



NO.: RZA2008-0255FCC



(No. CNAS L2264)

OET 65

TEST REPORT

| | |
|------------------|--|
| Test name | Electromagnetic Field (Specific Absorption Rate) |
| Product | HSPA USB Modem |
| Model | E230 |
| FCC ID | QISE230 |
| Client | HUAWEI Technologies Co., Ltd. |

TA Technology (Shanghai) Co., Ltd.



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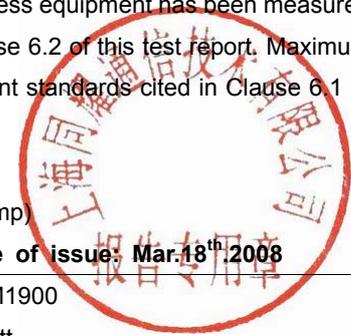
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No. RZA2008-0255FCC

Page 3of 111

GENERAL SUMMARY

| | | | |
|--------------------------------|---|-------------------------------|----------------------------|
| Product | HSPA USB Modem | Model | E230 |
| Client | HUAWEI Technologies Co., Ltd. | Type of test | Entrusted |
| Manufacturer | HUAWEI Technologies Co., Ltd. | Arrival Date of sample | Mar.5 th , 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 | D52AB10820200043 | | |
| Standard(s) | <p>EN 50360–2001: Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.</p> <p>EN 50361–2001: Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.</p> <p>ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz</p> <p>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.</p> <p>OET65C revision2002 DA 09-1948, June 19.2002: Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits.</p> <p>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.</p> <p>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.</p> | | |
| Conclusion | <p>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.</p> <p>General Judgment: Pass</p> <p style="text-align: right;">(Stamp) </p> <p style="text-align: right;">Date of issue: Mar.18th 2008</p> | | |
| Comment | <p>TX Freq. Band: GSM850 GSM1900</p> <p>Max. Power: 2Watt 1Watt</p> <p>The test result only responds to the measured sample.</p> | | |

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TABLE OF CONTENT

| | | |
|--------|---|----|
| 1. | COMPETENCE AND WARRANTIES | 6 |
| 2. | GENERAL CONDITIONS | 6 |
| 3. | DESCRIPTION OF EUT | 7 |
| 3.1. | ADDRESSING INFORMATION RELATED TO EUT | 7 |
| 3.2. | CONSTITUENTS OF EUT | 7 |
| 3.3. | GENERAL DESCRIPTION | 7 |
| 4. | OPERATIONAL CONDITIONS DURING TEST | 8 |
| 4.1. | SCHEMATIC TEST CONFIGURATION | 8 |
| 4.2. | POSITION OF MODULE IN PORTABLE DEVICES..... | 9 |
| 4.3. | PICTURE OF HOST PRODUCT | 10 |
| 5. | SAR MEASUREMENTS SYSTEM CONFIGURATION..... | 12 |
| 5.1. | SAR MEASUREMENT SET-UP | 12 |
| 5.2. | DASY4 E-FIELD PROBE SYSTEM | 13 |
| 5.3. | E-FIELD PROBE CALIBRATION..... | 14 |
| 5.4. | OTHER TEST EQUIPMENT | 14 |
| 5.4.1. | <i>Device Holder for Transmitters</i> | 14 |
| 5.4.2. | <i>Phantom</i> | 15 |
| 5.5. | EQUIVALENT TISSUES | 16 |
| 5.6. | SYSTEM SPECIFICATIONS | 16 |
| 5.6.1 | <i>Robotic System Specifications</i> | 16 |
| 6. | CHARACTERISTICS OF THE TEST | 17 |
| 6.1. | APPLICABLE LIMIT REGULATIONS | 17 |
| 6.2. | APPLICABLE MEASUREMENT STANDARDS | 17 |
| 7. | LABORATORY ENVIRONMENT | 18 |
| 8. | CONDUCTED OUTPUT POWER MEASUREMENT | 18 |
| 8.1. | SUMMARY | 18 |
| 8.2. | POWER DRIFT | 18 |
| 8.3. | CONDUCTED POWER..... | 19 |
| 8.3.1. | <i>Measurement Methods</i> | 19 |
| 8.3.2. | <i>Measurement result</i> | 19 |
| 9. | TEST RESULTS | 20 |
| 9.1. | DIELECTRIC PERFORMANCE | 20 |
| 9.2. | SYSTEM VALIDATION | 20 |
| 9.3. | SUMMARY OF MEASUREMENT RESULTS | 21 |
| 9.4. | CONCLUSION | 25 |
| 10. | MEASUREMENT UNCERTAINTY | 26 |
| 11. | MAIN TEST INSTRUMENTS..... | 27 |
| 12. | TEST PERIOD..... | 27 |
| 13. | TEST LOCATION | 27 |

TA Technology (Shanghai) Co., Ltd.
Test Report

No. RZA2008-0255FCC

Page 5 of 111

| | |
|---|-----|
| ANNEX A: MEASUREMENT PROCESS | 28 |
| ANNEX B: TEST LAYOUT | 29 |
| ANNEX C: GRAPH RESULTS | 31 |
| ANNEX D: SYSTEM VALIDATION RESULTS | 83 |
| ANNEX E: PROBE CALIBRATION CERTIFICATE | 85 |
| ANNEX F: D835V2 DIPOLE CALIBRATION CERTIFICATE | 94 |
| ANNEX G: D1900V2 DIPOLE CALIBRATION CERTIFICATE | 100 |
| ANNEX H: THE EUT APPEARANCES AND TEST CONFIGURATION | 109 |

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 |
|----------------|-------|------------------|-------------------------------|
| HSPA USB Modem | E230 | D52AB10820200043 | HUAWEI Technologies Co., Ltd. |

Note:

The EUT appearances see ANNEX H.

3.3. General Description

Equipment Under Test (EUT) is a HSPA USB Modem 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 (class 12) 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 ZH1 and 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 "3 dB rule" OET65C revision2002 DA 09-1948, June 19.2002, **"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)".**

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 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 $\pm 0.02\text{mm}$. 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.

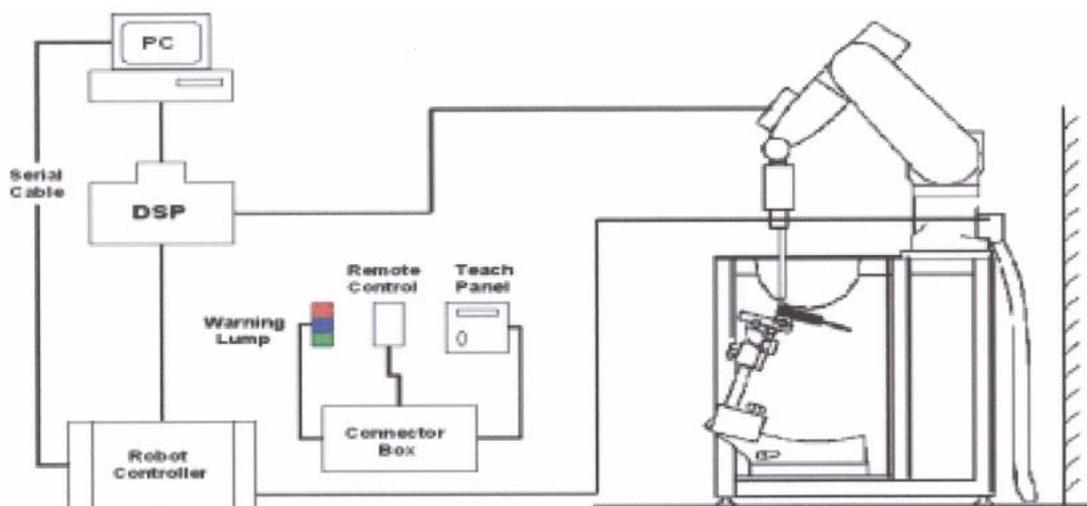


Figure 1. SAR Lab Test Measurement Set-up

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 $\pm 10\%$. The spherical isotropy was evaluated and found to be better than $\pm 0.25\text{dB}$.

ET3DV6 Probe Specification

| | |
|-------------------|--|
| Construction | Symmetrical design with triangular core Built-in optical fiber for surface detection System (ET3DV6 only) Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., glycol) |
| Calibration | In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at frequencies of 900MHz, 1750MHz, 1950MHz and 2450MHz (accuracy $\pm 8\%$) Calibration for other liquids and frequencies upon request |
| Frequency | 10 MHz to > 6 GHz; Linearity: $\pm 0.2\text{ dB}$ (30 MHz to 3 GHz) |
| Directivity | $\pm 0.2\text{ dB}$ in brain tissue (rotation around probe axis) $\pm 0.4\text{ dB}$ in brain tissue (rotation around probe axis) |
| Dynamic Range | 5 $\mu\text{W/g}$ to > 100mW/g; Linearity: $\pm 0.2\text{ dB}$ |
| Surface Detection | $\pm 0.2\text{ mm}$ repeatability in air and clear liquids over diffuse reflecting surface (ET3DV6 only) |
| Dimensions | Overall length: 330mm Tip length: 16mm Body diameter: 12mm Tip diameter: 6.8mm Distance from probe tip to dipole centers: 2.7mm |
| Application | General dosimetry up to 3GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms |

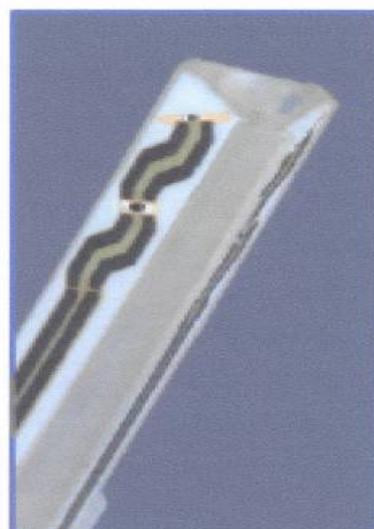


Figure 2. ET3DV6 E-field Probe

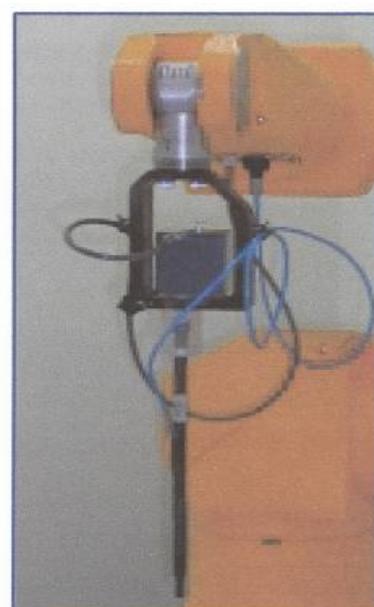


Figure 3. ET3DV6 E-field probe

5.3. E-field Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than $\pm 10\%$. The spherical isotropy was evaluated and found to be better than $\pm 0.25\text{dB}$. 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 below 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.

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

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

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

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 1000 x 500 mm (H x L x W) |
| Available | 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 $\epsilon=55.2$ $\sigma=0.97$ |

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 $\epsilon=53.3$ $\sigma=1.52$ |

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 within 20 cm of the user in the uncontrolled environment.

ANSI C95.1–1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

It specifies the maximum exposure limit of **1.6 W/kg** as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.

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 revision 2002 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 within 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 within 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) | 32.54 | 32.67 | 32.64 |
| After Test (dBm) | 32.52 | 32.71 | 32.67 |
| GSM 1900+GPRS | Conducted Power | | |
| | Channel 512 (1850.2MHz) | Channel 661 (1880MHz) | Channel 810 (1909.8MHz) |
| Before Test (dBm) | 29.82 | 29.68 | 29.67 |
| After Test (dBm) | 29.84 | 29.65 | 29.68 |

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 | 55.94 | 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 | % |

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 | 1 g 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°C | | | | |
|----------------------------|---------|---------------------------|------------------|---------------|
| 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 | 0.449 | -0.049 | Figure 7 |
| Acer ZH1 | Middle | 0.266 | -0.121 | Figure 9 |

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

| Liquid Temperature: 22.4°C | | | | |
|----------------------------|---------|---------------------------|------------------|---------------|
| 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 | 0.449 | -0.049 | Figure 7 |
| 3 timeslots in uplink | Middle | 0.524 | 0.045 | Figure 11 |
| 2 timeslots in uplink | Middle | 0.533 | 0.010 | Figure 13 |
| 1 timeslot in uplink | Middle | 0.492 | 0.188 | Figure 15 |

TA Technology (Shanghai) Co., Ltd.
Test Report

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

| Liquid Temperature: 22.4°C | | | | | |
|----------------------------|---------|---------------------------|--|------------------|---------------|
| 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 | | Power Drift (dB) | |
| Test Position 1 | Middle | 0.533 | | 0.010 | Figure 13 |
| Test Position 2 | Middle | 0.315 | | -0.025 | Figure 17 |
| Test Position 3 | Middle | 0.563 | | -0.043 | Figure 19 |

Table 13: SAR Values [GSM 850 GPRS (2 timeslots in uplink) with BenQ R55V (118)]

| Liquid Temperature: 22.4°C | | | | | |
|----------------------------|---------|---------------------------|--|------------------|---------------|
| 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 | | Power Drift (dB) | |
| Test Position 4 | Middle | 0.244 | | -0.030 | Figure 21 |
| Test Position 5 | Middle | 0.160 | | 0.010 | Figure 23 |
| Test Position 6 | Middle | 0.371 | | -0.064 | Figure 25 |
| Test Position 7 | High | 0.988 | | -0.009 | Figure 27 |
| | Middle | 0.918 | | -0.028 | Figure 29 |
| | Low | 0.801 | | -0.171 | Figure 31 |

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

TA Technology (Shanghai) Co., Ltd.
Test Report

Table 14: SAR Values [GSM850 EGPRS (2 timeslots in uplink) with BenQ Joy book R55V]

| Liquid Temperature: 22.4°C | | | | | |
|----------------------------|---------|---------------------------|--|------------------|---------------|
| Limit of SAR (W/kg) | | 1g Average | | Power Drift (dB) | Graph Results |
| | | 1.6 | | | |
| Test Case Of Body | | Measurement Result (W/kg) | | Power Drift (dB) | |
| Different Test Position | Channel | 1g Average | | | |
| Test Position 7 | Middle | 0.243 | | 0.162 | Figure 33 |

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

| Liquid Temperature: 22.4°C | | | | | |
|----------------------------|---------|---------------------------|--|------------------|---------------|
| Limit of SAR (W/kg) | | 1g Average | | Power Drift (dB) | Graph Results |
| | | 1.6 | | | |
| Test Case Of Body | | Measurement Result (W/kg) | | Power Drift (dB) | |
| Different Model Computer | Channel | 1g Average | | | |
| BenQ Joy book S72 | Middle | 0.511 | | 0.164 | Figure 35 |
| Acer ZH1 | Middle | 0.341 | | 0.105 | Figure 37 |

TA Technology (Shanghai) Co., Ltd.
Test Report

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

| Liquid Temperature: 22.4°C | | | | | |
|----------------------------|---------|---------------------------|--|------------------|---------------|
| 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 | | Power Drift (dB) | |
| 4 timeslots in uplink | Middle | 0.511 | | 0.164 | Figure 35 |
| 3 timeslots in uplink | Middle | 0.623 | | -0.038 | Figure 39 |
| 2 timeslots in uplink | Middle | 0.680 | | 0.057 | Figure 41 |
| 1 timeslot in uplink | Middle | 0.649 | | 0.166 | Figure 43 |

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

| Liquid Temperature: 22.4°C | | | | | |
|----------------------------|---------|---------------------------|--|------------------|---------------|
| 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 | | Power Drift (dB) | |
| Test Position 1 | Middle | 0.680 | | 0.057 | Figure 41 |
| Test Position 2 | Middle | 0.354 | | -0.039 | Figure 45 |
| Test Position 3 | Middle | 0.428 | | -0.183 | Figure 47 |

Table 18: SAR Values [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V]

| Liquid Temperature: 22.4°C | | | | |
|----------------------------|---------|---------------------------|------------------|---------------|
| Limit of SAR (W/kg) | | 1g Average | Power Drift (dB) | Graph Results |
| | | 1.6 | ± 0.2 | |
| Test Case Of Body | | Measurement Result (W/kg) | | Graph Results |
| Different Test Position | Channel | 1g Average | | |
| Test Position 4 | Middle | 0.234 | 0.022 | Figure 49 |
| Test Position 5 | Middle | 0.243 | -0.096 | Figure 51 |
| Test Position 6 | Middle | 0.737 | 0.051 | Figure 53 |
| Test Position 7 | Middle | 0.366 | -0.098 | Figure 55 |

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

Table 19: SAR Values [GSM1900 EGPRS (2 timeslots in uplink) with BenQ Joy book R55V]

| Liquid Temperature: 22.4°C | | | | |
|----------------------------|---------|---------------------------|------------------|---------------|
| Limit of SAR (W/kg) | | 1g Average | Power Drift (dB) | Graph Results |
| | | 1.6 | ± 0.2 | |
| Test Case Of Body | | Measurement Result (W/kg) | | Graph Results |
| Different Test Position | Channel | 1g Average | | |
| Test Position 6 | Middle | 0.273 | -0.093 | Figure 57 |

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.

TA Technology (Shanghai) Co., Ltd.
Test Report

No. RZA2008-0255FCC

Page 26 of 111

10. MEASUREMENT UNCERTAINTY

| No. | a | Type | c | d | e=f(d, k) | f | h=cxf / 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 | |

TA Technology (Shanghai) Co., Ltd.
Test Report

No. RZA2008-0255FCC

Page 27 of 111

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 | 1531 | January 29, 2008 | One year |
| 11 | DAE | DAE3 | 452 | September 6, 2007 | One year |

12. TEST PERIOD

The test is performed from Mar. 5th, 2008 to Mar. 14th, 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 7 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

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

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

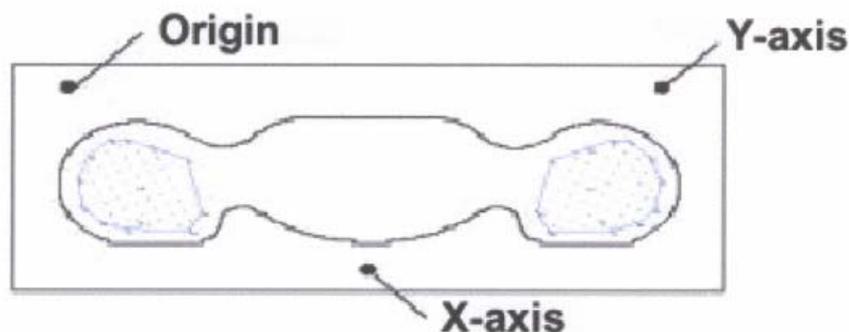
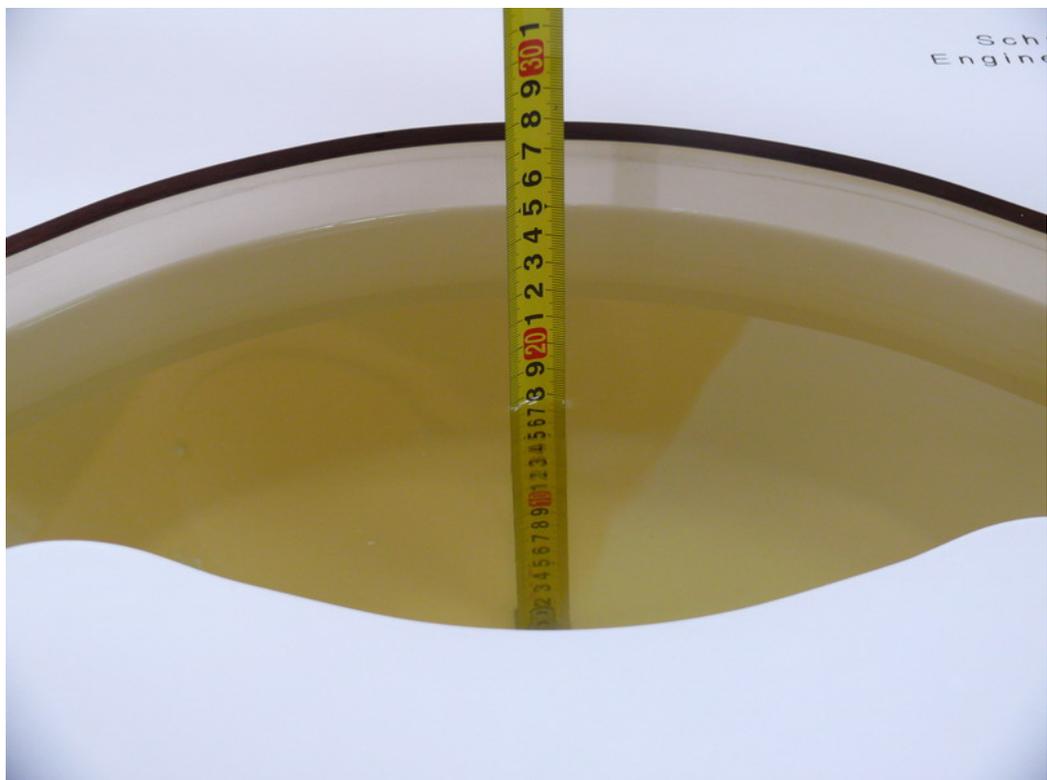


Figure 6. SAR Measurement Points in Area Scan

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; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.492 mW/g

