DECLARATION OF COMPLIANCE
SAR EVALUATION

Test Lab

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Applicant Information

VOCOLLECT INC.
701 Rodi Road, Suite 200
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Rule Part(s):	FCC §2.1093; IC RSS-102 Issue 1 (Provisional)
Test Procedure(s):	FCC OET Bulletin 65 Supplement C (Edition 01-01)
Device Classification:	Part 15 Spread Spectrum Transmitter (DSS)
Device Type:	Waist-Worn Terminal with 2.4GHz FHSS Wireless LAN Card
FCC ID:	MQOTT600-22300
Model Name / No.:	Talkman T2 / TT-600
Modulation:	Frequency Hopping Spread Spectrum (FHSS)
Tx Frequency Range:	2402 - 2480 MHz
RF Conducted Power Tested:	20.5 dBm (2440 MHz)
Antenna Type:	Integral
Power Supply:	7.2VDC Lithium-Ion Battery (1500mAh, 3000mAh)
Body-Worn Accessories Tested:	Slim Belt-Clip (P/N: 611037) Waist-Strap (P/N: 620024) Headset with Microphone (P/N: 400-0029-001) Scanner (P/N: 732027)
Max. SAR Level Measured:	0.142 W/kg

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 §2.1093 and Health Canada's Safety Code 6. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C, Edition 01-01 and Industry Canada RSS-102 Issue 1 (General Population/Uncontrolled Exposure).

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.

Russell Pipe
Senior Compliance Technologist
Celltech Research Inc.

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1.0 INTRODUCTION

This measurement report demonstrates that the VOCOLLECT INC. Model: TALKMAN T2 TT-600 Waist-Worn Terminal with 2.4GHz FHSS Wireless LAN Card FCC ID: MQOTT600-22300 complies with FCC 47 CFR §2.1093 (see reference [1]) and Health Canada Safety Code 6 (see reference [2]). The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]) and IC RSS-102 Issue 1 (Provisional) (see reference [4]), 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.

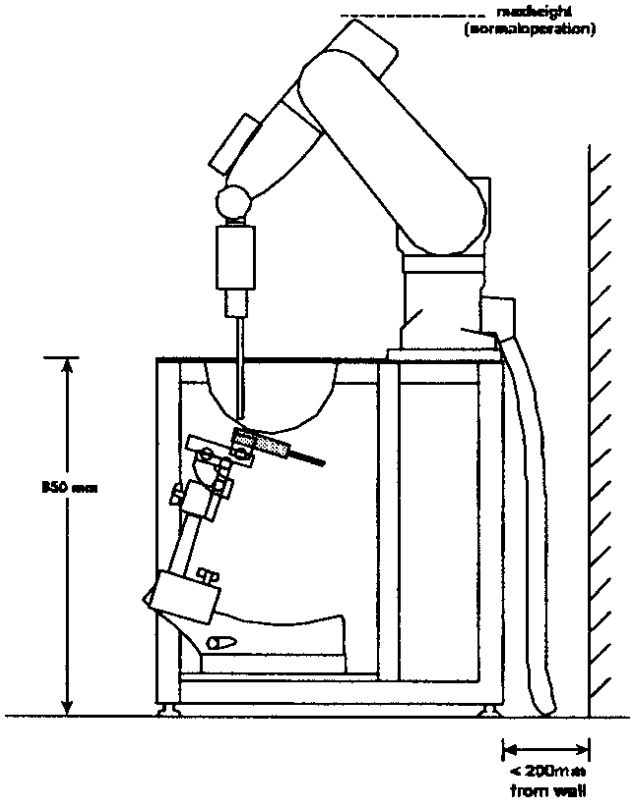
2.0 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

Rule Part(s)	FCC §2.1093; IC RSS-102 Issue 1
Test Procedure(s)	FCC OET Bulletin 65, Supplement C (01-01)
Device Classification	Part 15 Spread Spectrum Transmitter (DSS)
Device Type	Waist-Worn Terminal with FHSS Wireless LAN Card
Modulation	Frequency Hopping Spread Spectrum
Test Mode	Unmodulated Continuous Wave (CW)
Tx Frequency Range	2402 - 2480 MHz
Measured RF Conducted Output Power	20.5 dBm (2440 MHz)
FCC ID	MQOTT600-22300
Model Name	Talkman T2
Model No.	TT-600
Serial No.	Pre-production
Antenna Type	Integral
Power Supply	7.2VDC Lithium-Ion Battery (1500mAh, 3000mAh)
Body-Worn Accessories	Slim Belt-Clip (P/N: 611037) Waist-Strap (P/N: 620024) Headset with Microphone (P/N: 400-0029-001) Scanner (P/N: 732027)

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 SAR measurement system is comprised of the robot controller, computer, near-field probe, probe alignment sensor, specific anthropomorphic mannequin (SAM) phantom, and various planar phantoms for face and body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe in order to measure the location (points) of 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



DASY3 Compact Version – Side View

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-WORN SAR MEASUREMENT RESULTS

Freq. (MHz)	Channel	Mode Tested	Cond. Power Before (dBm)	Cond. Power After (dBm)	EUT Test Position	Battery Type	Phantom Section	Separation Distance (cm)	SAR 1g (w/kg) 100% Duty Cycle
2440	Mid	CW	20.5	20.3	Belt-Clip Side (Right Section)	1500mAh	Planar	0.0	0.135
2440	Mid	CW	20.5	20.3	Belt-Clip Side (Right Section)	3000mAh	Planar	0.0	0.142
2440	Mid	CW	20.5	20.4	Belt-Clip Side (Left Section)	1500mAh	Planar	0.0	0.111
2440	Mid	CW	20.5	20.3	Belt-Clip Side (Left Section)	3000mAh	Planar	0.0	0.126
2440	Mid	CW	20.5	20.3	Top Side	1500mAh	Planar	0.0	0.0904
2440	Mid	CW	20.5	20.4	Top Side	3000mAh	Planar	0.0	0.0972
2440	Mid	CW	20.5	20.4	Bottom Side	1500mAh	Planar	0.0	0.101
2440	Mid	CW	20.5	20.4	Bottom Side	3000mAh	Planar	0.0	0.120

ANSI / IEEE C95.1 1992 - SAFETY LIMIT
BODY: 1.6 W/kg (averaged over 1 gram)
Spatial Peak - Uncontrolled Exposure / General Population

Measured Mixture Type	2450MHz Body		**Relative Humidity**	46 %
Dielectric Constant	**Measured**	**Target**	**Atmospheric Pressure**	102.3 kPa
	50.7	52.7		
Conductivity	**Measured**	**Target**	**Fluid Temperature**	23.2 °C
	1.97	1.95		
Ambient Temperature	22.0 °C		**Fluid Depth**	17 cm

Notes:

1. The SAR values measured at mid channel were 3.0dB or greater below the SAR limit, therefore only mid channel data was reported (per OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).
2. The SAR values measured were below the maximum limit of 1.6 w/kg (uncontrolled exposure).
3. The highest body-worn SAR value measured was 0.142 w/kg (100% duty cycle, mid channel, belt-clip side of EUT, right section/antenna side).
4. The EUT was tested for body-worn SAR on the belt-clip side of the device. Both the left and right sections of the belt-clip side were evaluated separately (due to the shape of the EUT), parallel to the planar phantom, at 0.0 cm separation distance (see Appendix G for SAR test setup photographs).
5. The EUT was tested for body-worn SAR on both the top and bottom sides of the device, parallel to the planar phantom, with a 0.0 cm separation distance (see Appendix G for SAR test setup photographs).
6. The EUT was tested with the waist-strap accessory removed in a worst-case configuration. The waist-strap contains no metallic components.
7. The headset/microphone and scanner accessories were connected to the EUT for the duration of the tests.
8. During the entire test the conducted power was maintained to within 5% of the initial conducted power.

5.0 DETAILS OF SAR EVALUATION

The VOCOLLECT INC. Model: TALKMAN T2 TT-600 Waist-Worn Terminal with 2.4GHz FHSS Wireless LAN Card FCC ID: MQOTT600-22300 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-worn SAR on the belt-clip side of the device. Both the left and right sections of the belt-clip side were evaluated separately (due to the shape of the EUT), parallel to the planar phantom, at 0.0 cm separation distance (touching at two points on each end of the belt-clip side).
2. The EUT was tested for body-worn SAR on both the top and bottom sides of the device, parallel to the planar phantom, with a 0.0 cm separation distance.
3. The EUT was tested with the waist-strap accessory removed in a worst-case configuration. The waist-strap contains no metallic components.
4. The EUT was tested with the headset/microphone and scanner accessories connected.
5. The EUT was placed into test mode using HyperTerminal software program controlled from a PC connected to the EUT via serial cable. The frequency hopping modulation was disabled and the EUT was operated at maximum power in unmodulated continuous transmit mode for the duration of the tests.
6. The EUT was evaluated for body SAR at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimize drift. The conducted power levels were checked before and after each test. If the conducted power level varied more than 5% of the initial power level 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.
7. If the SAR values measured for mid channel were 3.0dB or greater below the SAR limit then only mid channel data was reported (per OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).
8. The location of the maximum spatial SAR distribution (Hot Spot) was determined relative to the EUT and its antenna.
9. The EUT was tested with a fully charged battery.

6.0 EVALUATION PROCEDURES

a. (i) The evaluation was performed in the applicable area of the phantom depending on the type of device being tested. For devices held to the ear during normal operation, both the left and right ear positions were evaluated 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.

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. A 5x5x7 matrix was performed around the greatest spatial SAR distribution found during the area scan of the applicable exposed region. SAR values were then calculated using a 3-D spline interpolation algorithm and averaged over spatial volumes of 1 and 10 grams.

d. The depth of the simulating tissue in the planar phantom used for the SAR evaluation and system validation was no less than 15.0 cm.

e. For this particular evaluation a stack of low-density, low-loss dielectric foamed polystyrene was used in place of the device holder.

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 ±10%. The applicable verifications are listed below (see Appendix B for system validation test plot and Appendix C for detailed dipole calibration procedures).

Dipole Validation Kit	Target SAR 1g (W/kg)	Measured SAR 1g (W/kg)	Ambient Temp.	Fluid Temp.	Fluid Depth	Validation Date
2450MHz	14.2	15.2	22.0°C	23.2°C	17 cm	08/07/02

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 ±5%	1.80 ±5%	1000
2450MHz Brain (Measured - 08/07/02)	**37.7**	**1.87**	**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 ±5%	1.95 ±5%	1000
2450MHz Body (Measured - 08/07/02)	**50.7**	**1.97**	**1000**

9.0 EQUIVALENT TISSUES

The 2450MHz brain and body mixtures consist of consist of Glycol-monobutyl, water, and salt (body only). The fluid was prepared according to standardized procedures and measured for dielectric parameters (permitivity and conductivity).

TISSUE MIXTURES		
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 ±0.1 mm
Volume:	Approx. 20 liters

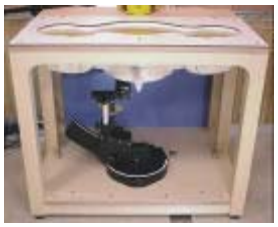
12.0 PROBE SPECIFICATION (ET3DV6)

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 ± 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 ?W/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

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 -Large Planar Phantom	 599396-01 1387 135 136 054 247 150 N/A N/A N/A	 N/A Feb 2002 Oct 2001 Oct 2001 June 2001 June 2001 Oct 2001 N/A 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	Nov 2001
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 permitivity (target)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permitivity (measured)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Combined Standard Uncertainty					**± 13.7**	
Expanded Uncertainty (k=2)					**± 27.5**	

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

17.0 REFERENCES

[1] Federal Communications Commission, “Radiofrequency radiation exposure evaluation: portable devices”, Rule Part 47 CFR §2.1093: 1999.

[2] Health Canada, “Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz”, Safety Code 6.

[3] 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.

[4] Industry Canada, “Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada’s Safety Code 6 for Exposure of Humans to Radio Frequency Fields”, Radio Standards Specification RSS-102 Issue 1 (Provisional): September 1999.

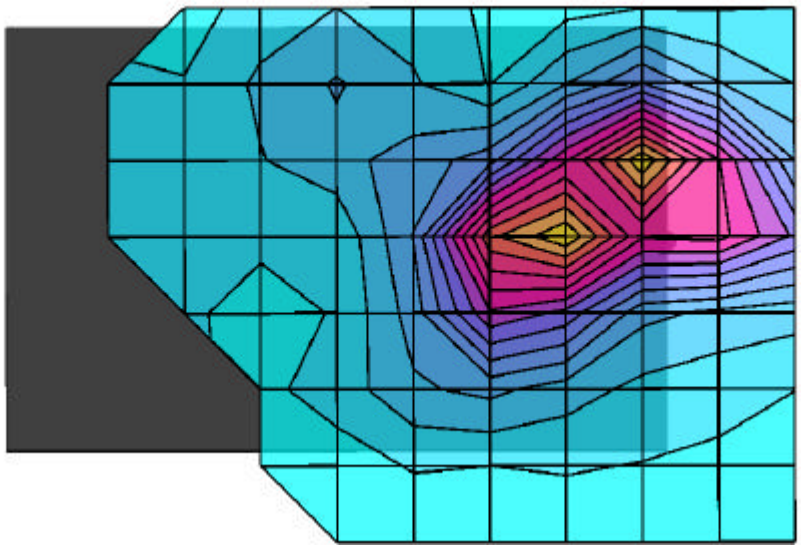
[5] IEEE Standards Coordinating Committee 34, Std 1528-200X, “DRAFT Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques”: Draft CBD 1.0, April 2002.

