

	<u>Date(s) of Evaluation</u> Oct 5 2015	<u>Test Report Serial No.</u> 100115AMW-1334	<u>Test Report Revision No.</u> Rev. 1.1	
	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

DECLARATION OF COMPLIANCE

SAR RF EXPOSURE EVALUATION - FCC / IC New Filing

TEST LAB INFORMATION	Name	CELLTECH LABS INC.				
	Address	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada				
TEST LAB ACCREDITATION	Type	ISO / IEC 17025	Accreditation	A2LA Test Lab Certificate No. 2470.01		
APPLICANT INFORMATION	Name	UNIDEN AMERICA CORPORATION				
	Address	3001 Gateway Drive, Suite 130, Irving, Texas, 75063				
STANDARDS APPLIED	FCC	47 CFR §2.1093	IC	Health Canada Safety Code 6		
PROCEDURES APPLIED	FCC	KDB 447498 D01v05r02, KDB 865664 D01v01r04	IC	RSS102 Issue 5		
	FCC	KDB 643646 D01v01r01	IEC	62209-1:2005		
	IEEE	IEEE 1528-2013	IEC	62209-2:2010		
DEVICE CLASSIFICATION	FCC	Licensed Non-Broadcast Transmitter Held to Face (TNF) - FCC Part 80 (VHF)				
	IC	Maritime Radio Transmitter and Receiver (156 – 162.5MHz)				
DEVICE DESCRIPTION	Portable Push-To-Talk (PTT) Radio Transceiver					
APPLICATION TYPE	New Filing					
DATE(S) OF EVALUATION	October 5, 2015		SAMPLES RECEIVED	October 1, 2015		
Devices Tested						
FCC ID	IC Certification	Model	Type	Frequency Range	Manufacturer's Rated Output Power	
AMWUT352	513C-UT352	Atlantis150	System	156.025-157.425 MHz	34.0dBm (2.5W)	
EVALUATION RESULTS						
Maximum SAR Level Evaluated FCC	Face	0.675	W/kg	1g	50% PTT Duty Factor	General Public / Uncontrolled
	Body	0.835				
Maximum SAR Level Evaluated IC	Face	0.699	W/kg	1g	50% PTT Duty Factor	General Public / Uncontrolled
	Body	0.873				
FCC / IC Spatial Peak SAR Limit	Face /Body		W/kg	1g	50% PTT Duty Factor	General Public / Uncontrolled
Celltech Labs Inc. declares under its sole responsibility that this wireless portable device has demonstrated compliance with the Specific Absorption Rate (SAR) RF exposure requirements specified in FCC 47 CFR §2.1093 and Health Canada 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 4, IEEE Standard 1528-2013 and International Standard IEC 62209-2:2010. All measurements were performed in accordance with the SAR system manufacturer recommendations.						
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The results and statements contained in this report pertain only to the device(s) evaluated						
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.						
Test Report Approved By			Art Voss	Senior Engineer	Celltech Labs Inc.	

Applicant:	Uniden America Corporation	FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver		VHF	
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	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

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REVISION HISTORY			
REVISION NO.	DESCRIPTION	IMPLEMENTED BY	RELEASE DATE
1.0	1st Release	Art Voss	October 15, 2015
1.1	2nd Release Corrected Address and reference to KDB 865664	Art Voss	October 16, 2015

TEST REPORT SIGN-OFF			
DEVICE TESTED BY	REPORT PREPARED BY	QA REVIEW BY	REPORT APPROVED BY
Daniel Guerrero	Daniel Guerrero	Art Voss	Art Voss

