**1900 Body Towards Ground Middle with GPRS**

Date/Time: 2011-7-5 16:04:02
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.49 mho/m; $\varepsilon r$ = 52.9; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1880 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Middle/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.324 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.95 V/m; Power Drift = 0.030 dB
Peak SAR (extrapolated) = 0.501 W/kg
**SAR(1 g) = 0.290 mW/g; SAR(10 g) = 0.168 mW/g**
Maximum value of SAR (measured) = 0.314 mW/g

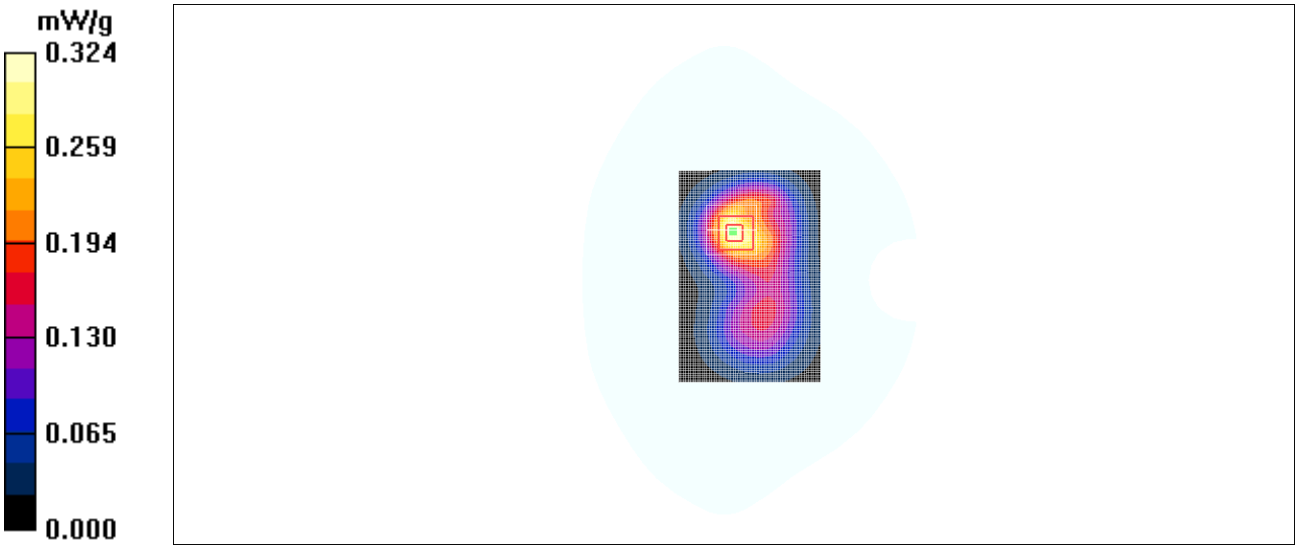



**Fig. 65 1900 MHz CH661**

**1900 Body Towards Ground Low with EGPRS**

Date/Time: 2011-7-5 16:20:33
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.47 mho/m; $\varepsilon r$ = 53.3; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0°C Liquid Temperature: 22.5°C
Communication System: GSM 1900MHz GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.366 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.3 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 0.585 W/kg
**SAR(1 g) = 0.342 mW/g; SAR(10 g) = 0.201 mW/g**
Maximum value of SAR (measured) = 0.373 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 1:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.3 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 0.335 W/kg
**SAR(1 g) = 0.220 mW/g; SAR(10 g) = 0.143 mW/g**
Maximum value of SAR (measured) = 0.234 mW/g

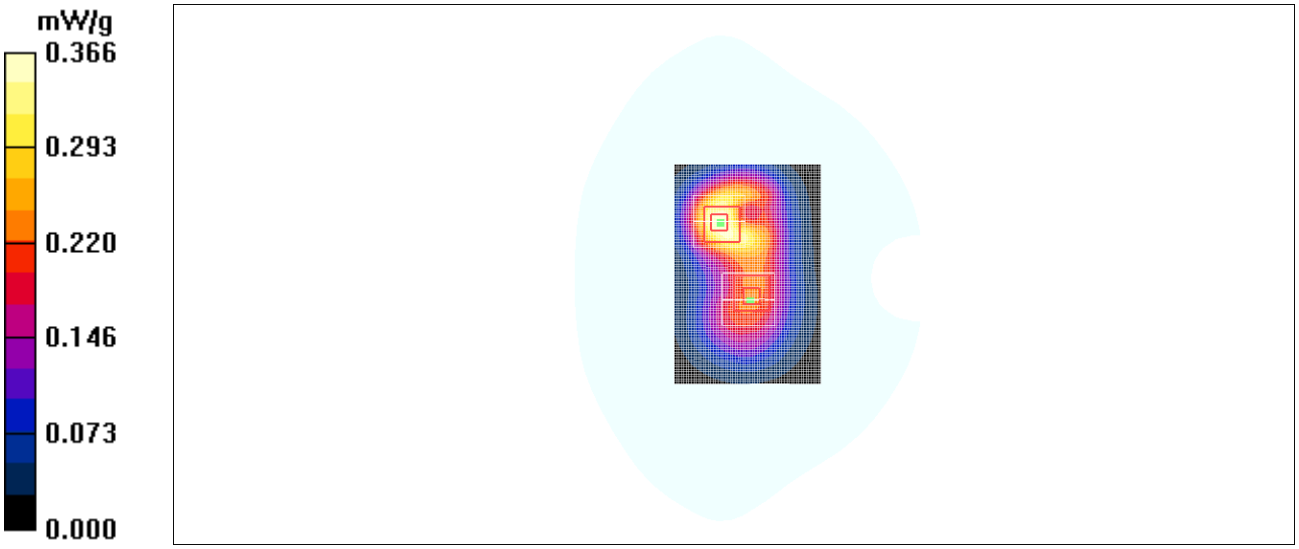



**Fig. 66 1900 MHz CH512**

**1900 Body Towards Ground Low with Headset_CCB3160A10C0**

Date/Time: 2011-7-5 16:37:11
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.47 mho/m; $\varepsilon r$ = 53.3; $\rho$ = 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(4.68, 4.68, 4.68)

**Toward Ground Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.274 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.37 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 0.432 W/kg
**SAR(1 g) = 0.254 mW/g; SAR(10 g) = 0.148 mW/g**
Maximum value of SAR (measured) = 0.277 mW/g

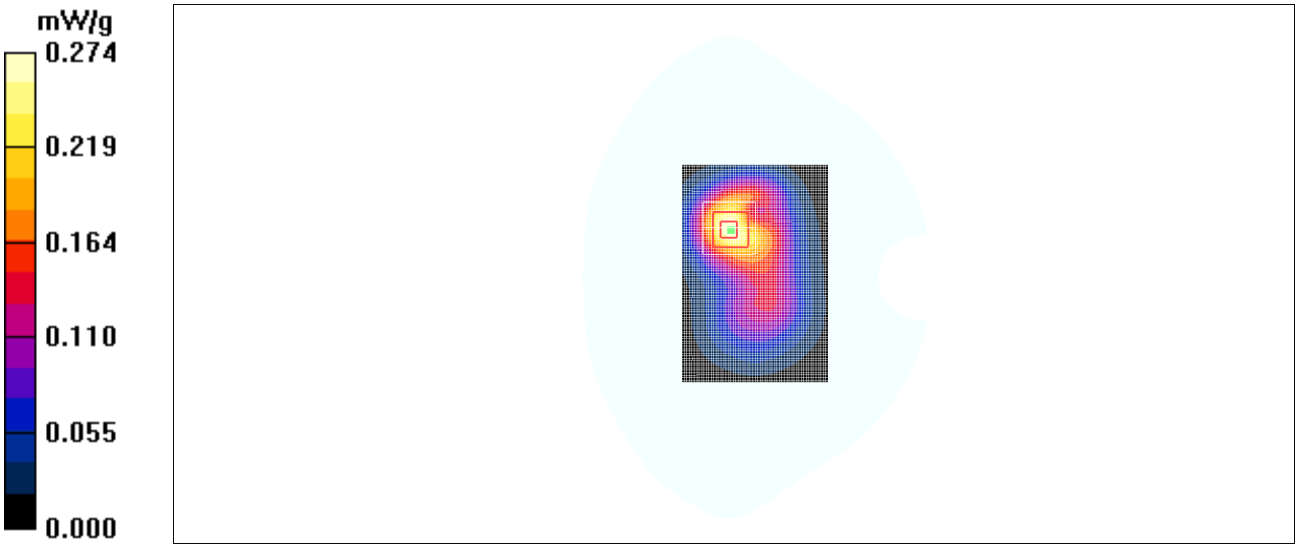



**Fig. 67 1900 MHz CH512**

**1900 Body Towards Ground Low with Headset_CCB31C0A10C0**

Date/Time: 2011-7-5 16:54:01
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1850.2 MHz; $\sigma$ = 1.47 mho/m; $\varepsilon r$ = 53.3; $\rho$ = 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(4.68, 4.68, 4.68)

**Toward Ground Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.261 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.2 V/m; Power Drift = 0.071 dB
Peak SAR (extrapolated) = 0.398 W/kg
**SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.141 mW/g**
Maximum value of SAR (measured) = 0.255 mW/g

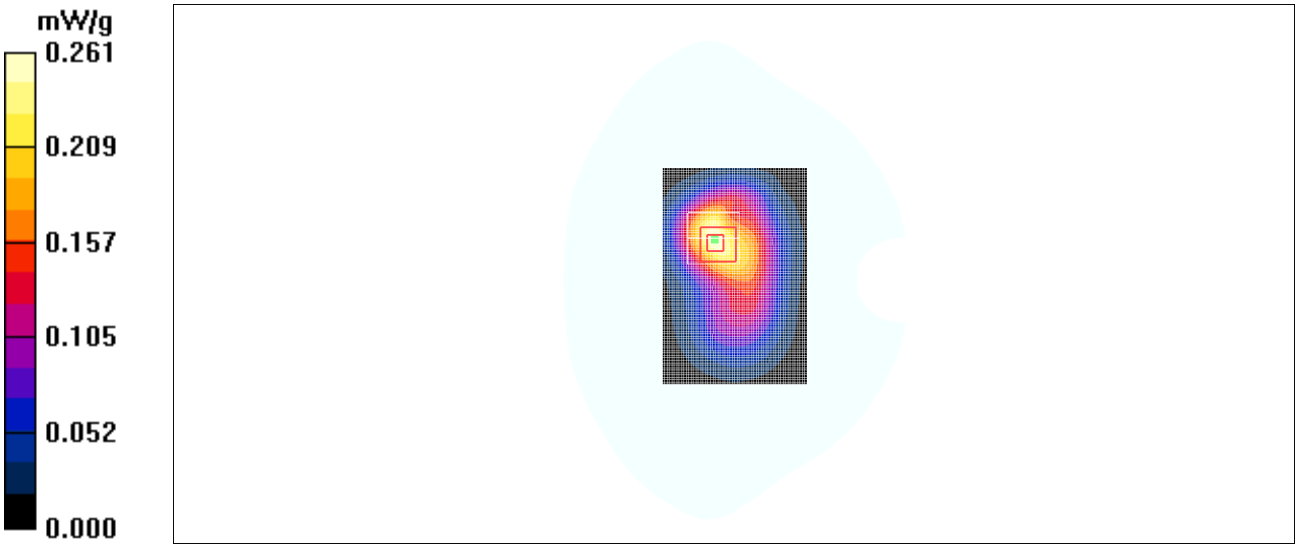



**Fig. 68 1900 MHz CH512**

**WCDMA 850 Body Towards Phantom Low**
Date/Time: 2011-7-4 17:33:30
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; $\sigma$ = 0.95 mho/m; $\varepsilon r$ = 55.1; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Toward Phantom Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.504 mW/g

**Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.6 V/m; Power Drift = -0.121 dB
Peak SAR (extrapolated) = 0.624 W/kg
**SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.344 mW/g**
Maximum value of SAR (measured) = 0.501 mW/g

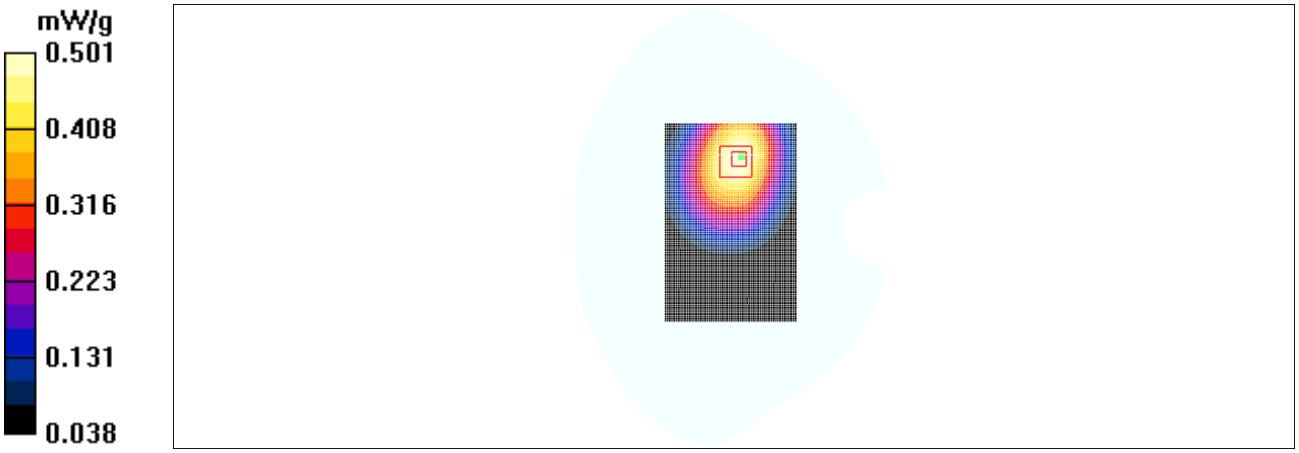



**Fig. 69 850 MHz CH4132**

**WCDMA 850 Body Towards Ground Low**
Date/Time: 2011-7-4 17:49:08
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; $\sigma$ = 0.95 mho/m; $\varepsilon r$ = 55.1; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Toward Ground Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.589 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.6 V/m; Power Drift = -0.122 dB
Peak SAR (extrapolated) = 0.730 W/kg
**SAR(1 g) = 0.549 mW/g; SAR(10 g) = 0.391 mW/g**
Maximum value of SAR (measured) = 0.583 mW/g

