(No. CNAS L2264)

OET 65

TEST   REPORT

Test name	Electromagnetic Field (Specific Absorption Rate)
Product	HSDPA USB Stick
Model	K3520
FCC ID	QISK3520
Client	HUAWEI Technologies Co., Ltd.

TA Technology (Shanghai) Co., Ltd.

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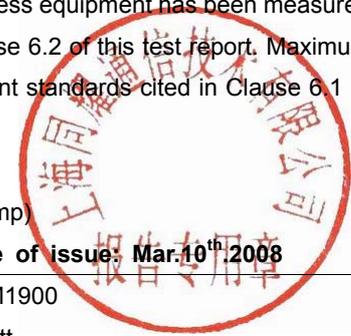
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GENERAL SUMMARY

Product	HSDPA USB Stick	**Model**	K3520
Client	HUAWEI Technologies Co., Ltd.	**Type of test**	Entrusted
Manufacturer	HUAWEI Technologies Co., Ltd.	**Arrival Date of sample**	Mar.1st, 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	EV7NAA17A2712292		

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. **OET65C revision2002 DA 09-1948, June 19.2002:** 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: Mar.10th.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

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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
HSDPA USB Stick	K3520	EV7NAA17A2712292	HUAWEI Technologies Co., Ltd.

Note:

The EUT appearances see ANNEX H.

3.3. General Description

Equipment Under Test (EUT) is a HSDPA USB Stick with internal antenna. During SAR test of the EUT, it was connected to three different portable computers. SAR is tested for the EUT respectively for GSM 850 and GSM1900.The EUT have GPRS (class 12) and EGPRS functions.

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

And according to the "3 dB rule" specified in the OET65C revision2002 DA 09-1948, June 19.2002: and SupplementC (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 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s)"**.

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.

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 vertical 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 Joybook S72 laptop, BenQ Joybook R55V (118) laptop and Acer ZH1 laptop are used as an assistant to help to setup communication. (See Picture 1)

Picture 1-a: BenQ Joybook S72 Close

Picture 1-b: BenQ Joybook S72 Open

Picture 1-c: Acer ZH1 Close

Picture 1-d: Acer ZH1 Open

Picture 1-e: BenQ Joybook R55V(118) Close

Picture 1-f: BenQ Joybook R55V(118) 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.
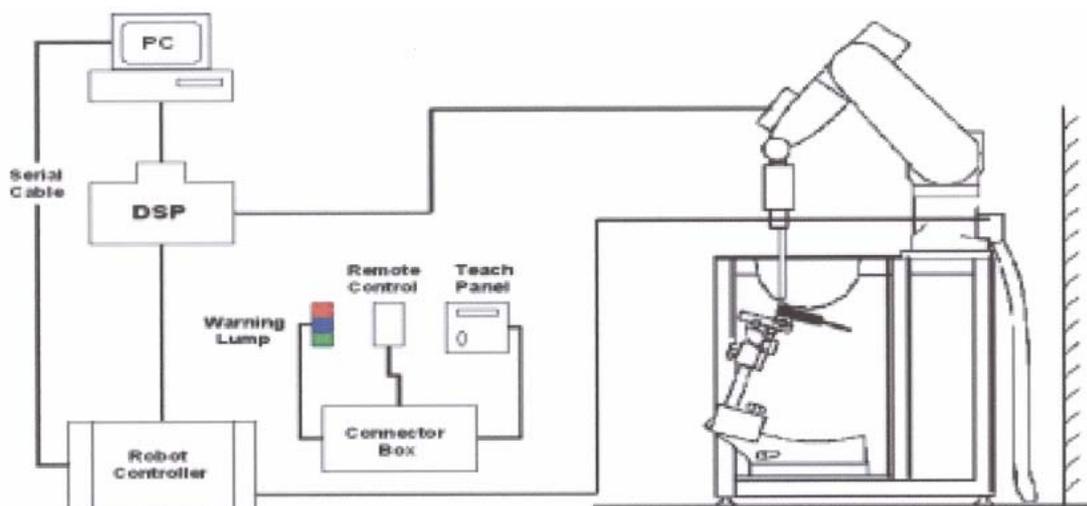

Figure 1.SAR Lab Test Measurement Set-up

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	I 0 MHz to > 6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz)

Figure 2.ET3DV6 E-field Probe

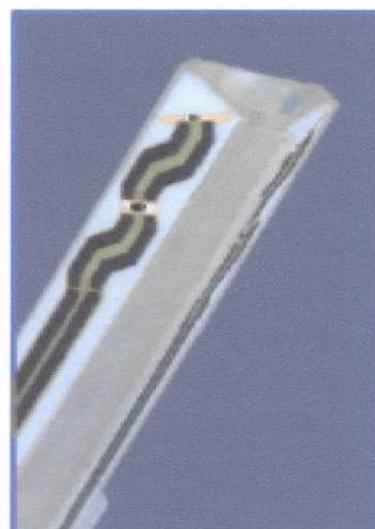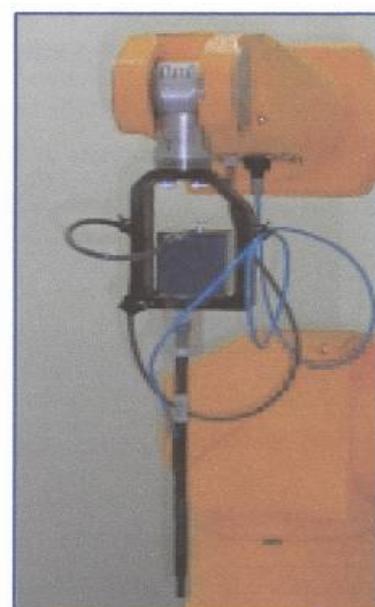|	
Directivity	±0.2 dB in brain tissue (rotation around probe axis) ±0.4 dB in brain tissue (rotation around probe axis)
Dynamic Range	5u W/g to > 100mW/g; Linearity: ±0.2dB
Surface Detection	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surface (ET3DV6 only)
Dimensions	Overall 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.

OET65C revision2002 DA 09-1948, June 19.2002: 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+GPRS	Conducted Power		
	Channel 128 (824.2MHz)	Channel 190 (836.6MHz)	Channel 251 (848.8MHz)
Before Test (dBm)	32.64	32.68	32.49
After Test (dBm)	32.66	32.67	32.47
GSM 1900+GPRS	Conducted Power		
	Channel 512 (1850.2MHz)	Channel 661 (1880MHz)	Channel 810 (1909.8MHz)
Before Test (dBm)	28.83	28.93	28.55
After Test (dBm)	28.78	28.84	28.53

9. TEST RESULTS

9.1. Dielectric Performance

Table 8: Dielectric Performance of Body Tissue Simulating Liquid

Frequency (MHz)		Target value	Measurement value	Difference percentage	
835 (Body)	Permittivity ε_r	55.20	55.94	1.34	%
	Conductivity σ	0.97	0.99	2.06	%
1900 (Body)	Permittivity ε_r	53.30	52.64	-1.24	%
	Conductivity σ	1.52	1.53	0.66	%

Measurement is made at temperature 22.5 °C and relative humidity 51%.
Liquid temperature during the test: 22.3°C

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	40.2		0.89	
	1900MHz	39.5		1.46	

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	1.56	2.43	1.53	2.34	-1.92%	-3.70%
	1900MHz	4.94	9.35	4.93	9.36	-0.20%	-0.11%

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)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	$\pm$ **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Model Computer	**Channel**	**1g Average**		
BenQ Joy book S72	Middle	0.591	0.156	Figure 7
Acer ZH1	Middle	0.248	-0.198	Figure 9

Table 11: SAR Values （GSM 850 GPRS at Test Position 1 with BenQ Joy book S72）

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	$\pm$ **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Timeslots	**Channel**	**1g Average**		
4 timeslots in uplink	Middle	0.591	0.156	Figure 7
3 timeslots in uplink	Middle	0.734	0.110	Figure 11
2 timeslots in uplink	High	0.949	0.188	Figure 13
	Middle	0.830	0.171	Figure 15
	Low	0.750	0.089	Figure 17
1 timeslot in uplink	Middle	0.749	-0.045	Figure 19

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

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)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	± **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Test Position	**Channel**	**1g Average**		
Test Position 1	High	0.949	0.188	Figure 13
	Middle	0.830	0.171	Figure 15
	Low	0.750	0.089	Figure 17
Test Position 2	Middle	0.451	-0.160	Figure 21
Test Position 3	Middle	0.151	-0.181	Figure 23

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

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	± **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Test Position	**Channel**	**1g Average**		
Test Position 4	Middle	0.287	0.178	Figure 25
Test Position 5	Middle	0.195	0.111	Figure 27
Test Position 6	Middle	0.414	-0.072	Figure 29
Test Position 7	Middle	0.449	-0.110	Figure 31

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

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Test Position	**Channel**	**1g Average**		
Test Position 1	Middle	0.181	0.168	Figure 33

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

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Model Computer	**Channel**	**1g Average**		
BenQ Joy book S72	Middle	0.742	-0.156	Figure 35
Acer ZH1	Middle	0.611	-0.006	Figure 37

Table 16: SAR Values（GSM1900 GPRS at Test Position 1 with BenQ Joy book S72）

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Timeslots	**Channel**	**1g Average**		
4 timeslots in uplink	Middle	0.742	-0.156	Figure 35
3 timeslots in uplink	High	0.920	0.166	Figure 39
	Middle	0.892	0.079	Figure 41
	Low	0.727	0.042	Figure 43
2 timeslots in uplink	High	0.915	0.032	Figure45
	Middle	0.853	0.105	Figure47
	Low	0.716	-0.159	Figure49
1 timeslot in uplink	Middle	0.681	0.132	Figure 51

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

Table 17: SAR Values [GSM1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72]

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	**± 0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Test Position	**Channel**	**1g Average**		
Test Position 1	High	0.920	0.166	Figure 39
	Middle	0.892	0.079	Figure 41
	Low	0.727	0.042	Figure 43
Test Position 2	Middle	0.316	-0.027	Figure 53
Test Position 3	Middle	0.425	0.053	Figure 55

Table 18: SAR Values [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V]

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	± **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Test Position	**Channel**	**1g Average**		
Test Position 4	Middle	0.216	-0.068	Figure 57
Test Position 5	Middle	0.189	-0.068	Figure 59
Test Position 6	High	1.290	0.116	Figure 61
	Middle	0.874	0.005	Figure 63
	Low	0.577	0.199	Figure 65
Test Position 7	Middle	0.442	-0.086	Figure 67

Table 19: SAR Values [GSM1900 EGPRS (3 timeslots in uplink) with BenQ Joy book S72]

Liquid Temperature: 22.4℃				
Limit of SAR (W/kg)		**1g Average**	**Power Drift (dB)**	**Graph Results**
		1.6	± **0.2**	
Test Case Of Body		**Measurement Result (W/kg)**	**Power Drift (dB)**	
Different Test Position	**Channel**	**1g Average**		
Test Position 1	Middle	0.207	-0.067	Figure 69

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	$\sqrt{3}$	$(1-cp)^{1/2}$	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	December 9, 2007	One year
08	Validation Kit 1900MHz	SPEAG D1900V2	5d018	April 23, 2007	One year
09	BTS	E5515C	GB46490218	September 15, 2007	One year
10	E-field Probe	ET3DV6	1530	September 26, 2007	One year
11	DAE	DAE3	452	September 6, 2007	One year

12. TEST PERIOD

The test is performed from Mar. 1st, 2008 to Mar. 7th, 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.
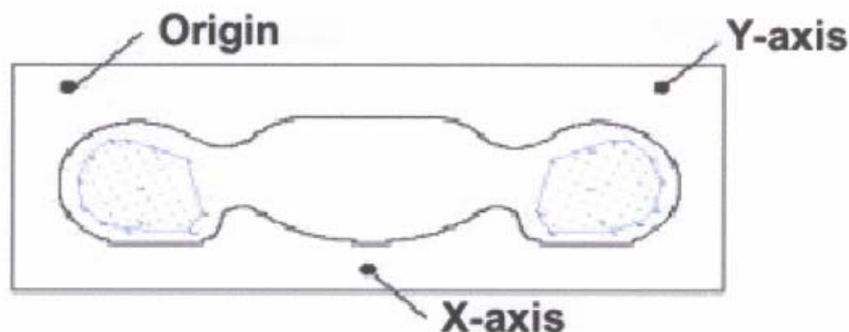
Figure 6.SAR Measurement Points in Area Scan

ANNEX B： TEST LAYOUT

Picture 2 Specific Absorption Rate Test Layout
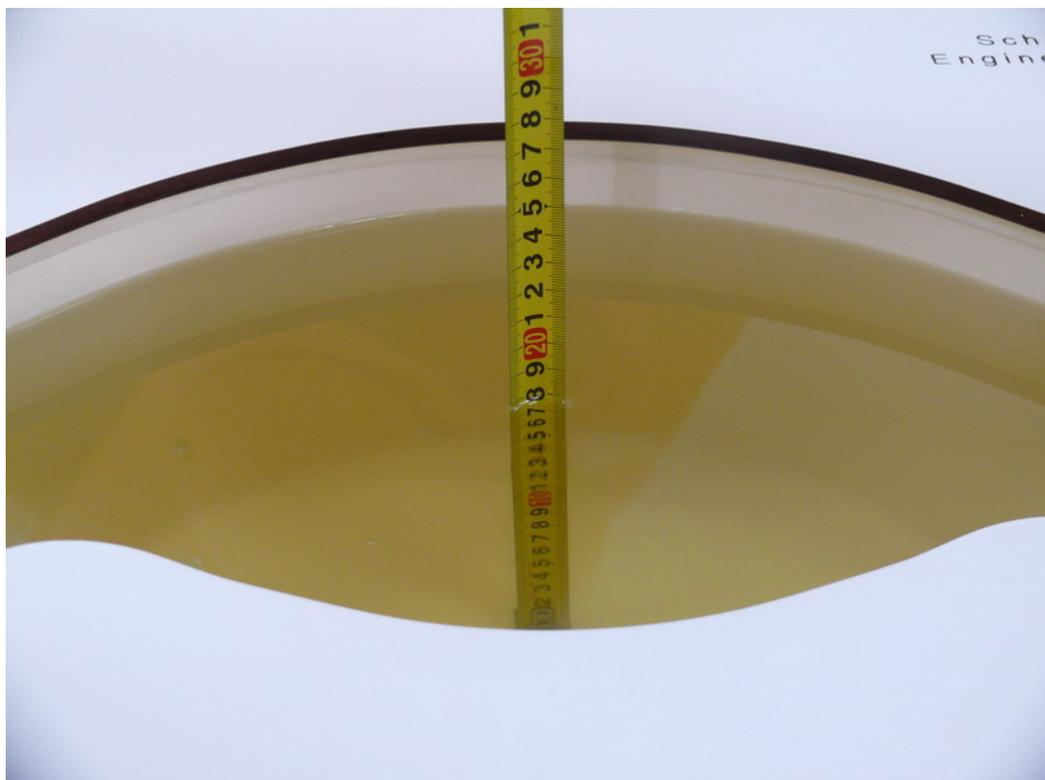
Picture 3 Liquid depth in the Flat Phantom (GSM850)

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 = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.670 mW/g

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

Reference Value = 22.0 V/m; Power Drift = 0.156 dB

Peak SAR (extrapolated) = 0.825 W/kg

SAR(1 g) = 0.591 mW/g; SAR(10 g) = 0.384 mW/g

Maximum value of SAR (measured) = 0.639 mW/g
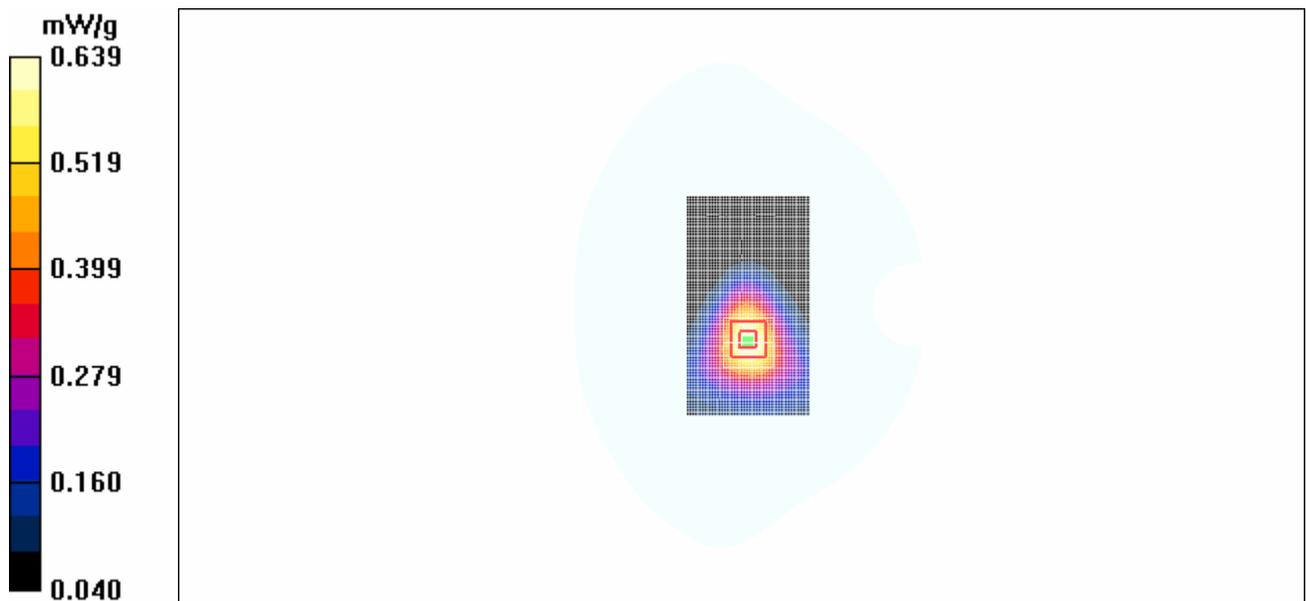
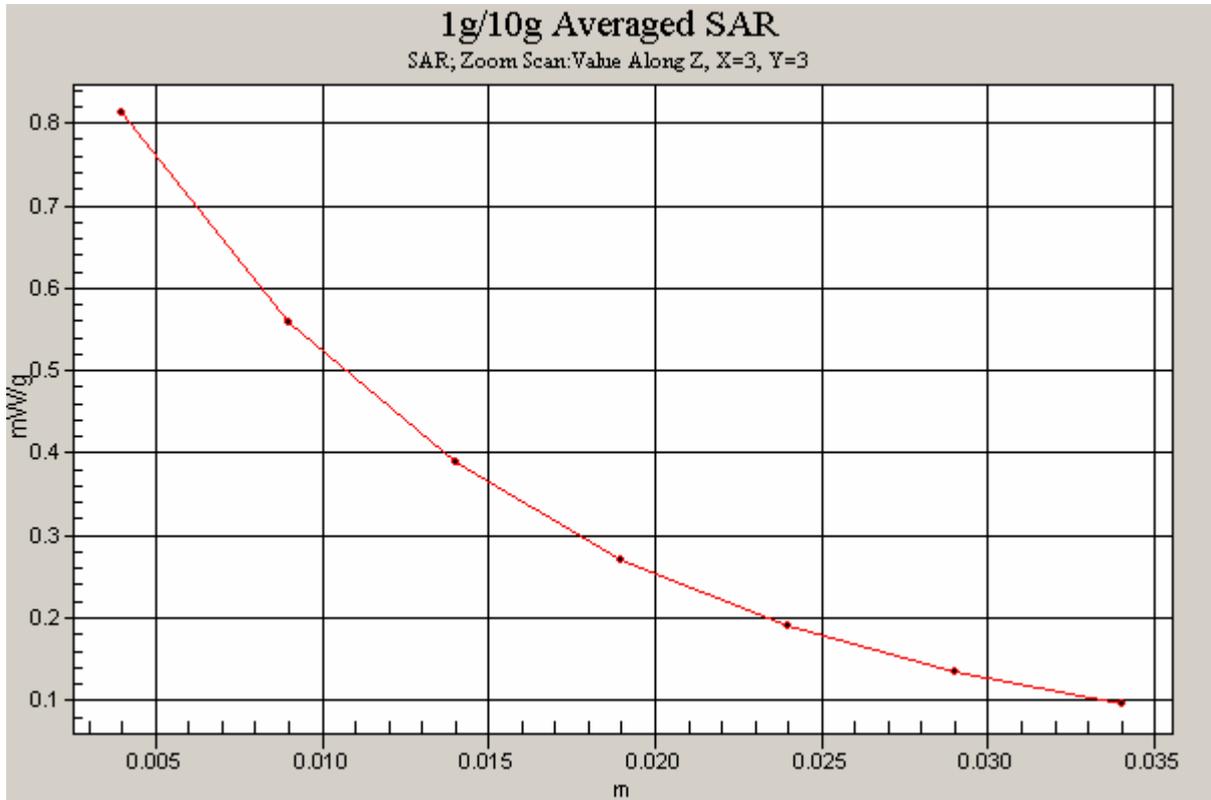**Figure 7 GSM 850 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190**
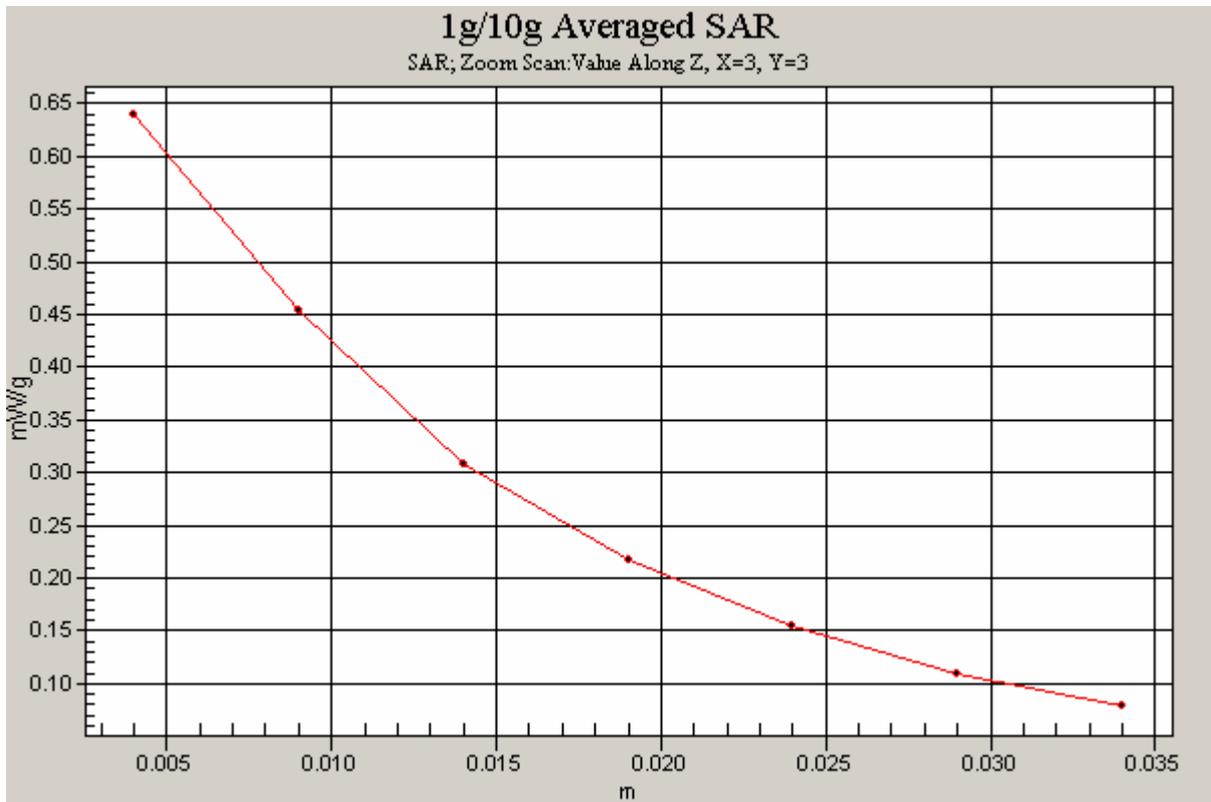
Figure 8 Z-Scan at power reference point [GSM 850 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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 = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 1 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
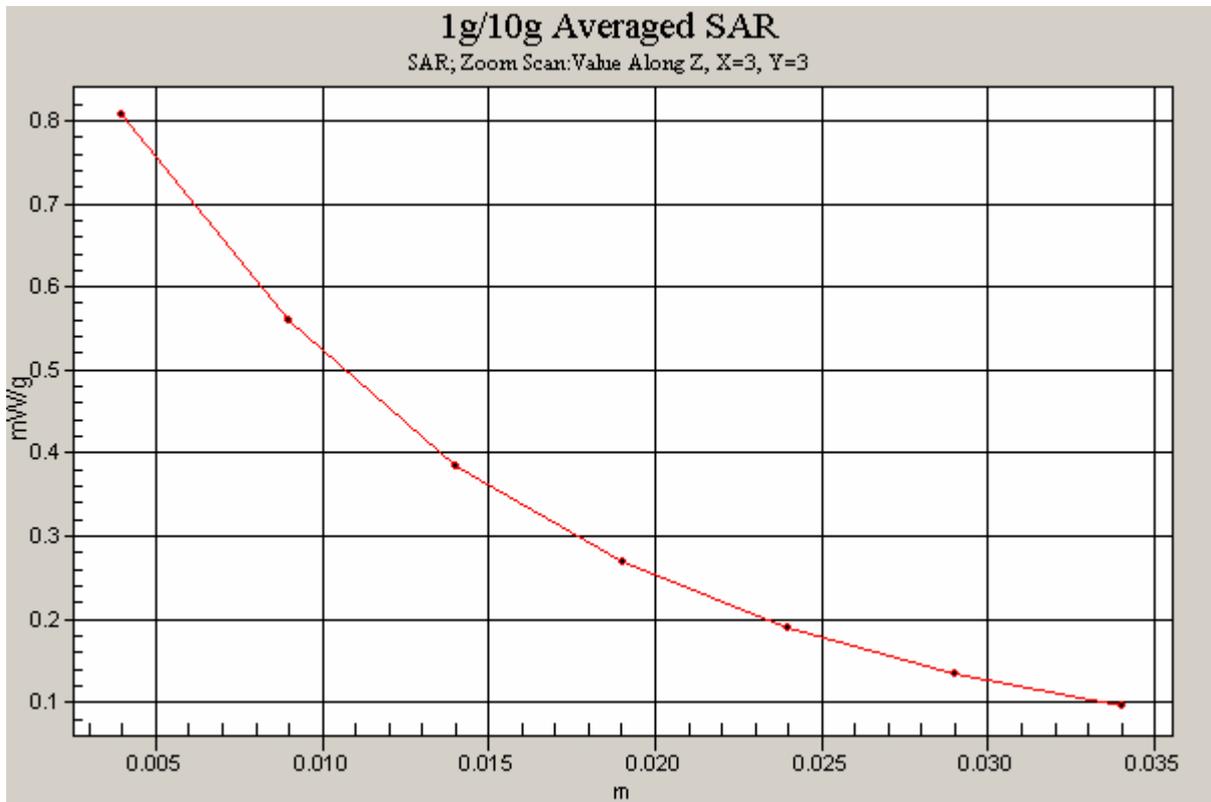
Maximum value of SAR (interpolated) = 0.275 mW/g

