信息产业部通信计量中心
Telecommunication Metrology Center of MII

Deutscher Akkreditierungs Rat

No. DAT-P-114/01-01

ilac-MRA

CNAS 检 测 CNAS L0442

TEST REPORT

No. 2008EEE01353

FCC ID	QISU1005
Test name	Electromagnetic Field (Specific Absorption Rate)
Product	WCDMA/GPRS/GSM Mobile Phone
Model	HUAWEI U1005
Client	HUAWEI Technologies Co., Ltd.
Classification of test	Non Type Approval

Telecommunication Metrology Center

of Ministry of Information Industry

Notes

1. . The test report shall be invalid if there is no “specified stamp for the test report” or the stamp of the test organization on it.
2. Copies of the test report shall be invalid if there is no “specified stamp for the test report” or the stamp of the test organization on it.
3. The test report shall be invalid if there are no signatures of the testing person, reviewing person and approving person on it.
4. The test report shall be invalid if it is altered.
5. Any demurral about the test shall be put forward to the testing organization within 15 days after the receiving of the test report.
6. This test report standalone dose not constitute or imply by its own an approval of the product by any Certification Authorities or Competent Bodies.
7. This report is only valid if complete, and test report shall not be reproduced except in full, without written approval of the laboratory.
8. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of Telecommunication Metrology Center of MII and the Accreditation Bodies, if it applies.

Address: No. 52, Huayuan Bei Road, Haidian District, Beijing, P. R. China
(Telecommunication Metrology Center of MII)
Post code: 100083
Telephone: +86 10 62302041 Fax: +86 10 62304793
Web site: http://www.emcite.com
E-mail: welcome@emcite.com

TABLE OF CONTENT

Product Name	WCDMA/GPRS/GSM Mobile Phone	Sample Model	HUAWEI U1005
Client	HUAWEI Technologies Co., Ltd.	Type of test	Non Type Approval
Factory	HUAWEI Technologies Co., Ltd.	Sampling arrival date	May 11th, 2008
Manufacturer	HUAWEI Technologies Co., Ltd.		
Sampling/ Sending sample	Sending sample	Sample sent by	Xie Yan
Sampling location	/	Sampling person	/
Sample quantity	1	Sample matrix	/
Series number of the Sample	354437020004376		
Test basis	**EN 50360–2001**: Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones. **EN 50361–2001**: Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones. **ANSI C95.1–1999**: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. **IEEE 1528–2003**: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques. **OET Bulletin 65 (Edition 97-01) and Supplement C(Edition 01-01):** Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits. **IEC 62209-1-2005**: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1:Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz) **IEC 62209-2 (Draft)**: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the Specific Absorption Rate (SAR)in the head and body for 30MHz to 6GHz Handheld and Body-Mounted Devices used in close proximity to the Body		
Test conclusion	Localized Specific Absorption Rate (SAR) of this portable wireless equipment has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this test report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report. General Judgment: **Pass** (Stamp) **Date of issue: June 18th, 2008**		
Note	The test results relate only to the items tested of the sample(s).		

Approved by (Lu Bingsong) **Deputy Director of the laboratory** **Reviewed by** (Sun Qian) **Tested by** (Lin Xiaojun)

1 COMPETENCE AND WARRANTIES

Telecommunication Metrology Center of Ministry of Information Industry is a test laboratory accredited by DAR (DATech) – Deutschen Akkreditierungs Rat (The German Accreditation Body Technology) for the tests indicated in the Certificate No. **DAT-P-114/01-01**.

Telecommunication Metrology Center of Ministry of Information Industry is a test laboratory accredited by CNAS–China national Accreditation Service for Conformity Assessment, for the tests indicated in the Certificate No. **L0442**.

Telecommunication Metrology Center of Ministry of Information Industry **(hereinafter TMC of MII)** is a test laboratory competent to carry out the tests described in this test report.

TMC of MII guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TMC of MII at the time of execution of the test.

TMC of MII is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test.

2 GENERAL CONDITIONS

2.1 This report only refers to the item that has undergone the test.

2.2 This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities.

2.3 This document is only valid if complete; no partial reproduction can be made without written approval of Telecommunication Metrology Center of Ministry of Information Industry.

2.4 This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of Telecommunication Metrology Center of Ministry of Information Industry and the Accreditation Bodies, if it applies.

3 DESCRIPTION OF EUT

3.1 Addressing Information Related to EUT

Table 1: Applicant (The Client)

Name or Company	HUAWEI Technologies Co., Ltd.
Address/Post	Bantian, Longgang District, Shenzhen, Guangdong
City	Shenzhen
Postal Code	518129
Country	China
Telephone	0755-28780808
Fax	0755-28780808

Table 2: Manufacturer

Name or Company	HUAWEI Technologies Co., Ltd.
Address/Post	Bantian, Longgang District, Shenzhen, Guangdong
City	Shenzhen
Postal Code	518129
Country	China
Telephone	0755-28780808
Fax	0755-28780808

3.2 Constituents of EUT

Description	Model	Serial Number	Manufacturer
Handset	HUAWEI U1005	354437020004376	HUAWEI Technologies Co., Ltd
Lithium Battery	HBU83S	FMT7C0344136Y	Shenzhen FMT Co., Ltd.
AC/DC Adapter	Ⅰ:TPCA-053065VY Ⅱ:CHG5365-3C	Ⅰ:TPI6B2500425 Ⅱ:HKY811000037	Ⅰ :TECH-POWER Electronics（Shenzhen）Co., Ltd. Ⅱ:Shenzhen Chi Yuan Industrial Co., Ltd.

3.3 General Description

Equipment Under Test (EUT) is a model of WCDMA/GPRS/GSM Mobile Phone with integrated antenna. It consists of Handset and normal options: Lithium Battery and AC/DC Adapter as Table 3. With the request of the client, SAR is tested for WCDMA 850, WCDMA 1900, GSM 850, GSM 1900, GSM 850 GPRS and GSM 1900 GPRS. Its GPRS class is 10. The appearance of the EUT is in Annex G.

The sample undergoing test was selected by the Client.

Components list please refer to documents of the manufacturer

4 OPERATIONAL CONDITIONS DURING TEST

4.1 Schematic Test Configuration

4.1.1 SAR Measurement Procedures for WCDMA 850MHz and WCDMA 1900MHZ

For the SAR tests at WCDMA 850MHz and WCDMA 1900MHz, a communication link is set up with a System Simulator (SS) by air link. The maximum output power were verified on high, middle and low channels for each test band according to section 5.2 of 3GPP TS 34.121 using 12.2kbps RMC and AMR with TPC set to all “1’s”

(Please see 7.2.2 Table 7 for the above detailed power measurement results.)

Head and body SAR are both measured using the 12.2kbps RMC with TPC bits configured to all “1”s, and not required for 12.2kbps AMR, because the maximum output power for 1.2kps AMR is less than 0.25dB higher than that measured in 12.2kbps RMC. For body SAR measurement, the multiple

$DPDCH_n$ configurations are also not required, because the EUT can't support it.

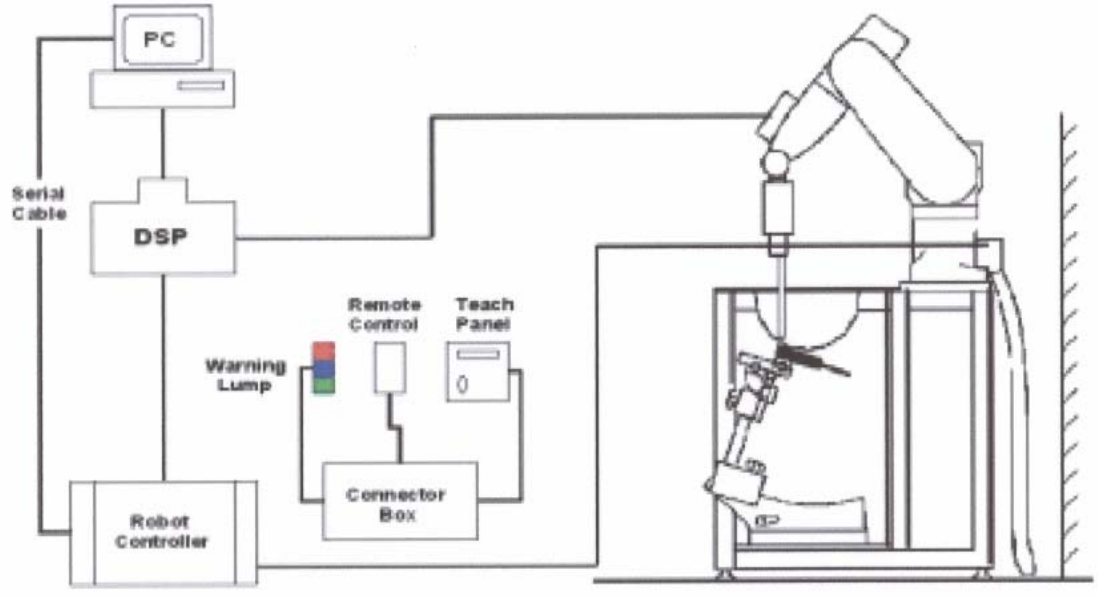
4.1.2 SAR Measurement Procedures for GSM 850MHz and GSM 1900MHZ

For the SAR tests at GSM 850 and GSM 1900, a communication link is set up with a System Simulator (SS) by air link. The EUT is commanded to operate at maximum transmitting power. And the EUT is measured with GPRS function in the body test positions.

4.2 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-field 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, 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

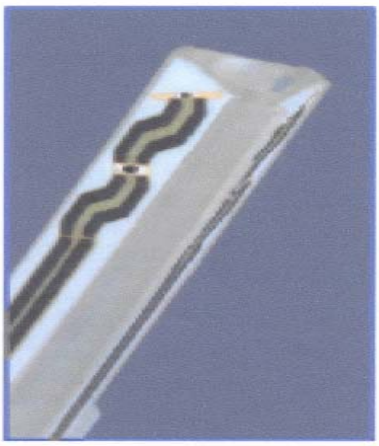
device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

4.3 Dasy4 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ET3DV6 (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.

ET3DV6 Probe Specification

Construction	Symmetrical design with triangular core Built-in optical fiber *for* surface detection System(ET3DV6 only) Built-in shielding against static charges PEEK enclosure material(resistant to organic solvents, e.q., glycol)
Calibration	In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at frequencies of 450MHz, 900MHz and 1.8GHz (accuracy±8%) Calibration for other liquids and frequencies upon request
Frequency	l 0 MHz to > 6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)
Directivity	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation normal probe axis)
Dynamic Range	5u W/g to > 100mW/g; Linearity: ±0.2dB
Surface Detection	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surface(ET3DV6 only)
Dimensions	Overall length: 330mm Tip length: 16mm Body diameter: 12mm Tip diarneter: 6.8mm Distance from probe tip to dipole centers: 2.7mm
Application	General dosimetry up to 3GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms



Picture 2: ET3DV6 E-field Probe

Picture3:ET3DV6 E-field probe

4.4 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.

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

Or

Where: σ = Simulated tissue conductivity,
ρ = Tissue density (kg/m3).

Note: Please see Annex E to check the probe calibration certificate.

Picture 4: Device Holder

4.5 Other Test Equipment

4.5.1 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 repeat ably positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

4.5.2 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 all predefined phantom positions and measurement grids by the complete setup of 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

Picture5:Generic Twin Phantom

4.6 Equivalent Tissues

The liquid used for the frequency range of 800-2000 MHz consisted of water, sugar, salt and Cellulose. The liquid has previously been 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 and OET Bulletin 65 (Edition 97-01) and Supplement C (Edition 01-01).

Table 4. Composition of the Head Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	40.29
Sugar	57.90
Salt	1.38
Preventol	0.18
Cellulose	0.24
Dielectric Parameters Target Value	f=850MHz ε=41.5 σ=0.93
MIXTURE %	FREQUENCY 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40

Table 5. Composition of the Body Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	52.5
Sugar	45.0
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=55.2 σ=0.97
MIXTURE %	FREQUENCY 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=1.52

4.7 System Specifications

4.7.1 Robotic System Specifications

Specifications

Positioner: Stäubli Unimation Corp. Robot Model: RX90L
Repeatability: ±0.02 mm
No. of Axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller
Processor: Pentium III
Clock Speed: 800 MHz
Operating System: Windows 2000
Data Converter
Features: Signal Amplifier, multiplexer, A/D converter, and control logic
Software: DASY4 software
Connecting Lines: Optical downlink for data and status info.
Optical uplink for commands and clock

5 CHARACTERISTICS OF THE TEST

5.1 Applicable Limit Regulations

EN 50360–2001: Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.

It specifies the maximum exposure limit of **2.0 W/kg** as averaged over any 10 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

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.

5.2 Applicable Measurement Standards

EN 50361–2001: Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.

IEEE 1528–2003: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.

OET Bulletin 65 (Edition 97-01) and Supplement C (Edition 01-01): Additional Information for

Evaluating Compliance of Mobile and Portable Devices with FCC Limits.

IEC 62209-1-2005: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)

IEC 62209-2 (Draft): Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the Specific Absorption Rate (SAR)in the head and body for 30MHz to 6GHz Handheld and Body-Mounted Devices used in close proximity to the Body

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

6 LABORATORY ENVIRONMENT

Table 6: The Ambient Conditions during EMF Test

Temperature	Min. = 15 °C, Max. = 30 °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.	

7 CONDUCTED OUTPUT POWER MEASUREMENT

7.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure the maximum power transmission and proper modulation. This result contains conducted output power and ERP for the EUT. In all cases, the measured peak output power should be greater and within 5% than EMI measurement.

7.2 Conducted Power

7.2.1 Measurement Methods

The EUT was set up for the maximum output power. The channel power was measured with Agilent Spectrum Analyzer E4440A. These measurements were done at low, middle and high channels for each test bands both before and after SAR test.

