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DAR

**No.** DAT-P-114/01-10

# TEST REPORT

## No. EMF2003065

| | |
|---|---|
| **Test name** | Electromagnetic Field (Specific Absorption Rate) |
| **Product** | GSM dual-band cellular phone |
| **Model** | One Touch 332a |
| **FCC ID** | RAD003 |
| **Client** | Alcatel Suzhou Telecommunication Co., Ltd |
| **Type of test** | Entrusted |

**Telecommunication Metrology Center**

**of Ministry of Information Industry**

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# GENERAL SUMMARY

| | | | |
|---|---|---|---|
| **Product** | GSM Dual-Band Mobile Phone | **Model** | One Touch 332a |
| **Client** | ALCATEL Suzhou Telecommunication Co.,Ltd | **Manufacturer** | Alcatel Business System |
| **Type of test** | Entrusted | **Arrival Date of sample** | Dec. 4th, 2003 |
| **Place of sampling** | (Blank) | **Carrier of the samples** | Ji LI |
| **Quantity of the samples** | One | **Date of product** | (Blank) |
| **Base of the samples** | (Blank) | **Items of test** | SAR |
| **Series number** | 001016000020516 | | |
| **Standard(s)** | **EN 50360–2001**: Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.<br>**EN 50361–2001**: Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.<br>**IEC 62209 Draft** : Procedure to Determine the Specific Absorption Rate(SAR) for Hand-hold Mobile Phone (Part 2)<br>**ANSI C95.1–1999**: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz<br>**OET Bulletin 65 (Edition 97-01) and Supplement C (Edition 01-01):** Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields and Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Supplement C (Edition 01-01).<br>**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. | | |
| **Conclusion** | Localized Specific Absorption Rate (SAR) of this portable wireless equipment has been measured in all cases requested by the relevant standards cited in Clause 5.2 of this test report. Maximum localized SAR is below exposure limits specified in the relevant standards cited in Clause 5.1 of this test report.<br><br>General Judgment: **Pass**<br><br>(Stamp) 检验报告专用章<br>**Date of issue: Dec. 9th, 2003** | | |
| **Comment** | TX Freq. Band: 824–849 MHz (GSM) 1850-1910 MHz (PCS)<br>Max. Power: 2 Watt (GSM) 1 Watt (PCS)<br>Antenna Character: /<br>The test result only responds to the measured sample. | | |

**Approved by** (Lu Minniu) **Revised by** (Wang Hongbo) **Performed by** (Qi Dianyuan)

# TABLE OF CONTENT

# 1 COMPETENCE AND WARRANTIES

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# 3 DESCRIPTION OF EUT

## 3.1 Addressing Information Related to EUT

**Table 1: Applicant (The Client)**

| | |
|---|---|
| Name or Company | ALCATEL Suzhou Telecommunication Co.,Ltd |
| Address/Post | No.500, Zhangyang Road, Pudong |
| City | Shanghai |
| Postal Code | 200122 |
| Country | China |
| Telephone | 021-50544555 |
| Fax | 021-50544557 |

**Table 2: Manufacturer**

| | |
|---|---|
| Name or Company | Alcatel Business System |
| Address/Post | 32 Avenue Kleber |
| City | Colombes |
| Postal Code | 92707 |
| Country | France |
| Telephone | / |
| Fax | / |

## 3.2 Constituents of EUT

**Table 3: Constituents of Samples**

| Description | Model | Serial Number | Manufacturer |
|---|---|---|---|
| Handset | One Touch 332a | 001016000020516 | Alcatel Business System |
| Lithium Battery | / | 3DS06941AAAA | Sony |
| AC/DC Adapter | SR | 3DS09371AGAA | ASTEC |
| Headset | / | 3DS07855AAAA | LeeMax |

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

## 3.3 General Description

Equipment Under Test (EUT) is a model of GSM Phase II portable Mobile Station (MS) with integrated antenna. It consists of Handset and normal options: Lithium Battery and AC/DC Adapter as Table 3 and Fig. 1. Since it is a Dual-Band MS (GSM/PCS), SAR is tested respectively for two bands.

The sample undergoing test was selected by the Client.
Components list please refer to documents of the manufacturer.

# 4 OPERATIONAL CONDITIONS DURING TEST

## 4.1 Schematic Test Configuration

During SAR test, EUT is in Traffic Mode (Channel Allocated) at Normal Voltage Condition. A communication link is set up with a System Simulator (SS) by air link, and a call is established. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 128, 190 and 251 respectively in the case of GSM 850 MHz, or to 512, 661 and 810 respectively in the case of PCS 1900 MHz. The EUT is commanded to operate at maximum transmitting power.

The EUT shall use its internal transmitter. The antenna(s), battery and accessories shall be those specified by the manufacturer. The EUT battery must be fully charged and checked periodically during the test to ascertain uniform power output. If a wireless link is used, the antenna connected to the output of the base station simulator shall be placed at least 50 cm away from the handset. The signal transmitted by the simulator to the antenna feeding point shall be lower than the output power level of the handset by at least 30 dB.

## 4.2 SAR Measurement Set-up

These measurements were performed with the automated near-field scanning system DASY4 from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision robot (working range greater than 0.9m) which positions the probes with a positional repeatability of better than ± 0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit.

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

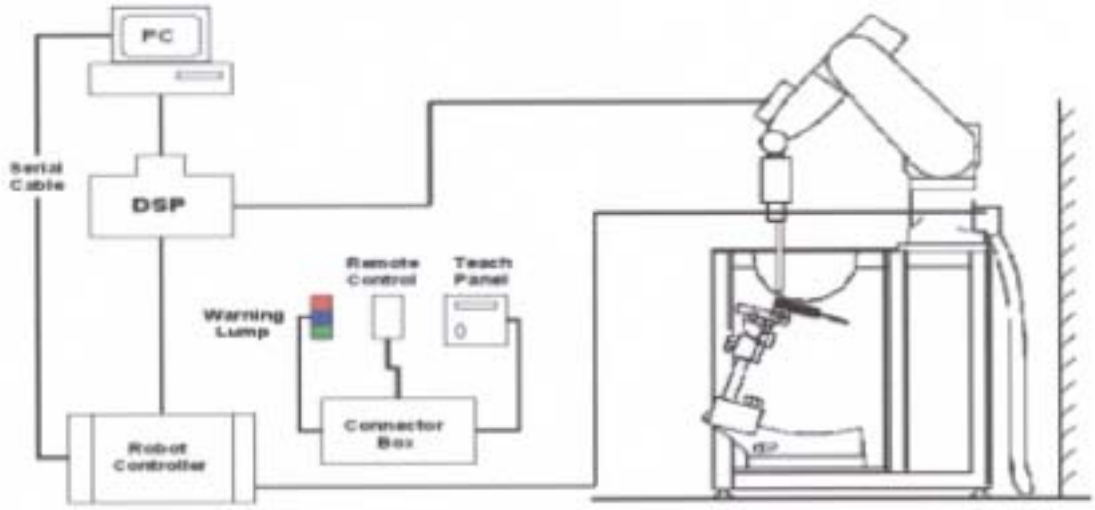



Figure 2. SAR Lab Test Measurement Set-up

The DAE3 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.

### 4.3 Dasy4 E-field Probe System

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

**ET3DV6 Probe Specification**

| | |
|---|---|
| Construction | Symmetrical design with triangular core<br>Built-in optical fiber *for* surface detection System(ET3DV6 only)<br>Built-in shielding against static charges<br>PEEK enclosure material(resistant to organic solvents, e.q., glycol) |
| Calibration | In air from 10 MHz to 2.5 GHz<br>In brain and muscle simulating tissue at frequencies of 450MHz, 900MHz and 1.8GHz (accuracy±8%)<br>Calibration for other liquids and frequencies upon request |
| Frequency | I 0 MHz to > 6 GHz; Linearity: ±0.2 dB (30 MHz to 3 GHz) |
| Directivity | ±0.2 dB in brain tissue (rotation around probe axis) |

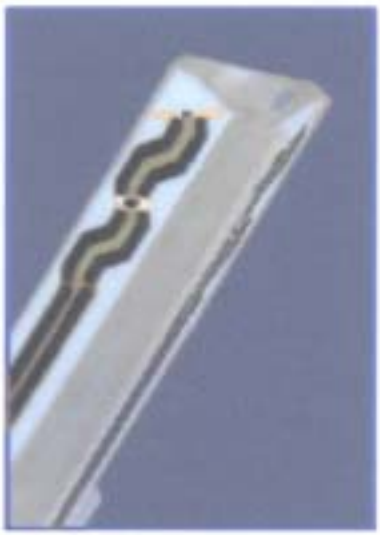


**Figure 3. ET3DV6 E-field Probe**

| | |
|---|---|
| | ±0.4 dB in brain tissue (rotation normal probe axis) |
| Dynamic Range | 5u W/g to > 100mW/g; Linearity: ±0.2dB |
| Surface Detection | ±0.2 mm repeatability in air and clear liquids over diffuse reflecting surface(ET3DV6 only) |
| Dimensions | Overall length: 330mm |
| | Tip length: 16mm |
| | Body diameter: 12mm |
| | Tip diarneter: 6.8mm |
| | Distance from probe tip to dipole centers: 2.7mm |
| Application | General dosimetry up to 3GHz |
| | Compliance tests of mobile phones |
| | Fast automatic scanning in arbitrary phantoms |

**Figure 4. ET3DV6 E-field probe**

## 4.4 E-field Probe Calibration

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

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a wave guide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

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

Where: $\Delta t$ = Exposure time (30 seconds),

C = Heat capacity of tissue (brain or muscle),

$\Delta T$ = Temperature increase due to RF exposure.

Or

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

Where:

σ = Simulated tissue conductivity,

ρ = Tissue density (kg/m3).

## 4.5 Other Test Equipment

### 4.5.1 Device Holder for Transmitters

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

**Figure 5. Device Holder**

### 4.5.2 Phantom

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

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

**Figure 6. Generic Twin Phantom**

## 4.6 Equivalent Tissues

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

**Table 4. Composition of the Head Tissue Equivalent Matter**

| MIXTURE % | FREQUENCY 824–849MHz |
|---|---|
| Water | 41.45 |
| Sugar | 56.0 |
| Salt | 1.45 |
| Preventol | 0.1 |
| Cellulose | 1.0 |
| Dielectric Parameters Target Value | f=835MHz ε=41.5 σ=0.90 |

| MIXTURE % | FREQUENCY 1850-1910MHz |
|---|---|
| Water | 55.242 |
| Glycol monobutyl | 44.452 |
| Salt | 0.306 |
| Dielectric Parameters Target Value | f=1900MHz ε=40.0 σ=1.40 |

**Table 5. Composition of the Body Tissue Equivalent Matter**

| MIXTURE % | FREQUENCY 824–849MHz |
|---|---|
| Water | 52.4 |
| Sugar | 45.0 |
| Salt | 1.4 |
| Preventol | 0.1 |
| Cellulose | 1.0 |
| Dielectric Parameters Target Value | f=835MHz ε=55.2 σ=0.97 |

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

## 4.7 System Specifications

### 4.7.1 Robotic System Specifications

**Specifications**

**Positioner:** Stäubli Unimation Corp. Robot Model: RX90L

**Repeatability:** ±0.02 mm
**No. of Axis:** 6

**Data Acquisition Electronic (DAE) System**

**Cell Controller**

**Processor:** Pentium III
**Clock Speed:** 800 MHz
**Operating System:** Windows 2000

**Data Converter**

**Features:**Signal Amplifier, multiplexer, A/D converter, and control logic
**Software:** DASY4 software
**Connecting Lines:** Optical downlink for data and status info.
Optical uplink for commands and clock

# 5 CHARACTERISTICS OF THE TEST

## 5.1 Applicable Limit Regulations

**EN 50360–2001:** Product standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.
It specifies the maximum exposure limit of **2.0 W/kg** as averaged over any 10 gram of tissue for portable devices being used within 20 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.

## 5.2 Applicable Measurement Standards

**EN 50361–2001:** Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones.
**IEC 62209 Draft** : Procedure to Determine the Specific Absorption Rate(SAR) for Hand-hold Mobile Phone (Part 2)
**OET Bulletin 65 (Edition 97-01) and Supplement C(Edition 01-01):** Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits.
**IEEE 1528–2003:** Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques.

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

## 5.3 Character of the Test

Handsets that are held on the side of a person's head next to the ear have been tested using realistic-shaped head phantoms.

Since it may be used for body-worn situation, the mobile phone is test with the flat phantom to simulate this case.

# 6 LABORATORY ENVIRONMENT

**Table 5: The Ambient Conditions during EMF Test**

| | |
|---|---|
| Temperature | Min. = 15 ºC, Max. = 30 ºC |
| 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.<br>Reflection of surrounding objects is minimized and in compliance with requirement of standards. | |

# 7 TEST RESULTS

## 7.1 Dielectric Performance

**Table 6: Dielectric Performance of Head Tissue Simulating Liquid**

| Measurement is made at temperature 22.5 ºC and relative humidity 49%.<br>Liquid temperature during the test: 21.4ºC | | | |
|---|---|---|---|
| / | **Frequency** | **Permittivity ε** | **Conductivity σ (S/m)** |
| **Target value** | 835 MHz | 41.5 | 0.90 |
| | 1900 MHz | 40.0 | 1.40 |
| **Measurement value (Average of 10 tests)** | 835 MHz | 41.7 | 0.88 |
| | 1900 MHz | 38.56 | 1.45 |

**Table 7: Dielectric Performance of Body Tissue Simulating Liquid**

| Measurement is made at temperature 22.6 ºC and relative humidity 51%.<br>Liquid temperature during the test: 22.0ºC | | | |
|---|---|---|---|
| / | **Frequency** | **Permittivity ε** | **Conductivity σ (S/m)** |
| **Target value** | 835 MHz | 55.2 | 0.97 |
| | 1900 MHz | 53.30 | 1.52 |
| **Measurement value (Average of 10 tests)** | 835 MHz | 54.3 | 0.97 |
| | 1900 MHz | 52.9 | 1.54 |

## 7.2 System Validation

**Table 8: System Validation**

| Measurement is made at temperature 23.3 °C, relative humidity 47%, input power 250 mW.<br>Liquid temperature during the test: 22.6°C | | | | | |
|---|---|---|---|---|---|
| **Liquid parameters** | | **Frequency** | **Permittivity ε** | | **Conductivity σ (S/m)** |
| | | 835 MHz | 41.7 | | 0.88 |
| | | 1900 MHz | 38.56 | | 1.45 |
| **Verification results** | **Frequency** | **Target value (W/kg)** | | **Measurement value (W/kg)** | |
| | | **10 g Average** | **1 g Average** | **10 g Average** | **1 g Average** |
| | **835 MHz** | 1.55 | 2.37 | 1.59 | 2.45 |
| | **1900 MHz** | 5.31 | 10.1 | 5.17 | 9.88 |

## 7.3 Summary of Measurement Results (Head, GSM 850 MHz Band)

**Table 9: SAR Values (GSM 850 MHz Band, head)**

| Temperature: 23.4 °C, humidity: 50%.<br>Liquid temperature during the test: 22.4°C | | | |
|---|---|---|---|
| **Limit of SAR (W/kg)** | **10 g Average** | **1 g Average** | **Conducted Power before/after each test (dBm)** |
| | 2.0 | 1.6 | |
| **Test Case** | **Measurement Result (W/kg)** | | |
| | **10 g Average** | **1 g Average** | |
| Left hand, Touch cheek, Top frequency | 0.38 | 0.54 | **32.32/32.21** |
| Left hand, Touch cheek, Mid frequency | 0.372 | 0.526 | **32.12/32.26** |
| Left hand, Touch cheek, Bottom frequency | 0.321 | 0.455 | **32.34/32.25** |
| Left hand, Tilt 15 Degree, Top frequency | 0.251 | 0.376 | **32.45/32.34** |
| Left hand, Tilt 15 Degree, Mid frequency | 0.234 | 0.354 | **32.35/32.25** |
| Left hand, Tilt 15 Degree, Bottom frequency | 0.2 | 0.292 | **32.35/32.46** |
| Right hand, Touch cheek, Top frequency | 0.366 | 0.535 | **32.41/32.52** |
| Right hand, Touch cheek, Mid frequency | 0.367 | 0.514 | **32.45/32.57** |
| Right hand, Touch cheek, Bottom frequency | 0.315 | 0.441 | **32.47/32.35** |

| | | | |
|---|---|---|---|
| Right hand, Tilt 15 Degree, Top frequency | 0.232 | 0.322 | **32.54/32.47** |
| Right hand, Tilt 15 Degree, Mid frequency | 0.222 | 0.306 | **32.56/32.62** |
| Right hand, Tilt 15 Degree, Bottom frequency | 0.185 | 0.257 | **32.44/32.56** |

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

**Table 10: SAR Values (GSM 850 MHz Band, body-worn)**

| Temperature: 23.5 °C, humidity: 48%.<br>Liquid temperature during the test: 22.4°C | | | |
|---|---|---|---|
| **Limit of SAR (W/kg)** | **10 g Average** | **1 g Average** | **Conducted Power before/after each test (dBm)** |
| | **2.0** | **1.6** | |
| **Test Case** | **Measurement Result (W/kg)** | | |
| | **10 g Average** | **1 g Average** | |
| Display of EUT towards the phantom, Top Frequency | 0.122 | 0.166 | **32.65/32.87** |
| Display of EUT towards the phantom, Mid Frequency | 0.153 | 0.236 | **32.64/32.45** |
| Display of EUT towards the phantom, Bottom Frequency | 0.117 | 0.219 | **32.52/32.48** |
| Display of EUT towards the ground, Top frequency | 0.224 | 0.308 | **32.32/32.45** |
| Display of EUT towards the ground, Mid frequency | 0.247 | 0.328 | **32.47/32.52** |
| Display of EUT towards the ground, Bottom frequency | 0.306 | 0.431 | **32.42/32.56** |

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

**Table 11: SAR Values (PCS 1900 MHz Band, head)**

| Temperature: 23.1 °C, humidity: 50%.<br>Liquid temperature during the test: 22.4°C | | | |
|---|---|---|---|
| **Limit of SAR (W/kg)** | **10 g Average** | **1 g Average** | **Conducted Power before/after each test (dBm)** |
| | 2.0 | 1.6 | |
| **Test Case** | **Measurement Result (W/kg)** | | |
| | **10 g Average** | **1 g Average** | |
| Left hand, Touch cheek, Top frequency | 0.0712 | 0.137 | **29.30/29.33** |
| Left hand, Touch cheek, Mid frequency | 0.0866 | 0.163 | **29.90/29.85** |
| Left hand, Touch cheek, Bottom frequency | 0.0807 | 0.153 | **29.72/29.75** |
| Left hand, Tilt 15 Degree, Top frequency | 0.0762 | 0.144 | **29.31/29.28** |
| Left hand, Tilt 15 Degree, Mid frequency | 0.0914 | 0.172 | **29.83/29.91** |
| Left hand, Tilt 15 Degree, Bottom frequency | 0.0839 | 0.157 | **29.68/29.65** |
| Right hand, Touch cheek, Top frequency | 0.0598 | 0.11 | **29.32/29.29** |
| Right hand, Touch cheek, Mid frequency | 0.0636 | 0.116 | **29.89/29.93** |
| Right hand, Touch cheek, Bottom frequency | 0.0606 | 0.111 | **29.66/29.71** |
| Right hand, Tilt 15 Degree, Top frequency | 0.0521 | 0.0948 | **29.30/29.35** |
| Right hand, Tilt 15 Degree, Mid frequency | 0.0672 | 0.123 | **29.91/29.96** |
| Right hand, Tilt 15 Degree, Bottom frequency | 0.0689 | 0.125 | **29.74/29.72** |

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

**Table 12: SAR Values (PCS 1900 MHz Band, body-worn)**

| Temperature: 23.5 °C, humidity: 48%.<br>Liquid temperature during the test: 22.4°C | | | |
|---|---|---|---|
| **Limit of SAR (W/kg)** | **10 g Average** | **1 g Average** | **Conducted Power before/after each test (dBm)** |
| | **2.0** | **1.6** | |
| **Test Case** | **Measurement Result (W/kg)** | | |
| | **10 g Average** | **1 g Average** | |
| Display of EUT towards the phantom, Top Frequency | 0.0414 | 0.0623 | **29.38/29.31** |
| Display of EUT towards the phantom, Mid Frequency | 0.0479 | 0.0706 | **29.85/29.88** |
| Display of EUT towards the phantom, Bottom Frequency | 0.0479 | 0.0705 | **29.64/29.67** |
| Display of EUT towards the ground, Top frequency | 0.416 | 0.706 | **29.34/29.29** |
| Display of EUT towards the ground, Mid frequency | 0.363 | 0.609 | **29.86/29.84** |
| Display of EUT towards the ground, Bottom frequency | 0.251 | 0.477 | **29.64/29.65** |

## 7.7 Conclusion

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

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

## 8 Measurement Uncertainty

| No. | Error source | Type | Uncertainty Value (%) | Probability Distribution | k | $c_i$ | Standard Uncertainty (%) $u_i'$ (%) | Degree of freedom $V_{eff}$ or $v_i$ |
|---|---|---|---|---|---|---|---|---|
| 1 | System repetivity | A | 0.5 | N | 1 | 1 | 0.5 | 9 |
| | Measurement system | | | | | | | |
| 2 | －probe calibration | B | 7 | N | 2 | 1 | 3.5 | ∞ |
| 3 | － axial isotropy of the probe | B | 4.7 | R | $\sqrt{3}$ | $\sqrt{0.5}$ | 4.3 | ∞ |
| 4 | － hemisphere isotropy of the probe | B | 9.4 | R | $\sqrt{3}$ | $\sqrt{0.5}$ | | |
| 5 | －spatial resolution | B | 0 | R | $\sqrt{3}$ | 1 | 0 | ∞ |
| 6 | －boundary effect | B | 11.0 | R | $\sqrt{3}$ | 1 | 6.4 | ∞ |
| 7 | －probe linearity | B | 4.7 | R | $\sqrt{3}$ | 1 | 2.7 | ∞ |
| 8 | －detection limit | B | 1.0 | R | $\sqrt{3}$ | 1 | 0.6 | ∞ |
| 9 | －electronic readout | B | 1.0 | N | 1 | 1 | 1.0 | ∞ |
| 10 | －RF interference | B | 3.0 | R | $\sqrt{3}$ | 1 | 1.73 | ∞ |
| 11 | － probe mechanical positioning constraint | B | 0.4 | R | $\sqrt{3}$ | 1 | 0.2 | ∞ |
| 12 | －matching between probe and phantom references | B | 2.9 | R | $\sqrt{3}$ | 1 | 1.7 | ∞ |
| 13 | － SAR interpolation and extrapolation | B | 3.9 | R | $\sqrt{3}$ | 1 | 2.3 | ∞ |
| | Uncertainties of the DUT | | | | | | | |
| 14 | －position of the DUT | A | 4.9 | N | 1 | 1 | 4.9 | 5 |
| 15 | －holder of the DUT | A | 6.1 | N | 1 | 1 | 6.1 | 5 |
| 16 | －drift of the output power | B | 5.0 | R | $\sqrt{3}$ | 1 | 2.9 | ∞ |
| | physical parameters | | | | | | | |
| 17 | －phantom shell | B | 1.0 | R | $\sqrt{3}$ | 1 | 0.6 | ∞ |
| 18 | － liquid conductivity (deviation from target) | B | 5.0 | R | $\sqrt{3}$ | 0.6 | 1.7 | ∞ |
| 19 | － liquid conductivity(measurement error) | B | 10.0 | R | $\sqrt{3}$ | 0.6 | 3.4 | ∞ |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 20 | – liquid permittivity(deviation from target) | B | 5.0 | R | $\sqrt{3}$ | 0.6 | 1.7 | ∞ |
| 21 | – liquid permittivity(measurement error) | B | 5.0 | R | $\sqrt{3}$ | 0.6 | 1.7 | ∞ |
| Combined standard uncertainty | | $u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$ | | | | | 13.5 | 88.7 |
| Expanded uncertainty (confidence interval of 95 %) | | $u_e = 2u_c$ | | N | | k=2 | 27 | |

# 9 MAIN TEST INSTRUMENTS

**Table 13: List of Main Instruments**

| No. | Name | Type | Serial Number | Calibration Date | Valid Period |
|---|---|---|---|---|---|
| 01 | Network analyzer | HP 8753C | 3146A01905 | August 18,2003 | One year |
| 02 | Dielectric Probe Kit | Agilent 85070C | US99360113 | No Calibration Requested | |
| 03 | Power meter | HP 436A | 2101A11858 | August 19,2003 | One year |
| 04 | Power sensor | HP 8481H | 2349A07289 | | |
| 05 | Signal Generator | MG 3633A | M73386 | No Calibration Requested | |
| 06 | Amplifier | AT 50S1G4A | 26549 | No Calibration Requested | |
| 07 | Validation Kit 835MHz | SPEAG D 835V2 | 443 | September 3, 2003 | Two years |
| 08 | Validation Kit 900MHz | SPEAG D 900V2 | 125 | September 3, 2003 | Two years |
| 09 | Validation Kit 1800MHz | SPEAG D 1800V2 | 2d010 | September 3, 2003 | Two years |
| 10 | Validation Kit 1900MHz | 1900 V2 | 541 | September 3, 2003 | Two years |
| 11 | BTS | CMU 200 | 100680 | September 13, 2003 | One year |
| 12 | E-field Probe | SPEAG ET3DV6 | 1738 | December 9, 2002 | Two years |
| 13 | DAE | SPEAG DAE3 | 589 | October 21 2003 | Two years |

# 10 TEST PERIOD

The test is performed from Dec 5, 2003 to Dec 8 2003.

# 11 TEST LOCATION

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

***END OF REPORT BODY***

# ANNEX A MEASUREMENT PROCESS

The evaluation was performed with the following procedure:

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

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

Step 3: Around this point, a volume of 32 mm x 32 mm x 34 mm was assessed by measuring 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.

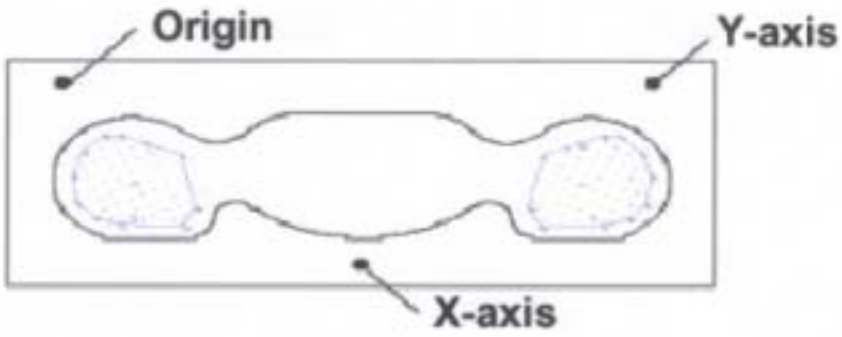



Figure 2 SAR Measurement Points in Area Scan

## ANNEX B TEST LAYOUT

Picture 1 Specific Absorption Rate Test Layout

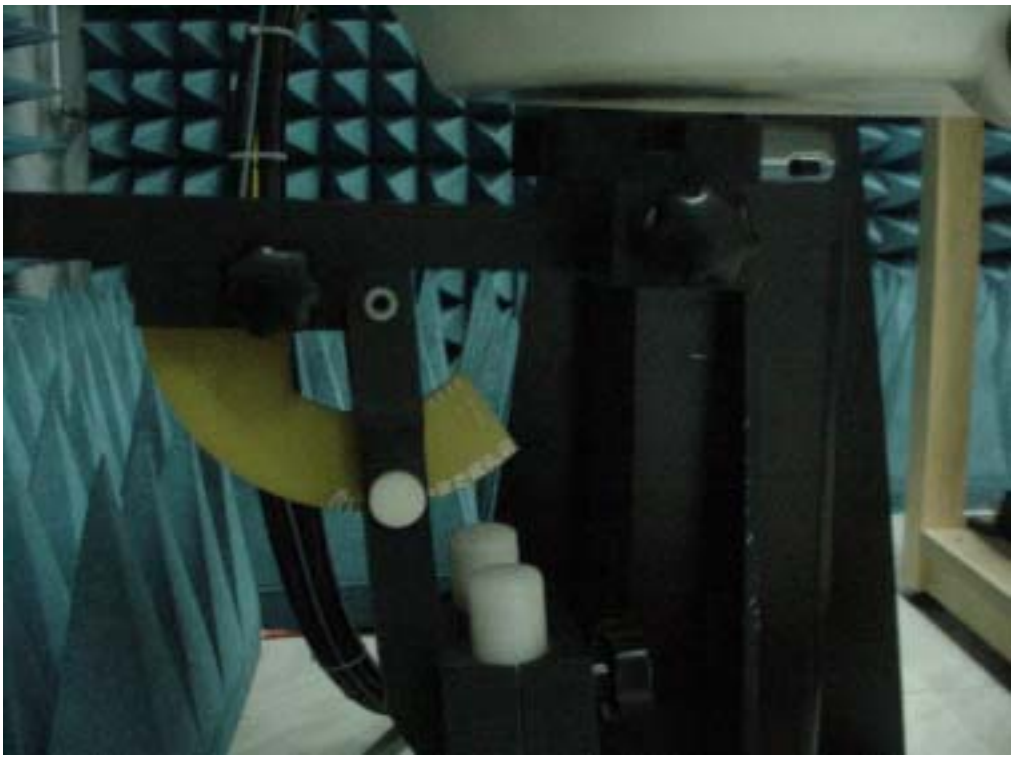
Picture 2 Left Hand Touch Cheek Position

Picture 3 Left Hand Tilt 15° Position

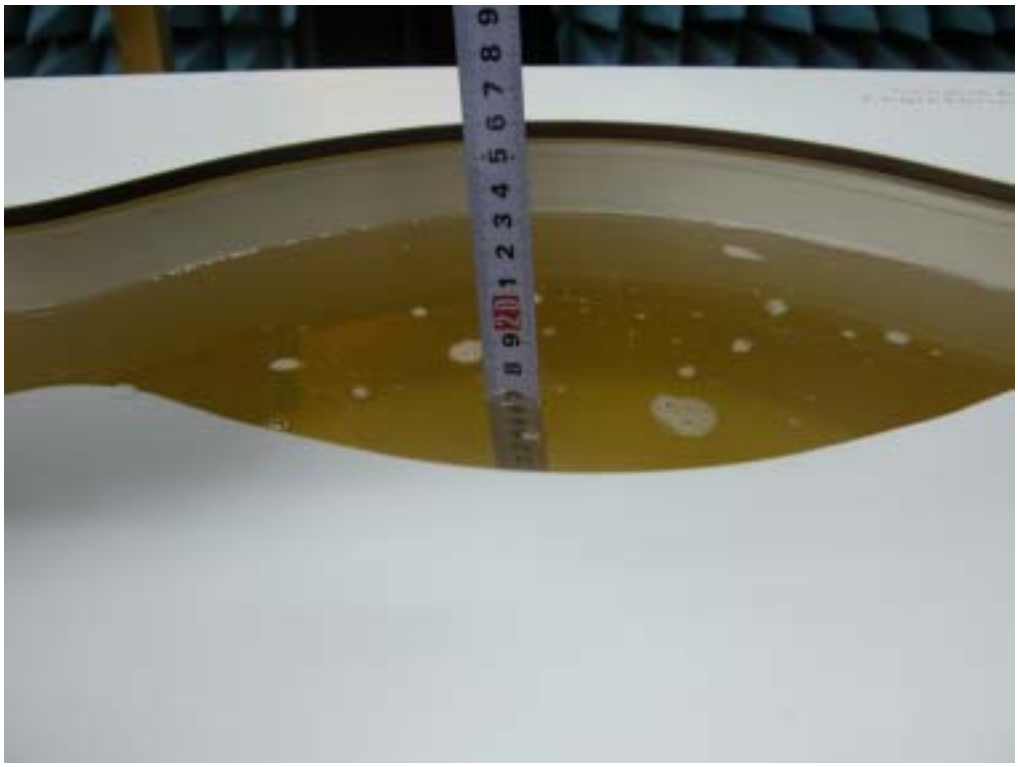
Picture 4 Right Hand Touch Cheek Position

