

 Celltech Testing and Engineering Services Ltd.	Date(s) of Evaluation	Test Report Serial No.	Test Report Revision No.	 ILAC-MRA ACCREDITED
	September 18, 2007	091707PBW-T849-S15T	Revision 1.1	
Test Report Issue Date	November 09, 2007	Description of Test(s)	RF Exposure Category	Certificate No. 2470.01

SAR TEST REPORT				
RF EXPOSURE EVALUATION		SPECIFIC ABSORPTION RATE		
APPLICANT	ASCALADE TECHNOLOGIES INC.			
PRODUCT	PORTABLE 1.9 GHz UPCS/LE-PCS DECT HANDSET			
MODEL(S)	DECT200X-YY-ZZ			
IDENTIFIER(S)	FCC ID:	PBWDT19R42H	IC:	3842A-B215
APPLICATION TYPE	Permissive Change			
STANDARD(S) APPLIED	FCC 47 CFR §2.1093			
	Health Canada Safety Code 6			
PROCEDURE(S) APPLIED	FCC OET Bulletin 65, Supplement C (01-01)			
	Industry Canada RSS-102 Issue 2			
	IEEE 1528-2003			
FCC DEVICE CLASSIFICATION(S)	Part 15 Unlicensed PCS Portable Transmitter held to ear (PUE)		47 CFR §15(D)	
IC DEVICE CLASSIFICATION(S)	2 GHz Licence Exempt Personal Communications Service Device (PCS)		RSS-213 Issue 2	
RF EXPOSURE CATEGORY	General Population / Uncontrolled			
RF EXPOSURE EVALUATION(S)	Head SAR (Held-to-Ear)			
TEST REPORT SERIAL NO.	091707PBW-T849-S15T			
TEST REPORT REVISION NO.	Revision 1.1 (Corrected Duty Cycle)			
	Revision 1.0 (Initial Release - 10/02/07)			
TEST REPORT ISSUE DATE	November 09, 2007			
TEST REPORT SIGNATORIES	Testing and Test Report By		Test Report Reviewed By	
	Cheri Frangiadakis Celltech Labs Inc.		Jonathan Hughes Celltech Labs Inc.	
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	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada			
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	info@celltechlabs.com		www.celltechlabs.com	
TEST LAB ACCREDITATION(S)	 ILAC-MRA ACCREDITED			Certificate No. 2470.01

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215		
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz				
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Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## DECLARATION OF COMPLIANCE SAR RF EXPOSURE EVALUATION

Test Lab Information		Name	CELLTECH LABS INC.			
		Address	21-364 Lougheed Road, Kelowna, BC V1X 7R8 Canada			
Applicant Information		Name	ASCALADE TECHNOLOGIES INC.			
		Address	12051 Riverside Way, Richmond, BC V6W 1K7 Canada			
Manufacturer Information		Name	DONGGUAN ASCALADE ELECTRONICS CO., LTD.			
		Address	National Highway 107, Cuntou Cun, Humen Town, DongGuan, GuanDong, China			
Standard(s) Applied		FCC	47 CFR §2.1093			
		IC	Health Canada Safety Code 6			
Procedure(s) Applied		FCC	OET Bulletin 65, Supplement C (01-01)			
		IC	RSS-102 Issue 2			
Device Classification(s)		FCC	Part 15 Unlicensed PCS portable Tx held to ear (PUE)			47 CFR §15(D)
		IC	2 GHz Licence Exempt Personal Communications Service Device (PCS)			RSS-213 Issue 2
Device Identifier(s)		FCC ID:	PBWDT19R42H			
		IC:	3842A-B215			
		Model(s)	DECT200X-YY-ZZ			
		Serial No.	B215071500001-US (Identical Prototype)			
Device Description		Portable 1.9 GHz UPCS/LE-PCS DECT Handset				
Transmit Frequency Range(s)		1921.536 - 1928.448 MHz				
Mode(s) of Operation		TDMA (Time Division Multiple Access)				
Modulation Type(s)		GFSK (Gaussian Frequency Shift Keying)				
Max. RF Output Power Tested		14.84 dBm	30.48 mW	EIRP	1924.992 MHz	
Source-Based Time-Averaged		3.87 dBm	2.44 mW	EIRP	1924.992 MHz	
Maximum Duty Cycle Tested		4 %	Source-Based Time-Averaged	Crest Factor: 1:25		
Antenna Type(s) Tested		Internal (pre-formed wire soldered on PCB)				
Battery Type(s) Tested		NiMH	1.2 V, 650 mAh	AAA (x2)		
Body-Worn Accessories Tested		n/a (handset does not have provision for body-worn transmit operation)				
Audio Accessories Tested		n/a (handset does not have provision for audio accessory)				
Max. SAR Level(s) Evaluated		Head	0.00871 W/kg	1g average	ANSI/IEEE Limit	1.6 W/kg
						1g average
Celltech Labs Inc. declares under its sole responsibility that this wireless portable device was compliant with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada's Safety Code 6 for the General Population / Uncontrolled Exposure environment. The device was tested in accordance with the measurement procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01), Industry Canada RSS-102 Issue 2 and IEEE Standard 1528-2003. 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	Celltech Labs Inc.	

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	Ascalade
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz			
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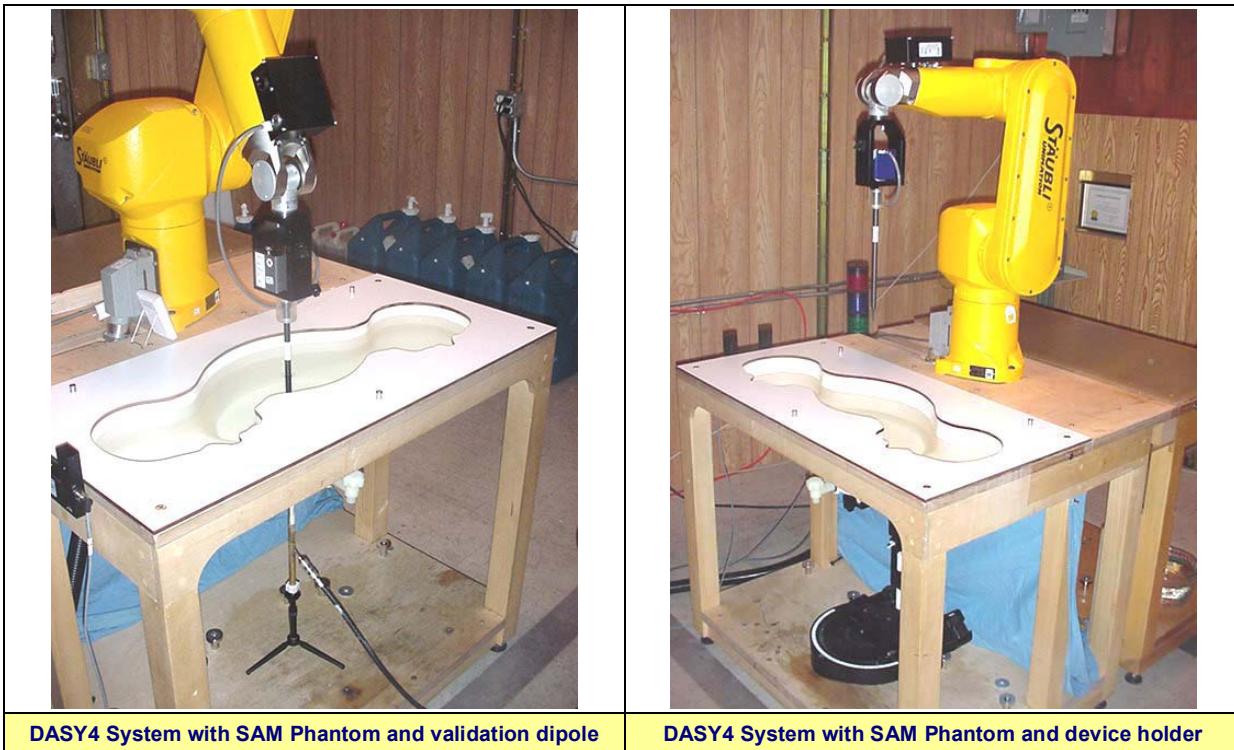
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	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## 1.0 INTRODUCTION

This measurement report demonstrates that the Ascalade Technologies Inc. Model(s): DECT200X-YY-ZZ Portable 1.9 GHz UPCS/LE-PCS DECT Handset 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 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.



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### 3.0 MEASUREMENT SUMMARY

#### HEAD SAR EVALUATION RESULTS

Freq. (MHz)	Chan.	Test Mode	Battery Type	Antenna Position	Phantom Section	Test Position	DUT Start Power		Power Drift During Test	Measured SAR 1g (W/kg)								
							EIRP (mW)	SBTA (mW)										
1924.992	3	TDMA	NiMH	Internal	Right Ear	Cheek/Touch	30.48	1.22	-- <sup>3</sup>	0.00871								
1924.992	3	TDMA	NiMH	Internal	Right Ear	Ear/Tilt (15°)	30.48	1.22	-- <sup>3</sup>	0.00444								
1924.992	3	TDMA	NiMH	Internal	Left Ear	Cheek/Touch	30.48	1.22	-- <sup>3</sup>	0.00590								
1924.992	3	TDMA	NiMH	Internal	Left Ear	Ear/Tilt (15°)	30.48	1.22	-- <sup>3</sup>	0.012*								
ANSI / IEEE C95.1:2005 - SAFETY LIMIT				BRAIN: 1.6 W/kg (averaged over 1 gram)				Spatial Peak Uncontrolled Exposure / General Population										
Date(s) of Evaluation			September 18, 2007			Relative Humidity		30	%									
Measured Fluid Type			1920 MHz Brain			Atmospheric Pressure		101.4	kPa									
Dielectric Constant $\epsilon_r$	IEEE Target		Measured	Deviation	Ambient Temperature		25.3	°C										
	40.0	$\pm 5\%$	38.1	-4.7%	Fluid Temperature		22.2	°C										
Conductivity $\sigma$ (mho/m)	IEEE Target		Measured	Deviation	Fluid Depth		$\geq 15$	cm										
	1.40	$\pm 5\%$	1.41	+0.8%	$\rho$ (Kg/m <sup>3</sup> )		1000											
Notes	*	The SAR level measured and reported for the Left Ear-Tilt Position (15°) is the Peak SAR level measured from the area scan. The 1g-averaged SAR is not measured when the peak SAR value from the area scan evaluation is less than 1% of the 1g average limit. The mathematical formula used to extrapolate the SAR value at the surface from the zoom scan SAR values measured at 5 mm steps leading away from the surface assumes a curving slope (i.e. the SAR values gradually decrease as the probe moves away from the surface). When the peak SAR of a device is so low that the RF noise level is competing with the SAR level, the zoom scan measurements leading away from the surface are no longer a curving slope and the extrapolation formula cannot accurately estimate the 1g average SAR. Therefore the peak value from the area scan is reported in place of the 1g averaged SAR value whenever the peak values are less than 1% of the average limit. This avoids gross uncertainties in the 1g average SAR calculation while maintaining a conservative estimation of the SAR level.																
	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 (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).																
	3.	The power drift of the DUT during the SAR evaluations was measured at the reference point of the phantom with low SAR. The resulting drift values were inaccurate due to the SAR value at the reference point is close to the measurement noise floor and therefore are not reported.																
	4.	The DUT batteries were fully charged prior to the SAR evaluations.																
	5.	The fluid temperature was measured prior to and after the SAR evaluations to ensure the temperature remained within +/-2°C of the fluid temperature reported during the dielectric parameter measurements.																
	6.	The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluations using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).																
	7.	The SAR evaluations were performed within 24 hours of the system performance check.																

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## 4.0 DETAILS OF SAR EVALUATION

The Ascalade Technologies Inc. Model(s): DECT200X-YY-ZZ Portable 1.9 GHz UPCS/LE-PCS DECT Handset 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. If the transmission band of the DUT is less than 10 MHz then 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.

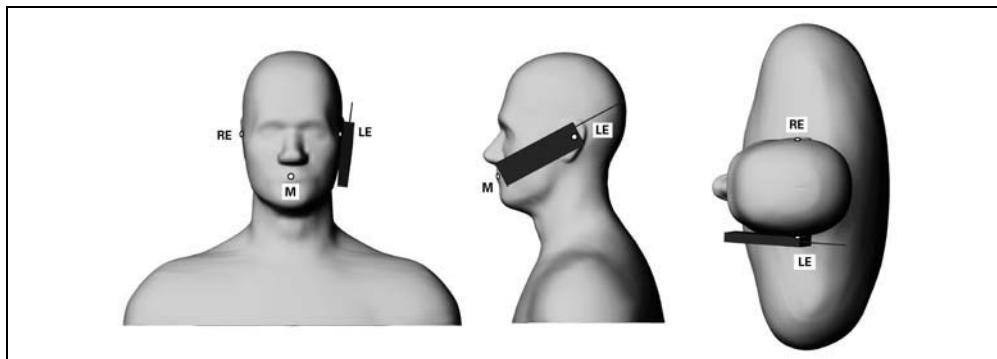


Figure 1. Position 1, "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for device positioning, are indicated (Shoulders are shown for illustration only).

- 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.

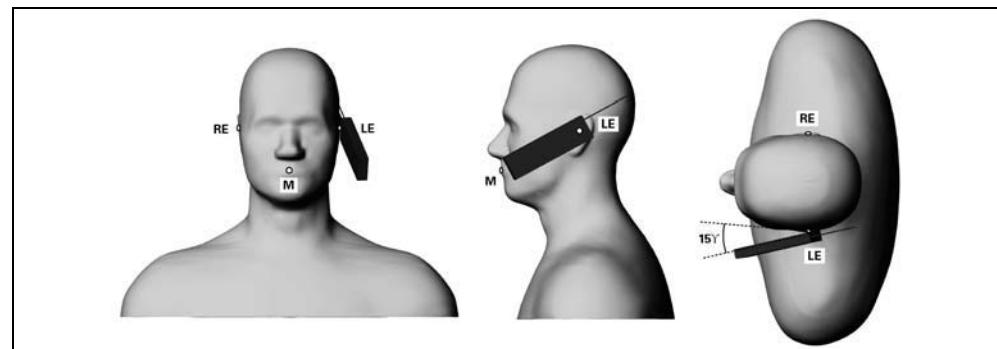


Figure 2. Position 2, "tilted position." The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for device positioning, are indicated (Shoulders are shown for illustration only).

