

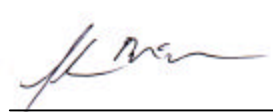
CERTIFICATE OF COMPLIANCE
SAR EVALUATION

| | |
|--|--|
| <u>Test Lab:</u> CELLTECH RESEARCH INC. Testing and Engineering Lab 1955 Moss Court Kelowna, B.C. Canada V1Y 9L3 Phone: 250 - 860-3130 Fax: 250 - 860-3110 e-mail: info@celltechlabs.com web site: www.celltechlabs.com | <u>Applicant Information:</u> COMPAL ELECTRONICS INC. 581, Juikuang Road Neihu, Taipei 114, Taiwan, R.O.C. |
| FCC Rule Part(s): FCC ID: Model(s): Equipment Type: Equipment Classification: Modulation: Tx Frequency Range: Conducted Power Levels: Antenna Type: Power Supply: | 2.1093; ET Docket 96.326 GKRPOCKETPCE740W POCKET PC e740W Handheld PDA with 2.4GHz Wireless LAN Mini PCI Card Part 15 Spread Spectrum Transmitter (DSS) Direct Sequence Spread Spectrum (DSSS) 2412 - 2462 MHz 16.55 dBm (2412 MHz) 16.65 dBm (2437 MHz) 16.45 dBm (2462 MHz) Integrated 4.6V 1000mAh Lithium-Ion Battery 100-240V AC Power Adapter |

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 FCC OET Bulletin 65, Supplement C, Edition 01-01, and Industry Canada RSS-102 Issue 1 (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 COMPAL Handheld PDA with 2.4GHz DSSS Wireless LAN FCC ID: GKRPOCKETPCE740W 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)

| | | | |
|---------------------------|--|----------------------------------|---|
| EUT Type | Handheld PDA with 2.4GHz DSSS Wireless LAN Mini PCI Card | FCC ID | GKRPOCKETPCE740W |
| Equipment Class | Part 15 Spread Spectrum Transmitter (DSS) | Model(s) | POCKET PC e740W |
| Modulation | Direct Sequence Spread Spectrum | S/N No. | Pre-production |
| Tx Frequency Range | 2412 - 2462 MHz | RF Conducted Output Power | 16.55 dBm (2412MHz) 16.65 dBm (2437MHz) 16.45 dBm (2462MHz) |
| Antenna Type | Integrated | Power Supply | 1. 4.6V 1000mAh Lithium-Ion Battery 2. 100-240V AC Adapter |



Front View



Rear View



Bottom End & Right Side



Top End & Left Side

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.

| BODY SAR EVALUATION RESULTS | | | | | | | | |
|--|---------|----------------|------------------------------|-----------------------------|------------------------------------|-------------------|--------------------------|---------------|
| Freq. (MHz) | Channel | Mode Tested | Conducted Power Before (dBm) | Conducted Power After (dBm) | EUT Test Position (Facing Phantom) | Phantom Section | Separation Distance (cm) | SAR 1g (w/kg) |
| 2412 | Low | CW | 16.55 | 16.43 | LCD Side | Planar | 0.0 | 0.707 |
| 2437 | Mid | CW | 16.65 | 16.52 | LCD Side | Planar | 0.0 | 0.780 |
| 2462 | High | CW | 16.45 | 16.34 | LCD Side | Planar | 0.0 | 0.661 |
| 2412 | Low | CW | 16.55 | 16.45 | Back Side | Planar | 0.0 | 0.473 |
| 2437 | Mid | CW | 16.65 | 16.48 | Back Side | Planar | 0.0 | 0.283 |
| 2462 | High | CW | 16.45 | 16.37 | Back Side | Planar | 0.0 | 0.237 |
| 2412 | Low | CW | 16.55 | 16.39 | Top End | Planar | 0.5 | 0.330 |
| 2437 | Mid | CW | 16.65 | 16.50 | Top End | Planar | 0.5 | 0.366 |
| 2462 | High | CW | 16.45 | 16.39 | Top End | Planar | 0.5 | 0.292 |
| ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak - Uncontrolled Exposure / General Population BODY: 1.6 W/kg (averaged over 1 gram) | | | | | | | | |
| Measured Mixture Type | | Body | | Relative Humidity | | 31 % | | |
| Dielectric Constant | | 52.3 | | Atmospheric Pressure | | 101.93 kPa | | |
| Conductivity | | 1.95 | | Fluid Temperature | | ≈ 23 °C | | |
| Ambient Temperature | | 23.9 °C | | Fluid Depth | | ≥ 15 cm | | |

Notes:

1. The SAR values measured were below the maximum limit of 1.6 w/kg (averaged over 1 gram).
2. The highest body SAR value measured was 0.780 w/kg (LCD side, mid channel).
3. The EUT was tested for body SAR with the LCD side of the EUT touching the outer surface of the planar phantom.
4. The EUT was tested for body SAR with the back-side of the EUT touching the outer surface of the planar phantom.
5. The EUT was tested for body SAR with a 0.5 cm separation distance between the top-end of the EUT and the outer surface of the planar phantom (with the CF card eject button touching outer surface of planar phantom).
6. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

5.0 DETAILS OF SAR EVALUATION

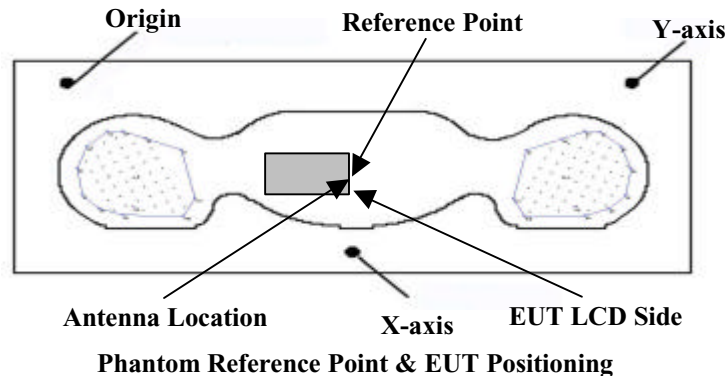
The COMPAL Handheld PDA Model: POCKET PC e740W with 2.4GHz DSSS Wireless LAN Mini PCI Card FCC ID: GKRPOCKETPCE740W was found to be compliant for localized Specific Absorption Rate based on the following test provisions and conditions:

1. The EUT was tested for body SAR with the LCD side of the EUT placed parallel to, and touching, the outer surface of the SAM planar phantom.
2. The EUT was tested for body SAR with the back-side of the EUT placed parallel to, and touching, the outer surface of the SAM planar phantom.
3. The EUT was tested for body SAR with the top-end of the EUT placed parallel to the outer surface of the SAM planar phantom. A 0.5 cm separation distance was maintained between the top-end of the EUT and the outer surface of the SAM planar phantom (with the CF card eject button touching the planar phantom).
4. A power adapter was used during the SAR evaluations with the battery installed. The power adapter generated the greatest supply voltage, and subsequently the worst-case SAR. The external cable was positioned in such a way as to provide excess separation between the antenna and the cable. 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 dropped 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. The conducted power was measured according to the procedures described in FCC Part 2.1046.
5. The device was operated in continuous transmit mode for the duration of the test.
6. The location of the maximum spatial SAR distribution (Hot Spot) was determined relative to the device and its antenna.

6.0 EVALUATION PROCEDURES

The Specific Absorption Rate (SAR) evaluation was performed as follows:

- (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 in accordance with FCC OET Bulletin 65, Supplement C (Edition 01-01) using the SAM phantom.
 - (ii) For body-worn and face-held devices a planar phantom was used. Depending on the phantom used for the evaluation, all other phantoms were drained of fluid.
- 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 with a grid spacing of 20mm x 20mm.
 - 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.
 - The depth of the simulating tissue in the planar phantom used for the SAR evaluation and system validation was no less than 15.0 cm.



7.0 SYSTEM VALIDATION

Prior to the assessment, the system was verified in the planar section of the SAM phantom with a 2450MHz dipole. A forward power of 250mW was applied to the dipole and system was verified to a tolerance of $\pm 10\%$. The applicable verifications are listed below (see Appendix B for system validation test plot and Appendix C for dipole calibration information).

| Dipole Validation Kit | Target SAR 1g (w/kg) | Measured SAR 1g (w/kg) | Fluid Temperature | Fluid Depth | Validation Date |
|-----------------------|----------------------|------------------------|--------------------------------|--------------|-----------------|
| 2450MHz | 14.2 | 14.0 | $\approx 23.0^{\circ}\text{C}$ | ≥ 15 cm | 05/06/02 |

8.0 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 listed below (see Appendix E for printout of measured fluid dielectric parameters).

| BRAIN TISSUE PARAMETERS - SYSTEM VALIDATION | | | |
|---|----------------------------------|----------------------------------|-----------------------------|
| Equivalent Tissue | Dielectric Constant ϵ_r | Conductivity σ (mho/m) | ρ (Kg/m ³) |
| 2450MHz Brain (Target) | 39.2 $\pm 5\%$ | 1.80 $\pm 5\%$ | 1000 |
| 2450MHz Brain (Measured - 05/06/02) | 39.6 | 1.79 | 1000 |

| BODY TISSUE PARAMETERS - EUT EVALUATION | | | |
|---|----------------------------------|----------------------------------|-----------------------------|
| Equivalent Tissue | Dielectric Constant ϵ_r | Conductivity σ (mho/m) | ρ (Kg/m ³) |
| 2450MHz Body (Target) | 52.7 $\pm 5\%$ | 1.95 $\pm 5\%$ | 1000 |
| 2450MHz Body (Measured - 05/06/02) | 52.3 | 1.95 | 1000 |

9.0 EQUIVALENT TISSUES

The 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).

| TISSUE MIXTURE | | |
|------------------|--|--|
| INGREDIENT | 2450MHz Brain Mixture (System Validation) | 2450MHz Body Mixture (EUT Evaluation) |
| Water | 55.20 % | 69.95 % |
| Glycol Monobutyl | 44.80 % | 30.00 % |
| Salt | - | 0.05 % |

10.0 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.

11.0 ROBOT SYSTEM SPECIFICATIONS

Specifications

POSITIONER: Stäubli Unimation Corp. Robot Model: RX60L
Repeatability: 0.02 mm
No. of axis: 6

Data Acquisition Electronic (DAE) System

Cell Controller

Processor: Pentium III
Clock Speed: 450 MHz
Operating System: Windows NT
Data Card: DASY3 PC-Board

Data Converter

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

PC Interface Card

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

E-Field Probe

Model: ET3DV6
Serial No.: 1387
Construction: Triangular core fiber optic detection system
Frequency: 10 MHz to 6 GHz
Linearity: ± 0.2 dB (30 MHz to 3 GHz)

Phantom

Type: SAM V4.0C
Shell Material: Fiberglass
Thickness: 2.0 \pm 0.1 mm
Volume: Approx. 20 liters

12.0 PROBE SPECIFICATION (ET3DV6)

Construction: Symmetrical design with triangular core
Built-in shielding against static charges
PEEK enclosure material (resistant to organic solvents, e.g. glycol)

Calibration: In air from 10 MHz to 2.5 GHz
In brain simulating tissue at frequencies of 900 MHz
and 1.8 GHz (accuracy $\pm 8\%$)

Frequency: 10 MHz to >6 GHz; Linearity: ± 0.2 dB
(30 MHz to 3 GHz)

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

Dynam. Rnge: $5 \mu\text{W/g}$ to $>100 \text{ mW/g}$; Linearity: ± 0.2 dB

Srfce. Detect. ± 0.2 mm repeatability in air and clear liquids over
diffuse reflecting surfaces

Dimensions: Overall length: 330 mm
Tip length: 16 mm
Body diameter: 12 mm
Tip diameter: 6.8 mm
Distance from probe tip to dipole centers: 2.7 mm

Application: General dosimetry up to 3 GHz
Compliance tests of mobile phone



ET3DV6 E-Field Probe

13.0 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

14.0 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

15.0 TEST EQUIPMENT LIST

| SAR MEASUREMENT SYSTEM | | |
|--|--|---|
| EQUIPMENT | SERIAL NO. | CALIBRATION DATE |
| DASY3 System -Robot -ET3DV6 E-Field Probe -300MHz Validation Dipole -450MHz Validation Dipole -900MHz Validation Dipole -1800MHz Validation Dipole -2450MHz Validation Dipole -SAM Phantom V4.0C -Small Planar Phantom | 599396-01 1387 135 136 054 247 150 N/A N/A | N/A Feb 2002 Oct 2001 Oct 2001 June 2001 June 2001 Oct 2001 N/A N/A |
| 85070C Dielectric Probe Kit | N/A | N/A |
| Gigatronics 8652A Power Meter -Power Sensor 80701A -Power Sensor 80701A | 1835272 1833535 1833542 | Feb 2002 Feb 2002 Mar 2002 |
| E4408B Spectrum Analyzer | US39240170 | Feb 2002 |
| 8594E Spectrum Analyzer | 3543A02721 | Feb 2002 |
| 8753E Network Analyzer | US38433013 | Feb 2002 |
| 8648D Signal Generator | 3847A00611 | Feb 2002 |
| 5S1G4 Amplifier Research Power Amplifier | 26235 | N/A |

