NO.: RZA2007-0954FCC

TEST REPORT

Test name	Electromagnetic Field (Specific Absorption Rate)
Product	WCDMA/GPRS/GSM/EDGE Mobile Phone With Bluetooth
Model	U5707
FCC ID	QISU5707
Client	Huawei Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

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Product	WCDMA/GPRS/GSM/EDGE Mobile Phone With Bluetooth	**Model**	U5707
Client	Huawei Technologies Co., Ltd.	**Type of test**	Entrusted
Manufacturer	Huawei Technologies Co., Ltd.	**Arrival Date of sample**	Sep. 30th, 2007
Place of sampling	(Blank)	**Carrier of the samples**	Wang Ye
Quantity of the samples	One	**Date of product**	(Blank)
Base of the samples	(Blank)	**Items of test**	SAR
IMEI	357958019999950		
Standard(s)	**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:** 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)		
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) 上海同耀通信技术有限公司 报告专用章 **Date of issue: Oct.17th,2007**		
Comment	TX Freq. Band: GSM1900 WCDMA Band V Max. Power: 1Watt 0.25Watt The test result only responds to the measured sample.		

Approved by ________ *(Chenguang Zheng)* **Revised by** ________ *(Weizhong Yang)* **Performed by** ________ *(Minbao Ling)*

TABLE OF CONTENT

1 COMPETENCE AND WARRANTIES

TA Technology (Shanghai) Co., Ltd. Is a test laboratory competent to carry out the tests described in this test report.

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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
City	Shenzhen
Postal Code	518129
Country	P.R. China
Telephone	0755-28780808
Fax	0755-28780808

Table 2: Manufacturer

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

3.2 Constituents of EUT

Table 3: Constituents of Samples

Description	Model	IMEI/SN	Manufacturer
WCDMA/GPRS/GSM/EDGE Mobile Phone With Bluetooth	U5707	357958019999950	Huawei Technologies Co., Ltd.
Lithium Battery	HBU570	FMT761001061L	FMT Electronics Co.,Ltd.
AC/DC Adapter	TPCA-050065UY	UEP750400357	TECH-POWER INTERNATIONAL CO.,LTD

Picture1-a: Close

Picture1-b: Open

Picture 1: Constituents of the sample (Lithium Battery is in the Handset)

3.3 General Description

Equipment Under Test (EUT) is a portable Mobile phone with internal antenna. It consists of Handset, Lithium Battery and AC/DC Adapter. The detail about Mobile phone, Lithium Battery and AC/DC Adapter is in the Table 3. Since it is a GSM1900, WCDMA Band V Mobile phone, SAR is tested respectively for two bands. It has the GPRS, EGPRS and Bluetooth functions; the GPRS and EGPRS class are 10.

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 WCDMA Test Configuration

For measurement in WCDMA, we established the radio link through call processing. The maximum output power were verified on high, middle and low channels for each test band according to 3GPP TS 34.121 with the following configuration (Please see 7.2.2 Table 6 for the above detailed power measurement results):
1) 12.2kbps RMC, 64,144,384 kbps RMC with TPC set to all “1’s”
2) Test loop Mode 1

For the output power, the configurations for the DPCCH and DPDCH1 are as followed (EUT do not support the DPDCH2-n):

	Channel Bit Rate(kbps)	Channel Symbol Rate(ksps)	Spreading Factor	Spreading Code Number	Bits/Slot
DPCCH	15	15	256	0	10
$DPDCH_1$	15	15	256	64	10
	30	30	128	32	20
	60	60	64	16	40
	120	120	32	8	80
	240	240	16	4	160
	480	480	8	2	320
	960	960	4	1	640

SAR is tested with 12.2kps RMS and not required for other spreading codes (64,144, and 384 kbps RMC) and multiple $DPDCH_n$, because the maximum output power for each of these other configurations<0.25dB higher than 12.2kbps RMC and the multiple $DPDCH_n$ is not applicable for the EUT.

4.1.2 GSM Test Configuration

During SAR test, EUT is in Traffic Mode (Channel Allocated). A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 512, 661, 810 respectively in the case of GSM 1900. The EUT is commanded to operate at maximum transmitting power.

4.1.3 Test to be performed

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 30 dB.

4.2 SAR Measurement Set-up

These measurements were performed with the automated near-field scanning system DASY4 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, 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.

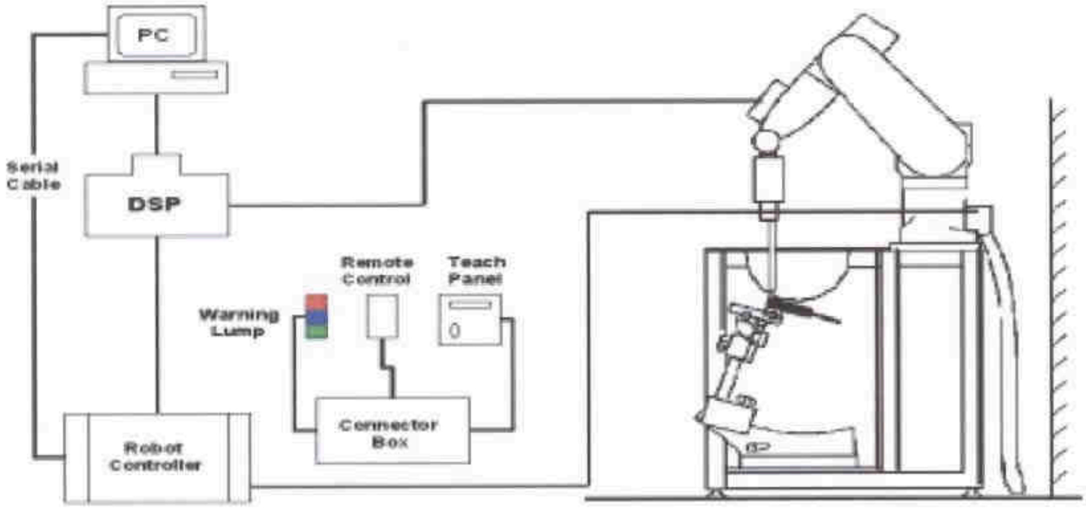


Fig1. SAR Lab Test Measurement Set-up

The DAE3 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 diameter: 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

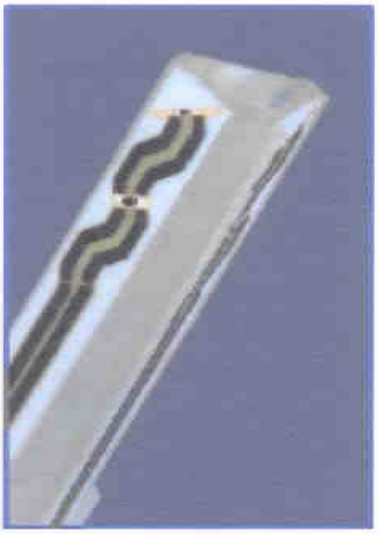


Fig2. ET3DV6 E-field Probe

Fig3. 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.

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

Where: Δt = Exposure time (30 seconds),
C = Heat capacity of tissue (brain or muscle),
ΔT = Temperature increase due to RF exposure.
Or

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

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

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).

Fig4. Device Holder

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 the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness	2±0.1 mm
Filling Volume	Approx. 20 liters
Dimensions	810 x l000 x 500 mm (H x L x W)
Available	Special

Fig5. Generic Twin Phantom

4.6 Equivalent Tissues

The liquid used for the frequency range of 800-2000 MHz consisted of water, sugar, salt, Glycol monobutyl, Preventol and Cellulose. The liquid has previously been proven to be suited for worst-case. The Table 4 and Table 5 show the detail solution. It's satisfying the latest tissue dielectric parameters requirements proposed by the IEEE 1528.

Table 4: Composition of the Head Tissue Equivalent Matter

MIXTURE%	FREQUENCY(Brain) 835MHz
Water	41.45
Sugar	56
Salt	1.45
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=835MHz ε=41.5 σ=0.9

MIXTURE%	FREQUENCY(Brain) 1900MHz
Water	54.90
Glycol monobutyl	44.92
Salt	0.18
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40

Table 5: Composition of the Body Tissue Equivalent Matter

MIXTURE%	FREQUENCY(Body) 835MHz
Water	52.5
Sugar	45
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=835MHz ε=55.2 σ=0.97

MIXTURE%	FREQUENCY(Body) 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

<u>Specifications</u>

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

<u>Data Acquisition Electronic (DAE) System</u>

<u>Cell Controller</u>
Processor: Pentium III
Clock Speed: 800 MHz
Operating System: Windows 2000

<u>Data Converter</u>
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.
It specifies the measurement method for demonstration of compliance with the SAR limits for such equipments.
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: 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)

6 LABORATORY ENVIRONMENT

Table 6: The Ambient Conditions during Test

Temperature	Min. = 20 °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.	

7 CONDUCTED OUTPUT POWER MEASUREMENT

7.1 Summary

During the process of testing, the EUT was controlled via Digital Radio Communication tester 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. These measurements were done at 3 channels 512, 661and 810 of GSM 1900, 3 channels 4132, 4182, 4233 of WCDMA Band V before SAR test and after SAR test.

7.2.2 Measurement result

Table 7: Conducted Power Measurement Results

WCDMA Band V (12.2kbps RMC)	Conducted Power		
	Channel 4132 (826.4MHz)	Channel 4182 (836.4MHz)	Channel 4233 (846.6MHz)
Before test	22.44	22.59	22.58
After test	22.49	22.62	22.55

WCDMA Band V (64kbps RMC)	Conducted Power		
	Channel 4132 (826.4MHz)	Channel 4182 (836.4MHz)	Channel 4233 (846.6MHz)
Before test	22.48	22.61	22.56
After test	22.46	22.63	22.58

WCDMA Band V (144kbps RMC)	Conducted Power		
	Channel 4132 (826.4MHz)	Channel 4182 (836.4MHz)	Channel 4233 (846.6MHz)
Before test	22.49	22.57	22.61
After test	22.47	22.61	22.65

WCDMA Band V (384kbps RMC)	Conducted Power		
	Channel 4132 (826.4MHz)	Channel 4182 (836.4MHz)	Channel 4233 (846.6MHz)
Before test	22.43	22.63	22.64
After test	22.45	22.67	22.61

GSM 1900	Conducted Power		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Before test	29.43	29.59	29.41
After test	29.45	29.61	29.39

GSM 1900 GPRS	Conducted Power		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Before test	29.39	29.58	29.37
After test	29.40	29.61	29.39

GSM 1900 EGPRS	Conducted Power		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Before test	25.53	24.96	25.45
After test	25.55	24.99	25.42

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 22.5 °C and relative humidity 51%. Liquid temperature during the test: 22.3°C			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	835 MHz	41.5	0.9
	1900 MHz	40.0	1.4
Measurement value (Average of 10 tests)	835MHz	41.86	0.93
	1900 MHz	39.97	1.4

Table 9: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 22.5 °C and relative humidity 51%. Liquid temperature during the test: 22.3°C			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	835 MHz	55.2	0.97
	1900MHz	53.3	1.52
Measurement value (Average of 10 tests)	835 MHz	56.21	0.99
	1900MHz	53.27	1.53

8.2 System Validation

Table 10: System Validation

Measurement is made at temperature 23.2 °C, relative humidity 50%, input power 250 mW. Liquid temperature during the test: 22.3°C					
Liquid parameters		**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**	
		835 MHz	42.8	0.89	
		1900MHz	39.4	1.42	
Verification results	**Frequency**	**Target value (W/kg)**		**Measurement value (W/kg)**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**
	835 MHz	1.60	2.48	1.53	2.34
	1900MHz	5.09	9.73	5.12	9.69

Note：Target Values used are one fourth of those in IEEE Std 1528-2003 (feeding power is normalized to 1 Watt), i.e.250 mW is used as feeding power to the validation dipole (SPEAG using).

8.3 Summary of Measurement Results

Table 11: SAR Values (GSM 1900, Head)

Liquid Temperature: 22.5℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Head	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, High frequency (See Fig.7)	0.377	0.638	0.126
Left hand, Touch cheek, Mid frequency(See Fig.9)	0.247	0.409	0.061
Left hand, Touch cheek, Low frequency (See Fig.11)	0.238	0.398	-0.098
Left hand, Tilt 15 Degree, High frequency(See Fig.13)	0.042	0.065	-0.007
Left hand, Tilt 15 Degree, Mid frequency(See Fig.15)	0.032	0.050	-0.150
Left hand, Tilt 15 Degree, Low frequency(See Fig.17)	0.019	0.036	0.065
Right hand, Touch cheek, High frequency(See Fig.19)	0.217	0.344	0.102
Right hand, Touch cheek, Mid frequency(See Fig.21)	0.207	0.330	-0.075
Right hand, Touch cheek, Low frequency(See Fig.23)	0.180	0.289	-0.116
Right hand, Tilt 15 Degree, High frequency(See Fig.25)	0.031	0.047	-0.059
Right hand, Tilt 15 Degree, Mid frequency(See Fig.27)	0.023	0.035	0.057
Right hand, Tilt 15 Degree, Low frequency(See Fig.29)	0.023	0.040	0.062

Table 12 SAR Values (GSM 1900, Body, Distance 15mm)

Liquid Temperature: 22.4℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Body	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Body, Towards Ground, High frequency(See Fig.31)	0.263	0.402	0.035
Body, Towards Ground, Mid frequency(See Fig.33)	0.208	0.313	0.042
Body, Towards Ground, Low frequency(See Fig.35)	0.168	0.251	-0.148

Table 13: SAR Values (GSM 1900, Body with Bluetooth earphone, Distance 15mm)

Liquid Temperature: 22.4℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Body	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Body, Towards Ground, High frequency(See Fig.37)	0.251	0.381	-0.193

Table 14: SAR Values (GSM 1900 GPRS, Body, Distance 15mm)

Liquid Temperature: 22.4℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Body	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Body, Towards Ground, High frequency(See Fig.39)	0.419	0.634	-0.105
Body, Towards Ground, Mid frequency(See Fig.41)	0.313	0.470	-0.030
Body, Towards Ground, Low frequency(See Fig.43)	0.258	0.387	-0.077

Remark: The value with blue color is the maximum SAR Value of each test band.

Table 15: SAR Values (GSM 1900 EGPRS, Body, Distance 15mm)

Liquid Temperature: 22.4℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Body	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Body, Towards Ground, High frequency(See Fig.45)	0.192	0.292	0.037

Table 16: SAR Values (WCDMA Band V, Head)

Liquid Temperature: 22.5℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Head	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, High frequency (See Fig.47)	0.384	0.558	0.012
Left hand, Touch cheek, Mid frequency(See Fig.49)	0.257	0.378	-0.108
Left hand, Touch cheek, Low frequency (See Fig.51)	0.298	0.433	-0.063
Left hand, Tilt 15 Degree, High frequency(See Fig.53)	0.049	0.067	-0.023
Left hand, Tilt 15 Degree, Mid frequency(See Fig.55)	0.032	0.045	-0.123
Left hand, Tilt 15 Degree, Low frequency(See Fig.57)	0.039	0.055	-0.152
Right hand, Touch cheek, High frequency(See Fig.59)	0.304	0.449	-0.105
Right hand, Touch cheek, Mid frequency(See Fig.61)	0.181	0.268	0.094
Right hand, Touch cheek, Low frequency(See Fig.63)	0.260	0.384	0.125
Right hand, Tilt 15 Degree, High frequency(See Fig.65)	0.015	0.064	-0.063
Right hand, Tilt 15 Degree, Mid frequency(See Fig.67)	0.032	0.044	-0.082
Right hand, Tilt 15 Degree, Low frequency(See Fig.69)	0.033	0.045	-0.139

Table 17: SAR Values (WCDMA Band V, Body, Distance 15mm)

Liquid Temperature: 22.4℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Body	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Body, Towards Ground, High frequency(See Fig.71)	0.477	0.687	0.140
Body, Towards Ground, Mid frequency(See Fig.73)	0.307	0.447	-0.106
Body, Towards Ground, Low frequency(See Fig.75)	0.426	0.619	0.067

Remark: The value with blue color is the maximum SAR Value of each test band.

Table 18: SAR Values (WCDMA Band V, Body with Bluetooth earphone, Distance 15mm)

Liquid Temperature: 22.4℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Power Drift (dB)**
	2.0	1.6	
Test Case Of Body	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Body, Towards Ground, High frequency(See Fig.77)	0.465	0.668	-0.004

8.4 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 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.

9 Measurement Uncertainty

No.	a	Type	c	d	e= f(d、k)	f	h=c×f / e	k
	Uncertainty Component		Tol. (±%)	Prob. Dist	Div.	c_1(1g)	1g u (±%)	v_1
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	$\sqrt{3}$	$(1-cp)^{1/2}$	4.3	∞
4	Hemisphere Isotropy	B	9.4	R	$\sqrt{3}$	$\sqrt{C_P}$		∞
5	Boundary Effect	B	0.4	R	$\sqrt{3}$	1	0.23	∞
6	Linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
7	System Detection Limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
8	Readout Electronics	B	1.0	N	1	1	1.0	∞
9	RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
10	Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
11	Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
12	Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	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	$\sqrt{3}$	1	2.9	∞
	Phantom and Tissue Parameters							
16	Phantom Uncertainty(shape and thickness tolerances)	B	1.0	R	$\sqrt{3}$	1	0.6	∞
17	Liquid Conductivity-deviation from target values	B	5.0	R	$\sqrt{3}$	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	$\sqrt{3}$	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	Agilent 8753E	US37390326	September 15, 2007	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	January 25, 2007	One year
04	Power sensor	Agilent 8481H	MY41091316	January 25, 2007	
05	Signal Generator	HP 8341B	2730A00804	September 15, 2007	One year
06	Amplifier	IXA-020	0401	No Calibration Requested	
07	Validation Kit 835MHz	SPEAG D835V2	443	February 19,2007	Two years
08	Validation Kit 1900MHz	SPEAG D1900V2	541	February 20,2007	Two years
09	BTS	E5515C	GB46490218	September 15, 2007	One year
10	E-field Probe	ET3DV6	1737	February 20, 2007	One year
11	DAE	DAE3	452	September 6, 2007	One year

11 TEST PERIOD

The test is performed from Oct. 8th, 2007 to Oct. 10th, 2007.

12 TEST LOCATION

The test is performed at TA Technology (Shanghai) Co., Ltd.

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 ear 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 head was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 20 mm x 20 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Around this point, a volume of 32 mm x 32 mm x 34 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.

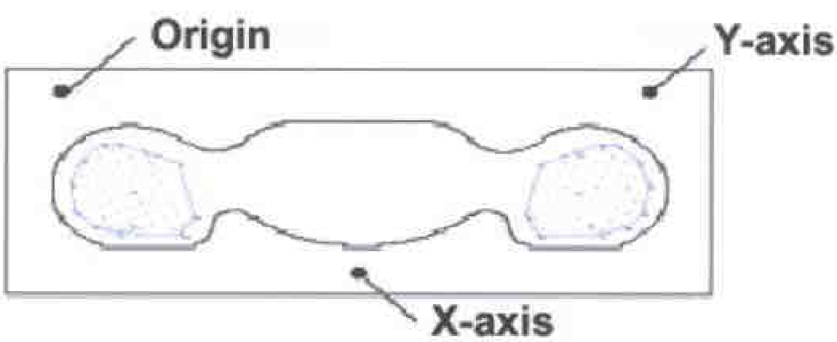
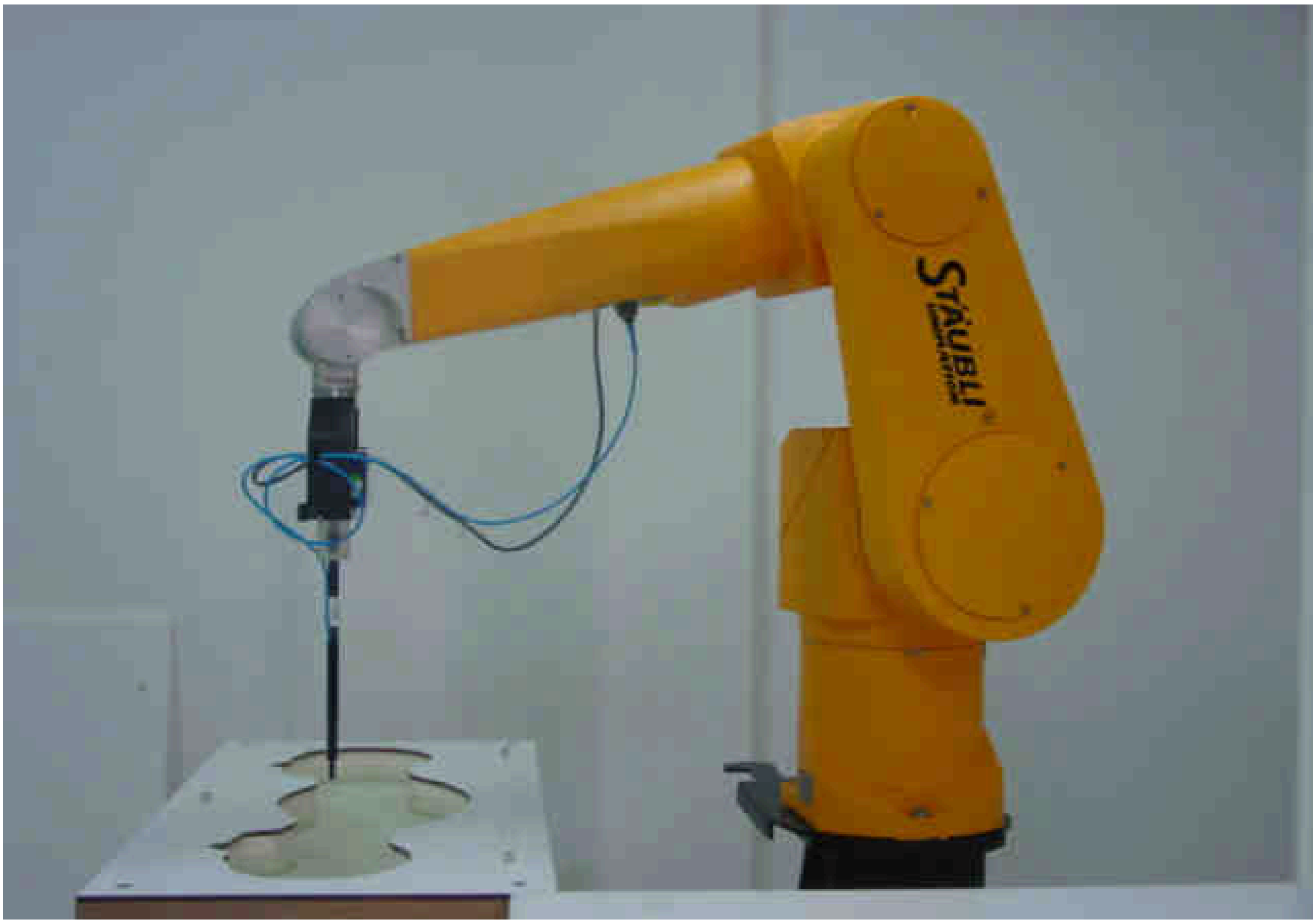


Fig 6 SAR Measurement Points in Area Scan

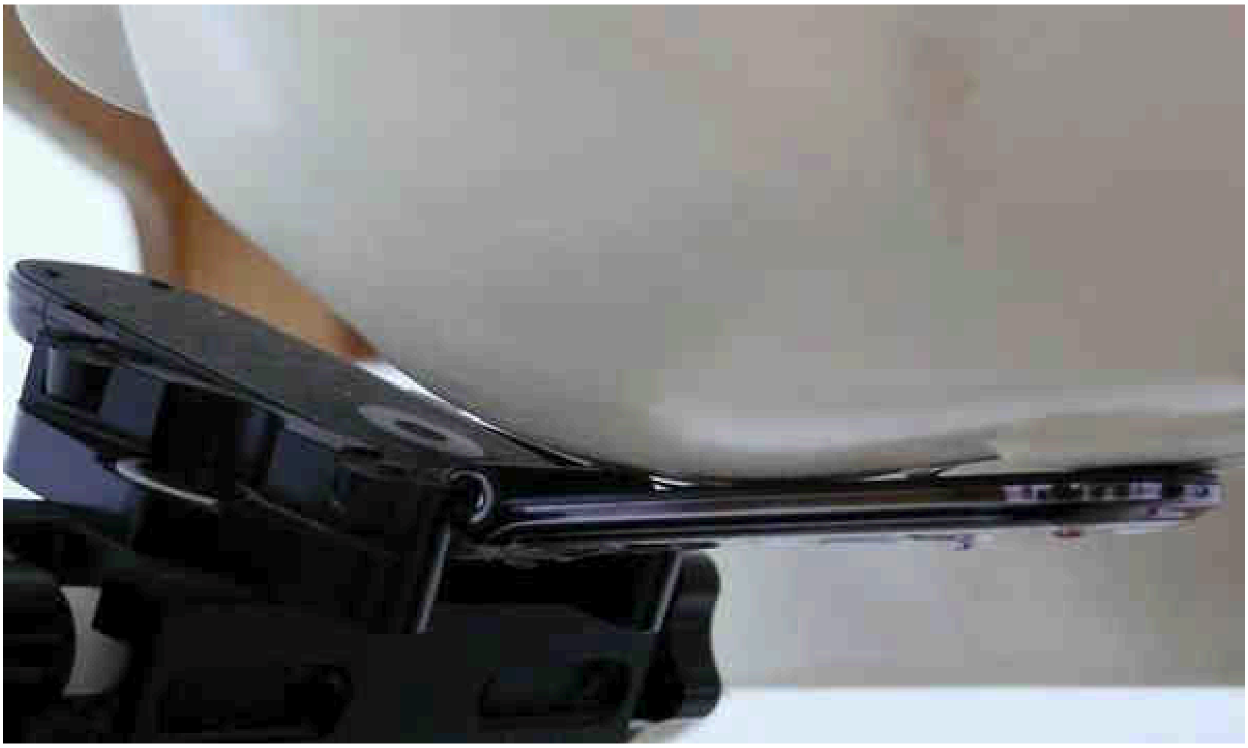
ANNEX B： TEST LAYOUT



Picture 2 Specific Absorption Rate Test Layout

Picture 3 Liquid depth in the Phantom (835 MHz)

Picture 4 Liquid depth in the Phantom (1900 MHz)



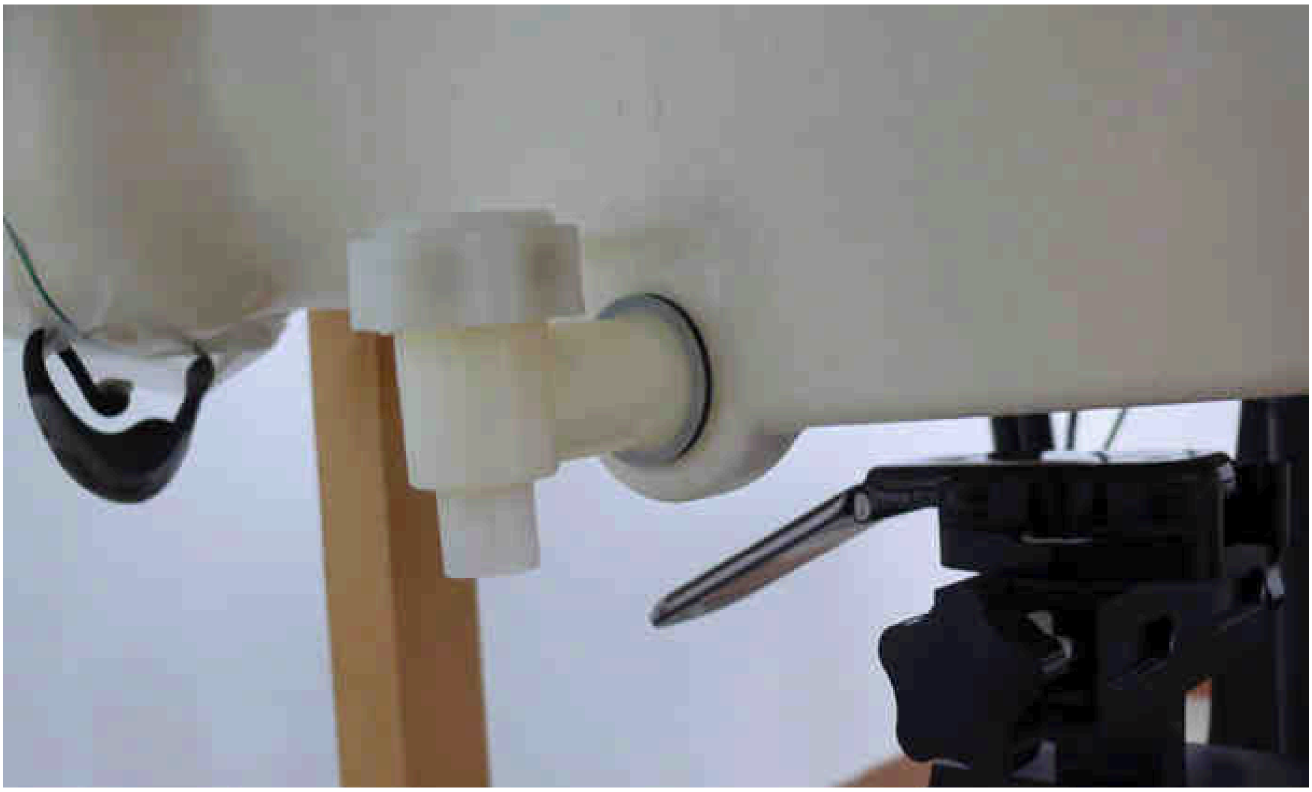
Picture 5 Left Hand Touch Cheek Position

Picture 6 Left Hand Tilt 15° Position

Picture 7 Right Hand Touch Cheek Position

Picture 8 Right Hand Tilt 15° Position

Picture 9 Body, towards ground, the distance from handset to the bottom of the Phantom is 15mm)



Picture 10 Body with the Bluetooth earphone, towards Phantom, the distance from handset to the bottom of the Phantom is 15mm)

ANNEX C： GRAPH RESULTS

GSM 1900 Left Cheek High

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.41 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Cheek High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.600 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.70 V/m; Power Drift = 0.126 dB
Peak SAR (extrapolated) = 0.967 W/kg
SAR(1 g) = 0.638 mW/g; SAR(10 g) = 0.377 mW/g
Maximum value of SAR (measured) = 0.706 mW/g

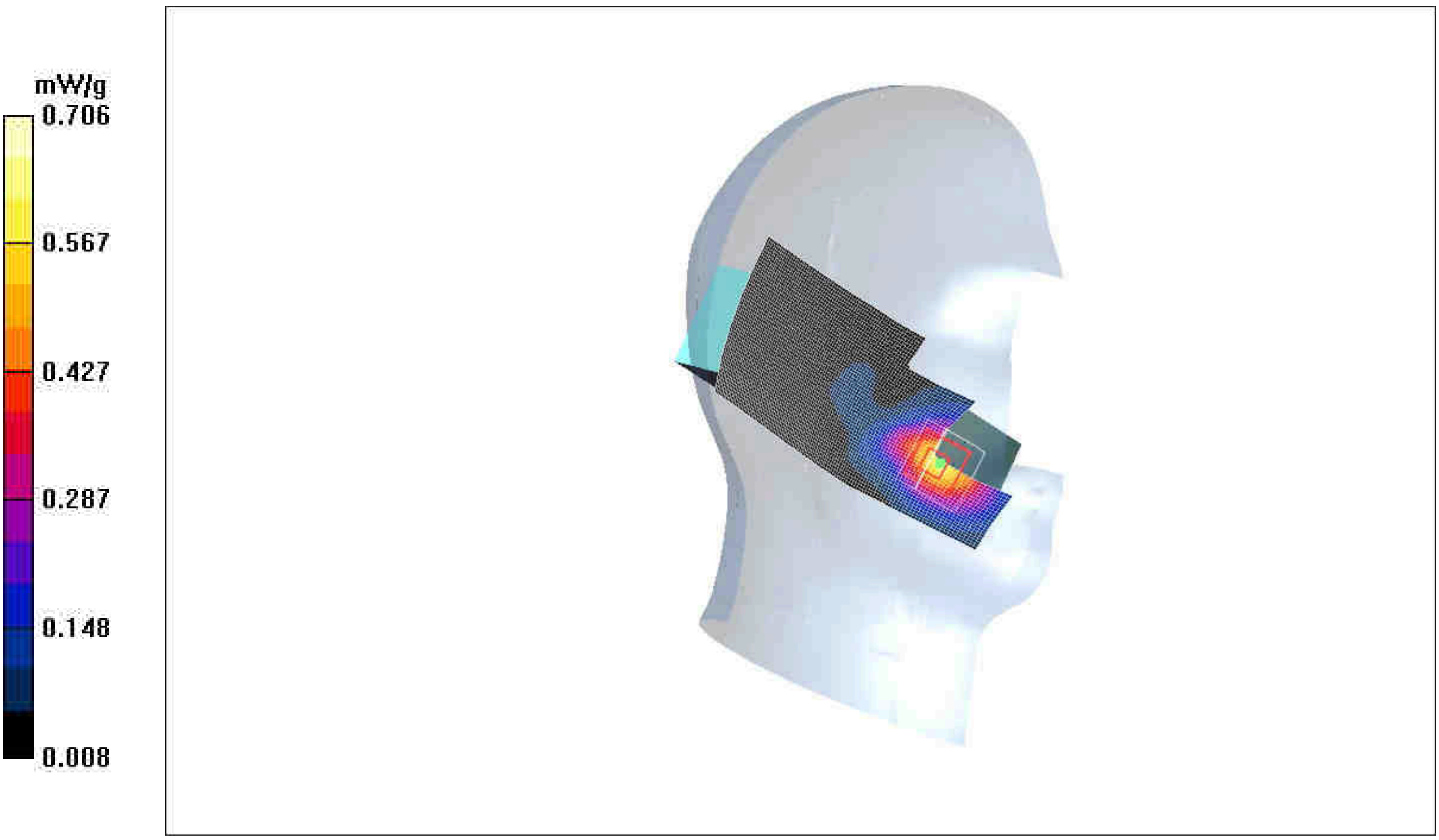


Fig. 7 Left Hand Touch Cheek GSM 1900 CH810

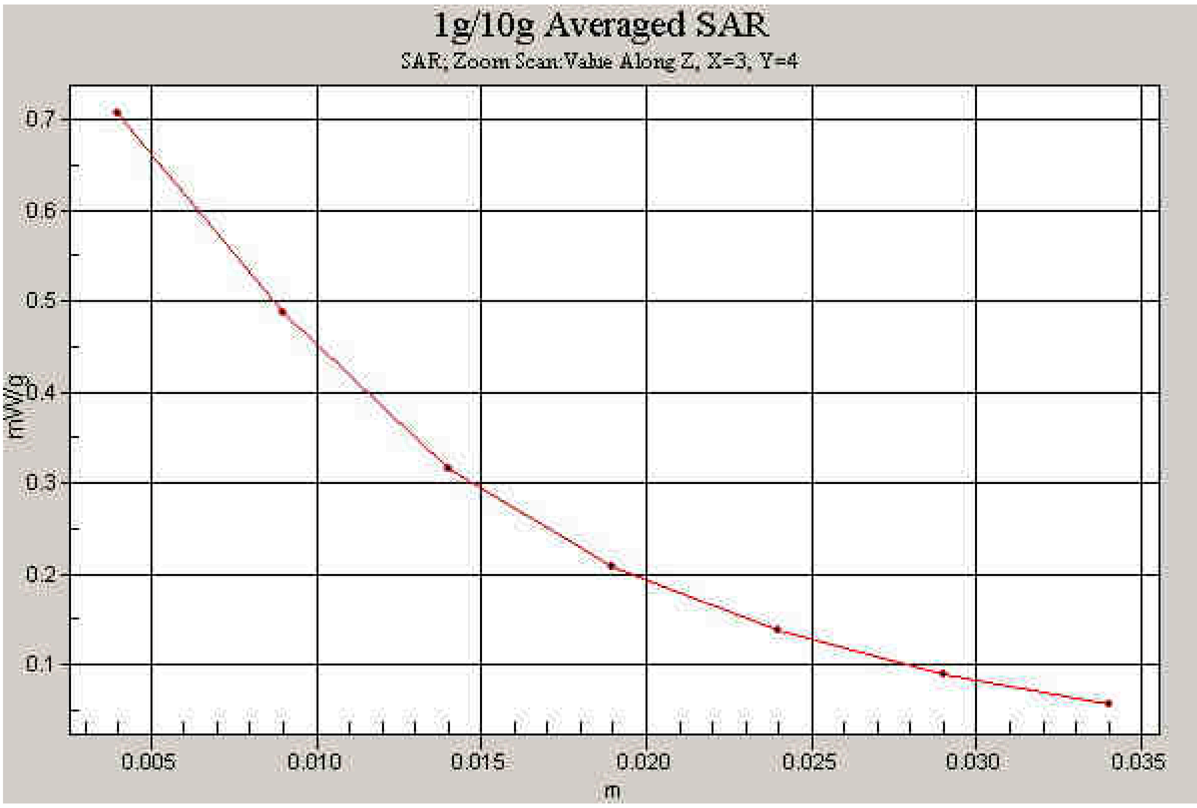


Fig. 8 Z-Scan at power reference point (Left Hand Touch Cheek GSM 1900 CH810)

GSM 1900 Left Cheek Middle

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3

Medium: Head 1900MHz

Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; ε_r = 40; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Cheek Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.473 mW/g