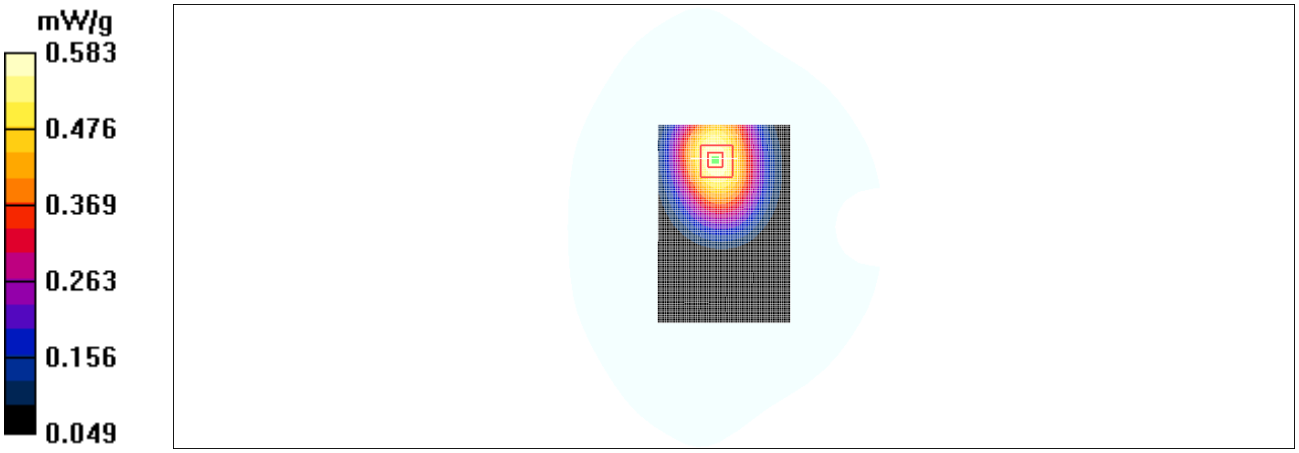



**Fig. 70 850 MHz CH4132**

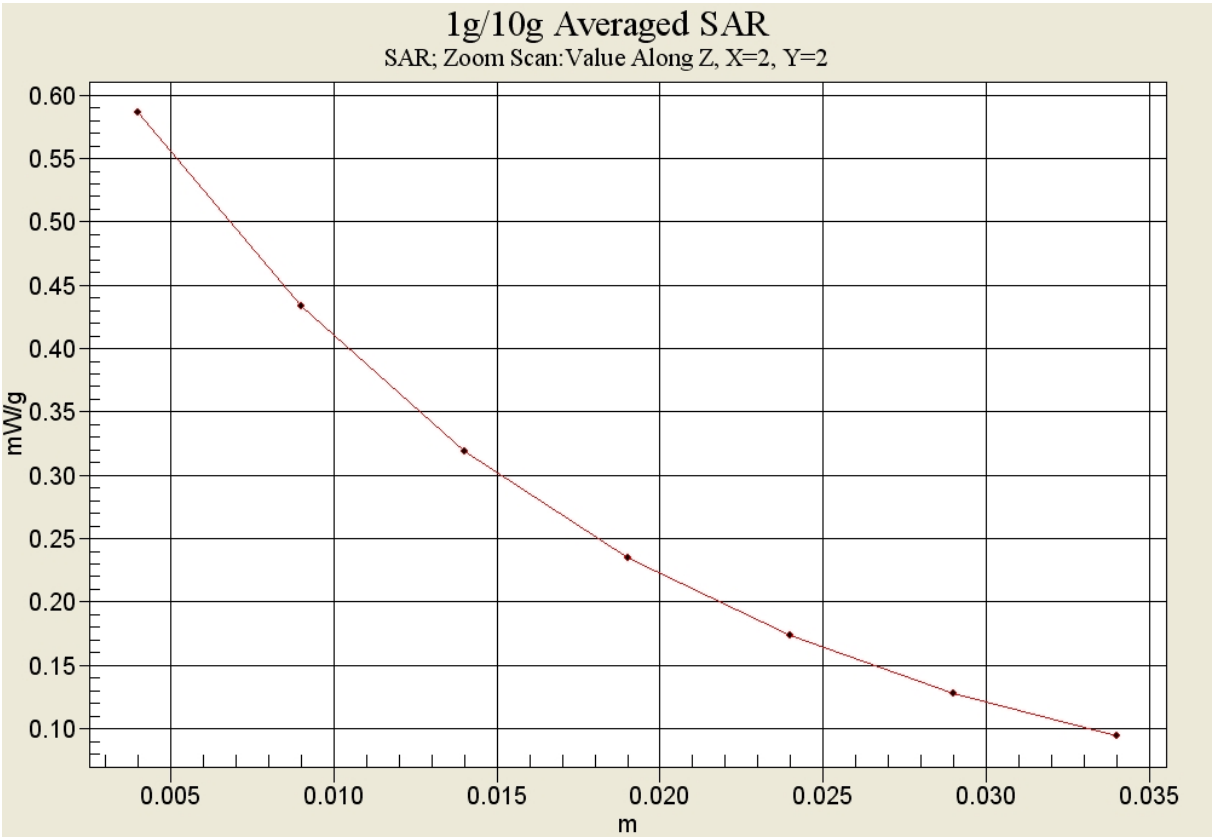



**Fig. 70-1 Z-Scan at power reference point (850 MHz CH4132)**

**WCDMA 850 Body Left Side Low**
Date/Time: 2011-7-4 18:05:04
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; $\sigma$ = 0.95 mho/m; $\varepsilon r$ = 55.1; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Left Side Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.307 mW/g

**Left Side Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.7 V/m; Power Drift = -0.125 dB
Peak SAR (extrapolated) = 0.390 W/kg
**SAR(1 g) = 0.279 mW/g; SAR(10 g) = 0.191 mW/g**
Maximum value of SAR (measured) = 0.297 mW/g

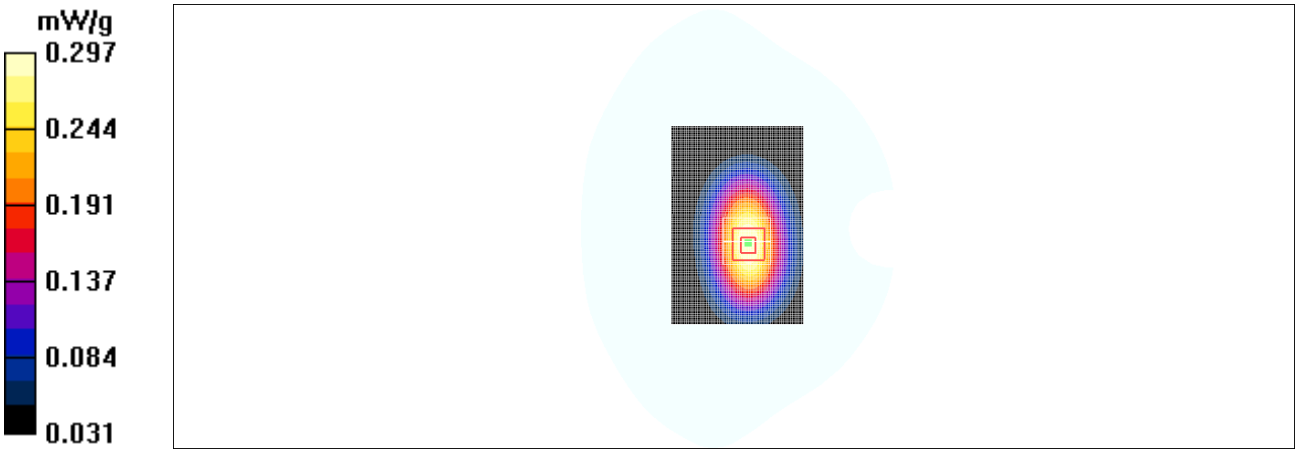



**Fig. 71 850 MHz CH4132**

**WCDMA 850 Body Right Side Low**
Date/Time: 2011-7-4 18:21:29
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; $\sigma$ = 0.95 mho/m; $\varepsilon r$ = 55.1; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Right Side Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.314 mW/g

**Right Side Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.6 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.402 W/kg
**SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.203 mW/g**
Maximum value of SAR (measured) = 0.312 mW/g

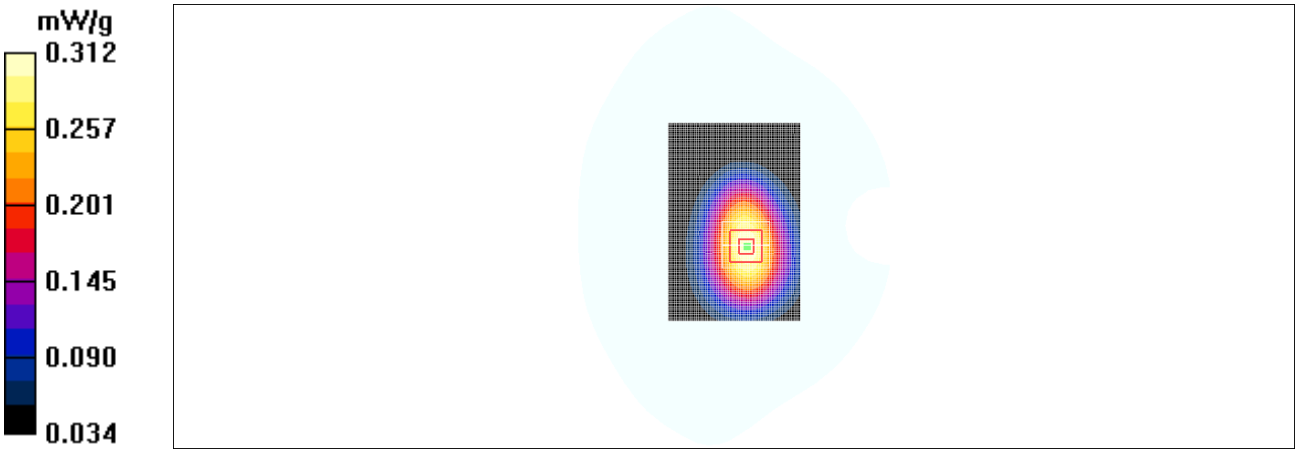



**Fig. 72 850 MHz CH4132**

**WCDMA 850 Body Bottom Side Low**

Date/Time: 2011-7-4 18:38:10
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; $\sigma$ = 0.95 mho/m; $\varepsilon r$ = 55.1; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Bottom Side Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.066 mW/g

**Bottom Side Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.97 V/m; Power Drift = 0.007 dB
Peak SAR (extrapolated) = 0.112 W/kg
**SAR(1 g) = 0.063 mW/g; SAR(10 g) = 0.038 mW/g**
Maximum value of SAR (measured) = 0.068 mW/g

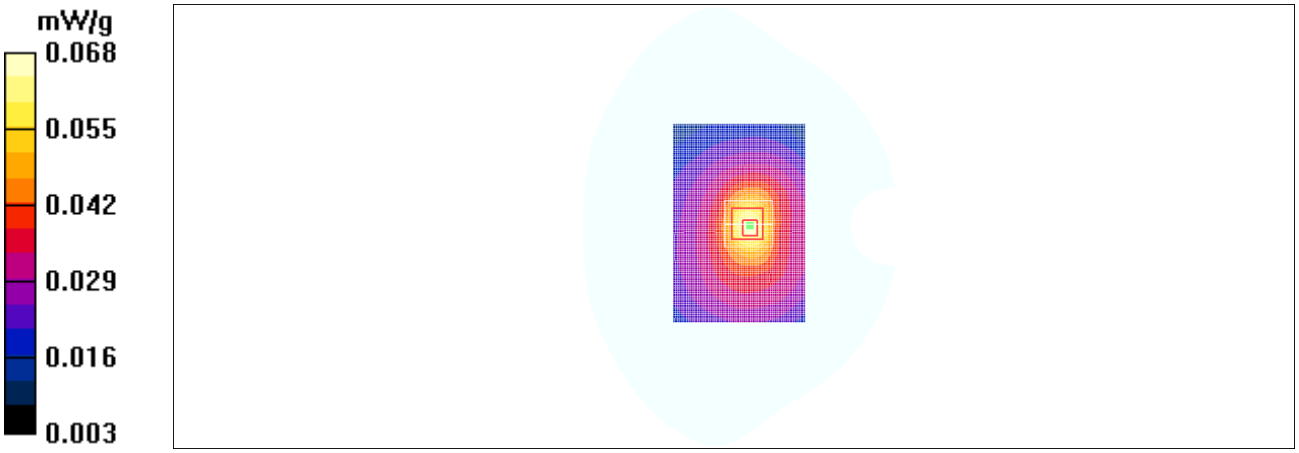



**Fig. 73 850 MHz CH4132**

**WCDMA 850 Body Towards Ground High**
Date/Time: 2011-7-4 18:54:35
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 846.6 MHz; σ = 0.95 mho/m; εr = 54.2; ρ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 846.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Toward Ground High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.476 mW/g

**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.3 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 0.594 W/kg
**SAR(1 g) = 0.445 mW/g; SAR(10 g) = 0.316 mW/g**
Maximum value of SAR (measured) = 0.473 mW/g

