Deutscher Akkreditierungs Rat

DAR

No. DAT-P-114/01-01

TEST REPORT

No. SAR2006013

Test name	Electromagnetic Field (Specific Absorption Rate)
Product	TRI-BAND GSM MOBILE PHONE
Model	AF51
Client	BENQ MOBILE
Type of test	Non Type Approval

Telecommunication Metrology Center

of Ministry of Information Industry

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TABLE OF CONTENT

Product Name	TRI-BAND GSM MOBILE PHONE	Sample Model	AF51
Client	BENQ MOBILE	Type of test	Non Type Approval
Factory	BENQ MOBILE	Sampling arrival date	August 30th, 2006
Manufacturer	BENQ MOBILE		
Sampling/ Sending sample	Sending sample	Sample sent by	Yang Xianguang
Sampling location	/	Sampling person	/
Sample quantity	1	Sample matrix	/
Series number of the Sample	004400015968843		
Test basis	**EN 50360–2001:** Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones. **EN 50361–2001:** Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones. **IEC 62209-1-2005:** Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 1:Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz) **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. **ANSI C95.1–1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz **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.		
Test conclusion	The BenQ AF51 mobile phone is in compliance with the Federal Communications Commission (FCC) Guidelines [OET 65] for uncontrolled exposure. General Judgment: **Pass** (Stamp) **Date of issue: October 9, 2006**		
Note	TX Freq. Band: 1850-1910 MHz (PCS) Max. Power: 1 Watt (PCS) Antenna Character: / The test results relate only to the items tested of the sample(s).		

Approved by________ **Reviewed by**________ **Tested by**________

(Lu Minniu) (Wang Hongbo) (Qi Dianyuan)

Deputy Director of the laboratory

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3 DESCRIPTION OF EUT

3.1 Addressing Information Related to EUT

Table 1: Applicant (The Client)

Name or Company	BENQ MOBILE
Address/Post	Wangjing Tower B, No. 9 Wangjing Zhonghuan Nanlu, Chaoyang District, Beijing, China
City	Beijing
Postal Code	100102
Country	China
Telephone	+86-10-64748800-6867
Fax	\

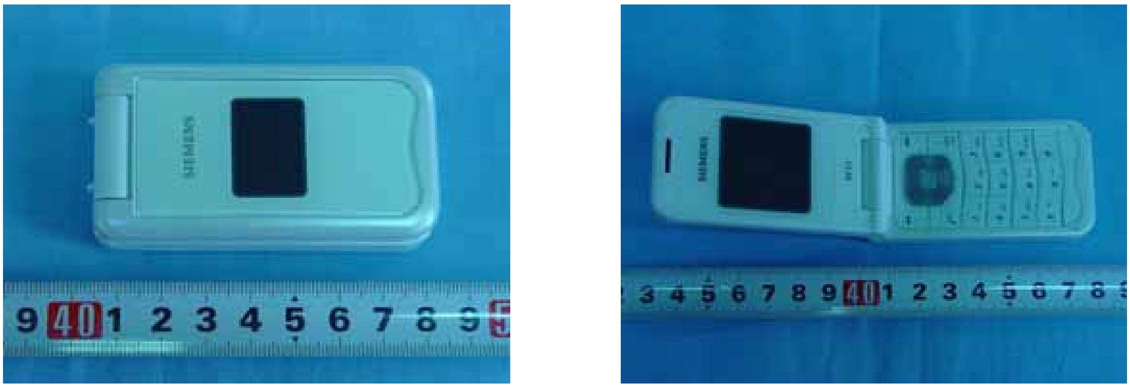
Table 2: Manufacturer

Name or Company	BENQ MOBILE
Address/Post	CHUAN QIAO RD. 777, PUDONG, SHANGHAI 201206,CHINA
City	Shanghai
Postal Code	201206
Country	China
Telephone	\
Fax	\

3.2 Constituents of EUT

Table 3: Constituents of Samples

Description	Model	Serial Number	Manufacturer
Handset	AF51	004400015968843	BENQ MOBILE
Lithium Battery	EBA-120	\	SONY DEUTSCHLAND GMBH
AC/DC Adapter	ETC-100	\	ASTEC EUROPE LTD
Headset	Basic HHS-100	S30880-S2611-A515	\
Headset	Purestyle HHS-120	S30880-S2611-A556	\
Headset	HHS-110	\	
Data-cable	DCA-100	S30880-S5601-A802-1	\



Picture 1.1: Handset (flip closed and flip open)

Picture 1.2: Headset HHS-100

Picture 1.3: Headset HHS-120

Picture 1.4: Headset HHS-110

icture 1.5: Data Cable DCA-100

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

3.3 General Description

Equipment Under Test (EUT) is a model of Tri-band GSM mobile phone with integrated antenna. It consists of Handset and normal options: Lithium Battery and AC/DC Adapter as Table 3 and Picture 1. With the request of the client, SAR is tested for PCS 1900MHz both in head position and body worn position. Its GPRS class is 8.

And the body worn tests used the following accessories:

- GSM with headset HHS-100 (6mm distance)
- GSM with headset HHS-120 (6mm distance)
- GPRS (class 8) with data cable DCA-100 (6mm distance)
- Push-to-Talk mode (GPRS class 8) (25mm distance)

Note1: The Push-to-Talk configurations shall be tested with the front of the device positioned at 25mm from the flat phantom (display towards the phantom)

Note2: The used headsets are Basic HHS-100 and Purestyle HHS-120. Since the three headsets in Table 3 provided for the BenQ AF51show equal performance, because of the same type and size of plugs connected to the phone, the headset Basic HHS-100 and headset Purestyle HHS-120 were chosen for the SAR body worn measurement.

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

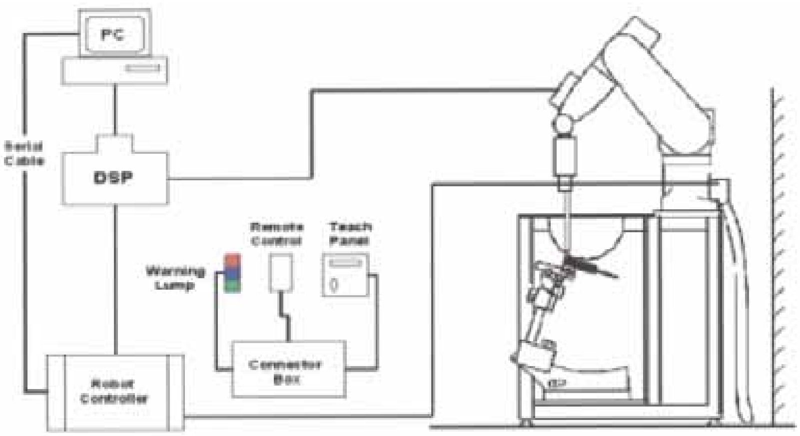
A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 512, 661 and 810 respectively in the case of PCS 1900 MHz. The EUT is commanded to operate at maximum transmitting power.

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

A cell controller system contains the power supply, robot controller, teaches pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the Micron Pentium III 800 MHz computer with Windows 2000 system and SAR Measurement Software DASY4, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.



Picture 2: SAR Lab Test Measurement Set-up

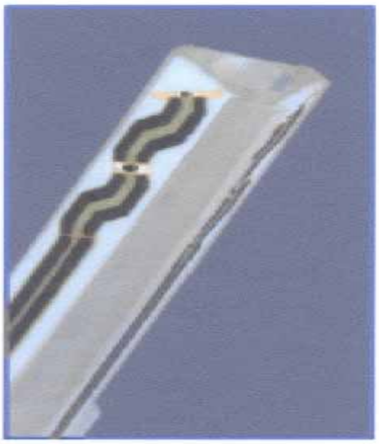
The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information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

4.3 Dasy4 E-field Probe System

The SAR measurements were conducted with the dosimetric probe ET3DV6 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the standard procedure with an accuracy of better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB.

ET3DV6 Probe Specification

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



Picture 3: ET3DV6 E-field Probe

Picture4:ET3DV6 E-field probe

4.4 E-field Probe Calibration

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

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.
E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

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

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

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

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

Picture 5:Device Holder

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

4.5 Other Test Equipment

4.5.1 Device Holder for Transmitters

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

4.5.2 Phantom

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

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

Picture6:Generic Twin Phantom

4.6 Equivalent Tissues

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

IEEE 1528 and OET Bulletin 65 (Edition 97-01) and Supplement C (Edition 01-01).

Table 4. Composition of the Head Tissue Equivalent Matter

MIXTURE %	FREQUENCY 1900MHz
Water	55.242
Glycol monobutyl	44.452
Salt	0.306
Dielectric Parameters Target Value	f=1900MHz ε=40.0 σ=1.40

Table 5. Composition of the Body Tissue Equivalent Matter

MIXTURE %	FREQUENCY 1900MHz
Water	69.91
Glycol monobutyl	29.96
Salt	0.13
Dielectric Parameters Target Value	f=1900MHz ε=53.3 σ=1.52

4.7 System Specifications

4.7.1 Robotic System Specifications

Specifications

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

Data Acquisition Electronic (DAE) System

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

5 CHARACTERISTICS OF THE TEST

5.1 Applicable Limit Regulations

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

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

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

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.

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

6 LABORATORY ENVIRONMENT

Table 6: The Ambient Conditions during EMF Test

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

7 CONDUCTED OUTPUT POWER MEASUREMENT

7.1 Summary

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

7.2 Conducted Power

7.2.1 Measurement Methods

The EUT was set up for the maximum output power. The channel power was measured with Agilent Spectrum Analyzer E4440A. These measurements were done at 3 channels, 512, 661 and 810 before SAR test and after SAR test.

7.2.2 Measurement result

Table 7: Conducted Power Measurement Results

	Conducted Power		
	Channel 512 (1850.2MHz)	**Channel 661 (1880MHz)**	**Channel 810 (1909.8MHz)**
Before Test (dBm)	28.8	28.5	29.3
After Test (dBm)	28.7	28.6	29.2

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 15 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 49%. Liquid temperature during the test: 21.4°C			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	1900MHz	40.0	1.40
Measurement value (Average of 10 tests)	1900MHz	40.3	1.45

Table 9: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 22.5 °C and relative humidity 49%. Liquid temperature during the test: 21.4°C			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	1900MHz	53.3	1.52
Measurement value (Average of 10 tests)	1900MHz	55.8	1.55

8.2 System Validation

Table 10: System Validation

<table>
<tr><td colspan="5">Measurement is made at temperature 23.3 °C, relative humidity 47%, input power 250 mW.
Liquid temperature during the test: 22.5°C</td></tr>
<tr><td rowspan="2" colspan="2">Liquid parameters</td><td>Frequency</td><td colspan="2">Permittivity ε</td><td>Conductivity σ (S/m)</td></tr>
<tr><td>1900 MHz</td><td colspan="2">40.3</td><td>1.45</td></tr>
<tr><td rowspan="5">Verification results at 1900 MHz</td><td rowspan="2">Date</td><td colspan="2">Target value (W/kg)</td><td colspan="2">Measurement value (W/kg)</td></tr>
<tr><td>10 g Average</td><td>1 g Average</td><td>10 g Average</td><td>1 g Average</td></tr>
<tr><td>2006-09-05</td><td rowspan="3">5.125</td><td rowspan="3">9.925</td><td>4.91</td><td>9.8</td></tr>
<tr><td>2006-09-06</td><td>5.24</td><td>9.59</td></tr>
<tr><td>2006-09-07</td><td>5.21</td><td>9.56</td></tr>
</table>

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 (Head, 1900 MHz Band)

<table>
<tr><td rowspan="2">Limit of SAR (W/kg)</td><td>10 g Average</td><td>1 g Average</td><td rowspan="4">Power Drift (dB)</td></tr>
<tr><td>2.0</td><td>1.6</td></tr>
<tr><td rowspan="2">Test Case</td><td colspan="2">Measurement Result (W/kg)</td></tr>
<tr><td>10 g Average</td><td>1 g Average</td></tr>
<tr><td>Left hand, Touch cheek, Top frequency(See Fig.1)</td><td>0.362</td><td>0.619</td><td>0.195</td></tr>
<tr><td>Left hand, Touch cheek, Mid frequency(See Fig.3)</td><td>0.355</td><td>0.612</td><td>0.188</td></tr>
<tr><td>Left hand, Touch cheek, Bottom frequency(See Fig.5)</td><td>0.342</td><td>0.582</td><td>-0.192</td></tr>
<tr><td>Left hand, Tilt 15 Degree, Mid frequency(See Fig.7)</td><td>0.045</td><td>0.071</td><td>0.191</td></tr>
<tr><td>Right hand, Touch cheek, Mid frequency(See Fig.9)</td><td>0.285</td><td>0.462</td><td>-0.198</td></tr>
<tr><td>Right hand, Tilt 15 Degree, Mid frequency(See Fig.11)</td><td>0.042</td><td>0.067</td><td>-0.194</td></tr>
</table>

Table 12: SAR Values (Body with Headset HHS-100, 1900 MHz Band)

<table>
<tr><td rowspan="2">Limit of SAR (W/kg)</td><td>10 g Average</td><td>1 g Average</td><td rowspan="4">Power Drift (dB)</td></tr>
<tr><td>2.0</td><td>1.6</td></tr>
<tr><td rowspan="2">Test Case</td><td colspan="2">Measurement Result (W/kg)</td></tr>
<tr><td>10 g Average</td><td>1 g Average</td></tr>
<tr><td>Body, Towards Ground, Top frequency(See Fig.13)</td><td>0.281</td><td>0.512</td><td>0.020</td></tr>
<tr><td>Body, Towards Ground, Mid frequency(See Fig.15)</td><td>0.371</td><td>0.665</td><td>-0.066</td></tr>
<tr><td>Body, Towards Ground, Bottom frequency(See Fig.17)</td><td>0.332</td><td>0.589</td><td>0.019</td></tr>
</table>

Table 13: SAR Values (Body with Headset HHS-120, 1900 MHz Band)

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Body, Towards Ground, Top frequency(See Fig.19)	0.431	0.844	0.049
Body, Towards Ground, Mid frequency(See Fig.21)	0.550	1.05	-0.041
Body, Towards Ground, Bottom frequency(See Fig.23)	0.523	1	0.064

Table 14: SAR Values (Body with Data Cable DCA-100, 1900 MHz Band)

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Body, Towards Ground, Top frequency(See Fig.25)	0.240	0.463	-0.101
Body, Towards Ground, Mid frequency(See Fig.27)	0.303	0.591	-0.191
Body, Towards Ground, Bottom frequency(See Fig.29)	0.283	0.538	-0.100

Table 15: SAR Values (Push-to-Talk with Data Cable DCA-100, 1900 MHz Band)

Limit of SAR (W/kg)	10 g Average	1 g Average	Power Drift (dB)
	2.0	1.6	
Test Case	Measurement Result (W/kg)		
	10 g Average	1 g Average	
Body, Towards Phantom, Top frequency(See Fig.31)	0.056	0.087	-0.008
Body, Towards Phantom, Mid frequency(See Fig.33)	0.057	0.088	0.188
Body, Towards Phantom, Bottom frequency(See Fig.35)	0.043	0.067	-0.193

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

SN	a	Type	c	d	e = f(d,k)	f	h = c x f / e	k
	Uncertainty Component		Tol. (± %)	Prob. Dist.	Div.	c_i (1 g)	1 g u_i (±%)	v_i
1	System repetivity	A	0.5	N	1	1	0.5	9
	Measurement System							
2	Probe Calibration	B	5	N	2	1	2.5	∞
3	Axial Isotropy	B	4.7	R	√3	$(1-cp)^{1/2}$	4.3	∞
4	Hemispherical Isotropy	B	9.4	R	√3	$\sqrt{c_p}$		∞
5	Boundary Effect	B	0.4	R	√3	1	0.23	∞
6	Linearity	B	4.7	R	√3	1	2.7	∞
7	System Detection Limits	B	1.0	R	√3	1	0.6	∞
8	Readout Electronics	B	1.0	N	1	1	1.0	∞
9	RF Ambient Conditions	B	3.0	R	√3	1	1.73	∞
10	Probe Positioner Mechanical Tolerance	B	0.4	R	√3	1	0.2	∞
11	Probe Positioning with respect to Phantom Shell	B	2.9	R	√3	1	1.7	∞
12	Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	√3	1	2.3	∞
	Test sample Related							
13	Test Sample Positioning	A	4.9	N	1	1	4.9	N-1
14	Device Holder Uncertainty	A	6.1	N	1	1	6.1	N-1
15	Output Power Variation - SAR drift measurement	B	5.0	R	√3	1	2.9	∞
	Phantom and Tissue Parameters							
16	Phantom Uncertainty (shape and thickness tolerances)	B	1.0	R	√3	1	0.6	∞
17	Liquid Conductivity - deviation from target values	B	5.0	R	√3	0.64	1.7	∞
18	Liquid Conductivity - measurement uncertainty	B	5.0	N	1	0.64	1.7	M
19	Liquid Permittivity - deviation from target values	B	5.0	R	√3	0.6	1.7	∞
20	Liquid Permittivity - measurement uncertainty	B	5.0	N	1	0.6	1.7	M
	Combined Standard Uncertainty			RSS			11.25	
	Expanded Uncertainty (95% CONFIDENCE INTERVAL)			K=2			22.5	

10 MAIN TEST INSTRUMENTS

Table 16: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 30,2006	One year
02	Dielectric Probe Kit	Agilent 85070C	US99360113	No Calibration Requested	
03	Power meter	NRVD	101253	No Calibration Requested	
04	Power sensor	NRV-Z5	100331		
05	Power sensor	NRV-Z6	100011		
06	Signal Generator	MG 3633A	M73386	No Calibration Requested	
07	Amplifier	AT 50S1G4A	26549	No Calibration Requested	
08	BTS	CMU 200	105948	August 15, 2006	One year
09	E-field Probe	SPEAG ET3DV6	1736	November 25, 2005	One year
10	DAE	SPEAG DAE3	589	October 21, 2005	One year
11	Dipole	D1900V2	541	September 1, 2005	Two years

11 TEST PERIOD

The test is performed from September 5th, 2006 to September 7th, 2006.

12 CONCLUSION

The BenQ AF51 mobile phone is in compliance with the Federal Communications Commission (FCC) Guidelines [OET 65] for uncontrolled exposure.

The phone was tested in addition to the head positions in the following configurations:
Body worn with the following accessories:

- GSM with headset HHS-100 (6mm distance)
- GSM with headset HHS-120 (6mm distance)
- GPRS (class 8) with data cable DCA-100 (6mm distance)
- Push-to-Talk mode (GPRS class 8) (25mm distance)

For body worn operation, this phone has been tested and meets the FCC RF exposure guidelines when used with the BenQ accessories supplied or designated for this product. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

13 TEST LOCATION

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

END OF REPORT BODY

ANNEX A MEASUREMENT PROCESS

The evaluation was performed with the following procedure:

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

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

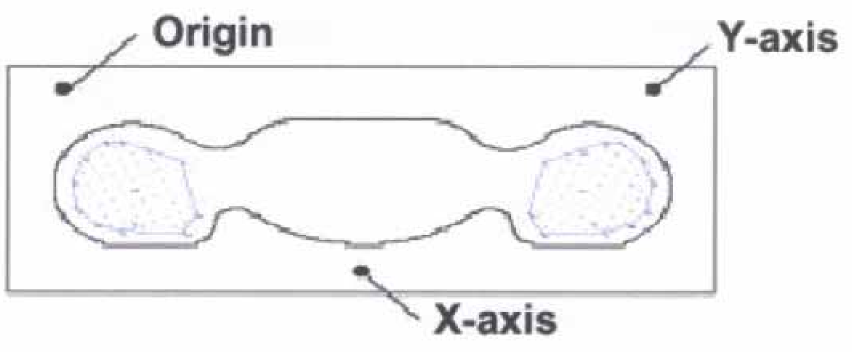
Step 3: Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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

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

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

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



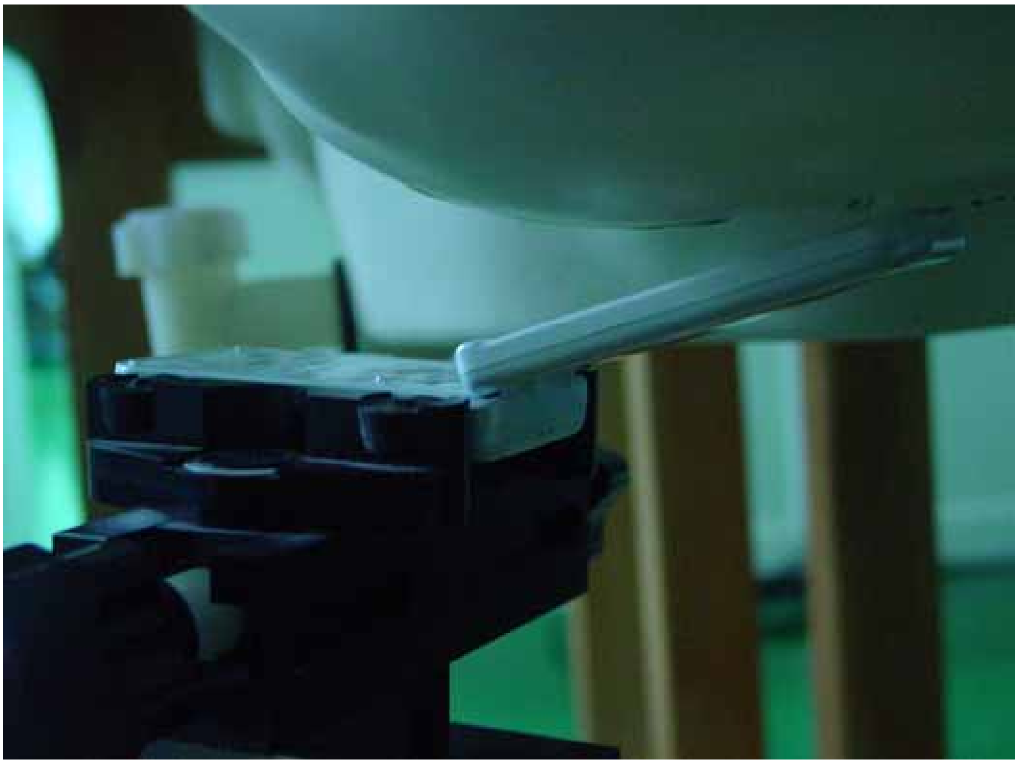
Picture A: SAR Measurement Points in Area Scan

