**1900 Right Cheek Low**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.35 mho/m; εr = 40.8; ρ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

**Cheek Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.843 mW/g

**Cheek Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.024 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.2410
**SAR(1 g) = 0.729 mW/g; SAR(10 g) = 0.386 mW/g**
Maximum value of SAR (measured) = 0.808 mW/g

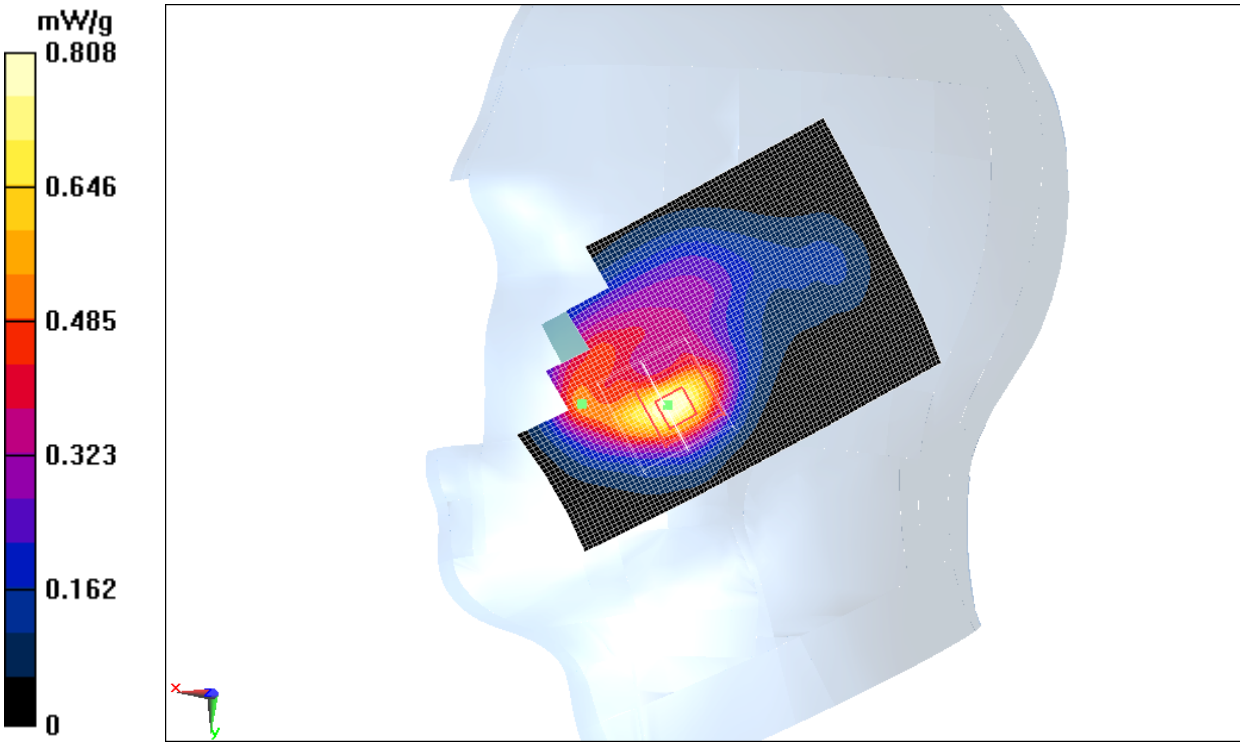



**Fig. 29 1900 MHz CH512**

**1900 Right Tilt High**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.42 mho/m; $\varepsilon r$ = 40.2; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

**Tilt High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.288 mW/g

**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.486 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.4080
**SAR(1 g) = 0.252 mW/g; SAR(10 g) = 0.140 mW/g**
Maximum value of SAR (measured) = 0.286 mW/g

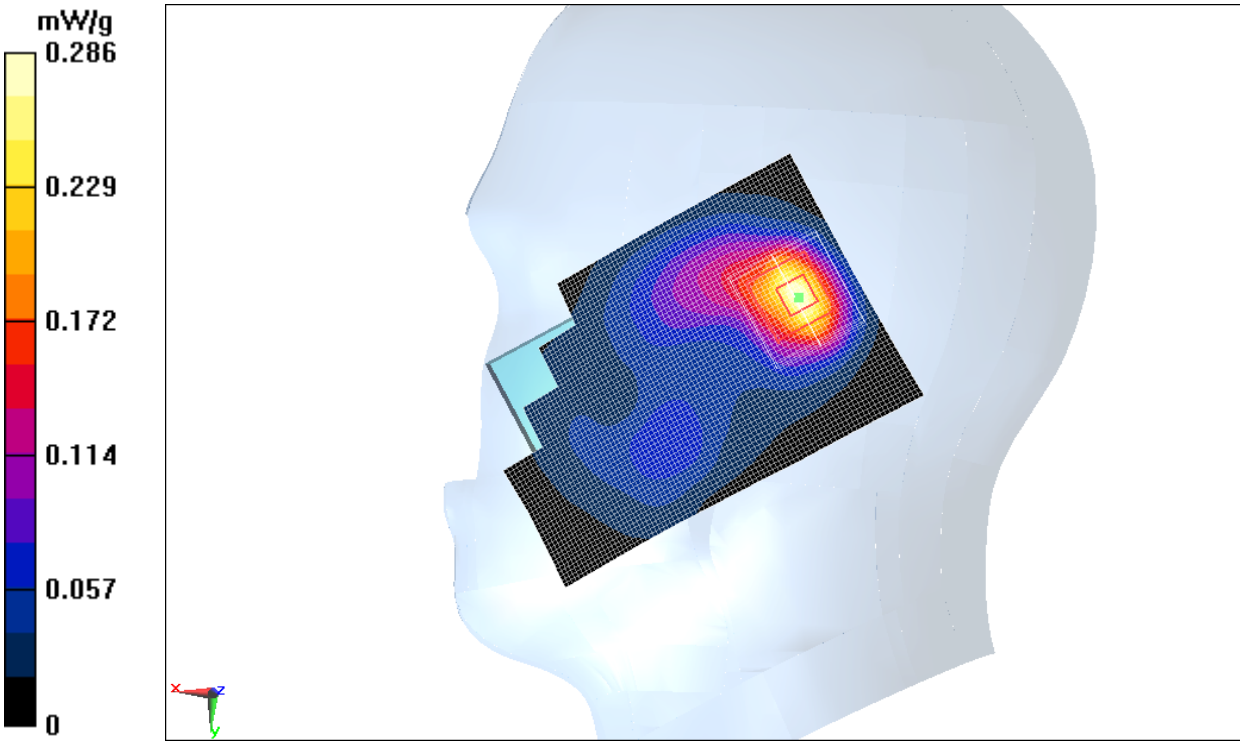



**Fig. 30 1900 MHz CH810**

**1900 Right Tilt Middle**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.38 mho/m; $\varepsilon r$ = 40.6; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

**Tilt Middle/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.319 mW/g

**Tilt Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.310 V/m; Power Drift = 0.0063 dB
Peak SAR (extrapolated) = 0.4380
**SAR(1 g) = 0.275 mW/g; SAR(10 g) = 0.154 mW/g**
Maximum value of SAR (measured) = 0.311 mW/g

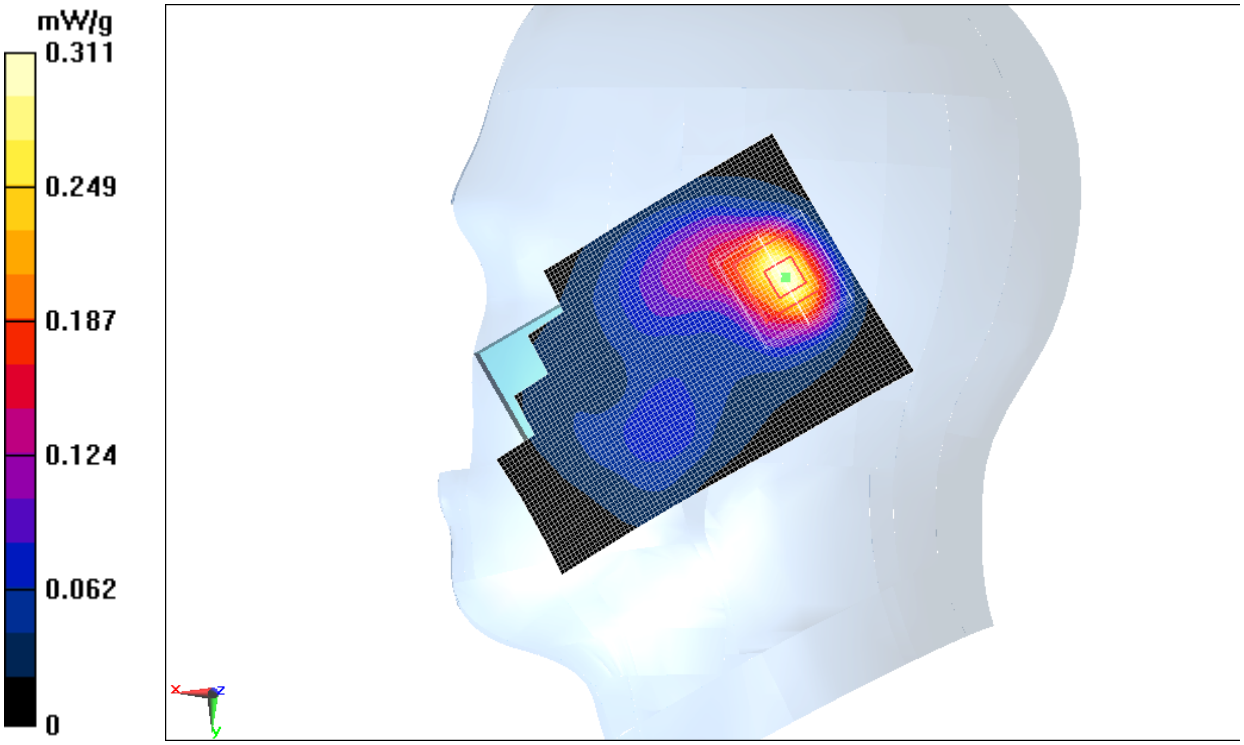



**Fig.31 1900 MHz CH661**

**1900 Right Tilt Low**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.35 mho/m; εr = 40.8; ρ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

**Tilt Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.300 mW/g

**Tilt Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.147 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.4160
**SAR(1 g) = 0.263 mW/g; SAR(10 g) = 0.149 mW/g**
Maximum value of SAR (measured) = 0.298 mW/g

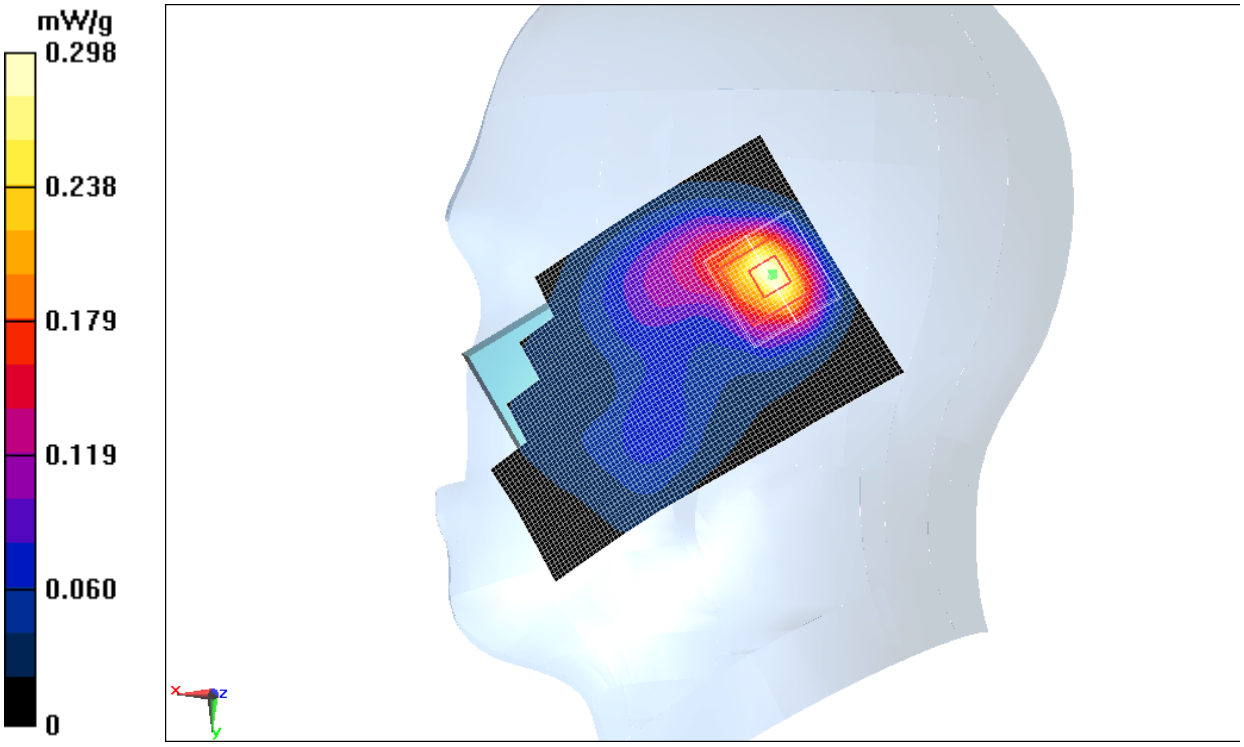



**Fig. 32 1900 MHz CH512**

**1900 Body Towards Phantom High**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.524 mho/m; $\varepsilon_r$ = 53.199; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS-3 Frequency: 1909.8 MHz Duty Cycle: 1:2
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)
**Toward Phantom High/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.464 mW/g
**Toward Phantom High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.767 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.7120
**SAR(1 g) = 0.442 mW/g; SAR(10 g) = 0.261 mW/g**
Maximum value of SAR (measured) = 0.472 mW/g
**Toward Phantom High/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.767 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.7140
**SAR(1 g) = 0.422 mW/g; SAR(10 g) = 0.248 mW/g**
Maximum value of SAR (measured) = 0.486 mW/g