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Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz							
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## DETAILS OF SAR EVALUATION (Cont.)

### Body-worn Configuration(s)

2) The DUT does not have an audio connector for headset input and does not support body-worn transmit operation.

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

- 3) The DUT was placed in test mode using internal test software program provided by the handset manufacturer and programmed via the handset keypad.
- 4) The DUT was tested at maximum power setting and duty cycle (4%) in TDMA modulation (crest factor = 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) level of the DUT as reported was measured by Timco Engineering Inc.
- 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 fluid temperature was measured prior to and after the SAR evaluations to ensure the temperature remained within  $\pm 2^{\circ}\text{C}$  of the fluid temperature reported during the dielectric parameter measurements.
- 10) The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).
- 11) The SAR measurements were performed within 24 hours of the system performance check.

## 5.0 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 determine the values between the dipole center of the probe and the surface of the phantom. This data cannot be measured because the center of the dipole sensors is 1.0 mm away from the probe tip and the distance between the probe and the boundary must be larger than 25% of the probe diameter. The probe diameter is 2.4 mm. In the DASY4 software, the distance between the sensor center and phantom surface is set to 2.0 mm. This provides a distance of 1.0 mm between the probe tip and the surface. The extrapolation of the values between the dipole center and the surface of the phantom 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  $\geq 800$  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.

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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## EVALUATION PROCEDURES (Cont.)

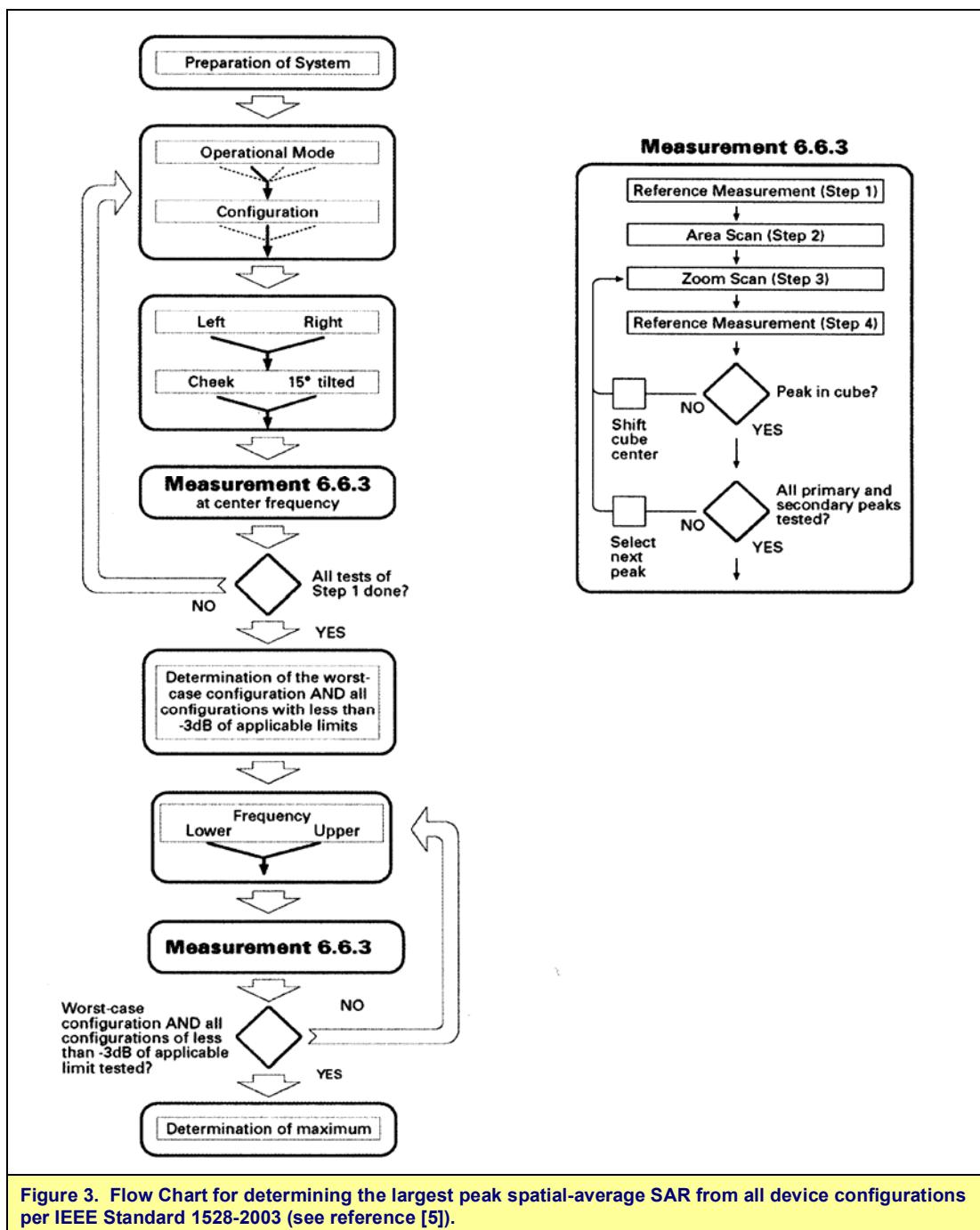


Figure 3. Flow Chart for determining the largest peak spatial-average SAR from all device configurations per IEEE Standard 1528-2003 (see reference [5]).

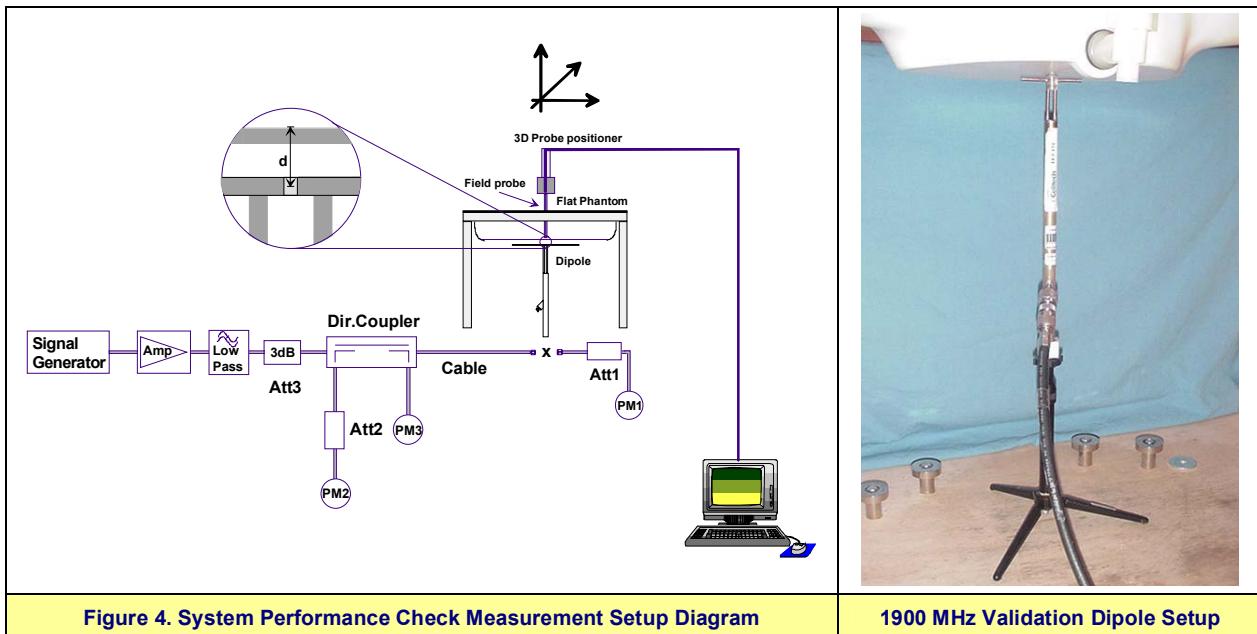
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## 6.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations a system check was performed at the planar section of the SAM phantom with a 1900MHz dipole (see Appendix B for system performance check test plot). The dielectric parameters of the simulated tissue mixture were measured prior to the system performance check using a Dielectric Probe Kit and a 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  $\pm 10\%$  from the system validation target SAR values (see Appendix E for system validation procedures).

### SYSTEM PERFORMANCE CHECK EVALUATION

Test Date	Tissue Freq.	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)
	Brain (MHz)	Sys. Val. Target	Meas.	Dev.	Sys. Val. Target	Meas.	Dev.	Sys. Val. Target	Meas.	Dev.						
Sep 18	1900	10.8 $\pm$ 10%	10.7	-0.9%	38.4 $\pm$ 5%	38.1	-0.7%	1.41 $\pm$ 5%	1.40	-0.7%	1000	25.3	22.2	$\geq 15$	30	101.4
Note(s)		1. The target SAR value is referenced from the System Validation procedure performed by Celltech Labs Inc. (see Appendix E). 2. The target dielectric parameters are referenced from the System Validation procedure performed by Celltech Labs Inc. (see Appendix E). 3. The fluid temperature was measured prior to and after the system performance check to ensure the temperature remained within $\pm 2^\circ\text{C}$ of the fluid temperature reported during the dielectric parameter measurements. 4. The SAR evaluations were performed within 24 hours of the system performance check.														



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## 7.0 SIMULATED EQUIVALENT TISSUES

The 1900/1920MHz simulated equivalent tissue mixture consisted of Glycol-monobutyl, water and salt. The fluid was 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
	System Performance Check	DUT Evaluation
Water	55.85 %	55.85 %
Glycol Monobutyl	44.00 %	44.00 %
Salt	0.15 %	0.15 %

## 8.0 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
The Spatial Average value of the SAR averaged over the whole body.		
The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.		
The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.		
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:	PBWDT19R42H	IC ID:	3842A-B215		
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset		1921.536 - 1928.448 MHz			
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Test Report Issue Date	Description of Test(s)	RF Exposure Category		
November 09, 2007	Specific Absorption Rate	General Population		Certificate No. 2470.01

## 9.0 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	EX3DV4
Serial No.	3600
Construction	Symmetrical design with triangular core
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

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215		
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz				
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November 09, 2007	Specific Absorption Rate	General Population		Certificate No. 2470.01

## 10.0 PROBE SPECIFICATION (ET3DV4-E)

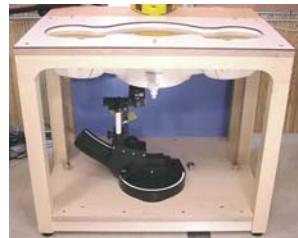
Construction:	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g. DGBE)
Calibration:	Basic Broadband Calibration in air: 10-3000 MHz Conversion Factors (CF) for HSL 900 and HSL 1750
Frequency:	10 MHz to >6 GHz; Linearity: $\pm 0.2$ dB (30 MHz to 3 GHz)
Directivity:	$\pm 0.3$ dB in HSL (rotation around probe axis) $\pm 0.5$ dB in tissue material (rotation normal to probe axis)
Dynamic Range:	10 $\mu$ W/g to >100 mW/g; Linearity: $\pm 0.2$ dB (noise: typically < 1 $\mu$ W/g)
Dimensions:	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm)
Application:	Typical distance from probe tip to dipole centers: 1.0 mm High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better than 30%.



EX3DV4 E-Field Probe

## 11.0 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

## 12.0 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

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	 Ascalade
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz			
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## 13.0 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
x	-Robot	00046	599396-01	N/A	N/A
x	-DAE4	00019	353	10Jul07	10Jul08
	-DAE3	00018	370	13Mar07	13Mar08
	-ET3DV6 E-Field Probe	00016	1387	16Mar07	16Mar08
x	-EX3DV4 E-Field Probe	00213	3600	24Jan07	24Jan08
	-300 MHz Validation Dipole	00023	135	08Jun07	08Jun08
	-450 MHz Validation Dipole	00024	136	30Jul07	30Jul08
	-835 MHz Validation Dipole	00022	411	Brain 07Jun07	07Jun08
				Body 07Jun07	07Jun08
	-900 MHz Validation Dipole	00020	054	Brain 07Jun07	07Jun08
				Body 07Jun07	07Jun08
	-1800 MHz Validation Dipole	00021	247	Brain 06Jun07	06Jun08
				Body 06Jun07	06Jun08
x	-1900 MHz Validation Dipole	00032	151	Brain 06Jun07	06Jun08
				Body 06Jun07	06Jun08
	-2450 MHz Validation Dipole	00025	150	Brain 16Jul07	16Jul08
				Body 08Jun07	08Jun08
	5GHz Validation Dipole	-5200 MHz -5500 MHz -5800 MHz	1031	Body 18May07	18May08
				Body 22May07	22May08
				Brain 09May07	09May08
				Body 10May07	10May08
x	-SAM Phantom V4.0C	00154	1033	N/A	N/A
	-Barski Planar Phantom	00155	03-01	N/A	N/A
	-Plexiglas Side Planar Phantom	00156	161	N/A	N/A
	-Plexiglas Validation Planar Phantom	00157	137	N/A	N/A
	ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A	N/A
x	HP 85070C Dielectric Probe Kit	00033	US39240170	N/A	N/A
x	Gigatronics 8652A Power Meter	00007	1835272	26Mar07	26Mar08
	Gigatronics 8652A Power Meter	00008	1835267	22Jan07	22Jan08
x	Gigatronics 80701A Power Sensor	00012	1834350	22Jan07	22Jan08
x	Gigatronics 80701A Power Sensor	00014	1833699	22Jan07	22Jan08
	Gigatronics 80701A Power Sensor	00109	1834366	26Mar07	26Mar08
x	HP 8753ET Network Analyzer	00134	US39170292	20Apr07	20Apr08
	HP 8648D Signal Generator	00005	3847A00611	NCR	NCR
x	Rohde & Schwarz SMR20 Signal Generator	00006	100104	NCR	NCR
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	NCR	NCR
	Amplifier Research 10W1000C Power Amplifier	00041	27887	NCR	NCR
	Nextec NB00383 Microwave Amplifier	00151	0535	NCR	NCR
	HP E4408B Spectrum Analyzer	00015	US39240170	05Feb07	05Feb08

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215		
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz				
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Test Report Issue Date	Description of Test(s)	RF Exposure Category		
November 09, 2007	Specific Absorption Rate	General Population		Certificate No. 2470.01

## 14.0 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 (1950 MHz)	5.5	Normal	1	1	5.5	∞
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)	5	Normal	1	0.64	3.2	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	5	Normal	1	0.6	3.0	∞
<b>Combined Standard Uncertainty</b>						
<b>Expanded Uncertainty (k=2)</b>						
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])						

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset		1921.536 - 1928.448 MHz		
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Revision 1.1

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November 09, 2007

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 (1950 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>Dipole</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)	5	Normal	1	0.64	3.2	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	5	Normal	1	0.6	3.0	∞
<b>Combined Standard Uncertainty</b>					<b>9.57</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>19.14</b>	
Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003 (see reference [5])						

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	Ascalade
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset		1921.536 - 1928.448 MHz		
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## 15.0 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.
- [6] ANSI/IEEE C95.1:2005 - "American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 3 kHz to 300 GHz", New York: IEEE, April 2006.