7.2.2 Measurement result

Table 7: Conducted Power Measurement Results

WCDMA 850 (12.2kbps RMC)	**Conducted Power**		
	Channel 4132 (826.4MHz)	**Channel 4182 (836.4MHz)**	**Channel 4233 (846.6MHz)**
Before Test (dBm)	22.25	22.37	22.51
After Test (dBm)	22.25	22.35	22.50
WCDMA 1900 (12.2kbps RMC)	**Conducted Power**		
	Channel 9262 (1852.4MHz)	**Channel 9400 (1880MHz)**	**Channel 9538 (1907.6MHz)**
Before Test (dBm)	21.45	21.39	21.42
After Test (dBm)	21.44	21.38	21.43
WCDMA 850 (12.2kbps AMR)	**Conducted Power**		
	Channel 128 (824.2MHz)	**Channel 190 (836.6MHz)**	**Channel 251 (848.8MHz)**
Before Test (dBm)	22.24	22.34	22.48
After Test (dBm)	22.25	22.33	22.50
WCDMA 1900 (12.2kbps AMR)	**Conducted Power**		
	Channel 512 (1850.2MHz)	**Channel 661 (1880MHz)**	**Channel 810 (1909.8MHz)**
Before Test (dBm)	21.43	21.39	21.44
After Test (dBm)	21.44	21.38	21.44
GSM 850MHz	**Conducted Power**		
	Channel 128 (824.2MHz)	**Channel 190 (836.6MHz)**	**Channel 251 (848.8MHz**
Before Test (dBm)	32.63	32.80	32.72
After Test (dBm)	32.63	32.80	32.72
GSM 1900MHZ	**Conducted Power**		
	Channel 512 (1850.2MHz)	**Channel 661 (1880MHz)**	**Channel 810 (1909.8MHz)**
Before Test (dBm)	28.91	28.89	28.95
After Test (dBm)	28.91	28.90	28.94
GSM 850MHz GPRS	**Conducted Power**		
	Channel 128 (824.2MHz)	**Channel 190 (836.6MHz)**	**Channel 251 (848.8MHz**
Before Test (dBm)	32.65	32.82	32.75
After Test (dBm)	32.64	32.81	32.74
GSM 1900MHZ GPRS	**Conducted Power**		
	Channel 512 (1850.2MHz)	**Channel 661 (1880MHz)**	**Channel 810 (1909.8MHz)**
Before Test (dBm)	28.92	28.90	28.96
After Test (dBm)	28.91	28.92	28.95

7.2.3 Power Drift

To control the output power stability during the SAR test, DASY4 system calculates the power drift by measuring the E-field at the same location at the beginning and at the end of the measurement for each test position. These drift values can be found in Table 11 to Table 18 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is within 5%.

8 TEST RESULTS

8.1 Dielectric Performance

Table 8: Dielectric Performance of Head Tissue Simulating Liquid

Measurement is made at temperature 24.5 ℃ and relative humidity 40%.Liquid temperature during the test: 24.0℃			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	850 MHz	41.5	0.90
	1900 MHz	40.0	1.40
Measurement value (Average of 10 tests)	850 MHz	43.7	0.92
	1900 MHz	39.3	1.37

Table 9: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 24.5 ℃ and relative humidity 40%.Liquid temperature during the test: 24.0℃			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	850 MHz	55.2	0.97
	1900 MHz	53.3	1.52
Measurement value (Average of 10 tests)	850 MHz	55.0	0.99
	1900 MHz	52.1	1.49

8.2 System Validation

Table 10: System Validation

Measurement is made at temperature 23.3 ℃, relative humidity 49%, input power 250 mW. Liquid temperature during the test: 22.5℃							
Liquid parameters		**Frequency**		**Permittivity ε**		**Conductivity σ (S/m)**	
		835 MHz		42.1		0.93	
		1900 MHz		39.3		1.37	
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	2.48	1.62	2.50	1.25%	0.81%
	1900 MHz	5.09	9.73	5.27	9.91	3.3%	1.9%

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

8.3 Summary of Measurement Results (WCDMA 850)

Table 11: SAR Values (Head, WCDMA 850 MHz Band)

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	
Left hand, Touch cheek, Top frequency(See Fig.1)	0.433	0.643	0.127
Left hand, Touch cheek, Mid frequency(See Fig.3)	0.459	0.679	0.103
Left hand, Touch cheek, Bottom frequency(See Fig.5)	0.516	0.761	-0.013
Left hand, Tilt 15 Degree, Top frequency(See Fig.7)	0.251	0.371	0.032
Left hand, Tilt 15 Degree, Mid frequency(See Fig.9)	0.267	0.395	0.112
Left hand, Tilt 15 Degree, Bottom frequency(See Fig.11)	0.304	0.446	0.055
Right hand, Touch cheek, Top frequency(See Fig.13)	0.500	0.735	0.060
Right hand, Touch cheek, Mid frequency(See Fig.15)	0.533	0.783	0.039
Right hand, Touch cheek, Bottom frequency(See Fig.17)	0.591	0.863	0.066
Right hand, Tilt 15 Degree, Top frequency(See Fig.19)	0.288	0.418	0.125
Right hand, Tilt 15 Degree, Mid frequency(See Fig.21)	0.304	0.441	0.159
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.23)	0.344	0.497	-0.173

Table 12: SAR Values (Body, WCDMA 850 MHz Band)

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	
Body, Towards Ground, Top frequency(See Fig.25)	0.333	0.470	0.178
Body, Towards Ground, Mid frequency(See Fig.27)	0.388	0.549	0.057
Body, Towards Ground, Bottom frequency(See Fig.29)	0.392	0.552	0.046
Body, Towards Phantom, Top frequency(See Fig.31)	0.221	0.310	0.186
Body, Towards Phantom, Mid frequency(See Fig.33)	0.226	0.318	0.065
Body, Towards Phantom, Bottom frequency(See Fig.35)	0.250	0.350	0.035

8.4 Summary of Measurement Results (WCDMA 1900)

Table 13: SAR Values (Head, WCDMA 1900 MHz Band)

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	
Left hand, Touch cheek, Top frequency(See Fig.37)	0.402	0.816	0.012
Left hand, Touch cheek, Mid frequency(See Fig.39)	0.414	0.840	0.156
Left hand, Touch cheek, Bottom frequency(See Fig.41)	0.356	0.722	0.200
Left hand, Tilt 15 Degree, Top frequency(See Fig.43)	0.487	0.991	-0.026
Left hand, Tilt 15 Degree, Mid frequency(See Fig.45)	0.473	0.964	0.064
Left hand, Tilt 15 Degree, Bottom frequency(See Fig.47)	0.388	0.782	-0.031
Right hand, Touch cheek, Top frequency(See Fig.49)	0.289	0.540	-0.002
Right hand, Touch cheek, Mid frequency(See Fig.51)	0.298	0.562	0.030
Right hand, Touch cheek, Bottom frequency(See Fig.53)	0.259	0.485	0.053
Right hand, Tilt 15 Degree, Top frequency(See Fig.55)	0.308	0.590	-0.068
Right hand, Tilt 15 Degree, Mid frequency(See Fig.57)	0.314	0.599	0.074
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.59)	0.265	0.502	0.028

Table 14: SAR Values (Body, WCDMA 1900 MHz Band)

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	
Body, Towards Ground, Top frequency(See Fig.61)	0.338	0.562	0.075
Body, Towards Ground, Mid frequency(See Fig.63)	0.341	0.567	0.117
Body, Towards Ground, Bottom frequency(See Fig.65)	0.290	0.490	0.013
Body, Towards Phantom, Top frequency(See Fig.67)	0.127	0.219	0.092
Body, Towards Phantom, Mid frequency(See Fig.69)	0.100	0.174	0.200
Body, Towards Phantom, Bottom frequency(See Fig.71)	0.077	0.135	0.200

8.5 Summary of Measurement Results (GSM 850)

Table 15: SAR Values (Head, GSM 850 MHz Band)

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	
Left hand, Touch cheek, Top frequency(See Fig.73)	0.366	0.541	0.001
Left hand, Touch cheek, Mid frequency(See Fig.75)	0.472	0.698	0.011
Left hand, Touch cheek, Bottom frequency(See Fig.77)	0.557	0.822	-0.019
Left hand, Tilt 15 Degree, Top frequency(See Fig.79)	0.223	0.328	-0.034
Left hand, Tilt 15 Degree, Mid frequency(See Fig.81)	0.298	0.438	0.035
Left hand, Tilt 15 Degree, Bottom frequency(See Fig.83)	0.346	0.507	-0.113
Right hand, Touch cheek, Top frequency(See Fig.85)	0.437	0.642	-0.200
Right hand, Touch cheek, Mid frequency(See Fig.87)	0.564	0.832	-0.018
Right hand, Touch cheek, Bottom frequency(See Fig.89)	0.650	0.952	-0.031
Right hand, Tilt 15 Degree, Top frequency(See Fig.91)	0.236	0.342	-0.077
Right hand, Tilt 15 Degree, Mid frequency(See Fig.93)	0.322	0.466	0.055
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.95)	0.374	0.541	-0.098

Table 16: SAR Values (Body GPRS, GSM 850 MHz Band)

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	
Body, Towards Ground, Top frequency(See Fig.97)	0.428	0.608	-0.047
Body, Towards Ground, Mid frequency(See Fig.99)	0.452	0.639	-0.010
Body, Towards Ground, Bottom frequency(See Fig.101)	0.545	0.770	0.017
Body, Towards Phantom, Top frequency(See Fig.103)	0.196	0.276	0.021
Body, Towards Phantom, Mid frequency(See Fig.105)	0.227	0.317	-0.047
Body, Towards Phantom, Bottom frequency(See Fig.107)	0.297	0.415	-0.040

8.6 Summary of Measurement Results (GSM 1900)

Table 17: SAR Values (Head, GSM 1900 MHz Band)

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	
Left hand, Touch cheek, Top frequency(See Fig.109)	0.223	0.451	-0.160
Left hand, Touch cheek, Mid frequency(See Fig.111)	0.267	0.539	0.069
Left hand, Touch cheek, Bottom frequency(See Fig.113)	0.255	0.517	-0.008
Left hand, Tilt 15 Degree, Top frequency(See Fig.115)	0.238	0.482	0.037
Left hand, Tilt 15 Degree, Mid frequency(See Fig.117)	0.289	0.583	0.200
Left hand, Tilt 15 Degree, Bottom frequency(See Fig.119)	0.278	0.560	-0.022
Right hand, Touch cheek, Top frequency(See Fig.121)	0.133	0.248	-0.054
Right hand, Touch cheek, Mid frequency(See Fig.123)	0.161	0.301	-0.059
Right hand, Touch cheek, Bottom frequency(See Fig.125)	0.160	0.300	-0.200
Right hand, Tilt 15 Degree, Top frequency(See Fig.127)	0.156	0.299	0.024
Right hand, Tilt 15 Degree, Mid frequency(See Fig.129)	0.193	0.367	-0.014
Right hand, Tilt 15 Degree, Bottom frequency(See Fig.131)	0.189	0.360	-0.033

Table 18: SAR Values (Body GPRS, GSM 1900 MHz Band)

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	
Body, Towards Ground, Top frequency(See Fig.133)	0.188	0.316	-0.141
Body, Towards Ground, Mid frequency(See Fig.135)	0.182	0.303	-0.027
Body, Towards Ground, Bottom frequency(See Fig.137)	0.158	0.264	-0.047
Body, Towards Phantom, Top frequency(See Fig.139)	0.072	0.123	0.021
Body, Towards Phantom, Mid frequency(See Fig.141)	0.071	0.122	-0.104
Body, Towards Phantom, Bottom frequency(See Fig.143)	0.058	0.096	0.120

8.7 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 5.2 of this report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.

The maximum **1g** SAR values is obtained at the case of **WCDMA 1900 Head, Left hand, Tilt 15 Degree, Top frequency(Table 13),**and the value is: **0.991(1g).**

The maximum **10g** SAR values is obtained at the case **of GSM 850 Head, Right hand, Touch cheek, Bottom frequency (Table 15),** and the value are: **0.650(10g).**

9 Measurement Uncertainty

SN	a	Type	c	d	e = f(d,k)	f	h = c x f / e	k
	Uncertainty Component		Tol. (± %)	Prob. Dist.	Div.	c_i (1 g)	1 g u_i (±%)	v_i
1	System repetivity	A	0.5	N	1	1	0.5	9
	Measurement System							
2	Probe Calibration	B	5	N	2	1	2.5	∞
3	Axial Isotropy	B	4.7	R	√3	$(1\text{-}cp)^{1/2}$	4.3	∞
4	Hemispherical Isotropy	B	9.4	R	√3	$\sqrt{c_p}$		∞
5	Boundary Effect	B	0.4	R	√3	1	0.23	∞
6	Linearity	B	4.7	R	√3	1	2.7	∞
7	System Detection Limits	B	1.0	R	√3	1	0.6	∞
8	Readout Electronics	B	1.0	N	1	1	1.0	∞
9	RF Ambient Conditions	B	3.0	R	√3	1	1.73	∞
10	Probe Positioner Mechanical Tolerance	B	0.4	R	√3	1	0.2	∞
11	Probe Positioning with respect to Phantom Shell	B	2.9	R	√3	1	1.7	∞
12	Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	√3	1	2.3	∞
	Test sample Related							
13	Test Sample Positioning	A	4.9	N	1	1	4.9	N-1
14	Device Holder Uncertainty	A	6.1	N	1	1	6.1	N-1
15	Output Power Variation - SAR drift measurement	B	5.0	R	√3	1	2.9	∞
	Phantom and Tissue Parameters							
16	Phantom Uncertainty (shape and thickness tolerances)	B	1.0	R	√3	1	0.6	∞

17	Liquid Conductivity - deviation from target values	B	5.0	R	√3	0.64	1.7	∞
18	Liquid Conductivity - measurement uncertainty	B	5.0	N	1	0.64	1.7	M
19	Liquid Permittivity - deviation from target values	B	5.0	R	√3	0.6	1.7	∞
20	Liquid Permittivity - measurement uncertainty	B	5.0	N	1	0.6	1.7	M
	Combined Standard Uncertainty			RSS			11.25	
	Expanded Uncertainty (95% CONFIDENCE INTERVAL)			K=2			22.5	

10 MAIN TEST INSTRUMENTS

Table 19: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 31,2007	One year
02	Power meter	NRVD	101253	June 21, 2007	One year
03	Power sensor	NRV-Z5	100333		
04	Power sensor	NRV-Z6	100011	September 3, 2007	One year
05	Signal Generator	E4433B	US37230472	September 5, 2007	One Year
06	Amplifier	VTL5400	0505	No Calibration Requested	
07	BTS	CMU 200	105948	August 16, 2007	One year
08	E-field Probe	SPEAG ES3DV3	3142	September 7, 2007	One year
09	DAE	SPEAG DAE4	777	September 7, 2007	One year
10	Dipole Validation Kit	SPEAG D835V2	443	February 19, 2007	Two years
11	Dipole Validation Kit	SPEAG D1900V2	541	February 20, 2007	Two years

11 TEST PERIOD

The test is performed from June 13th, 2008 to June 16th, 2008.