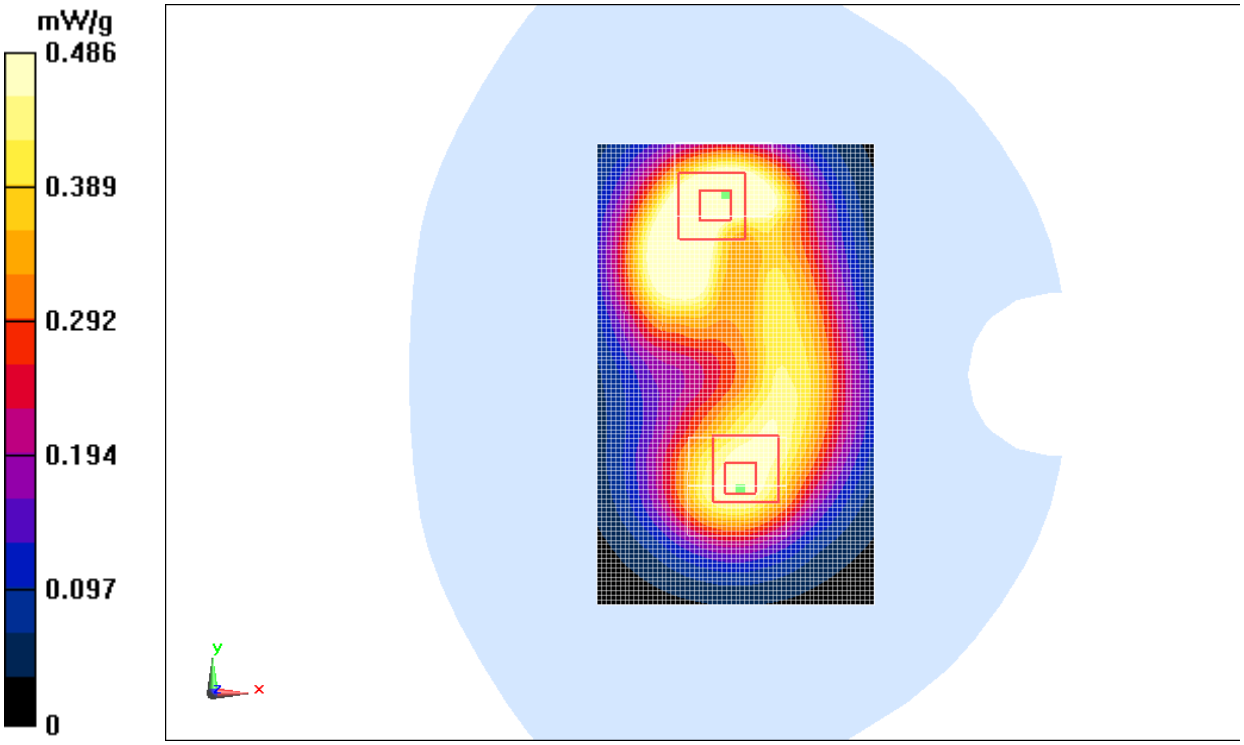



**Fig. 33 1900 MHz CH810**

**1900 Body Towards Phantom Middle**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.499 mho/m; $\varepsilon r$ = 53.287; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:2
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Phantom Middle/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.499 mW/g
**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.263 V/m; Power Drift = -0.0013 dB
Peak SAR (extrapolated) = 0.7850
**SAR(1 g) = 0.482 mW/g; SAR(10 g) = 0.284 mW/g**
Maximum value of SAR (measured) = 0.514 mW/g
**Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.263 V/m; Power Drift = -0.0013 dB
Peak SAR (extrapolated) = 0.5210
**SAR(1 g) = 0.338 mW/g; SAR(10 g) = 0.219 mW/g**
Maximum value of SAR (measured) = 0.362 mW/g


**Fig. 34 1900 MHz CH661**

**1900 Body Towards Phantom Low**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.475 mho/m; $\varepsilon_r$ = 53.406; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:2
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)
**Toward Phantom Low/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.480 mW/g
**Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.168 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.7450
**SAR(1 g) = 0.463 mW/g; SAR(10 g) = 0.275 mW/g**
Maximum value of SAR (measured) = 0.493 mW/g
**Toward Phantom Low/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.168 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.5060
**SAR(1 g) = 0.332 mW/g; SAR(10 g) = 0.218 mW/g**
Maximum value of SAR (measured) = 0.351 mW/g

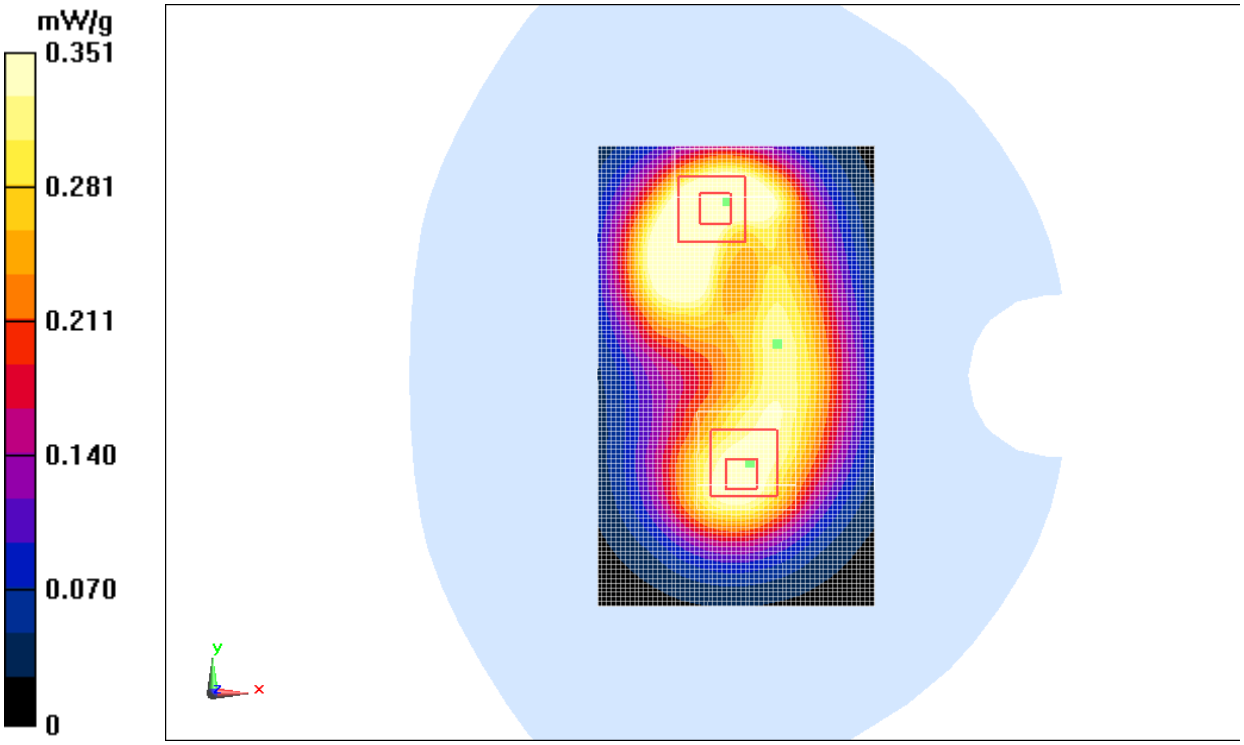



**Fig. 35 1900 MHz CH512**

**1900 Body Towards Ground High**

Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1910 MHz; $\sigma$ = 1.524 mho/m; $\varepsilon_r$ = 53.199; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS-3 Frequency: 1909.8 MHz Duty Cycle: 1:2
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground High/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.568 mW/g

**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.986 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.8630
**SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.304 mW/g**
Maximum value of SAR (measured) = 0.553 mW/g

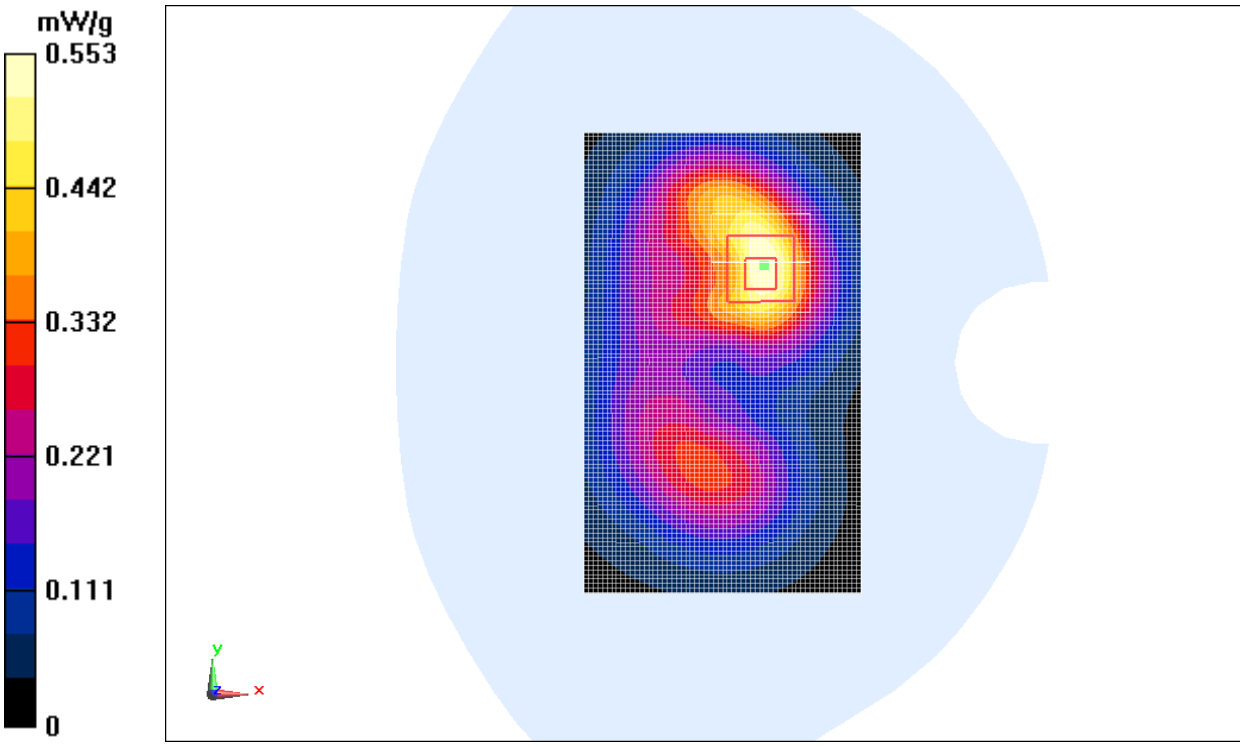



**Fig. 36 1900 MHz CH810**

**1900 Body Towards Ground Middle**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.499 mho/m; $\varepsilon r$ = 53.287; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:2
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.599 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.319 V/m; Power Drift = 0.0061 dB
Peak SAR (extrapolated) = 0.9140
**SAR(1 g) = 0.544 mW/g; SAR(10 g) = 0.322 mW/g**
Maximum value of SAR (measured) = 0.589 mW/g

