CERTIFICATE OF COMPLIANCE
SAR EVALUATION

Test Lab:

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Applicant Information:

INTERMEC TECHNOLOGIES CORP.
6001 36th Avenue West, MS 270
Everett, WA 98203

FCC ID:	**EHARFID2450PCC-5**
Model(s):	**RFID 2450 PC Card-5**
Equipment Type:	**2.4GHz FHSS PCMCIA RFID Card (installed in Intermec 6110 Handheld Terminal)**
Equipment Classification:	**Part 15 Spread Spectrum Transmitter**
Modulation:	**Frequency Hopping Spread Spectrum**
Tx Frequency Range:	**2402 - 2480 MHz**
Conducted Power Tested:	**30.0 dBm**
FCC Rule Part(s):	**15.247, 2.1093; ET Docket 96.326**

This wireless mobile and/or portable device has been shown to be compliant for localized Specific Absorption Rate (SAR) for uncontrolled environment/general exposure limits specified in ANSI/IEEE Std. C95.1-1992 and has been tested in accordance with the measurement procedures specified in ANSI/IEEE Std. C95.3-1999.

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.

Celltech Research Inc. certifies that no party to this application has been denied FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

Shawn McMillen
General Manager
Celltech Research Inc.

August 3, 2001

Federal Communications Commission
Equipment Approval Services
7435 Oakland Mills Road
Columbia, MD 21046

SUBJECT: INTERMEC TECHNOLOGIES
FCC ID: EHARFID2450PCC-5
RF Exposure Evaluation

To Whom It May Concern:

The manufacturer of the DASY3 generic twin phantom determined that the planar section used during system validations and hand/body SAR RF exposure evaluation is 3.2mm, as opposed to the 2.0mm required thickness (OET Bulletin 65 Supplement C, Edition 01-01). As a result of this increased thickness, both the system validation and hand/body SAR measurements report a 12% lower assessed value. Please see attached notice from the device manufacturer regarding the change in procedure of dipole calibration due to variances in the generic twin phantom shell thickness. Also attached is the summary of dipole data from the device manufacturer listing the measured and extrapolated SAR values for the D1800V2 dipole S/N: 247. We also informed Mr. Kwok Chan at the FCC on July 20, 2001 who advised us that we should record both the measured body SAR values with 3.2mm phantom, and the extrapolated SAR values based on a 2.0mm phantom (see pages 3 & 4 of RF exposure evaluation report).

If you have any questions or comments concerning the above, please do not hesitate to contact me.

Sincerely,

Shawn McMillen
General Manager
Celltech Research Inc.
Testing & Engineering Lab

cc: Mr. Kwok Chan, FCC

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1.0 INTRODUCTION

This measurement report shows compliance of the INTERMEC TECHNOLOGIES CORP. 2.4GHz Frequency Hopping Spread Spectrum PCMCIA RFID Card FCC ID: EHARFID2450PCC-5 (installed in Intermec 6110 handheld terminal) 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 (1), FCC OET Bulletin 65-1997 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)

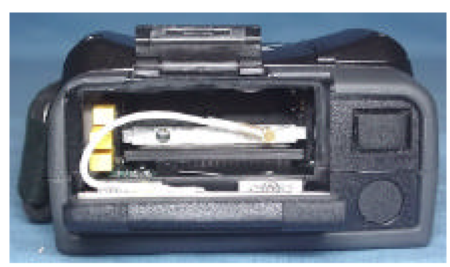
EUT Type	2.4GHz FHSS PCMCIA RFID Card installed in Intermec Pen Key 6110 Handheld Terminal	**Model No.(s)**	RFID 2450 PC Card-5
Equipment Class	FCC Part 15 Spread Spectrum Transmitter	**S/N No.**	Pre-production
Modulation	Frequency Hopping Spread Spectrum	**RF Conducted Power Tested**	30.0 dBm
FCC Rule Part(s)	15.247, 2.1093; ET Docket 96.326	**Antenna Type**	Internal
Tx Frequency Range (MHz)	2402 - 2480	**Power Supply**	Lithium Ion Battery 7.2V 1500 mAh

Front of Handheld PC

Left Side

Right Side

Back Side



Top Side with RFID Card & Antenna

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, and the generic twin phantom containing brain or muscle equivalent material. 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 electronics (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

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.

Hand SAR Measurement Results

Freq. (MHz)	Chan.	Mode Tested	Cond. Power (dBm)	EUT Position	Phantom Section	Separ. Dist. (cm)	SAR (w/kg) 10 gram average	
							Measured SAR values with 3.2mm phantom	Extrapolated SAR values for 2.0mm phantom
2402	02	Unmod.	30.0	Front	Flat	0.0	0.419	0.469
2452	52	Unmod.	30.0	Front	Flat	0.0	0.352	0.394
2480	80	Unmod.	30.0	Front	Flat	0.0	0.292	0.327
2402	02	Unmod.	30.0	Back	Flat	0.0	0.866	0.970
2452	52	Unmod.	30.0	Back	Flat	0.0	1.02	1.14
2480	80	Unmod.	30.0	Back	Flat	0.0	0.823	0.922
2402	02	Unmod.	30.0	Left Side	Flat	0.0	0.236	0.264
2452	52	Unmod.	30.0	Left Side	Flat	0.0	0.156	0.175
2480	80	Unmod.	30.0	Left Side	Flat	0.0	0.119	0.133
2402	02	Unmod.	30.0	Right Side	Flat	0.0	0.169	0.189
2452	52	Unmod.	30.0	Right Side	Flat	0.0	0.124	0.139
2480	80	Unmod.	30.0	Right Side	Flat	0.0	0.122	0.137
Mixture Type: Muscle Dielectric Constant: 53.6 Conductivity: 1.77			**ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Hand SAR: 4.0 W/kg (averaged over 10 grams)**					

Notes:

1. The actual thickness of the flat phantom shell as reported by the system manufacturer was 3.2mm instead of the required 2.0mm thickness (see Appendix B). As a result of the increased thickness, the measured SAR values were 12% lower than expected. The final SAR values were extrapolated from the measured SAR values and calculated for a 2.0mm flat phantom shell thickness.
2. The SAR levels found were below the maximum limit of 4.0 w/kg. The highest hand SAR value found was 1.02 w/kg (Back of EUT).
3. Ambient TEMPERATURE: 22.6 °C - Relative HUMIDITY: 56.1 % - Atmospheric PRESSURE: 95.3 kPa

Body SAR Measurement Results

Freq. (MHz)	Chan.	Mode Tested	Cond. Power (dBm)	EUT Position	Phantom Section	Separ. Dist. (cm)	SAR (w/kg) 1 gram average	
							Measured SAR values with 3.2mm phantom	Extrapolated SAR values for 2.0mm phantom
2402	02	Unmod.	30.0	Front	Flat	0.0	0.717	0.803
2452	52	Unmod.	30.0	Front	Flat	0.0	0.605	0.678
2480	80	Unmod.	30.0	Front	Flat	0.0	0.505	0.566
2402	02	Unmod.	30.0	Back	Flat	0.5	1.24	1.39
2452	52	Unmod.	30.0	Back	Flat	0.5	1.35	1.51
2480	80	Unmod.	30.0	Back	Flat	0.5	1.08	1.21
2402	02	Unmod.	30.0	Left Side	Flat	0.0	0.405	0.454
2452	52	Unmod.	30.0	Left Side	Flat	0.0	0.270	0.302
2480	80	Unmod.	30.0	Left Side	Flat	0.0	0.201	0.225
2402	02	Unmod.	30.0	Right Side	Flat	0.0	0.321	0.360
2452	52	Unmod.	30.0	Right Side	Flat	0.0	0.241	0.270
2480	80	Unmod.	30.0	Right Side	Flat	0.0	0.245	0.274
2402	02	Unmod.	30.0	Antenna Side	Flat	2.5	1.33	1.49
2452	52	Unmod.	30.0	Antenna Side	Flat	2.5	1.37	1.53
2480	80	Unmod.	30.0	Antenna Side	Flat	2.5	1.32	1.48
Mixture Type: Muscle Dielectric Constant: 53.6 Conductivity: 1.77			**ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Body SAR: 1.6 W/kg (averaged over 1 gram)**					

Notes:

1. The actual thickness of the flat phantom shell as reported by the system manufacturer was 3.2mm instead of the required 2.0mm thickness (see Appendix B). As a result of the increased thickness, the measured SAR values were 12% lower than expected. The final SAR values were extrapolated from the measured SAR values and calculated for a 2.0mm flat phantom shell thickness.
2. The SAR levels found were below the maximum limit of 1.6 w/kg. The highest body SAR value found was 1.37 w/kg (Antenna side of EUT).
3. Ambient TEMPERATURE: 22.6 °C - Relative HUMIDITY: 56.1 % - Atmospheric PRESSURE: 95.3 kPa

5.0 DETAILS OF SAR EVALUATION

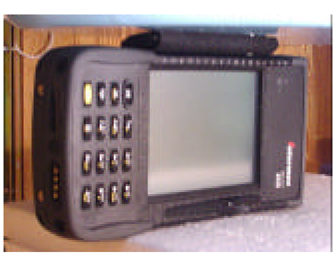
The INTERMEC TECHNOLOGIES CORP. 2.4GHz Frequency Hopping Spread Spectrum PCMCIA RFID Card FCC ID: EHARFID2450PCC-5 (installed in Intermec 6110 handheld terminal) was found to be compliant for localized Specific Absorption Rate (SAR) based on the following test provisions and conditions:

1. The EUT was tested for hand and body SAR with the front of the handheld terminal placed parallel to, and touching, the outer surface of the planar phantom.
2. The EUT was tested for hand SAR with the back of the handheld terminal placed parallel to, and touching, the outer surface of the planar phantom.
3. The EUT was tested for body SAR with the back of the handheld terminal placed parallel to the outer surface of the planar phantom with a 0.5cm separation distance.
4. The EUT was tested for hand and body SAR with the left side of the handheld terminal placed parallel to, and with the hand-grip touching, the outer surface of the planar phantom.
5. The EUT was tested for hand and body SAR with the right side of the handheld terminal placed parallel to, and touching, the outer surface of the planar phantom.
6. The EUT was tested for body SAR with the antenna side of the handheld terminal placed parallel to the outer surface of the planar phantom with a 2.5cm separation distance.
7. 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.
8. The conducted power was measured according to the procedures described in FCC Part 2.1046.
9. The device was keyed to operate continuously in the transmit mode for the duration of the test.
10. The location of the maximum spatial SAR distribution (Hot Spot) was determined relative to the device and its antenna.
11. The EUT was tested with a fully charged battery.