ANNEX B TEST LAYOUT

Picture B1: Specific Absorption Rate Test Layout

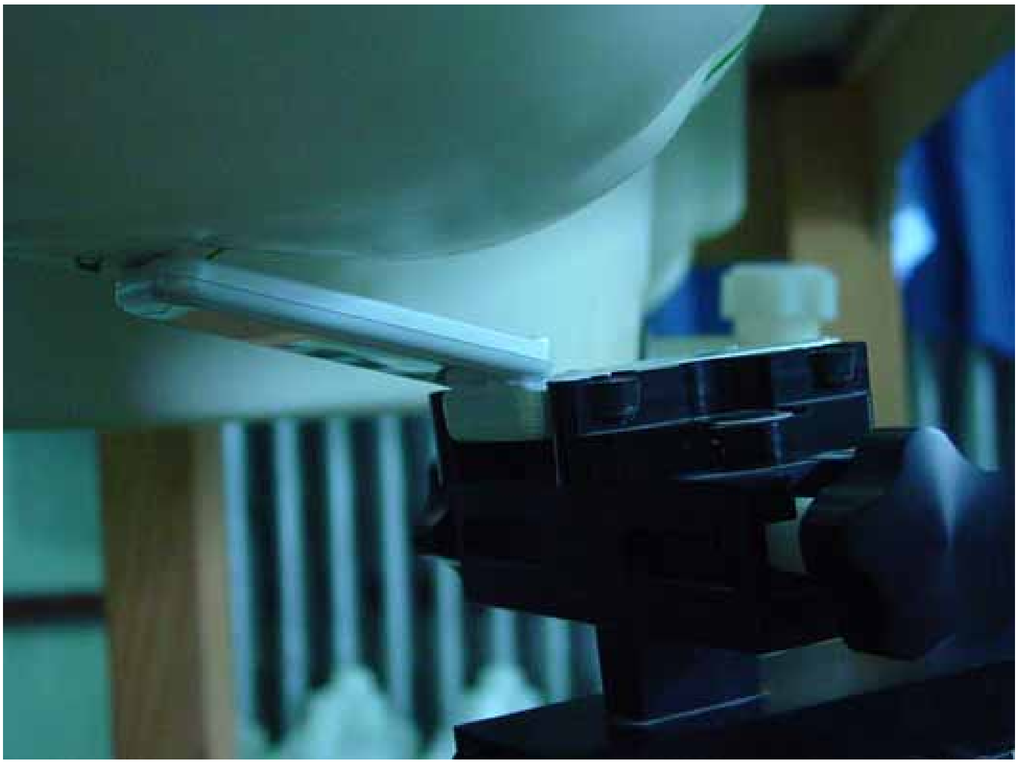
Picture B2: Liquid depth in the Flat Phantom (PCS 1900MHz)

Picture B4: Left Hand Touch Cheek Position

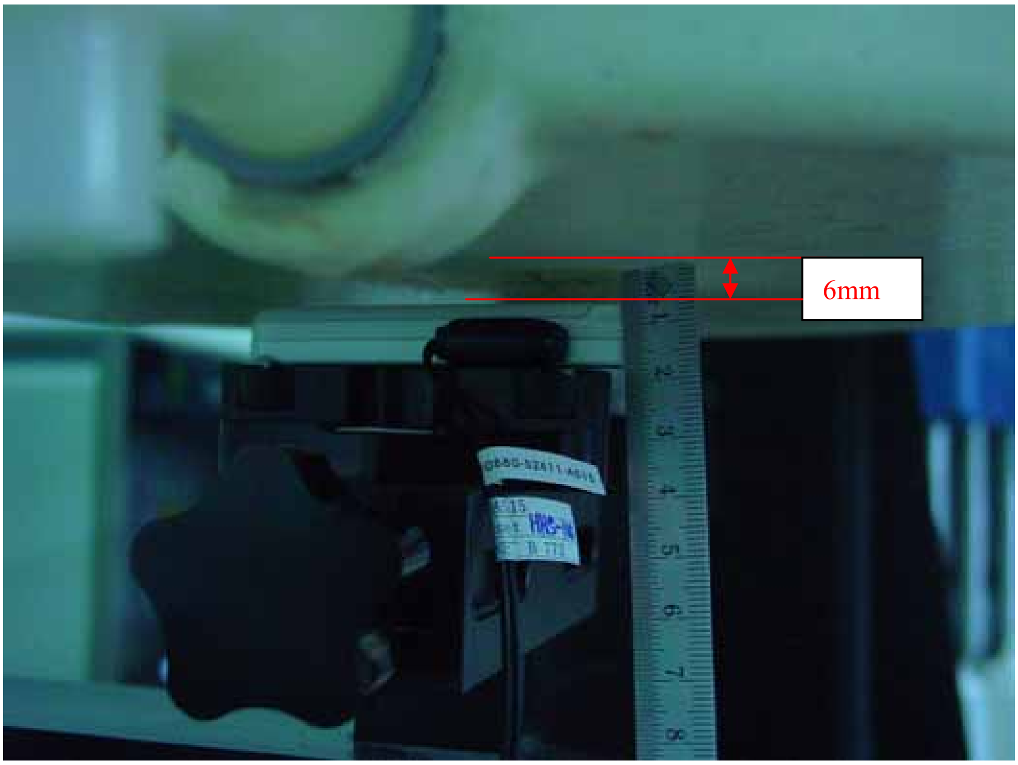


Picture B5: Left Hand Tilt 15° Position

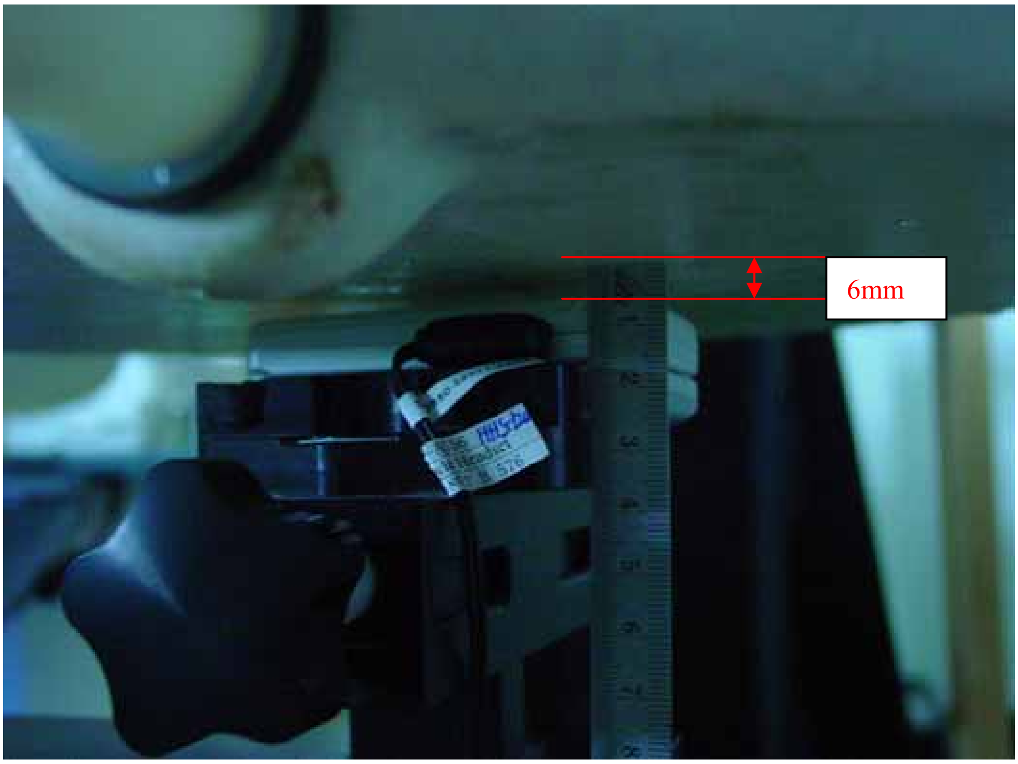
Picture B6: Right Hand Touch Cheek Position



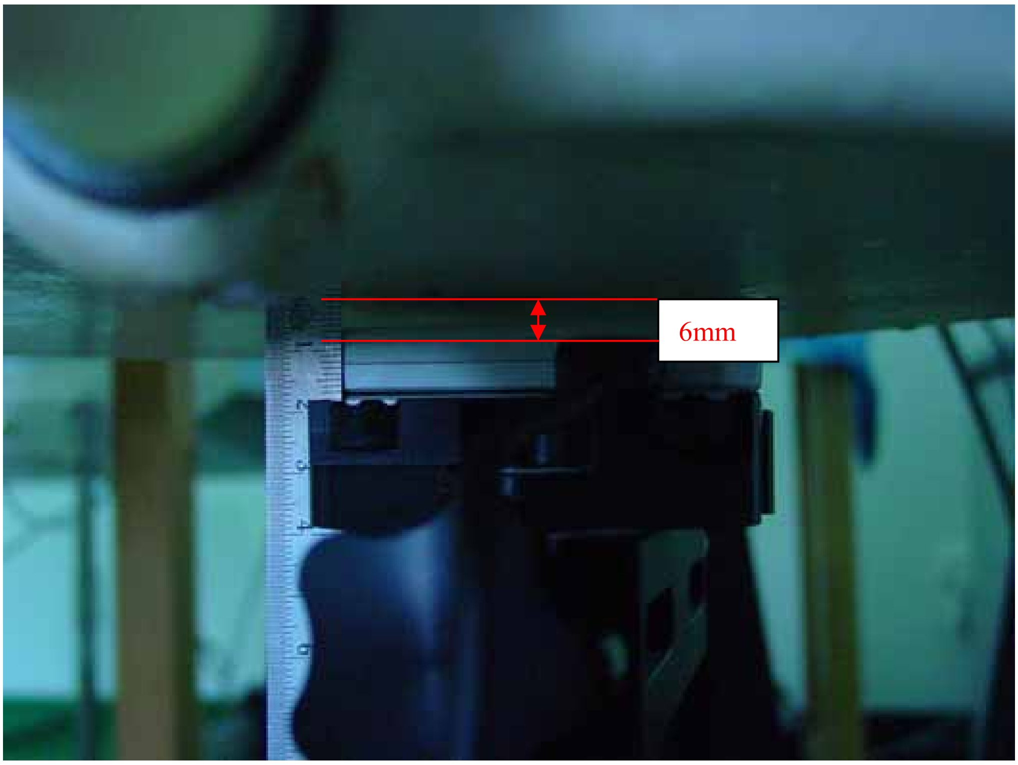
Picture B7: Right Hand Tilt 15° Position



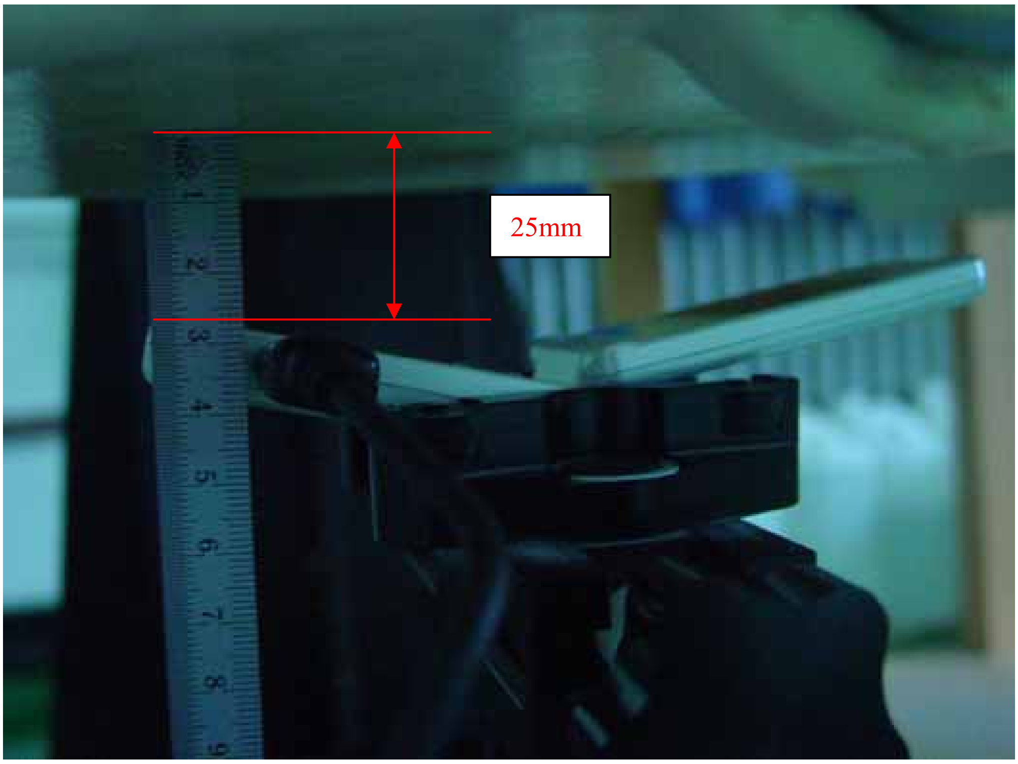
Picture B8: Body-worn Position with Headset HHS-100 (Towards ground, the distance from handset to the bottom of the Phantom is 6mm)



Picture B9: Body-worn Position with Headset HHS-120 (Towards ground, the distance from handset to the bottom of the Phantom is 6mm)



Picture B10: Body-worn Position with Data Cable DCA-100 (Towards ground, the distance from handset to the bottom of the Phantom is 6mm)



Picture B11: Push-to-Talk with DCA-100 (Towards phantom, the distance from handset to the bottom of the Phantom is 25mm)

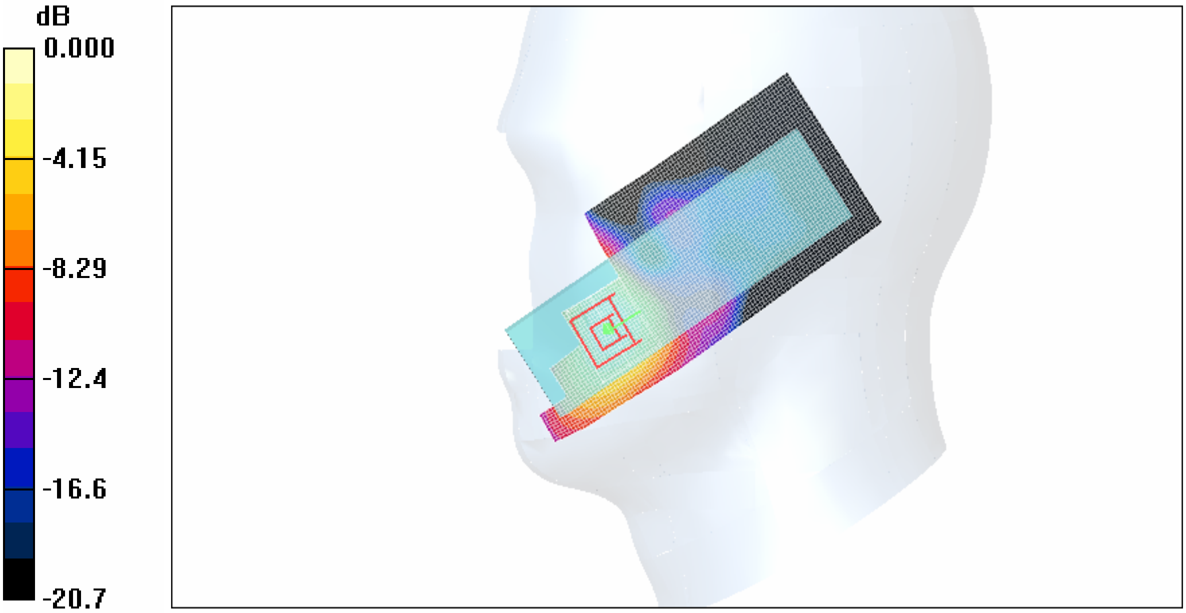
ANNEX C GRAPH RESULTS

1900 Left Cheek High

Date/Time: 2006-9-5 21:03:16
Electronics: DAE3 Sn589
Medium: Head 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

Cheek High/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.691 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.32 V/m; Power Drift = 0.195 dB
Peak SAR (extrapolated) = 0.951 W/kg
SAR(1 g) = 0.619 mW/g; SAR(10 g) = 0.362 mW/g
Maximum value of SAR (measured) = 0.676 mW/g



0 dB = 0.676mW/g

Fig. 1 Left Hand Touch Cheek PCS 1900MHz CH810

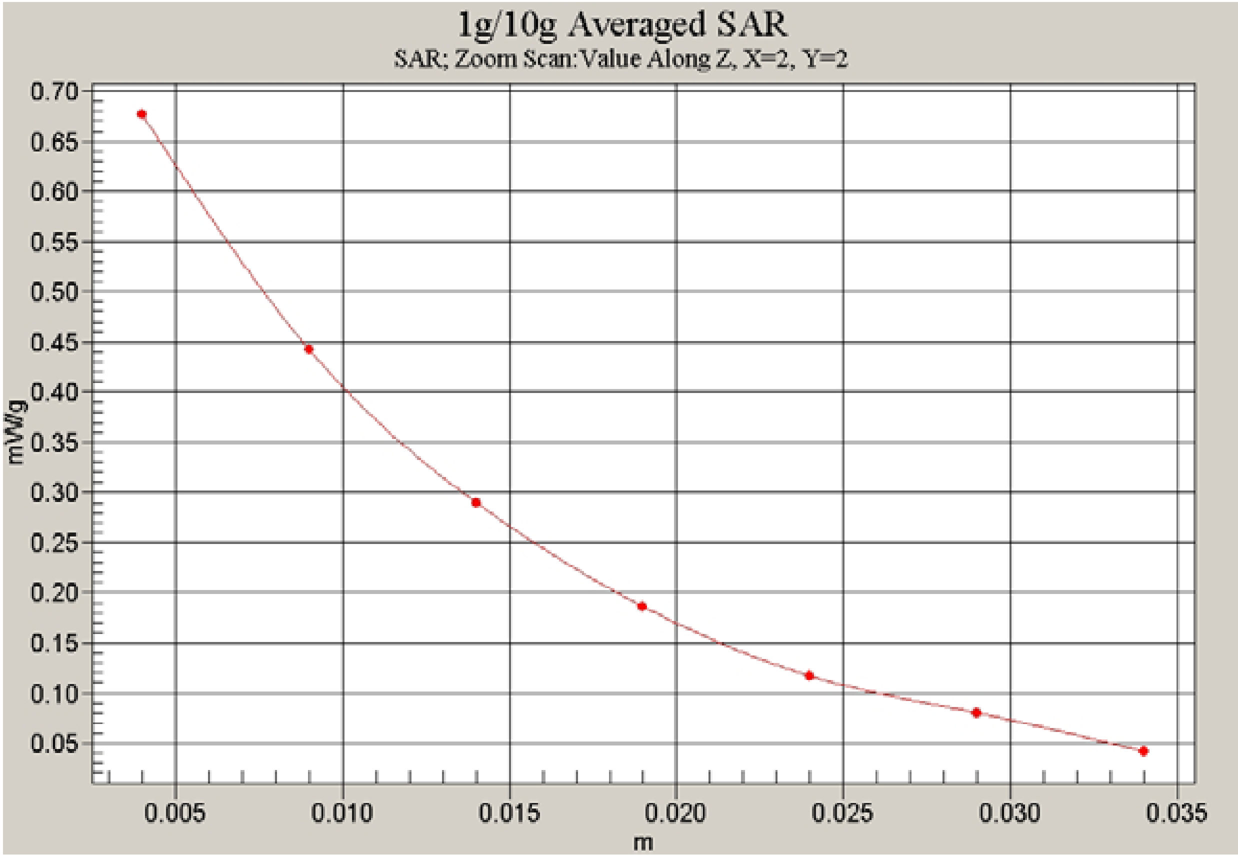
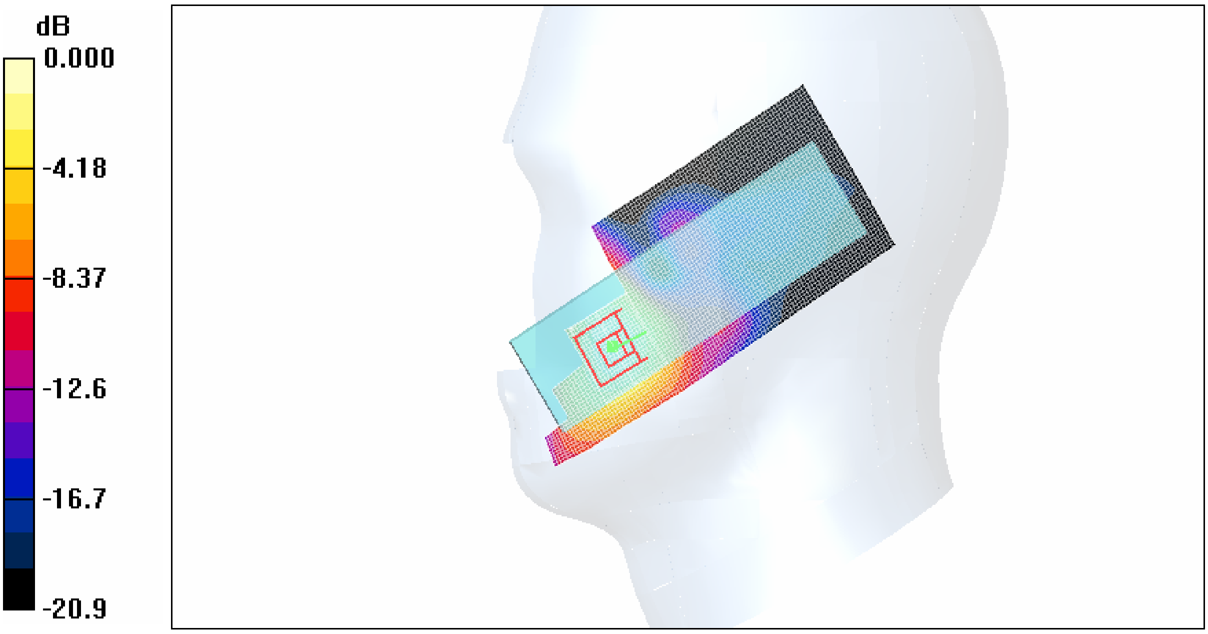


Fig. 2 Z-Scan at power reference point (PCS 1900MHz CH810)

1900 Left Cheek Middle
Date/Time: 2006-9-5 20:03:01
Electronics: DAE3 Sn589
Medium: Head 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