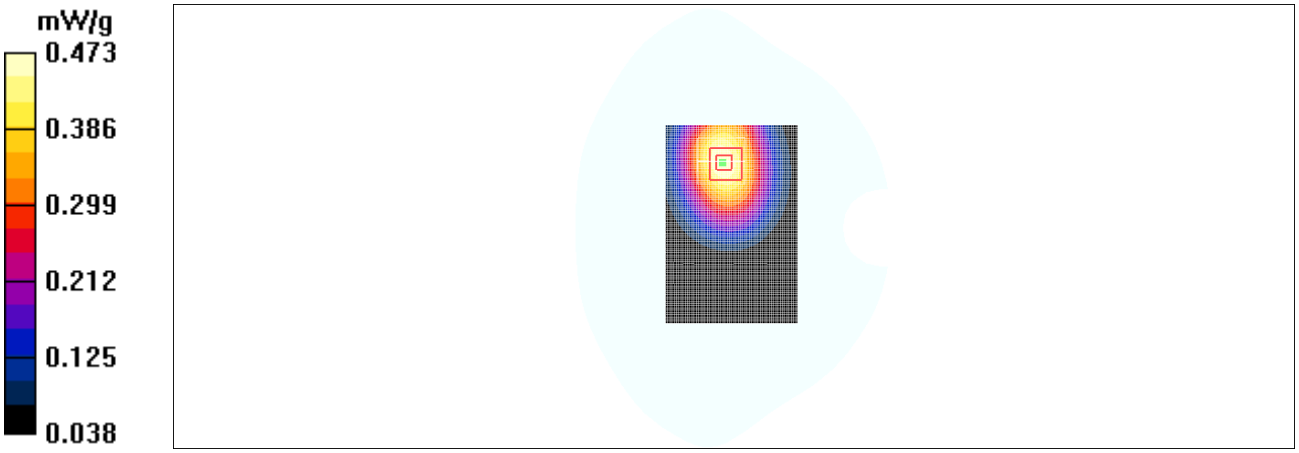



**Fig. 74 850 MHz CH4233**

**WCDMA 850 Body Towards Ground Middle**

Date/Time: 2011-7-4 19:10:03
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 836.4 MHz; $\sigma$ = 0.96 mho/m; $\varepsilon r$ = 54.4; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 836.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Toward Ground Middle/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.574 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 0.720 W/kg
**SAR(1 g) = 0.540 mW/g; SAR(10 g) = 0.383 mW/g**
Maximum value of SAR (measured) = 0.573 mW/g

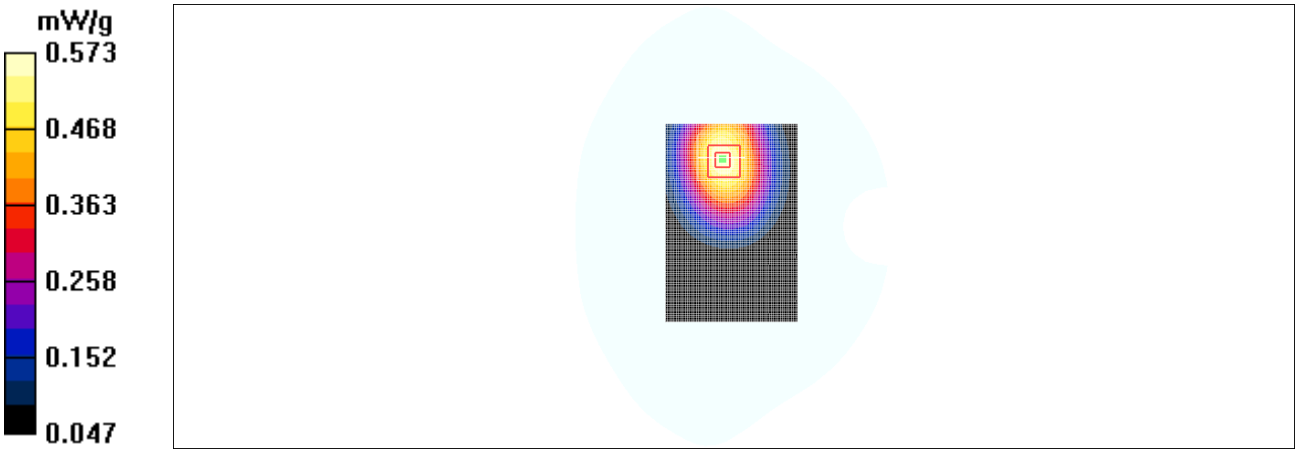



**Fig. 75 850 MHz CH4182**

**WCDMA 850 Body Towards Ground Low with Headset_CCB3160A10C0**
Date/Time: 2011-7-4 19:26:44
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; $\sigma$ = 0.95 mho/m; $\varepsilon r$ = 55.1; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Toward Ground Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.546 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.6 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 0.661 W/kg
**SAR(1 g) = 0.495 mW/g; SAR(10 g) = 0.353 mW/g**
Maximum value of SAR (measured) = 0.526 mW/g

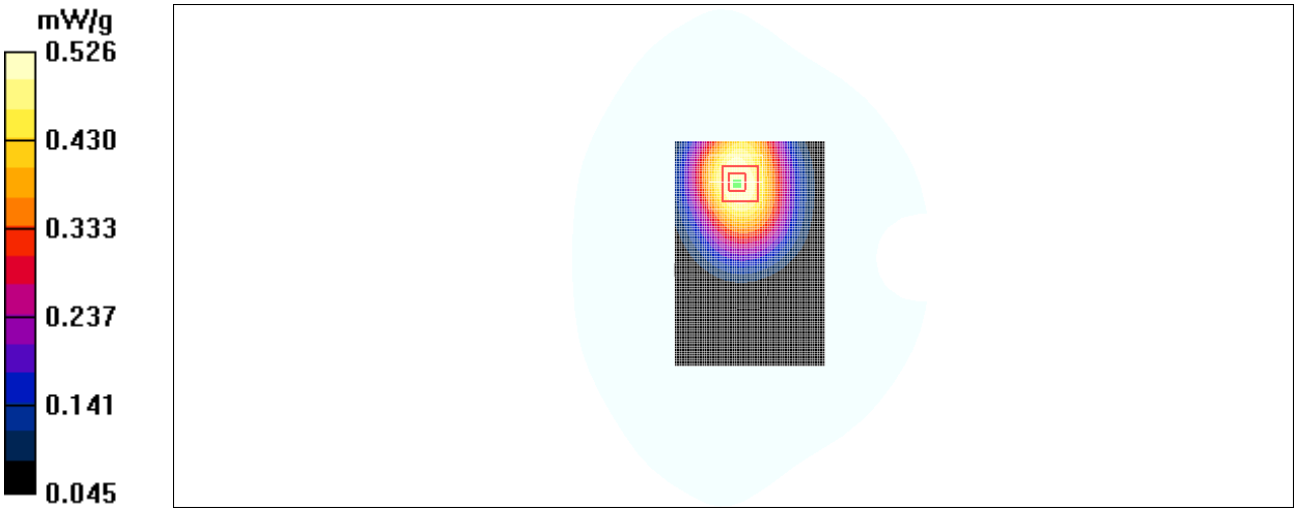



**Fig. 76 850 MHz CH4132**

**WCDMA 850 Body Towards Ground Low with Headset_CCB31C0A10C0**
Date/Time: 2011-7-4 19:44:00
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.95 mho/m; εr = 55.1; ρ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(6.22, 6.22, 6.22)

**Toward Ground Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.555 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.2 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 0.691 W/kg
**SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.366 mW/g**
Maximum value of SAR (measured) = 0.549 mW/g

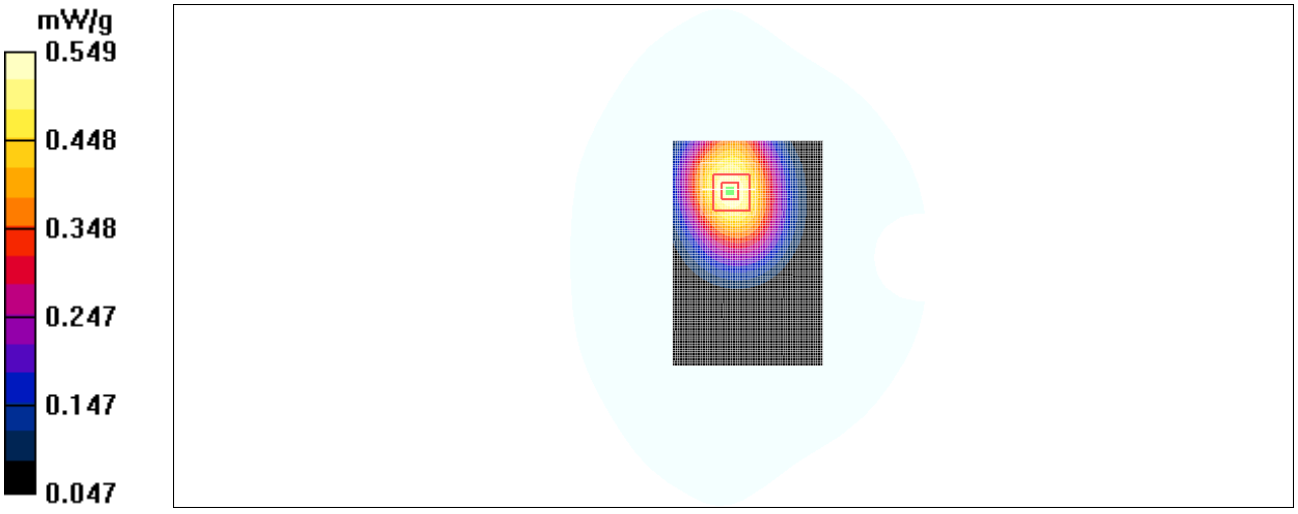



**Fig. 77 850 MHz CH4132**

**WCDMA 1900 Body Towards Phantom High**
Date/Time: 2011-7-5 17:27:26
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1907.6 MHz; $\sigma$ = 1.53 mho/m; $\varepsilon r$ = 52.5; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1907.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Phantom High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.469 mW/g

**Toward Phantom High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = -0.012 dB
Peak SAR (extrapolated) = 0.737 W/kg
**SAR(1 g) = 0.418 mW/g; SAR(10 g) = 0.240 mW/g**
Maximum value of SAR (measured) = 0.455 mW/g

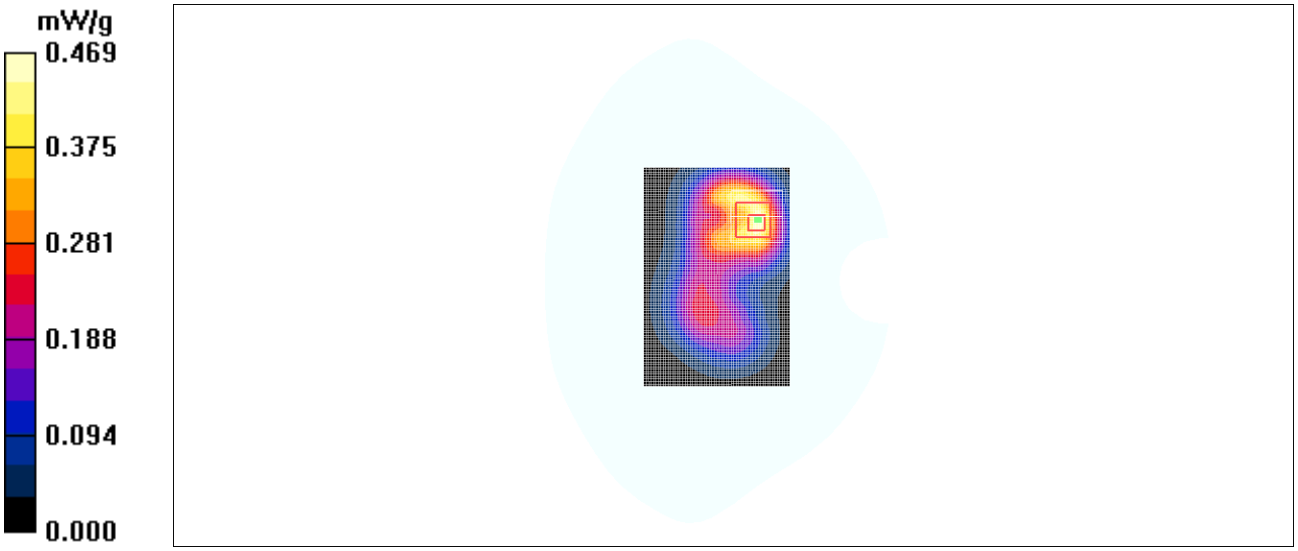



**Fig. 78 1900 MHz CH9538**

**WCDMA 1900 Body Towards Ground High**

Date/Time: 2011-7-5 17:43:04
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1907.6 MHz; $\sigma$ = 1.53 mho/m; $\varepsilon r$ = 52.5; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1907.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.490 mW/g

**Toward Ground High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.27 V/m; Power Drift = -0.164 dB
Peak SAR (extrapolated) = 0.800 W/kg
**SAR(1 g) = 0.464 mW/g; SAR(10 g) = 0.265 mW/g**
Maximum value of SAR (measured) = 0.491 mW/g

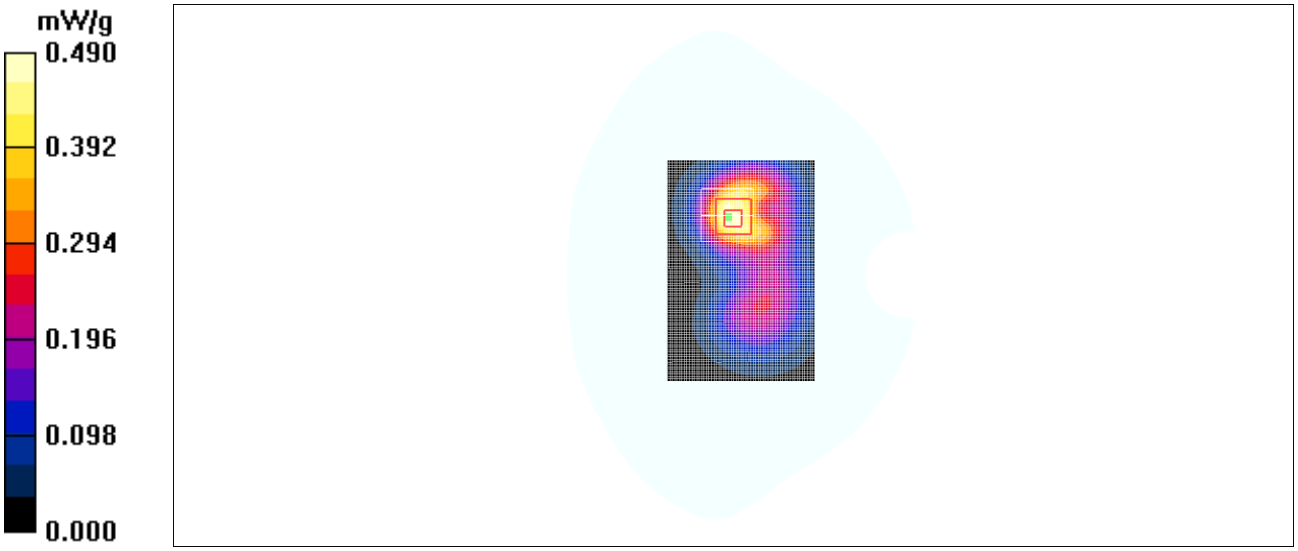



**Fig. 79 1900 MHz CH9538**

**WCDMA 1900 Body Left Side High**
Date/Time: 2011-7-5 17:58:43
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1907.6 MHz; $\sigma$ = 1.53 mho/m; $\varepsilon r$ = 52.5; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1907.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Left Side High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.103 mW/g

