NO.: RZA2008-0150FCC

OET 65

TEST REPORT

Test name	Electromagnetic Field (Specific Absorption Rate)
Product	EDGE/GPRS USB Stick
Model	K2540/EG162G
FCC ID	QISK2540
Client	HUAWEI Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

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GENERAL SUMMARY

Product	EDGE/GPRS USB Stick	**Model**	K2540/EG162G
Client	HUAWEI Technologies Co., Ltd.	**Type of test**	Entrusted
Manufacturer	HUAWEI Technologies Co., Ltd.	**Arrival Date of sample**	Feb.5th, 2008
Place of sampling	(Blank)	**Carrier of the samples**	Ting Zhang
Quantity of the samples	One	**Date of product**	(Blank)
Base of the samples	(Blank)	**Items of test**	SAR
Series number	D82AA10812800056(K2540)/ D82AA10812800124(EG162G)		
Standard(s)	**EN 50360–2001:** Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones. **EN 50361–2001:** Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones. **ANSI C95.1–1999:** IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz **IEEE 1528–2003:** Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques. **OET Bulletin 65 (Edition 97-01) and Supplement C (Edition 01-01):** Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits. **IEC 62209-2 (Draft):** Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures –Part 2: Procedure to determine the Specific Absorption Rate (SAR)in the head and body for 30MHz to 6GHz Handheld and Body-Mounted Devices used in close proximity to the body. **Vodafone SAR_Data_cards_V1.1:** Global Test Specification for Terminals for Performance Measurements –Performance TST- Specific Absorption Rate (SAR) for Data Cards and External Antennas.		
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 6.2 of this test report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 6.1 of this test report. General Judgment: **Pass** (Stamp) **Date of issue: Feb.17th,2008**		
Comment	TX Freq. Band: GSM850 GSM1900 Max. Power: 2Watt 1Watt The test result only responds to the measured sample.		

Approved by ________ chenguang zheng **Revised by** ________ weizhong yang **Performed by** ________ minbao ling

TABLE OF CONTENT

1. COMPETENCE AND WARRANTIES

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

TA Technology (Shanghai) Co., Ltd. guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

TA Technology (Shanghai) Co., Ltd. is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test.

2. GENERAL CONDITIONS

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

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3. DESCRIPTION OF EUT

3.1. Addressing Information Related to EUT

Table 1: Applicant (The Client)

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

Table 2: Manufacturer

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

3.2. Constituents of EUT

Table 3: Constituents of Samples

Description	Model	Serial Number	Manufacturer
EDGE/GPRS USB STICK	K2540	D82AA10812800056	HUAWEI Technologies Co., Ltd.
	EG162G	D82AA10812800124	

EG162G is the USB stick which change some component from K2540.
The PCB and antenna are the same. The differences between EG162G and K2540 are:
1. Lens of EG162G is different from K2540.
2. Nameplate of EG162G is different from K2540.
3. There are 3 kind of external color for EG162G，they are red, white and black. The color of external K2540 is only white.

Note:
The EUT appearances see ANNEX H.

3.3. General Description

Equipment Under Test (EUT) is a EDGE/GPRS USB STICK with internal antenna. SAR is tested for the EUT respectively for GSM 850 and GSM1900.The EUT have GPRS (class 12) and EGPRS (class 12) function.

Since the EUT only has the data transfer function, but does not have the voice transfer function, the tests in the band of GSM 850 and GSM 1900 are performed in the mode of GPRS and EGPRS. The measurements were performed in combination with three different host products [BenQ Joy book S72, Acer ZH1and BenQ Joybook R55V (118)]. BenQ Joy book S72 and Acer ZH1 laptop have horizontal USB slots, BenQ Joybook R55V (118) laptop has vertical USB slot

The sample under 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

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

Since the EUT only has the data transfer function, but does not have the voice transfer function. The tests in the band of GSM 850 and GSM1900 are performed in the mode of GPRS and EGPRS. And since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink. According to specification 3GPP TS 51.010, the maximum power of the GSM can do the power reduction for the multi-slot. The allowed power reduction in the multi-slot configuration is as following:

Number of timeslots in uplink assignment	Permissible nominal reduction of maximum output power,(dB)
1	0
2	0 to 3,0
3	1,8 to 4,8
4	3,0 to 6,0

For this EUT, the tests for GSM 850 GPRS and GSM 1900 GPRS band will be performed under the following 4 setups at one same test position:

1) Using 1 timeslot in uplink with the power of 33 dBm for GSM850 and 30 dBm for GSM1900
2) Using 2 timeslots in uplink with the power reduced 2dB
3) Using 3 timeslots in uplink with the power reduced 4dB
4) Using 4 timeslots in uplink with the power reduced 6dB

After drawn the worst case, the tests will be continued to perform with the same EUT setup for the whole tests for GSM850 GPRS and GSM1900 GPRS.

And according to the "2 dB rule" specified in the OET Bulletin 65 (Edition 97-01) and Supplement C (Edition 01-01), **"If the SAR measured at the middle channel for each test configuration (Left, right, Cheek/Touch, Tile/Ear, extended and retracted) is at least 2.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s)"**.

Then The Absolute Radio Frequency Channel Number (ARFCN) is firstly allocated to 190 and 661 respectively in the case of GSM 850 and GSM 1900 then to low and high if necessary.

4.2. Position of module in Portable devices

The EUT is tested at the following 7 test positions:

- Test Position 1: The EUT is connected to the portable computer with horizontal USB slot. The back side of the EUT is towards the bottom of the flat phantom. (ANNEX H Picture 6-a）
- Test Position 2: The EUT is connected to the portable computer with horizontal USB slot. The front side of the EUT is towards the bottom of the flat phantom.（ANNEX H Picture 6-b）
- Test Position 3: The EUT is connected to the portable computer with horizontal USB slot. The top side of the EUT is towards the bottom of the flat phantom.（ANNEX H Picture 6-c）
- Test Position 4: The EUT is connected to the portable computer with vertical USB slot. The front side of the EUT is towards the bottom of the flat phantom.（ANNEX H Picture 6-d）
- Test Position 5: The EUT is connected to the portable computer with vertical USB slot. The left side of the EUT is towards the bottom of the flat phantom.（ANNEX H Picture 6-e）
- Test Position 6: The EUT is connected to the portable computer with vertical USB slot. The right side of the EUT is towards the bottom of the flat phantom.（ANNEX H Picture 6-f）
- Test Position 7: The EUT is connected to the portable computer with horizontal USB slot. The top side of the EUT is towards the bottom of the flat phantom.（ANNEX H Picture 6-g）

Show the distance that the back side of the EUT with different computer is towards the bottom of the Phantom. Please see ANNEX H Picture 7.

4.3. Picture of host product

During the test, The BenQ Joy book S72 laptop, BenQ R55V laptop and Acer ZH1 laptop are used as an assistant to help to setup communication. (See Picture 1)

Picture 1-a: BenQ Joy book S72 Close

Picture 1-b: BenQ Joy book S72 Open

Picture 1-c: Acer ZH1 Close

Picture 1-d: Acer ZH1 Open

Picture 1-e: BenQ R55V Close

Picture 1-f: BenQ R55V Open

Picture 1-g: BenQ Joybook S72 with horizontal USB slot

Picture 1-h: Acer ZH1 with horizontal USB slot

Picture 1-i: BenQ Joybook R55V(118) with Vertical USB slot

Picture 1: Computer as a test assistant

5. SAR MEASUREMENTS SYSTEM CONFIGURATION

5.1. 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.

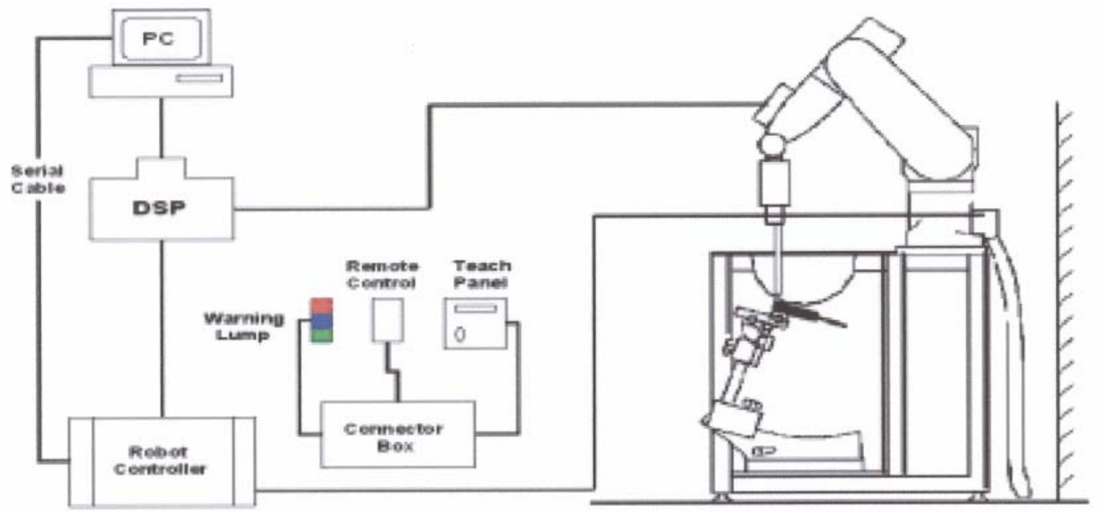


Figure 1.SAR Lab Test Measurement Set-up

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.

5.2. 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, 1.8GHz, 2.0GHz and 2.4GHz (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)

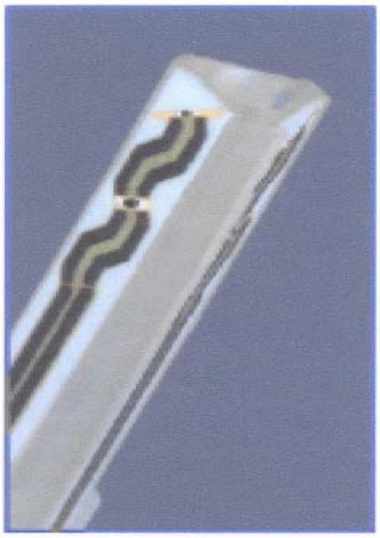


Figure 2.ET3DV6 E-field Probe

Directivity ±0.2 dB in brain tissue (rotation around probe axis)
±0.4 dB in brain tissue (rotation around 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

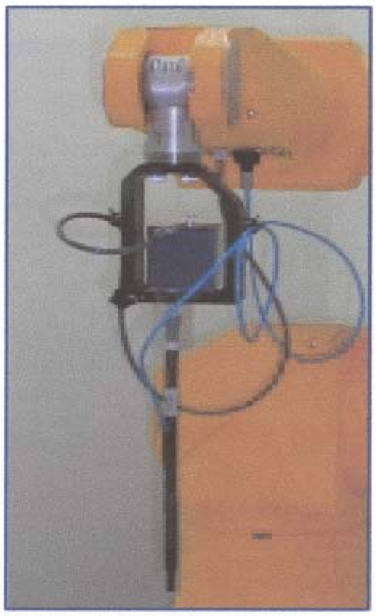


Figure3. ET3DV6 E-field probe

5.3. 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).

5.4. Other Test Equipment

5.4.1. 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).

Figure 4.Device Holder

5.4.2. Phantom

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

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

Figure5.Generic Twin Phantom

5.5. Equivalent Tissues

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

Table 4: Composition of the Body Tissue Equivalent Matter

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

Table 5: Composition of the Body Tissue Equivalent Matter

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

5.6. System Specifications

5.6.1 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.

6. CHARACTERISTICS OF THE TEST

6.1. 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 with in 20 cm of the user in the uncontrolled environment.

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

6.2. Applicable Measurement Standards

EN 50361–2001: Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.
It specifies the measurement method for demonstration of compliance with the SAR limits for such equipments.

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

OET Bulletin 65 (Edition 97-01) and Supplement C (Edition 01-01): Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits.

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

Vodafone SAR_Data_cards_V1.1: Global Test Specification for Terminals for Performance Measurements –Performance TST- Specific Absorption Rate (SAR) for Data Cards and External Antennas.

7. LABORATORY ENVIRONMENT

Table 6: The Ambient Conditions during Test

Temperature	Min. = 20°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

8. CONDUCTED OUTPUT POWER MEASUREMENT

8.1. Summary

During the process of testing, the EUT was controlled via Digital Radio Communication tester to ensure the maximum power transmission and proper modulation. This result contains conducted output power and ERP for the EUT. In all cases, the measured peak output power should be greater and with in 5% than EMI measurement.

8.2. 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 10 to Table 19 labeled as: (Power Drift [dB]). This ensures that the power drift during one measurement is with in 5%.

8.3. Conducted Power

8.3.1. Measurement Methods

The EUT was set up for the maximum output power. The channel power was measured .The measurements were done both before and after SAR tests for each test band.

8.3.2. Measurement result

Table 7: Conducted Power Measurement Results

GSM 850	**Conducted Power**		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz)
Before Test (dBm)	31.55	31.58	31.52
After Test (dBm)	31.57	31.56	31.53
GSM 850+GPRS	**Conducted Power**		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz)
Before Test (dBm)	25.59	25.61	25.64
After Test (dBm)	25.57	25.62	25.66
GSM 1900	**Conducted Power**		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Before Test (dBm)	29.62	29.35	29.12
After Test (dBm)	29.63	29.37	29.08
GSM 1900+GPRS	**Conducted Power**		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Before Test (dBm)	23.65	23.39	23.12
After Test (dBm)	23.59	23.38	23.14

9. TEST RESULTS

9.1. Dielectric Performance

Table 8: Dielectric Performance of Body Tissue Simulating Liquid

Measurement is made at temperature 22.5 °C and relative humidity 51%. Liquid temperature during the test: 22.3°C				
Frequency (MHz)		**Target value**	**Measurement value**	**Difference percentage**
835 (Body)	Permittivity ε_r	55.20	55.42	3.99 %
	Conductivity σ	0.97	0.99	2.06 %
1900 (Body)	Permittivity ε_r	53.30	52.87	-0.08 %
	Conductivity σ	1.52	1.54	1.97 %

9.2. System Validation

Table 9: System Validation

Measurement is made at temperature 23.2 °C, relative humidity 50%, and input power 250 mW. Liquid temperature during the test: 22.3°C							
Liquid parameters	**Frequency**	**Permittivity ε**		**Conductivity σ (S/m)**			
	835MHz	42.8		0.89			
	1900MHz	39.4		1.42			
Verification results	**Frequency**	**Target value (W/kg)**		**Measurement value (W/kg)**		**Difference percentage**	
		10 g Average	**1 g Average**	**10 g Average**	**1 g Average**	**10 g Average**	**1g Average**
	835MHz	1.6	2.48	1.53	2.34	4.38%	5.65%
	1900MHz	5.09	9.73	5.12	9.69	0.59%	0.41%

Note：

a. Target Values used derive from the SPEAG calibration certificate and 250 mW is used as feeding power to the validation dipole (SPEAG using).

b. The graph results see ANNEX D.

9.3. Summary of Measurement Results

Table 10: SAR Values [GSM 850 GPRS (4 timeslots in uplink) at Test Position 1]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Model Computer	**Channel**	**10g Average**	**1g Average**		
BenQ Joy book S72	Middle	0.433	0.663	0.181	Figure 7
Acer ZH1	Middle	0.298	0.448	-0.106	Figure 9

Table 11: SAR Values [GSM 850 GPRS (different timeslots in uplink) at Test Position 1 with BenQ Joy book S72]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Timeslots	**Channel**	**10g Average**	**1g Average**		
4 timeslots in uplink	Middle	0.433	0.663	0.181	Figure 7
3 timeslots in uplink	Middle	0.499	0.766	0.078	Figure 11
2 timeslots in uplink	Middle	0.602	0.922	-0.033	Figure 13
1 timeslot in uplink	Middle	0.469	0.717	0.199	Figure 15

Table 12: SAR Values [GSM 850 GPRS(2 timeslots in uplink) with BenQ Joy book S72]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	± **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Test Position	**Channel**	**10g Average**	**1g Average**		
Test Position 1	Middle	0.602	0.922	-0.033	Figure 13
Test Position 2	Middle	0.352	0.523	-0.082	Figure 17
Test Position 3	Middle	0.083	0.310	0.154	Figure 19

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

Table 13: SAR Values [GSM 850 GPRS (2 timeslots in uplink) with BenQ R55V]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	± **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Test Position	**Channel**	**10g Average**	**1g Average**		
Test Position 4	Middle	0.148	0.229	-0.149	Figure 21
Test Position 5	Middle	0.166	0.249	0.180	Figure 23
Test Position 6	Middle	0.213	0.300	-0.043	Figure 25
Test Position 7	Middle	0.171	0.613	0.010	Figure 27

Table 14: SAR Values [GSM850 EGPRS (2 timeslots in uplink) with BenQ Joy book S72]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Test Position	**Channel**	**10g Average**	**1g Average**		
Test Position 1	Middle	0.155	0.237	0.007	Figure 29

Table 15: SAR Values [GSM1900 GPRS (4 timeslots in uplink) at Test Position 1]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Model Computer	**Channel**	**10g Average**	**1g Average**		
BenQ Joy book S72	Middle	0.460	0.787	-0.101	Figure 31
Acer ZH1	Middle	0.243	0.427	-0.076	Figure 33

Table 16: SAR Values [GSM1900 GPRS (different timeslots in uplink)at Test Position 1 with BenQ Joy book S72]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		10g Average	1g Average	Power Drift (dB)	Graph Results
		2.0	1.6	± 0.2	
Test Case Of Body		Measurement Result (W/kg)		Power Drift (dB)	
Different Timeslots	Channel	10g Average	1g Average		
4 timeslots in uplink	Middle	0.460	0.787	-0.101	Figure 31
3 timeslots in uplink	Middle	0.578	0.989	0.073	Figure 35
2 timeslots in uplink	High	0.586	1.020	0.180	Figure 37
	Middle	0.638	1.100	0.024	Figure 39
	Low	0.623	1.070	0.117	Figure 41
1 timeslot in uplink	Middle	0.531	0.913	-0.069	Figure 43

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

Table 17: SAR Values [GSM1900 GPRS (2 timeslots in uplink) at different position with BenQ Joy book S72]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		10 g Average	1g Average	Power Drift (dB)	Graph Results
		2.0	1.6	± 0.2	
Test Case Of Body		Measurement Result (W/kg)		Power Drift (dB)	
Different Test Position	Channel	10 g Average	1 g Average		
Test Position 1	Middle	0.638	1.100	0.024	Figure 39
Test Position 2	Middle	0.296	0.493	-0.010	Figure 45
Test Position 3	Middle	0.351	0.829	-0.113	Figure 47

Table 18: SAR Values [GSM 1900 GPRS (2 timeslots in uplink) at different Position with BenQ R55V, Mid frequency]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10 g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Test Position	**Channel**	**10 g Average**	**1 g Average**		
Test Position 4	Middle	0.151	0.243	0.142	Figure 49
Test Position 5	Middle	0.171	0.300	-0.054	Figure 51
Test Position 6	High	0.598	1.190	0.188	Figure 53
	Middle	0.549	1.070	-0.048	Figure 55
	Low	0.465	0.918	0.003	Figure 57
Test Position 7	Middle	0.334	0.739	0.184	Figure 59

Table 19: SAR Values [GSM1900 EGPRS (2 timeslots in uplink) with BenQ Joy book S72]

Liquid Temperature: 22.4℃					
Limit of SAR (W/kg)		**10g Average**	**1g Average**	**Power Drift (dB)**	**Graph Results**
		2.0	**1.6**	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**		**Power Drift (dB)**	
Different Test Position	**Channel**	**10 g Average**	**1 g Average**		
Test Position 1	Middle	0.254	0.434	-0.137	Figure 61

9.4. 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 6.2 of this report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 6.1 of this test report.

10. MEASUREMENT UNCERTAINTY

No.	a	Type	c	d	e=f(d、k)	f	h=c×f / e	k
	Uncertainty Component		Tol. (±%)	Prob. Dist	Div.	c_1(1g)	1g u (± %)	v_1
1	System repetivity	A	0.5	N	1	1	0.5	9
	Measurement system							
2	Probe Calibration	B	5	N	2	1	2.5	∞
3	Axial isotropy	B	4.7	R	$\sqrt{3}$	$(1\text{-cp})^{1/2}$	4.3	∞
4	Hemisphere Isotropy	B	9.4	R	$\sqrt{3}$	$\sqrt{C_P}$		∞
5	Boundary Effect	B	0.4	R	$\sqrt{3}$	1	0.23	∞
6	Linearity	B	4.7	R	$\sqrt{3}$	1	2.7	∞
7	System Detection Limits	B	1.0	R	$\sqrt{3}$	1	0.6	∞
8	Readout Electronics	B	1.0	N	1	1	1.0	∞
9	RF Ambient Conditions	B	3.0	R	$\sqrt{3}$	1	1.73	∞
10	Probe Positioner Mechanical Tolerance	B	0.4	R	$\sqrt{3}$	1	0.2	∞
11	Probe Positioning with respect to Phantom Shell	B	2.9	R	$\sqrt{3}$	1	1.7	∞
12	Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	B	3.9	R	$\sqrt{3}$	1	2.3	∞
	Test Sample Related							
13	Test Sample Positioning	A	4.9	N	1	1	4.9	N-1
14	Device Holder Uncertainty	A	6.1	N	1	1	6.1	N-1
15	Output Power Variation-SAR drift measurement	B	5.0	R	$\sqrt{3}$	1	2.9	∞
	Phantom and Tissue Parameters							
16	Phantom Uncertainty(shape and thickness tolerances)	B	1.0	R	$\sqrt{3}$	1	0.6	∞
17	Liquid Conductivity-deviation from target values	B	5.0	R	$\sqrt{3}$	0.64	1.7	∞
18	Liquid Conductivity-measurement uncertainty	B	5.0	N	1	0.64	1.7	M
19	Liquid Permittivity-deviation from target values	B	5.0	R	$\sqrt{3}$	0.6	1.7	∞
20	Liquid Permittivity- measurement uncertainty	B	5.0	N	1	0.6	1.7	M
Combined Standard Uncertainty				RSS			11.25	
Expanded Uncertainty (95 % CONFIDENCE INTERVAL)				K=2			22.5	

11. MAIN TEST INSTRUMENTS

Table 20: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent 8753E	US37390326	September 15, 2007	One year
02	Dielectric Probe Kit	Agilent 85070E	US44020115	No Calibration Requested	
03	Power meter	Agilent E4417A	GB41291714	March 16, 2007	One year
04	Power sensor	Agilent 8481H	MY41091316	March 16, 2007	One year
05	Signal Generator	HP 8341B	2730A00804	September 15, 2007	One year
06	Amplifier	IXA-020	0401	No Calibration Requested	
07	Validation Kit 835MHz	SPEAG D835V2	443	February 19, 2007	One year
08	Validation Kit 1900MHz	SPEAG D1900V2	541	February 20, 2007	One year
09	BTS	E5515C	GB46490218	September 15, 2007	One year
10	E-field Probe	ET3DV6	1737	February 20, 2007	One year
11	DAE	DAE3	452	September 6, 2007	One year

12. TEST PERIOD

The test is performed from Feb. 5th, 2008 to Feb. 11th, 2008

13. TEST LOCATION

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

END OF REPORT BODY

ANNEX A： MEASUREMENT PROCESS

The evaluation was performed with the following procedure:

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

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 3.9 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 20 mm x 20 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Around this point, a volume of 32 mm x 32 mm x 34 mm was assessed by measuring 7 x 7x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

a. The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
b. The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x ~ y and z-directions). The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

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

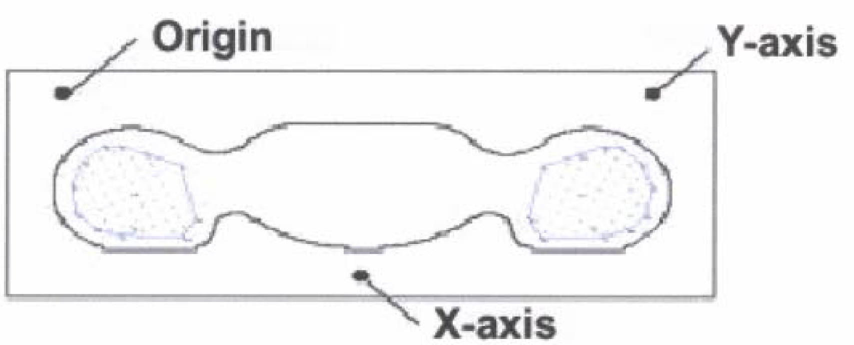
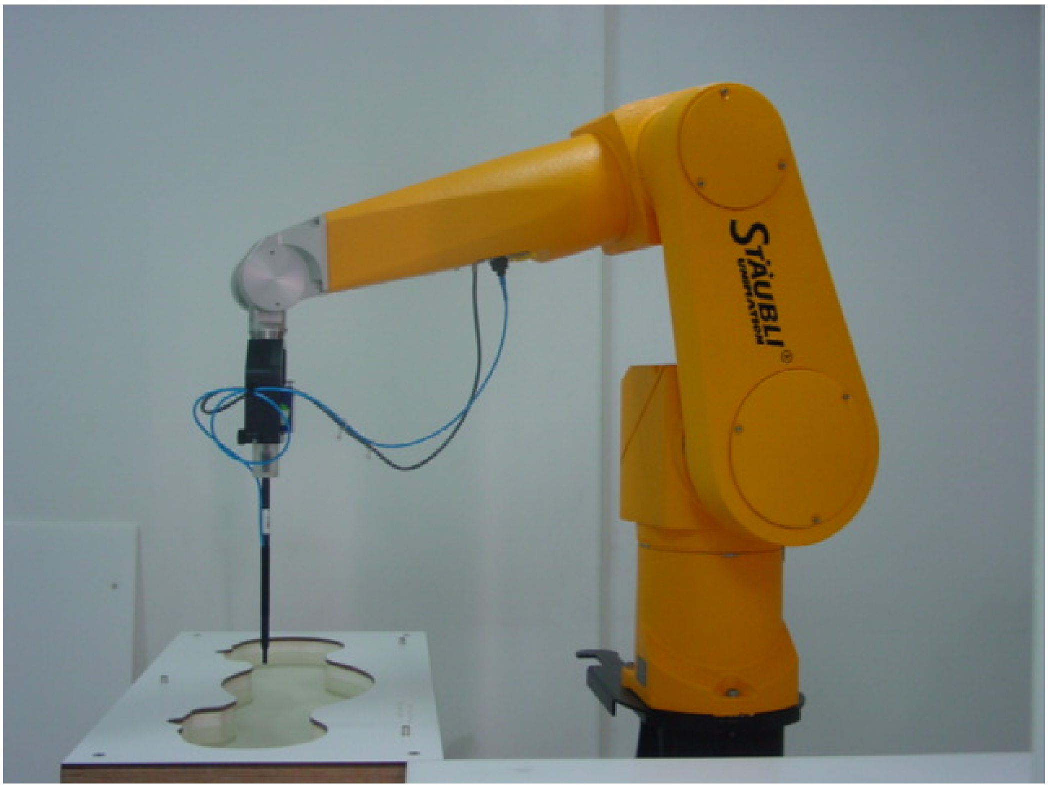
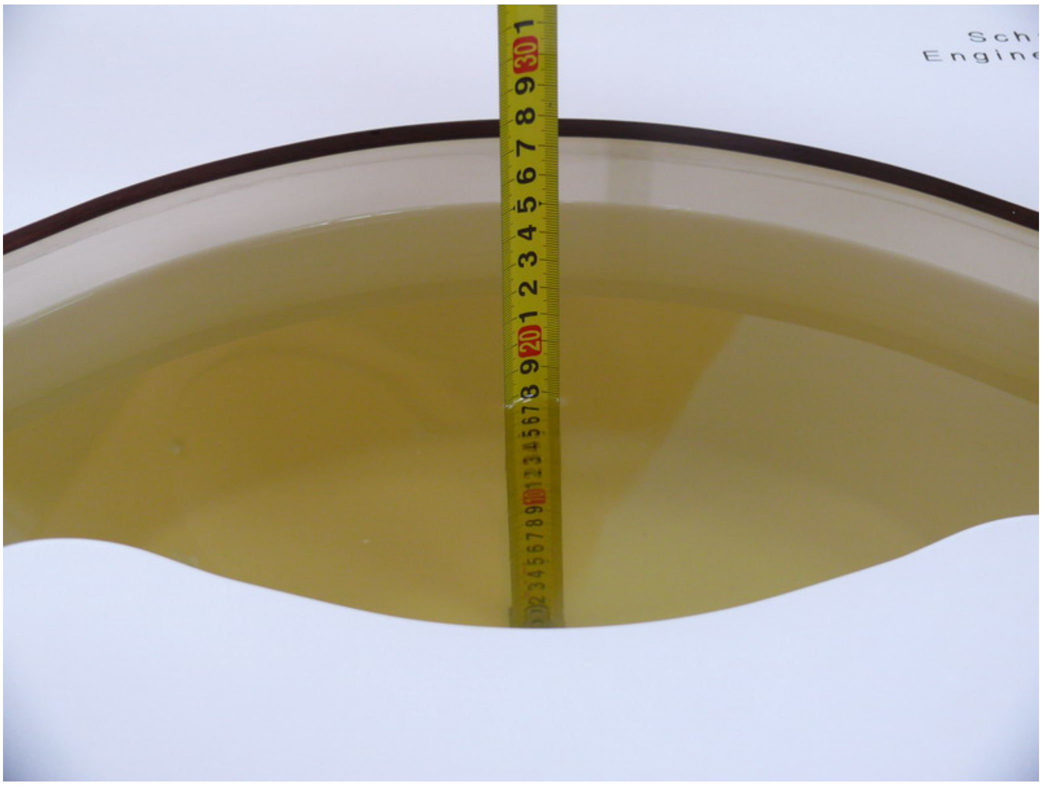