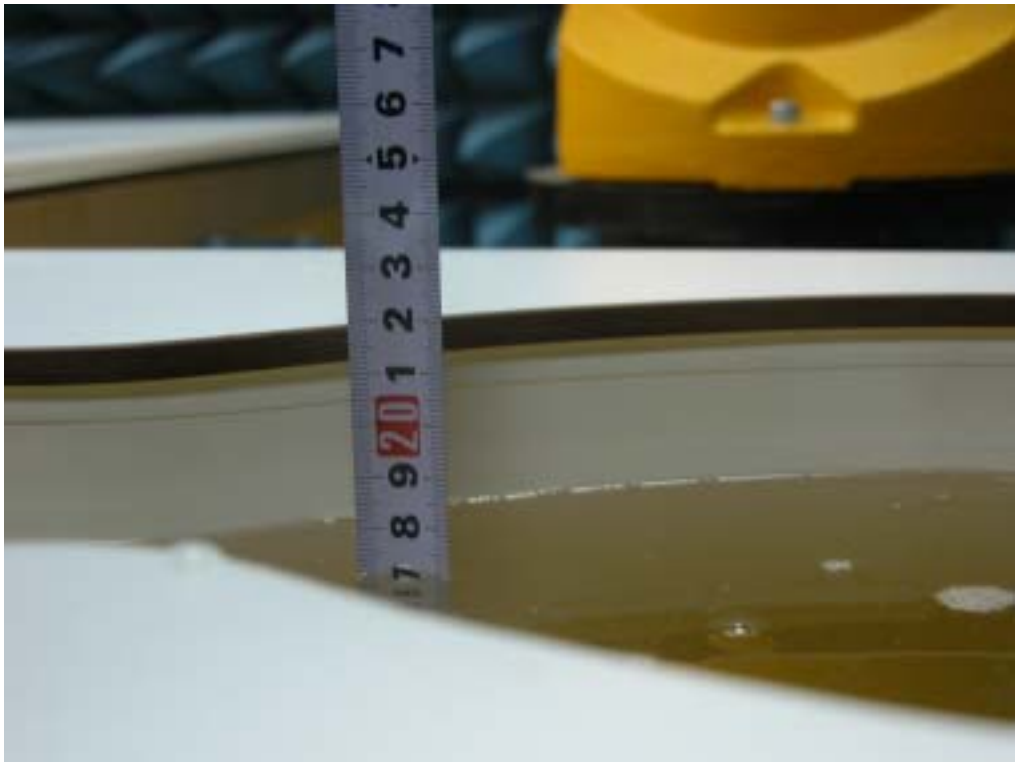
Picture 5 Right Hand Tilt 15° Position

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

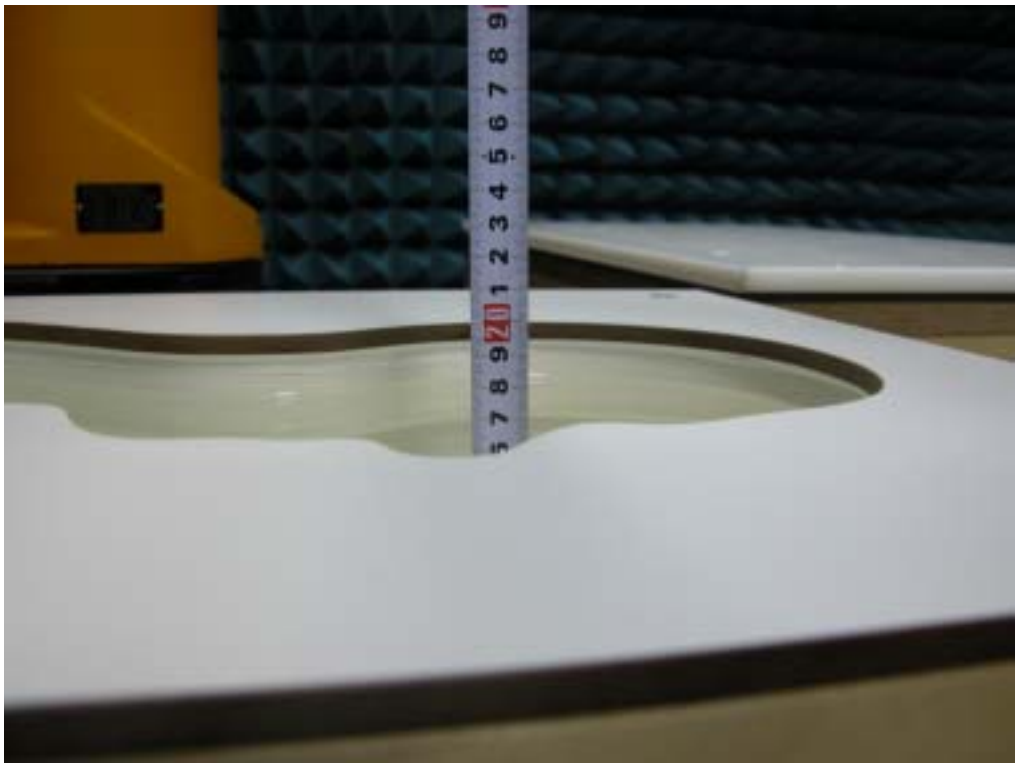


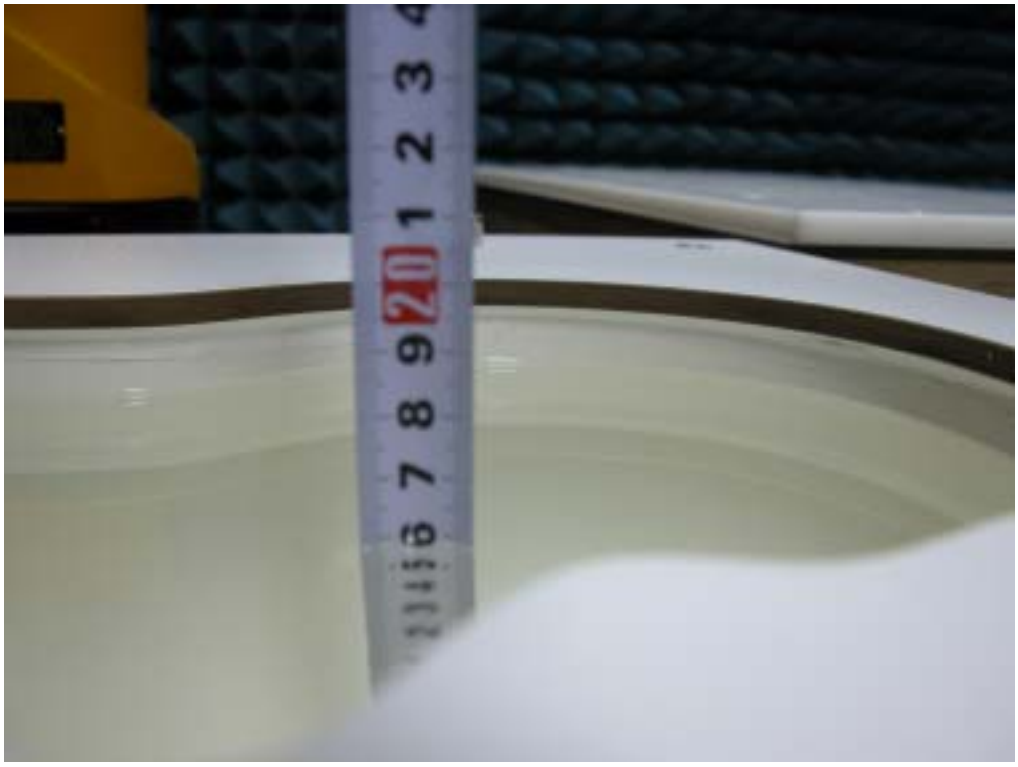
Picture 7 Flat Phantom -- Body-worn Position (toward ground, the distance from handset to the bottom of the Phantom is 1.5cm)



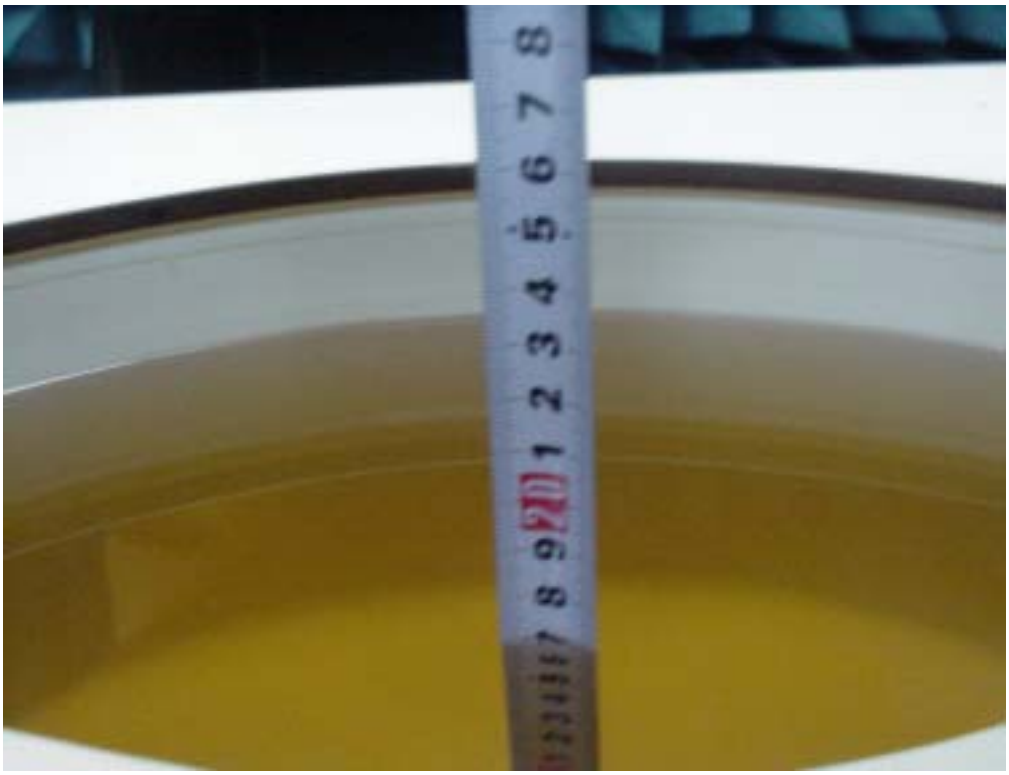


Picture 8 Liquid depth in the Head Phantom (Head 850MHz)

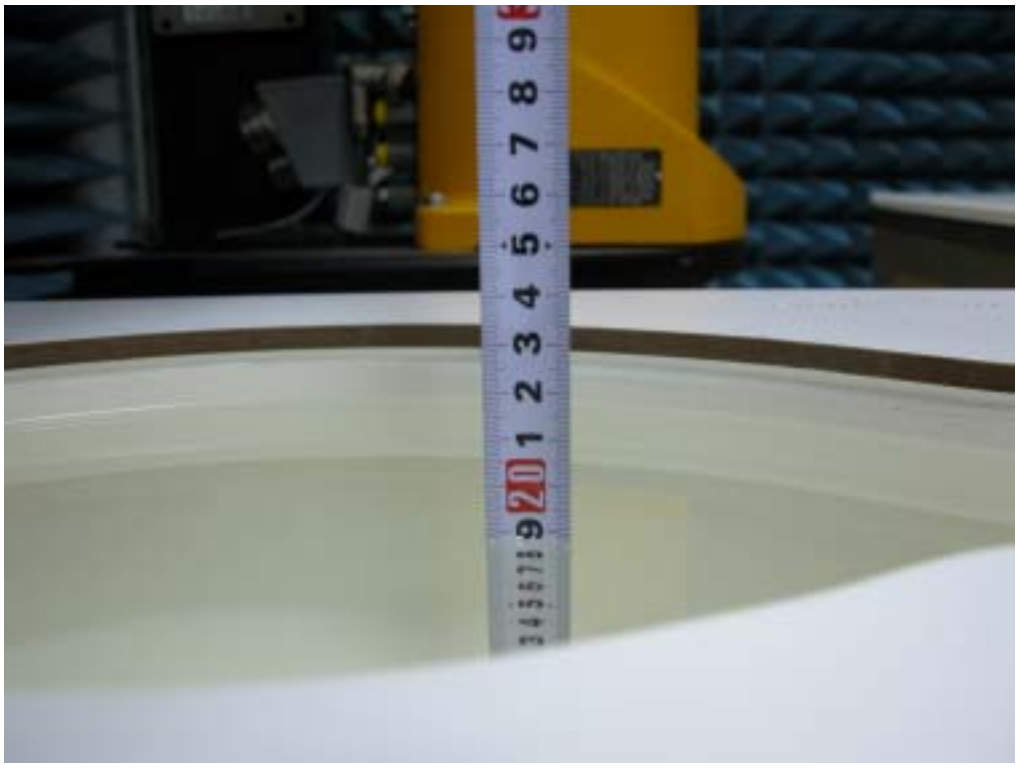




Picture 9 Liquid depth in the Head Phantom (Head,1900MHz)



Picture 9 Liquid depth in the Flat Phantom (Body 850MHz)



Picture 10 Liquid depth in the Flat Phantom (Body 1900MHz)

## ANNEX C GRAPH RESULTS

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Left; Alcatel One Touch 332a Left Cheek L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 21.7 V/m
Peak SAR = 0.589 mW/g
SAR(1 g) = 0.455 mW/g; SAR(10 g) = 0.321 mW/g
Power Drift = 0.01 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

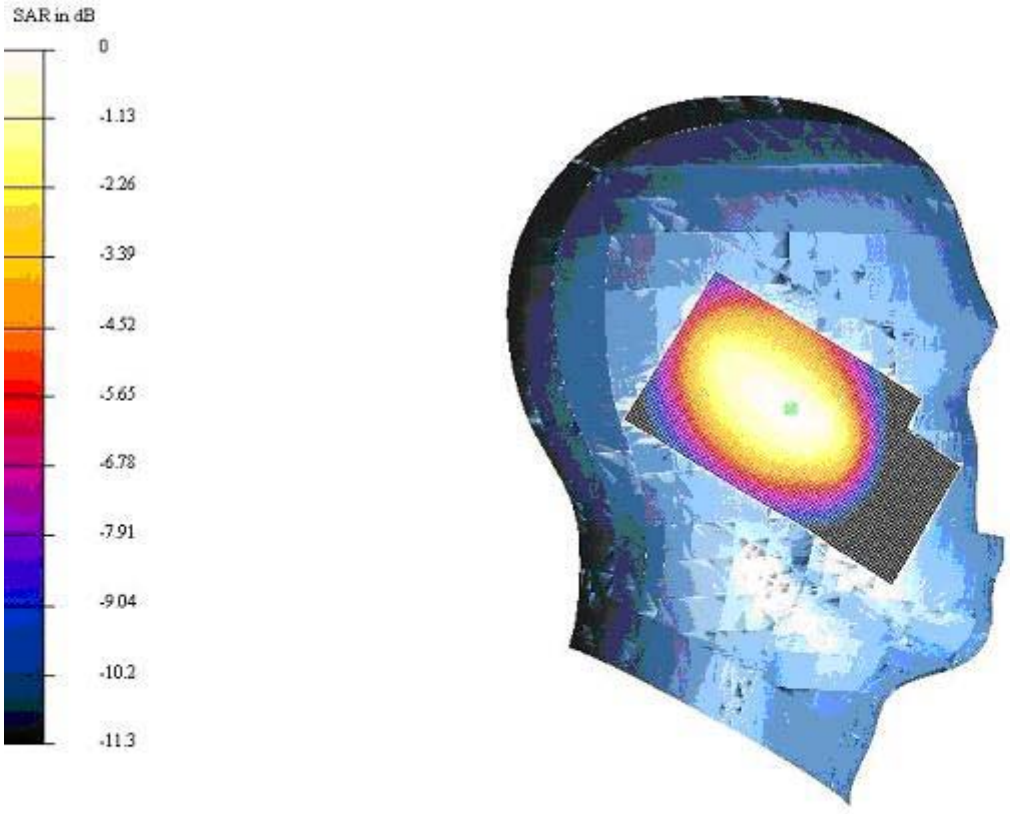



**Fig. 1 Left Hand Touch Cheek 850MHz CH128**

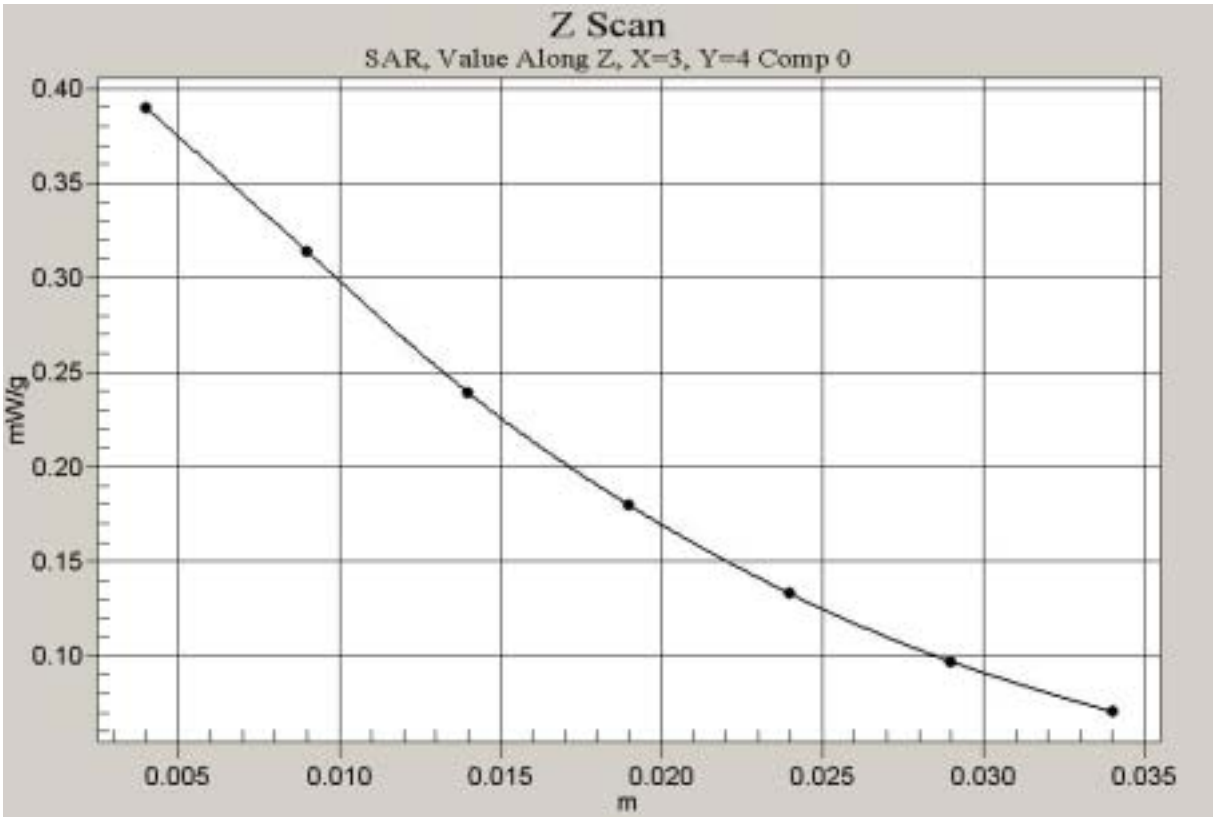



**Fig. 2 Z-Scan at maximum power point (Left Hand Touch Cheek 850MHz CH128)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Left; Alcatel One Touch 332a Left Cheek M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 23.3 V/m
Peak SAR = 0.683 mW/g
SAR(1 g) = 0.526 mW/g; SAR(10 g) = 0.372 mW/g
Power Drift = 0.01 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

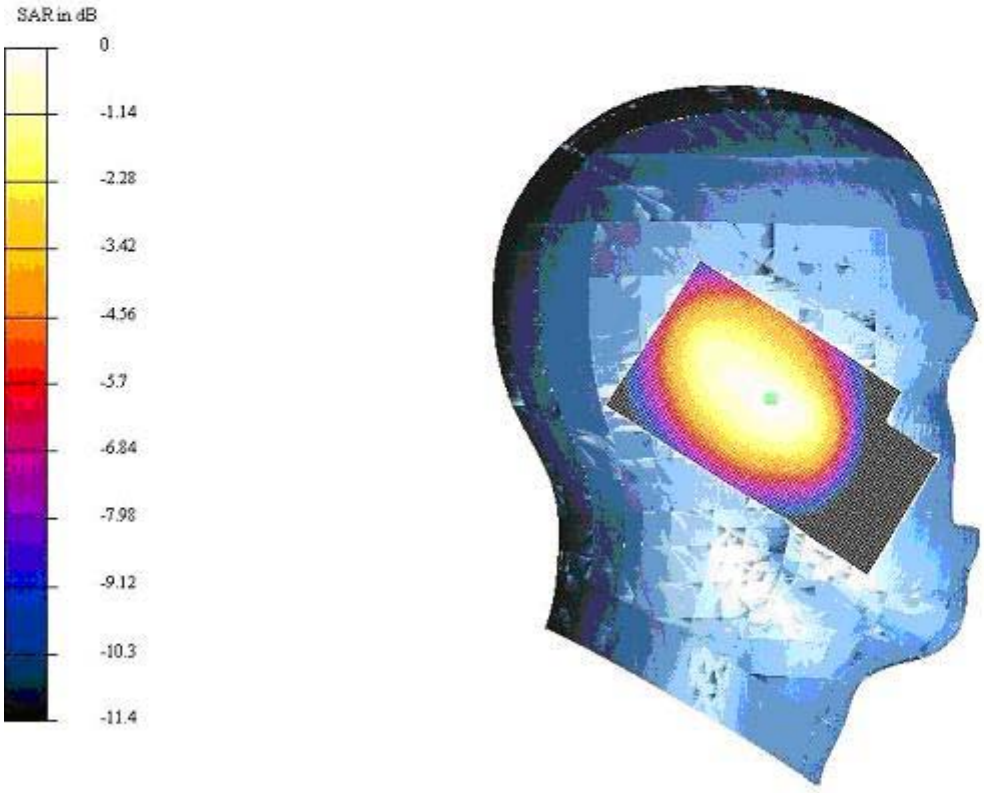



**Fig. 3 Left Hand Touch Cheek 850MHz CH190**

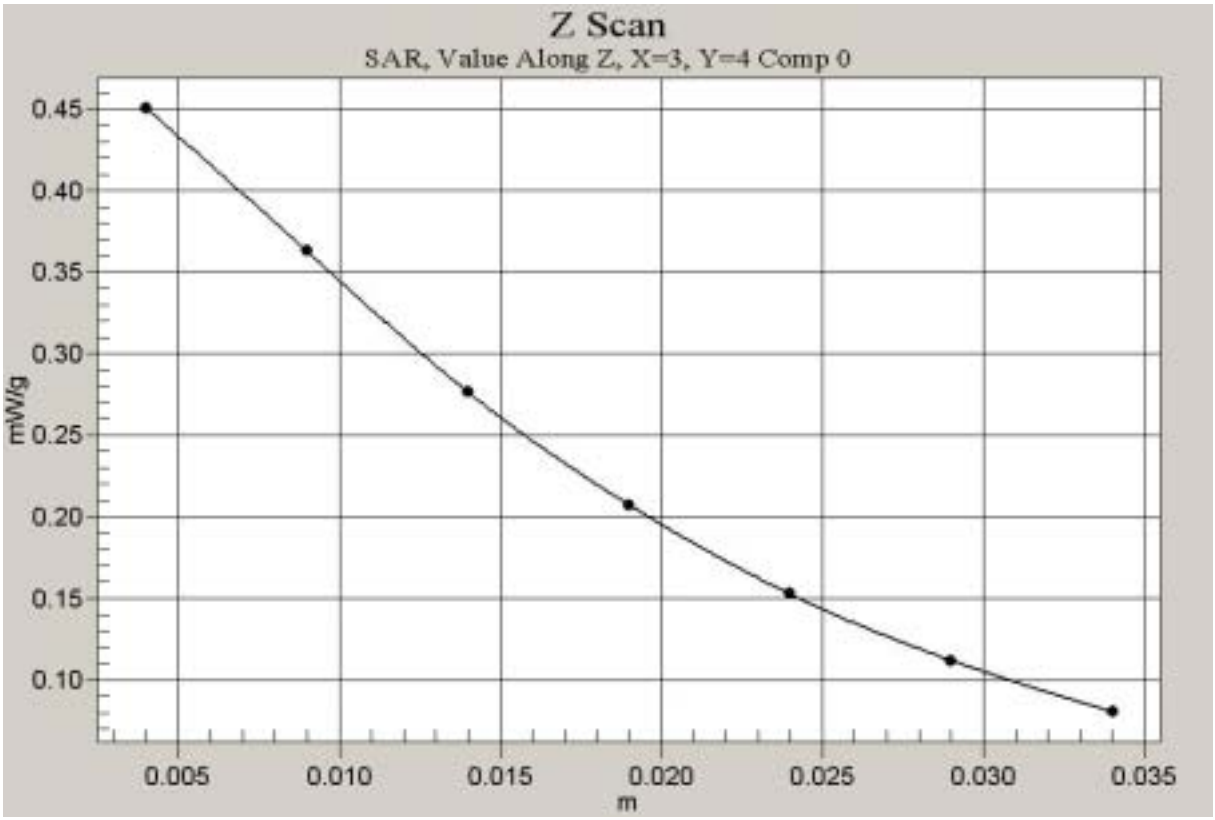



**Fig. 4 Z-Scan at maximum power point (Left Hand Touch Cheek 850MHz CH190)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Left; Alcatel OT332a Left Cheek H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 23.6 V/m
Peak SAR = 0.708 mW/g
SAR(1 g) = 0.54 mW/g; SAR(10 g) = 0.38 mW/g
Power Drift = -0.03 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

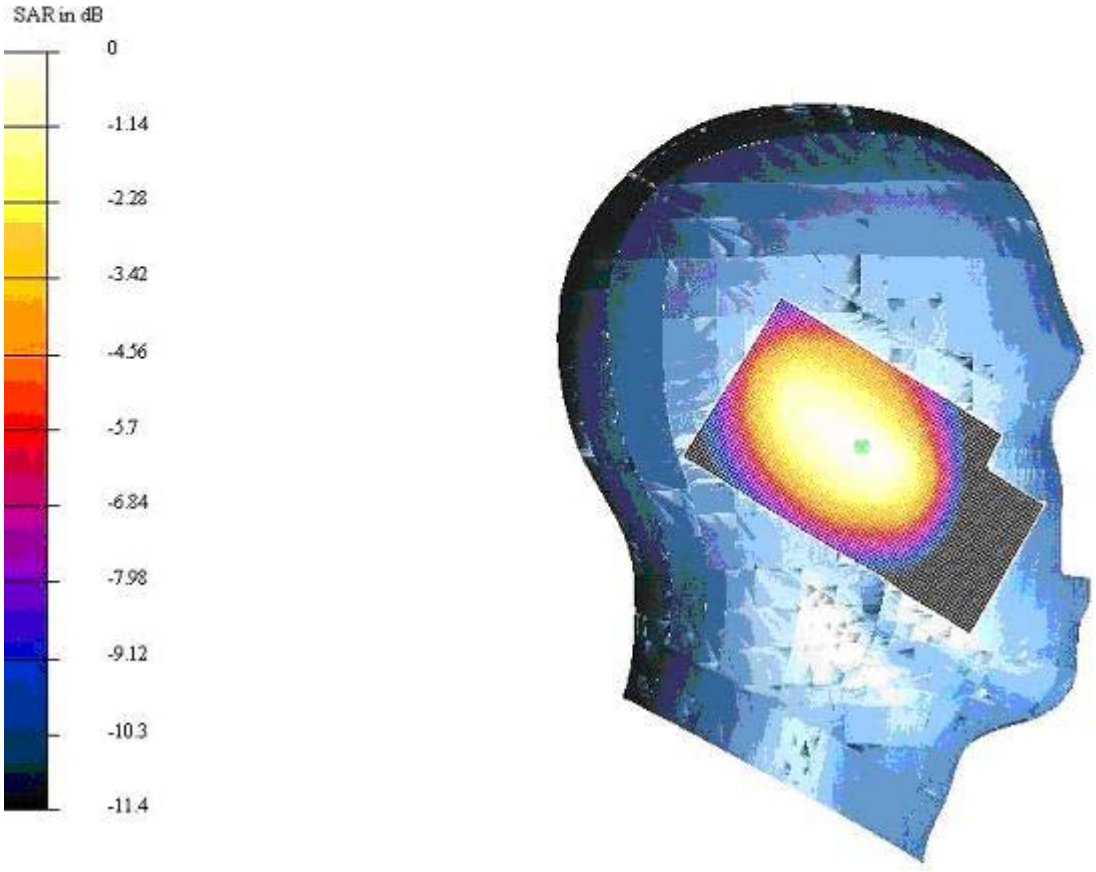



**Fig. 5 Left Hand Touch Cheek 850MHz CH251**

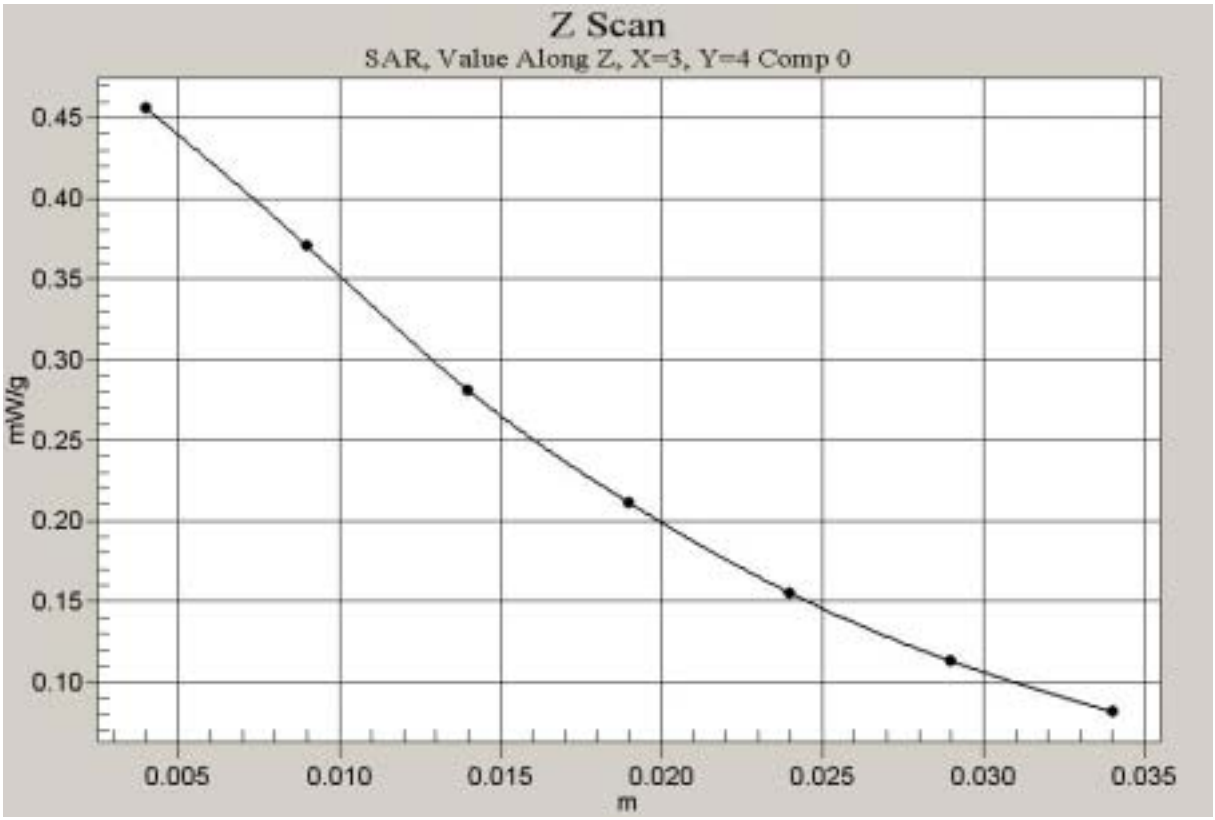



**Fig. 6 Z-Scan at maximum power point ( Left Hand Touch Cheek 850MHz CH251)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Left; Alcatel One Touch 332a Left Tilt L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 19 V/m
Peak SAR = 0.402 mW/g
SAR(1 g) = 0.292 mW/g; SAR(10 g) = 0.2 mW/g
Power Drift = -0.03 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