Cheek Middle/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.686 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.49 V/m; Power Drift = 0.188 dB
Peak SAR (extrapolated) = 0.970 W/kg
SAR(1 g) = 0.612 mW/g; SAR(10 g) = 0.355 mW/g
Maximum value of SAR (measured) = 0.667 mW/g



0 dB = 0.667mW/g

Fig. 3 Left Hand Touch Cheek PCS 1900MHz CH661

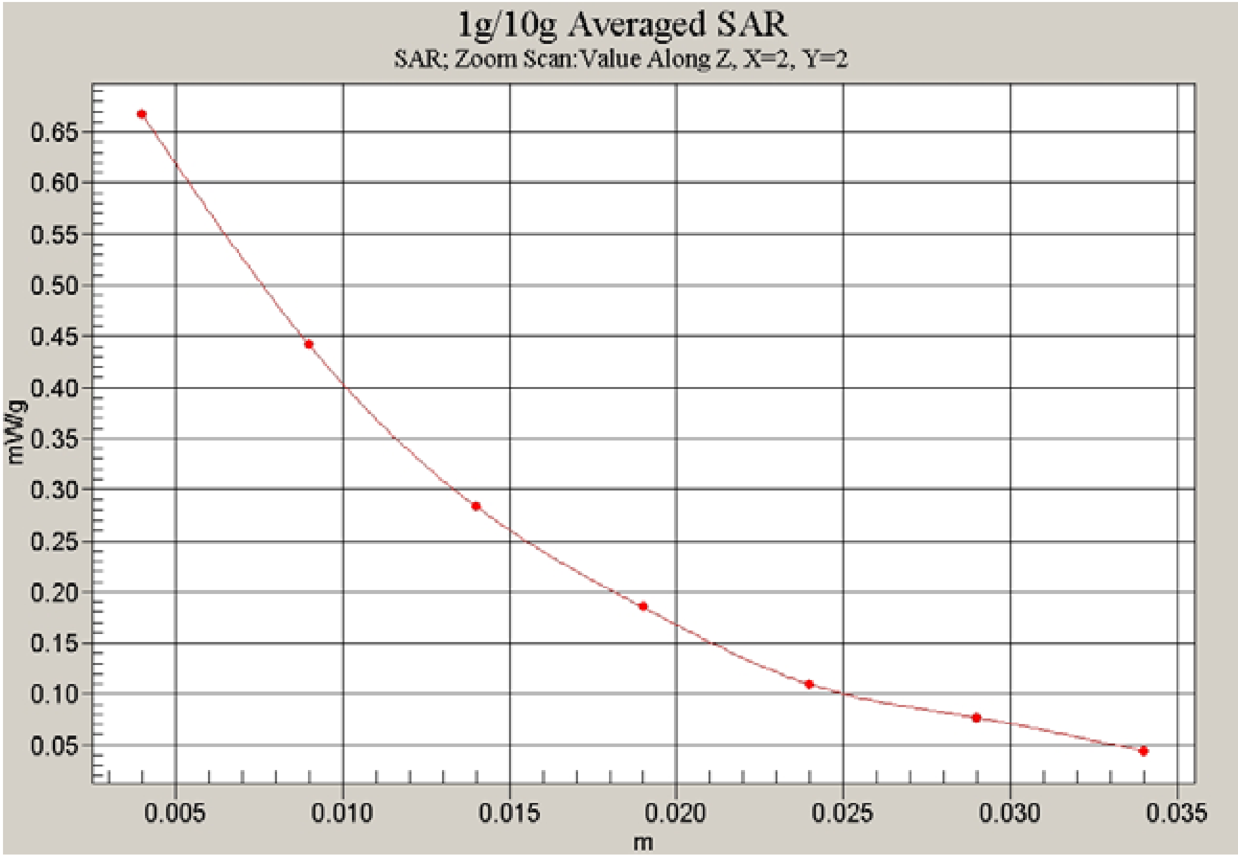
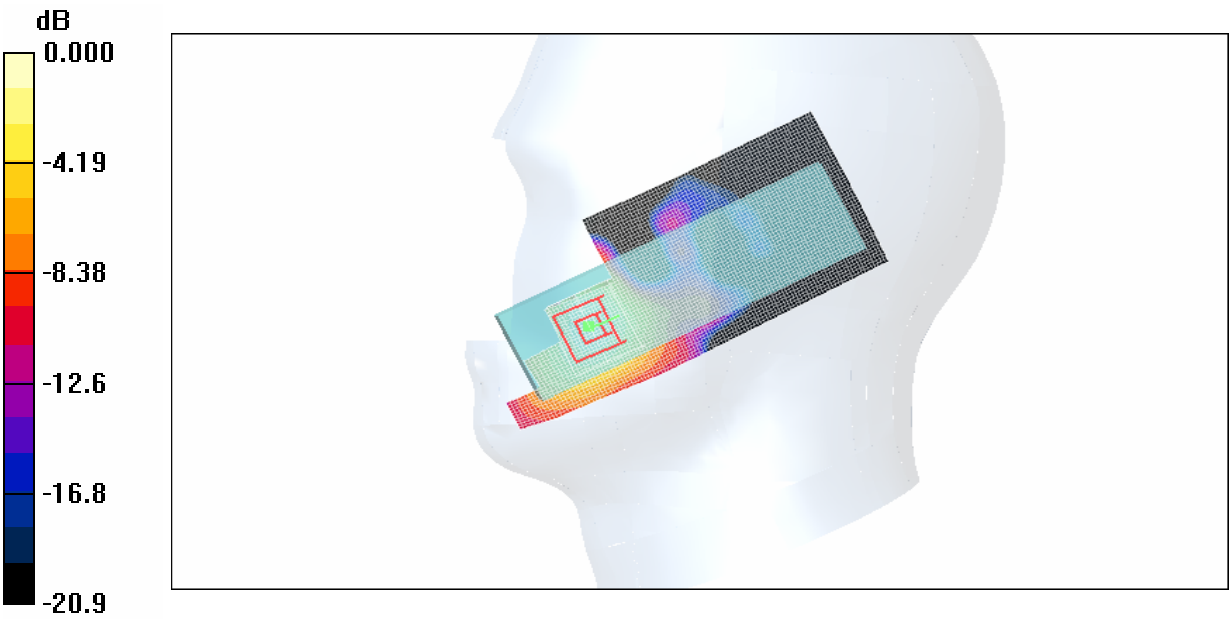


Fig. 4 Z-Scan at power reference point (PCS 1900MHz CH661)

1900 Left Cheek Low
Date/Time: 2006-9-5 21:18:41
Electronics: DAE3 Sn589
Medium: Head 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1850.2 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

Cheek Low/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.649 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.74 V/m; Power Drift = -0.192 dB
Peak SAR (extrapolated) = 0.897 W/kg
SAR(1 g) = 0.582 mW/g; SAR(10 g) = 0.342 mW/g
Maximum value of SAR (measured) = 0.626 mW/g



0 dB = 0.626mW/g

Fig. 5 Left Hand Touch Cheek PCS 1900MHz CH512

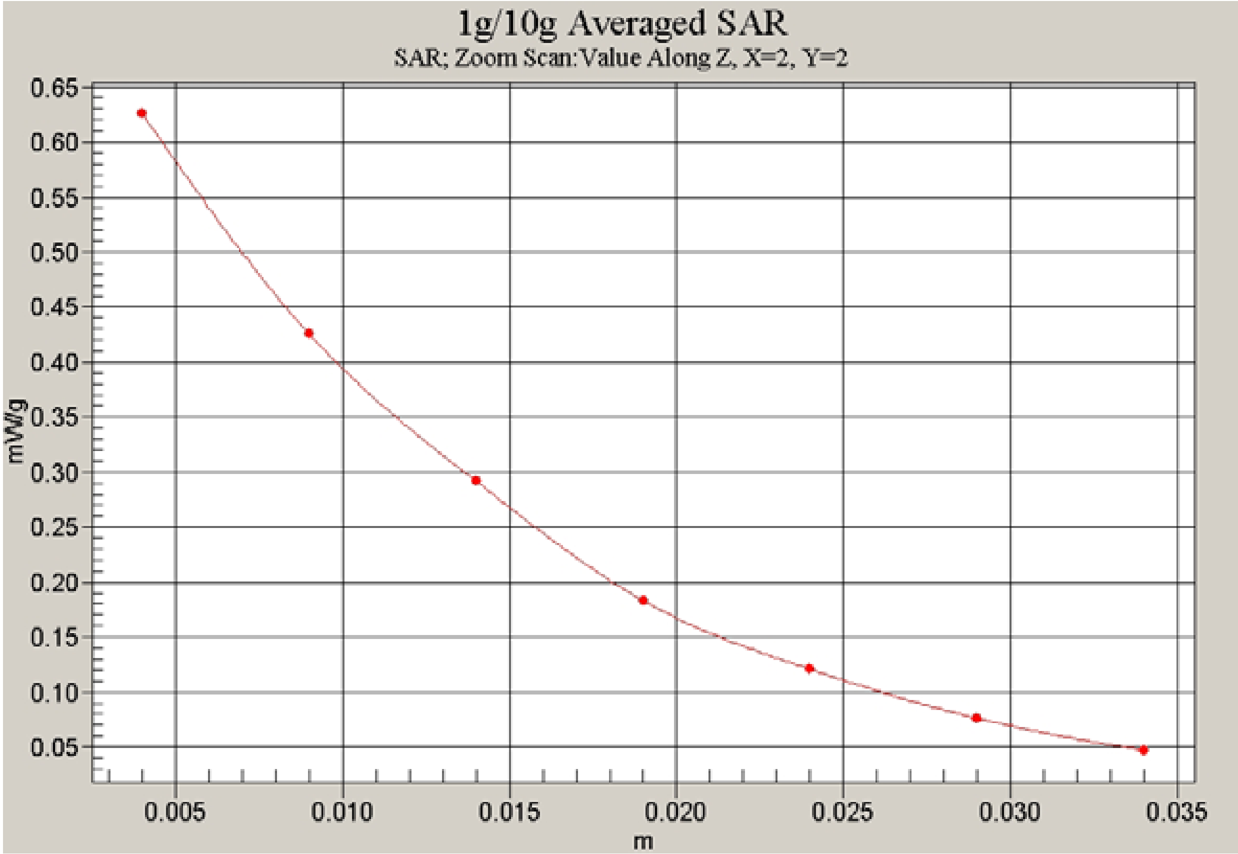


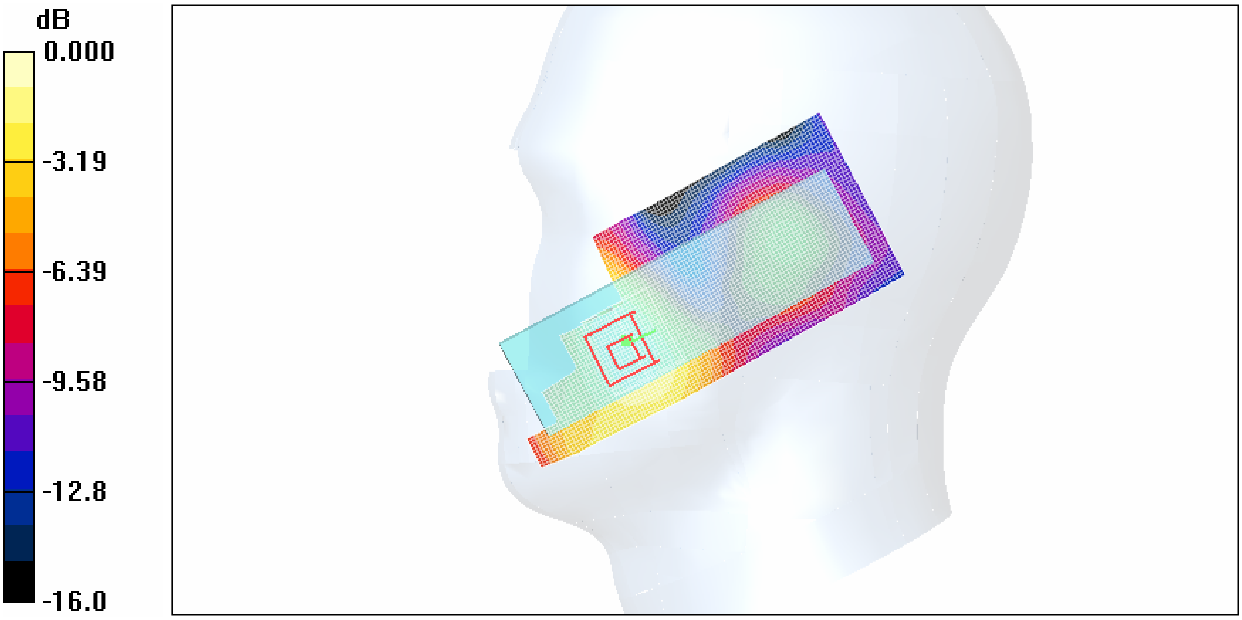
Fig. 6 Z-Scan at power reference point (PCS 1900MHz CH512)

1900 Left Tilt Middle

Date/Time: 2006-9-5 20:16:57
Electronics: DAE3 Sn589
Medium: Head 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

Tilt Middle/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.078 mW/g

Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.46 V/m; Power Drift = 0.191 dB
Peak SAR (extrapolated) = 0.104 W/kg
SAR(1 g) = 0.071 mW/g; SAR(10 g) = 0.045 mW/g
Maximum value of SAR (measured) = 0.076 mW/g



0 dB = 0.076mW/g

Fig. 7 Left Hand Tilt 15°PCS 1900MHz CH661

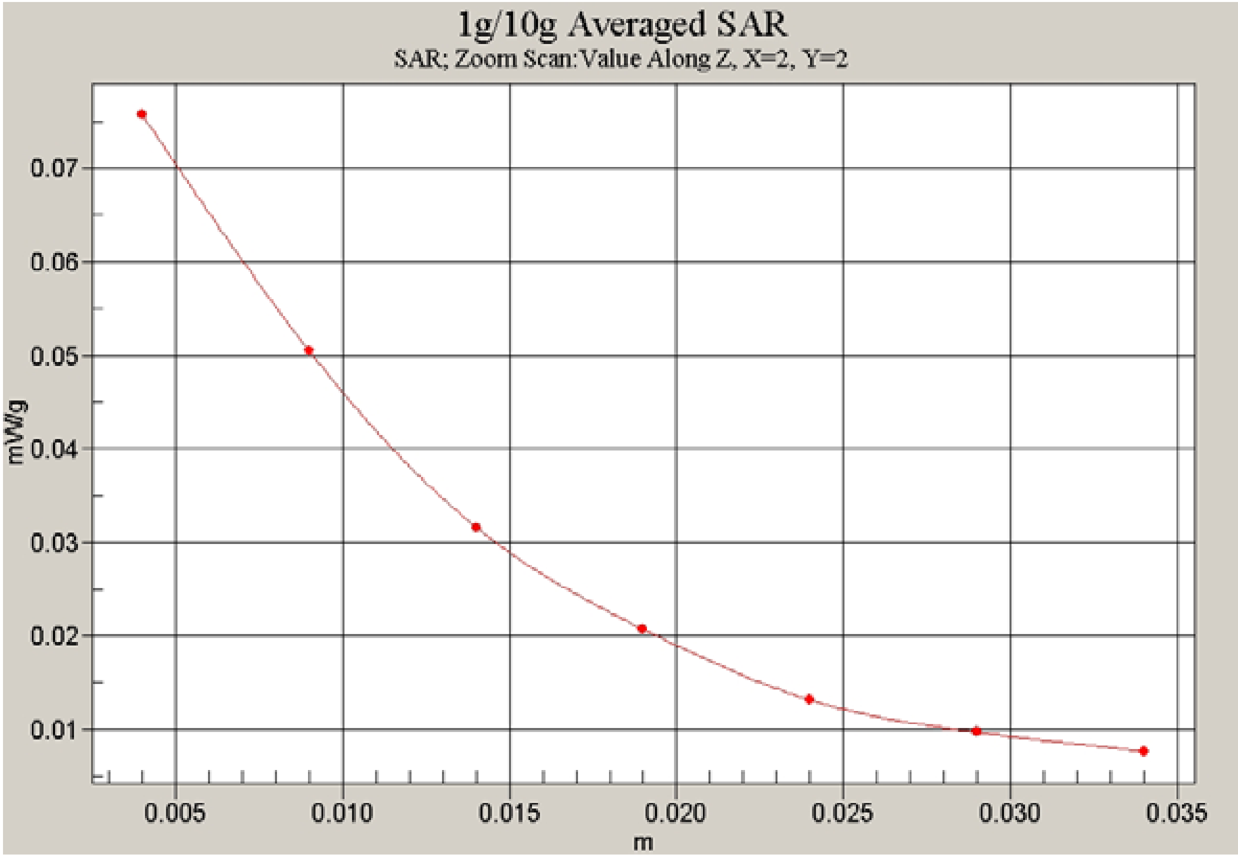
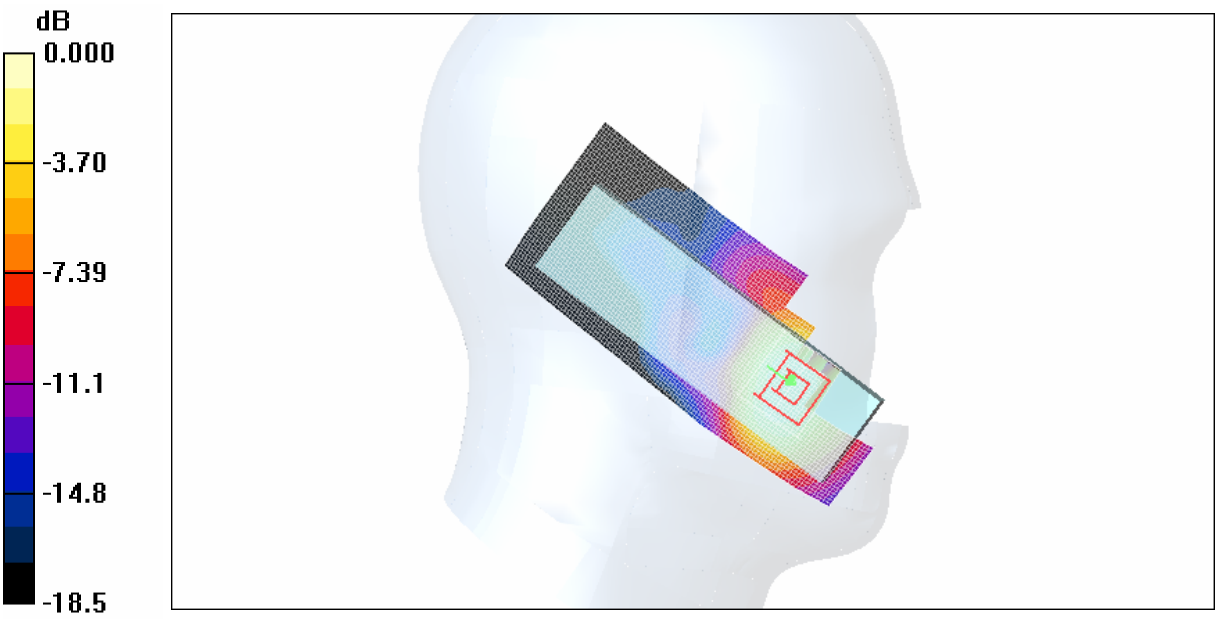


Fig. 8 Z-Scan at power reference point (PCS 1900MHz CH661)

1900 Right Cheek Middle
Date/Time: 2006-9-5 20:32:50
Electronics: DAE3 Sn589
Medium: Head 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

Cheek Middle/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.542 mW/g

Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.95 V/m; Power Drift = -0.198 dB
Peak SAR (extrapolated) = 0.670 W/kg
SAR(1 g) = 0.462 mW/g; SAR(10 g) = 0.285 mW/g
Maximum value of SAR (measured) = 0.500 mW/g



0 dB = 0.500mW/g

Fig.9 Right Hand Touch Cheek PCS 1900MHz CH661

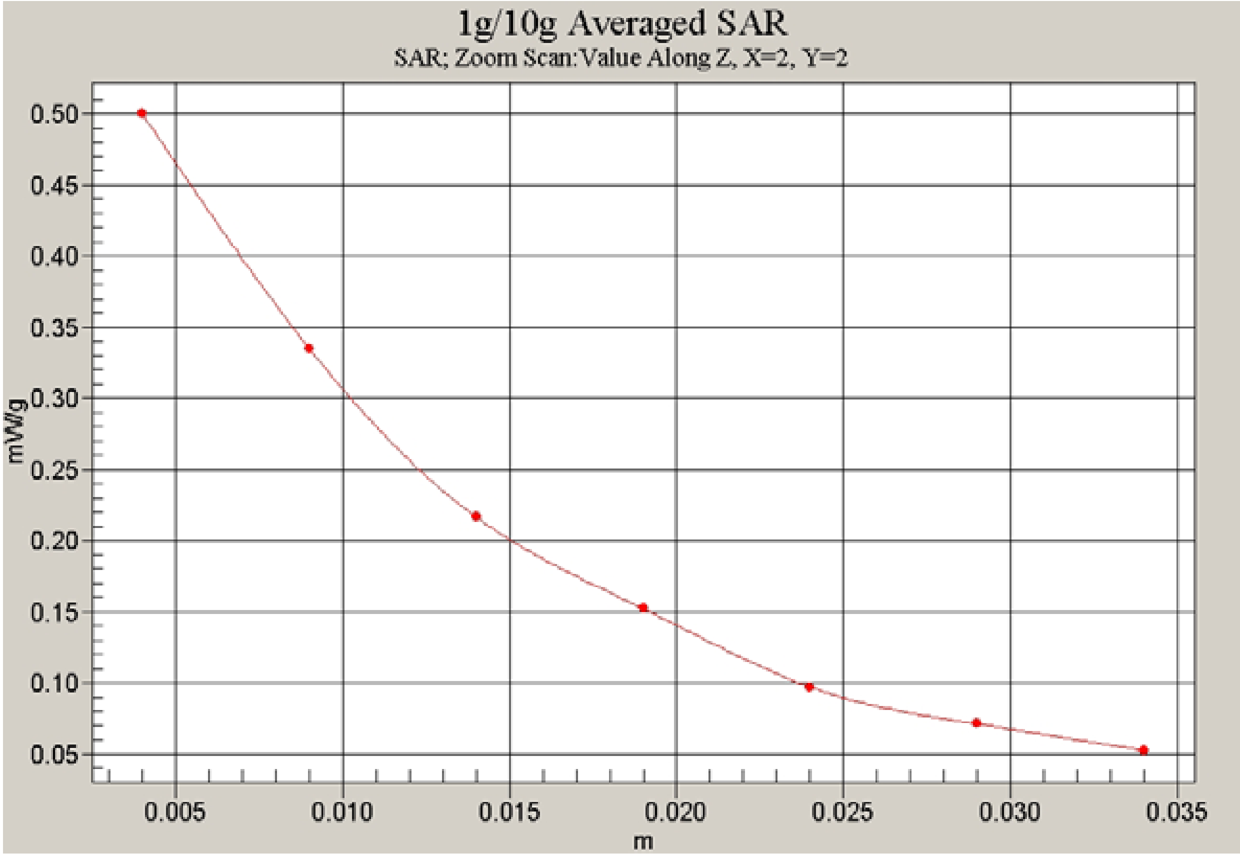


Fig. 10 Z-Scan at power reference point (PCS 1900MHz CH661)