Figure 6.SAR Measurement Points in Area Scan

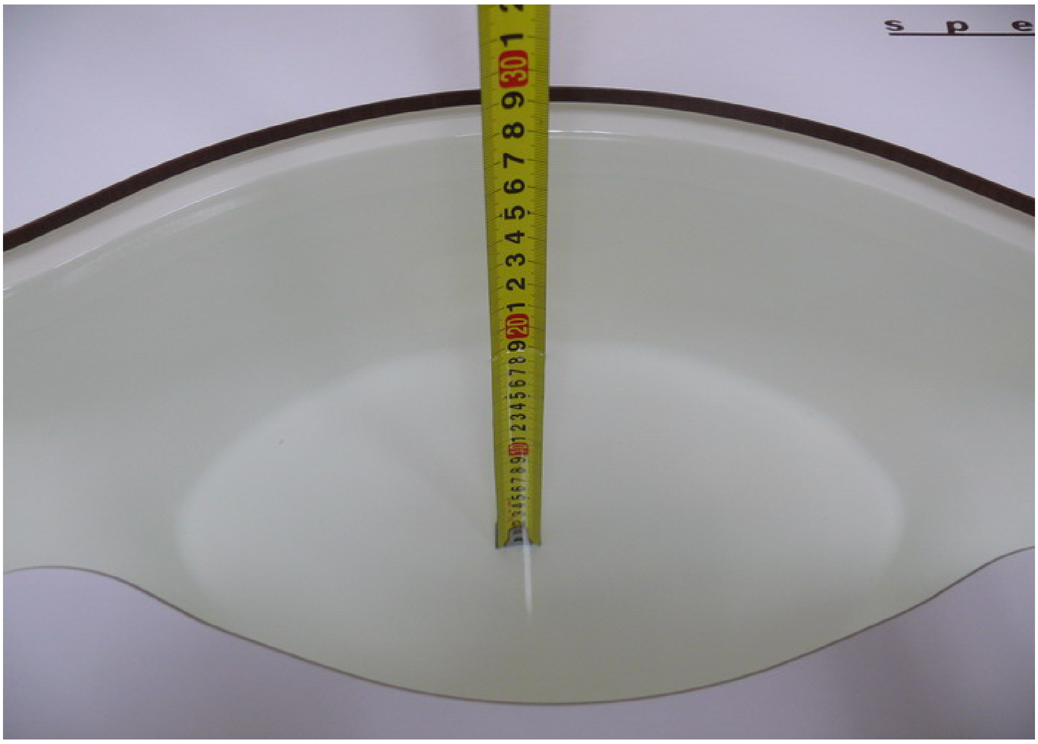
ANNEX B: TEST LAYOUT



Picture 2 Specific Absorption Rate Test Layout



Picture 3 Liquid depth in the Flat Phantom (GSM850)



Picture 4 Liquid depth in the Flat Phantom (GSM1900)

ANNEX C: GRAPH RESULTS

GSM 850 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

Communication System: GSM 850+GPRS(4Up); Frequency: 836.6 MHz;Duty Cycle: 1:2

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.707 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 20.9 V/m; Power Drift = 0.181 dB

Peak SAR (extrapolated) = 0.948 W/kg

SAR(1 g) = 0.663 mW/g; SAR(10 g) = 0.433 mW/g

Maximum value of SAR (measured) = 0.717 mW/g

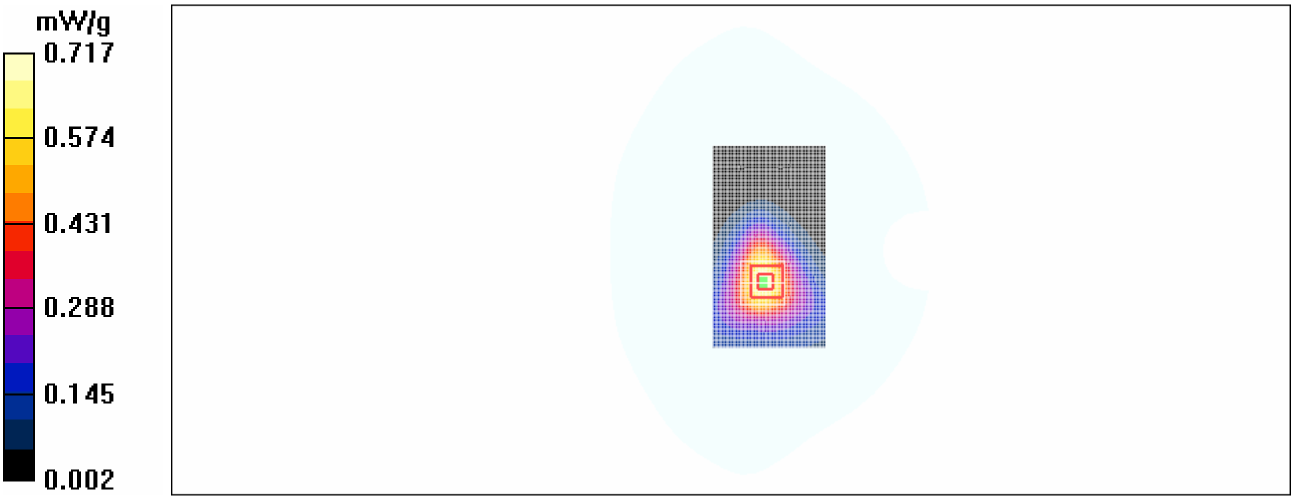


Figure 7 GSM 850 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

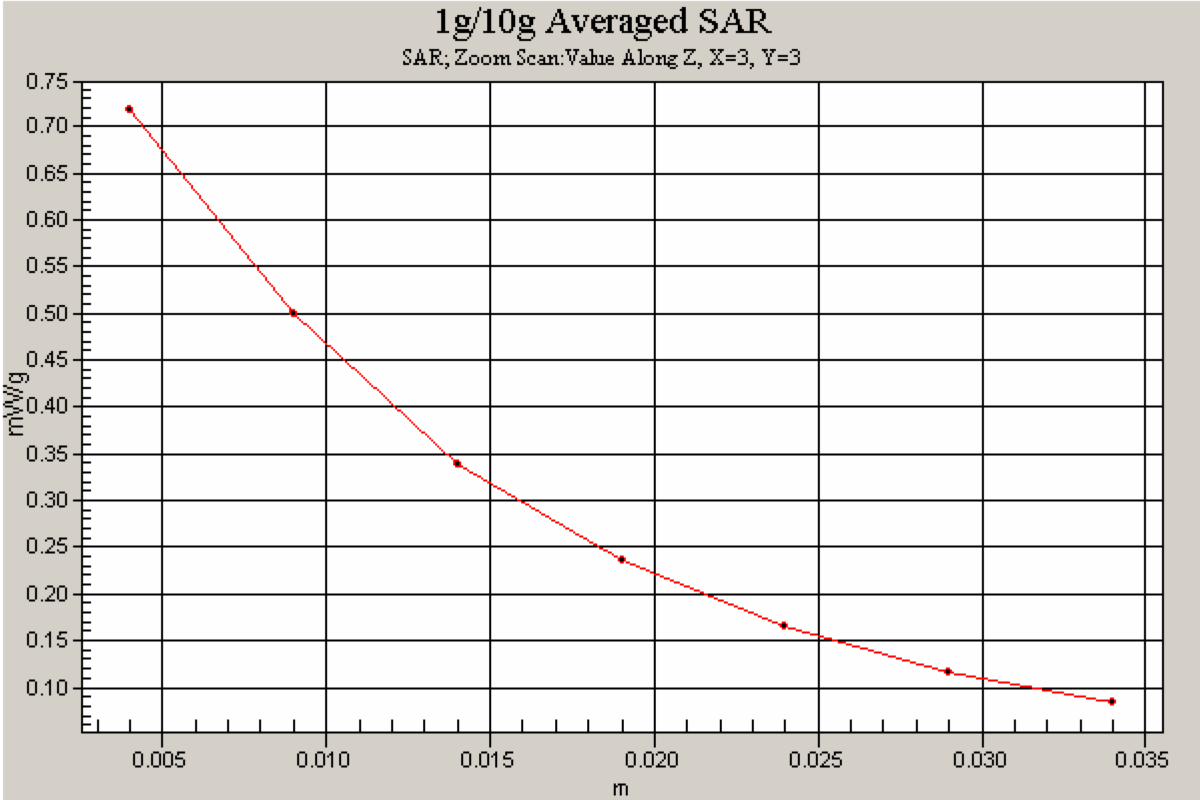


Figure 8 Z-Scan at power reference point [GSM 850 GPRS(4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

GSM 850 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Middle

Communication System: GSM 850+GPRS(4Up); Frequency: 836.6 MHz;Duty Cycle: 1:2

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 23.1 V/m; Power Drift = -0.106 dB

Peak SAR (extrapolated) = 0.974 W/kg

SAR(1 g) = 0.448 mW/g; SAR(10 g) = 0.298 mW/g

Maximum value of SAR (measured) = 0.482 mW/g

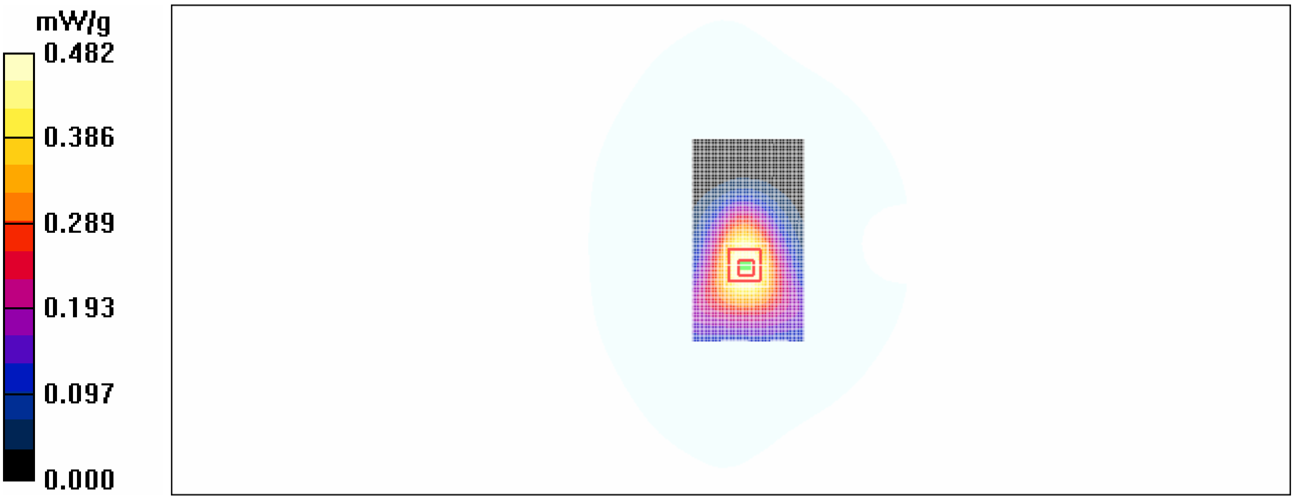


Figure 9 GSM 850 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 190

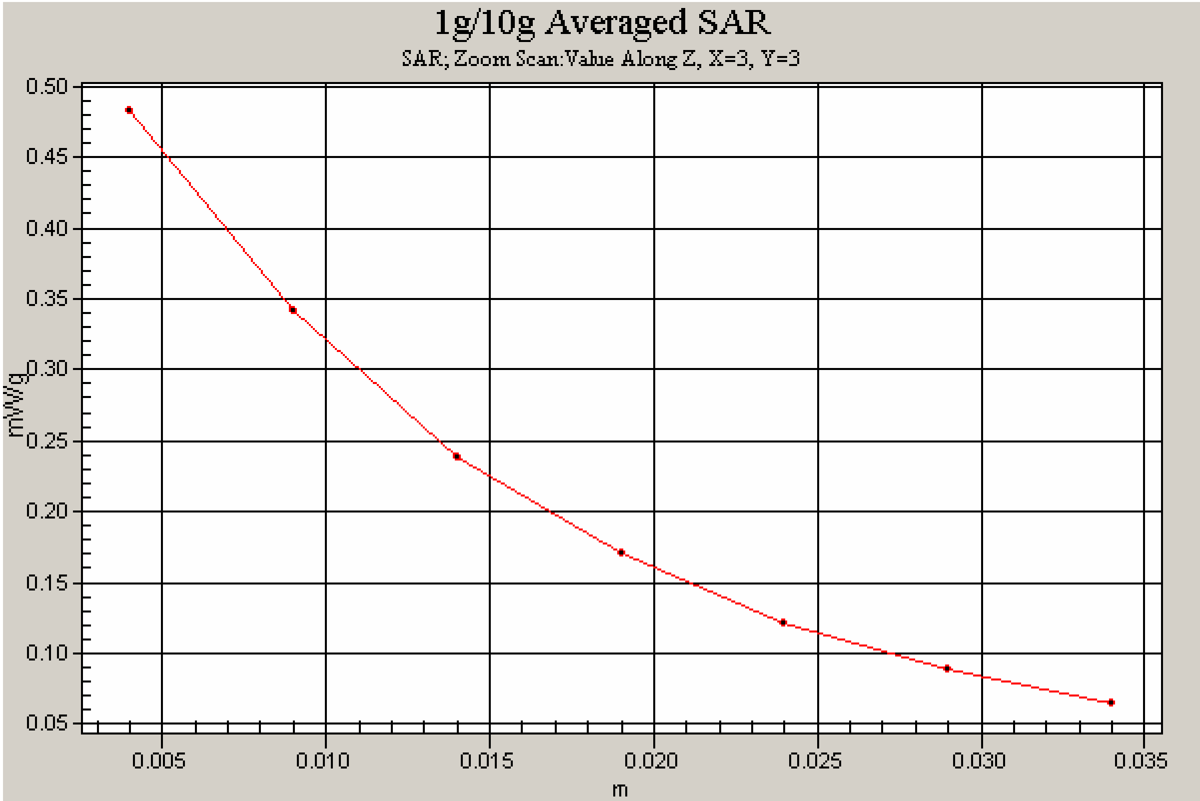


Figure 10 Z-Scan at power reference point [GSM 850 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 190]

GSM 850 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

Communication System: GSM850 + GPRS(3Up); Frequency: 836.6 MHz;Duty Cycle: 1:2.67

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.918 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.7 V/m; Power Drift = 0.078 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.766 mW/g; SAR(10 g) = 0.499 mW/g

Maximum value of SAR (measured) = 0.827 mW/g

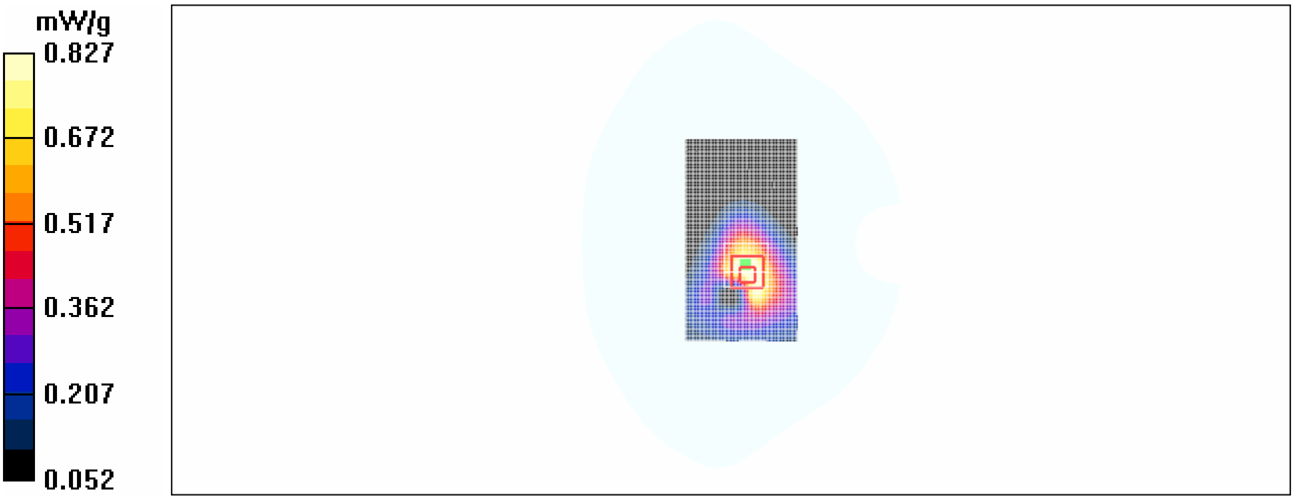


Figure 11 GSM 850 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

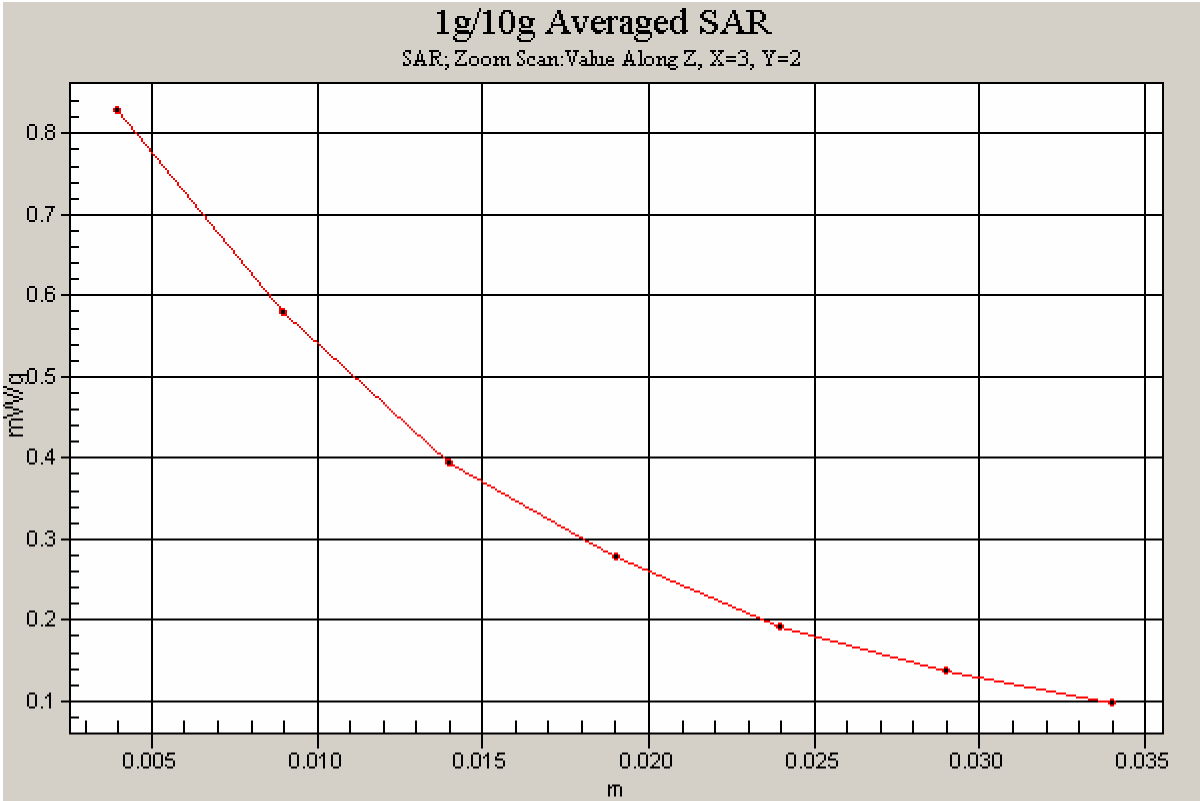


Figure 12 Z-Scan at power reference point [GSM 850 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.04 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.6 V/m; Power Drift = -0.033 dB

Peak SAR (extrapolated) = 1.33 W/kg

SAR(1 g) = 0.922 mW/g; SAR(10 g) = 0.602 mW/g

Maximum value of SAR (measured) = 1.00 mW/g

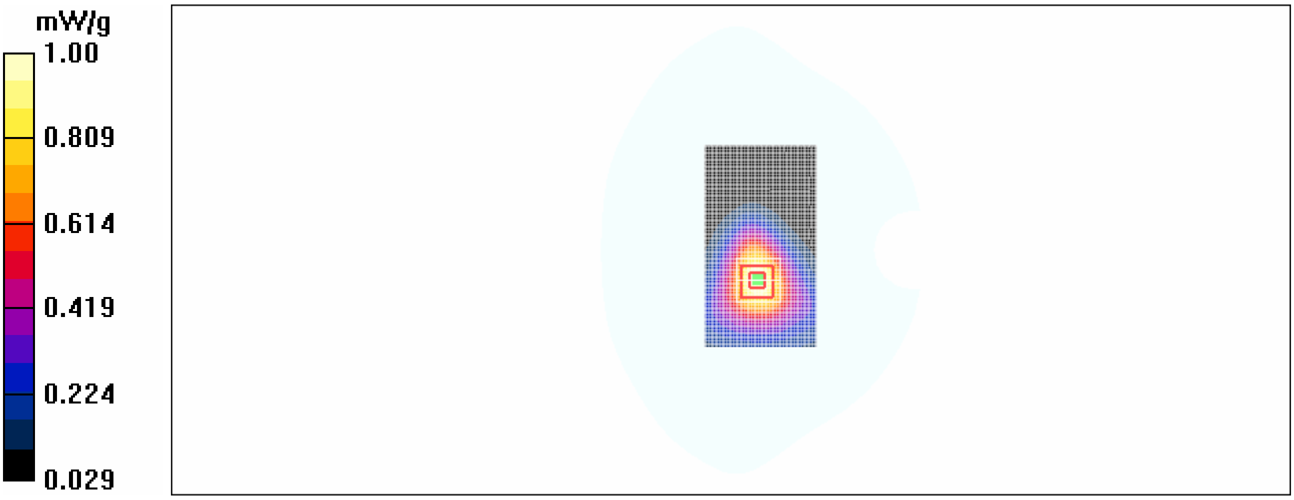


Figure 13 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

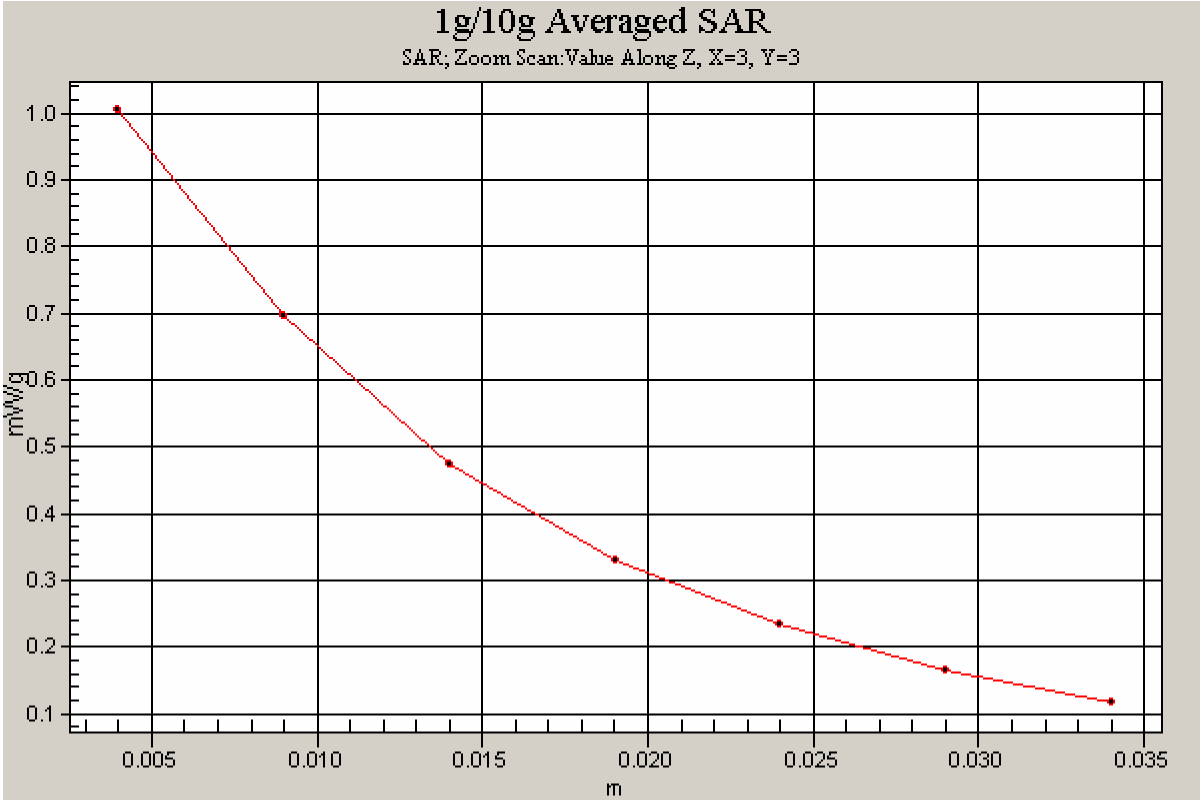


Figure 14 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

GSM 850 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Middle

Communication System: GSM850 + GPRS(1Up); Frequency: 836.6 MHz;Duty Cycle: 1:8

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.775 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 24.2 V/m; Power Drift = 0.199 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.717 mW/g; SAR(10 g) = 0.469 mW/g