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

Reference Value = 16.6 V/m; Power Drift = -0.198 dB

Peak SAR (extrapolated) = 0.341 W/kg

SAR(1 g) = 0.248 mW/g; SAR(10 g) = 0.168 mW/g

Maximum value of SAR (measured) = 0.267 mW/g
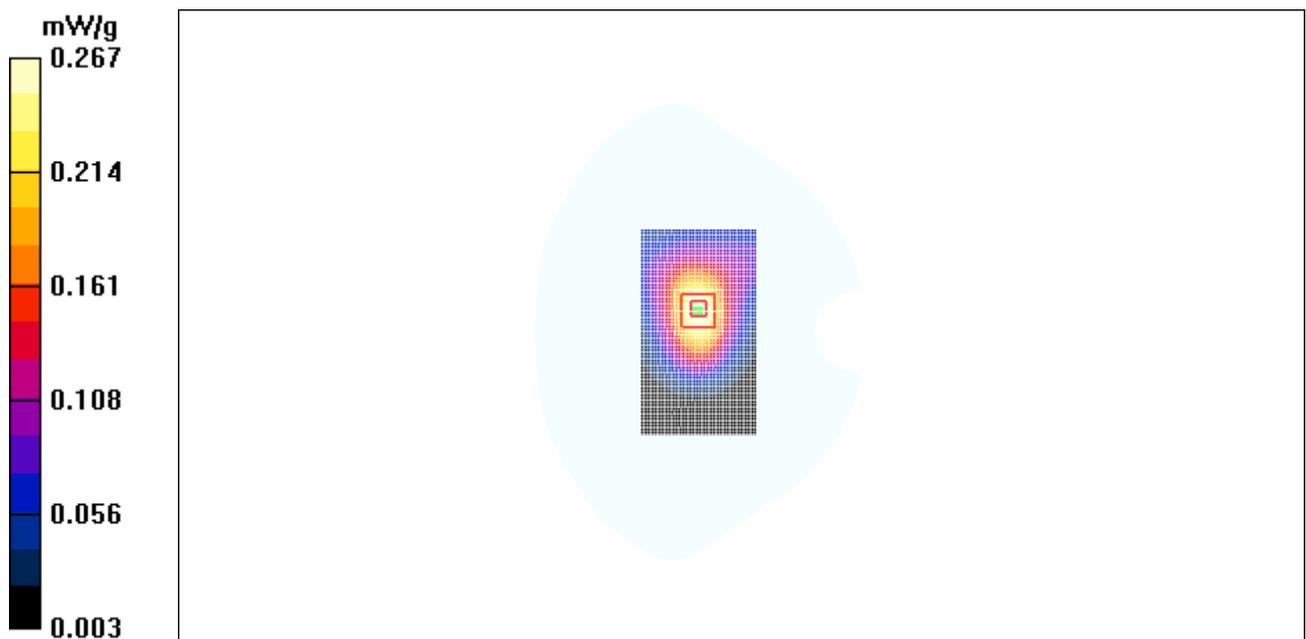
Figure 9 GSM 850 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 190
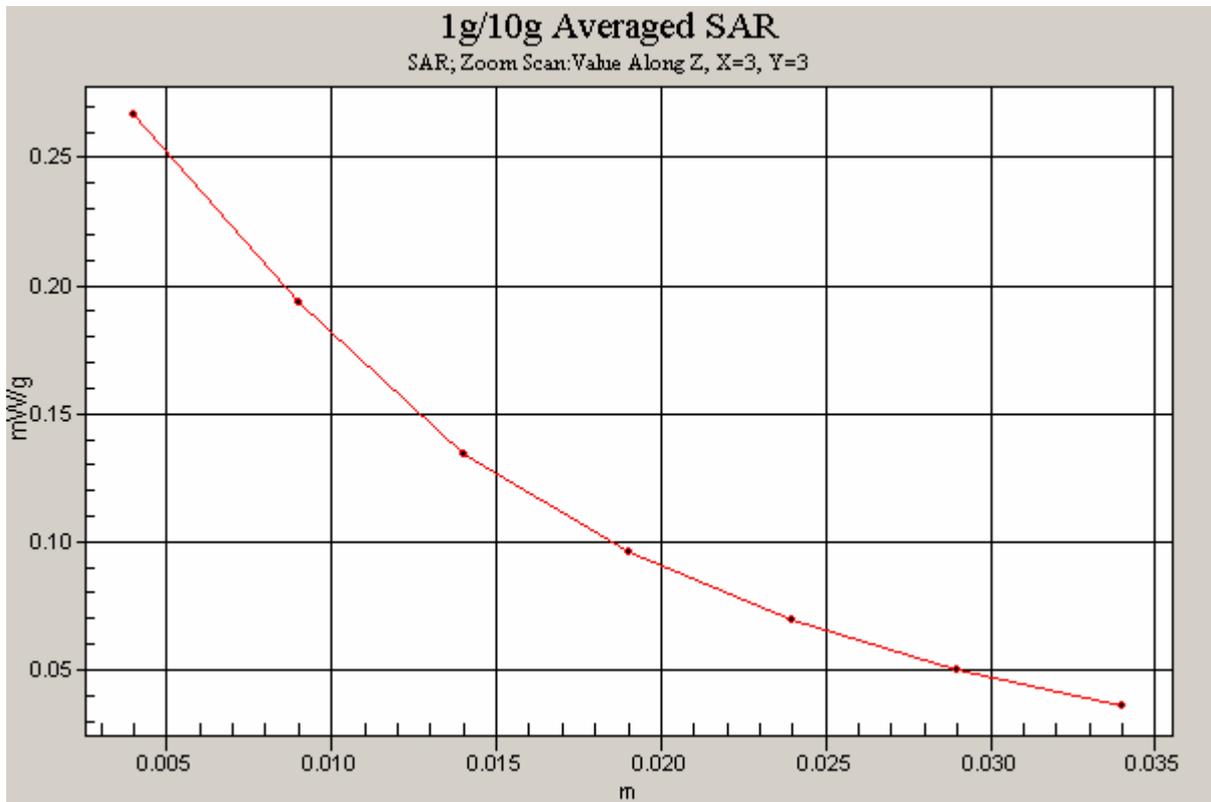
Figure 10 Z-Scan at power reference point [GSM 850 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 190]

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

Communication System: GSM 850+GPRS(3Up); Frequency: 836.6 MHz;Duty Cycle: 1:2.67

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.794 mW/g

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

Reference Value = 23.5 V/m; Power Drift = 0.110 dB

Peak SAR (extrapolated) = 1.01 W/kg

SAR(1 g) = 0.734 mW/g; SAR(10 g) = 0.482 mW/g

Maximum value of SAR (measured) = 0.797 mW/g
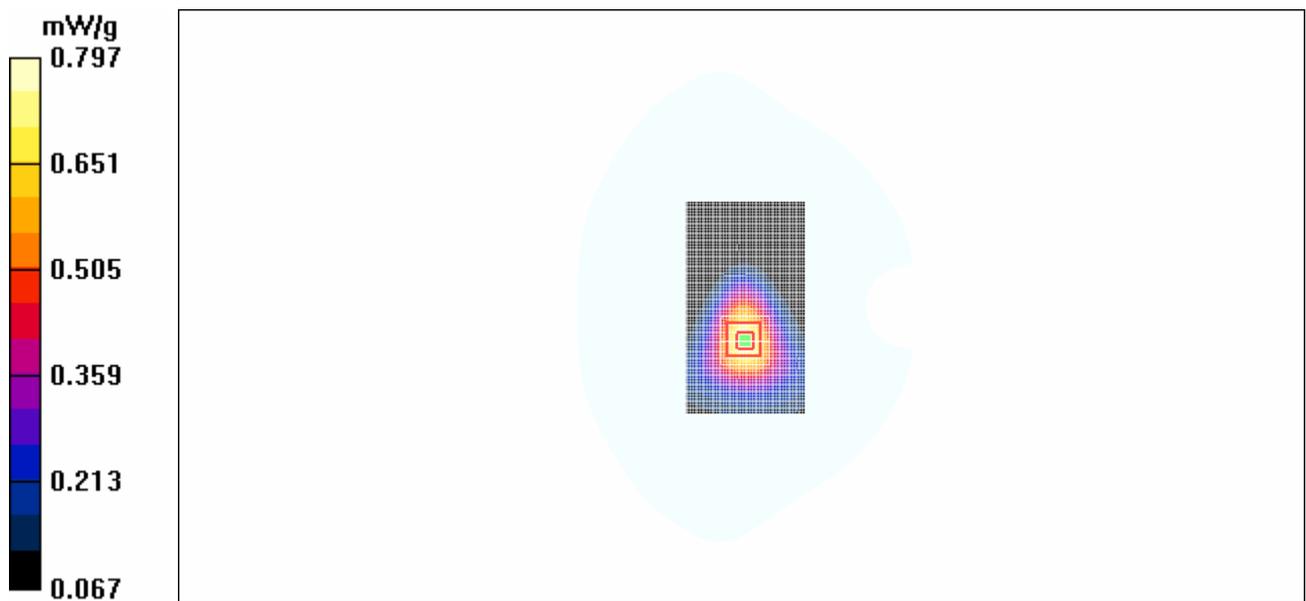
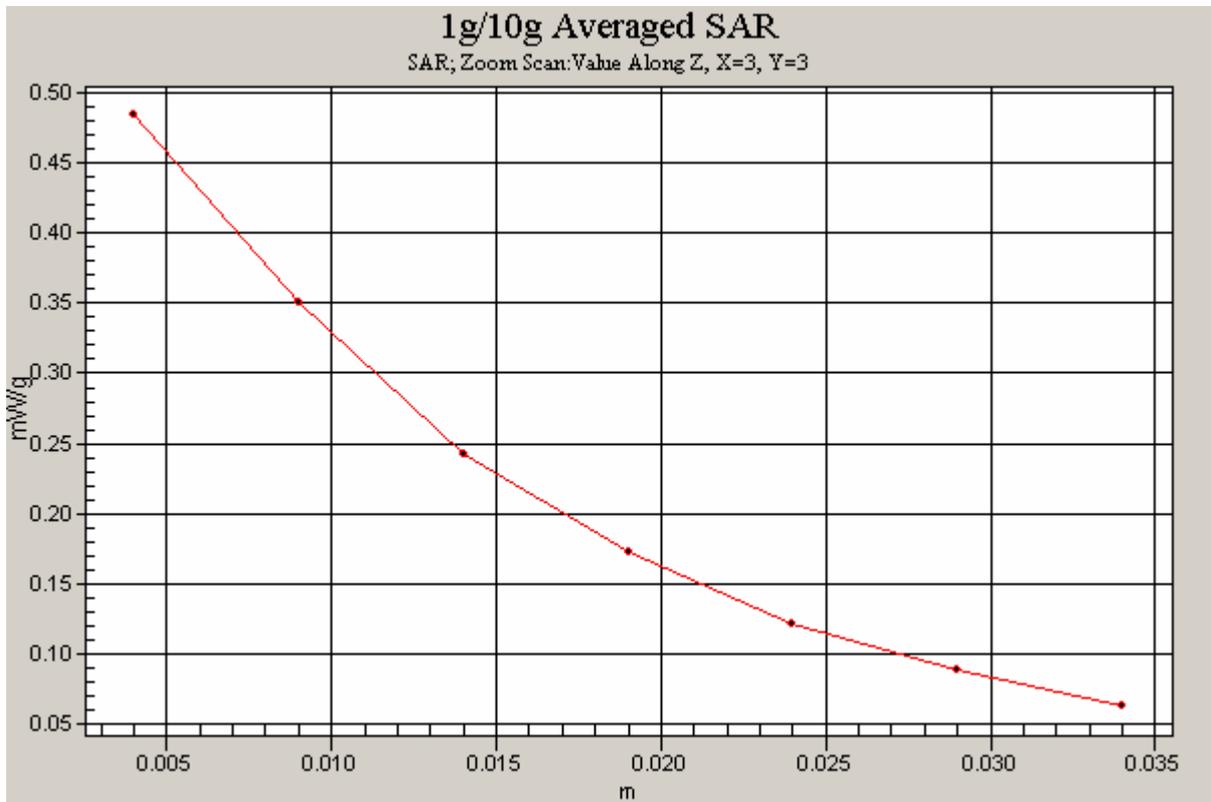**Figure 11 GSM 850 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190**
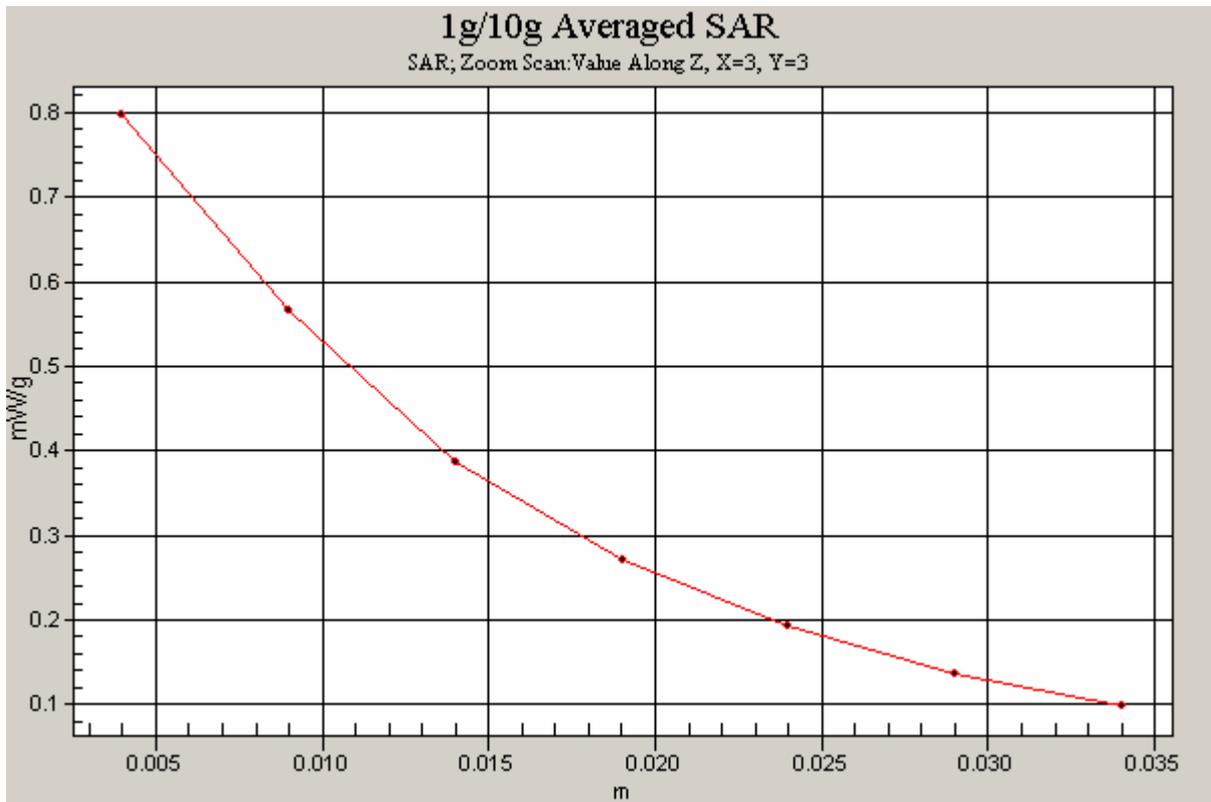
Figure 12 Z-Scan at power reference point [GSM 850 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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

Communication System: GSM 850+GPRS(2Up); Frequency: 848.8 MHz;Duty Cycle: 1:4

Medium parameters used: f = 849 MHz; σ = 1.01 mho/m; ε_r = 55; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

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

Maximum value of SAR (interpolated) = 1.06 mW/g

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

Reference Value = 27.0 V/m; Power Drift = 0.188 dB

Peak SAR (extrapolated) = 1.37 W/kg

SAR(1 g) = 0.949 mW/g; SAR(10 g) = 0.613 mW/g

Maximum value of SAR (measured) = 1.05 mW/g
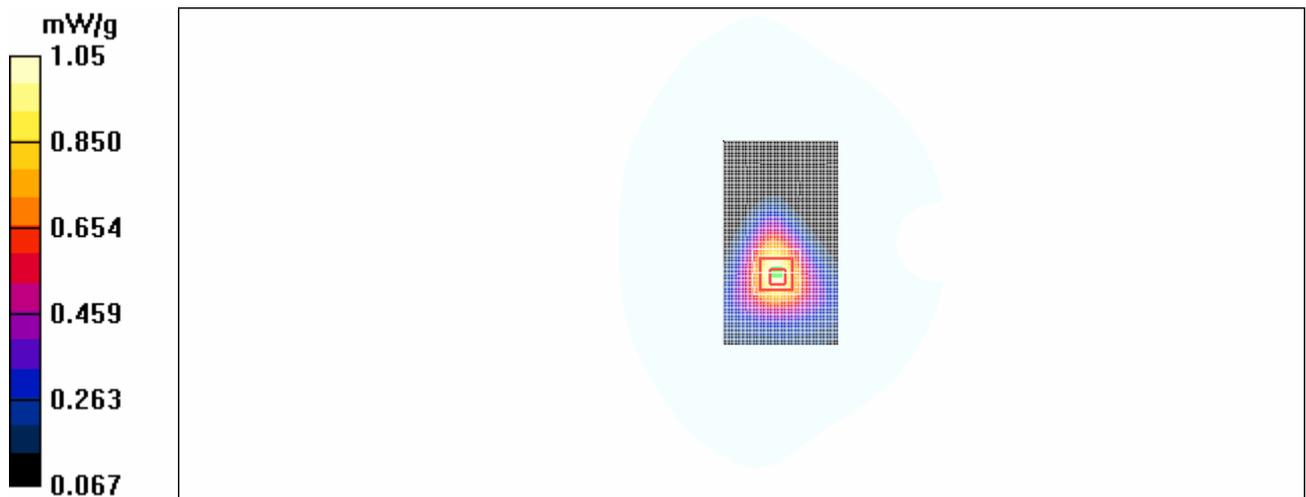
Figure 13 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 251
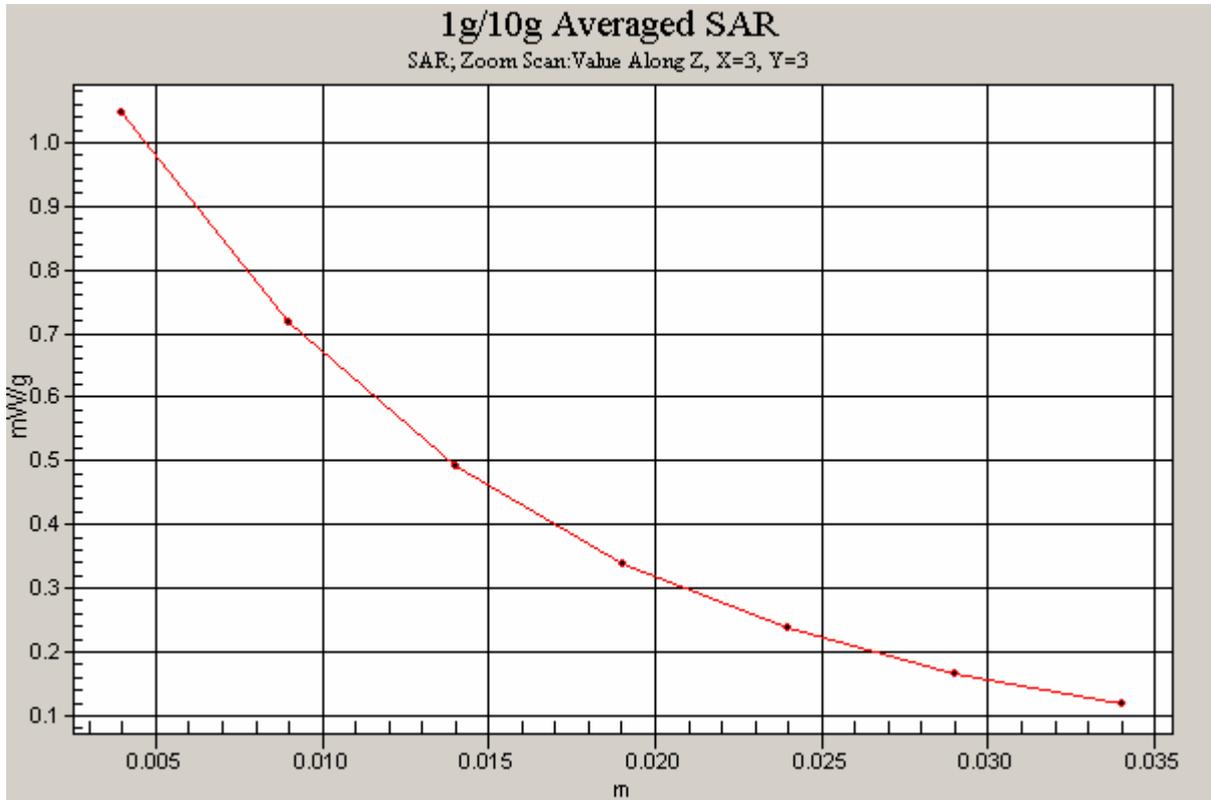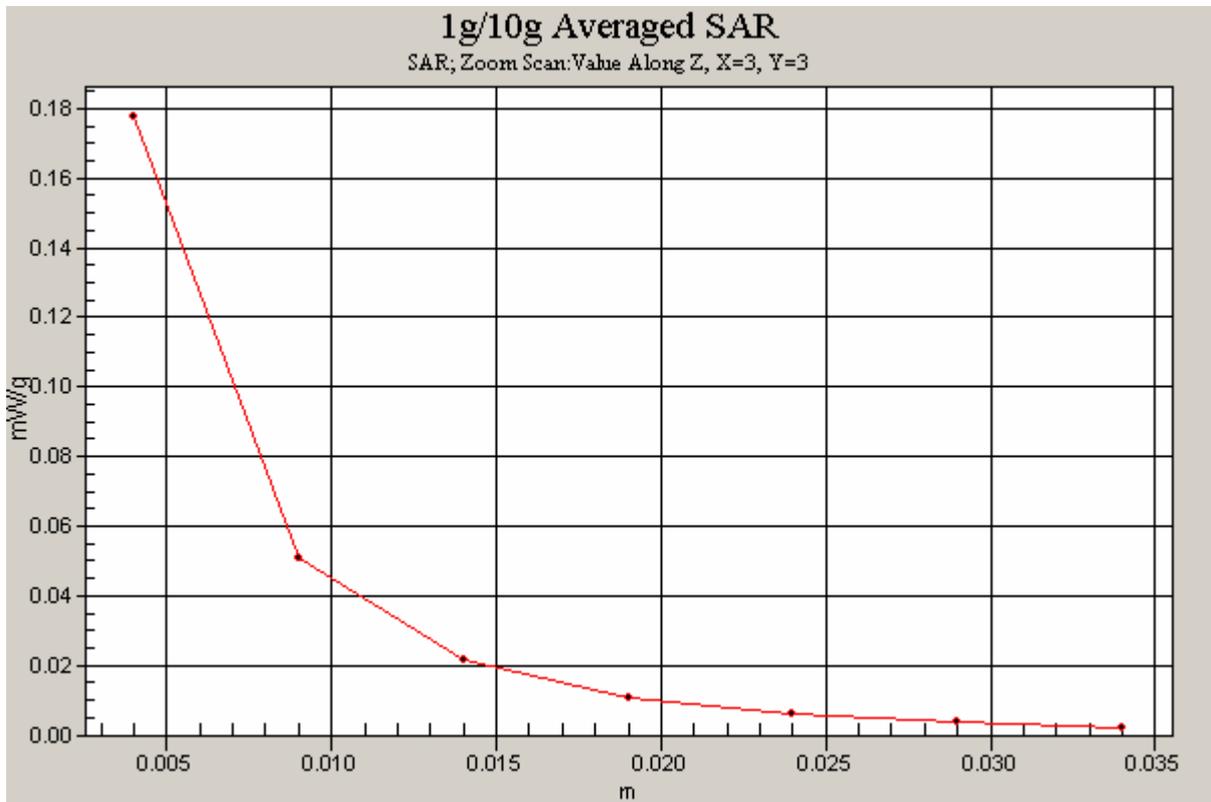
Figure 14 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 251]

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

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

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.913 mW/g

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

Reference Value = 25.0 V/m; Power Drift = 0.171 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.830 mW/g; SAR(10 g) = 0.544 mW/g