**Left Side High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.46 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 0.149 W/kg
**SAR(1 g) = 0.089 mW/g; SAR(10 g) = 0.051 mW/g**
Maximum value of SAR (measured) = 0.098 mW/g

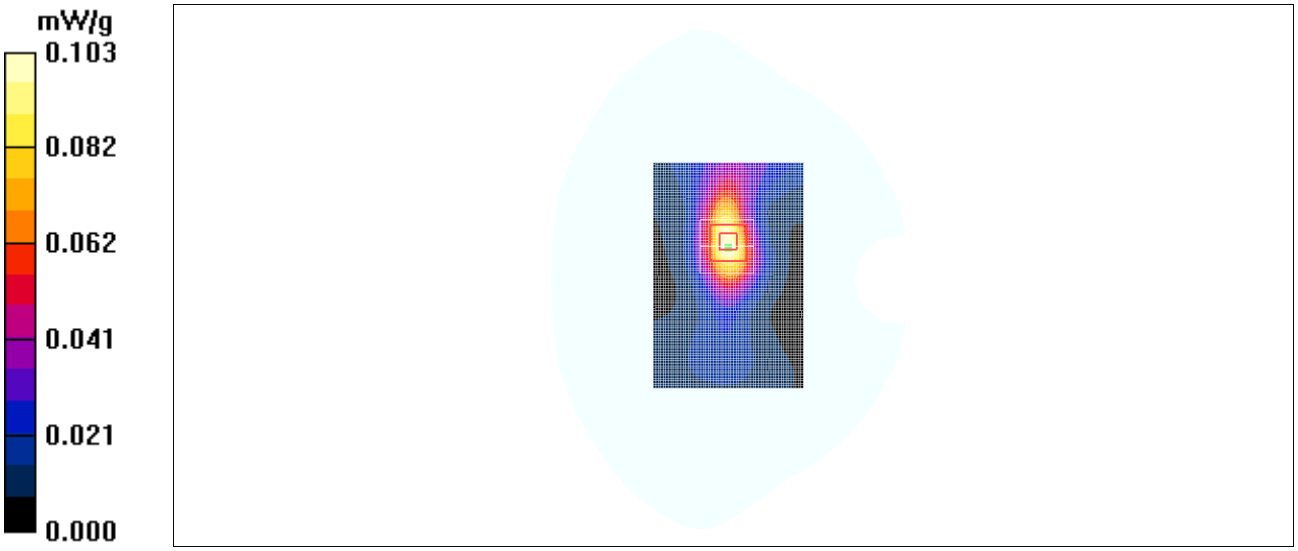



**Fig. 80 1900 MHz CH9538**

**WCDMA 1900 Body Right Side High**
Date/Time: 2011-7-5 18:14:21
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1907.6 MHz; $\sigma$ = 1.53 mho/m; $\varepsilon r$ = 52.5; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1907.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Right Side High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.238 mW/g

**Right Side High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.1 V/m; Power Drift = -0.196 dB
Peak SAR (extrapolated) = 0.340 W/kg
**SAR(1 g) = 0.210 mW/g; SAR(10 g) = 0.125 mW/g**
Maximum value of SAR (measured) = 0.229 mW/g

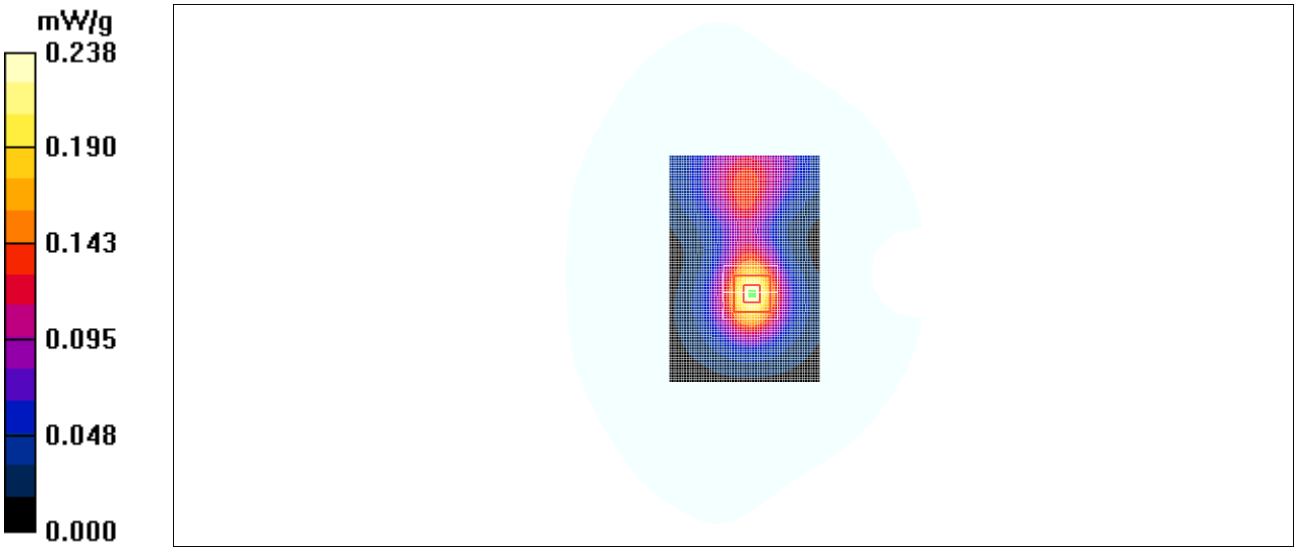



**Fig. 81 1900 MHz CH9538**

**WCDMA 1900 Body Bottom Side High**

Date/Time: 2011-7-5 18:30:02
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1907.6 MHz; $\sigma$ = 1.53 mho/m; $\varepsilon r$ = 52.5; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1907.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Bottom Side High/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.516 mW/g

**Bottom Side High/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.1 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 0.767 W/kg
**SAR(1 g) = 0.458 mW/g; SAR(10 g) = 0.257 mW/g**
Maximum value of SAR (measured) = 0.512 mW/g

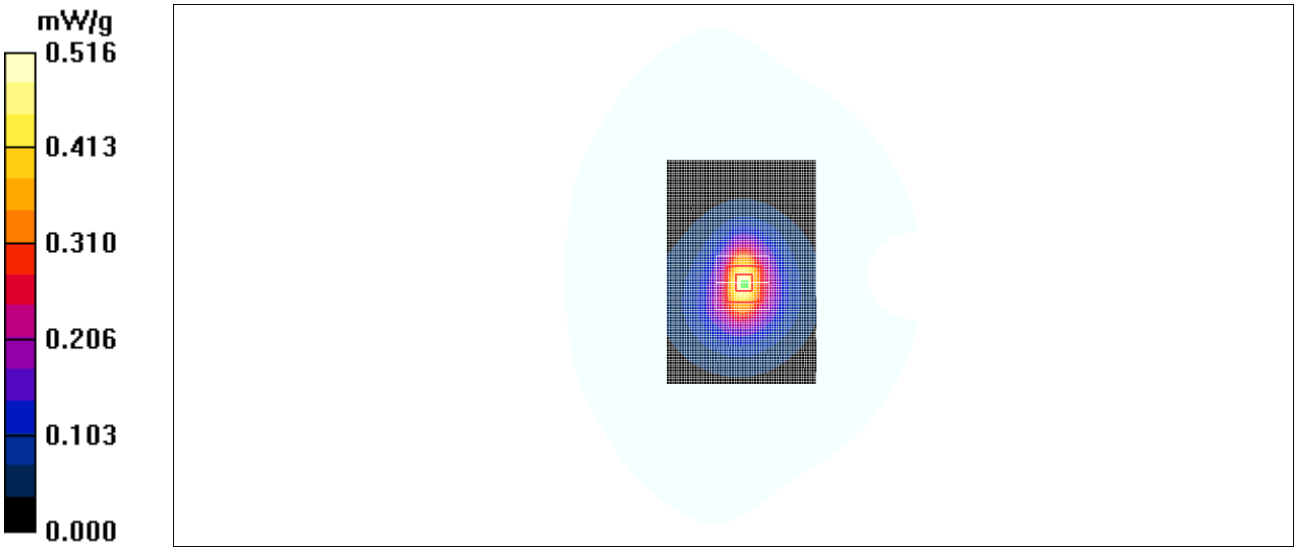



**Fig. 82 1900 MHz CH9538**

**WCDMA 1900 Body Towards Ground Middle**
Date/Time: 2011-7-5 18:46:27
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.49 mho/m; $\varepsilon r$ = 52.9; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Middle/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.674 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.3 V/m; Power Drift = 0.019 dB
Peak SAR (extrapolated) = 1.10 W/kg
**SAR(1 g) = 0.646 mW/g; SAR(10 g) = 0.374 mW/g**
Maximum value of SAR (measured) = 0.677 mW/g

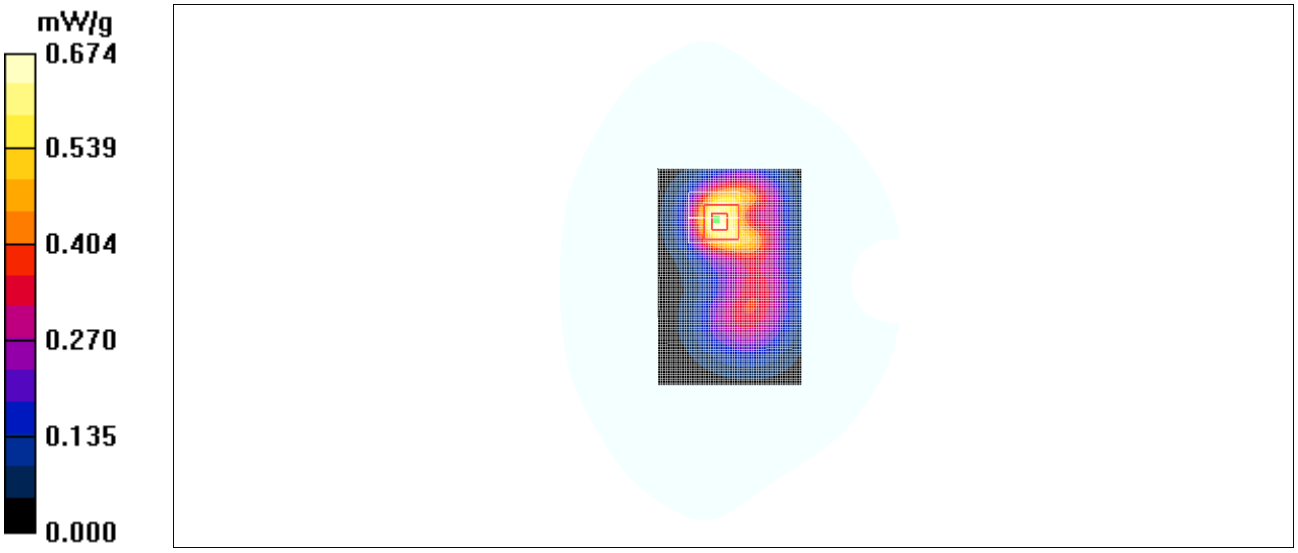



**Fig. 83 1900 MHz CH9400**

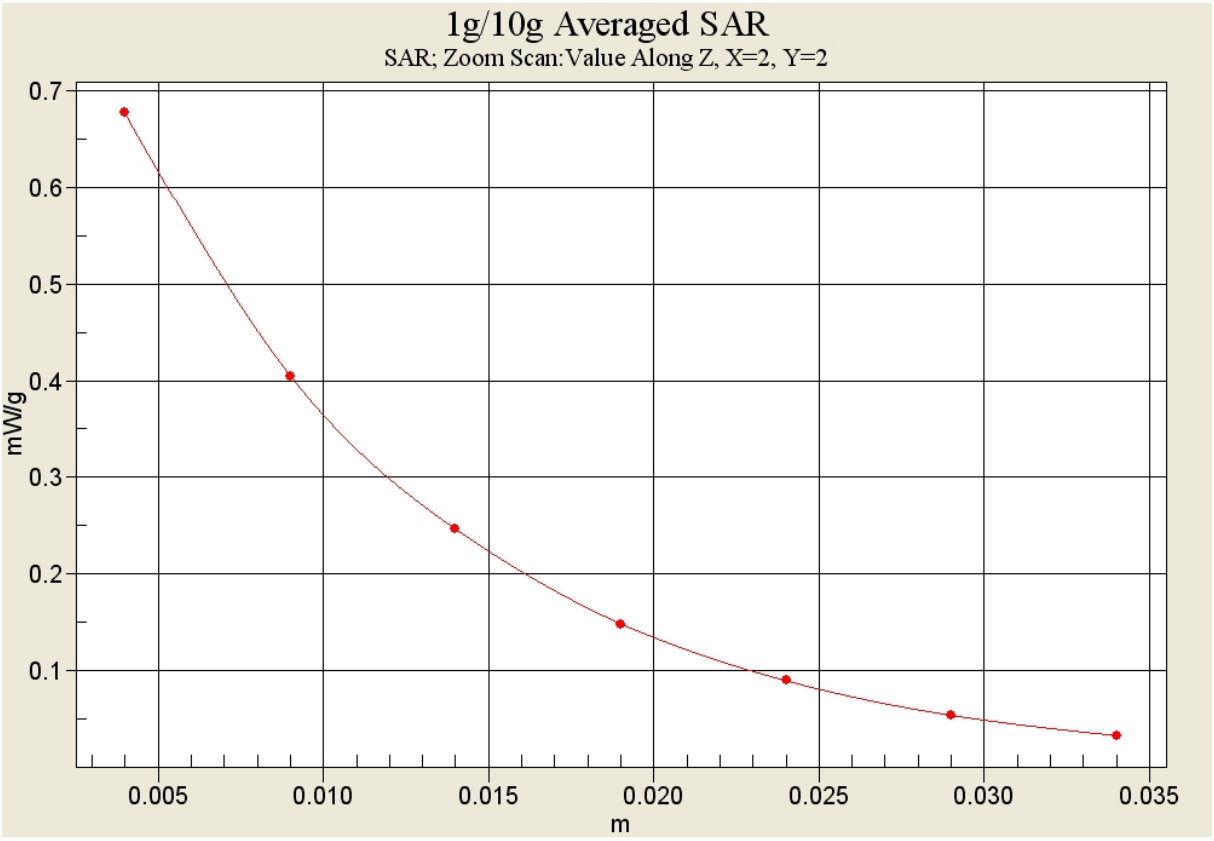



**Fig. 83-1 Z-Scan at power reference point (1900 MHz CH9400)**

**WCDMA 1900 Body Towards Ground Low**
Date/Time: 2011-7-5 19:01:55
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used (interpolated): f = 1852.4 MHz; $\sigma$ = 1.47 mho/m; $\varepsilon r$ = 53.3; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1852.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Low/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.508 mW/g