12 TEST LOCATION

The test is performed at Radio Communication & Electromagnetic Compatibility Laboratory of Telecommunication Metrology Center

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.

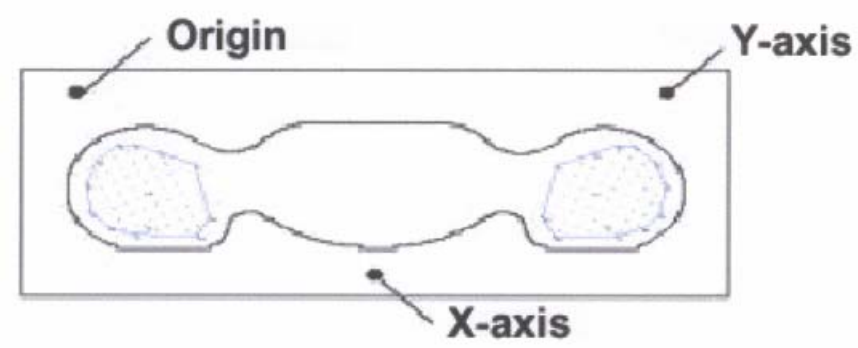
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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.

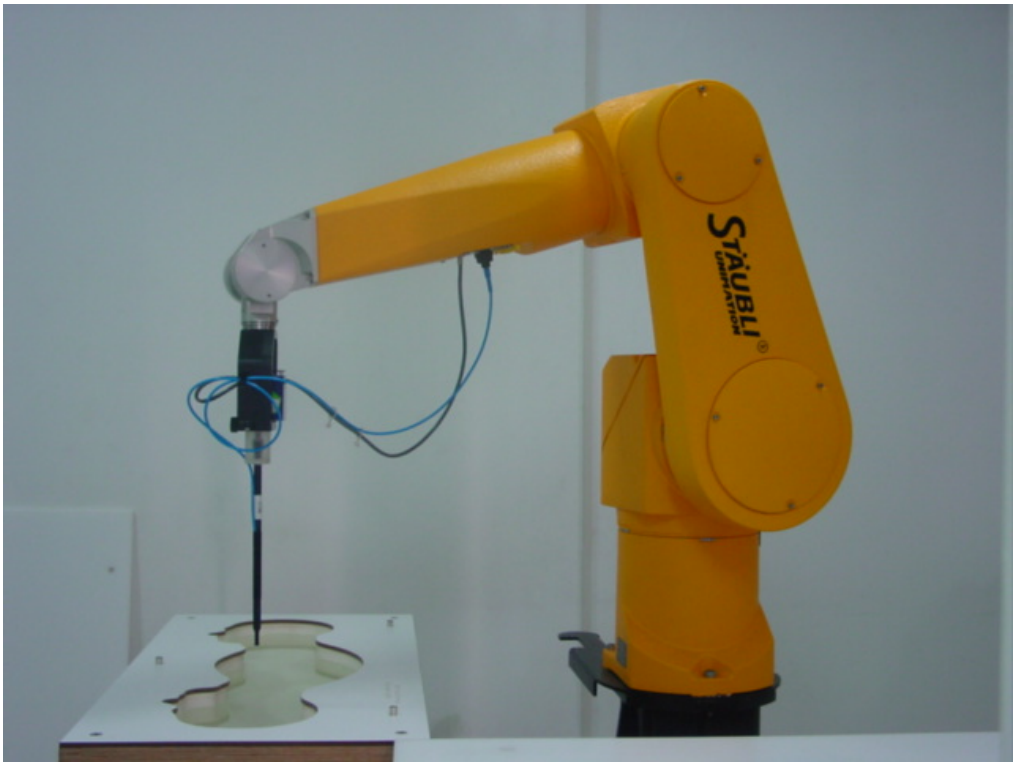
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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.

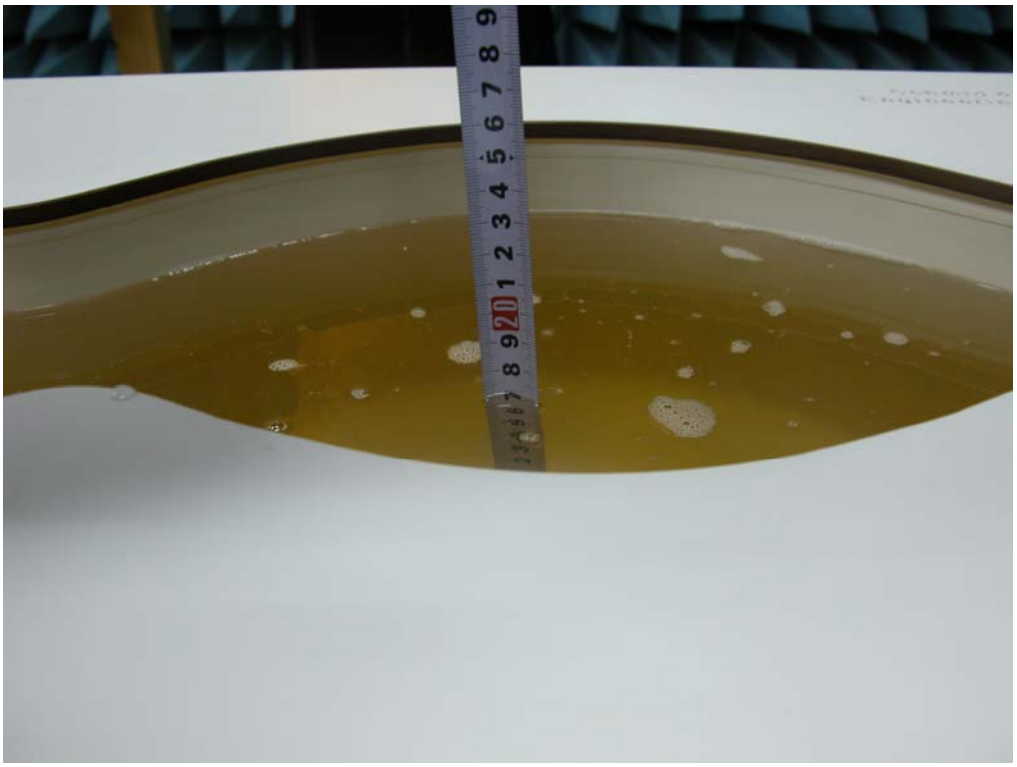


Picture A: SAR Measurement Points in Area Scan

ANNEX B TEST LAYOUT



Picture B1: Specific Absorption Rate Test Layout



Picture B2: Liquid depth in the Flat Phantom (850 MHz)

Picture B3: Liquid depth in the Flat Phantom (1900MHz)

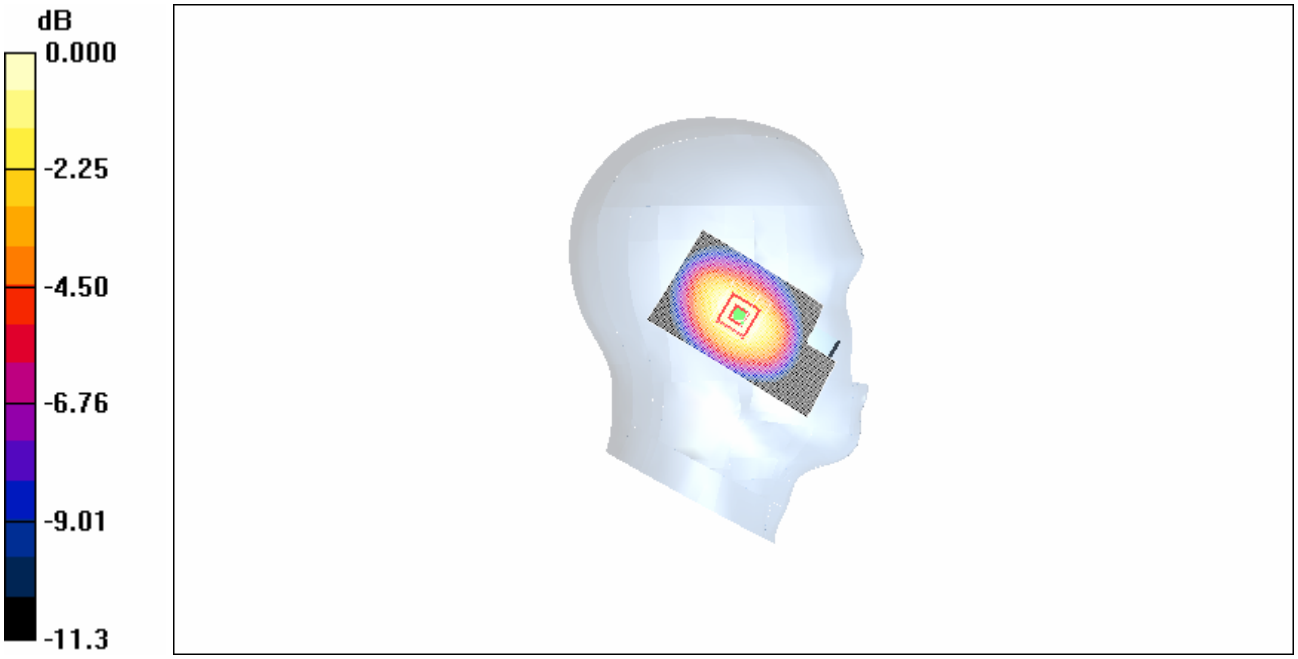
ANNEX C GRAPH RESULTS

WCDMA 850 Left Cheek High

Date/Time: 2008-6-13 13:28:47
Electronics: DAE4 Sn777
Medium: Head GSM850
Medium parameters used (interpolated): f = 846.6 MHz; σ = 0.918 mho/m; ε_r = 43.7; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: WCDMA 850 Frequency: 846.6 MHz Duty Cycle: 1:1
Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Cheek High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.685 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.6 V/m; Power Drift = 0.127 dB
Peak SAR (extrapolated) = 0.889 W/kg
SAR(1 g) = 0.643 mW/g; SAR(10 g) = 0.433 mW/g
Maximum value of SAR (measured) = 0.664 mW/g



0 dB = 0.664mW/g

Fig. 1 Left Hand Touch Cheek WCDMA 850MHz CH423

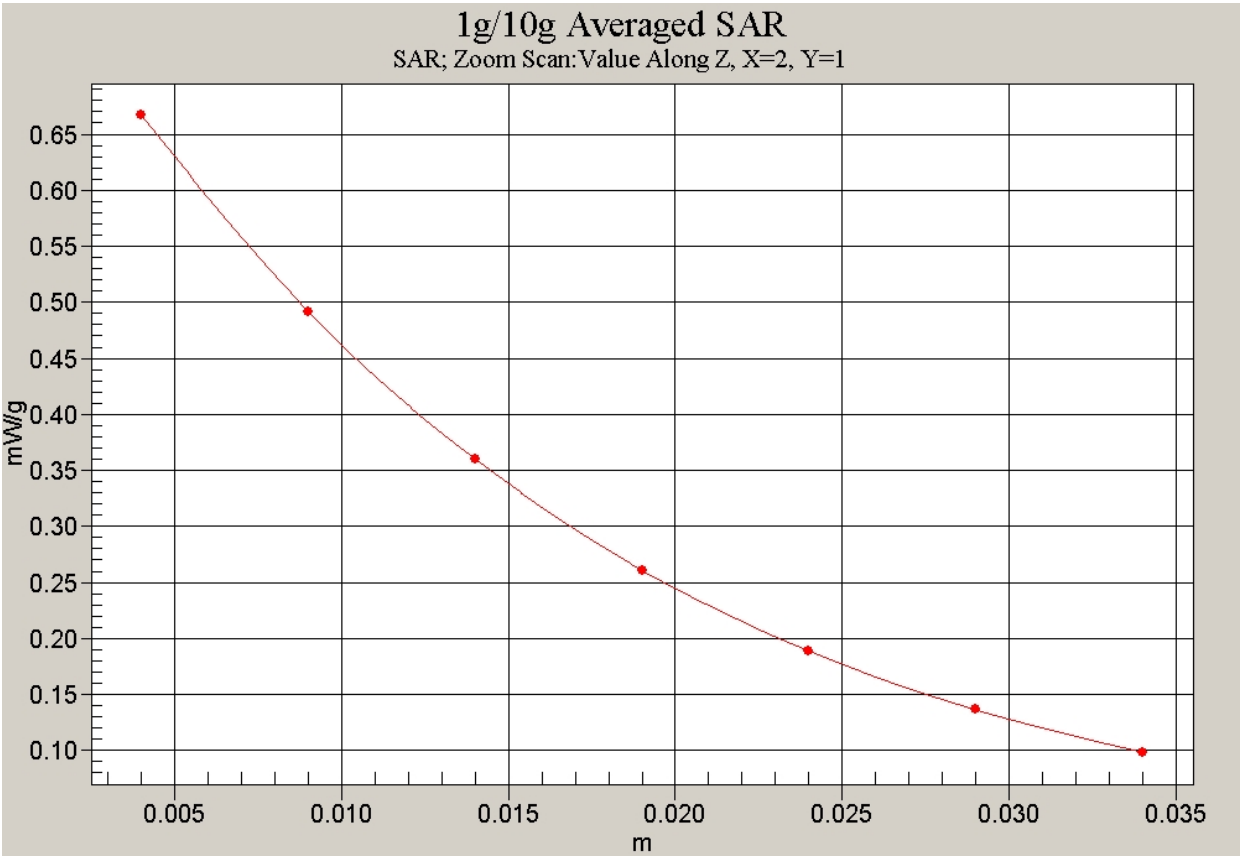


Fig. 2 Z-Scan at power reference point (WCDMA 850MHz CH4233)