16.0 MEASUREMENT UNCERTAINTIES

| Error Description | Uncertainty Value ±% | Probability Distribution | Divisor | c _i 1g | Standard Uncertainty ±% (1g) | v _i or v _{eff} |
|--------------------------------------|-------------------------|--------------------------|---------|----------------------|---------------------------------|------------------------------------|
| Measurement System | | | | | | |
| Probe calibration | ± 4.8 | Normal | 1 | 1 | ± 4.8 | ∞ |
| Axial isotropy of the probe | ± 4.7 | Rectangular | √3 | (1-c _p) | ± 1.9 | ∞ |
| Spherical isotropy of the probe | ± 9.6 | Rectangular | √3 | (c _p) | ± 3.9 | ∞ |
| Spatial resolution | ± 0.0 | Rectangular | √3 | 1 | ± 0.0 | ∞ |
| Boundary effects | ± 5.5 | Rectangular | √3 | 1 | ± 3.2 | ∞ |
| Probe linearity | ± 4.7 | Rectangular | √3 | 1 | ± 2.7 | ∞ |
| Detection limit | ± 1.0 | Rectangular | √3 | 1 | ± 0.6 | ∞ |
| Readout electronics | ± 1.0 | Normal | 1 | 1 | ± 1.0 | ∞ |
| Response time | ± 0.8 | Rectangular | √3 | 1 | ± 0.5 | ∞ |
| Integration time | ± 1.4 | Rectangular | √3 | 1 | ± 0.8 | ∞ |
| RF ambient conditions | ± 3.0 | Rectangular | √3 | 1 | ± 1.7 | ∞ |
| Mech. constraints of robot | ± 0.4 | Rectangular | √3 | 1 | ± 0.2 | ∞ |
| Probe positioning | ± 2.9 | Rectangular | √3 | 1 | ± 1.7 | ∞ |
| Extrapolation & integration | ± 3.9 | Rectangular | √3 | 1 | ± 2.3 | ∞ |
| Test Sample Related | | | | | | |
| Device positioning | ± 6.0 | Normal | √3 | 1 | ± 6.7 | 12 |
| Device holder uncertainty | ± 5.0 | Normal | √3 | 1 | ± 5.9 | 8 |
| Power drift | ± 5.0 | Rectangular | √3 | | ± 2.9 | ∞ |
| Phantom and Setup | | | | | | |
| Phantom uncertainty | ± 4.0 | Rectangular | √3 | 1 | ± 2.3 | ∞ |
| Liquid conductivity (target) | ± 5.0 | Rectangular | √3 | 0.6 | ± 1.7 | ∞ |
| Liquid conductivity (measured) | ± 10.0 | Rectangular | √3 | 0.6 | ± 3.5 | ∞ |
| Liquid permittivity (target) | ± 5.0 | Rectangular | √3 | 0.6 | ± 1.7 | ∞ |
| Liquid permittivity (measured) | ± 5.0 | Rectangular | √3 | 0.6 | ± 1.7 | ∞ |
| Combined Standard Uncertainty | | | | | ± 13.6 | |
| Expanded Uncertainty (k=2) | | | | | ± 27.1 | |

Measurement Uncertainty Table in accordance with IEEE Std 1528 (Draft - see reference [5])

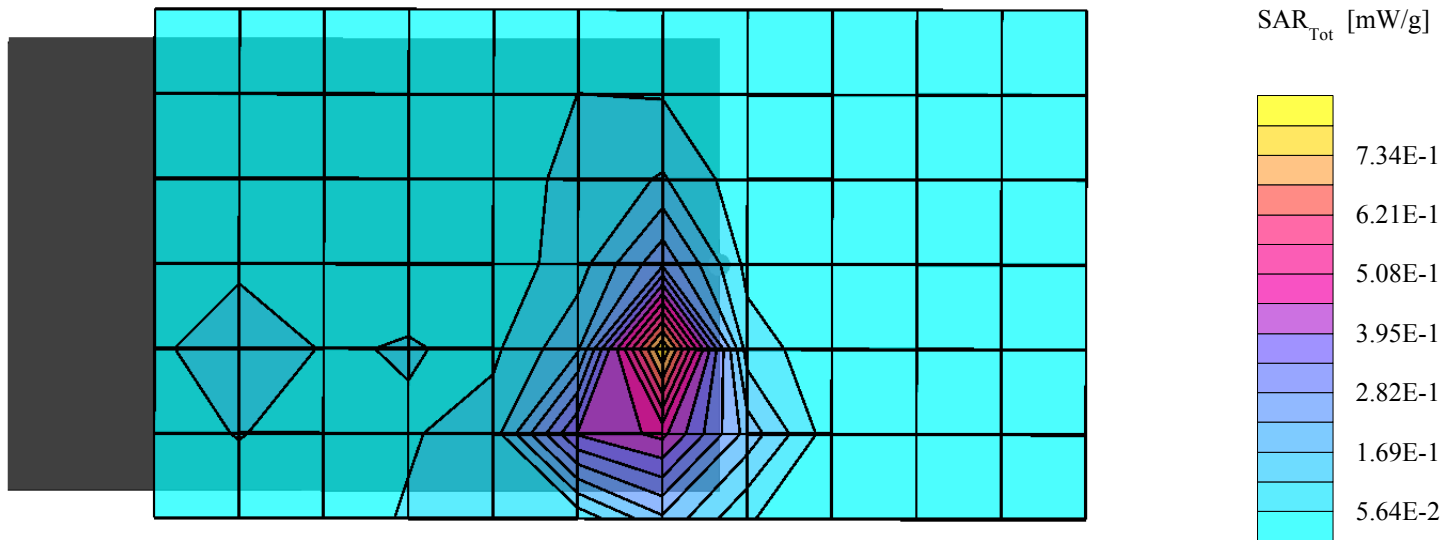
17.0 REFERENCES

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

APPENDIX A - SAR MEASUREMENT DATA

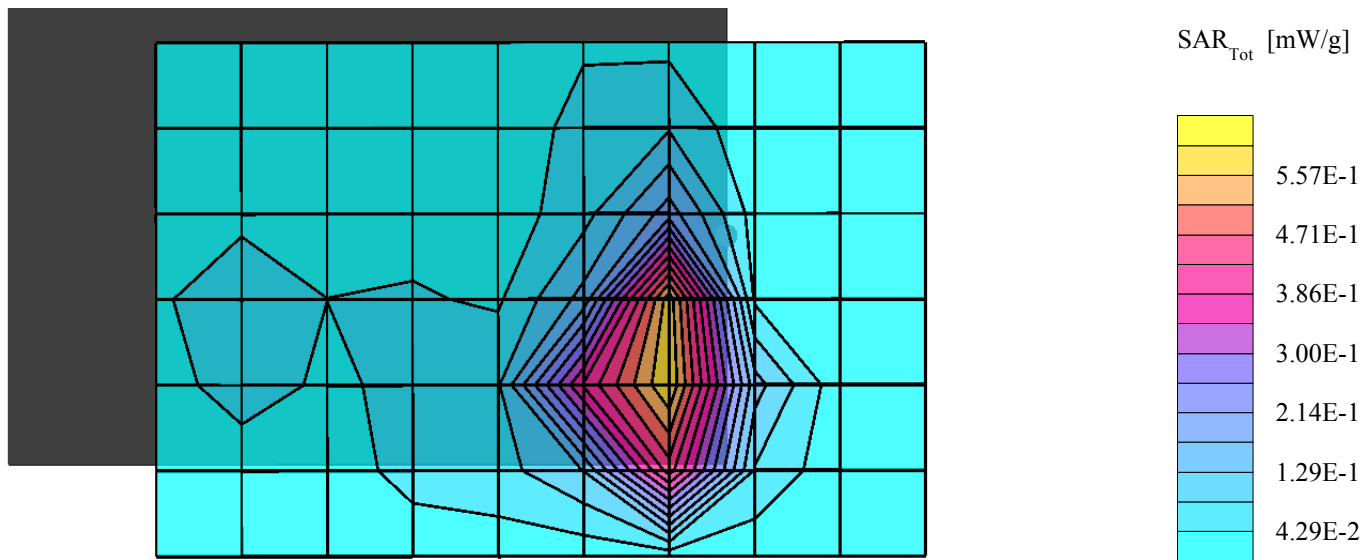
Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.14 dB
SAR (1g): 0.707 mW/g, SAR (10g): 0.314 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.0cm Separation Distance
Front LCD Side of EUT
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
Low Channel [2412 MHz]
Conducted Power: 16.55 dBm
Date Tested: May 6, 2002



Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.16 dB
SAR (1g): 0.780 mW/g, SAR (10g): 0.339 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.0cm Separation Distance
Front LCD Side of EUT
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
Mid Channel [2437 MHz]
Conducted Power: 16.65 dBm
Date Tested: May 6, 2002



Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section

Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0

2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³

Z-Axis Extrapolation at Peak SAR Location

Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C

Body SAR at 0.0cm Separation Distance

Front LCD Side of EUT

Handheld PDA with Wireless LAN

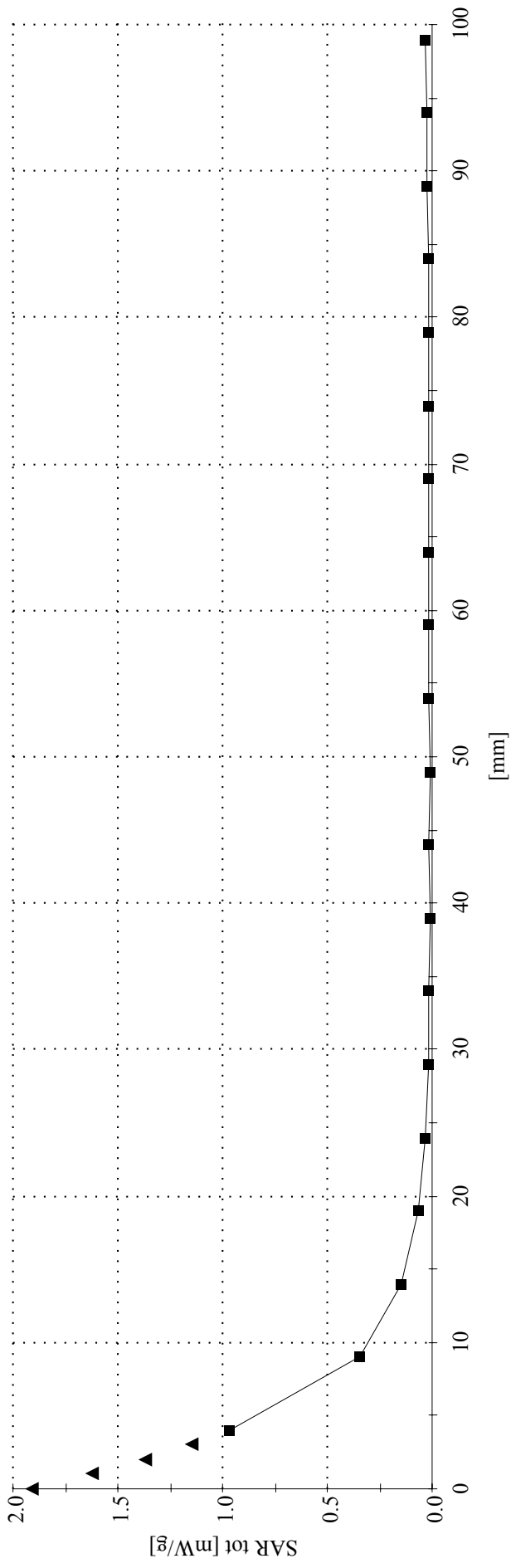
Model: POCKET PC e740W

CW Mode

Mid Channel [2437 MHz]