1900 Right Tilt Middle

Date/Time: 2006-9-5 20:46:54

Electronics: DAE3 Sn589

Medium: Head 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

Tilt Middle/Area Scan (51x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.074 mW/g

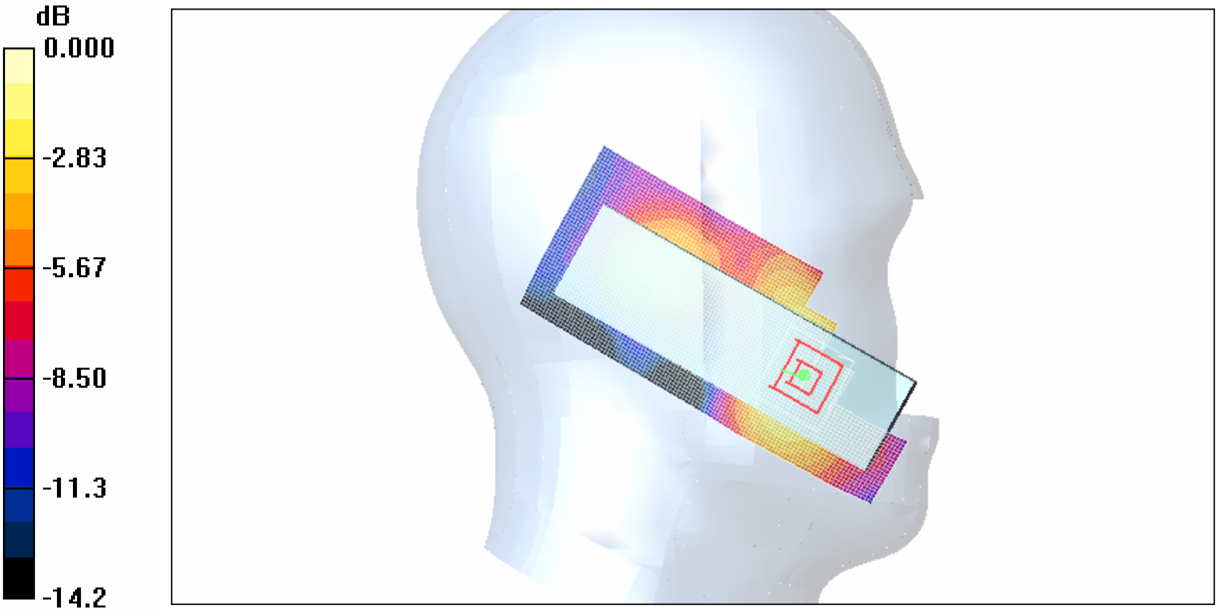
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.50 V/m; Power Drift = -0.194 dB

Peak SAR (extrapolated) = 0.109 W/kg

SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.042 mW/g

Maximum value of SAR (measured) = 0.071 mW/g



0 dB = 0.071mW/g

Fig. 11 Right Hand Tilt 15°PCS 1900MHz CH661

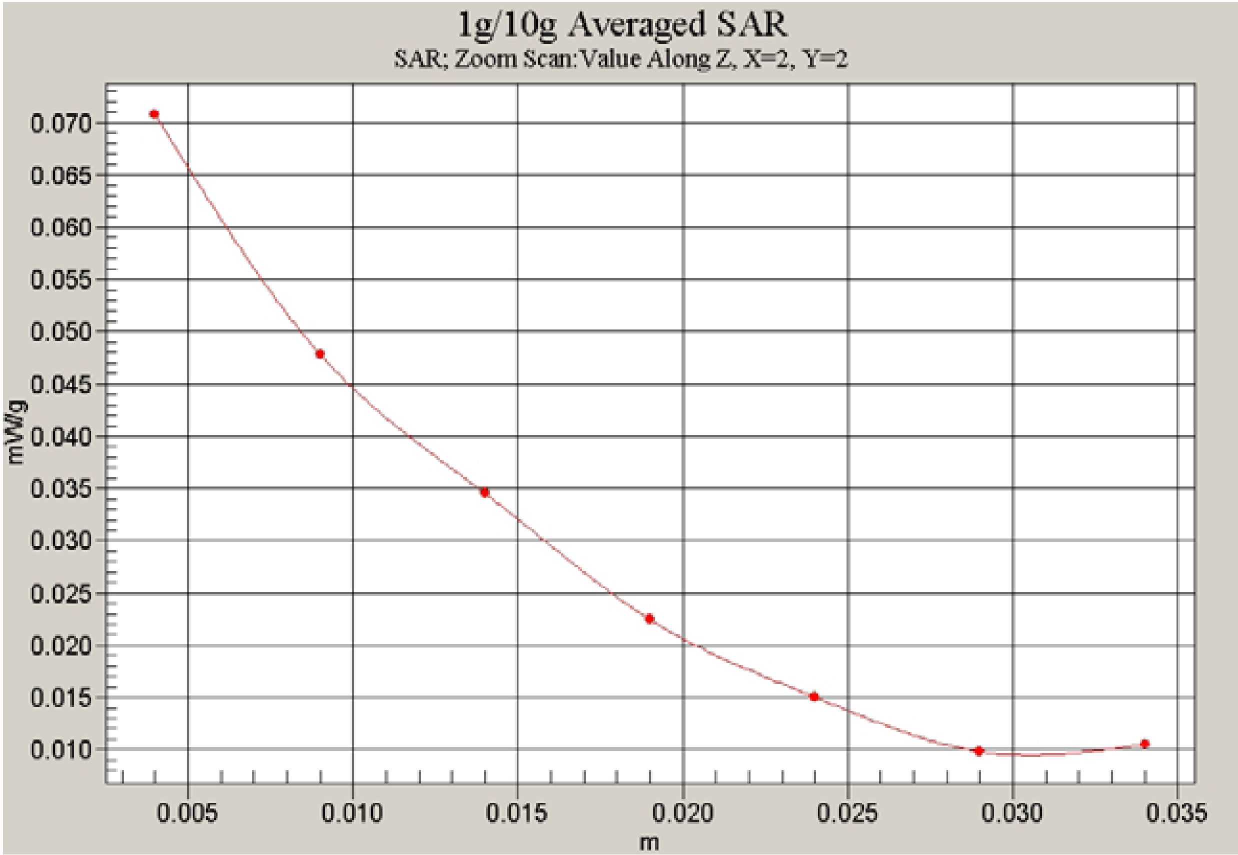


Fig. 12 Z-Scan at power reference point (PCS 1900MHz CH661)

1900 Body with Headset HHS-100 Towards Ground High

Date/Time: 2006-9-6 13:02:27

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground High,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

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

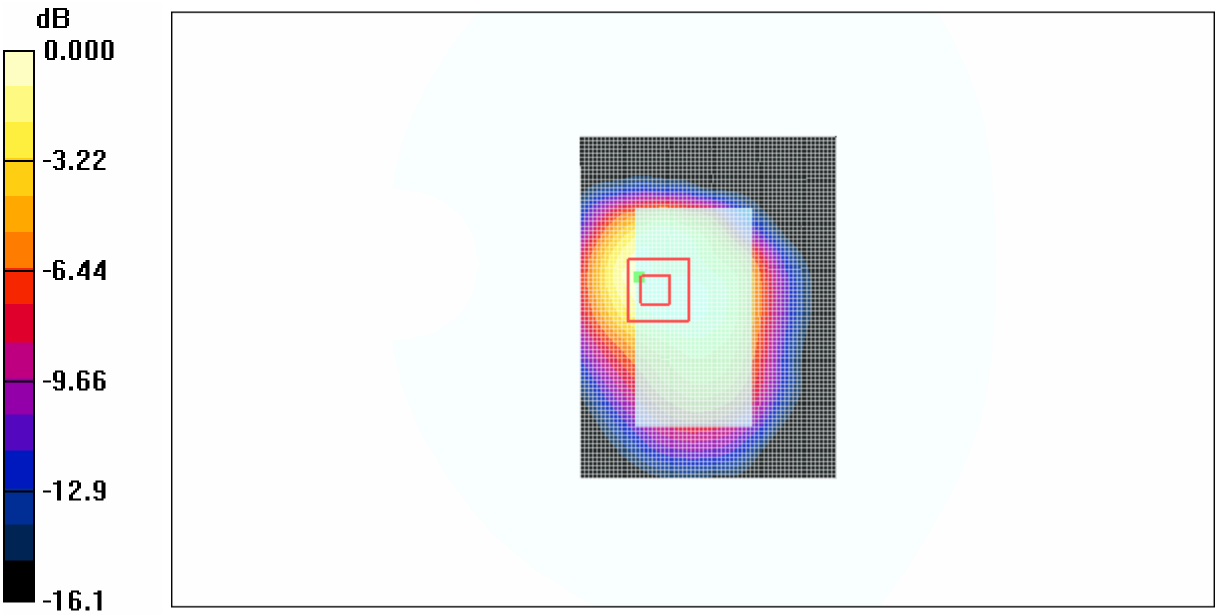
Towards Ground High,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.1 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 0.982 W/kg

SAR(1 g) = 0.512 mW/g; SAR(10 g) = 0.281 mW/g

Maximum value of SAR (measured) = 0.552 mW/g



0 dB = 0.552mW/g

Fig. 13 PCS 1900MHz, Body with Headset HHS-100, Towards Ground, CH810

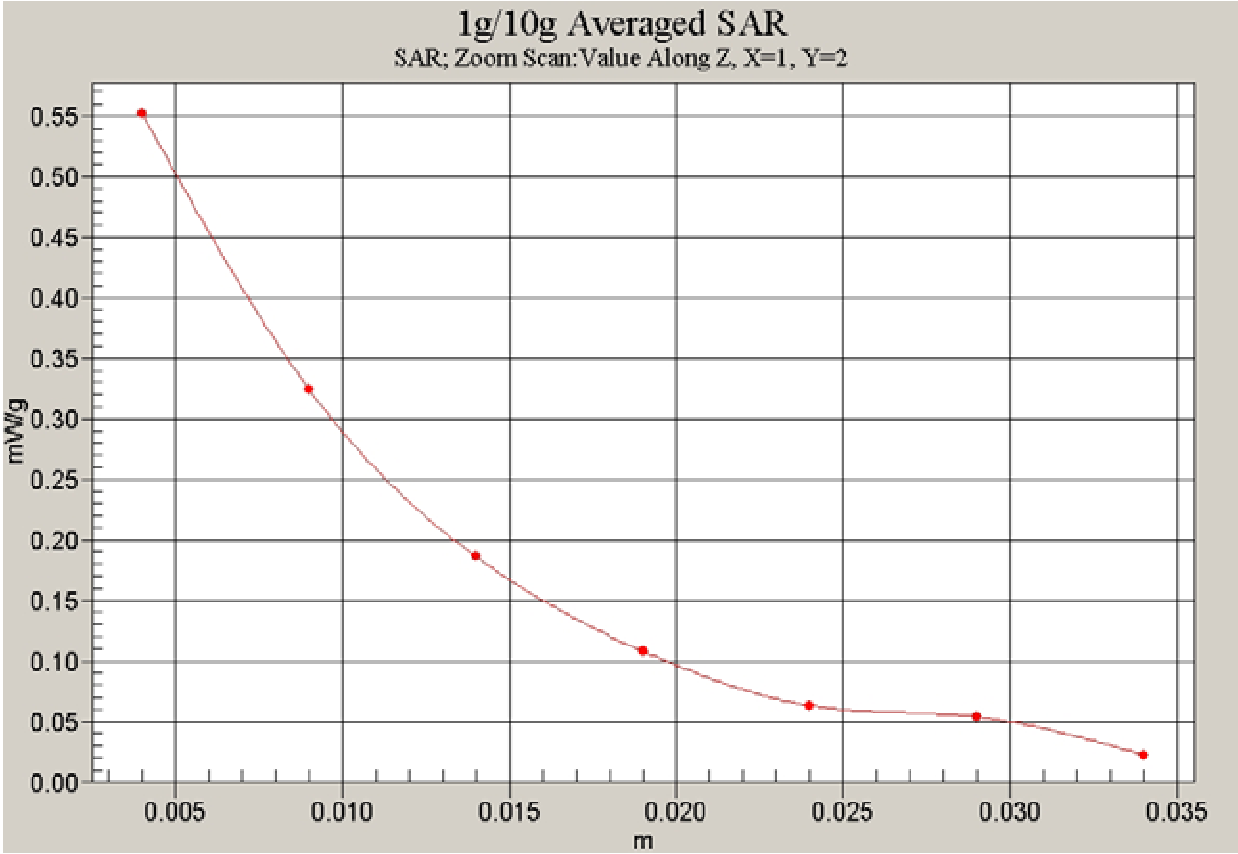


Fig. 14 Z-Scan at power reference point (PCS 1900MHz, Body with Headset HHS-100, Towards Ground, CH810)

1900 Body Headset HHS-100 Towards Ground Middle

Date/Time: 2006-9-6 12:47:52

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground Middle,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.660 mW/g

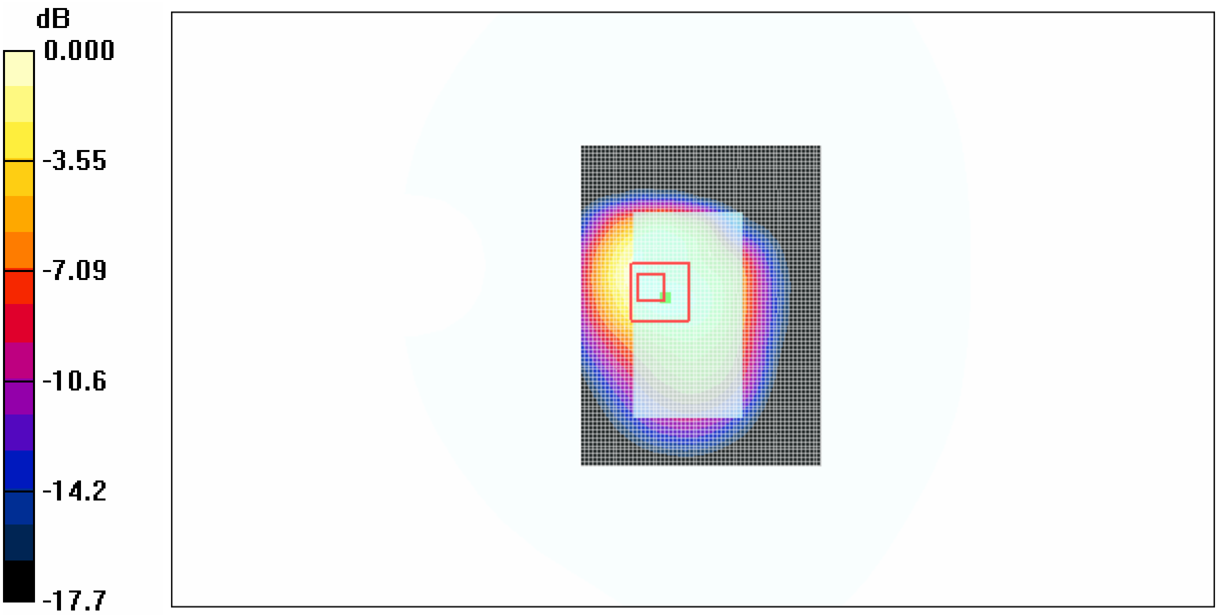
Towards Ground Middle,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.6 V/m; Power Drift = -0.066 dB

Peak SAR (extrapolated) = 1.28 W/kg

SAR(1 g) = 0.665 mW/g; SAR(10 g) = 0.371 mW/g

Maximum value of SAR (measured) = 0.705 mW/g



0 dB = 0.705mW/g

Fig. 15 PCS 1900MHz, Body with Headset HHS-100, Towards Ground, CH661

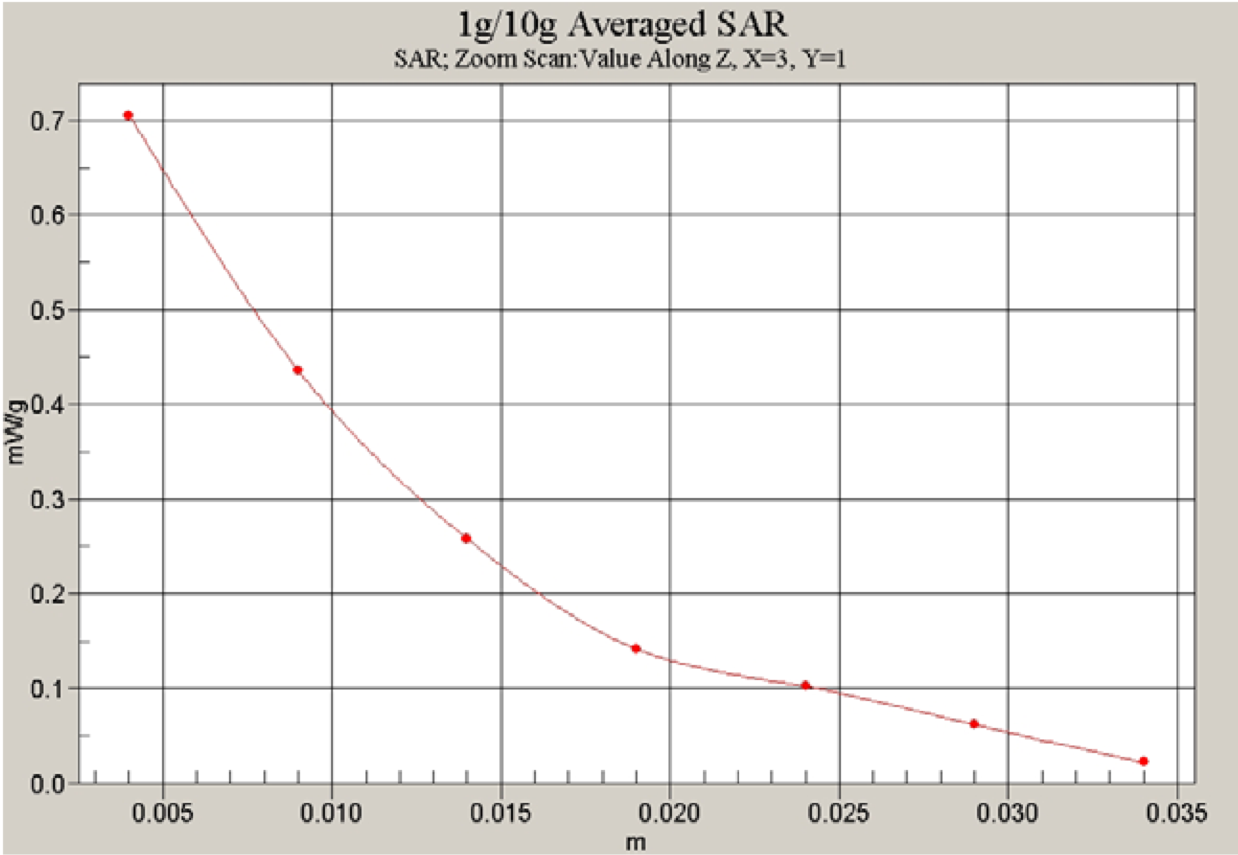


Fig. 16 Z-Scan at power reference point (PCS 1900MHz, Body with Headset HHS-100, Towards Ground, CH661)

1900 Body Headset HHS-100 Towards Ground Low

Date/Time: 2006-9-6 13:17:41

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground Low,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.608 mW/g

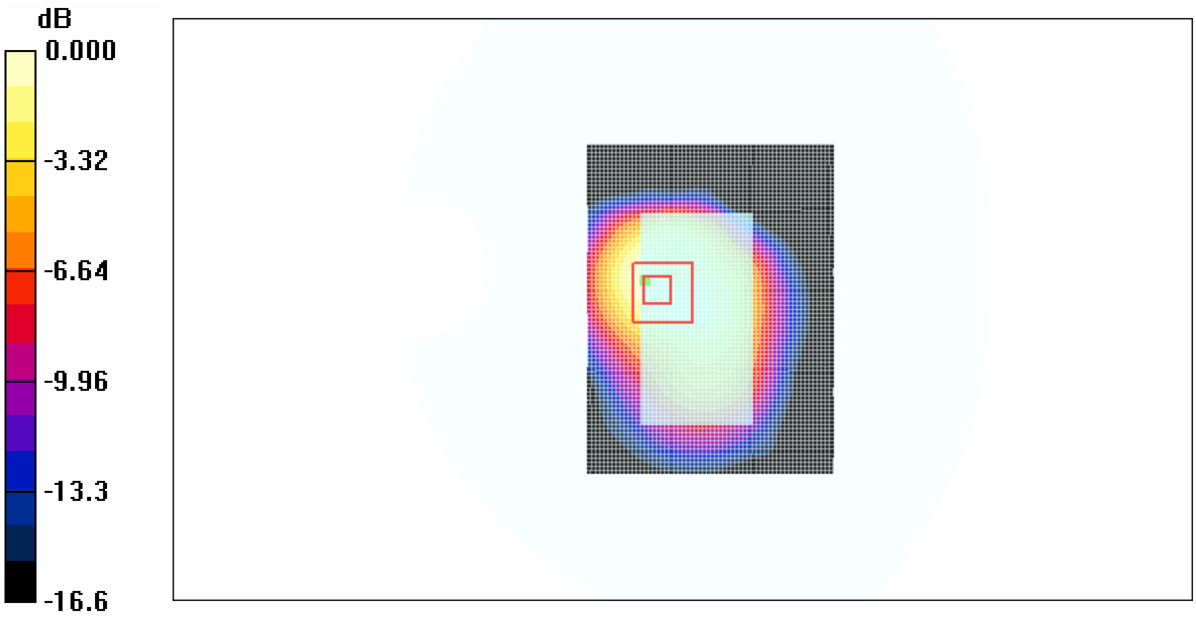
Towards Ground Low,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.1 V/m; Power Drift = 0.019 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.589 mW/g; SAR(10 g) = 0.332 mW/g