WCDMA 850 Left Cheek Middle

Date/Time: 2008-6-13 13:39:09

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.909 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 836.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Cheek Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.736 mW/g

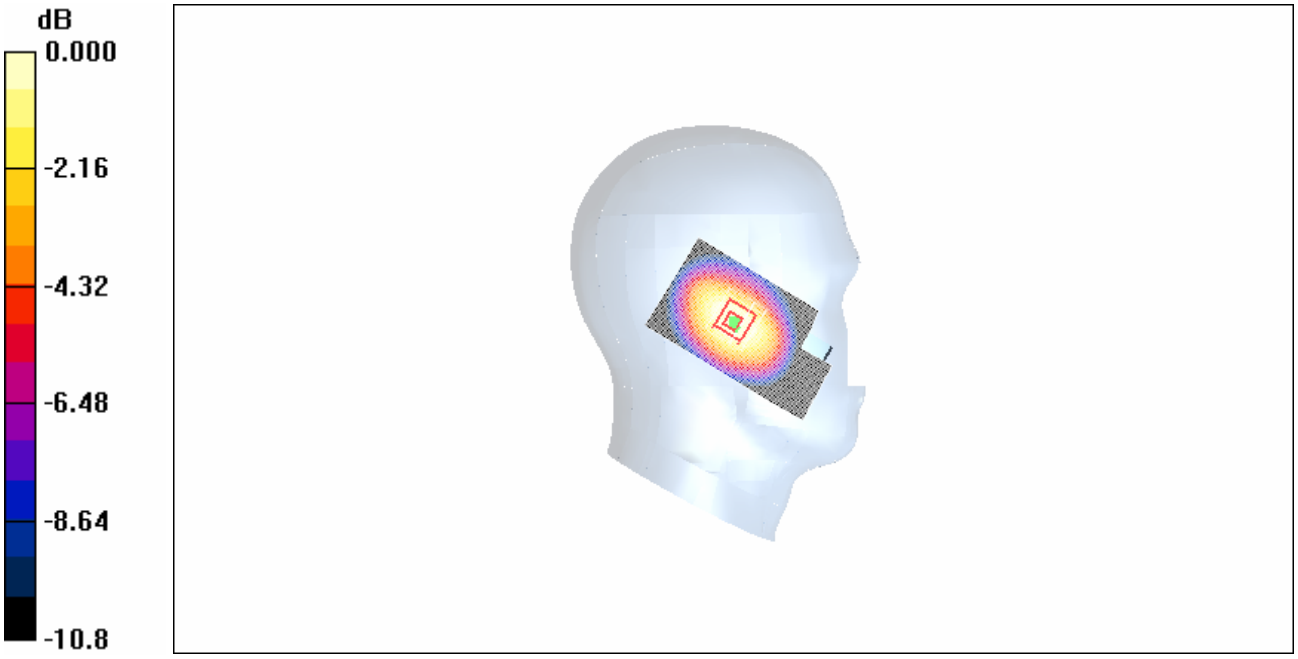
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.5 V/m; Power Drift = 0.103 dB

Peak SAR (extrapolated) = 0.937 W/kg

SAR(1 g) = 0.679 mW/g; SAR(10 g) = 0.459 mW/g

Maximum value of SAR (measured) = 0.686 mW/g



0 dB = 0.686mW/g

Fig. 3 Left Hand Touch Cheek WCDMA 850MHz CH4182

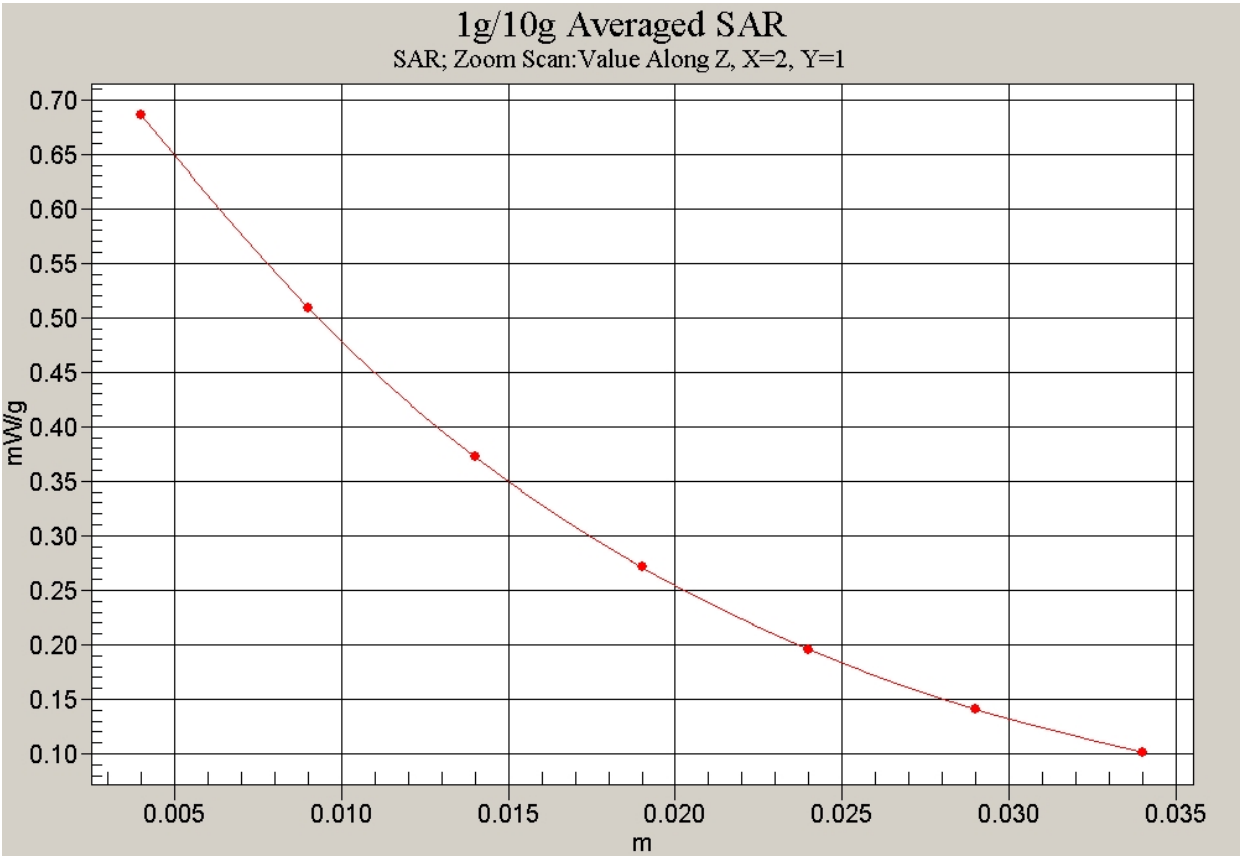


Fig. 4 Z-Scan at power reference point (WCDMA 850MHz CH4182)

WCDMA 850 Left Cheek Low

Date/Time: 2008-6-13 13:50:01

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.899 mho/m; ε_r = 44; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Cheek Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.819 mW/g

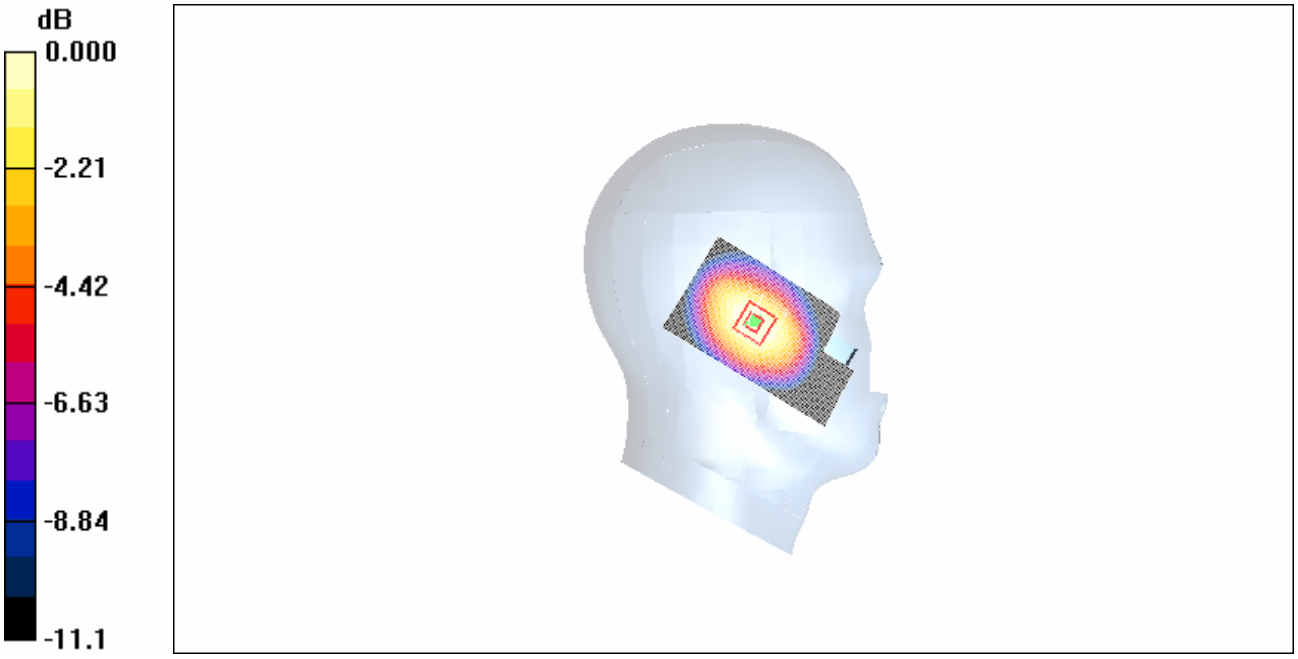
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.4 V/m; Power Drift = -0.013 dB

Peak SAR (extrapolated) = 1.04 W/kg

SAR(1 g) = 0.761 mW/g; SAR(10 g) = 0.516 mW/g

Maximum value of SAR (measured) = 0.786 mW/g



0 dB = 0.786mW/g

Fig. 5 Left Hand Touch Cheek WCDMA 850MHz CH4132

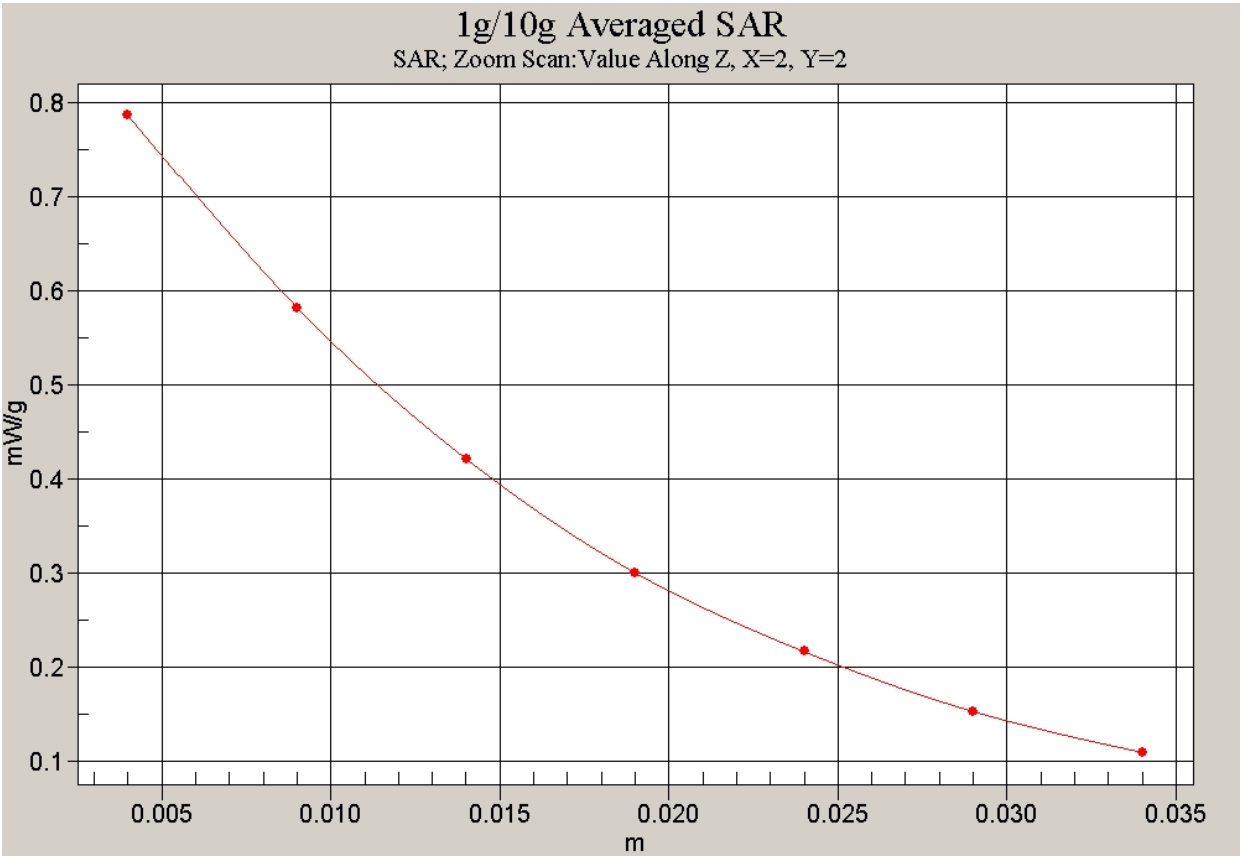


Fig. 6 Z-Scan at power reference point (WCDMA 850MHz CH4132)