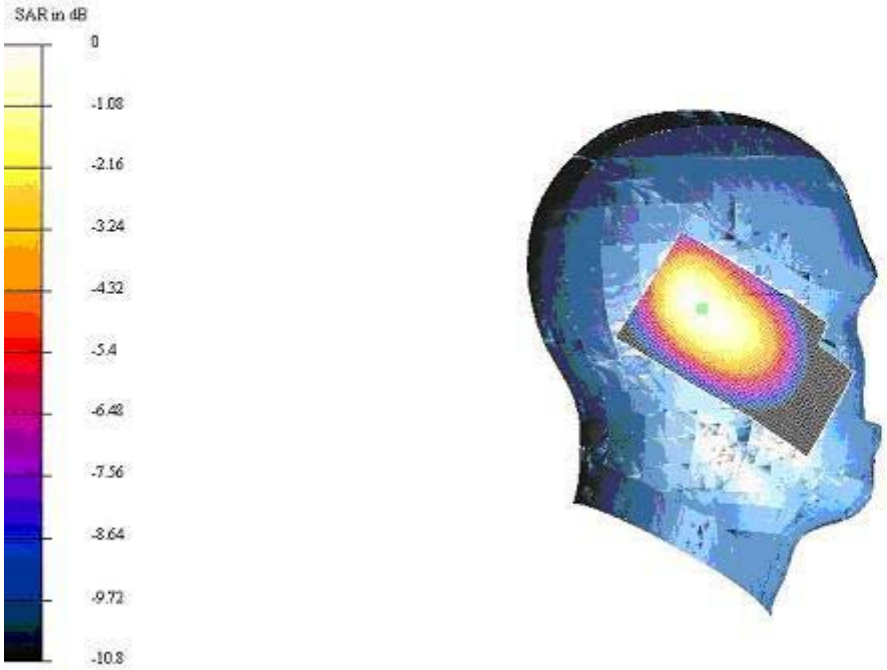



**Fig. 7 Left Hand Tilt 15° 850MHz CH128**

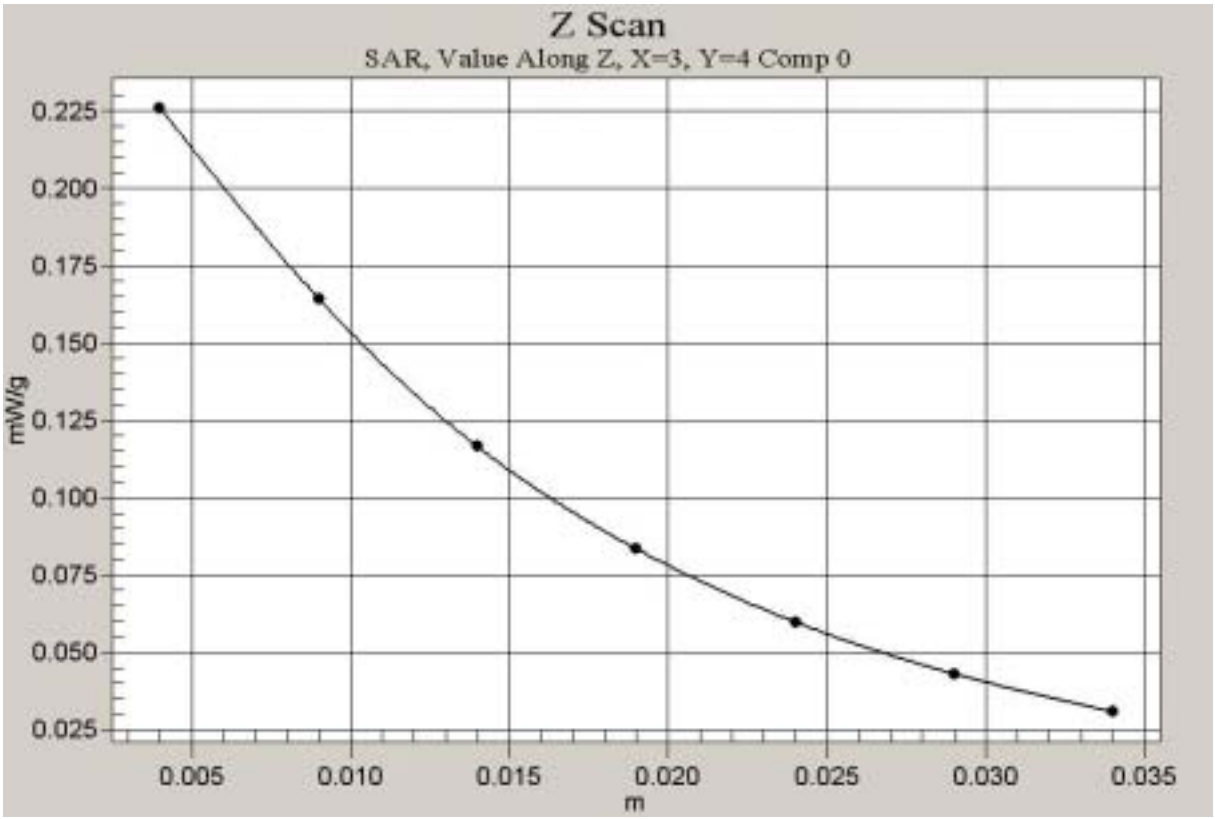



**Fig. 8 Z-Scan at maximum power point ( Left Hand Tilt 15° 850MHz CH128)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Left; Alcatel One Touch 332a Left Tilt M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 20.6 V/m
Peak SAR = 0.494 mW/g
SAR(1 g) = 0.354 mW/g; SAR(10 g) = 0.234 mW/g
Power Drift = -0.01 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

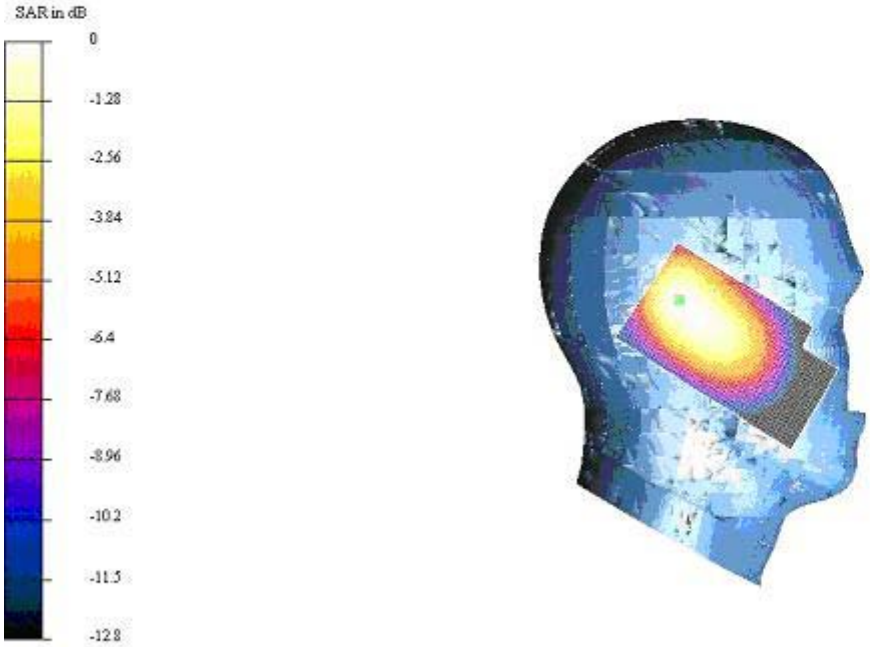



**Fig. 9 Left Hand Tilt 15° 850MHz CH190**

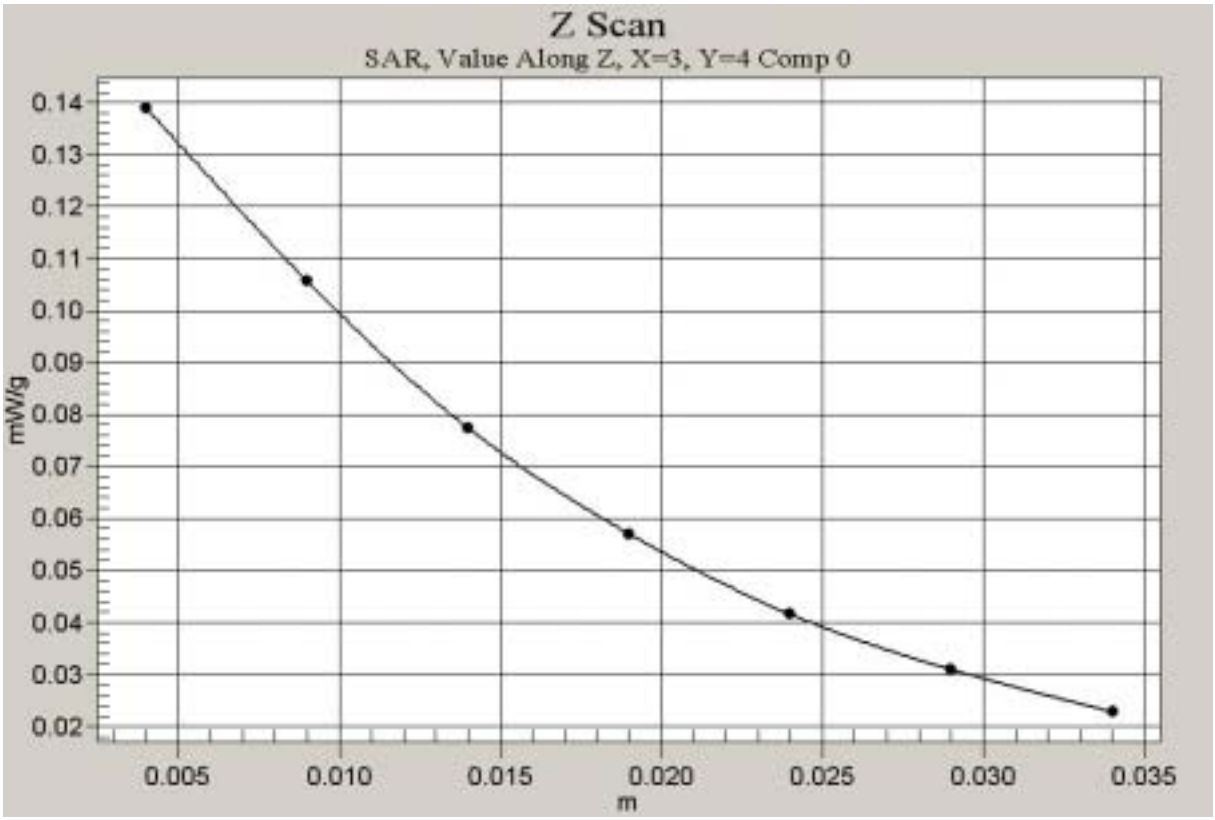



**Fig. 10 Z-Scan at maximum power point ( Left Hand Tilt 15° 850MHz CH190)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Left; Alcatel One Touch 332a Left Tilt H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 21 V/m
Peak SAR = 0.527 mW/g
SAR(1 g) = 0.376 mW/g; SAR(10 g) = 0.251 mW/g
Power Drift = -0.005 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

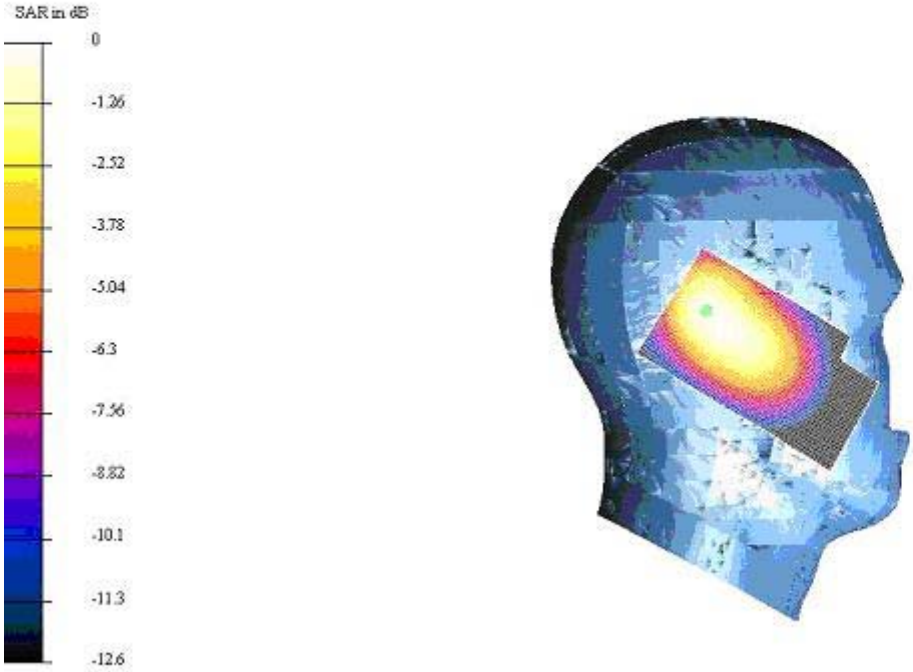



**Fig. 11 Left Hand Tilt 15° 850MHz CH251**

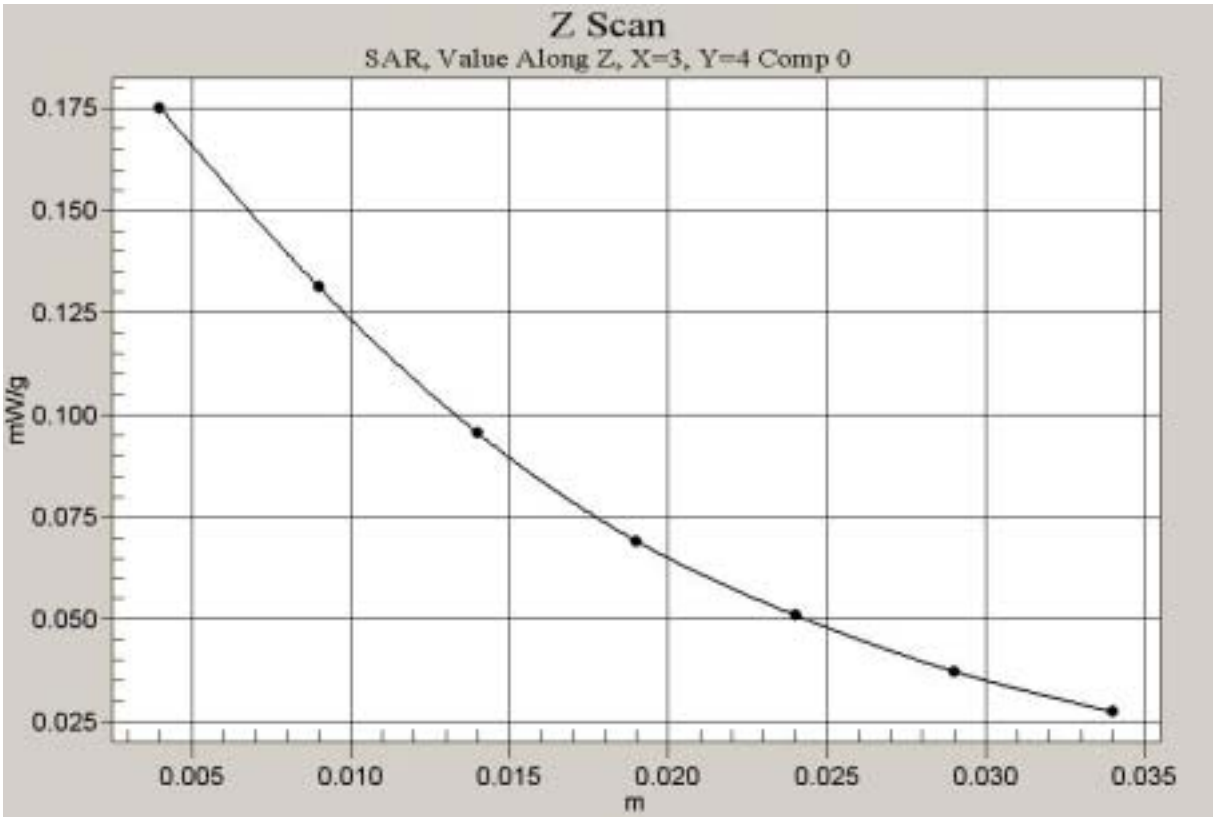



**Fig. 12 Z-Scan at maximum power point (Left Hand Tilt 15° 850MHz CH251)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Right; Alcatel One Touch 332a Right Cheek L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 20.3 V/m
Peak SAR = 0.567 mW/g
SAR(1 g) = 0.441 mW/g; SAR(10 g) = 0.315 mW/g
Power Drift = 0.03 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

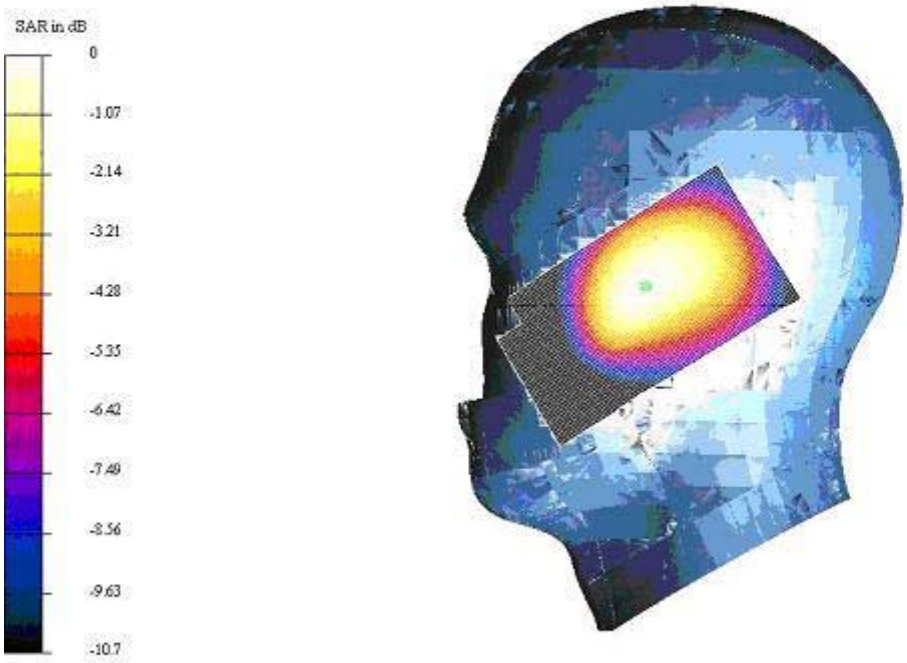



**Fig. 13 Right Hand Touch Cheek 850MHz CH128**

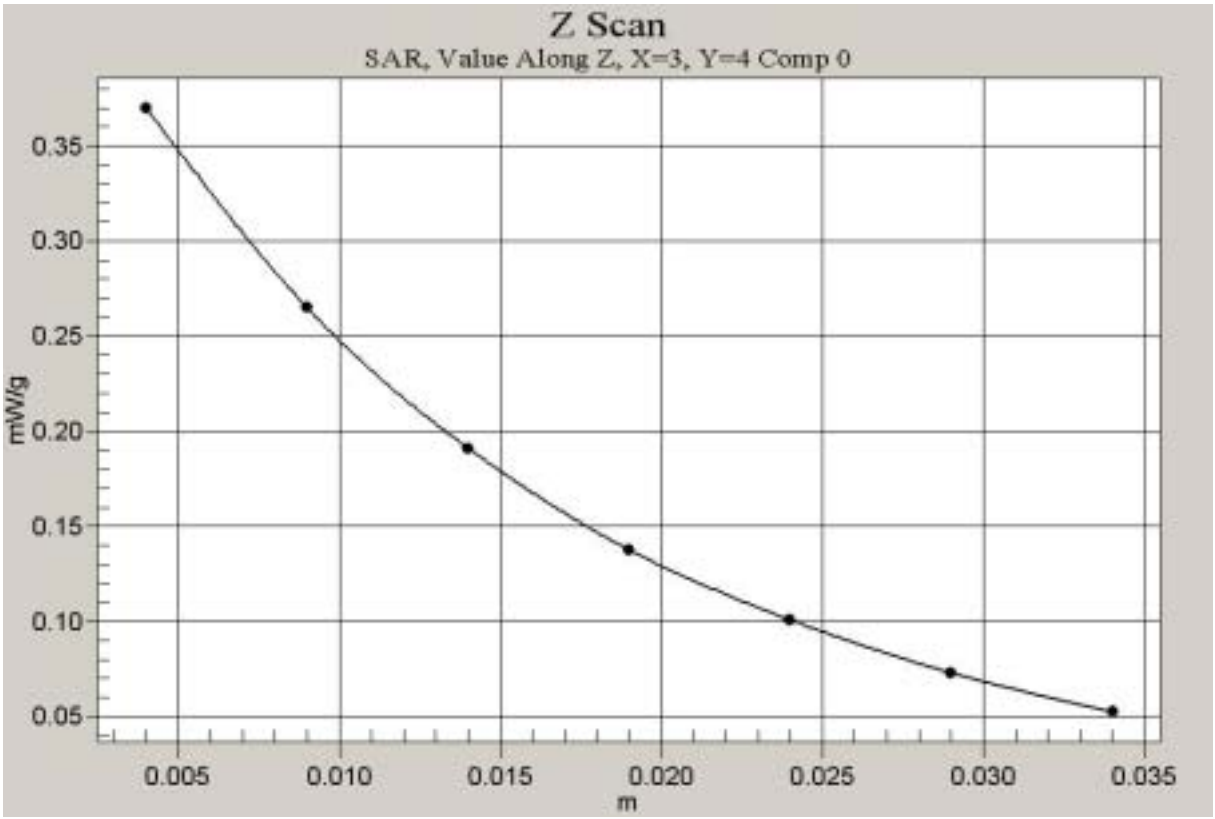



**Fig. 14 Z-Scan at maximum power point (Right Hand Touch Cheek 850MHz CH128)**

**DUT: Alcatel One Touch 332a** **Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Right; Alcatel One Touch 332a Right Cheek M**

**Zoom Scan (**7x7x7 **)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 21.8 V/m
Peak SAR = 0.663 mW/g
SAR(1 g) = 0.514 mW/g; SAR(10 g) = 0.367 mW/g
Power Drift = -0.002 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

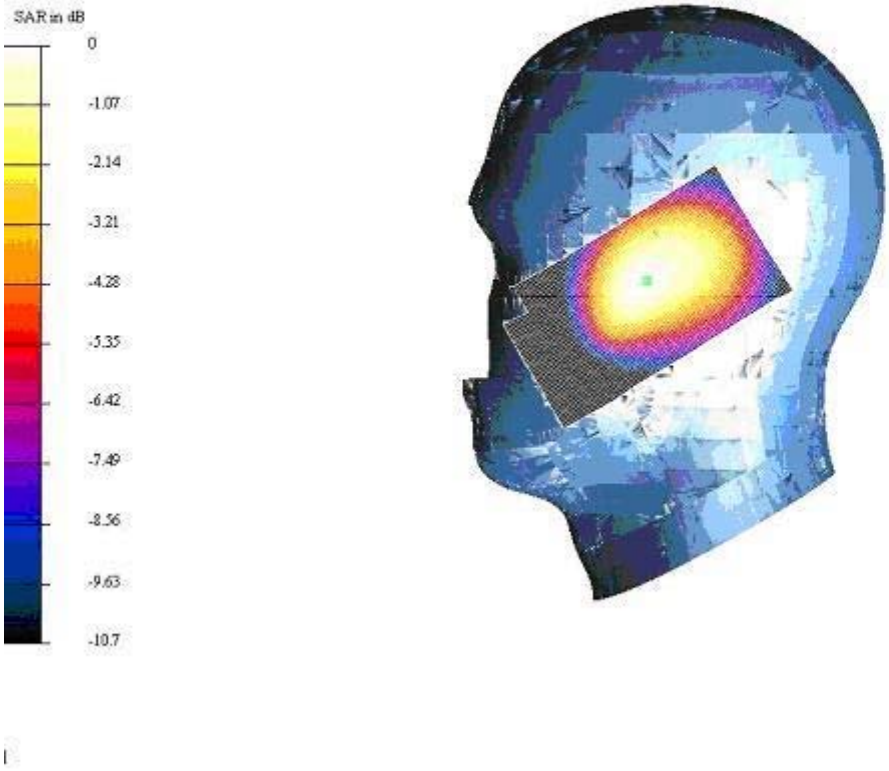



**Fig. 15 Right Hand Touch Cheek 850MHz CH190**

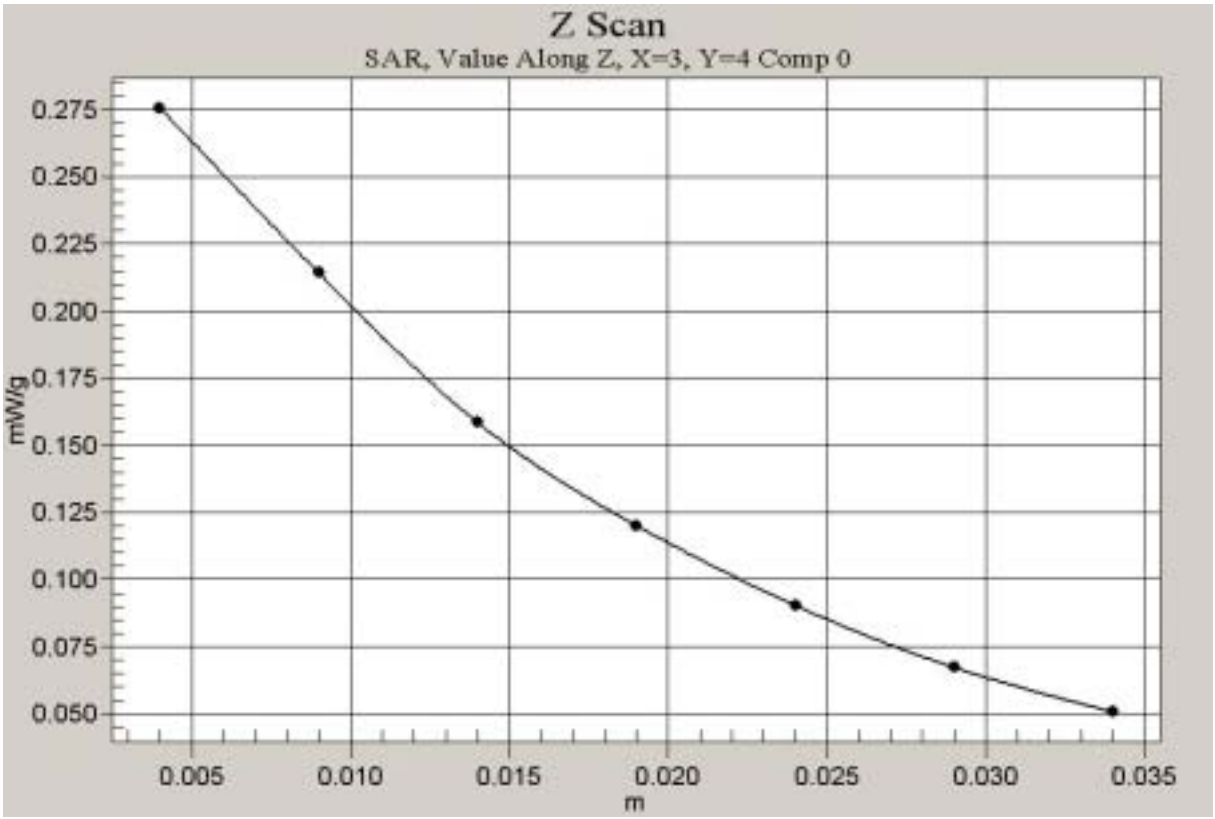



**Fig. 16 Z-Scan at maximum power point (Right Hand Touch Cheek 850MHz CH190)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Right; Alcatel One Touch 332a Right Cheek H**

**Zoom Scan (7x7x7 )/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 22 V/m
Peak SAR = 0.688 mW/g
SAR(1 g) = 0.535 mW/g; SAR(10 g) = 0.366 mW/g
Power Drift = -0.02 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