Maximum value of SAR (measured) = 0.637 mW/g



0 dB = 0.637mW/g

Fig. 17 PCS 1900MHz, Body with Headset HHS-100, Towards Ground, CH512

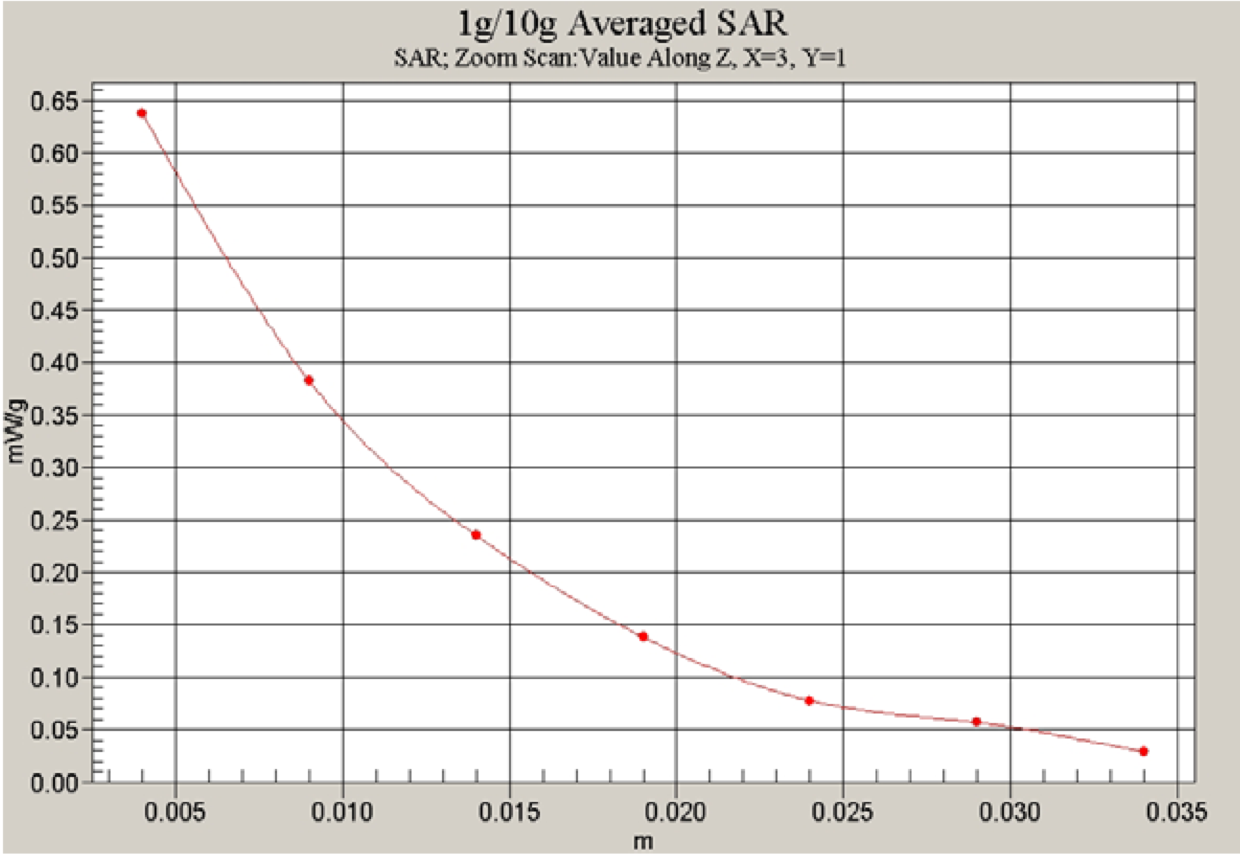


Fig. 18 Z-Scan at power reference point (PCS 1900MHz, Body with Headset HHS-100, Towards Ground, CH512)

1900 Body Headset HHS-120 Towards Ground High

Date/Time: 2006-9-6 9:09:45

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground High,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.837 mW/g

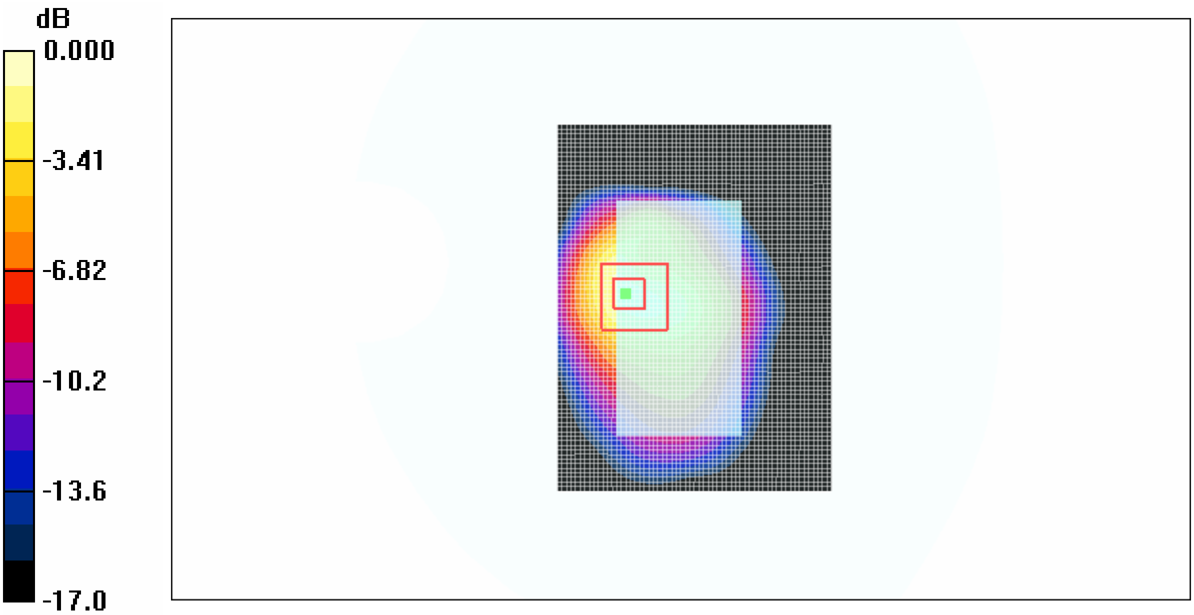
Towards Ground High,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.8 V/m; Power Drift = 0.049 dB

Peak SAR (extrapolated) = 1.73 W/kg

SAR(1 g) = 0.844 mW/g; SAR(10 g) = 0.431 mW/g

Maximum value of SAR (measured) = 0.965 mW/g



0 dB = 0.965mW/g

Fig. 19 PCS 1900MHz, Body with Headset HHS-120, Towards Ground with GPRS, CH810

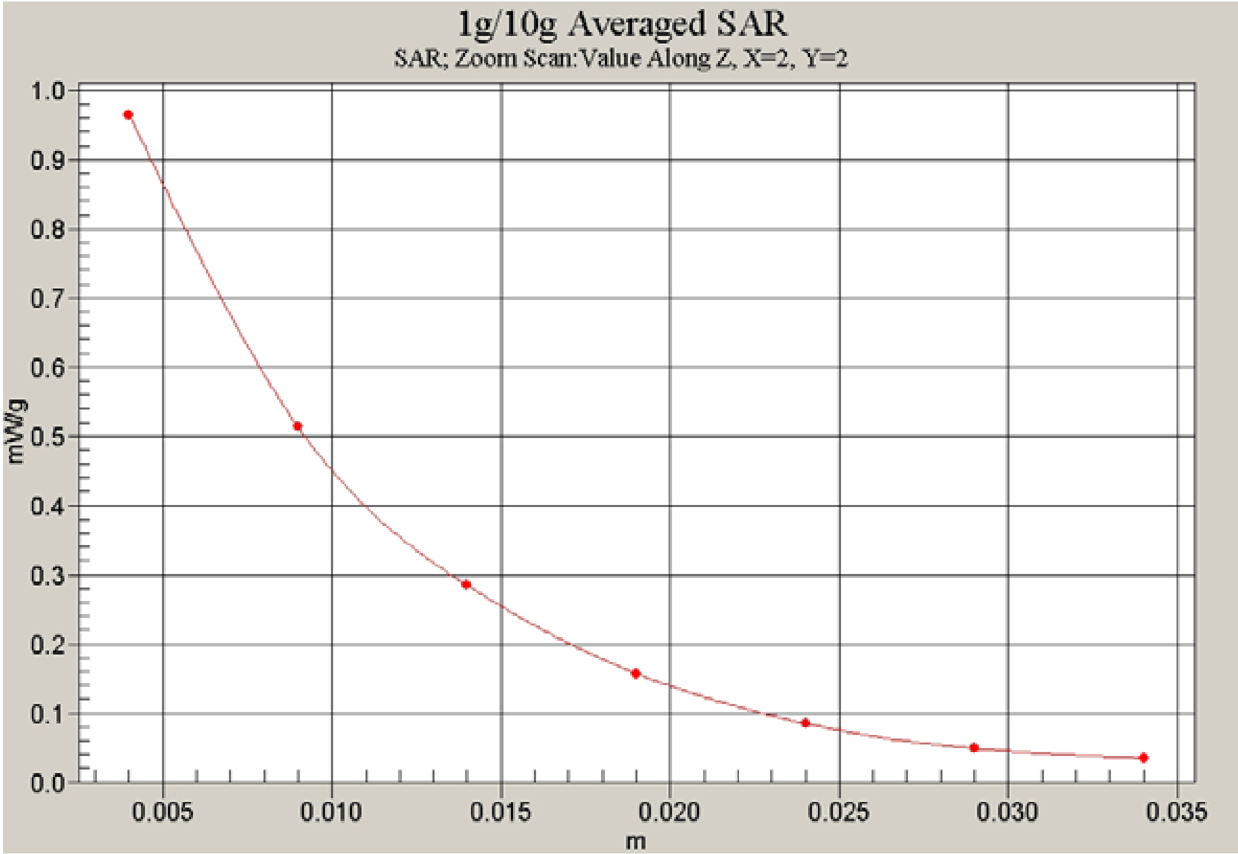


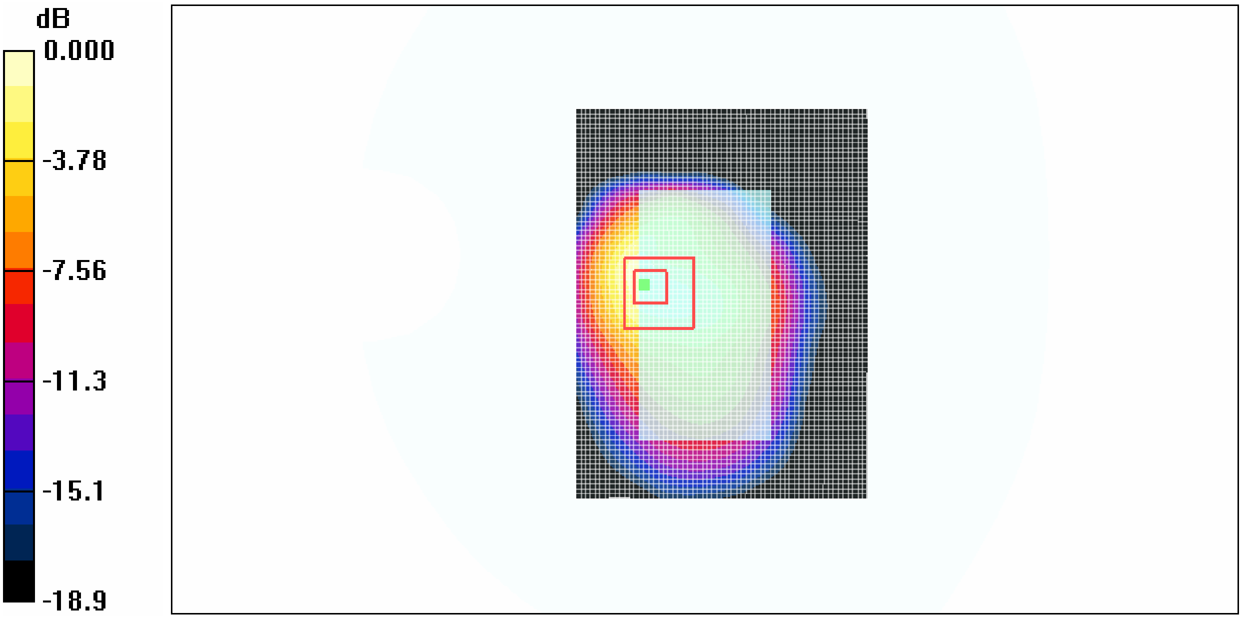
Fig. 20 Z-Scan at power reference point (PCS 1900MHz, Body with Headset HHS-120, Towards Ground with GPRS, CH810)

1900 Body Headset HHS-120 Towards Ground Middle

Date/Time: 2006-9-6 8:46:37
Electronics: DAE3 Sn589
Medium: Body 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground Middle,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 1.12 mW/g

Towards Ground Middle,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.3 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 2.11 W/kg
SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.550 mW/g
Maximum value of SAR (measured) = 1.19 mW/g



0 dB = 1.19mW/g

Fig. 21 PCS 1900MHz, Body with Headset HHS-120, Towards Ground with GPRS, CH661

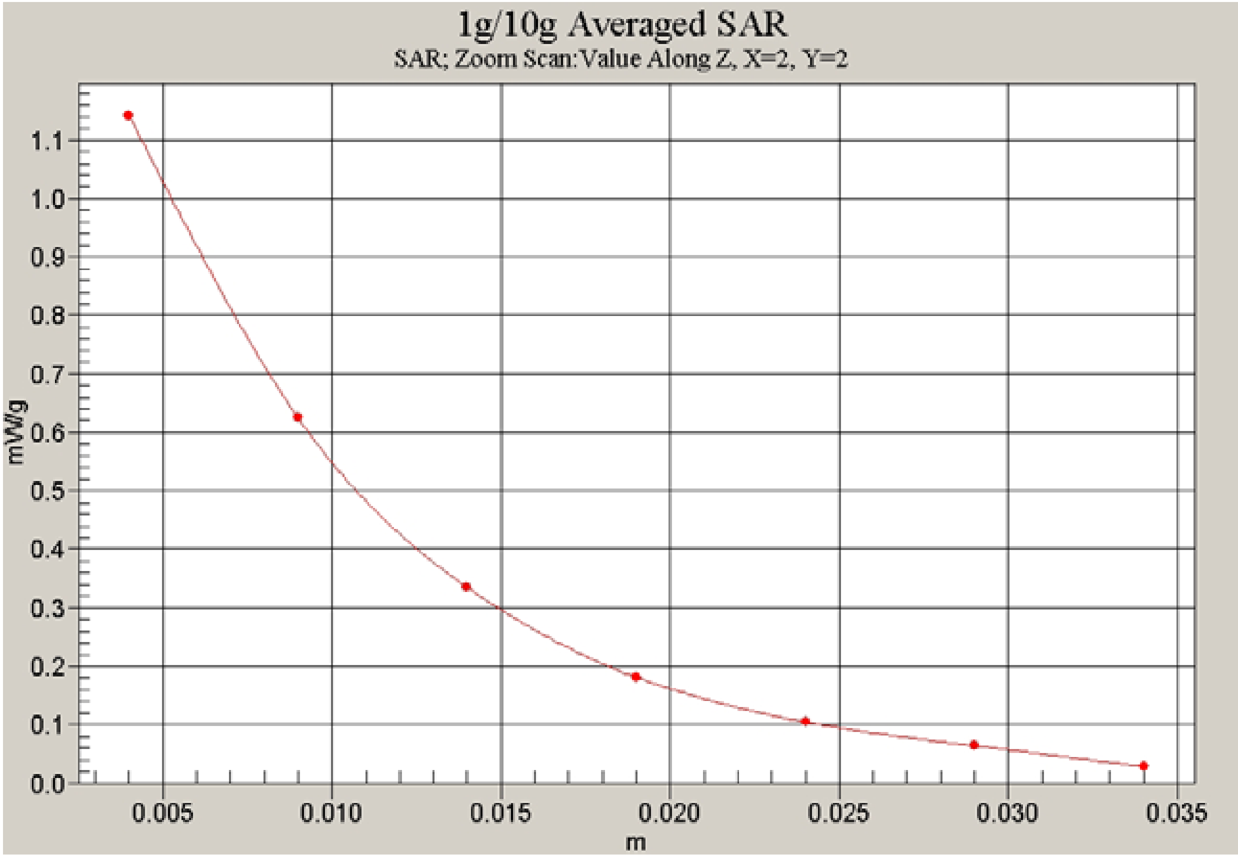


Fig. 22 Z-Scan at power reference point (PCS 1900MHz, Body with Headset HHS-120, Towards Ground with GPRS, CH661)

1900 Body Headset HHS-120 Towards Ground Low

Date/Time: 2006-9-6 9:22:42

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

Ambient Temperature:23.3^{o}C Liqiud Temperature: 22.5^{o}C

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground Low,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.05 mW/g

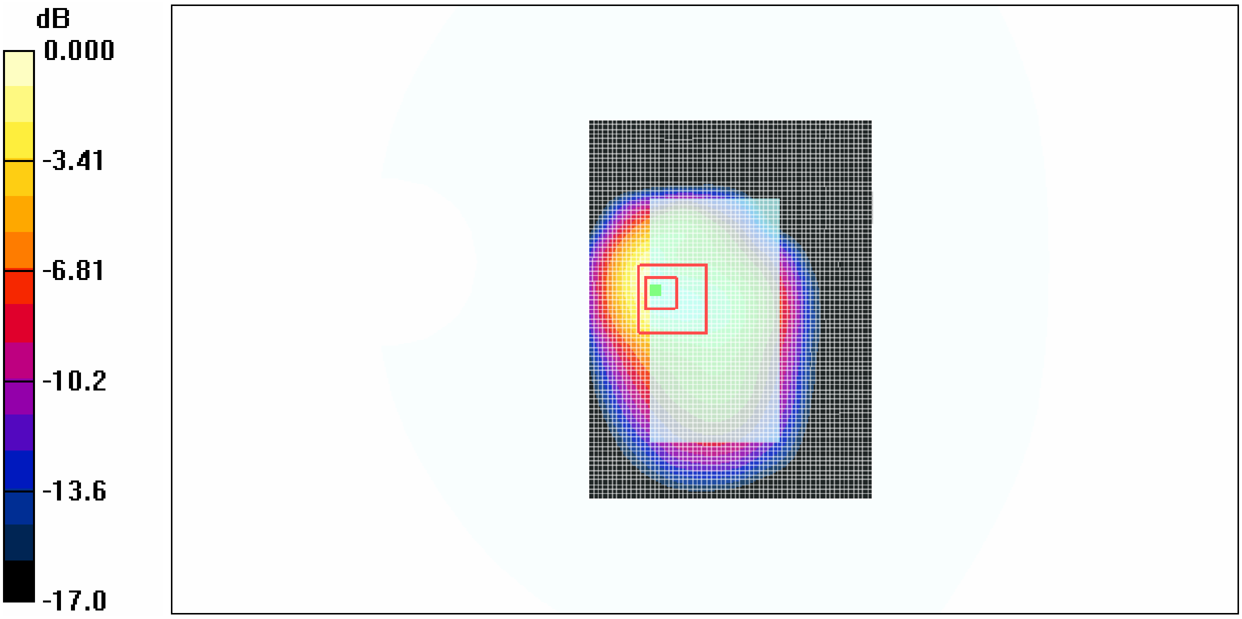
Towards Ground Low,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.2 V/m; Power Drift = 0.064 dB

Peak SAR (extrapolated) = 1.95 W/kg

SAR(1 g) = 1 mW/g; SAR(10 g) = 0.523 mW/g

Maximum value of SAR (measured) = 1.14 mW/g



0 dB = 1.14mW/g

Fig. 23 PCS 1900MHz, Body with Headset HHS-120, Towards Ground with GPRS, CH512

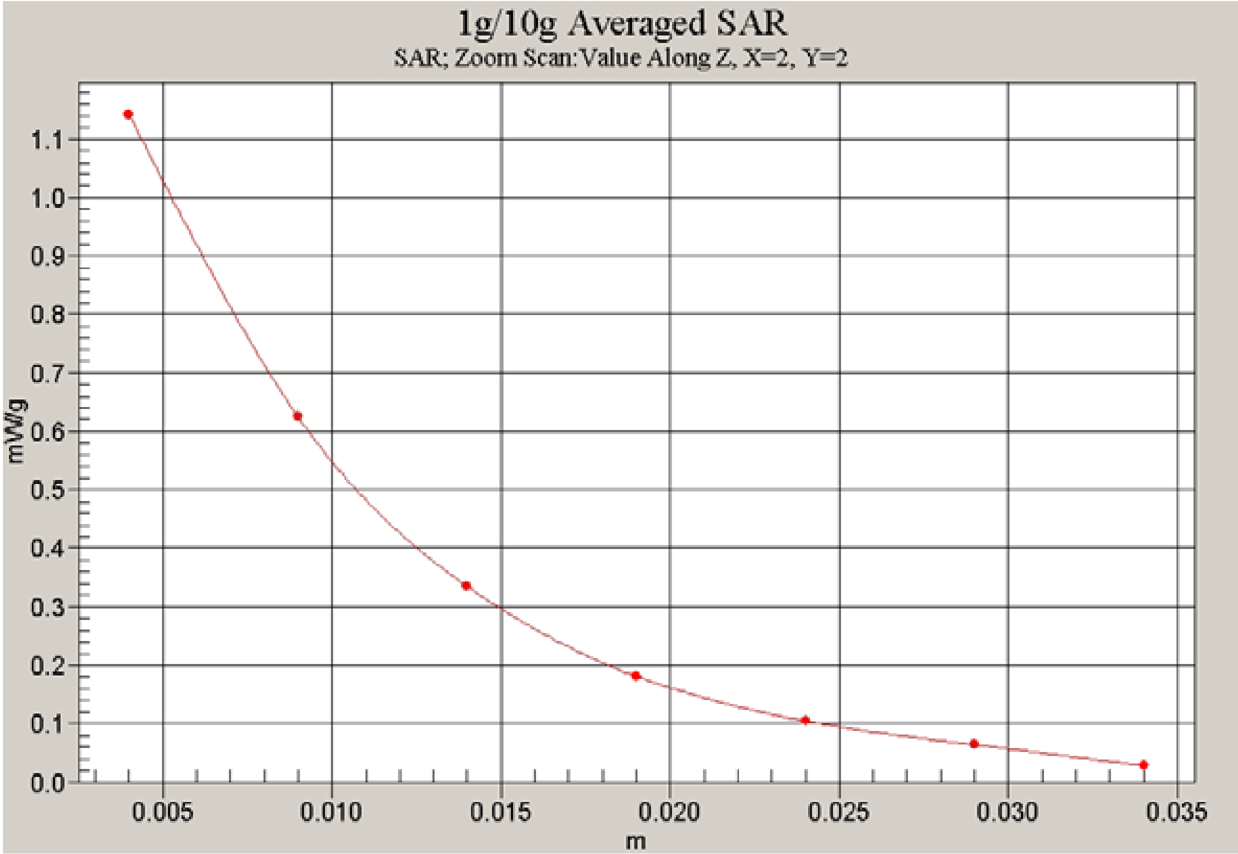


Fig. 24 Z-Scan at power reference point (PCS 1900MHz, Body with Headset HHS-120, Towards Ground with GPRS, CH512)

