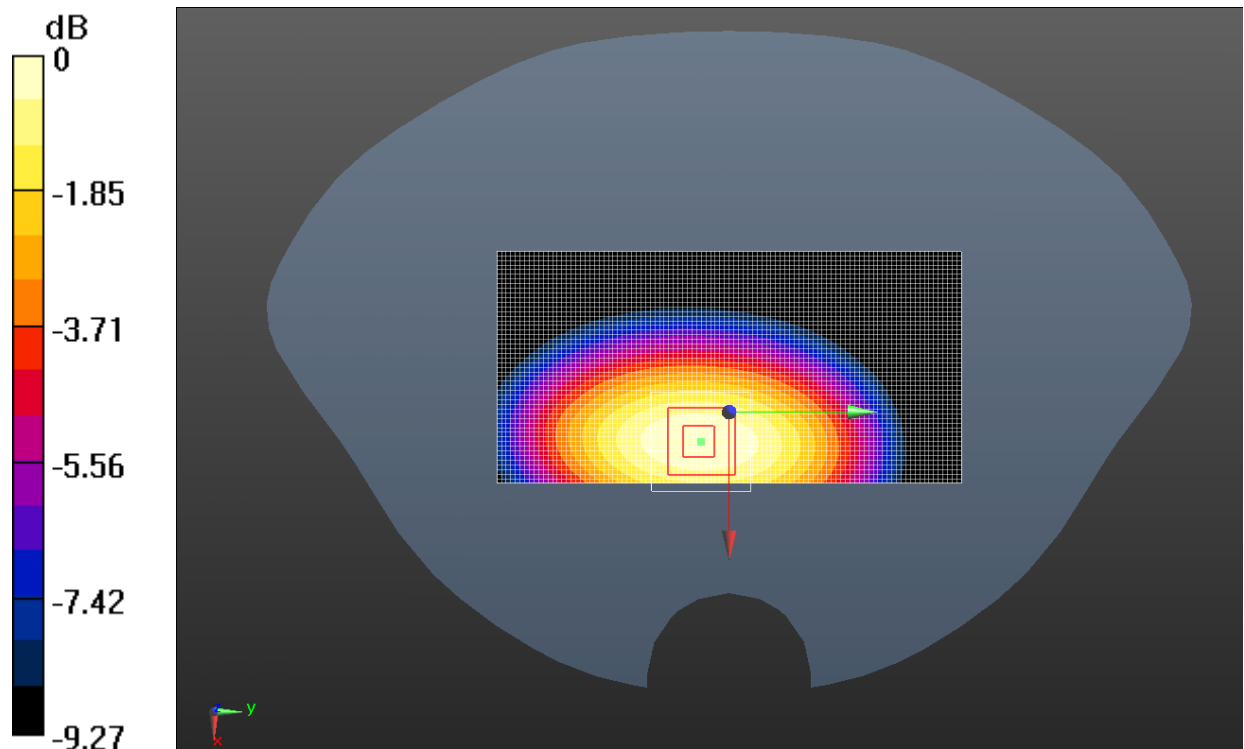
**Left Side Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.564 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.609 W/kg

**SAR(1 g) = 0.445 W/kg; SAR(10 g) = 0.310 W/kg**

Maximum value of SAR (measured) = 0.476 W/kg



0 dB = 0.476 W/kg = -3.23 dBW/kg

Fig. 60 W850 MHz CH4183

**W850 Body Right Side Middle**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.978$  S/m;  $\epsilon_r = 54.315$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Right Side Middle/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 14.972 V/m; Power Drift = -0.12 dB

Maximum value of SAR (interpolated) = 0.594 W/kg

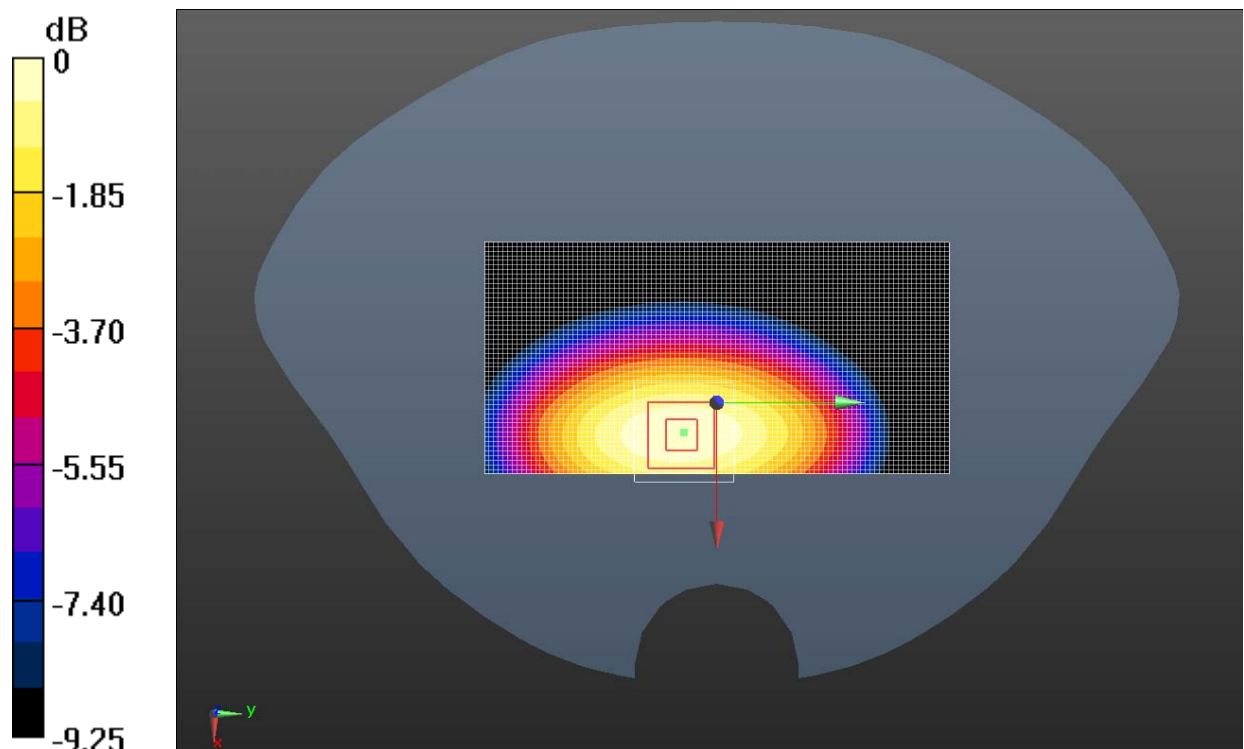
**Right Side Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.972 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 0.764 W/kg

**SAR(1 g) = 0.559 W/kg; SAR(10 g) = 0.391 W/kg**

Maximum value of SAR (measured) = 0.597 W/kg



0 dB = 0.597 W/kg = -2.24 dBW/kg

**Fig. 61 W850 MHz CH4183**



### W850 Body Bottom Side Middle

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 836.6$  MHz;  $\sigma = 0.978$  S/m;  $\epsilon_r = 54.315$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Bottom Side Middle/Area Scan (41x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.463 V/m; Power Drift = -0.15 dB

Maximum value of SAR (interpolated) = 0.0925 W/kg

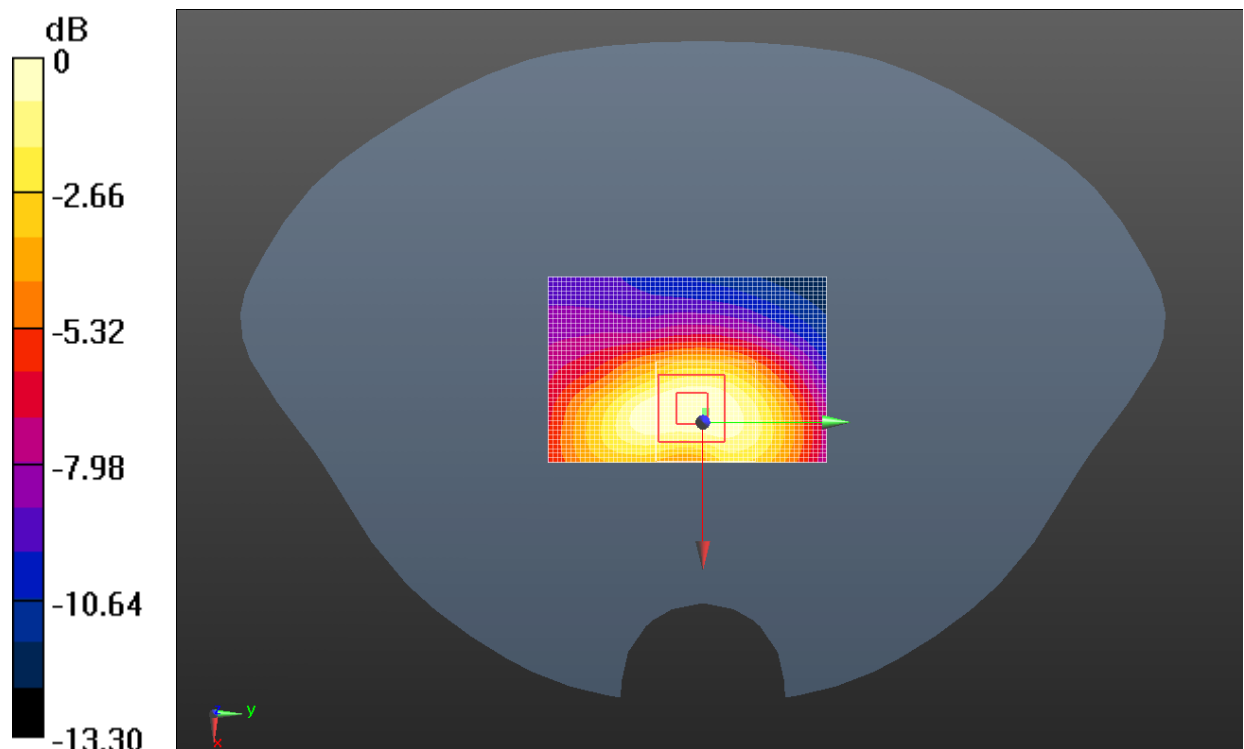
**Bottom Side Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.463 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.131 W/kg

**SAR(1 g) = 0.083 W/kg; SAR(10 g) = 0.050 W/kg**

Maximum value of SAR (measured) = 0.0907 W/kg



0 dB = 0.0907 W/kg = -10.42 dBW/kg

Fig. 62 W850 MHz CH4183

### W850 Body Toward Ground High with Headset C1

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 846.6$  MHz;  $\sigma = 0.988$  S/m;  $\epsilon_r = 54.246$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Ground High with c1/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 24.125 V/m; Power Drift = -0.04 dB

Maximum value of SAR (interpolated) = 0.796 W/kg

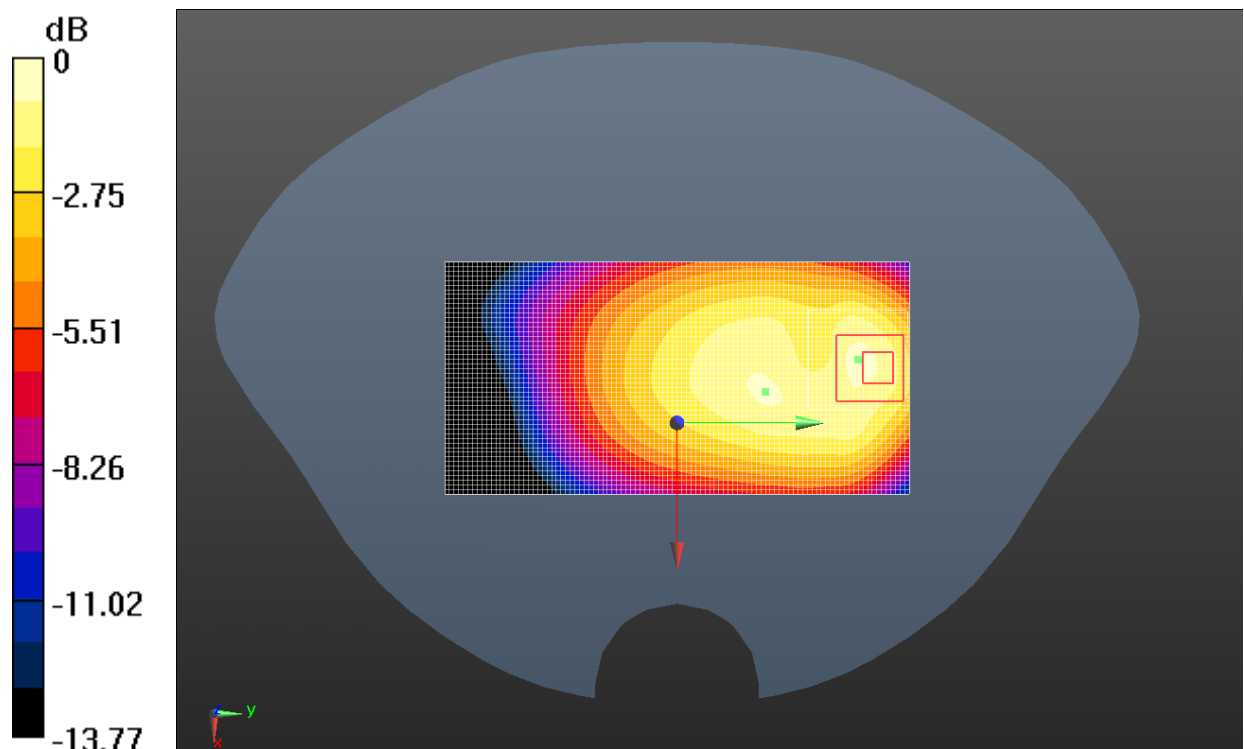
**Towards Ground High with c1/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.125 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.49 W/kg

**SAR(1 g) = 0.801 W/kg; SAR(10 g) = 0.445 W/kg**

Maximum value of SAR (measured) = 0.900 W/kg



0 dB = 0.900 W/kg = -0.46 dBW/kg

Fig. 63 W850 MHz CH4233

### W850 Body Toward Ground High with Headset C4

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 846.6$  MHz;  $\sigma = 0.988$  S/m;  $\epsilon_r = 54.246$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

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

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Ground High with c4/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 27.390 V/m; Power Drift = -0.02 dB

Maximum value of SAR (interpolated) = 0.837 W/kg

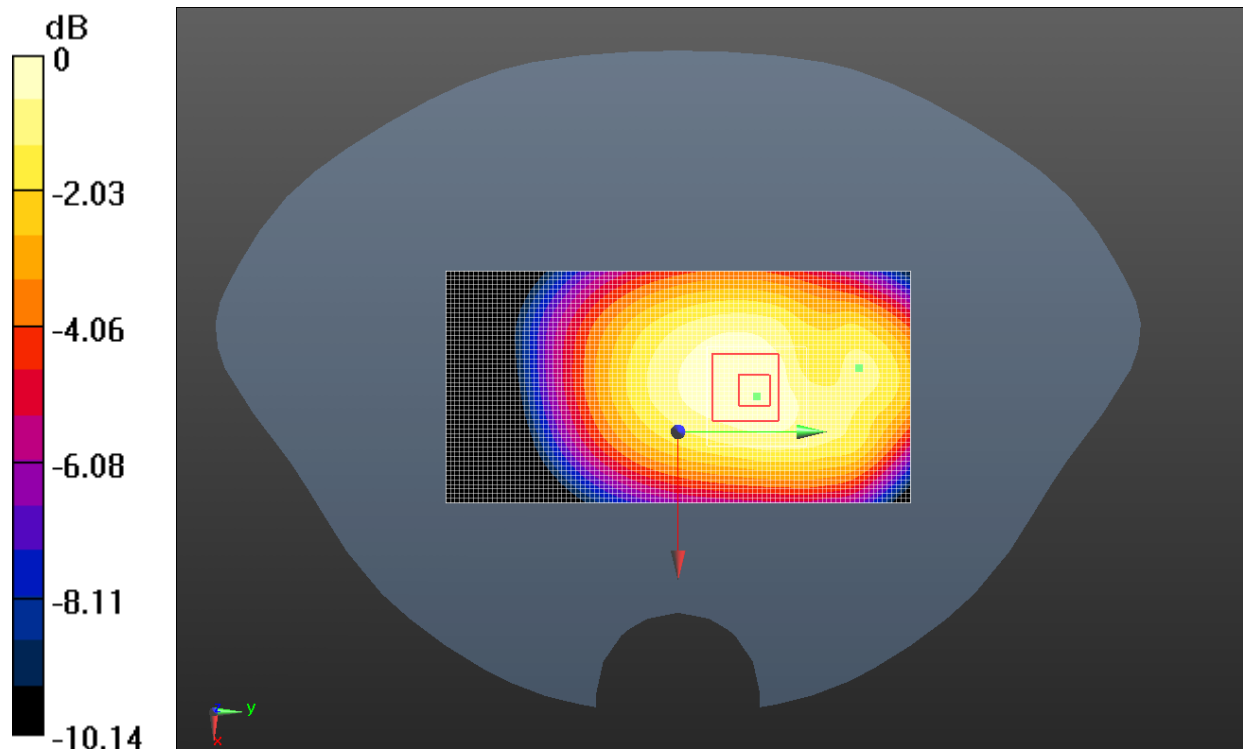
**Towards Ground High with c4/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.390 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.967 W/kg

**SAR(1 g) = 0.794 W/kg; SAR(10 g) = 0.603 W/kg**

Maximum value of SAR (measured) = 0.835 W/kg



0 dB = 0.835 W/kg = -0.78 dBW/kg

Fig. 64 W850 MHz CH4233

### W1900 Left Cheek High

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1908 \text{ MHz}$ ;  $\sigma = 1.475 \text{ S/m}$ ;  $\epsilon_r = 38.995$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $21.4^\circ\text{C}$       Liquid Temperature:  $21.0^\circ\text{C}$

Communication System: WCDMA Frequency: 1908 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Left Cheek High/Area Scan (61x101x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Reference Value = 7.801 V/m; Power Drift = 0.04 dB

Maximum value of SAR (interpolated) = 0.457 W/kg

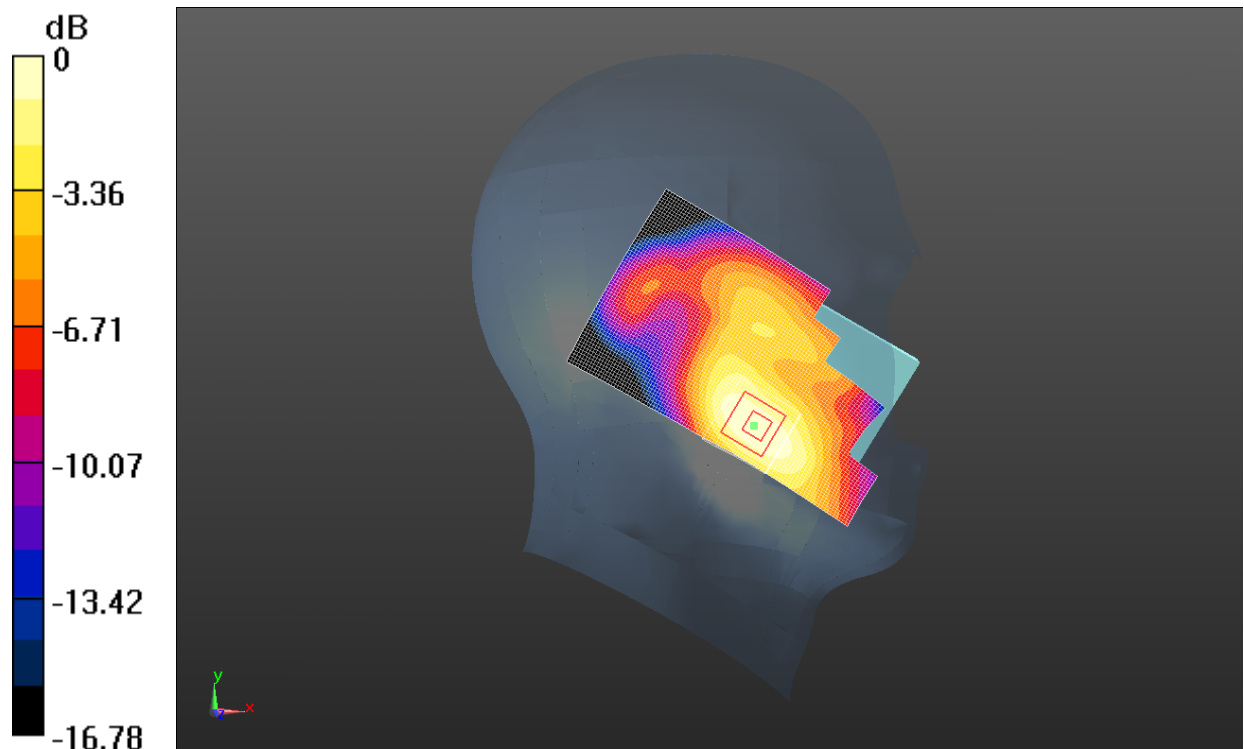
**Left Cheek High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.801 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.656 W/kg

**SAR(1 g) = 0.412 W/kg; SAR(10 g) = 0.251 W/kg**

Maximum value of SAR (measured) = 0.451 W/kg



0 dB = 0.451 W/kg = -3.46 dBW/kg

Fig. 65 W1900 MHz CH9538

**W1900 Left Cheek Middle**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.449$  S/m;  $\epsilon_r = 39.083$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

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

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Left Cheek Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.789 V/m; Power Drift = 0.11 dB

Maximum value of SAR (interpolated) = 0.488 W/kg

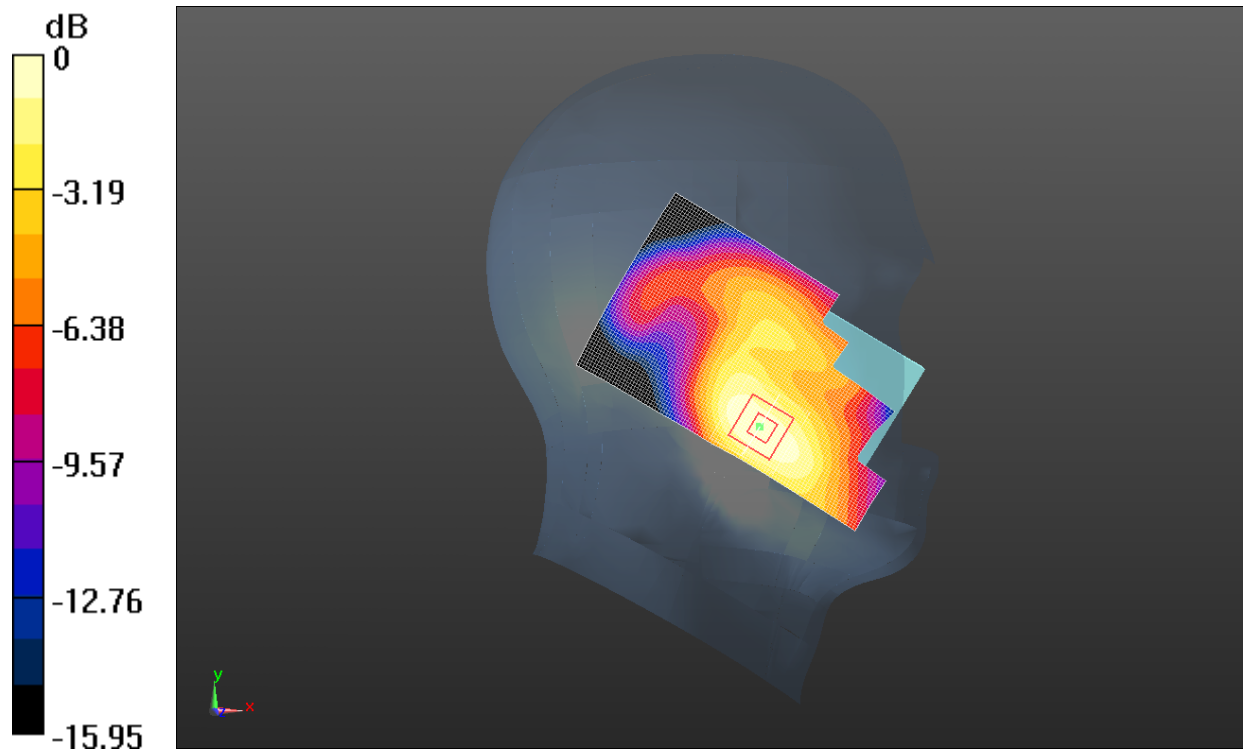
**Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.789 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.682 W/kg