Maximum value of SAR (measured) = 0.780 mW/g

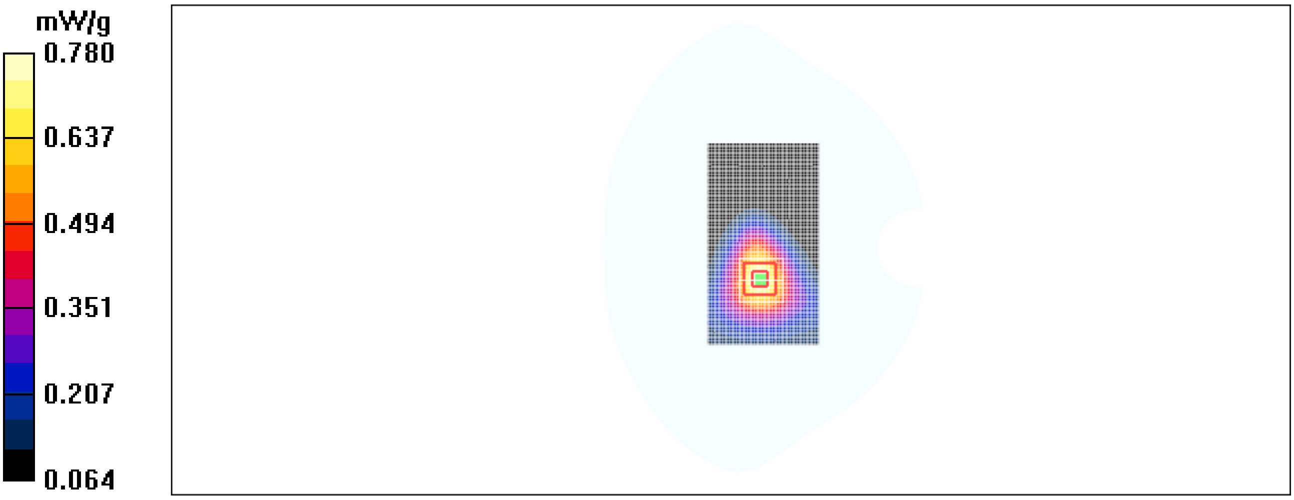


Figure 15 GSM 850 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

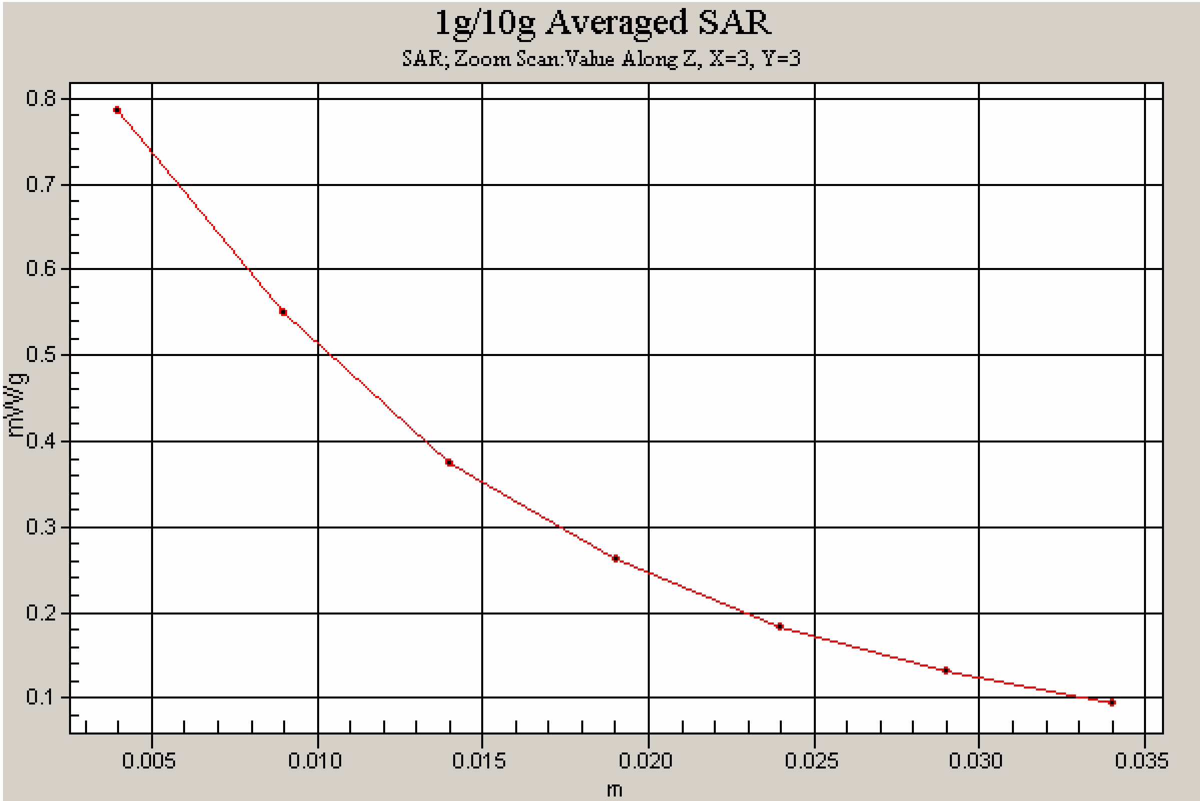


Figure 16 Z-Scan at power reference point [GSM 850 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Middle

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 2 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.596 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.5 V/m; Power Drift = -0.082 dB

Peak SAR (extrapolated) = 0.703 W/kg

SAR(1 g) = 0.523 mW/g; SAR(10 g) = 0.352 mW/g

Maximum value of SAR (measured) = 0.567 mW/g

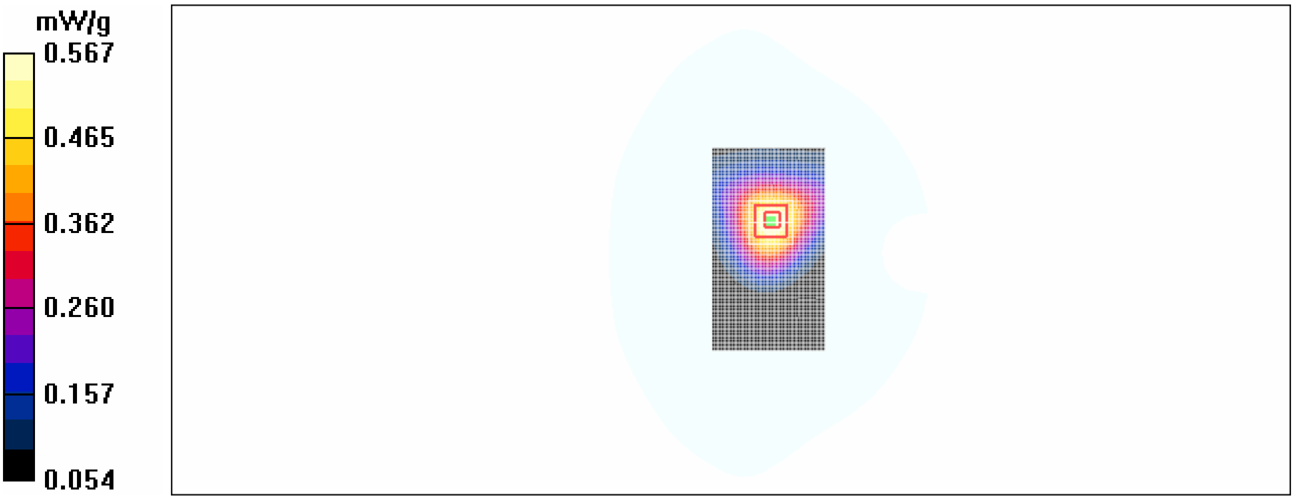


Figure 17 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 190

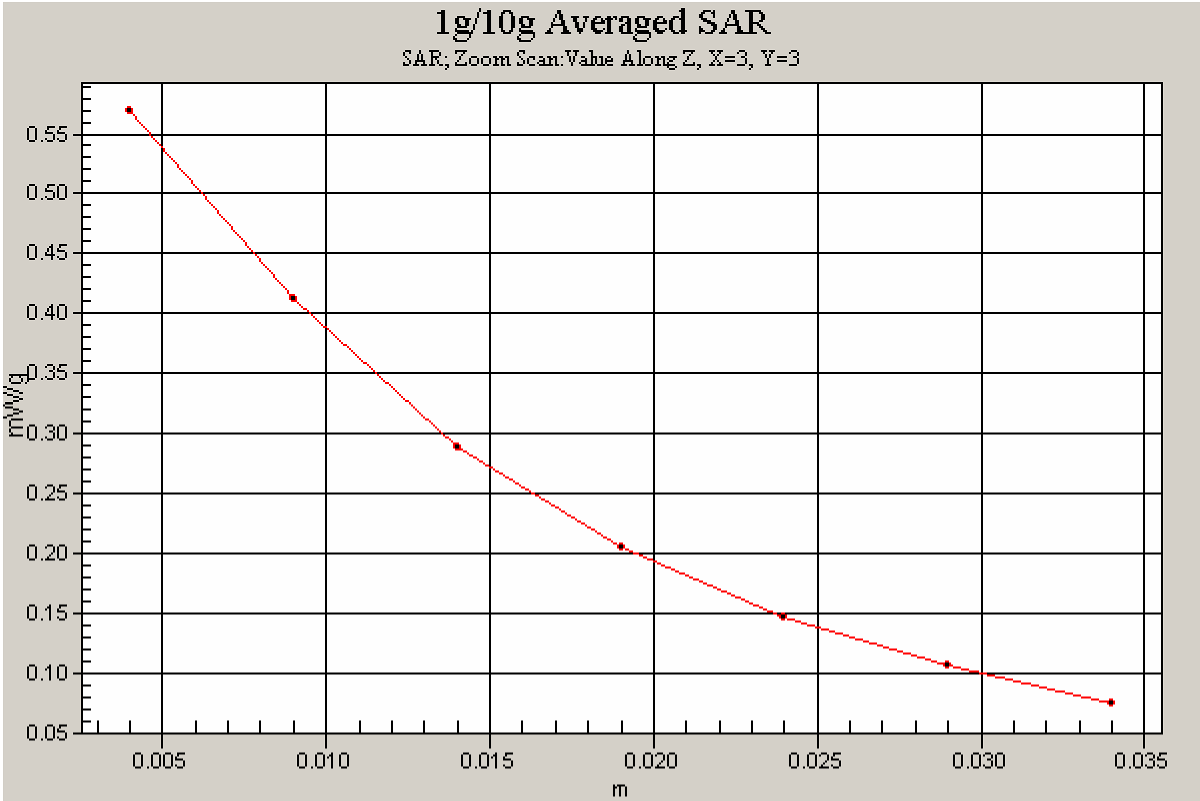


Figure 18 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 190]

GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Middle

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 3 Middle/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.153 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.6 V/m; Power Drift = 0.154 dB

Peak SAR (extrapolated) = 2.25 W/kg

SAR(1 g) = 0.310 mW/g; SAR(10 g) = 0.083 mW/g

Maximum value of SAR (measured) = 0.375 mW/g

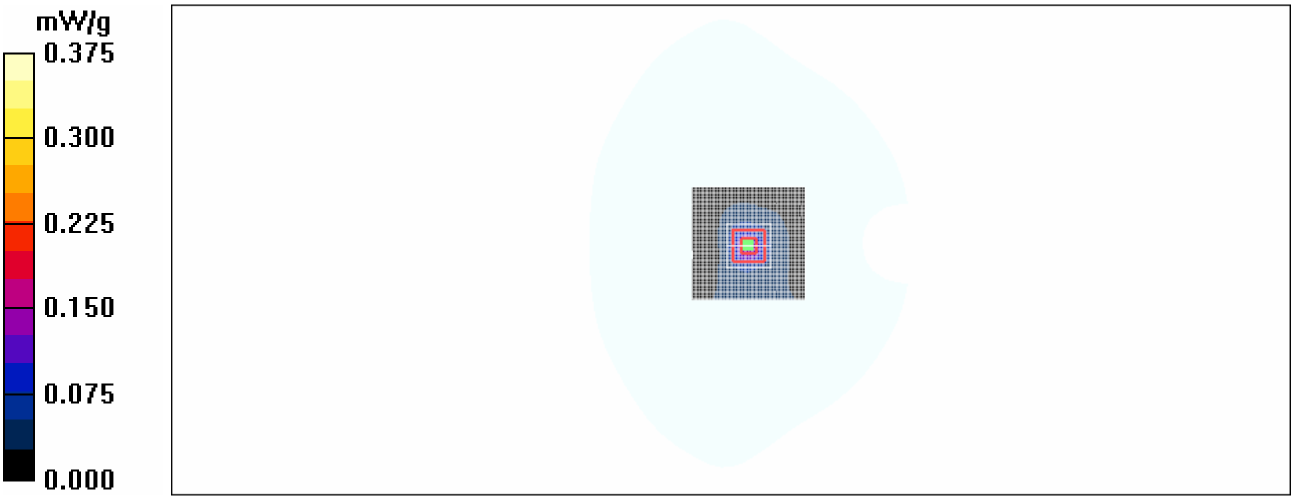


Figure 19 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 190

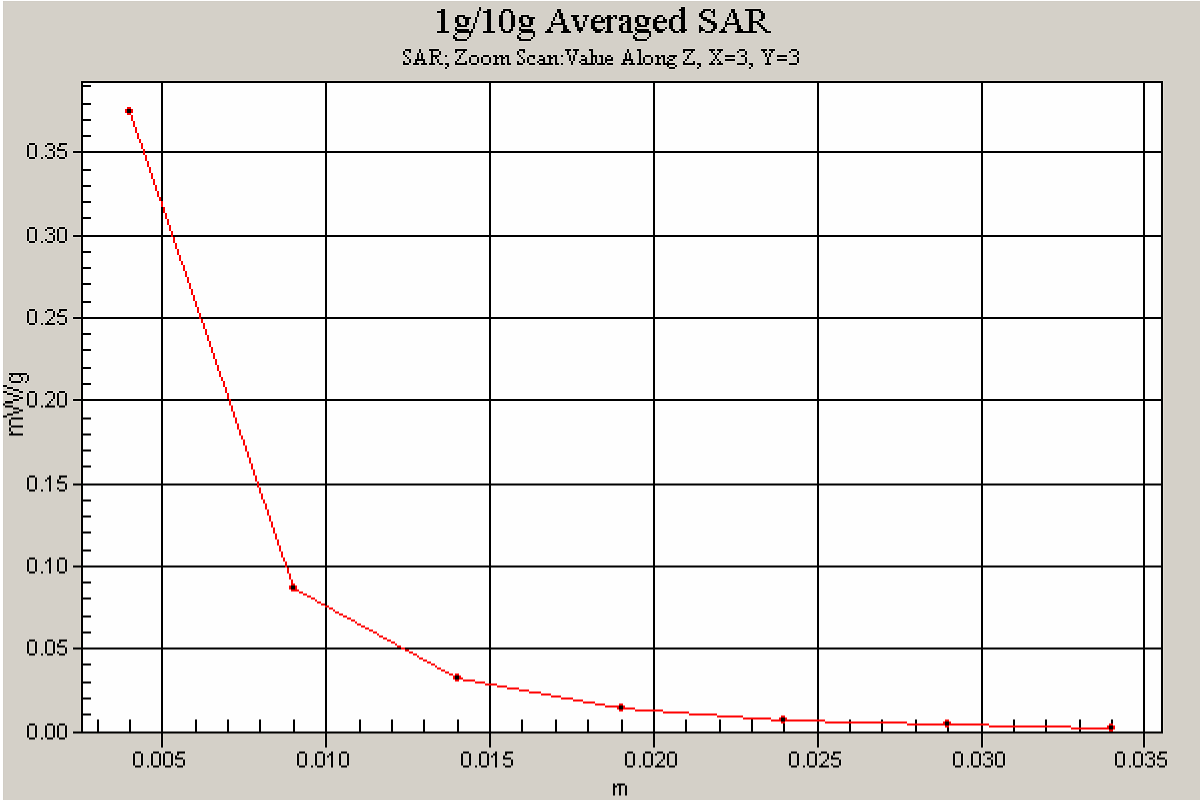


Figure 20 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 190]

GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Middle

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 4 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.261 mW/g

Test Position 4 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 13.7 V/m; Power Drift = -0.149 dB

Peak SAR (extrapolated) = 0.377 W/kg

SAR(1 g) = 0.229 mW/g; SAR(10 g) = 0.148 mW/g

Maximum value of SAR (measured) = 0.252 mW/g

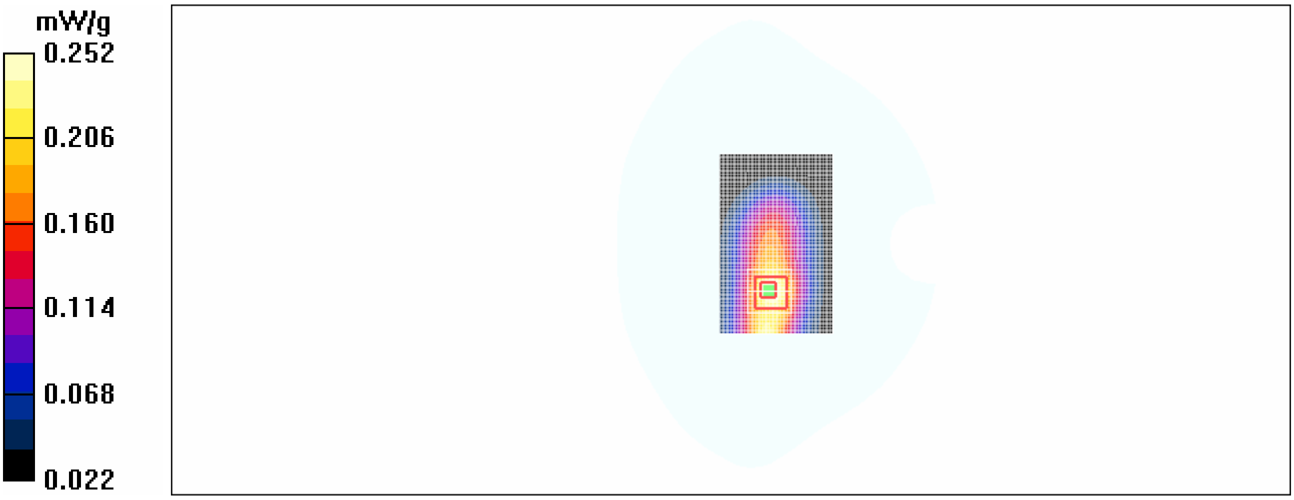


Figure 21 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 190

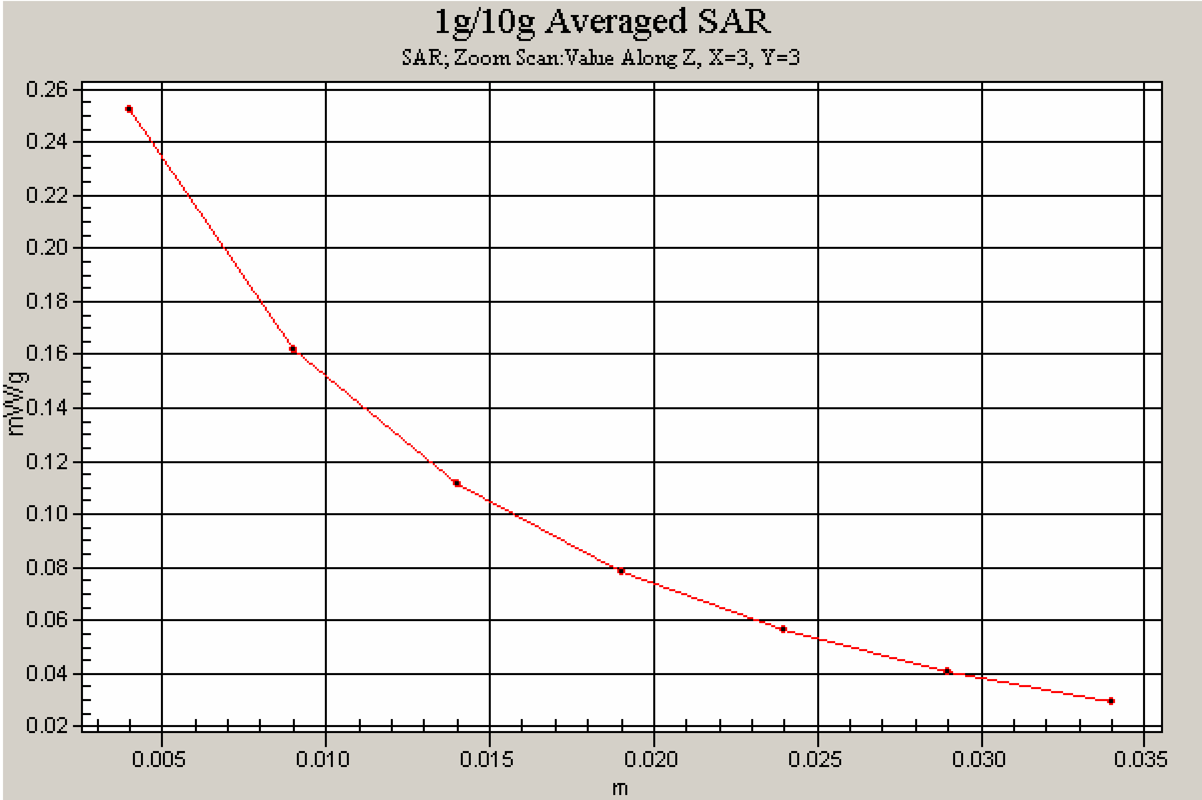


Figure 22 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 190]

GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Middle

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 5 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 10.9 V/m; Power Drift = 0.180 dB

Peak SAR (extrapolated) = 0.356 W/kg

SAR(1 g) = 0.249 mW/g; SAR(10 g) = 0.166 mW/g

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

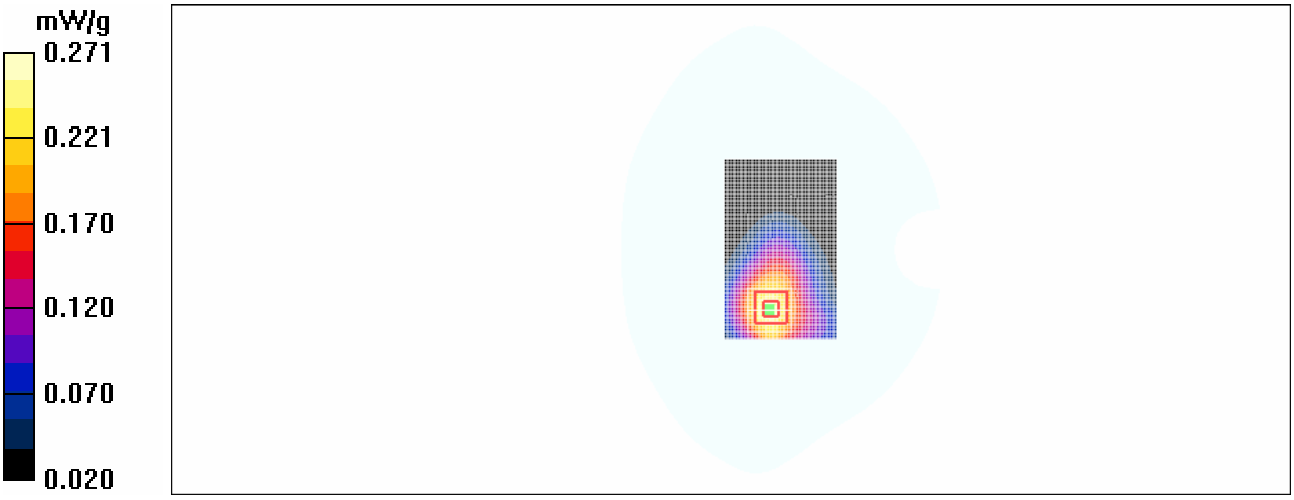


Figure 23 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 190

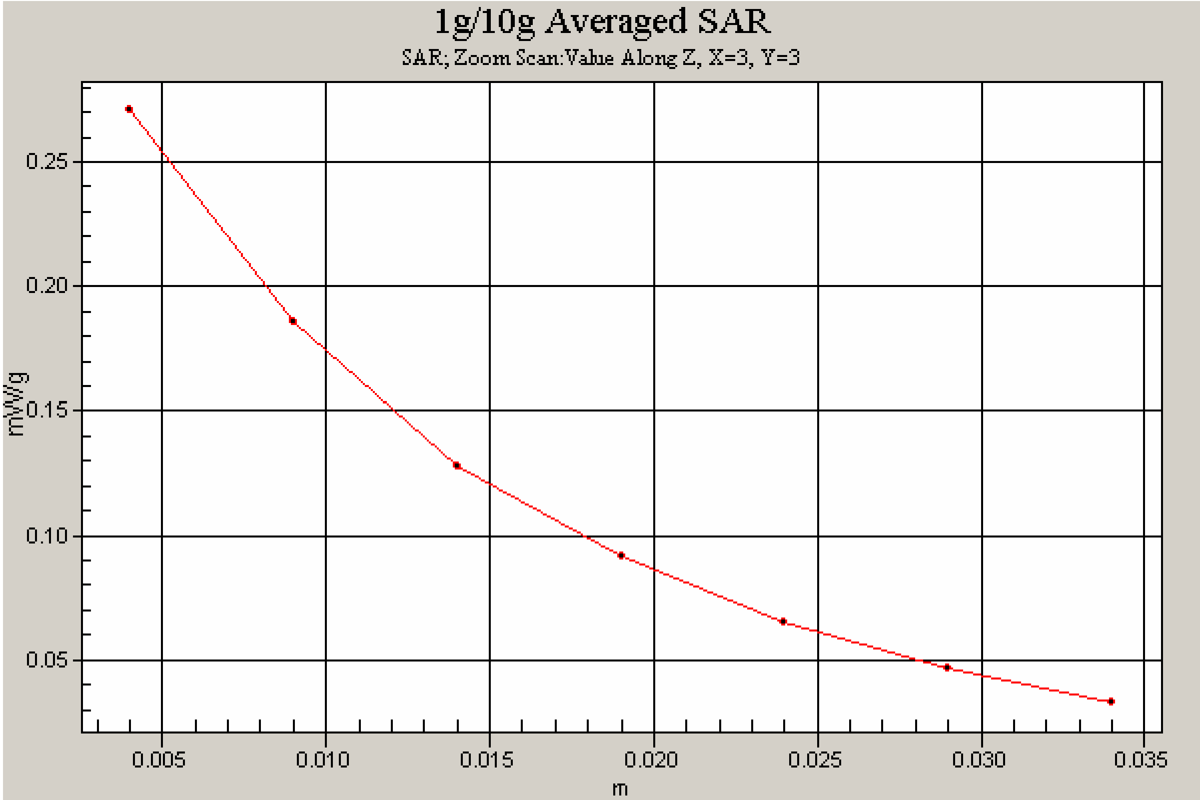


Figure 24 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 190]

GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Middle

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 6 Middle/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.321 mW/g

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

Reference Value = 18.0 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 0.400 W/kg

SAR(1 g) = 0.300 mW/g; SAR(10 g) = 0.213 mW/g

Maximum value of SAR (measured) = 0.319 mW/g

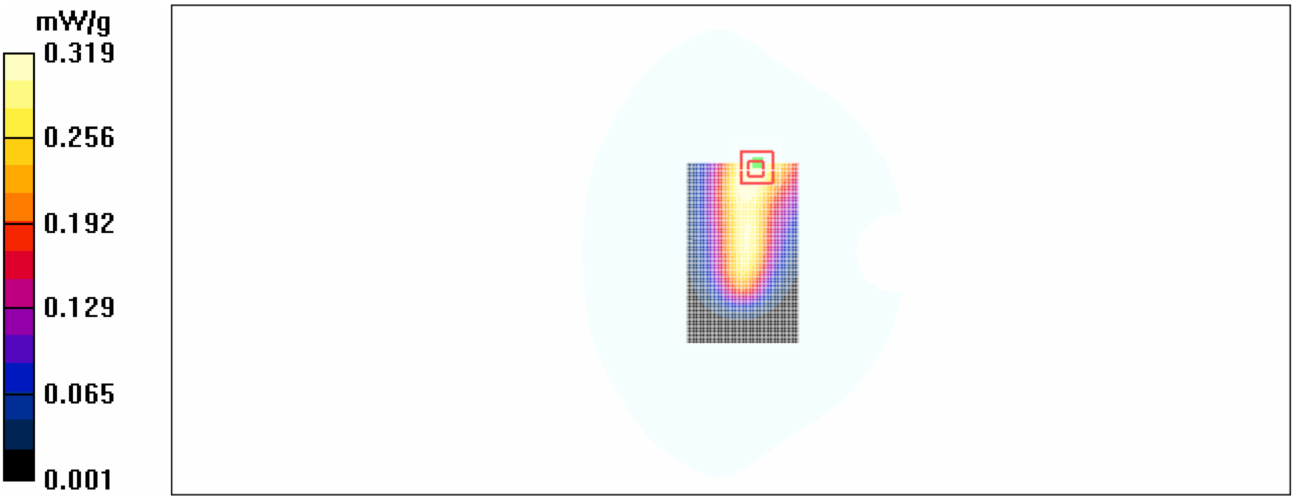


Figure 25 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 190

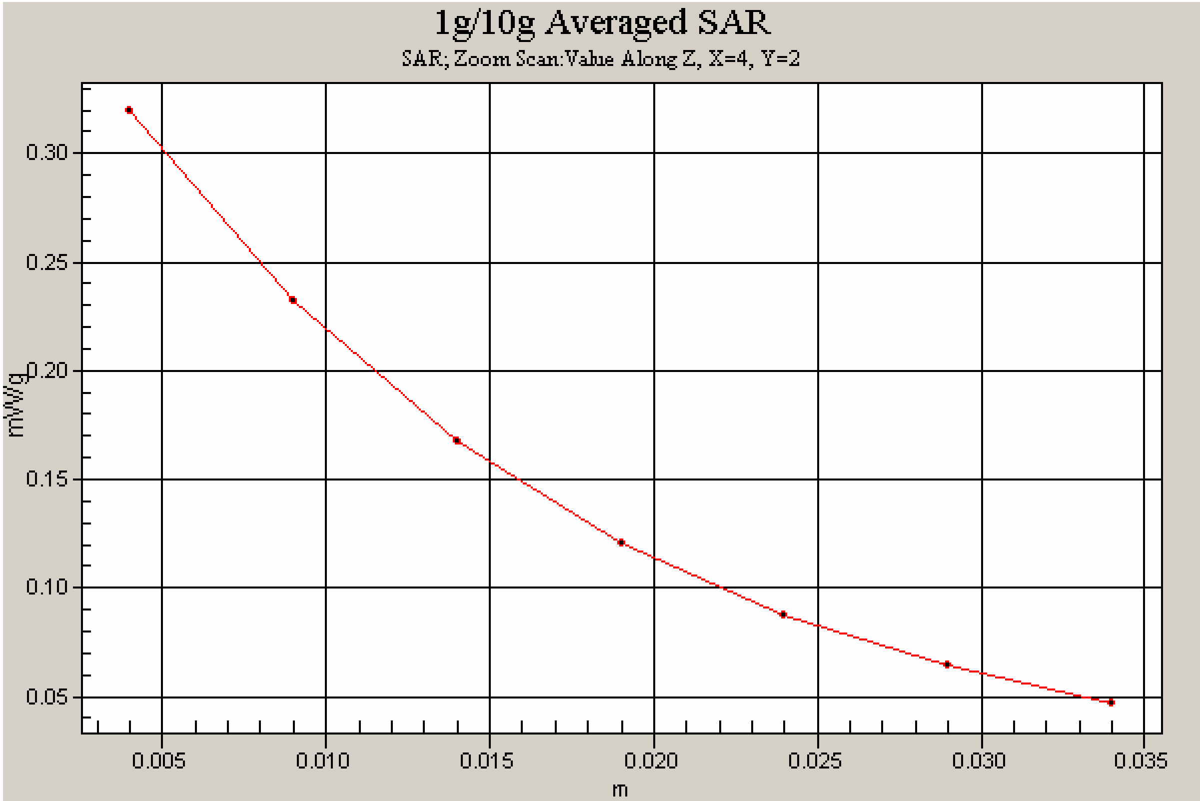


Figure 26 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 190]

GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Middle

Communication System: GSM850 + GPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 7 Middle/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.375 mW/g

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

Reference Value = 32.3 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 1.98 W/kg

SAR(1 g) = 0.613 mW/g; SAR(10 g) = 0.171 mW/g

Maximum value of SAR (measured) = 0.839 mW/g

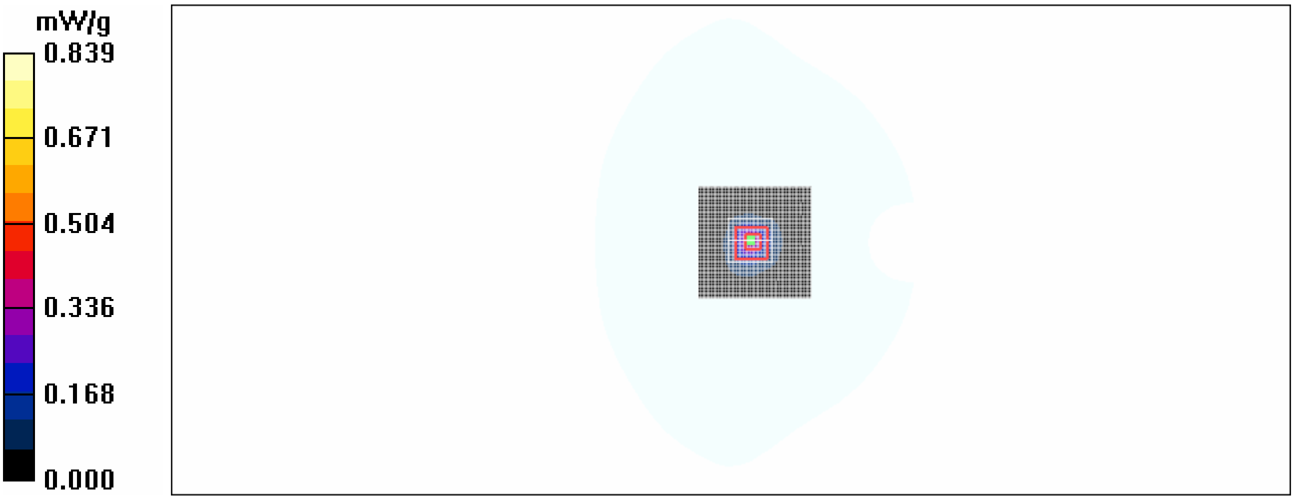


Figure 27 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 190

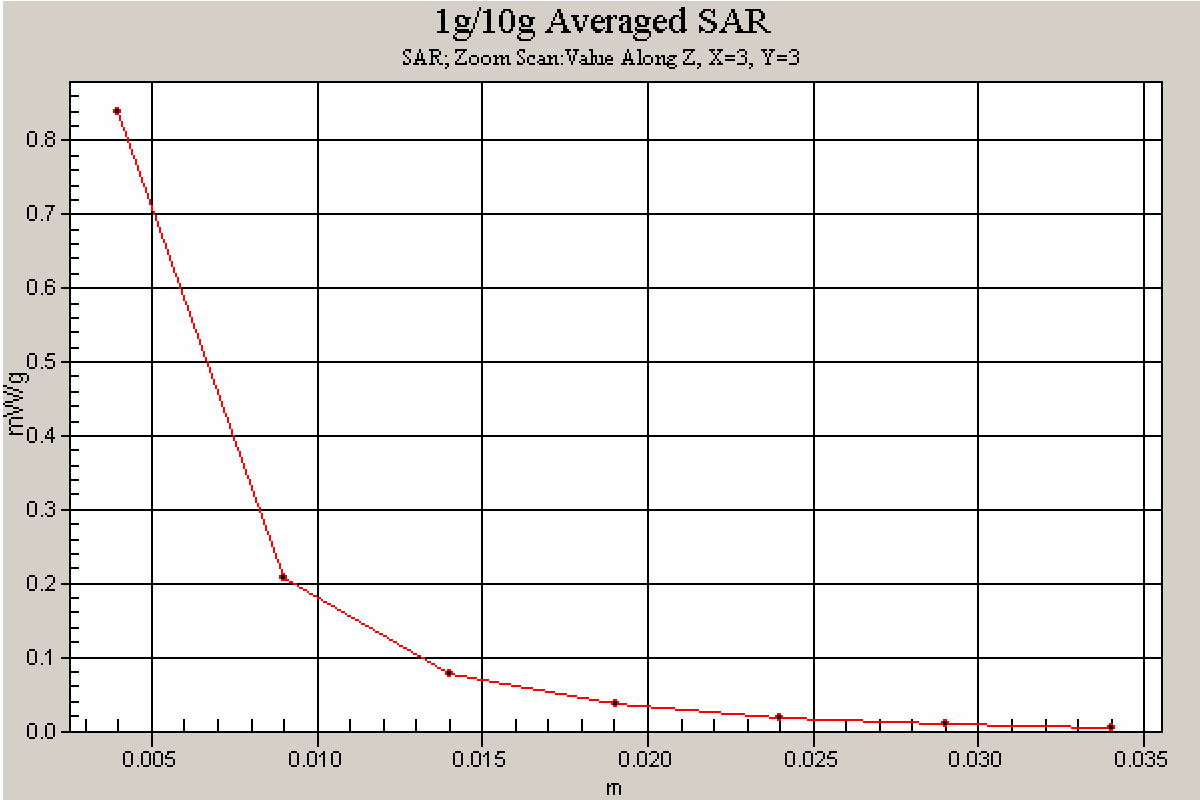


Figure 28 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 190]

GSM 850 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

Communication System: GSM850 + EGPRS(2Up); Frequency: 836.6 MHz;Duty Cycle: 1:4

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 55.4; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.267 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 12.9 V/m; Power Drift = 0.007 dB

Peak SAR (extrapolated) = 0.339 W/kg

SAR(1 g) = 0.237 mW/g; SAR(10 g) = 0.155 mW/g

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

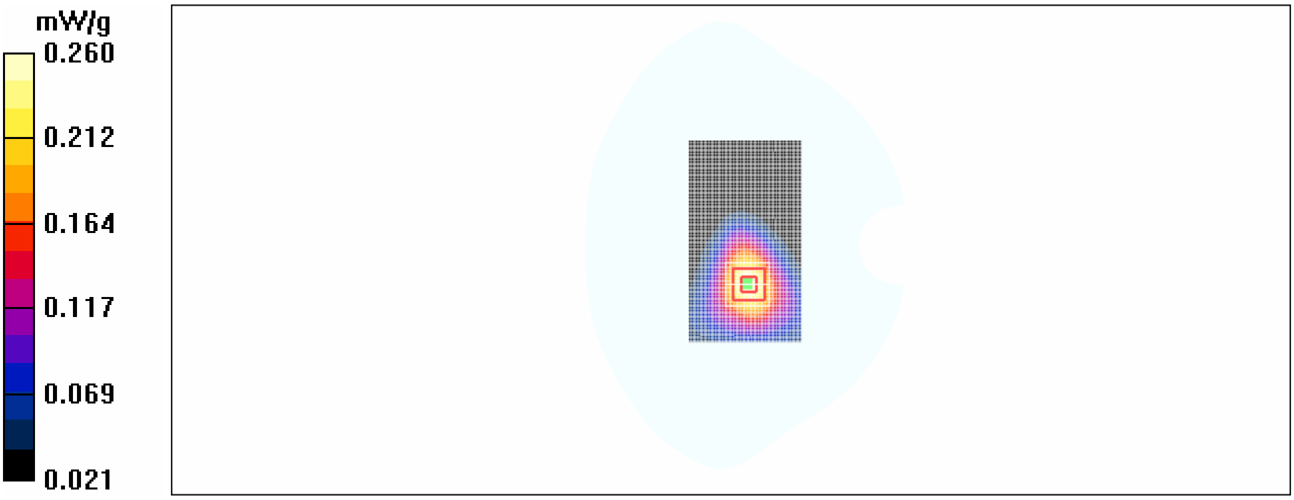


Figure 29 GSM 850 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

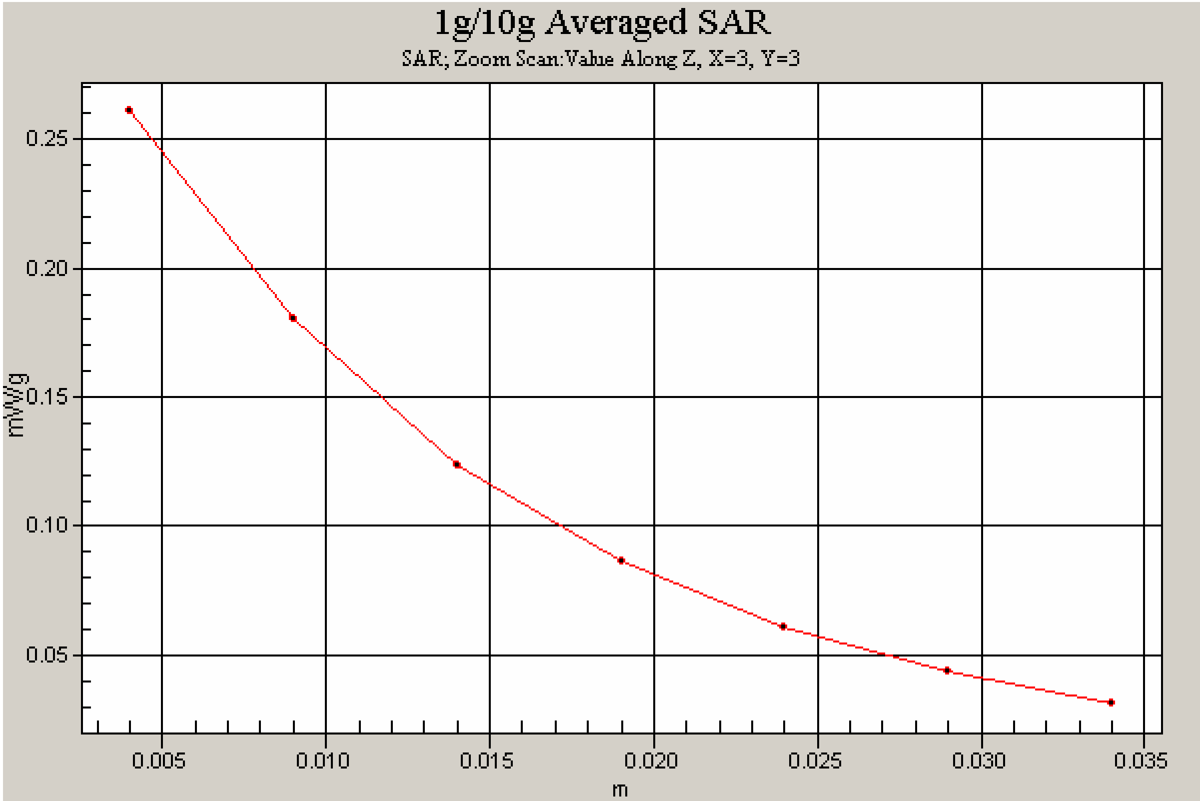


Figure 30 Z-Scan at power reference point [GSM 850 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

GSM 1900 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.893 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 16.9 V/m; Power Drift = -0.101 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.787 mW/g; SAR(10 g) = 0.460 mW/g

Maximum value of SAR (measured) = 0.868 mW/g

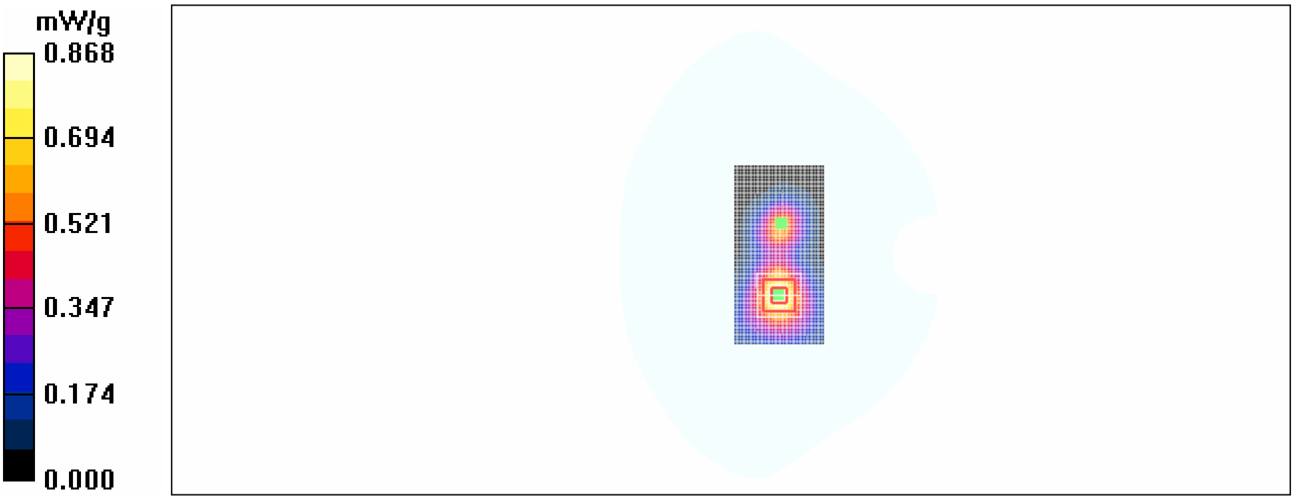


Figure 31 GSM 1900 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

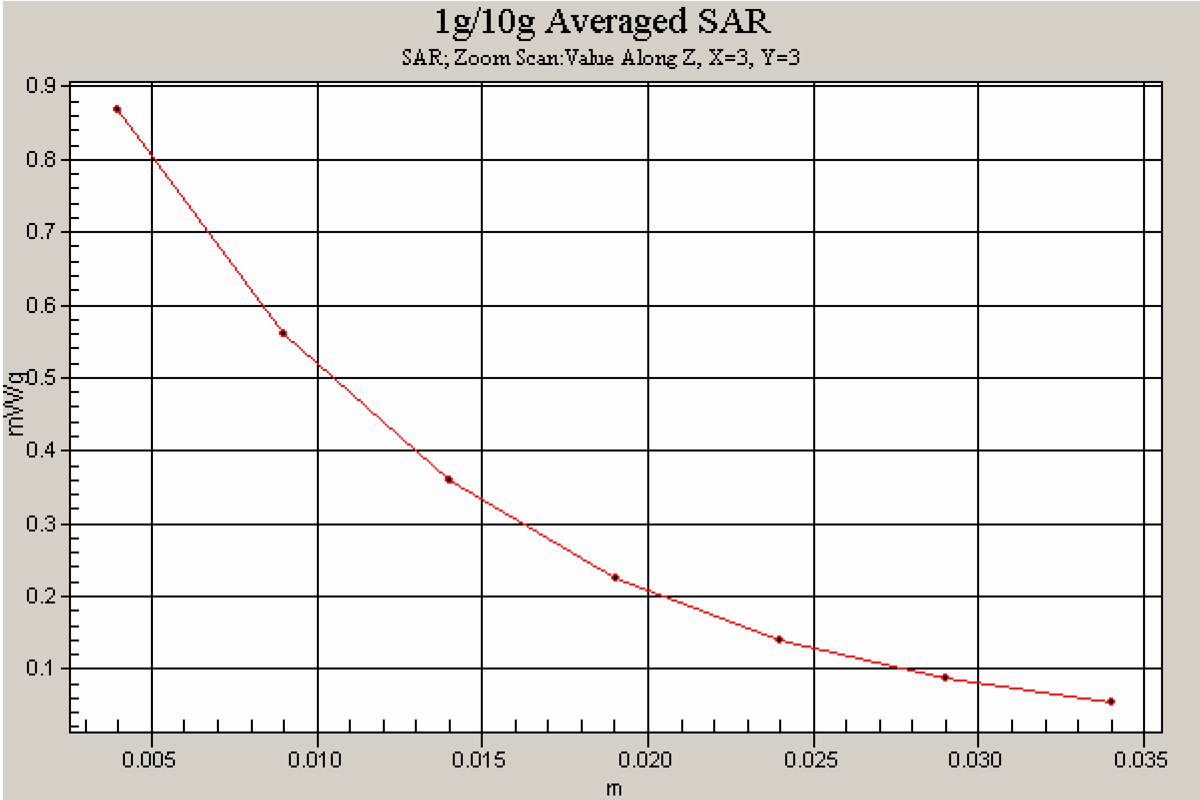


Figure 32 Z-Scan at power reference point [GSM 1900 GPRS(4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

GSM 1900 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.497 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.9 V/m; Power Drift = -0.076 dB

Peak SAR (extrapolated) = 0.718 W/kg

SAR(1 g) = 0.427 mW/g; SAR(10 g) = 0.243 mW/g

Maximum value of SAR (measured) = 0.458 mW/g

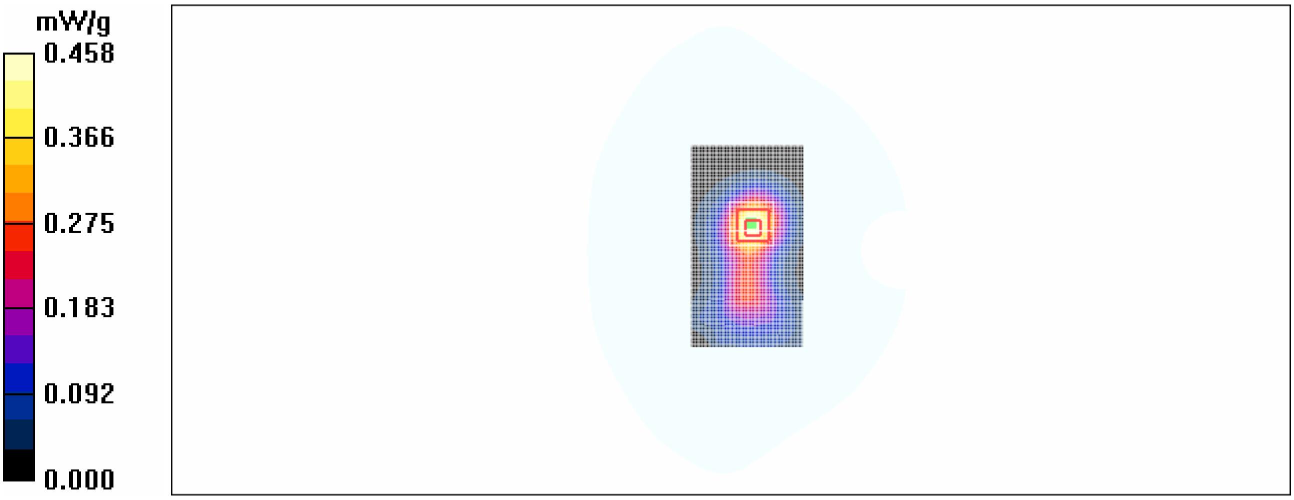


Figure 33 GSM 1900 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 661

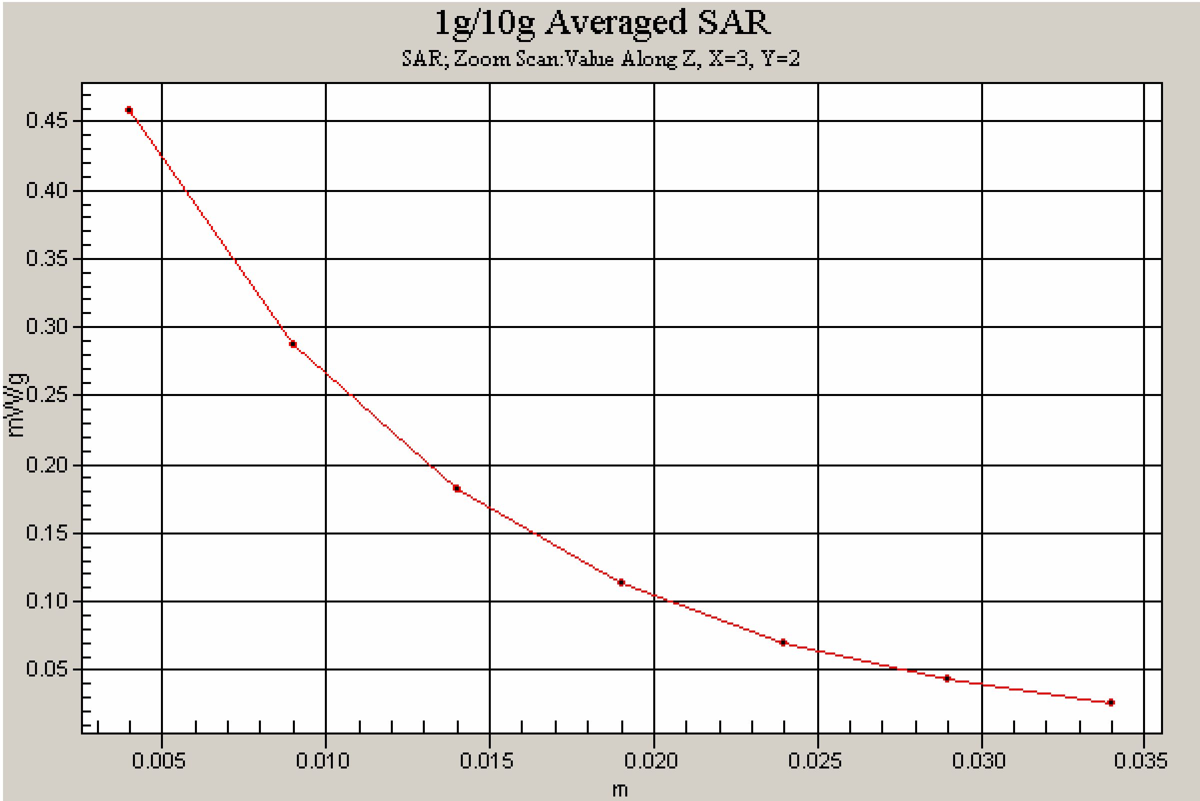


Figure 34 Z-Scan at power reference point [GSM 1900 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 661]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