1900 Body with Data Cable DCA-100 Towards Ground High

Date/Time: 2006-9-7 16:35:52

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground High,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.557 mW/g

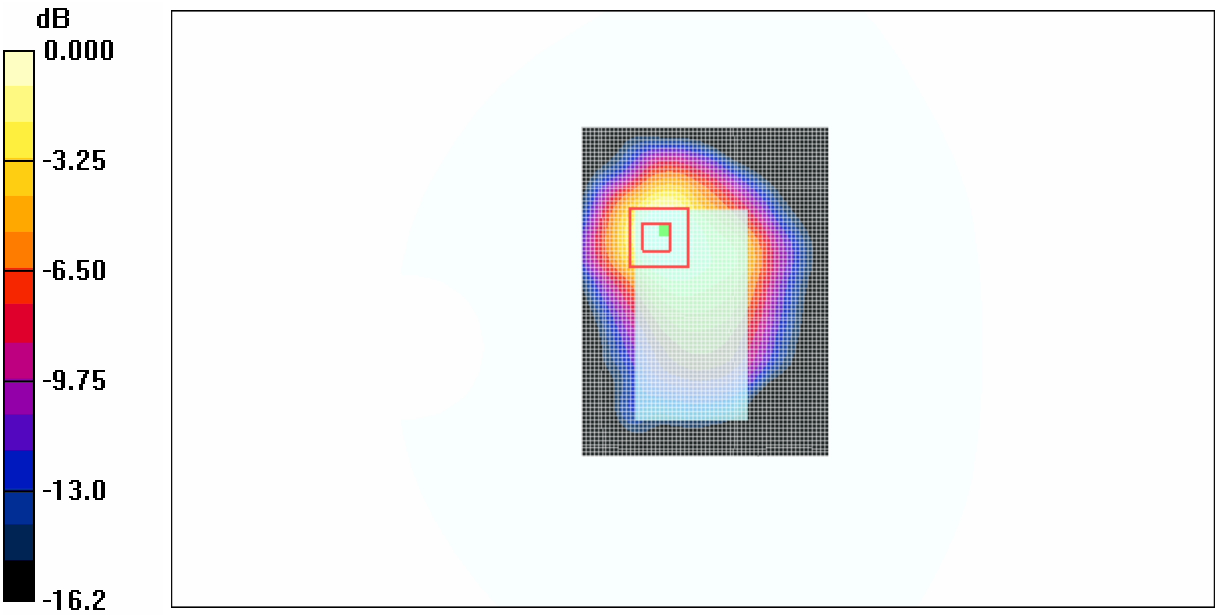
Towards Ground High,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.98 V/m; Power Drift = -0.101 dB

Peak SAR (extrapolated) = 0.959 W/kg

SAR(1 g) = 0.463 mW/g; SAR(10 g) = 0.240 mW/g

Maximum value of SAR (measured) = 0.487 mW/g



0 dB = 0.487mW/g

Fig. 25 PCS 1900MHz, Body with Data Cable DCA-100, Towards Ground with GPRS, CH810

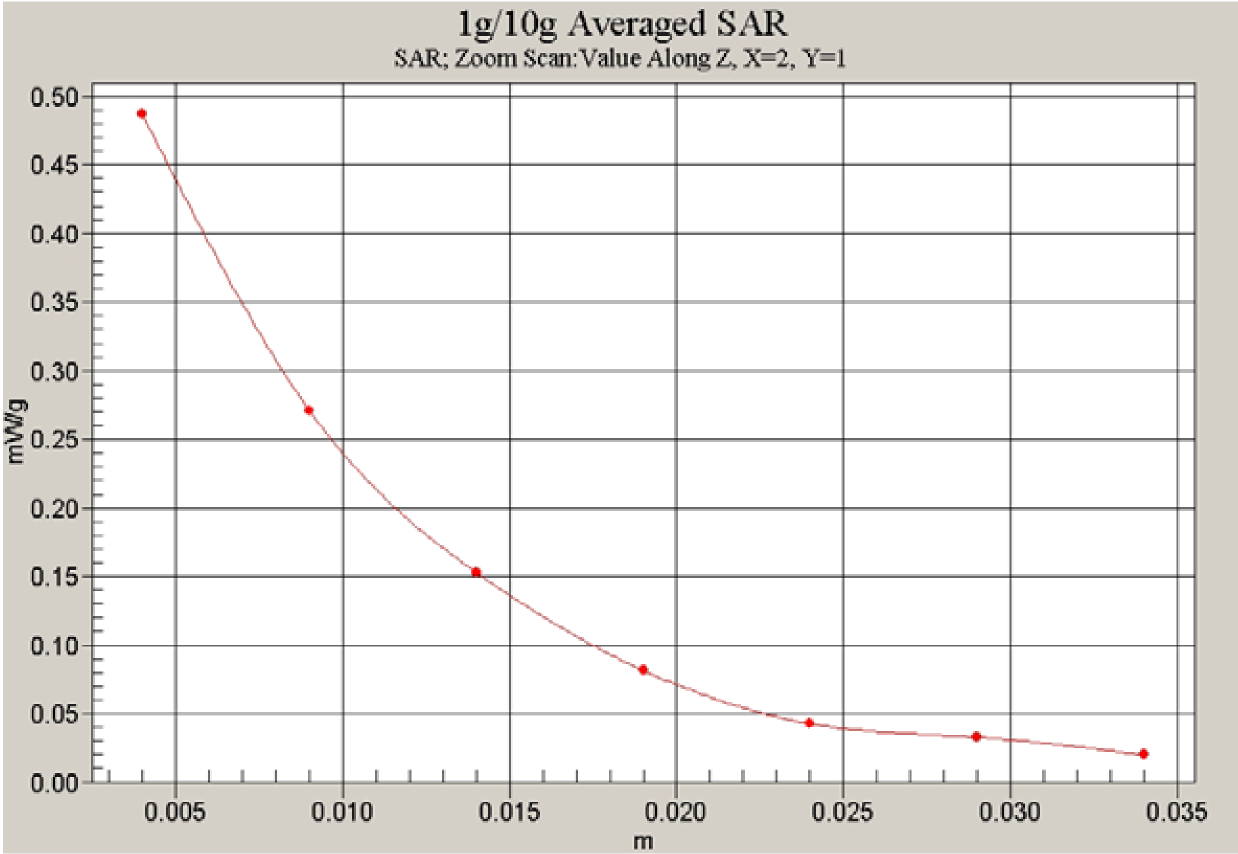


Fig. 26 Z-Scan at power reference point (PCS 1900MHz, Body with Data Cable DCA-100, Towards Ground with GPRS, CH810)

1900 with Data Cable DCA-100 Towards Ground Middle

Date/Time: 2006-9-7 16:21:52

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground Middle,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.672 mW/g

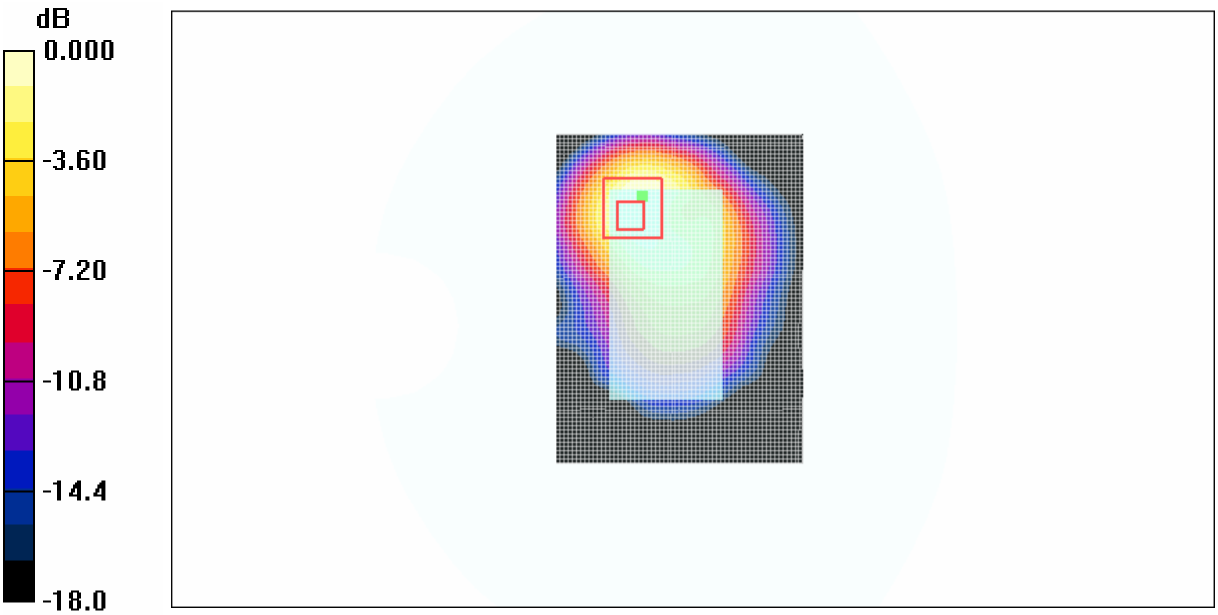
Towards Ground Middle,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.2 V/m; Power Drift = -0.191 dB

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.591 mW/g; SAR(10 g) = 0.303 mW/g

Maximum value of SAR (measured) = 0.643 mW/g



0 dB = 0.643mW/g

Fig. 27 PCS 1900MHz, Body with Data Cable DCA-100, Towards Ground with GPRS, CH661

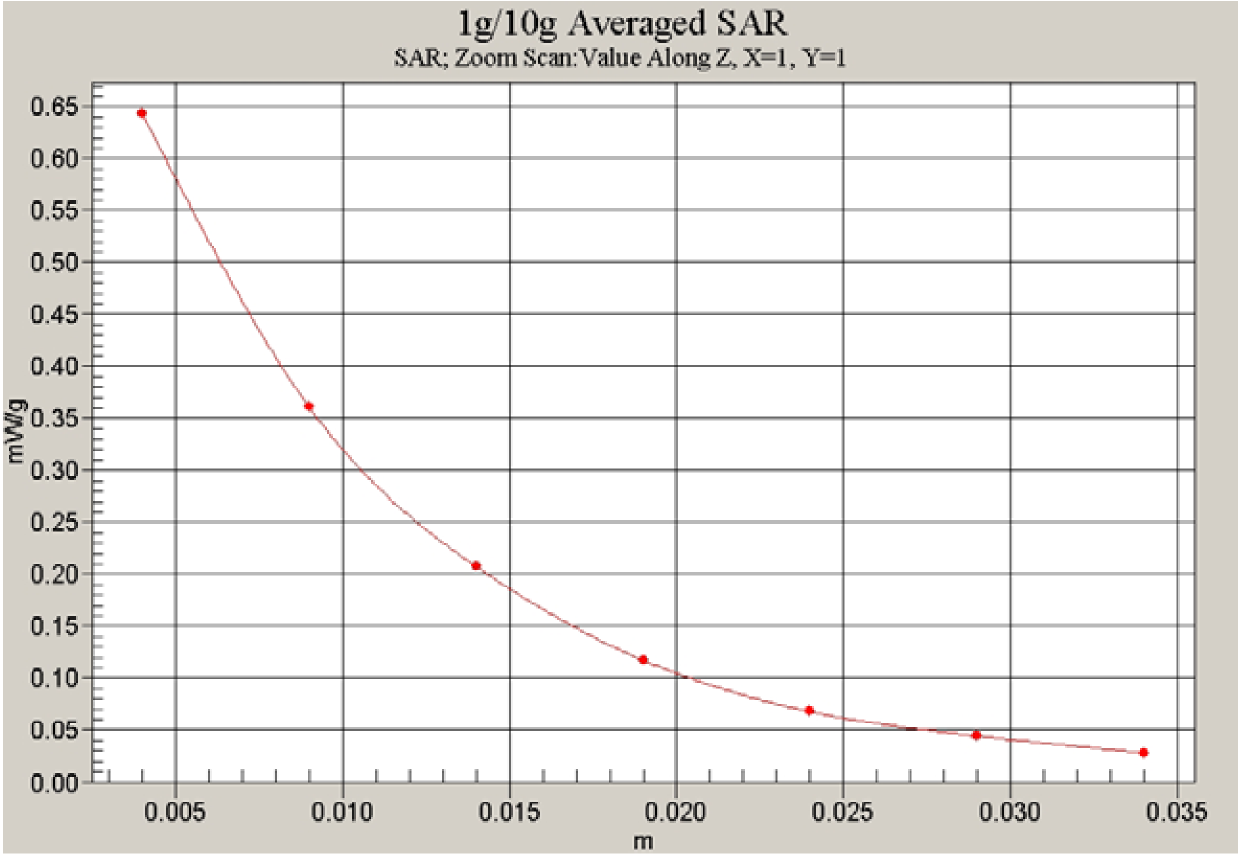


Fig. 28 Z-Scan at power reference point (PCS 1900MHz, Body with Data Cable DCA-100, Towards Ground with GPRS, CH661)

1900 with Data Cable DCA-100 Towards Ground Low

Date/Time: 2006-9-7 16:49:28

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Ground Low,6mm/Area Scan (61x81x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.660 mW/g

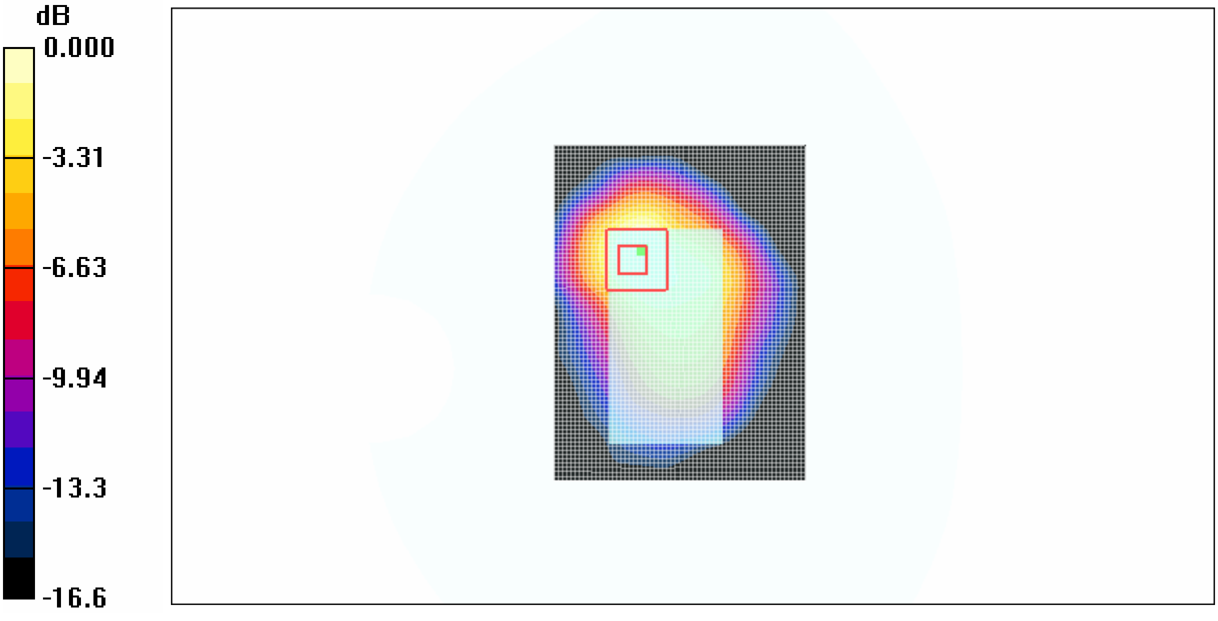
Towards Ground Low,6mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.6 V/m; Power Drift = -0.100 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.538 mW/g; SAR(10 g) = 0.283 mW/g

Maximum value of SAR (measured) = 0.566 mW/g



0 dB = 0.566mW/g

Fig. 29 PCS 1900MHz, Body with Data Cable DCA-100, Towards Ground with GPRS, CH512

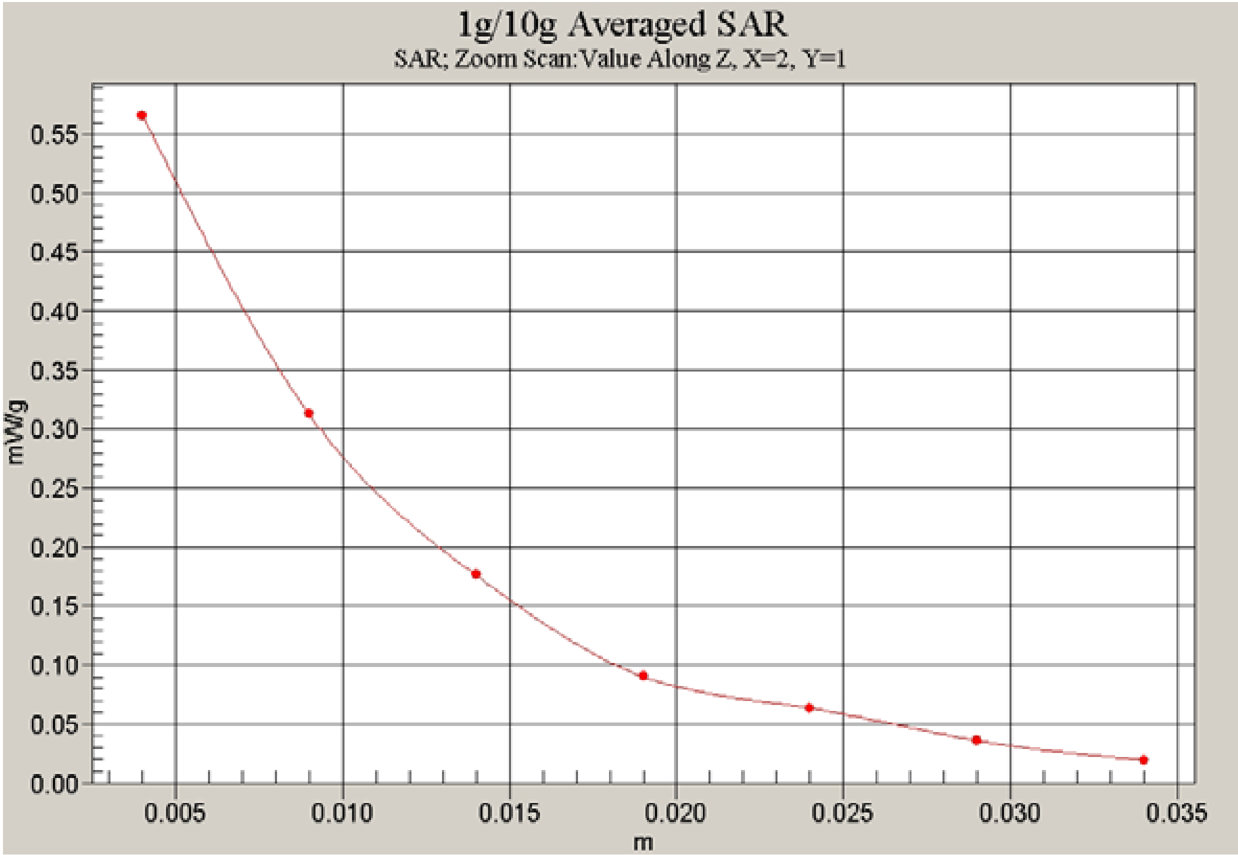


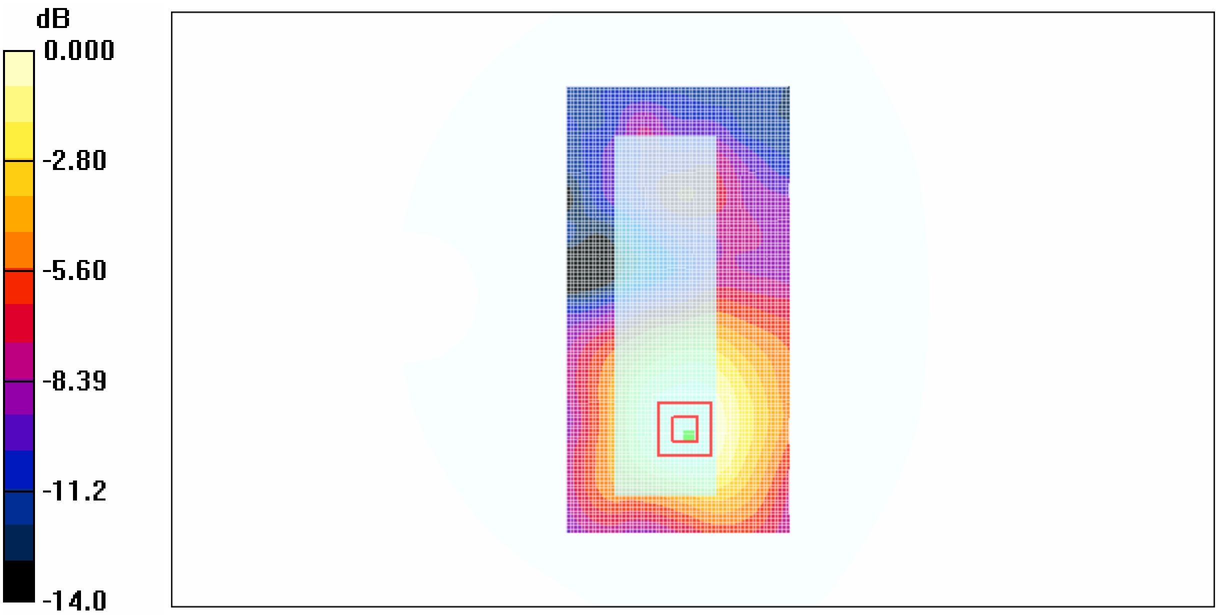
Fig. 30 Z-Scan at power reference point
(PCS 1900MHz, Body with Data Cable DCA-100, Towards Ground with GPRS, CH512)

