APPENDIX A: RF EXPOSURE COMPLIANCE FCC RULES AND REGULATIONS PART 1.1307, 1.1310, 2.1091, 2.1093:

Please refer to the SAR evaluation that follows.

DECLARATION OF COMPLIANCE
SAR RF EXPOSURE EVALUATION

Test Lab

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Applicant Information

UTSTARCOM INC.
33 Wood Ave. South, 3rd Floor
Iselin, NJ 08830
United States

FCC IDENTIFIER:	**O6Y-UT106**
Model(s):	**UT106**
FCC Rule Part(s):	**47 CFR §2.1093**
Test Procedure(s):	**FCC OET Bulletin 65, Supplement C (Edition 01-01)** **IEEE Standard 1528-2003**
FCC Classification:	**Part 24 Licensed Portable Transmitter held to ear (PCE)**
Device Type:	**Portable Single-Mode PAS PHS Handset**
Tx Frequency Range:	**1880.15 - 1909.85 MHz**
Access Method:	**TDMA (Time Division Multiple Access)**
Modulation:	**DQPSK (Differential Quadrature Phase Shift Keying)**
Max. RF Output Power Tested:	**79 mW EIRP (1880.15 MHz)** **115 mW EIRP (1895.10 MHz)** **165 mW EIRP (1909.85 MHz)**
Max. Duty Cycle Tested:	**12.8 % (Crest Factor: 1:7.8)**
Max. Source-Based Time-Average Power:	**21.1 mW EIRP (1909.85 MHz)**
Antenna Type Tested:	**Fixed Stubby**
Battery Type Tested:	**3.6 V Lithium-ion, 480 mAh (P/N: HZSL053040B)**
Body-worn Accessories Tested:	**n/a (handset does not have provision for body-worn operation)**
Max. SAR Level(s) Evaluated:	**Head: 0.151 W/kg (1g average)**

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device has demonstrated compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093. The device was tested in accordance with the measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01) and IEEE Standard 1528-2003 for the General Population / Uncontrolled Exposure environment. All measurements were performed in accordance with the SAR system manufacturer recommendations.

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 Labs Inc. The results and statements contained in this report pertain only to the device(s) evaluated.

Russell W. Pipe
Senior Compliance Technologist
Celltech Labs Inc.

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1.0 INTRODUCTION

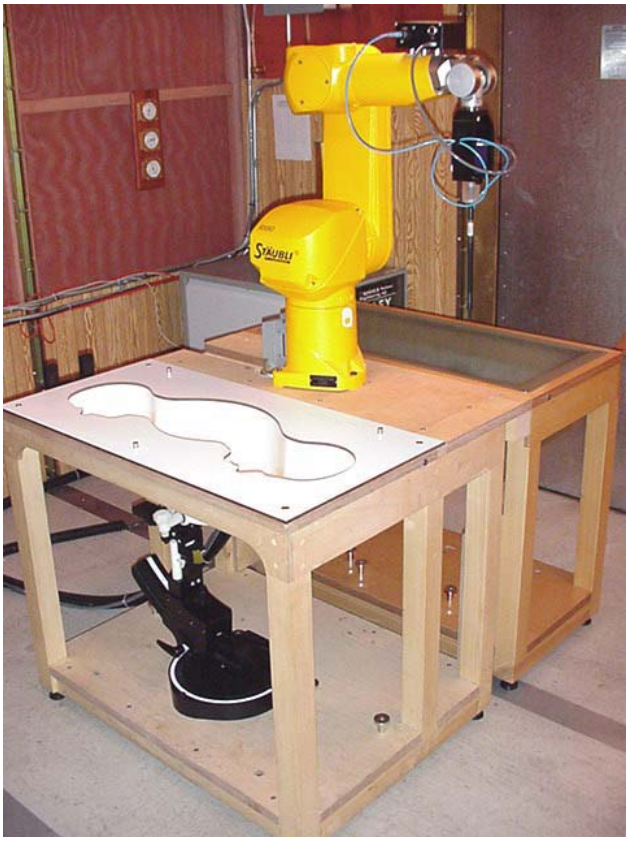
This measurement report demonstrates that the UTSTARCOM INC. Model: UT106 Single-Mode PAS PHS Handset FCC ID: O6Y-UT106 complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) for the General Population / Uncontrolled Exposure environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [2]), and IEEE Standard 1528-2003 (see reference [3]) 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 provisions of the rules are included within this test report.

2.0 DESCRIPTION of Device Under Test (DUT)

FCC Device Classification	Licensed Portable Transmitter Held to Ear (PCE)		
FCC Rule Part(s)	47 CFR §2.1093		
Test Procedure(s)	FCC OET Bulletin 65, Supplement C (01-01)		
	IEEE Standard 1528-2003		
Device Type	Single-Mode PAS PHS Handset		
FCC IDENTIFIER	O6Y-UT106		
Model No.(s)	UT106		
Serial No.	130801038	Identical Prototype	
Tx Frequency Range	1880.15 - 1909.85 MHz		
Access Method	TDMA	Time Division Multiple Access	
Modulation	DQPSK	Differential Quadrature Phase Shift Keying	
RF Output Power Tested	79 mW	EIRP	1880.15 MHz
	115 mW	EIRP	1895.10 MHz
	165 mW	EIRP	1909.85 MHz
Source-Based Time-Averaged RF Output Power	10.1 mW	EIRP	1880.15 MHz
	14.7 mW	EIRP	1895.10 MHz
	21.1 mW	EIRP	1909.85 MHz
Source-Based Time-Averaged Duty Cycle Tested	12.8 %	Crest Factor: 1:7.8	
Battery Type(s) Tested	3.6 V Lithium-ion, 480 mAh (HZSL053040B)		
Antenna Type(s) Tested	Fixed Stubby		
Body-Worn Accessories Tested	n/a (handset does not have provision for body-worn operation)		

3.0 SAR MEASUREMENT SYSTEM

Celltech Labs Inc. SAR measurement facility utilizes the Dosimetric Assessment System (DASY™) manufactured by Schmid & Partner Engineering AG (SPEAG™) of Zurich, Switzerland. The DASY4 measurement system is comprised of the measurement server, robot controller, computer, near-field probe, probe alignment sensor, specific anthropomorphic mannequin (SAM) phantom, and various planar phantoms for brain and/or body SAR evaluations. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF). A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The Staubli robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the DASY4 measurement server. The DAE4 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 DASY4 measurement server 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. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer.



DASY4 Measurement System with SAM Phantom

DASY4 Measurement System with SAM Phantom

4.0 MEASUREMENT SUMMARY

HEAD SAR EVALUATION RESULTS

Freq. (MHz)	Chan.	Test Mode	Battery Type	Antenna Position	Phantom Section	Test Position	Start Power EIRP (mW)		Measured SAR 1g (W/kg)		SAR Drift During Test (dB)	Scaled SAR 1g (W/kg) with drift	
							Meas.	SBTA					
1895.10	1	TDMA	Li-ion	Fixed	Right Ear	Cheek/Touch	115	14.7	P	0.110	0.126	P	0.110
									S	0.091		S	0.091
1880.15	206	TDMA	Li-ion	Fixed	Right Ear	Cheek/Touch	79	10.1	P	0.111	0.0826	P	0.111
									S	0.094		S	0.094
1909.85	50	TDMA	Li-ion	Fixed	Right Ear	Cheek/Touch	165	21.1	P	0.130	0.112	P	0.130
									S	0.112		S	0.112
1895.10	1	TDMA	Li-ion	Fixed	Right Ear	Ear/Tilt (15°)	115	14.7	0.137		0.119	0.137	
1880.15	206	TDMA	Li-ion	Fixed	Right Ear	Ear/Tilt (15°)	79	10.1	0.138		0.0429	0.138	
1909.85	50	TDMA	Li-ion	Fixed	Right Ear	Ear/Tilt (15°)	165	21.1	0.151		0.047	0.151	
1895.10	1	TDMA	Li-ion	Fixed	Left Ear	Cheek/Touch	115	14.7	P	0.094	0.0699	P	0.094
									S	0.080		S	0.080
1880.15	206	TDMA	Li-ion	Fixed	Left Ear	Cheek/Touch	79	10.1	P	0.087	0.0401	P	0.087
									S	0.074		S	0.074
1909.85	50	TDMA	Li-ion	Fixed	Left Ear	Cheek/Touch	165	21.1	P	0.099	0.110	P	0.099
									S	0.088		S	0.088
1895.10	1	TDMA	Li-ion	Fixed	Left Ear	Ear/Tilt (15°)	115	14.7	0.123		0.0578	0.123	
1880.15	206	TDMA	Li-ion	Fixed	Left Ear	Ear/Tilt (15°)	79	10.1	0.112		-0.0283	0.113	
1909.85	50	TDMA	Li-ion	Fixed	Left Ear	Ear/Tilt (15°)	165	21.1	0.121		0.0375	0.121	

ANSI / IEEE C95.1 1999 - SAFETY LIMIT
BRAIN: 1.6 W/kg (averaged over 1 gram)
Spatial Peak - Uncontrolled Exposure / General Population

Test Date(s)	August 23, 2004			Relative Humidity	45	%
Measured Fluid Type	1900 MHz Brain			Atmospheric Pressure	101.6	kPa
Dielectric Constant ε_r	IEEE Target		Measured	Ambient Temperature	23.5	°C
	40.0	± 5%	38.6	Fluid Temperature	23.4	°C
Conductivity σ (mho/m)	IEEE Target		Measured	Fluid Depth	≥ 15	cm
	1.40	± 5%	1.43	ρ (Kg/m^3)	1000	

Note(s):
1. The measurement results were obtained with the DUT tested in the conditions described in this report. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A.
2. If the SAR levels measured at the mid channel were ≥ 3 dB below the SAR limit, SAR evaluation for the low and high channels was optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [2]).
3. Secondary peak SAR levels within 2 dB of the primary were reported (P = Primary, S = Secondary).
4. The power drifts measured by the DASY4 system were within 5% of the start power. The negative drifts were subsequently added to the measured SAR levels to report scaled SAR results as shown in the above table.
5. The SAR measurements were performed within 24 hours of the system performance check.

5.0 DETAILS OF SAR EVALUATION

The UTSTARCOM INC. Model: UT106 Single-Mode PAS PHS TDMA Handset FCC ID: O6Y-UT106 was compliant for localized Specific Absorption Rate (SAR) based on the test provisions and conditions described below. The detailed test setup photographs are shown in Appendix G.

Ear-held Configuration

1) The DUT was tested in an ear-held configuration on both the left and right sections of the SAM phantom at the mid channel of the operating band. If the SAR level at the mid channel of the frequency band for each test configuration (left ear, right ear, cheek/touch, ear/tilt) was ≥ 3 dB below the SAR limit, measurements at the low and high channels were optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).

a) The handset was placed in the device holder in a normal operating position with the test device reference point located along the vertical centerline on the front of the device aligned to the ear reference point, with the center of the earpiece touching the center of the ear spacer of the SAM phantom.

b) With the handset positioned parallel to the cheek, the test device reference point was aligned to the ear reference point on the head phantom, and the vertical centerline was aligned to the phantom reference plane (initial ear position).

c) While maintaining the three alignments, the body of the handset was gradually adjusted to each of the following test positions:

- Cheek/Touch Position: the handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

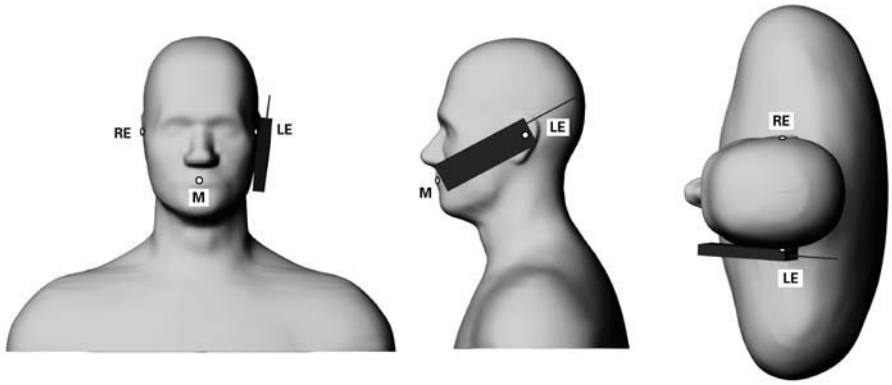


Figure 1. Phone position 1, "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).

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

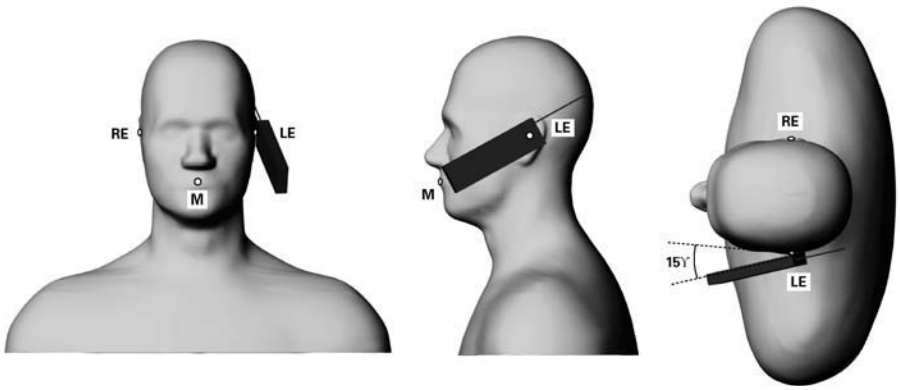


Figure 2. Phone position 2 - "tilted position." The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).

DETAILS OF SAR EVALUATION (Cont.)

Body-worn Configuration

2) The DUT does not have provision for body-worn operation and therefore was not tested in body-worn configuration.

Test Modes & Power Settings

3) The DUT was placed into test mode using internal software controlled by the keypad.
4) The DUT was tested in TDMA mode at a duty cycle of 12.8% and a crest factor of 7.8.
5) The conducted output power of the DUT could not be measured prior to the SAR evaluations due to a non-detachable antenna. The DUT was evaluated for SAR at the maximum conducted power level preset by the manufacturer.
6) The DUT was evaluated for SAR at the maximum ERP levels measured prior to the SAR evaluations on a 3-meter Open Area Test Site using the signal substitution method in accordance with ANSI TIA/EIA-603-A-2001.
7) The power drifts measured by the DASY4 system were within 5% of the start power. The negative drifts were subsequently added to the measured SAR levels to report scaled SAR results as shown in the test data table.
8) The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluation. The temperatures reported were consistent for all measurement periods.
9) The dielectric parameters of the simulated tissues were measured prior to the evaluation using an HP 85070C Dielectric Probe Kit and an HP 8753E Network Analyzer (see Appendix E for printout of measured fluid dielectric parameters).
10) The DUT was tested with a fully charged battery.
11) The SAR measurements were performed within 24 hours of the system performance check.

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 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 DASY4 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 15mm x 15mm.

An area scan was determined as follows:

c. Based on the defined area scan grid, a more detailed grid is created to increase the points by a factor of 10. The interpolation function then evaluates all field values between corresponding measurement points.
d. A linear search is applied to find all the candidate maxima. Subsequently, all maxima are removed that are >2 dB from the global maximum. The remaining maxima are then used to position the cube scans.

A 1g and 10g spatial peak SAR was determined as follows:

e. Extrapolation is used to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away form the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix D). The extrapolation was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.
f. Interpolated data is used to calculate the average SAR over 1g and 10g cubes by spatially discretizing the entire measured cube. The volume used to determine the averaged SAR is a 1mm grid (42875 interpolated points).
g. A zoom scan volume of 32 mm x 32 mm x 30 mm (5x5x7 points) centered at the peak SAR location determined from the area scan is used for all zoom scans for devices with a transmit frequency < 800 MHz. Zoom scans for frequencies ≥ 800 MHz are determined with a scan volume of 30 mm x 30 mm x 30 mm (7x7x7) to ensure complete capture of the peak spatial-average SAR.

EVALUATION PROCEDURES (Cont.)