**Toward Ground Low/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = -0.080 dB
Peak SAR (extrapolated) = 0.798 W/kg
**SAR(1 g) = 0.471 mW/g; SAR(10 g) = 0.275 mW/g**
Maximum value of SAR (measured) = 0.500 mW/g

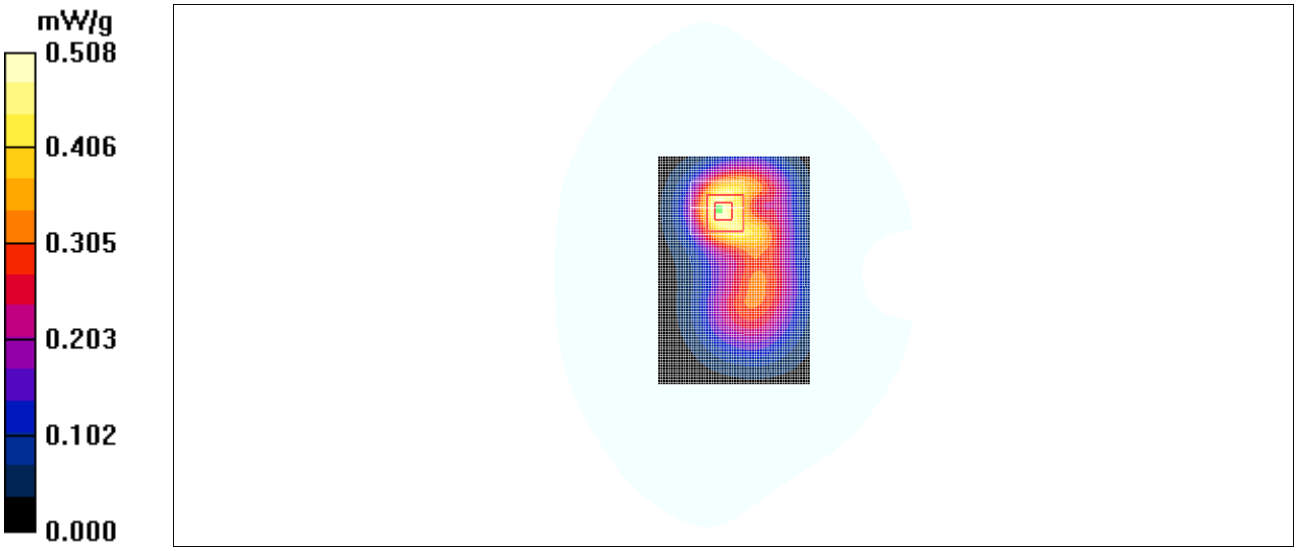



**Fig. 84 1900 MHz CH9262**

**WCDMA 1900 Body Towards Ground Middle with Headset_CCB3160A10C0**
Date/Time: 2011-7-5 19:18:43
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.49 mho/m; $\varepsilon r$ = 52.9; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Middle/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.700 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.1 V/m; Power Drift = -0.042 dB
Peak SAR (extrapolated) = 1.09 W/kg
**SAR(1 g) = 0.637 mW/g; SAR(10 g) = 0.367 mW/g**
Maximum value of SAR (measured) = 0.695 mW/g

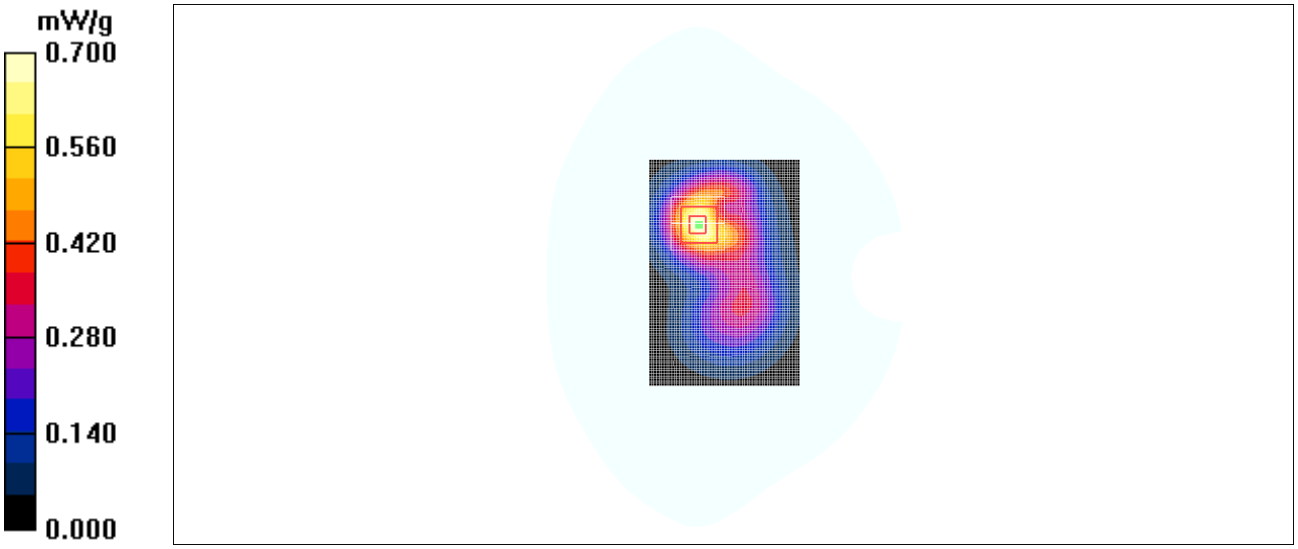



**Fig. 85 1900 MHz CH9400**

**WCDMA 1900 Body Towards Ground Middle with Headset_CCB31C0A10C0**
Date/Time: 2011-7-5 19:35:53
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1880 MHz; $\sigma$ = 1.49 mho/m; $\varepsilon r$ = 52.9; $\rho$ = 1000 kg/$m^3$
Ambient Temperature:23.0 °C Liquid Temperature: 22.5°C
Communication System: WCDMA 1900 Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3149 ConvF(4.68, 4.68, 4.68)

**Toward Ground Middle/Area Scan (61x91x1):** Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.695 mW/g

**Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.0 V/m; Power Drift = -0.060 dB
Peak SAR (extrapolated) = 1.06 W/kg
**SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.359 mW/g**
Maximum value of SAR (measured) = 0.669 mW/g

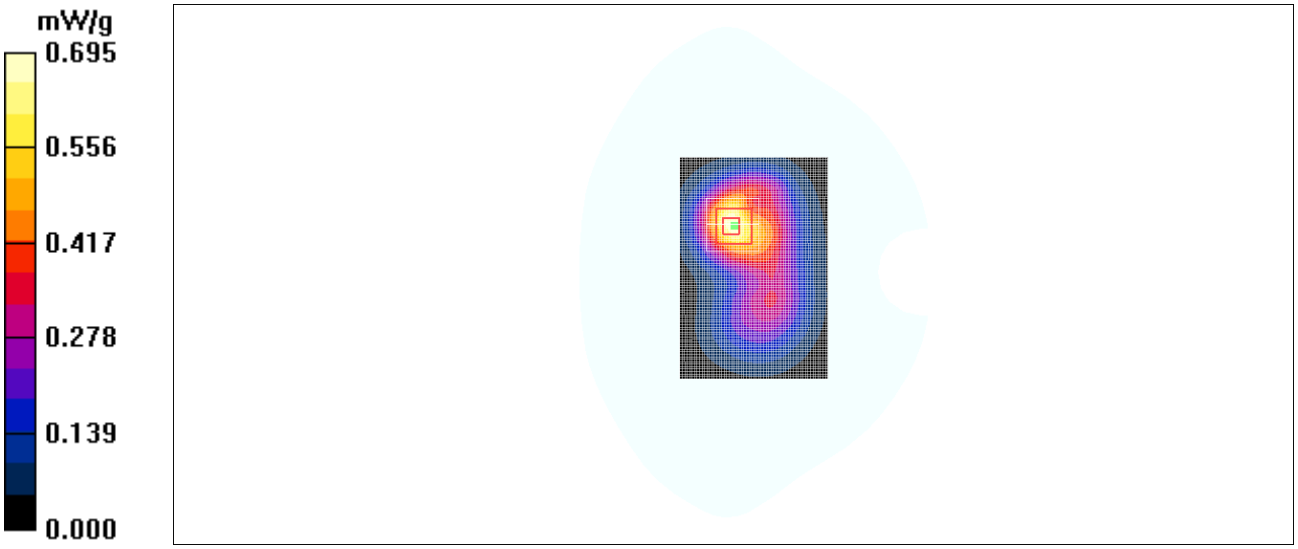



**Fig. 86 1900 MHz CH9400**

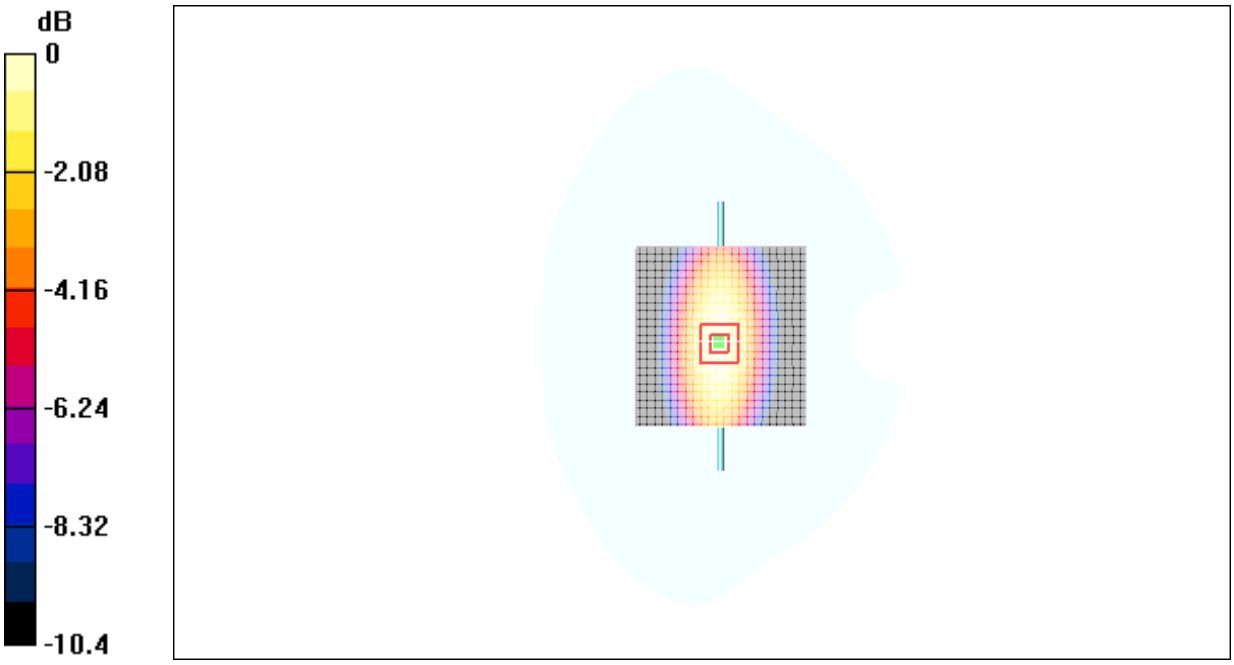
# ANNEX D SYSTEM VALIDATION RESULTS

## 835MHz

Date/Time: 2011-7-4 7:27:39
Electronics: DAE4 Sn771
Medium: Head 850 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.90 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: 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 = 55.1 V/m; Power Drift = -0.099 dB
Peak SAR (extrapolated) = 3.35 W/kg
**SAR(1 g) = 2.31 mW/g; SAR(10 g) = 1.49 mW/g**
Maximum value of SAR (measured) = 2.46 mW/g