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
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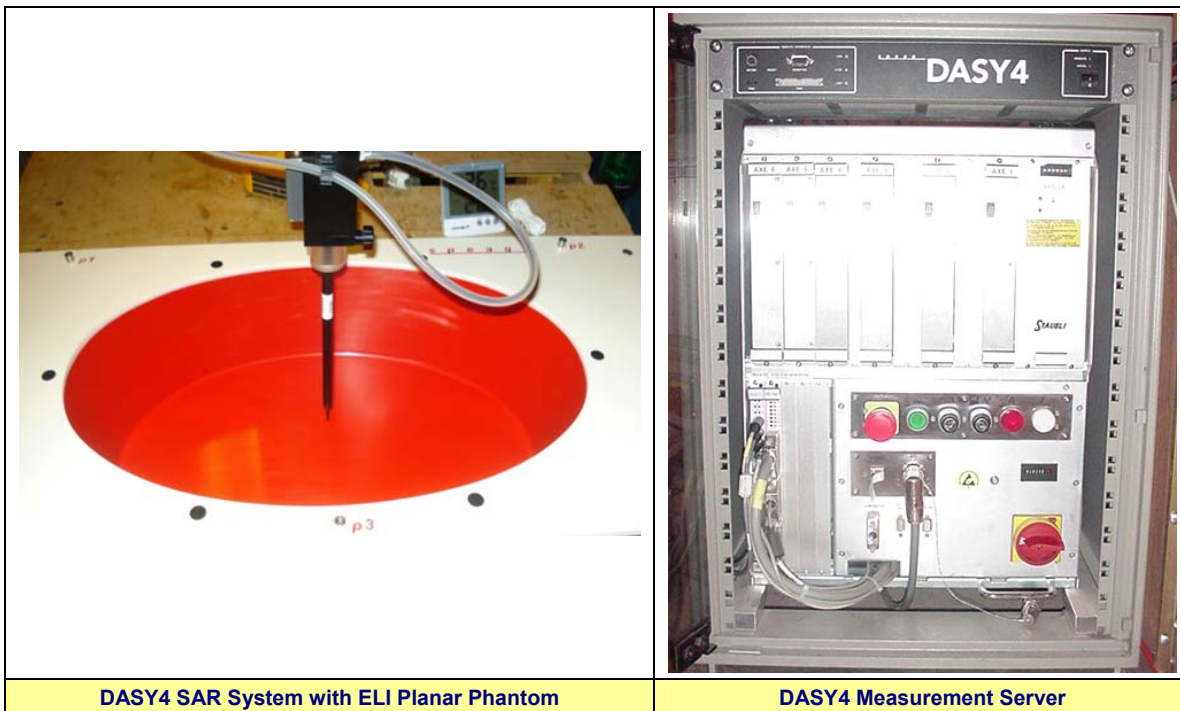
Test Lab Certificate No. 2470.01

1.0 INTRODUCTION

This measurement report demonstrates that the Uniden America Corporation Model: Atlantis150 Portable VHF PTT Radio Transceiver complies with the SAR (Specific Absorption Rate) 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 measurement procedures described in KDB 447498, KDB 865664, IC RSS-102 Issue 5, IEEE Standard 1528-2013 and IEC Standard 62209-2:2010 were employed. A description of the device, 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 Head 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 utilizes a controller with built in VME-bus computer.



DASY4 SAR System with ELI Planar Phantom

DASY4 Measurement Server

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3.0 RF CONDUCTED OUTPUT POWER MEASUREMENT

Band	Frequency	Channel	Mode	Measured Power Level		Method
				dBm	Watts	
VHF	156.05 MHz	01	CW	33.6	2.29	Average Conducted
VHF	156.9 MHz	19	CW	33.93	2.471	
VHF	157.4 MHz	88	CW	33.66	2.32	
Notes						
1. The test channel was selected in accordance with the procedures specified in FCC KDB 447498.						
2. The RF conducted output power levels of the DUT were measured by Celltech prior to the SAR evaluations using a Gigatronics 8652A Universal Power Meter at the external antenna connector of the radio in accordance with FCC 47 CFR §2.1046 and IC RSS-Gen.						

4.0 NO. OF TEST CHANNELS (N_c)

Device Frequency Range	Band	N_c	Test Frequencies (MHz)
156.05 - 157.425 MHz	VHF	3	156.025 – 157-425 MHz
Note: The number of test channels (N_c) was calculated in accordance with the procedures specified in FCC KDB 447498.			

5.0 SAR PROBE CALIBRATION & MEASUREMENT FREQUENCIES

The following procedures are recommended for measurements at 150 MHz - 3 GHz to minimize probe calibration and tissue dielectric parameter discrepancies. In general, SAR measurements below 300 MHz should be within ± 50 MHz of the probe calibration frequency. At 300 MHz to 3 GHz, measurements should be within ± 100 MHz of the probe calibration frequency. Measurements exceeding 50% of these intervals, ± 25 MHz < 300 MHz and ± 50 MHz $\geq$ 300 MHz, require additional steps (per FCC KDB 450824, SAR Probe Calibration and System Verification Considerations for Measurements at 150 MHz - 3 GHz).