Maximum value of SAR (measured) = 0.898 mW/g
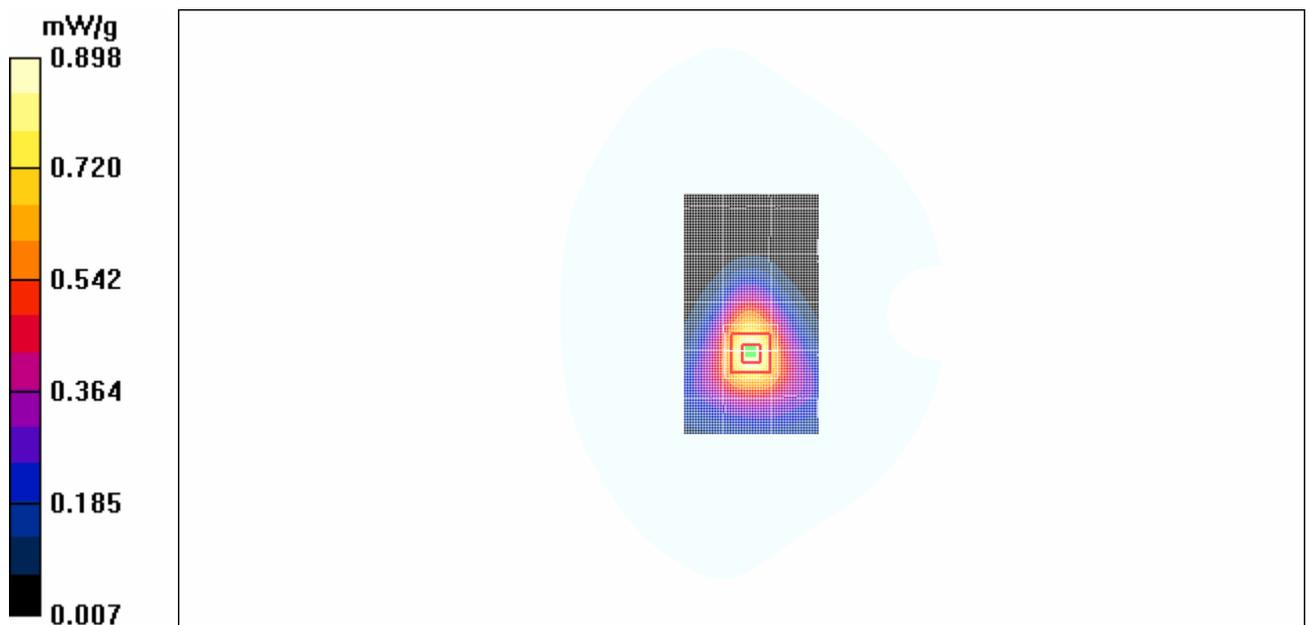
Figure 15 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190
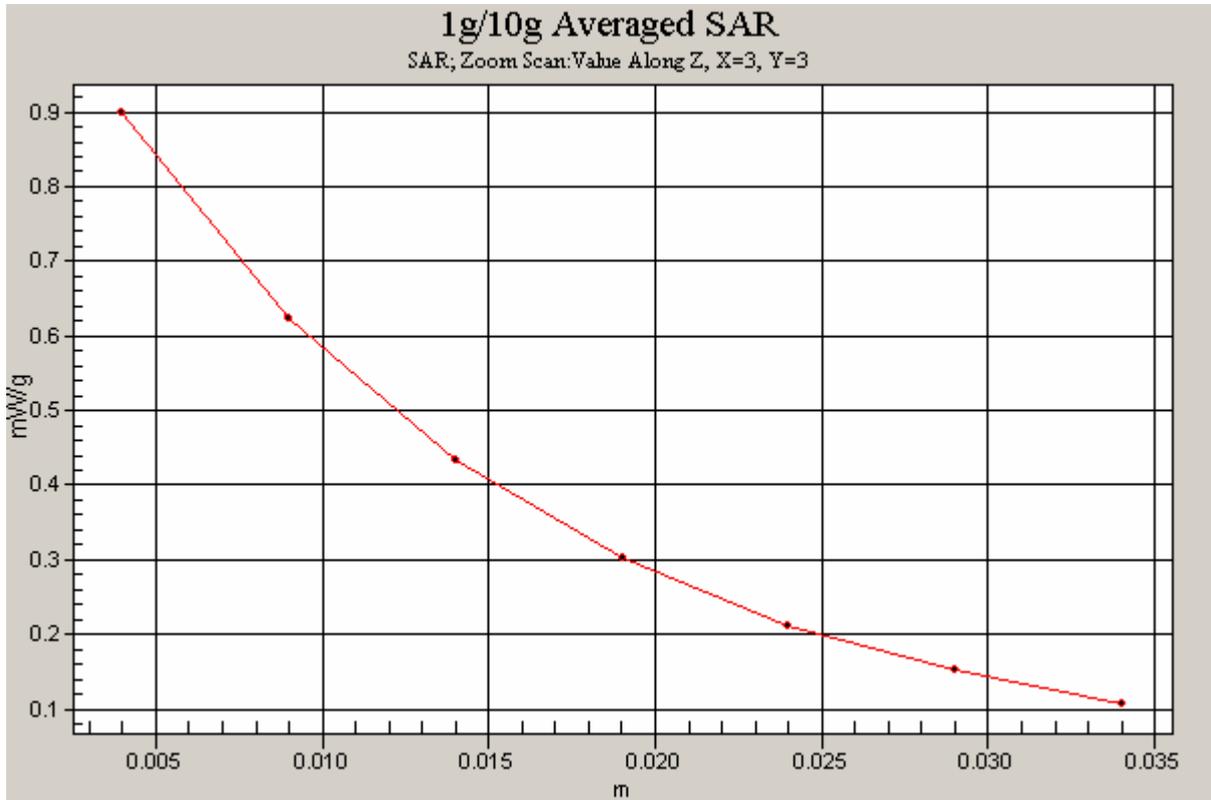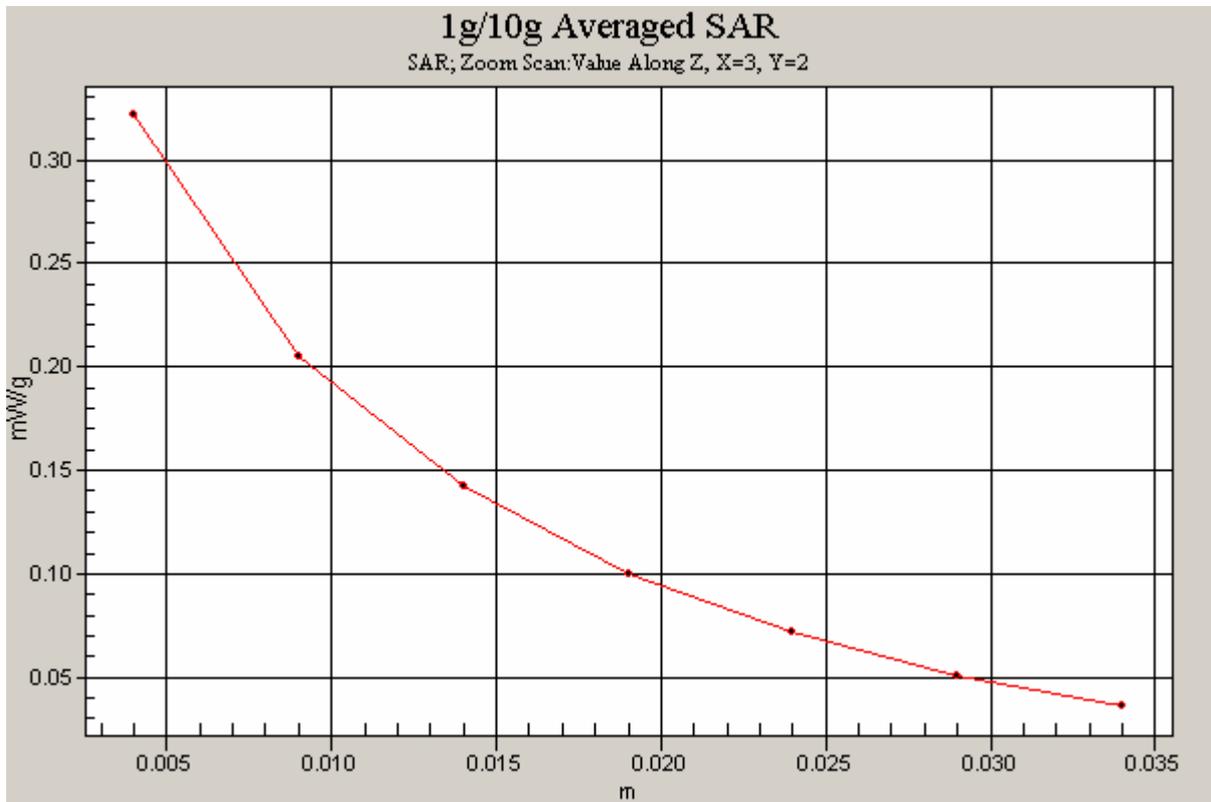
Figure 16 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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

Communication System: GSM 850+GPRS(2Up); Frequency: 824.2 MHz;Duty Cycle: 1:4

Medium parameters used (interpolated): f = 824.2 MHz; σ = 0.983 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Towards Phantom Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.816 mW/g

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

Reference Value = 23.6 V/m; Power Drift = 0.089 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.750 mW/g; SAR(10 g) = 0.490 mW/g

Maximum value of SAR (measured) = 0.812 mW/g
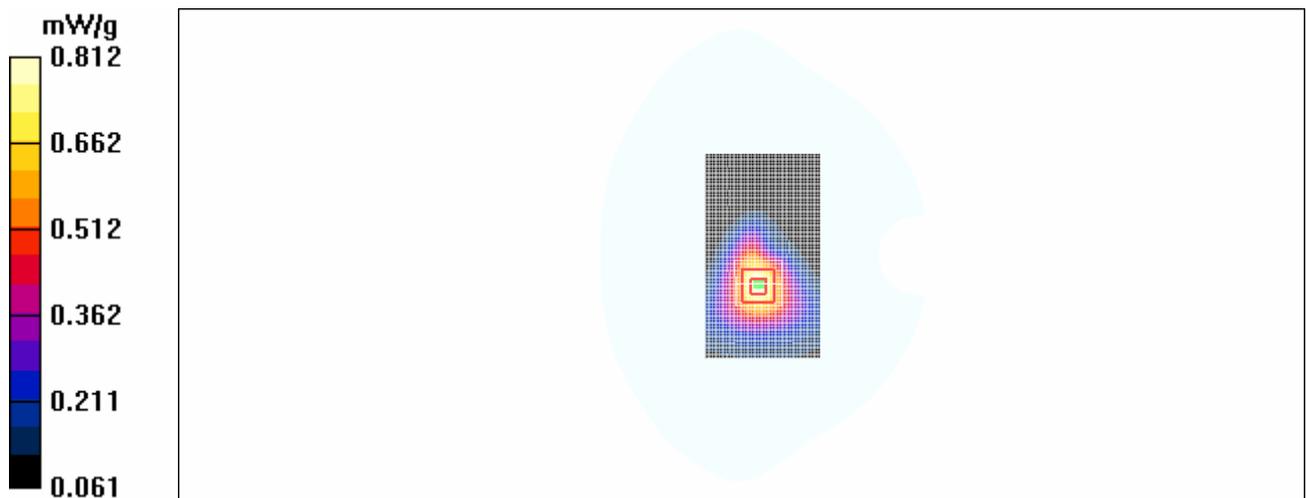
Figure 17 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 128
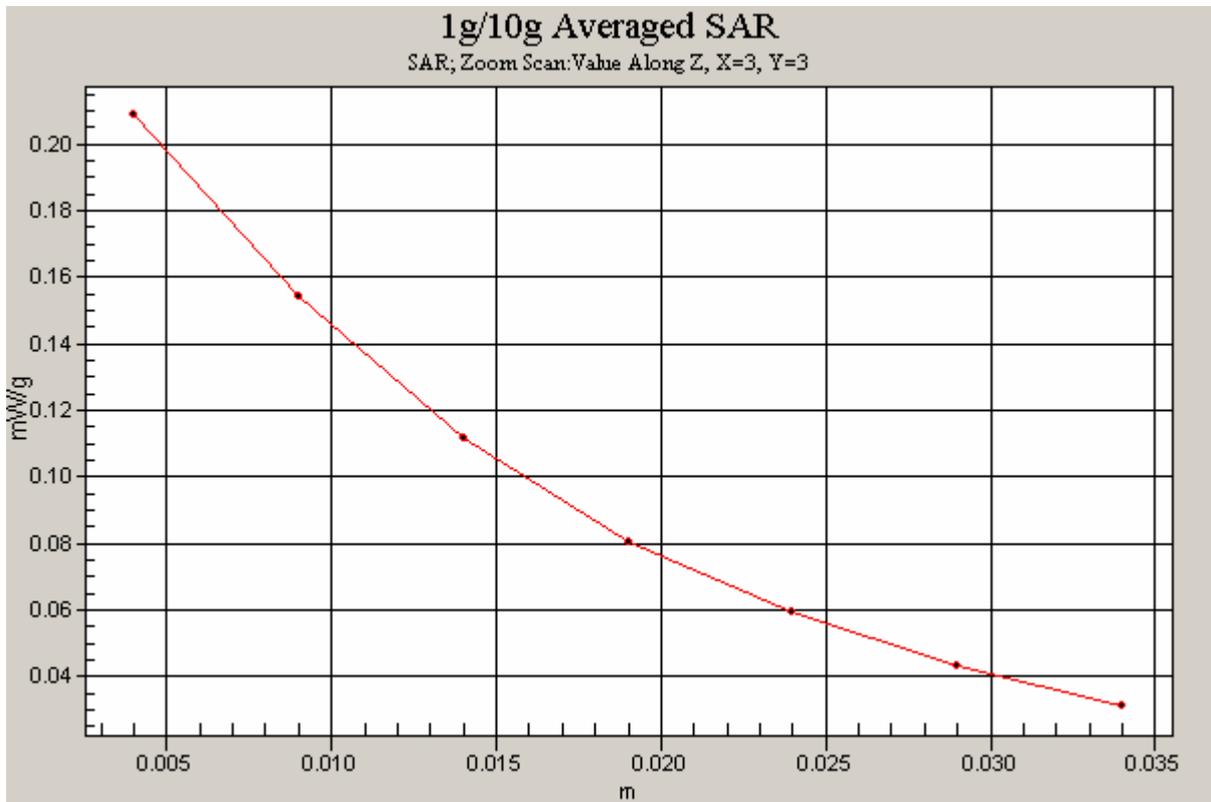
Figure 18 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 128]

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

Communication System: GSM 850+GPRS(1Up); Frequency: 836.6 MHz;Duty Cycle: 1:8

Medium parameters used: f = 837 MHz; σ = 0.996 mho/m; ε_r = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.784 mW/g

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

Reference Value = 22.3 V/m; Power Drift = -0.045 dB

Peak SAR (extrapolated) = 1.46 W/kg

SAR(1 g) = 0.749 mW/g; SAR(10 g) = 0.483 mW/g

Maximum value of SAR (measured) = 0.806 mW/g
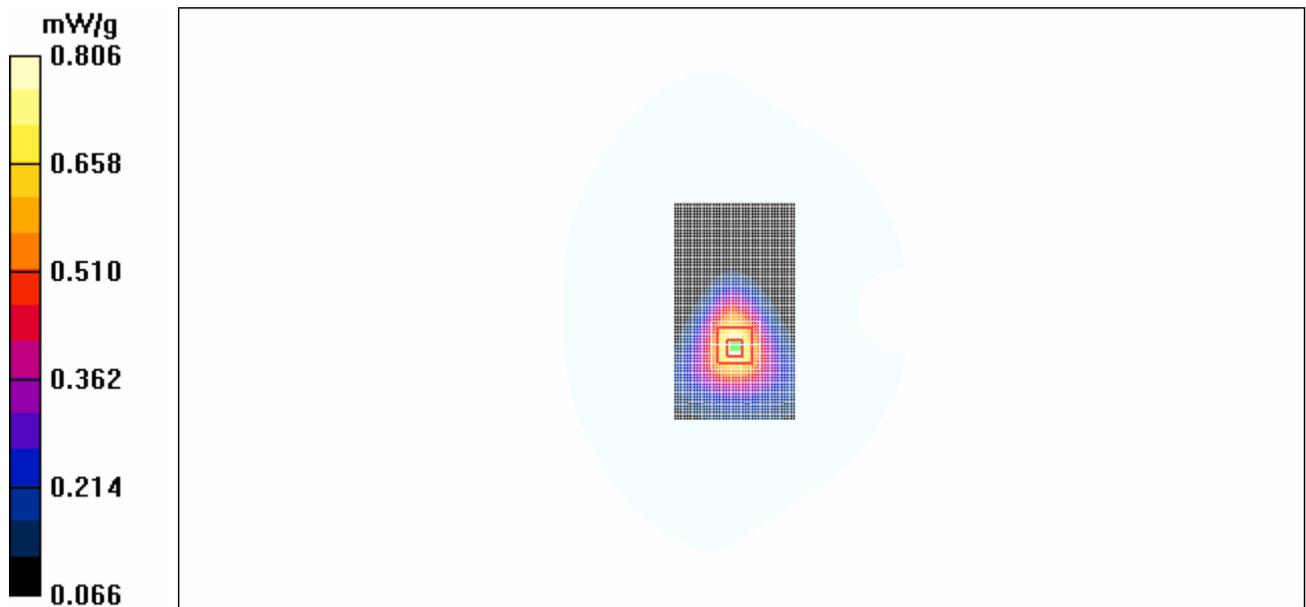
Figure 19 GSM 850 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

Figure 20 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 = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.494 mW/g

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

Reference Value = 19.3 V/m; Power Drift = -0.160 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.451 mW/g; SAR(10 g) = 0.306 mW/g

Maximum value of SAR (measured) = 0.484 mW/g
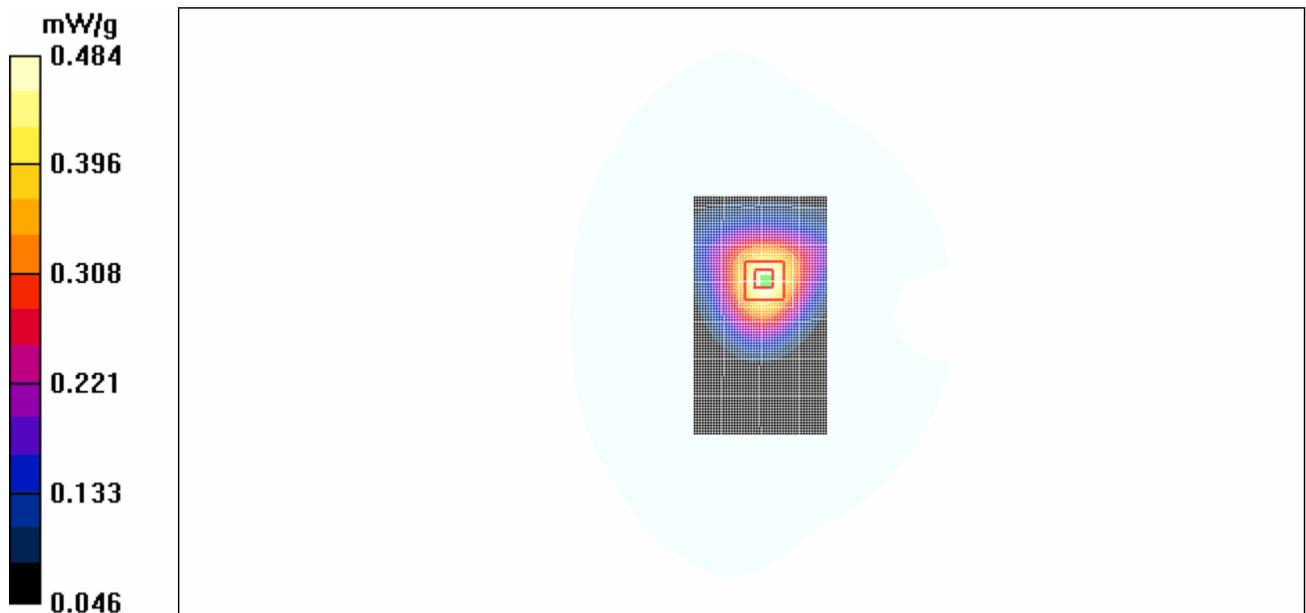
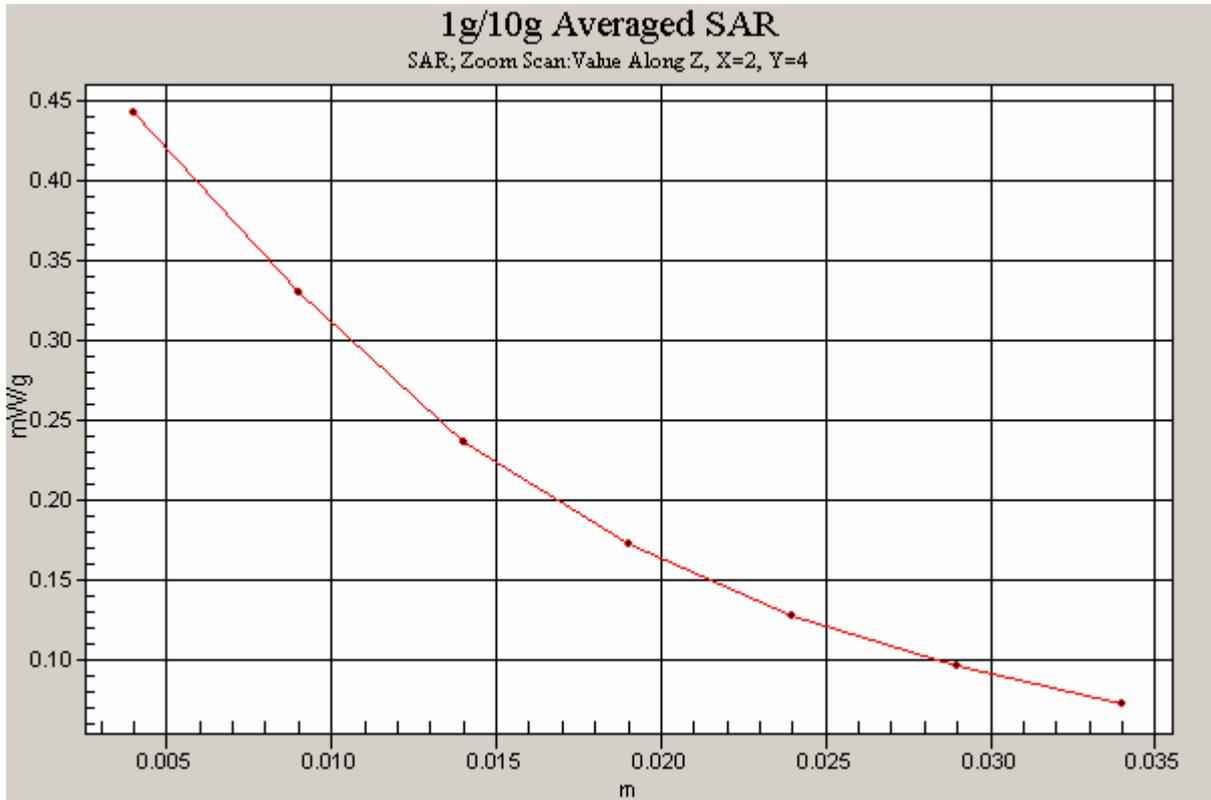**Figure 21 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 190**

Figure 22 Z-Scan at power refernce 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; $ε_r$ = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.086 mW/g

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

Reference Value = 14.0 V/m; Power Drift = -0.181 dB

Peak SAR (extrapolated) = 0.859 W/kg

SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.048 mW/g

Maximum value of SAR (measured) = 0.178 mW/g
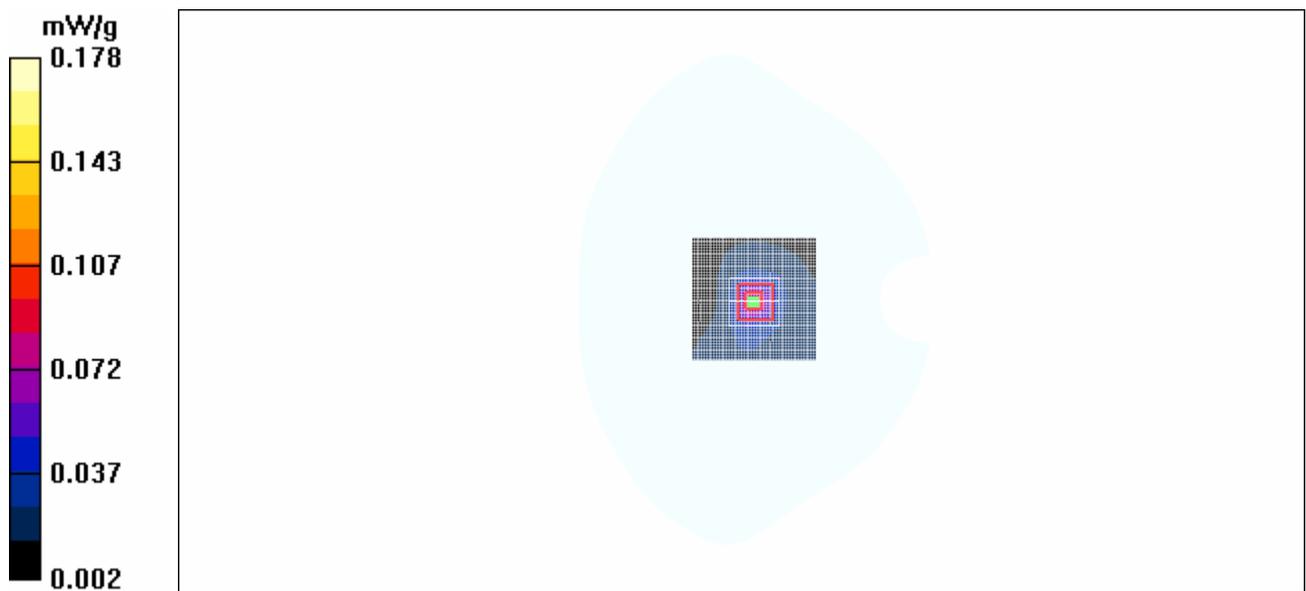
Figure 23 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 190
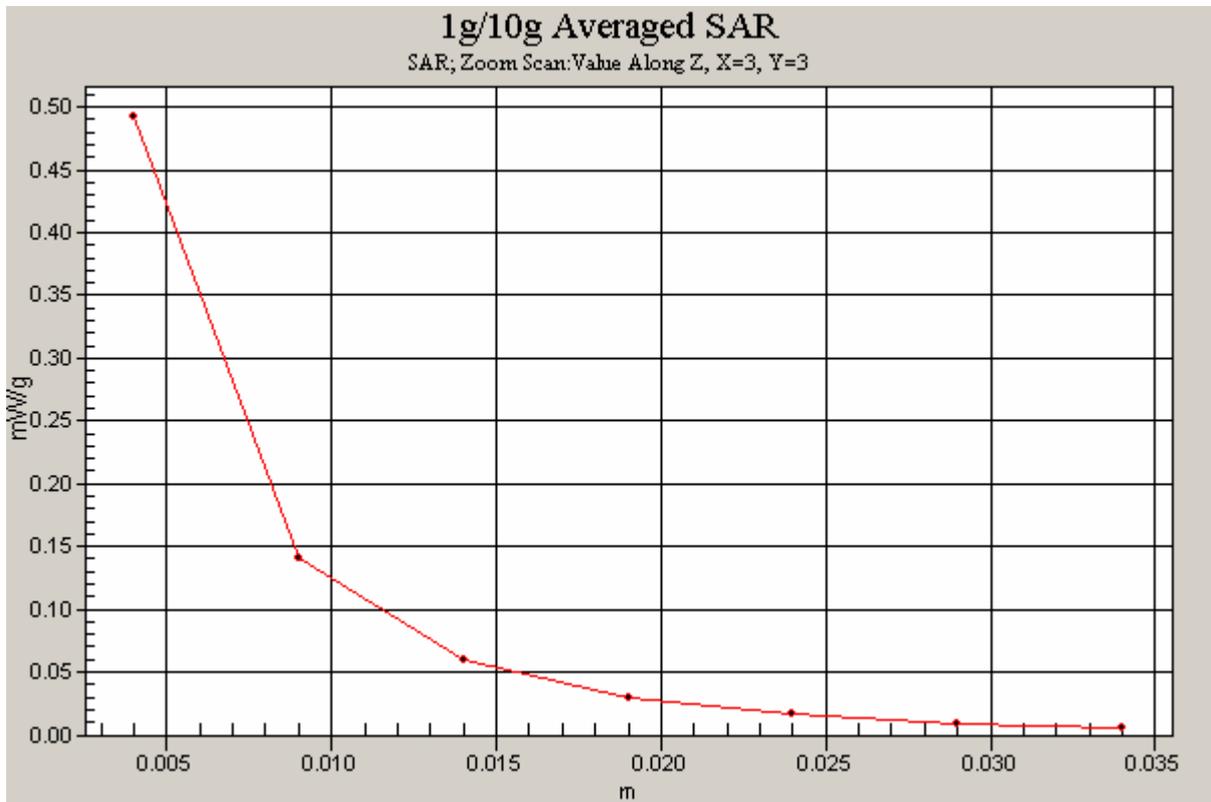
Figure 24 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 190]

