Deutscher Akkreditierungs Rat

No. DAT-P-114/01-10

No. L0442

TEST REPORT

No. SAR2005019

Test name	Electromagnetic Field (Specific Absorption Rate)
Product	GSM Triple Frequency Mobile Station
Model	T118
Client	TCL Mobile Communication Co., Ltd
Type of test	Non Type approval

Telecommunication Metrology Center

of Ministry of Information Industry

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TABLE OF CONTENT

Product Name	GSM Triple Frequency Mobile Station	Sample Model	T118
Client	TCL Mobile Communication Co., Ltd.	Type of test	Entrusted
Factory	TCL Mobile Communication Co., Ltd.	Sampling arrival date	July 22, 2005
Manufacturer	TCL Mobile Communication Co., Ltd.		
Sampling/ Sending sample	Sending sample	Sample sent by	Luo Jian
Sampling location	/	Sampling person	/
Sample quantity	1	Sample matrix	/
Series number of the Sample	135790246811220		
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 Draft:** Procedure to Determine the Specific Absorption Rate(SAR) for Hand-hold Mobile Phone (Part 2) **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. **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.		
Test conclusion	Localized Specific Absorption Rate (SAR) of this portable wireless equipment has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this test report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report. General Judgment: **Pass** (Stamp) **Date of issue: September 2nd, 2005**		
Note	TX Freq. Band: 824-849MHz (GSM) 1850-1910 MHz (PCS) Max. Power: 2 Watt (GSM) 1 Watt (PCS) Antenna Character: / The test results relate only to the items tested of the sample(s).		

Approved by (Lu Bingsong- **Deputy Director of the laboratory**) **Reviewed by** (Wang Hongbo) **Tested by** (Qi Dianyuan)

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3 DESCRIPTION OF EUT

3.1 Addressing Information Related to EUT

Table 1: Applicant (The Client)

Name or Company	TCL Mobile Communication Co., Ltd.
Address/Post	No.23 Zone, Zhongkai High Technology Development Zone, Huizhou, Guangdong
City	Hui Zhou
Postal Code	516006
Country	China
Telephone	0752-2636729
Fax	0752-2636525

Table 2: Manufacturer

Name or Company	TCL Mobile Communication Co., Ltd.
Address/Post	No.23 Zone, Zhongkai High Technology Development Zone, Huizhou, Guangdong
City	Hui Zhou
Postal Code	516006
Country	China
Telephone	0752-2636729
Fax	0752-2636525

3.2 Constituents of EUT

Table 3: Constituents of Samples

Description	Model	Serial Number	Manufacturer
Handset	T118	135790246811220	TCL Mobile Communication Co., Ltd.
Lithium Battery	TB-04A	TB-04A0003588	BYD LITHIUM BATTERY CO., LTD
AC/DC Adapter	WYS-082	WYT7821029196	HUIZHOU WEIYESHUN ELECTRONICS CO., LTD

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

3.3 General Description

Equipment Under Test (EUT) is a model of GSM Phase III portable Mobile Station (MS) with integrated antenna. It consists of Handset and normal options: Lithium Battery and AC/DC Adapter as Table 3 and Fig. 1. Upon the request of the client, SAR is tested respectively for two bands: GSM 850MHz and PCS1900MHz.

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

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. 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 128,190 and 251 respectively in the case of GSM 850 MHz, or 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 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.

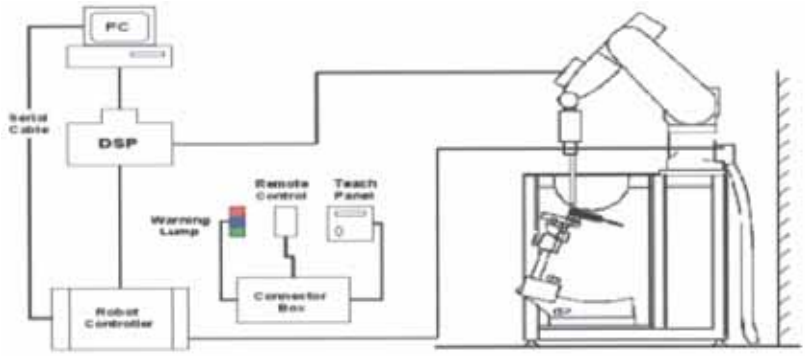


Figure2. SAR Lab Test Measurement Set-up

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.g., 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

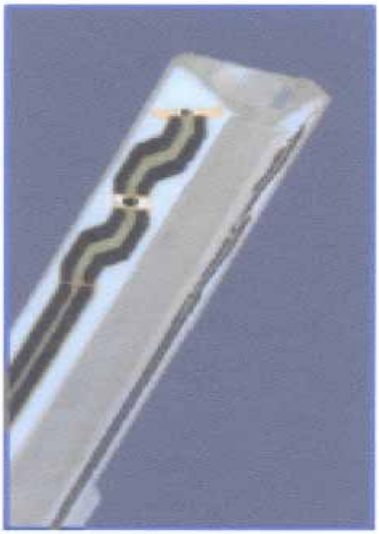


Figure3. ET3DV6 E-field Probe

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

Figure4. 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).

Figure5. Device Holder

4.5 Other Test Equipment

4.5.1 Device Holder for Transmitters

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

4.5.2 Phantom

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

Figure6. Generic Twin Phantom

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

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.

Table 4. Composition of the Head Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	**41.45**
Sugar	**56.0**
Salt	**1.45**
Preventol	**0.1**
Cellulose	**1.0**
Dielectric Parameters Target Value	**f=850MHz ε=41.5 σ=0.90**

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

Table 5. Composition of the Body Tissue Equivalent Matter

MIXTURE %	FREQUENCY 850MHz
Water	52.4
Sugar	45.0
Salt	1.4
Preventol	0.1
Cellulose	1.0
Dielectric Parameters Target Value	f=850MHz ε=55.2 σ=0.97

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

4.7 System Specifications

4.7.1 Robotic System Specifications

Specifications

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

Data Acquisition Electronic (DAE) System

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

5 CHARACTERISTICS OF THE TEST

5.1 Applicable Limit Regulations

EN 50360–2001: Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.
It specifies the maximum exposure limit of **2.0 W/kg** as averaged over any 10 gram of tissue for portable devices being used within 20 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 Draft : Procedure to Determine the Specific Absorption Rate(SAR) for Hand-hold Mobile Phone (Part 2)
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 TEST RESULTS

7.1 Dielectric Performance

Table 7: Dielectric Performance of Head Tissue Simulating Liquid

Measurement is made at temperature 22 °C and relative humidity 40%.			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	850 MHz	41.5	0.90
	1900 MHz	40.0	1.40
Measurement value (Average of 10 tests)	850 MHz	41.5	0.93
	1900 MHz	40.27	1.45

Table 8: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 22 ℃ and relative humidity 40%.			
/	**Frequency**	**Permittivity ε**	**Conductivity σ (S/m)**
Target value	850 MHz	55.2	0.97
	1900 MHz	53.3	1.52
Measurement value (Average of 10 tests)	850 MHz	54.3	0.97
	1900 MHz	55.85	1.55

7.2 System Validation

Table 9: System Validation

Measurement is made at temperature 23 ℃, relative humidity 40%, input power 250 mW.					
Liquid parameters		**Frequency**	**Permittivity ε**		**Conductivity σ (S/m)**
		850 MHz	41.5		0.93
		1900 MHz	40.27		1.45
Verification results	**Frequency**	**Target value (W/kg)**		**Measurement value (W/kg)**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**
	850 MHz	1.55	2.375	1.62	2.48
	1900 MHz	5.125	9.925	5.27	9.91

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).

7.3 Summary of Measurement Results(HEAD, GSM850 MHz Band)

Table 10: SAR Values (GSM 850 MHz Band)

Temperature: 22 ℃, humidity: 50%. Liquid temperature during the test: 22.2℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Conducted Power before/after each test (dBm)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, Top frequency (See ANNEX C GRAPH RESULTS Fig.1)	0.709	1.09	**33.6/33.5**
Left hand, Touch cheek, Mid frequency (See ANNEX C GRAPH RESULTS Fig.3)	0.585	0.856	**33.5/33.4**
Left hand, Touch cheek, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.5)	0.581	0.851	**33.9/33.8**
Left hand, Tilt 15 Degree, Top frequency (See ANNEX C GRAPH RESULTS Fig.7)	0.321	0.467	**33.5/33.6**
Left hand, Tilt 15 Degree, Mid frequency (See ANNEX C GRAPH RESULTS Fig.9)	0.292	0.426	**33.5/33.6**
Left hand, Tilt 15 Degree, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.11)	0.276	0.400	**33.8/33.9**
Right hand, Touch cheek, Top frequency (See ANNEX C GRAPH RESULTS Fig.13)	0.620	0.913	**33.6/33.5**
Right hand, Touch cheek, Mid frequency (See ANNEX C GRAPH RESULTS Fig.15)	0.586	0.866	**33.5/33.6**
Right hand, Touch cheek, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.17)	0.580	0.857	**33.8/33.9**
Right hand, Tilt 15 Degree, Top frequency (See ANNEX C GRAPH RESULTS Fig.19)	0.319	0.474	**33.6/33.6**
Right hand, Tilt 15 Degree, Mid frequency (See ANNEX C GRAPH RESULTS Fig.21)	0.299	0.447	**33.5/33.6**
Right hand, Tilt 15 Degree, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.23)	0.290	0.436	**33.9/33.8**

7.4 Summary of Measurement Results (Body-Worn, GSM 850 MHz Band)

Table 11: SAR Values (GSM 850 MHz Band, body-worn)

Temperature: 22 ℃, humidity: 50%. Liquid temperature during the test: 22.2℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Conducted Power before/after each test (dBm)**
	2.0	**1.6**	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Display of EUT towards the ground, Top frequency (See ANNEX C GRAPH RESULTS Fig.25)	0.298	0.451	**33.6/33.5**
Display of EUT towards the ground, Mid frequency (See ANNEX C GRAPH RESULTS Fig.27)	0.309	0.462	**33.5/33.6**
Display of EUT towards the ground, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.29)	0.326	0.481	**33.9/34.0**
Display of EUT towards the phantom, Top frequency (See ANNEX C GRAPH RESULTS Fig.31)	0.129	0.179	**33.6/33.5**
Display of EUT towards the phantom, Mid frequency (See ANNEX C GRAPH RESULTS Fig.33)	0.132	0.184	**33.5/33.4**
Display of EUT towards the phantom, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.35)	0.139	0.194	**33.8/33.9**

7.5 Summary of Measurement Results (Head, PCS 1900 MHz Band)

Table 12: SAR Values (PCS 1900 MHz Band, head)

Temperature: 22 ℃, humidity: 50%. Liquid temperature during the test: 22.2℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Conducted Power before/after each test (dBm)**
	2.0	1.6	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Left hand, Touch cheek, Top frequency (See ANNEX C GRAPH RESULTS Fig.37)	0.199	0.342	**29.6/29.5**
Left hand, Touch cheek, Mid frequency (See ANNEX C GRAPH RESULTS Fig.39)	0.160	0.270	**29.0/29.1**
Left hand, Touch cheek, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.40)	0.134	0.222	**28.9/29.0**
Left hand, Tilt 15 Degree, Top frequency (See ANNEX C GRAPH RESULTS Fig.43)	0.120	0.222	**29.6/29.7**
Left hand, Tilt 15 Degree, Mid frequency (See ANNEX C GRAPH RESULTS Fig.45)	0.111	0.200	**29.1/29.2**
Left hand, Tilt 15 Degree, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.47)	0.099	0.178	**28.8/28.9**
Right hand, Touch cheek, Top frequency (See ANNEX C GRAPH RESULTS Fig.49)	0.180	0.356	**29.5/29.6**
Right hand, Touch cheek, Mid frequency (See ANNEX C GRAPH RESULTS Fig.51)	0.155	0.302	**29.1/29.2**
Right hand, Touch cheek, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.53)	0.127	0.246	**29.0/28.9**
Right hand, Tilt 15 Degree, Top frequency (See ANNEX C GRAPH RESULTS Fig.55)	0.155	0.307	**29.6/29.6**
Right hand, Tilt 15 Degree, Mid frequency (See ANNEX C GRAPH RESULTS Fig.57)	0.140	0.273	**29.1/29.0**
Right hand, Tilt 15 Degree, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.59)	0.120	0.232	**28.9/28.8**

7.6 Summary of Measurement Results (Body-Worn, PCS 1900 MHz Band)

Table 13: SAR Values (PCS 1900 MHz Band, body-worn)

Temperature: 22 ℃, humidity: 50%. Liquid temperature during the test: 22.2℃			
Limit of SAR (W/kg)	**10 g Average**	**1 g Average**	**Conducted Power before/after each test (dBm)**
	2.0	**1.6**	
Test Case	**Measurement Result (W/kg)**		
	10 g Average	**1 g Average**	
Display of EUT towards the ground, Top frequency (See ANNEX C GRAPH RESULTS Fig.61)	0.220	0.342	**29.6/29.5**
Display of EUT towards the ground, Mid frequency (See ANNEX C GRAPH RESULTS Fig.63)	0.154	0.237	**29.0/29.1**
Display of EUT towards the ground, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.65)	0.117	0.176	**28.9/28.8**
Display of EUT towards the phantom, Top frequency (See ANNEX C GRAPH RESULTS Fig.67)	0.042	0.065	**29.5/29.6**
Display of EUT towards the phantom, Mid frequency (See ANNEX C GRAPH RESULTS Fig.69)	0.031	0.049	**29.1/29.0**
Display of EUT towards the phantom, Bottom frequency (See ANNEX C GRAPH RESULTS Fig.71)	0.022	0.034	**28.9/29.0**

7.7 Conclusion

Localized Specific Absorption Rate (SAR) of this portable wireless device has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.

8 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	$\sqrt{3}$	$(1\text{-cp})^{1/2}$	4.3	∞
4	Hemispherical 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	

9 MAIN TEST INSTRUMENTS

Table 14: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	HP 8753E	US38433212	August 29,2005	One year
02	Dielectric Probe Kit	Agilent 85070C	US99360113	No Calibration Requested	
03	Power meter	NRVD	101253	June 3,2005	One year
04	Power sensor	NRV-Z5	100331	June 20,2005	
05	Power sensor	NRV-Z6	100011	December 12,2004	
06	Signal Generator	MG 3633A	M73386	No Calibration Requested	
07	Amplifier	AT 50S1G4A	26549	No Calibration Requested	
08	BTS	CMU 200	100680	September 13, 2004	One year
09	E-field Probe	SPEAG ET3DV6	1736	July 14, 2005	One year
10	DAE	SPEAG DAE3	536	July 11, 2005	One year

10 TEST PERIOD

The test is performed from August 30, 2005 to August 31, 2005

11 TEST LOCATION

The test is performed at Radio Communication & Electromagnetic Compatibility Laboratory of Telecommunication Metrology Center of Ministry of Information Industry of The People's Republic of China

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 5 x 5 x 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.

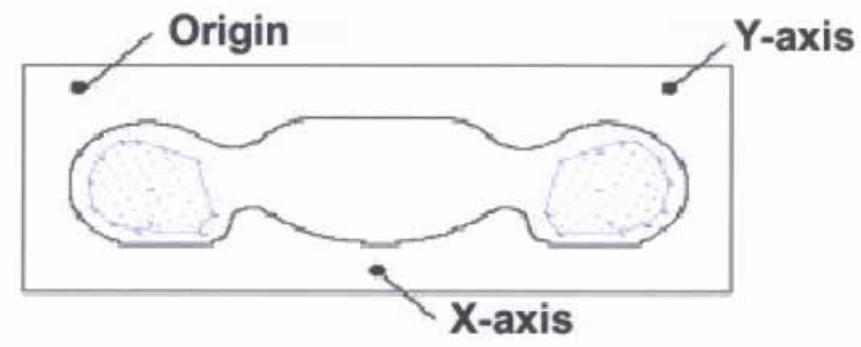


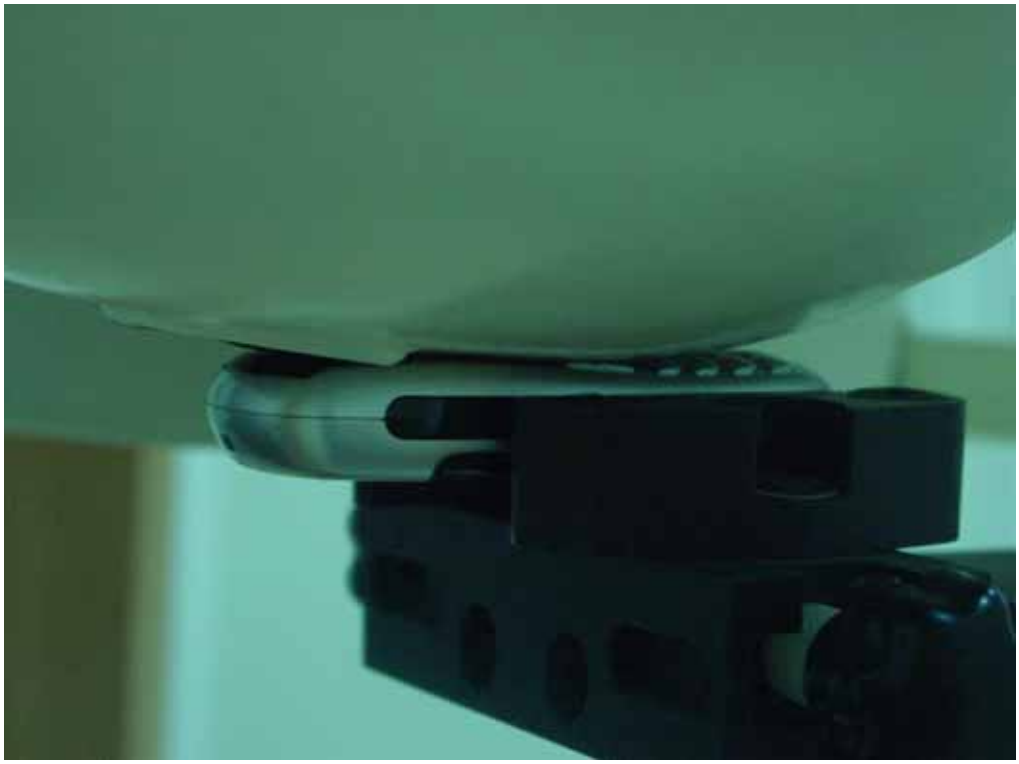
Figure 1 SAR Measurement Points in Area Scan

ANNEX B TEST LAYOUT

Picture 1 Specific Absorption Rate Test Layout

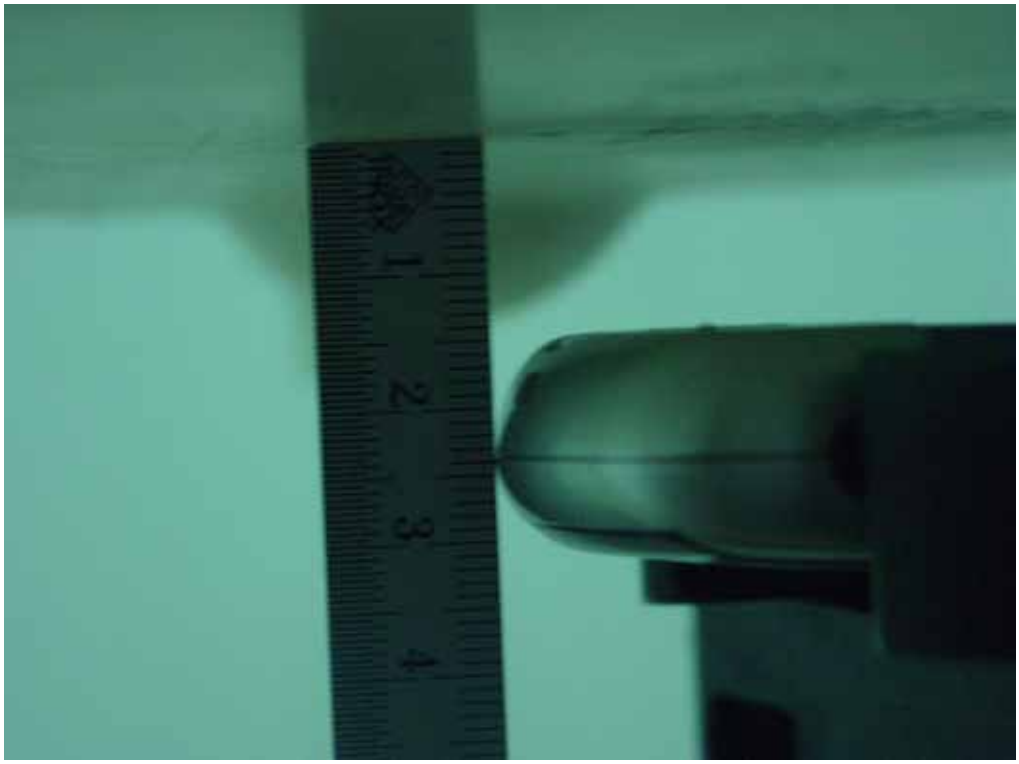
Picture 2 Left Hand Touch Cheek Position

Picture 3 Left Hand Tilt 15° Position

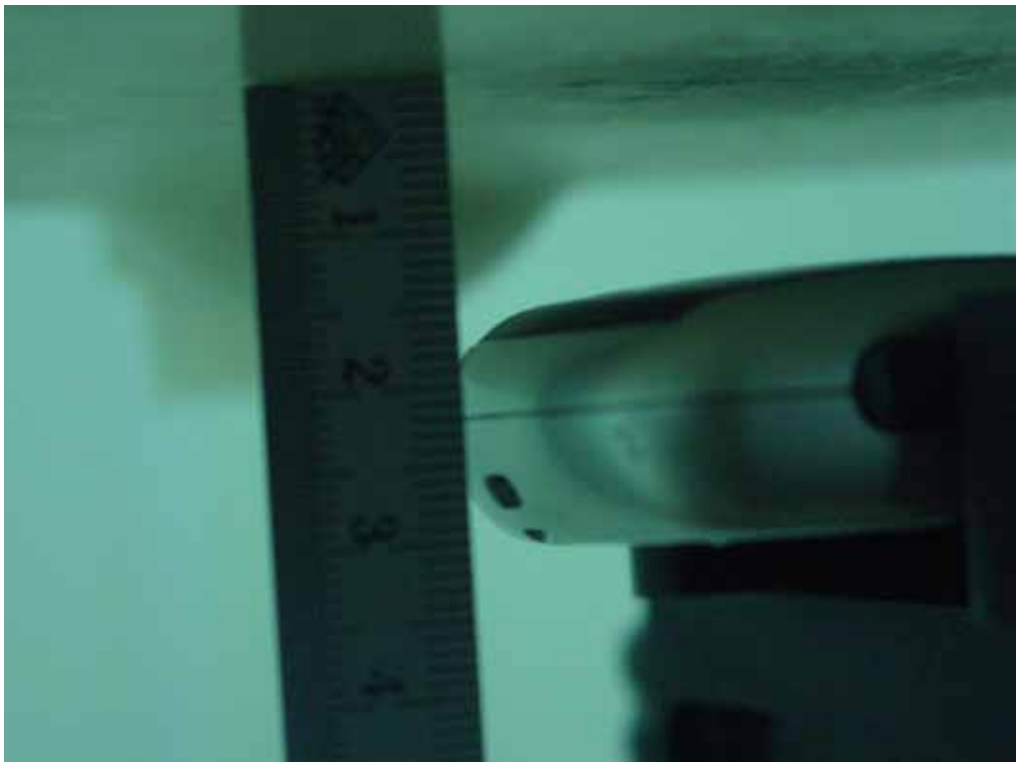


Picture 4 Right Hand Touch Cheek Position

Picture 5 Right Hand Tilt 15° Position



Picture 6 Flat Phantom -- Body-worn Position (towards ground, the distance from handset to the bottom of the Phantom is 1.5cm)



Picture 7 Flat Phantom -- Body-worn Position (towards phantom, the distance from handset to the bottom of the Phantom is 1.5cm)

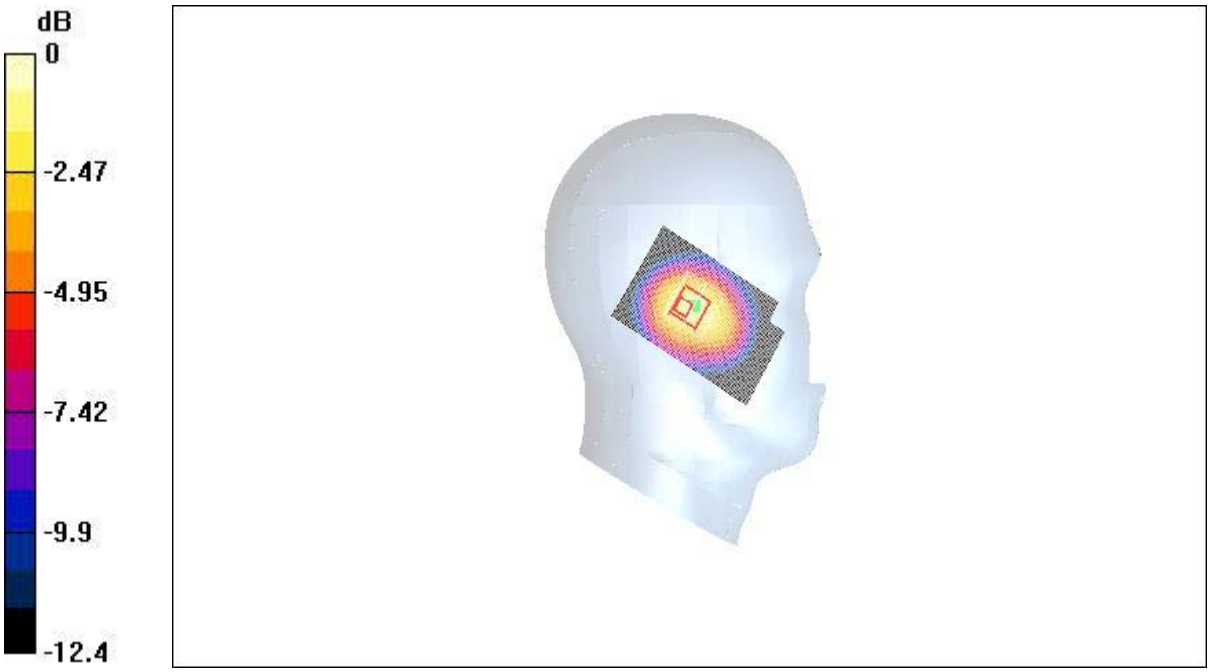
ANNEX C GRAPH RESULTS

850 Left Cheek High

Electronics: DAE3 Sn536
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Cheek High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 29.3 V/m; Power Drift = 0.0 dB
Maximum value of SAR (interpolated) = 0.993 mW/g

Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.3 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 1.26 mW/g
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.709 mW/g



0 dB = 1.26mW/g

Fig. 1 Left Hand Touch Cheek 850MHz CH251

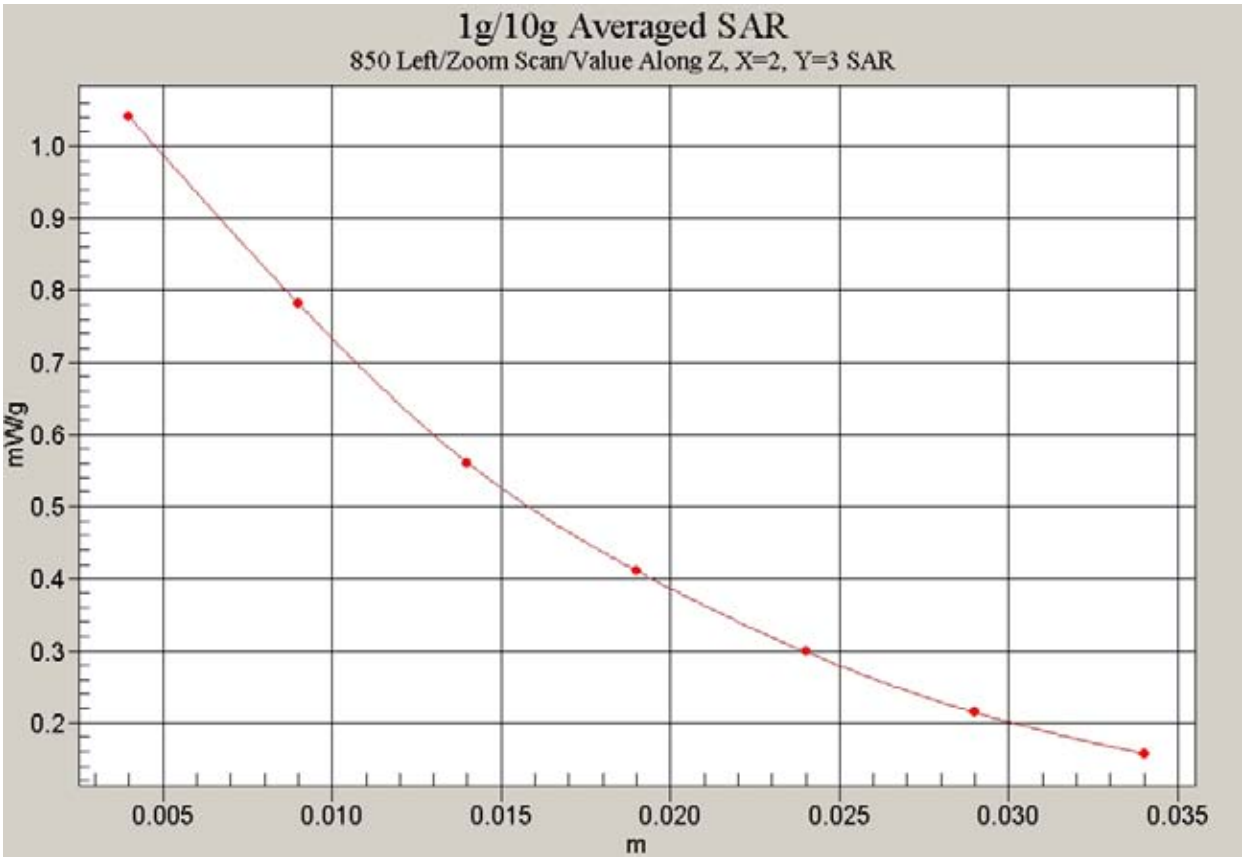


Fig. 2 Z-Scan at power reference point (Left Hand Touch Cheek 850MHz CH251)

850 Left Cheek Middle

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Cheek Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 28.8 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.915 mW/g

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

Reference Value = 28.8 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.914 mW/g

Peak SAR (extrapolated) = 1.18 W/kg

SAR(1 g) = 0.856 mW/g; SAR(10 g) = 0.585 mW/g

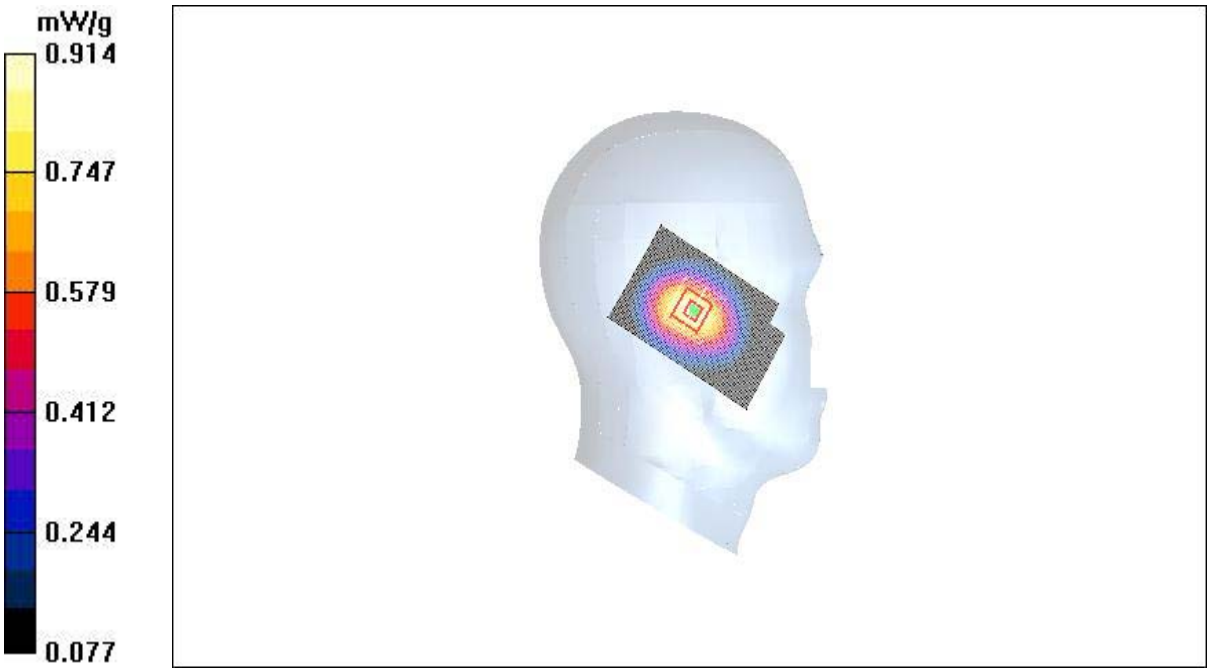


Fig. 3 Left Hand Touch Cheek 850MHz CH190

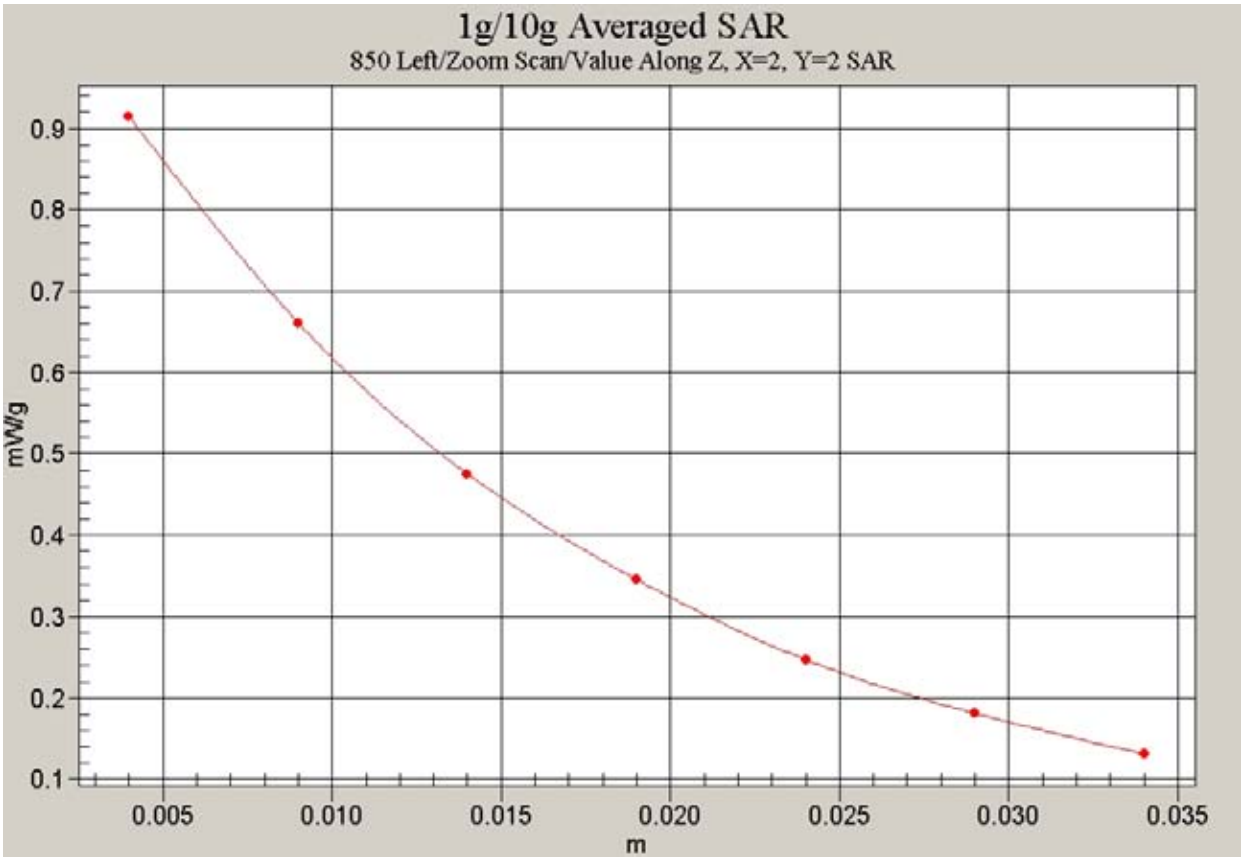


Fig. 4 Z-Scan at power reference point (Left Hand Touch Cheek 850MHz CH190)