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>		
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>			
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## APPENDIX A - SAR MEASUREMENT DATA

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 09/18/2007

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

DUT: Ascalade Model: DECT200X-YY-ZZ; Type: Portable 1.9 GHz DECT UPCS Handset; Serial: B215071500001-US

Ambient Temp: 25.3°C; Fluid Temp: 22.2°C; Barometric Pressure: 101.4 kPa; Humidity: 30%

Communication System: TDMA 1900

1.2V, 650mAh NiMH Batteries AAA (x2)

Frequency: 1924.99 MHz; Duty Cycle: 1:25

Medium: HSL1900 Medium parameters used:  $f = 1924.99$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(6.59, 6.59, 6.59); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 10/07/2007
- 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/Area Scan (8x16x1):

Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.013 mW/g

#### Head SAR - Right Ear - Cheek/Touch Position - Mid Channel/Zoom Scan (7x7x7)/Cube 0:

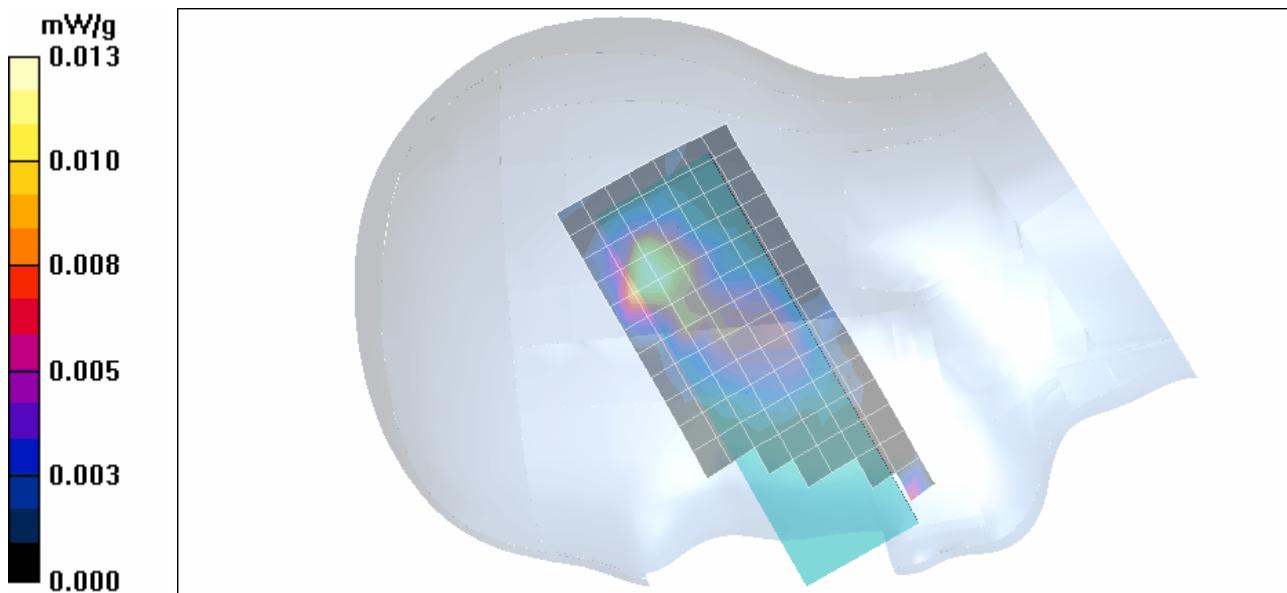
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.49 V/m; Power Drift = 2.14 dB

Peak SAR (extrapolated) = 0.016 W/kg

**SAR(1 g) = 0.00871 mW/g; SAR(10 g) = 0.00387 mW/g**

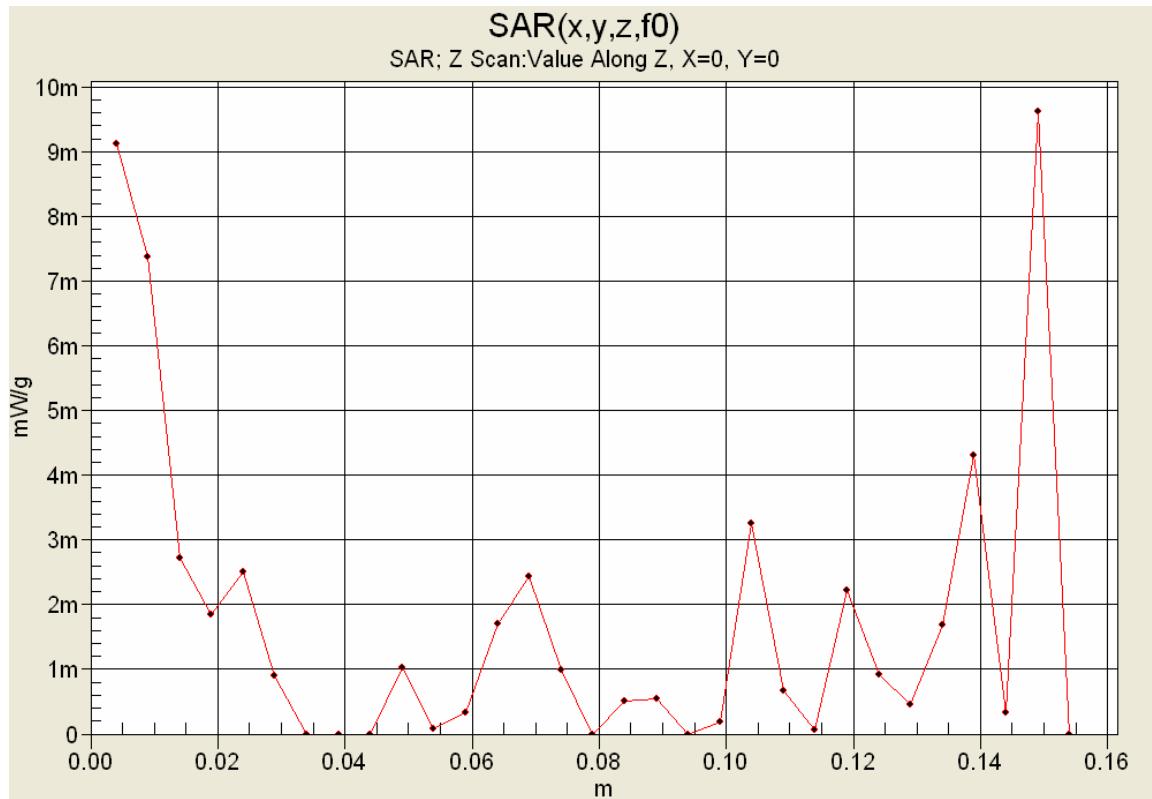
Maximum value of SAR (measured) = 0.013 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>		
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>			
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## Z-Axis Scan



Due to the very low SAR level measured in this configuration the Z-axis scan is only reporting noise. The DASY4 software adjusts the scale according to the measured SAR level, which for this evaluation is close to the measurement noise floor.

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	<b>Ascalade</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>			
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	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 09/18/2007

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

**DUT: Ascalade Model: DECT200X-YY-ZZ; Type: Portable 1.9 GHz DECT UPCS Handset; Serial: B215071500001-US**

Ambient Temp: 25.3°C; Fluid Temp: 22.2°C; Barometric Pressure: 101.4 kPa; Humidity: 30%

Communication System: TDMA 1900

1.2V, 650mAh NiMH Batteries AAA (x2)

Frequency: 1924.99 MHz; Duty Cycle: 1:25

Medium: HSL1900 Medium parameters used:  $f = 1924.99$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(6.59, 6.59, 6.59); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 10/07/2007
- 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/Area Scan (8x16x1):

Measurement grid: dx=10mm, dy=10mm

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

#### Head SAR - Right Ear - Tilt Position (15°) - Mid Channel/Zoom Scan (7x7x7)/Cube 0:

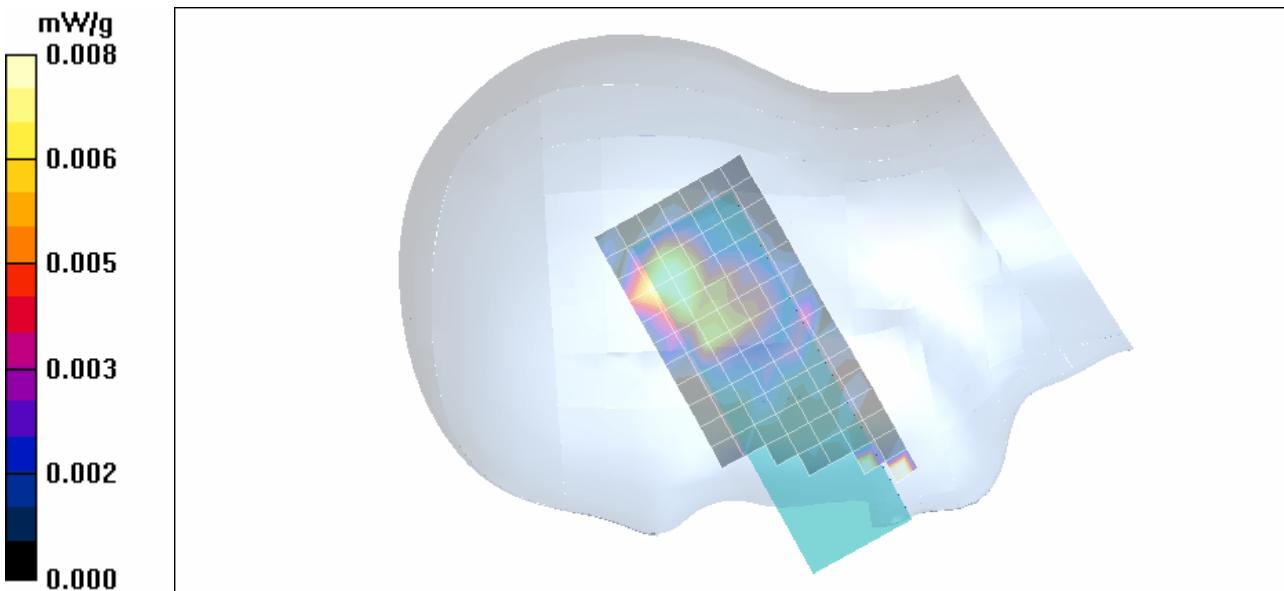
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 1.96 V/m; Power Drift = 0.653 dB

Peak SAR (extrapolated) = 0.011 W/kg

**SAR(1 g) = 0.00444 mW/g; SAR(10 g) = 0.00157 mW/g**

Maximum value of SAR (measured) = 0.008 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>		
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>			
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 Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 IAC-MRA ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 09/18/2007

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

DUT: Ascalade Model: DECT200X-YY-ZZ; Type: Portable 1.9 GHz DECT UPCS Handset; Serial: B215071500001-US

Ambient Temp: 25.3°C; Fluid Temp: 22.2°C; Barometric Pressure: 101.4 kPa; Humidity: 30%

Communication System: TDMA 1900

1.2V, 650mAh NiMH Batteries AAA (x2)

Frequency: 1924.99 MHz; Duty Cycle: 1:25

Medium: HSL1900 Medium parameters used:  $f = 1924.99$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(6.59, 6.59, 6.59); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 10/07/2007
- 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/Area Scan (8x16x1):

Maximum value of SAR (measured) = 0.009 mW/g

#### Head SAR - Left Ear - Cheek/Touch Position - Mid Channel/Zoom Scan (7x7x7)/Cube 0:

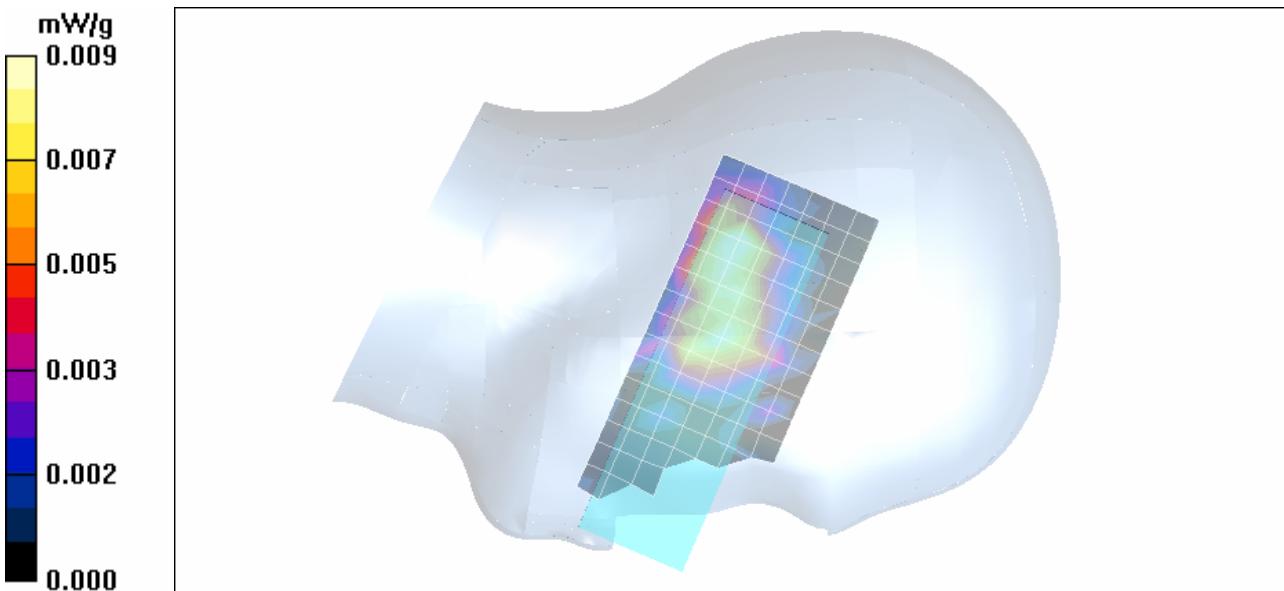
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.08 V/m; Power Drift = 0.139 dB

