SAR TEST REPORT

No. 2011EEB00647

For

Sierra Wireless Inc.

USB Modem

AirCard 330U

With

Hardware Version: DV1.1

Software Version: SWI9200X_03.00.06.05AP

FCCID : N7NAC330U

IC Cert Number: 2417C-AC330U

Issued Date: 2012-02-01

Deutscher Akkreditierungs Rat DAR

***No.* DGA-PL-114/09-A0**

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of MIIT

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Revision Version

Report Number	Revision	Date	Memo
2011EEB00647	00	2011/11/22	Initial creation of test report
2011EEB00647	01	2012/01/31	Add annex H
2011EEB00647	02	2012/02/01	Remove the picture of sample
2011EEB00647	03	2012/02/15	Add KDB450824D01&D02

TABLE OF CONTENT

1 Test Laboratory

1.1 Testing Location

Company Name:	TMC Shenzhen, Telecommunication Metrology Center of MIIT
Address:	No. 12building, Shangsha Innovation and Technology Park, Futian District, Shenzhen, P. R. China
Postal Code:	518048
Telephone:	+86-755-33322000
Fax:	+86-755-33322001

1.2 Testing Environment

Temperature:	Min. = 18 °C, Max. = 25 °C
Relative humidity:	Min. = 30%, Max. = 70%
Ground system resistance:	< 0.5 Ω

Ambient noise is checked and found very low and in compliance with requirement of standards.
Reflection of surrounding objects is minimized and in compliance with requirement of standards.

1.3 Project Data

Project Leader:	Zhou Yi
Test Engineer:	Zhu Zhiqiang
Testing Start Date:	October 31, 2011
Testing End Date:	November 01, 2011

1.4 Signature

Zhu Zhiqiang

(Prepared this test report)

Zhou Yi

(Reviewed this test report)

Lu Minniu

Director of the laboratory

(Approved this test report)

2 Client Information

2.1 Applicant Information

Company Name:	Sierra Wireless Inc.
Address /Post:	13811 Wireless Way Richmond, British Columbia, Canada, V6V 3A4.
City:	/
Postal Code:	/
Country:	Canada
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Telephone:	+ 1 604 232 1440
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2.2 Manufacturer Information

Company Name:	Sierra Wireless Inc.
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City:	/
Postal Code:	/
Country:	Canada
Contact:	Ying Wang
Email:	ywang@sierrawireless.com
Telephone:	+ 1 604 232 1440
Fax:	/

3 Equipment under Test (EUT) and Ancillary Equipment (AE)

3.1 About EUT

Description:	USB Modem
Model Name:	AirCard 330U
Frequency Band:	GSM850MHz; PCS 1900MHz; WCDMA Band II, WCDMA Band V; LTE Band4; LTE Band7
GPRS Class:	10
EGPRS Class:	12

3.2 Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	0521	DV1.1	SWI9200X_03.00.06.05AP

*EUT ID: is used to identify the test sample in the lab internally.

4 CHARACTERISTICS OF THE TEST

4.1 Applicable Limit Regulations

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

4.2 Applicable Measurement Standards

IC RSS-102 ISSUE4: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

KDB 447498 D01: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies v03r02

KDB 447498 D02: SAR Measurement Procedures for USB Dongle Transmitters

KDB 941225 D01: SAR Measurement Procedures for 3G devices v02

KDB 450824 D01: SAR probe calibration and system verification considerations for measurements from 150 MHz to 3 GHz.

KDB 450824 D02: Dipole Requirements for SAR System Validation and Verification.

They specify the measurement method for demonstration of compliance with the SAR limits for such equipments.

5 OPERATIONAL CONDITIONS DURING TEST

5.1 Schematic Test Configuration

During SAR test of the EUT, it is in continuous emission Mode (Channel Allocated) at normal voltage condition and maximum transmitting power

Power Measurement

The maximum average conducted output power is measured for the uplink burst in the different modulations. The same setup and device operating configurations used for SAR measurement are also used for the power measurements. Power is measured with a spectrum analyzer (model & specifics etc.) and the device is connected to the vector signal generator through a directional coupler.

GSM Frequency Band

Because the EUT has only data transfer function, the tests for GSM 850/1900 are performed in GPRS and EGPRS mode (The tests are performed for the case of the slots in uplink with the maximum averaged power). The tests are performed for GPRS at the highest output power channel frequency first for all the 5 test positions, and according to the 3 dB rule then set to the other channels if necessary.And after found the worst case, the EGPRS will be tested for that position.

Test Results for GSM/EDGE Output Power is as following:

Band	Frequency (MHz)	Channel	GMSK Mode(MCS4)					
			1 Time slot		2Time slots		3Time slots	4Time slots
			RMS Power (dBm)	Peak Power (dBm)	RMS Power (dBm)	Peak Power (dBm)	Peak Power (dBm)	Peak Power (dBm)
GSM 850	824.2	128	32.71	32.92	32.03	32.24	AC330U is Class 10 for GMSK Mode	
	836.6	190	32.52	32.76	31.78	32.02		
	848.8	251	32.53	32.78	31.73	31.98		
GSM 1900	1850.2	512	30.43	30.64	29.56	29.77		
	1880	661	30.31	30.55	29.61	29.85		
	1909.8	810	30.24	30.49	29.67	29.92		

Band	Frequency (MHz)	Channel	8PSK Mode(MCS9)							
			1 Time slot		2Time slots		3 Time slots		4Time slots	
			RMS Power (dBm)	Peak Power (dBm)	RMS Power (dBm)	Peak Power (dBm)	RMS Power (dBm)	Peak Power (dBm)	RMS Power (dBm)	Peak Power (dBm)
GSM 850	824.2	128	26.23	29.48	26.19	29.44	25.92	29.17	25.05	29.1
	836.6	190	26.31	29.53	26.14	29.36	26.08	29.3	25.93	29.15
	848.8	251	26.19	29.34	26.09	29.24	25.89	29.04	25.8	28.95
GSM 1900	1850.2	512	25.88	29.13	25.84	29.09	25.64	28.89	24.37	27.62
	1880	661	25.93	29.15	25.85	29.07	25.67	28.89	24.32	27.54
	1909.8	810	25.81	28.96	25.77	28.92	25.54	28.69	24.24	27.39

To decide which time slot should be chosed to test in, average power should be caculated. The Averaged conducted power for GPRS/EGPRS 850/1900 is as follow:

GSM 850 GPRS	Measured Power (dBm)				Averaged Power (dBm)		
	Ch 251	Ch190	Ch128		Ch 251	Ch190	Ch128
1 Txslot	32.53	32.52	32.71	-9.03dB	23.5	23.49	23.68
2 Txslots	**31.73**	**31.78**	**32.03**	**-6.02dB**	**25.71**	**25.76**	**26.01**
3Txslots	\	\	\	-4.26dB	\	\	\
4 Txslots	\	\	\	-3.01dB	\	\	\
GSM 850 EGPRS	Measured Power (dBm)				Averaged Power (dBm)		
	Ch 251	Ch190	Ch128		Ch 251	Ch190	Ch128
1 Txslot	26.19	26.31	26.23	-9.03dB	17.16	17.28	17.2
2 Txslots	26.09	26.14	26.19	-6.02dB	20.07	20.12	20.17
3Txslots	25.89	26.08	25.92	-4.26dB	21.63	21.82	21.66
4 Txslots	**25.8**	**25.93**	**25.05**	**-3.01dB**	**22.79**	**22.92**	**22.04**
GSM1900 GPRS	Measured Power (dBm)				Averaged Power (dBm)		
	Ch 810	Ch661	Ch512		Ch 810	Ch661	Ch512
1 Txslot	30.24	30.31	30.43	-9.03dB	21.21	21.28	21.4
2 Txslots	**29.67**	**29.61**	**29.56**	**-6.02dB**	**23.65**	**23.59**	**23.54**
3Txslots	\	\	\	-4.26dB	\	\	\
4 Txslots	\	\	\	-3.01dB	\	\	\
GSM1900 EGPRS	Measured Power (dBm)				Averaged Power (dBm)		
	Ch 810	Ch661	Ch512		Ch 810	Ch661	Ch512
1 Txslot	25.81	25.93	25.88	-9.03dB	16.78	16.9	16.85
2 Txslots	25.77	25.85	25.84	-6.02dB	19.75	19.83	19.82
3Txslots	**25.54**	**25.67**	**25.64**	**-4.26dB**	**21.28**	**21.41**	**21.38**
4 Txslots	24.24	24.32	24.37	-3.01dB	21.23	21.31	21.36

NOTES:

1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

WCDMA Band

For WCDMA 850/1900, the conducted power will be measured for WCDMA, and the results are as following:

Mode	band	FDDV result(dBm)			FDDIIresult(dBm)			MPR
	3GPP Subtest	4132	4182	4233	9262	9400	9538	
Rel99	\	23.06	23.01	23.02	22.05	22.31	22.24	N/A
Rel HSDPA	1	22.73	22.47	22.41	21.46	21.77	21.71	0
	2	22.77	22.56	22.51	21.47	21.87	21.80	0
	3	22.35	22.06	22.03	21.00	21.37	21.36	0.5
	4	22.33	22.10	22.06	21.08	21.38	21.27	0.5
Rel HSUPA	1	22.38	22.45	22.13	22.03	22.13	21.61	0
	2	20.95	20.86	20.79	20.73	20.56	20.61	2
	3	21.81	21.78	21.81	20.94	20.90	20.85	1
	4	21.80	21.71	21.79	20.62	20.59	20.63	2
	5	22.44	22.45	22.32	21.75	21.94	22.18	0

Note: All measurements are based on an average detector. Power number in dBm.

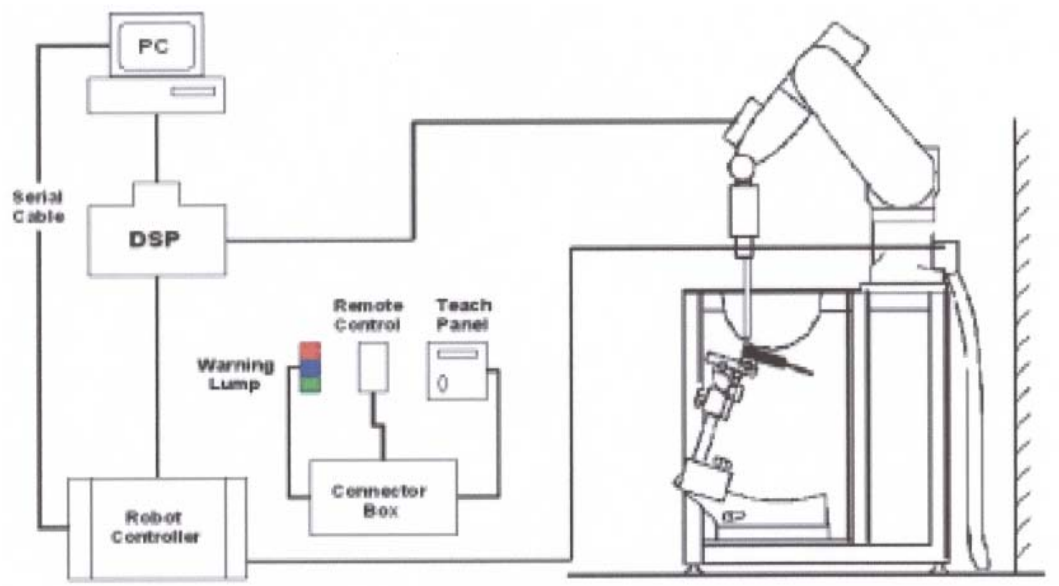
The tests are performed for WCDMA 850 and WCDMA 1900 at the highest output power channel frequency first for all the 5 test positions, and according to the 3 dB rule then set to the other channels if necessary. HSDPA and HSUPA body SAR are not required, because maximum average output power of each RF channel with HSDPA and HSUPA active is not 1/4 dB higher than that measured without HSDPA and HSUPA and the maximum SAR for WCDMA 850 and WCDMA 1900 are not above 75% of the SAR limit (see Table 8&9 for the SAR measurement results).

5.2 SAR Measurement Set-up

These measurements were performed with the automated near-field scanning system DASY4 Professional from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9m), which positions the probes with a positional repeatability of better than ± 0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit.

A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the Micron Pentium III 800 MHz computer with Windows 2000 system and SAR Measurement Software DASY4 Professional, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected

to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.



Picture 1: SAR Lab Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

5.3 Dasy4 E-field Probe System

The SAR measurements were conducted with the dosimetric probe EX3DV4 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the standard procedure with an accuracy of better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB.

ES3DV3 Probe Specification

Construction	Symmetrical design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 2300

Picture 2: ES3DV3 E-field

	Additional CF for other liquids and frequencies upon request
Frequency	10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz)
Directivity	± 0.2 dB in HSL (rotation around probe axis) ± 0.3 dB in tissue material (rotation normal to probe axis)
Dynamic Range	5 μW/g to > 100 mW/g; Linearity: ± 0.2 dB
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 3.9 mm (Body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm
Application	General dosimetry up to 4 GHz Dosimetry in strong gradient fields Compliance tests of mobile phones

Picture6:EX3DV3 E-field probe

5.4 E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

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

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

Where: Δt = Exposure time (30 seconds),

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

ΔT = Temperature increase due to RF exposure.

Or

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

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m^3).

Picture 7: Device Holder

5.5 Other Test Equipment

5.5.1 Device Holder for Transmitters

In combination with the Generic Twin Phantom V3.0, the Mounting Device (POM) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeatable positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

5.5.2 Phantom

The Generic Twin Phantom is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness	2±0. I mm
Filling Volume	Approx. 20 liters
Dimensions	810 x l000 x 500 mm (H x L x W)
Available	Special

Picture 4: Generic Twin Phantom

5.6 Equivalent Tissues

The liquid used for the frequency range of 800-2000 MHz consisted of water, sugar, salt and Cellulose. The liquid has been previously proven to be suited for worst-case. The Table 4 shows the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528.

Table 1: Composition of the Body Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	50.93
Sugar	45.61
Salt	1.09
Preventol	0.37
Cellulose	2.0
Dielectric Parameters Target Value	f=850MHz ε=55.2 σ=0.97
MIXTURE %	FREQUENCY 1900MHz
Water	70.52
Glycol monobutyl	29.09
Salt	0.39
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=1.52

5.7 System Specifications

Specifications

Positioner: Stäubli Unimation Corp. Robot Model: TX90XL
Repeatability: ±0.02 mm
No. of Axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor: Inter® Core™ CPU 6300
Clock Speed: 1.86GHz
Operating System: Windows XP

Data Converter

Features: Signal Amplifier, multiplexer, A/D converter, and control logic
Software: DASY5 NEO Version 52.8.0.692
Connecting Lines: Optical downlink for data and status info.
Optical uplink for commands and clock

6 TEST RESULTS

6.1 Dielectric Performance

Table 2: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 22.5 °C and relative humidity 64%. Liquid temperature during the test: 23.0 °C Measurement Date : 850MHz **October 31, 2011**			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	850 MHz	55.2	0.97
Measurement value (Average of 10 tests)	850 MHz	53.98	0.99
Deviation	850 MHz	-2.21%	2.06%
Measurement is made at temperature 21.5 °C and relative humidity 68%. Liquid temperature during the test: 22.0 °C Measurement Date : 1900 MHz **November 01, 2011**			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	1900 MHz	53.3	1.52
Measurement value (Average of 10 tests)	1900 MHz	52.18	1.56
Deviation	1900 MHz	-2.10%	2.63%

6.2 System Validation

Table 3: System Validation of Body

Measurement is made at temperature 22.5 °C and relative humidity 64%. Liquid temperature during the test: 23.0 °C Measurement Date : 850MHz **Octorber 31, 2011**							
Liquid parameters	Dipole calibration Target value	**Frequency**		**Permittivity ε**		**Conductivity σ (S/m)**	
		850 MHz		55.2		0.97	
	Actual Measurement value	850 MHz		53.98		0.99	
Verification results	**Frequency**	**Target value (W/kg)**		**Measured value (W/kg)**		**Deviation**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
	835 MHz	1.60	2.46	1.56	2.50	-2.50%	1.63%
Measurement is made at temperature 21.5 °C and relative humidity 68%. Liquid temperature during the test: 22.0 °C Measurement Date : 1900 MHz **November 01, 2011**							
Liquid parameters	Dipole calibration Target value	**Frequency**		**Permittivity ε**		**Conductivity σ (S/m)**	
		1900 MHz		53.3		1.52	
	Actual Measurement value	1900 MHz		52.18		1.56	
Verification results	**Frequency**	**Target value (W/kg)**		**Measured value (W/kg)**		**Deviation**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1 g Average**
	1900 MHz	5.29	10.4	5.19	10.4	-1.90%	0

Note：Target values are the data of the dipole validation results, please check Annex F for the Dipole Calibration Certificate.

6.3 Summary of Measurement Results

Table 4: SAR Values (GSM 850 MHz GPRS-2 Txslots)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Flat Phantom, Test Position 1, Low frequency (See Figure 1)	0.499	0.855	0.003
Flat Phantom, Test Position 2 Low frequency (See Figure 2)	0.537	0.834	-0.139
Flat Phantom, Test Position 3, Low frequency (See Figure 3)	0.313	0.502	-0.058
Flat Phantom, Test Position 4, Low frequency (See Figure 4)	0.378	0.634	-0.037
Flat Phantom, Test Position 5, Low frequency (See Figure 5)	0.184	0.304	-0.121
Flat Phantom, Test Position 1, High frequency (See Figure 6)	0.688	1.21	-0.185
Flat Phantom, Test Position 1, Mid frequency (See Figure 7)	0.593	1.04	0.015
Flat Phantom, Test Position 2, High frequency (See Figure 8)	**0.776**	**1.23**	0.084
Flat Phantom, Test Position 2, Mid frequency (See Figure 10)	0.697	1.1	-0.103

Table 5: SAR Values (GSM 850 MHz EGPRS-4 Txslots)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Flat Phantom, Test Position 2, Mid frequency (See Figure 11)	0.389	0.648	-0.055

Table 6: SAR Values (DCS 1900 MHz GPRS-2 Txslots)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Flat Phantom, Test Position 1, High frequency (See Figure 12)	0.726	1.26	-0.038
Flat Phantom, Test Position 2 High frequency (See Figure 13)	0.545	1.03	0.012
Flat Phantom, Test Position 3, High frequency (See Figure 14)	0.084	0.133	0.121
Flat Phantom, Test Position 4, High frequency (See Figure 15)	0.289	0.507	0.055
Flat Phantom, Test Position 5, High frequency (See Figure 16)	0.600	1.07	0.105
Flat Phantom, Test Position 1, Mid frequency (See Figure 17)	0.734	1.3	0.153
Flat Phantom, Test Position 1, Low frequency (See Figure 18)	0.786	1.34	0.019

Flat Phantom, Test Position 2, Mid frequency (See Figure 19)	0.578	0.996	0.08
Flat Phantom, Test Position 2, Low frequency (See Figure 20)	**0.745**	**1.36**	**0.135**
Flat Phantom, Test Position 5, Mid frequency (See Figure 22)	0.580	1.04	-0.105
Flat Phantom, Test Position 5, Low frequency (See Figure 23)	0.535	0.96	-0.055

Table 7: SAR Values (DCS 1900 MHz EGPRS-3 Txslots)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Flat Phantom, Test Position 2, Mid frequency (See Figure 24)	0.225	0.432	0.033

Table 8: SAR Values (WCDMA 850)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Flat Phantom, Test Position 1, Low frequency (See Figure 25)	0.494	0.838	0.182
Flat Phantom, Test Position 2 Low frequency (See Figure 26)	0.520	0.814	0.145
Flat Phantom, Test Position 3, Low frequency (See Figure 27)	0.263	0.430	0.146
Flat Phantom, Test Position 4, Low frequency (See Figure 28)	0.239	0.381	0.138
Flat Phantom, Test Position 5, Low frequency (See Figure 29)	0.135	0.227	-0.073
Flat Phantom,Test Position 1, High frequency (See Figure 30)	**0.500**	**0.880**	0.2
Flat Phantom, Test Position 1, Mid frequency (See Figure 32)	0.450	0.777	0.064
Flat Phantom, Test Position 2, High frequency (See Figure 33)	0.493	0.785	0.049
Flat Phantom, Test Position 2, Mid frequency (See Figure 34)	0.455	0.723	0.099

Table 9: SAR Values (WCDMA 1900)

Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Flat Phantom, Test Position 1, Mid frequency (See Figure 35)	**0.733**	**1.29**	**0.156**
Flat Phantom, Test Position 2 Mid frequency (See Figure 37)	0.477	0.795	0.158
Flat Phantom, Test Position 3, Mid frequency (See Figure 38)	0.078	0.122	0.183
Flat Phantom, Test Position 4, Mid frequency (See Figure 39)	0.309	0.535	0.080

Flat Phantom, Test Position 5, Mid frequency (See Figure 40)	0.601	1.08	0.149
Flat Phantom, Test Position 1, High frequency (See Figure 41)	0.623	1.08	0.121
Flat Phantom, Test Position 1, Low frequency (See Figure 42)	0.662	1.14	0.113
Flat Phantom, Test Position 5, High frequency (See Figure 43)	0.528	0.945	-0.052
Flat Phantom, Test Position 5, Low frequency (See Figure 44)	0.492	0.888	-0.0859

6.4 Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 4.2 of this report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 4.1 of this test report.

The maximum SAR values are obtained at the case of **DCS 1900 MHz GPRS-2 Txslots _ Position 2, Low frequency (Table 6)**, and the value is: **0.745(10g), 1.36(1g).**

7 Measurement Uncertainty

SN	Error source	Type	Uncertainty Value (%)	Probability Distribution	k	c_i	Standard Uncertainty (%) u_i' (%)	Degree of freedom v_{eff} or v_i
1	System repetivity	A	0.3	N	1	1	0.3	9
	Measurement system							
2	—probe calibration	B	7	N	2	1	3.5	∞
3	—axial isotropy of the probe	B	4.7	R	$\sqrt{3}$	0.5	4.3	∞
4	— hemisphere isotropy of the probe	B	9.4	R	$\sqrt{3}$	$\sqrt{0.5}$		
5	—probe linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
6	—detection limit	B	1.0	R	$\sqrt{3}$	1	0.6	∞
7	—boundary effect	B	11.0	R	$\sqrt{3}$	1	6.4	∞
8	—Response time	B	0	R	$\sqrt{3}$	1	0	∞
9	— RF ambient conditions – noise	B	0	R	$\sqrt{3}$	1	0	∞
10	—Integration time	B	5.0	R	$\sqrt{3}$	1	2.9	∞

	Mechanism restrict							
11	—Scan system	B	0.4	R	$\sqrt{3}$	1	0.2	∞
12	—phantom shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
13	—matching between probe and phantom references	B	2.9	R	$\sqrt{3}$	1	1.7	∞
14	—position of the DUT	A	4.9	N	1	1	4.9	5
	physical parameters							
15	—liquid density	B	0	R	$\sqrt{3}$	1	0	∞
16	— liquid conductivity (deviation from target)	B	5.0	R	$\sqrt{3}$	0.5	2.9	∞
17	— liquid conductivity(measurement error)	A	0.23	N	1	1	0.23	9
17	— liquid permittivity(deviation from target)	B	5.0	R	$\sqrt{3}$	0.5	2.9	∞
18	— liquid permittivity(measurement error)	A	0.46	N	1	1	0.46	9
19	— liquid conductivity(measurement error)	B	5.0	R	$\sqrt{3}$	1	2.9	∞
20	-drifts in output power of the phone, probe, temperature and humidity	B	3.0	R	$\sqrt{3}$	1	1.7	∞
21	-RF ambientconditions –reflections	B	0	R	$\sqrt{3}$	1	0	∞
	post-processing							
22	-SAR interpolation and extrapolation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$		/			11.2	83.4
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$		N	k=2		22.4	$u_e = 2u_c$

8 MAIN TEST INSTRUMENTS

Table 10: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent E5071C	MY46103759	January 17,2011	One year
02	Dielectric Probe kit	85070E	MY44300317	No Calibration Requested	
03	Power meter	NRVD	101253	March 9, 2011	One year
04	Power sensor	NRV-Z5	100333		
05	Signal Generator	Agilent E4438C	MY45095825	January 17,2011	One Year
06	Amplifier	VTL5400	0404	No Calibration Requested	
07	BTS	Agilent E5515C	GB47460389	September 21,2011	One year
08	E-field Probe	SPEAG ES3DV3	3151	April 27,2011	One year
09	DAE	SPEAG DAE4	786	November 22,2010	One year
10	Dipole Validation Kit	SPEAG D835V2	443	October 25, 2009	Three year
11	Dipole Validation Kit	SPEAG D1900V2	541	October 26, 2009	Three year

END OF REPORT BODY

ANNEX A MEASUREMENT PROCESS

The evaluation was performed with the following procedure:

Step 1: Measurement of the SAR value at a fixed location above the reference point was measured and was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of the phantom was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the flat phantom and the horizontal grid spacing was 10 mm x 10 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

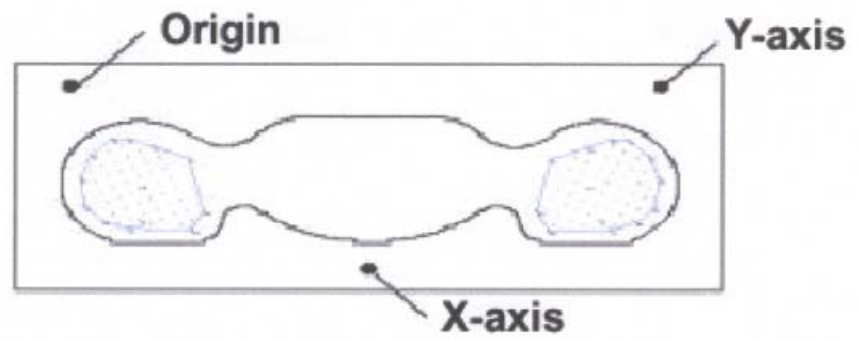
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

a. The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.

b. The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x ~ y and z-directions). The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

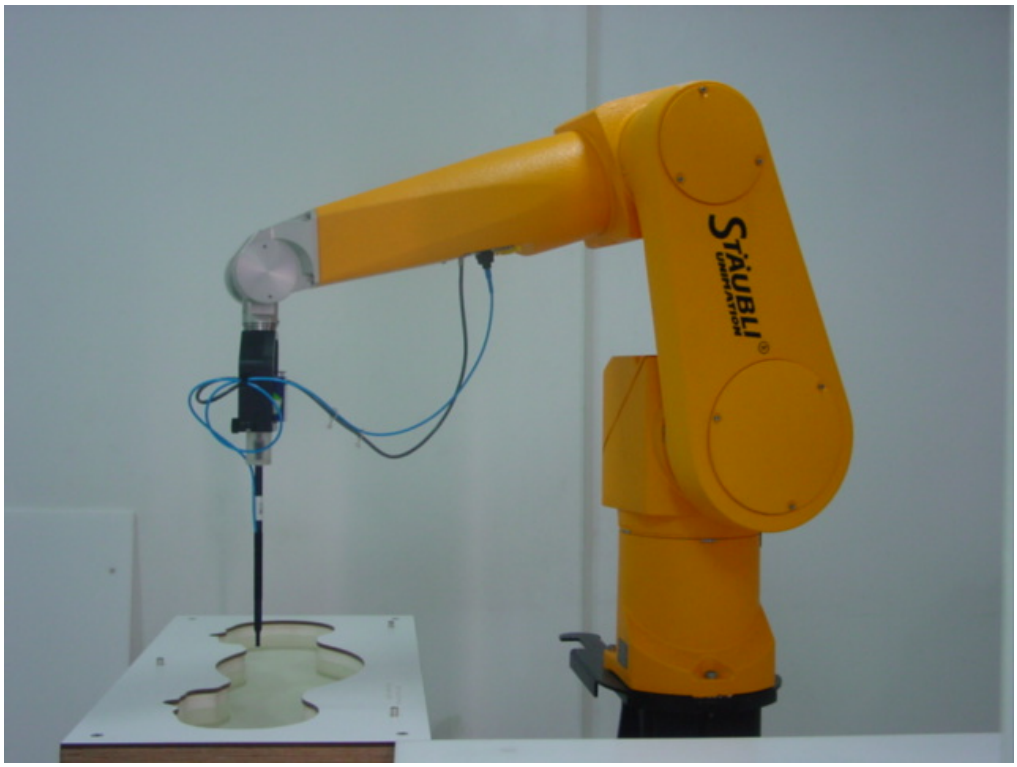
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation is repeated.