850 Left Cheek Low

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Cheek Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 29 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.903 mW/g

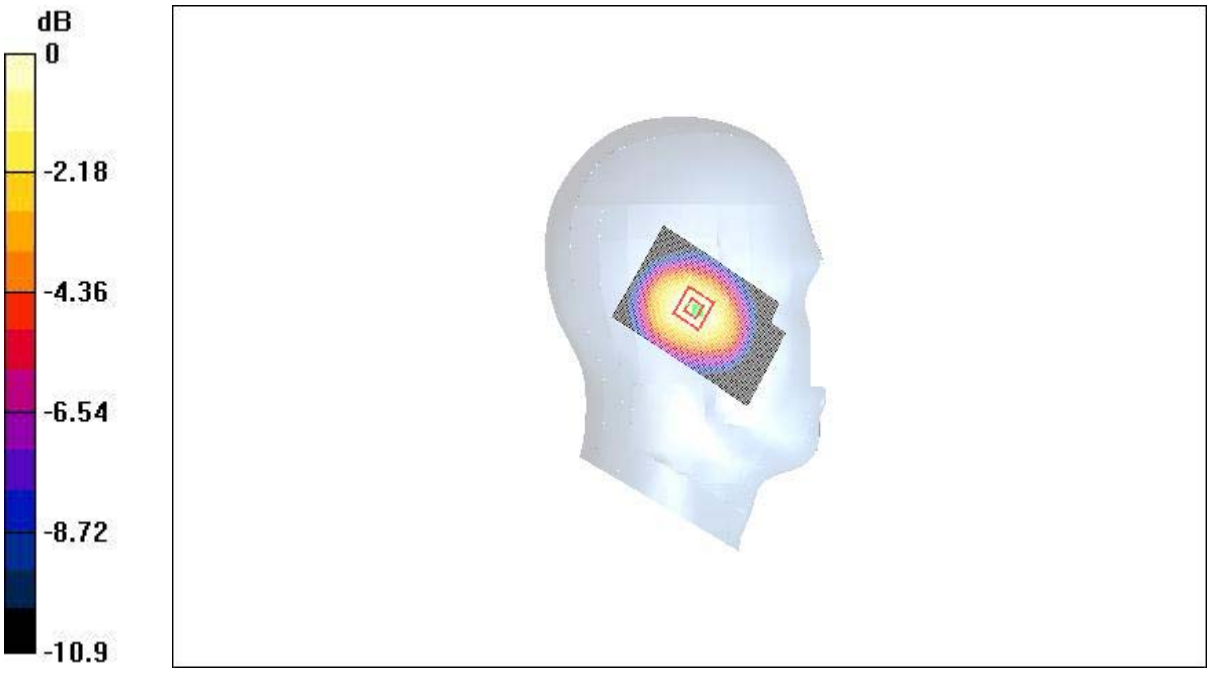
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.906 mW/g

Peak SAR (extrapolated) = 1.2 W/kg

SAR(1 g) = 0.851 mW/g; SAR(10 g) = 0.581 mW/g



0 dB = 0.906mW/g

Fig. 5 Left Hand Touch Cheek 850MHz CH128

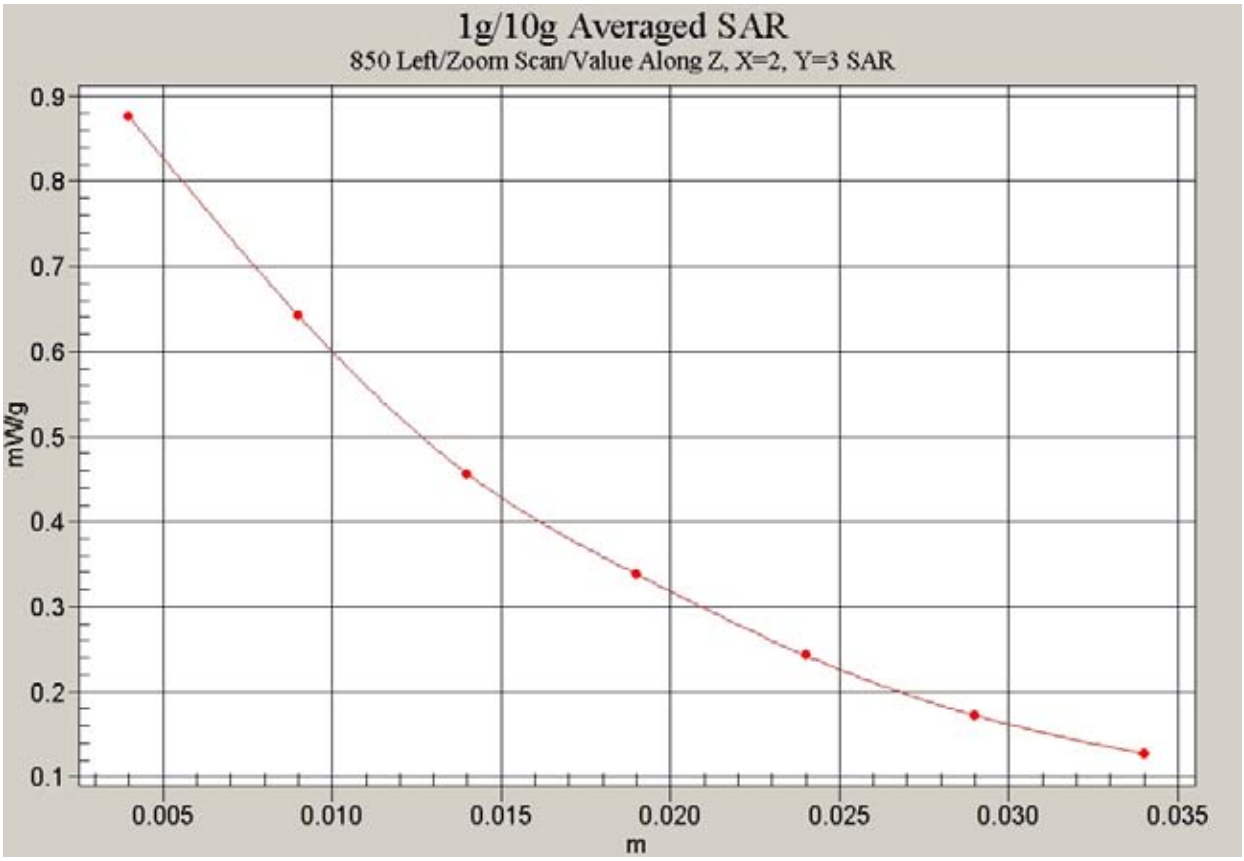


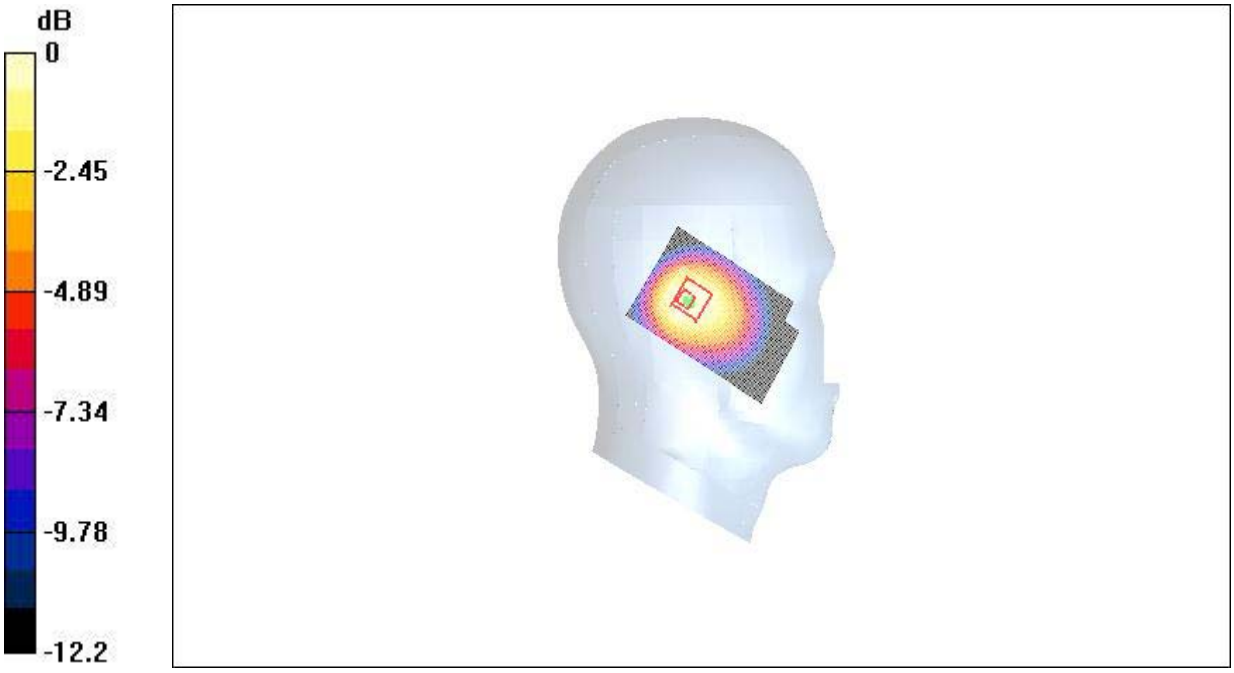
Fig. 6 Z-Scan at power reference point (Left Hand Touch Cheek 850MHz CH128)

850 Left Tilt High

Electronics: DAE3 Sn536
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Tilt High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 23.7 V/m; Power Drift = 0.1 dB
Maximum value of SAR (interpolated) = 0.519 mW/g

Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.7 V/m; Power Drift = 0.1 dB
Maximum value of SAR (measured) = 0.489 mW/g
Peak SAR (extrapolated) = 0.657 W/kg
SAR(1 g) = 0.467 mW/g; SAR(10 g) = 0.321 mW/g



0 dB = 0.489mW/g

Fig. 7 Left Hand Tilt 15° 850MHz CH251

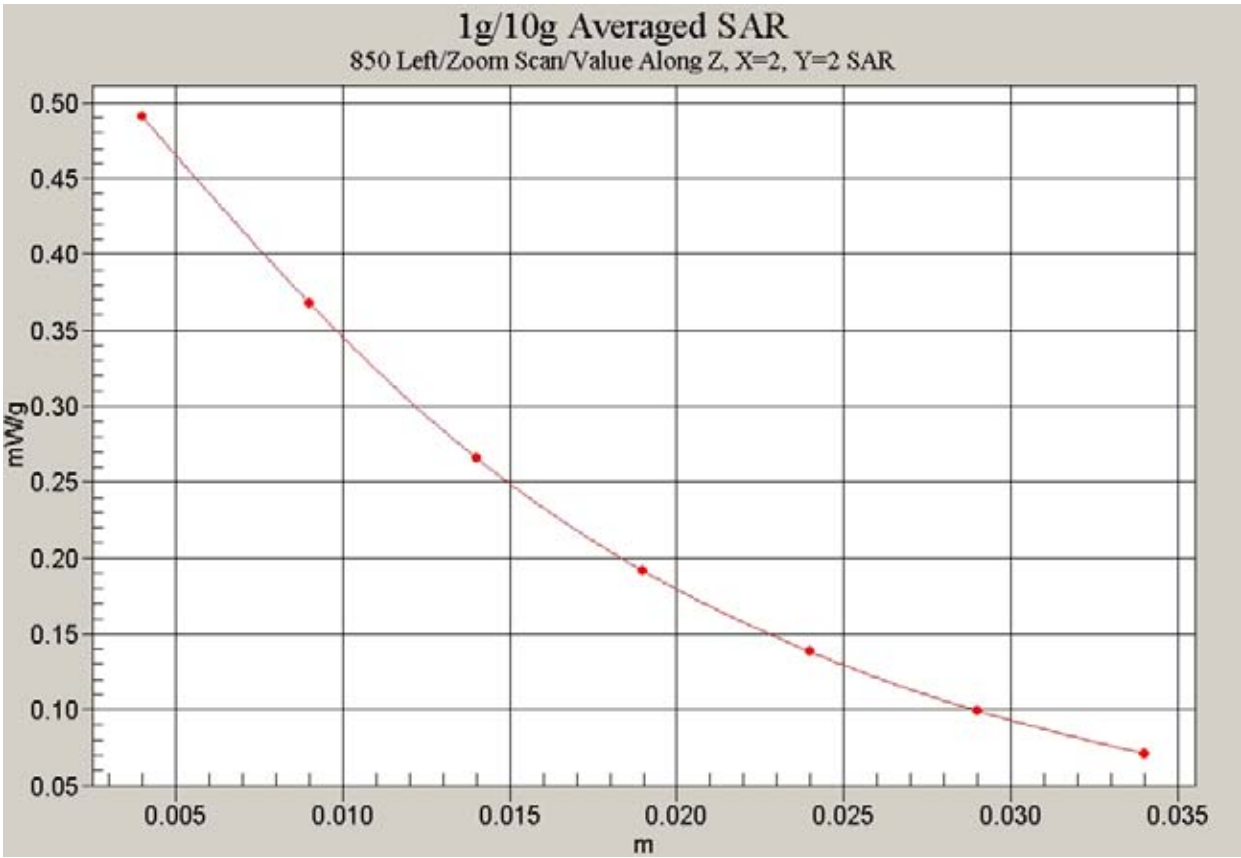


Fig. 8 Z-Scan at power reference point (Left Hand Tilt 15° 850MHz CH251)

850 Left Tilt Middle

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Tilt Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 22.6 V/m; Power Drift = 0.1 dB

Maximum value of SAR (interpolated) = 0.469 mW/g

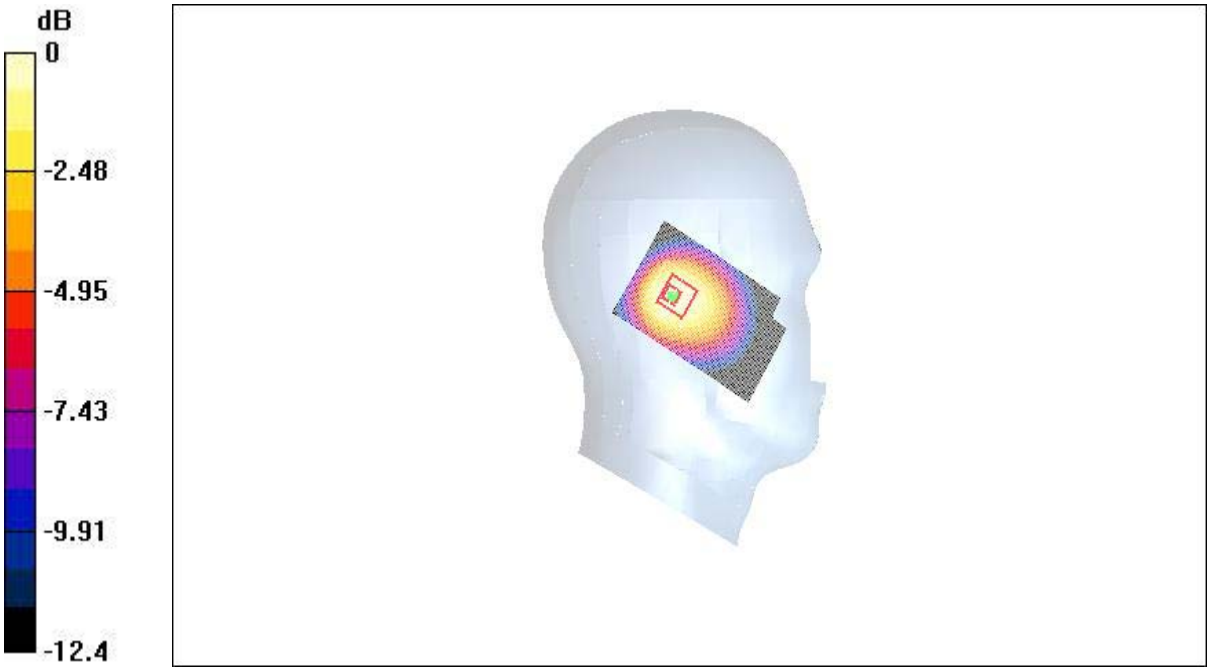
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.6 V/m; Power Drift = 0.1 dB

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

Peak SAR (extrapolated) = 0.595 W/kg

SAR(1 g) = 0.426 mW/g; SAR(10 g) = 0.292 mW/g



0 dB = 0.450mW/g

Fig. 9 Left Hand Tilt 15° 850MHz CH190

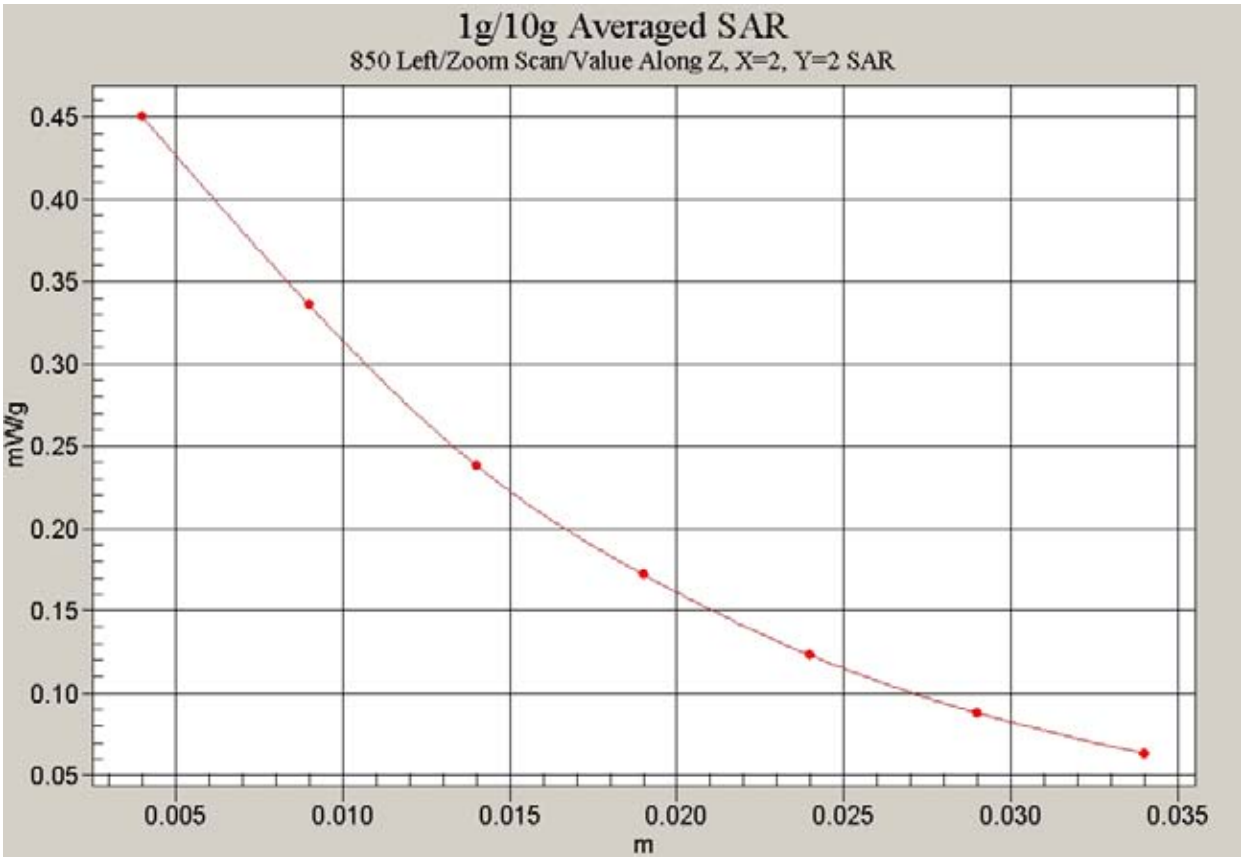


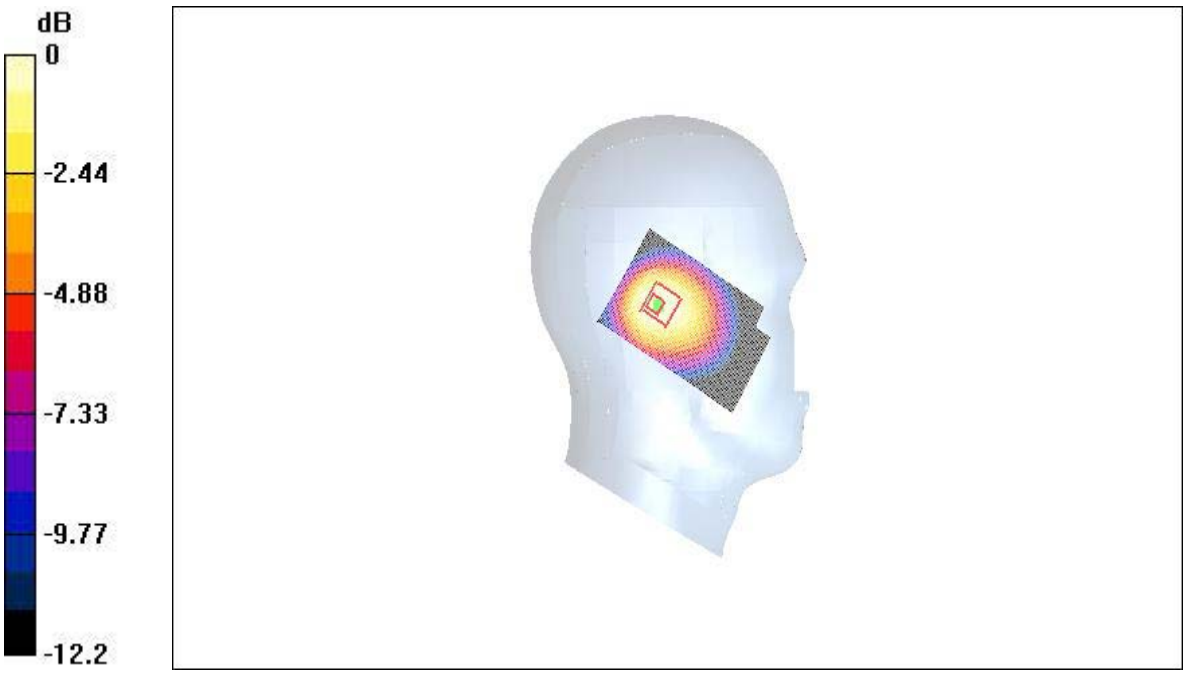
Fig. 10 Z-Scan at power reference point (Left Hand Tilt 15° 850MHz CH190)

850 Left Tilt Low

Electronics: DAE3 Sn536
Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Tilt Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 22.4 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 0.438 mW/g

Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.4 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.419 mW/g
Peak SAR (extrapolated) = 0.551 W/kg
SAR(1 g) = 0.400 mW/g; SAR(10 g) = 0.276 mW/g



0 dB = 0.419mW/g

Fig. 11 Left Hand Tilt 15° 850MHz CH128

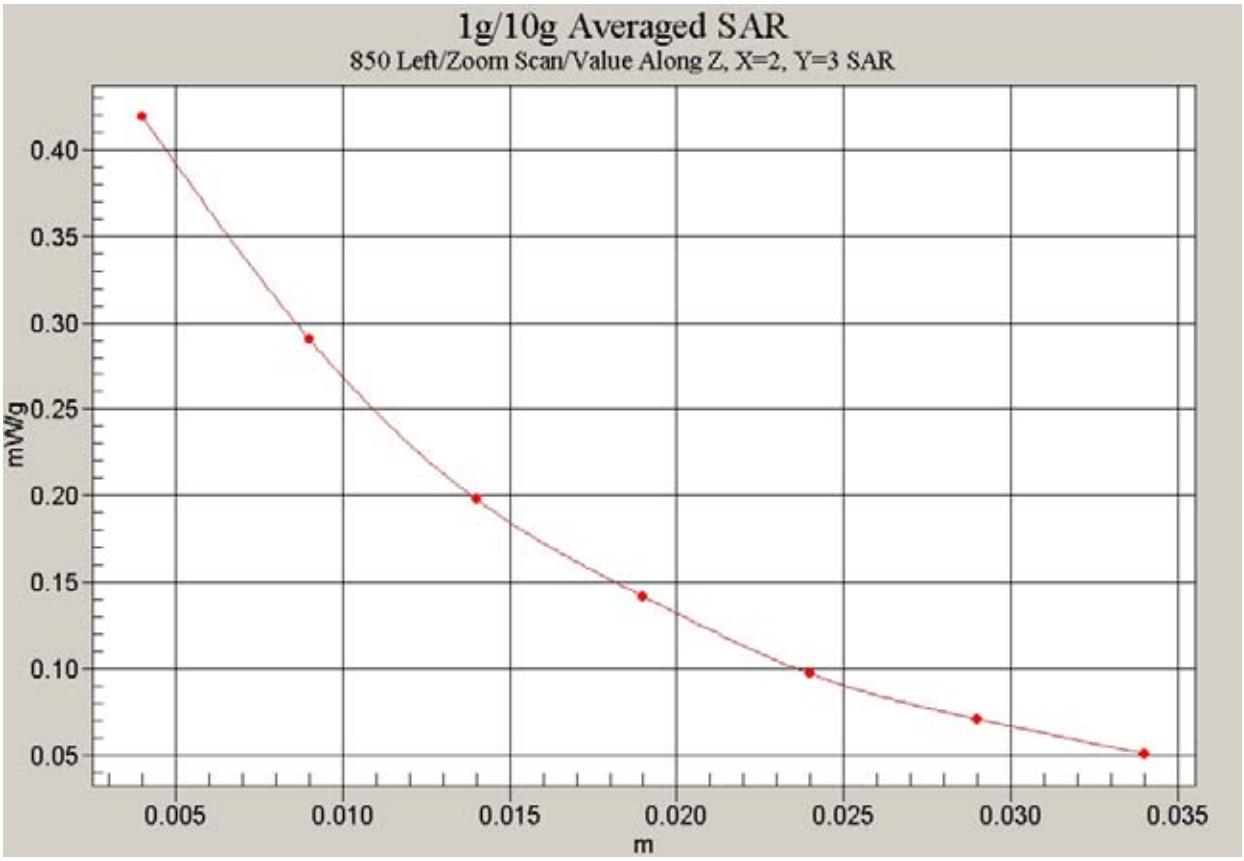


Fig. 12 Z-Scan at power reference point (Left Hand Tilt 15° 850MHz CH128)

850 Right Cheek High

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Cheek High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 28.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.970 mW/g

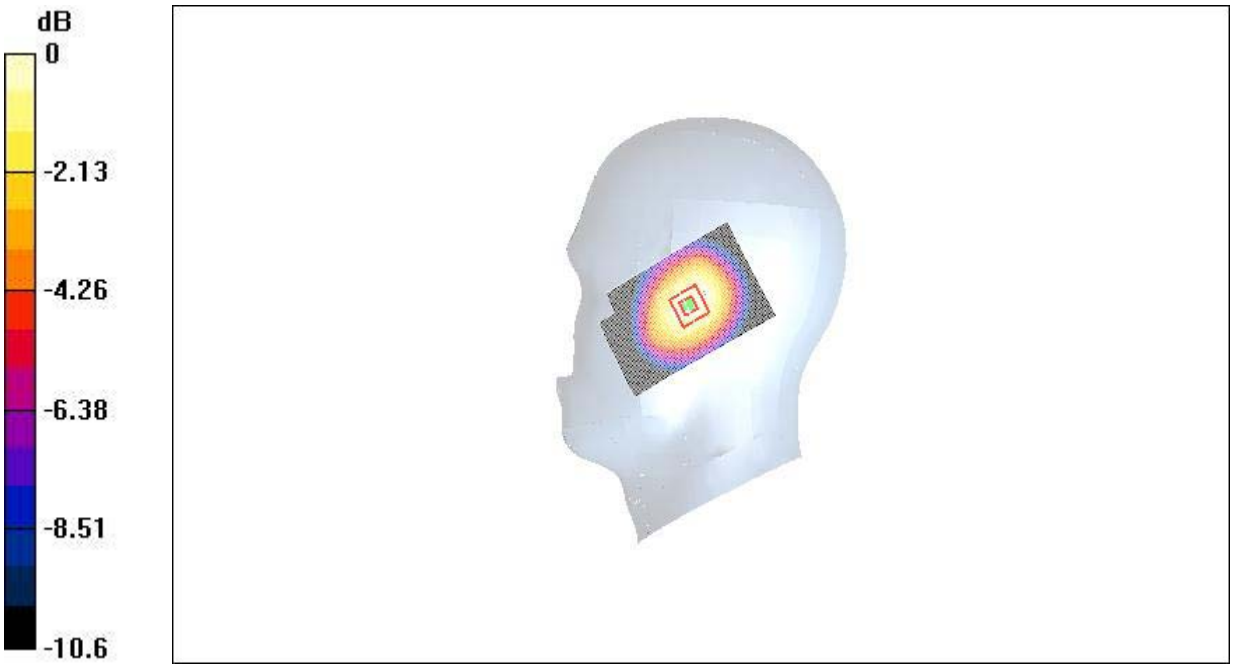
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 28.9 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.979 mW/g

Peak SAR (extrapolated) = 1.29 W/kg

SAR(1 g) = 0.913 mW/g; SAR(10 g) = 0.620 mW/g



0 dB = 0.979mW/g

Fig. 13 Right Hand Touch Cheek 850MHz CH251

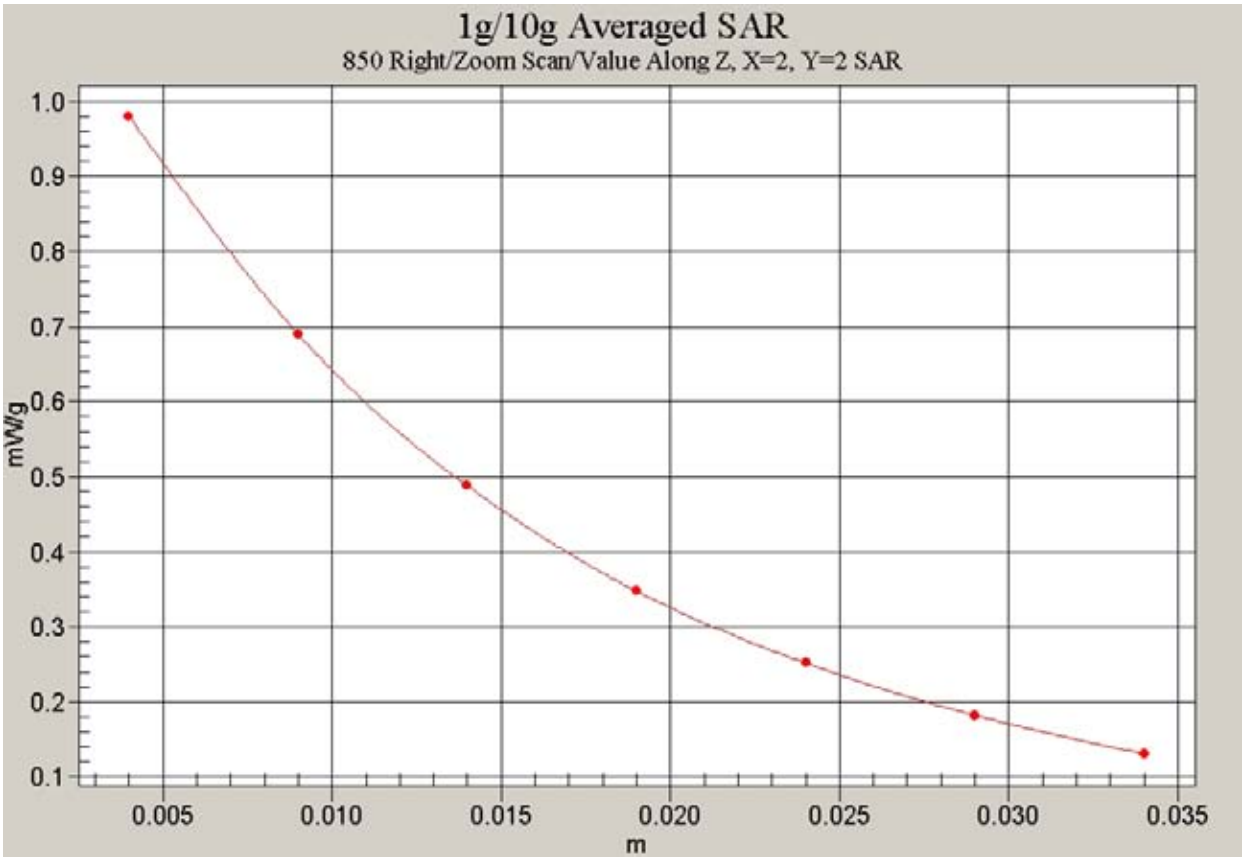


Fig. 14 Z-Scan at power reference point (Right Hand Touch Cheek 850MHz CH251)