0 dB = 2.46mW/g

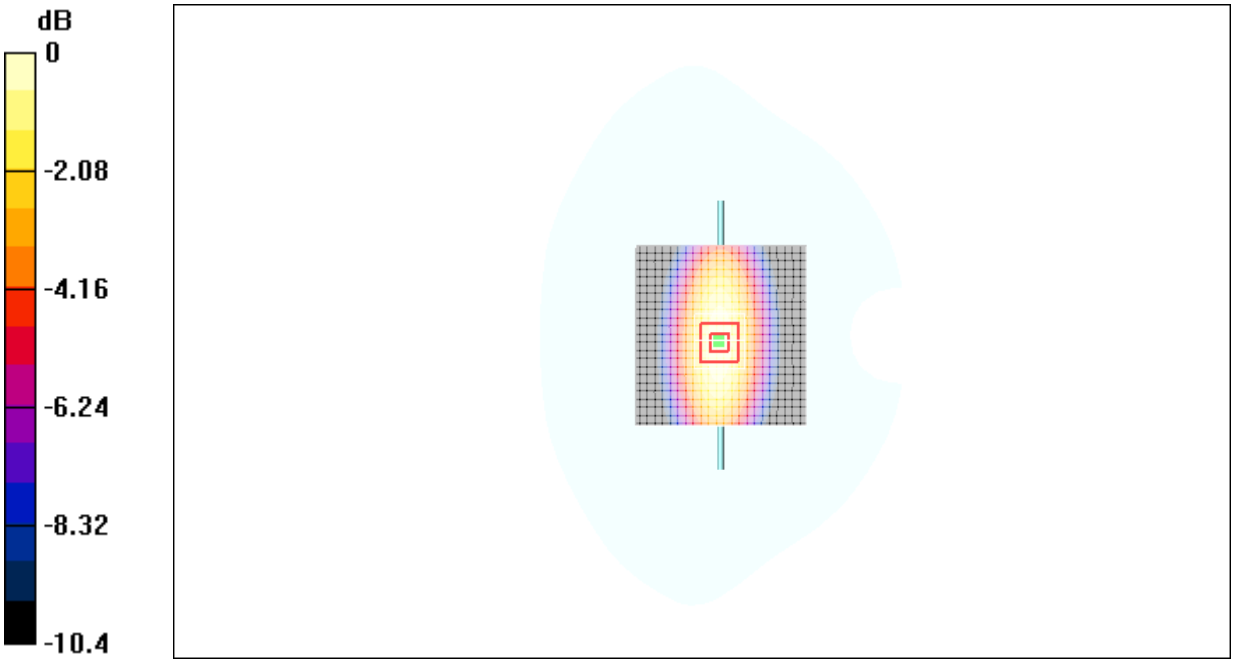
**Fig.87 validation 835MHz 250mW**

## 835MHz

Date/Time: 2011-7-4 8:11:30
Electronics: DAE4 Sn771
Medium: Body 850 MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.96 mho/m; $\varepsilon_r$ = 54.4; $\rho$ = 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) = 2.64 mW/g

**System Validation /Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.8 V/m; Power Drift = 0.077 dB
Peak SAR (extrapolated) = 3.39 W/kg
**SAR(1 g) = 2.47 mW/g; SAR(10 g) = 1.58 mW/g**
Maximum value of SAR (measured) = 2.56 mW/g




0 dB = 2.56mW/g

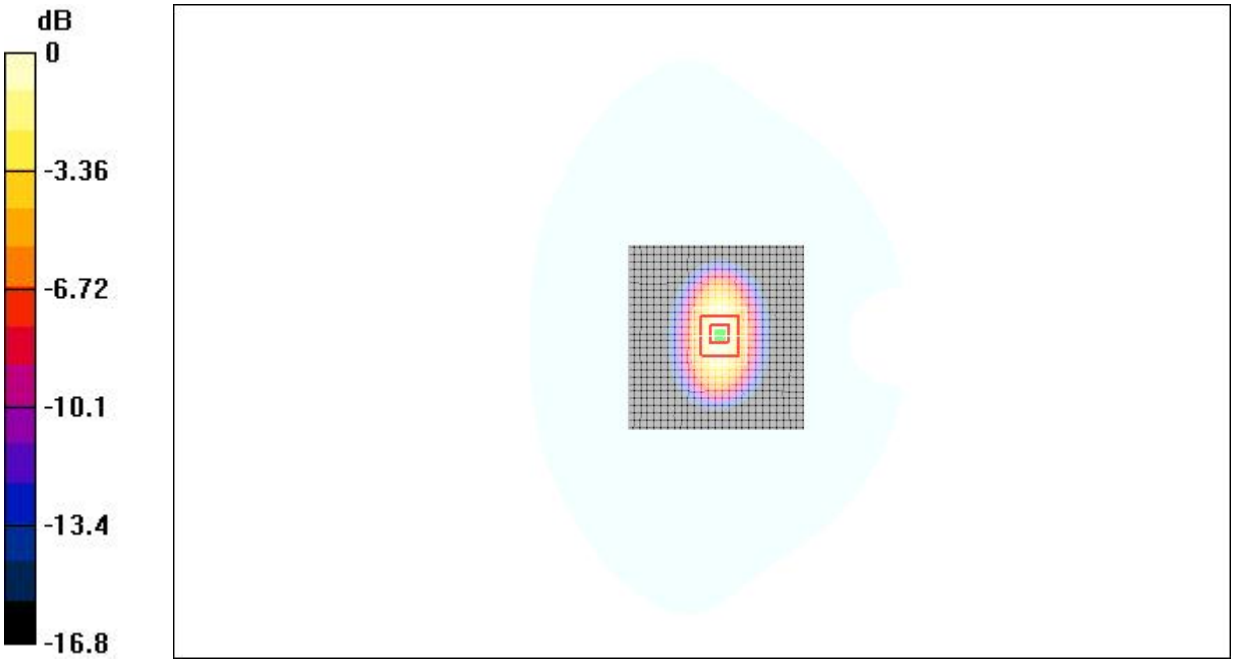
**Fig.88 validation 835MHz 250mW**

## 1900MHz

Date/Time: 2011-7-5 7:28:12
Electronics: DAE4 Sn771
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.41 mho/m; $\varepsilon_r$ = 40.6; $\rho$ = 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 = 88.3 V/m; Power Drift = -0.084 dB
Peak SAR (extrapolated) = 14.8 W/kg
**SAR(1 g) = 9.68 mW/g; SAR(10 g) = 4.95 mW/g**
Maximum value of SAR (measured) = 10.5 mW/g




0 dB = 10.5mW/g

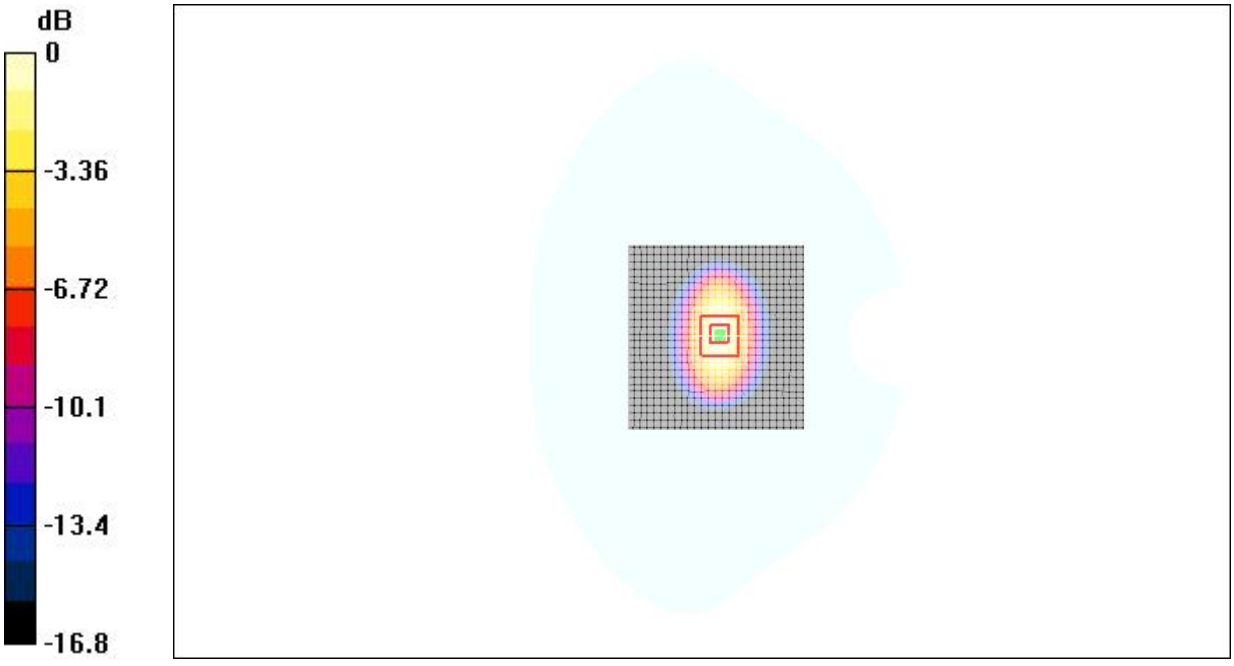
**Fig.89 validation 1900MHz 250mW**

## 1900MHz

Date/Time: 2011-7-5 8:06:41
Electronics: DAE4 Sn771
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.52 mho/m; $\varepsilon_r$ = 52.6; $\rho$ = 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) = 11.6 mW/g

**System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.7 V/m; Power Drift = -0.056 dB
Peak SAR (extrapolated) = 15.7 W/kg
**SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.17 mW/g**
Maximum value of SAR (measured) = 11.0 mW/g




0 dB = 11.0mW/g

**Fig.90 validation 1900MHz 250mW**

# ANNEX E 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 China Certificate No: ES3DV3-3149_Sep10

## CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | ES3DV3-SN: 3149 |
| Calibration procedure(s) | QA CAL-01.v6<br>Calibration procedure for dosimetric E-field probes |
| Calibration date: | September 25, 2010 |
| 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)°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-10 (METAS, NO. 251-00388) | May-11 |
| Power sensor E4412A | MY41495277 | 5-May-10 (METAS, NO. 251-00388) | May-11 |
| Reference 3 dB Attenuator | SN:S5054 (3c) | 10-Aug-10 (METAS, NO. 251-00403) | Aug-11 |
| Reference 20 dB Attenuator | SN:S5086 (20b) | 3-May-10 (METAS, NO. 251-00389) | May-11 |
| Reference 30 dB Attenuator | SN:S5129 (30b) | 10-Aug-10 (METAS, NO. 251-00404) | Aug-11 |
| DAE4 | SN:617 | 10-Jun-10 (SPEAG, NO.DAE4-907_Jun10) | Jun-11 |
| Reference Probe ES3DV2 | SN: 3013 | 12-Jan-10 (SPEAG, NO. ES3-3013_Jan10) | Jan-11 |

| Secondary Standards | ID# | Check Data (in house) | Scheduled Calibration |
|---|---|---|---|
| RF generator HP8648C | US3642U01700 | 4-Aug-99(SPEAG, in house check Oct-09) | In house check: Oct-10 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01(SPEAG, in house check Nov-09) | In house check: Nov-10 |

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

Issued: September 25, 2010

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

Certificate No: ES3DV3-3149_Sep10 Page 1 of 9

**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 25, 2010

Calibrated for DASY4 System

**ES3DV3 SN: 3149** **September 25, 2010**

## DASY – Parameters of Probe: ES3DV3 SN:3149

Sensitivity in Free Space[A] Diode Compression[B]

| | | | | |
|---|---|---|---|---|
| NormX | 1.14±10.1% | $\mu V/(V/m)^2$ | DCP X | 94mV |
| NormY | 1.23±10.1% | $\mu V/(V/m)^2$ | DCP Y | 95mV |
| NormZ | 1.29±10.1% | $\mu V/(V/m)^2$ | DCP Z | 91mV |

Sensitivity in Tissue Simulating Liquid (Conversion Factors)
Please see Page 8

Boundary Effect

TSL 900MHz Typical SAR gradient: 5% per mm

| Sensor Center to Phantom Surface Distance | | 3.0 mm | 4.0 mm |
|---|---|---|---|
| SARbe[%] | Without Correction Algorithm | 3.8 | 1.6 |
| SARbe[%] | With Correction Algorithm | 0.8 | 0.7 |

TSL 1810MHz Typical SAR gradient: 10% per mm

| Sensor Center to Phantom Surface Distance | | 3.0 mm | 4.0 mm |
|---|---|---|---|
| SARbe[%] | Without Correction Algorithm | 6.8 | 3.6 |
| SARbe[%] | With Correction Algorithm | 0.4 | 0.2 |

Sensor Offset

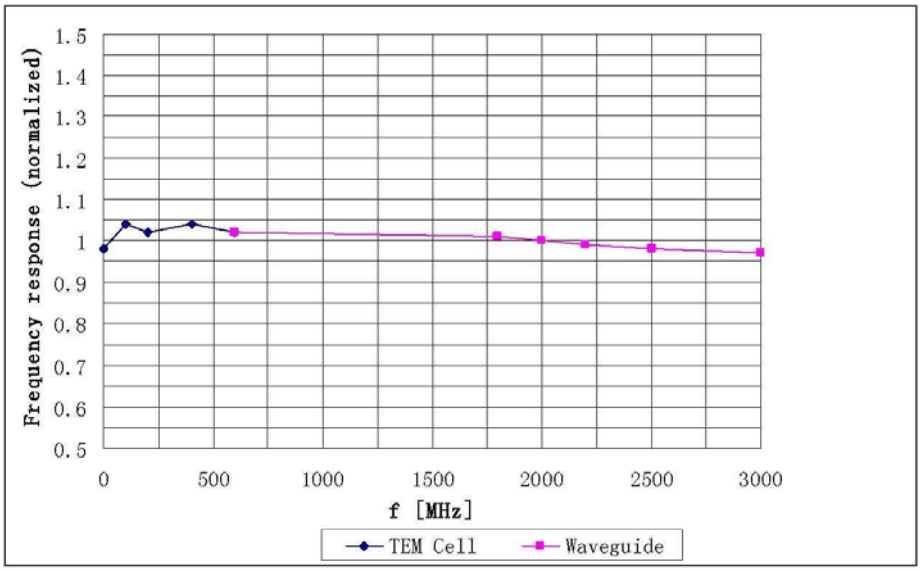
| | |
|---|---|
| Probe Tip to Sensor Center | 2.0 mm |