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 = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 4 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 11.7 V/m; Power Drift = 0.178 dB

Peak SAR (extrapolated) = 0.481 W/kg

SAR(1 g) = 0.287 mW/g; SAR(10 g) = 0.185 mW/g

Maximum value of SAR (measured) = 0.321 mW/g
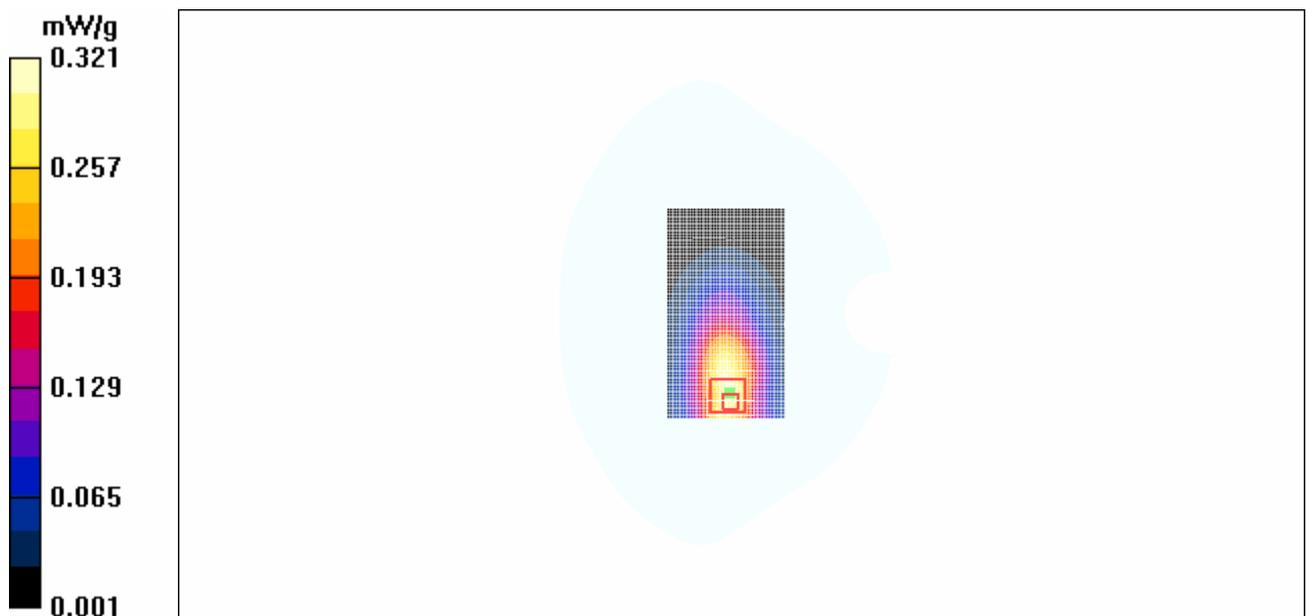
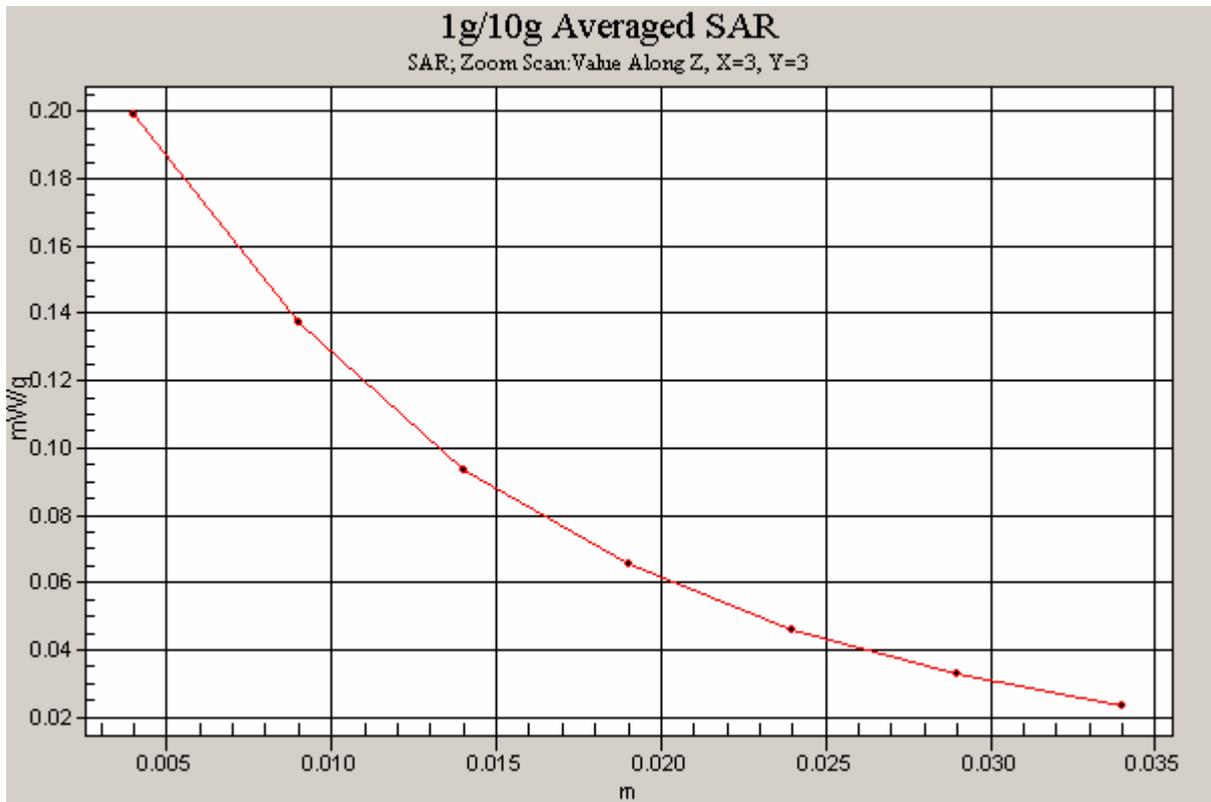**Figure 25 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 190**

Figure 26 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 = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 5 Middle/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.209 mW/g

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

Reference Value = 9.52 V/m; Power Drift = 0.111 dB

Peak SAR (extrapolated) = 0.257 W/kg

SAR(1 g) = 0.195 mW/g; SAR(10 g) = 0.139 mW/g

Maximum value of SAR (measured) = 0.209 mW/g
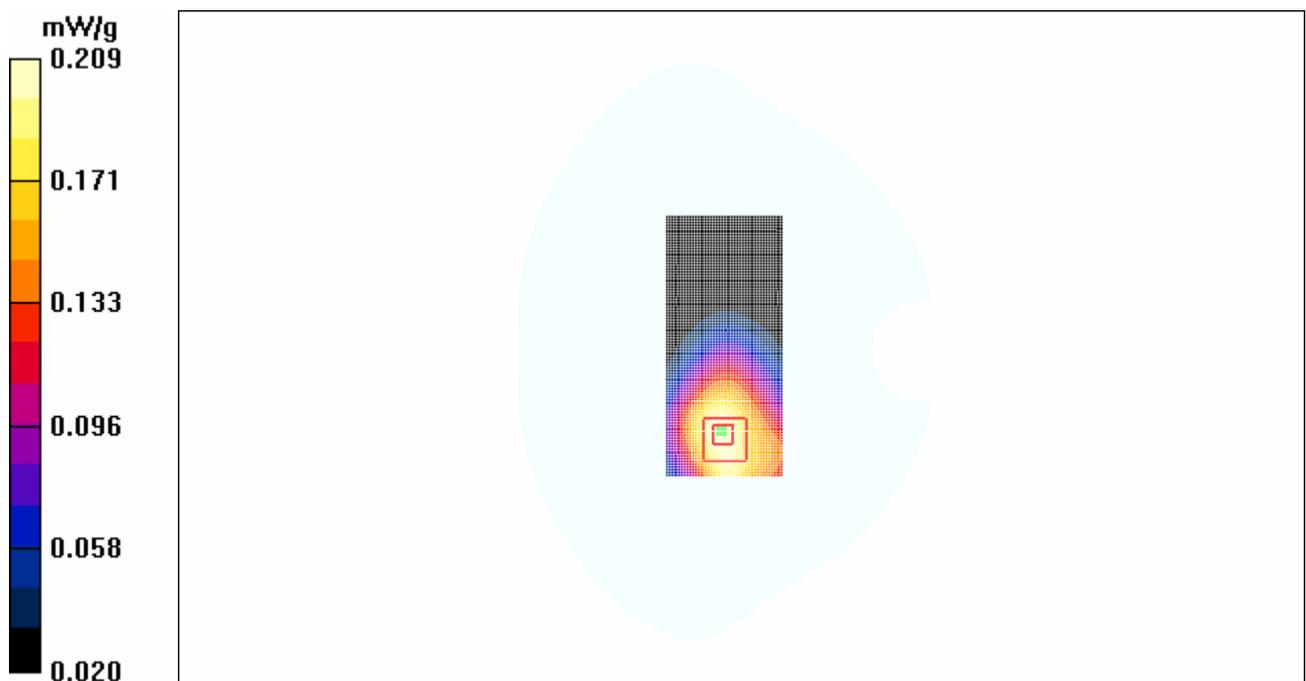
Figure 27 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 190
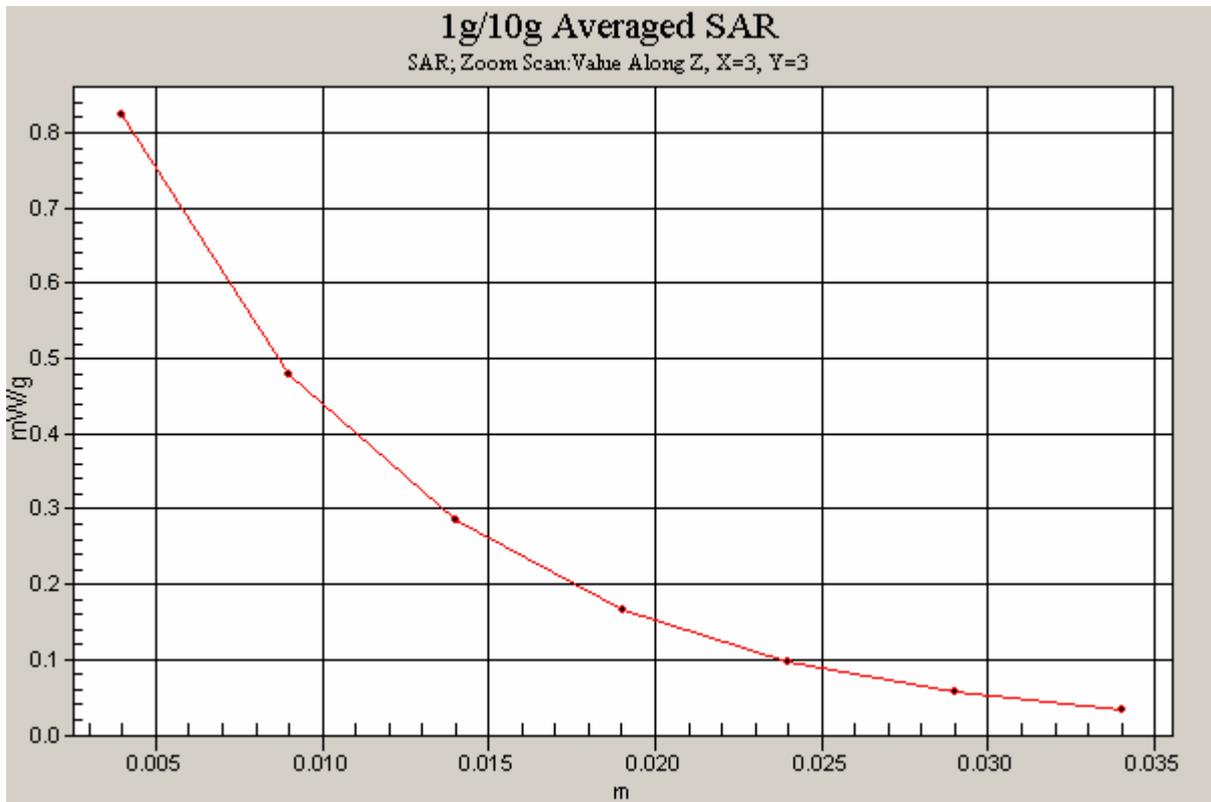
Figure 28 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 190]

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; $ε_r$ = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 6 Middle/Area Scan (41x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.451 mW/g

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

Reference Value = 15.7 V/m; Power Drift = -0.072 dB

Peak SAR (extrapolated) = 0.548 W/kg

SAR(1 g) = 0.414 mW/g; SAR(10 g) = 0.285 mW/g

Maximum value of SAR (measured) = 0.442 mW/g
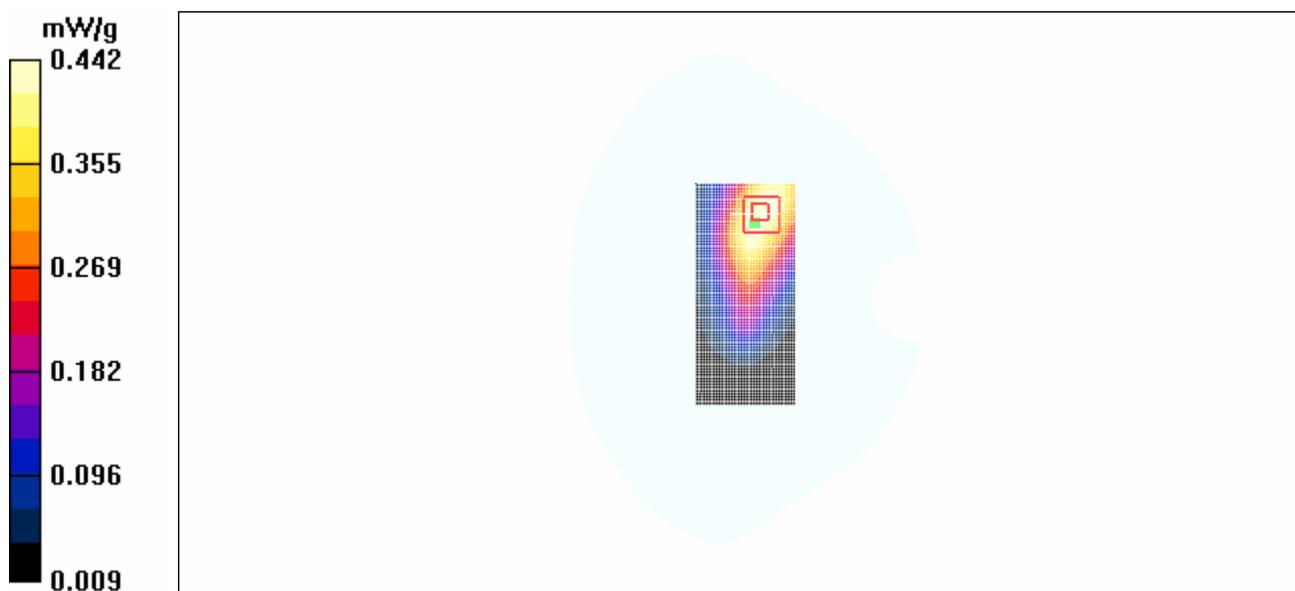
Figure 29 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 190

Figure 30 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 = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.226 mW/g

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

Reference Value = 23.8 V/m; Power Drift = -0.110 dB

Peak SAR (extrapolated) = 2.95 W/kg

SAR(1 g) = 0.449 mW/g; SAR(10 g) = 0.130 mW/g

Maximum value of SAR (measured) = 0.493 mW/g
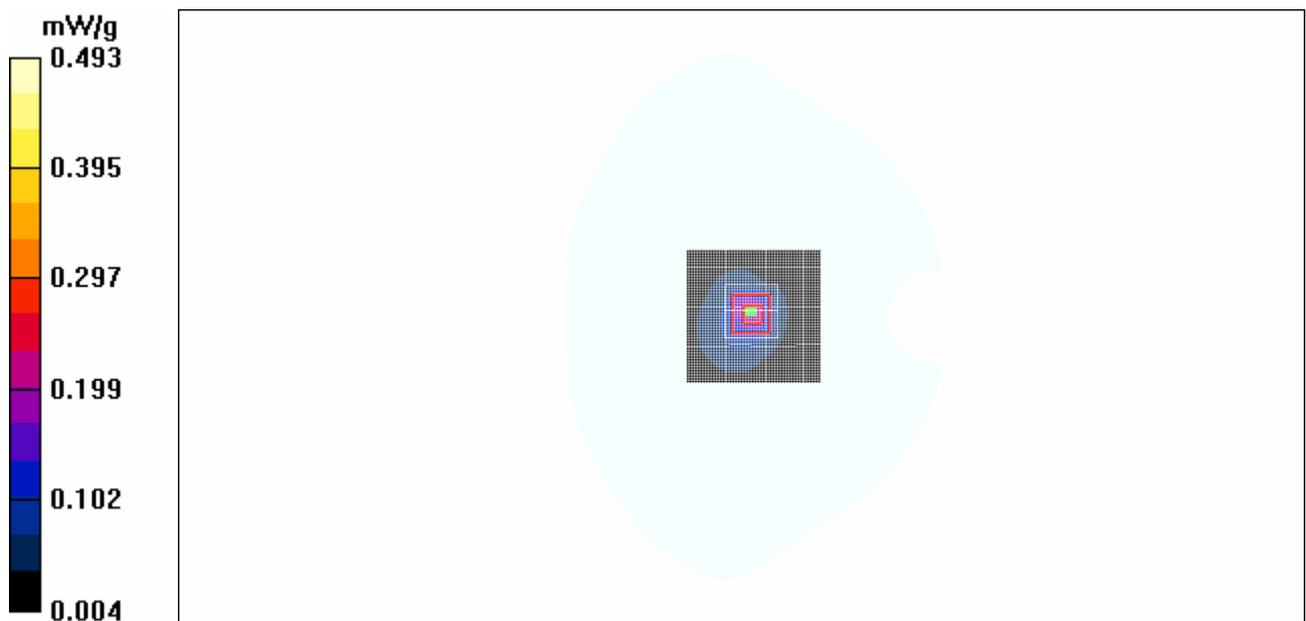
Figure 31 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 190

Figure 32 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 = 56; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.191 mW/g

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

Reference Value = 10.7 V/m; Power Drift = 0.168 dB

Peak SAR (extrapolated) = 0.254 W/kg

SAR(1 g) = 0.181 mW/g; SAR(10 g) = 0.118 mW/g

Maximum value of SAR (measured) = 0.199 mW/g
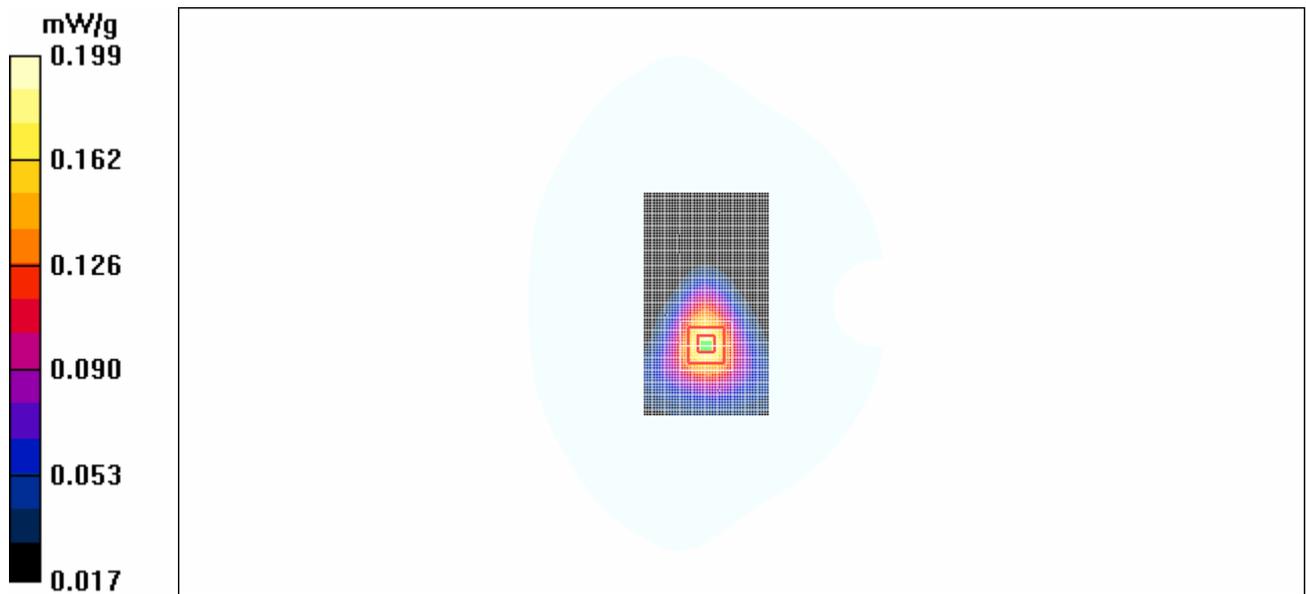
Figure 33 GSM 850 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190
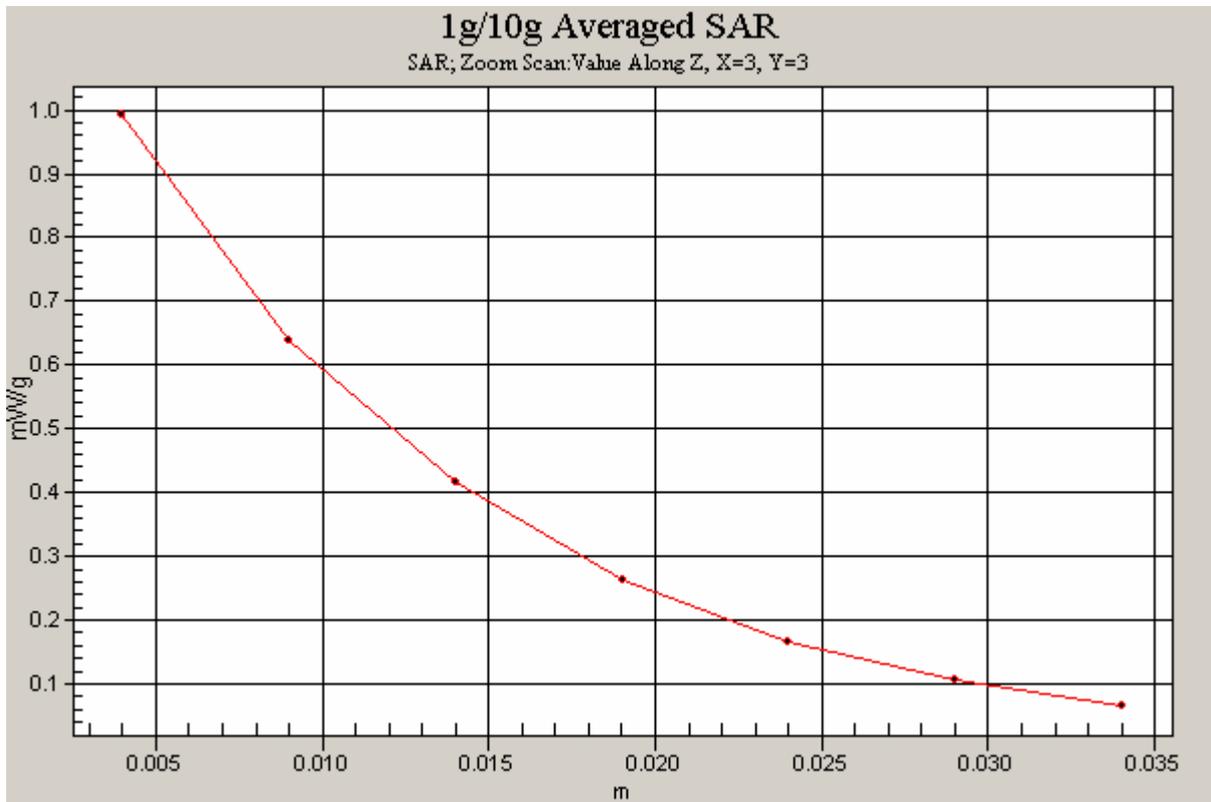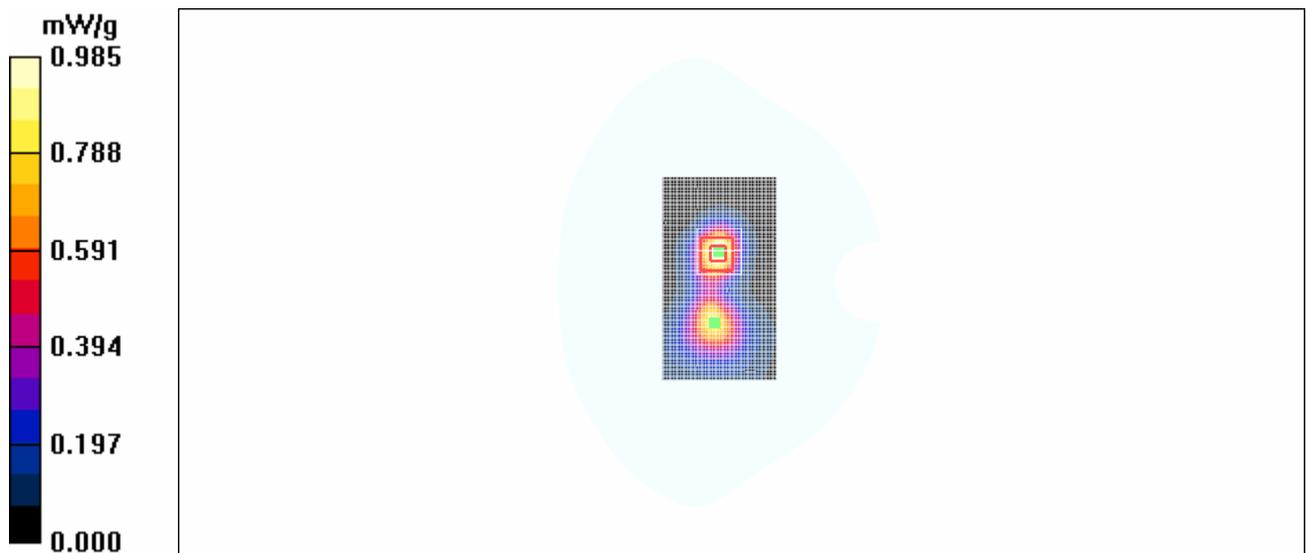
Figure 34 Z-Scan at power reference point [GSM 850 EGPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.845 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 = -0.156 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.742 mW/g; SAR(10 g) = 0.391 mW/g