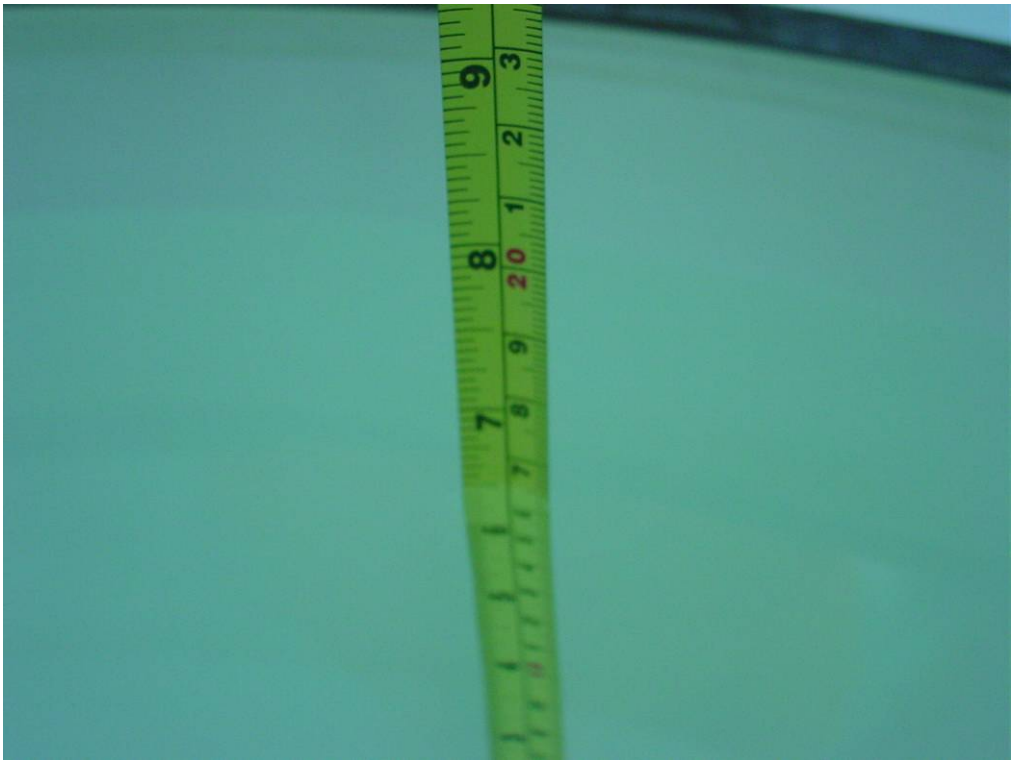


Picture A: SAR Measurement Points in Area Scan

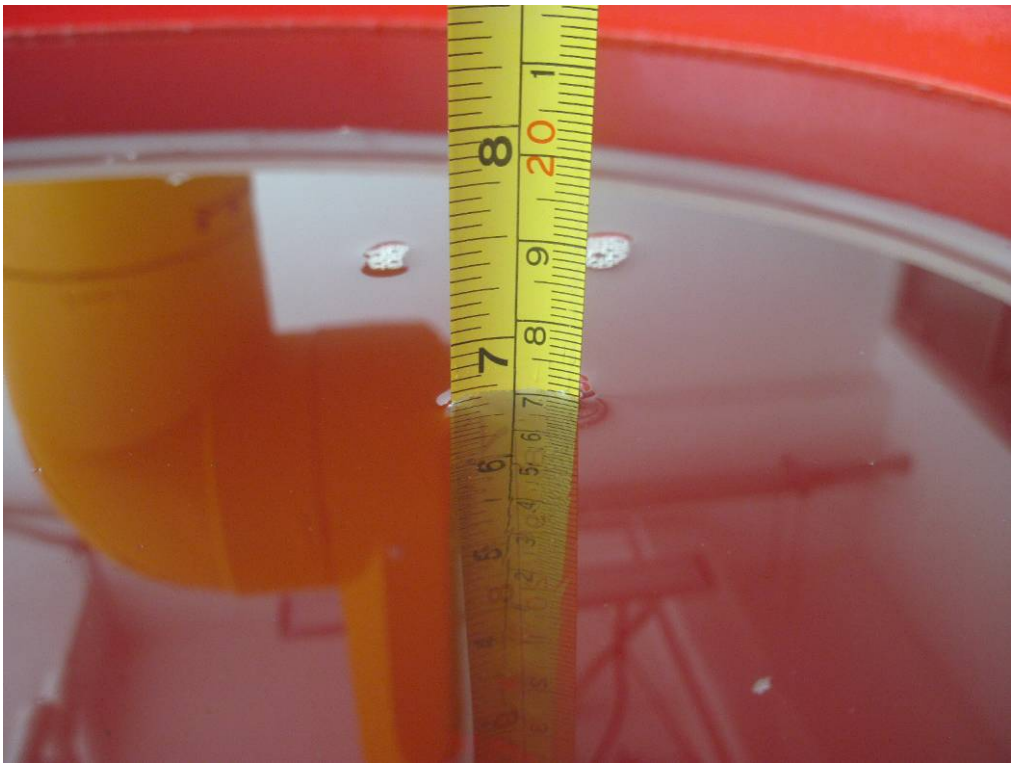
ANNEX B TEST LAYOUT



Picture B1: Specific Absorption Rate Test Layout



Picture B2 Liquid depth in the Flat Phantom (1900MHz)



Picture B3: Liquid depth in the Flat Phantom (850 MHz)

ANNEX C GRAPH RESULTS

GSM 850 Test Position 1 Low with GPRS

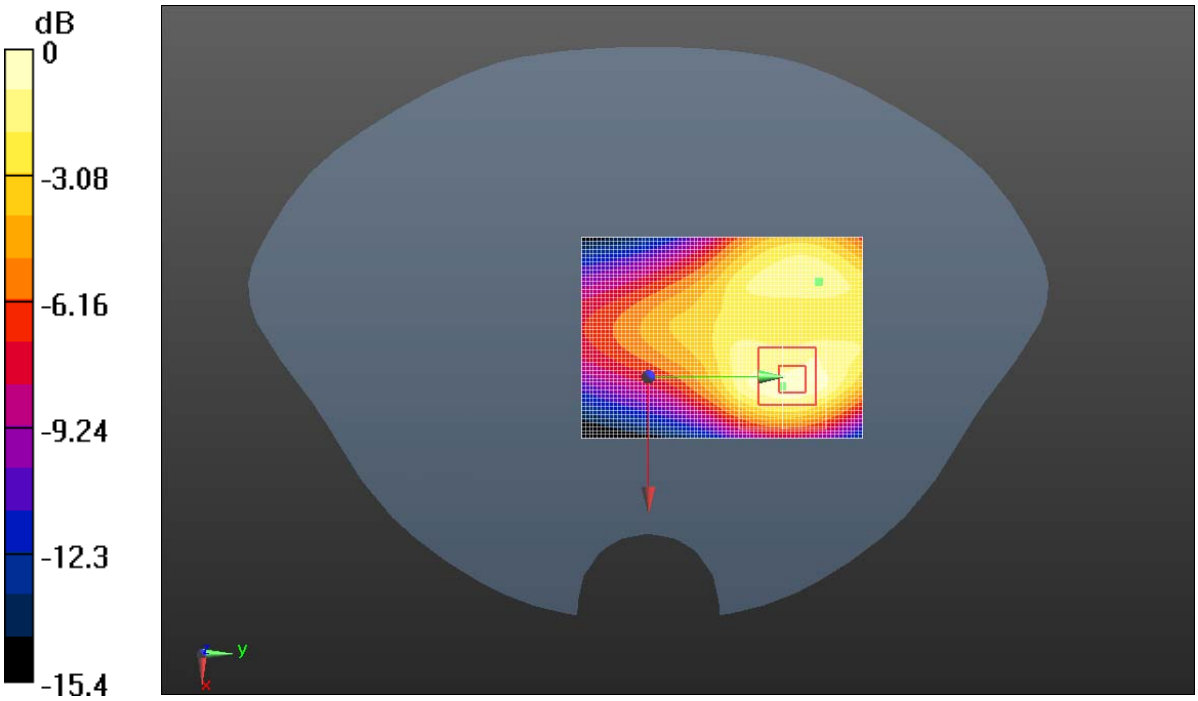
Date/Time: 10/31/2011 9:03:56 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.964 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 824.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Up_1 Low/Area Scan (51x71x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.921 mW/g

850 body/Horizontal Up_1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.2 V/m; Power Drift = 0.003 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.855 mW/g; SAR(10 g) = 0.499 mW/g
Maximum value of SAR (measured) = 0.932 mW/g



0 dB = 0.932mW/g

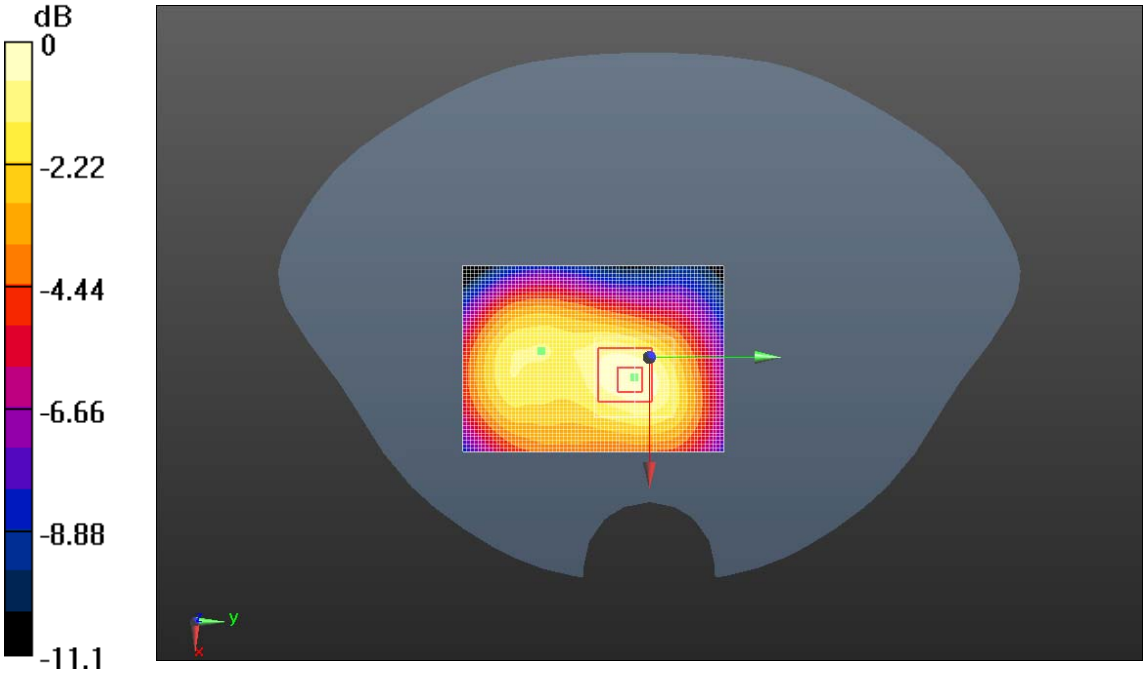
Fig.1 850MHz CH128 Test Position 1-GPRS

GSM 850 Test Position 2 Low with GPRS

Date/Time: 10/31/2011 9:20:34 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.964 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 824.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Down_2 Low/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.901 mW/g

850 body/Horizontal Down_2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.5 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.834 mW/g; SAR(10 g) = 0.537 mW/g
Maximum value of SAR (measured) = 0.898 mW/g



0 dB = 0.898mW/g

Fig.2 850MHz CH128 Test Position 2-GPRS

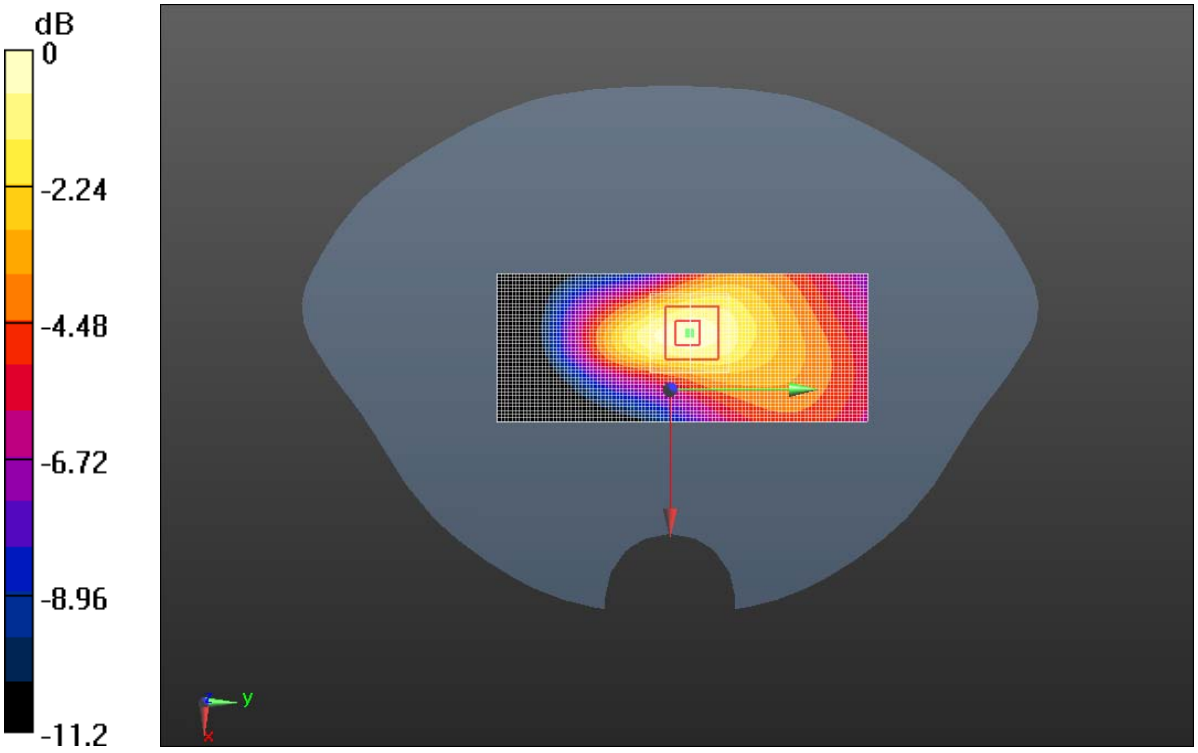
GSM 850 Test Position 3 Low with GPRS

Date/Time: 10/31/2011 9:41:53 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.964 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 824.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body side/Vertical Front _3 Low/Area Scan (41x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.525 mW/g

850 body side/Vertical Front _3 Low/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.3 V/m; Power Drift = -0.058 dB
Peak SAR (extrapolated) = 0.805 W/kg
SAR(1 g) = 0.502 mW/g; SAR(10 g) = 0.313 mW/g
Maximum value of SAR (measured) = 0.550 mW/g



0 dB = 0.550mW/g

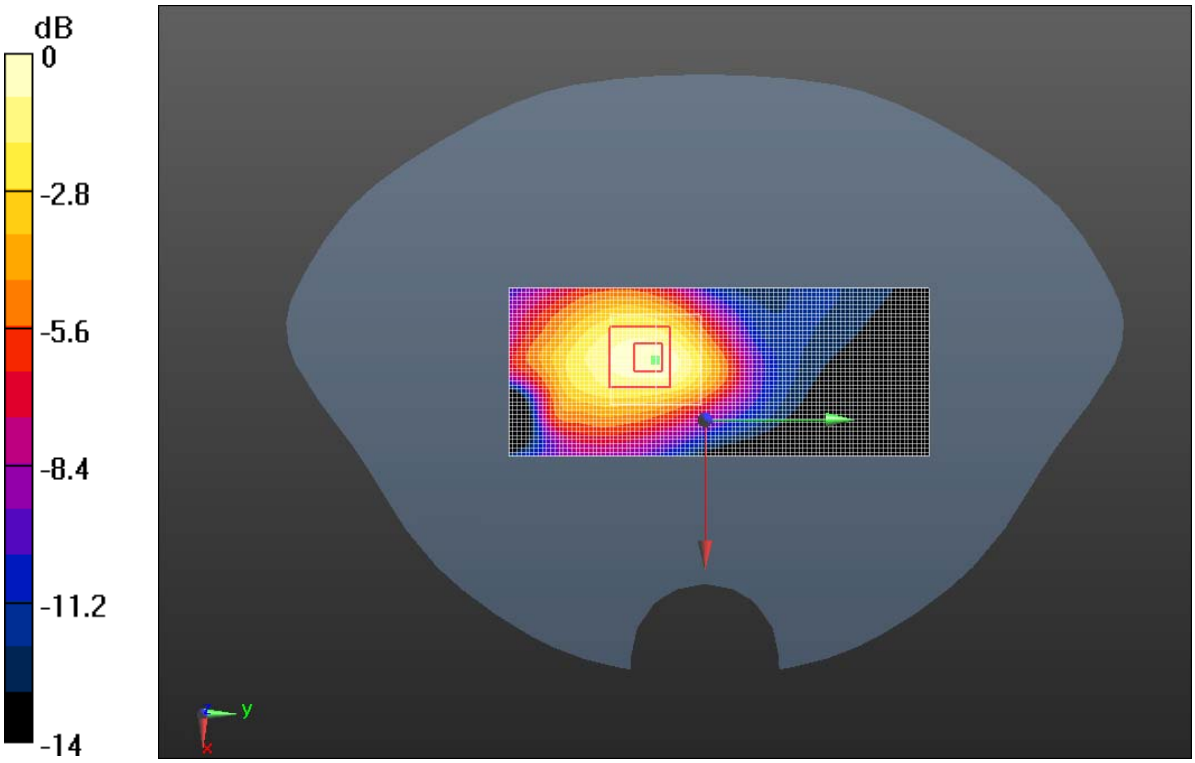
Fig.3 850MHz CH128 Test Position 3-GPRS

GSM 850 Test Position 4 Low with GPRS

Date/Time: 10/31/2011 9:51:36 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.964 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 824.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body side/Vertical Back_4 Low/Area Scan (41x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.680 mW/g

850 body side/Vertical Back_4 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.634 mW/g; SAR(10 g) = 0.378 mW/g
Maximum value of SAR (measured) = 0.704 mW/g



0 dB = 0.704mW/g

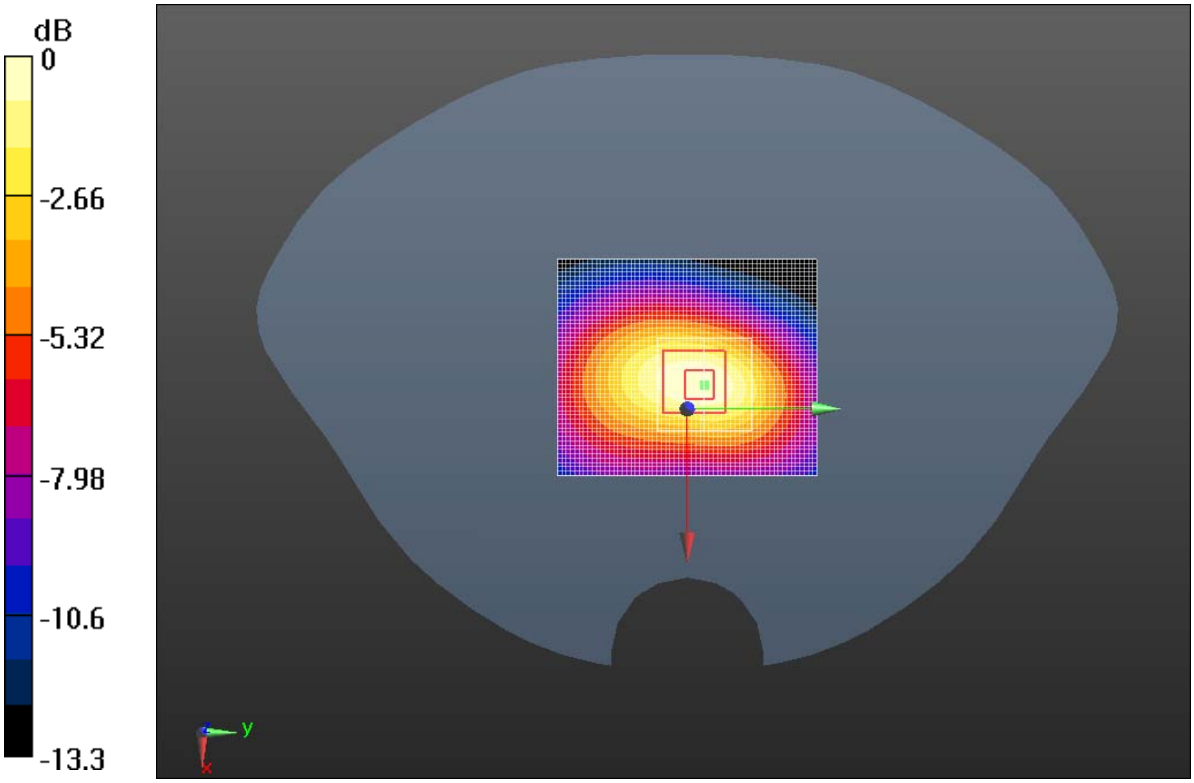
Fig.4 850MHz CH128 Test Position 4-GPRS

GSM 850 Test Position 5 Low with GPRS

Date/Time: 10/31/2011 10:13:37 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.964 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 824.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Vertical Top_5 Middle/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.338 mW/g

850 body/Vertical Top_5 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.8 V/m; Power Drift = -0.121 dB
Peak SAR (extrapolated) = 0.497 W/kg
SAR(1 g) = 0.304 mW/g; SAR(10 g) = 0.184 mW/g
Maximum value of SAR (measured) = 0.333 mW/g