Front of EUT with 0.0cm separation


Back of EUT with 0.5cm separation


Back of EUT with 0.0cm separation


Left Side of EUT with 0.0cm separation


Right Side of EUT with 0.0cm separation


Antenna Side of EUT with 2.5cm separation

6.0 EVALUATION PROCEDURES

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

a. (i) The evaluation was performed in an 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 center frequency of the band at maximum power. The ear position that produced the highest SAR determined which side of the phantom would be used for the entire evaluation. The positioning of the ear-held device relative to the phantom was performed according to FCC OET Bulletin 65 Supplement C (Edition 01-01).

(ii) For face-held and body-worn devices, or devices which can be operated within 20cm of the body, the planar section of the phantom was used. The type of device being evaluated determined the distance of the EUT to the outer surface of the planar phantom.

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 with a grid spacing of 20mm x 20mm.

c. For frequencies below 500MHz a 4x4x7 matrix was performed around the greatest spatial SAR distribution found during the area scan of the applicable exposed region. For frequencies above 500MHz a 5x5x7 matrix was performed. SAR values were then calculated using a 3-D spline interpolation algorithm and averaged over spatial volumes of 1 and 10 grams.

d. If the EUT had any appreciable drift over the course of the evaluation, then the EUT was re-evaluated. Any unusual anomalies over the course of the test also warranted a re-evaluation.

7.0 SYSTEM VALIDATION

Prior to the assessment, the system was verified in the planar region of the phantom. A forward power of 250mW was applied to the 1800MHz dipole and the system was verified to a tolerance of $\pm$10%. The applicable verification(s) is/are as follows (see Appendix B for validation test plot):

Dipole Validation Kit	Target SAR 1g (w/kg)		Measured SAR 1g (w/kg)
	Target SAR value with 2.0mm phantom	Extrapolated SAR value with 3.2mm phantom	
D1800V2	9.66	8.63	8.38

8.0 SIMULATED TISSUES

The 2400MHz muscle mixture consists of Glycol-monobutyl, water, and salt. The fluid was prepared according to standardized procedures, and measured for dielectric parameters (permitivity and conductivity). Prior to the evaluation the dipole validation was performed using 1800MHz brain mixture.

INGREDIENT	MIXTURE (%) 2400MHz Muscle	MIXTURE (%) 1800MHz Brain (Validation)
Water	69.91	54.88
Glycol Monobutyl	29.96	44.91
Salt	0.13	0.21

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 as follows:

Frequency	Equivalent Tissue	Dielectric Constant e_r	Conductivity s (mho/m)	r (Kg/m^3)
2400MHz	Muscle	53.6 ± 5%	1.77 ± 5%	1000
1800MHz (Validation)	Brain	40.5 ± 5%	1.35 ± 5%	1000

10.0 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

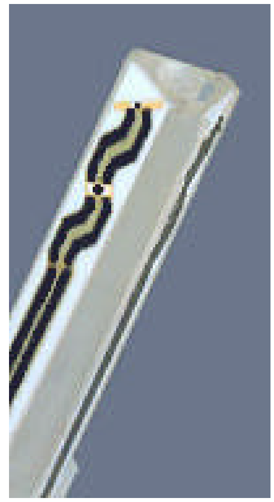
Model:	ET3DV6
Serial No.:	1590
Construction:	Triangular core fiber optic detection system
Frequency:	10 MHz to 6 GHz
Linearity:	± 0.2 dB (30 MHz to 3 GHz)

Phantom

Phantom:	Generic Twin
Shell Material:	Fiberglass
Thickness:	Left/Right Head - 2.0 ± 0.1 mm Planar Phantom - 3.2 ± 0.1 mm

11.0 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 ± 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 μW/g to > 100 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

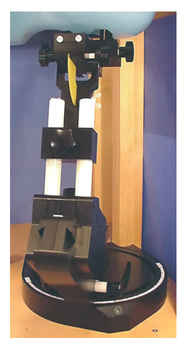
12.0 GENERIC TWIN PHANTOM

The generic twin phantom is a fiberglass shell phantom with a 2.0mm left and right head shell thickness and a 3.2mm flat planar area. 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.


Generic Twin Phantom

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°.


Device Holder

14.0 TEST EQUIPMENT LIST

SAR MEASUREMENT SYSTEM		
EQUIPMENT	***SERIAL NO.***	***CALIBRATION DATE***
DASY3 System -Robot -ET3DV6 E-Field Probe -DAE -835MHz Validation Dipole -900MHz Validation Dipole -1800MHz Validation Dipole -Generic Twin Phantom V3.0	 599396-01 1590 383 411 054 247 N/A	 N/A Mar 2001 Sept 1999 Aug 1999 June 2001 June 2001 N/A
85070C Dielectric Probe Kit	N/A	N/A
Gigatronics 8652A Power Meter -Power Sensor 80701A -Power Sensor 80701A	1835272 1833535 1833542	Oct 1999 Oct 1999 Oct 1999
E4408B Spectrum Analyzer	US39240170	Nov 1999
8594E Spectrum Analyzer	3543A02721	Mar 2000
8753E Network Analyzer	US38433013	Nov 1999
8648D Signal Generator	3847A00611	N/A
5S1G4 Amplifier Research Power Amplifier	26235	N/A

15.0 MEASUREMENT UNCERTAINTIES

Uncertainty Description	Error	Distribution	Weight	Standard Deviation	Offset
Probe Uncertainty					
Axial isotropy	±0.2 dB	U-Shaped	0.5	±2.4 %	
Spherical isotropy	±0.4 dB	U-Shaped	0.5	±4.8 %	
Isotropy from gradient	±0.5 dB	U-Shaped	0	±	
Spatial resolution	±0.5 %	Normal	1	±0.5 %	
Linearity error	±0.2 dB	Rectangle	1	±2.7 %	
Calibration error	±3.3 %	Normal	1	±3.3 %	
SAR Evaluation Uncertainty					
Data acquisition error	±1 %	Rectangle	1	±0.6 %	
ELF and RF disturbances	±0.25 %	Normal	1	±0.25 %	
Conductivity assessment	±5 %	Rectangle	1	±5.8 %	
Spatial Peak SAR Evaluation Uncertainty					
Extrapolated boundary effect	±3 %	Normal	1	±3 %	±5 %
Probe positioning error	±0.1 mm	Normal	1	±1 %	
Integrated and cube orientation	±3 %	Normal	1	±3 %	
Cube Shape inaccuracies	±2 %	Rectangle	1	±1.2 %	
Device positioning	±6 %	Normal	1	±6 %	
Combined Uncertainties				±11.7 %	±5 %

Measurement uncertainties in SAR measurements are difficult to quantify due to several variables including biological, physiological, and environmental. However, the estimated measurement uncertainties in SAR are less than 15-25 %.

According to ANSI/IEEE C95.3, the overall uncertainties are difficult to assess and will vary with the type of meter and usage situation. However, accuracy's of ± 1 to 3 dB can be expected in practice, with greater uncertainties in near-field situations and at higher frequencies (shorter wavelengths), or areas where large reflecting objects are present. Under optimum measurement conditions, SAR measurement uncertainties of at least ± 2dB can be expected.

According to CENELEC, typical worst-case uncertainty of field measurements is ± 5 dB.
For well-defined modulation characteristics the uncertainty can be reduced to ± 3 dB.

16.0 SAR SAFETY LIMITS

EXPOSURE LIMITS (General Population / Uncontrolled Exposure Environment)	**SAR** (W/Kg)
Spatial Average (averaged over the whole body)	0.08
Spatial Peak (averaged over any 1g of tissue)	1.60
Spatial Peak (hands/wrists/feet/ankles averaged over 10g)	4.00

Notes: 1. The FCC SAR safety limits specified in the table above apply to devices operated in the General Population / Uncontrolled Exposure environment.
2. Uncontrolled environments are defined as locations where there is exposure of individuals who have no knowledge or control of their exposure.

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 10017, 1992;*

(2) Federal Communications Commission, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields", OET Bulletin 65, FCC, Washington, D.C. 20554, 1997;

(3) Thomas Schmid, Oliver Egger, and Neils Kuster, "Automated E-field scanning system for dosimetric assessments", IEEE *Transaction on Microwave Theory and Techniques*, Vol. 44, pp. 105-113, January, 1996.

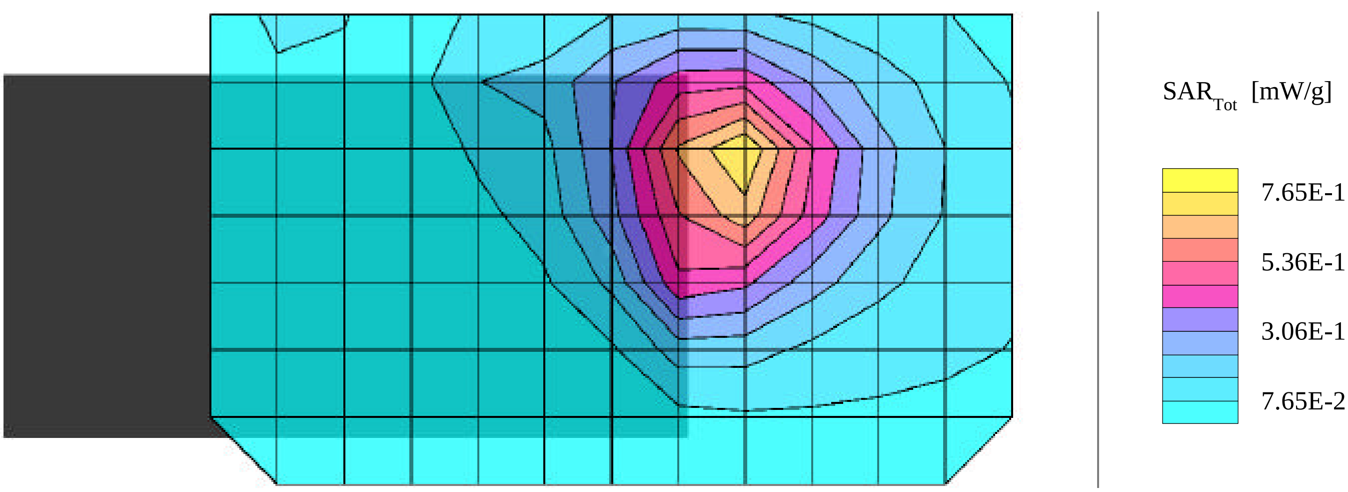
(4) Niels Kuster, Ralph Kastle, and Thomas Schmid, "Dosimetric evaluation of mobile communications equipment with know precision", IEICE Transactions of Communications, vol. E80-B, no. 5, pp. 645 – 652, May 1997.