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

Reference Value = 15.2 V/m; Power Drift = -0.049 dB

Peak SAR (extrapolated) = 0.638 W/kg

SAR(1 g) = 0.449 mW/g; SAR(10 g) = 0.292 mW/g

Maximum value of SAR (measured) = 0.490 mW/g

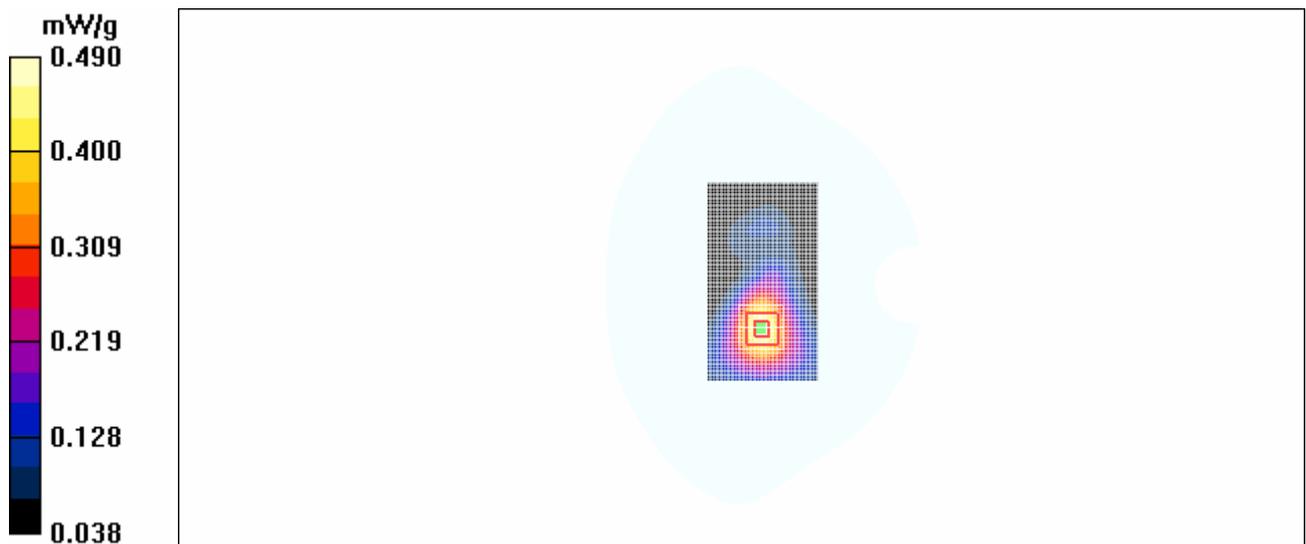


Figure 7 GSM 850 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

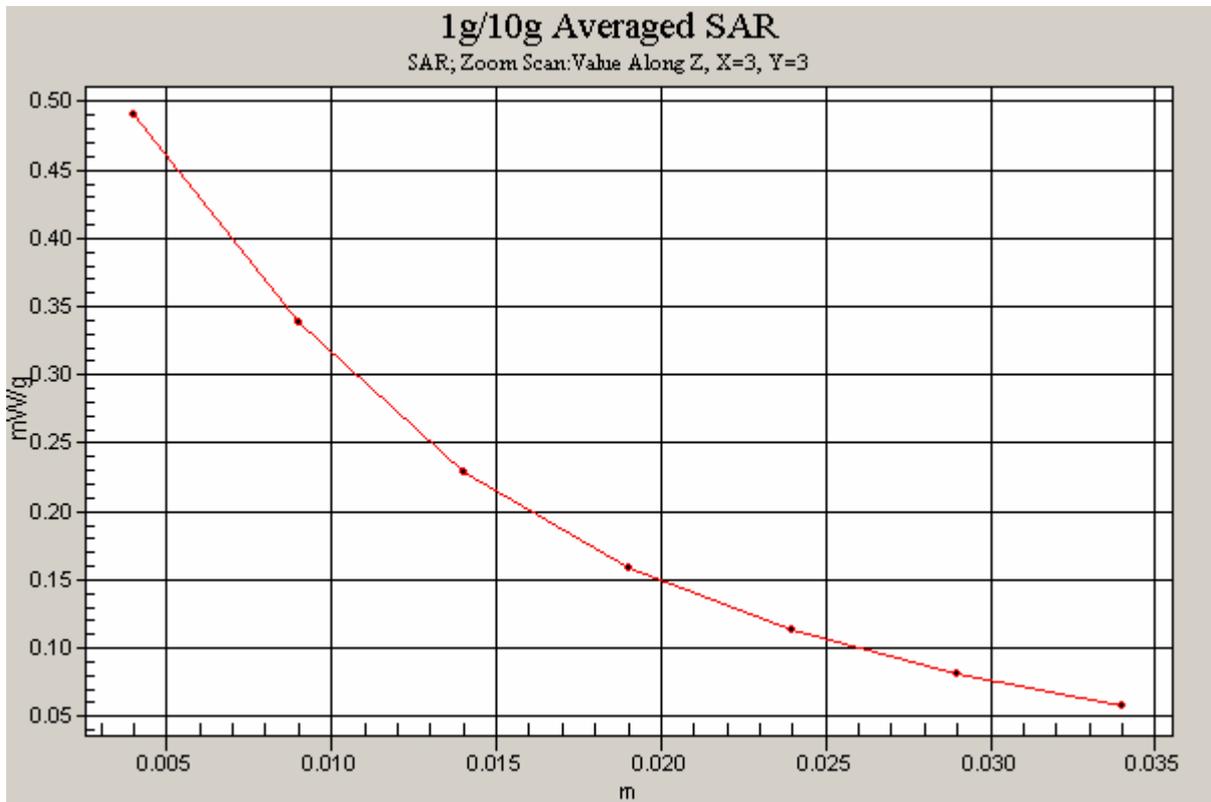


Figure 8 Z-Scan at power reference point [GSM 850 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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 = 12.0 V/m; Power Drift = -0.121 dB

Peak SAR (extrapolated) = 0.385 W/kg

SAR(1 g) = 0.266 mW/g; SAR(10 g) = 0.176 mW/g

Maximum value of SAR (measured) = 0.292 mW/g

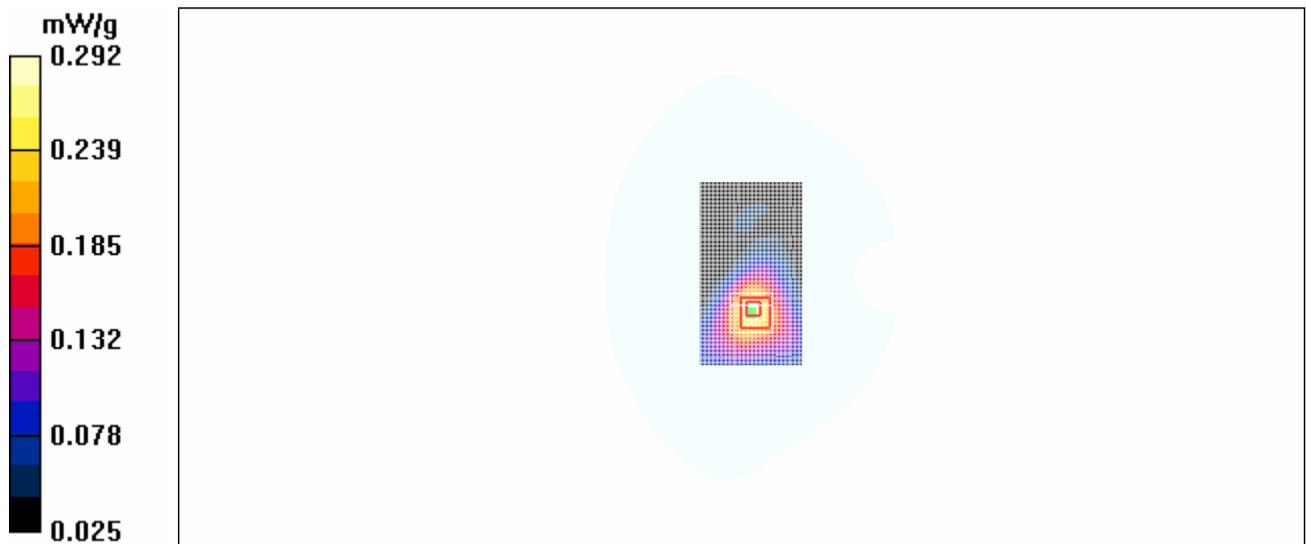


Figure 9 GSM 850 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 190

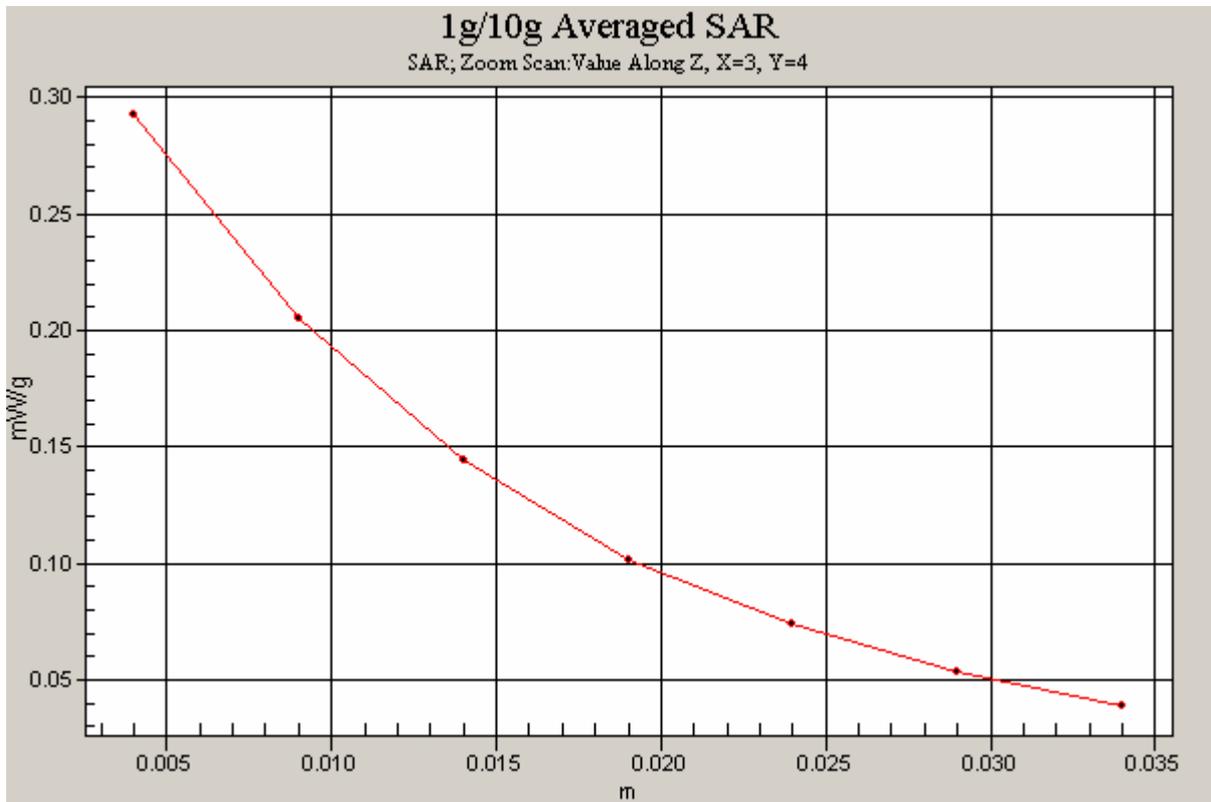


Figure 10 Z-Scan at power reference point [GSM 850 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 190]

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; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.566 mW/g

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

Reference Value = 16.3 V/m; Power Drift = 0.045 dB

Peak SAR (extrapolated) = 0.749 W/kg

SAR(1 g) = 0.524 mW/g; SAR(10 g) = 0.341 mW/g

Maximum value of SAR (measured) = 0.570 mW/g

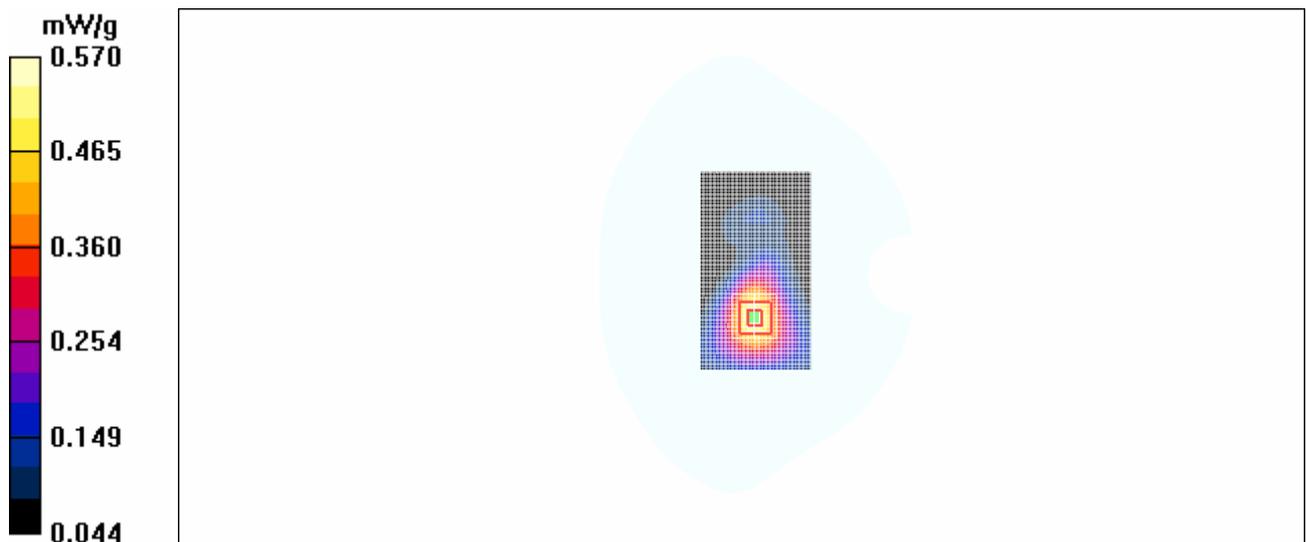


Figure 11 GSM 850 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

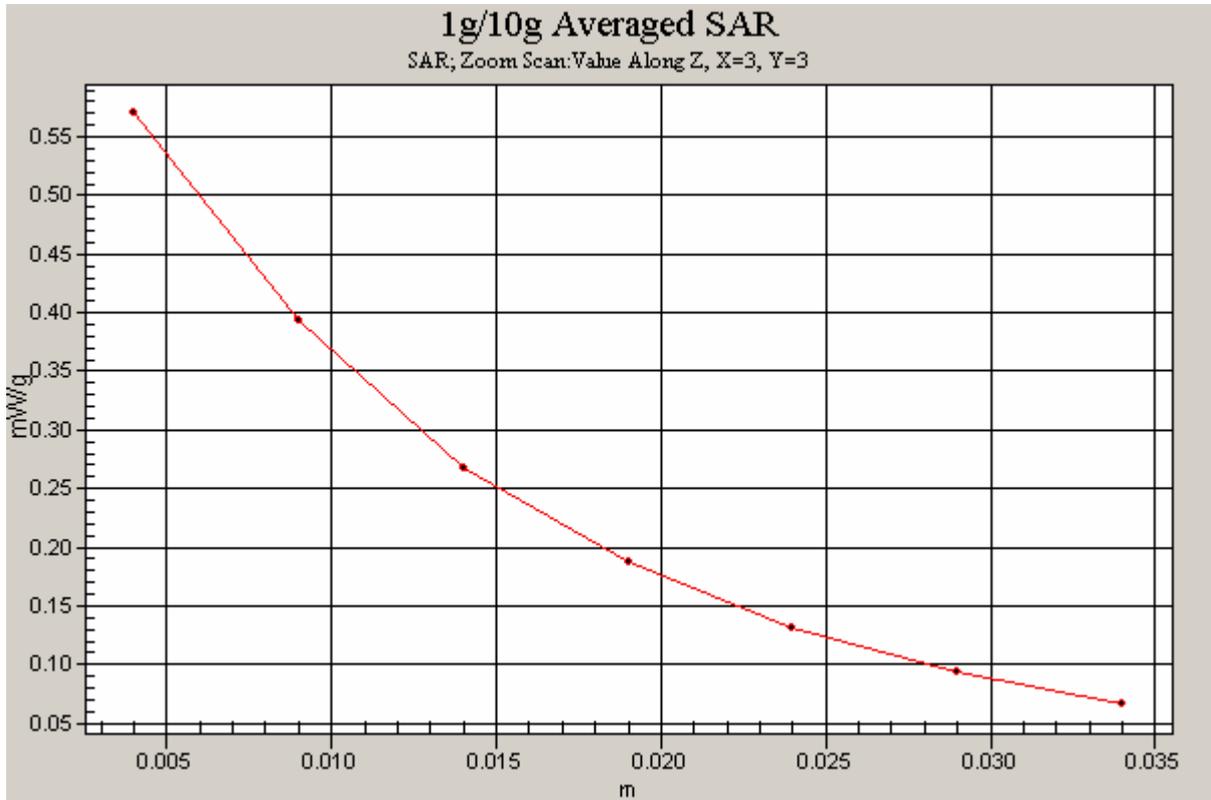


Figure 12 Z-Scan at power reference point [GSM 850 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.591 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 = 0.010 dB