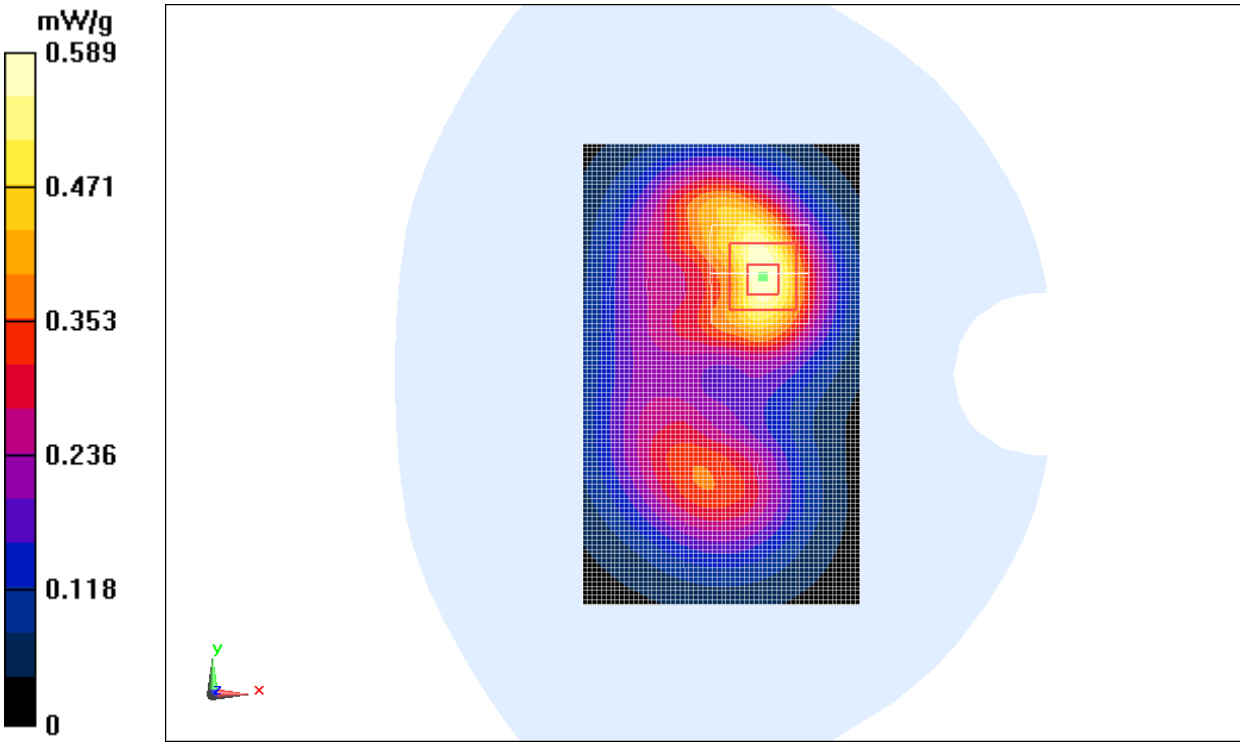



**Fig. 37 1900 MHz CH661**

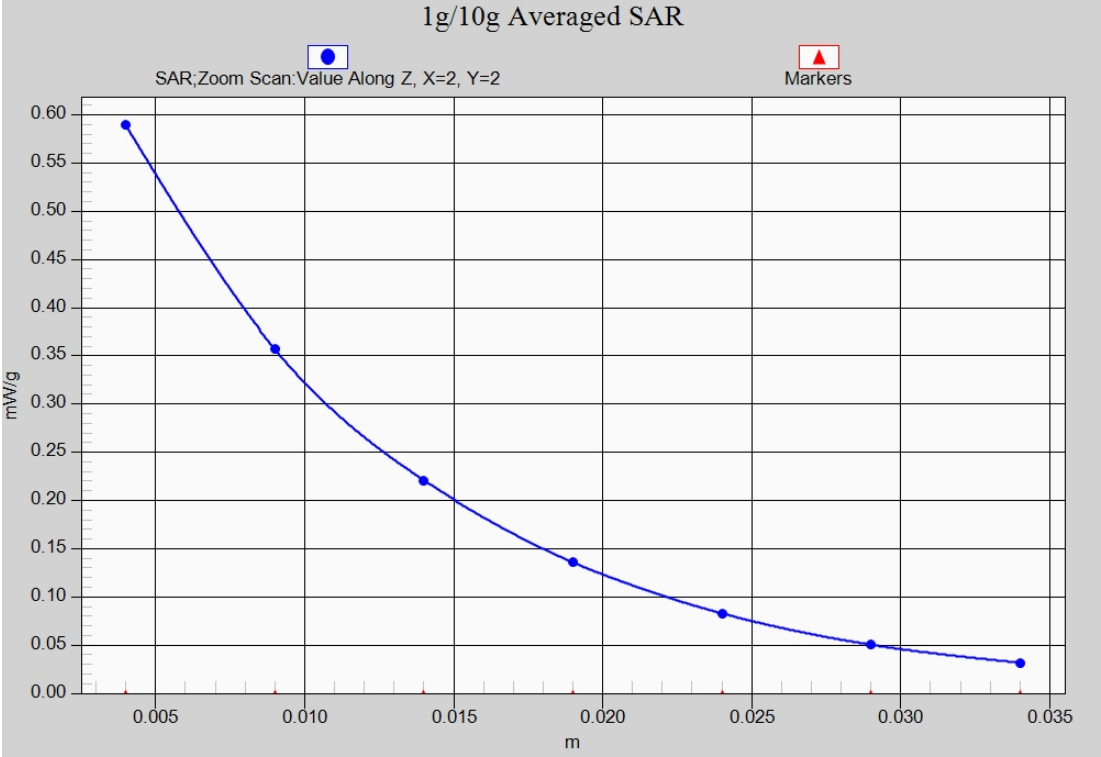



**Fig. 37-1 Z-Scan at power reference point (1900 MHz CH661)**

**900 Body Towards Ground Low**

Date: 2012-2-25

Electronics: DAE4 Sn771

Medium: Body 1900 MHz

Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.475 mho/m; $\varepsilon_r$ = 53.406; $\rho$ = 1000 kg/$m^3$

Ambient Temperature:23.3°C Liquid Temperature: 22.5°C

Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:2

Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Low/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.574 mW/g

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

Reference Value = 12.228 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.8630

**SAR(1 g) = 0.525 mW/g; SAR(10 g) = 0.314 mW/g**

Maximum value of SAR (measured) = 0.570 mW/g

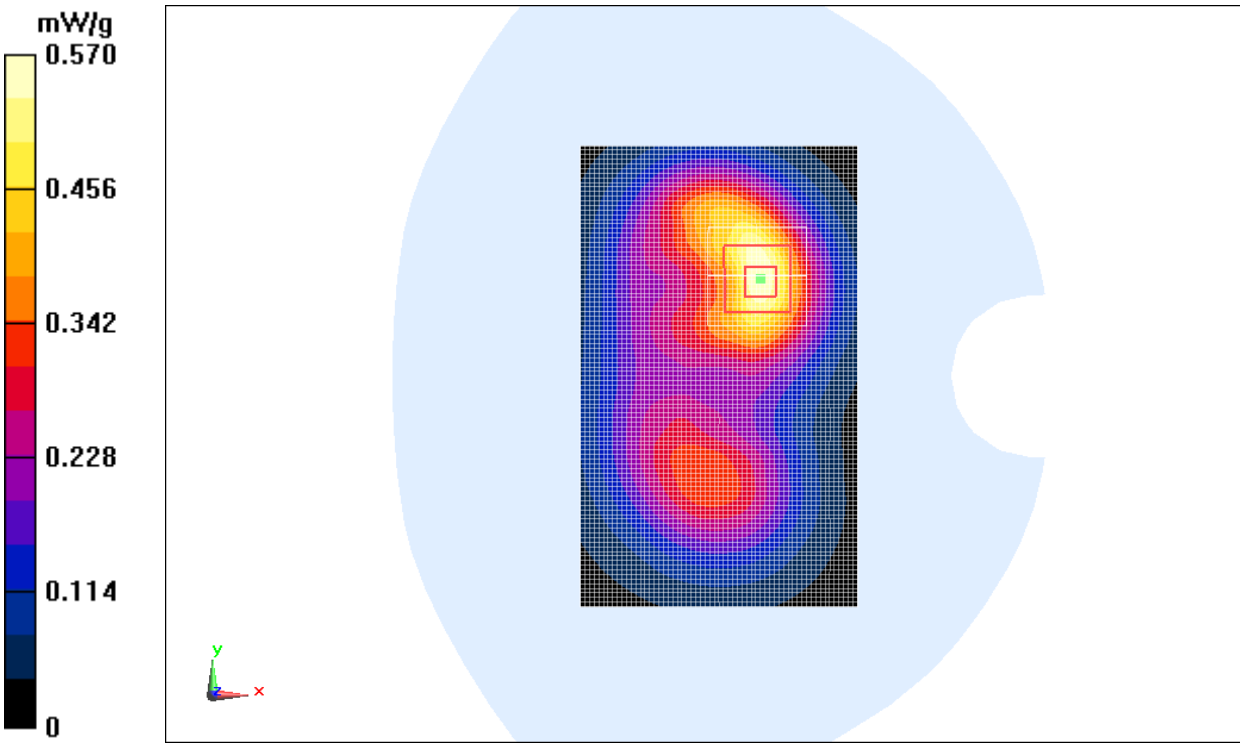



**Fig. 38 1900 MHz CH512**

**1900 Body Towards Ground Middle With Headset CCB3160A11C1**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.499 mho/m; $\varepsilon r$ = 53.287; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:2
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.312 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.310 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.4860
**SAR(1 g) = 0.293 mW/g; SAR(10 g) = 0.172 mW/g**
Maximum value of SAR (measured) = 0.313 mW/g

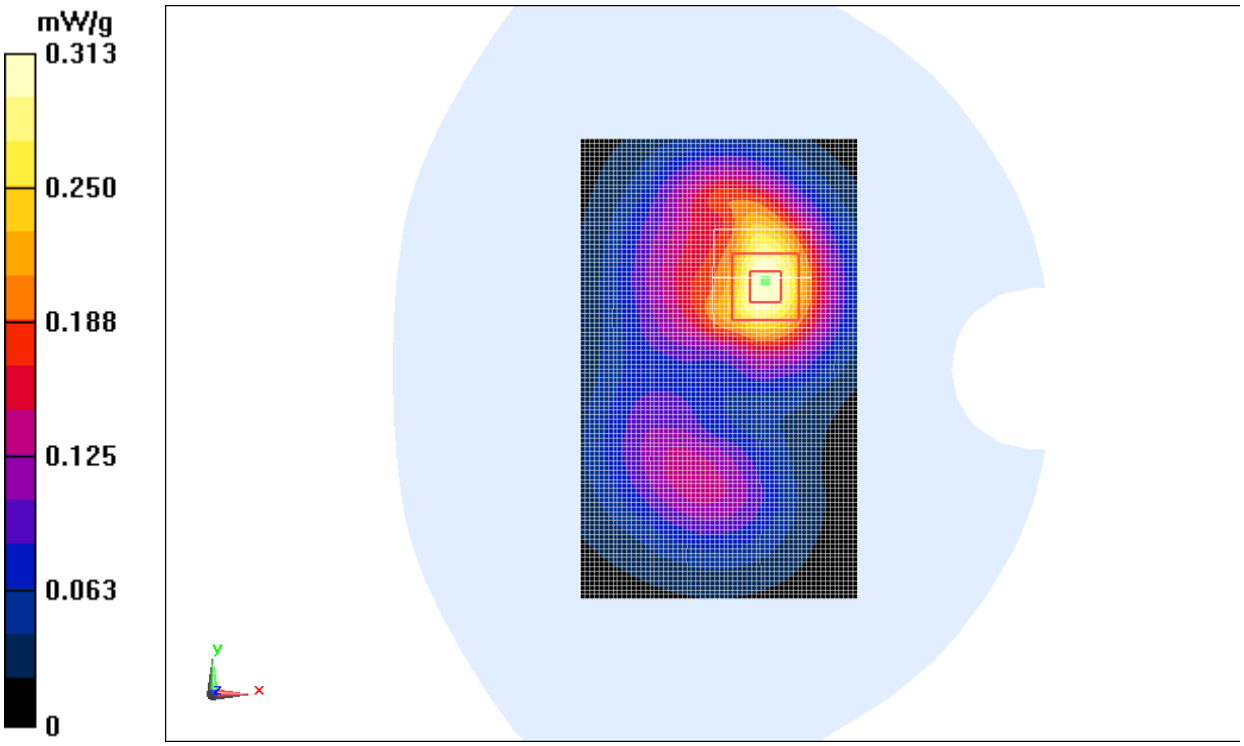



**Fig. 39 1900 MHz CH661**

**1900 Body Towards Ground Middle With Headset CCB3160A11C2**
Date: 2012-2-25
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.499 mho/m; $\varepsilon r$ = 53.287; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:2
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Middle/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.284 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.563 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.4440
**SAR(1 g) = 0.263 mW/g; SAR(10 g) = 0.154 mW/g**
Maximum value of SAR (measured) = 0.280 mW/g