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

Reference Value = 1.86 V/m; Power Drift = 0.061 dB

Peak SAR (extrapolated) = 0.603 W/kg

SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.247 mW/g

Maximum value of SAR (measured) = 0.443 mW/g

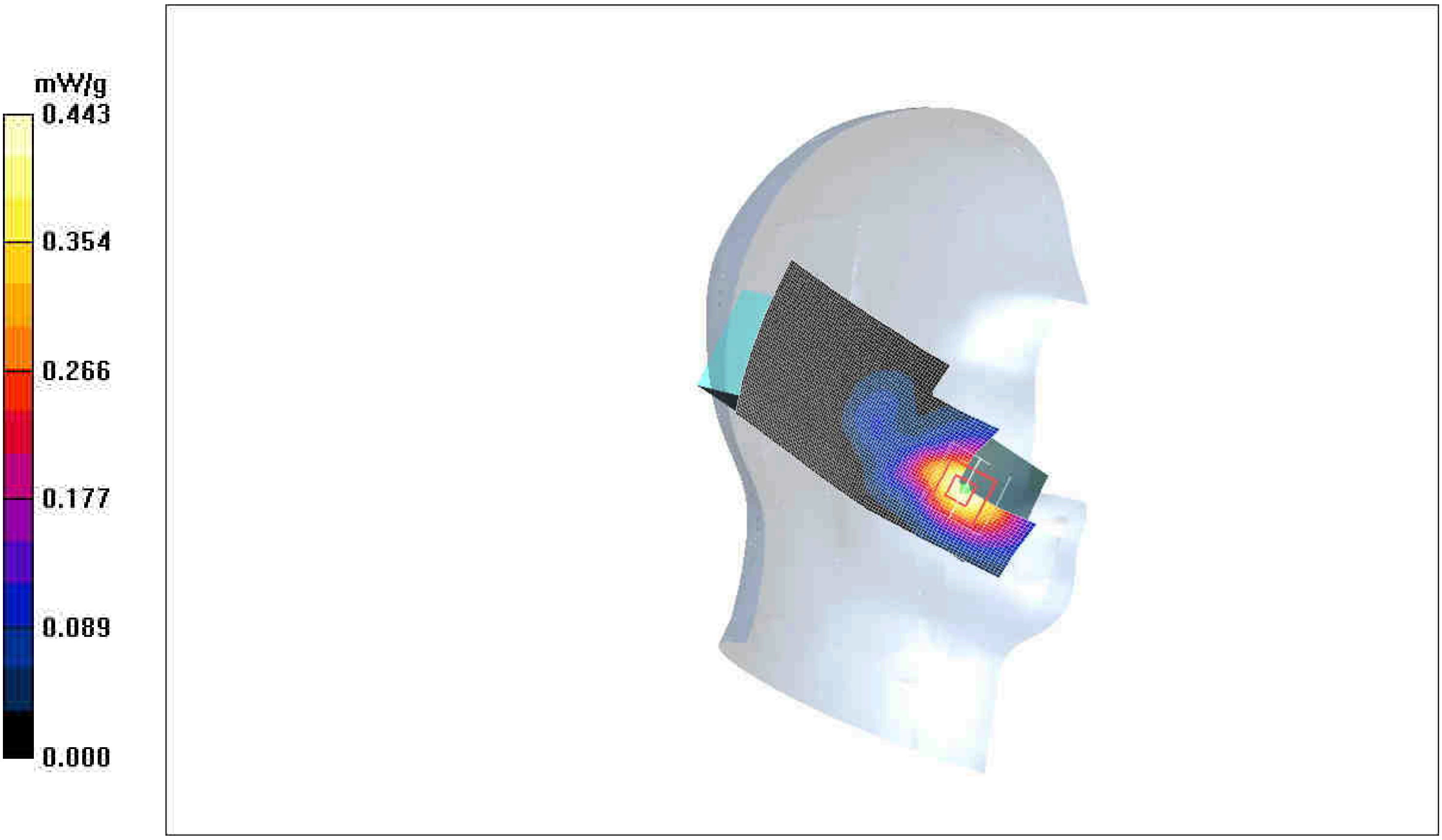


Fig. 9 Left Hand Touch Cheek GSM 1900 CH661

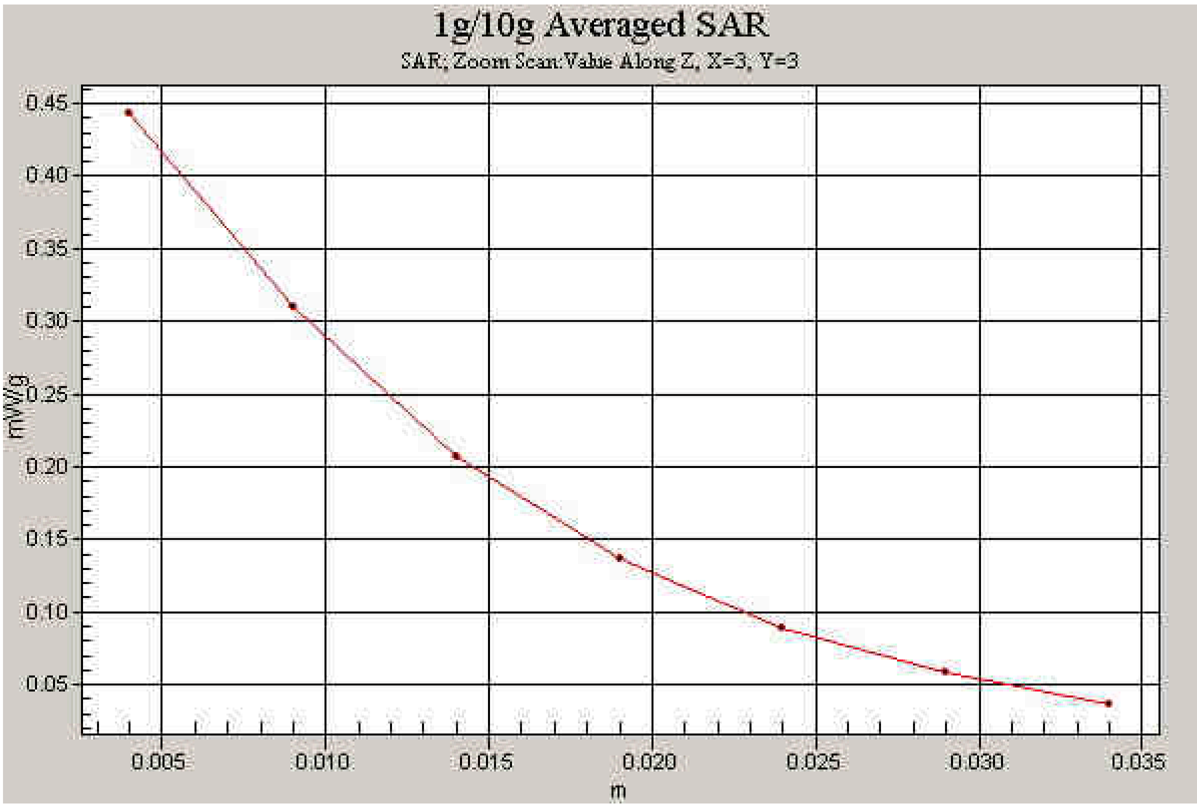


Fig. 10 Z-Scan at power reference point (Left Hand Touch Cheek GSM 1900 CH661)

GSM 1900 Left Cheek Low
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Cheek Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.467 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.08 V/m; Power Drift = -0.098 dB
Peak SAR (extrapolated) = 0.579 W/kg
SAR(1 g) = 0.398 mW/g; SAR(10 g) = 0.238 mW/g
Maximum value of SAR (measured) = 0.434 mW/g

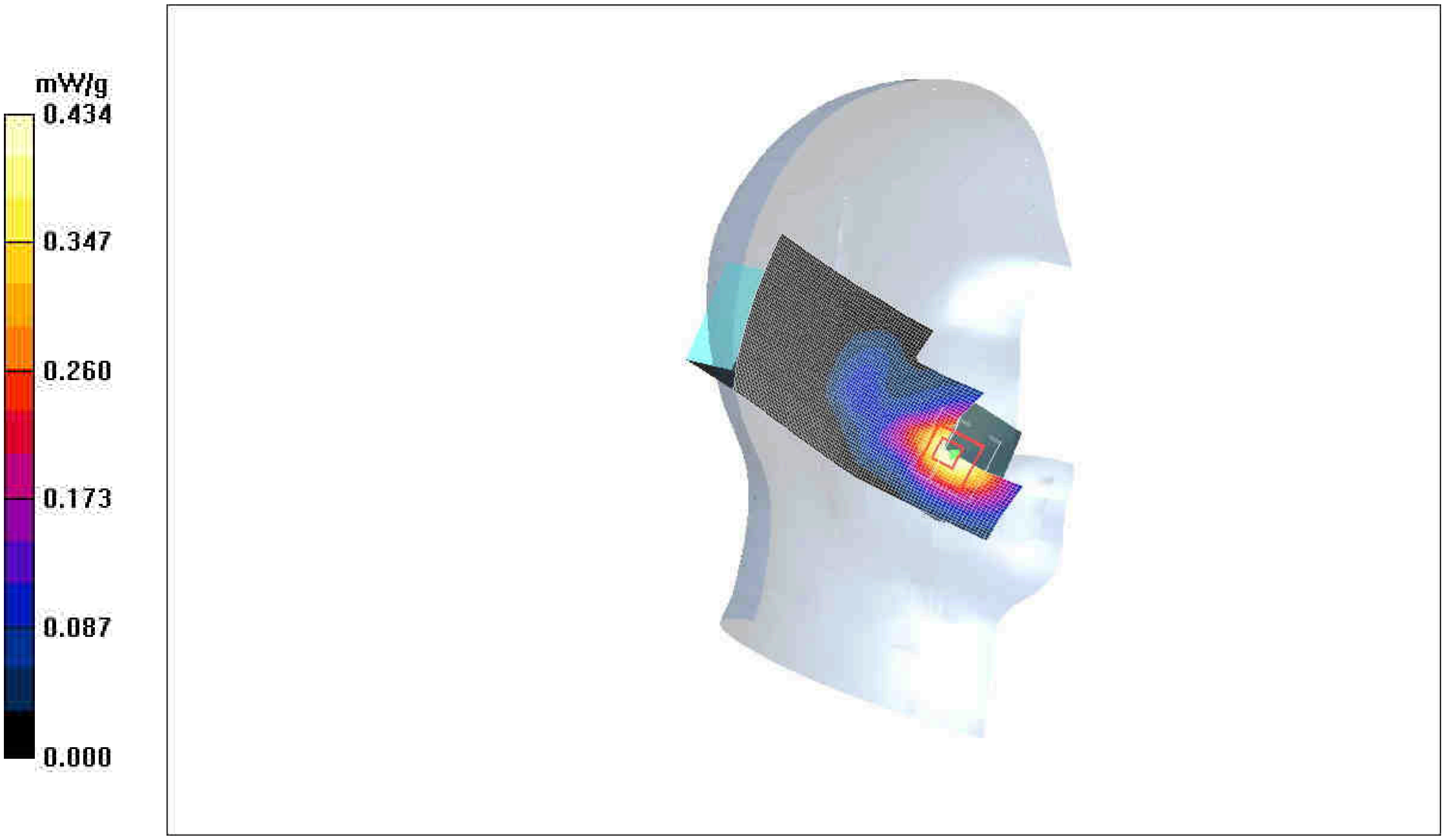


Fig. 11 Left Hand Touch Cheek GSM 1900 CH512

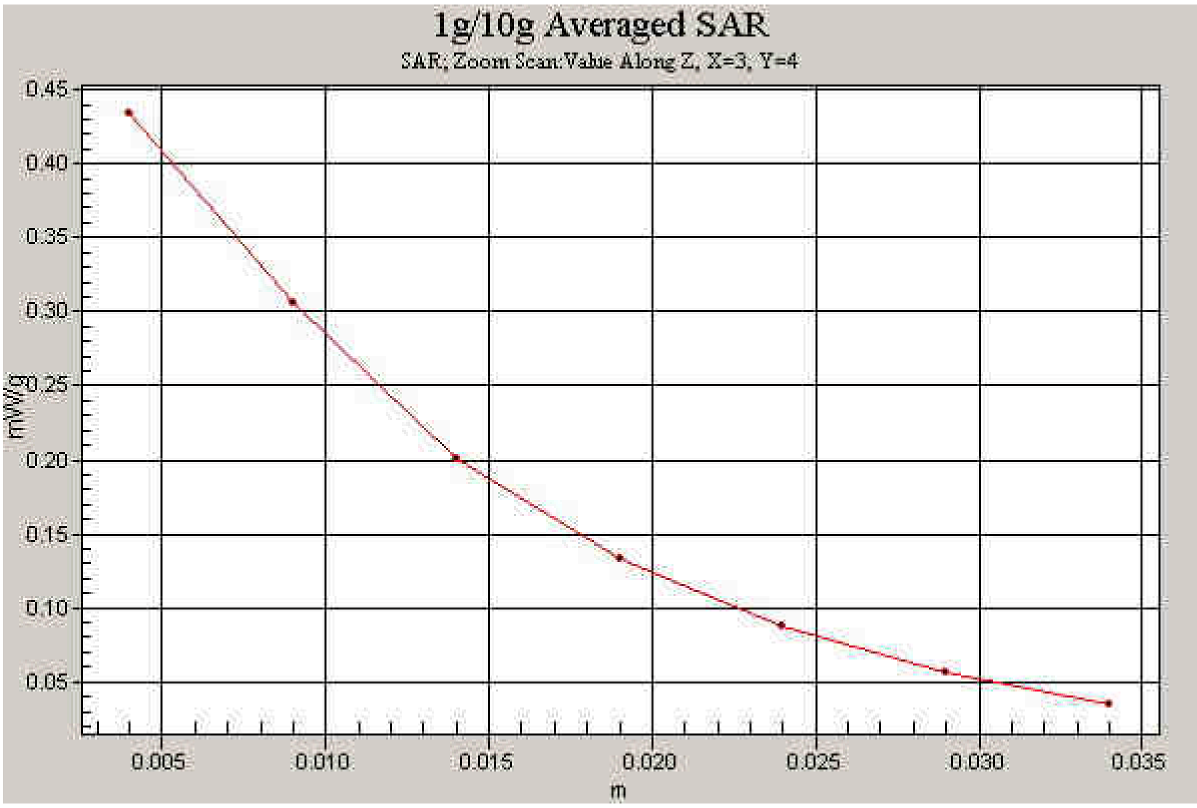


Fig. 12 Z-Scan at power reference point (Left Hand Touch Cheek GSM 1900 CH512)

GSM 1900 Left Tilt High

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3

Medium: Head 1900MHz

Medium parameters used: f = 1910 MHz; σ = 1.41 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Tilt High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.070 mW/g

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

Reference Value = 4.40 V/m; Power Drift = -0.007 dB

Peak SAR (extrapolated) = 0.095 W/kg

SAR(1 g) = 0.065 mW/g; SAR(10 g) = 0.042 mW/g

Maximum value of SAR (measured) = 0.070 mW/g

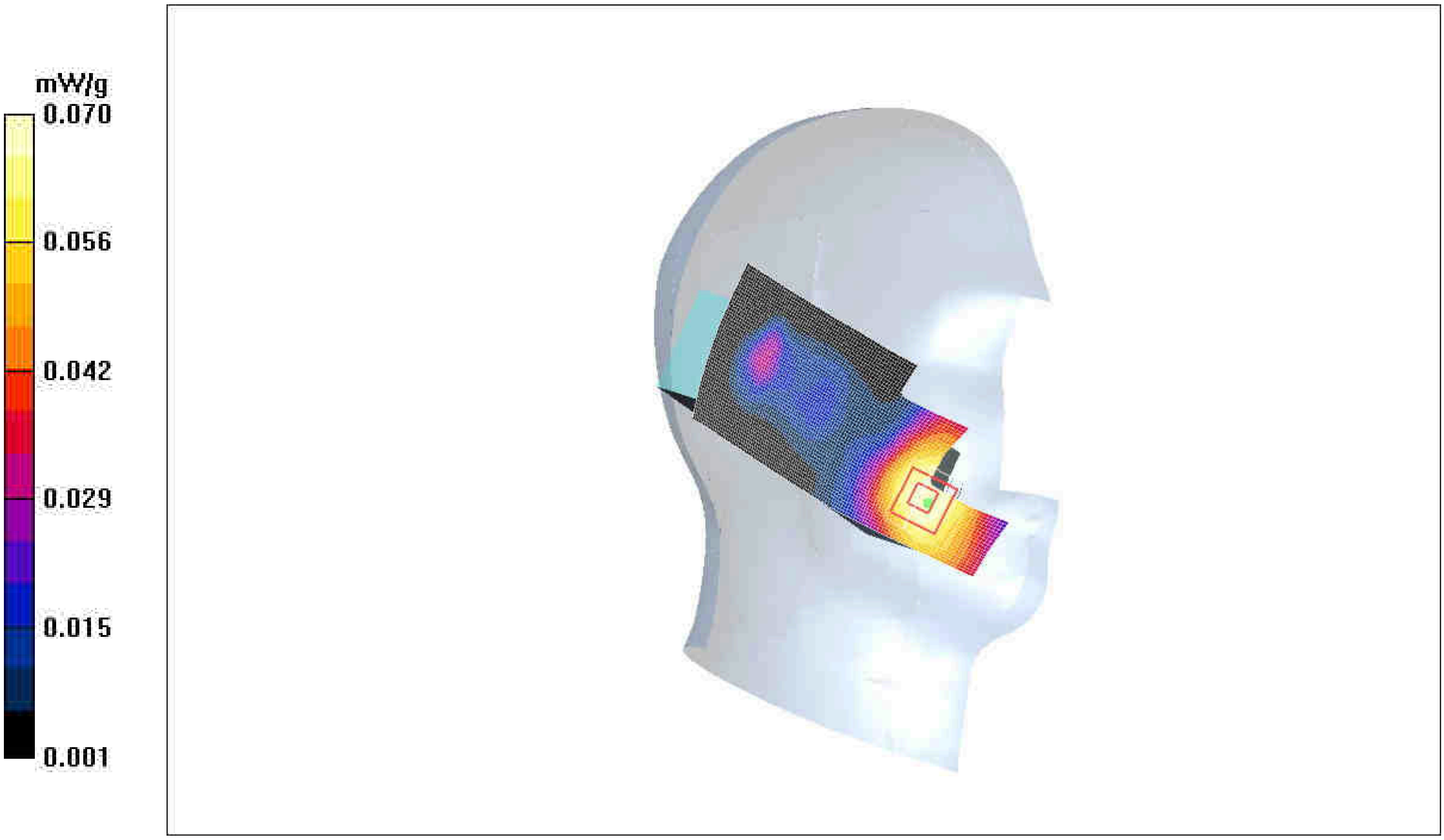


Fig. 13 Left Hand Tilt GSM 1900 CH810

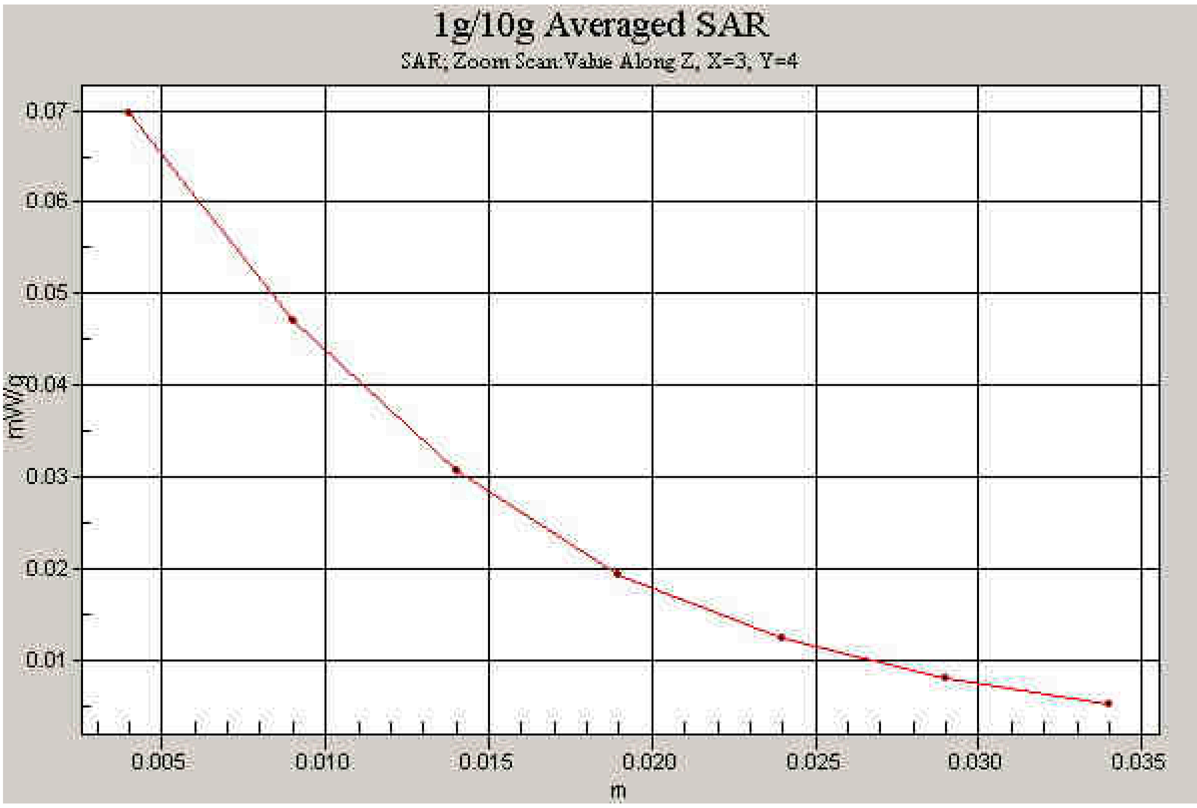


Fig. 14 Z-Scan at power reference point (Left Hand Tilt GSM 1900 CH810)

GSM 1900 Left Tilt Middle

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; ε_r = 40; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Tilt Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.054 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.79 V/m; Power Drift = -0.150 dB
Peak SAR (extrapolated) = 0.074 W/kg
SAR(1 g) = 0.050 mW/g; SAR(10 g) = 0.032 mW/g
Maximum value of SAR (measured) = 0.053 mW/g

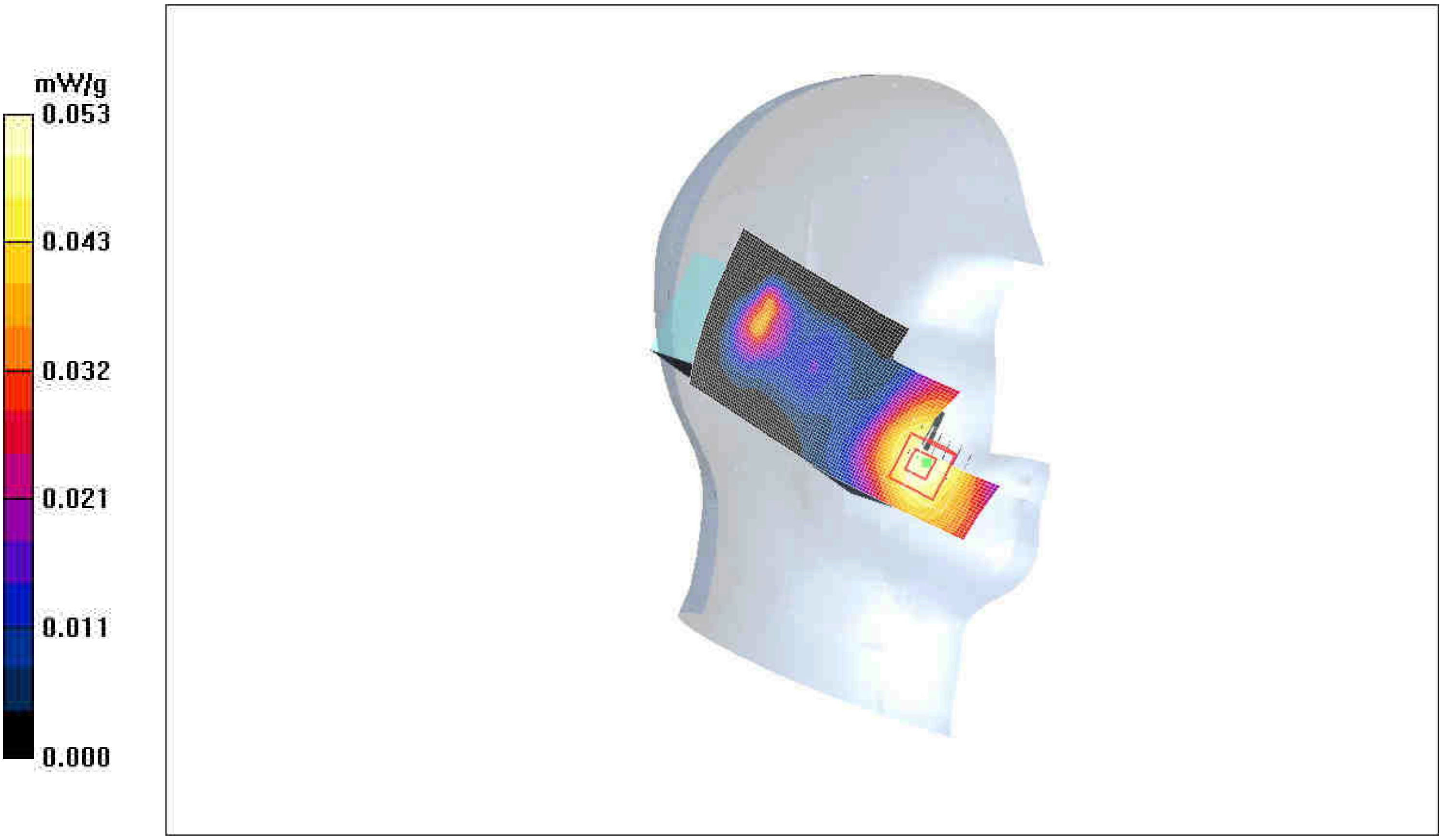


Fig. 15 Left Hand Tilt GSM 1900 CH661

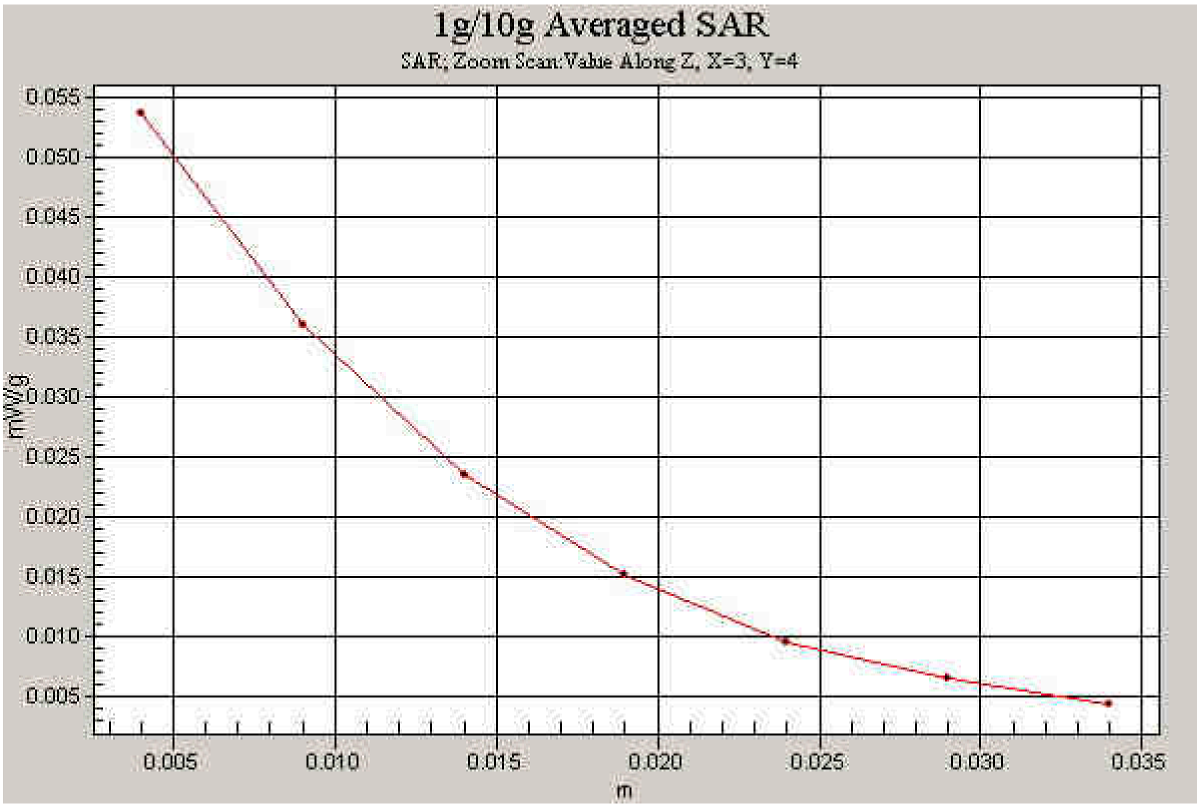


Fig. 16 Z-Scan at power reference point (Left Hand Tilt GSM 1900 CH661)

GSM 1900 Left Tilt Low

ommunication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3

Medium: Head 1900MHz

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Tilt Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.045 mW/g

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

Reference Value = 5.13 V/m; Power Drift = 0.065 dB

Peak SAR (extrapolated) = 0.056 W/kg

SAR(1 g) = 0.036 mW/g; SAR(10 g) = 0.019 mW/g

Maximum value of SAR (measured) = 0.039 mW/g

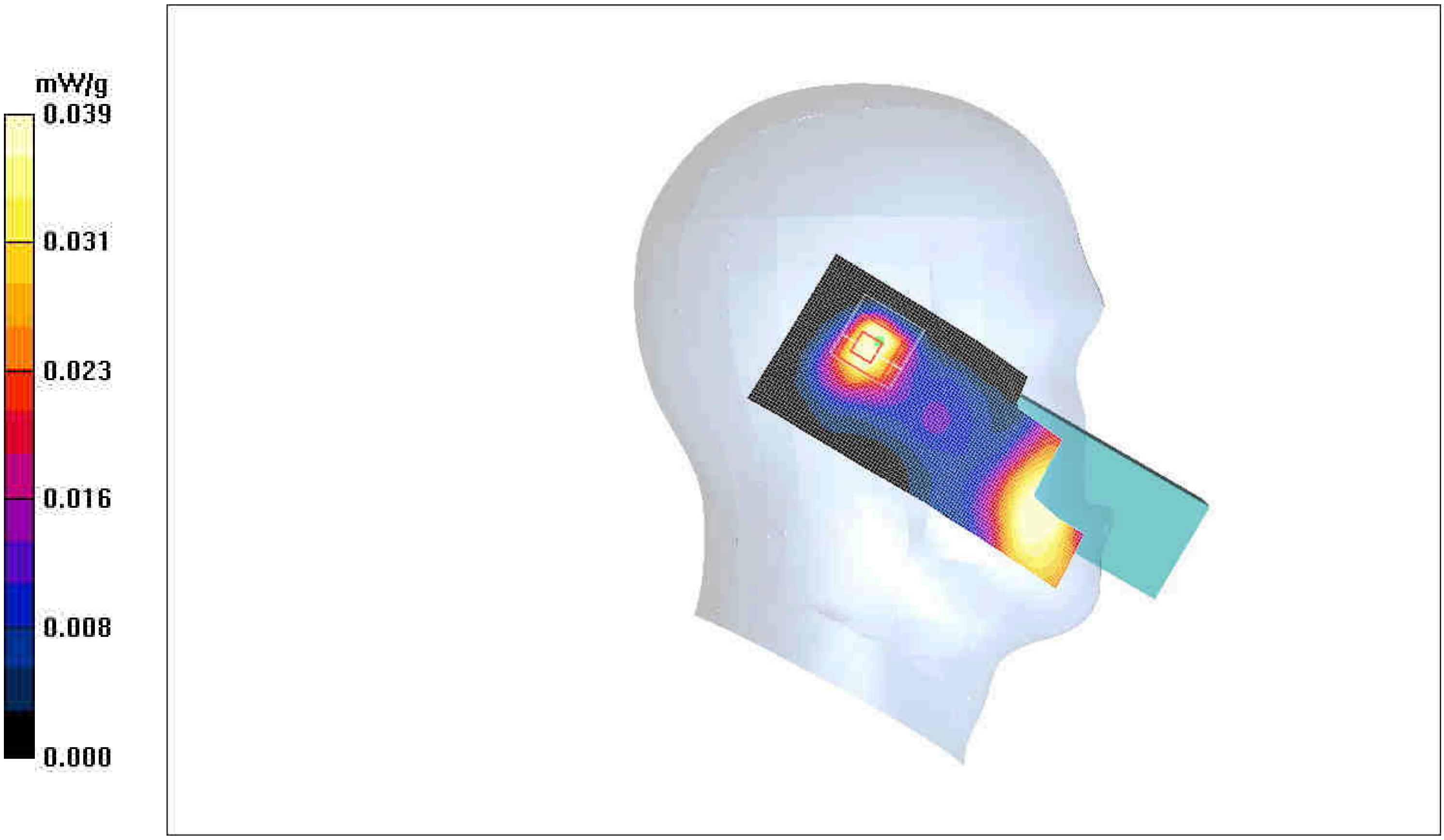


Fig. 17 Left Hand Tilt GSM 1900 CH512

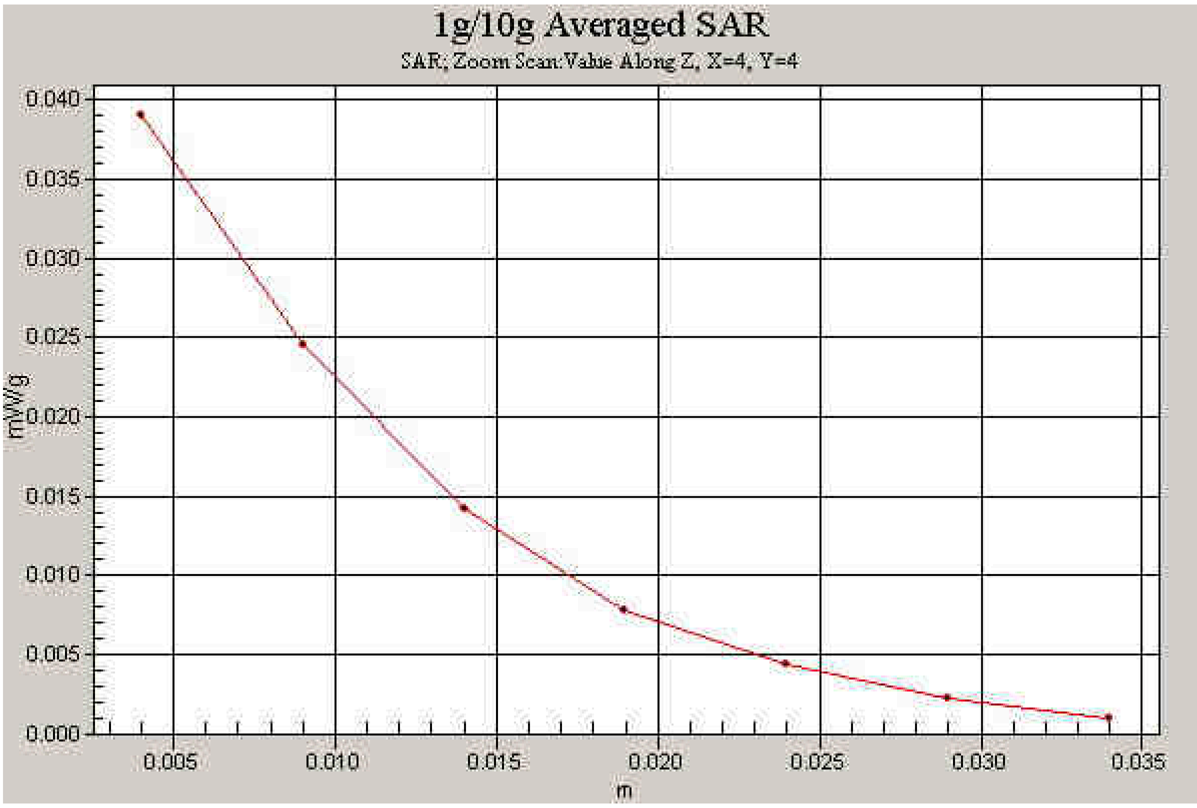


Fig. 18 Z-Scan at power reference point (Left Hand Tilt GSM 1900 CH512)

GSM 1900 Right Cheek High
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.41 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Cheek High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.380 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.61 V/m; Power Drift = 0.102 dB
Peak SAR (extrapolated) = 0.452 W/kg
SAR(1 g) = 0.344 mW/g; SAR(10 g) = 0.217 mW/g
Maximum value of SAR (measured) = 0.377 mW/g

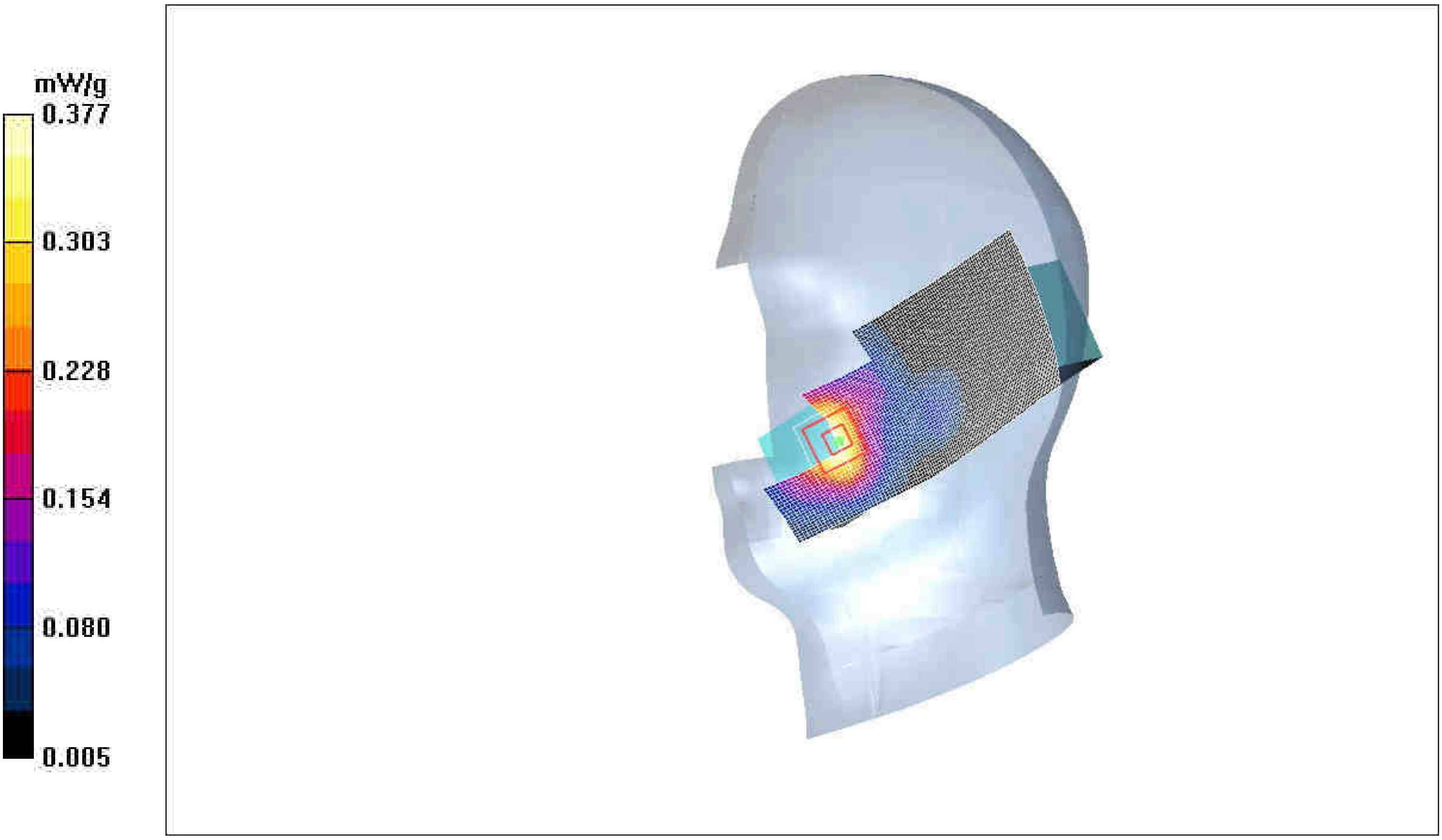


Fig. 19 Right Hand Touch Cheek GSM 1900 CH810

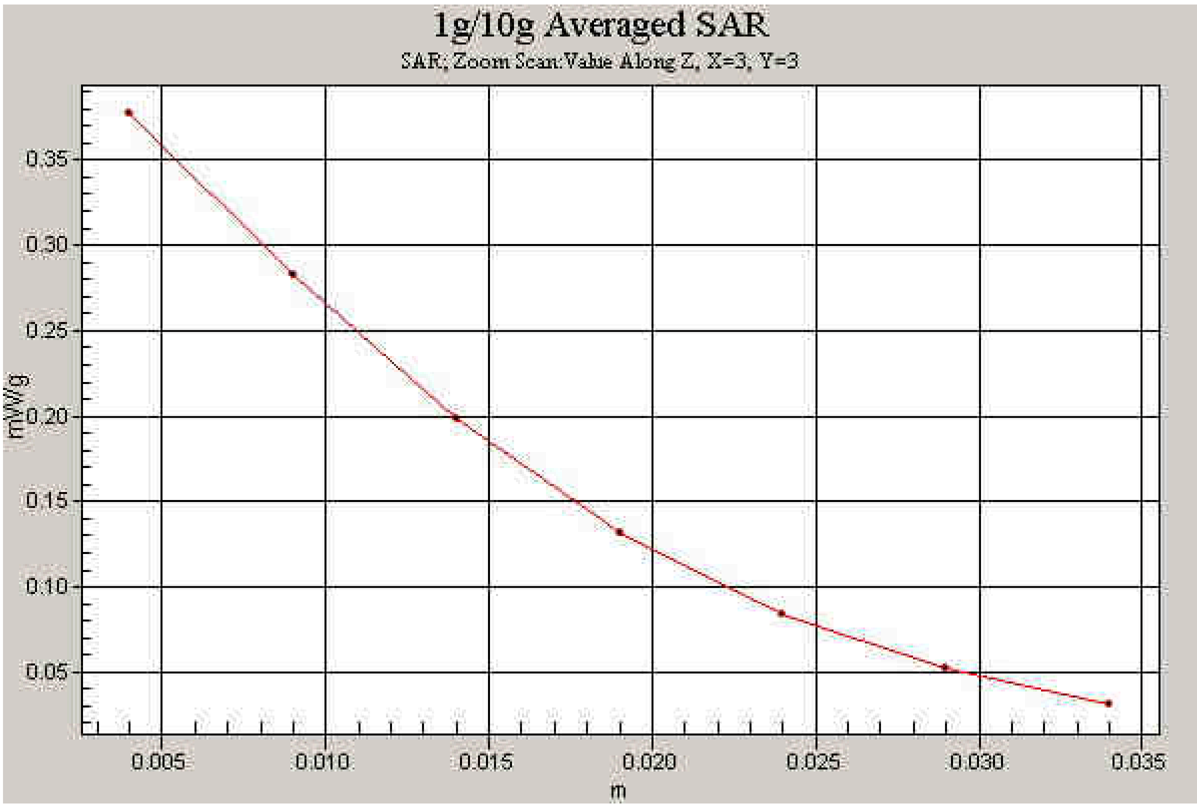


Fig. 20 Z-Scan at power reference point (Right Hand Touch Cheek GSM 1900 CH810)