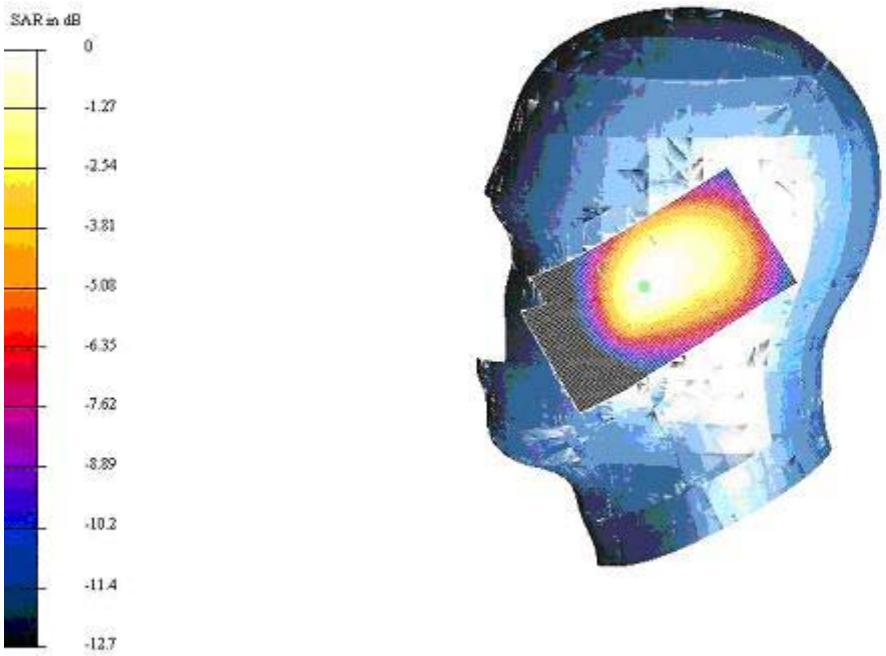



**Fig. 17 Right Hand Touch Cheek 850MHz CH251**

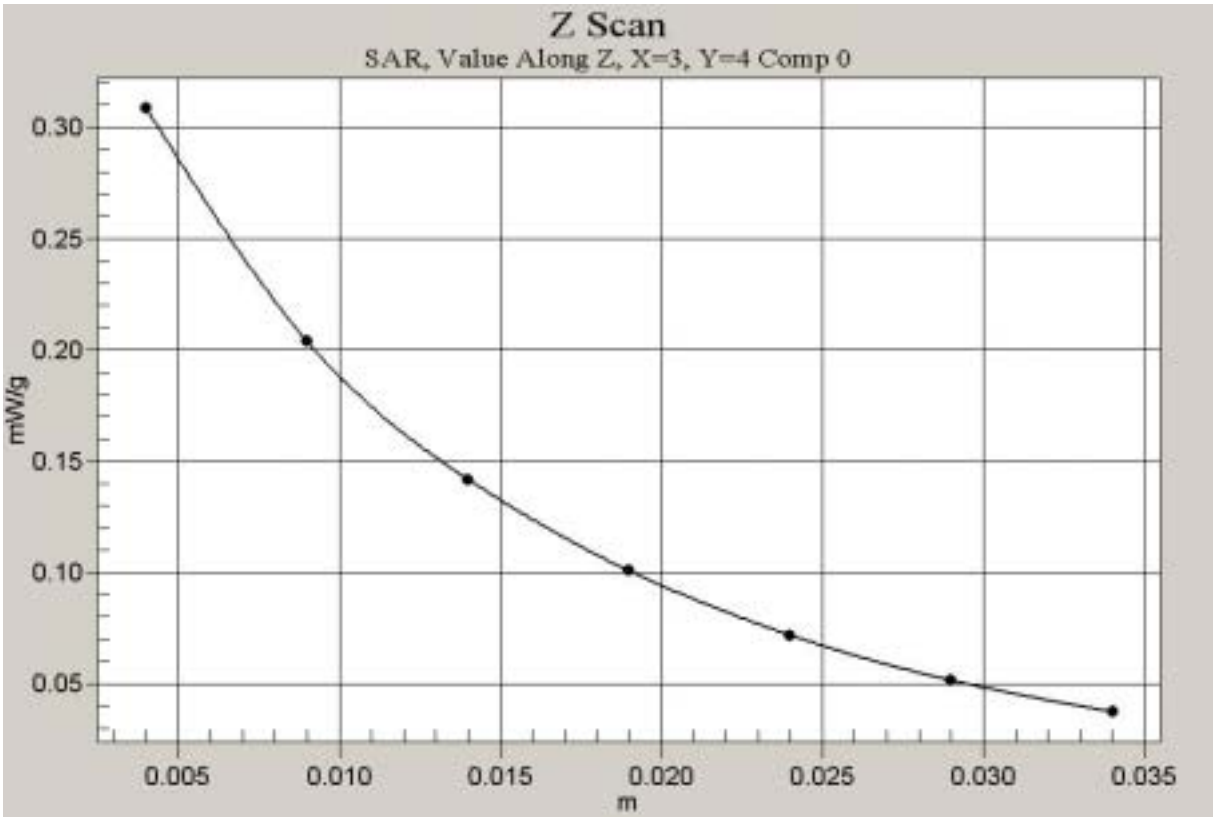



**Fig. 18 Z-Scan at maximum power point (Right Hand Touch Cheek 850MHz CH251)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a GSM850 Right; Alcatel One Touch 332a Right Tilt L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 18 V/m
Peak SAR = 0.327 mW/g
SAR(1 g) = 0.257 mW/g; SAR(10 g) = 0.185 mW/g
Power Drift = -0.008 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

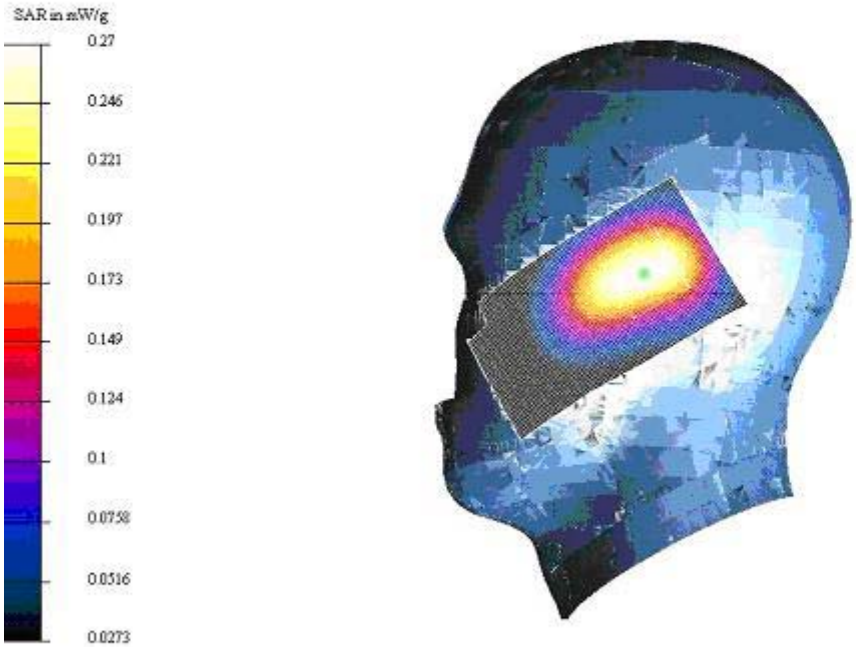



**Fig. 19 Right Hand Tilt 15° 850MHz CH128**

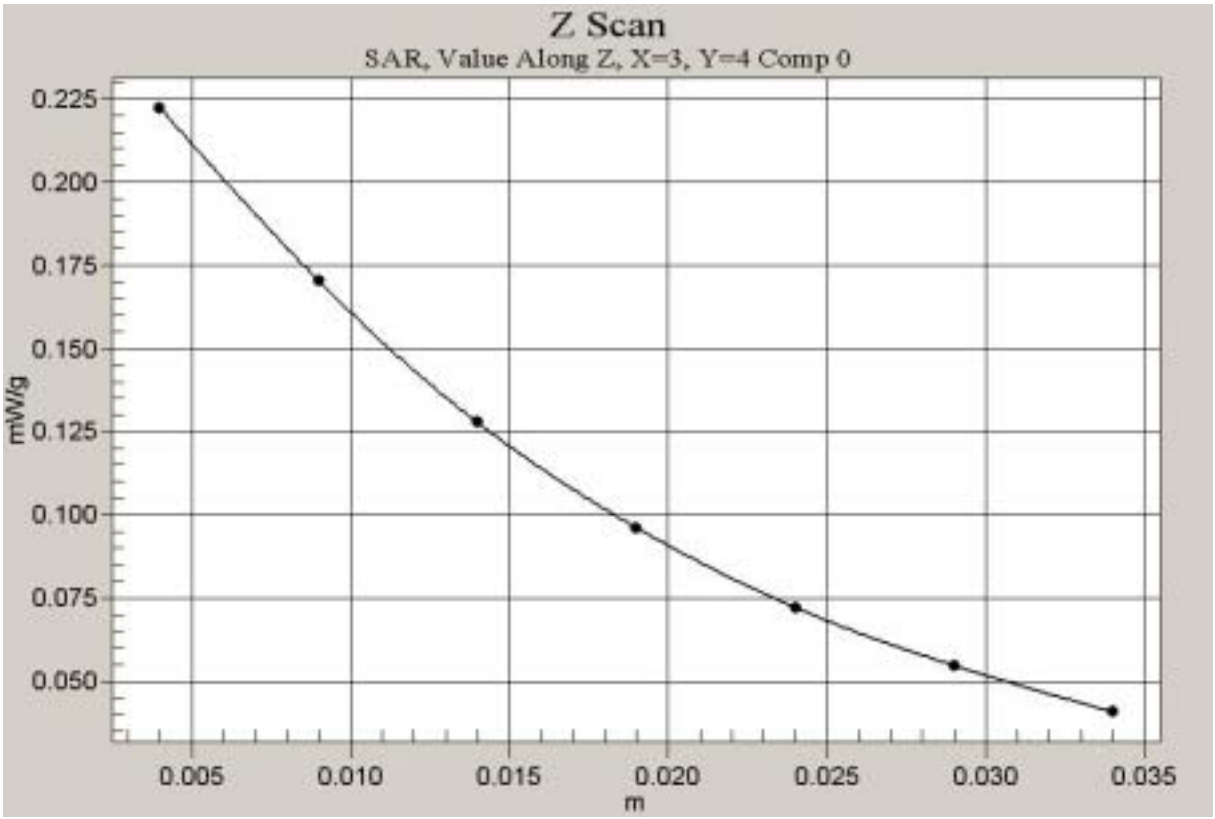



**Fig. 20 Z-Scan at maximum power point (Right Hand Tilt 15° 850MHz CH128)**

**DUT: Alcatel One Touch 332a** **Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a Right; Alcatel One Touch 332a Right Tilt M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 19.5 V/m
Peak SAR = 0.411 mW/g
SAR(1 g) = 0.305 mW/g; SAR(10 g) = 0.214 mW/g
Power Drift = -0.03 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

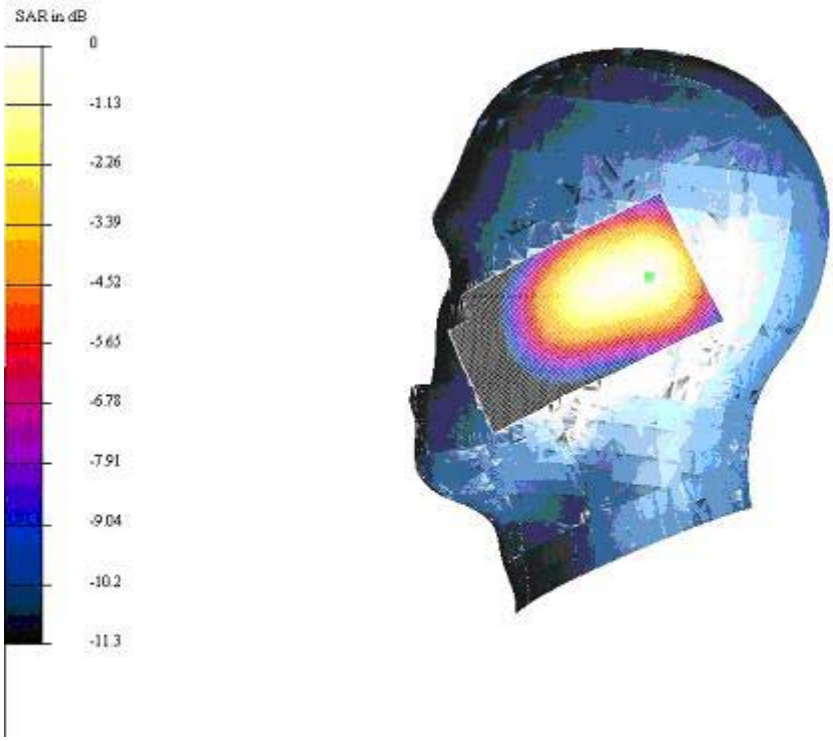



**Fig. 21 Right Hand Tilt 15° 850MHz CH190**

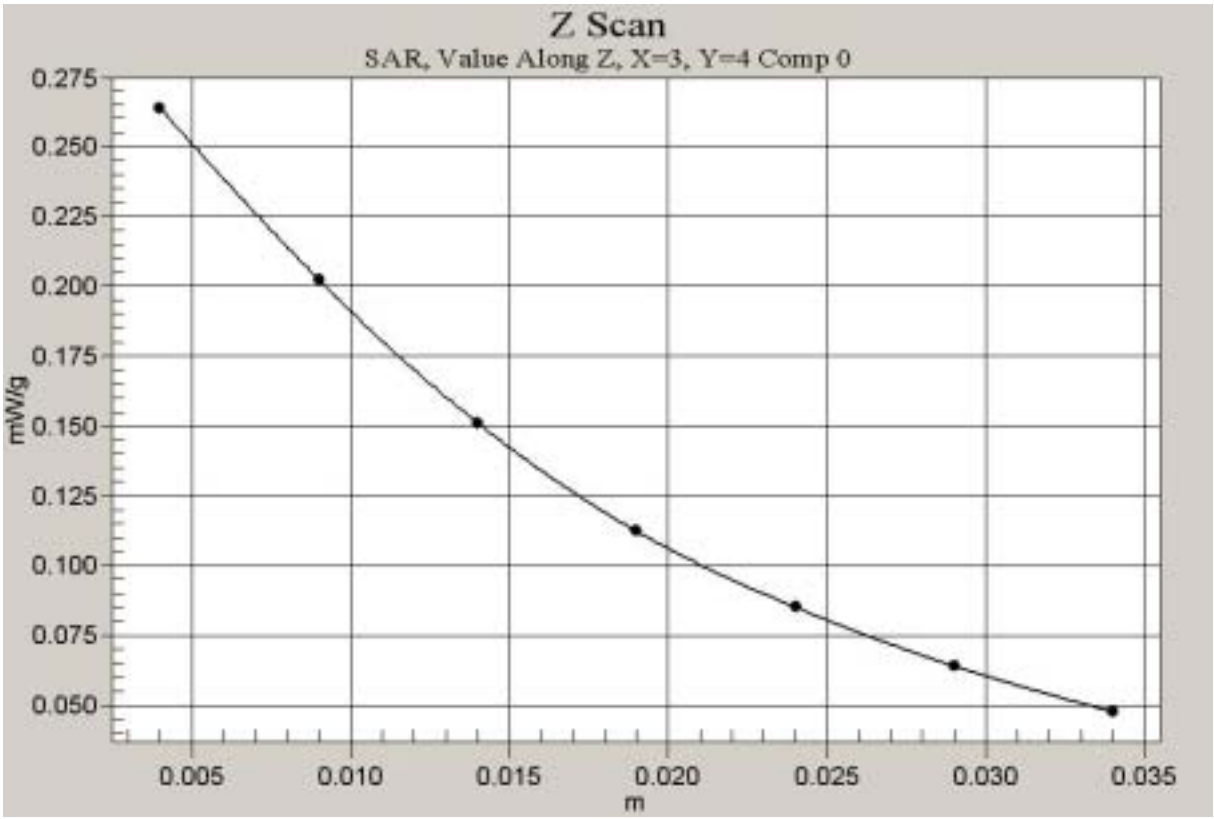



**Fig. 22 Z-Scan at maximum power point (Right Hand Tilt 15° 850MHz CH190)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Right: ALcatel One Touch 332a Right Tilt H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 7.59 V/m
Peak SAR = 0.163 mW/g
SAR(1 g) = 0.0948 mW/g; SAR(10 g) = 0.0521 mW/g
Power Drift = 0.004 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

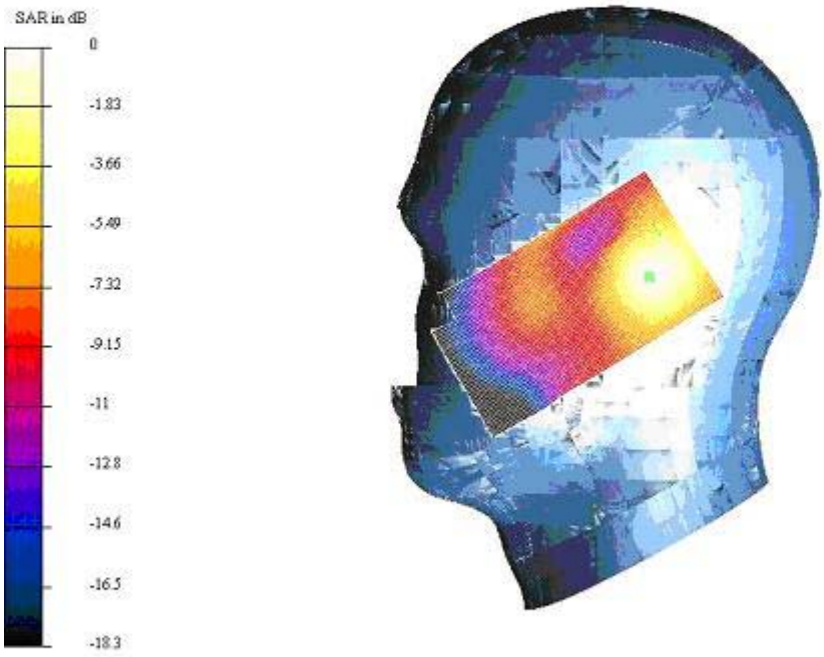



**Fig. 23 Right Hand Tilt 15° 850MHz CH251**

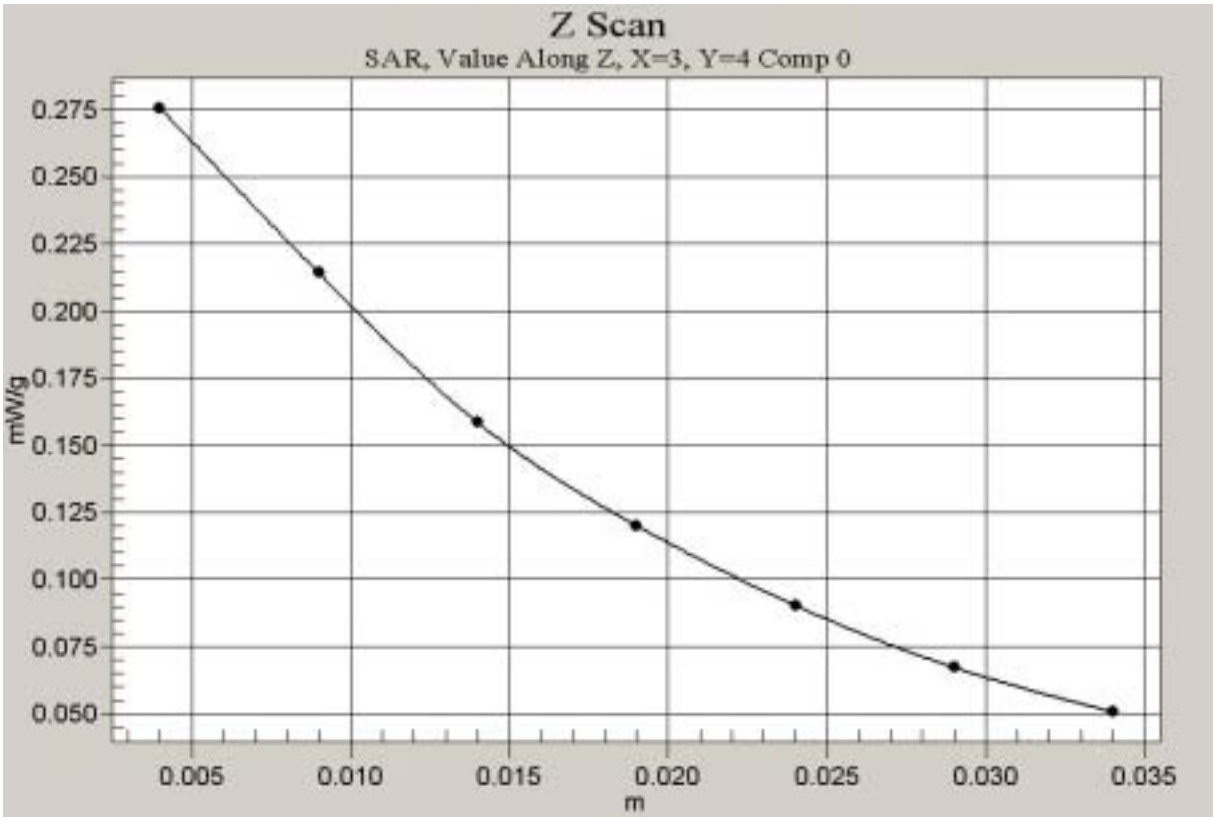



**Fig. 24 Z-Scan at maximum power point (Right Hand Tilt 15° 850MHz CH251)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: SAR Test GSM 850 Body toward phantom; Alcatel OT 332a GSM 850 Flat L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 11.3 V/m
Peak SAR = 0.392 mW/g
SAR(1 g) = 0.219 mW/g; SAR(10 g) = 0.117 mW/g
Power Drift = 0.04 dB
**Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

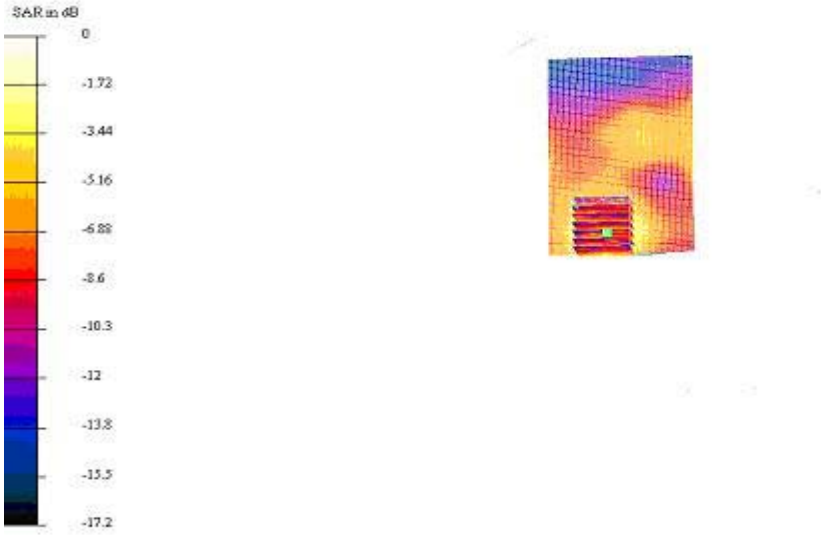



**Fig. 25 Flat Phantom Body-worn Position 850MHz CH128 with the display of the handset towards the phantom**

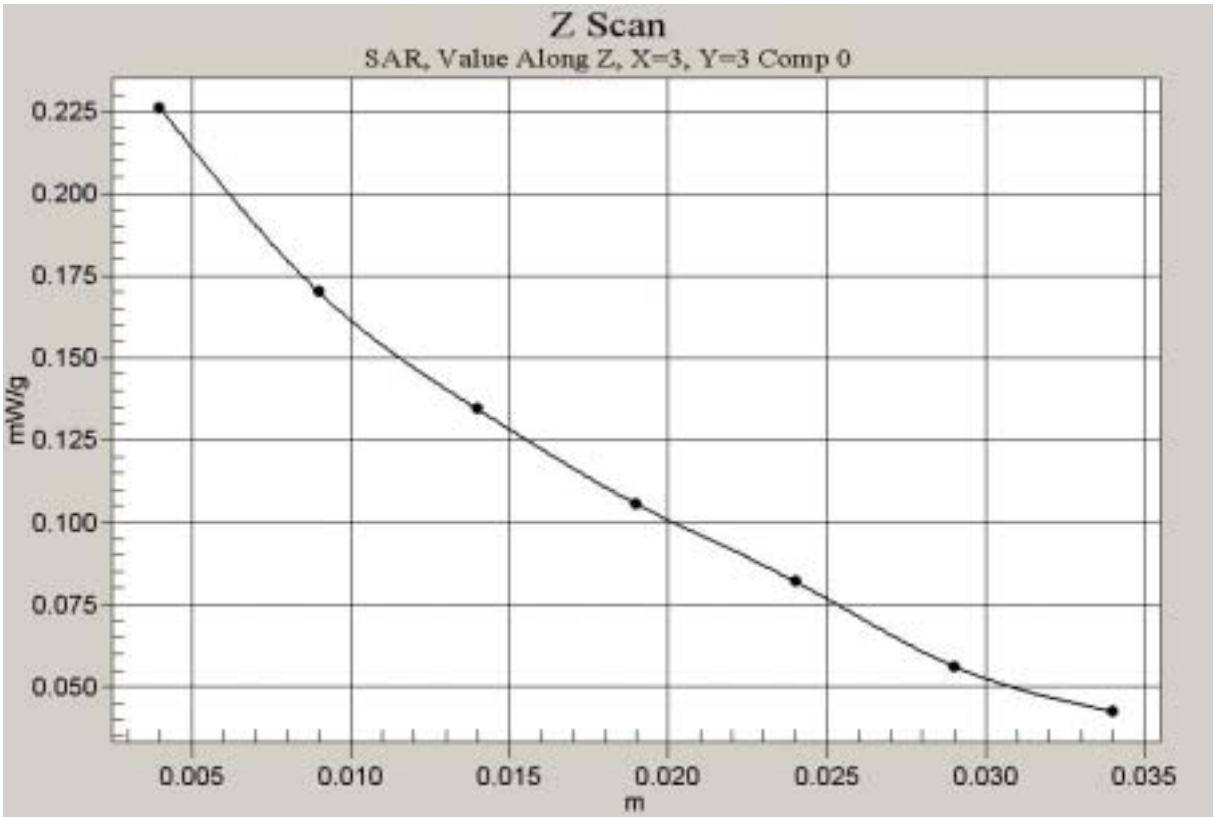



**Fig. 26 Z-Scan at maximum power point (Flat Phantom 850MHz CH128 with the display of the handset towards the phantom)**

DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516
Program: SAR Test GSM850 Body toward phantom; Alcatel One Touch 332a Flat M

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm
Reference Value = 11.3 V/m
Peak SAR =0.423 mW/g
SAR(1 g) =0.236 mW/g; SAR(10 g) =0.153 mW/g
Power Drift = 0.04 dB
Area Scan (51x81x1): Measurement grid: dx=10mm, dy=10mm

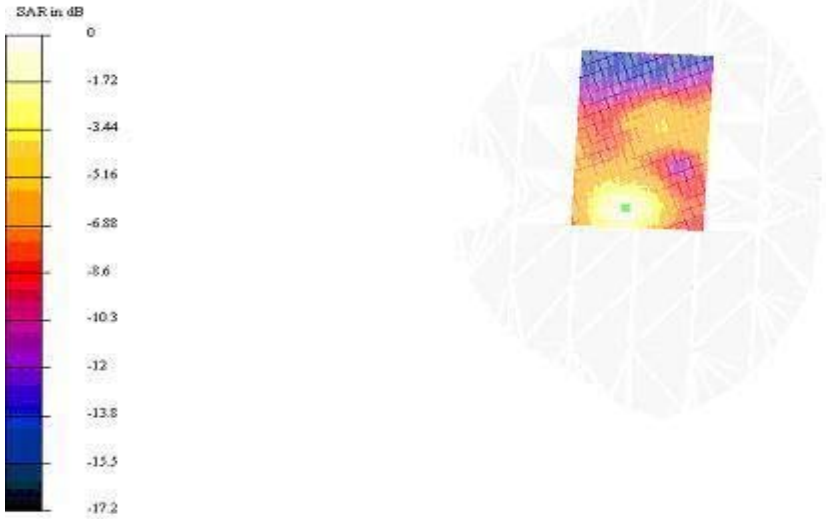



**Fig. 27 Flat Phantom Body-worn Position 850MHz CH190 with the display of the handset towards the phantom**

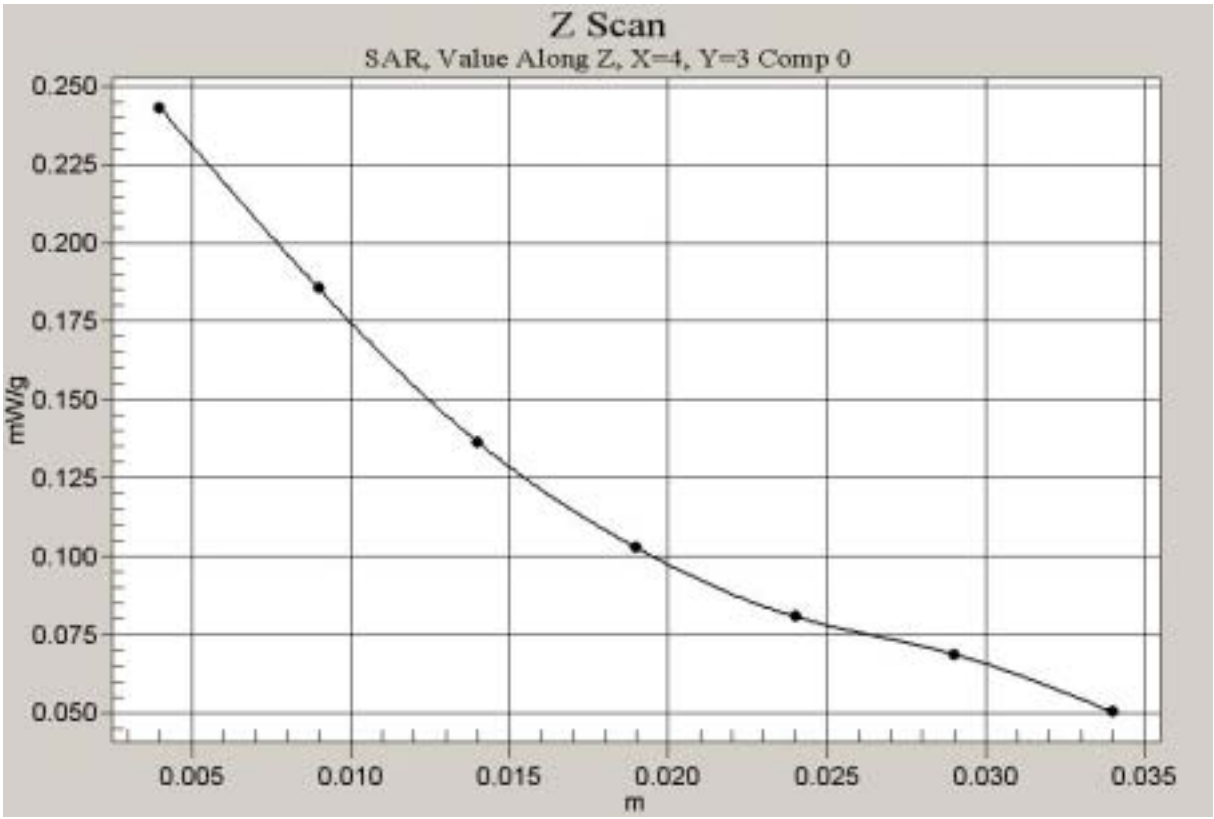



**Fig. 28 Z-Scan at maximum power point (Flat Phantom 850MHz CH190 with the display of the handset towards the phantom)**