0 dB = 0.333mW/g

Fig.5 850MHz CH128 Test Position 5-GPRS

GSM 850 Test Position 1 High with GPRS

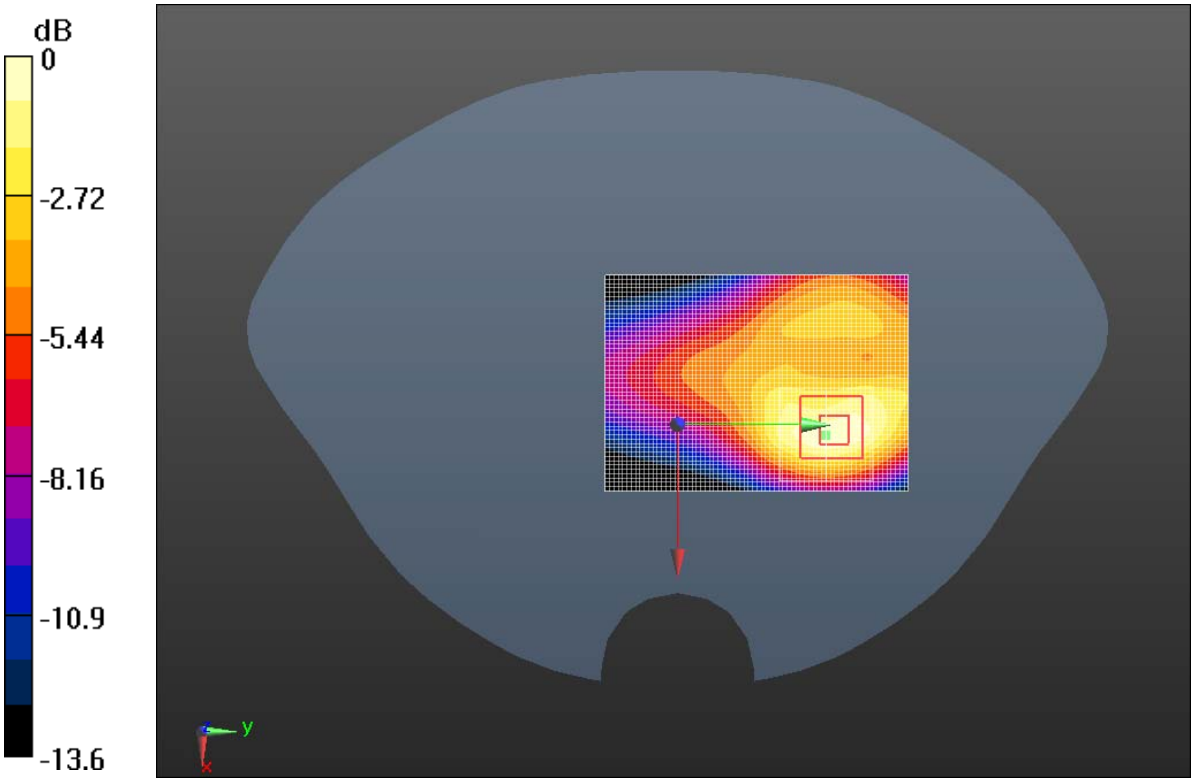
Date/Time: 10/31/2011 10:25:34 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.991 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 848.8 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Up_1 High/Area Scan (51x71x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.34 mW/g

850 body/Horizontal Up_1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.4 V/m; Power Drift = -0.185 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 1.21 mW/g; SAR(10 g) = 0.688 mW/g
Maximum value of SAR (measured) = 1.34 mW/g



0 dB = 1.34mW/g

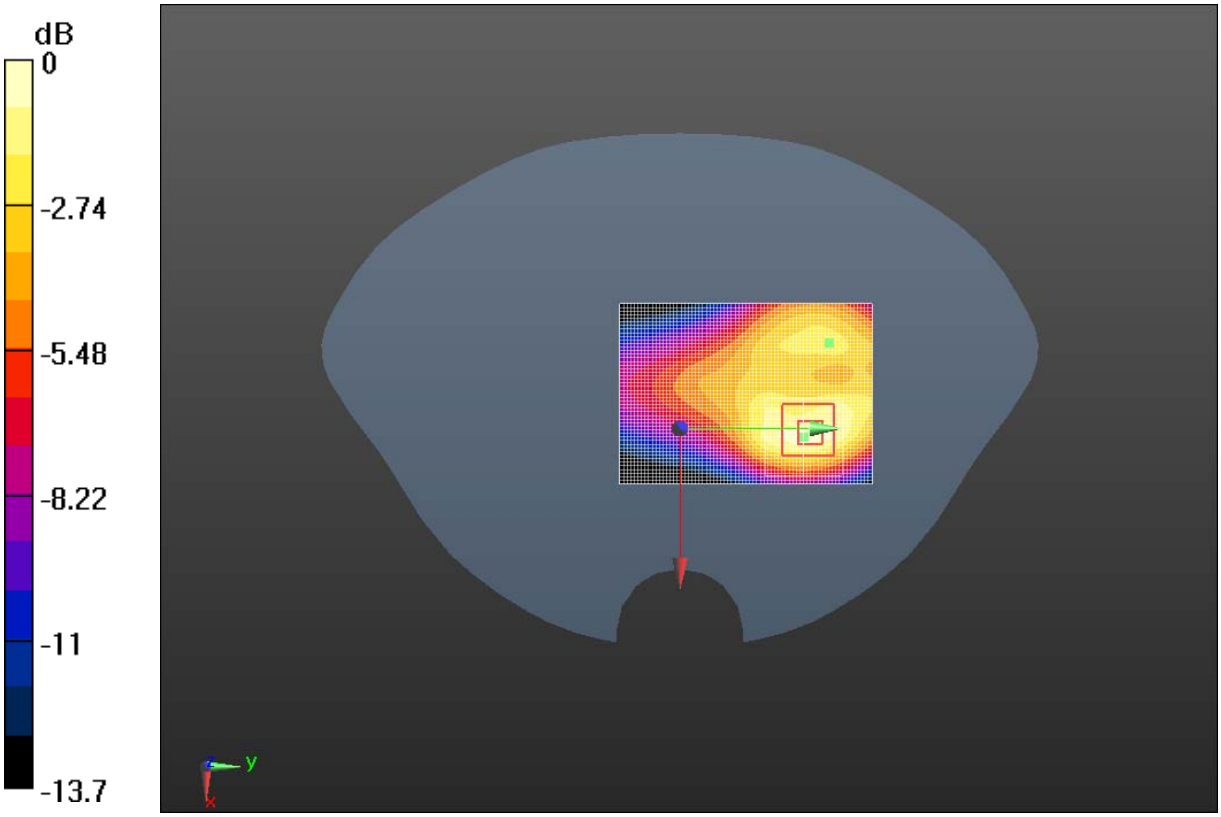
Fig.6 850MHz CH251 Test Position 1-GPRS

GSM 850 Test Position 1 Middle with GPRS

Date/Time: 10/31/2011 10:42:11 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.978 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 836.6 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Up_1 Middle/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.04 mW/g

850 body/Horizontal Up_1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.9 V/m; Power Drift = 0.015 dB
Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.593 mW/g
Maximum value of SAR (measured) = 1.14 mW/g



0 dB = 1.14mW/g

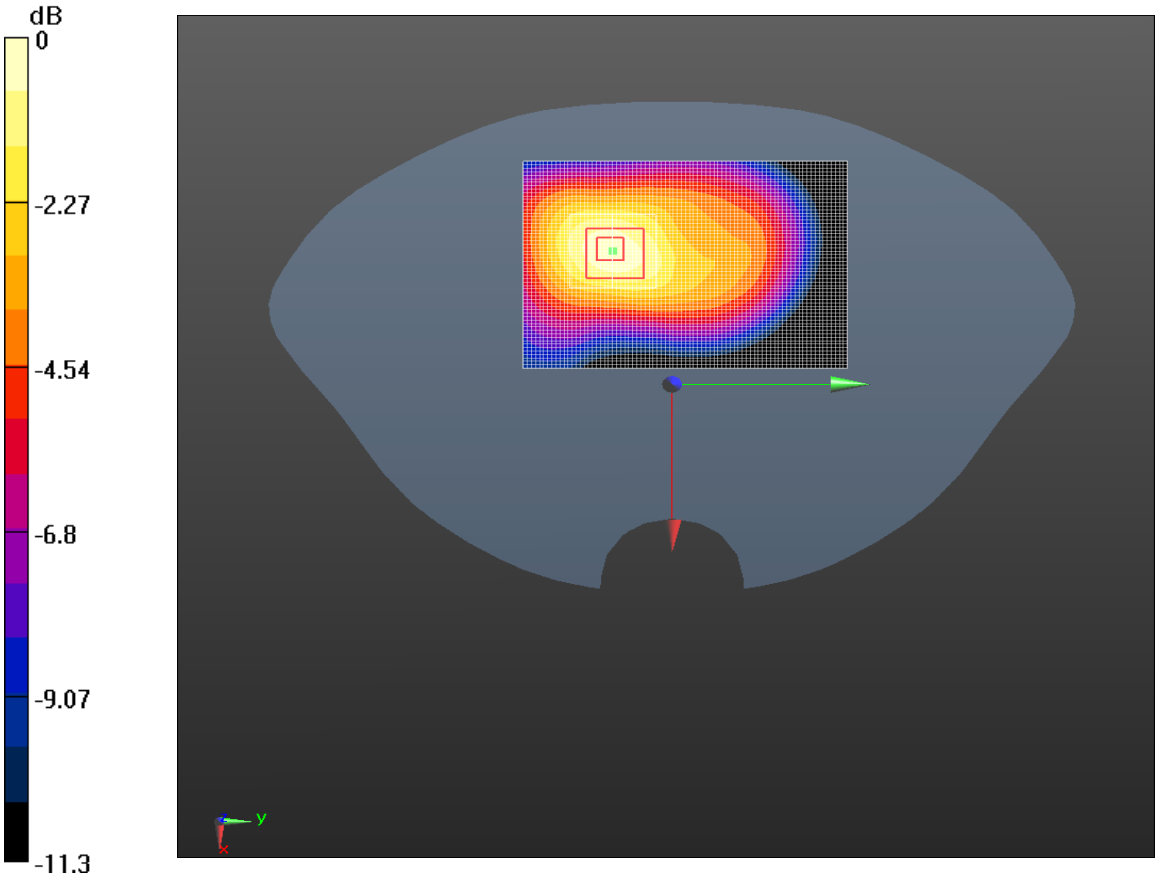
Fig.7 850MHz CH190 Test Position 1-GPRS

GSM 850 Test Position 2 High with GPRS

Date/Time: 10/31/2011 10:58:52 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 848.8 MHz; σ = 0.991 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 848.8 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Down_2 High /Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.3 mW/g

850 body/Horizontal Down_2 High /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13 V/m; Power Drift = 0.084 dB
Peak SAR (extrapolated) = 1.93 W/kg
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.776 mW/g
Maximum value of SAR (measured) = 1.33 mW/g



0 dB = 1.33mW/g

Fig.8 850MHz CH251 Test Position 2-GPRS

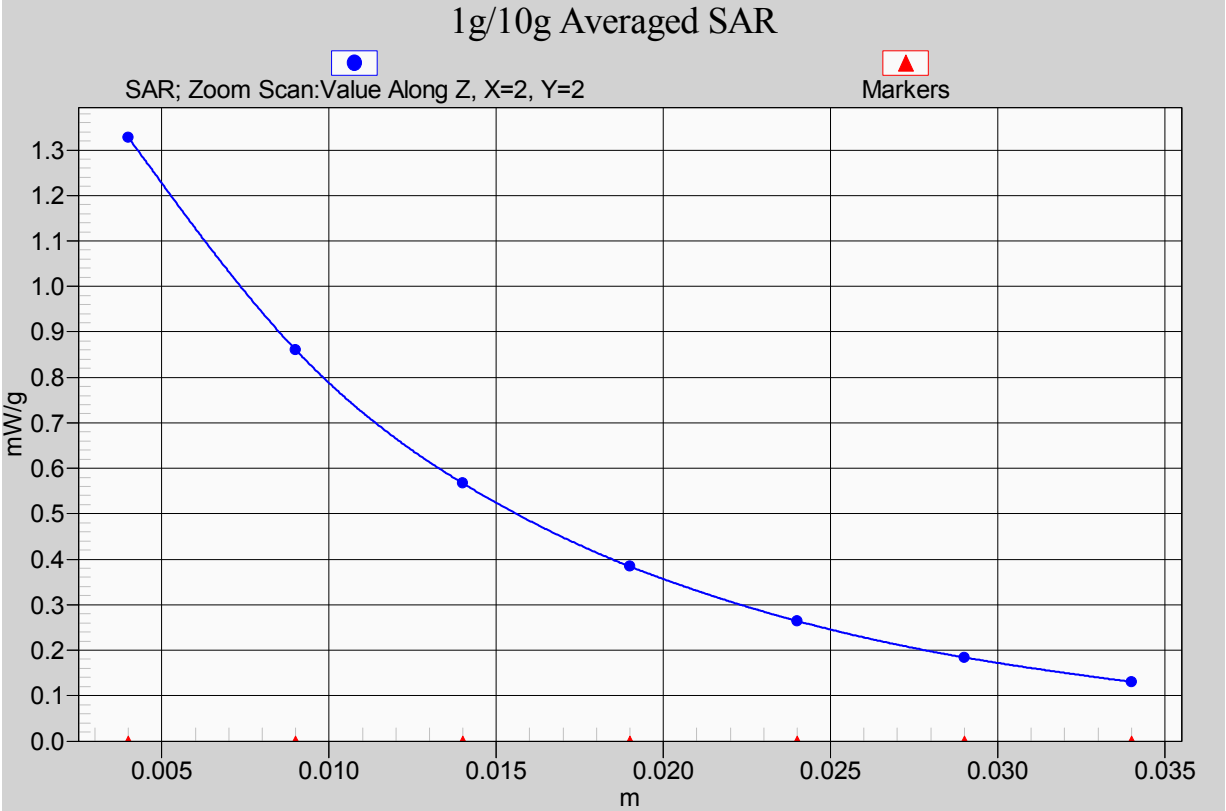


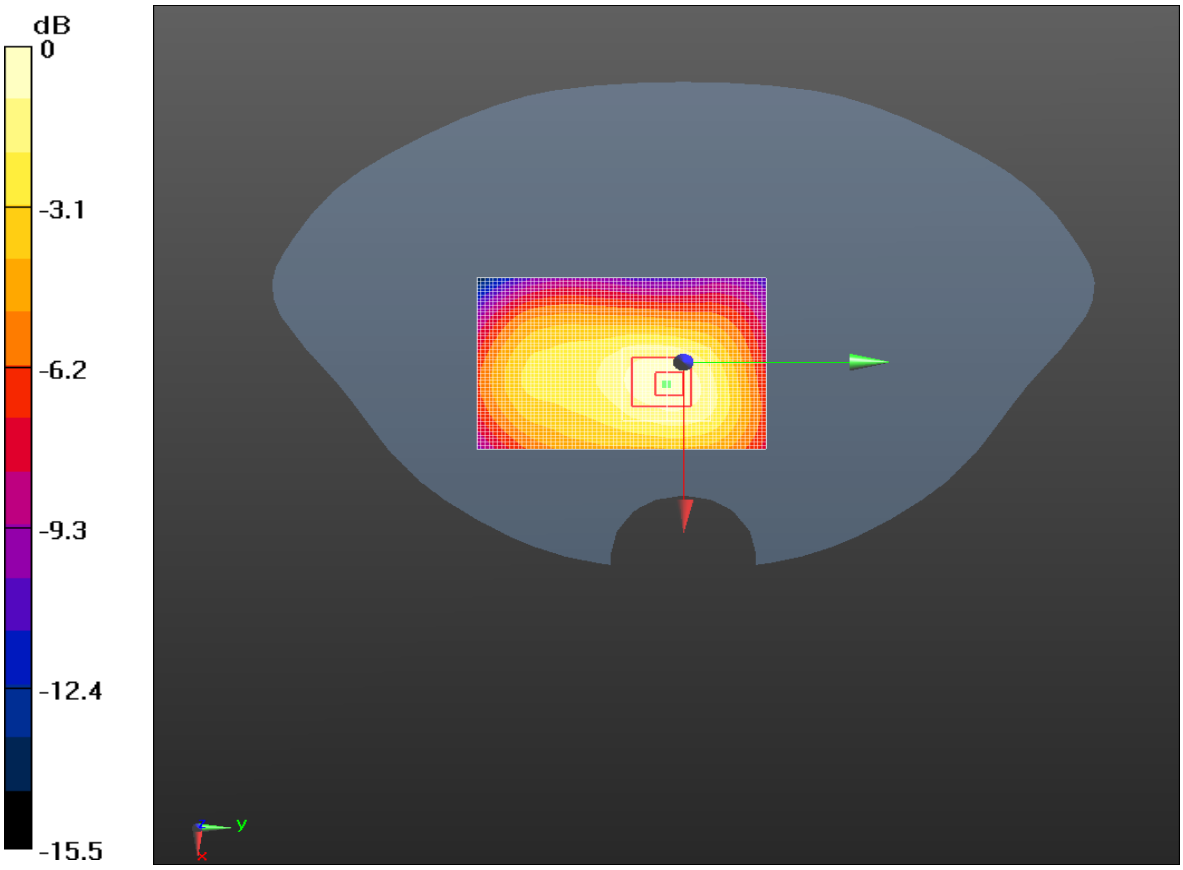
Fig. 9 Z-Scan at power reference point (850MHz CH251 Test Position 2-GPRS)

GSM 850 Test Position 2 Middle with GPRS

Date/Time: 10/31/2011 11:15:09 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.978 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 2 slot GPRS Frequency: 836.6 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Down_2 Middle/Area Scan (51x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.18 mW/g

850 body/Horizontal Down_2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.4 V/m; Power Drift = -0.103 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.697 mW/g
Maximum value of SAR (measured) = 1.19 mW/g



0 dB = 1.19mW/g

Fig.10 850MHz CH190 Test Position 2-GPRS

GSM 850 Test Position 2 Middle with EGPRS

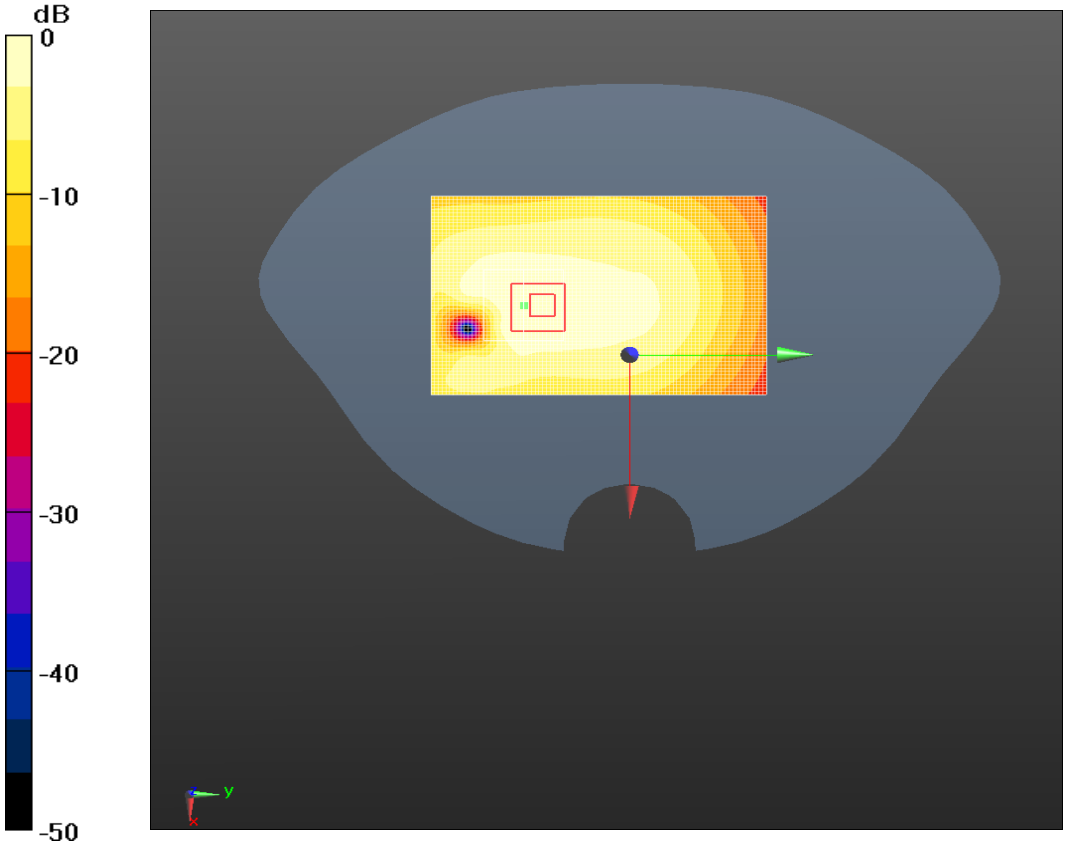
Date/Time:10/31/2011 11:31:47 AM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.978 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: 4 slot GPRS Frequency: 836.6 MHz Duty Cycle: 1:2.08018
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Down_2 Middle EGPRS /Area Scan (61x91x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.863 mW/g

850 body/Horizontal Down_2 Middle EGPRS /Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 0.985 W/kg
SAR(1 g) = 0.648 mW/g; SAR(10 g) = 0.389 mW/g
Maximum value of SAR (measured) = 0.691 mW/g



0 dB = 0.691mW/g

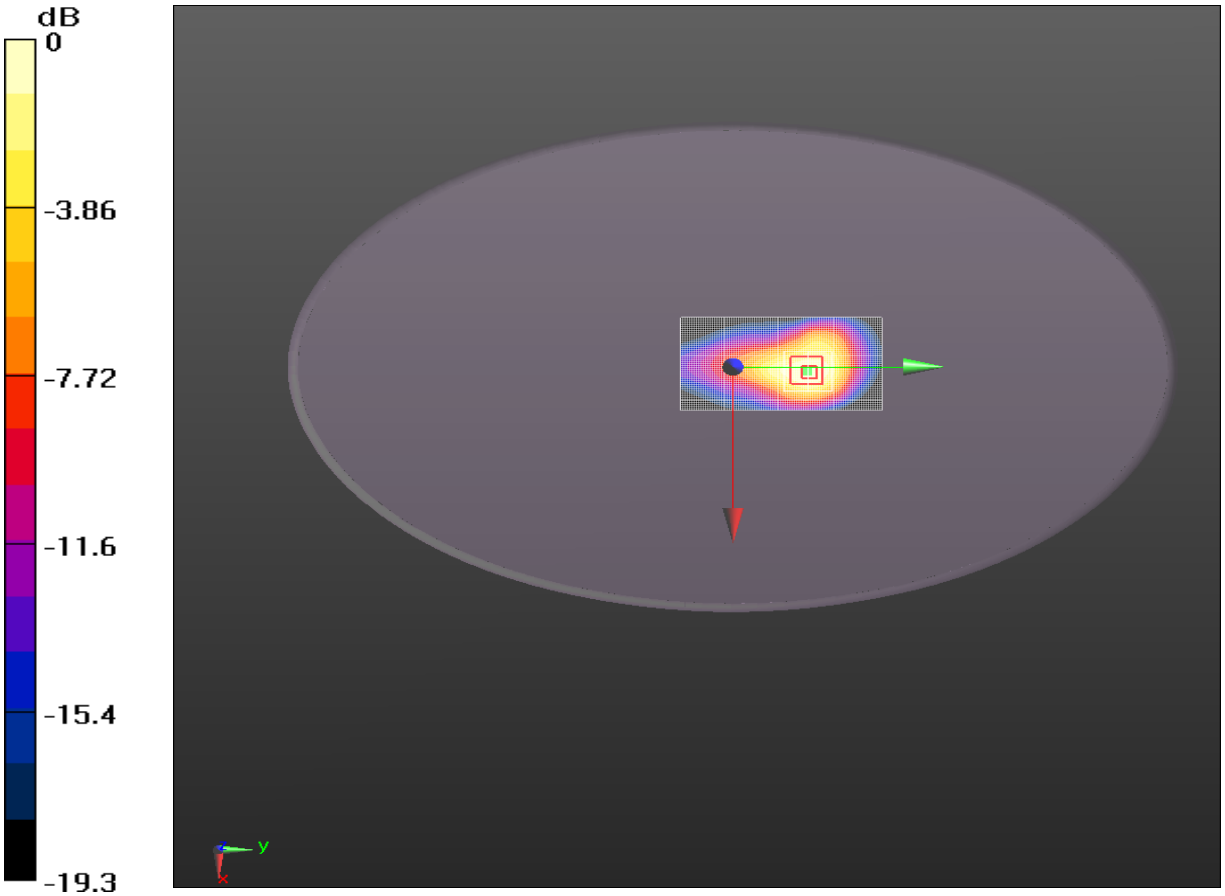
Fig.11 850MHz CH190 Test Position 2-EGPRS

GSM 1900 Test Position 1 High with GPRS

Date/Time: 11/01/2011 9:02:16 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.57 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Up_1 High /Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.49 mW/g

1900 body/Horizontal Up_1 High /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.8 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 2.19 W/kg
SAR(1 g) = 1.26 mW/g; SAR(10 g) = 0.726 mW/g
Maximum value of SAR (measured) = 1.37 mW/g