GSM 1900 Right Cheek Middle
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; ε_r = 40; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Cheek Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.372 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.76 V/m; Power Drift = -0.075 dB
Peak SAR (extrapolated) = 0.455 W/kg
SAR(1 g) = 0.330 mW/g; SAR(10 g) = 0.207 mW/g
Maximum value of SAR (measured) = 0.353 mW/g

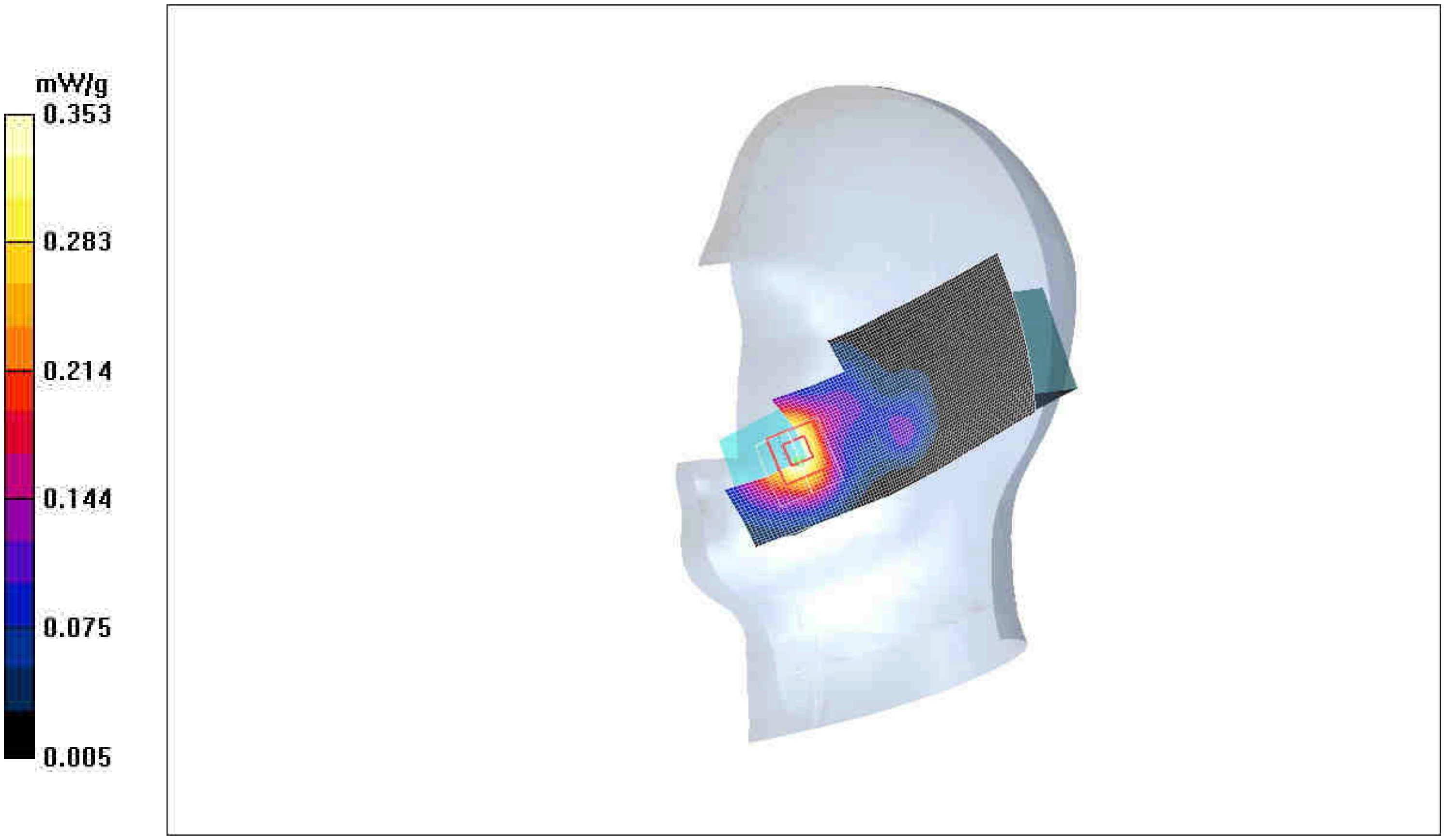


Fig. 21 Right Hand Touch Cheek GSM 1900 CH661

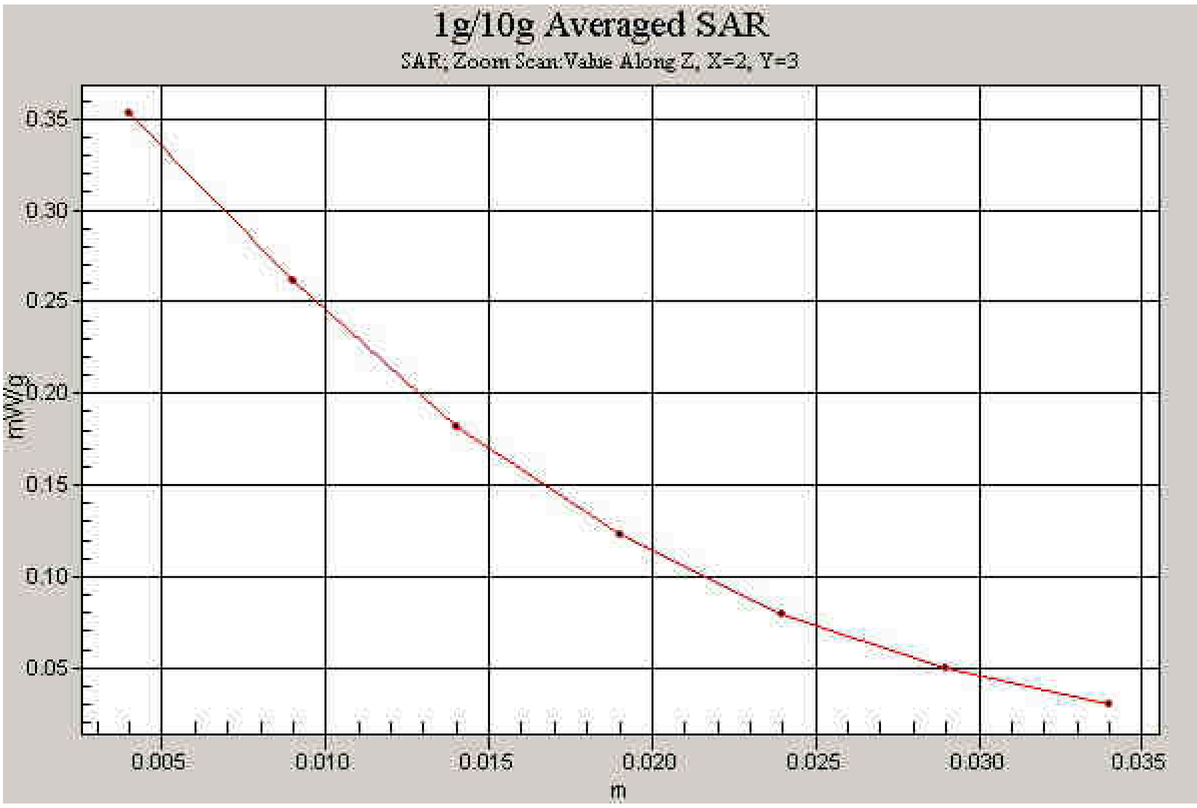


Fig. 22 Z-Scan at power reference point (Right Hand Touch Cheek GSM 1900 CH661)

GSM 1900 Right Cheek Low
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Cheek Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.337 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.96 V/m; Power Drift = -0.116 dB
Peak SAR (extrapolated) = 0.383 W/kg
SAR(1 g) = 0.289 mW/g; SAR(10 g) = 0.180 mW/g
Maximum value of SAR (measured) = 0.315 mW/g

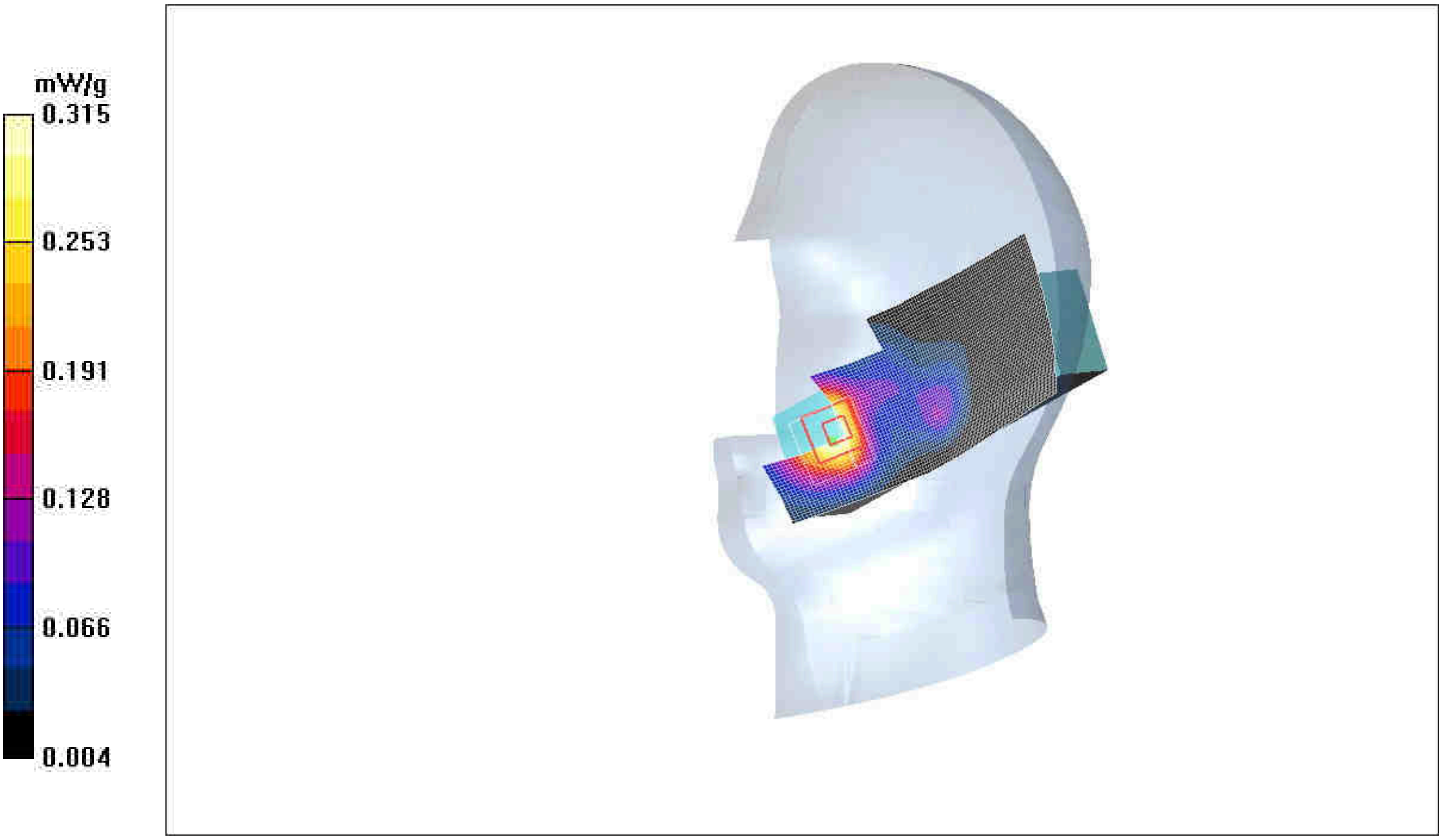


Fig. 23 Right Hand Touch Cheek GSM 1900 CH512

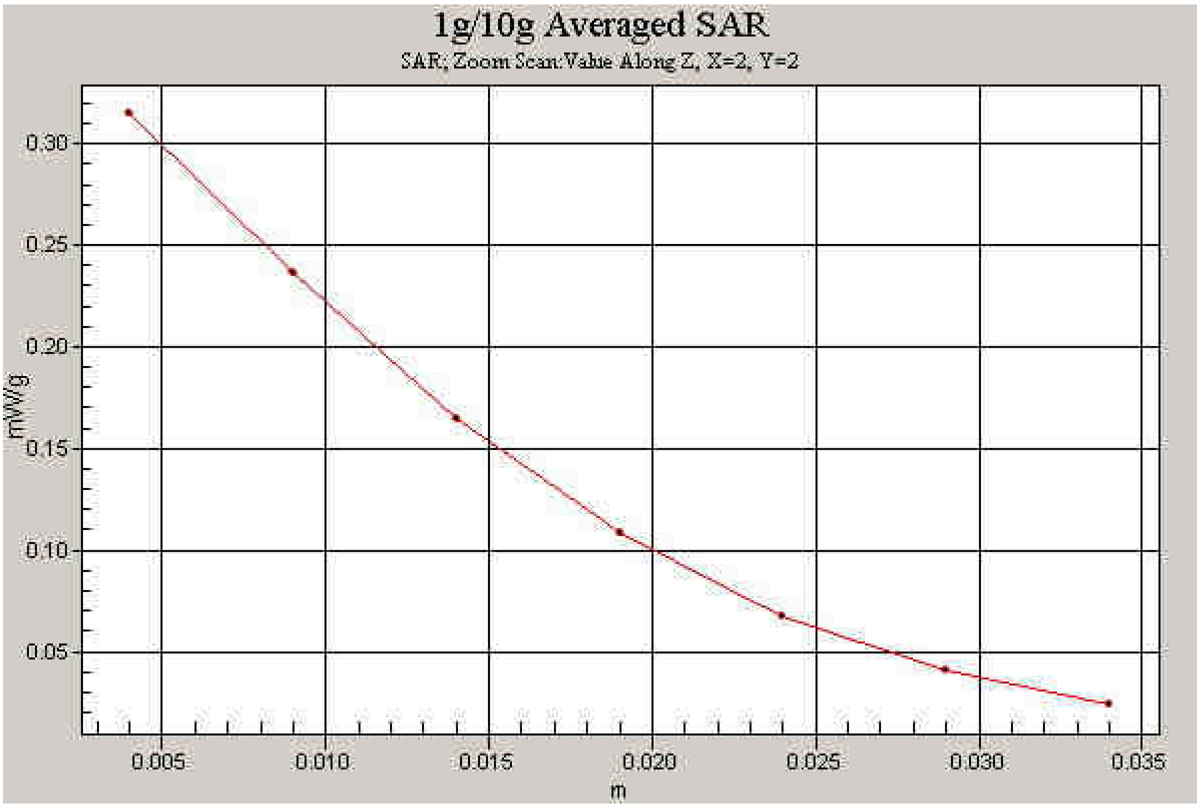


Fig. 24 Z-Scan at power reference point (Right Hand Touch Cheek GSM 1900 CH512)

GSM 1900 Right Tilt High
Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.41 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Tilt High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.051 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.17 V/m; Power Drift = -0.059 dB
Peak SAR (extrapolated) = 0.069 W/kg
SAR(1 g) = 0.047 mW/g; SAR(10 g) = 0.031 mW/g
Maximum value of SAR (measured) = 0.051 mW/g

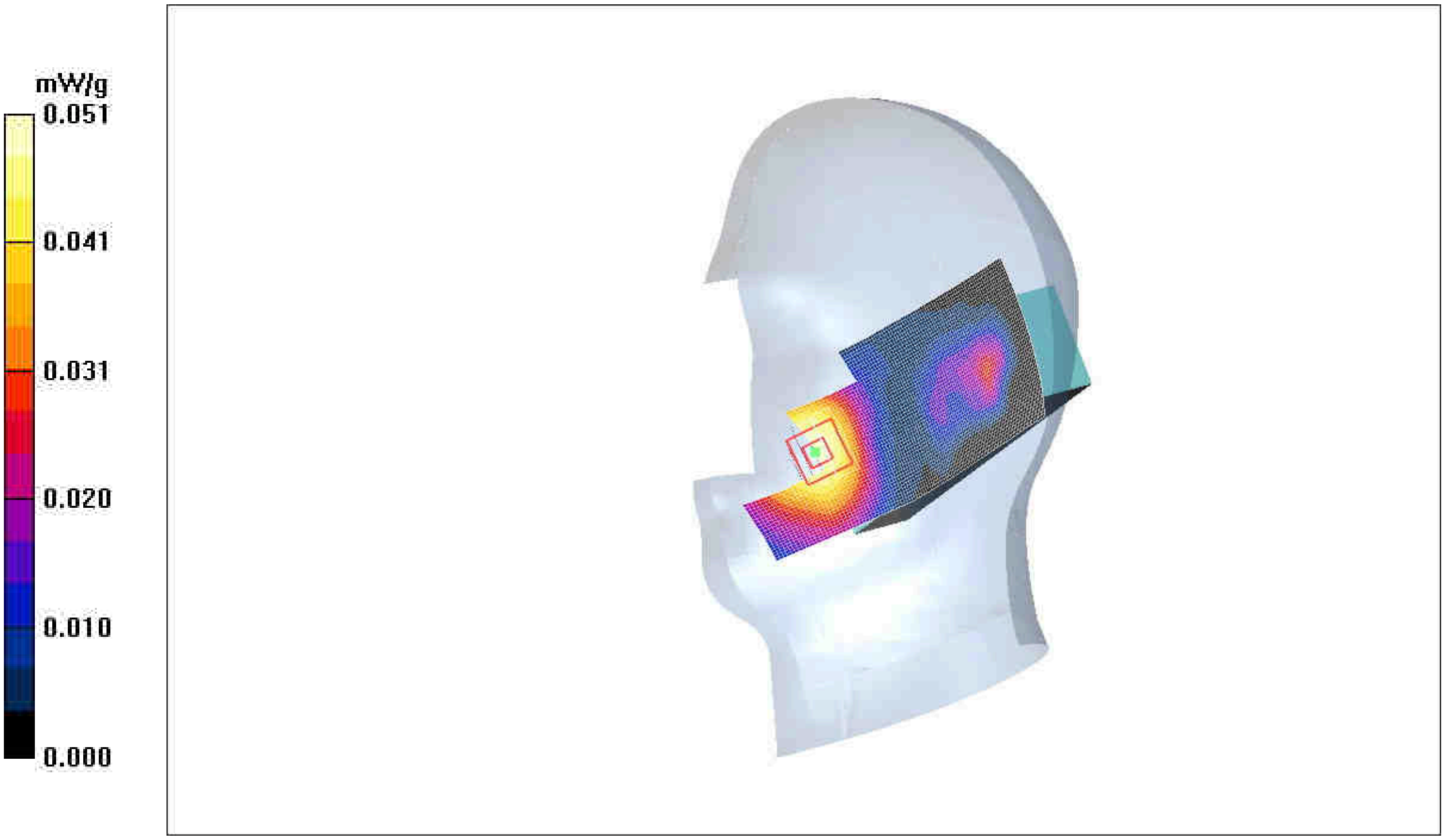


Fig. 25 Right Hand Tilt GSM 1900 CH810

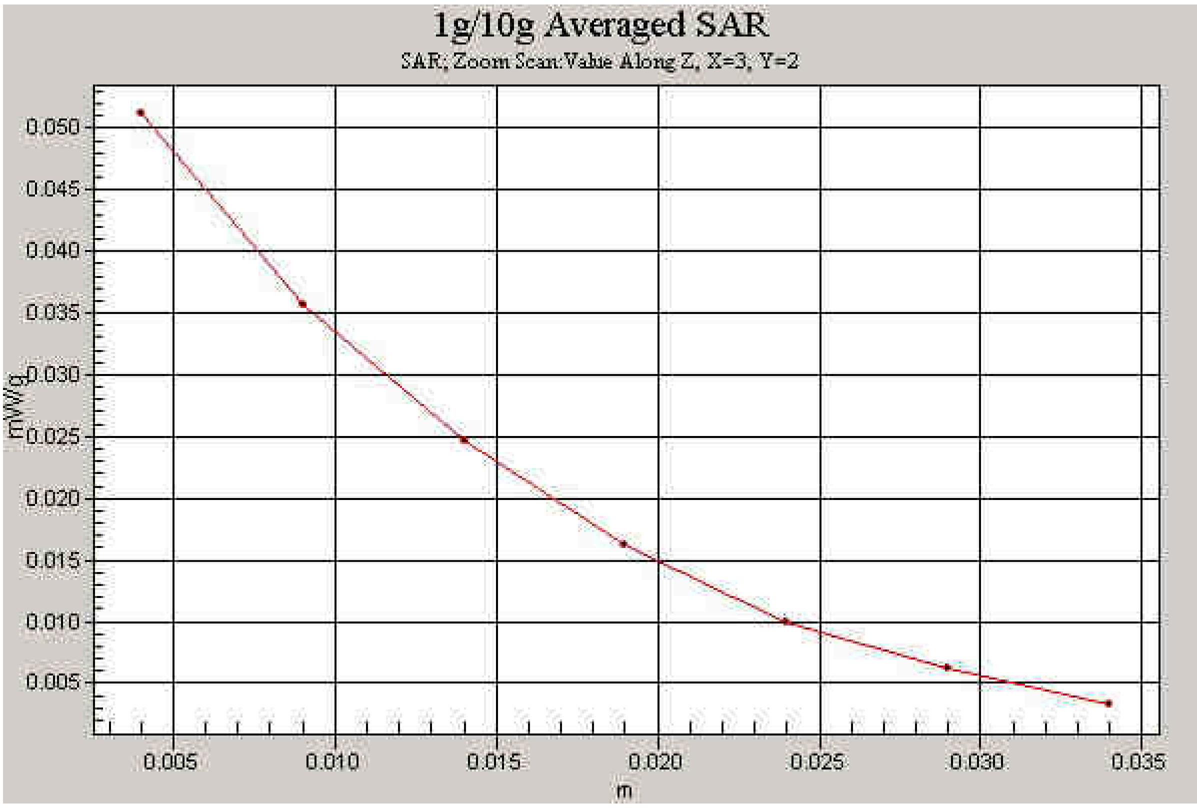


Fig. 26 Z-Scan at power reference point (Right Hand Tilt GSM 1900 CH810)

GSM 1900 Right Tilt Middle

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3

Medium: Head 1900MHz

Medium parameters used: f = 1880 MHz; σ = 1.38 mho/m; ε_r = 40; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Tilt Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.038 mW/g

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

Reference Value = 4.62 V/m; Power Drift = 0.057 dB

Peak SAR (extrapolated) = 0.050 W/kg

SAR(1 g) = 0.035 mW/g; SAR(10 g) = 0.023 mW/g

Maximum value of SAR (measured) = 0.038 mW/g

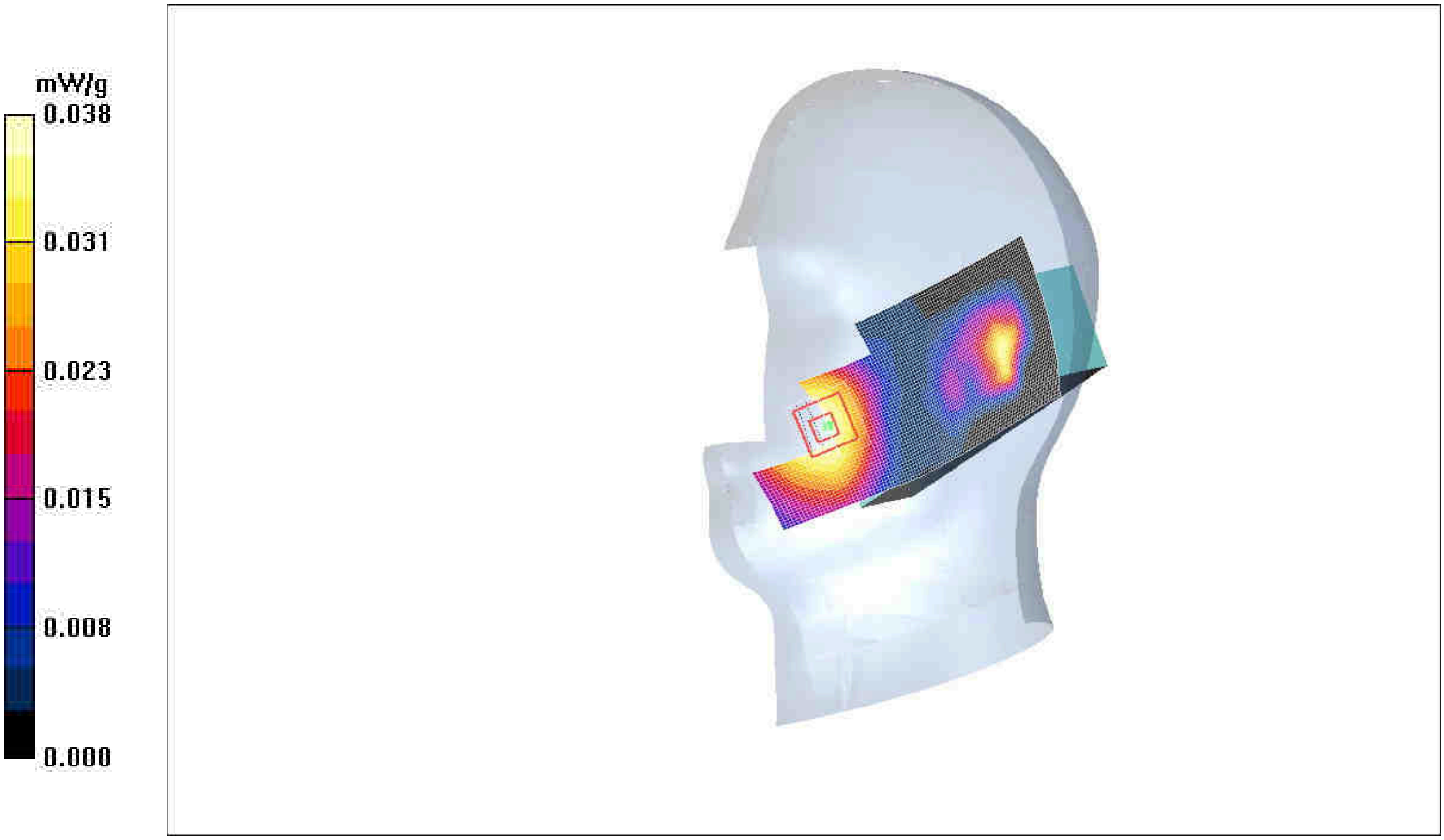


Fig. 27 Right Hand Tilt GSM 1900 CH661

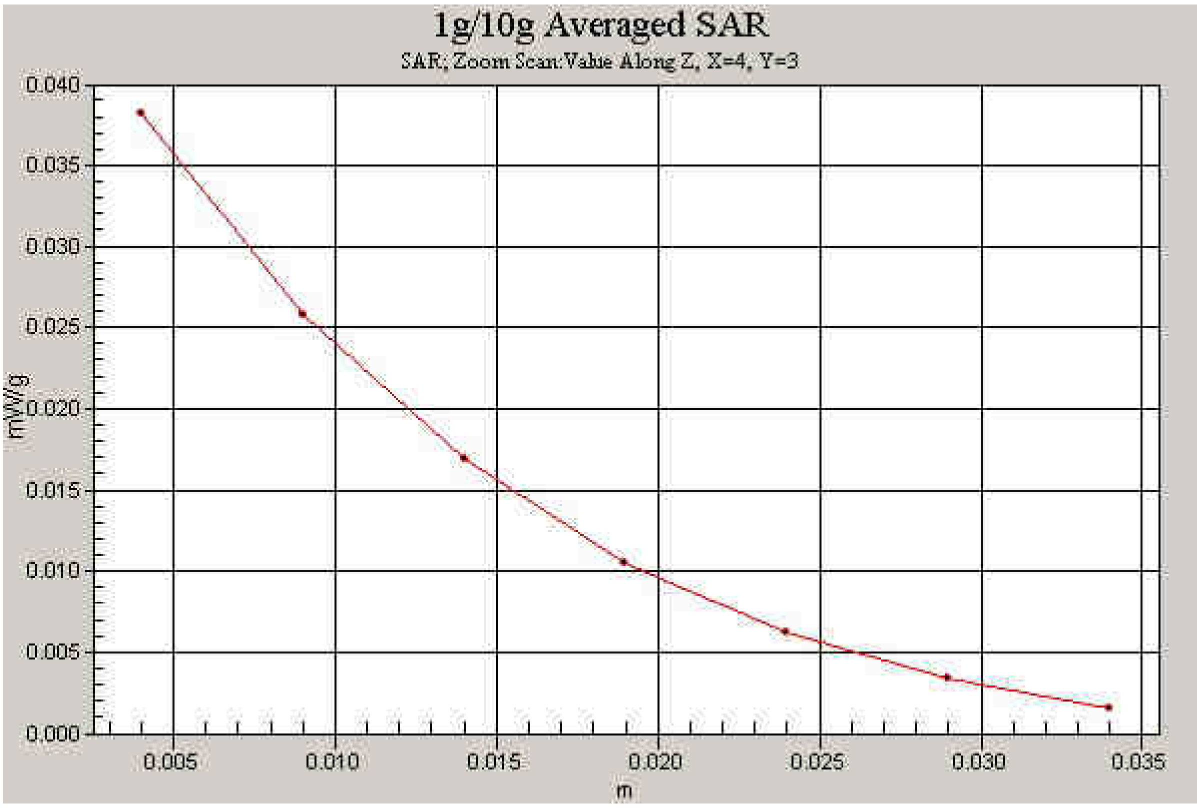


Fig. 28 Z-Scan at power reference point (Right Hand Tilt GSM 1900 CH661)

GSM 1900 Right Tilt Low
Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3
Medium: Head 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.37 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(5.15, 5.15, 5.15);
- Electronics: DAE3 Sn452;

Tilt Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.057 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.55 V/m; Power Drift = 0.062 dB
Peak SAR (extrapolated) = 0.057 W/kg
SAR(1 g) = 0.040 mW/g; SAR(10 g) = 0.023 mW/g
Maximum value of SAR (measured) = 0.045 mW/g

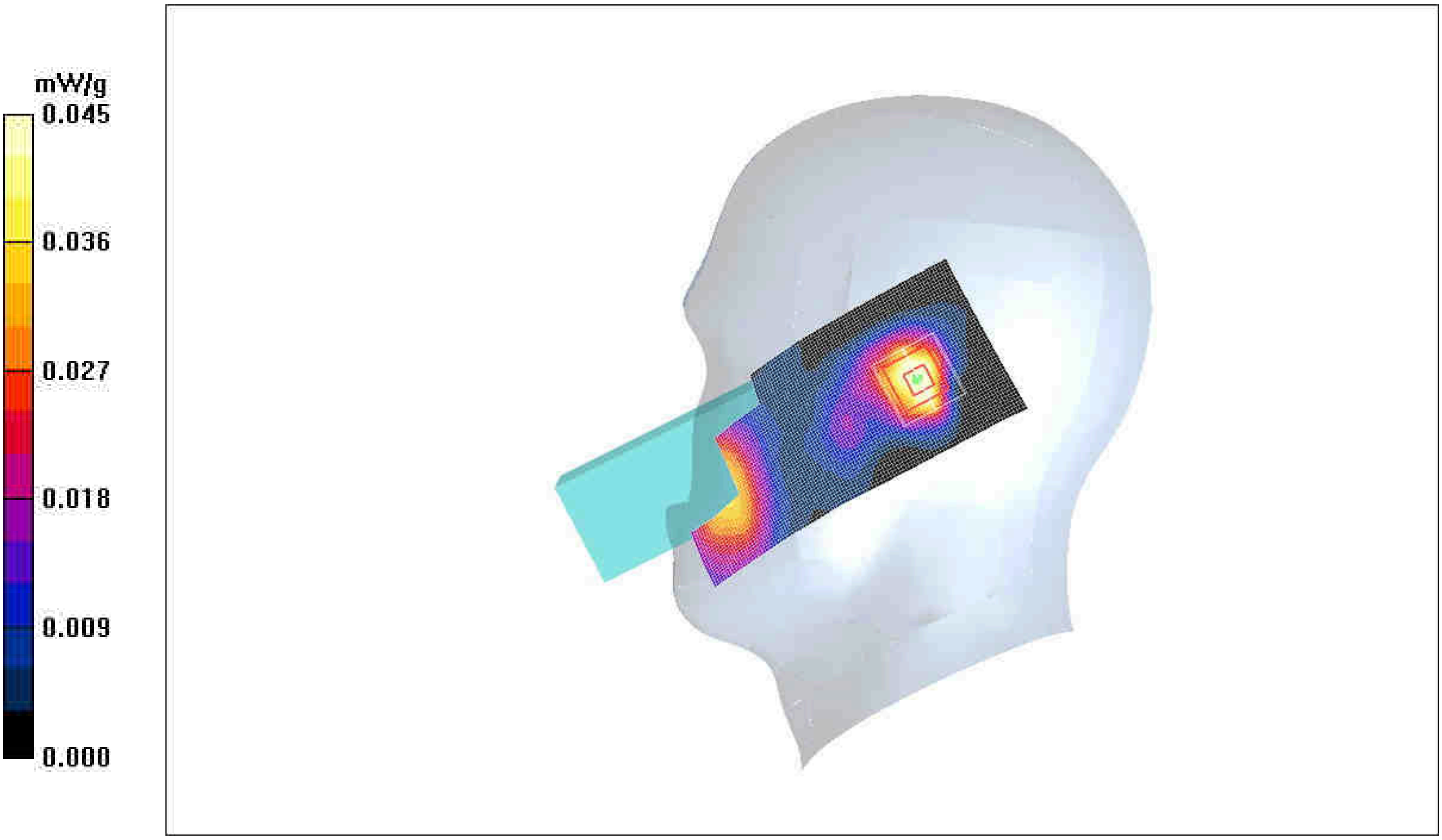


Fig. 29 Right Hand Tilt GSM 1900 CH512

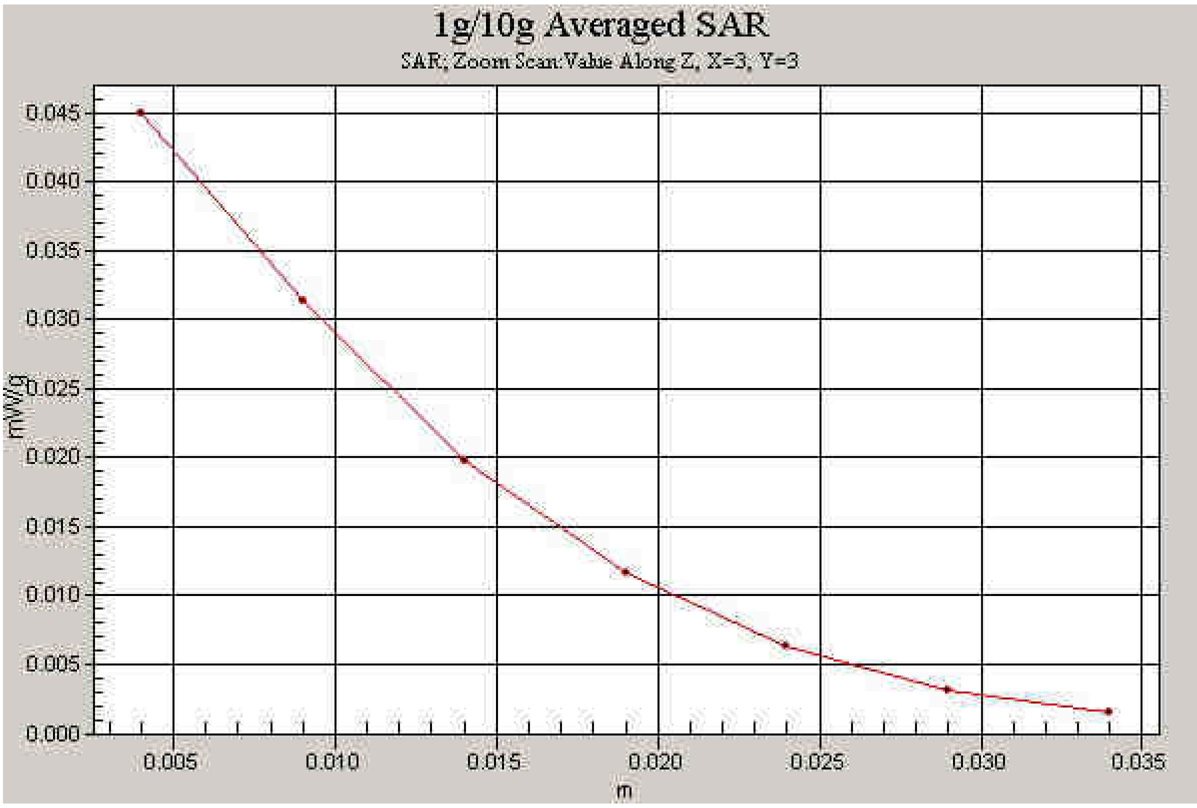


Fig. 30 Z-Scan at power reference point (Right Hand Tilt GSM 1900 CH512)

GSM 1900 Towards Ground High

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3
Medium: Body 1900MHz
Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);
- Electronics: DAE3 Sn452;

Towards Ground High/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.438 mW/g

Towards Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.97 V/m; Power Drift = 0.035 dB
Peak SAR (extrapolated) = 0.590 W/kg
SAR(1 g) = 0.402 mW/g; SAR(10 g) = 0.263 mW/g
Maximum value of SAR (measured) = 0.433 mW/g

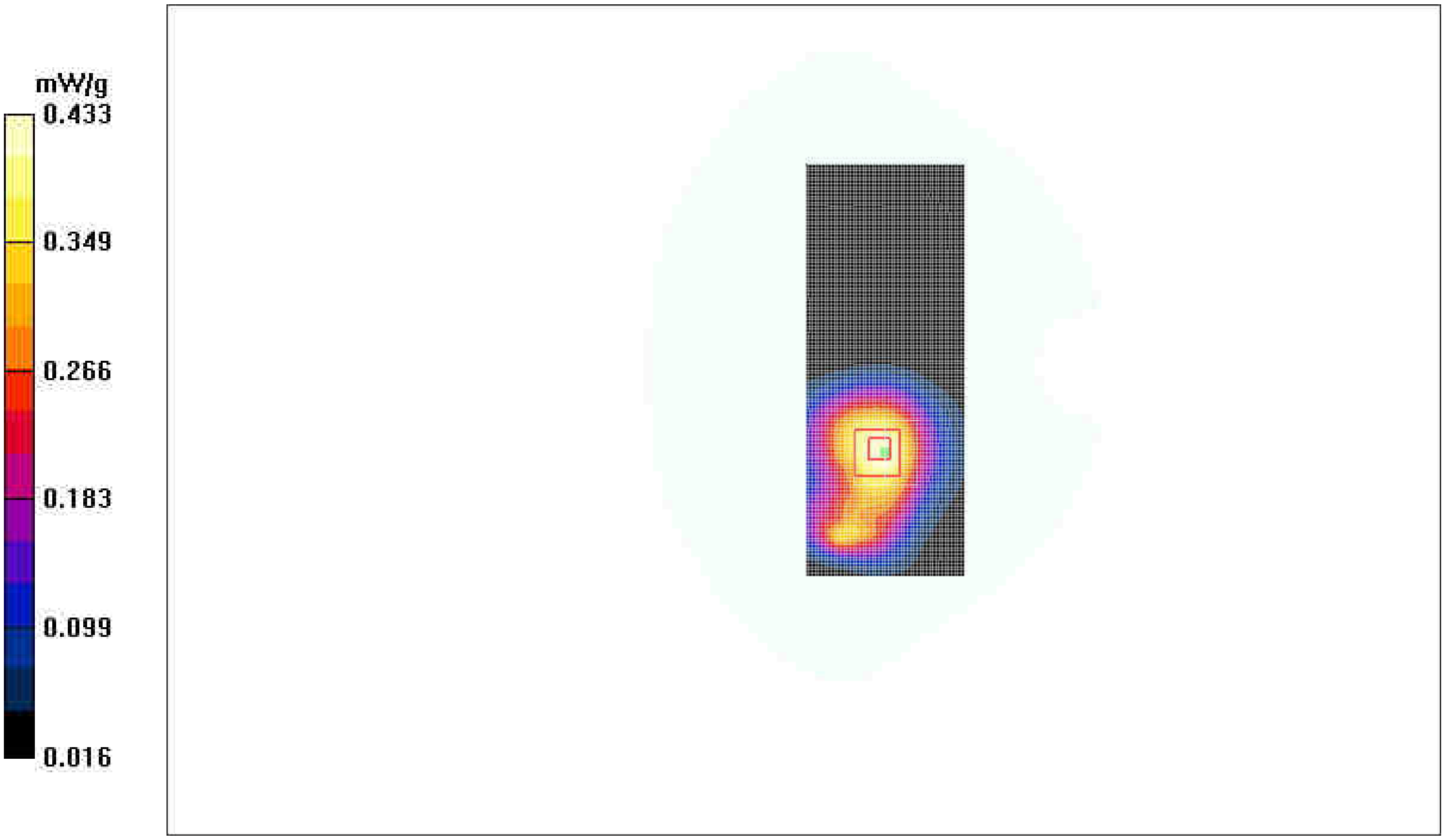


Fig. 31 Body, Towards Ground, GSM 1900 CH810

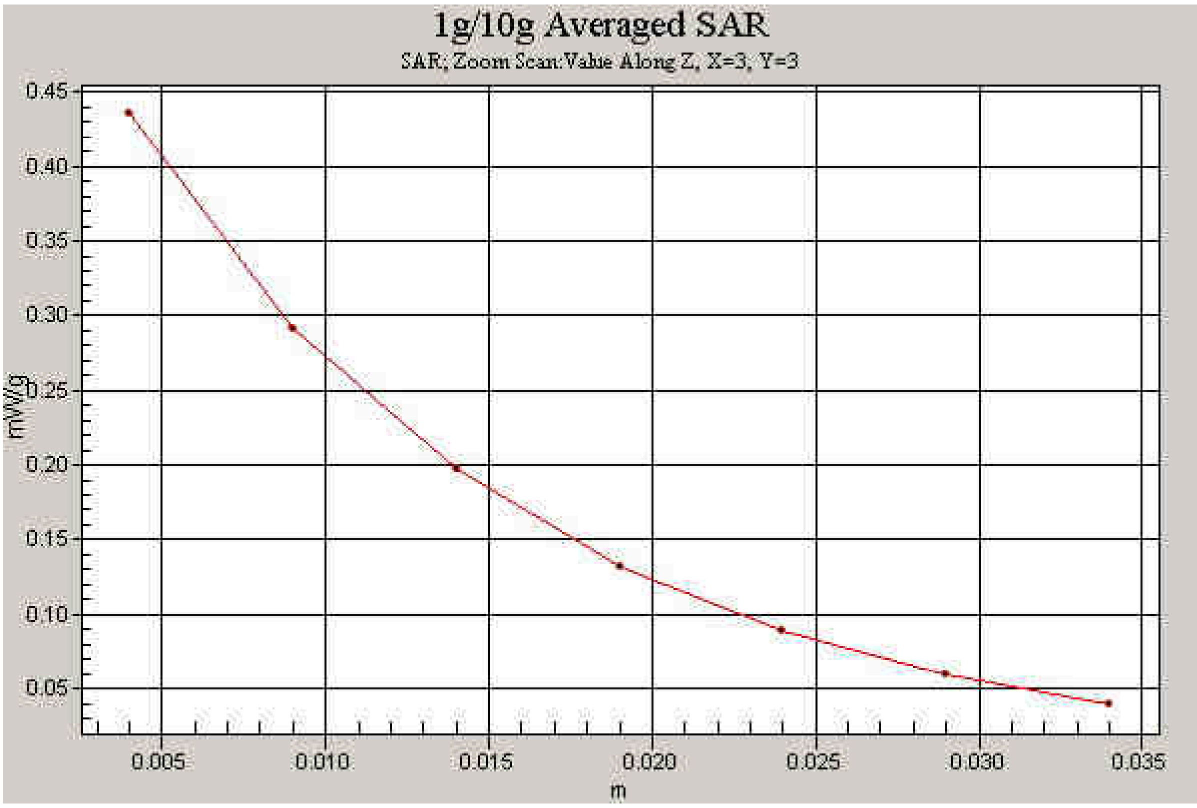


Fig. 32 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 CH810)