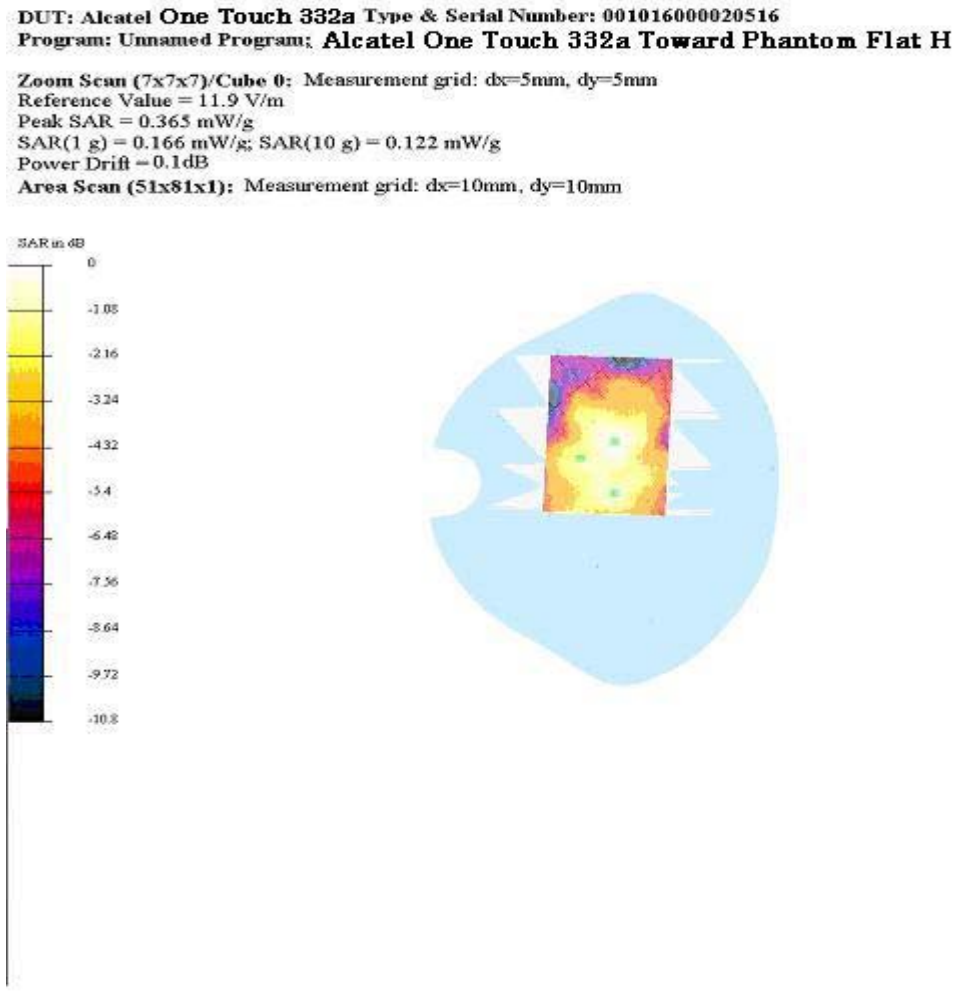



**Fig. 29 Flat Phantom Body-worn Position 850MHz CH251 with the display of the handset towards the phantom**

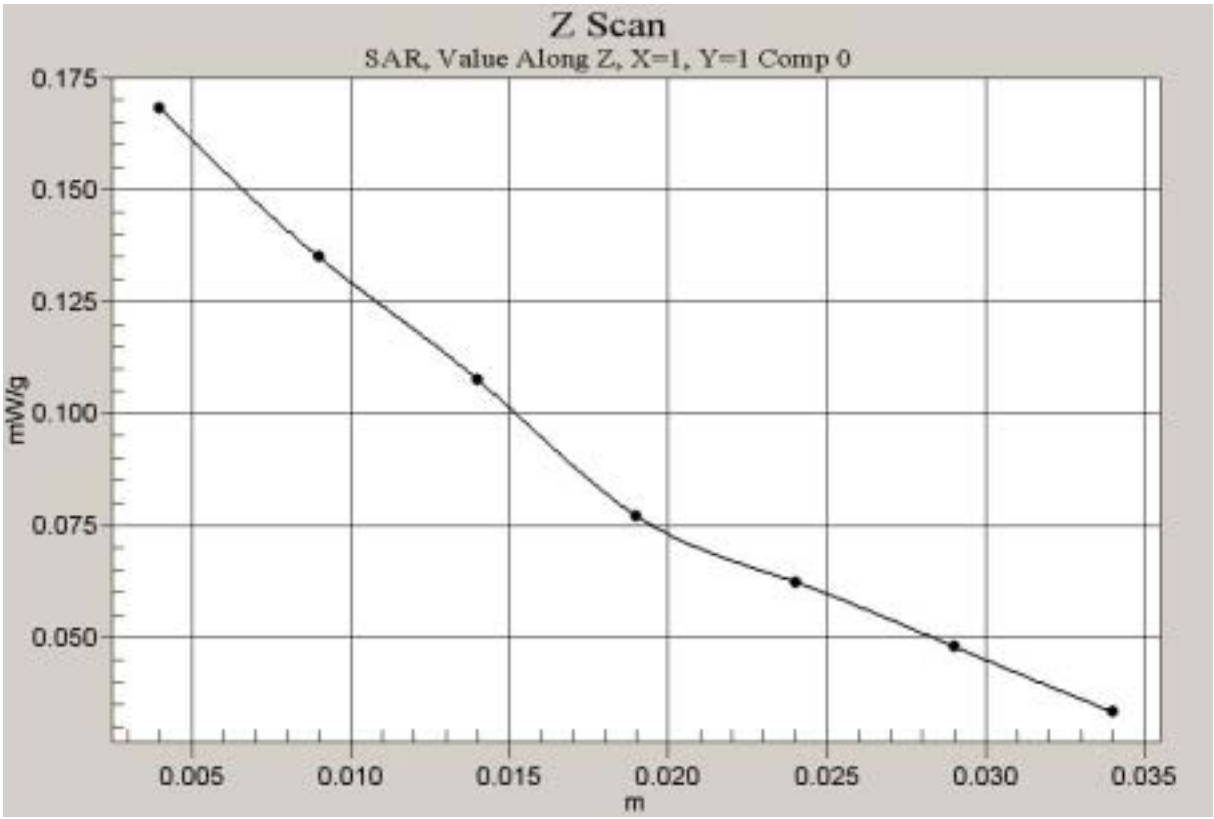



**Fig. 30 Z-Scan at maximum power point (Flat Phantom 850MHz CH251 with the display of the handset towards the phantom)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Unnamed Program; Alcatel One Touch 332a GSM850 Toward Ground L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 17 V/m
Peak SAR = 0.588 mW/g
SAR(1 g) = 0.431 mW/g; SAR(10 g) = 0.306 mW/g
Power Drift = -0.08 dB
**Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

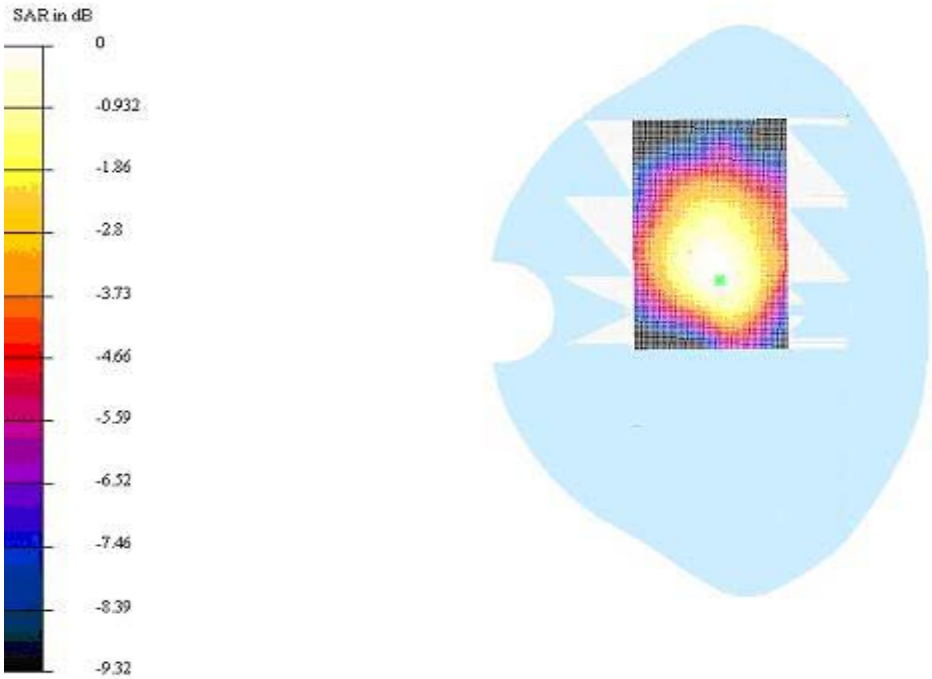



**Fig. 31 Flat Phantom Body-worn Position 850MHz CH128 with the display of the handset towards the ground**

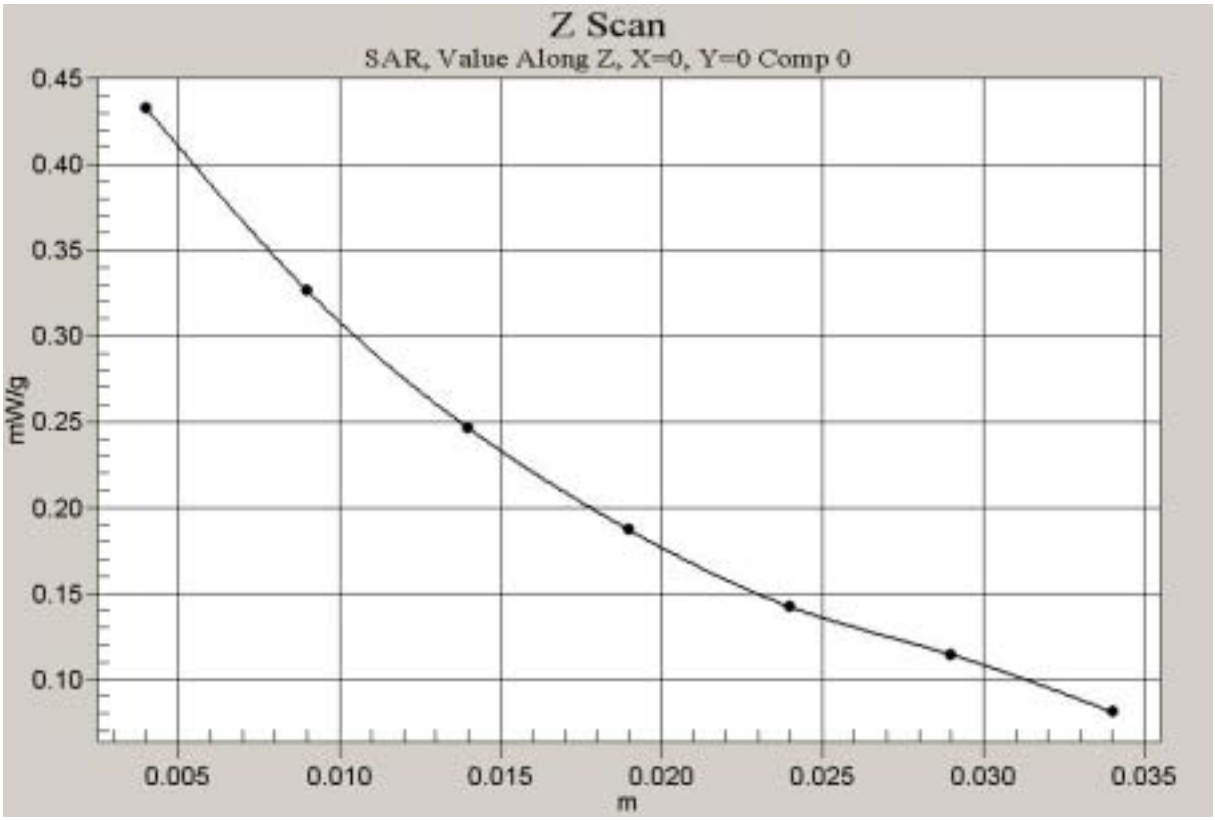



**Fig. 32 Z-Scan at maximum power point (Flat Phantom 850MHz CH128 with the display of the handset towards the ground)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Unnamed Program; Alcatel One Touch 332a GSM850 Toward Ground M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 15.4 V/m
Peak SAR = 0.642 mW/g
SAR(1 g) = 0.328 mW/g; SAR(10 g) = 0.247 mW/g
Power Drift = 0.3 dB
**Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

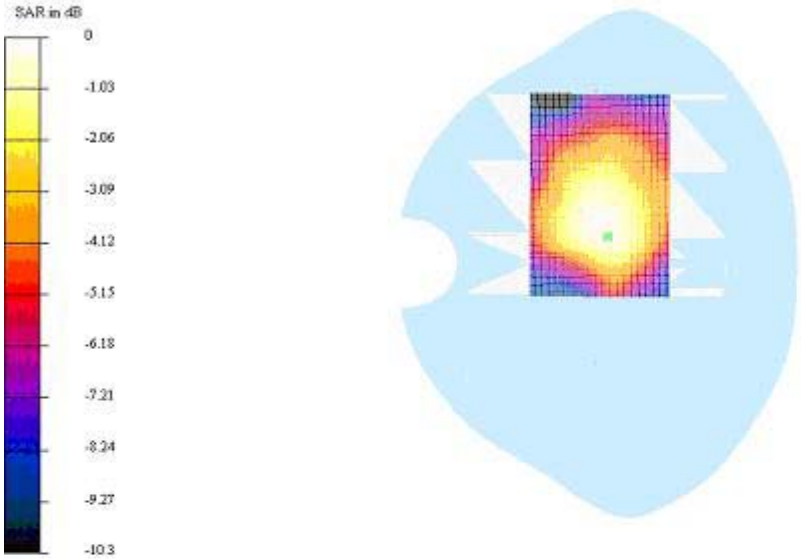



**Fig. 33 Flat Phantom Body-worn Position 850MHz CH190 with the display of the handset towards the ground**

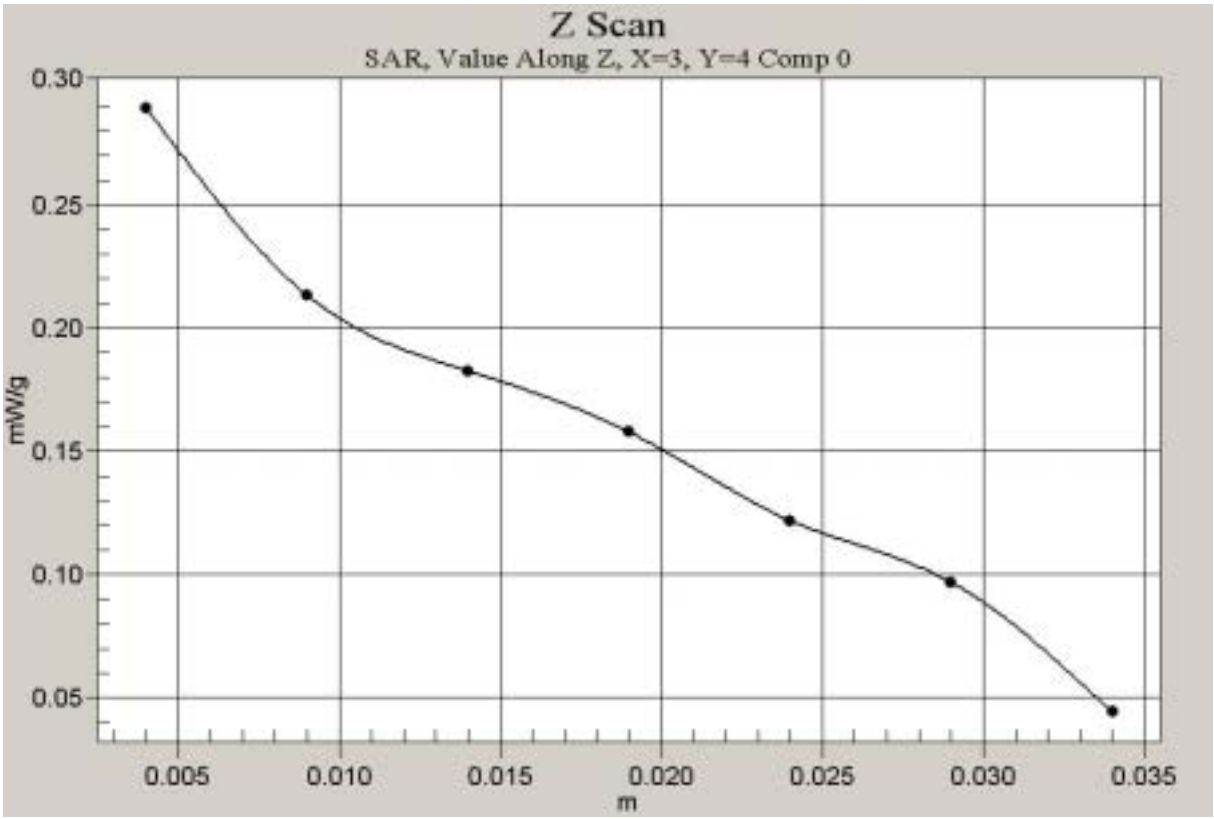



**Fig. 34 Z-Scan at maximum power point (Flat Phantom 850MHz CH190 with the display of the handset towards the ground)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Unnamed Program; Alcatel One Touch 332a Toward Ground Flat H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 13.7 V/m
Peak SAR = 0.455 mW/g
SAR(1 g) = 0.308 mW/g; SAR(10 g) = 0.224 mW/g
Power Drift = 0.3 dB
**Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

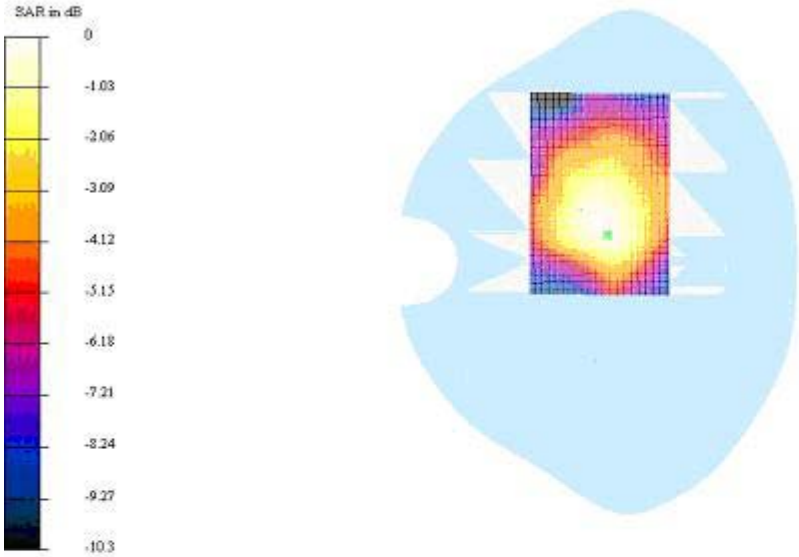



**Fig. 35 Flat Phantom Body-worn Position 850MHz CH251 with the display of the handset towards the ground**

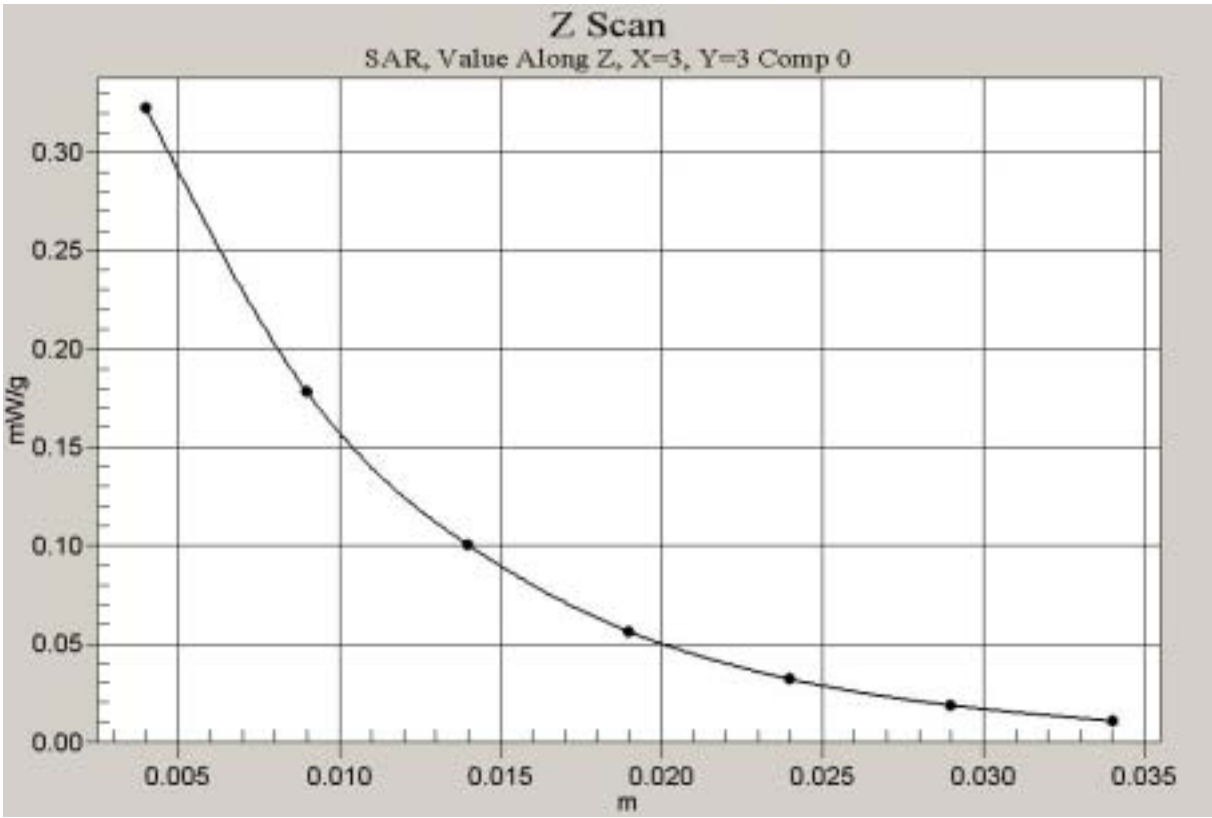



**Fig. 34 Z-Scan at maximum power point (Flat Phantom 850MHz CH251 with the display of the handset towards the ground)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Left: ALcatel One Touch 332a Left Cheek Low**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 8.5 V/m
Peak SAR = 0.263 mW/g
SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.0807 mW/g
Power Drift = 0.0004 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

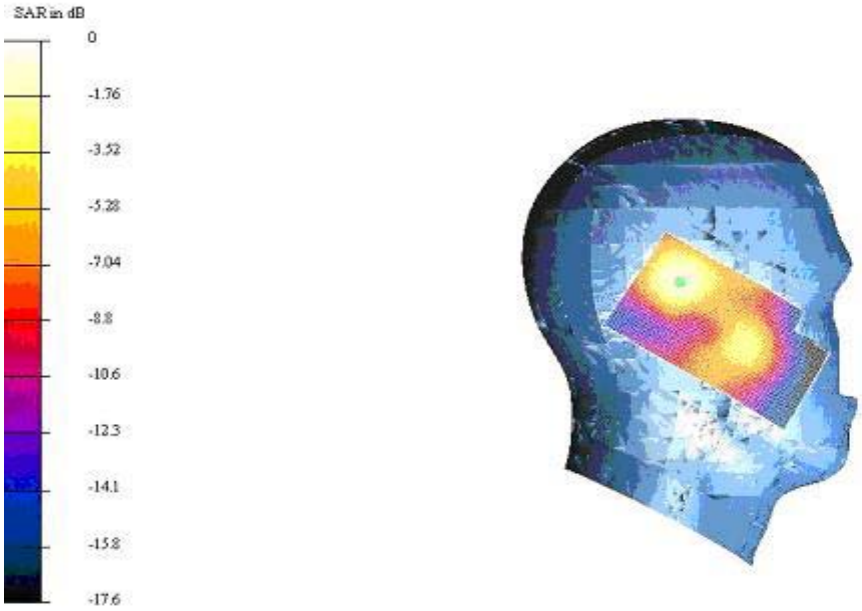



**Fig. 37 Left Hand Touch Cheek 1900MHz CH512**

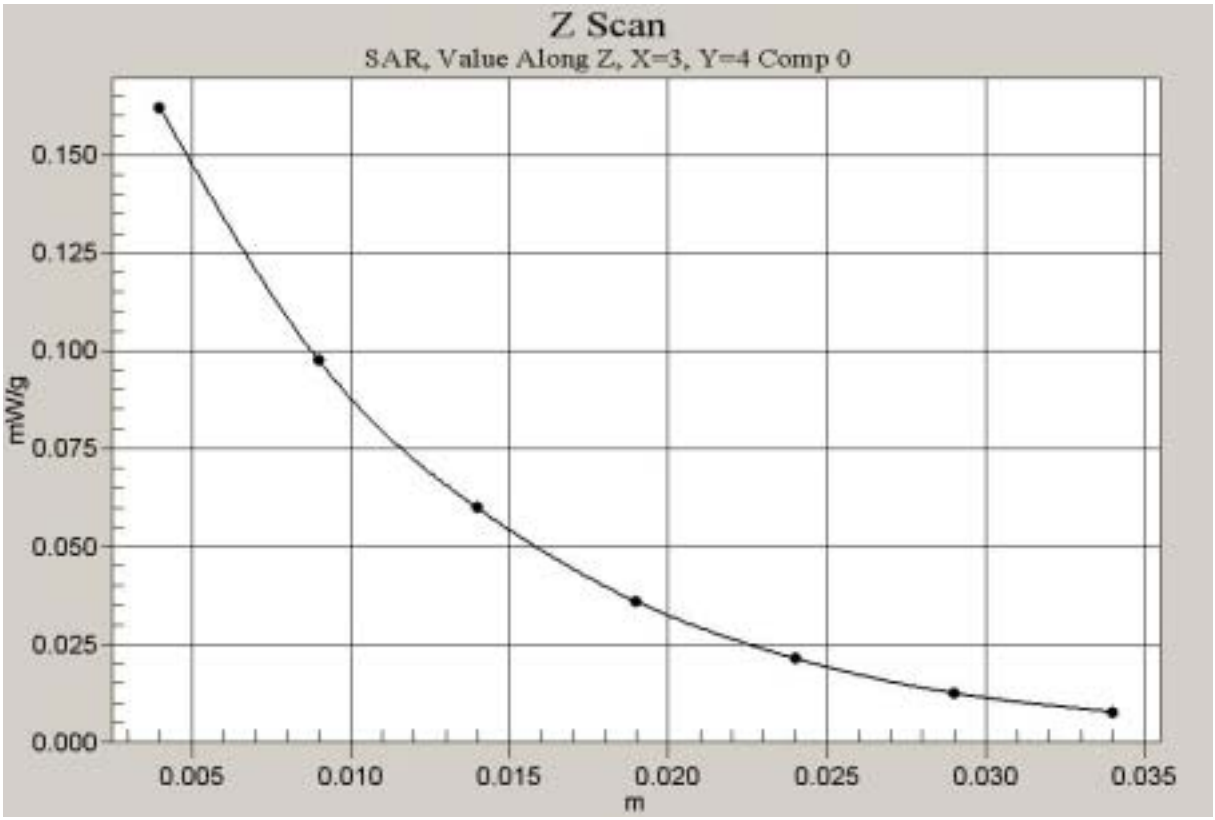



**Fig. 38 Z-Scan at maximum power point (Left Hand Touch Cheek 1900MHz CH512)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900; ALcatel One Touch Left Cheek M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 7.96 V/m
Peak SAR = 0.276 mW/g
SAR(1 g) = 0.163 mW/g; SAR(10 g) = 0.0866 mW/g
Power Drift =0.1dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

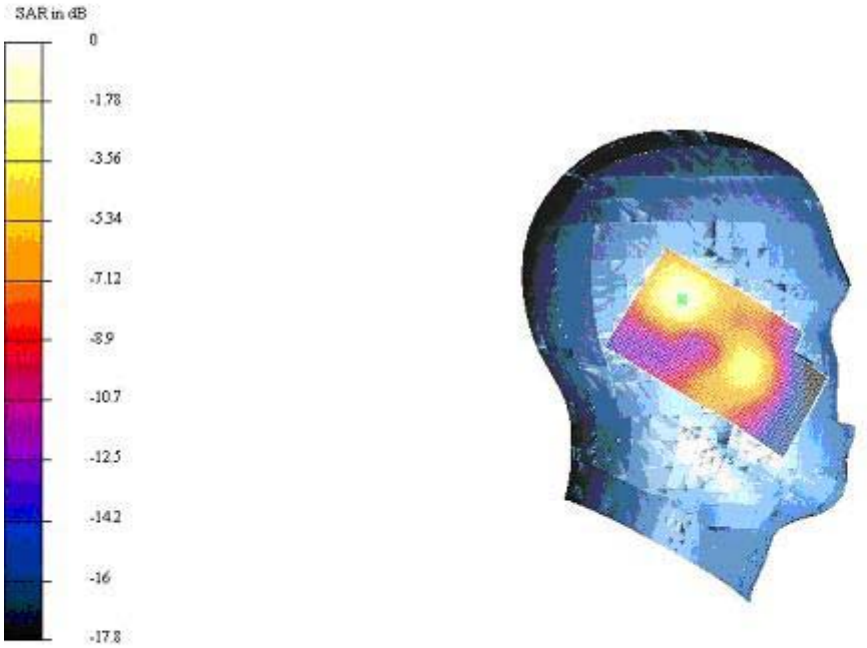



**Fig. 39 Left Hand Touch Cheek 1900MHz CH661**

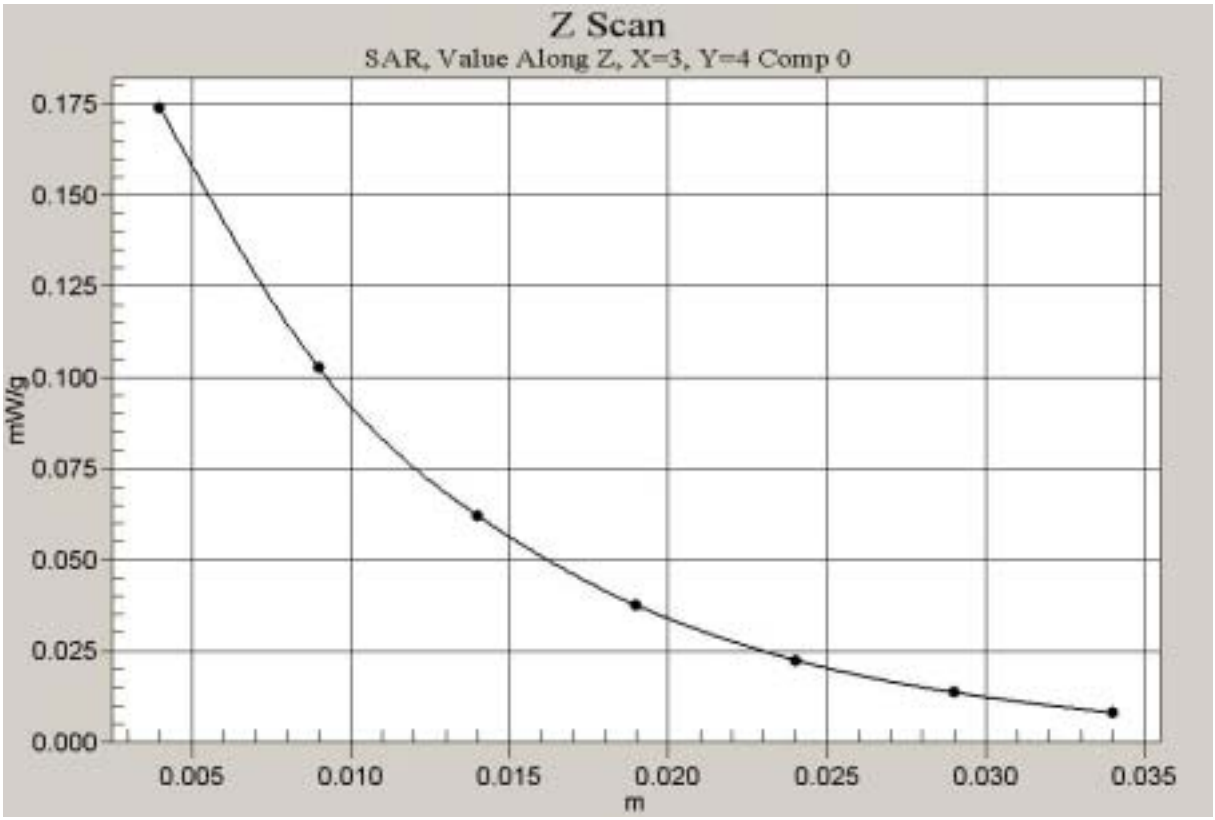



**Fig. 40 Z-Scan at maximum power point (Left Hand Touch Cheek 1900MHz CH661**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Left: ALcatel One Touch 332a Left Cheek H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 7.15 V/m
Peak SAR = 0.239 mW/g
SAR(1 g) = 0.137 mW/g; SAR(10 g) = 0.0712 mW/g
Power Drift = -0.01 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