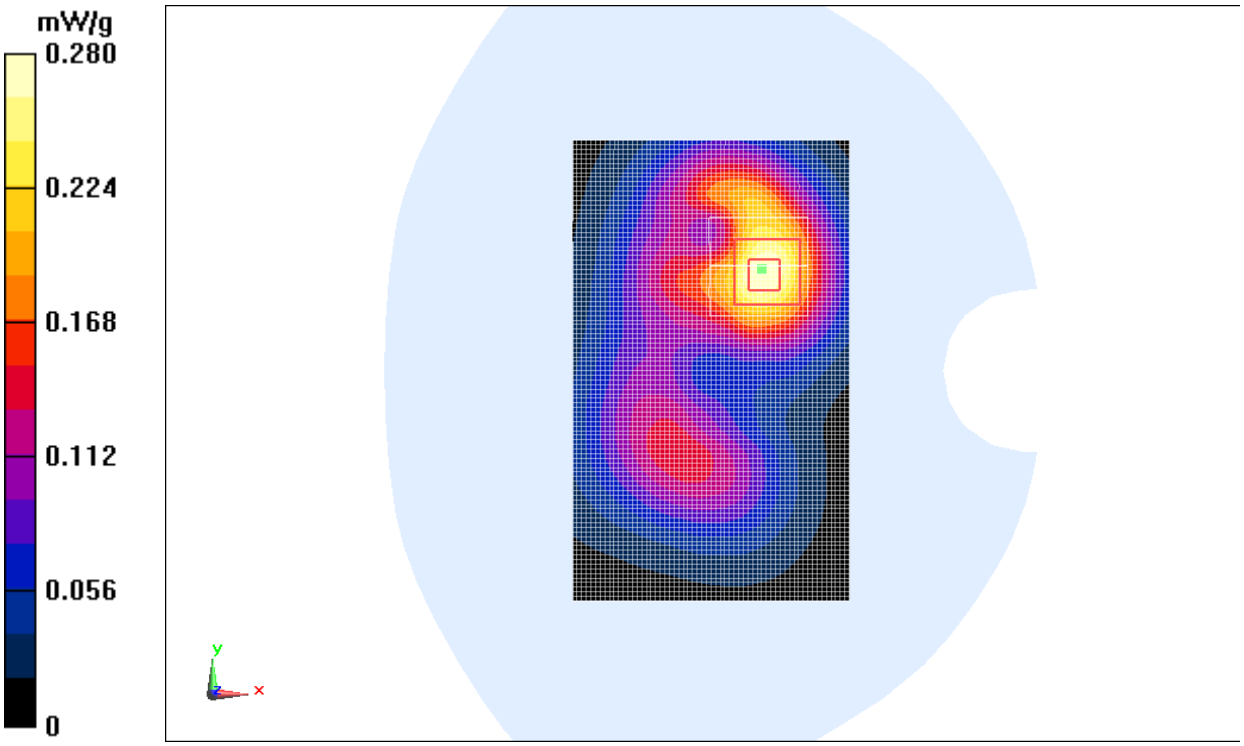



**Fig. 40 1900 MHz CH661**

**Wifi Left Cheek High**
Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; $\sigma$ = 1.835 mho/m; $\varepsilon_r$ = 38.43; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.35, 4.35, 4.35)
**Cheek High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.196 mW/g
**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.597 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.3640
**SAR(1 g) = 0.178 mW/g; SAR(10 g) = 0.102 mW/g**
Maximum value of SAR (measured) = 0.200 mW/g

**Cheek High/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.597 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 0.3410
**SAR(1 g) = 0.190 mW/g; SAR(10 g) = 0.105 mW/g**
Maximum value of SAR (measured) = 0.214 mW/g

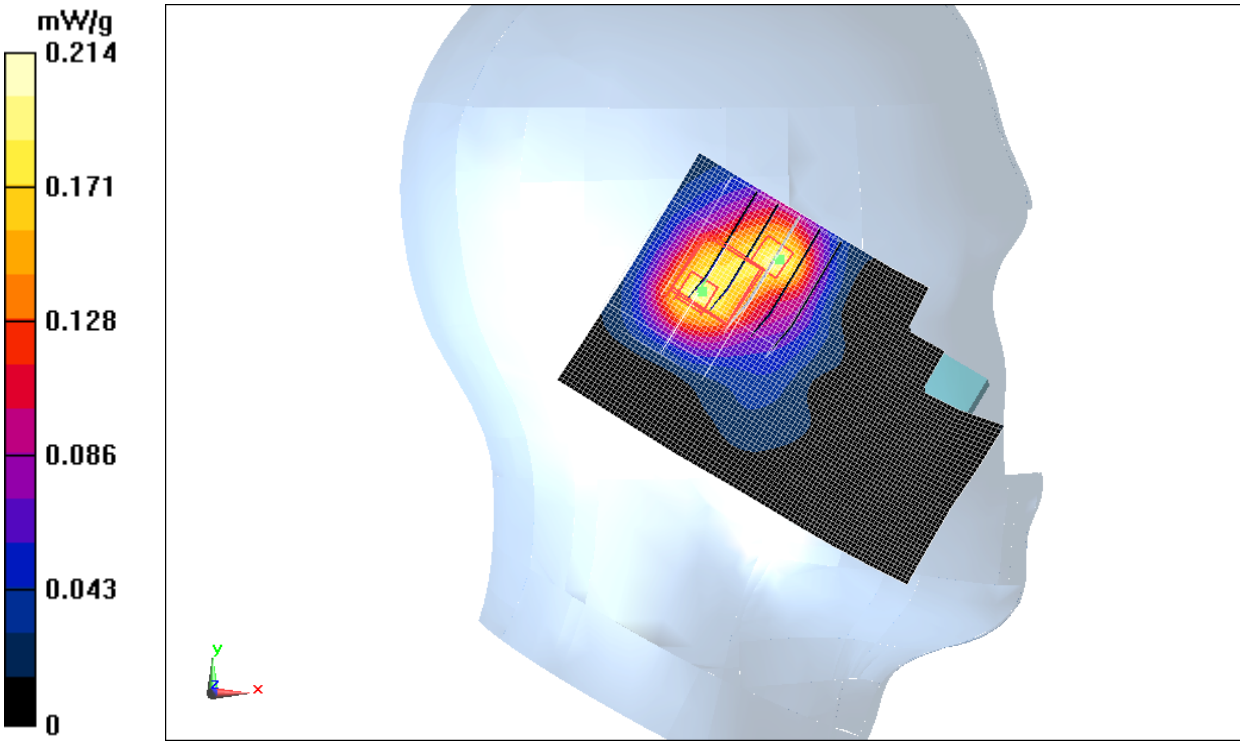



**Fig. 41 2450 MHz CH11**

**Wifi Left Tilt High**
Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; $\sigma$ = 1.835 mho/m; $\varepsilon_r$ = 38.43; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.3$^o$C Liquid Temperature: 22.5$^o$C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.35, 4.35, 4.35)

**Tilt High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.270 mW/g

**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.905 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 0.4670
**SAR(1 g) = 0.255 mW/g; SAR(10 g) = 0.131 mW/g**
Maximum value of SAR (measured) = 0.288 mW/g

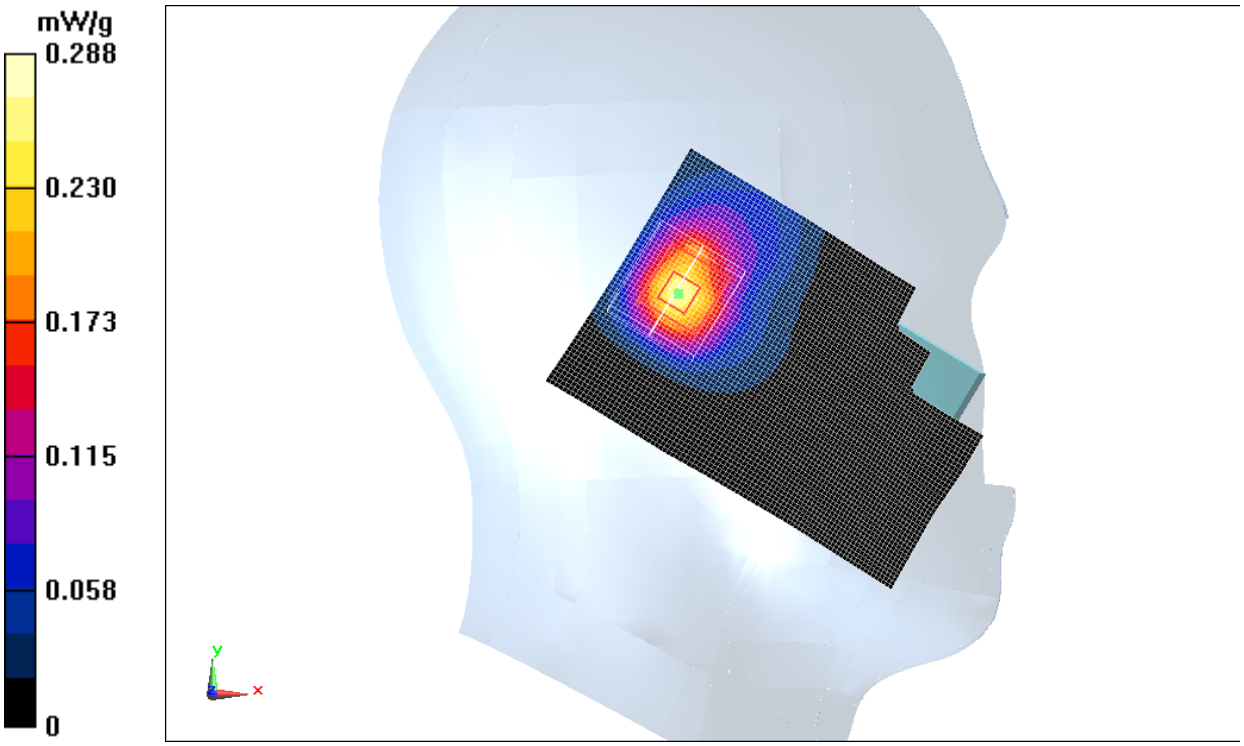



**Fig. 42 2450 MHz CH11**

**Wifi Right Cheek High**
Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; $\sigma$ = 1.835 mho/m; $\varepsilon_r$ = 38.43; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.3$^o$C Liquid Temperature: 22.5$^o$C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.35, 4.35, 4.35)

**Cheek High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.265 mW/g

**Cheek High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.933 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 0.4780
**SAR(1 g) = 0.260 mW/g; SAR(10 g) = 0.133 mW/g**
Maximum value of SAR (measured) = 0.294 mW/g

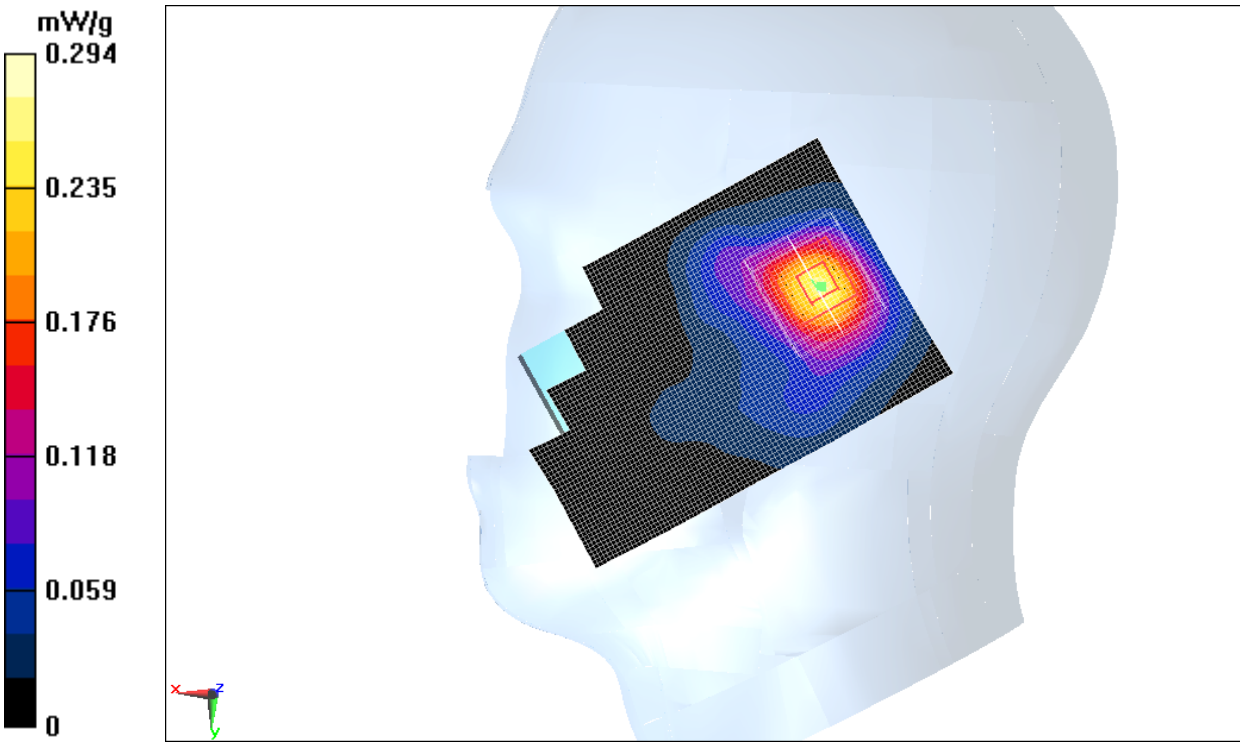



**Fig. 43 2450 MHz CH11**

**Wifi Right Tilt High**
Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: Head 2450 MHz
Medium parameters used (interpolated): f = 2462 MHz; $\sigma$ = 1.835 mho/m; $\varepsilon_r$ = 38.43; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.35, 4.35, 4.35)

**Tilt High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.342 mW/g

**Tilt High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.503 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.6040
**SAR(1 g) = 0.318 mW/g; SAR(10 g) = 0.156 mW/g**
Maximum value of SAR (measured) = 0.364 mW/g