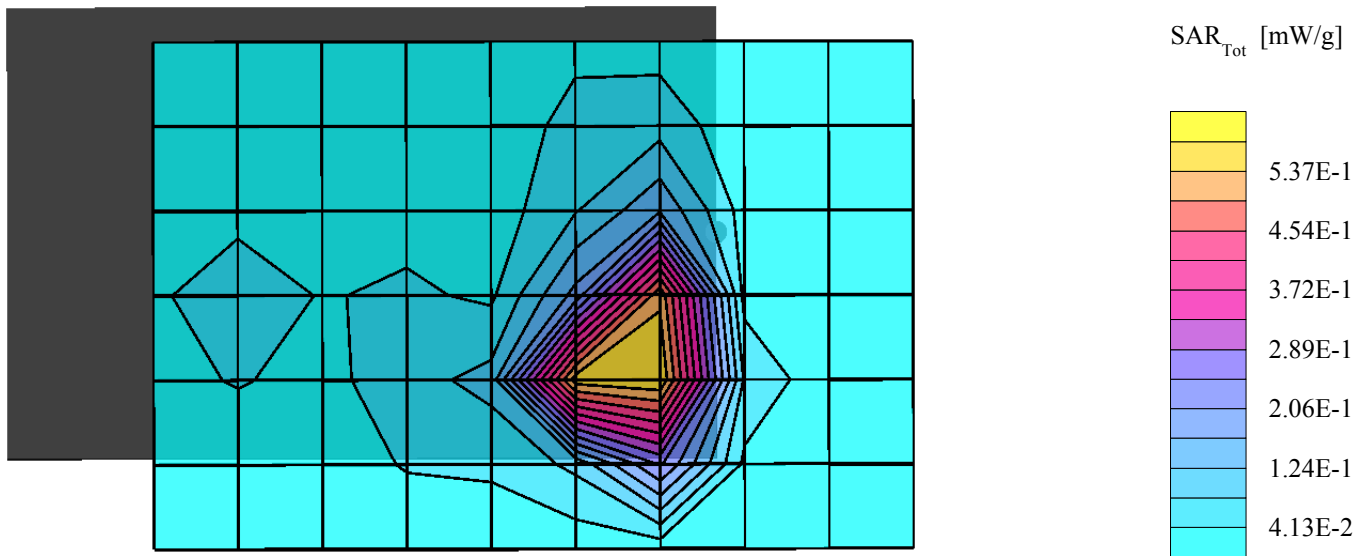
Conducted Power: 16.65 dBm

Date Tested: May 6, 2002



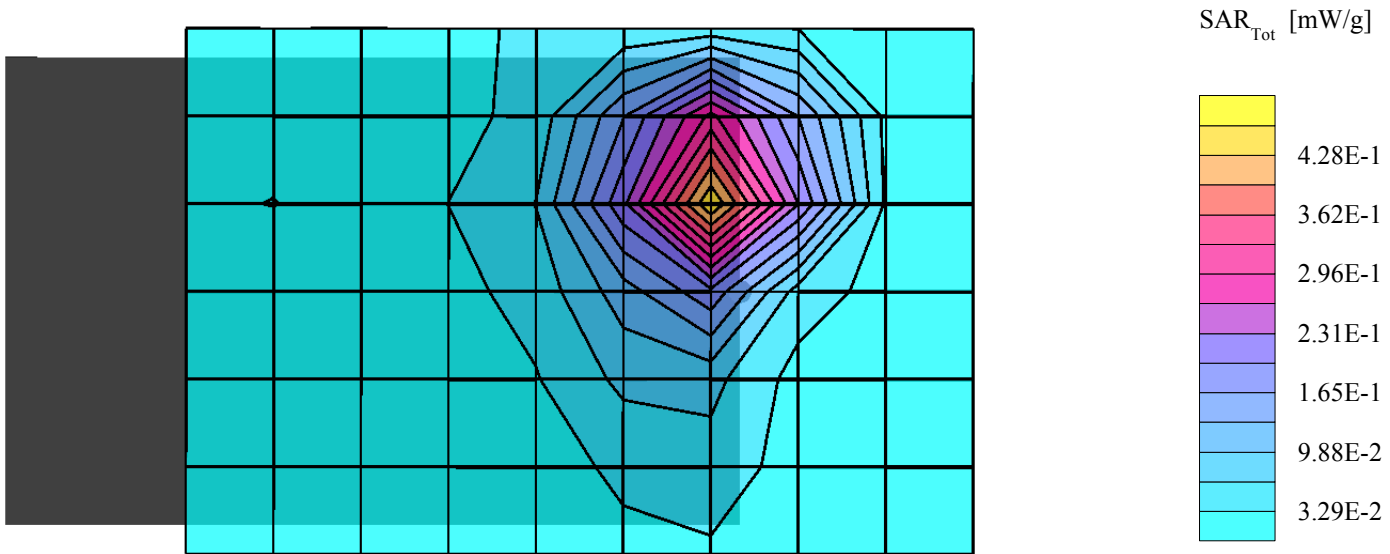
Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.11 dB
SAR (1g): 0.661 mW/g, SAR (10g): 0.297 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.0cm Separation Distance
Front LCD Side of EUT
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
High Channel [2462 MHz]
Conducted Power: 16.45 dBm
Date Tested: May 6, 2002



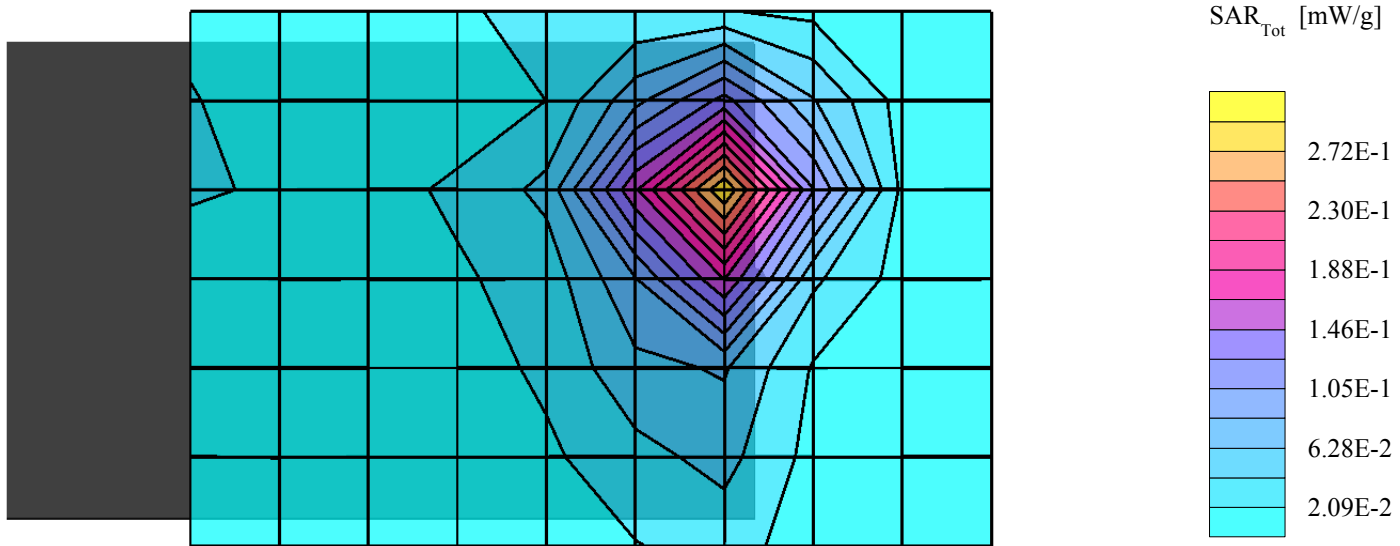
Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.10 dB
SAR (1g): 0.473 mW/g, SAR (10g): 0.230 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.0cm Separation Distance
Back Side of EUT
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
Low Channel [2412 MHz]
Conducted Power: 16.55 dBm
Date Tested: May 6, 2002



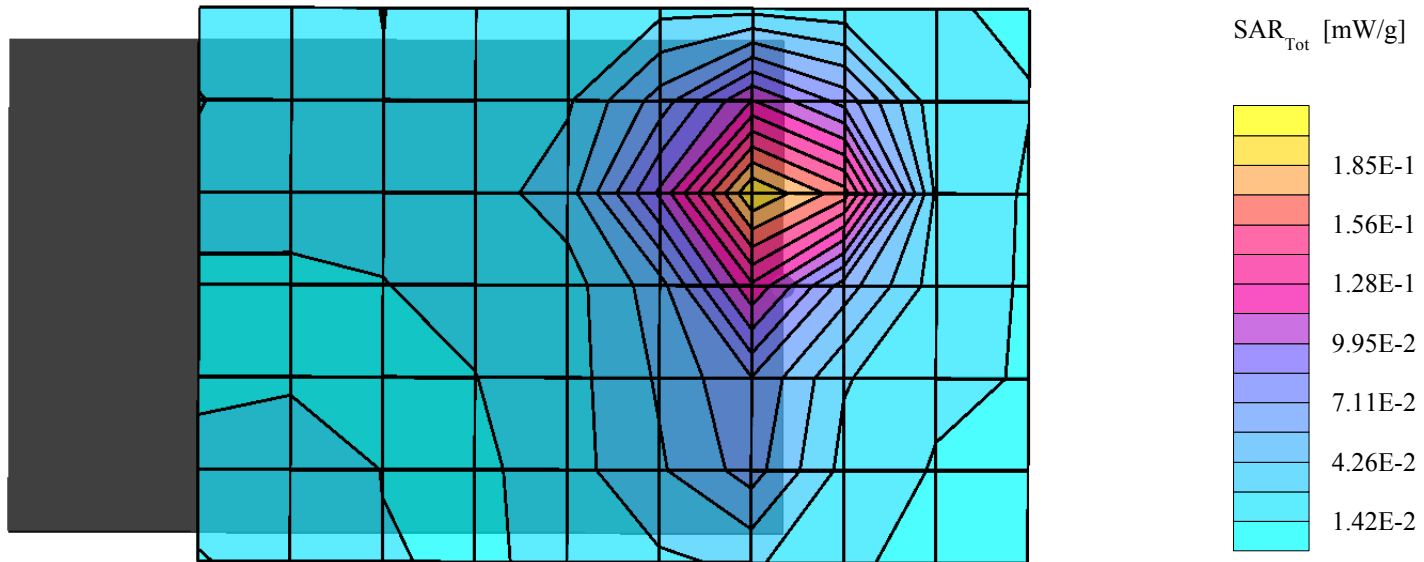
Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.18 dB
SAR (1g): 0.283 mW/g, SAR (10g): 0.141 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.0cm Separation Distance
Back Side of EUT
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
Mid Channel [2437 MHz]
Conducted Power: 16.65 dBm
Date Tested: May 6, 2002



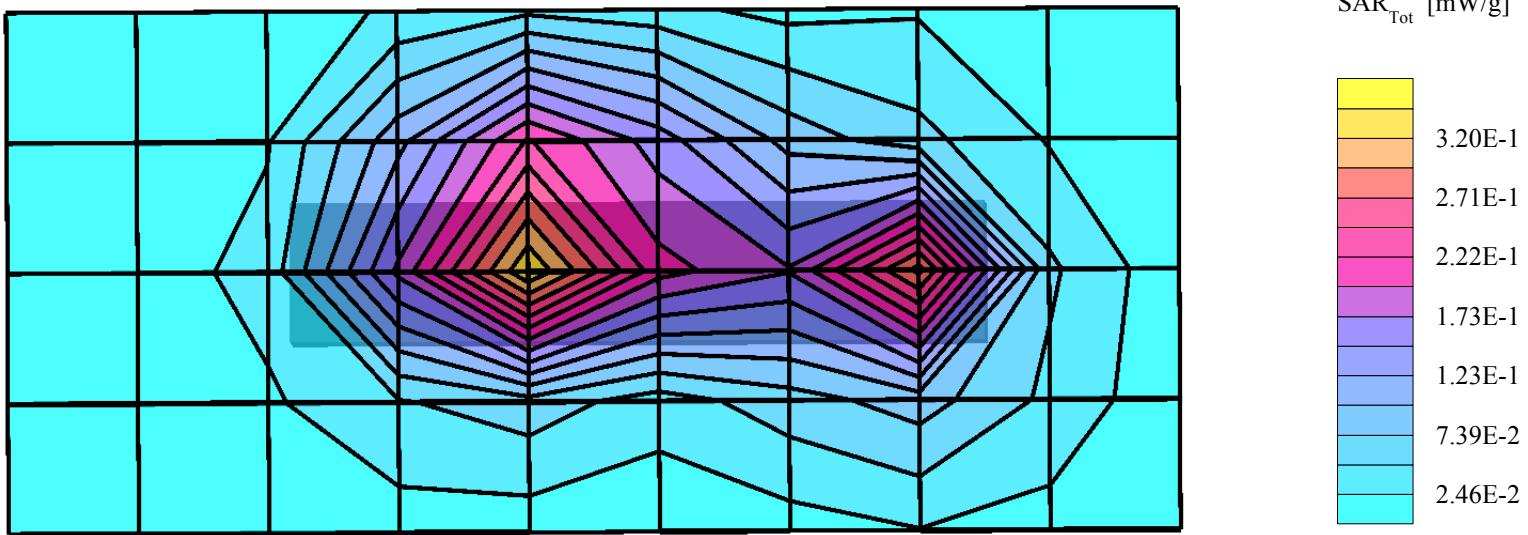
Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.08 dB
SAR (1g): 0.237 mW/g, SAR (10g): 0.118 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.0cm Separation Distance
Back Side of EUT
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
High Channel [2462 MHz]
Conducted Power: 16.45 dBm
Date Tested: May 6, 2002



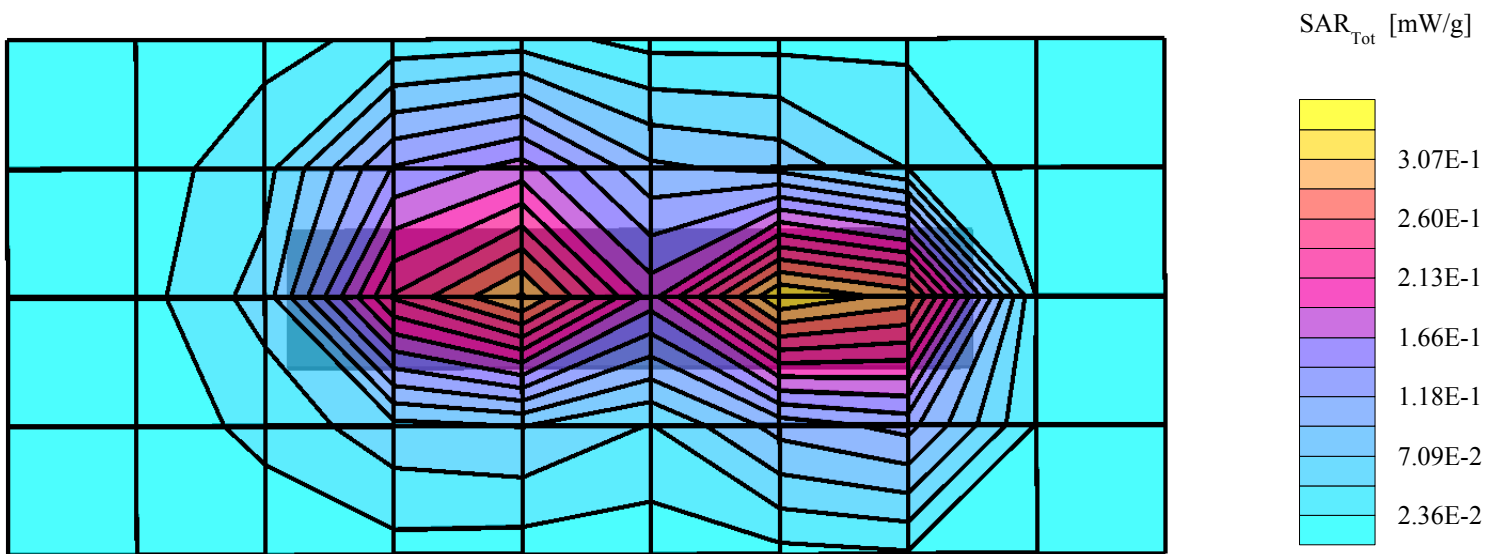
Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (180°,0°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.15 dB
SAR (1g): 0.330 mW/g, SAR (10g): 0.162 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.5cm Separation Distance
Top End of EUT (CF Card Eject Touching Phantom)
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
Low Channel [2412 MHz]
Conducted Power: 16.55 dBm
Date Tested: May 6, 2002