Peak SAR (extrapolated) = 0.018 W/kg

**SAR(1 g) = 0.00590 mW/g; SAR(10 g) = 0.00235 mW/g**

Maximum value of SAR (measured) = 0.009 mW/g



<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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 <b>Celltech</b> <small>Testing and Engineering Services Lab</small>	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 <b>IAC-MRA</b>  <b>ACCREDITED</b>
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 09/18/2007

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

**DUT: Ascalade Model: DECT200X-YY-ZZ; Type: Portable 1.9 GHz DECT UPCS Handset; Serial: B215071500001-US**

Ambient Temp: 25.3°C; Fluid Temp: 22.2°C; Barometric Pressure: 101.4 kPa; Humidity: 30%

Communication System: TDMA 1900

1.2V, 650mAh NiMH Batteries AAA (x2)

Frequency: 1924.99 MHz; Duty Cycle: 1:25

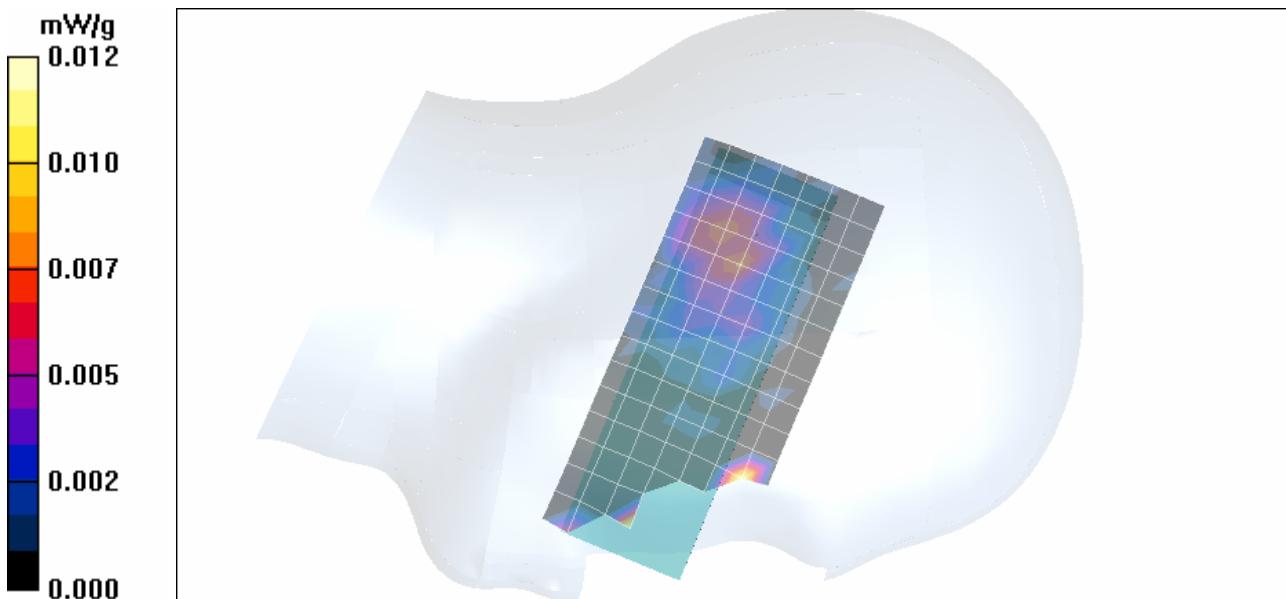
Medium: HSL1900 Medium parameters used:  $f = 1924.99$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(6.59, 6.59, 6.59); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 10/07/2007
- 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/Area Scan (8x16x1):

Measurement grid: dx=10mm, dy=10mm

**Maximum Peak Value of SAR (measured) = 0.012 mW/g**



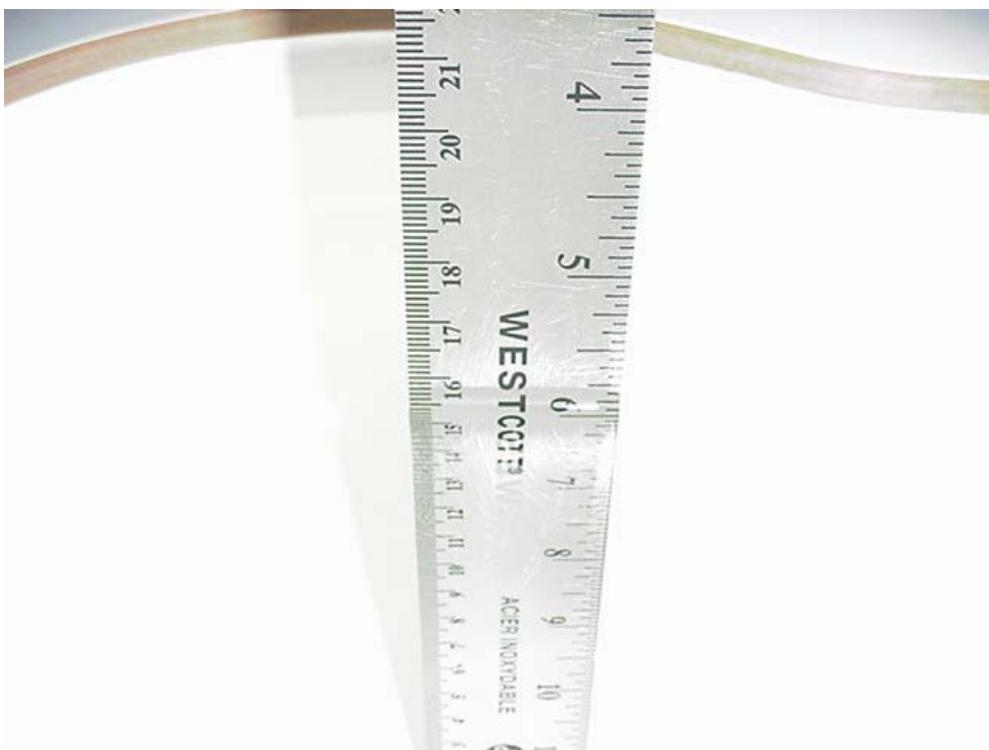
<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>		
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>			
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 <b>Celltech</b> <small>Testing and Engineering Services Lab</small>	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 <b>IAC-MRA</b> ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

### Fluid Depth (>15cm)



Left Head Section



Right Head Section

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	<b>Ascalade</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPSC/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>			
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 <b>Celltech</b> <small>Testing and Engineering Services Lab</small>	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 <b>ilac-MRA</b> <b>ACREDITED</b>
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

<b>Company:</b>	Ascalade Technologies Inc.		FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	
<b>Model(s):</b>	DECT200X-YY-ZZ		Portable UPCS/LE-PCS DECT Handset		1921.536 - 1928.448 MHz		
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 Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 IAC-MRA ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

Date Tested: 09/18/2007

## System Performance Check - 1900 MHz Dipole - HSL

**DUT: Dipole 1900 MHz; Asset: 00032; Serial: 151; Validation: 06/06/2007**

Ambient Temp: 25.3°C; Fluid Temp: 22.2°C; Barometric Pressure: 101.4 kPa; Humidity: 30%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.40$  mho/m;  $\epsilon_r = 38.1$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(6.59, 6.59, 6.59); Calibrated: 24/01/2007
- Sensor-Surface: 2 mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 10/07/2007
- 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) = 15.0 mW/g

### 1900 MHz Dipole System Performance Check/Zoom Scan (7x7x7)/Cube 0:

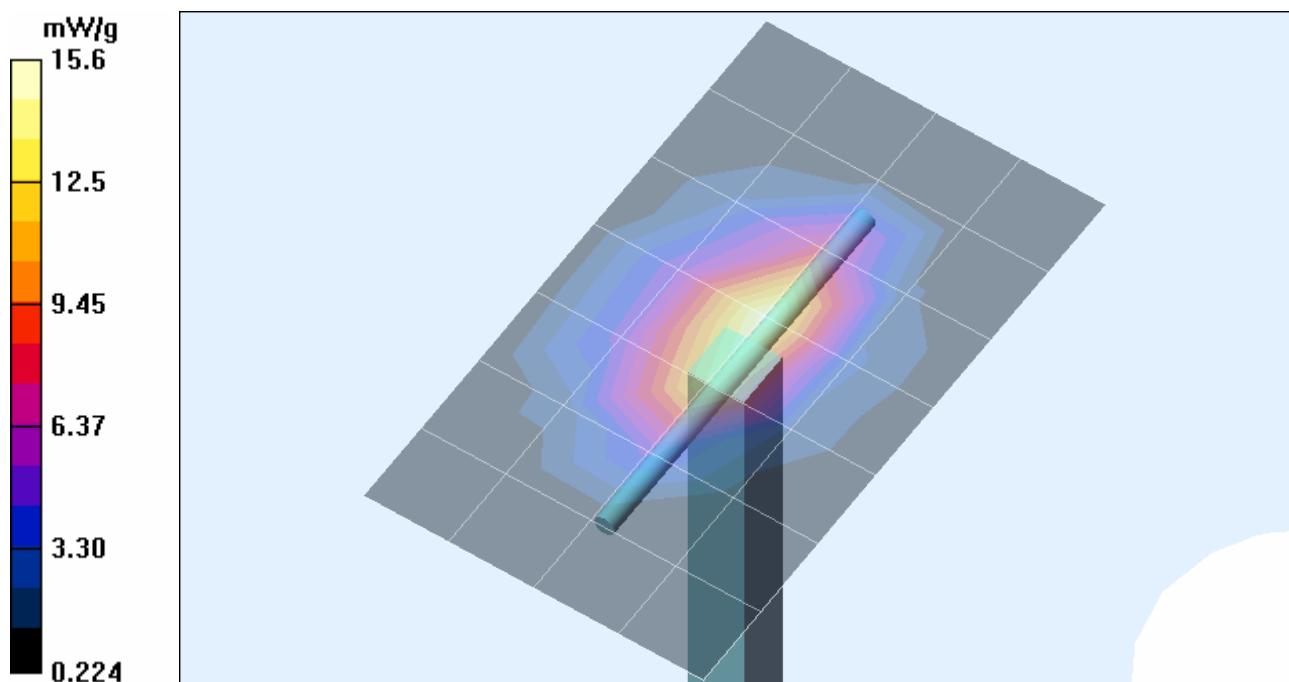
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.0 V/m; Power Drift = 0.000 dB

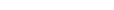
Peak SAR (extrapolated) = 20.4 W/kg

**SAR(1 g) = 10.7 mW/g; SAR(10 g) = 5.46 mW/g**

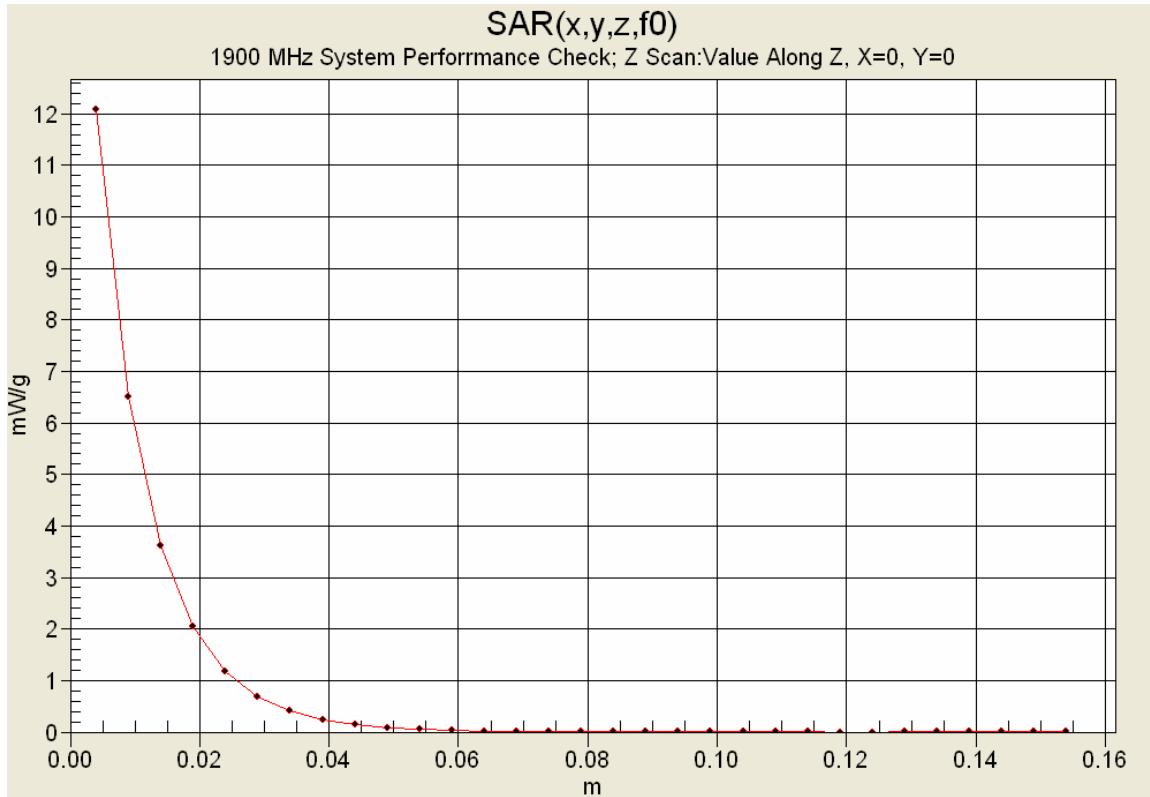
Maximum value of SAR (measured) = 15.6 mW/g

