
	<u>Date(s) of Evaluation</u> September 14, 2006	<u>Test Report Serial No.</u> 091206AMW-T774-S15T	<u>Report Revision No.</u> Revision 1.0	
	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

Certificate No. 2470.01

## RF EXPOSURE EVALUATION

## SPECIFIC ABSORPTION RATE

### **SAR TEST REPORT**

FOR

### **UNIDEN AMERICA CORPORATION**

### **PORTABLE 5.8 GHz CORDLESS TELEPHONE HANDSET**

**Model(s): UP822BH / TRU9380**

**FCC ID: AMWUP822**

**IC ID: 513C-UP822**

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.

091206AMW-T774-S15T

#### Test Report Revision No.

Revision 1.0 (Initial Release)


#### Test Location



Celltech Compliance Testing & Engineering Lab  
(Celltech Labs Inc.)  
1955 Moss Court  
Kelowna, BC  
Canada  
V1Y 9L3



Certificate No. 2470.01

<u>Test Report Prepared By:</u> <b>Cheri Frangiadakis</b> Test Report Writer Celltech Labs Inc.	<u>Test Report Reviewed By:</u> <b>Jonathan Hughes</b> General Manager Celltech Labs Inc.
--	--

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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Certificate No. 2470.01				

## DECLARATION OF COMPLIANCE SAR RF EXPOSURE EVALUATION

### Test Lab and Location

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### Company Information

#### **UNIDEN AMERICA CORPORATION**

Engineering Services Office  
181 N. Country Club Road  
Lake City, SC 29560  
United States

**FCC IDENTIFIER:** AMWUP822  
**IC IDENTIFIER:** 513C-UP822  
**Model No.(s):** UP822BH / TRU9380

**Test Standard(s):** FCC 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 1528-2003  
**FCC Device Classification:** Digital Transmission System (DTS)  
**IC Device Classification:** Low Power License-Exempt Radiocommunication Device (RSS-210 Issue 6)

**Device Description:** 5.8 GHz Cordless Telephone Handset  
**Transmit Frequency Range(s):** 5725.8 - 5848.9 MHz (ISM Band)  
**Mode of Operation:** TDMA/TDD  
**Max. Duty Cycle Tested:** 10.5 %  
**Max. RF Output Power Tested:** 245.44 mW / 23.90 dBm (5787.3503 MHz) - Source-Based Time-Averaged  
**Power Measurement Method:** Radiated Free Space Power  
**Battery Type(s) Tested:** Ni-MH 3.6 V, 600 mAh (P/N: BT909)  
**Antenna Type(s) Tested:** Internal

**Body-Worn Accessories Tested:** Plastic Belt-Clip (P/N: GBCT3C8645Z)  
Headset with Boom-Microphone (P/N: TRUC46)

**Max. SAR Level(s) Evaluated:** Head: 0.037 W/kg (Peak SAR measured from Area Scan)  
Body: 0.274 W/kg (1g average)

Celltech Labs Inc. declares under its sole responsibility that this wireless 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:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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Certificate No. 2470.01				



## 1.0 INTRODUCTION

This measurement report demonstrates that the UNIDEN AMERICA CORPORATION Model: UP822BH / TRU9380 Portable 5.8 GHz Cordless Telephone Handset FCC ID: AMWUP822 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	47 CFR §2.1093		
	IC	Health Canada Safety Code 6		
Device Classification(s)	FCC	Digital Transmission System (DTS)		FCC §15(C)
	IC	Low Power License-Exempt Radiocommunication Device		RSS-210 Issue 6
Test Procedure(s)	FCC OET Bulletin 65, Supplement C (01-01)			
	Industry Canada RSS-102 Issue 2			
	IEEE Standard 1528-2003			
Device Description	Portable 5.8 GHz Cordless Telephone Handset			
RF Exposure Category	General Population / Uncontrolled Environment			
FCC IDENTIFIER	AMWUP822			
IC IDENTIFIER	513C-UP822			
Model No.(s)	UP822BH		TRU9380	
Test Sample Serial No.	None		Identical Prototype	
Mode(s) of Operation	TDMA		TDD	
Max Duty Cycle Tested	10.5% Duty Cycle		Crest Factor: 1:9.52	
Transmitter Frequency Range(s)	5725.8 - 5848.9 MHz (ISM Band)			
Max. RF Output Power Levels Calculated from Corrected Field Strengths (Source-Based Time-Averaged)	205.18 mW	23.12 dBm	Free-Space Power	5725.8093 MHz
	245.44 mW	23.90 dBm	Free-Space Power	5787.3503 MHz
	207.24 mW	23.16 dBm	Free-Space Power	5848.8894 MHz
Antenna Type(s) Tested	Internal			
Battery Type(s) Tested	Ni-MH	3.6 V	600 mAh	P/N: BT909
Body-Worn Accessories Tested	Plastic Belt-Clip		P/N: GBCT3C8645Z	
Audio Accessories Tested	Headset with Boom-Microphone		P/N: TRUC46	
Additional Audio Accessories (Additional Testing Not Required)	Headset		P/N: HS910	
	Headset		P/N: HS915	

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Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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### 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 alternate 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 device holder

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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## 5.0 DETAILS OF SAR EVALUATION

The UNIDEN AMERICA CORPORATION Model(s): UP822BH / TRU9380 Portable 5.8 GHz Cordless Telephone Handset FCC ID: AMWUP822 was compliant for localized Specific Absorption Rate (Uncontrolled Exposure) based on the test provisions and conditions described below. The detailed test setup photographs are shown in Appendix E.

### Ear-held Configuration

- 1) The DUT was tested in an ear-held configuration on both the left and right sections of the SAM phantom at the mid channel of the operating band. If the SAR level at the mid channel of the frequency band for each test configuration (left ear, right ear, cheek/touch, ear/tilt) was  $\geq 3$ dB below the SAR limit, measurements at the low and high channels were optional (per FCC OET Bulletin 65, Supplement C, Edition 01-01 - see reference [3]).
  - a) The handset was placed in the device holder in a normal operating position with the test device reference point located along the vertical centerline on the front of the device aligned to the ear reference point, with the center of the earpiece touching the center of the ear spacer of the SAM phantom.
  - b) With the handset positioned parallel to the cheek, the test device reference point was aligned to the ear reference point on the head phantom, and the vertical centerline was aligned to the phantom reference plane (initial ear position).
  - c) While maintaining the three alignments, the body of the handset was gradually adjusted to each of the following test positions:
    - Cheek/Touch Position: the handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

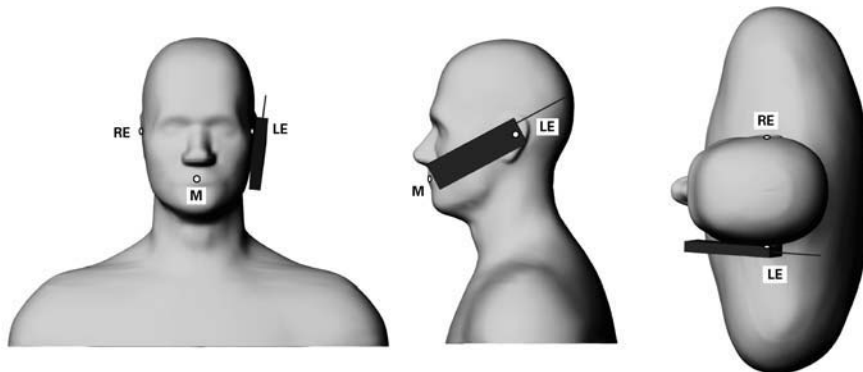


Figure 1. Phone position 1, “cheek” or “touch” position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).

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

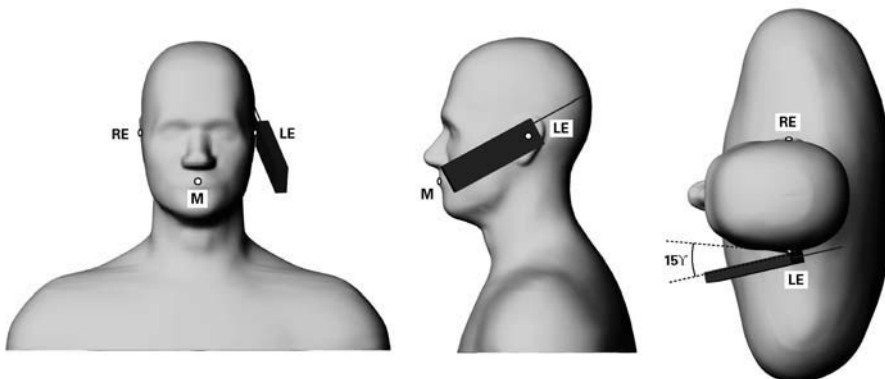





Figure 2. Phone position 2, “tilted position.” The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning, are indicated (Shoulders are shown for illustration only).

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## DETAILS OF SAR EVALUATION (Cont.)

### Body-worn Configuration

- 2) The DUT was tested in a body-worn configuration with the back of the device placed parallel to the outer surface of the SAM phantom (planar section). The attached plastic belt-clip accessory was touching the outer surface of the SAM phantom (planar section) and provided a 1.6 cm separation distance from the back of the handset to the SAM phantom (planar section).
- 3) A headset audio accessory was connected to the DUT for the duration of the test(s).

### DUT Test Modes & Power Settings

- 4) The DUT was programmed in test mode via internal software controlled by the keypad.
- 5) SAR measurements were performed with the DUT transmitting at maximum power on a fixed frequency with a modulated signal and a measured source-based time-averaged duty cycle of 10.5% (crest factor: 1:9.52).
- 6) The conducted power level(s) of the DUT could not be measured for the SAR evaluation due to internal antenna. The DUT was evaluated for SAR at the maximum conducted power level preset by the manufacturer. The RF output power reference levels of the DUT were evaluated prior to the SAR evaluations using the free-space power measurement method (output power calculated from measured field strengths) using Celltech Labs' 3-meter open area test site (OATS) in accordance with the measurement procedures described in ANSI TIA/EIA-603-C-2004.

## 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:

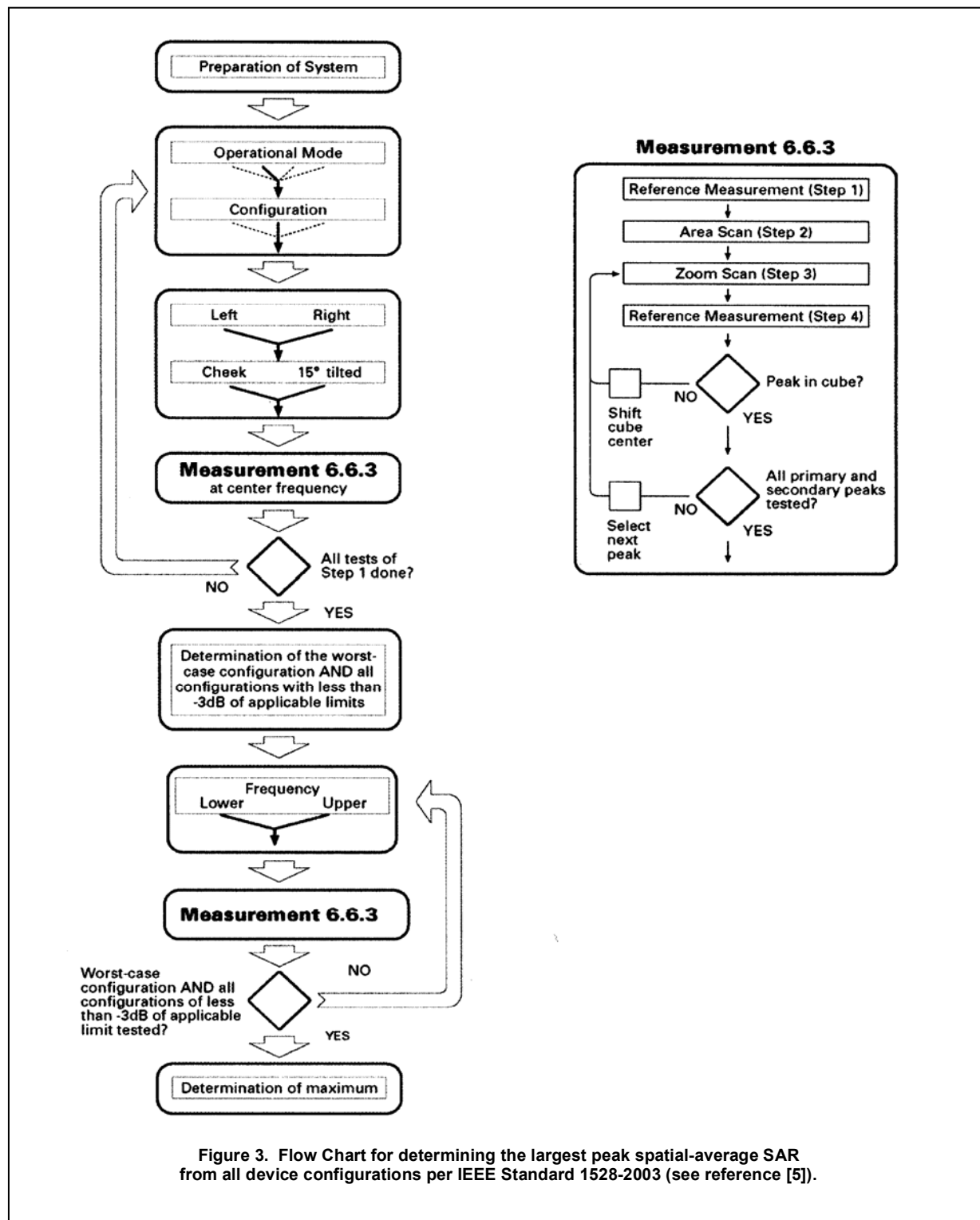
- c. Based on the defined area scan grid, a more detailed grid is created to increase the points by a factor of 10. The interpolation function then evaluates all field values between corresponding measurement points.
- d. A linear search is applied to find all the candidate maxima. Subsequently, all 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 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 ≥ 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.)



