

## CERTIFICATE OF COMPLIANCE SAR EVALUATION

### Test Lab:

**CELLTECH RESEARCH INC.**  
Testing and Engineering Lab  
1955 Moss Court  
Kelowna, B.C.  
Canada V1Y 9L3  
Phone: 250 - 860-3130  
Fax: 250 - 860-3110  
Toll Free: 1-877-545-6287  
e-mail: [info@celltechlabs.com](mailto:info@celltechlabs.com)  
web site: [www.celtechlabs.com](http://www.celtechlabs.com)

### Applicant Information:

**WITHUS IT CO., LTD.**  
2F. DongNam Bldg. 448-16  
Shingil-5Dong, YongDungPo-Ku,  
Seoul, Korea

### **FCC ID:**

**POQWCE-210**

### **Model(s):**

**WCE-210**

### **Equipment Type:**

**Dual-Mode AMPS/CDMA Cellular Phone**

### **Classification:**

**Licensed Non-Broadcast Transmitter Held to Ear (TNE)**

### **Tx Frequency Range:**

**824.04 - 848.97 MHz (AMPS)**

**824.70 - 848.31 MHz (CDMA)**

### **Rx Frequency Range:**

**869.04 - 893.97 MHz (AMPS)**

**869.70 - 893.31 MHz (CDMA)**

### **Rated RF Conducted Power:**

**26.1 dBm (AMPS)**

**25.1 dBm (CDMA)**

### **FCC Rule Part(s):**

**2.1093; ET Docket 96.326**

Celltech Research Inc. declares under its sole responsibility that this device was found to be in compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in OET Bulletin 65, Supplement C, Edition 01-01 (General Population / Uncontrolled Exposure), and was tested in accordance with the appropriate measurement standards, guidelines, and recommended practices specified in American National Standards Institute C95.1-1992.

I attest to the accuracy of data. All measurements were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

*This test report shall not be reproduced partially, or in full, without the prior written approval of Celltech Research Inc. The results and statements contained in this report pertain only to the device(s) evaluated.*



**Shawn McMillen  
General Manager  
Celltech Research Inc.**



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## 1.0 INTRODUCTION

This measurement report shows that the WITHUS IT CO., LTD. Model: WCE-210 Dual-Mode AMPS/CDMA Cellular Phone FCC ID: POQWCE-210 complies with FCC Part 2.1093, ET Docket 96-326 Rules for mobile and portable devices. The test procedures, as described in American National Standards Institute C95.1-1992 (see reference [1]), and FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [2]) were employed. A description of the product and operating configuration, detailed summary of the test results, methodology and procedures used in the evaluation, equipment used, and the various provisions of the rules are included within this test report.

## 2.0 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

|  |  |                         |  |
|--|--|-------------------------|--|
| <b>EUT Type</b>                        | Dual-Mode AMPS/CDMA Cellular Phone                   | <b>FCC ID</b>           | POQWCE-210   |
| <b>Equipment Class</b>                 | Licensed Non-Broadcast Transmitter Held to Ear (TNE) | <b>Model No.(s)</b>     | WCE-210  |
| <b>FCC Rule Part(s)</b>                | § 2.1093, Docket 96-326                              | <b>Application Type</b> | FCC Part 22 Certification  |
| <b>Tx Frequency Range (MHz)</b>        | 824.04 - 848.97 (AMPS)<br>824.70 - 848.31 (CDMA)     | <b>Serial No.</b>       | Pre-production Unit  |
| <b>Rx Frequency Range (MHz)</b>        | 869.04 - 893.97 (AMPS)<br>869.70 - 893.31 (CDMA)     | <b>Battery Type(s)</b>  | Lithium-Ion Battery<br>Standard: 3.7V 950mA/h<br>Extended: 3.7V 1700mA/h |
| <b>Rated RF Conducted Output Power</b> | 26.1 dBm (AMPS)<br>25.1 dBm (CDMA)                   | <b>Antenna Type</b>     | Retractable Whip (1/4λ)  |
| <b>Modulation(s)</b>                   | AMPS (Analog)<br>CDMA (Digital)                      | <b>Antenna Length</b>   | 111 mm   |

### 3.0 SAR MEASUREMENT SYSTEM

Celltech Research SAR measurement facility utilizes the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY system is comprised of the robot controller, computer, near-field probe, probe alignment sensor, specific anthropomorphic mannequin (SAM) phantom, and various planar phantoms for brain or body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Staubli 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. The DAE3 utilizes 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.



DASY3 SAR Measurement System with SAM phantom

#### 4.0 MEASUREMENT SUMMARY

The measurement results were obtained with the EUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the EUT are reported in Appendix A.

#### HEAD SAR MEASUREMENT RESULTS - AMPS Mode - Left Head Section

| Freq.<br>(MHz)   | Channel | Mode | Cond.<br>Power<br>Before<br>(dBm) | Cond.<br>Power<br>After<br>(dBm)  | Battery<br>Type | Antenna<br>Position | Phantom<br>Section | Test Position | SAR 1g<br>(w/kg) |
|--|---------|------|-----------------------------------|---|-----------------|---------------------|--------------------|---------------|------------------|
| 824.04   | 991     | AMPS | 26.12                             | 26.03   | Standard        | Retracted           | Left Ear           | Cheek/Touch   | 0.802            |
| 824.04   | 991     | AMPS | 26.11                             | 26.07   | Standard        | Extended            | Left Ear           | Cheek/Touch   | 1.40             |
| 824.04   | 991     | AMPS | 26.10                             | 26.18   | Extended        | Extended            | Left Ear           | Cheek/Touch   | 1.38             |
| 836.49   | 383     | AMPS | 26.10                             | 26.06   | Standard        | Retracted           | Left Ear           | Cheek/Touch   | 0.826            |
| 836.49   | 383     | AMPS | 26.10                             | 26.07   | Standard        | Extended            | Left Ear           | Cheek/Touch   | 1.43             |
| 836.49   | 383     | AMPS | 26.11                             | 26.14   | Extended        | Extended            | Left Ear           | Cheek/Touch   | 1.42             |
| 848.97   | 799     | AMPS | 26.10                             | 25.95   | Standard        | Retracted           | Left Ear           | Cheek/Touch   | 0.937            |
| 848.97   | 799     | AMPS | 26.10                             | 25.98   | Standard        | Extended            | Left Ear           | Cheek/Touch   | 1.42             |
| 848.97   | 799     | AMPS | 26.10                             | 25.94   | Extended        | Extended            | Left Ear           | Cheek/Touch   | 1.38             |
| 836.49   | 383     | AMPS | 26.10                             | 25.97   | Standard        | Retracted           | Left Ear           | Ear/Tilt      | 0.218            |
| 836.49   | 383     | AMPS | 26.10                             | 26.03   | Standard        | Extended            | Left Ear           | Ear/Tilt      | 0.421            |
| <b>Mixture Type: Brain (Measured)</b><br><b>Dielectric Constant: 41.0</b><br><b>Conductivity: 0.90</b> |         |      |                                   | <b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b><br><b>Spatial Peak - Uncontrolled Exposure - General Population</b><br><b>BRAIN: 1.6 W/kg (averaged over 1 gram)</b> |                 |                     |                    |               |                  |

Notes:

1. Test Date(s): January 16, 2002.
2. The SAR values found were below the maximum limit of 1.6 w/kg (averaged over 1 gram).
3. The highest AMPS mode head SAR value measured (left head section) was 1.43 w/kg (cheek/touch position, mid channel, antenna extended, with standard-life battery).
4. The EUT was tested with the clamshell open, which is the only ear-held operating configuration for this phone.
5. Ambient TEMPERATURE: 23.8°C  
Relative HUMIDITY: 34%  
Atmospheric PRESSURE: 102.4 kPa
6. Fluid Temperature ≈ 23 °C
7. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

**MEASUREMENT SUMMARY (CONT.)**

**HEAD SAR MEASUREMENT RESULTS - AMPS Mode - Right Head Section**

| Freq.<br>(MHz)   | Channel | Mode | Cond.<br>Power<br>Before<br>(dBm) | Cond.<br>Power<br>After<br>(dBm)  | Battery<br>Type | Antenna<br>Position | Phantom<br>Section | Test Position | SAR 1g<br>(w/kg) |
|--|---------|------|-----------------------------------|---|-----------------|---------------------|--------------------|---------------|------------------|
| 824.04   | 991     | AMPS | 26.14                             | 26.06   | Standard        | Retracted           | Right Ear          | Cheek/Touch   | 0.853            |
| 824.04   | 991     | AMPS | 26.10                             | 25.90   | Standard        | Extended            | Right Ear          | Cheek/Touch   | 1.40             |
| 824.04   | 991     | AMPS | 26.10                             | 25.91   | Extended        | Extended            | Right Ear          | Cheek/Touch   | 1.36             |
| 836.49   | 383     | AMPS | 26.10                             | 26.16   | Standard        | Retracted           | Right Ear          | Cheek/Touch   | 0.848            |
| 836.49   | 383     | AMPS | 26.10                             | 25.98   | Standard        | Extended            | Right Ear          | Cheek/Touch   | 1.45             |
| 836.49   | 383     | AMPS | 26.10                             | 26.04   | Extended        | Extended            | Right Ear          | Cheek/Touch   | 1.45             |
| 848.97   | 799     | AMPS | 26.12                             | 26.02   | Standard        | Retracted           | Right Ear          | Cheek/Touch   | 1.10             |
| 848.97   | 799     | AMPS | 26.10                             | 25.90   | Standard        | Extended            | Right Ear          | Cheek/Touch   | 1.44             |
| 848.97   | 799     | AMPS | 26.10                             | 25.94   | Extended        | Extended            | Right Ear          | Cheek/Touch   | 1.41             |
| 836.49   | 383     | AMPS | 26.10                             | 25.96   | Standard        | Retracted           | Right Ear          | Ear/Tilt      | 0.152            |
| 836.49   | 383     | AMPS | 26.10                             | 26.09   | Standard        | Extended            | Right Ear          | Ear/Tilt      | 0.487            |
| <b>Mixture Type: Brain (Measured)</b><br><b>Dielectric Constant: 41.0</b><br><b>Conductivity: 0.90</b> |         |      |                                   | <b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b><br><b>Spatial Peak - Uncontrolled Exposure / General Population</b><br><b>BRAIN: 1.6 W/kg (averaged over 1 gram)</b> |                 |                     |                    |               |                  |

Notes:

1. Test Date(s): January 16, 2002.
2. The SAR values found were below the maximum limit of 1.6 w/kg (averaged over 1 gram).
3. The highest AMPS mode head SAR value measured (right head section) was 1.45 w/kg (cheek/touch position, mid channel, antenna extended, with both standard-life and extended-life batteries).
4. The EUT was tested with the clamshell open, which is the only ear-held operating configuration for this phone.
5. Ambient TEMPERATURE: 23.8°C  
Relative HUMIDITY: 34%  
Atmospheric PRESSURE: 102.4 kPa
6. Fluid Temperature  $\approx$  23.0 °C
7. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

***MEASUREMENT SUMMARY (CONT.)***

**HEAD SAR MEASUREMENT RESULTS - CDMA Mode - Left Head Section**

| Freq.<br>(MHz)   | Channel | Mode | Cond.<br>Power<br>Before<br>(dBm) | Cond.<br>Power<br>After<br>(dBm)  | Battery<br>Type | Antenna<br>Position | Phantom<br>Section | Test Position | SAR 1g<br>(w/kg) |
|--|---------|------|-----------------------------------|---|-----------------|---------------------|--------------------|---------------|------------------|
| 824.70   | 1013    | CDMA | 25.13                             | 25.19   | Standard        | Retracted           | Left Ear           | Cheek/Touch   | 0.644            |
| 824.70   | 1013    | CDMA | 25.10                             | 25.10   | Standard        | Extended            | Left Ear           | Cheek/Touch   | 1.14             |
| 824.70   | 1013    | CDMA | 25.10                             | 25.03   | Extended        | Extended            | Left Ear           | Cheek/Touch   | 1.10             |
| 835.89   | 363     | CDMA | 25.13                             | 24.99   | Standard        | Retracted           | Left Ear           | Cheek/Touch   | 0.663            |
| 835.89   | 363     | CDMA | 25.10                             | 25.20   | Standard        | Extended            | Left Ear           | Cheek/Touch   | 1.21             |
| 835.89   | 363     | CDMA | 25.10                             | 24.99   | Extended        | Extended            | Left Ear           | Cheek/Touch   | 1.09             |
| 848.31   | 777     | CDMA | 25.10                             | 24.96   | Standard        | Retracted           | Left Ear           | Cheek/Touch   | 0.928            |
| 848.31   | 777     | CDMA | 25.13                             | 25.02   | Standard        | Extended            | Left Ear           | Cheek/Touch   | 1.34             |
| 848.31   | 777     | CDMA | 25.10                             | 24.93   | Extended        | Extended            | Left Ear           | Cheek/Touch   | 1.22             |
| 835.89   | 363     | CDMA | 25.10                             | 24.92   | Standard        | Retracted           | Left Ear           | Ear/Tilt      | 0.172            |
| 835.89   | 363     | CDMA | 25.10                             | 25.06   | Standard        | Extended            | Left Ear           | Ear/Tilt      | 0.383            |
| <b>Mixture Type: Brain (Measured)</b><br><b>Dielectric Constant: 41.2</b><br><b>Conductivity: 0.90</b> |         |      |                                   | <b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b><br><b>Spatial Peak - Uncontrolled Exposure / General Population</b><br><b>BRAIN: 1.6 W/kg (averaged over 1 gram)</b> |                 |                     |                    |               |                  |

Notes:

1. Test Date(s): January 17, 2002.
2. The SAR values found were below the maximum limit of 1.6 w/kg (averaged over 1 gram).
3. The highest CDMA mode head SAR value measured (left head section) was 1.34 w/kg (cheek/touch position, high channel, antenna extended, with standard-life battery).
4. The EUT was tested with the clamshell open, which is the only ear-held operating configuration for this phone.
5. Ambient TEMPERATURE: 22.2°C  
Relative HUMIDITY: 35%  
Atmospheric PRESSURE: 102.2 kPa
6. Fluid Temperature  $\approx$  23.0 °C
7. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

***MEASUREMENT SUMMARY (CONT.)***

**HEAD SAR MEASUREMENT RESULTS - CDMA Mode - Right Head Section**

| Freq.<br>(MHz)   | Channel | Mode | Cond.<br>Power<br>Before<br>(dBm) | Cond.<br>Power<br>After<br>(dBm)   | Battery<br>Type | Antenna<br>Position | Phantom<br>Section | Test Position | SAR 1g<br>(w/kg) |
|--|---------|------|-----------------------------------|--|-----------------|---------------------|--------------------|---------------|------------------|
| 824.70   | 1013    | CDMA | 25.10                             | 25.09  | Standard        | Retracted           | Right Ear          | Cheek/Touch   | 0.719            |
| 824.70   | 1013    | CDMA | 25.10                             | 25.10  | Standard        | Extended            | Right Ear          | Cheek/Touch   | 1.22             |
| 824.70   | 1013    | CDMA | 25.10                             | 25.03  | Extended        | Extended            | Right Ear          | Cheek/Touch   | 1.15             |
| 835.89   | 363     | CDMA | 25.10                             | 24.94  | Standard        | Retracted           | Right Ear          | Cheek/Touch   | 0.683            |
| 835.89   | 363     | CDMA | 25.12                             | 24.96  | Standard        | Extended            | Right Ear          | Cheek/Touch   | 1.16             |
| 835.89   | 363     | CDMA | 25.10                             | 25.19  | Extended        | Extended            | Right Ear          | Cheek/Touch   | 1.21             |
| 848.31   | 777     | CDMA | 25.10                             | 24.93  | Standard        | Retracted           | Right Ear          | Cheek/Touch   | 0.917            |
| 848.31   | 777     | CDMA | 25.10                             | 24.98  | Standard        | Extended            | Right Ear          | Cheek/Touch   | 1.35             |
| 848.31   | 777     | CDMA | 25.11                             | 24.97  | Extended        | Extended            | Right Ear          | Cheek/Touch   | 1.32             |
| 835.89   | 363     | CDMA | 25.14                             | 25.01  | Standard        | Retracted           | Right Ear          | Ear/Tilt      | 0.137            |
| 835.89   | 363     | CDMA | 25.10                             | 25.06  | Standard        | Extended            | Right Ear          | Ear/Tilt      | 0.373            |
| <b>Mixture Type: Brain (Measured)</b><br><b>Dielectric Constant: 41.2</b><br><b>Conductivity: 0.90</b> |         |      |                                   | <b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b><br><b>Spatial Peak: Uncontrolled Exposure/General Population</b><br><b>BRAIN: 1.6 W/kg (averaged over 1 gram)</b> |                 |                     |                    |               |                  |

Notes:

1. Test Date(s): January 17, 2002.
2. The SAR values found were below the maximum limit of 1.6 w/kg (averaged over 1 gram).
3. The highest CDMA mode head SAR value measured (right head section) was 1.35 w/kg (cheek/touch position, high channel, antenna extended, with standard-life battery).
4. The EUT was tested with the clamshell open, which is the only ear-held operating configuration for this phone.
5. Ambient TEMPERATURE: 22.2°C  
Relative HUMIDITY: 35%  
Atmospheric PRESSURE: 102.2 kPa
6. Fluid Temperature  $\approx$  23.0 °C
7. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

***MEASUREMENT SUMMARY (CONT.)***

**BODY SAR MEASUREMENT RESULTS - AMPS Mode**

| Freq.<br>(MHz)  | Channel | Mode | Cond.<br>Power<br>Before<br>(dBm) | Cond.<br>Power<br>After<br>(dBm)  | Battery<br>Type | Antenna<br>Position | Phantom<br>Section | Separation<br>Distance<br>(cm) | SAR 1g<br>(w/kg) |
|---|---------|------|-----------------------------------|---|-----------------|---------------------|--------------------|--------------------------------|------------------|
| 824.04  | 991     | AMPS | 26.11                             | 26.01   | Standard        | Retracted           | Planar             | 1.5                            | 0.699            |
| 824.04  | 991     | AMPS | 26.12                             | 26.02   | Standard        | Extended            | Planar             | 1.5                            | 1.37             |
| 836.49  | 383     | AMPS | 26.12                             | 25.92   | Standard        | Retracted           | Planar             | 1.5                            | 0.657            |
| 836.49  | 383     | AMPS | 26.10                             | 26.02   | Standard        | Extended            | Planar             | 1.5                            | 1.38             |
| 836.49  | 383     | AMPS | 26.10                             | 26.01   | Extended        | Extended            | Planar             | 1.5                            | 1.13             |
| 848.97  | 799     | AMPS | 26.12                             | 25.97   | Standard        | Retracted           | Planar             | 1.5                            | 0.756            |
| 848.97  | 799     | AMPS | 26.10                             | 25.90   | Standard        | Extended            | Planar             | 1.5                            | 1.26             |
| <b>Mixture Type: Body (Measured)</b><br><b>Dielectric Constant: 55.0</b><br><b>Conductivity: 0.97</b> |         |      |                                   | <b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b><br><b>Spatial Peak: Uncontrolled Exposure/General Population</b><br><b>BODY: 1.6 W/kg (averaged over 1 gram)</b> |                 |                     |                    |                                |                  |

Notes:

1. Test Date(s): January 18, 2002.
2. The body SAR values found were below the maximum limit of 1.6 w/kg (averaged over 1 gram).
3. The highest AMPS mode body SAR value found was 1.38 w/kg (mid channel, antenna extended, with standard-life battery).
4. The EUT was tested for body SAR with ear-microphone connected.
5. The EUT was tested for body SAR with the clamshell closed, which is the only intended body-worn operating configuration for this phone. A 1.5cm separation distance was maintained between the back of the phone and the outer surface of the SAM planar phantom.
6. Ambient TEMPERATURE: 22.6°C  
Relative HUMIDITY: 35%  
Atmospheric PRESSURE: 102.5 kPa
7. Fluid Temperature  $\approx$  23.0 °C
8. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

***MEASUREMENT SUMMARY (CONT.)***

**BODY SAR MEASUREMENT RESULTS - CDMA Mode**

| Freq.<br>(MHz)  | Channel | Mode | Cond.<br>Power<br>Before<br>(dBm) | Cond.<br>Power<br>After<br>(dBm)  | Battery<br>Type | Antenna<br>Position | Phantom<br>Section | Separation<br>Distance<br>(cm) | SAR 1g<br>(w/kg) |
|---|---------|------|-----------------------------------|---|-----------------|---------------------|--------------------|--------------------------------|------------------|
| 824.70  | 1013    | CDMA | 25.13                             | 25.08   | Standard        | Retracted           | Planar             | 1.5                            | 0.542            |
| 824.70  | 1013    | CDMA | 25.14                             | 25.12   | Standard        | Extended            | Planar             | 1.5                            | 1.15             |
| 835.89  | 363     | CDMA | 25.15                             | 24.98   | Standard        | Retracted           | Planar             | 1.5                            | 0.499            |
| 835.89  | 363     | CDMA | 25.15                             | 25.08   | Standard        | Extended            | Planar             | 1.5                            | 1.14             |
| 848.31  | 777     | CDMA | 25.13                             | 24.97   | Standard        | Retracted           | Planar             | 1.5                            | 0.485            |
| 848.31  | 777     | CDMA | 25.14                             | 24.96   | Standard        | Extended            | Planar             | 1.5                            | 1.17             |
| 848.31  | 777     | CDMA | 25.12                             | 25.04   | Extended        | Extended            | Planar             | 1.5                            | 0.959            |
| <b>Mixture Type: Body (Measured)</b><br><b>Dielectric Constant: 55.0</b><br><b>Conductivity: 0.97</b> |         |      |                                   | <b>ANSI / IEEE C95.1 1992 - SAFETY LIMIT</b><br><b>Spatial Peak: Uncontrolled Exposure/General Population</b><br><b>BODY: 1.6 W/kg (averaged over 1 gram)</b> |                 |                     |                    |                                |                  |

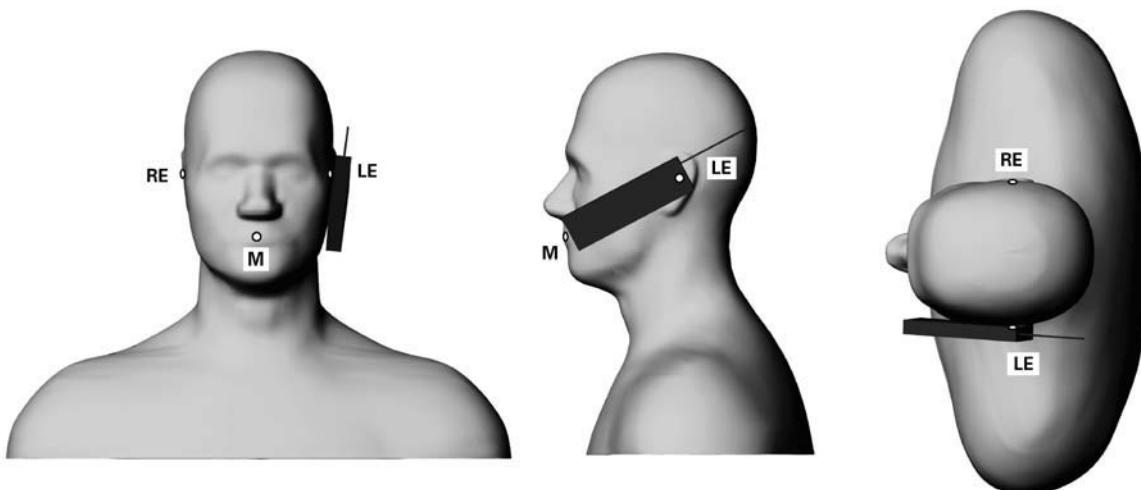
Notes:

1. Test Date(s): January 18, 2002.
2. The body SAR values found were below the maximum limit of 1.6 w/kg (averaged over 1 gram).
3. The highest CDMA mode body SAR value found was 1.17 w/kg (high channel, antenna extended, with standard-life battery).
4. The EUT was tested for body SAR with ear-microphone connected.
5. The EUT was tested for body SAR with the clamshell closed, which is the only intended body-worn operating configuration for this phone. A 1.5cm separation distance was maintained between the back of the phone and the outer surface of the SAM planar phantom.
6. Ambient TEMPERATURE: 22.6°C  
Relative HUMIDITY: 35%  
Atmospheric PRESSURE: 102.5 kPa
7. Fluid Temperature  $\approx$  23.0 °C
8. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

## 5.0 DETAILS OF SAR EVALUATION

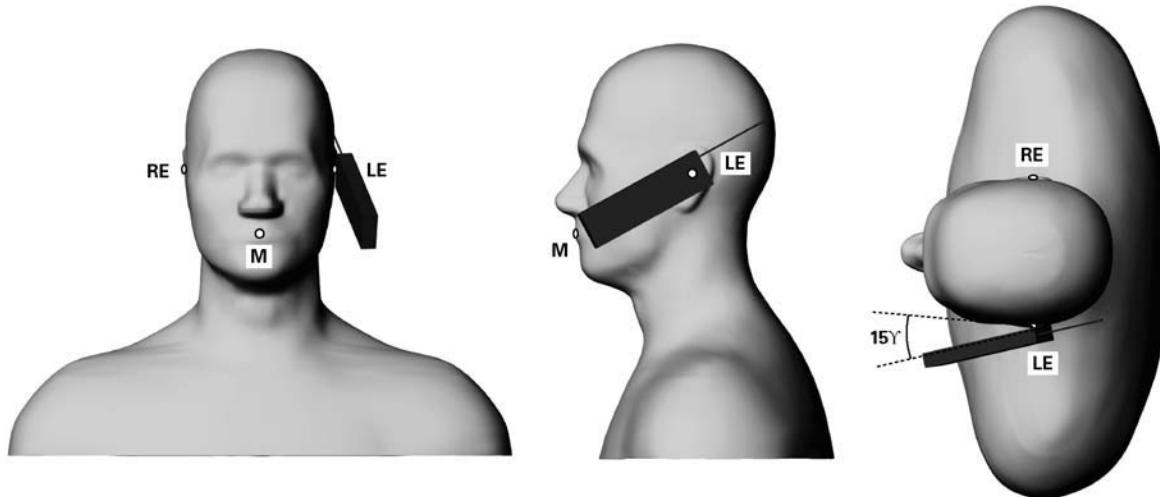
The WITHUS IT CO., LTD. Model: WCE-210 Dual-Mode AMPS/CDMA Cellular Phone FCC ID: POQWCE-210 was found to be compliant for localized Specific Absorption Rate (SAR) based on the following test provisions and conditions:

- 1) The EUT was tested in an ear-held configuration on both the left and right sections of the phantom with the device antenna in both the extended and retracted positions as follows:
  - a) The handset was placed in the device holder in a normal operating position with the test device reference point located along the vertical centerline on the front of the device aligned to the ear reference point, with the center of the earpiece touching the center of the ear spacer of the SAM phantom.
  - b) With the handset positioned parallel to the cheek, the test device reference point was aligned to the ear reference point on the head phantom, and the vertical centerline was aligned to the phantom reference plane (initial ear position).
  - c) While maintaining the three alignments, the body of the handset was gradually adjusted to each of the following test positions:
    - Cheek/Touch Position: The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.



**Phone position 1, “cheek” or “touch” position.** The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).

- Ear/Tilt Position: With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.



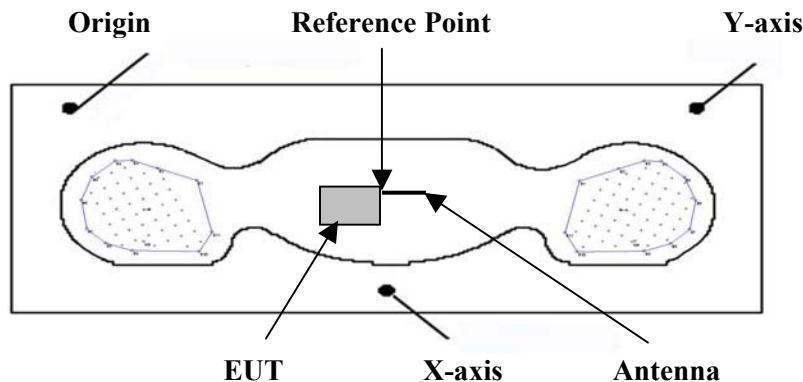
**Phone position 2, “tilted position.” The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).**

- 2) The EUT was tested in a body-worn configuration with the device in the clamshell-closed position and the back of the device placed parallel to the outer surface of the planar phantom at a separation distance of 1.5 cm (Note: A body-holster or belt-clip were not available at the time of evaluation). Both antenna extended and antenna retracted modes were tested.
- 3) The EUT was tested for body SAR with ear-microphone connected.
- 4) SAR measurements were evaluated at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimize drift. The conducted power levels were checked before and after each test. If the conducted power level deviated more than 5% of the initial power level, then the EUT was retested. Any unusual anomalies over the course of the test also warranted a re-evaluation.
- 5) The conducted power was measured according to the procedures described in FCC Part 2.1046.
- 6) The EUT was placed into test mode via keypad access or base station simulator at a full data rate in the “always up” power control mode.
- 7) The location of the maximum spatial SAR distribution (Hot Spot) was determined relative to the handset and its antenna.
- 8) The EUT was tested with a fully charged battery.

## 6.0 EVALUATION PROCEDURES

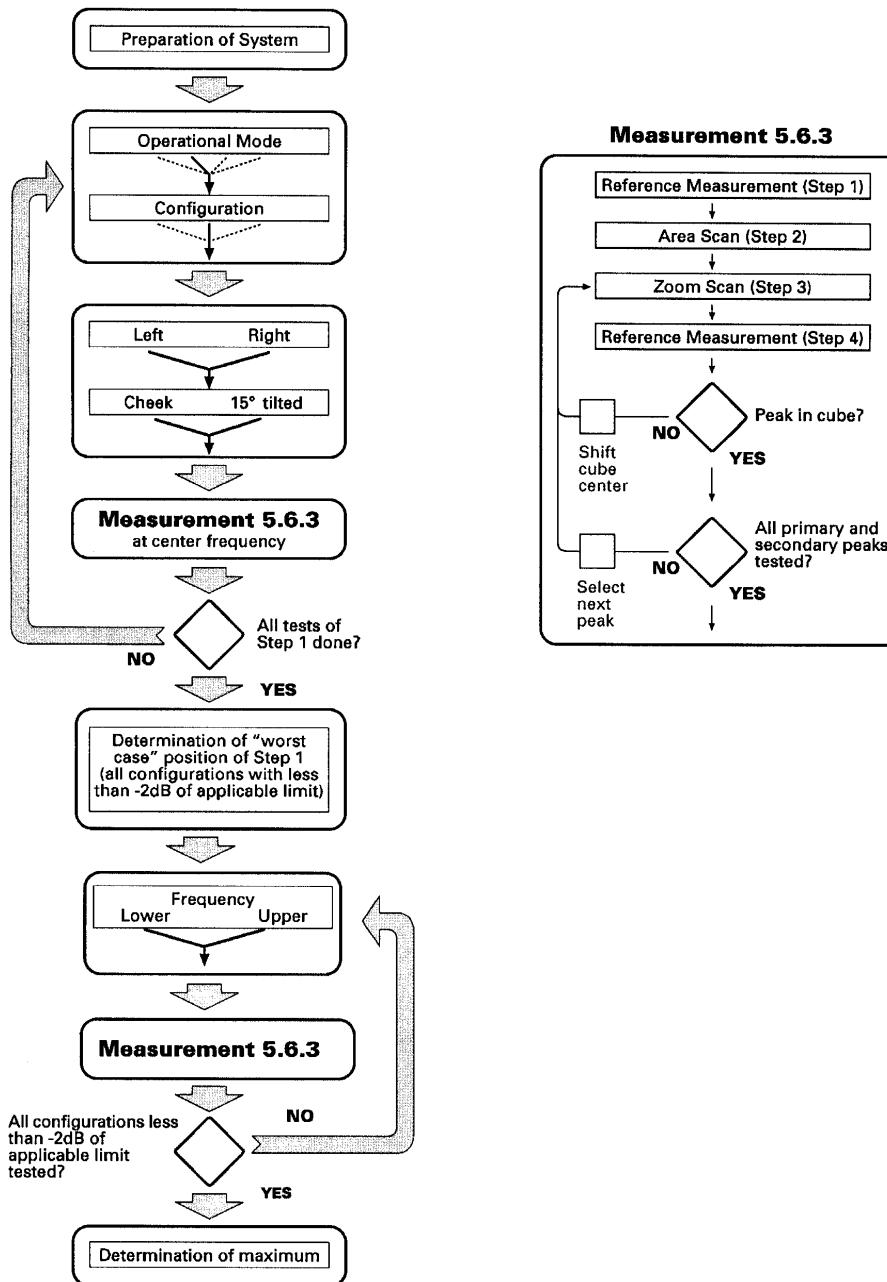
The Specific Absorption Rate (SAR) evaluation was performed in the following manner:

- a. (i) The evaluation was performed in the applicable area of the phantom depending on the type of device being tested. For devices held to the ear during normal operation both the left and right ear positions were evaluated at the low, middle, and high frequencies of the band at maximum power, and with the device antenna in both the extended and extracted positions as applicable. The positioning of the ear-held device relative to the phantom was performed in accordance with FCC OET Bulletin 65, Supplement C (Edition 01-01) using the SAM phantom.  
(ii) For face-held and body-worn devices, a planar phantom was used.
- b. The SAR was determined by a pre-defined procedure within the DASY3 software. Upon completion of a reference and optical surface check, the exposed region of the phantom was scanned near the inner surface using a uniform grid spacing.
- c. A 5x5x7 matrix was performed around the greatest spatial SAR distribution found during the area scan of the applicable exposed region. SAR values were then calculated using a 3-D spline interpolation algorithm and averaged over spatial volumes of 1 and 10 grams.
- d. The depth of the simulating tissue in the phantom used for the system validation and SAR evaluation was no less than 15cm.
- e. The E-field probe conversion factors for 835MHz were determined as follows:
  - In brain and muscle tissue between 750MHz and 1GHz, the conversion factor decreases approximately 1.3% per 100MHz frequency increase.
  - In brain and muscle tissue between 1.6GHz and 2GHz, the conversion factor decreases approximately 1% per 100MHz frequency increase.



