



Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## RF EXPOSURE EVALUATION

## SPECIFIC ABSORPTION RATE

### **SAR TEST REPORT**

FOR

**ASCALADE TECHNOLOGIES INC.**

**PORTABLE UPSCS DECT VoIP HANDSET**

**MODEL(S): PHILIPS VOIP841XY/ZZ**

**FCC ID: PBWB187R26H**

**IC: 3842A-B187**

TEST STANDARD(S) & PROCEDURE(S) APPLIED
FCC OET Bulletin 65, Supplement C (01-01)
Industry Canada RSS-102 Issue 2
IEEE 1528-2003

Test Report Serial No.

101206PBW-T782-S15T

Test Report Revision No.

Revision 1.0 (Initial Release)

Test Lab and Location

Celltech Compliance Testing & Engineering Lab  
(Celltech Labs Incorporated)

1955 Moss Court  
Kelowna, BC  
Canada  
V1Y 9L3



Certificate No. 2470.01

Test Report Prepared By:

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Celltech Labs Inc.

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Jonathan Hughes  
General Manager  
Celltech Labs Inc.

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187		
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPSCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz			
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	Page 1 of 44						



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## DECLARATION OF COMPLIANCE SAR RF EXPOSURE EVALUATION

### Test Lab and Location

**CELLTECH LABS INCORPORATED**  
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### Company Information

**ASCALADE TECHNOLOGIES INC.**  
12051 Riverside Way  
Richmond, BC V6W 1K7  
Canada

FCC IDENTIFIER:

PBWB187R26H

IC IDENTIFIER:

3842A-B187

Model(s):

PHILIPS VOIP841XY/ZZ

Test Requirement(s):  
Test Procedure(s):

FCC 47 CFR §2.1093; Health Canada Safety Code 6  
FCC OET Bulletin 65, Supplement C (Edition 01-01)  
Industry Canada RSS-102 Issue 2  
IEEE Standard 1525-2003

Device Classification:  
Device Description:

Part 15 Unlicensed PCS portable Tx held to ear (PUE)  
Portable UPSCS DECT VoIP Handset

Transmit Frequency Range:

1921.536 - 1928.448 MHz

Mode of Operation:

TDMA (Time Division Multiple Access)

Modulation Type:

GFSK (Gaussian Frequency Shift Keying)

Max. RF Output Power Level Tested:

17.9 dBm (61 mW) EIRP (1924.992 MHz)

Source-Based Time-Av. Duty Cycle Tested:

4 % (Crest Factor: 1:25)

Max. Source-Based Time-Av. Power Tested:

3.87 dBm (2.44 mW) EIRP (1924.992 MHz)

Antenna Type(s) Tested:

Internal (pre-formed wire soldered on PCB)

Battery Type(s) Tested:

NIMH 1.2 V, 750 mAh AAA (x2)

Body-worn Accessories Tested:

Plastic Belt-Clip (4 mm spacing)

Audio Accessories Tested:

Ear-Microphone (P/N: WDCP045)

Max. SAR Level(s) Evaluated:

Head: 0.0298 W/kg (1g average)

Body: 0.0145 W/kg (1g average)

Class II Permissive Change(s):

Add new model(s) with metallic changes

Celltech Labs Inc. declares under its sole responsibility that this wireless portable device is compliant with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §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), Industry Canada RSS-102 Issue 2 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.

### Test Report Approved By:

Sean Johnston  
SAR Lab Manager  
Celltech Labs Inc.



Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPSCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		

## TABLE OF CONTENTS

<b>1.0 INTRODUCTION</b>	<b>4</b>
<b>2.0 DESCRIPTION OF DEVICE UNDER TEST (DUT)</b>	<b>4</b>
<b>3.0 SAR MEASUREMENT SYSTEM</b>	<b>5</b>
<b>4.0 MEASUREMENT SUMMARY</b>	<b>6</b>
<b>MEASUREMENT SUMMARY (CONT.)</b>	<b>7</b>
<b>5.0 DETAILS OF SAR EVALUATION</b>	<b>8</b>
<b>DETAILS OF SAR EVALUATION (CONT.)</b>	<b>9</b>
<b>6.0 EVALUATION PROCEDURES</b>	<b>9</b>
<b>EVALUATION PROCEDURES (CONT.)</b>	<b>10</b>
<b>7.0 SYSTEM PERFORMANCE CHECK</b>	<b>11</b>
<b>8.0 SIMULATED EQUIVALENT TISSUES</b>	<b>12</b>
<b>9.0 SAR SAFETY LIMITS</b>	<b>12</b>
<b>10.0 ROBOT SYSTEM SPECIFICATIONS</b>	<b>13</b>
<b>11.0 PROBE SPECIFICATION (ET3DV6)</b>	<b>14</b>
<b>12.0 SAM PHANTOM V4.0C</b>	<b>14</b>
<b>13.0 DEVICE HOLDER</b>	<b>14</b>
<b>14.0 TEST EQUIPMENT LIST</b>	<b>15</b>
<b>15.0 MEASUREMENT UNCERTAINTIES</b>	<b>16</b>
<b>MEASUREMENT UNCERTAINTIES (CONT.)</b>	<b>17</b>
<b>16.0 REFERENCES</b>	<b>18</b>
<b>APPENDIX A - SAR MEASUREMENT DATA</b>	<b>19</b>
<b>APPENDIX B - SYSTEM PERFORMANCE CHECK DATA</b>	<b>27</b>
<b>APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS</b>	<b>30</b>
<b>APPENDIX D - SAR TEST SETUP &amp; DUT PHOTOGRAPHS</b>	<b>33</b>
<b>APPENDIX E - SYSTEM VALIDATION</b>	<b>42</b>
<b>APPENDIX F - PROBE CALIBRATION</b>	<b>43</b>
<b>APPENDIX G - SAM PHANTOM CERTIFICATE OF CONFORMITY</b>	<b>44</b>



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## 1.0 INTRODUCTION

This measurement report demonstrates that the Ascalade Technologies Inc. Model(s): VOIP841XY/ZZ Portable UPSCS DECT VoIP Handset FCC ID: PBWB187R26H complies with the SAR (Specific Absorption Rate) RF exposure requirements specified in FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the General Population / Uncontrolled Exposure environment. The test procedures described in FCC OET Bulletin 65, Supplement C, Edition 01-01 (see reference [3]), IC RSS-102 Issue 2 (see reference [4]), and IEEE Standard 1528-2003 (see reference [5]) were employed. A description of the product, 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 DEVICE UNDER TEST (DUT)

Test Requirement(s)	FCC Rule Part 47 CFR §2.1093			
	Health Canada Safety Code 6			
Test Procedure(s)	FCC OET Bulletin 65, Supplement C (01-01)			
	Industry Canada RSS-102 Issue 2			
	IEEE Standard 1528-2003			
FCC Device Classification	Part 15 Unlicensed PCS portable Tx held to ear (PUE)		§15(D)	
IC Device Classification	2 GHz Licence Exempt Personal Communications Service Device (PCS)		RSS-213 Issue 2	
Device Description	Portable UPSCS DECT VoIP Handset			
RF Exposure Category	General Population / Uncontrolled Exposure Environment			
FCC IDENTIFIER	PBWB187R26H			
IC IDENTIFIER	3842A-B187			
Trade Name(s)	PHILIPS			
Model(s)	VOIP841XY/ZZ			
Test Sample Serial No.	MS000639010017		Identical Prototype	
Transmit Frequency Range	1921.536 - 1928.448 MHz			
Mode of Operation	TDMA		Time Division Multiple Access	
Modulation Scheme	GFSK		Gaussian Frequency Shift Keying	
Max. RF Output Power Tested	17.9 dBm	61 mW	EIRP	1924.992 MHz
Source-Based Time-Averaged	3.87 dBm	2.44 mW	EIRP	1924.992 MHz
Maximum Duty Cycle Tested	4 %	Crest Factor: 1:25	Source-Based Time-Averaged	
Battery Type(s) Tested	NiMH	1.2 V	750 mAh	AAA (x2)
Antenna Type(s) Tested	Internal (pre-formed wire soldered on PCB)			
Body-Worn Accessories Tested	Plastic Belt-Clip		provides 4 mm spacing	
Audio Accessories Tested	Ear-Microphone		P/N: WDCP045	
Class II Permissive Change(s)	Add new model(s) with metallic changes			

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPSCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

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RF Exposure Category  
General Population



Certificate No. 2470.01

### 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 and device holder



DASY4 Measurement System with SAM Phantom and validation dipole

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October 20, 2006

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101206PBW-T782-S15T

Report Revision No.

Revision 1.0

Report Issue Date

October 30, 2006

Description of Test(s)

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General Population



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Certificate No. 2470.01

## 4.0 MEASUREMENT SUMMARY

### HEAD SAR EVALUATION RESULTS

Freq. (MHz)	Chan.	Test Mode	Battery Type	Antenna Position	Phantom Section	Test Position	Start Power		SAR Drift During Test (dB)	Measured SAR 1g (W/kg)	Scaled SAR <sup>3</sup> 1g (W/kg)
							EIRP (mW)	SBTA (mW)			
1924.992	3	TDMA	NiMH	Internal	Left Ear	Ear/Tilt (15°)	61	2.44	-0.0169	0.0174	0.0183
1924.992	3	TDMA	NiMH	Internal	Left Ear	Cheek/Touch	61	2.44	0.101	0.0284	0.0298
1924.992	3	TDMA	NiMH	Internal	Right Ear	Ear/Tilt (15°)	61	2.44	0.0436	0.0158	0.0166
1924.992	3	TDMA	NiMH	Internal	Right Ear	Cheek/Touch	61	2.44	0.0480	0.0272	0.0285

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)	October 20, 2006			Relative Humidity	35	%	
Measured Fluid Type	1920 MHz Brain			Atmospheric Pressure	102.0	kPa	
Dielectric Constant $\epsilon_r$	IEEE Target		Measured	Deviation	Ambient Temperature	23.5	°C
	40.0	± 5%	38.1	-4.8%	Fluid Temperature	22.8	°C
Conductivity $\sigma$ (mho/m)	IEEE Target		Measured	Deviation	Fluid Depth	≥ 15	cm
	1.40	± 5%	1.42	+1.4%	$\rho$ (Kg/m <sup>3</sup> )	1000	

Notes	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.	The transmission band of the DUT is less than 10 MHz; therefore mid channel data only is reported (FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).
	3.	The measured SAR levels were scaled up by 5% to correlate with the maximum EIRP level measured by the EMC test lab.
	4.	The power drifts of the DUT measured by the DASY4 system during the SAR evaluations were <5% from the start power.
	5.	The DUT batteries were fully charged prior to the SAR evaluations.
	6.	The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported in the table above were consistent for all measurement periods.
	7.	The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations (see Appendix C).
	8.	The SAR evaluations were performed within 24 hours of the system performance check.

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

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Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## MEASUREMENT SUMMARY (Cont.)

### BODY-WORN SAR EVALUATION RESULTS

Freq. (MHz)	Chan.	Test Mode	Battery Type	Phantom Section	Test Position	Separation Distance to Planar Phantom (mm)	Accessories		Start Power (mW)		SAR Drift During Test (dB)	Measured SAR 1g (W/kg)	Scaled SAR <sup>3</sup> 1g (W/kg)				
							Body-Worn	Audio	EIRP	SBTA							
1924.992	3	TDMA	NiMH	Planar	Back Side	4.0	Belt-Clip	Ear-Mic	61	2.44	0.185	0.0138	0.0145				
ANSI / IEEE C95.1 1999 - SAFETY LIMIT					BODY: 1.6 W/kg (averaged over 1 gram)					Spatial Peak Uncontrolled Exposure / General Population							
Test Date(s)			October 20, 2006				Relative Humidity			35		%					
Measured Fluid Type			1920 MHz Body				Atmospheric Pressure			102.0		kPa					
Dielectric Constant $\epsilon_r$	IEEE Target			Measured	Deviation	Ambient Temperature			24.3		$^{\circ}\text{C}$						
	53.3	$\pm 5\%$	51.6	-3.2%	Fluid Temperature			23.1		$^{\circ}\text{C}$							
Conductivity $\sigma$ (mho/m)	IEEE Target			Measured	Deviation	Fluid Depth			$\geq 15$		cm						
	1.52	$\pm 5\%$	1.50	-1.3%	$\rho$ (Kg/m <sup>3</sup> )			1000									
Notes	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.	The transmission band of the DUT is less than 10 MHz; therefore mid channel data only is reported (FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).															
	3.	The measured SAR levels were scaled up by 5% to correlate with the maximum EIRP level measured by the EMC test lab.															
	4.	The power drifts of the DUT measured by the DASY4 system during the SAR evaluations were <5% from the start power.															
	5.	The DUT batteries were fully charged prior to the SAR evaluations.															
	6.	The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported in the table above were consistent for all measurement periods.															
	7.	The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations (see Appendix C).															
	8.	The SAR evaluations were performed within 24 hours of the system performance check.															

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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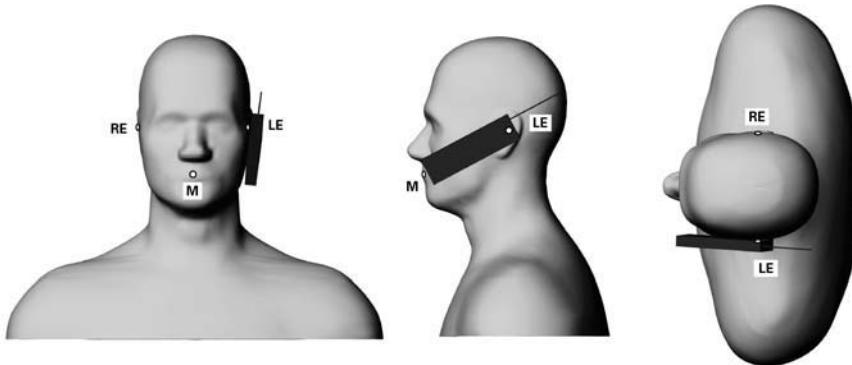
## 5.0 DETAILS OF SAR EVALUATION

The Ascalade Technologies Inc. Model(s): VOIP841XY/ZZ Portable UPCS DECT VoIP Handset FCC ID: PBWB187R26H was compliant for localized Specific Absorption Rate (Uncontrolled Exposure) based on the test provisions and conditions described below. Detailed measurement data and plots showing the maximum SAR location of the DUT are reported in Appendix A. The detailed test setup photographs are shown in Appendix D.

### Ear-held Configuration(s)

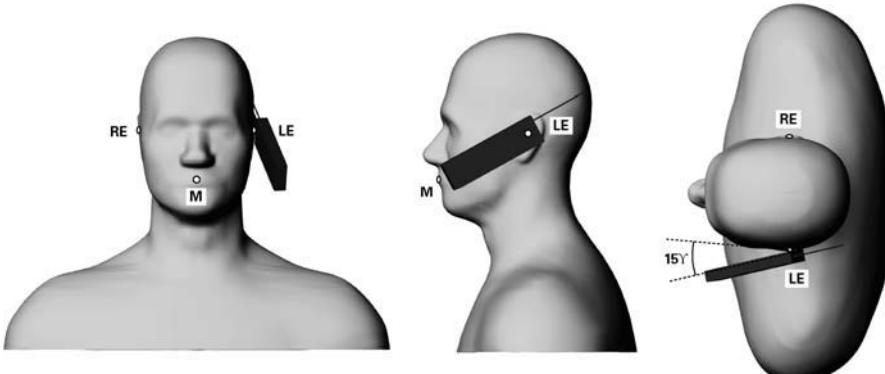
- 1) The DUT was tested in an ear-held configuration on both the left and right sections of the SAM phantom at the mid channel of the operating band. The transmission band of the DUT is less than 10 MHz; therefore mid channel data only was reported (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - 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).**

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Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		

 Celltech <small>Testing and Engineering Services Lab</small>	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 <b>IAC-MRA</b> <small>ACCREDITED</small>
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Certificate No. 2470.01

## DETAILS OF SAR EVALUATION (Cont.)

### Body-worn Configuration(s)

- 2) The DUT was tested in a body-worn configuration with the back side of the device placed parallel to the outer surface of the SAM phantom (planar section). The attached belt-clip accessory was touching the outer surface of the SAM phantom (planar section) and provided a 4 mm separation distance from the back of the DUT to the SAM phantom (planar section). The DUT was evaluated for body-worn SAR with an ear-microphone audio accessory connected to the audio port.