GSM 1900 Towards Ground Middle
Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium: Body 1900MHz
Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);
- Electronics: DAE3 Sn452;

Towards Ground Middle/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.343 mW/g

Towards Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.85 V/m; Power Drift = 0.042 dB
Peak SAR (extrapolated) = 0.445 W/kg
SAR(1 g) = 0.313 mW/g; SAR(10 g) = 0.208 mW/g
Maximum value of SAR (measured) = 0.335 mW/g

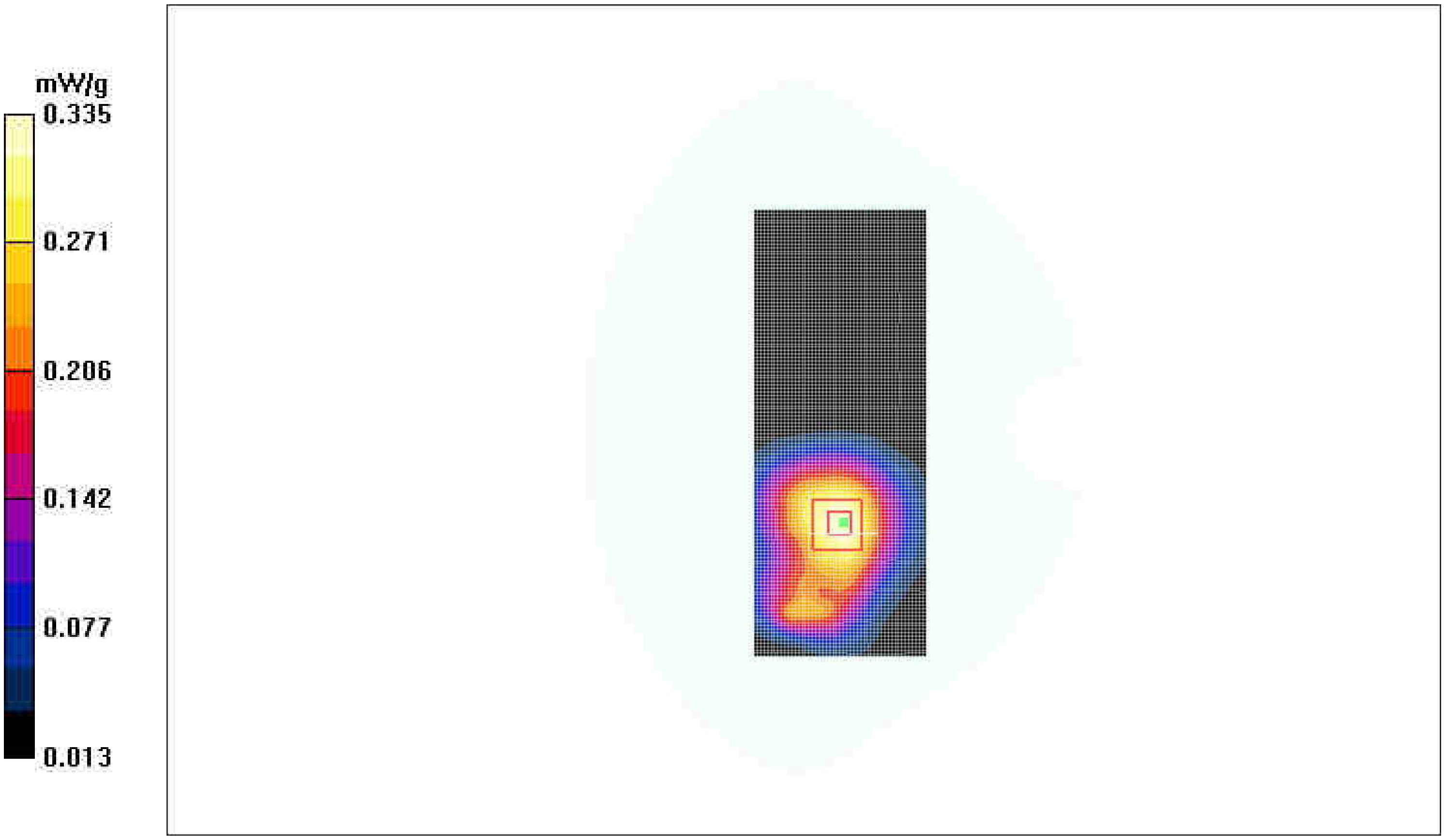


Fig. 33 Body, Towards Ground, GSM 1900 CH661

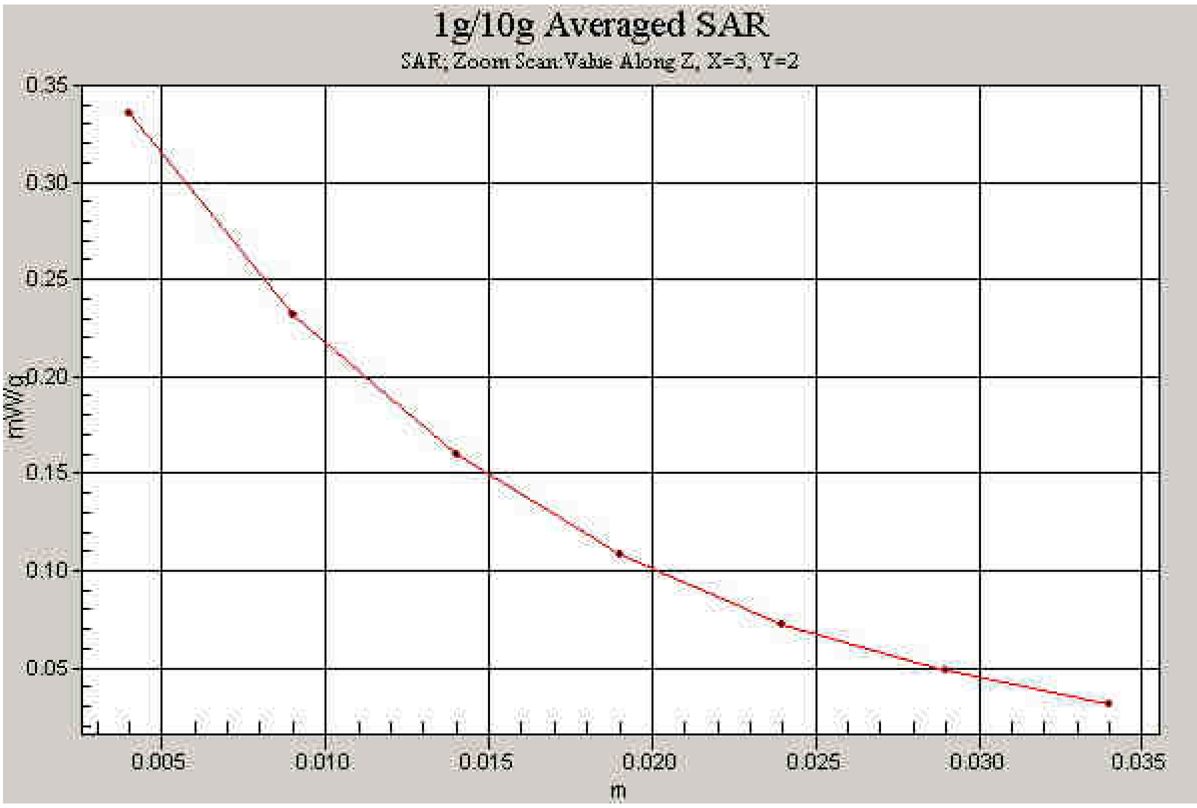


Fig.34 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 CH661)

GSM 1900 Towards Ground Low

Communication System: GSM 1900; Frequency: 1850.2 MHz;Duty Cycle: 1:8.3

Medium: Body 1900MHz

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 53.4; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);
- Electronics: DAE3 Sn452;

Towards Ground Low/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.271 mW/g

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

Reference Value = 4.08 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 0.352 W/kg

SAR(1 g) = 0.251 mW/g; SAR(10 g) = 0.168 mW/g

Maximum value of SAR (measured) = 0.268 mW/g

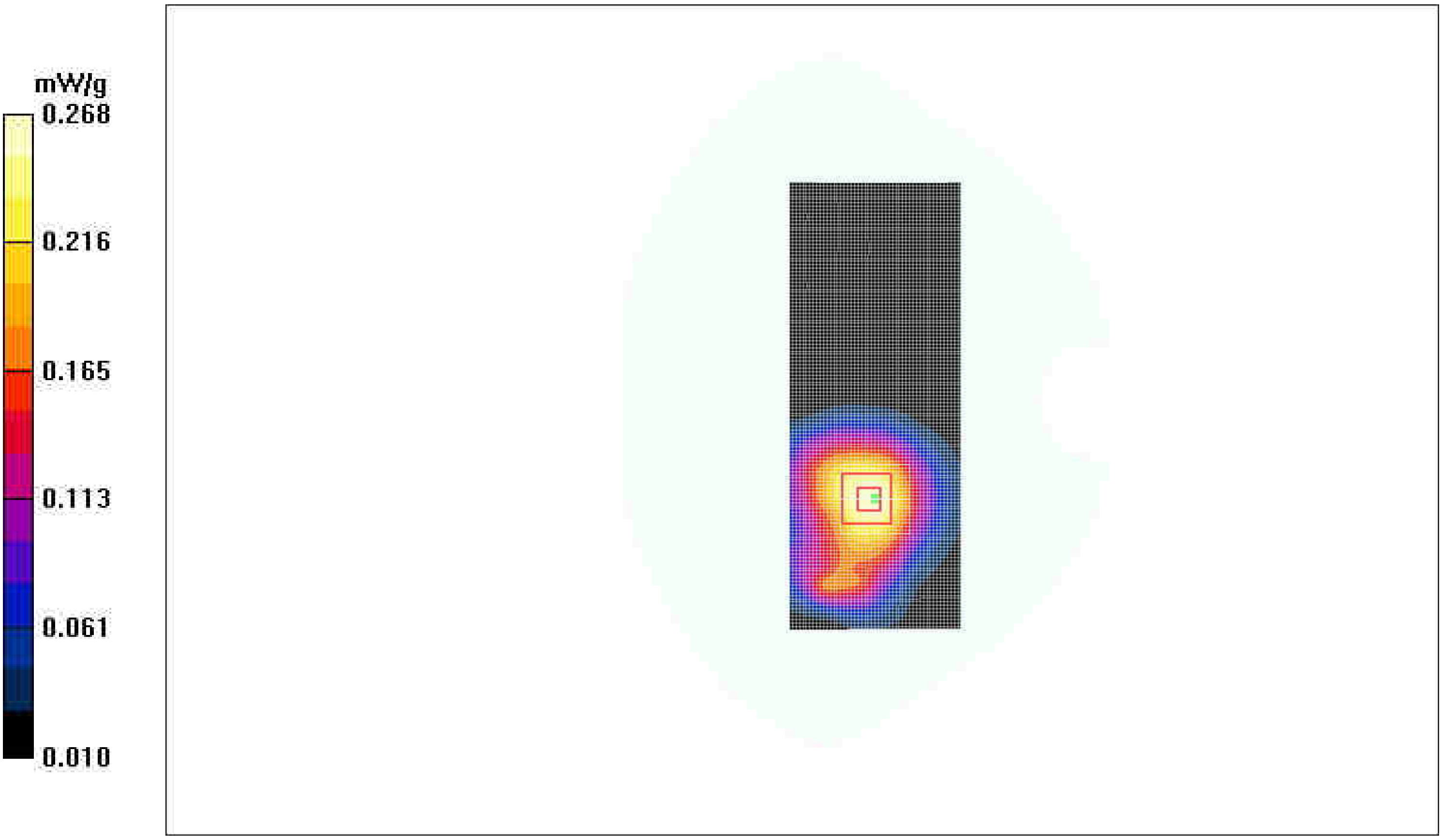


Fig. 35 Body, Towards Ground, GSM 1900 CH512

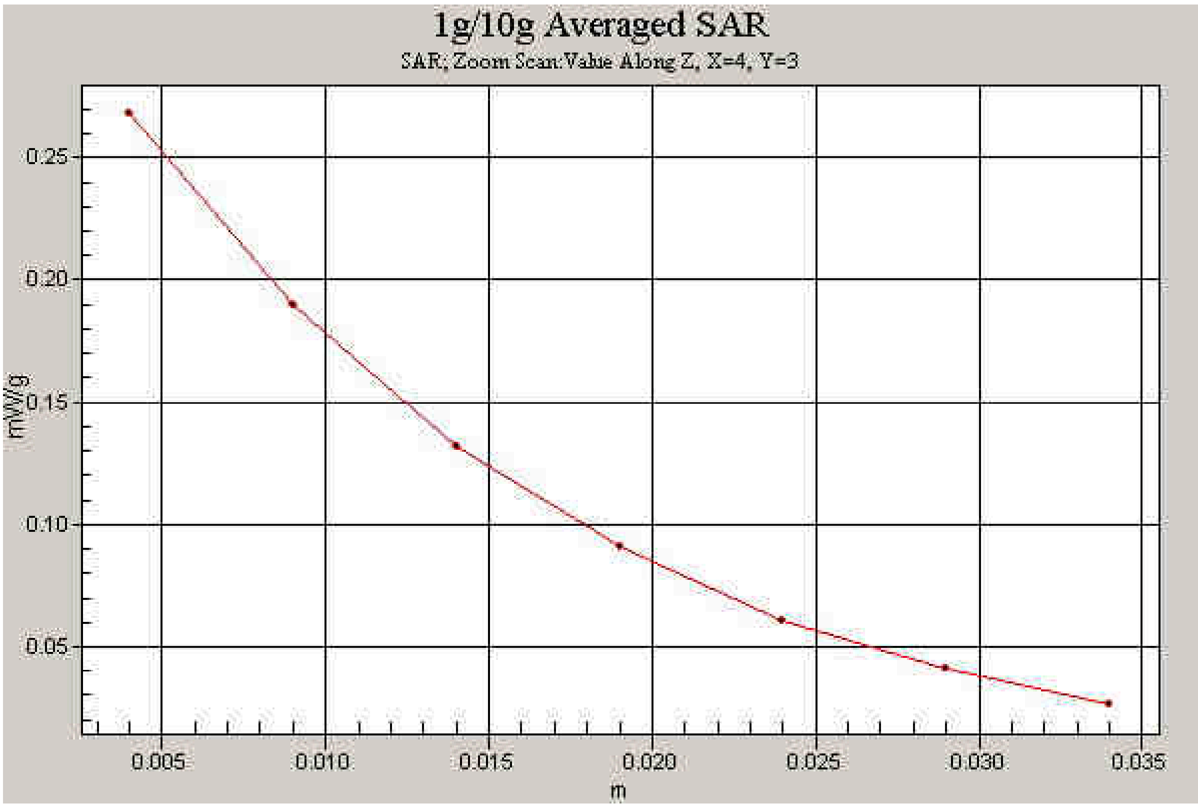


Fig. 36 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 CH512)

Bluetooth earphone GSM 1900 Towards Ground High

Communication System: GSM 1900; Frequency: 1909.8 MHz;Duty Cycle: 1:8.3

Medium: Body 1900MHz

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);
- Electronics: DAE3 Sn452;

Towards Ground High/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.415 mW/g

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

Reference Value = 6.02 V/m; Power Drift = -0.193 dB

Peak SAR (extrapolated) = 0.554 W/kg

SAR(1 g) = 0.381 mW/g; SAR(10 g) = 0.251 mW/g

Maximum value of SAR (measured) = 0.408 mW/g

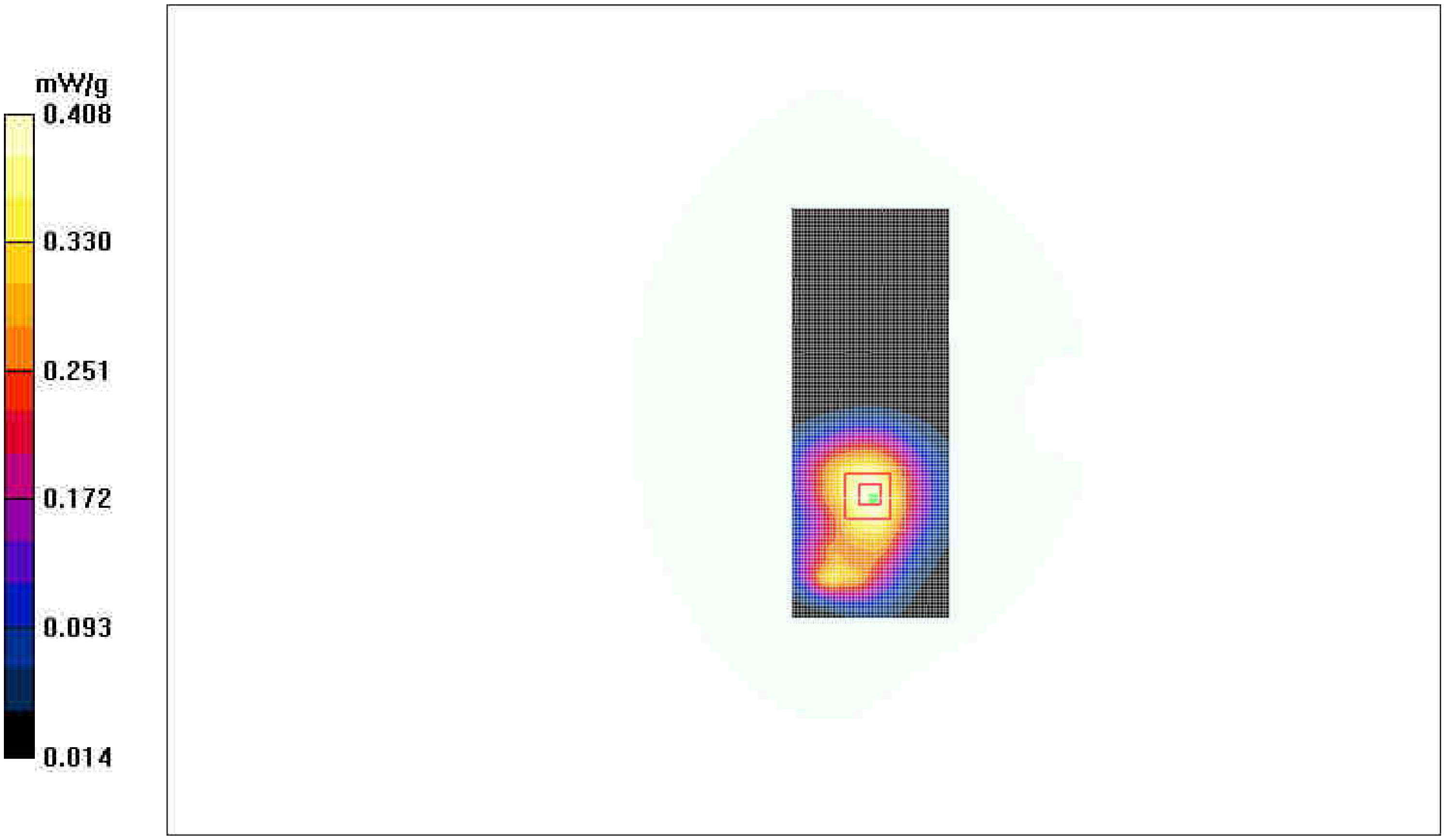


Fig.37 Body with Bluetooth earphone, Towards Ground, GSM 1900, CH810

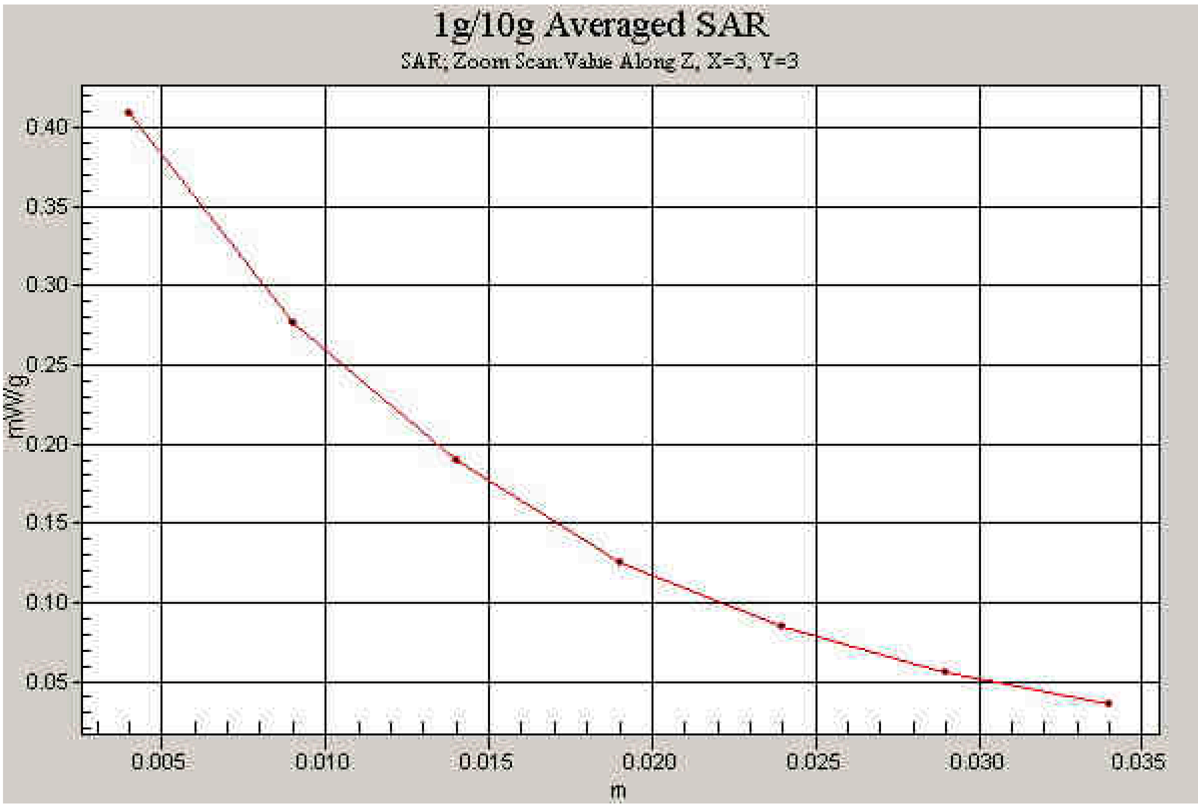


Fig. 38 Z-Scan at power reference point (Body with Bluetooth earphone, Towards Ground, GSM 1900, CH810)

GSM 1900 GPRS Towards Ground High

Communication System: GSM 1900+GPRS(2Up); Frequency: 1909.8 MHz;Duty Cycle: 1:4

Medium: Body 1900MHz

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);

- Electronics: DAE3 Sn452;

Towards Ground High/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.690 mW/g

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

Reference Value = 8.54 V/m; Power Drift = -0.105 dB

Peak SAR (extrapolated) = 0.913 W/kg

SAR(1 g) = 0.634 mW/g; SAR(10 g) = 0.419 mW/g

Maximum value of SAR (measured) = 0.682 mW/g

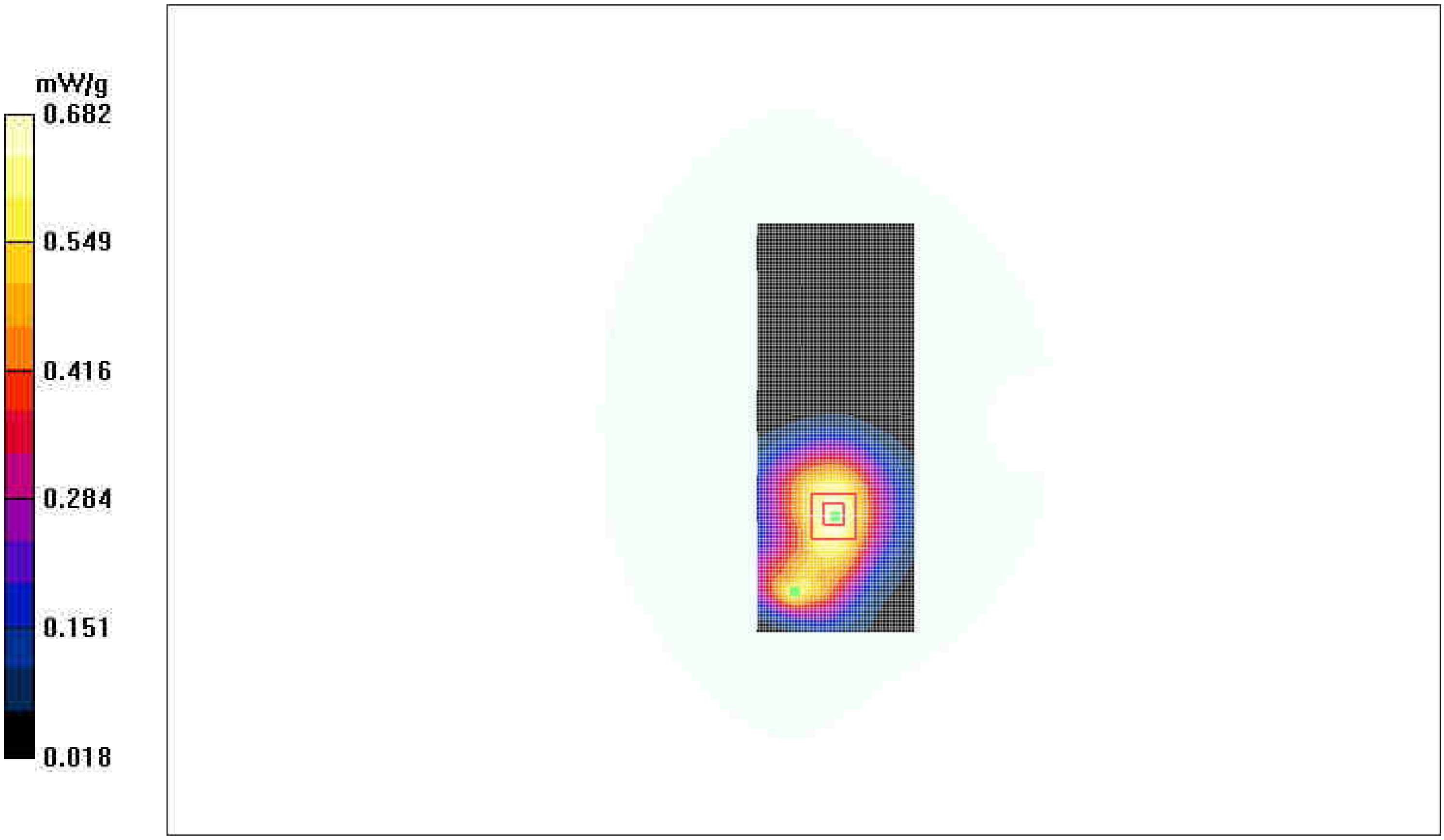


Fig. 39 Body, Towards Ground, GSM1900 GPRS , CH810

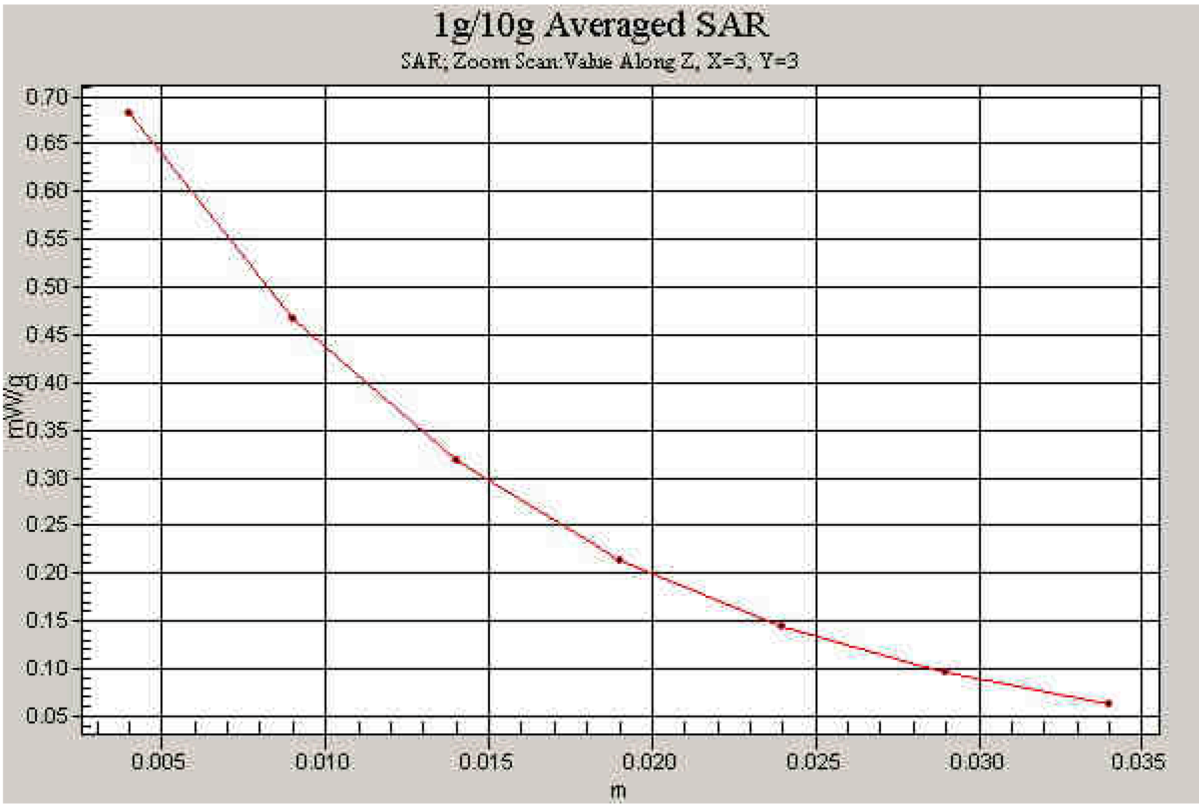


Fig. 40 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 GPRS, CH810)

GSM 1900 GPRS Towards Ground Middle

Communication System: GSM 1900+GPRS (2Up); Frequency: 1880 MHz; Duty Cycle: 1:4

Medium: Body 1900MHz

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);

- Electronics: DAE3 Sn452;

Towards Ground Middle/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.518 mW/g

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

Reference Value = 7.00 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.674 W/kg

SAR(1 g) = 0.470 mW/g; SAR(10 g) = 0.313 mW/g

Maximum value of SAR (measured) = 0.506 mW/g

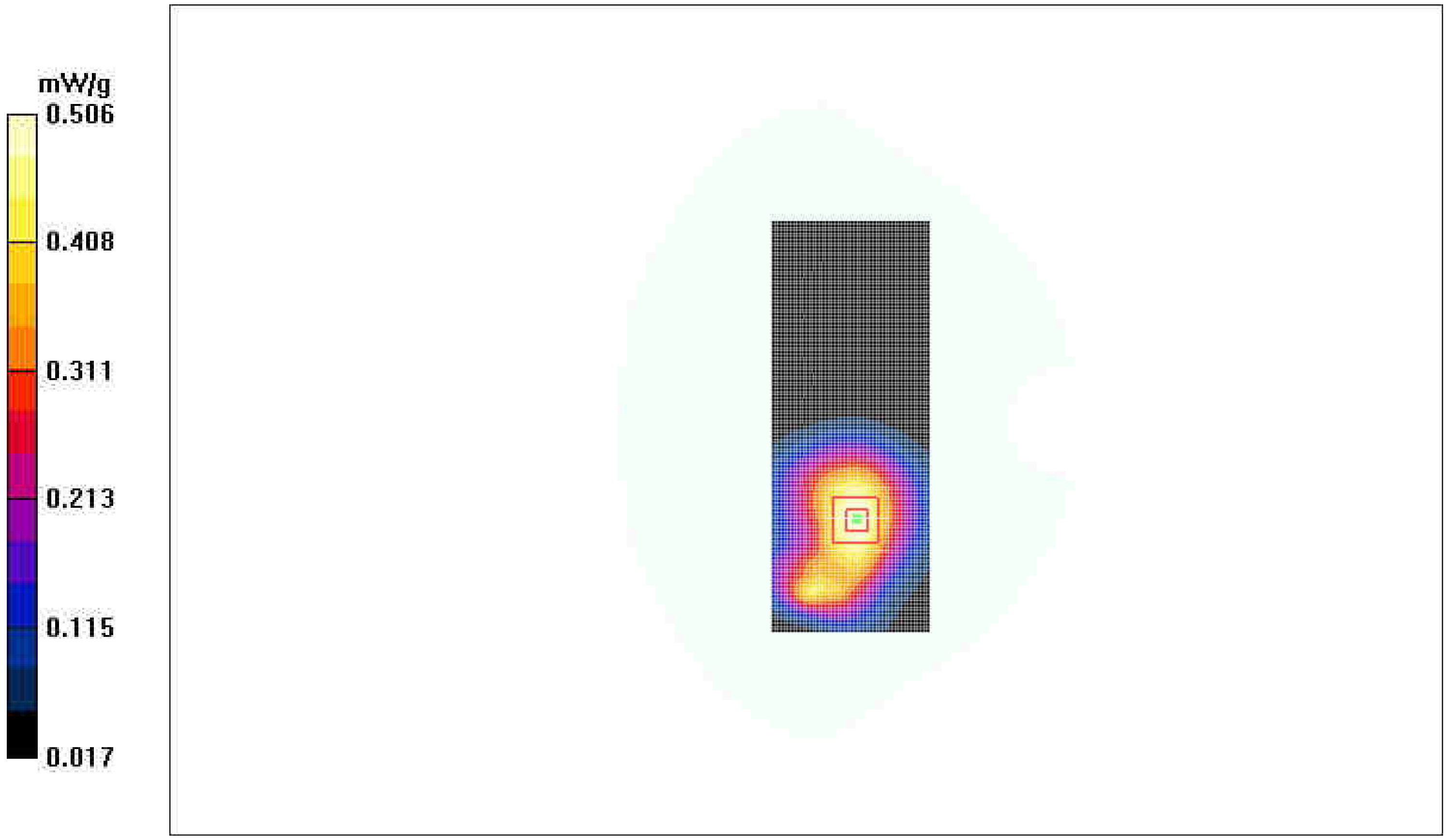


Fig. 41 Body, Towards Ground, GSM1900 GPRS , CH661

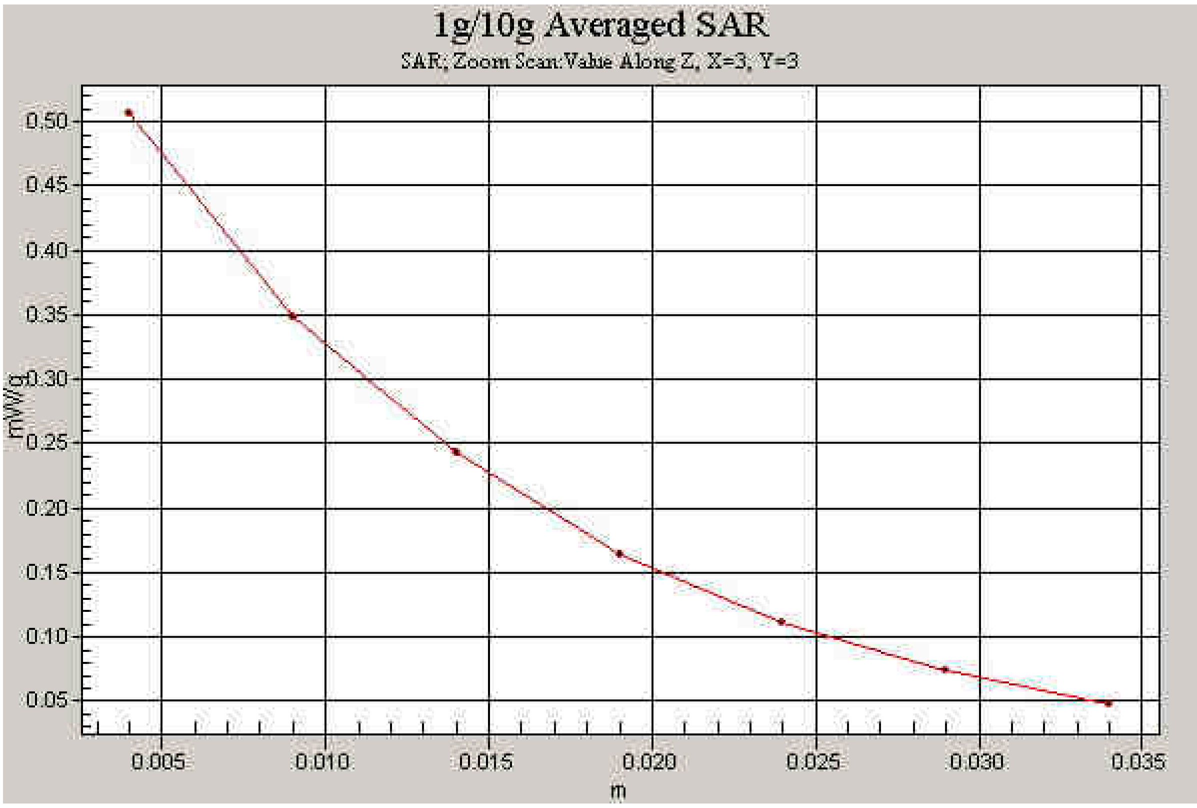


Fig. 42 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 GPRS, CH661)

GSM 1900 GPRS Towards Ground Low
Communication System: GSM 1900+GPRS(2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4
Medium: Body 1900MHz
Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 53.4; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);
- Electronics: DAE3 Sn452;