0 dB = 1.37mW/g

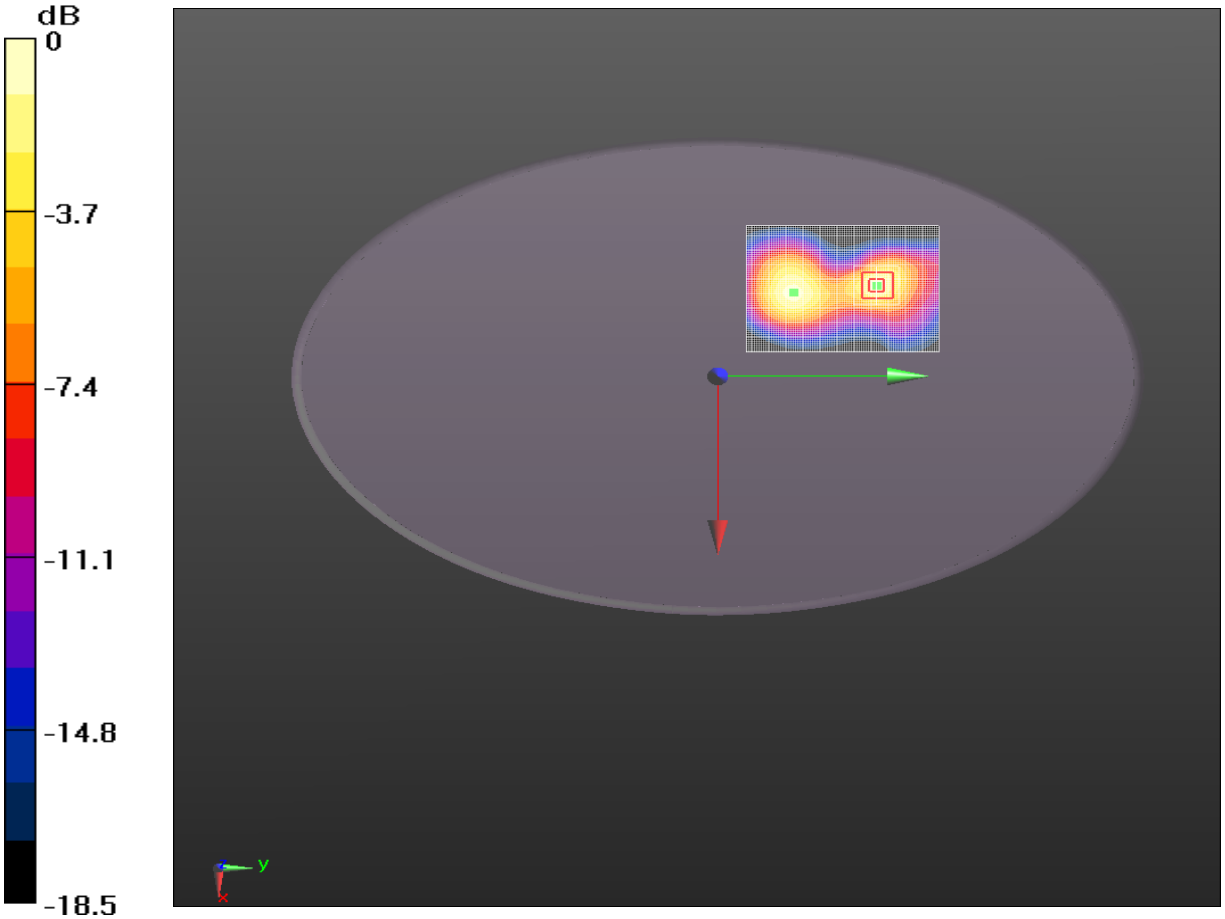
Fig. 12 GSM1900 MHz CH810 Test Position 1-GPRS

GSM 1900 Test Position 2 High with GPRS

Date/Time: 11/01/2011 9:18:07 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.57 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Down_2 High/Area Scan (71x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.07 mW/g

1900 body/Horizontal Down_2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.545 mW/g
Maximum value of SAR (measured) = 1.19 mW/g



0 dB = 1.19mW/g

Fig. 13 GSM1900 MHz CH810 Test Position 2-GPRS

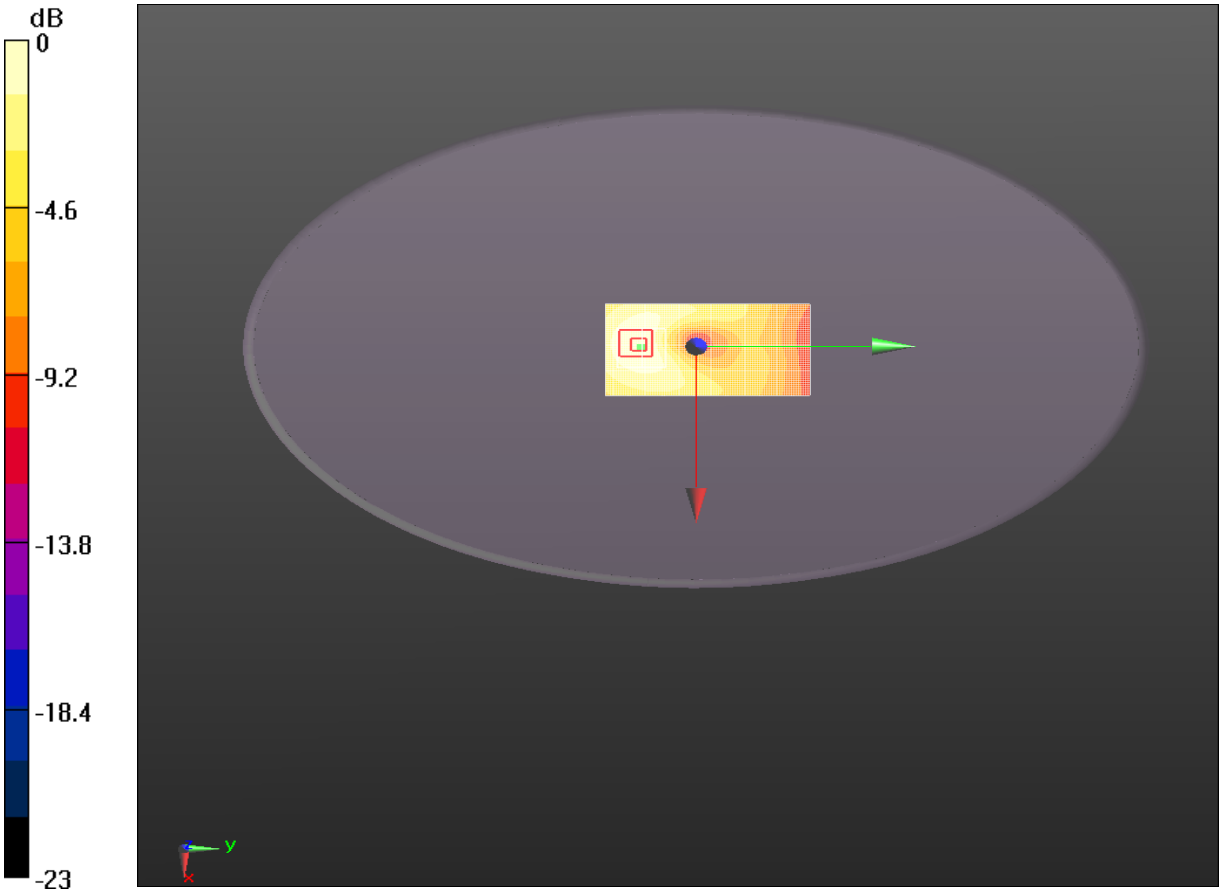
GSM 1900 Test Position 3 High with GPRS

Date/Time: 11/01/2011 9:31:41 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.57 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body side/Vertical Front_3 High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.149 mW/g

1900 body side/Vertical Front_3 High/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.58 V/m; Power Drift = 0.121 dB
Peak SAR (extrapolated) = 0.209 W/kg
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.084 mW/g
Maximum value of SAR (measured) = 0.144 mW/g



0 dB = 0.144mW/g

Fig. 14 GSM1900 MHz CH810 Test Position 3-GPRS

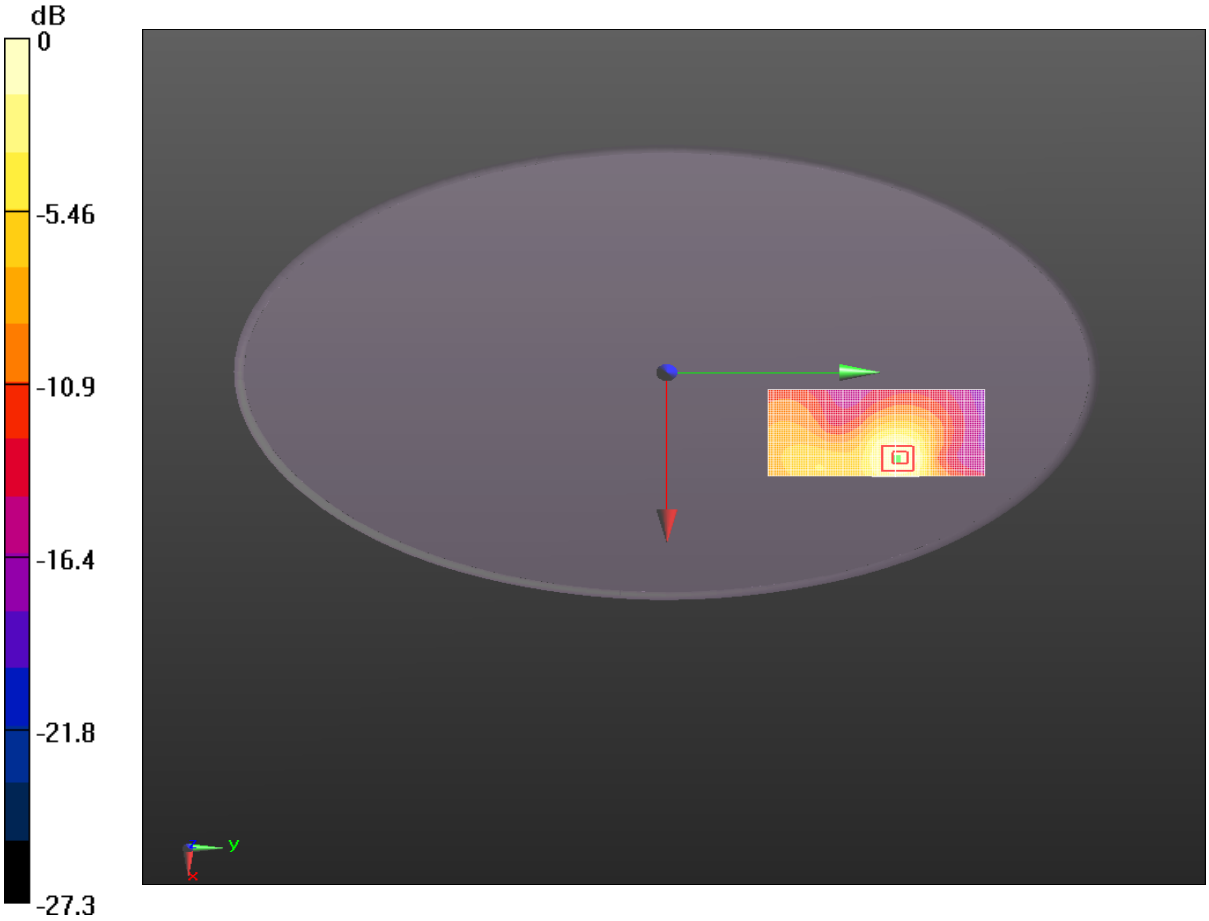
GSM 1900 Test Position 4 High with GPRS

Date/Time: 11/01/2011 9:43:05 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.57 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body side/Vertical Back_4 High/Area Scan (51x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.559 mW/g

1900 body side/Vertical Back_4 High/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.13 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 0.879 W/kg
SAR(1 g) = 0.507 mW/g; SAR(10 g) = 0.289 mW/g
Maximum value of SAR (measured) = 0.539 mW/g



0 dB = 0.539mW/g

Fig. 15 GSM1900 MHz CH810 Test Position 4-GPRS

GSM 1900 Test Position 5 High with GPRS

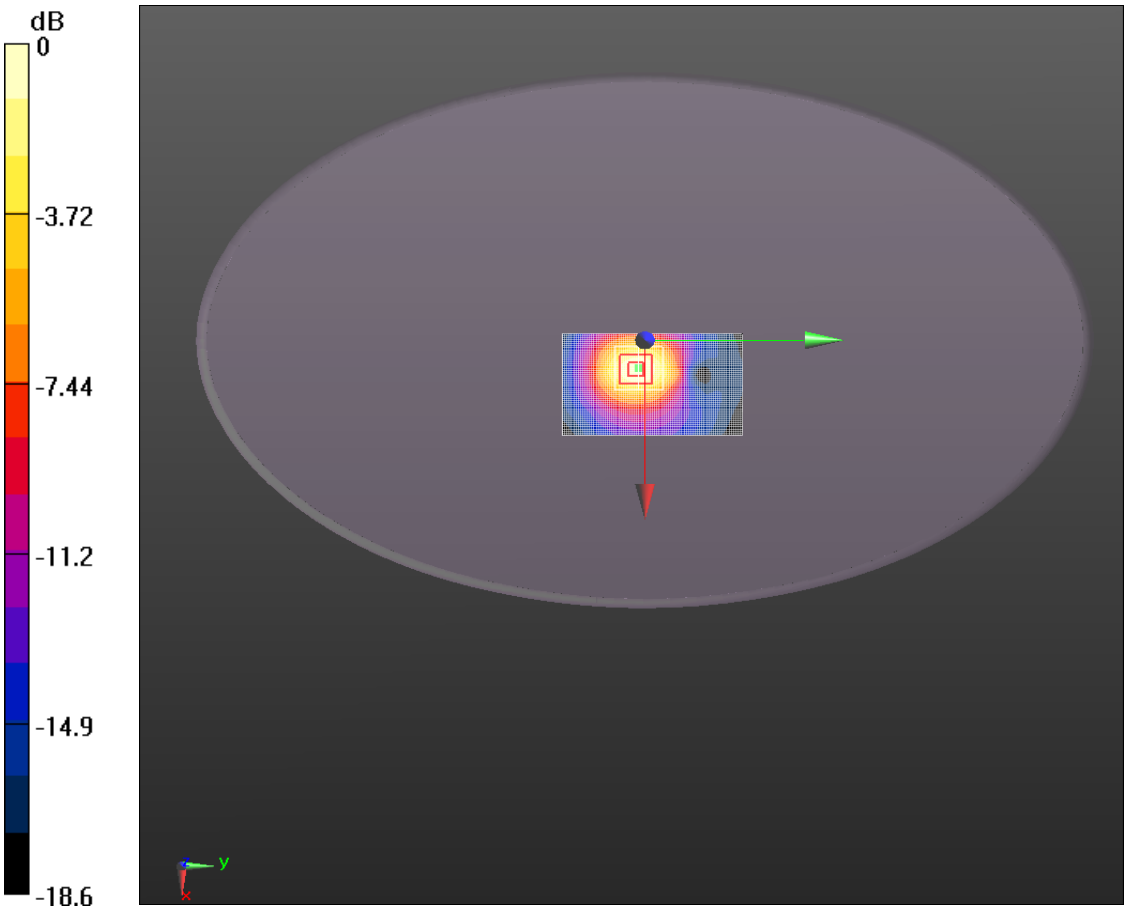
Date/Time: 11/01/2011 10:01:11 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.57 mho/m; ε_r = 52.1; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1909.8 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Vertical Top_5 High/Area Scan (51x81x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.3 mW/g

1900 body/Vertical Top_5 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = 0.105 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.600 mW/g
Maximum value of SAR (measured) = 1.18 mW/g



0 dB = 1.18mW/g

Fig. 16 GSM1900 MHz CH810 Test Position 5-GPRS

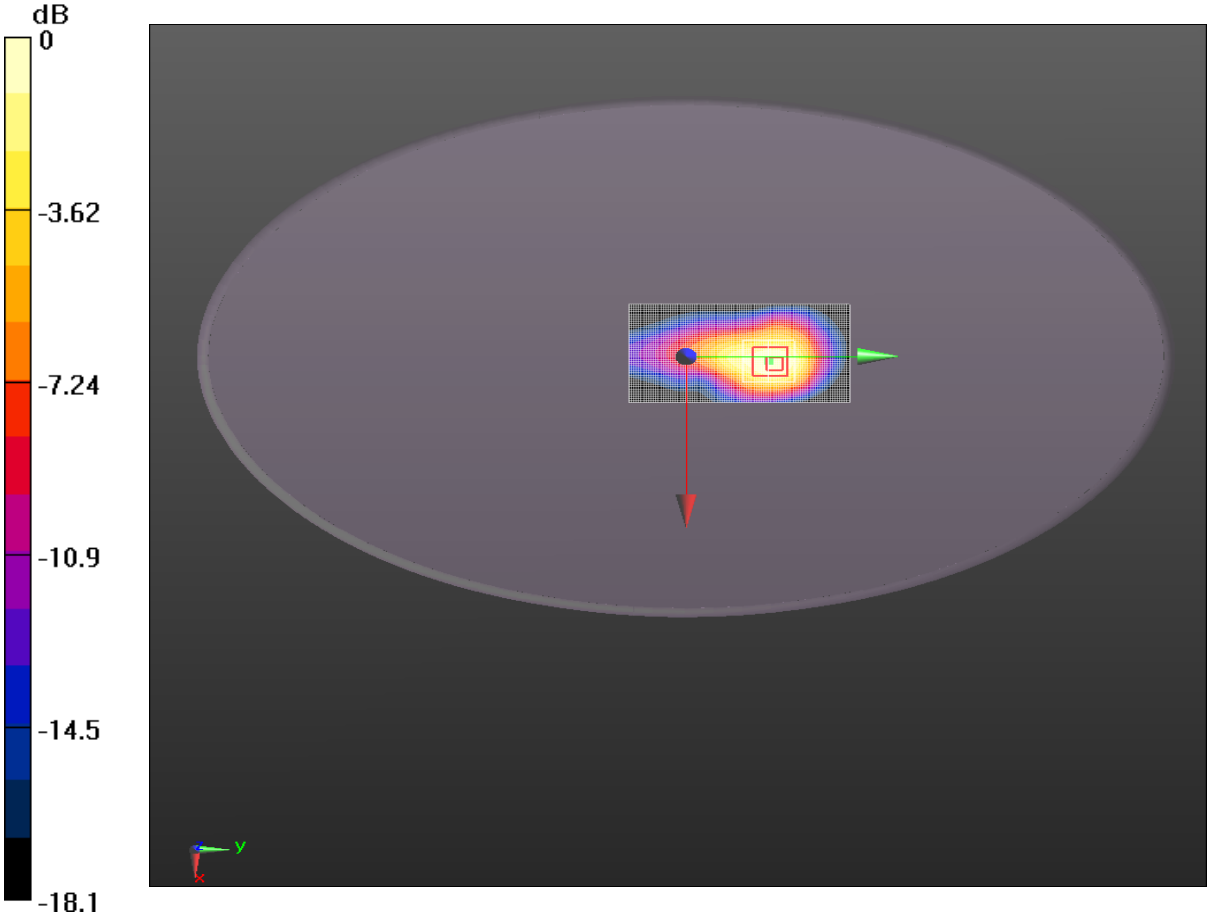
GSM 1900 Test Position 1 Middle with GPRS

Date/Time: 11/01/2011 10:15:37 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1880 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Up_1 Middle last/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.49 mW/g

1900 body/Horizontal Up_1 Middle last/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = 0.153 dB
Peak SAR (extrapolated) = 2.29 W/kg
SAR(1 g) = 1.3 mW/g; SAR(10 g) = 0.734 mW/g
Maximum value of SAR (measured) = 1.39 mW/g



0 dB = 1.39mW/g

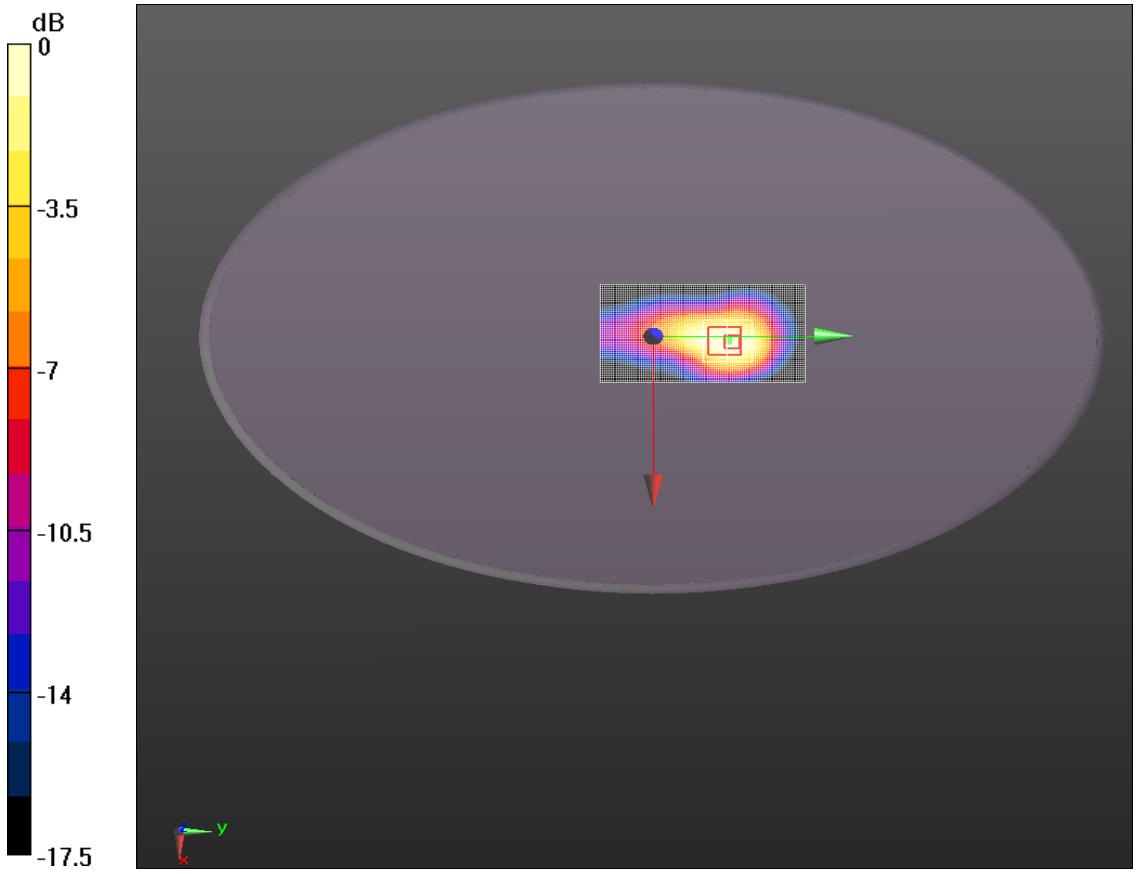
Fig. 17 GSM1900 MHz CH661 Test Position 1-GPRS

GSM 1900 Test Position 1 Low with GPRS

Date/Time: 11/01/2011 10:36:15 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.51 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Up_1 Low last/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.61 mW/g

1900 body/Horizontal Up_1 Low last/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.6 V/m; Power Drift = 0.019 dB
Peak SAR (extrapolated) = 2.28 W/kg
SAR(1 g) = 1.34 mW/g; SAR(10 g) = 0.786 mW/g
Maximum value of SAR (measured) = 1.44 mW/g



0 dB = 1.44mW/g

Fig. 18 GSM1900 MHz CH512 Test Position 1-GPRS

GSM 1900 Test Position 2 Middle with GPRS

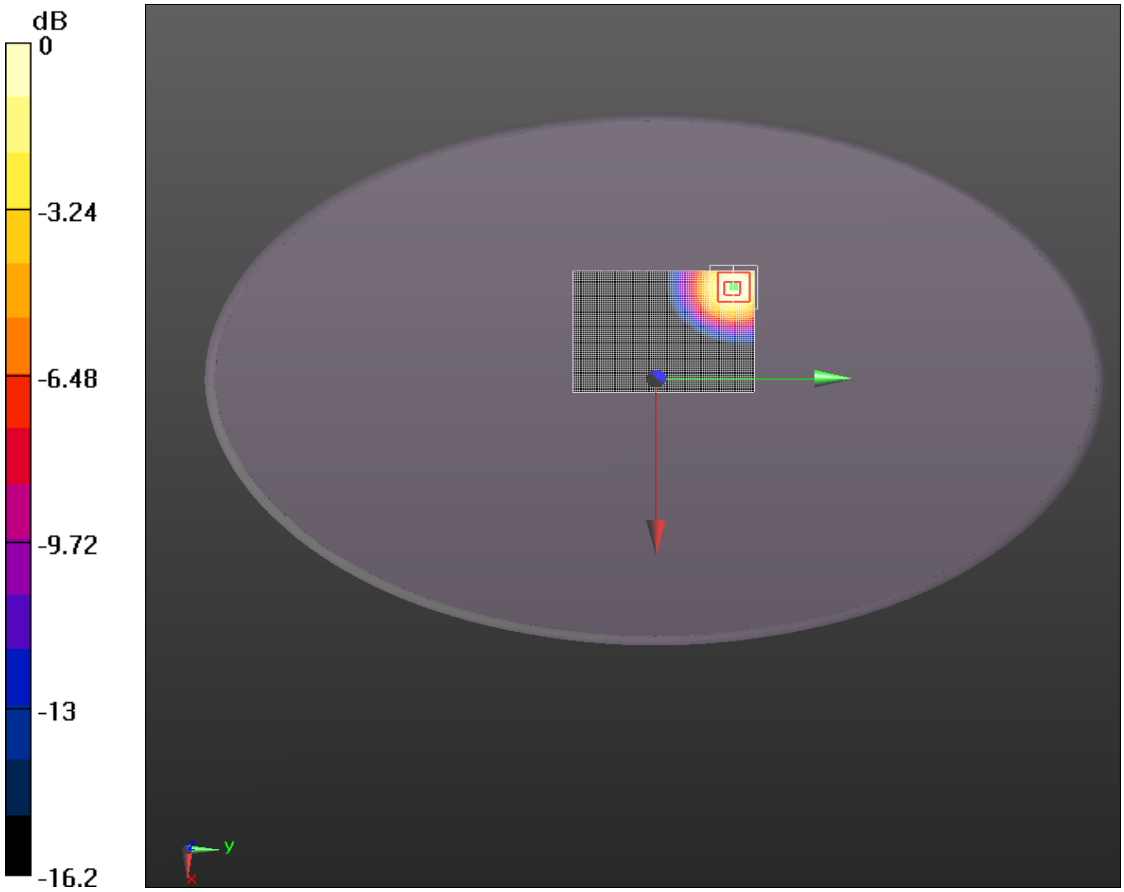
Date/Time: 11/01/2011 10:51:15 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1880 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Down_2 Middle/Area Scan (61x81x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.12 mW/g