Device Positioning & Reference Point (Body SAR)

**EVALUATION Procedures (Cont.)**



Flow Chart of the recommended practices and procedures per IEEE Std 1528 (Draft) [5]

## 7.0 SAR SAFETY LIMITS

| EXPOSURE LIMITS  | SAR (W/Kg)   |  |
|--|--|--|
|  | (General Population / Uncontrolled Exposure Environment) | (Occupational / Controlled Exposure Environment) |
| Spatial Average (averaged over the whole body)             | 0.08   | 0.4  |
| Spatial Peak (averaged over any 1 g of tissue)             | 1.60   | 8.0  |
| Spatial Peak (hands/wrists/feet/ankles averaged over 10 g) | 4.0  | 20.0   |

Notes:

1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

## 8.0 SIMULATED TISSUES

The 835MHz and 900MHz brain and body mixtures consist of a viscous gel using hydroxethylcellulose (HEC) gelling agent and saline solution. Preservation with a bactericide is added and visual inspection is made to ensure air bubbles are not trapped during the mixing process. The fluid was prepared according to standardized procedures, and measured for dielectric parameters (permittivity and conductivity).

| 835MHz & 900MHz TISSUE MIXTURE - DIPOLE VALIDATION & EUT EVALUATION |                                   |                                       |                                      |
|---|-----------------------------------|---------------------------------------|--------------------------------------|
| INGREDIENT  | 900MHz Brain Mixture (Validation) | 835MHz Brain Mixture (EUT Evaluation) | 835MHz Body Mixture (EUT Evaluation) |
| Water   | 40.71 %                           | 40.71 %                               | 53.70 %                              |
| Sugar   | 56.63 %                           | 56.63 %                               | 45.10 %                              |
| Salt  | 1.48 %                            | 1.48 %                                | 0.97 %                               |
| HEC   | 1.00 %                            | 1.00 %                                | 0.13%                                |
| Bactericide   | 0.18 %                            | 0.18 %                                | 0.10 %                               |

## 9.0 TISSUE PARAMETERS

The dielectric parameters of the fluids were verified prior to the SAR evaluation using an 85070C Dielectric Probe Kit and an 8753E Network Analyzer. The dielectric parameters of the fluid are shown in the table below. See Appendix D for printout of measured tissue dielectric parameters.

| TISSUE PARAMETERS - DIPOLE VALIDATION & EUT EVALUATION |                                     |                                  |                             |
|--|-------------------------------------|----------------------------------|-----------------------------|
| Equivalent Tissue                                      | Dielectric Constant<br>$\epsilon_r$ | Conductivity<br>$\sigma$ (mho/m) | $\rho$ (Kg/m <sup>3</sup> ) |
| 900MHz Brain<br>(Target)                               | 41.5 ±5%                            | 0.97 ±5%                         | 1000                        |
| 900MHz Brain<br>(Validation - Measured: 01/16/02)      | 40.2                                | 0.95                             | 1000                        |
| 900MHz Brain<br>(Validation - Measured: 01/17/02)      | 40.5                                | 0.96                             | 1000                        |
| 900MHz Brain<br>(Validation - Measured: 01/18/02)      | 40.4                                | 0.96                             | 1000                        |
| 835MHz Brain<br>(Target)                               | 41.5 ±5%                            | 0.90 ±5%                         | 1000                        |
| 835MHz Brain<br>(Evaluation - Measured: 01/16/02)      | 41.0                                | 0.90                             | 1000                        |
| 835MHz Brain<br>(Evaluation - Measured: 01/17/02)      | 41.2                                | 0.90                             | 1000                        |
| 835MHz Brain<br>(Evaluation - Measured: 01/18/02)      | 41.1                                | 0.90                             | 1000                        |
| 835MHz Body<br>(Target)                                | 55.2 ±5%                            | 0.97 ±5%                         | 1000                        |
| 835MHz Body<br>(Evaluation - Measured: 01/17/02)       | 55.0                                | 0.97                             | 1000                        |

## 10.0 SYSTEM VALIDATION

Prior to the assessment, the system was verified in the planar section of the SAM phantom using a 900MHz dipole. A forward power of 250mW was applied to the dipole, and the system was verified to a tolerance of  $\pm 10\%$ . The applicable verification is as follows (see Appendix B for validation test plots):

| Dipole Validation Kit | Target SAR 1g (w/kg) | Measured SAR 1g (w/kg) | Fluid Temperature | Validation Date |
|-----------------------|----------------------|------------------------|-------------------|-----------------|
| D900V2                | 2.78                 | 2.75                   | ≈23.0 °C          | 01/16/02        |
|                       |                      | 2.72                   | ≈23.0 °C          | 01/17/02        |
|                       |                      | 2.76                   | ≈23.0 °C          | 01/18/02        |

## 11.0 ROBOT SYSTEM SPECIFICATIONS

### Specifications

|                       |  |
|-----------------------|--|
| <b>POSITIONER:</b>    | Stäubli Unimation Corp. Robot Model: RX60L |
| <b>Repeatability:</b> | 0.02 mm                                    |
| <b>No. of axis:</b>   | 6  |

### Data Acquisition Electronic (DAE) System

#### Cell Controller

|                          |                |
|--------------------------|----------------|
| <b>Processor:</b>        | Pentium III    |
| <b>Clock Speed:</b>      | 450 MHz        |
| <b>Operating System:</b> | Windows NT     |
| <b>Data Card:</b>        | DASY3 PC-Board |

#### Data Converter

|                          |   |
|--------------------------|---|
| <b>Features:</b>         | Signal Amplifier, multiplexer, A/D converter, and control logic                     |
| <b>Software:</b>         | DASY3 software  |
| <b>Connecting Lines:</b> | Optical downlink for data and status info.<br>Optical uplink for commands and clock |

### PC Interface Card

|                  |   |
|------------------|---|
| <b>Function:</b> | 24 bit (64 MHz) DSP for real time processing<br>Link to DAE3<br>16-bit A/D converter for surface detection system<br>serial link to robot<br>direct emergency stop output for robot |
|------------------|---|

### E-Field Probe

|                      |  |
|----------------------|--|
| <b>Model:</b>        | ET3DV6                                       |
| <b>Serial No.:</b>   | 1590   |
| <b>Construction:</b> | Triangular core fiber optic detection system |
| <b>Frequency:</b>    | 10 MHz to 6 GHz                              |
| <b>Linearity:</b>    | $\pm 0.2$ dB (30 MHz to 3 GHz)               |

### Phantom

|                        |                                       |
|------------------------|---------------------------------------|
| <b>Type:</b>           | SAM V4.0C                             |
| <b>Configuration:</b>  | Left Head, Right Head, Planar Section |
| <b>Shell Material:</b> | Fiberglass                            |
| <b>Thickness:</b>      | $2.0 \pm 0.1$ mm                      |
| <b>Volume:</b>         | Approx. 20 liters                     |

## 12.0 SAM PHANTOM V4.0C

The SAM phantom V4.0C is a fiberglass shell phantom with a 2.0 mm shell thickness for left and right head and flat planar area integrated in a wooden table. The shape of the fiberglass shell corresponds to the phantom defined by SCC34-SC2. The device holder positions are adjusted to the standard measurement positions in the three sections.



SAM Phantom V4.0C

## 13.0 DEVICE HOLDER

The DASY3 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.



Device Holder

## 14.0 PROBE SPECIFICATION (ET3DV6)

|                |  |
|----------------|--|
| Construction:  | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g. glycol) |
| Calibration:   | In air from 10 MHz to 2.5 GHz<br>In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy $\pm 8\%$ )                                      |
| Frequency:     | 10 MHz to $>6$ GHz; Linearity: $\pm 0.2$ dB<br>(30 MHz to 3 GHz)   |
| Directivity:   | $\pm 0.2$ dB in brain tissue (rotation around probe axis)<br>$\pm 0.4$ dB in brain tissue (rotation normal to probe axis)                                    |
| Dynam. Rnge:   | 5 $\mu$ W/g to $>100$ mW/g; Linearity: $\pm 0.2$ dB  |
| Srfce. Detect. | $\pm 0.2$ mm repeatability in air and clear liquids over diffuse reflecting surfaces   |
| Dimensions:    | Overall length: 330 mm<br>Tip length: 16 mm<br>Body diameter: 12 mm<br>Tip diameter: 6.8 mm  |
| Application:   | Distance from probe tip to dipole centers: 2.7 mm<br>General dosimetry up to 3 GHz<br>Compliance tests of mobile phone                                       |



ET3DV6 E-Field Probe

## 15.0 TEST EQUIPMENT LIST

| SAR MEASUREMENT SYSTEM  |   |  |
|---|---|--|
| <u>EQUIPMENT</u>  | <u>SERIAL NO.</u>   | <u>DATE CALIBRATED</u>   |
| <b>DASY3 System</b><br>-Robot<br>-ET3DV6 E-Field Probe<br>-300MHz Validation Dipole<br>-450MHz Validation Dipole<br>-900MHz Validation Dipole<br>-1800MHz Validation Dipole<br>-2450MHz Validation Dipole<br>-SAM Phantom V4.0C | 599396-01<br>1590<br>135<br>136<br>054<br>247<br>150<br>N/A | N/A<br>Mar 2001<br>Oct 2001<br>Oct 2001<br>June 2001<br>June 2001<br>Oct 2001<br>N/A |
| <b>85070C Dielectric Probe Kit</b>  | N/A   | N/A  |
| <b>Gigatronics 8652A Power Meter</b><br>-Power Sensor 80701A<br>-Power Sensor 80701A  | 1835272<br>1833535<br>1833542                               | Oct 2001<br>Jan 2002<br>Jan 2002   |
| <b>E4408B Spectrum Analyzer</b>   | US39240170  | Nov 2001   |
| <b>8594E Spectrum Analyzer</b>  | 3543A02721  | Mar 2001   |
| <b>8753E Network Analyzer</b>   | US38433013  | Nov 2001   |
| <b>8648D Signal Generator</b>   | 3847A00611  | Aug 2001   |
| <b>5S1G4 Amplifier Research Power Amplifier</b>   | 26235   | N/A  |

## 16.0 MEASUREMENT UNCERTAINTIES

| Error Description               | Uncertainty Value<br>±% | Probability Distribution | Divisor    | $c_i$<br>1g | Standard Uncertainty<br>±% (1g) | $v_i$ or $v_{eff}$ |
|---------------------------------|-------------------------|--------------------------|------------|-------------|---------------------------------|--------------------|
| <b>Measurement System</b>       |                         |                          |            |             |                                 |                    |
| Probe calibration               | ± 4.4                   | Normal                   | 1          | 1           | ± 4.4                           | ∞                  |
| Axial isotropy of the probe     | ± 4.7                   | Rectangular              | $\sqrt{3}$ | $(1-c_p)$   | ± 1.9                           | ∞                  |
| Spherical isotropy of the probe | ± 9.6                   | Rectangular              | $\sqrt{3}$ | $(c_p)$     | ± 3.9                           | ∞                  |
| Spatial resolution              | ± 0.0                   | Rectangular              | $\sqrt{3}$ | 1           | ± 0.0                           | ∞                  |
| Boundary effects                | ± 5.5                   | Rectangular              | $\sqrt{3}$ | 1           | ± 3.2                           | ∞                  |
| Probe linearity                 | ± 4.7                   | Rectangular              | $\sqrt{3}$ | 1           | ± 2.7                           | ∞                  |
| Detection limit                 | ± 1.0                   | Rectangular              | $\sqrt{3}$ | 1           | ± 0.6                           | ∞                  |
| Readout electronics             | ± 1.0                   | Normal                   | 1          | 1           | ± 1.0                           | ∞                  |
| Response time                   | ± 0.8                   | Rectangular              | $\sqrt{3}$ | 1           | ± 0.5                           | ∞                  |
| Integration time                | ± 1.4                   | Rectangular              | $\sqrt{3}$ | 1           | ± 0.8                           | ∞                  |
| RF ambient conditions           | ± 3.0                   | Rectangular              | $\sqrt{3}$ | 1           | ± 1.7                           | ∞                  |
| Mech. constraints of robot      | ± 0.4                   | Rectangular              | $\sqrt{3}$ | 1           | ± 0.2                           | ∞                  |
| Probe positioning               | ± 2.9                   | Rectangular              | $\sqrt{3}$ | 1           | ± 1.7                           | ∞                  |
| Extrap. & integration           | ± 3.9                   | Rectangular              | $\sqrt{3}$ | 1           | ± 2.3                           | ∞                  |
| <b>Test Sample Related</b>      |                         |                          |            |             |                                 |                    |
| Device positioning              | ± 6.0                   | Normal                   | 0.89       | 1           | ± 6.7                           | 12                 |
| Device holder uncertainty       | ± 5.0                   | Normal                   | 0.84       | 1           | ± 5.9                           | 8                  |
| Power drift                     | ± 5.0                   | Rectangular              | $\sqrt{3}$ |             | ± 2.9                           | ∞                  |
| <b>Phantom and Setup</b>        |                         |                          |            |             |                                 |                    |
| Phantom uncertainty             | ± 4.0                   | Rectangular              | $\sqrt{3}$ | 1           | ± 2.3                           | ∞                  |
| Liquid conductivity (target)    | ± 5.0                   | Rectangular              | $\sqrt{3}$ | 0.6         | ± 1.7                           | ∞                  |
| Liquid conductivity (measured)  | ± 10.0                  | Rectangular              | $\sqrt{3}$ | 0.6         | ± 3.5                           | ∞                  |
| Liquid permittivity (target)    | ± 5.0                   | Rectangular              | $\sqrt{3}$ | 0.6         | ± 1.7                           | ∞                  |
| Liquid permittivity (measured)  | ± 5.0                   | Rectangular              | $\sqrt{3}$ | 0.6         | ± 1.7                           | ∞                  |
| Combined Standard Uncertainty   |                         |                          |            |             |                                 |                    |
| <b>Expanded Uncertainty</b>     |                         |                          |            |             |                                 |                    |
|                                 |                         |                          |            |             |                                 |                    |

The divisor for device positioning uncertainty and holder uncertainty are based on the procedure defined in IEEE Std 1528 (draft) (see reference [5]), or based on the degrees of freedom for each error source.

For estimation of Device Positioning Uncertainty (divisor=0.89) 12 different devices were used (see last column - i.e. degrees of freedom). The corresponding  $k_p$  factor for  $v_{eff}=12$  is 2.23, therefore the divisor is  $2/2.23=0.89$ .

For estimation of Device Holder Uncertainty (divisor=0.84) 8 different devices were used (see last column - i.e. degrees of freedom). The corresponding  $k_p$  factor for  $v_{eff}=8$  is 2.37, therefore the divisor is  $2/2.37=0.84$ .

## 17.0 REFERENCES

- [1] ANSI, ANSI/IEEE C95.1: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3kHz to 300 Ghz, The Institute of Electrical and Electronics Engineers, Inc., New York, NY: 1992.
- [2] Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.
- [3] Thomas Schmid, Oliver Egger, and Niels Kuster, “Automated E-field scanning system for dosimetric assessments”, IEEE Transaction on Microwave Theory and Techniques, Vol. 44, pp. 105 - 113: January 1996.
- [4] Niels Kuster, Ralph Kastle, and Thomas Schmid, “Dosimetric evaluation of mobile communications equipment with known precision”, IEICE Transactions of Communications, vol. E80-B, no. 5, pp. 645 – 652: May 1997.
- [5] IEEE Standards Coordinating Committee 34, Std 1528, DRAFT Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques: Draft, December 2001.

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***APPENDIX A - SAR MEASUREMENT DATA***

**HEAD SAR TEST PLOTS - AMPS MODE - LEFT EAR**

## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.01 dB

SAR (1g): 0.802 mW/g, SAR (10g): 0.545 mW/g

Head SAR - Left Cheek/Touch Position

Antenna In

Standard Battery

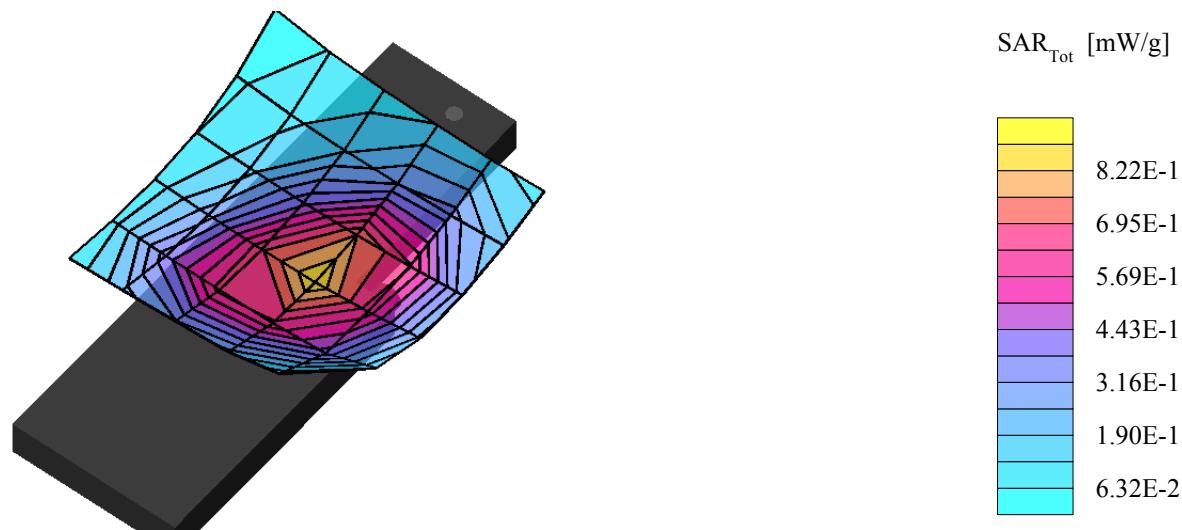
Withus Model: WCE-210

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.12 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.08 dB

SAR (1g): 1.40 mW/g, SAR (10g): 0.922 mW/g

Head SAR - Left Cheek/Touch Positon

Antenna Out

Standard Battery

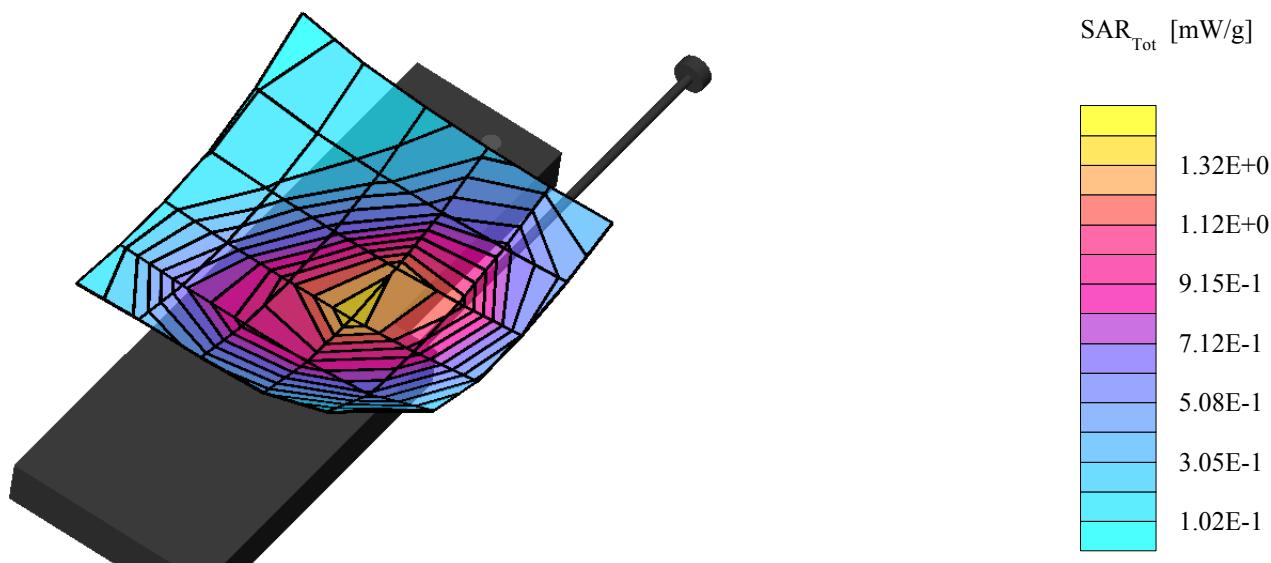
Withus Model: WCE-210

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.11 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.11 dB

SAR (1g): 1.38 mW/g, SAR (10g): 0.912 mW/g

Head SAR - Left Cheek/Touch Positon

Antenna Out

Extended Battery

Withus Model: WCE-210

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.05 dB

SAR (1g): 0.826 mW/g, SAR (10g): 0.554 mW/g

Head SAR - Left Cheek/Touch Position

Antenna In

Standard Battery

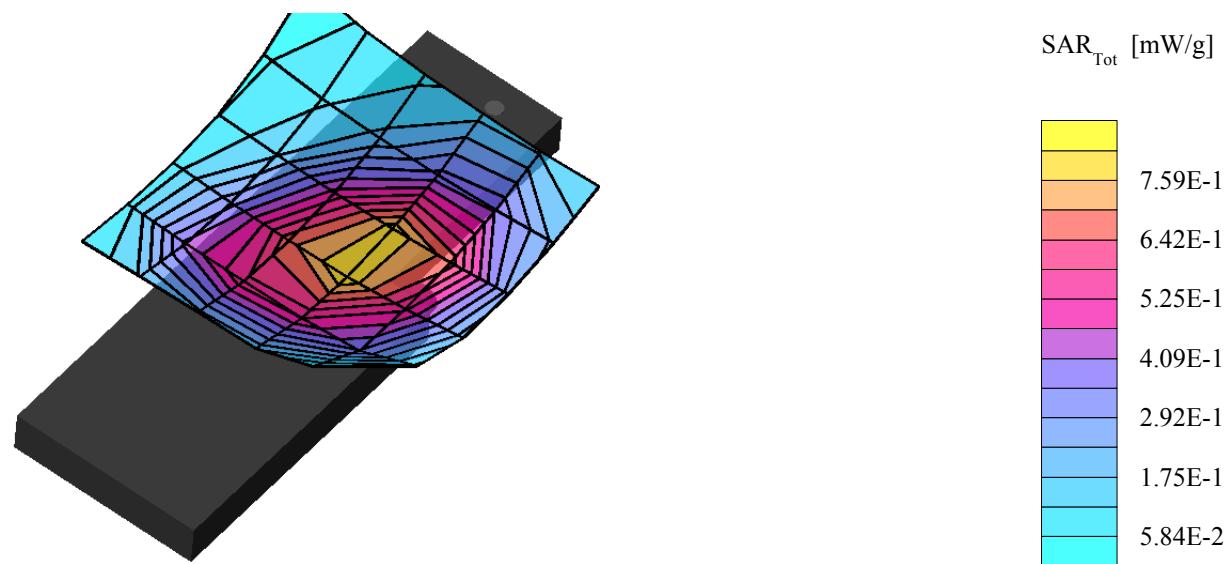
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.06 dB

SAR (1g): 1.43 mW/g, SAR (10g): 0.933 mW/g

Head SAR - Left Cheek/Touch Positon

Antenna Out

Standard Battery

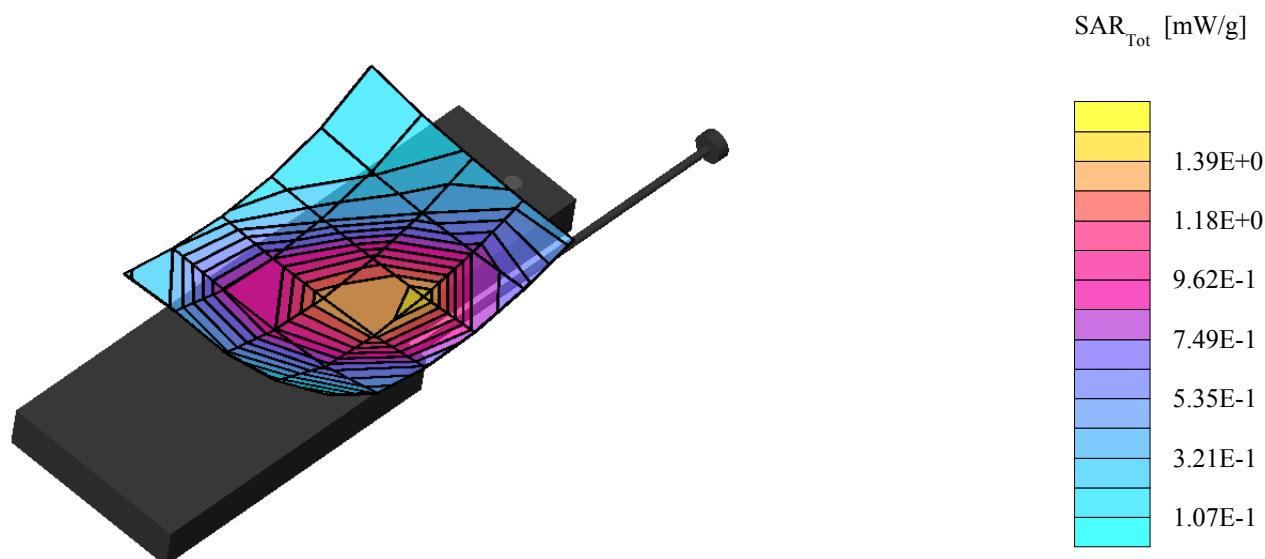
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



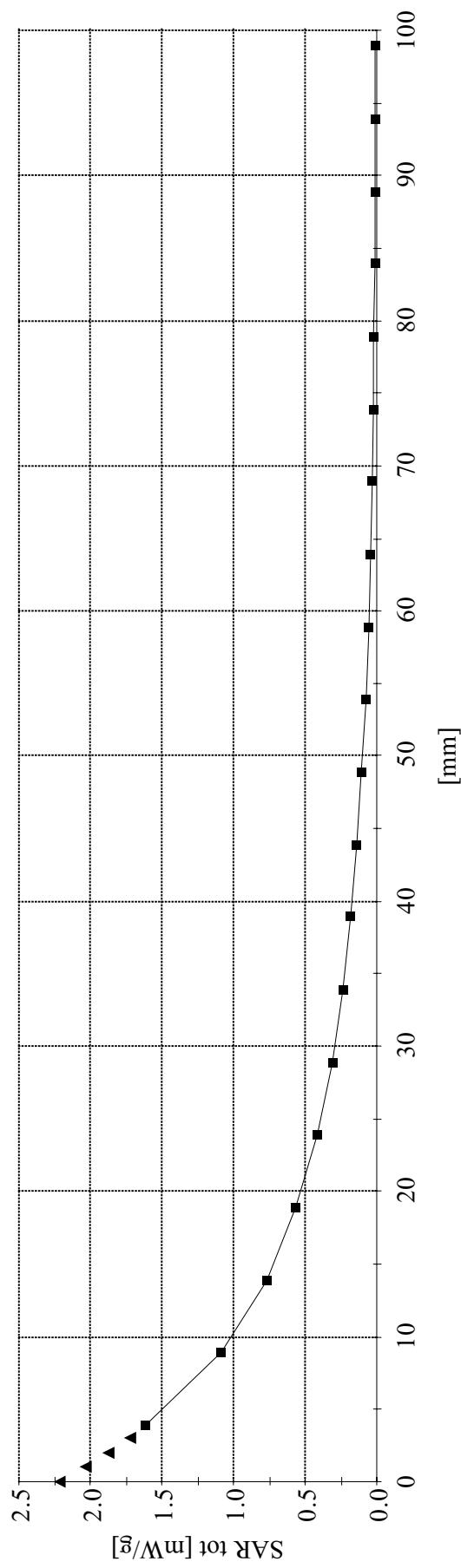
**Withus IT Co. Ltd. FCC ID: POQWCE-210**

SAM Phantom; Left Cheek Section

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0;  
835 MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_f = 41.0$   $\rho = 1.00$  g/cm<sup>3</sup>

**Z-Axis Extrapolation at Peak SAR Location**

Head SAR - Left Cheek/Touch Position  
Antenna Out  
Standard Battery  
Withus Model: WCE-210  
AMPS Mode  
Channel 383 [836.49 MHz]  
Conducted Power: 26.10 dBm  
Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.07 dB

SAR (1g): 1.42 mW/g, SAR (10g): 0.931 mW/g

Head SAR - Left Cheek/Touch Positon

Antenna Out

Extended Battery

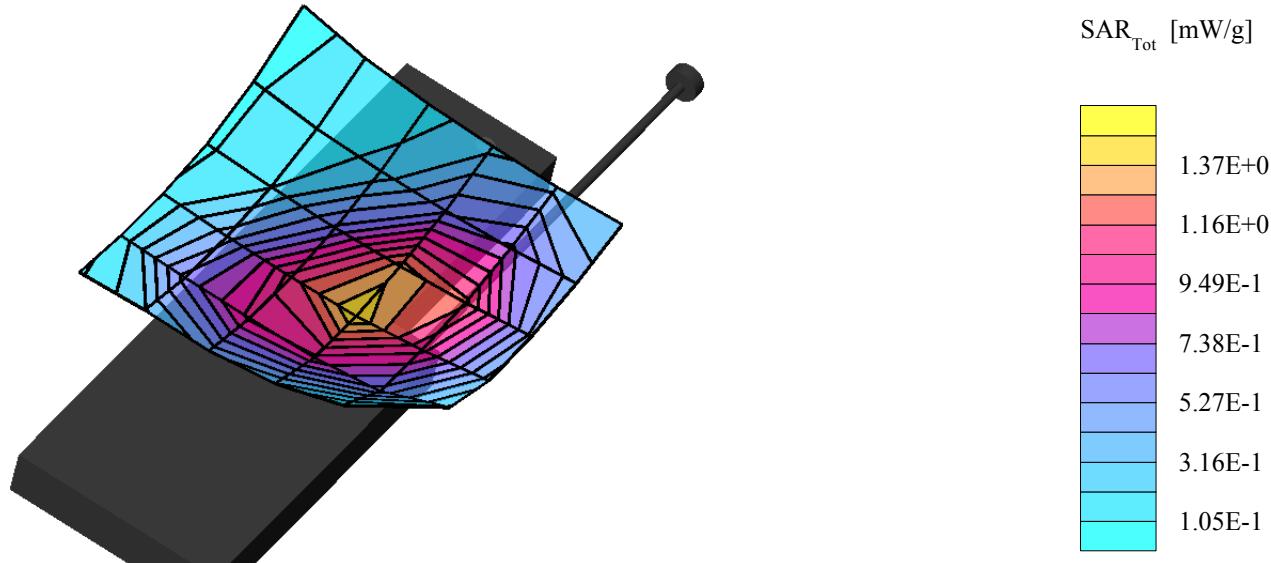
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.11 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.16 dB