Towards Ground Low/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.423 mW/g
Towards Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 6.33 V/m; Power Drift = -0.077 dB
Peak SAR (extrapolated) = 0.541 W/kg
SAR(1 g) = 0.387 mW/g; SAR(10 g) = 0.258 mW/g
Maximum value of SAR (measured) = 0.418 mW/g

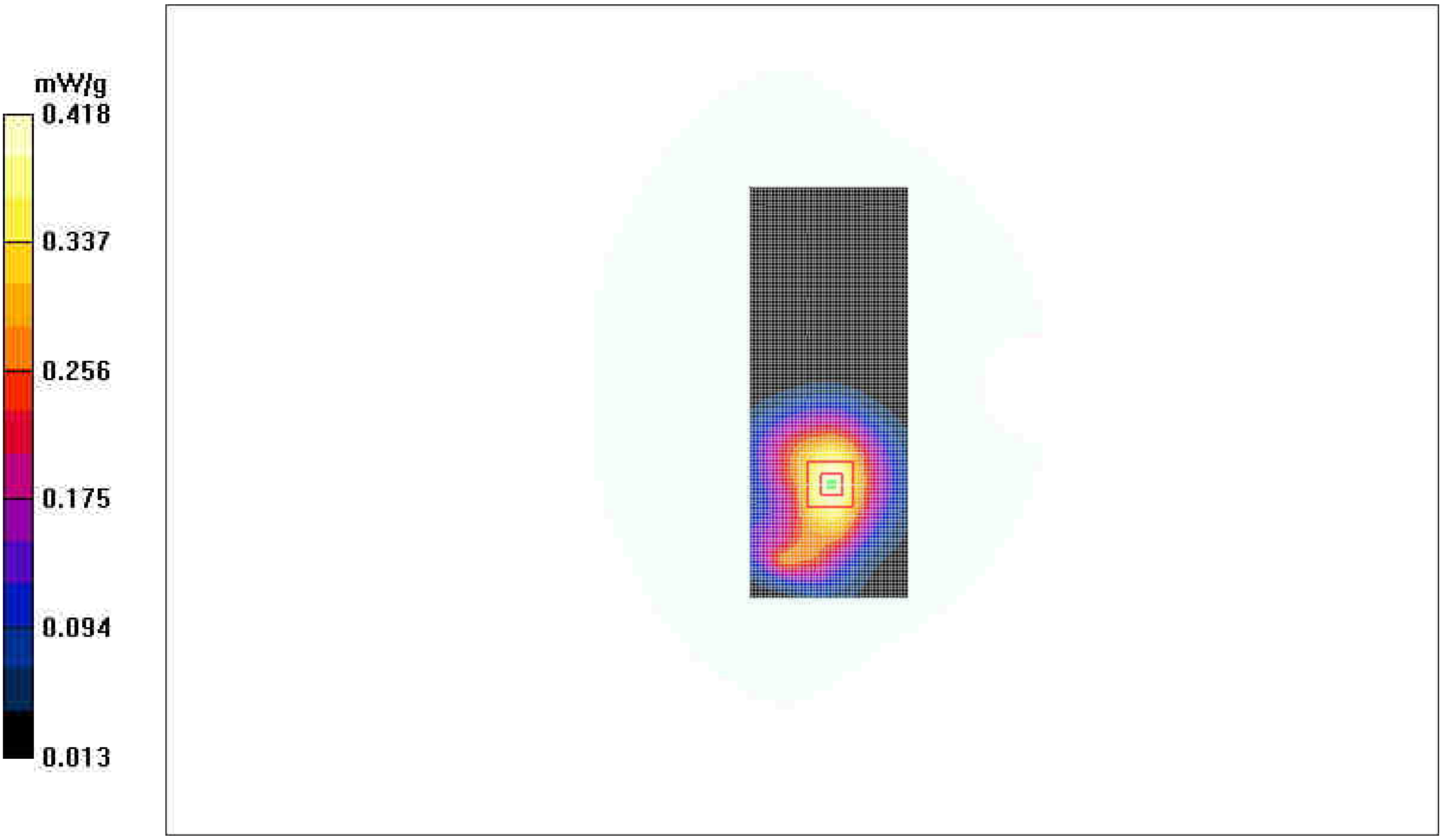


Fig. 43 Body, Towards Ground, GSM1900 GPRS , CH512

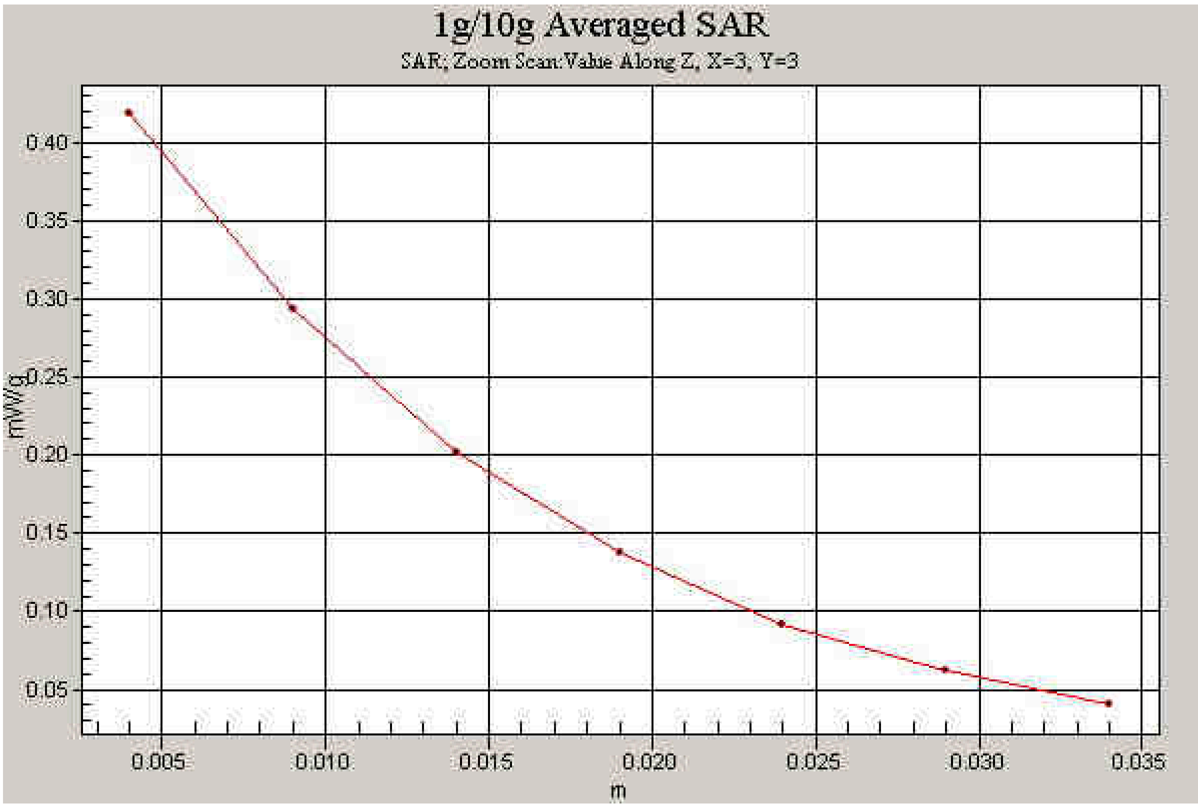


Fig. 44 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 GPRS, CH512)

GSM 1900 EGPRS Towards Ground High

Communication System: GSM 1900+EGPRS (2Up); Frequency: 1909.8 MHz; Duty Cycle: 1:4

Medium: Body 1900MHz

Medium parameters used: f = 1910 MHz; σ = 1.54 mho/m; ε_r = 53.2; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);
- Electronics: DAE3 Sn452;

Towards Ground High/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.313 mW/g

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

Reference Value = 7.79 V/m; Power Drift = 0.037 dB

Peak SAR (extrapolated) = 0.418 W/kg

SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.192 mW/g

Maximum value of SAR (measured) = 0.312 mW/g

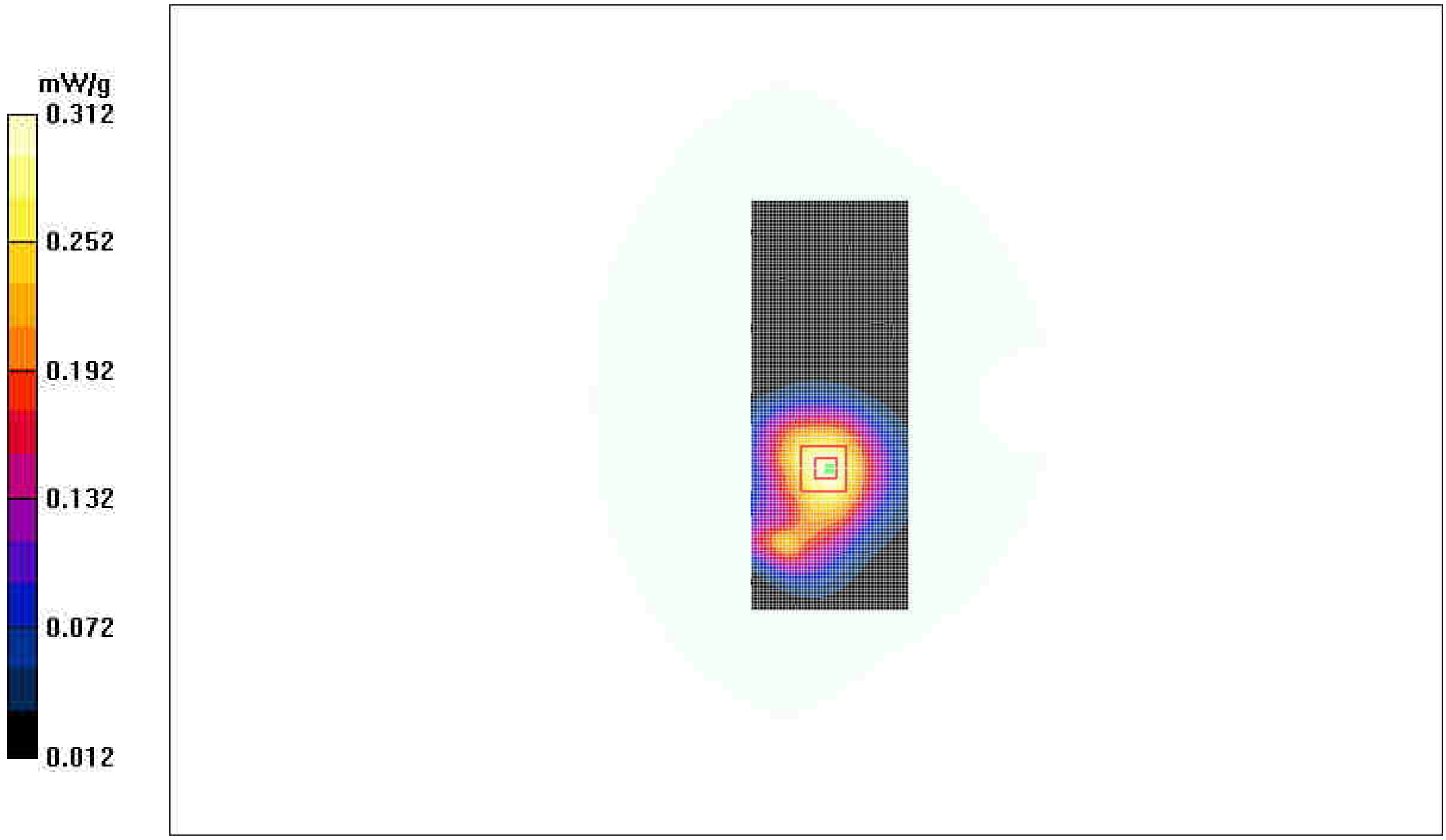


Fig. 45 Body, Towards Ground, GSM1900 EGPRS, CH810

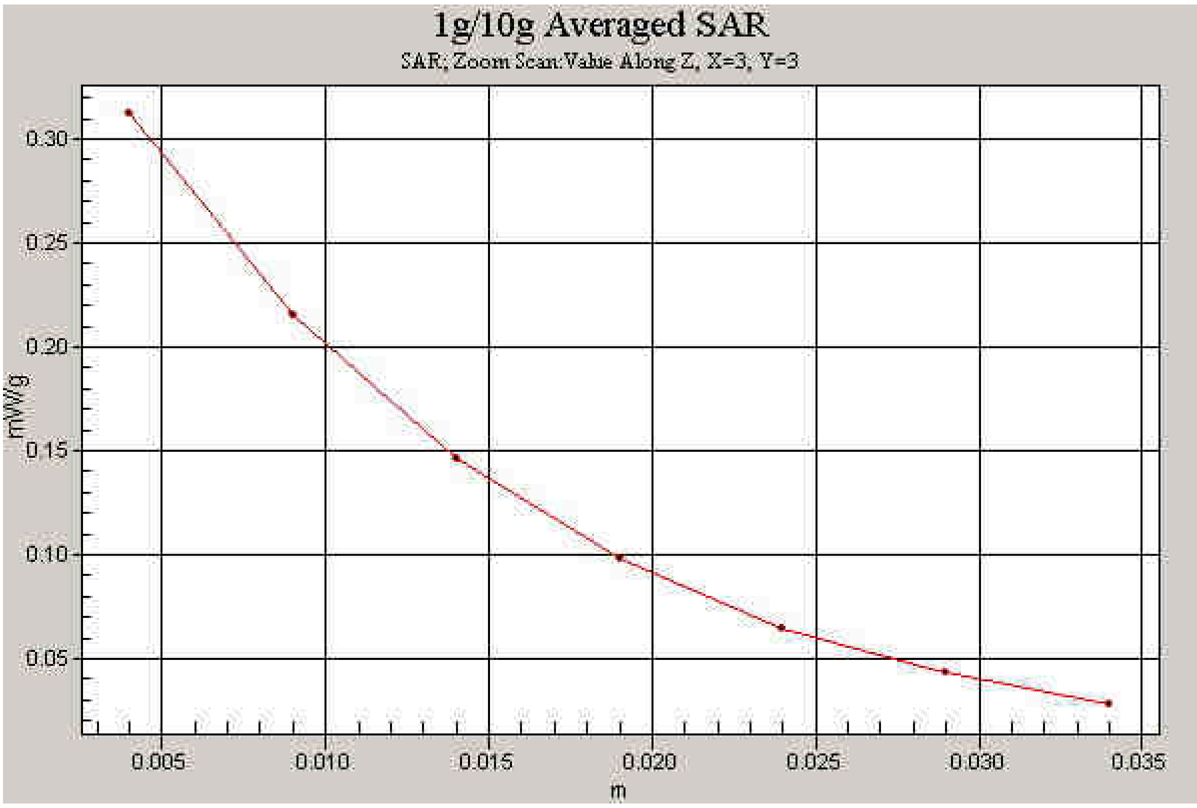


Fig. 46 Z-Scan at power reference point (Body, Towards Ground, GSM 1900 EGPRS, CH810)

WCDMA Band V Left Cheek High

Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1

Medium: Head 835MHz

Medium parameters used: f = 847 MHz; σ = 0.949 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Cheek High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.605 mW/g

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

Reference Value = 2.39 V/m; Power Drift = 0.012 dB

Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.558 mW/g; SAR(10 g) = 0.384 mW/g

Maximum value of SAR (measured) = 0.623 mW/g

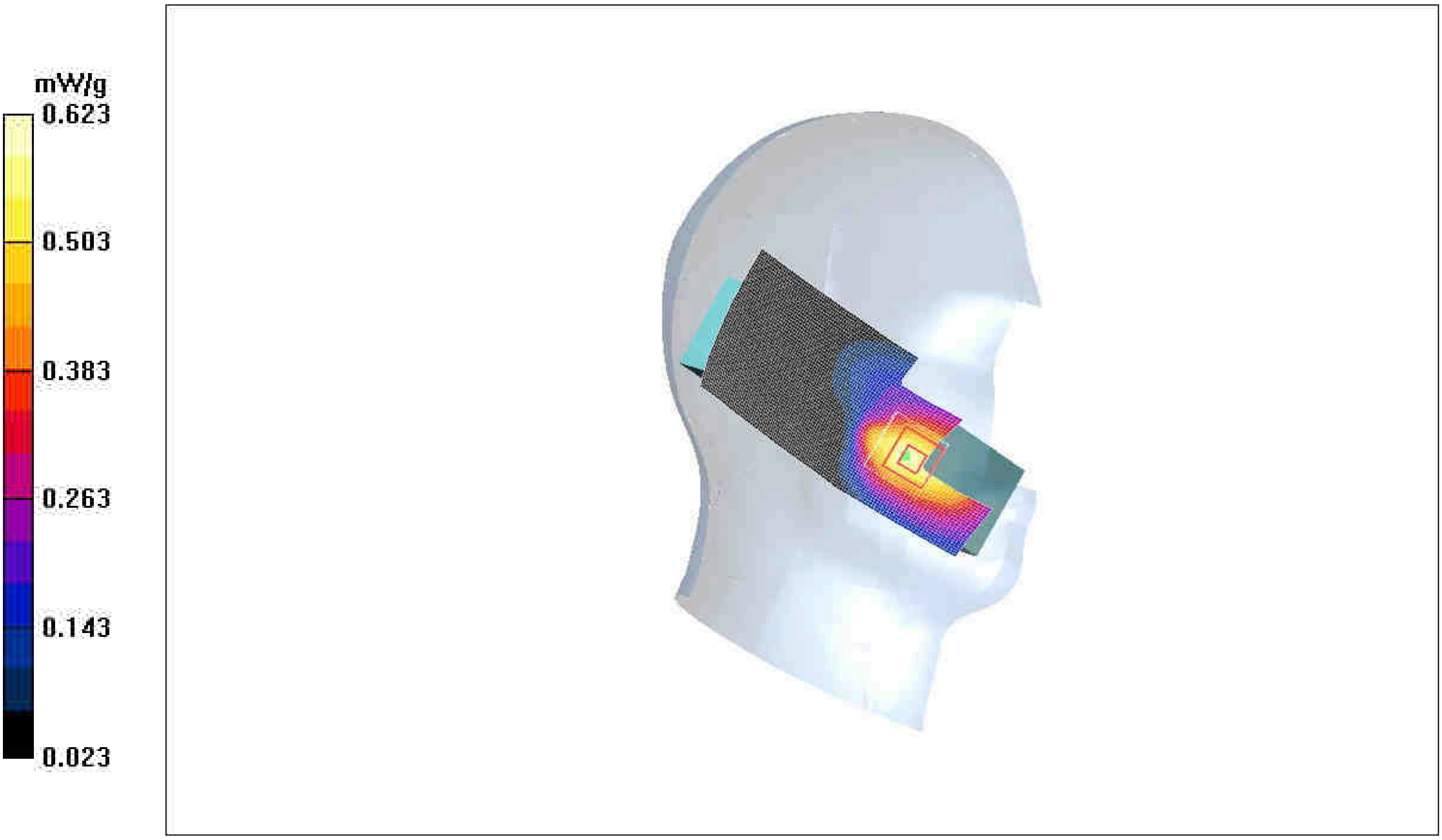


Fig. 47 Left Hand Touch Cheek WCDMA Band V CH4233

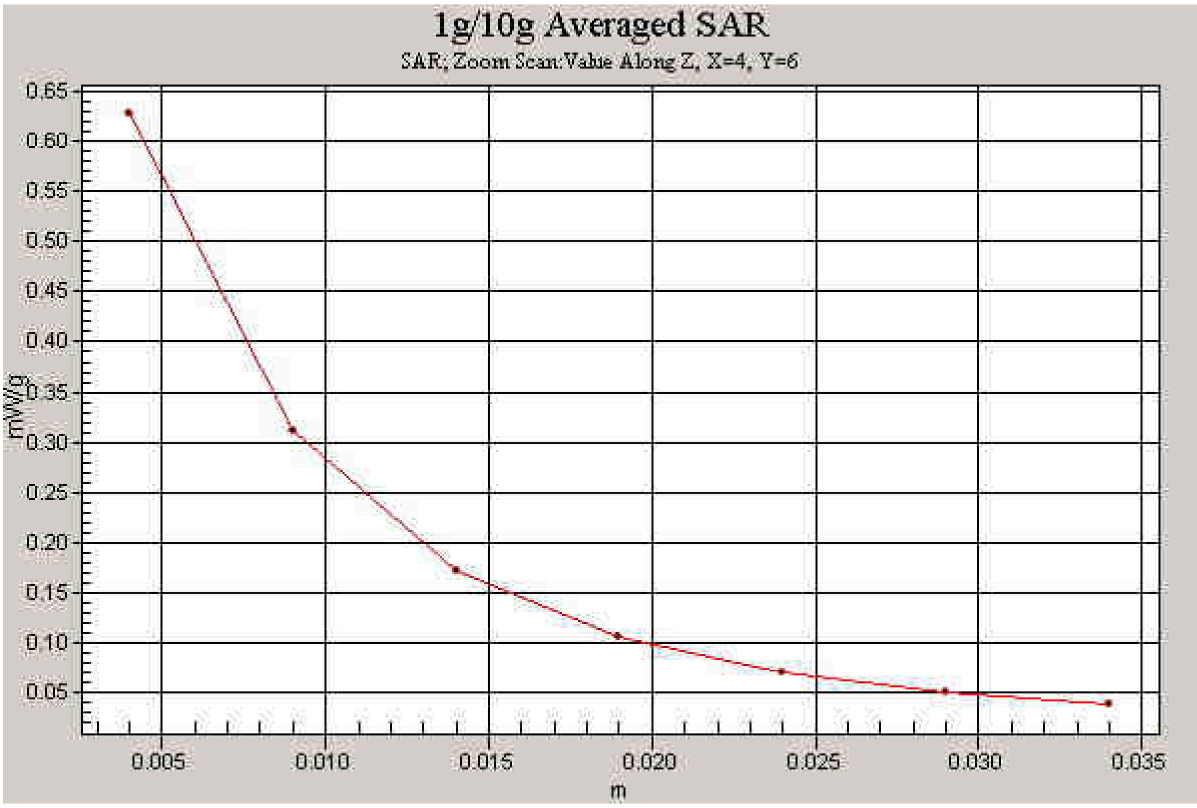


Fig.48 Z-Scan at power reference point (Left Hand Touch Cheek WCDMA Band V CH4233)

WCDMA Band V Left Cheek Middle

Communication System: WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.939 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Cheek Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.398 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.63 V/m; Power Drift = -0.108 dB
Peak SAR (extrapolated) = 0.947 W/kg
SAR(1 g) = 0.378 mW/g; SAR(10 g) = 0.257 mW/g
Maximum value of SAR (measured) = 0.413 mW/g

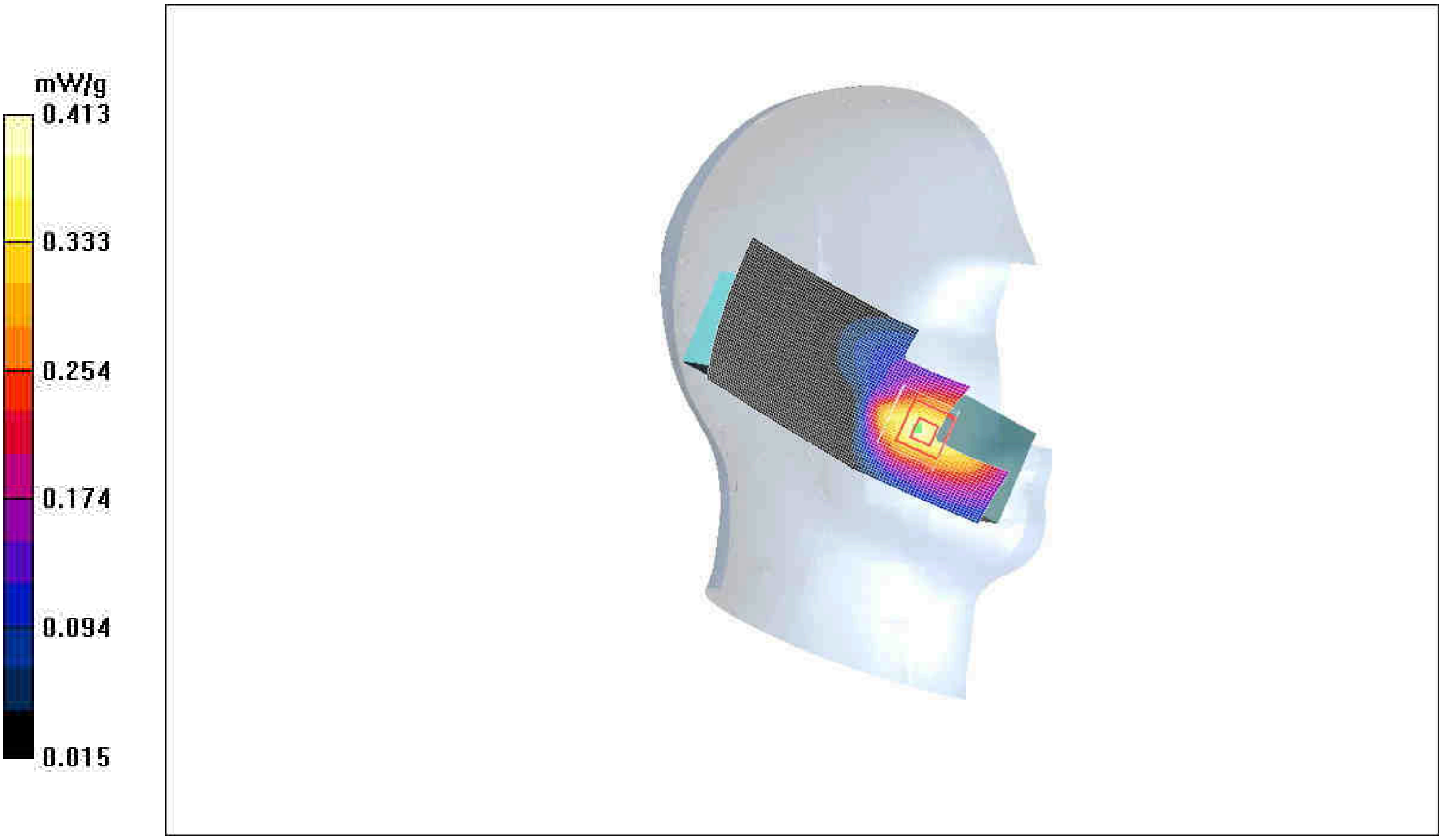


Fig. 49 Left Hand Touch Cheek WCDMA Band V CH4182

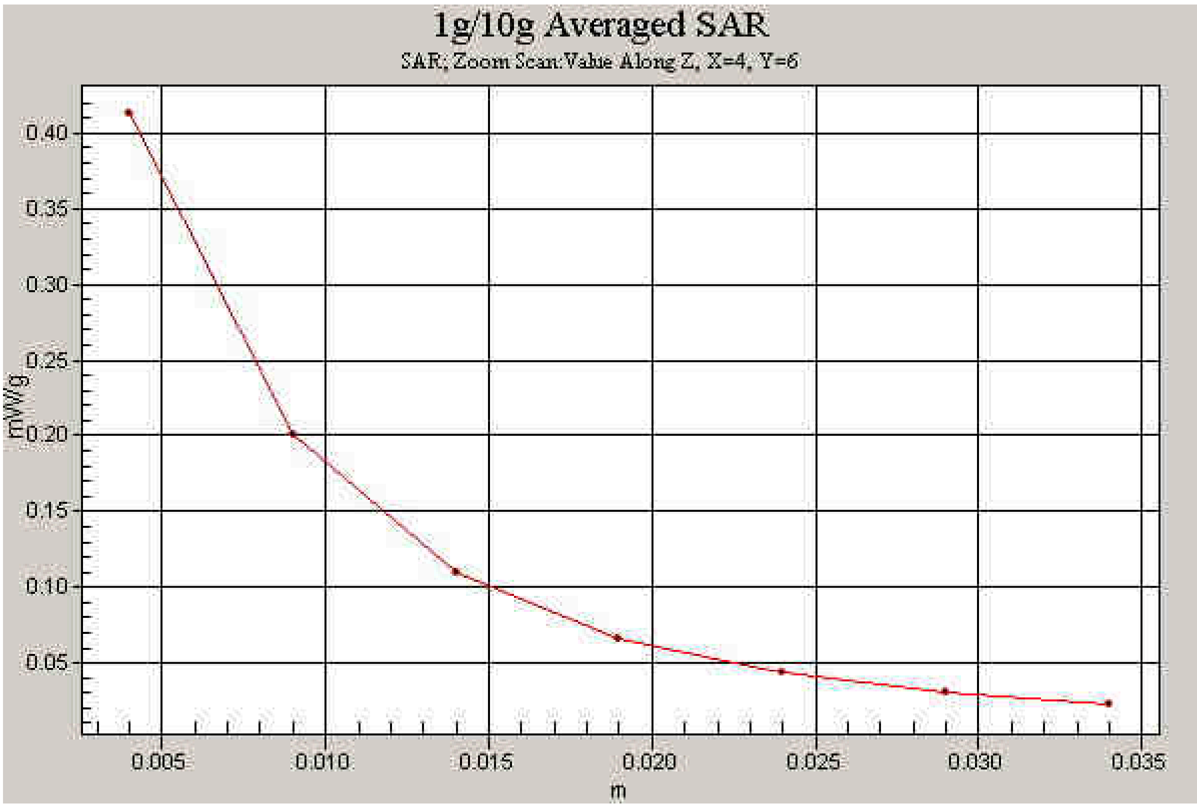


Fig. 50 Z-Scan at power reference point (Left Hand Touch Cheek WCDMA Band V CH4182)

WCDMA Band V Left Cheek Low

Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium: Head 835MHz

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Cheek Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.455 mW/g

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

Reference Value = 1.93 V/m; Power Drift = -0.063 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.433 mW/g; SAR(10 g) = 0.298 mW/g

Maximum value of SAR (measured) = 0.484 mW/g

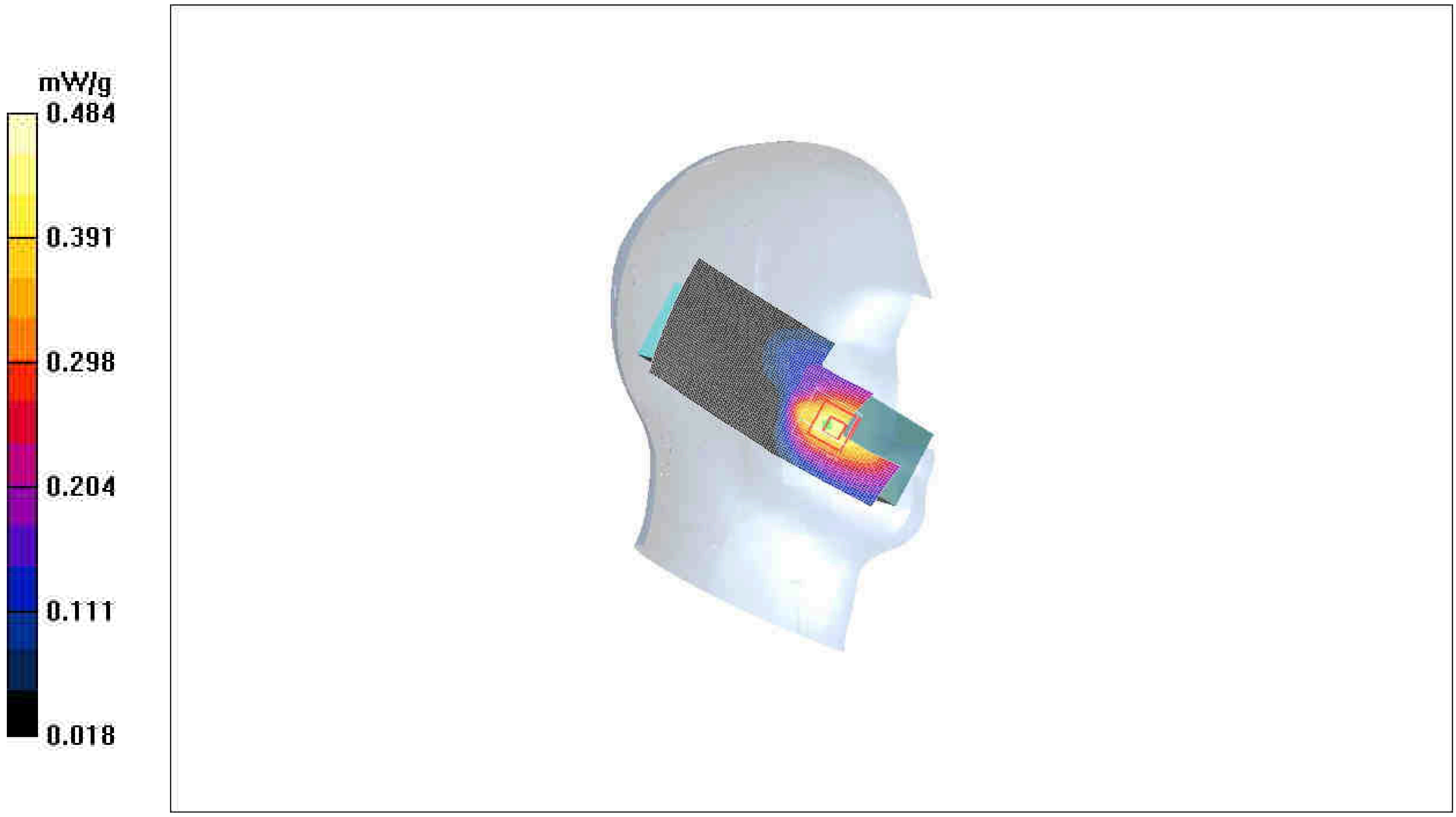


Fig. 51 Left Hand Touch Cheek WCDMA Band V CH4132

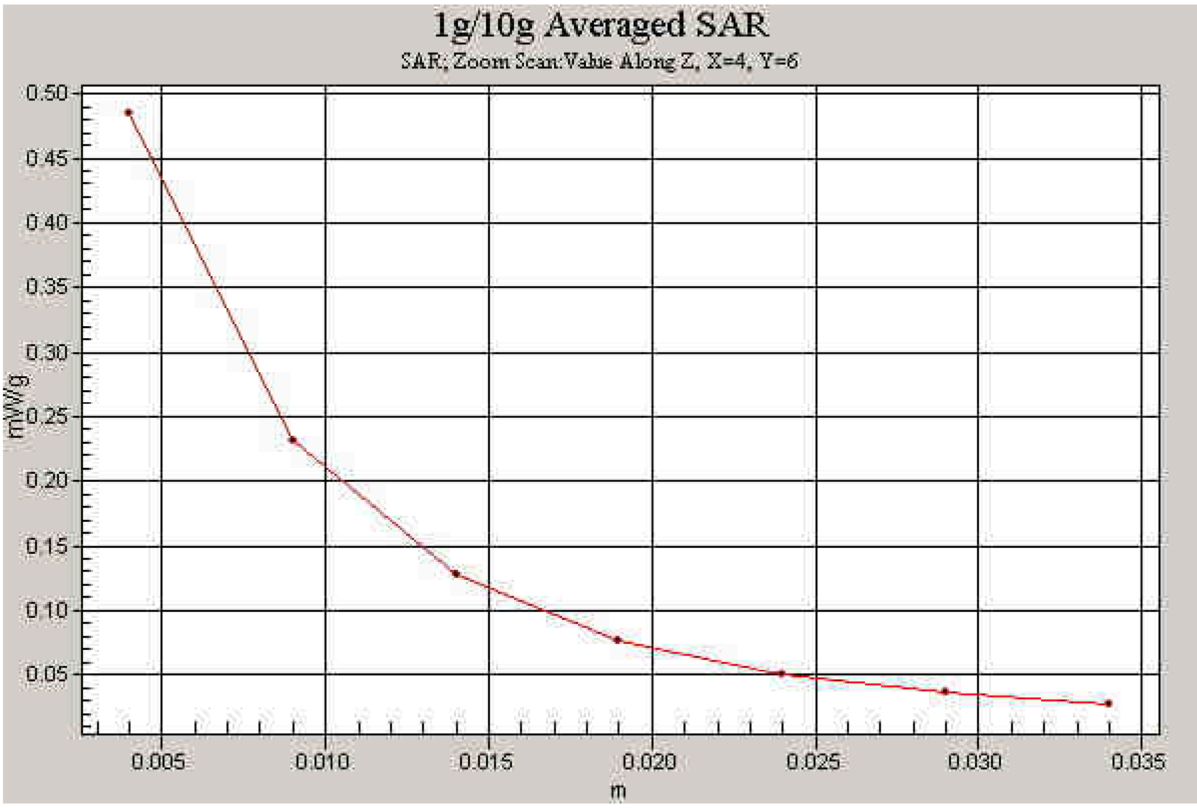


Fig. 52 Z-Scan at power reference point (Left Hand Touch Cheek WCDMA Band V CH4132)

WCDMA Band V Left Tilt High
Communication System: WCDMA Band V; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used: f = 847 MHz; σ = 0.949 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Tilt High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.069 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.21 V/m; Power Drift = -0.023 dB
Peak SAR (extrapolated) = 0.089 W/kg
SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.049 mW/g
Maximum value of SAR (measured) = 0.074 mW/g

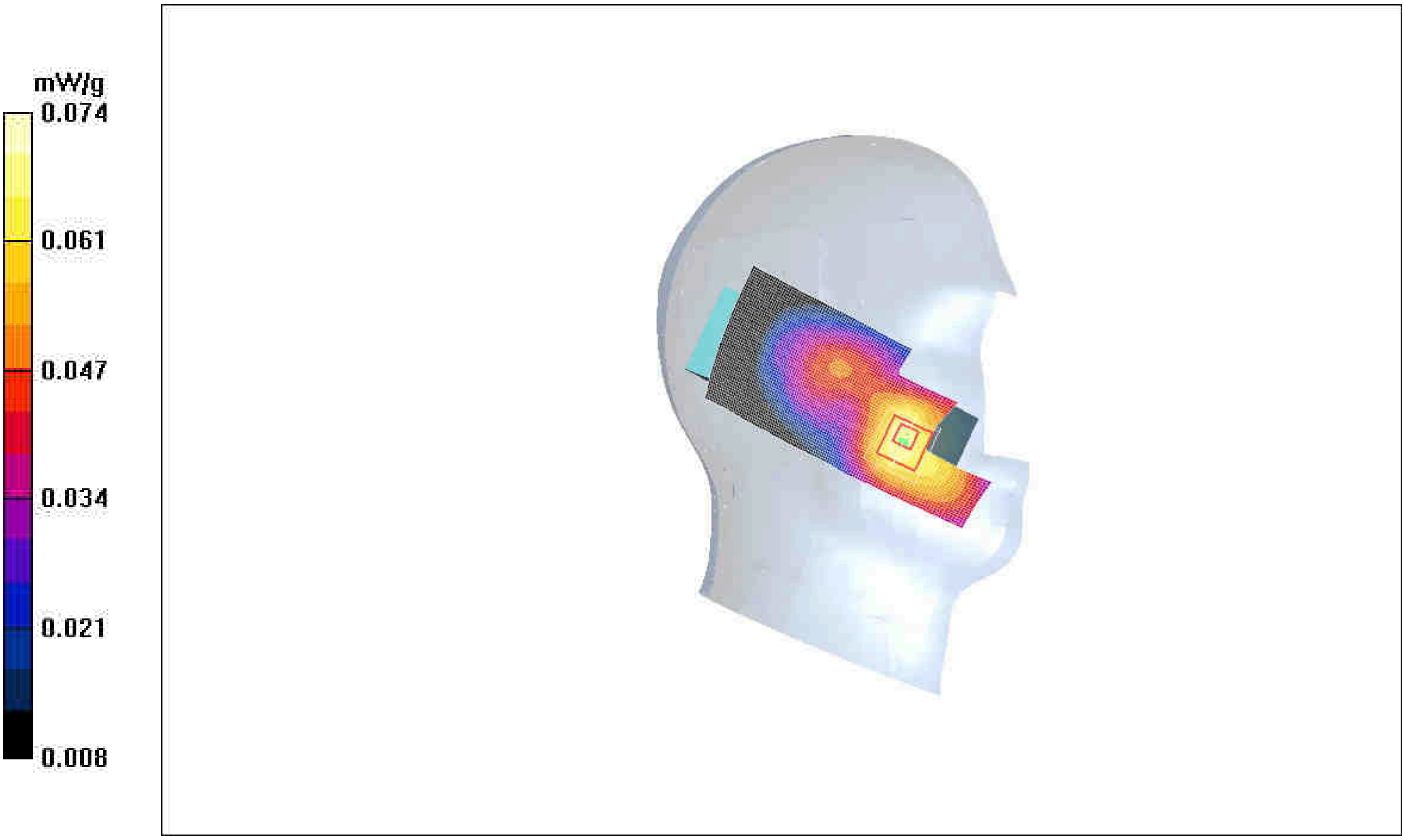


Fig. 53 Left Hand Tilt WCDMA Band V CH4233

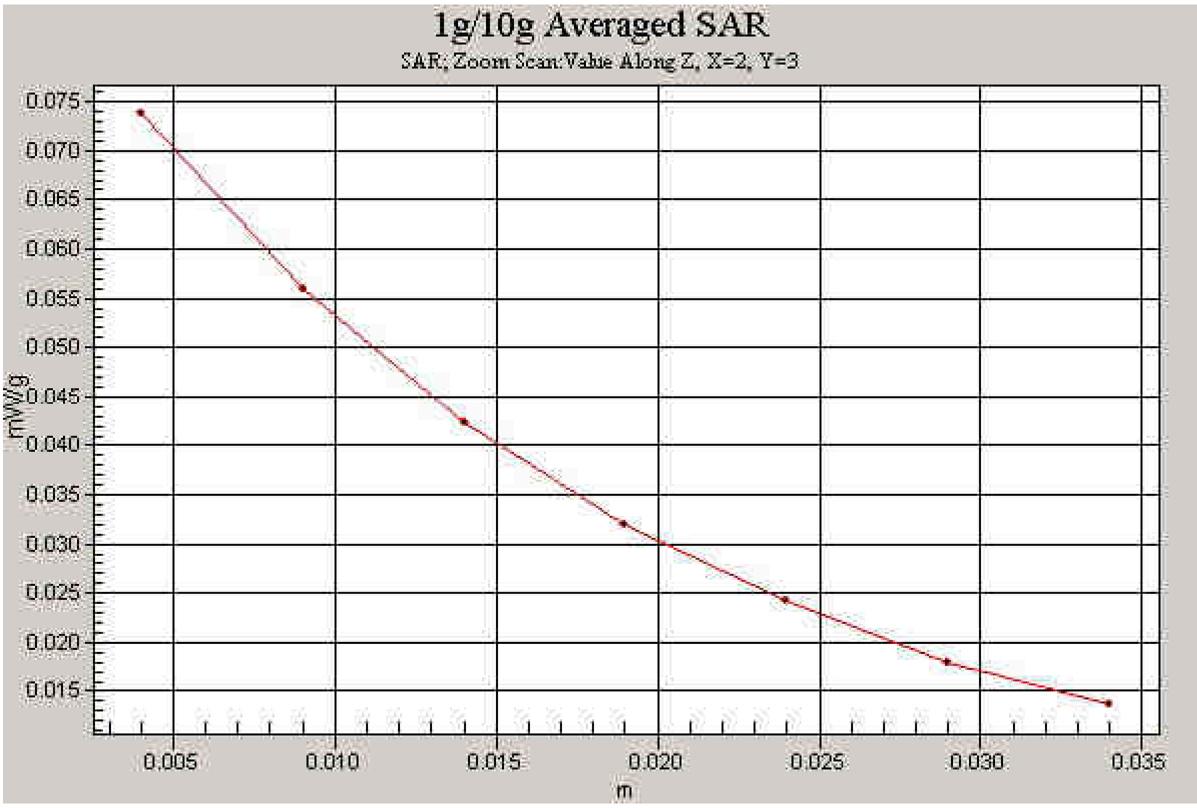


Fig. 54 Z-Scan at power reference point (Left Hand Tilt WCDMA Band V CH4233)