WCDMA 850 Left Tilt High

Date/Time: 2008-6-13 14:22:00

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 846.6 MHz; σ = 0.918 mho/m; ε_r = 43.7; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 846.6 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Tilt High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.406 mW/g

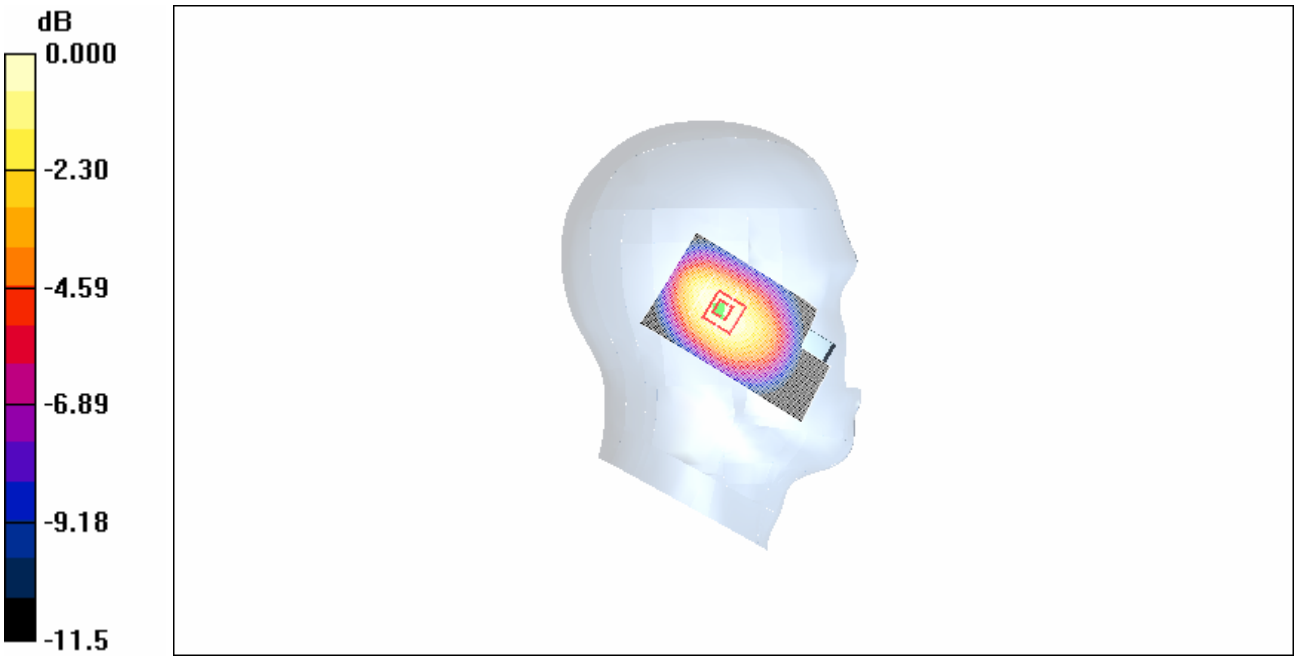
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.7 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 0.519 W/kg

SAR(1 g) = 0.371 mW/g; SAR(10 g) = 0.251 mW/g

Maximum value of SAR (measured) = 0.381 mW/g



0 dB = 0.381mW/g

Fig. 7 Left Hand Tilt 15°WCDMA 850MHz CH4233

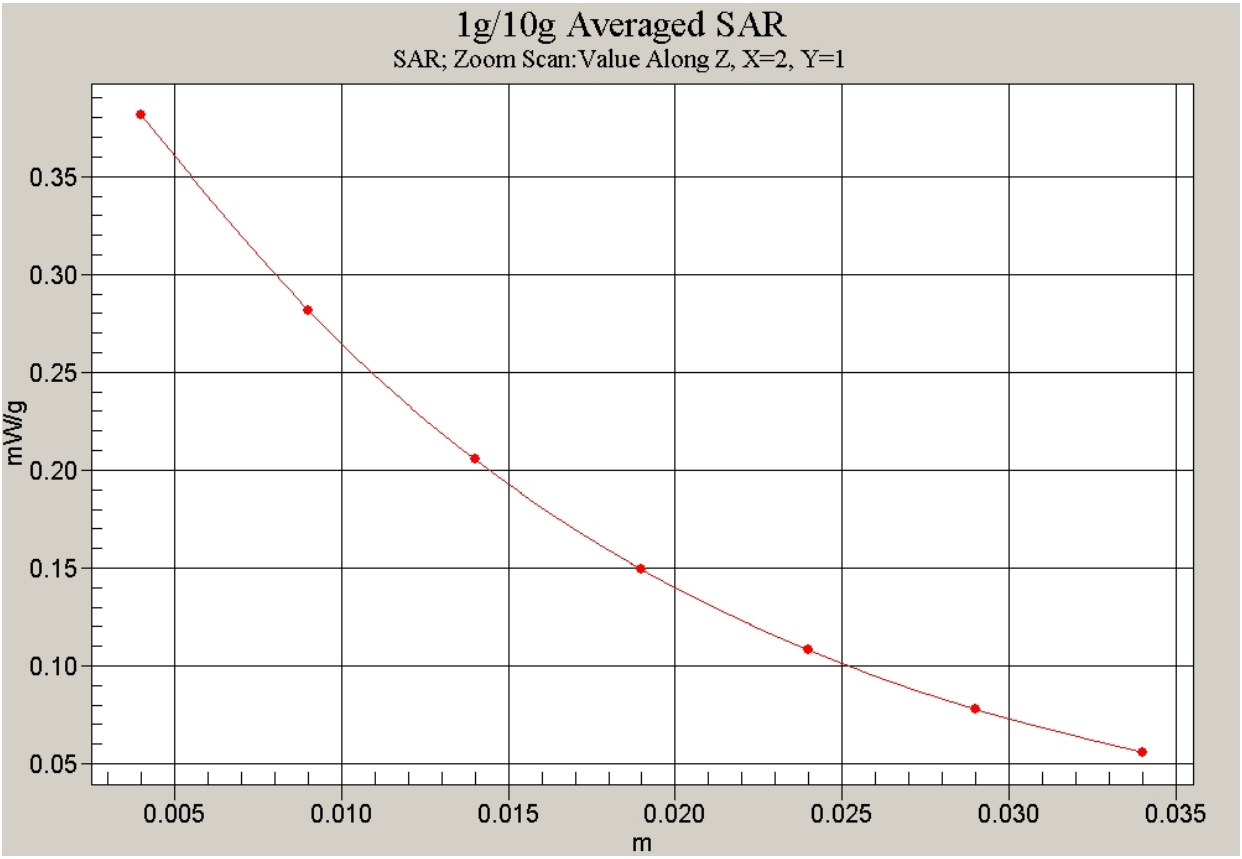


Fig. 8 Z-Scan at power reference point (WCDMA 850MHz CH4233)

WCDMA 850 Left Tilt Middle

Date/Time: 2008-6-13 14:11:12

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.909 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 836.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Tilt Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.429 mW/g

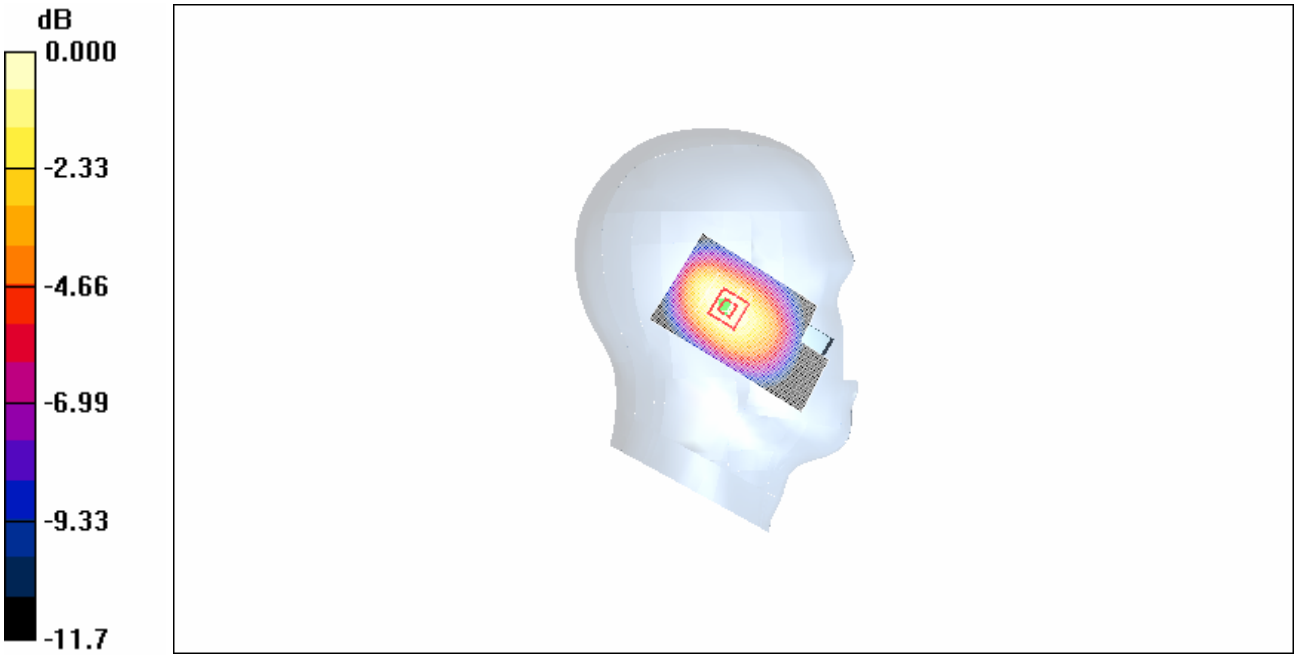
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.3 V/m; Power Drift = 0.112 dB

Peak SAR (extrapolated) = 0.551 W/kg

SAR(1 g) = 0.395 mW/g; SAR(10 g) = 0.267 mW/g

Maximum value of SAR (measured) = 0.407 mW/g



0 dB = 0.407mW/g

Fig. 9 Left Hand Tilt 15°WCDMA 850MHz CH4182

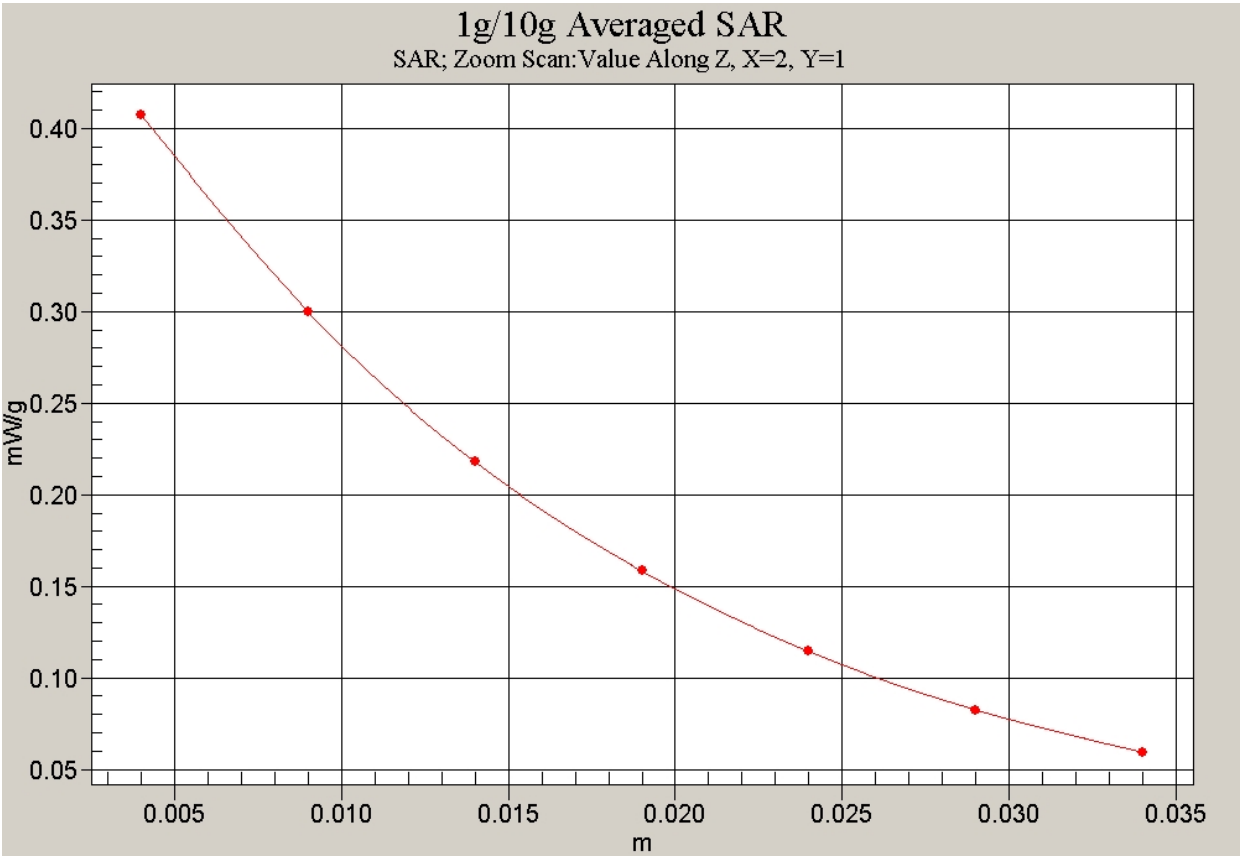


Fig. 10 Z-Scan at power reference point (WCDMA 850MHz CH4182)