SAR (1g): 0.937 mW/g, SAR (10g): 0.626 mW/g

Head SAR - Left Cheek/Touch Positon

Antenna In

Standard Battery

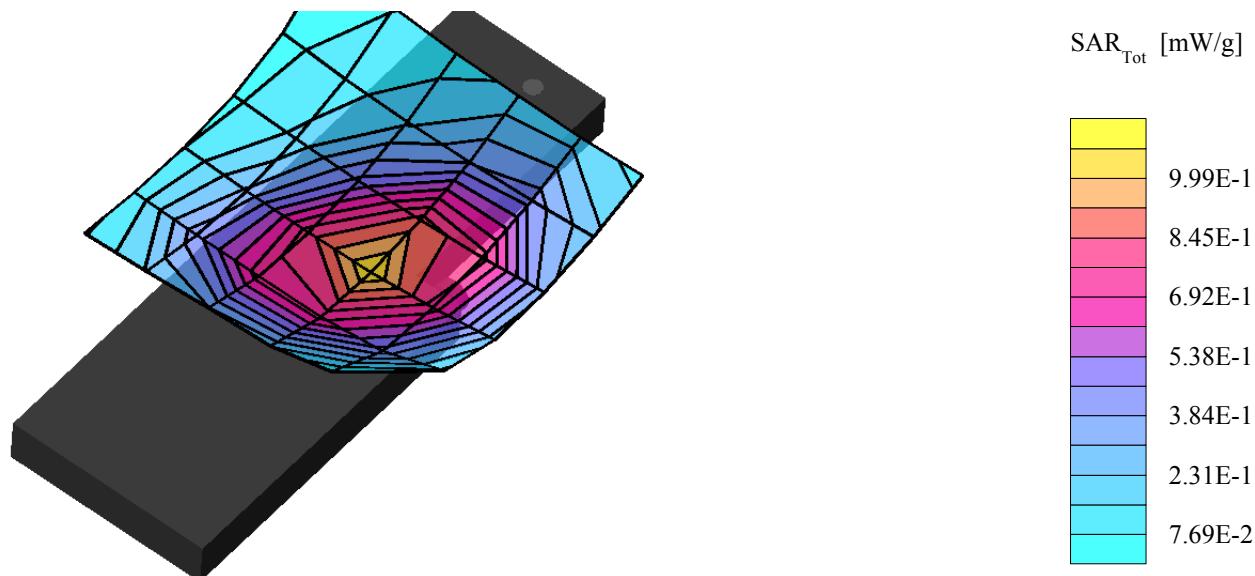
Withus Model: WCE-210

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.14 dB

SAR (1g): 1.42 mW/g, SAR (10g): 0.936 mW/g

Head SAR - Left Cheek/Touch Positon

Antenna Out

Standard Battery

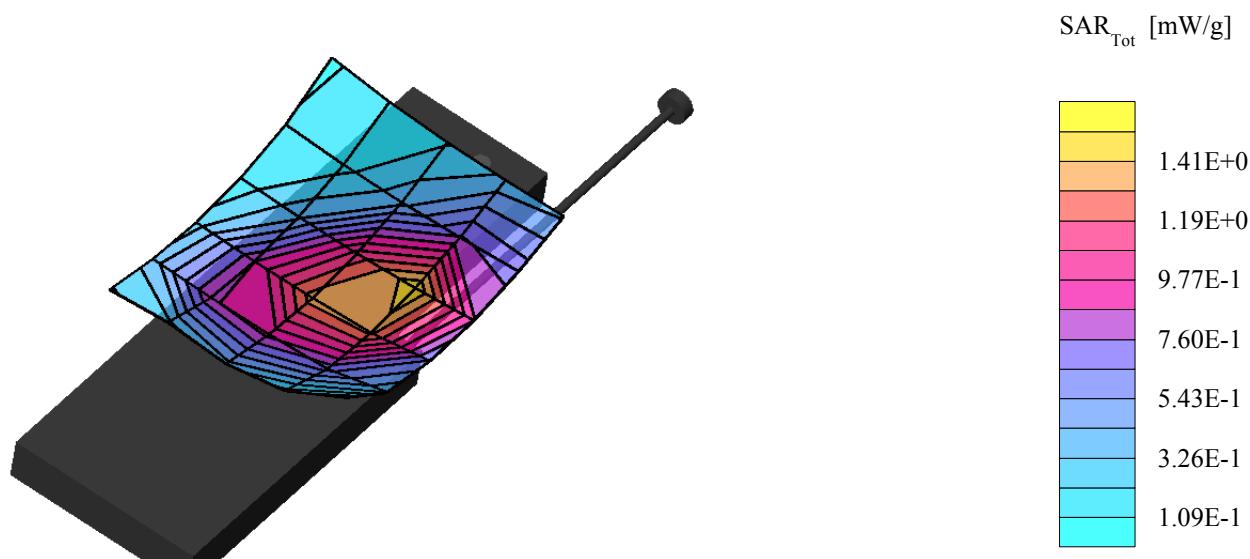
Withus Model: WCE-210

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.18 dB

SAR (1g): 1.38 mW/g, SAR (10g): 0.906 mW/g

Head SAR - Left Cheek/Touch Positon

Antenna Out

Extended Battery

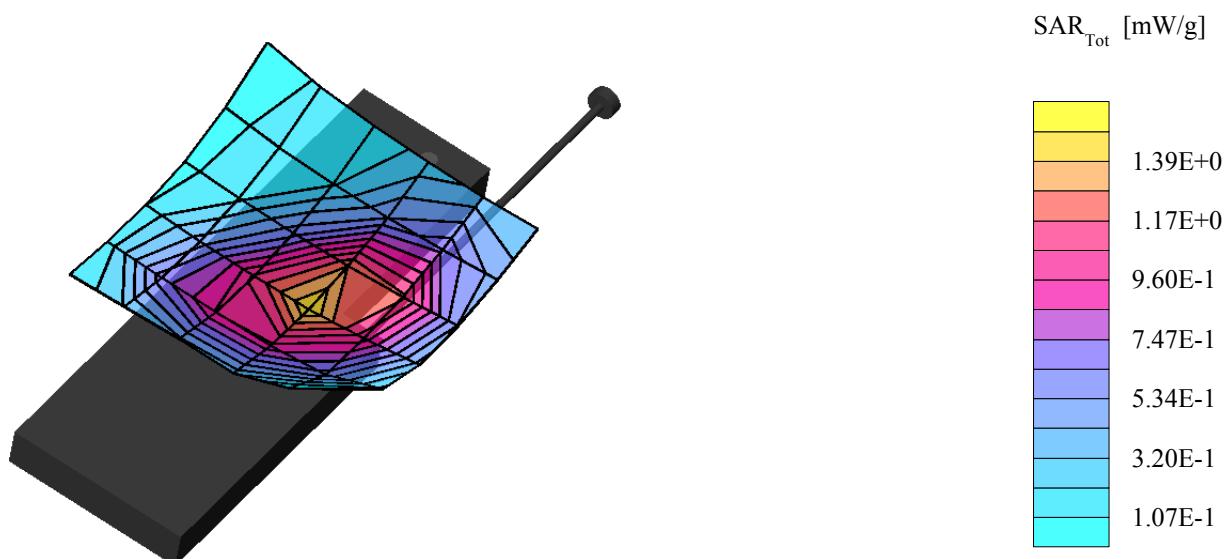
Withus Model: WCE-210

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.16 dB

SAR (1g): 0.218 mW/g, SAR (10g): 0.156 mW/g

Head SAR - Left Ear/Tilt Position

Antenna In

Standard Battery

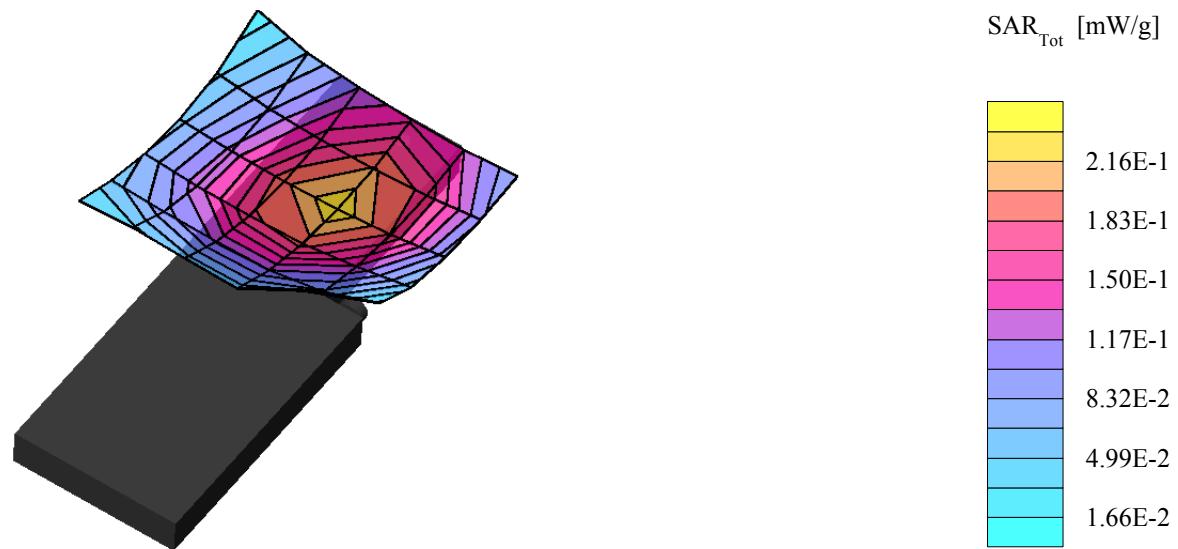
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.10 dB

SAR (1g): 0.421 mW/g, SAR (10g): 0.302 mW/g

Head SAR - Left Ear/Tilt Position

Antenna Out

Standard Battery

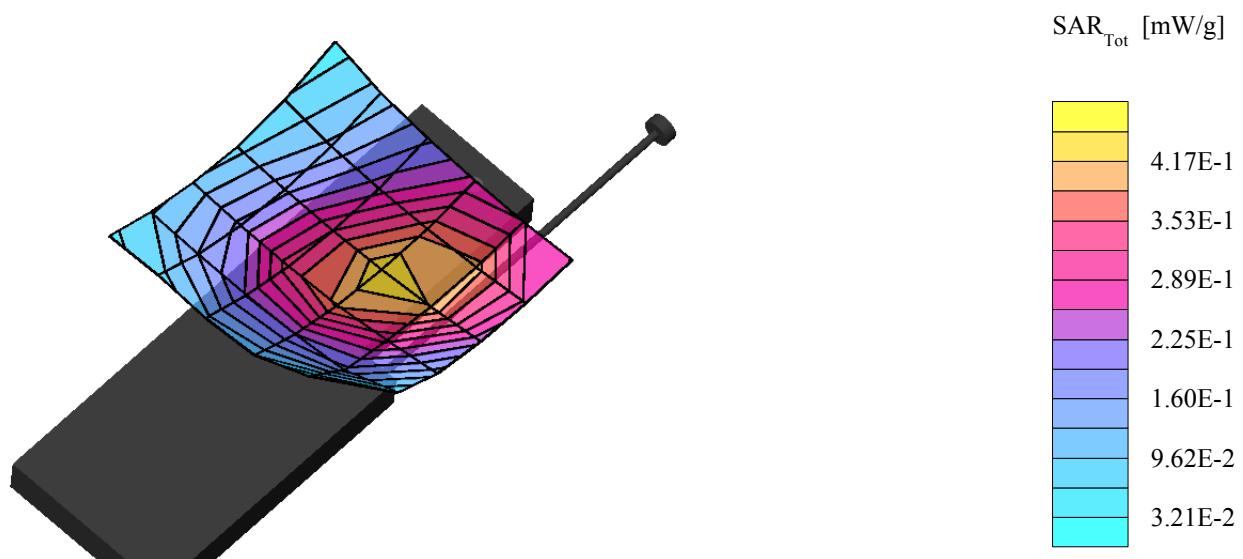
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



**HEAD SAR TEST PLOTS - AMPS MODE - RIGHT EAR**

## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.02 dB

SAR (1g): 0.853 mW/g, SAR (10g): 0.567 mW/g

Head SAR - Right Cheek/Touch Position

Antenna In

Withus Model: WCE-210

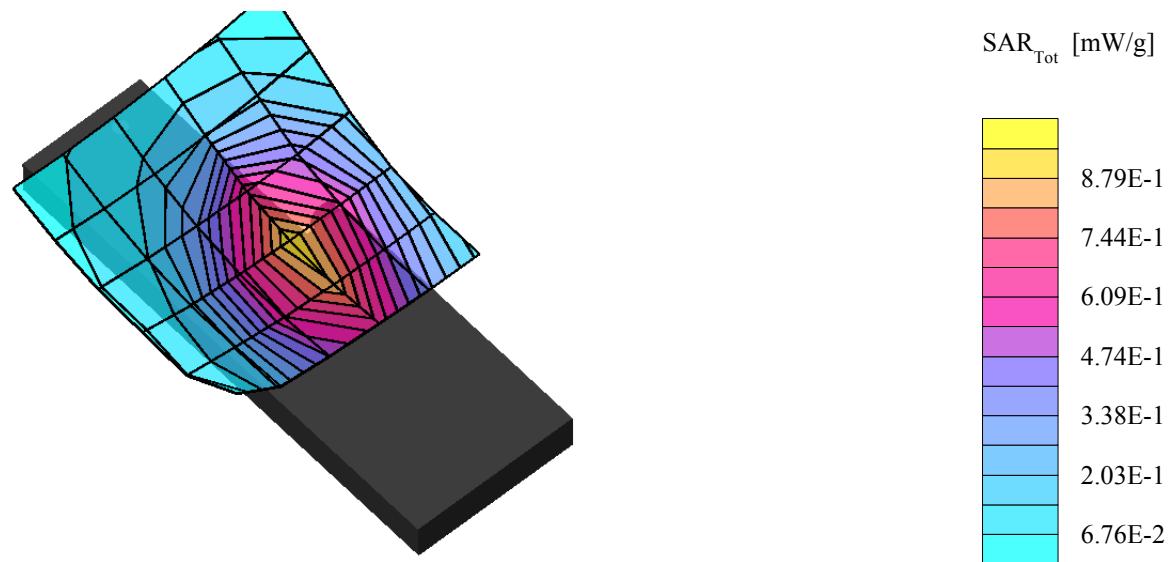
Standard Battery

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.14 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.18 dB  
SAR (1g): 1.40 mW/g, SAR (10g): 0.896 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

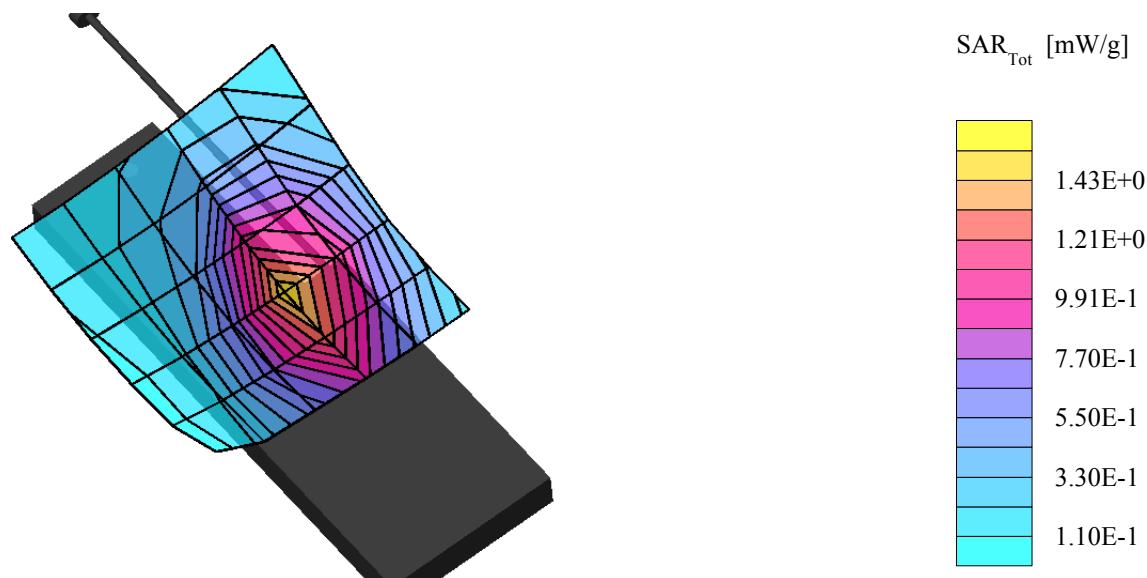
Standard Battery

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.20 dB  
SAR (1g): 1.36 mW/g, SAR (10g): 0.870 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

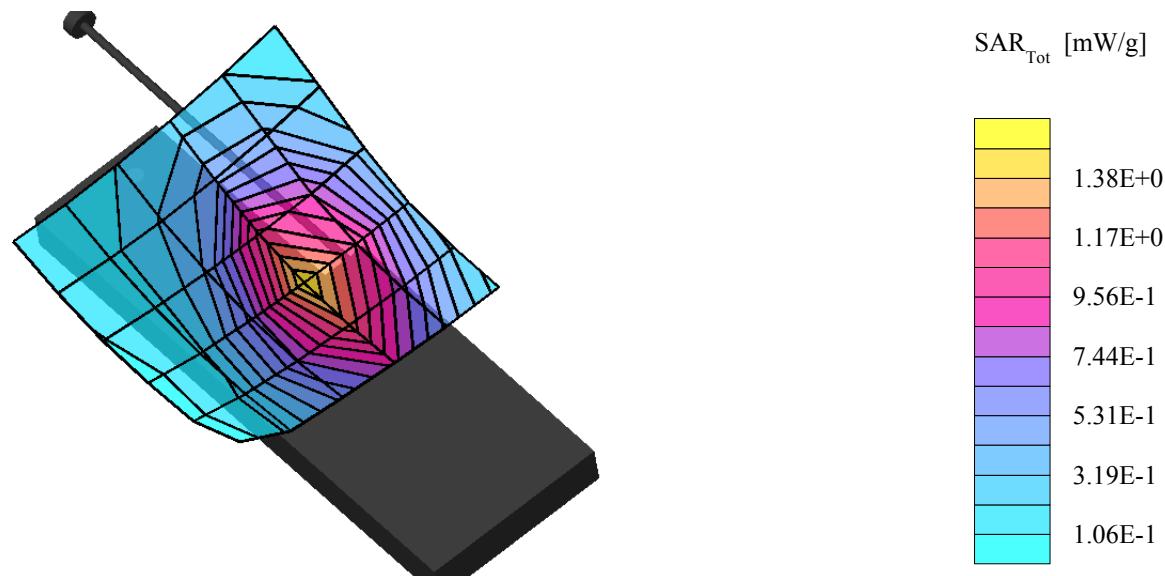
Extended Battery

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: 0.08 dB  
SAR (1g): 0.848 mW/g, SAR (10g): 0.555 mW/g

Head SAR - Right Cheek/Touch Position

Antenna In

Withus Model: WCE-210

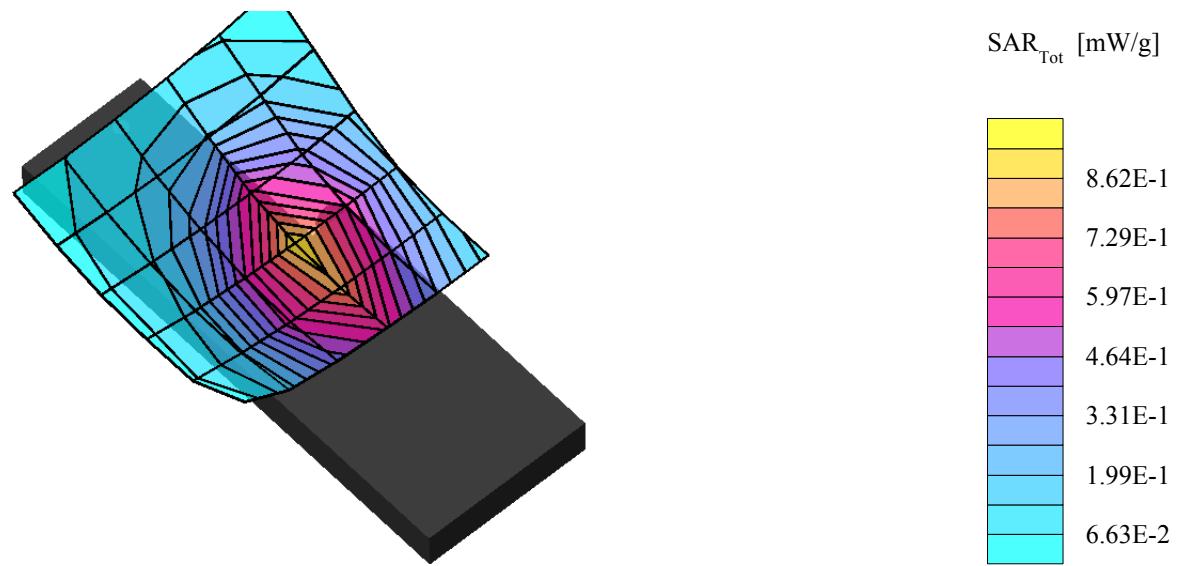
Standard Battery

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.11 dB  
SAR (1g): 1.45 mW/g, SAR (10g): 0.920 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

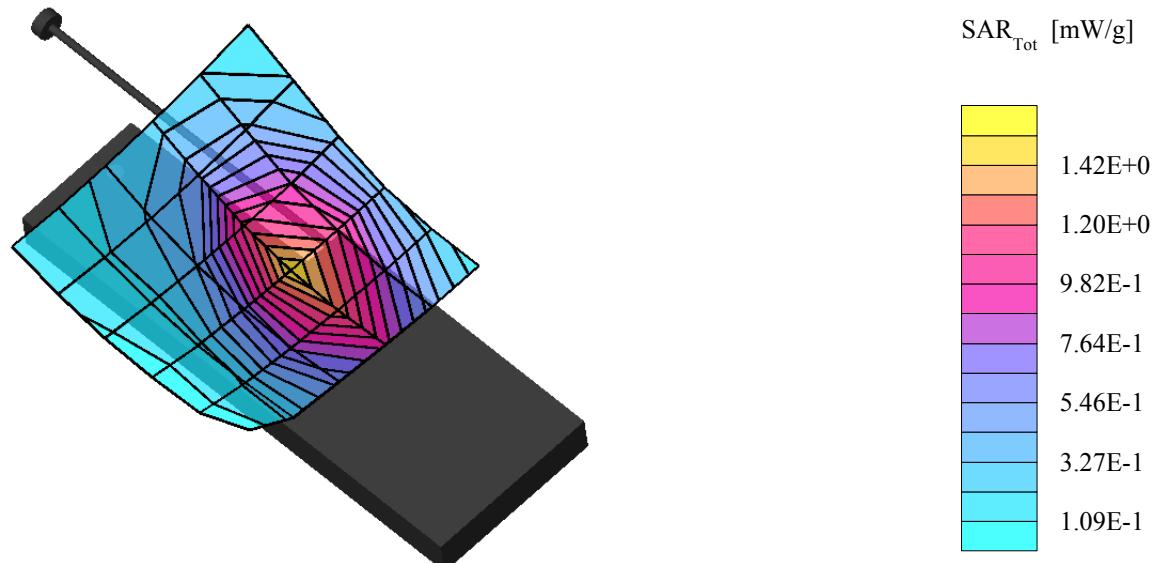
Standard Battery

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



**Withus IT Co. Ltd. FCC ID: POQWCE-210**

SAM Phantom; Right Cheek Section

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91); Crest factor: 1.0;  
835 MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_f = 41.0$   $\rho = 1.00$  g/cm<sup>3</sup>

**Z-Axis Extrapolation at Peak SAR Location**

Head SAR - Right Cheek/Touch Position  
Antenna Out

Standard Battery

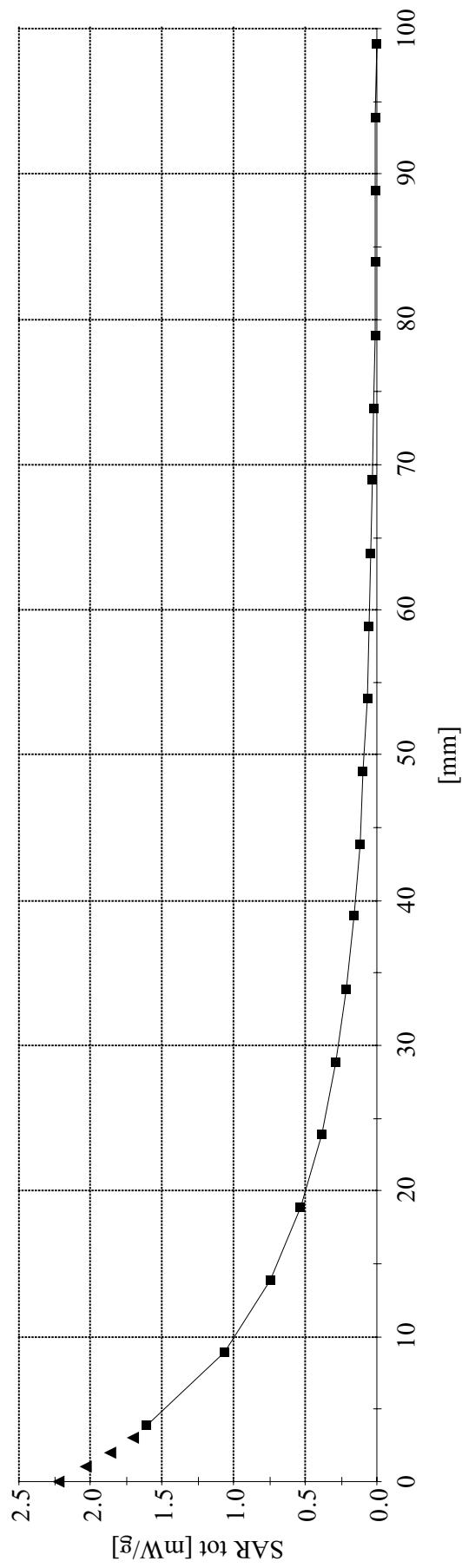
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.09 dB

SAR (1g): 1.45 mW/g, SAR (10g): 0.923 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

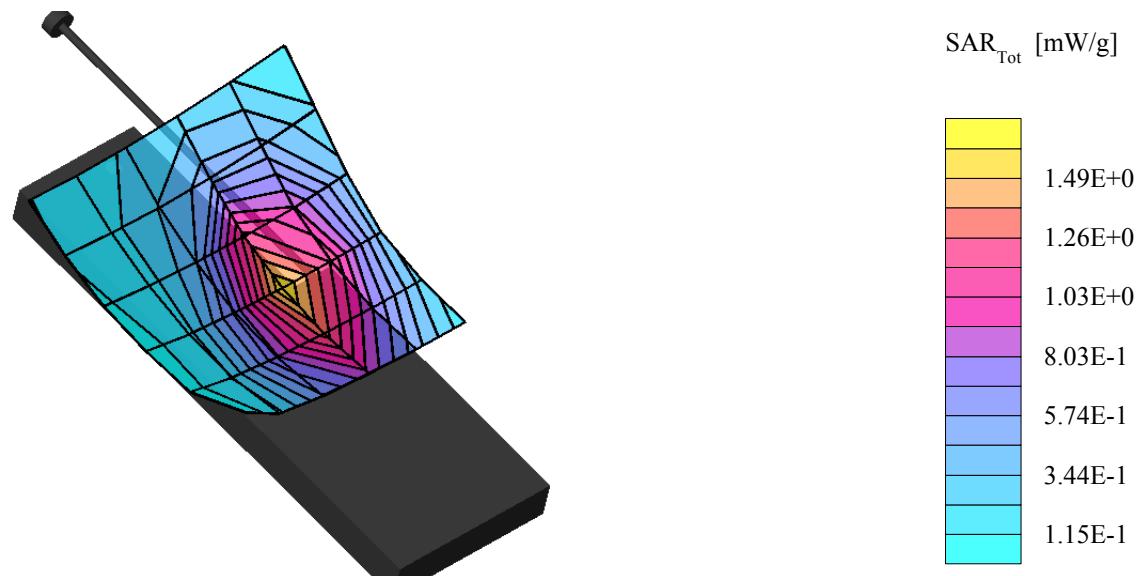
Extended Battery

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



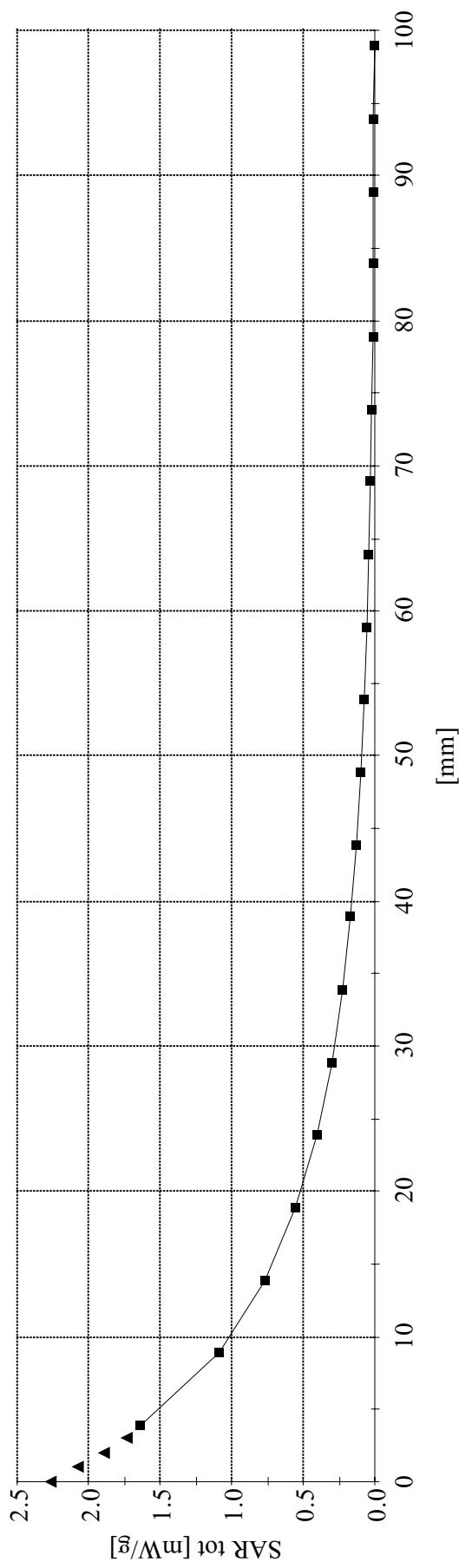
**Withus IT Co. Ltd. FCC ID: POQWCE-210**

SAM Phantom; Right Cheek Section

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0;  
835 MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_f = 41.0$   $\rho = 1.00$  g/cm<sup>3</sup>

**Z-Axis Extrapolation at Peak SAR Location**

Head SAR - Right Cheek/Touch Position  
Antenna Out  
Extended Battery  
Withus Model: WCE-210  
AMPS Mode  
Channel 383 [836.49 MHz]  
Conducted Power: 26.10 dBm  
Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.15 dB  
SAR (1g): 1.10 mW/g, SAR (10g): 0.699 mW/g

Head SAR - Right Cheek/Touch Position

Antenna In

Standard Battery

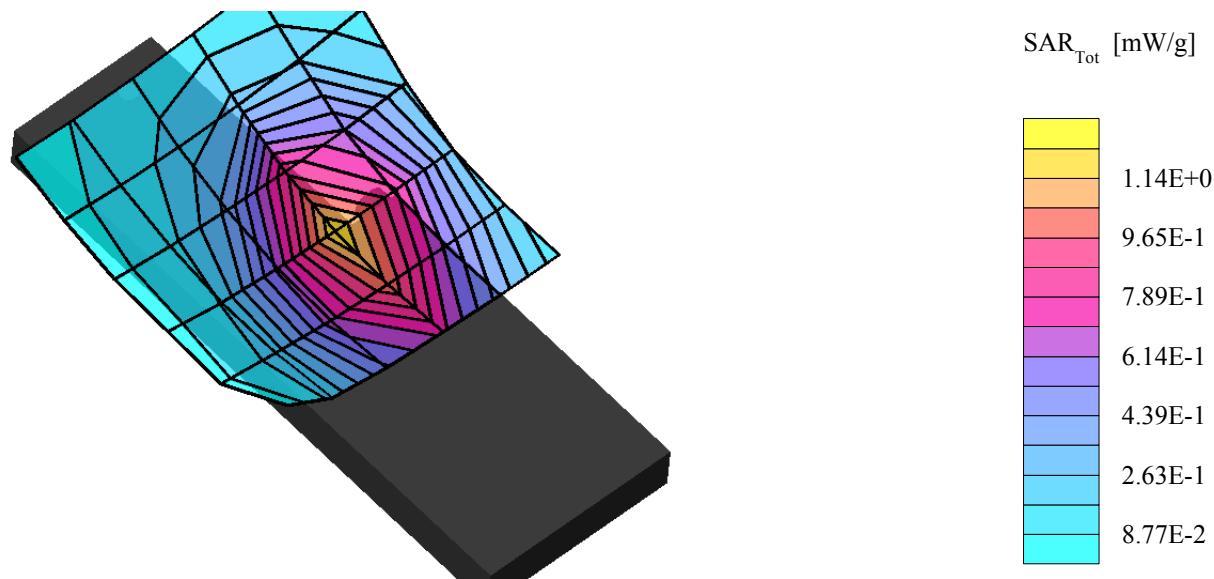
Withus Model: WCE-210

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.12 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.19 dB  
SAR (1g): 1.44 mW/g, SAR (10g): 0.916 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Standard Battery

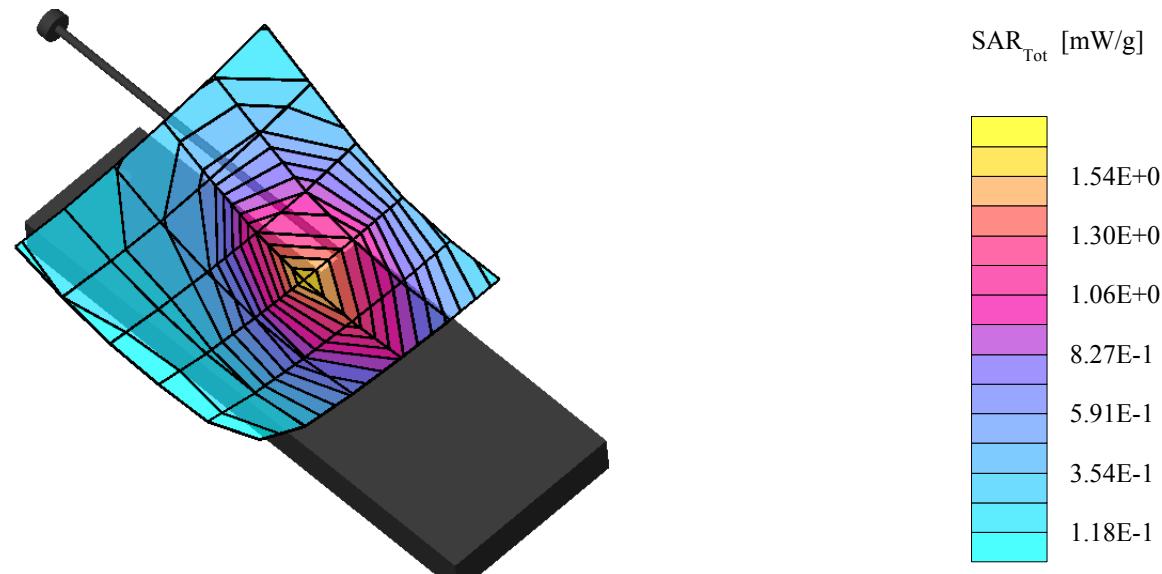
Withus Model: WCE-210

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.15 dB  
SAR (1g): 1.41 mW/g, SAR (10g): 0.896 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

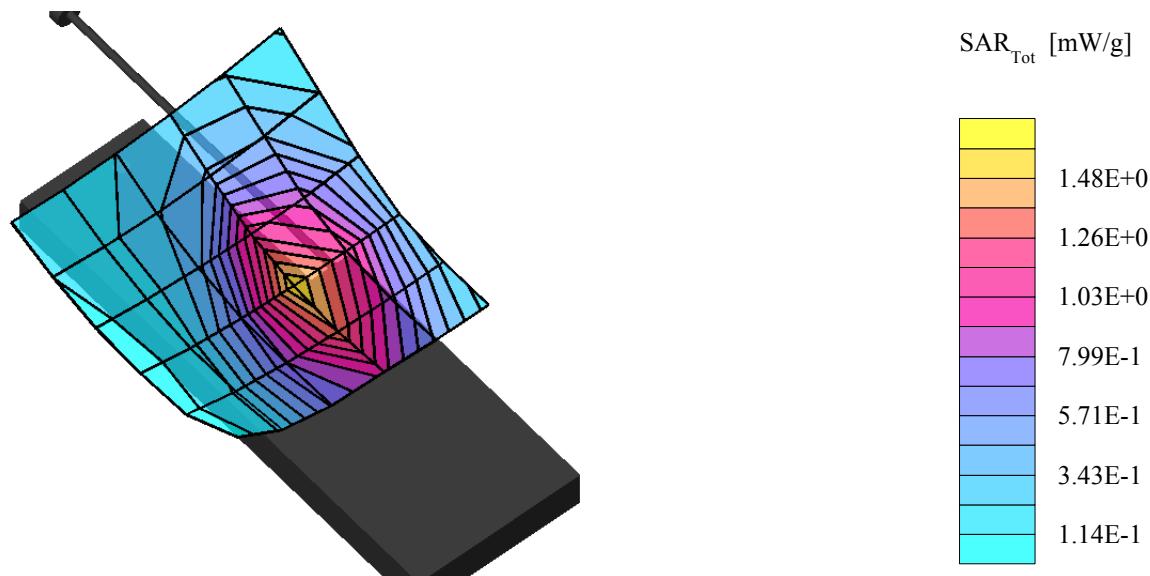
Extended Battery

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (80°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.12 dB