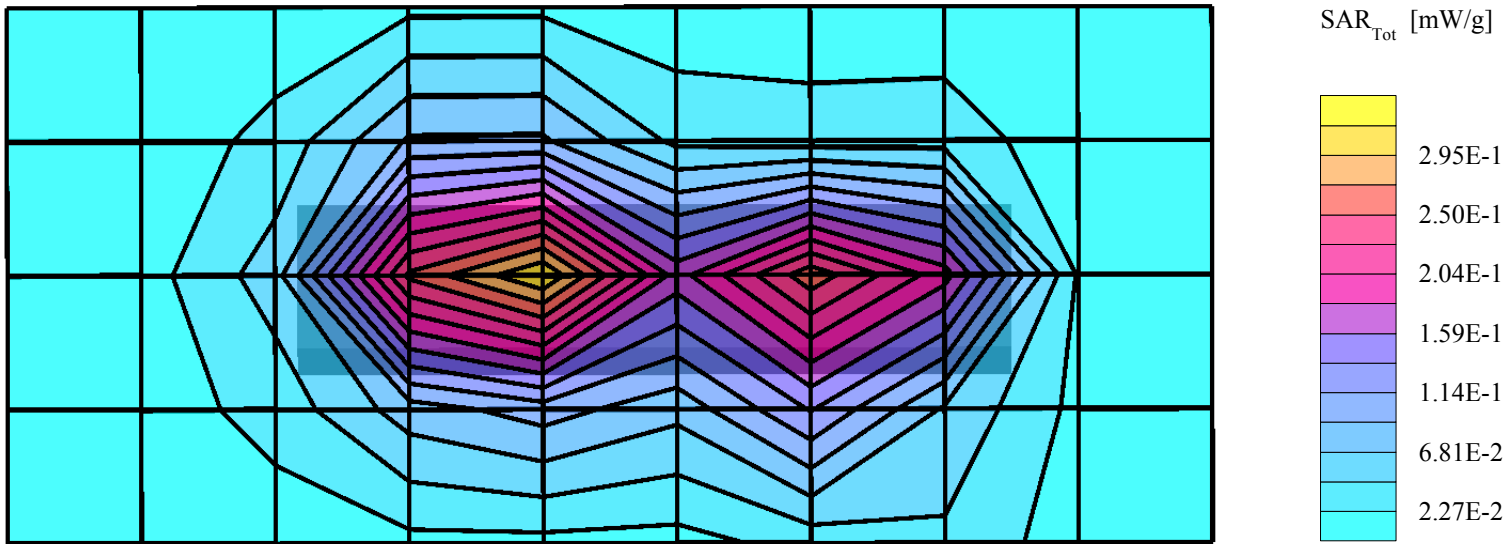
Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (180°,0°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.16 dB
SAR (1g): 0.366 mW/g, SAR (10g): 0.140 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.5cm Separation Distance
Top End of EUT (CF Card Eject Touching Phantom)
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
Mid Channel [2437 MHz]
Conducted Power: 16.65 dBm
Date Tested: May 6, 2002



Compal Electronics FCC ID: GKRPOCKETPCE740W

SAM Phantom; Flat Section; Position: (180°,0°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: $\sigma = 1.95$ mho/m $\epsilon_r = 52.3$ $\rho = 1.00$ g/cm³
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.04 dB
SAR (1g): 0.292 mW/g, SAR (10g): 0.139 mW/g
Ambient TEMP: 23.9°C; Liquid TEMP: 23.0°C
Body SAR at 0.5cm Separation Distance
Top End of EUT (CF Card Eject Touching Phantom)
Handheld PDA with Wireless LAN
Model: POCKET PC e740W
CW Mode
High Channel [2462 MHz]
Conducted Power: 16.45 dBm
Date Tested: May 6, 2002



APPENDIX B - SYSTEM VALIDATION

Dipole 2450MHz

SAM Phantom; Flat Section

Probe: ET3DV6 - SN1387; ConvF(4.74,4.74,4.74); Crest factor: 1.0; 2450 MHz Brain: $\sigma = 1.79$ mho/m $\epsilon_r = 39.6$ $\rho = 1.00$ g/cm³

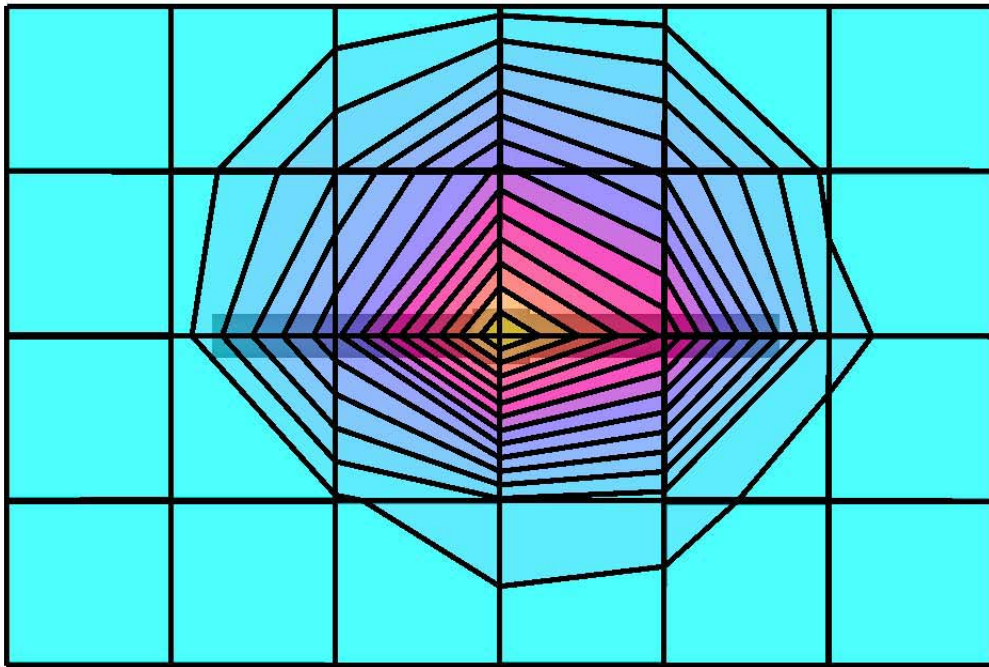
Cube 5x5x7: Peak: 33.7 mW/g, SAR (1g): 14.0 mW/g, SAR (10g): 6.43 mW/g, (Worst-case extrapolation)

Penetration depth: 6.2 (6.0, 7.0) [mm]

Powerdrift: -0.03 dB

Conducted Power: 250mW

Date Tested: May 06, 2002



APPENDIX C - DIPOLE CALIBRATION

2450MHz SYSTEM VALIDATION DIPOLE

Type:

2450MHz Validation Dipole

Serial Number:

150

Place of Calibration:


Celltech Research Inc.

Date of Calibration:

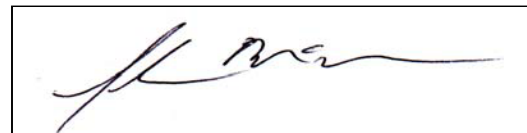
October 24, 2001

Celltech Research Inc. hereby certifies that this device has been calibrated on the date indicated above.

Calibrated by:

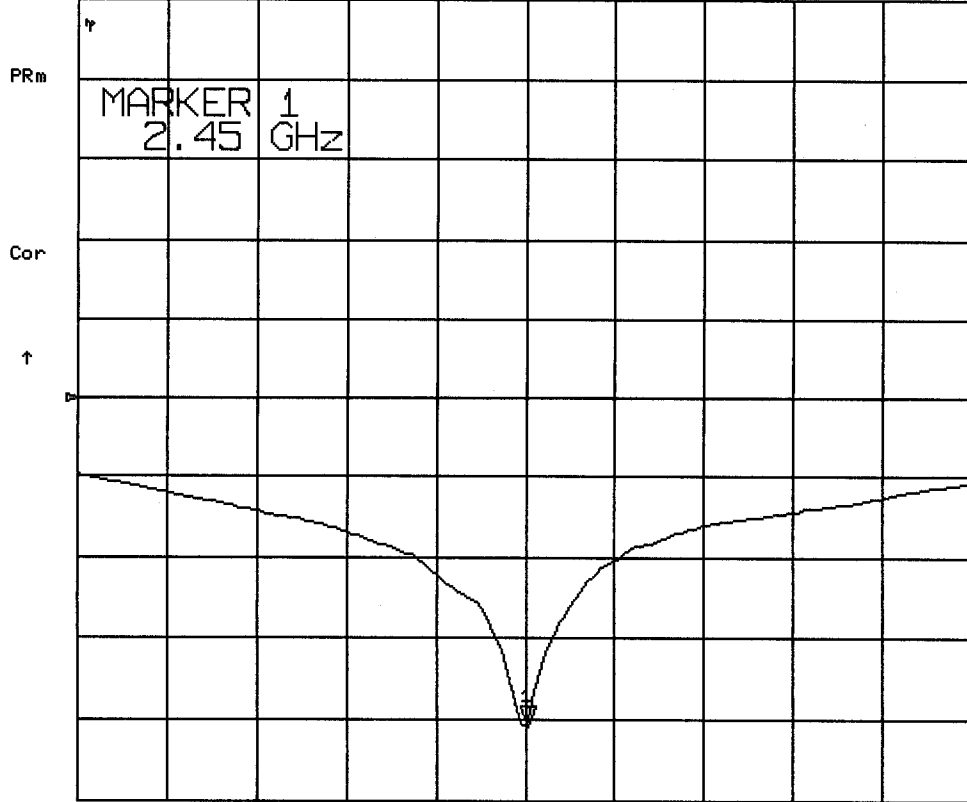


Approved by:



9 Nov 2001 09:52:05

CH1 S11 LOG 10 dB/REF 0 dB 1:-40.897 dB 2:450.000 000 MHz

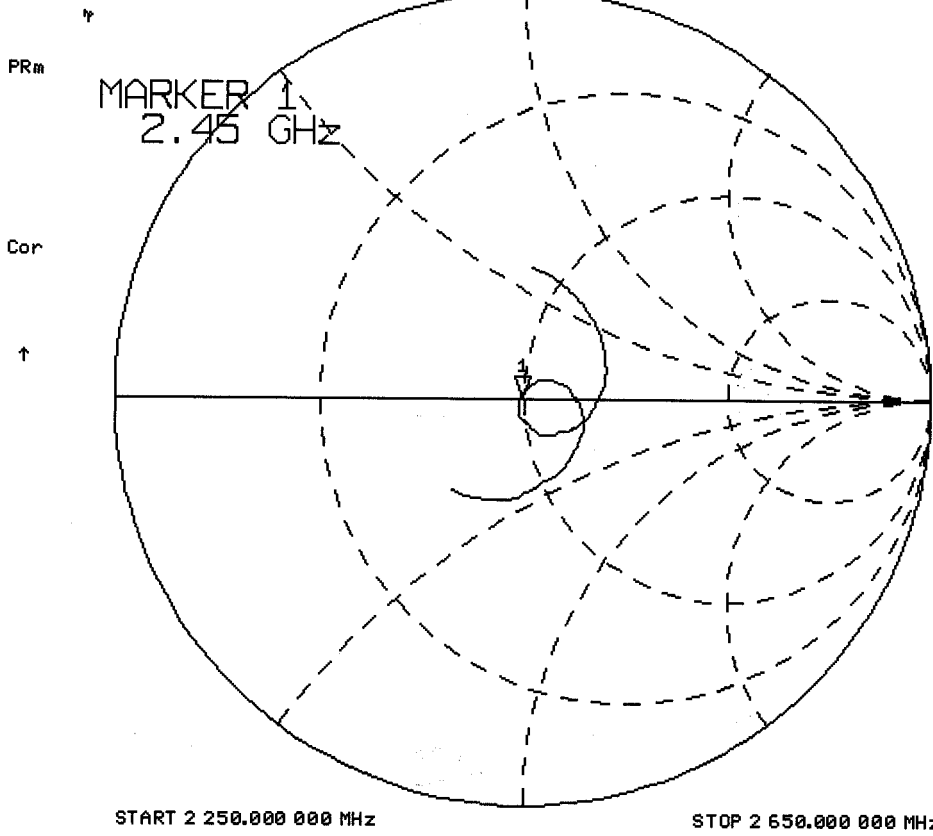


START 2 250.000 000 MHz

STOP 2 650.000 000 MHz

9 Nov 2001 09:52:18

CH1 S11 1 U FS 1: 49.268 Ω 0.4121 Ω 26.771 pH 2 450.000 000 MHz



Validation Dipole Dimensions

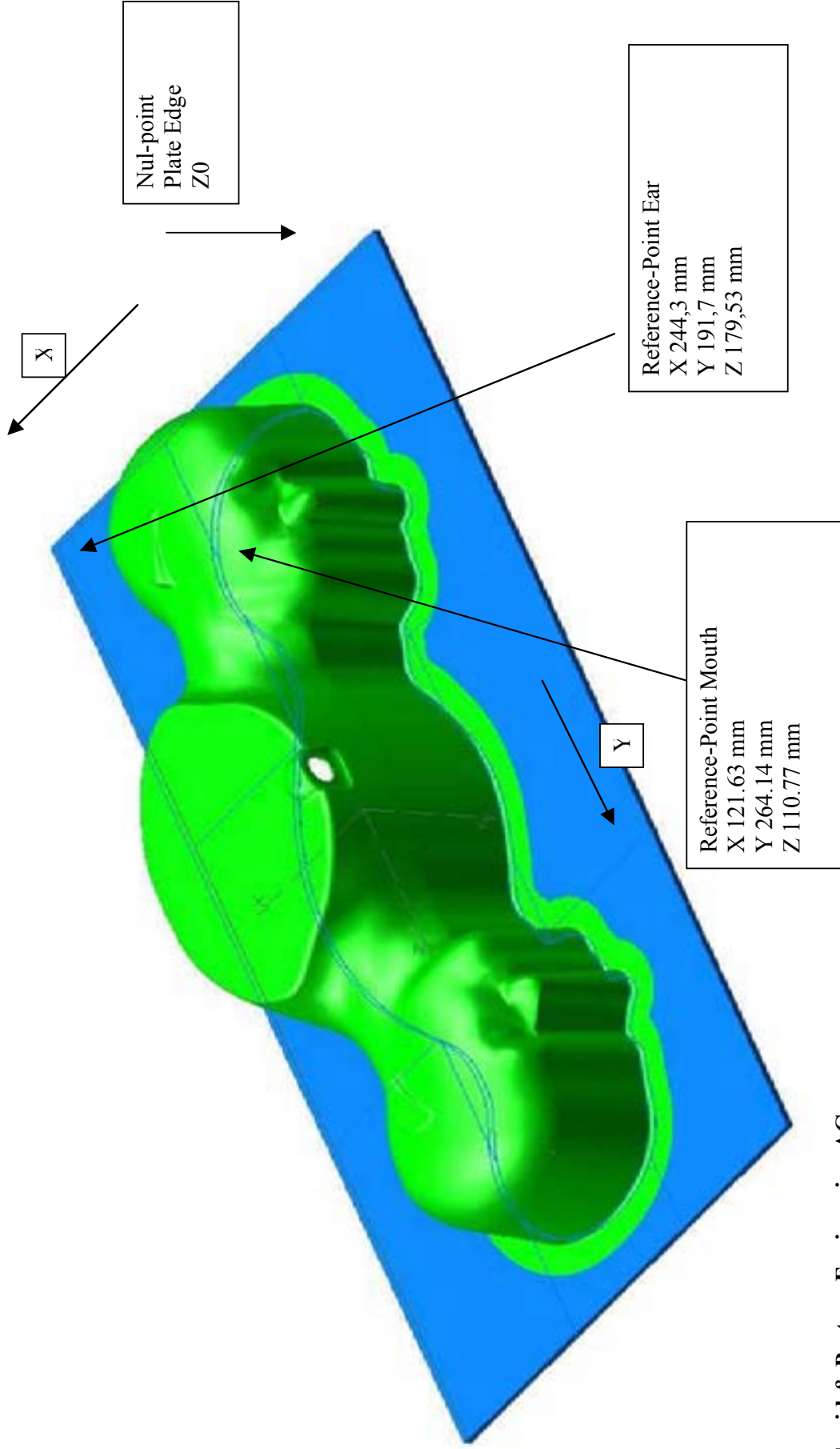
| Frequency (MHz) | L (mm) | h (mm) | d (mm) |
|-----------------|--------|--------|--------|
| 300 | 420.0 | 250.0 | 6.2 |
| 450 | 288.0 | 167.0 | 6.2 |
| 835 | 161.0 | 89.8 | 3.6 |
| 900 | 149.0 | 83.3 | 3.6 |
| 1450 | 89.1 | 51.7 | 3.6 |
| 1800 | 72.0 | 41.7 | 3.6 |
| 1900 | 68.0 | 39.5 | 3.6 |
| 2000 | 64.5 | 37.5 | 3.6 |
| 2450 | 51.8 | 30.6 | 3.6 |
| 3000 | 41.5 | 25.0 | 3.6 |

2. Validation Phantom

The validation phantom is the SAM (Specific Anthropomorphic Mannequin) phantom manufactured by Schmid & Partner Engineering AG. The SAM phantom is a Fiberglass shell integrated in a wooden table. The shape of the shell corresponds to the phantom defined by SCC34-SC2. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Shell Thickness: 2 ± 0.1 mm
Filling Volume: Approx. 20 liters
Dimensions: 50 cm (W) x 100 cm (L)

SAM Twin-Phantom



2450MHz Dipole Calibration



2450MHz Dipole Calibration



3. Measurement Conditions

The planar phantom was filled with brain simulating tissue having the following electrical parameters at 2450MHz:

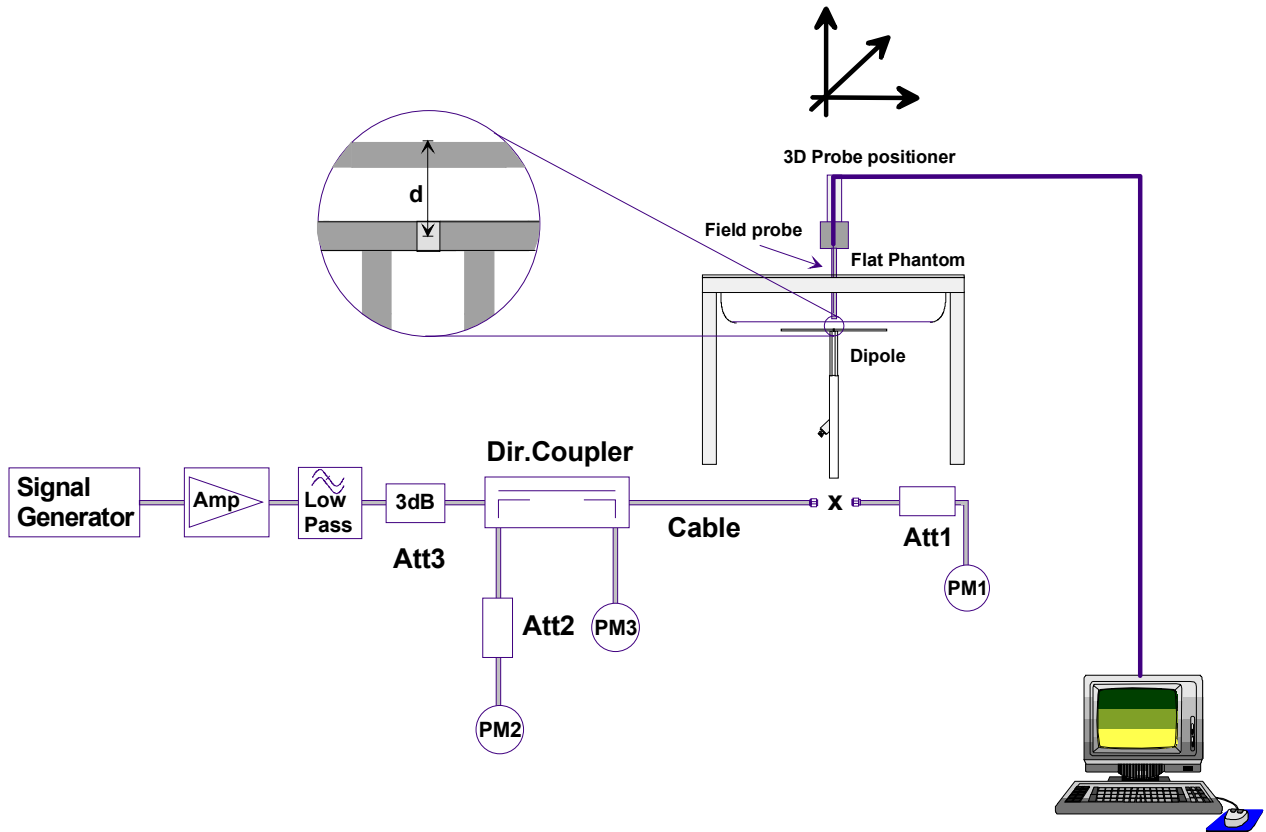
| | | |
|------------------------|------------|------|
| Relative Permittivity: | 39.2 | ± 5% |
| Conductivity: | 1.80 mho/m | ± 5% |
| Temperature: | 23.1°C | |

The 2450MHz simulating tissue consists of the following ingredients:

| Ingredient | Percentage by weight |
|---|--|
| Water | 54.95% |
| Glycol Monobutyl | 44.98% |
| Salt | 0.07% |
| Target Dielectric Parameters at 22°C | $\epsilon_r = 39.2$ $\sigma = 1.80 \text{ S/m}$ |

4. SAR Measurement

The SAR measurement was performed with the E-field probe in mechanical detection mode only. The setup and determination of the forward power into the dipole was performed using the following procedures.



First, the power meter PM1 (including attenuator Att1) is connected to the cable to measure the forward power at the location of the dipole connector (X). The signal generator is adjusted for the desired forward power at the dipole connector (taking into account the attenuation of Att1) as read by power meter PM2. After connecting the cable to the dipole, the signal generator is readjusted for the same reading at power meter PM2. If the signal generator does not allow adjustment in 0.01dB steps, the remaining difference at PM2 must be taken into consideration. PM3 records the reflected power from the dipole to ensure that the value is not changed from the previous value. The reflected power should be 20dB below the forward power.

Ten SAR measurements were performed in order to achieve repeatability and to establish an average target value.

Validation Dipole SAR Test Results

| Validation Measurement | SAR @ 0.25W Input averaged over 1g | SAR @ 1W Input averaged over 1g | SAR @ 0.25W Input averaged over 10g | SAR @ 1W Input averaged over 10g | Peak SAR @ 0.25W Input |
|------------------------|------------------------------------|---------------------------------|-------------------------------------|----------------------------------|------------------------|
| Test 1 | 14.2 | 56.80 | 6.33 | 25.32 | 30.5 |
| Test 2 | 14.3 | 57.20 | 6.34 | 25.36 | 30.8 |
| Test 3 | 14.2 | 56.80 | 6.33 | 25.32 | 30.4 |
| Test 4 | 14.1 | 56.40 | 6.32 | 25.28 | 30.1 |
| Test 5 | 14.3 | 57.20 | 6.33 | 25.32 | 30.7 |
| Test 6 | 14.0 | 56.00 | 6.31 | 25.24 | 30.0 |
| Test 7 | 14.2 | 56.80 | 6.33 | 25.32 | 30.4 |
| Test 8 | 14.2 | 56.80 | 6.33 | 25.32 | 30.5 |
| Test 9 | 14.4 | 57.60 | 6.34 | 25.36 | 30.8 |
| Test10 | 14.2 | 56.80 | 6.32 | 25.28 | 30.4 |
| Average Value | 14.21 | 56.84 | 6.32 | 25.31 | 30.46 |

The results have been normalized to 1W (forward power) into the dipole.

Averaged over 1cm (1g) of tissue: 56.84 mW/g

Averaged over 10cm (10g) of tissue: 25.31 mW/g

Dipole 2450MHz

SAM Phantom; Flat Section

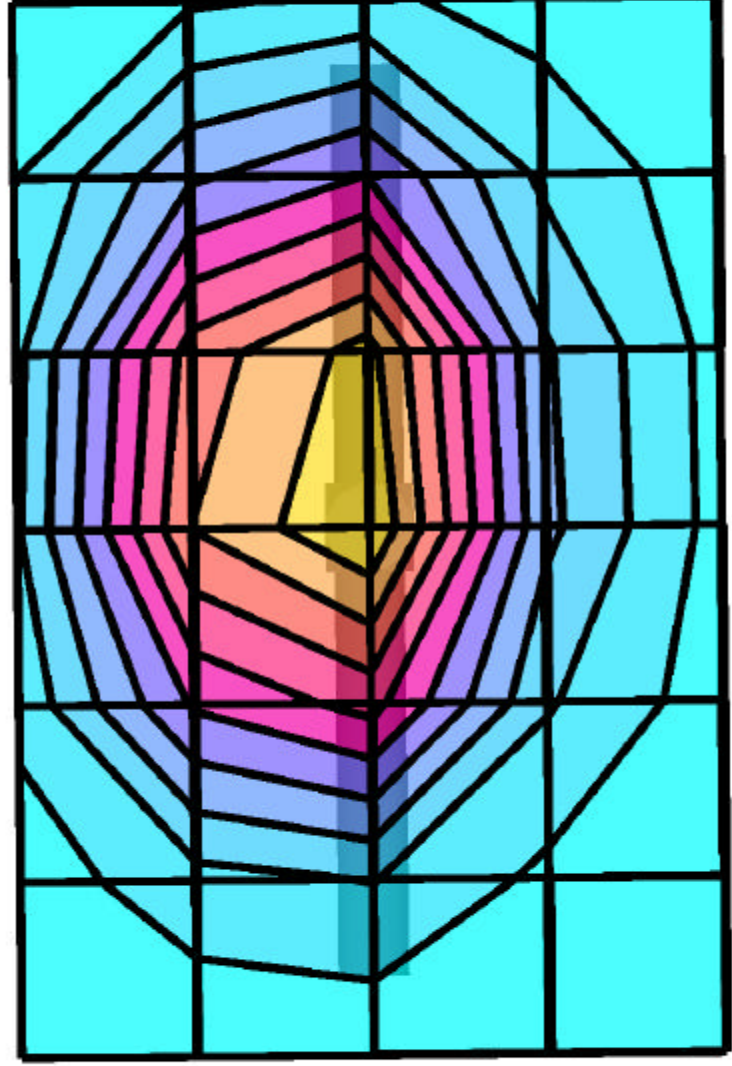
Probe: ET3DV6 - SNI1590; ConvF(4.93,4.93,4.93); Crest factor: 1.0; 2450 MHz Brain: $\sigma = 1.80$ mho/m $\epsilon_r = 39.2$ $\rho = 1.00$ g/cm³

Cube 5x5x7; Peak: 30.5 mW/g, SAR (1g): 14.2 mW/g, SAR (10g): 6.33 mW/g, (Worst-case extrapolation)

Penetration depth: 6.2 (5.9, 7.0) [mm]

Powerdrift: 0.03 dB

Calibration Date: October 24, 2001



APPENDIX D - PROBE CALIBRATION

Schmid & Partner Engineering AG

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

Calibration Certificate

Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1387

Place of Calibration:

Zurich

Date of Calibration:

February 22, 2002

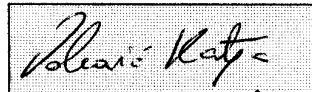
Calibration Interval:

12 months

Schmid & Partner Engineering AG hereby certifies, that this device has been calibrated on the date indicated above. The calibration was performed in accordance with specifications and procedures of Schmid & Partner Engineering AG.