1900 Body Push-to-Talk with Data Cable DCA-100 Towards Phantom High

Date/Time: 2006-9-6 13:43:53
Electronics: DAE3 Sn589
Medium: Body 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Phantom High,25mm/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.094 mW/g

Towards Phantom High,25mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.77 V/m; Power Drift = -0.008 dB
Peak SAR (extrapolated) = 0.161 W/kg
SAR(1 g) = 0.087 mW/g; SAR(10 g) = 0.056 mW/g
Maximum value of SAR (measured) = 0.091 mW/g



0 dB = 0.091mW/g

Fig. 31 PCS 1900MHz, Body Push-to-Talk with Data Cable DCA-100, Towards Phantom with GPRS, CH810

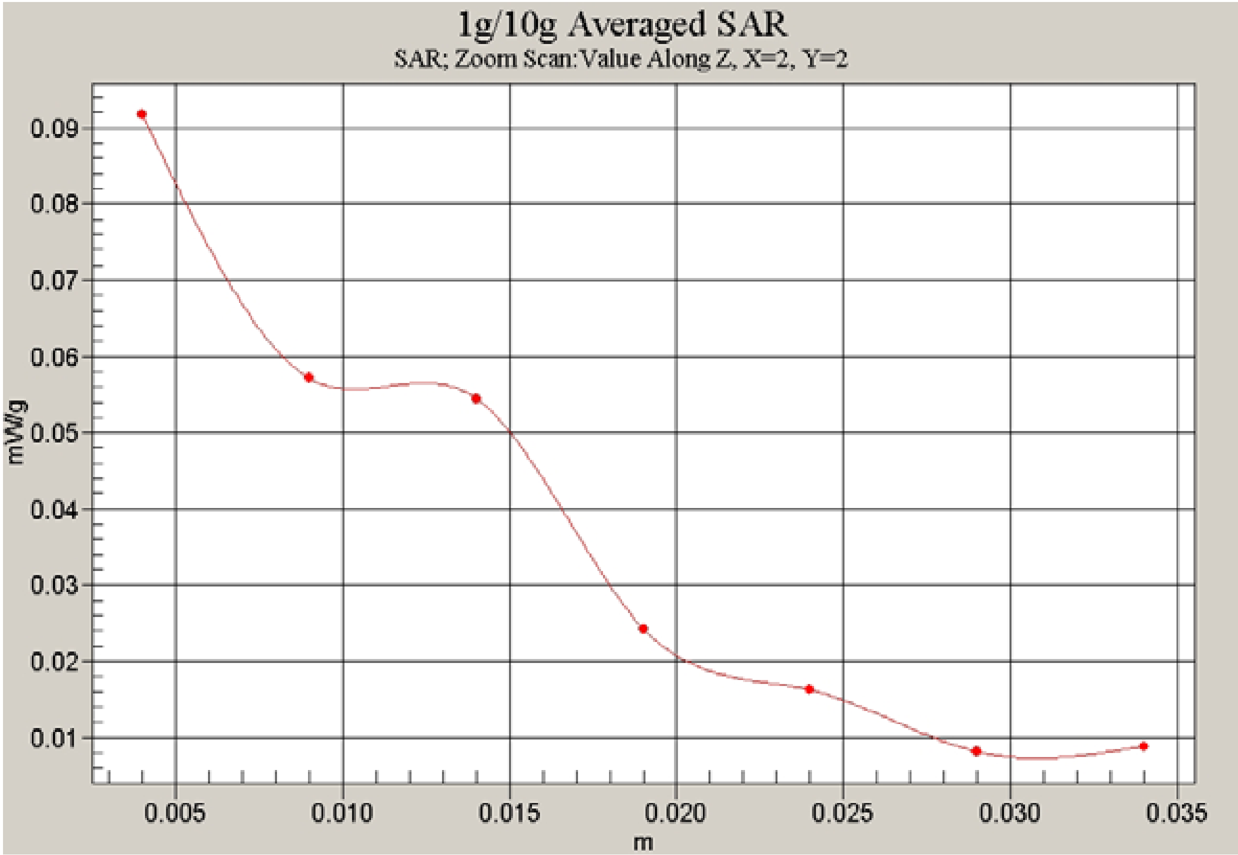
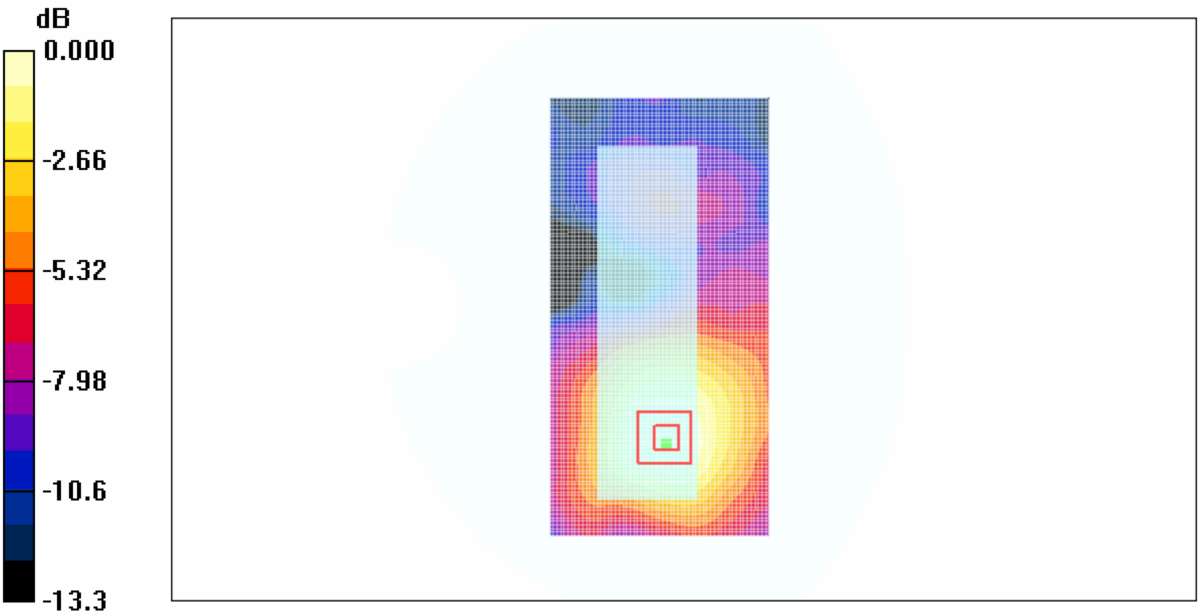


Fig. 32 Z-Scan at power reference point (PCS 1900MHz, Body Push-to-Talk with Data Cable DCA-100, Towards Phantom with GPRS, CH810)

1900 Body Push-to-Talk with Data Cable DCA-100 Towards Phantom Middle
Date/Time: 2006-9-6 14:01:34
Electronics: DAE3 Sn589
Medium: Body 1900
Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3
Ambient Temperature:23.3°C Liqiud Temperature: 22.5°C
Communication System: GSM 1900MHz Frequency: 1880 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Phantom Middle,25mm/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.096 mW/g

Towards Phantom Middle,25mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.78 V/m; Power Drift = 0.188 dB
Peak SAR (extrapolated) = 0.140 W/kg
SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.057 mW/g
Maximum value of SAR (measured) = 0.094 mW/g



0 dB = 0.094mW/g

Fig. 33 PCS 1900MHz, Body Push-to-Talk with Data Cable DCA-100, Towards Phantom with GPRS, CH661

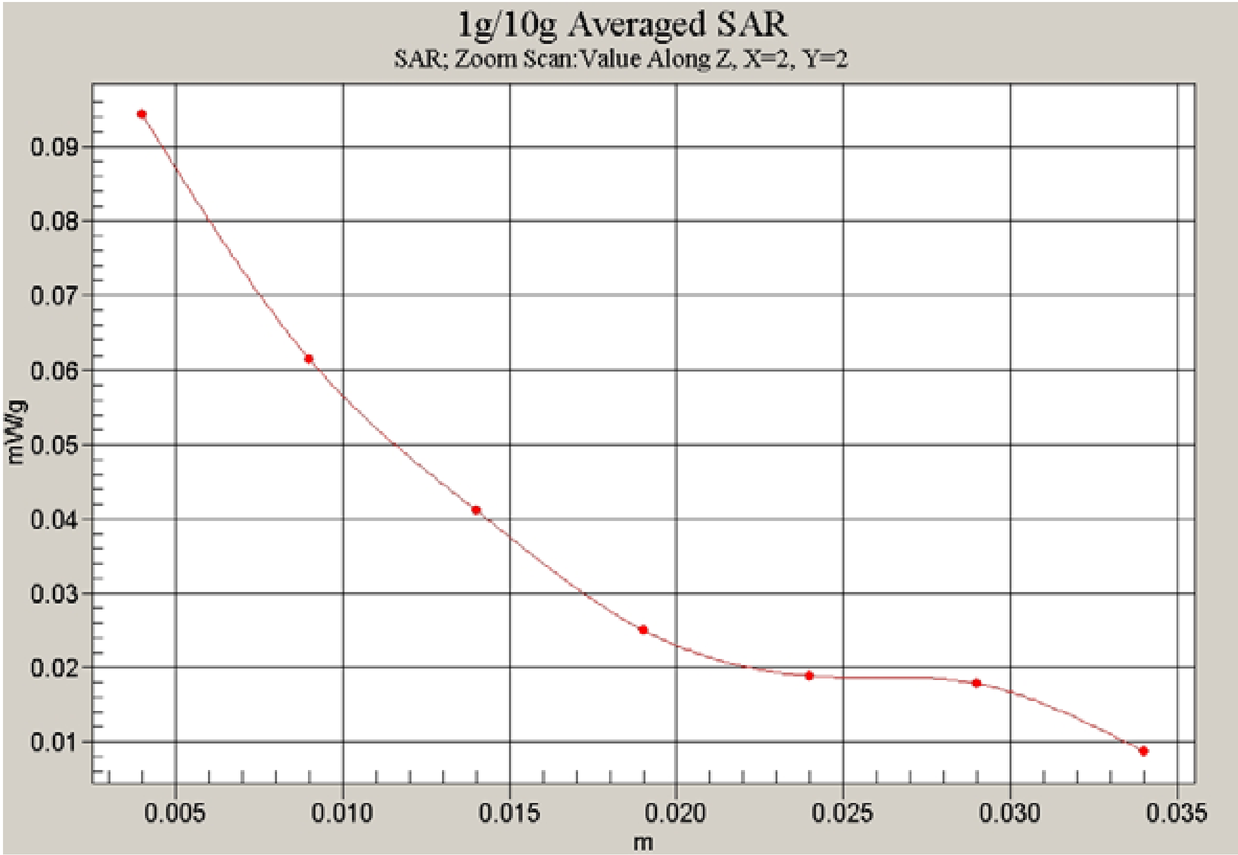


Fig. 34 Z-Scan at power reference point (PCS 1900MHz, Body Push-to-Talk with Data Cable DCA-100, Towards Phantom with GPRS, CH661)

1900 Body Push-to-Talk with Data Cable DCA-100 Towards Phantom Low

Date/Time: 2006-9-6 14:19:41

Electronics: DAE3 Sn589

Medium: Body 1900

Medium parameters used (interpolated): f = 1900 MHz; σ = 1.55 mho/m; ε_r = 55.8; ρ = 1000 kg/m^3

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

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

Probe: ET3DV6 - SN1736 ConvF(4.88, 4.88, 4.88)

Towards Phantom Low,25mm/Area Scan (61x111x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.074 mW/g

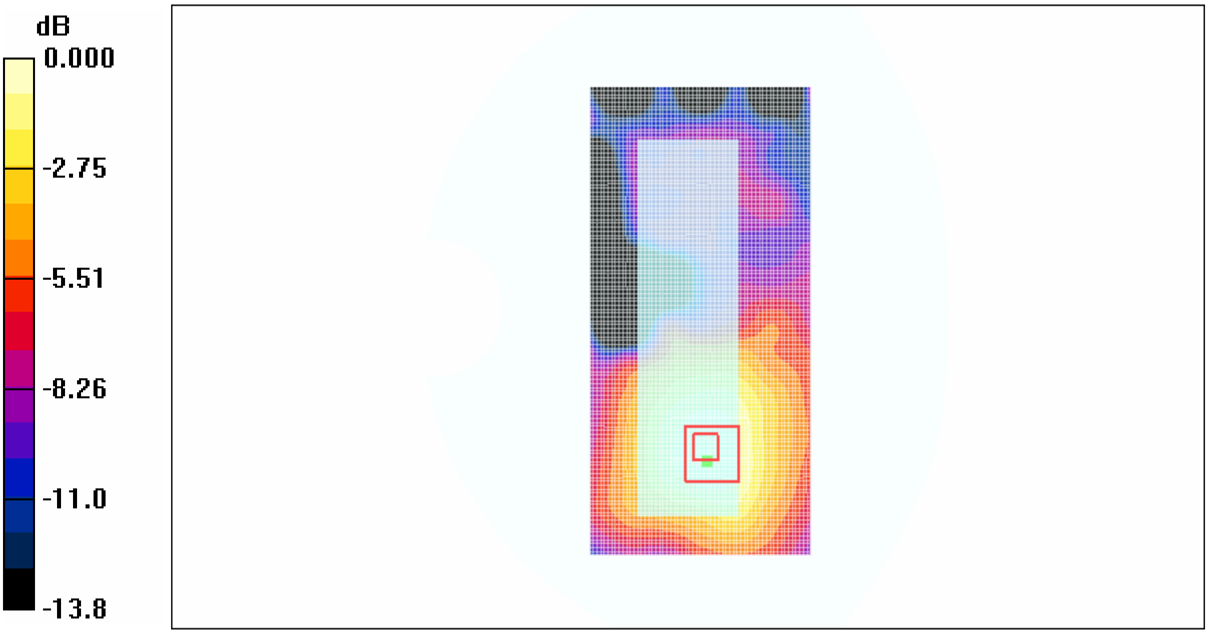
Towards Phantom Low,25mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.47 V/m; Power Drift = -0.193 dB

Peak SAR (extrapolated) = 0.105 W/kg

SAR(1 g) = 0.067 mW/g; SAR(10 g) = 0.043 mW/g

Maximum value of SAR (measured) = 0.073 mW/g



0 dB = 0.073mW/g

Fig. 35 PCS 1900MHz, Body Push-to-Talk with Data Cable DCA-100, Towards Phantom with GPRS, CH512

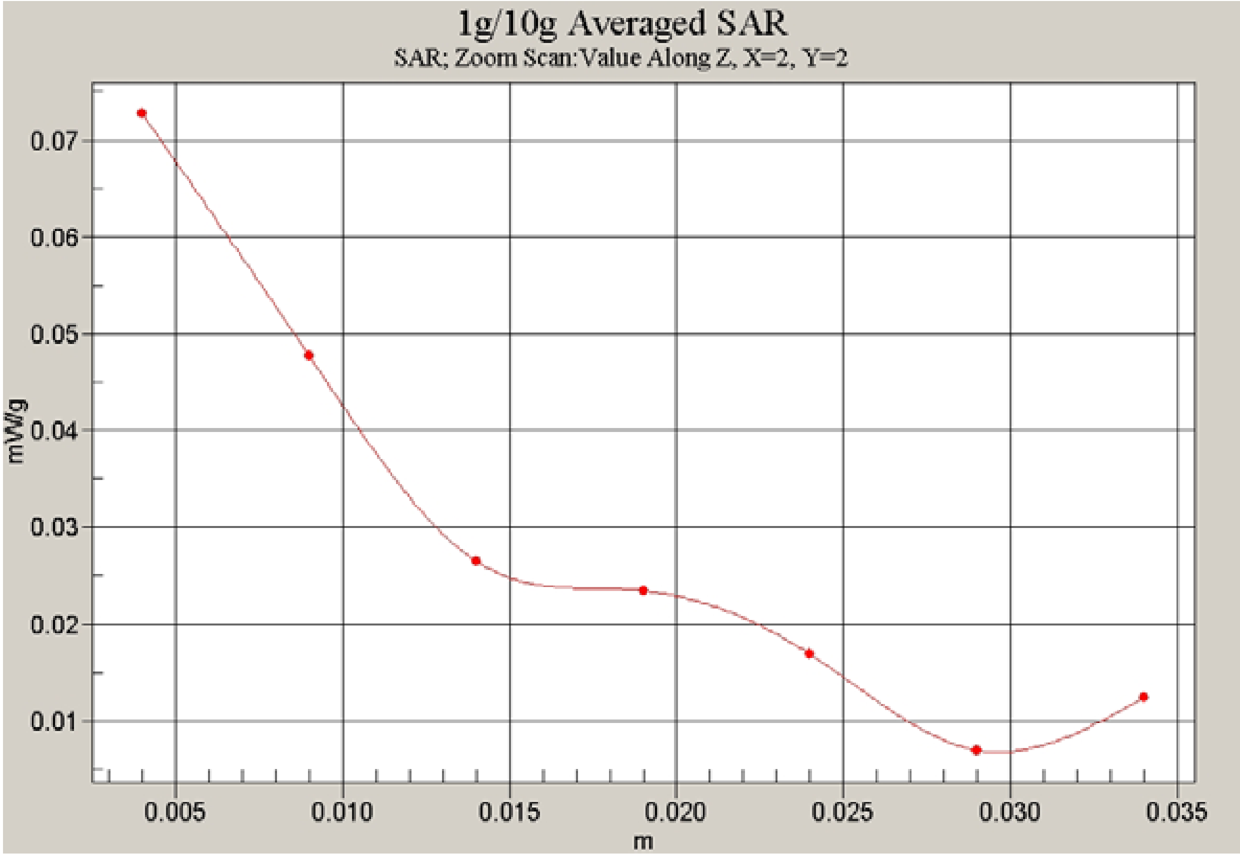


Fig. 36 Z-Scan at power reference point (PCS 1900MHz, Body Push-to-Talk with Data Cable DCA-100, Towards Phantom with GPRS, CH512)

ANNEX D SYSTEM VALIDATION RESULTS

1900MHzDAE589Probe1736

Date/Time: 2006-9-5 8:39:02

Electronics: DAE3 Sn589

Medium: Head 1900

Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3

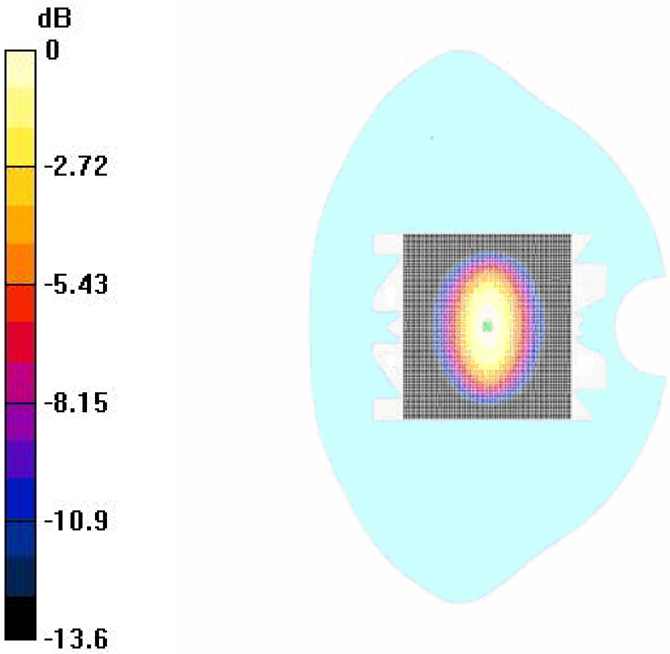
Ambient Temperature:23.3^{o}C Liqiud Temperature: 22.5^{o}C

Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

System Validation/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.2 mW/g

System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.9V/m; Power Drift = 0.004 dB
Peak SAR (extrapolated) = 18.3 /kg
SAR(1 g) = 9.8 mW/g; SAR(10 g) = 4.91mW/g
Maximum value of SAR (measured) = 12.7mW/g



0 dB = 12.7W/g

Fig.37 validation 1900MHz 250mW(2006-09-05)

1900MHzDAE589Probe1736

Date/Time: 2006-9-6 8:28:03

Electronics: DAE3 Sn589

Medium: Head 1900

Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3

Ambient Temperature:23.3^{o}C Liqiud Temperature: 22.5^{o}C

Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

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

Maximum value of SAR (interpolated) = 10.9 mW/g

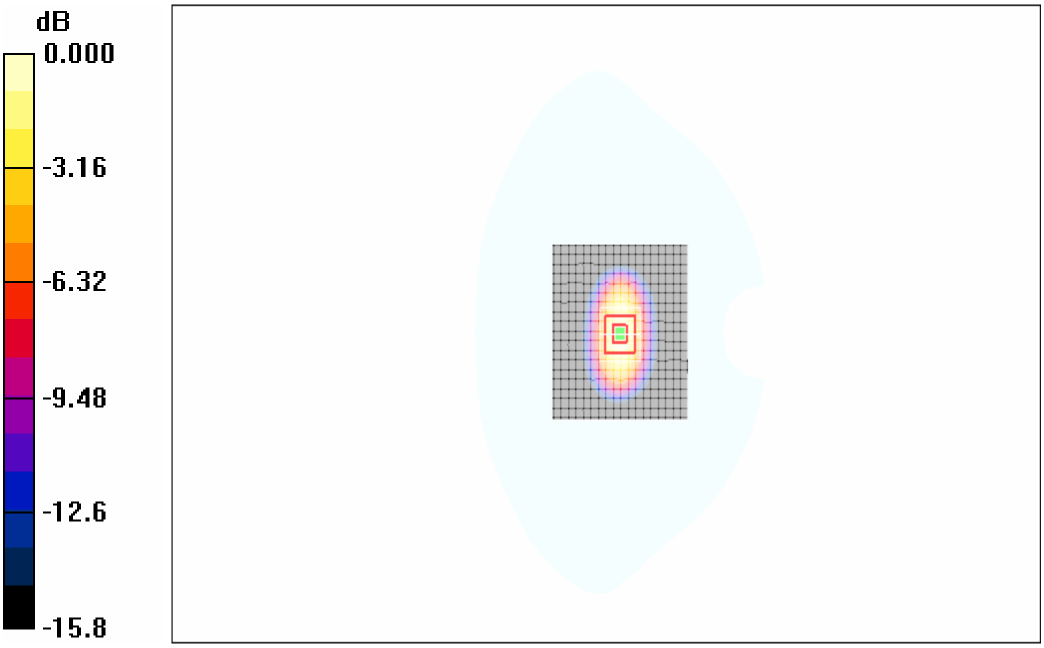
System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.9 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 15.6 W/kg