APPENDIX A - SAR MEASUREMENT DATA

Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.419 mW/g

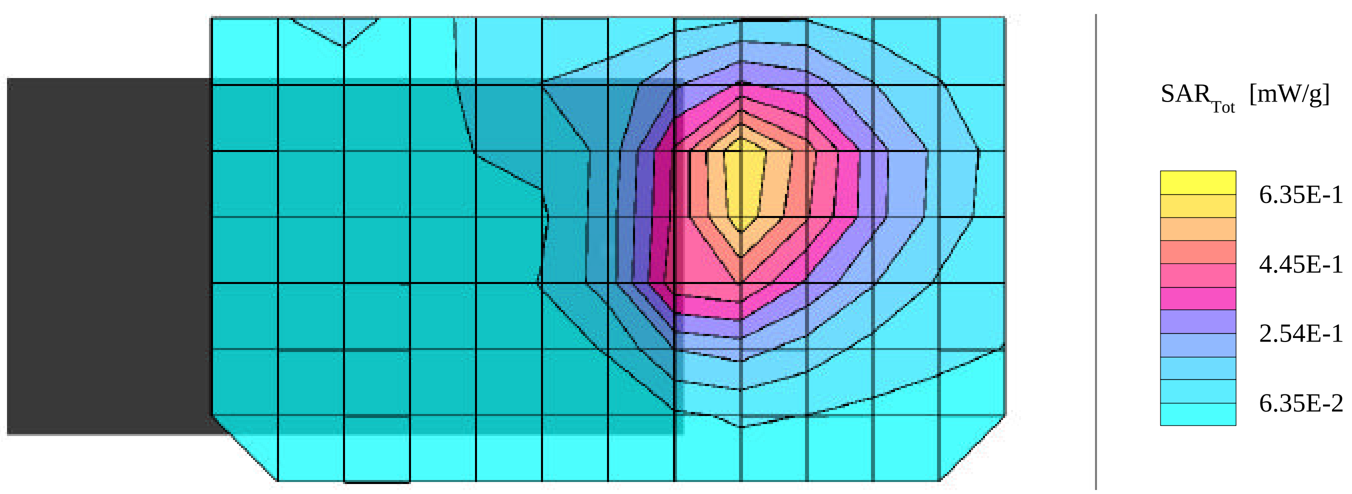
Hand SAR - Front of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 2 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.352 mW/g

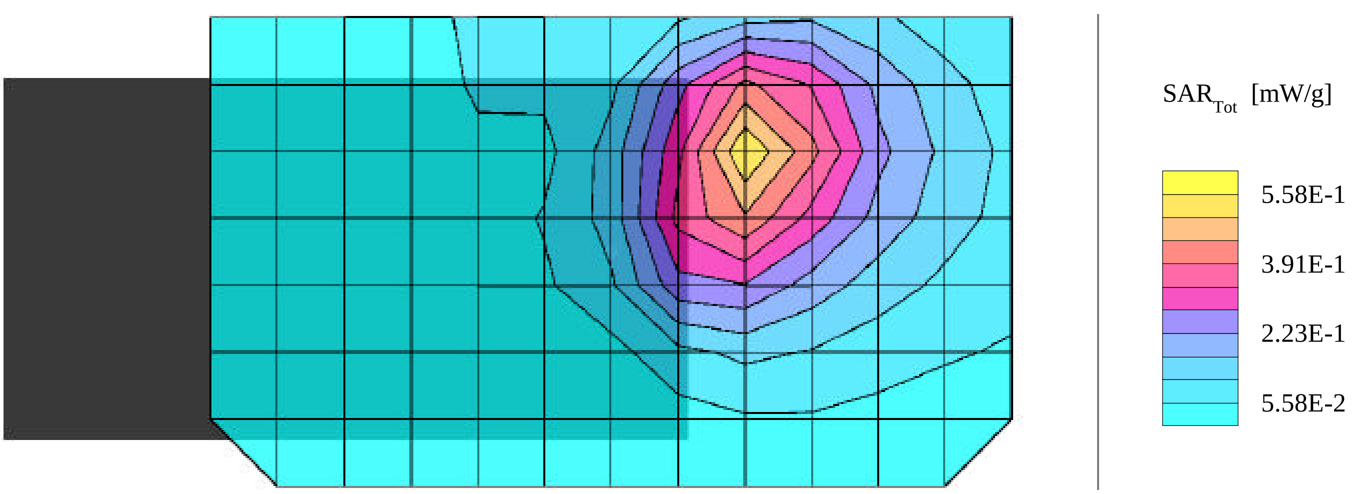
Hand SAR - Front of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.292 mW/g

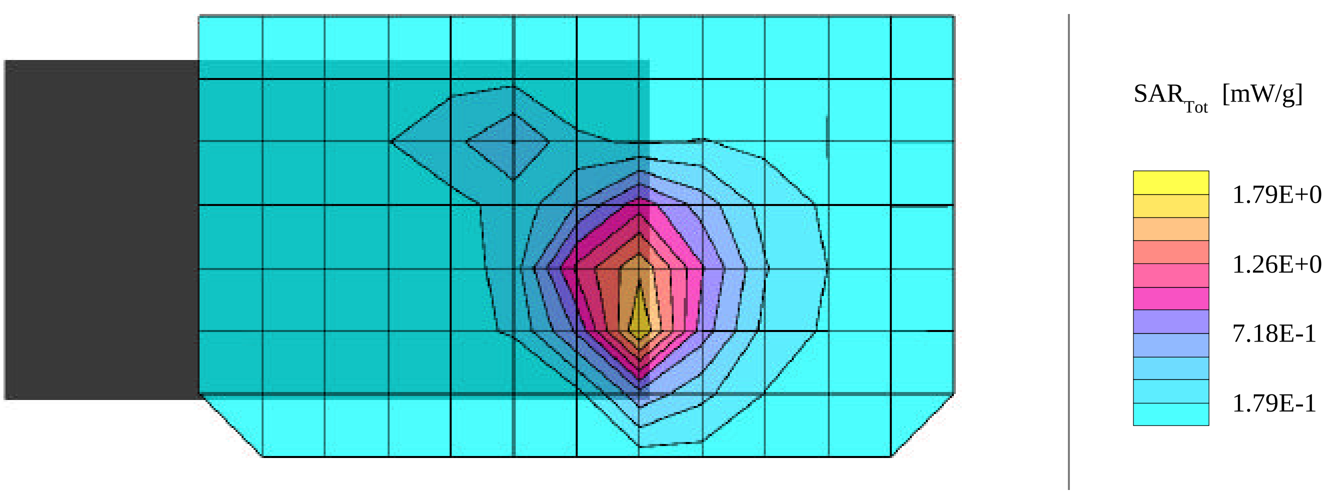
Hand SAR - Front of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.866 mW/g

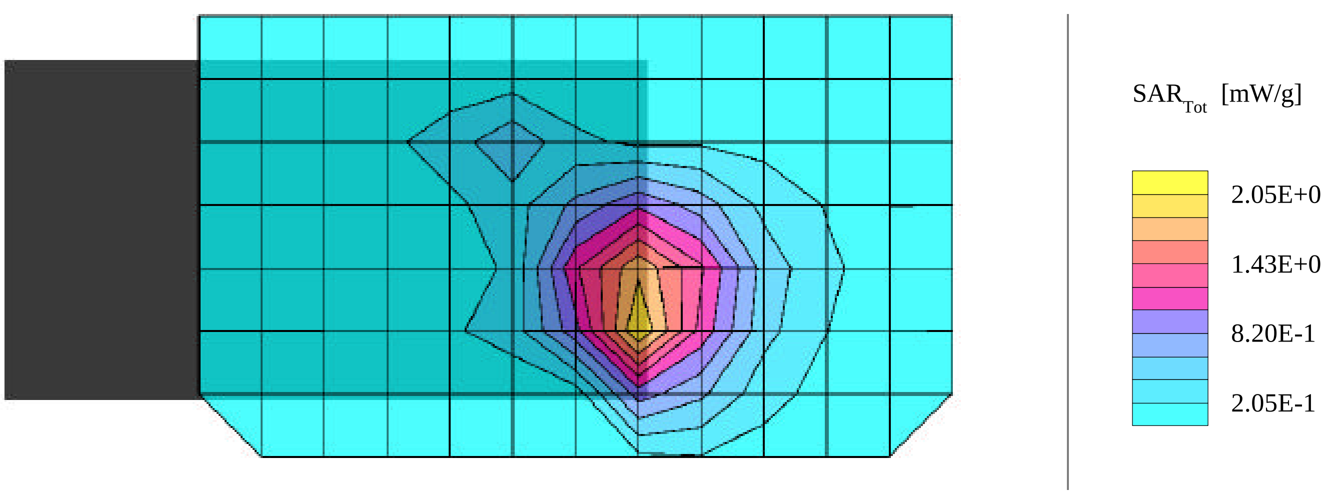
Hand SAR - Back of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 2 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 1.02 mW/g

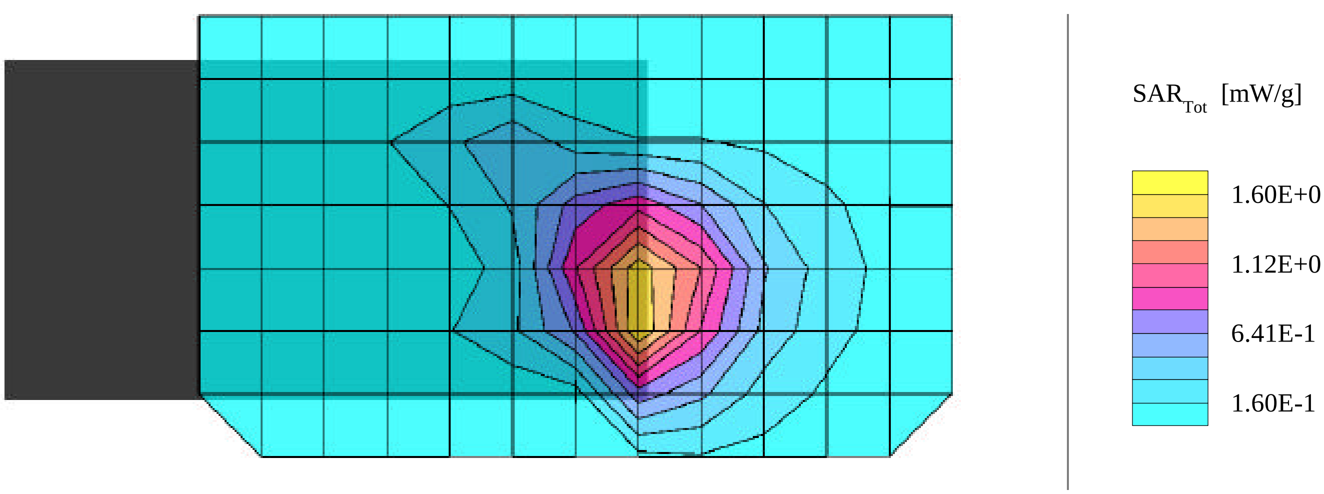
Hand SAR - Back of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.823 mW/g