WCDMA Band V Left Tilt Middle
Communication System: WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.939 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Tilt Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.046 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.09 V/m; Power Drift = -0.123 dB
Peak SAR (extrapolated) = 0.058 W/kg
SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.032 mW/g
Maximum value of SAR (measured) = 0.048 mW/g

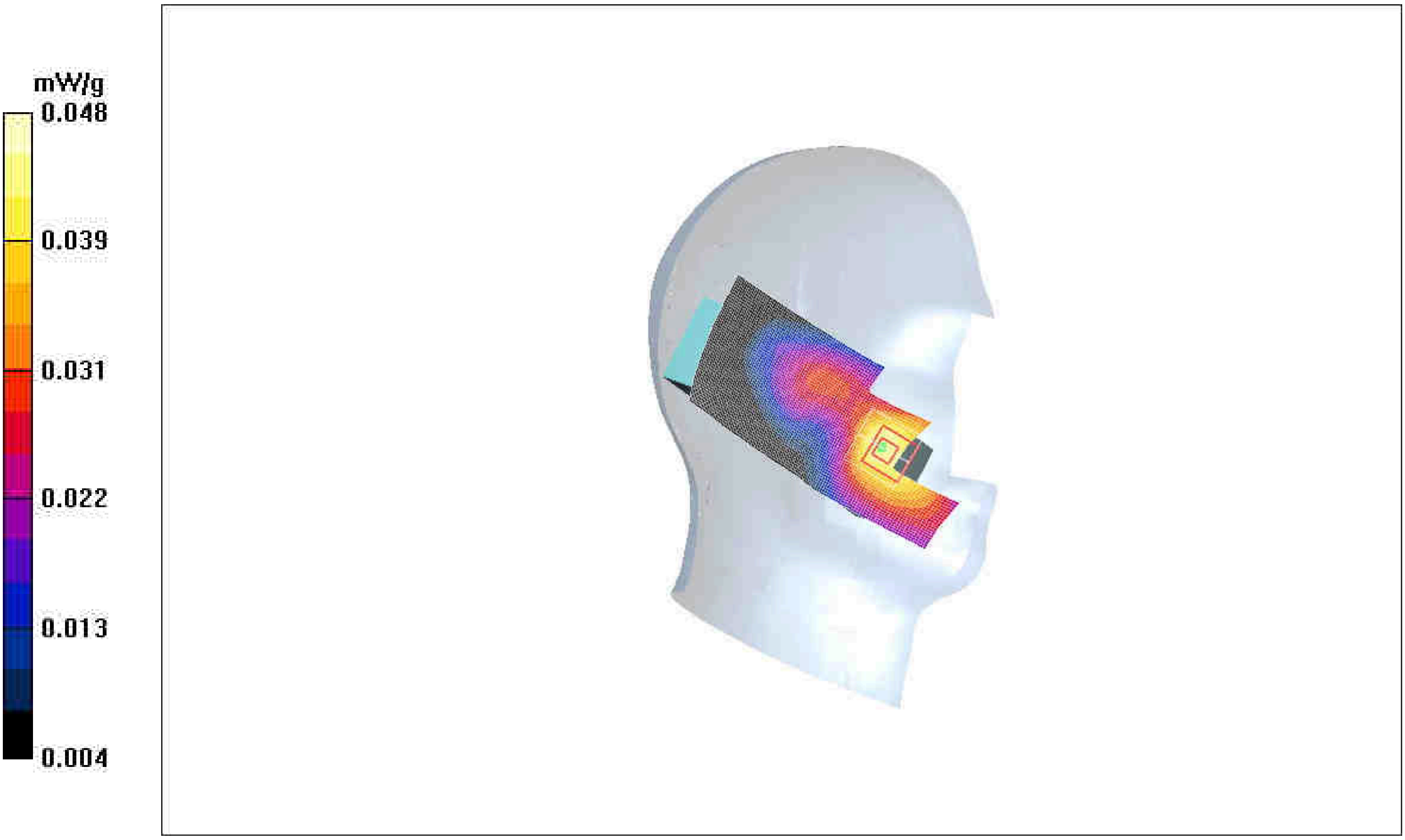


Fig. 55 Left Hand Tilt WCDMA Band V CH4182

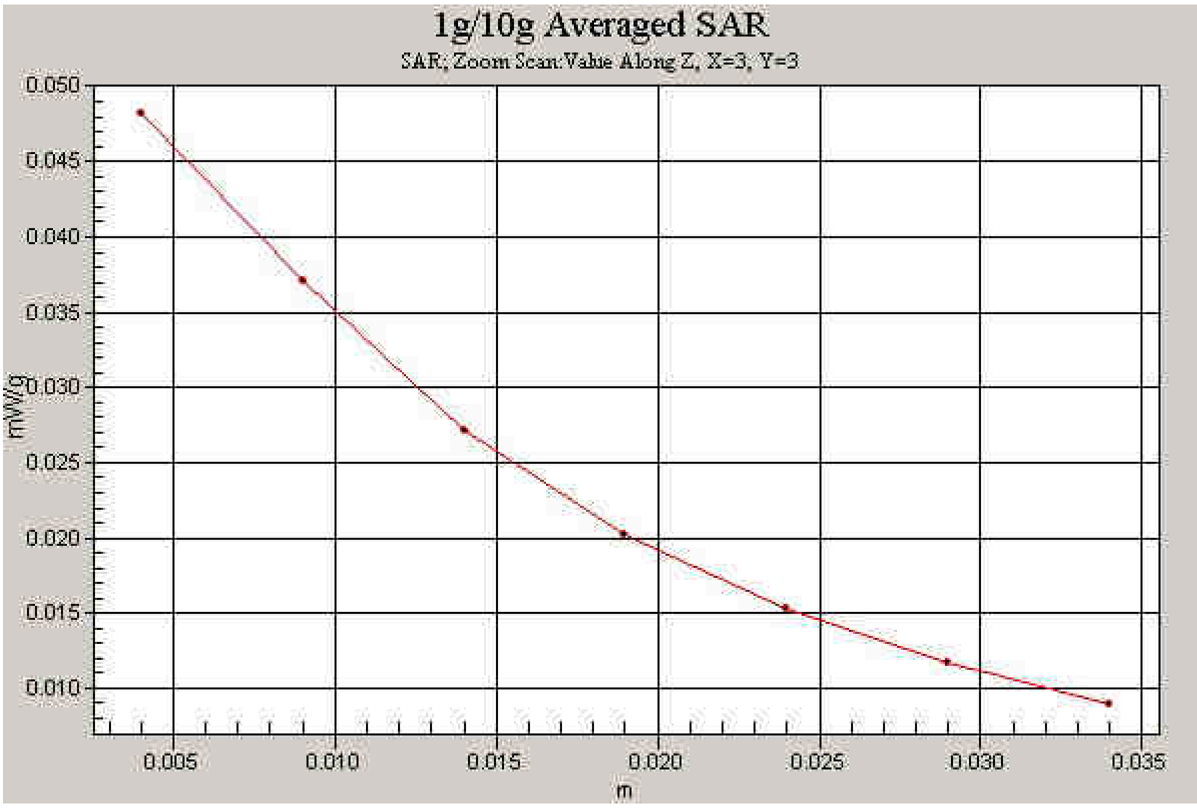


Fig. 56 Z-Scan at power reference point (Left Hand Tilt WCDMA Band V CH4182)

WCDMA Band V Left Tilt Low

Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Left Tilt Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.057 mW/g

Left Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.25 V/m; Power Drift = -0.152 dB
Peak SAR (extrapolated) = 0.073 W/kg
SAR(1 g) = 0.055 mW/g; SAR(10 g) = 0.039 mW/g
Maximum value of SAR (measured) = 0.059 mW/g

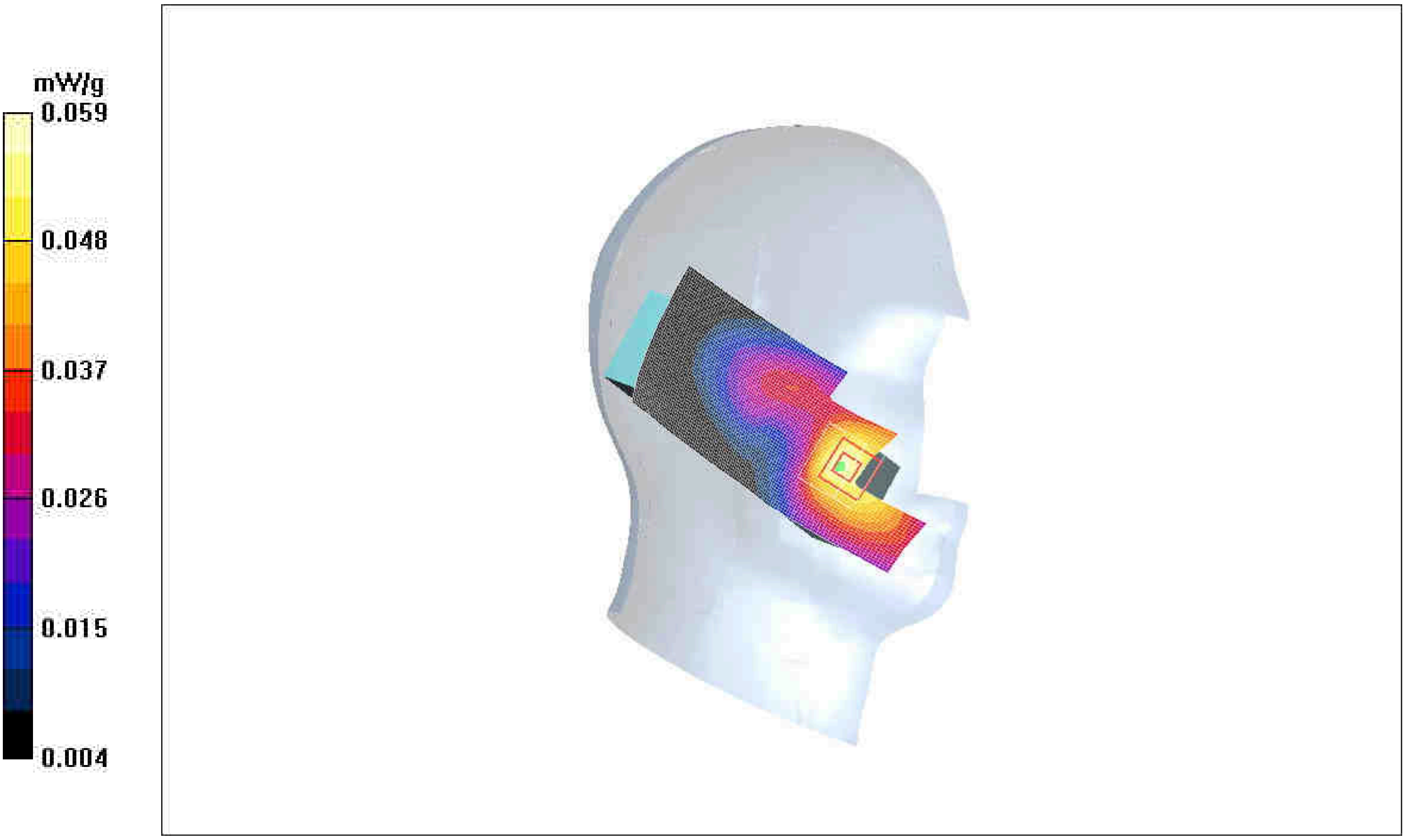


Fig.57 Left Hand Tilt WCDMA Band V CH4132

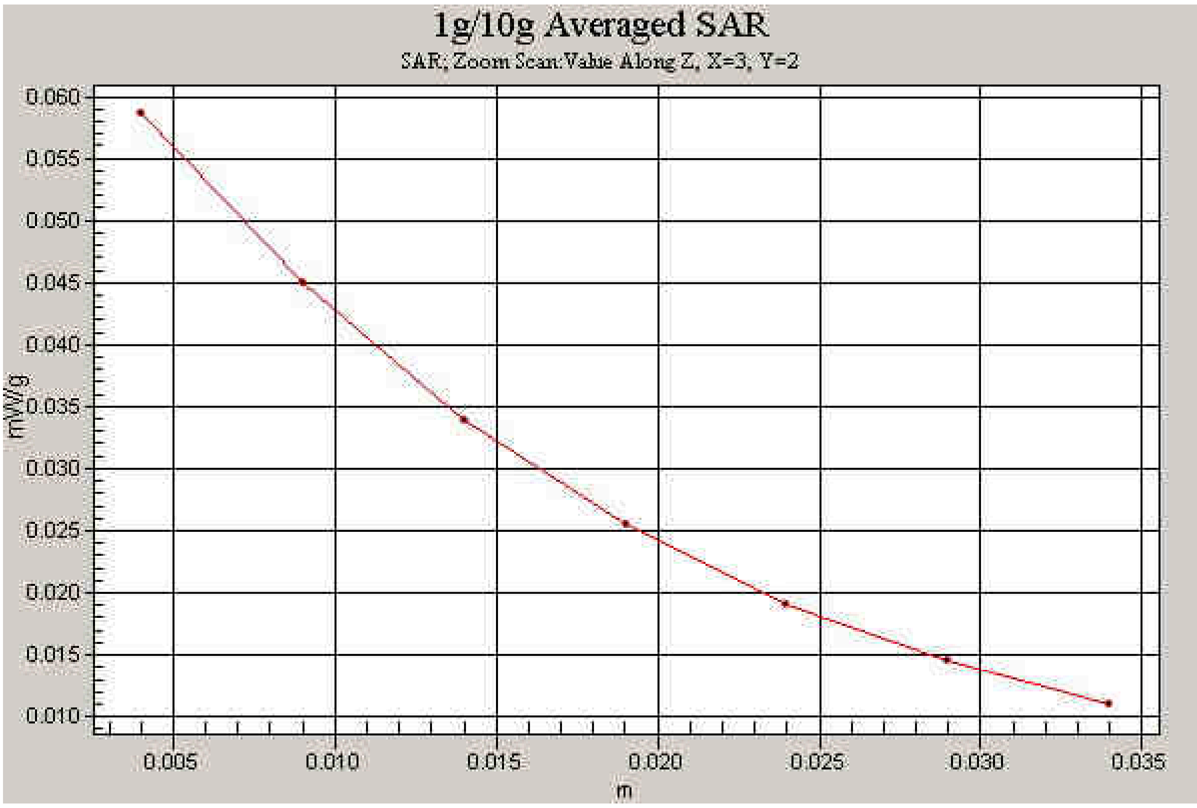


Fig. 58 Z-Scan at power reference point (Left Hand Tilt WCDMA Band V CH4132)

WCDMA Band V Right Cheek High
Communication System: WCDMA Band V; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used: f = 847 MHz; σ = 0.949 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Cheek High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.486 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.31 V/m; Power Drift = -0.105 dB
Peak SAR (extrapolated) = 0.687 W/kg
SAR(1 g) = 0.449 mW/g; SAR(10 g) = 0.304 mW/g
Maximum value of SAR (measured) = 0.494 mW/g

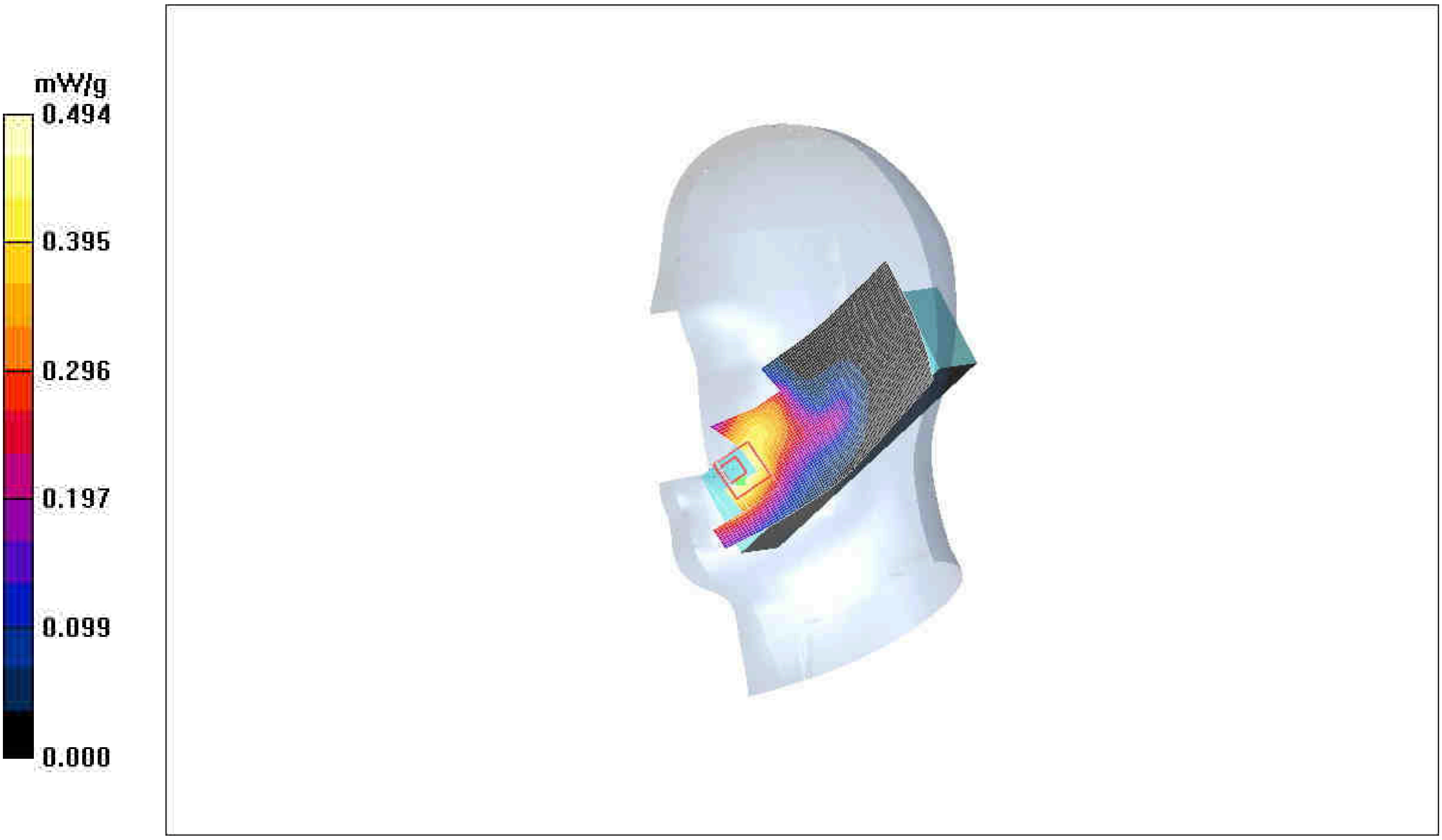


Fig. 59 Right Hand Touch Cheek WCDMA Band V CH4233

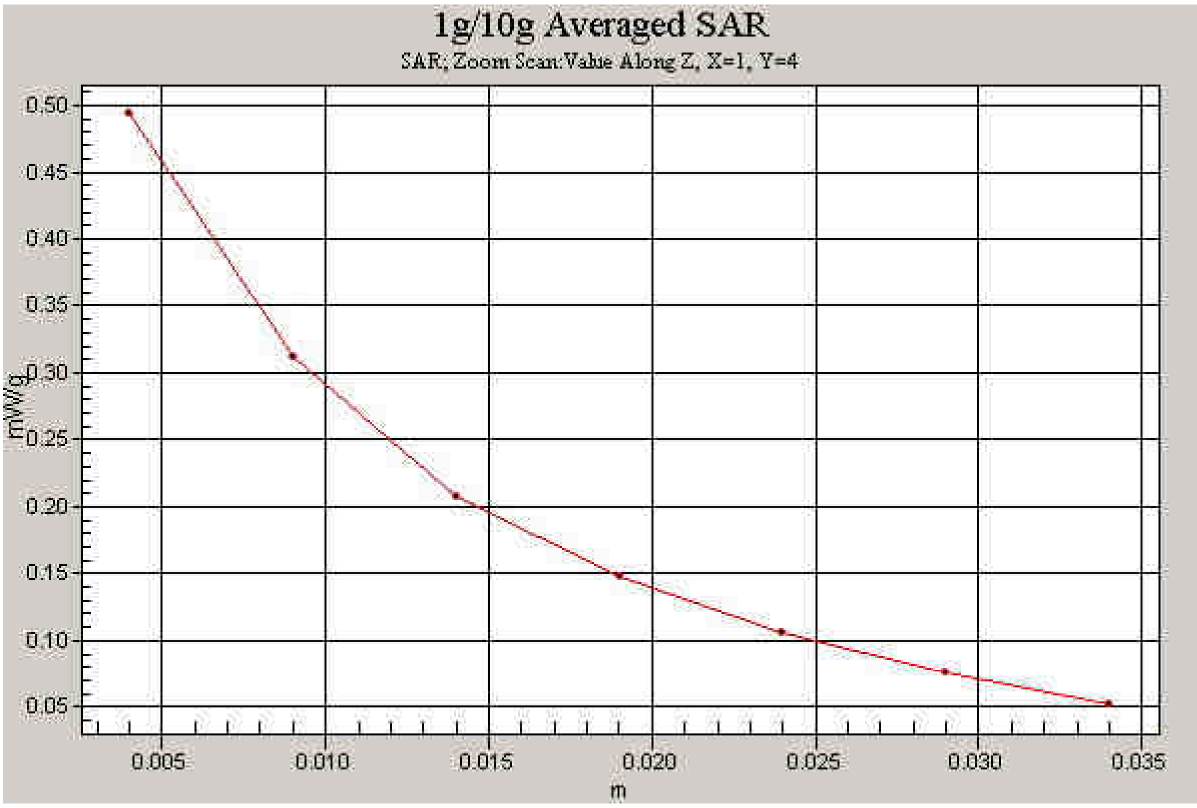


Fig. 60 Z-Scan at power reference point (Right Hand Touch Cheek WCDMA Band V CH4233)

WCDMA Band V Right Cheek Middle
Communication System: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.939 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Cheek Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.283 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.98 V/m; Power Drift = 0.094 dB
Peak SAR (extrapolated) = 0.413 W/kg
SAR(1 g) = 0.268 mW/g; SAR(10 g) = 0.181 mW/g
Maximum value of SAR (measured) = 0.285 mW/g

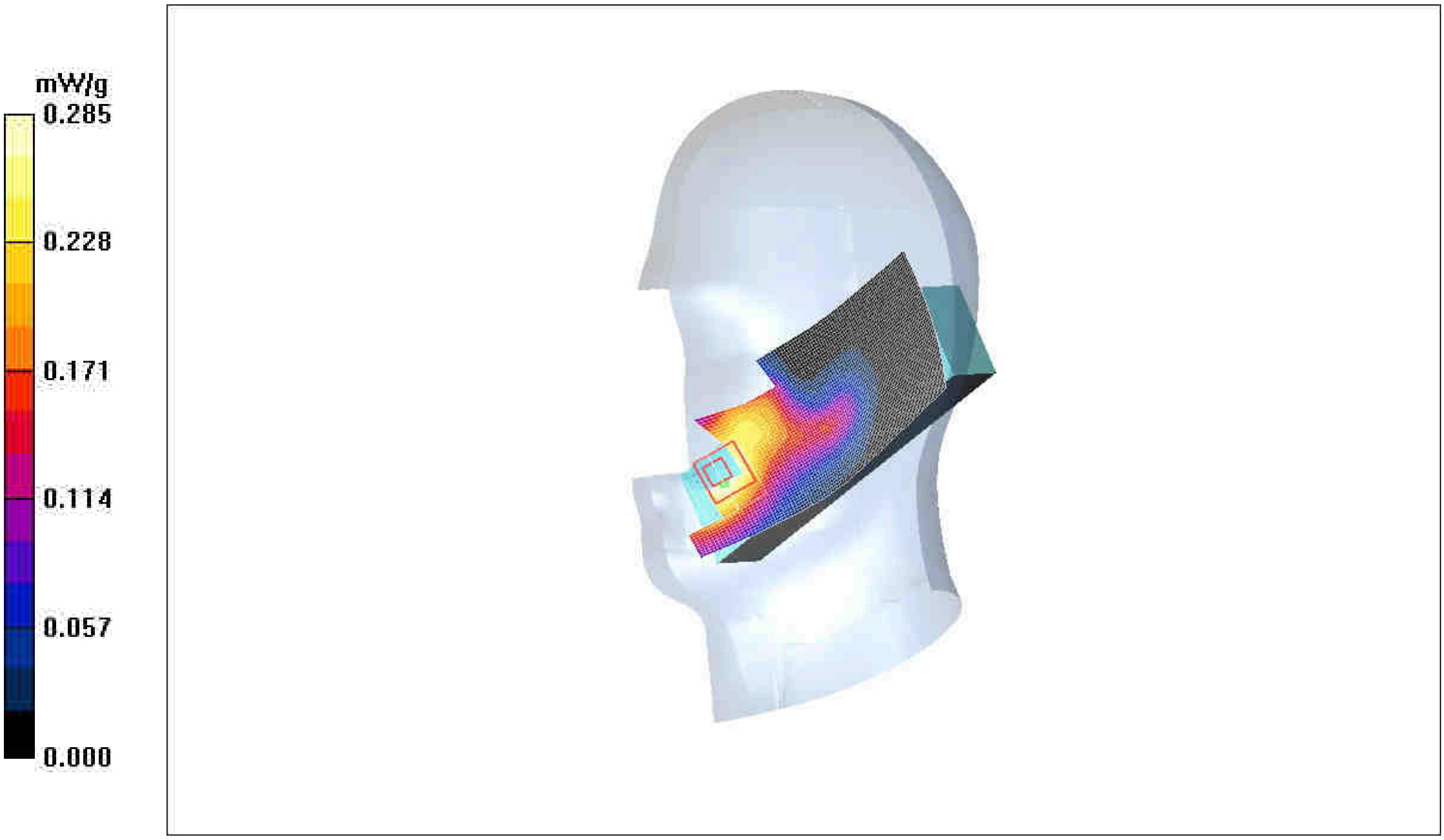


Fig. 61 Right Hand Touch Cheek WCDMA Band V CH4182

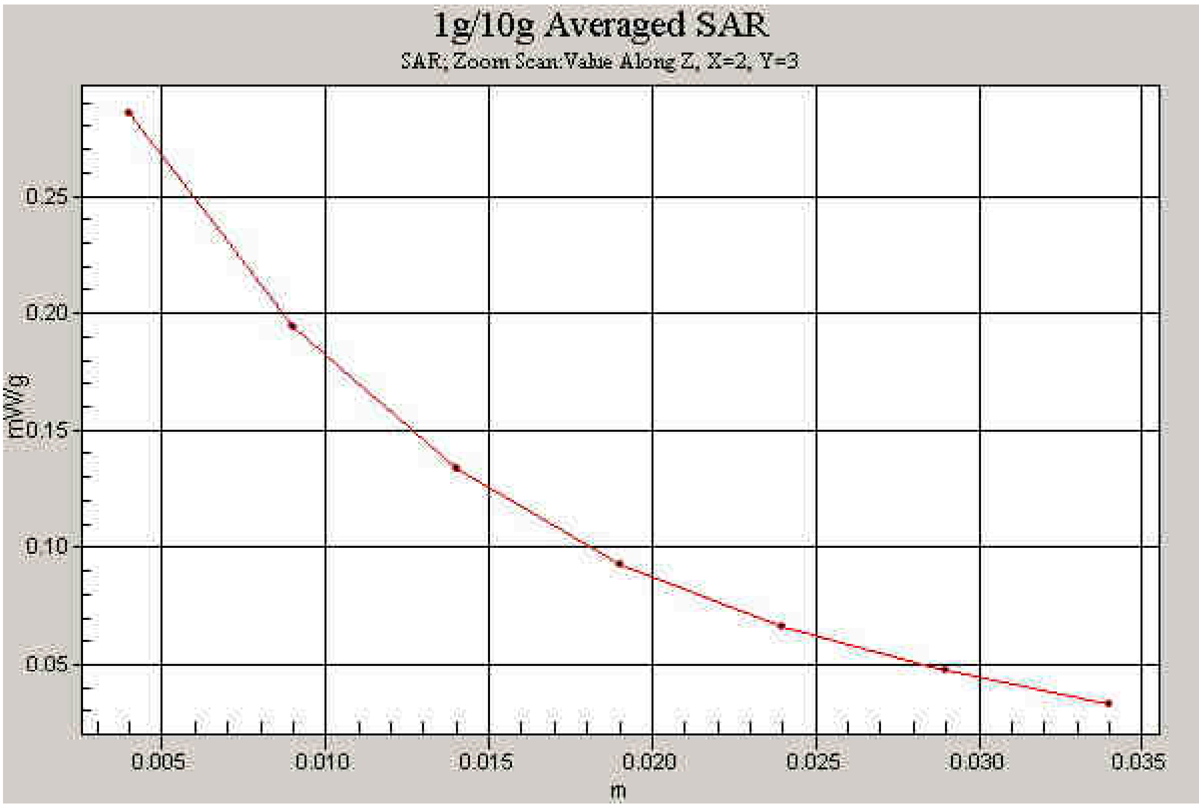


Fig. 62 Z-Scan at power reference point (Right Hand Touch Cheek WCDMA Band V CH4182)

WCDMA Band V Right Cheek Low
Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Cheek Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.383 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.75 V/m; Power Drift = 0.125 dB
Peak SAR (extrapolated) = 0.544 W/kg
SAR(1 g) = 0.384 mW/g; SAR(10 g) = 0.260 mW/g
Maximum value of SAR (measured) = 0.410 mW/g

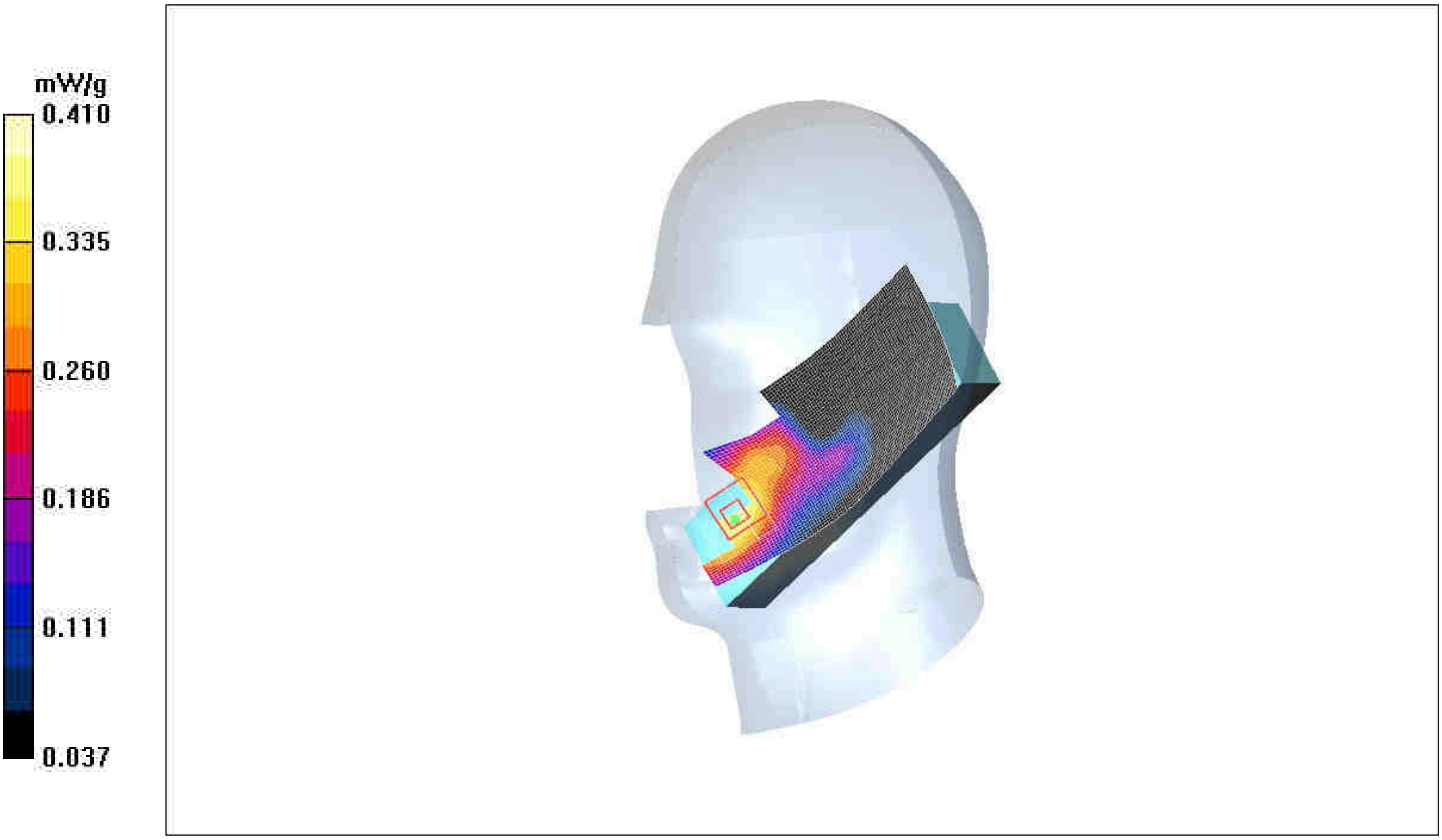


Fig. 63 Right Hand Touch Cheek WCDMA Band V CH4132

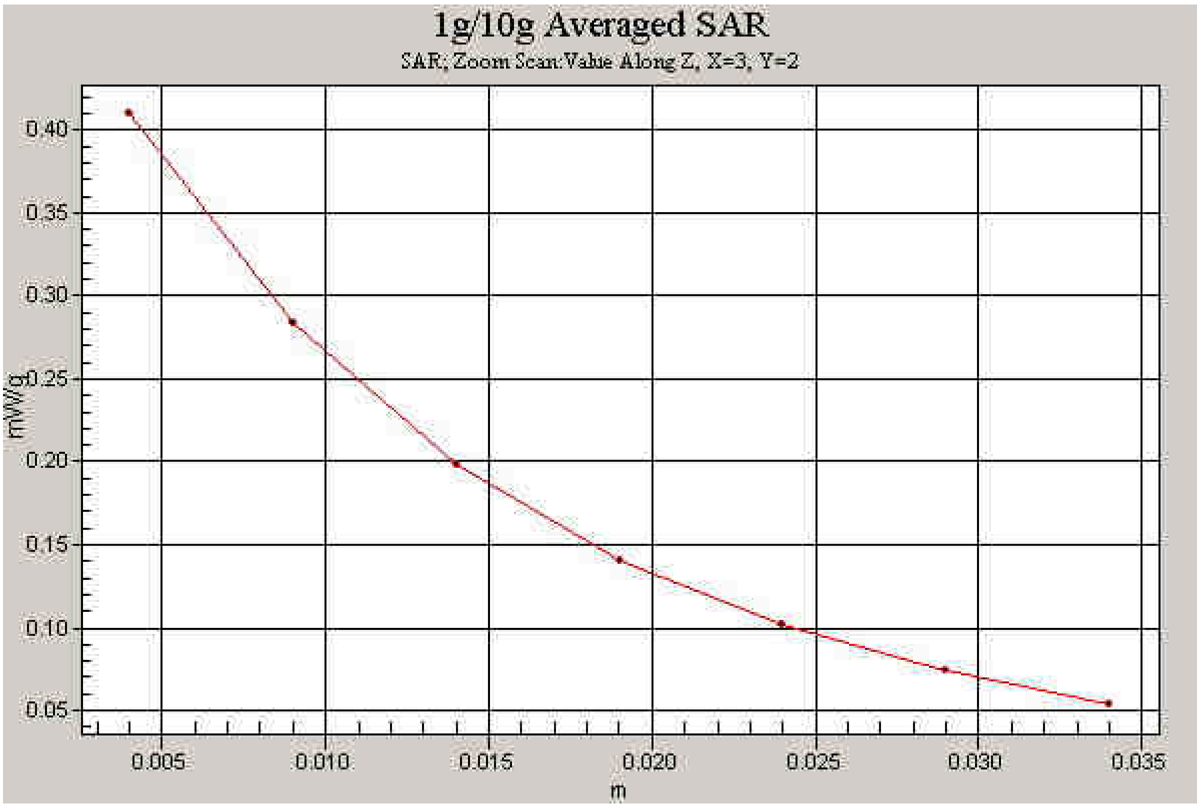


Fig. 64 Z-Scan at power reference point (Right Hand Touch Cheek WCDMA Band V CH4132)

WCDMA Band V Right Tilt High
Communication System: WCDMA Band V; Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used: f = 847 MHz; σ = 0.949 mho/m; ε_r = 41.7; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Tilt High/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.078 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.81 V/m; Power Drift = -0.063 dB
Peak SAR (extrapolated) = 0.276 W/kg
SAR(1 g) = 0.064 mW/g; SAR(10 g) = 0.015 mW/g
Maximum value of SAR (measured) = 0.071 mW/g