### Test Mode(s) & Power Setting(s)

- 3) The DUT was placed in test mode using internal test software program controlled by the handset keypad.
- 4) The DUT was tested at maximum power in TDMA modulation with a duty cycle of 4% and a crest factor of 1:25.
- 5) The RF conducted output power of the DUT could not be measured prior to the SAR evaluations due to an internal antenna. The DUT was evaluated for SAR at the maximum RF conducted output power level preset by the manufacturer.
- 6) The radiated output power (EIRP) of the DUT was measured by Ascalade Technologies Inc. prior to the SAR evaluations using the same test sample.
- 7) The DUT batteries were fully charged prior to the SAR evaluations.
- 8) The power drift of the DUT during the SAR evaluations was measured by the DASY4 system.

### Test Conditions

- 9) The ambient and fluid temperatures were measured prior to, and during, the fluid dielectric parameter check and the SAR evaluations. The temperatures reported were consistent for all measurement periods.
- 10) The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using an ALS-PR-DIEL Dielectric Probe Kit and an HP 8753ET Network Analyzer (see Appendix C).
- 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 from 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 F). 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 points) to ensure complete capture of the peak spatial-average SAR.

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## EVALUATION PROCEDURES (Cont.)

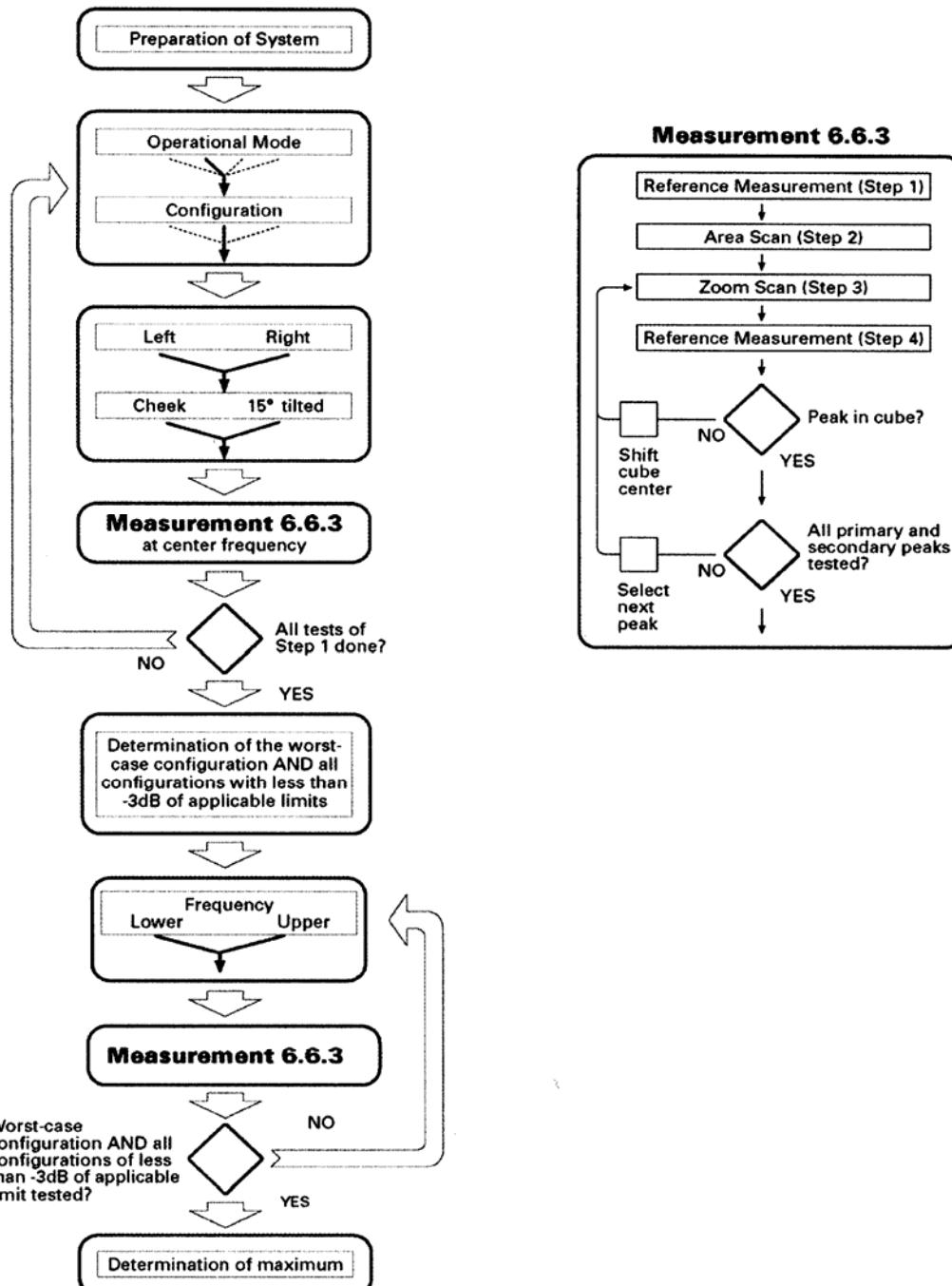


Figure 3. Flow Chart for determining the largest peak spatial-average SAR from all device configurations per IEEE Standard 1528-2003 (see reference [5]).

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		

## 7.0 SYSTEM PERFORMANCE CHECK

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

### SYSTEM PERFORMANCE CHECK EVALUATION

Test Date	Equiv. Tissue	SAR 1g (W/kg)			Dielectric Constant $\epsilon_r$			Conductivity $\sigma$ (mho/m)			$\rho$ (Kg/m <sup>3</sup> )	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
		MHz	IEEE Target	Meas.	Dev.	IEEE Target	Meas.	Dev.	IEEE Target	Meas.	Dev.					
10/20/06	Brain 1900	9.93 $\pm 10\%$	10.1	+1.7%	40.0 $\pm 5\%$	38.3	-4.3%	1.40 $\pm 5\%$	1.39	-0.7%	1000	23.5	22.8	$\geq 15$	35	102.0
Note(s):		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.														

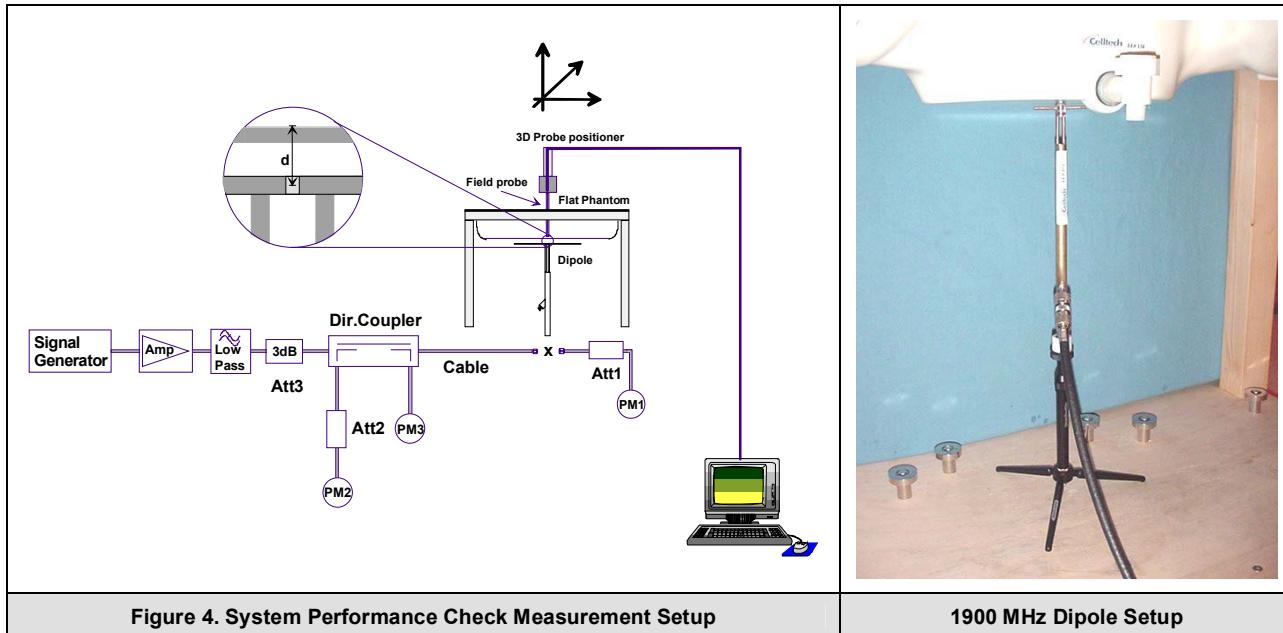


Figure 4. System Performance Check Measurement Setup

1900 MHz Dipole Setup



Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## 8.0 SIMULATED EQUIVALENT TISSUES

The 1900/1920MHz simulated equivalent tissue mixtures consisted of Glycol-monobutyl, water, and salt. The fluids were prepared according to standardized procedures and measured for dielectric parameters (permittivity and conductivity).

1900/1920 MHz SIMULATED TISSUE MIXTURES			
INGREDIENT	1900 MHz Brain	1920 MHz Brain	1920 MHz Body
	System Performance Check	DUT Evaluation	DUT Evaluation
Water	55.85 %	55.85 %	69.85 %
Glycol Monobutyl	44.00 %	44.00 %	29.89 %
Salt	0.15 %	0.15 %	0.26 %

## 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
Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.		
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.		

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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## 10.0 ROBOT SYSTEM SPECIFICATIONS

<u>Specifications</u>	
Positioner	Stäubli Unimation Corp. Robot Model: RX60L
Repeatability	0.02 mm
No. of axis	6
<u>Data Acquisition Electronic (DAE) System</u>	
<u>Cell Controller</u>	
Processor	AMD Athlon XP 2400+
Clock Speed	2.0 GHz
Operating System	Windows XP Professional
<u>Data Converter</u>	
Features	Signal Amplifier, multiplexer, A/D converter, and control logic
Software	Measurement Software: DASY4, V4.7 Build 44 Postprocessing Software: SEMCAD, V1.8 Build 171
Connecting Lines	Optical downlink for data and status info.; Optical uplink for commands and clock
<u>DASY4 Measurement Server</u>	
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
<u>E-Field Probe</u>	
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)
<u>Phantom(s)</u>	
Type	SAM V4.0C
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 25 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, glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In brain simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy $\pm$ 8%)
Frequency:	10 MHz to $>$ 6 GHz; Linearity: $\pm$ 0.2 dB (30 MHz to 3 GHz)
Directivity:	$\pm$ 0.2 dB in brain tissue (rotation around probe axis) $\pm$ 0.4 dB in brain tissue (rotation normal to probe axis)
Dynamic Range:	5 $\mu$ W/g to $>$ 100 mW/g; Linearity: $\pm$ 0.2 dB
Surface Detect:	$\pm$ 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
Application:	Distance from probe tip to dipole centers: 2.7 mm General dosimetry up to 3 GHz Compliance tests of mobile 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 G 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



Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## 14.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED		CALIBRATION DUE DATE
USED	DESCRIPTION					
x	Schmid & Partner DASY4 System	-	-	-	-	-
x	-DASY4 Measurement Server	00158	1078	N/A	N/A	N/A
x	-Robot	00046	599396-01	N/A	N/A	N/A
x	-DAE4	00019	353	21Jun06	21Jun07	
	-DAE3	00018	370	08Feb06	08Feb07	
x	-ET3DV6 E-Field Probe	00016	1387	16Mar06	16Mar07	
	-EX3DV4 E-Field Probe	00125	3547	14Feb06	14Feb07	
	-300MHz Validation Dipole	00023	135	25Oct05	25Oct06	
	-450MHz Validation Dipole	00024	136	25Oct05	25Oct06	
	-835MHz Validation Dipole	00022	411	Brain	28Mar06	28Mar07
				Body	27Mar06	27Mar07
	-900MHz Validation Dipole	00020	054	Brain	06Jun06	06Jun07
				Body	06Jun06	06Jun07
	-1640MHz Validation Dipole	00212	0175	Brain	14Aug06	14Aug07
	-1800MHz Validation Dipole	00021	247	Brain	08Jun06	08Jun07
				Body	09Jun06	09Jun07
x	-1900MHz Validation Dipole	00032	151	Brain	09Jun06	09Jun07
				Body	12Jun06	12Jun07
	-2450MHz Validation Dipole	00025	150	Body	24Apr06	24Apr07
	5GHz Validation Dipole	00126	1031	Body	18Jul06	18Jul07
	5200MHz			Brain	15Mar06	15Mar07
	5800MHz			Body	18Jul06	18Jul07
x	-SAM Phantom V4.0C	00154	1033	N/A	N/A	N/A
	-Barski Planar Phantom	00155	03-01	N/A	N/A	N/A
	-Plexiglas Side Planar Phantom	00156	161	N/A	N/A	N/A
	-Plexiglas Validation Planar Phantom	00157	137	N/A	N/A	N/A
x	ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A	N/A	N/A
x	Gigatronics 8652A Power Meter	00110	1835801	12Apr06	12Apr07	
	Gigatronics 8652A Power Meter	00007	1835272	03Feb06	03Feb07	
x	Gigatronics 80701A Power Sensor	00011	1833542	03Feb06	03Feb07	
	Gigatronics 80701A Power Sensor	00013	1833713	03Feb06	03Feb07	
x	HP 8753ET Network Analyzer	00134	US39170292	18Apr06	18Apr07	
x	HP 8648D Signal Generator	00005	3847A00611	N/A	N/A	N/A
	Rohde & Schwarz SMR40 Signal Generator	00006	100104	06Apr06	06Apr07	
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	N/A	N/A	N/A
	HP E4408B Spectrum Analyzer	00015	US39240170	02Feb06	02Feb07	

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
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## 15.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	$V_i$ or $V_{eff}$
<b>Measurement System</b>						
Probe calibration (1925 MHz)	3.5	Normal	1	1	3.5	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	0.7	1.9	∞
Spherical isotropy of the probe	9.6	Rectangular	1.732050808	0.7	3.9	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	1	Rectangular	1.732050808	1	0.6	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0.8	Rectangular	1.732050808	1	0.5	∞
Integration time	2.6	Rectangular	1.732050808	1	1.5	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
<b>Test Sample Related</b>						
Device positioning	2.9	Normal	1	1	2.9	12
Device holder uncertainty	3.6	Normal	1	1	3.6	8
Power drift	5	Rectangular	1.732050808	1	2.9	∞
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.5	Normal	1	0.64	1.6	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	2.5	Normal	1	0.6	1.5	∞
<b>Combined Standard Uncertainty</b>					9.69	
<b>Expanded Uncertainty (k=2)</b>					19.39	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])



Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## MEASUREMENT UNCERTAINTIES (CONT.)

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	$V_i$ or $V_{eff}$
<b>Measurement System</b>						
Probe calibration (1900 MHz)	5.5	Normal	1	1	5.5	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	∞
Spherical isotropy of the probe	0	Rectangular	1.732050808	1	0.0	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	1	Rectangular	1.732050808	1	0.6	∞
Probe linearity	4.7	Rectangular	1.732050808	1	2.7	∞
Detection limit	1	Rectangular	1.732050808	1	0.6	∞
Readout electronics	0.3	Normal	1	1	0.3	∞
Response time	0	Rectangular	1.732050808	1	0.0	∞
Integration time	0	Rectangular	1.732050808	1	0.0	∞
RF ambient conditions	3	Rectangular	1.732050808	1	1.7	∞
Mech. constraints of robot	0.4	Rectangular	1.732050808	1	0.2	∞
Probe positioning	2.9	Rectangular	1.732050808	1	1.7	∞
Extrapolation & integration	1	Rectangular	1.732050808	1	0.6	∞
<b>Test Sample Related</b>						
Dipole Positioning	2	Normal	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Normal	1.732050808	1	2.7	∞
<b>Phantom and Setup</b>						
Phantom uncertainty	4	Rectangular	1.732050808	1	2.3	∞
Liquid conductivity (target)	5	Rectangular	1.732050808	0.64	1.8	∞
Liquid conductivity (measured)	2.5	Normal	1	0.64	1.6	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	2.5	Normal	1	0.6	1.5	∞
<b>Combined Standard Uncertainty</b>					<b>8.79</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>17.57</b>	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 IAC-MRA ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## 16.0 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: 1999.
- [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 - "Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)", Radio Standards Specification RSS-102 Issue 2: November 2005.
- [5] IEEE Standard 1528-2003 - "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques": December 2003.