WCDMA 850 Left Tilt Low

Date/Time: 2008-6-13 14:00:43

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.899 mho/m; ε_r = 44; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Tilt Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.483 mW/g

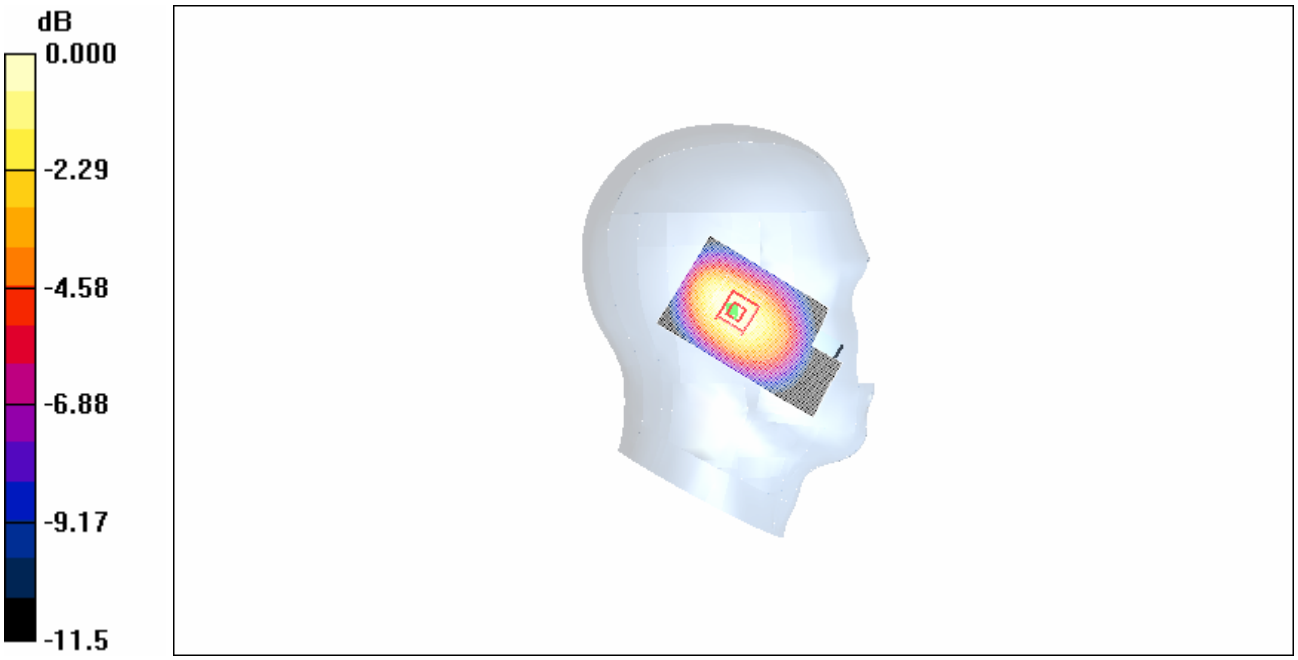
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.9 V/m; Power Drift = 0.055 dB

Peak SAR (extrapolated) = 0.616 W/kg

SAR(1 g) = 0.446 mW/g; SAR(10 g) = 0.304 mW/g

Maximum value of SAR (measured) = 0.463 mW/g



0 dB = 0.463mW/g

Fig. 11 Left Hand Tilt 15°WCDMA 850MHz CH4132

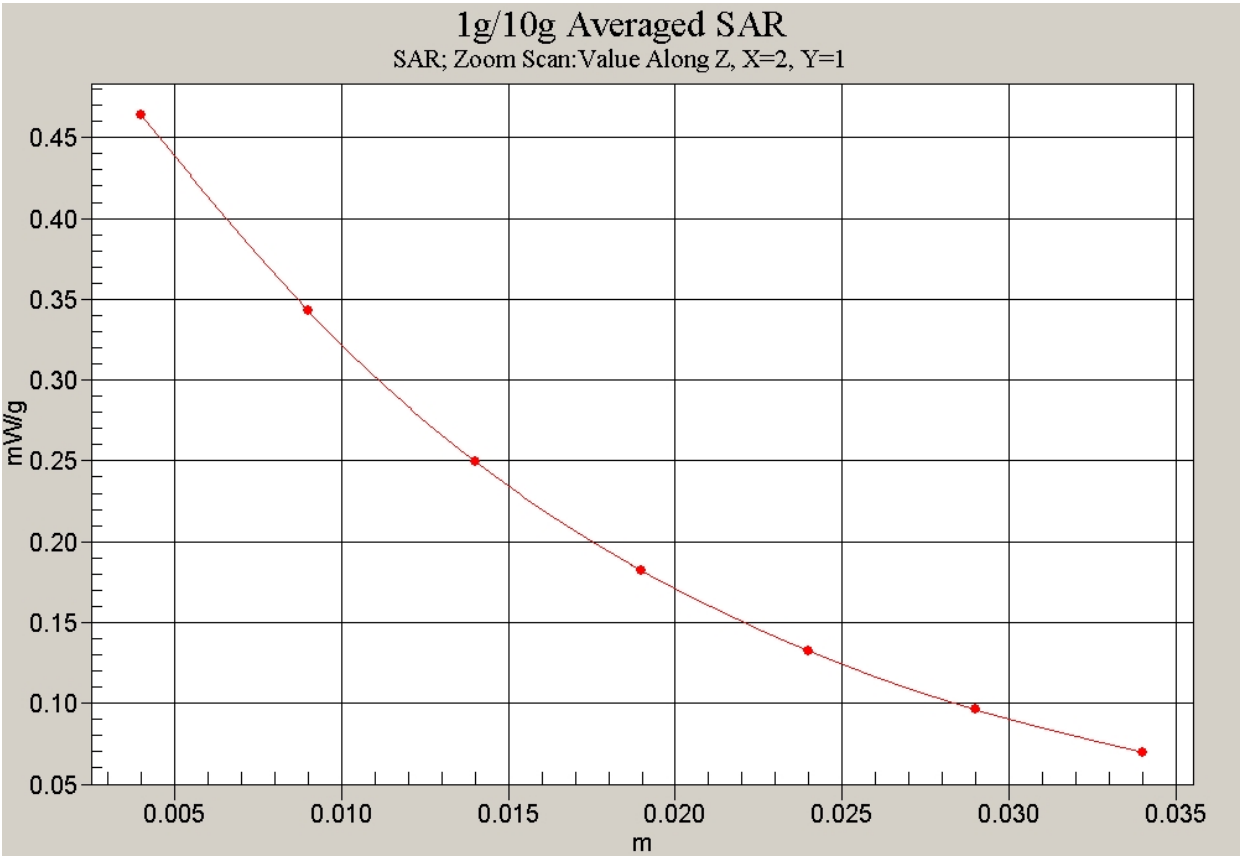


Fig. 12 Z-Scan at power reference point (WCDMA 850MHz CH4132)

WCDMA 850 Right Cheek High

Date/Time: 2008-6-13 14:40:20

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 846.6 MHz; σ = 0.918 mho/m; ε_r = 43.7; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 846.6 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Cheek High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.783 mW/g

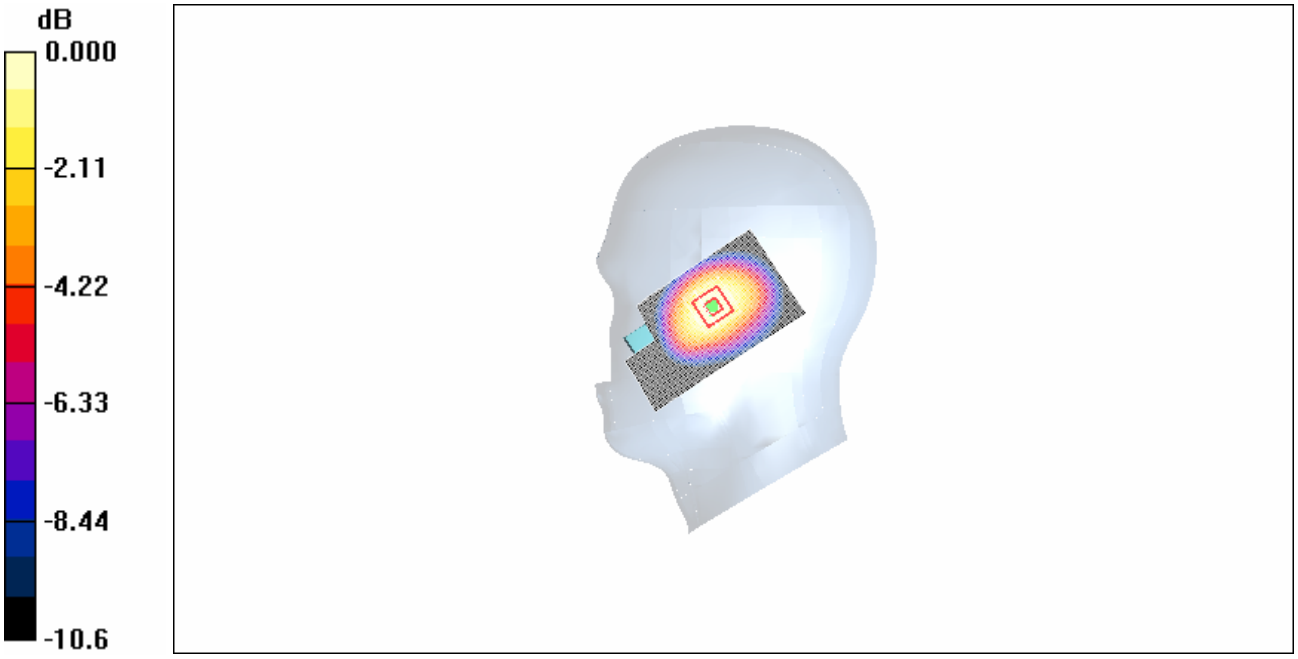
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.2 V/m; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 0.997 W/kg

SAR(1 g) = 0.735 mW/g; SAR(10 g) = 0.500 mW/g

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



0 dB = 0.752mW/g

Fig. 13 Right Hand Touch Cheek WCDMA 850MHz CH4233

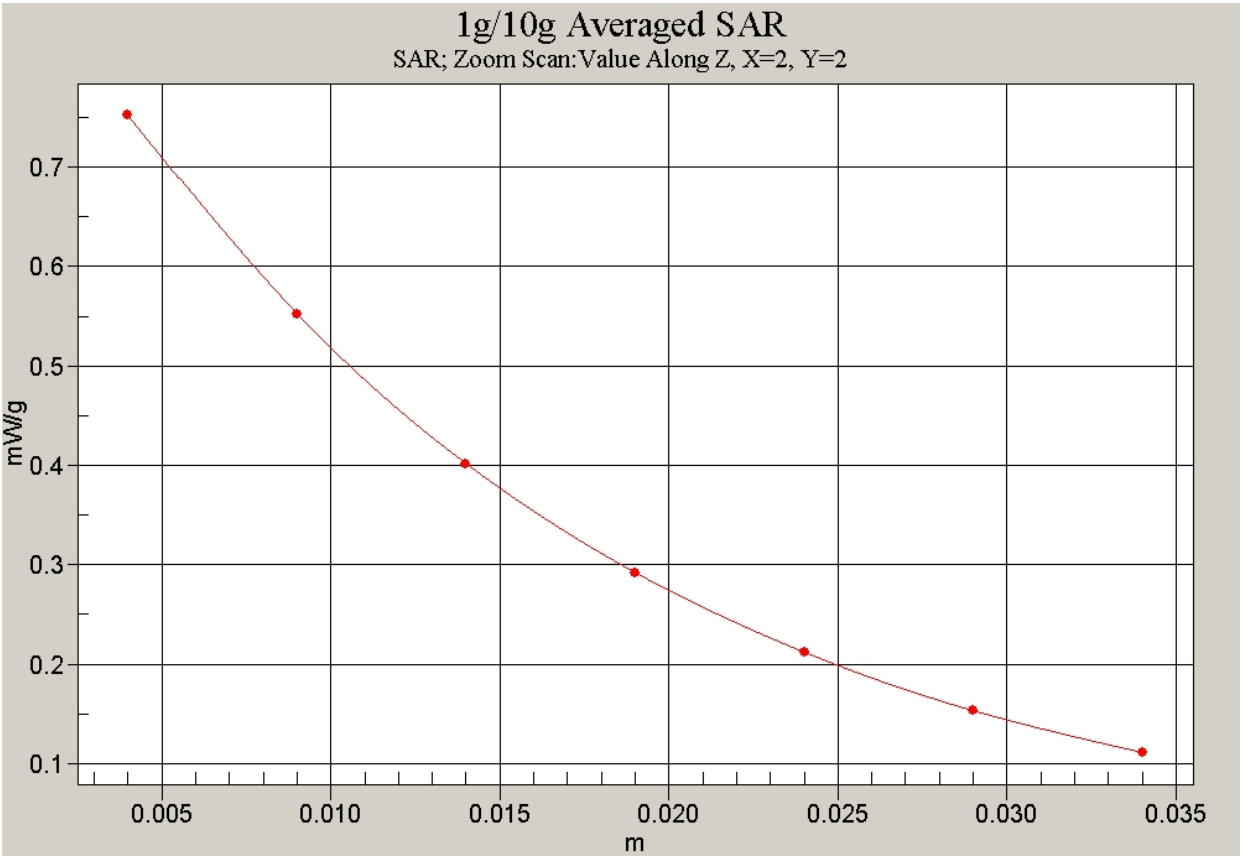


Fig. 14 Z-Scan at power reference point (WCDMA 850MHz CH4233)