Peak SAR (extrapolated) = 0.744 W/kg

SAR(1 g) = 0.533 mW/g; SAR(10 g) = 0.349 mW/g

Maximum value of SAR (measured) = 0.574 mW/g

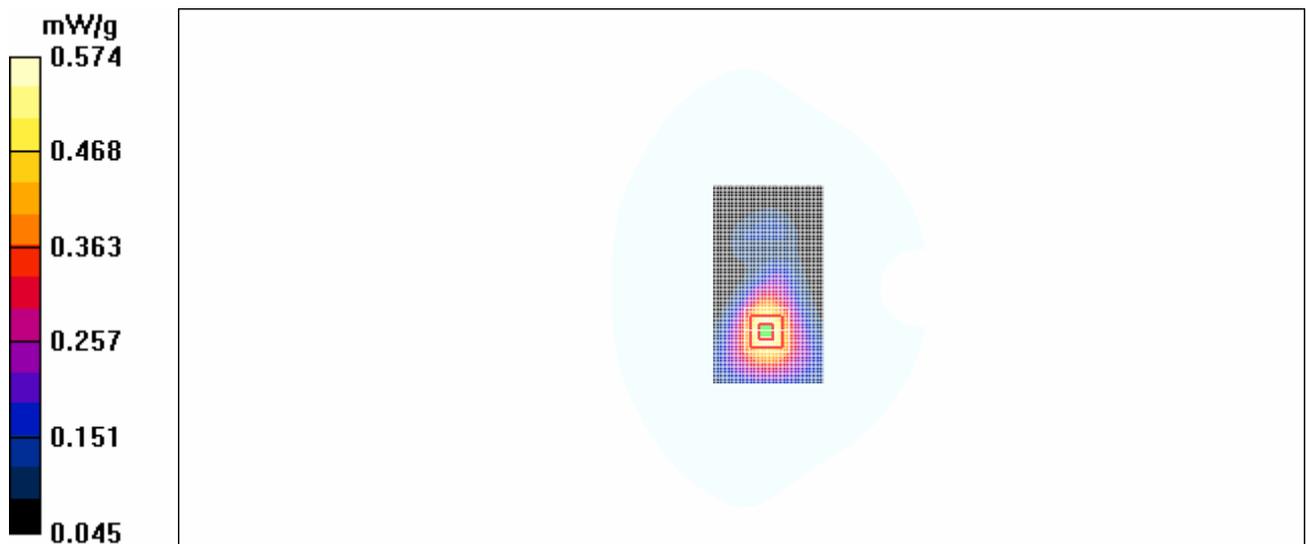


Figure 13 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

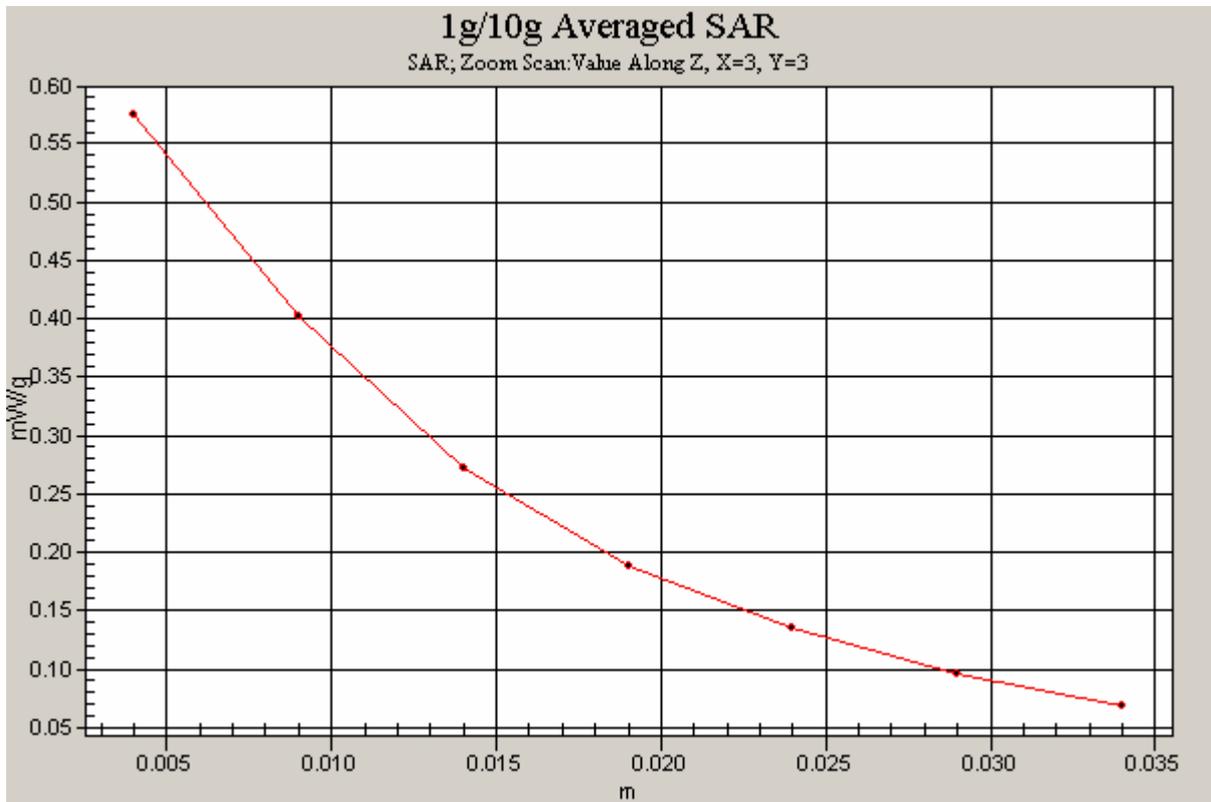


Figure 14 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.530 mW/g

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

Reference Value = 15.6 V/m; Power Drift = 0.188 dB

Peak SAR (extrapolated) = 0.696 W/kg

SAR(1 g) = 0.492 mW/g; SAR(10 g) = 0.321 mW/g

Maximum value of SAR (measured) = 0.532 mW/g

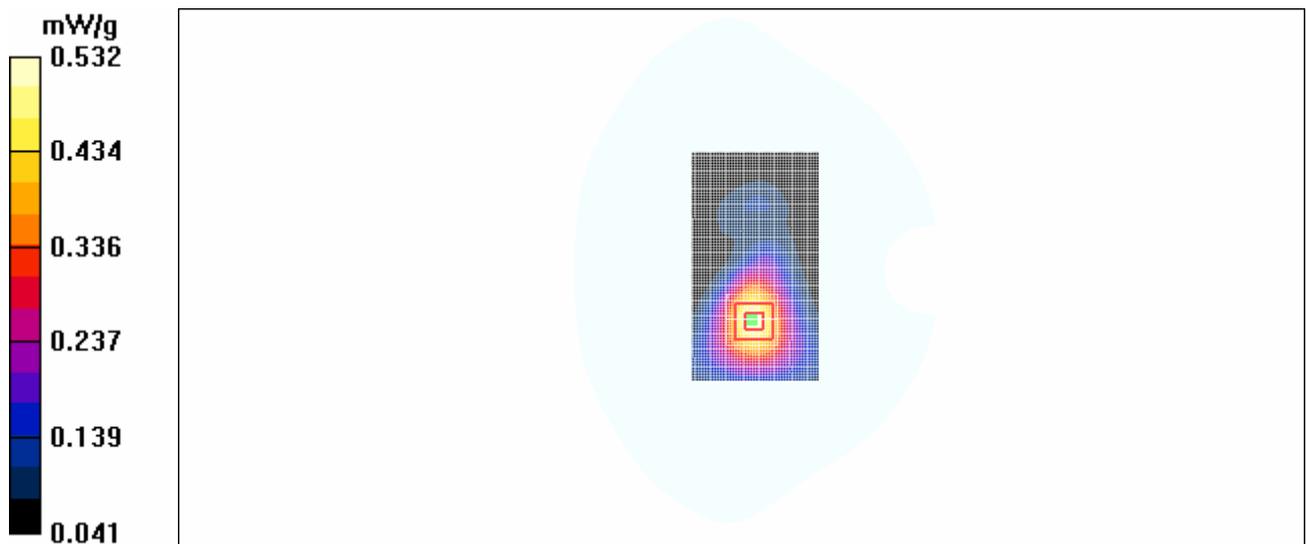


Figure 15 GSM 850 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 190

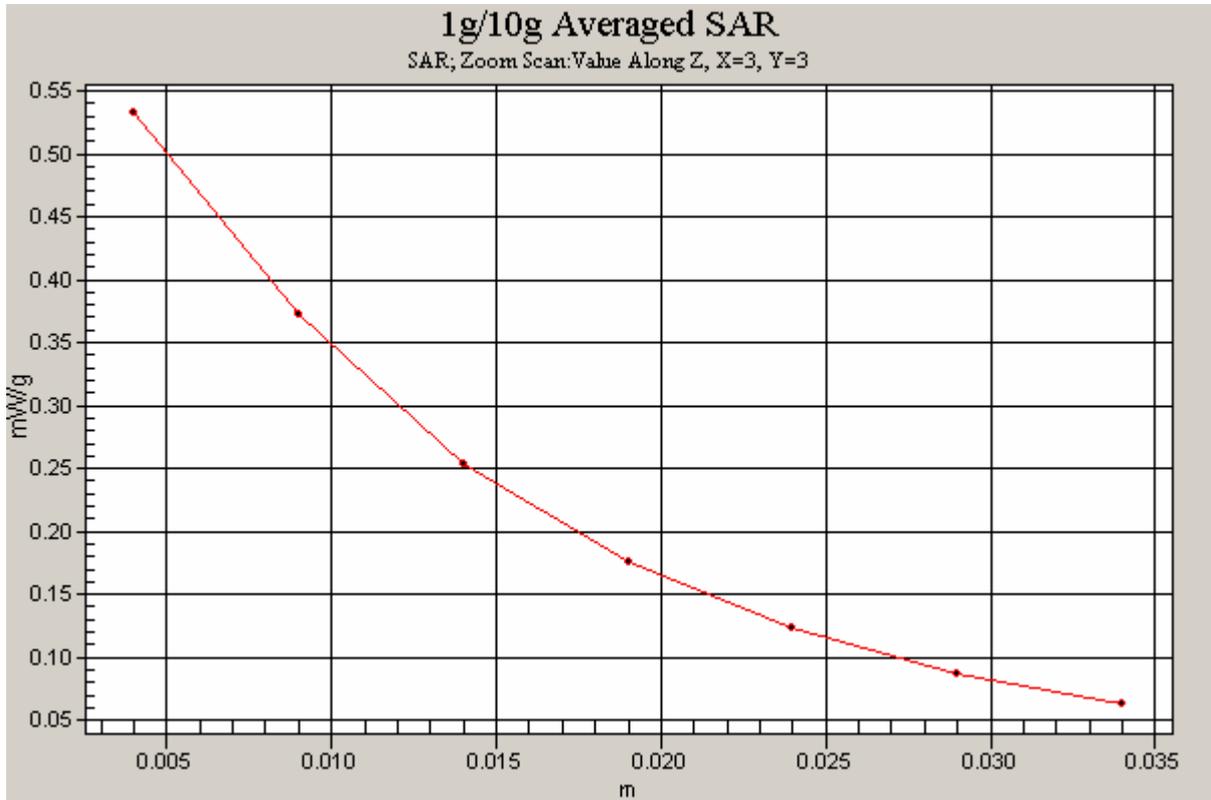


Figure 16 Z-Scan at power reference point [GSM 850 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 190]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.353 mW/g

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

Reference Value = 10.6 V/m; Power Drift = -0.025 dB

Peak SAR (extrapolated) = 0.434 W/kg

SAR(1 g) = 0.315 mW/g; SAR(10 g) = 0.209 mW/g

Maximum value of SAR (measured) = 0.340 mW/g

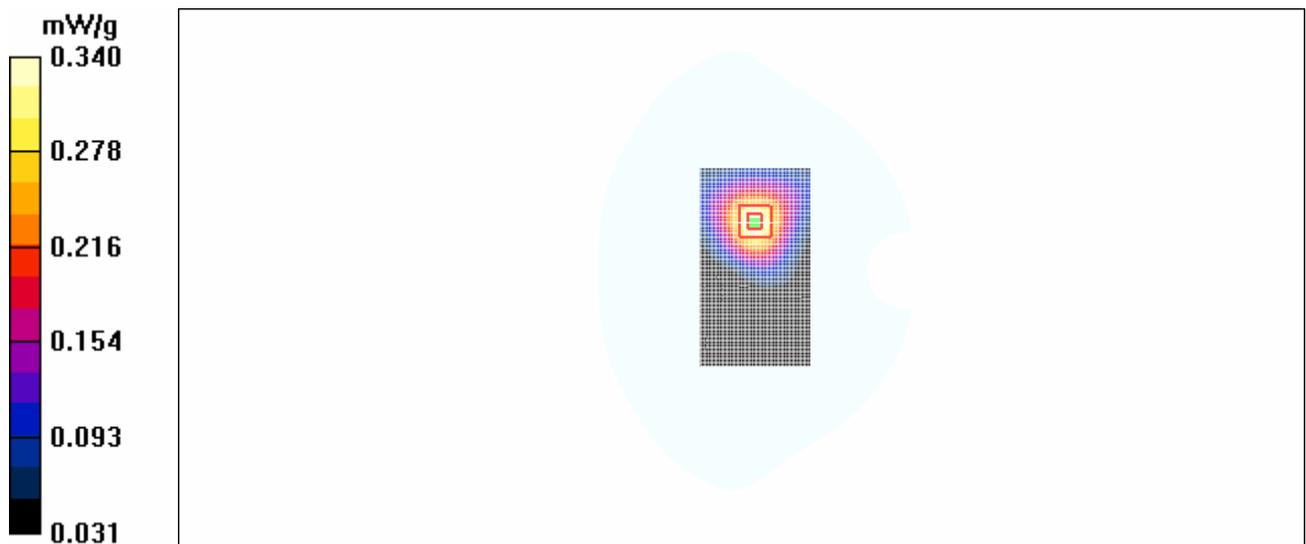


Figure 17 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 190

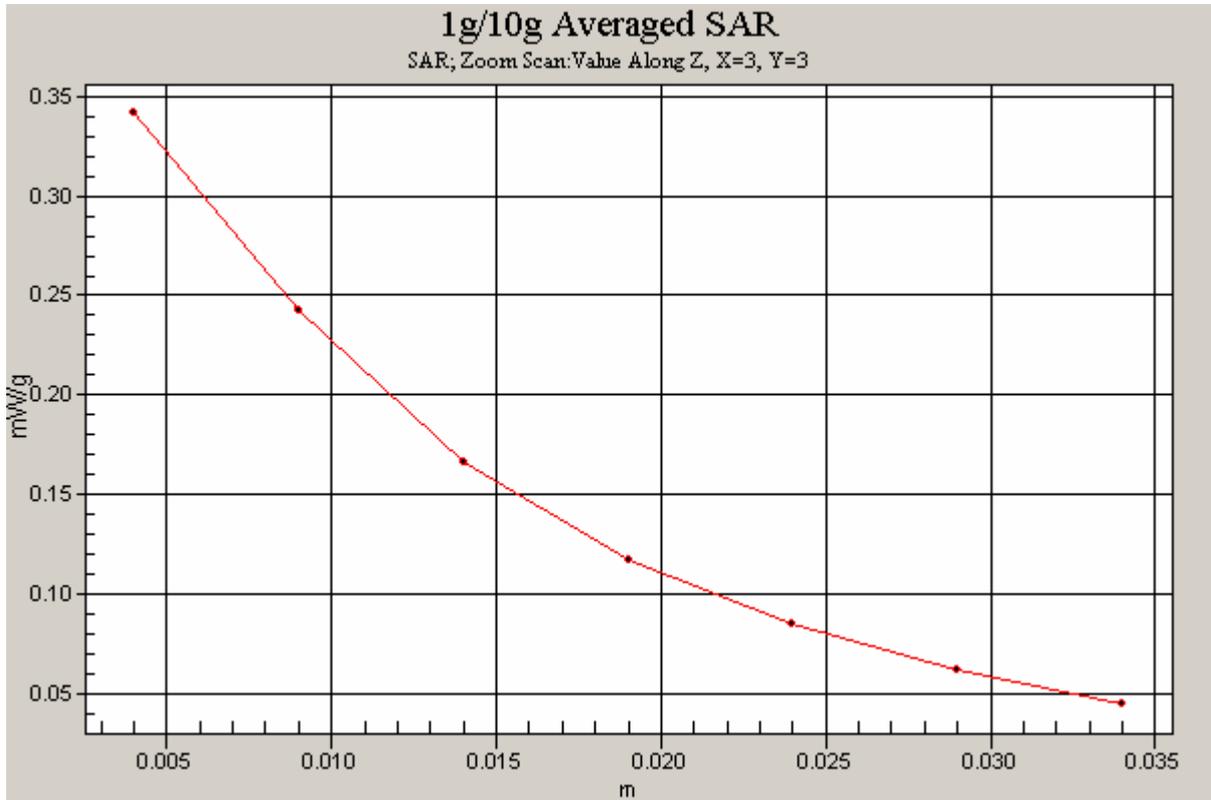


Figure 18 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 190]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 3 Middle/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.526 mW/g

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

Reference Value = 23.3 V/m; Power Drift = -0.043 dB

Peak SAR (extrapolated) = 1.89 W/kg

SAR(1 g) = 0.563 mW/g; SAR(10 g) = 0.213 mW/g

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

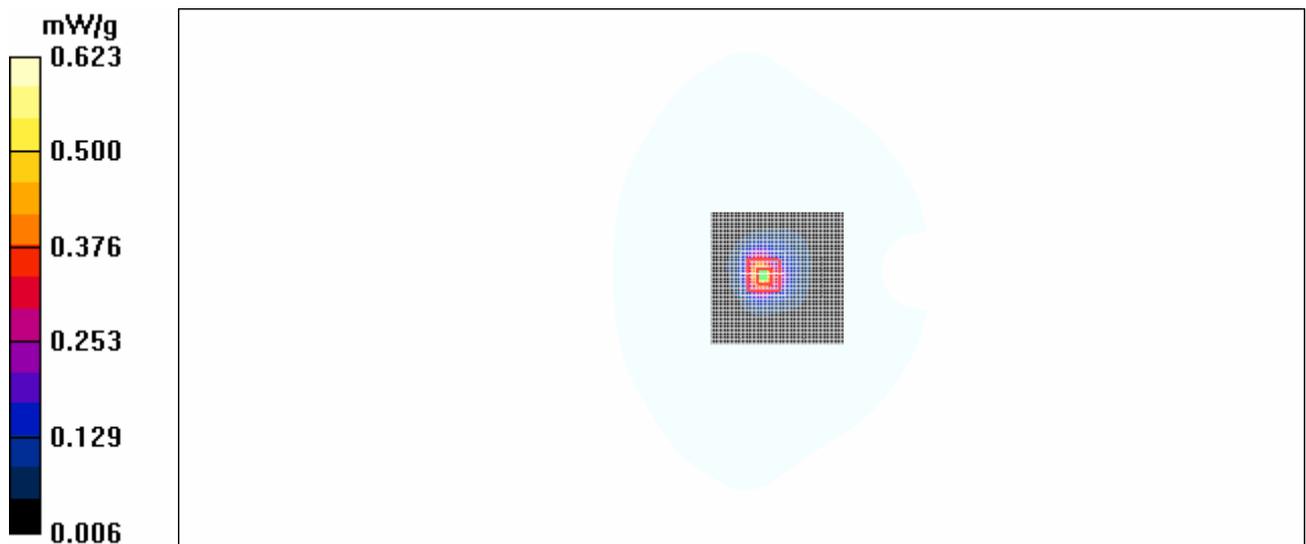


Figure 19 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 190

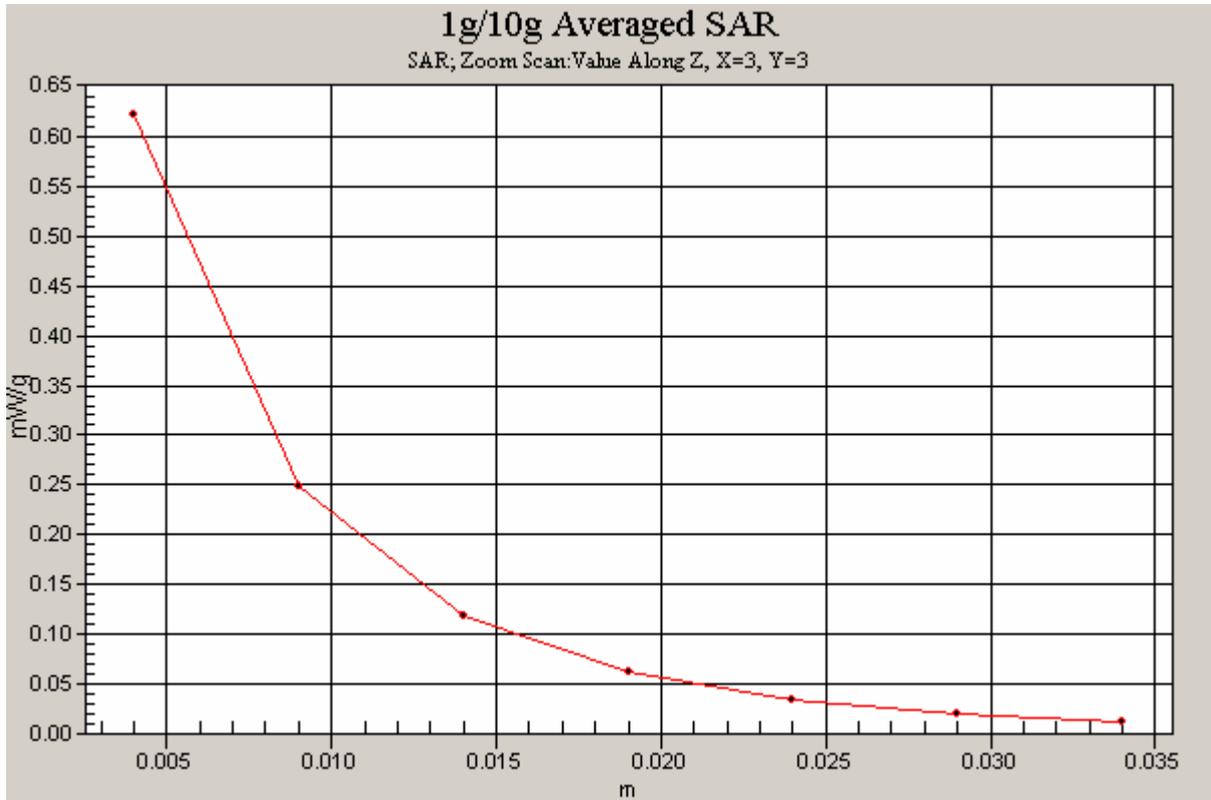


Figure 20 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 190]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.270 mW/g

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

Reference Value = 9.73 V/m; Power Drift = -0.030 dB

Peak SAR (extrapolated) = 0.397 W/kg

SAR(1 g) = 0.244 mW/g; SAR(10 g) = 0.157 mW/g

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

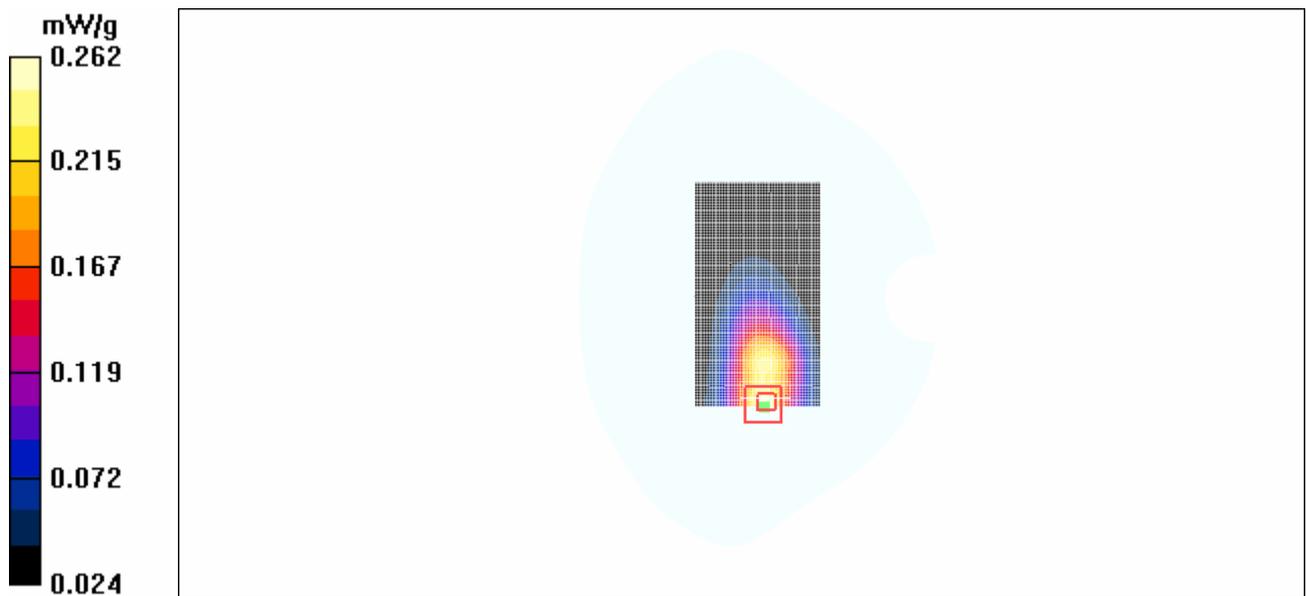


Figure 21 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 190

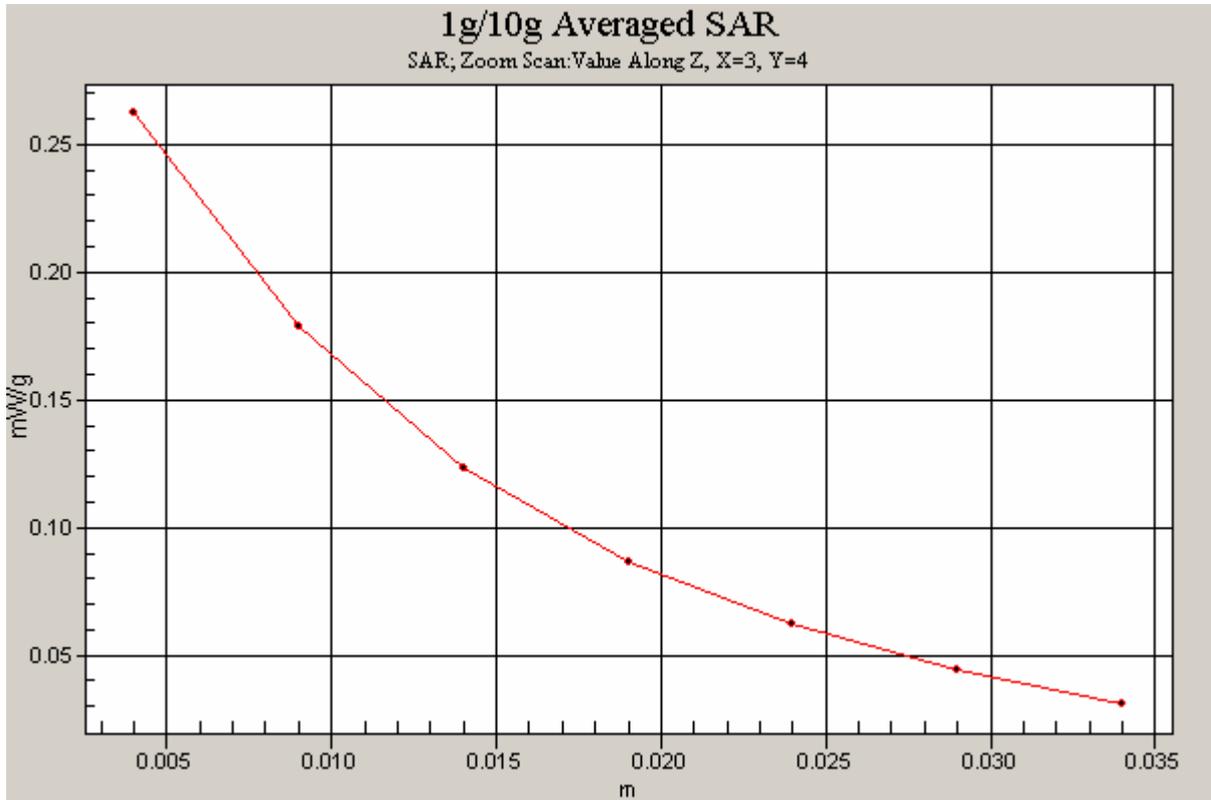


Figure 22 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 190]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