**SAR(1 g) = 0.435 W/kg; SAR(10 g) = 0.270 W/kg**

Maximum value of SAR (measured) = 0.474 W/kg



0 dB = 0.474 W/kg = -3.24 dBW/kg

**Fig. 66 W1900 MHz CH9400**

**W1900 Left Cheek Low**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used (interpolated):  $f = 1852.4$  MHz;  $\sigma = 1.422$  S/m;  $\epsilon_r = 39.181$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

Communication System: WCDMA Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Left Cheek Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 8.415 V/m; Power Drift = 0.05 dB

Maximum value of SAR (interpolated) = 0.498 W/kg

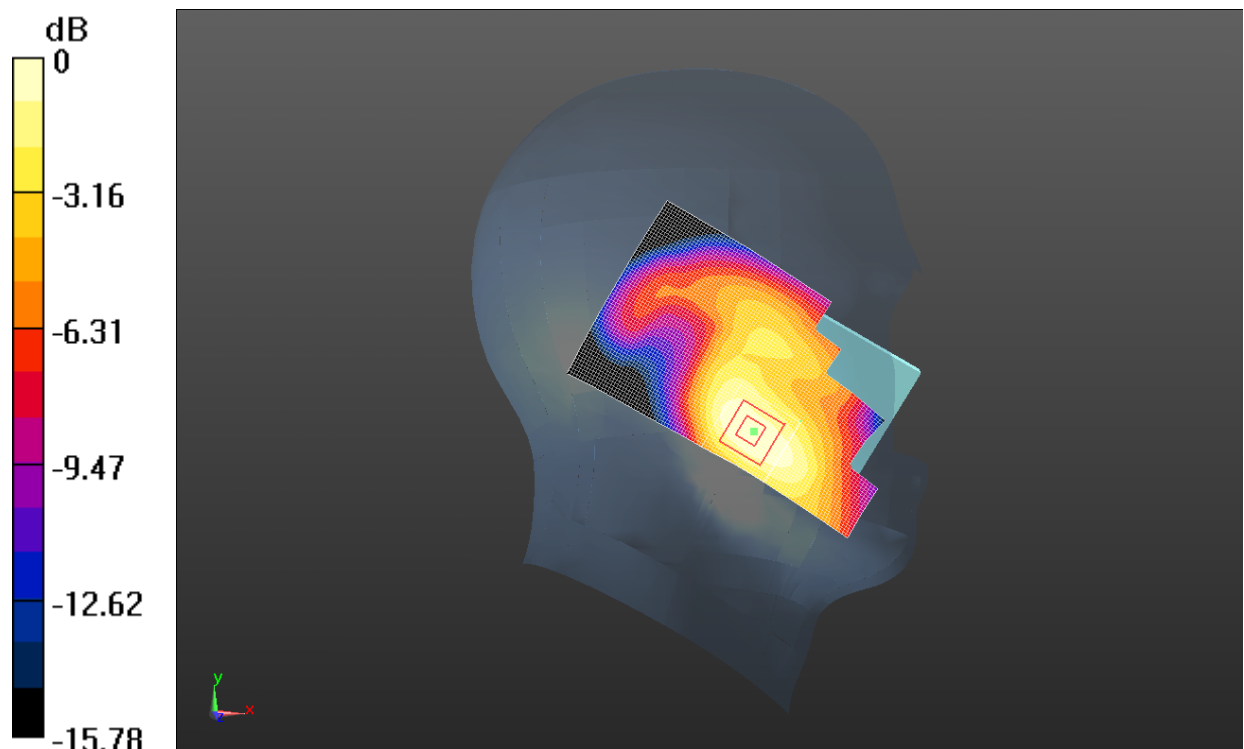
**Left Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.415 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.695 W/kg

**SAR(1 g) = 0.446 W/kg; SAR(10 g) = 0.279 W/kg**

Maximum value of SAR (measured) = 0.485 W/kg



0 dB = 0.485 W/kg = -3.14 dBW/kg

**Fig. 67 W1900 MHz CH9262**

**W1900 Left Tilt High**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1908 \text{ MHz}$ ;  $\sigma = 1.475 \text{ S/m}$ ;  $\epsilon_r = 38.995$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $21.4^\circ\text{C}$       Liquid Temperature:  $21.0^\circ\text{C}$

Communication System: WCDMA Frequency: 1908 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Left Tilt High/Area Scan (61x101x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Reference Value = 12.242 V/m; Power Drift = -0.08 dB

Maximum value of SAR (interpolated) = 0.222 W/kg

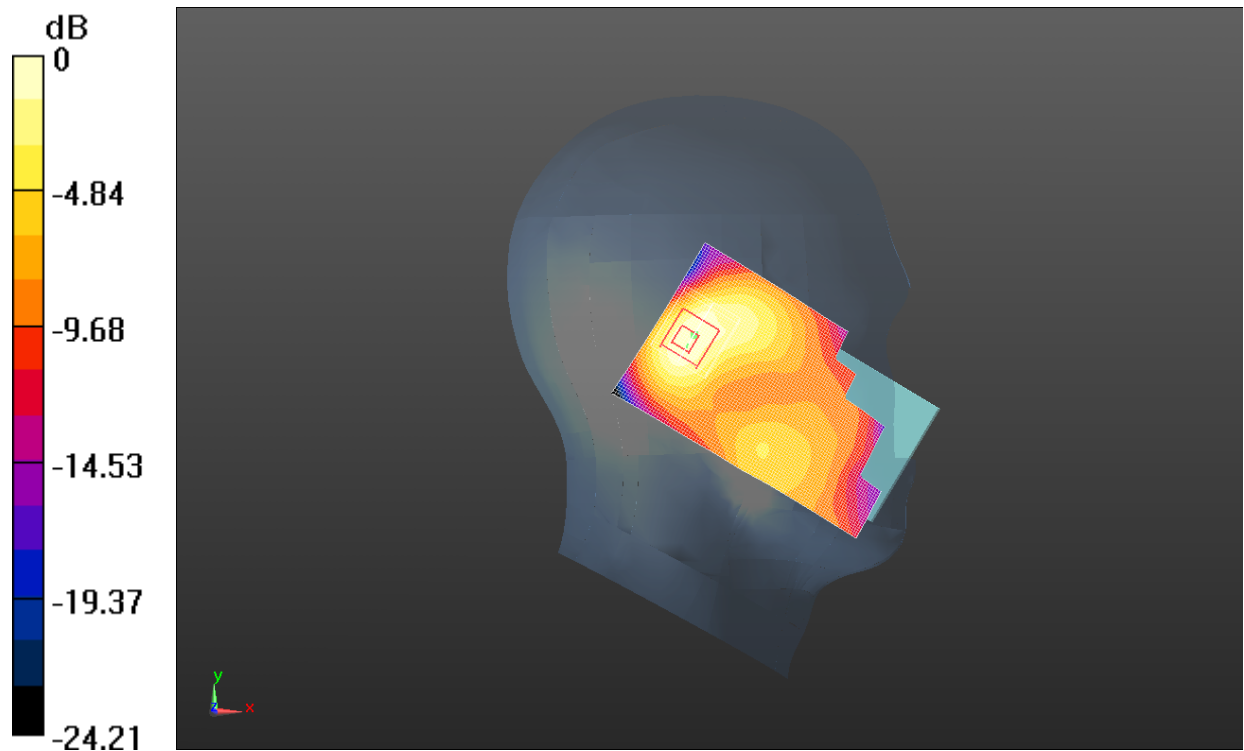
**Left Tilt High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 12.242 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.342 W/kg

**SAR(1 g) = 0.199 W/kg; SAR(10 g) = 0.110 W/kg**

Maximum value of SAR (measured) = 0.213 W/kg



0 dB = 0.213 W/kg = -6.72 dBW/kg

**Fig. 68 W1900 MHz CH9538**



**W1900 Left Tilt Middle**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.449$  S/m;  $\epsilon_r = 39.083$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

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

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Left Tilt Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.828 V/m; Power Drift = 0.04 dB

Maximum value of SAR (interpolated) = 0.246 W/kg

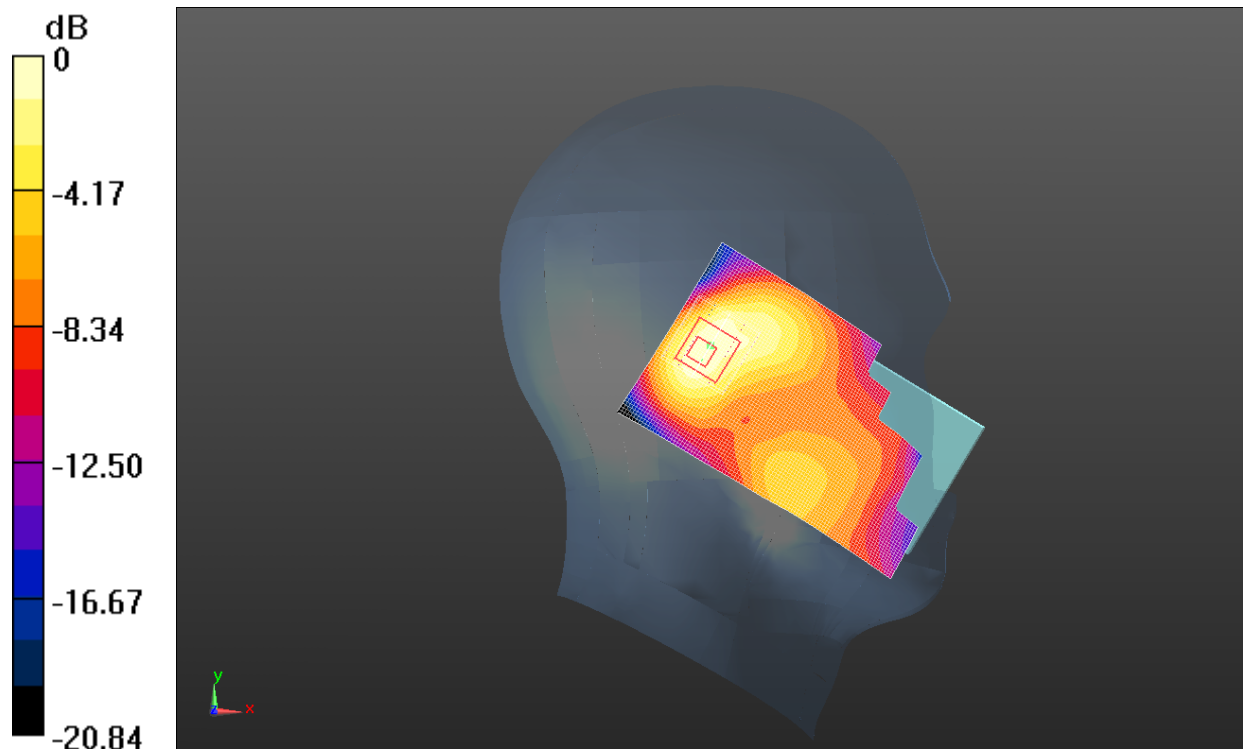
**Left Tilt Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.828 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.372 W/kg

**SAR(1 g) = 0.219 W/kg; SAR(10 g) = 0.123 W/kg**

Maximum value of SAR (measured) = 0.235 W/kg



0 dB = 0.235 W/kg = -6.29 dBW/kg

**Fig. 69 W1900 MHz CH9400**

**W1900 Left Tilt Low**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used (interpolated):  $f = 1852.4$  MHz;  $\sigma = 1.422$  S/m;  $\epsilon_r = 39.181$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

Communication System: WCDMA Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Left Tilt Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.718 V/m; Power Drift = 0.08 dB

Maximum value of SAR (interpolated) = 0.239 W/kg

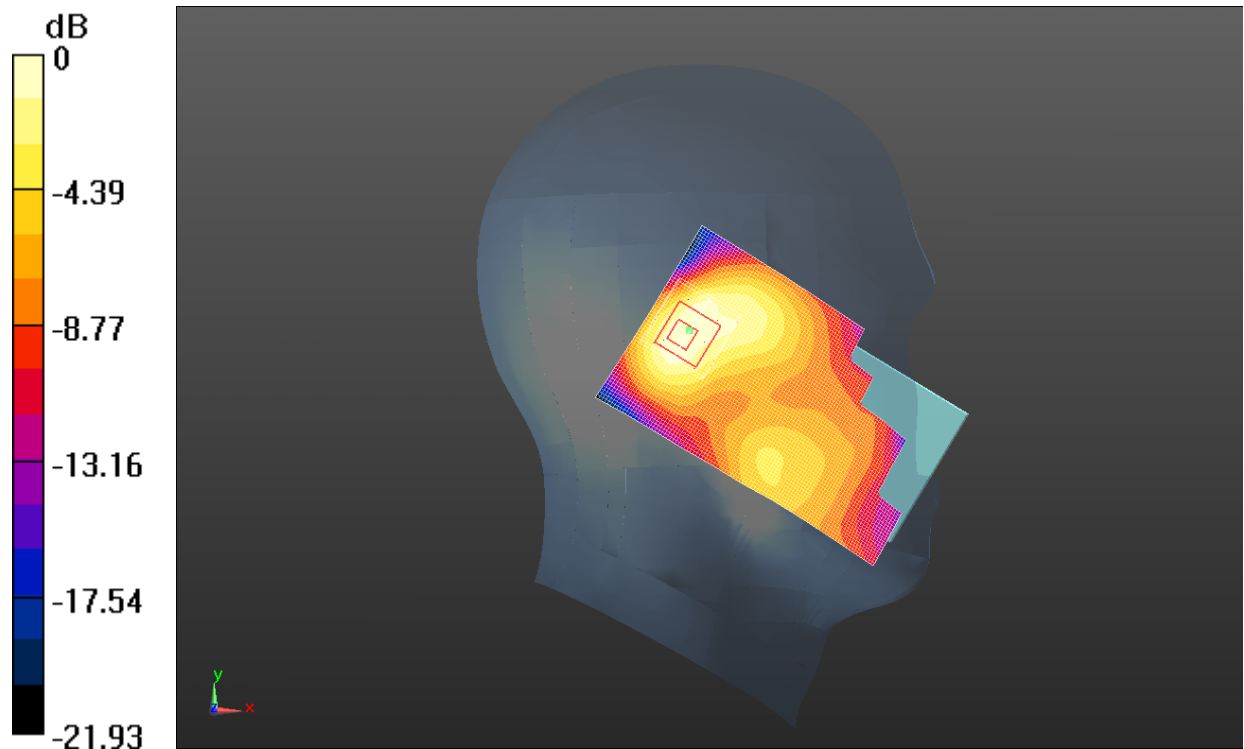
**Left Tilt Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.718 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.352 W/kg

**SAR(1 g) = 0.210 W/kg; SAR(10 g) = 0.120 W/kg**

Maximum value of SAR (measured) = 0.226 W/kg



0 dB = 0.226 W/kg = -6.46 dBW/kg

**Fig. 70 W1900 MHz CH9262**

**W1900 Right Cheek High**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1908 \text{ MHz}$ ;  $\sigma = 1.475 \text{ S/m}$ ;  $\epsilon_r = 38.995$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $21.4^\circ\text{C}$       Liquid Temperature:  $21.0^\circ\text{C}$

Communication System: WCDMA Frequency: 1908 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Right Cheek High/Area Scan (61x101x1):** Interpolated grid:  $dx=1.500 \text{ mm}$ ,  $dy=1.500 \text{ mm}$

Reference Value = 7.218 V/m; Power Drift = 0.15 dB

Maximum value of SAR (interpolated) = 0.427 W/kg

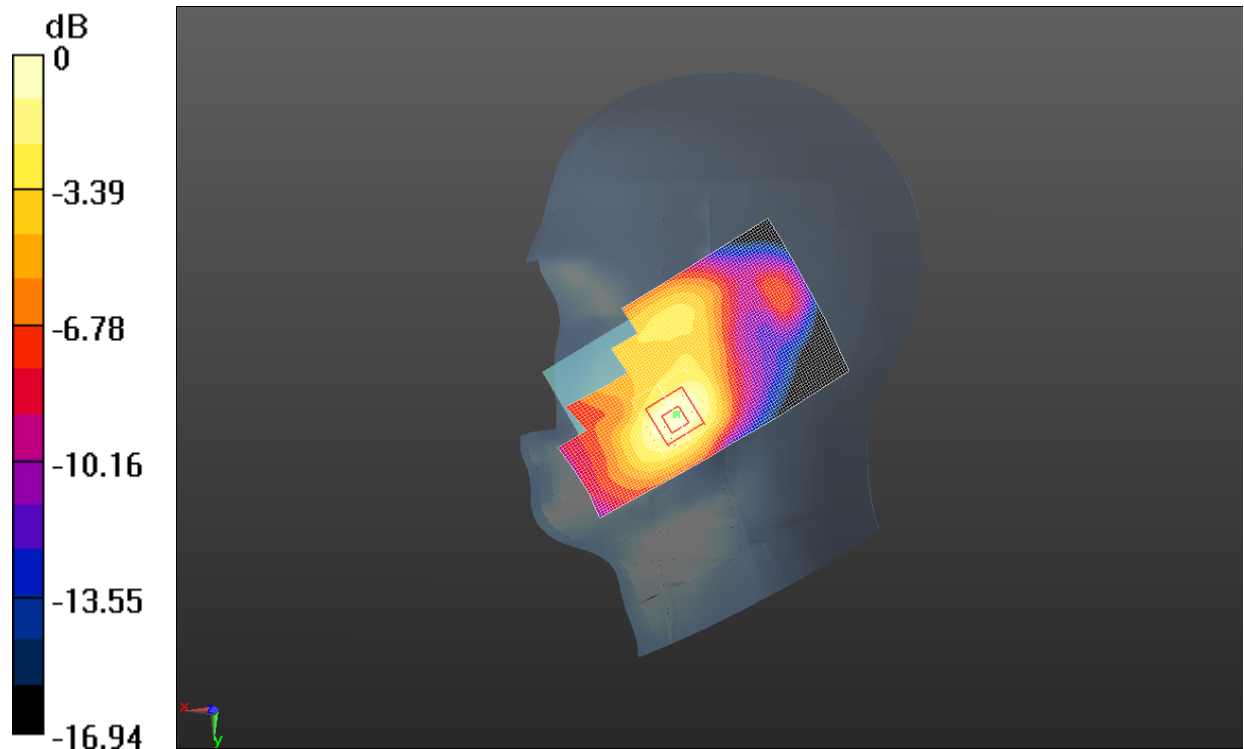
**Right Cheek High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid:  $dx=8\text{mm}$ ,  $dy=8\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 7.218 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.611 W/kg

**SAR(1 g) = 0.396 W/kg; SAR(10 g) = 0.238 W/kg**

Maximum value of SAR (measured) = 0.430 W/kg



0 dB = 0.430 W/kg = -3.67 dBW/kg

**Fig. 71 W1900 MHz CH9538**

**W1900 Right Cheek Middle**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.449$  S/m;  $\epsilon_r = 39.083$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

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

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Right Cheek Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.666 V/m; Power Drift = 0.20 dB

Maximum value of SAR (interpolated) = 0.481 W/kg

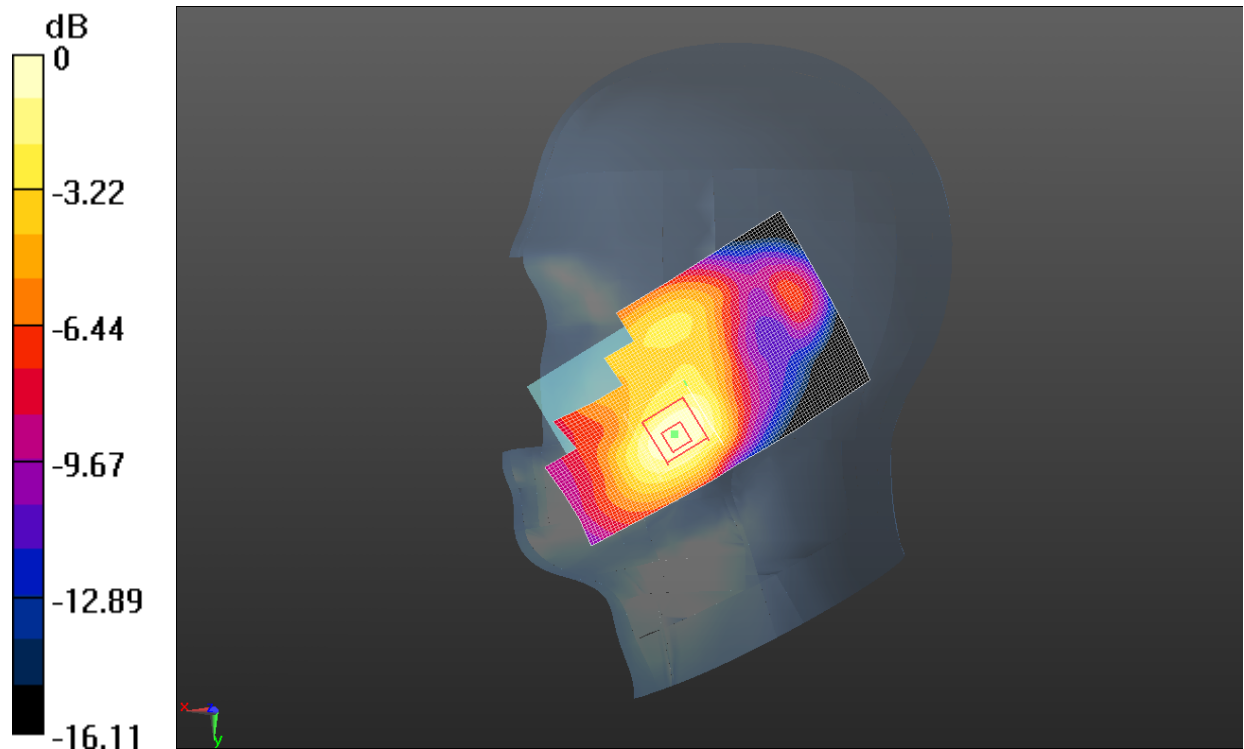
**Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.666 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 0.681 W/kg

**SAR(1 g) = 0.444 W/kg; SAR(10 g) = 0.271 W/kg**

Maximum value of SAR (measured) = 0.479 W/kg



0 dB = 0.479 W/kg = -3.19 dBW/kg

**Fig. 72 W1900 MHz CH9400**

**W1900 Right Cheek Low**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used (interpolated):  $f = 1852.4$  MHz;  $\sigma = 1.422$  S/m;  $\epsilon_r = 39.181$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

Communication System: WCDMA Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Right Cheek Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.373 V/m; Power Drift = 0.16 dB