850 Right Cheek Middle

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Cheek Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 27.9 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.925 mW/g

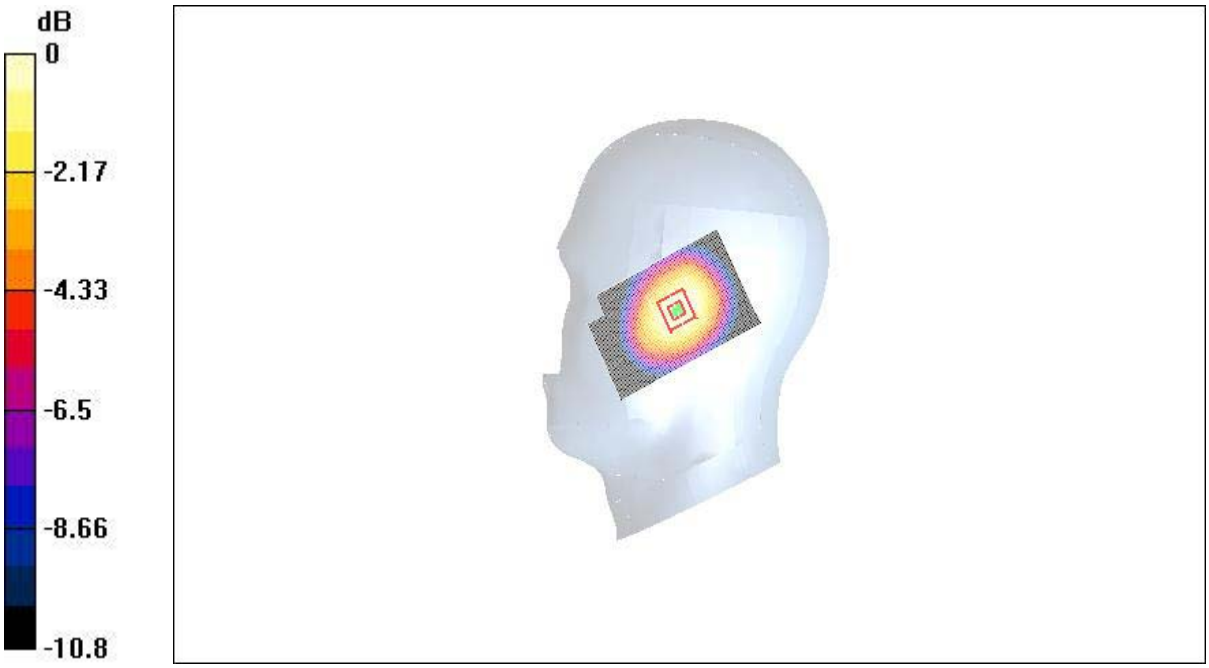
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.9 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.932 mW/g

Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.866 mW/g; SAR(10 g) = 0.586 mW/g



0 dB = 0.932mW/g

Fig.15 Right Hand Touch Cheek 850MHz CH190

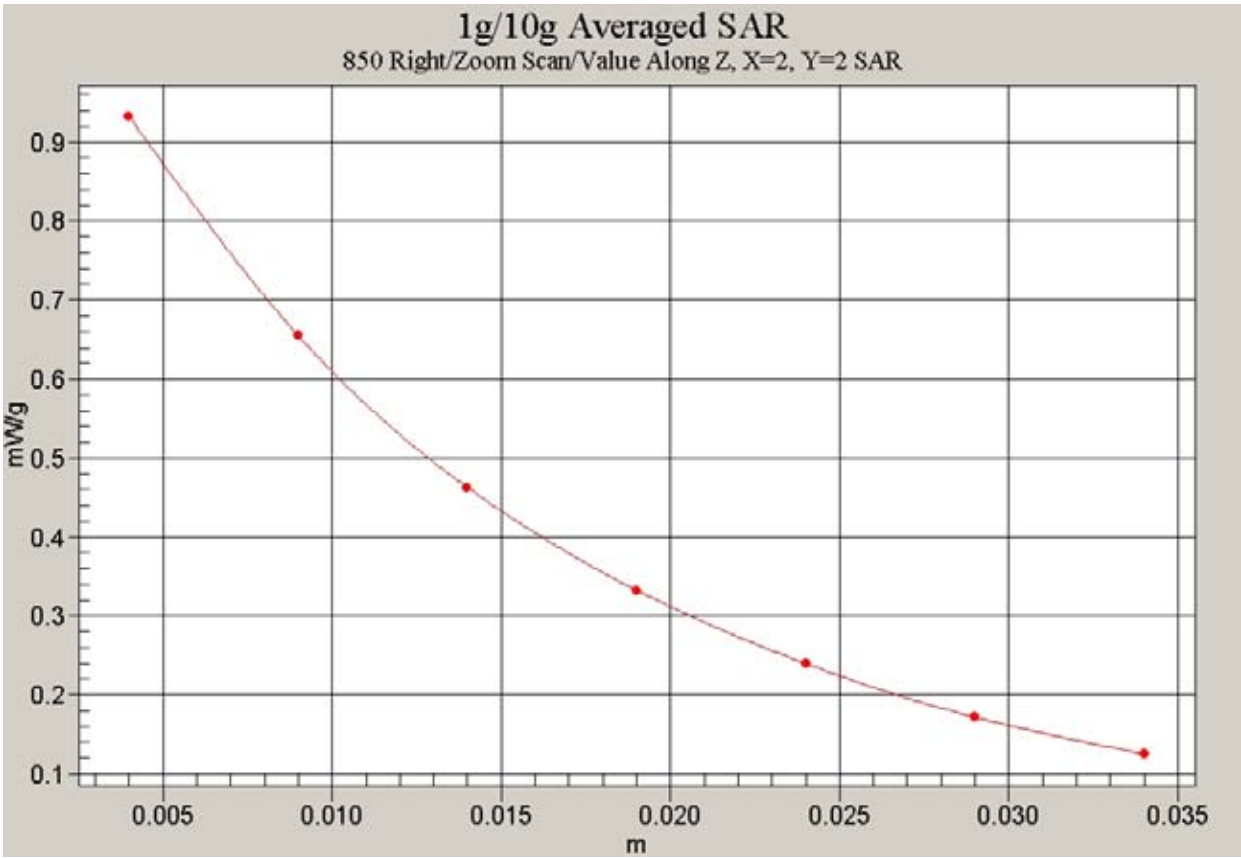


Fig. 16 Z-Scan at power reference point (Right Hand Touch Cheek 850MHz CH190)

850 Right Cheek Low

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Cheek Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 27.7 V/m; Power Drift = -0.1 dB

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

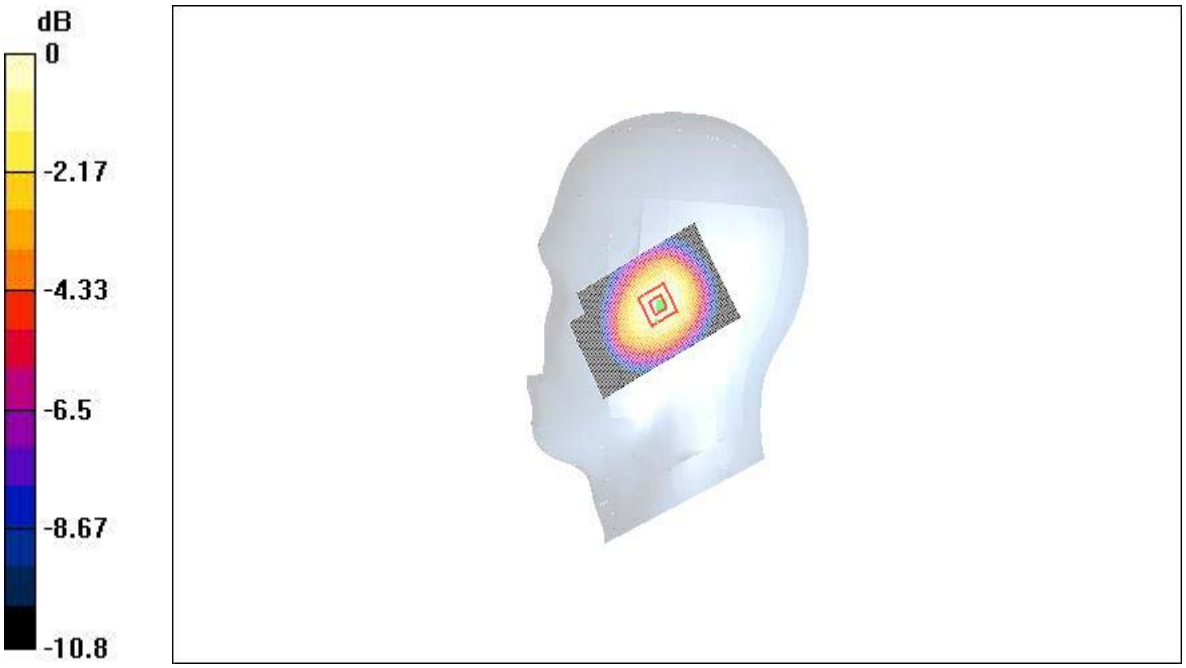
Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.7 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.925 mW/g

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.857 mW/g; SAR(10 g) = 0.580 mW/g



0 dB = 0.925mW/g

Fig. 17 Right Hand Touch Cheek 850MHz CH128

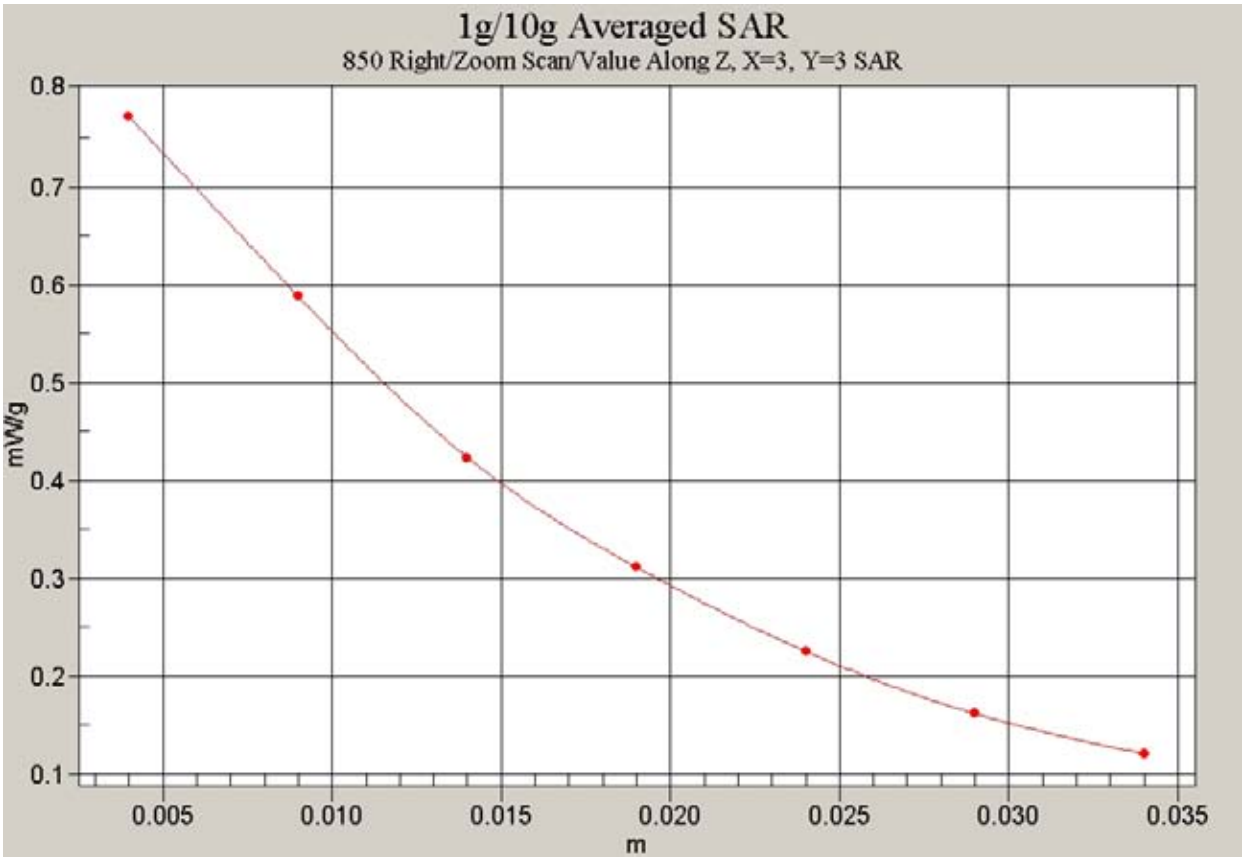


Fig. 18 Z-Scan at power reference point (Right Hand Touch Cheek 850MHz CH128)

850 Right Tilt High

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Tilt High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 23.5 V/m; Power Drift = -0.007 dB

Maximum value of SAR (interpolated) = 0.531 mW/g

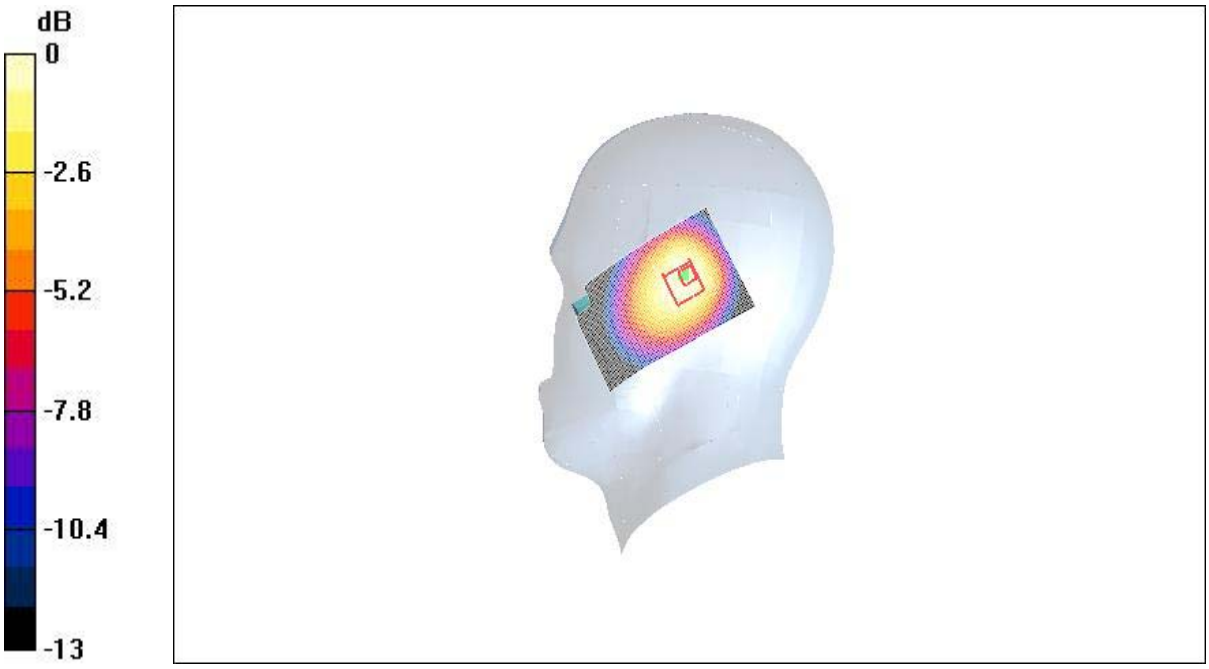
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.5 V/m; Power Drift = -0.007 dB

Maximum value of SAR (measured) = 0.495 mW/g

Peak SAR (extrapolated) = 0.707 W/kg

SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.319 mW/g



0 dB = 0.495mW/g

Fig. 19 Right Hand Tilt 15°850MHz CH251

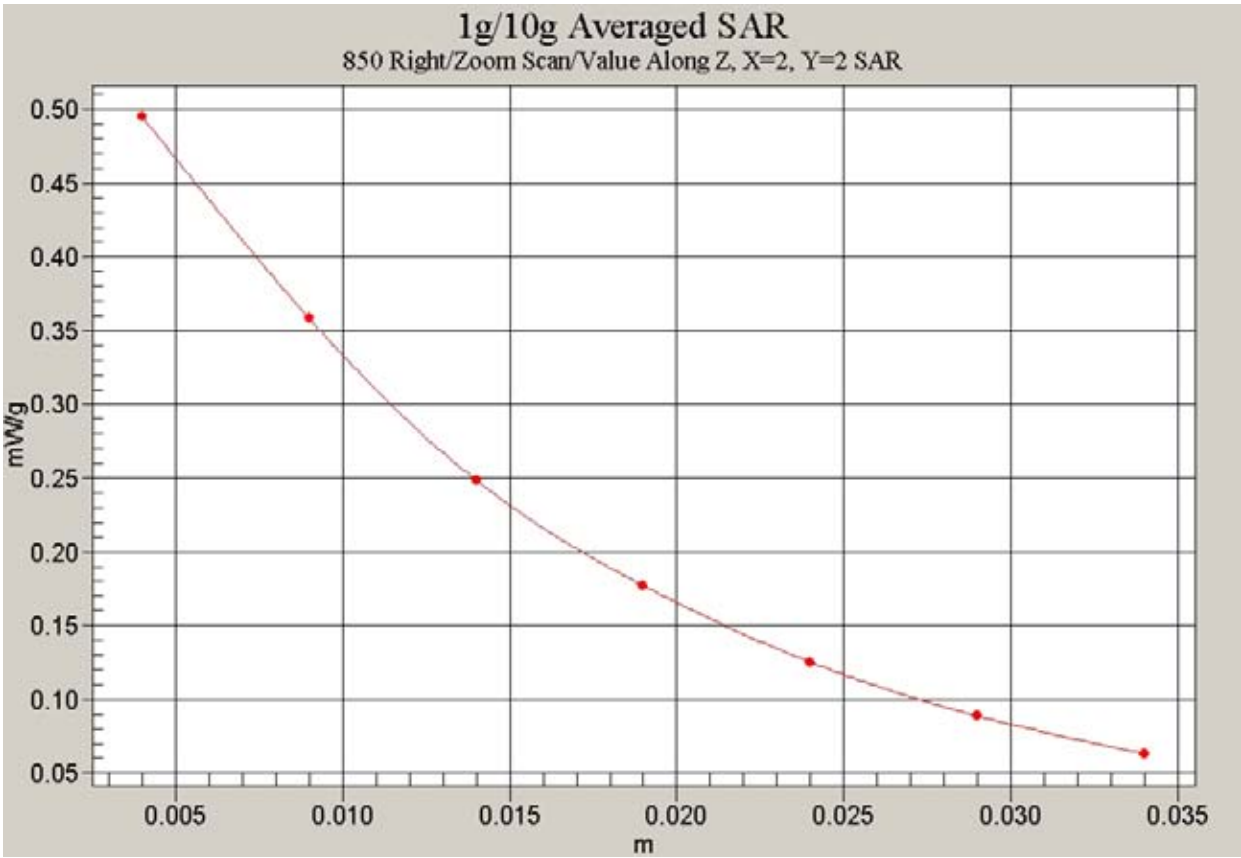


Fig. 20 Z-Scan at power reference point (Right Hand Tilt 15° 850MHz CH251)

850 Right Tilt Middle

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Tilt Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 22.7 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.503 mW/g

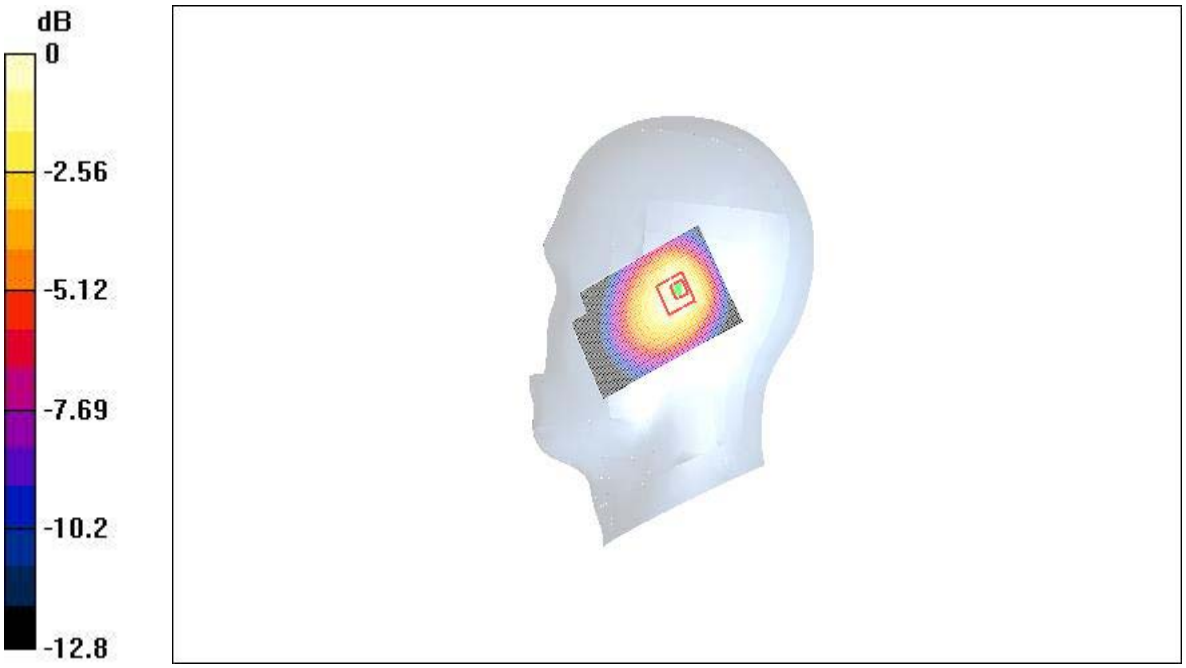
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.7 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.469 mW/g

Peak SAR (extrapolated) = 0.664 W/kg

SAR(1 g) = 0.447 mW/g; SAR(10 g) = 0.299 mW/g



0 dB = 0.469mW/g

Fig. 21 Right Hand Tilt 15°850MHz CH190

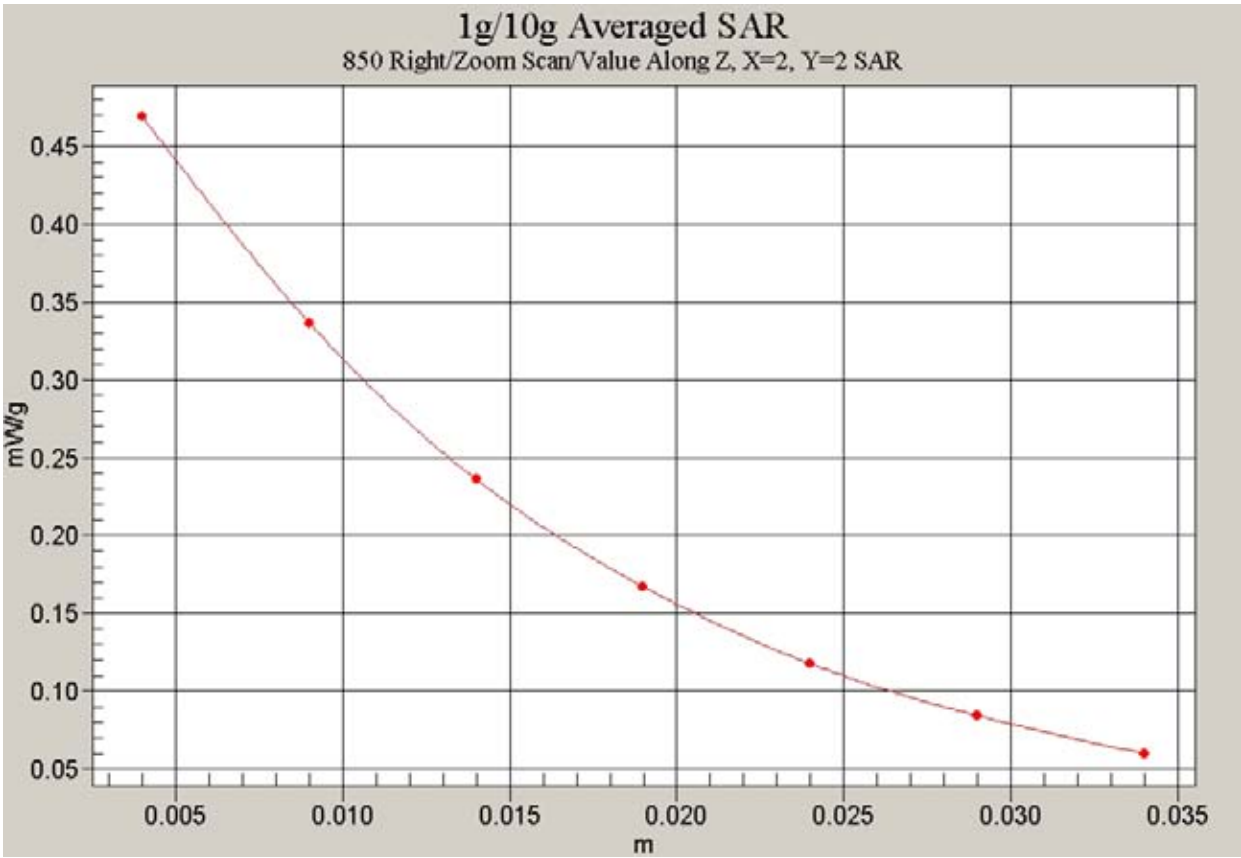


Fig. 22 Z-Scan at power reference point (Right Hand Tilt 15° 850MHz CH190)

850 Right Tilt Low

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Tilt Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 22.8 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.494 mW/g

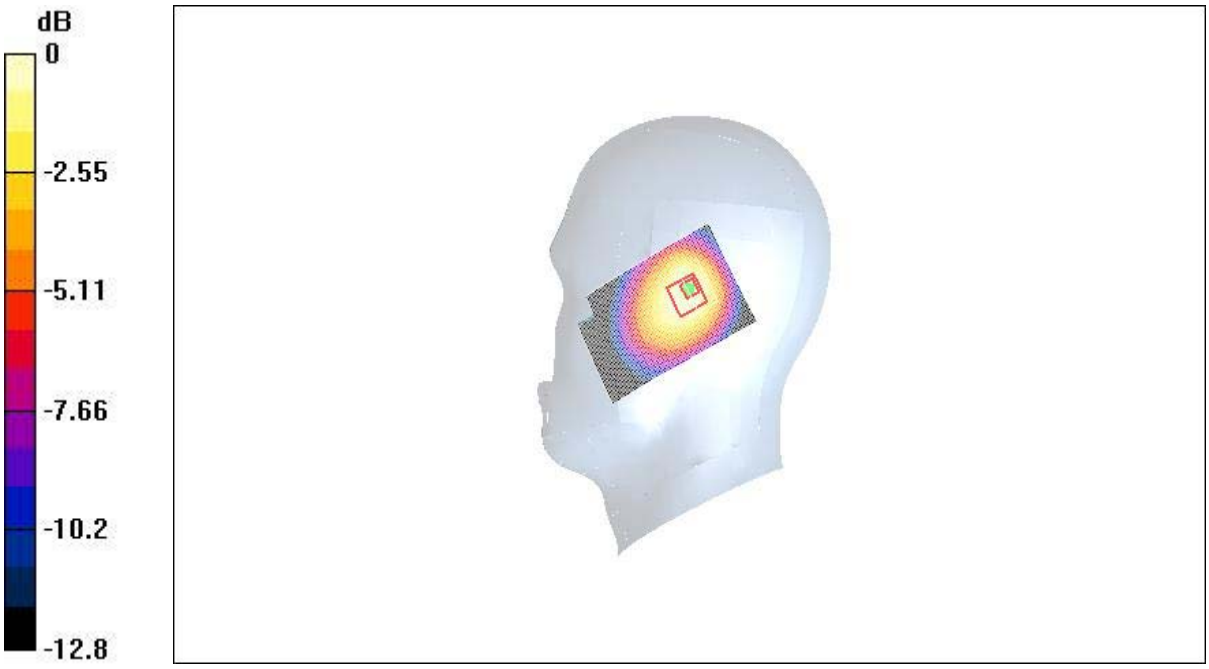
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 22.8 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.459 mW/g

Peak SAR (extrapolated) = 0.655 W/kg

SAR(1 g) = 0.436 mW/g; SAR(10 g) = 0.290 mW/g



0 dB = 0.459mW/g

Fig. 23 Right Hand Tilt 15° 850MHz CH128

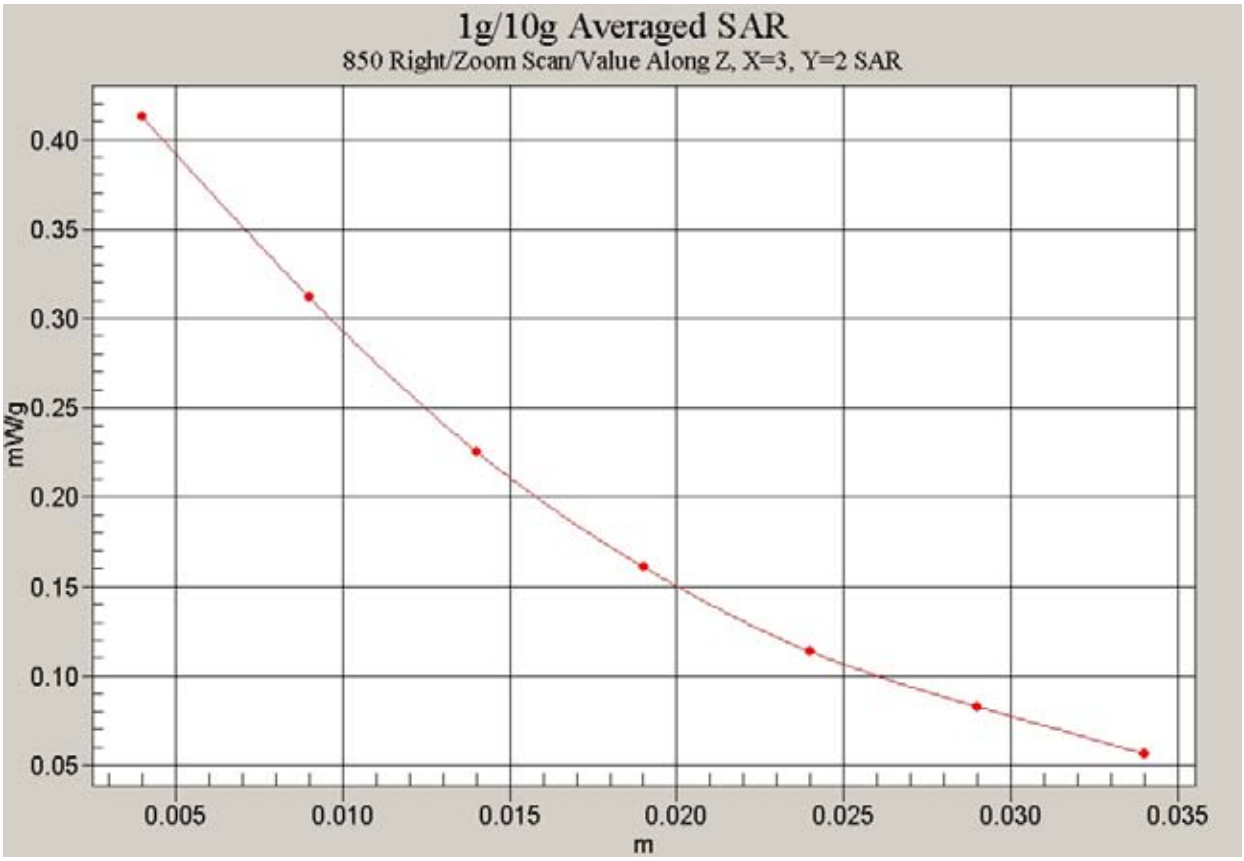


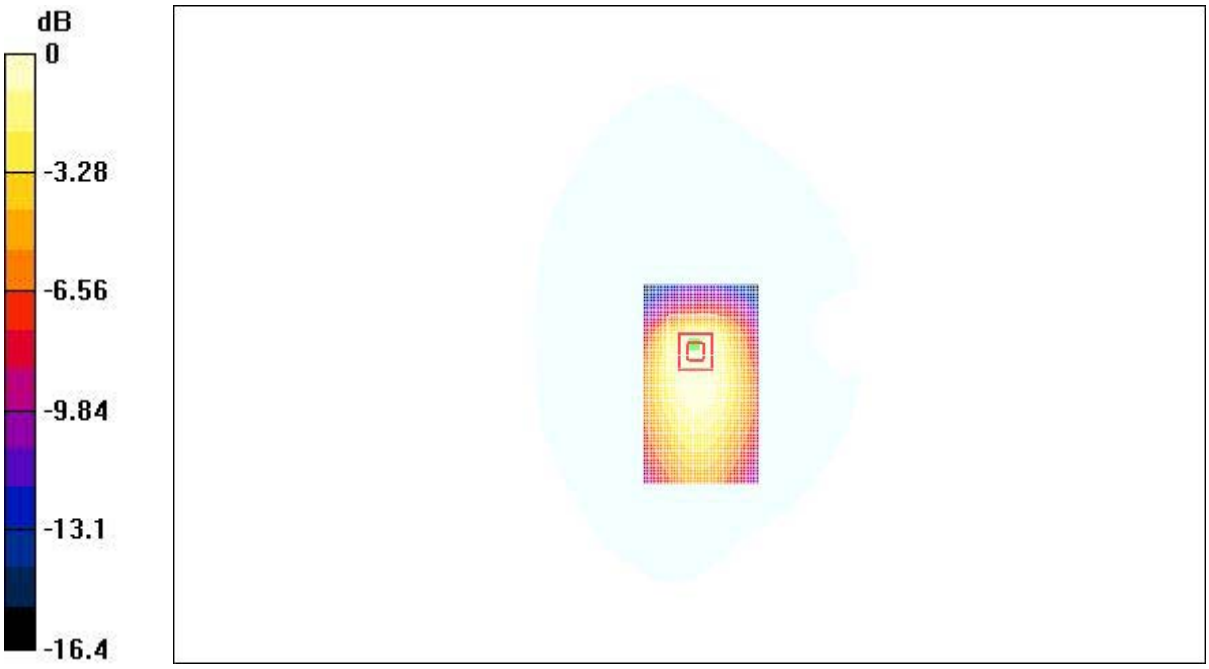
Fig. 24 Z-Scan at power reference point (Right Hand Tilt 15° 850MHz CH128)