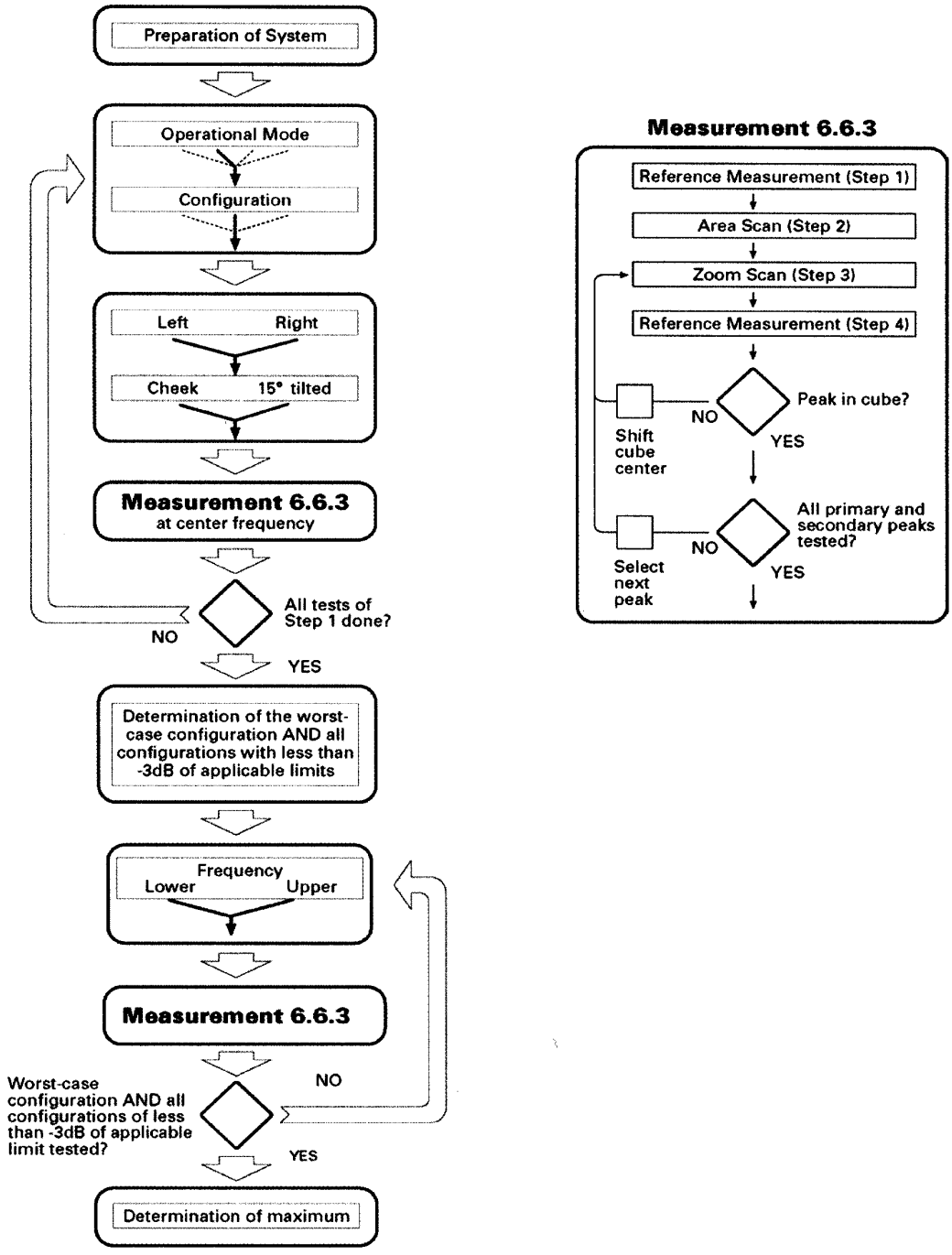


Figure 3. Flow Chart for determining the largest peak spatial-average SAR from all device configurations per IEEE Standard 1528-2003 (see reference [5]).

7.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluation a system check was performed at the planar section of the SAM phantom with a 1900MHz dipole (see Appendix C for system validation procedures). The dielectric parameters of the simulated brain tissue mixture were measured prior to the system performance check using an HP 85070C Dielectric Probe Kit and an HP 8753E Network Analyzer (see Appendix E for printout of measured fluid dielectric parameters). A forward power of 250mW was applied to the dipole and the system was verified to a tolerance of ±10% (see Appendix B for system performance check test plot).

SYSTEM PERFORMANCE CHECK

Test Date	1900MHz Equiv. Tissue	SAR 1g (W/kg)		Dielectric Constant ε_r		Conductivity σ (mho/m)		ρ (Kg/m^3)	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
		IEEE Target	Measured	IEEE Target	Measured	IEEE Target	Measured						
08/23/04	**Brain**	**9.93 ±10%**	10.6 (+6.7%)	**40.0 ±5%**	38.6	**1.40 ±5%**	1.43	1000	24.0	23.4	≥ 15	41	101.5

Note(s):
1. The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the system performance check. The temperatures listed in the table above were consistent for all measurement periods.

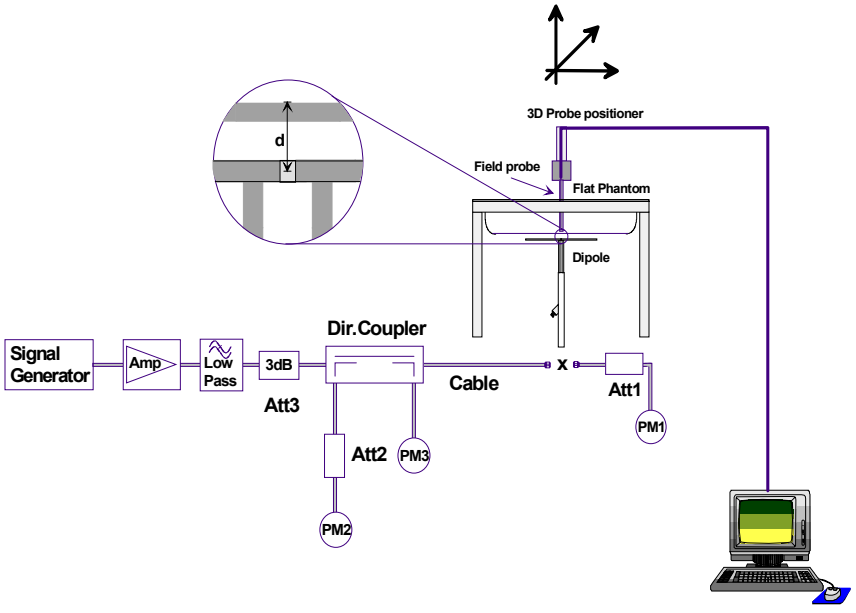


Figure 4. System Performance Check Setup Diagram

1900MHz Dipole Setup

8.0 SIMULATED EQUIVALENT TISSUES

The 1900MHz simulated equivalent tissue mixtures consist of Glycol-monobutyl, water, and salt. The fluids were prepared according to standardized procedures and measured for dielectric parameters (permittivity and conductivity).

1900MHz TISSUE MIXTURES	
INGREDIENT	**1900MHz Brain**
	System Performance Check & DUT Evaluation
Water	55.85 %
Glycol Monobutyl	44.00 %
Salt	0.15 %

9.0 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.

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: AMD Athlon XP 2400+
Clock Speed: 2.0 GHz
Operating System: Windows XP Professional

Data Converter

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

DASY4 Measurement Server

Function: Real-time data evaluation for field measurements and surface detection
Hardware: PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM
Connections: COM1, COM2, DAE, Robot, Ethernet, Service Interface

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(s)

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

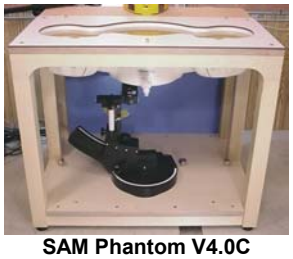
11.0 PROBE SPECIFICATION (ET3DV6)

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)
Dynamic Range:	5 μW/g to >100 mW/g; Linearity: ±0.2 dB
Surface Detection:	±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 portable phone

ET3DV6 E-Field Probe

12.0 SAM PHANTOM V4.0C

The SAM phantom V4.0C is a fiberglass shell phantom with a 2.0 mm (+/-0.2 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 (see Appendix F for specifications of the SAM phantom V4.0C).



SAM Phantom V4.0C

13.0 DEVICE HOLDER

The DASY4 device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.

Device Holder

14.0 TEST EQUIPMENT LIST

TEST EQUIPMENT	SERIAL NO.	CALIBRATION DATE
Schmid & Partner DASY4 System	-	-
-DASY4 Measurement Server	1078	N/A
-Robot	599396-01	N/A
-DAE3	353	Dec 2003
-DAE3	370	May 2004
-ET3DV6 E-Field Probe	1387	Mar 2004
-ET3DV6 E-Field Probe	1590	May 2004
-300MHz Validation Dipole	135	Oct 2003
-450MHz Validation Dipole	136	Nov 2003
-835MHz Validation Dipole	411	Mar 2004
-900MHz Validation Dipole	054	June 2004
-1800MHz Validation Dipole	247	June 2004
-1900 MHz Validation Dipole	151	June 2004
-2450MHz Validation Dipole	150	Sept 2003
-SAM Phantom V4.0C	1033	N/A
-Barski Planar Phantom	03-01	N/A
-Plexiglas Planar Phantom	161	N/A
-Validation Planar Phantom	137	N/A
HP 85070C Dielectric Probe Kit	N/A	N/A
Gigatronics 8651A Power Meter	8650137	April 2004
Gigatronics 8652A Power Meter	1835267	April 2004
Gigatronics 80701A Power Sensor	1833535	April 2004
Gigatronics 80701A Power Sensor	1833542	April 2004
Gigatronics 80701A Power Sensor	1834350	April 2004
HP E4408B Spectrum Analyzer	US39240170	Dec 2003
HP 8594E Spectrum Analyzer	3543A02721	April 2004
HP 8753E Network Analyzer	US38433013	April 2004
HP 8648D Signal Generator	3847A00611	April 2004
Amplifier Research 5S1G4 Power Amplifier	26235	N/A

15.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
Error Description	**Uncertainty Value ±%**	**Probability Distribution**	**Divisor**	**c_i 1g**	**Standard Uncertainty ±% (1g)**	**v_i or v_{eff}**
Measurement System						
Probe calibration	± 4.85	Normal	1	1	± 4.85	∞
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)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (target)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (measured)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Combined Standard Uncertainty					**± 13.32**	
Expanded Uncertainty (k=2)					**± 26.64**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [3])

MEASUREMENT UNCERTAINTIES (Cont.)

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION

Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	c_i 1g	Standard Uncertainty ±% (1g)	v_i or v_{eff}
Measurement System						
Probe calibration	± 4.85	Normal	1	1	± 4.85	∞
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	∞
Dipole						
Dipole Axis to Liquid Distance	± 2.0	Rectangular	√3	1	± 1.2	∞
Input Power	± 4.7	Rectangular	√3	1	± 2.7	∞
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)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (target)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Liquid permittivity (measured)	± 5.0	Rectangular	√3	0.6	± 1.7	∞
Combined Standard Uncertainty					**± 9.97**	
Expanded Uncertainty (k=2)					**± 19.93**	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [3])

16.0 REFERENCES

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

[2] Federal Communications Commission, “Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields”, OET Bulletin 65, Supplement C (Edition 01-01), FCC, Washington, D.C.: June 2001.

[3] IEEE Std 1528-2003, “Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”.

APPENDIX A - SAR MEASUREMENT DATA

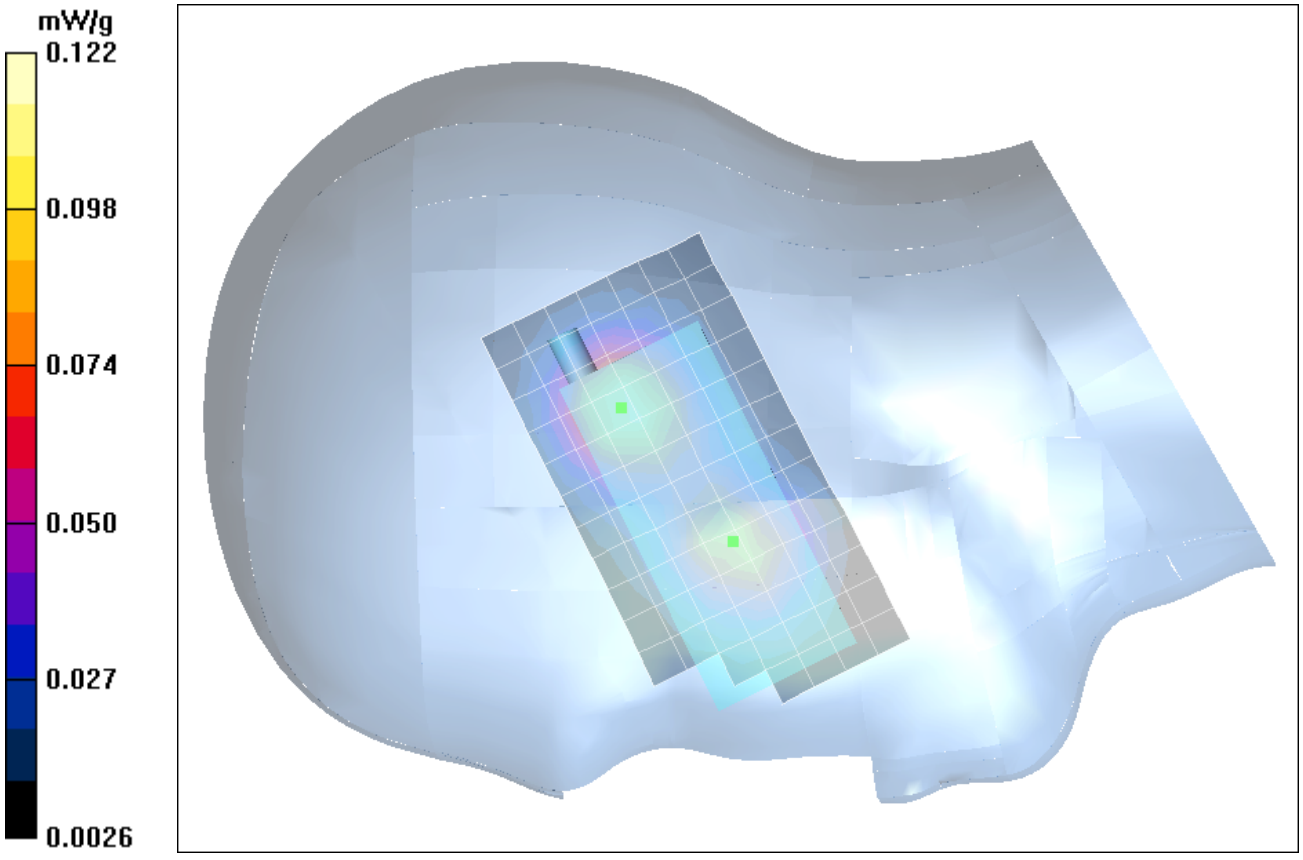
Date Tested: 08/23/04

Head SAR - Mid Channel - Right Ear - Cheek/Touch Position

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 115 mW (EIRP)
Frequency: 1895.10 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)
- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Right Ear - Cheek/Touch Position - Channel 1/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm
Head SAR - Right Ear - Cheek/Touch Position - Channel 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.73 V/m; Power Drift = 0.126 dB
Peak SAR (extrapolated) = 0.184 W/kg
SAR(1 g) = 0.110 mW/g; SAR(10 g) = 0.062 mW/g
Head SAR - Right Ear - Cheek/Touch Position - Channel 1/Zoom Scan (7x7x7)/Cube 1:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.136 W/kg
SAR(1 g) = 0.091 mW/g; SAR(10 g) = 0.055 mW/g



■ **Peak SAR Location(s)**

© 2004 Celltech Labs Inc.

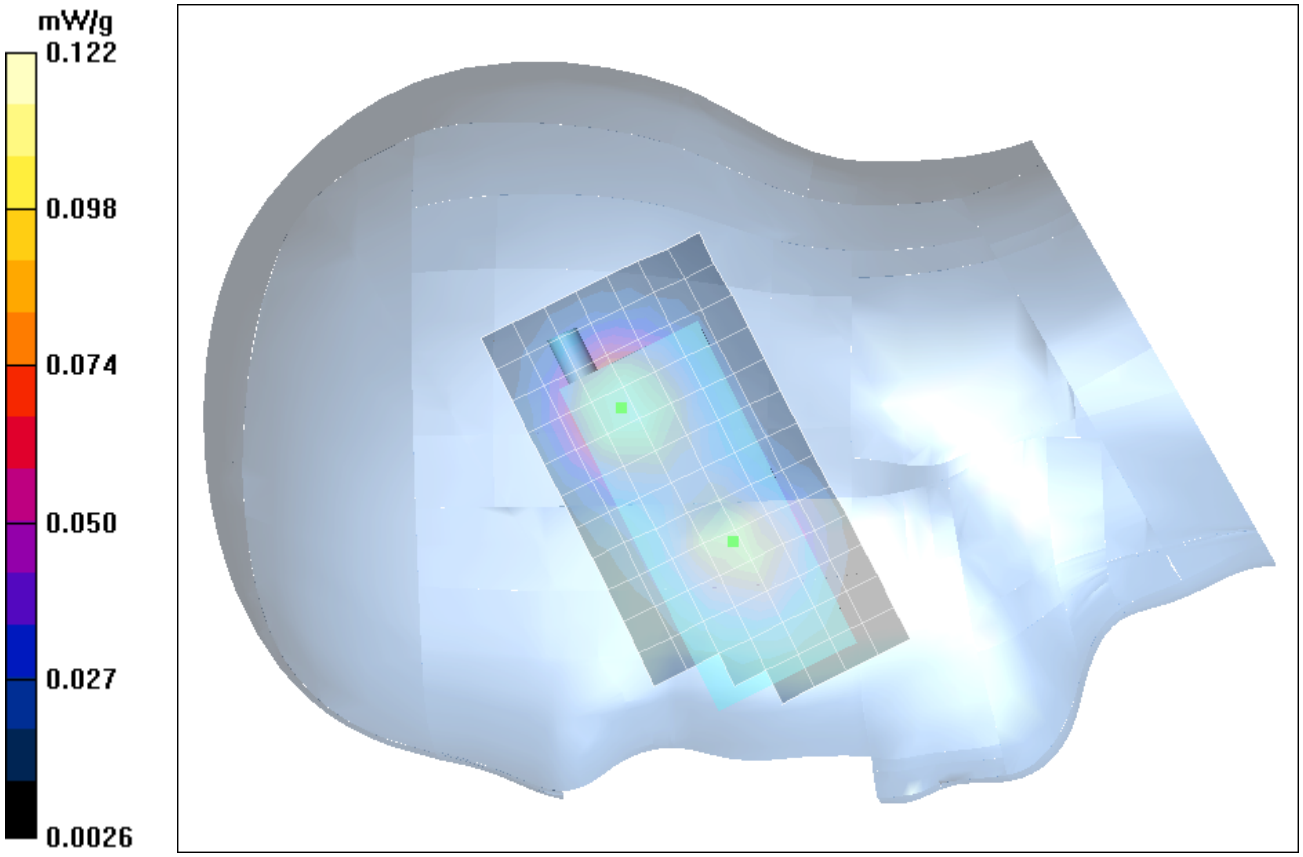
Date Tested: 08/23/04

Head SAR - Low Channel - Right Ear - Cheek/Touch Position

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 79 mW (EIRP)
Frequency: 1880.15 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)
- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Right Ear - Cheek/Touch Position - Channel 206/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm
Head SAR - Right Ear - Cheek/Touch Position - Channel 206/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.67 V/m; Power Drift = 0.0826 dB
Peak SAR (extrapolated) = 0.188 W/kg
SAR(1 g) = 0.111 mW/g; SAR(10 g) = 0.062 mW/g
Head SAR - Right Ear - Cheek/Touch Position - Channel 206/Zoom Scan (7x7x7)/Cube 1:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.140 W/kg
SAR(1 g) = 0.094 mW/g; SAR(10 g) = 0.056 mW/g