Maximum value of SAR (interpolated) = 0.488 W/kg

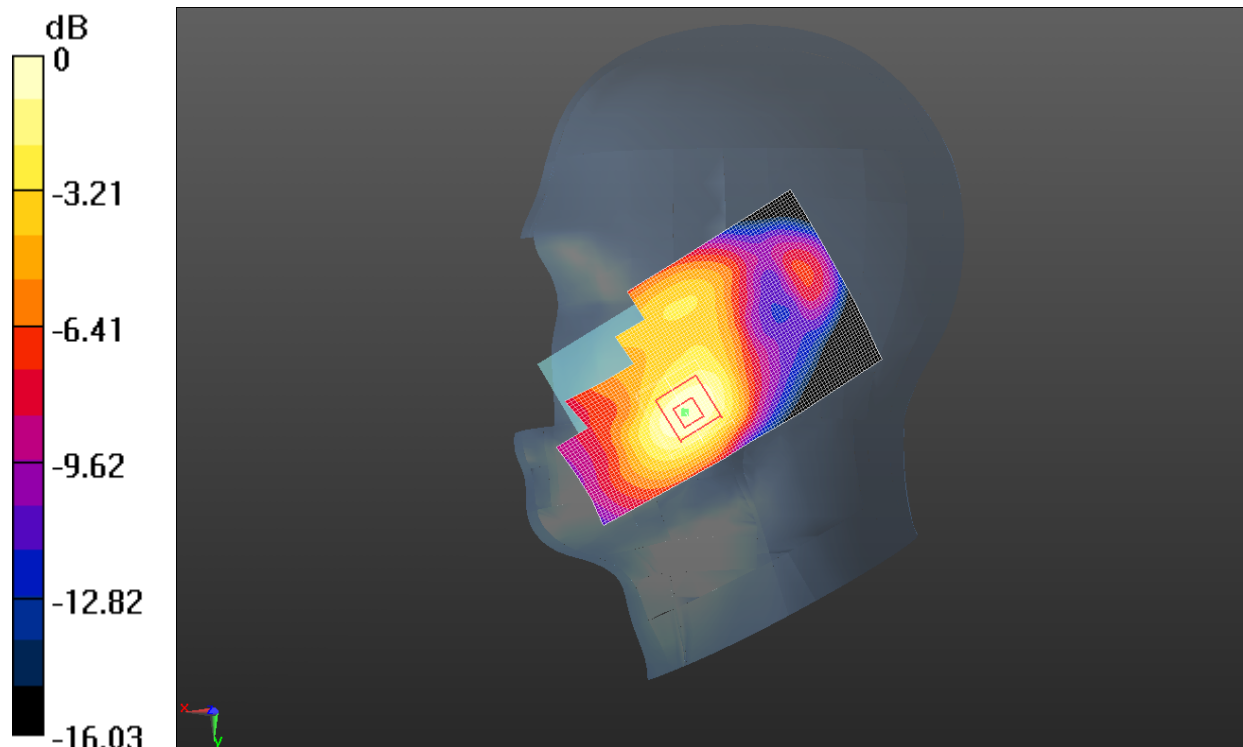
**Right Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.373 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.686 W/kg

**SAR(1 g) = 0.451 W/kg; SAR(10 g) = 0.277 W/kg**

Maximum value of SAR (measured) = 0.486 W/kg



0 dB = 0.486 W/kg = -3.13 dBW/kg

**Fig. 73 W1900 MHz CH9262**

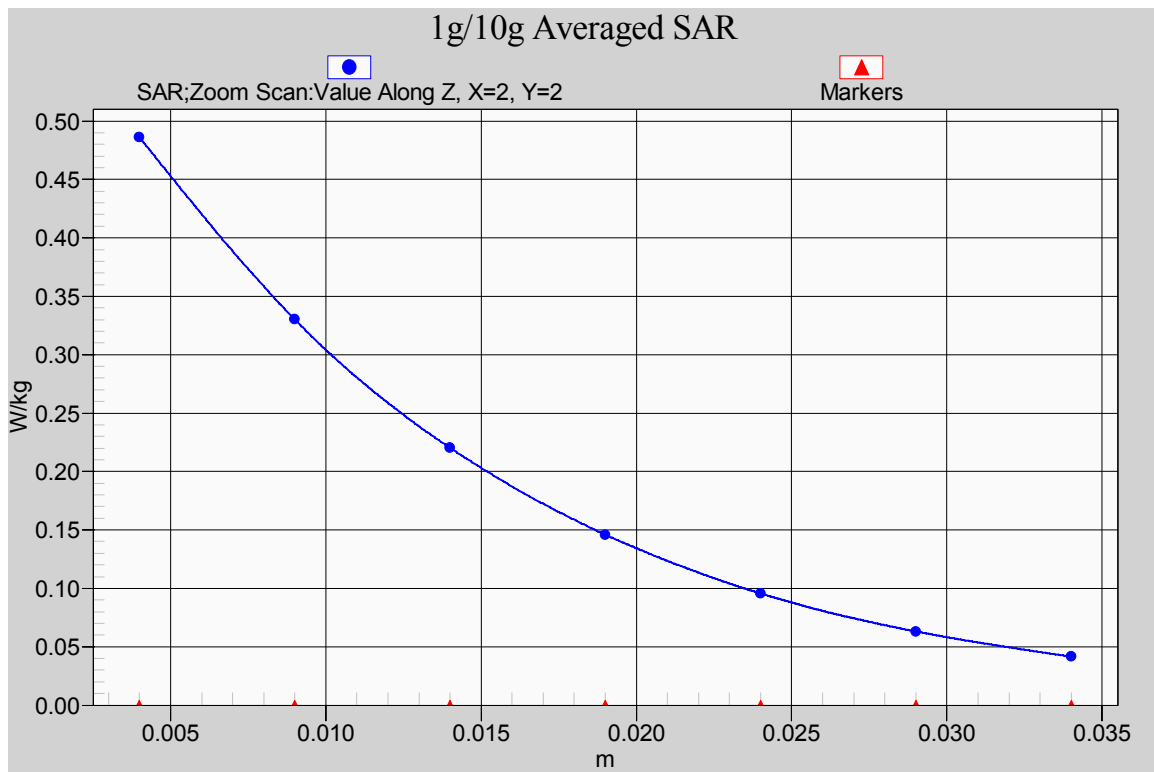


Fig. 73-1 Z-Scan at power reference point (1900 MHz CH9626)

### W1900 Right Tilt High

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1908$  MHz;  $\sigma = 1.475$  S/m;  $\epsilon_r = 38.995$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

Communication System: WCDMA Frequency: 1908 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Right Tilt High/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 12.802 V/m; Power Drift = -0.14 dB

Maximum value of SAR (interpolated) = 0.229 W/kg

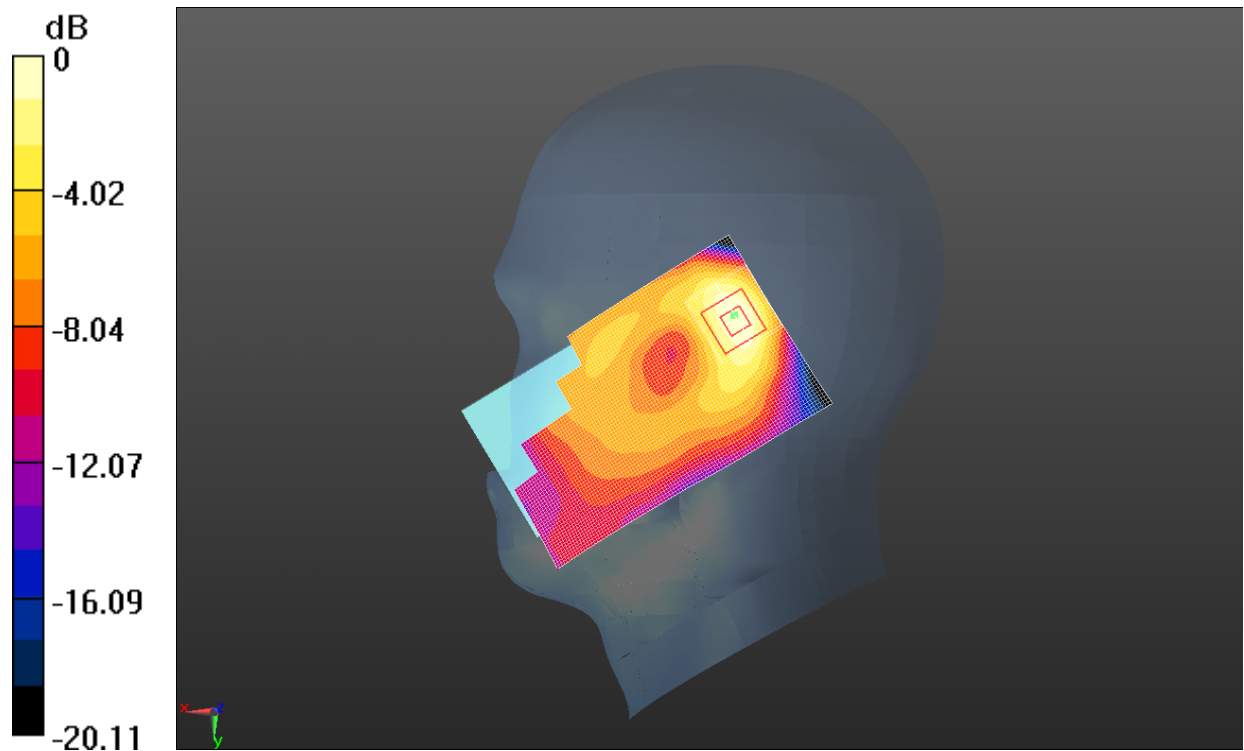
**Right Tilt High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.802 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 0.344 W/kg

**SAR(1 g) = 0.197 W/kg; SAR(10 g) = 0.105 W/kg**

Maximum value of SAR (measured) = 0.217 W/kg



0 dB = 0.217 W/kg = -6.64 dBW/kg

Fig. 74 W1900 MHz CH9538



**W1900 Right Tilt Middle**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.449$  S/m;  $\epsilon_r = 39.083$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

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

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Right Tilt Middle/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 13.328 V/m; Power Drift = 0.05 dB

Maximum value of SAR (interpolated) = 0.261 W/kg

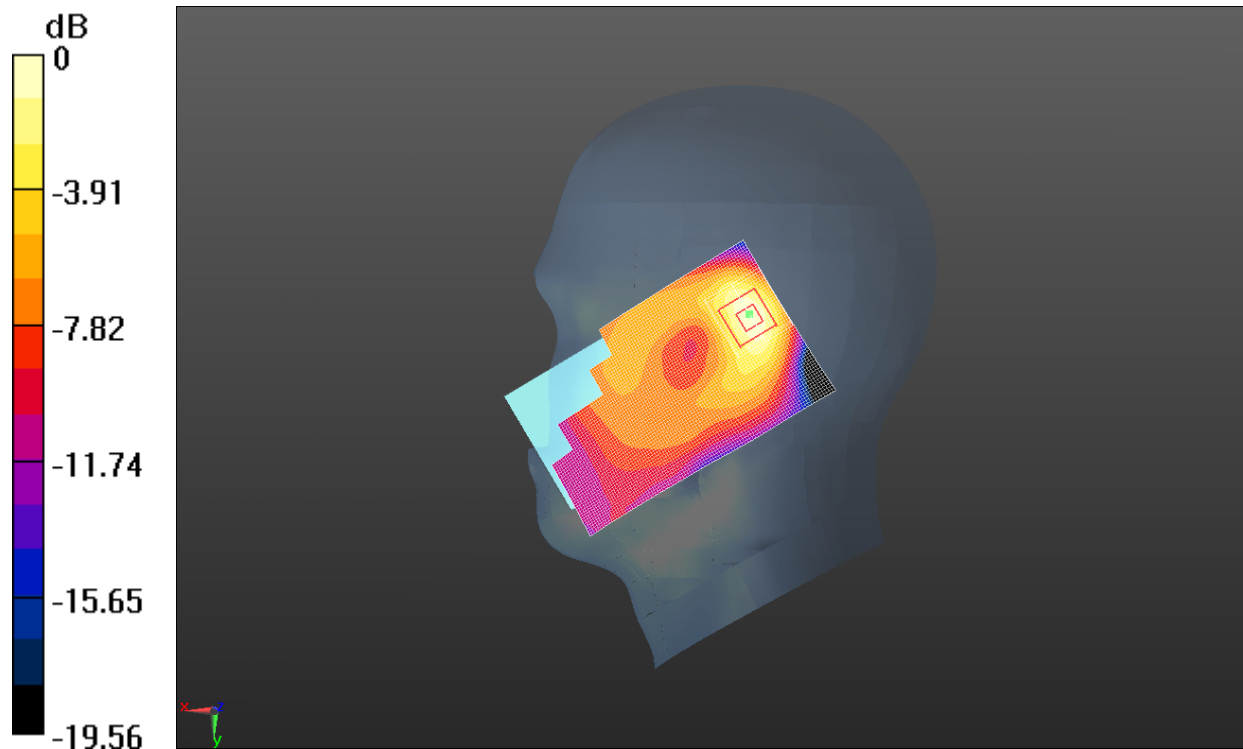
**Right Tilt Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.328 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.408 W/kg

**SAR(1 g) = 0.235 W/kg; SAR(10 g) = 0.126 W/kg**

Maximum value of SAR (measured) = 0.263 W/kg



0 dB = 0.263 W/kg = -5.80 dBW/kg

**Fig. 75 W1900 MHz CH9400**

**W1900 Right Tilt Low**

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used (interpolated):  $f = 1852.4$  MHz;  $\sigma = 1.422$  S/m;  $\epsilon_r = 39.181$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

Communication System: WCDMA Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Right Tilt Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 13.228 V/m; Power Drift = 0.03 dB

Maximum value of SAR (interpolated) = 0.253 W/kg

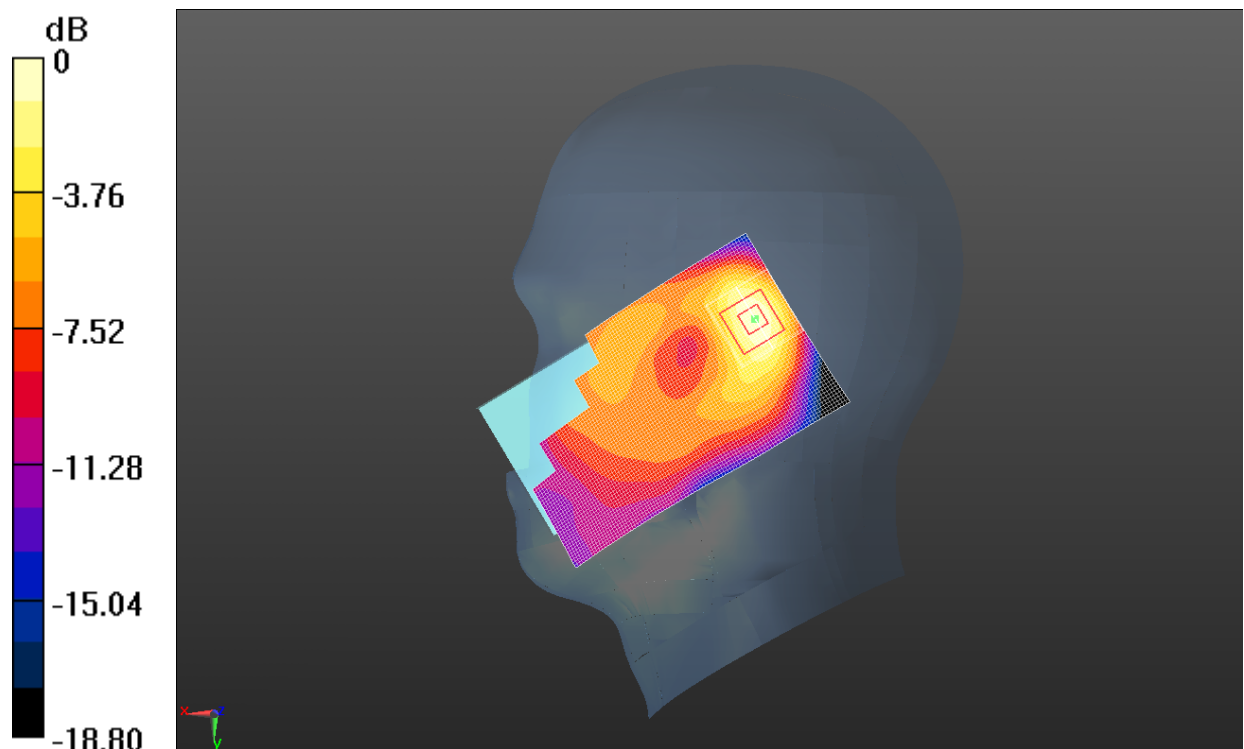
**Right Tilt Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.228 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.386 W/kg

**SAR(1 g) = 0.225 W/kg; SAR(10 g) = 0.122 W/kg**

Maximum value of SAR (measured) = 0.252 W/kg



0 dB = 0.252 W/kg = -5.99 dBW/kg

**Fig. 76 W1900 MHz CH9262**

**W1900 Body Toward Phantom Middle**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.531$  S/m;  $\epsilon_r = 51.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Phantom Middle/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 6.993 V/m; Power Drift = 0.10 dB

Maximum value of SAR (interpolated) = 0.741 W/kg

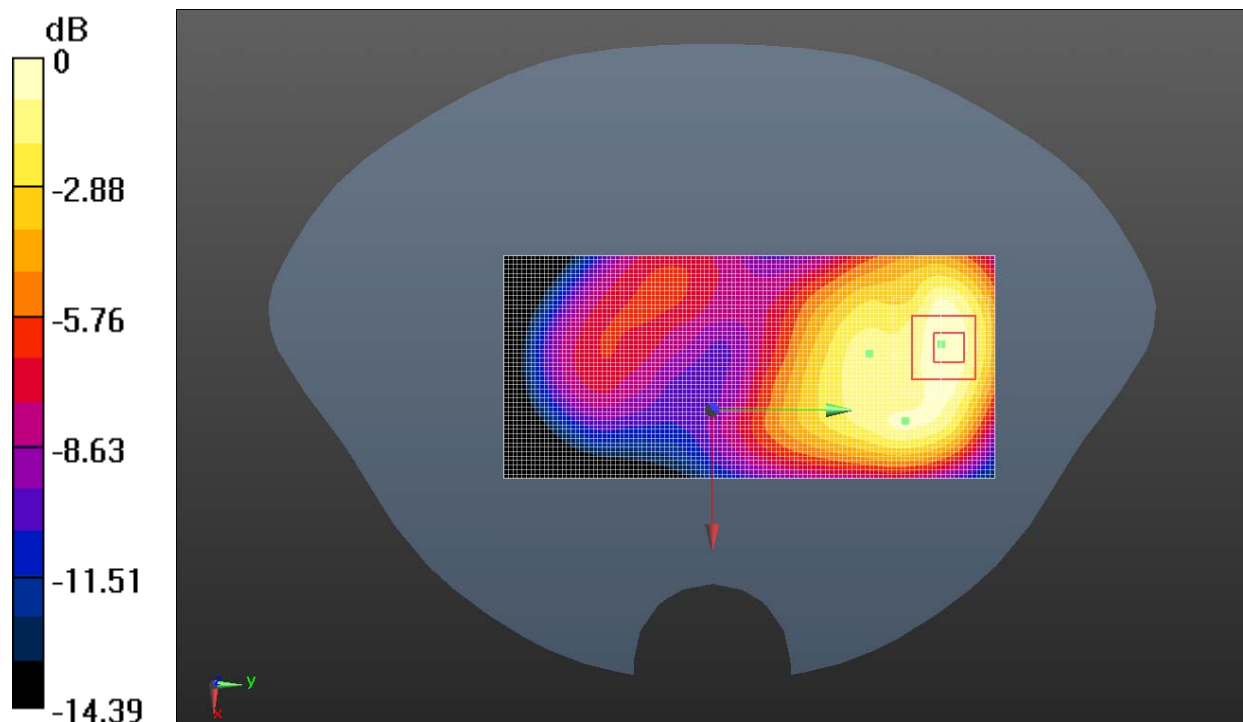
**Towards Phantom Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.993 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.962 W/kg

**SAR(1 g) = 0.647 W/kg; SAR(10 g) = 0.390 W/kg**

Maximum value of SAR (measured) = 0.701 W/kg



0 dB = 0.701 W/kg = -1.54 dBW/kg

**Fig. 77 W1900 MHz CH9400**

### W1900 Body Toward Ground High with GPRS

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1908$  MHz;  $\sigma = 1.559$  S/m;  $\epsilon_r = 51.885$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

Communication System: WCDMA Frequency: 1908 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground High/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 5.743 V/m; Power Drift = -0.17 dB

Maximum value of SAR (interpolated) = 1.00 W/kg

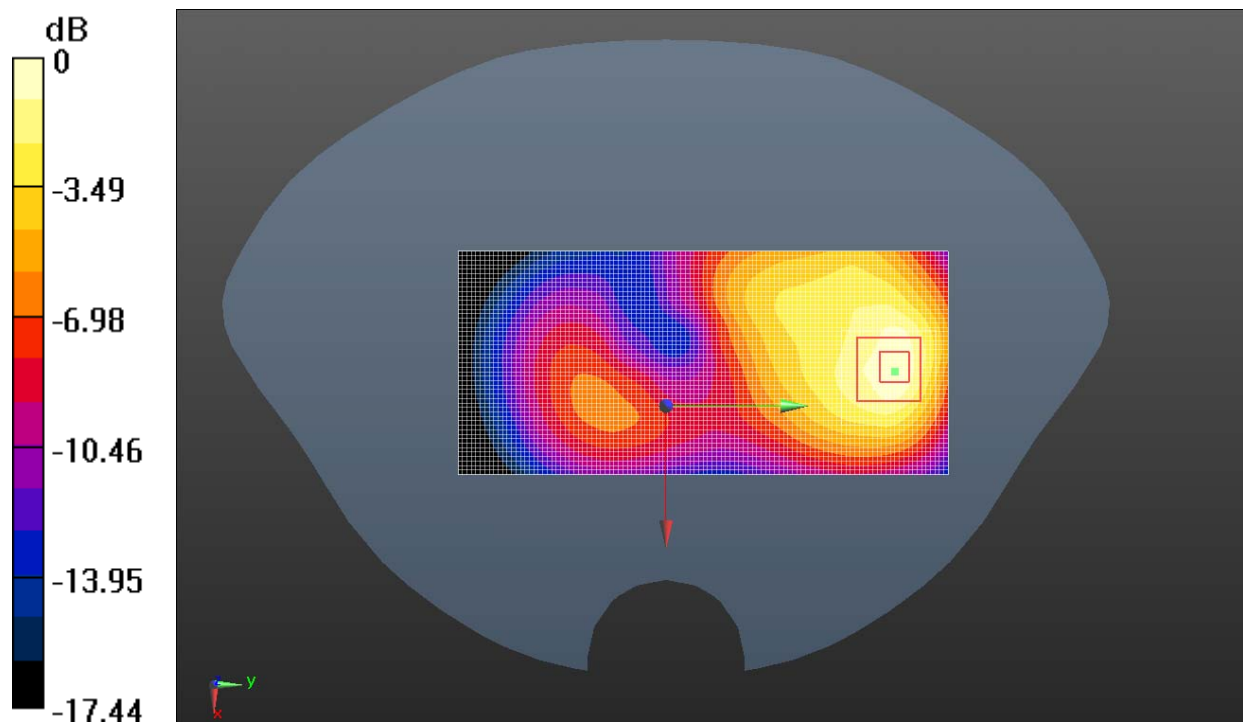
**Towards Ground High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.743 V/m; Power Drift = -0.17 dB

Peak SAR (extrapolated) = 1.45 W/kg

**SAR(1 g) = 0.918 W/kg; SAR(10 g) = 0.527 W/kg**

Maximum value of SAR (measured) = 0.992 W/kg



0 dB = 0.992 W/kg = -0.04 dBW/kg

Fig. 78 W1900 MHz CH9538

### W1900 Body Toward Ground Middle

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.531$  S/m;  $\epsilon_r = 51.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground Middle/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 5.898 V/m; Power Drift = 0.17 dB