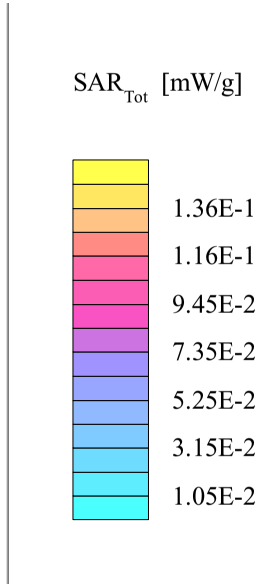
APPENDIX A - SAR MEASUREMENT DATA

Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.17 dB
SAR (1g): 0.135 mW/g, SAR (10g): 0.0714 mW/g

Body-Worn SAR - 0.0cm Separation Distance
Belt-Clip Side of EUT - Right Section (Antenna Side)
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Standard Battery (1500 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp: 22.0°C; Fluid Temp: 23.2°C
Date Tested: August 7, 2002

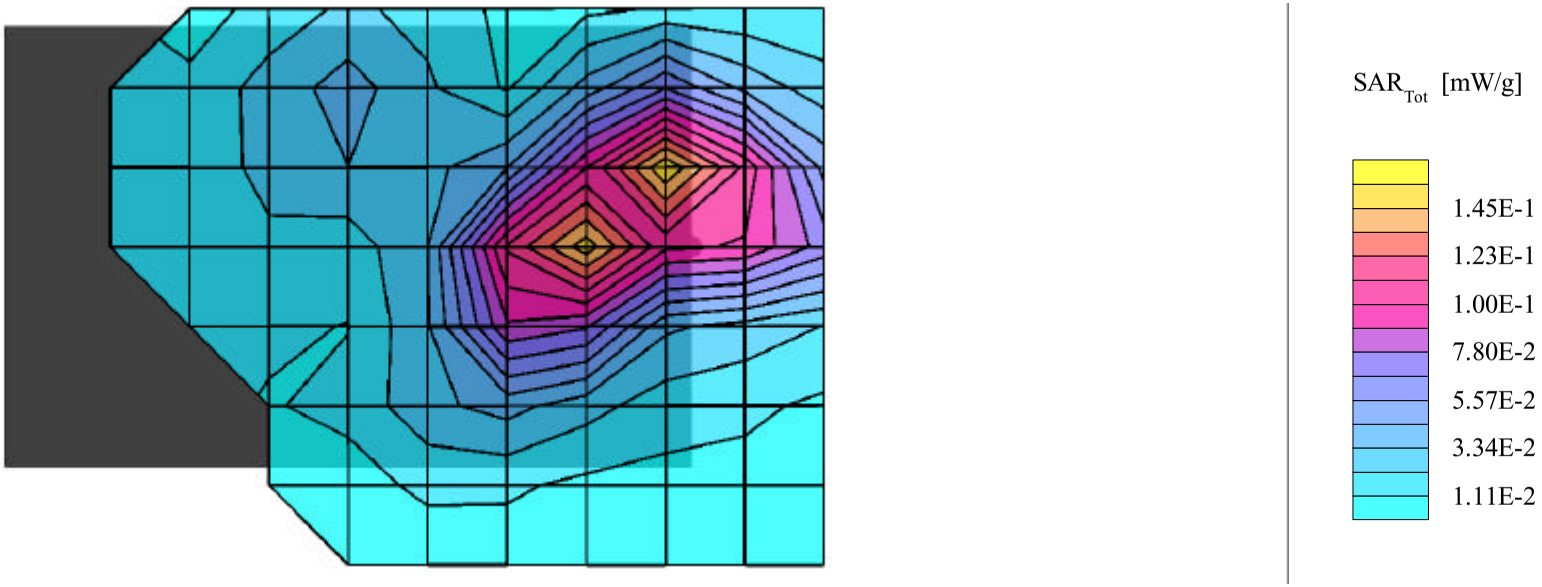




Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.20 dB
SAR (1g): 0.142 mW/g, SAR (10g): 0.0757 mW/g

Body-Worn SAR - 0.0cm Separation Distance
Belt-Clip Side of EUT - Right Section (Antenna Side)
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Extended Battery (3000 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002

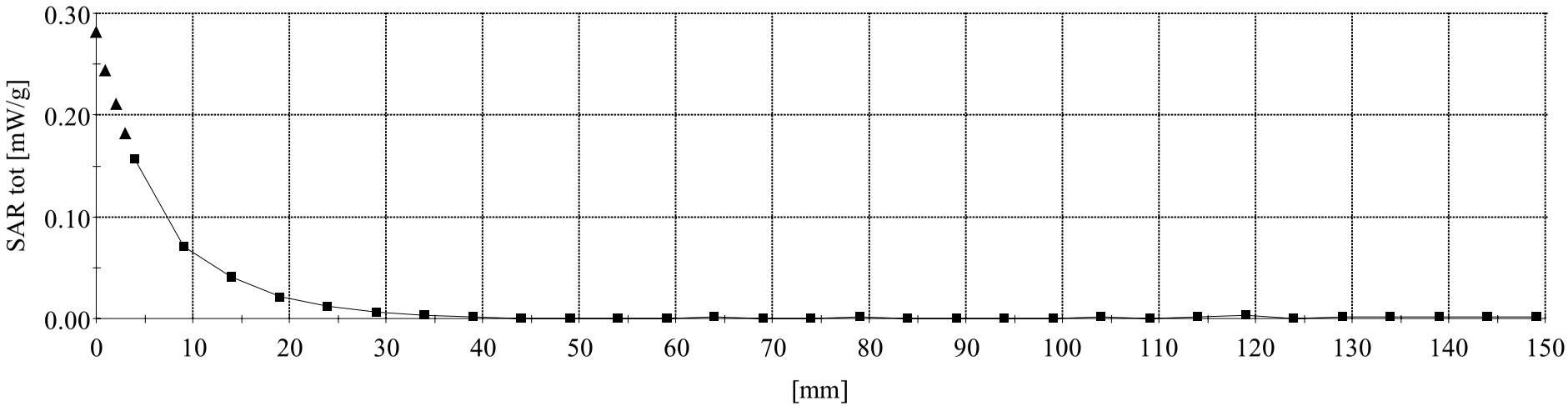


Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3

Z-Axis Extrapolation at Peak SAR Location

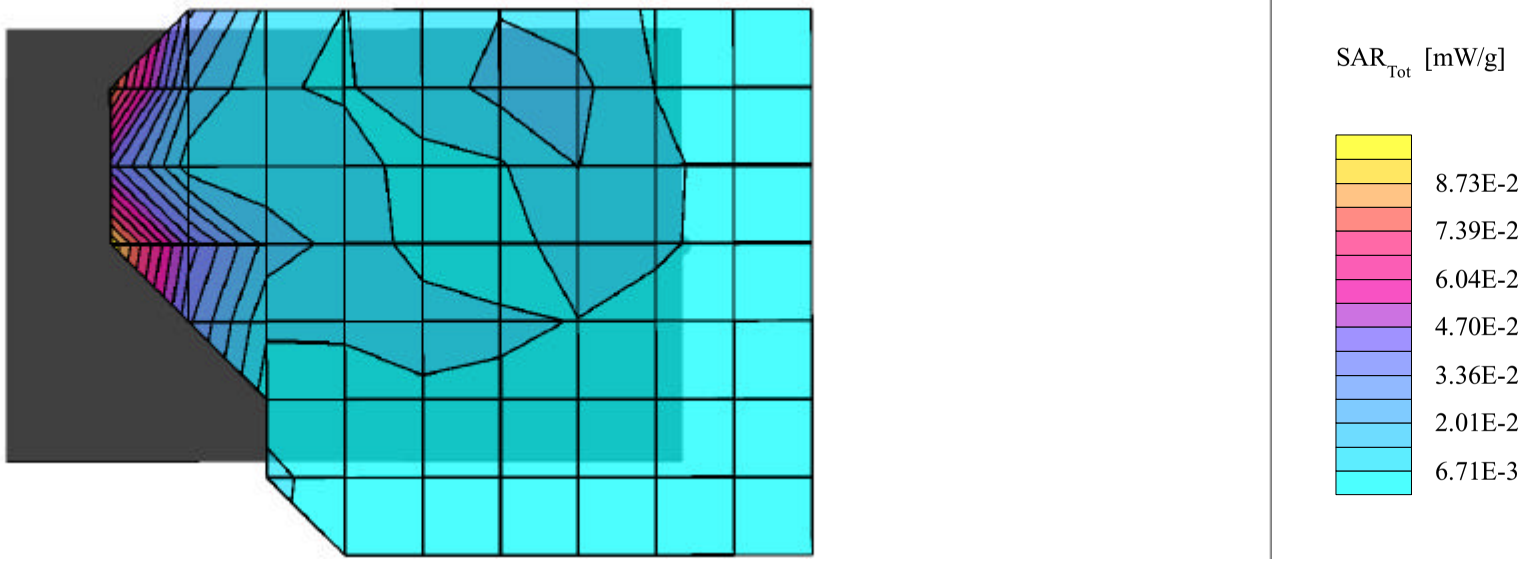
Body-Worn SAR - 0.0cm Separation Distance
Belt-Clip Side of EUT - Right Section (Antenna Side)
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Extended Battery (3000 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002



Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.12 dB
SAR (1g): 0.111 mW/g, SAR (10g): 0.0455 mW/g

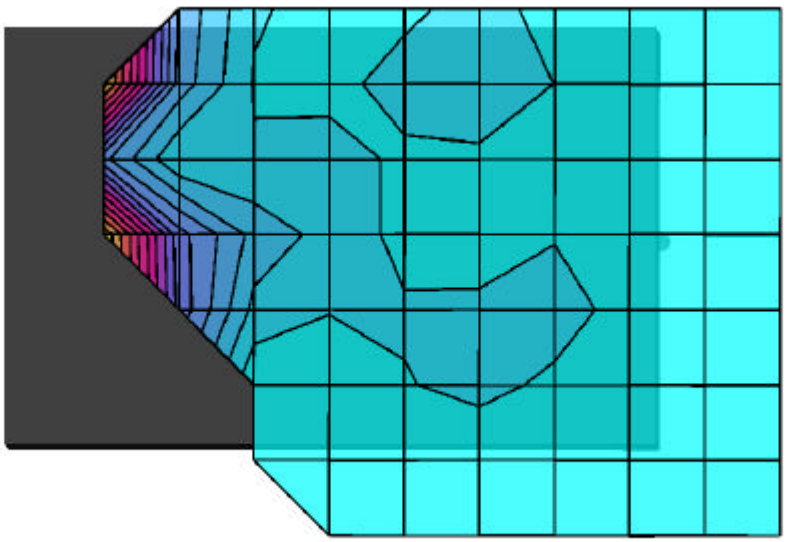
Body-Worn SAR - 0.0cm Separation Distance
Belt-Clip Side of EUT - Left Section
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Standard Battery (1500 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002

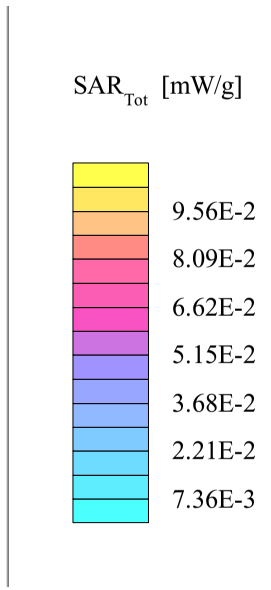


Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.15 dB
SAR (1g): 0.126 mW/g, SAR (10g): 0.0498 mW/g

Body-Worn SAR - 0.0cm Separation Distance
Belt-Clip Side of EUT - Left Section
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Extended Battery (3000 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002