1900 body/Horizontal Down_2 Middle/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.647 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.996 mW/g; SAR(10 g) = 0.578 mW/g
Maximum value of SAR (measured) = 1.09 mW/g



0 dB = 1.09mW/g

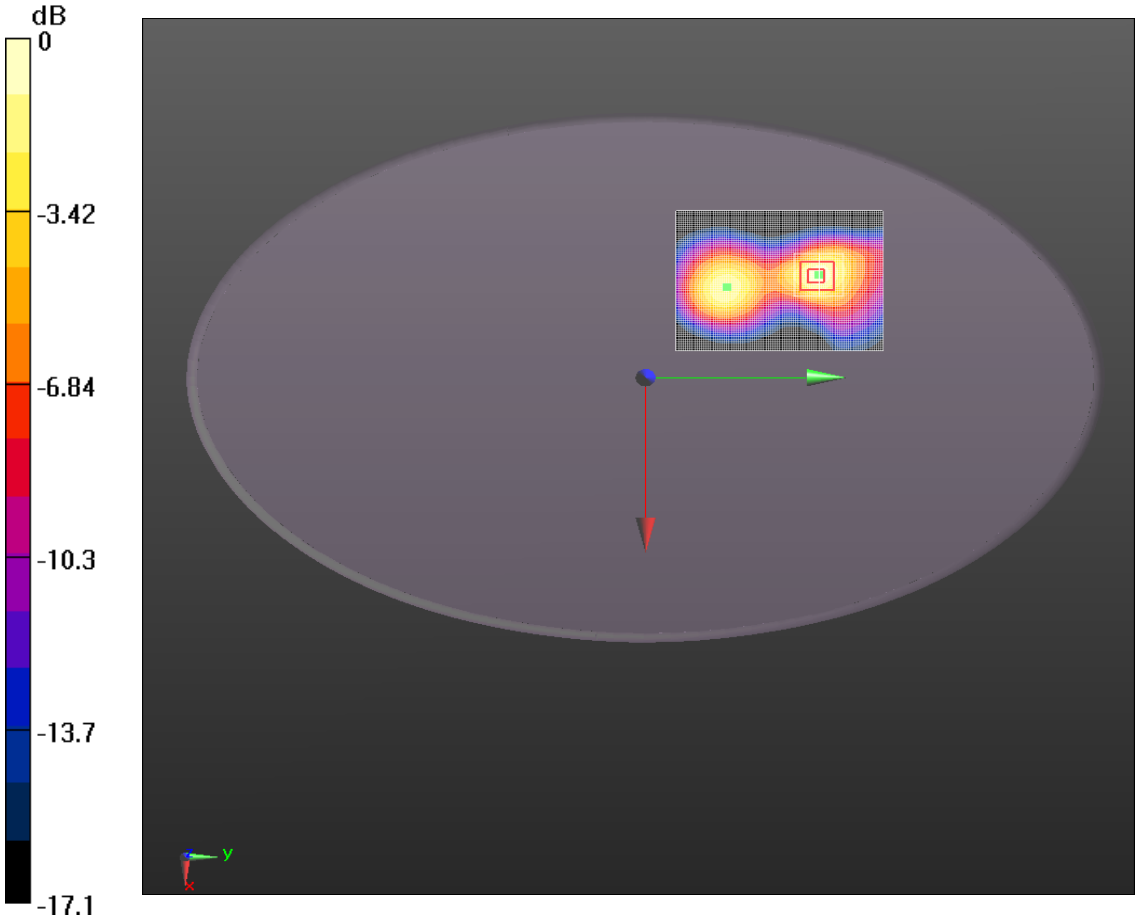
Fig. 19 GSM1900 MHz CH661 Test Position 2-GPRS

GSM 1900 Test Position 2 Low with GPRS

Date/Time: 11/01/2011 11:11:15 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.51 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Down_2 Low/Area Scan (71x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.54 mW/g

1900 body/Horizontal Down_2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.877 V/m; Power Drift = 0.135 dB
Peak SAR (extrapolated) = 2.24 W/kg
SAR(1 g) = 1.36 mW/g; SAR(10 g) = 0.745 mW/g
Maximum value of SAR (measured) = 1.56 mW/g



0 dB = 1.56mW/g

Fig. 20 GSM1900 MHz CH512 Test Position 2-GPRS

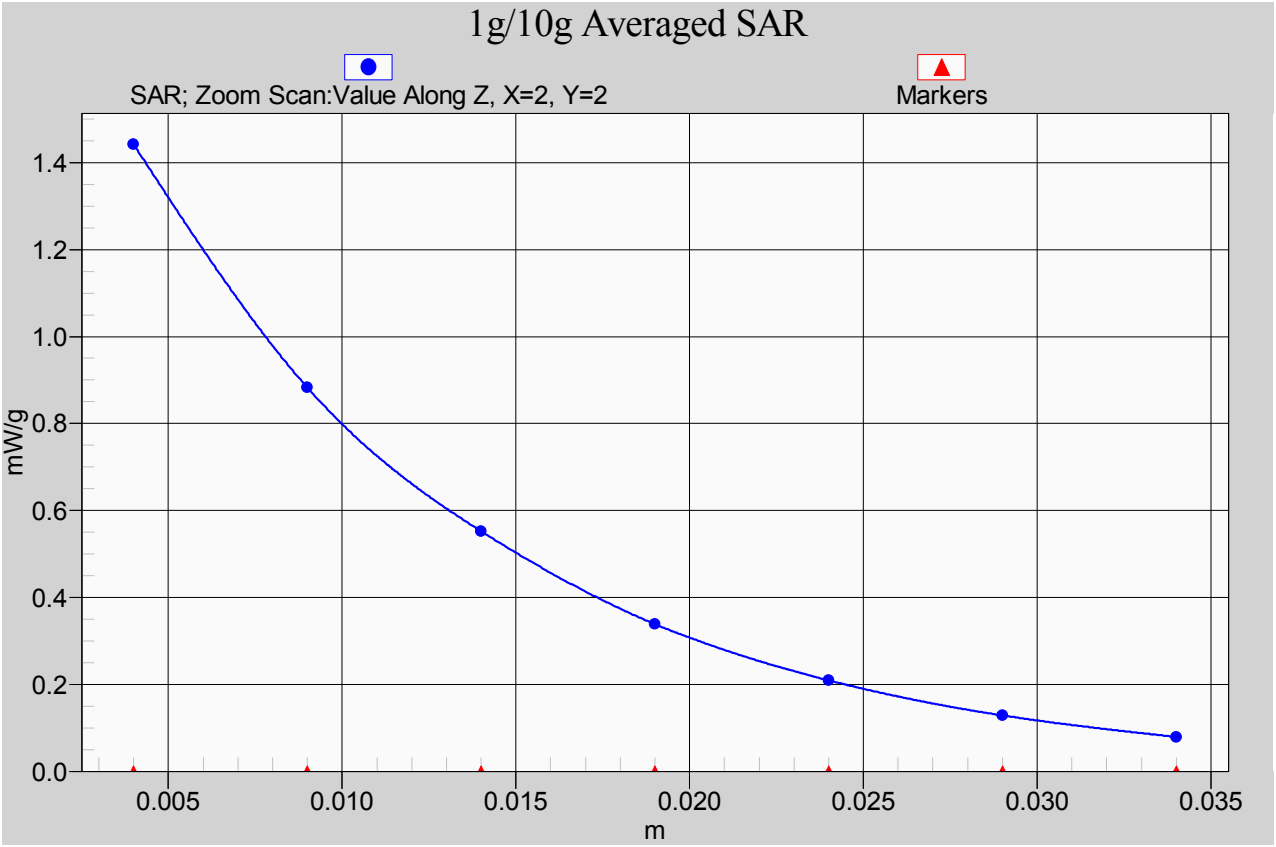


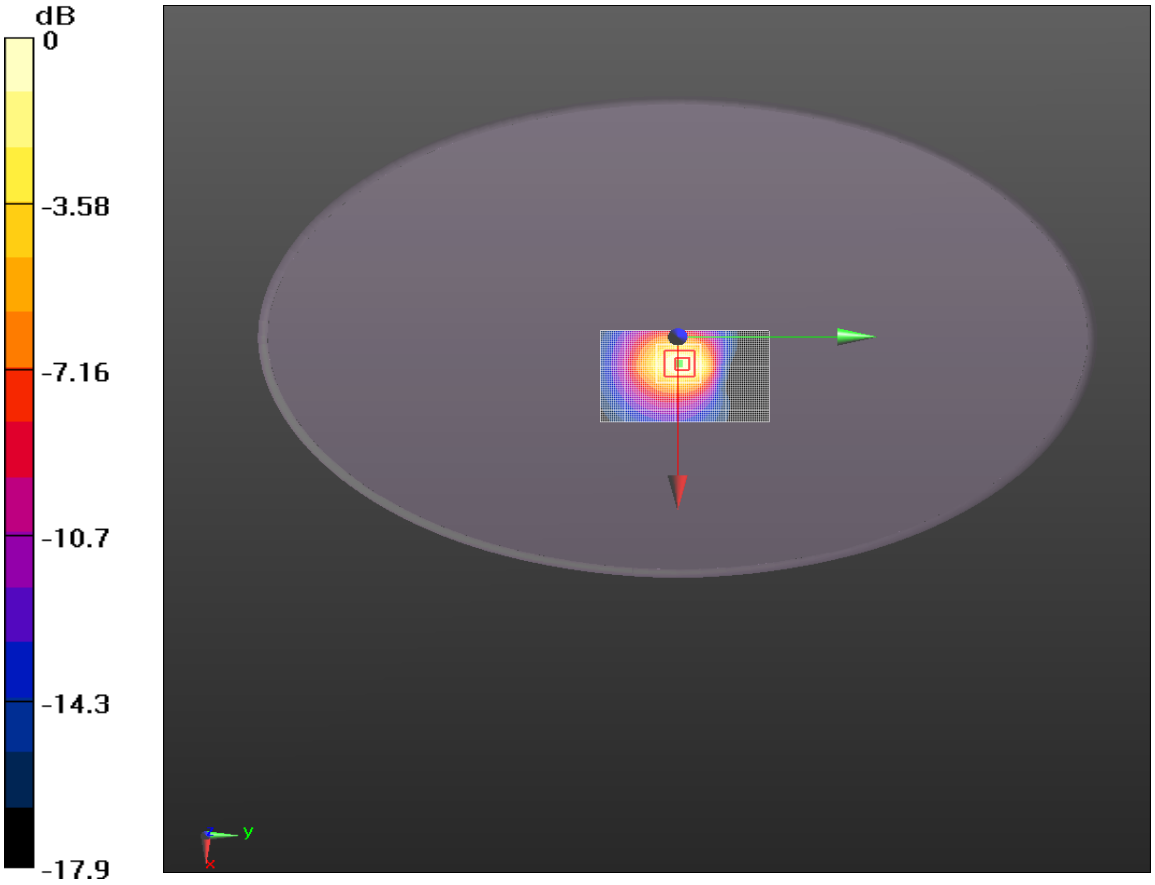
Fig. 21 Z-Scan at power reference point (1900MHz CH512 Test Position 2-GPRS)

GSM 1900 Test Position 5 Middle with GPRS

Date/Time: 11/01/2011 11:30:15 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1880 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Vertical Top_5 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.19 mW/g

1900 body/Vertical Top_5 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = -0.105 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.580 mW/g
Maximum value of SAR (measured) = 1.14 mW/g



0 dB = 1.14mW/g

Fig. 22 GSM1900 MHz CH661 Test Position 5-GPRS

GSM 1900 Test Position 5 Low with GPRS

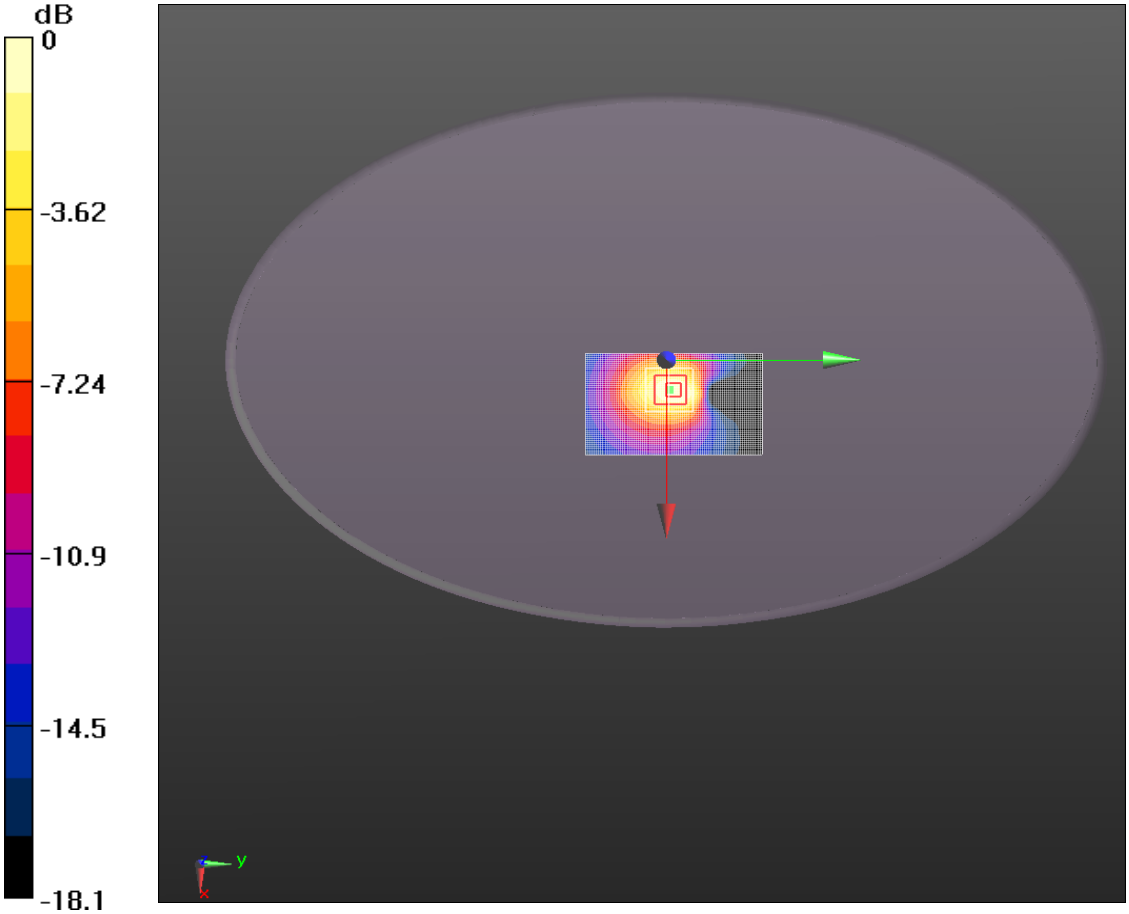
Date/Time: 11/01/2011 11:43:55 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.51 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 2 slot GPRS Frequency: 1850.2 MHz Duty Cycle: 1:4.16006
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Vertical Top_5 Low/Area Scan (51x81x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.09 mW/g

1900 body/Vertical Top_5 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.6 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 0.960 mW/g; SAR(10 g) = 0.535 mW/g
Maximum value of SAR (measured) = 1.05 mW/g



0 dB = 1.05mW/g

Fig. 23 GSM1900 MHz CH512 Test Position 5-GPRS

GSM 1900 Test Position 2 Middle with EGPRS

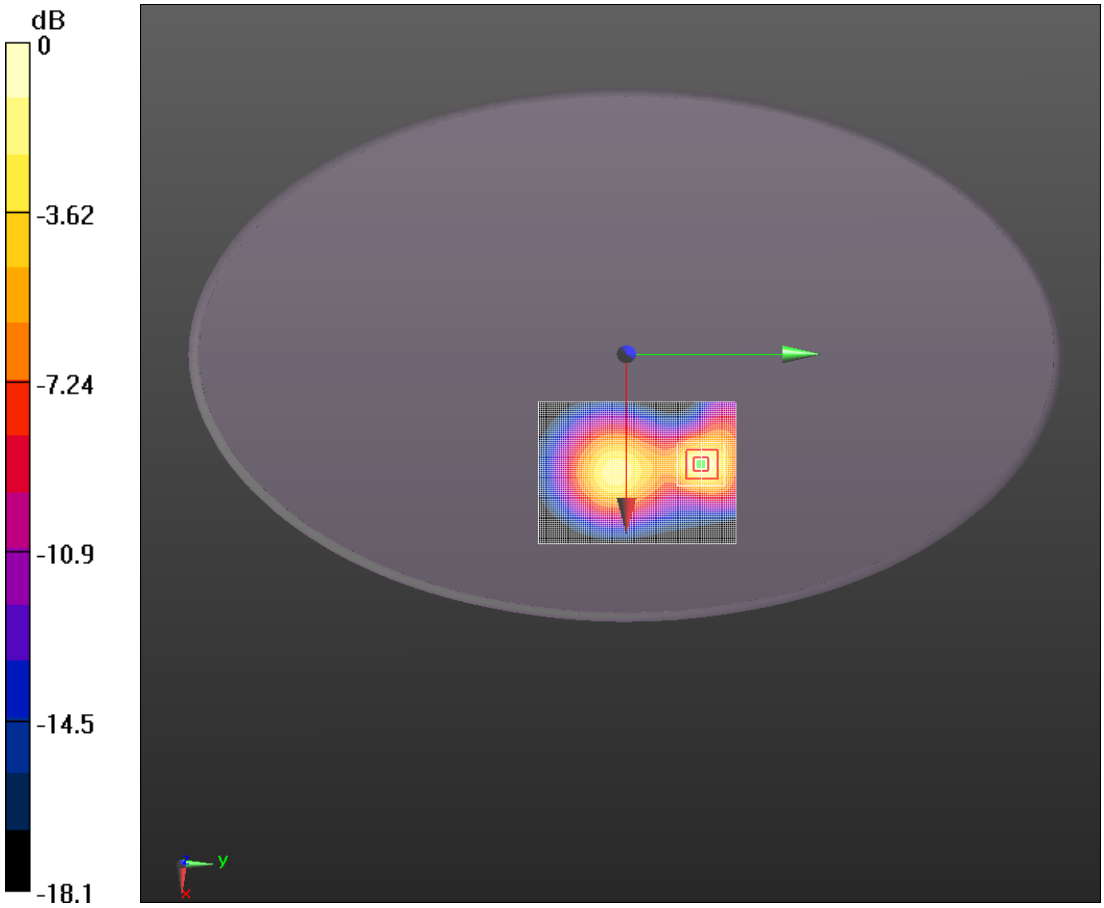
Date/Time: 11/01/2011 11:55:12 AM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: 3 slot GPRS Frequency: 1880 MHz Duty Cycle: 1:2.80027
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Down_2 Middle EGPRS/Area Scan (71x91x1):

Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.473 mW/g

1900 body/Horizontal Down_2 Middle EGPRS/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 0.775 W/kg
SAR(1 g) = 0.432 mW/g; SAR(10 g) = 0.225 mW/g
Maximum value of SAR (measured) = 0.494 mW/g



0 dB = 0.494mW/g

Fig. 24 GSM1900 MHz CH661 Test Position 2-GPRS

WCDMA 850 Test Position 1 Low

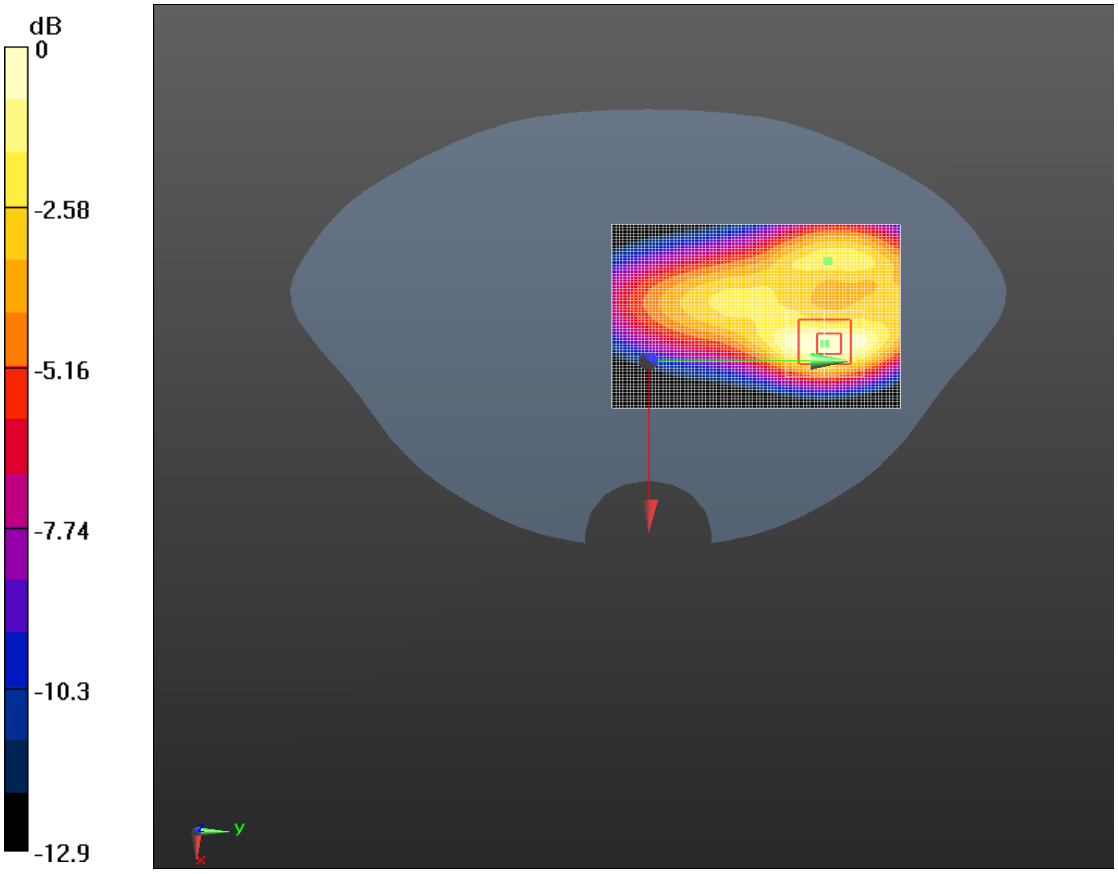
Date/Time: 10/31/2011 1:52:46 PM,
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.967 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Up_1 Low/Area Scan (61x81x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.968 mW/g

850 body/Horizontal Up_1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.7 V/m; Power Drift = 0.182 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.838 mW/g; SAR(10 g) = 0.494 mW/g
Maximum value of SAR (measured) = 0.937 mW/g