■ **Peak SAR Location(s)**

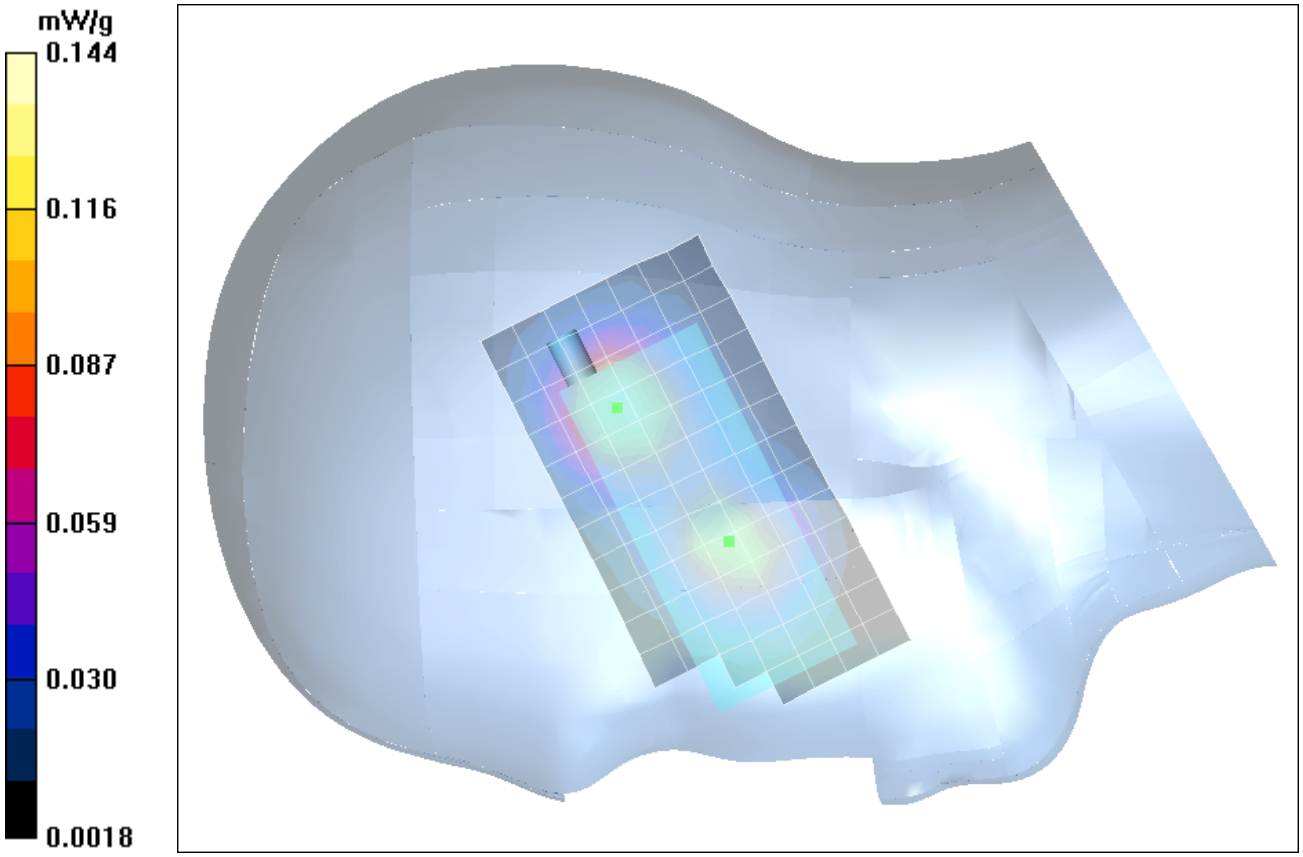
© 2004 Celltech Labs Inc.

Date Tested: 08/23/04

Head SAR - High Channel - Right Ear - Cheek/Touch Position

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 165 mW (EIRP)
Frequency: 1909.85 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)
- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112
Head SAR - Right Ear - Cheek/Touch Position - Channel 50/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm
Head SAR - Right Ear - Cheek/Touch Position - Channel 50/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.44 V/m; Power Drift = 0.112 dB
Peak SAR (extrapolated) = 0.223 W/kg
SAR(1 g) = 0.130 mW/g; SAR(10 g) = 0.072 mW/g
Head SAR - Right Ear - Cheek/Touch Position - Channel 50/Zoom Scan (7x7x7)/Cube 1:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.168 W/kg
SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.067 mW/g



■ **Peak SAR Location(s)**

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Date Tested: 08/23/04

Head SAR - Mid Channel - Right Ear - Tilt Position (15 °)

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038

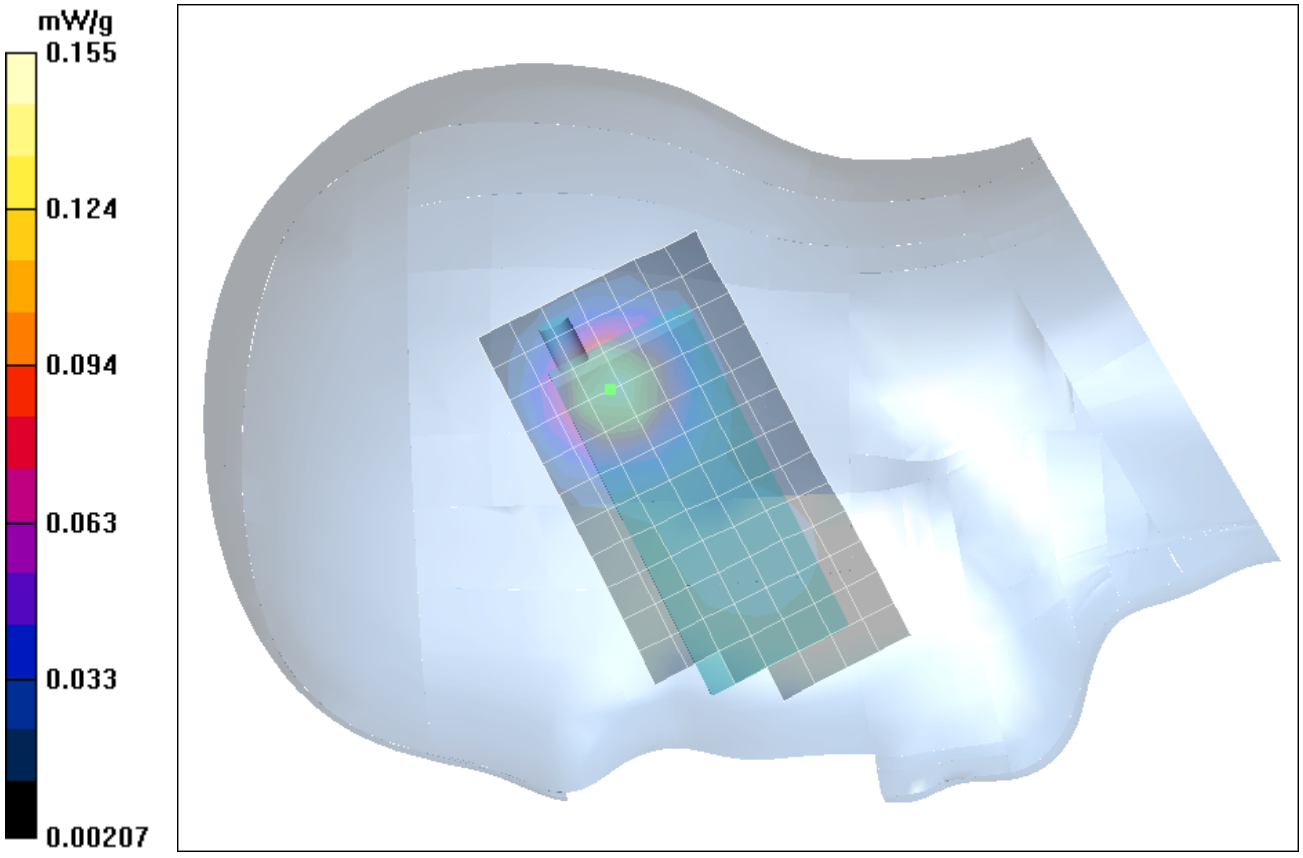
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 115 mW (EIRP)
Frequency: 1895.10 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)

- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Right Ear - Tilt Position (15°) - Channel 1/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm

Head SAR - Right Ear - Tilt Position (15°) - Channel 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.2 V/m; Power Drift = 0.119 dB
Peak SAR (extrapolated) = 0.231 W/kg
SAR(1 g) = 0.137 mW/g; SAR(10 g) = 0.075 mW/g



■ **Peak SAR Location(s)**

© 2004 Celltech Labs Inc.

Date Tested: 08/23/04

Head SAR - Low Channel - Right Ear - Tilt Position (15 °)

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038

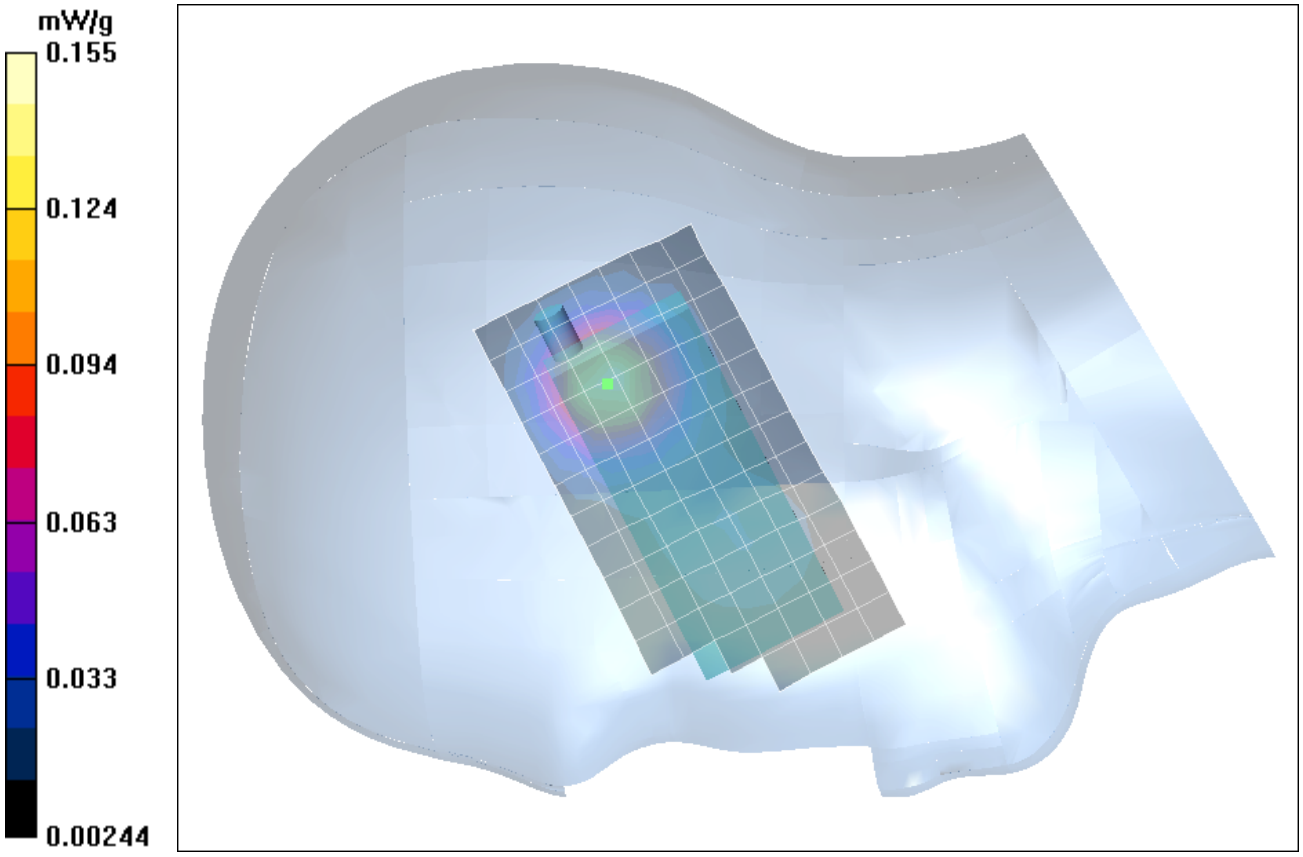
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 79 mW (EIRP)
Frequency: 1880.15 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)

- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Right Ear - Tilt Position (15°) - Channel 206/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm

Head SAR - Right Ear - Tilt Position (15°) - Channel 206/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.1 V/m; Power Drift = 0.0429 dB
Peak SAR (extrapolated) = 0.233 W/kg
SAR(1 g) = 0.138 mW/g; SAR(10 g) = 0.076 mW/g



■ **Peak SAR Location(s)**

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Date Tested: 08/23/04

Head SAR - High Channel - Right Ear - Tilt Position (15 °)

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038

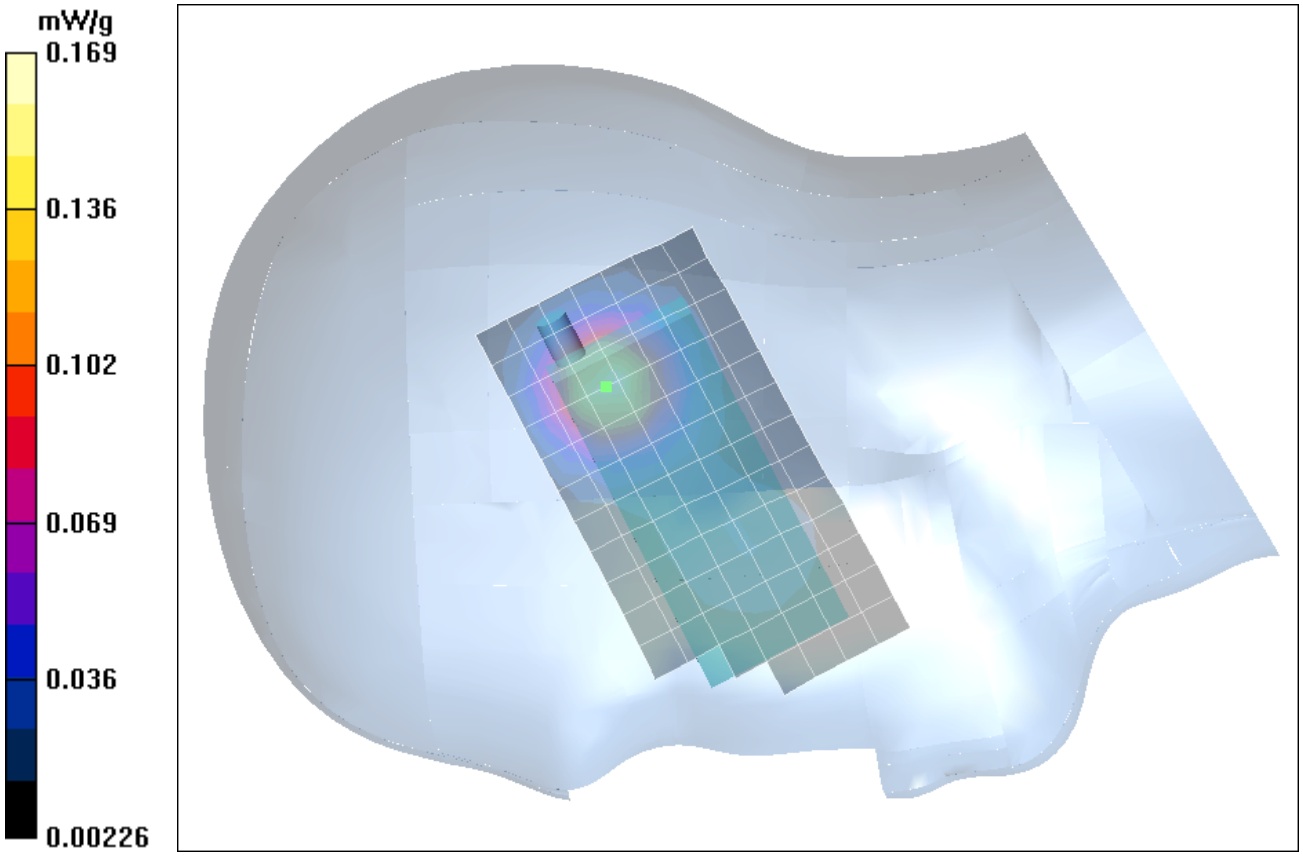
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 165 mW (EIRP)
Frequency: 1909.85 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)

- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

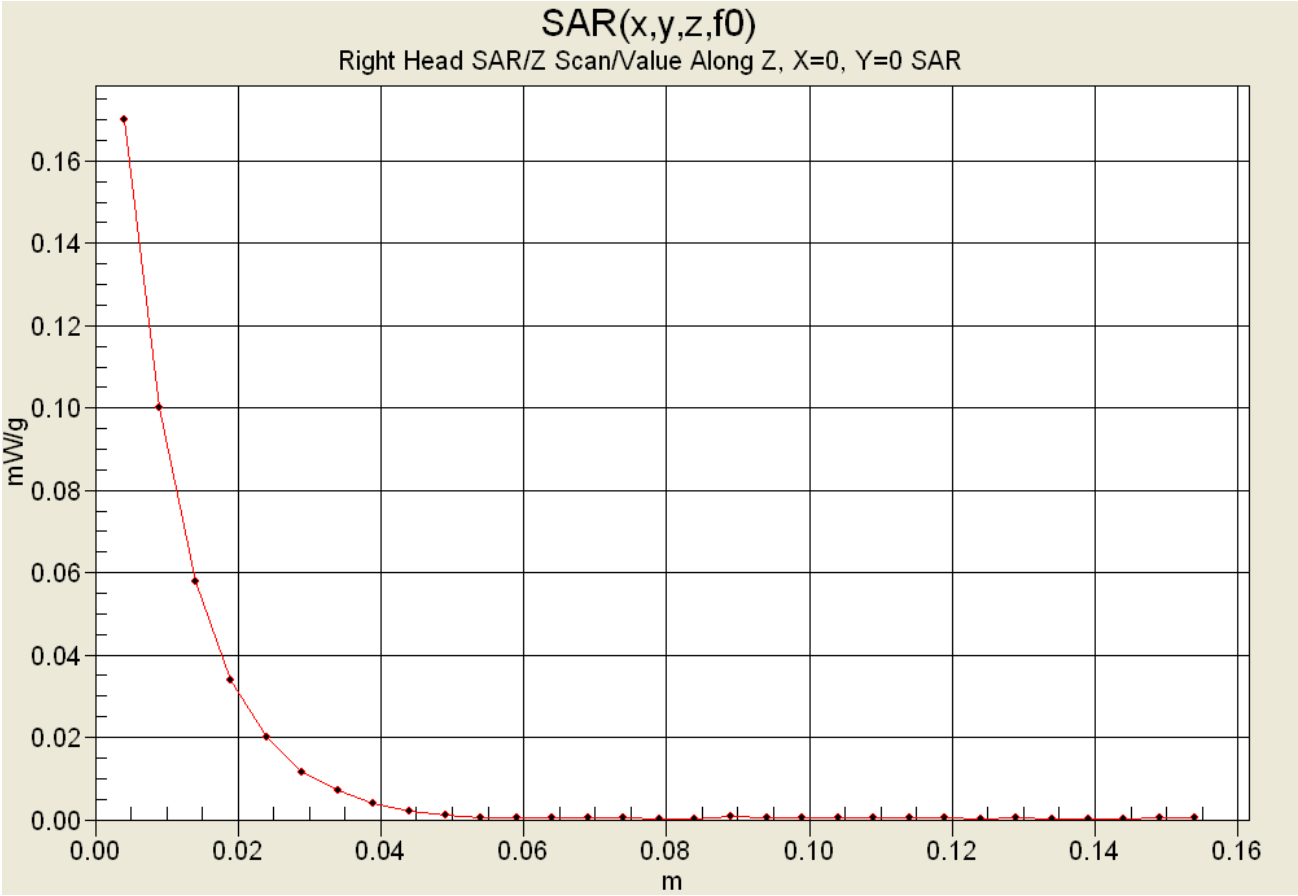
Head SAR - Right Ear - Tilt Position (15°) - Channel 50/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm

Head SAR - Right Ear - Tilt Position (15°) - Channel 50/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.6 V/m; Power Drift = 0.047 dB
Peak SAR (extrapolated) = 0.254 W/kg
SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.082 mW/g



■ **Peak SAR Location(s)**

Z-Axis Scan


SAR(x,y,z,f0)
Right Head SAR/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
m

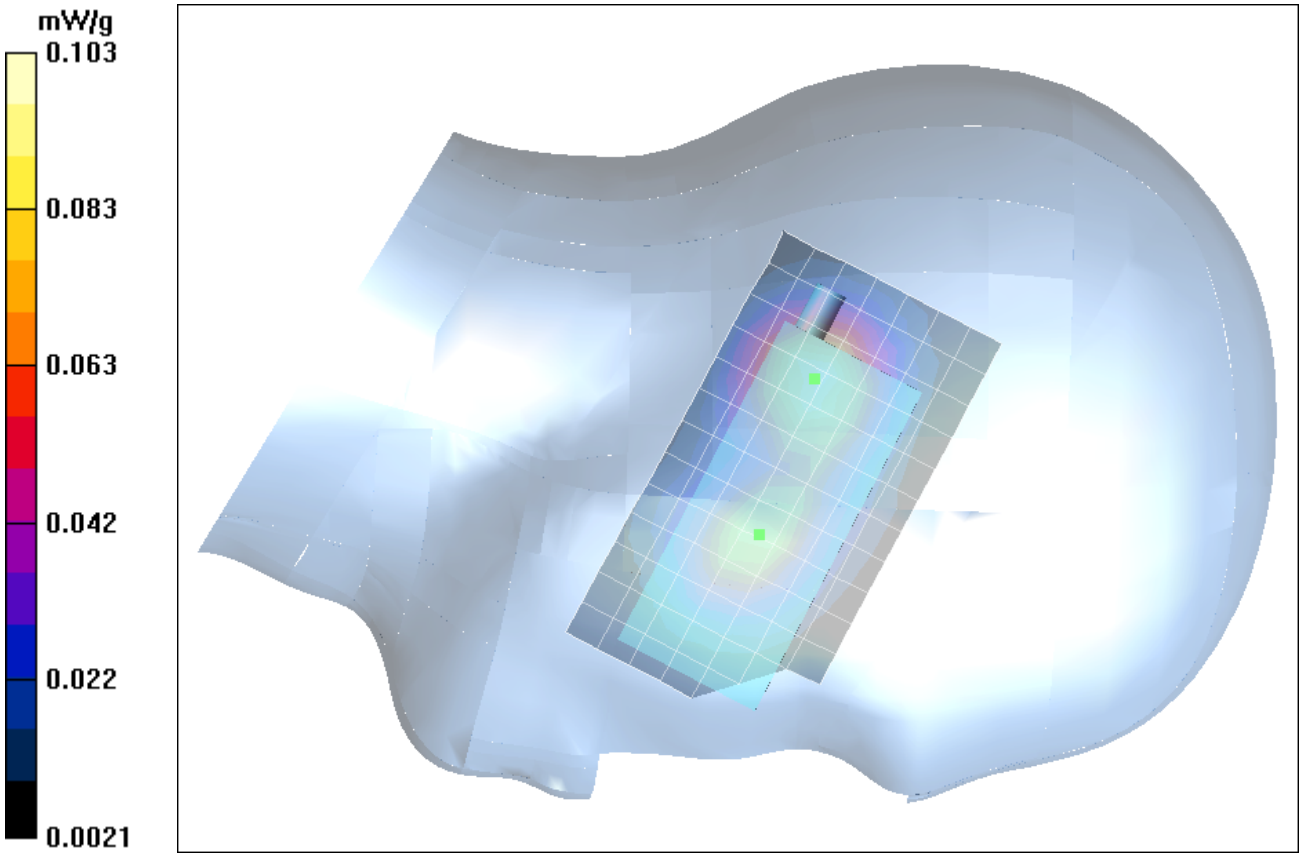
Date Tested: 08/23/04

Head SAR - Mid Channel - Left Ear - Cheek/Touch Position

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 115 mW (EIRP)
Frequency: 1895.10 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)
- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Left Ear - Cheek/Touch Position - Channel 1/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm
Head SAR - Left Ear - Cheek/Touch Position - Channel 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.52 V/m; Power Drift = 0.0699 dB
Peak SAR (extrapolated) = 0.148 W/kg
SAR(1 g) = 0.094 mW/g; SAR(10 g) = 0.055 mW/g
Head SAR - Left Ear - Cheek/Touch Position - Channel 1/Zoom Scan (7x7x7)/Cube 1:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.119 W/kg
SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.049 mW/g



■ **Peak SAR Location(s)**

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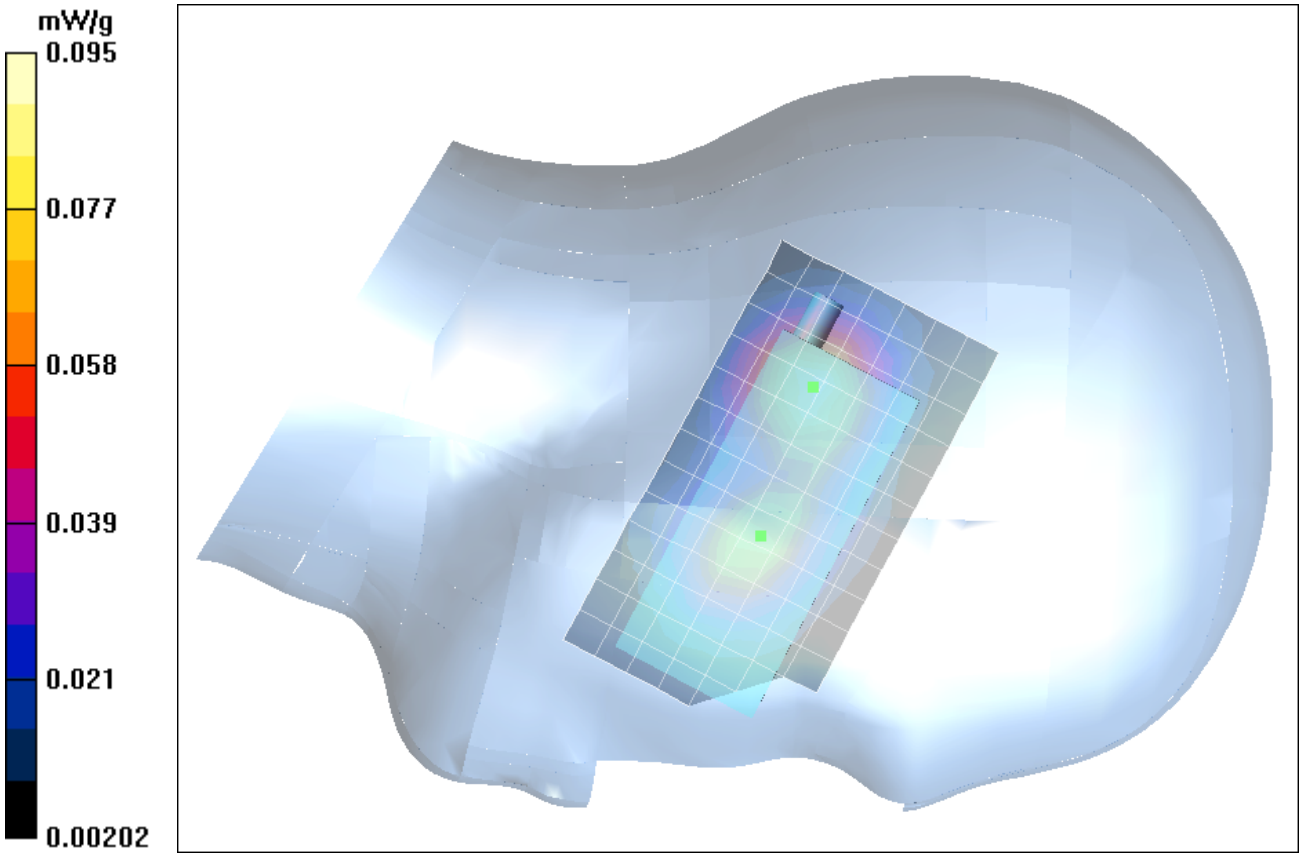
Date Tested: 08/23/04

Head SAR - Low Channel - Left Ear - Cheek/Touch Position

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 79 mW (EIRP)
Frequency: 1880.15 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)
- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Left Ear - Cheek/Touch Position - Channel 206/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm
Head SAR - Left Ear - Cheek/Touch Position - Channel 206/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.1 V/m; Power Drift = 0.0401 dB
Peak SAR (extrapolated) = 0.137 W/kg
SAR(1 g) = 0.087 mW/g; SAR(10 g) = 0.051 mW/g
Head SAR - Left Ear - Cheek/Touch Position - Channel 206/Zoom Scan (7x7x7)/Cube 1:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.108 W/kg
SAR(1 g) = 0.074 mW/g; SAR(10 g) = 0.045 mW/g



■ **Peak SAR Location(s)**

© 2004 Celltech Labs Inc.

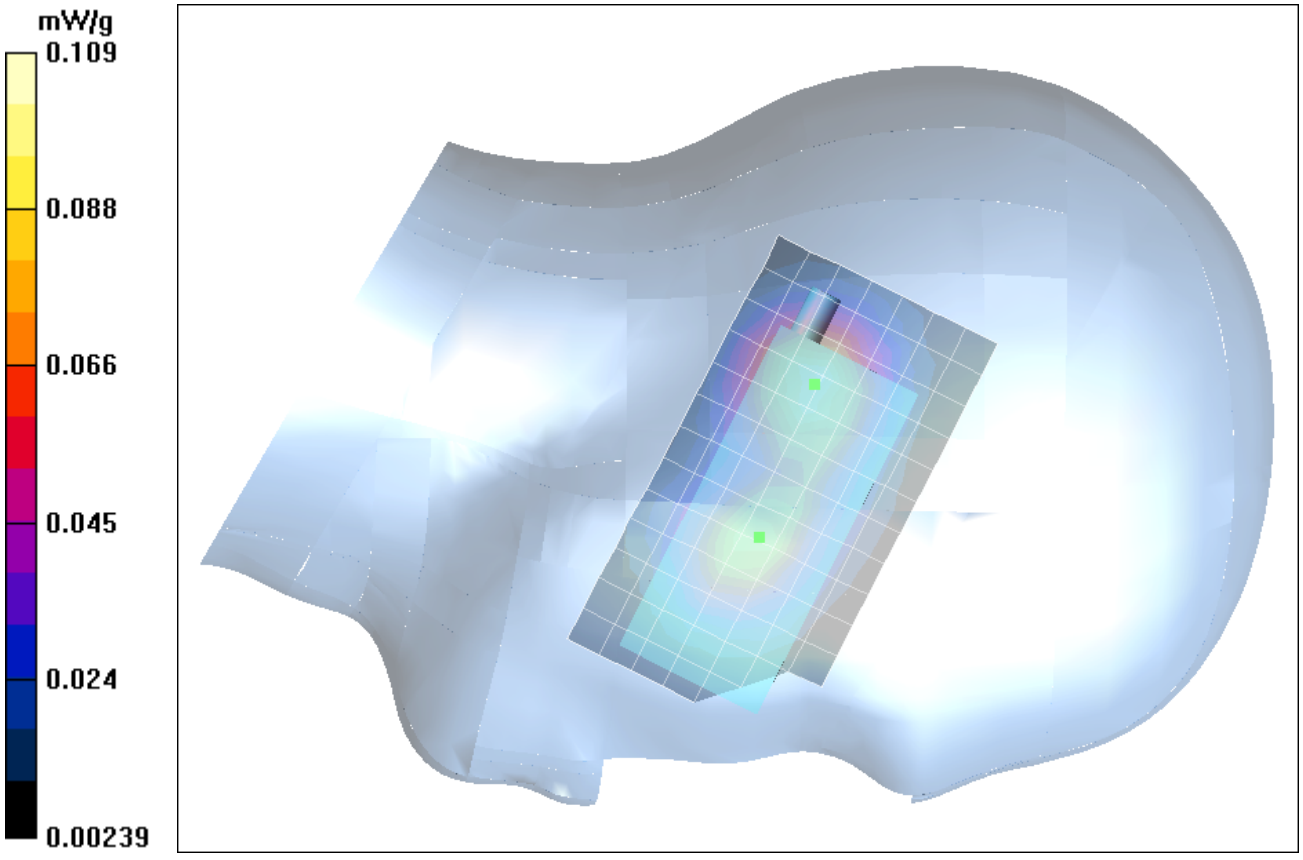
Date Tested: 08/23/04

Head SAR - High Channel - Left Ear - Cheek/Touch Position

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 165 mW (EIRP)
Frequency: 1909.85 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)
- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Left Ear - Cheek/Touch Position - Channel 50/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm
Head SAR - Left Ear - Cheek/Touch Position - Channel 50/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.66 V/m; Power Drift = 0.110 dB
Peak SAR (extrapolated) = 0.158 W/kg
SAR(1 g) = 0.099 mW/g; SAR(10 g) = 0.059 mW/g
Head SAR - Left Ear - Cheek/Touch Position - Channel 50/Zoom Scan (7x7x7)/Cube 1:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Peak SAR (extrapolated) = 0.134 W/kg
SAR(1 g) = 0.088 mW/g; SAR(10 g) = 0.054 mW/g



■ **Peak SAR Location(s)**

© 2004 Celltech Labs Inc.