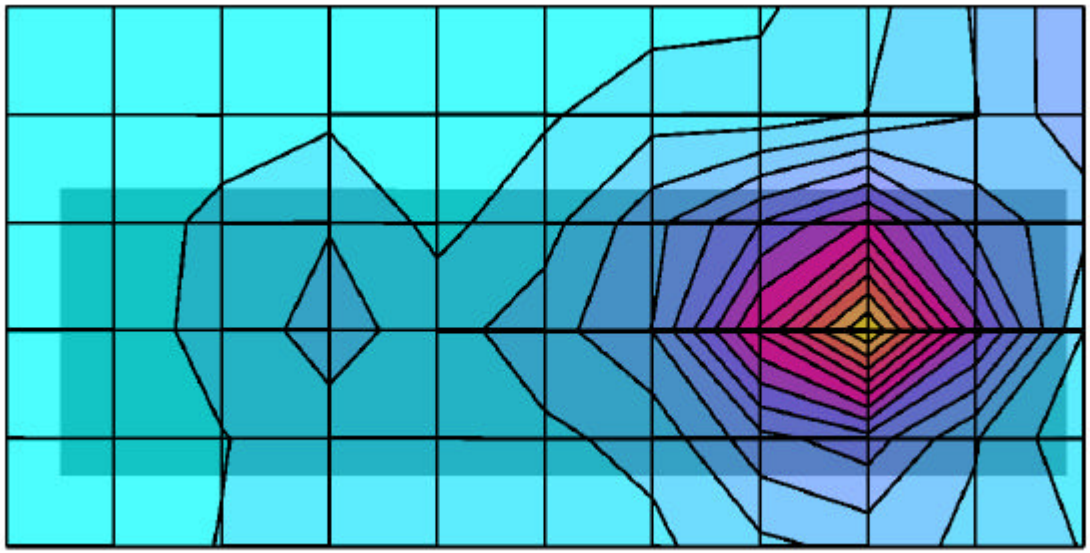




Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.16 dB
SAR (1g): 0.0904 mW/g, SAR (10g): 0.0451 mW/g

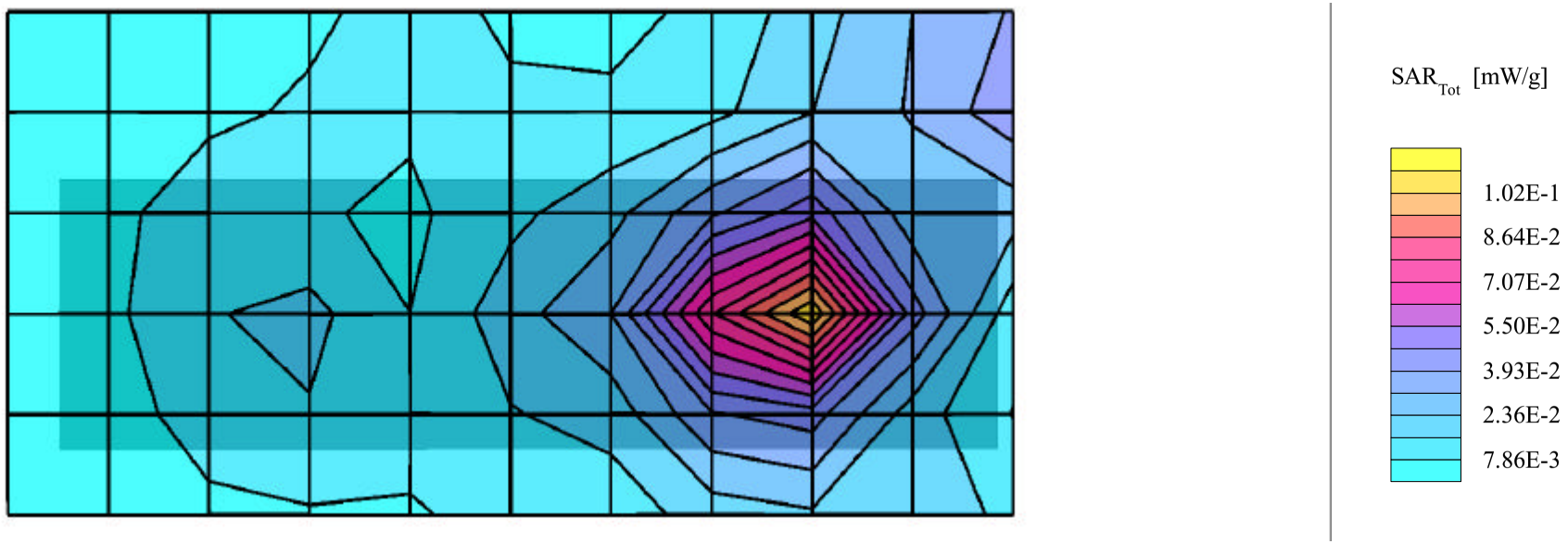
Body-Worn SAR - 0.0cm Separation Distance
Top Side of EUT
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Standard Battery (1500 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002



Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.09 dB
SAR (1g): 0.0972 mW/g, SAR (10g): 0.0482 mW/g

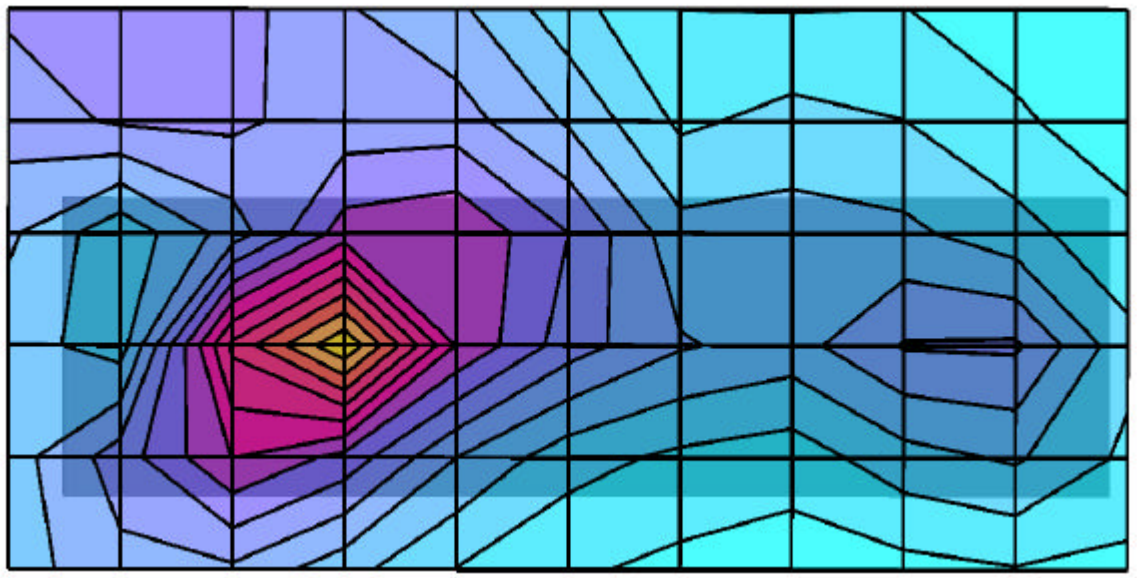
Body-Worn SAR - 0.0cm Separation Distance
Top Side of EUT
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Extended Battery (3000 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002



Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.12 dB
SAR (1g): 0.101 mW/g, SAR (10g): 0.0497 mW/g

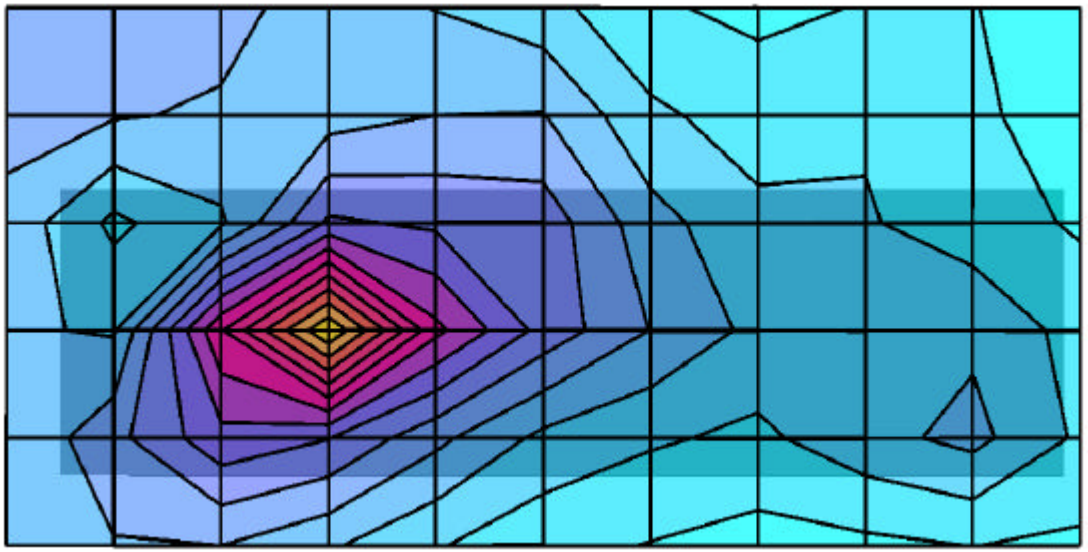
Body-Worn SAR - 0.0cm Separation Distance
Bottom Side of EUT
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Standard Battery (1500 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002



Vocollect Inc. FCC ID: MQOTT600-22300

SAM Phantom; Flat Section; Position: (270°,270°)
Probe: ET3DV6 - SN1387; ConvF(4.30,4.30,4.30); Crest factor: 1.0
2450 MHz Muscle: σ = 1.97 mho/m ε_r = 50.7 ρ = 1.00 g/cm^3
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Cube 5x5x7; Powerdrift: -0.07 dB
SAR (1g): 0.120 mW/g, SAR (10g): 0.0588 mW/g

Body-Worn SAR - 0.0cm Separation Distance
Bottom Side of EUT
Waist-Worn Terminal with Internal FHSS WLAN Card
Model: Talkman T2 / TT-600
Extended Battery (3000 mAh)
CW Mode
Mid Channel [2440 MHz]
Conducted Power: 20.5 dBm
Ambient Temp. 22.0°C; Fluid Temp. 23.2°C
Date Tested: August 7, 2002



APPENDIX B - SYSTEM VALIDATION

Dipole 2450MHz

SAM Phantom; Flat Section

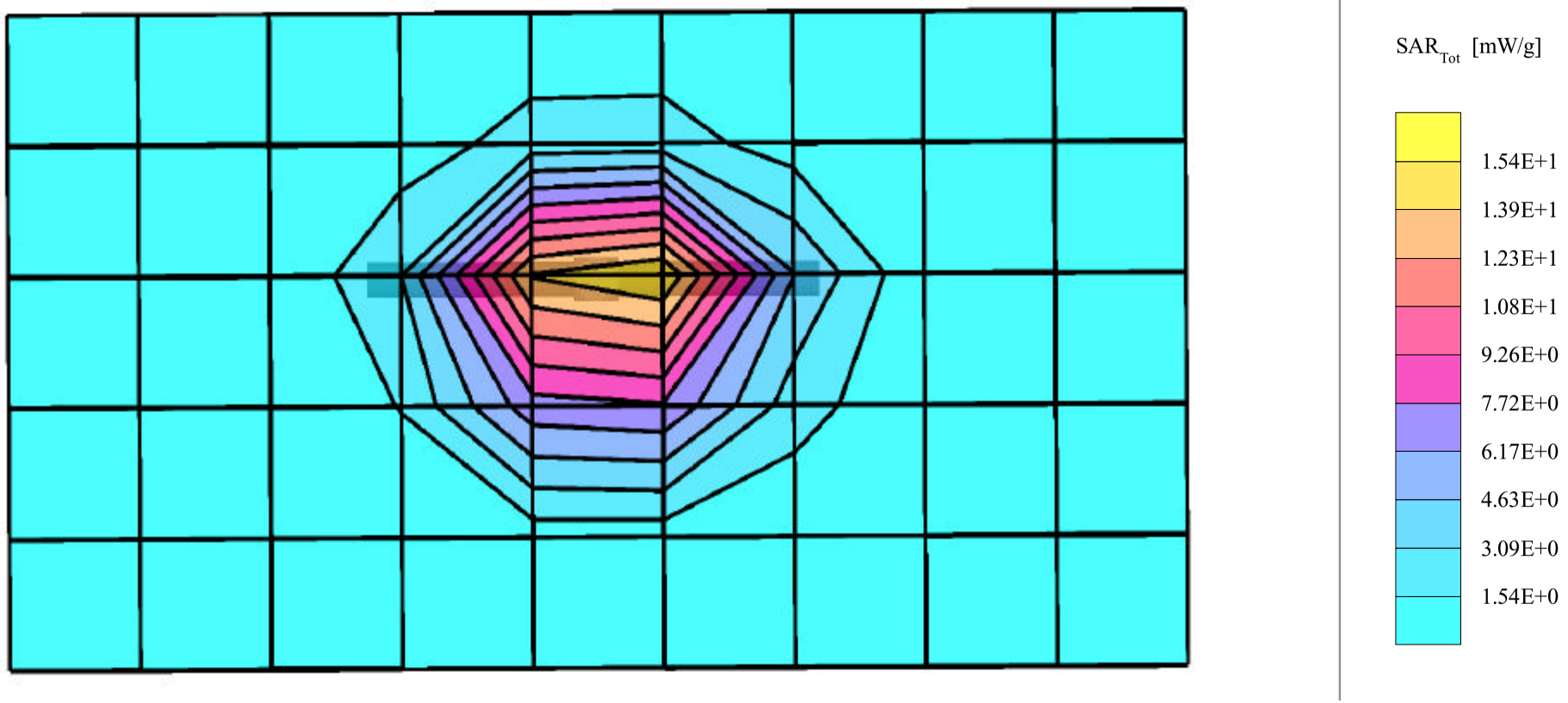
Probe: ET3DV6 - SN1387; ConvF(4.70,4.70,4.70); Crest factor: 1.0; 2450 MHz Brain: σ = 1.87 mho/m ε_r = 37.7 ρ = 1.00 g/cm^3