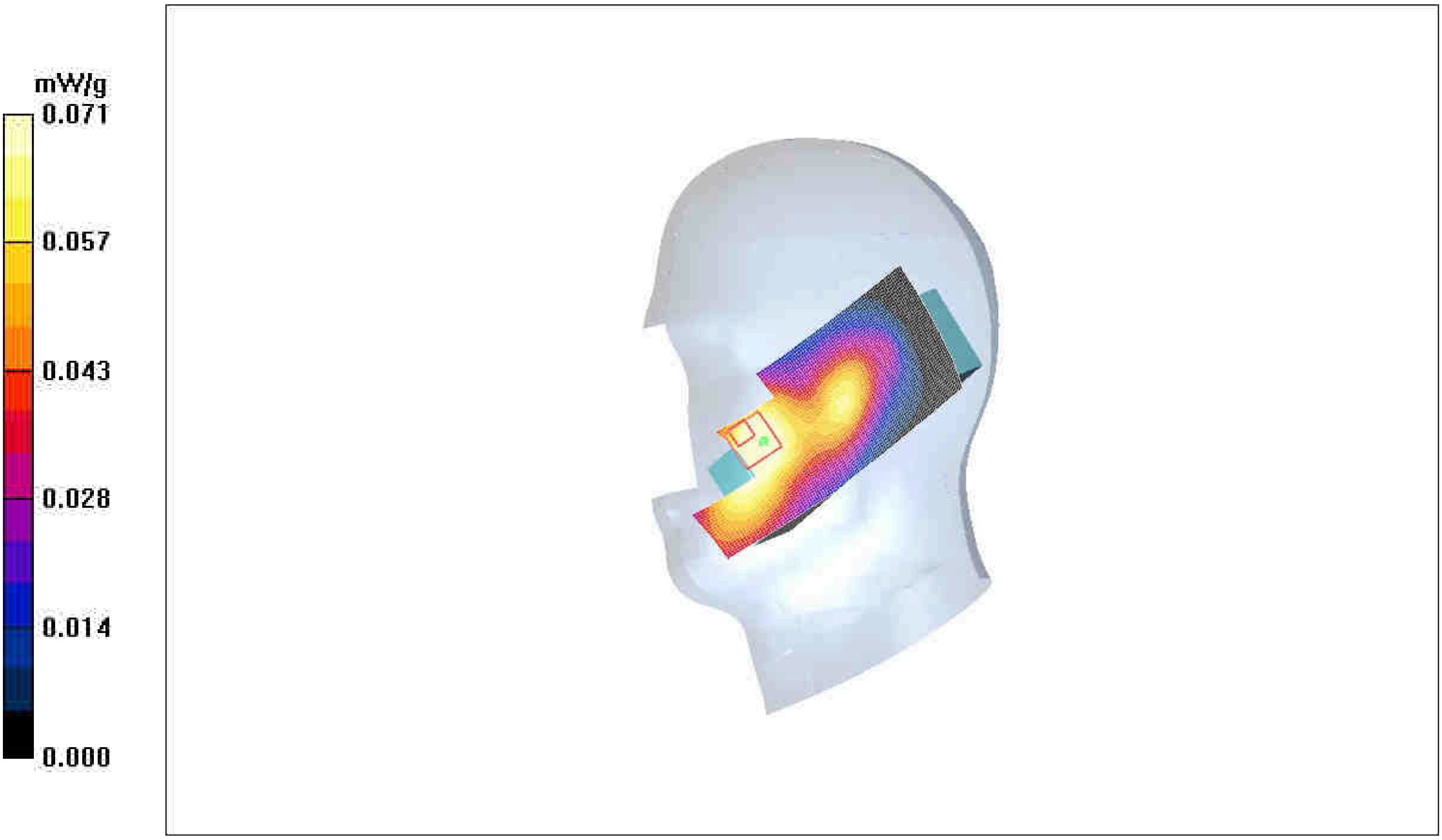


Fig. 65 Right Hand Tilt WCDMA Band V CH4233

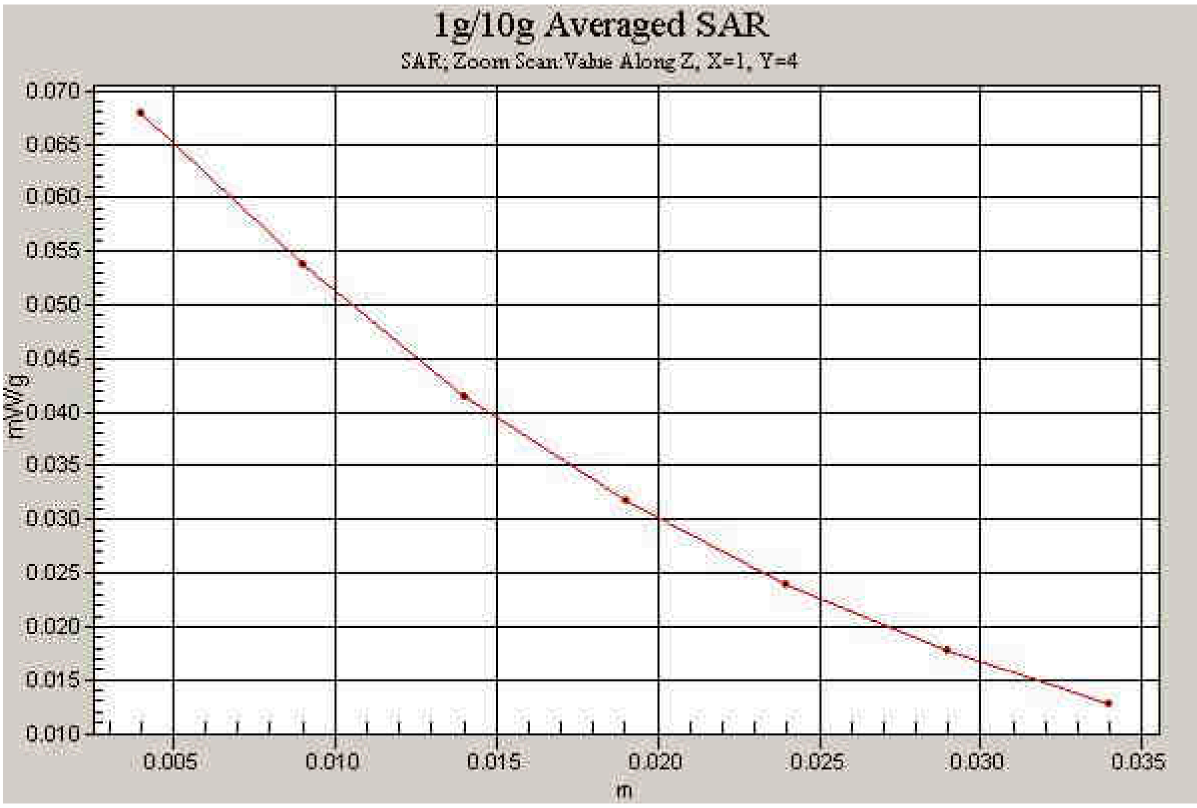


Fig. 66 Z-Scan at power reference point (Right Hand Tilt WCDMA Band V CH4233)

WCDMA Band V Right Tilt Middle

Communication System: WCDMA Band V; Frequency: 836.4 MHz; Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.939 mho/m; ε_r = 41.9; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Tilt Middle/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.046 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.74 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 0.056 W/kg
SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.032 mW/g
Maximum value of SAR (measured) = 0.047 mW/g

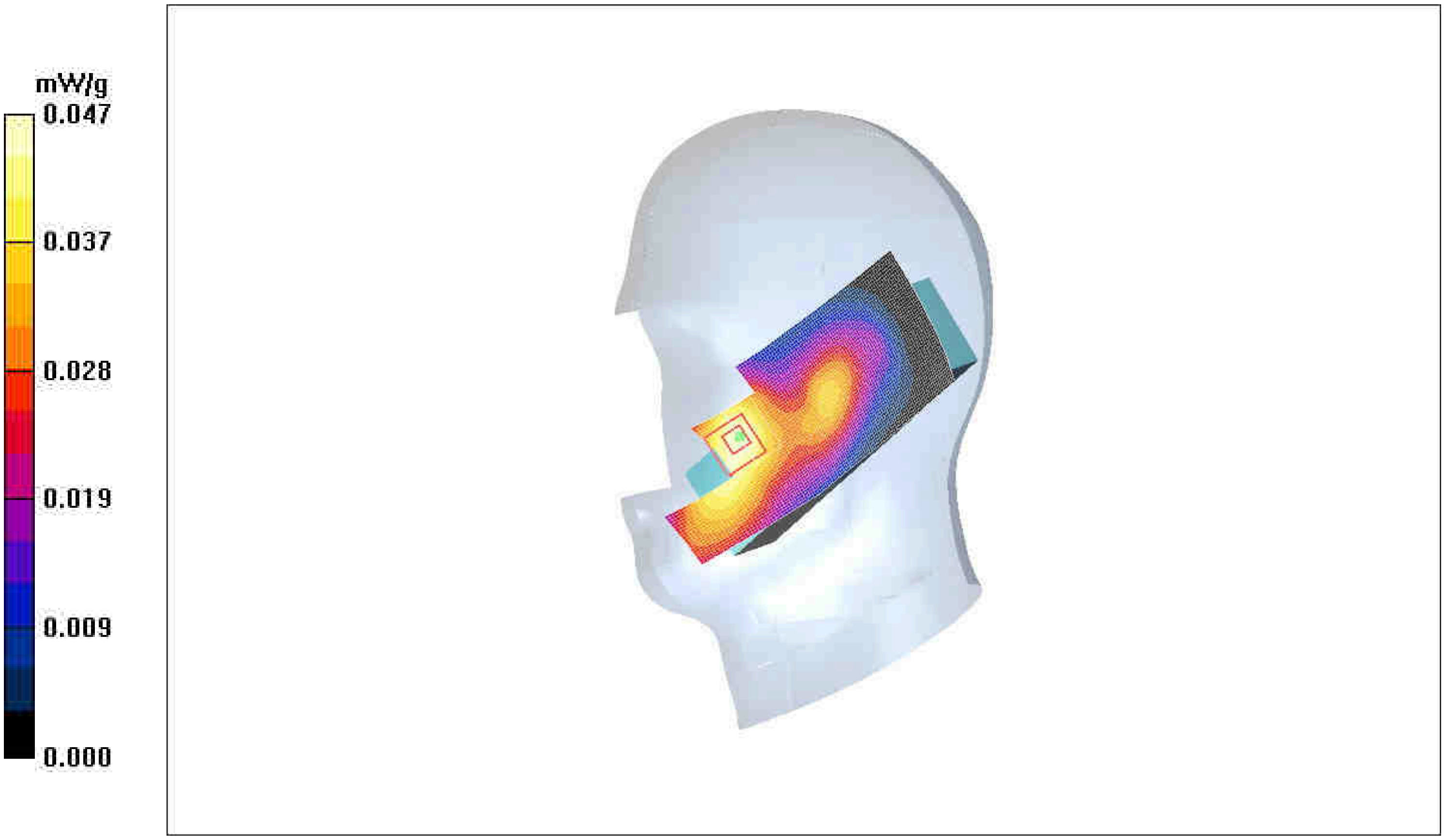


Fig. 67 Right Hand Tilt WCDMA Band V CH4182

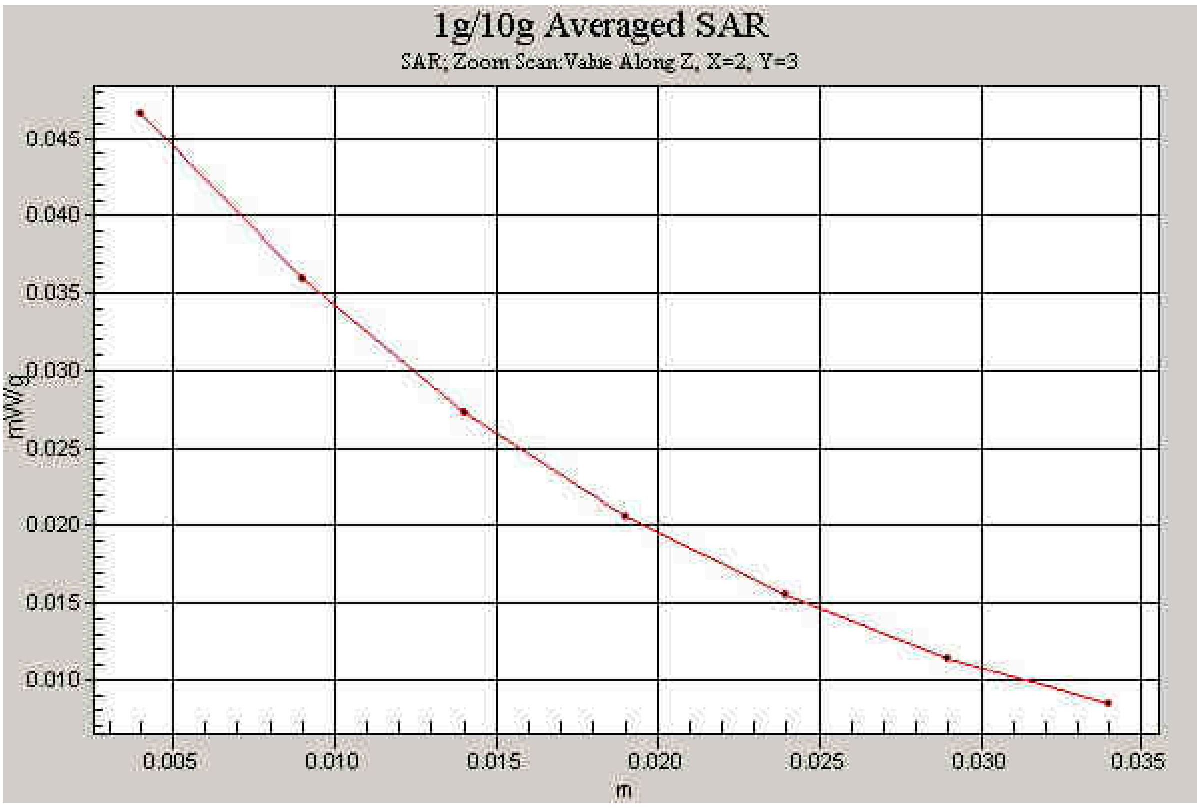


Fig. 68 Z-Scan at power reference point (Right Hand Tilt WCDMA Band V CH4182)

WCDMA Band V Right Tilt Low

Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1

Medium: Head 835MHz

Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.93 mho/m; ε_r = 42; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(6.85, 6.85, 6.85);
- Electronics: DAE3 Sn452;

Tilt Low/Area Scan (51x141x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.048 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.94 V/m; Power Drift = -0.139 dB
Peak SAR (extrapolated) = 0.059 W/kg
SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.033 mW/g
Maximum value of SAR (measured) = 0.050 mW/g

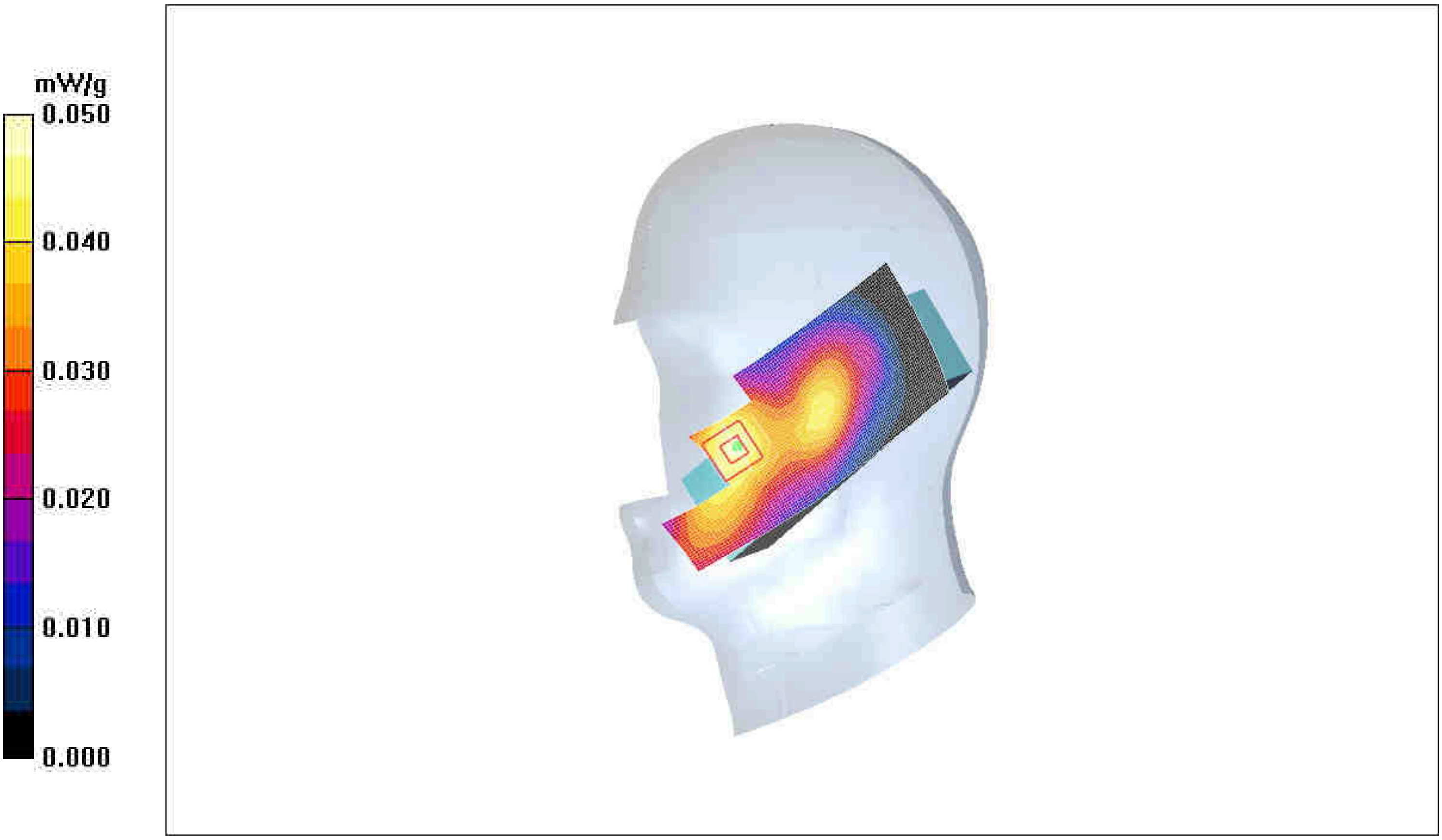


Fig. 69 Right Hand Tilt WCDMA Band V CH4132

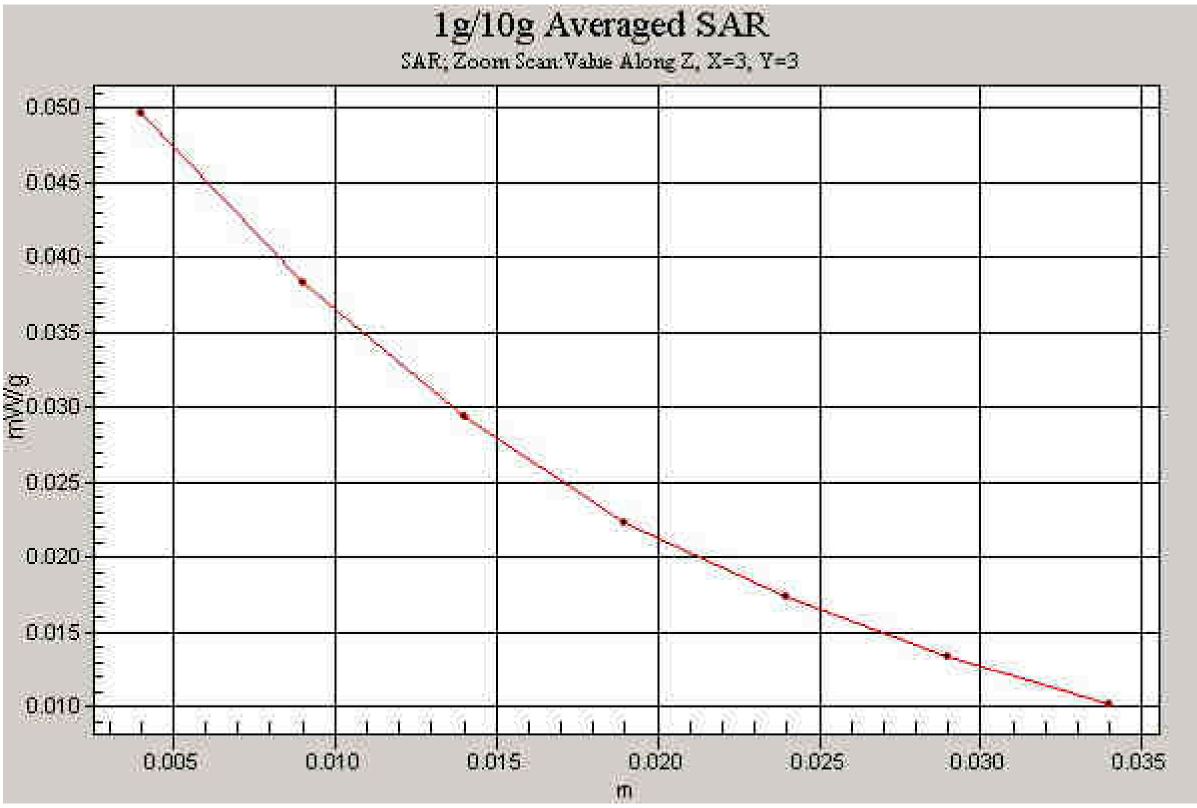


Fig. 70 Z-Scan at power reference point (Right Hand Tilt WCDMA Band V CH4132)

WCDMA Band V Towards Ground High
Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: Body 835MHz
Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 56; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);
- Electronics: DAE3 Sn452;

Towards Ground High/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.734 mW/g

Towards Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.1 V/m; Power Drift = 0.140 dB
Peak SAR (extrapolated) = 0.912 W/kg
SAR(1 g) = 0.687 mW/g; SAR(10 g) = 0.477 mW/g
Maximum value of SAR (measured) = 0.738 mW/g

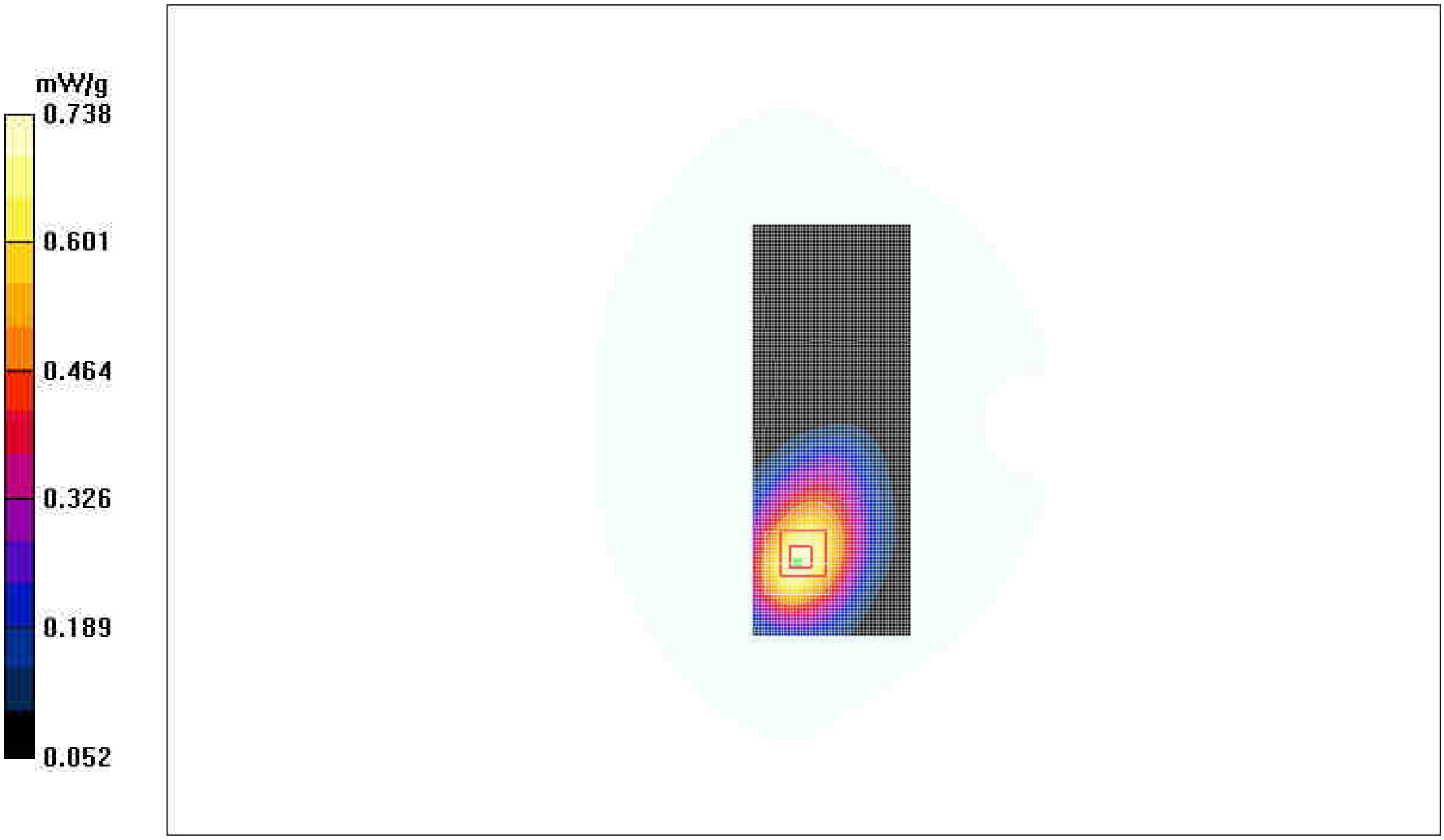


Fig. 71 Body, Towards Ground, WCDMA Band V CH4233

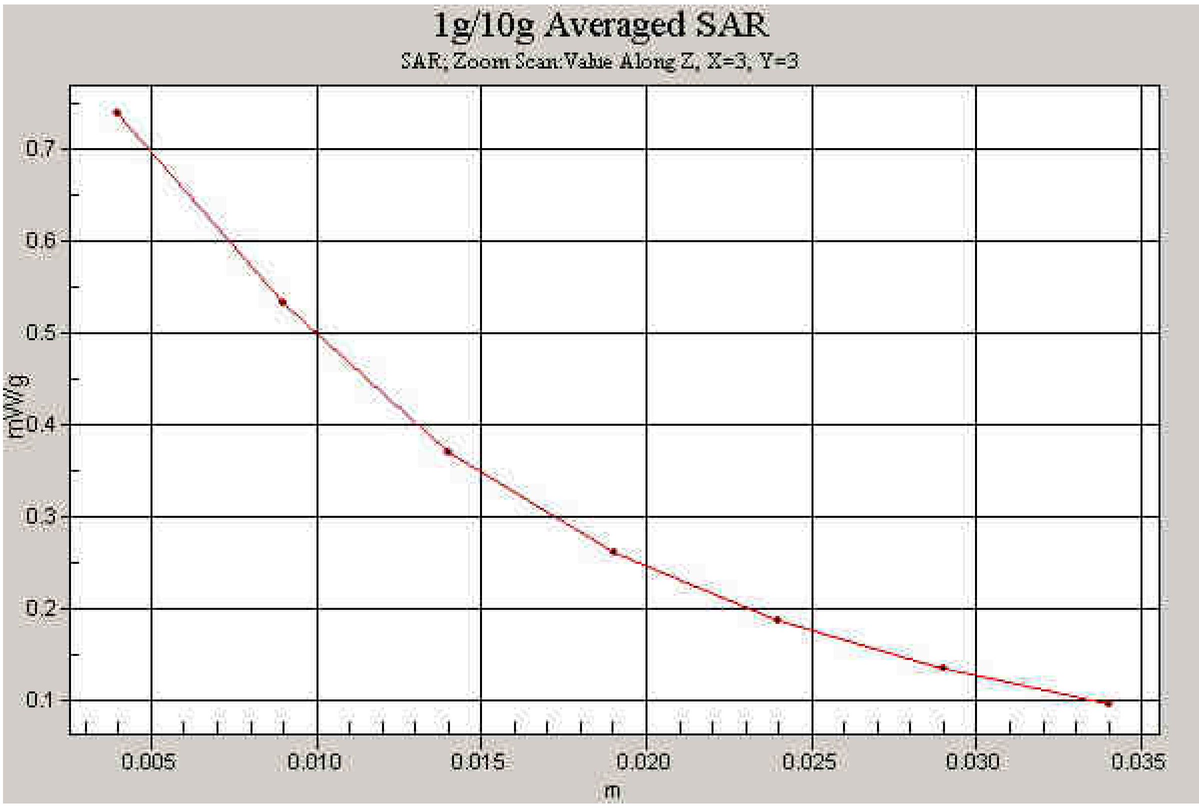


Fig. 72 Z-Scan at power reference point (Body, Towards Ground, WCDMA Band V CH4233)

WCDMA Band V Towards Ground Middle
Communication System: WCDMA Band V; Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium: Body 835MHz
Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.993 mho/m; ε_r = 56.2; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);
- Electronics: DAE3 Sn452;

Towards Ground Middle/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.478 mW/g

Towards Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.05 V/m; Power Drift = -0.106 dB
Peak SAR (extrapolated) = 0.599 W/kg
SAR(1 g) = 0.447 mW/g; SAR(10 g) = 0.307 mW/g
Maximum value of SAR (measured) = 0.479 mW/g

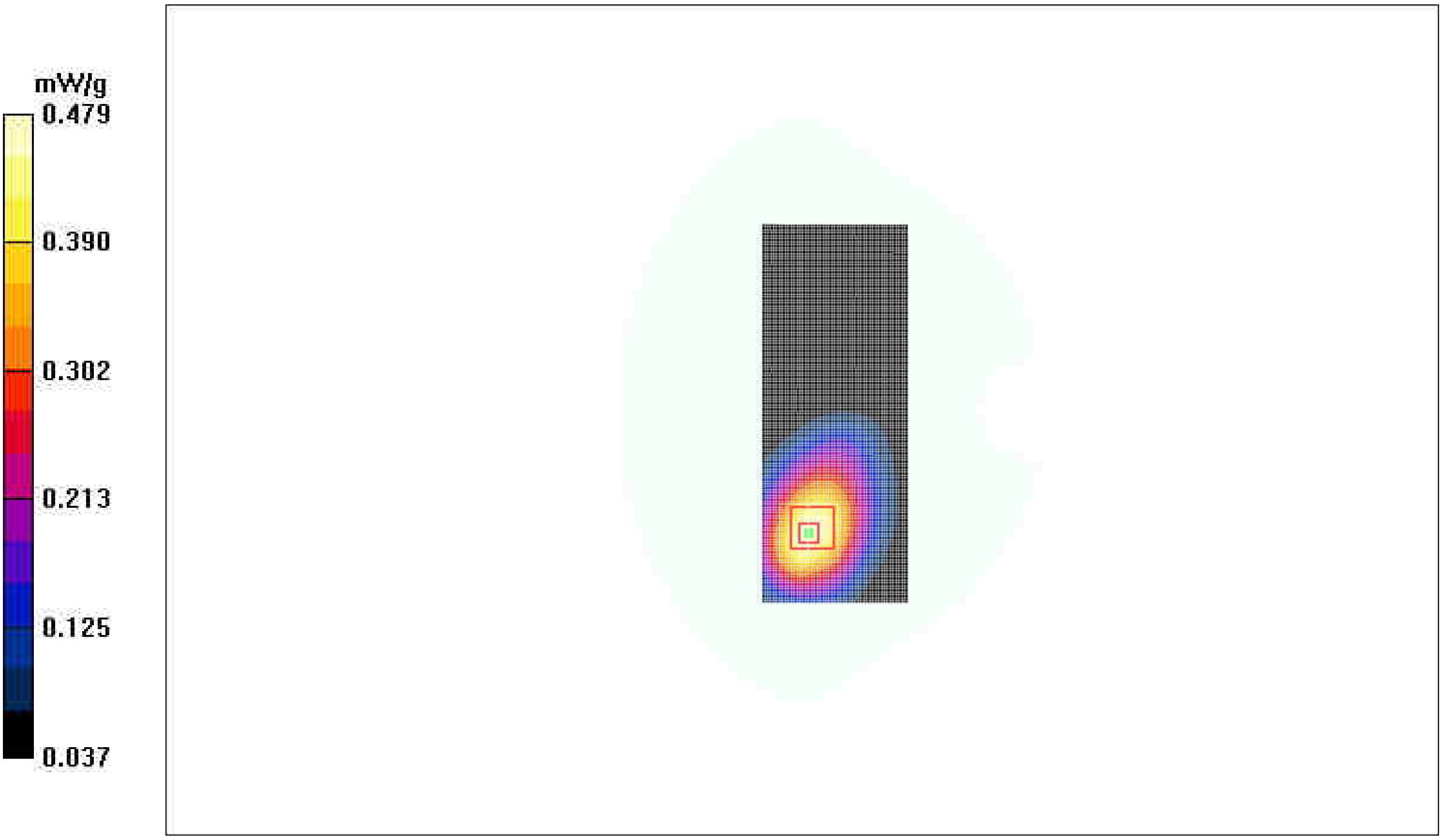


Fig. 73 Body, Towards Ground, WCDMA Band V CH4182

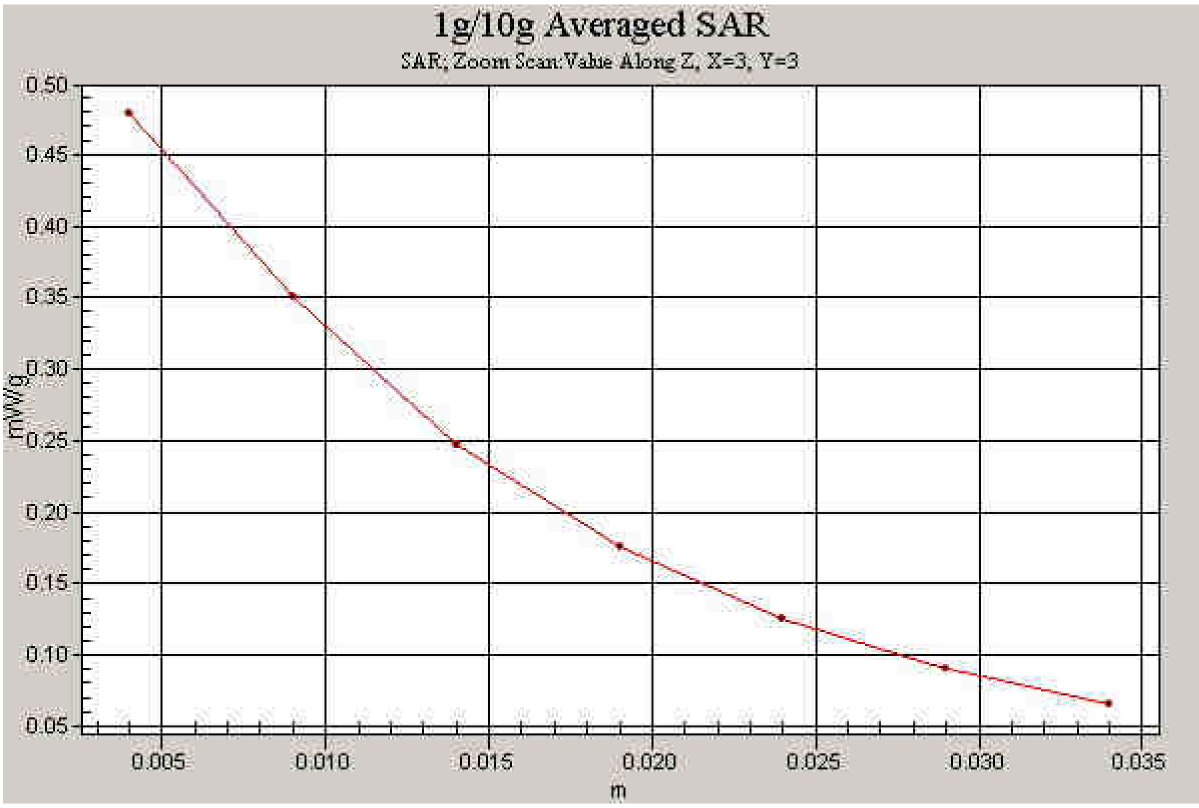


Fig. 74 Z-Scan at power reference point (Body, Towards Ground, WCDMA Band V CH4182)

WCDMA Band V Towards Ground Low

Communication System: WCDMA Band V; Frequency: 826.4 MHz;Duty Cycle: 1:1
Medium: Body 835MHz
Medium parameters used (interpolated): f = 826.4 MHz; σ = 0.983 mho/m; ε_r = 56.3; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);
- Electronics: DAE3 Sn452;

Towards Ground Low/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.664 mW/g

Towards Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.85 V/m; Power Drift = 0.067 dB
Peak SAR (extrapolated) = 0.830 W/kg
SAR(1 g) = 0.619 mW/g; SAR(10 g) = 0.426 mW/g
Maximum value of SAR (measured) = 0.676 mW/g

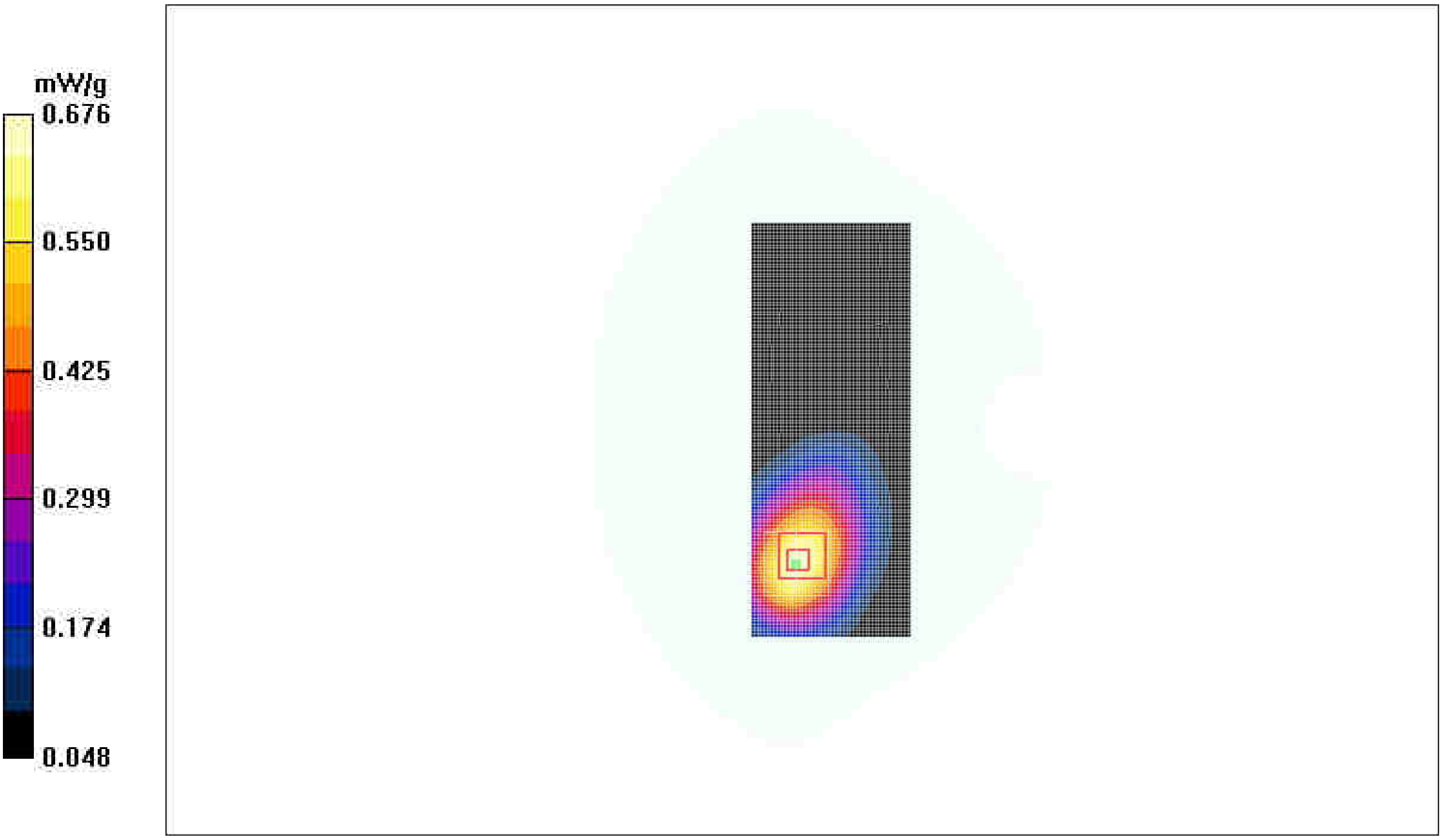


Fig. 75 Body, Towards Ground, WCDMA Band V CH4132

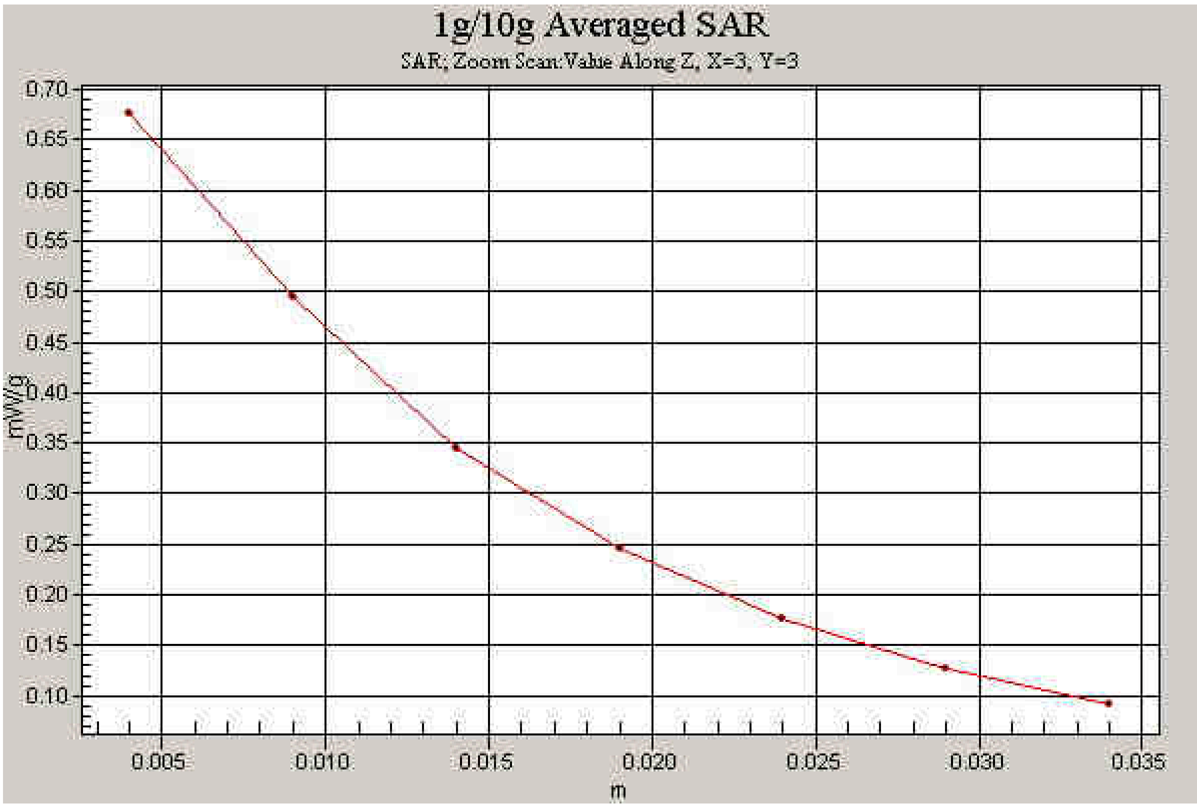


Fig. 76 Z-Scan at power reference point (Body, Towards Ground, WCDMA Band V CH4132)