Wherever applicable, the standards used in the calibration process are traceable to international standards. In all other cases the standards of the Laboratory for EMF and Microwave Electronics at the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland have been applied.

Calibrated by:



Approved by:



Probe ET3DV6

SN:1387

| | |
|-------------------|--------------------|
| Manufactured: | September 21, 1999 |
| Last calibration: | September 22, 1999 |
| Recalibrated: | February 22, 2002 |

Calibrated for System DASY3

DASY3 - Parameters of Probe: ET3DV6 SN:1387

Sensitivity in Free Space

| | |
|-------|---|
| NormX | 1.58 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| NormY | 1.67 $\mu\text{V}/(\text{V}/\text{m})^2$ |
| NormZ | 1.67 $\mu\text{V}/(\text{V}/\text{m})^2$ |

Diode Compression

| | | |
|-------|-----------|----|
| DCP X | 97 | mV |
| DCP Y | 97 | mV |
| DCP Z | 97 | mV |

Sensitivity in Tissue Simulating Liquid

| | | | |
|---------|------------------------------|-----------------------------|-------------------------------|
| Head | 900 MHz | $\epsilon_r = 41.5 \pm 5\%$ | $\sigma = 0.97 \pm 5\%$ mho/m |
| Head | 835 MHz | $\epsilon_r = 41.5 \pm 5\%$ | $\sigma = 0.90 \pm 5\%$ mho/m |
| ConvF X | 6.6 $\pm 9.5\%$ (k=2) | | Boundary effect: |
| ConvF Y | 6.6 $\pm 9.5\%$ (k=2) | | Alpha 0.40 |
| ConvF Z | 6.6 $\pm 9.5\%$ (k=2) | | Depth 2.38 |
| Head | 1800 MHz | $\epsilon_r = 40.0 \pm 5\%$ | $\sigma = 1.40 \pm 5\%$ mho/m |
| Head | 1900 MHz | $\epsilon_r = 40.0 \pm 5\%$ | $\sigma = 1.40 \pm 5\%$ mho/m |
| ConvF X | 5.4 $\pm 9.5\%$ (k=2) | | Boundary effect: |
| ConvF Y | 5.4 $\pm 9.5\%$ (k=2) | | Alpha 0.57 |
| ConvF Z | 5.4 $\pm 9.5\%$ (k=2) | | Depth 2.18 |

Boundary Effect

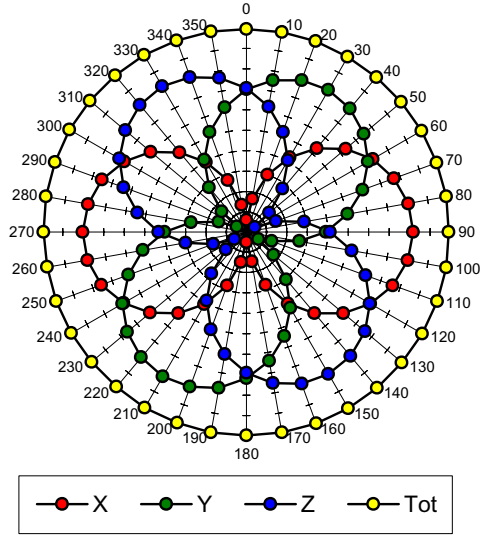
| | | | |
|------|--|--|-------------|
| Head | 900 MHz | Typical SAR gradient: 5 % per mm | |
| | Probe Tip to Boundary | 1 mm | 2 mm |
| | SAR _{be} [%] Without Correction Algorithm | 9.7 | 5.4 |
| | SAR _{be} [%] With Correction Algorithm | 0.3 | 0.6 |
| Head | 1800 MHz | Typical SAR gradient: 10 % per mm | |
| | Probe Tip to Boundary | 1 mm | 2 mm |
| | SAR _{be} [%] Without Correction Algorithm | 11.5 | 7.3 |
| | SAR _{be} [%] With Correction Algorithm | 0.1 | 0.3 |

Sensor Offset

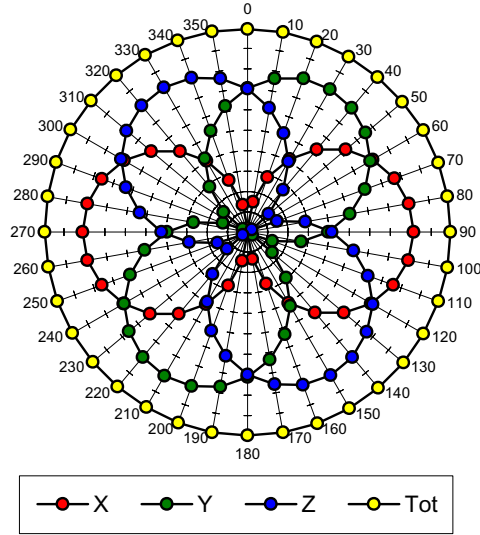
| | | |
|----------------------------|---------------------------------|----|
| Probe Tip to Sensor Center | 2.7 | mm |
| Optical Surface Detection | 1.3 \pm 0.2 | mm |