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

Maximum value of SAR (interpolated) = 0.173 mW/g

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

Reference Value = 6.60 V/m; Power Drift = 0.010 dB

Peak SAR (extrapolated) = 0.229 W/kg

SAR(1 g) = 0.160 mW/g; SAR(10 g) = 0.107 mW/g

Maximum value of SAR (measured) = 0.174 mW/g

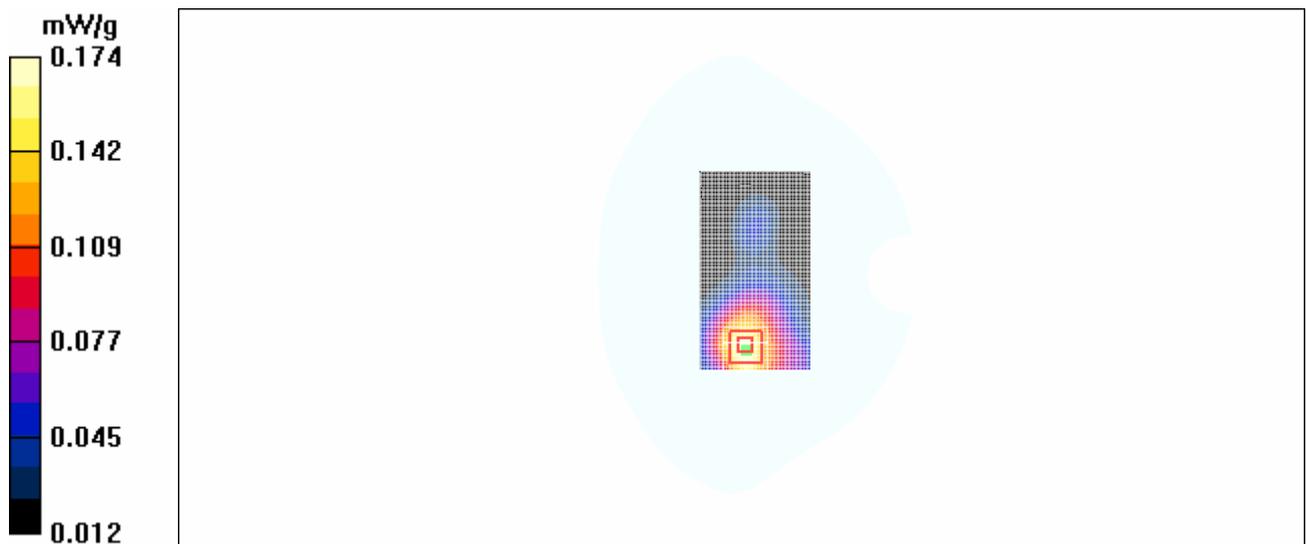


Figure 23 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 190

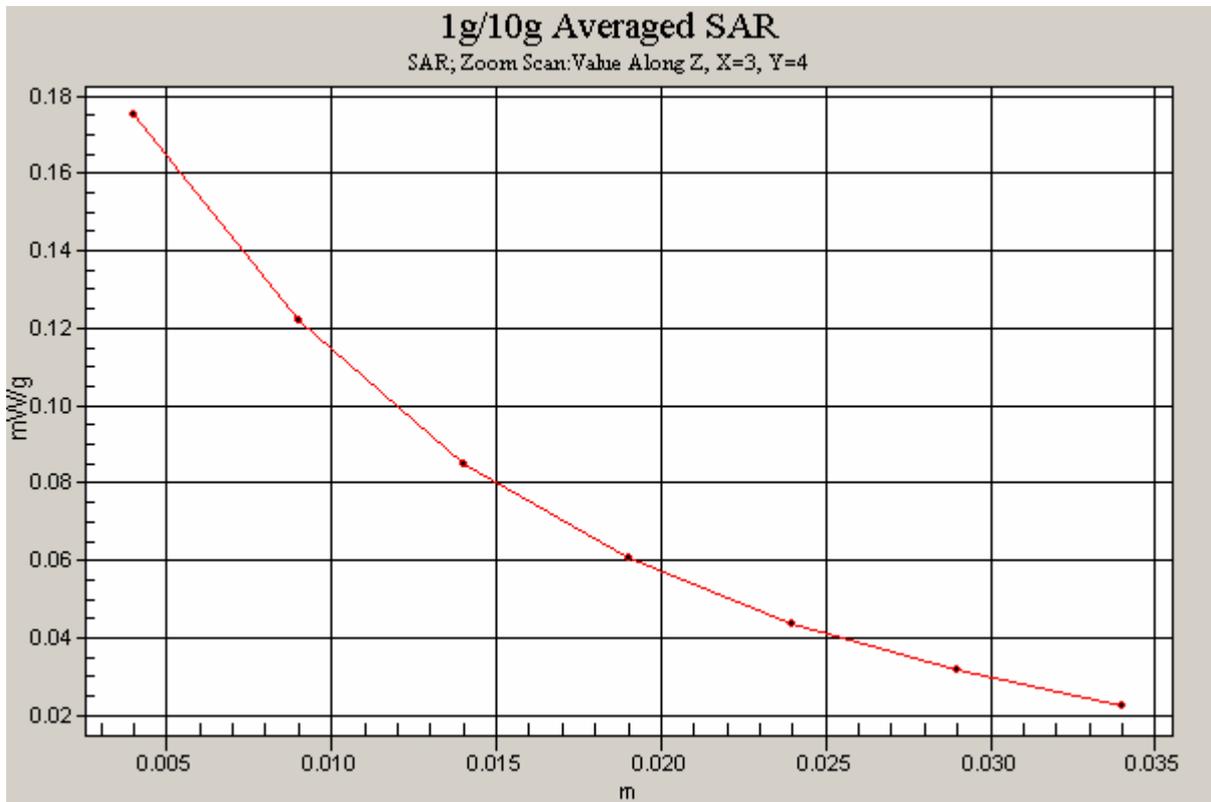


Figure 24 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 190]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

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

Maximum value of SAR (interpolated) = 0.398 mW/g

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

Reference Value = 13.8 V/m; Power Drift = -0.064 dB

Peak SAR (extrapolated) = 0.499 W/kg

SAR(1 g) = 0.371 mW/g; SAR(10 g) = 0.258 mW/g

Maximum value of SAR (measured) = 0.398 mW/g

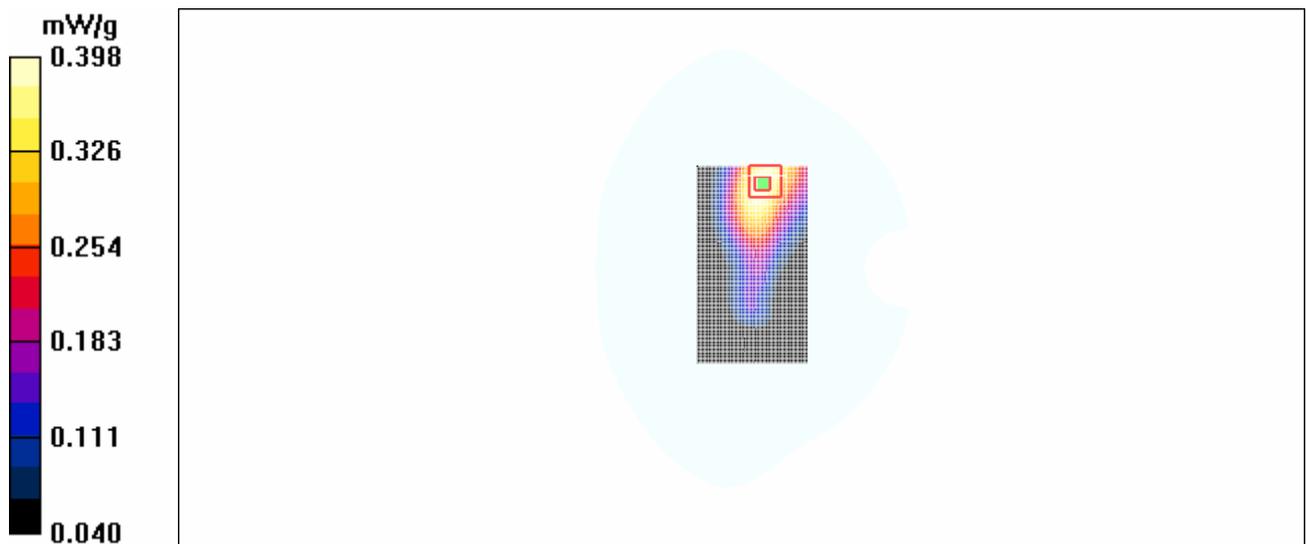


Figure 25 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 190

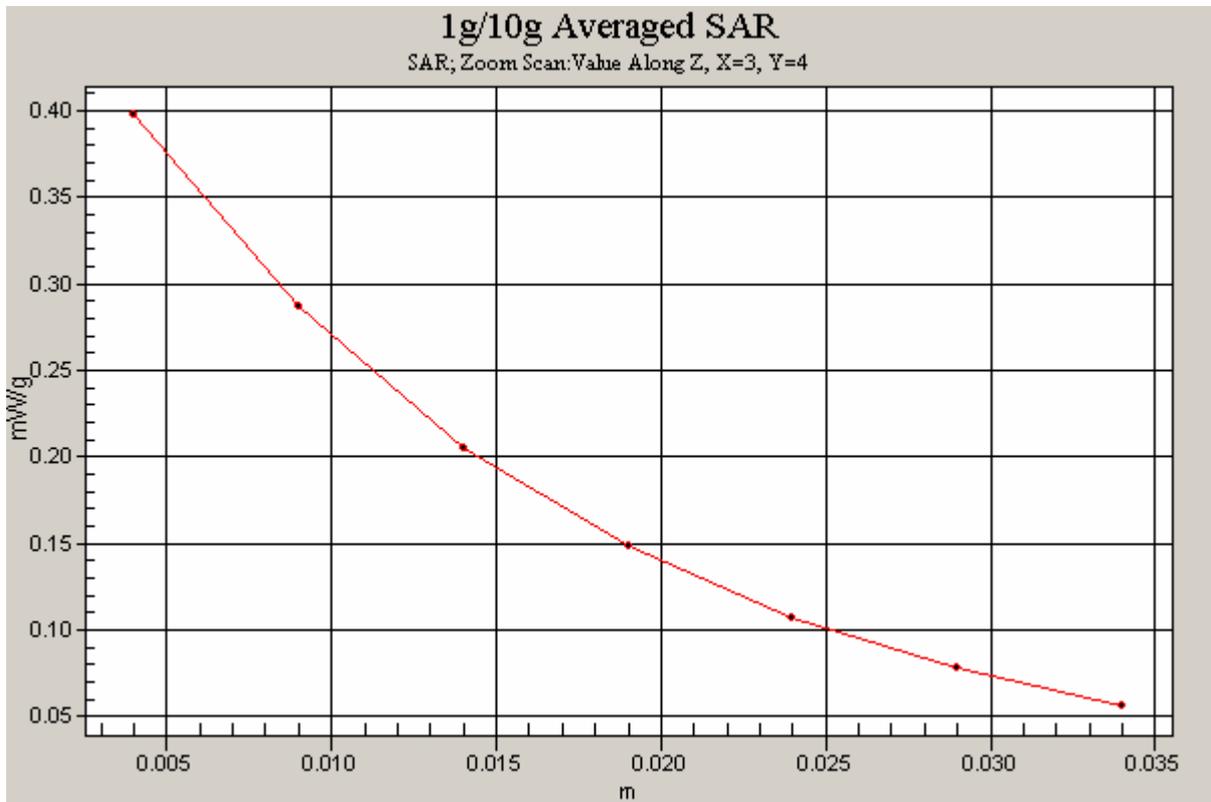


Figure 26 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 190]

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

Communication System: GSM850 + GPRS(2Up); Frequency: 848.8 MHz; Duty Cycle: 1:4

Medium parameters used: $f = 849$ MHz; $\sigma = 0.991$ mho/m; $\epsilon_r = 54.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 7 High/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.768 mW/g

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

Reference Value = 28.5 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 4.07 W/kg

SAR(1 g) = 0.988 mW/g; SAR(10 g) = 0.345 mW/g

Maximum value of SAR (measured) = 1.15 mW/g

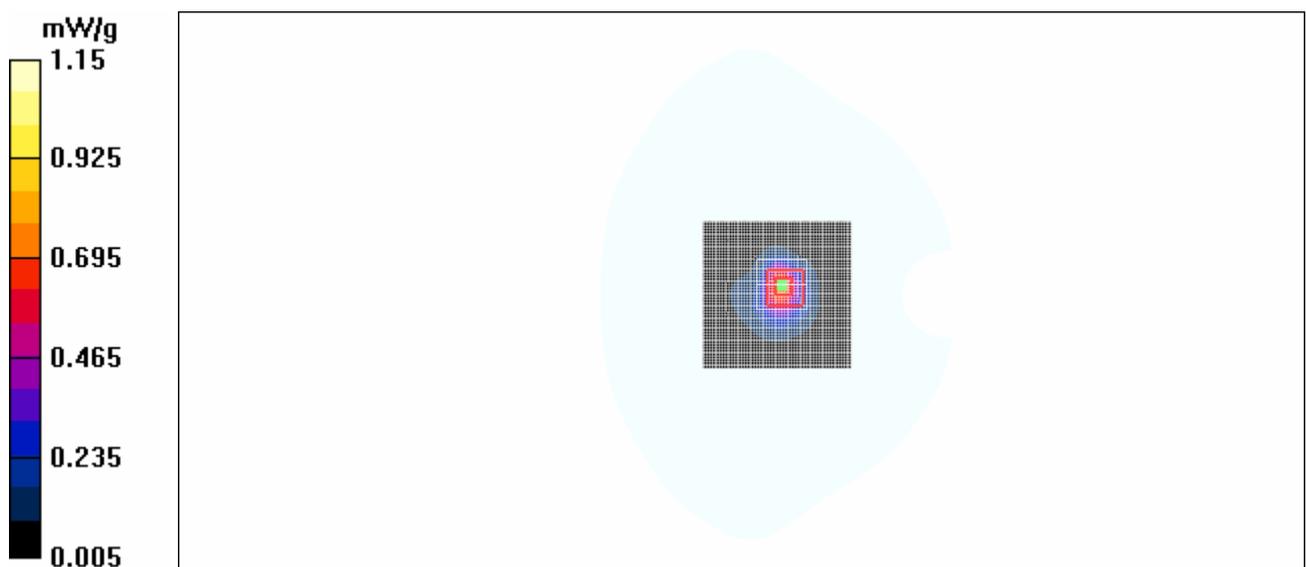


Figure 27 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 251

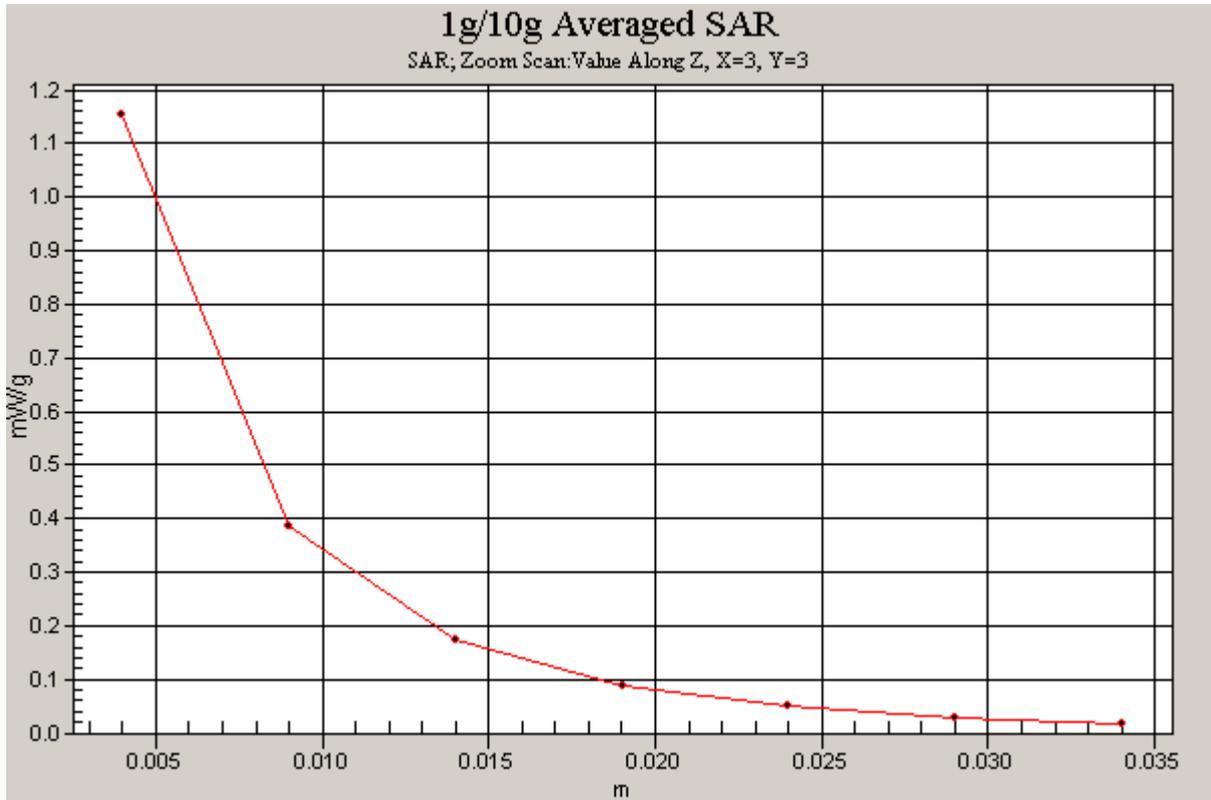


Figure 28 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 251]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 7 Middle/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 31.9 V/m; Power Drift = -0.028 dB

Peak SAR (extrapolated) = 3.73 W/kg

SAR(1 g) = 0.918 mW/g; SAR(10 g) = 0.320 mW/g

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

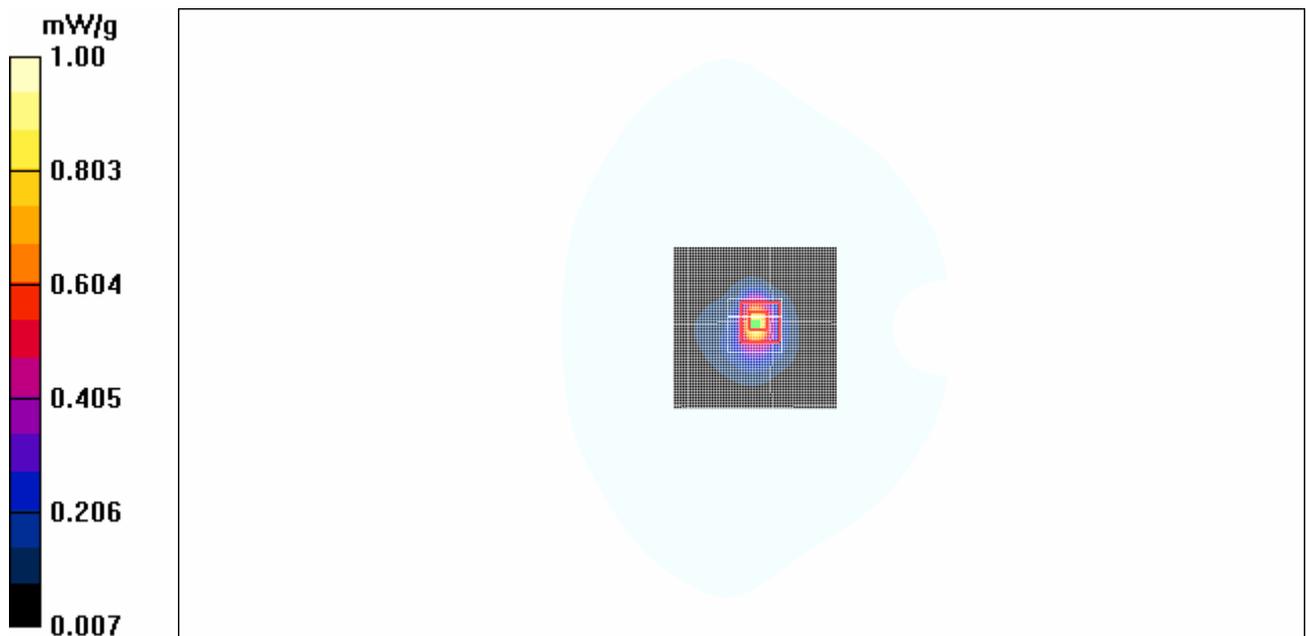


Figure 29 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 190

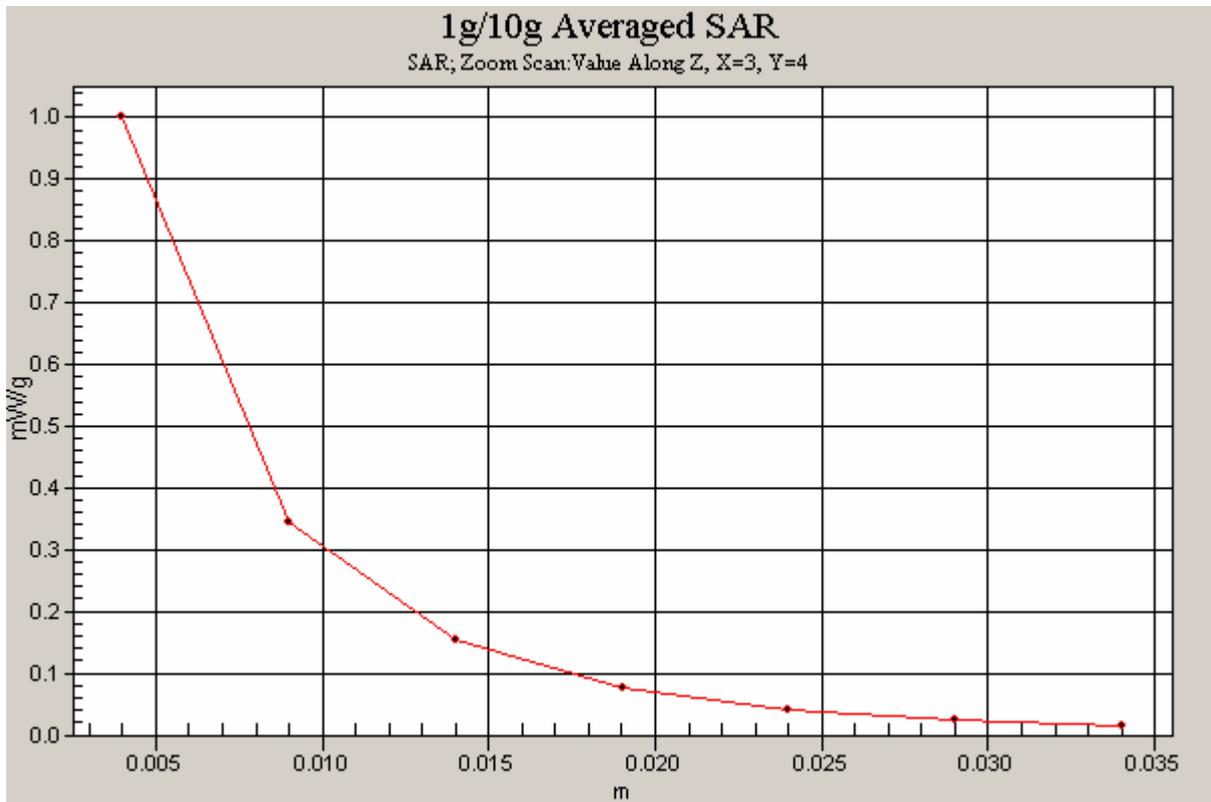


Figure 30 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 190]

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

Communication System: GSM850 + GPRS(2Up); Frequency: 824.2 MHz; Duty Cycle: 1:4

Medium parameters used (interpolated): $f = 824.2$ MHz; $\sigma = 0.969$ mho/m; $\epsilon_r = 55$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 7 Low/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