Bluetooth earphone WCDMA Band V Towards Ground High
Communication System: WCDMA Band V; Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: Body 835MHz
Medium parameters used: f = 847 MHz; σ = 1 mho/m; ε_r = 56; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);
- Electronics: DAE3 Sn452;

Towards Ground High/Area Scan (51x131x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.692 mW/g

Towards Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.3 V/m; Power Drift = -0.004 dB
Peak SAR (extrapolated) = 0.870 W/kg
SAR(1 g) = 0.668 mW/g; SAR(10 g) = 0.465 mW/g
Maximum value of SAR (measured) = 0.724 mW/g

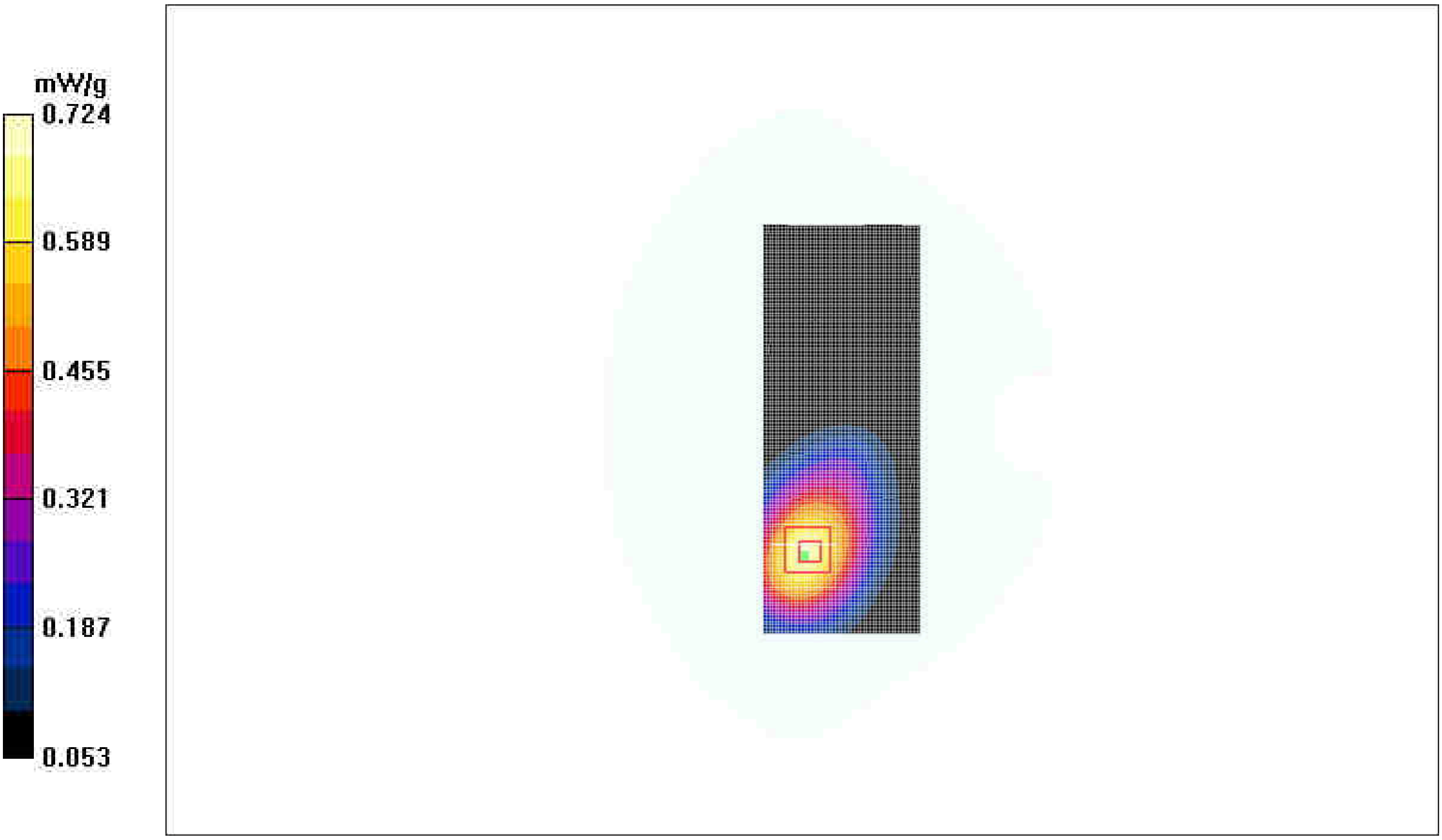


Fig. 77 Body with Bluetooth earphone, Towards Ground, WCDMA Band V, CH4233

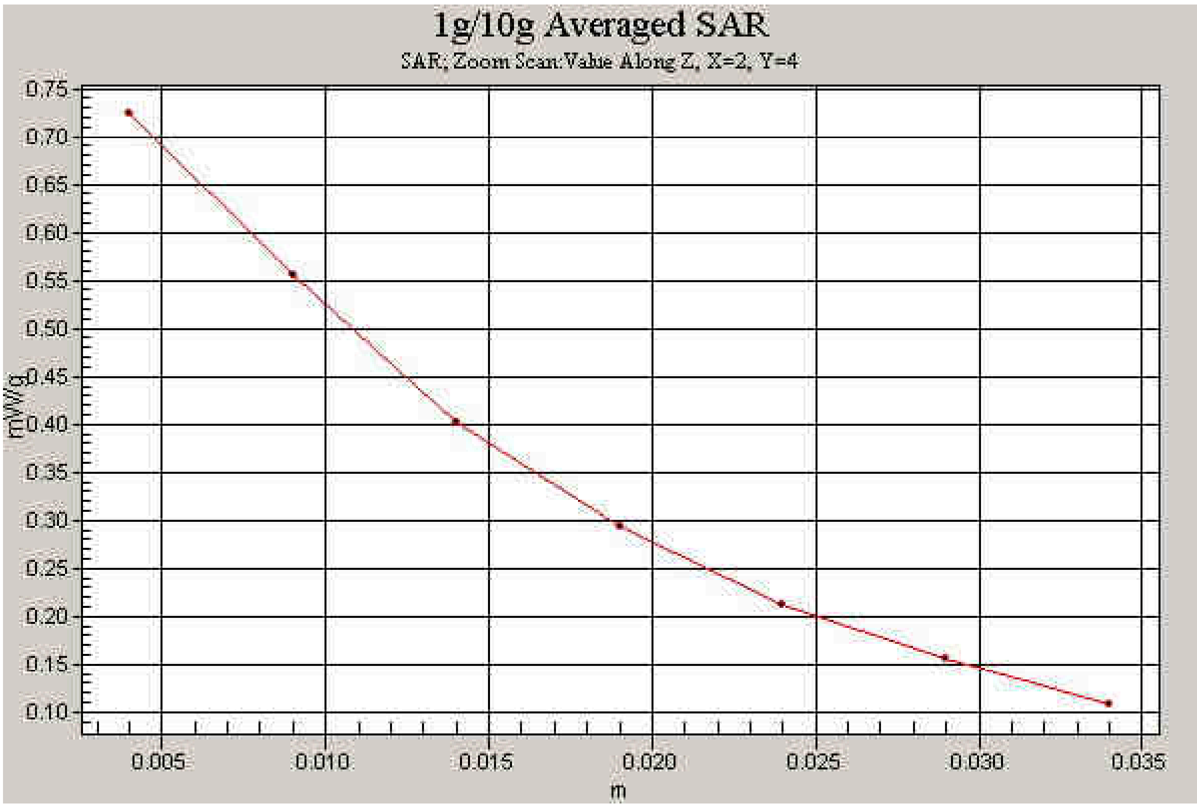
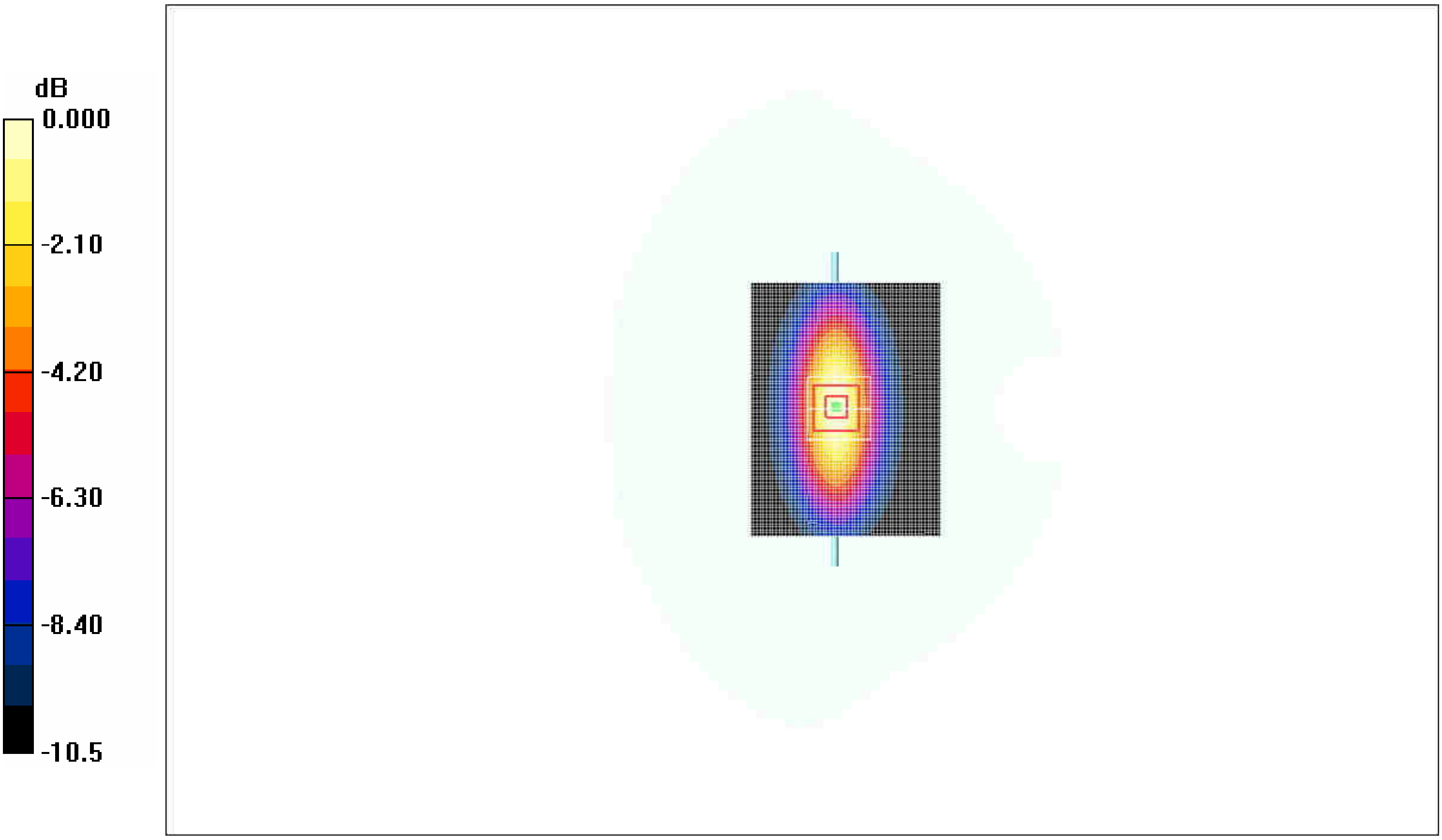


Fig. 78 Z-Scan at power reference point (Body with Bluetooth earphone, Towards Ground, WCDMA Band V, CH4233)

ANNEX D： SYSTEM VALIDATION RESULTS

System Performance Check at 835 MHz
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 443
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: Head 835MHz
Medium parameters used: f = 835 MHz; σ = 0.899 mho/m; ε_r = 42.8; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);
- Electronics: DAE3 Sn452;

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.54 mW/g
d=15mm, Pin=250mW/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.0 V/m; Power Drift = -0.061 dB
Peak SAR (extrapolated) = 3.44 W/kg
SAR(1 g) = 2.34 mW/g; SAR(10 g) = 1.53 mW/g
Maximum value of SAR (measured) = 2.52 mW/g

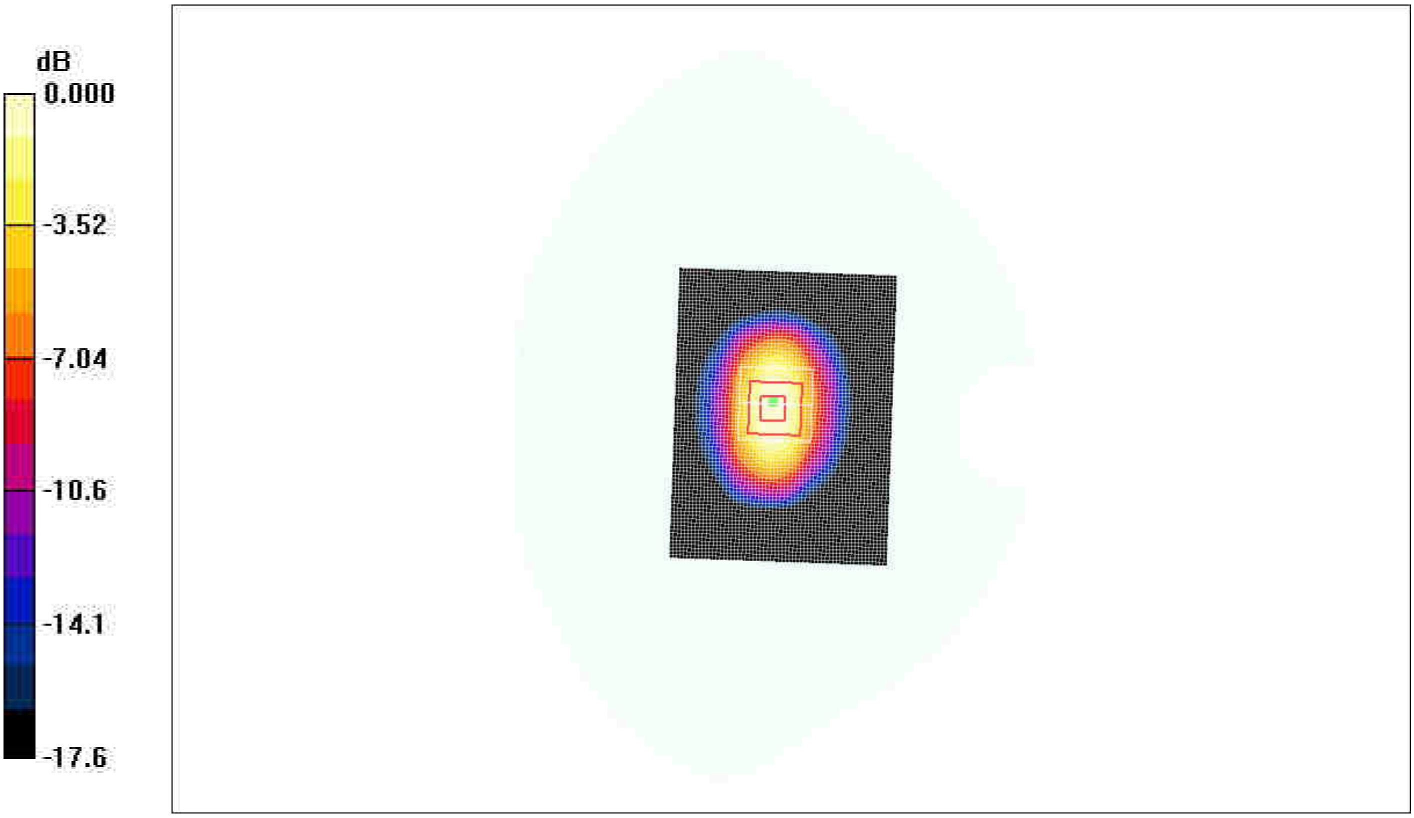


0 dB = 2.52mW/g

Fig. 79 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 541
Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: Head1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.42 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3
- Probe: ET3DV6 - SN1737; ConvF(4.64, 4.64, 4.64);
- Electronics: DAE3 Sn452;

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.7 mW/g
d=10mm, Pin=250mW/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.4 V/m; Power Drift = -0.045 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 9.69 mW/g; SAR(10 g) = 5.12 mW/g
Maximum value of SAR (measured) = 10.9 mW/g



0 dB = 10.9mW/g

Fig. 80 System Performance Check 1900MHz 250mW

ANNEX E： PROBE CALIBRATION CERTIFICATE

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

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

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client: **TMC-Auden**

Certificate No: **ET3-1737_Feb07**

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1737
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	February 19, 2007
Condition of the calibrated item	In Tolerance

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-06 (METAS, No. 217-00593)	Aug-07
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-07

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-06)	In house check: Oct-07

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

Issued: February 19, 2007

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

Certificate No: ET3-1737_Feb07 Page 1 of 9

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

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

Accredited by the Swiss Federal Office of Metrology and Accreditation
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) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

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

Probe ET3DV6

SN:1737

Manufactured:	September 27, 2002
Last calibrated:	February 23, 2005
Recalibrated:	February 19, 2007

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1737 February 19, 2007

DASY - Parameters of Probe: ET3DV6 SN:1737

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

NormX	**1.52** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**95** mV
NormY	**1.66** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**94** mV
NormZ	**1.71** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**93** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL 900 MHz Typical SAR gradient: 5 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	8.3	4.5
SAR_{be} [%]	With Correction Algorithm	0.7	0.0

TSL 1750 MHz Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	11.9	8.0
SAR_{be} [%]	With Correction Algorithm	0.5	0.1

Sensor Offset

Probe Tip to Sensor Center **2.7** mm

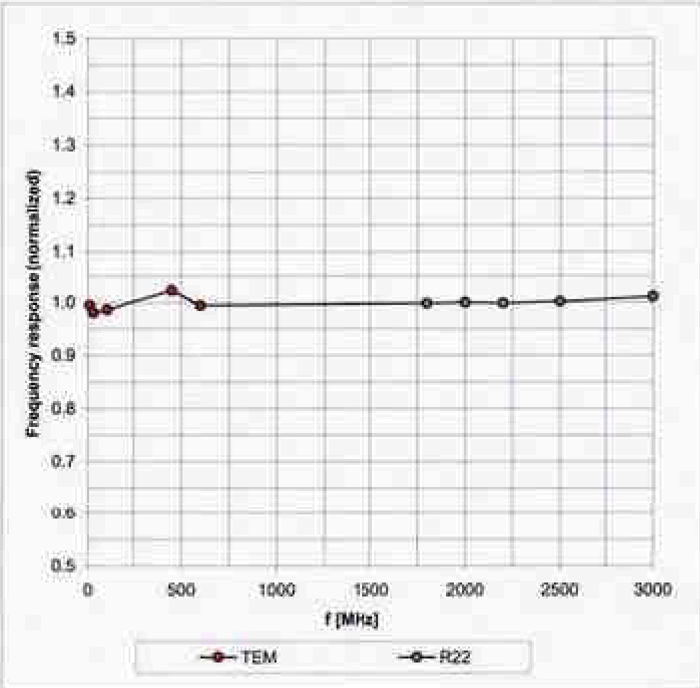
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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

ET3DV6 SN:1737 February 19, 2007

Frequency Response of E-Field

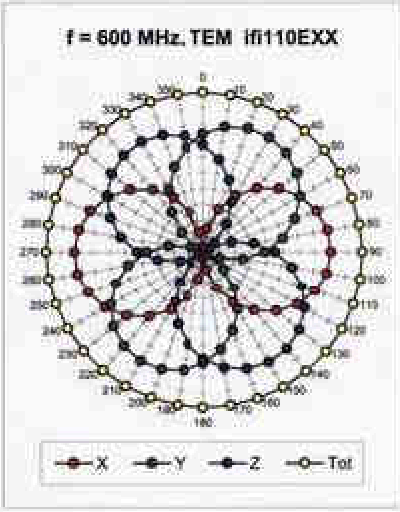
(TEM-Cell:ifi110 EXX, Waveguide: R22)

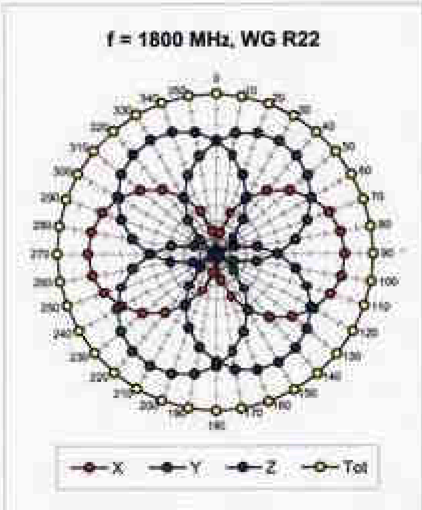


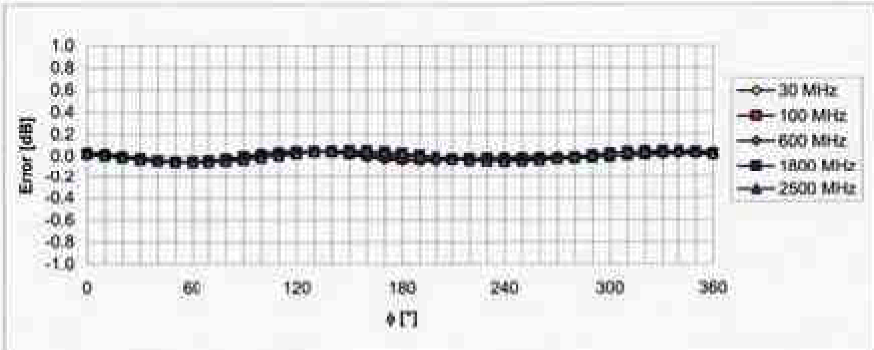
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6 SN:1737 February 19, 2007

Receiving Pattern (ϕ), $\vartheta = 0°$





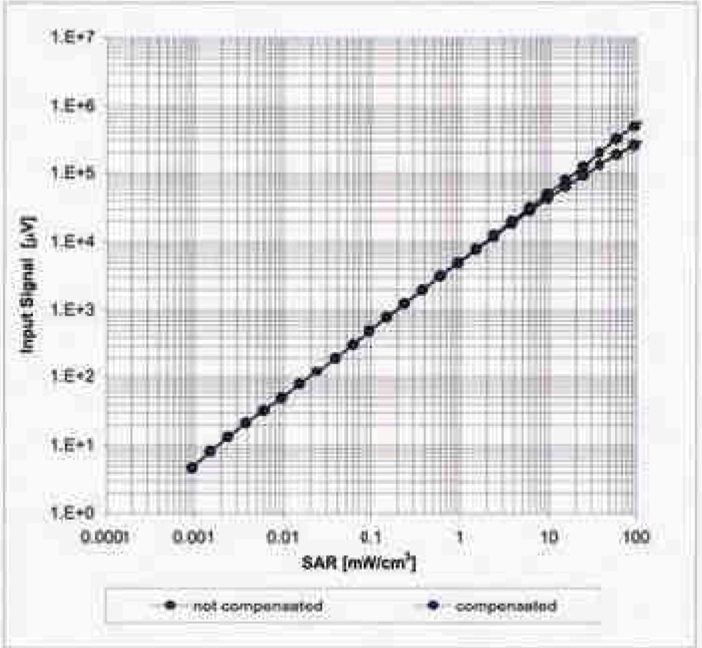


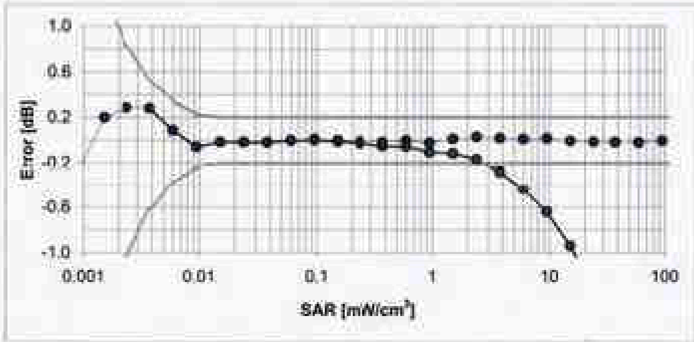
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ET3DV6 SN:1737 February 19, 2007

Dynamic Range f(SAR_{head})

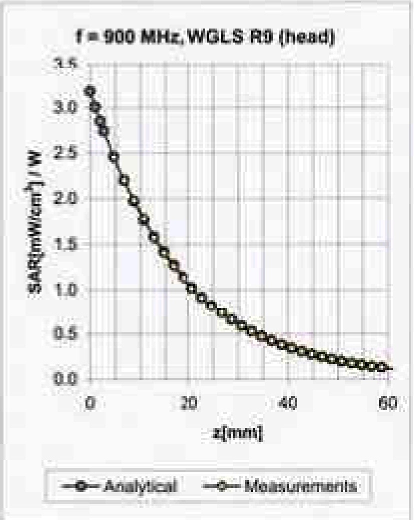
(Waveguide R22, f = 1800 MHz)

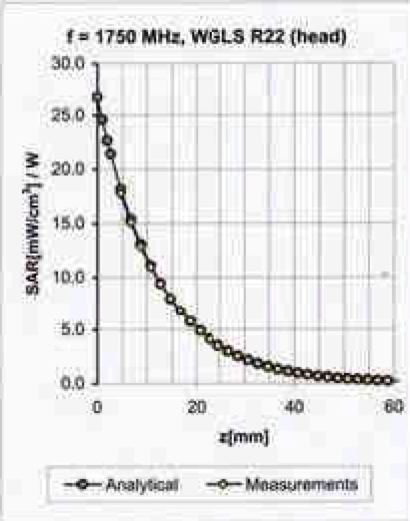




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment





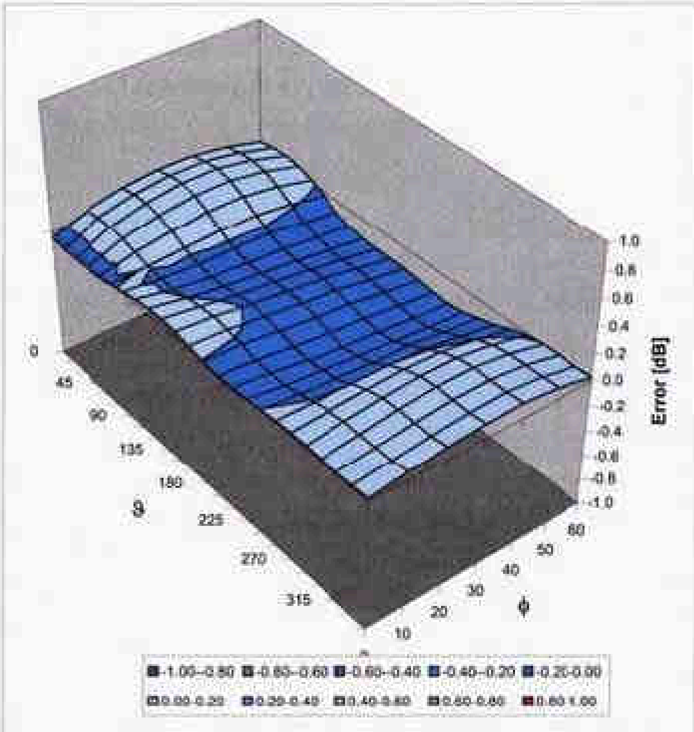
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.27	2.89	6.85	± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.52	2.56	5.42	± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.49	2.89	5.15	± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.35	2.82	6.52	± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.56	2.68	4.97	± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.88	2.07	4.64	± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.66	2.16	4.10	± 11.8% (k=2)

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

ET3DV6 SN:1737 February 19, 2007

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

ANNEX F： D835V2 DIPOLE CALIBRATION CERTIFICATE

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

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S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client: TMC China

Certificate No: D835V2-443_Feb07

CALIBRATION CERTIFICATE

Object	D835V2-SN: 443
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	February 19, 2007
Condition of the calibrated item	In Tolerance

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

All calibrations have been conducted 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 EPM-442A	GB37480704	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Power sensor 8481A	US37292783	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN:5086 (20g)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
Reference 10 dB Attenuator	SN:5047_2 (10r)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
DAE4	SN:601	30-Jan-07 (SPEAG, NO.DAE4-601_Jan07)	Jan-08
Reference Probe ET3DV6 (HF)	SN: 1507	19-Oct-06 (SPEAG, NO. ET3-1507_Oct06)	Oct-07
Secondary Standards	**ID#**	**Check Data (in house)**	**Scheduled Calibration**
Power sensor HP 8481A	MY41092317	18-Oct-02(SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05(SPEAG, in house check Nov-05)	In house check: Nov -07
Network Analyzer HP 8753E	US37390585S4206	18-Oct-01(SPEAG, in house check Oct-06)	In house check: Oct -07

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Director	

Issued: February 21, 2007

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

Certificate No: D835V2-443_Feb07 Page 1 of 6

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

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Accredited by the Swiss Federal Office of Metrology and Accreditation
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
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.9 ± 6 %	0.88 mho/m ± 6 %
Head TSL temperature during test	(21.2 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.48 mW / g
SAR normalized	normalized to 1W	9.90 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**9.70 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.60 mW / g
SAR normalized	normalized to 1W	6.40 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**6.31 mW /g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.5 Ω - 6.8 jΩ
Return Loss	- 25.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.402 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 3, 2001

DASY4 Validation Report for Head TSL

Date/Time: 19.02.2007 10:04:15

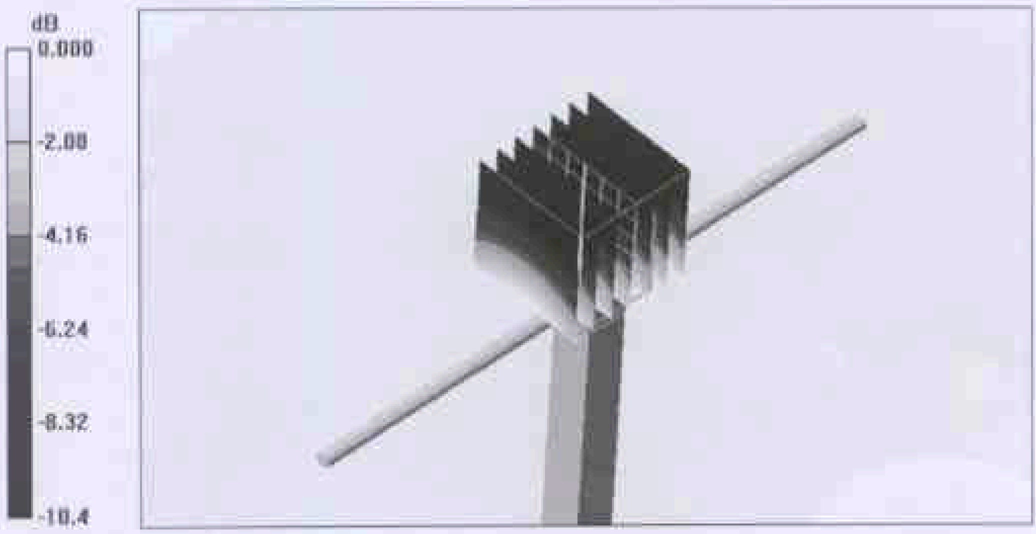
Test laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; serial: D835V2-SN: 443

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL 835 MHz;
Medium parameters used: f=835 MHz; σ=0.88 mho/m; ε_r=39.9; ρ= 1000kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)
DASY4 Configuration:

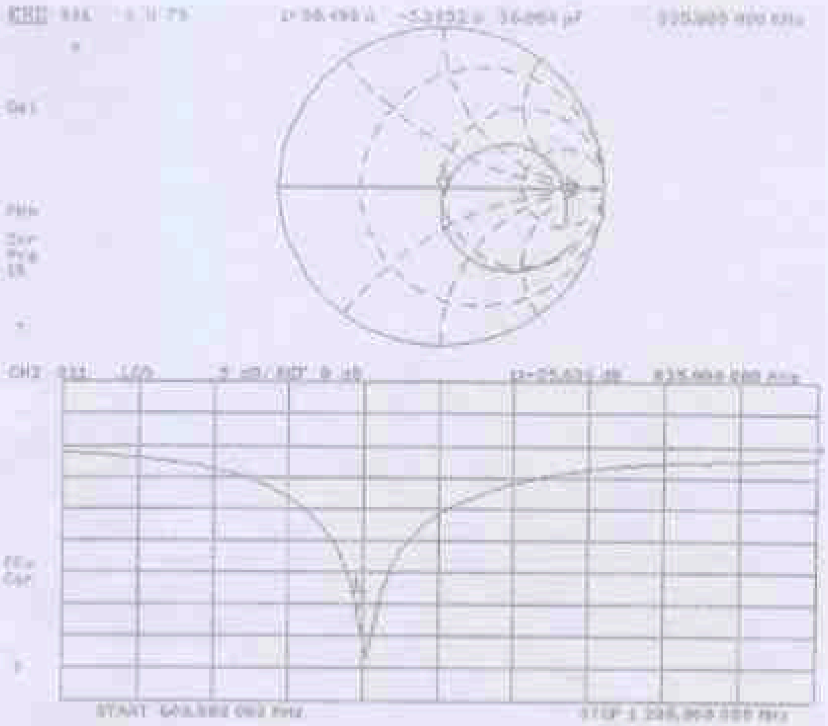
- Probe: ET3DV6-SN1507(HF); ConvF(6.01,6.01,6.01); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.1_2007
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA;
- Measurement SW: DASY, V4.7 Build 53; Post processing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.6 V/m; Power Drift = 0.010 dB
Peak SAR (extrapolated) = 3.72 W/kg
SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.60 mW/g
Maximum value of SAR (measured) = 2.70 mW/g



0 dB = 2.70mW/g

Impedance measurement Plot for Head TSL



ANNEX G： D1900V2 DIPOLE CALIBRATION CERTIFICATE

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

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Swiss Calibration Service

Accredited by the Swiss Federal Office of metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client TMC China

Certificate No: D1900V2-541_Feb07

CALIBRATION CERTIFICATE

Object	D1900V2-SN: 541
Calibration procedure(s)	QA CAL-05.v6 Calibration procedure for dipole validation kits
Calibration date:	February 20, 2007
Condition of the calibrated item	In Tolerance

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

All calibrations have been conducted 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 EPM-442A	GB37480704	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Power sensor 8481A	US37292783	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN:5086 (20g)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
Reference 10 dB Attenuator	SN:5047_2 (10r)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
DAE4	SN:601	30-Jan-07 (SPEAG, NO.DAE4-601_Jan07)	Jan-08
Reference Probe ET3DV6 (HF)	SN: 1507	19-Oct-06 (SPEAG, NO. ET3-1507_Oct06)	Oct-07
Secondary Standards	**ID#**	**Check Data (in house)**	**Scheduled Calibration**
Power sensor HP 8481A	MY41092317	18-Oct-02(SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05(SPEAG, in house check Nov-05)	In house check: Nov -07
Network Analyzer HP 8753E	US37390585 54206	18-Oct-01(SPEAG, in house check Oct-06)	In house check: Oct -07

	Name	Function	Signature
Calibrated by:	Marcel Fehr	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Director	

Issued: February 21, 2007

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

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

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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
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.8 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature during test	(22.1 ± 0.2) °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	9.73 mW /g
SAR normalized	normalized to 1W	38.9 mW /g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**39.6 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.09 mW /g
SAR normalized	normalized to 1W	20.4 mW /g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**20.2 mW / g ± 16.5 % (k=2)**

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	45.4 Ω - 8.9 jΩ
Return Loss	- 26.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.214 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 4 , 2001

DASY4 Validation Report for Head TSL

Date/Time: 20.02.2007 09:25:37

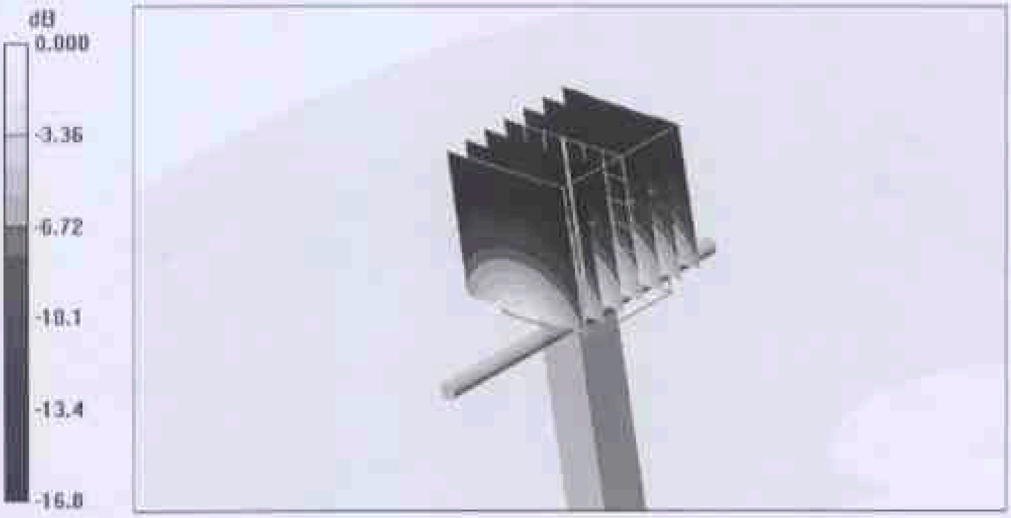
Test laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; serial: D1900V2-SN: 541

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL 1900 MHz;
Medium parameters used: f=1900 MHz; σ=1.38 mho/m; ε_r=38.9; ρ= 1000kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)
DASY4 Configuration:

- Probe: ET3DV6-SN1507(HF); ConvF(5.03, 5.03, 5.03); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.1_2007
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA;
- Measurement SW: DASY, V4.7 Build 53; Post processing SW: SEMCAD, V1.8 Build 172

Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.1 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.73 mW/g; SAR(10 g) = 5.09 mW/g
Maximum value of SAR (measured) = 11.3 mW/g



0 dB = 11.3mW/g

Impedance measurement Plot for Head TSL