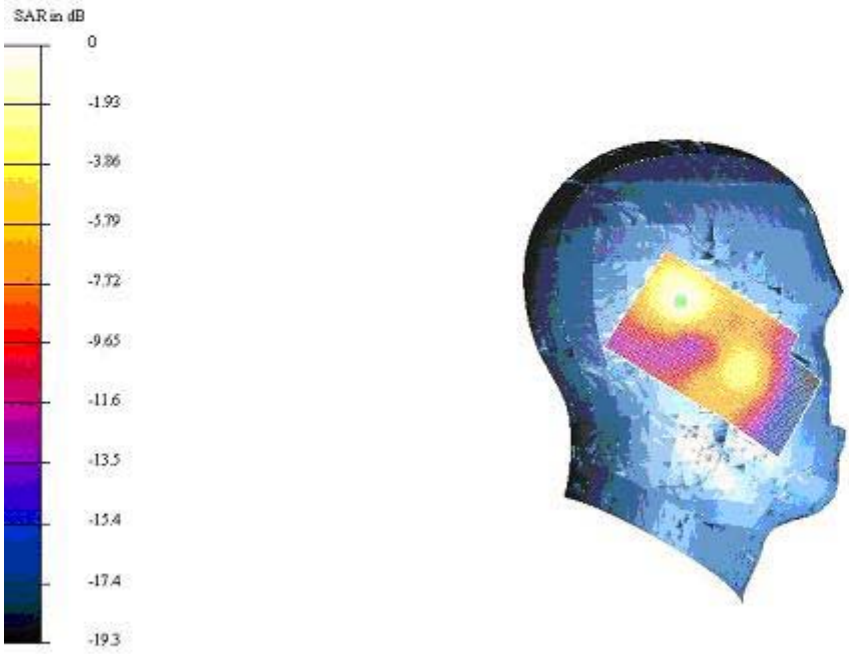



**Fig. 41 Left Hand Touch Cheek 1900MHz CH810**

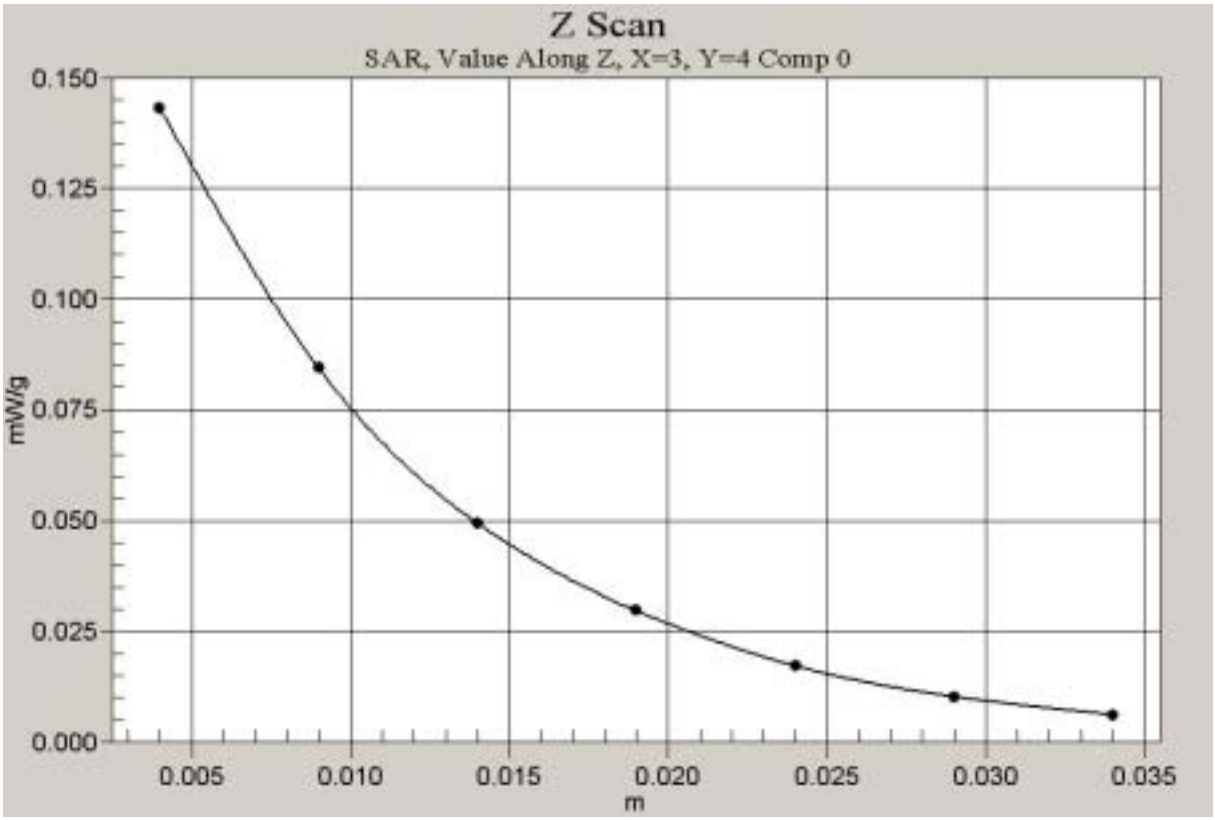



**Fig. 42 Z-Scan at maximum power point (Left Hand Touch Cheek 1900MHz CH810)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Left: ALcatel One Touch 332a Left Tilt L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 9.24 V/m
Peak SAR = 0.264 mW/g
SAR(1 g) = 0.157 mW/g; SAR(10 g) = 0.0839 mW/g
Power Drift = 0.2 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

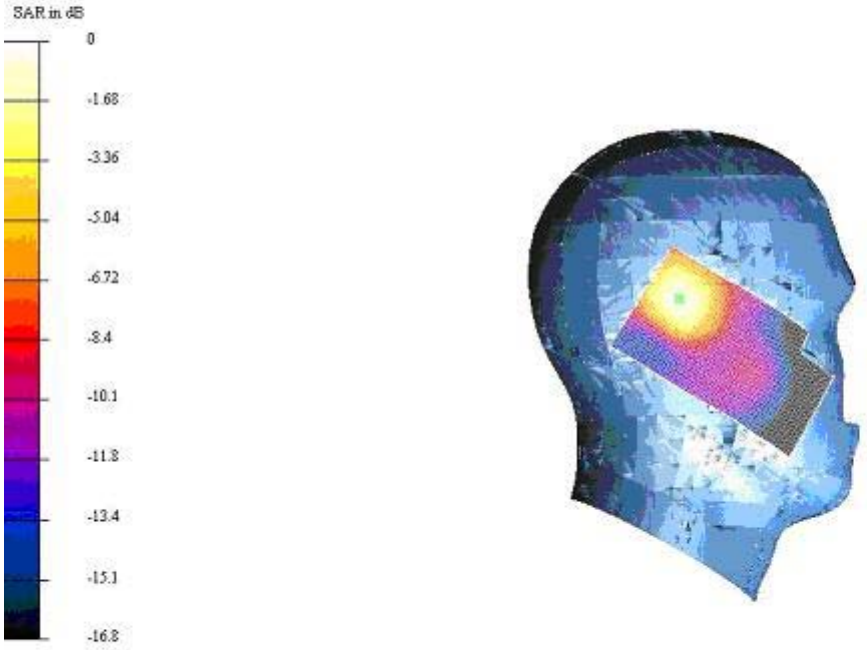



**Fig. 43 Left Hand Tilt 15° 1900MHz CH512**

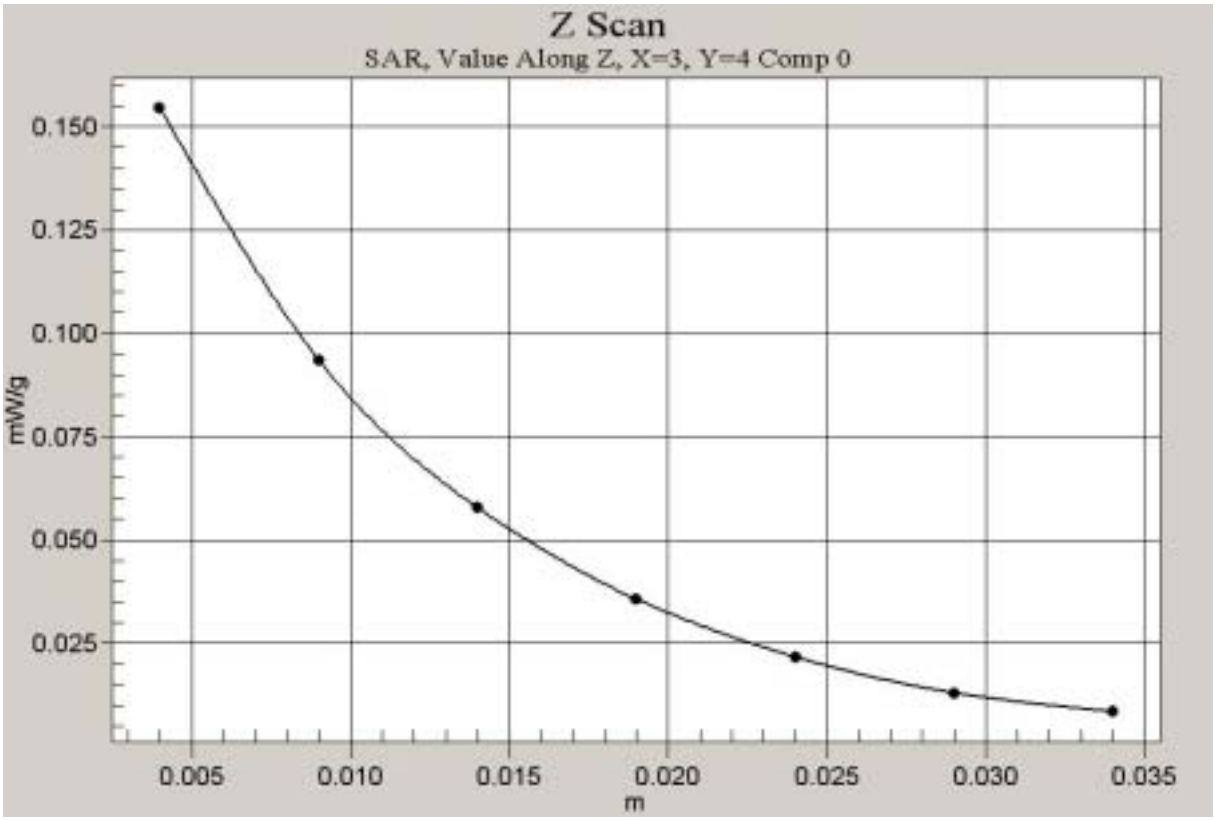



**Fig. 44 Z-Scan at maximum power point (Left Hand Tilt 15° 1900MHz CH512)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Left; Alcatel One Touch 332a Left Tilt M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 9.46 V/m
Peak SAR = 0.299 mW/g
SAR(1 g) = 0.172 mW/g; SAR(10 g) = 0.0914 mW/g
Power Drift = 0.005 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

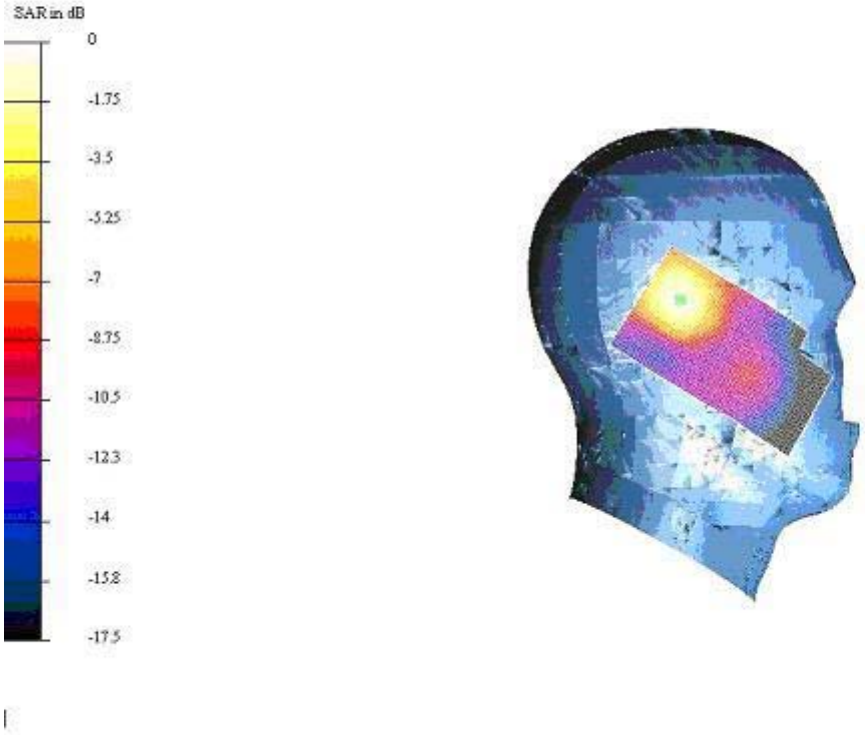



**Fig. 45 Left Hand Tilt 15° 1900MHz CH661**

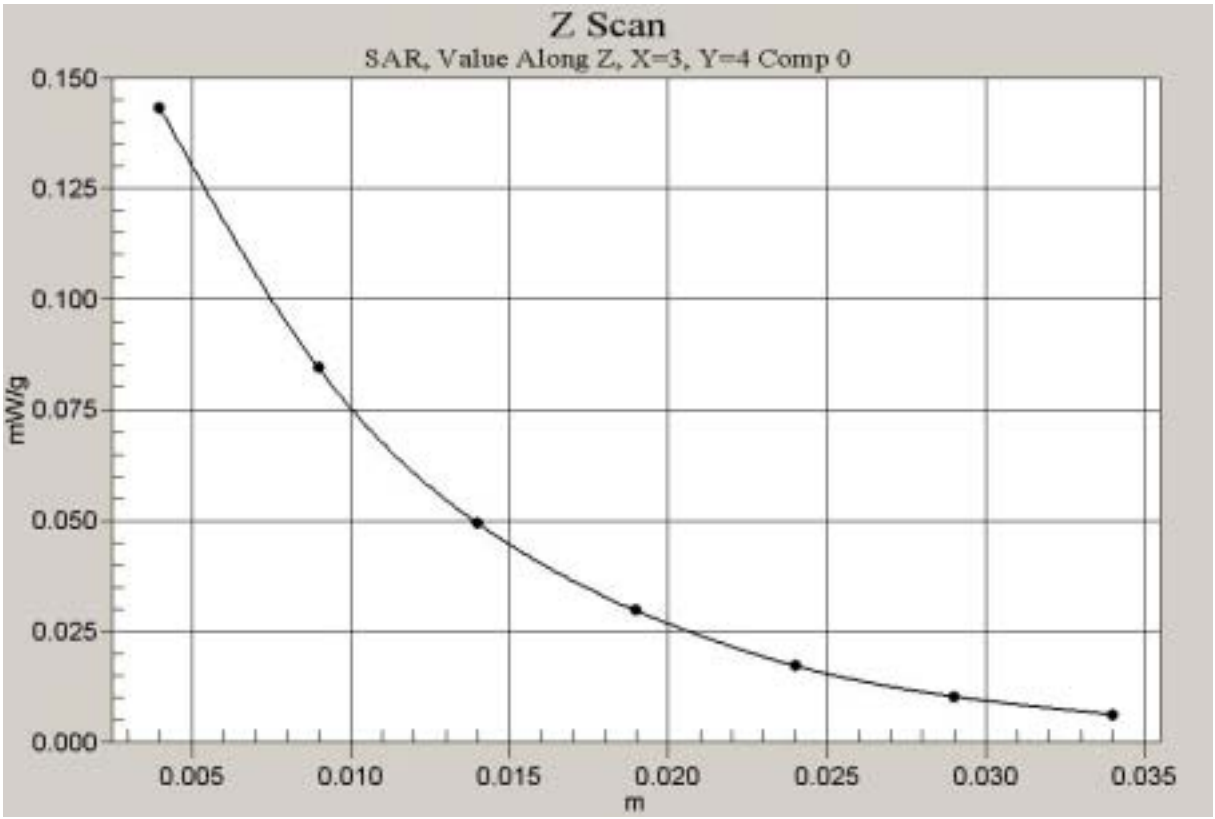



**Fig. 46 Z-Scan at maximum power point (Left Hand Tilt 15° 1900MHz CH661)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Left: Alcatel One Touch 332a Left Tilt H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 8.39 V/m
Peak SAR = 0.256 mW/g
SAR(1 g) = 0.144 mW/g; SAR(10 g) = 0.0762 mW/g
Power Drift = -0.0008 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

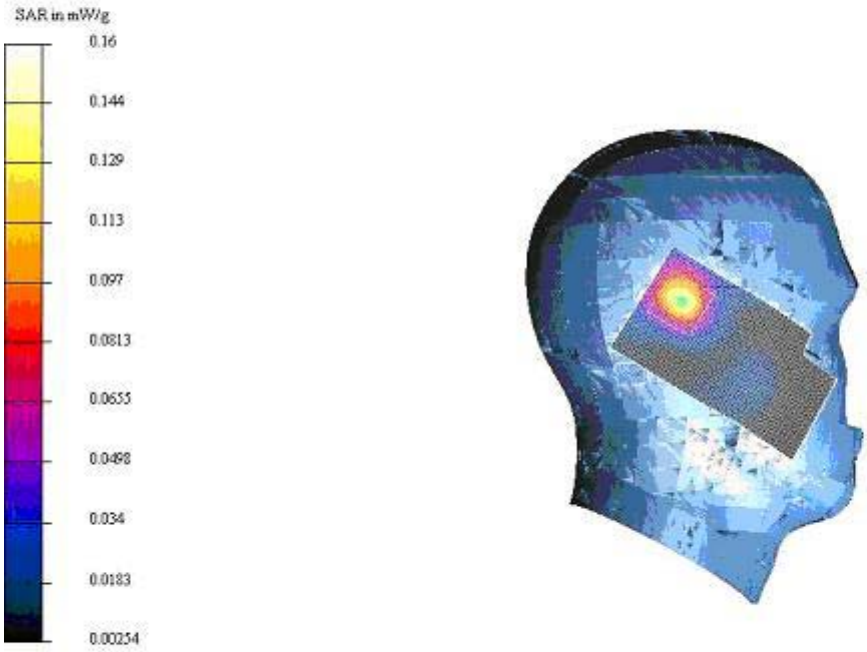



**Fig. 47 Left Hand Tilt 15° 1900MHz CH810**

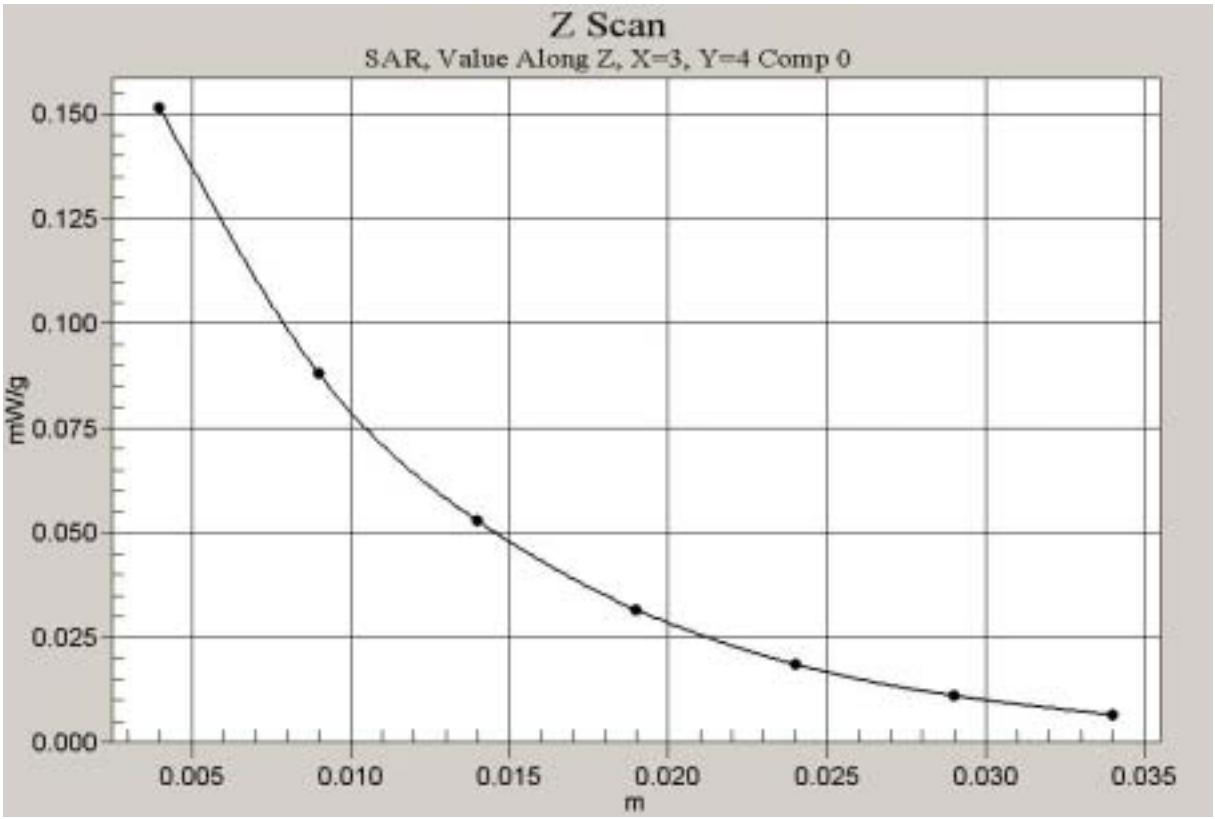



**Fig. 48 Z-Scan at maximum power point (left Hand Tilt 15° 1900MHz CH810)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Right: Alcatel One Touch 332a Right Cheek L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 9.31 V/m
Peak SAR = 0.186 mW/g
SAR(1 g) = 0.111 mW/g; SAR(10 g) = 0.0606 mW/g
Power Drift = 0.007 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

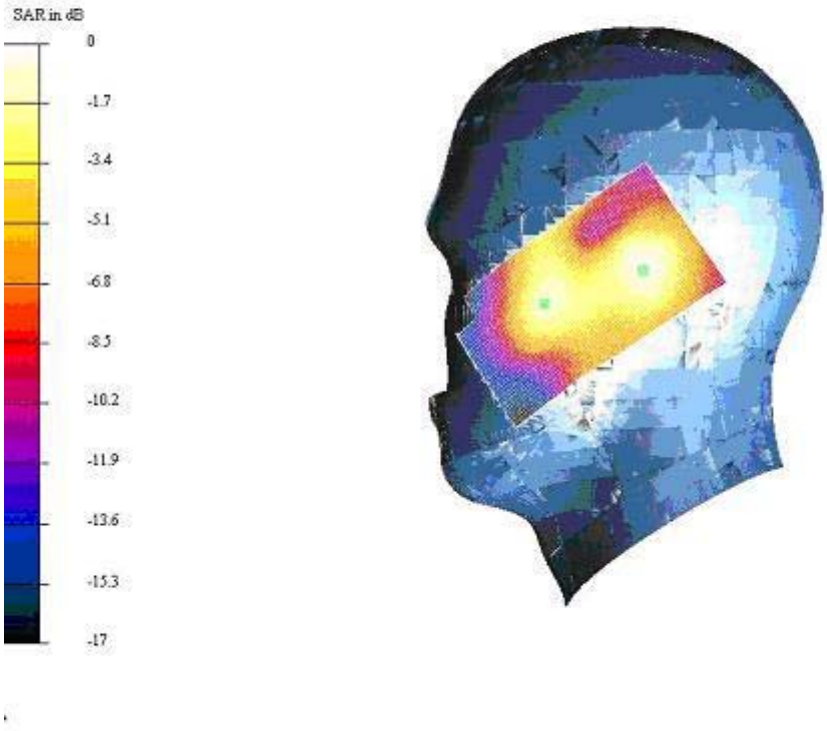



**Fig. 49 Right Hand Touch Cheek 1900MHz CH512**

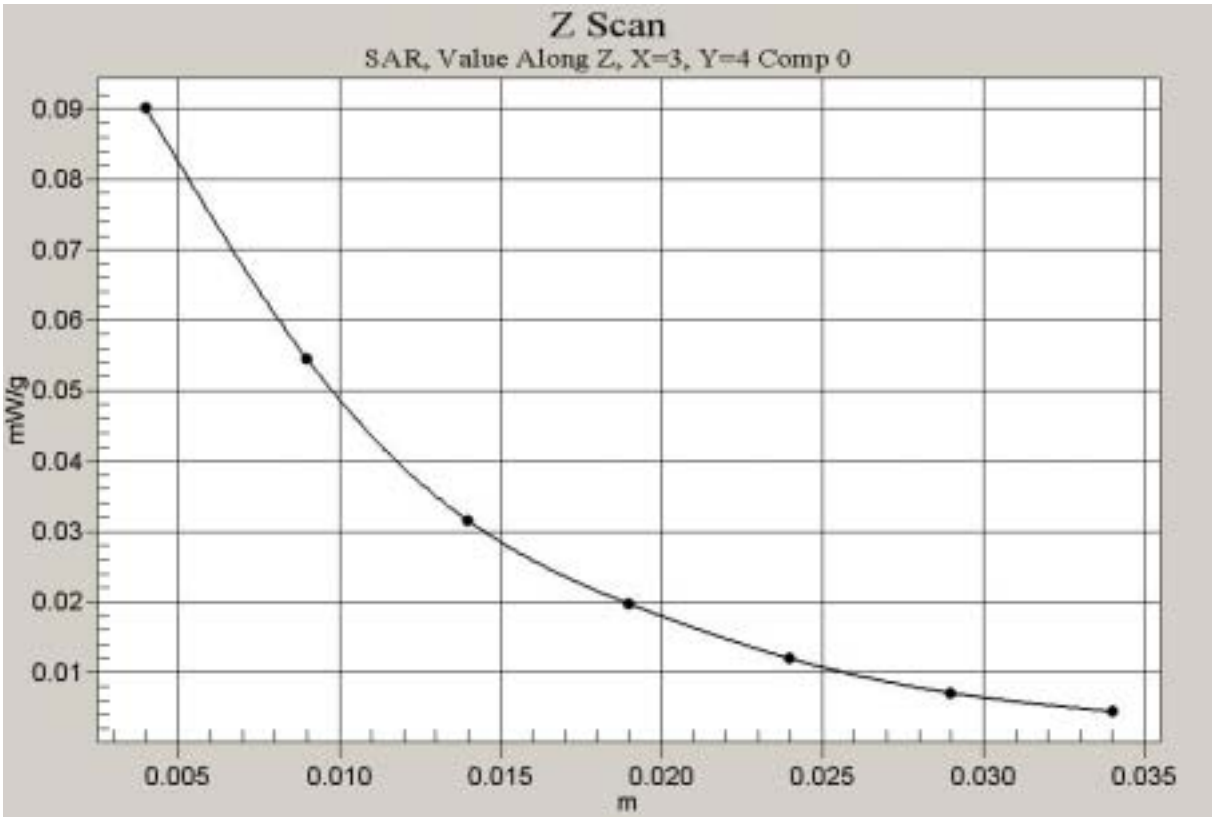



**Fig. 50 Z-Scan at maximum power point (Right Hand Touch Cheek 1800MHz CH512)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Right: Alcatel One Touch 332a Right Cheek M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 9.52 V/m
Peak SAR = 0.194 mW/g
SAR(1 g) = 0.116 mW/g; SAR(10 g) = 0.0636 mW/g
Power Drift = -0.04 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

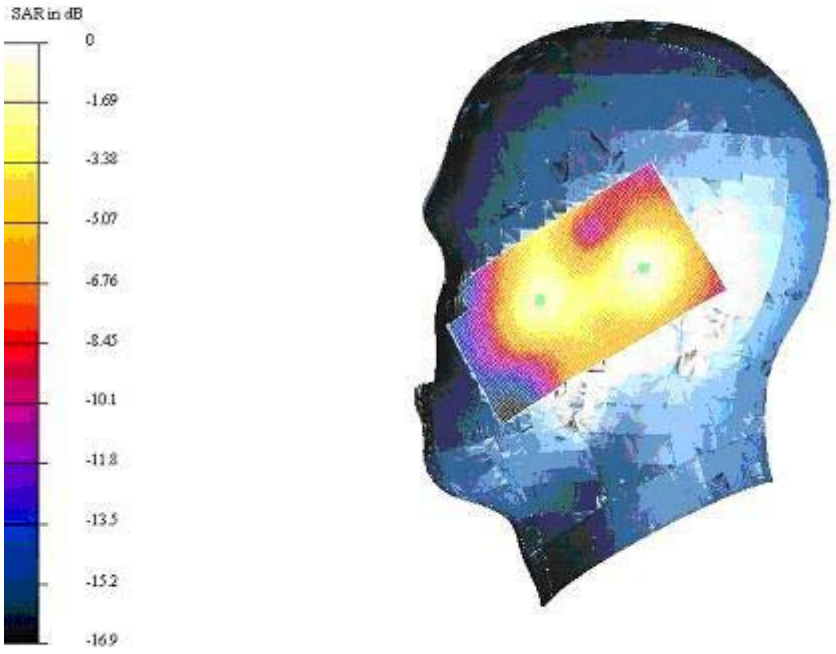



**Fig. 51 Right Hand Touch Cheek 1900MHz CH661**

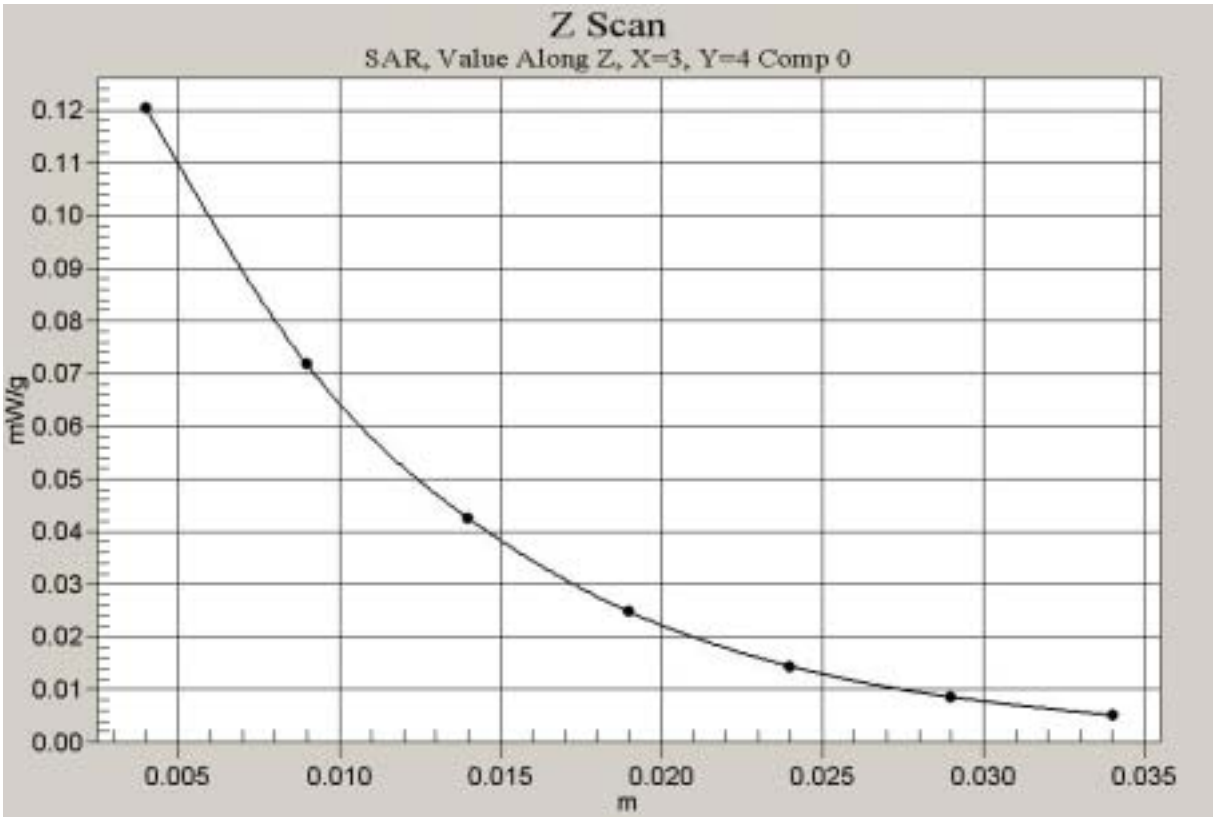



**Fig. 52 Z-Scan at maximum power point (Right Hand Touch Cheek 1900MHz CH661)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Right; Alcatel One Touch 332a Right Cheek H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 8.96 V/m
Peak SAR = 0.186 mW/g
SAR(1 g) = 0.11 mW/g; SAR(10 g) = 0.0598 mW/g
Power Drift = 0.02 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