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

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

Reference Value = 25.9 V/m; Power Drift = -0.171 dB

Peak SAR (extrapolated) = 3.22 W/kg

SAR(1 g) = 0.801 mW/g; SAR(10 g) = 0.278 mW/g

Maximum value of SAR (measured) = 0.946 mW/g

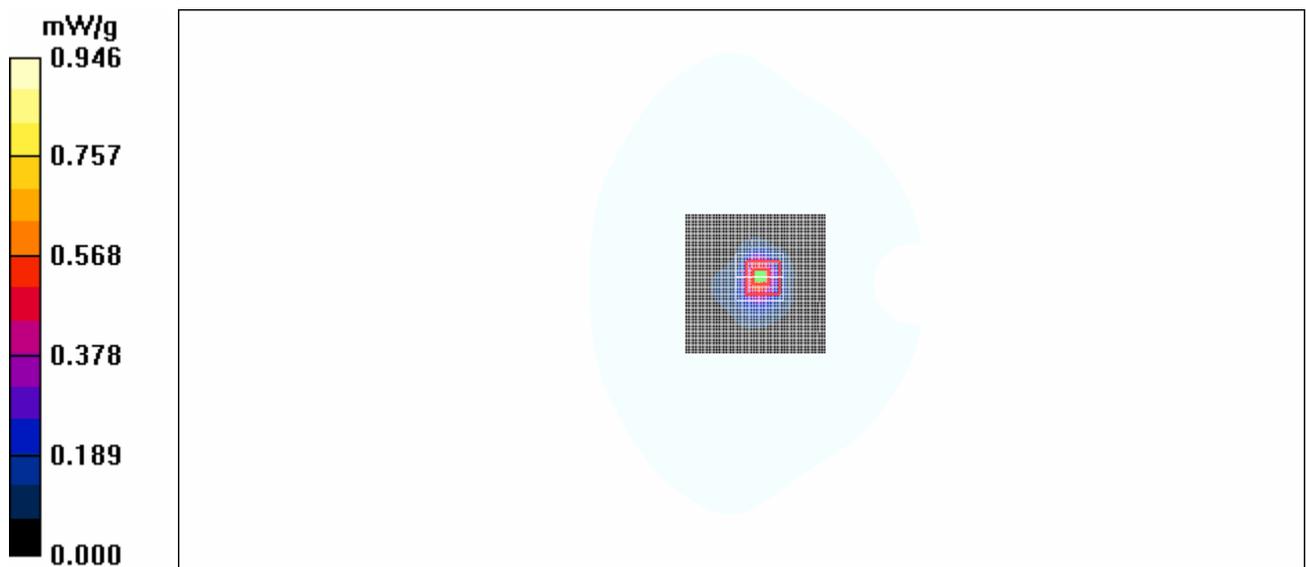


Figure 31 GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 128

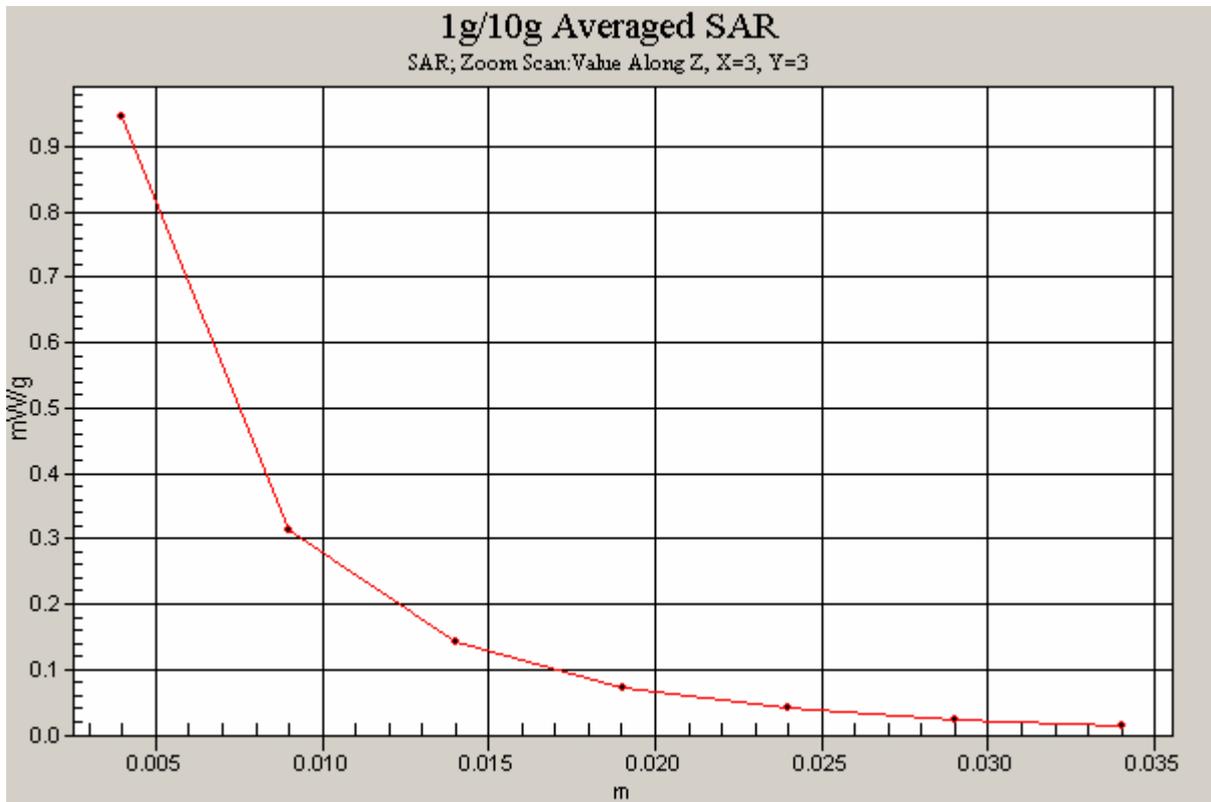


Figure 32 Z-Scan at power reference point [GSM 850 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 128]

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

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

Medium parameters used: $f = 837$ MHz; $\sigma = 0.996$ mho/m; $\epsilon_r = 56$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(6.52, 6.52, 6.52);

Electronics: DAE3 Sn452;

Test Position 7 Middle/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.233 mW/g

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

Reference Value = 15.7 V/m; Power Drift = 0.162 dB

Peak SAR (extrapolated) = 0.924 W/kg

SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.086 mW/g

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

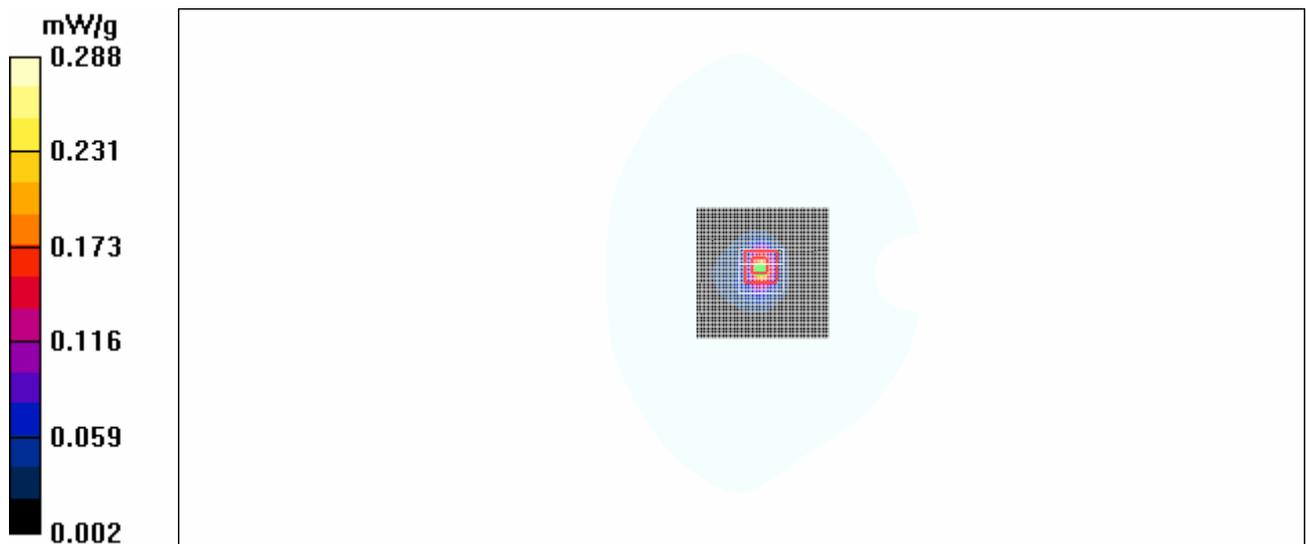


Figure 33 GSM 850 EGPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 190

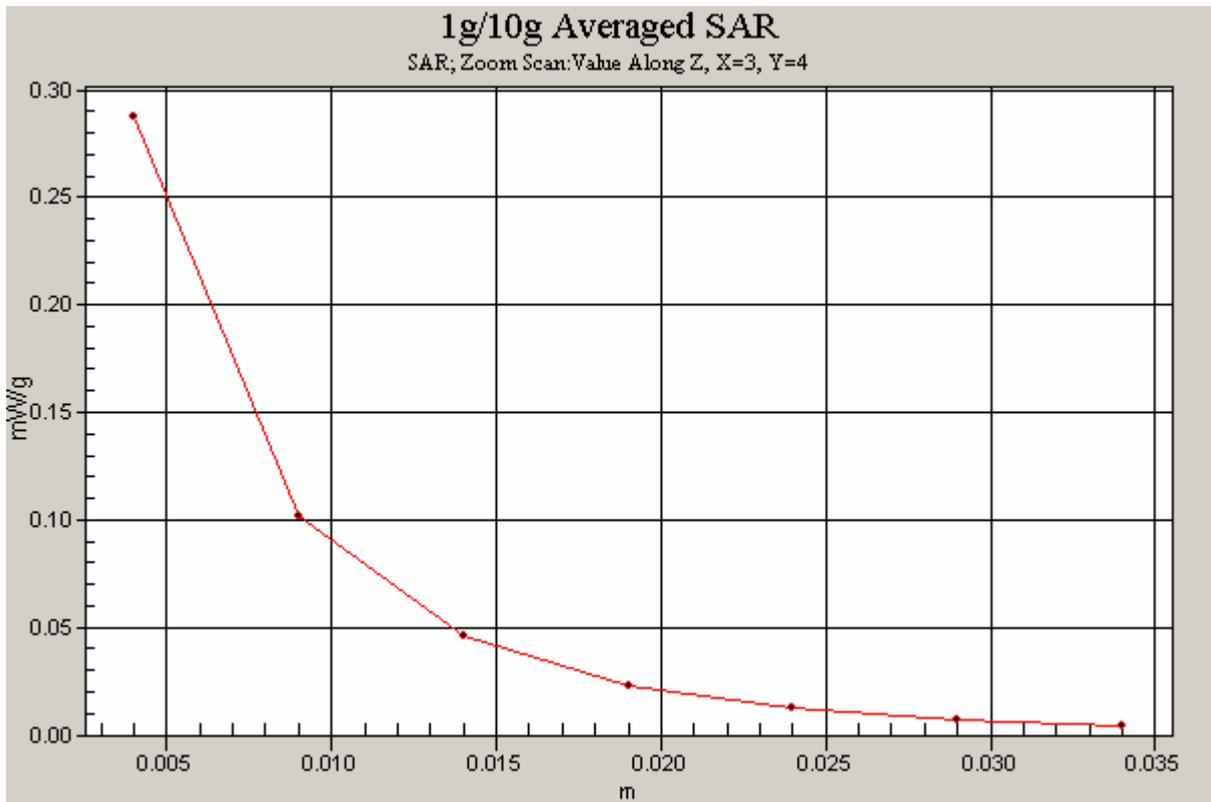


Figure 34 Z-Scan at power reference point [GSM 850 EGPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 190]

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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.650 mW/g

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

Reference Value = 16.0 V/m; Power Drift = 0.164 dB

Peak SAR (extrapolated) = 0.824 W/kg

SAR(1 g) = 0.511 mW/g; SAR(10 g) = 0.292 mW/g

Maximum value of SAR (measured) = 0.564 mW/g

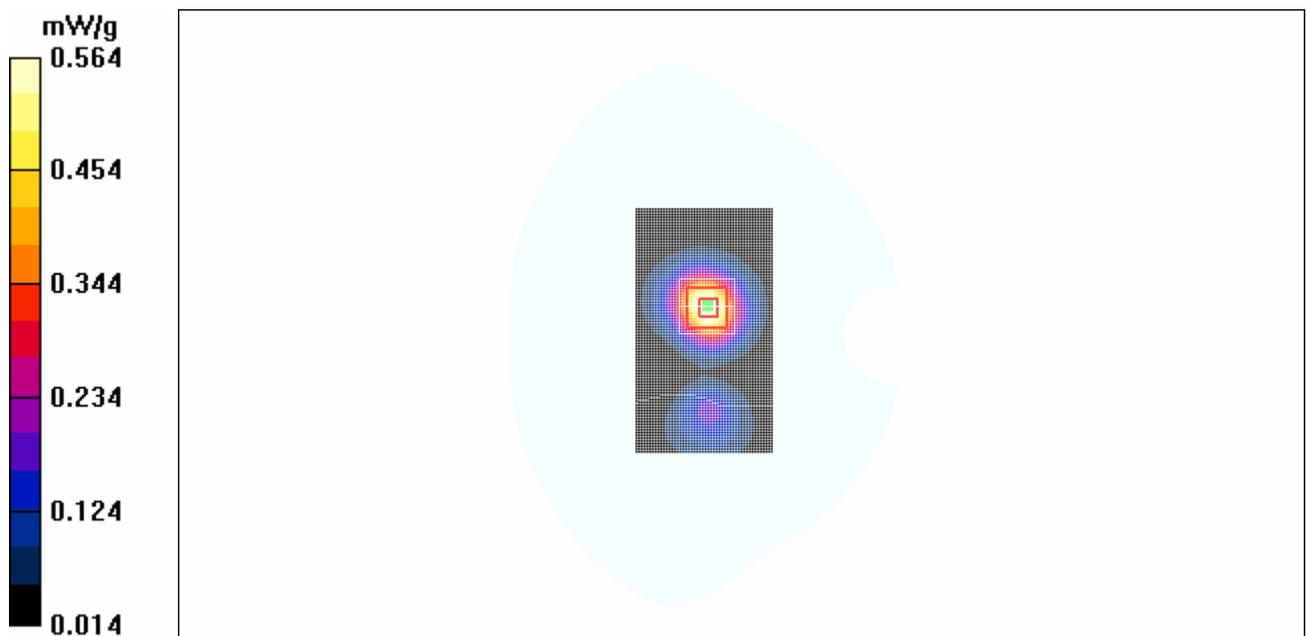


Figure 35 GSM 1900 GPRS (4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

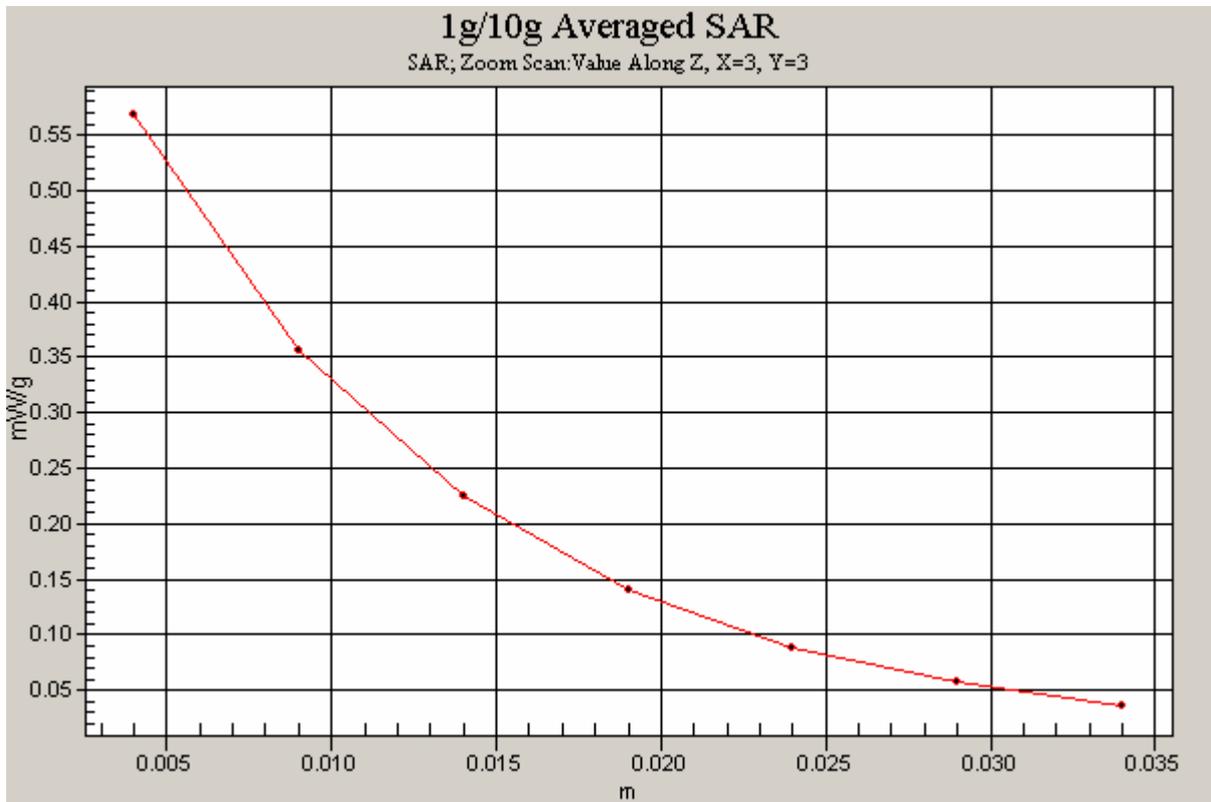


Figure 36 Z-Scan at power reference point [GSM 1900 GPRS(4 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.429 mW/g

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

Reference Value = 12.1 V/m; Power Drift = 0.105 dB

Peak SAR (extrapolated) = 0.544 W/kg

SAR(1 g) = 0.341 mW/g; SAR(10 g) = 0.201 mW/g

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

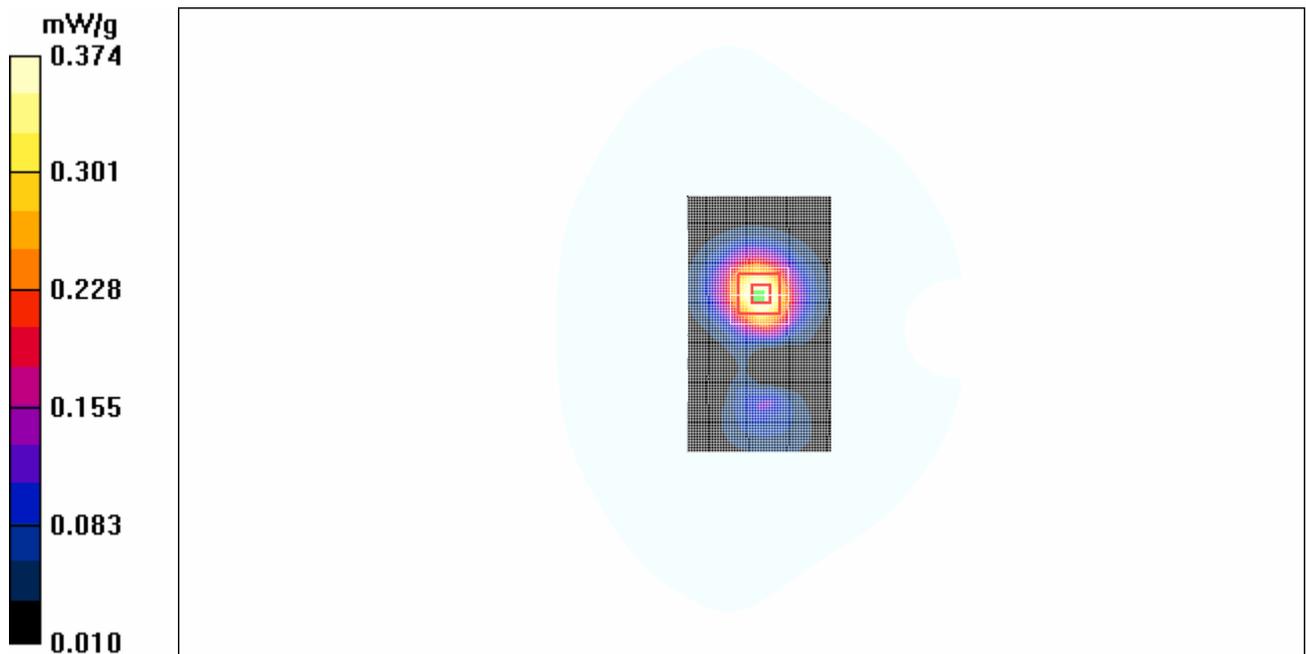


Figure 37 GSM 1900 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 661

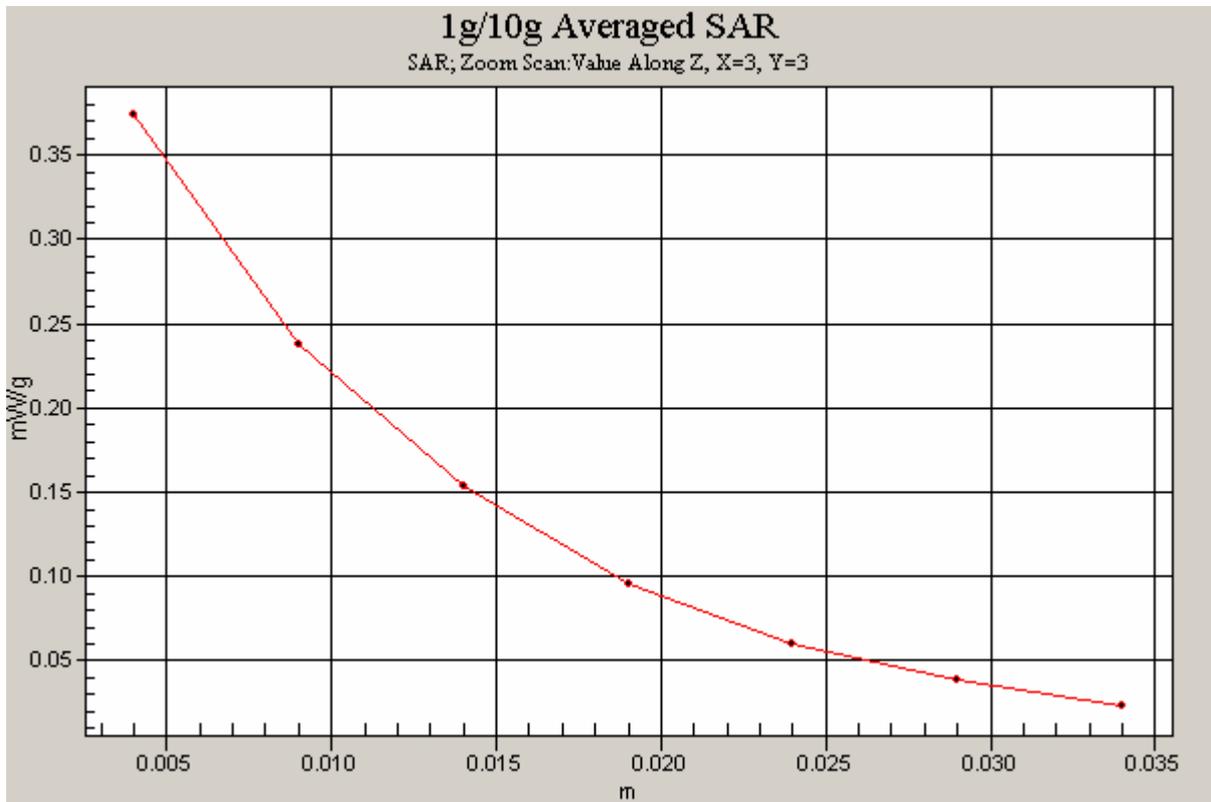


Figure 38 Z-Scan at power reference point [GSM 1900 GPRS (4 timeslots in uplink) with Acer ZH1 Test Position 1 Channel 661]