Maximum value of SAR (interpolated) = 1.12 W/kg

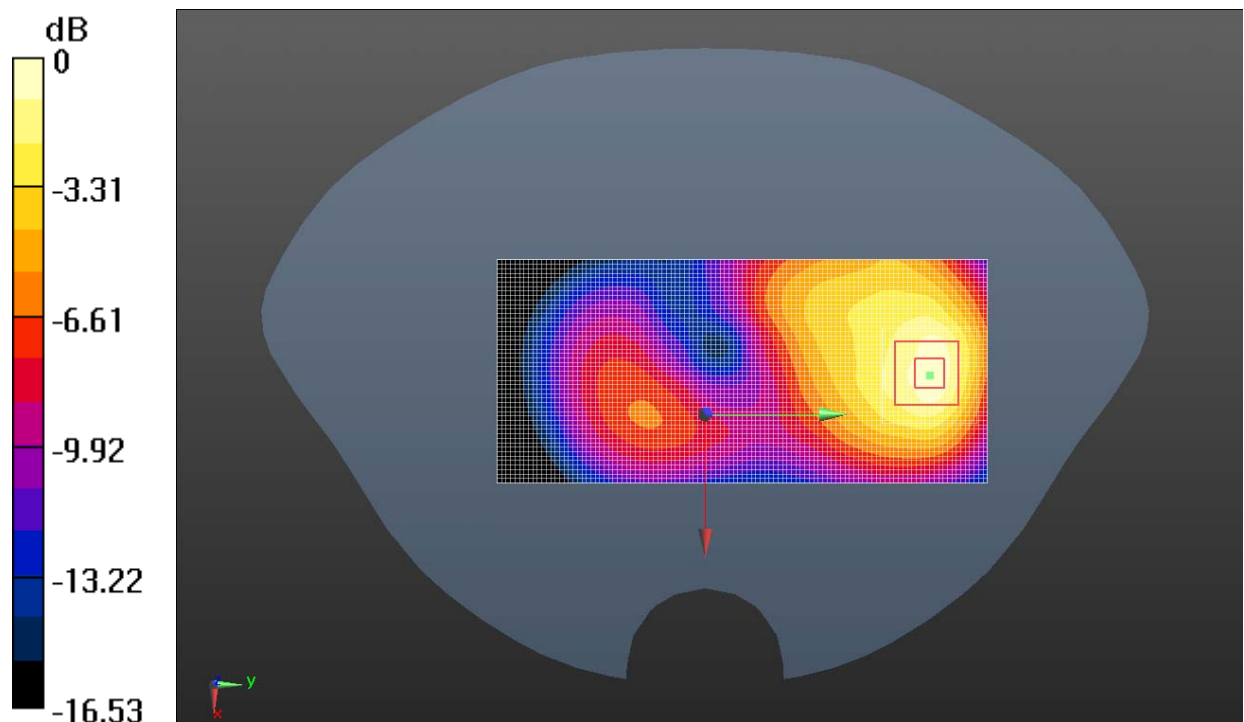
**Towards Ground Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.898 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 1.63 W/kg

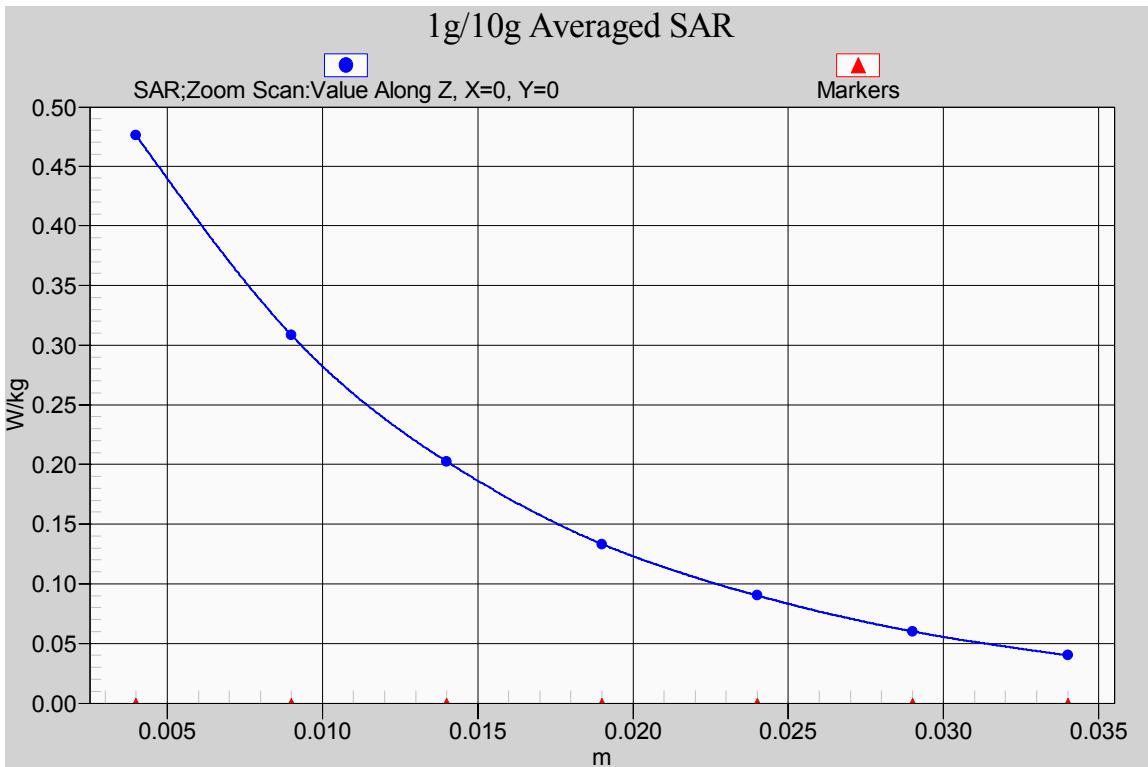
**SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.601 W/kg**

Maximum value of SAR (measured) = 1.17 W/kg



0 dB = 1.17 W/kg = 0.67 dBW/kg

Fig. 79 W1900 MHz CH9400



**Fig. 79-1 Z-Scan at power reference point (1900 MHz CH9400)**

### W1900 Body Toward Ground Low

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used (interpolated):  $f = 1852.4$  MHz;  $\sigma = 1.505$  S/m;  $\epsilon_r = 51.971$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

Communication System: WCDMA Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground Low/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 6.887 V/m; Power Drift = -0.13 dB

Maximum value of SAR (interpolated) = 0.984 W/kg

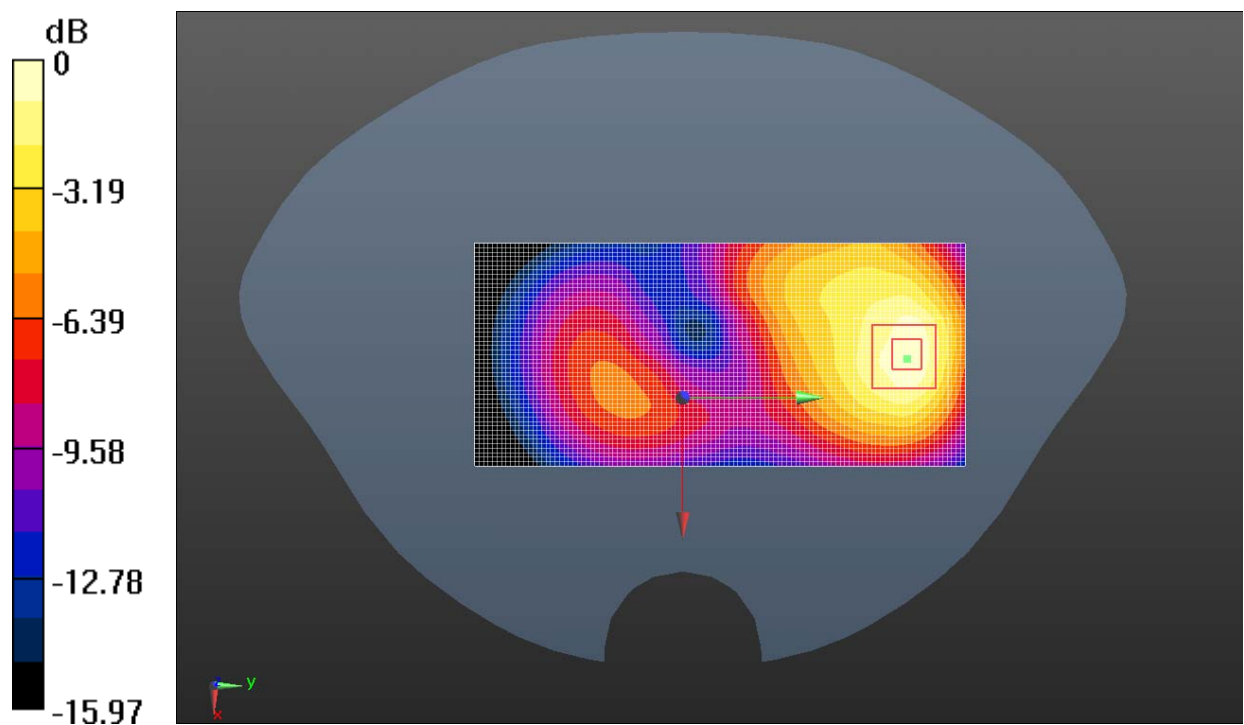
**Towards Ground Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.887 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 1.40 W/kg

**SAR(1 g) = 0.916 W/kg; SAR(10 g) = 0.539 W/kg**

Maximum value of SAR (measured) = 0.988 W/kg



0 dB = 0.988 W/kg = -0.05 dBW/kg

Fig. 80 W1900 MHz CH9262



**W1900 Body Left Side Middle**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.531$  S/m;  $\epsilon_r = 51.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Left Side Middle/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 9.845 V/m; Power Drift = 0.20 dB

Maximum value of SAR (interpolated) = 0.286 W/kg

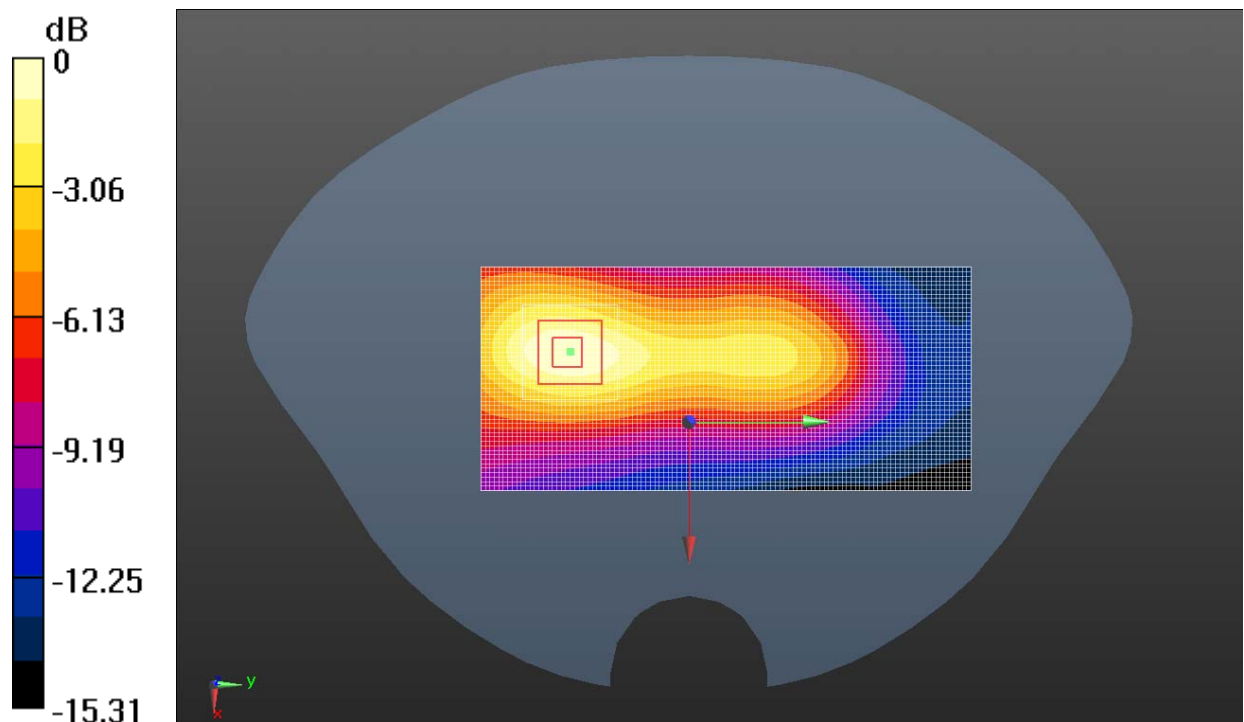
**Left Side Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.845 V/m; Power Drift = 0.20 dB

Peak SAR (extrapolated) = 0.402 W/kg

**SAR(1 g) = 0.258 W/kg; SAR(10 g) = 0.154 W/kg**

Maximum value of SAR (measured) = 0.284 W/kg



0 dB = 0.286 W/kg = -5.44 dBW/kg

**Fig. 81 W1900 MHz CH9400**



### W1900 Body Right Side Middle

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.531$  S/m;  $\epsilon_r = 51.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Right Side Middle/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.153 V/m; Power Drift = 0.12 dB

Maximum value of SAR (interpolated) = 0.207 W/kg

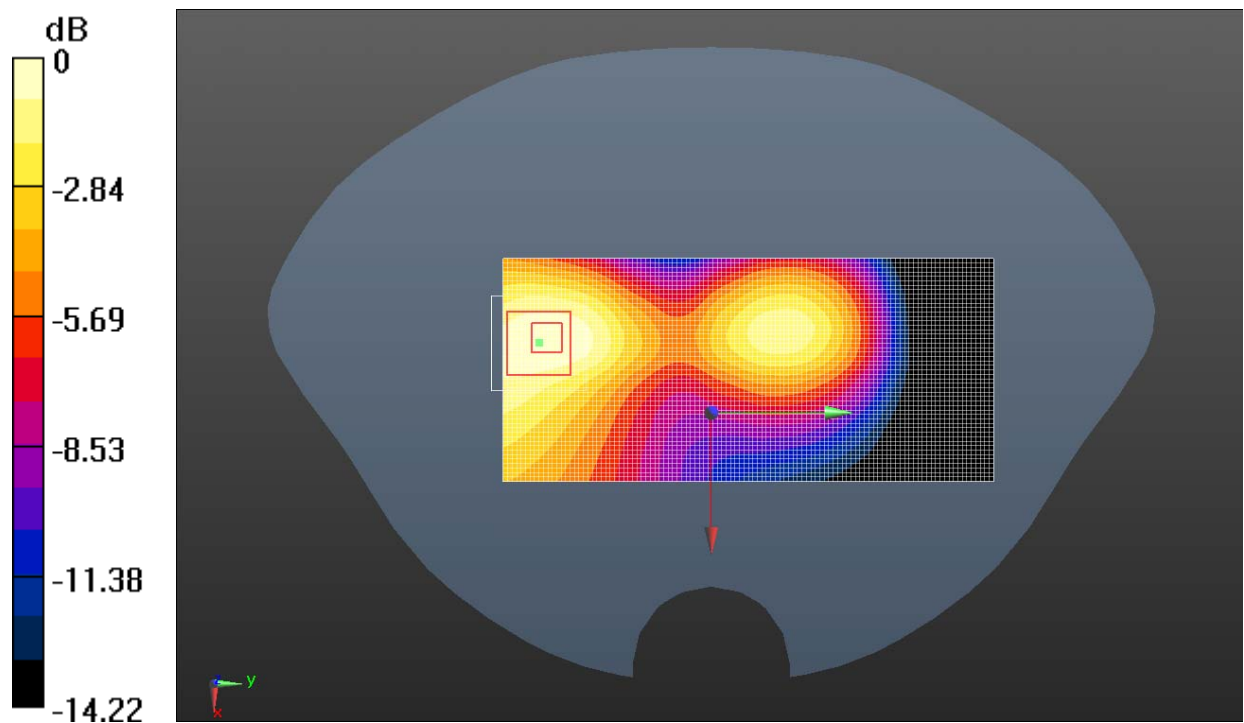
**Right Side Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.153 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.302 W/kg

**SAR(1 g) = 0.194 W/kg; SAR(10 g) = 0.120 W/kg**

Maximum value of SAR (measured) = 0.209 W/kg



0 dB = 0.209 W/kg = -6.80 dBW/kg

Fig. 82 W1900 MHz CH9400

**W1900 Body Bottom Side Middle**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.531$  S/m;  $\epsilon_r = 51.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Bottom Side Middle/Area Scan (41x61x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 21.099 V/m; Power Drift = 0.04 dB

Maximum value of SAR (interpolated) = 0.911 W/kg

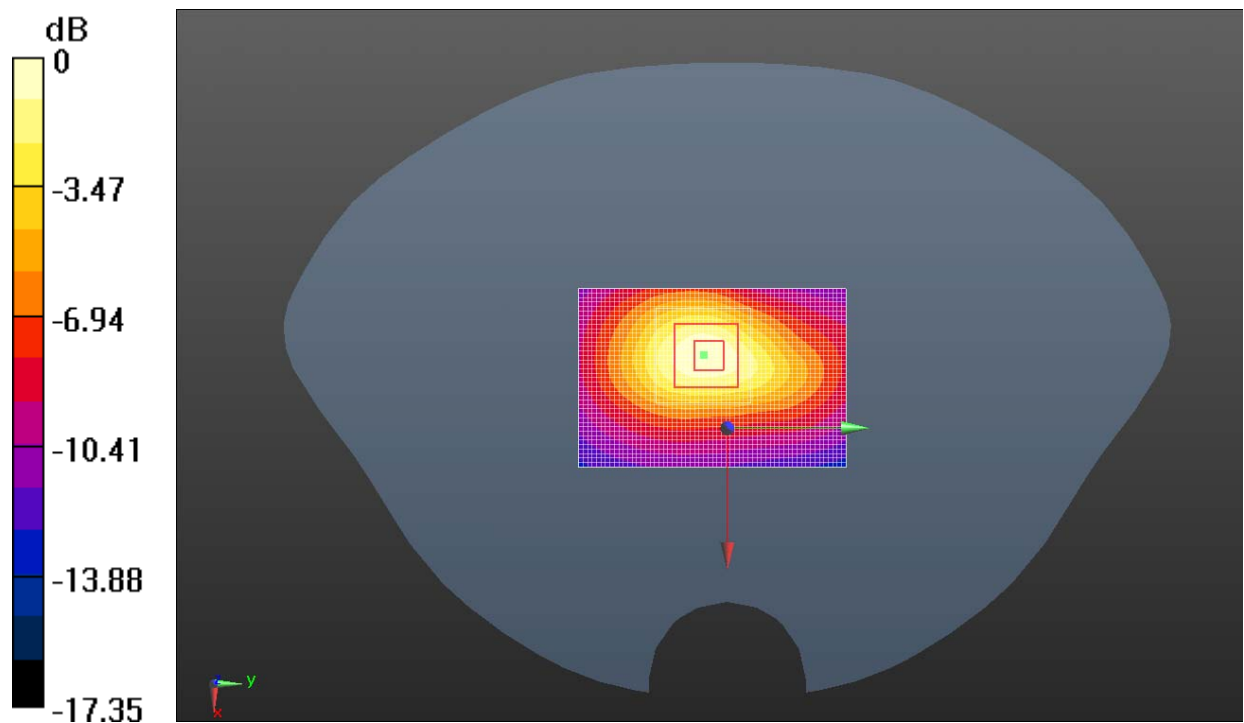
**Bottom Side Middle/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.099 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.25 W/kg

**SAR(1 g) = 0.794 W/kg; SAR(10 g) = 0.447 W/kg**

Maximum value of SAR (measured) = 0.888 W/kg



0 dB = 0.888 W/kg = -0.52 dBW/kg

**Fig. 83 W1900 MHz CH9400**

**W1900 Body Toward Ground Middle with Headset C1**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.531$  S/m;  $\epsilon_r = 51.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground Middle with c1/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.123 V/m; Power Drift = -0.11 dB

Maximum value of SAR (interpolated) = 1.06 W/kg

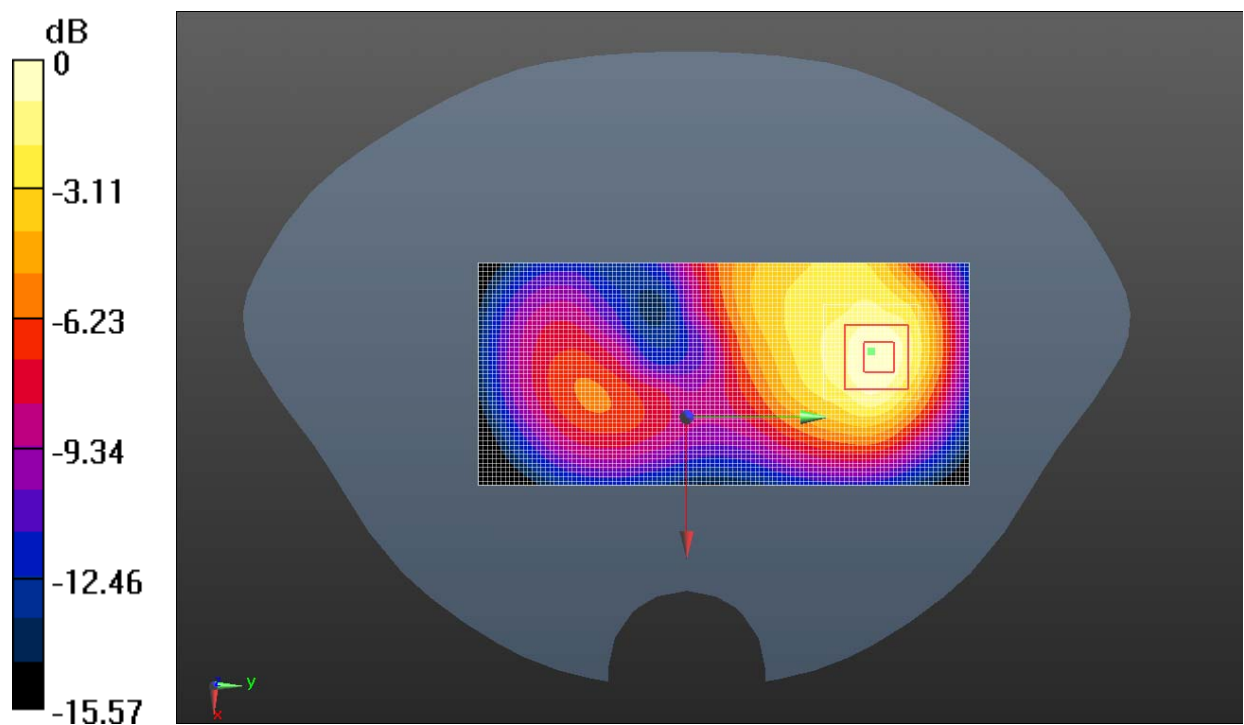
**Towards Ground Middle with c1/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.123 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 1.44 W/kg

**SAR(1 g) = 0.935 W/kg; SAR(10 g) = 0.549 W/kg**

Maximum value of SAR (measured) = 0.988 W/kg



0 dB = 0.988 W/kg = -0.05 dBW/kg

**Fig. 84 W1900 MHz CH9400**

**W1900 Body Toward Ground Middle with Headset C4**

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1880$  MHz;  $\sigma = 1.531$  S/m;  $\epsilon_r = 51.92$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

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

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground Middle with c4/Area Scan (51x111x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.016 V/m; Power Drift = 0.01 dB