SAR(1 g) = 9.59 mW/g; SAR(10 g) = 5.24 mW/g

Maximum value of SAR (measured) = 10.9 mW/g



0 dB = 10.9mW/g

Fig.38 validation 1900MHz 250mW(2006-09-06)

1900MHzDAE589Probe1736

Date/Time: 2006-9-7 8:33:11

Electronics: DAE3 Sn589

Medium: Head 1900

Medium parameters used: f = 1900 MHz; σ = 1.45 mho/m; ε_r = 40.3; ρ = 1000 kg/m^3

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

Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1

Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

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

Maximum value of SAR (interpolated) = 10.9 mW/g

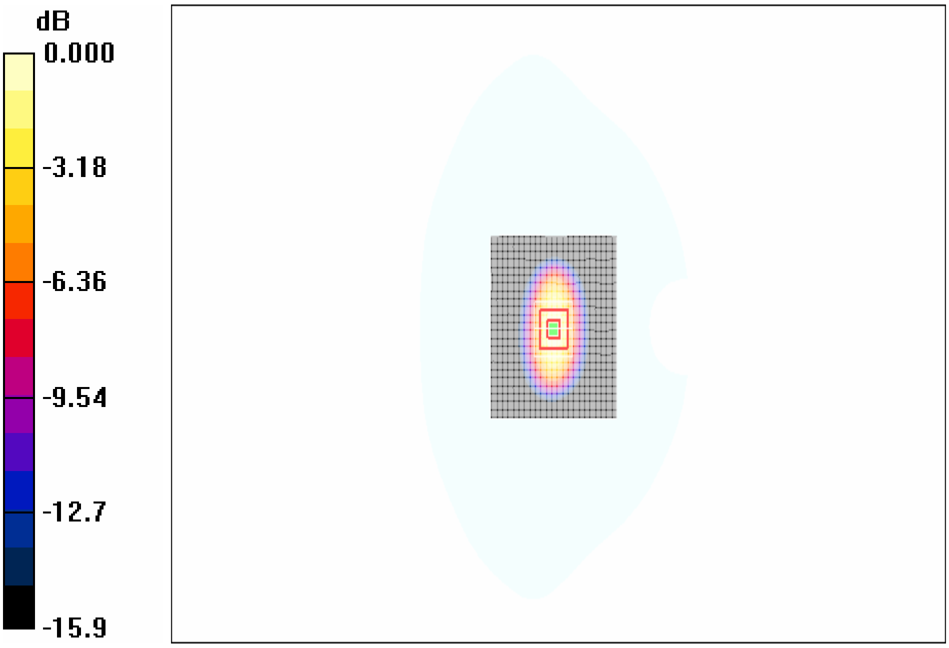
System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.6 V/m; Power Drift = -0.014 dB

Peak SAR (extrapolated) = 15.6 W/kg

SAR(1 g) = 9.56 mW/g; SAR(10 g) = 5.21 mW/g

Maximum value of SAR (measured) = 10.6 mW/g



0 dB = 10.6mW/g

Fig.39 validation 1900MHz 250mW(2006-09-07)

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
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: **ET3-1736_Nov05**

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1736
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	November 25, 2005
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	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference Probe ES3DV2	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
DAE4	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
Reference Probe ES3DV2	SN: 907	21-Jun-05 (SPEAG, No. DAE4-907_Jun05)	Jun-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 25, 2005

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
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:1736

Manufactured:	September 27, 2002
Last calibrated:	July 14, 2005
Recalibrated:	November 25, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1736

Sensitivity in Free Space[A]

NormX	**1.97** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**93** mV
NormY	**1.75** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**93** mV
NormZ	**1.97** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**93** mV

Diode Compression[B]

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	9.6	5.0
SAR_{be} [%]	With Correction Algorithm	0.1	0.3

TSL **1810 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	13.2	8.8
SAR_{be} [%]	With Correction Algorithm	0.6	0.1

Sensor Offset

Probe Tip to Sensor Center **2.7** mm

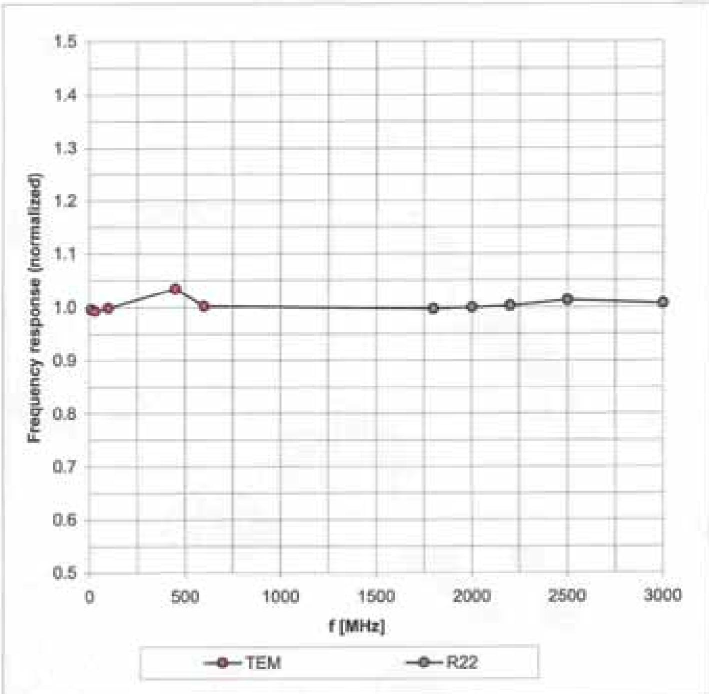
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[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.

Frequency Response of E-Field

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



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

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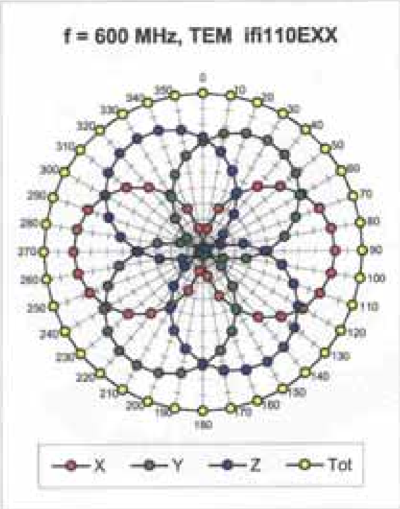
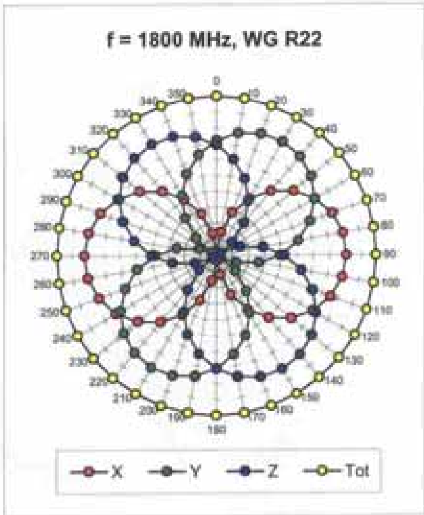
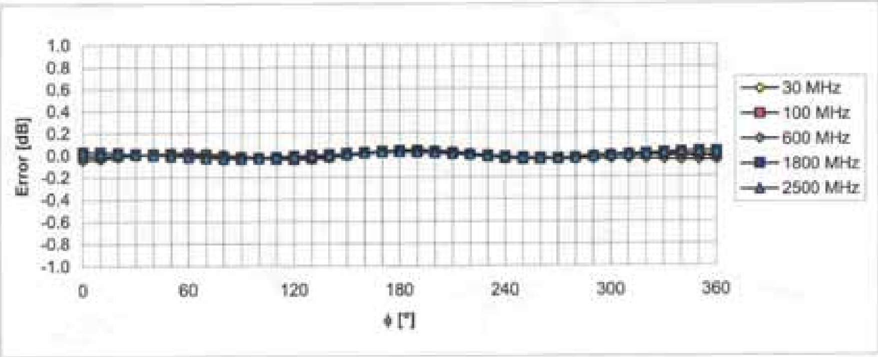
Receiving Pattern (ϕ), ϑ = 0°



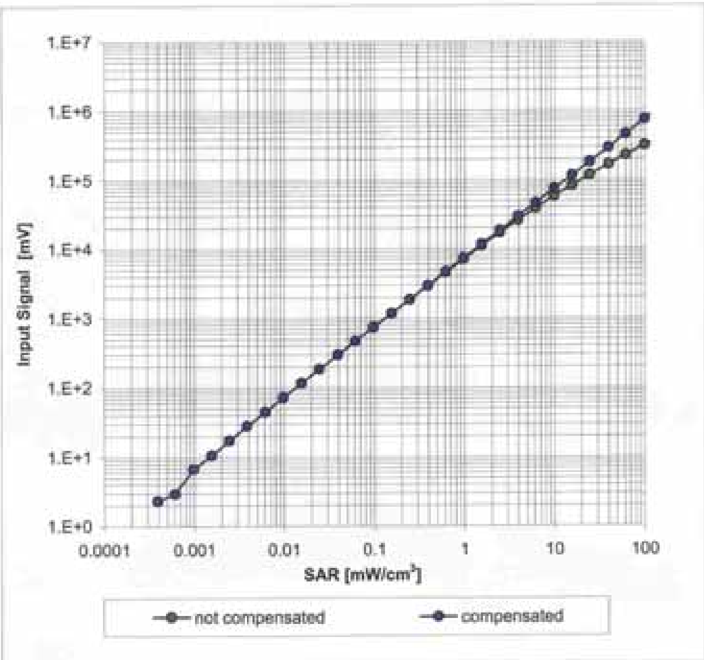


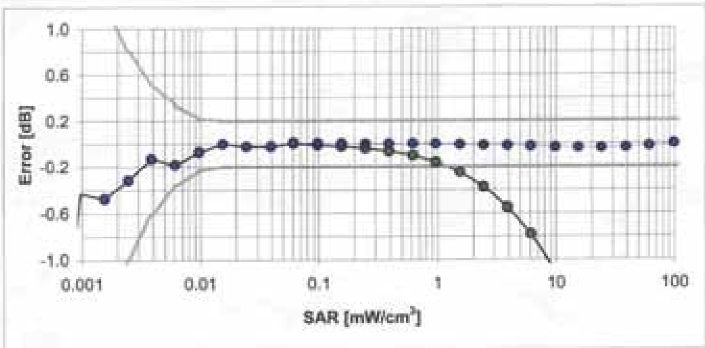


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

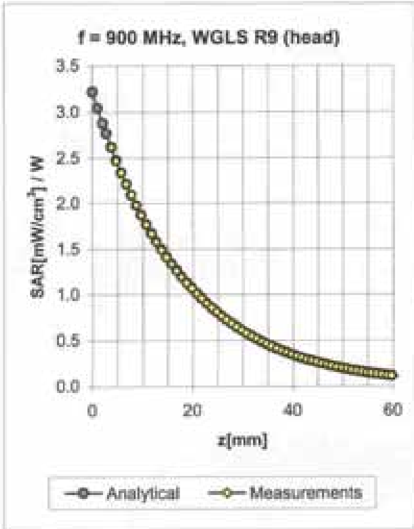
(Waveguide R22, f = 1800 MHz)

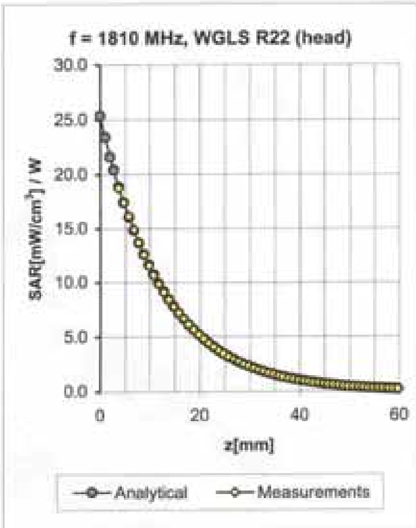




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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%	0.56	1.85	6.51 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.57	2.47	5.40 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.62	2.29	4.67 ± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.12	1.61	7.74 ± 13.3% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.47	2.15	6.45 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.53	2.78	4.88 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.65	2.11	4.35 ± 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.

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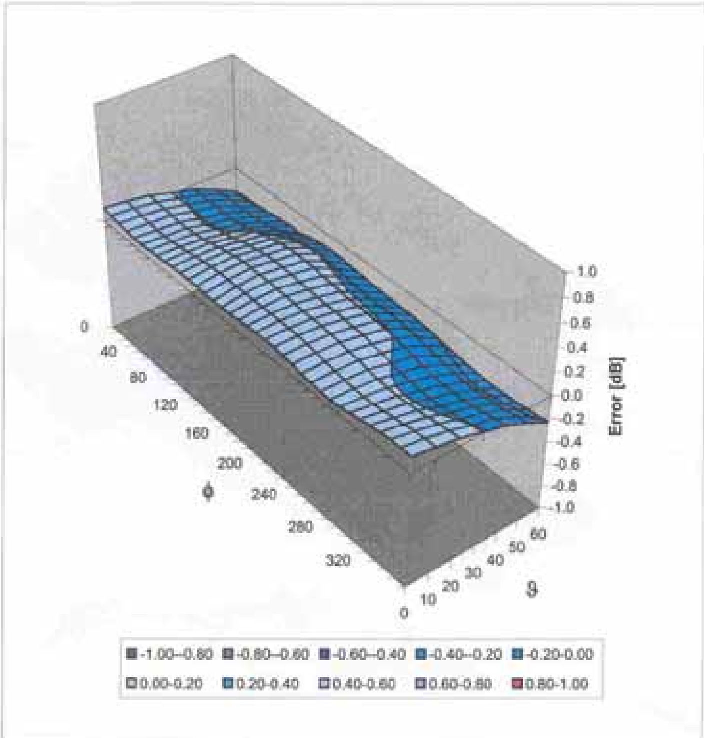
Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

ANNEX F DIPOLE CALIBRATION CERTIFICATE

Y351

受控文件

Schmid & Partner
Engineering AG

009

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

Calibration Certificate

1900 MHz System Validation Dipole

Type:	D1900V2
Serial Number:	541
Place of Calibration:	Zurich
Date of Calibration:	September 1, 2005
Calibration Interval:	24 months

Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:

Approved by:

Schmid & Partner
Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

DASY4

Dipole Validation Kit

Type: D1900V2

Serial: 541

Manufactured: July 26, 2001
Calibrated: September 1, 2005

1. Measurement Conditions

The measurements were performed in the flat section of the new generic twin phantom filled with brain simulating sugar solution of the following electrical parameters at 1900 MHz:

Relative permitivity	**39.5**	± 5%
Conductivity	**1.47 mho/m**	± 10%

The DASY3 System (Software version 3.1c) with a dosimetric E-field probe ET3DV6 (SN:1507, conversion factor 5.57 at 1800 MHz) was used for the measurements.

The dipole feedpoint was positioned below the center marking and oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10mm from dipole center to the solution surface. The included distance holder was used during measurements for accurate distance positioning.

The coarse grid with a grid spacing of 15mm was aligned with the dipole. The 5x5x7 fine cube was chosen for cube integration. Probe isotropy errors were cancelled by measuring the SAR with normal and 90° turned probe orientations and averaging.
The dipole input power (forward power) was 250mW ± 3 %. The results are normalized to 1W input power.

2. SAR Measurement

Standard SAR-measurements were performed with the head phantom according to the measurement conditions described in section 1. The results (see figure) have been normalized to a dipole input power of 1W (forward power). The resulting averaged SAR-values are:

averaged over 1 cm^3 (1 g) of tissue:	**41.6 mW/g**
averaged over 10 cm^3 (10 g) of tissue:	**21.4 mW/g**

Note: If the liquid parameters for validation are slightly different from the ones used for initial calibration, the SAR-values will be different as well. The estimated sensitivities of SAR-values and penetration depths to the liquid parameters are listed in the DASY Application Note 4: 'SAR Sensitivities'.

3. Dipole Impedance and Return Loss

The impedance was measured at the SMA-connector with a network analyzer and numerically transformed to the dipole feedpoint. The transformation parameters from the SMA-connector to the dipole feedpoint are:

Electrical delay:	**1.214 ns**	(one direction)
Transmission factor:	**0.993**	(voltage transmission, one direction)

The dipole was positioned at the flat phantom sections according to section 1 and the distance holder was in place during impedance measurements.

Feedpoint impedance at 1900 MHz:	Re{Z} = **45.4 Ω**
	Im {Z} = **-9.8 Ω**
Return Loss at 1900 MHz	**- 19.0 dB**

4. Handling

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.

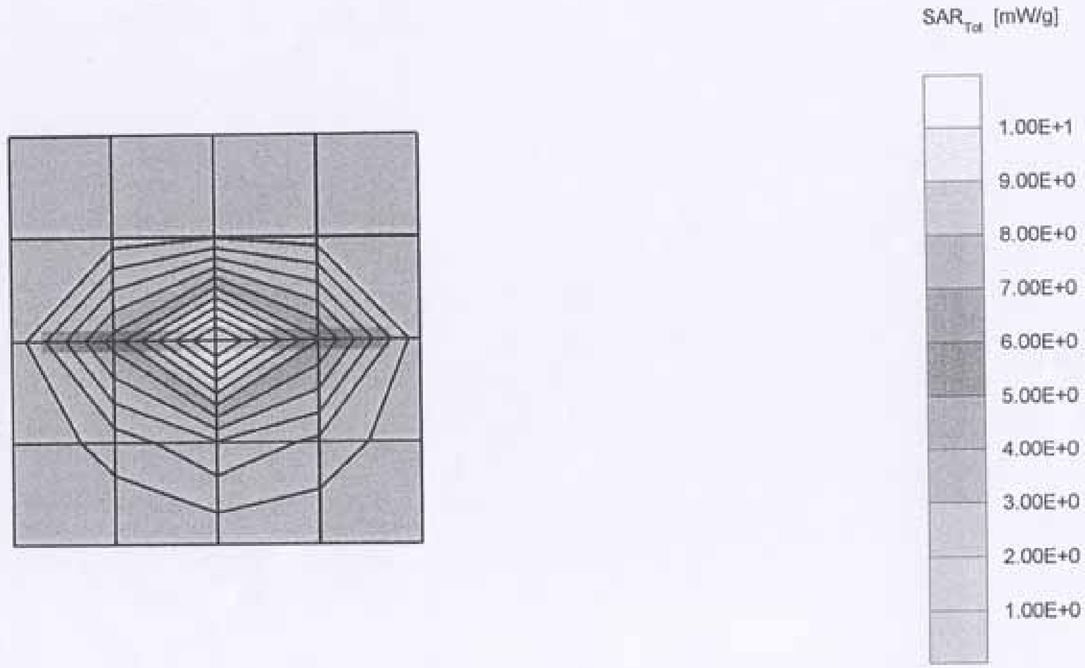
Do not apply excessive force to the dipole arms, because they might bend. If the dipole arms have to be bent back, take care to release stress to the soldered connections near the feedpoint; they might come off.

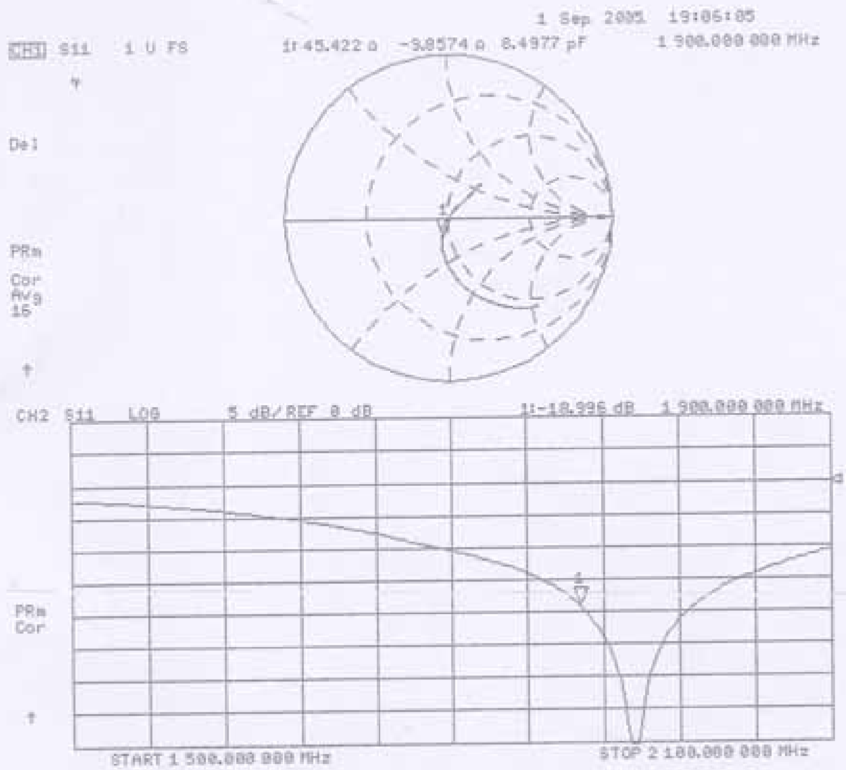
After prolonged use with 40W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

09/01/05

Validation Dipole D1900V2 SN:541, d = 10 mm

Frequency: 1900 MHz; Antenna Input Power: 250 [mW]
SAM Phantom; Flat Section; Grid Spacing: Dx = 20.0, Dy = 20.0, Dz = 10.0
Probe: ET3DV6 - SN1507; ConvF(5.57,5.57,5.57) at 1800 MHz; IEEE1528 1900 MHz ; σ = 1.47 mho/m ε_r = 39.5 ρ = 1.00 g/cm³
Cubes (2): Peak: 19.8 mW/g ± 0.00 dB, SAR (1g): 10.4 mW/g ± 0.02 dB, SAR (10g): 5.36 mW/g ± 0.03 dB, (Worst-case extrapolation)
Penetration depth: 8.2 (7.8, 9.2) [mm]
Powerdrift: -0.05 dB




1 Sep 2005 19:06:05
CH1 S11 1 U FS
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Del
PRm
Cor
Avg
16
CH2 S11 LOG 5 dB/ REF 0 dB 1:-18.996 dB 1 900.000 000 MHz
PRm
Cor
START 1 500.000 000 MHz
STOP 2 100.000 000 MHz