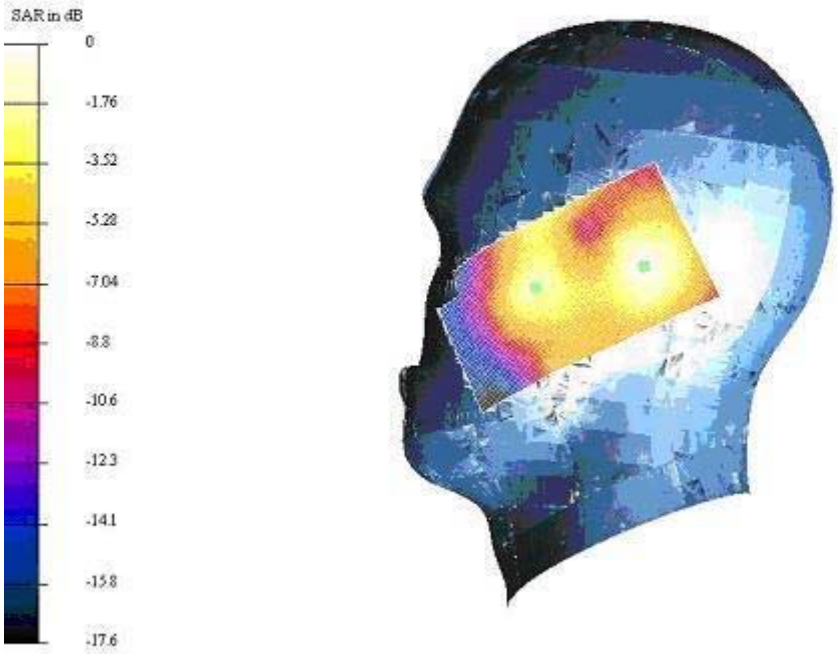



**Fig. 53 Right Hand Touch Cheek 1900MHz CH810**

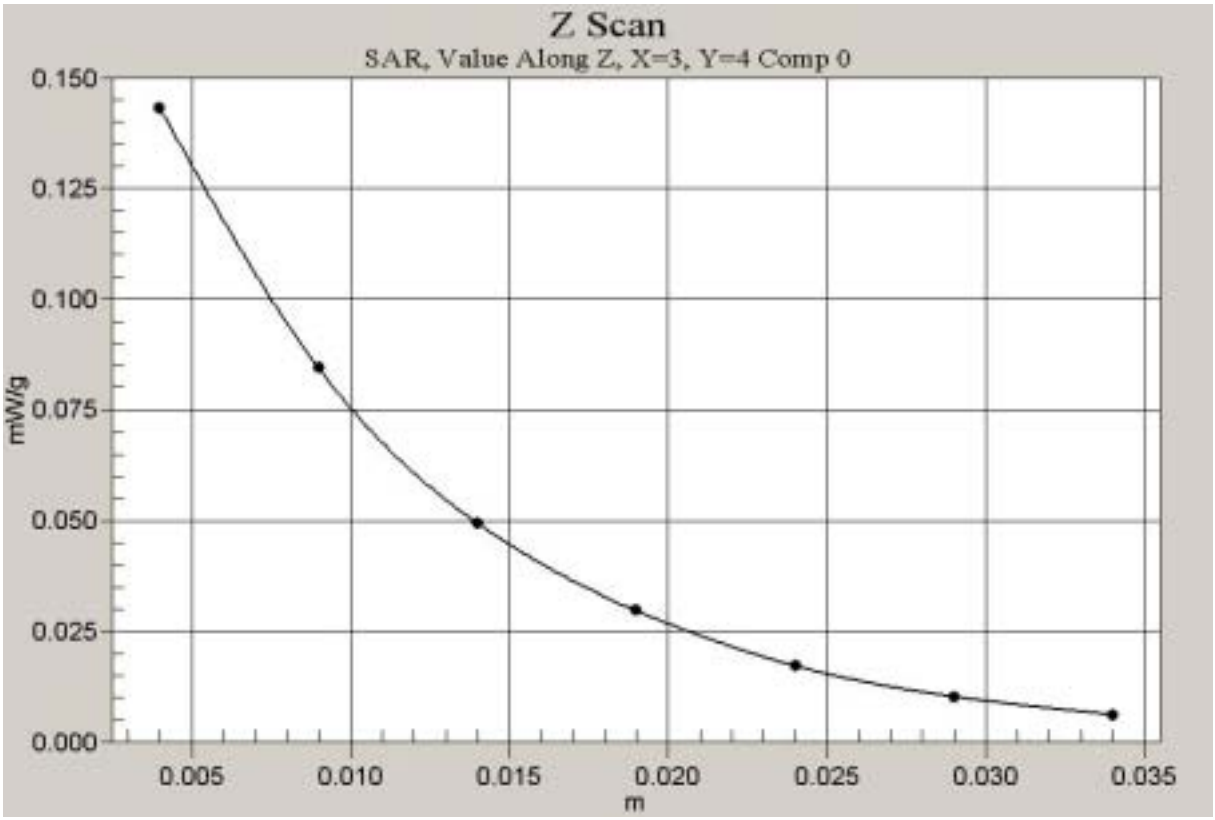



**Fig. 54 Z-Scan at maximum power point (Right Hand Touch Cheek 1900MHz CH810)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Right: Alcatel One Touch 332a Right Tilt L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 9.13 V/m
Peak SAR = 0.21 mW/g
SAR(1 g) = 0.125 mW/g; SAR(10 g) = 0.0689 mW/g
Power Drift = -0.002 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

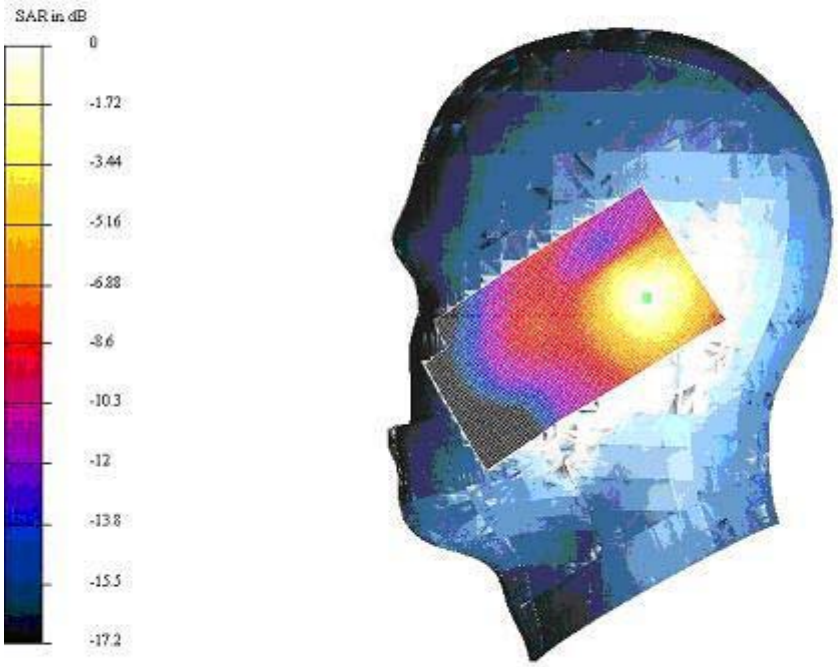



**Fig. 55 Right Hand Tilt 15° 1900MHz CH512**

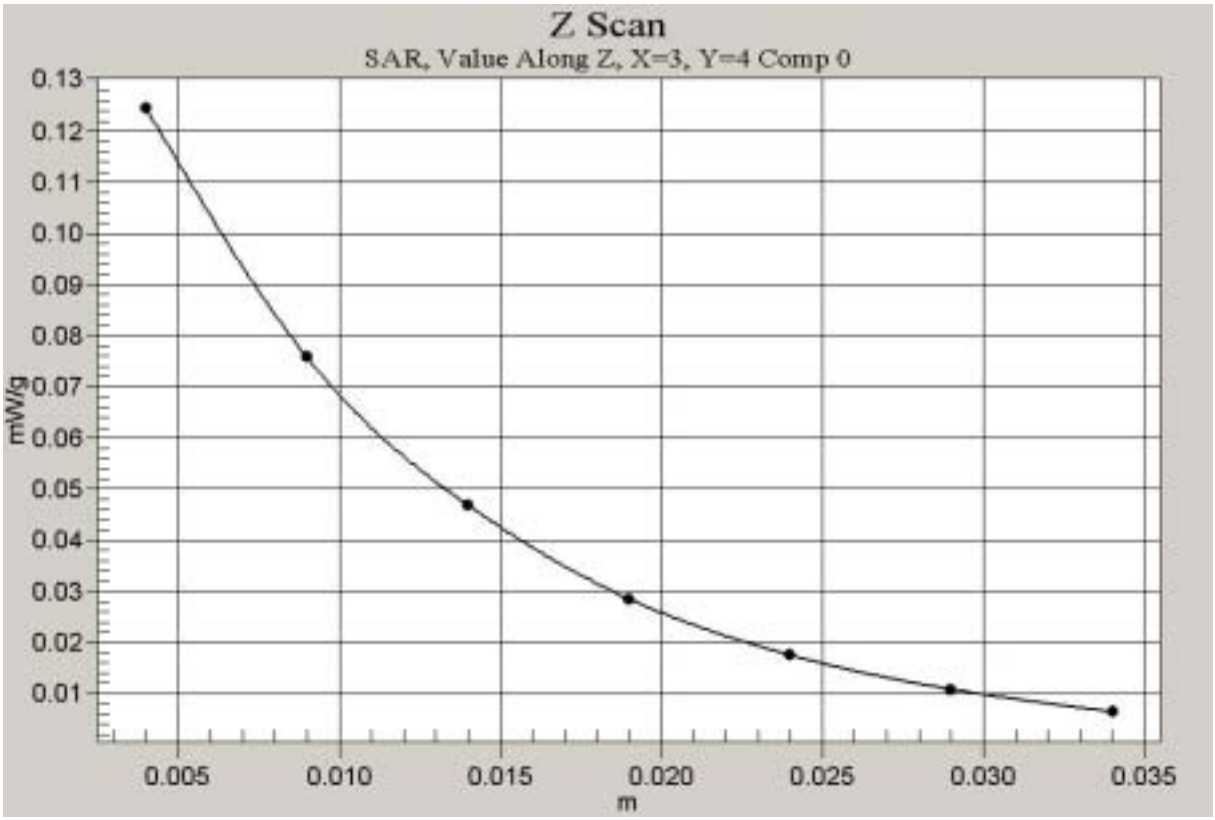



**Fig. 56 Z-Scan at maximum power point (Right Hand Tilt 15° 1900MHz CH512)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Right: Alcatel One Touch 332a Right Tilt M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 8.95 V/m
Peak SAR = 0.208 mW/g
SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.0672 mW/g
Power Drift = -0.05 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

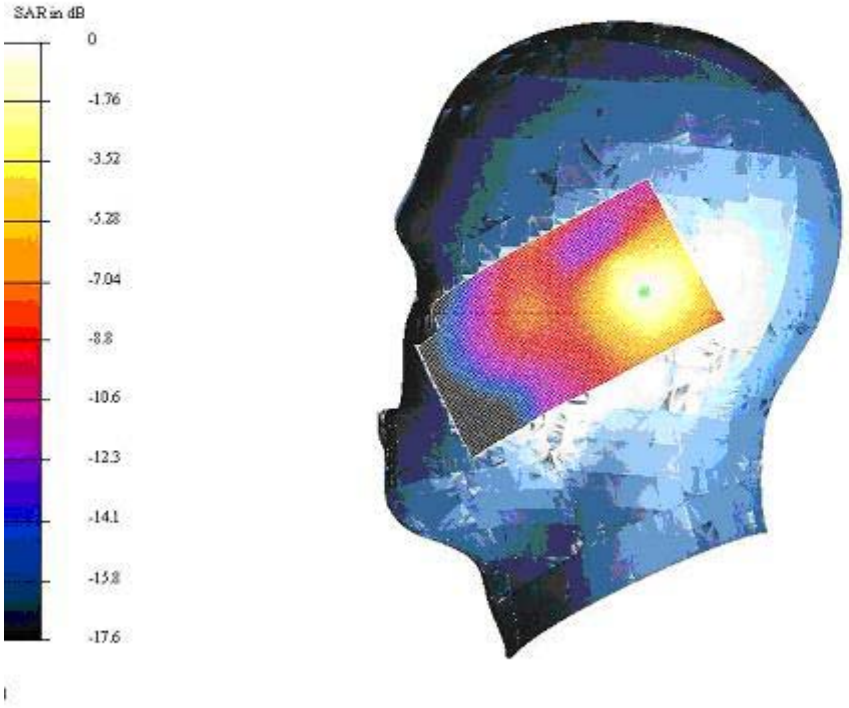



**Fig. 57 Right Hand Tilt 15° 1900MHz CH661**

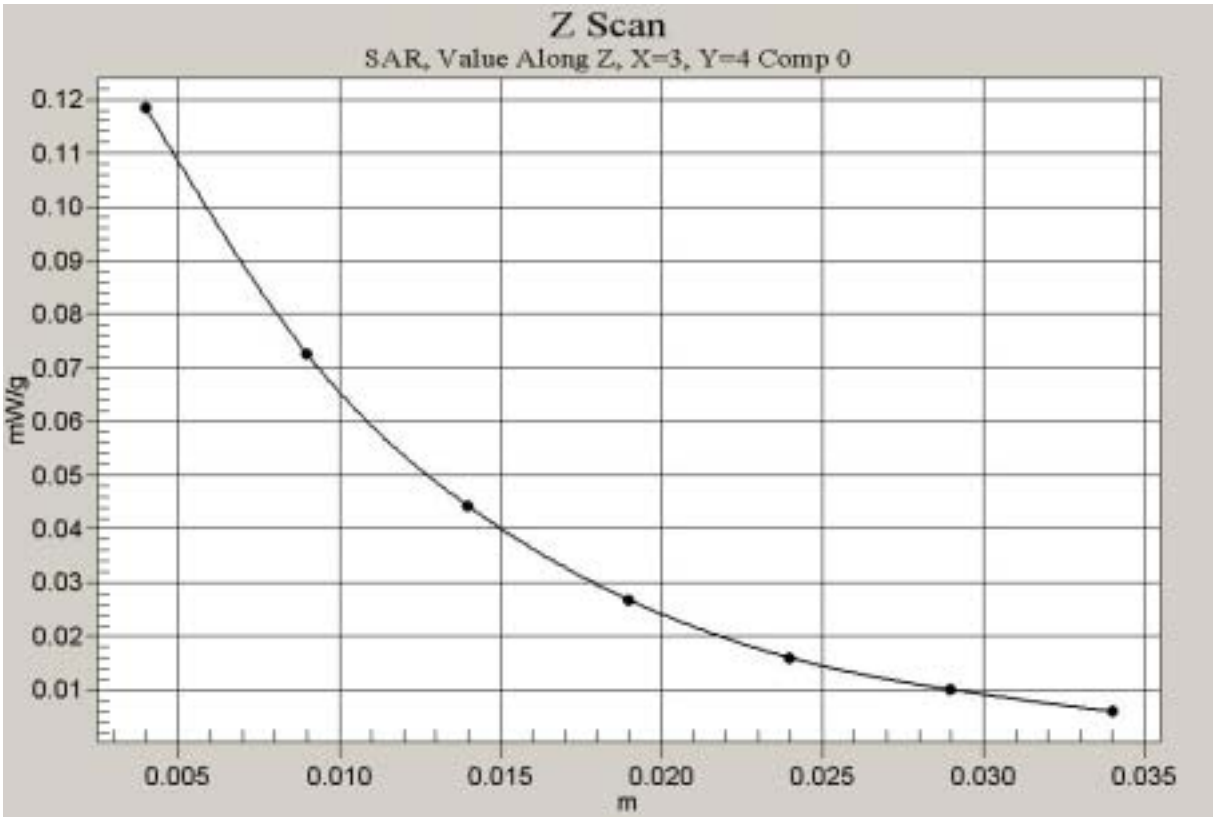



**Fig. 58 Z-Scan at maximum power point (Right Hand Tilt 15° 1900MHz CH661)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: Alcatel One Touch 332a PCS1900 Right: ALcatel One Touch 332a Right Tilt H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 7.59 V/m
Peak SAR = 0.163 mW/g
SAR(1 g) = 0.0948 mW/g; SAR(10 g) = 0.0521 mW/g
Power Drift = 0.004 dB
**Area Scan (51x91x1):** Measurement grid: dx=10mm, dy=10mm

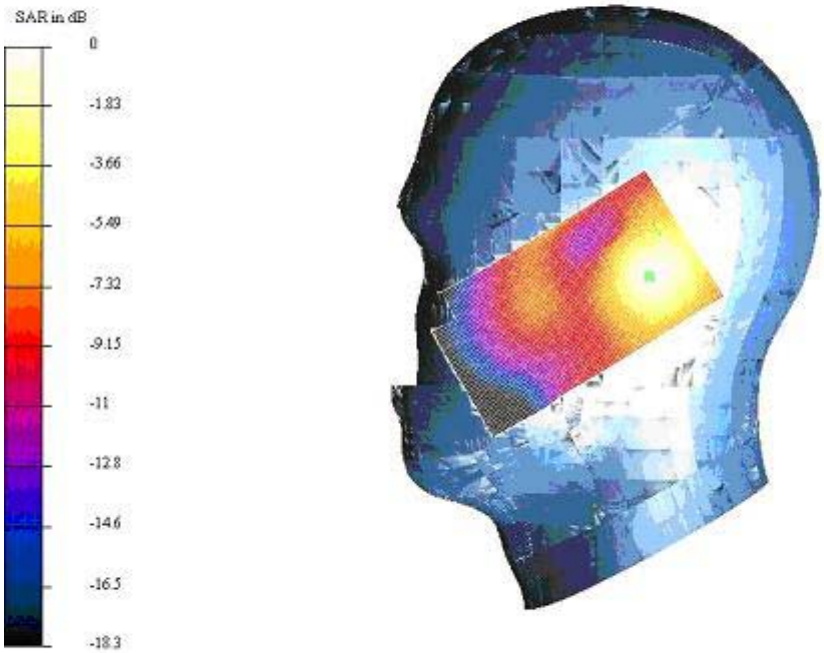



**Fig. 59 Right Hand Tilt 15° 1900MHz CH810**

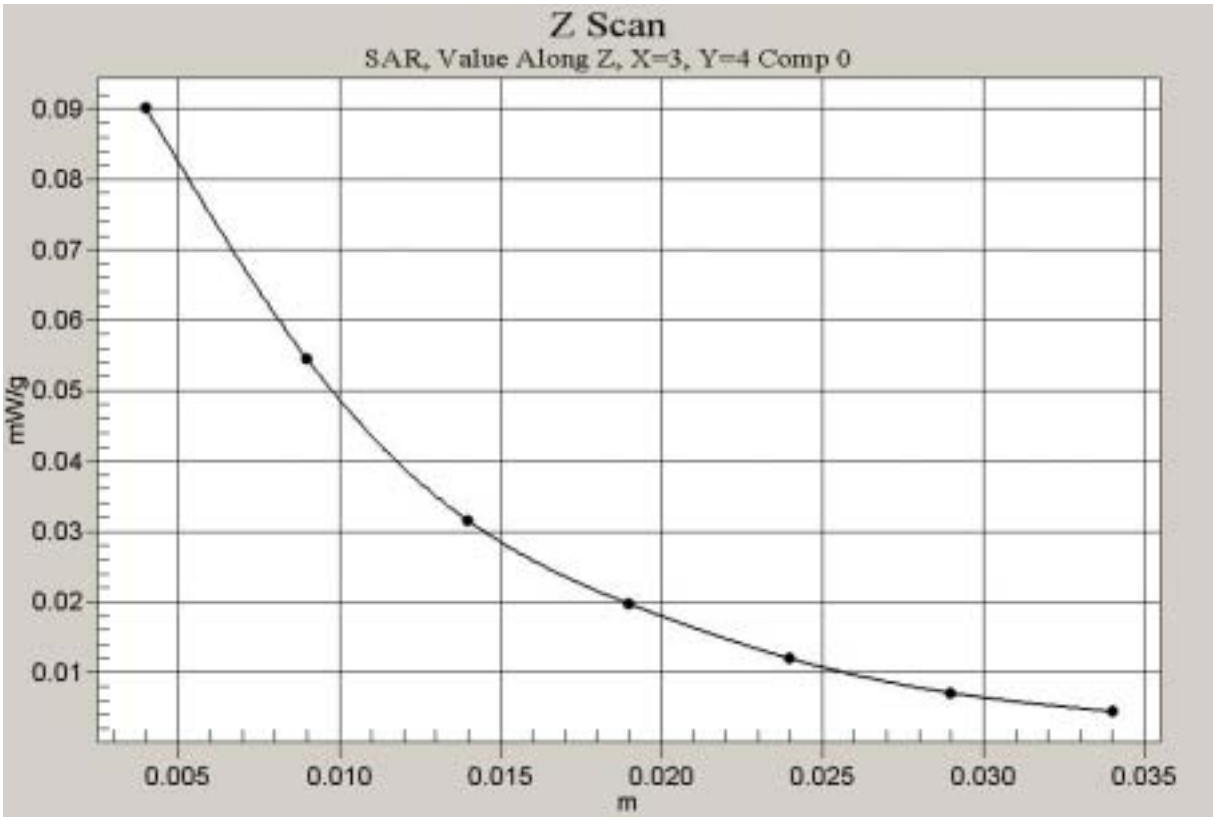



**Fig. 60 Z-Scan at maximum power point (Right Hand Tilt 15° 1900MHz CH8101)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: SAR Test PCS1900 Body toward phantom; Alcatel One Touch 332a Flat L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 5.24 V/m
Peak SAR = 0.0965 mW/g
SAR(1 g) = 0.0705 mW/g; SAR(10 g) = 0.0479 mW/g
Power Drift = -0.07 dB
**Area Scan (71x131x1):** Measurement grid: dx=10mm, dy=10mm

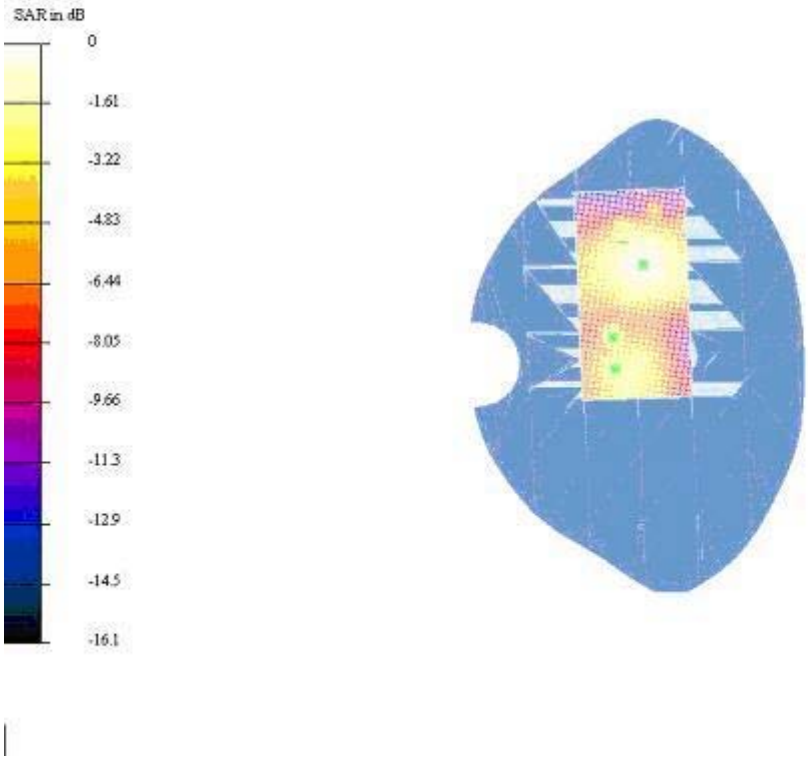



**Fig. 61 Flat Phantom Body-worn Position 1900MHz CH512 with the display of the handset towards the phantom**

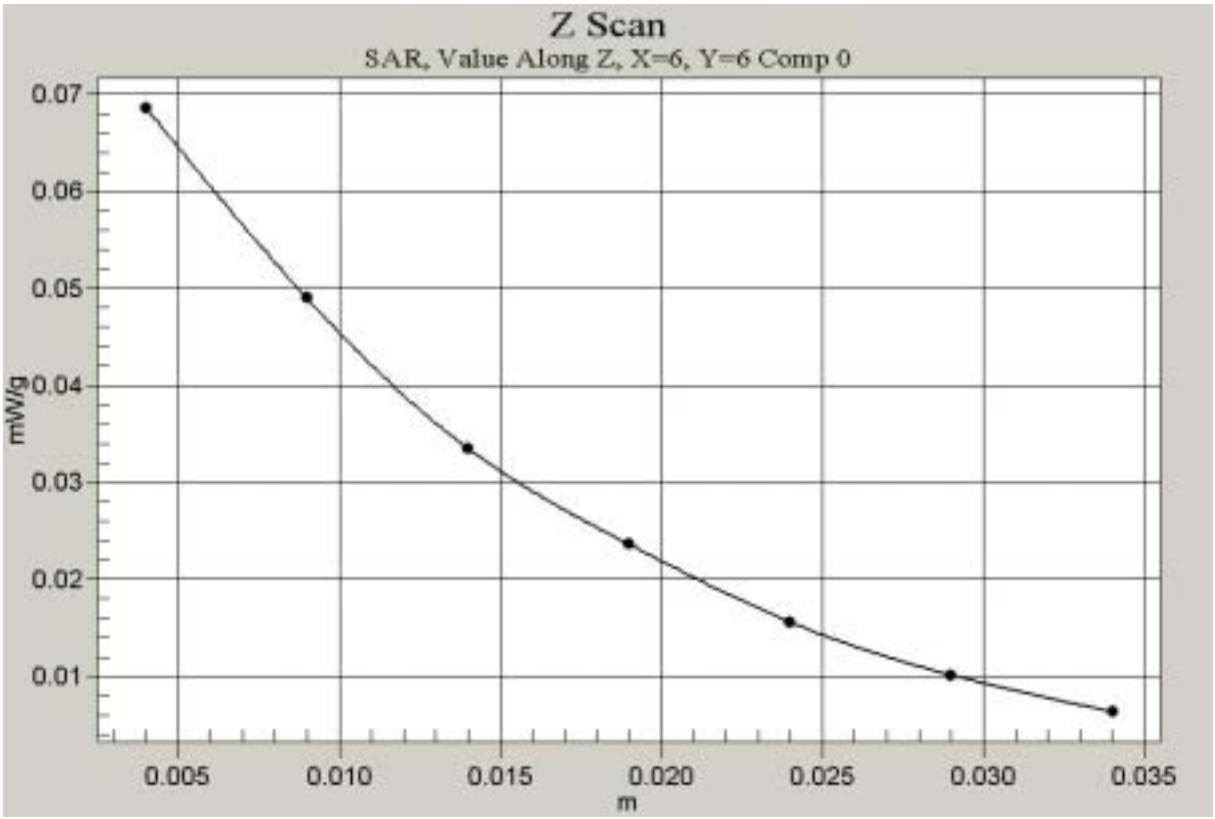



**Fig. 62 Z-Scan at maximum power point (Flat Phantom 1900MHz CH512 with the display of the handset towards the phantom)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: SAR Test PCS1900 Body toward phantom; Alcatel One Touch 332a Flat M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 5.11 V/m
Peak SAR = 0.0997 mW/g
SAR(1 g) = 0.0706 mW/g; SAR(10 g) = 0.0479 mW/g
Power Drift = 0.2 dB
**Area Scan (71x131x1):** Measurement grid: dx=10mm, dy=10mm