Maximum value of SAR (interpolated) = 1.12 W/kg

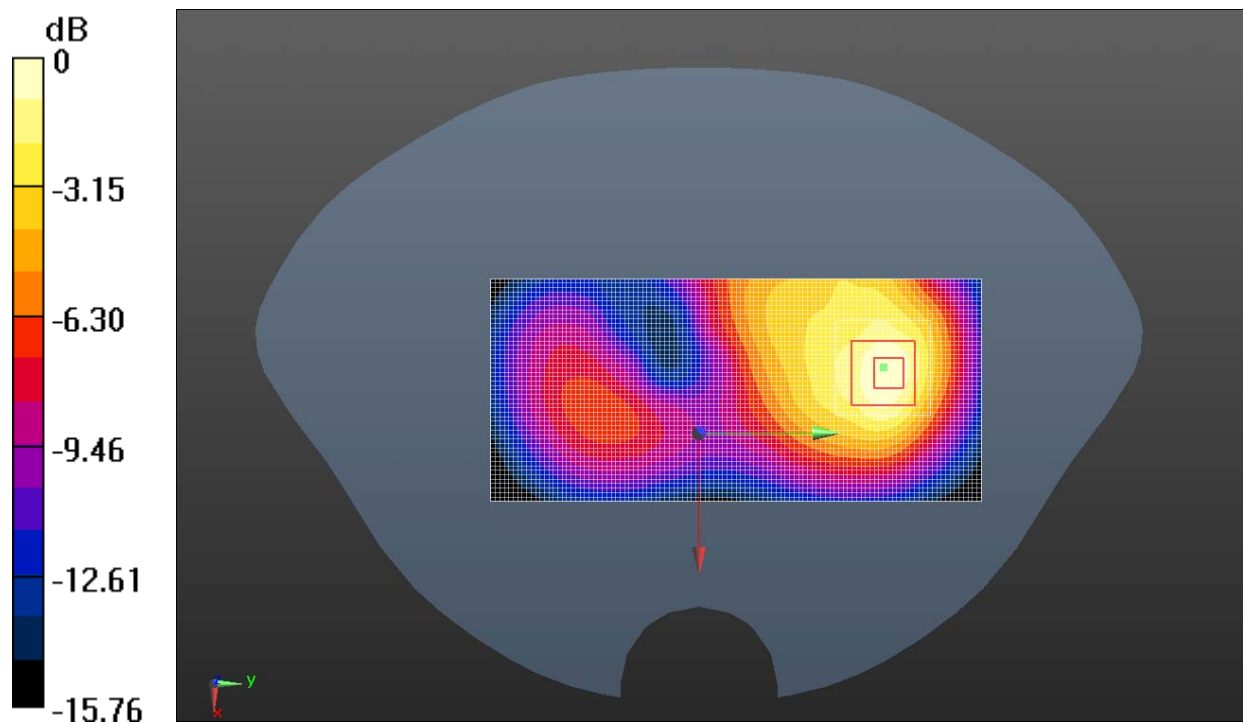
**Towards Ground Middle with c4/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.016 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.51 W/kg

**SAR(1 g) = 0.975 W/kg; SAR(10 g) = 0.568 W/kg**

Maximum value of SAR (measured) = 1.06 W/kg



0 dB = 1.06 W/kg = 0.24 dBW/kg

**Fig. 85 W1900 MHz CH9400**

**Wifi Left Cheek Low**

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Head 2450

Medium parameters used:  $f = 2412$  MHz;  $\sigma = 1.815$  S/m;  $\epsilon_r = 40.212$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: WiFi 802.11 b Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.44, 4.44, 4.44); Calibrated: 4/24/2012

**Left Cheek Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 1.921 V/m; Power Drift = 0.16 dB

Maximum value of SAR (interpolated) = 0.0273 W/kg

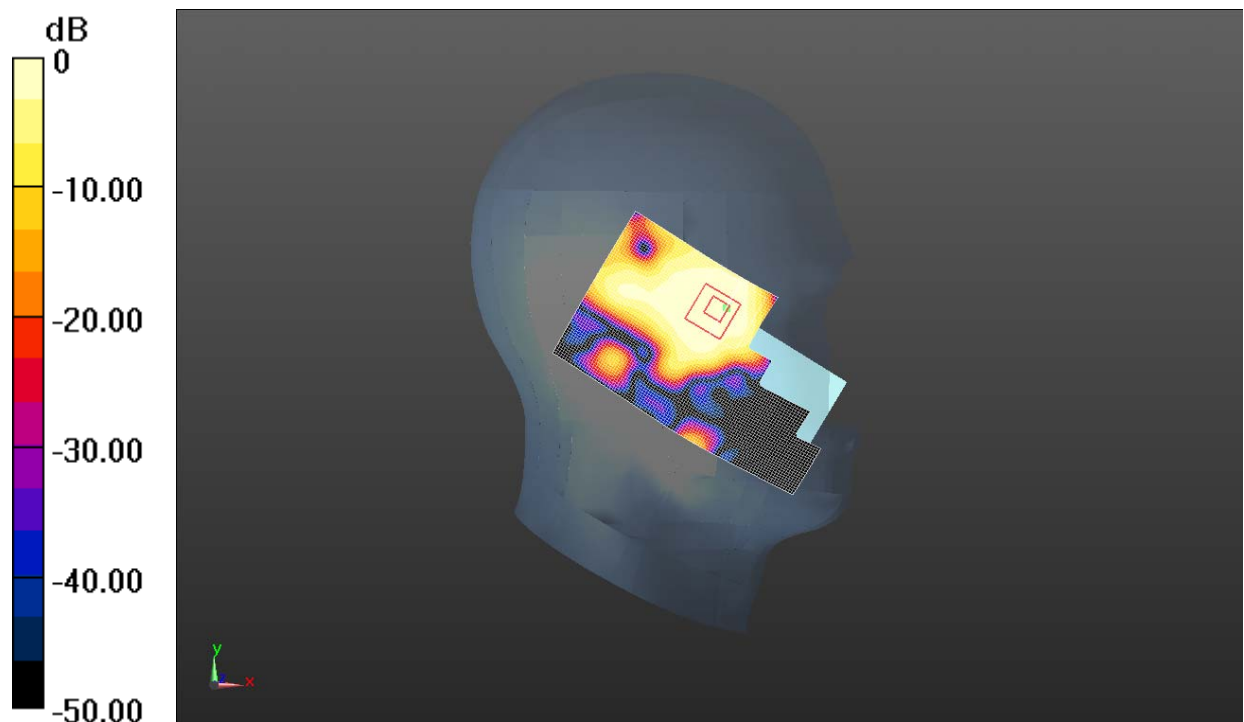
**Left Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.921 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.0440 W/kg

**SAR(1 g) = 0.022 W/kg; SAR(10 g) = 0.011 W/kg**

Maximum value of SAR (measured) = 0.0226 W/kg



0 dB = 0.0226 W/kg = -16.46 dBW/kg

**Fig. 86 2450 MHz CH1**

**Wifi Left Tilt Low**

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Head 2450

Medium parameters used:  $f = 2412$  MHz;  $\sigma = 1.815$  S/m;  $\epsilon_r = 40.212$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: WiFi 802.11 b Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.44, 4.44, 4.44); Calibrated: 4/24/2012

**Left Tilt Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 2.946 V/m; Power Drift = 0.19 dB

Maximum value of SAR (interpolated) = 0.0260 W/kg

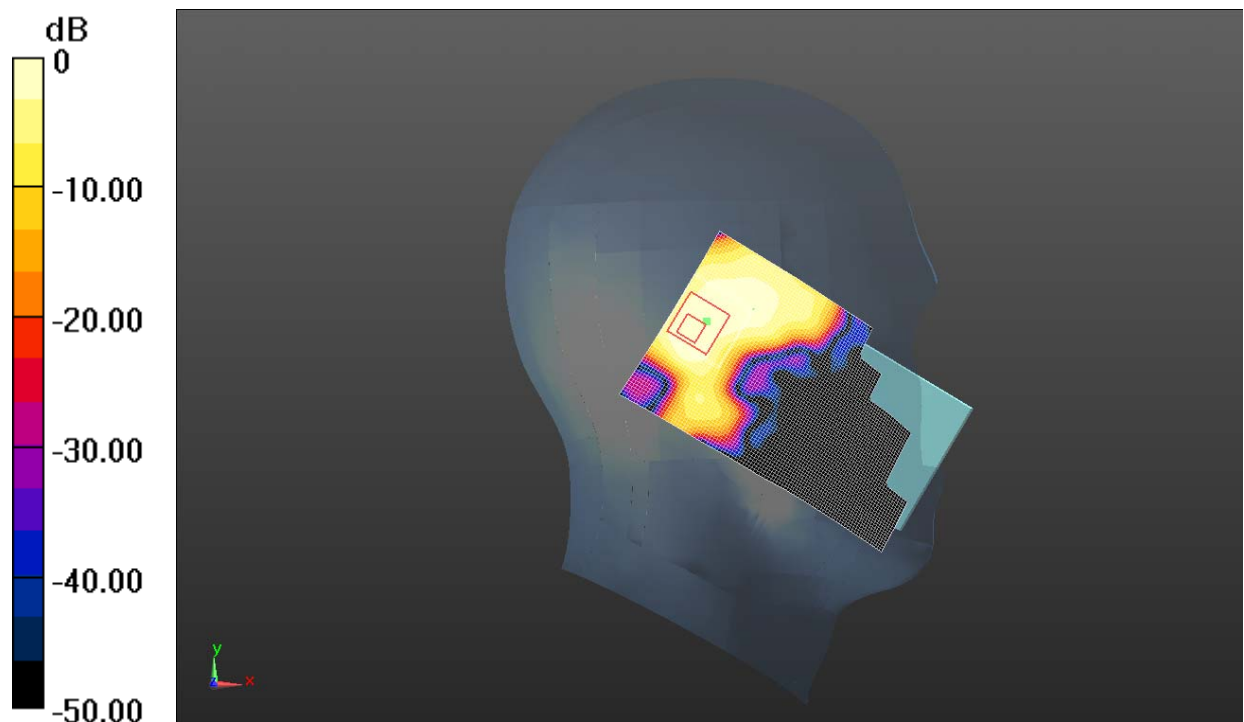
**Left Tilt Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.946 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.0250 W/kg

**SAR(1 g) = 0.017 W/kg; SAR(10 g) = 0.00797 W/kg**

Maximum value of SAR (measured) = 0.0196 W/kg



0 dB = 0.0196 W/kg = -17.07 dBW/kg

**Fig. 87 2450 MHz CH1**

**Wifi Right Cheek Low**

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Head 2450

Medium parameters used:  $f = 2412$  MHz;  $\sigma = 1.815$  S/m;  $\epsilon_r = 40.212$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: WiFi 802.11 b Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.44, 4.44, 4.44); Calibrated: 4/24/2012

**Right Cheek Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 1.505 V/m; Power Drift = 0.16 dB

Maximum value of SAR (interpolated) = 0.0538 W/kg

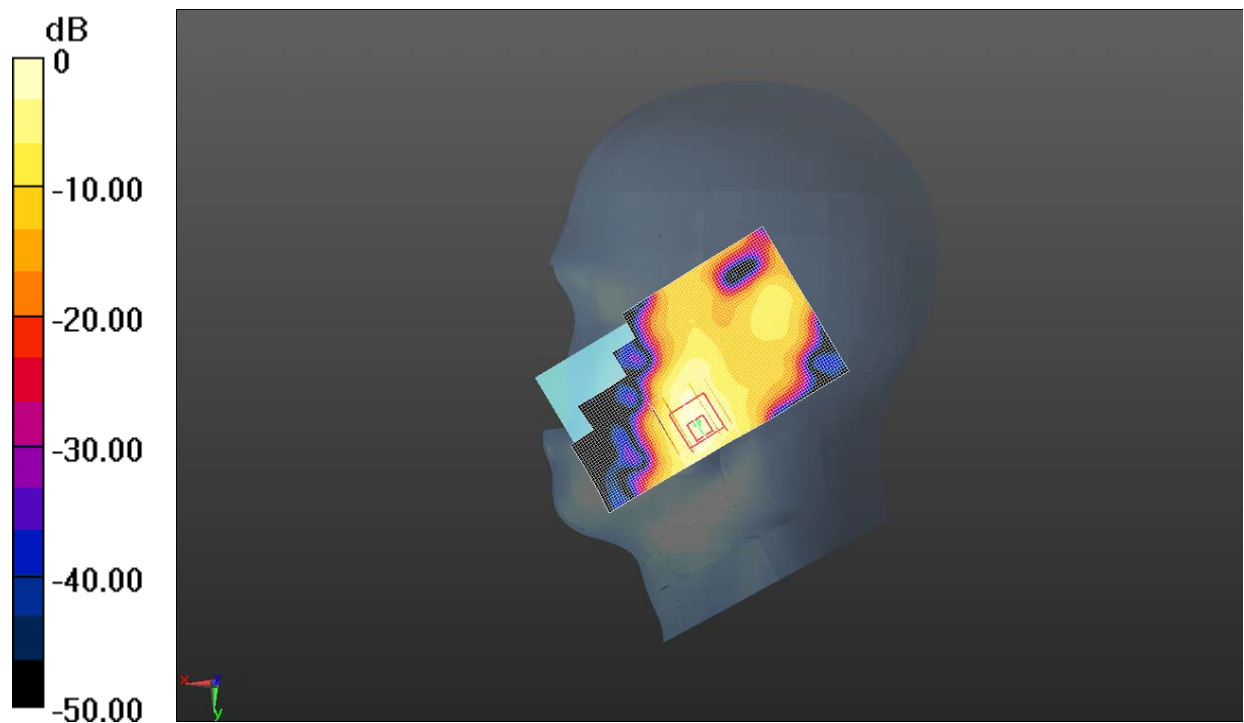
**Right Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.505 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.105 W/kg

**SAR(1 g) = 0.050 W/kg; SAR(10 g) = 0.022 W/kg**

Maximum value of SAR (measured) = 0.0546 W/kg



0 dB = 0.0546 W/kg = -12.63 dBW/kg

**Fig. 88 2450 MHz CH1**

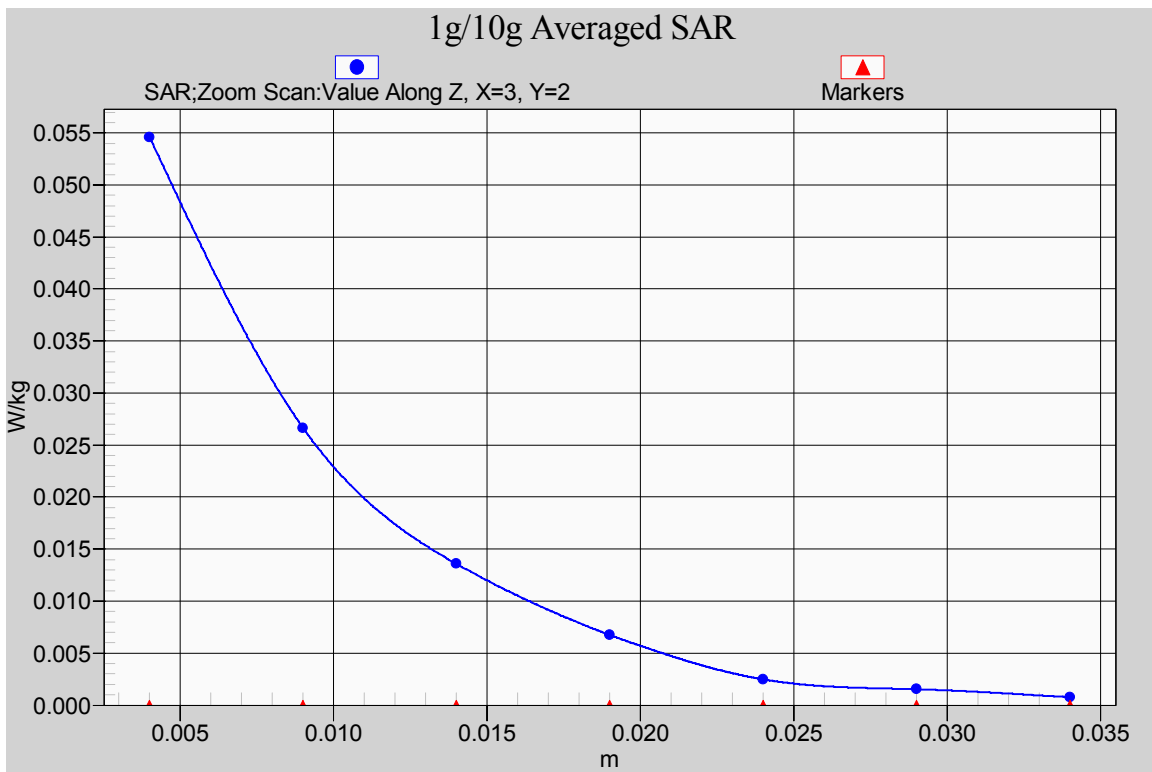


Fig. 88-1 Z-Scan at power reference point (2450 MHz CH1)



**Wifi Right Tilt Low**

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Head 2450

Medium parameters used:  $f = 2412$  MHz;  $\sigma = 1.815$  S/m;  $\epsilon_r = 40.212$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: WiFi 802.11 b Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.44, 4.44, 4.44); Calibrated: 4/24/2012

**Right Tilt Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 1.638 V/m; Power Drift = 0.18 dB

Maximum value of SAR (interpolated) = 0.0435 W/kg

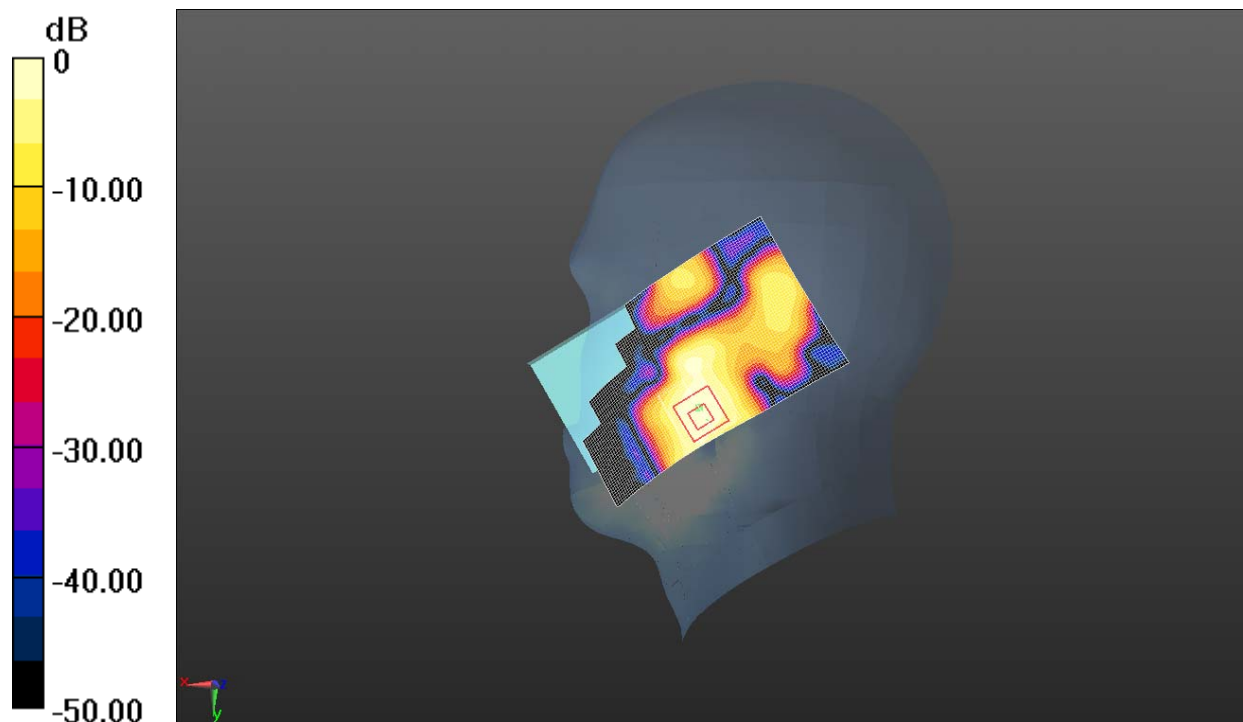
**Right Tilt Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.638 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 0.110 W/kg

**SAR(1 g) = 0.038 W/kg; SAR(10 g) = 0.017 W/kg**

Maximum value of SAR (measured) = 0.0418 W/kg



0 dB = 0.0418 W/kg = -13.79 dBW/kg

**Fig. 89 2450 MHz CH1**

### Wifi Body Toward Phantom Low

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Body 2450

Medium parameters used:  $f = 2412$  MHz;  $\sigma = 1.893$  S/m;  $\epsilon_r = 52.318$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: WiFi 802.11 b Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.24, 4.24, 4.24); Calibrated: 4/24/2012

**Towards Phantom Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 2.631 V/m; Power Drift = -0.13 dB

Maximum value of SAR (interpolated) = 0.0146 W/kg

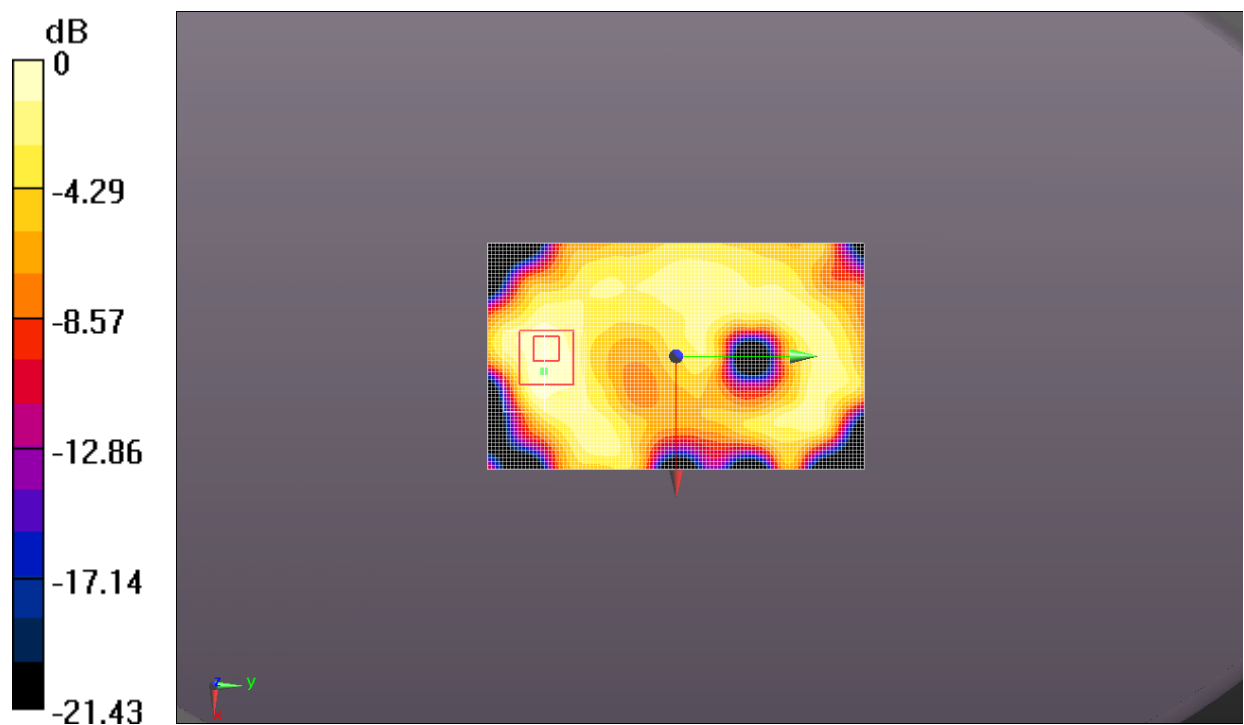
**Towards Phantom Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.631 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.0240 W/kg

**SAR(1 g) = 0.012 W/kg; SAR(10 g) = 0.00761 W/kg**

Maximum value of SAR (measured) = 0.0137 W/kg



0 dB = 0.0137 W/kg = -18.63 dBW/kg

Fig. 90 2450 MHz CH1

### Wifi Body Toward Ground Low

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Body 2450

Medium parameters used:  $f = 2412$  MHz;  $\sigma = 1.893$  S/m;  $\epsilon_r = 52.318$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: WiFi 802.11 b Frequency: 2412 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.24, 4.24, 4.24); Calibrated: 4/24/2012