Communication System: GSM 1900+GPRS(3Up); Frequency: 1880 MHz;Duty Cycle: 1:2.67

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.13 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.7 V/m; Power Drift = 0.073 dB

Peak SAR (extrapolated) = 3.26 W/kg

SAR(1 g) = 0.989 mW/g; SAR(10 g) = 0.578 mW/g

Maximum value of SAR (measured) = 1.09 mW/g

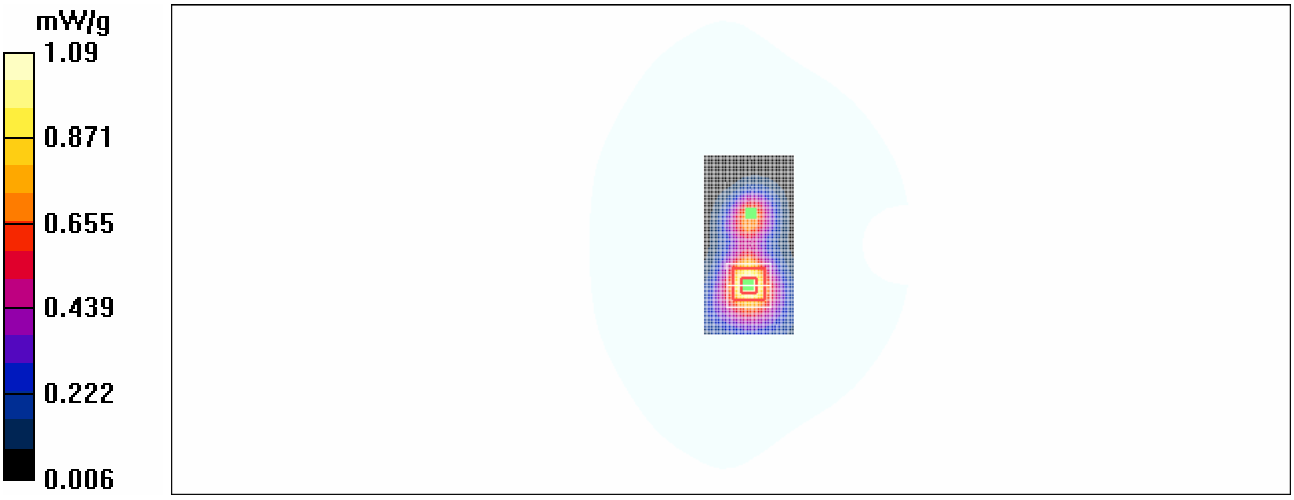


Figure 35 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

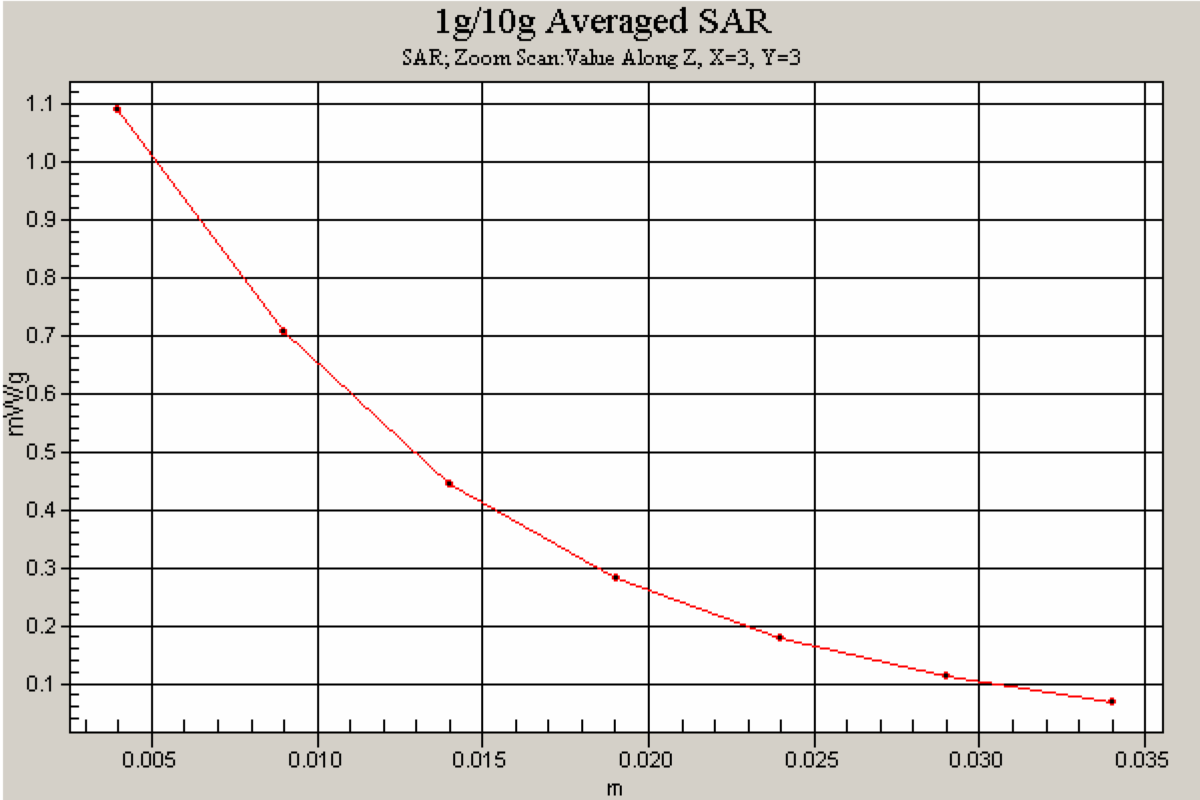


Figure 36 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 High

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

Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.19 mW/g

Test Position 1 High/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.4 V/m; Power Drift = 0.180 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.586 mW/g

Maximum value of SAR (measured) = 1.12 mW/g

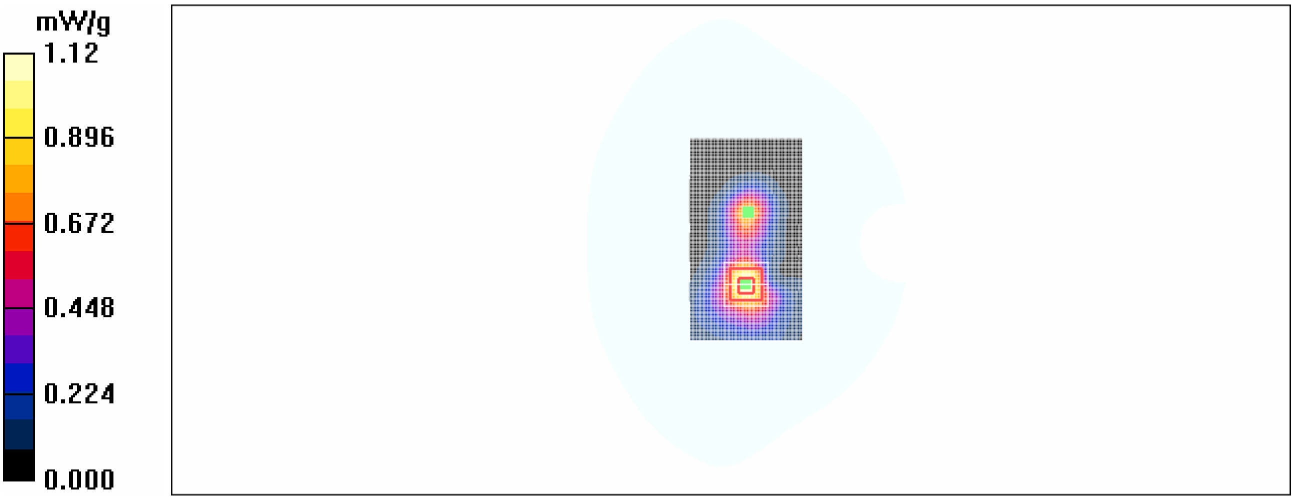


Figure 37 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 810

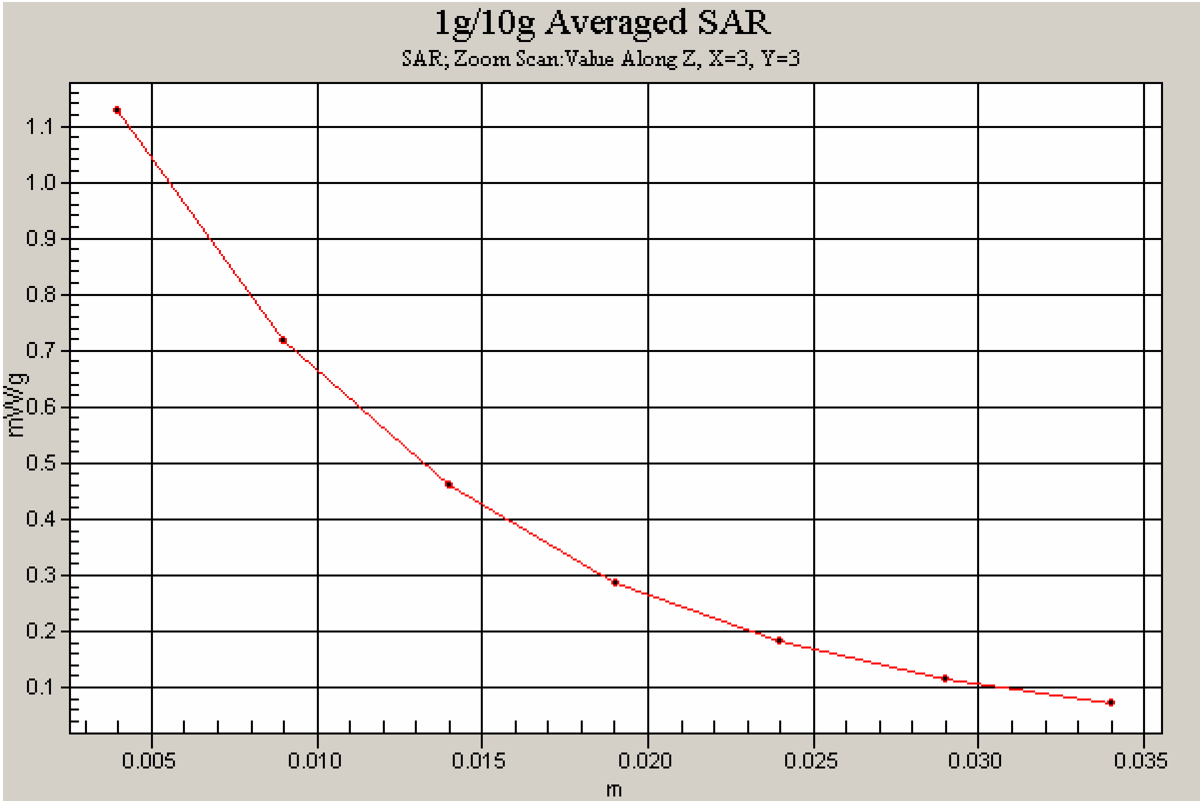


Figure 38 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 810]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.27 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.2 V/m; Power Drift = 0.024 dB

Peak SAR (extrapolated) = 1.72 W/kg

SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.638 mW/g

Maximum value of SAR (measured) = 1.22 mW/g

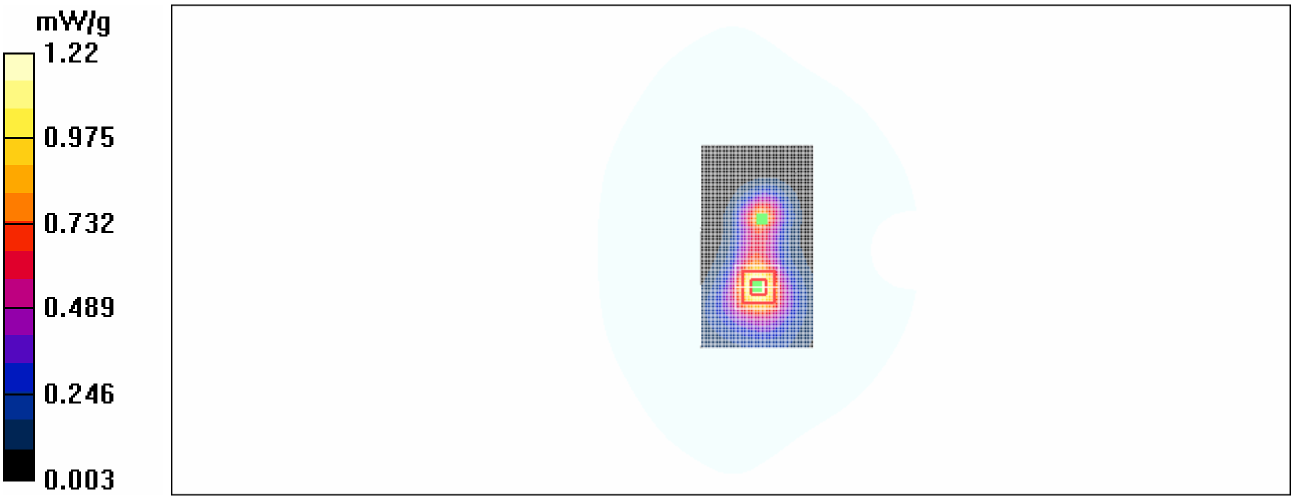


Figure 39 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

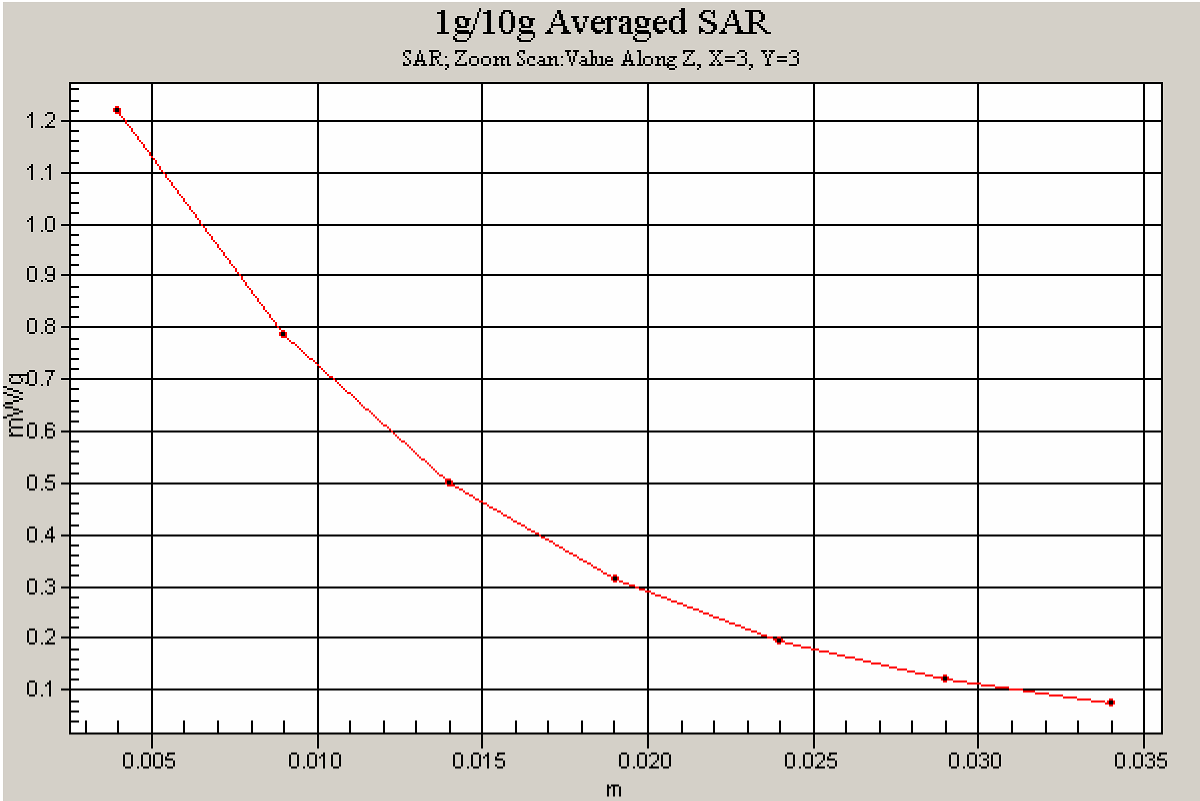


Figure 40 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Low

Communication System: GSM 1900+GPRS(2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 53; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.17 mW/g

Test Position 1 Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.0 V/m; Power Drift = 0.117 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.623 mW/g

Maximum value of SAR (measured) = 1.17 mW/g

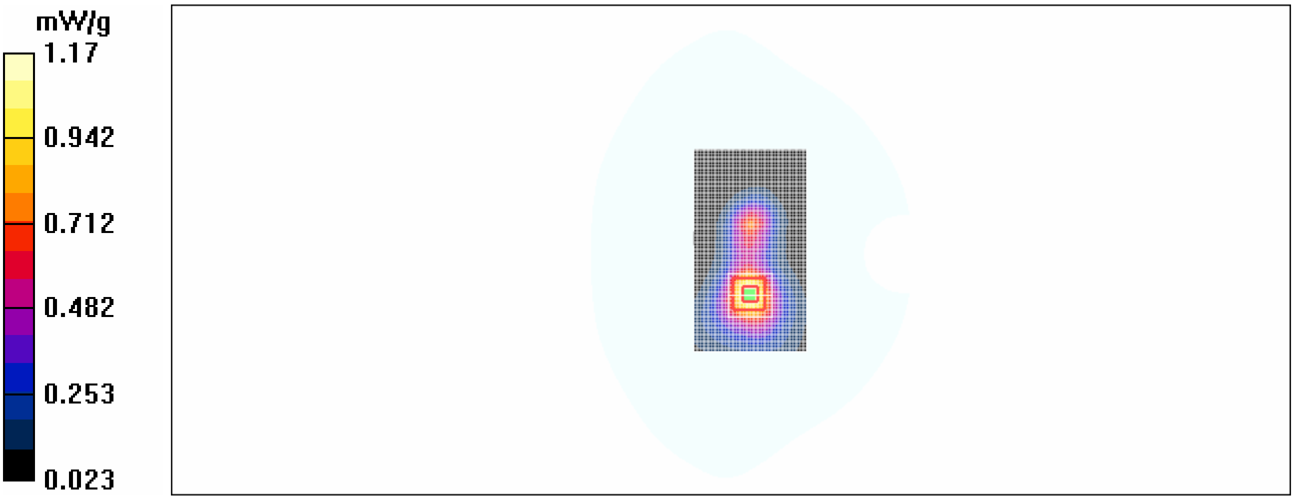


Figure 41 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 512

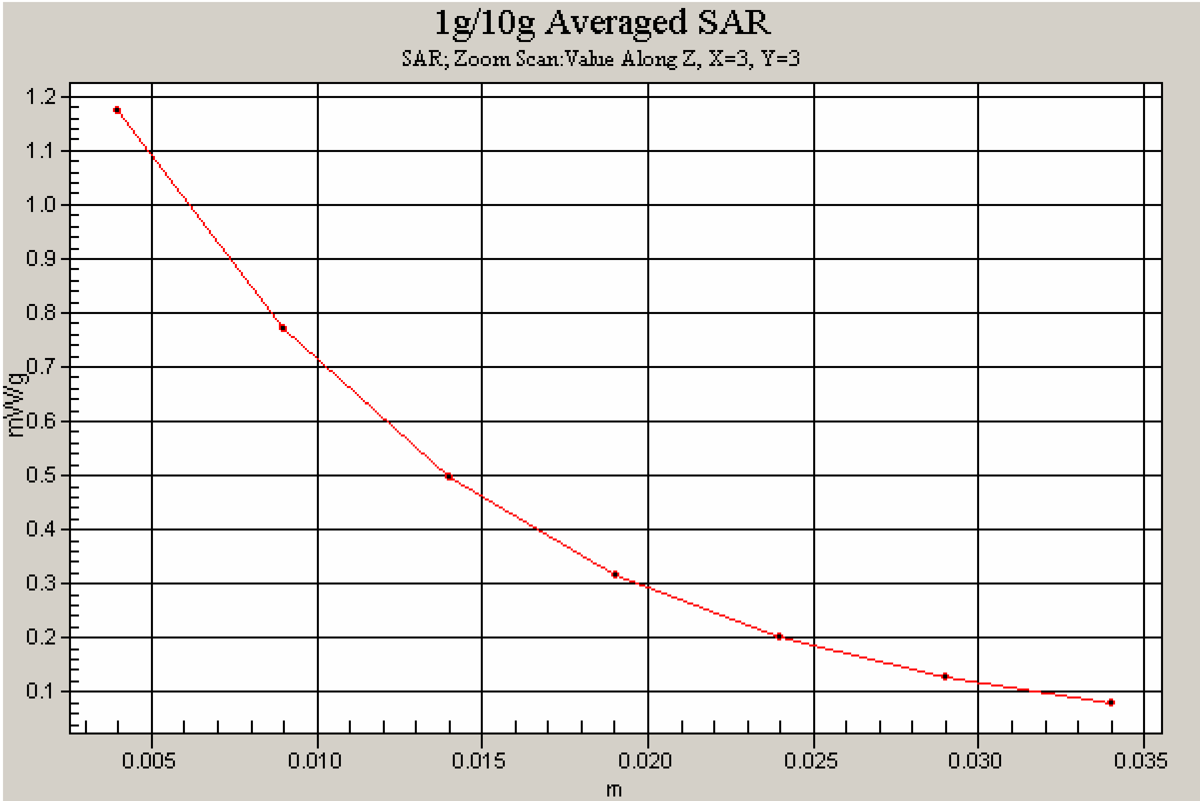


Figure 42 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 512]

GSM 1900 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Middle

Communication System: GSM 1900+GPRS(1Up); Frequency: 1880 MHz;Duty Cycle: 1:8

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.981 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.4 V/m; Power Drift = -0.069 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.913 mW/g; SAR(10 g) = 0.531 mW/g