Cube 5x5x7: Peak: 32.6 mW/g, SAR (1g): 15.2 mW/g, SAR (10g): 6.83 mW/g, (Worst-case extrapolation)

Penetration depth: 6.0 (5.8, 6.7) [mm]; Ambient Temp: 22.0°C; Fluid Temp: 23.2°C; Powerdrift: -0.01 dB

Conducted Power: 250mW

Validation Date: August 07, 2002



APPENDIX C - DIPOLE CALIBRATION

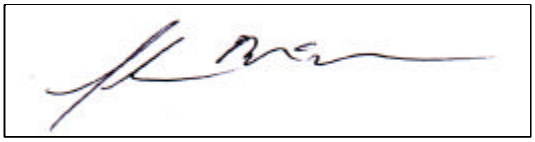
Celltech
Testing and Engineering Services Lab

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: 

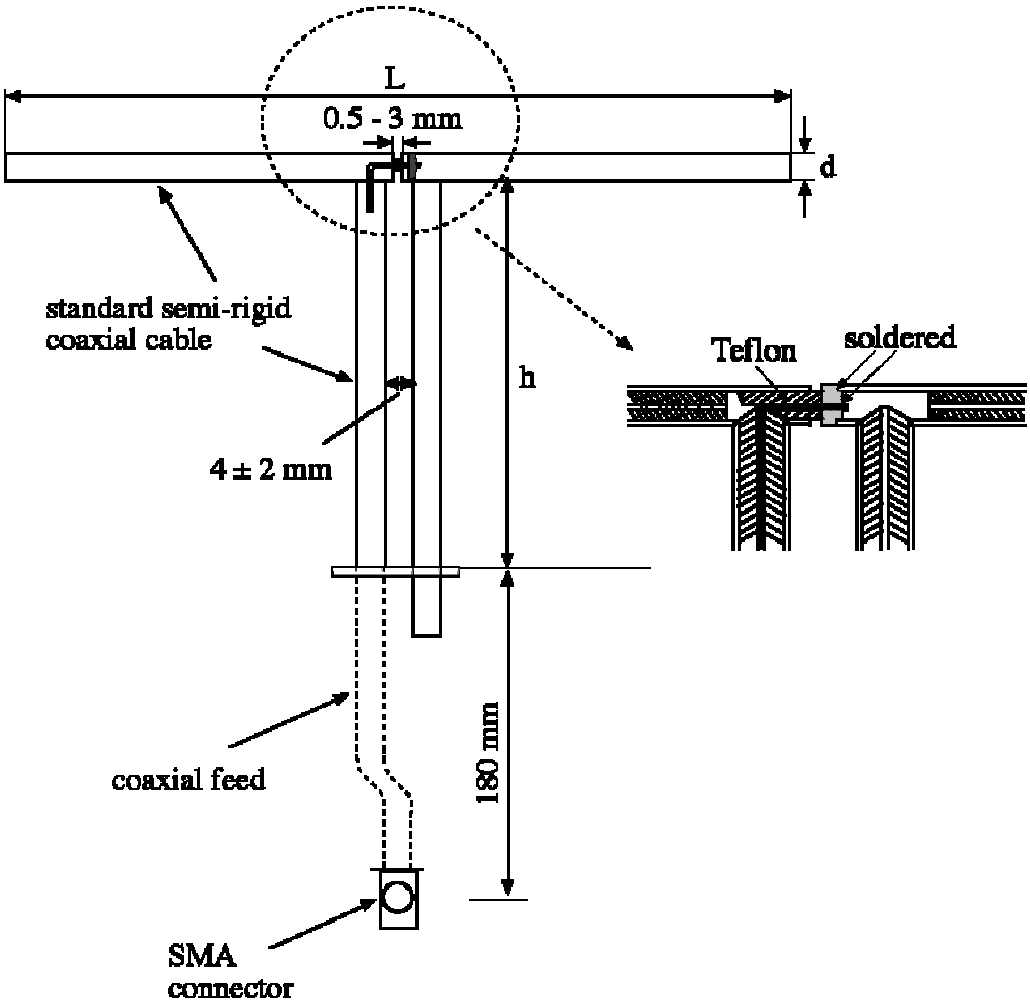
Approved by: 

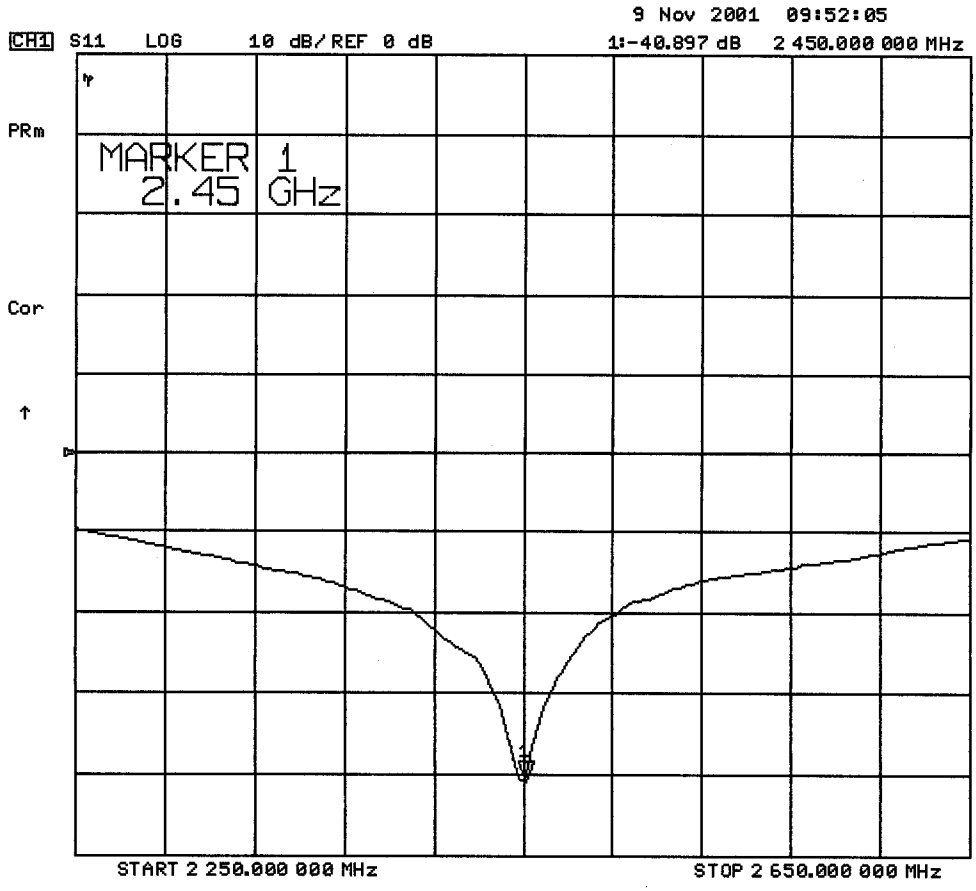
Celltech Research Inc. 1955 Moss Court, Kelowna, B.C. Canada V1Y 9L3
Tel. 250-860-3130 • Fax. 250-860-3110 • e-mail: info@celltechlabs.com
www.celltechlabs.com

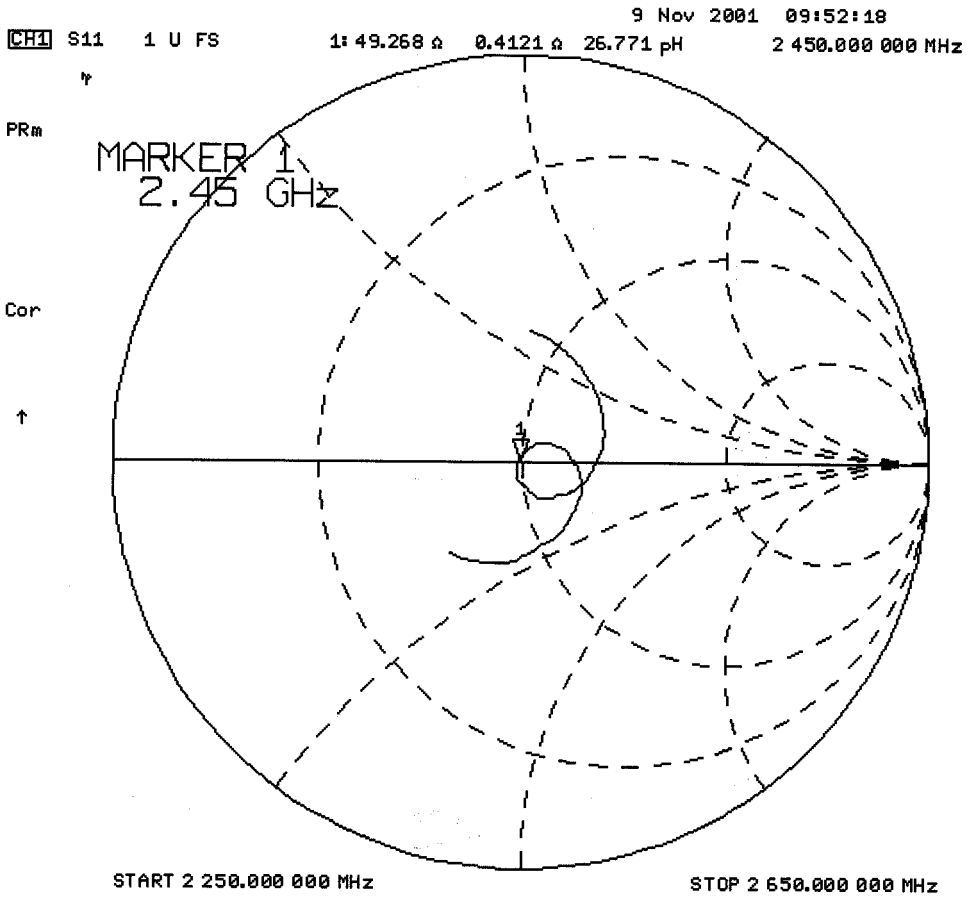
1. Dipole Construction & Electrical Characteristics

The validation dipole was constructed in accordance with the IEEE Std "Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques". The electrical properties were measured using an HP 8753E Network Analyzer. The network analyzer was calibrated to the validation dipole N-type connector feed point using an HP85032E Type N calibration kit. The dipole was placed parallel to a planar phantom at a separation distance of 10.0mm from the simulating fluid using a loss-less dielectric spacer. The measured input impedance is:

Feed point impedance at 2450MHz	Re{Z} = 49.268Ω
	Im{Z} = 0.4121Ω
Return Loss at 2450MHz	-40.897dB




9 Nov 2001 09:52:05
CH1 S11 LOG 10 dB/ REF 0 dB
1:-40.897 dB 2 450.000 000 MHz
PRm
MARKER 1
2.45 GHz
Cor
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
PRm
MARKER 1
2.45 GHz
Cor
START 2 250.000 000 MHz
STOP 2 650.000 000 MHz