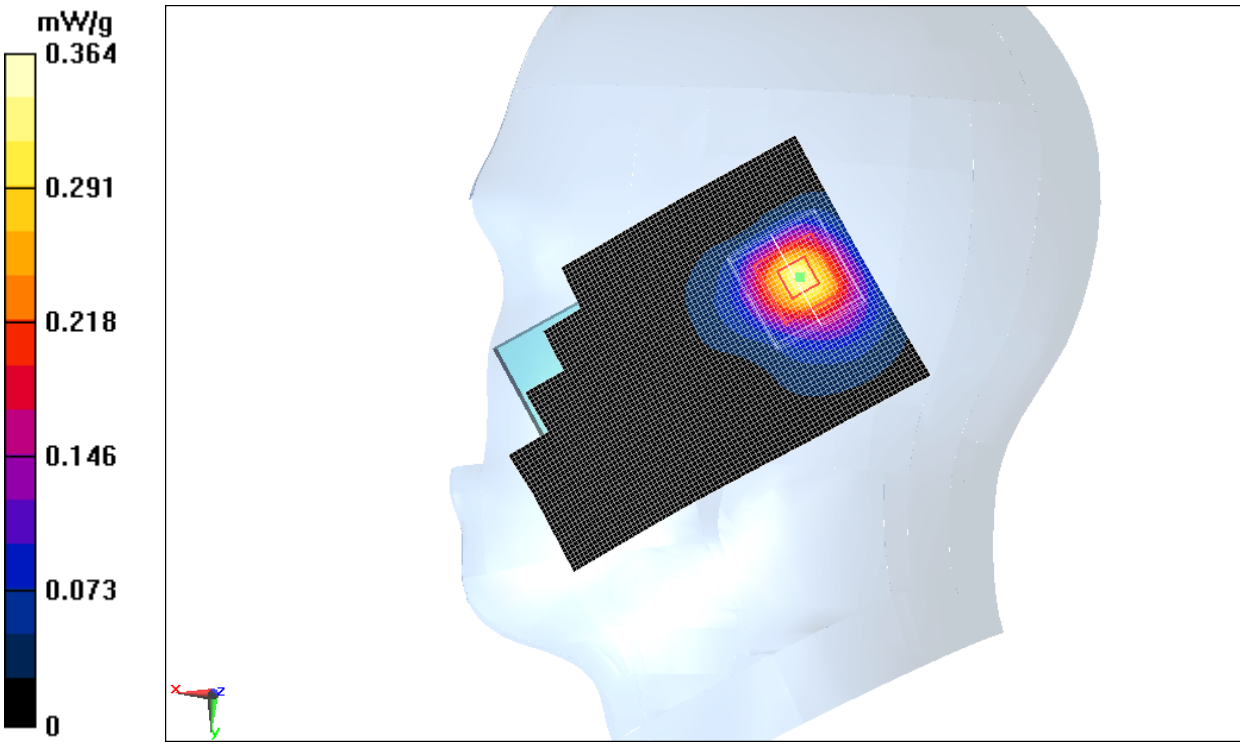



**Fig. 44 2450 MHz CH11**

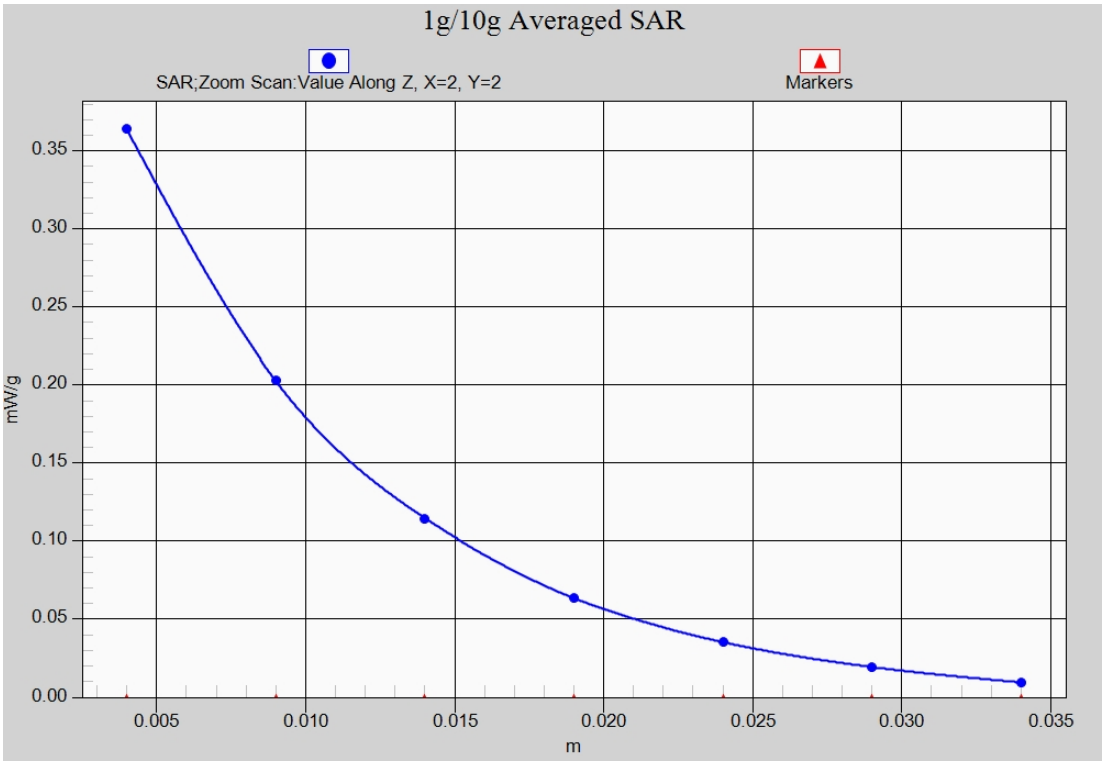



**Fig. 44-1 Z-Scan at power reference point (2450 MHz CH11)**

**Wifi Body Toward Phantom High**
Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: 2450 Body
Medium parameters used (interpolated): f = 2462 MHz; $\sigma$ = 1.97 mho/m; $\varepsilon_r$ = 51.8; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.3°C Liquid Temperature: 22.5°C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.13, 4.13, 4.13)

**Toward Phantom High/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.070 mW/g

**Toward Phantom High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.785 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 0.1100
**SAR(1 g) = 0.064 mW/g; SAR(10 g) = 0.036 mW/g**
Maximum value of SAR (measured) = 0.069 mW/g

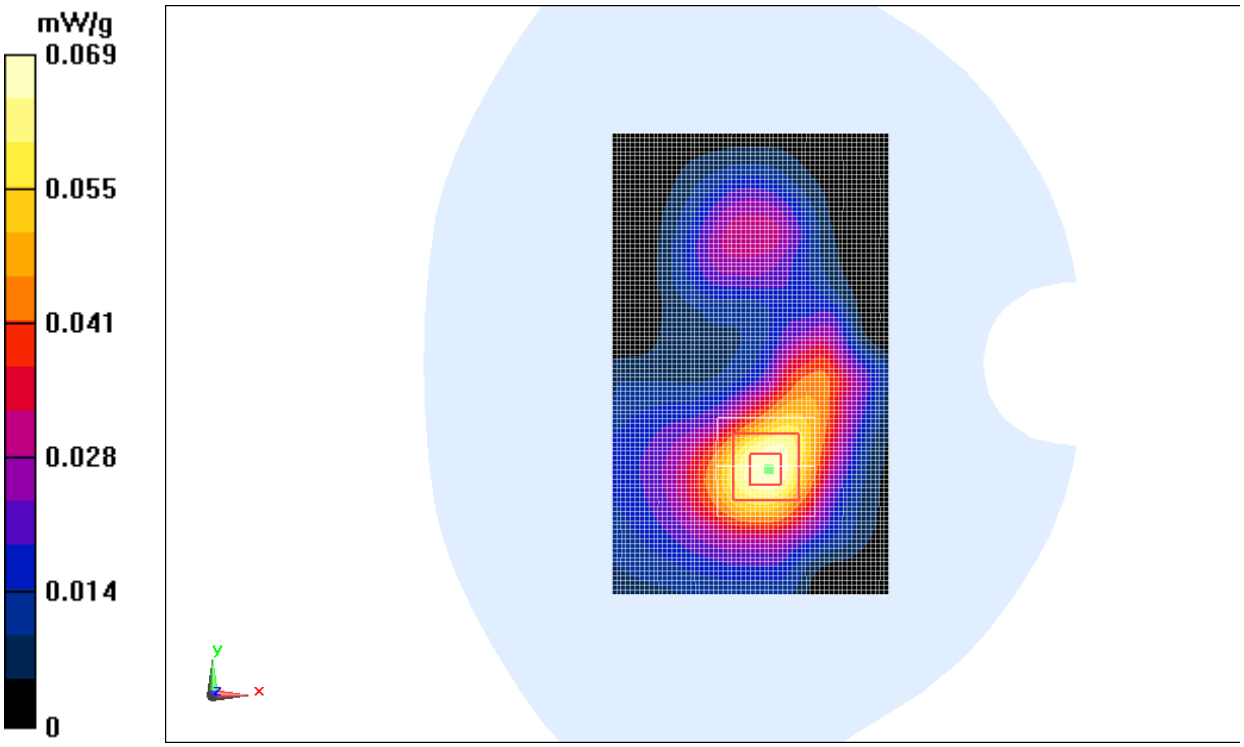



**Fig. 45 2450 MHz CH11**

**Wifi Body Toward Ground High**
Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: 2450 Body
Medium parameters used (interpolated): f = 2462 MHz; $\sigma$ = 1.97 mho/m; $\varepsilon_r$ = 51.8; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.3$^o$C Liquid Temperature: 22.5$^o$C
Communication System: WLan 2450 Frequency: 2462 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.13, 4.13, 4.13)
**Toward Ground High/Area Scan (61x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.115 mW/g
**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.521 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.1840
**SAR(1 g) = 0.107 mW/g; SAR(10 g) = 0.062 mW/g**
Maximum value of SAR (measured) = 0.115 mW/g
**Toward Ground High/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.521 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 0.1650
**SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.047 mW/g**
Maximum value of SAR (measured) = 0.098 mW/g