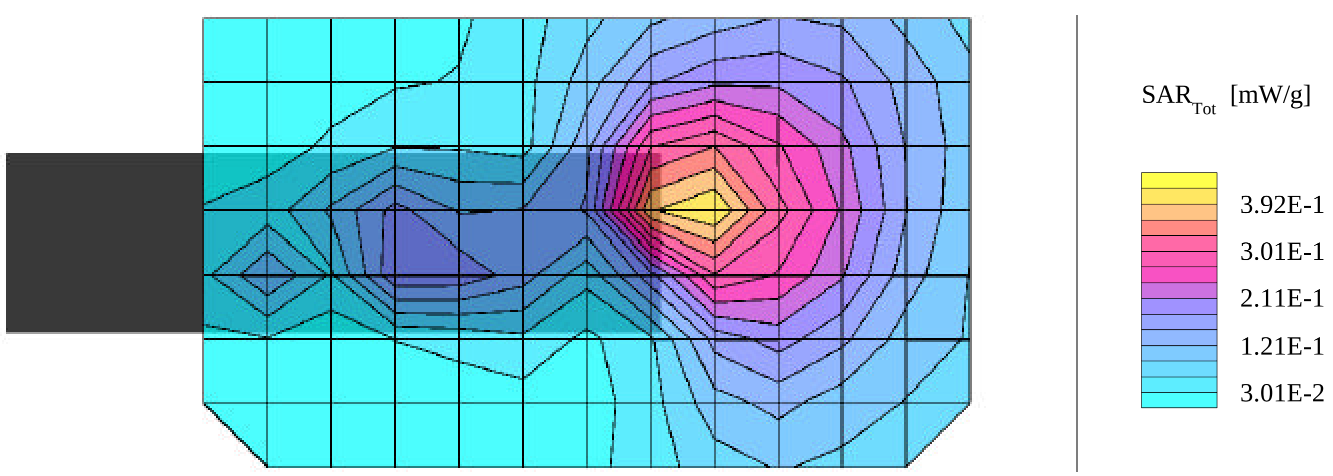
Hand SAR - Back of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.236 mW/g

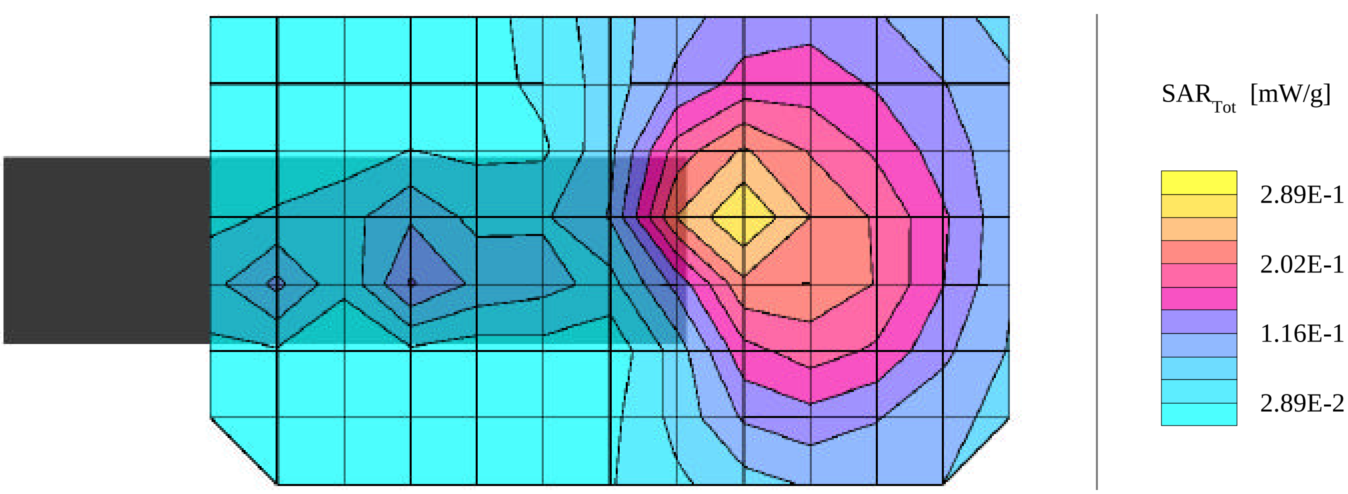
Hand SAR - Left Side of PC - 0cm Separation (touching hand-grip)
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 02 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.156 mW/g

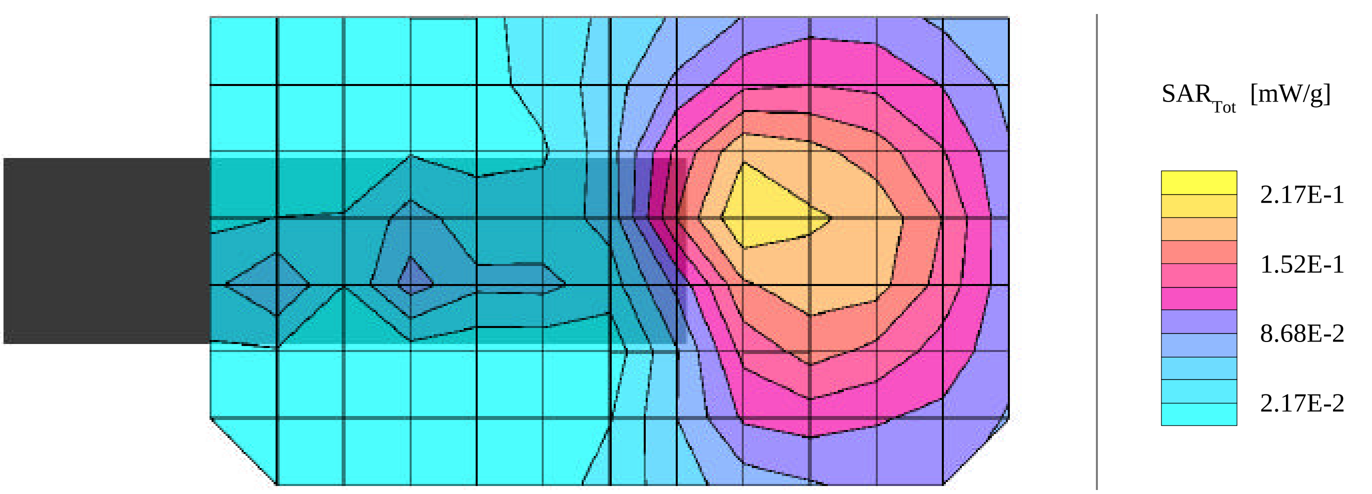
Hand SAR - Left Side of PC - 0cm Separation (touching hand-grip)
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.119 mW/g

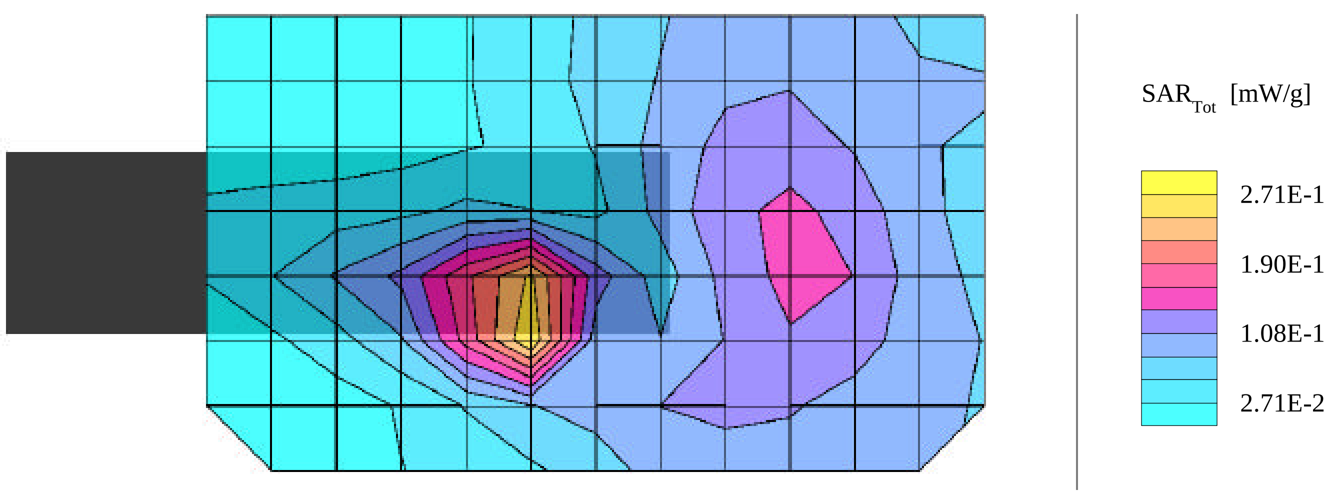
Hand SAR - Left Side of PC - 0cm Separation (touching hand-grip)
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.169 mW/g

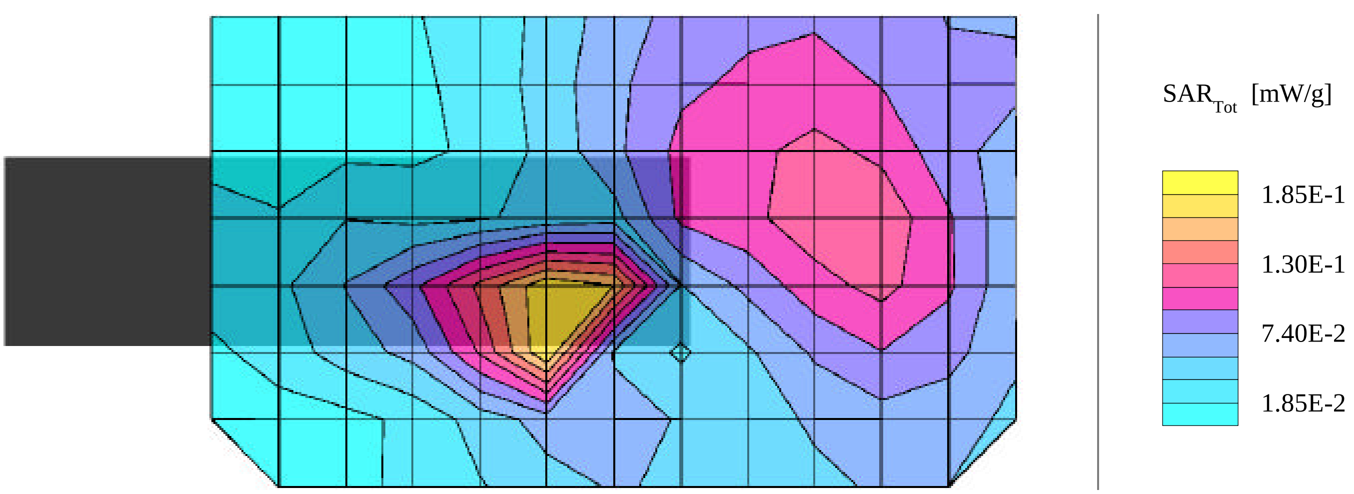
Hand SAR - Right Side of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 2 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.124 mW/g