WCDMA 850 Right Cheek Middle

Date/Time: 2008-6-13 14:50:55

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.909 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 836.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Cheek Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.843 mW/g

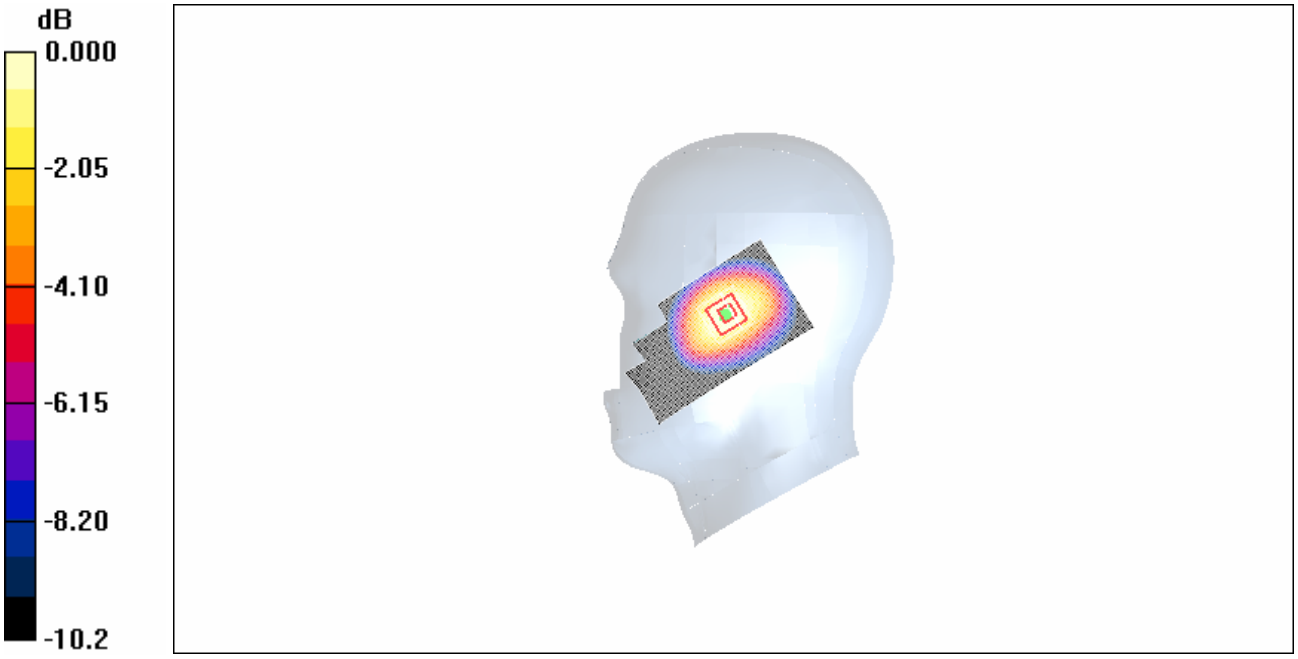
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.2 V/m; Power Drift = 0.039 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.783 mW/g; SAR(10 g) = 0.533 mW/g

Maximum value of SAR (measured) = 0.806 mW/g



0 dB = 0.806mW/g

Fig.15 Right Hand Touch Cheek WCDMA 850MHz CH4182

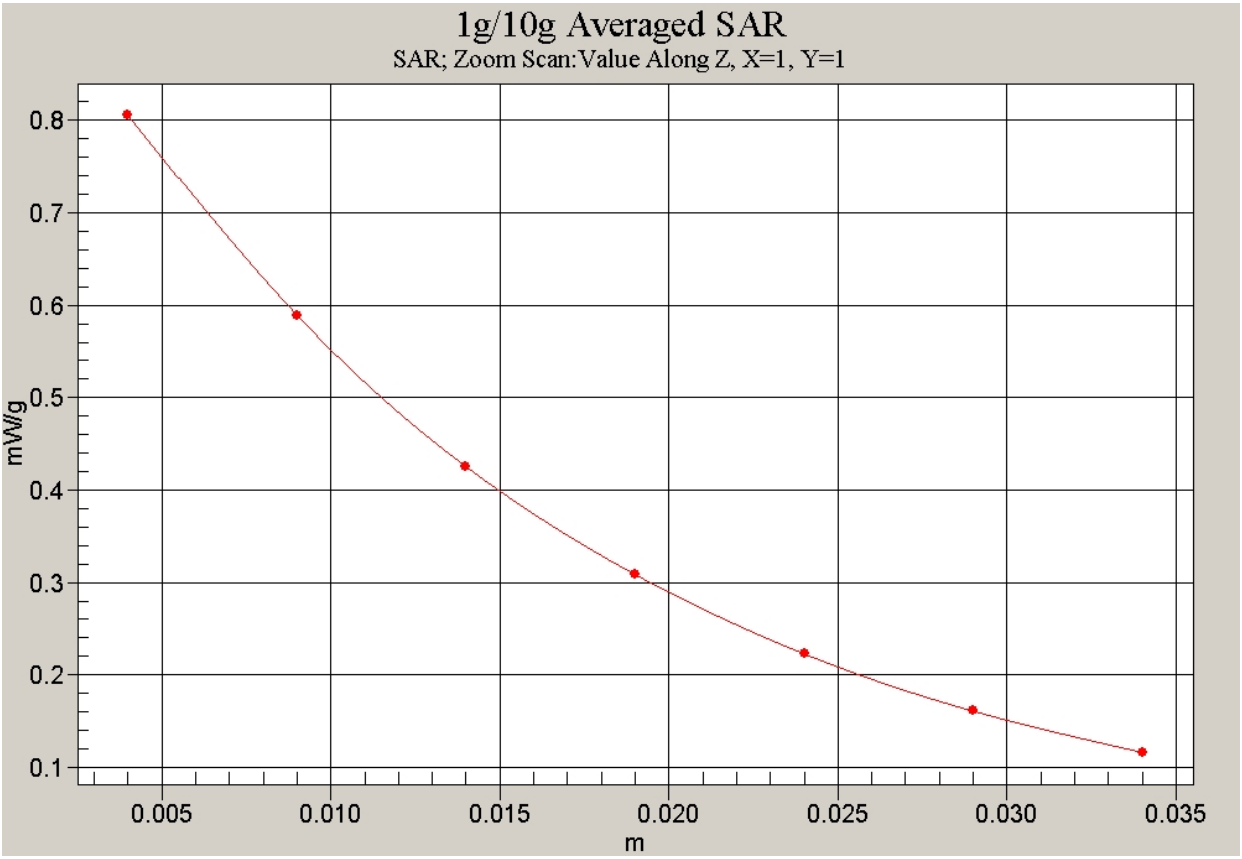


Fig. 16 Z-Scan at power reference point (WCDMA 850MHz CH4182)

WCDMA 850 Right Cheek Low

Date/Time: 2008-6-13 15:01:34

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.899 mho/m; ε_r = 44; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 826.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Cheek Low/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.936 mW/g

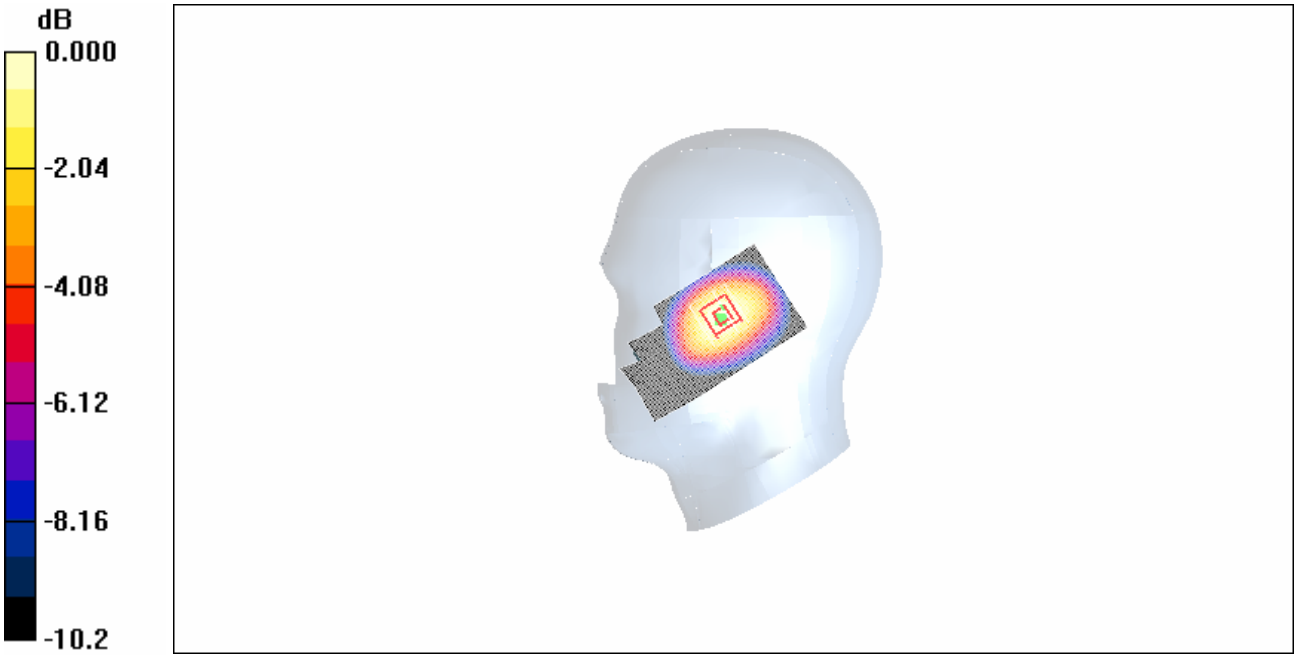
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.7 V/m; Power Drift = 0.066 dB

Peak SAR (extrapolated) = 1.16 W/kg

SAR(1 g) = 0.863 mW/g; SAR(10 g) = 0.591 mW/g

Maximum value of SAR (measured) = 0.896 mW/g



0 dB = 0.896mW/g

Fig. 17 Right Hand Touch Cheek WCDMA 850MHz CH4132

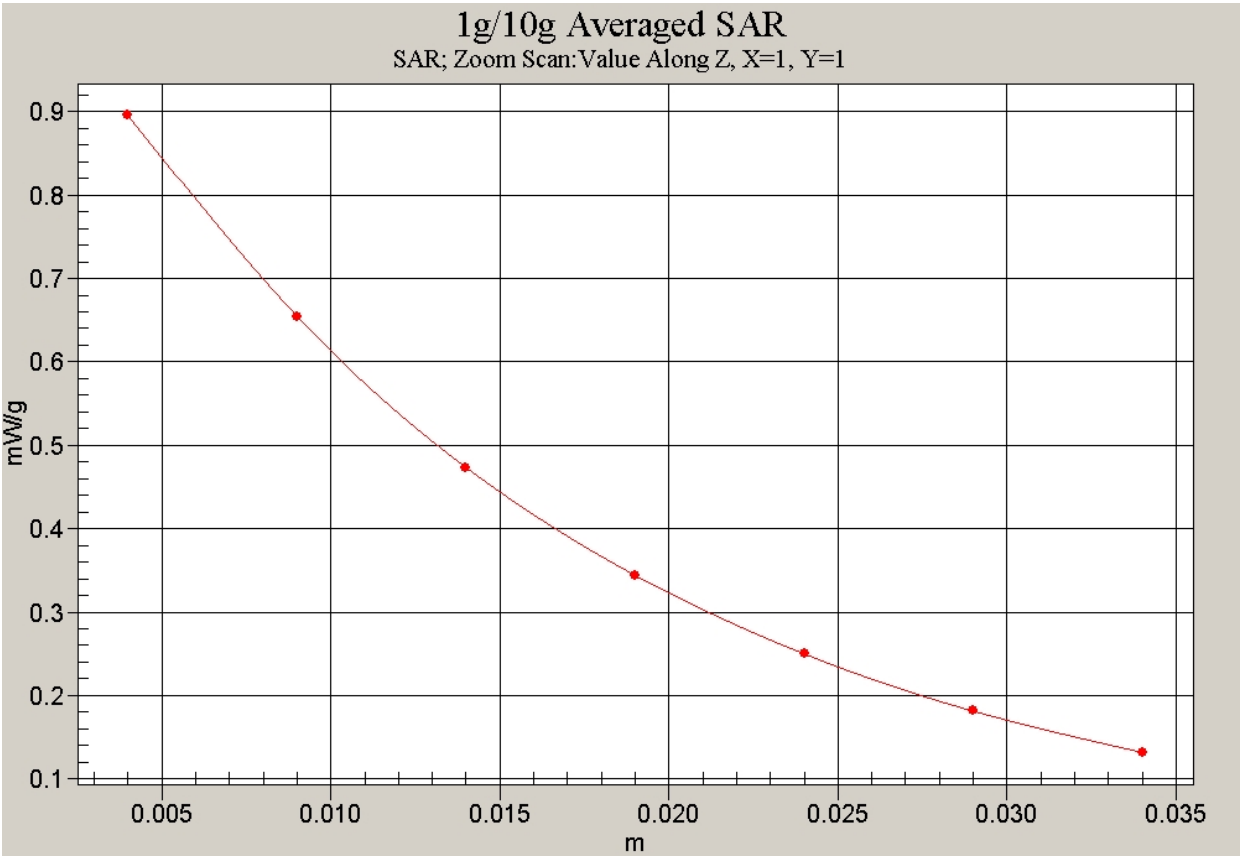


Fig. 18 Z-Scan at power reference point (WCDMA 850MHz CH4132)

WCDMA 850 Right Tilt High

Date/Time: 2008-6-13 15:34:07

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 846.6 MHz; σ = 0.918 mho/m; ε_r = 43.7; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 846.6 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Tilt High/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