SAR (1g): 0.152 mW/g, SAR (10g): 0.108 mW/g

Head SAR - Right Ear/Tilt Position

Antenna In

Standard Battery

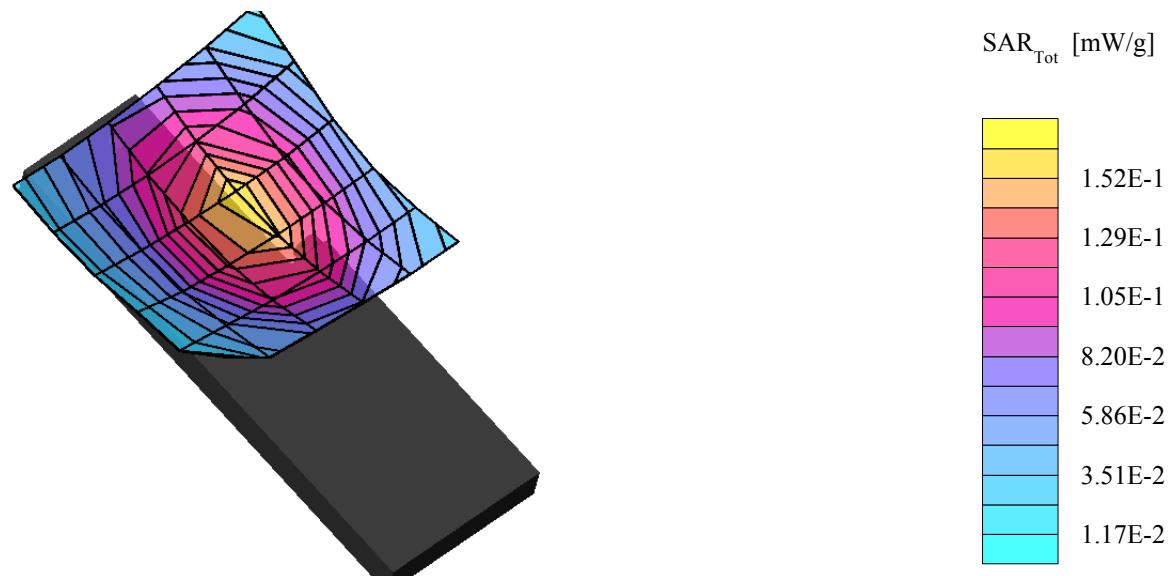
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (80°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.0$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.03 dB  
SAR (1g): 0.487 mW/g, SAR (10g): 0.345 mW/g

Head SAR - Right Ear/Tilt Position

Antenna Out

Standard Battery

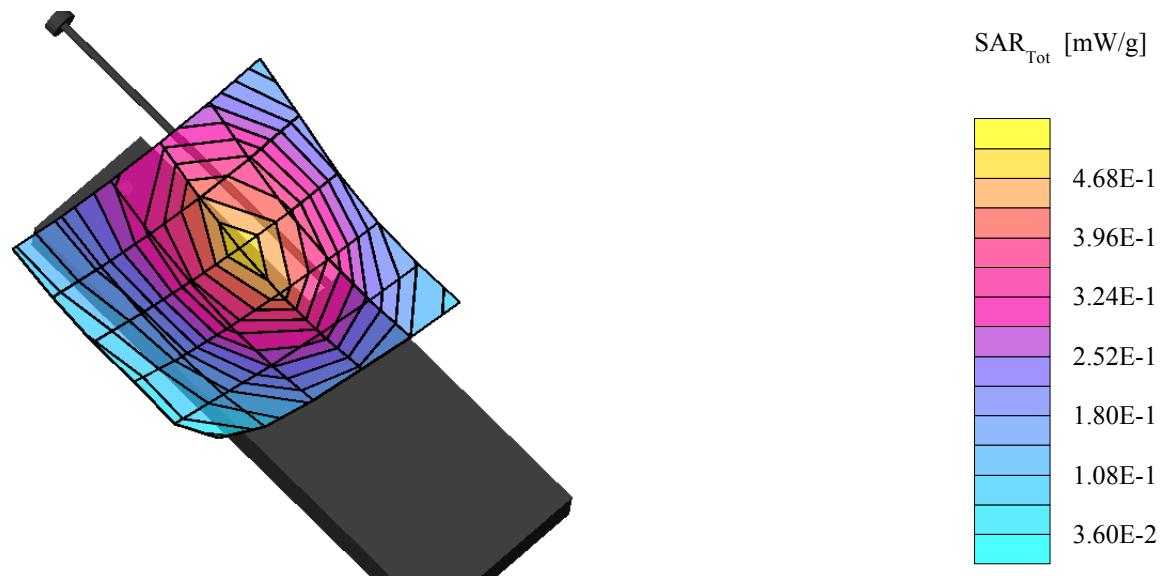
Withus Model: WCE-210

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 16, 2002



**HEAD SAR TEST PLOTS - CDMA MODE - LEFT EAR**

## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.05 dB

SAR (1g): 0.644 mW/g, SAR (10g): 0.437 mW/g

Head SAR - Left Cheek/Touch Position

Antenna In

Standard Battery

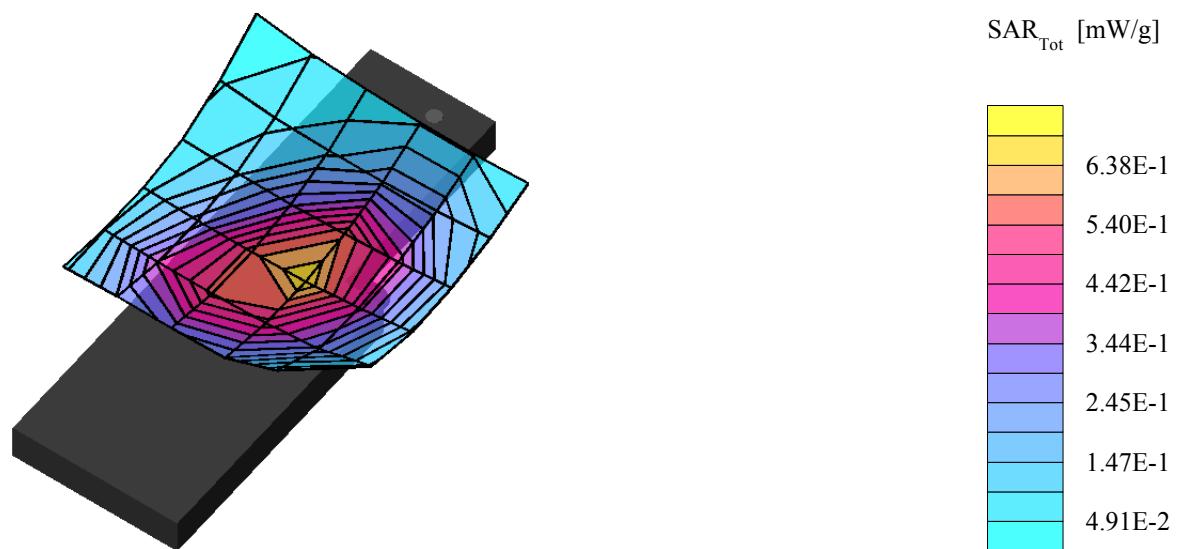
Withus Model: WCE-210

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.13 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.02 dB

SAR (1g): 1.14 mW/g, SAR (10g): 0.758 mW/g

Head SAR - Left Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

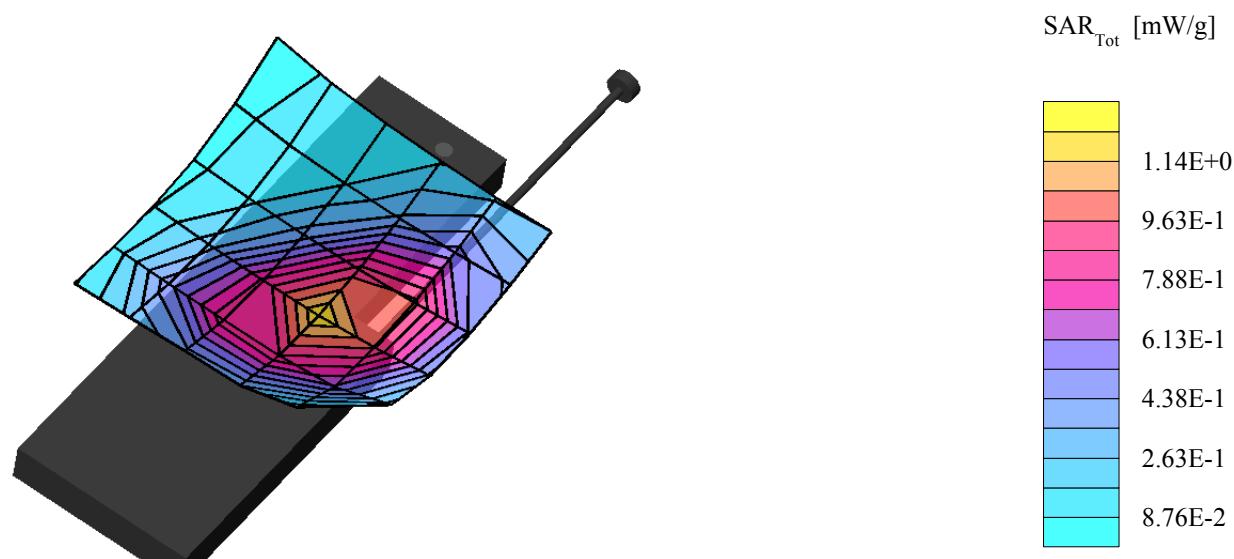
Standard Battery

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.04 dB

SAR (1g): 1.10 mW/g, SAR (10g): 0.732 mW/g

Head SAR - Left Cheek/Touch Position

Antenna Out

Extended Battery

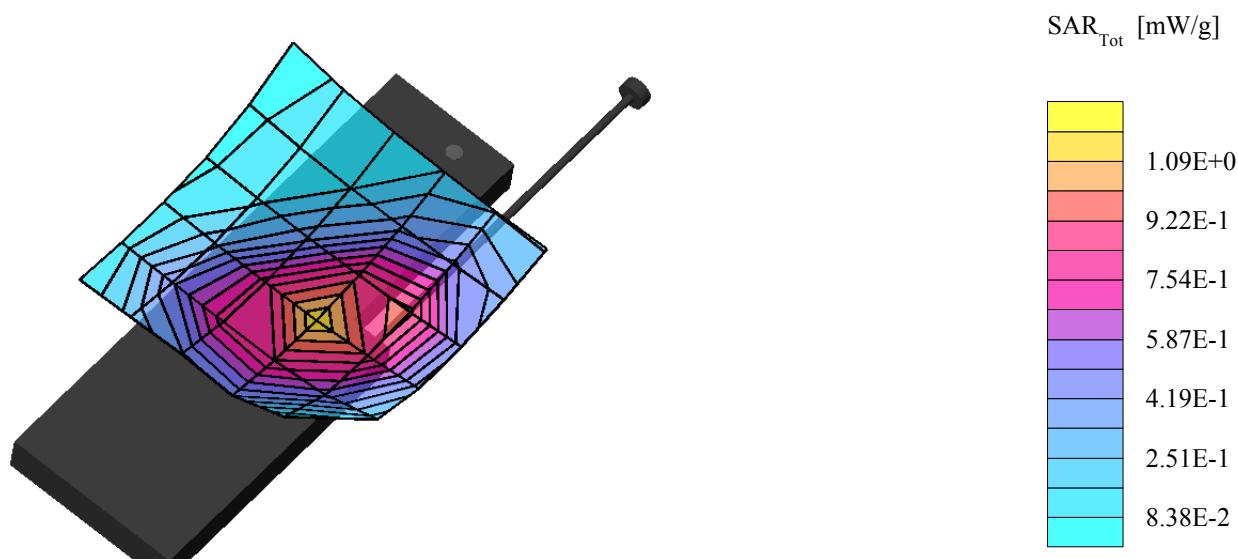
Withus Model: WCE-210

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.16 dB

SAR (1g): 0.663 mW/g, SAR (10g): 0.443 mW/g

Head SAR - Left Cheek/Touch Position

Antenna In

Standard Battery

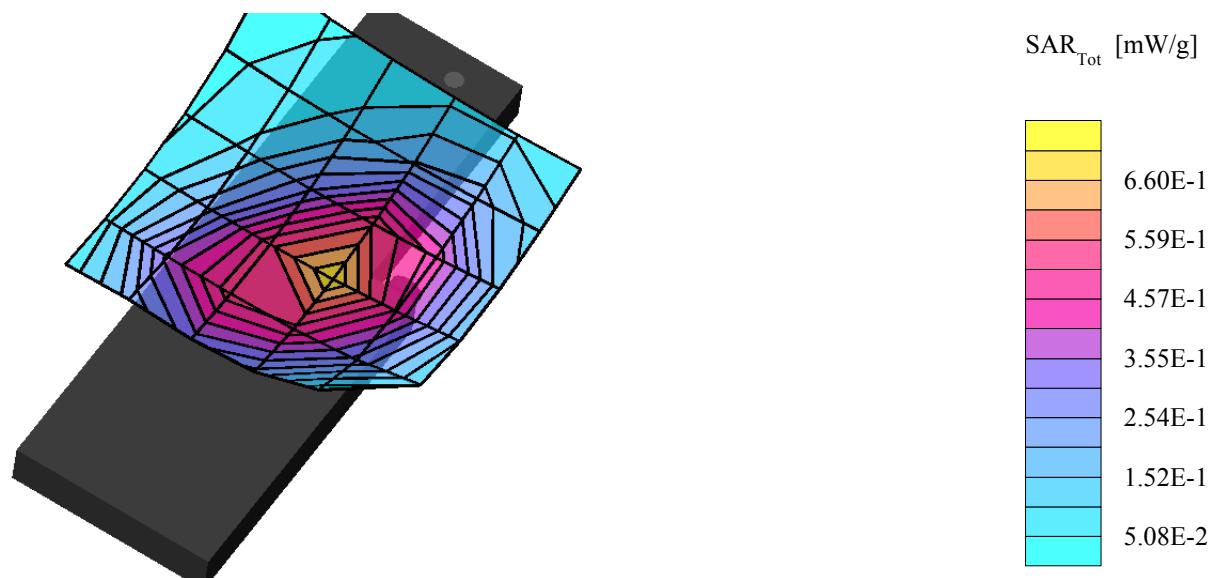
Withus Model: WCE-210

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.13 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.13 dB

SAR (1g): 1.21 mW/g, SAR (10g): 0.797 mW/g

Head SAR - Left Cheek/Touch Position

Antenna Out

Standard Battery

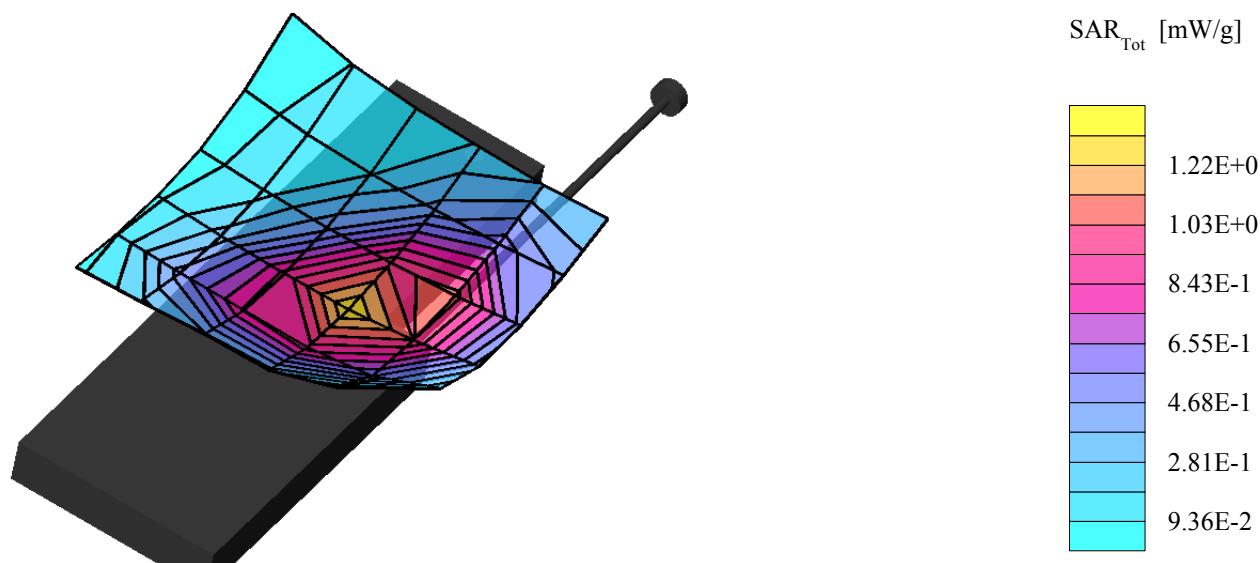
Withus Model: WCE-210

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.14 dB

SAR (1g): 1.09 mW/g, SAR (10g): 0.717 mW/g

Head SAR - Left Cheek/Touch Position

Antenna Out

Extended Battery

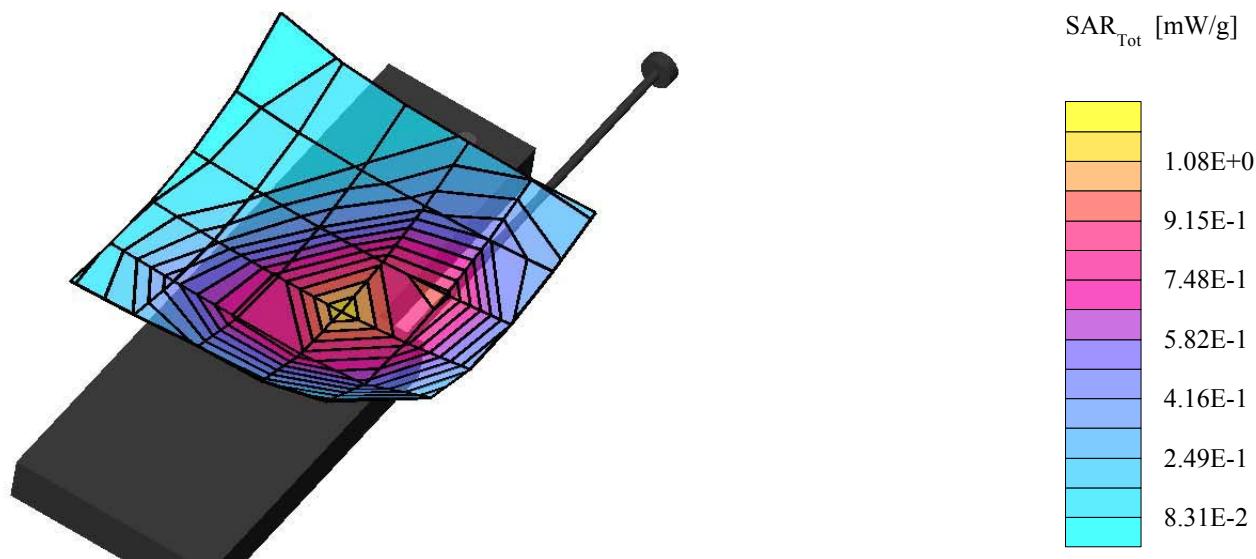
Withus Model: WCE-210

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.15 dB

SAR (1g): 0.928 mW/g, SAR (10g): 0.612 mW/g

Head SAR - Left Cheek/Touch Position

Antenna In

Withus Model: WCE-210

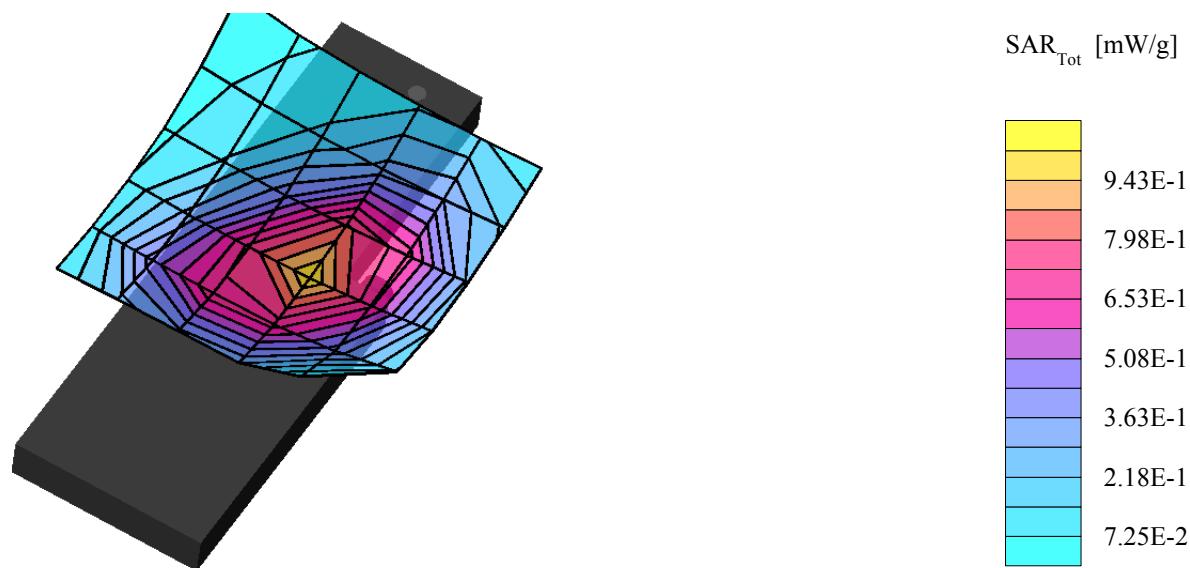
Standard Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.10 dB

SAR (1g): 1.34 mW/g, SAR (10g): 0.880 mW/g

Head SAR - Left Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

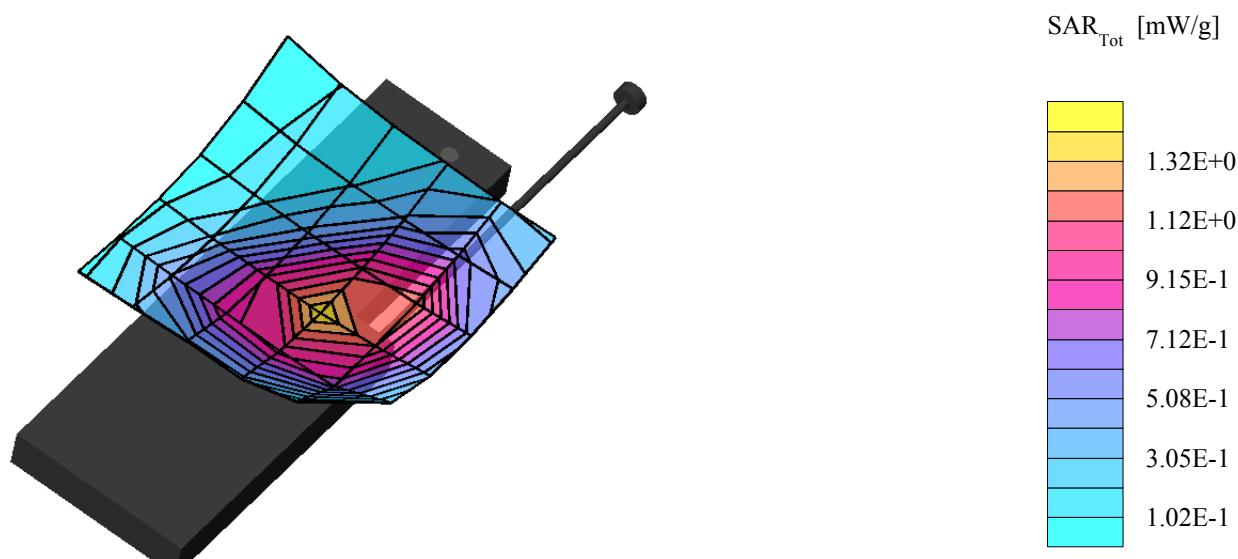
Standard Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.13 dBm

Date Tested: January 17, 2002



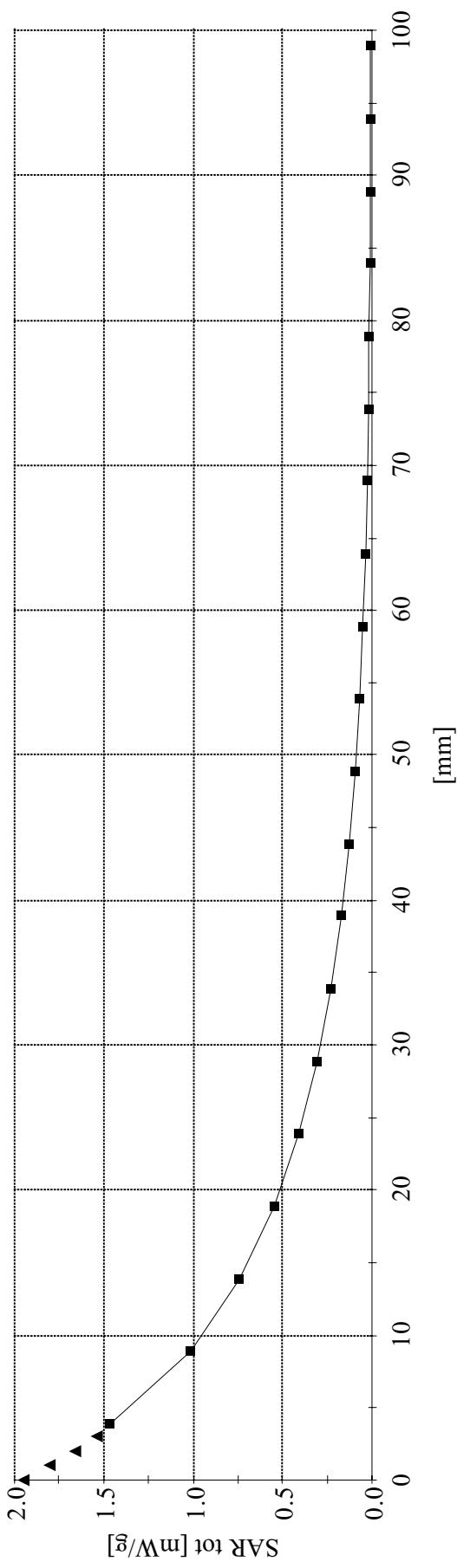
**Withus IT Co. Ltd. FCC ID: POQWCE-210**

SAM Phantom; Left Cheek Section

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91); Crest factor: 1.0;  
835 MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_f = 41.2$   $\rho = 1.00$  g/cm<sup>3</sup>

**Z-Axis Extrapolation at Peak SAR Location**

Head SAR - Left Cheek/Touch Position  
Antenna Out  
Standard Battery  
Withus Model: WCE-210  
CDMA Mode  
Channel 777 [848.31 MHz]  
Conducted Power: 25.13 dBm  
Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (65°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.18 dB

SAR (1g): 1.22 mW/g, SAR (10g): 0.798 mW/g

Head SAR - Left Cheek/Touch Position

Antenna Out

Extended Battery

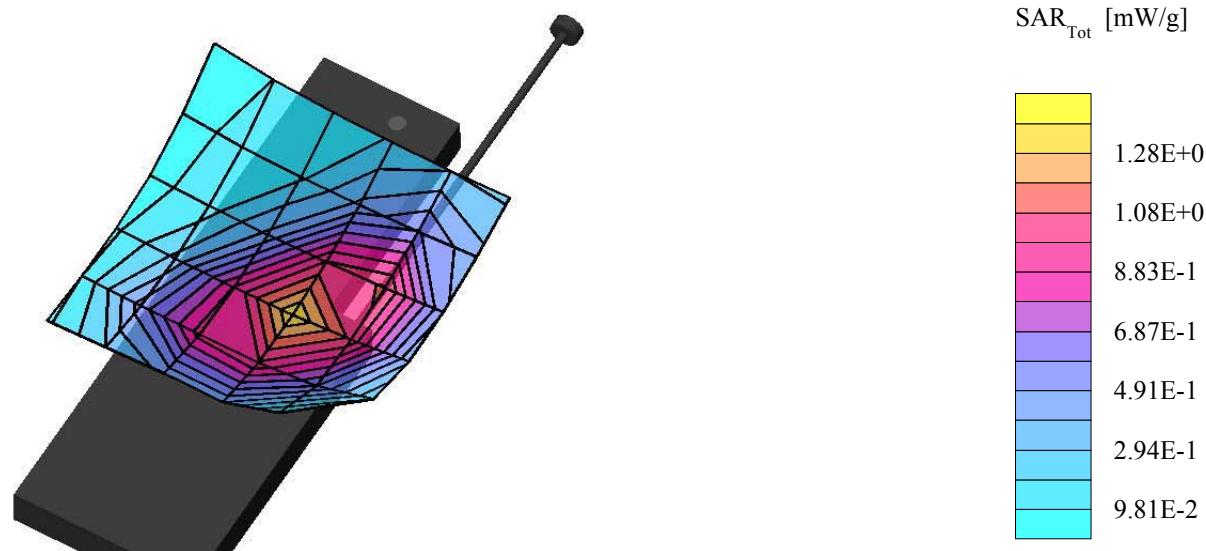
Withus Model: WCE-210

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (80°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.20 dB

SAR (1g): 0.172 mW/g, SAR (10g): 0.125 mW/g

Head SAR - Left Ear/Tilt Position

Antenna In

Standard Battery

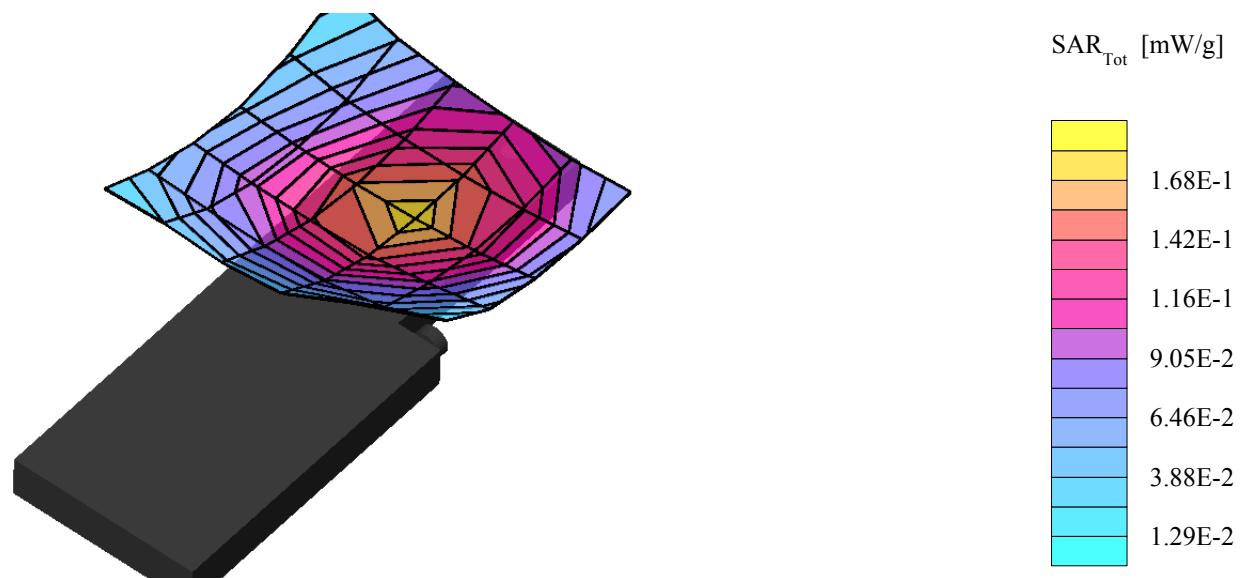
Withus Model: WCE-210

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Left Cheek Section; Position: (80°,180°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.07 dB

SAR (1g): 0.383 mW/g, SAR (10g): 0.269 mW/g

Head SAR - Left Ear/Tilt Position

Antenna Out

Standard Battery

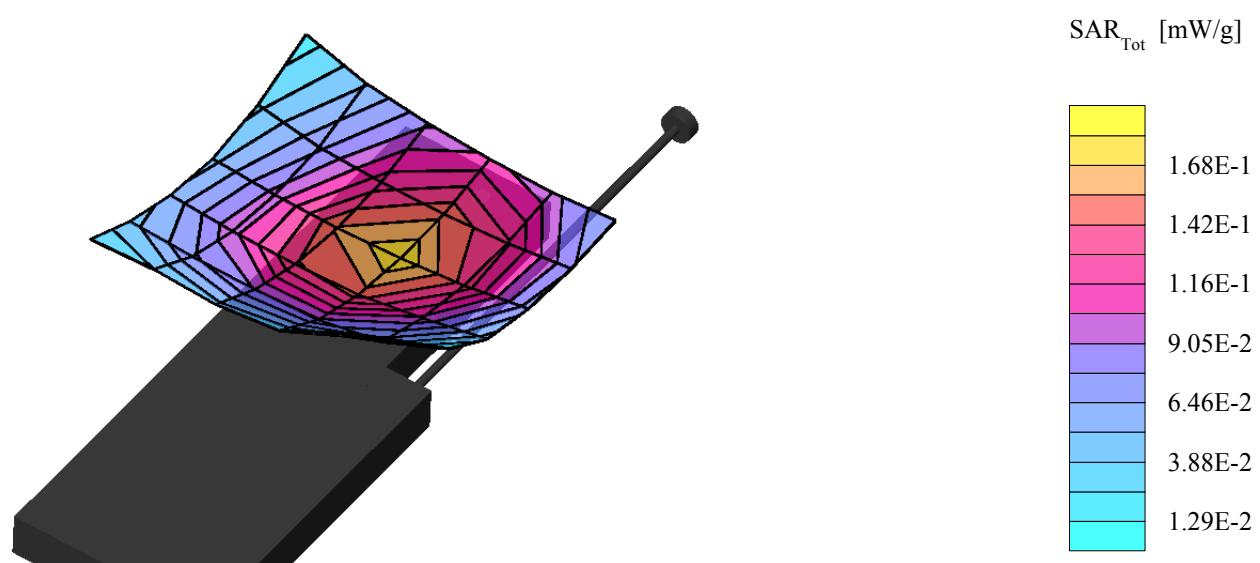
Withus Model: WCE-210

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



**HEAD SAR TEST PLOTS - CDMA MODE - RIGHT EAR**

## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.00 dB

SAR (1g): 0.719 mW/g, SAR (10g): 0.478 mW/g

Head SAR - Right Cheek/Touch Position

Antenna In

Withus Model: WCE-210

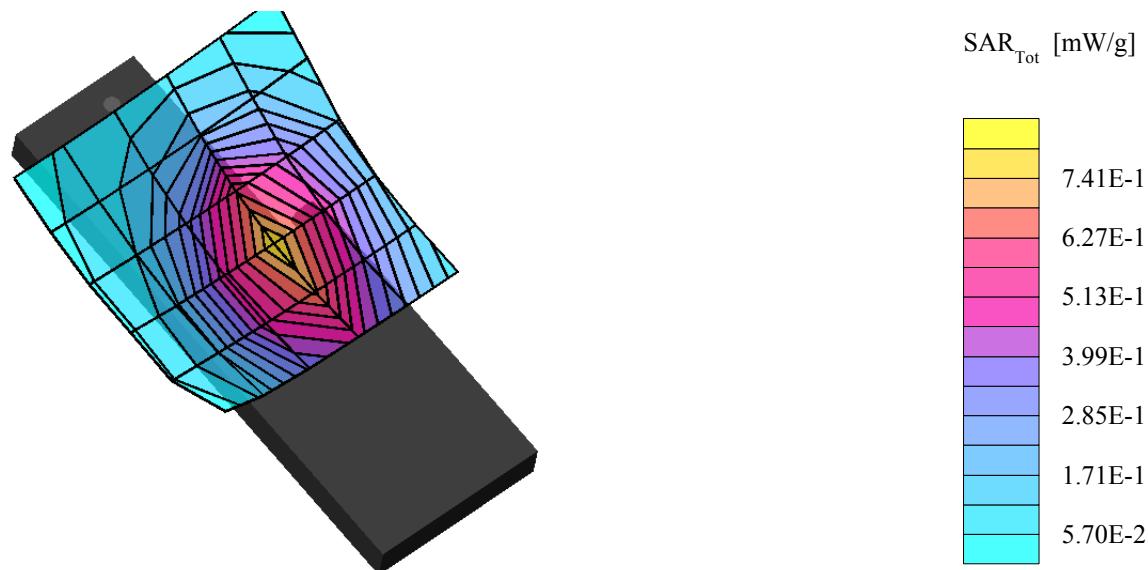
Standard Battery

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.02 dB

SAR (1g): 1.22 mW/g, SAR (10g): 0.771 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