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

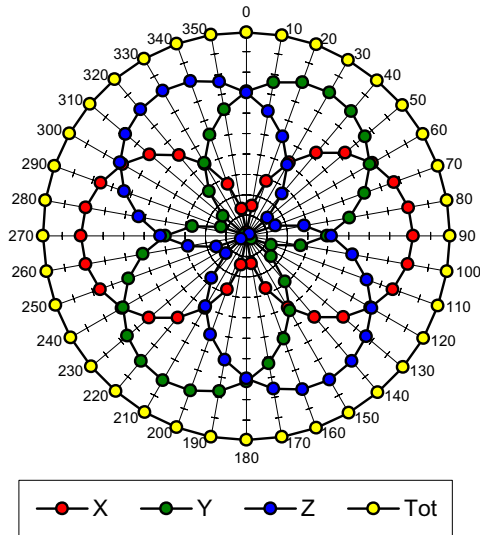
f = 30 MHz, TEM cell ifi110



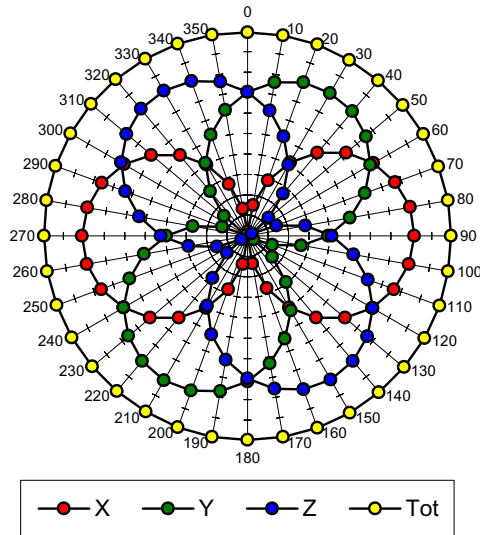
f = 100 MHz, TEM cell ifi110

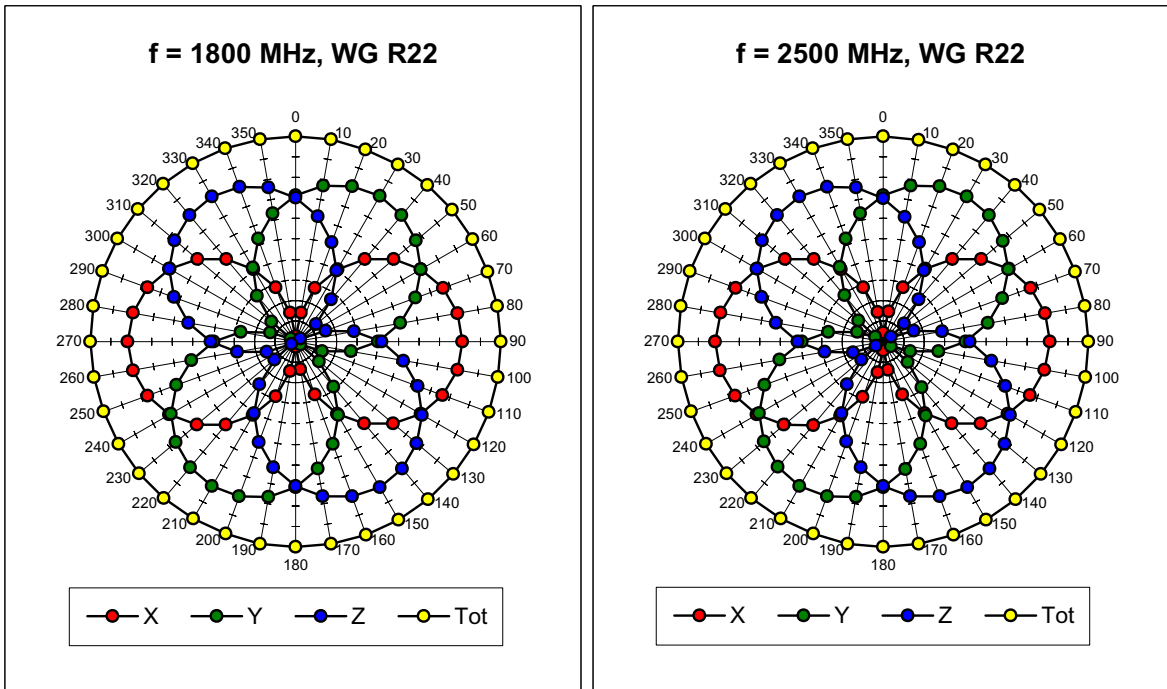


f = 300 MHz, TEM cell ifi110

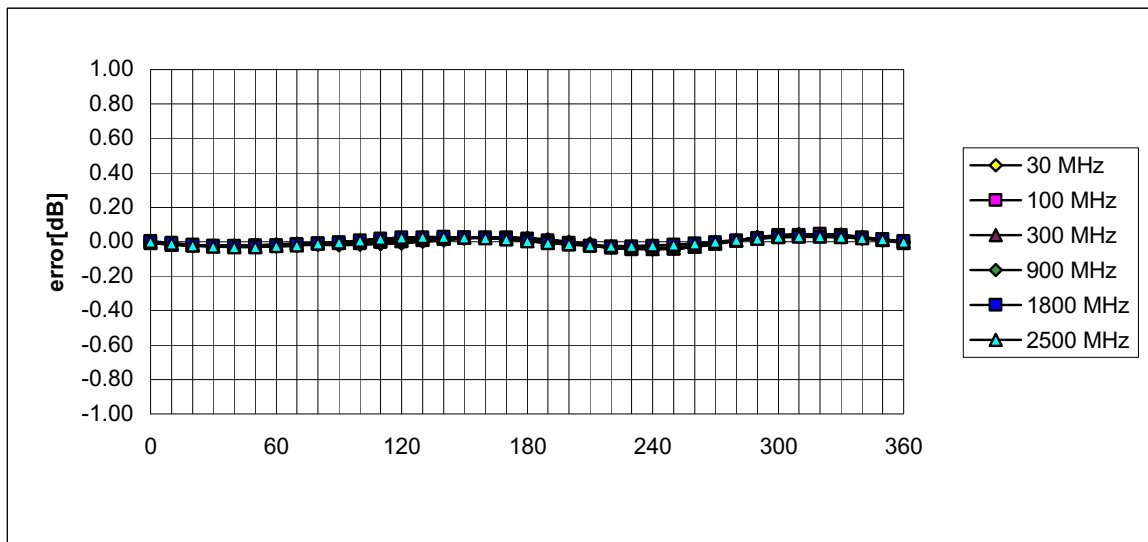


f = 900 MHz, TEM cell ifi110



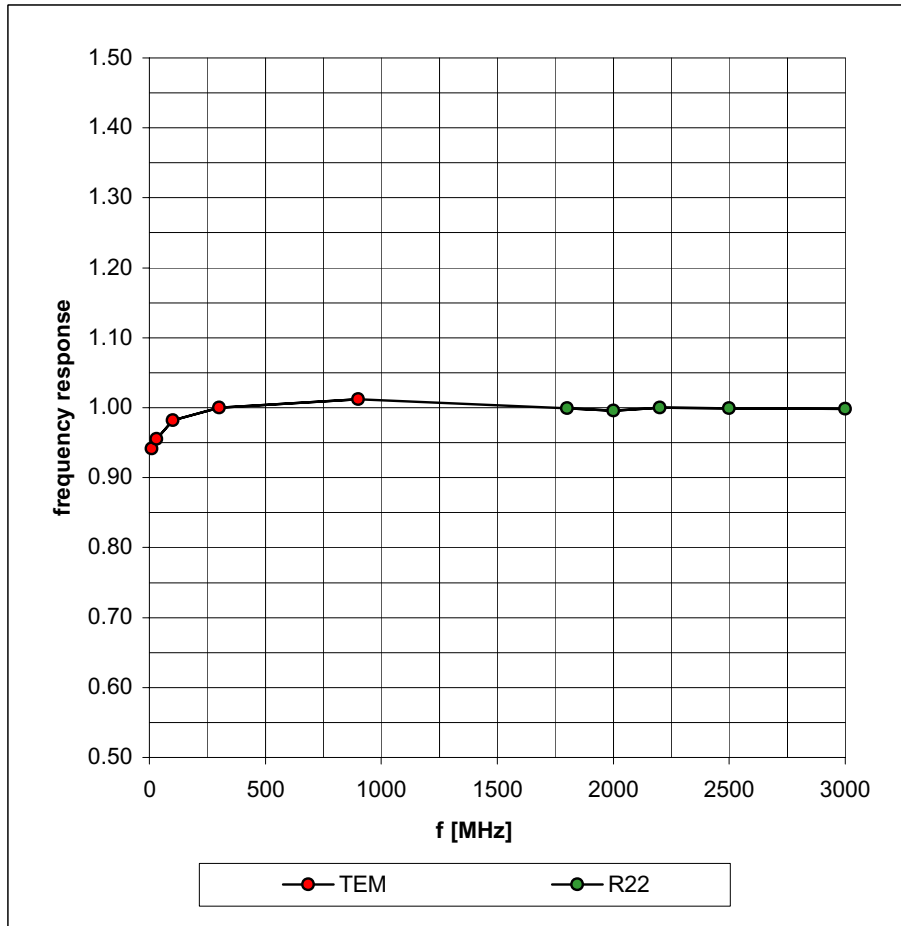


Isotropy Error (ϕ), $\theta = 0^\circ$

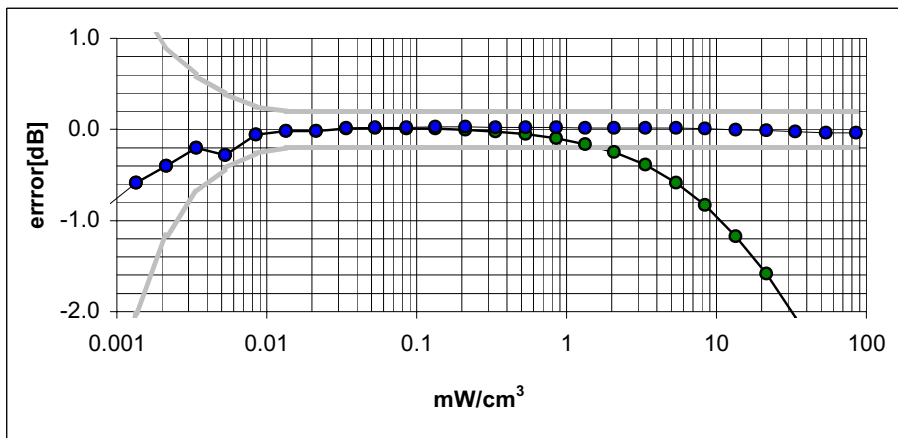
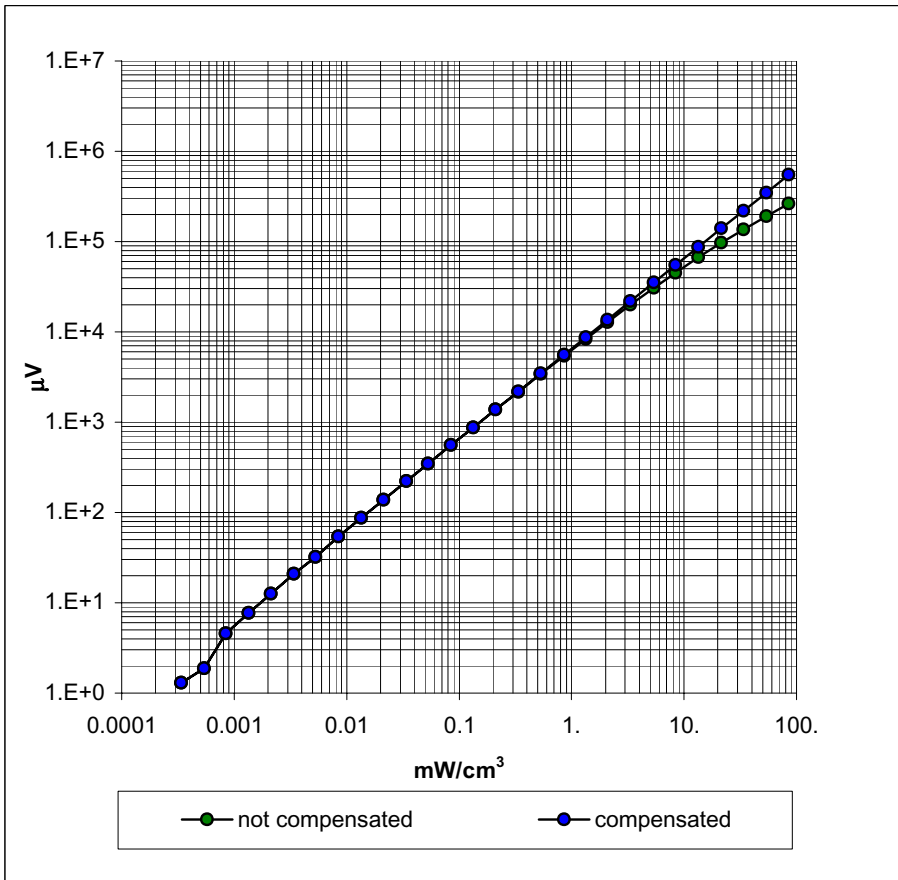


Frequency Response of E-Field

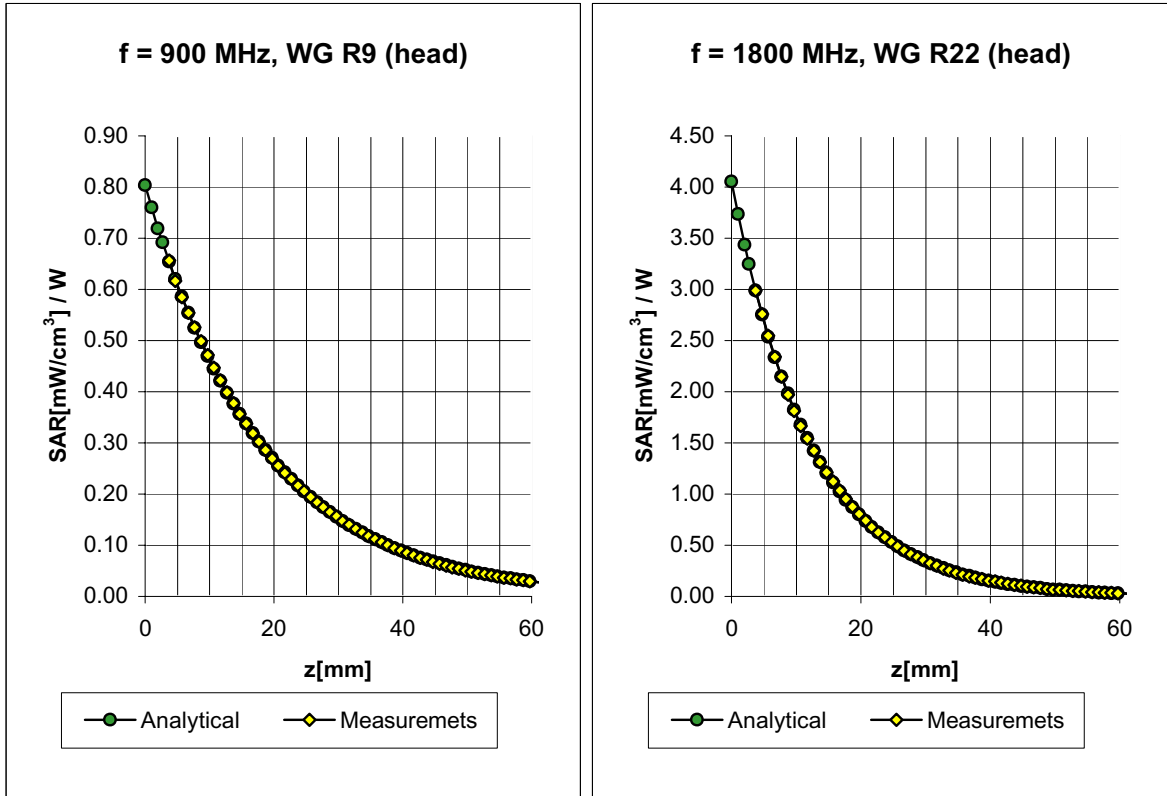
(TEM-Cell:ifi110, Waveguide R22)



Dynamic Range f(SAR_{brain}) (Waveguide R22)



Conversion Factor Assessment

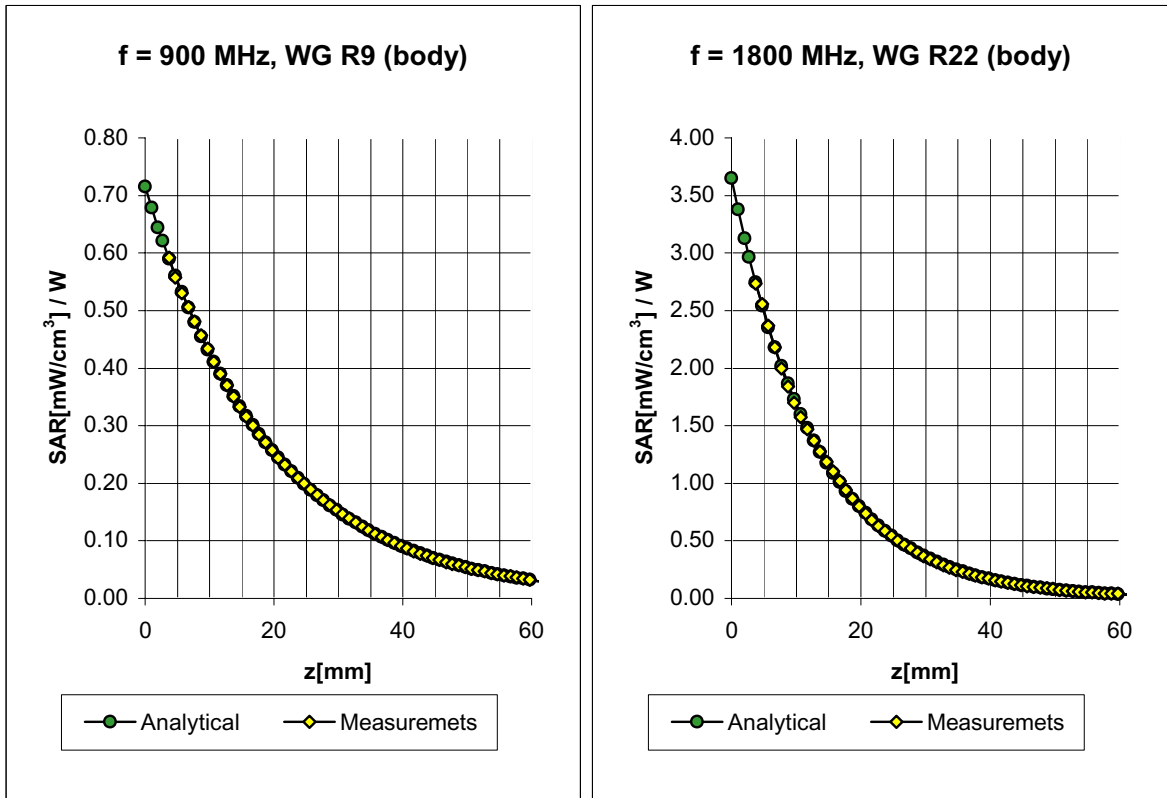


| | | | |
|------|-----------------|------------------------------|---------------------------------------|
| Head | 900 MHz | $\epsilon_r = 41.5 \pm 5\%$ | $\sigma = 0.97 \pm 5\% \text{ mho/m}$ |
| Head | 835 MHz | $\epsilon_r = 41.5 \pm 5\%$ | $\sigma = 0.90 \pm 5\% \text{ mho/m}$ |
| | ConvF X | 6.6 $\pm 9.5\%$ (k=2) | Boundary effect: |
| | ConvF Y | 6.6 $\pm 9.5\%$ (k=2) | Alpha 0.40 |
| | ConvF Z | 6.6 $\pm 9.5\%$ (k=2) | Depth 2.38 |
| Head | 1800 MHz | $\epsilon_r = 40.0 \pm 5\%$ | $\sigma = 1.40 \pm 5\% \text{ mho/m}$ |
| Head | 1900 MHz | $\epsilon_r = 40.0 \pm 5\%$ | $\sigma = 1.40 \pm 5\% \text{ mho/m}$ |
| | ConvF X | 5.4 $\pm 9.5\%$ (k=2) | Boundary effect: |
| | ConvF Y | 5.4 $\pm 9.5\%$ (k=2) | Alpha 0.57 |
| | ConvF Z | 5.4 $\pm 9.5\%$ (k=2) | Depth 2.18 |