Probe Calibration Freq.	Device Measurement Freq.	Frequency Interval	± 25 MHz $\leq$ 300 MHz
150 MHz	156.05 – 157.425 MHz	6.8 MHz	< 25 MHz
Note: The probe calibration and measurement frequency interval is < 25 MHz; therefore additional steps were not required.			

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6.0 FLUID DIELECTRIC PARAMETERS

FLUID DIELECTRIC PARAMETERS						
Date:	05 Oct 2015	Frequency:		150MHz	Tissue:	Head
Freq (MHz)	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
100.0000	59.28	0.68	54.63	0.72	8.51%	-5.56%
110.0000	58.86	0.69	54.17	0.73	8.66%	-5.48%
120.0000	52.79	0.69	53.70	0.74	-1.69%	-6.76%
130.0000	54.84	0.71	53.23	0.75	3.02%	-5.33%
140.0000	51.75	0.71	52.77	0.75	-1.93%	-5.33%
150.0000	50.16	0.73	52.30	0.76	-4.09%	-3.95%
156.0500	51.19	0.74	52.02	0.77	-1.58%	-3.92%
156.9000	51.34	0.74	51.98	0.77	-1.22%	-3.91%
157.4000	51.43	0.74	51.95	0.77	-1.01%	-3.91%
160.0000	51.87	0.74	51.83	0.77	0.08%	-3.90%
170.0000	51.69	0.76	51.37	0.77	0.62%	-1.30%
180.0000	50.34	0.76	50.90	0.78	-1.10%	-2.56%
190.0000	49.70	0.74	50.43	0.79	-1.45%	-6.33%
200.0000	48.90	0.76	49.97	0.80	-2.14%	-5.00%

**interpolated using DASY4 software*

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FLUID DIELECTRIC PARAMETERS

Date:	01 Oct 2015	Frequency:		150MHz	Tissue:	Body
Freq (MHz)	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
100.0000	70.58	0.71	63.13	0.76	11.80%	-6.58%
110.0000	70.29	0.72	62.89	0.77	11.77%	-6.49%
120.0000	66.62	0.73	62.64	0.78	6.35%	-6.41%
130.0000	66.65	0.76	62.39	0.78	6.83%	-2.56%
140.0000	65.14	0.74	62.15	0.79	4.81%	-6.33%
150.0000	66.78	0.75	61.90	0.80	7.88%	-6.25%
156.0500	66.35	0.77	61.75	0.81	7.45%	-4.70%
156.9000	66.29	0.77	61.73	0.81	7.39%	-4.49%
157.4000	66.25	0.77	61.72	0.81	7.36%	-4.36%
160.0000	66.07	0.78	61.65	0.81	7.17%	-3.70%
170.0000	64.97	0.79	61.41	0.82	5.80%	-3.66%
180.0000	65.63	0.78	61.16	0.82	7.31%	-4.88%
190.0000	66.47	0.79	60.91	0.83	9.13%	-4.82%
200.0000	65.80	0.80	60.67	0.84	8.46%	-4.76%

**interpolated using DASY4 software*

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8.0 SAR SCALING (MANUFACTURER TOLERANCE)

Scaling of Maximum Measured SAR

Plot ID	Configuration	Freq	Measured Fluid Deviation		Measured Conducted Power	Measured Drift	Measured SAR
		(MHz)	Permittivity	Conductivity	(dBm)	(dBm)	(W/kg)
F3	Face	157.425	-4.09%	-3.95%	33.66	-0.152	0.624
B1	Body	156.05	7.88%	-6.25%	33.6	-0.196	0.762

Step 1

Fluid Sensitivity Adjustment (1)

Plot ID	Measured SAR	X	Scale Factor	=	Adjusted SAR
	(W/kg)		(%)		(W/kg)
F3	0.624	X	-2.26	=	0.624
B1	0.762	X	-6.54	=	0.762

Step 2

Manufacturer's Tune-Up Tolerance (2)