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

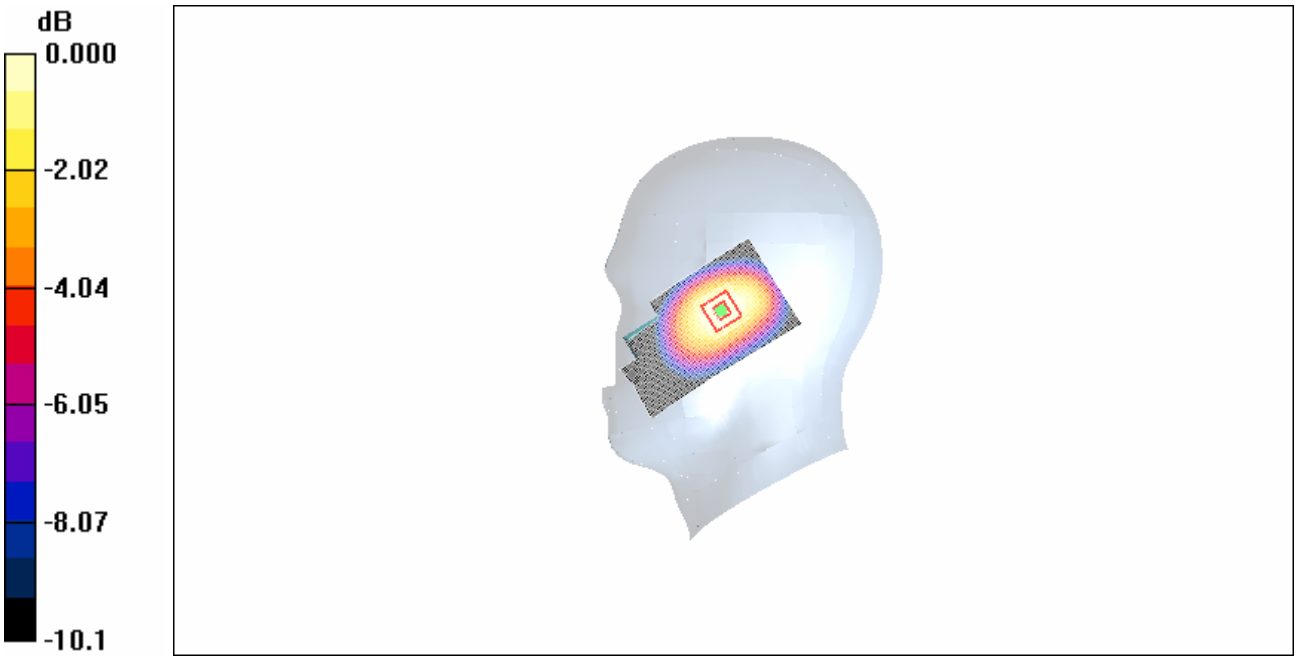
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.5 V/m; Power Drift = 0.125 dB

Peak SAR (extrapolated) = 0.564 W/kg

SAR(1 g) = 0.418 mW/g; SAR(10 g) = 0.288 mW/g

Maximum value of SAR (measured) = 0.423 mW/g



0 dB = 0.423mW/g

Fig. 19 Right Hand Tilt 15°WCDMA 850MHz CH4233

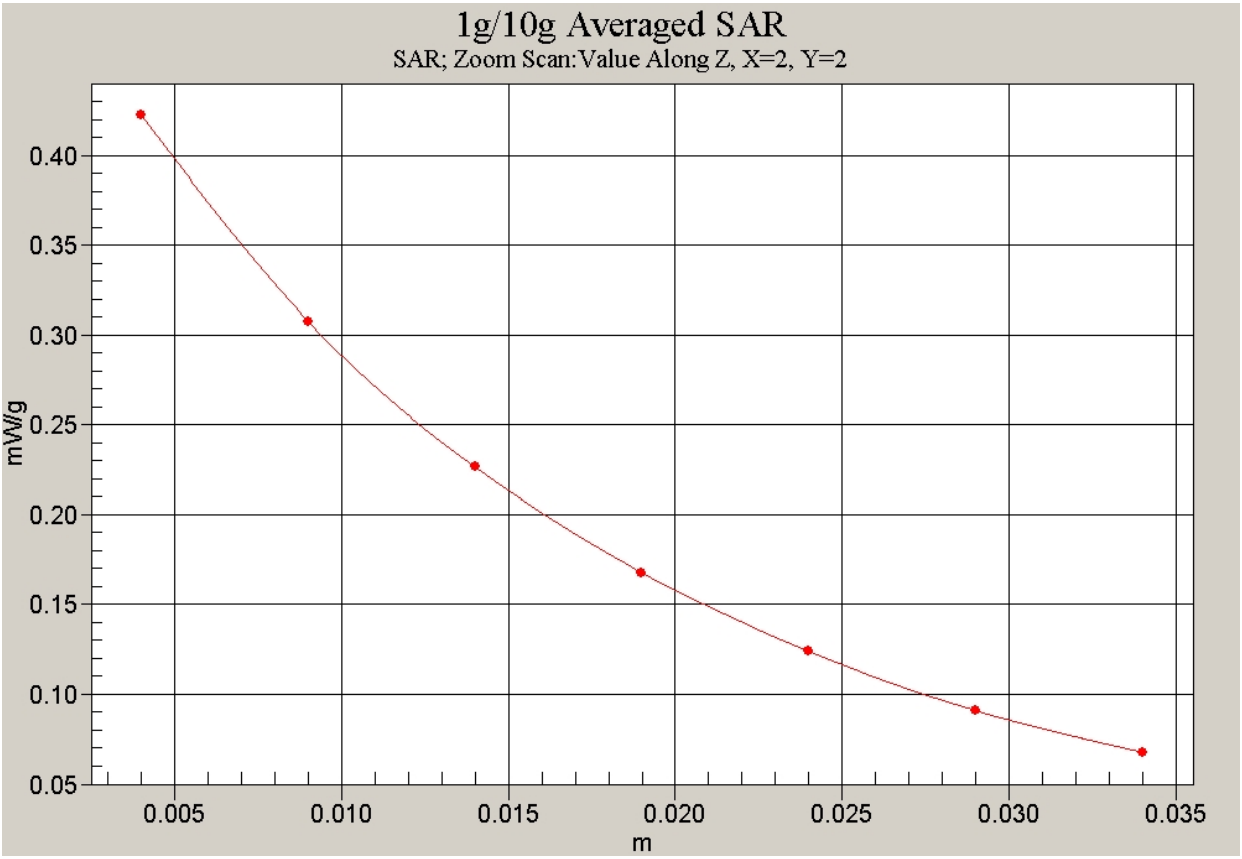


Fig. 20 Z-Scan at power reference point (WCDMA 850MHz CH4233)

WCDMA 850 Right Tilt Middle

Date/Time: 2008-6-13 15:23:08

Electronics: DAE4 Sn777

Medium: Head GSM850

Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.909 mho/m; ε_r = 43.9; ρ = 1000 kg/m^3

Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C

Communication System: WCDMA 850 Frequency: 836.4 MHz Duty Cycle: 1:1

Probe: ES3DV3 - SN3142 ConvF(5.97, 5.97, 5.97)

Tilt Middle/Area Scan (51x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.466 mW/g

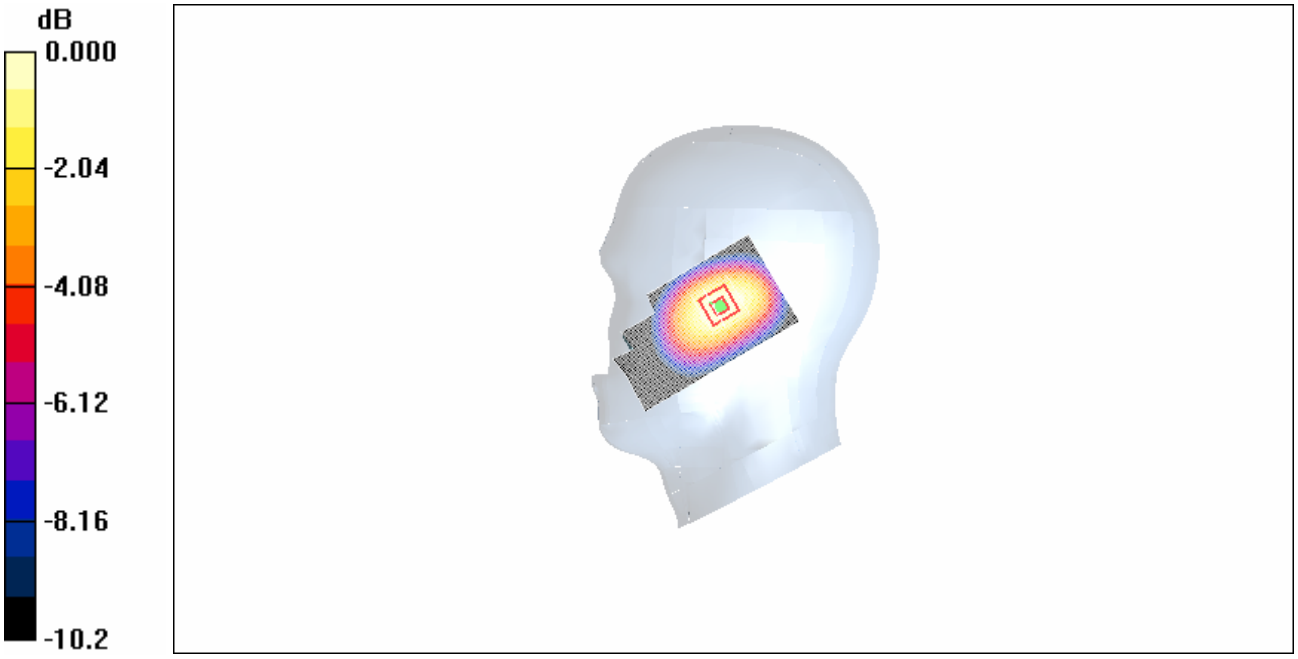
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.1 V/m; Power Drift = 0.159 dB

Peak SAR (extrapolated) = 0.592 W/kg

SAR(1 g) = 0.441 mW/g; SAR(10 g) = 0.304 mW/g

Maximum value of SAR (measured) = 0.448 mW/g



0 dB = 0.448mW/g

Fig. 21 Right Hand Tilt 15°WCDMA 850MHz CH4182

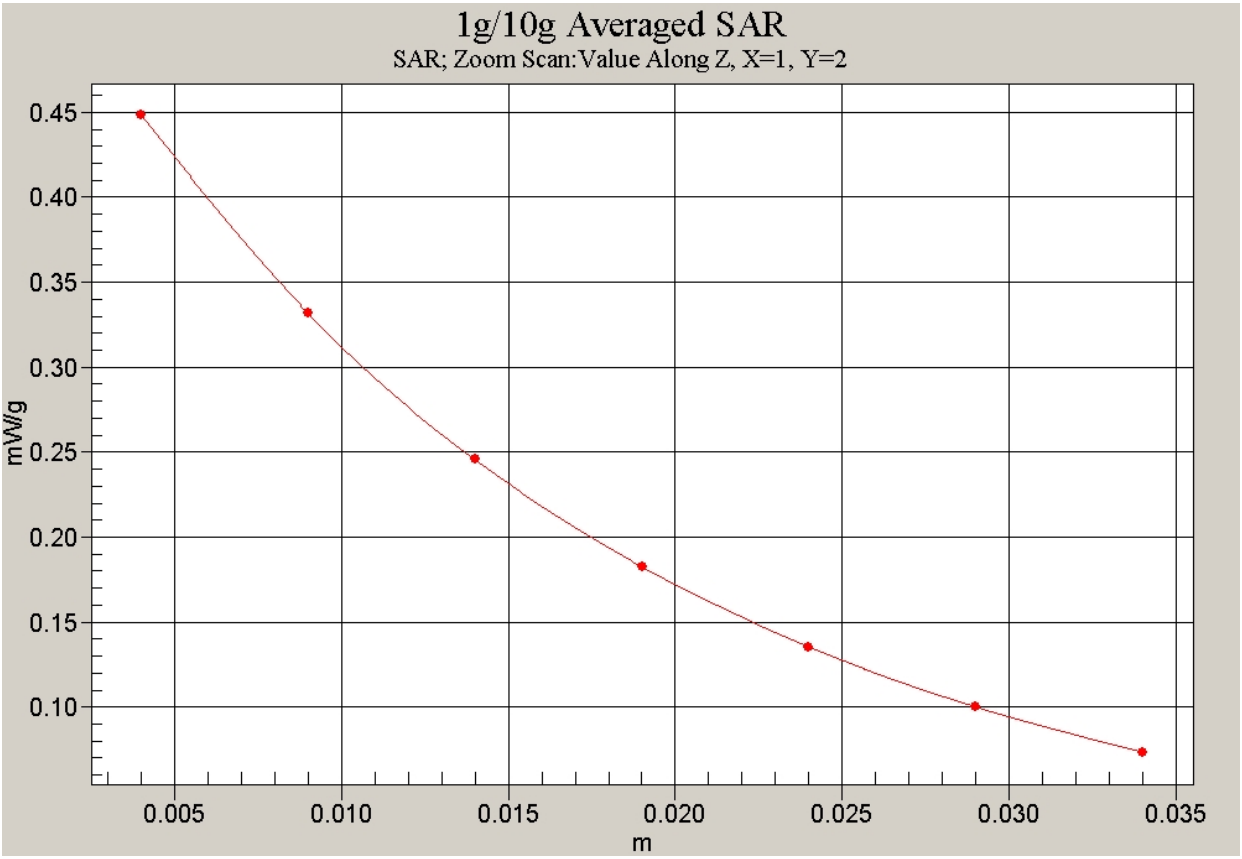


Fig. 22 Z-Scan at power reference point (WCDMA 850MHz CH4182)