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## APPENDIX A - SAR MEASUREMENT DATA

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	<b>Ascalade</b>
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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 <b>Celltech</b> Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 <b>IAC-MRA</b> ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 10/20/2006

### Head SAR - Left Ear - Tilt Position (15°) - Mid Channel - 1924.992 MHz

**DUT: Ascalade Model: VOIP841XY/ZZ; Type: Portable UPCS DECT VoIP Handset; Serial: MS000639010017**

Ambient Temp: 23.5°C; Fluid Temp: 22.8°C; Barometric Pressure: 102.0 kPa; Humidity: 35%

Communication System: TDMA

RF Output Power: 61 mW (EIRP)

NiMH Batteries 1.2V, 750mAh AAA (x2)

Frequency: 1924.992 MHz; Duty Cycle: 1:25

Medium: HSL1900;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 38.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5, 5, 5); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Head SAR - Left Ear - Tilt Position (15°) - Mid Channel - 1924.992 MHz

**Area Scan (8x14x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.019 mW/g

### Head SAR - Left Ear - Tilt Position (15°) - Mid Channel - 1924.992 MHz

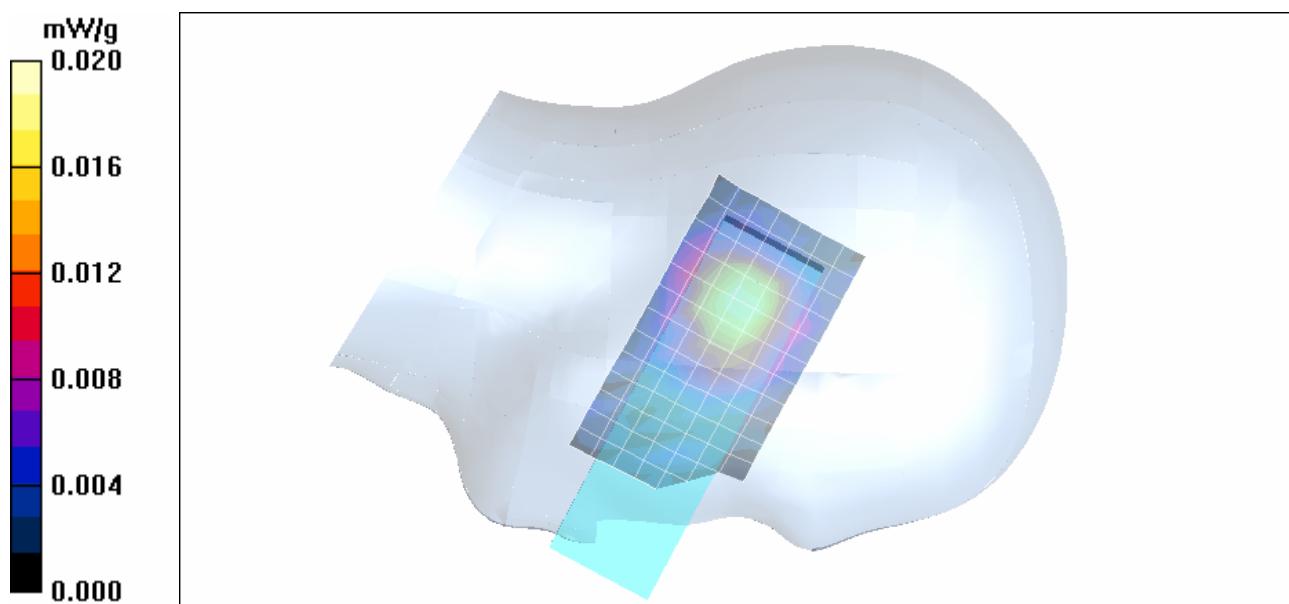
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.62 V/m; Power Drift = -0.0169 dB

Peak SAR (extrapolated) = 0.031 W/kg

**SAR(1 g) = 0.0174 mW/g; SAR(10 g) = 0.011 mW/g**

Maximum value of SAR (measured) = 0.020 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>	<b>Portable UPCS DECT VoIP Handset</b>			<b>Tx: 1921.536-1928.448 MHz</b>		
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 <b>Celltech</b> Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 <b>IAC-MRA</b> ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 10/20/2006

### Head SAR - Left Ear - Cheek/Touch Position - Mid Channel - 1924.992 MHz

**DUT: Ascalade Model: VOIP841XY/ZZ; Type: Portable UPCS DECT VoIP Handset; Serial: MS000639010017**

Ambient Temp: 23.5°C; Fluid Temp: 22.8°C; Barometric Pressure: 102.0 kPa; Humidity: 35%

Communication System: TDMA

RF Output Power: 61 mW (EIRP)

NiMH Batteries 1.2V, 750mAh AAA (x2)

Frequency: 1924.992 MHz; Duty Cycle: 1:25

Medium: HSL1900;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 38.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5, 5, 5); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Head SAR - Left Ear - Cheek/Touch Position - Mid Channel - 1924.992 MHz

**Area Scan (8x14x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.032 mW/g

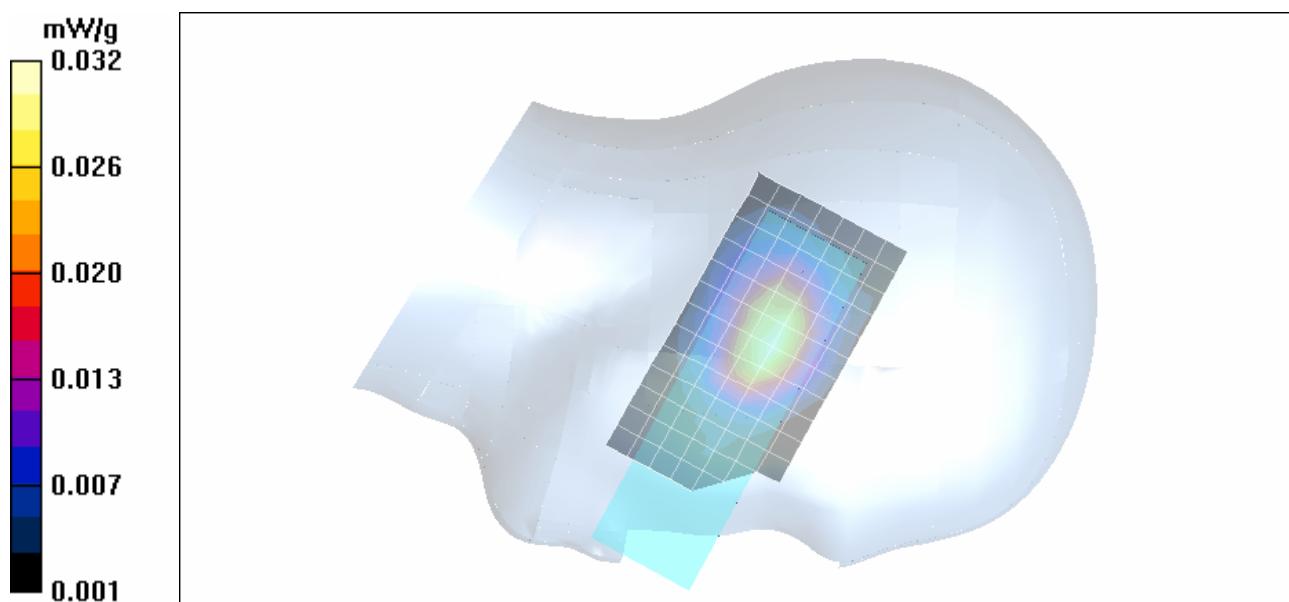
### Head SAR - Left Ear - Cheek/Touch Position - Mid Channel - 1924.992 MHz

**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.70 V/m; Power Drift = 0.101 dB

Peak SAR (extrapolated) = 0.051 W/kg

**SAR(1 g) = 0.0284 mW/g; SAR(10 g) = 0.017 mW/g**



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>	<b>Portable UPCS DECT VoIP Handset</b>			<b>Tx: 1921.536-1928.448 MHz</b>		
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

### Fluid Depth (>15cm)



Left Head Section



Right Head Section

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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 <b>Celltech</b> Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 <b>IAC-MRA</b>  <b>ACCREDITED</b>
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 10/20/2006

### Head SAR - Right Ear - Tilt Position (15°) - Mid Channel - 1924.992 MHz

**DUT: Ascalade Model: VOIP841XY/ZZ; Type: Portable UPCS DECT VoIP Handset; Serial: MS000639010017**

Ambient Temp: 23.5°C; Fluid Temp: 22.8°C; Barometric Pressure: 102.0 kPa; Humidity: 35%

Communication System: TDMA

RF Output Power: 61 mW (EIRP)

NiMH Batteries 1.2V, 750mAh AAA (x2)

Frequency: 1924.992 MHz; Duty Cycle: 1:25

Medium: HSL1900;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 38.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5, 5, 5); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Head SAR - Right Ear - Tilt Position (15°) - Mid Channel - 1924.992 MHz

**Area Scan (8x14x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.018 mW/g

### Head SAR - Right Ear - Tilt Position (15°) - Mid Channel - 1924.992 MHz

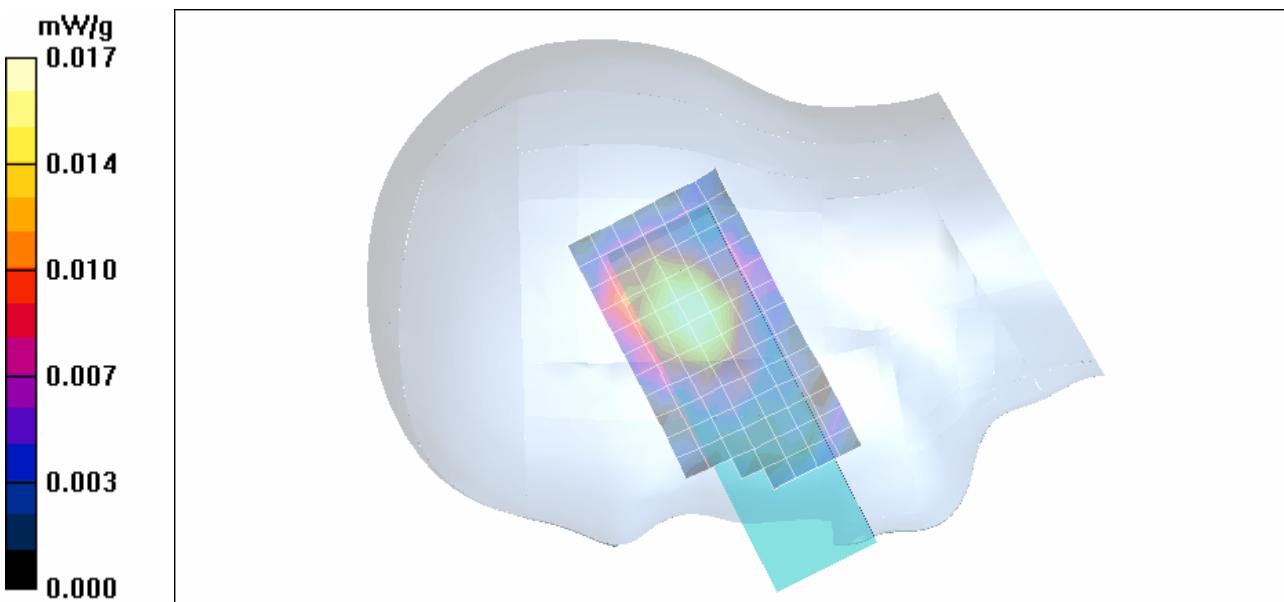
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.41 V/m; Power Drift = 0.0436 dB

Peak SAR (extrapolated) = 0.026 W/kg

**SAR(1 g) = 0.0158 mW/g; SAR(10 g) = 0.00991 mW/g**

Maximum value of SAR (measured) = 0.017 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>	<b>Portable UPCS DECT VoIP Handset</b>			<b>Tx: 1921.536-1928.448 MHz</b>		
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 <b>Celltech</b> Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 <b>IAC-MRA</b> ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 10/20/2006

### Head SAR - Right Ear - Cheek/Touch Position - Mid Channel - 1924.992 MHz

**DUT: Ascalade Model: VOIP841XY/ZZ; Type: Portable UPCS DECT VoIP Handset; Serial: MS000639010017**

Ambient Temp: 23.5°C; Fluid Temp: 22.8°C; Barometric Pressure: 102.0 kPa; Humidity: 35%

Communication System: TDMA

RF Output Power: 61 mW (EIRP)

NiMH Batteries 1.2V, 750mAh AAA (x2)

Frequency: 1924.992 MHz; Duty Cycle: 1:25

Medium: HSL1900;  $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 38.1$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5, 5, 5); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Head SAR - Right Ear - Cheek/Touch Position - Mid Channel - 1924.992 MHz

**Area Scan (8x14x1):** Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.028 mW/g

### Head SAR - Right Ear - Cheek/Touch Position - Mid Channel - 1924.992 MHz

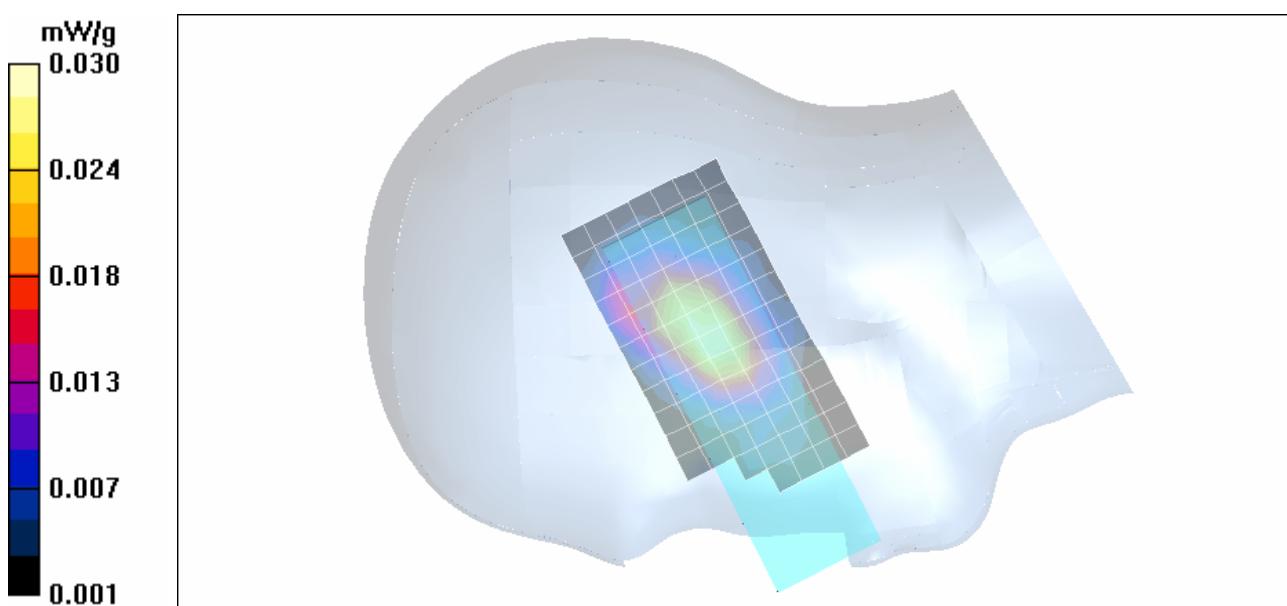
**Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 4.42 V/m; Power Drift = 0.0480 dB

Peak SAR (extrapolated) = 0.043 W/kg

**SAR(1 g) = 0.0272 mW/g; SAR(10 g) = 0.017 mW/g**

Maximum value of SAR (measured) = 0.030 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>	<b>Portable UPCS DECT VoIP Handset</b>			<b>Tx: 1921.536-1928.448 MHz</b>		
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 <b>Celltech</b> Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 <b>IAC-MRA</b> ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 10/20/2006

### Body-Worn SAR - Back Side of DUT with Plastic Belt-Clip - Mid Channel - 1924.992 MHz

DUT: Ascalade Model: VOIP841XY/ZZ; Type: Portable UPCS DECT VoIP Handset; Serial: MS000639010017

Body-Worn Accessory: Plastic Belt-Clip (4 mm); Audio Accessory: Ear-Microphone (P/N: WDCP045)

Ambient Temp: 24.3°C; Fluid Temp: 23.1°C; Barometric Pressure: 102.0 kPa; Humidity: 35%