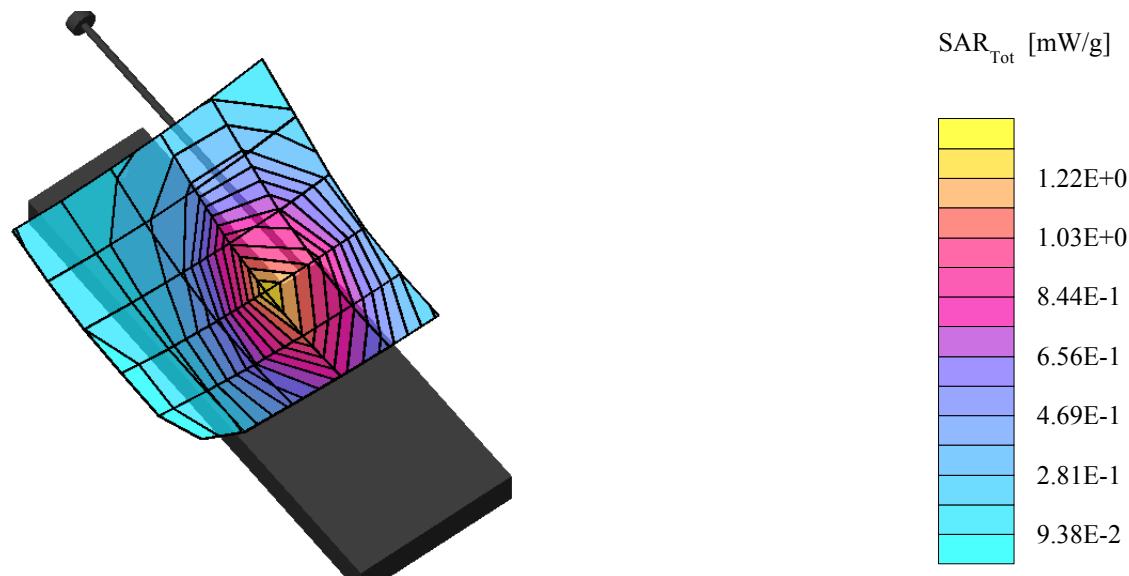
Standard Battery

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.09 dB

SAR (1g): 1.15 mW/g, SAR (10g): 0.737 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

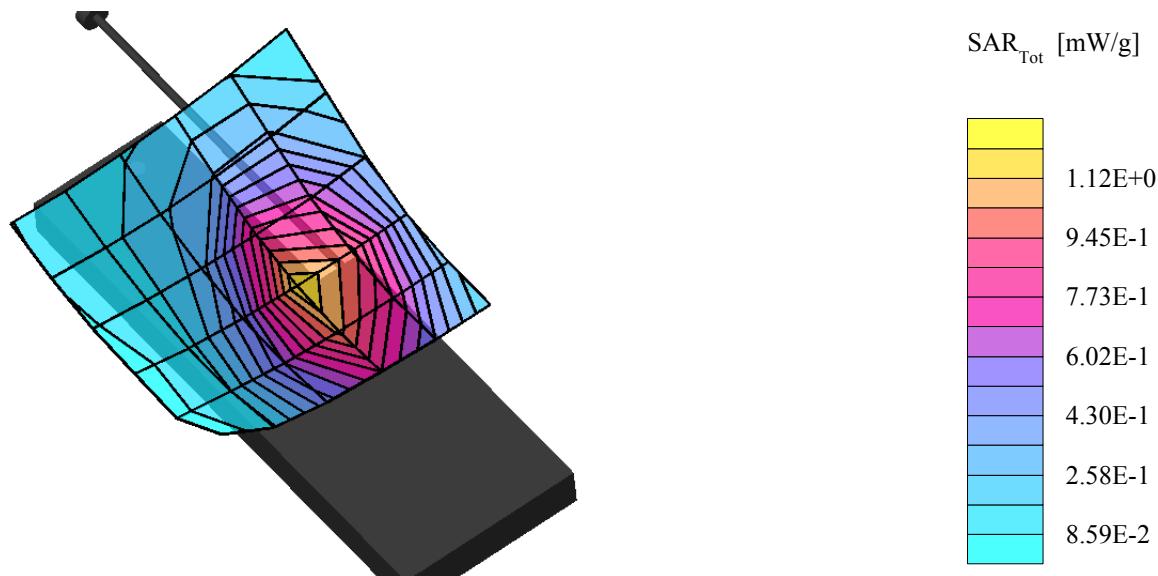
Extended Battery

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.15 dB

SAR (1g): 0.683 mW/g, SAR (10g): 0.448 mW/g

Head SAR - Right Cheek/Touch Position

Antenna In

Withus Model: WCE-210

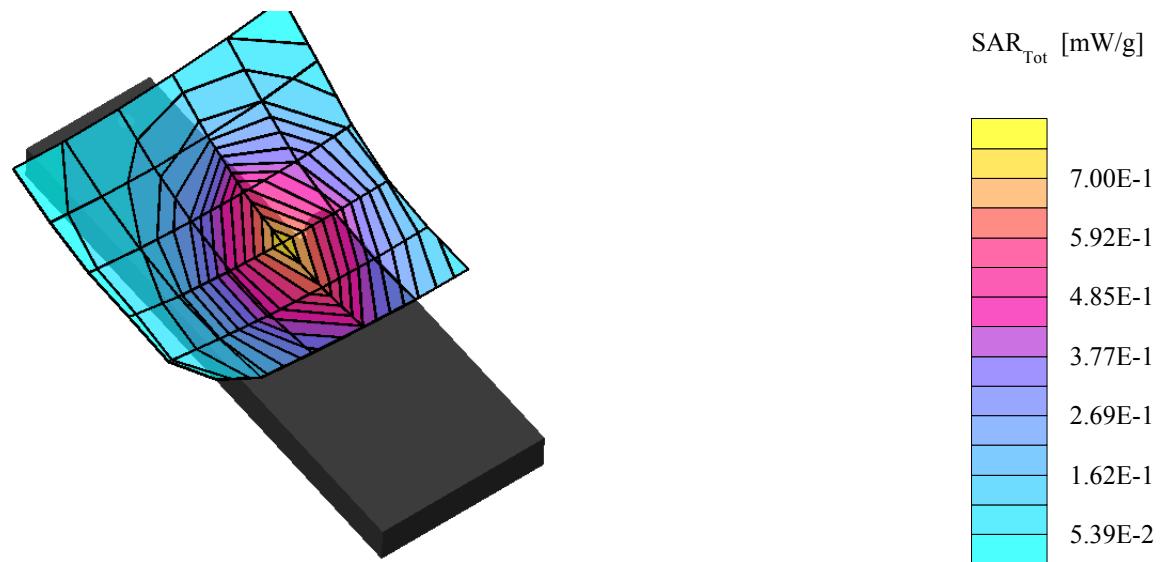
Standard Battery

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.18 dB

SAR (1g): 1.16 mW/g, SAR (10g): 0.739 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

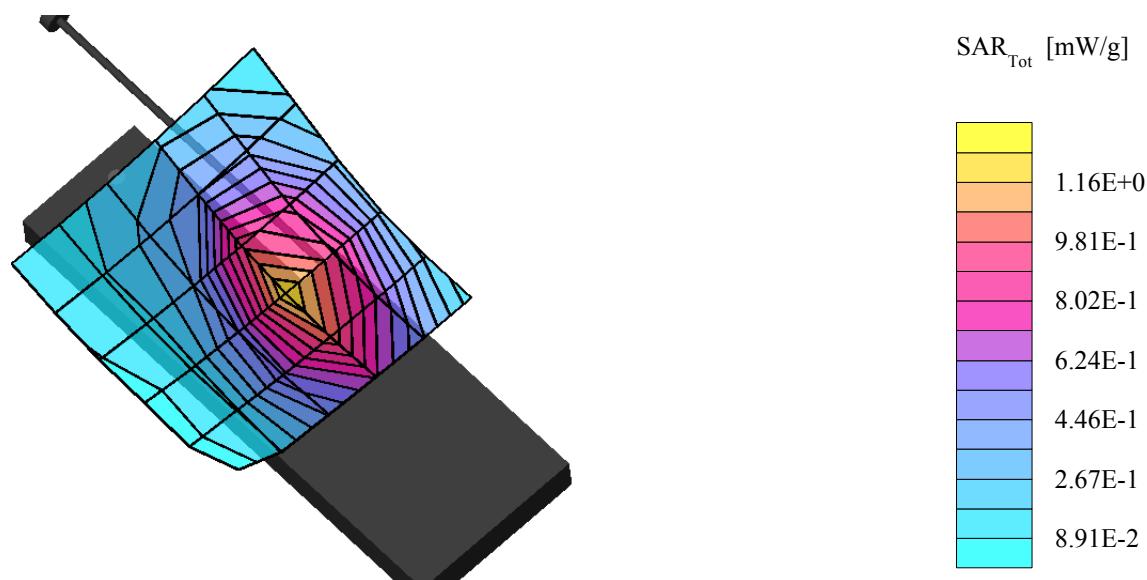
Standard Battery

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.12 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.08 dB

SAR (1g): 1.21 mW/g, SAR (10g): 0.771 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

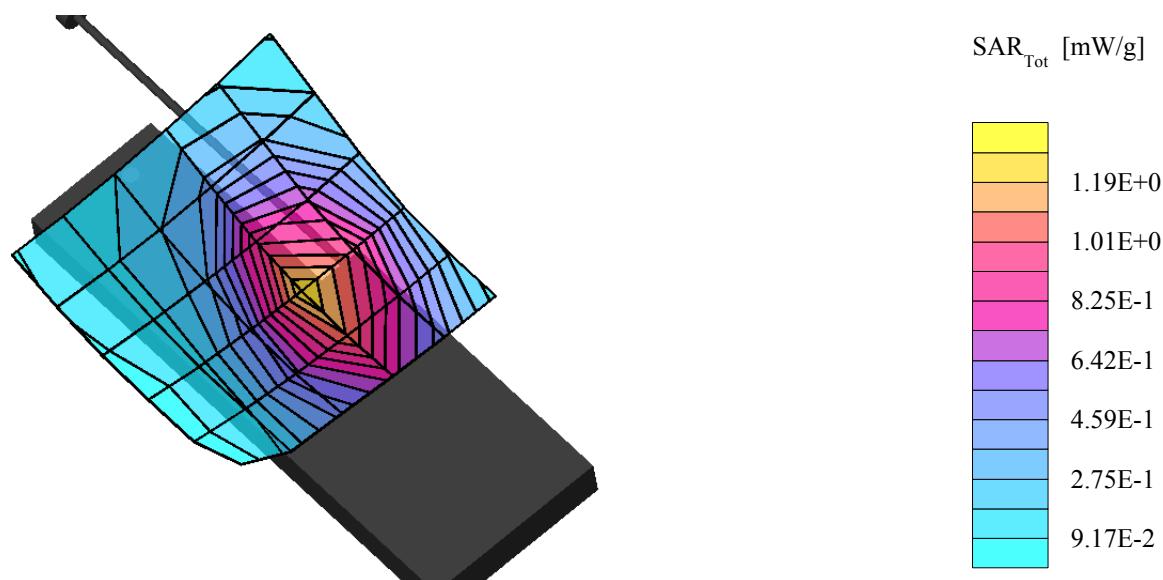
Extended Battery

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)  
Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0  
835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$   
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0  
Cube 5x5x7; Powerdrift: -0.20 dB  
SAR (1g): 0.917 mW/g, SAR (10g): 0.584 mW/g

Head SAR - Right Cheek/Touch Position

Antenna In

Withus Model: WCE-210

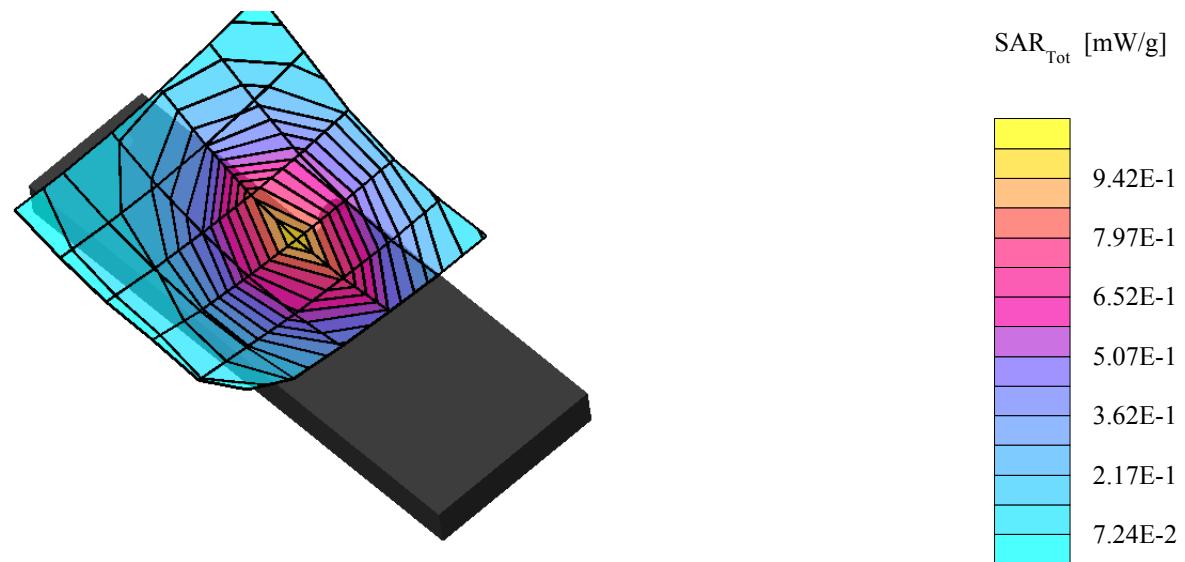
Standard Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.15 dB

SAR (1g): 1.35 mW/g, SAR (10g): 0.848 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

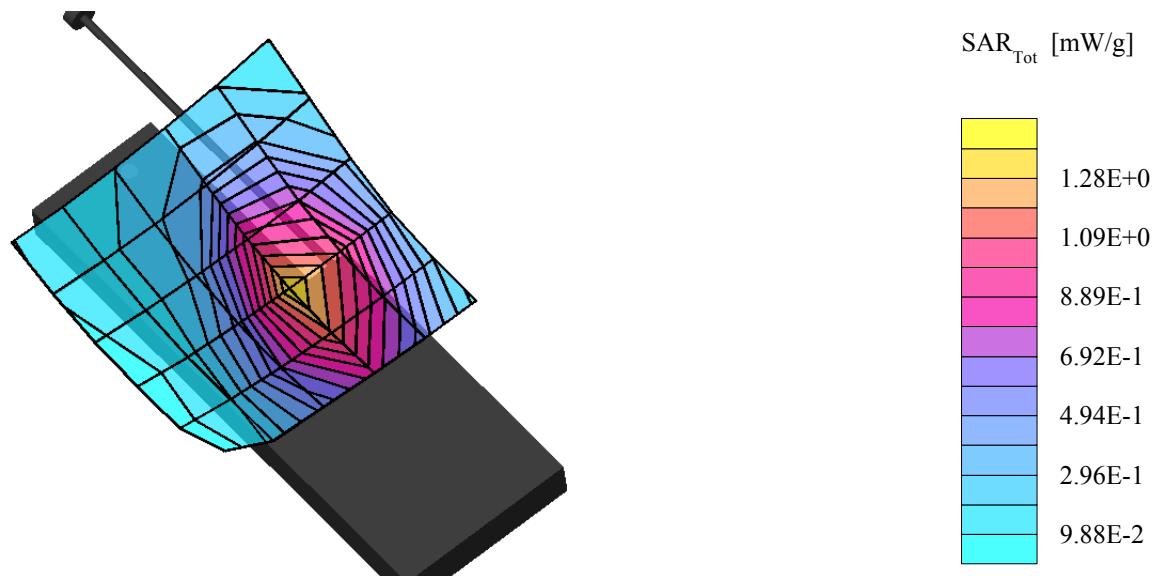
Standard Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



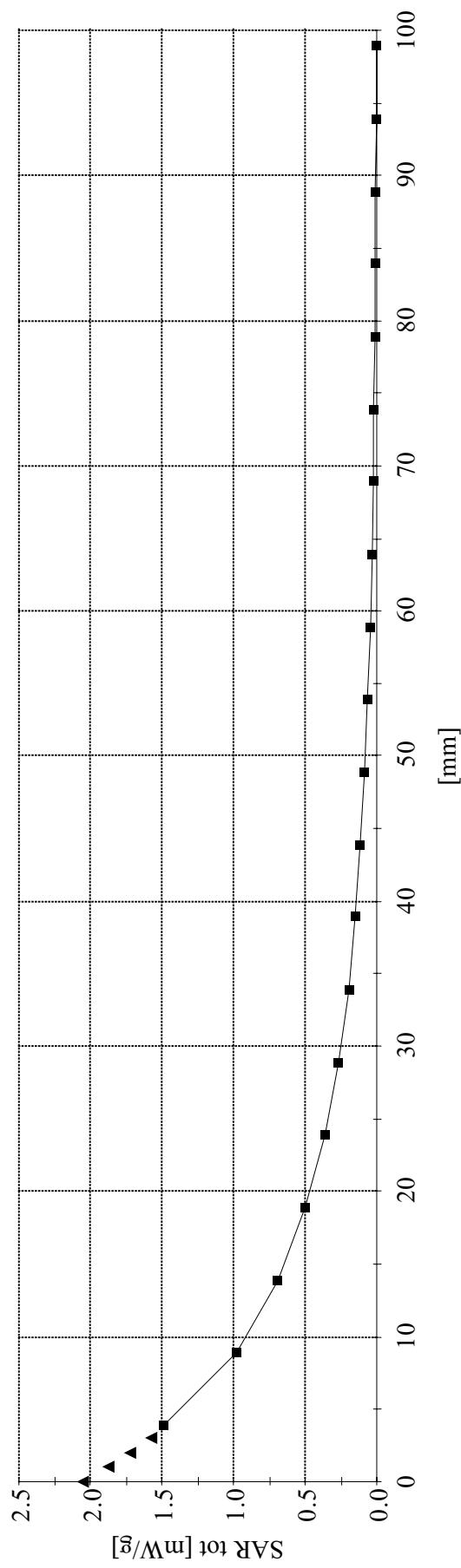
**Withus IT Co. Ltd. FCC ID: POQWCE-210**

SAM Phantom; Right Cheek Section

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0;  
835 MHz Brain:  $\sigma = 0.90$  mho/m  $\epsilon_f = 41.2$   $\rho = 1.00$  g/cm<sup>3</sup>

**Z-Axis Extrapolation at Peak SAR Location**

Head SAR - Right Cheek/Touch Position  
Antenna Out  
Standard Battery  
Withus Model: WCE-210  
CDMA Mode  
Channel 777 [848.31 MHz]  
Conducted Power: 25.10 dBm  
Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (65°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.12 dB

SAR (1g): 1.32 mW/g, SAR (10g): 0.835 mW/g

Head SAR - Right Cheek/Touch Position

Antenna Out

Withus Model: WCE-210

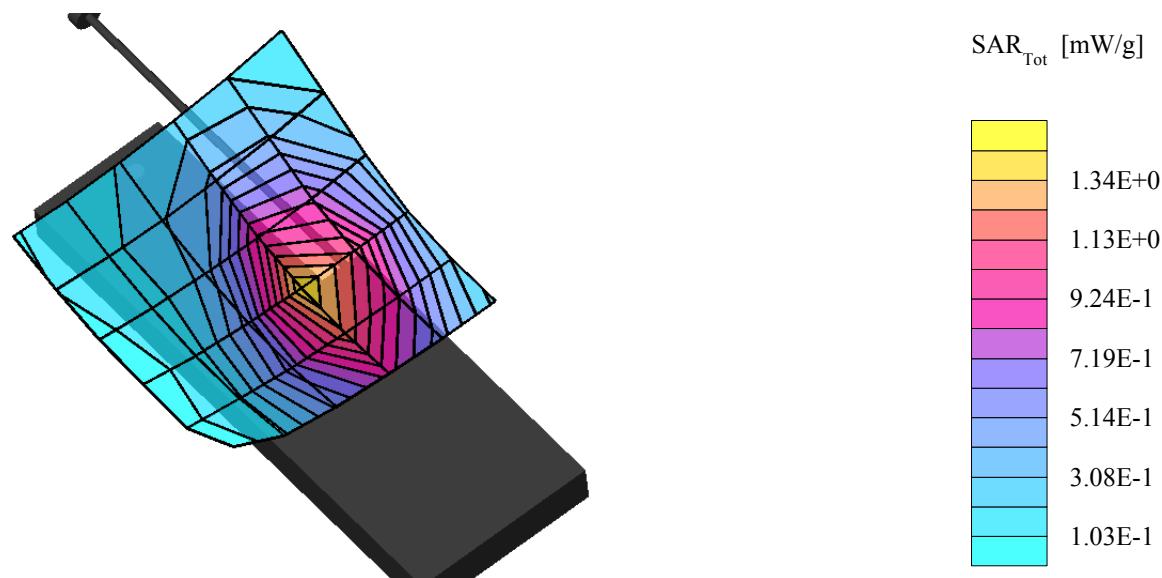
Extended Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.11 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (80°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.10 dB

SAR (1g): 0.137 mW/g, SAR (10g): 0.0969 mW/g

Head SAR - Right Ear/Tilt Position

Antenna In

Withus Model: WCE-210

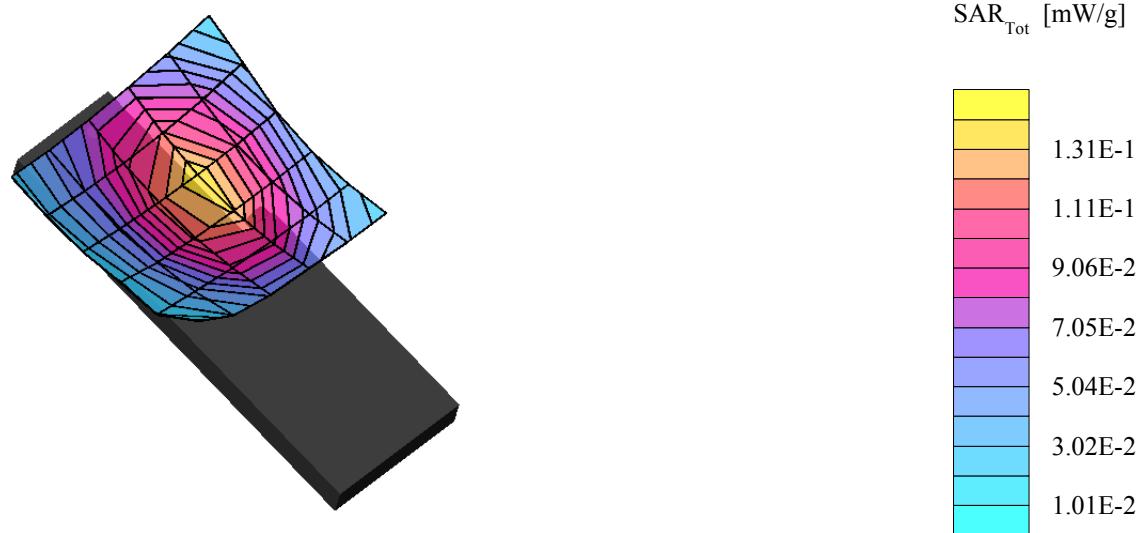
Standard Battery

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.14 dBm

Date Tested: January 17, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Right Cheek Section; Position: (80°,230°)

Probe: ET3DV6 - SN1590; ConvF(6.91,6.91,6.91); Crest factor: 1.0

835 MHz Brain:  $\sigma = 0.90 \text{ mho/m}$   $\epsilon_r = 41.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.06 dB

SAR (1g): 0.373 mW/g, SAR (10g): 0.264 mW/g

Head SAR - Right Ear/Tilt Position

Antenna Out

Withus Model: WCE-210

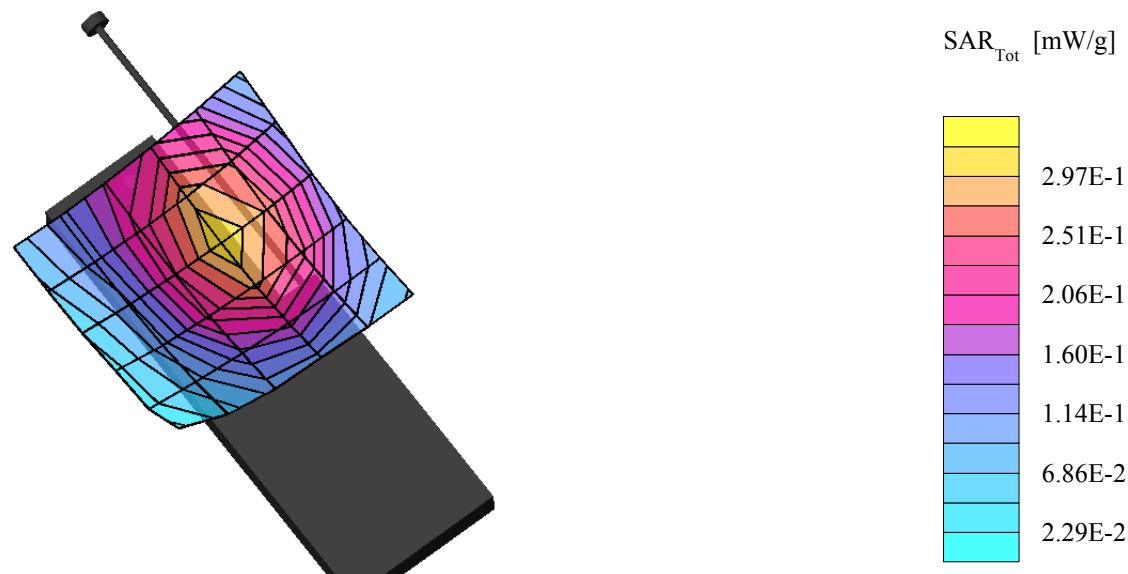
Standard Battery

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.10 dBm

Date Tested: January 17, 2002



## **BODY SAR TEST PLOTS - AMPS MODE**

## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.03 dB

SAR (1g): 0.699 mW/g, SAR (10g): 0.469 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna In

Withus Model: WCE-210

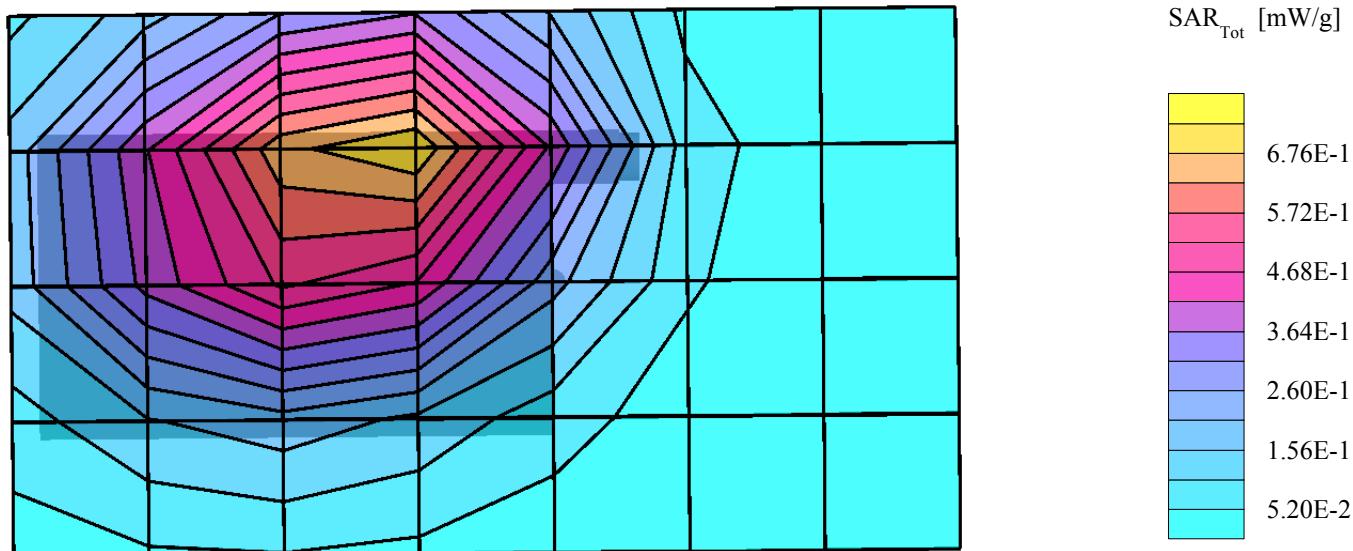
Standard Battery

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.11 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.12 dB

SAR (1g): 1.37 mW/g, SAR (10g): 0.935 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

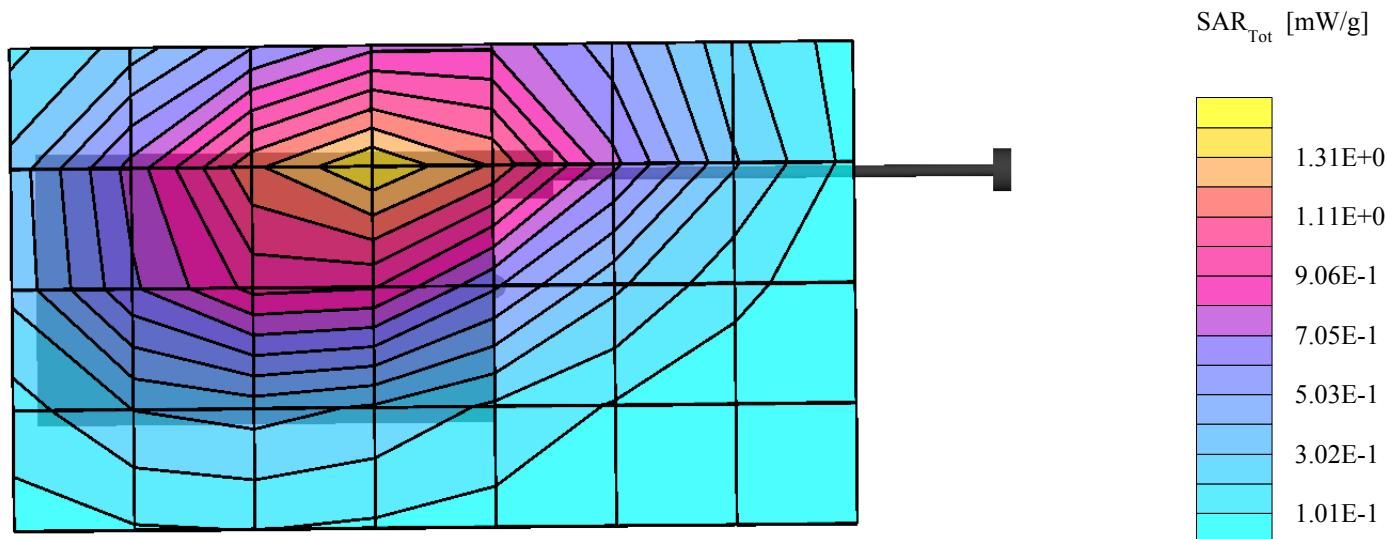
Standard Battery

AMPS Mode

Channel 991 [824.04 MHz]

Conducted Power: 26.12 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.18 dB

SAR (1g): 0.657 mW/g, SAR (10g): 0.451 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna In