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

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.748 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 = -0.038 dB

Peak SAR (extrapolated) = 1.02 W/kg

SAR(1 g) = 0.623 mW/g; SAR(10 g) = 0.356 mW/g

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

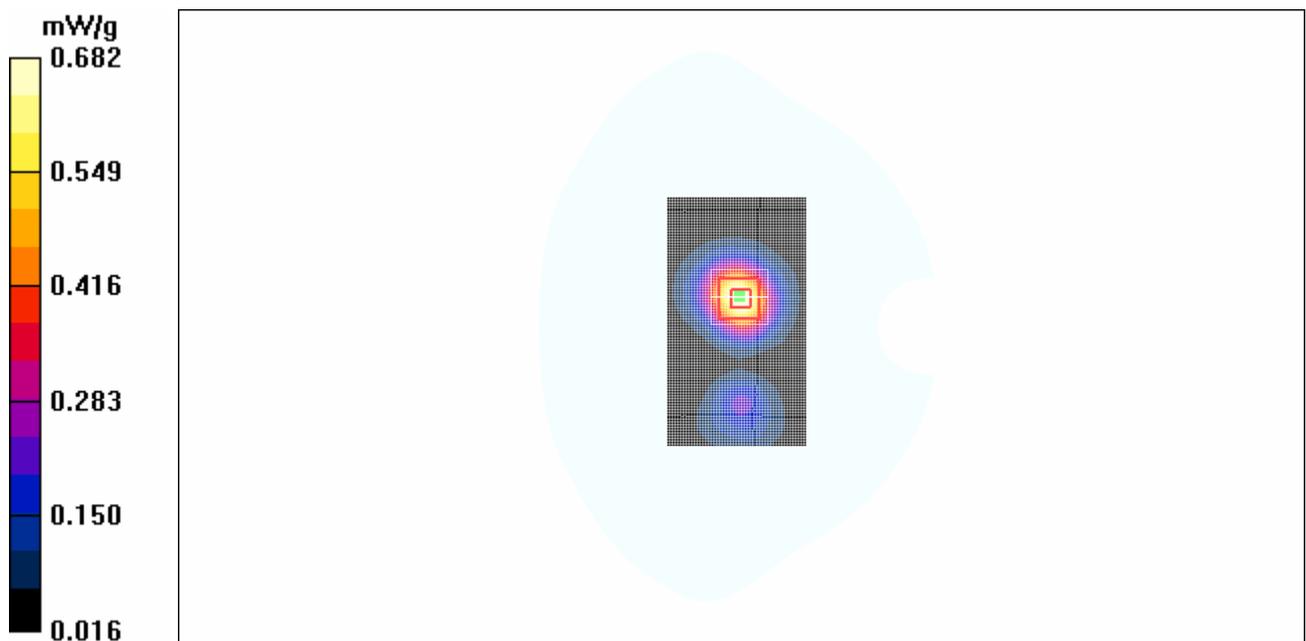


Figure 39 GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

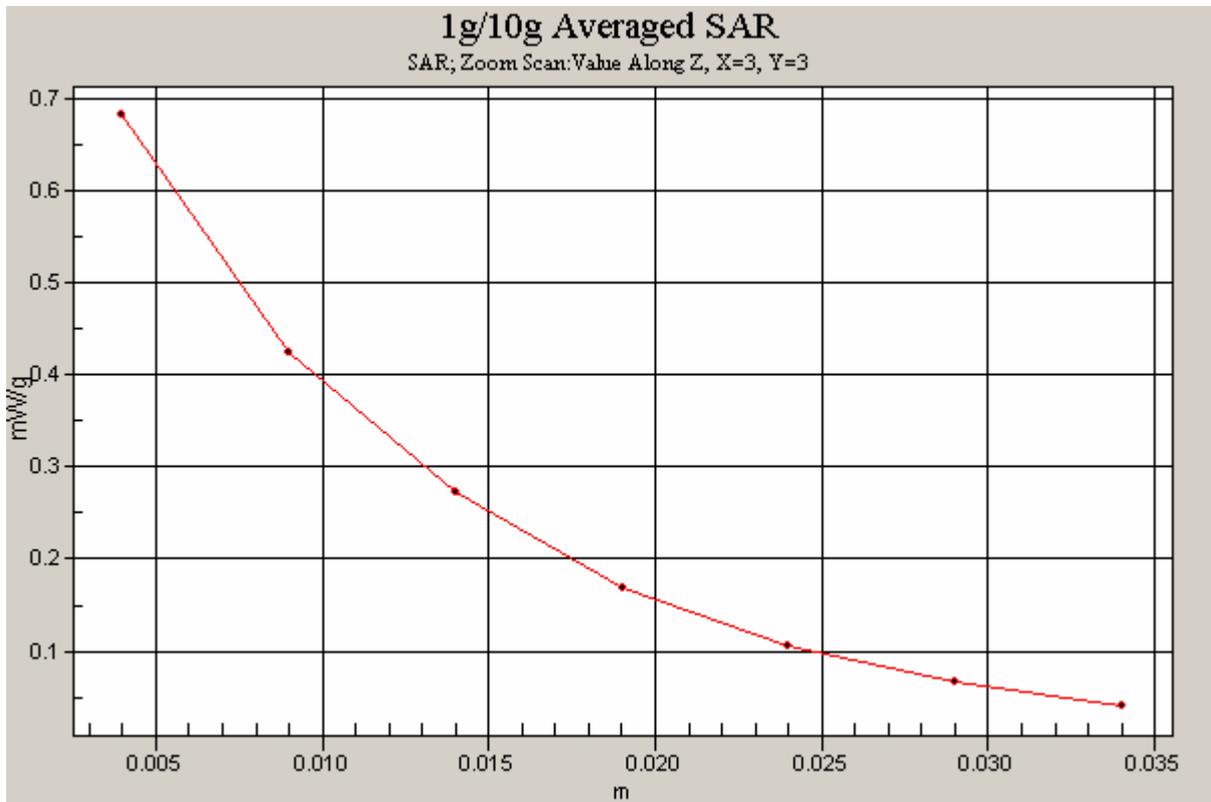


Figure 40 Z-Scan at power reference point [GSM 1900 GPRS (3 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

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

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.818 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 = 0.057 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.680 mW/g; SAR(10 g) = 0.390 mW/g

Maximum value of SAR (measured) = 0.752 mW/g

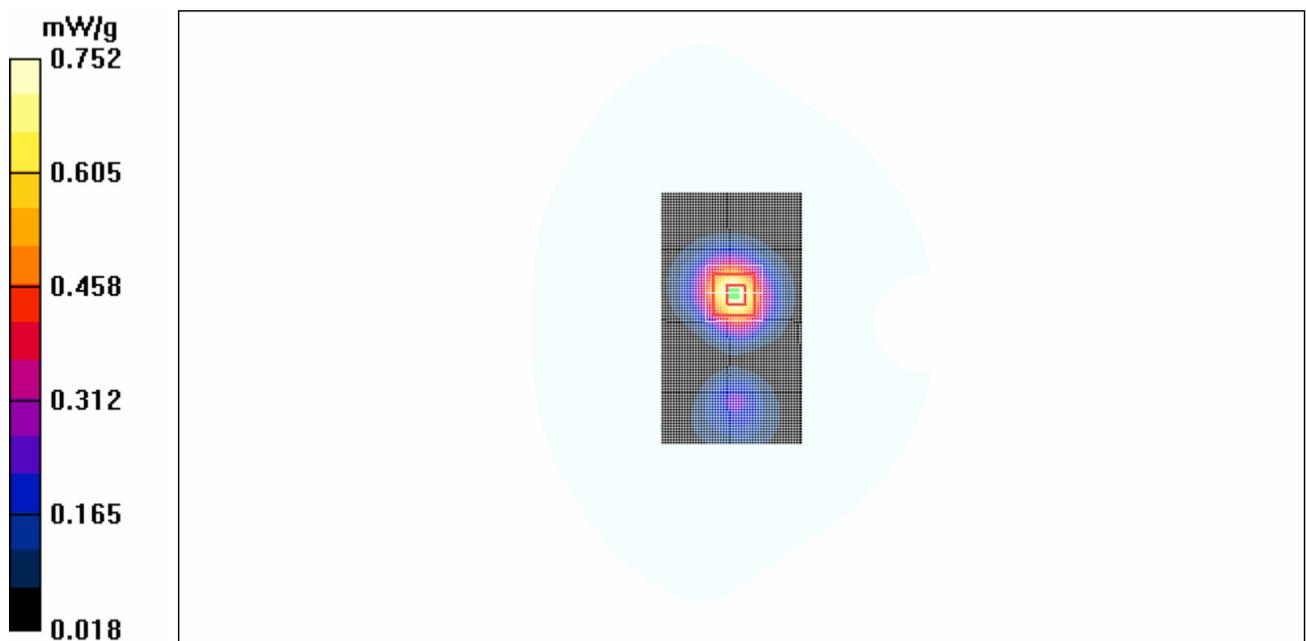


Figure 41 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

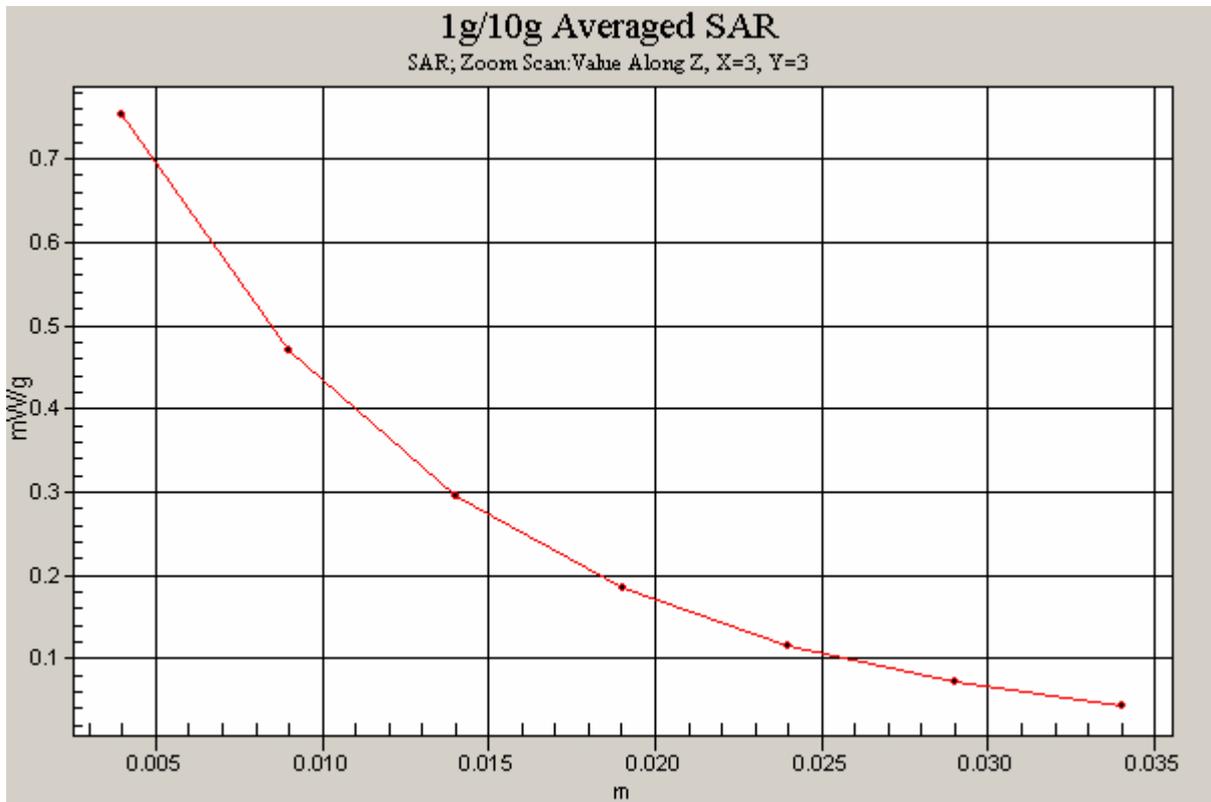


Figure 42 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

GSM 1900 GPRS (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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.778 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 = 0.166 dB

Peak SAR (extrapolated) = 1.06 W/kg

SAR(1 g) = 0.649 mW/g; SAR(10 g) = 0.371 mW/g

Maximum value of SAR (measured) = 0.716 mW/g

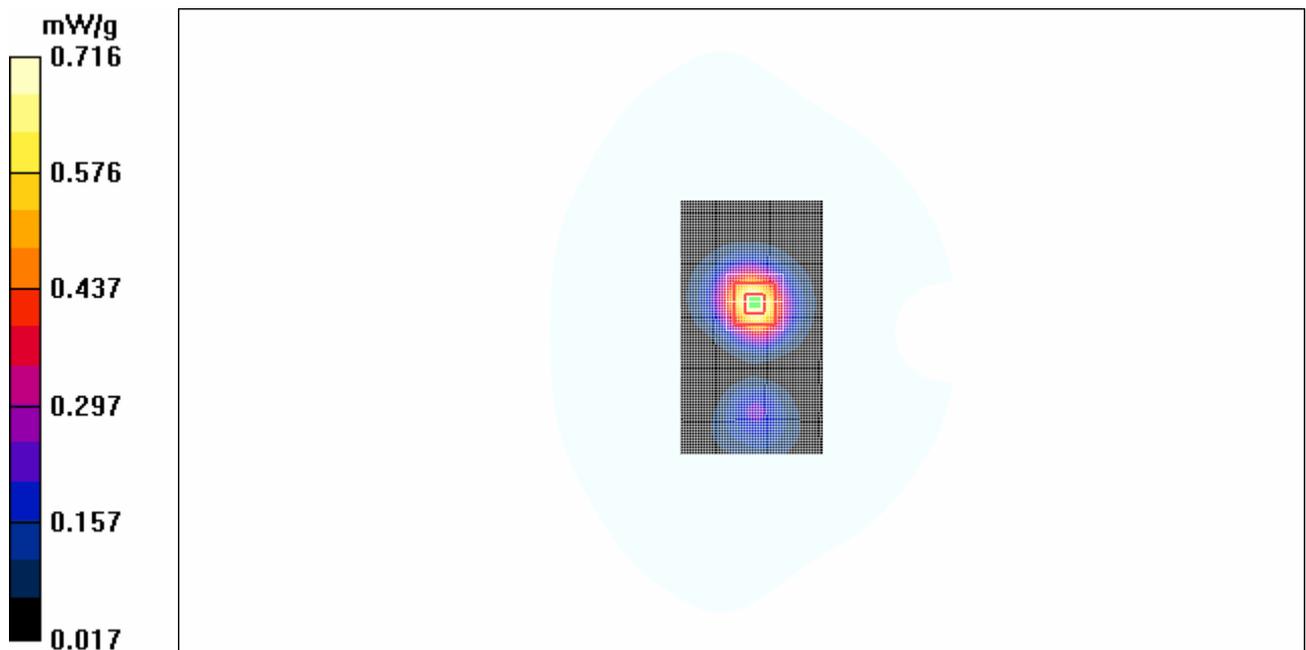


Figure 43 GSM 1900 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 661

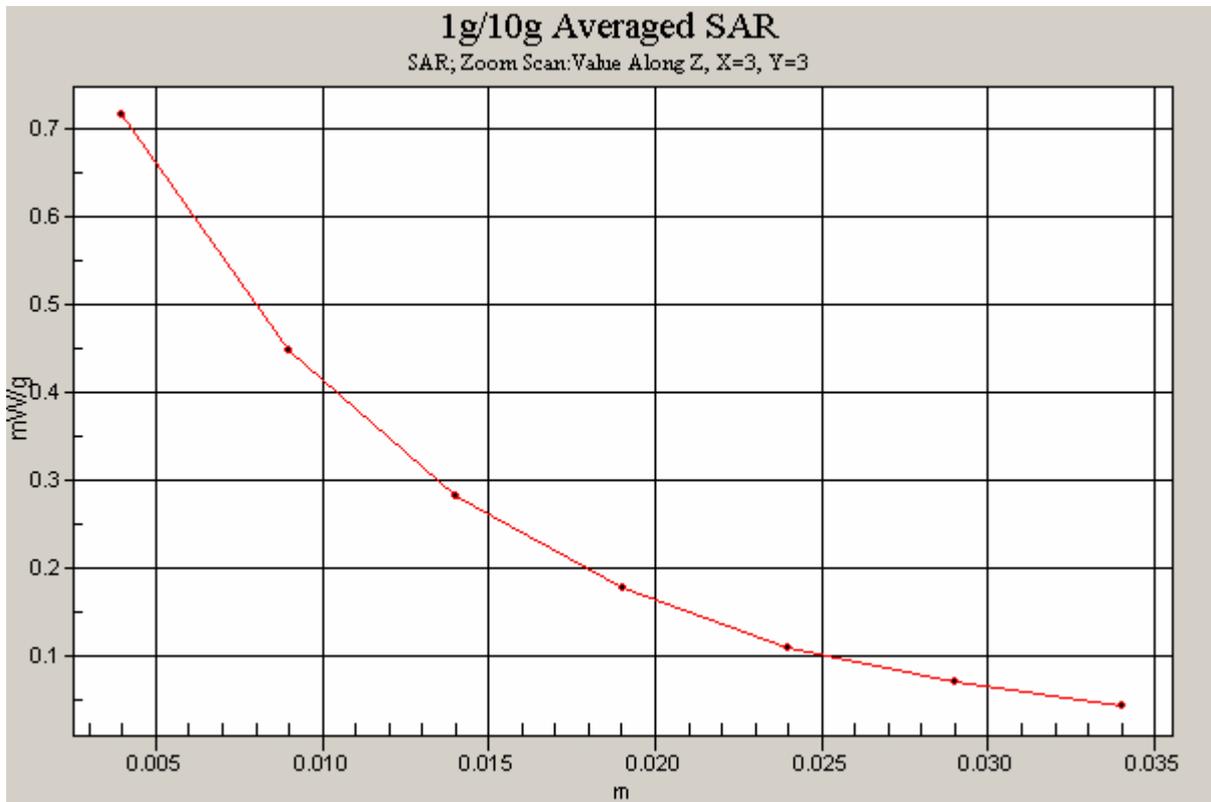


Figure 44 Z-Scan at power reference point [GSM 1900 GPRS (1 timeslot in uplink) with BenQ Joy book S72 Test Position 1 Channel 661]

GSM 1900 GPRS (2timeslots 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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.419 mW/g