Validation Dipole Dimensions

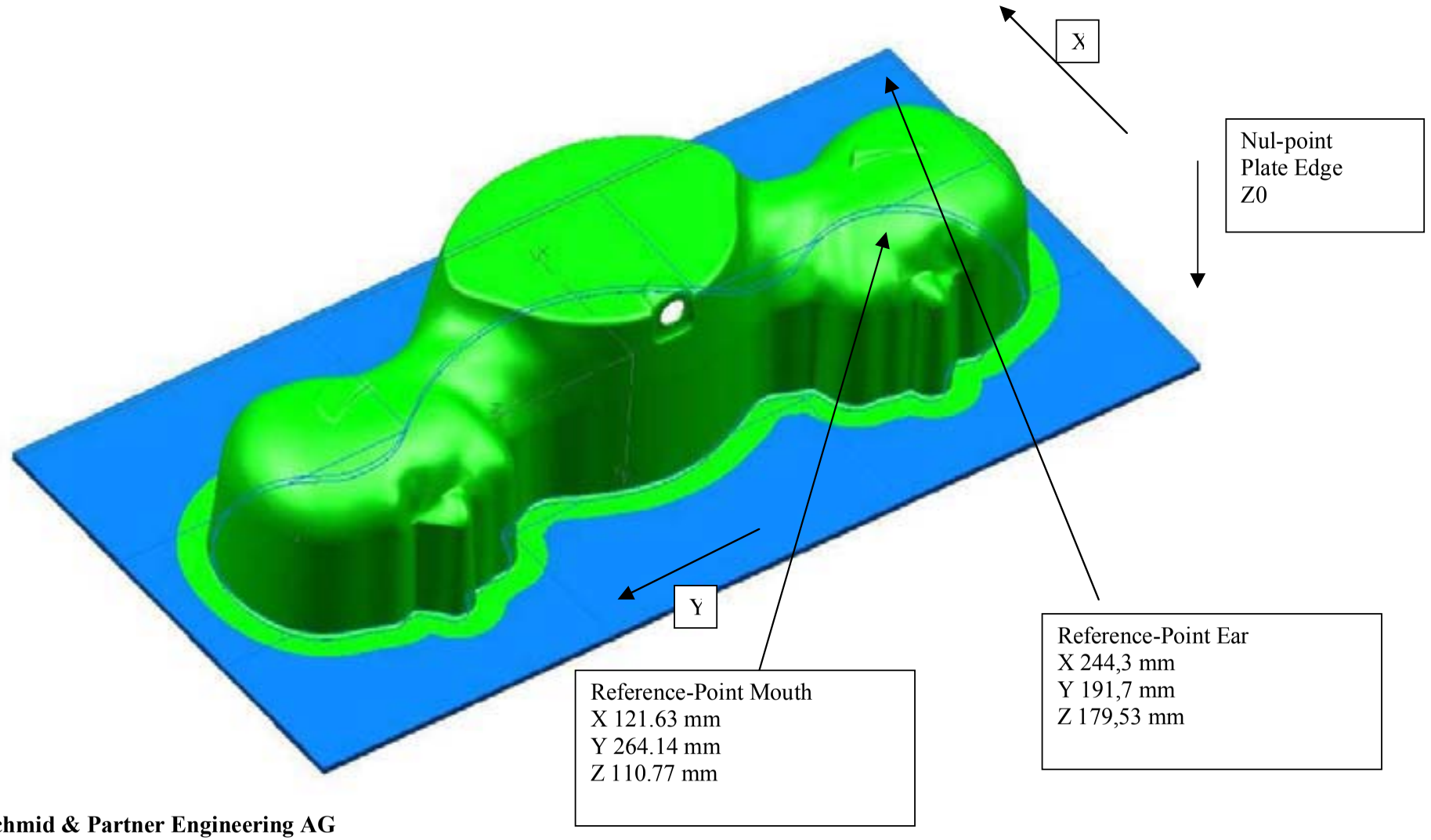
Frequency (MHz)	L (mm)	h (mm)	d (mm)
300	420.0	250.0	6.2
450	288.0	167.0	6.2
835	161.0	89.8	3.6
900	149.0	83.3	3.6
1450	89.1	51.7	3.6
1800	72.0	41.7	3.6
1900	68.0	39.5	3.6
2000	64.5	37.5	3.6
2450	51.8	30.6	3.6
3000	41.5	25.0	3.6

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



Schmid & Partner Engineering AG

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:

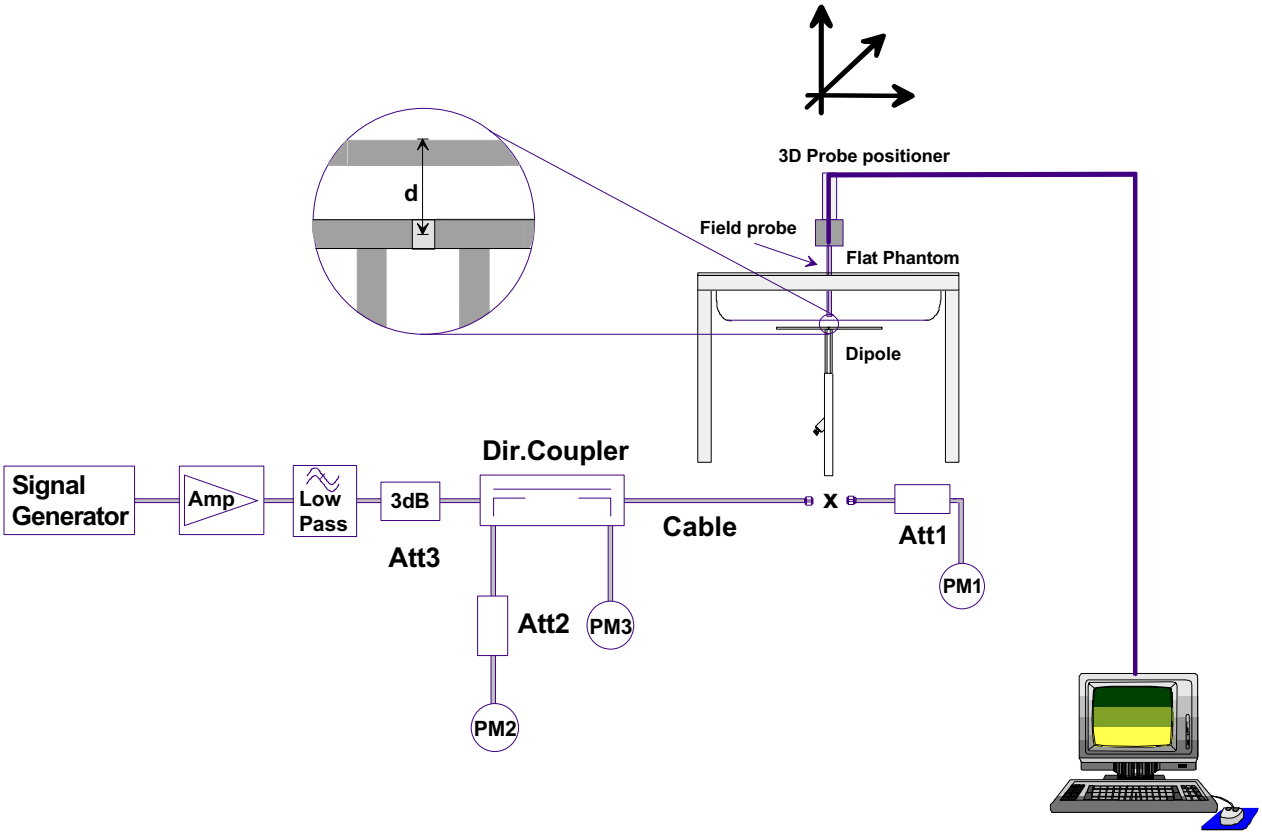
Relative Permitivity:	39.2	± 5%
Conductivity:	1.80 mho/m	± 5%
Temperature:	23.1°C	

The 2450MHz simulating tissue consists of the following ingredients:

Ingredient	Percentage by weight
Water	55.20 %
Glycol Monobutyl	44.80 %
Target Dielectric Parameters at 22°C	ε_r = 39.2 σ = 1.80 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

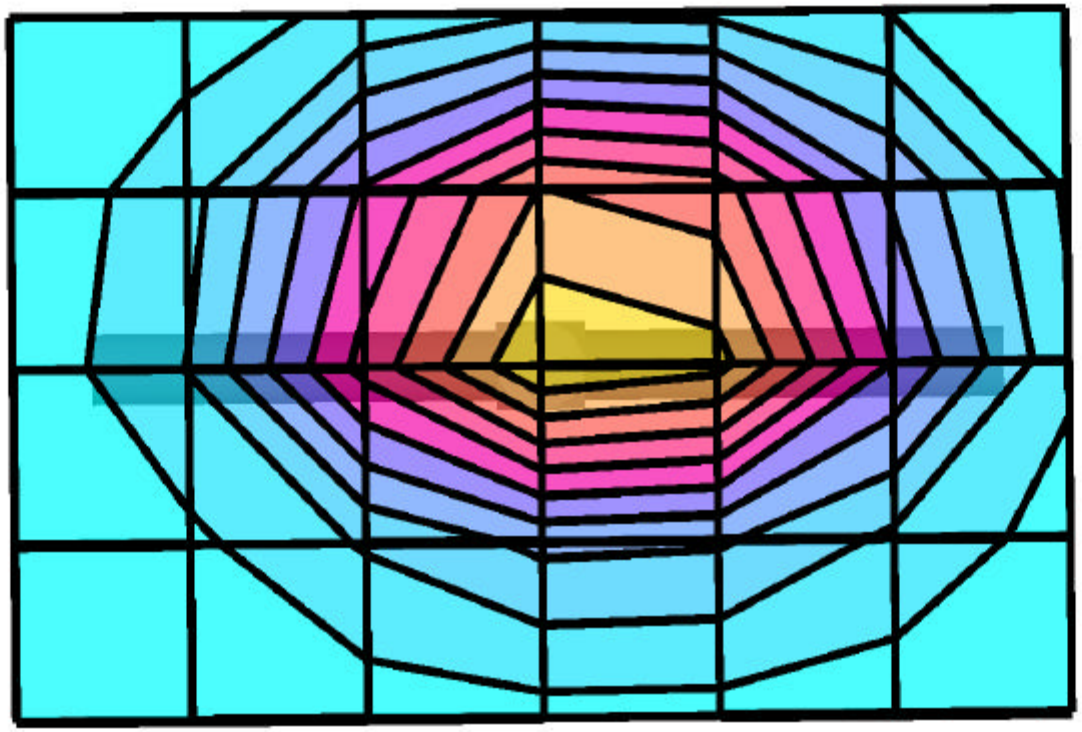
Probe: ET3DV6 - SN1590; ConvF(4.93,4.93,4.93); Crest factor: 1.0; 2450 MHz Brain: σ = 1.80 mho/m ε_r = 39.2 ρ = 1.00 g/cm^3

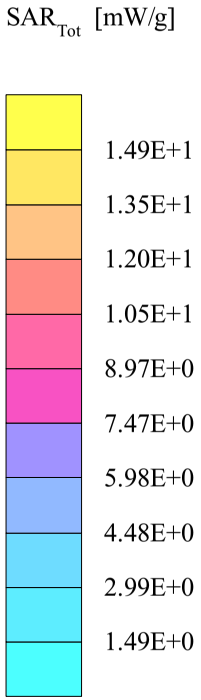
Cube 5x5x7: Peak: 30.5 mW/g, SAR (1g): 14.2 mW/g, SAR (10g): 6.33 mW/g, (Worst-case extrapolation)

Penetration depth: 6.2 (5.9, 7.0) [mm]; Ambient Temp: 21.5°C; Fluid Temp: 23.1°C

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

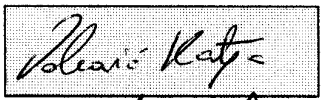
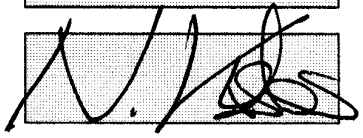
Calibration Certificate

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

Diode Compression

NormX	**1.58**	$\mu V/(V/m)^2$	DCP X	**97**	mV
NormY	**1.67**	$\mu V/(V/m)^2$	DCP Y	**97**	mV
NormZ	**1.67**	$\mu V/(V/m)^2$	DCP Z	**97**	mV

Sensitivity in Tissue Simulating Liquid

Head **900 MHz** **ε_r = 41.5 ± 5%** **σ = 0.97 ± 5% mho/m**
Head **835 MHz** **ε_r = 41.5 ± 5%** **σ = 0.90 ± 5% mho/m**

ConvF X	**6.6**	± 9.5% (k=2)	Boundary effect:	
ConvF Y	**6.6**	± 9.5% (k=2)	Alpha	**0.40**
ConvF Z	**6.6**	± 9.5% (k=2)	Depth	**2.38**

Head **1800 MHz** **ε_r = 40.0 ± 5%** **σ = 1.40 ± 5% mho/m**
Head **1900 MHz** **ε_r = 40.0 ± 5%** **σ = 1.40 ± 5% mho/m**

ConvF X	**5.4**	± 9.5% (k=2)	Boundary effect:	
ConvF Y	**5.4**	± 9.5% (k=2)	Alpha	**0.57**
ConvF Z	**5.4**	± 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