Communication System: TDMA

RF Output Power: 61 mW (EIRP)

NiMH Batteries 1.2V, 750mAh AAA (x2)

Frequency: 1924.992 MHz; Duty Cycle: 1:25

Medium: M1900;  $\sigma = 1.50 \text{ mho/m}$ ;  $\epsilon_r = 51.6$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(4.7, 4.7, 4.7); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Body-worn SAR - 4 mm Belt-Clip spacing from Back of DUT to Planar Phantom - Mid Channel - 1924.992 MHz

Area Scan (8x19x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.014 mW/g

### Body-worn SAR - 4 mm Belt-Clip spacing from Back of DUT to Planar Phantom - Mid Channel - 1924.992 MHz

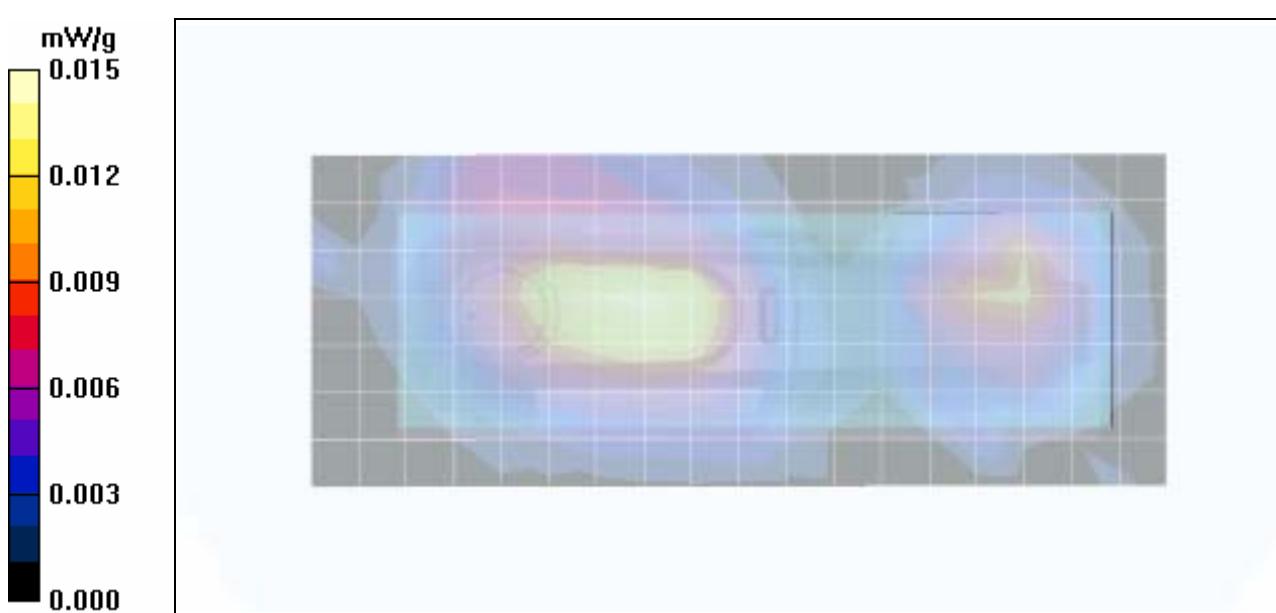
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 3.12 V/m; Power Drift = 0.185 dB

Peak SAR (extrapolated) = 0.024 W/kg

**SAR(1 g) = 0.0138 mW/g; SAR(10 g) = 0.00823 mW/g**

Maximum value of SAR (measured) = 0.015 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>	<b>Portable UPCS DECT VoIP Handset</b>			<b>Tx: 1921.536-1928.448 MHz</b>		
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	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## Fluid Depth (>15cm)



**Planar Section**

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	<b>Ascalade</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>			
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



## APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	<b>Ascalade</b>
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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 <b>Celltech</b> Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 <b>IAC-MRA</b> ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 10/20/2006

## System Performance Check (Brain) - 1900 MHz Dipole

**DUT: Dipole 1900 MHz; Model: D1900V2; Serial: 151; Validation: 06/09/2006**

Ambient Temp: 23.5°C; Fluid Temp: 22.8°C; Barometric Pressure: 102.0 kPa; Humidity: 35%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900;  $\sigma = 1.39 \text{ mho/m}$ ;  $\epsilon_r = 38.3$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1387; ConvF(5, 5, 5); Calibrated: 16/03/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

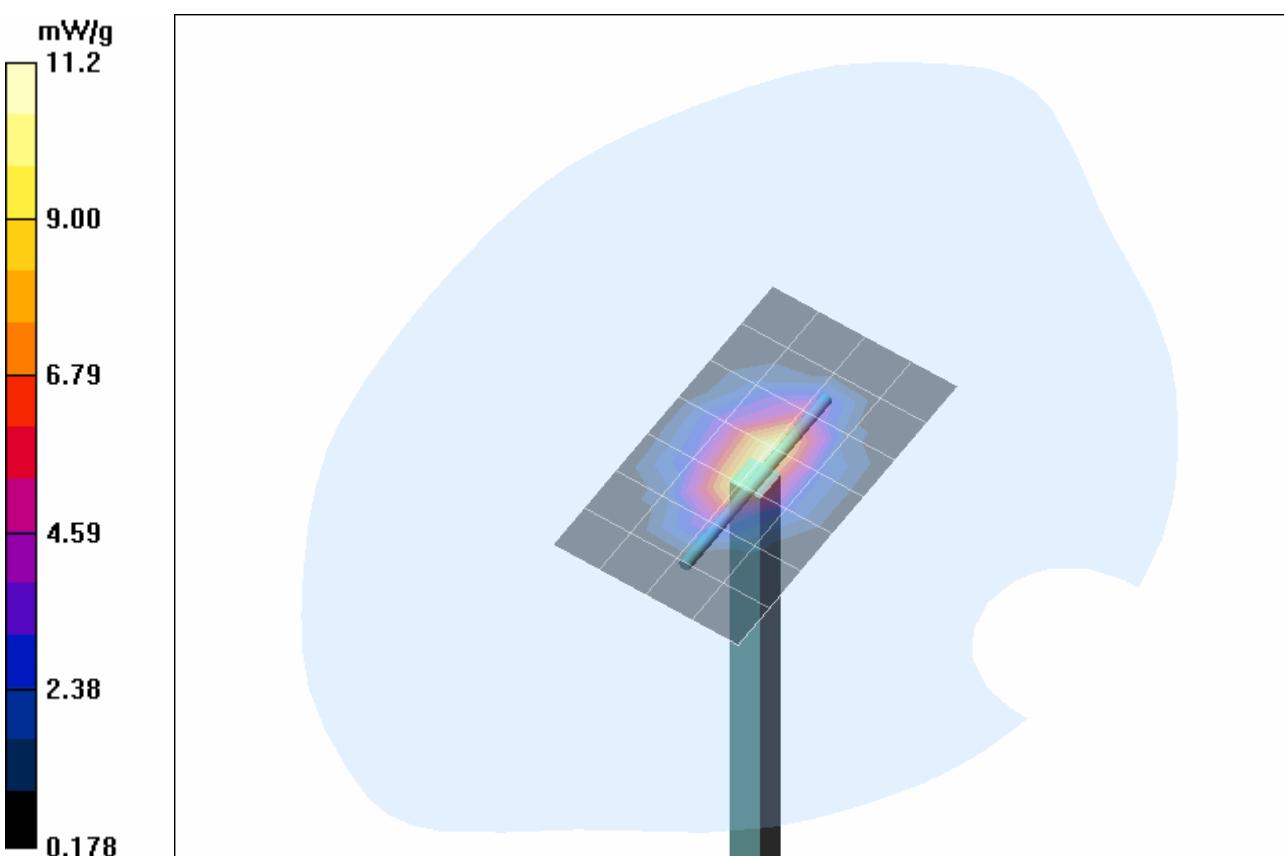
**1900 MHz Dipole - System Performance Check/Area Scan (5x8x1):** Measurement grid: dx=15mm, dy=15mm  
Maximum value of SAR (measured) = 10.4 mW/g

**1900 MHz Dipole - System Performance Check/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm  
Reference Value = 89.3 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 19.5 W/kg

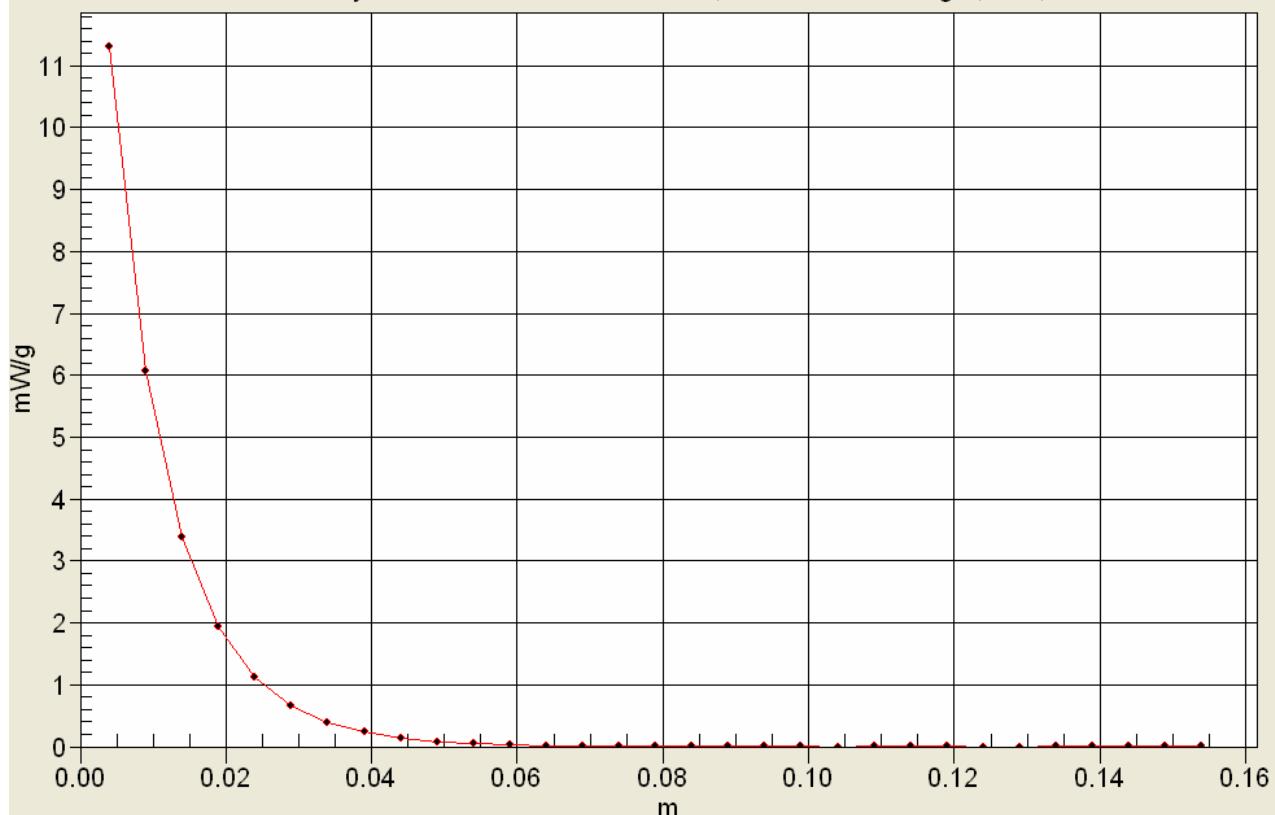
**SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.11 mW/g**

Maximum value of SAR (measured) = 11.2 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>	<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>			
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**Z-Axis Scan**

 SAR(x,y,z,f0)  
 1900 MHz System Performance Check SAR; Z Scan:Value Along Z, X=0, Y=0




Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	<b>Ascalade</b>
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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 Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## 1900 MHz System Performance Check & 1920 MHz DUT Evaluation (Head)

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Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Fri 20/Oct/2006

Frequency (GHz)

FCC\_eHFCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon  
 FCC\_sHFCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

---

Freq	FCC_eHFCC_sH	Test_e	Test_s
1.8000	40.00	1.40	38.68
1.8100	40.00	1.40	38.65
1.8200	40.00	1.40	38.63
1.8300	40.00	1.40	38.56
1.8400	40.00	1.40	38.52
1.8500	40.00	1.40	38.59
1.8600	40.00	1.40	38.42
1.8700	40.00	1.40	38.40
1.8800	40.00	1.40	38.35
1.8900	40.00	1.40	38.29
1.9000	40.00	1.40	38.30
1.9100	40.00	1.40	38.25
1.9200	40.00	1.40	38.14
1.9300	40.00	1.40	38.18
1.9400	40.00	1.40	38.20
1.9500	40.00	1.40	38.13
1.9600	40.00	1.40	38.11
1.9700	40.00	1.40	38.05
1.9800	40.00	1.40	38.04
1.9900	40.00	1.40	37.96
2.0000	40.00	1.40	38.00

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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 <b>Celltech</b> <small>Testing and Engineering Services Lab</small>	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## 1920 MHz DUT Evaluation (Body)

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Fri 20/Oct/2006

Frequency (GHz)

FCC\_eHFCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon  
 FCC\_sHFCC Bulletin 65 Supplement C (June 2001) Limits for Head Sigma

FCC\_eB FCC Limits for Body Epsilon

FCC\_sB FCC Limits for Body Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
1.8000	53.30	1.52	51.86	1.40
1.8100	53.30	1.52	51.99	1.41
1.8200	53.30	1.52	51.85	1.41
1.8300	53.30	1.52	51.82	1.41
1.8400	53.30	1.52	51.66	1.42
1.8500	53.30	1.52	51.56	1.44
1.8600	53.30	1.52	51.62	1.44
1.8700	53.30	1.52	51.57	1.45
1.8800	53.30	1.52	51.50	1.47
1.8900	53.30	1.52	51.42	1.48
1.9000	53.30	1.52	51.50	1.49
1.9100	53.30	1.52	51.47	1.50
<b>1.9200</b>	<b>53.30</b>	<b>1.52</b>	<b>51.60</b>	<b>1.50</b>
1.9300	53.30	1.52	51.52	1.53
1.9400	53.30	1.52	51.40	1.53
1.9500	53.30	1.52	51.40	1.53
1.9600	53.30	1.52	51.45	1.55
1.9700	53.30	1.52	51.34	1.56
1.9800	53.30	1.52	51.26	1.58
1.9900	53.30	1.52	51.15	1.59
2.0000	53.30	1.52	51.30	1.61

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	<b>Ascalade</b>
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

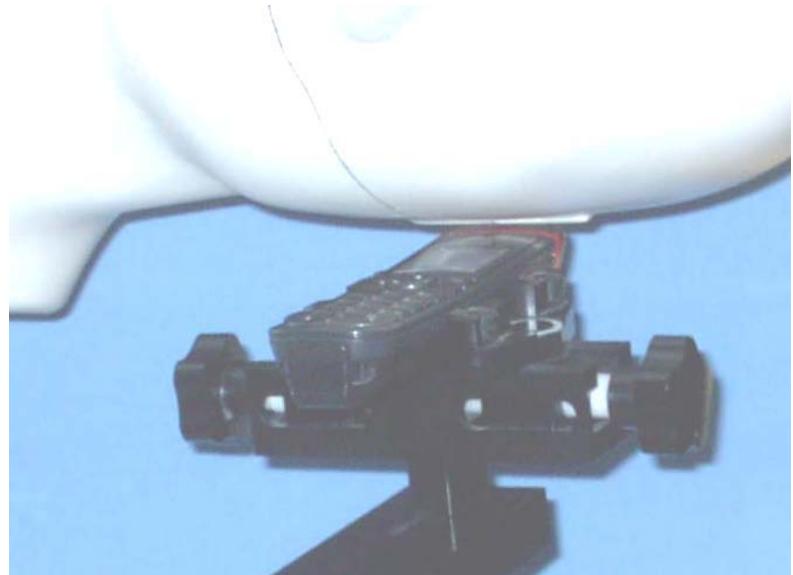
RF Exposure Category  
General Population



Certificate No. 2470.01

## HEAD SAR TEST SETUP PHOTOGRAPHS

Left Head Section / Ear-Tilt Position (15°)



Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		



Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

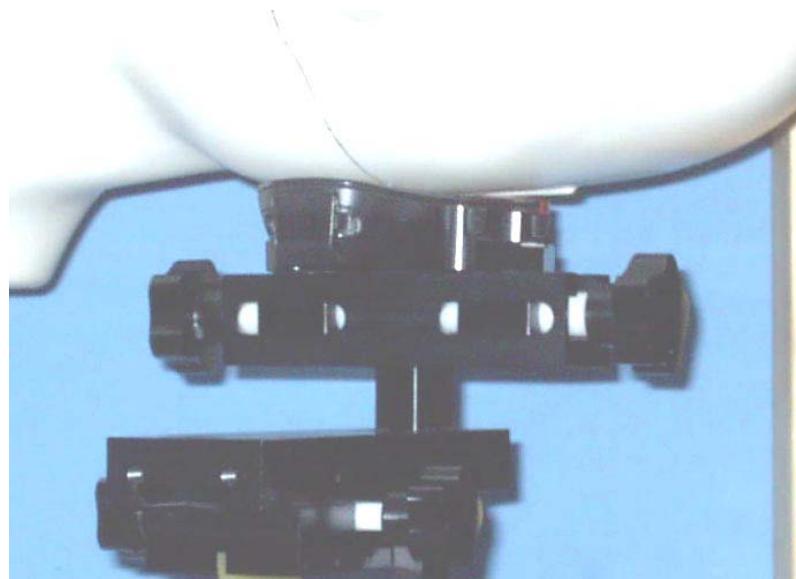
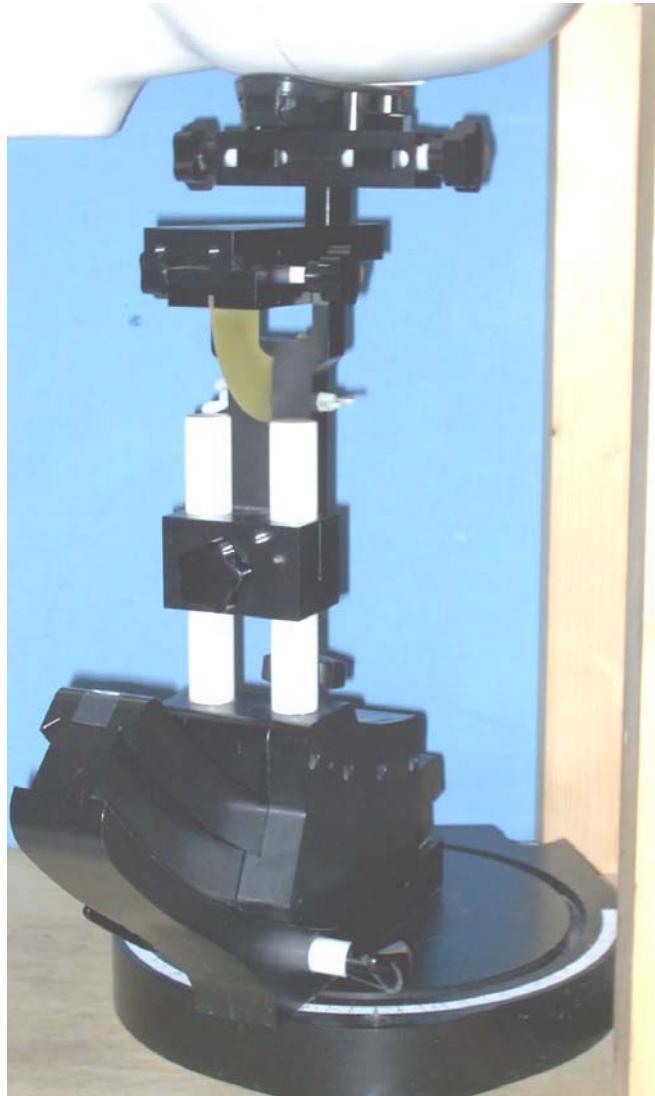
RF Exposure Category  
General Population



Certificate No. 2470.01

## HEAD SAR TEST SETUP PHOTOGRAPHS

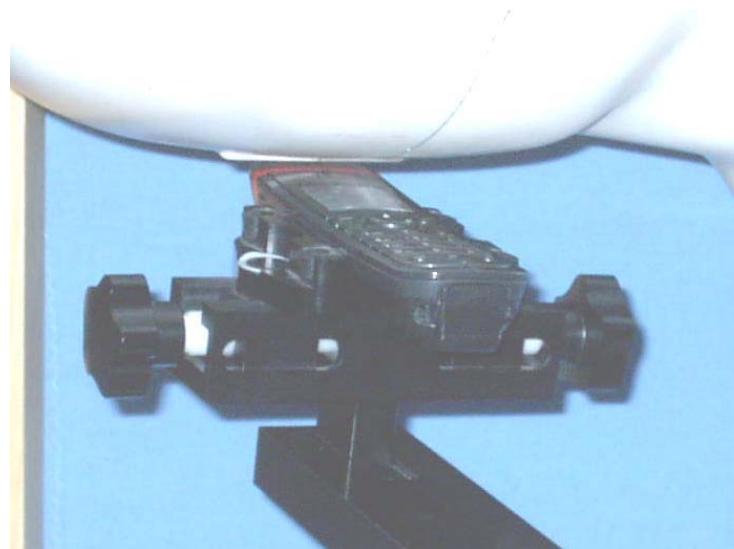
Left Head Section / Cheek-Touch Position



Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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## HEAD SAR TEST SETUP PHOTOGRAPHS

Right Head Section / Ear-Tilt Position (15°)



<b>Company:</b>	Ascalade Technologies Inc.		<b>FCC ID:</b>	PBWB187R26H	<b>IC ID:</b>	3842A-B187	
<b>Model(s):</b>	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz			
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

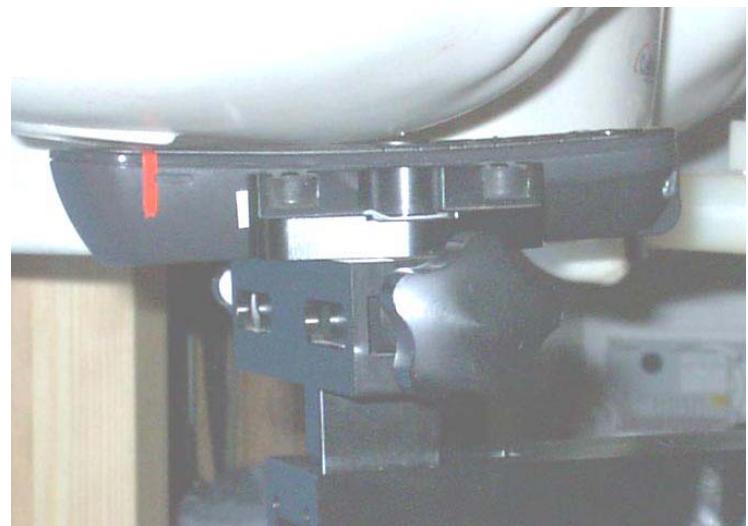
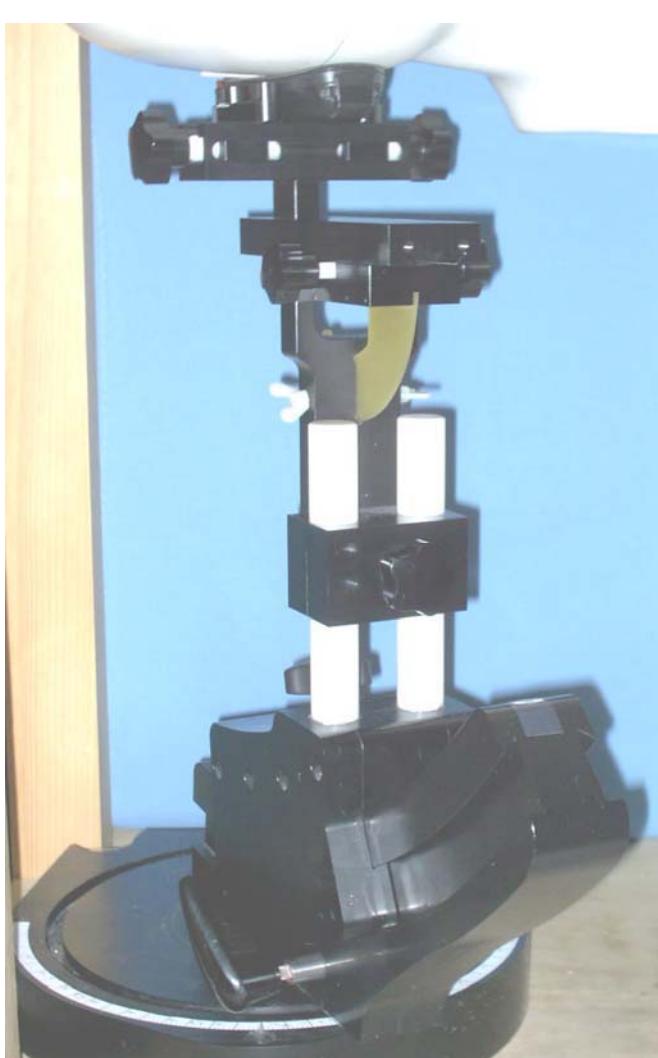
Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



## HEAD SAR TEST SETUP PHOTOGRAPHS

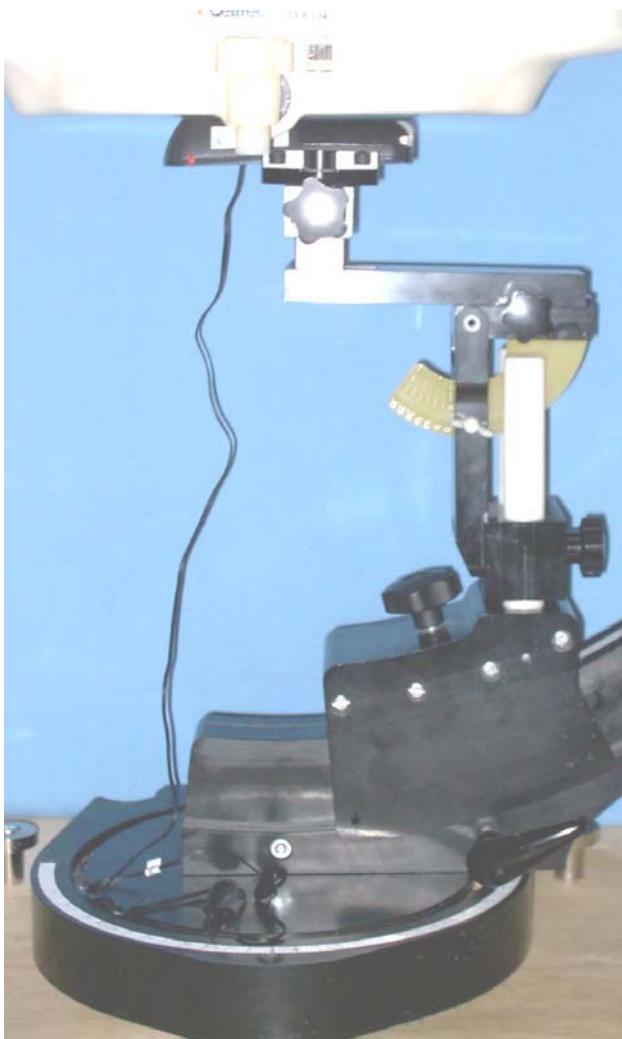
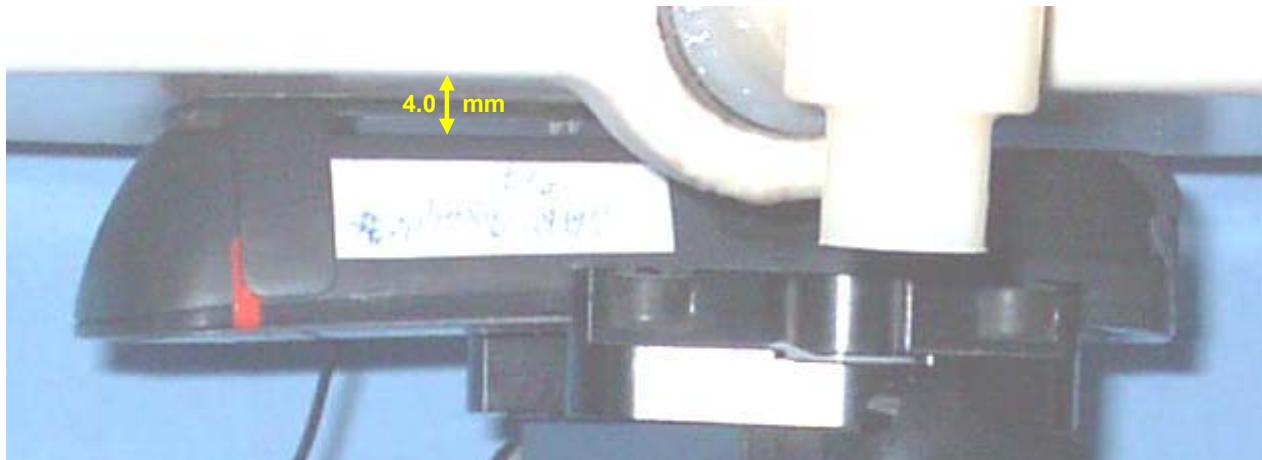
Right Head Section / Cheek-Touch Position



Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPSCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		

## BODY-WORN SAR TEST SETUP PHOTOGRAPHS

4 mm Belt-Clip Spacing from Back of DUT to Planar Phantom  
With Ear-Microphone Audio Accessory (P/N: WDCP045)



<b>Company:</b>	Ascalade Technologies Inc.		<b>FCC ID:</b>	PBWB187R26H	<b>IC ID:</b>	3842A-B187	<b>Ascalade</b>
<b>Model(s):</b>	PHILIPS VOIP841XY/ZZ	Portable UPSCS DECT VoIP Handset			Tx: 1921.536-1928.448 MHz		
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Date(s) of Evaluation  
October 20, 2006

Test Report Serial No.  
101206PBW-T782-S15T

Report Revision No.  
Revision 1.0

Report Issue Date  
October 30, 2006

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



## DUT PHOTOGRAPHS



Front of DUT



Back of DUT with Plastic Belt-Clip

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		



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General Population



Certificate No. 2470.01

## DUT PHOTOGRAPHS



Left Side of DUT with Plastic Belt-Clip



Right Side of DUT with Plastic Belt-Clip



Top end of DUT



Bottom end of DUT

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		



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RF Exposure Category  
General Population



Certificate No. 2470.01

## DUT PHOTOGRAPHS



DUT Battery Compartment



NiMH AAA Batteries



DUT with Ear-Microphone Audio Accessory (P/N: WDCP045)

Company:	Ascalade Technologies Inc.	FCC ID:	PBWB187R26H	IC ID:	3842A-B187	Ascalade
Model(s):	PHILIPS VOIP841XY/ZZ	Portable UPCS DECT VoIP Handset		Tx: 1921.536-1928.448 MHz		
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Date(s) of Evaluation  
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Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## APPENDIX E - SYSTEM VALIDATION

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	<b>Ascalade</b>
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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Date of Evaluation:	June 09, 2006		Document Issue No.:	SV1900B-060906-R1.0	
Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Brain

## 1900 MHz SYSTEM VALIDATION

Type:

**1900 MHz Validation Dipole**

Asset Number:

**00032**

Serial Number:

**151**

Place of Validation:

**Celltech Labs Inc.**

Date of Validation:

**June 09, 2006**

Celltech Labs Inc. hereby certifies that the 1900 MHz System Validation was performed on the date indicated above.