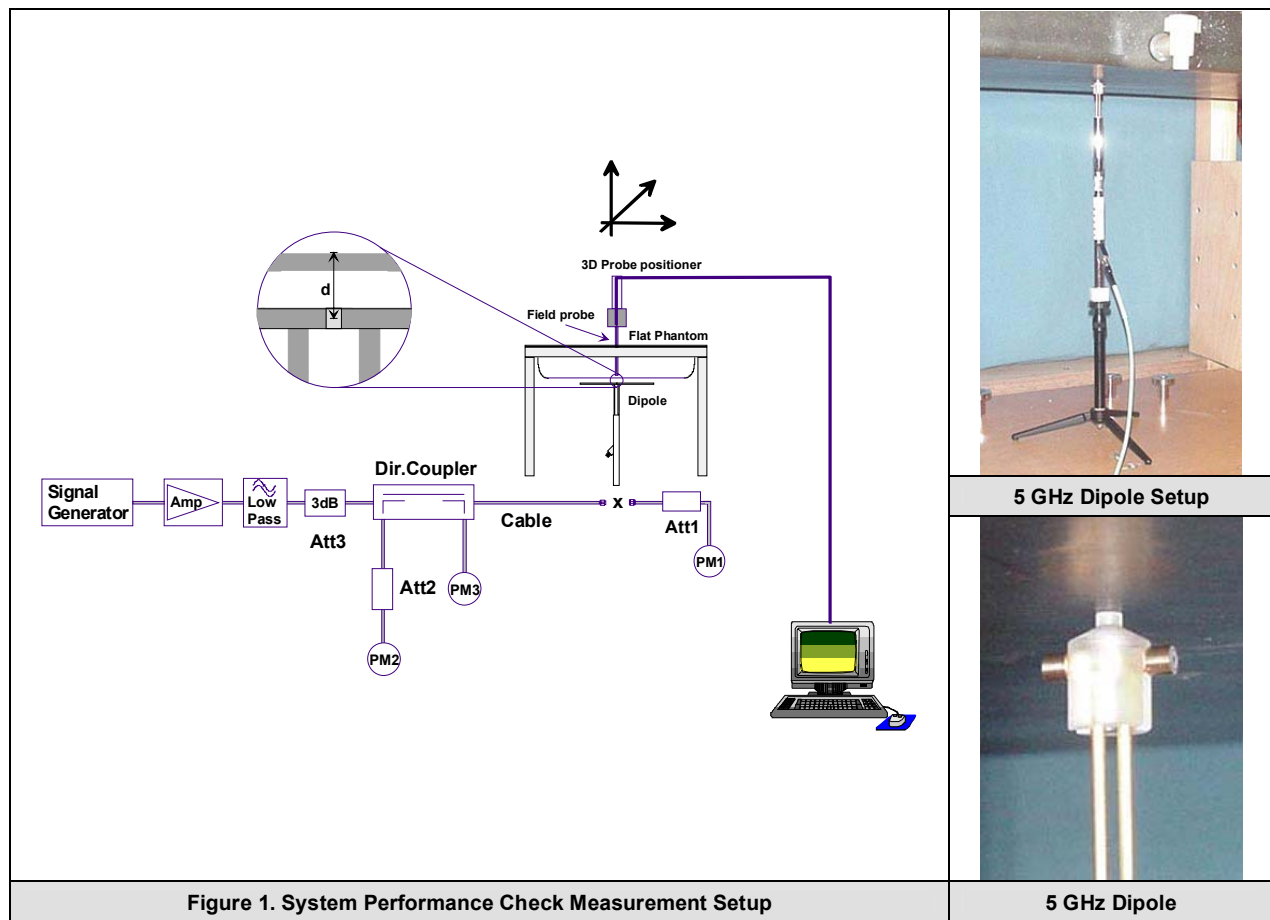
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## 7.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations a system check was performed at the planar section of the SAM phantom with a SPEAG D5GHzV2 validation dipole (see Appendix F 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	5.8GHz 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)
		Target	Meas.	Dev.	IEEE Target	Meas.	Dev.	IEEE Target	Meas.	Dev.						
9/13/06	Brain	19.5 $\pm 10\%$	20.9	+7.2%	35.3 $\pm 5\%$	35.6	+0.8%	5.27 $\pm 5\%$	5.37	+1.9%	1000	24.2	23.0	$\geq 15$	32	101.1
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.														



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## 8.0 SIMULATED EQUIVALENT TISSUES

The 5.8 GHz simulated tissue mixtures were provided by the SAR system manufacturer (SPEAG) and are listed below. The dielectric parameters of the tissue mixture (permittivity and conductivity) were measured prior to the SAR evaluations. See Appendix D for manufacturer's fluid data sheet.

SIMULATED TISSUE MIXTURES			
INGREDIENT	System Performance Check & DUT Evaluation		
	5.8 GHz Brain	5.8 GHz Body	5 GHz Fluid
Water	64 - 78%	64 - 78%	
Mineral Oil	11 - 18%	11 - 18%	
Emulsifiers	9 - 15%	9 - 15%	
Additives and Salt	2 - 3%	2 - 3%	

## 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.		

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Certificate No. 2470.01				


## 10.0 ROBOT SYSTEM SPECIFICATIONS

<u>Specifications</u>	
<b>Positioner</b>	Stäubli Unimation Corp. Robot Model: RX60L
<b>Repeatability</b>	0.02 mm
<b>No. of axis</b>	6
<u>Data Acquisition Electronic (DAE) System</u>	
<u>Cell Controller</u>	
<b>Processor</b>	AMD Athlon XP 2400+
<b>Clock Speed</b>	2.0 GHz
<b>Operating System</b>	Windows XP Professional
<u>Data Converter</u>	
<b>Features</b>	Signal Amplifier, multiplexer, A/D converter, and control logic
<b>Software</b>	Measurement Software: DASY4, V4.7 Build 44
	Postprocessing Software: SEMCAD, V1.8 Build 171
<b>Connecting Lines</b>	Optical downlink for data and status info.; Optical uplink for commands and clock
<u>DASY4 Measurement Server</u>	
<b>Function</b>	Real-time data evaluation for field measurements and surface detection
<b>Hardware</b>	PC/104 166MHz Pentium CPU; 32 MB chipdisk; 64 MB RAM
<b>Connections</b>	COM1, COM2, DAE, Robot, Ethernet, Service Interface
<u>E-Field Probe</u>	
<b>Model</b>	ET3DV6
<b>Serial No.</b>	1387
<b>Construction</b>	Triangular core fiber optic detection system
<b>Frequency</b>	10 MHz to 6 GHz
<b>Linearity</b>	±0.2 dB (30 MHz to 3 GHz)
<u>Phantom(s)</u>	
<b>Type</b>	SAM V4.0C
<b>Shell Material</b>	Fiberglass
<b>Thickness</b>	2.0 ±0.1 mm
<b>Volume</b>	Approx. 25 liters




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## 11.0 PROBE SPECIFICATION (EX3DV4)


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) Typical distance from probe tip to dipole centers: 1.0 mm	
Application:	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%.	
		<b>EX3DV4 E-Field Probe</b>



## 12.0 SAM PHANTOM V4.0C

<p>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).</p>	
<b>SAM Phantom V4.0C</b>	

## 13.0 DEVICE HOLDER


<p>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.</p>	
<b>Device Holder</b>	



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## 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	21Jun07
	-DAE3	00018	370	08Feb06	08Feb07	08Feb07
	-ET3DV6 E-Field Probe	00016	1387	16Mar06	16Mar07	16Mar07
x	-EX3DV4 E-Field Probe	00125	3547	14Feb06	14Feb07	14Feb07
	-300MHz Validation Dipole	00023	135	25Oct05	25Oct06	25Oct06
	-450MHz Validation Dipole	00024	136	25Oct05	25Oct06	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
	-1900MHz Validation Dipole	00032	151	Brain	09Jun06	09Jun07
				Body	12Jun06	12Jun07
	-2450MHz Validation Dipole	00025	150	Brain	20Sep05	20Sep06
				Body	24Apr06	24Apr07
x	-5800MHz Validation Dipole	00126	1031	Brain	15Mar06	15Mar07
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
	Gigatronics 8652A Power Meter	00110	1835801	12Apr06	12Apr07	12Apr07
x	Gigatronics 8652A Power Meter	00007	1835272	03Feb06	03Feb07	03Feb07
x	Gigatronics 80701A Power Sensor	00011	1833542	03Feb06	03Feb07	03Feb07
x	Gigatronics 80701A Power Sensor	00013	1833713	03Feb06	03Feb07	03Feb07
x	HP 8753ET Network Analyzer	00134	US39170292	18Apr06	18Apr07	18Apr07
	HP 8648D Signal Generator	00005	3847A00611	N/A	N/A	N/A
x	Rohde & Schwarz SMR40 Signal Generator	00006	100104	06Apr06	06Apr07	06Apr07
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	N/A	N/A	N/A


Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset			5725.8-5848.9 MHz	
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	Report Issue Date September 22, 2006	Description of Test(s) RF Exposure - SAR	RF Exposure Category General Population	

## 15.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION						
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	6.55	Normal	1	1	6.55	∞
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	2	Rectangular	1.732050808	1	1.2	∞
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	0.8	Rectangular	1.732050808	1	0.5	∞
Probe positioning	5.7	Rectangular	1.732050808	1	3.3	∞
Extrapolation & integration	4	Rectangular	1.732050808	1	2.3	∞
<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>					<b>11.78</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>23.56</b>	

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


Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> 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 <sub>i</sub> or V <sub>eff</sub>
<b>Measurement System</b>						
Probe calibration	6.55	Normal	1	1	6.6	∞
Axial isotropy of the probe	4.7	Rectangular	1.732050808	1	2.7	∞
Spherical isotropy of the probe	9.6	Rectangular	1.732050808	1	5.5	∞
Spatial resolution	0	Rectangular	1.732050808	1	0.0	∞
Boundary effects	2	Rectangular	1.732050808	1	1.2	∞
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	0.8	Rectangular	1.732050808	1	0.5	∞
Probe positioning	5.7	Rectangular	1.732050808	1	3.3	∞
Extrapolation & integration	4	Rectangular	1.732050808	1	2.3	∞
<b>Dipole</b>						
Dipole positioning	2	Rectangular	1.732050808	1	1.2	∞
Power & Power Drift	4.7	Rectangular	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>11.61</b>	
<b>Expanded Uncertainty (k=2)</b>					<b>23.22</b>	


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

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<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.



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## APPENDIX A - SAR MEASUREMENT DATA

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	
Certificate No. 2470.01				

Date Tested: 09/14/2006

## Head SAR - Right Ear - Cheek/Touch Position - Channel 70 - 5787.3503 MHz

**DUT: Uniden Model: TRU9380; Type: 5.8GHz Cordless Telephone Handset; Serial: None**

Ambient Temp: 24.2°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: TDMA/TDD

RF Output Power: 245.4 mW (Radiated)

3.6V, 600mAh NiMH Battery (P/N: BT909)

Frequency: 5787.3503 MHz; Duty Cycle: 1:9.52

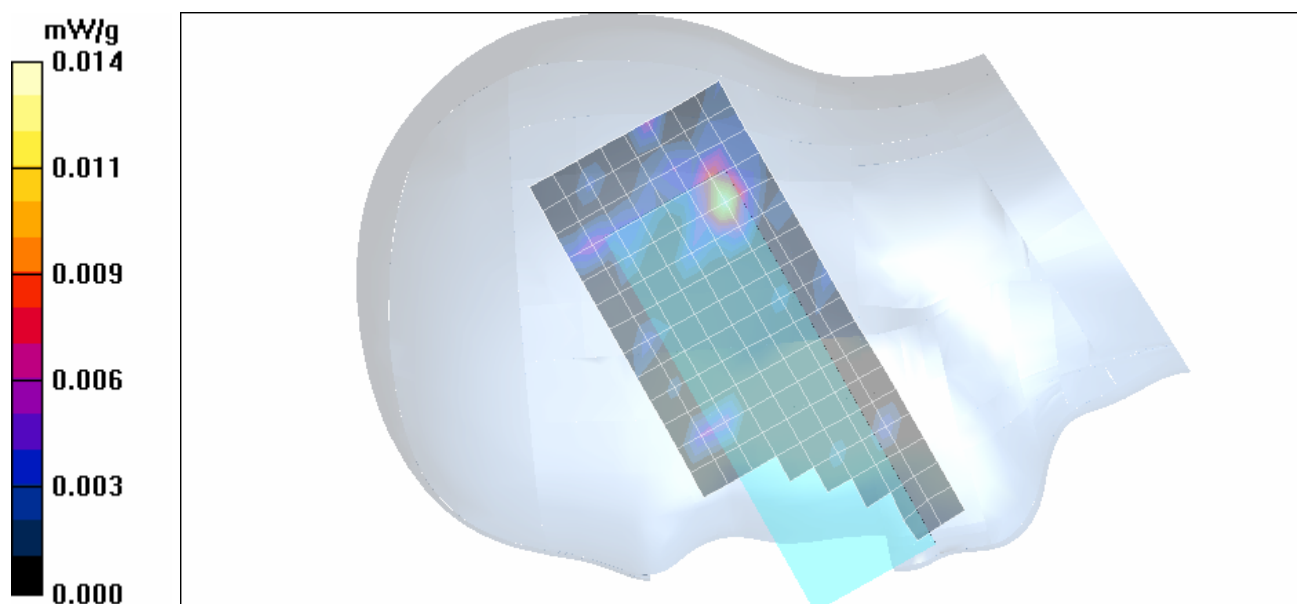
Medium: HSL5200-5800 Medium parameters used:  $f = 5787.35 \text{ MHz}$ ;  $\sigma = 5.37 \text{ mho/m}$ ;  $\epsilon_r = 35.6$ ;  $\rho = 1000 \text{ kg/m}^3$


- Probe: EX3DV4 - SN3547; ConvF(4.79, 4.79, 4.79); Calibrated: 14/02/2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglass; 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 (9x20x1):** Measurement grid: dx=10mm, dy=10mm

**Maximum Peak Value of SAR (measured) = 0.019 mW/g**



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	
Certificate No. 2470.01				

Date Tested: 09/14/2006

## Head SAR - Right Ear - Tilt Position (15°) - Channel 70 - 5787.3503 MHz

**DUT: Uniden Model: TRU9380; Type: 5.8GHz Cordless Telephone Handset; Serial: None**

Ambient Temp: 24.2°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: TDMA/FDD

RF Output Power: 245.4 mW (Radiated)

3.6V, 600mAh NiMH Battery (P/N: BT909)