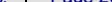


<b>Company:</b>	Ascalade Technologies Inc.	<b>FCC ID:</b>	PBWDT19R42H	<b>IC ID:</b>	3842A-B215	
<b>Model(s):</b>	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz			

 <b>Celltech</b> <small>Testing and Engineering Services Lab</small>	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 <b>ILAC-MRA</b>  <b>ACCREDITED</b>
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## Z-Axis Scan



<b>Company:</b>	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	
<b>Model(s):</b>	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset		1921.536 - 1928.448 MHz		
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 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 IAC-MRA ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPSC/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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 Testing and Engineering Services Ltd.	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<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 (Brain)

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Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Tue 18/Sep/2007

Frequency(GHz)

FCC\_eHFCC OET 65 Supplement C (June 2001) Limits for Head Epsilon  
 FCC\_sHFCC OET 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	38.39
1.8100	40.00	1.40	38.38
1.8200	40.00	1.40	38.36
1.8300	40.00	1.40	38.32
1.8400	40.00	1.40	38.33
1.8500	40.00	1.40	38.19
1.8600	40.00	1.40	38.21
1.8700	40.00	1.40	38.24
1.8800	40.00	1.40	38.11
1.8900	40.00	1.40	38.18
<b>1.9000</b>	<b>40.00</b>	<b>1.40</b>	<b>38.14</b>
1.9100	40.00	1.40	38.09
<b>1.9200</b>	<b>40.00</b>	<b>1.40</b>	<b>38.09</b>
1.9300	40.00	1.40	38.11
1.9400	40.00	1.40	38.09
1.9500	40.00	1.40	38.01
1.9600	40.00	1.40	38.02
1.9700	40.00	1.40	37.94
1.9800	40.00	1.40	37.91
1.9900	40.00	1.40	37.96
2.0000	40.00	1.40	37.93

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	<b>Ascalade</b>
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPSC/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 IAC-MRA ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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Date(s) of Evaluation  
September 18, 2007

Test Report Serial No.  
091707PBW-T849-S15T

Test Report Revision No.  
Revision 1.1

Test Report Issue Date  
November 09, 2007

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



Certificate No. 2470.01

## HEAD SAR TEST SETUP PHOTOGRAPHS

Right Head Section / Cheek-Touch Position



Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	Ascalade	
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz				
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Date(s) of Evaluation  
September 18, 2007

Test Report Serial No.  
091707PBW-T849-S15T

Test Report Revision No.  
Revision 1.1

Test Report Issue Date  
November 09, 2007

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



## HEAD SAR TEST SETUP PHOTOGRAPHS

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



Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	Ascalade	
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz				
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Date(s) of Evaluation  
September 18, 2007

Test Report Serial No.  
091707PBW-T849-S15T

Test Report Revision No.  
Revision 1.1

Test Report Issue Date  
November 09, 2007

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: PBWDT19R42H	IC ID: 3842A-B215	
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz	
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Date(s) of Evaluation  
September 18, 2007

Test Report Serial No.  
091707PBW-T849-S15T

Test Report Revision No.  
Revision 1.1

Test Report Issue Date  
November 09, 2007

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:	PBWDT19R42H	IC ID:	3842A-B215	Ascalade
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz			
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Date(s) of Evaluation  
September 18, 2007

Test Report Serial No.  
091707PBW-T849-S15T

Test Report Revision No.  
Revision 1.1

Test Report Issue Date  
November 09, 2007

Description of Test(s)  
Specific Absorption Rate

RF Exposure Category  
General Population



## DUT PHOTOGRAPHS



Front of DUT



Back of DUT



Top end of DUT



Bottom end of DUT

Company:	Ascalade Technologies Inc.	FCC ID:	PBWDT19R42H	IC ID:	3842A-B215	Ascalade	
Model(s):	DECT200X-YY-ZZ	Portable UPCS/LE-PCS DECT Handset	1921.536 - 1928.448 MHz				
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 Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## DUT PHOTOGRAPHS



Left Side of DUT



Right Side of DUT



DUT Battery Compartment



NiMH AAA Batteries

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	<b>Ascalade</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPCS/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>			
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 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 IAC-MRA ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX E - SYSTEM VALIDATION

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPSC/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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	Date of Evaluation:	June 06, 2007	Document Serial No.:	SV1900B-060607-R1.1		
	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 06, 2007**

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

Performed by:

**Cheri Frangiadakis**

Approved by:

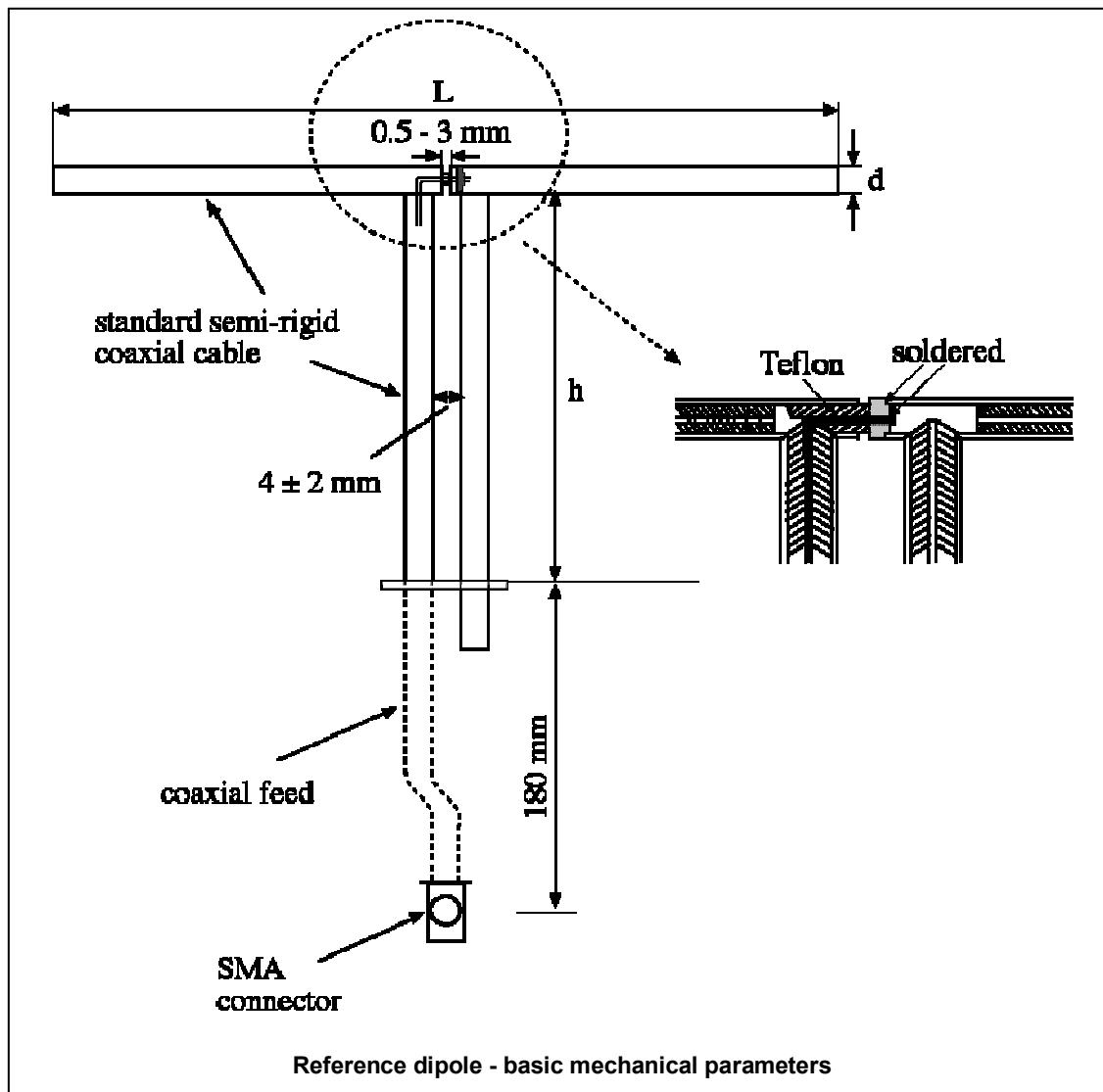
**Jon Hughes**

## 1. Dipole Construction & Electrical Characteristics

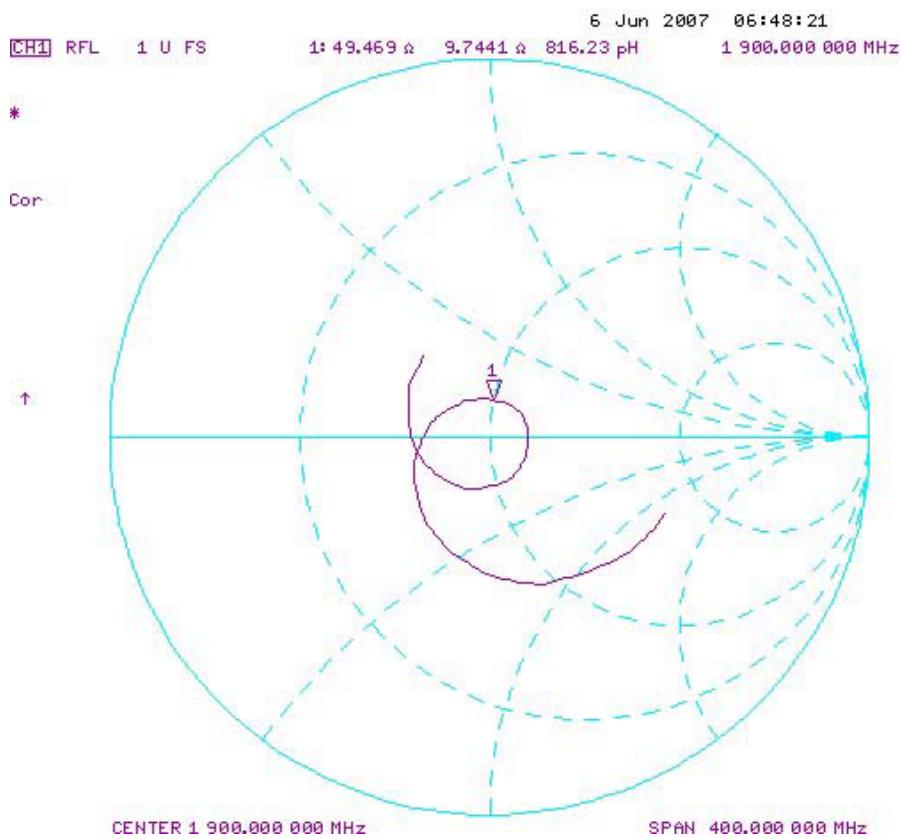
The validation dipole was constructed in accordance with the requirements specified in IEEE Standard 1528-2003 and International Standard IEC 62209-1:2005. The electrical properties were measured using an HP 8753ET Network Analyzer. The network analyzer was calibrated to the validation dipole N-type 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 1900 MHz       $\text{Re}\{Z\} = 49.469\Omega$   
 $\text{Im}\{Z\} = 9.7441\Omega$

Return Loss at 1900 MHz      -20.247dB



## 2. Validation Dipole VSWR Data



 Celltech <small>Testing and Engineering Services Ltd.</small>	Date of Evaluation:	June 06, 2007	Document Serial No.:	SV1900B-060607-R1.1		
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Brain

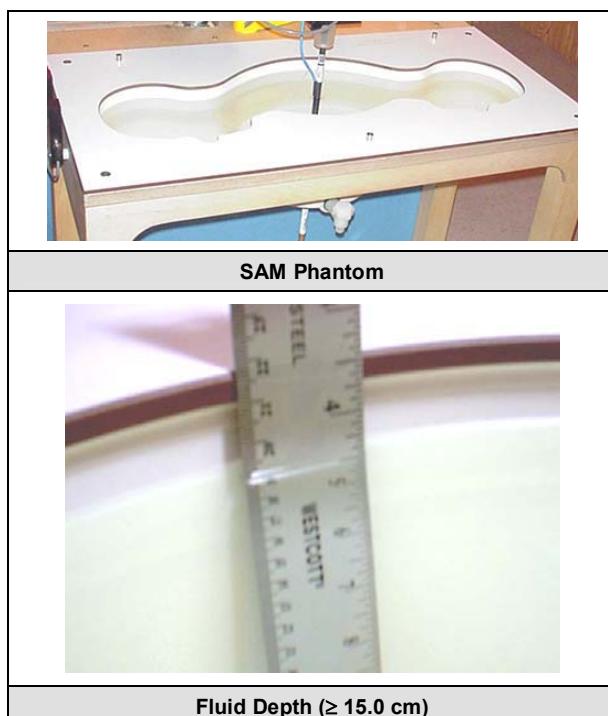
### 3. Validation Dipole Dimensions

Frequency (MHz)	L (mm)	h (mm)	d (mm)
300	396.0	250.0	6.0
450	270.0	167.0	6.0
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
<b>1900</b>	<b>68.0</b>	<b>39.5</b>	<b>3.6</b>
2000	64.5	37.5	3.6
2450	51.5	30.4	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 06, 2007	Document Serial No.:	SV1900B-060607-R1.1		
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Brain

## 5. 1900 MHz System Validation Setup



 Celltech Testing and Engineering Services Ltd.	Date of Evaluation:	June 06, 2007	Document Serial No.:	SV1900B-060607-R1.1		
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Brain