0 dB = 0.937mW/g

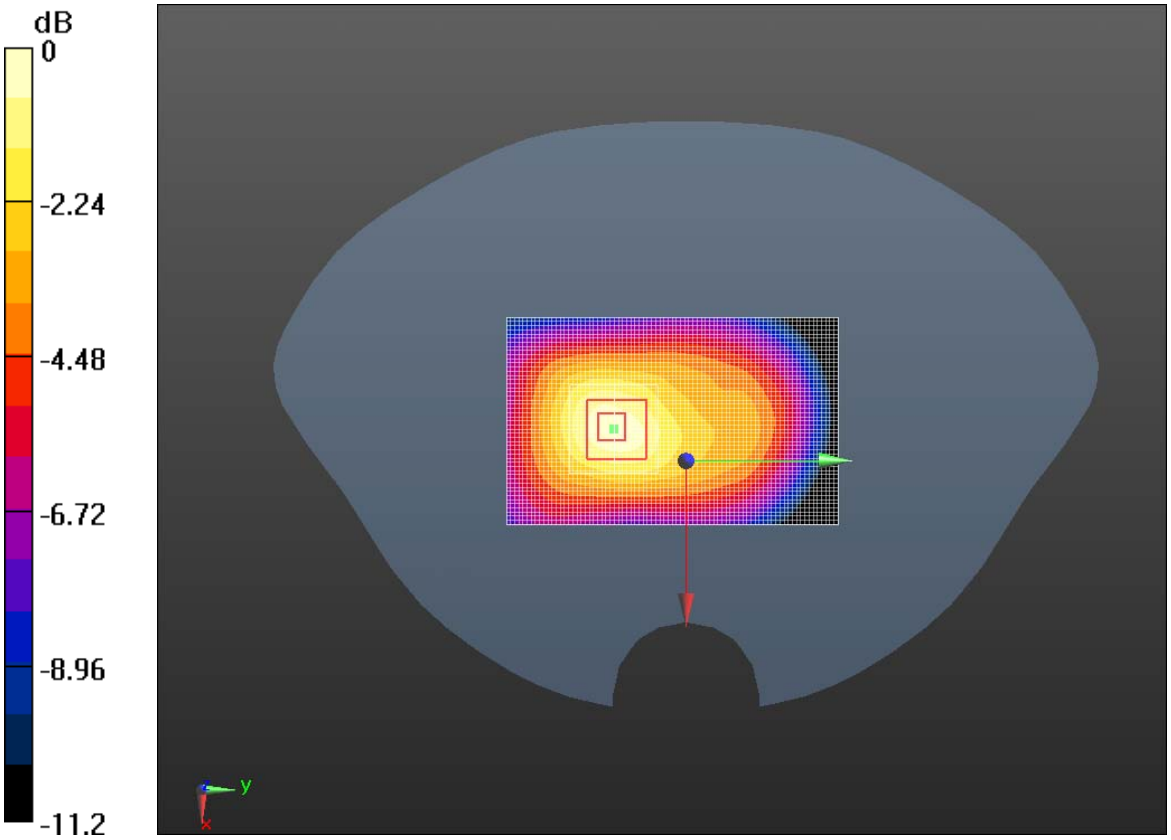
Fig.25 WCDMA 850 CH4132 Test Position 1

WCDMA 850 Test Position 2 Low

Date/Time: 10/31/2011 2:12:46 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.967 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Down_2 Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.848 mW/g

850 body/Horizontal Down_2 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.9 V/m; Power Drift = 0.145 dB
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 0.814 mW/g; SAR(10 g) = 0.520 mW/g
Maximum value of SAR (measured) = 0.879 mW/g



0 dB = 0.879mW/g

Fig.26 WCDMA 850 CH4132 Test Position 2

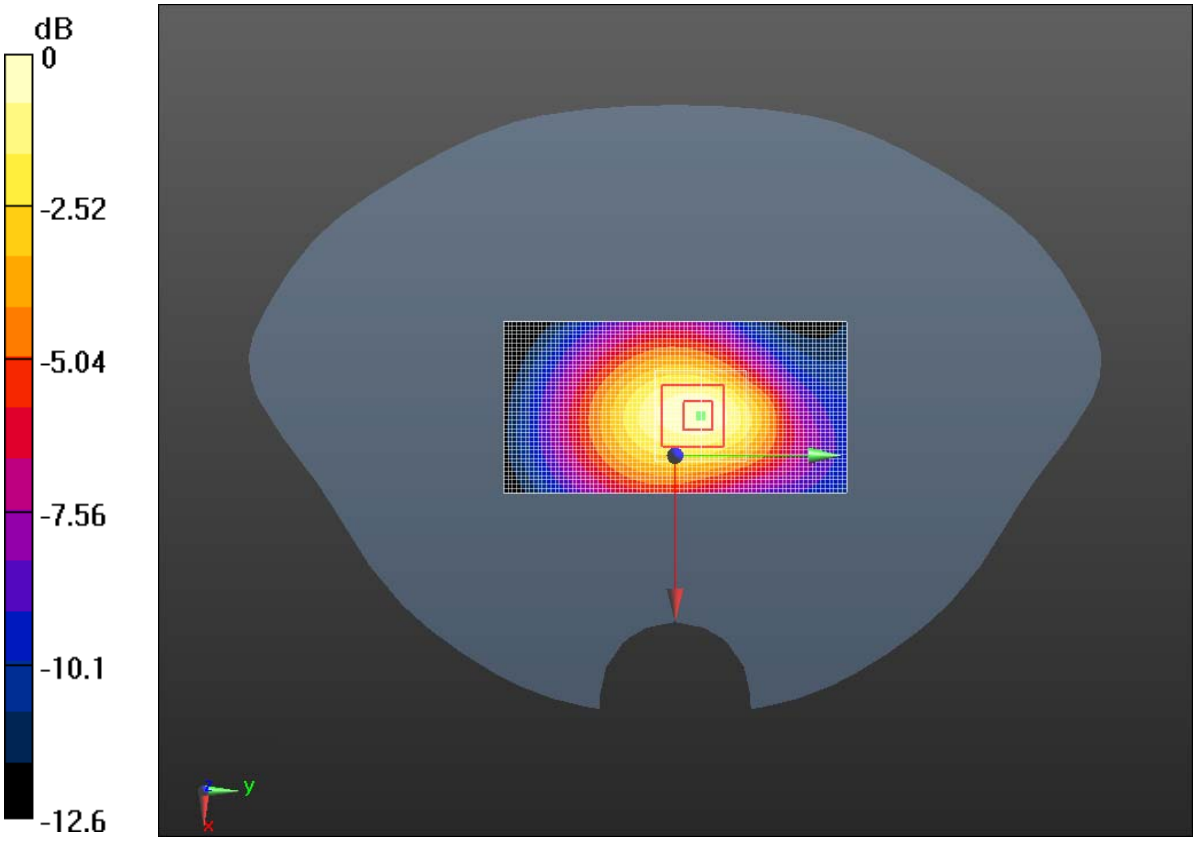
WCDMA 850 Test Position 3 Low

Date/Time: 10/31/2011 2:25:16 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.967 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body side/Vertical Front _3 Low/Area Scan (41x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.477 mW/g

850 body side/Vertical Front _3 Low/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.2 V/m; Power Drift = 0.146 dB
Peak SAR (extrapolated) = 0.702 W/kg
SAR(1 g) = 0.430 mW/g; SAR(10 g) = 0.263 mW/g
Maximum value of SAR (measured) = 0.473 mW/g



0 dB = 0.473mW/g

Fig.27 WCDMA 850 CH4132 Test Position 3

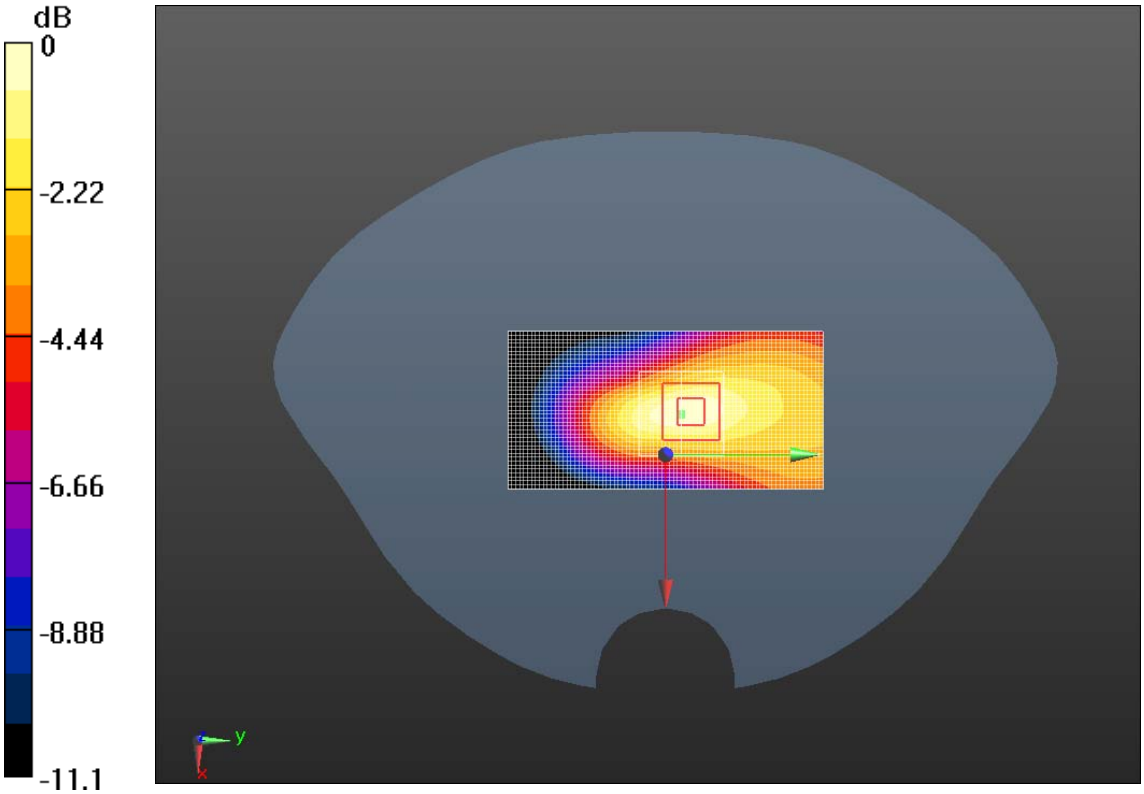
WCDMA 850 Test Position 4 Low

Date/Time: 10/31/2011 2:38:25 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.967 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body side/Vertical Front _4 Low/Area Scan (41x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.401 mW/g

850 body side/Vertical Front _4 Low/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.2 V/m; Power Drift = 0.138 dB
Peak SAR (extrapolated) = 0.607 W/kg
SAR(1 g) = 0.381 mW/g; SAR(10 g) = 0.239 mW/g
Maximum value of SAR (measured) = 0.414 mW/g



0 dB = 0.414mW/g

Fig.28 WCDMA 850 CH4132 Test Position 4

WCDMA 850 Test Position 5 Low

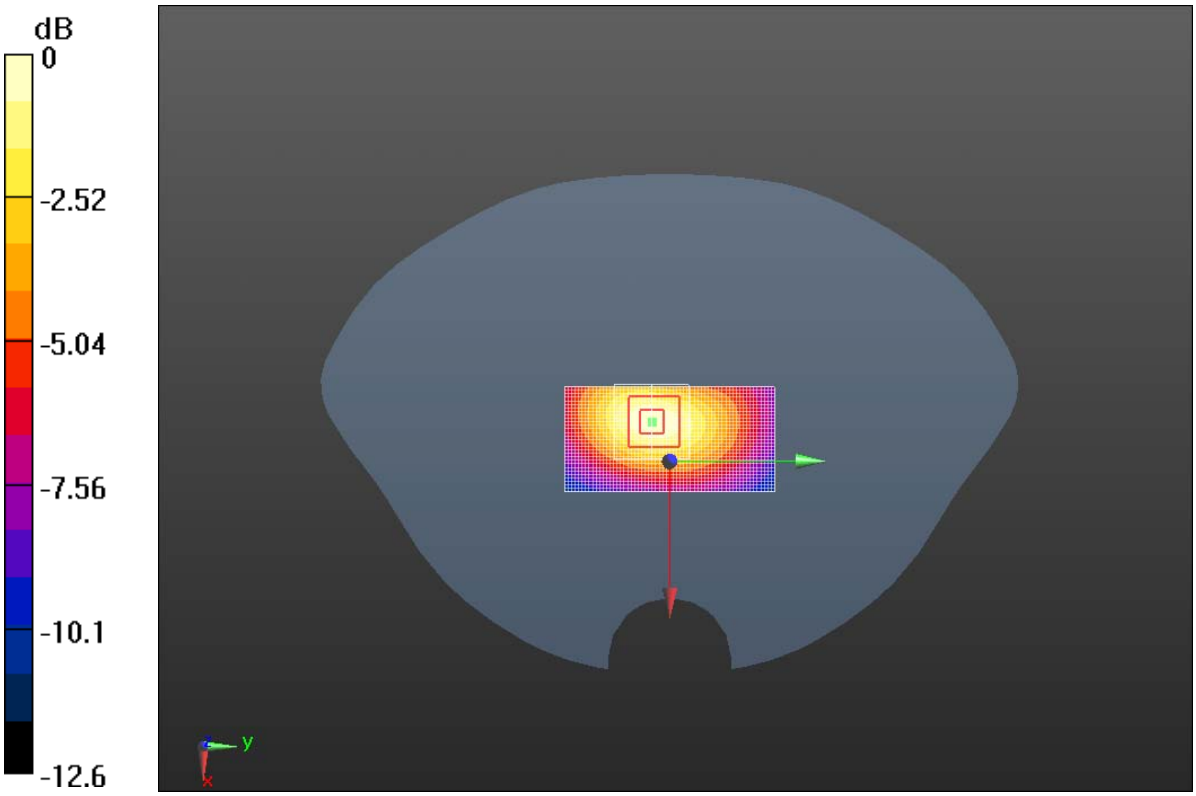
Date/Time: 10/31/2011 2:55:24 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.967 mho/m; ε_r = 54.2; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 826.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Vertical Top_5 Low/Area Scan (31x61x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.250 mW/g

850 body/Vertical Top_5 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = -0.073 dB
Peak SAR (extrapolated) = 0.376 W/kg
SAR(1 g) = 0.227 mW/g; SAR(10 g) = 0.135 mW/g
Maximum value of SAR (measured) = 0.252 mW/g



0 dB = 0.252mW/g

Fig.29 WCDMA 850 CH4132 Test Position 5

WCDMA 850 Test Position 1 High

Date/Time: 10/31/2011 3:15:24 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 846.6 MHz; σ = 0.989 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 846.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Up_1 High/Area Scan (51x81x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.940 mW/g

850 body/Horizontal Up_1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.6 V/m; Power Drift = 0.200 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.880 mW/g; SAR(10 g) = 0.500 mW/g
Maximum value of SAR (measured) = 0.998 mW/g

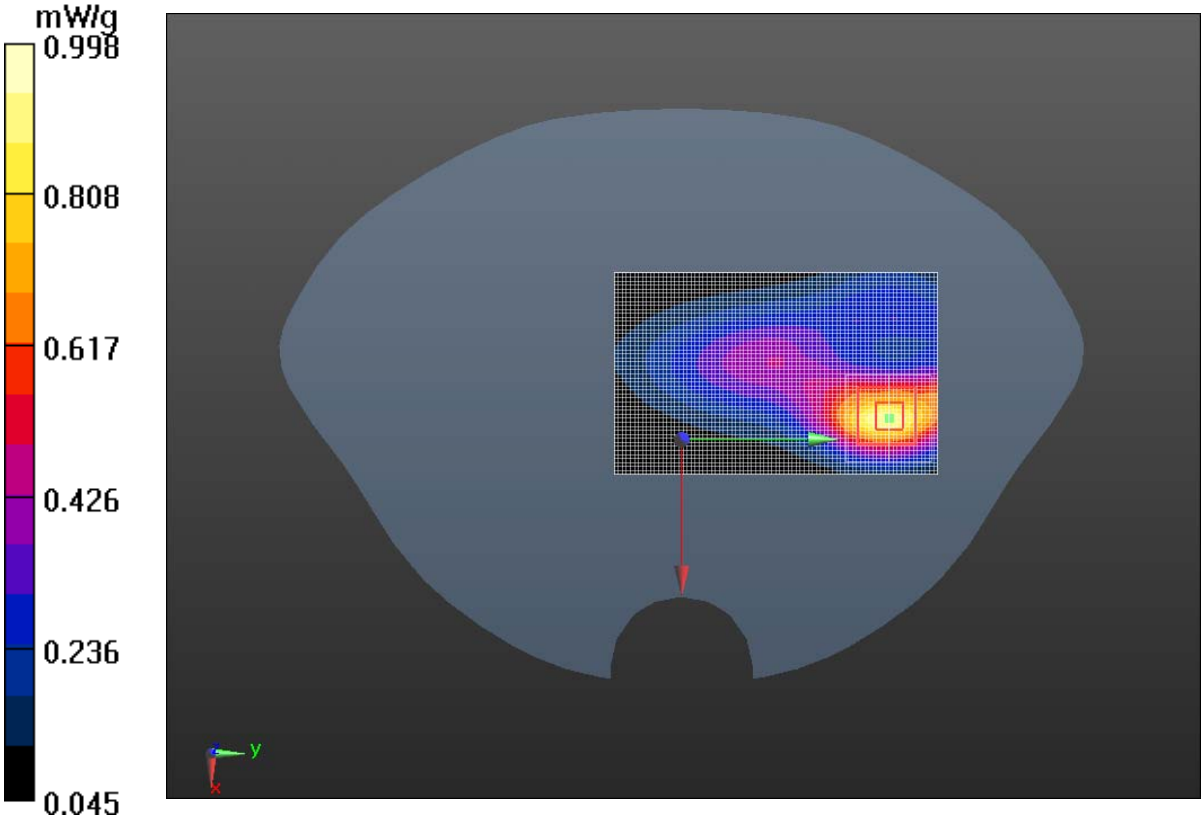


Fig.30 WCDMA 850 CH4233 Test Position 1

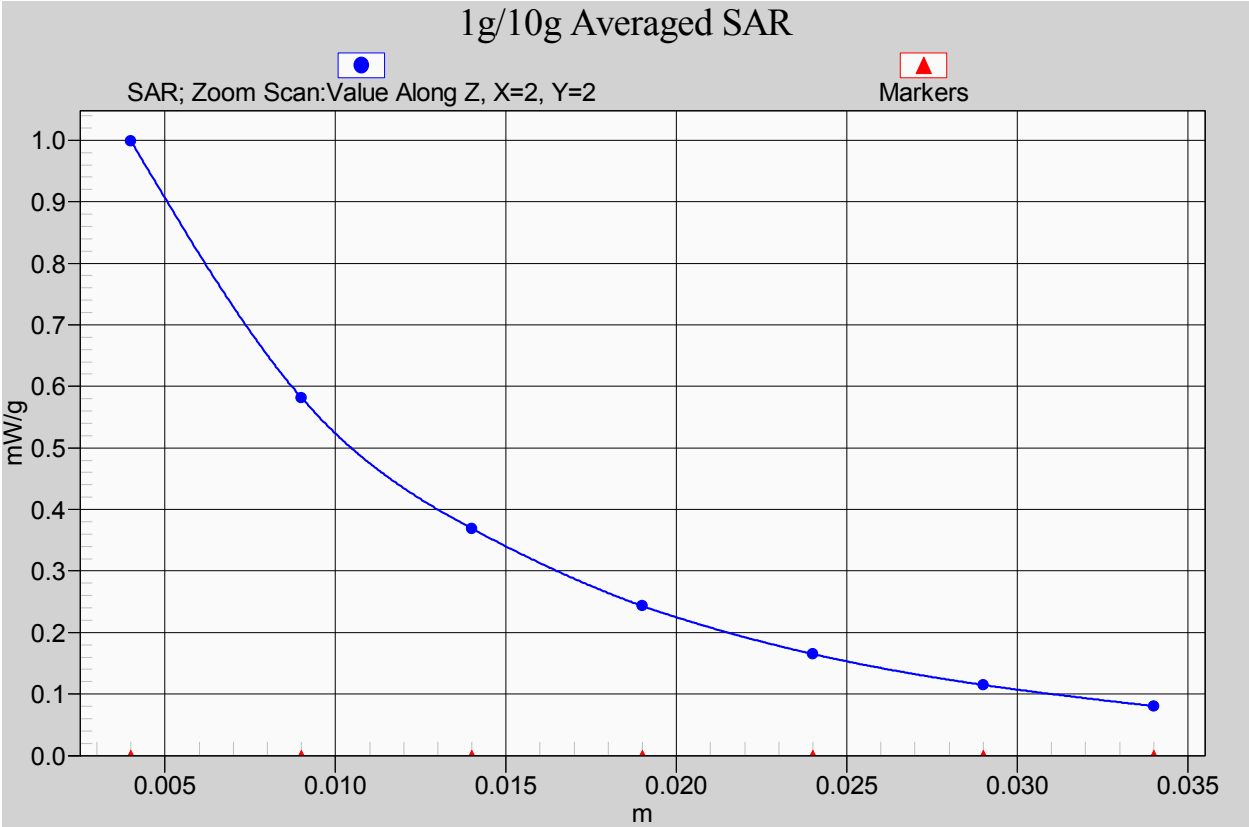


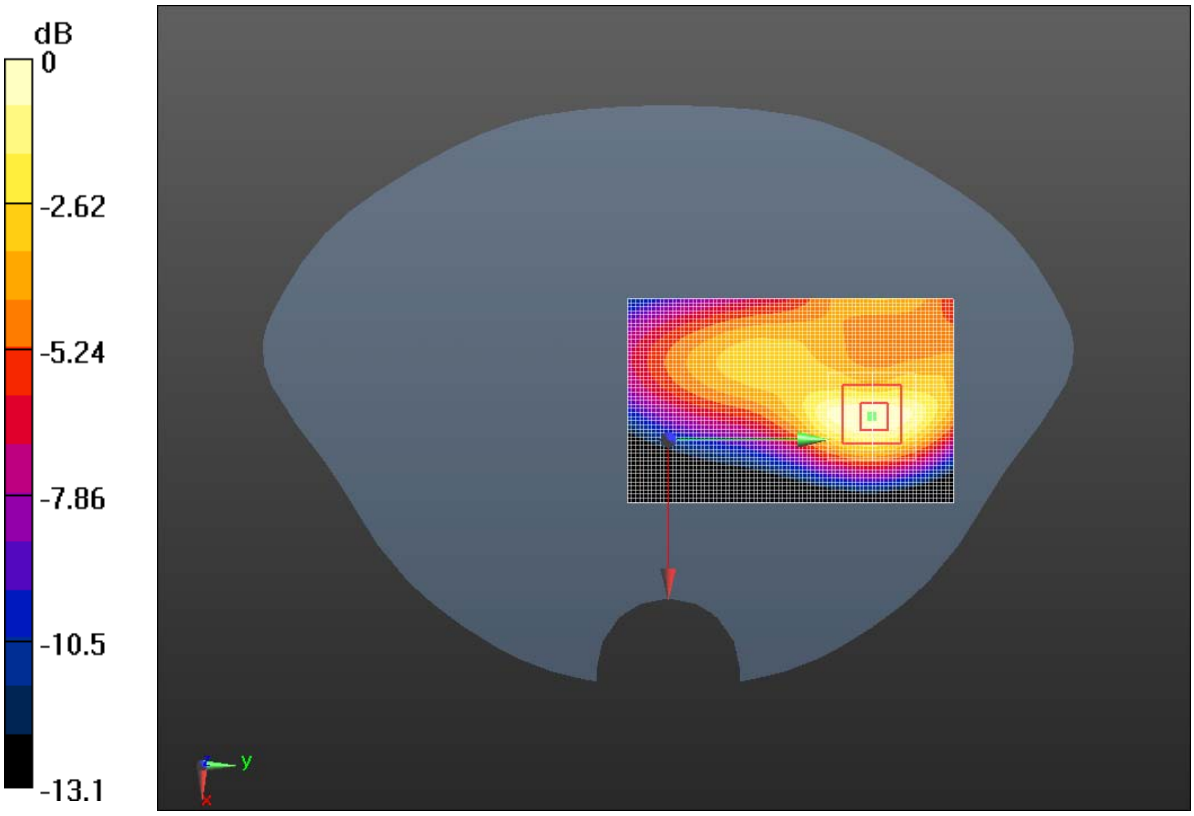
Fig. 31 Z-Scan at power reference point (WCDMA850MHz CH4233 Test Position 2)

WCDMA 850 Test Position 1 Middle

Date/Time: 10/31/2011 3:30:21 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.978 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 836.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Up_1 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.878 mW/g

850 body/Horizontal Up_1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.9 V/m; Power Drift = 0.064 dB
Peak SAR (extrapolated) = 1.37 W/kg
SAR(1 g) = 0.777 mW/g; SAR(10 g) = 0.450 mW/g
Maximum value of SAR (measured) = 0.874 mW/g



0 dB = 0.874mW/g

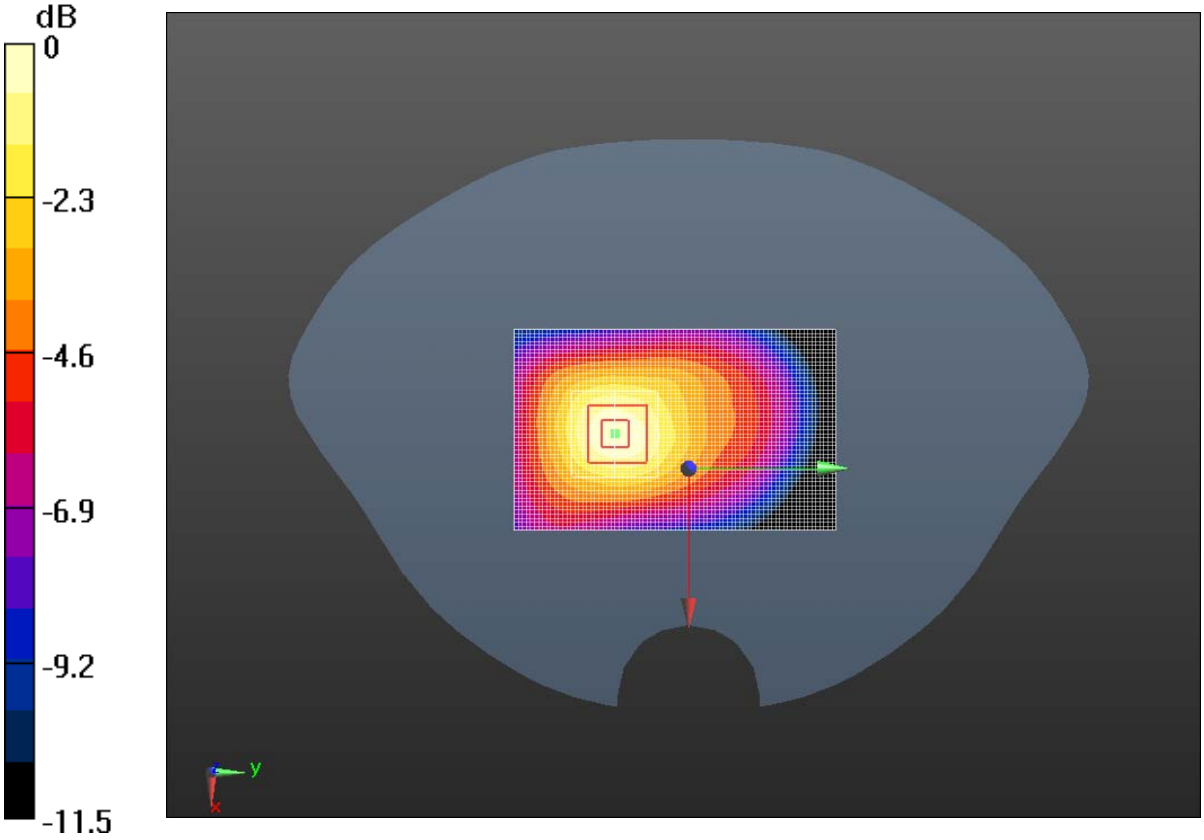
Fig. 32 WCDMA 850 CH4183 Test Position 1