Frequency: 5787.3503 MHz; Duty Cycle: 1:9.52

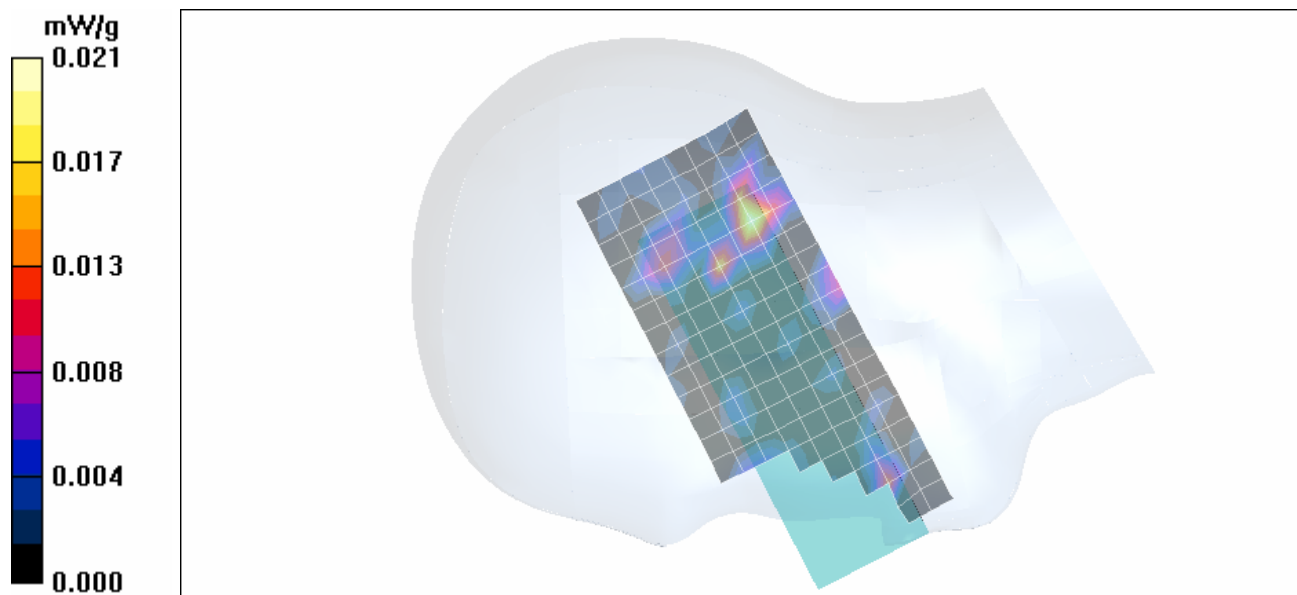
Medium: HSL5200-5800 Medium parameters used:  $f = 5787.35 \text{ MHz}$ ;  $\sigma = 5.37 \text{ mho/m}$ ;  $\epsilon_r = 35.6$ ;  $\rho = 1000 \text{ kg/m}^3$


- Probe: EX3DV4 - SN3547; ConvF(4.79, 4.79, 4.79); Calibrated: 14/02/2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglass; 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 (9x20x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

**Maximum Peak Value of SAR (measured) = 0.021 mW/g**



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	
Certificate No. 2470.01				

Date Tested: 09/14/2006

## Head SAR - Left Ear - Cheek/Touch Position - Channel 70 - 5787.3503 MHz

**DUT: Uniden Model: TRU9380; Type: 5.8GHz Cordless Telephone Handset; Serial: None**

Ambient Temp: 24.2°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: TDMA/TDD

RF Output Power: 245.4 mW (Radiated)

3.6V, 600mAh NiMH Battery (P/N: BT909)

Frequency: 5787.3503 MHz; Duty Cycle: 1:9.52

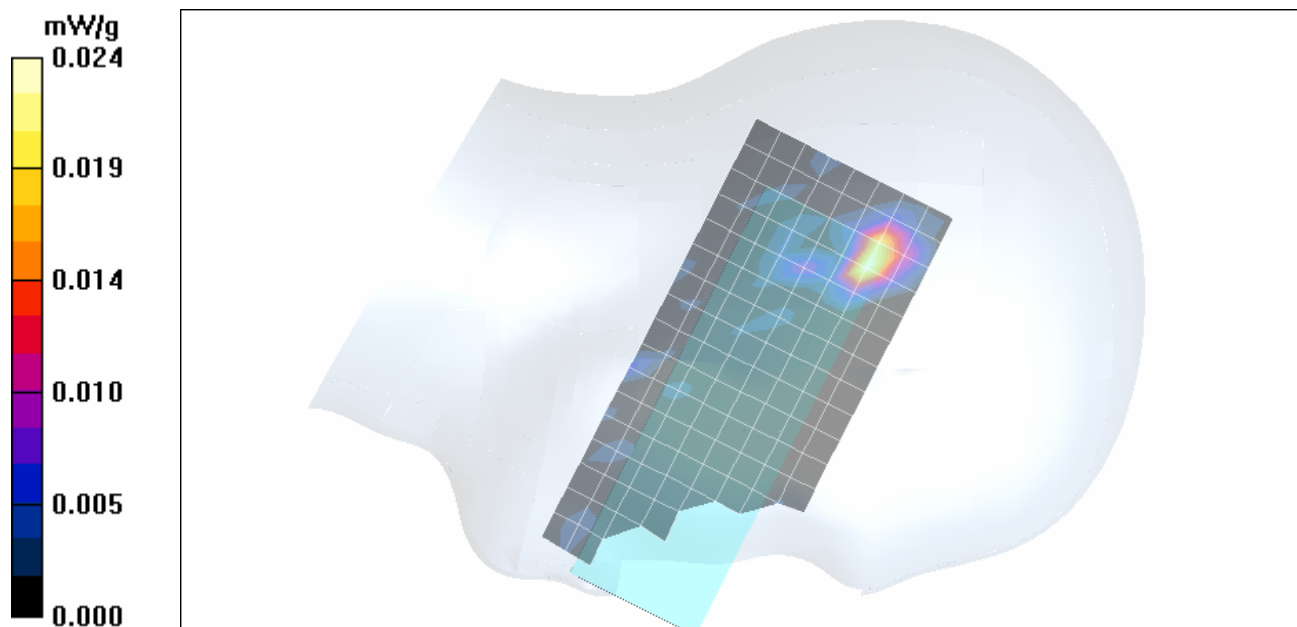
Medium: HSL5200-5800 Medium parameters used:  $f = 5787.35 \text{ MHz}$ ;  $\sigma = 5.37 \text{ mho/m}$ ;  $\epsilon_r = 35.6$ ;  $\rho = 1000 \text{ kg/m}^3$


- Probe: EX3DV4 - SN3547; ConvF(4.79, 4.79, 4.79); Calibrated: 14/02/2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglass; 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 (9x20x1):** Measurement grid: dx=10mm, dy=10mm

**Maximum Peak Value of SAR (measured) = 0.024 mW/g**



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

Date Tested: 09/14/2006

## Head SAR - Left Ear - Tilt Position (15°) - Channel 70 - 5787.3503 MHz

**DUT: Uniden Model: TRU9380; Type: 5.8GHz Cordless Telephone Handset; Serial: None**

Ambient Temp: 24.2°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: TDMA/TDD

RF Output Power: 245.4 mW (Radiated)

3.6V, 600mAh NiMH Battery (P/N: BT909)

Frequency: 5787.3503 MHz; Duty Cycle: 1:9.52

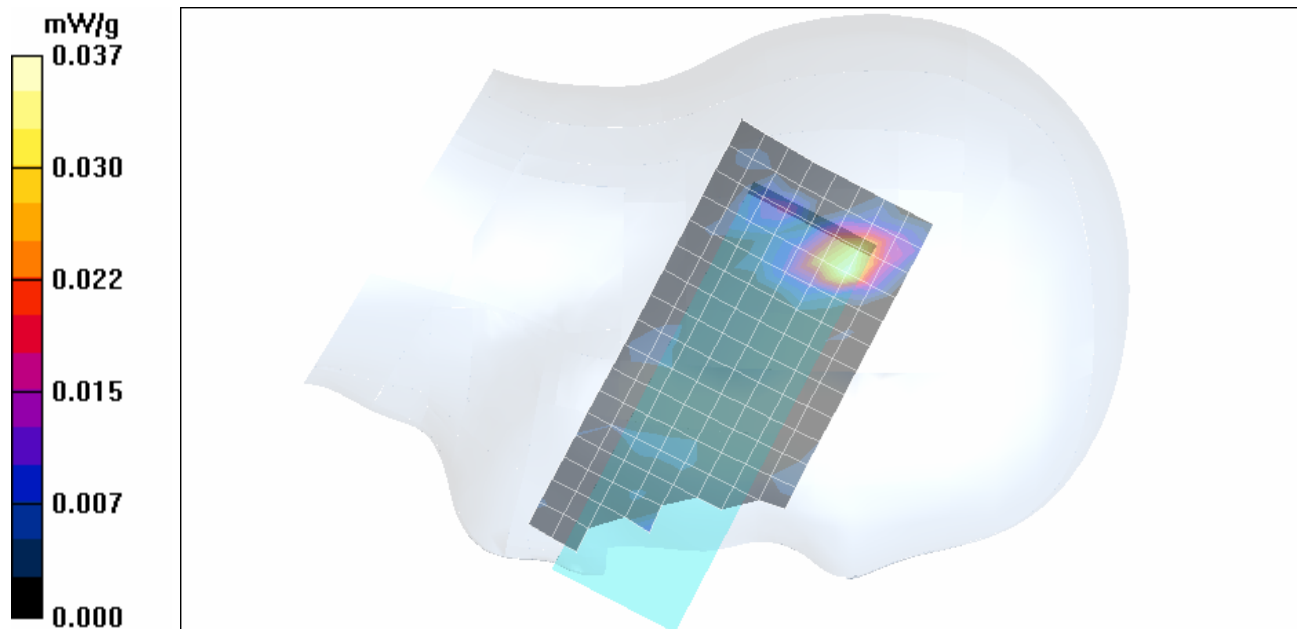
Medium: HSL5200-5800 Medium parameters used:  $f = 5787.35 \text{ MHz}$ ;  $\sigma = 5.37 \text{ mho/m}$ ;  $\epsilon_r = 35.6$ ;  $\rho = 1000 \text{ kg/m}^3$


- Probe: EX3DV4 - SN3547; ConvF(4.79, 4.79, 4.79); Calibrated: 14/02/2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglass; 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 (9x20x1):** Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

**Maximum Peak Value of SAR (measured) = 0.037 mW/g**

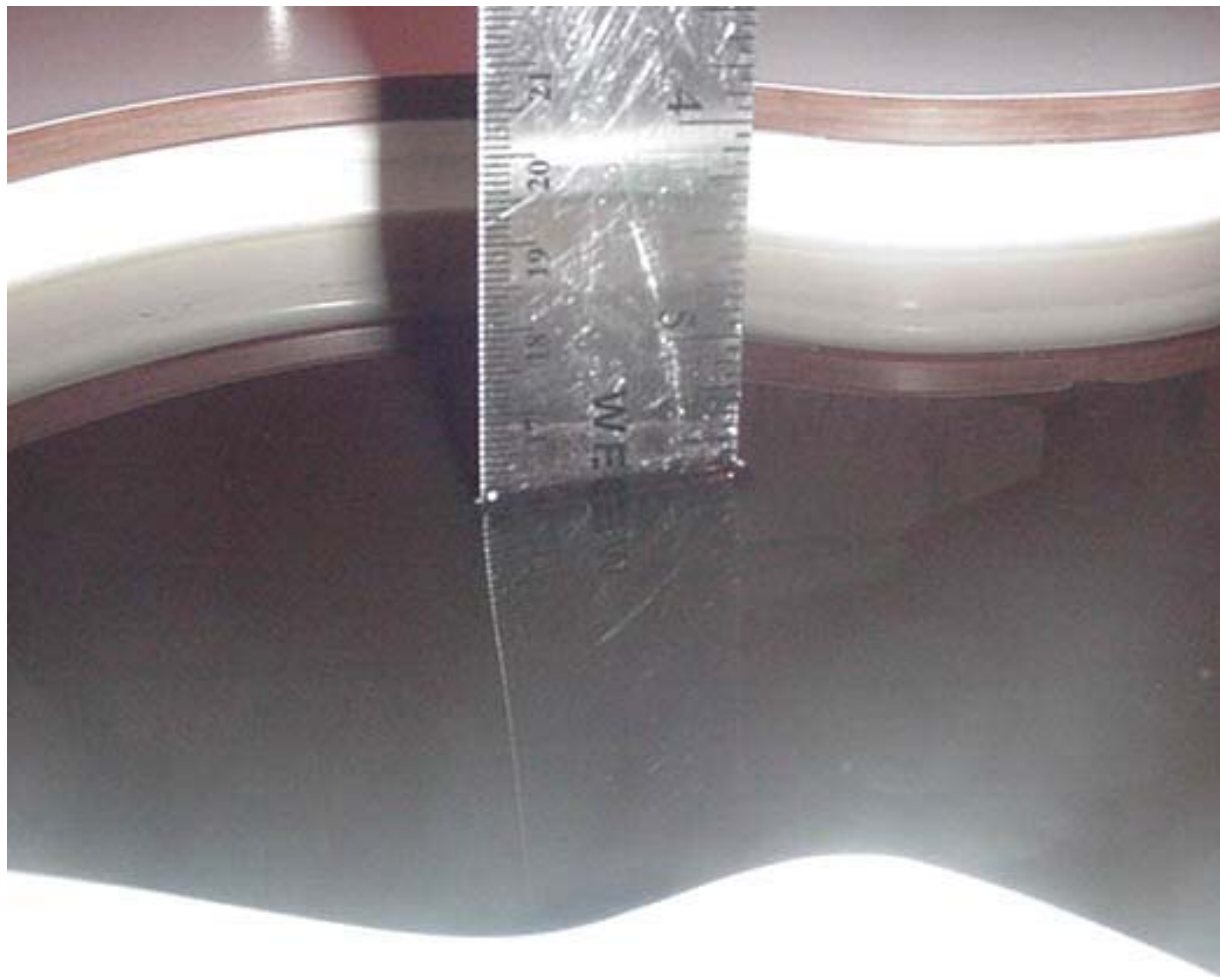



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## Fluid Depth (>15cm)



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	
Certificate No. 2470.01				

Date Tested: 09/14/2006

## Body-Worn SAR - Back Side of DUT with Belt-Clip and Headset - Channel 70 - 5787.3503 MHz

DUT: Uniden Model: TRU9380; Type: 5.8GHz Cordless Telephone Handset; Serial: None

Body-worn Accessory: Plastic Belt-Clip (P/N: GBCT3C8645Z); Audio Accessory: Headset/Boom-Mic (P/N: TRUC46)

Ambient Temp: 24.5°C; Fluid Temp: 23.4°C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: TDMA/TDD

RF Output Power: 245.4 mW (Radiated)

3.6V, 600mAh NiMH Battery (P/N: BT909)

Frequency: 5787.3505 MHz; Duty Cycle: 1:9.52

Medium: M5200-5800 Medium parameters used:  $f = 5787.35 \text{ MHz}$ ;  $\sigma = 5.87 \text{ mho/m}$ ;  $\epsilon_r = 45.9$ ;  $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3547; ConvF(4.69, 4.69, 4.69); Calibrated: 14/02/2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### Body SAR - 1.6 cm Belt-Clip Separation Distance to Planar Phantom - Mid Channel