Date Tested: 08/23/04

Head SAR - Mid Channel - Left Ear - Tilt Position (15°)

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038

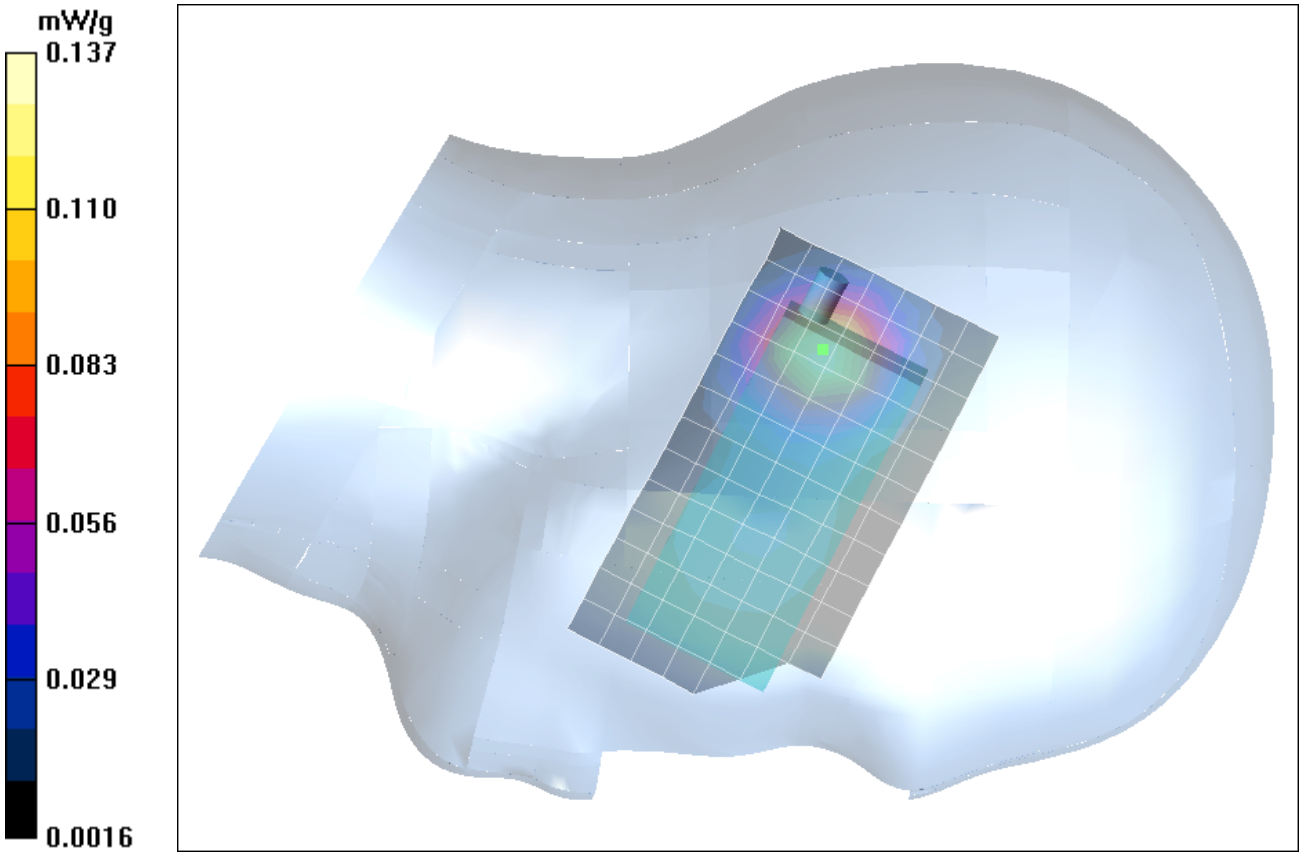
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 115 mW (EIRP)
Frequency: 1895.10 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)

- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Left Ear - Tilt Position (15°) - Channel 1/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm

Head SAR - Left Ear - Tilt Position (15°) - Channel 1/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.48 V/m; Power Drift = 0.0578 dB
Peak SAR (extrapolated) = 0.200 W/kg
SAR(1 g) = 0.123 mW/g; SAR(10 g) = 0.069 mW/g



Date Tested: 08/23/04

Head SAR - Low Channel - Left Ear - Tilt Position (15°)

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038

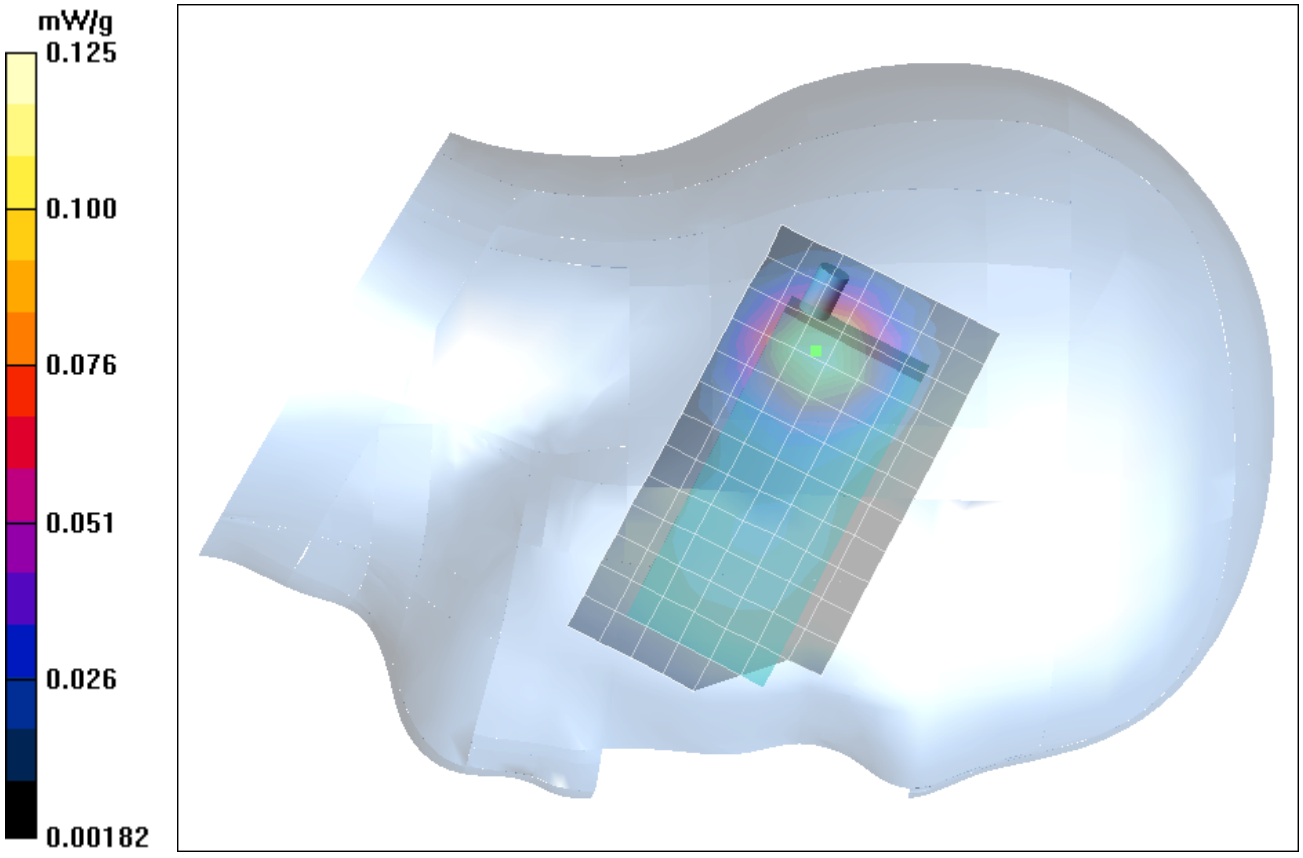
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 79 mW (EIRP)
Frequency: 1880.15 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)

- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Left Ear - Tilt Position (15°) - Channel 206/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm

Head SAR - Left Ear - Tilt Position (15°) - Channel 206/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.18 V/m; Power Drift = -0.0283 dB
Peak SAR (extrapolated) = 0.181 W/kg
SAR(1 g) = 0.112 mW/g; SAR(10 g) = 0.063 mW/g



■ **Peak SAR Location(s)**

© 2004 Celltech Labs Inc.

Date Tested: 08/23/04

Head SAR - High Channel - Left Ear - Tilt Position (15°)

DUT: UTStarcom, Inc. Model: UT106; Type: Portable PAS PHS Handset; Serial: 130801038

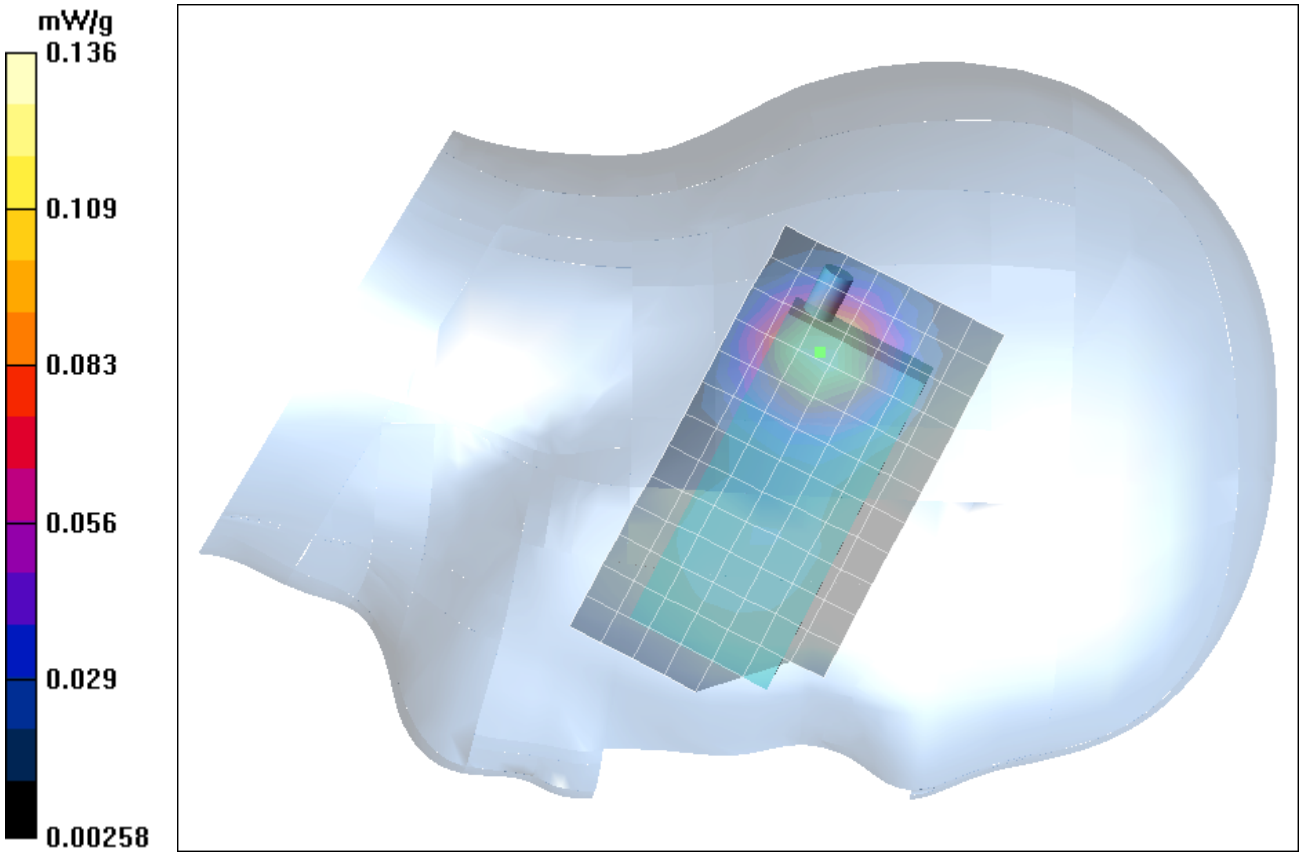
Ambient Temp: 23.5 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.6 kPa; Humidity: 45%

Communication System: TDMA
RF Output Power: 165 mW (EIRP)
Frequency: 1909.85 MHz; Duty Cycle: 1:7.8
3.6V 480mAh Li-ion Battery Pack (P/N: HZSL053040B)
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)

- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

Head SAR - Left Ear - Tilt Position (15°) - Channel 50/Area Scan (8x14x1):
Measurement grid: dx=10mm, dy=10mm

Head SAR - Left Ear - Tilt Position (15°) - Channel 50/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.47 V/m; Power Drift = 0.0375 dB
Peak SAR (extrapolated) = 0.197 W/kg
SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.068 mW/g



■ **Peak SAR Location(s)**

APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

Date Tested: 08/23/04

System Performance Check - 1900 MHz Dipole

DUT: Dipole 1900 MHz; Model: D1900V2; Type: System Performance Check; Serial: 151; Calibrated: 06/18/2004

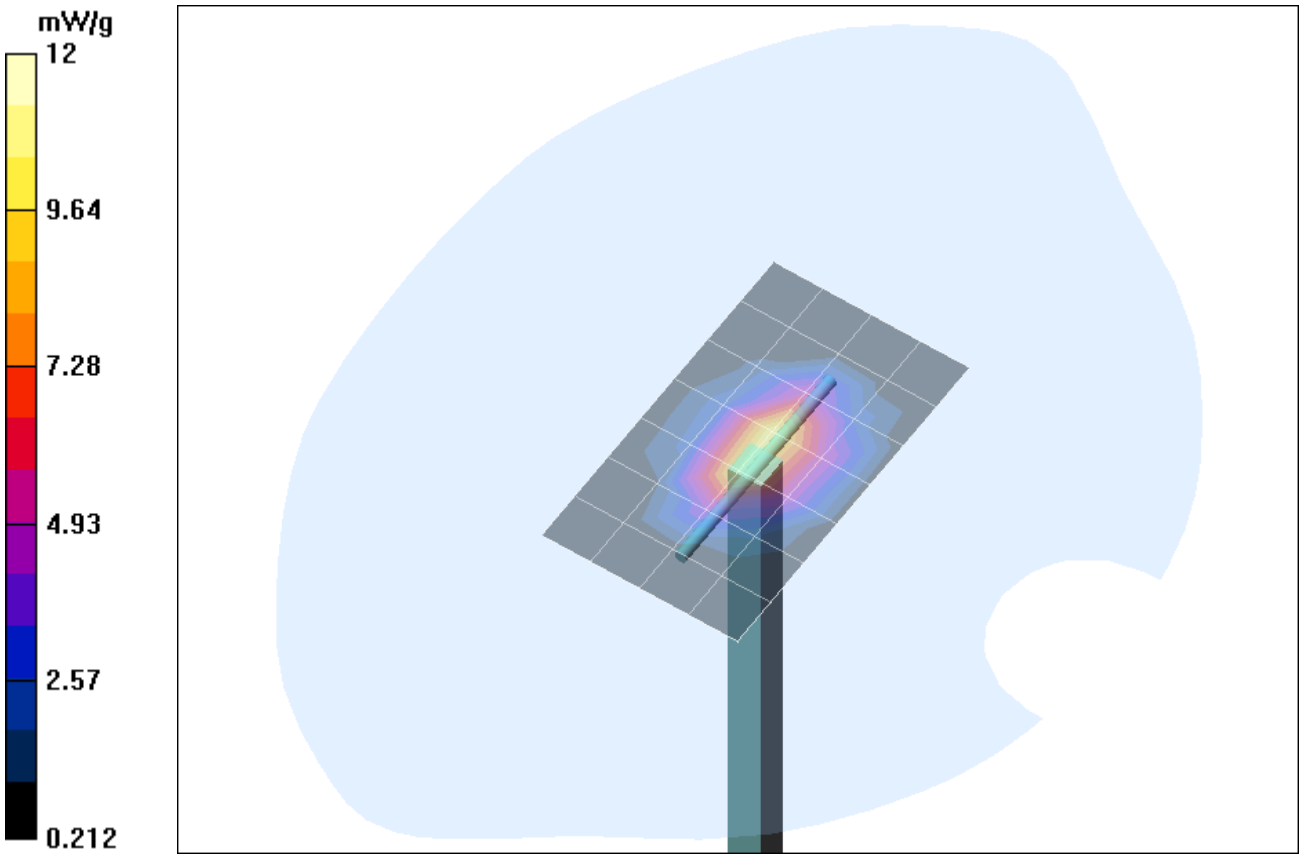
Ambient Temp: 24.0 °C; Fluid Temp: 23.4 °C; Barometric Pressure: 101.5 kPa; Humidity: 41%

Communication System: CW
Forward Conducted Power: 250mW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.6; ρ = 1000 kg/m^3)