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

Reference Value = 10.4 V/m; Power Drift = -0.039 dB

Peak SAR (extrapolated) = 0.584 W/kg

SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.202 mW/g

Maximum value of SAR (measured) = 0.385 mW/g

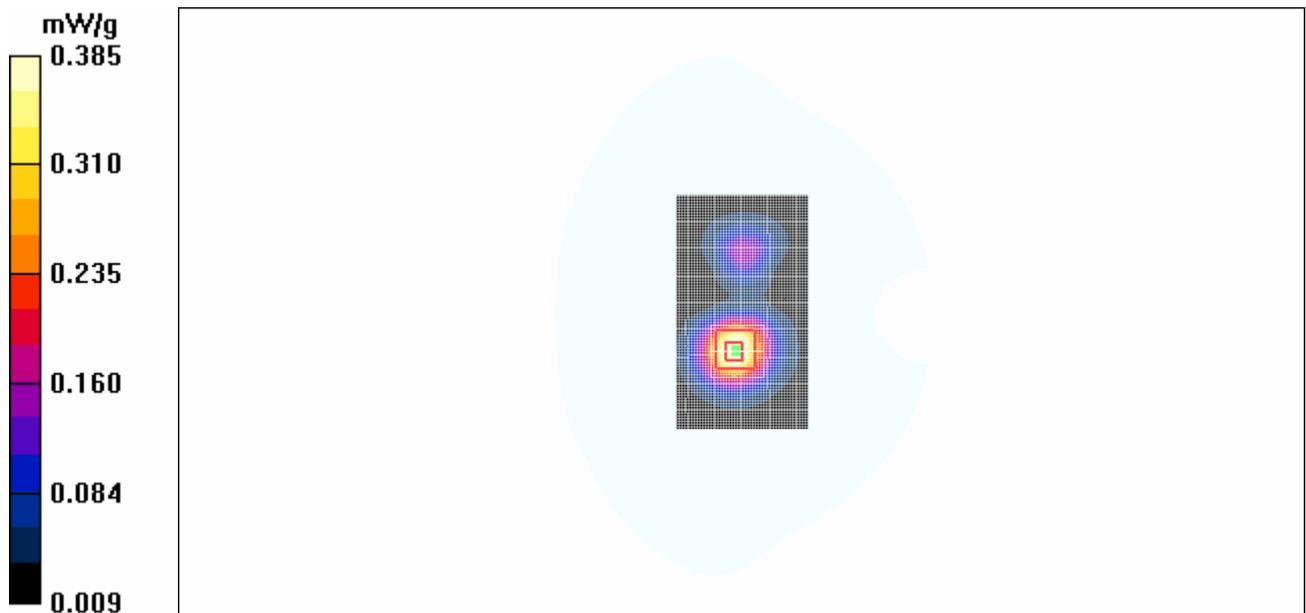


Figure 45 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 661

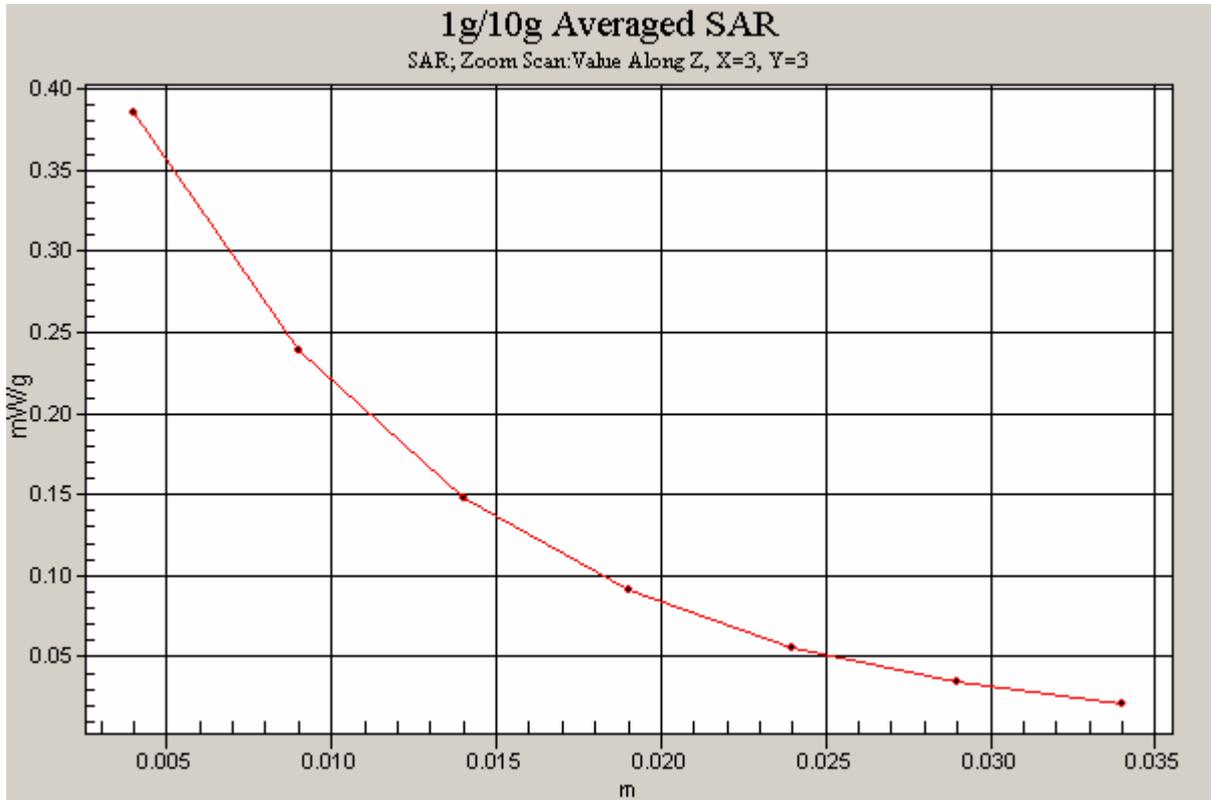


Figure 46 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 2 Channel 661]

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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(4.64, 4.64, 4.64);

Electronics: DAE3 Sn452;

Test Position 3 Middle/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.508 mW/g

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

Reference Value = 19.2 V/m; Power Drift = -0.183 dB

Peak SAR (extrapolated) = 1.66 W/kg

SAR(1 g) = 0.428 mW/g; SAR(10 g) = 0.203 mW/g

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

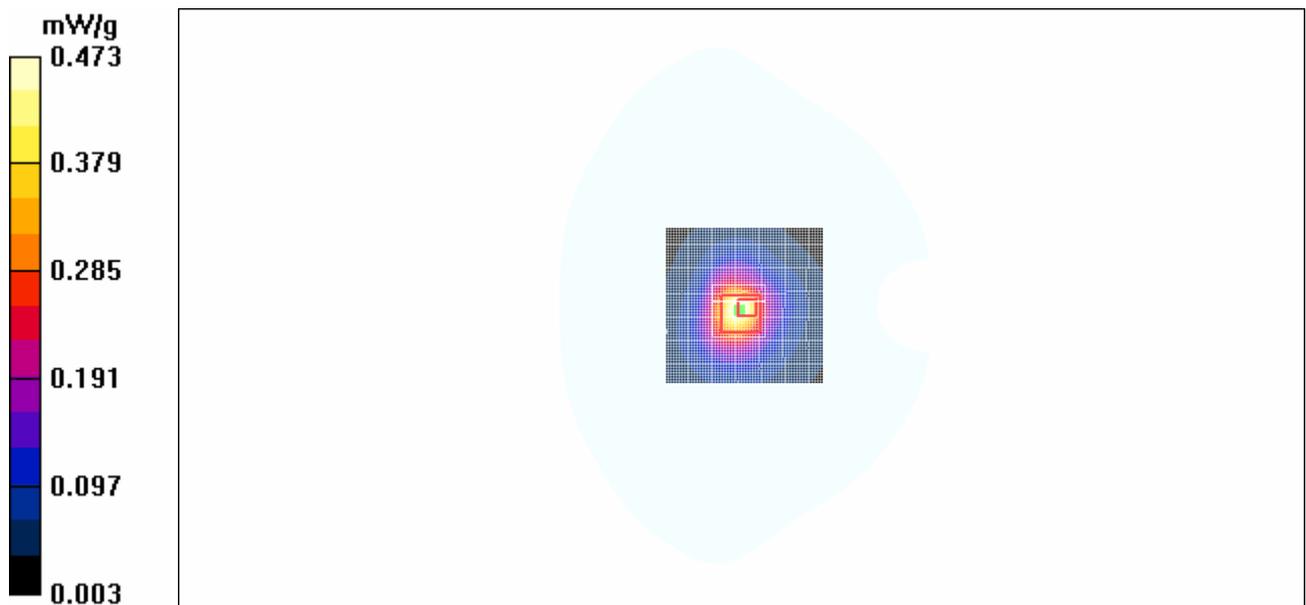


Figure 47 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 661

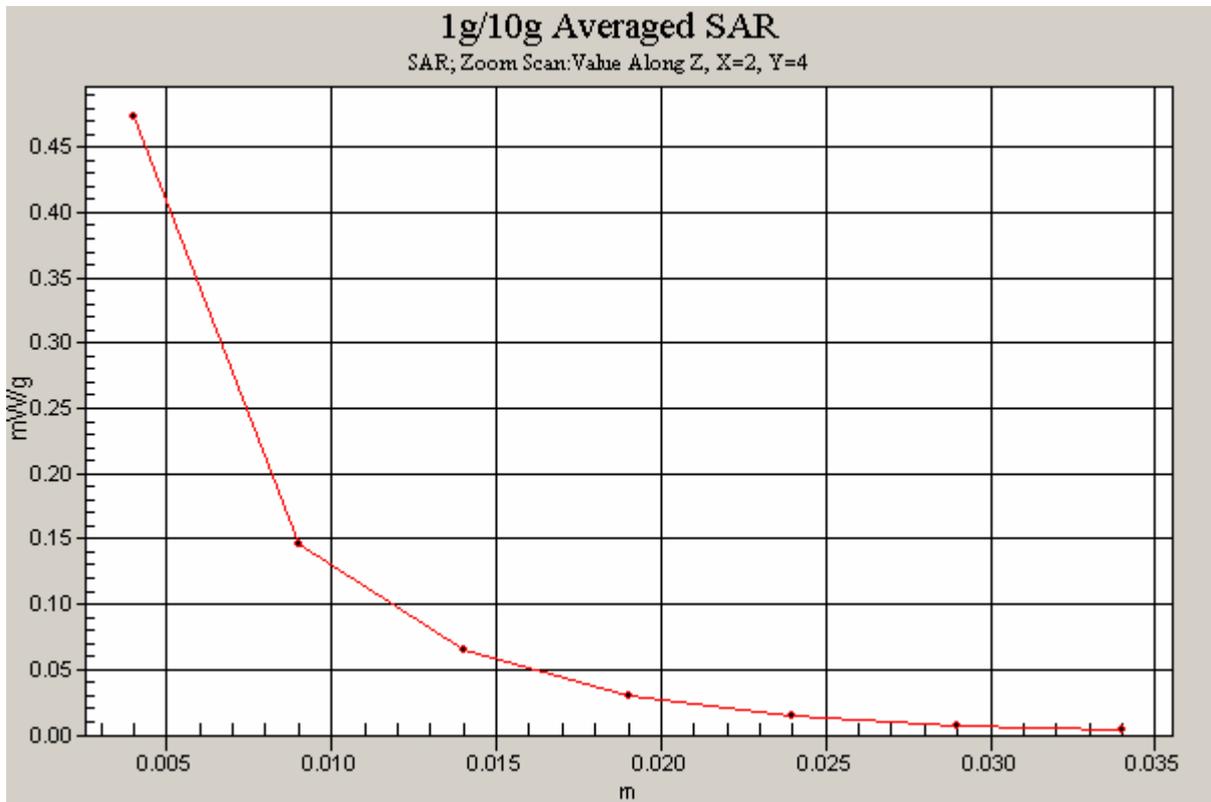


Figure 48 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book S72 Test Position 3 Channel 661]

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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.279 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 = 0.022 dB

Peak SAR (extrapolated) = 0.365 W/kg

SAR(1 g) = 0.234 mW/g; SAR(10 g) = 0.142 mW/g

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

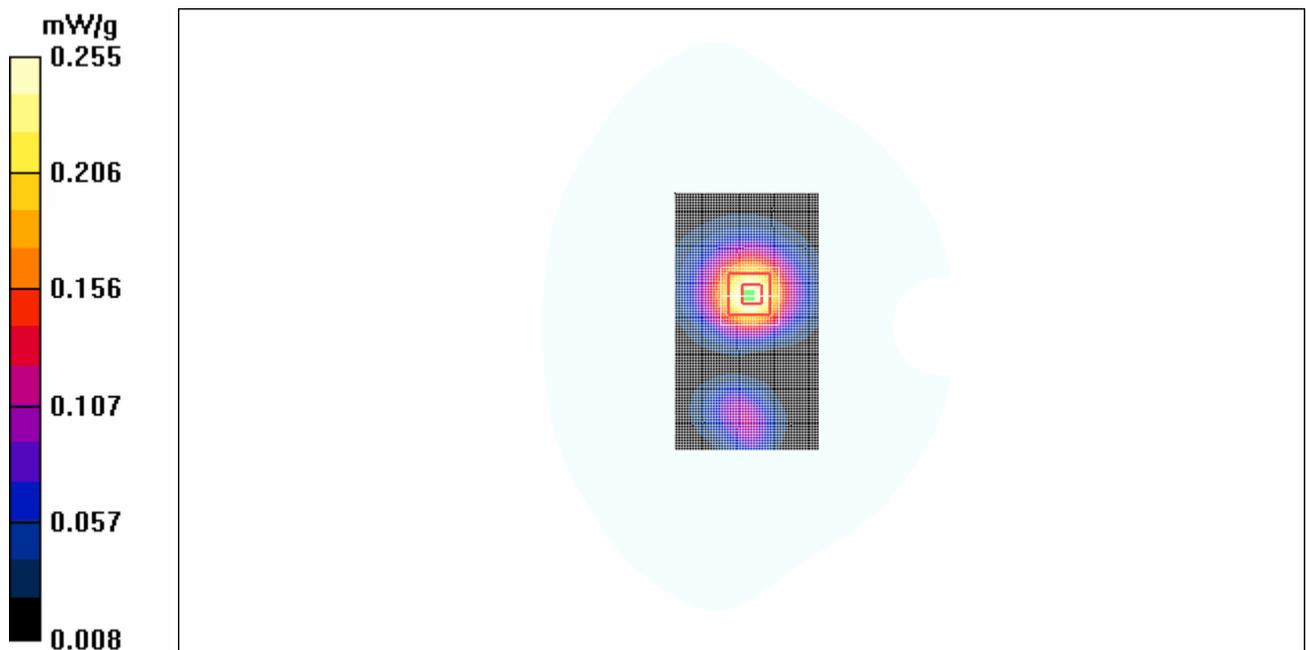


Figure 49 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 661

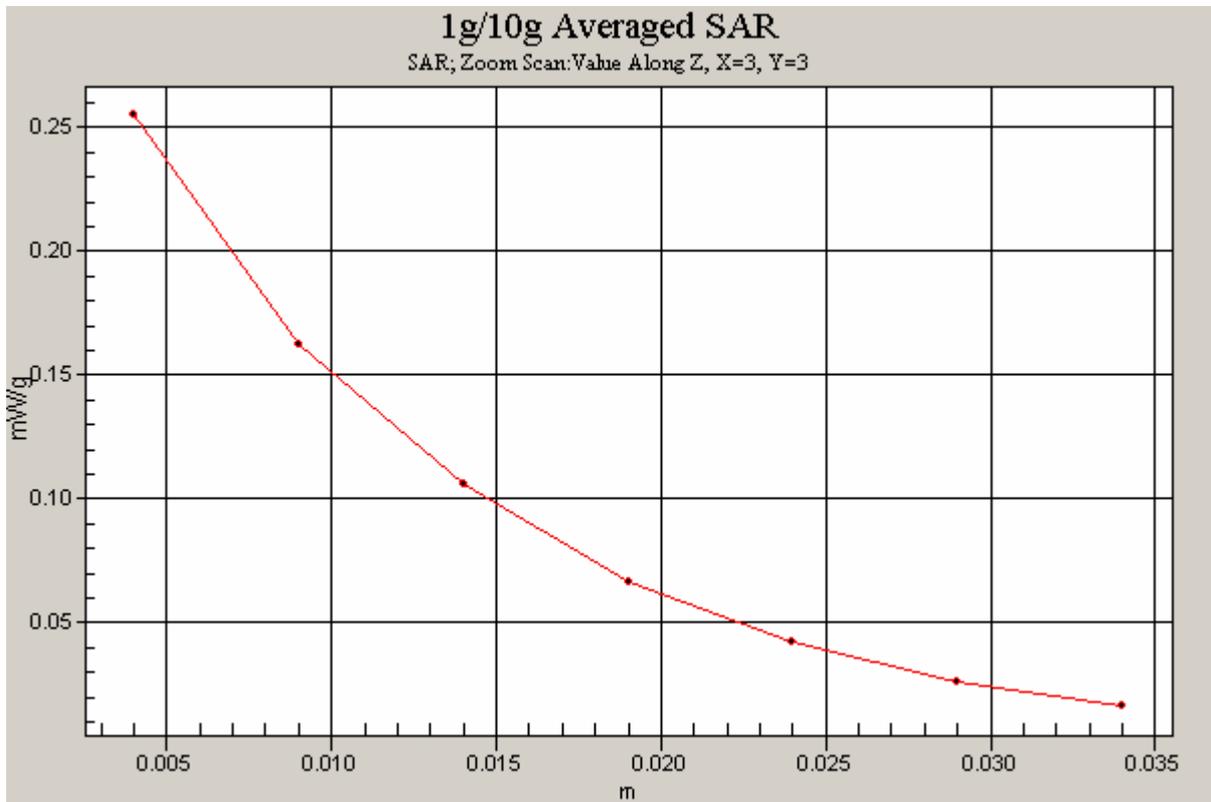


Figure 50 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 4 Channel 661]

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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.276 mW/g

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

Reference Value = 12.1 V/m; Power Drift = -0.096 dB

Peak SAR (extrapolated) = 0.377 W/kg

SAR(1 g) = 0.243 mW/g; SAR(10 g) = 0.146 mW/g

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

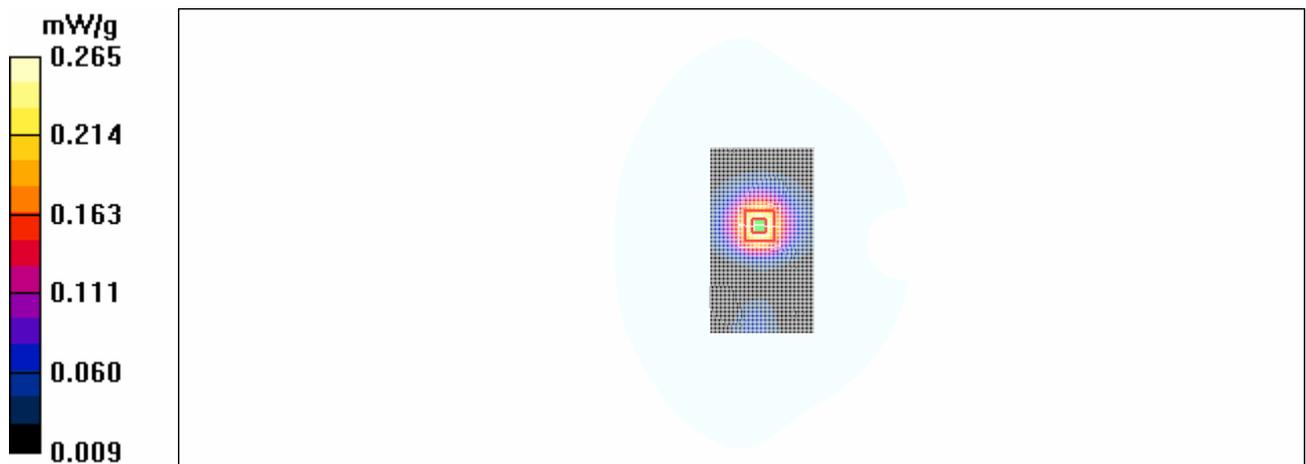


Figure 51 GSM 1900 GPRS 2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 661

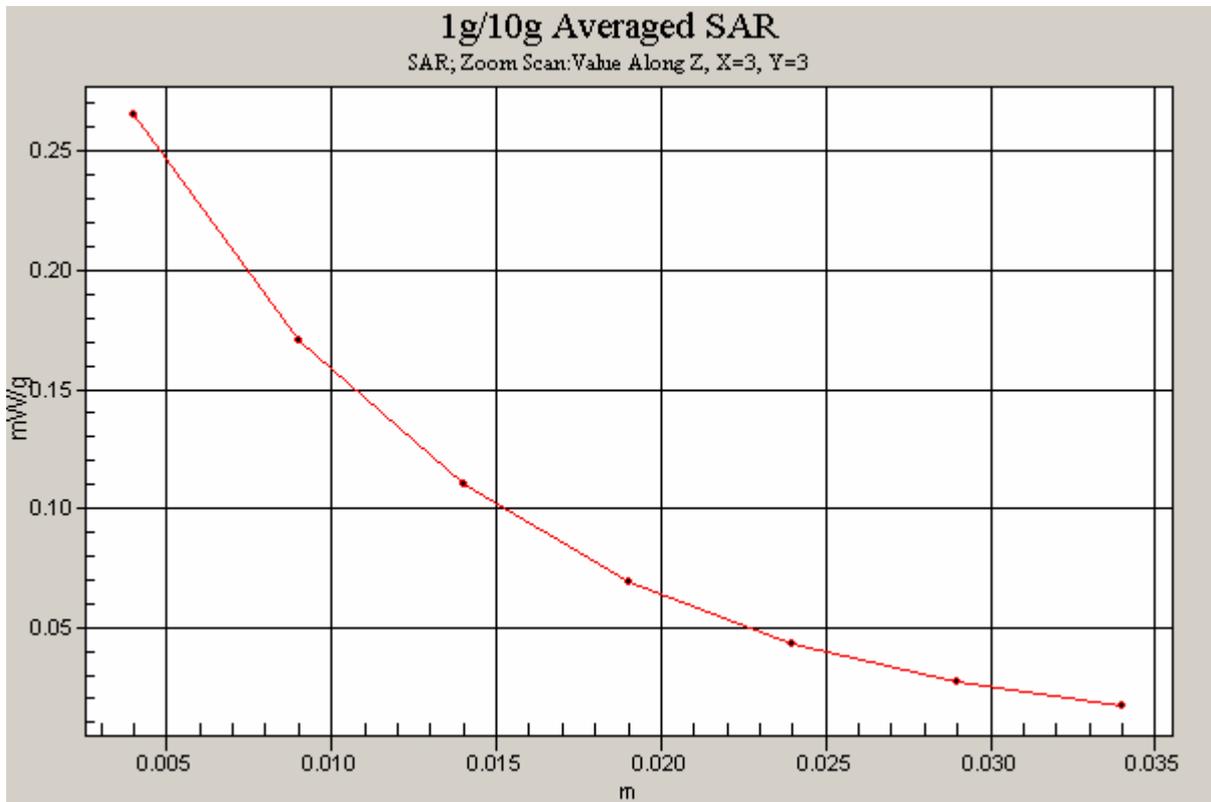


Figure 52 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 5 Channel 661]

GSM 1900 GPRS (3 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; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.940 mW/g

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

Reference Value = 18.4 V/m; Power Drift = 0.051 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.737 mW/g; SAR(10 g) = 0.418 mW/g