Area Scan (9x20x1): Measurement grid:  $dx=10\text{mm}$ ,  $dy=10\text{mm}$

Maximum value of SAR (measured) = 0.454 mW/g

### Body SAR - 1.6 cm Belt-Clip Separation Distance to Planar Phantom - Mid Channel

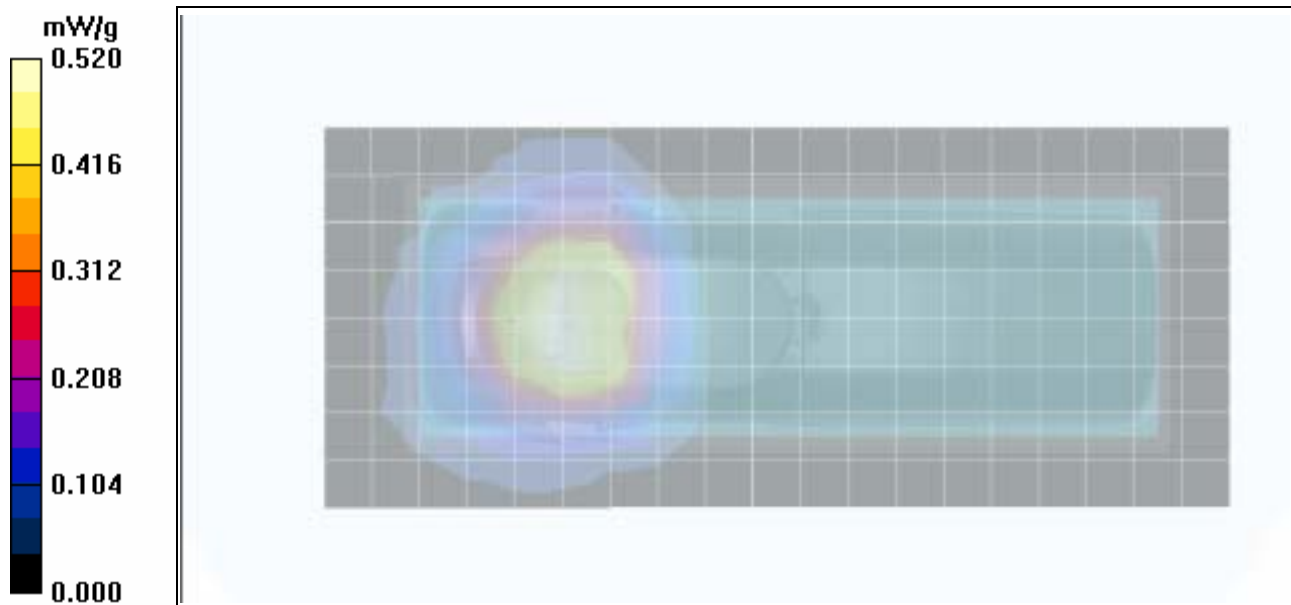
Zoom Scan (8x8x8)/Cube 0: Measurement grid:  $dx=4.3\text{mm}$ ,  $dy=4.3\text{mm}$ ,  $dz=3\text{mm}$


Reference Value = 10.0 V/m; Power Drift = -0.163 dB

Peak SAR (extrapolated) = 1.07 W/kg

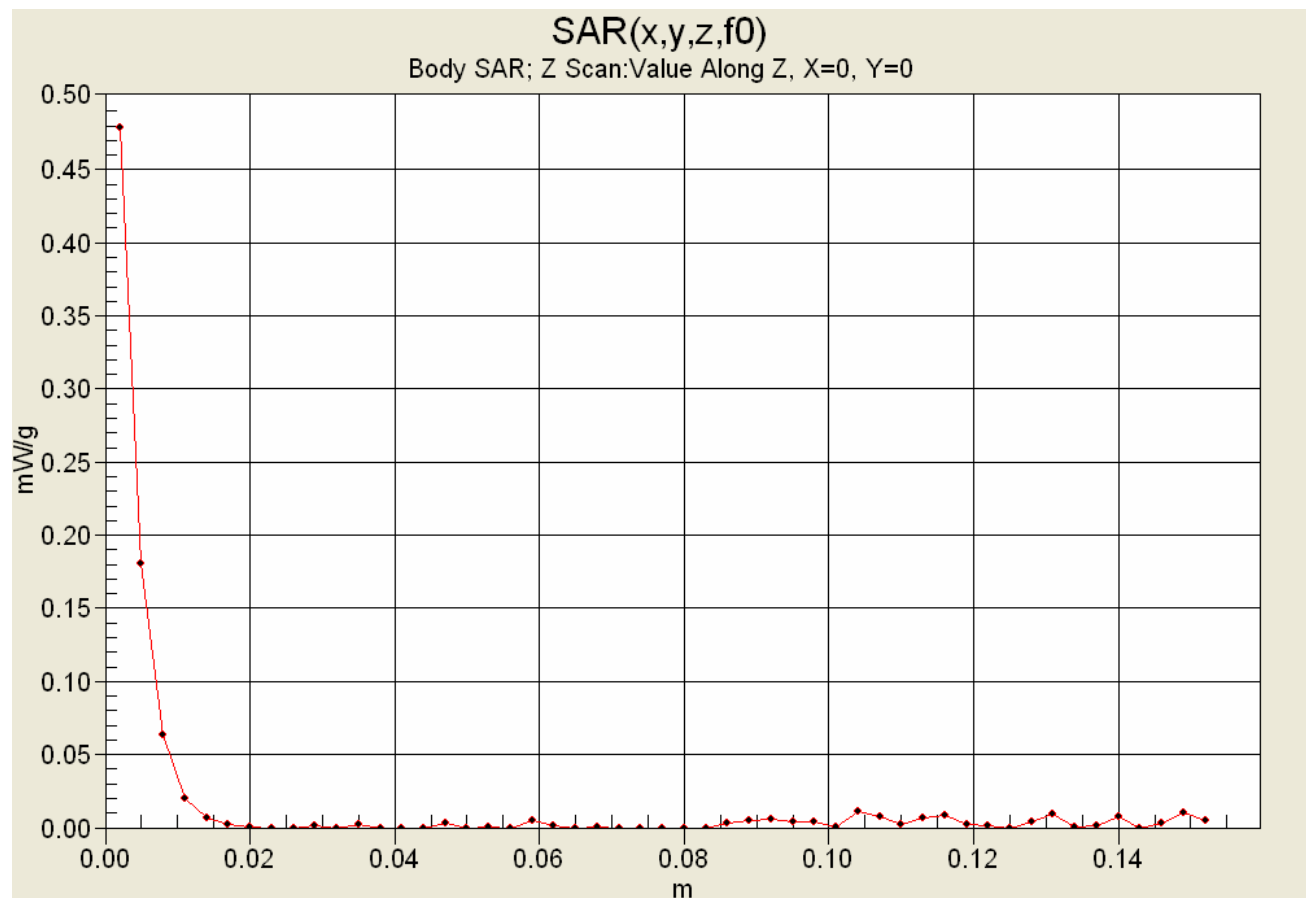
SAR(1 g) = 0.274 mW/g; SAR(10 g) = 0.113 mW/g



Maximum value of SAR (measured) = 0.520 mW/g



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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## Z-Axis Scan





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## Fluid Depth (>15cm)





Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## APPENDIX B - SYSTEM PERFORMANCE CHECK DATA

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	
Certificate No. 2470.01				

Date Tested: 09/14/2006

## System Performance Check (Brain) - 5800 MHz Dipole

**DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1031; Validation: 03/15/2006**

Ambient Temp: 24.2°C; Fluid Temp: 23.0°C; Barometric Pressure: 101.1 kPa; Humidity: 32%

Communication System: CW

Forward Conducted Power: 250 mW

Frequency: 5800 MHz; Duty Cycle: 1:1

Medium: HSL5200-5800 ( $\sigma = 5.37$  mho/m;  $\epsilon_r = 35.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>)

- Probe: EX3DV4 - SN3547; ConvF(4.79, 4.79, 4.79); Calibrated: 14/02/2006
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 21/06/2006
- Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033
- Measurement SW: DASY4, V4.7 Build 44; Postprocessing SW: SEMCAD, V1.8 Build 171

### 5800 MHz System Performance Check/Area Scan (9x13x1):

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

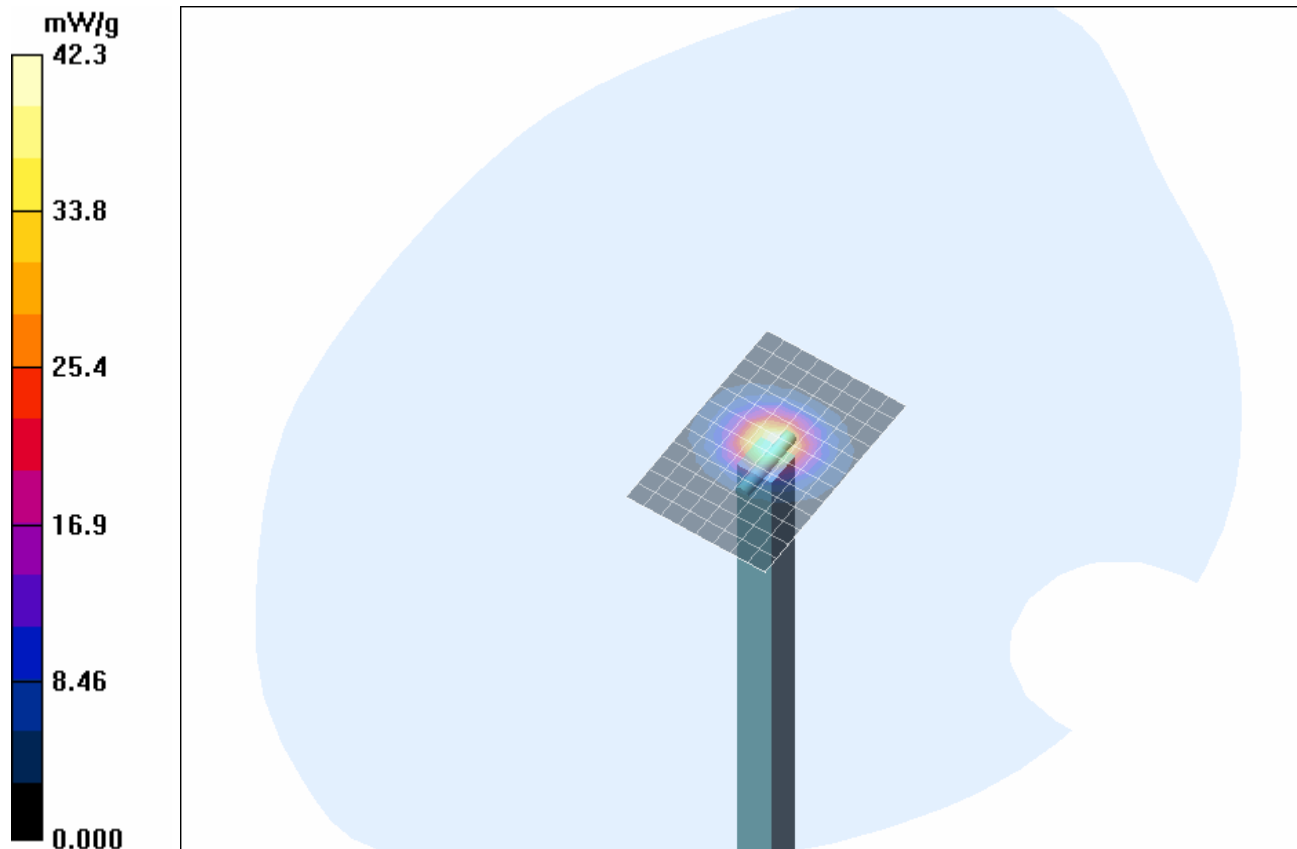
### 5800 MHz System Performance Check/Zoom Scan 2 (8x8x8)/Cube 0:


Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 90.4 V/m; Power Drift = 0.027 dB

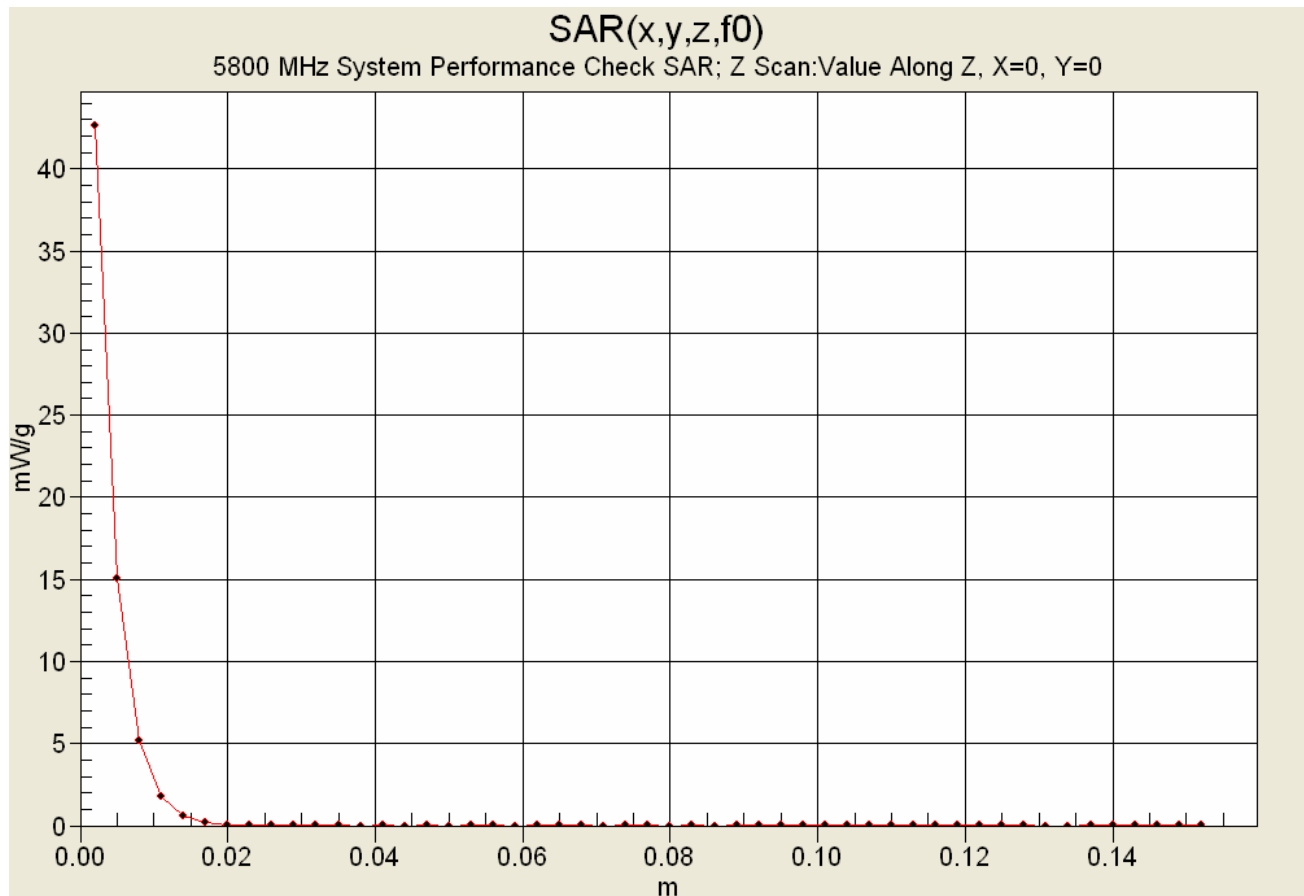
Peak SAR (extrapolated) = 100.1 W/kg



**SAR(1 g) = 20.9 mW/g; SAR(10 g) = 5.87 mW/g**




Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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## Z-Axis Scan