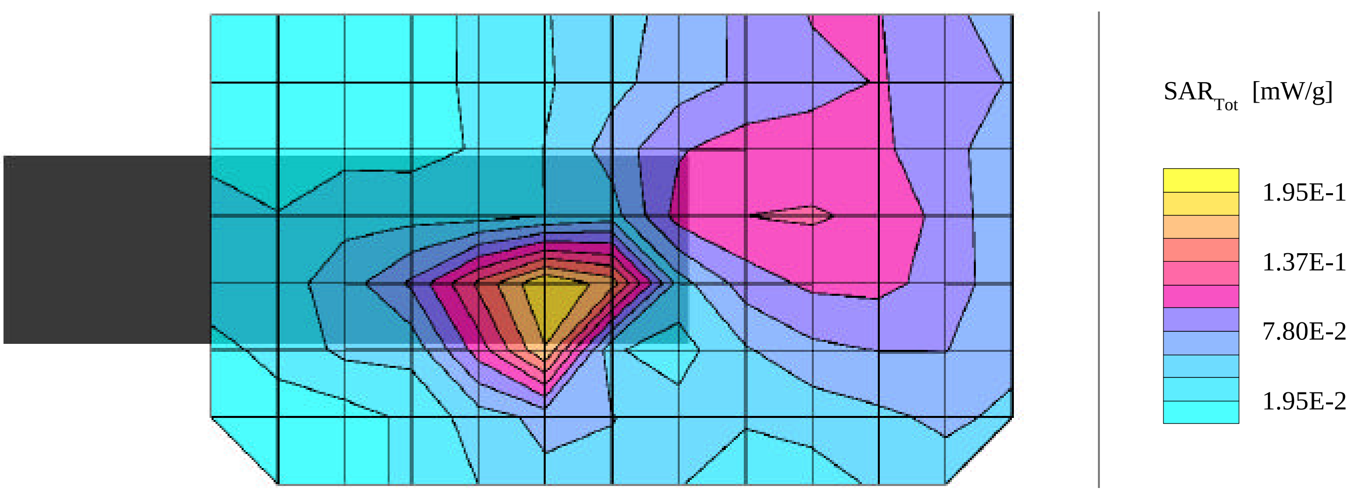
Hand SAR - Right Side of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (10g): 0.122 mW/g

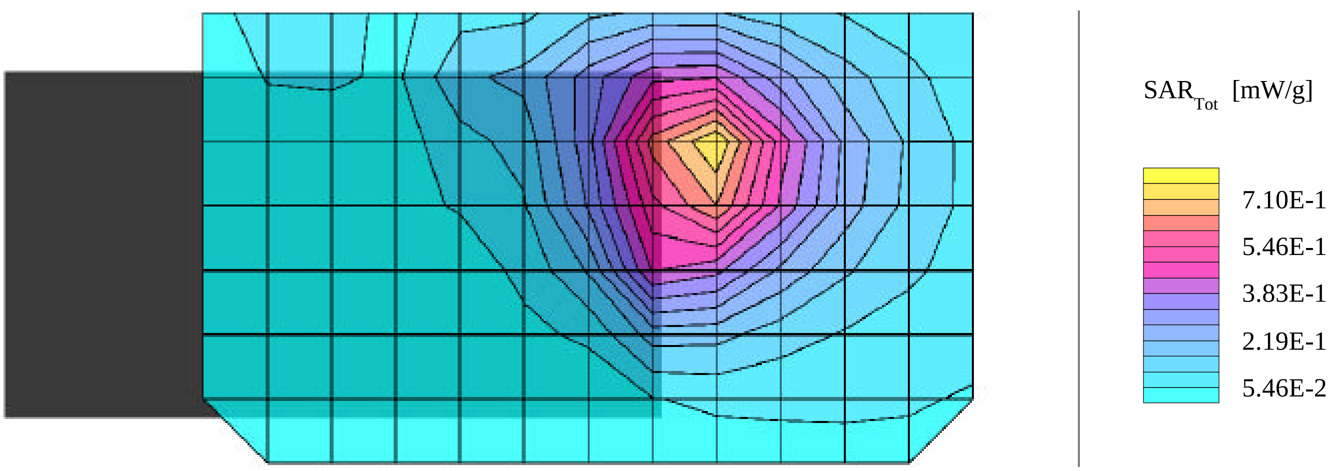
Hand SAR -Right Side of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.717 mW/g, SAR (10g): 0.419 mW/g

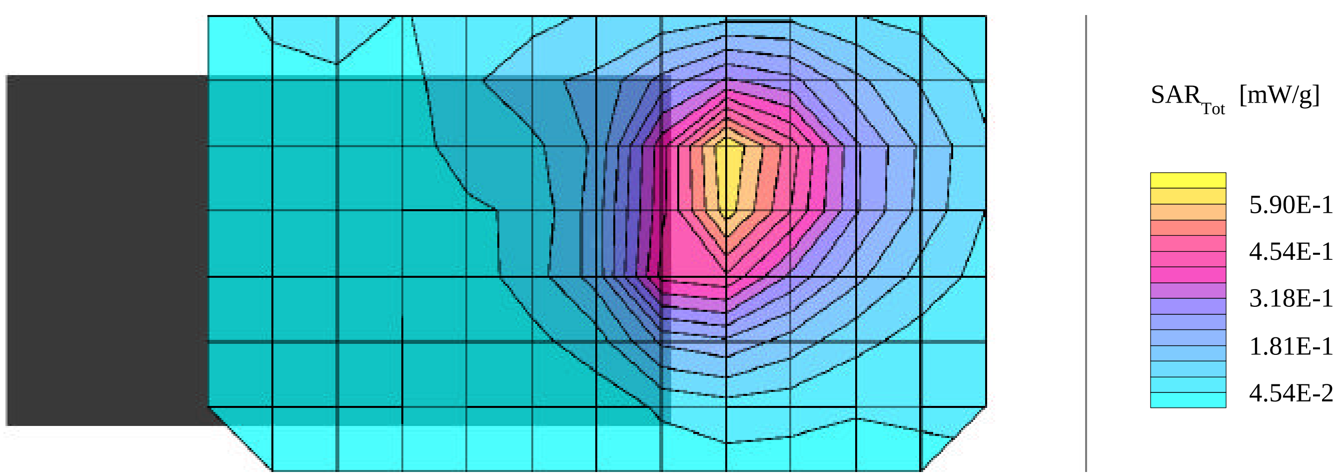
Body SAR - Front of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 2 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.605 mW/g, SAR (10g): 0.352 mW/g

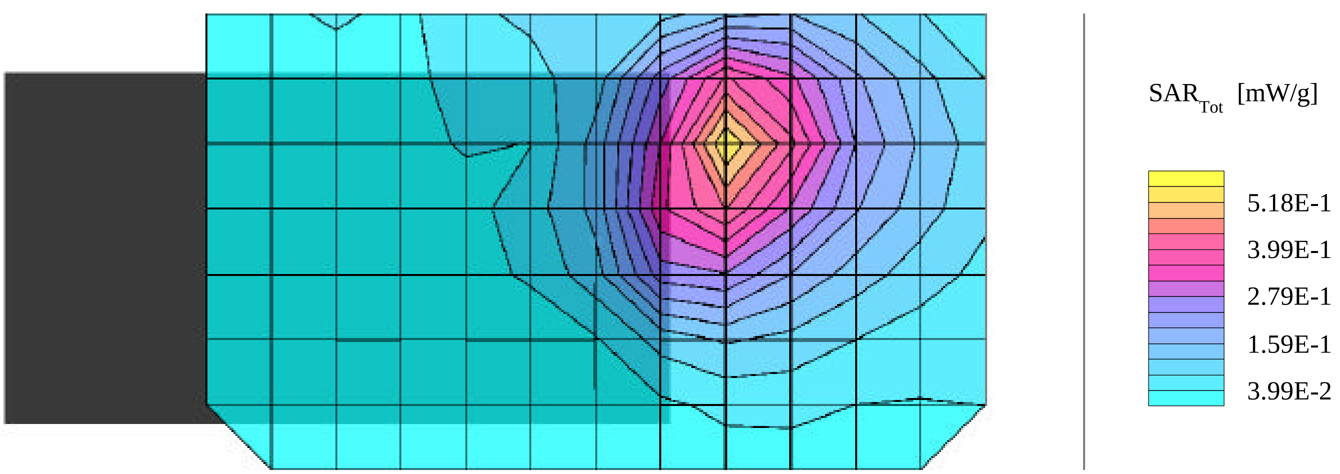
Body SAR - Front of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.505 mW/g, SAR (10g): 0.292 mW/g

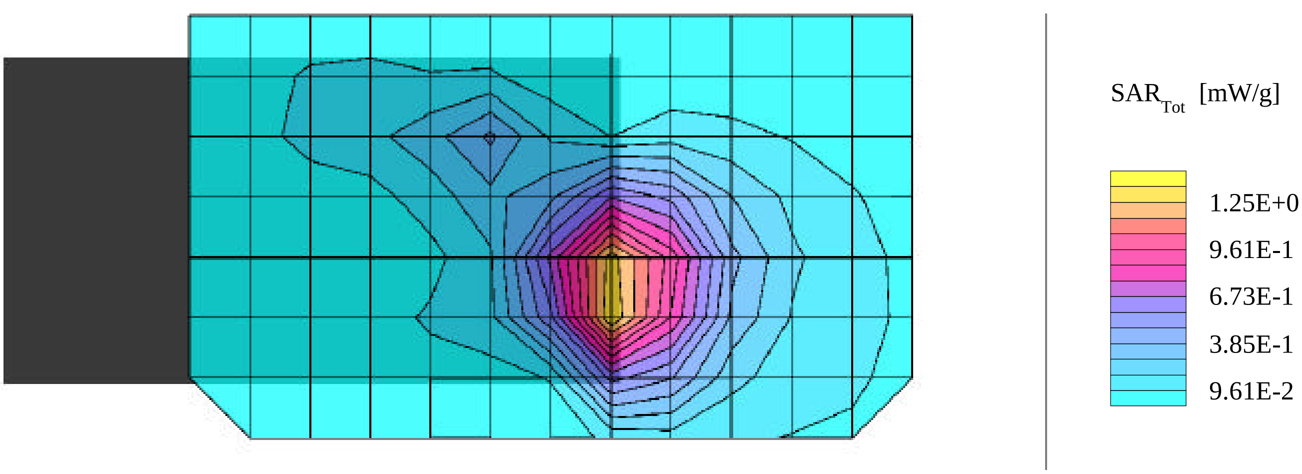
Body SAR - Front of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 1.24 mW/g, SAR (10g): 0.720 mW/g