850 Body Towards Ground High

Electronics: DAE3 Sn536
Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Toward Ground High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 20.9 V/m; Power Drift = 0.0 dB
Maximum value of SAR (interpolated) = 0.510 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.9 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.472 mW/g
Peak SAR (extrapolated) = 0.700 W/kg
SAR(1 g) = 0.451 mW/g; SAR(10 g) = 0.298 mW/g



0 dB = 0.472mW/g

Fig. 25 Flat Phantom Body-worn Position 850MHz CH251 with the display of the handset towards the ground

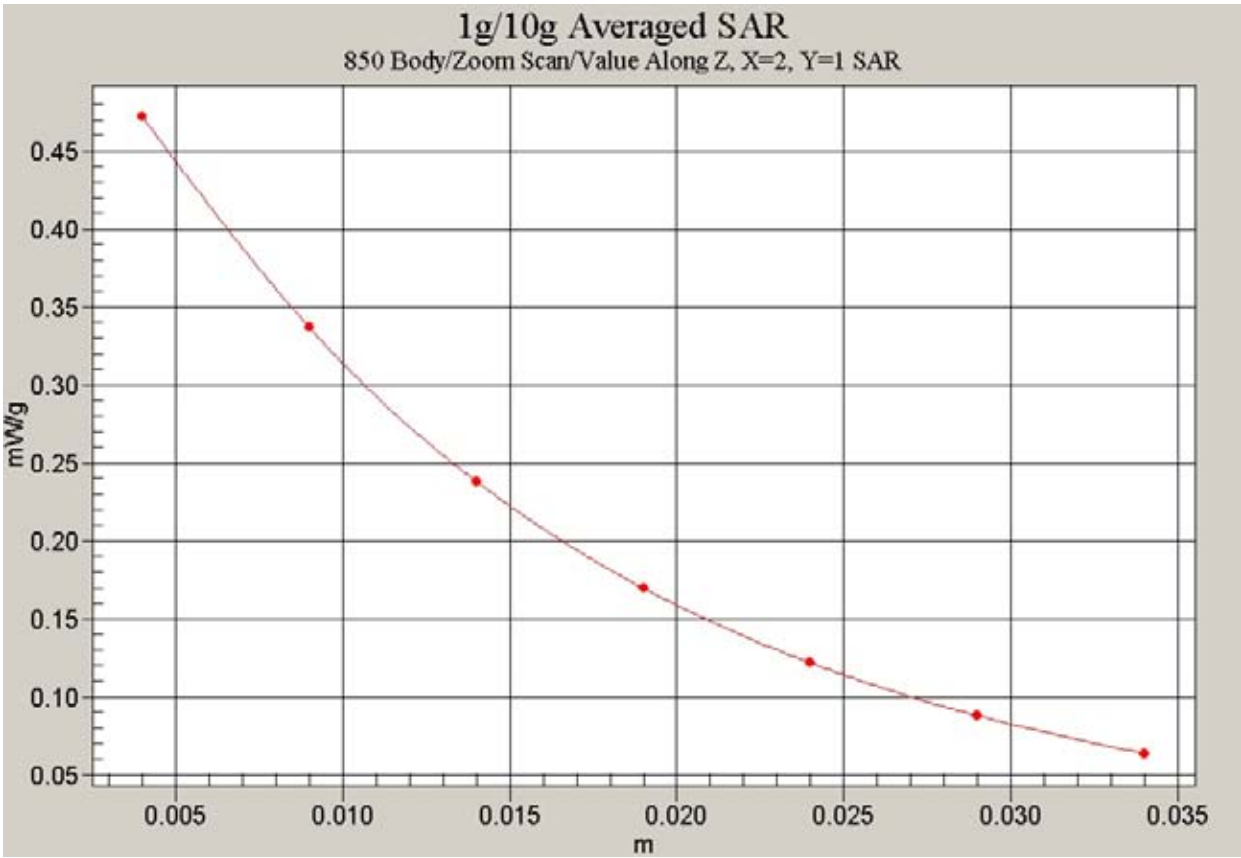


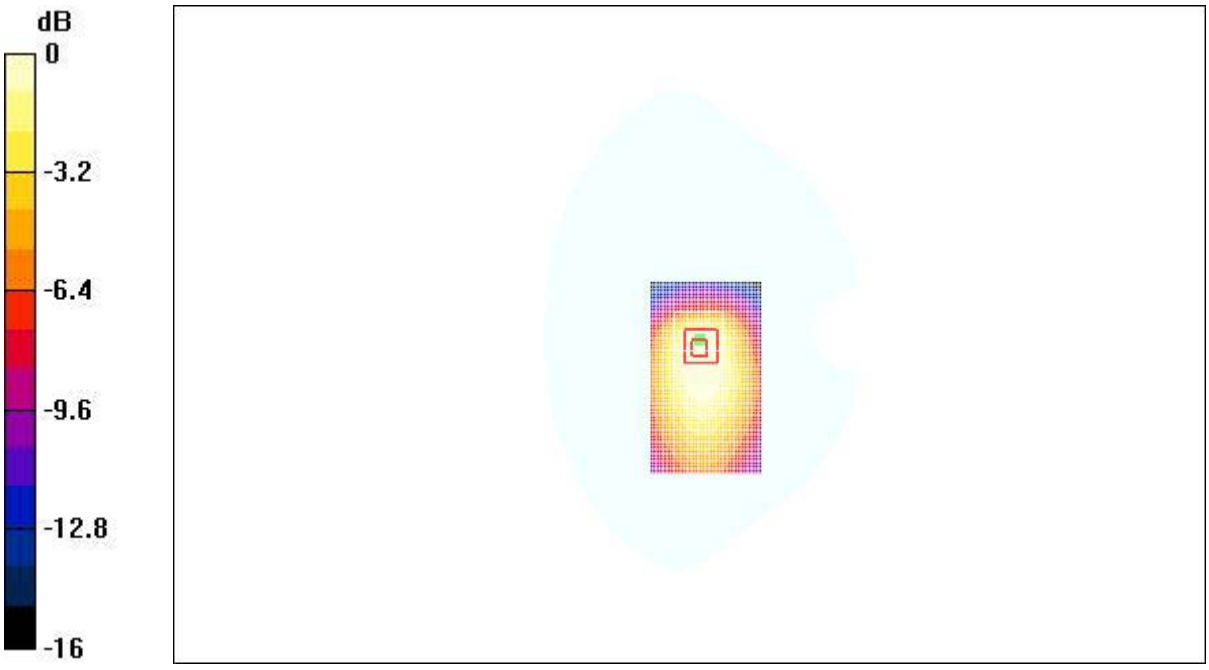
Fig. 26 Z-Scan at power reference point (Flat Phantom 850MHz CH251 with the display of the handset towards the ground)

850 Body Towards Ground Middle

Electronics: DAE3 Sn536
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Toward Ground Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 21 V/m; Power Drift = 0.0 dB
Maximum value of SAR (interpolated) = 0.519 mW/g

Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21 V/m; Power Drift = 0.0 dB
Maximum value of SAR (measured) = 0.488 mW/g
Peak SAR (extrapolated) = 0.704 W/kg
SAR(1 g) = 0.462 mW/g; SAR(10 g) = 0.309 mW/g



0 dB = 0.488mW/g

Fig. 27 Flat Phantom Body-worn Position 850MHz CH190 with the display of the handset towards the ground

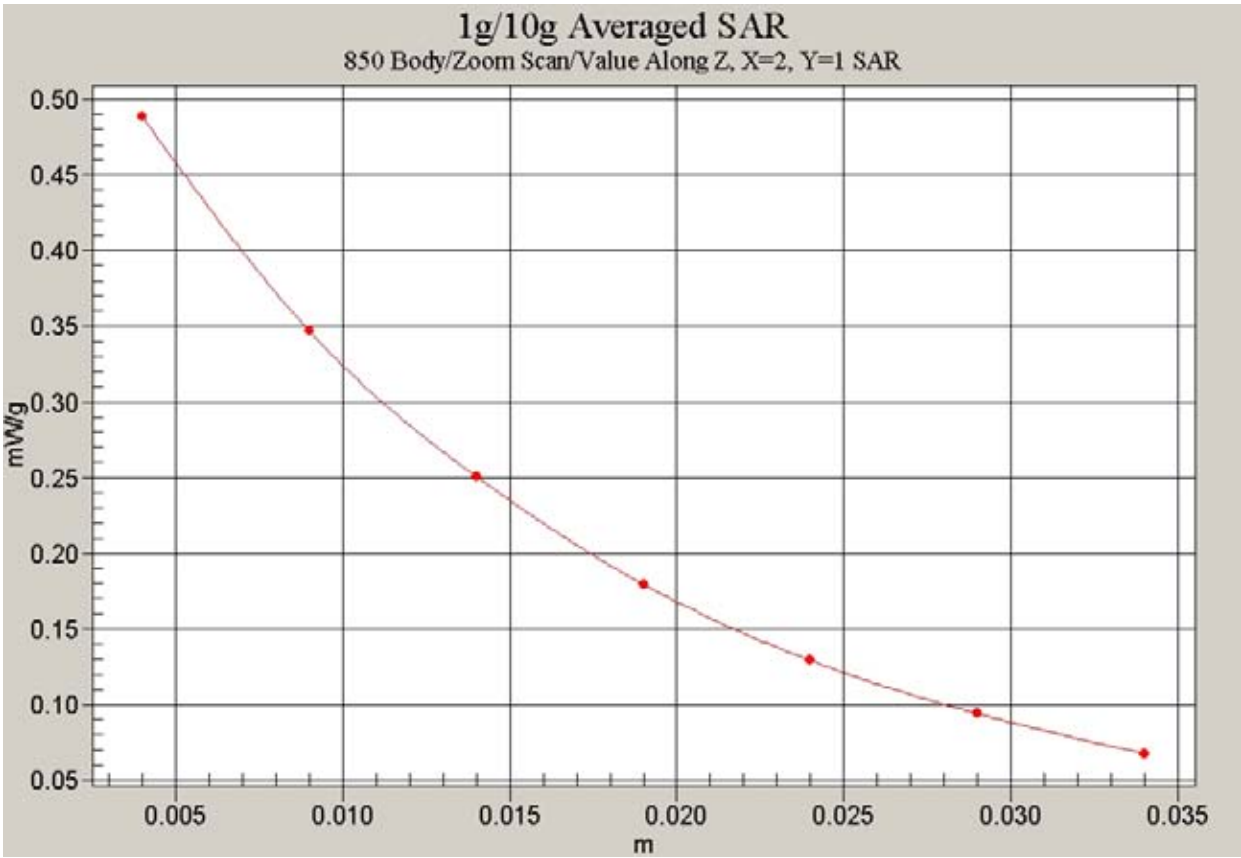


Fig. 28 Z-Scan at power reference point (Flat Phantom 850MHz CH190 with the display of the handset towards the ground)

850 Body Towards Ground Low

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Toward Ground Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 21.6 V/m; Power Drift = 0.0 dB

Maximum value of SAR (interpolated) = 0.534 mW/g

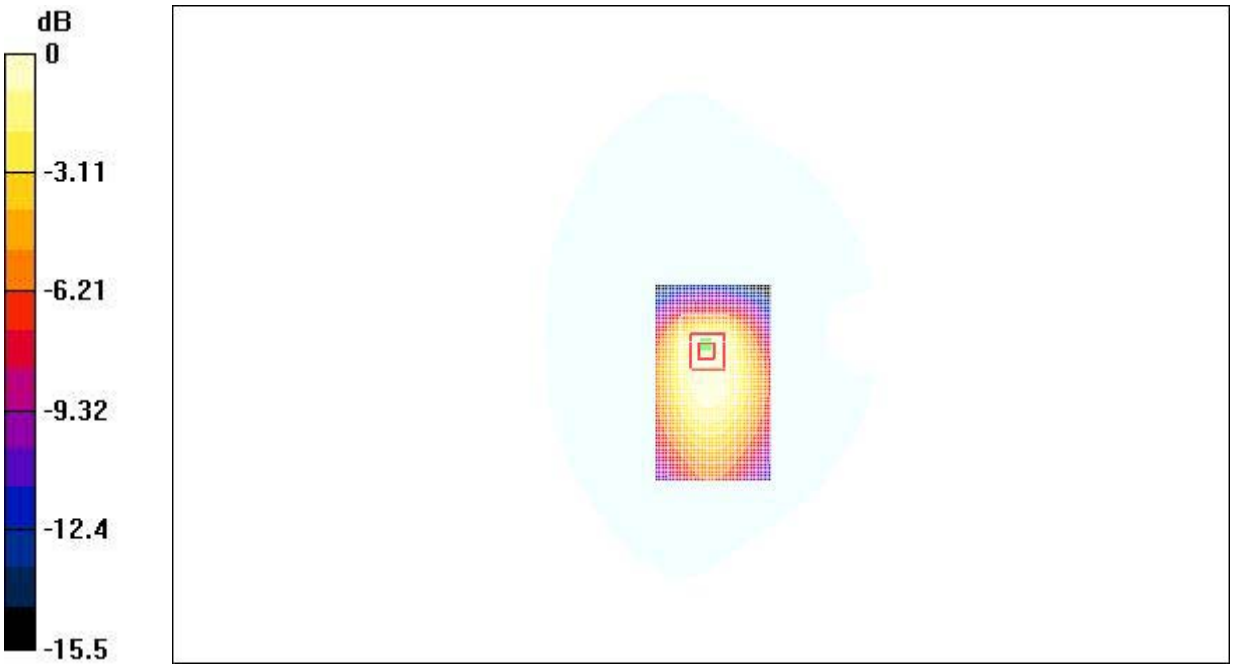
Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.6 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 0.509 mW/g

Peak SAR (extrapolated) = 0.717 W/kg

SAR(1 g) = 0.481 mW/g; SAR(10 g) = 0.326 mW/g



0 dB = 0.509mW/g

Fig. 29 Flat Phantom Body-worn Position 850MHz CH128 with the display of the handset towards the ground

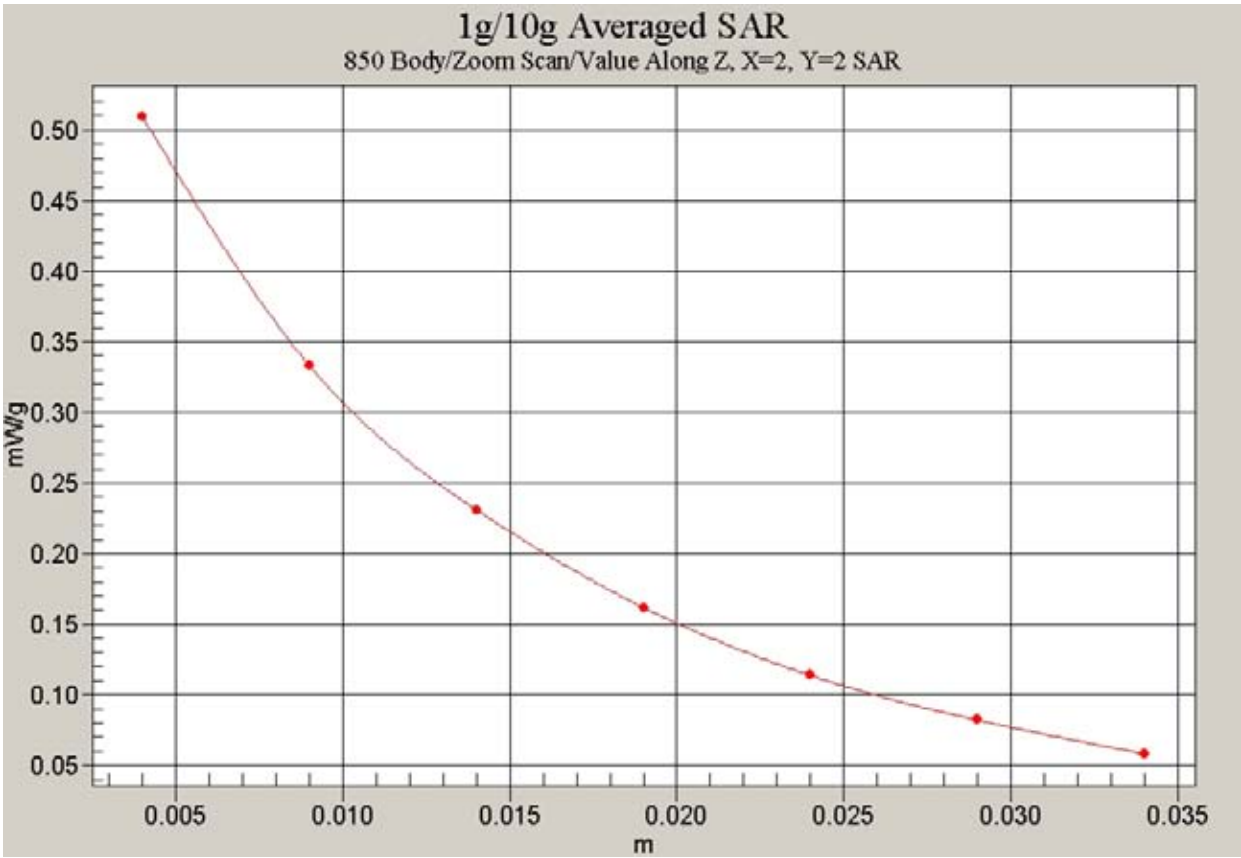


Fig. 30 Z-Scan at power reference point (Flat Phantom 850MHz CH128 with the display of the handset towards the ground)

850 Body Towards Phantom High

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 824.2 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Toward Phantom Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 12.8 V/m; Power Drift = -0.007 dB

Maximum value of SAR (interpolated) = 0.195 mW/g

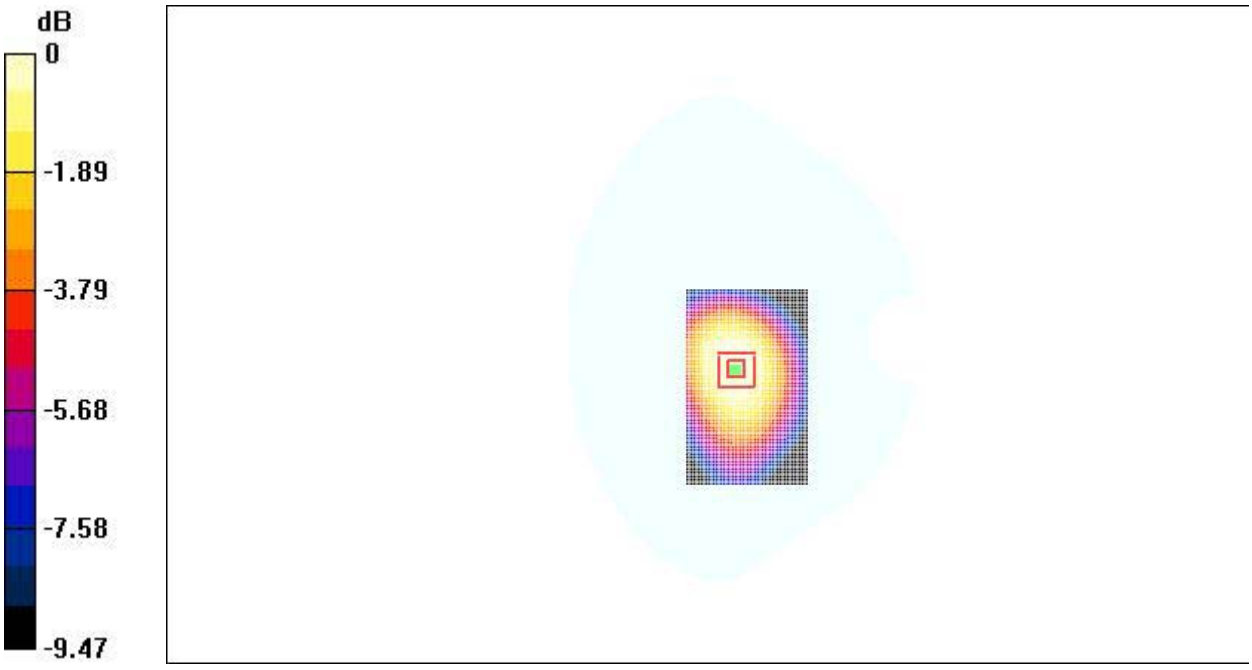
Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.8 V/m; Power Drift = -0.007 dB

Maximum value of SAR (measured) = 0.187 mW/g

Peak SAR (extrapolated) = 0.233 W/kg

SAR(1 g) = 0.179 mW/g; SAR(10 g) = 0.129 mW/g



0 dB = 0.187mW/g

Fig. 31 Flat Phantom Body-worn Position 850MHz CH251 with the display of the handset towards the phantom

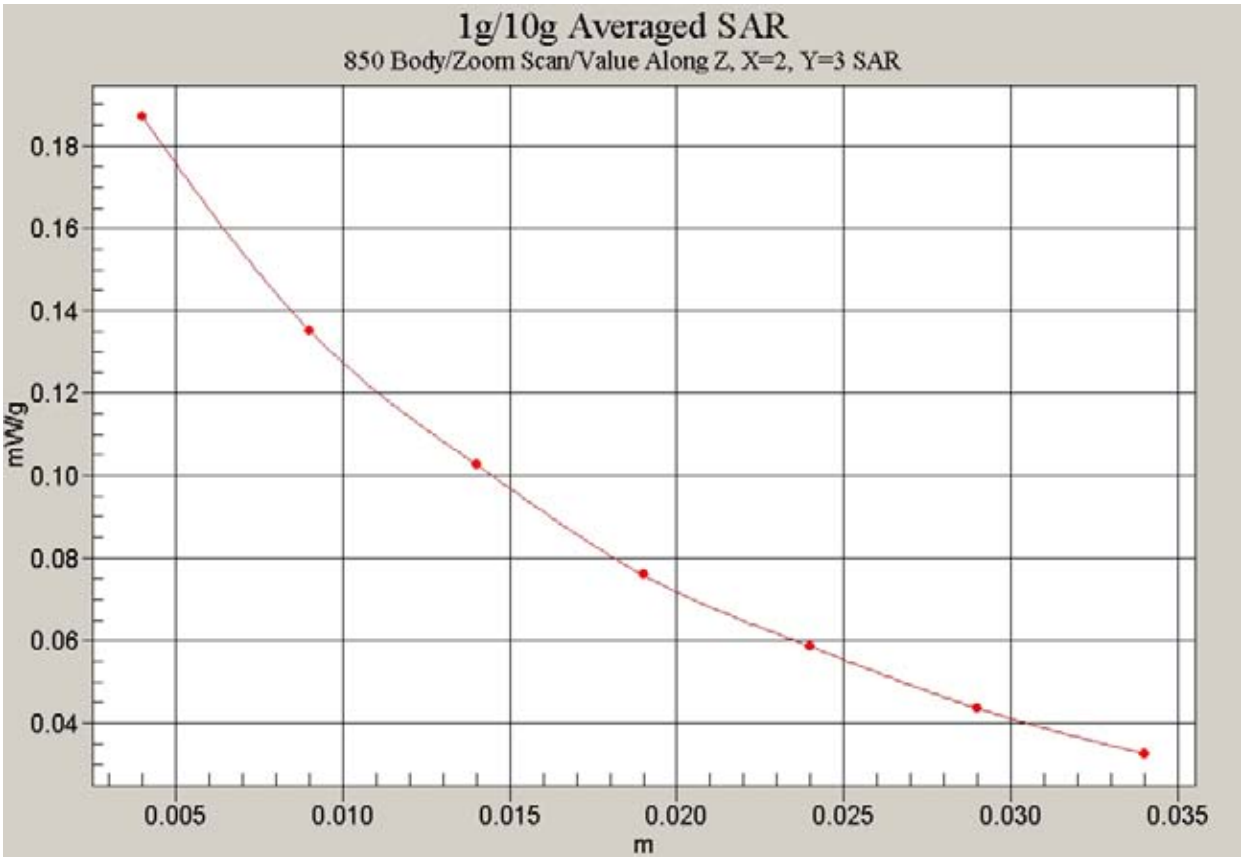


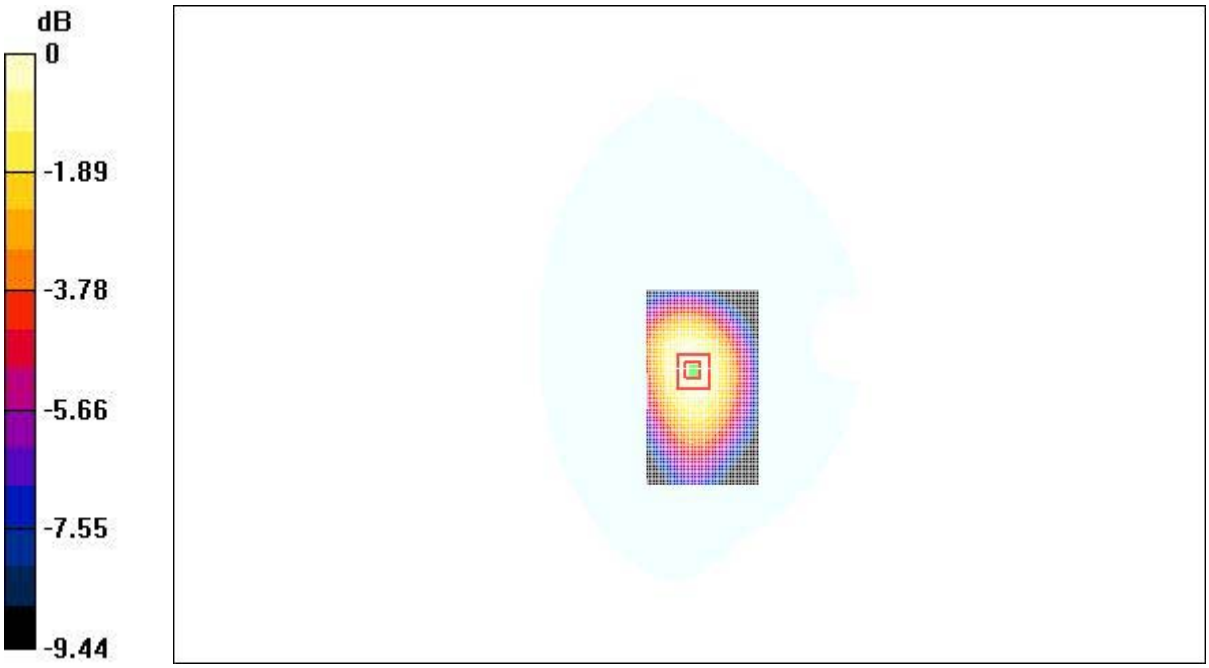
Fig. 32 Z-Scan at power reference point (Flat Phantom 850MHz CH251 with the display of the handset towards the phantom)

850 Body Towards Phantom Middle

Electronics: DAE3 Sn536
Communication System: GSM 850 Frequency: 836.6 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Toward Phantom Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 12.9 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 0.196 mW/g

Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.196 mW/g
Peak SAR (extrapolated) = 0.243 W/kg
SAR(1 g) = 0.184 mW/g; SAR(10 g) = 0.132 mW/g



0 dB = 0.196mW/g

Fig. 33 Flat Phantom Body-worn Position 850MHz CH190 with the display of the handset towards the phantom

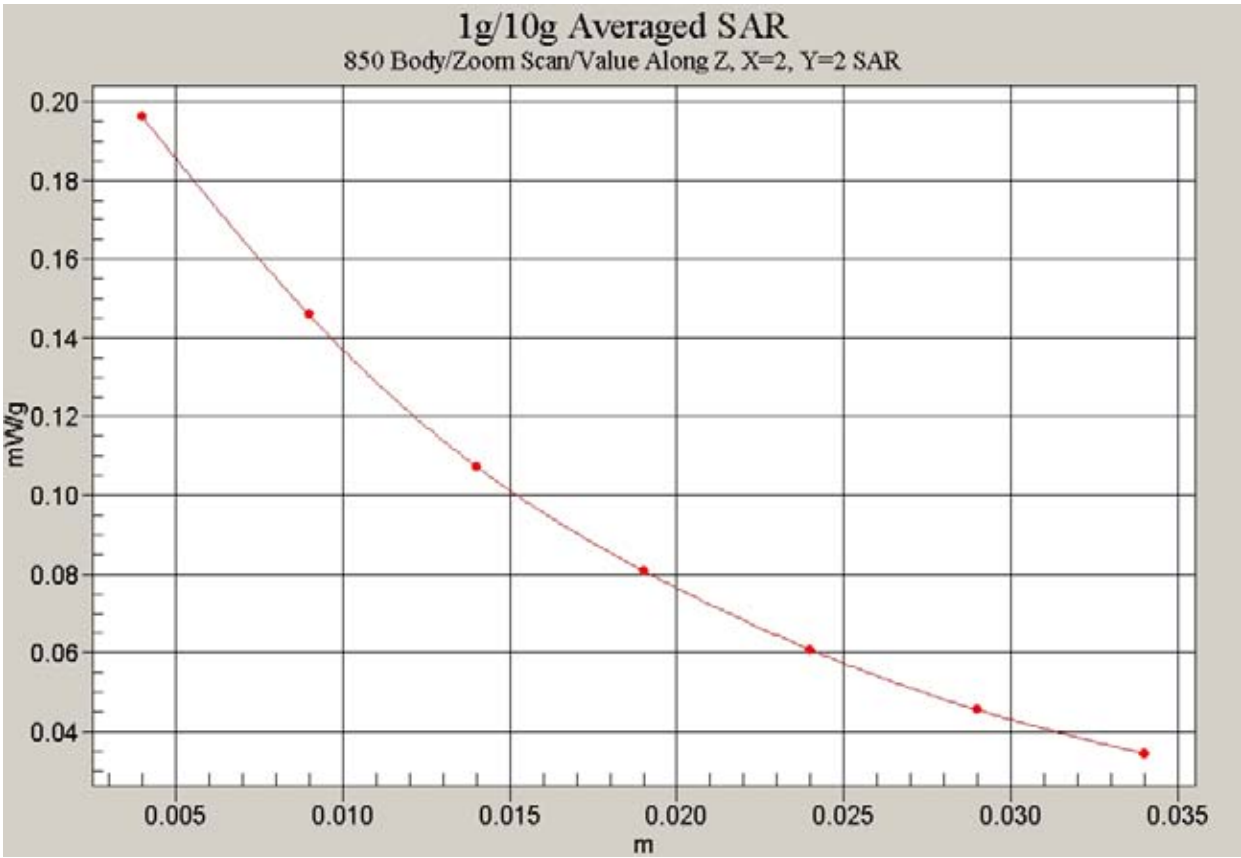


Fig. 34 Z-Scan at power reference point (Flat Phantom 850MHz CH190 with the display of the handset towards the phantom)

850 Body Towards Phantom Low

Electronics: DAE3 Sn536

Communication System: GSM 850 Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

Toward Phantom High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 13.4 V/m; Power Drift = -0.2 dB

Maximum value of SAR (interpolated) = 0.207 mW/g

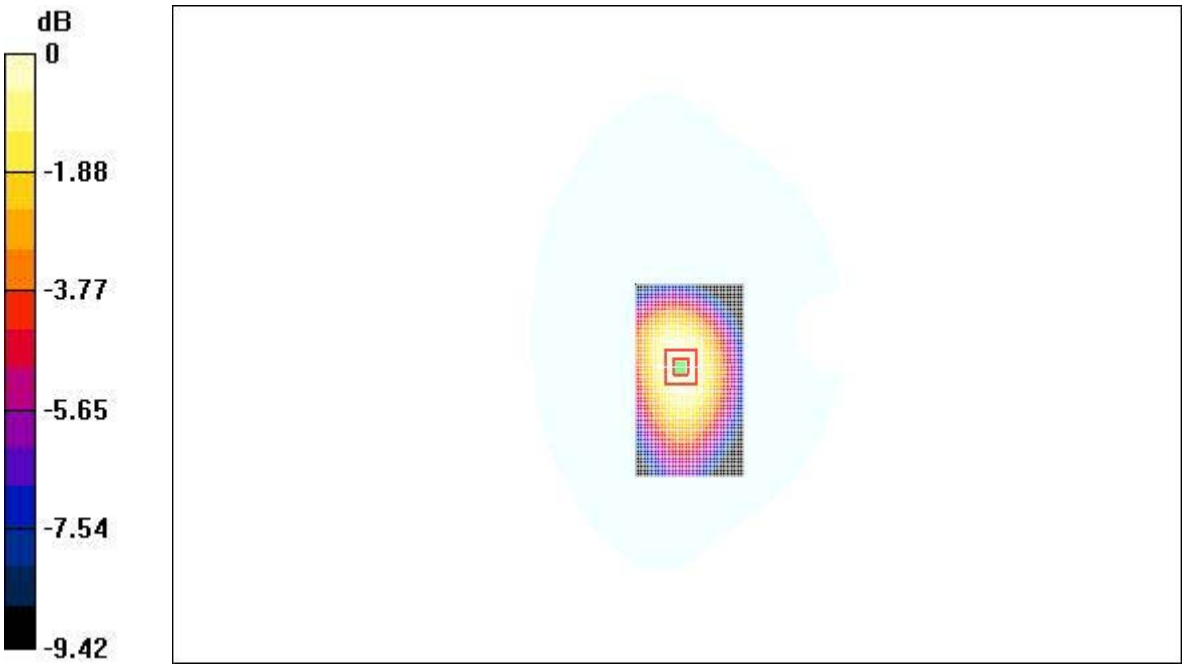
Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.4 V/m; Power Drift = -0.2 dB

Maximum value of SAR (measured) = 0.206 mW/g

Peak SAR (extrapolated) = 0.255 W/kg

SAR(1 g) = 0.194 mW/g; SAR(10 g) = 0.139 mW/g



0 dB = 0.206mW/g

Fig. 35 Flat Phantom Body-worn Position 850MHz CH128 with the display of the handset towards the phantom