Performed by:

**Sean Johnston**

Approved by:

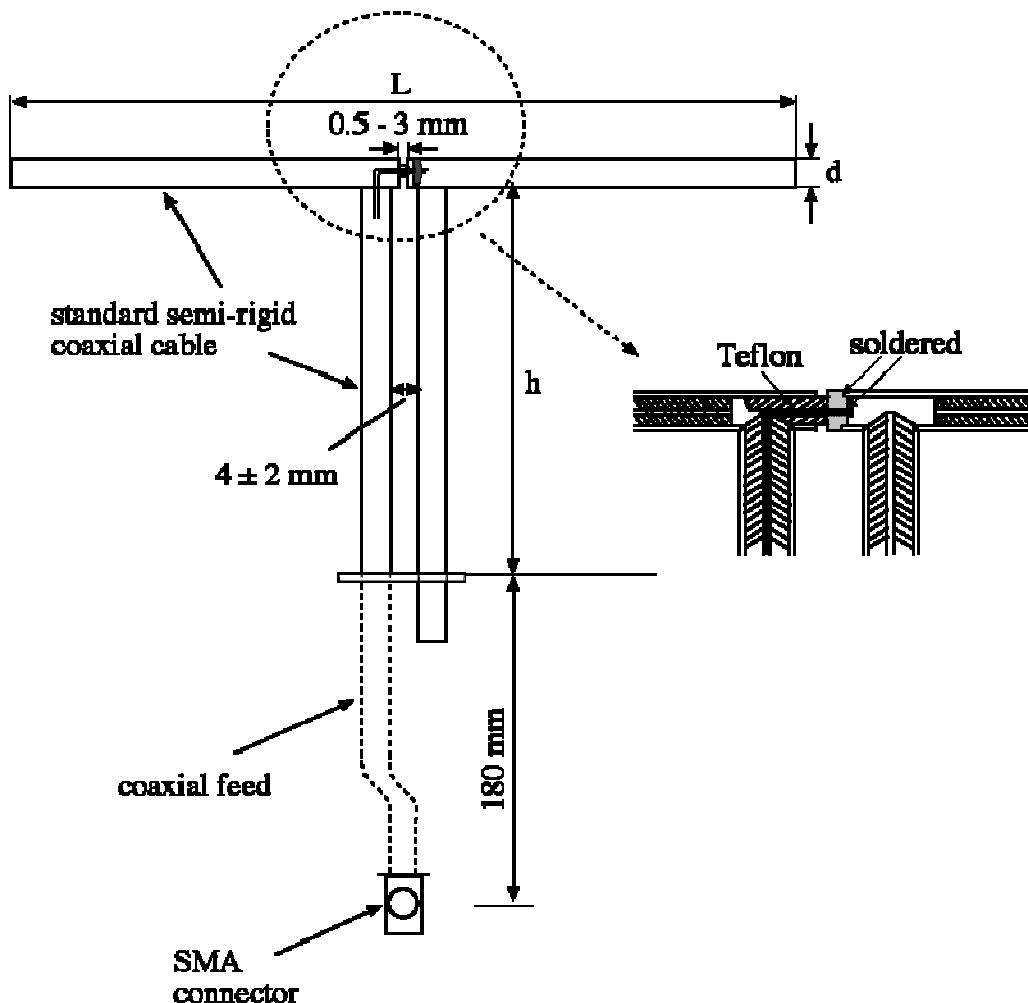
**Spencer Watson**

## 1. Dipole Construction & Electrical Characteristics

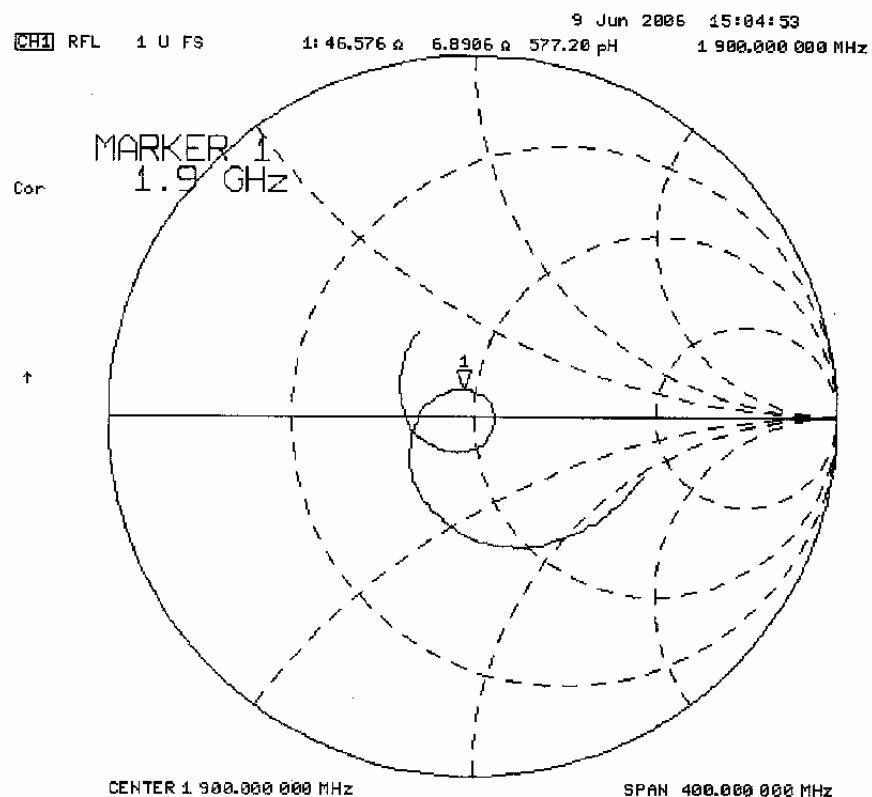
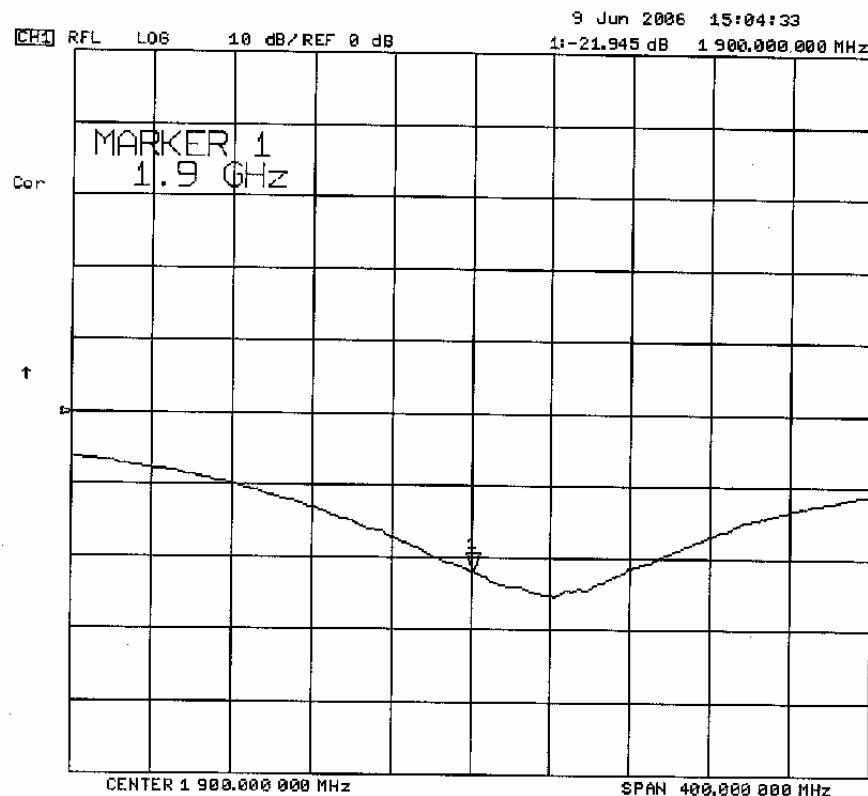
The validation dipole was constructed in accordance with the IEEE Standard “Annex G (informative) Reference dipoles for use in system validation”. The electrical properties were measured using an HP 8753ET Network Analyzer. The network analyzer was calibrated to the validation dipole N-type connector 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       $\text{Re}\{Z\} = 46.576\Omega$   
 $\text{Im}\{Z\} = 6.8906\Omega$

Return Loss at 1900MHz      -21.945 dB



## 2. Validation Dipole VSWR Data



### 3. 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

### 4. 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:**  $2.0 \pm 0.1$  mm  
**Filling Volume:** Approx. 25 liters  
**Dimensions:** 50 cm (W) x 100 cm (L)

<b>Celltech</b> Testing and Engineering Services Ltd	Date of Evaluation:	June 09, 2006	Document Issue No.:	SV1900B-060906-R1.0
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz

## 5. 1900 MHz System Validation Setup



<b>Celltech</b> Testing and Engineering Services Ltd	Date of Evaluation:	June 09, 2006	Document Issue No.:	SV1900B-060906-R1.0
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz

## 6. 1900 MHz System Validation Dipole



 <small>Testing and Engineering Services Ltd.</small>	Date of Evaluation:	June 09, 2006	Document Issue No.:	SV1900B-060906-R1.0
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz
	Fluid Type:	Brain		

## 7. Measurement Conditions

The phantom was filled with 1900 MHz Brain tissue simulant.

Relative Permittivity: 39.7 (-0.7% deviation from target)  
 Conductivity: 1.42 mho/m (+1.5% deviation from target)  
 Fluid Temperature: 23.5 °C  
 Fluid Depth: ≥ 15.0 cm

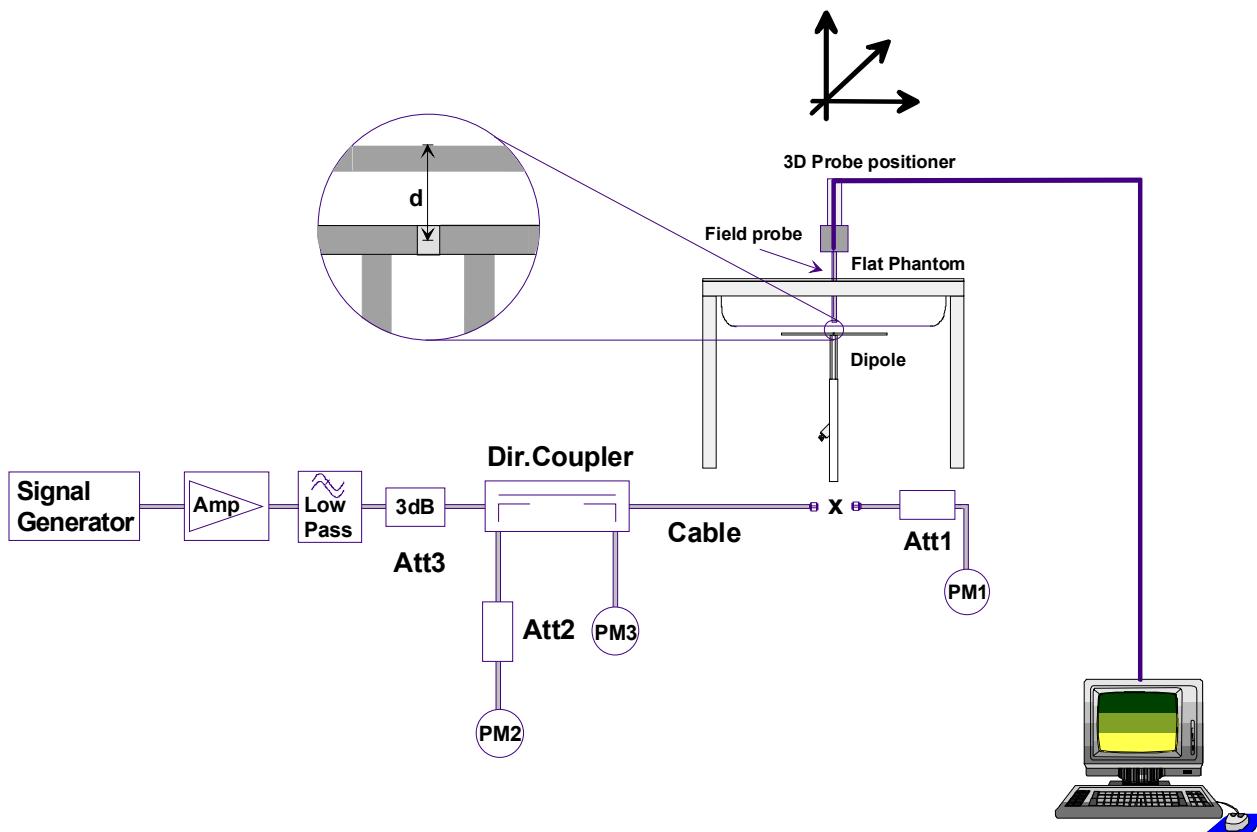
Environmental Conditions:  
 Ambient Temperature: 24.6 °C  
 Barometric Pressure: 101.2 kPa  
 Humidity: 35 %

The 1900 MHz Brain tissue simulant consisted of the following ingredients:

Ingredient	Percentage by weight
Water	55.85%
Glycol	44.00%
Salt	0.15%
Target Dielectric Parameters at 25 °C	$\epsilon_r = 40.0 (+/- 5\%)$ $\sigma = 1.40 \text{ S/m} (+/- 5\%)$

## 8. 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.

## 9. Validation Dipole SAR Test Results

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

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	10.70	42.80	5.51	22.04	12.10
Test 2	10.40	41.60	5.37	21.48	11.80
Test 3	10.30	41.20	5.33	21.32	11.60
Test 4	10.30	41.20	5.31	21.24	11.60
Test 5	10.40	41.60	5.39	21.56	11.80
Test 6	10.60	42.40	5.40	21.60	11.80
Test 7	10.60	42.40	5.40	21.60	11.80
Test 8	10.40	41.60	5.32	21.28	11.60
Test 9	10.40	41.60	5.32	21.28	11.60
Test 10	10.40	41.60	5.31	21.24	11.60
<b>Average</b>	<b>10.45</b>	<b>41.80</b>	<b>5.37</b>	<b>21.46</b>	<b>11.73</b>

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

Target SAR @ 1 Watt Input averaged over 1 gram (W/kg)	Measured SAR @ 1 Watt Input averaged over 1 gram	Deviation from Target	Target SAR @ 1 Watt Input averaged over 10 grams (W/kg)	Measured SAR @ 1 Watt Input averaged over 10 grams	Deviation from Target
39.7	+/- 10%	<b>41.8</b> W/kg	+5.3%	20.5	+/- 10%

 Testing and Engineering Services Ltd.	Date of Evaluation:	June 09, 2006		Document Issue No.:	SV1900B-060906-R1.0	
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Brain

## System Validation (Brain) - 1900 MHz Dipole - June 9, 2006

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 151; Asset: 00032

Ambient Temp: 24.6 °C; Fluid Temp: 23.5 °C; Barometric Pressure: 101.2 kPa; Humidity: 35%

Communication System: CW

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900 ( $\sigma = 1.42 \text{ mho/m}$ ;  $\epsilon_r = 39.7$ ;  $\rho = 1000 \text{ kg/m}^3$ )

- Probe: EX3DV4 - SN3547; ConvF(8.2, 8.2, 8.2); Calibrated: 14/02/2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370; Calibrated: 08/02/2006
- Phantom: SAM 4.0; Type: Fiberglas; Serial: 1033
- Measurement SW: DASY4, V4.6 Build 23; Postprocessing SW: SEMCAD, V1.8 Build 161

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

**1900 MHz System Validation/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.7 V/m; Power Drift = 0.037 dB

**SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.51 mW/g**

Maximum value of SAR (measured) = 12.1 mW/g

**1900 MHz System Validation/Zoom Scan 2 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.8 V/m; Power Drift = 0.003 dB

**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.37 mW/g**

Maximum value of SAR (measured) = 11.8 mW/g

**1900 MHz System Validation/Zoom Scan 3 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.7 V/m; Power Drift = 0.020 dB

**SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.33 mW/g**

Maximum value of SAR (measured) = 11.6 mW/g

**1900 MHz System Validation/Zoom Scan 4 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.2 V/m; Power Drift = 0.041 dB

**SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.31 mW/g**

Maximum value of SAR (measured) = 11.6 mW/g

**1900 MHz System Validation/Zoom Scan 5 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.1 V/m; Power Drift = 0.036 dB

**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.39 mW/g**

Maximum value of SAR (measured) = 11.8 mW/g

**1900 MHz System Validation/Zoom Scan 7 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.2 V/m; Power Drift = 0.009 dB

**SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.4 mW/g**

Maximum value of SAR (measured) = 11.8 mW/g

**1900 MHz System Validation/Zoom Scan 8 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.4 V/m; Power Drift = -0.015 dB

**SAR(1 g) = 10.6 mW/g; SAR(10 g) = 5.4 mW/g**

Maximum value of SAR (measured) = 11.8 mW/g

**1900 MHz System Validation/Zoom Scan 9 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.6 V/m; Power Drift = -0.009 dB

**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.32 mW/g**

Maximum value of SAR (measured) = 11.6 mW/g

**1900 MHz System Validation/Zoom Scan 10 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.5 V/m; Power Drift = 0.002 dB