Plot ID	Measured Conducted	Rated Conducted	Delta	+	Adjusted SAR	=	Reported SAR
	Power (dBm)	Power (dBm)	(dB)		(W/kg)		(W/kg)
F4	33.66	34.0	-0.34	+	0.624	=	0.675
B4	33.6	34.0	-0.4	+	0.762	=	0.835

Step 3

Simultaneous Transmission (3) – Bluetooth (Not Applicable)

Plot ID	Output Power	Freq	Separation Distance	Estimated SAR	+	Reported SAR	=	Simultaneous Reported SAR
	Pmax (mW)	(GHz)	(mm)	(W/kg)		(W/kg)		(W/kg)
					+		=	
					+		=	

Step 4 (IC/EU/AU)

Drift Adjustment (4)

Plot ID	Measured	+	Reported or Simultaneous Reported SAR	=	Scaled
	Drift (dBm)		(W/kg)		SAR (W/kg)
F4	-0.152	+	0.675	=	0.699
B4	-0.196	+	0.835	=	0.873

Notes:

- Only the highest SAR values for face and body per frequency band are scaled.
- The resulting value is the reported SAR.
- The scaled SAR levels are below the FCC/IC General Population SAR Limit of 1.6 W/kg.
- IC requires that the reported SAR also be scaled for the measured drift, therefore the above table calculates the SAR separately for IC.

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Test Lab Certificate No. 2470.01

9.0 DETAILS OF SAR EVALUATION

The DUT was compliant for localized Specific Absorption Rate (General Population / Uncontrolled Exposure) based on the test provisions and conditions described below. The detailed test setup photographs are shown in Appendix D.

1. The face-held SAR evaluation was performed with the front of the DUT placed parallel to the outer surface of the planar phantom. A 2.5 cm spacing was maintained between the front side of the DUT and the outer surface of the planar phantom.
2. The area scan evaluation was performed with a fully charged battery. After the area scan was completed the radio was allowed to cool for 10 minutes prior to the zoom scan evaluation.
3. The DUT was evaluated for SAR in an unmodulated continuous transmit operation (Continuous Wave mode at 100% duty cycle) with the transmit key constantly depressed. For a push-to-talk device the 50% duty cycle compensation reported assumes a transmit/receive cycle of equal time base.
4. The SAR drift of the DUT was measured by the DASY4 system for the duration of the SAR evaluation and a SAR-versus-Time power droop evaluation was performed (see Appendix A).
5. The fluid temperature remained within $\pm 2^{\circ}\text{C}$ from the fluid dielectric parameter measurement to the completion of the SAR evaluation.
6. The dielectric parameters of the simulated tissue mixture were measured prior to the SAR evaluation using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).

10.0 SAR EVALUATION PROCEDURES

- (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.
- 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:
 - 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.
 - 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:
 - Extrapolation is used to find the points between the dipole center of the probe and the surface of the phantom. This data cannot be measured, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.4 mm (see probe calibration document in Appendix F). The extrapolation was based on trivariate quadratics computed from the previously calculated 3D interpolated points nearest the phantom surface.
 - 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).
 - A zoom scan volume of 30 mm x 30 mm x 30 mm (5 x 5 x 7 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 (7 x 7 x 7) to ensure complete capture of the peak spatial-average SAR.

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11.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations, system verifications were performed with a planar phantom and SPEAG 150MHz CLA (see Appendix B) in accordance with the procedures described in FCC KDB 865664.