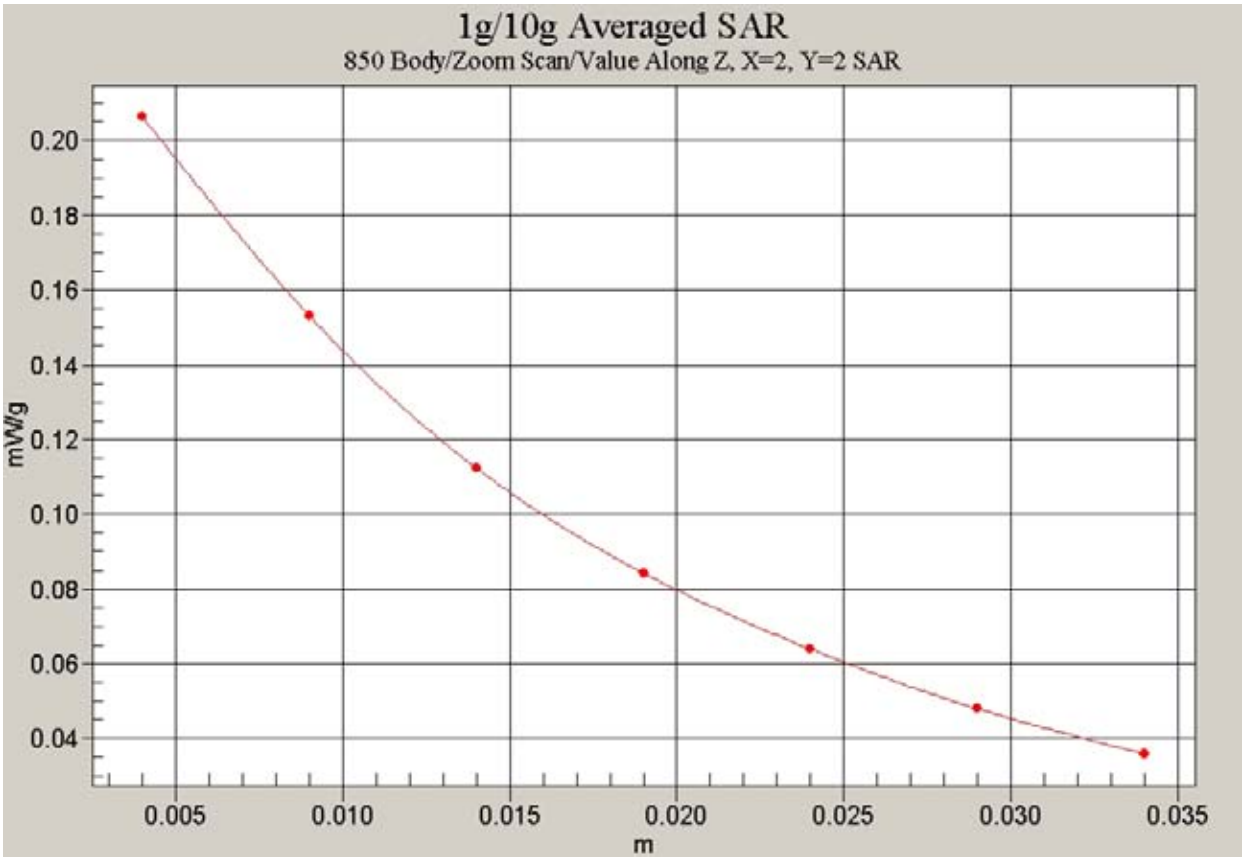


Fig. 36 Z-Scan at power reference point (Flat Phantom 850MHz CH128 with the display of the handset towards the phantom)

1900 Left Cheek High

Electronics: DAE3 Sn536

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 (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 11 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.348 mW/g

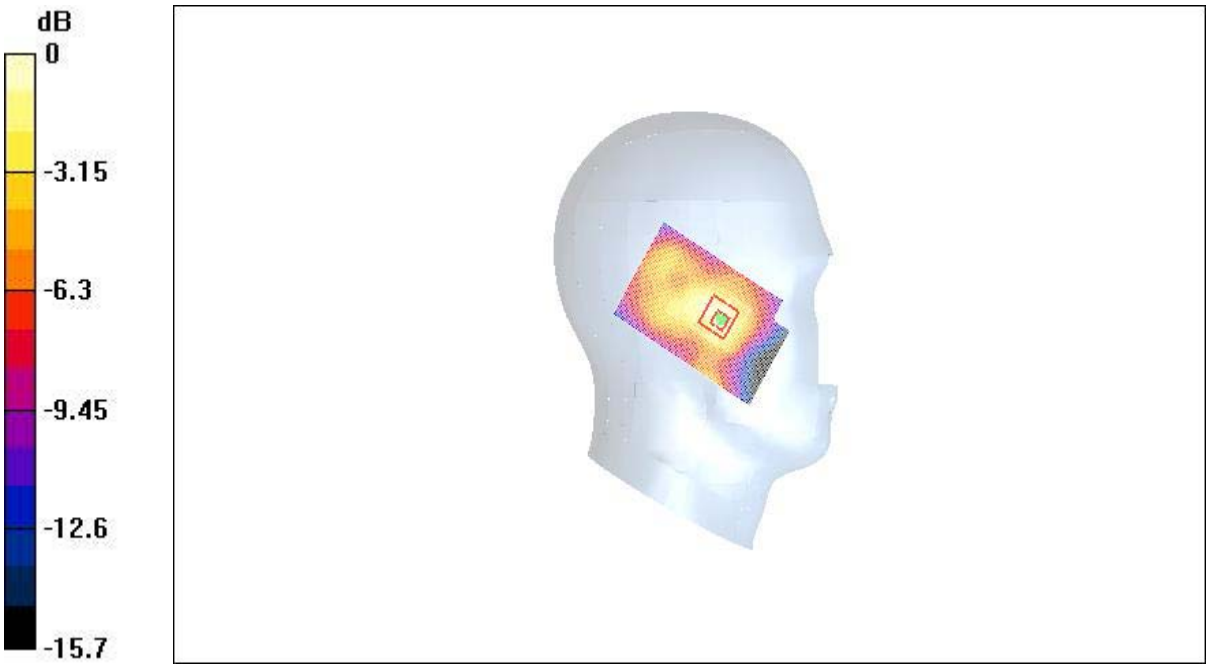
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.374 mW/g

Peak SAR (extrapolated) = 0.497 W/kg

SAR(1 g) = 0.342 mW/g; SAR(10 g) = 0.199 mW/g



0 dB = 0.374mW/g

Fig. 37 Left Hand Touch Cheek PCS 1900MHz CH810

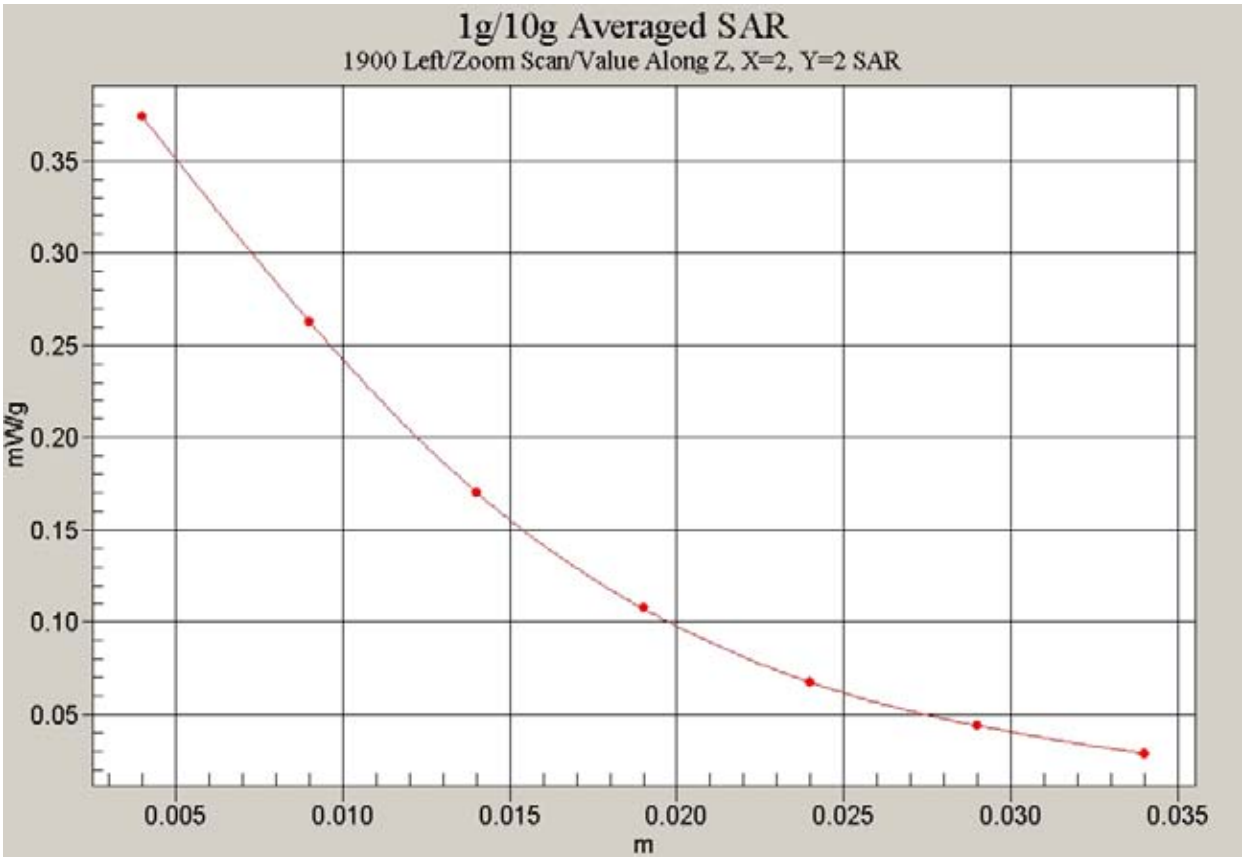


Fig. 38 Z-Scan at power reference point (Left Hand Touch Cheek 1900MHz CH810)

1900 Left Cheek Middle

Electronics: DAE3 Sn536

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 (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 10.1 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.263 mW/g

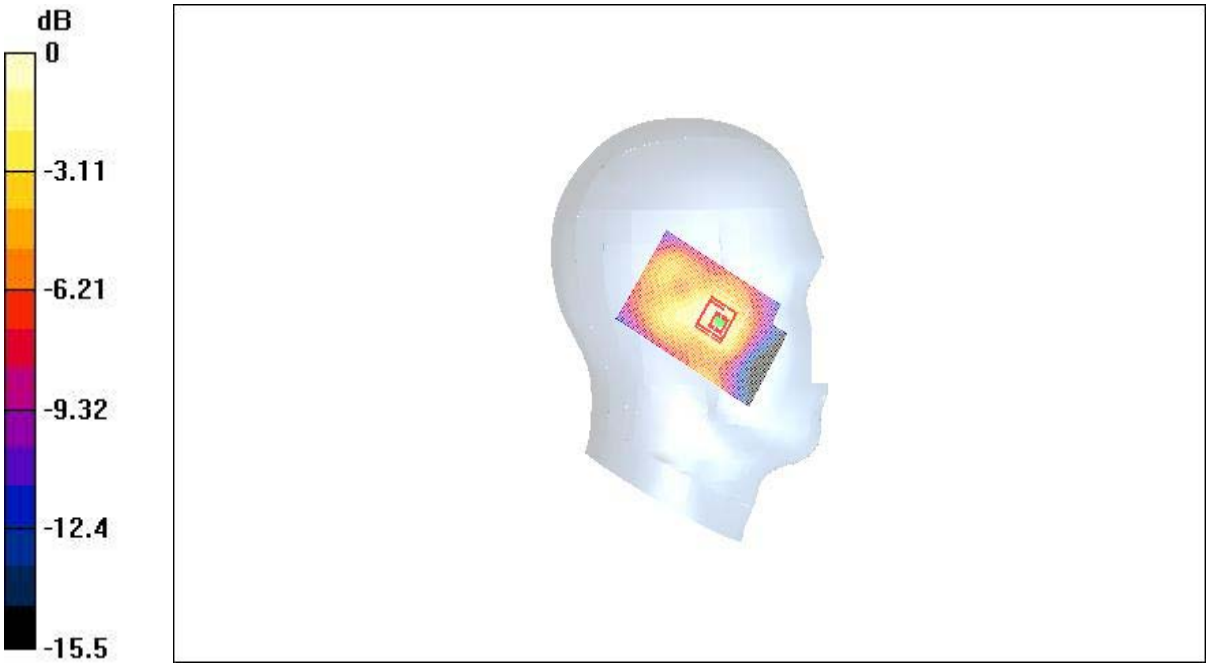
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.1 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.293 mW/g

Peak SAR (extrapolated) = 0.391 W/kg

SAR(1 g) = 0.270 mW/g; SAR(10 g) = 0.160 mW/g



0 dB = 0.293mW/g

Fig. 39 Left Hand Touch Cheek PCS 1900MHz CH661

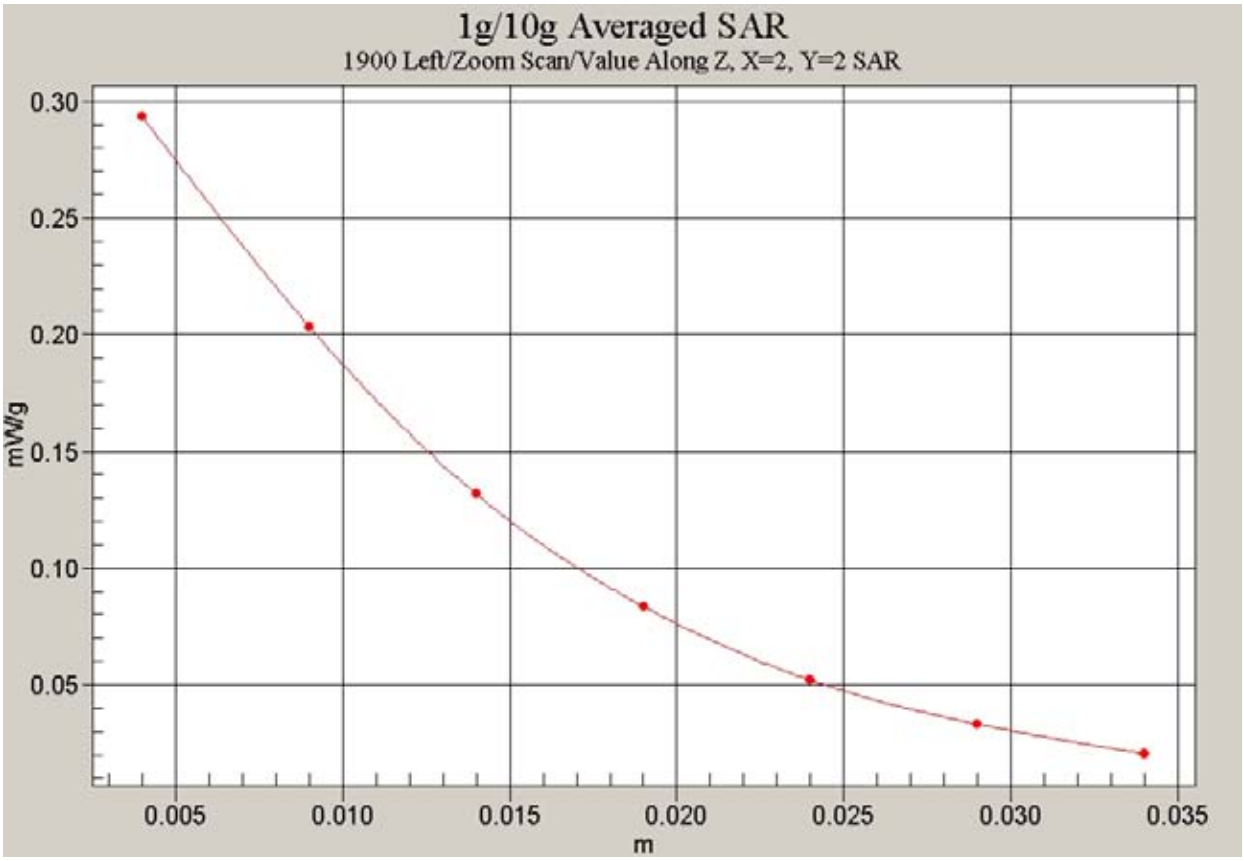
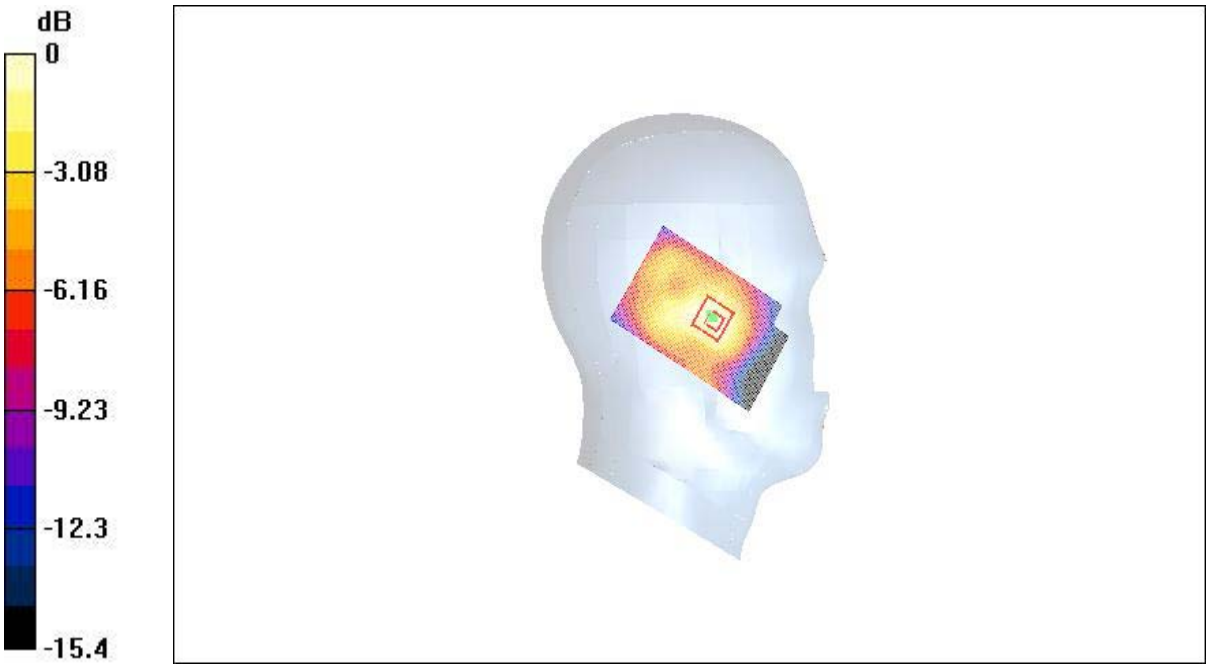


Fig. 40 Z-Scan at power reference point (Left Hand Touch Cheek 1900MHz CH661)

1900 Left Cheek Low
Electronics: DAE3 Sn536
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 (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 9.33 V/m; Power Drift = 0.009 dB
Maximum value of SAR (interpolated) = 0.221 mW/g

Cheek Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.33 V/m; Power Drift = 0.009 dB
Maximum value of SAR (measured) = 0.237 mW/g
Peak SAR (extrapolated) = 0.319 W/kg
SAR(1 g) = 0.222 mW/g; SAR(10 g) = 0.134 mW/g



0 dB = 0.237mW/g

Fig. 41 Left Hand Touch Cheek PCS1900MHz CH512

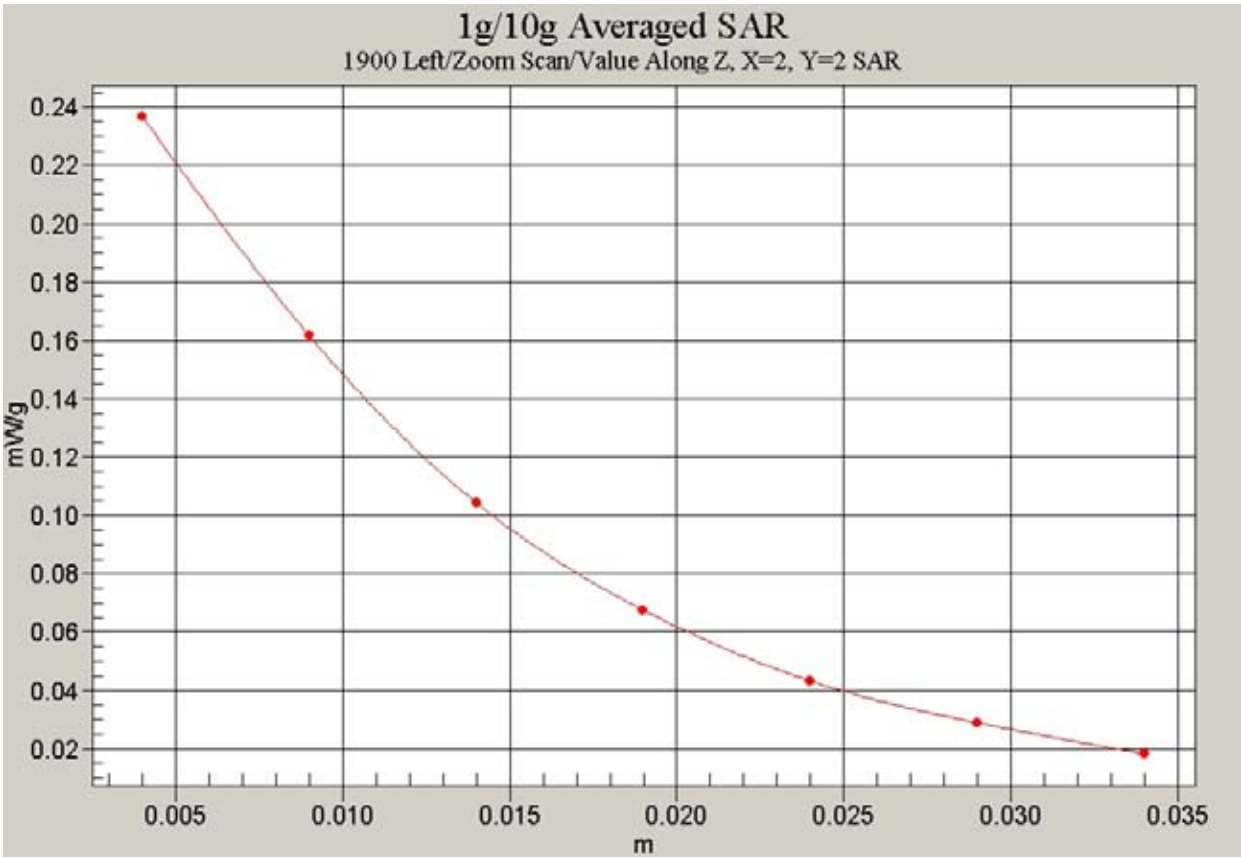


Fig. 42 Z-Scan at power reference point (Left Hand Touch Cheek 1900MHz CH512)

1900 Left Tilt High

Electronics: DAE3 Sn536

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

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

Tilt High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 11.5 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.219 mW/g

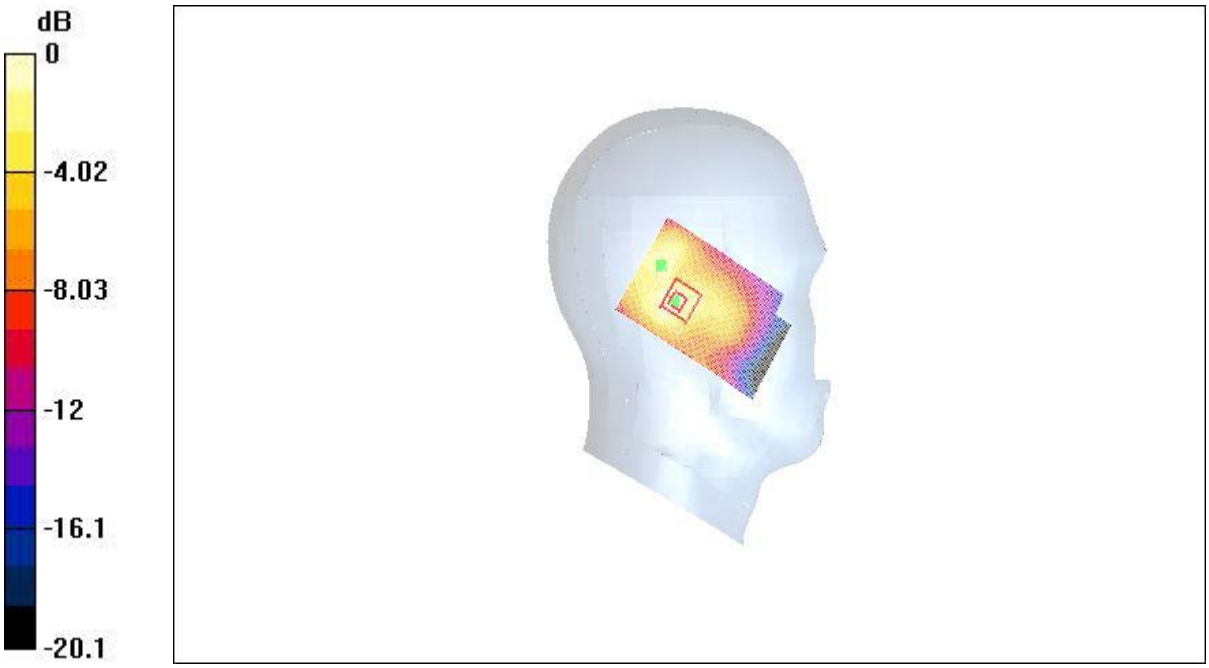
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.5 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.242 mW/g

Peak SAR (extrapolated) = 0.376 W/kg

SAR(1 g) = 0.222 mW/g; SAR(10 g) = 0.120 mW/g



0 dB = 0.242mW/g

Fig. 43 Left Hand Tilt 15°PCS1900MHz CH810

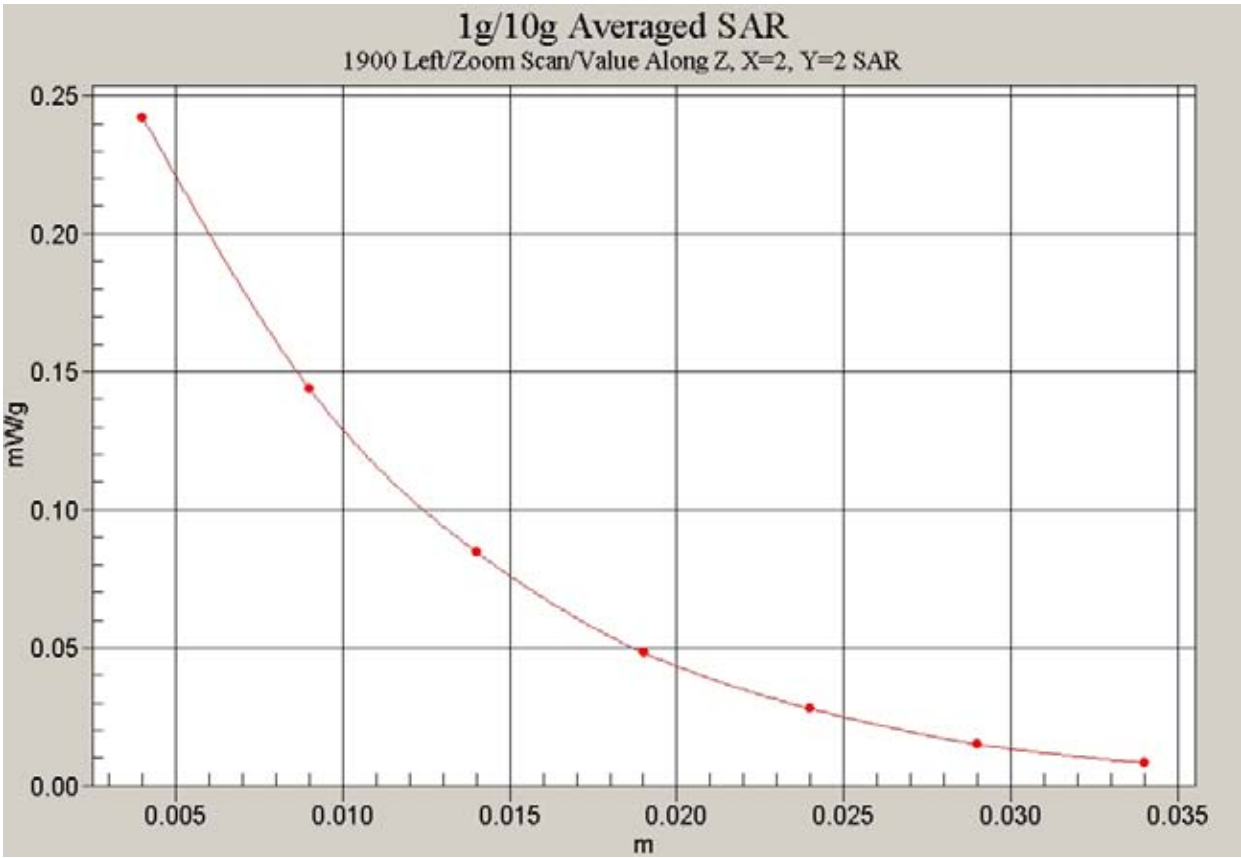


Fig. 44 Z-Scan at power reference point (Left Hand Tilt 15° 1900MHz CH810)

1900 Left Tilt Middle

Electronics: DAE3 Sn536

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 (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 11 V/m; Power Drift = -0.004 dB

Maximum value of SAR (interpolated) = 0.199 mW/g

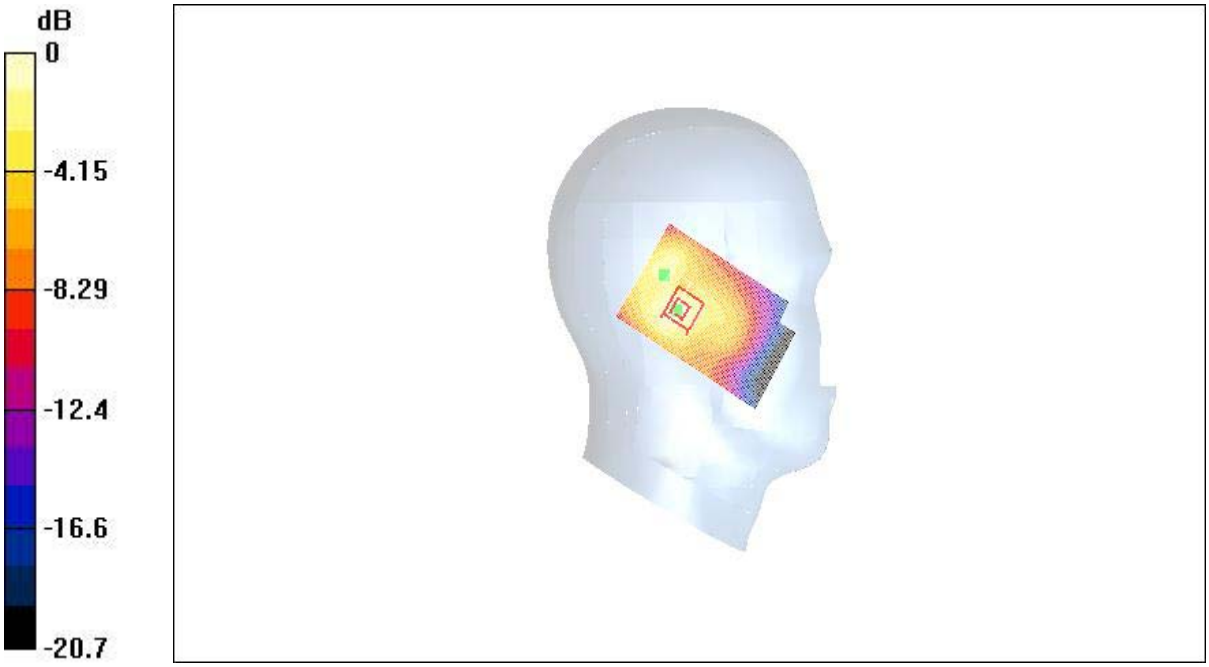
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11 V/m; Power Drift = -0.004 dB

Maximum value of SAR (measured) = 0.224 mW/g

Peak SAR (extrapolated) = 0.330 W/kg

SAR(1 g) = 0.200 mW/g; SAR(10 g) = 0.111 mW/g



0 dB = 0.224mW/g

Fig. 45 Left Hand Tilt 15°PCS1900MHz CH661

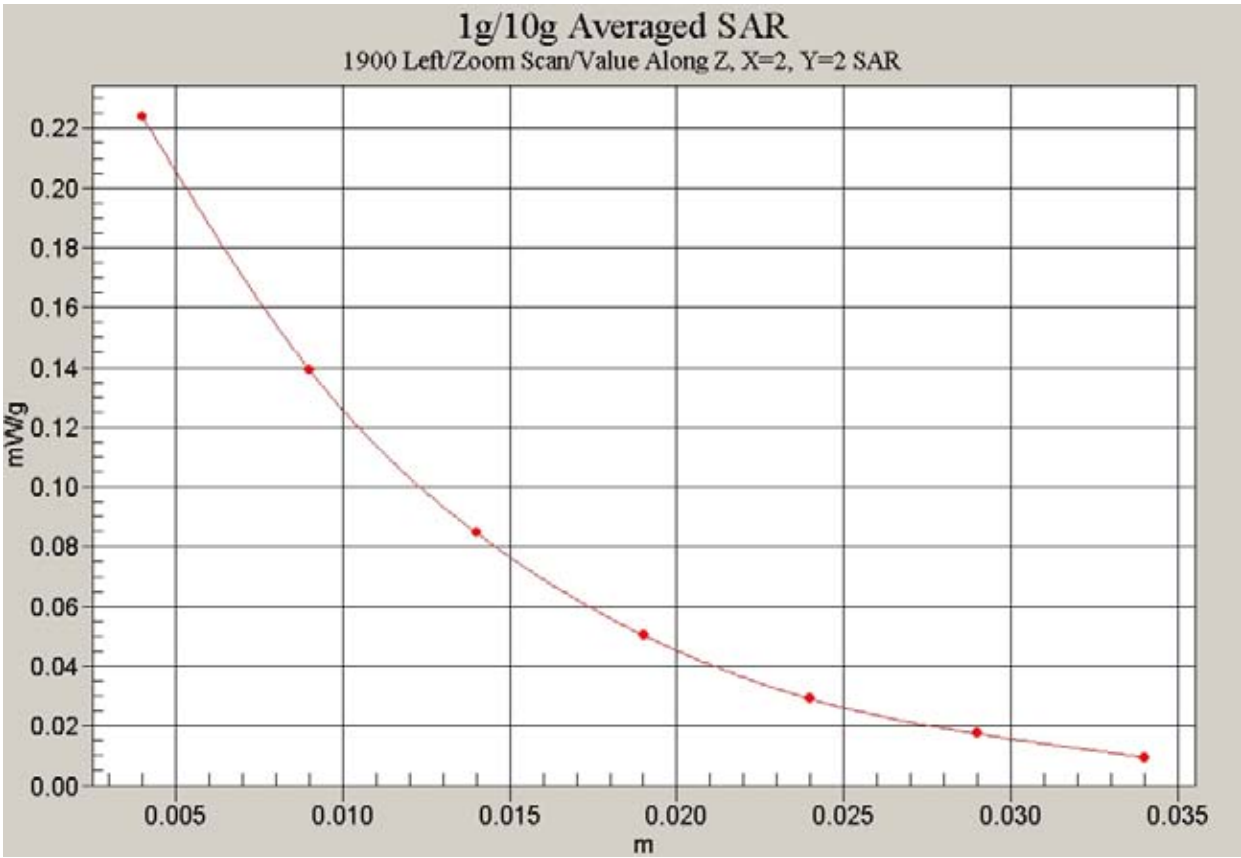


Fig. 46 Z-Scan at power reference point (Left Hand Tilt 15° 1900MHz CH661)