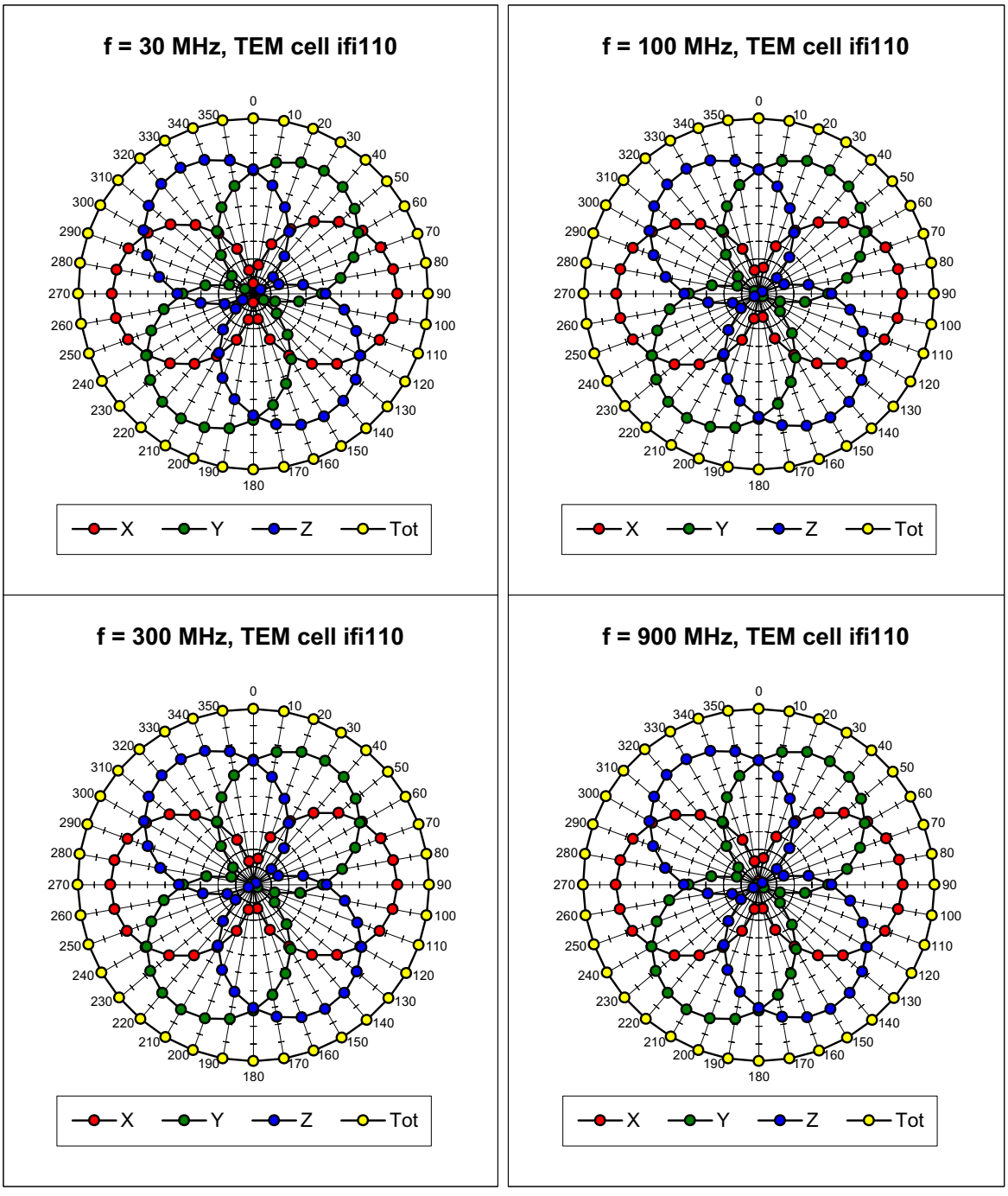
Head **1800 MHz** **Typical SAR gradient: 10 % per mm**

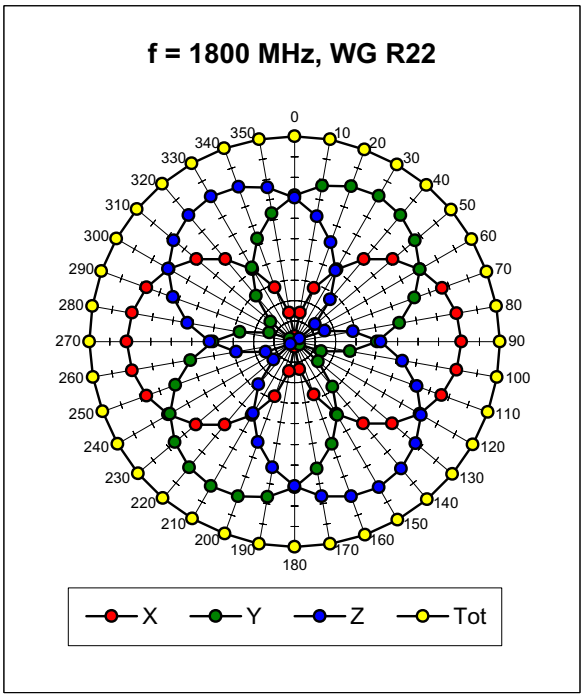
Probe Tip to Boundary		**1 mm**	**2 mm**
SAR_{be} [%]	Without Correction Algorithm	11.5	7.3
SAR_{be} [%]	With Correction Algorithm	0.1	0.3

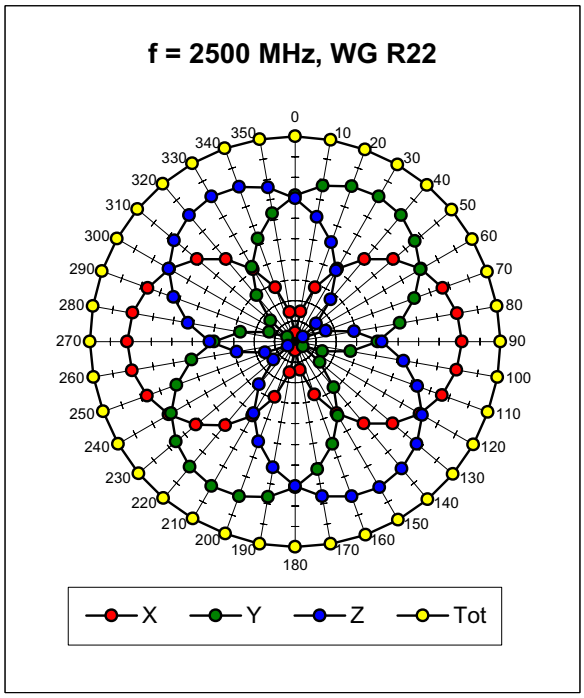
Sensor Offset

Probe Tip to Sensor Center	**2.7**	mm
Optical Surface Detection	**1.3 ± 0.2**	mm

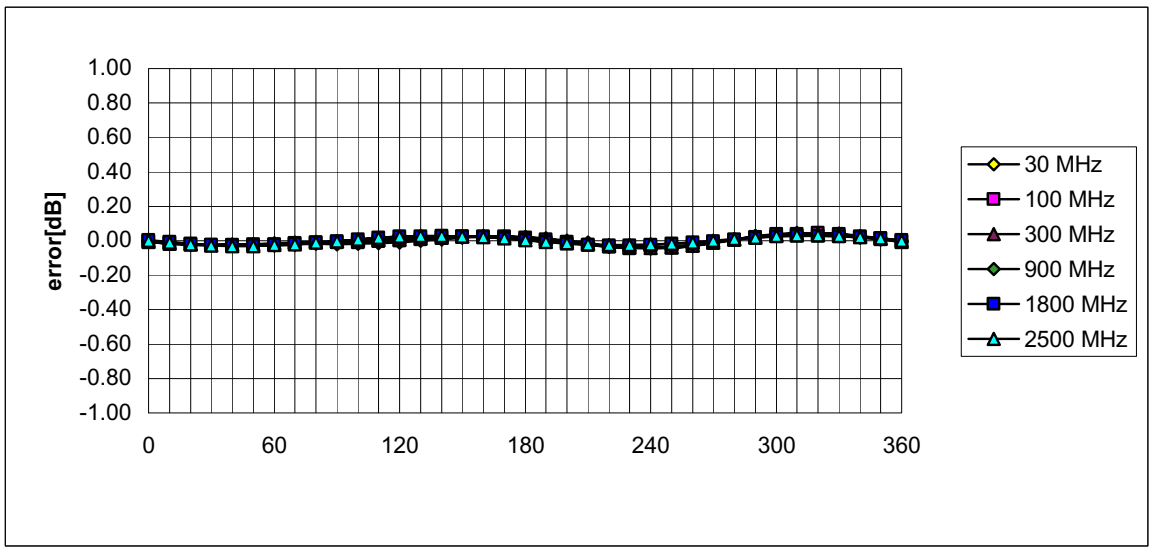
Receiving Pattern (ϕ , θ = 0°





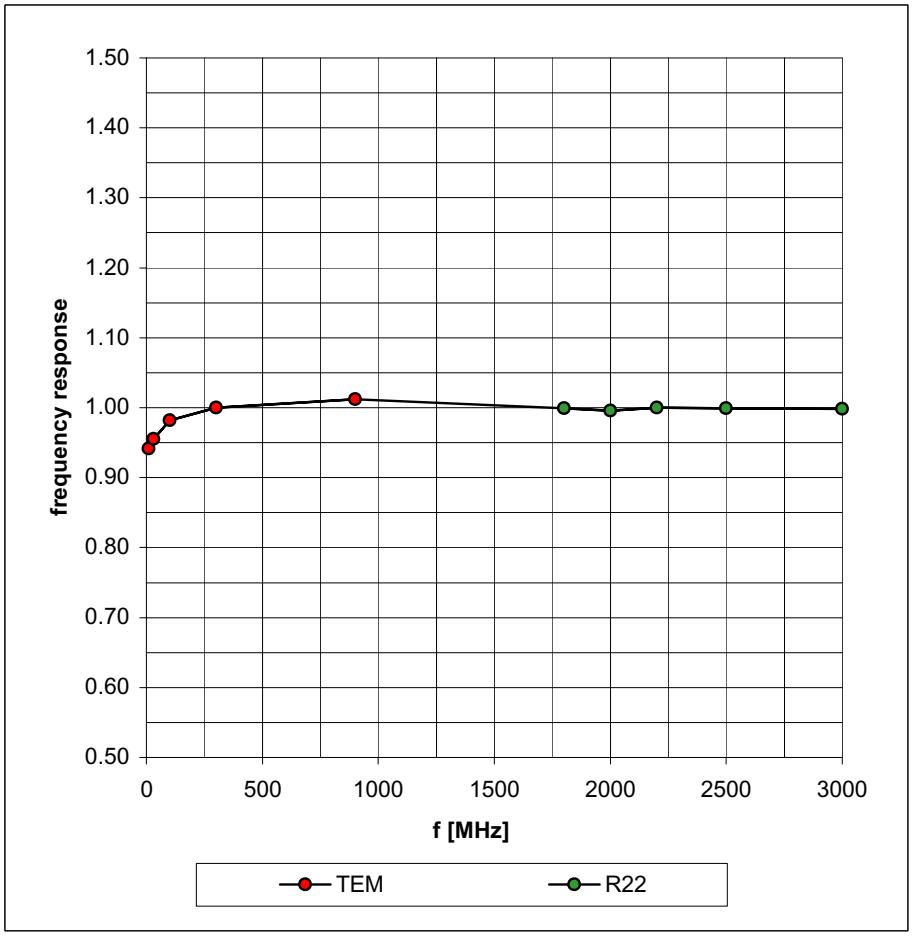


Isotropy Error (ϕ), θ = 0°



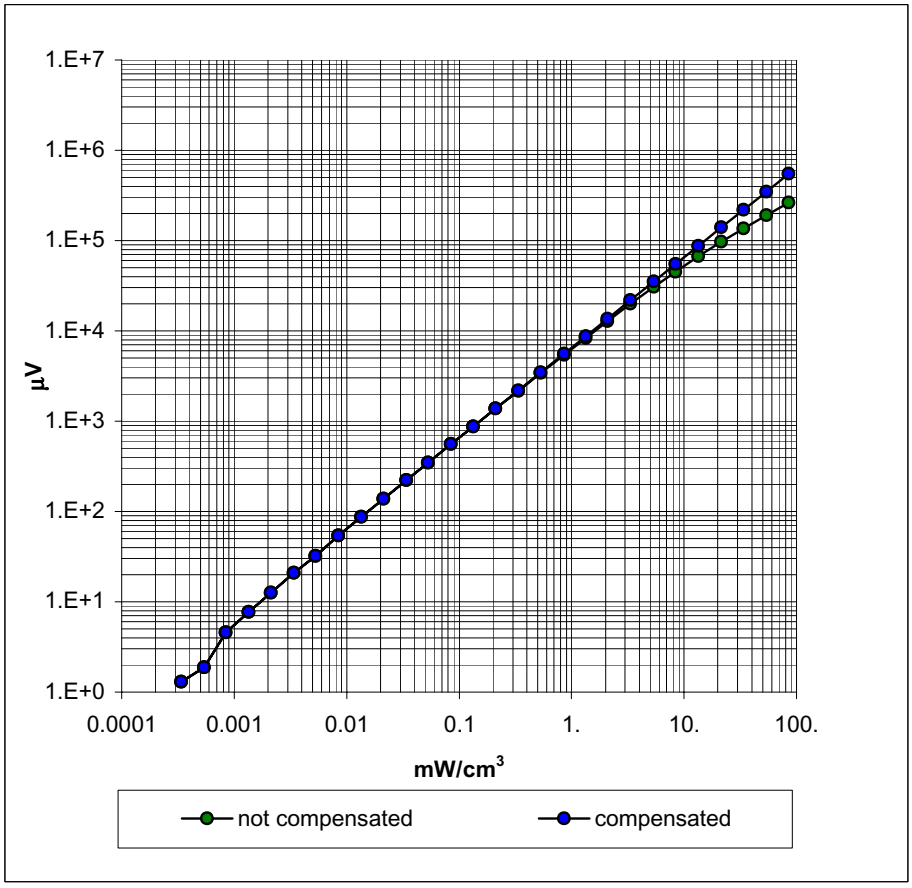
Frequency Response of E-Field

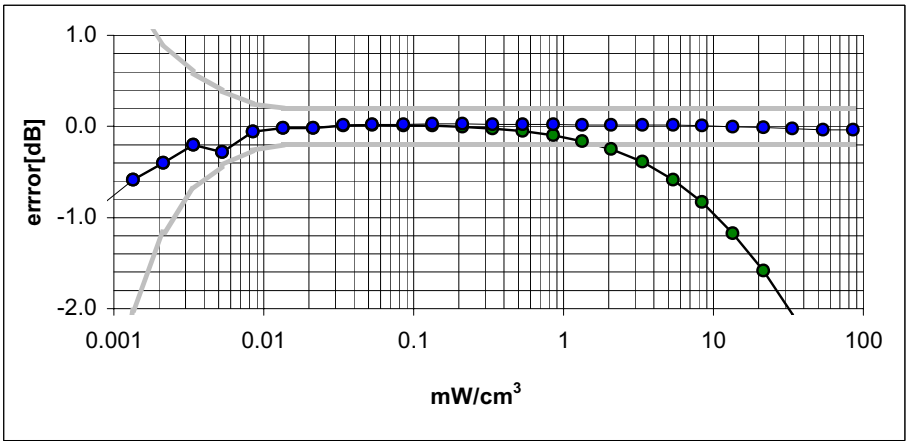
(TEM-Cell:ifi110, Waveguide R22)