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

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

**ES3DV3 SN: 3149** **September 25, 2010**

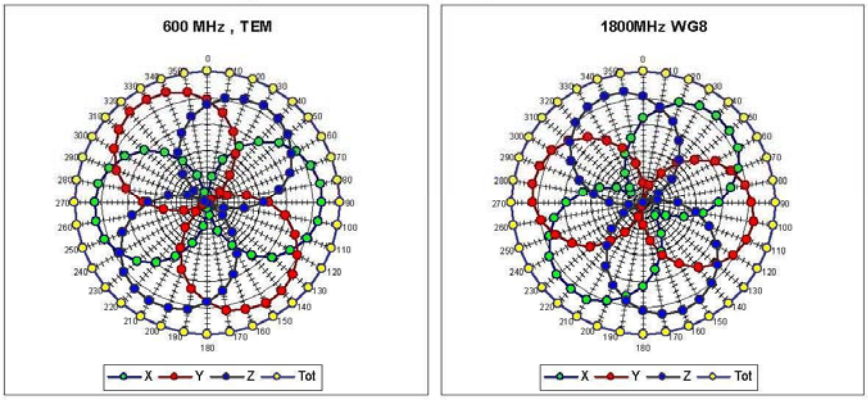
# Frequency Response of E-Field

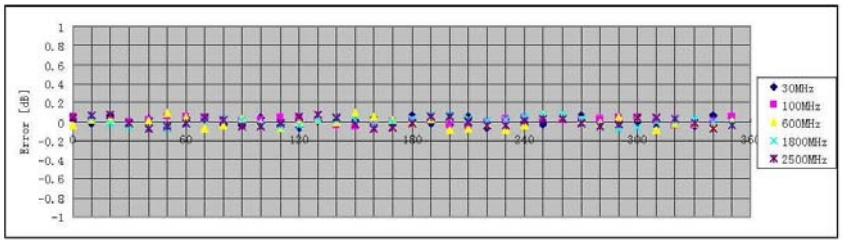



**Uncertainty of Frequency Response of E-field: ±5.0% (k=2)**

**ES3DV3 SN: 3149** **September 25, 2010**

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

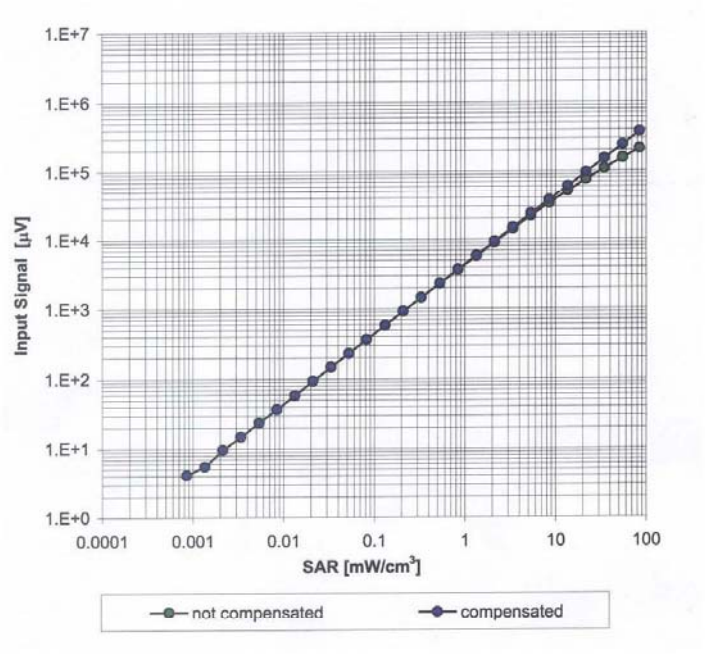


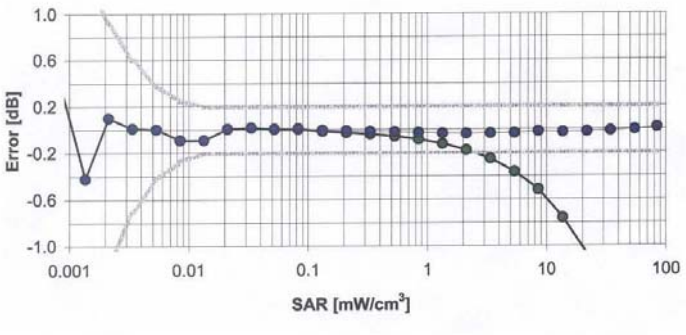




**Uncertainty of Axial Isotropy Assessment: ±0.5% (k=2)**

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

(Waveguide: WG8, f = 1800 MHz)

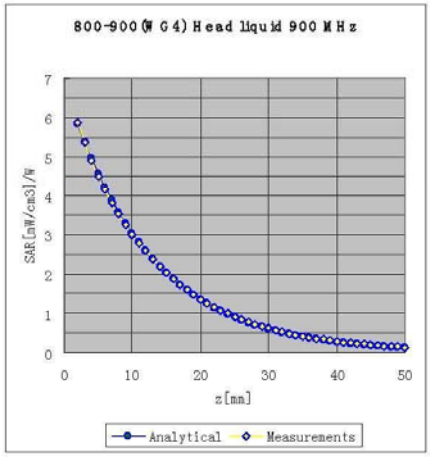


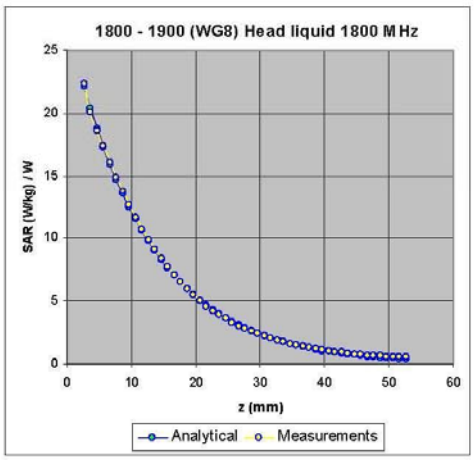




**Uncertainty of Linearity Assessment: ±0.5% (k=2)**

**ES3DV3 SN: 3149** **September 25, 2010**

# Conversion Factor Assessment



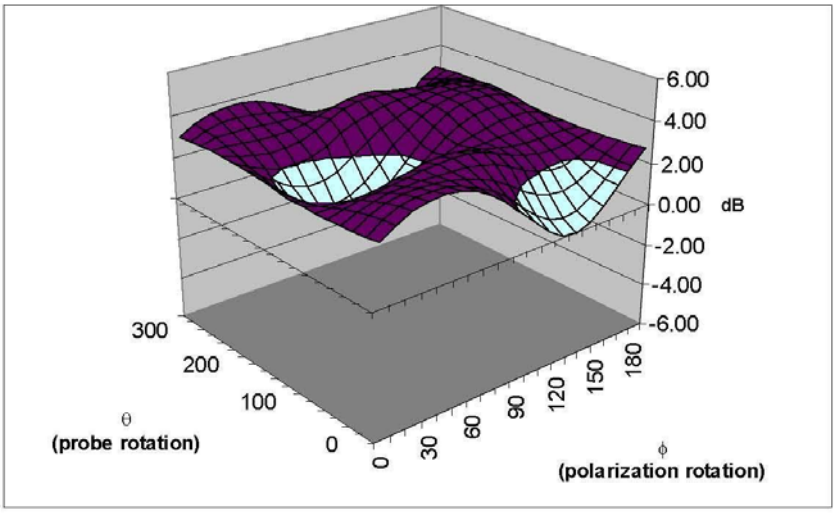

| f[MHz] | Validity[MHz][C] | TSL | Permittivity | Conductivity | Alpha | Depth | ConvF | Uncertainty |
|---|---|---|---|---|---|---|---|---|
| 850 | ±50 /±100 | Head | 41.5±5% | 0.90±5% | 0.91 | 1.13 | 6.56 | ±11.0% (k=2) |
| 900 | ±50 /±100 | Head | 41.5±5% | 0.97±5% | 0.83 | 1.26 | 6.34 | ±11.0% (k=2) |
| 1800 | ±50 /±100 | Head | 40.0±5% | 1.40±5% | 0.69 | 1.47 | 5.18 | ±11.0% (k=2) |
| 1900 | ±50 /±100 | Head | 40.0±5% | 1.40±5% | 0.72 | 1.38 | 5.03 | ±11.0% (k=2) |
| 2100 | ±50 /±100 | Head | 39.8±5% | 1.49±5% | 0.66 | 1.34 | 4.58 | ±11.0% (k=2) |
| 850 | ±50 /±100 | Body | 55.2±5% | 0.97±5% | 0.76 | 1.26 | 6.22 | ±11.0% (k=2) |
| 900 | ±50 /±100 | Body | 55.0±5% | 1.05±5% | 0.99 | 1.06 | 6.02 | ±11.0% (k=2) |
| 1800 | ±50 /±100 | Body | 53.3±5% | 1.52±5% | 0.75 | 1.34 | 4.97 | ±11.0% (k=2) |
| 1900 | ±50 /±100 | Body | 53.3±5% | 1.52±5% | 0.62 | 1.33 | 4.68 | ±11.0% (k=2) |
| 2100 | ±50 /±100 | Body | 53.5±5% | 1.57±5% | 0.68 | 1.34 | 4.35 | ±11.0% (k=2) |

[C] The validity of ±100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

**ES3DV3 SN: 3149** **September 25, 2010**

# Deviation from Isotropy

**Error ( Φ , θ ), f = 900 MHz**




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

# ANNEX F 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.

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## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V5.0 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | 2mm Oval Phantom ELI4 | |
| **Distance Dipole Center - TSL** | 15 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 835 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 41.5 | 0.90 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 41.6 ± 6 % | 0.92mho/m ± 6 % |
| **Head TSL temperature during test** | (21.7 ± 0.2) °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.38 mW / g |
| SAR normalized | normalized to 1W | 9.52 mW / g |
| SAR for nominal Head TSL parameters [1] | normalized to 1W | **9.41 mW /g ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.54 mW / g |
| SAR normalized | normalized to 1W | 6.16 mW / g |
| SAR for nominal Head TSL parameters [1] | normalized to 1W | **6.12 mW /g ± 16.5 % (k=2)** |

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

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## Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 55.2 | 0.97 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 54.5 ± 6% | 0.97mho/m ± 6 % |
| **Body TSL temperature during test** | (21.9 ± 0.2) °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 2.41 mW / g |
| SAR normalized | normalized to 1W | 9.64 mW / g |
| SAR for nominal Body TSL parameters [2] | normalized to 1W | **9.57 mW /g ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 1.57 mW / g |
| SAR normalized | normalized to 1W | 6.28 mW / g |
| SAR for nominal Body TSL parameters [2] | normalized to 1W | **6.24 mW /g ± 16.5 % (k=2)** |

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

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## Appendix

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 53.7Ω -3.7 jΩ |
| Return Loss | - 25.9dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 49.4Ω - 5.1 jΩ |
| Return Loss | -25.6dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.387 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | September 3, 2001 |

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Telecommunication Metrology Center of MIIT

**DASY5 Validation Report for Head TSL**

Date/Time: 2010-2-26 14:31:40

Test Laboratory: TMC, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: SN: 443

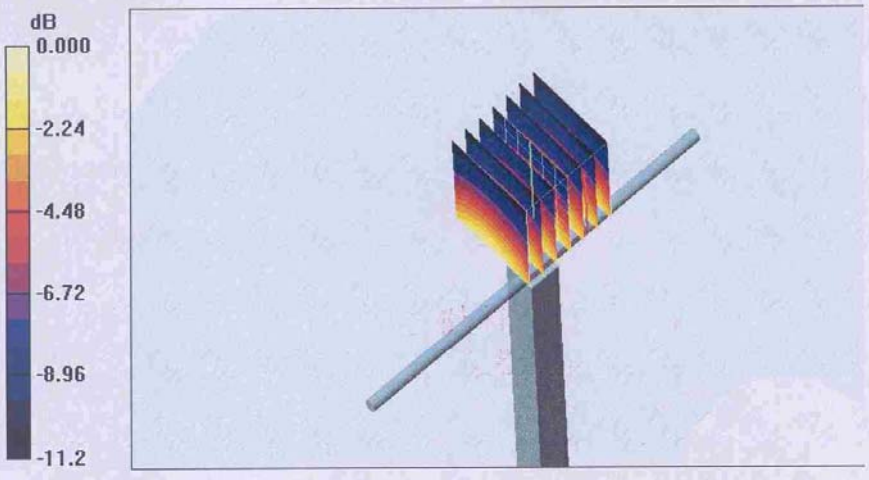
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.92 mho/m; $\varepsilon_r$ = 41.6; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(6.56, 6.56, 6.56); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom EL14; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

Pin=250mW; d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.8 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 3.11 W/kg
**SAR(1 g) = 2.38 mW/g; SAR(10 g) = 1.54 mW/g**
Maximum value of SAR (measured) = 2.71 mW/g




0 dB = 2.71mW/g

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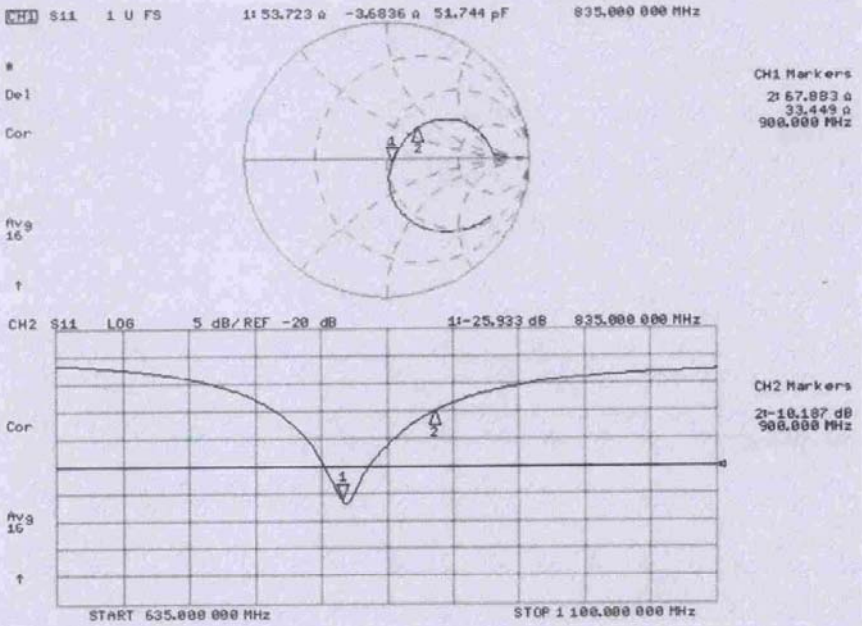
## Impedance Measurement Plot for Head TSL