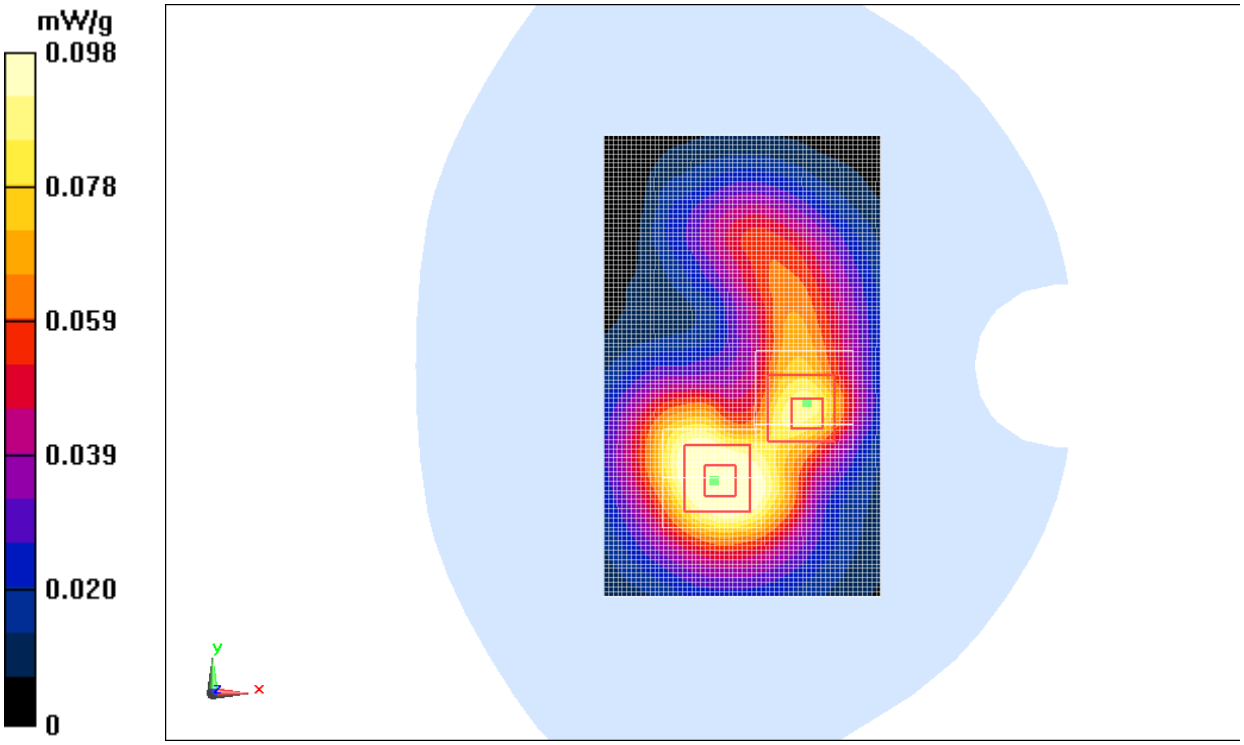



**Fig. 46 2450 MHz CH11**

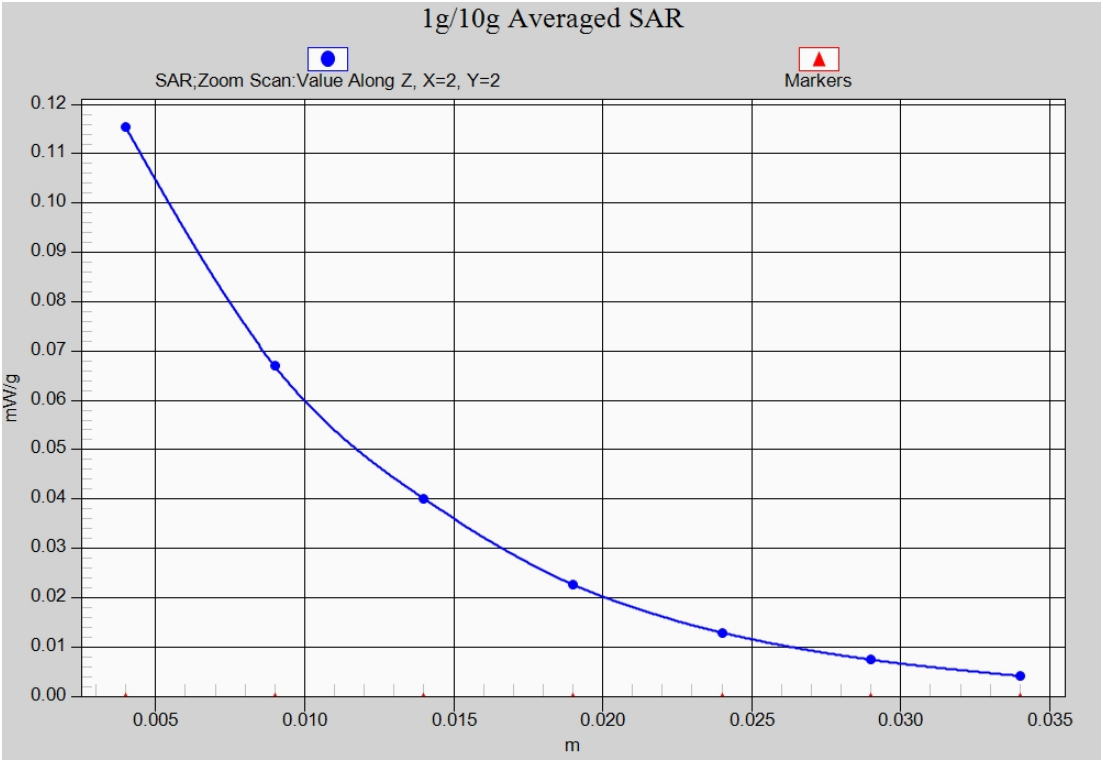



**Fig. 46-1 Z-Scan at power reference point (2450 MHz CH11)**

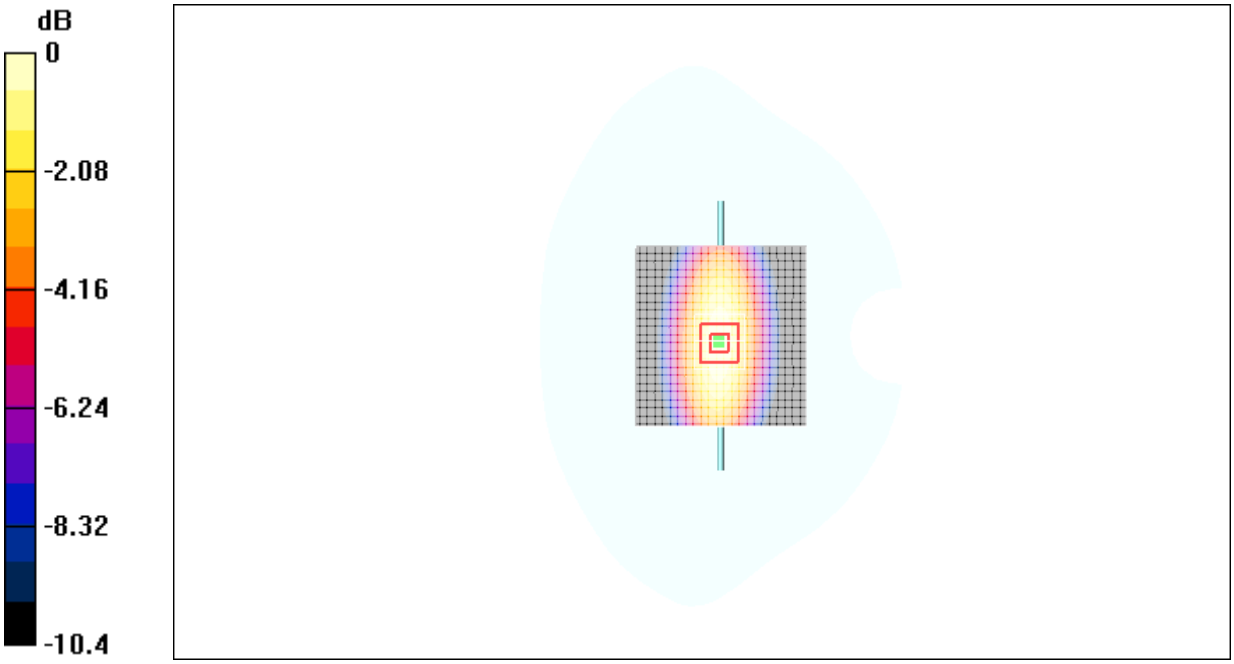
# ANNEX B SYSTEM VALIDATION RESULTS

## 835MHz

Date: 2012-2-29
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.91 mho/m; $\varepsilon_r$ = 42.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.56, 6.56, 6.56)

**System Validation /Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.54 mW/g

**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.7 V/m; Power Drift = -0.086 dB
Peak SAR (extrapolated) = 3.33W/kg
**SAR(1 g) = 2.29 mW/g; SAR(10 g) = 1.53 mW/g**
Maximum value of SAR (measured) = 2.49 mW/g




0 dB = 2.49 mW/g

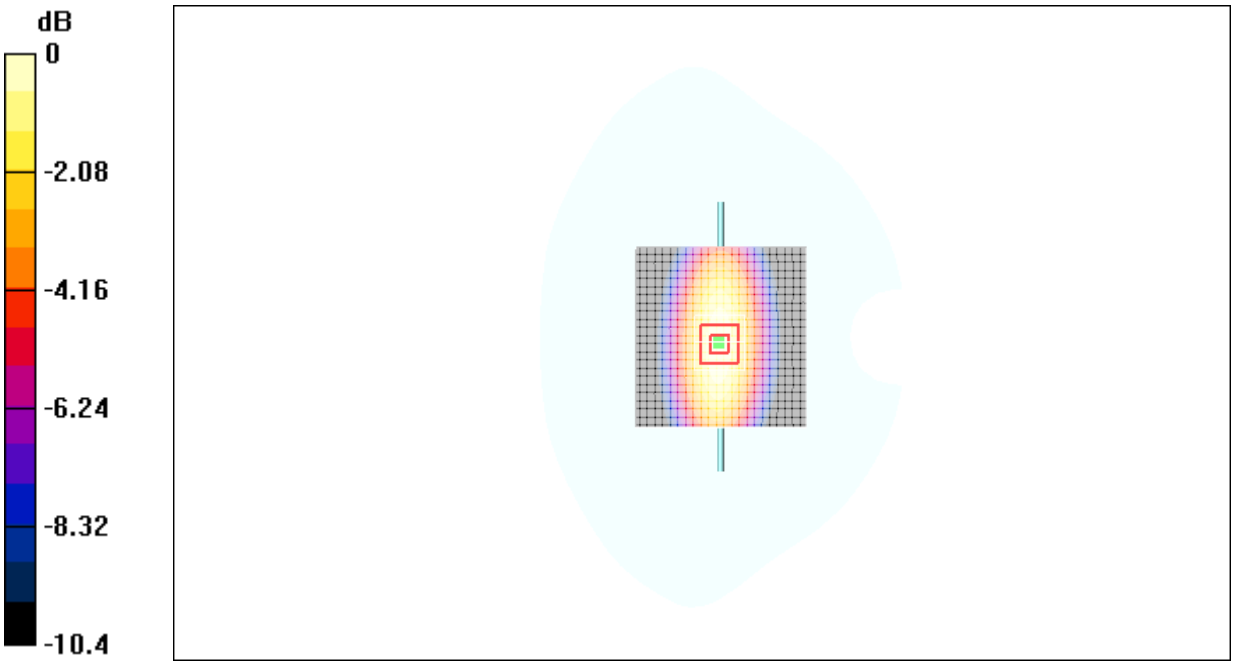
**Fig.56 validation 835MHz 250mW**

## 835MHz

Date: 2012-2-29
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.97 mho/m; $\varepsilon_r$ = 53.9; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**System Validation /Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.50 mW/g

**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 50.3 V/m; Power Drift = -0.118 dB
Peak SAR (extrapolated) = 3.31 W/kg
**SAR(1 g) = 2.32 mW/g; SAR(10 g) = 1.51 mW/g**
Maximum value of SAR (measured) = 2.42 mW/g




0 dB = 2.42 mW/g

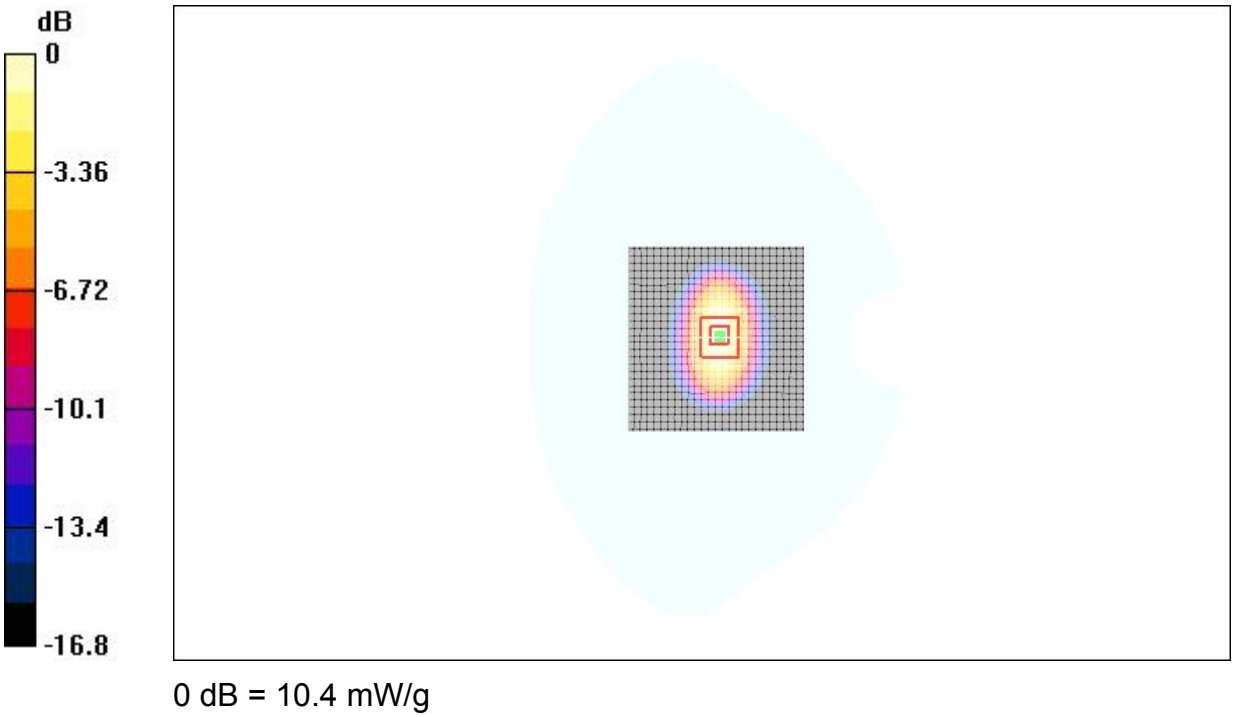
**Fig.57 validation 835MHz 250mW**

## 1900MHz

Date: 2012-3-1
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.39 mho/m; $\varepsilon_r$ = 40.9; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(5.03, 5.03, 5.03)

**System Validation/Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.4 mW/g

**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 89.2 V/m; Power Drift = -0.069 dB
Peak SAR (extrapolated) = 14.5 W/kg
**SAR(1 g) = 9.68mW/g; SAR(10 g) = 4.99 mW/g**
Maximum value of SAR (measured) = 10.4mW/g