**Towards Ground Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 3.668 V/m; Power Drift = -0.09 dB

Maximum value of SAR (interpolated) = 0.0900 W/kg

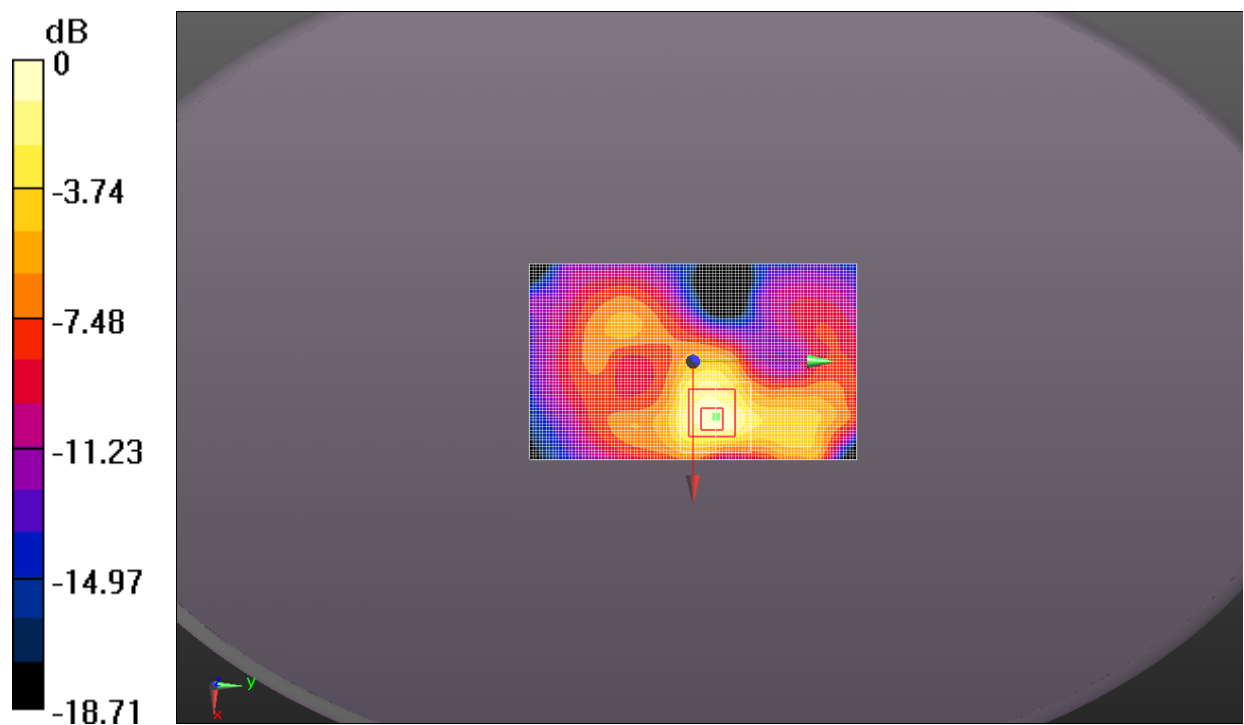
**Towards Ground Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.668 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 0.171 W/kg

**SAR(1 g) = 0.081 W/kg; SAR(10 g) = 0.042 W/kg**

Maximum value of SAR (measured) = 0.0869 W/kg



0 dB = 0.0869 W/kg = -10.61 dBW/kg

Fig. 91 2450 MHz CH1

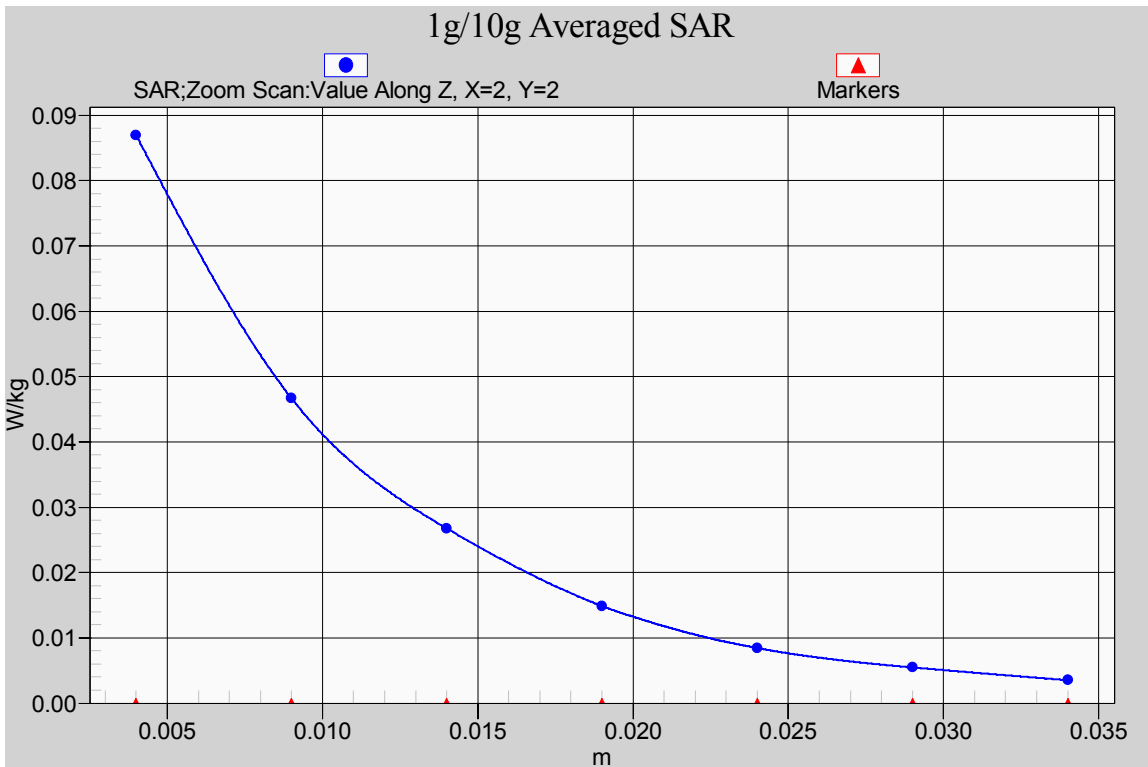


Fig. 91-1 Z-Scan at power reference point (2450 MHz CH1)

**Wifi Body Right Side Low**

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Body 2450

Medium parameters used (interpolated):  $f = 2437$  MHz;  $\sigma = 1.923$  S/m;  $\epsilon_r = 52.269$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: WiFi 802.11 b Frequency: 2437 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.24, 4.24, 4.24); Calibrated: 4/24/2012

**Right side Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 1.382 V/m; Power Drift = 0.17 dB

Maximum value of SAR (interpolated) = 0.0440 W/kg

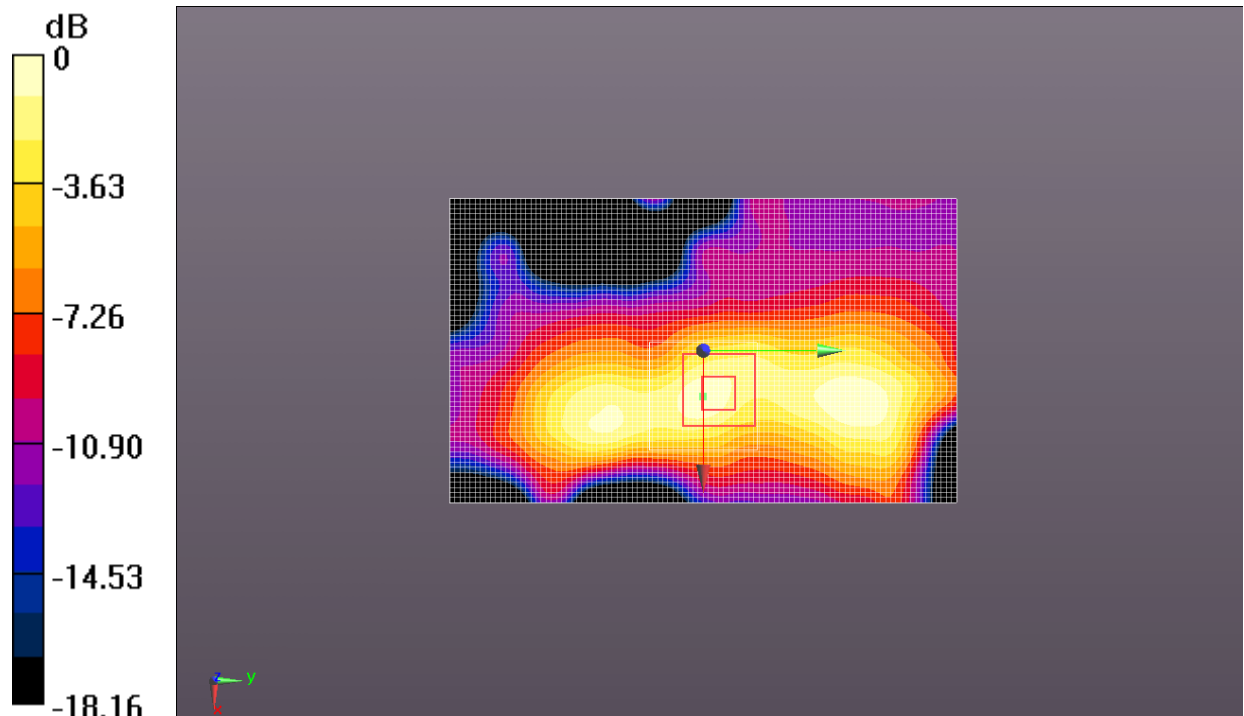
**Right side Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.382 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 0.0860 W/kg

**SAR(1 g) = 0.042 W/kg; SAR(10 g) = 0.020 W/kg**

Maximum value of SAR (measured) = 0.0453 W/kg



0 dB = 0.0453 W/kg = -13.43 dBW/kg

**Fig. 92 2450 MHz CH1**

### W1900 Right Cheek Low

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used (interpolated):  $f = 1852.4$  MHz;  $\sigma = 1.422$  S/m;  $\epsilon_r = 39.181$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.4°C      Liquid Temperature: 21.0°C

Communication System: WCDMA Frequency: 1852.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**Right Cheek Low/Area Scan (61x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 8.789 V/m; Power Drift = 0.16 dB

Maximum value of SAR (interpolated) = 0.442 W/kg

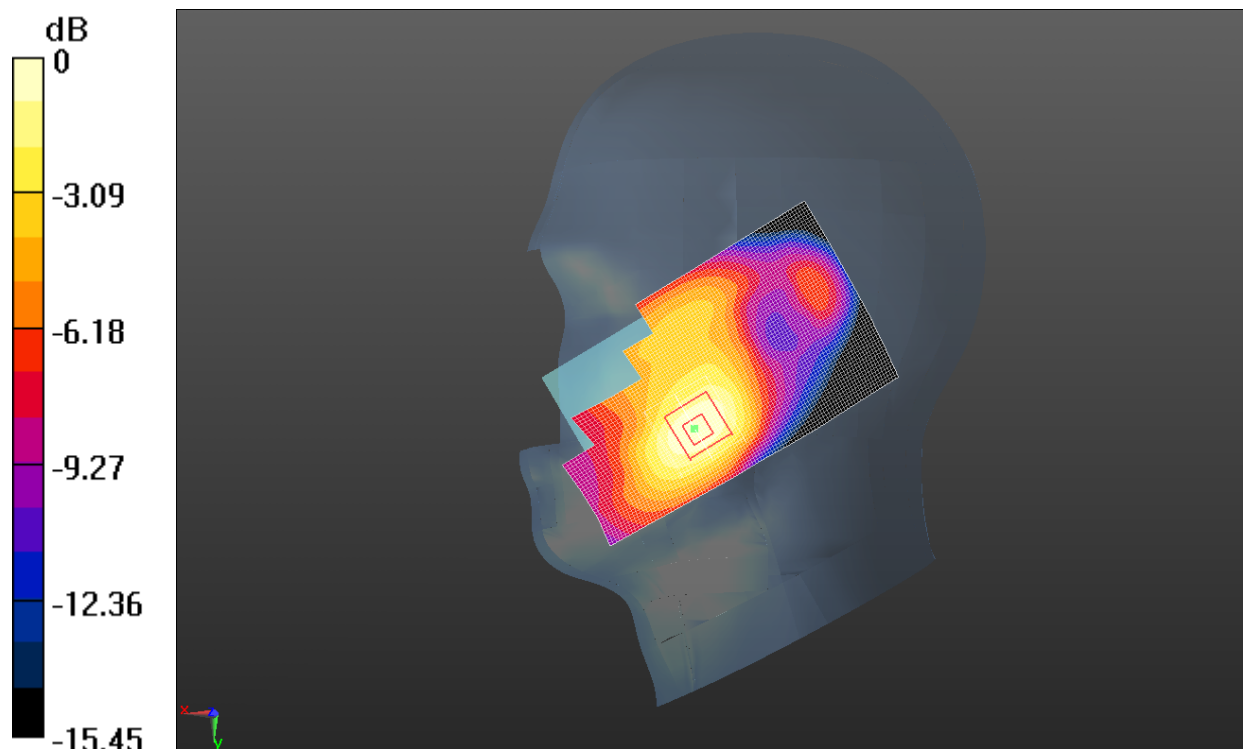
**Right Cheek Low/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.789 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.622 W/kg

**SAR(1 g) = 0.412 W/kg; SAR(10 g) = 0.256 W/kg**

Maximum value of SAR (measured) = 0.444 W/kg



0 dB = 0.444 W/kg = -3.53 dBW/kg

**Fig. 93 1900 MHz CH9262**

### GSM 850 Towards Ground High with GPRS

Date/Time: 2/2/2013 12:41:12 AM

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.991$  S/m;  $\epsilon_r = 54.231$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

Communication System: 4 slot GPRS Frequency: 848.8 MHz Duty Cycle: 1:2.08018

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Ground High/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 34.092 V/m; Power Drift = -0.02 dB

Maximum value of SAR (interpolated) = 1.21 W/kg

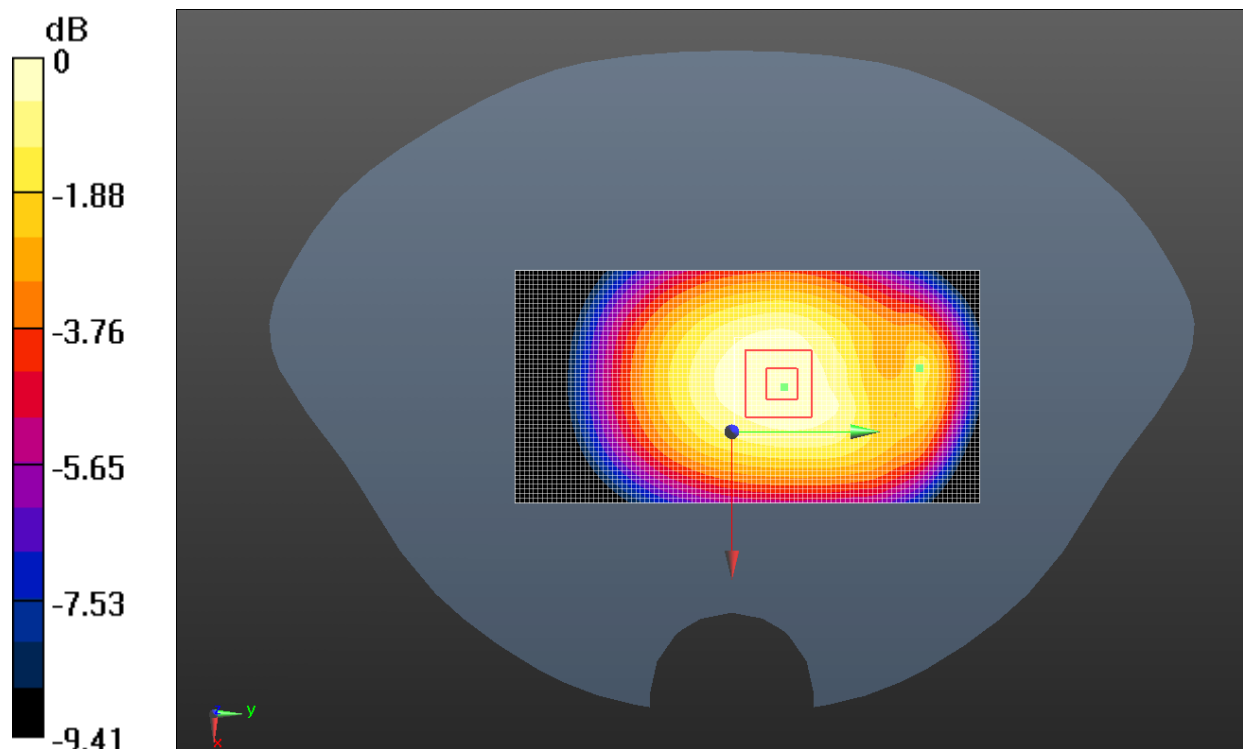
**Towards Ground High/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 34.092 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.40 W/kg

**SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.869 W/kg**

Maximum value of SAR (measured) = 1.20 W/kg



0 dB = 1.20 W/kg = 0.79 dBW/kg

**Fig. 94 850 MHz CH251**

### GSM850 Body Towards Ground High with EGPRS

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 848.8$  MHz;  $\sigma = 0.991$  S/m;  $\epsilon_r = 54.231$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.8°C

Communication System: 4 slot GPRS Frequency: 848.8 MHz Duty Cycle: 1:2.08018

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**Towards Ground High EGPRS/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 33.735 V/m; Power Drift = -0.04 dB

Maximum value of SAR (interpolated) = 1.23 W/kg

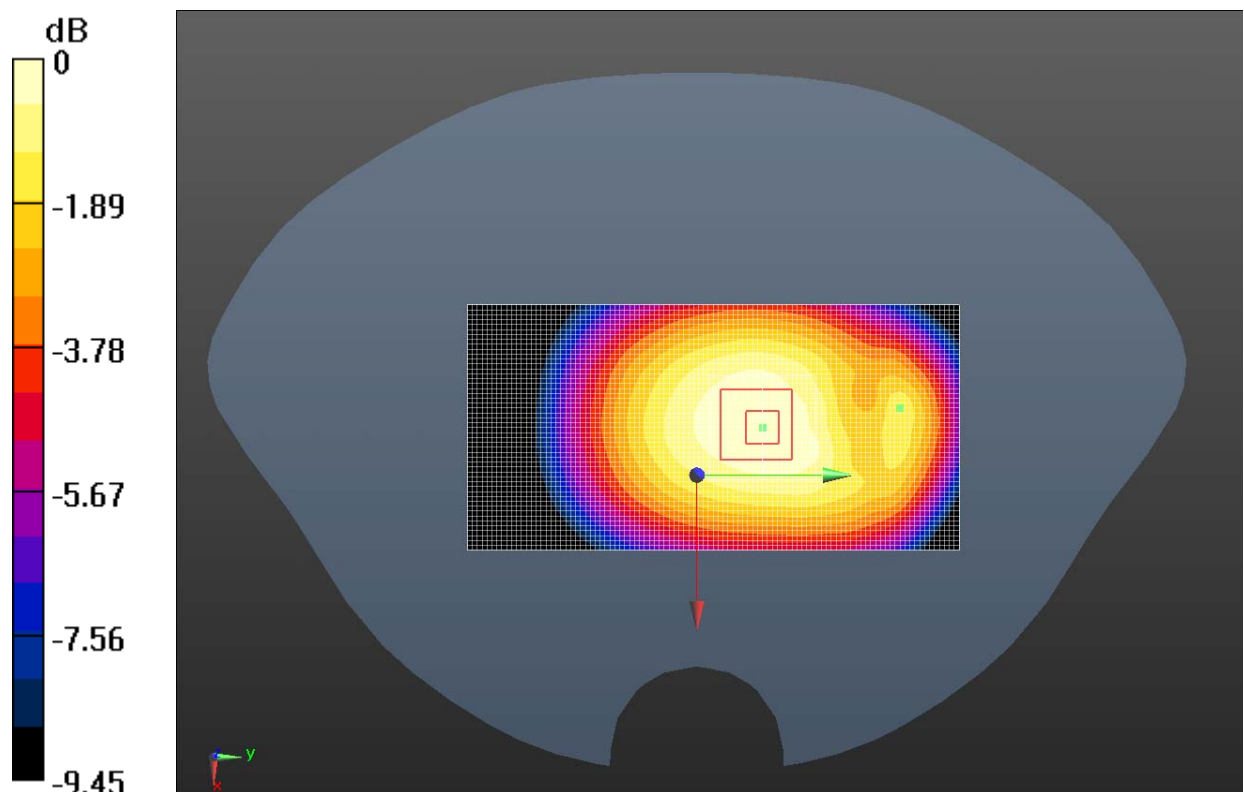
**Towards Ground High EGPRS/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 33.735 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.42 W/kg

**SAR(1 g) = 1.17 W/kg; SAR(10 g) = 0.887 W/kg**

Maximum value of SAR (measured) = 1.23 W/kg



0 dB = 1.23 W/kg = 0.90 dBW/kg

Fig. 95 850 MHz CH251



### GSM1900 Body Towards Ground High with EGPRS

Date: 2/2/2013 5

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1910$  MHz;  $\sigma = 1.561$  S/m;  $\epsilon_r = 51.882$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.3°C      Liquid Temperature: 21.9°C

Communication System: 4 slot GPRS Frequency: 1909.8 MHz Duty Cycle: 1:2.08018

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**Towards Ground High \_EGPRS/Area Scan (51x101x1):** Interpolated grid: dx=1.500 mm, dy=1.500 mm

Reference Value = 7.410 V/m; Power Drift = -0.05 dB

Maximum value of SAR (interpolated) = 0.807 W/kg

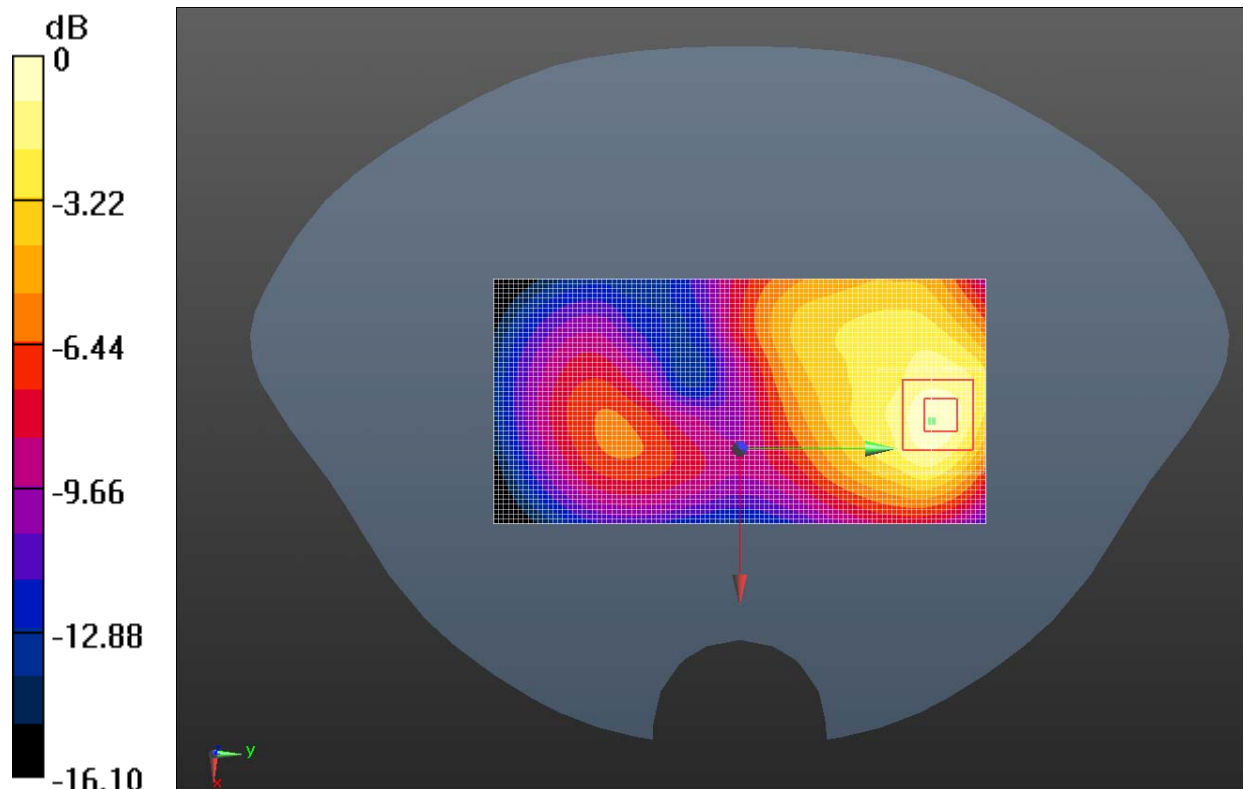
**Towards Ground High \_EGPRS/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 7.410 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.12 W/kg