1900 Left Tilt Low

Electronics: DAE3 Sn536

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

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

Tilt Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 10.4 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.176 mW/g

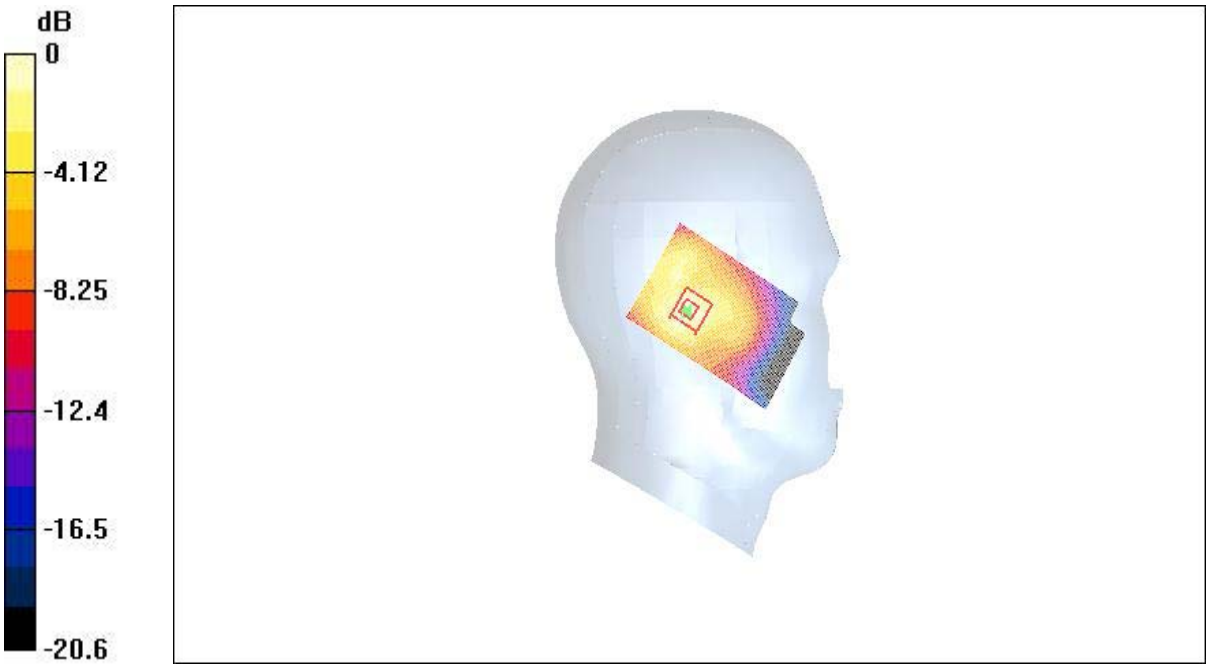
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.4 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.197 mW/g

Peak SAR (extrapolated) = 0.287 W/kg

SAR(1 g) = 0.178 mW/g; SAR(10 g) = 0.099 mW/g



0 dB = 0.197mW/g

Fig. 47 Left Hand Tilt 15°PCS1900MHz CH512

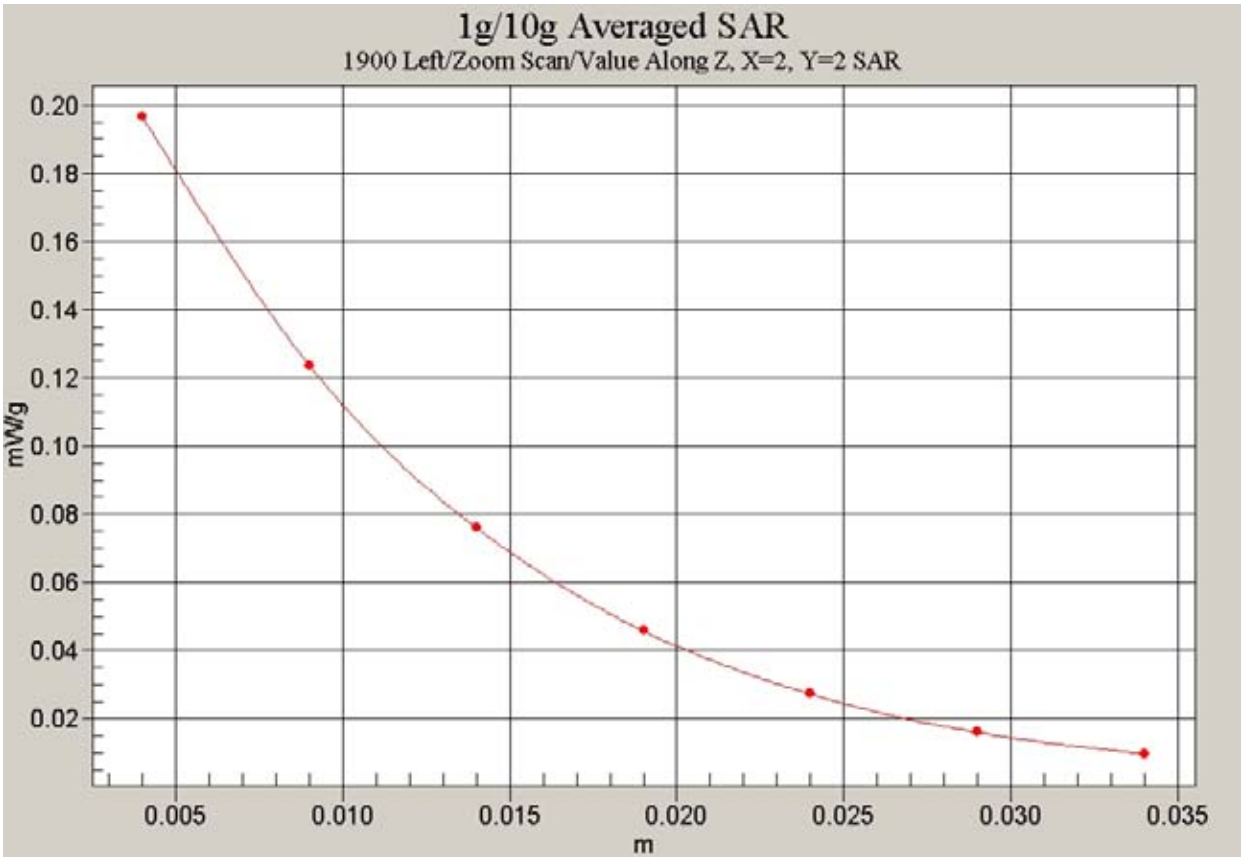


Fig.48 Z-Scan at power reference point (Left Hand Tilt 15° 1900MHz CH512)

1900 Right Cheek High

Electronics: DAE3 Sn536

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 (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 10.4 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.376 mW/g

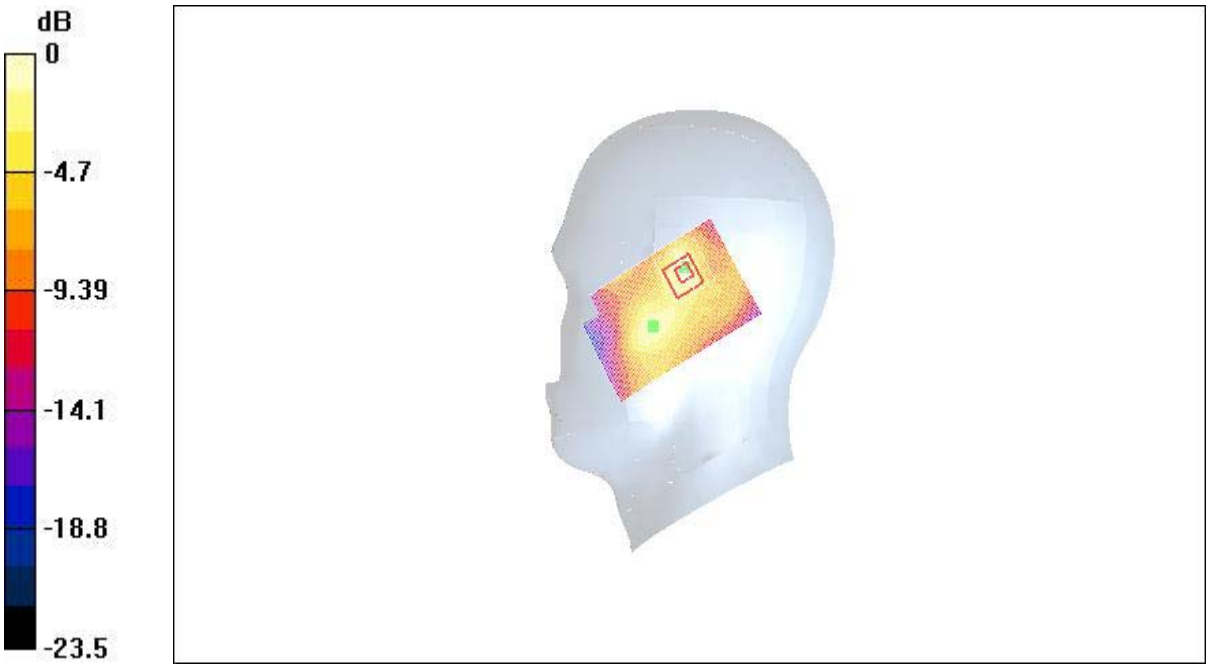
Cheek High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.4 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.414 mW/g

Peak SAR (extrapolated) = 0.634 W/kg

SAR(1 g) = 0.356 mW/g; SAR(10 g) = 0.180 mW/g



0 dB = 0.414mW/g

Fig. 49 Right Hand Touch Cheek PCS1900MHz CH810

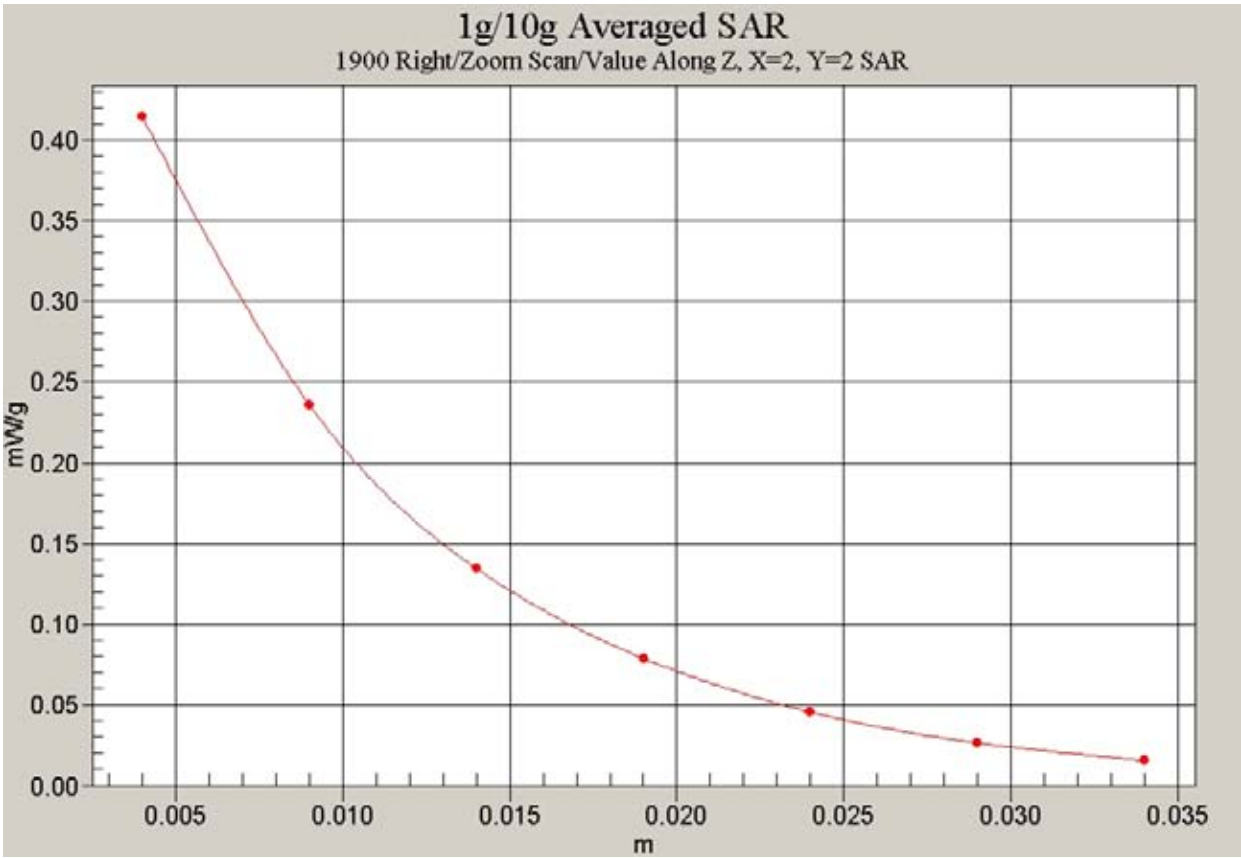


Fig. 50 Z-Scan at power reference point (Right Hand Touch Cheek 1900MHz CH810)

1900 Right Cheek Middle

Electronics: DAE3 Sn536

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 (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 9.49 V/m; Power Drift = 0.1 dB

Maximum value of SAR (interpolated) = 0.318 mW/g

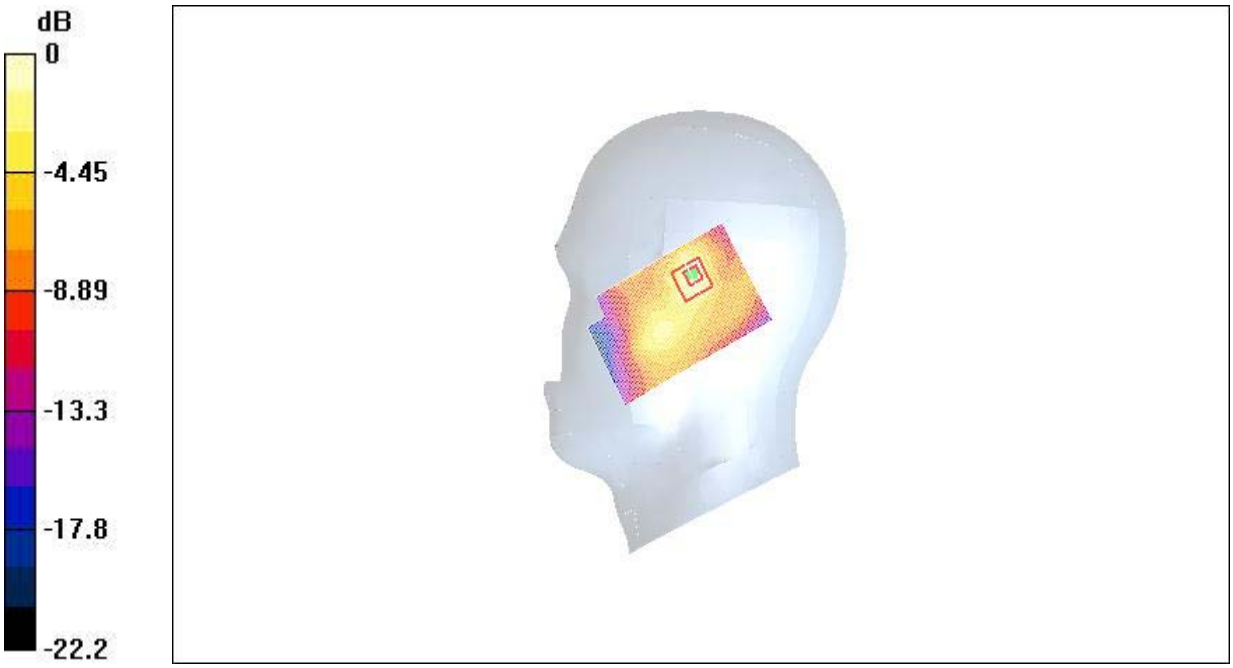
Cheek Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.49 V/m; Power Drift = 0.1 dB

Maximum value of SAR (measured) = 0.347 mW/g

Peak SAR (extrapolated) = 0.536 W/kg

SAR(1 g) = 0.302 mW/g; SAR(10 g) = 0.155 mW/g



0 dB = 0.347mW/g

Fig. 51 Right Hand Touch Cheek PCS1900MHz CH661

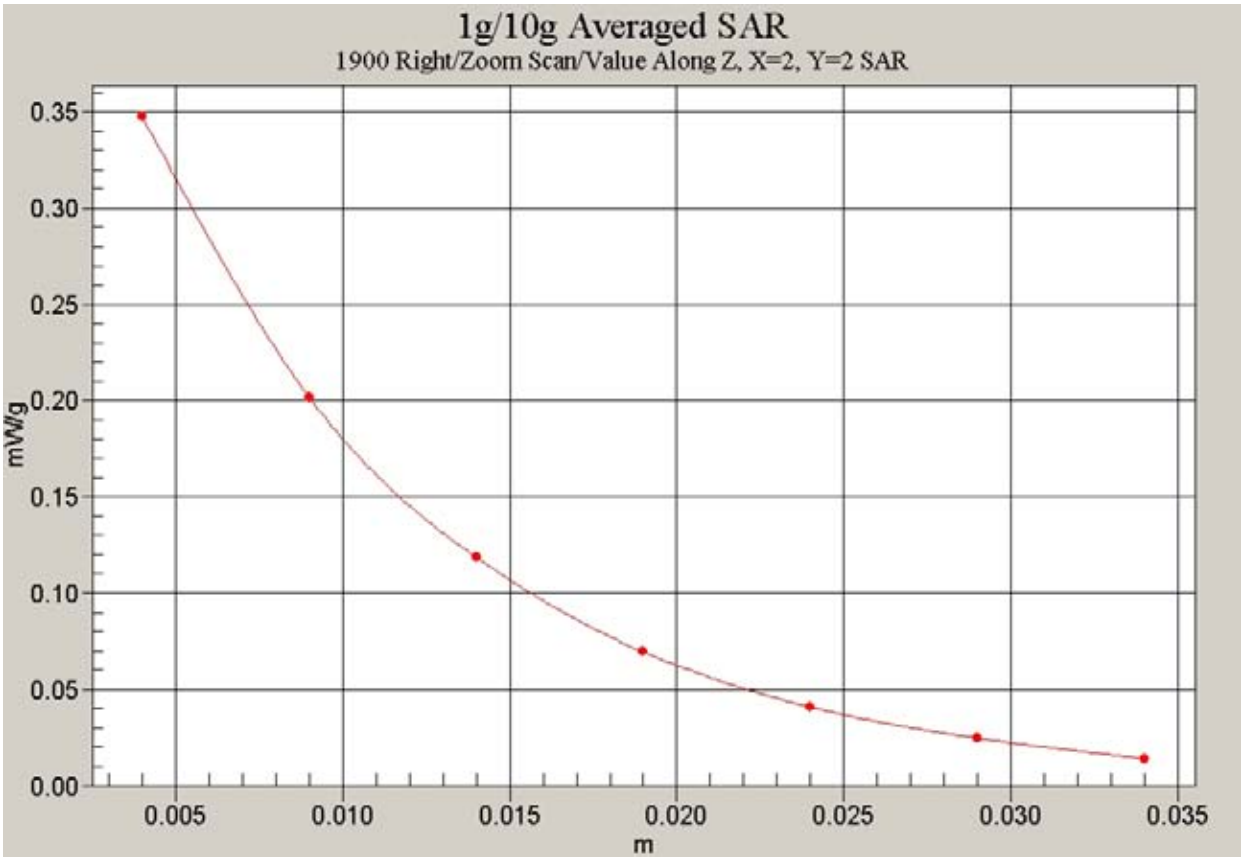


Fig. 52 Z-Scan at power reference point (Right Hand Touch Cheek 1900MHz CH661)

1900 Right Cheek Low

Electronics: DAE3 Sn536

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 (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 8.5 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.260 mW/g

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

Reference Value = 8.5 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.284 mW/g

Peak SAR (extrapolated) = 0.432 W/kg

SAR(1 g) = 0.246 mW/g; SAR(10 g) = 0.127 mW/g

0 dB = 0.284mW/g

Fig. 53 Right Hand Touch Cheek PCS1900MHz CH512

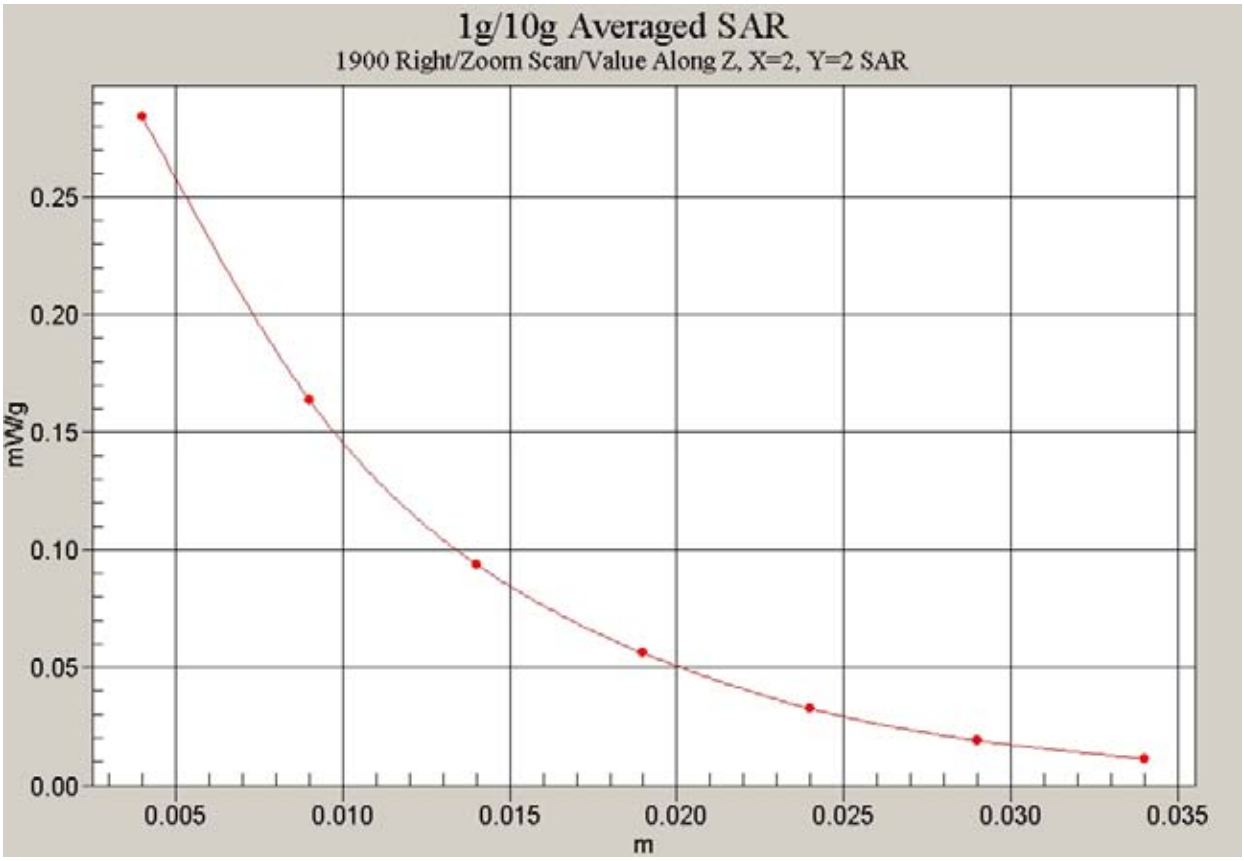


Fig. 54 Z-Scan at power reference point (Right Hand Touch Cheek 1900MHz CH512)

1900 Right Tilt High

Electronics: DAE3 Sn536

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

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

Tilt High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 10.1 V/m; Power Drift = 0.0 dB

Maximum value of SAR (interpolated) = 0.330 mW/g

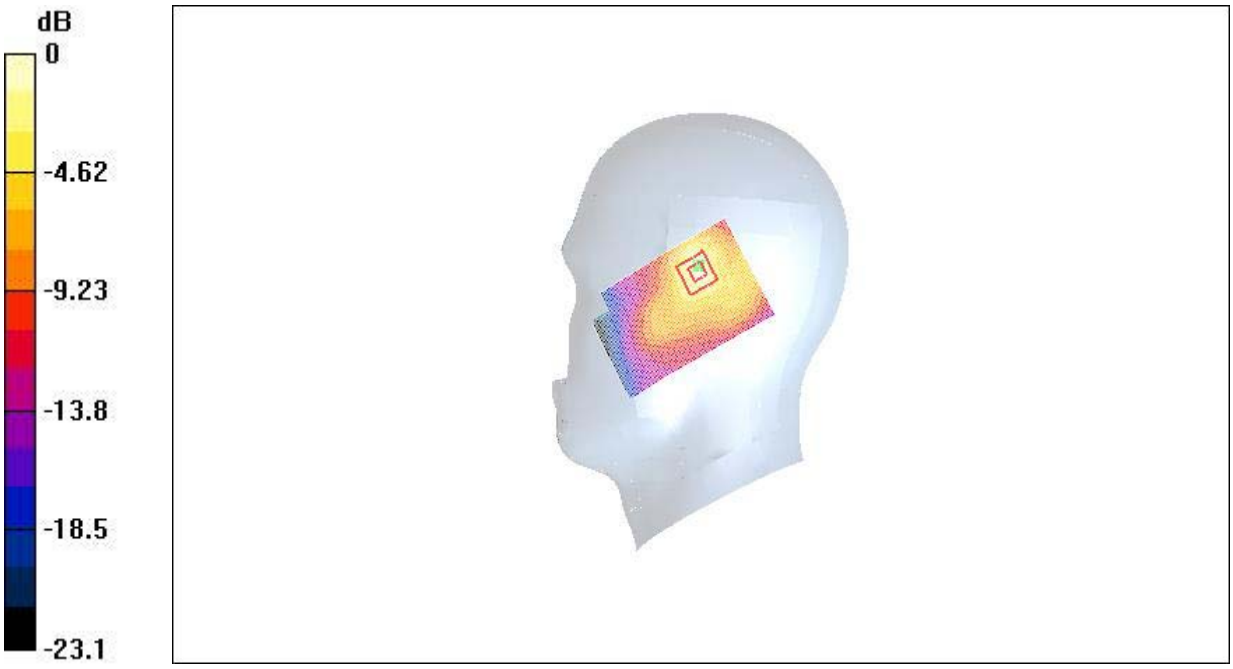
Tilt High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.1 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 0.352 mW/g

Peak SAR (extrapolated) = 0.555 W/kg

SAR(1 g) = 0.307 mW/g; SAR(10 g) = 0.155 mW/g



0 dB = 0.352mW/g

Fig. 55 Right Hand Tilt 15°PCS1900MHz CH810

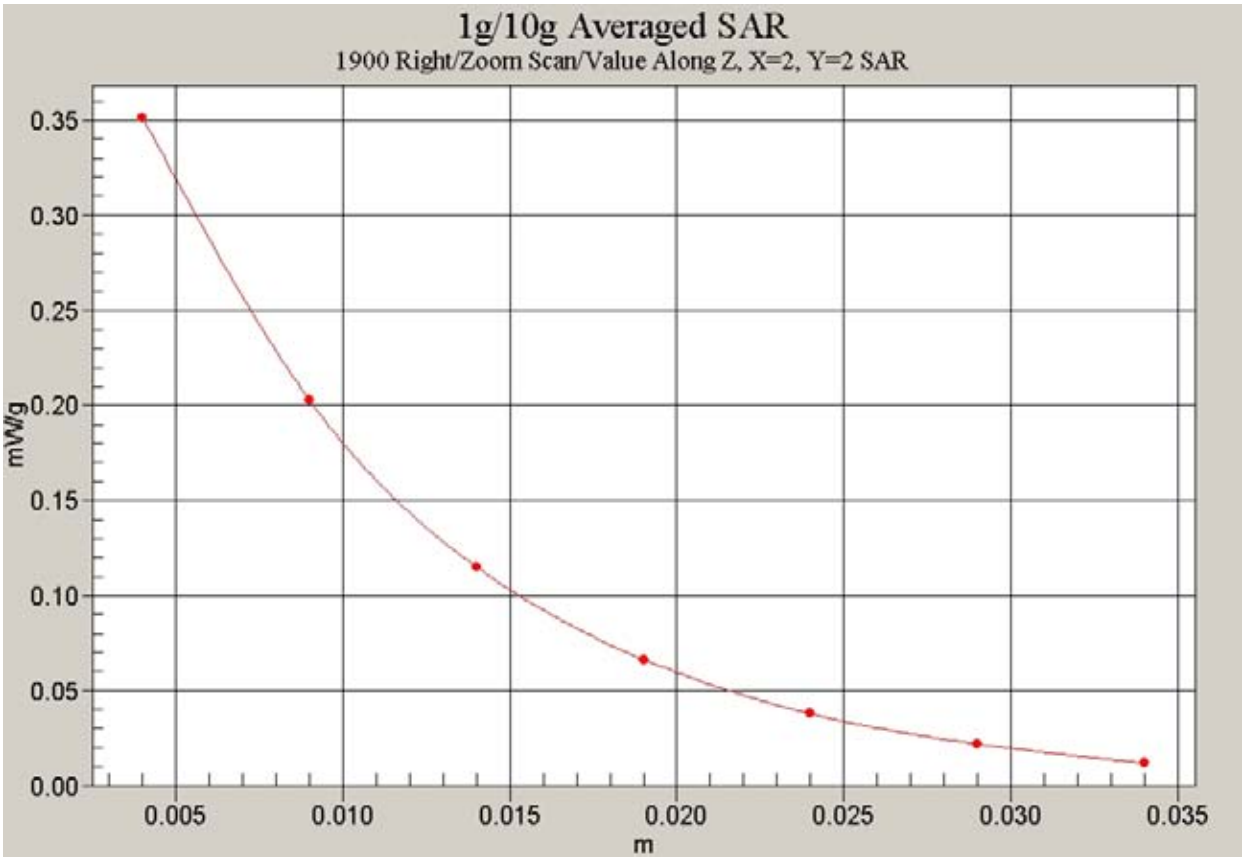


Fig. 56 Z-Scan at power reference point (Right Hand Tilt 15° 1900MHz CH810)

1900 Right Tilt Middle

Electronics: DAE3 Sn536

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 (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 9.78 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.288 mW/g

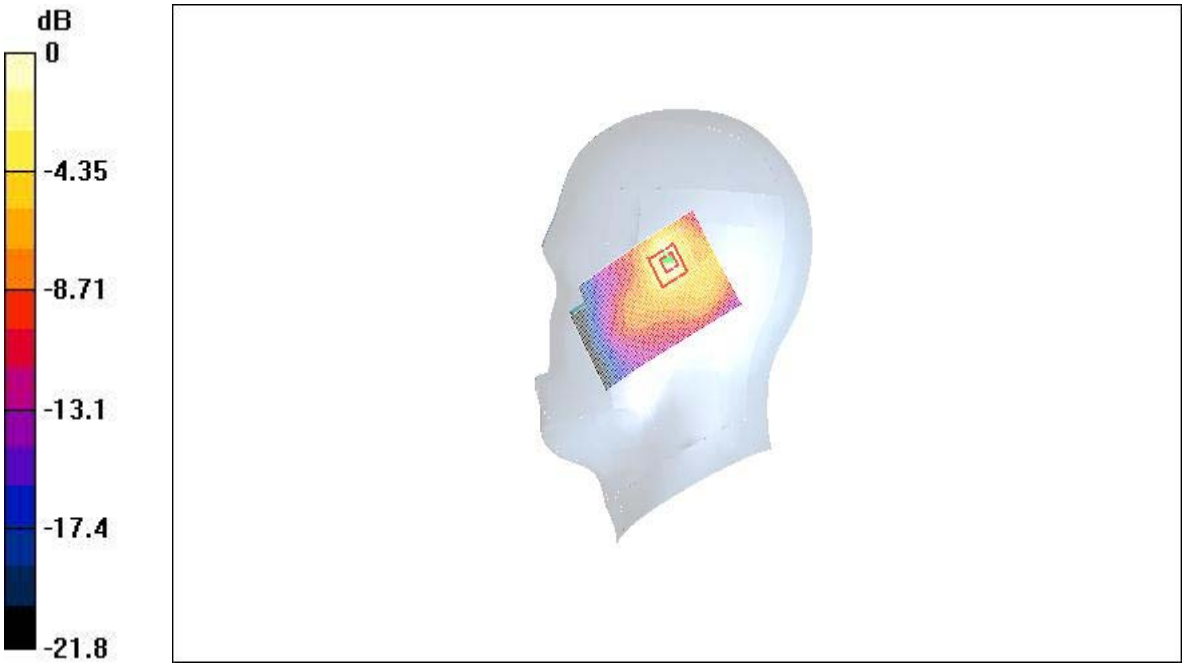
Tilt Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.78 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.311 mW/g