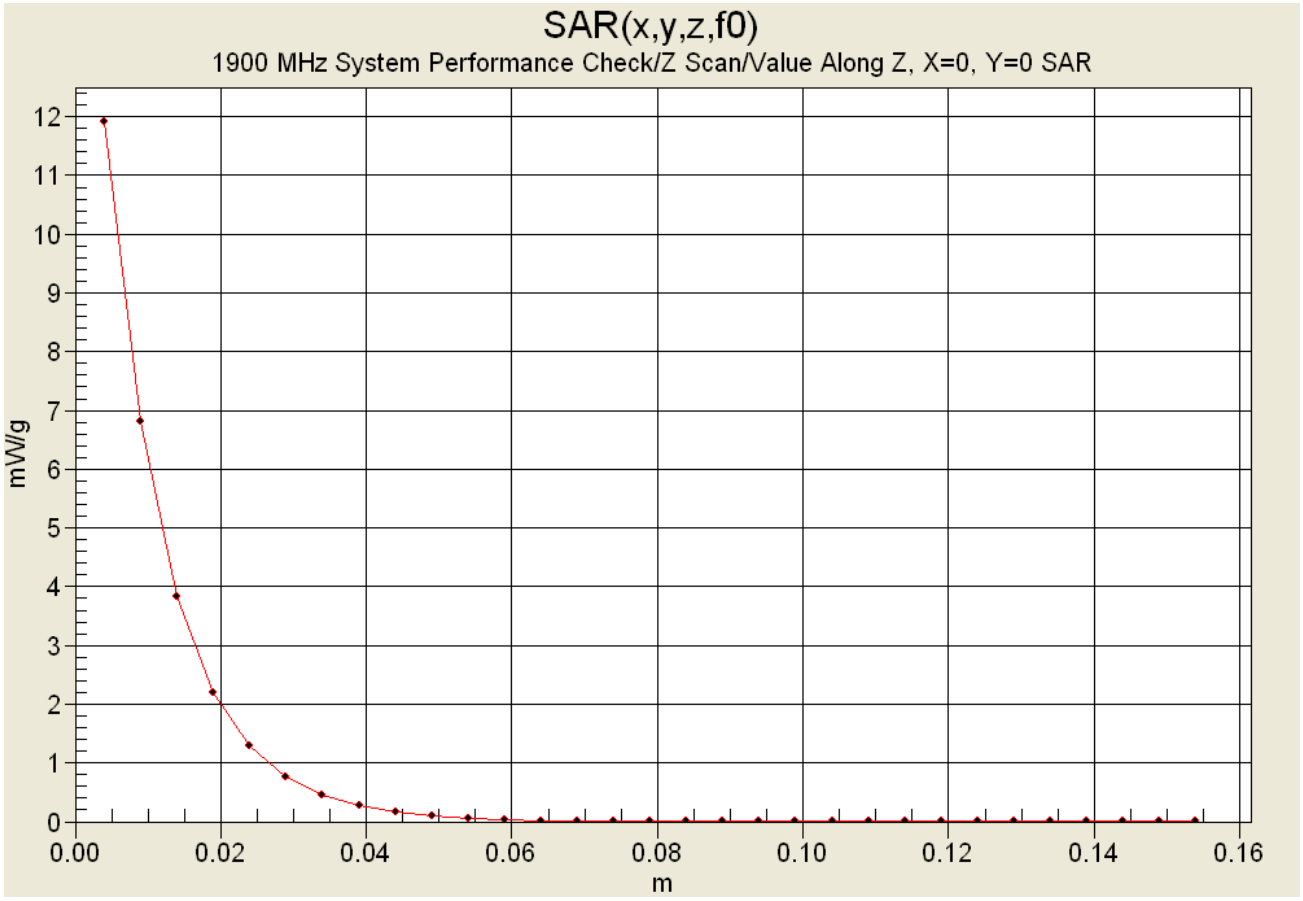
- Probe: ET3DV6 - SN1590; ConvF(5.03, 5.03, 5.03); Calibrated: 24/05/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

1900 MHz System Performance Check/Area Scan (5x8x1):
Measurement grid: dx=15mm, dy=15mm

1900 MHz System Performance Check/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.8 V/m; Power Drift = -0.0 dB
Peak SAR (extrapolated) = 18.2 W/kg
SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.55 mW/g



Z-Axis Scan


SAR(x,y,z,f0)
1900 MHz System Performance Check/Z Scan/Value Along Z, X=0, Y=0 SAR
mW/g
m
0
1
2
3
4
5
6
7
8
9
10
11
12
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16

APPENDIX C - SYSTEM VALIDATION

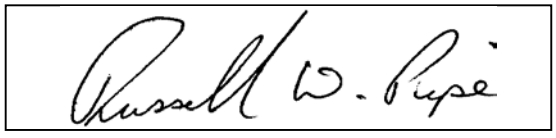
Celltech
Testing and Engineering Services Lab

1900 MHz SYSTEM VALIDATION DIPOLE

Type:	**1900 MHz Validation Dipole**
Serial Number:	**151**
Place of Calibration:	**Celltech Labs Inc.**
Date of Calibration:	**June 18, 2004**

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

Calibrated by: 

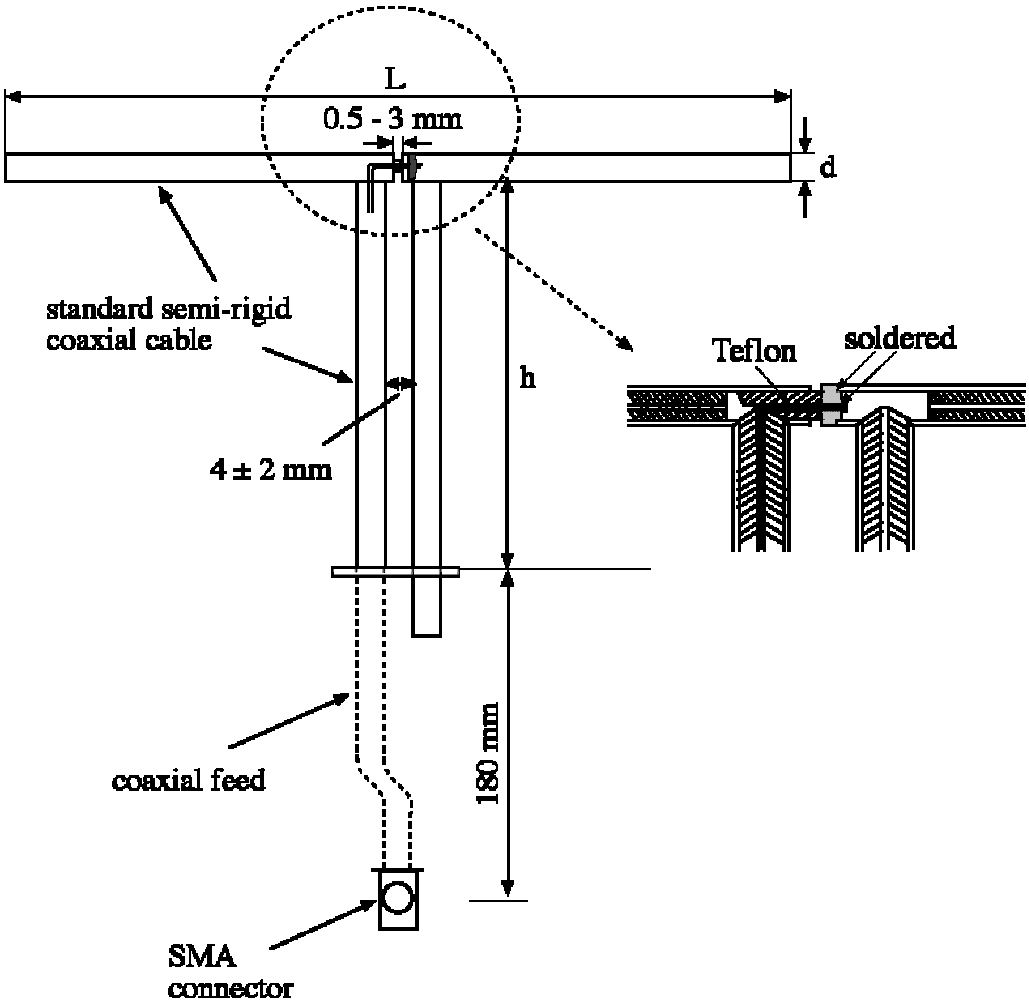
Approved by: 

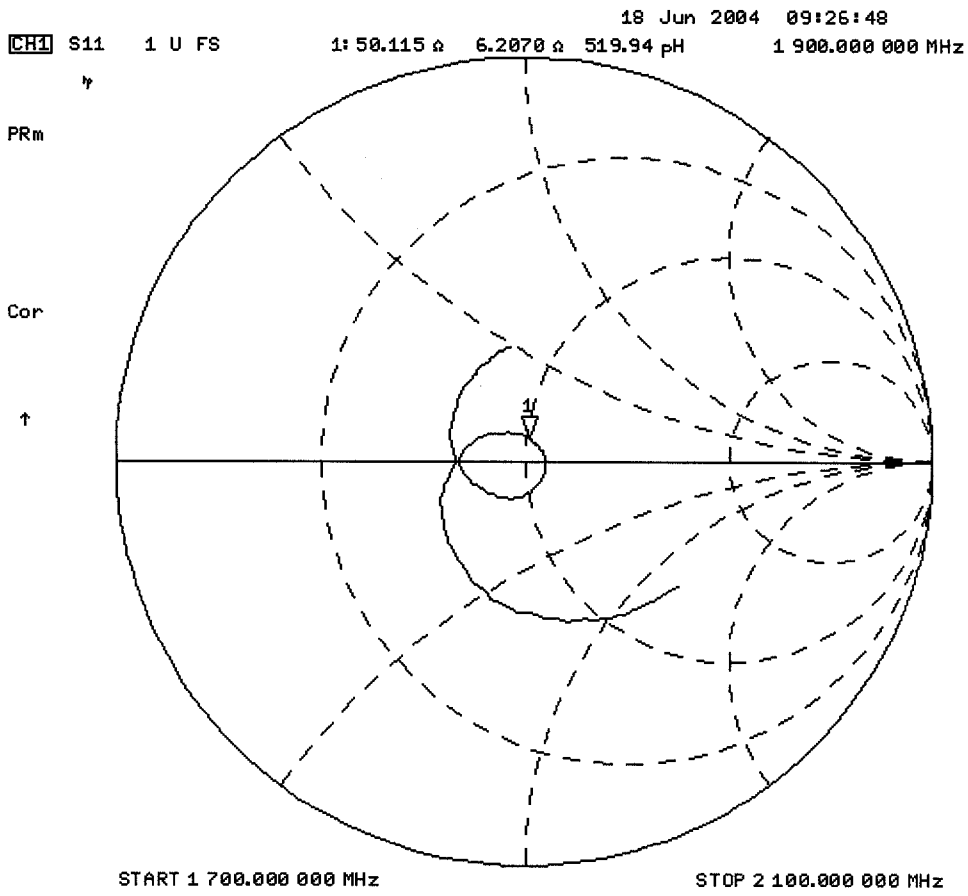
Celltech Labs Inc. 1955 Moss Court, Kelowna, B.C. Canada V1Y 9L3
Tel. 250-448-7047 • Fax. 250-448-7046 • e-mail: info@celltechlabs.com
www.celltechlabs.com

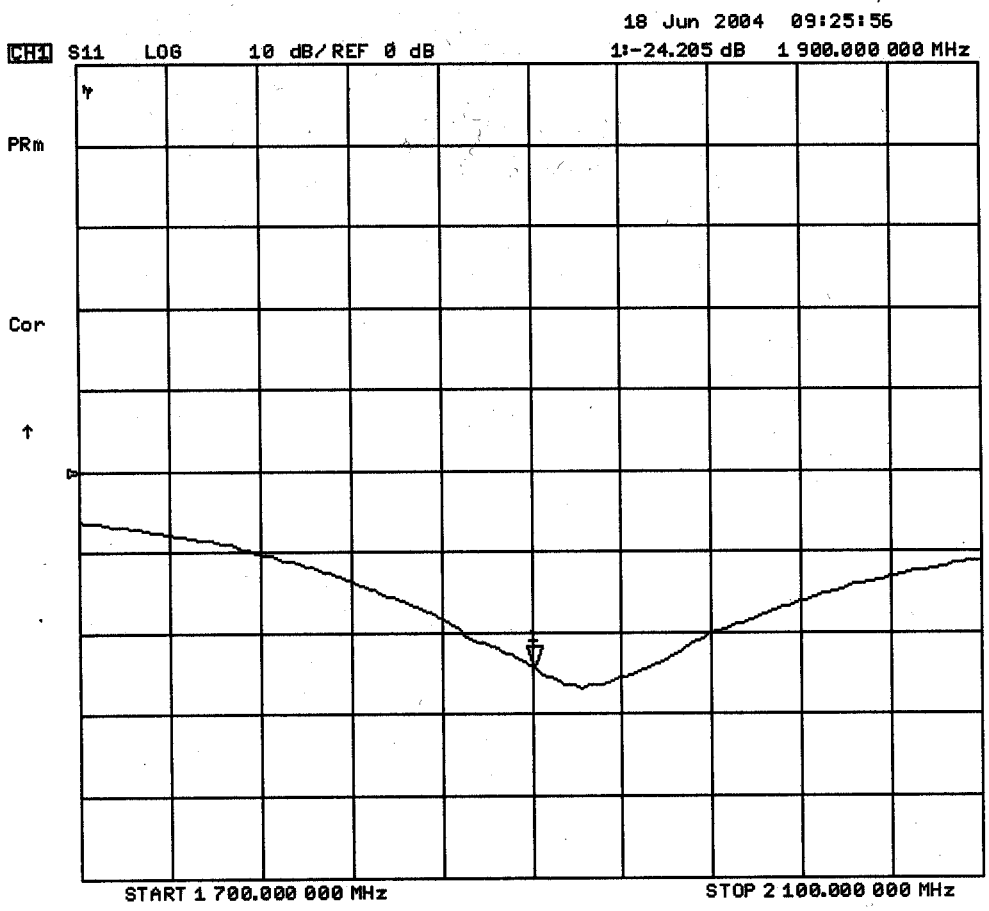
1. Dipole Construction & Electrical Characteristics

The validation dipole was constructed in accordance with the IEEE Standard "Annex G (informative) Reference dipoles for use in system validation". 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 1900MHz	Re{Z} = 50.115Ω
	Im{Z} = 6.2070Ω
Return Loss at 1900MHz	-24.205dB




18 Jun 2004 09:26:48
CH1 S11 1 U FS
1: 50.115 Ω 6.2070 Ω 519.94 pH
1 900.000 000 MHz
PRm
Cor
1
START 1 700.000 000 MHz
STOP 2 100.000 000 MHz


18 Jun 2004 09:25:56
CH1 S11 LOG 10 dB/ REF 0 dB
1:-24.205 dB 1 900.000 000 MHz
PRm
Cor
START 1 700.000 000 MHz
STOP 2 100.000 000 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 ± 0.1 mm
Filling Volume: Approx. 20 liters
Dimensions: 50 cm (W) x 100 cm (L)

1900 MHz System Validation Setup

1900 MHz System Validation Setup

3. Measurement Conditions

The SAM phantom was filled with 1900 MHz brain simulating tissue.

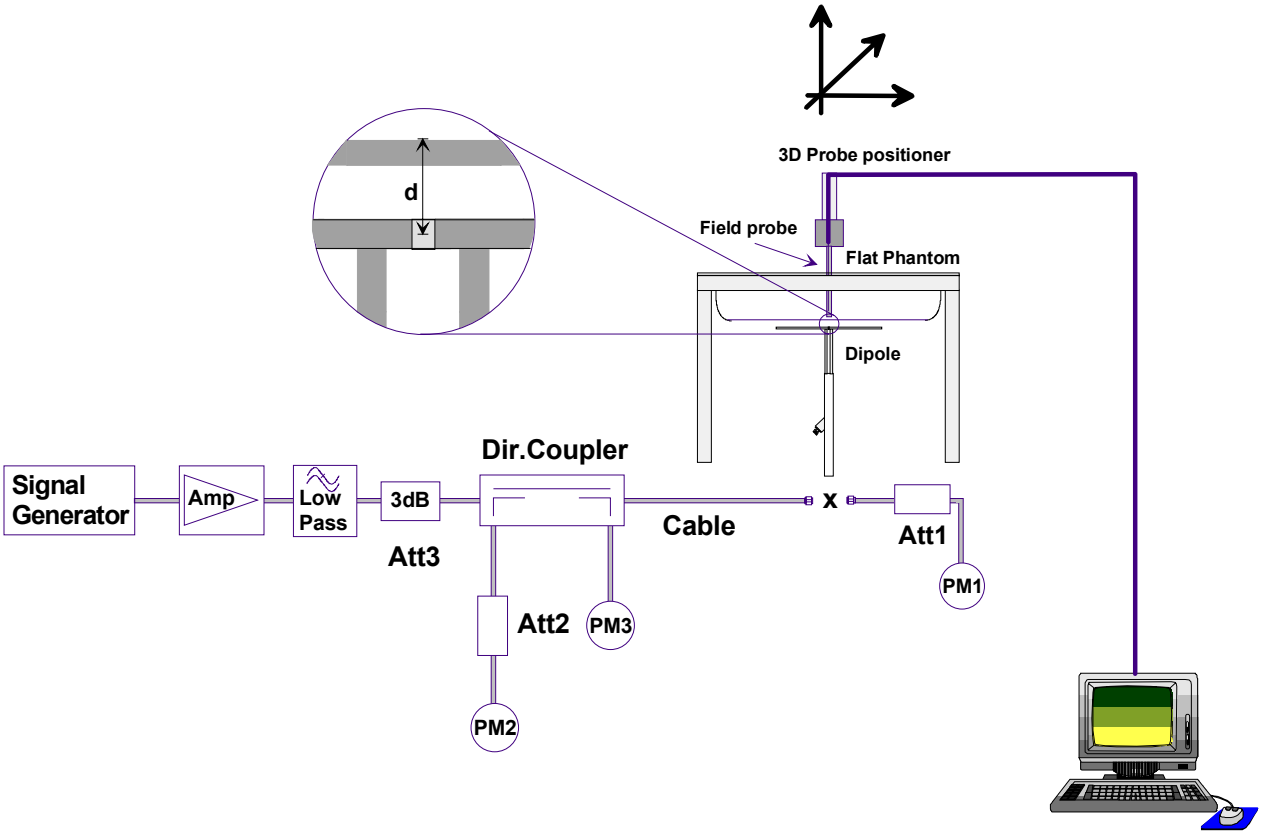
Relative Permittivity:	38.3
Conductivity:	1.43 mho/m
Ambient Temperature:	24.0 °C
Fluid Temperature:	22.6 °C
Fluid Depth:	≥ 15.0 cm
Barometric Pressure:	103.0 kPa
Humidity:	37%