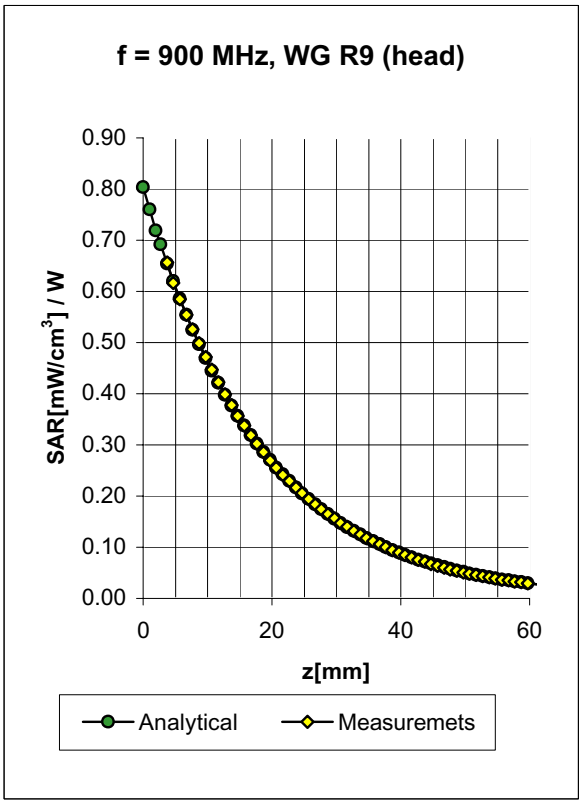
Dynamic Range f(SAR_{brain})

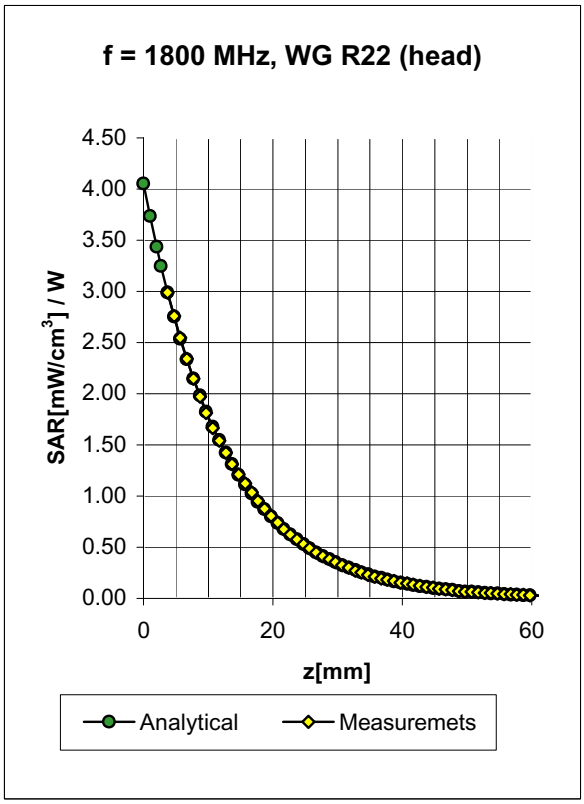
(Waveguide R22)





Conversion Factor Assessment



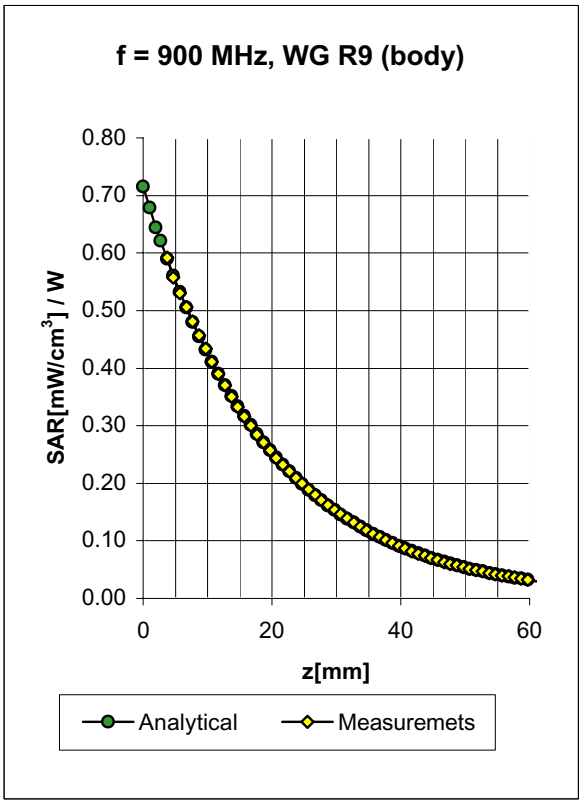


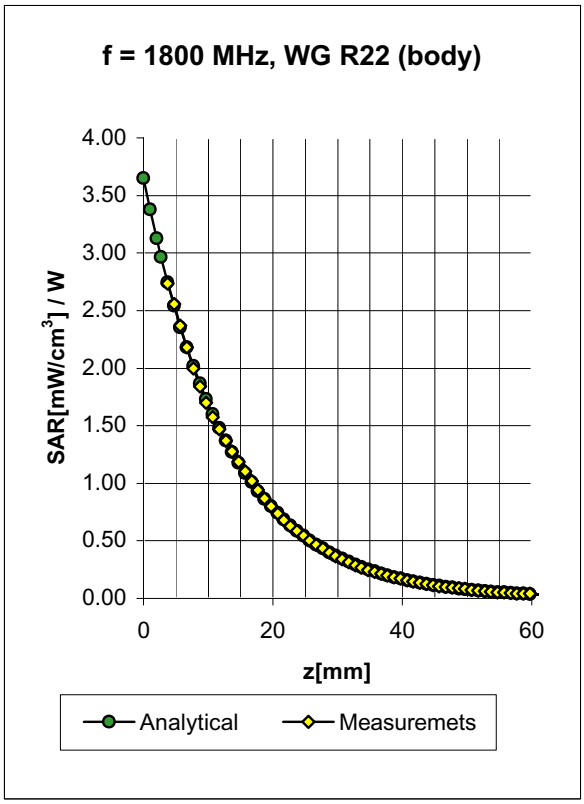
Head	**900 MHz**		**ε_r = 41.5 ± 5%**	**σ = 0.97 ± 5% mho/m**
Head	**835 MHz**		**ε_r = 41.5 ± 5%**	**σ = 0.90 ± 5% mho/m**
	ConvF X	**6.6** ± 9.5% (k=2)		Boundary effect:
	ConvF Y	**6.6** ± 9.5% (k=2)		Alpha **0.40**
	ConvF Z	**6.6** ± 9.5% (k=2)		Depth **2.38**

Head	**1800 MHz**		**ε_r = 40.0 ± 5%**	**σ = 1.40 ± 5% mho/m**
Head	**1900 MHz**		**ε_r = 40.0 ± 5%**	**σ = 1.40 ± 5% mho/m**
	ConvF X	**5.4** ± 9.5% (k=2)		Boundary effect:
	ConvF Y	**5.4** ± 9.5% (k=2)		Alpha **0.57**
	ConvF Z	**5.4** ± 9.5% (k=2)		Depth **2.18**

ET3DV6 SN:1387 **February 22, 2002**

Conversion Factor Assessment





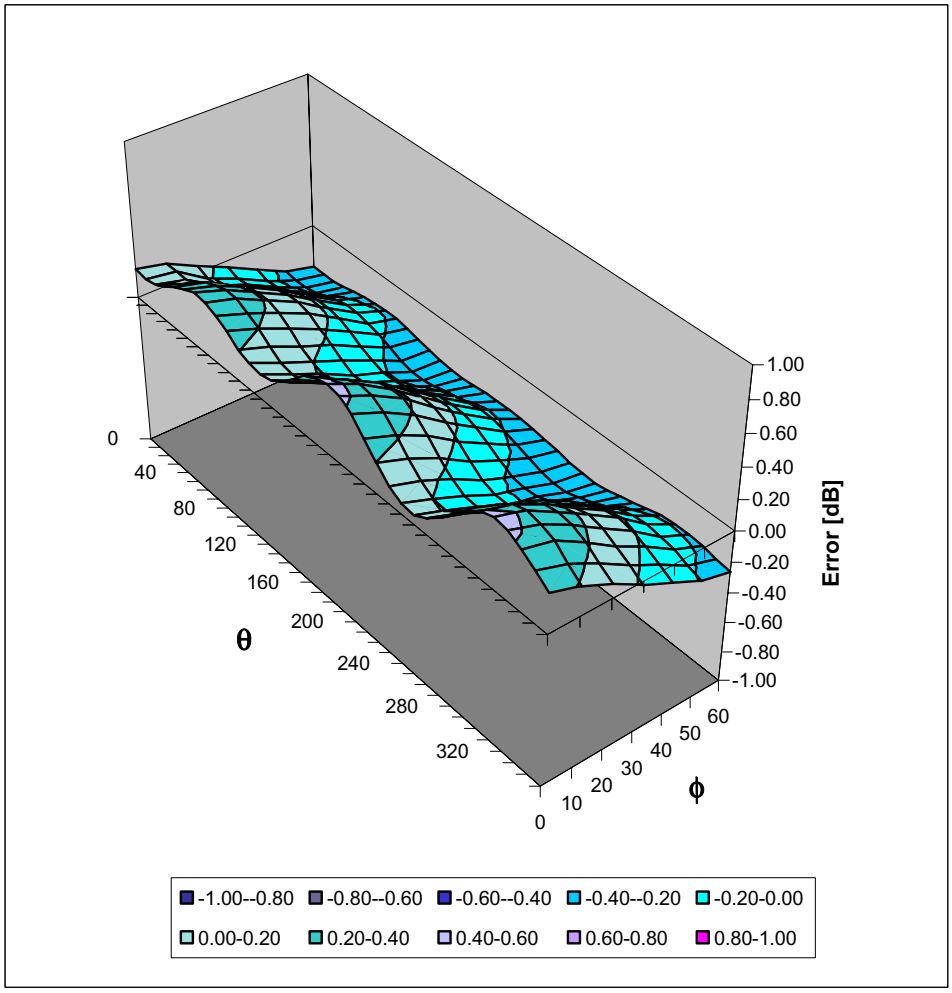
Body	**900 MHz**	ε_r **= 55.0 ± 5%**	**σ = 1.05 ± 5% mho/m**	
Body	**835 MHz**	ε_r **= 55.2 ± 5%**	**σ = 0.97 ± 5% mho/m**	
	ConvF X	**6.3** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**6.3** ± 9.5% (k=2)	Alpha	**0.42**
	ConvF Z	**6.3** ± 9.5% (k=2)	Depth	**2.44**

Body	**1800 MHz**	ε_r **= 53.3 ± 5%**	**σ = 1.52 ± 5% mho/m**	
Body	**1900 MHz**	ε_r **= 53.3 ± 5%**	**σ = 1.52 ± 5% mho/m**	
	ConvF X	**5.0** ± 9.5% (k=2)	Boundary effect:	
	ConvF Y	**5.0** ± 9.5% (k=2)	Alpha	**0.76**
	ConvF Z	**5.0** ± 9.5% (k=2)	Depth	**2.01**

ET3DV6 SN:1387 **February 22, 2002**

Deviation from Isotropy in HSL

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



Schmid & Partner
Engineering AG

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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 (± standard deviation)

150 MHz	ConvF	**9.2 ± 8%**	**ε_r = 52.3** **σ = 0.76 mho/m** (head tissue)
300 MHz	ConvF	**8.0 ± 8%**	**ε_r = 45.3** **σ = 0.87 mho/m** (head tissue)
450 MHz	ConvF	**7.3 ± 8%**	**ε_r = 43.5** **σ = 0.87 mho/m** (head tissue)
2450 MHz	ConvF	**4.7 ± 8%**	**ε_r = 39.2** **σ = 1.80 mho/m** (head tissue)
150 MHz	ConvF	**8.8 ± 8%**	**ε_r = 61.9** **σ = 0.80 mho/m** (body tissue)
450 MHz	ConvF	**7.7 ± 8%**	**ε_r = 56.7** **σ = 0.94 mho/m** (body tissue)
2450 MHz	ConvF	**4.3 ± 8%**	**ε_r = 52.7** **σ = 1.95 mho/m** (body tissue)

APPENDIX E - MEASURED FLUID DIELECTRIC PARAMETERS

2450MHz System Validation

Measured Fluid Dielectric Parameters (Brain)