Maximum value of SAR (measured) = 1.01 mW/g

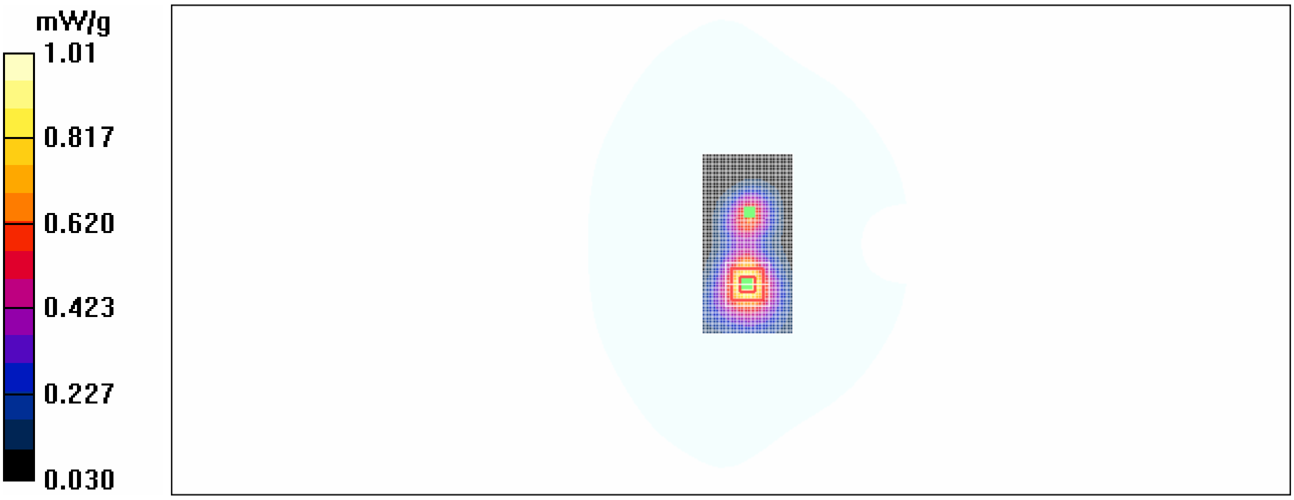


Figure 43 GSM 1900 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

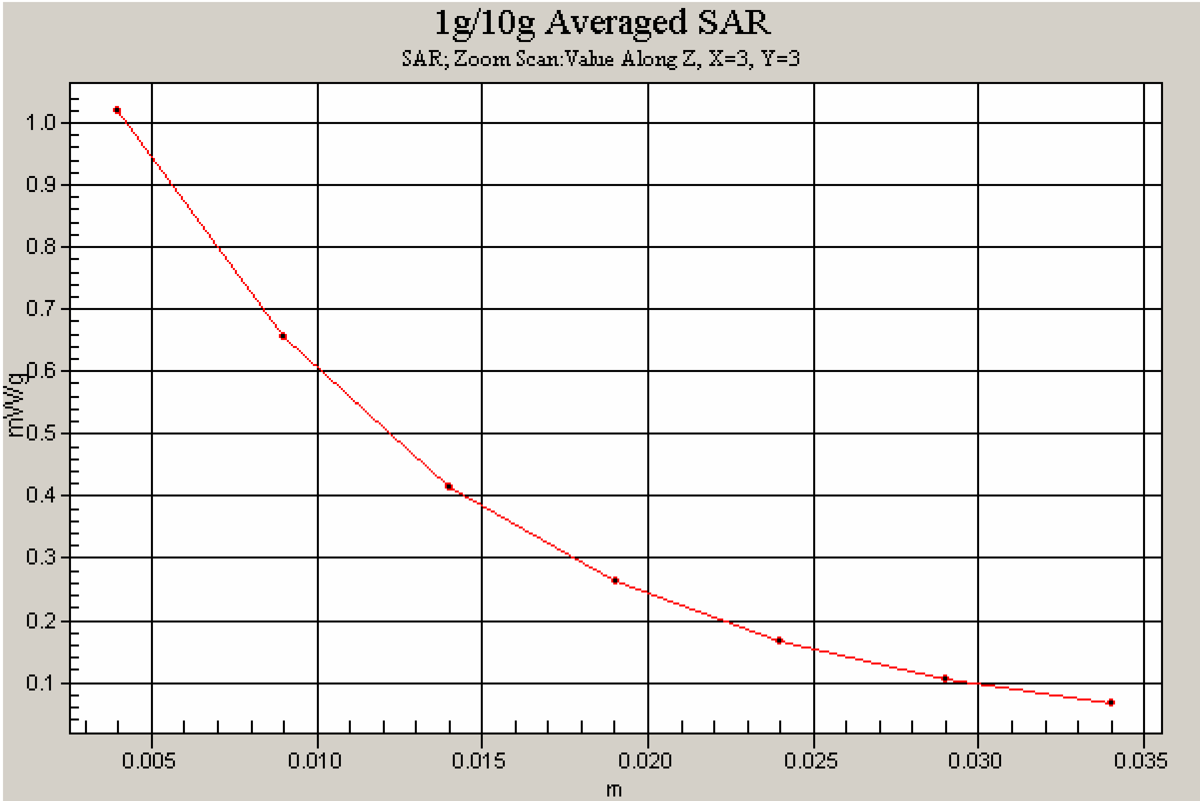


Figure 44 Z-Scan at power reference point [GSM 1900 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 2 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.541 mW/g

Test Position 2 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.2 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.850 W/kg

SAR(1 g) = 0.493 mW/g; SAR(10 g) = 0.296 mW/g

Maximum value of SAR (measured) = 0.544 mW/g

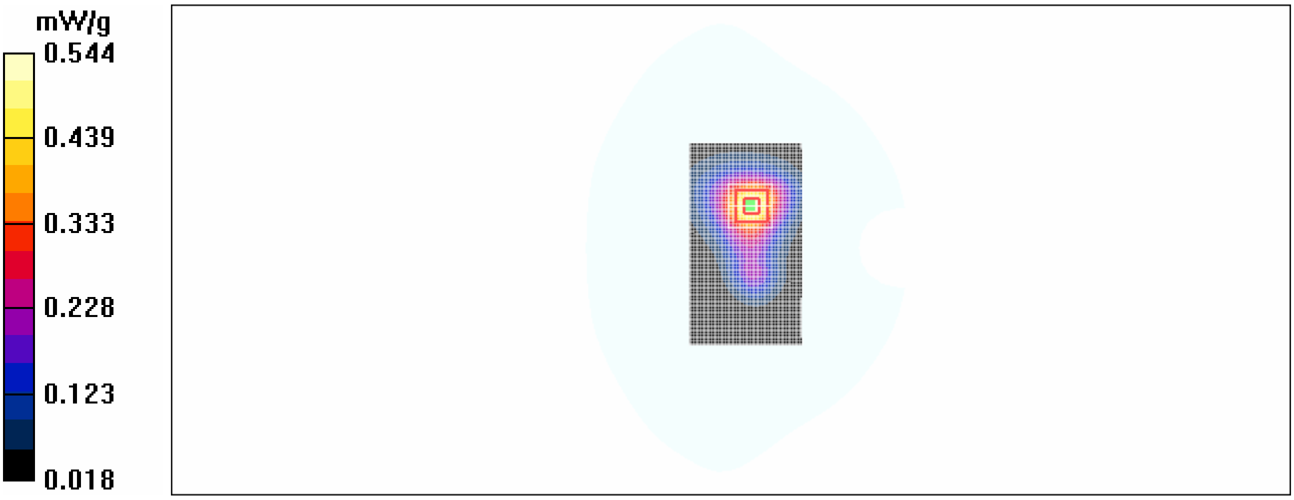


Figure 45 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 661

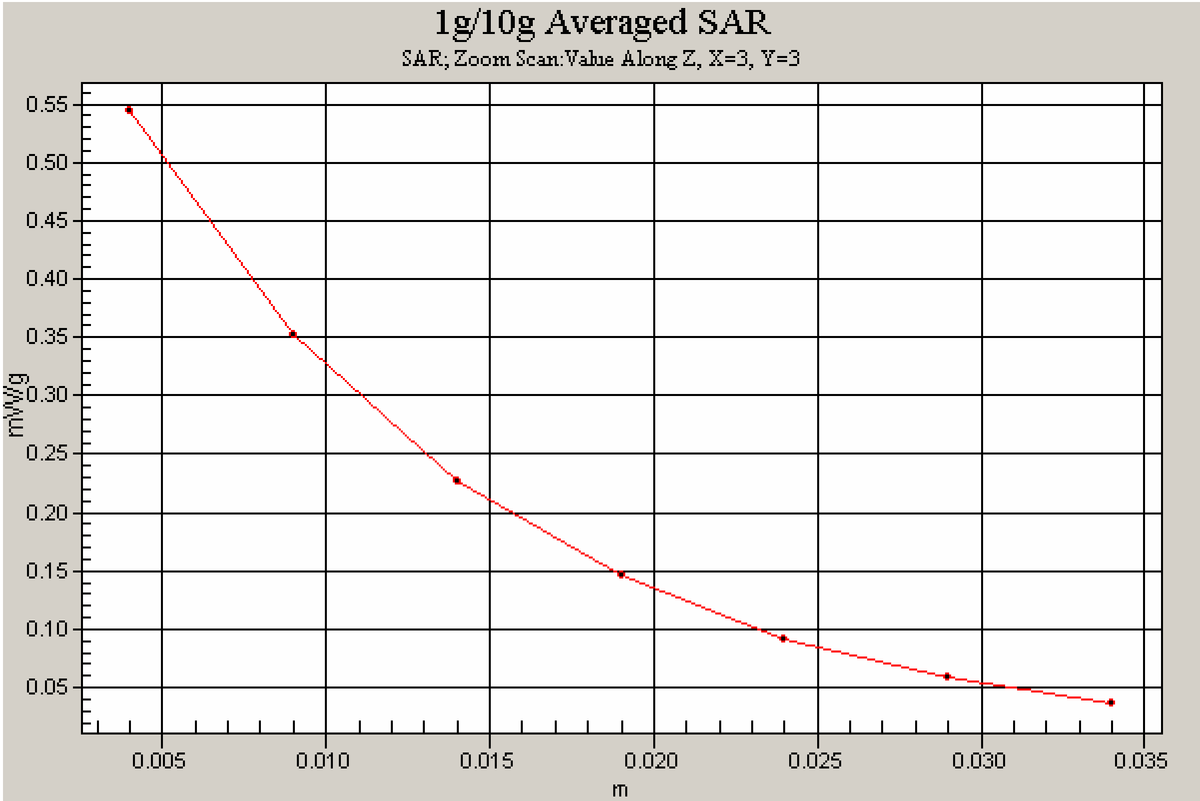


Figure 46 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 3 Middle/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.650 mW/g

Test Position 3 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 30.1 V/m; Power Drift = -0.113 dB

Peak SAR (extrapolated) = 2.03 W/kg

SAR(1 g) = 0.829 mW/g; SAR(10 g) = 0.351 mW/g

Maximum value of SAR (measured) = 1.12 mW/g

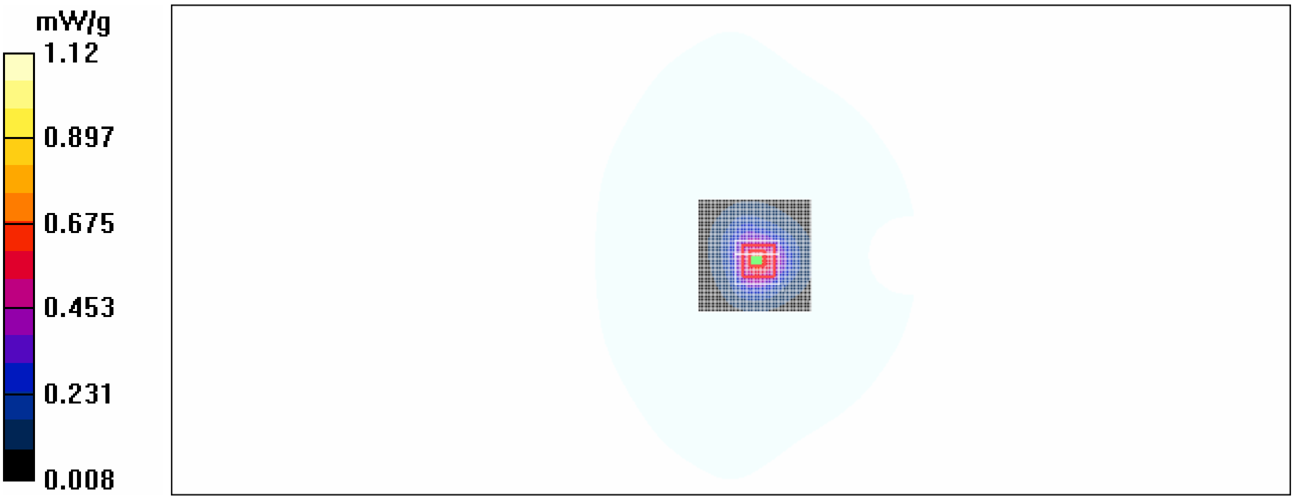


Figure 47 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 661

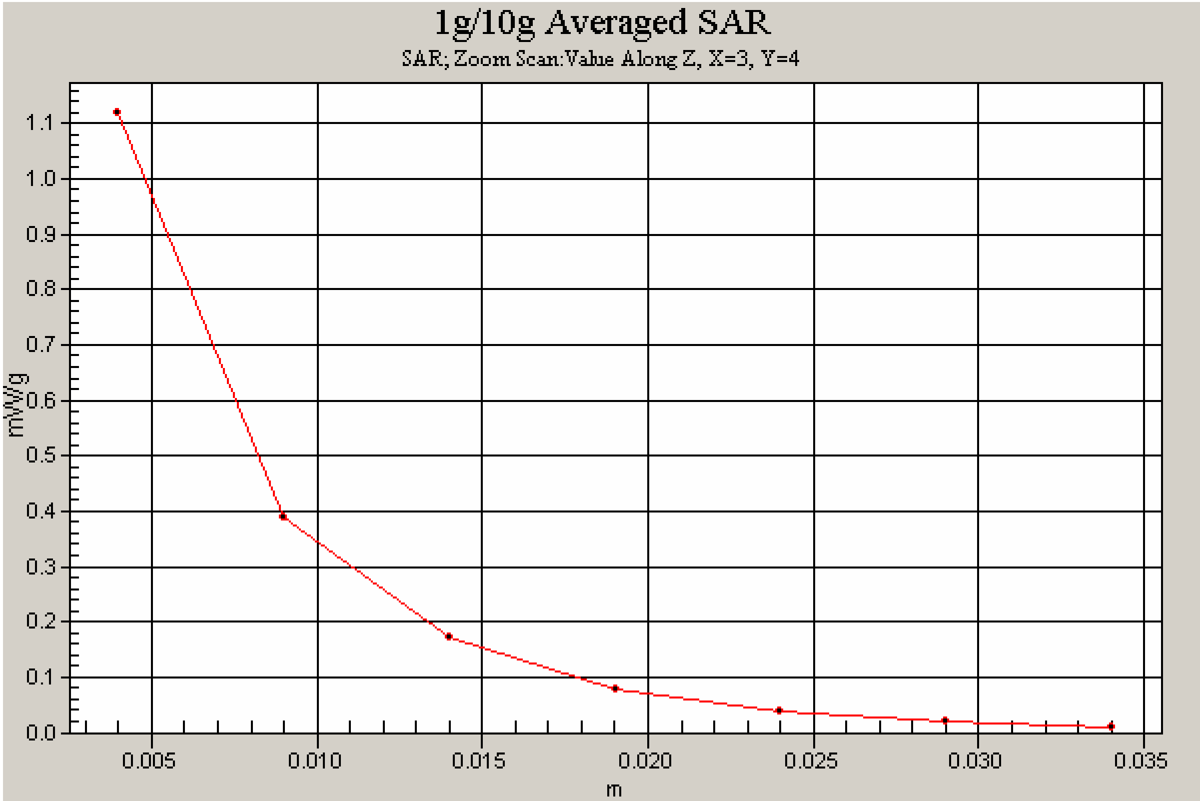


Figure 48 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 4 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.275 mW/g

Test Position 4 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.7 V/m; Power Drift = 0.142 dB

Peak SAR (extrapolated) = 0.388 W/kg

SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.151 mW/g

Maximum value of SAR (measured) = 0.262 mW/g

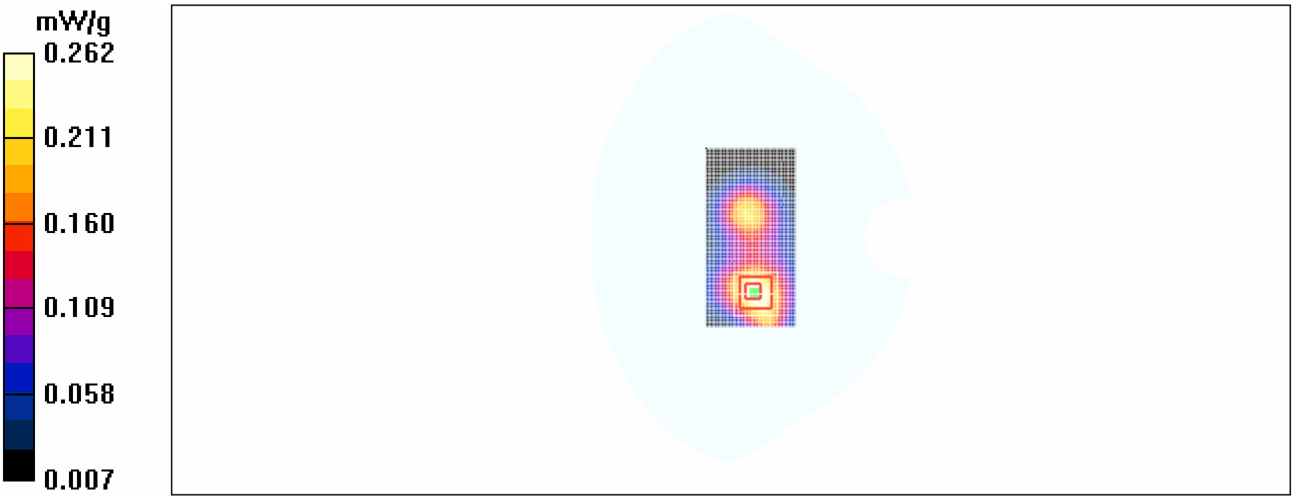


Figure 49 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 661

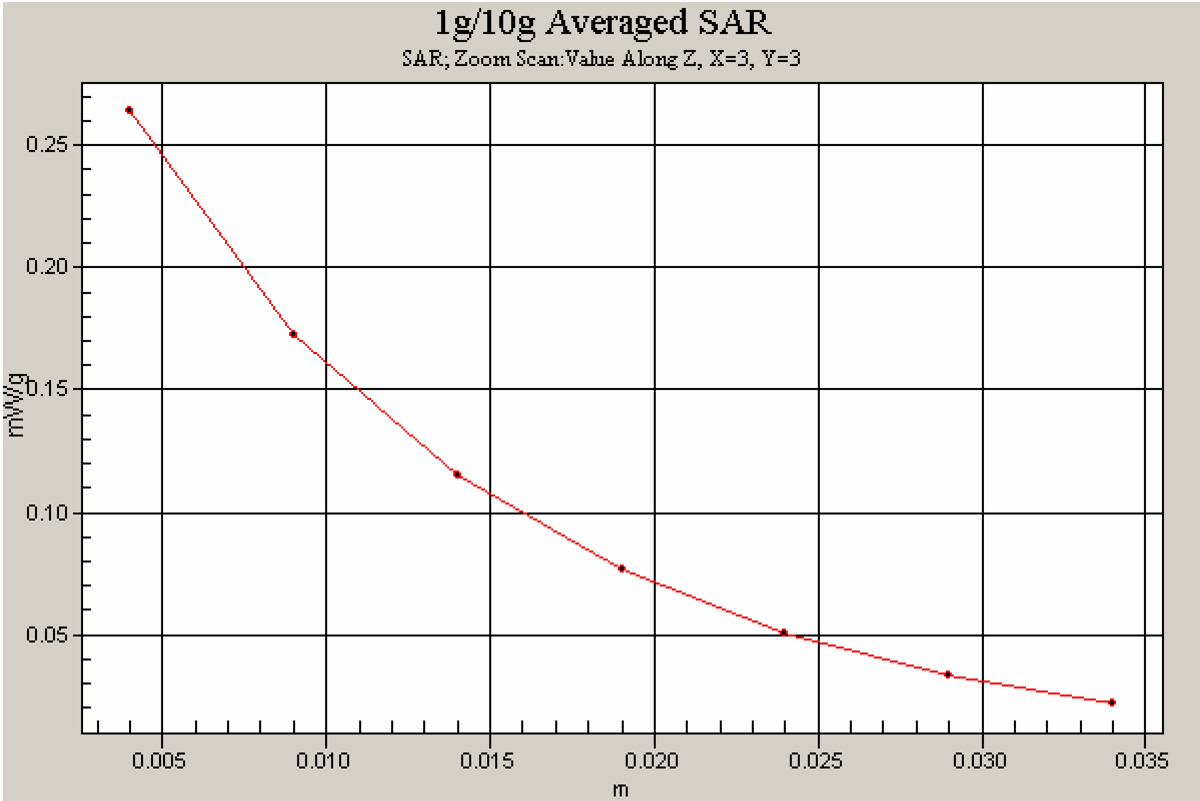


Figure 50 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 5 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.335 mW/g

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

Reference Value = 10.7 V/m; Power Drift = -0.054 dB

Peak SAR (extrapolated) = 0.491 W/kg

SAR(1 g) = 0.300 mW/g; SAR(10 g) = 0.171 mW/g

Maximum value of SAR (measured) = 0.328 mW/g

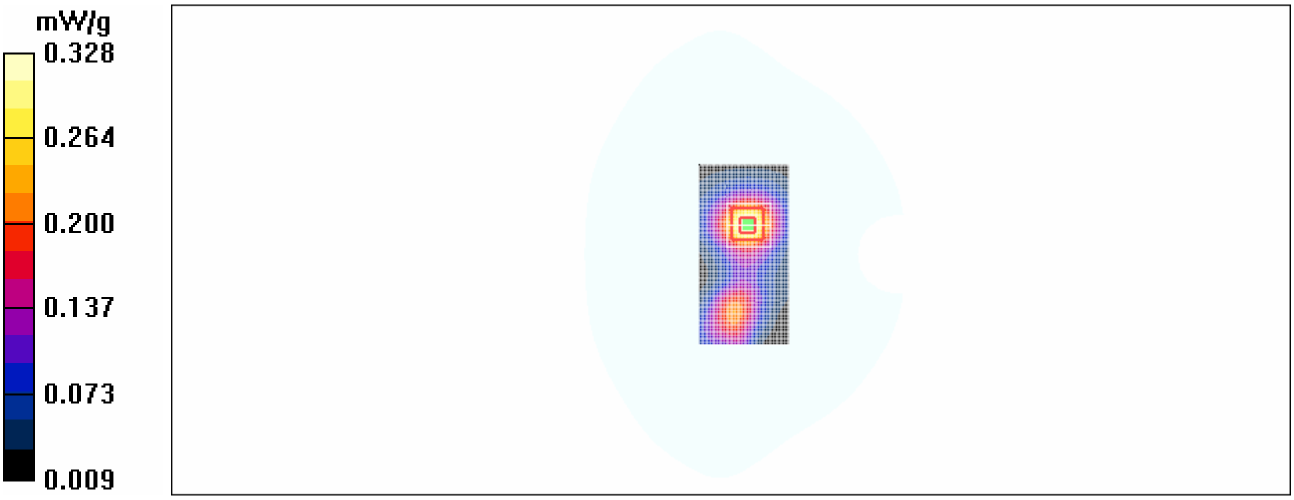


Figure 51 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 661

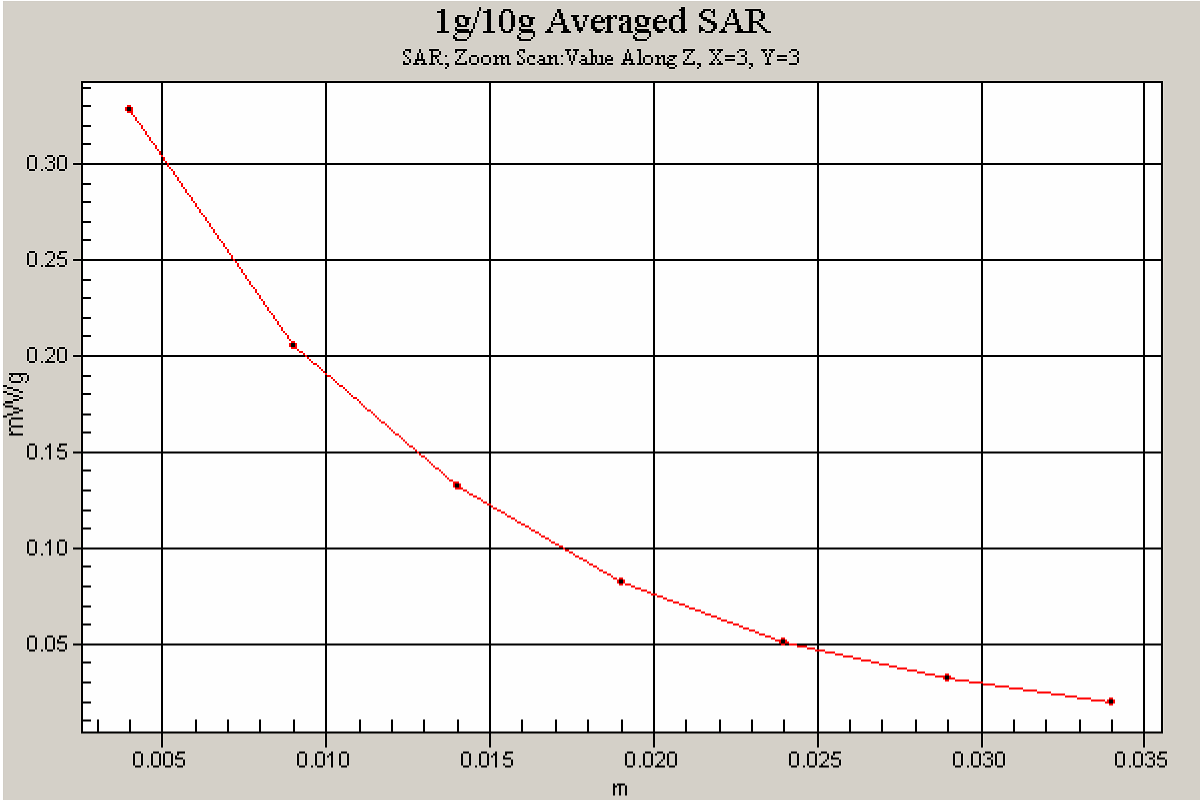


Figure 52 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 High

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

Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.8; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 6 High/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.50 mW/g