0 dB = 10.4 mW/g

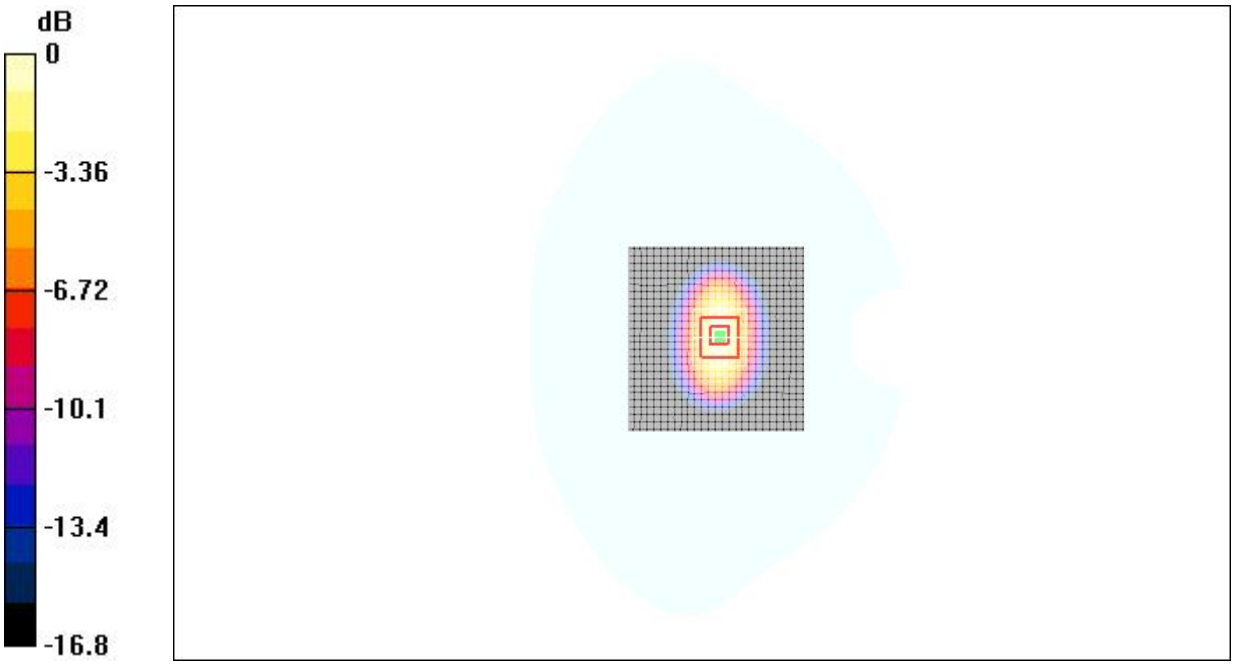
**Fig.58 validation 1900MHz 250mW**

## 1900MHz

Date: 2012-3-1
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.50 mho/m; $\varepsilon_r$ = 53.1; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**System Validation/Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.5 mW/g

**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.8 V/m; Power Drift = 0.070 dB
Peak SAR (extrapolated) = 15.6 W/kg
**SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.11 mW/g**
Maximum value of SAR (measured) = 11.0 mW/g




0 dB = 11.0 mW/g

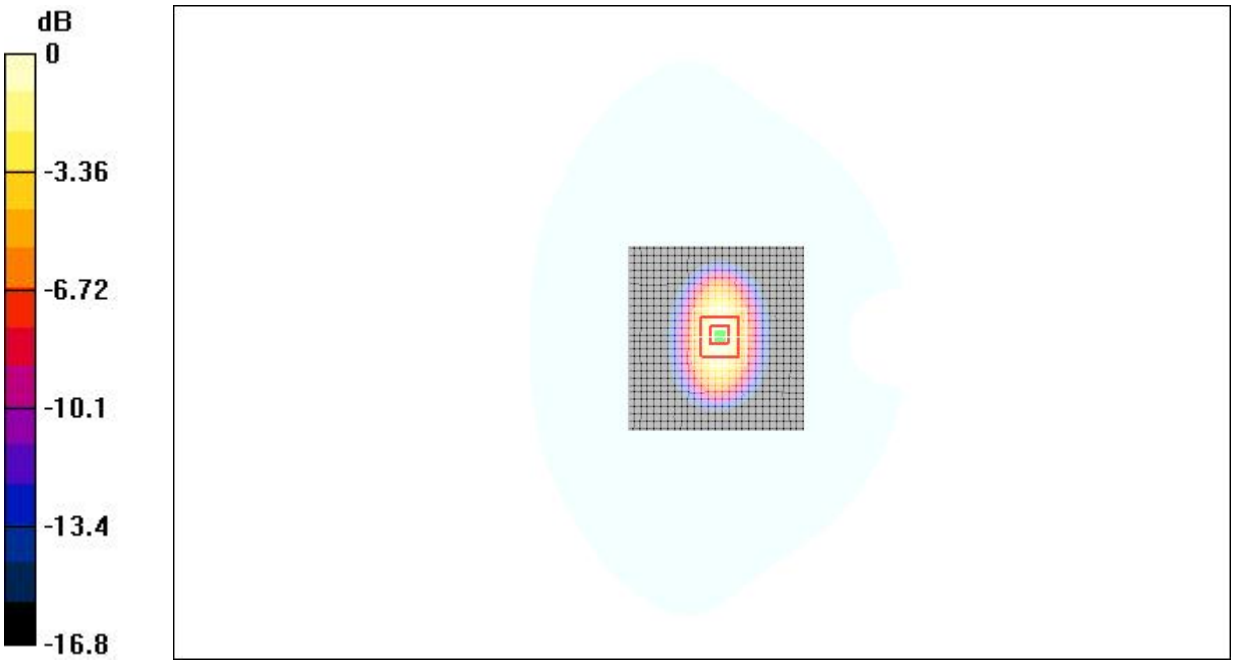
**Fig.59 validation 1900MHz 250mW**

## 2450MHz

Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: Head 2450
Medium parameters used: f = 2450 MHz; $\sigma$ = 1.82 mho/m; $\varepsilon_r$ = 38.5; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.35, 4.35, 4.35)

**System Validation/Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.1 mW/g

**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 87.3 V/m; Power Drift = 0.058 dB
Peak SAR (extrapolated) = 18.4 W/kg
**SAR(1 g) = 12.9 mW/g; SAR(10 g) = 5.98 mW/g**
Maximum value of SAR (measured) = 13.6 mW/g




0 dB = 13.6 mW/g

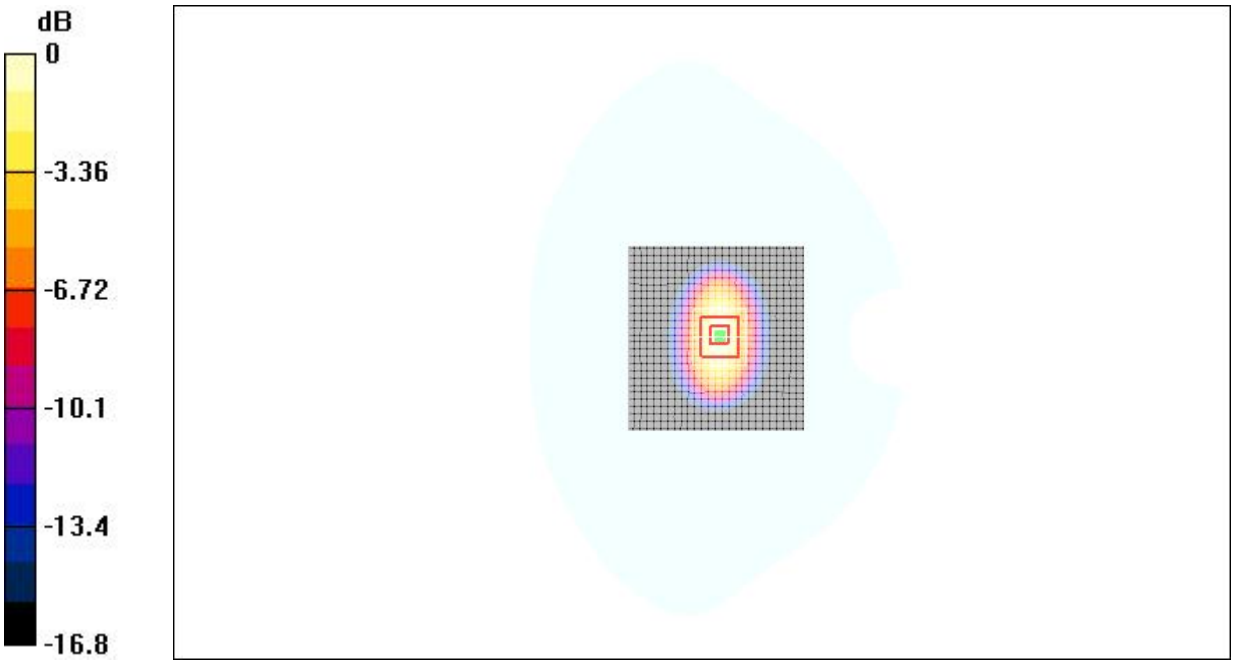
**Fig.60 validation 2450MHz 250mW**

## 2450MHz

Date: 2012-2-26
Electronics: DAE4 Sn771
Medium: Body 2450
Medium parameters used: f = 2450 MHz; $\sigma$ = 1.96 mho/m; $\varepsilon_r$ = 51.9; $\rho$ = 1000 kg/m$^3$
Ambient Temperature:23.0oC Liquid Temperature: 22.5$^o$C
Communication System: CW Frequency: 2450 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.13, 4.13, 4.13)

**System Validation/Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 15.6 mW/g

**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 81.0 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 24.0 W/kg
**SAR(1 g) = 12.8 mW/g; SAR(10 g) = 5.80 mW/g**
Maximum value of SAR (measured) = 14.4 mW/g




0 dB = 14.4 mW/g

**Fig.61 validation 2450MHz 250mW**

# ANNEX C DIPOLE CALIBRATION CERTIFICATE

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

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

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

Accreditation No.: SCS 108

Client TMC China Certificate No: ES3DV3-3149_Sep11

## CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | ES3DV3-SN: 3149 |
| Calibration procedure(s) | QA CAL-01.v6<br>Calibration procedure for dosimetric E-field probes |
| Calibration date: | September 24, 2011 |
| Condition of the calibrated item | In Tolerance |

This calibration certify 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 at an environment temperature (22±3)$^0$C and humidity<70%

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID# | Cal Data (Calibrated by, Certification NO.) | Scheduled Calibration |
|---|---|---|---|
| Power meter E4419B | GB41293874 | 5-May-11 (METAS, NO. 251-00388) | May-12 |
| Power sensor E4412A | MY41495277 | 5-May-11 (METAS, NO. 251-00388) | May-12 |
| Reference 3 dB Attenuator | SN:S5054 (3c) | 11-Aug-11 (METAS, NO. 251-00403) | Aug-12 |
| Reference 20 dB Attenuator | SN:S5086 (20b) | 3-May-11 (METAS, NO. 251-00389) | May-12 |
| Reference 30 dB Attenuator | SN:S5129 (30b) | 11-Aug-11 (METAS, NO. 251-00404) | Aug-12 |
| DAE4 | SN:617 | 10-Jun-11 (SPEAG, NO.DAE4-907_Jun11) | Jun-12 |
| Reference Probe ES3DV2 | SN: 3013 | 12-Jan-11 (SPEAG, NO. ES3-3013_Jan11) | Jan-12 |

| Secondary Standards | ID# | Check Data (in house) | Scheduled Calibration |
|---|---|---|---|
| RF generator HP8648C | US3642U01700 | 4-Aug-99(SPEAG, in house check Oct-10) | In house check: Oct-11 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01(SPEAG, in house check Nov-10) | In house check: Nov-11 |

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

Issued: September 24, 2011

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

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

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

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

**Accreditation No.: SCS 108**

**Glossary:**

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

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

**Methods Applied and Interpretation of Parameters:**

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the $E^2$-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

# Probe ES3DV3

## SN: 3149

Manufactured: June 12, 2007

Calibrated: September 24, 2011

Calibrated for DASY/EASY System

(Note: non-compatible with DASY2 system!)

# DASY/EASY – Parameters of Probe: ES3DV3 - SN:3149

## Basic Calibration Parameters

| | Sensor X | Sensor Y | Sensor Z | Unc (k=2) |
|---|---|---|---|---|
| Norm ( μ V/(V/m)$^2$)$^A$ | 1.14 | 1.23 | 1.29 | ±10.1% |
| DCP (mV)$^B$ | 94 | 95 | 91 | |

## Modulation Calibration Parameters

| UID | Communication System Name | PAR | | A dB | B dBuV | C | VR mV | Unc$^E$ (k=2) |
|---|---|---|---|---|---|---|---|---|
| 10000 | CW | 0.00 | X | 0.00 | 0.00 | 1.00 | 300.0 | ±1.5% |
| | | | Y | 0.00 | 0.00 | 1.00 | 300.0 | |
| | | | Z | 0.00 | 0.00 | 1.00 | 300.0 | |

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

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

# DASY/EASY – Parameters of Probe: ES3DV3 - SN:3149

## Calibration Parameter Determined in Head Tissue Simulating Media

| f[MHz] [C] | Relative Permittivity [F] | Conductivity (S/m) [F] | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unct. (k=2) |
|---|---|---|---|---|---|---|---|---|
| 850 | 41.5 | 0.90 | 6.56 | 6.56 | 6.56 | 0.91 | 1.13 | ±12.0% |
| 900 | 41.5 | 0.97 | 6.34 | 6.34 | 6.34 | 0.83 | 1.26 | ±12.0% |
| 1800 | 40.0 | 1.40 | 5.18 | 5.18 | 5.18 | 0.69 | 1.47 | ±12.0% |
| 1900 | 40.0 | 1.40 | 5.03 | 5.03 | 5.03 | 0.72 | 1.38 | ±12.0% |
| 2100 | 39.8 | 1.49 | 4.58 | 4.58 | 4.58 | 0.66 | 1.34 | ±12.0% |
| 2450 | 39.2 | 1.80 | 4.35 | 4.35 | 4.35 | 0.67 | 1.36 | ±12.0% |