**SAR(1 g) = 0.716 W/kg; SAR(10 g) = 0.412 W/kg**

Maximum value of SAR (measured) = 0.776 W/kg



0 dB = 0.776 W/kg = -1.10 dBW/kg

**Fig. 96 1900 MHz CH810**

## ANNEX B System Verification Results

### 835MHz

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head850MHz

Medium parameters used (interpolated):  $f = 835 \text{ MHz}$ ;  $\sigma = 0.915 \text{ S/m}$ ;  $\epsilon_r = 43.174$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $21.6^\circ\text{C}$       Liquid Temperature:  $21.1^\circ\text{C}$

Communication System: CW\_TMC Frequency: 835 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(6.27, 6.27, 6.27); Calibrated: 4/24/2012

**System Validation /Area Scan (61x181x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value = 56.730 V/m; Power Drift = -0.06 dB

Maximum value of SAR (interpolated) = 2.70 W/kg

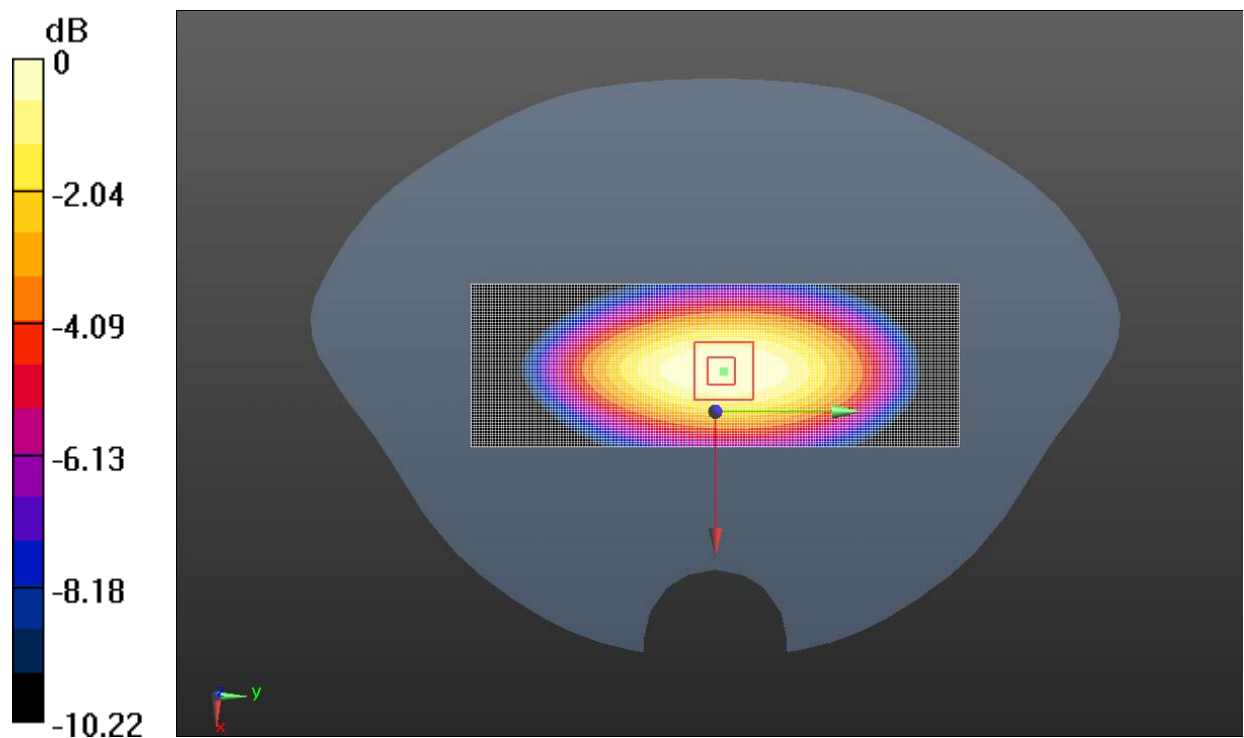
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value = 56.730 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 3.42 W/kg

**SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.58 W/kg**

Maximum value of SAR (measured) = 2.58 W/kg



0 dB = 2.58 W/kg = 4.11 dBW/kg

Fig.B.1 validation 835MHz 250mW

## 835MHz

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 850

Medium parameters used (interpolated):  $f = 835 \text{ MHz}$ ;  $\sigma = 0.976 \text{ S/m}$ ;  $\epsilon_r = 54.326$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.8^\circ\text{C}$

Communication System: CW\_TMC Frequency:  $835 \text{ MHz}$  Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012

**System Validation /Area Scan (61x181x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value =  $53.753 \text{ V/m}$ ; Power Drift =  $0.01 \text{ dB}$

Maximum value of SAR (interpolated) =  $2.73 \text{ W/kg}$

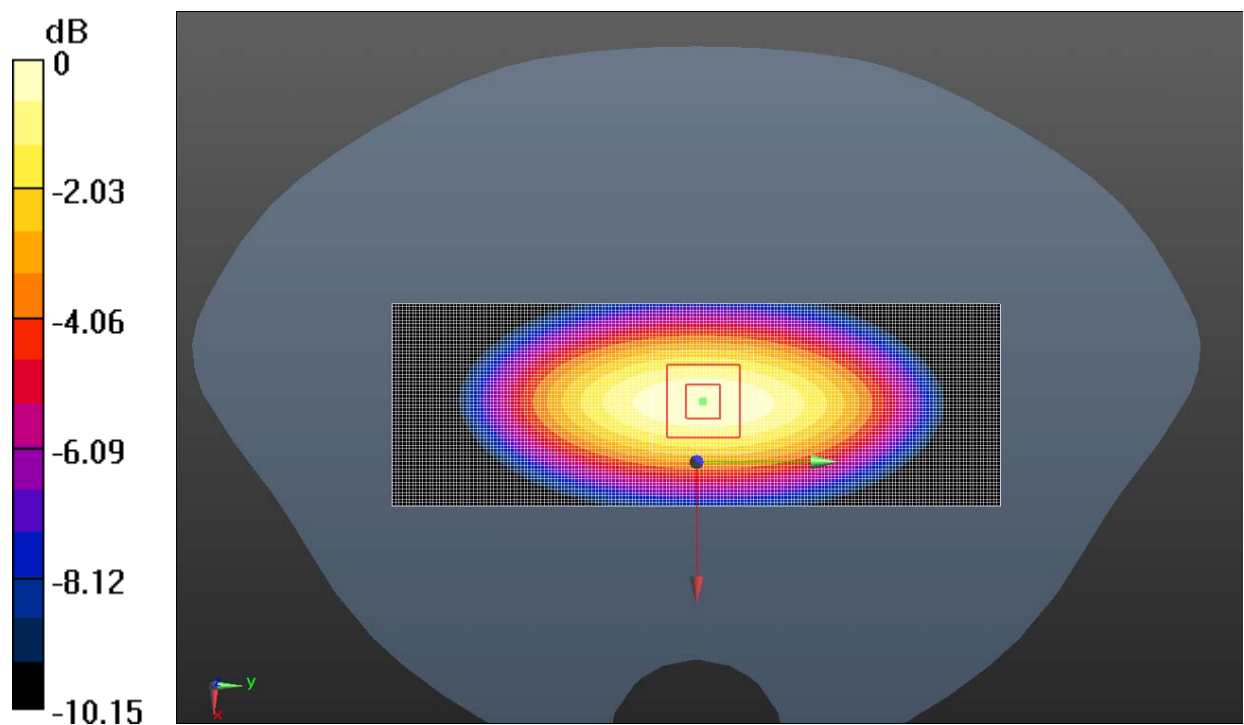
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $53.753 \text{ V/m}$ ; Power Drift =  $0.01 \text{ dB}$

Peak SAR (extrapolated) =  $3.67 \text{ W/kg}$

**SAR(1 g) =  $2.52 \text{ W/kg}$ ; SAR(10 g) =  $1.66 \text{ W/kg}$**

Maximum value of SAR (measured) =  $2.74 \text{ W/kg}$



0 dB =  $2.74 \text{ W/kg} = 4.37 \text{ dBW/kg}$

**Fig.B.2 validation 835MHz 250mW**

## 1900MHz

Date: 2/4/2013

Electronics: DAE4 Sn786

Medium: Head 1900

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.46 \text{ S/m}$ ;  $\epsilon_r = 39.02$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $21.4^\circ\text{C}$       Liquid Temperature:  $21.0^\circ\text{C}$

Communication System: CW\_TMC Frequency: 1900 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(5.06, 5.06, 5.06); Calibrated: 4/24/2012

**System Validation /Area Scan (61x121x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value =  $83.328 \text{ V/m}$ ; Power Drift =  $0.10 \text{ dB}$

Maximum value of SAR (interpolated) =  $11.6 \text{ W/kg}$

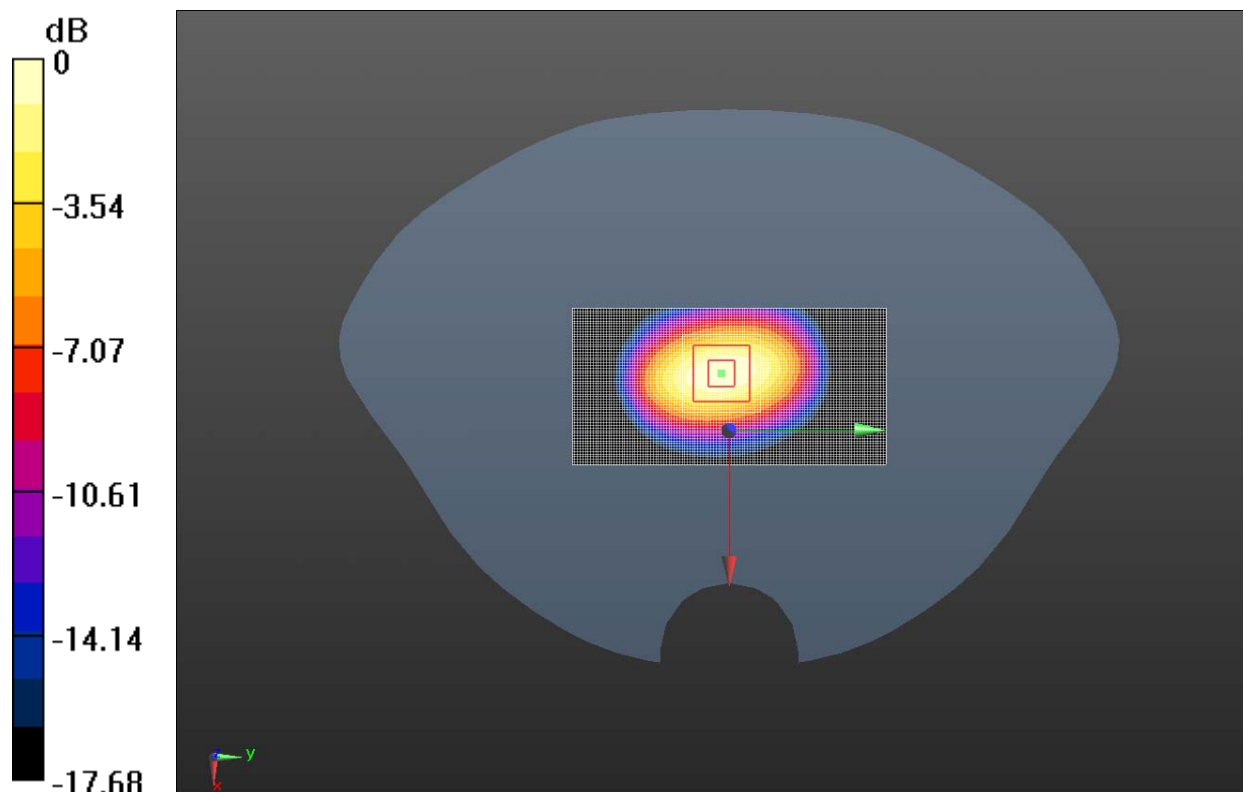
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $83.328 \text{ V/m}$ ; Power Drift =  $0.10 \text{ dB}$

Peak SAR (extrapolated) =  $19.2 \text{ W/kg}$

**SAR(1 g) =  $10.2 \text{ W/kg}$ ; SAR(10 g) =  $5.27 \text{ W/kg}$**

Maximum value of SAR (measured) =  $11.5 \text{ W/kg}$



0 dB =  $11.5 \text{ W/kg}$  =  $10.61 \text{ dBW/kg}$

**Fig.B.3 validation 1900MHz 250mW**

## 1900MHz

Date: 2/2/2013

Electronics: DAE4 Sn786

Medium: Body 1900MHz

Medium parameters used:  $f = 1900 \text{ MHz}$ ;  $\sigma = 1.551 \text{ S/m}$ ;  $\epsilon_r = 51.898$ ;  $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature:  $22.3^\circ\text{C}$       Liquid Temperature:  $21.9^\circ\text{C}$

Communication System: CW\_TMC Frequency: 1900 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.7, 4.7, 4.7); Calibrated: 4/24/2012

**System Validation /Area Scan (61x121x1):** Interpolated grid:  $dx=1.000 \text{ mm}$ ,  $dy=1.000 \text{ mm}$

Reference Value =  $77.765 \text{ V/m}$ ; Power Drift =  $0.17 \text{ dB}$

Maximum value of SAR (interpolated) =  $11.8 \text{ W/kg}$

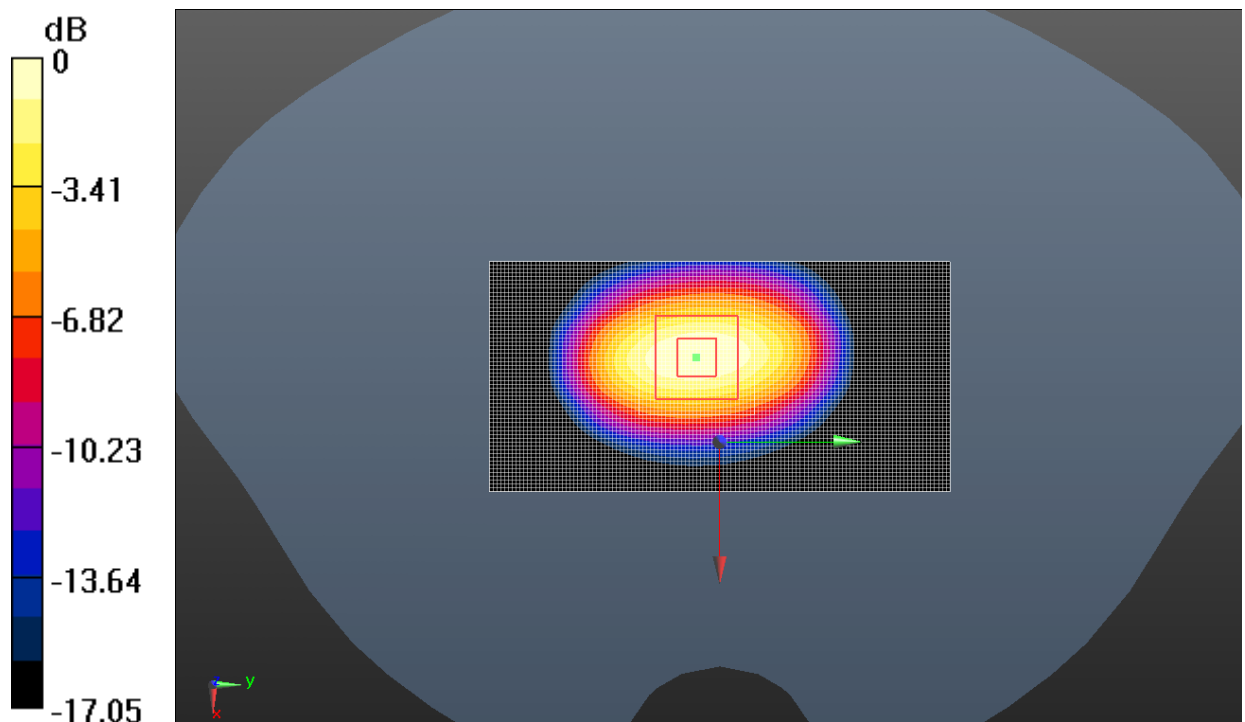
**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid:  $dx=5\text{mm}$ ,  $dy=5\text{mm}$ ,  $dz=5\text{mm}$

Reference Value =  $77.765 \text{ V/m}$ ; Power Drift =  $0.17 \text{ dB}$

Peak SAR (extrapolated) =  $18.0 \text{ W/kg}$

**SAR(1 g) =  $10.2 \text{ W/kg}$ ; SAR(10 g) =  $5.32 \text{ W/kg}$**

Maximum value of SAR (measured) =  $11.6 \text{ W/kg}$



0 dB =  $11.6 \text{ W/kg}$  =  $10.64 \text{ dBW/kg}$

**Fig.B.4 validation 1900MHz 250mW**

## 2450MHz

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Head 2450

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.864$  S/m;  $\epsilon_r = 40.086$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: CW\_TMC Frequency: 2450 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.44, 4.44, 4.44); Calibrated: 4/24/2012

**System validation /Area Scan (61x121x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 89.132 V/m; Power Drift = 0.13 dB

Maximum value of SAR (interpolated) = 15.9 W/kg

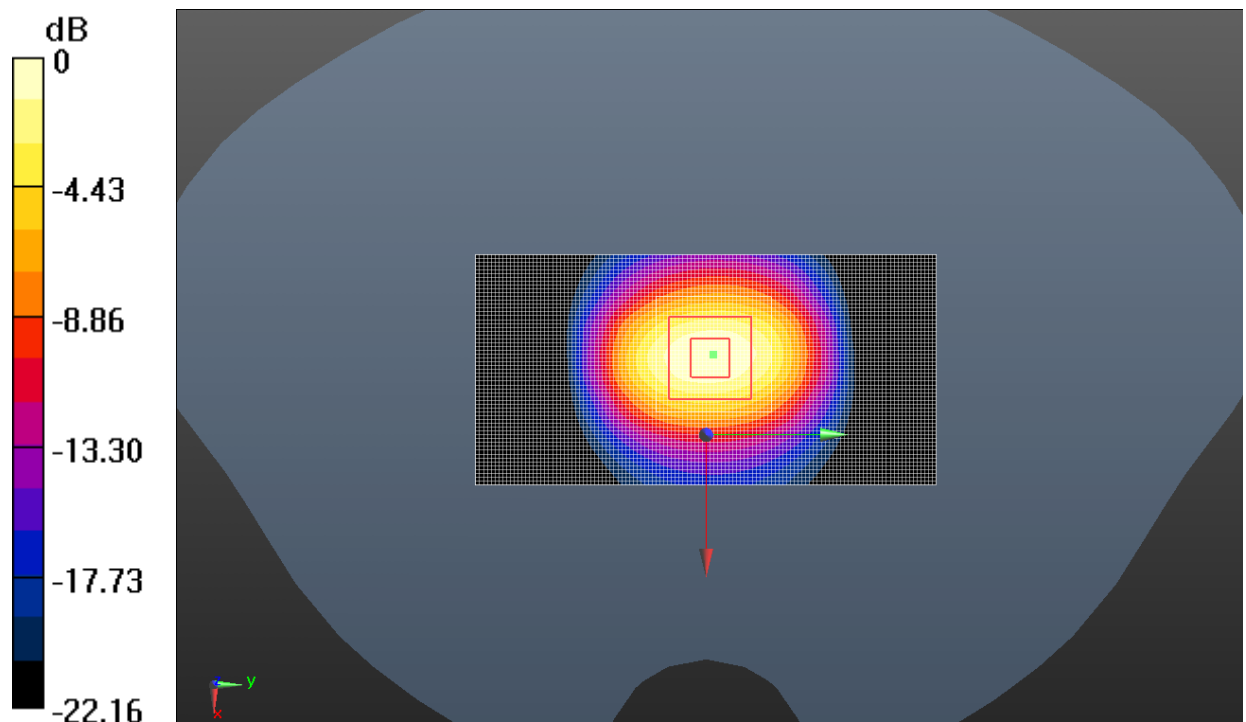
**System validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 89.132 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 29.2 W/kg

**SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.34 W/kg**

Maximum value of SAR (measured) = 15.6 W/kg



0 dB = 15.6 W/kg = 11.92 dBW/kg

**Fig.B.5 validation 2450MHz 250mW**

## 2450MHz

Date: 2/5/2013

Electronics: DAE4 Sn786

Medium: Body 2450

Medium parameters used:  $f = 2450$  MHz;  $\sigma = 1.936$  S/m;  $\epsilon_r = 52.236$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.5°C      Liquid Temperature: 22.0°C

Communication System: CW\_TMC Frequency: 2450 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3151 ConvF(4.24, 4.24, 4.24); Calibrated: 4/24/2012

**System validation/Area Scan (61x121x1):** Interpolated grid: dx=1.000 mm, dy=1.000 mm

Reference Value = 83.910 V/m; Power Drift = 0.11 dB

Maximum value of SAR (interpolated) = 15.8 W/kg

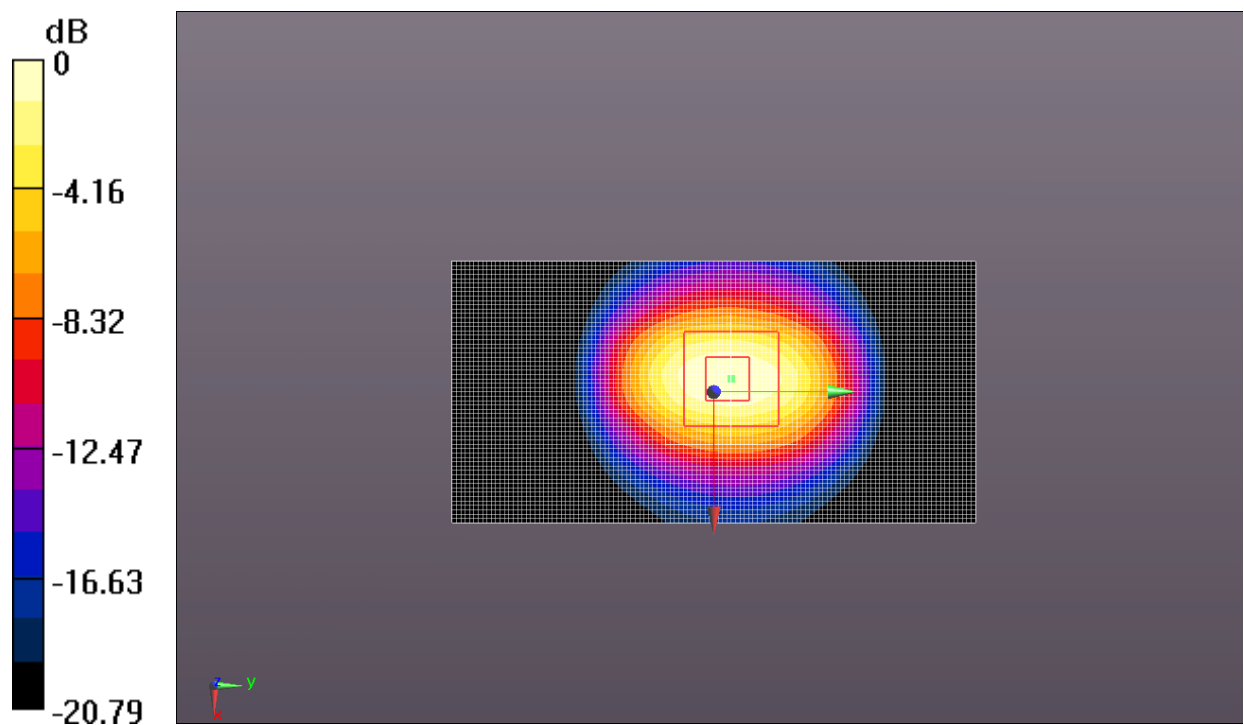
**System validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 83.910 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 28.6 W/kg

**SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.2 W/kg**

Maximum value of SAR (measured) = 15.3 W/kg



0 dB = 15.3 W/kg = 11.85 dBW/kg

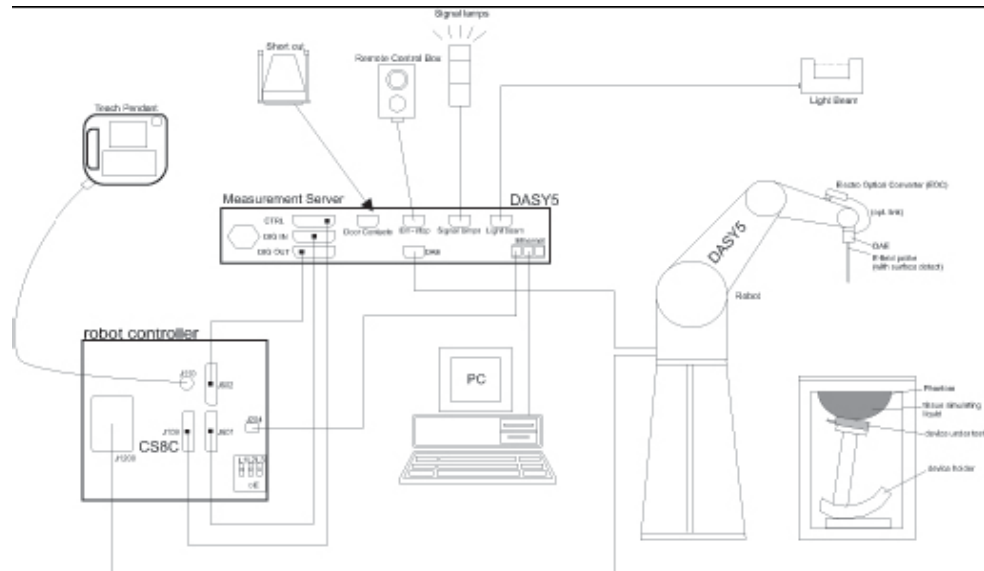
**Fig.B.6 validation 2450MHz 250mW**



## ANNEX C SAR Measurement Setup

### C.1 Measurement Set-up

The Dasy4 or DASY5 system for performing compliance tests is illustrated above graphically. This system consists of the following items:



Picture C.1 SAR Lab Test Measurement Set-up

- A standard high precision 6-axis robot (Stäubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY4 or DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as
- warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.