Maximum value of SAR (measured) = 0.823 mW/g
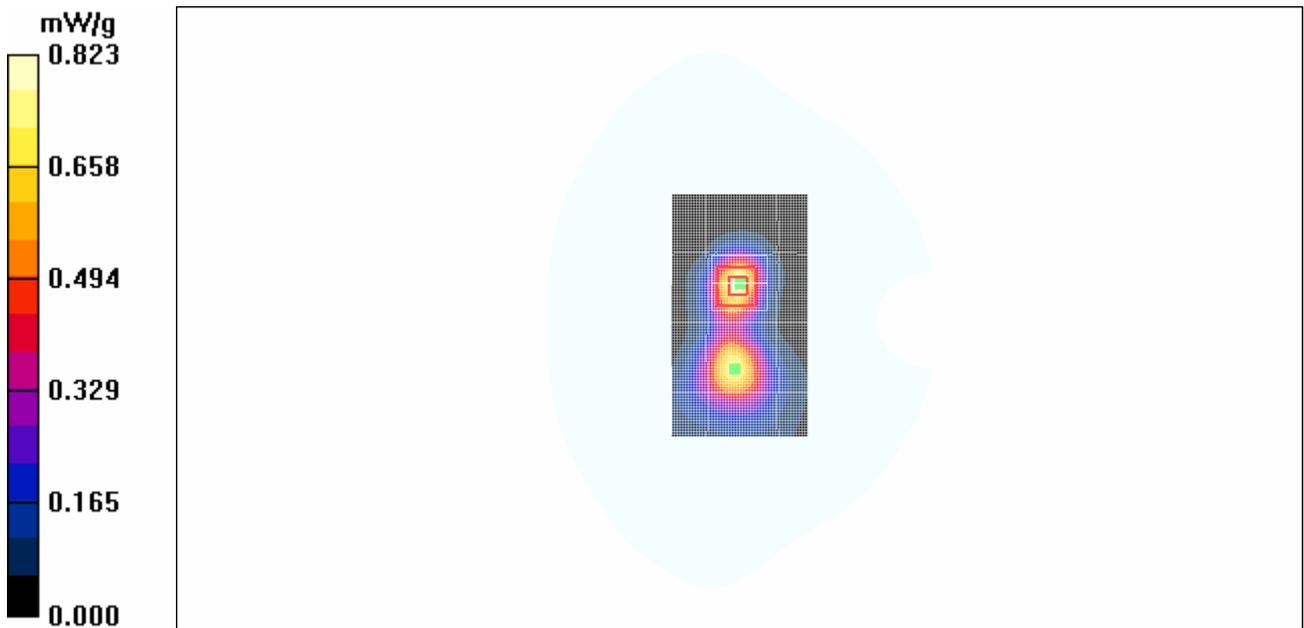
Figure 35 GSM 1900 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661
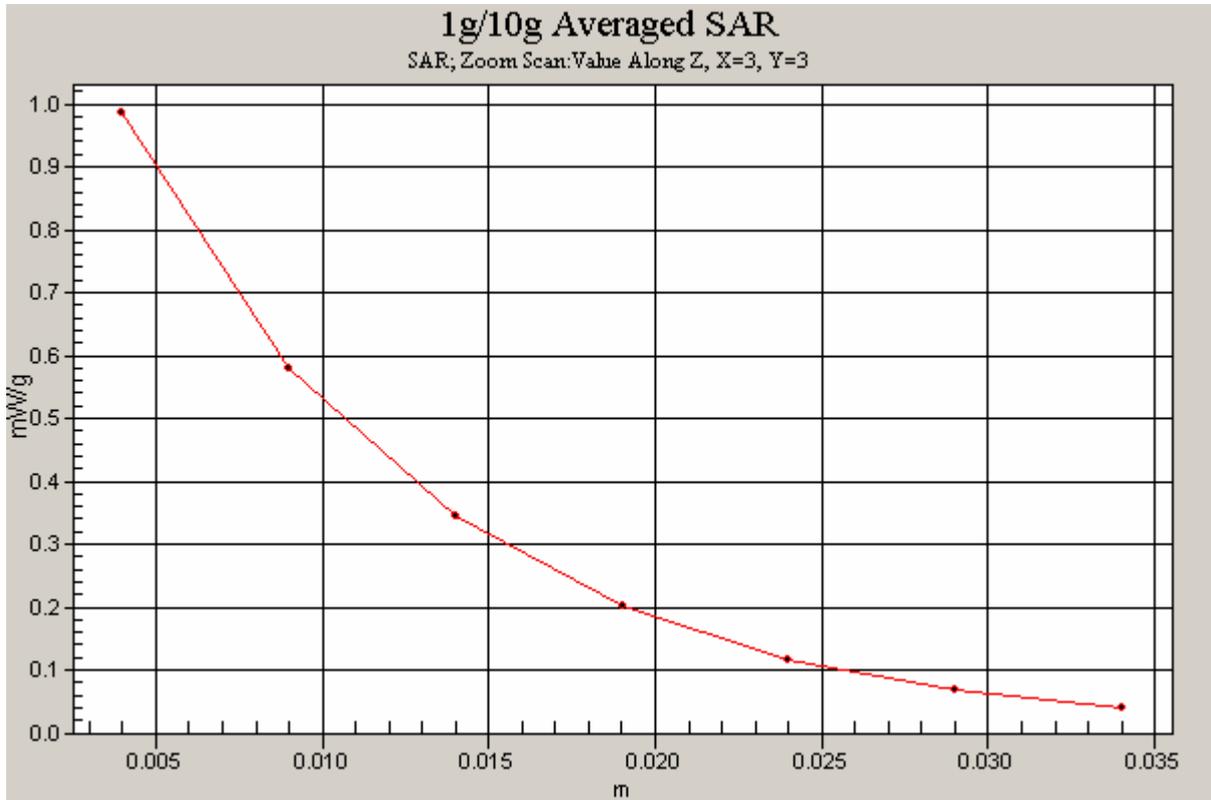
Figure 36 Z-Scan at power reference point [GSM 1900 GPRS(4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.800 mW/g

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

Reference Value = 17.3 V/m; Power Drift = 0.006 dB

Peak SAR (extrapolated) = 0.910 W/kg

SAR(1 g) = 0.611 mW/g; SAR(10 g) = 0.345 mW/g

Maximum value of SAR (measured) = 0.715 mW/g
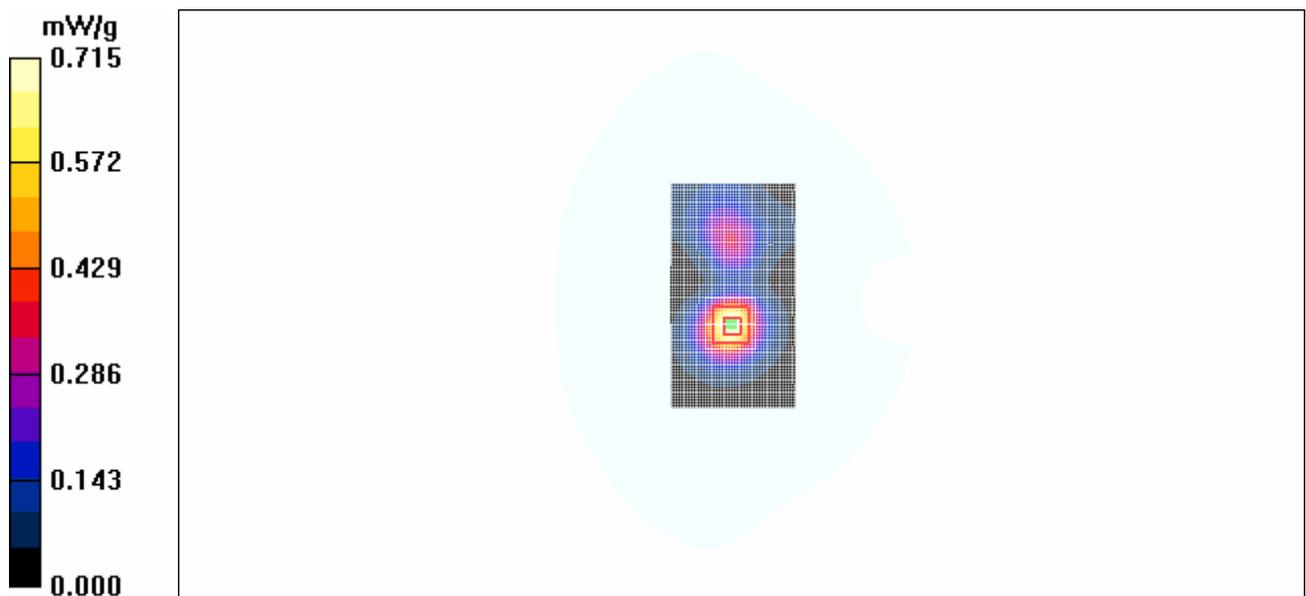
Figure 37 GSM 1900 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 661
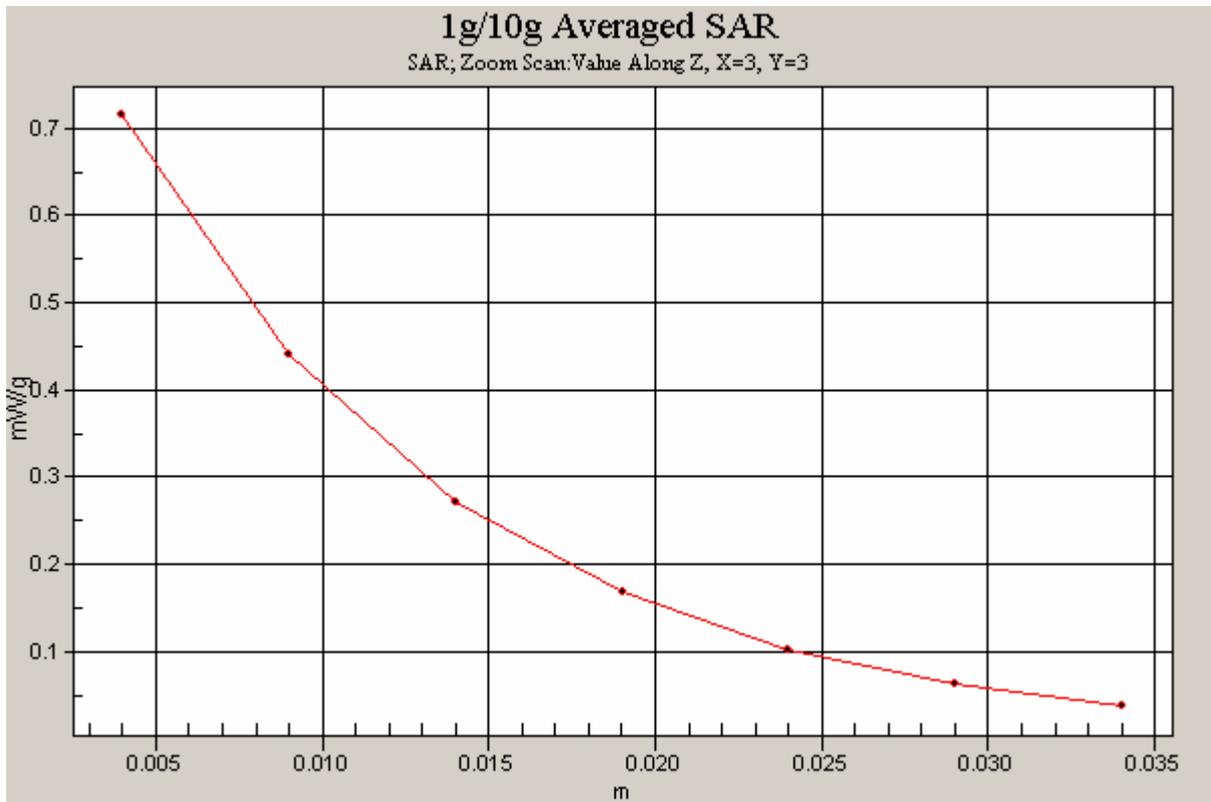
Figure 38 Z-Scan at power reference point [GSM 1900 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 661]

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

Communication System: GSM 1900+GPRS(3Up); Frequency: 1909.8 MHz;Duty Cycle: 1:2.67

Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 1.08 mW/g

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

Reference Value = 19.7 V/m; Power Drift = 0.166 dB

Peak SAR (extrapolated) = 1.42 W/kg

SAR(1 g) = 0.920 mW/g; SAR(10 g) = 0.540 mW/g

Maximum value of SAR (measured) = 0.992 mW/g
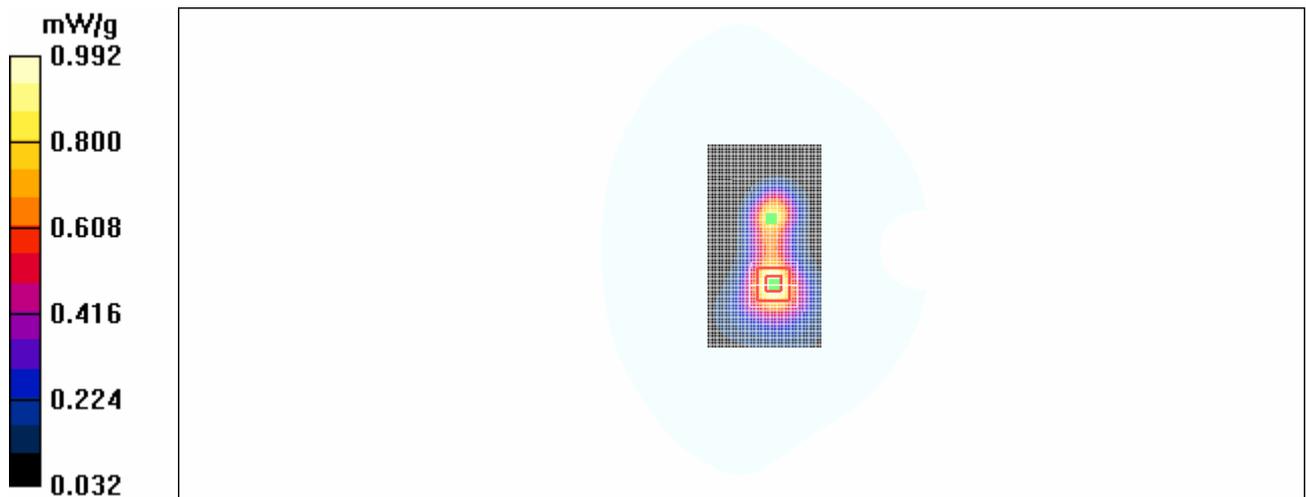
Figure 39 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 810
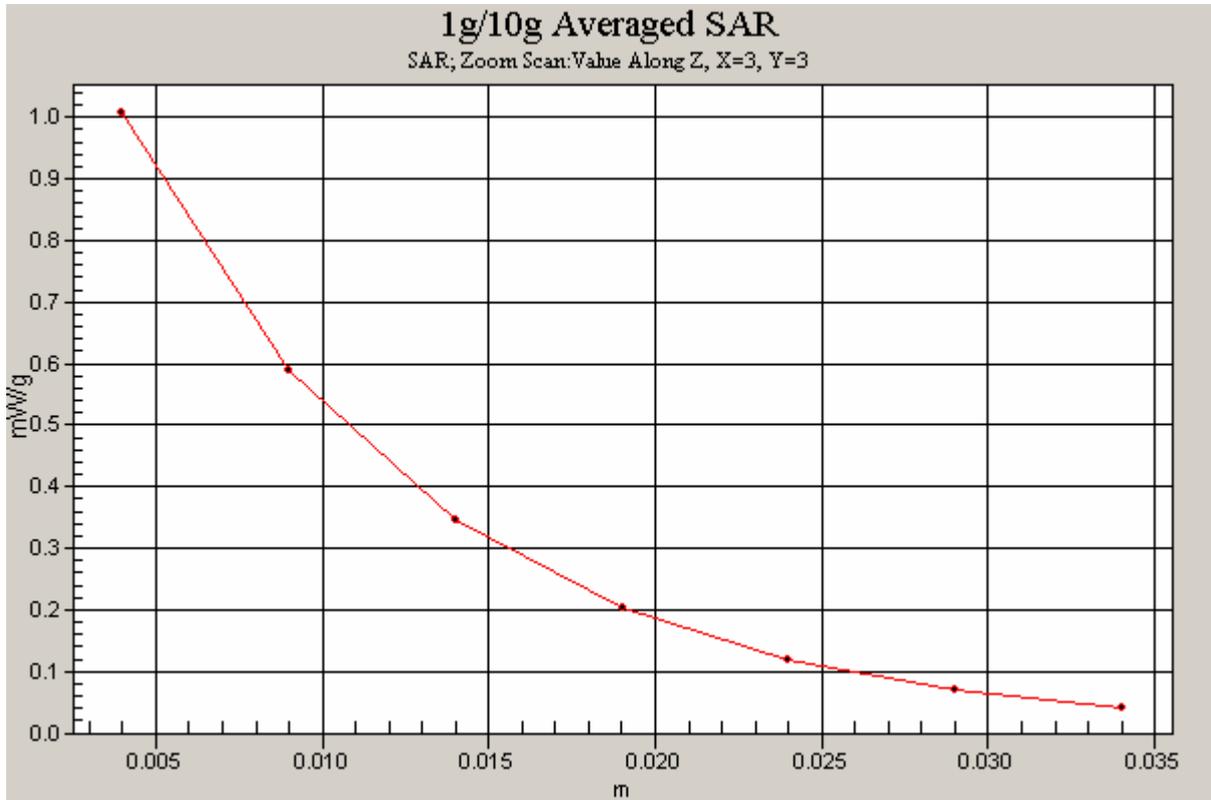
Figure 40 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 810]

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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 1.14 mW/g

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

Reference Value = 16.8 V/m; Power Drift = 0.079 dB

Peak SAR (extrapolated) = 1.56 W/kg

SAR(1 g) = 0.892 mW/g; SAR(10 g) = 0.472 mW/g

Maximum value of SAR (measured) = 0.985 mW/g

Figure 41 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661
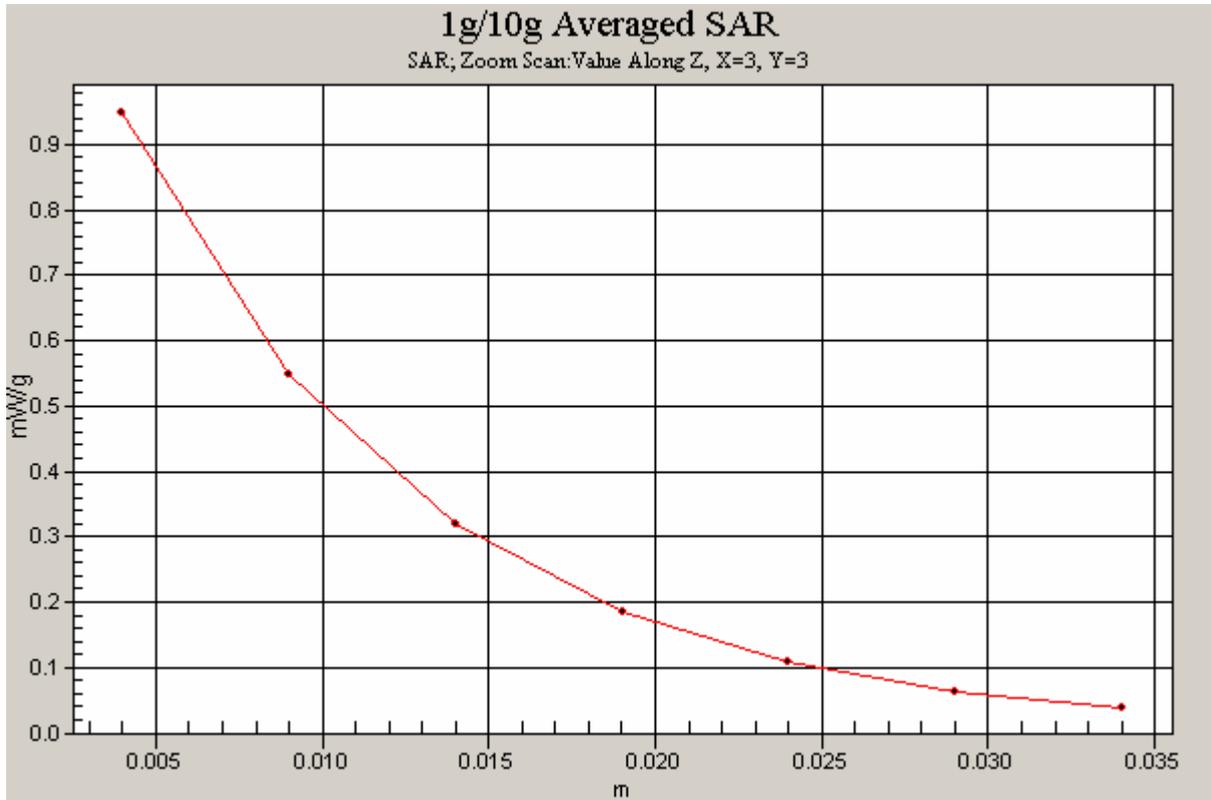
Figure 42 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

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

Communication System: GSM 1900+GPRS(3Up); Frequency: 1850.2 MHz;Duty Cycle: 1:2.67

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.749 mW/g

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

Reference Value = 19.1 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.727 mW/g; SAR(10 g) = 0.432 mW/g

Maximum value of SAR (measured) = 0.804 mW/g
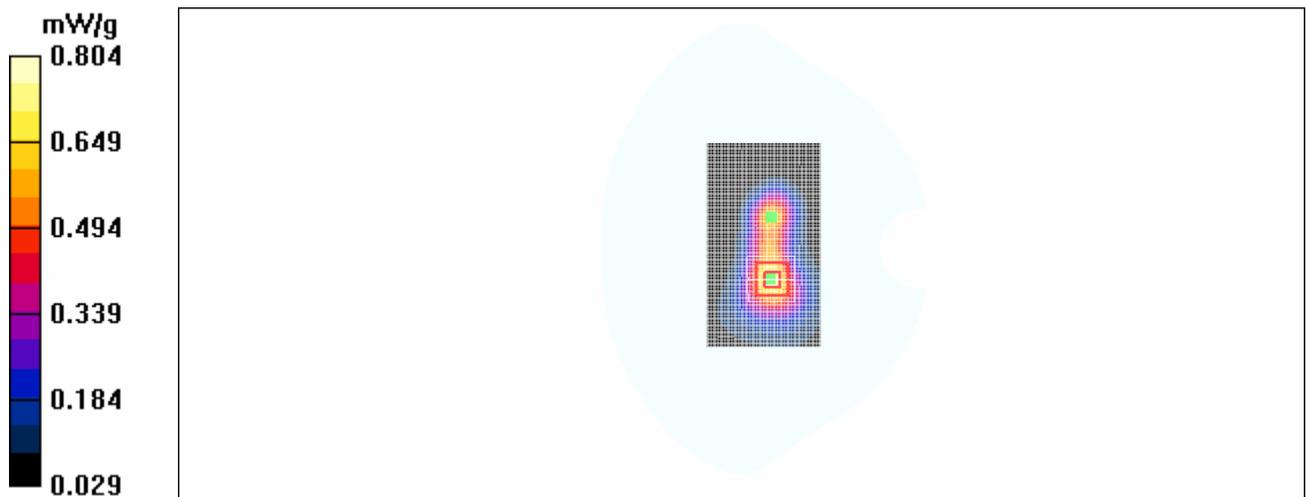
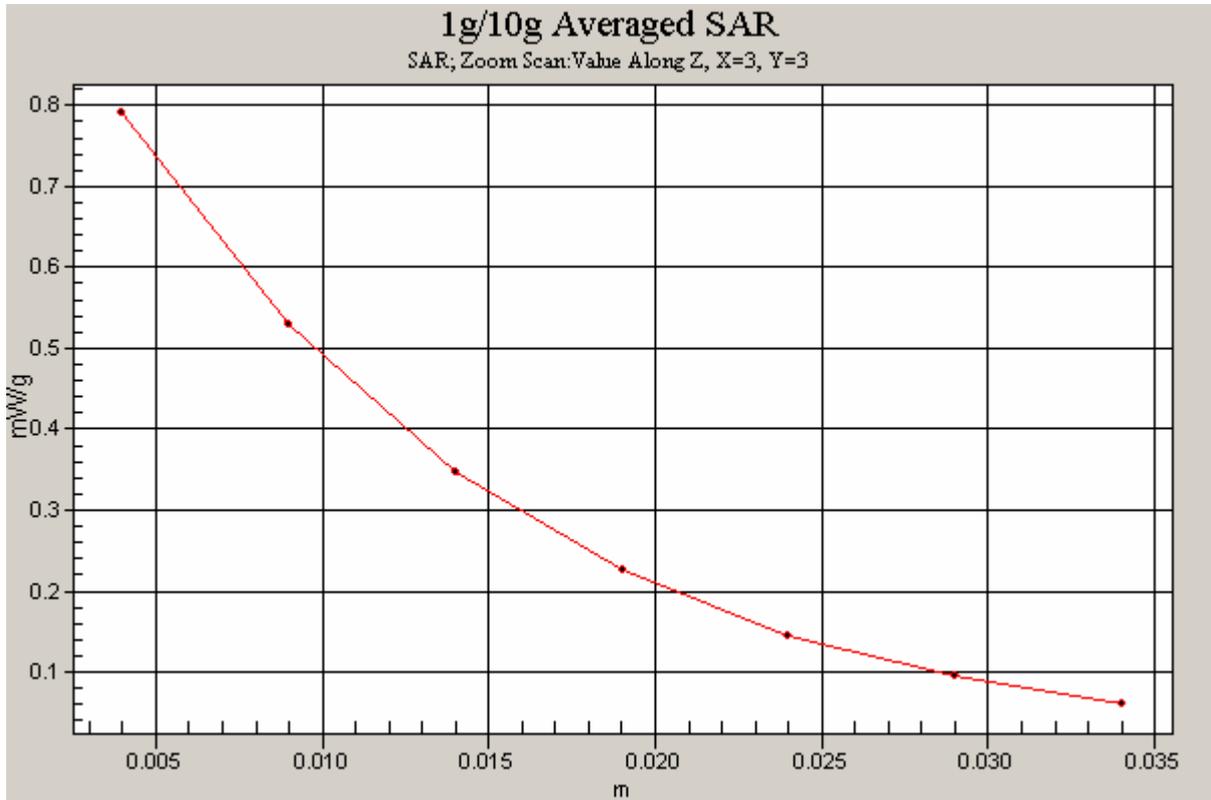**Figure 43 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 512**
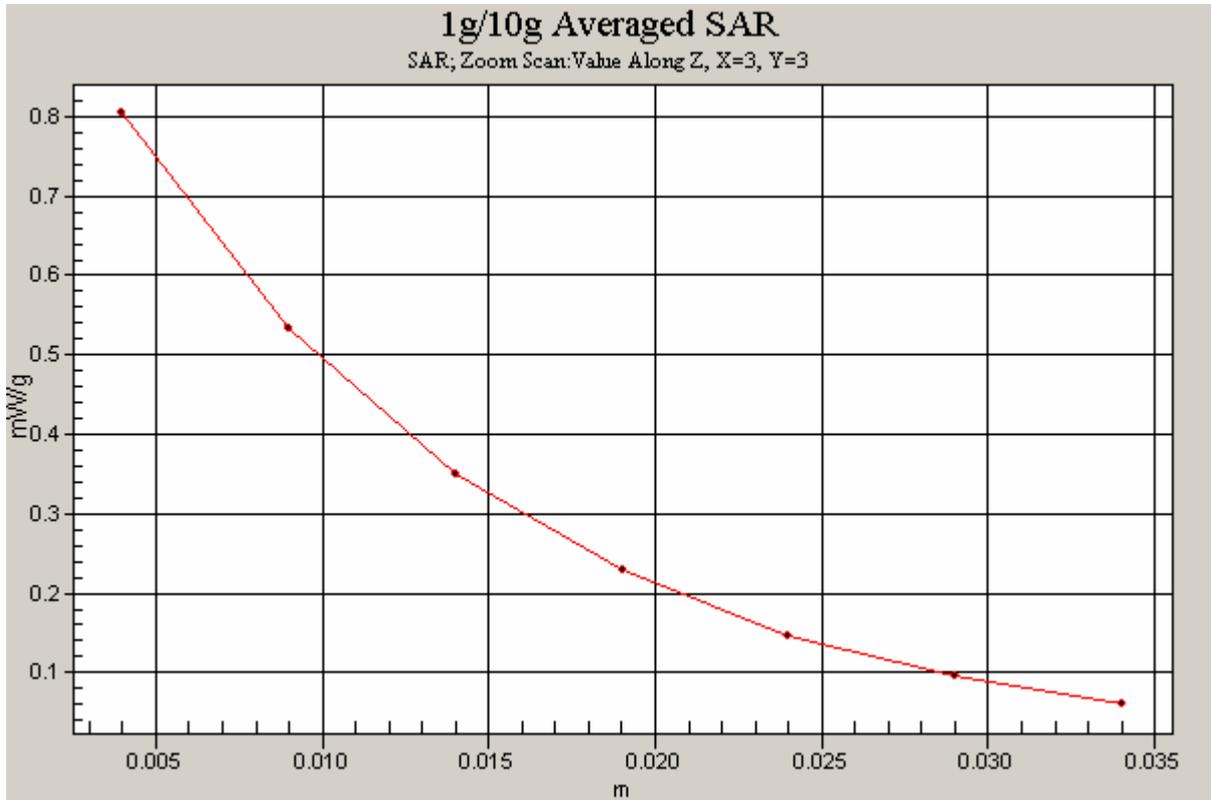
Figure 44 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 512]