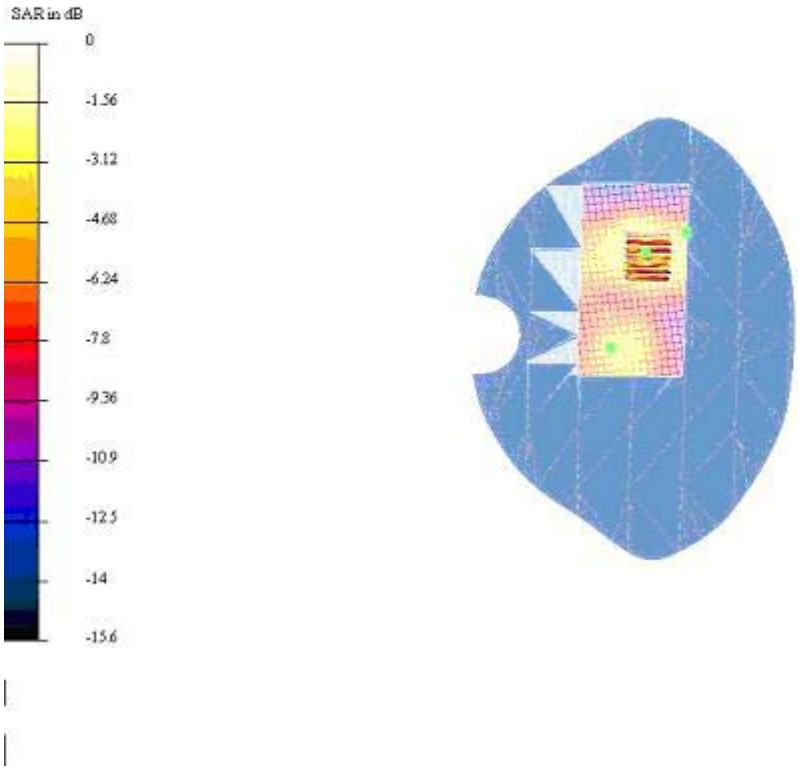



**Fig. 63 Flat Phantom Body-worn Position 1900MHz CH661 with the display of the handset towards the phantom**

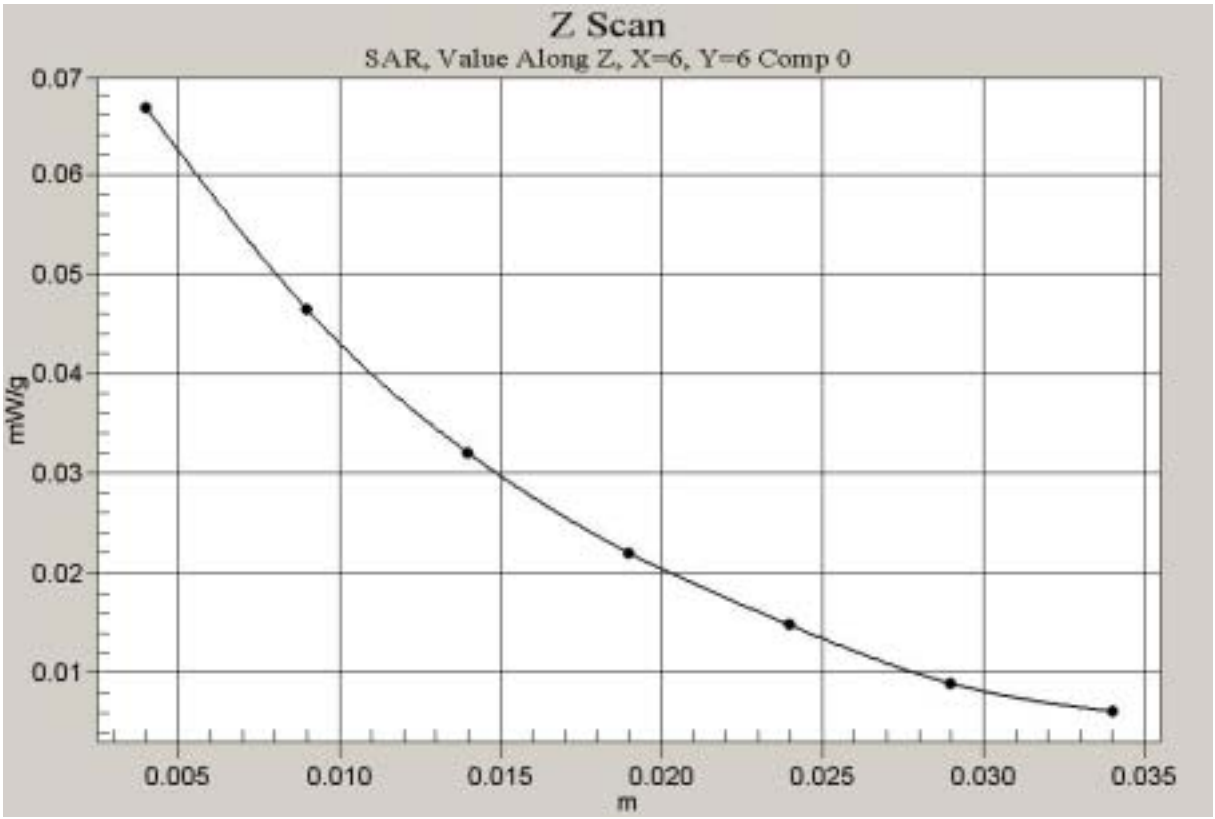



**Fig. 64 Z-Scan at maximum power point (Flat Phantom 1900MHz CH661 with the display of the handset towards the phantom)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: SAR Test PCS1900 Body toward phantom; Alcatel One Touch 332a Flat H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 4.94 V/m
Peak SAR = 0.157 mW/g
SAR(1 g) = 0.0623 mW/g; SAR(10 g) = 0.0414 mW/g
Power Drift =0.1dB
**Area Scan (71x131x1):** Measurement grid: dx=10mm, dy=10mm

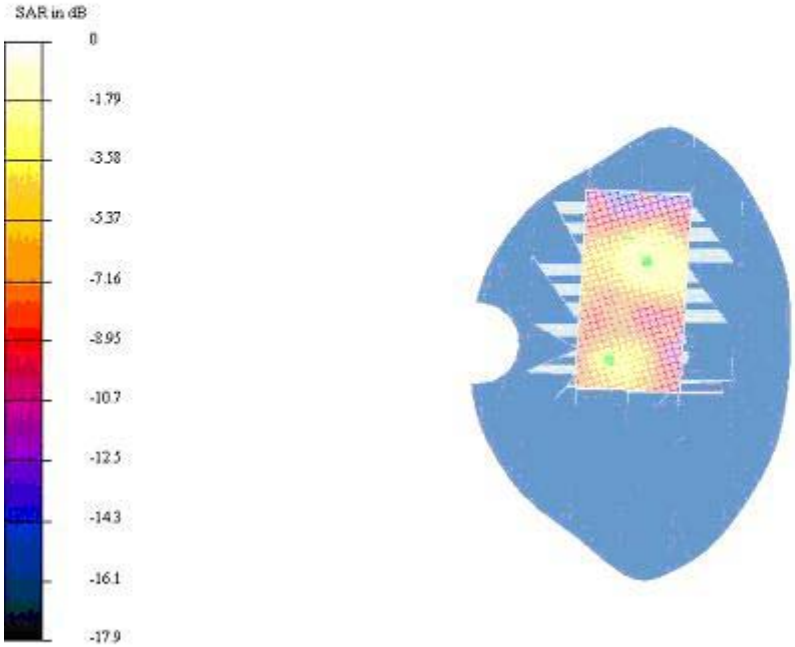



**Fig. 65 Flat Phantom Body-worn Position 1900MHz CH810 with the display of the handset towards the phantom**

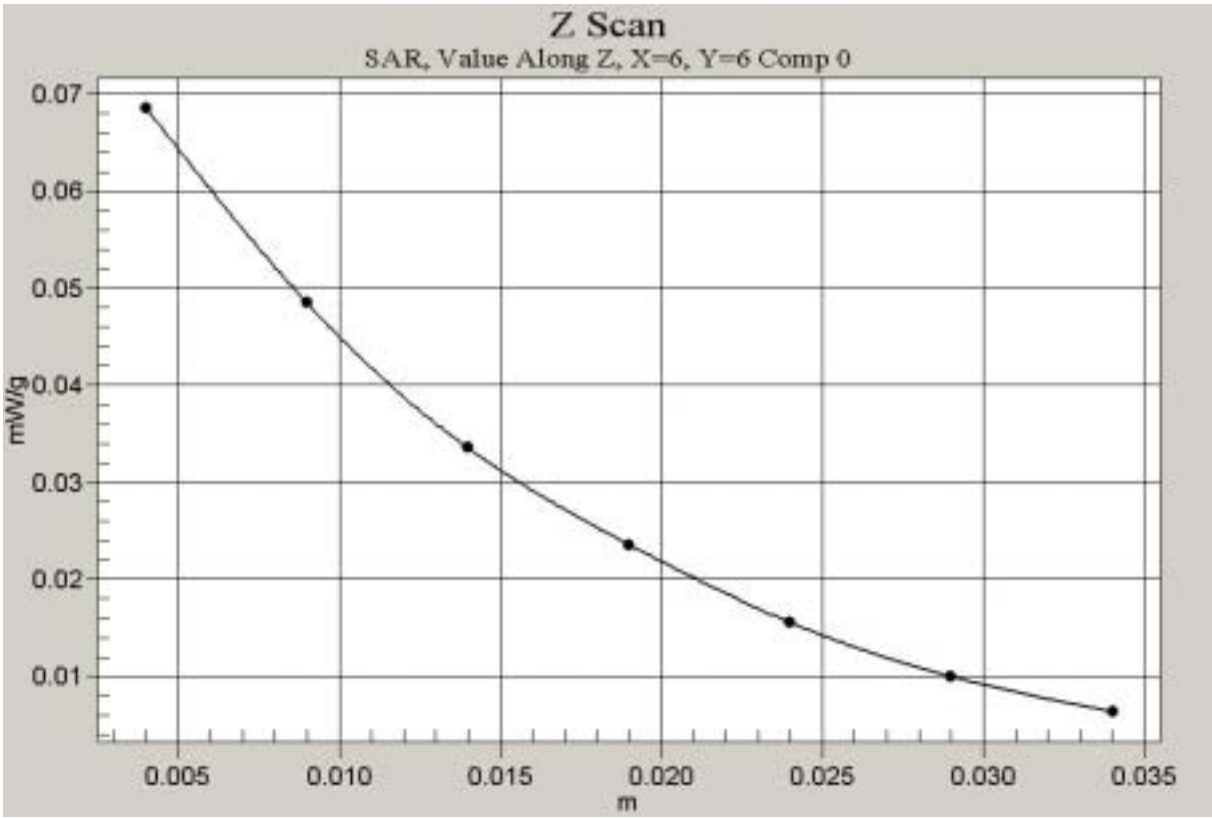



**Fig. 66 Z-Scan at maximum power point (Flat Phantom 1900MHz CH810 with the display of the handset towards the phantom)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: SAR Test PCS1900 Body toward ground: Alcatel One Touch 332a Flat L**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 17 V/m
Peak SAR = 0.886 mW/g
SAR(1 g) = 0.477 mW/g; SAR(10 g) = 0.251 mW/g
Power Drift = -0.02 dB
**Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

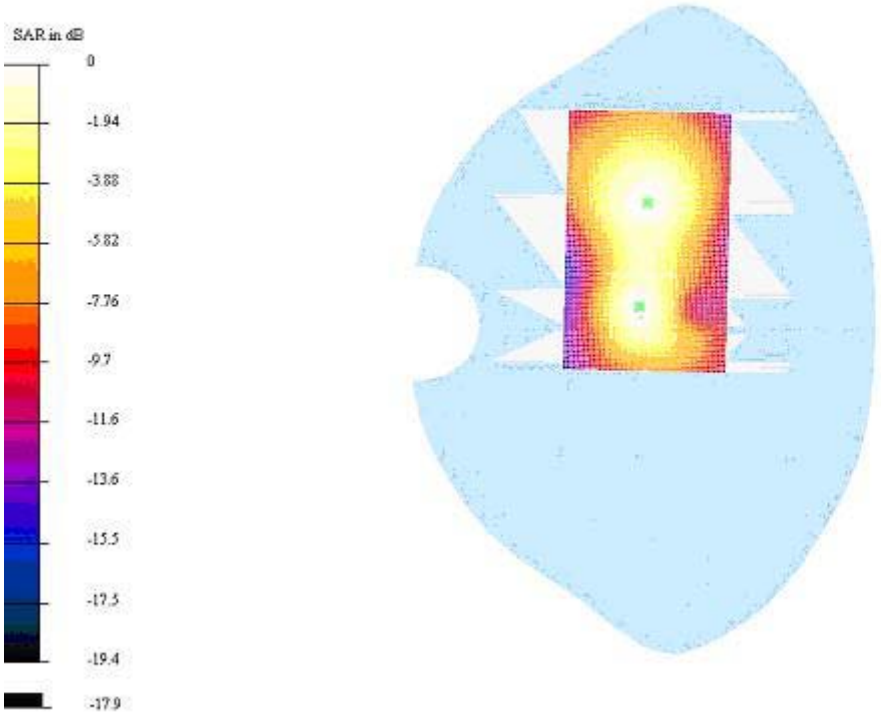



**Fig. 67 Flat Phantom Body-worn Position 1900MHz CH512 with the display of the handset towards the ground**

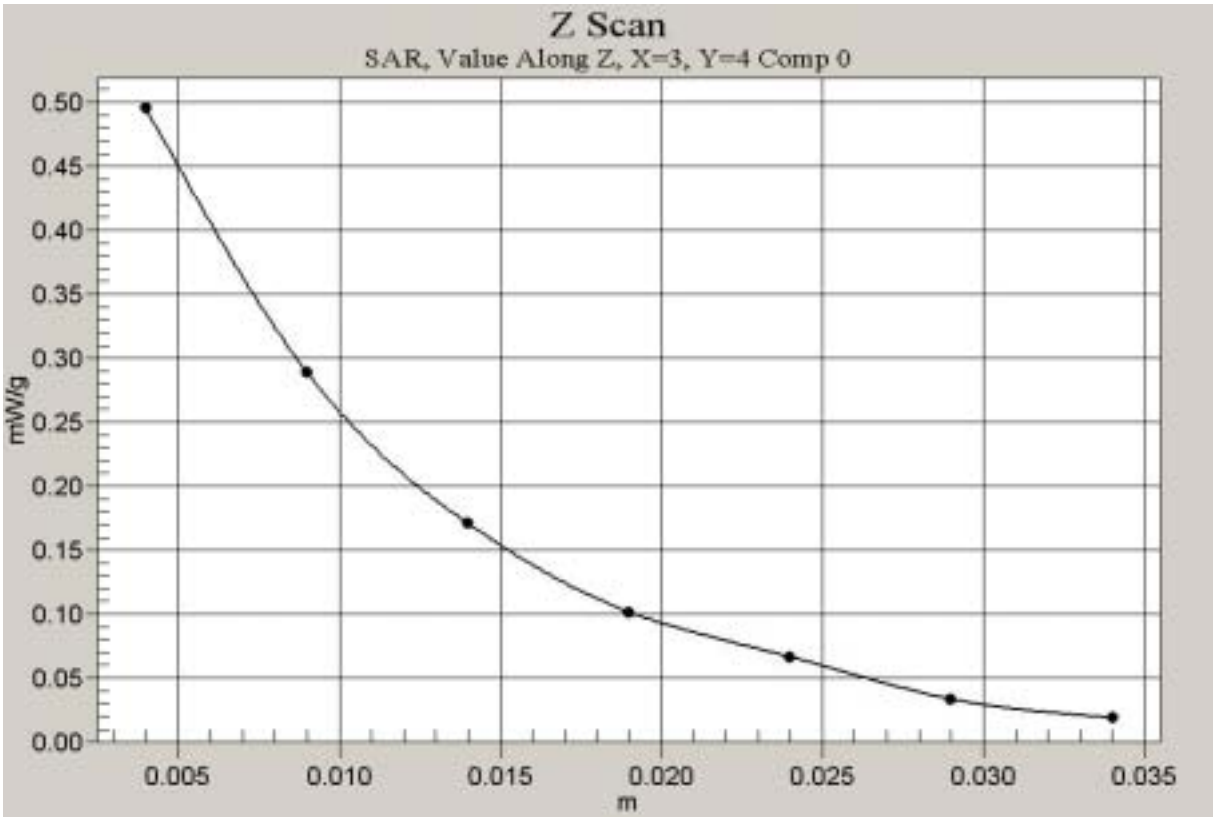



**Fig. 68 Z-Scan at maximum power point (Flat Phantom 1900MHz CH512 with the display of the handset towards the ground)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: SAR Test PCS1900 Body toward ground: Alcatel One Touch 332a Flat M**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 18.7 V/m
Peak SAR = 0.975 mW/g
SAR(1 g) = 0.609 mW/g; SAR(10 g) = 0.363 mW/g
Power Drift = -0.02 dB
**Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

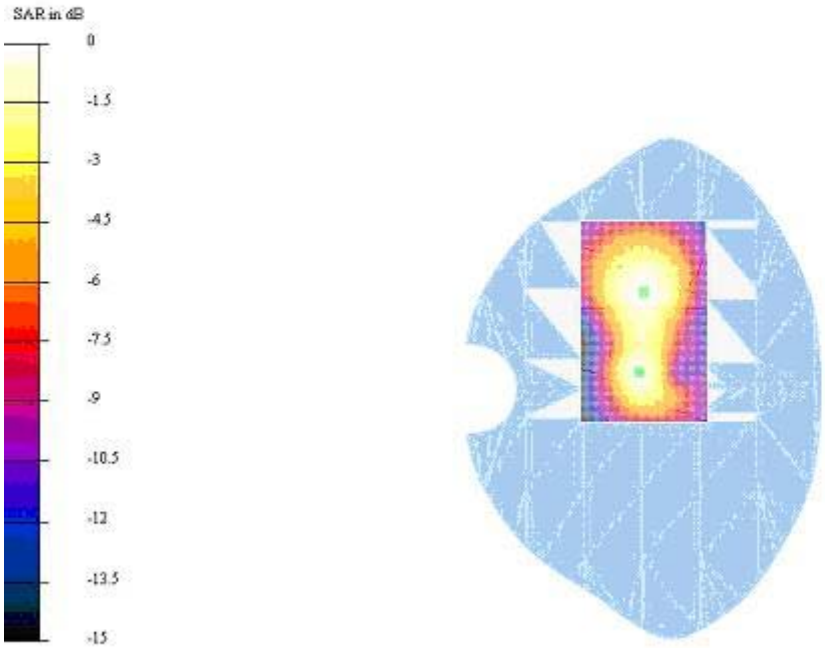



**Fig. 69 Flat Phantom Body-worn Position 1900MHz CH661 with the display of the handset towards the ground**

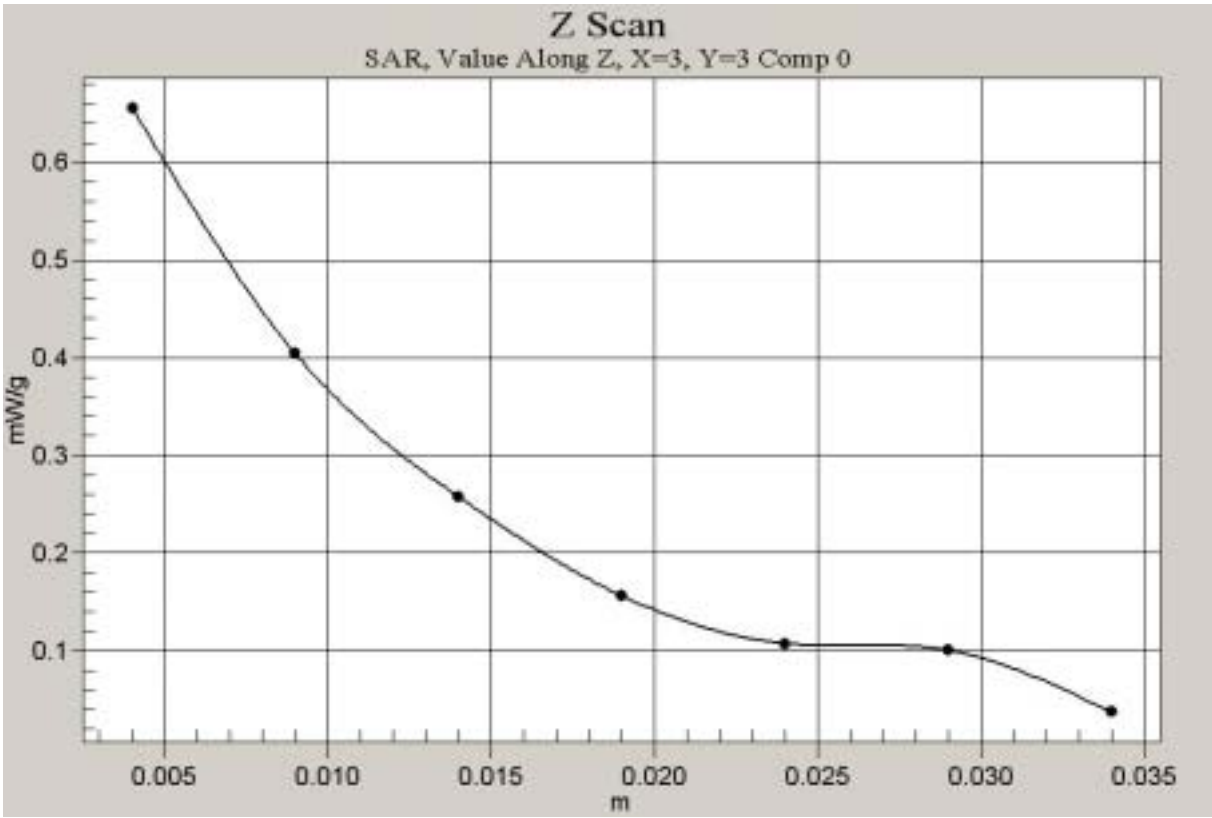



**Fig. 70 Z-Scan at maximum power point (Flat Phantom 1900MHz CH661 with the display of the handset towards the ground)**

**DUT: Alcatel One Touch 332a Type & Serial Number: 001016000020516**
**Program: SAR Test PCS1900 Body toward ground; Alcatel One Touch 332a Flat H**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 18.9 V/m
Peak SAR = 1.15 mW/g
SAR(1 g) = 0.706 mW/g; SAR(10 g) = 0.416 mW/g
Power Drift = 0.06 dB
**Area Scan (51x81x1):** Measurement grid: dx=10mm, dy=10mm

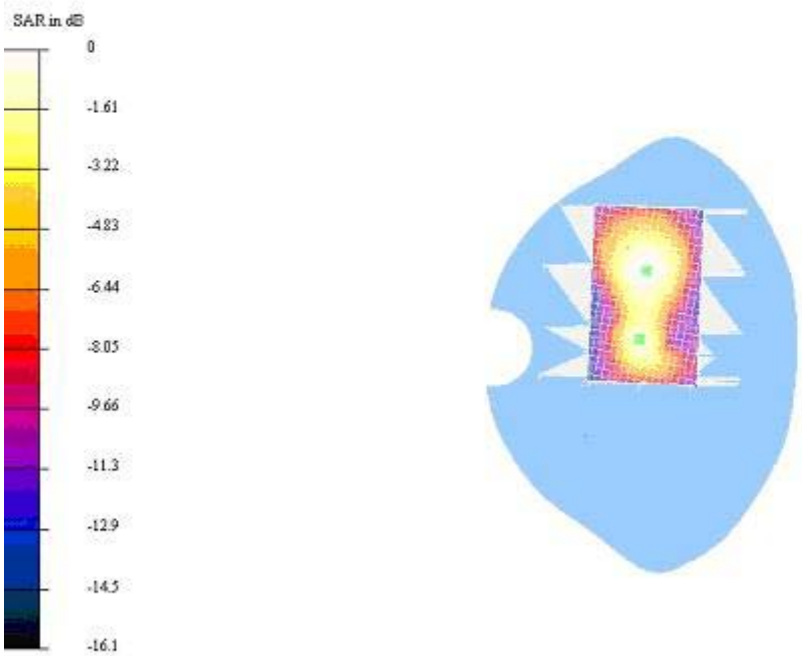



**Fig. 71 Flat Phantom Body-worn Position 1900MHz CH810 with the display of the handset towards the ground**

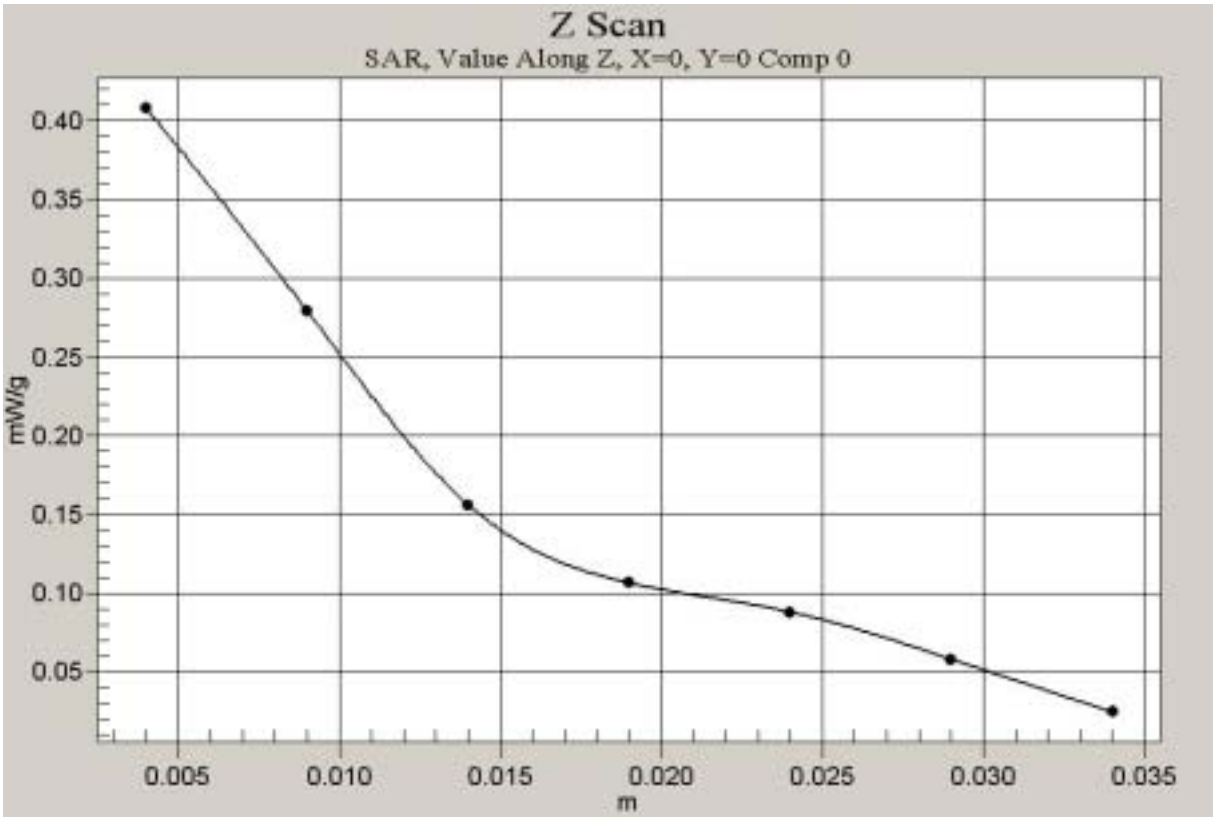



**Fig. 72 Z-Scan at maximum power point (Flat Phantom 1900MHz CH810 with the display of the handset towards the ground)**

Test Laboratory: TMC
File Name: 835MHz.da4

**DUT: Dipole 835 MHz Type & Serial Number: D835V2 - SN:443**
**Program: System Performance Check; Dipole 835MHz,Pin=250mW,d=15mm**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 54.7 V/m
Peak SAR = 3.47 mW/g
SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.52 mW/g
Power Drift = -0.01 dB
**Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm

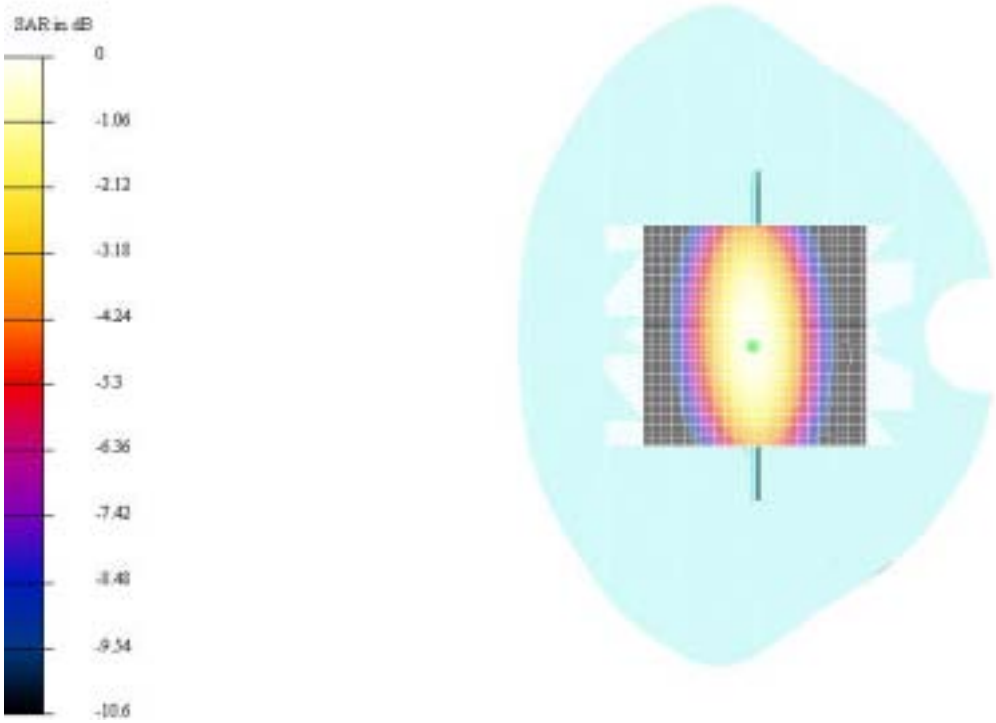



**Fig.73 System Performance Check 835MHz 250mW**

Test Laboratory: TMC
File Name: D1900_SystemCheck_040403.da4

**DUT: Dipole 1900 MHz Type & Serial Number: D1900V2 - SN:541**
**Program: Unnamed Program; Dipole 1900MHz**

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm
Reference Value = 90.9 V/m
Peak SAR = 18.3 mW/g
SAR(1 g) = 9.8 mW/g; SAR(10 g) = 4.91 mW/g
Power Drift = 0.004 dB
**Area Scan (101x101x1):** Measurement grid: dx=10mm, dy=10mm

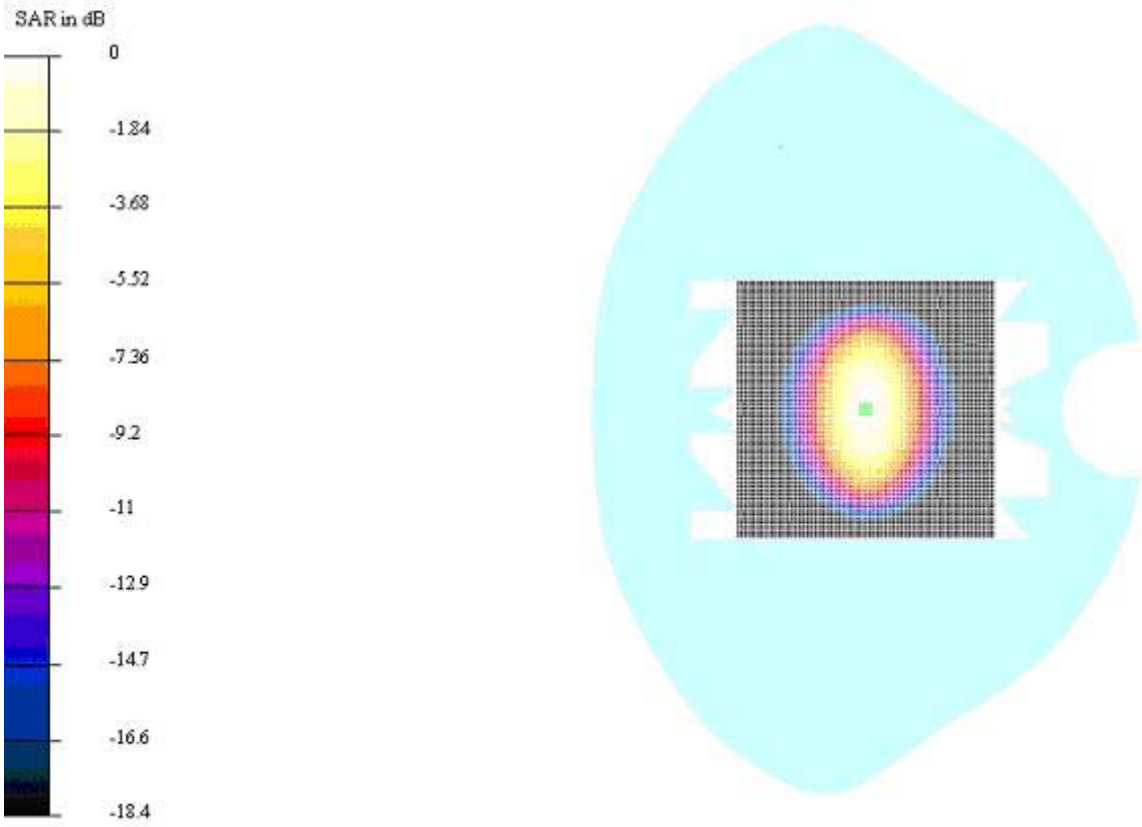



**Fig.74 System Performance Check 1900MHz 250mW**