Withus Model: WCE-210

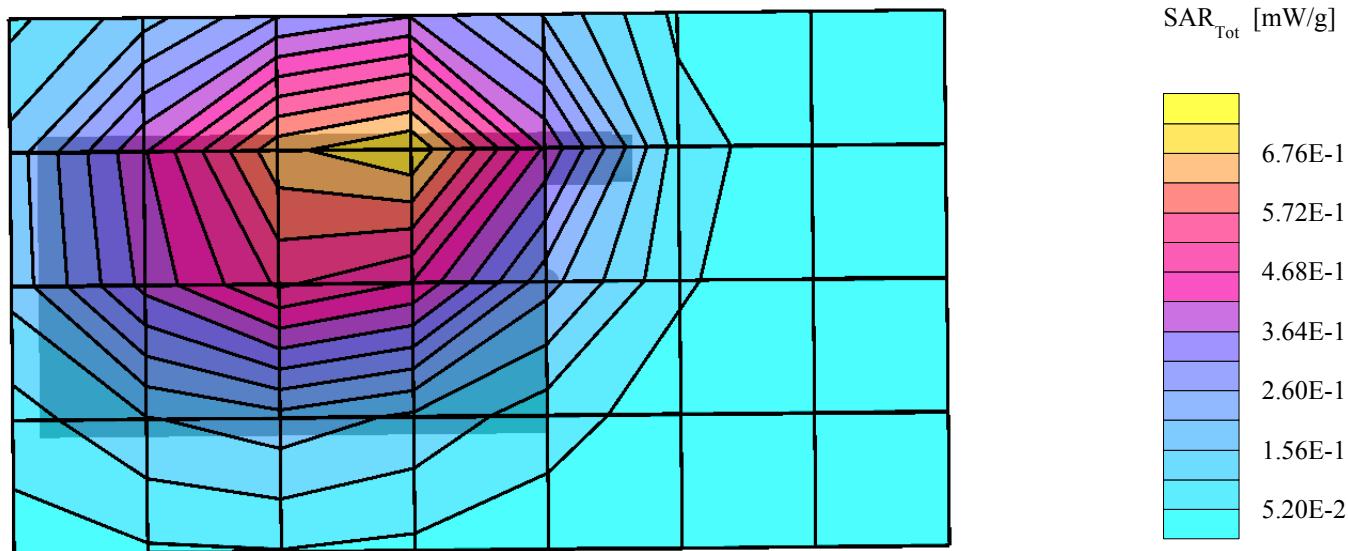
Standard Battery

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.12 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.09 dB

SAR (1g): 1.38 mW/g, SAR (10g): 0.943 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

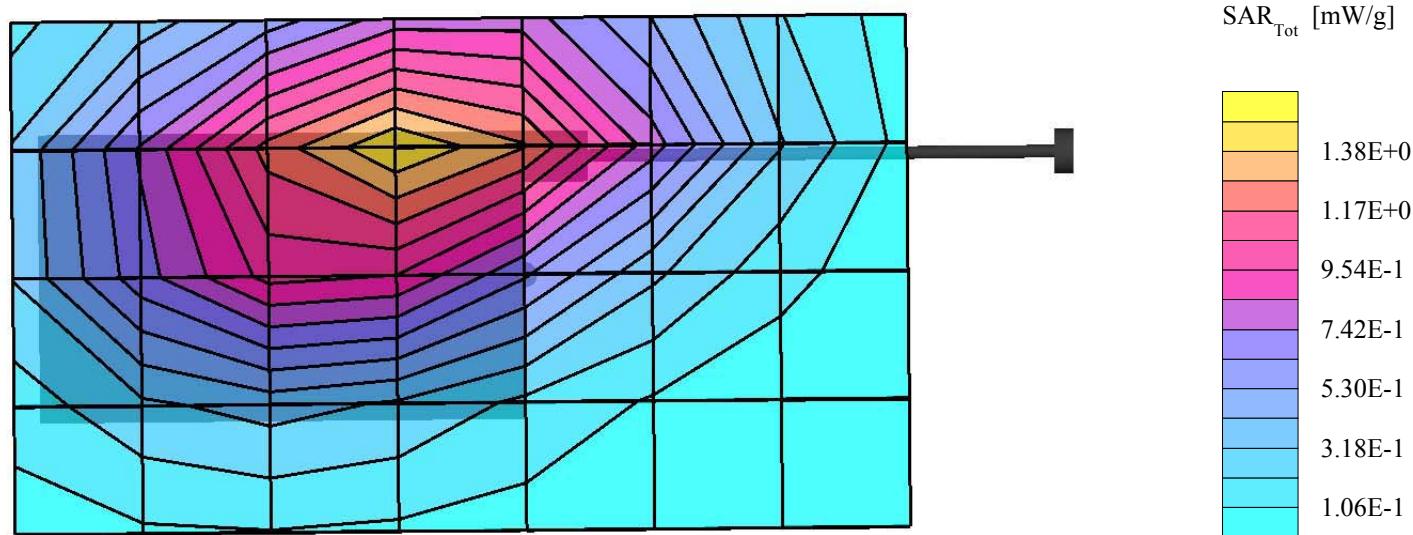
Standard Battery

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 18, 2002



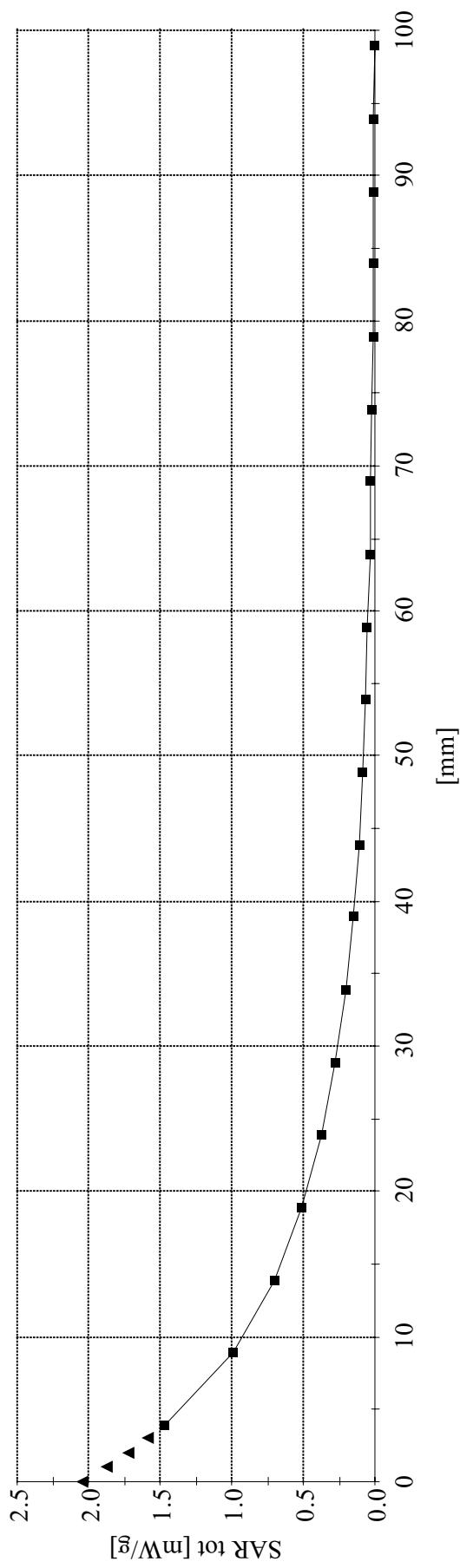
**Withus IT Co. Ltd. FCC ID: POQWCE-210**

SAM Phantom; Flat Section

Probe: ET3DV6 - SN1590; ConvF(6,70,6,70); Crest factor: 1.0;  
835 MHz Muscle:  $\sigma = 0.97$  mho/m  $\epsilon_r = 55.0$   $\rho = 1.00$  g/cm<sup>3</sup>

**Z-Axis Extrapolation at Peak SAR Location**

Body-Worn SAR at 1.5 cm Separation Distance  
Antenna Out  
Standard Battery  
Withus Model: WCE-210  
AMPS Mode  
Channel 383 [836.49 MHz]  
Conducted Power: 26.10 dBm  
Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.12 dB

SAR (1g): 1.13 mW/g, SAR (10g): 0.783 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

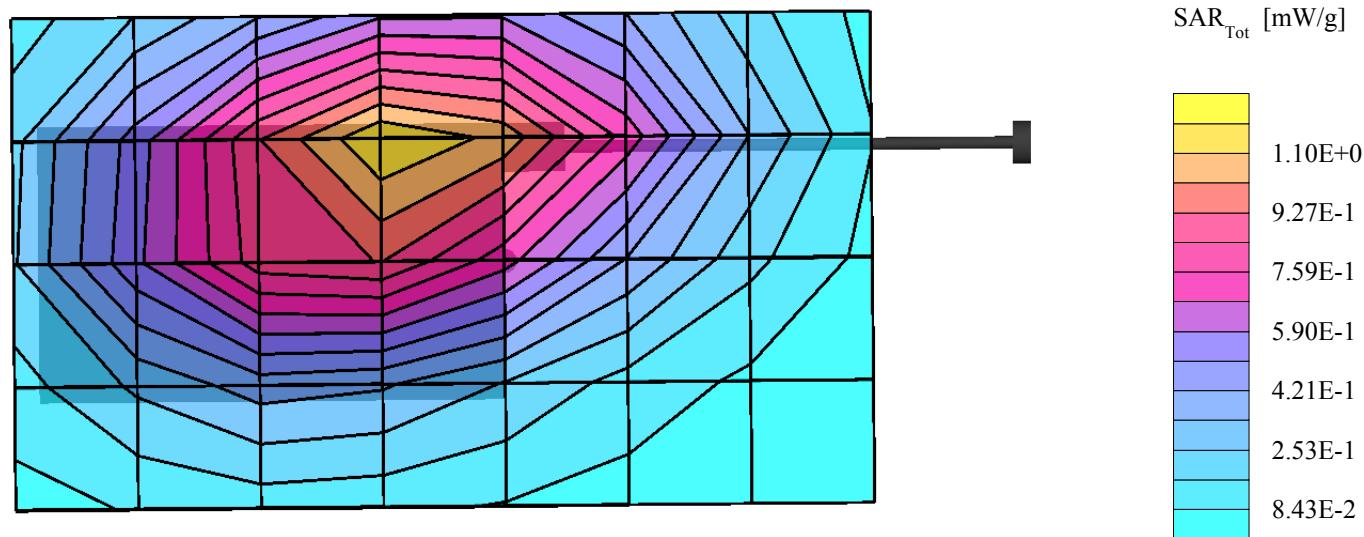
Extended Battery

AMPS Mode

Channel 383 [836.49 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.18 dB

SAR (1g): 0.756 mW/g, SAR (10g): 0.512 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna In

Withus Model: WCE-210

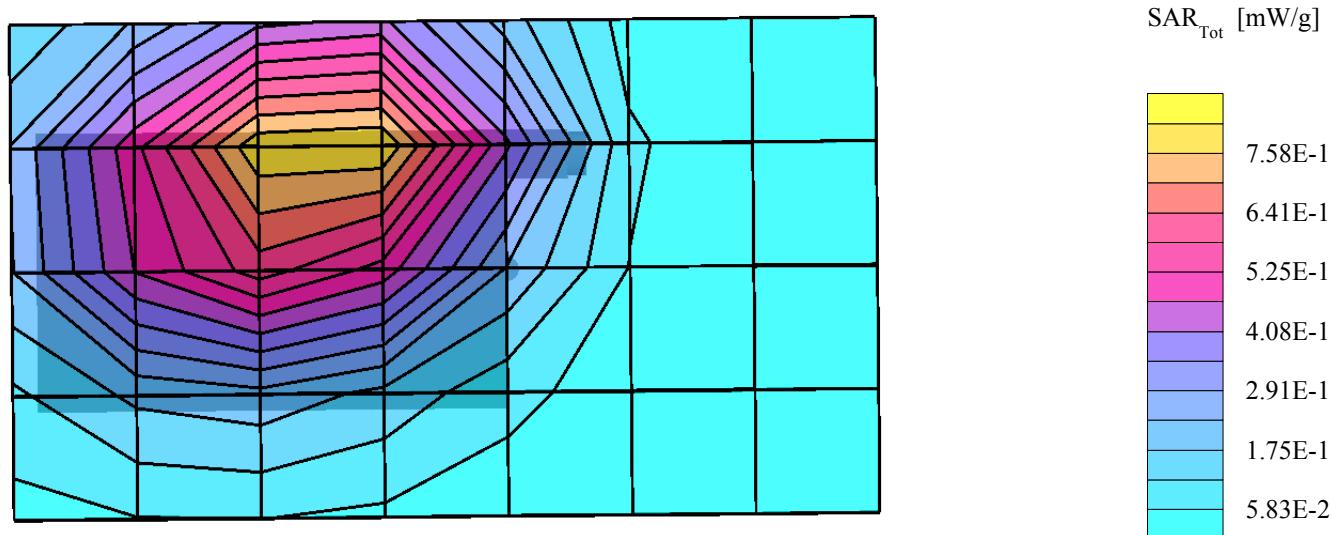
Standard Battery

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.12 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.17 dB

SAR (1g): 1.26 mW/g, SAR (10g): 0.854 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

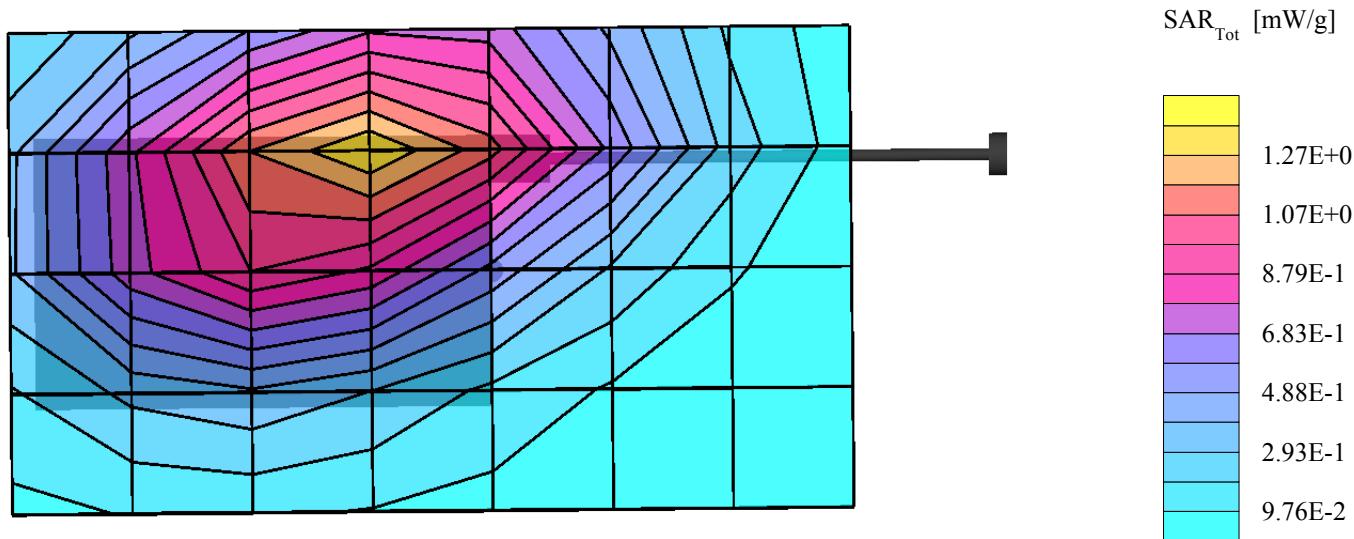
Standard Battery

AMPS Mode

Channel 799 [848.97 MHz]

Conducted Power: 26.10 dBm

Date Tested: January 18, 2002



## **BODY SAR TEST PLOTS - CDMA MODE**

## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.10 dB

SAR (1g): 0.542 mW/g, SAR (10g): 0.370 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna In

Withus Model: WCE-210

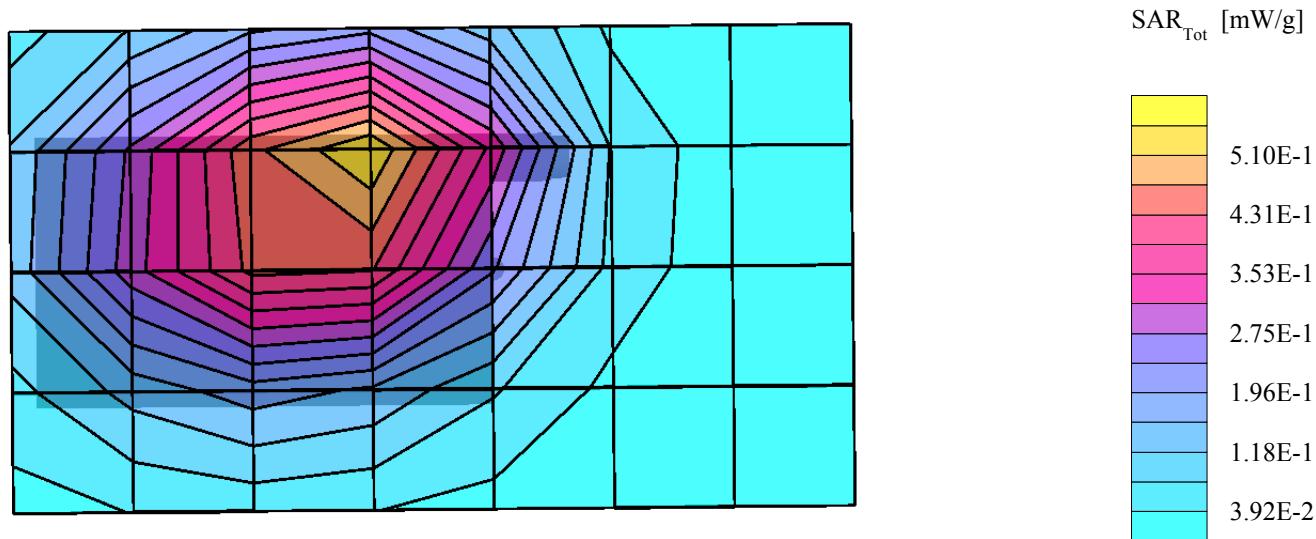
Standard Battery

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.13 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.04 dB

SAR (1g): 1.15 mW/g, SAR (10g): 0.785 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

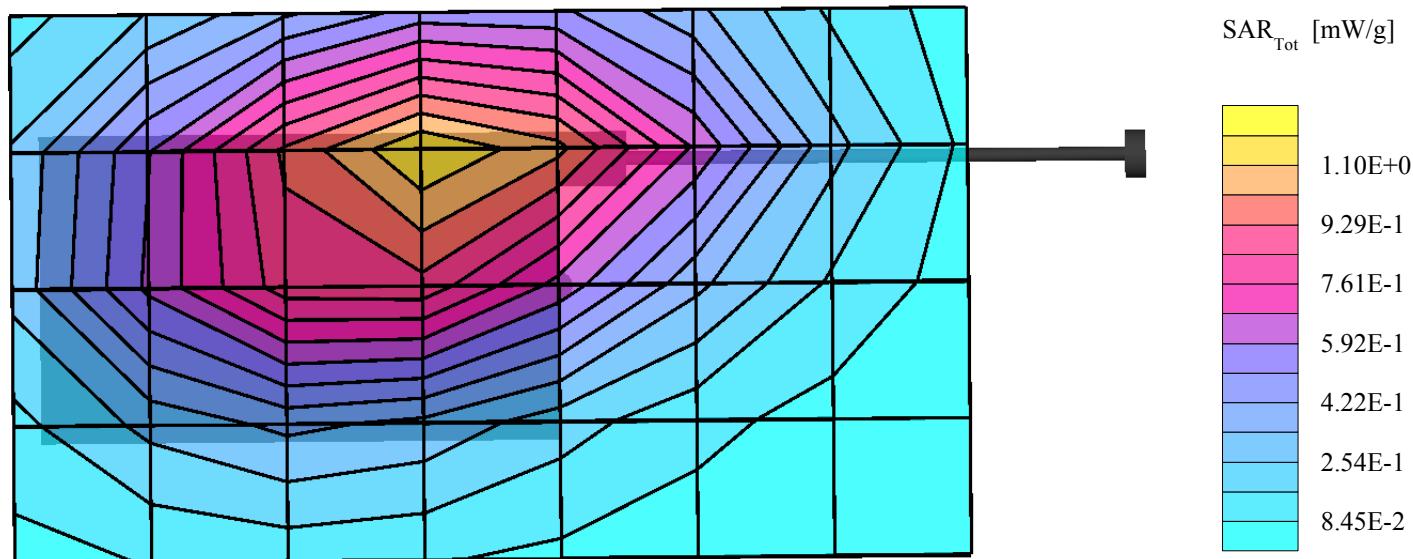
Standard Battery

CDMA Mode

Channel 1013 [824.70 MHz]

Conducted Power: 25.14 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.20 dB

SAR (1g): 0.499 mW/g, SAR (10g): 0.338 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna In

Withus Model: WCE-210

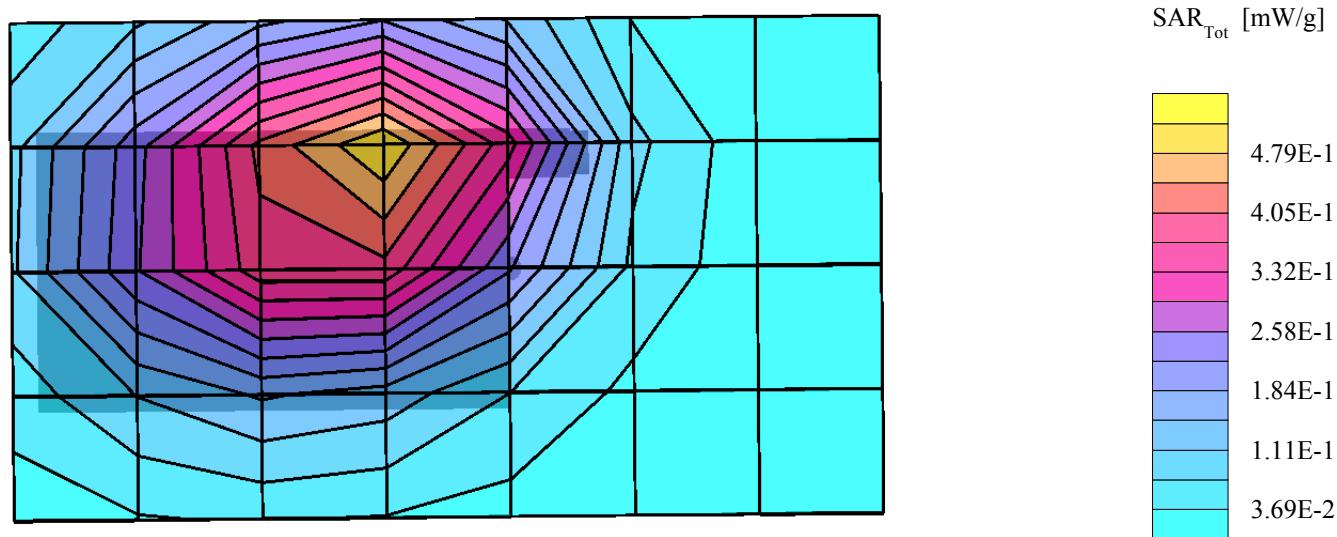
Standard Battery

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.15 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: 0.05 dB

SAR (1g): 1.14 mW/g, SAR (10g): 0.778 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

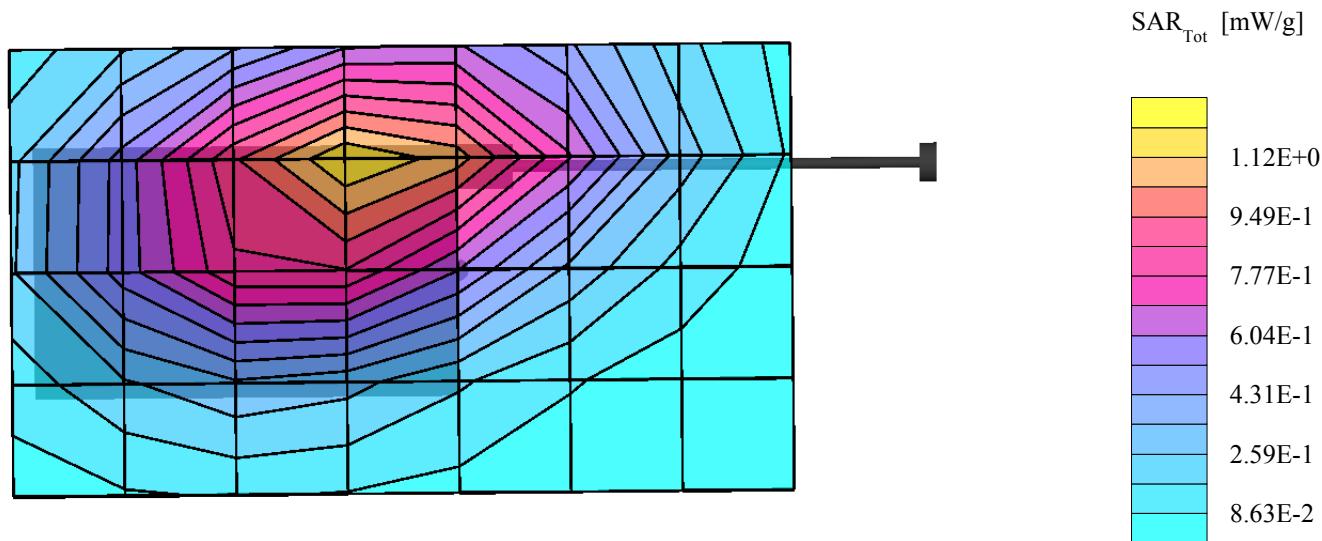
Standard Battery

CDMA Mode

Channel 363 [835.89 MHz]

Conducted Power: 25.15 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.17 dB

SAR (1g): 0.485 mW/g, SAR (10g): 0.329 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna In

Withus Model: WCE-210

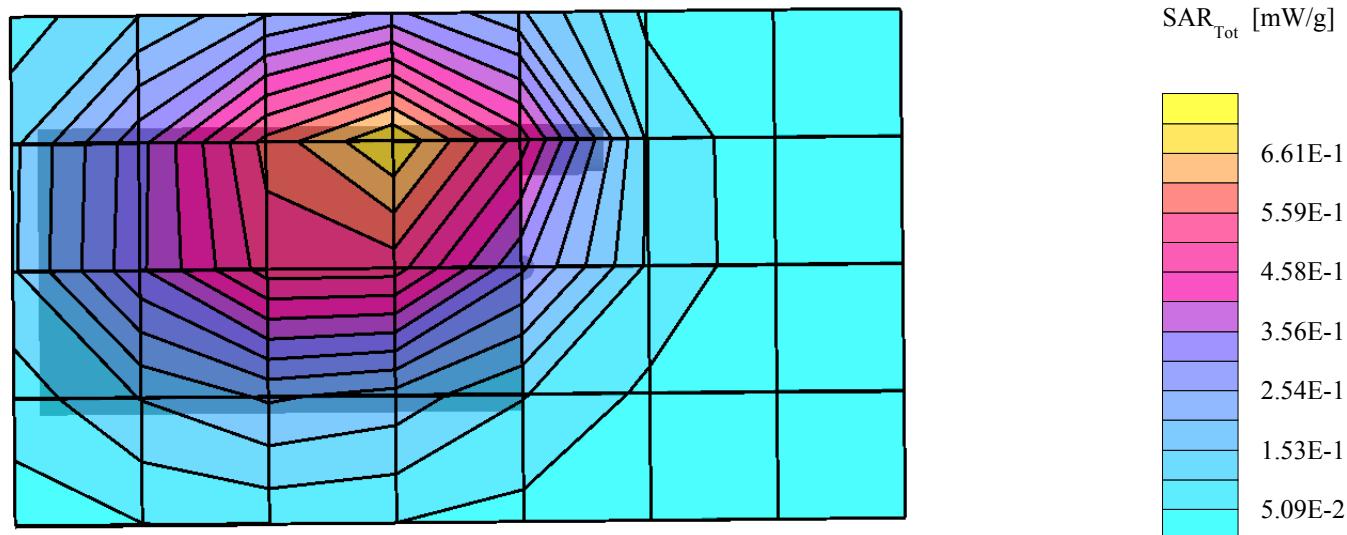
Standard Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.13 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.18 dB

SAR (1g): 1.17 mW/g, SAR (10g): 0.793 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

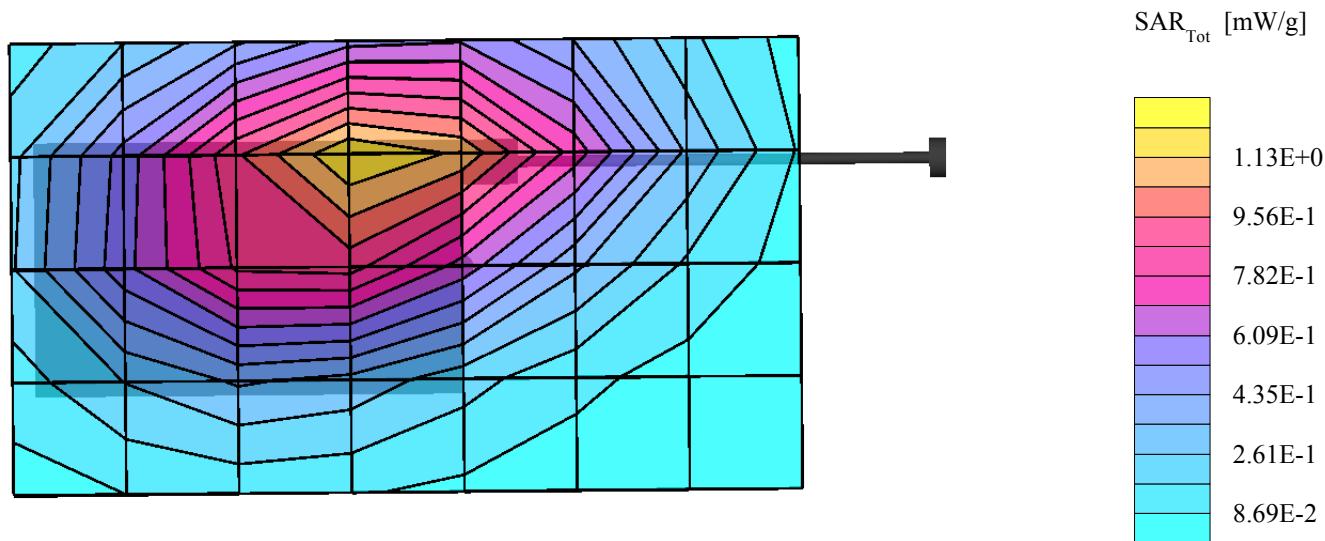
Standard Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.14 dBm

Date Tested: January 18, 2002



**Withus IT Co. Ltd. FCC ID: POQWCE-210**

SAM Phantom; Flat Section

Probe: ET3DV6 - SN1590; ConvF(6,70,6,70); Crest factor: 1.0;

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ **Z-Axis Extrapolation at Peak SAR Location**Body-Worn SAR at 1.5 cm Separation Distance  
Antenna Out

Standard Battery

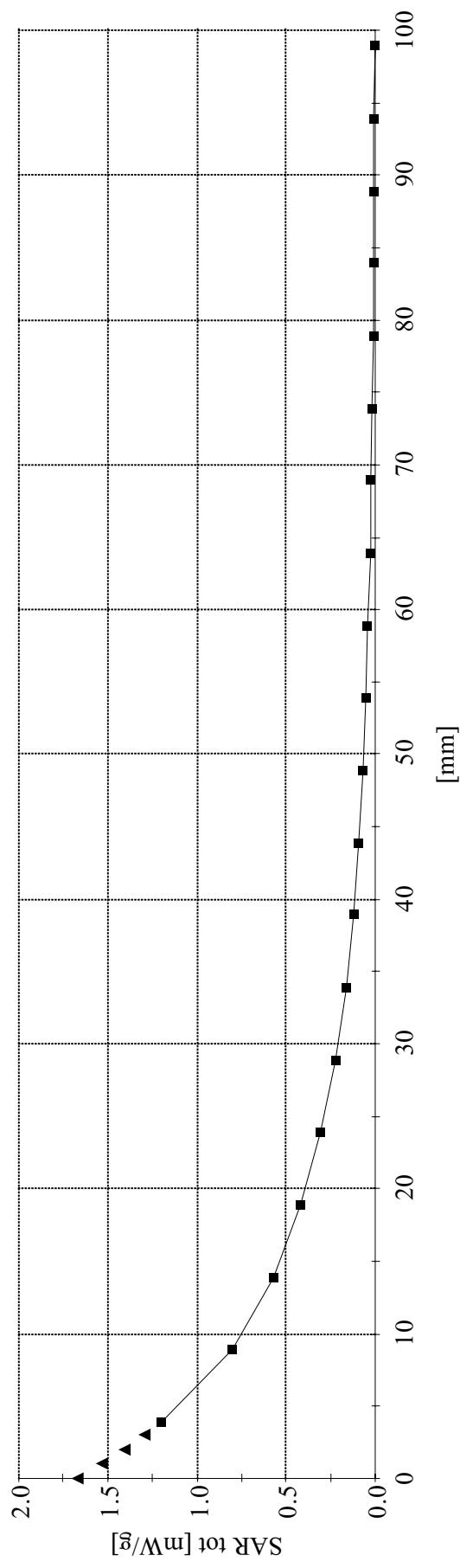
Withus Model: WCE-210

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.14 dBm

Date Tested: January 18, 2002



## Withus IT Co. Ltd. FCC ID: POQWCE-210

SAM Phantom; Flat Section; Position: (270°,270°)