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

Reference Value = 17.1 V/m; Power Drift = 0.188 dB

Peak SAR (extrapolated) = 2.17 W/kg

SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.598 mW/g

Maximum value of SAR (measured) = 1.35 mW/g

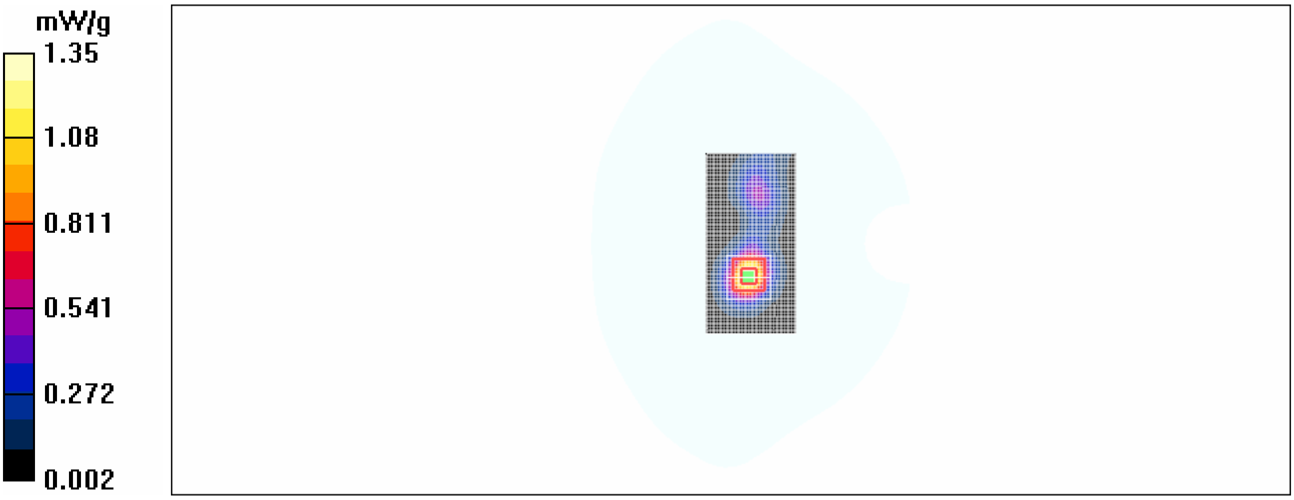


Figure 53 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 810

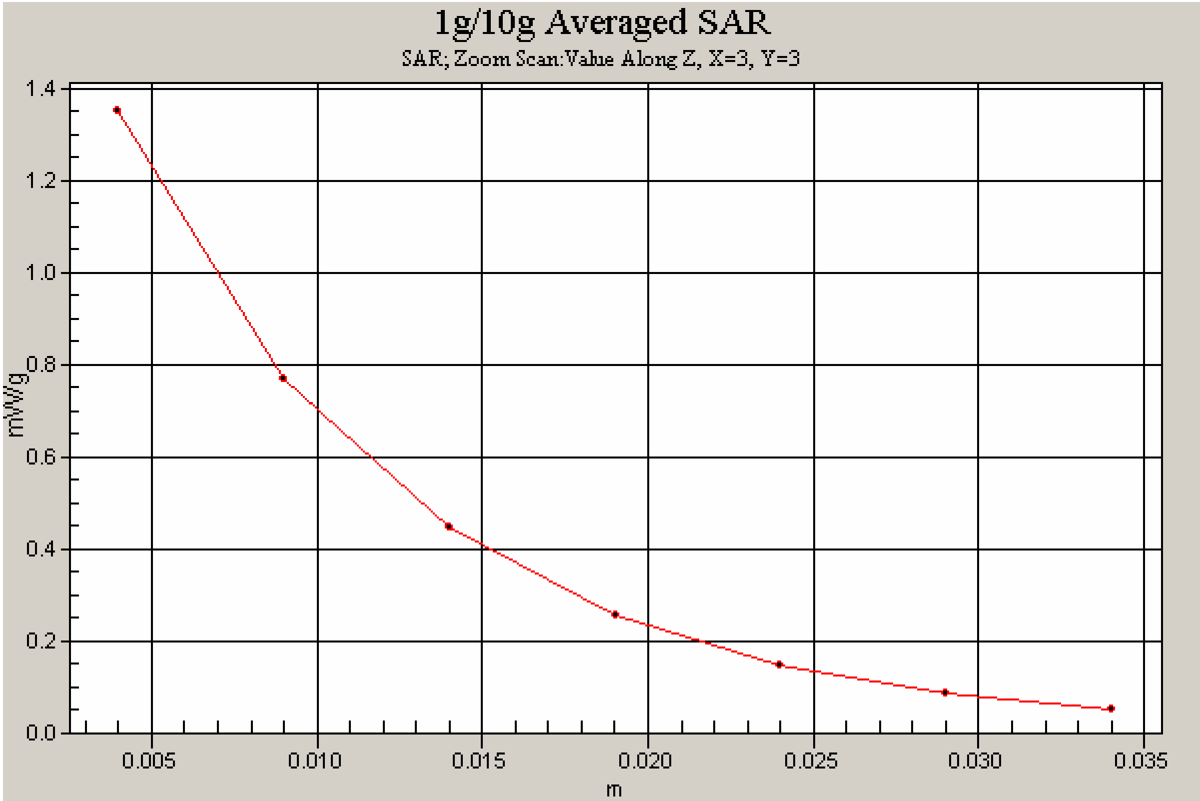


Figure 54 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 810]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 6 Middle/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.26 mW/g

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

Reference Value = 19.5 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.549 mW/g

Maximum value of SAR (measured) = 1.19 mW/g

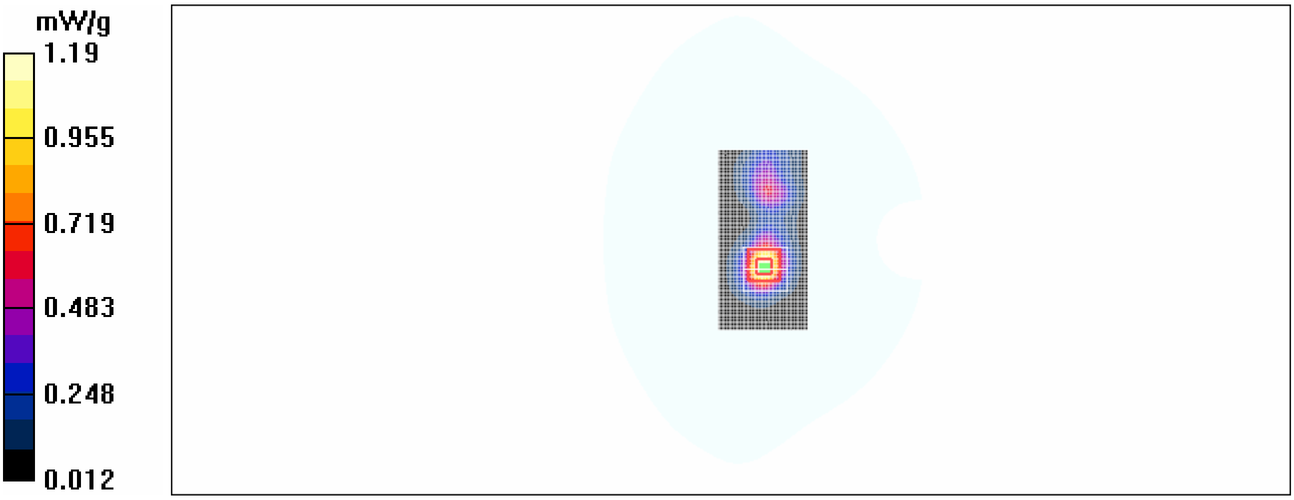


Figure 55 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661

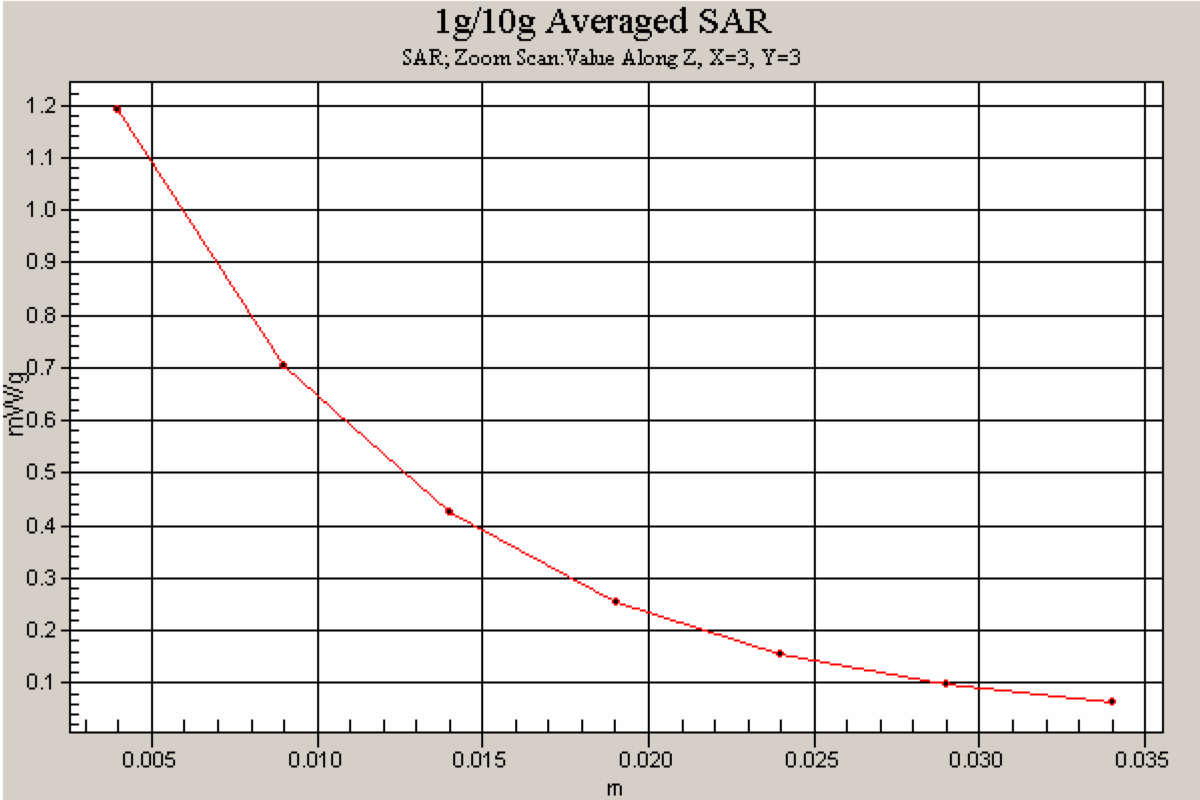


Figure 56 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Low

Communication System: GSM 1900+GPRS(2Up); Frequency: 1850.2 MHz;Duty Cycle: 1:4

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 53; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 6 Low/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.25 mW/g

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

Reference Value = 14.6 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 0.918 mW/g; SAR(10 g) = 0.465 mW/g

Maximum value of SAR (measured) = 1.13 mW/g

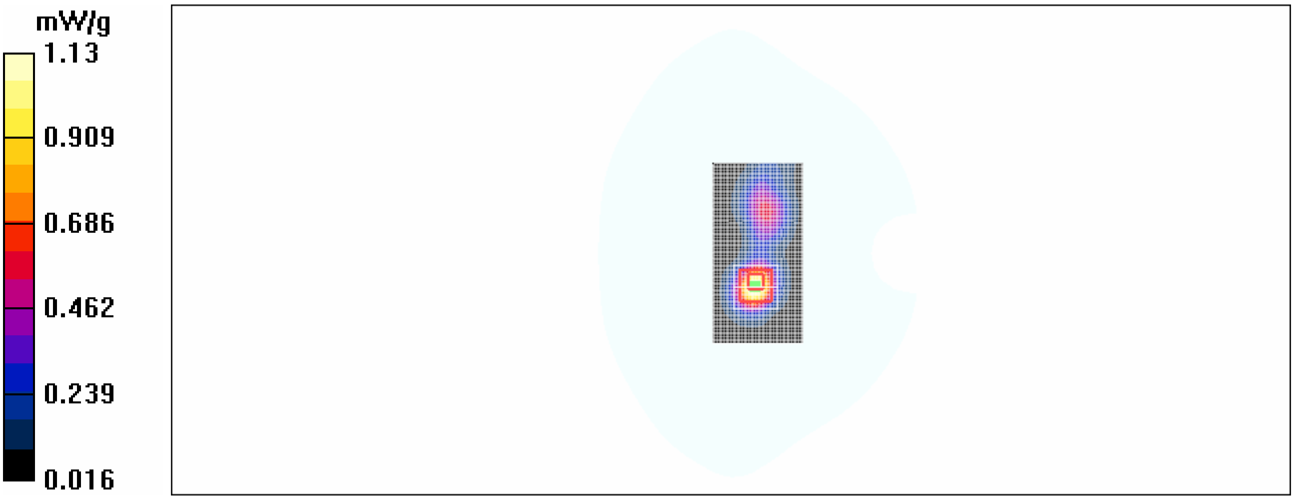


Figure 57 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 512

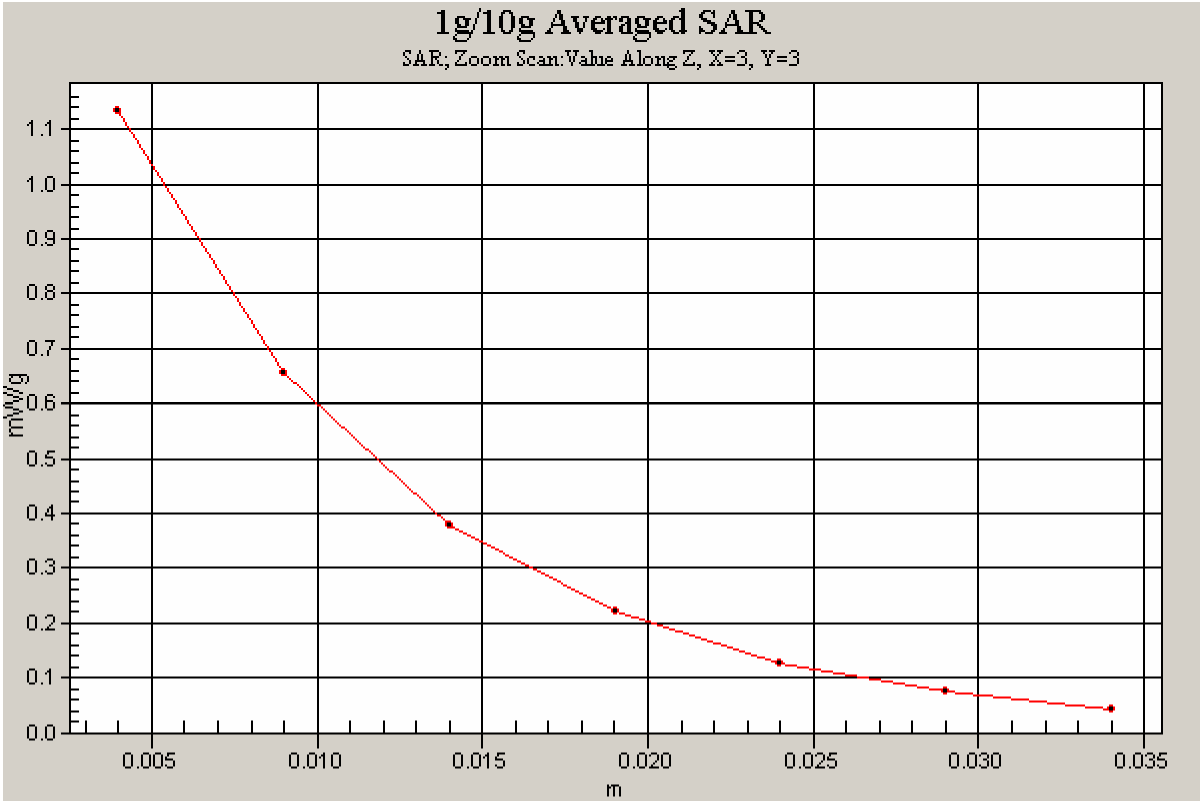


Figure 58 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 512]

GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 7 Middle/Area Scan (51x51x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.612 mW/g

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

Reference Value = 25.3 V/m; Power Drift = 0.184 dB

Peak SAR (extrapolated) = 2.32 W/kg

SAR(1 g) = 0.739 mW/g; SAR(10 g) = 0.334 mW/g

Maximum value of SAR (measured) = 0.897 mW/g

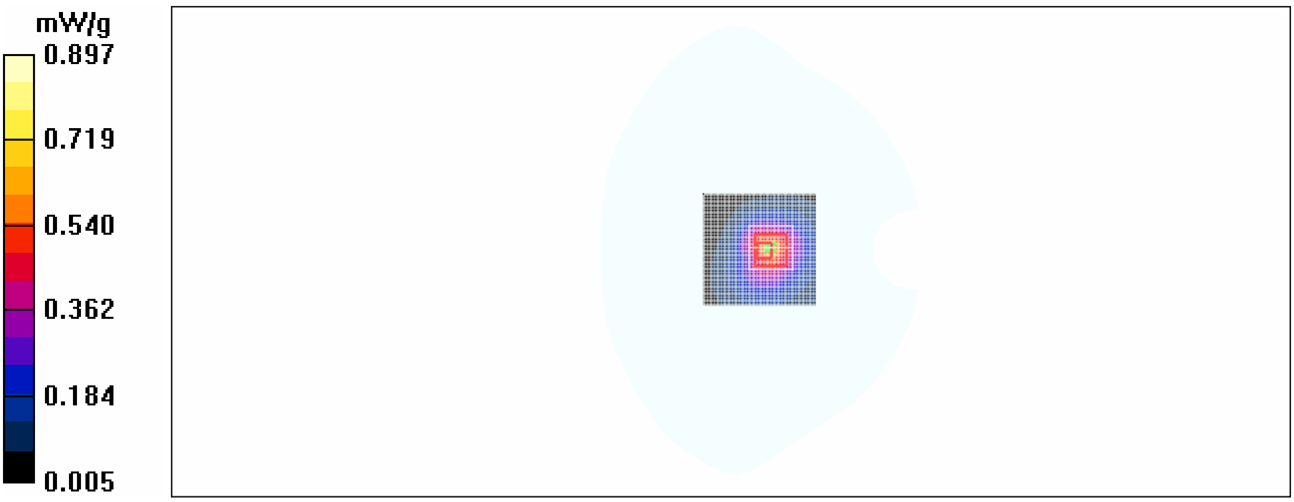


Figure 59 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 661

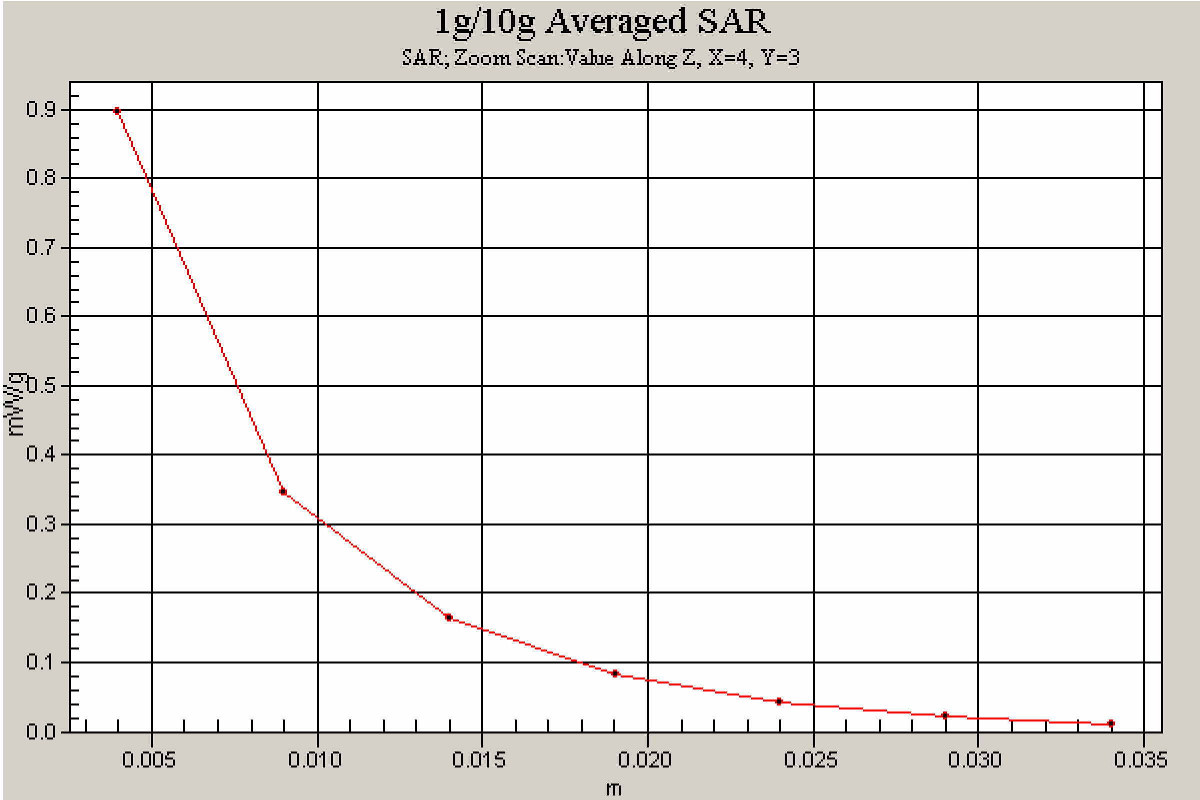


Figure 60 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 661]

GSM 1900 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Middle

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.9; ρ = 1000 kg/m^3

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

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.505 mW/g

Test Position 1 Middle/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.8 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 0.665 W/kg

SAR(1 g) = 0.434 mW/g; SAR(10 g) = 0.254 mW/g

Maximum value of SAR (measured) = 0.479 mW/g

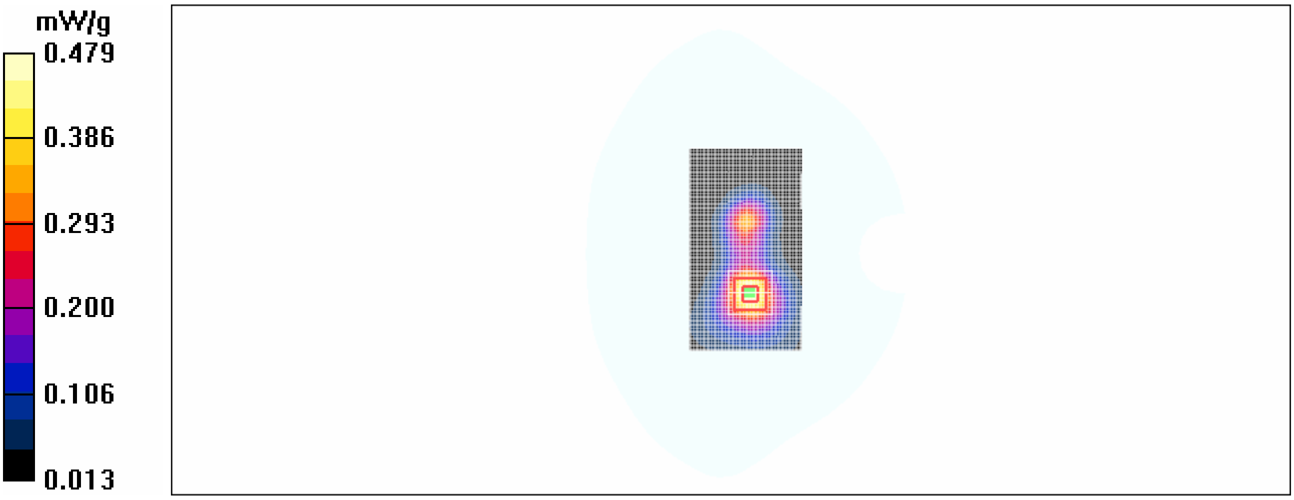


Figure 61 GSM 1900 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

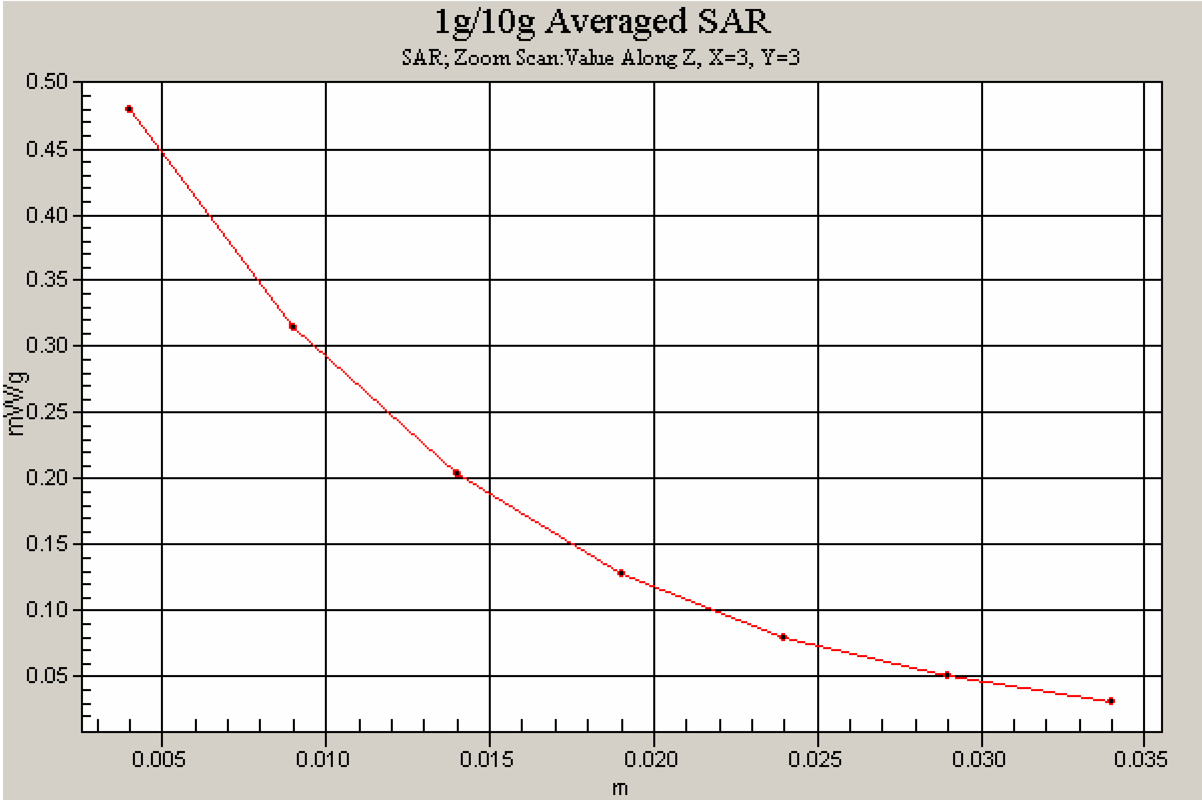


Figure 62 Z-Scan at power reference point [GSM 1900 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