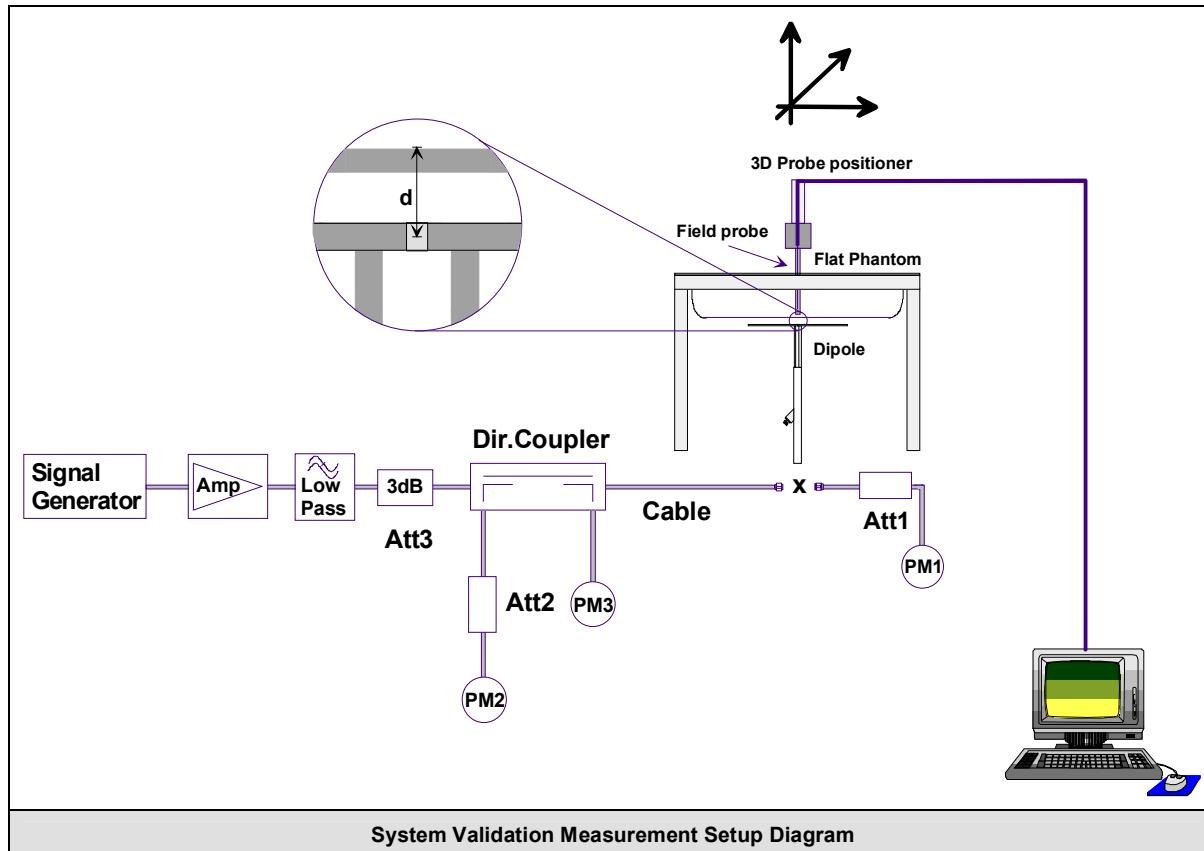
## 6. 1900 MHz Validation Dipole Setup



## 7. SAR Measurement

Measurements were made using a dosimetric E-field probe EX3DV4 (S/N: 3600, Conversion Factor 6.59). 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 procedures described below.

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.



	Date of Evaluation:	June 06, 2007	Document Serial No.:	SV1900B-060607-R1.1		
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Brain

## 8. Measurement Conditions

The SAM phantom was filled with 1900 MHz Brain tissue simulant.

Relative Permittivity: 38.4 (-4.0% deviation from target)

Conductivity: 1.41 mho/m (+0.8% deviation from target)

Fluid Temperature: 21.2 °C (Start of Test) / 21.2 °C (End of Test)

Fluid Depth: ≥ 15.0 cm

Environmental Conditions:

Ambient Temperature: 21.2 °C

Barometric Pressure: 95.9 kPa

Humidity: 40%

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

Ingredient	Percentage by weight
Water	55.85%
Glycol	44.00%
Salt	0.15%
IEEE Target Dielectric Parameters:	$\epsilon_r = 40.0$ (+/-5%)
	$\sigma = 1.40$ S/m (+/-5%)

## 9. System Validation SAR Results

SAR @ 0.25W Input averaged over 1g (W/kg)			SAR @ 1W Input averaged over 1g (W/kg)																																																								
IEEE/IEC Target	Measured	Deviation	IEEE/IEC Target	Measured	Deviation																																																						
9.93	+/- 10%	10.8	+8.8%	39.7	+/- 10%																																																						
SAR @ 0.25W Input averaged over 10g (W/kg)			SAR @ 1W Input averaged over 10g (W/kg)																																																								
IEEE/IEC Target	Measured	Deviation	IEEE/IEC Target	Measured	Deviation																																																						
5.13	+/- 10%	5.45	+6.3%	20.5	+/- 10%																																																						
<table border="1" data-bbox="323 1436 1232 1932"> <thead> <tr> <th>Frequency (MHz)</th> <th>1 g SAR</th> <th>10 g SAR</th> <th>Local SAR at surface (above feed-point)</th> <th>Local SAR at surface (y = 2 cm offset from feed-point)<sup>a</sup></th> </tr> </thead> <tbody> <tr> <td>300</td><td>3.0</td><td>2.0</td><td>4.4</td><td>2.1</td></tr> <tr> <td>450</td><td>4.9</td><td>3.3</td><td>7.2</td><td>3.2</td></tr> <tr> <td>835</td><td>9.5</td><td>6.2</td><td>4.1</td><td>4.9</td></tr> <tr> <td>900</td><td>10.8</td><td>6.9</td><td>16.4</td><td>5.4</td></tr> <tr> <td>1450</td><td>29.0</td><td>16.0</td><td>50.2</td><td>6.5</td></tr> <tr> <td>1800</td><td>38.1</td><td>19.8</td><td>69.5</td><td>6.8</td></tr> <tr> <td>1900</td><td>39.7</td><td>20.5</td><td>72.1</td><td>6.6</td></tr> <tr> <td>2000</td><td>41.1</td><td>21.1</td><td>74.6</td><td>6.5</td></tr> <tr> <td>2450</td><td>52.4</td><td>24.0</td><td>104.2</td><td>7.7</td></tr> <tr> <td>3000</td><td>63.8</td><td>25.7</td><td>140.2</td><td>9.5</td></tr> </tbody> </table>					Frequency (MHz)	1 g SAR	10 g SAR	Local SAR at surface (above feed-point)	Local SAR at surface (y = 2 cm offset from feed-point) <sup>a</sup>	300	3.0	2.0	4.4	2.1	450	4.9	3.3	7.2	3.2	835	9.5	6.2	4.1	4.9	900	10.8	6.9	16.4	5.4	1450	29.0	16.0	50.2	6.5	1800	38.1	19.8	69.5	6.8	1900	39.7	20.5	72.1	6.6	2000	41.1	21.1	74.6	6.5	2450	52.4	24.0	104.2	7.7	3000	63.8	25.7	140.2	9.5
Frequency (MHz)	1 g SAR	10 g SAR	Local SAR at surface (above feed-point)	Local SAR at surface (y = 2 cm offset from feed-point) <sup>a</sup>																																																							
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Numerical reference SAR values for reference dipole and flat phantom normalized to 1 W (IEEE 1528-2003; IEC 62209-1:2005)																																																											

## System Validation - 1900 MHz Dipole - June 6, 2007

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

Ambient Temp: 21.2°C; Fluid Temp: 21.2°C; Barometric Pressure: 95.9 kPa; Humidity: 40%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL1900 Medium parameters used:  $f = 1900$  MHz;  $\sigma = 1.41$  mho/m;  $\epsilon_r = 38.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

- Probe: EX3DV4 - SN3600; ConvF(6.59, 6.59, 6.59); Calibrated: 24/01/2007
- 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 System Validation/Area Scan (5x8x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 11.7 mW/g

### 1900 MHz System Validation/Zoom Scan (7x7x7)/Cube 0:

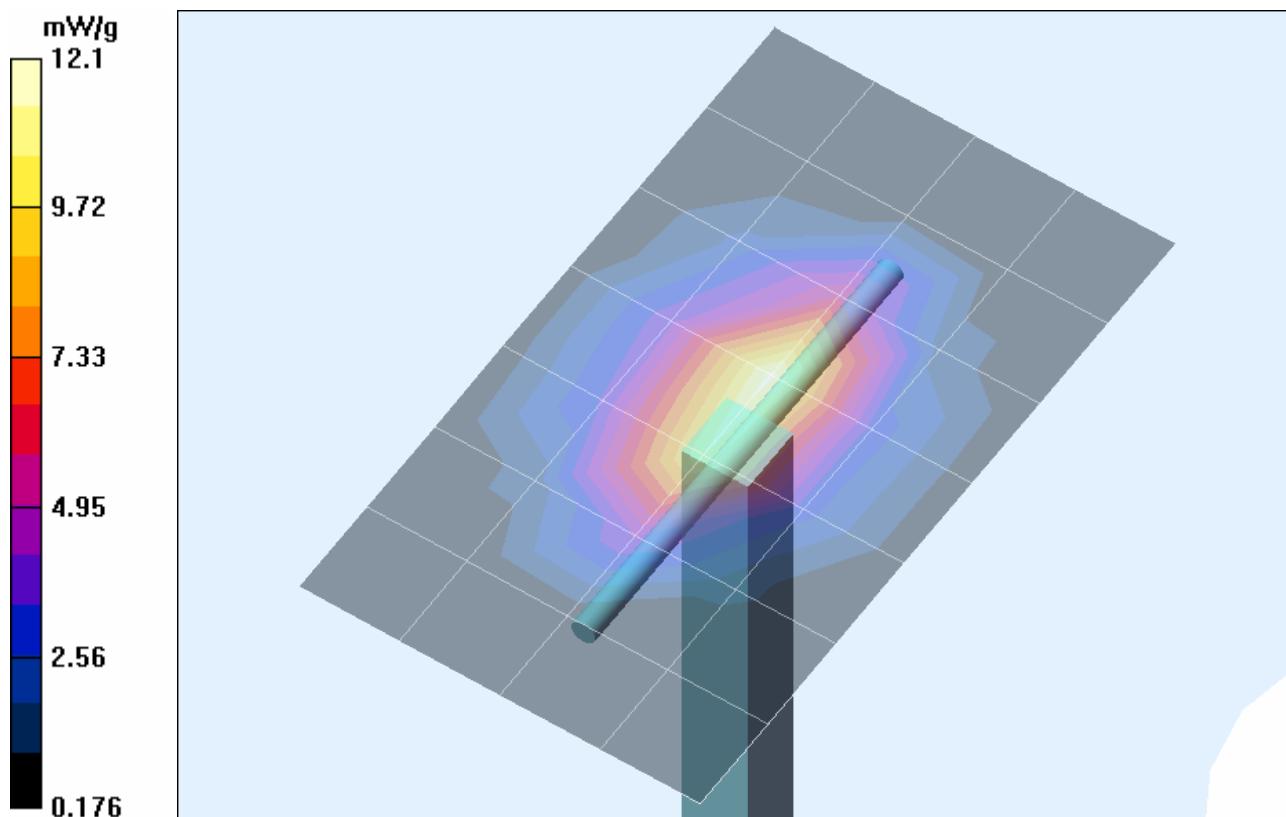
Measurement grid: dx=5mm, dy=5mm, dz=5mm

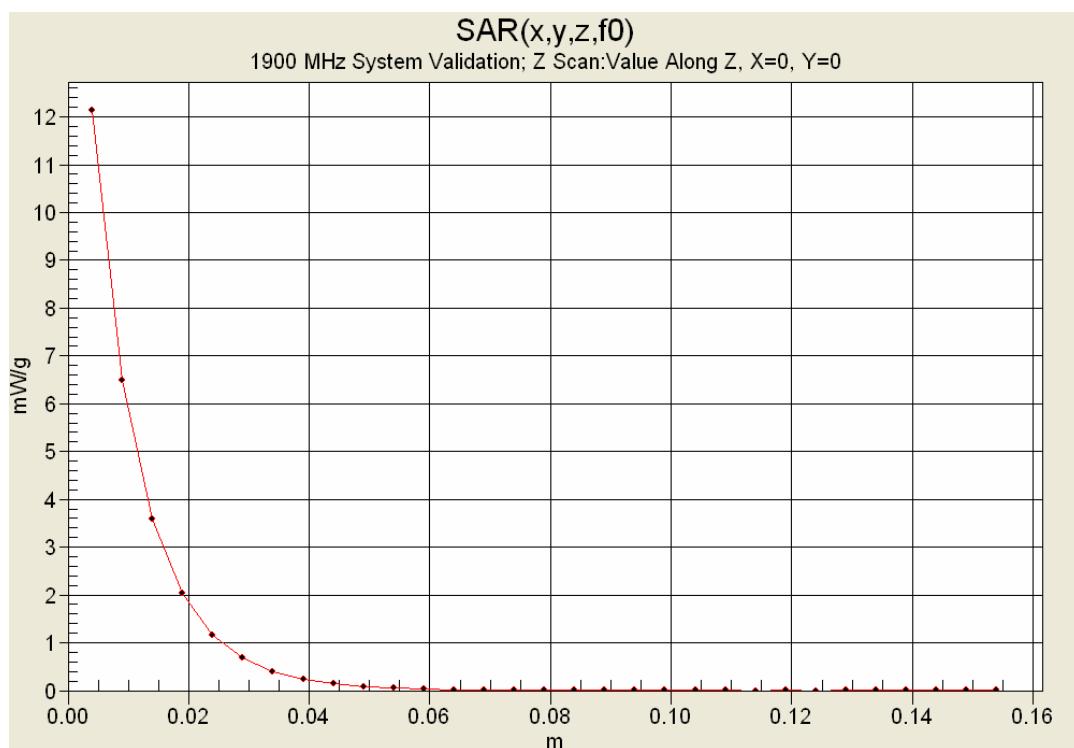
Reference Value = 94.0 V/m; Power Drift = -0.075 dB