Maximum value of SAR (measured) = 0.808 mW/g

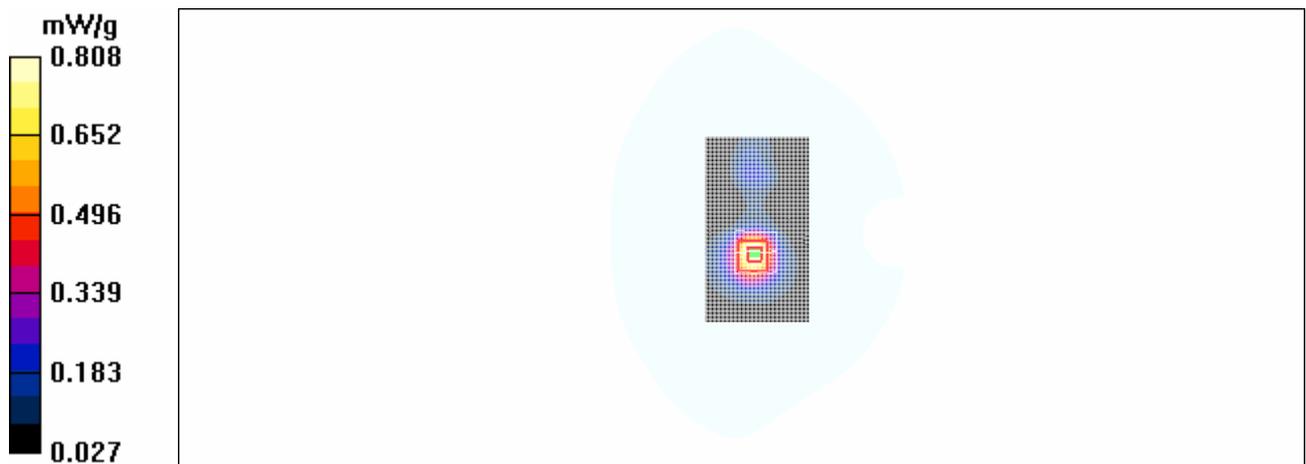


Figure 53 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661

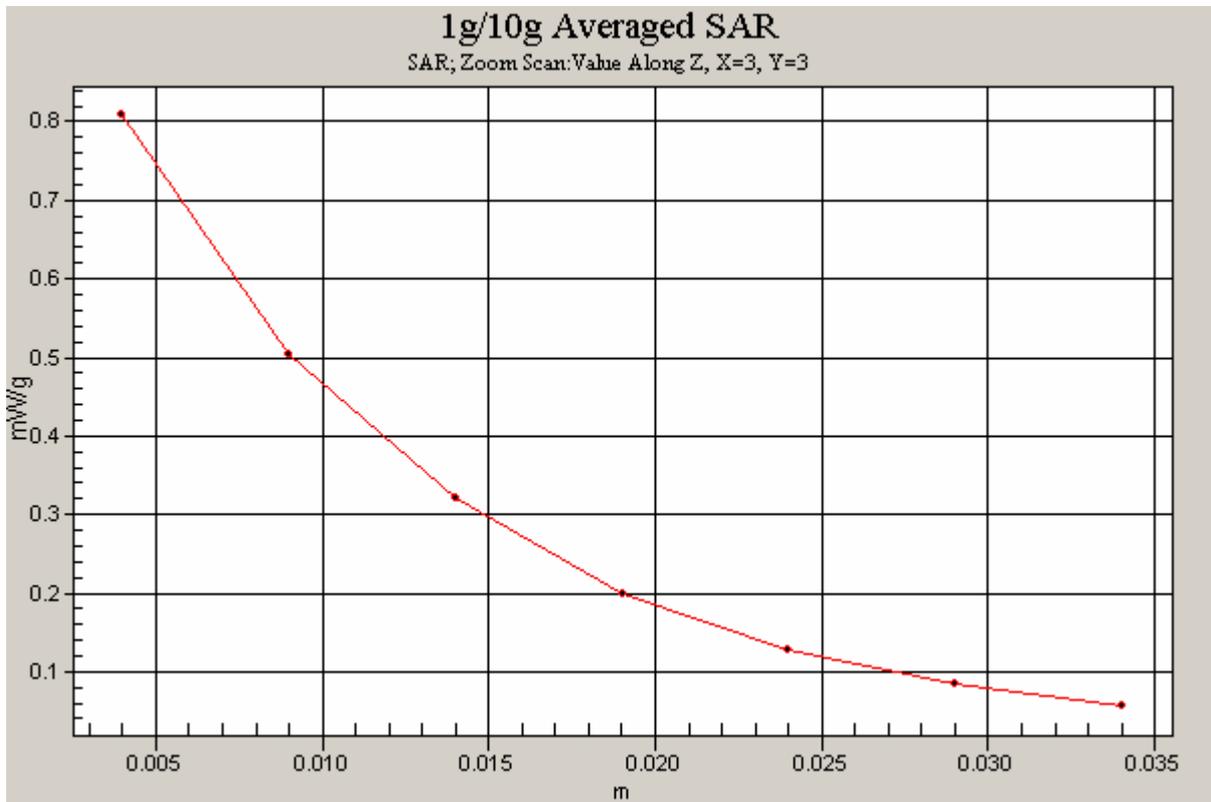


Figure 54 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661]

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

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; ConvF(4.64, 4.64, 4.64);

Electronics: DAE3 Sn452;

Test Position 7 Middle/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.356 mW/g

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

Reference Value = 16.2 V/m; Power Drift = -0.098 dB

Peak SAR (extrapolated) = 1.38 W/kg

SAR(1 g) = 0.366 mW/g; SAR(10 g) = 0.177 mW/g

Maximum value of SAR (measured) = 0.400 mW/g

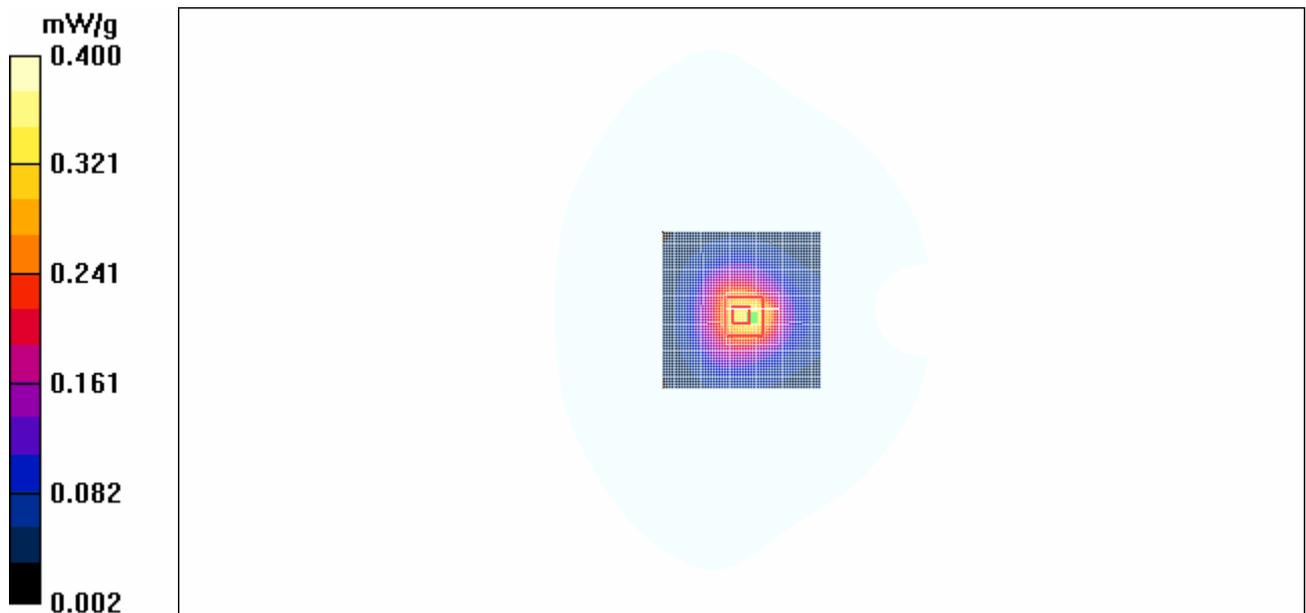


Figure 55 GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 661

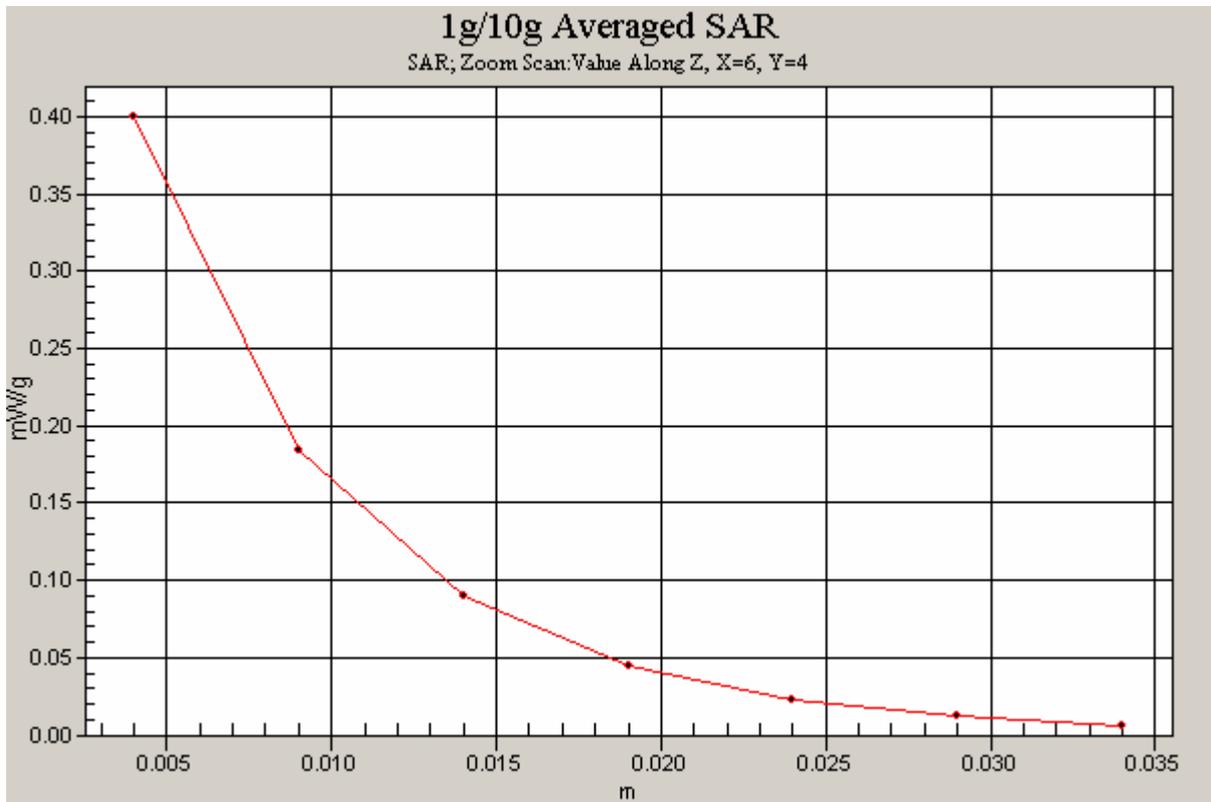


Figure 56 Z-Scan at power reference point [GSM 1900 GPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 7 Channel 661]

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

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

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.51$ mho/m; $\epsilon_r = 52.6$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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) = 0.348 mW/g

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

Reference Value = 11.8 V/m; Power Drift = -0.093 dB

Peak SAR (extrapolated) = 0.429 W/kg

SAR(1 g) = 0.273 mW/g; SAR(10 g) = 0.160 mW/g

Maximum value of SAR (measured) = 0.300 mW/g

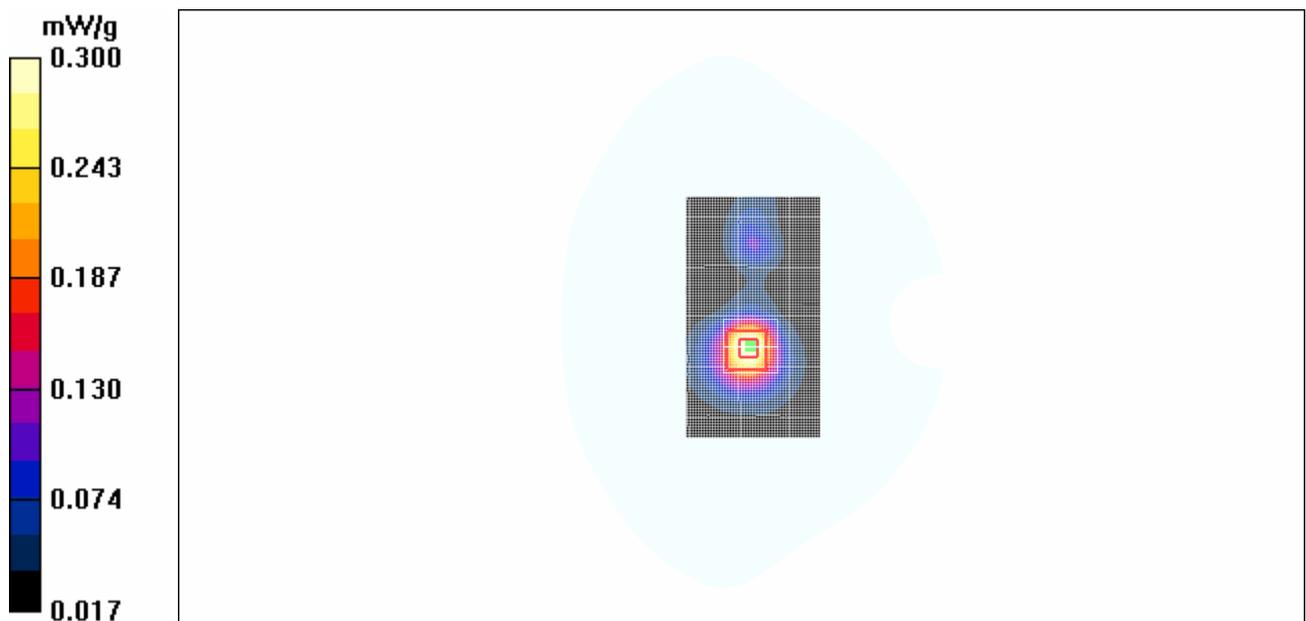


Figure 57 GSM 1900 EGPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661

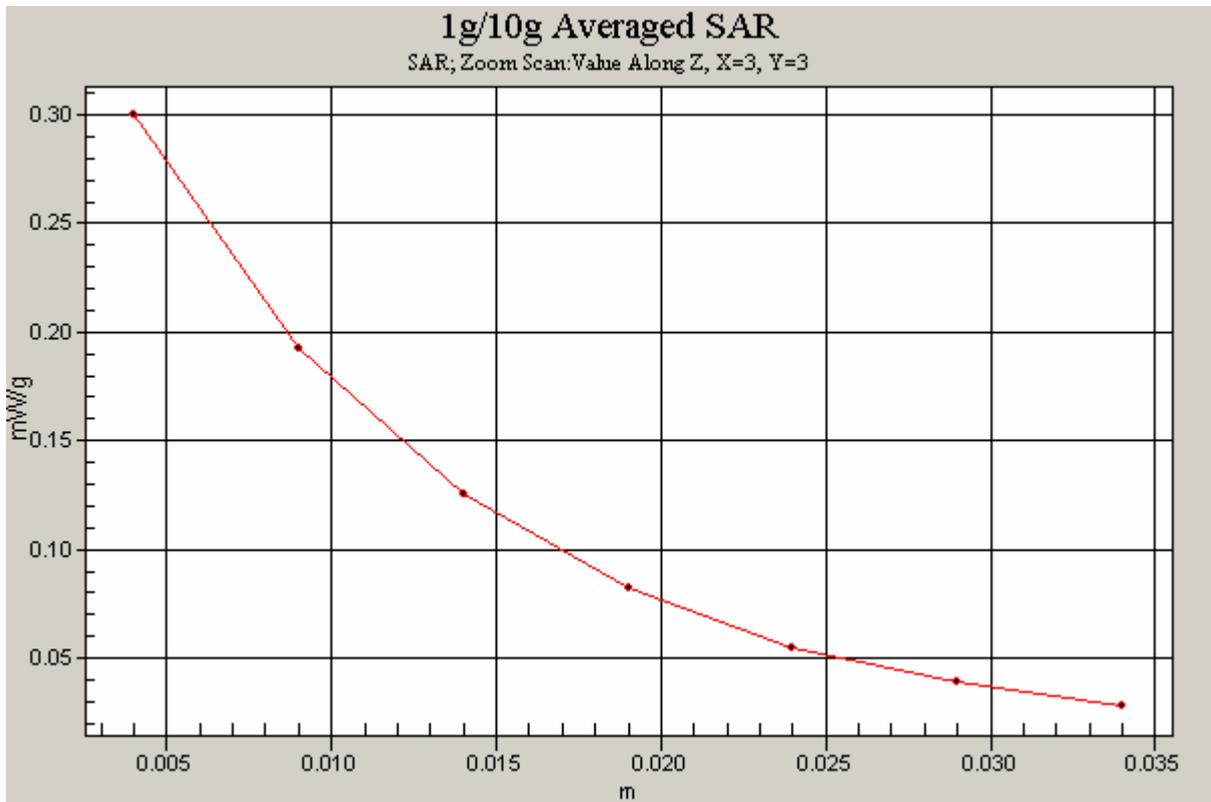


Figure 58 Z-Scan at power reference point [GSM 1900 EGPRS (2 timeslots in uplink) with BenQ Joy book R55V Test Position 6 Channel 661]

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 parameters used: $f = 835$ MHz; $\sigma = 0.899$ mho/m; $\epsilon_r = 40.2$; $\rho = 1000$ kg/m³

- Probe: ET3DV6 - SN1531; 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

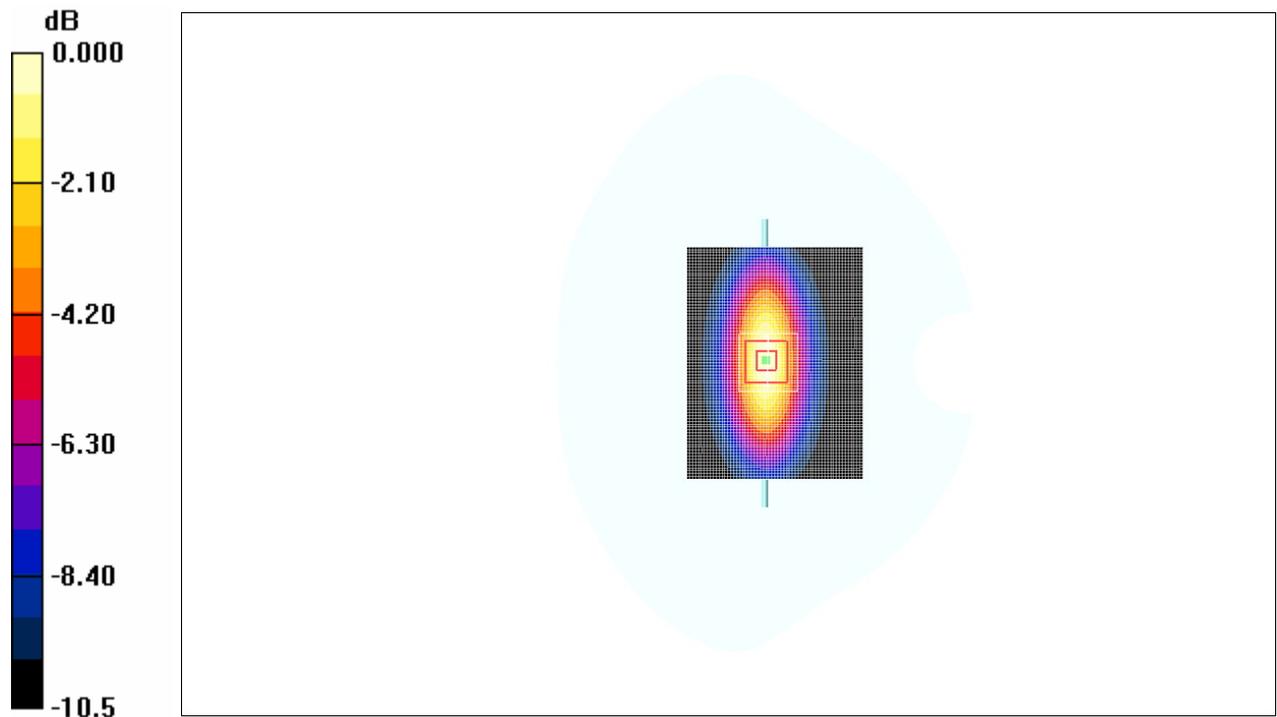
d=15mm, Pin=250mW/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

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 59 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; $\sigma = 1.46$ mho/m; $\epsilon_r = 39.5$; $\rho = 1000$ kg/m³

Probe: ET3DV6 - SN1531; 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

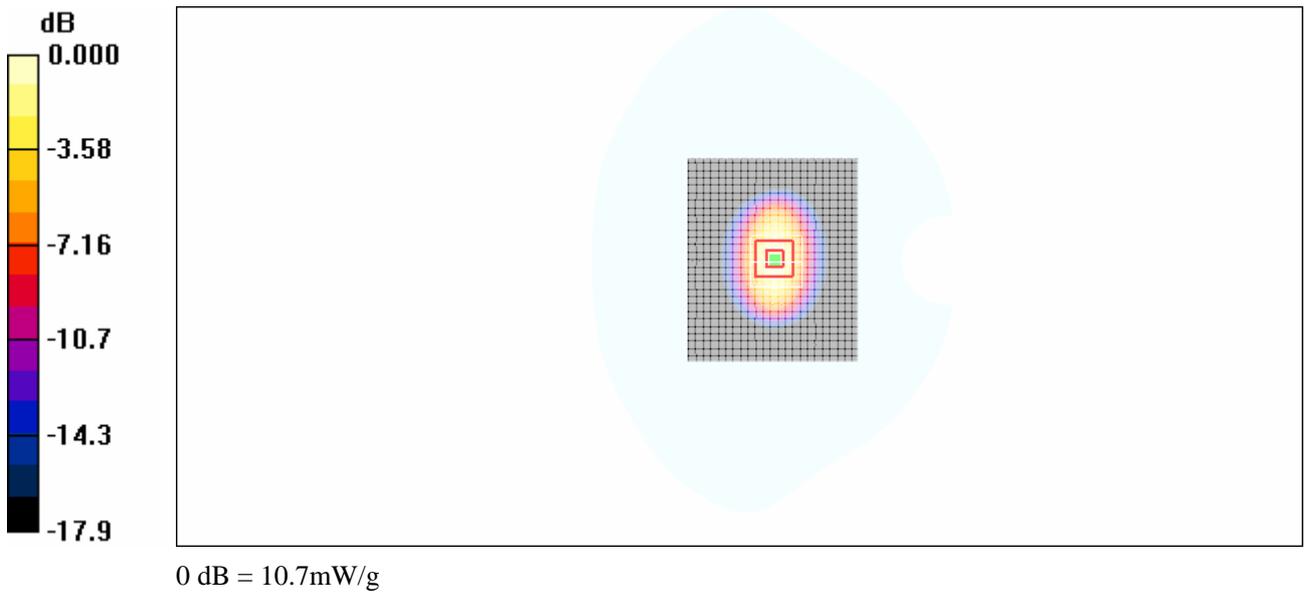


Figure 60 System Performance Check 1900MHz 250mW

TA Technology (Shanghai) Co., Ltd. Test Report

No. RZA2008-0255FCC

Page 85 of 111

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 Accreditation Service (SAS)
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: **ET3-1531_Jan08**

CALIBRATION CERTIFICATE

Object: **ET3DV6 - SN: 1531**

Calibration procedure(s): **QA CAL-01.v6 and QA CAL-12.v5
Calibration procedure for dosimetric E-field probes**

Calibration date: **January 29, 2008**

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 $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

| Primary Standards | ID # | Cal Date (Calibrated by, Certificate No.) | Scheduled Calibration |
|----------------------------|-----------------|---|-----------------------|
| Power meter E4410B | 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 | MY41498067 | 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: S5088 (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 | 2-Jan-08 (SPEAG, No. ES3-3013_Jan08) | Jan-09 |
| 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 Oct-07) | In house check: Oct-08 |
| Network Analyzer HP 8753E | US37390585 | 18-Oct-01 (SPEAG, in house check Oct-07) | In house check: Oct-08 |

| | Name | Function | Signature |
|----------------|---------------|-------------------|-----------|
| Calibrated by: | Katja Pokovic | Technical Manager | |
| Approved by: | Nils Kusler | Quality Manager | |

Issued: January 29, 2008

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