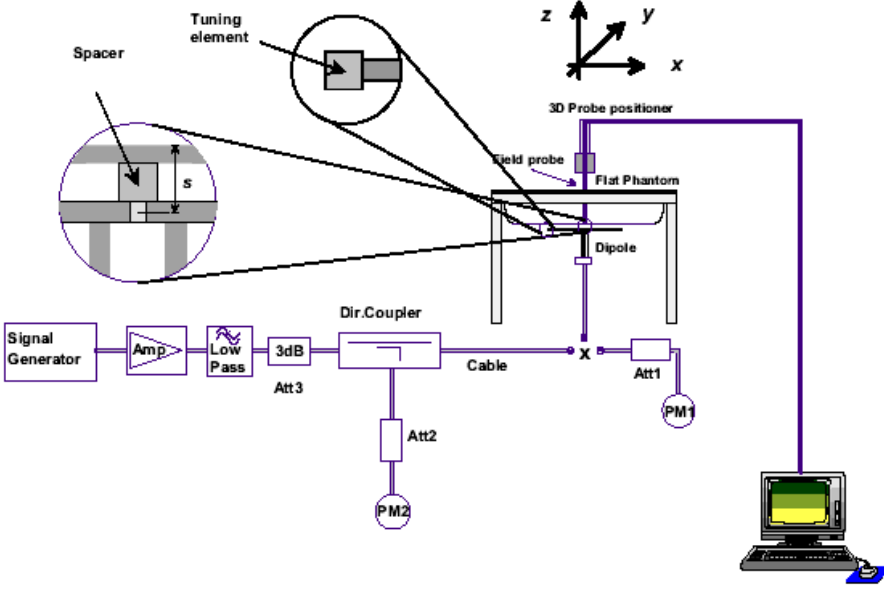
System Verification Test Results											
Date	Frequency (MHz)	Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Dipole Spacing (mm)	Validation Source			
								P/N		S/N	
05 Oct 2015	150	Head	22.1	23	25%	1000	0	CLA-150		4007	
SAR						Fluid Parameters					
1 gram			10 gram			Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation	Measured	Target	Deviation	Measured	Target	Deviation
3.91	3.86	1.30%	2.59	2.55	1.57%	50.16	52.30	-4.09%	0.73	0.76	-3.95%

System Verification Test Results											
Date		Frequency (MHz)	Fluid Type	Fluid Temp °C	Ambient Temp °C	Ambient Humidity (%)	Forward Power (mW)	Dipole Spacing (mm)	Validation Source		
									P/N		S/N
01 Oct 2015		150	Body	23.0	24	25%	1000	0	CLA-150		4007
SAR						Fluid Parameters					
1 gram			10 gram			Permittivity			Conductivity		
Measured	Target	Deviation	Measured	Target	Deviation	Measured	Target	Deviation	Measured	Target	Deviation
3.67	3.90	-5.90%	2.46	2.60	-5.38%	66.78	61.90	7.88%	0.75	0.80	-6.25%

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Notes	1.	The 150MHz SAR values have a coefficient of variation < 3%.
	2.	The target dielectric parameters are the nominal values from the SAR system manufacturer's dipole calibration (see Appendix E).
	3.	The fluid temperature was measured prior to and after the system performance check evaluations. The fluid temperature remained within +/-2°C during the system performance check evaluations.
	4.	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).

	
System Performance Check Measurement Setup (IEEE Standard 1528-2003)	SPEAG CLA-150 150 MHz Validation Source

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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12.0 SIMULATED EQUIVALENT TISSUES

The simulated equivalent tissue recipes in the table below are derived from the SAR system manufacturer's suggested recipes in the DASY4 manual in accordance with the procedures and requirements specified in IEEE Standard 1528-2013 and IEC Standard 62209-1:2005. The ingredient percentage may have been adjusted minimally in order to achieve the appropriate target dielectric parameters within the specified tolerance.

SIMULATED TISSUE MIXTURES	
INGREDIENT	150 MHz HEAD
Water	38.35 %
Sugar	55.5%
Salt	5.15%
HEC	0.9%
Bactericide	0.1%
SIMULATED TISSUE MIXTURES	
INGREDIENT	150 MHz Body
Water	46.6%
Sugar	49.7%
Salt	2.6%
HEC	1%
Bactericide	0.1%

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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13.0 SAR LIMITS

SAR RF EXPOSURE LIMITS			
FCC 47 CFR 2.1093	Health Canada Safety Code 6	(General Population / Uncontrolled Exposure)	(Occupational / Controlled Exposure)
Spatial Average (averaged over the whole body)		0.08 W/kg	0.4 W/kg
Spatial Peak (averaged over any 1 g of tissue)		1.6 W/kg	8.0 W/kg
Spatial Peak (hands/wrists/feet/ankles averaged over 10 g)		4.0 W/kg	20.0 W/kg
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.			