Peak SAR (extrapolated) = 0.489 W/kg

SAR(1 g) = 0.273 mW/g; SAR(10 g) = 0.140 mW/g



0 dB = 0.311mW/g

Fig. 57 Right Hand Tilt 15°PCS1900MHz CH661

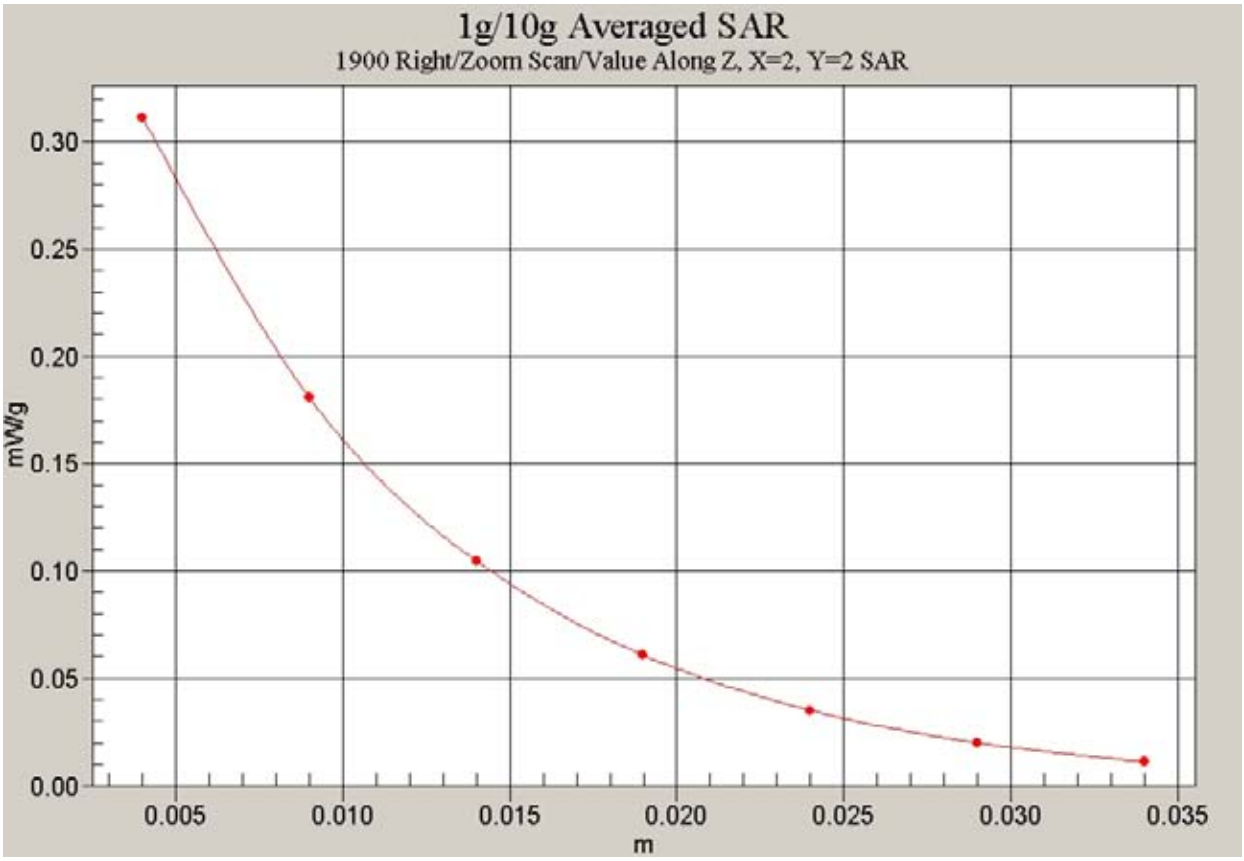


Fig. 58 Z-Scan at power reference point (Right Hand Tilt 15° 1900MHz CH661)

1900 Right Tilt Low

Electronics: DAE3 Sn536

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

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

Tilt Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 9.01 V/m; Power Drift = 0.007 dB

Maximum value of SAR (interpolated) = 0.247 mW/g

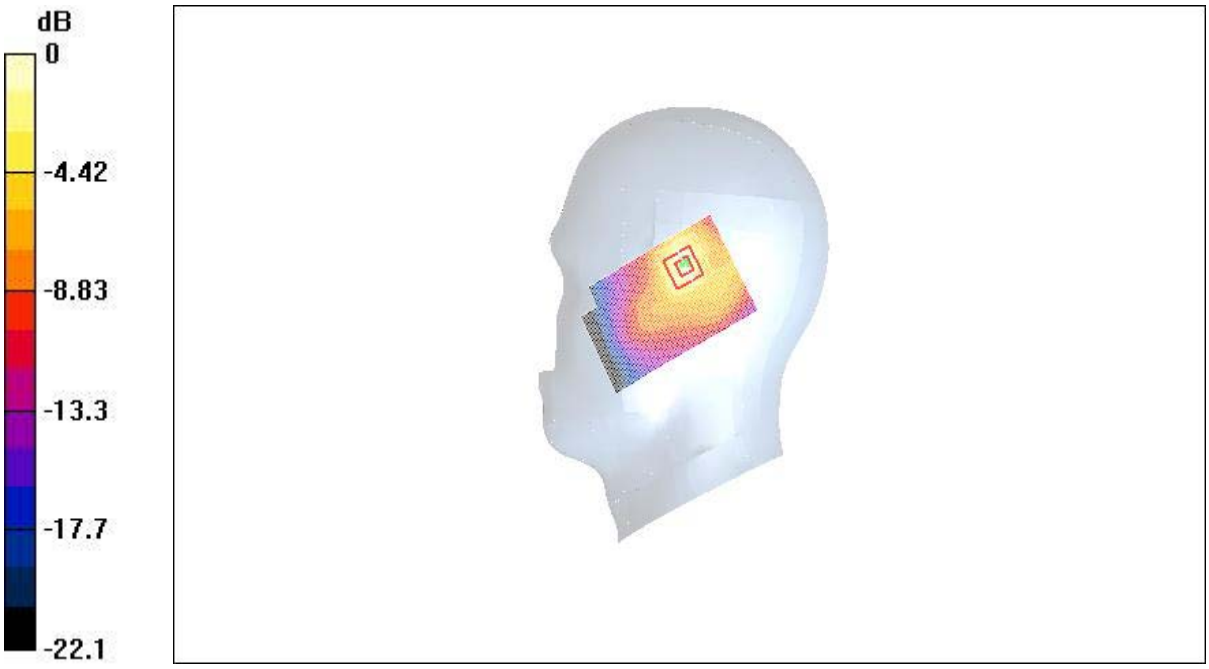
Tilt Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.01 V/m; Power Drift = 0.007 dB

Maximum value of SAR (measured) = 0.265 mW/g

Peak SAR (extrapolated) = 0.408 W/kg

SAR(1 g) = 0.232 mW/g; SAR(10 g) = 0.120 mW/g



0 dB = 0.265mW/g

Fig. 59 Right Hand Tilt 15°PCS1900MHz CH512

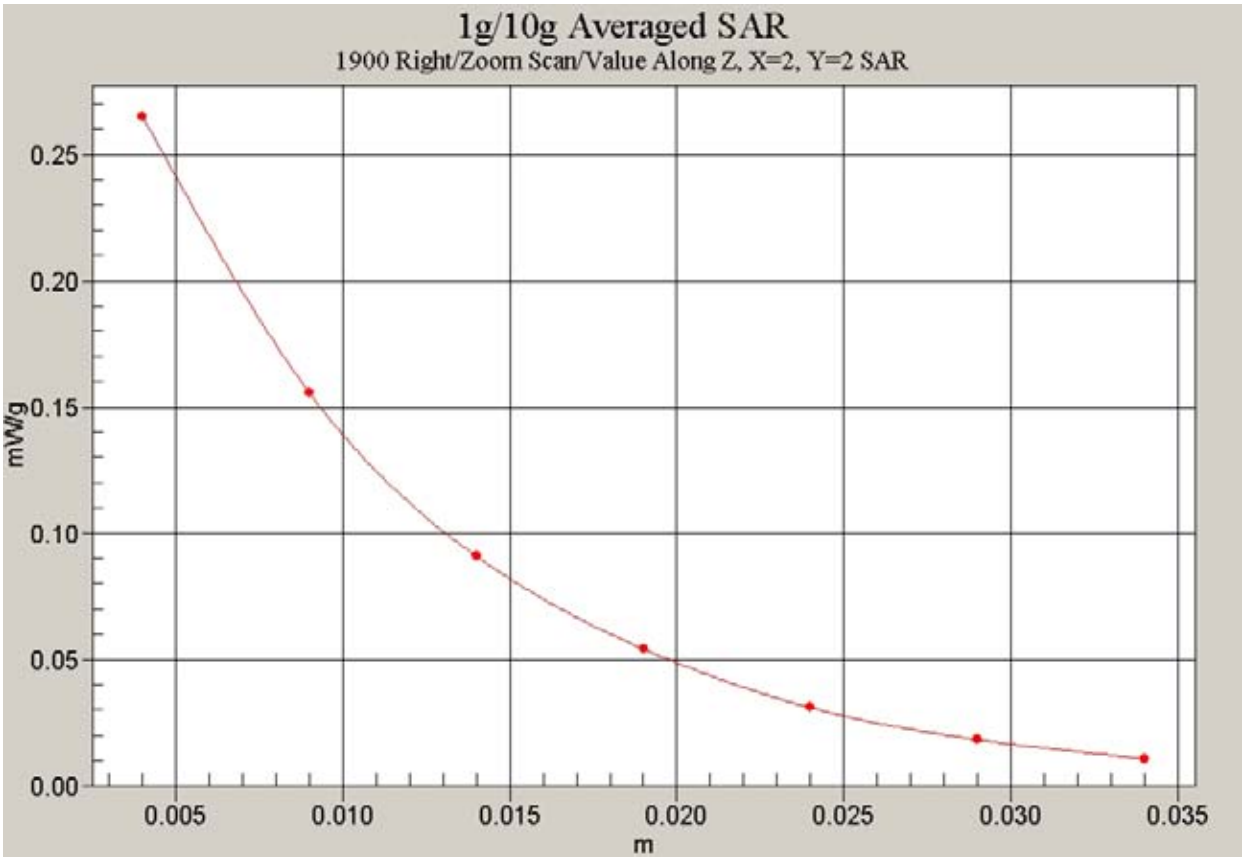


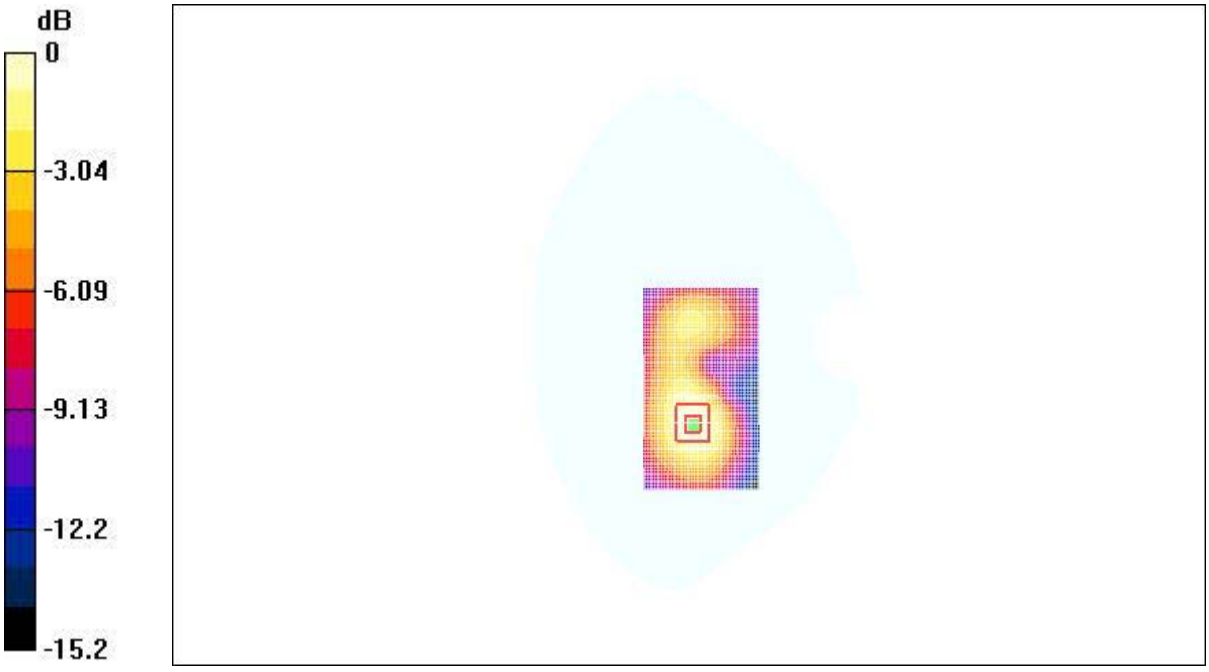
Fig. 60 Z-Scan at power reference point (Right Hand Tilt 15° 1900MHz CH512)

1900 Body Towards Ground High

Electronics: DAE3 Sn536
Communication System: GSM 1900MHz Frequency: 1909.8 MHz Duty Cycle: 1:8.3
Probe: ET3DV6 - SN1736 ConvF(5.4, 5.4, 5.4)

Toward Ground High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 10.8 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 0.381 mW/g

Toward Ground High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.8 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 0.369 mW/g
Peak SAR (extrapolated) = 0.497 W/kg
SAR(1 g) = 0.342 mW/g; SAR(10 g) = 0.220 mW/g



0 dB = 0.369mW/g

Fig. 61 Flat Phantom Body-worn Position 1900MHz CH810 with the display of the handset towards the ground

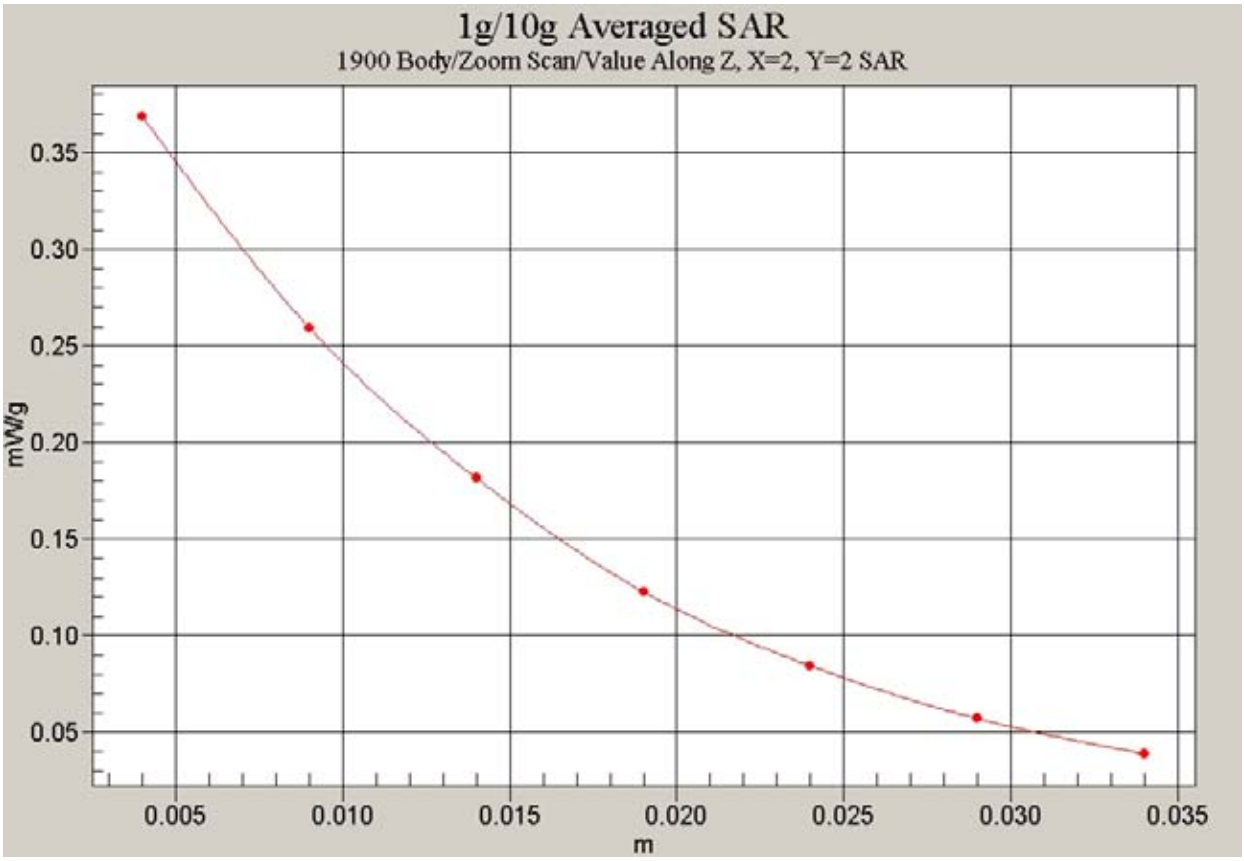


Fig. 62 Z-Scan at power reference point (Flat Phantom 1900MHz CH810 with the display of the handset towards the ground)

1900 Body Towards Ground Middle

Electronics: DAE3 Sn536

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

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

Toward Ground Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 9.05 V/m; Power Drift = 0.0 dB

Maximum value of SAR (interpolated) = 0.257 mW/g

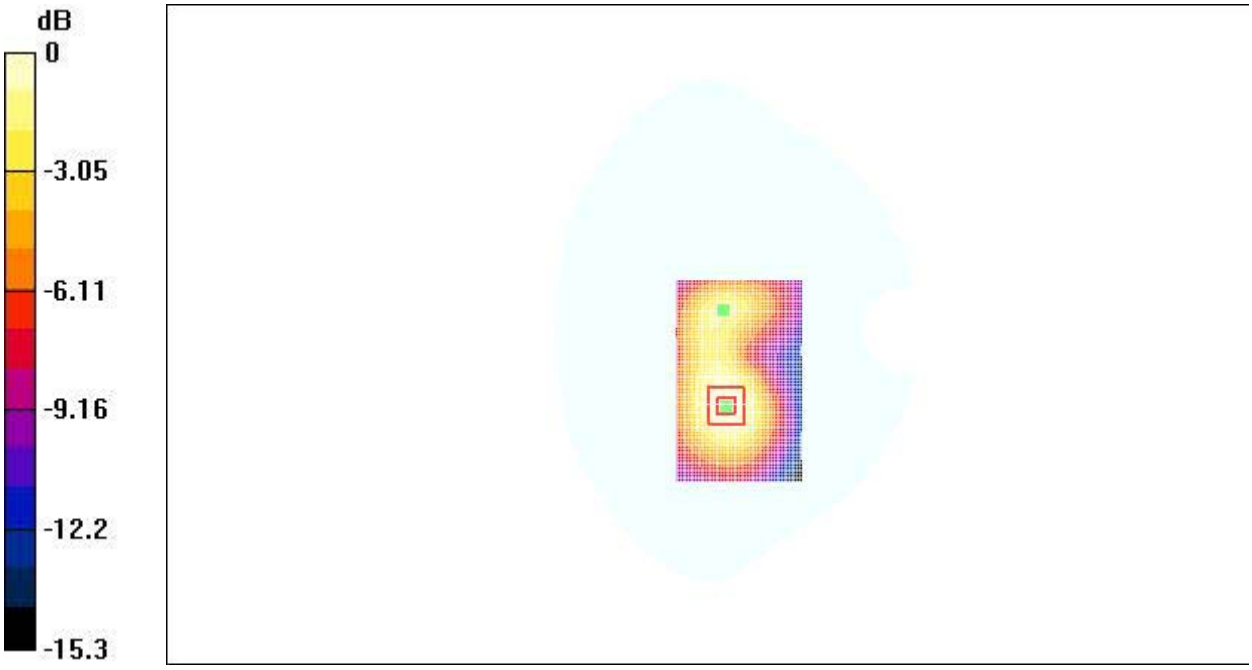
Toward Ground Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.05 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 0.255 mW/g

Peak SAR (extrapolated) = 0.342 W/kg

SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.154 mW/g



0 dB = 0.255mW/g

Fig. 63 Flat Phantom Body-worn Position 1900MHz CH661 with the display of the handset towards the ground

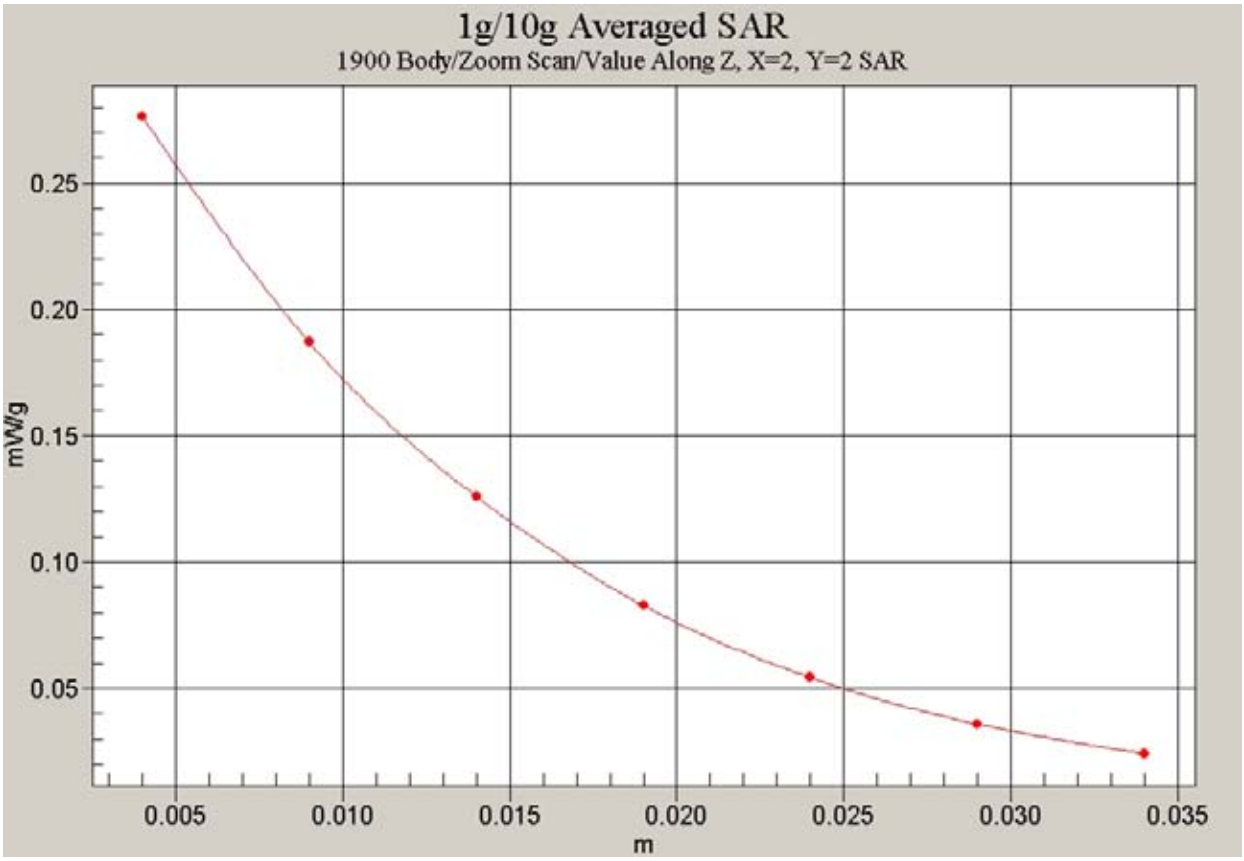


Fig. 64 Z-Scan at power reference point (Flat Phantom 1900MHz CH661 with the display of the handset towards the ground)

1900 Body Towards Ground Low

Electronics: DAE3 Sn536

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

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

Toward Ground Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 8.14 V/m; Power Drift = -0.0 dB

Maximum value of SAR (interpolated) = 0.193 mW/g

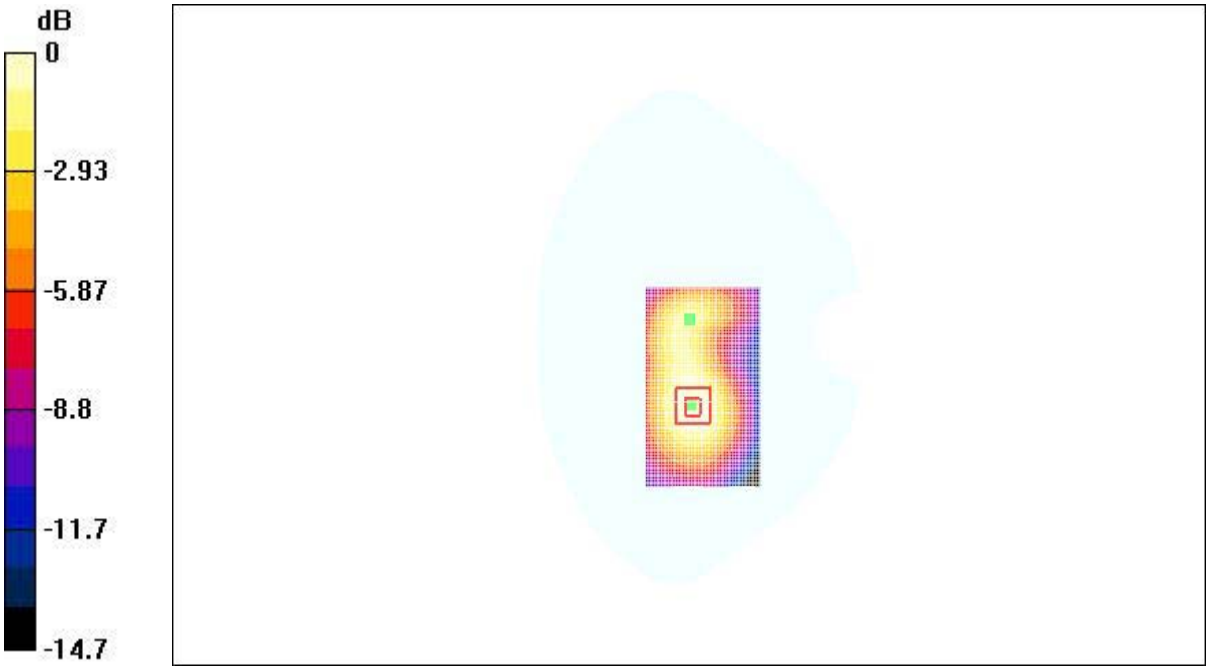
Toward Ground Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.14 V/m; Power Drift = -0.0 dB

Maximum value of SAR (measured) = 0.187 mW/g

Peak SAR (extrapolated) = 0.249 W/kg

SAR(1 g) = 0.176 mW/g; SAR(10 g) = 0.117 mW/g



0 dB = 0.187mW/g

Fig. 65 Flat Phantom Body-worn Position 1900MHz CH512 with the display of the handset towards the ground

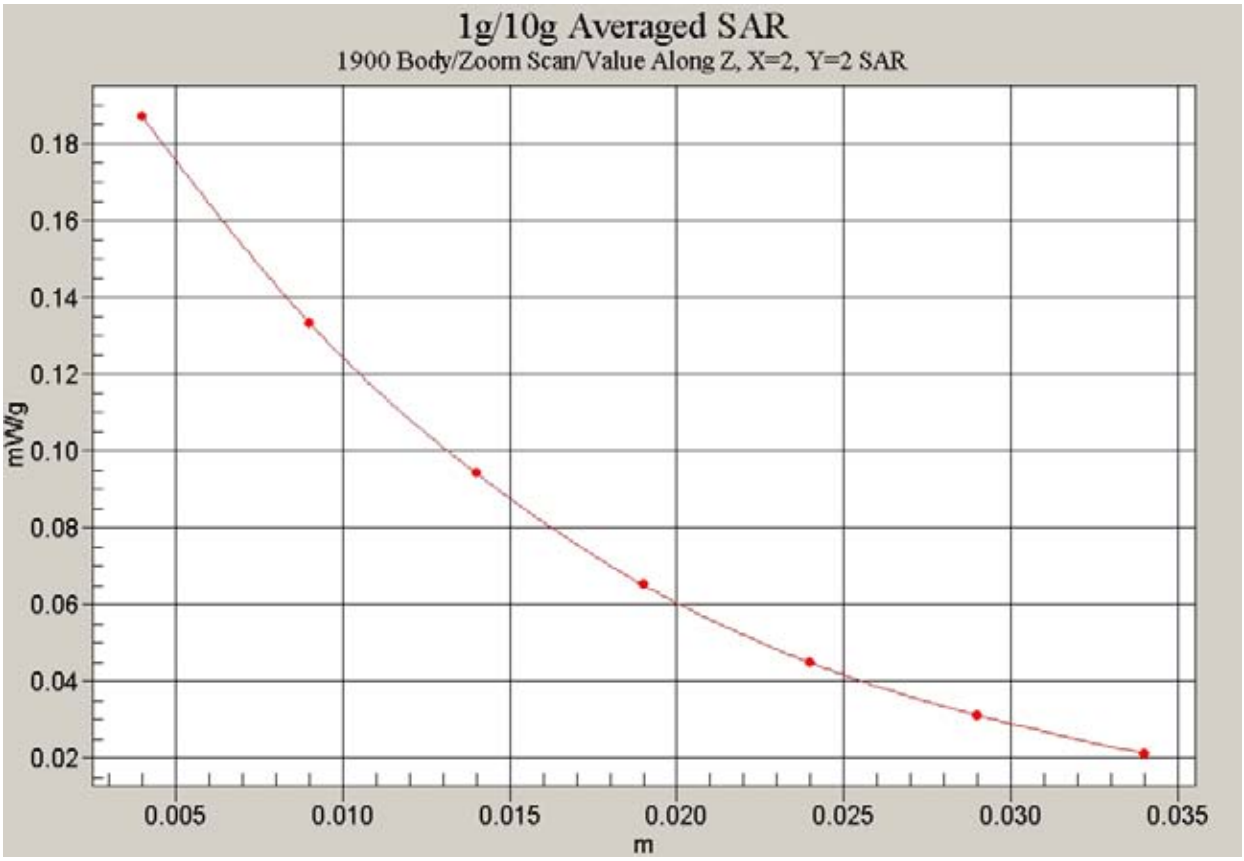


Fig. 66 Z-Scan at power reference point (Flat Phantom 1900MHz CH512 with the display of the handset towards the ground)

1900 Body Towards Phantom High

Electronics: DAE3 Sn536

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

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

Toward Phantom High/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 5.2 V/m; Power Drift = 0.1 dB

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

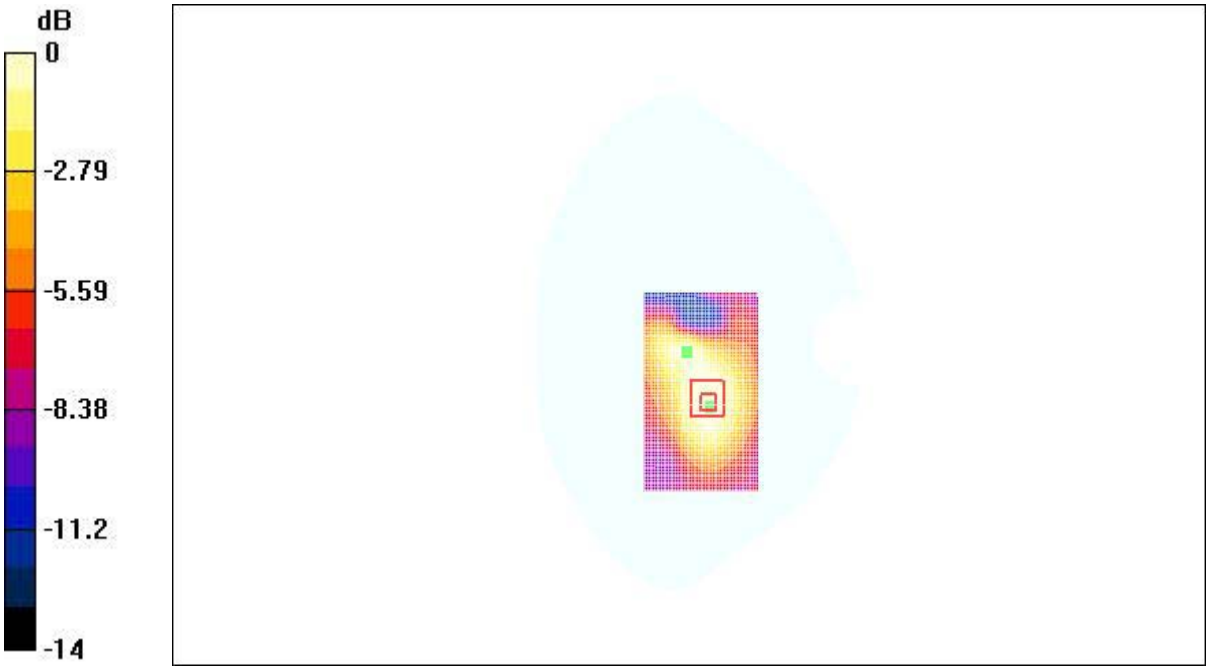
Toward Phantom High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.2 V/m; Power Drift = 0.1 dB

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

Peak SAR (extrapolated) = 0.104 W/kg

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



0 dB = 0.070mW/g

Fig. 67 Flat Phantom Body-worn Position 1900MHz CH810 with the display of the handset towards the phantom

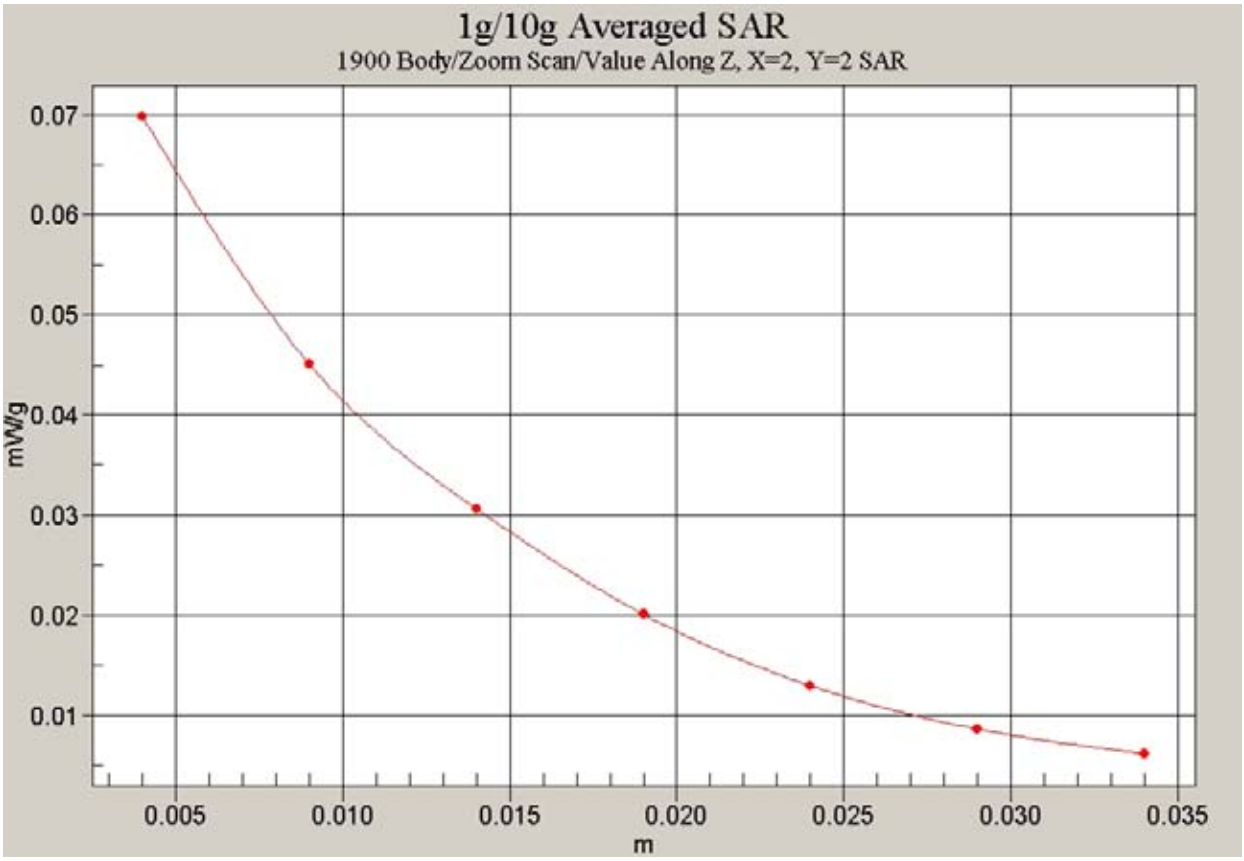


Fig. 68 Z-Scan at power reference point (Flat Phantom 1900MHz CH810 with the display of the handset towards the phantom)