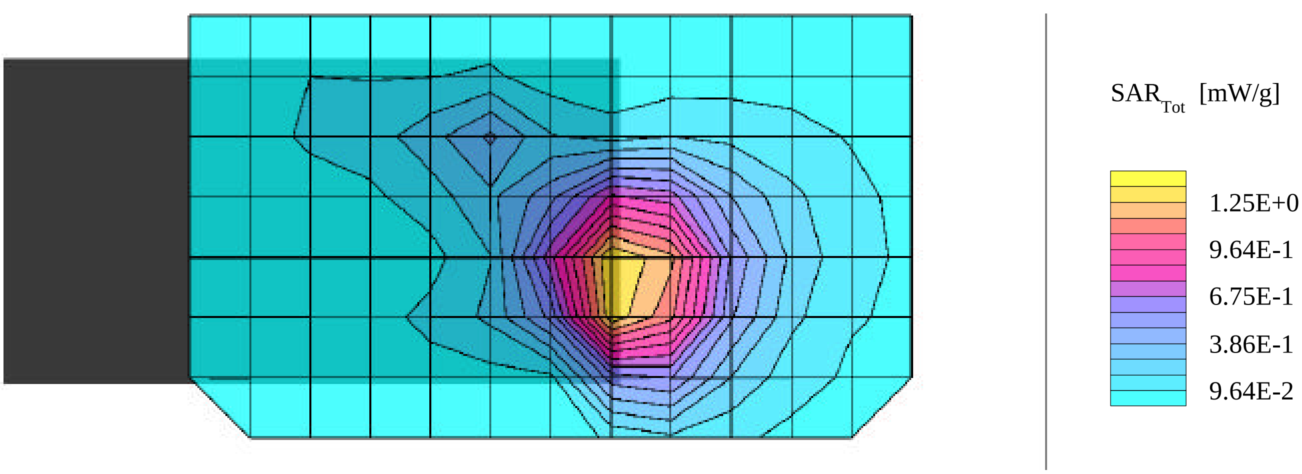
Body SAR - Back of PC - 0.5cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 2 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 1.35 mW/g, SAR (10g): 0.783 mW/g

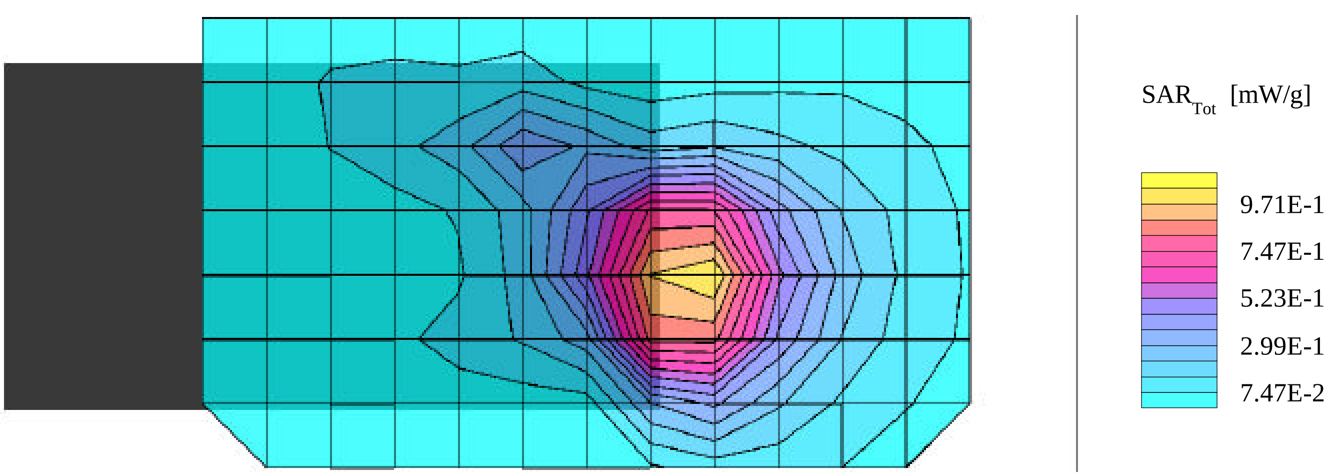
Body SAR - Back of PC - 0.5cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 1.08 mW/g, SAR (10g): 0.615 mW/g

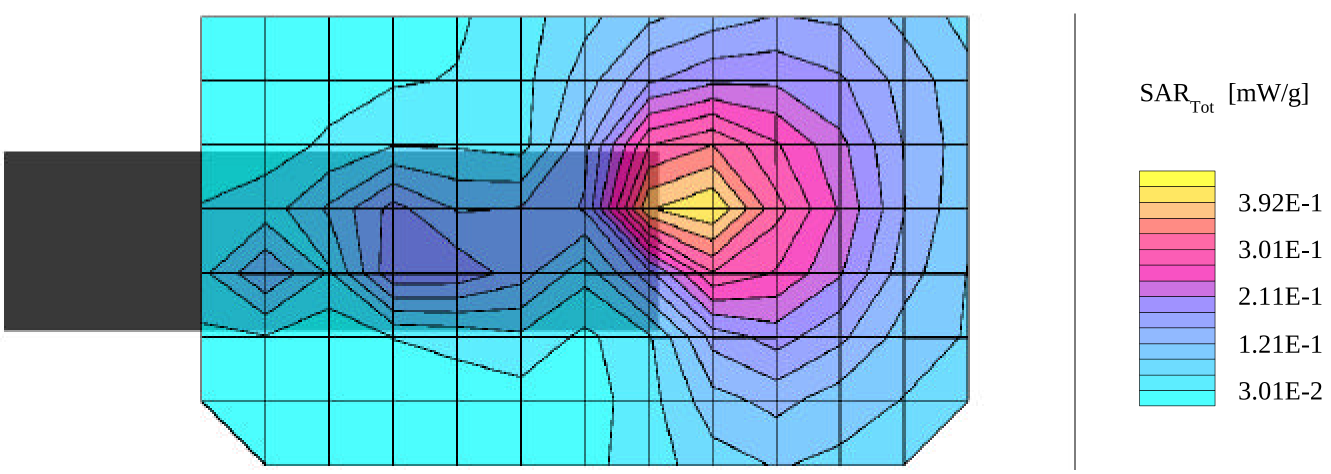
Body SAR - Back of PC - 0.5cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.405 mW/g, SAR (10g): 0.236 mW/g

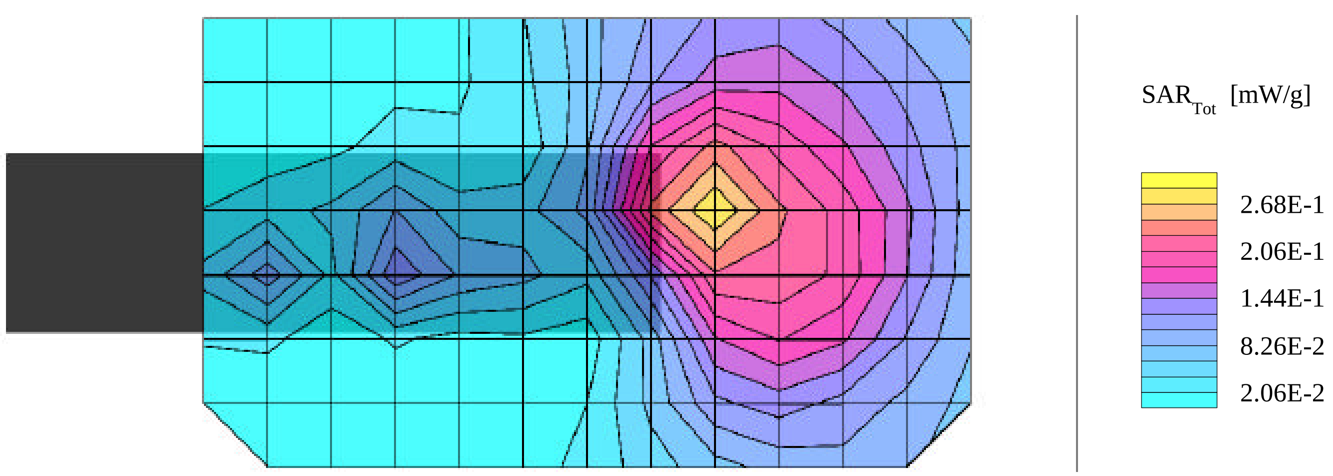
Body SAR - Left Side of PC - 0cm Separation (touching hand-grip)
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 02 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.270 mW/g, SAR (10g): 0.156 mW/g

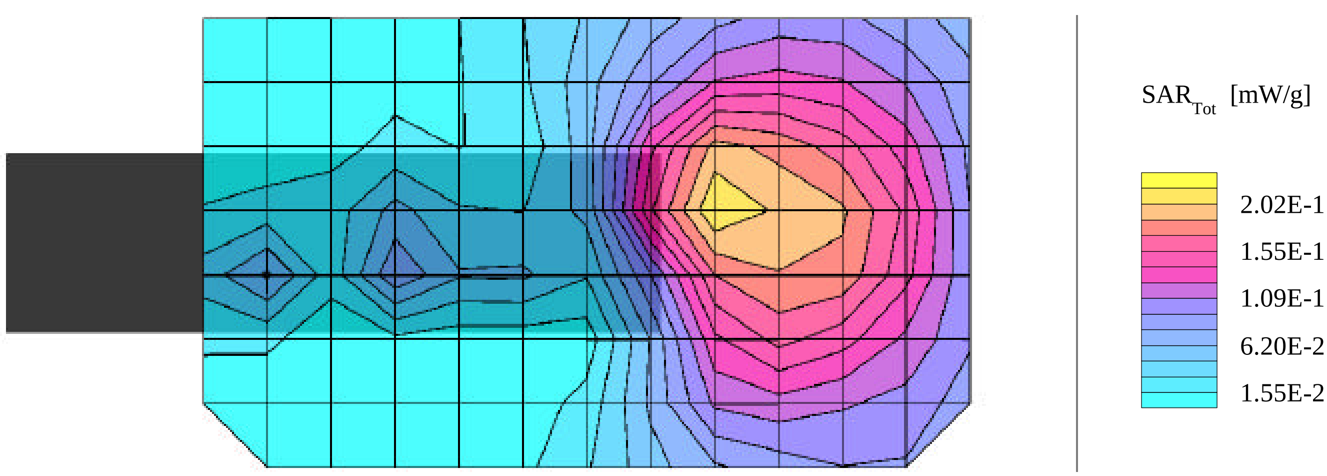
Body SAR - Left Side of PC - 0cm Separation (touching hand-grip)
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.201 mW/g, SAR (10g): 0.119 mW/g