Peak SAR (extrapolated) = 21.0 W/kg

**SAR(1 g) = 10.8 mW/g; SAR(10 g) = 5.45 mW/g**

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





## 10. Measured Fluid Dielectric Parameters

### System Validation - 1900 MHz (Brain)

\*\*\*\*\*
 Celltech Labs Inc.  
 Test Result for UIM Dielectric Parameter  
 Wed 06/Jun/2007  
 Frequency (GHz)  
 FCC\_eHFCC OET 65 Supplement C (June 2001) Limits for Head Epsilon  
 FCC\_sHFCC 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	38.49	1.30
1.8100	40.00	1.40	38.70	1.31
1.8200	40.00	1.40	38.62	1.32
1.8300	40.00	1.40	38.57	1.33
1.8400	40.00	1.40	38.57	1.34
1.8500	40.00	1.40	38.46	1.35
1.8600	40.00	1.40	38.51	1.37
1.8700	40.00	1.40	38.51	1.38
1.8800	40.00	1.40	38.38	1.38
1.8900	40.00	1.40	38.42	1.39
<b>1.9000</b>	<b>40.00</b>	<b>1.40</b>	<b>38.38</b>	<b>1.41</b>
1.9100	40.00	1.40	38.33	1.42
1.9200	40.00	1.40	38.27	1.43
1.9300	40.00	1.40	38.23	1.44
1.9400	40.00	1.40	38.17	1.45
1.9500	40.00	1.40	38.16	1.47
1.9600	40.00	1.40	38.17	1.47
1.9700	40.00	1.40	38.04	1.48
1.9800	40.00	1.40	38.02	1.49
1.9900	40.00	1.40	37.98	1.50
2.0000	40.00	1.40	37.90	1.51

 Testing and Engineering Services Ltd.	Date of Evaluation:	June 06, 2007	Document Serial No.:	SV1900B-060607-R1.1		
	Evaluation Type:	System Validation	Validation Dipole:	1900 MHz	Fluid Type:	Brain

## 11. Measurement Uncertainties

UNCERTAINTY BUDGET FOR SYSTEM VALIDATION						
Error Description	Uncertainty Value ±%	Probability Distribution	Divisor	ci 1g	Uncertainty Value ±% (1g)	V <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>						
Probe calibration (1950 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>Dipole</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)	5	Normal	1	0.64	3.2	∞
Liquid permittivity (target)	5	Rectangular	1.732050808	0.6	1.7	∞
Liquid permittivity (measured)	5	Normal	1	0.6	3.0	∞
<b>Combined Standard Uncertainty</b>					9.57	
<b>Expanded Uncertainty (k=2)</b>					19.14	
<b>Note(s)</b>	1. Measurement Uncertainty Table in accordance with IEEE 1528-2003 and IEC 62209-1:2005.					

## 12. Test Equipment List

TEST EQUIPMENT	ASSET NO.	SERIAL NO.	DATE OF CAL.	CAL. DUE DATE
SPEAG DASY4 Measurement Server	00158	1078	N/A	N/A
SPEAG Robot	00046	599396-01	N/A	N/A
SPEAG DAE4	00019	353	21Jun06	21Jun07
SPEAG EX3DV4 E-Field Probe	00213	3600	24Jan07	24Jan08
1900 MHz Validation Dipole	00032	151	06Jun07	06Jun08
SPEAG SAM Phantom V4.0C	00154	1033	N/A	N/A
ALS-PR-DIEL Dielectric Probe Kit	00160	260-00953	N/A	N/A
Gigatronics 8652A Power Meter	00007	1835272	26Mar07	26Mar08
Gigatronics 80701A Power Sensor	00014	1833699	22Jan07	22Jan08
Gigatronics 80701A Power Sensor	00109	1834366	26Mar07	26Mar08
HP 8753ET Network Analyzer	00134	US39170292	20Apr07	20Apr08
HP 8648D Signal Generator	00005	3847A00611	NCR	NCR
Amplifier Research 5S1G4 Power Amplifier	00106	26235	NCR	NCR

 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 IAC-MRA ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> General Population	

## APPENDIX F - PROBE CALIBRATION

<b>Company:</b>	<b>Ascalade Technologies Inc.</b>		<b>FCC ID:</b>	<b>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPSC/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
2007 Celltech Labs Inc.	This document is not to be reproduced in whole or in part without the prior written permission of Celltech Labs Inc.						Page 37 of 38

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



**S** Schweizerischer Kalibrierdienst  
**C** Service suisse d'étalonnage  
**C** Servizio svizzero di taratura  
**S** Swiss Calibration Service

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**

**Certificate No: EX3-3600\_Jan07**

## **CALIBRATION CERTIFICATE**

**Object** **EX3DV4 - SN:3600**

**Calibration procedure(s)** **QA CAL-01.v5 and QA CAL-14.v3**  
**Calibration procedure for dosimetric E-field probes**

**Calibration date:** **January 24, 2007**

**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 ( $22 \pm 3$ )°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	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41495277	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Power sensor E4412A	MY41498087	5-Apr-06 (METAS, No. 251-00557)	Apr-07
Reference 3 dB Attenuator	SN: S5054 (3c)	10-Aug-06 (METAS, No. 217-00592)	Aug-07
Reference 20 dB Attenuator	SN: S5086 (20b)	4-Apr-06 (METAS, No. 251-00558)	Apr-07
Reference 30 dB Attenuator	SN: S5129 (30b)	10-Aug-06 (METAS, No. 217-00593)	Aug-07
Reference Probe ES3DV2	SN: 3013	4-Jan-07 (SPEAG, No. ES3-3013_Jan07)	Jan-08
DAE4	SN: 654	21-Jun-06 (SPEAG, No. DAE4-654_Jun06)	Jun-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 Oct-06)	In house check: Oct-07

Calibrated by:	Name	Function	Signature
	Katja Pokovic	Technical Manager	

Approved by:	Name	Function	Signature
	Niels Kuster	Quality Manager	

**Issued: January 24, 2007**

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



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:**

<b>TSL</b>	tissue simulating liquid
<b>NORM<math>x,y,z</math></b>	sensitivity in free space
<b>ConF</b>	sensitivity in TSL / NORM $x,y,z$
<b>DCP</b>	diode compression point
<b>Polarization <math>\phi</math></b>	$\phi$ rotation around probe axis
<b>Polarization <math>\vartheta</math></b>	$\vartheta$ 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:**

- NORM $x,y,z$ :** Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM $x,y,z$  are only intermediate values, i.e., the uncertainties of NORM $x,y,z$  does not effect the E<sup>2</sup>-field uncertainty inside TSL (see below *ConvF*).
- NORM( $f$ ) $x,y,z$  = NORM $x,y,z$  \* 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 NORM $x,y,z$  \* *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 EX3DV4**

## **SN:3600**

**Manufactured:** January 10, 2007  
**Calibrated:** January 24, 2007

**Calibrated for DASY Systems**

**(Note: non-compatible with DASY2 system!)**

**DASY - Parameters of Probe: EX3DV4 SN:3600**

## Sensitivity in Free Space<sup>A</sup>

## Diode Compression<sup>B</sup>

NormX	<b>0.460</b> $\pm$ 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	90 mV
NormY	<b>0.470</b> $\pm$ 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	88 mV
NormZ	<b>0.380</b> $\pm$ 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Z	89 mV

## Sensitivity in Tissue Simulating Liquid (Conversion Factors)

**Please see Page 8.**

## Boundary Effect

**TSL**      **1810 MHz**      **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		2.0 mm	3.0 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	4.5	3.5
SAR <sub>be</sub> [%]	With Correction Algorithm	0.2	0.4

**TSL**      **5800 MHz**      **Typical SAR gradient: 30 % per mm**

Sensor Center to Phantom Surface Distance		2.0 mm	3.0 mm
SAR <sub>be</sub> [%]	Without Correction Algorithm	3.5	2.0
SAR <sub>be</sub> [%]	With Correction Algorithm	0.1	0.3

## Sensor Offset

Probe Tip to Sensor Center **1.0 mm**

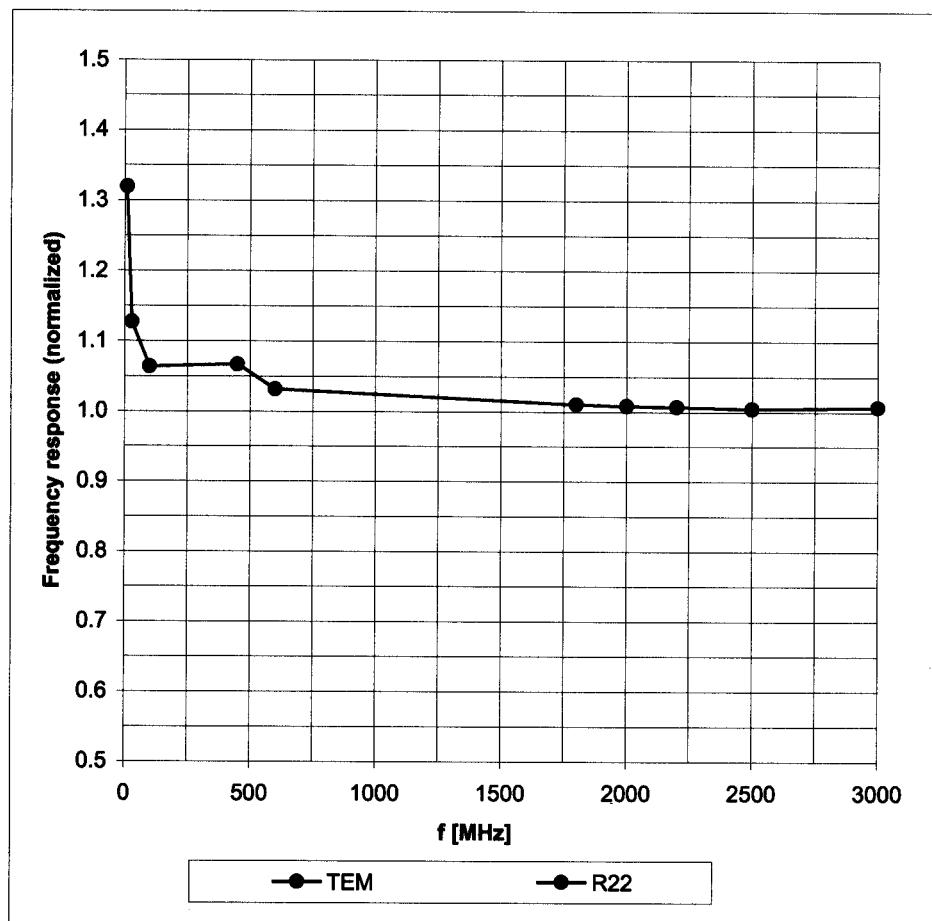
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

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

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

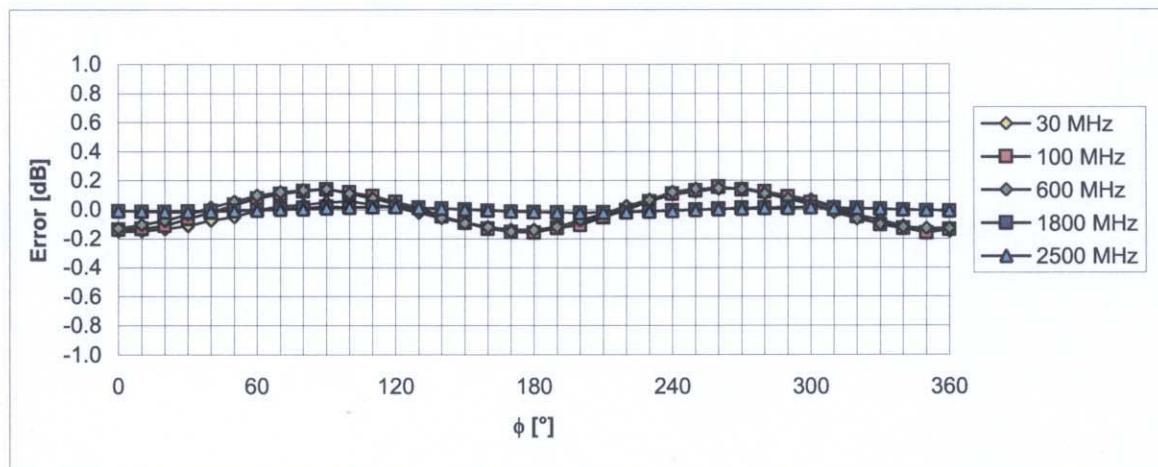
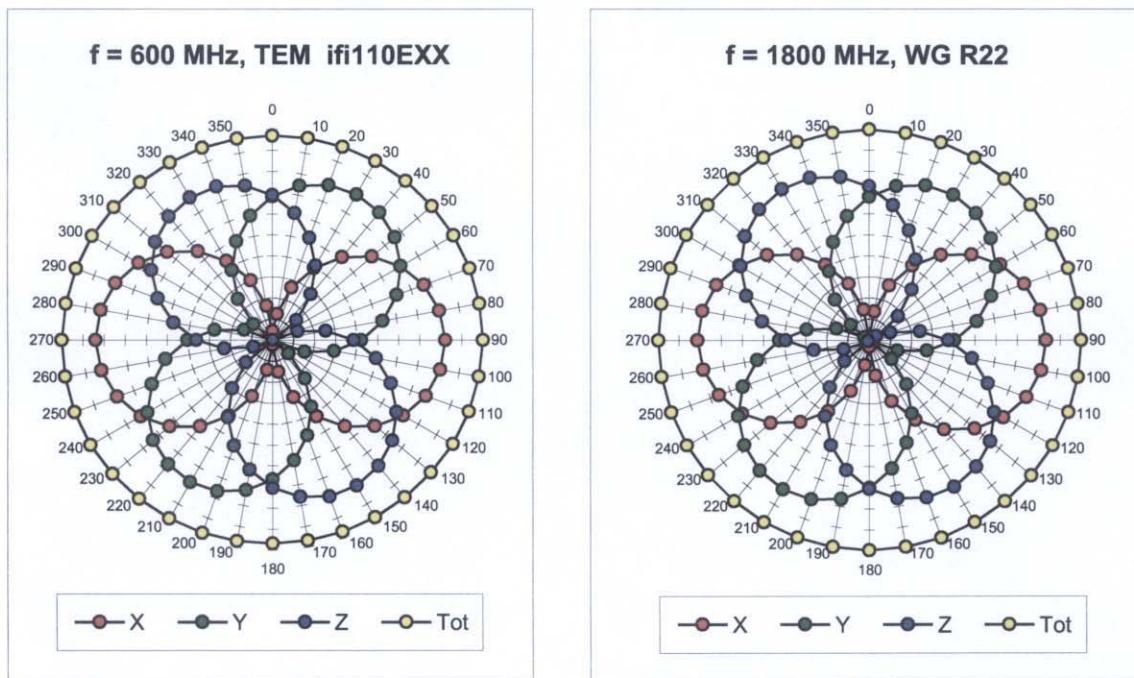
## Frequency Response of E-Field