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 = 52.5; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 1.07 mW/g

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

Reference Value = 20.0 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 0.915 mW/g; SAR(10 g) = 0.485 mW/g

Maximum value of SAR (measured) = 1.01 mW/g
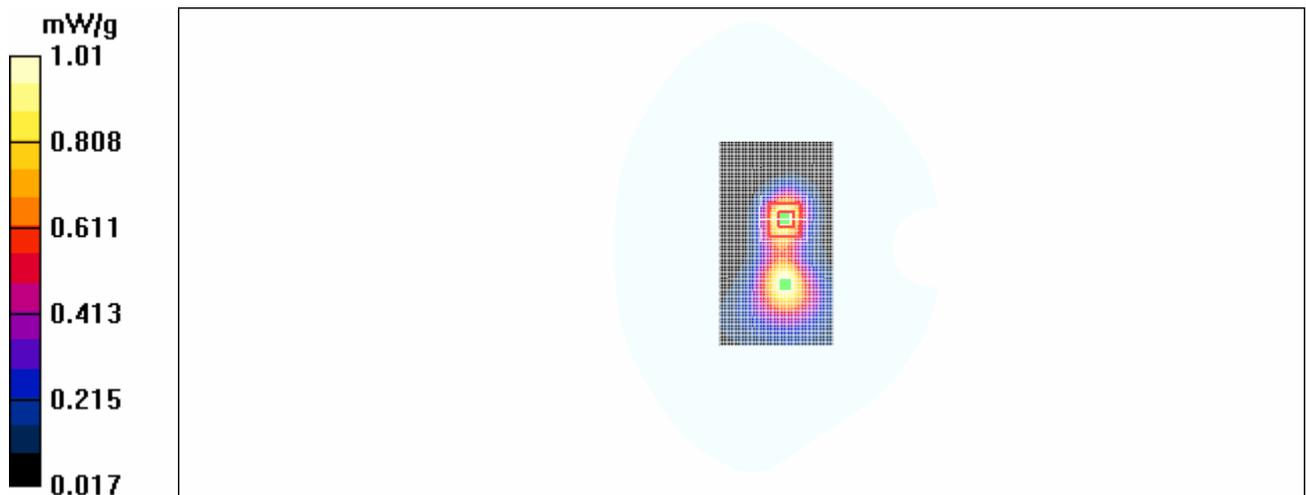
Figure 45 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 810
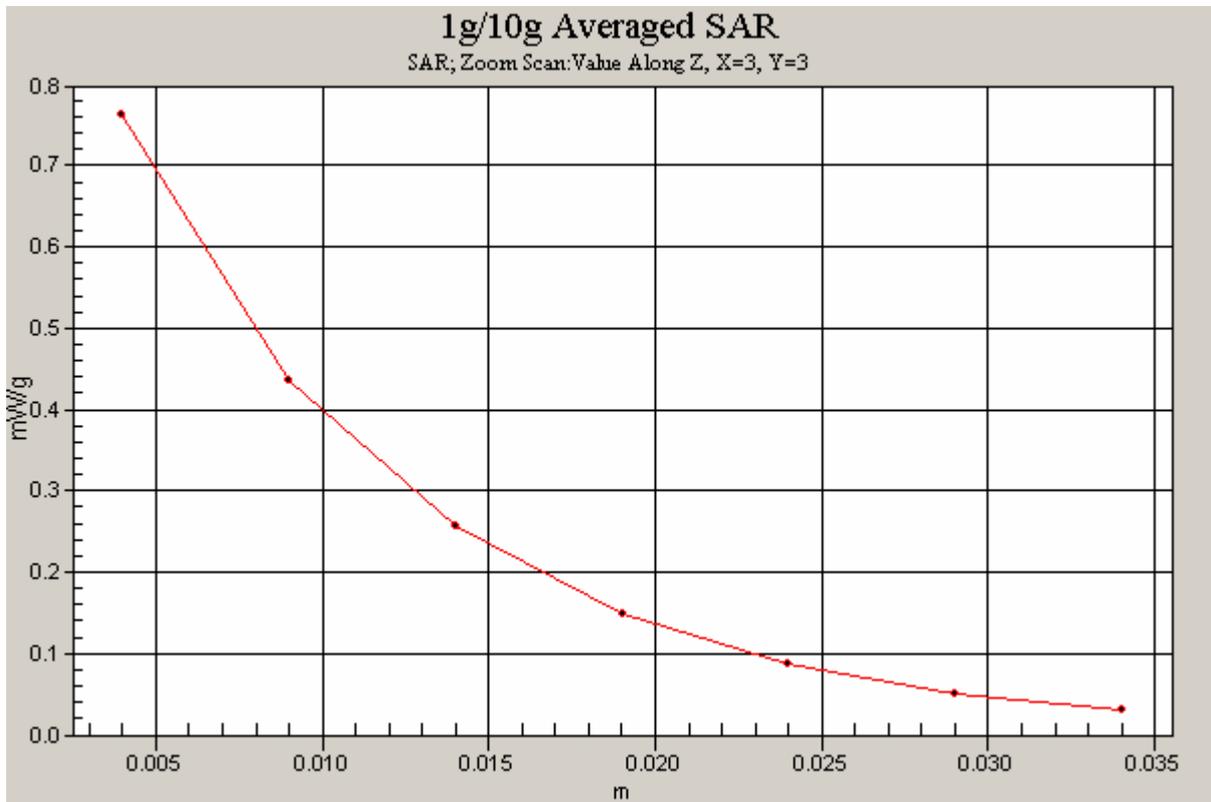
Figure 46 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 810]

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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 1.19 mW/g

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

Reference Value = 17.2 V/m; Power Drift = 0.105 dB

Peak SAR (extrapolated) = 1.51 W/kg

SAR(1 g) = 0.853 mW/g; SAR(10 g) = 0.452 mW/g

Maximum value of SAR (measured) = 0.947 mW/g
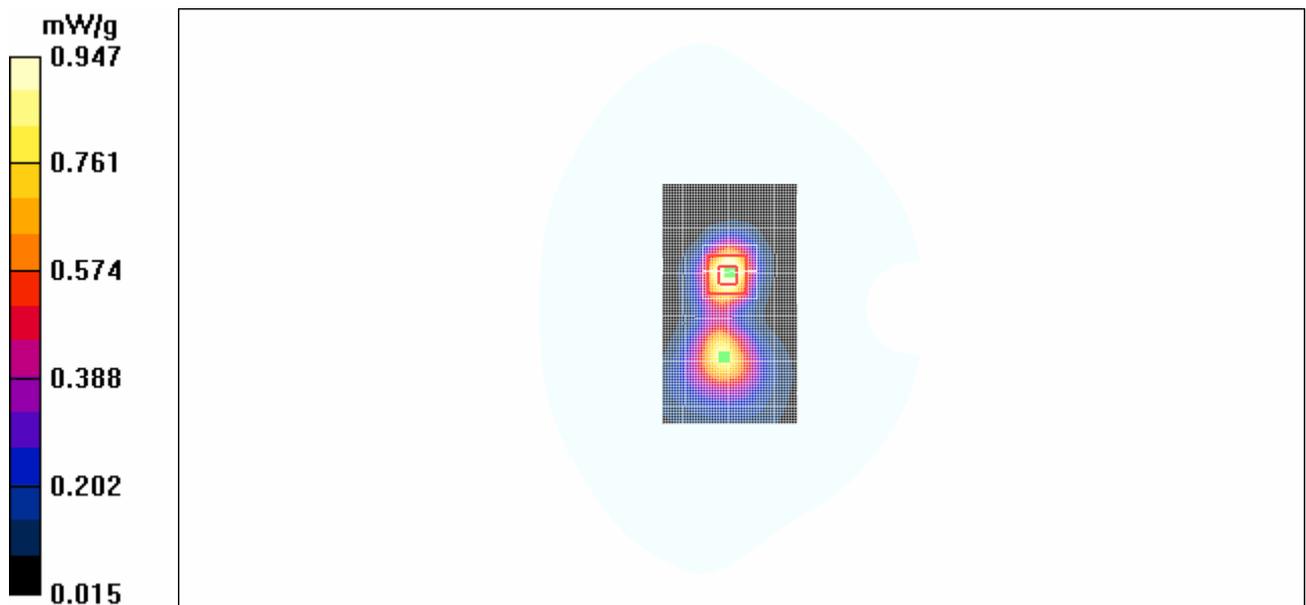
Figure 47 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661
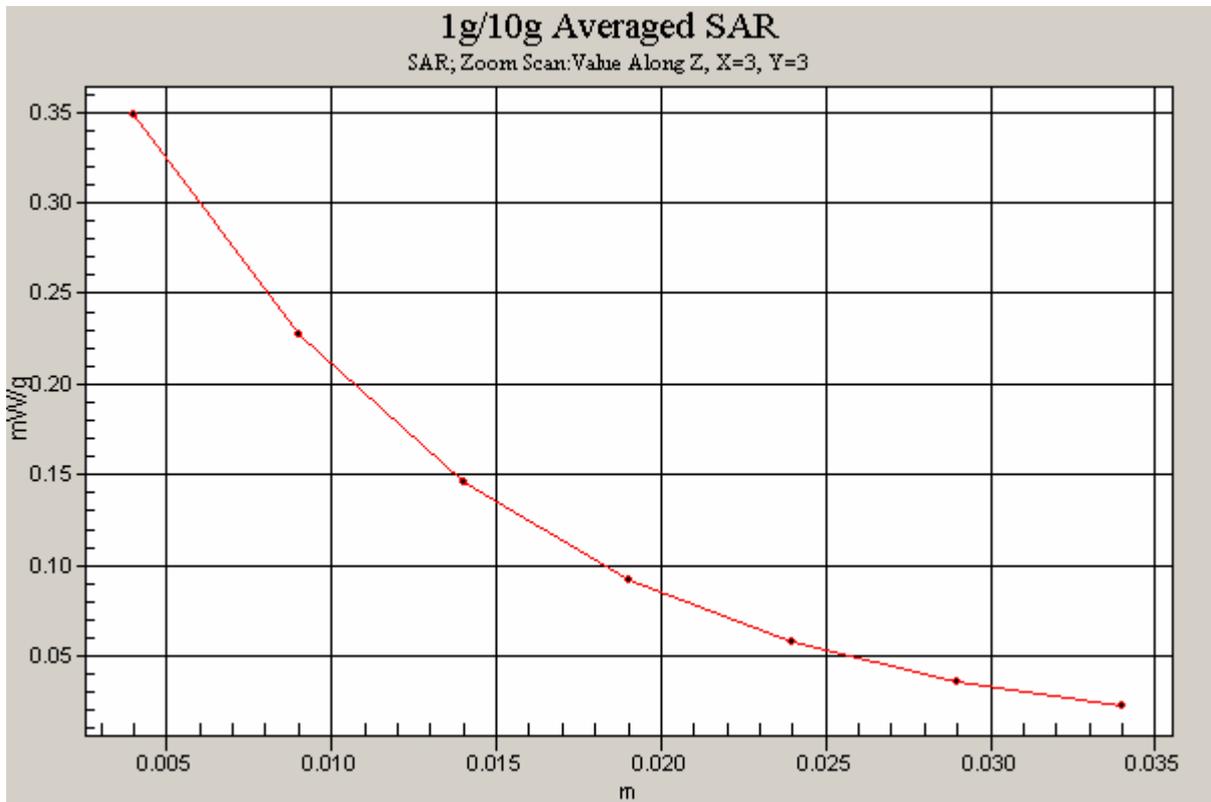
Figure 48 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.845 mW/g

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

Reference Value = 19.6 V/m; Power Drift = -0.159 dB

Peak SAR (extrapolated) = 1.08 W/kg

SAR(1 g) = 0.716 mW/g; SAR(10 g) = 0.428 mW/g

Maximum value of SAR (measured) = 0.790 mW/g
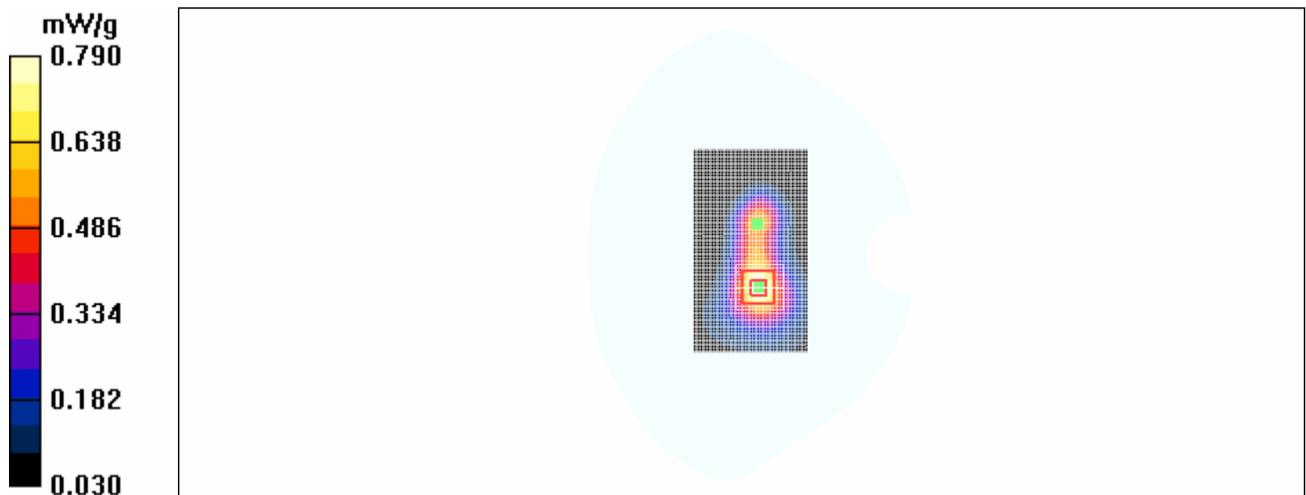
Figure 49 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 512

Figure 50 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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.849 mW/g

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

Reference Value = 15.3 V/m; Power Drift = 0.132 dB

Peak SAR (extrapolated) = 1.35 W/kg

SAR(1 g) = 0.681 mW/g; SAR(10 g) = 0.362 mW/g

Maximum value of SAR (measured) = 0.761 mW/g
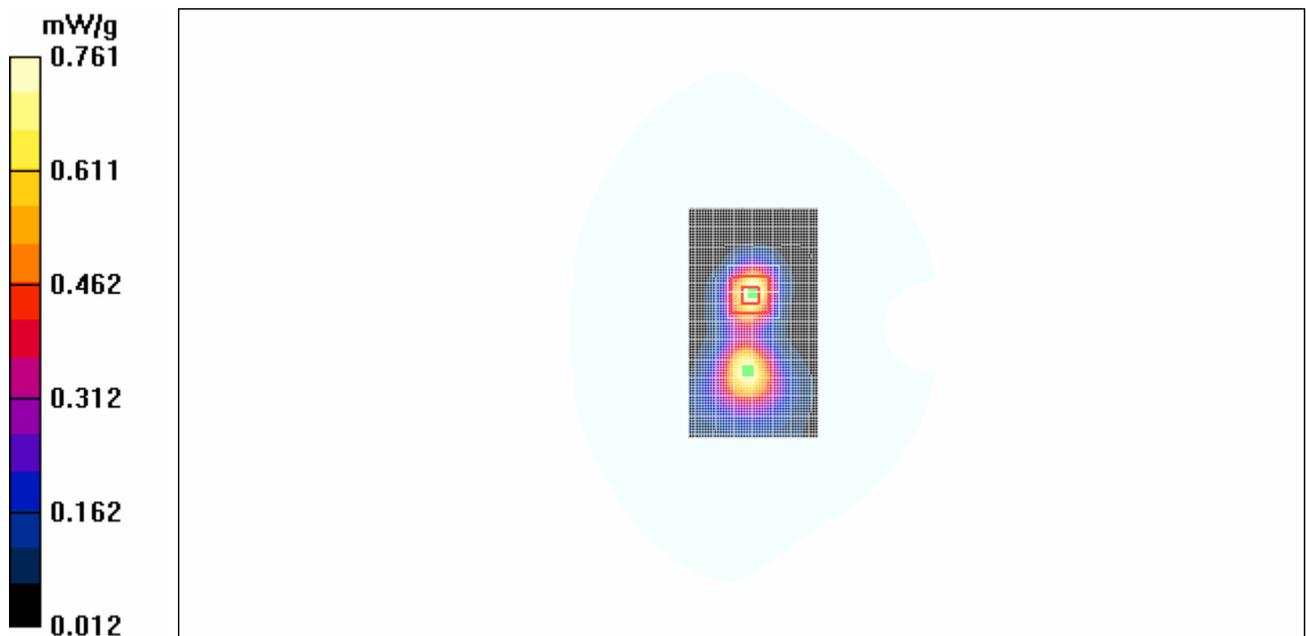
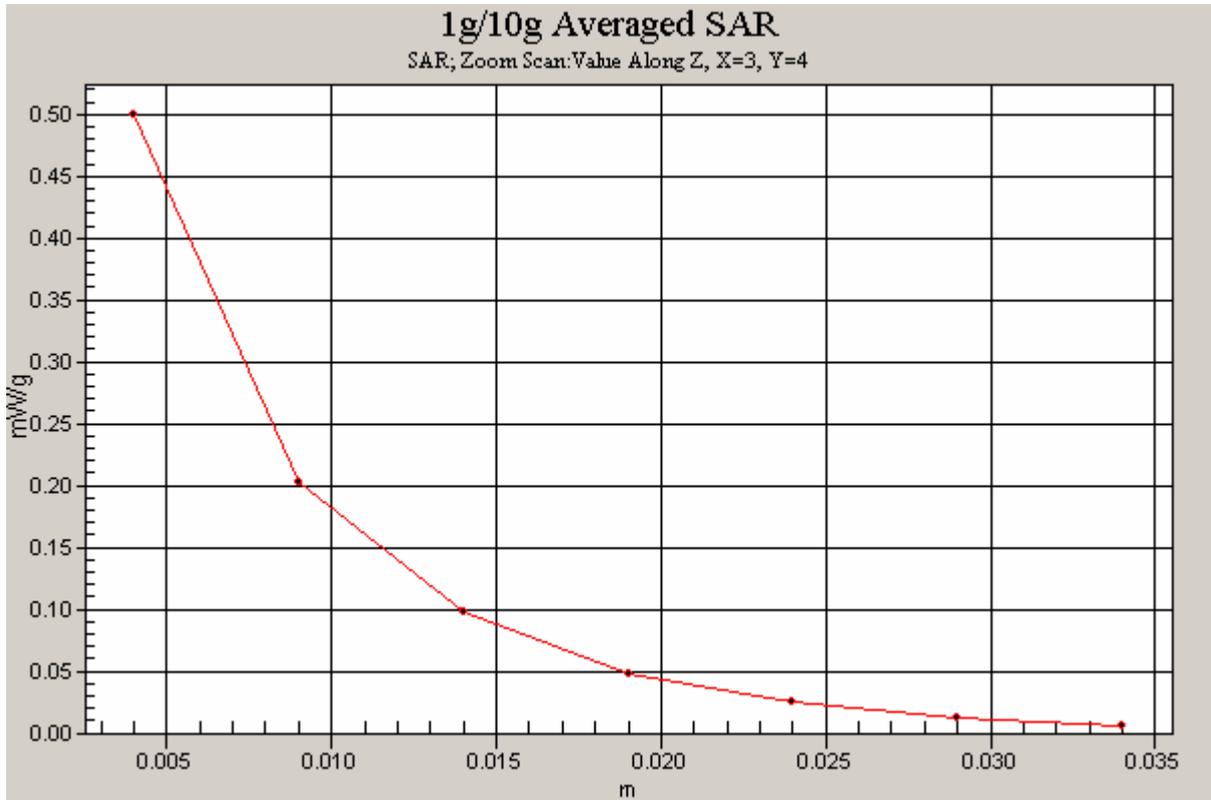**Figure 51 GSM 1900 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 661**

**Figure 52 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 (3timeslots in uplink) with BenQ Joy book S72 Test Position 2 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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.352 mW/g