**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.32 mW/g**

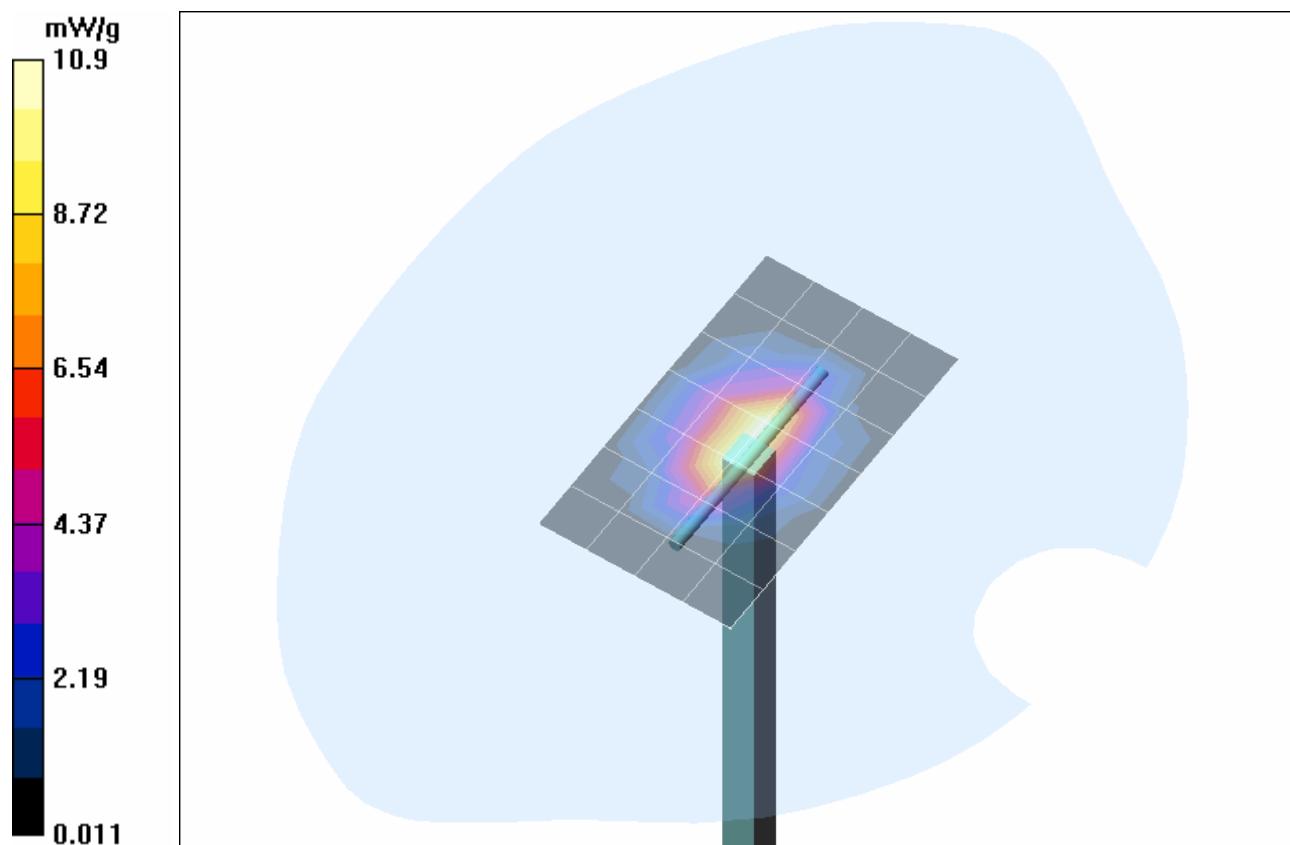
Maximum value of SAR (measured) = 11.6 mW/g

**1900 MHz System Validation/Zoom Scan 11 (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 91.4 V/m; Power Drift = 0.005 dB

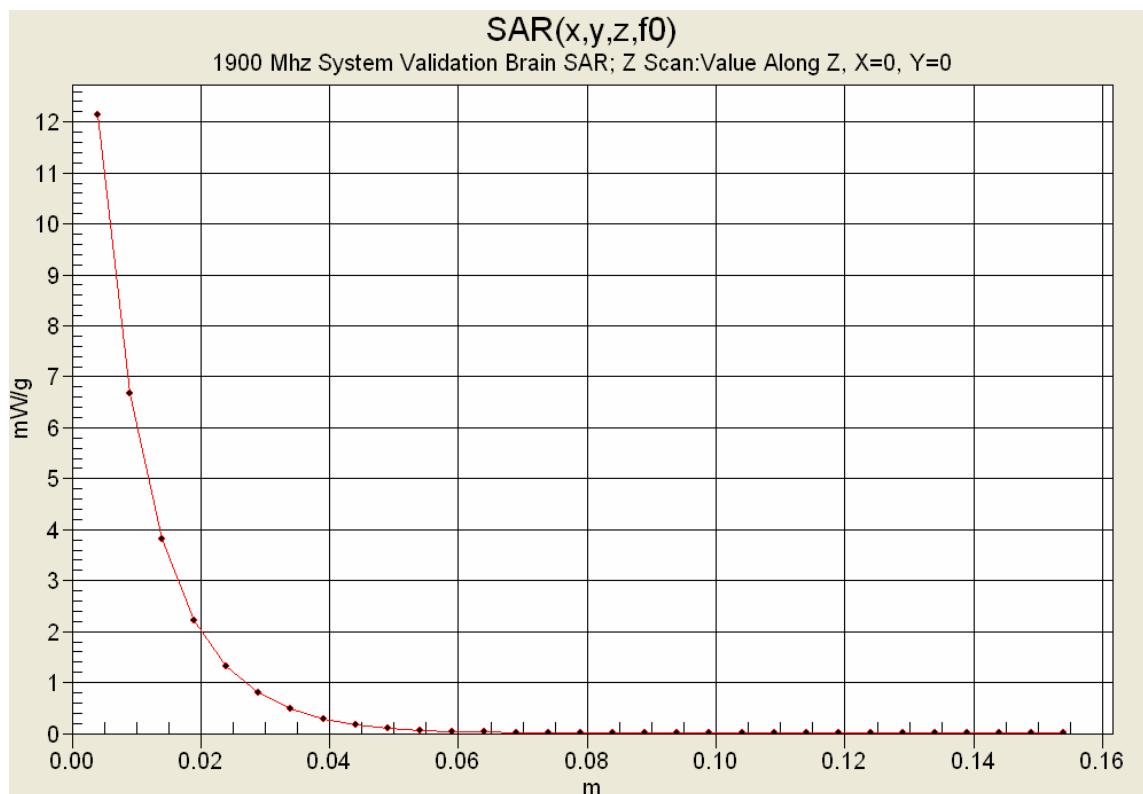
**SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.31 mW/g**

Maximum value of SAR (measured) = 11.6 mW/g



1 g average of 10 measurements: 10.45 mW/g

10 g average of 10 measurements: 5.37 mW/g



 Testing and Engineering Services Ltd.	Date of Evaluation:	June 09, 2006	Document Issue No.:	SV1900B-060906-R1.0
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz
			Fluid Type:	Brain

## 10. Measured Fluid Dielectric Parameters

### **1900 MHz System Validation (Brain)**

\*\*\*\*\*  
Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Fri 09/Jun/2006

Frequency (GHz)

FCC\_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon

FCC\_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma

Test\_e Epsilon of UIM

Test\_s Sigma of UIM

Freq	FCC_eH	FCC_sH	Test_e	Test_s
1.8000	40.00	1.40	40.27	1.31
1.8100	40.00	1.40	40.15	1.32
1.8200	40.00	1.40	40.10	1.33
1.8300	40.00	1.40	40.01	1.33
1.8400	40.00	1.40	39.93	1.35
1.8500	40.00	1.40	39.90	1.36
1.8600	40.00	1.40	39.84	1.37
1.8700	40.00	1.40	39.77	1.39
1.8800	40.00	1.40	39.81	1.39
1.8900	40.00	1.40	39.73	1.41
<b>1.9000</b>	<b>40.00</b>	<b>1.40</b>	<b>39.65</b>	<b>1.42</b>
1.9100	40.00	1.40	39.71	1.42
1.9200	40.00	1.40	39.61	1.43
1.9300	40.00	1.40	39.67	1.43
1.9400	40.00	1.40	39.52	1.44
1.9500	40.00	1.40	39.61	1.45
1.9600	40.00	1.40	39.44	1.46
1.9700	40.00	1.40	39.46	1.46
1.9800	40.00	1.40	39.41	1.48
1.9900	40.00	1.40	39.32	1.50
2.0000	40.00	1.40	39.31	1.51



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Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## APPENDIX F - PROBE CALIBRATION

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	<b>Ascalade</b>
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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Accredited by the Swiss Federal Office of Metrology and Accreditation  
**The Swiss Accreditation Service is one of the signatories to the EA**  
**Multilateral Agreement for the recognition of calibration certificates**

**Accreditation No.: SCS 108**

**Client** **Celltech Labs**

**Certificate No.: ET3-1387\_Mar06**

## **CALIBRATION CERTIFICATE**

**Object** **ET3DV6 - SN:1387**

**Calibration procedure(s)**  
**QA CAL-01.v5**  
**Calibration procedure for dosimetric E-field probes**

**Calibration date:** **March 16, 2006**

**Condition of the calibrated item** **In Tolerance**

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: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	2-Jan-06 (SPEAG, No. ES3-3013_Jan06)	Jan-07
DAE4	SN: 654	2-Feb-06 (SPEAG, No. DAE4-654_Feb06)	Feb-07
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov 06

Calibrated by:	Name	Function	Signature
	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

**Issued: March 16, 2006**



Accredited by the Swiss Federal Office of Metrology and Accreditation  
 The Swiss Accreditation Service is one of the signatories to the EA  
 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

### **Glossary:**

TSL	tissue simulating liquid
NORM $x,y,z$	sensitivity in free space
ConvF	sensitivity in TSL / NORM $x,y,z$
DCP	diode compression point
Polarization $\varphi$	$\varphi$ rotation around probe axis
Polarization $\vartheta$	$\vartheta$ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

### **Calibration is Performed According to the Following Standards:**

- IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
- CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

### **Methods Applied and Interpretation of Parameters:**

- $NORMx,y,z$ : Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide).  $NORMx,y,z$  are only intermediate values, i.e., the uncertainties of  $NORMx,y,z$  does not effect the  $E^2$ -field uncertainty inside TSL (see below *ConvF*).
- $NORM(f)x,y,z = NORMx,y,z * frequency\_response$  (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- $DCPx,y,z$ : DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- ConvF and Boundary Effect Parameters*: Assessed in flat phantom using E-field (or Temperature Transfer Standard for  $f \leq 800$  MHz) and inside waveguide using analytical field distributions based on power measurements for  $f > 800$  MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to  $NORMx,y,z * ConvF$  whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from  $\pm 50$  MHz to  $\pm 100$  MHz.
- Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

# Probe ET3DV6

## SN:1387

Manufactured:	September 21, 1999
Last calibrated:	March 18, 2005
Recalibrated:	March 16, 2006

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

**DASY - Parameters of Probe: ET3DV6 SN:1387**

Sensitivity in Free Space <sup>A</sup>			Diode Compression <sup>B</sup>		
NormX	<b>1.62</b> $\pm$ 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	<b>92</b> mV	
NormY	<b>1.72</b> $\pm$ 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	<b>92</b> mV	
NormZ	<b>1.72</b> $\pm$ 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	<b>92</b> mV	

## Sensitivity in Tissue Simulating Liquid (Conversion Factors)

**Please see Page 8.**

## Boundary Effect

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

Sensor Center to Phantom Surface Distance		3.7 mm	4.7 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	9.3	5.0
SAR <sub>be</sub> [%]	With Correction Algorithm	0.1	0.2

## Sensor Offset

Probe Tip to Sensor Center **2.7 mm**

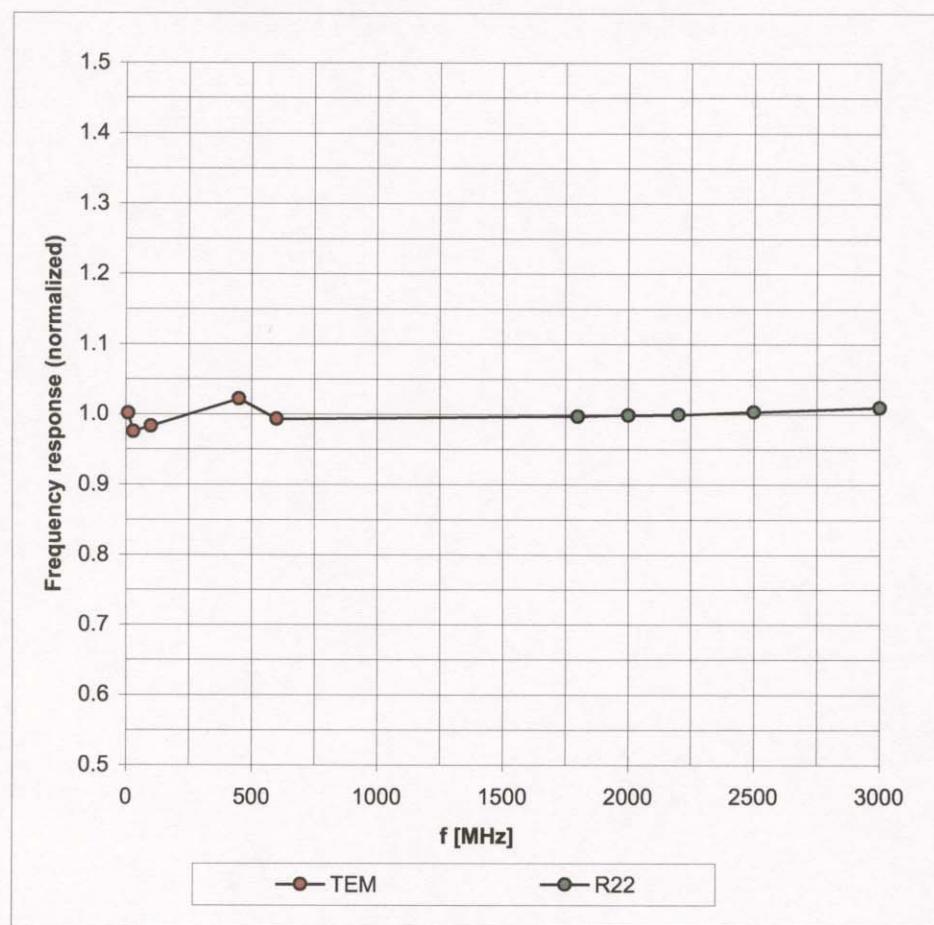
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

<sup>a</sup> The uncertainties of NormX,Y,Z do not affect the  $E^2$ -field uncertainty inside TSL (see Page 8).