WCDMA 850 Test Position 2 High

Date/Time: 10/31/2011 3:42:19 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 846.6 MHz; σ = 0.989 mho/m; ε_r = 54; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 846.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Down_2 High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.850 mW/g

850 body/Horizontal Down_2 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.8 V/m; Power Drift = 0.049 dB
Peak SAR (extrapolated) = 1.25 W/kg
SAR(1 g) = 0.785 mW/g; SAR(10 g) = 0.493 mW/g
Maximum value of SAR (measured) = 0.855 mW/g



0 dB = 0.855mW/g

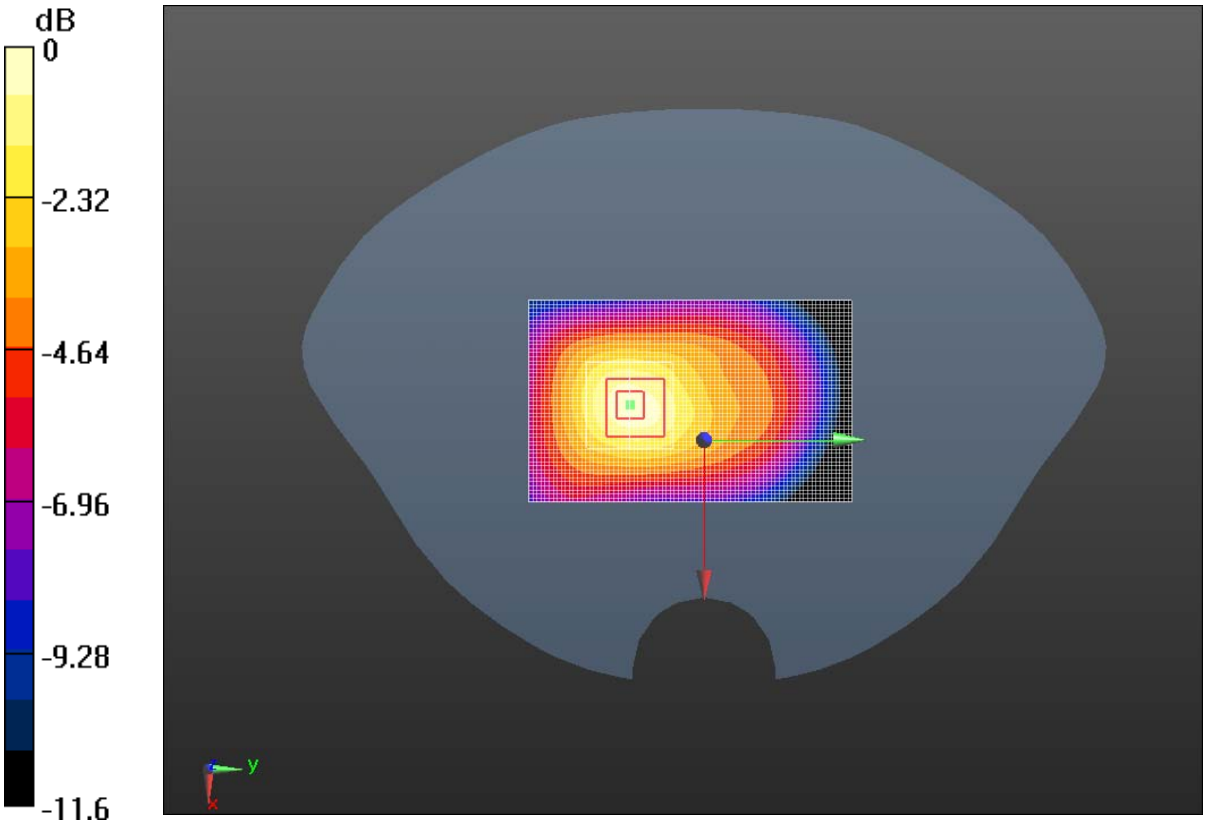
Fig.33 WCDMA 850 CH4233 Test Position 2

WCDMA 850 Test Position 2 Middle

Date/Time: 10/31/2011 4:20:19 PM
Electronics: DAE4 Sn786
Medium: Body 900
Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.978 mho/m; ε_r = 54.1; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature:22.5℃
Communication System: WCMDA Frequency: 836.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

850 body/Horizontal Down_2 Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.750 mW/g

850 body/Horizontal Down_2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.1 V/m; Power Drift = 0.099 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.455 mW/g
Maximum value of SAR (measured) = 0.790 mW/g



0 dB = 0.790mW/g

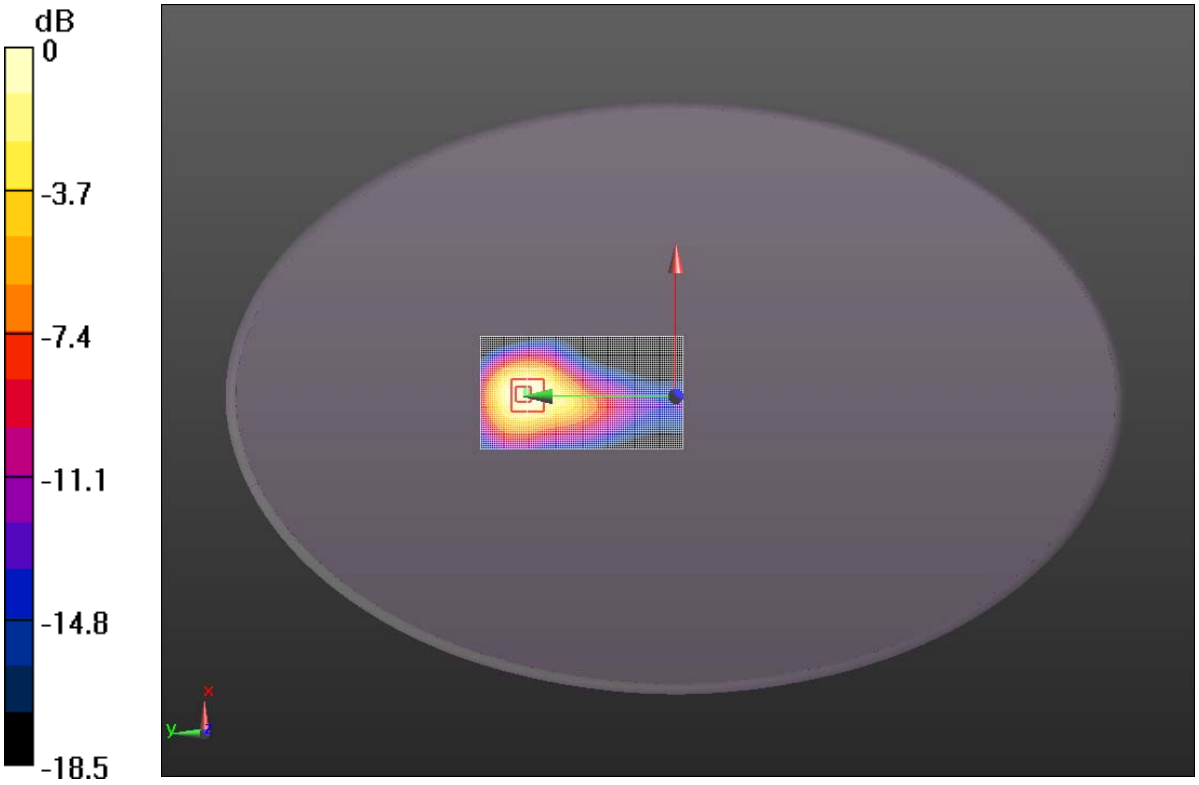
Fig.34 WCDMA 850 CH4183 Test Position 2

WCDMA 1900 Test Position 1 Middle

Date/Time: 11/01/2011 1:46:36 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Up_1 Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.47 mW/g

1900 body/Horizontal Up_1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.9 V/m; Power Drift = 0.156 dB
Peak SAR (extrapolated) = 2.23 W/kg
SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.733 mW/g
Maximum value of SAR (measured) = 1.38 mW/g



0 dB = 1.38mW/g

Fig.35 WCDMA 1900 CH9400 Test Position 1

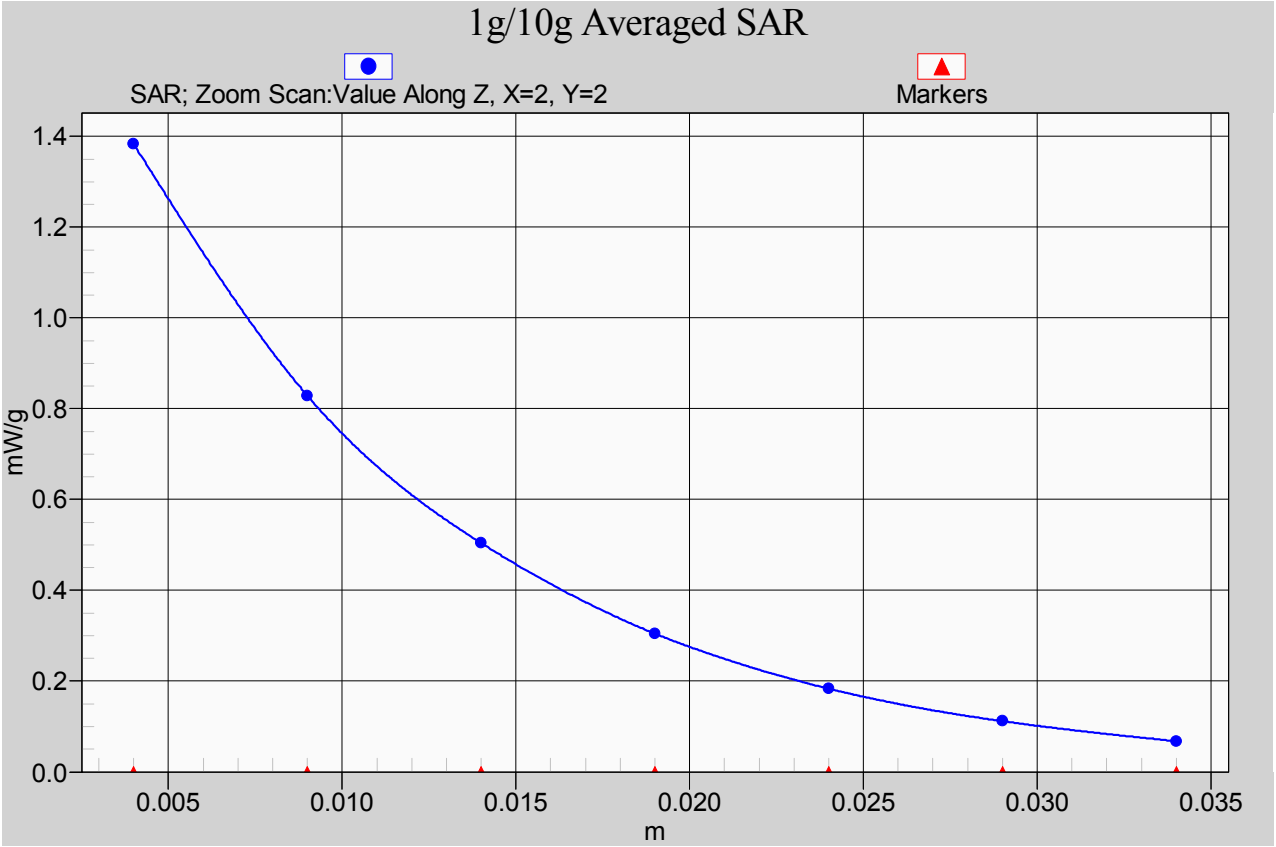


Fig. 36 Z-Scan at power reference point (WCDMA 1900 CH9400 Test Position1)

WCDMA 1900 Test Position 2 Middle

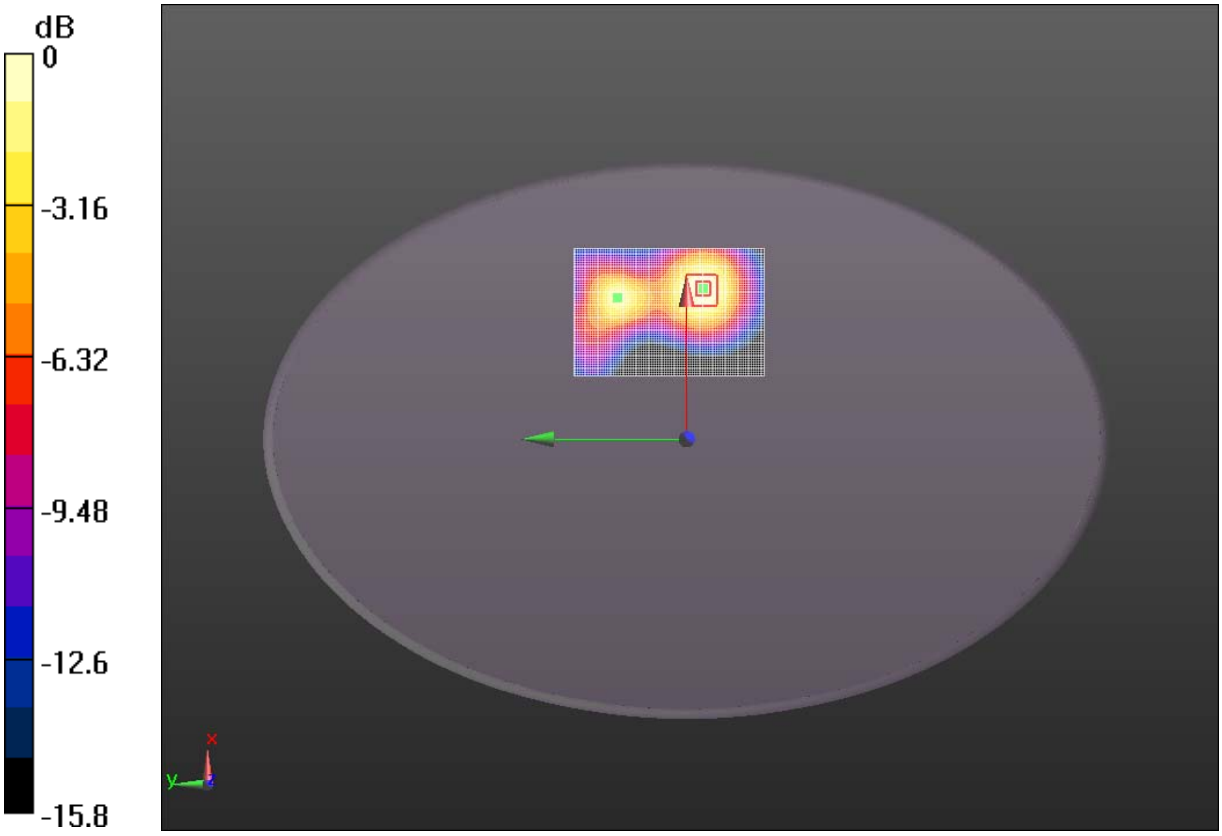
Date/Time: 11/01/2011 2:13:36 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Down_2 Middle/Area Scan (61x91x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.860 mW/g

1900 body/Horizontal Down_2 Middle/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.158 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.795 mW/g; SAR(10 g) = 0.477 mW/g
Maximum value of SAR (measured) = 0.867 mW/g



0 dB = 0.867mW/g

Fig.37 WCDMA 1900 CH9400 Test Position 2

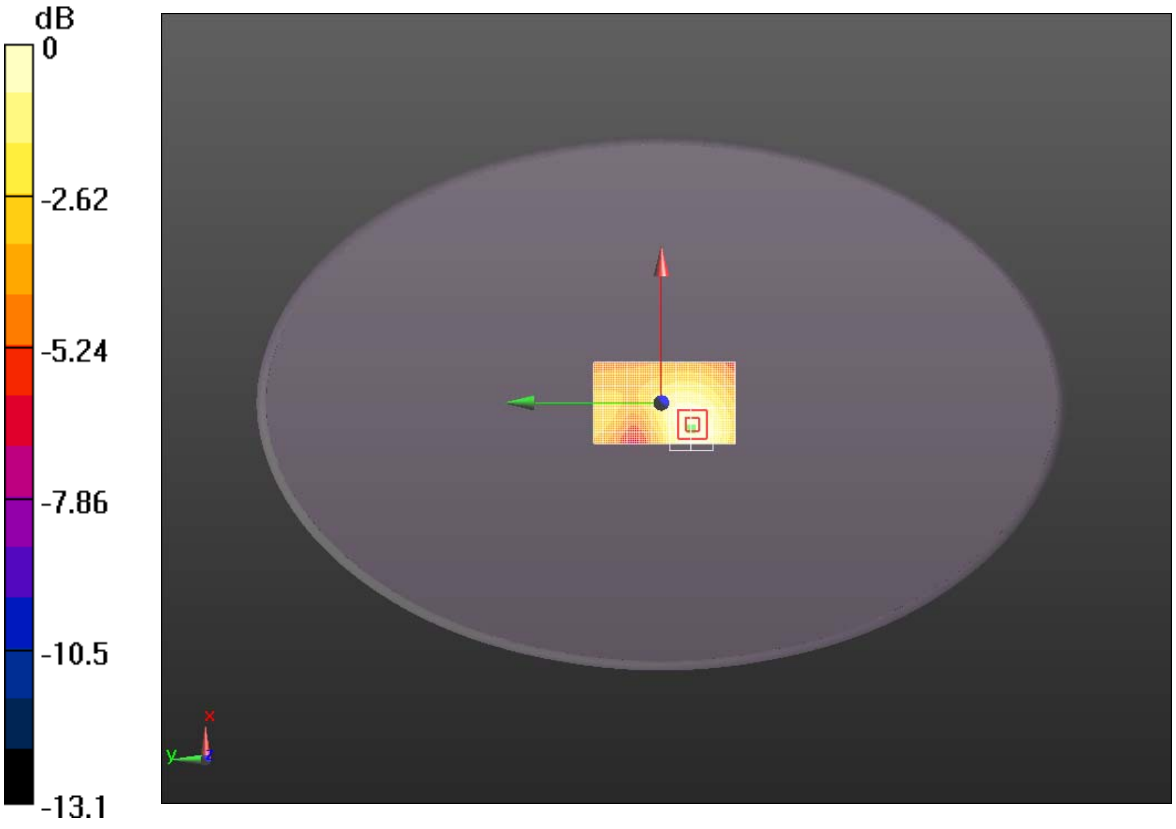
WCDMA 1900 Test Position 3 Middle

Date/Time: 11/01/2011 2:33:36 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body side/Vertical Front _3 Middle/Area Scan (41x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.132 mW/g

1900 body side/Vertical Front _3 Middle/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.6 V/m; Power Drift = 0.183 dB
Peak SAR (extrapolated) = 0.193 W/kg
SAR(1 g) = 0.122 mW/g; SAR(10 g) = 0.078 mW/g
Maximum value of SAR (measured) = 0.130 mW/g



0 dB = 0.130mW/g

Fig.38 WCDMA 1900 CH9400 Test Position 3

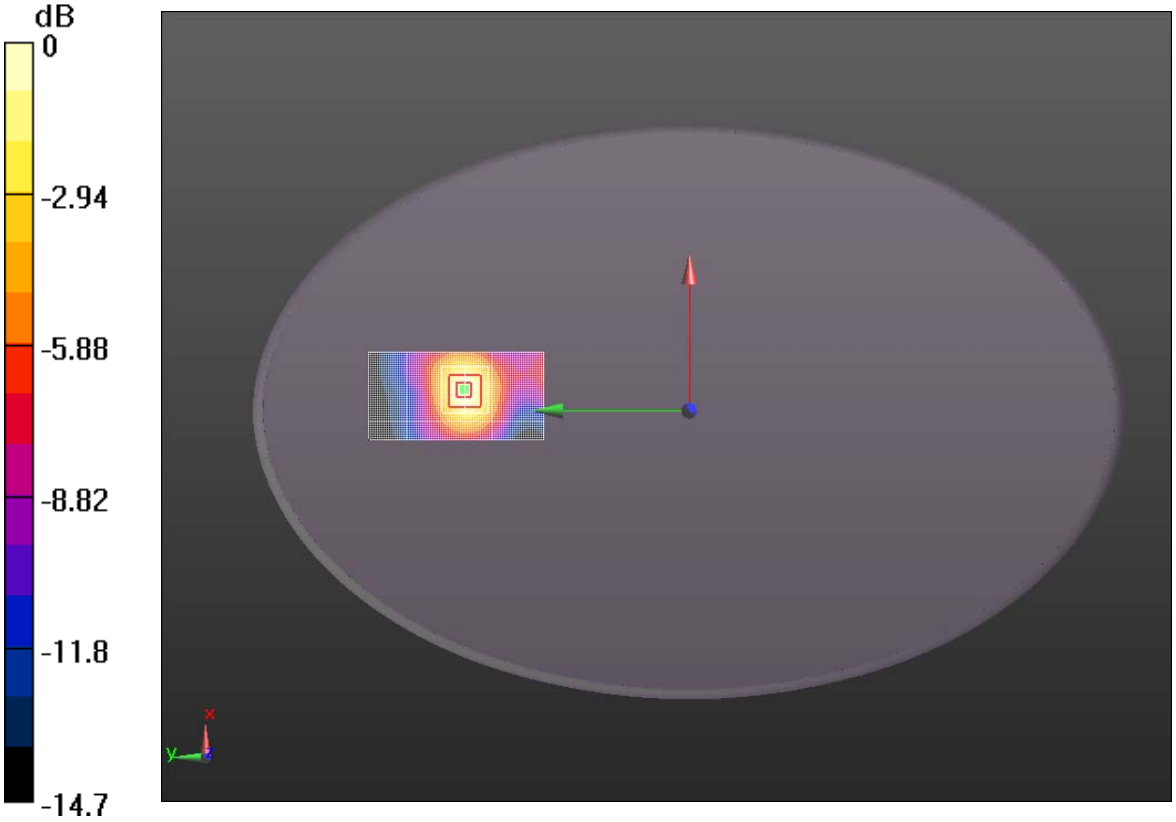
WCDMA 1900 Test Position 4 Middle

Date/Time: 11/01/2011 2:50:15 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body side/Vertical Back_4 Middle/Area Scan (41x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.610 mW/g

1900 body side/Vertical Back_4 Middle/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.27 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 0.884 W/kg
SAR(1 g) = 0.535 mW/g; SAR(10 g) = 0.309 mW/g
Maximum value of SAR (measured) = 0.587 mW/g



0 dB = 0.587mW/g

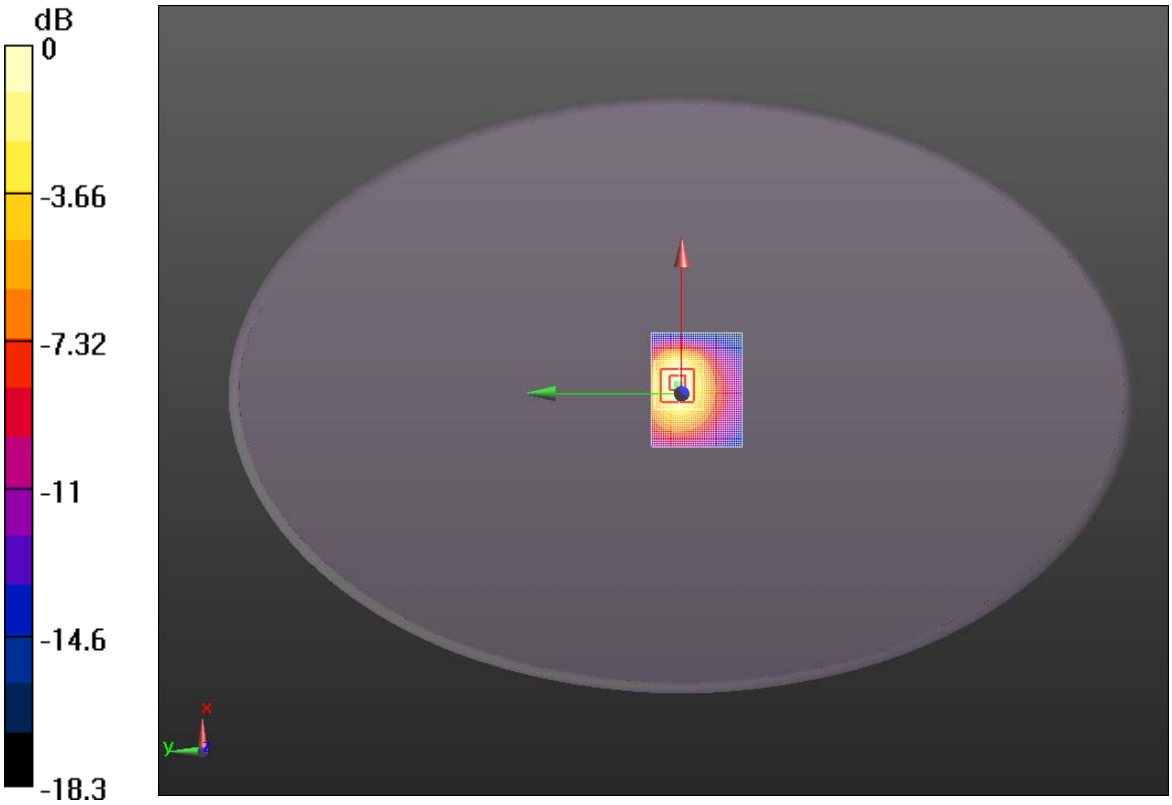
Fig.39 WCDMA 1900 CH9400 Test Position 4