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

# DASY/EASY – Parameters of Probe: ES3DV3 - SN:3149

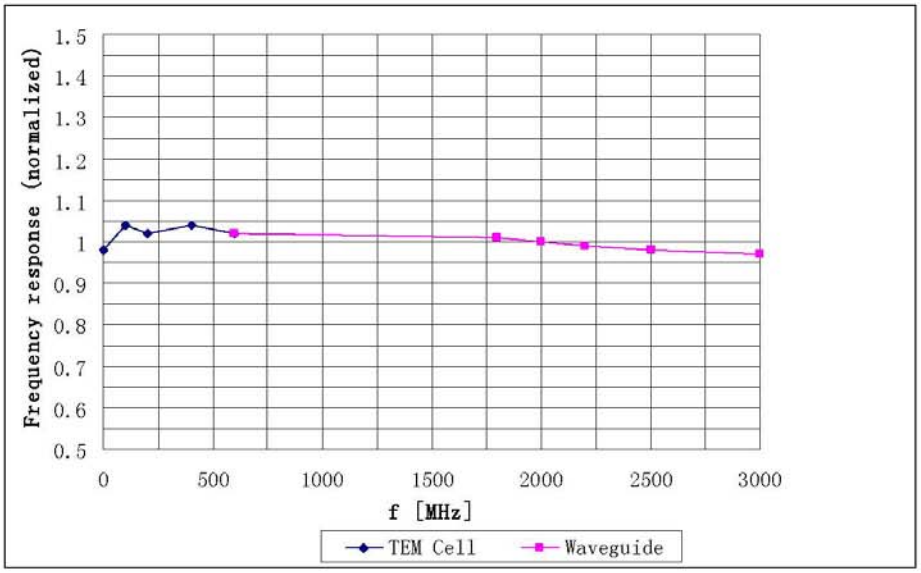
## Calibration Parameter Determined in Body Tissue Simulating Media

| f[MHz] [C] | Relative Permittivity [F] | Conductivity (S/m) [F] | ConvF X | ConvF Y | ConvF Z | Alpha | Depth (mm) | Unct. (k=2) |
|---|---|---|---|---|---|---|---|---|
| 850 | 55.2 | 0.97 | 6.22 | 6.22 | 6.22 | 0.76 | 1.26 | ±12.0% |
| 900 | 55.0 | 1.05 | 6.02 | 6.02 | 6.02 | 0.99 | 1.06 | ±12.0% |
| 1800 | 53.3 | 1.52 | 4.97 | 4.97 | 4.97 | 0.75 | 1.34 | ±12.0% |
| 1900 | 53.3 | 1.52 | 4.68 | 4.68 | 4.68 | 0.62 | 1.33 | ±12.0% |
| 2100 | 53.5 | 1.57 | 4.35 | 4.35 | 4.35 | 0.68 | 1.34 | ±12.0% |
| 2450 | 52.7 | 1.95 | 4.13 | 4.13 | 4.13 | 0.71 | 1.35 | ±12.0% |

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

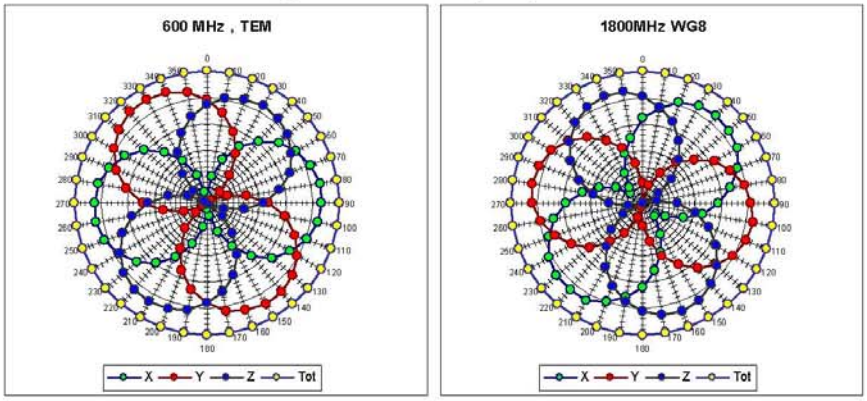
# Frequency Response of E-Field

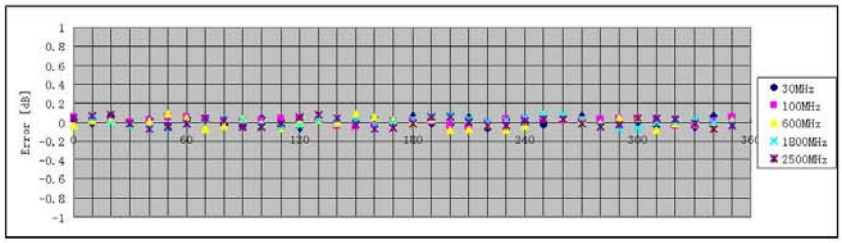
(TEM-Cell: ifi110 EXX, Waveguide: R22)




**Uncertainty of Frequency Response of E-field: ±5.0% (k=2)**

# Receiving Pattern ( $\phi$ ), $\theta$ =0°

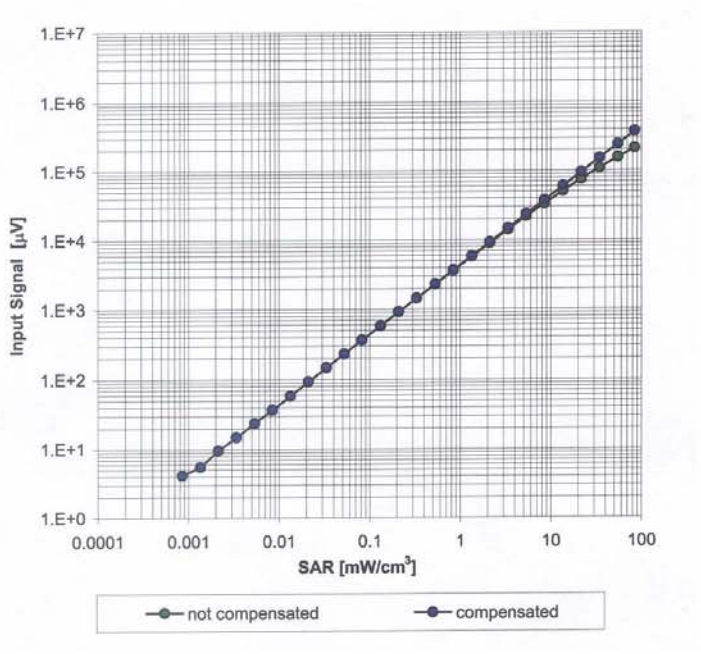


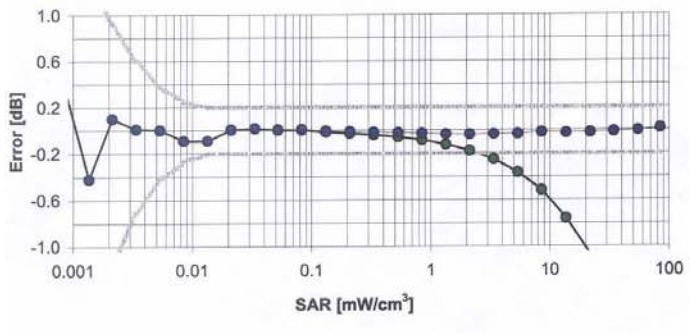




**Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)**

# Dynamic Range f($SAR_{head}$)

(Waveguide: WG8, f = 1800 MHz)

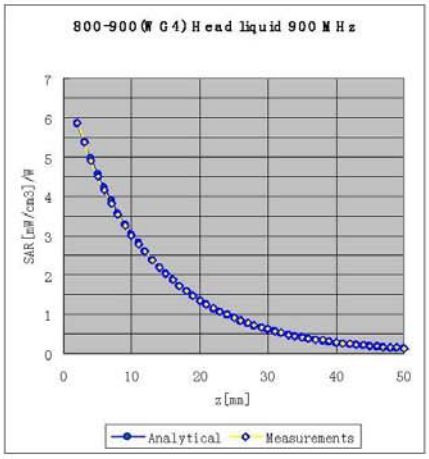


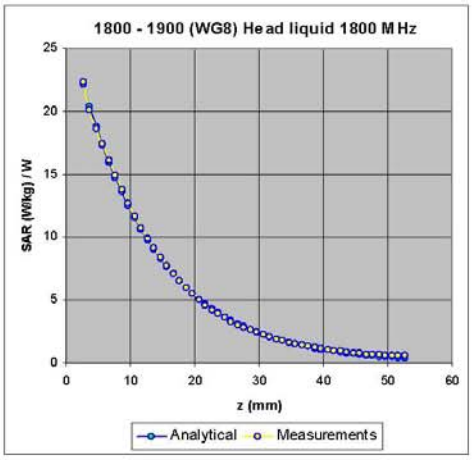




**Uncertainty of Linearity Assessment: ±0.5% (k=2)**

**ES3DV3 SN: 3149** **September 24, 2011**

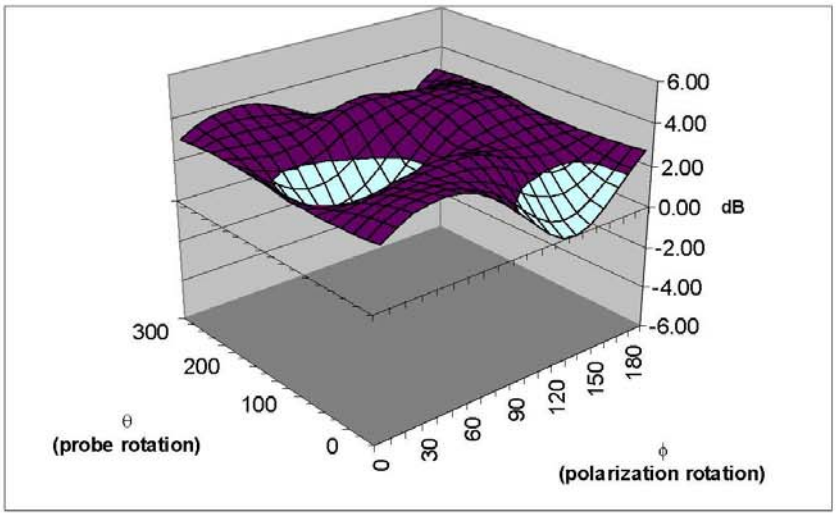
# Conversion Factor Assessment




# Deviation from Isotropy

Error ( Φ , θ ), f = 900 MHz




**Uncertainty of Spherical Isotropy Assessment: ±2.5% (k=2)**

# DASY/EASY – Parameters of Probe: ES3DV3 - SN:3149

## Other Probe Parameters

| | |
|---|---|
| Sensor Arrangement | Triangular |
| Connector Angle (°) | Not applicable |
| Mechanical Surface Detection Mode | enabled |
| Optical Surface Detection Mode | disabled |
| Probe Overall Length | 337 mm |
| Probe Body Diameter | 10 mm |
| Tip Length | 10 mm |
| Tip Diameter | 4 mm |
| Probe Tip to Sensor X Calibration Point | 2 mm |
| Probe Tip to Sensor Y Calibration Point | 2 mm |
| Probe Tip to Sensor Z Calibration Point | 2 mm |
| Recommended Measurement Distance from Surface | 2 mm |

# ANNEX D DIPOLE CALIBRATION CERTIFICATE

**835 MHz Dipole Calibration Certificate**

工业和信息化部通信计量中心
Telecommunication Metrology Center of MIIT

CNAS 校准 CNAS L0442

Client TMC Certificate No: D835V2-443_Feb10

## CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D835V2 - SN: 443 |
| Calibration Procedure(s) | TMC-XZ-01-027<br>Calibration procedure for dipole validation kits |
| Calibration date: | February 26, 2010 |
| Condition of the calibrated item | In Tolerance |

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

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

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date(Calibrated by, Certificate No.) | Scheduled Calibration |
|---|---|---|---|
| Power Meter NRVD | 101253 | 04-Sep-09 (TMC, No.JZ09-248) | Jun-10 |
| Power sensor NRV-Z5 | 100333 | 04-Sep-09 (TMC, No. JZ09-248) | Jun-10 |
| Reference Probe ES3DV3 | SN 3149 | 25-Sep-09(SPEAG, No.ES3-3149_Sep09) | Sep-10 |
| DAE4 | SN 771 | 19-Nov-09(SPEAG, No.DAE4-771_Nov09) | Nov-10 |
| RF generator E4438C | MY45092879 | 18-Jun-09(TMC, No.JZ09-302) | Jun-10 |
| Network Analyzer 8753E | US38433212 | 29-Aug-09(TMC, No.JZ09-056) | Aug-10 |

| | Name | Function | Signature |
|---|---|---|---|
| Calibrated by: | Lin Hao | SAR Test Engineer | |
| Reviewed by: | Qi Dianyuan | SAR Project Leader | |
| Approved by: | Lu Bingsong | Deputy Director of the laboratory | |

Issued: February 26, 2010

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

Certificate No: D835V2-443_Feb10 Page 1 of 9

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**Glossary:**

| | |
|---|---|
| TSL | tissue simulating liquid |
| ConvF | sensitivity in TSL / NORMx,y,z |
| N/A | not applicable or not measured |

**Calibration is Performed According to the Following Standards:**

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003

b) 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 300MHz to 3GHz)", February 2005

c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

**Additional Documentation:**

d) DASY System Handbook

**Methods Applied and Interpretation of Parameters:**

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