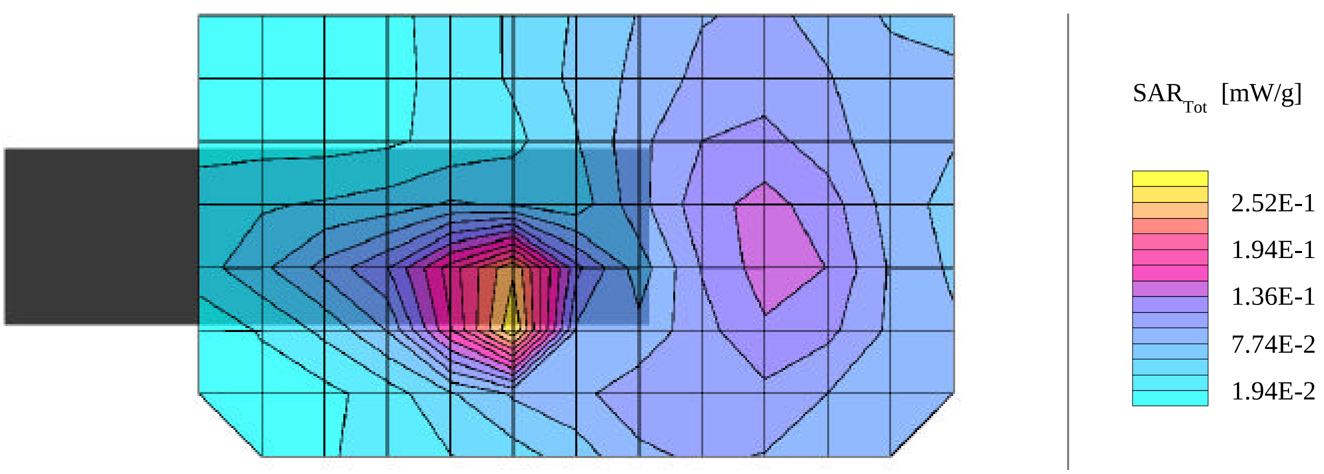
Body SAR - Left Side of PC - 0cm Separation (touching hand-grip)
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.321 mW/g, SAR (10g): 0.169 mW/g

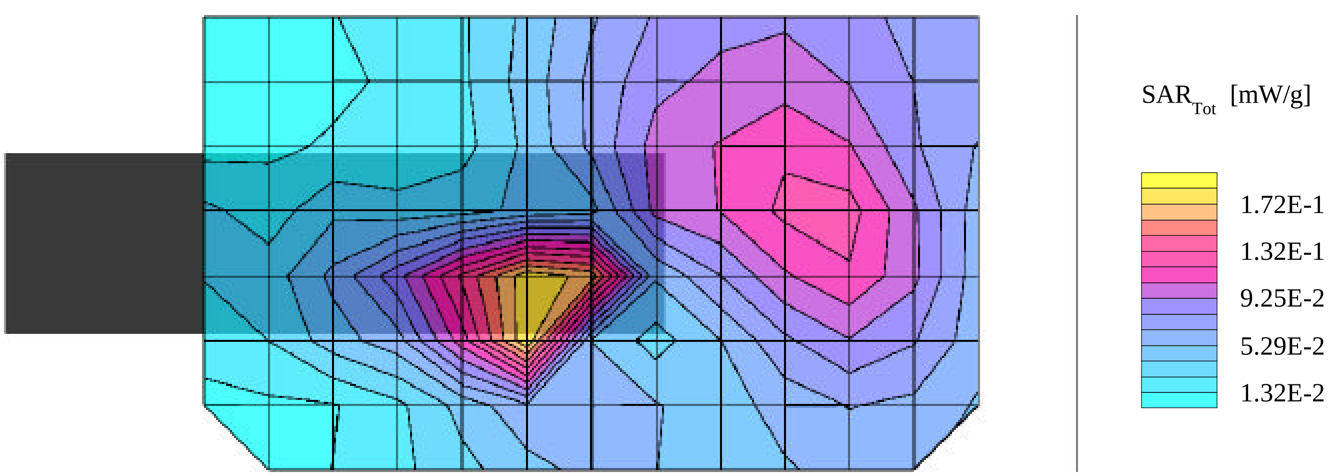
Body SAR - Right Side of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 2 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.241 mW/g, SAR (10g): 0.124 mW/g

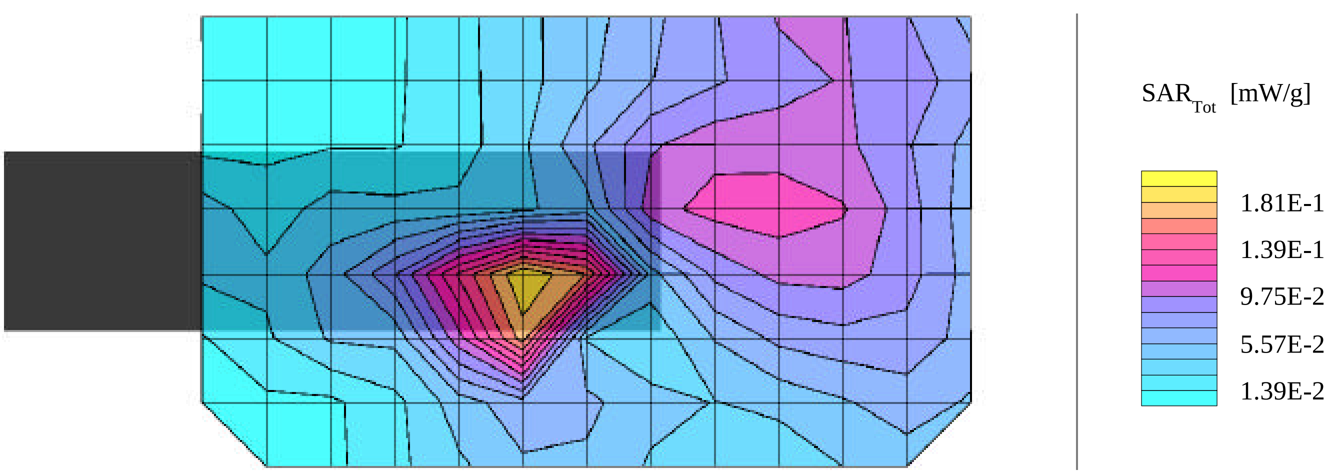
Body SAR - Right Side of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ϵ_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 0.245 mW/g, SAR (10g): 0.122 mW/g

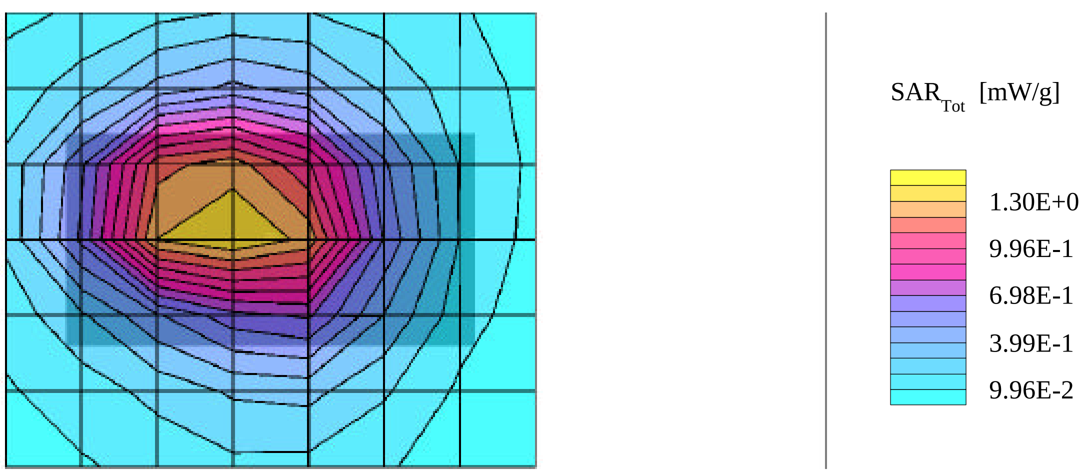
Body SAR -Right Side of PC - 0cm Separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 1.33 mW/g, SAR (10g): 0.775 mW/g

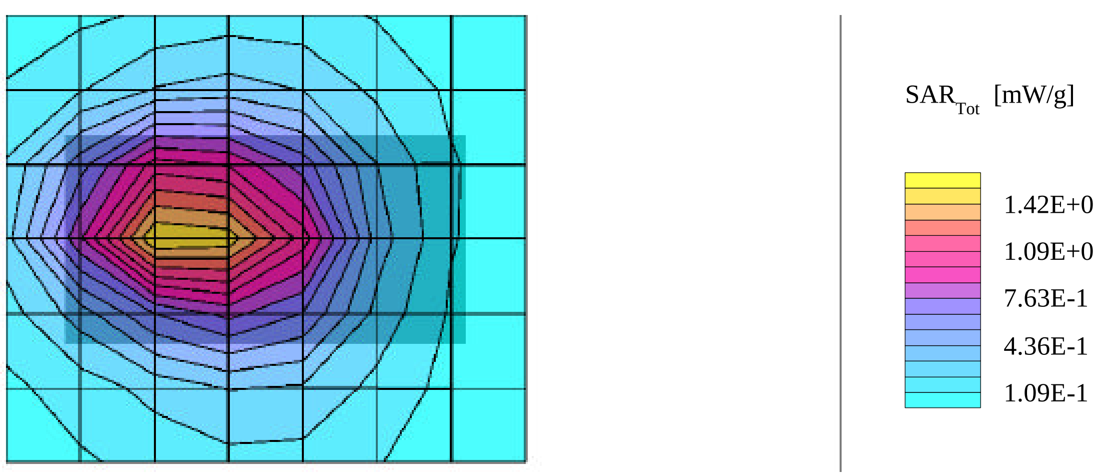
Body SAR - Antenna Side of PC - 2.5cm separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Low Channel 2 [2402.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm³
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 1.37 mW/g, SAR (10g): 0.790 mW/g

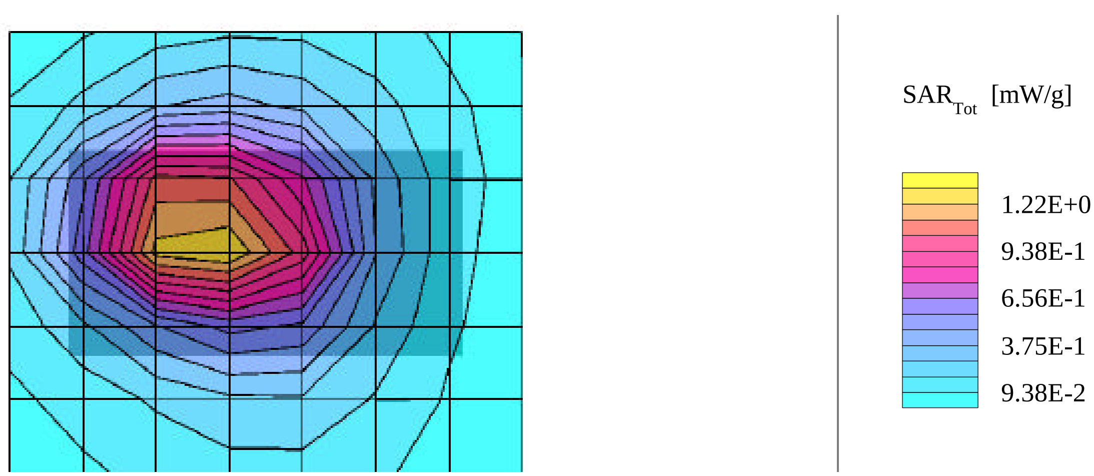
Body SAR - Antenna Side of PC - 2.5cm separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
Mid Channel 52 [2452.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