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**DASY5 Validation Report for Body TSL**

Date/Time: 2010-2-26 9:52:36

Test Laboratory: TMC, Beijing, China

DUT: Dipole 835 MHz; Type: D835V2; Serial: SN: 443

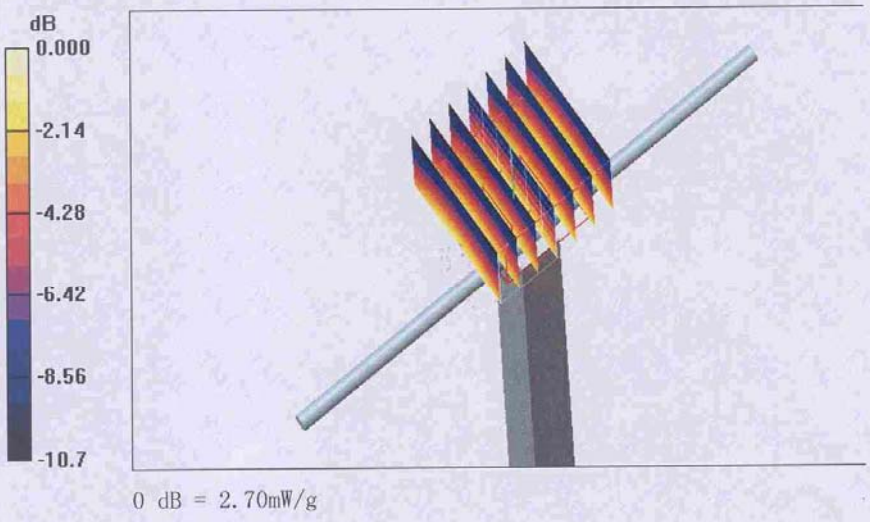
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Medium: Body 835MHz
Medium parameters used: f = 835 MHz; $\sigma$ = 0.97 mho/m; $\varepsilon_r$ = 54.5; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(6.22, 6.22, 6.22); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

Pin=250mW; d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.0 V/m; Power Drift = -0.025 dB
Peak SAR (extrapolated) = 3.78 W/kg
**SAR(1 g) = 2.41 mW/g; SAR(10 g) = 1.57 mW/g**
Maximum value of SAR (measured) = 2.70 mW/g




0 dB = 2.70mW/g

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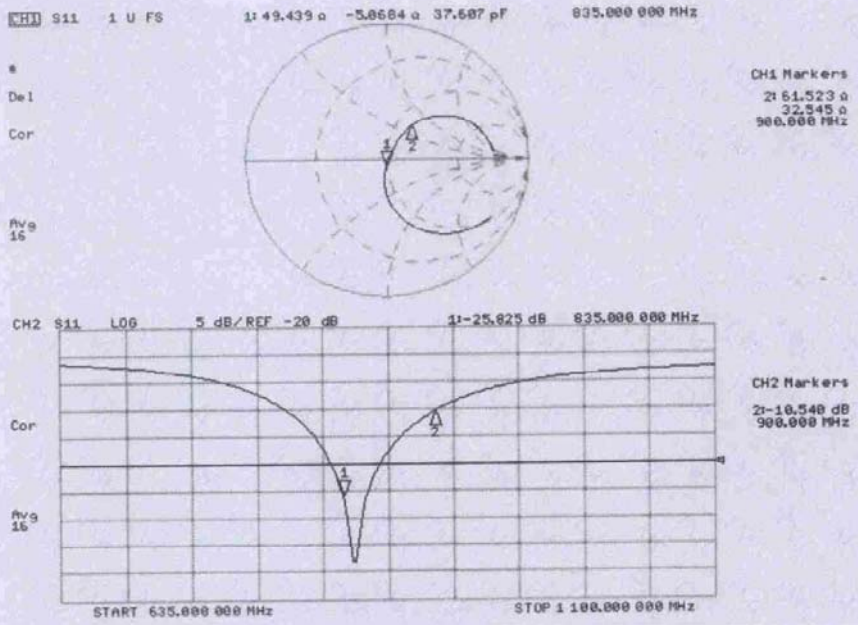
## Impedance Measurement Plot for Body TSL



**1900 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: D1900V2-541_Feb10

## CALIBRATION CERTIFICATE

| | |
|---|---|
| Object | D1900V2 - SN: 541 |
| 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) | Sep-10 |
| Power sensor NRV-Z5 | 100333 | 04-Sep-09 (TMC, No. JZ09-248) | Sep-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

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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.

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## Measurement Conditions

DASY system configuration, as far as not given on page 1.

| | | |
|---|---|---|
| **DASY Version** | DASY5 | V5.0 |
| **Extrapolation** | Advanced Extrapolation | |
| **Phantom** | 2mm Oval Phantom ELI4 | |
| **Distance Dipole Center - TSL** | 10 mm | with Spacer |
| **Zoom Scan Resolution** | dx, dy, dz = 5 mm | |
| **Frequency** | 1900 MHz ± 1 MHz | |

## Head TSL parameters

The following parameters and calculations were applied.

| | **Temperature** | **Permittivity** | **Conductivity** |
|---|---|---|---|
| **Nominal Head TSL parameters** | 22.0 °C | 40.0 | 1.40 mho/m |
| **Measured Head TSL parameters** | (22.0 ± 0.2) °C | 39.6 ± 6 % | 1.40mho/m ± 6 % |
| **Head TSL temperature during test** | (21.9 ± 0.2) °C | ---- | ---- |

## SAR result with Head TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 9.91 mW / g |
| SAR normalized | normalized to 1W | 39.6 mW / g |
| SAR for nominal Head TSL parameters [1] | normalized to 1W | **39.4 mW /g ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Head TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.05 mW / g |
| SAR normalized | normalized to 1W | 20.2 mW / g |
| SAR for nominal Head TSL parameters [1] | normalized to 1W | **20.1 mW /g ± 16.5 % (k=2)** |

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

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## Body TSL parameters

The following parameters and calculations were applied.

| | Temperature | Permittivity | Conductivity |
|---|---|---|---|
| **Nominal Body TSL parameters** | 22.0 °C | 53.3 | 1.52 mho/m |
| **Measured Body TSL parameters** | (22.0 ± 0.2) °C | 52.5 ± 6% | 1.51 mho/m ± 6 % |
| **Body TSL temperature during test** | (21.8 ± 0.2) °C | ---- | ---- |

## SAR result with Body TSL

| **SAR averaged over 1 $cm^3$ (1 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 10.4 mW / g |
| SAR normalized | normalized to 1W | 41.6 mW / g |
| SAR for nominal Body TSL parameters [2] | normalized to 1W | **41.4 mW /g ± 17.0 % (k=2)** |

| **SAR averaged over 10 $cm^3$ (10 g) of Body TSL** | Condition | |
|---|---|---|
| SAR measured | 250 mW input power | 5.24 mW / g |
| SAR normalized | normalized to 1W | 21.0 mW / g |
| SAR for nominal Body TSL parameters [2] | normalized to 1W | **20.9 mW /g ± 16.5 % (k=2)** |

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

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## Appendix

### Antenna Parameters with Head TSL

| | |
|---|---|
| Impedance, transformed to feed point | 54.8Ω + 4.0 jΩ |
| Return Loss | - 23.7dB |

### Antenna Parameters with Body TSL

| | |
|---|---|
| Impedance, transformed to feed point | 47.9Ω + 7.1 jΩ |
| Return Loss | - 22.6dB |

### General Antenna Parameters and Design

| | |
|---|---|
| Electrical Delay (one direction) | 1.201 ns |

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

### Additional EUT Data

| | |
|---|---|
| Manufactured by | SPEAG |
| Manufactured on | October 4, 2001 |

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Telecommunication Metrology Center of MIIT

**DASY5 Validation Report for Head TSL**

Date/Time: 2010-2-26 15:20:47

Test Laboratory: TMC, Beijing, China

**DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN: 541**

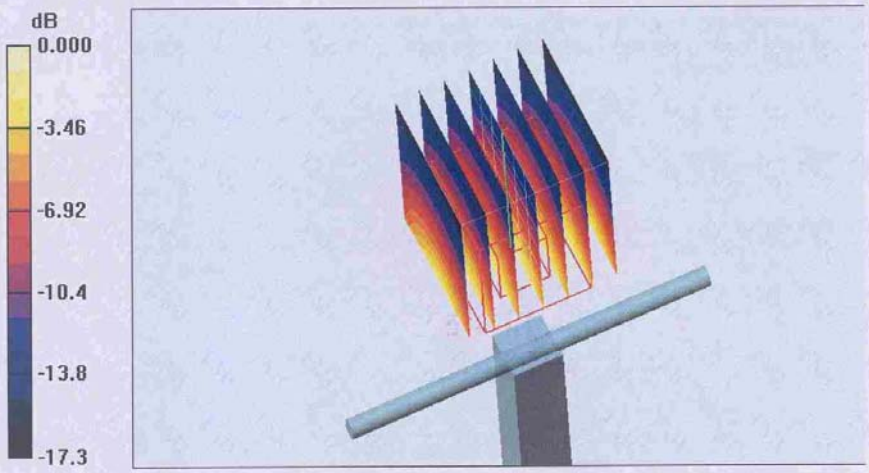
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Medium: Head 1900MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.40 mho/m; $\varepsilon_r$ = 39.6; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(5.03, 5.03, 5.03); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

**Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:**

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 85.1 V/m; Power Drift = -0.057 dB
Peak SAR (extrapolated) = 18.8 W/kg
**SAR(1 g) = 9.91 mW/g; SAR(10 g) = 5.05 mW/g**
Maximum value of SAR (measured) = 11.5 mW/g




0 dB = 11.5mW/g

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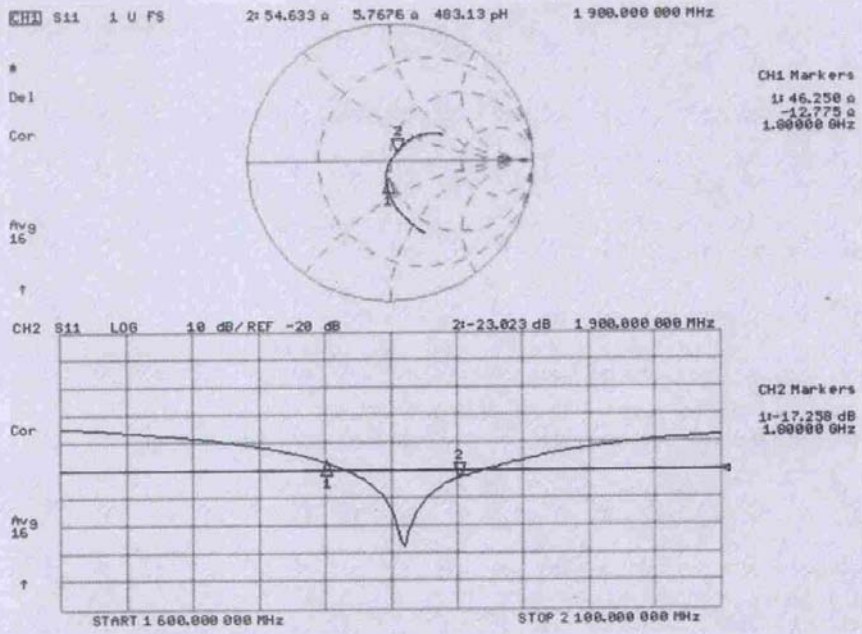
**Impedance Measurement Plot for Head TSL**



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

**DASY5 Validation Report for Body TSL**

Date/Time: 2010-2-26 10:41:08

Test Laboratory: TMC, Beijing, China

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN: 541

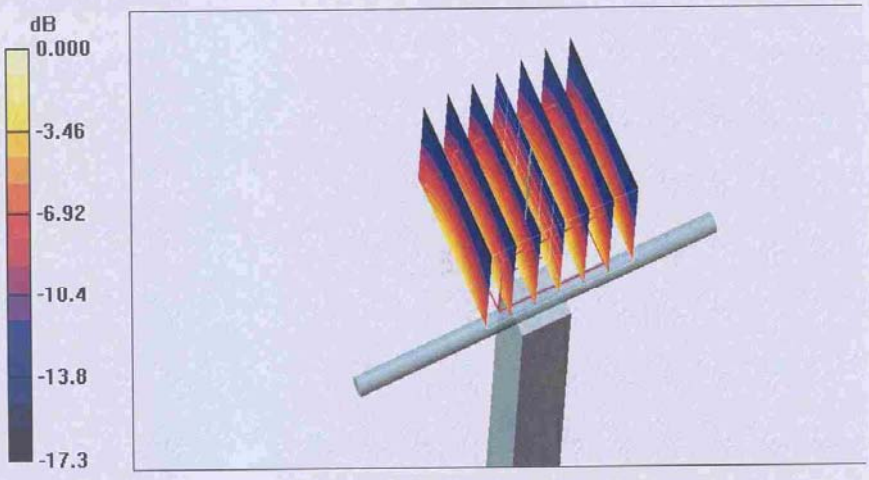
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Medium: Body 1900MHz
Medium parameters used: f = 1900 MHz; $\sigma$ = 1.51 mho/m; $\varepsilon_r$ = 52.5; $\rho$ = 1000 kg/m$^3$
Phantom section: Flat Section

DASY5 Configuration:

- Probe: ES3DV3 - SN3149; ConvF(4.68, 4.68, 4.68); Calibrated: 25.09.09
- Electronics: DAE4 Sn771; Calibration: 19.11.09
- Phantom: 2mm Oval Phantom ELI4; Type: QDOVA001BB
- Measurement SW: DASY5, V5.0 Build 119.9; Postprocessing SW: SEMCAD, V13.2 Build 87

Pin=250mW; d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 80.2 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 19.1 W/kg
**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.24 mW/g**
Maximum value of SAR (measured) = 12.0 mW/g




0 dB = 12.0mW/g

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

**Impedance Measurement Plot for Body TSL**