The 1900 MHz tissue simulant consists of the following ingredients:

Ingredient	Percentage by weight
Water	55.85%
Glycol	44.00%
Salt	0.15%
Target Dielectric Parameters at 22 °C	ε_r = 40.0 σ = 1.40 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 50dB 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	10.1	40.40	5.30	21.20	17.4
Test 2	9.93	39.72	5.21	20.84	17.2
Test 3	9.98	39.92	5.23	20.92	17.3
Test 4	9.99	39.96	5.21	20.84	17.4
Test 5	9.97	39.88	5.22	20.88	17.4
Test 6	9.90	39.60	5.20	20.80	17.1
Test 7	9.93	39.72	5.21	20.84	17.2
Test 8	9.96	39.84	5.20	20.80	17.3
Test 9	9.94	39.76	5.20	20.80	17.2
Test 10	9.96	39.84	5.21	20.84	17.2
Average	9.966	39.864	5.219	20.876	17.27

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

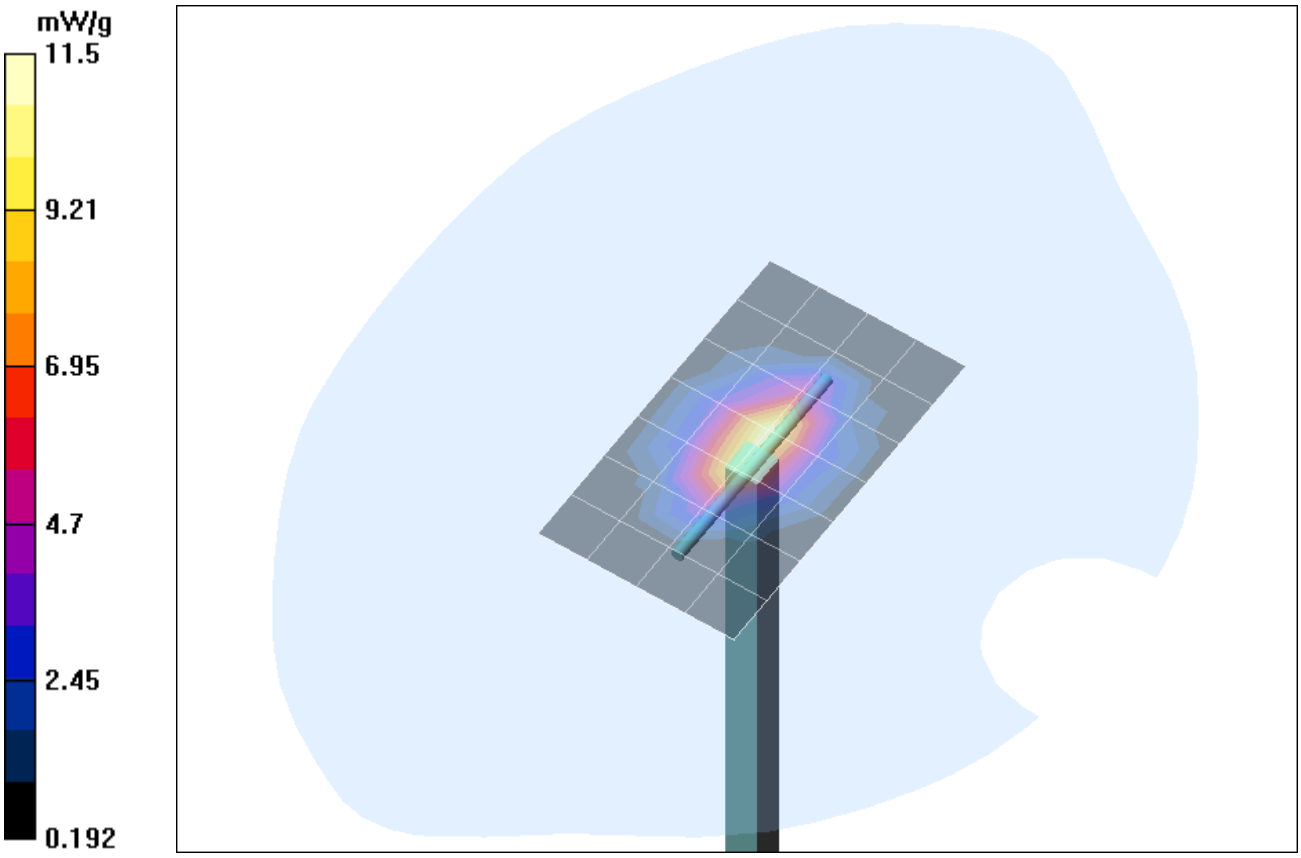
1g/10g Averaged	Average Measured SAR @ 1W Input	IEEE Target SAR @ 1W Input	Deviation (%)
1 gram	39.864	39.7	+ 0.413
10 gram	20.876	20.5	+ 1.835

1900 MHz System Validation - June 18, 2004

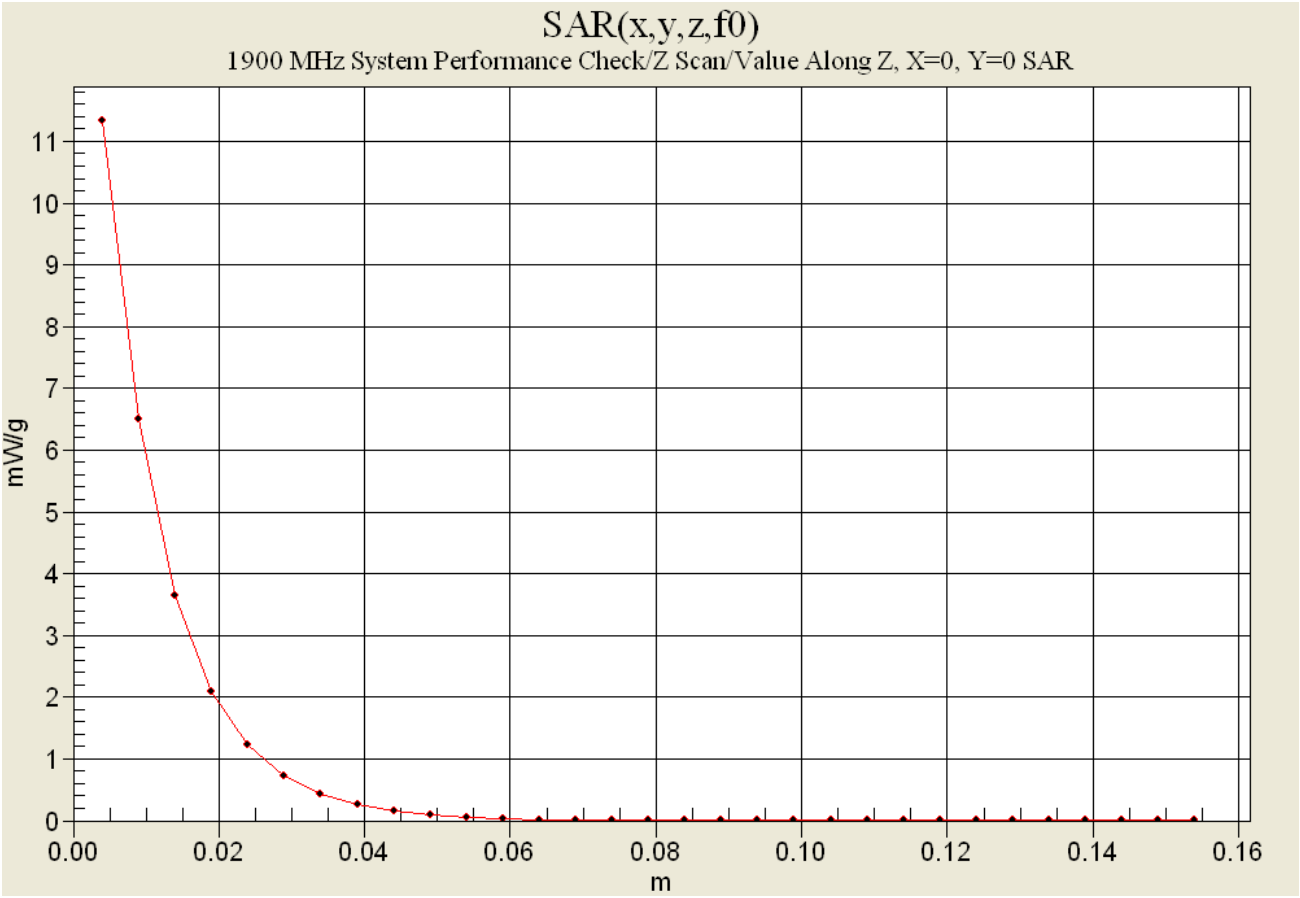
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 151
Ambient Temp: 24.0°C; Fluid Temp: 22.6°C; Barometric Pressure: 103.0 kPa; Humidity: 37%
Communication System: CW
Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL1900 (σ = 1.43 mho/m; ε_r = 38.3; ρ = 1000 kg/m^3)

- Probe: ET3DV6 - SN1387; ConvF(5.25, 5.25, 5.25); Calibrated: 18/03/2004
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 14/05/2004
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.2 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 112

1900 MHz System Validation/Area Scan (5x8x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 96.9 V/m; Power Drift = 0.1 dB
1900 MHz System Validation/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.9 V/m; Power Drift = 0.1 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.3 mW/g
1900 MHz System Validation/Zoom Scan 2 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.8 V/m; Power Drift = 0.0 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.93 mW/g; SAR(10 g) = 5.21 mW/g
1900 MHz System Validation/Zoom Scan 3 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.2 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 9.98 mW/g; SAR(10 g) = 5.23 mW/g
1900 MHz System Validation/Zoom Scan 4 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.9 V/m; Power Drift = 0.001 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 9.99 mW/g; SAR(10 g) = 5.21 mW/g
1900 MHz System Validation/Zoom Scan 5 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.2 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 9.97 mW/g; SAR(10 g) = 5.22 mW/g
1900 MHz System Validation/Zoom Scan 6 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.8 V/m; Power Drift = -0.0 dB
Peak SAR (extrapolated) = 17.1 W/kg
SAR(1 g) = 9.9 mW/g; SAR(10 g) = 5.2 mW/g
1900 MHz System Validation/Zoom Scan 7 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.8 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.93 mW/g; SAR(10 g) = 5.21 mW/g
1900 MHz System Validation/Zoom Scan 8 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.1 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 17.3 W/kg
SAR(1 g) = 9.96 mW/g; SAR(10 g) = 5.2 mW/g
1900 MHz System Validation/Zoom Scan 9 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 94.7 V/m; Power Drift = -0.0 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.94 mW/g; SAR(10 g) = 5.2 mW/g
1900 MHz System Validation/Zoom Scan 10 (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.1 V/m; Power Drift = -0.0 dB
Peak SAR (extrapolated) = 17.2 W/kg
SAR(1 g) = 9.96 mW/g; SAR(10 g) = 5.21 mW/g



1 g average of 10 measurements: 9.966 mW/g
10 g average of 10 measurements: 5.219 mW/g



1900 MHz System Validation

Measured Fluid Dielectric Parameters (Brain)

June 18, 2004

Frequency	e'	e"
1.800000000 GHz	38.7685	13.2945
1.810000000 GHz	38.7232	13.3253
1.820000000 GHz	38.6647	13.3519
1.830000000 GHz	38.6047	13.3737
1.840000000 GHz	38.5593	13.4078
1.850000000 GHz	38.5136	13.4244
1.860000000 GHz	38.4736	13.4289
1.870000000 GHz	38.4328	13.4399
1.880000000 GHz	38.3934	13.4856
1.890000000 GHz	38.3637	13.4872
1.900000000 GHz	38.3205	13.5178
1.910000000 GHz	38.2981	13.5327
1.920000000 GHz	38.2590	13.5755
1.930000000 GHz	38.2344	13.5976
1.940000000 GHz	38.2172	13.6297
1.950000000 GHz	38.1838	13.6574
1.960000000 GHz	38.1575	13.6807
1.970000000 GHz	38.1070	13.6962
1.980000000 GHz	38.0516	13.7296
1.990000000 GHz	38.0093	13.7634
2.000000000 GHz	37.9485	13.7978

APPENDIX D - PROBE CALIBRATION

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

Client **Celltech Labs**

CALIBRATION CERTIFICATE

Object(s)	ET3DV6 - SN:1590
Calibration procedure(s)	QA CAL-01.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	May 24, 2004
Condition of the calibrated item	In Tolerance (according to the specific calibration document)

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environ ment temperature 22 +/- 2 degrees Celsius and humidity < 75%.

Calibration Equipment used (M&TE critical for calibration)

Model Type	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E4419B	GB41293874	5-May-04 (METAS, No 251-00388)	May-05
Power sensor E4412A	MY41495277	5-May-04 (METAS, No 251-00388)	May-05
Reference 20 dB Attenuator	SN: 5086 (20b)	3-May-04 (METAS, No 251-00389)	May-05
Fluke Process Calibrator Type 702	SN: 6295803	8-Sep-03 (Sintrel SCS No. E-030020)	Sep-04
Power sensor HP 8481A	MY41092180	18-Sep-02 (SPEAG, in house check Oct-03)	In house check: Oct 05
RF generator HP 8684C	US3642U01700	4-Aug-99 (SPEAG, in house check Aug-02)	In house check: Aug-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Oct-03)	In house check: Oct 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Technician	
Approved by:	Katja Pokovic	Laboratory Director	

Date issued: May 24, 2004

This calibration certificate is issued as an intermediate solution until the accreditation process (based on ISO/IEC 17025 International Standard) for Calibration Laboratory of Schmid & Partner Engineering AG is completed.

Probe ET3DV6

SN:1590

Manufactured:	March 19, 2001
Last calibrated:	May 15, 2003
Recalibrated:	May 24, 2004

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1590

Sensitivity in Free Space

Diode Compression[A]

NormX	**1.85** $\mu V/(V/m)^2$	DCP X	**91**	mV
NormY	**2.01** $\mu V/(V/m)^2$	DCP Y	**91**	mV
NormZ	**1.73** $\mu V/(V/m)^2$	DCP Z	**91**	mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Plese see Page 7.