1900 Body Towards phantom Middle

Electronics: DAE3 Sn536

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

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

Toward Phantom Middle/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 5.05 V/m; Power Drift = -0.1 dB

Maximum value of SAR (interpolated) = 0.059 mW/g

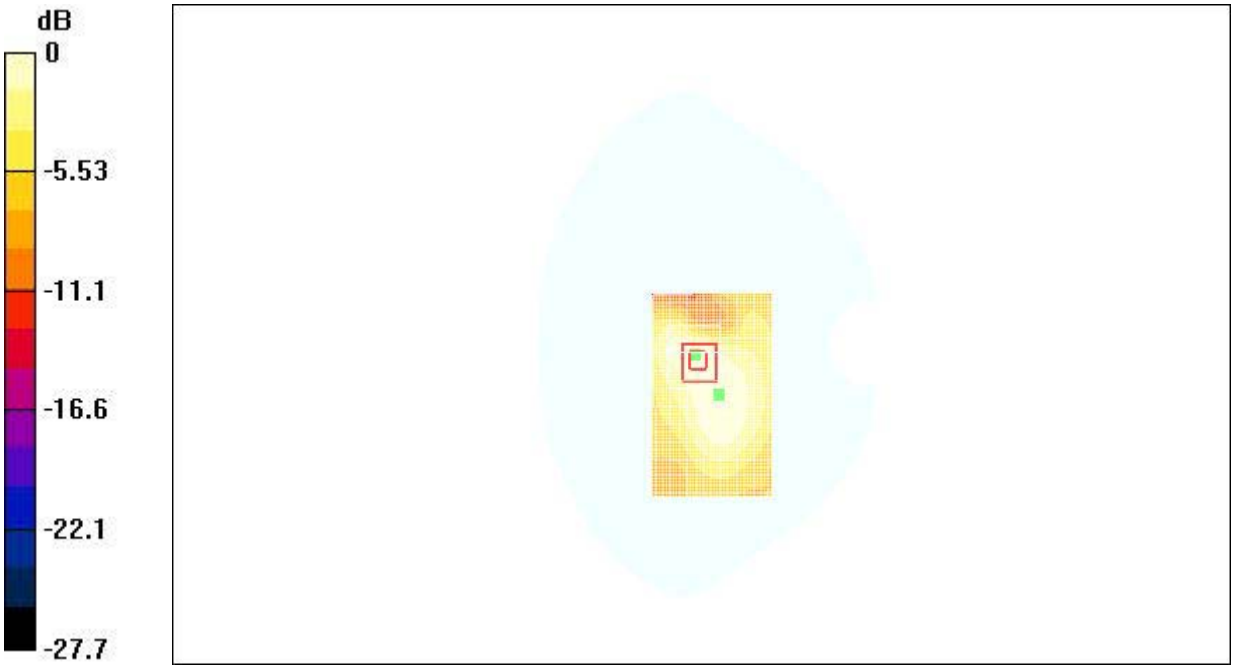
Toward Phantom Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.05 V/m; Power Drift = -0.1 dB

Maximum value of SAR (measured) = 0.052 mW/g

Peak SAR (extrapolated) = 0.076 W/kg

SAR(1 g) = 0.049 mW/g; SAR(10 g) = 0.031 mW/g



0 dB = 0.052mW/g

Fig. 69 Flat Phantom Body-worn Position 1900MHz CH661 with the display of the handset towards the phantom

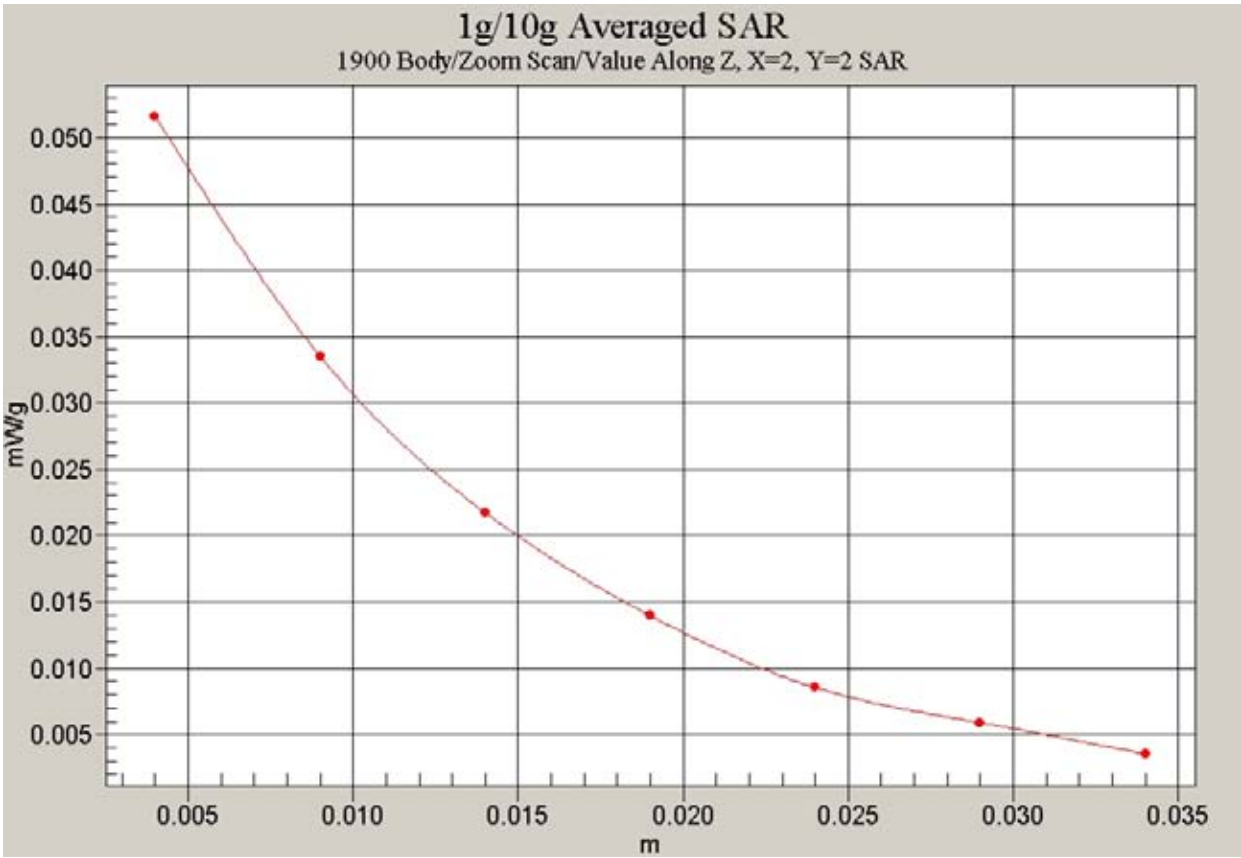


Fig. 70 Z-Scan at power reference point (Flat Phantom 1900MHz CH661 with the display of the handset towards the phantom)

1900 Body Towards phantom Low

Electronics: DAE3 Sn536

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

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

Toward Phantom Low/Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

Reference Value = 4.35 V/m; Power Drift = 0.0 dB

Maximum value of SAR (interpolated) = 0.042 mW/g

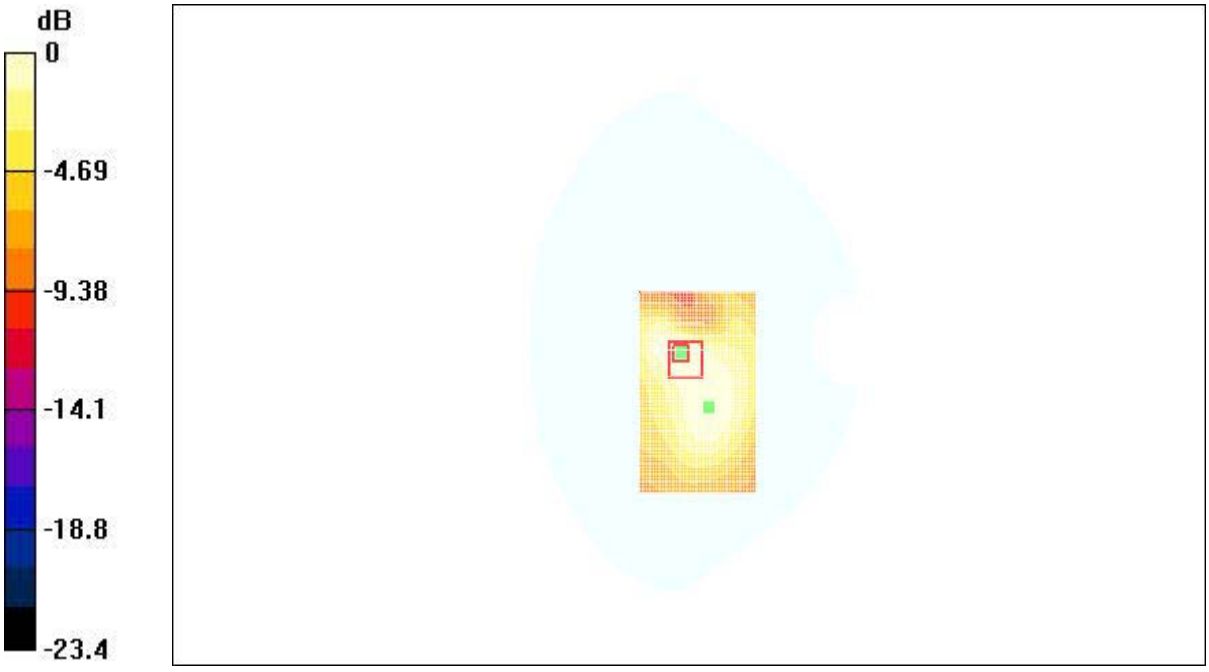
Toward Phantom Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.35 V/m; Power Drift = 0.0 dB

Maximum value of SAR (measured) = 0.036 mW/g

Peak SAR (extrapolated) = 0.053 W/kg

SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.022 mW/g



0 dB = 0.036mW/g

Fig. 71 Flat Phantom Body-worn Position 1900MHz CH512 with the display of the handset towards the phantom

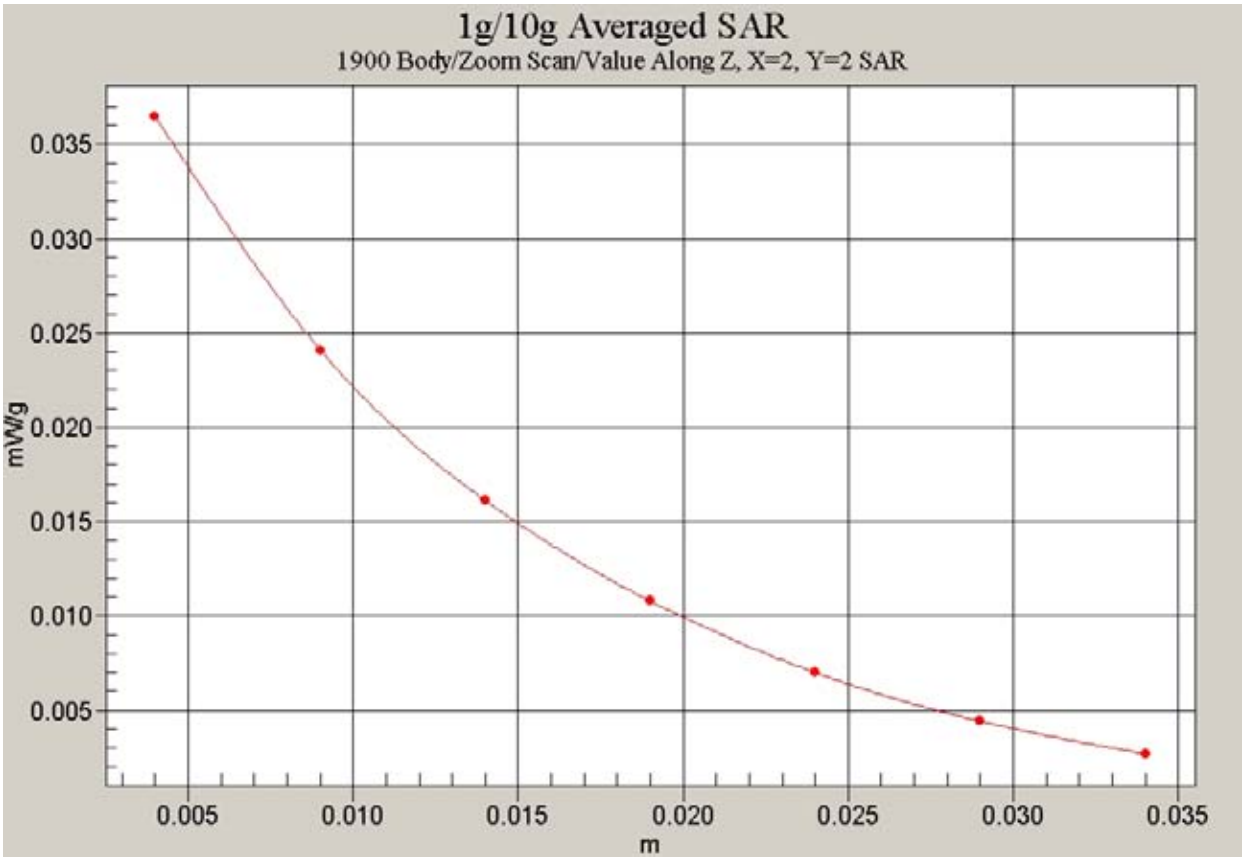


Fig. 72 Z-Scan at power reference point (Flat Phantom 1900MHz CH512 with the display of the handset towards the phantom)

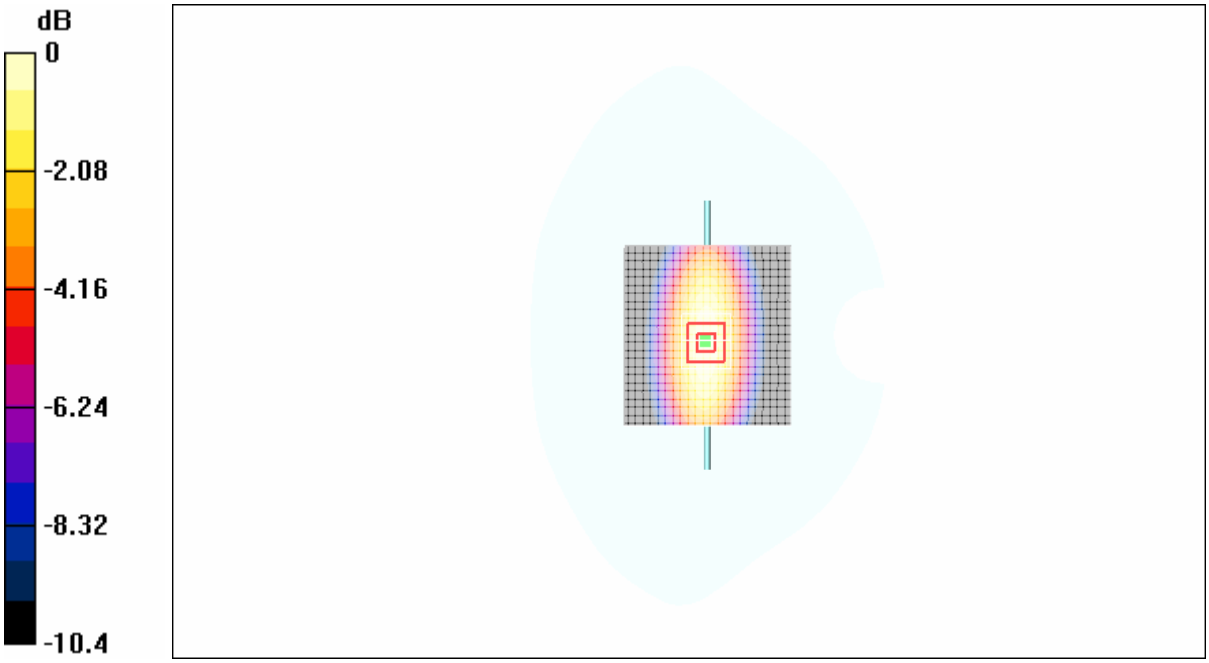
ANNEX D SYSTEM VALIDATION RESULTS

835MHzDAE536Probe1736

Electronics: DAE3 Sn536
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: ET3DV6 - SN1736 ConvF(6.51, 6.51, 6.51)

835MHz/Area Scan (101x101x1): Measurement grid: dx=10mm, dy=10mm
Reference Value = 56.8 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 2.68 mW/g

835MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.8 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 2.69 mW/g
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 2.48 mW/g; SAR(10 g) = 1.62 mW/g



0 dB = 2.69mW/g

Fig.73validation 850MHz 250mW

1900MHzDAE536Probe1736

Electronics: DAE3 Sn536

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

Reference Value = 92.1 V/m; Power Drift = 0.1 dB

Maximum value of SAR (interpolated) = 11.2 mW/g

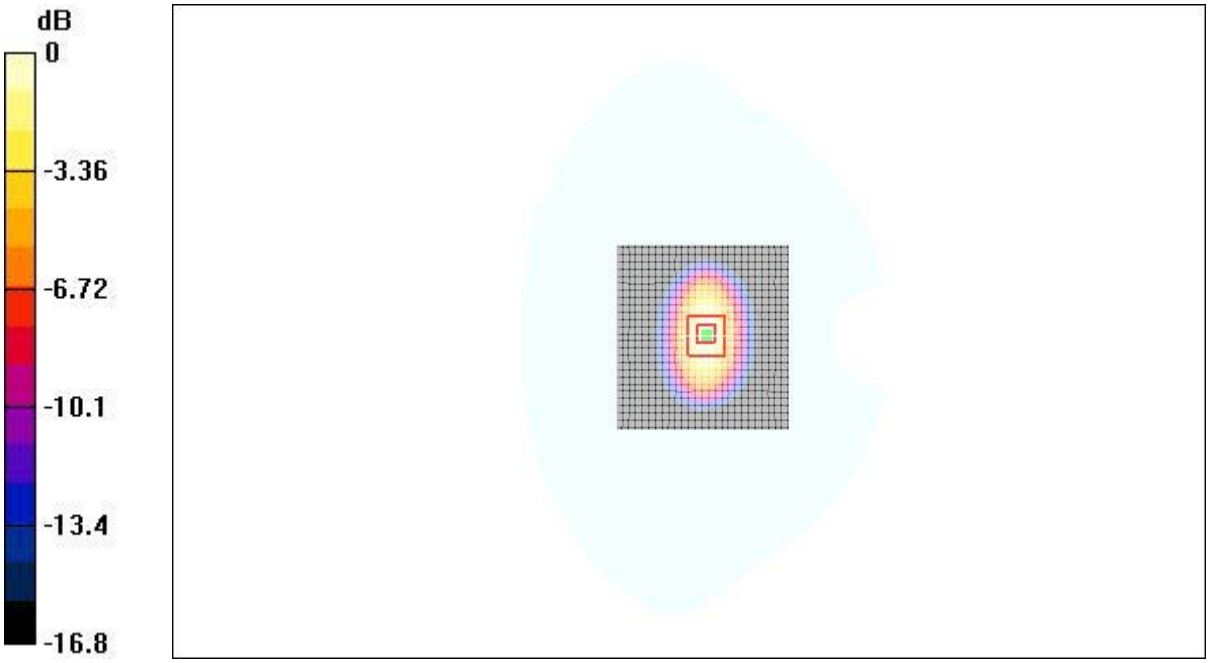
System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.1 V/m; Power Drift = 0.1 dB

Maximum value of SAR (measured) = 11.3 mW/g

Peak SAR (extrapolated) = 16.9 W/kg

SAR(1 g) = 9.91 mW/g; SAR(10 g) = 5.27 mW/g



0 dB = 11.3mW/g

Fig.74 validation 1900MHz 250mW

ANNEX E PROBE CALIBRATION CERTIFICATE

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

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

Accredited by the Swiss 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_Jul05

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1736
Calibration procedure(s)	QA CAL-01.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	July 14, 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 3 dB Attenuator	SN: S5054 (3c)	10-Aug-04 (METAS, No. 251-00403)	Aug-05
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-04 (METAS, No. 251-00404)	Aug-05
Reference Probe ES3DV2	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
DAE4	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: July 18, 2005

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
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:	November 25, 2004
Recalibrated:	July 14, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1736 **July 14, 2005**

DASY - Parameters of Probe: ET3DV6 SN:1736

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

NormX	**1.86** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**97** mV
NormY	**1.90** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**97** mV
NormZ	**1.89** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**97** 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	4.4
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

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	13.6	9.5
SAR_{be} [%]	With Correction Algorithm	0.9	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.

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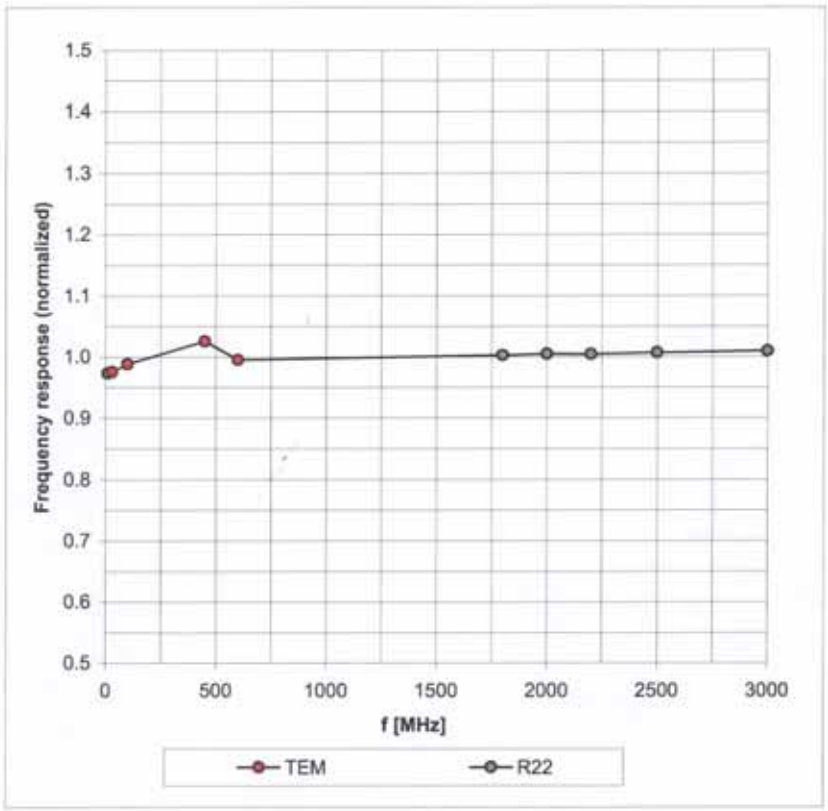
Frequency Response of E-Field

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



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

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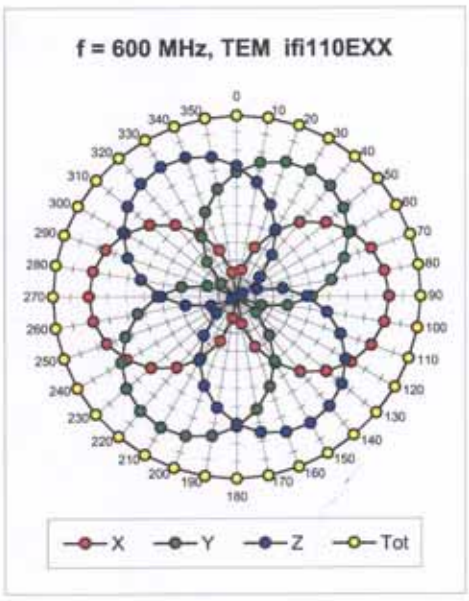
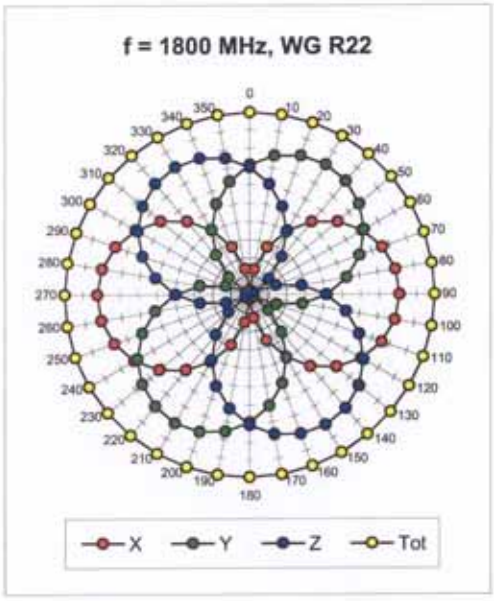
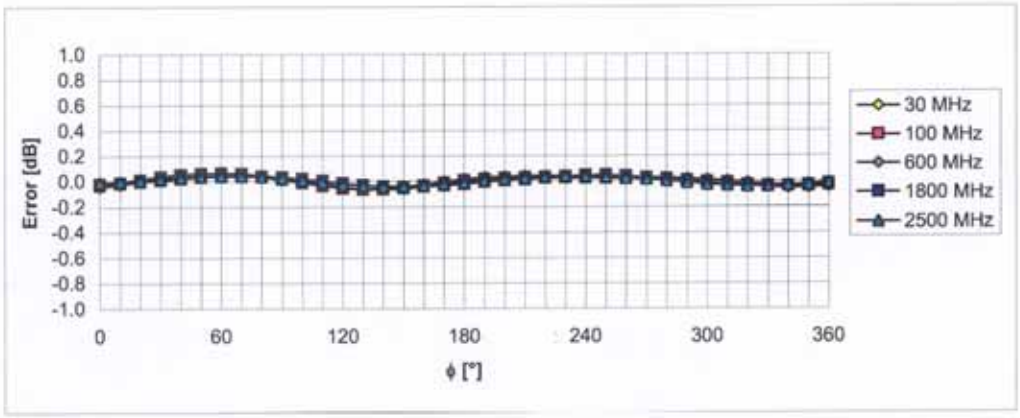
Receiving Pattern (ϕ), ϑ = 0°







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

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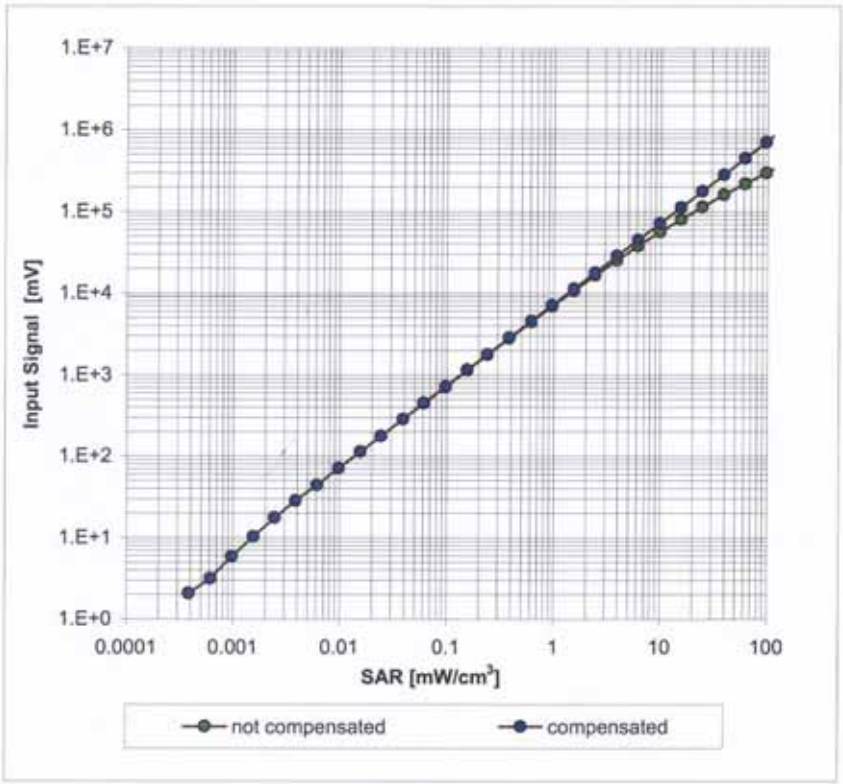
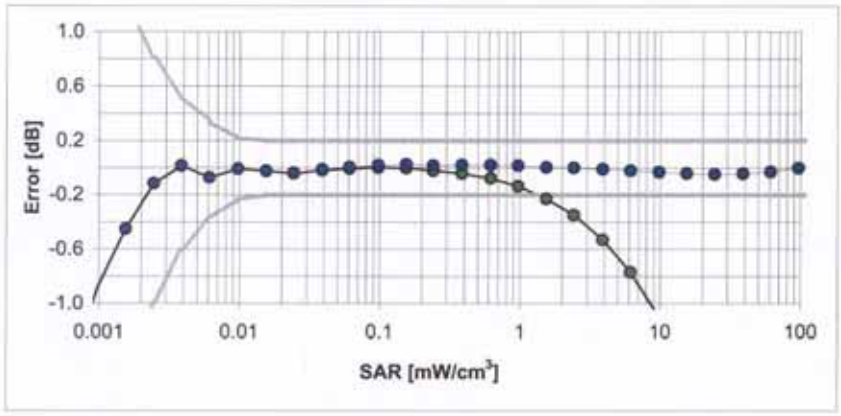
Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)

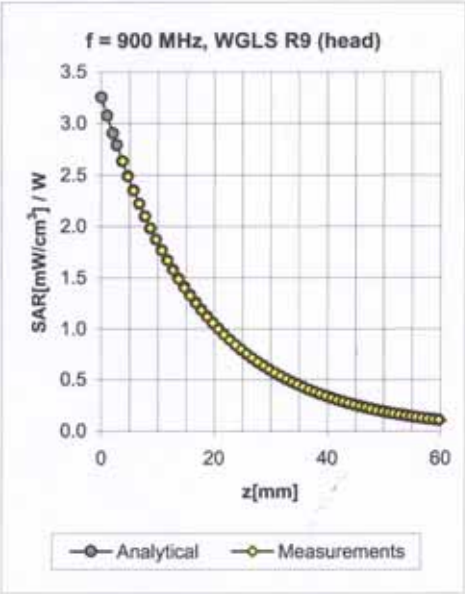


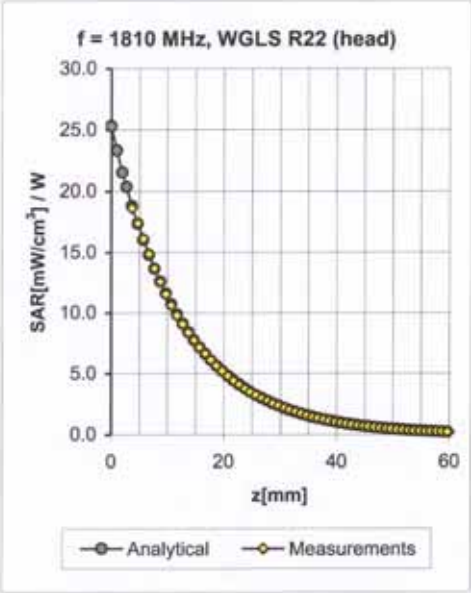


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ET3DV6 SN:1736 **July 14, 2005**

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)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.72	1.94	4.39 ± 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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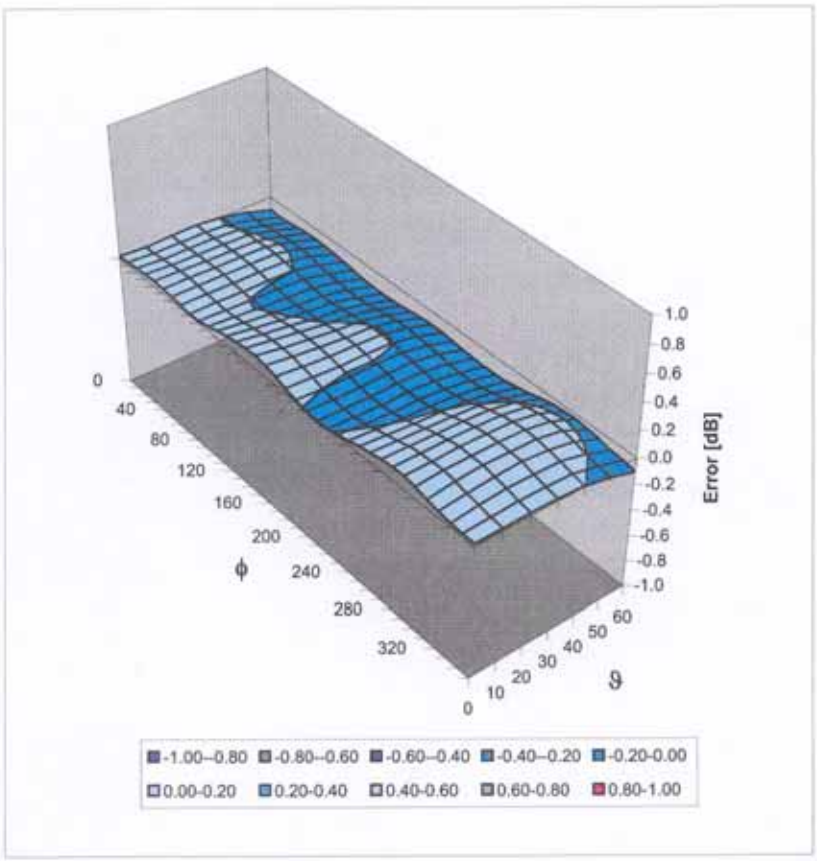
Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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