Intermec Technologies FCC ID: EHARFID2450PCC-5

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1387; ConvF(4.94,4.94,4.94); Crest factor: 1.0
2400MHz Muscle: σ = 1.77 mho/m ε_r = 53.6 ρ = 1.00 g/cm^3
Coarse: Dx = 20.0, Dy = 20.0, Dz = 10.0
Cube 5x5x7
SAR (1g): 1.32 mW/g, SAR (10g): 0.752 mW/g

Body SAR - Antenna Side of PC - 2.5cm separation
FHSS PCMCIA Card in Handheld PC
Model: RFID 2450 PC Card-5
Unmodulated Carrier
High Channel 80 [2480.000 MHz]
Conducted Power: 30.0 dBm
Date Tested: July 27, 2001



APPENDIX B - DIPOLE VALIDATION

The manufacturer of the DASY3 generic twin phantom has determined that the planar section used during system validations, body SAR, and hand SAR RF exposure evaluations is 3.2mm, as opposed to the 2.0mm required thickness (OET Bulletin 65 Supplement C, Edition 01-01). As a result of this increased thickness, both the system validation and hand/body SAR measurements report a 12% lower assessed value. Attached is the notice from the device manufacturer regarding the change in procedure of dipole calibration due to the increased shell thickness of the generic twin phantom. Also attached from the device manufacturer is the summary of validation dipole target numbers for the increased phantom shell thickness.

MC0300: Change in Procedure of Dipole Calibration

Procedure Before February 2000

The distance between the dipole axis and head tissue simulating liquid was based on the specifications given by the vendor manufacturing the generic twin phantom. The specifications for the shell thickness were 2 ± 0.2 mm at the location where the phone touches the head as well as at the location of dipole validation in the flat phantom area. The thickness of the first phantom was carefully verified using the robot, which is a very tedious and time consuming procedure. Afterward, Schmid & Partner Engineering AG (SPEAG) relied on the manufacturer's specifications, since suitable equipment for routine validation of the shell thickness was not available before January 2000.

Rationale for Change of Procedure

During the course of closing the remaining gaps of quality control of our products and production, SPEAG purchased the hall effect wall thickness gauge MINITEST FH4100 of ElektroPhysik in January 2000. This instrumentation enables measurement of the shell thickness with a precision of better than ±0.1 mm. Verification of the phantoms revealed that the production variability in the regions of validation is considerably larger, i.e., about 2.8 ± 0.4 mm, which is due to an unnotified change in the production method of the vendor. The mean and deviation were estimated thereafter based on a limited number of samples.

The thickness of the phantom used for dipole calibration has a thickness of 3.2 ± 0.1 mm. In other words, the distances between the dipole axis and the liquid were 16.2 mm and not 15 mm below 1 GHz and 11.2 instead of 10 mm above 1 GHz. Therefore, an incorrect distance is stated in all calibration documents issued before February 2000. This does not effect laboratories using the generic twin phantom, only those groups which use other phantoms.

Changes in Procedure (effective February 2000)

1) Rigorous quality control of the new phantoms and conduct of the calibration at the correct distances of 15 mm and 10 mm respectively.

2) Provision of the corrected calibration distance as well as of extrapolated values for the distances 15, 15.5 and 16 mm for customers using phantoms other than the generic twin phantom. The latter are extrapolated values based on a series of measurements conducted with different dipoles which therefore have slightly enhanced uncertainties.

Suggested on: 15. 04. 2000 by: [signature]

Approved on: 16. 04. 2000 by: [signature]

Schmid & Partner Engineering AG

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

D1800V2 – SN:247 Summary of Dipole Data (June 20, 2001)

SAR Measurement

In the Table 1 averaged measured and extrapolated SAR values are normalized to a dipole input power of 1W (forward power). The dipole was position below the flat phantom filled with head-tissue simulating liquid (ε=40.0, σ=1.36).

Distance (mm)	SAR (1g) mW/g	SAR (10g) mW/g	Validation Repeatability (Standard deviation)	Method
10.0	**38.7**	**20.1**	**± 4%**	**Calibrated**
10.5	36.8	19.3	± 5%	Extrapolated
11.0	35.1	18.6	± 5%	Extrapolated
11.2 [1]	34.5	18.3	± 5%	Extrapolated

In the Table 2 averaged measured and extrapolated SAR values are normalized to a dipole input power of 1W (forward power). The dipole was position below the flat phantom filled with head-tissue simulating liquid (ε=40.1, σ=1.71).

Distance (mm)	SAR (1g) mW/g	SAR (10g) mW/g	Validation Repeatability (Standard deviation)	Method
10.0	**43.6**	**21.6**	**± 4%**	**Calibrated**
10.5	41.5	20.8	± 5%	Extrapolated
11.0	39.6	20.1	± 5%	Extrapolated
11.2 [1]	38.9	19.8	± 5%	Extrapolated

Dipole Impedance and Return Loss

The transformation parameters from the SMA-connector to the dipole feedpoint are:

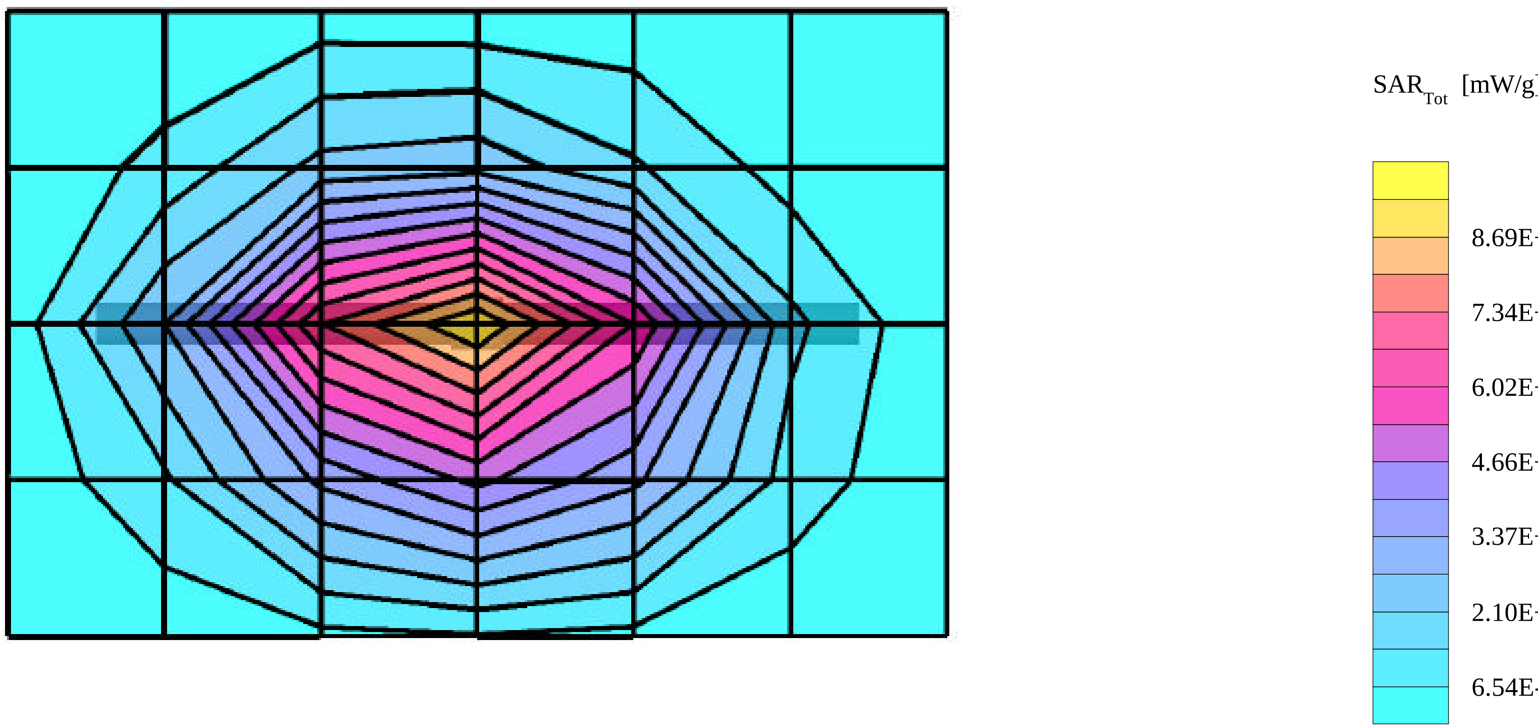
Electrical delay:	**1.208 ns**	(one direction)
Transmission factor:	**0.995**	(voltage transmission, one direction)

[1] As explained in the document "MC0300: Change in Procedure of Dipole Calibration" of April 15th, 2000, the distance between the dipole axis and liquid was 1.2 mm more than stated in the original documents issued before February 2000. The extrapolated values and the given uncertainties have been carefully evaluated and have been validated by measurements and computations.

Dipole 1800MHz

Generic Twin Phantom; Flat Section; Position: (90°,90°)
Probe: ET3DV6 - SN1590; ConvF(5.78,5.78,5.78); Crest factor: 1.0
1800MHz Brain: σ = 1.35 mho/m ε_r = 40.5 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cubes (2), measured power: 250 mW
SAR (1g): 8.38 mW/g ± 0.04 dB, SAR (10g): 4.54 mW/g ± 0.03 dB

Test Date: July 27, 2001



Validation Dipole D1800V2 SN:247, d = 10 mm

Frequency: 1800 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(5.57,5.57,5.57); Crest factor: 1.0; IEEE1528 1800 MHz : σ = 1.36 mho/m ε_r = 40.0 ρ = 1.00 g/cm^3
Cubes (2): Peak: 18.2 mW/g ± 0.04 dB, SAR (1g): 9.66 mW/g ± 0.03 dB, SAR (10g): 5.02 mW/g ± 0.03 dB, (Worst-case extrapolation)
Penetration depth: 8.2 (7.6, 9.4) [mm]
Powerdrift: -0.01 dB