Probe: ET3DV6 - SN1590; ConvF(6.70,6.70,6.70); Crest factor: 1.0

835 MHz Muscle:  $\sigma = 0.97 \text{ mho/m}$   $\epsilon_r = 55.0$   $\rho = 1.00 \text{ g/cm}^3$ 

Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0

Cube 5x5x7; Powerdrift: -0.15 dB

SAR (1g): 0.959 mW/g, SAR (10g): 0.664 mW/g

Body-Worn SAR at 1.5 cm Separation Distance

Antenna Out

Withus Model: WCE-210

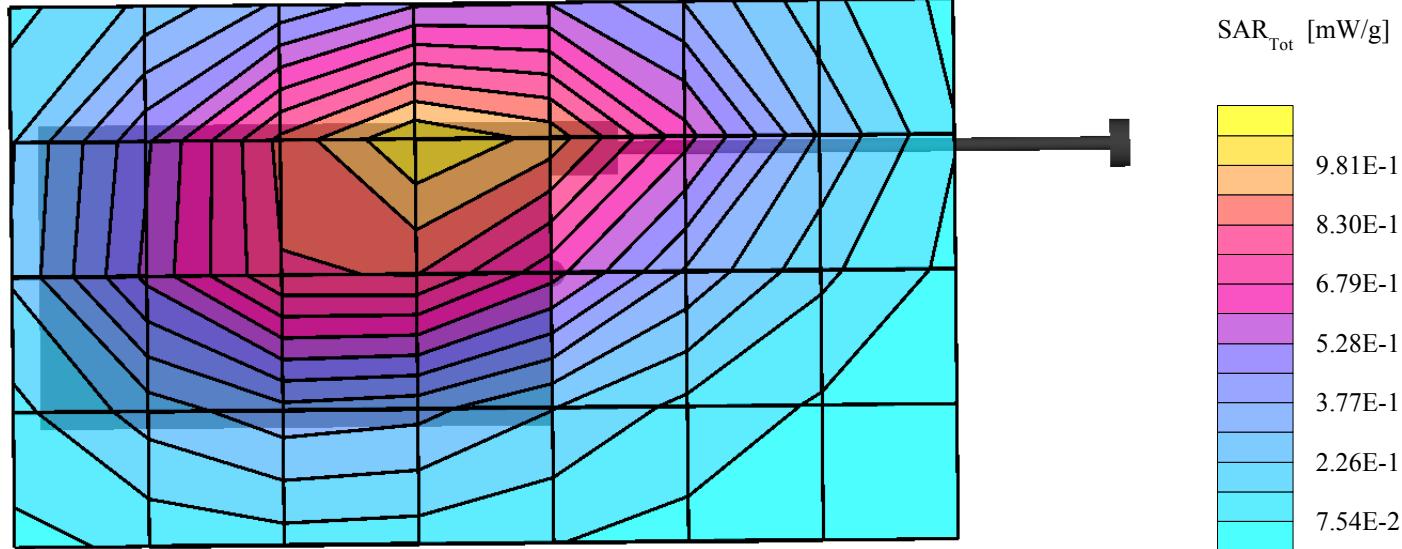
Extended Battery

CDMA Mode

Channel 777 [848.31 MHz]

Conducted Power: 25.12 dBm

Date Tested: January 18, 2002



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***APPENDIX B - DIPOLE VALIDATION***

**Dipole 900 MHz**

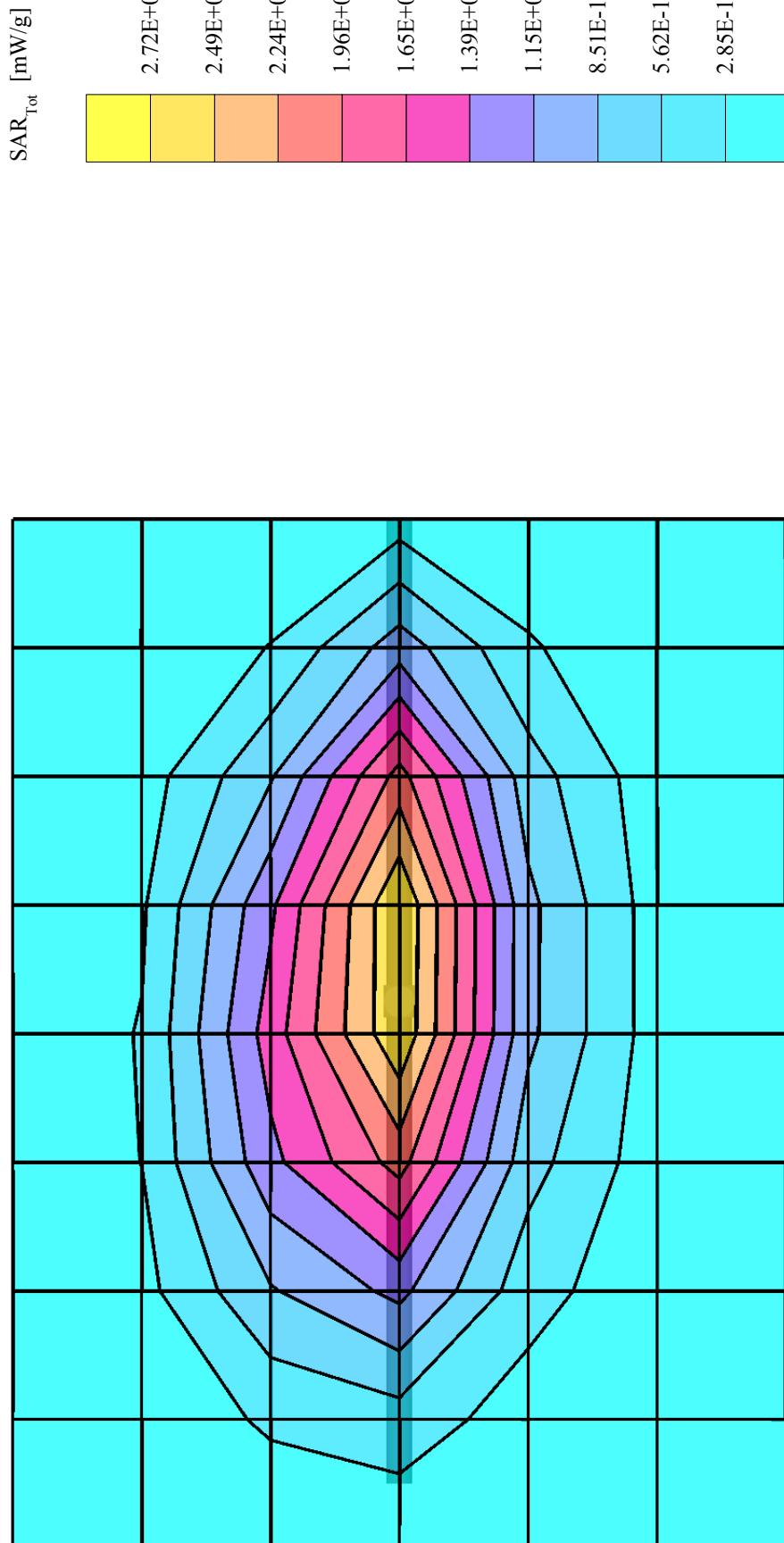
SAM Phantom; Flat Section

Probe: ET3DV6 - SNI590; ConvF(6.83,6.83,6.83); Crest factor: 1.0; 900 MHz Brain:  $\sigma = 0.95 \text{ mho/m}$   $\epsilon_r = 40.2$   $\rho = 1.00 \text{ g/cm}^3$ 

Cube 5x5x7; Peak: 4.38 mW/g, SAR (1g): 2.75 mW/g, SAR (10g): 1.73 mW/g, (Worst-case extrapolation)

Penetration depth: 11.3 (10.2, 12.7) [mm]

Powerdrift: 0.02 dB

Conducted Power: 250.0 mW  
Date Tested: January 16, 2002

**Dipole 900 MHz**

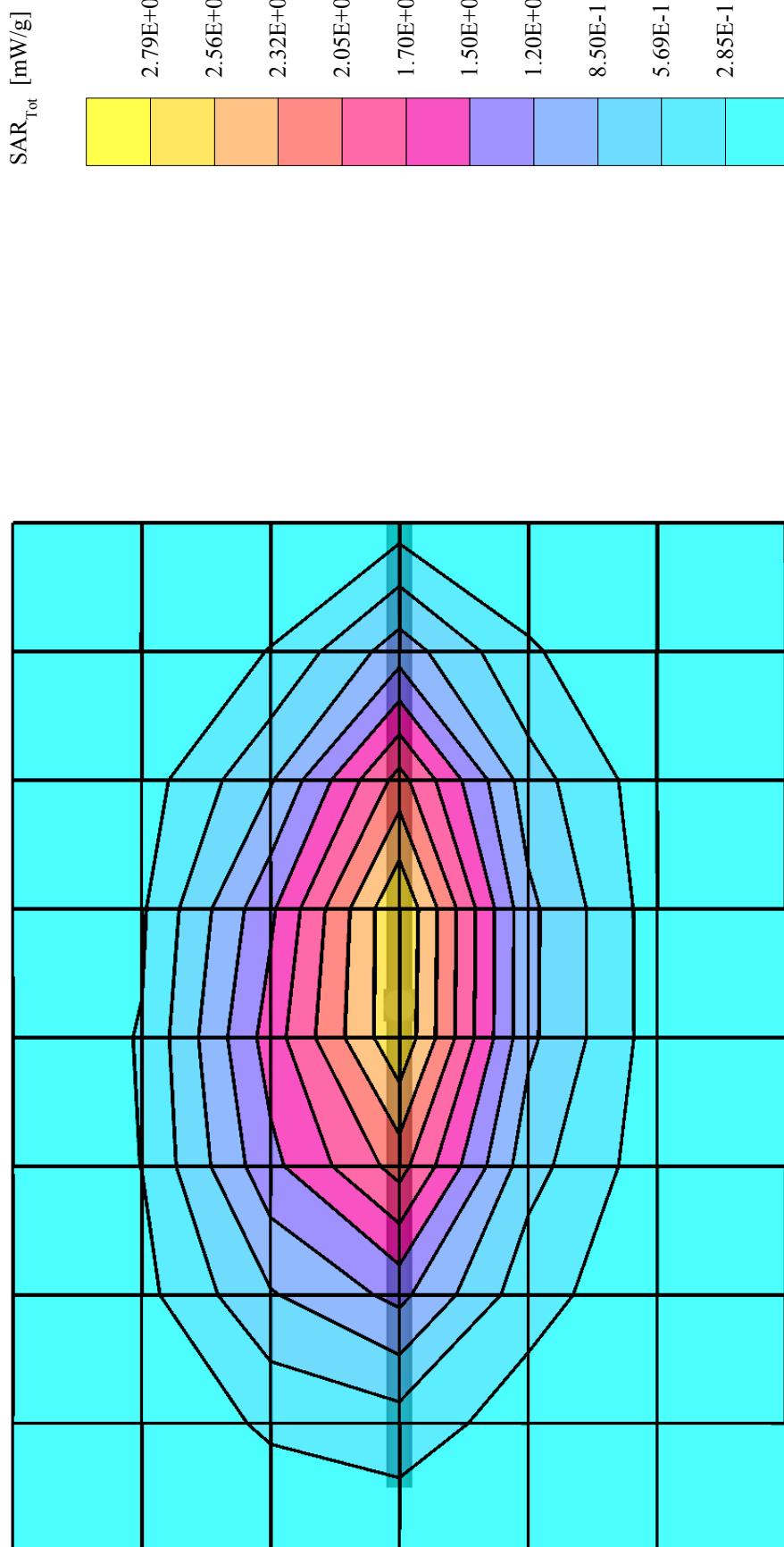
SAM Phantom; Flat Section

Probe: ET3DV6 - SNI590; ConvF(6.83,6.83,6.83); Crest factor: 1.0; 900 MHz Brain:  $\sigma = 0.96$  mho/m  $\epsilon_r = 40.5$   $\rho = 1.00$  g/cm<sup>3</sup>

Cube 5x5x7; Peak: 4.40 mW/g, SAR (1g): 2.72 mW/g, SAR (10g): 1.70 mW/g, (Worst-case extrapolation)

Penetration depth: 11.3 (10.2, 12.7) [mm]

Powerdrift: 0.05 dB

Conducted Power: 250.0 mW  
Date Tested: January 17, 2002

**Dipole 900 MHz**

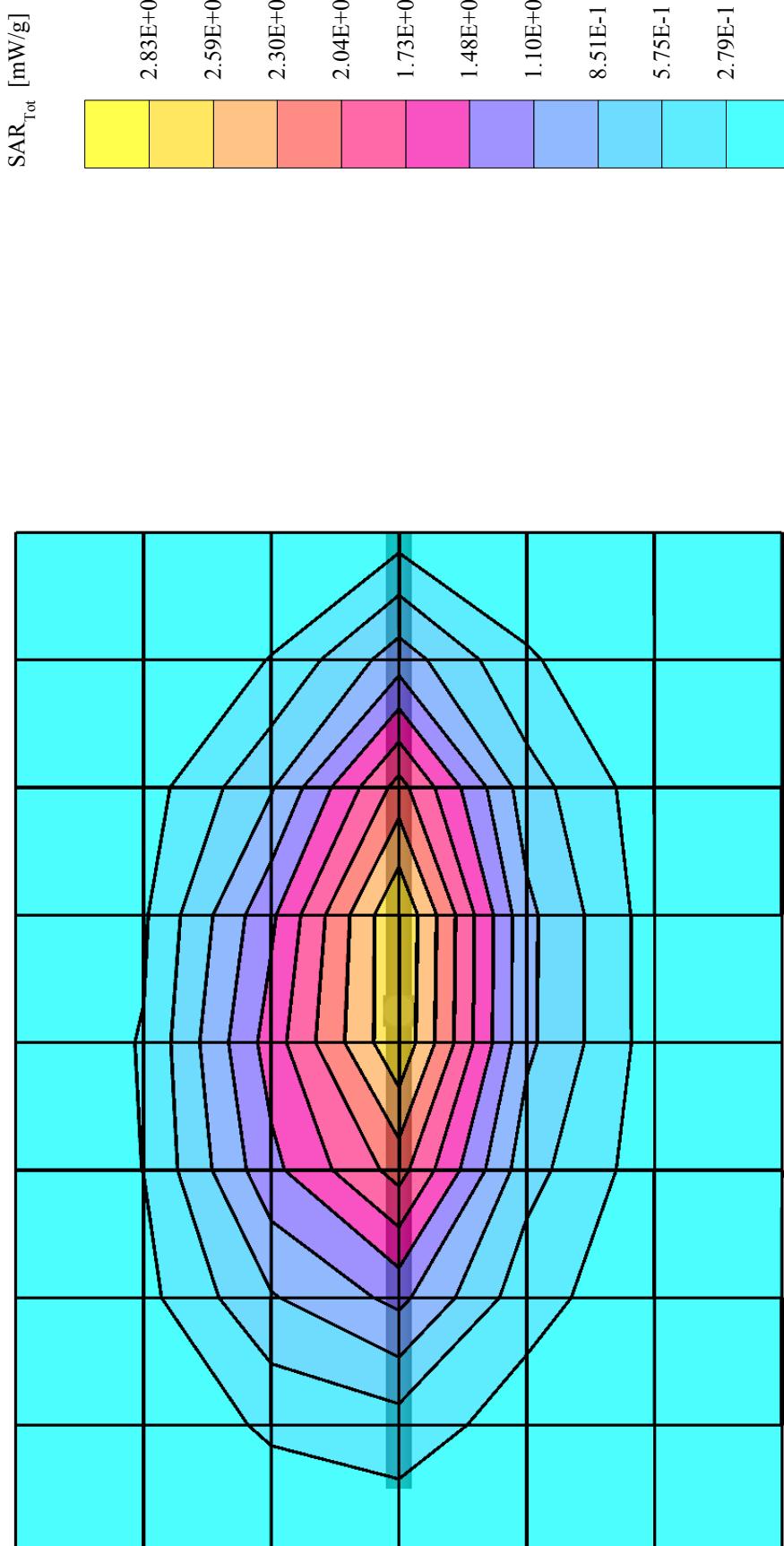
SAM Phantom; Flat Section

Probe: ET3DV6 - SNI590; ConvF(6.83,6.83,6.83); Crest factor: 1.0; 900 MHz Brain:  $\sigma = 0.96 \text{ mho/m}$   $\epsilon_r = 40.4$   $\rho = 1.00 \text{ g/cm}^3$ 

Cube 5x5x7: Peak: 4.43 mW/g, SAR (1g): 2.76 mW/g, SAR (10g): 1.73 mW/g, (Worst-case extrapolation)

Penetration depth: 11.3 (10.2, 12.7) [mm]

Powerdrift: 0.04 dB

Conducted Power: 250.0 mW  
Date Tested: January 18, 2002

CELLTECH RESEARCH INC.  
1955 Moss Court, Kelowna  
B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

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***APPENDIX C - DIPOLE CALIBRATION***

## Validation Dipole D900V2 SN:054, d = 15 mm

Frequency: 900 MHz; Antenna Input Power: 250 [mW]

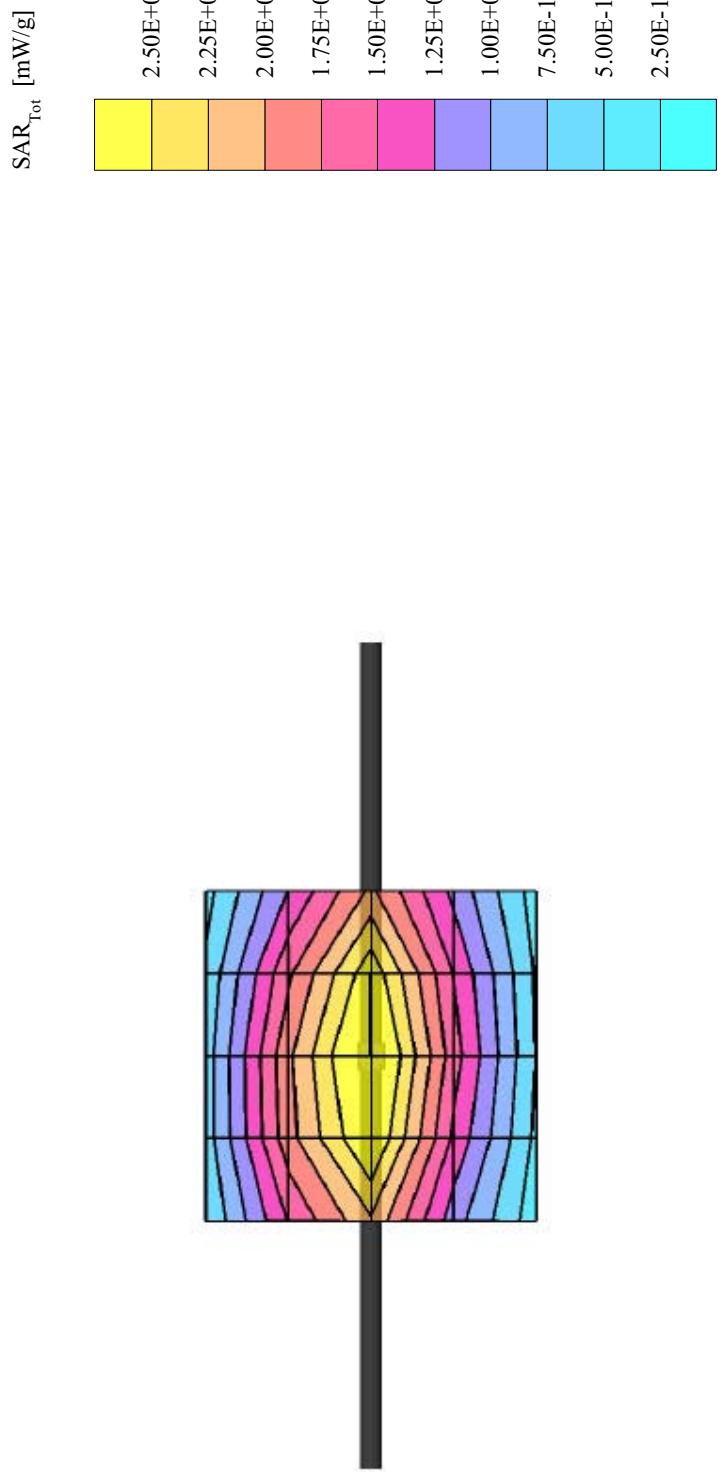
Generic Twin Phantom; Flat Section; Grid Spacing: Dx = 15.0, Dy = 15.0, Dz = 10.0

Probe: ET3DV6 - SN1507; ConvF(6.27,6.27,6.27); Crest factor: 1.0; IEEE1528 900 MHz:  $\sigma = 0.97$  mho/m  $\epsilon_r = 42.4$   $\rho = 1.00$  g/cm<sup>3</sup>

Cubes (2): Peak: 4.47 mW/g  $\pm 0.05$  dB, SAR (1g): 2.78 mW/g  $\pm 0.04$  dB, SAR (10g): 1.76 mW/g  $\pm 0.02$  dB, (Worst-case extrapolation)

Penetration depth: 11.5 (10.3, 13.2) [mm]

Powerdrift: -0.00 dB



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***APPENDIX D - PROBE CALIBRATION***

# Probe ET3DV6

SN:1590

Manufactured: March 19, 2001  
Calibrated: March 26, 2001

Calibrated for System DASY3

**DASY3 - Parameters of Probe: ET3DV6 SN:1590**

## Sensitivity in Free Space

|       |   |
|-------|---|
| NormX | <b>1.77</b> $\mu\text{V}/(\text{V}/\text{m})^2$ |
| NormY | <b>1.91</b> $\mu\text{V}/(\text{V}/\text{m})^2$ |
| NormZ | <b>1.67</b> $\mu\text{V}/(\text{V}/\text{m})^2$ |

## Diode Compression

|       |               |
|-------|---------------|
| DCP X | <b>100</b> mV |
| DCP Y | <b>100</b> mV |
| DCP Z | <b>100</b> mV |

## Sensitivity in Tissue Simulating Liquid

| Head    | 450 MHz                     | $\epsilon_r = 43.5 \pm 5\%$ | $\sigma = 0.87 \pm 10\% \text{ mho/m}$ |
|---------|-----------------------------|-----------------------------|--|
| ConvF X | <b>7.36</b> extrapolated    |                             | Boundary effect:                       |
| ConvF Y | <b>7.36</b> extrapolated    |                             | Alpha <b>0.29</b>                      |
| ConvF Z | <b>7.36</b> extrapolated    |                             | Depth <b>2.72</b>                      |
| Head    | 900 MHz                     | $\epsilon_r = 42 \pm 5\%$   | $\sigma = 0.97 \pm 10\% \text{ mho/m}$ |
| ConvF X | <b>6.83</b> $\pm 7\%$ (k=2) |                             | Boundary effect:                       |
| ConvF Y | <b>6.83</b> $\pm 7\%$ (k=2) |                             | Alpha <b>0.37</b>                      |
| ConvF Z | <b>6.83</b> $\pm 7\%$ (k=2) |                             | Depth <b>2.48</b>                      |
| Head    | 1500 MHz                    | $\epsilon_r = 40.4 \pm 5\%$ | $\sigma = 1.23 \pm 10\% \text{ mho/m}$ |
| ConvF X | <b>6.13</b> interpolated    |                             | Boundary effect:                       |
| ConvF Y | <b>6.13</b> interpolated    |                             | Alpha <b>0.47</b>                      |
| ConvF Z | <b>6.13</b> interpolated    |                             | Depth <b>2.17</b>                      |
| Head    | 1800 MHz                    | $\epsilon_r = 40 \pm 5\%$   | $\sigma = 1.40 \pm 10\% \text{ mho/m}$ |
| ConvF X | <b>5.78</b> $\pm 7\%$ (k=2) |                             | Boundary effect:                       |
| ConvF Y | <b>5.78</b> $\pm 7\%$ (k=2) |                             | Alpha <b>0.53</b>                      |
| ConvF Z | <b>5.78</b> $\pm 7\%$ (k=2) |                             | Depth <b>2.01</b>                      |

## Sensor Offset

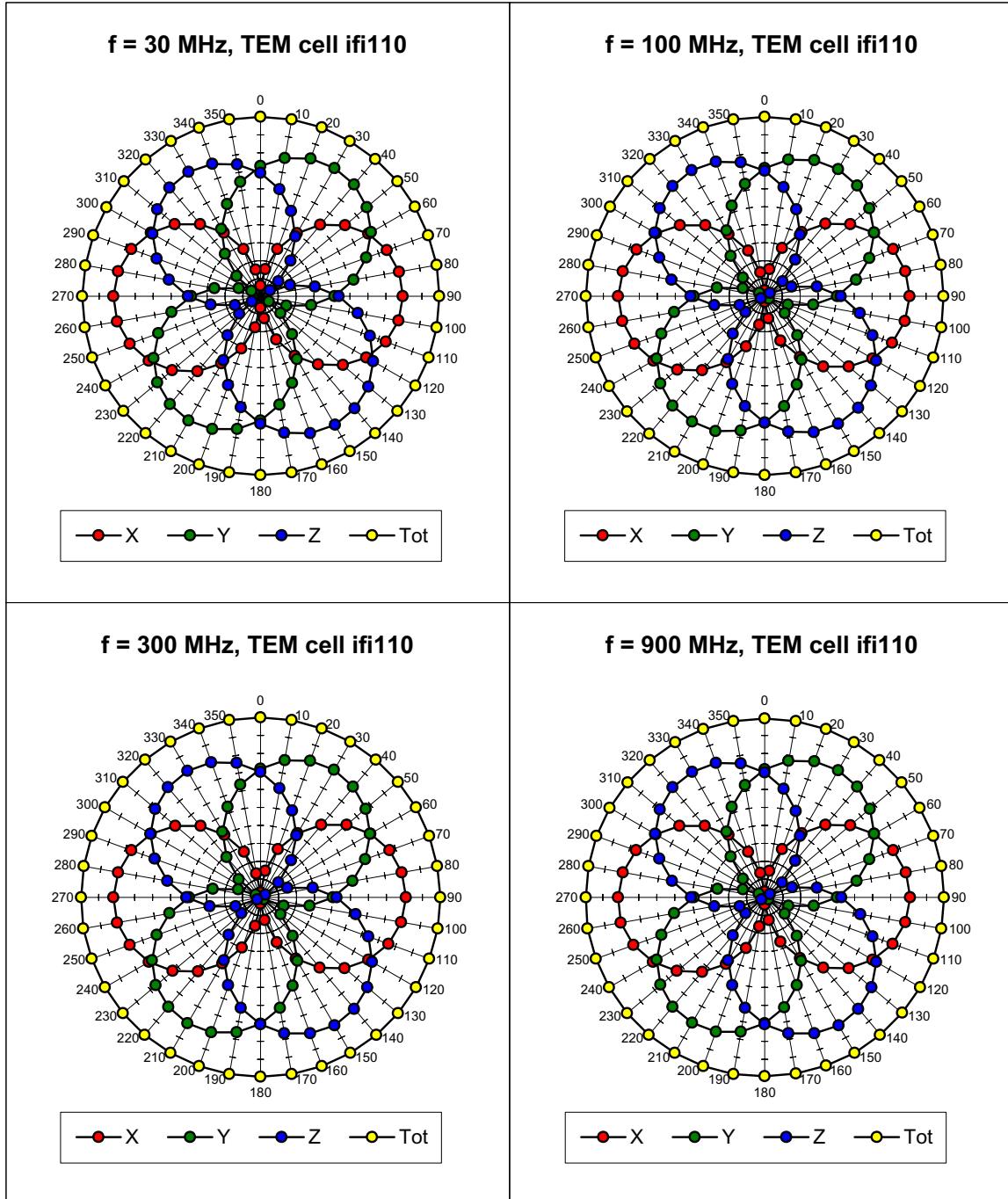
|                            |                                 |    |
|----------------------------|---------------------------------|----|
| Probe Tip to Sensor Center | <b>2.7</b>                      | mm |
| Optical Surface Detection  | <b>1.2 <math>\pm 0.2</math></b> | mm |

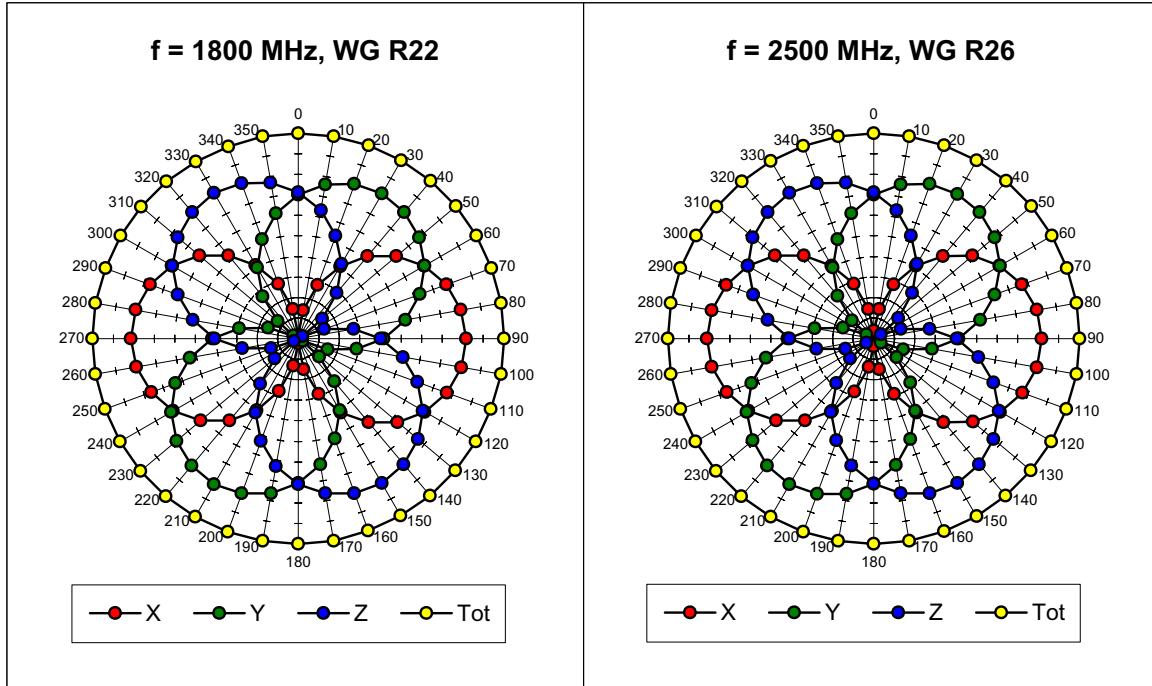
**ET3DV6 SN:1590**

## **DASY3 - Parameters of Probe: ET3DV6 SN: 1590**

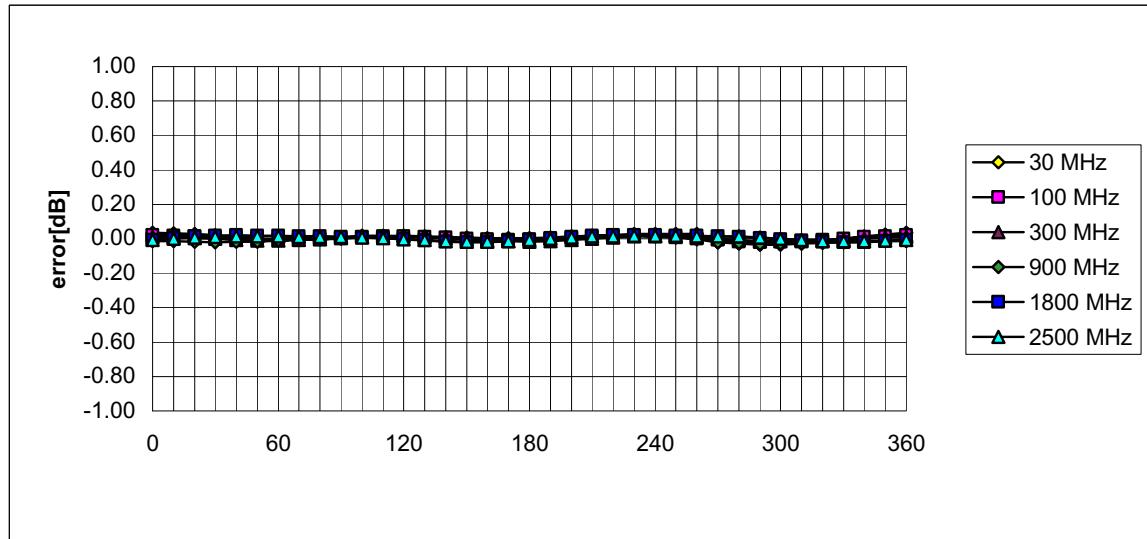
|             |                             |   |  |
|-------------|-----------------------------|---|--|
| <b>Body</b> | <b>450 MHz</b>              | <b><math>\epsilon_r = 56.7 \pm 5\%</math></b> | <b><math>\sigma = 0.94 \pm 10\% \text{ mho/m}</math></b> |
| ConvF X     | <b>7.23</b> extrapolated    |   |  |
| ConvF Y     | <b>7.23</b> extrapolated    |   |  |
| ConvF Z     | <b>7.23</b> extrapolated    |   |  |
| <b>Body</b> | <b>900 MHz</b>              | <b><math>\epsilon_r = 55.0 \pm 5\%</math></b> | <b><math>\sigma = 1.05 \pm 10\% \text{ mho/m}</math></b> |
| ConvF X     | <b>6.61</b> $\pm 7\%$ (k=2) |   |  |
| ConvF Y     | <b>6.61</b> $\pm 7\%$ (k=2) |   |  |
| ConvF Z     | <b>6.61</b> $\pm 7\%$ (k=2) |   |  |
| <b>Body</b> | <b>1500 MHz</b>             | <b><math>\epsilon_r = 54.0 \pm 5\%</math></b> | <b><math>\sigma = 1.30 \pm 10\% \text{ mho/m}</math></b> |
| ConvF X     | <b>5.78</b> interpolated    |   |  |
| ConvF Y     | <b>5.78</b> interpolated    |   |  |
| ConvF Z     | <b>5.78</b> interpolated    |   |  |
| <b>Body</b> | <b>1800 MHz</b>             | <b><math>\epsilon_r = 53.3 \pm 5\%</math></b> | <b><math>\sigma = 1.52 \pm 10\% \text{ mho/m}</math></b> |
| ConvF X     | <b>5.36</b> $\pm 7\%$ (k=2) |   |  |
| ConvF Y     | <b>5.36</b> $\pm 7\%$ (k=2) |   |  |
| ConvF Z     | <b>5.36</b> $\pm 7\%$ (k=2) |   |  |