August 07, 2002

Frequency	e'	e"
2.400000000 GHz	37.9582	13.6173
2.405000000 GHz	37.9308	13.6312
2.410000000 GHz	37.9040	13.6526
2.415000000 GHz	37.8786	13.6651
2.420000000 GHz	37.8501	13.6695
2.425000000 GHz	37.8281	13.6823
2.430000000 GHz	37.7894	13.6972
2.435000000 GHz	37.7635	13.7183
2.440000000 GHz	37.7487	13.7364
2.445000000 GHz	37.7215	13.7587
2.450000000 GHz	37.6932	13.7582
2.455000000 GHz	37.6601	13.7824
2.460000000 GHz	37.6355	13.8003
2.465000000 GHz	37.6112	13.8286
2.470000000 GHz	37.6004	13.8466
2.475000000 GHz	37.5956	13.8654
2.480000000 GHz	37.5745	13.8626
2.485000000 GHz	37.5586	13.8767
2.490000000 GHz	37.5412	13.8817
2.495000000 GHz	37.5149	13.8987
2.500000000 GHz	37.5032	13.9072

2450MHz EUT Evaluation (Body)

Measured Fluid Dielectric Parameters (Muscle)

August 07, 2002

Frequency	e'	e"
2.400000000 G	50.963	14.3013
2.405000000 G	50.934	14.3053
2.410000000 G	50.916	14.3330
2.415000000 G	50.879	14.3409
2.420000000 G	50.864	14.3731
2.425000000 G	50.844	14.3891
2.430000000 G	50.829	14.4145
2.435000000 G	50.806	14.4488
2.440000000 G	50.800	14.4631
2.445000000 G	50.779	14.4740
2.450000000 G	50.773	14.4964
2.455000000 G	50.751	14.5088
2.460000000 G	50.727	14.5312
2.465000000 G	50.713	14.5492
2.470000000 G	50.694	14.5627
2.475000000 G	50.681	14.5934
2.480000000 G	50.662	14.6067
2.485000000 G	50.637	14.6174
2.490000000 G	50.610	14.6330
2.495000000 G	50.585	14.6370
2.500000000 G	50.566	14.6434
2.505000000 G	50.537	14.6559
2.510000000 G	50.513	14.6579
2.515000000 G	50.475	14.6810
2.520000000 G	50.461	14.6932
2.525000000 G	50.441	14.7206
2.530000000 G	50.406	14.7531
2.535000000 G	50.395	14.7696
2.540000000 G	50.375	14.7903
2.545000000 G	50.370	14.7994
2.550000000 G	50.359	14.8155
2.555000000 G	50.331	14.8403
2.560000000 G	50.329	14.8454
2.565000000 G	50.317	14.8680
2.570000000 G	50.313	14.8910
2.575000000 G	50.304	14.8952
2.580000000 G	50.279	14.9191
2.585000000 G	50.263	14.9176
2.590000000 G	50.256	14.9342
2.595000000 G	50.246	14.9511
2.600000000 G	50.230	14.9574

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].

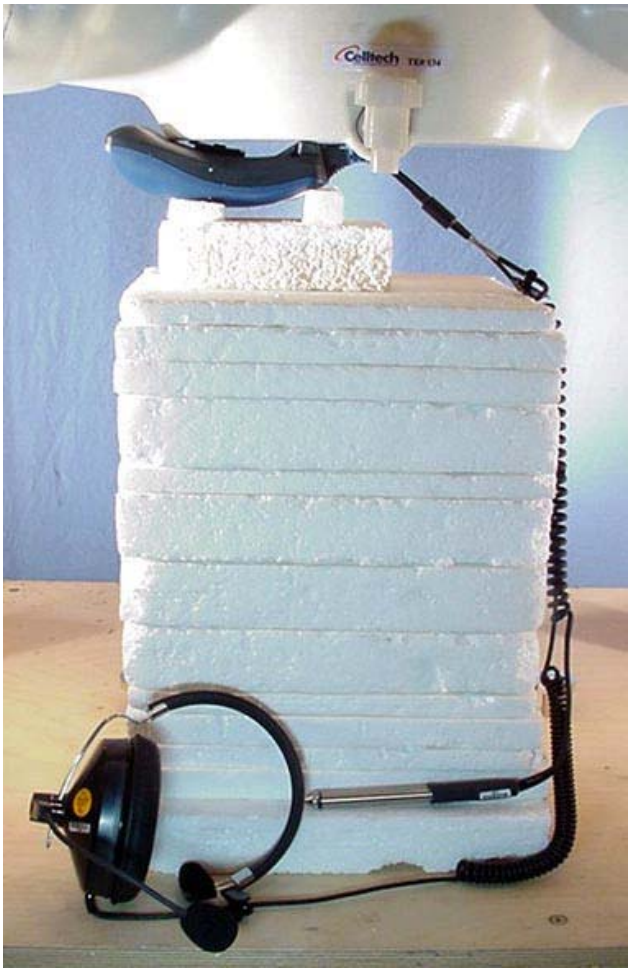
Date 18.11.2001

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 & EUT PHOTOGRAPHS

SAR TEST SETUP PHOTOGRAPHS

Belt-Clip Side of EUT - Standard Battery
Right Section (Antenna Side) Touching Planar Phantom



SAR TEST SETUP PHOTOGRAPHS

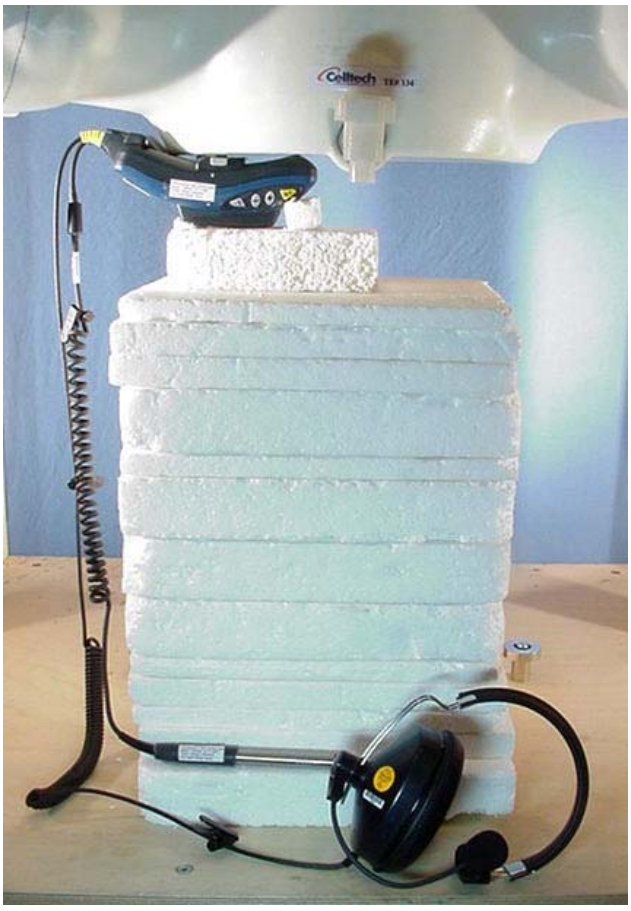
Belt-Clip Side of EUT - Extended Battery
Right Section (Antenna Side) Touching Planar Phantom

SAR TEST SETUP PHOTOGRAPHS

Belt-Clip Side of EUT - Standard Battery
Left Section Touching Planar Phantom

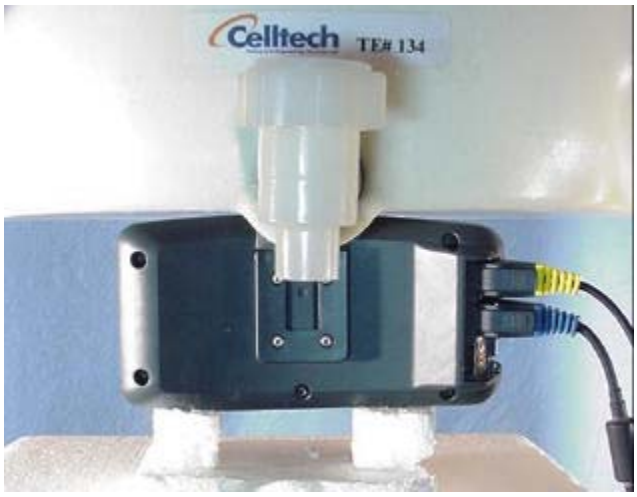
SAR TEST SETUP PHOTOGRAPHS

Belt-Clip Side of EUT - Extended Battery
Belt-Clip & Left Section of EUT Touching Planar Phantom

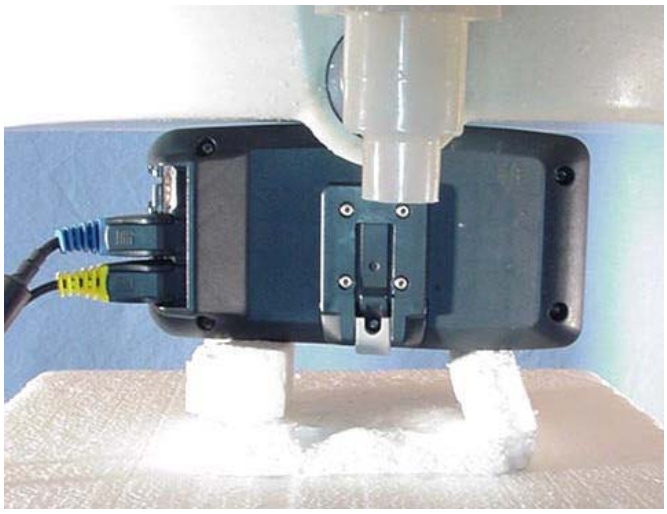


SAR TEST SETUP PHOTOGRAPHS

Top Side of EUT Touching Planar Phantom

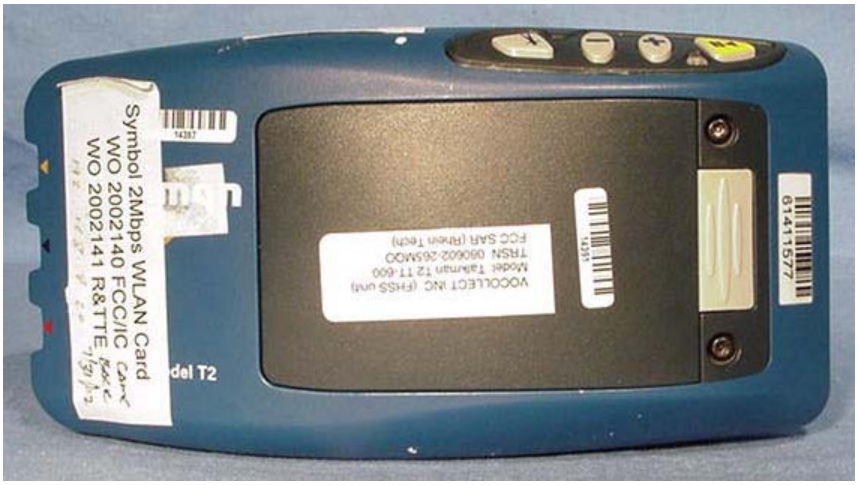


SAR TEST SETUP PHOTOGRAPHS
Bottom Side of EUT Touching Planar Phantom



EUT PHOTOGRAPHS

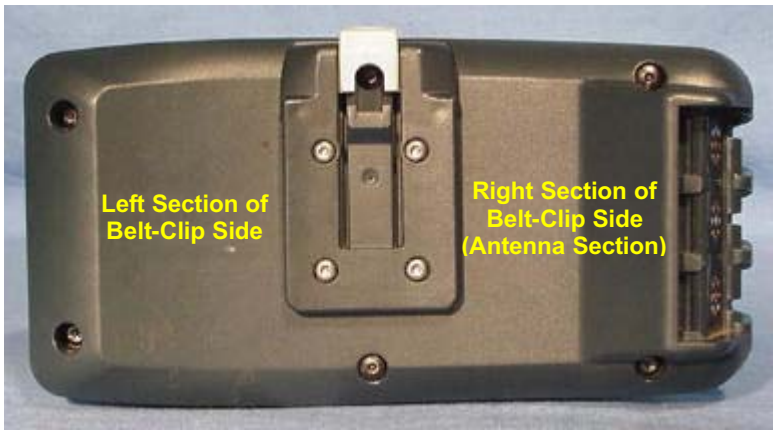
Front Side of EUT without Battery



Front Side of EUT with Standard Battery (1500mAh)

Front Side of EUT with Extended Battery (3000mAh)

EUT PHOTOGRAPHS



Belt-Clip Side of EUT

Right Section of EUT (Antenna Side) with Waist-Strap Accessory

Left Section of EUT with Waist-Strap Accessory

EUT PHOTOGRAPHS

Top Side of EUT with Standard Battery

Top Side of EUT with Extended Battery

Bottom Side of EUT with Standard Battery

Bottom Side of EUT with Extended Battery

EUT PHOTOGRAPHS

EUT with Headset/Mic & Scanner Accessories & Standard Battery

EUT with Headset/Mic & Scanner Accessories & Extended Battery

Extended & Standard Batteries