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## APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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Certificate No. 2470.01				

## 5.8 GHz System Performance Check and DUT Evaluation (Head)

\*\*\*\*\*

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Thu 14/Sep/2006

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_eHF	FCC_sH	Test_e	Test_s
5.7000	35.41	5.17	35.91	5.23
5.7100	35.40	5.18	36.01	5.26
5.7200	35.39	5.19	35.92	5.19
5.7300	35.38	5.20	35.74	5.19
5.7400	35.37	5.21	35.84	5.26
5.7500	35.36	5.22	35.80	5.25
5.7600	35.35	5.23	35.78	5.25
5.7700	35.33	5.24	35.79	5.32
5.7800	35.32	5.25	35.66	5.32
5.7900	35.31	5.26	35.70	5.30
5.8000	35.30	5.27	35.57	5.37
5.8100	35.29	5.28	35.63	5.37
5.8200	35.28	5.29	35.63	5.38
5.8300	35.27	5.30	35.69	5.41
5.8400	35.25	5.31	35.56	5.38
5.8500	35.24	5.32	35.36	5.36
5.8600	35.23	5.33	35.28	5.45
5.8700	35.22	5.34	35.41	5.41
5.8800	35.21	5.35	35.48	5.36
5.8900	35.20	5.36	35.30	5.36
5.9000	35.19	5.37	35.35	5.44

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	


### 5.8 GHz DUT Evaluation (Body)



\*\*\*\*\*

Celltech Labs Inc.  
Test Result for UIM Dielectric Parameter  
Thu 14/Sep/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
5.7000	48.34	5.88	46.48	5.80
5.7100	48.32	5.89	46.52	5.81
5.7200	48.31	5.91	46.35	5.74
5.7300	48.30	5.92	46.03	5.77
5.7400	48.28	5.93	46.28	5.84
5.7500	48.27	5.94	46.41	5.84
5.7600	48.25	5.95	46.24	5.80
5.7700	48.24	5.96	46.23	5.87
5.7800	48.23	5.98	46.14	5.86
5.7900	48.21	5.99	46.16	5.87
5.8000	48.20	6.00	45.90	5.87
5.8100	48.19	6.01	46.04	5.90
5.8200	48.17	6.02	45.98	5.95
5.8300	48.16	6.04	46.11	5.98
5.8400	48.15	6.05	46.25	5.93
5.8500	48.13	6.06	45.97	5.92
5.8600	48.12	6.07	45.94	6.05
5.8700	48.10	6.08	46.08	5.97
5.8800	48.09	6.09	46.14	5.99
5.8900	48.08	6.11	45.81	5.91
5.9000	48.06	6.12	45.95	5.87



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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## APPENDIX D - MANUFACTURER'S TISSUE SIMULANT DATA SHEET

<b>Company:</b>	<b>Uniden America Corporation</b>	<b>FCC ID:</b>	<b>AMWUP822</b>	<b>IC ID:</b>	<b>513C-UP822</b>	
<b>Model(s):</b>	<b>UP822BH / TRU9380</b>	<b>Portable 5.8 GHz Cordless Telephone Handset</b>	<b>5725.8-5848.9 MHz</b>			
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

Schmid & Partner Engineering AG

**s p e a g**

Zeughausstrasse 43, 8004 Zurich, Switzerland  
Phone +41 1 245 9700, Fax +41 1 245 9779  
info@speag.com, http://www.speag.com

## Material Safety Data Sheet

### 1 Identification of the substance and of the manufacturer / origin

Item	Head Tissue Simulation Liquid HSL5800 Muscle Tissue Simulation Liquid MSL 5800
Type No	SL AAH 580, SL AAM 580
Series No	N/A
Manufacturer / Origin	Schmid & Partner Engineering AG Zeughausstrasse 43 8004 Zürich Switzerland Phone +41 1 245 9700, Fax +41 1 245 9779, support@speag.com

Use of the substance:

Liquid simulating physical parameters of Head or Muscle Tissue in the RF range to 6GHz.

### 2 Composition / Information on ingredients

The Item is composed of the following ingredients:

Water	64 - 78%
Mineral Oil	11 - 18%
Emulsifiers	9 - 15%
Additives and Salt	2 - 3%

Safety relevant ingredients according to EU directives:

CAS-No 107-41-5	< 4%	2-Methyl-2,4-pentandiol (Hexylene Glycol): Xi irritant, R36/38 irritant for eyes and skin
CAS-No 770-35-4	< 2%	1-Phenoxy-2-propanol (Propylene Glycol Phenyl Ether): Xi irritant, R36 irritant for eyes
CAS-No 93-83-4	< 2%	N,N-bis(2-Hydroxyethyl)oleamide: Xi irritant, R36/38 irritant for eyes and skin
CAS-No 9004-95-9	< 0.5%	Polyethylene glycol cetyl ether: Xi irritant, R22 harmful if swallowed, R36/38 irritant for eyes and skin R50 Very toxic to aquatic organisms

According to EU guidelines and Swiss rules, the product is not a dangerous mixture and therefore not required to be marked by symbols.

### 3 Hazards identification

Identification not required.


### 4 First aid measures



The product reacts slightly alkaline.

After skin contact:	Wash with fresh water and mild sope
After eye contact:	Rinse out with plenty of water for several minutes with the eyelid held open. Consult an ophthalmologist if necessary.
After ingestion:	Do not induce vomiting. Get medical attention.

### 5 Fire-fighting measures

Firefighting media	CO <sub>2</sub> , foam, dry chemical
Combustion products	Carbon oxides, nitrogen and traces of oxides of chlorine and sulfur, HCl
Due to the high water content, the liquid is self-extinguishing.	

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset			5725.8-5848.9 MHz	
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## 6 Accidental release measures

Person-related precaution measures: wash with water and mild soap.

Environmental-protection measures: do not allow to enter sewerage system.

Procedures for cleaning / absorption: Use oil-binding agents., forward for disposal. Spills may cause slippery conditions.

## 7 Handling and storage

Handling: Keep in open container only for minimum required time in order to avoid water evaporation.

Storage: tightly closed, between >0 to 40°C. Avoid direct solar irradiation of the storage containers.

## 8 Exposure controls / personal protection

Protection measures are not generally required. For eye protection, industrial safety glasses are recommended.

Personal hygiene and clean working practices are sufficient.

## 9 Physical and chemical properties

Form:	liquid
Colour:	medium to dark brown, transparent to opaque
Odour:	almost odourless / slightly oily
pH-Value:	slightly alcalic
Boiling point:	100°C
Density:	1g/cm <sup>3</sup>

## 10 Stability and reactivity

Conditions to be avoided: heating above 40°C

The product contains water and is not compatible with strong oxidizers or magnesium.

## 11 Toxicological information

LD50 > 40 g/kg

Further data: the product should be handled with the care usual when dealing with chemicals

## 12 Ecological information

Contains mineral oil. Do not allow to enter waters, waste water, or soil!

## 13 Disposal considerations

Disposal is possible by splitting the mineral oil from the emulsion with absorbing agents, with salt or ultra-filtration. Dispose as other mineral oil containing products according to local regulations.

Product packing must be disposed of in compliance with respect national regulations.

## 14 Transport information

Not subject to transport regulations.


## 15 Regulatory information



No special labelling required.

## 16 Other information


Release date: 6.1.2005



Responsible: FB

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset			5725.8-5848.9 MHz	
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## APPENDIX E - SAR TEST SETUP & DUT PHOTOGRAPHS


Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## HEAD SAR TEST SETUP PHOTOGRAPHS

### Right Head Section / Cheek-Touch Position




Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	



## HEAD SAR TEST SETUP PHOTOGRAPHS

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



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	



## HEAD SAR TEST SETUP PHOTOGRAPHS

Left Head Section / Cheek-Touch Position



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

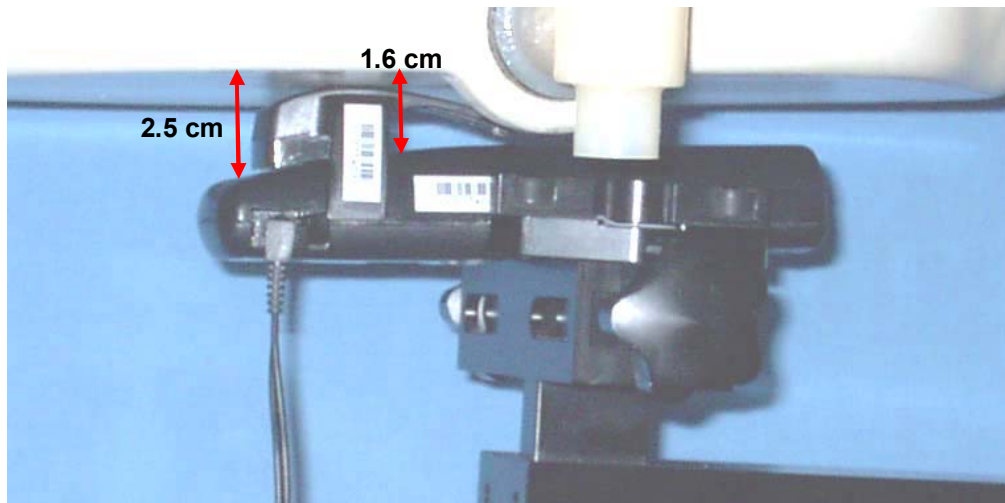
## HEAD SAR TEST SETUP PHOTOGRAPHS



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



Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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**BODY-WORN SAR TEST SETUP PHOTOGRAPHS**  
**1.6 cm Belt-Clip Separation Distance from Back of DUT to Planar Phantom**  
**(DUT with Plastic Belt-Clip and Headset with Boom-Microphone)**



	Date(s) of Evaluation September 14, 2006	Test Report Serial No. 091206AMW-T774-S15T	Report Revision No. Revision 1.0	
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Certificate No. 2470.01

## DUT PHOTOGRAPHS



Front of DUT



Back of DUT




Back of DUT with Plastic Belt-Clip





Top end of DUT



Bottom end of DUT

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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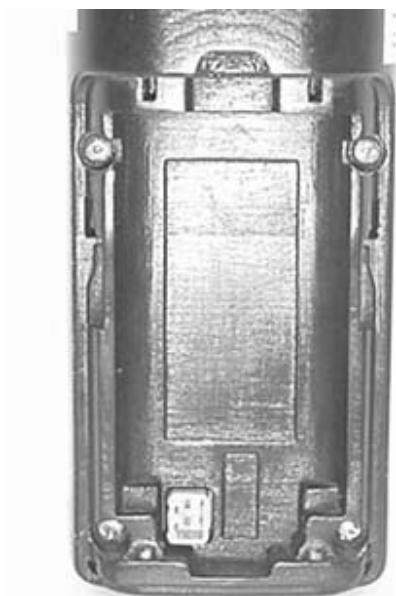
## DUT PHOTOGRAPHS



Left Side of DUT with Plastic Belt-Clip (P/N: GBCT3C8645Z)




Right Side of DUT with Plastic Belt-Clip (P/N: GBCT3C8645Z)





DUT Battery Compartment



Ni-MH Battery 3.6V, 600mAh


Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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## DUT PHOTOGRAPHS




DUT with Headset & Boom-Microphone Audio Accessory (P/N: TRUC46)

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## APPENDIX F - SYSTEM VALIDATION

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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## 5800 MHz SYSTEM VALIDATION DIPOLE

Type:

**5800 MHz Validation Dipole**

Asset Number:

**00126**

Serial Number:

**1031**

Place of Validation:

**Celltech Labs Inc.**

Date of Validation:

**March 15, 2006**

**Celltech Labs Inc. hereby certifies that the 5800 MHz System Validation (Brain) 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 Std “Recommended Practice for Determining the Spatial-Peak Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques”. The electrical properties were measured using an HP 8753E Network Analyzer. The network analyzer was calibrated to the validation dipole N-type connector feed point using an HP85032E Type N calibration kit. The dipole was placed parallel to a planar phantom at a separation distance of 10.0mm from the simulating fluid using a loss-less dielectric spacer. The measured input impedance is:

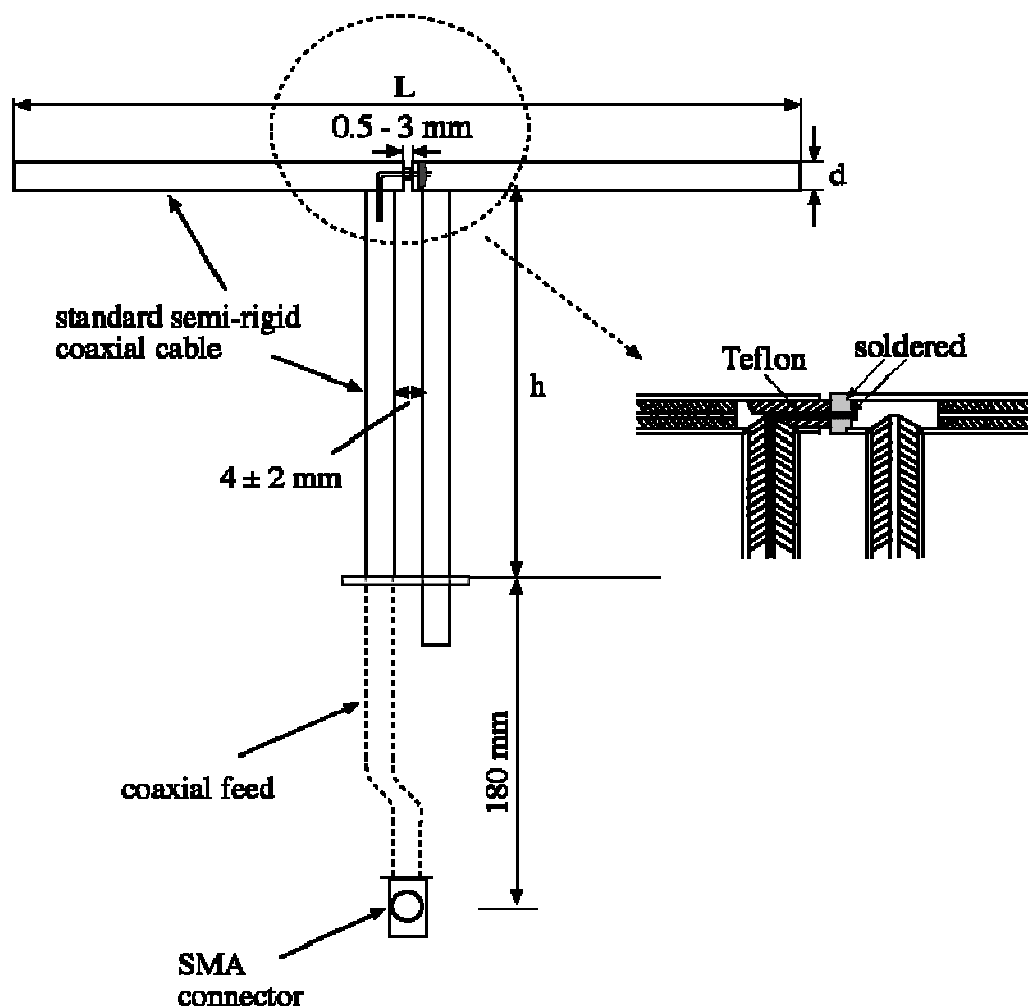
Feed point impedance at 5800 MHz

$$\text{Re}\{Z\} = 54.244\Omega$$

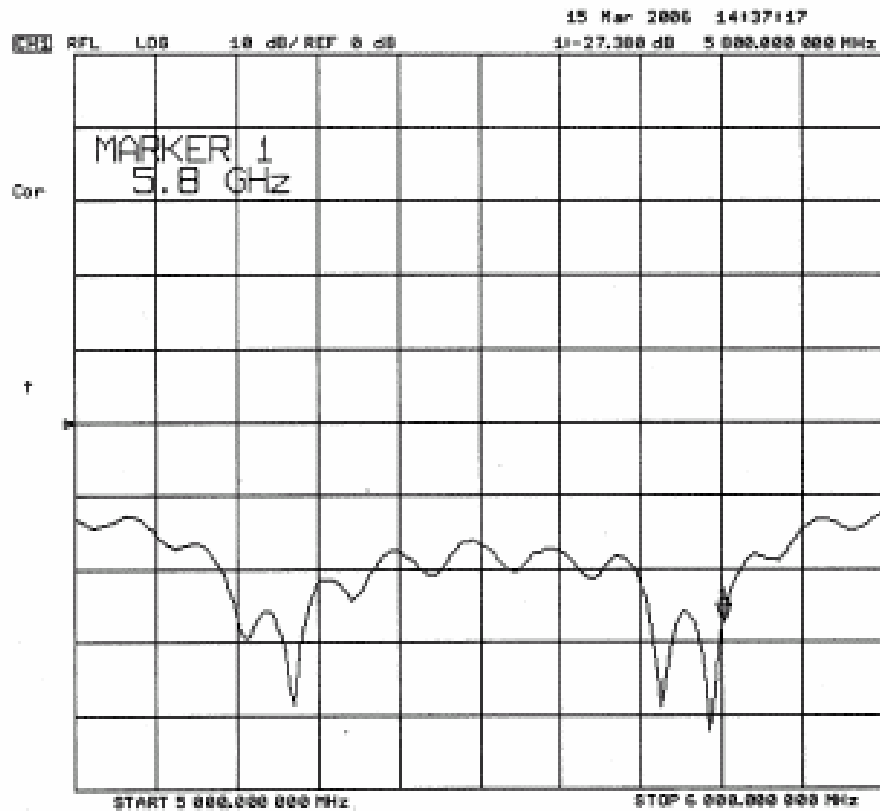
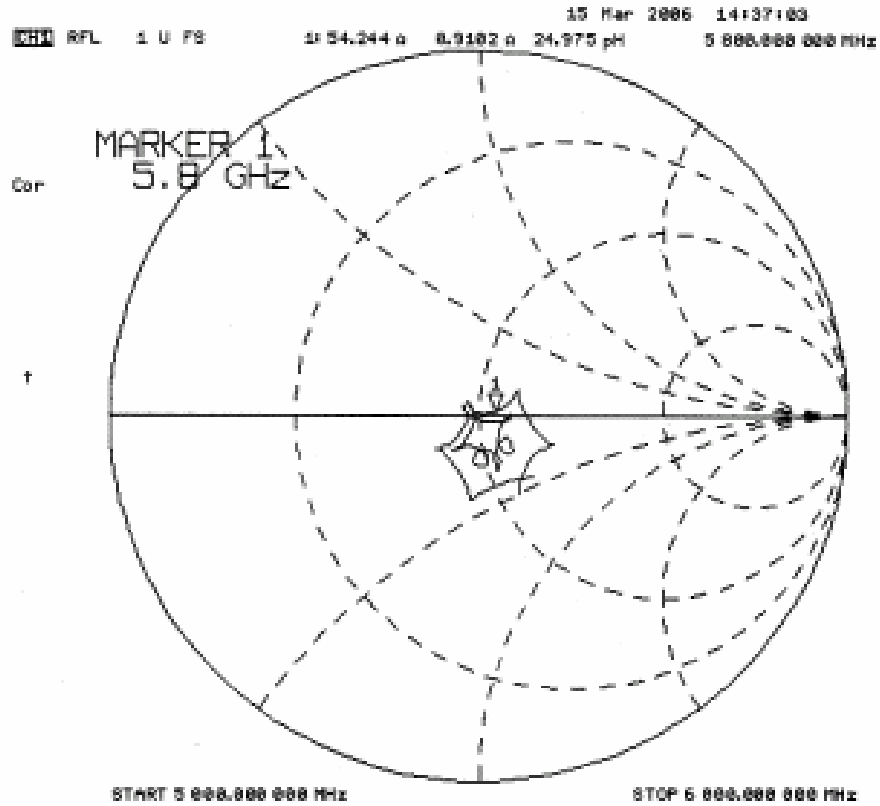
$$\text{Im}\{Z\} = 0.9102\Omega$$

Return Loss at 5800 MHz

$$-27.380 \text{ dB}$$



## 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
5200 - 5800			

### 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 ± 0.1 mm  
**Filling Volume:** Approx. 25 liters  
**Dimensions:** 50 cm (W) x 100 cm (L)

### 5. 5800 MHz System Validation Setup



## 6. 5800 MHz Dipole Setup





## 7. Measurement Conditions

The SAM phantom was filled with 5800 MHz brain tissue stimulant.

Relative Permittivity: 34.4  
 Conductivity: 5.27 mho/m  
 Fluid Temperature: 23 °C  
 Fluid Depth:  $\geq 15.0$  cm

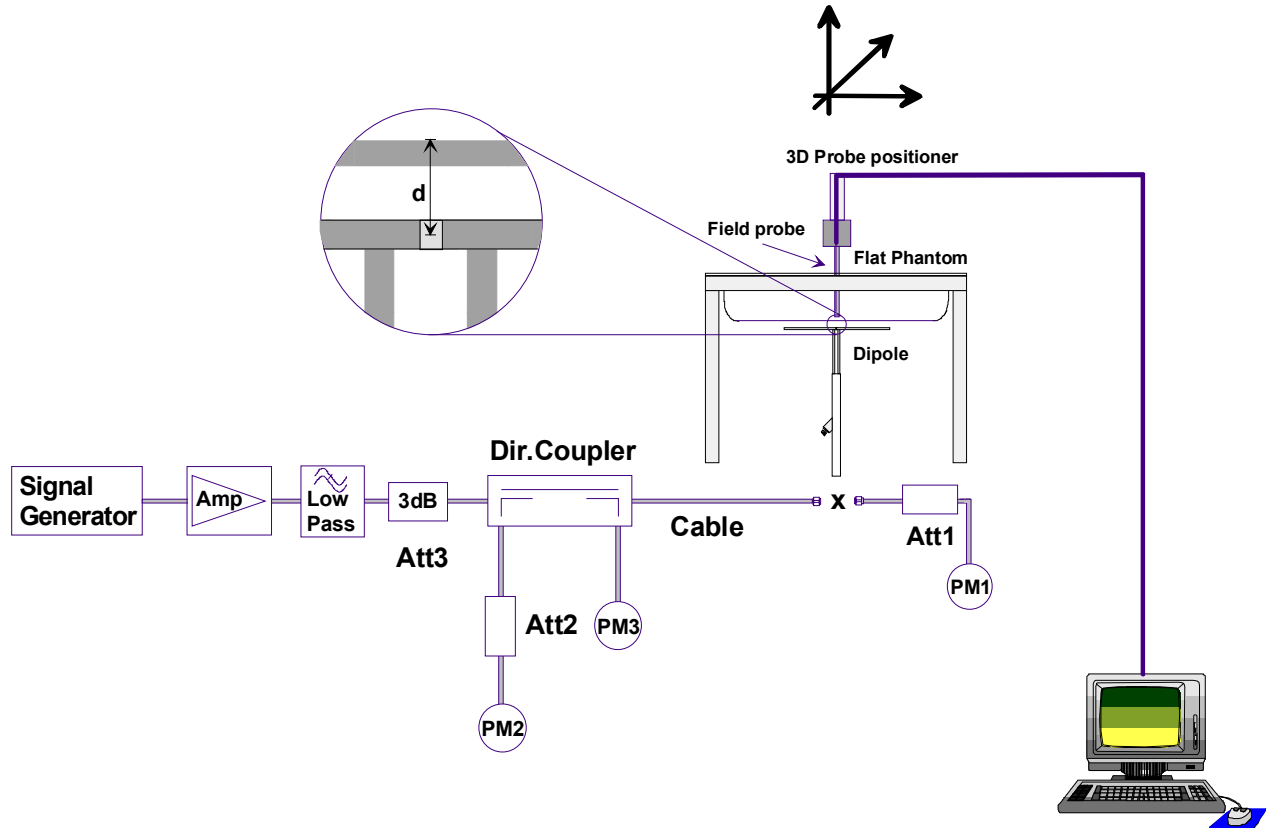
Environmental Conditions:  
 Ambient Temperature: 24.8°C  
 Humidity: 30%  
 Barometric Pressure: 101.1kPa

The 5800 MHz brain tissue simulant consisted of the following ingredients:

Ingredient	Percentage by weight
Water	64 - 78%
Mineral Oil	11 - 18%
Emulsifiers	9 - 15%
Additives and Salt	2 - 3%
Target Dielectric Parameters at 22°C	$\epsilon_r = 35.3$ (+/-5%) $\sigma = 5.27$ 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 20dB 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 (W/kg).

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	Max SAR @ 0.25W Input
Test 1	20.40	81.60	5.72	22.88	40.00
Test 2	20.40	81.60	5.70	22.80	40.00
Test 3	20.50	82.00	5.72	22.88	39.90
Test 4	20.30	81.20	5.68	22.72	40.20
Test 5	20.80	83.20	5.81	23.24	40.40
Test 6	20.50	82.00	5.75	23.00	39.70
Test 7	20.50	82.00	5.74	22.96	39.40
Test 8	20.50	82.00	5.73	22.92	39.60
Test 9	20.50	82.00	5.73	22.92	39.60
Test10	20.40	81.60	5.71	22.84	39.40
<b>Average SAR</b>	<b>20.48</b>	<b>81.92</b>	<b>5.73</b>	<b>22.92</b>	<b>39.82</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 (W/kg)	Deviation from Target (%)	Target SAR @ 1 Watt Input averaged over 10 grams (W/kg)		Measured SAR @ 1 Watt Input averaged over 10 grams (W/kg)	Deviation from Target (%)
78.0	+/- 10%	81.92	+5.03%	21.9	+/- 10%	22.92	+4.66%

## 5800 MHz System Validation (Brain) - 5200-5800 MHz Dipole - March 15, 2006

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: 1031  
 Ambient Temp: 24.8 °C; Fluid Temp: 23.0 °C; Barometric Pressure: 101.1 kPa; Humidity: 30%  
 Communication System: CW  
 Frequency: 5800 MHz; Duty Cycle: 1:1  
 Medium: HSL5800 ( $\sigma = 5.27$  mho/m;  $\epsilon_r = 34.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>)  
 - Probe: EX3DV4 - SN3547; ConvF(4.79, 4.79, 4.79); Calibrated: 14/02/2006  
 - Sensor-Surface: 2mm (Mechanical Surface Detection)  
 - Electronics: DAE4 Sn353; Calibrated: 15/06/2005  
 - Phantom: SAM 4.0; Type: Fiberglass; Serial: 1033  
 - Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 159

**5800 MHz System Performance Check /Area Scan (9x13x1):** Measurement grid: dx=5mm, dy=5mm  
 Maximum value of SAR (measured) = 43.0 mW/g

**5800 MHz System Validation/Zoom Scan (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 93.4 V/m; Power Drift = 0.038 dB  
**SAR(1 g) = 20.4 mW/g; SAR(10 g) = 5.72 mW/g**  
 Maximum value of SAR (measured) = 40.0 mW/g

**5800 MHz System Validation/Zoom Scan 2 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 93.0 V/m; Power Drift = 0.077 dB  
**SAR(1 g) = 20.4 mW/g; SAR(10 g) = 5.7 mW/g**  
 Maximum value of SAR (measured) = 40.0 mW/g

**5800 MHz System Validation/Zoom Scan 3 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 92.9 V/m; Power Drift = 0.047 dB  
**SAR(1 g) = 20.5 mW/g; SAR(10 g) = 5.72 mW/g**  
 Maximum value of SAR (measured) = 39.9 mW/g

**5800 MHz System Validation/Zoom Scan 4 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 93.0 V/m; Power Drift = 0.003 dB  
**SAR(1 g) = 20.3 mW/g; SAR(10 g) = 5.68 mW/g**  
 Maximum value of SAR (measured) = 40.2 mW/g

**5800 MHz System Validation/Zoom Scan 5 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 93.3 V/m; Power Drift = 0.016 dB  
**SAR(1 g) = 20.8 mW/g; SAR(10 g) = 5.81 mW/g**  
 Maximum value of SAR (measured) = 40.4 mW/g