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

Reference Value = 10.1 V/m; Power Drift = -0.027 dB

Peak SAR (extrapolated) = 0.486 W/kg

SAR(1 g) = 0.316 mW/g; SAR(10 g) = 0.187 mW/g

Maximum value of SAR (measured) = 0.348 mW/g
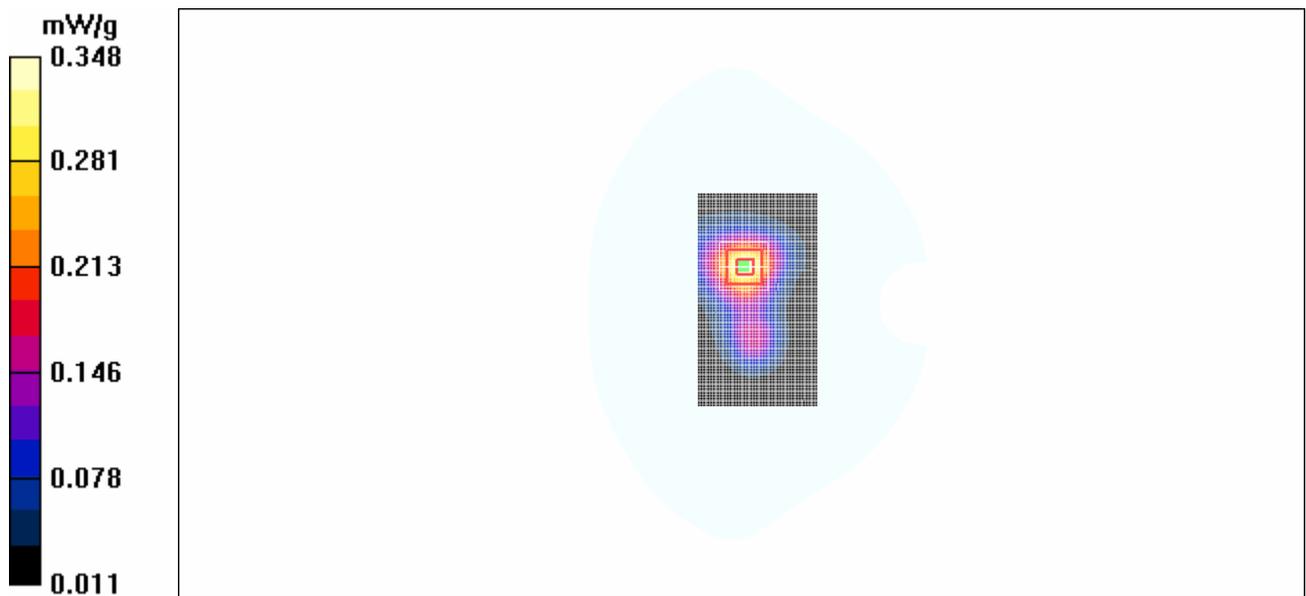
Figure 53 GSM 1900 GPRS (3timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 661
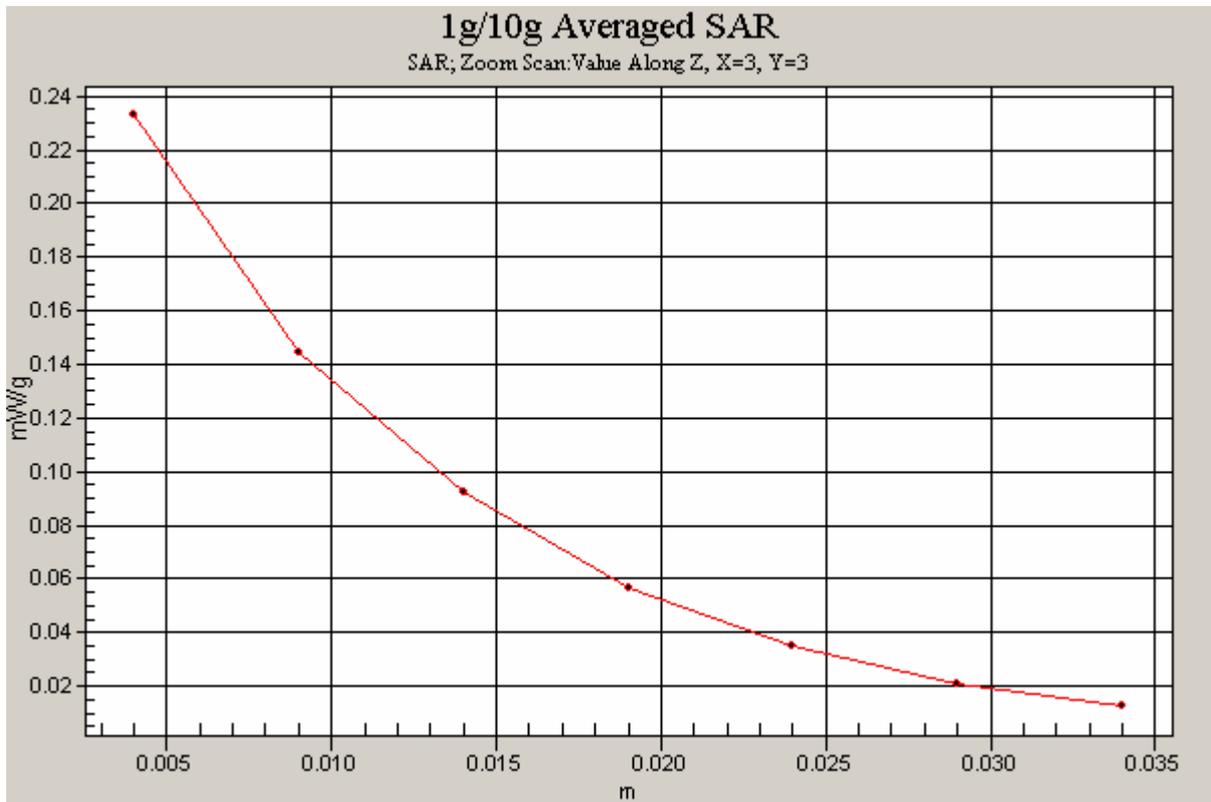
Figure 54 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 661]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 3 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; $ε_r$ = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.401 mW/g

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

Reference Value = 17.0 V/m; Power Drift = 0.053 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.425 mW/g; SAR(10 g) = 0.200 mW/g

Maximum value of SAR (measured) = 0.500 mW/g
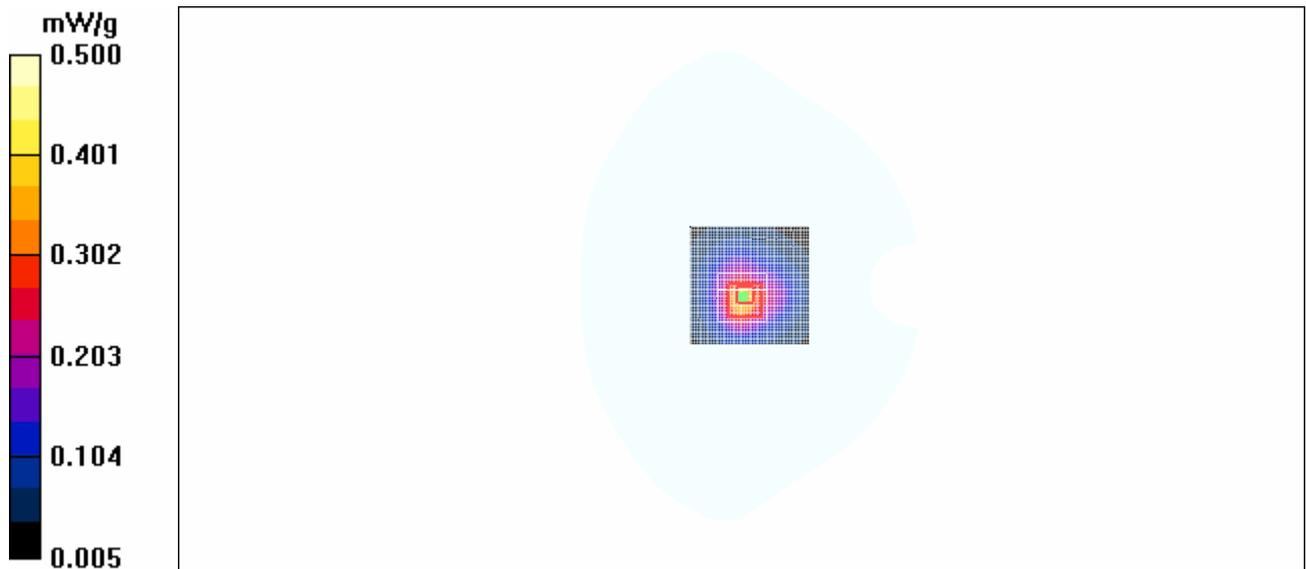
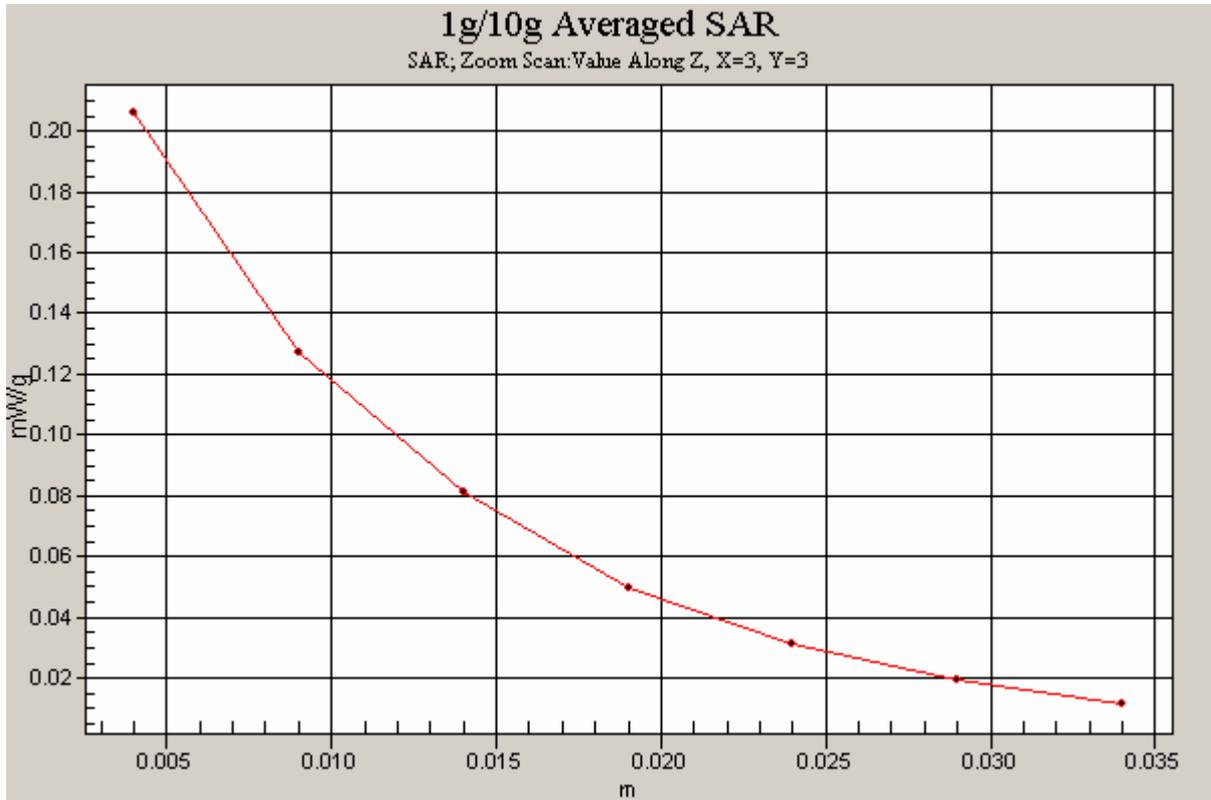**Figure 55 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 661**

Figure 56 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 661]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 4 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; $ε_r$ = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(4.64, 4.64, 4.64);

Electronics: DAE3 Sn452;

Test Position 4 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.238 mW/g

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

Reference Value = 10.2 V/m; Power Drift = -0.068 dB

Peak SAR (extrapolated) = 0.348 W/kg

SAR(1 g) = 0.216 mW/g; SAR(10 g) = 0.128 mW/g

Maximum value of SAR (measured) = 0.233 mW/g
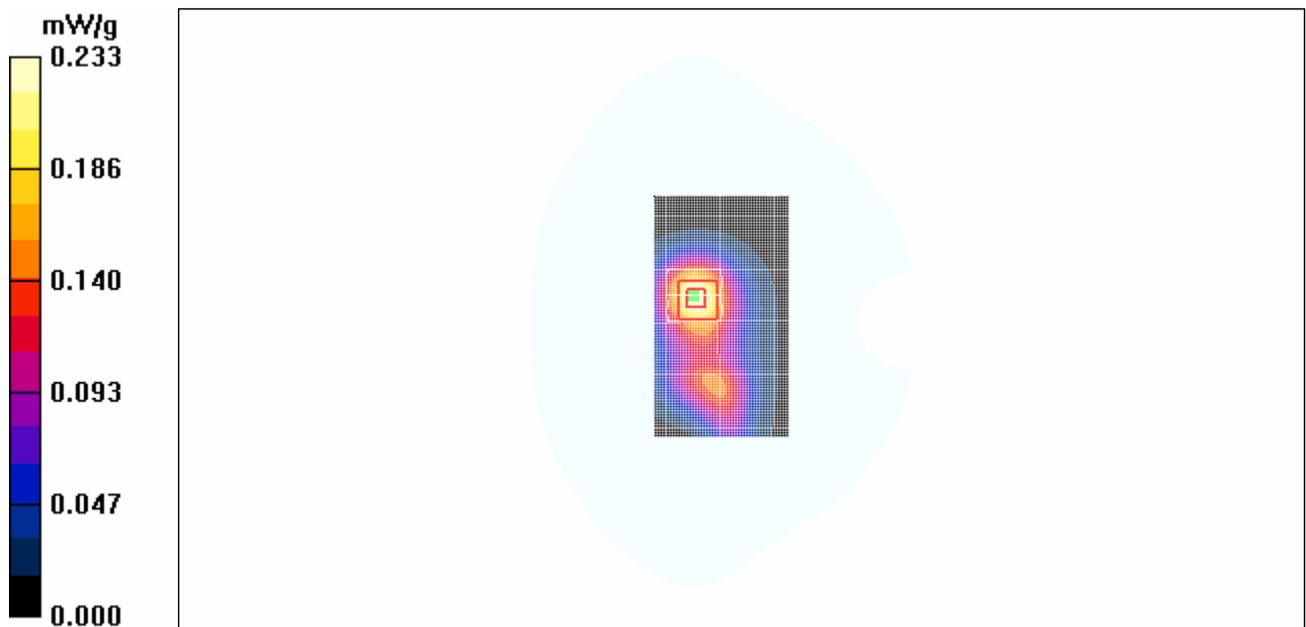
Figure 57 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 661
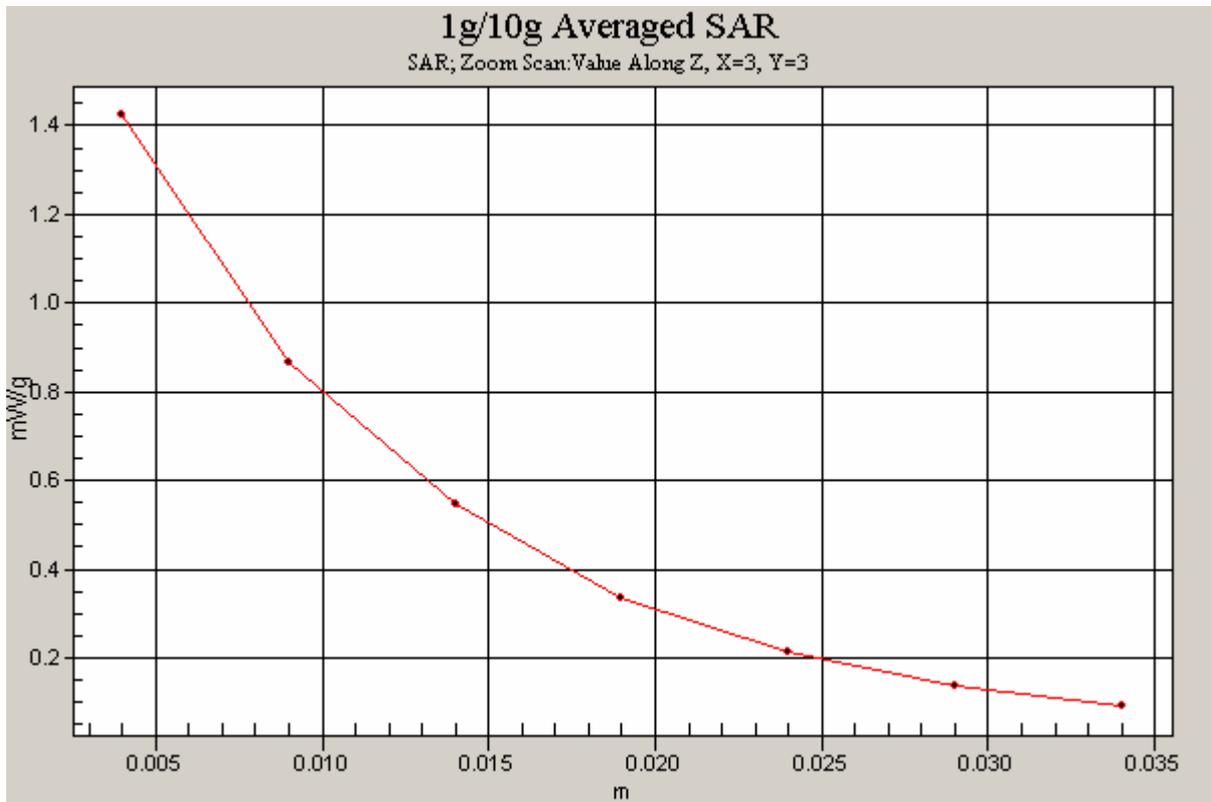
Figure 58 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 661]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 5 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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(4.64, 4.64, 4.64);

Electronics: DAE3 Sn452;

Test Position 5 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 11.6 V/m; Power Drift = -0.068 dB

Peak SAR (extrapolated) = 0.307 W/kg

SAR(1 g) = 0.189 mW/g; SAR(10 g) = 0.114 mW/g

Maximum value of SAR (measured) = 0.206 mW/g
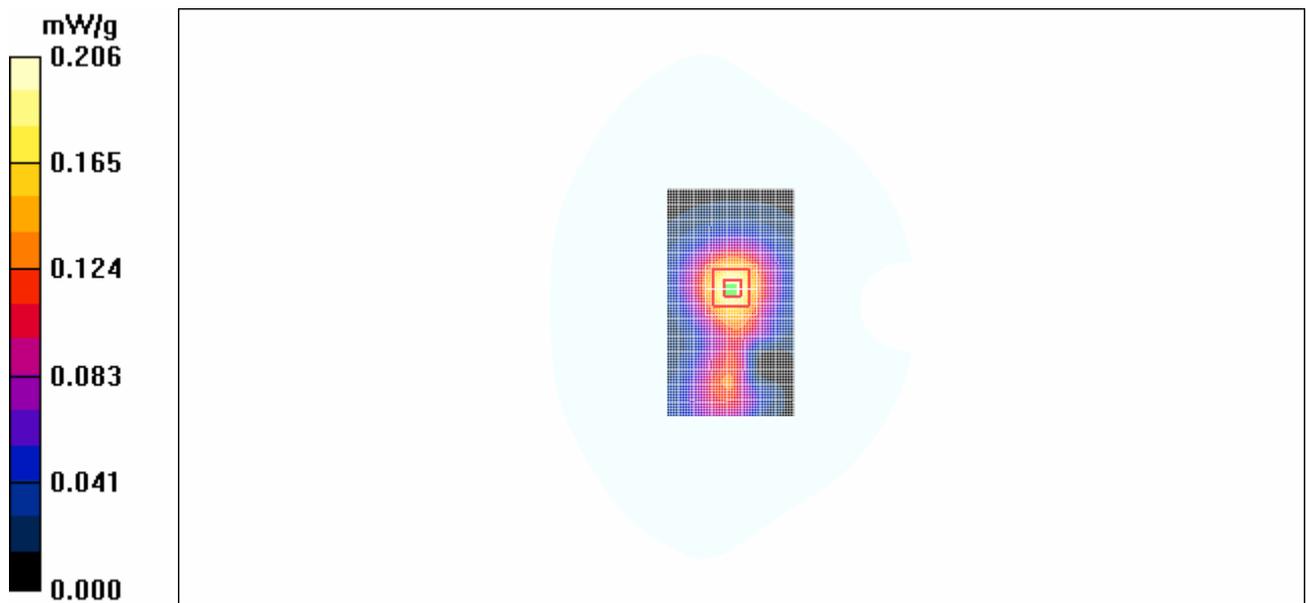
Figure 59 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 661
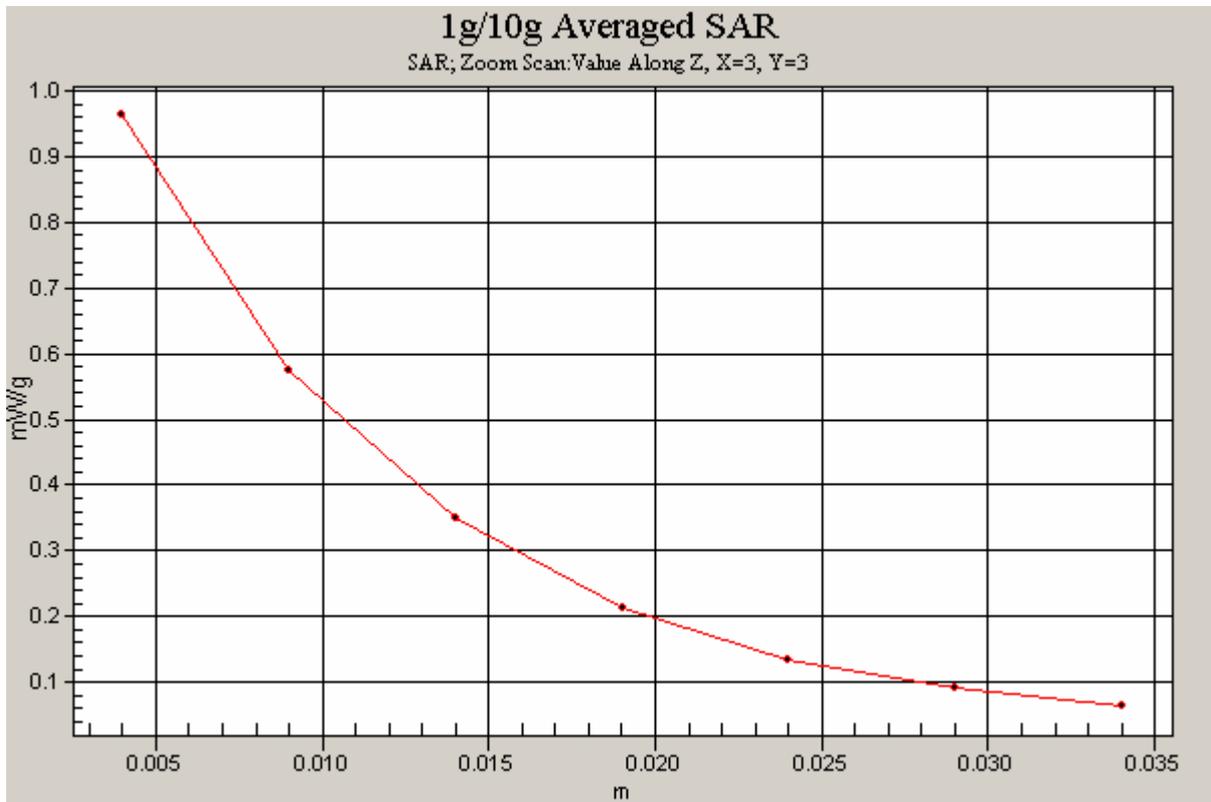
Figure 60 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 661]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 High

Communication System: GSM 1900+GPRS(3Up); Frequency: 1909.8 MHz;Duty Cycle: 1:2.67

Medium parameters used: f = 1910 MHz; σ = 1.55 mho/m; $ε_r$ = 52.5; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(4.64, 4.64, 4.64);

Electronics: DAE3 Sn452;

Test Position 6 High/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.72 mW/g

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

Reference Value = 23.0 V/m; Power Drift = 0.116 dB

Peak SAR (extrapolated) = 2.14 W/kg

SAR(1 g) = 1.29 mW/g; SAR(10 g) = 0.699 mW/g

Maximum value of SAR (measured) = 1.42 mW/g
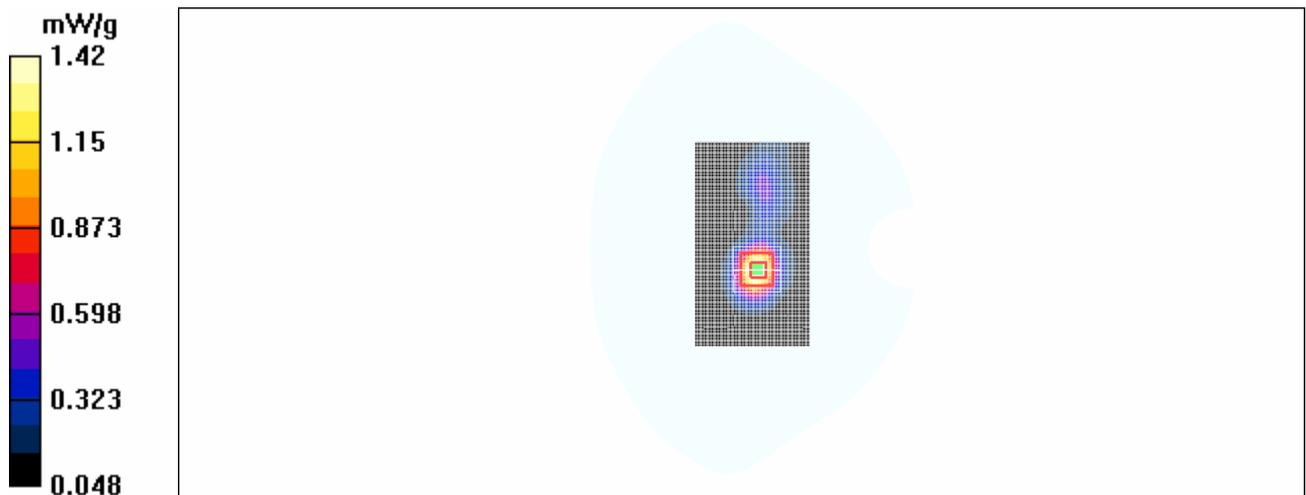
Figure 61 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 810
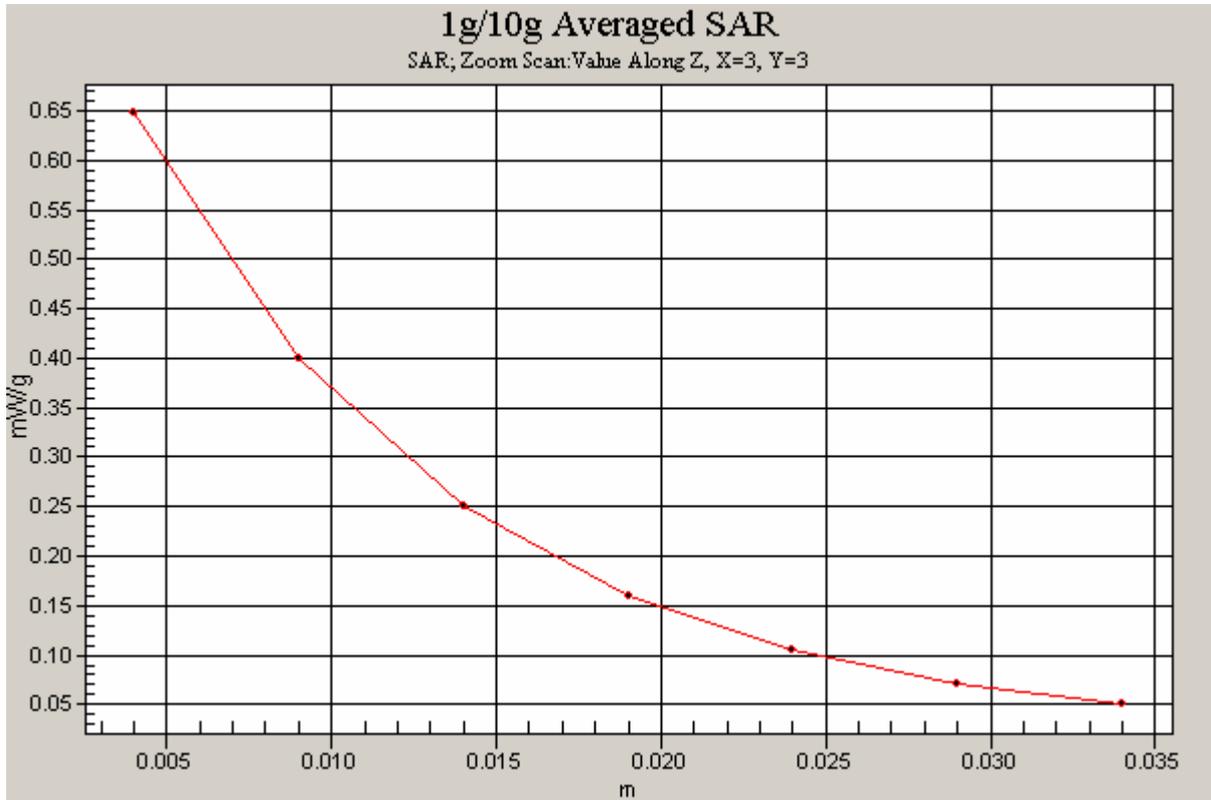
Figure 62 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 810]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 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 = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(4.64, 4.64, 4.64);