## C.2 Dasy4 or DASY5 E-field Probe System

The SAR measurements were conducted with the dosimetric probe designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 or DASY5 software reads the reflection during a software approach and looks for the maximum using 2<sup>nd</sup> order curve fitting. The approach is stopped at reaching the maximum.

### Probe Specifications:

<b>Model:</b>	<b>ES3DV3, EX3DV4</b>
<b>Frequency</b>	<b>10MHz — 6.0GHz(EX3DV4)</b>
<b>Range:</b>	<b>10MHz — 4GHz(ES3DV3)</b>
<b>Calibration:</b>	<b>In head and body simulating tissue at Frequencies from 835 up to 5800MHz</b>
<b>Linearity:</b>	<b>± 0.2 dB(30 MHz to 6 GHz) for EX3DV4 ± 0.2 dB(30 MHz to 4 GHz) for ES3DV3</b>
<b>Dynamic Range:</b>	<b>10 mW/kg — 100W/kg</b>
<b>Probe Length:</b>	<b>330 mm</b>
<b>Probe Tip</b>	
<b>Length:</b>	<b>20 mm</b>
<b>Body Diameter:</b>	<b>12 mm</b>
<b>Tip Diameter:</b>	<b>2.5 mm (3.9 mm for ES3DV3)</b>
<b>Tip-Center:</b>	<b>1 mm (2.0mm for ES3DV3)</b>
<b>Application:</b>	<b>SAR Dosimetry Testing Compliance tests of mobile phones Dosimetry in strong gradient fields</b>



Picture C.2 Near-field Probe



Picture C.3 E-field Probe

## C.3 E-field Probe Calibration

Each E-Probe/Probe Amplifier combination has unique calibration parameters. A TEM cell calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density ( $1 \text{ mW/cm}^2$ ) using an RF Signal generator, TEM cell, and RF Power Meter.

The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed

in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/ cm<sup>2</sup>:

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C \frac{\Delta T}{\Delta t}$$

Where:

$\Delta t$  = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

$\Delta T$  = Temperature increase due to RF exposure.

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

Where:

$\sigma$  = Simulated tissue conductivity,

$\rho$  = Tissue density (kg/m<sup>3</sup>).

## C.4 Other Test Equipment

### C.4.1 Data Acquisition Electronics(DAE)

The data acquisition electronics consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



PictureC.4: DAE

### C.4.2 Robot

The SPEAG DASY system uses the high precision robots (DASY5: TX90XL) type from Stäubli SA (France). For the 6-axis controller system, the robot controller version from Stäubli is used. The Stäubli robot series have many features that are important for our application:

- High precision (repeatability 0.02mm)
- High reliability (industrial design)
- Low maintenance costs (virtually maintenance free due to direct drive gears; no belt drives)
- Jerk-free straight movements (brushless synchron motors; no stepper motors)
- Low ELF interference (motor control fields shielded via the closed metallic construction shields)



PictureC.5: DASY5 Robot

### C.4.3 Measurement Server

The Measurement server is based on a PC/104 CPU board with CPU (dasy4: 166 MHz, Intel Pentium; DASY5: 400 MHz, Intel Celeron), chipdisk (DASY4: 32 MB; DASY5: 128MB), RAM (DASY4: 64 MB, DASY5: 128MB). The necessary circuits for communication with the DAE electronic box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY I/O board, which is directly connected to the PC/104 bus of the CPU board.

The measurement server performs all real-time data evaluation of field measurements and surface detection, controls robot movements and handles safety operation. The PC operating system cannot interfere with these time critical processes. All connections are supervised by a watchdog, and disconnection of any of the cables to the measurement server will automatically disarm the robot and disable all program-controlled robot movements. Furthermore, the measurement server is equipped with an expansion port which is reserved for future applications. Please note that this expansion port does not have a standardized pinout, and therefore only devices provided by SPEAG can be connected. Devices from any other supplier could seriously damage the measurement server.



Picture C.6 Server for DASY 4



Picture C.7 Server for DASY 5

#### C.4.4 Device Holder for Phantom

The SAR in the phantom is approximately inversely proportional to the square of the distance between the source and the liquid surface. For a source at 5mm distance, a positioning uncertainty of  $\pm 0.5\text{mm}$  would produce a SAR uncertainty of  $\pm 20\%$ . Accurate device positioning is therefore crucial for accurate and repeatable measurements. The positions in which the devices must be measured are defined by the standards.

The DASY device holder is designed to cope with the different positions given in the standard. It has two scales for device rotation (with respect to the body axis) and device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder is constructed of low-loss

POM material having the following dielectric

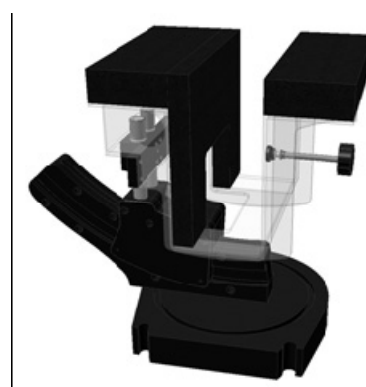
parameters: relative permittivity  $\epsilon = 3$  and loss tangent  $\delta = 0.02$ . The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

<Laptop Extension Kit>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the Mounting Device in place of the phone positioner. The extension is fully compatible with the Twin-SAM and ELI phantoms.



Picture C.8-1: Device Holder



Picture C.8-2: Laptop Extension Kit

#### C.4.5 Phantom

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a table. The shape of the shell is based on data from an anatomical study designed to

Represent the 90<sup>th</sup> percentile of the population. The phantom enables the dissymmetric evaluation

of SAR for both left and right handed handset usage, as well as body-worn usage using the flat phantom region. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. The shell phantom has a 2mm shell thickness (except the ear region where shell thickness increases to 6 mm).

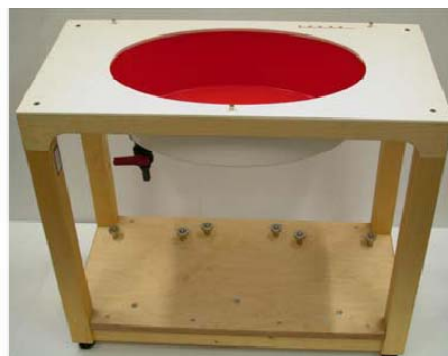
Shell Thickness:  $2 \pm 0.2$  mm  
 Filling Volume: Approx. 25 liters  
 Dimensions: 810 x 1000 x 500 mm (H x L x W)  
 Available: Special



**Picture C.9: SAM Twin Phantom**

The ELI4 phantom is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6GHz. ELI4 is fully compatible with the latest standard IEC 62209-2 and all known tissue simulating liquids. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness  $2 \pm 0.1$  mm  
 Filling Volume Approx. 20 liters  
 Dimensions 810 x 1000 x 500 mm (H x L x W)  
 Available Special

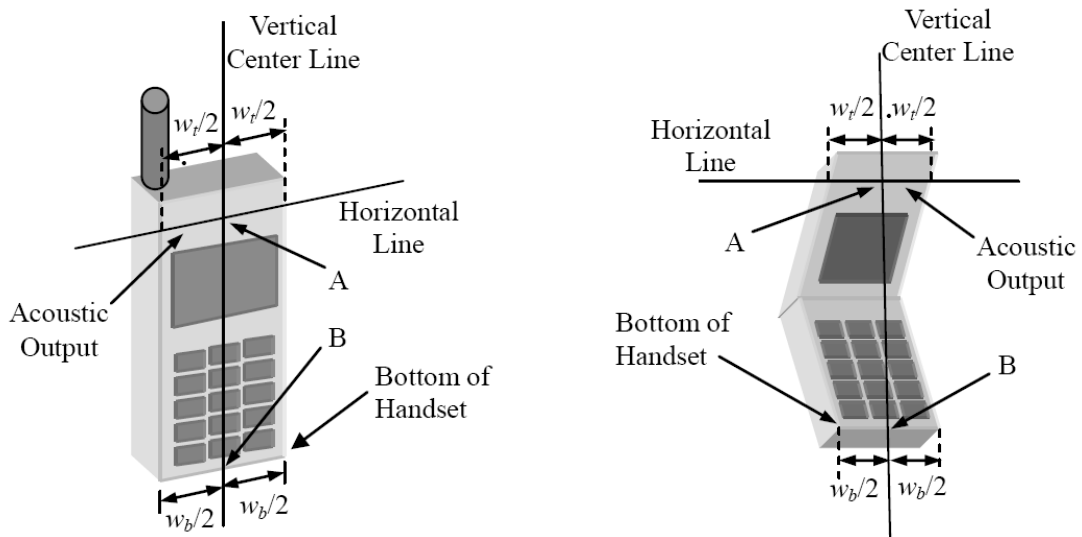


**Picture C.10: SAM Twin Phantom**

## ANNEX D Position of the wireless device in relation to the phantom

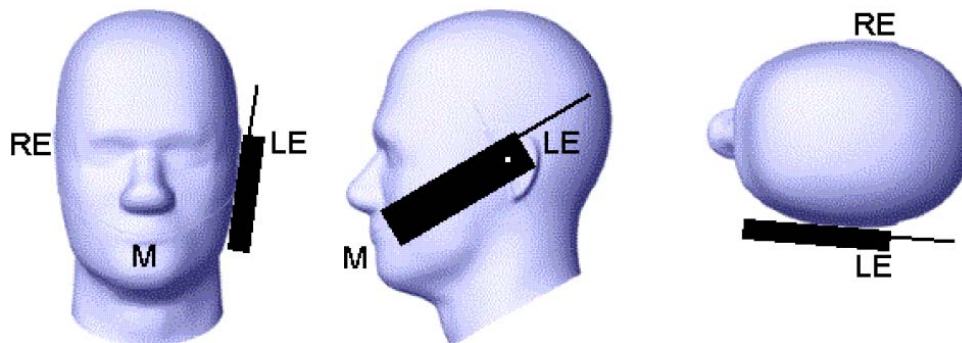
### D.1 General Considerations

This standard specifies two handset test positions against the head phantom – the “cheek” position and the “tilt” position.



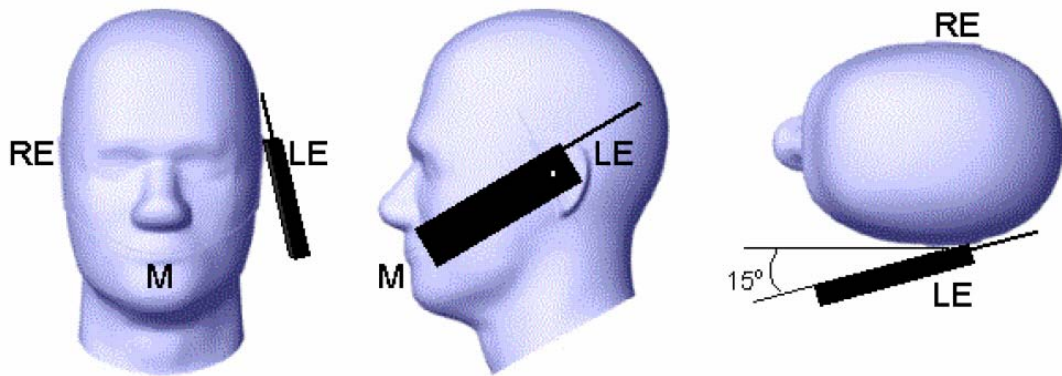
- $w_t$  Width of the handset at the level of the acoustic
- $w_b$  Width of the bottom of the handset
- A Midpoint of the width  $w_t$  of the handset at the level of the acoustic output
- B Midpoint of the width  $w_b$  of the bottom of the handset

Picture D.1-a Typical “fixed” case handset      Picture D.1-b Typical “clam-shell” case handset



Picture D.2 Cheek position of the wireless device on the left side of SAM

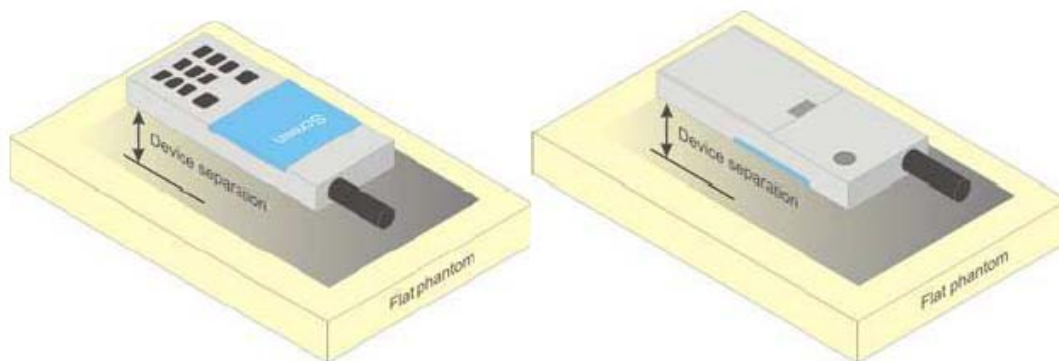




Picture D.3 Tilt position of the wireless device on the left side of SAM

## D.2 Body-worn device

A typical example of a body-worn device is a mobile phone, wireless enabled PDA or other battery operated wireless device with the ability to transmit while mounted on a person's body using a carry accessory approved by the wireless device manufacturer.

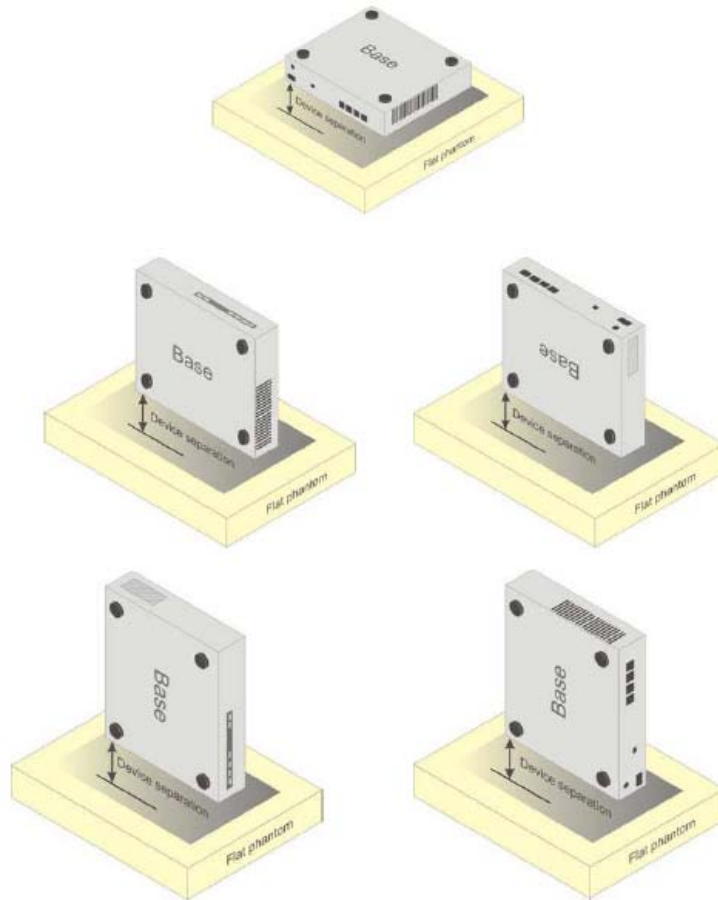


Picture D.4 Test positions for body-worn devices

## D.3 Desktop device

A typical example of a desktop device is a wireless enabled desktop computer placed on a table or desk when used.

The DUT shall be positioned at the distance and in the orientation to the phantom that corresponds to the intended use as specified by the manufacturer in the user instructions. For devices that employ an external antenna with variable positions, tests shall be performed for all antenna positions specified. Picture 8.5 show positions for desktop device SAR tests. If the intended use is not specified, the device shall be tested directly against the flat phantom.



Picture D.5 Test positions for desktop devices

#### D.4 DUT Setup Photos



Picture D.6



## ANNEX E Equivalent Media Recipes

The liquid used for the frequency range of 800-3000 MHz consisted of water, sugar, salt, preventol, glycol monobutyl and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table E.1 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528 and IEC 62209.

**Table E.1: Composition of the Tissue Equivalent Matter**

Frequency (MHz)	835 Head	835 Body	1900 Head	1900 Body	2450 Head	2450 Body
Ingredients (% by weight)						
Water	41.45	52.5	55.242	69.91	58.79	72.60
Sugar	56.0	45.0	\	\	\	\
Salt	1.45	1.4	0.306	0.13	0.06	0.18
Preventol	0.1	0.1	\	\	\	\
Cellulose	1.0	1.0	\	\	\	\
Glycol Monobutyl	\	\	44.452	29.96	41.15	27.22
Dielectric Parameters Target Value	$\epsilon=41.5$ $\sigma=0.90$	$\epsilon=55.2$ $\sigma=0.97$	$\epsilon=40.0$ $\sigma=1.40$	$\epsilon=53.3$ $\sigma=1.52$	$\epsilon=39.2$ $\sigma=1.80$	$\epsilon=52.7$ $\sigma=1.95$

## ANNEX F System Validation

The SAR system must be validated against its performance specifications before it is deployed. When SAR probes, system components or software are changed, upgraded or recalibrated, these must be validated with the SAR system(s) that operates with such components.

**Table F.1: System Validation**

System No.	Probe SN.	Liquid name	Validation date	Frequency point	Status (OK or Not)
	3151	Head 850MHz	May. 21, 2012	850 MHz	OK
	3151	Head 850MHz	May. 21, 2012	900 MHz	OK
	3151	Head 1800MHz	May. 22, 2012	1800 MHz	OK
	3151	Head 1900MHz	May. 22, 2012	1900 MHz	OK
	3151	Head 2000MHz	May. 23, 2012	2000 MHz	OK
	3151	Head 2100MHz	May. 23, 2012	2100 MHz	OK
	3151	Head 2450MHz	May. 23, 2012	2450 MHz	OK
	3151	Head 2550MHz	May. 24, 2012	2550 MHz	OK
	3151	Head 2600MHz	May. 24, 2012	2600 MHz	OK
	3151	Body 850MHz	May. 24, 2012	850 MHz	OK
	3151	Body 850MHz	May. 24, 2012	900 MHz	OK
	3151	Body 1800MHz	May. 25, 2012	1800 MHz	OK
	3151	Body 1900MHz	May. 25, 2012	1900 MHz	OK
	3151	Body 2000MHz	May. 25, 2012	2000 MHz	OK
	3151	Body 2100MHz	May. 26, 2012	2100 MHz	OK
	3151	Body 2450MHz	May. 26, 2012	2450 MHz	OK
	3151	Body 2550MHz	May. 26, 2012	2550 MHz	OK
	3151	Body 2600MHz	May. 26, 2012	2600 MHz	OK

## ANNEX G Probe Calibration Certificate

**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**

Client **TMC Beijing**

Certificate No: **ES3-3151\_Apr12**

### CALIBRATION CERTIFICATE

Object **ES3DV3 - SN:3151**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-23.v4, QA CAL-25.v4  
Calibration procedure for dosimetric E-field probes**

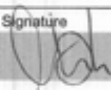
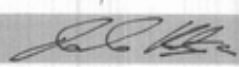
Calibration date: **April 24, 2012**

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

Calibrated by:	Name <b>Claudio Leubler</b>	Function <b>Laboratory Technician</b>	Signature 
Approved by:	Name <b>Katja Pokovic</b>	Function <b>Technical Manager</b>	
			Issued: April 24, 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



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The Swiss Accreditation Service is one of the signatories to the EA  
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Accreditation No.: SCS 108

**Glossary:**

TSL	tissue simulating liquid
NORM <sub>x,y,z</sub>	sensitivity in free space
ConvF	sensitivity in TSL / NORM <sub>x,y,z</sub>
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization $\varphi$	$\varphi$ rotation around probe axis
Polarization $\vartheta$	$\vartheta$ 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:**

- 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
- 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:**

- NORM<sub>x,y,z</sub>:** Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not affect the E<sup>2</sup>-field uncertainty inside TSL (see below ConvF).
- NORM(f)<sub>x,y,z</sub> = NORM<sub>x,y,z</sub> \* 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.
- DCP<sub>x,y,z</sub>:** 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
- A<sub>x,y,z</sub>; B<sub>x,y,z</sub>; C<sub>x,y,z</sub>; VR<sub>x,y,z</sub>:** 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 NORM<sub>x,y,z</sub> \* 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.