Boundary Effect

Head **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	8.0	4.4
SAR_{be} [%]	With Correction Algorithm	0.1	0.2

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

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	12.2	8.5
SAR_{be} [%]	With Correction Algorithm	0.2	0.1

Sensor Offset

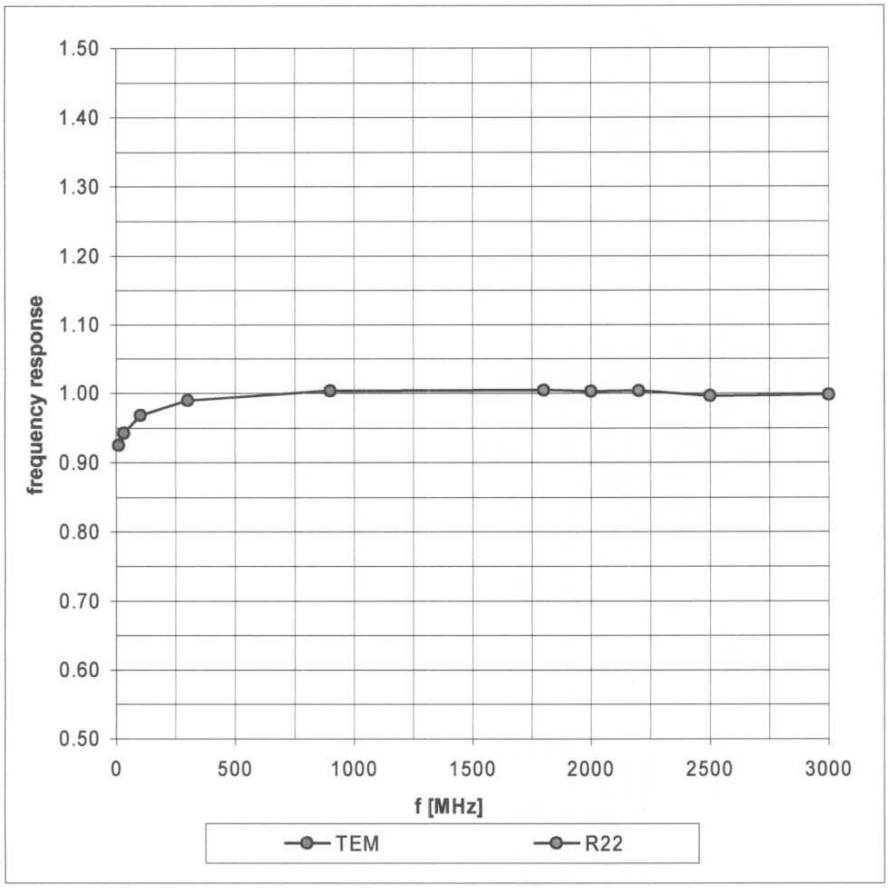
Probe Tip to Sensor Center	**2.7** mm
Optical Surface Detection	**in tolerance**

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

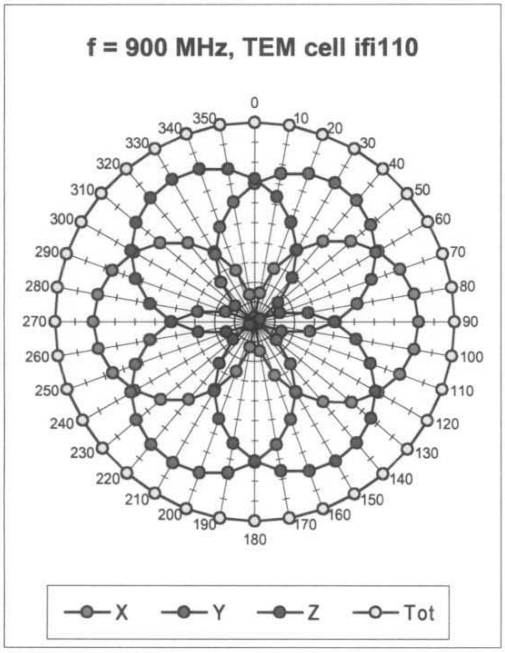
[A] numerical linearization parameter: uncertainty not required

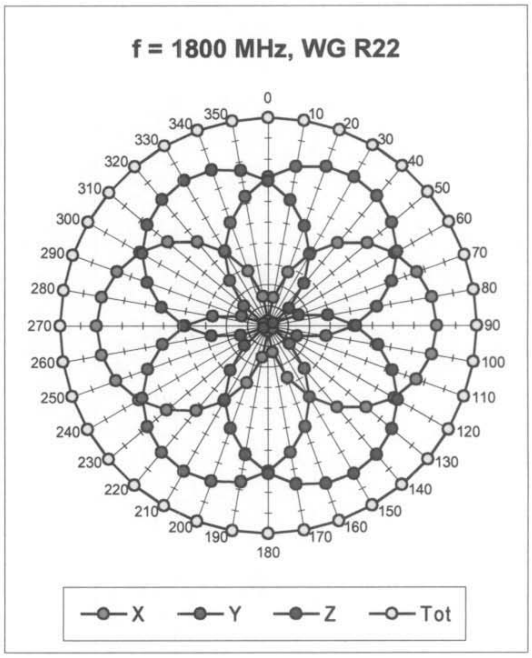
Frequency Response of E-Field

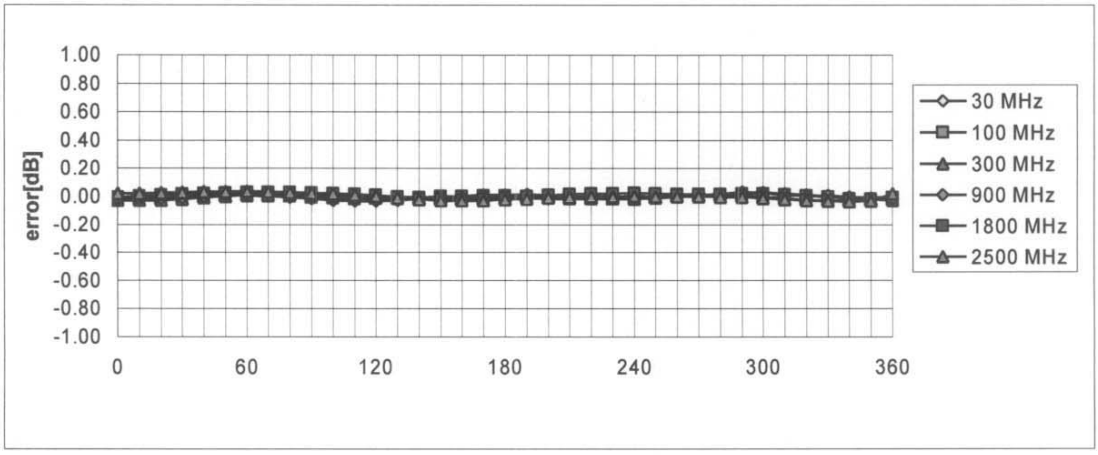
(TEM-Cell:ifi110, Waveguide R22)



Receiving Pattern (ϕ), θ = 0°



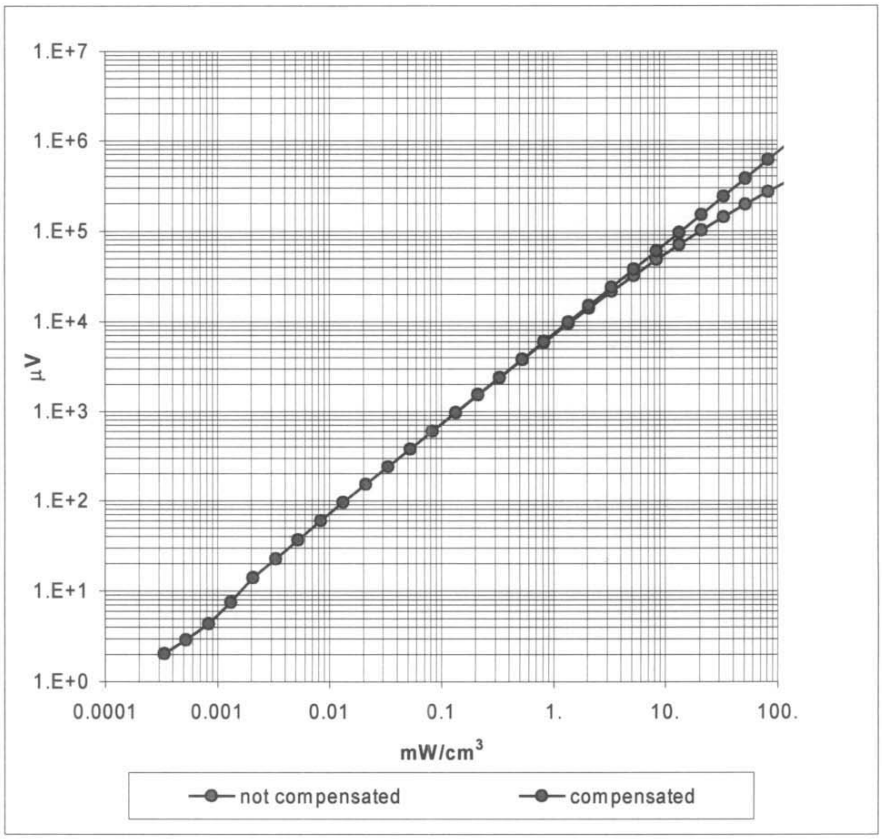


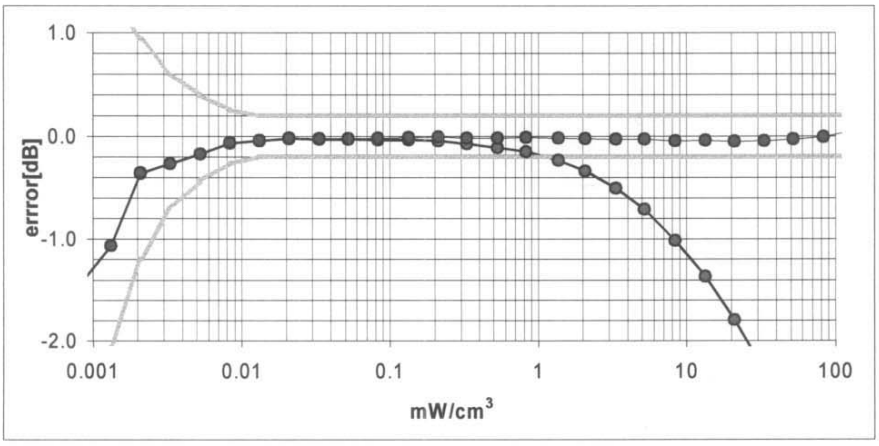


Axial Isotropy Error < ± 0.2 dB

Dynamic Range f(SAR_{head})

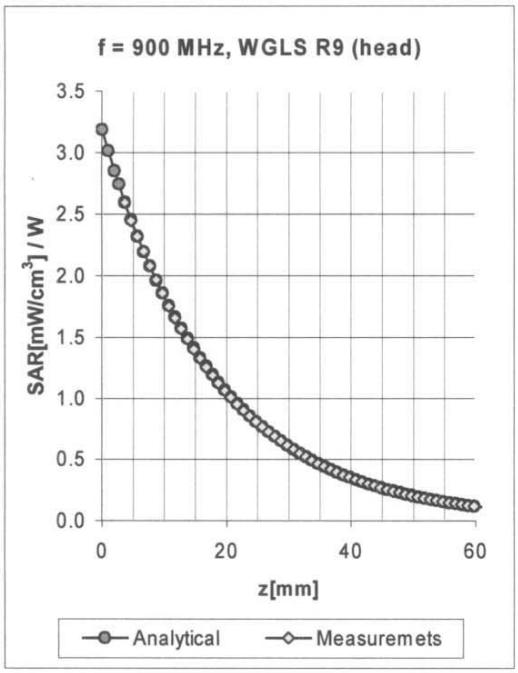
(Waveguide R22)

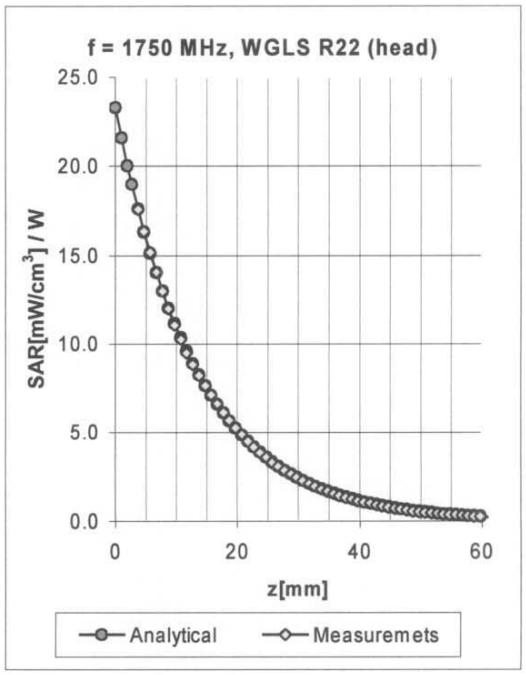




Probe Linearity Error < ± 0.2 dB

Conversion Factor Assessment



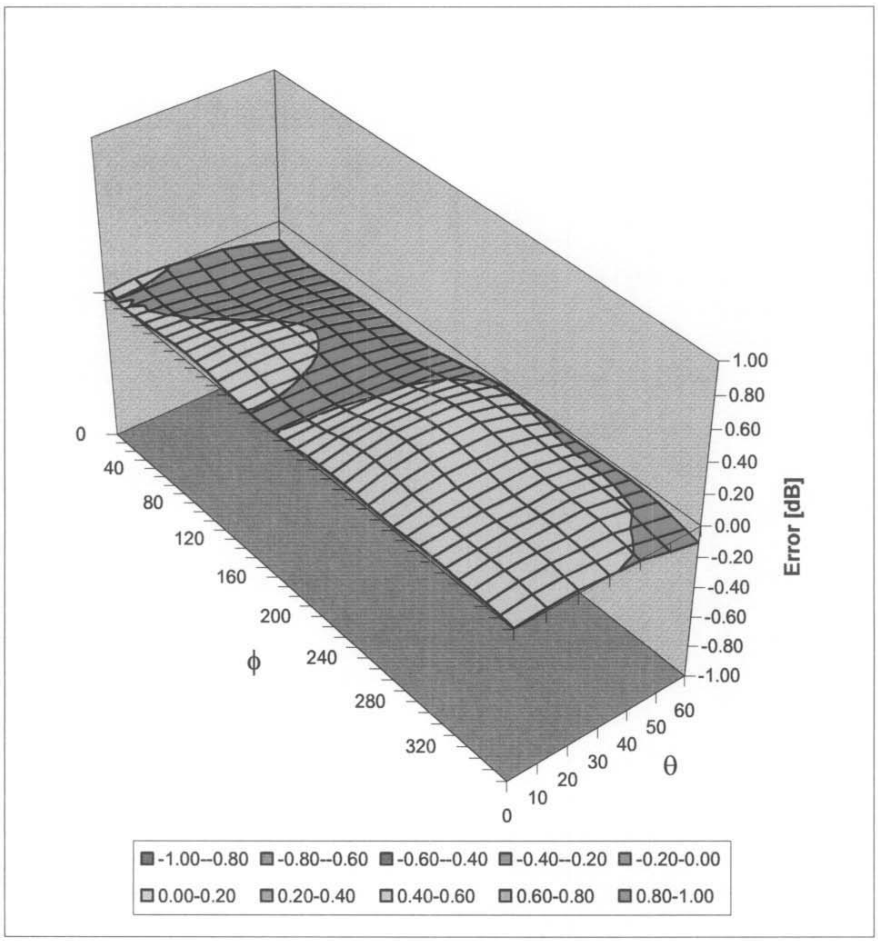


f [MHz]	Validity [MHz][B]	Tissue	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
835	750-950	Head	41.5 ± 5%	0.90 ± 5%	0.68	1.64	6.71 ± 11.9% (k=2)
1750	1700-1800	Head	40.0 ± 5%	1.40 ± 5%	0.43	2.67	5.28 ± 9.7% (k=2)
1900	1850-1950	Head	40.0 ± 5%	1.40 ± 5%	0.46	2.81	5.03 ± 9.7% (k=2)
2450	2400-2500	Head	39.2 ± 5%	1.80 ± 5%	0.81	1.95	4.44 ± 9.7% (k=2)
835	750-950	Body	55.2 ± 5%	0.97 ± 5%	0.49	1.99	6.54 ± 11.9% (k=2)
1750	1700-1800	Body	53.3 ± 5%	1.52 ± 5%	0.50	2.87	4.68 ± 9.7% (k=2)
1900	1850-1950	Body	53.3 ± 5%	1.52 ± 5%	0.52	2.93	4.58 ± 9.7% (k=2)
2450	2400-2500	Body	52.7 ± 5%	1.95 ± 5%	0.91	1.78	4.22 ± 9.7% (k=2)

[B] The total standard uncertainty is calculated as root-sum-square of standard uncertainty of the Conversion Factor at calibration frequency and the standard uncertainty for the indicated frequency band.

Deviation from Isotropy in HSL

Error (θ, φ), f = 900 MHz



Spherical Isotropy Error < ± 0.4 dB

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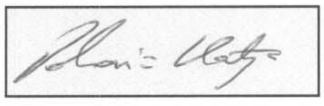
Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1590**
Place of Assessment:	**Zurich**
Date of Assessment:	**May 25, 2004**
Probe Calibration Date:	**May 24, 2004**

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:



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Dosimetric E-Field Probe ET3DV6 SN:1590

Conversion factor (± standard deviation)

150 MHz	ConvF	**9.1 ± 8%**	ε_r = **52.3 ± 5%** σ = **0.76 ± 5% mho/m** (head tissue)
300 MHz	ConvF	**7.9 ± 8%**	ε_r = **45.3 ± 5%** σ = **0.87 ± 5% mho/m** (head tissue)
450 MHz	ConvF	**7.5 ± 8%**	ε_r = **43.5 ± 5%** σ = **0.87 ± 5% mho/m** (head tissue)
150 MHz	ConvF	**8.8 ± 8%**	ε_r = **61.9 ± 5%** σ = **0.80 ± 5% mho/m** (body tissue)
450 MHz	ConvF	**7.7 ± 8%**	ε_r = **56.7 ± 5%** σ = **0.94 ± 5% mho/m** (body tissue)

Important Note:

For numerically assessed probe conversion factors, parameters Alpha and Delta in the DASY software must have the following entries: Alpha = 0 and Delta = 1.

Please see also Section 4.7 of the DASY4 Manual.

APPENDIX E - MEASURED FLUID DIELECTRIC PARAMETERS

1900 MHz System Performance Check & DUT Evaluation (Head)

Measured Fluid Dielectric Parameters (Brain)

August 23, 2004

Frequency	e'	e"
1.800000000 GHz	39.0152	13.3296
1.810000000 GHz	38.9677	13.3575
1.820000000 GHz	38.9226	13.3721
1.830000000 GHz	38.8766	13.4083
1.840000000 GHz	38.8294	13.4304
1.850000000 GHz	38.7998	13.4450
1.860000000 GHz	38.7561	13.4444
1.870000000 GHz	38.7139	13.4787
1.880000000 GHz	38.6881	13.4942
1.890000000 GHz	38.6487	13.5241
1.900000000 GHz	38.6196	13.5593
1.910000000 GHz	38.5843	13.6014
1.920000000 GHz	38.5470	13.6243
1.930000000 GHz	38.5106	13.6467
1.940000000 GHz	38.4856	13.6853
1.950000000 GHz	38.4537	13.7021
1.960000000 GHz	38.4083	13.7189
1.970000000 GHz	38.3671	13.7360
1.980000000 GHz	38.3091	13.7613
1.990000000 GHz	38.2459	13.7903
2.000000000 GHz	38.1978	13.8271

APPENDIX F - SAM PHANTOM CERTIFICATE OF CONFORMITY

Schmid & Partner Engineering AG

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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
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