WCDMA 1900 Test Position 5 Middle

Date/Time: 11/01/2011 3:12:15 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1880 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Vertical Top_5 Middle/Area Scan (51x41x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.32 mW/g

1900 body/Vertical Top_5 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.3 V/m; Power Drift = -0.149 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.601 mW/g
Maximum value of SAR (measured) = 1.2 mW/g



0 dB = 1.2mW/g

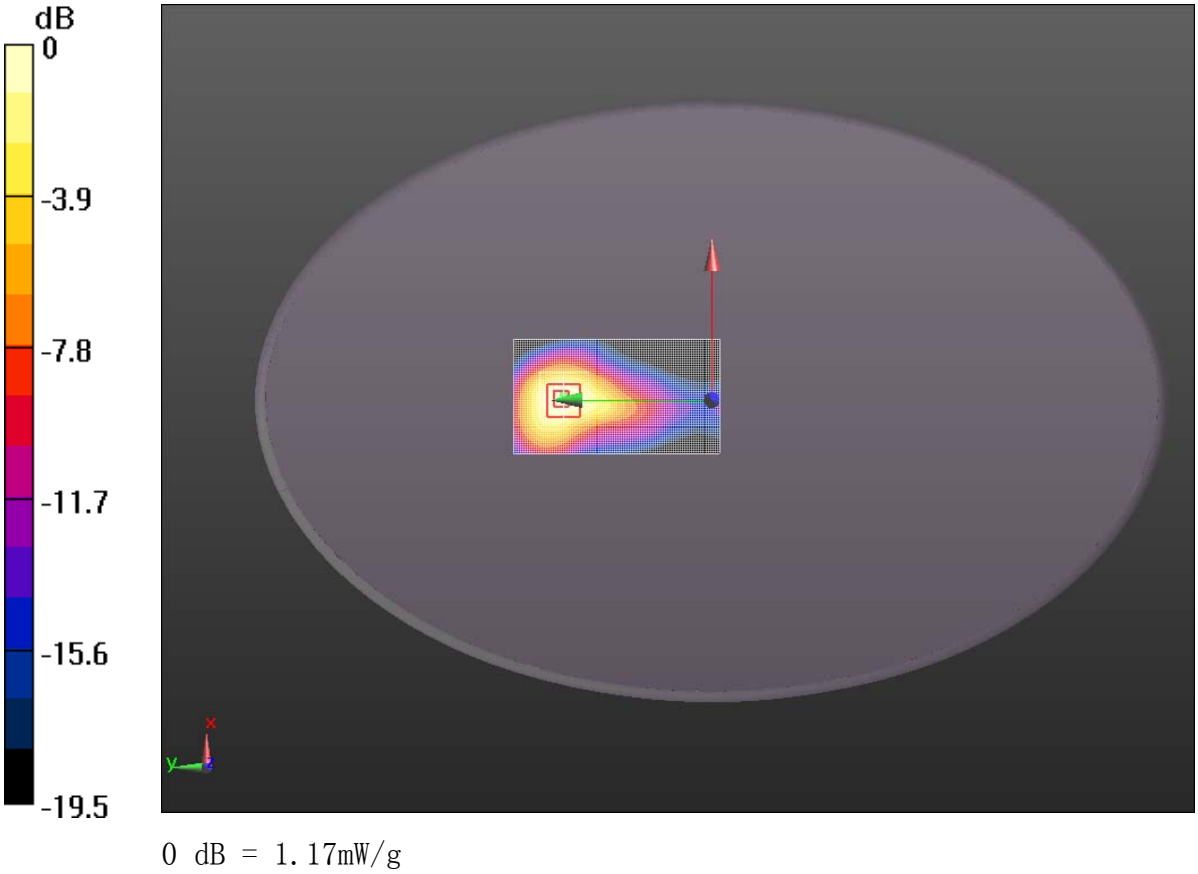
Fig.40 WCDMA 1900 CH9400 Test Position 5

WCDMA 1900 Test Position 1 High

Date/Time: 11/01/2011 3:32:15 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1908 MHz; σ = 1.57 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1907.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Up_1 High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.19 mW/g

1900 body/Horizontal Up_1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.37 V/m; Power Drift = 0.121 dB
Peak SAR (extrapolated) = 1.84 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.623 mW/g
Maximum value of SAR (measured) = 1.17 mW/g



0 dB = 1.17mW/g

Fig.41 WCDMA 1900 CH9538 Test Position 1

WCDMA 1900 Test Position 1 Low

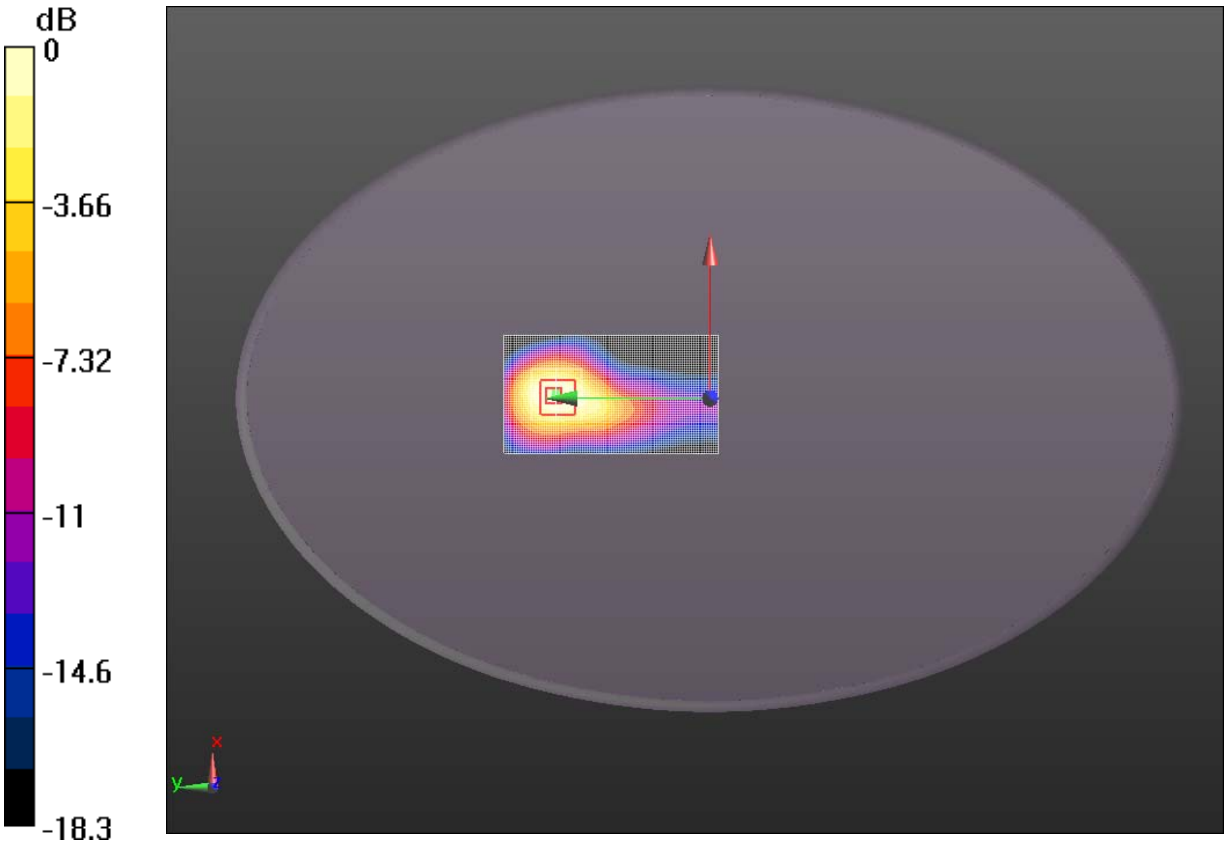
Date/Time: 11/01/2011 3:45:15 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.51 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1852.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Horizontal Up_1 Low/Area Scan (51x91x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.35 mW/g

1900 body/Horizontal Up_1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.07 V/m; Power Drift = 0.113 dB
Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.662 mW/g
Maximum value of SAR (measured) = 1.23 mW/g



0 dB = 1.23mW/g

Fig.42 WCDMA 1900 CH9262 Test Position 1

WCDMA 1900 Test Position 5 High

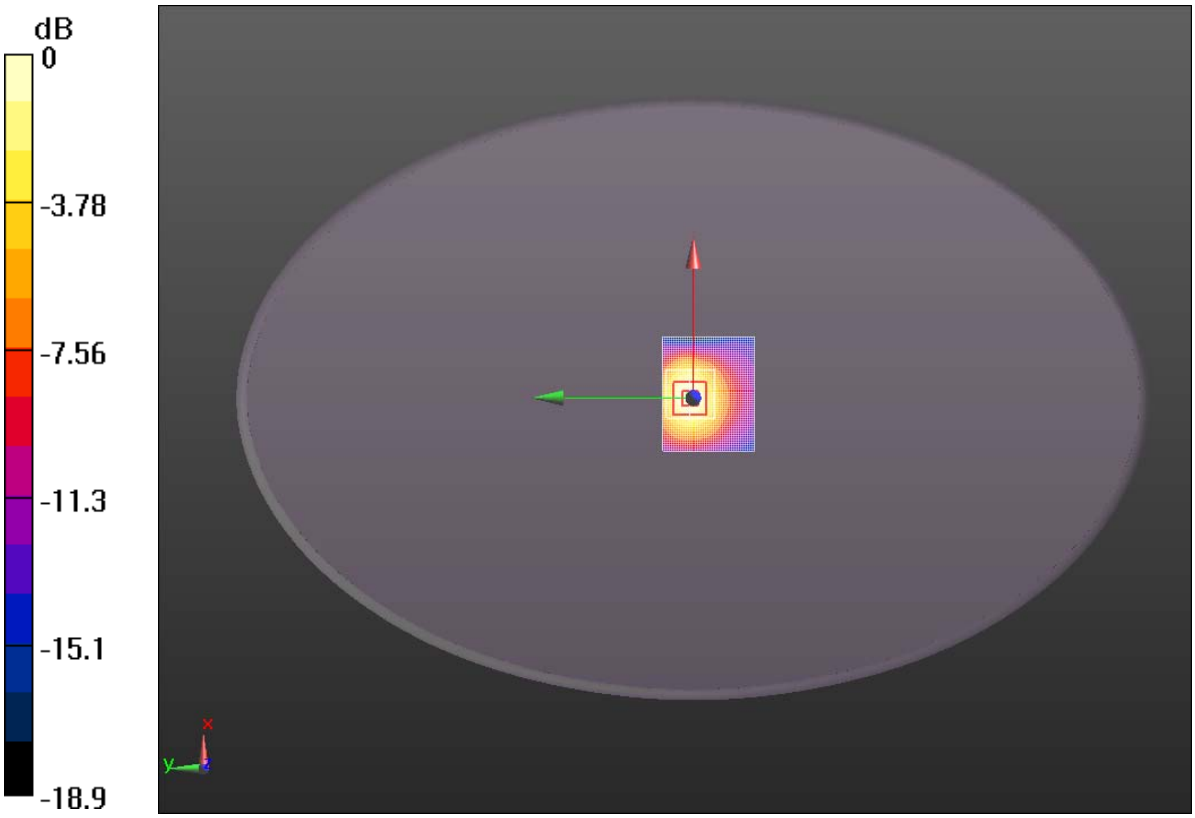
Date/Time: 11/01/2011 3:58:14 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used: f = 1908 MHz; σ = 1.57 mho/m; ε_r = 52.2; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1907.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Vertical Top_5 High/Area Scan (51x41x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.12 mW/g

1900 body/Vertical Top_5 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.4 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.945 mW/g; SAR(10 g) = 0.528 mW/g
Maximum value of SAR (measured) = 1.03 mW/g



0 dB = 1.03mW/g

Fig.43 WCDMA 1900 CH9538 Test Position 5

WCDMA 1900 Test Position 5 Low

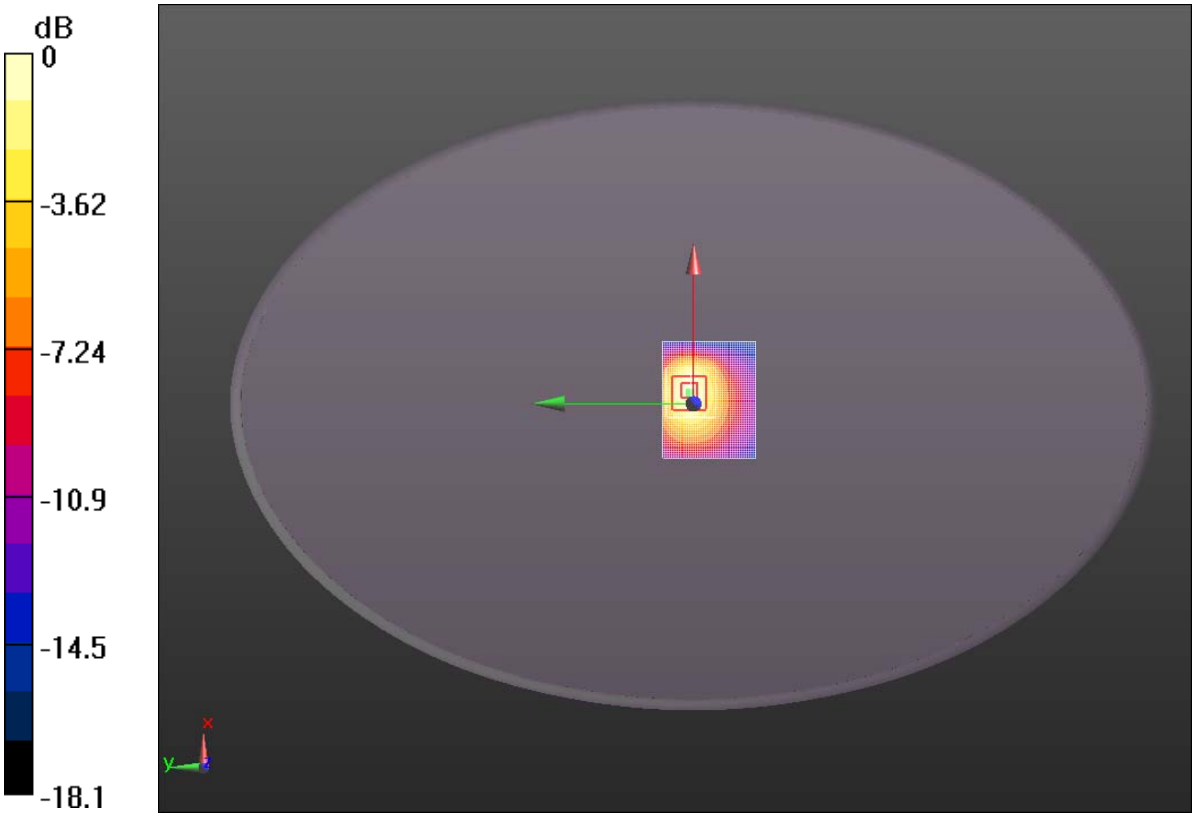
Date/Time: 11/01/2011 4:28:14 PM,
Electronics: DAE4 Sn786
Medium: Body 1900MHz
Medium parameters used (interpolated): f = 1852.4 MHz; σ = 1.51 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature:21.5℃
Communication System: WCMDA Frequency: 1852.4 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

1900 body/Vertical Top_5 Low/Area Scan (51x41x1): Measurement grid:

dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.05 mW/g

1900 body/Vertical Top_5 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.8 V/m; Power Drift = -0.00859 dB
Peak SAR (extrapolated) = 1.49 W/kg
SAR(1 g) = 0.888 mW/g; SAR(10 g) = 0.492 mW/g
Maximum value of SAR (measured) = 0.984 mW/g



0 dB = 0.984mW/g

Fig.44 WCDMA 1900 CH9262 Test Position 5

ANNEX D SYSTEM VALIDATION RESULTS

835MHz

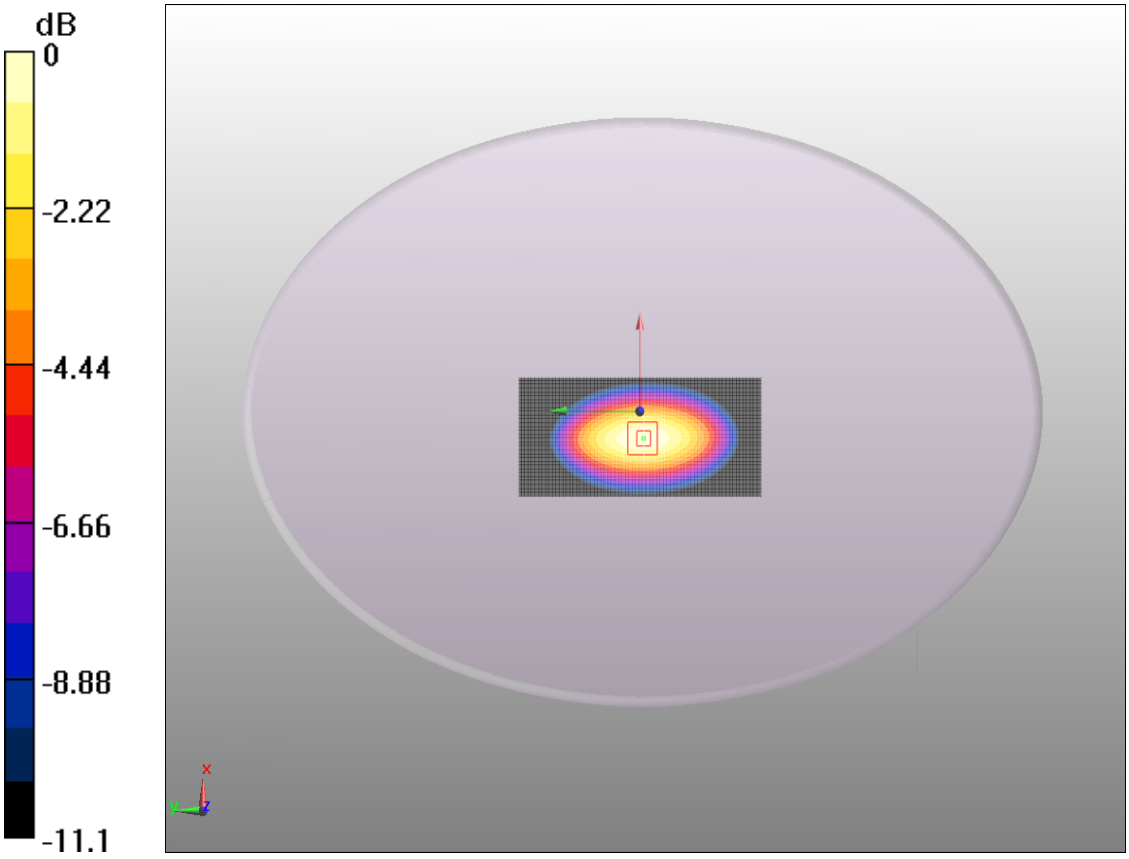
Date/Time: 10/31/2011 8:25:34 AM
Electronics: DAE4 Sn786
Medium: 850 Body
Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.14; ρ = 1000 kg/m^3
Ambient Temperature:23.0℃ Liquid Temperature: 22.5℃
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(6.02, 6.02, 6.02)

System Validation /Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 2.71 mW/g

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm
Reference Value = 53.1 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 3.49 W/kg
SAR(1 g) = 2.50 mW/g; SAR(10 g) = 1.56 mW/g
Maximum value of SAR (measured) = 2.58 mW/g



0 dB = 2.58mW/g

Fig.45 validation 835MHz 250Mw

1900MHz

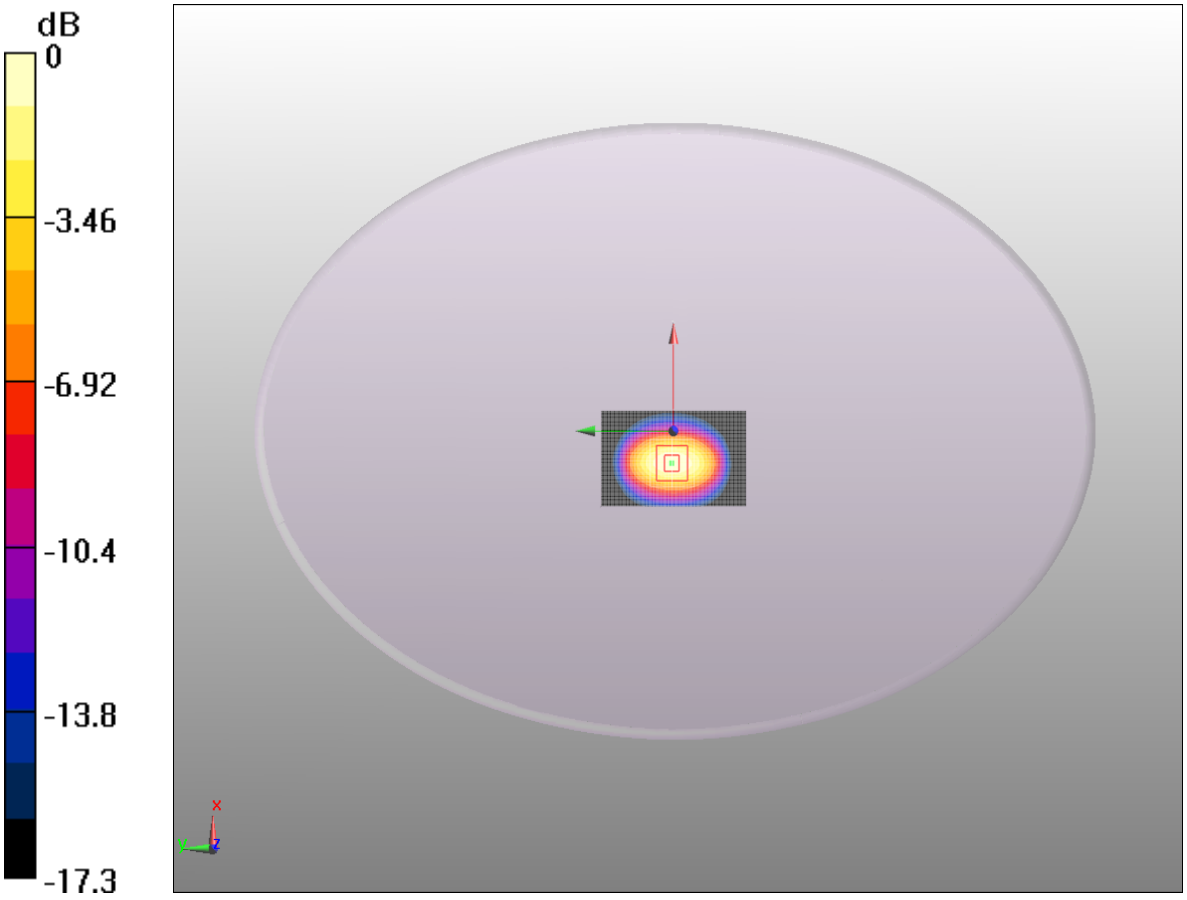
Date/Time: 11/01/2011 8:19:45 AM
Electronics: DAE4 Sn786
Medium: Body 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.56 mho/m; ε_r = 52.18; ρ = 1000 kg/m^3
Ambient Temperature:22.0℃ Liquid Temperature: 21.5℃
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3151 ConvF(4.87, 4.87, 4.87)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 11.7 mW/g

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

Reference Value = 93.5 V/m; Power Drift = 0.071 dB
Peak SAR (extrapolated) = 16.6 W/kg
SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.19 mW/g
Maximum value of SAR (measured) = 11.4 mW/g



0 dB = 11.4mW/g

Fig.46 validation 1900MHz 250Mw

ANNEX E PROBE 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 Telecommunication Metrology Center of MIIT Certificate No: ES3DV3-3151_Apr11

CALIBRATION CERTIFICATE

Object	ES3DV3-SN: 3151
Calibration procedure(s)	QA CAL-01.v6 Calibration procedure for dosimetric E-field probes
Calibration date:	April 27, 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)°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	11-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: April 27, 2011

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

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S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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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.