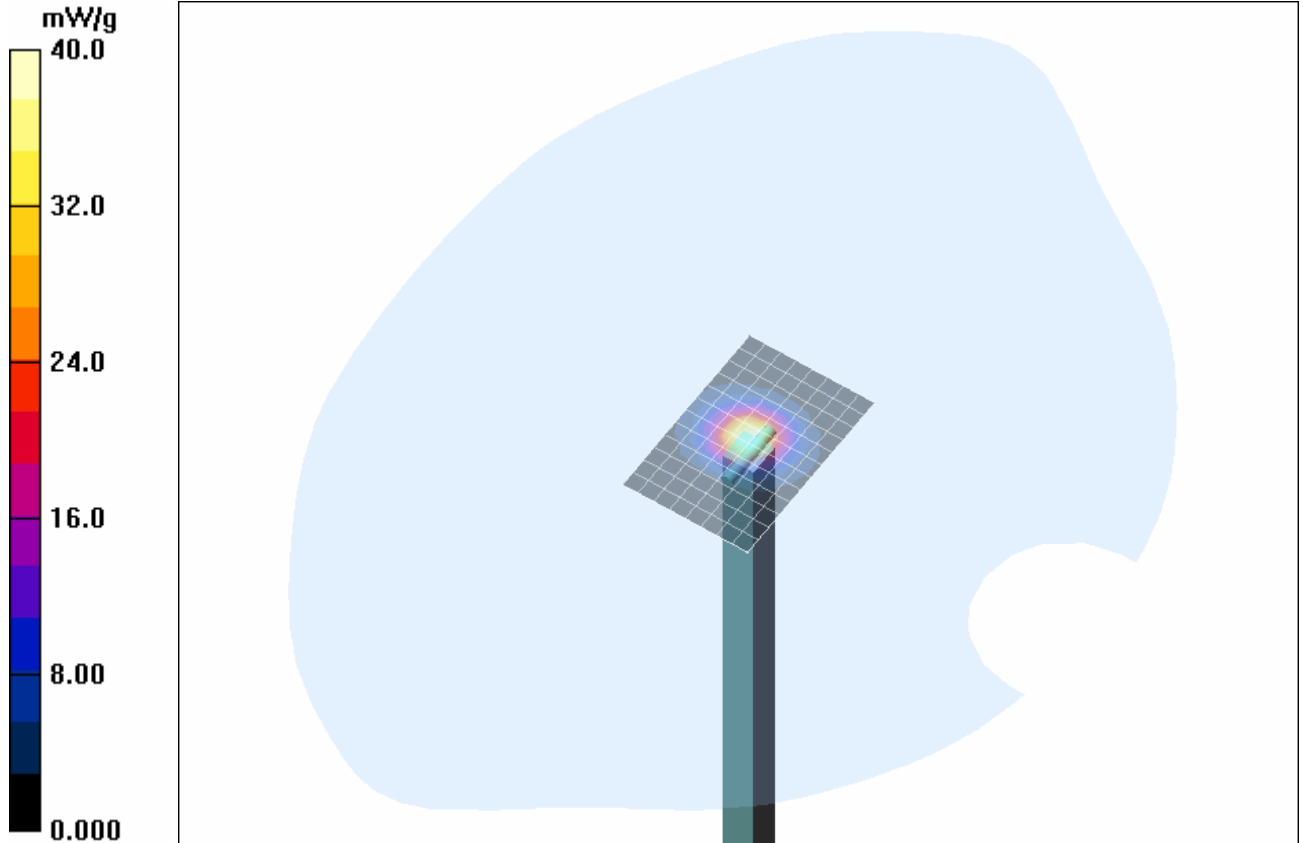
**5800 MHz System Validation/Zoom Scan 6 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 93.5 V/m; Power Drift = 0.016 dB  
**SAR(1 g) = 20.5 mW/g; SAR(10 g) = 5.75 mW/g**  
 Maximum value of SAR (measured) = 39.7 mW/g

**5800 MHz System Validation/Zoom Scan 7 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 94.2 V/m; Power Drift = 0.042 dB  
**SAR(1 g) = 20.5 mW/g; SAR(10 g) = 5.74 mW/g**  
 Maximum value of SAR (measured) = 39.4 mW/g

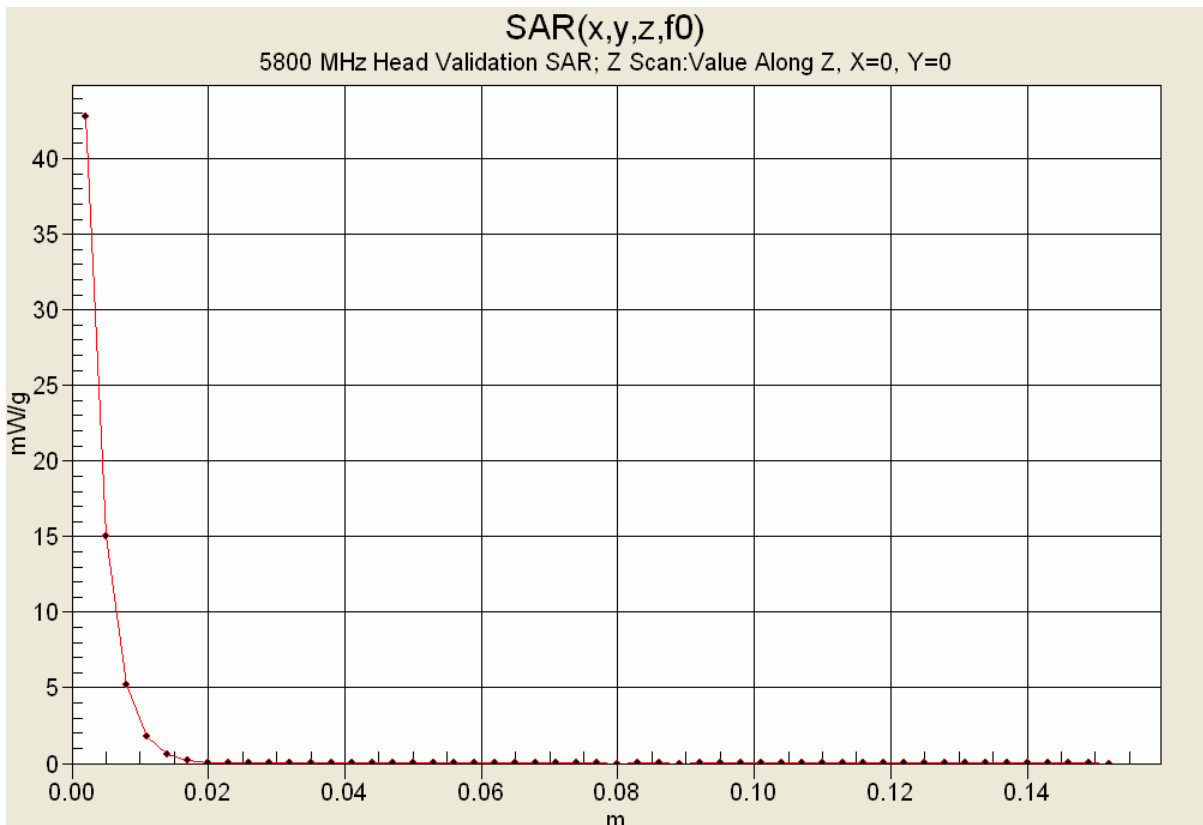
**5800 MHz System Validation/Zoom Scan 8 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 92.8 V/m; Power Drift = 0.049 dB  
**SAR(1 g) = 20.5 mW/g; SAR(10 g) = 5.73 mW/g**  
 Maximum value of SAR (measured) = 39.6 mW/g

**5800 MHz System Validation/Zoom Scan 9 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 92.2 V/m; Power Drift = 0.018 dB  
**SAR(1 g) = 20.5 mW/g; SAR(10 g) = 5.73 mW/g**  
 Maximum value of SAR (measured) = 39.6 mW/g

**5800 MHz System Validation/Zoom Scan 10 (8x8x8)/Cube 0:** Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm  
 Reference Value = 92.3 V/m; Power Drift = 0.051 dB  
**SAR(1 g) = 20.4 mW/g; SAR(10 g) = 5.71 mW/g**  
 Maximum value of SAR (measured) = 39.4 mW/g



1 g average of 10 measurements: 20.48 mW/g  
10 g average of 10 measurements: 5.73 mW/g



## 10. Measured Fluid Dielectric Parameters

### System Validation (Brain) - 5800 MHz Dipole

\*\*\*\*\*

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

Wed 15/Mar/2006

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
5.7000	35.41	5.17	34.38
5.7100	35.40	5.18	34.67
5.7200	35.39	5.19	34.55
5.7300	35.38	5.20	34.55
5.7400	35.37	5.21	34.27
5.7500	35.36	5.22	34.38
5.7600	35.35	5.23	34.47
5.7700	35.33	5.24	34.20
5.7800	35.32	5.25	34.38
5.7900	35.31	5.26	34.14
5.8000	35.30	5.27	34.36
5.8100	35.29	5.28	34.40
5.8200	35.28	5.29	34.38
5.8300	35.27	5.30	34.34
5.8400	35.25	5.31	34.27
5.8500	35.24	5.32	34.22
5.8600	35.23	5.33	34.40
5.8700	35.22	5.34	34.12
5.8800	35.21	5.35	34.18
5.8900	35.20	5.36	34.25
5.9000	35.19	5.37	34.18



	<u>Date(s) of Evaluation</u> September 14, 2006	<u>Test Report Serial No.</u> 091206AMW-T774-S15T	<u>Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## APPENDIX G - PROBE CALIBRATION

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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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: **EX3-3547\_Feb06**

## CALIBRATION CERTIFICATE

Object **EX3DV4 - SN.3547**

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

Calibration date: **February 14, 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  $(22 \pm 3)^{\circ}\text{C}$  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: **Katja Pokovic** **Technical Manager**

Approved by: **Niels Kuster** **Quality Manager**

Signature

Issued: February 14, 2006

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



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 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 <sub>x,y,z</sub>	sensitivity in free space
ConF	sensitivity in TSL / NORM <sub>x,y,z</sub>
DCP	diode compression point
Polarization $\phi$	$\phi$ 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:

- NORM<sub>x,y,z</sub>:** Assessed for E-field polarization  $\vartheta = 0$  ( $f \leq 900$  MHz in TEM-cell;  $f > 1800$  MHz: R22 waveguide). NORM<sub>x,y,z</sub> are only intermediate values, i.e., the uncertainties of NORM<sub>x,y,z</sub> does not effect the  $E^2$ -field uncertainty inside TSL (see below *ConvF*).
- NORM( $f$ )<sub>x,y,z</sub> = NORM<sub>x,y,z</sub> \* 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<sub>x,y,z</sub> \* *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:3547

Manufactured:	July 5, 2004
Last calibrated:	January 21, 2005
Recalibrated:	February 14, 2006

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

## DASY - Parameters of Probe: EX3DV4 SN:3547

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

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

NormX	<b>0.399</b> ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP X	<b>92</b> mV
NormY	<b>0.423</b> ± 10.1%	$\mu\text{V}/(\text{V}/\text{m})^2$	DCP Y	<b>92</b> mV
NormZ	<b>0.475</b> ± 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		<b>2.0 mm</b>	<b>3.0 mm</b>
SAR <sub>be</sub> [%]	Without Correction Algorithm	3.5	1.1
SAR <sub>be</sub> [%]	With Correction Algorithm	0.1	0.4

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

Sensor Center to Phantom Surface Distance		<b>2.0 mm</b>	<b>3.0 mm</b>
SAR <sub>be</sub> [%]	Without Correction Algorithm	2.5	1.1
SAR <sub>be</sub> [%]	With Correction Algorithm	0.2	0.4

### Sensor Offset

Probe Tip to Sensor Center                      **1.0 mm**

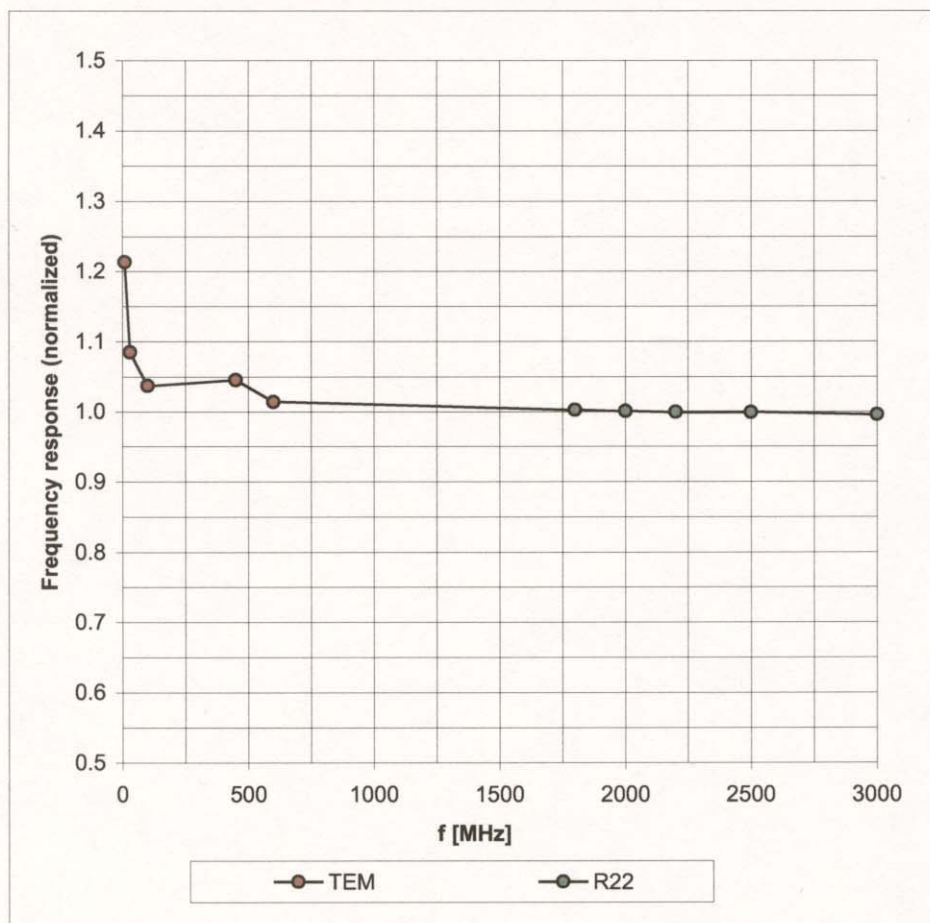
**The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.**