## Receiving Pattern ( $\phi$ ), $\theta = 0^\circ$



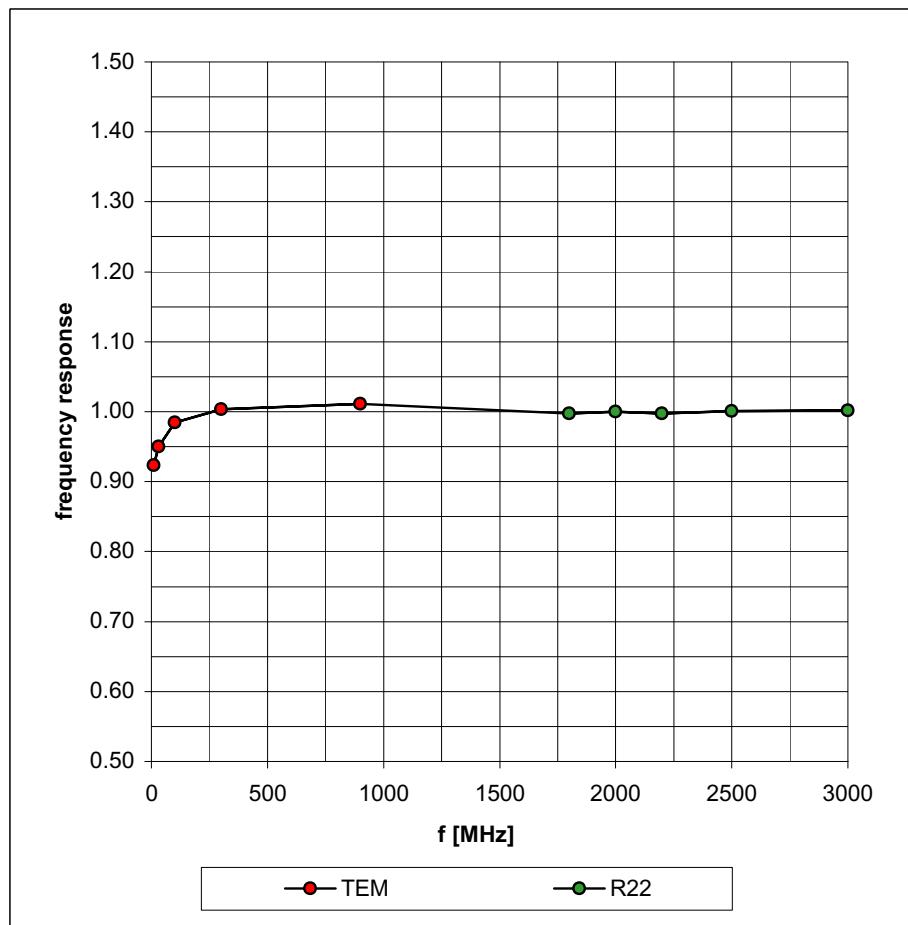


**Isotropy Error ( $\phi$ ),  $\theta = 0^\circ$**

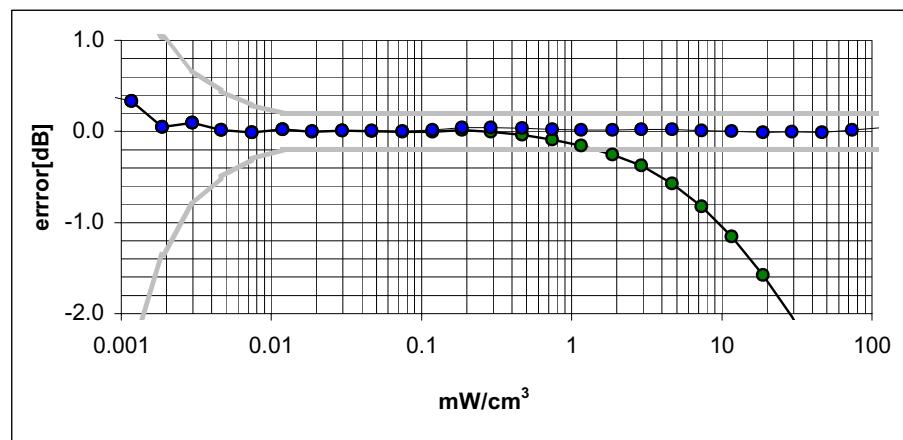
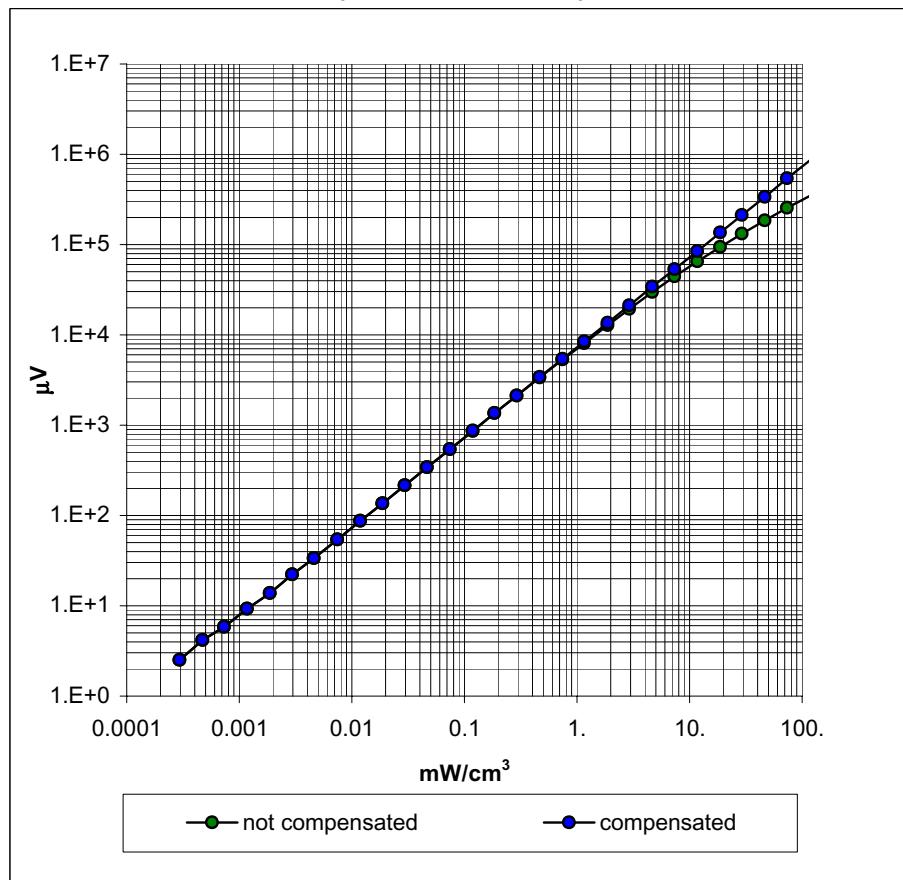


## Frequency Response of E-Field

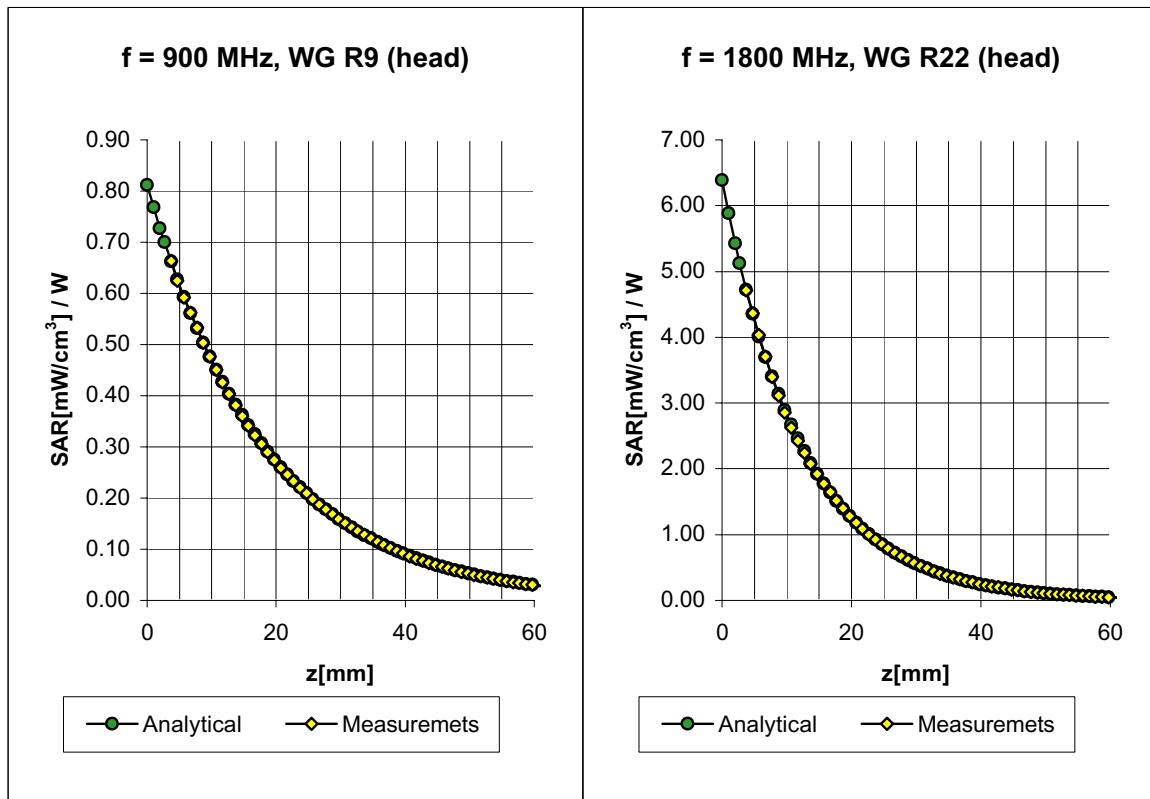
( TEM-Cell:ifi110, Waveguide R22)



### Dynamic Range $f(\text{SAR}_{\text{brain}})$ ( TEM-Cell:ifi110 )



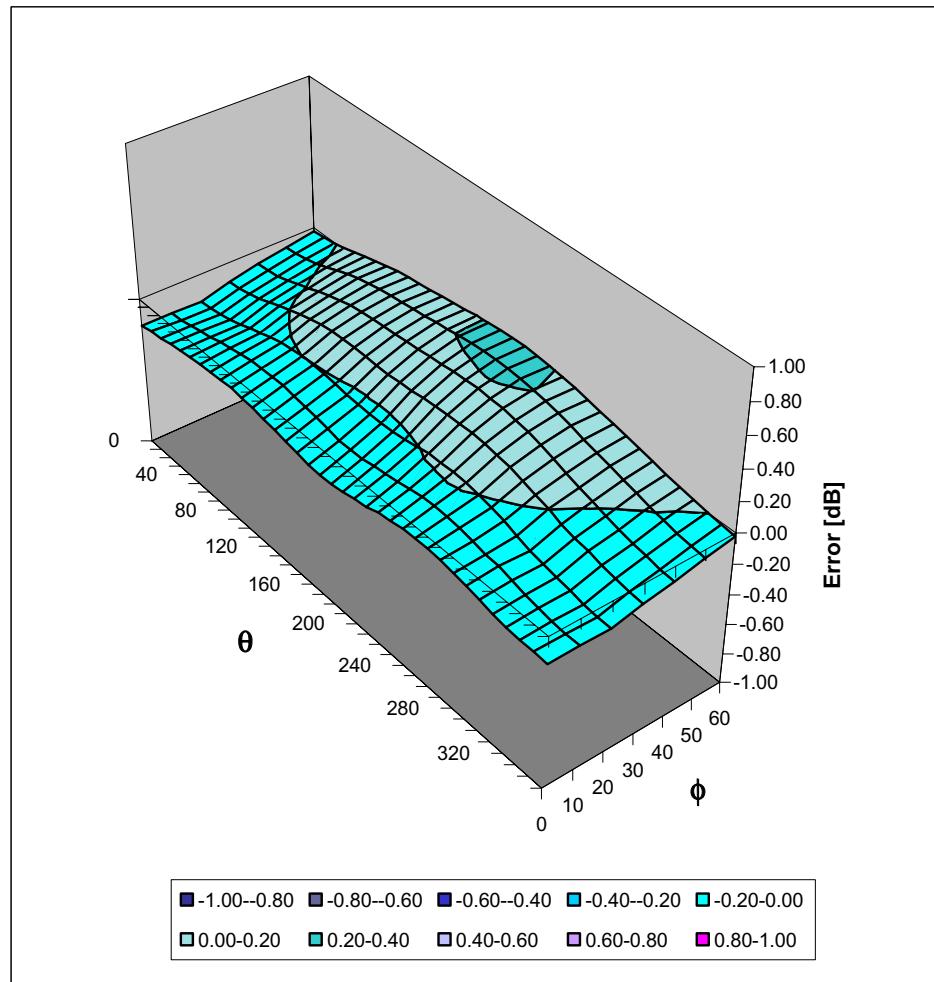
## Conversion Factor Assessment



ET3DV6 SN:1590

## Deviation from Isotropy in HSL

Error ( $\theta, \phi$ ),  $f = 900$  MHz



CELLTECH RESEARCH INC.  
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***APPENDIX E - MEASURED TISSUE DIELECTRIC PARAMETERS***

# 900MHz Validation & 835MHz Evaluation

## Measured Liquid Dielectric Parameters (Brain)

January 16, 2002

| Frequency      | e'             | e"             |
|----------------|----------------|----------------|
| 800.000000 MHz | <b>41.4153</b> | <b>19.4078</b> |
| 805.000000 MHz | <b>41.3496</b> | <b>19.3975</b> |
| 810.000000 MHz | <b>41.3014</b> | <b>19.3882</b> |
| 815.000000 MHz | <b>41.2359</b> | <b>19.3515</b> |
| 820.000000 MHz | <b>41.1891</b> | <b>19.3210</b> |
| 825.000000 MHz | <b>41.1063</b> | <b>19.3114</b> |
| 830.000000 MHz | <b>41.0234</b> | <b>19.2968</b> |
| 835.000000 MHz | <b>40.9569</b> | <b>19.2992</b> |
| 840.000000 MHz | <b>40.9318</b> | <b>19.2589</b> |
| 845.000000 MHz | <b>40.8328</b> | <b>19.2499</b> |
| 850.000000 MHz | <b>40.7517</b> | <b>19.2261</b> |
| 855.000000 MHz | <b>40.7111</b> | <b>19.2325</b> |
| 860.000000 MHz | <b>40.6552</b> | <b>19.1818</b> |
| 865.000000 MHz | <b>40.5772</b> | <b>19.1584</b> |
| 870.000000 MHz | <b>40.5229</b> | <b>19.1794</b> |
| 875.000000 MHz | <b>40.4616</b> | <b>19.1721</b> |
| 880.000000 MHz | <b>40.4172</b> | <b>19.1502</b> |
| 885.000000 MHz | <b>40.3498</b> | <b>19.1852</b> |
| 890.000000 MHz | <b>40.3071</b> | <b>19.1632</b> |
| 895.000000 MHz | <b>40.2662</b> | <b>19.1111</b> |
| 900.000000 MHz | <b>40.2299</b> | <b>19.0730</b> |
| 905.000000 MHz | <b>40.1769</b> | <b>19.0599</b> |
| 910.000000 MHz | <b>40.1337</b> | <b>19.0442</b> |
| 915.000000 MHz | <b>40.0527</b> | <b>19.0301</b> |
| 920.000000 MHz | <b>40.0003</b> | <b>19.0274</b> |
| 925.000000 MHz | <b>39.9709</b> | <b>19.0179</b> |
| 930.000000 MHz | <b>39.8896</b> | <b>19.0097</b> |
| 935.000000 MHz | <b>39.8331</b> | <b>18.9848</b> |
| 940.000000 MHz | <b>39.7651</b> | <b>18.9828</b> |
| 945.000000 MHz | <b>39.7129</b> | <b>18.9668</b> |
| 950.000000 MHz | <b>39.6527</b> | <b>18.9535</b> |
| 955.000000 MHz | <b>39.5960</b> | <b>18.9488</b> |
| 960.000000 MHz | <b>39.5263</b> | <b>18.9296</b> |
| 965.000000 MHz | <b>39.4712</b> | <b>18.9250</b> |
| 970.000000 MHz | <b>39.3973</b> | <b>18.9170</b> |

# 900 MHz Validation & 835MHz Evaluation

## Measured Liquid Dielectric Parameters (Brain)

January 17, 2002

| Frequency      | e'             | e"             |
|----------------|----------------|----------------|
| 800.000000 MHz | <b>41.6687</b> | <b>19.4597</b> |
| 805.000000 MHz | <b>41.5833</b> | <b>19.4213</b> |
| 810.000000 MHz | <b>41.5457</b> | <b>19.4352</b> |
| 815.000000 MHz | <b>41.4554</b> | <b>19.4098</b> |
| 820.000000 MHz | <b>41.4278</b> | <b>19.3945</b> |
| 825.000000 MHz | <b>41.3375</b> | <b>19.3807</b> |
| 830.000000 MHz | <b>41.2744</b> | <b>19.3650</b> |
| 835.000000 MHz | <b>41.1861</b> | <b>19.3304</b> |
| 840.000000 MHz | <b>41.1513</b> | <b>19.3339</b> |
| 845.000000 MHz | <b>41.0389</b> | <b>19.3174</b> |
| 850.000000 MHz | <b>40.9952</b> | <b>19.2822</b> |
| 855.000000 MHz | <b>40.9412</b> | <b>19.2812</b> |
| 860.000000 MHz | <b>40.8868</b> | <b>19.2395</b> |
| 865.000000 MHz | <b>40.8009</b> | <b>19.2276</b> |
| 870.000000 MHz | <b>40.7336</b> | <b>19.2414</b> |
| 875.000000 MHz | <b>40.6993</b> | <b>19.2255</b> |
| 880.000000 MHz | <b>40.6631</b> | <b>19.2003</b> |
| 885.000000 MHz | <b>40.5920</b> | <b>19.2256</b> |
| 890.000000 MHz | <b>40.5270</b> | <b>19.1992</b> |
| 895.000000 MHz | <b>40.5243</b> | <b>19.1451</b> |
| 900.000000 MHz | <b>40.4635</b> | <b>19.1283</b> |
| 905.000000 MHz | <b>40.4062</b> | <b>19.1205</b> |
| 910.000000 MHz | <b>40.3660</b> | <b>19.1178</b> |
| 915.000000 MHz | <b>40.2916</b> | <b>19.0960</b> |
| 920.000000 MHz | <b>40.2484</b> | <b>19.0945</b> |
| 925.000000 MHz | <b>40.2096</b> | <b>19.0724</b> |
| 930.000000 MHz | <b>40.1537</b> | <b>19.0558</b> |
| 935.000000 MHz | <b>40.0723</b> | <b>19.0471</b> |
| 940.000000 MHz | <b>40.0007</b> | <b>19.0359</b> |
| 945.000000 MHz | <b>39.9561</b> | <b>19.0167</b> |
| 950.000000 MHz | <b>39.8802</b> | <b>19.0169</b> |
| 955.000000 MHz | <b>39.8173</b> | <b>18.9945</b> |
| 960.000000 MHz | <b>39.7578</b> | <b>18.9807</b> |
| 965.000000 MHz | <b>39.7077</b> | <b>18.9645</b> |
| 970.000000 MHz | <b>39.6577</b> | <b>18.9764</b> |

# 900MHz Validation

## Measured Liquid Dielectric Parameters (Brain)

January 18, 2002

| Frequency      | e'             | e"             |
|----------------|----------------|----------------|
| 800.000000 MHz | <b>41.5792</b> | <b>19.5510</b> |
| 805.000000 MHz | <b>41.4870</b> | <b>19.5255</b> |
| 810.000000 MHz | <b>41.4458</b> | <b>19.5246</b> |
| 815.000000 MHz | <b>41.3733</b> | <b>19.5039</b> |
| 820.000000 MHz | <b>41.3262</b> | <b>19.4973</b> |
| 825.000000 MHz | <b>41.2365</b> | <b>19.4801</b> |
| 830.000000 MHz | <b>41.1726</b> | <b>19.4691</b> |
| 835.000000 MHz | <b>41.0831</b> | <b>19.4579</b> |
| 840.000000 MHz | <b>41.0752</b> | <b>19.3936</b> |
| 845.000000 MHz | <b>40.9605</b> | <b>19.3776</b> |
| 850.000000 MHz | <b>40.8830</b> | <b>19.3215</b> |
| 855.000000 MHz | <b>40.8349</b> | <b>19.2999</b> |
| 860.000000 MHz | <b>40.7838</b> | <b>19.2678</b> |
| 865.000000 MHz | <b>40.7187</b> | <b>19.2397</b> |
| 870.000000 MHz | <b>40.6638</b> | <b>19.2105</b> |
| 875.000000 MHz | <b>40.6112</b> | <b>19.2002</b> |
| 880.000000 MHz | <b>40.5594</b> | <b>19.1899</b> |
| 885.000000 MHz | <b>40.4980</b> | <b>19.2127</b> |
| 890.000000 MHz | <b>40.4637</b> | <b>19.1876</b> |
| 895.000000 MHz | <b>40.4286</b> | <b>19.1234</b> |
| 900.000000 MHz | <b>40.3636</b> | <b>19.1081</b> |
| 905.000000 MHz | <b>40.3159</b> | <b>19.0979</b> |
| 910.000000 MHz | <b>40.2851</b> | <b>19.0927</b> |
| 915.000000 MHz | <b>40.2052</b> | <b>19.0679</b> |
| 920.000000 MHz | <b>40.1419</b> | <b>19.0630</b> |
| 925.000000 MHz | <b>40.1049</b> | <b>19.0457</b> |
| 930.000000 MHz | <b>40.0380</b> | <b>19.0231</b> |
| 935.000000 MHz | <b>39.9624</b> | <b>19.0323</b> |
| 940.000000 MHz | <b>39.9000</b> | <b>19.0185</b> |
| 945.000000 MHz | <b>39.8498</b> | <b>19.0109</b> |
| 950.000000 MHz | <b>39.7917</b> | <b>19.0059</b> |
| 955.000000 MHz | <b>39.7119</b> | <b>18.9889</b> |
| 960.000000 MHz | <b>39.6657</b> | <b>18.9714</b> |
| 965.000000 MHz | <b>39.6058</b> | <b>18.9678</b> |
| 970.000000 MHz | <b>39.5680</b> | <b>18.9575</b> |

# 835MHz Evaluation

## Measured Liquid Dielectric Parameters (Body)

January 18, 2002

| Frequency      | e'             | e"             |
|----------------|----------------|----------------|
| 800.000000 MHz | <b>55.3442</b> | <b>21.0522</b> |
| 805.000000 MHz | <b>55.2876</b> | <b>21.0266</b> |
| 810.000000 MHz | <b>55.2444</b> | <b>21.0191</b> |
| 815.000000 MHz | <b>55.2026</b> | <b>20.9662</b> |
| 820.000000 MHz | <b>55.1565</b> | <b>20.9601</b> |
| 825.000000 MHz | <b>55.0938</b> | <b>20.9212</b> |
| 830.000000 MHz | <b>55.0151</b> | <b>20.9109</b> |
| 835.000000 MHz | <b>54.9607</b> | <b>20.9030</b> |
| 840.000000 MHz | <b>54.9521</b> | <b>20.8670</b> |
| 845.000000 MHz | <b>54.8924</b> | <b>20.8394</b> |
| 850.000000 MHz | <b>54.8302</b> | <b>20.8023</b> |
| 855.000000 MHz | <b>54.7740</b> | <b>20.8068</b> |
| 860.000000 MHz | <b>54.7212</b> | <b>20.7884</b> |
| 865.000000 MHz | <b>54.6845</b> | <b>20.7533</b> |
| 870.000000 MHz | <b>54.6279</b> | <b>20.7477</b> |
| 875.000000 MHz | <b>54.5630</b> | <b>20.7454</b> |
| 880.000000 MHz | <b>54.5435</b> | <b>20.7469</b> |
| 885.000000 MHz | <b>54.4955</b> | <b>20.7276</b> |
| 890.000000 MHz | <b>54.4540</b> | <b>20.6955</b> |
| 895.000000 MHz | <b>54.4551</b> | <b>20.6363</b> |
| 900.000000 MHz | <b>54.4141</b> | <b>20.6150</b> |
| 905.000000 MHz | <b>54.3756</b> | <b>20.5720</b> |
| 910.000000 MHz | <b>54.3363</b> | <b>20.5765</b> |
| 915.000000 MHz | <b>54.2684</b> | <b>20.5718</b> |
| 920.000000 MHz | <b>54.2308</b> | <b>20.5499</b> |
| 925.000000 MHz | <b>54.1968</b> | <b>20.5473</b> |
| 930.000000 MHz | <b>54.1667</b> | <b>20.5022</b> |
| 935.000000 MHz | <b>54.1045</b> | <b>20.5012</b> |
| 940.000000 MHz | <b>54.0274</b> | <b>20.4863</b> |
| 945.000000 MHz | <b>54.0018</b> | <b>20.4705</b> |
| 950.000000 MHz | <b>53.9533</b> | <b>20.4947</b> |
| 955.000000 MHz | <b>53.9050</b> | <b>20.4686</b> |
| 960.000000 MHz | <b>53.8525</b> | <b>20.4544</b> |
| 965.000000 MHz | <b>53.7672</b> | <b>20.4545</b> |
| 970.000000 MHz | <b>53.7383</b> | <b>20.4209</b> |

CELLTECH RESEARCH INC.  
1955 Moss Court, Kelowna  
B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

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***APPENDIX F - SAM PHANTOM CERTIFICATE OF CONFORMANCE***

# Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland, Phone +41 1 245 97 00, Fax +41 1 245 97 79

## Certificate of conformity / First Article Inspection

|                       |  |
|-----------------------|--|
| Item                  | SAM Twin Phantom V4.0  |
| Type No               | QD 000 P40 BA  |
| Series No             | TP-1002 and higher   |
| Manufacturer / Origin | Untersee Composites<br>Hauptstr. 69<br>CH-8559 Fruthwilen<br>Switzerland |

### Tests

The series production process used allows the limitation to test of first articles. Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

| Test                 | Requirement   | Details  | Units tested                |
|----------------------|---|--|-----------------------------|
| Shape                | Compliance with the geometry according to the CAD model.                                | IT'IS CAD File (*)   | First article, Samples      |
| Material thickness   | Compliant with the requirements according to the standards                              | 2mm +/- 0.2mm in specific areas                                      | First article, Samples      |
| Material parameters  | Dielectric parameters for required frequencies  | 200 MHz – 3 GHz<br>Relative permittivity < 5<br>Loss tangent < 0.05. | Material sample<br>TP 104-5 |
| Material resistivity | The material has been tested to be compatible with the liquids defined in the standards | Liquid type HSL 1800 and others according to the standard.           | Pre-series, First article   |

### Standards

- [1] CENELEC EN 50361
- [2] IEEE P1528-200x draft 6.5
- [3] IEC PT 62209 draft 0.9

(\*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

### Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date 18.11.2001

Signature / Stamp

  
**Schmid & Partner**  
**Engineering AG**

Zeughausstrasse 43, CH-8004 Zurich  
Tel. +41 1 245 97 00, Fax +41 1 245 97 79

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1955 Moss Court, Kelowna  
B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

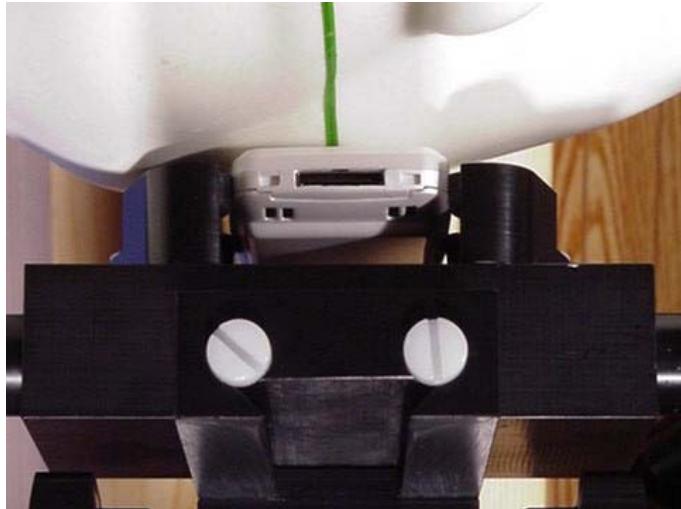
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***APPENDIX G - SAR TEST SETUP PHOTOGRAPHS***

CELLTECH RESEARCH INC.  
1955 Moss Court, Kelowna  
B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

**SAR TEST SETUP PHOTOGRAPHS**  
**Left Head Section – Cheek/Touch Position**



CELLTECH RESEARCH INC.  
1955 Moss Court, Kelowna  
B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

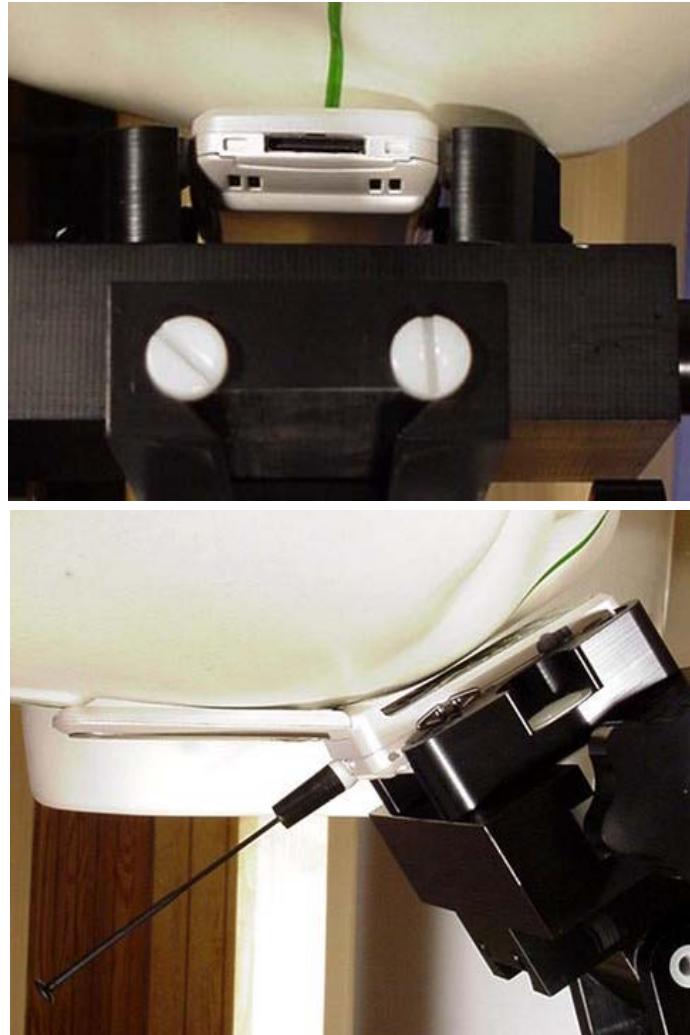
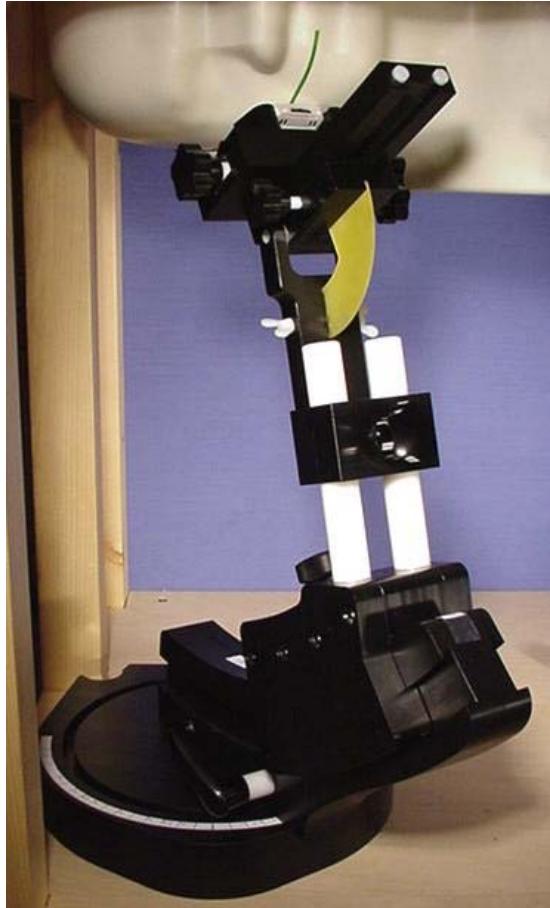
**SAR TEST SETUP PHOTOGRAPHS**  
**Left Head Section – Ear/Tilt Position**



CELLTECH RESEARCH INC.  
1955 Moss Court, Kelowna  
B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

**SAR TEST SETUP PHOTOGRAPHS**  
**Right Head Section – Cheek/Touch Position**



CELLTECH RESEARCH INC.  
1955 Moss Court, Kelowna  
B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

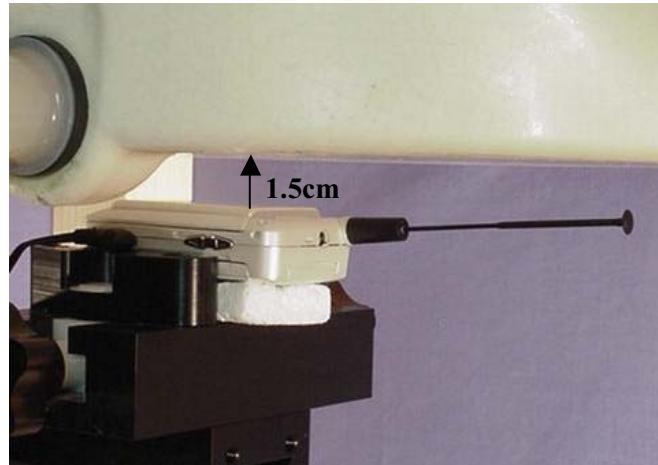
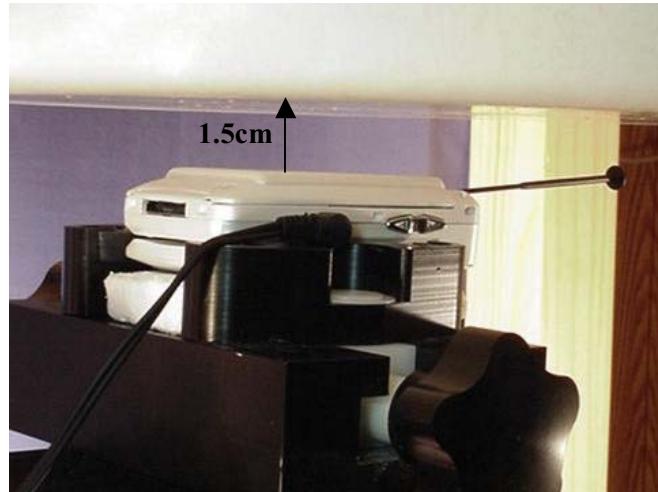
**SAR TEST SETUP PHOTOGRAPHS**  
**Right Head Section – Ear/Tilt Position**



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B.C. Canada V1Y 9L3

Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

**SAR TEST SETUP PHOTOGRAPHS**  
**Planar Section - Body-Worn Configuration**  
**1.5cm Separation Distance - with Standard Battery**



CELLTECH RESEARCH INC.  
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Test Report S/N: 010302-214POQ  
Test Dates: January 16-18, 2002  
FCC SAR Evaluation

**SAR TEST SETUP PHOTOGRAPHS**  
**Planar Section - Body-Worn Configuration**  
**2.0 cm Separation Distance - with Extended Battery**