Electronics: DAE3 Sn452;

Test Position 6 Middle/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 24.5 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = 0.874 mW/g; SAR(10 g) = 0.476 mW/g

Maximum value of SAR (measured) = 0.958 mW/g
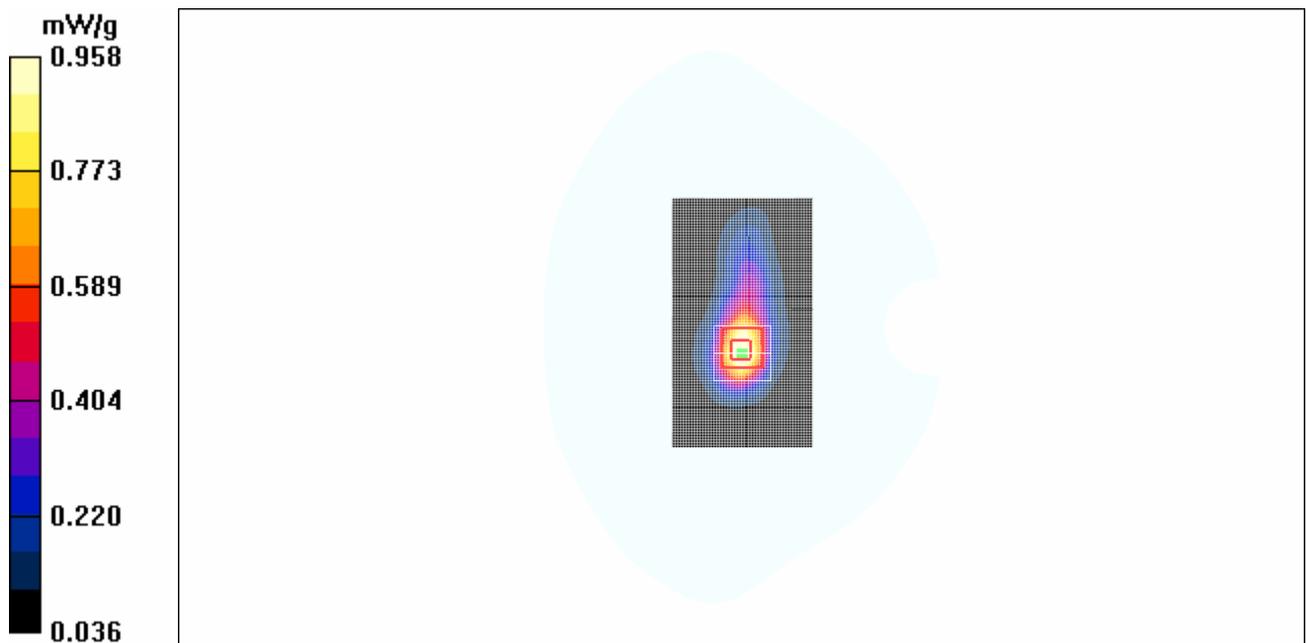
Figure 63 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661
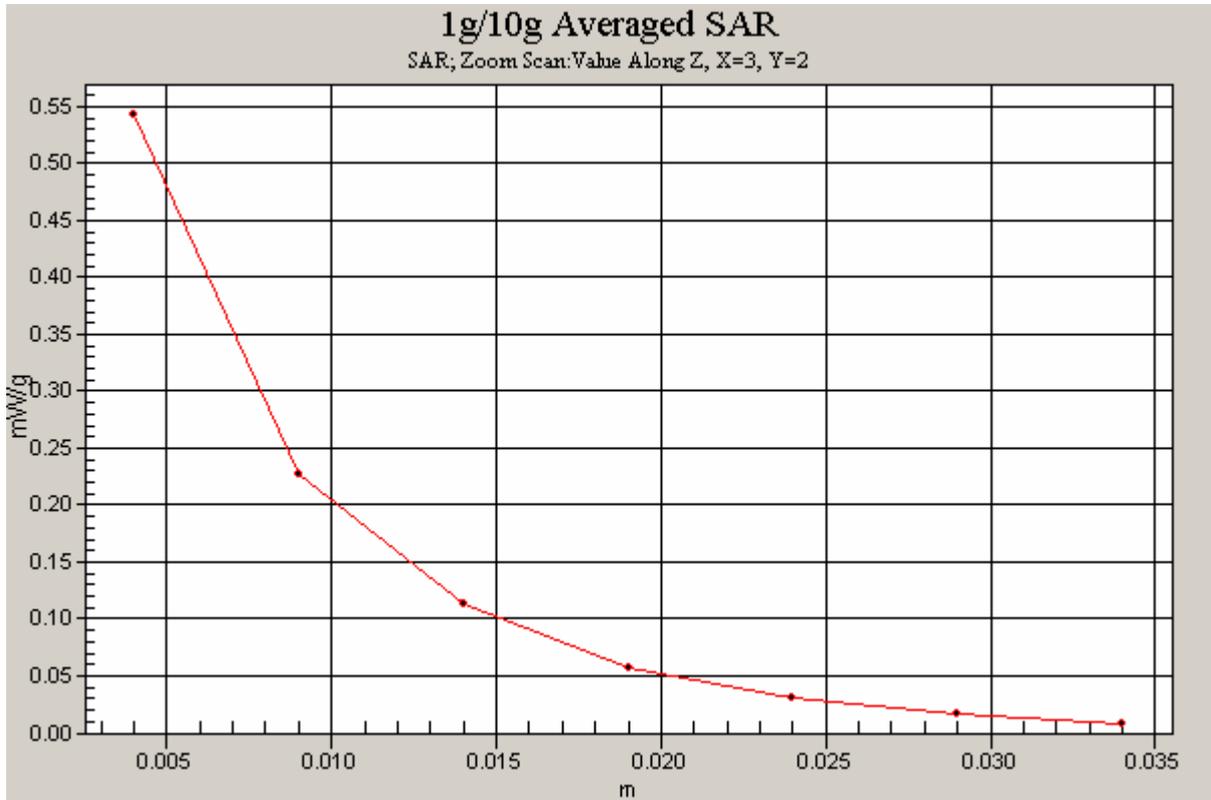
Figure 64 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Low

Communication System: GSM 1900+GPRS(3Up); Frequency: 1850.2 MHz;Duty Cycle: 1:2.67

Medium parameters used (interpolated): f = 1850.2 MHz; σ = 1.48 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(4.64, 4.64, 4.64);

Electronics: DAE3 Sn452;

Test Position 6 Low/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.760 mW/g

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

Reference Value = 15.2 V/m; Power Drift = 0.199 dB

Peak SAR (extrapolated) = 0.978 W/kg

SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.313 mW/g

Maximum value of SAR (measured) = 0.647 mW/g
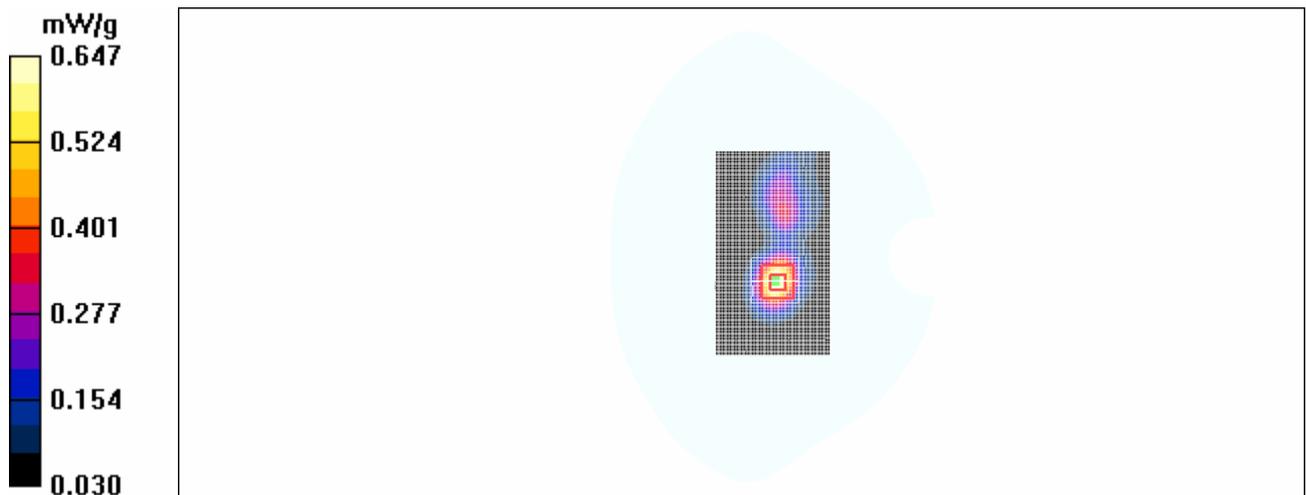
Figure 65 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 512

Figure 66 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 512]

GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 7 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; $ε_r$ = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.443 mW/g

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

Reference Value = 19.4 V/m; Power Drift = -0.086 dB

Peak SAR (extrapolated) = 1.13 W/kg

SAR(1 g) = 0.442 mW/g; SAR(10 g) = 0.219 mW/g

Maximum value of SAR (measured) = 0.543 mW/g
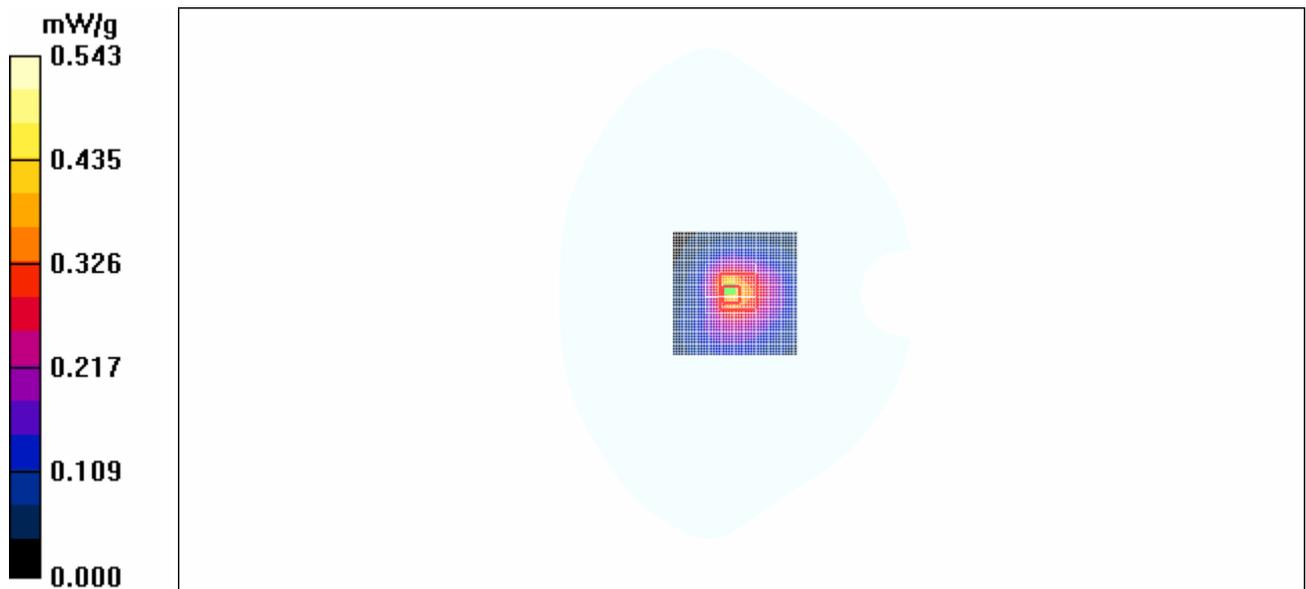
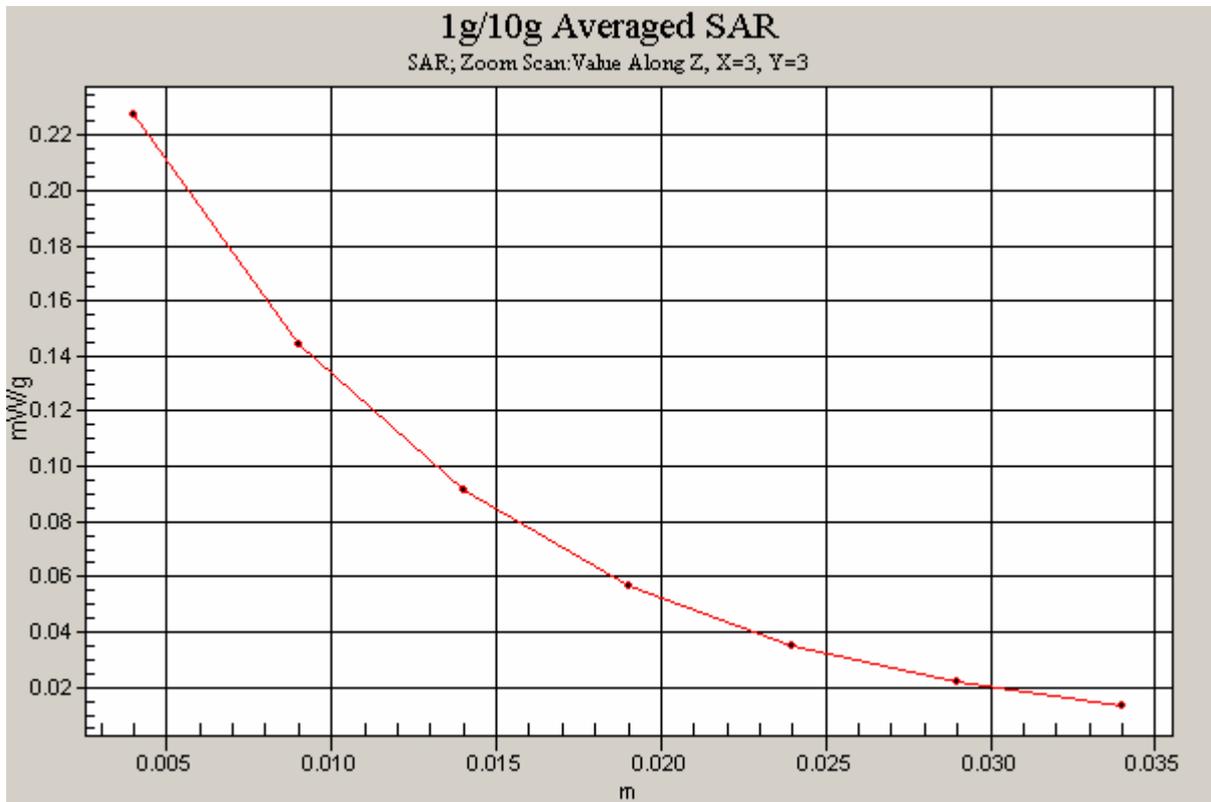**Figure 67 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 661**

Figure 68 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 661]

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

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

Medium parameters used: f = 1880 MHz; σ = 1.51 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; 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) = 0.233 mW/g

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

Reference Value = 9.05 V/m; Power Drift = 0.067 dB

Peak SAR (extrapolated) = 0.325 W/kg

SAR(1 g) = 0.207 mW/g; SAR(10 g) = 0.120 mW/g

Maximum value of SAR (measured) = 0.227 mW/g
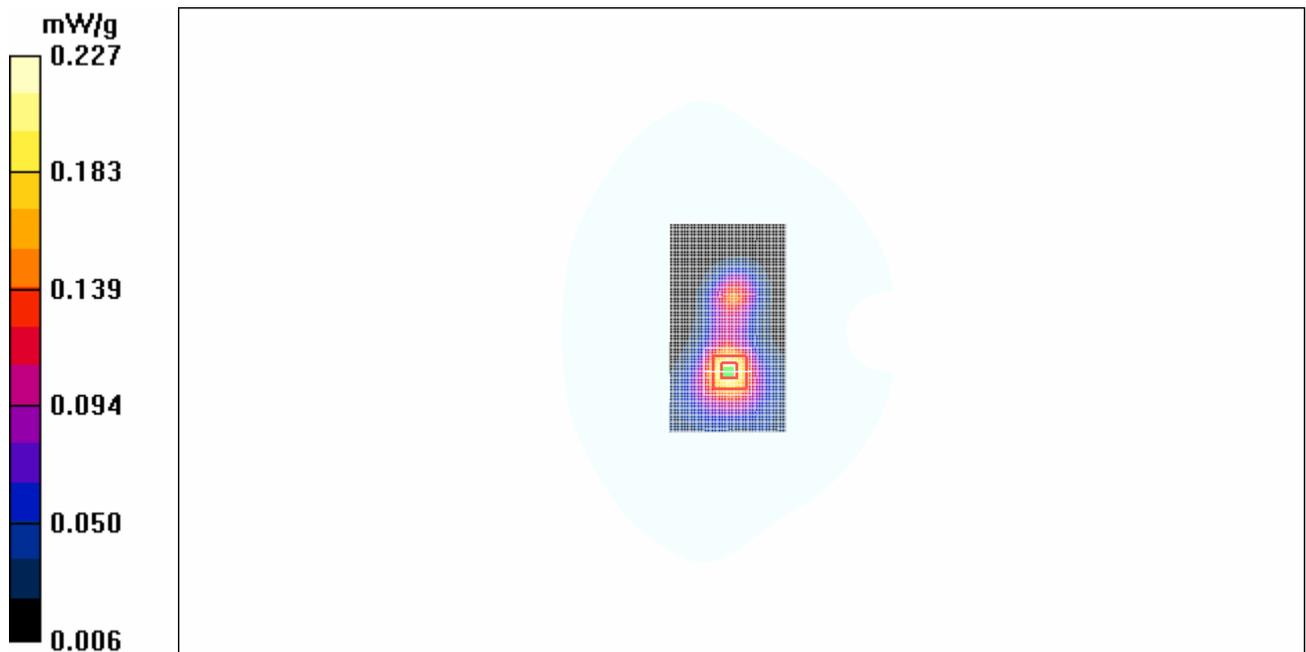
Figure 69 GSM 1900 EGPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

Figure 70 Z-Scan at power reference point [GSM 1900 EGPRS (3 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 - SN1530; 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
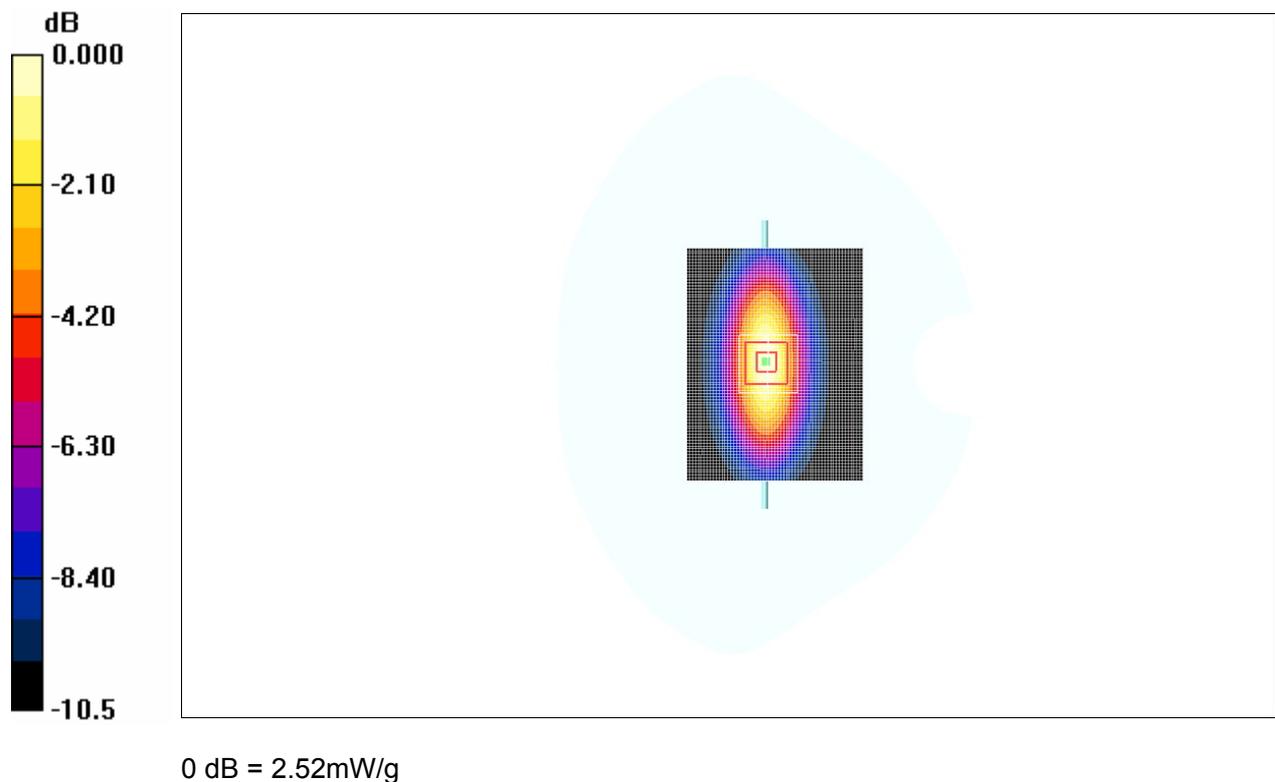
Figure 71 System Performance Check 835MHz 250mW

System Performance Check at 1900 MHz

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d018

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

Medium parameters used: f = 1900 MHz; σ = 1.42 mho/m; ε_r = 39.7; ρ = 1000 kg/m^3

Probe: ET3DV6 - SN1530; ConvF(5.15, 5.15, 5.15);

Electronics: DAE3 Sn452;

d=10mm, Pin=250mW 2/Area Scan (101x121x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 10.8 mW/g

d=10mm, Pin=250mW 2/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.8 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 16.0 W/kg

SAR(1 g) = 9.36 mW/g; SAR(10 g) = 4.93 mW/g

Maximum value of SAR (measured) = 10.7 mW/g

0 dB = 10.7mW/g
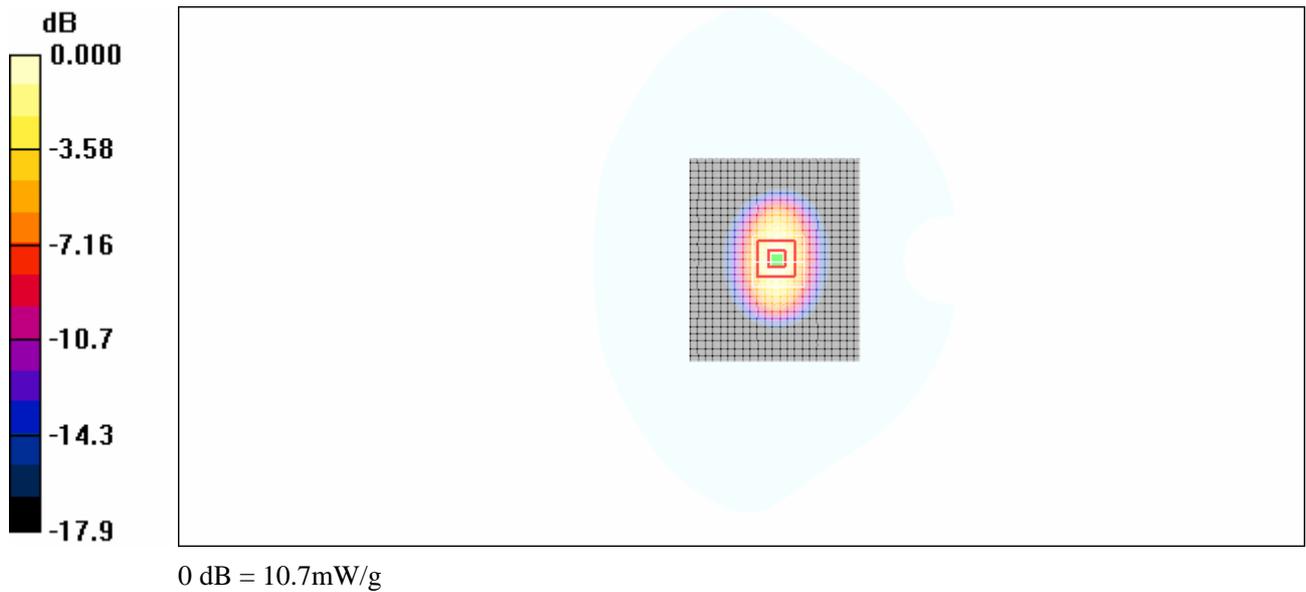
Figure 72 System Performance Check 1900MHz 250mW

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   **ATL (Auden)**

Certificate No: **ET3-1530_Sep07**

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1530
Calibration procedure(s)	QA CAL-01.v6 and QA CAL-12.v5 Calibration procedure for dosimetric E-field probes
Calibration date:	September 26, 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	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41495277	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Power sensor E4412A	MY41498087	29-Mar-07 (METAS, No. 217-00670)	Mar-08
Reference 3 dB Attenuator	SN: S5054 (3c)	8-Aug-07 (METAS, No. 217-00719)	Aug-08
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-07 (METAS, No. 217-00671)	Mar-08
Reference 30 dB Attenuator	SN: S5129 (30b)	8-Aug-07 (METAS, No. 217-00720)	Aug-08
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	20-Apr-07 (SPEAG, No. DAE4-654_Apr07)	Apr-08

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: September 26, 2007

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

Certificate No: ET3-1530_Sep07   Page 1 of 9

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

ilac-MRA

SWISS CALIBRATION

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., $\vartheta = 0$ 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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:
   - *NORMx,y,z*: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ 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 $f \leq 800$ 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.

Certificate No: ET3-1530_Sep07   Page 2 of 9

ET3DV6 SN:1530

September 26, 2007

Probe ET3DV6

SN:1530

Manufactured: July 15, 2000
Last calibrated: September 21, 2006
Recalibrated: September 26, 2007

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

ET3DV6 SN:1530   September 26, 2007

DASY - Parameters of Probe: ET3DV6 SN:1530

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

NormX	$1.37 \pm 10.1\%$	$\mu V/(V/m)^2$	DCP X	91 mV
NormY	$1.56 \pm 10.1\%$	$\mu V/(V/m)^2$	DCP Y	96 mV
NormZ	$1.48 \pm 10.1\%$	$\mu V/(V/m)^2$	DCP Z	95 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	6.9	3.3
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

TSL   1810 MHz   Typical SAR gradient: 10 % per mm

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR_{be} [%]	Without Correction Algorithm	14.9	9.5
SAR_{be} [%]	With Correction Algorithm	0.2	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 E²-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

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