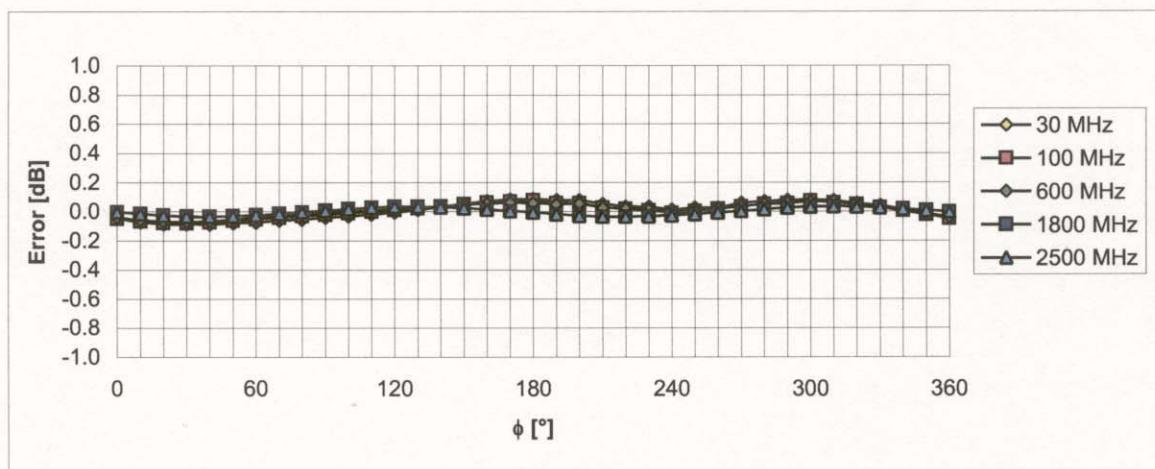
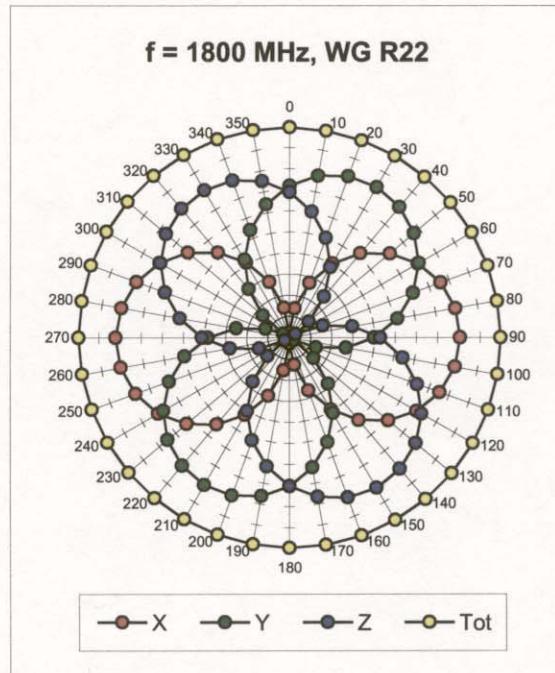
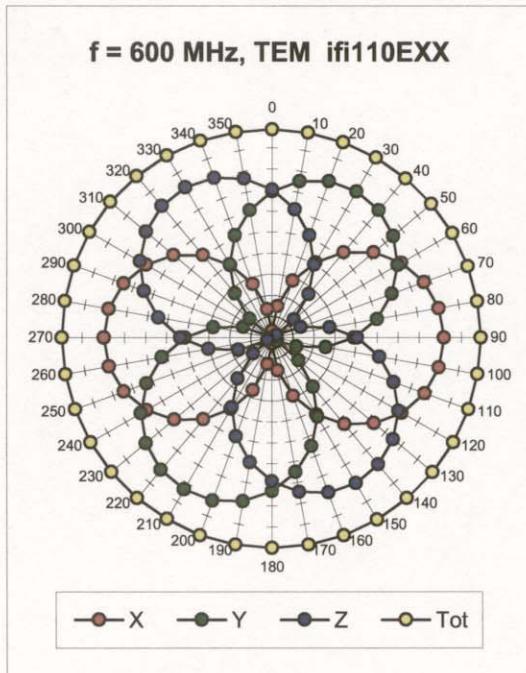
<sup>b</sup> Numerical linearization parameter: uncertainty not required.

## Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



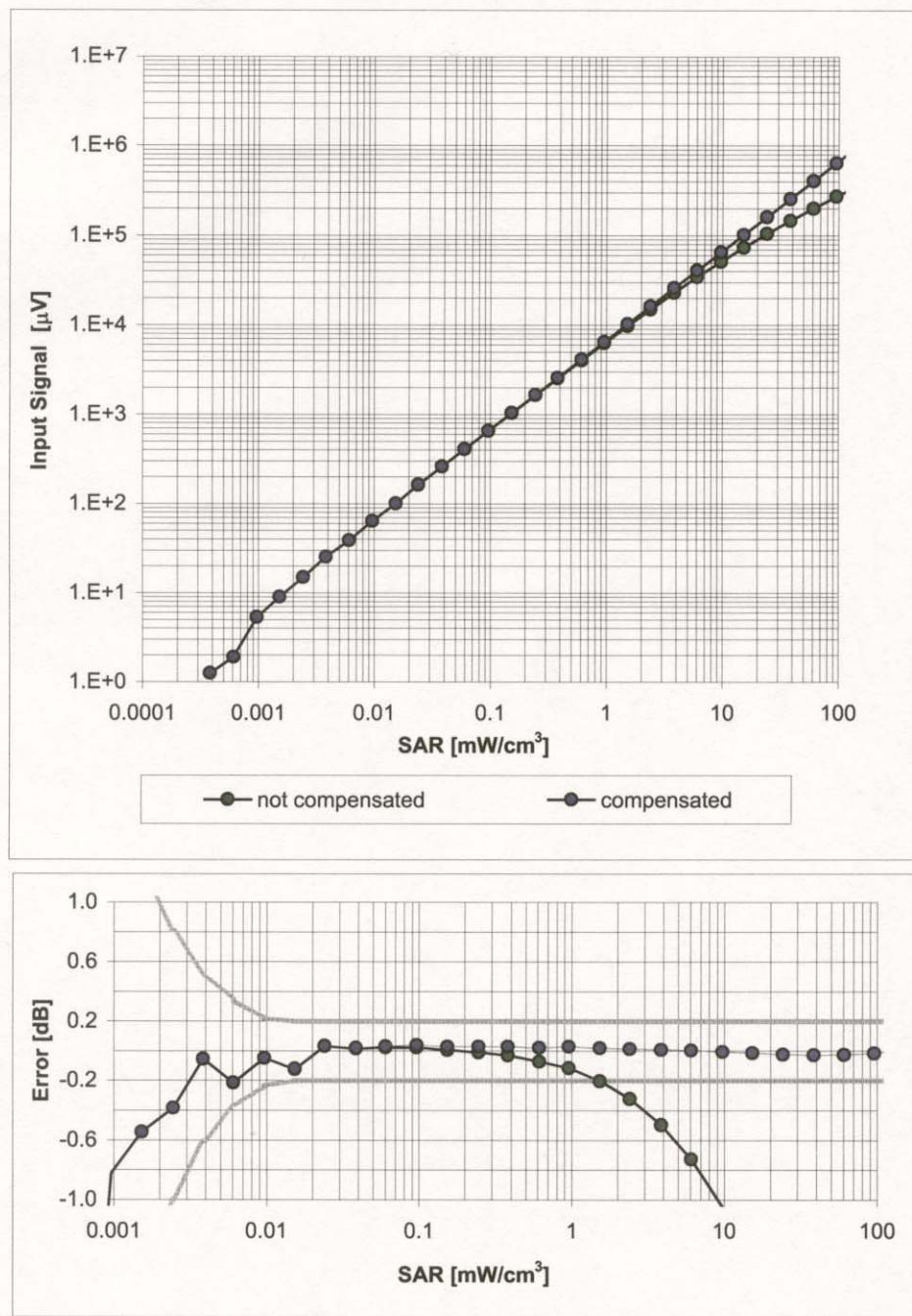
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  ( $k=2$ )

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

Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  (k=2)

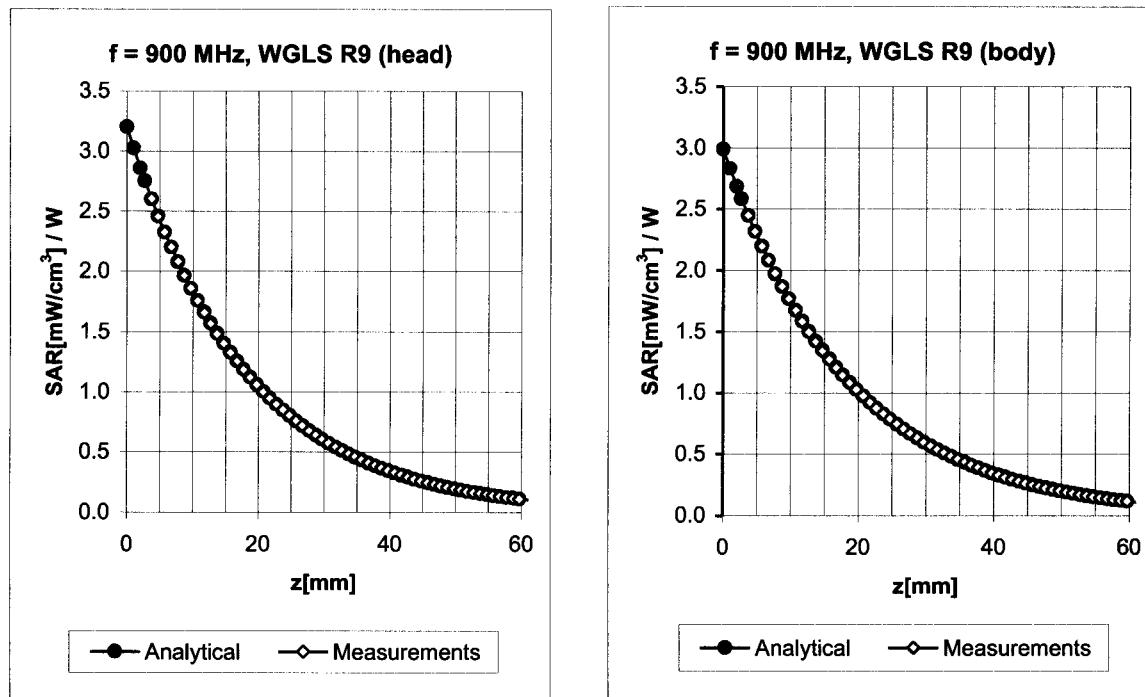
## Dynamic Range f(SAR<sub>head</sub>)

(Waveguide R22, f = 1800 MHz)



Uncertainty of Linearity Assessment:  $\pm 0.6\%$  ( $k=2$ )

## Conversion Factor Assessment

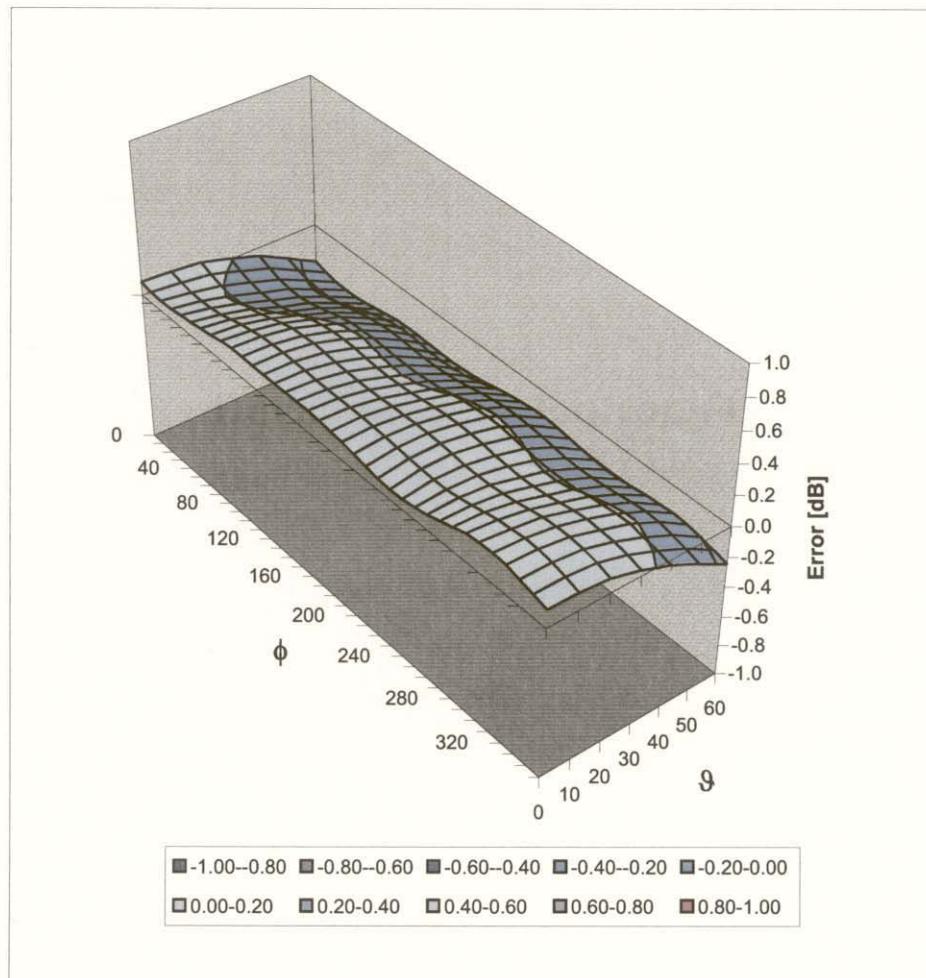


$f$ [MHz]	Validity [MHz] <sup>c</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
900	$\pm 50 / \pm 100$	Head	$41.5 \pm 5\%$	$0.97 \pm 5\%$	0.62	1.86	6.35	$\pm 11.0\% (k=2)$
900	$\pm 50 / \pm 100$	Body	$55.0 \pm 5\%$	$1.05 \pm 5\%$	0.59	1.97	6.04	$\pm 11.0\% (k=2)$

<sup>c</sup> The validity of  $\pm 100$  MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

## Deviation from Isotropy in HSL

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



Uncertainty of Spherical Isotropy Assessment:  $\pm 2.6\%$  (k=2)

## **Additional Conversion Factors for Dosimetric E-Field Probe**

Type:

**ET3DV6**

Serial Number:

**1387**

Place of Assessment:

**Zurich**

Date of Assessment:

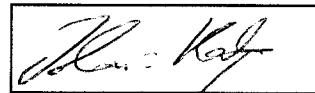
**March 18, 2006**

Probe Calibration Date:

**March 16, 2006**

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

Assessed by:



## Dosimetric E-Field Probe ET3DV6 SN:1387

Conversion factor ( $\pm$  standard deviation)

<b>150 <math>\pm</math> 50 MHz</b>	ConvF	<b>8.6 <math>\pm</math> 10 %</b>	$\epsilon_r = 52.3 \pm 5\%$ $\sigma = 0.76 \pm 5\% \text{ mho/m}$ (head tissue)
<b>150 <math>\pm</math> 50 MHz</b>	ConvF	<b>8.2 <math>\pm</math> 10 %</b>	$\epsilon_r = 61.9 \pm 5\%$ $\sigma = 0.80 \pm 5\% \text{ mho/m}$ (body tissue)
<b>300 <math>\pm</math> 50 MHz</b>	ConvF	<b>7.8 <math>\pm</math> 9 %</b>	$\epsilon_r = 45.3 \pm 5\%$ $\sigma = 0.87 \pm 5\% \text{ mho/m}$ (head tissue)
<b>450 <math>\pm</math> 50 MHz</b>	ConvF	<b>7.4 <math>\pm</math> 8 %</b>	$\epsilon_r = 43.5 \pm 5\%$ $\sigma = 0.87 \pm 5\% \text{ mho/m}$ (head tissue)
<b>450 <math>\pm</math> 50 MHz</b>	ConvF	<b>7.3 <math>\pm</math> 8 %</b>	$\epsilon_r = 56.7 \pm 5\%$ $\sigma = 0.94 \pm 5\% \text{ mho/m}$ (body tissue)
<b>750 <math>\pm</math> 50 MHz</b>	ConvF	<b>6.6 <math>\pm</math> 7 %</b>	$\epsilon_r = 41.8 \pm 5\%$ $\sigma = 0.89 \pm 5\% \text{ mho/m}$ (head tissue)
<b>750 <math>\pm</math> 50 MHz</b>	ConvF	<b>6.4 <math>\pm</math> 7 %</b>	$\epsilon_r = 55.4 \pm 5\%$ $\sigma = 0.96 \pm 5\% \text{ mho/m}$ (body tissue)
<b>1925 <math>\pm</math> 50 MHz</b>	ConvF	<b>5.0 <math>\pm</math> 7 %</b>	$\epsilon_r = 39.8 \pm 5\%$ $\sigma = 1.48 \pm 5\% \text{ mho/m}$ (head tissue)
<b>1925 <math>\pm</math> 50 MHz</b>	ConvF	<b>4.7 <math>\pm</math> 7 %</b>	$\epsilon_r = 53.2 \pm 5\%$ $\sigma = 1.60 \pm 5\% \text{ mho/m}$ (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.

 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> October 20, 2006	<u>Test Report Serial No.</u> 101206PBW-T782-S15T	<u>Report Revision No.</u> Revision 1.0	 IAC-MRA ACCREDITED
	<u>Report Issue Date</u> October 30, 2006	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX G - SAM PHANTOM CERTIFICATE OF CONFORMITY

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWB187R26H</b>	<b>IC ID:</b>	<b>3842A-B187</b>	
<b>Model(s):</b>	<b>PHILIPS VOIP841XY/ZZ</b>		<b>Portable UPSCS DECT VoIP Handset</b>		<b>Tx: 1921.536-1928.448 MHz</b>		
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# 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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