ANNEX D： SYSTEM VALIDATION RESULTS

System Performance Check at 835 MHz

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

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

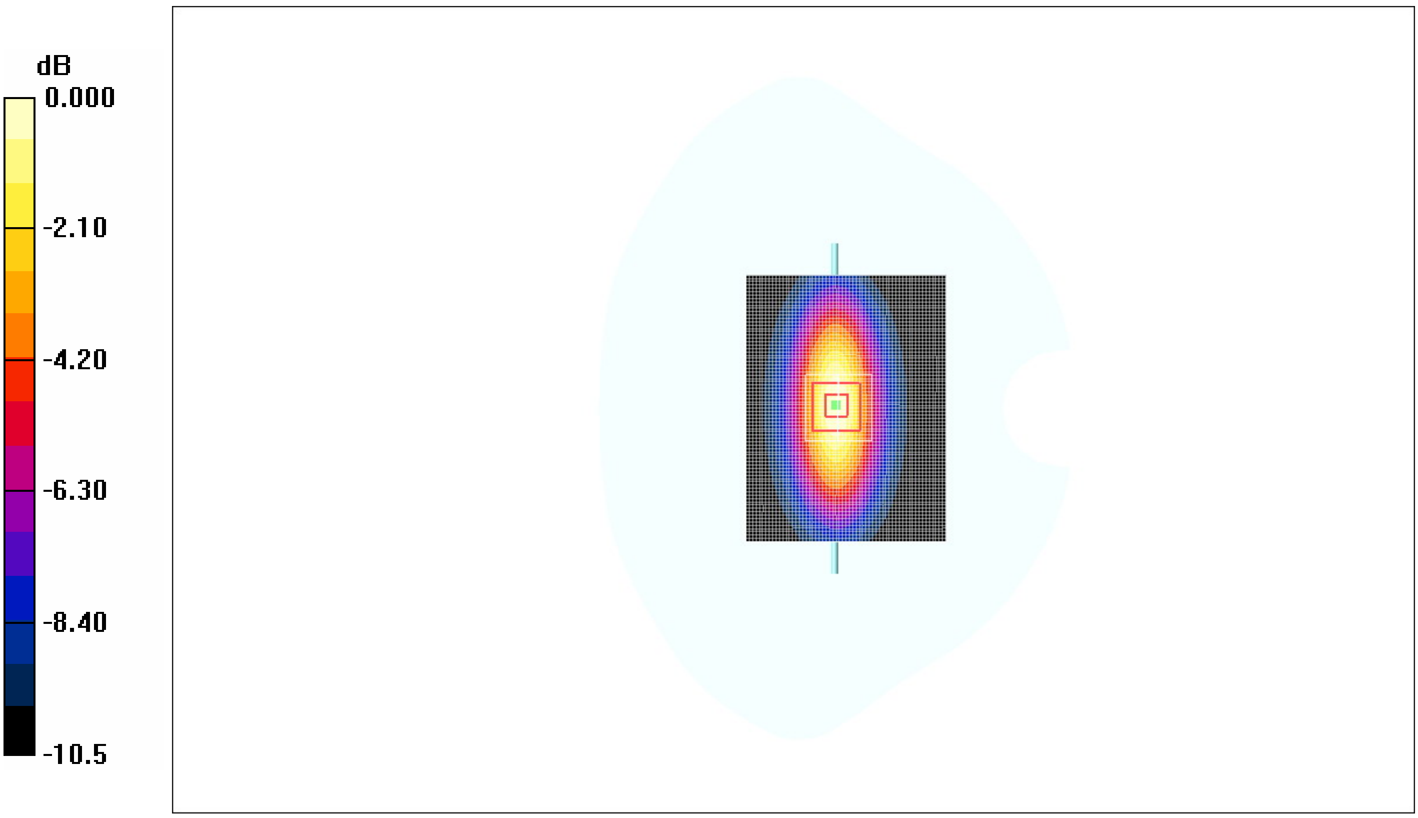
Medium: Head 835MHz

Medium parameters used: f = 835 MHz; σ = 0.899 mho/m; ε_r = 42.8; ρ = 1000 kg/m^3

- Probe: ET3DV6 - SN1737; ConvF(6.52, 6.52, 6.52);
- Electronics: DAE3 Sn452;

d=15mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.54 mW/g

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



0 dB = 2.52mW/g

Figure 63 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz

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

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

Medium: Head 1900 MHz

Medium parameters used: f = 1900 MHz; σ = 1.42 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3

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

Phantom section: Flat Section

d=10mm, Pin=250mW/Area Scan (61x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.7 mW/g

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

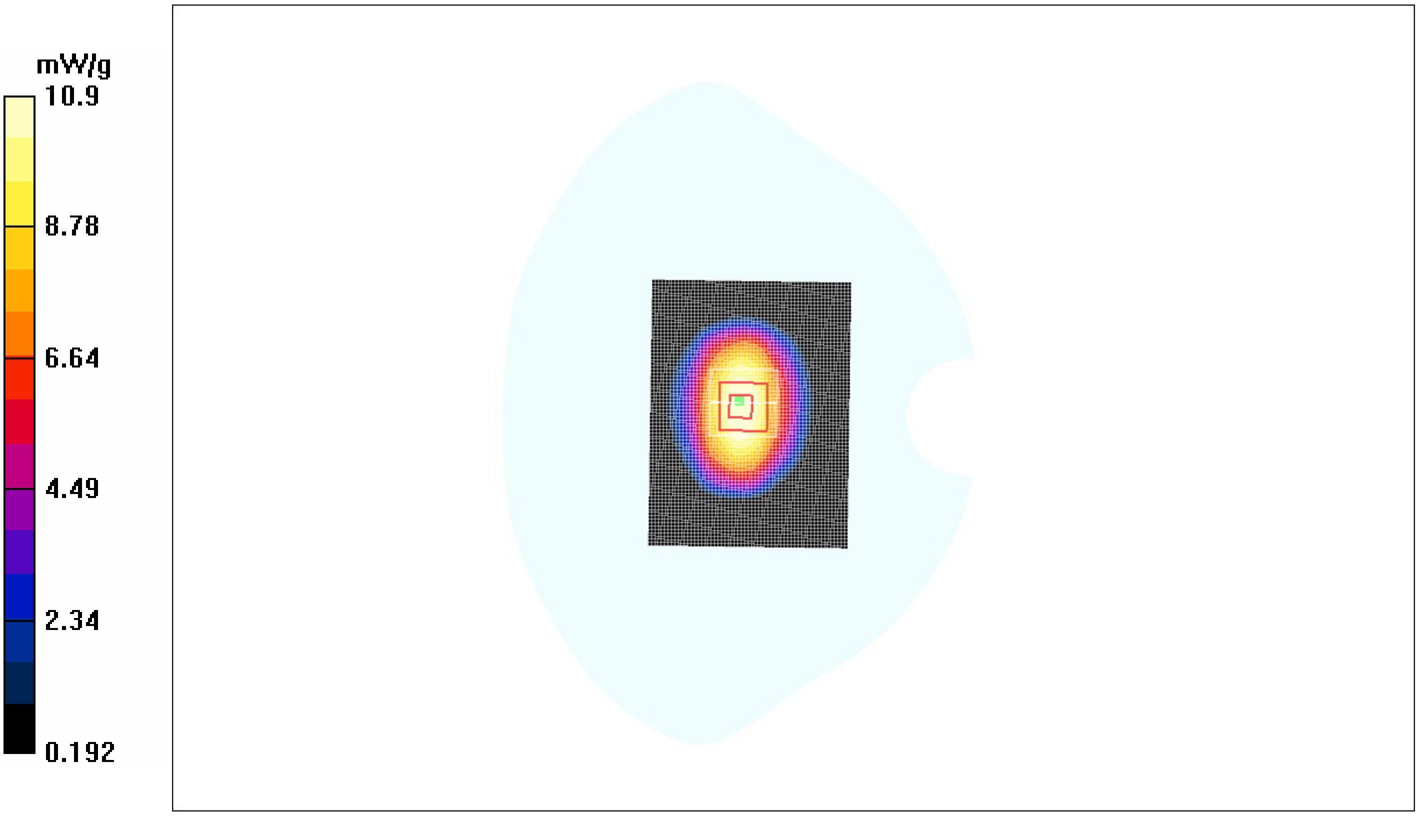


Figure 64 System Performance Check 1900MHz 250mW

ANNEX E： PROBE CALIBRATION CERTIFICATE

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

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

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

Accreditation No.: **SCS 108**

Client **TMC-Auden**

Certificate No: **ET3-1737_Feb07**

CALIBRATION CERTIFICATE

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

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: February 19, 2007

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

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

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

Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

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

Probe ET3DV6

SN:1737

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

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1737

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

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

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

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

TSL **1750 MHz** **Typical SAR gradient: 10 % per mm**

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

Sensor Offset

Probe Tip to Sensor Center **2.7** mm

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

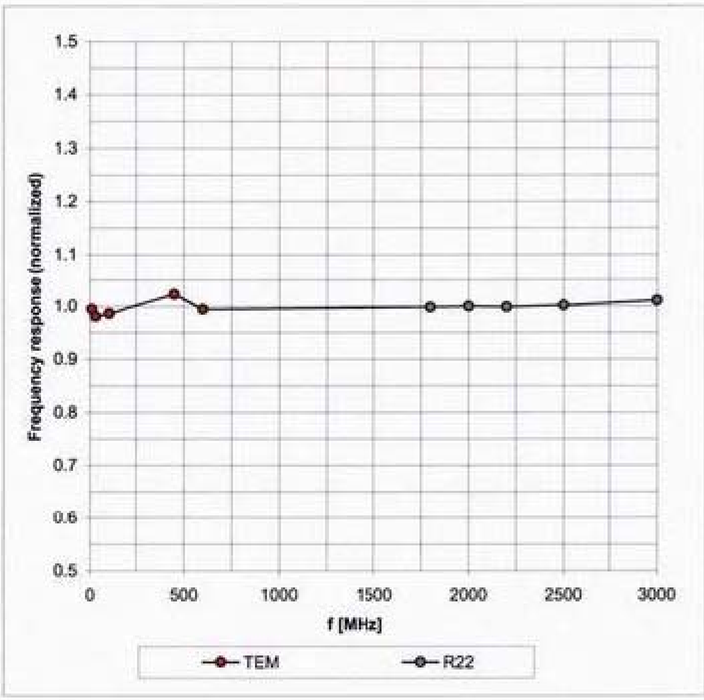
[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

ET3DV6 SN:1737 February 19, 2007

Frequency Response of E-Field

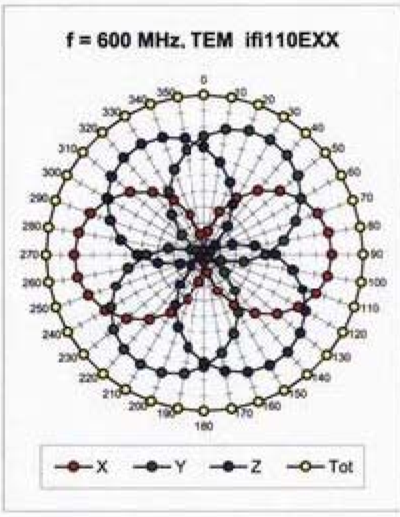
(TEM-Cell:ifi110 EXX, Waveguide: R22)

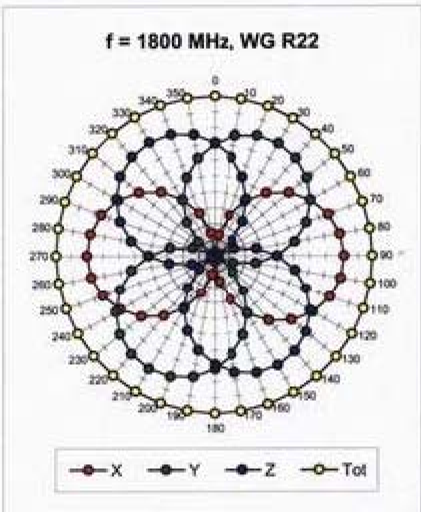


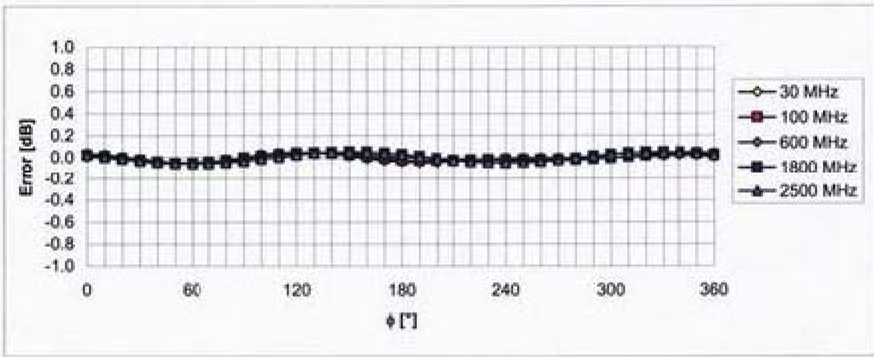
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6 SN:1737 February 19, 2007

Receiving Pattern (ϕ), ϑ = 0°





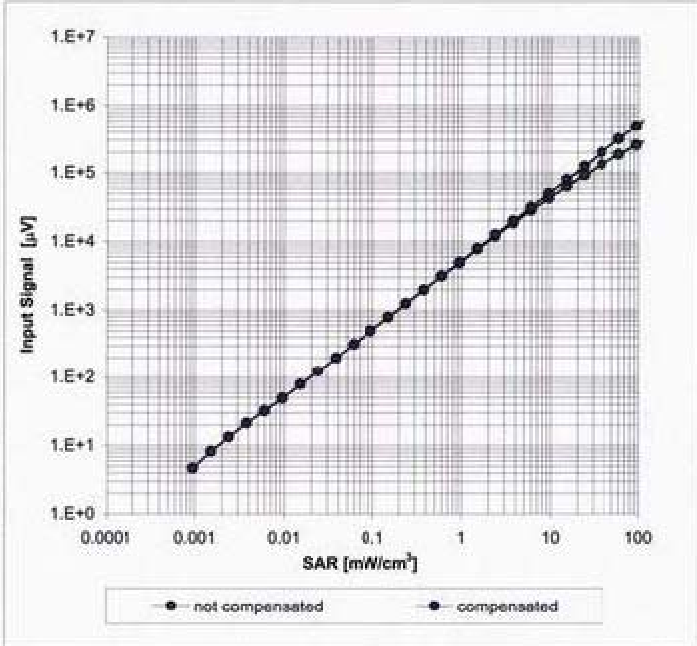


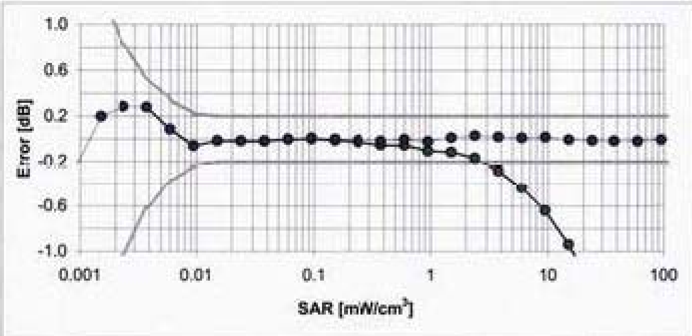
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

ET3DV6 SN:1737 February 19, 2007

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)

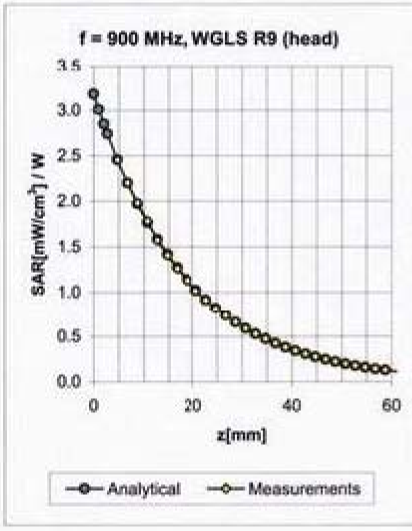


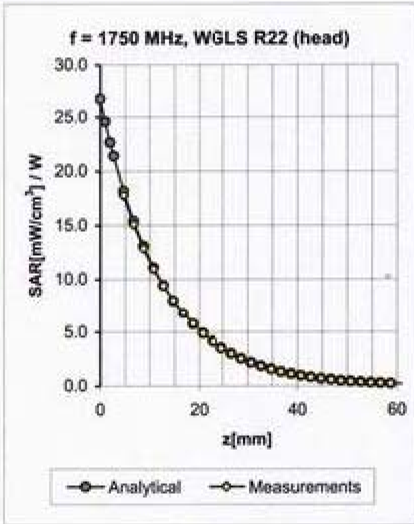


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ET3DV6 SN:1737 February 19, 2007

Conversion Factor Assessment





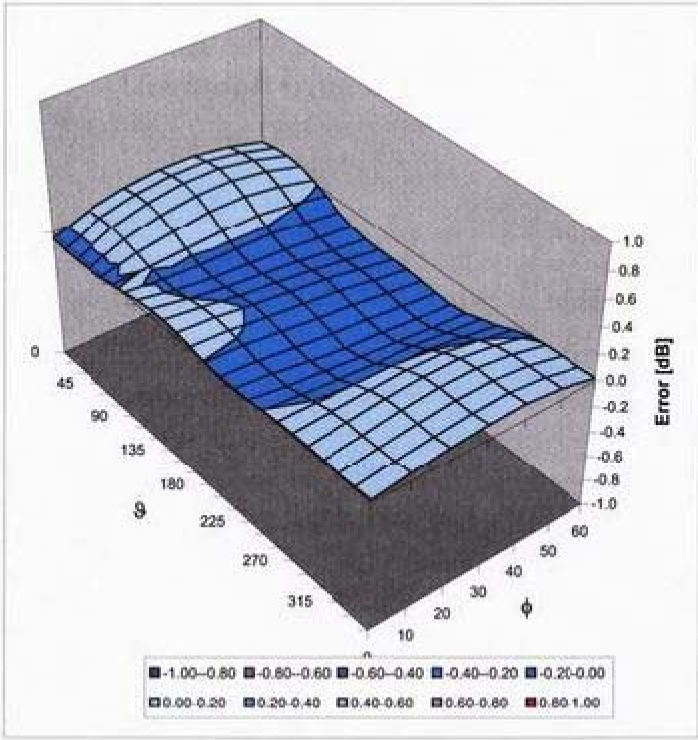
f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.27	2.89	6.85	± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.52	2.56	5.42	± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.49	2.89	5.15	± 11.0% (k=2)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

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

ET3DV6 SN:1737 February 19, 2007

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



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

ANNEX F： D835V2 DIPOLE CALIBRATION CERTIFICATE

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

S Schweizerischer Kalibrierdienst
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Accreditation No.: SCS 108

Client TMC China

Certificate No: D835V2-443_Feb07

CALIBRATION CERTIFICATE

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

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

All calibrations have been conducted at an environment temperature (22±3)°C and humidity<70%

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID#	Cal Data (Calibrated by, Certification NO.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Power sensor 8481A	US37292783	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN:5086 (20g)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
Reference 10 dB Attenuator	SN:5047_2 (10r)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
DAE4	SN:601	30-Jan-07 (SPEAG, NO.DAE4-601_Jan07)	Jan-08
Reference Probe ET3DV6 (HF)	SN: 1507	19-Oct-06 (SPEAG, NO. ET3-1507_Oct06)	Oct-07
Secondary Standards	**ID#**	**Check Data (in house)**	**Scheduled Calibration**
Power sensor HP 8481A	MY41092317	18-Oct-02(SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Aglient E4421B	MY41000676	11-May-05(SPEAG, in house check Nov-05)	In house check: Nov -07
Network Analyzer HP 8753E	US37390585S4206	18-Oct-01(SPEAG, in house check Oct-06)	In house check: Oct -07

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

Issued: February 21, 2007

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

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Engineering AG
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Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

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

SAR result with Head TSL

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

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

Appendix

Antenna Parameters with Head TSL

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

General Antenna Parameters and Design

Electrical Delay (one direction)	1.402 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 3, 2001

DASY4 Validation Report for Head TSL

Date/Time: 19.02.2007 10:04:15

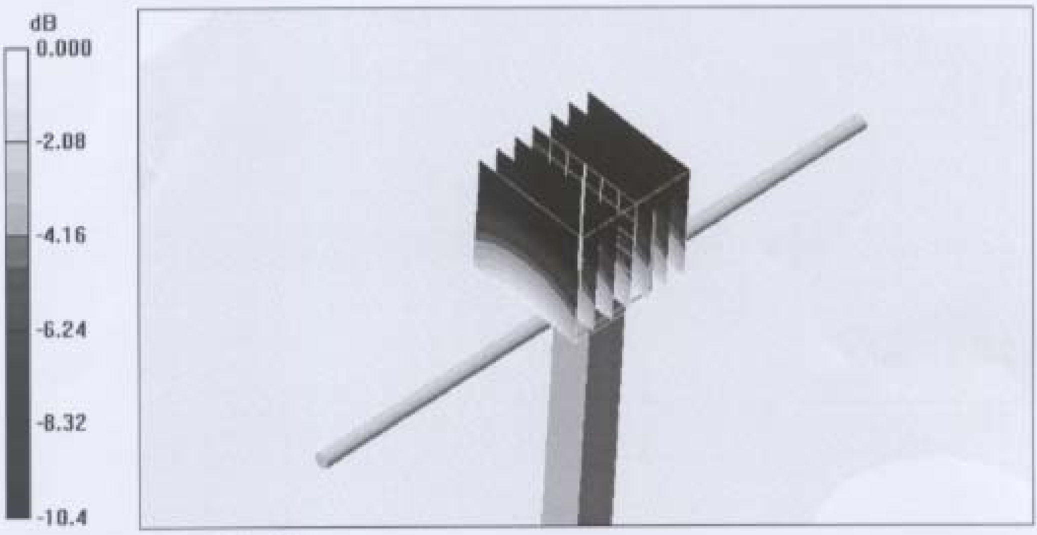
Test laboratory: SPEAG, Zurich, Switzerland

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

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

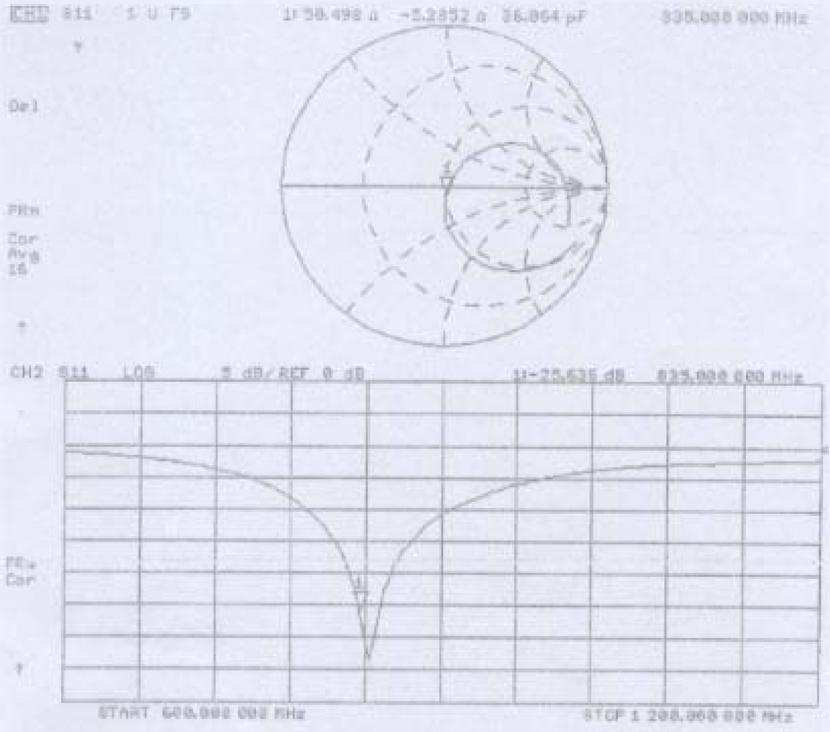
- Probe: ET3DV6-SN1507(HF); ConvF(6.01,6.01,6.01); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.1_2007
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA;
- Measurement SW: DASY, V4.7 Build 53; Post processing SW: SEMCAD, V1.8 Build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

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



0 dB = 2.70mW/g

Impedance measurement Plot for Head TSL



ANNEX G： D1900V2 DIPOLE CALIBRATION CERTIFICATE

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Accreditation No.: SCS 108

Client TMC China

Certificate No: D1900V2-541_Feb07

CALIBRATION CERTIFICATE

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

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

All calibrations have been conducted at an environment temperature (22±3)°C and humidity<70%

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID#	Cal Data (Calibrated by, Certification NO.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Power sensor 8481A	US37292783	03-Oct-06 (METAS, NO. 217-00608)	Oct-07
Reference 20 dB Attenuator	SN:5086 (20g)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
Reference 10 dB Attenuator	SN:5047_2 (10r)	10-Aug-06 (METAS, NO. 217-00591)	Aug-07
DAE4	SN:601	30-Jan-07 (SPEAG, NO.DAE4-601_Jan07)	Jan-08
Reference Probe ET3DV6 (HF)	SN: 1507	19-Oct-06 (SPEAG, NO. ET3-1507_Oct06)	Oct-07
Secondary Standards	**ID#**	**Check Data (in house)**	**Scheduled Calibration**
Power sensor HP 8481A	MY41092317	18-Oct-02(SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000676	11-May-05(SPEAG, in house check Nov-05)	In house check: Nov -07
Network Analyzer HP 8753E	US37390585S4206	18-Oct-01(SPEAG, in house check Oct-06)	In house check: Oct -07

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

Issued: February 21, 2007

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

Calibration Laboratory of
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Accreditation No.: **SCS 108**

Glossary:

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

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

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

Measurement Conditions

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

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

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature during test	(22.1 ± 0.2) °C	—	—

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	9.73 mW /g
SAR normalized	normalized to 1W	38.9 mW /g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**38.6 mW / g ± 17.0 % (k=2)**

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

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

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.4 Ω - 8.9 jΩ
Return Loss	- 26.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.214 ns

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 4 , 2001

DASY4 Validation Report for Head TSL

Date/Time: 20.02.2007 09:25:37

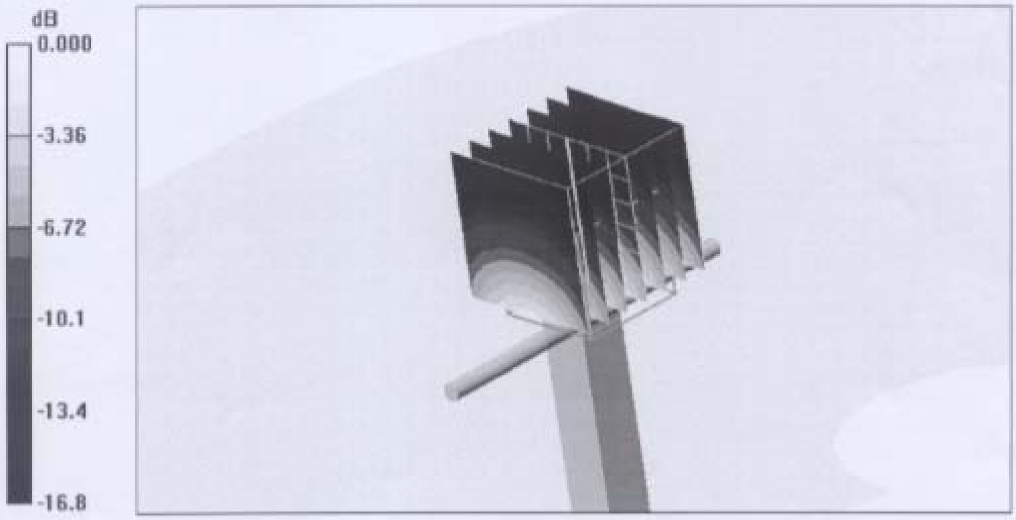
Test laboratory: SPEAG, Zurich, Switzerland

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

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

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

Pin = 250 mW; d = 15 mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.1 V/m; Power Drift = 0.059 dB
Peak SAR (extrapolated) = 16.9 W/kg
SAR(1 g) = 9.73 mW/g; SAR(10 g) = 5.09 mW/g
Maximum value of SAR (measured) = 11.3 mW/g



0 dB = 11.3mW/g

Impedance measurement Plot for Head TSL