<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

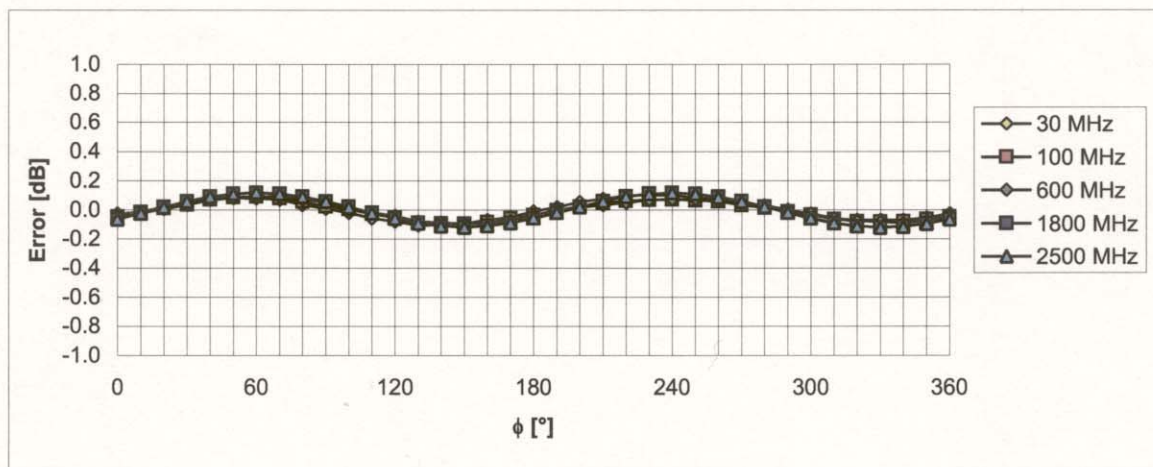
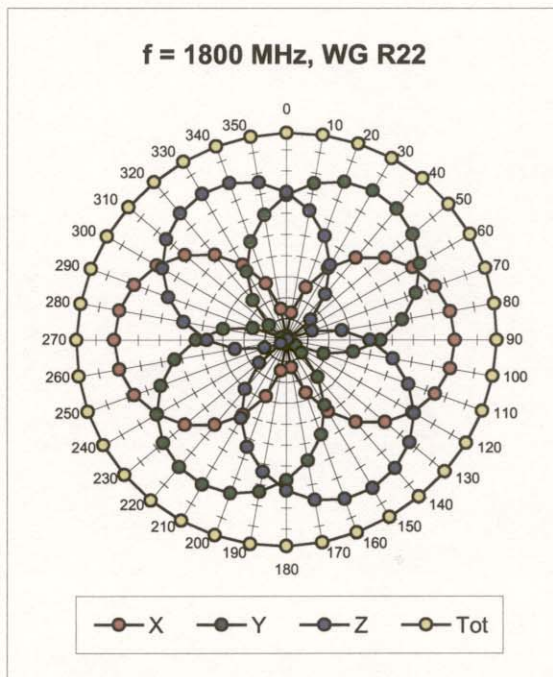
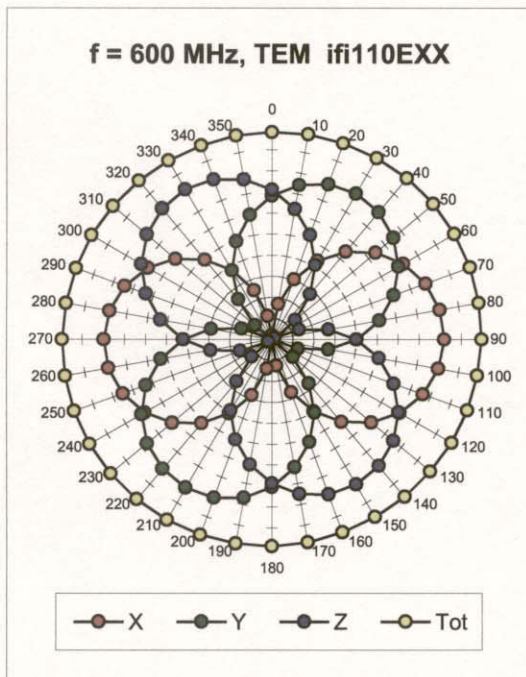
(TEM-Cell:ifi110 EXX, Waveguide: R22)



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

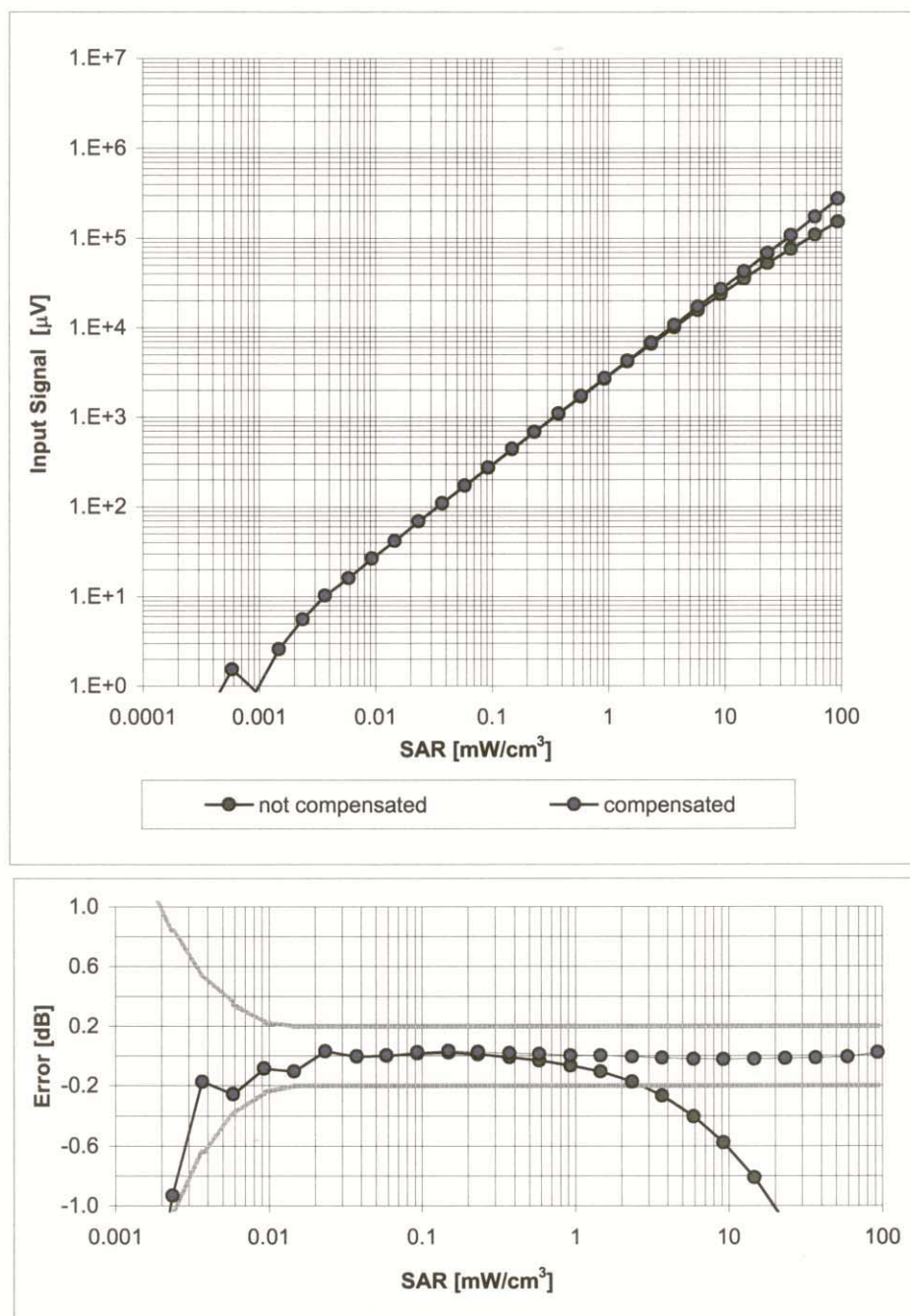


# Receiving Pattern ( $\phi$ ), $\vartheta = 0^\circ$



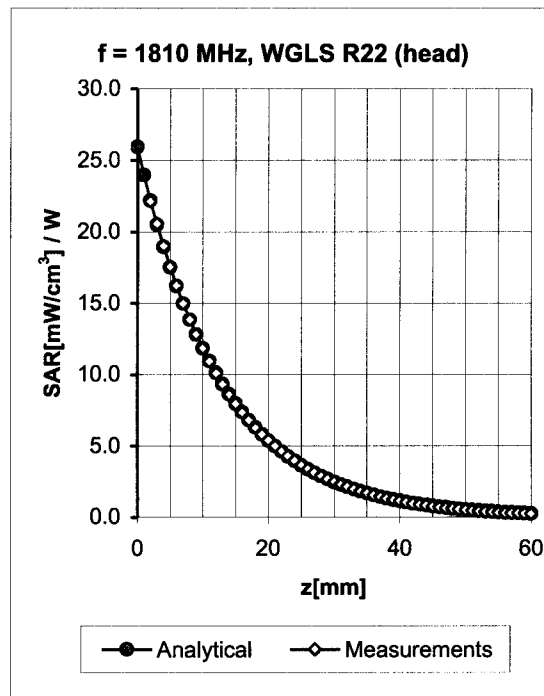
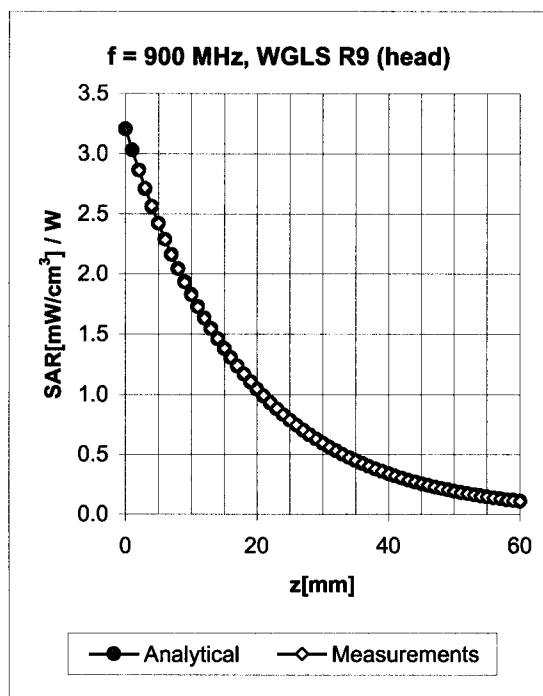
Uncertainty of Axial Isotropy Assessment:  $\pm 0.5\%$  ( $k=2$ )

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



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

## Conversion Factor Assessment

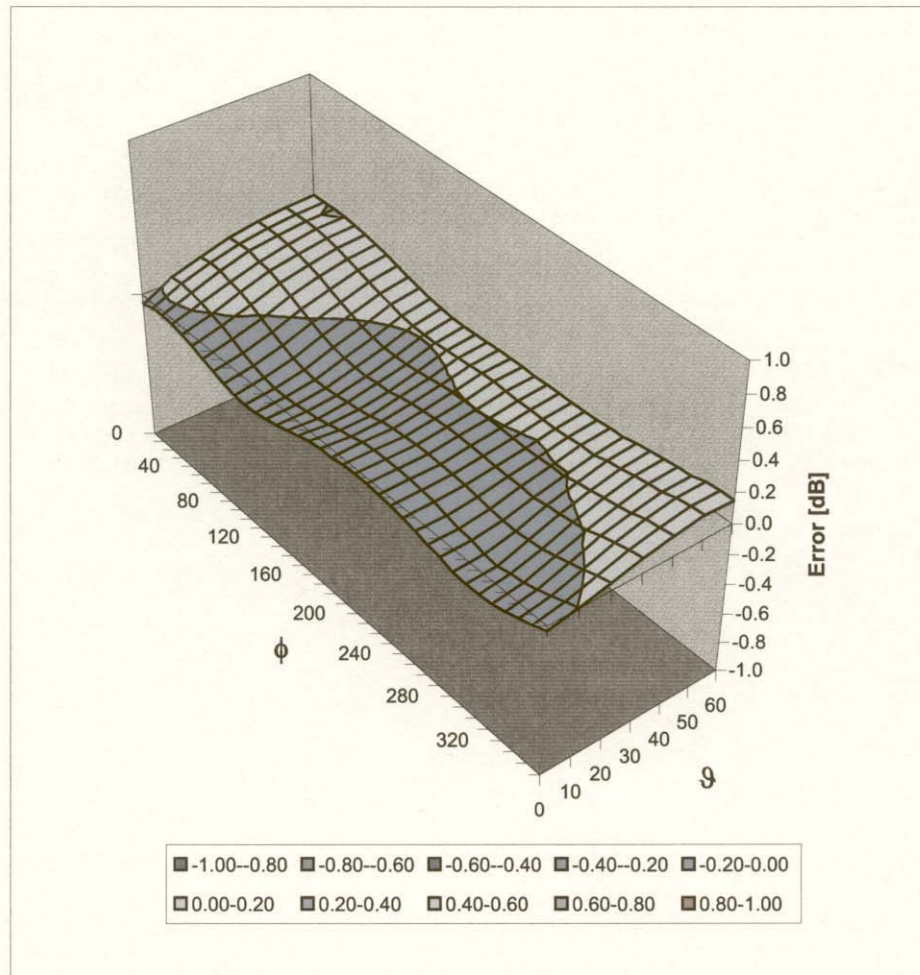


f [MHz]	Validity [MHz] <sup>c</sup>	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.71	0.66	9.20 ± 11.0% (k=2)
1810	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.42	0.73	8.20 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.55	0.56	7.41 ± 11.8% (k=2)
5800	± 50 / ± 100	Head	35.3 ± 5%	5.27 ± 5%	0.58	0.93	4.79 ± 13.1% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.79	0.65	9.09 ± 11.0% (k=2)
1810	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.10	4.00	7.84 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.58	0.54	7.53 ± 11.8% (k=2)
5200	± 50 / ± 100	Body	49.0 ± 5%	5.30 ± 5%	0.54	1.09	4.87 ± 13.1% (k=2)
5500	± 50 / ± 100	Body	48.6 ± 5%	5.65 ± 5%	0.57	0.96	4.57 ± 13.1% (k=2)
5800	± 50 / ± 100	Body	48.2 ± 5%	6.00 ± 5%	0.79	0.70	4.69 ± 13.1% (k=2)



<sup>c</sup> The validity of ± 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 ( $\phi$ ,  $\vartheta$ ),  $f = 900$  MHz



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

	<u>Date(s) of Evaluation</u> September 14, 2006	<u>Test Report Serial No.</u> 091206AMW-T774-S15T	<u>Report Revision No.</u> Revision 1.0	 Certificate No. 2470.01
	<u>Report Issue Date</u> September 22, 2006	<u>Description of Test(s)</u> RF Exposure - SAR	<u>RF Exposure Category</u> General Population	

## APPENDIX H - SAM PHANTOM CERTIFICATE OF CONFORMITY

Company:	Uniden America Corporation	FCC ID:	AMWUP822	IC ID:	513C-UP822	
Model(s):	UP822BH / TRU9380	Portable 5.8 GHz Cordless Telephone Handset		5725.8-5848.9 MHz		
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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

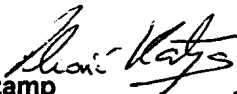
(\*) The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of [1] and [3].

### 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



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