ET3DV6 SN:1387

February 22, 2002

Conversion Factor Assessment



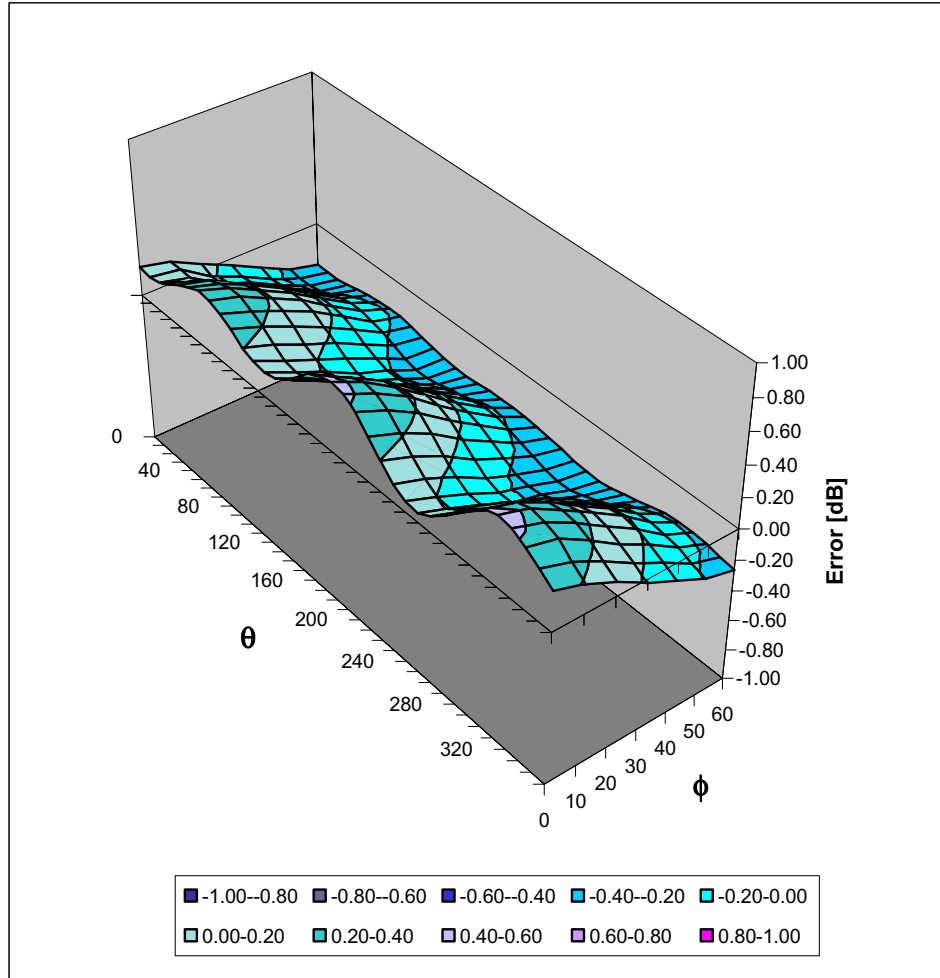
| | | | |
|-------------|-----------------|------------------------------|---------------------------------------|
| Body | 900 MHz | $\epsilon_r = 55.0 \pm 5\%$ | $\sigma = 1.05 \pm 5\% \text{ mho/m}$ |
| Body | 835 MHz | $\epsilon_r = 55.2 \pm 5\%$ | $\sigma = 0.97 \pm 5\% \text{ mho/m}$ |
| | ConvF X | 6.3 $\pm 9.5\%$ (k=2) | Boundary effect: |
| | ConvF Y | 6.3 $\pm 9.5\%$ (k=2) | Alpha 0.42 |
| | ConvF Z | 6.3 $\pm 9.5\%$ (k=2) | Depth 2.44 |
| Body | 1800 MHz | $\epsilon_r = 53.3 \pm 5\%$ | $\sigma = 1.52 \pm 5\% \text{ mho/m}$ |
| Body | 1900 MHz | $\epsilon_r = 53.3 \pm 5\%$ | $\sigma = 1.52 \pm 5\% \text{ mho/m}$ |
| | ConvF X | 5.0 $\pm 9.5\%$ (k=2) | Boundary effect: |
| | ConvF Y | 5.0 $\pm 9.5\%$ (k=2) | Alpha 0.76 |
| | ConvF Z | 5.0 $\pm 9.5\%$ (k=2) | Depth 2.01 |

ET3DV6 SN:1387

February 22, 2002

Deviation from Isotropy in HSL

Error (θ, ϕ), $f = 900$ MHz



Additional Conversion Factors for Dosimetric E-Field Probe

Type:

ET3DV6

Serial Number:

1387

Place of Assessment:

Zurich

Date of Assessment:

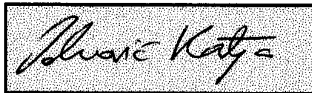
February 25, 2002

Probe Calibration Date:

February 22, 2002

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. Since the evaluation is coupled with measured conversion factors, it has to be recalculated yearly, i.e., following the re-calibration schedule of the probe. The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1800 MHz.

Assessed by:



Dosimetric E-Field Probe ET3DV6 SN:1387

Conversion Factor (\pm standard deviation)

| | | | |
|----------|-------|---------------|---|
| 150 MHz | ConvF | $9.2 \pm 8\%$ | $\epsilon_r = 52.3$ $\sigma = 0.76 \text{ mho/m}$ (head tissue) |
| 300 MHz | ConvF | $8.0 \pm 8\%$ | $\epsilon_r = 45.3$ $\sigma = 0.87 \text{ mho/m}$ (head tissue) |
| 450 MHz | ConvF | $7.3 \pm 8\%$ | $\epsilon_r = 43.5$ $\sigma = 0.87 \text{ mho/m}$ (head tissue) |
| 2450 MHz | ConvF | $4.7 \pm 8\%$ | $\epsilon_r = 39.2$ $\sigma = 1.80 \text{ mho/m}$ (head tissue) |
| 150 MHz | ConvF | $8.8 \pm 8\%$ | $\epsilon_r = 61.9$ $\sigma = 0.80 \text{ mho/m}$ (body tissue) |
| 450 MHz | ConvF | $7.7 \pm 8\%$ | $\epsilon_r = 56.7$ $\sigma = 0.94 \text{ mho/m}$ (body tissue) |
| 2450 MHz | ConvF | $4.3 \pm 8\%$ | $\epsilon_r = 52.7$ $\sigma = 1.95 \text{ mho/m}$ (body tissue) |

APPENDIX E - MEASURED FLUID DIELECTRIC PARAMETERS

2450MHz System Validation

Measured Liquid Dielectric Parameters (Brain)

May 06, 2002

| Frequency | ϵ' | ϵ'' |
|-----------------|-------------|--------------|
| 2.350000000 GHz | 40.0703 | 12.8614 |
| 2.360000000 GHz | 40.0281 | 12.8842 |
| 2.370000000 GHz | 39.9996 | 12.9127 |
| 2.380000000 GHz | 39.9871 | 12.9410 |
| 2.390000000 GHz | 39.9574 | 12.9756 |
| 2.400000000 GHz | 39.8899 | 13.0019 |
| 2.410000000 GHz | 39.8099 | 13.0249 |
| 2.420000000 GHz | 39.7891 | 13.0442 |
| 2.430000000 GHz | 39.7564 | 13.1111 |
| 2.440000000 GHz | 39.6992 | 13.1443 |
| 2.450000000 GHz | 39.6427 | 13.1559 |
| 2.460000000 GHz | 39.5821 | 13.1712 |
| 2.470000000 GHz | 39.5562 | 13.1926 |
| 2.480000000 GHz | 39.5498 | 13.2153 |
| 2.490000000 GHz | 39.5031 | 13.2297 |
| 2.500000000 GHz | 39.4702 | 13.2789 |
| 2.510000000 GHz | 39.3872 | 13.2956 |
| 2.520000000 GHz | 39.3521 | 13.3507 |
| 2.530000000 GHz | 39.2926 | 13.3732 |
| 2.540000000 GHz | 39.2391 | 13.3845 |
| 2.550000000 GHz | 39.1872 | 13.3983 |

2450MHz EUT Evaluation

Measured Liquid Dielectric Parameters (Body)

May 06, 2002

| Frequency | ϵ' | ϵ'' |
|-----------------|-------------|--------------|
| 2.350000000 GHz | 53.1542 | 13.7906 |
| 2.360000000 GHz | 53.0423 | 13.8210 |
| 2.370000000 GHz | 52.5979 | 14.0723 |
| 2.380000000 GHz | 52.5847 | 14.1034 |
| 2.390000000 GHz | 52.5563 | 14.1549 |
| 2.400000000 GHz | 52.4921 | 14.1921 |
| 2.410000000 GHz | 52.4129 | 14.2134 |
| 2.420000000 GHz | 52.3878 | 14.2362 |
| 2.430000000 GHz | 52.3630 | 14.2647 |
| 2.440000000 GHz | 52.3641 | 14.3365 |
| 2.450000000 GHz | 52.3416 | 14.3552 |
| 2.460000000 GHz | 52.3378 | 14.4220 |
| 2.470000000 GHz | 52.3170 | 14.4456 |
| 2.480000000 GHz | 52.2904 | 14.4693 |
| 2.490000000 GHz | 52.2778 | 14.4865 |
| 2.500000000 GHz | 52.2261 | 14.5146 |
| 2.510000000 GHz | 52.1963 | 14.5953 |
| 2.520000000 GHz | 52.1616 | 14.6534 |
| 2.530000000 GHz | 52.1466 | 14.6681 |
| 2.540000000 GHz | 52.1031 | 14.7572 |
| 2.550000000 GHz | 52.0732 | 14.7691 |

APPENDIX F - SAM PHANTOM CERTIFICATE OF CONFORMITY

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 Hauptstr. 69 CH-8559 Fruthwilen 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 Relative permittivity < 5 Loss tangent < 0.05. | Material sample 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



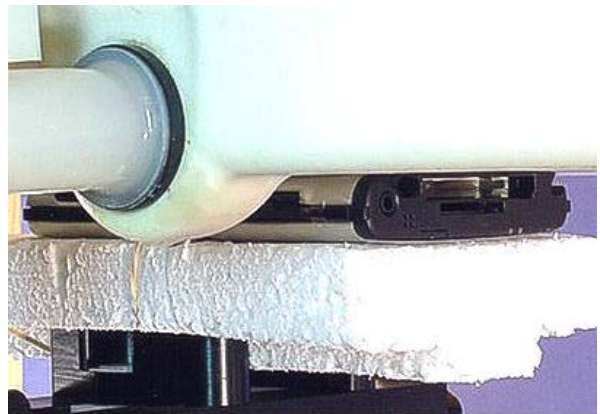
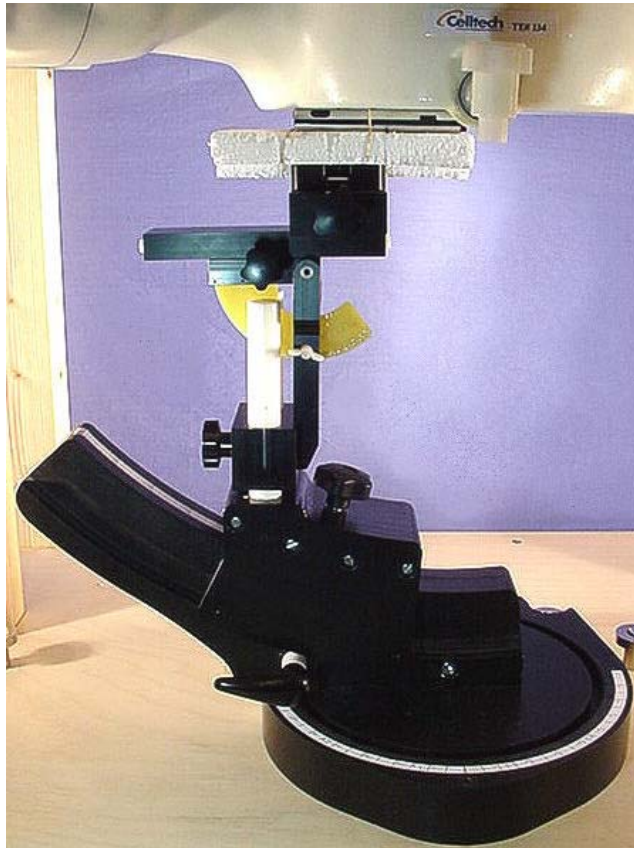
**Schmid & Partner
Engineering AG**



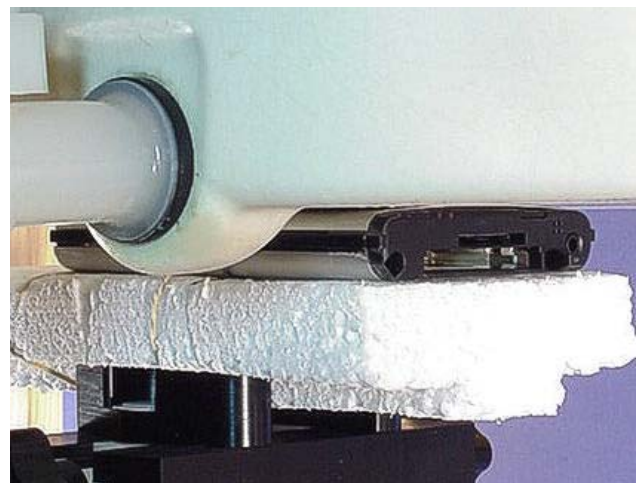
Zeughausstrasse 43, CH-8004 Zurich
Tel. +41 1 245 97 00, Fax +41 1 245 97 79

APPENDIX G - SAR TEST SETUP PHOTOGRAPHS

SAR TEST SETUP PHOTOGRAPHS
LCD Side of EUT Touching Planar Phantom



SAR TEST SETUP PHOTOGRAPHS
Back Side of EUT Touching Planar Phantom



SAR TEST SETUP PHOTOGRAPHS
Top End of EUT with 0.5cm Separation Distance
(CF Card Eject Button Touching Planar Phantom)