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



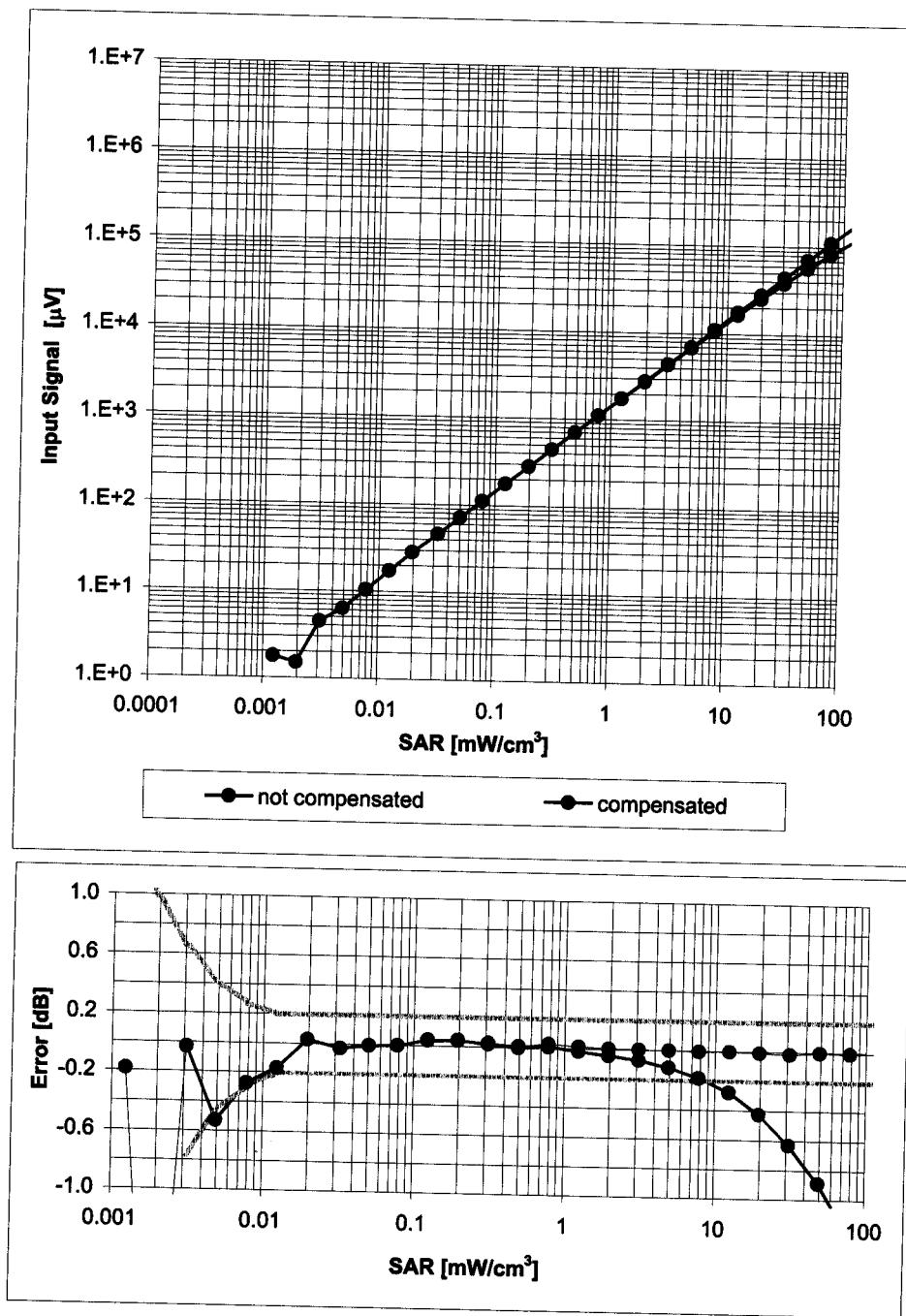
Uncertainty of Frequency Response of E-field:  $\pm 6.3\%$  (k=2)

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



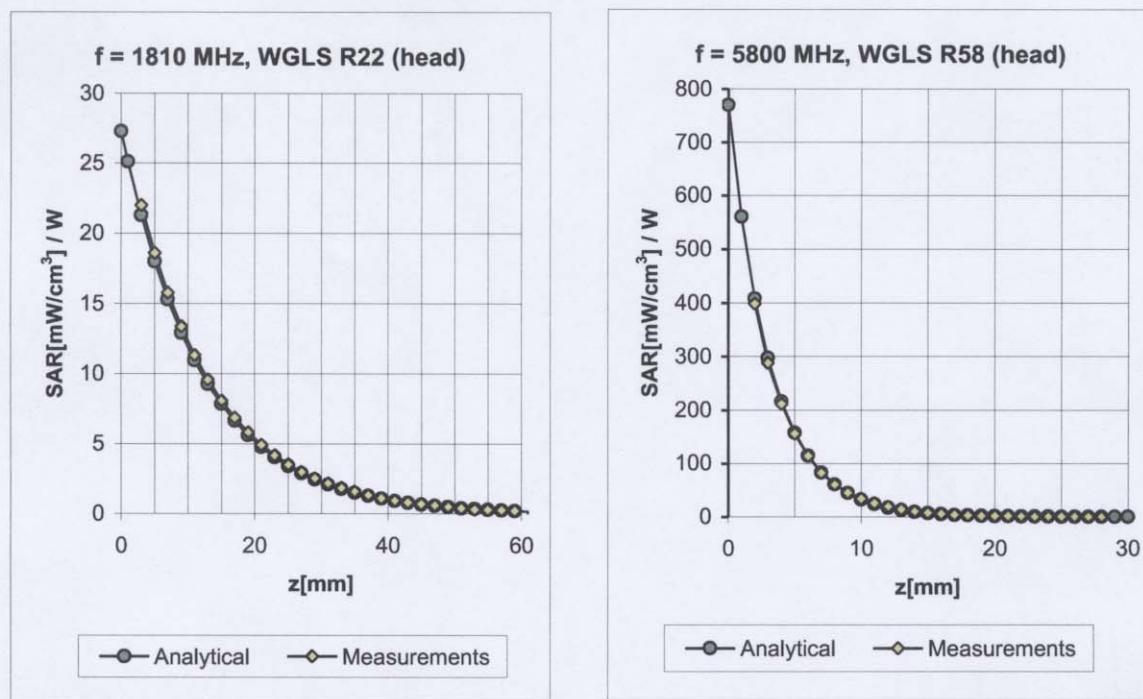
Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

**Dynamic Range  $f(\text{SAR}_{\text{head}})$**   
(Waveguide R22,  $f = 1800$  MHz)



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

## Conversion Factor Assessment



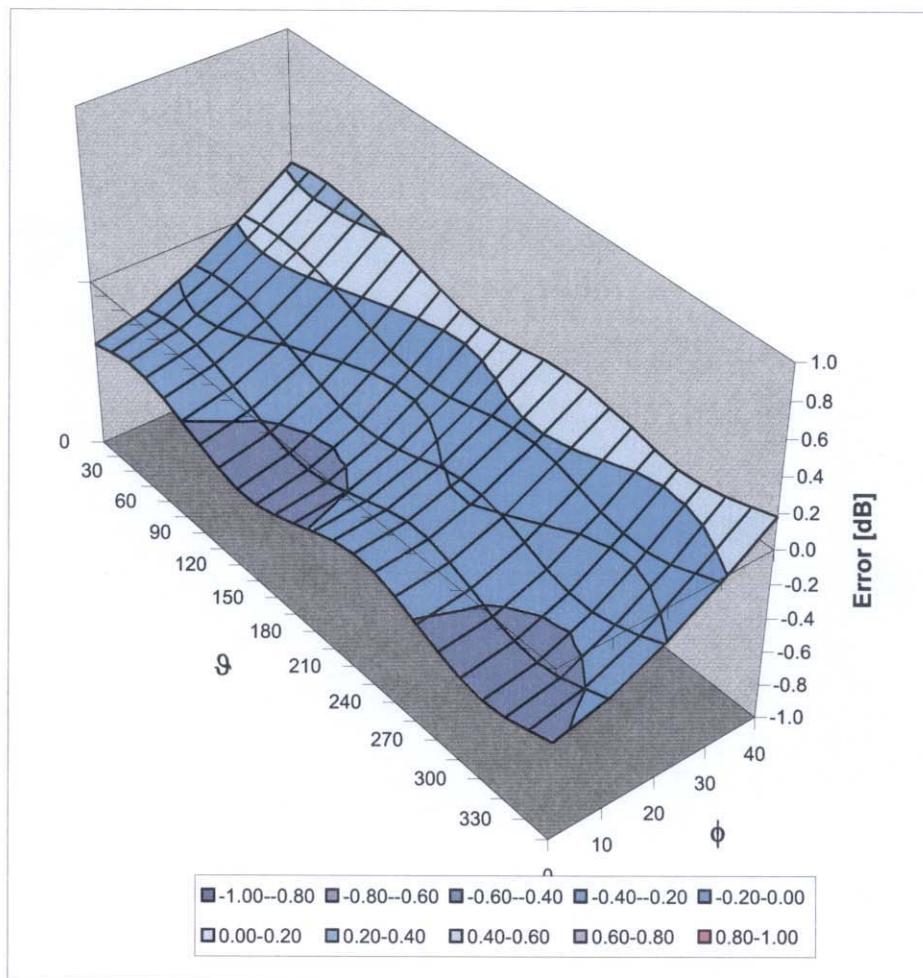
f [MHz]	Validity [MHz] <sup>c</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF	Uncertainty
1810	$\pm 50 / \pm 100$	Head	$40.0 \pm 5\%$	$1.40 \pm 5\%$	0.20	1.01	7.02	$\pm 11.0\% \text{ (k=2)}$
1950	$\pm 50 / \pm 100$	Head	$40.0 \pm 5\%$	$1.40 \pm 5\%$	0.26	1.05	6.59	$\pm 11.0\% \text{ (k=2)}$
2450	$\pm 50 / \pm 100$	Head	$39.2 \pm 5\%$	$1.80 \pm 5\%$	0.44	1.00	6.37	$\pm 11.8\% \text{ (k=2)}$
5800	$\pm 50 / \pm 100$	Head	$35.3 \pm 5\%$	$5.27 \pm 5\%$	0.37	1.65	4.34	$\pm 13.1\% \text{ (k=2)}$

1810	$\pm 50 / \pm 100$	Body	$53.3 \pm 5\%$	$1.52 \pm 5\%$	0.24	1.06	6.85	$\pm 11.0\% \text{ (k=2)}$
1950	$\pm 50 / \pm 100$	Body	$53.3 \pm 5\%$	$1.52 \pm 5\%$	0.16	1.35	6.54	$\pm 11.0\% \text{ (k=2)}$
2450	$\pm 50 / \pm 100$	Body	$52.7 \pm 5\%$	$1.95 \pm 5\%$	0.42	1.00	6.31	$\pm 11.8\% \text{ (k=2)}$
5200	$\pm 50 / \pm 100$	Body	$49.0 \pm 5\%$	$5.30 \pm 5\%$	0.35	1.70	4.10	$\pm 13.1\% \text{ (k=2)}$
5500	$\pm 50 / \pm 100$	Body	$48.6 \pm 5\%$	$5.65 \pm 5\%$	0.32	1.70	3.95	$\pm 13.1\% \text{ (k=2)}$
5800	$\pm 50 / \pm 100$	Body	$48.2 \pm 5\%$	$6.00 \pm 5\%$	0.33	1.70	4.14	$\pm 13.1\% \text{ (k=2)}$

<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:  $\pm 2.6\%$  ( $k=2$ )

 Celltech Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> September 18, 2007	<u>Test Report Serial No.</u> 091707PBW-T849-S15T	<u>Test Report Revision No.</u> Revision 1.1	 IAC-MRA ACCREDITED
	<u>Test Report Issue Date</u> November 09, 2007	<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>PBWDT19R42H</b>	<b>IC ID:</b>	<b>3842A-B215</b>	
<b>Model(s):</b>	<b>DECT200X-YY-ZZ</b>		<b>Portable UPSC/LE-PCS DECT Handset</b>		<b>1921.536 - 1928.448 MHz</b>		
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# Schmid & Partner Engineering AG

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

## Certificate of conformity / First Article Inspection

Item	SAM Twin Phantom V4.0
Type No	QD 000 P40 BA
Series No	TP-1002 and higher
Manufacturer / Origin	Untersee Composites Hauptstr. 69 CH-8559 Fruthwilen Switzerland

### Tests

The series production process used allows the limitation to test of first articles. Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested using further series units (called samples).

Test	Requirement	Details	Units tested
Shape	Compliance with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness	Compliant with the requirements according to the standards	2mm +/- 0.2mm in specific areas	First article, Samples
Material parameters	Dielectric parameters for required frequencies	200 MHz – 3 GHz Relative permittivity < 5 Loss tangent < 0.05.	Material sample TP 104-5
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards	Liquid type HSL 1800 and others according to the standard.	Pre-series, First article

### Standards

- [1] CENELEC EN 50361
- [2] IEEE P1528-200x draft 6.5
- [3] IEC PT 62209 draft 0.9

(\*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

### Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standard [1] and draft standards [2] and [3].

Date

18.11.2001

Signature / Stamp

Schmid & Partner  
Engineering AG

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