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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Test Lab Certificate No. 2470.01

14.0 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 80
	Postprocessing Software: SEMCAD, V1.8 Build 186
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	Triangular core fiber optic detection system
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
<u>Phantom</u>	
Type	ELI Planar Phantom
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 70 liters

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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15.0 PROBE SPECIFICATION (ET3DV6)

Construction: Symmetrical design with triangular core
Built-in shielding against static charges
PEEK enclosure material (resistant to organic solvents, e.g. 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: ± 0.2 dB (30 MHz to 3 GHz)

Directivity: ± 0.3 dB in HSL (rotation around probe axis)
 ± 0.5 dB in tissue material (rotation normal to probe axis)

Dynamic Range: 10 μ W/g to >100 mW/g; Linearity: ± 0.2 dB
(noise: typically < 1 μ 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

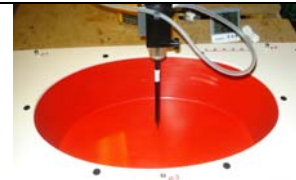
Application: High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better than 30%.



EX3DV4 E-Field Probe

16.0 ELI PLANAR PHANTOM

The ELI V5.0 phantom is an elliptical planar fiberglass shell phantom with a shell thickness of 2.0mm $\pm$.2mm at the planar area. This phantom conforms to OET Bulletin 65, Supplement C, IEEE 1528-2013, IEC 62209-1 and IEC 62209-2.



ELI Planar Phantom

17.0 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. Face-held SAR evaluations (PTT radios) are performed with the device holder in the body axis.



Device Holder

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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18.0 TEST EQUIPMENT LIST

Table 18.0

Test Equipment List				
DESCRIPTION	ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION INTERVAL
Schmid & Partner DASY4 System	-	-	-	-
-DASY4 Measurement Server	00158	1078	CNR	CNR
-Robot	00046	599396-01	CNR	CNR
-DAE4	00019	353	9 April 2014	Biennial
-DAE3	00018	370	23 April 2015	Biennial
-EX3DV6 E-Field Probe	00017	3600	23 April 2015	Annual
-D450V3 Validation Dipole	00221	1068	21 April 2015	Triennial
ELI Elliptical Planar Phantom	00247	-	CNR	CNR
HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
Gigatronics 8652A Power Meter	00110	1835801	17 March 2014	Biennial
Gigatronics 80701A Power Sensor	00249	1834473	17 March 2014	Biennial
Gigatronics 80701A Power Sensor	00248	1833687	17 March 2014	Biennial
HP 8753ET Network Analyzer	00134	US39170292	22 Oct 2014	Biennial
Rohde & Schwarz SMR20 Signal Generator	00006	100104	8 May 2014	Biennial
Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR

CNR = Calibration Not Required

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19.0 MEASUREMENT UNCERTAINTIES (IC ONLY)

IEEE 1528 Table E.9

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEEE 1528-2013 Table 9)

Source of Uncertainty	IEEE 1528 Section	Toler ±%	Prob Dist	Div	c _i	c _i	Stand Unct ±%	Stand Unct ±%	V _i or V _{eff}
Measurement System					(1g)	(10g)	(1g)	(10g)	
EX3DV4 Probe Calibration** (k=1)	E.2.1		N	1	1	1	6.6	6.6	∞
Axial Isotropy** (k=1)	E.2.2		R	√3	0.7	0.7	0.3	0.3	∞
Hemispherical Isotropy** (k=1)	E.2.2		R	√3	0.7	0.7	1.3	1.3	∞
Boundary Effect*	E.2.3	1.0	R	√3	1	1	0.6	0.6	∞
Linearity** (k=1)	E.2.4		R	√3	1	1	0.3	0.3	∞
System Detection Limits*	E.2.4	1.0	R	√3	1	1	0.6	0.6	∞
Modulation Response** (k=1)	E.2.5		R	√3	1	1	1.4	1.4	∞
Readout Electronics*	E.2.6	0.0	N	1	1	1	0.0	0.0	∞
Response Time*	E.2.7	0.8	R	√3	1	1	0.5	0.5	∞
Integration Time*	E.2.8	2.6	R	√3	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	1.3	R	√3	1	1	0.7	0.7	10
RF Ambient Conditions - Reflection	E.6.1	0.0	R	√3	1	1	0.0	0.0	10
Probe Positioner Mechanical Tolerance*	E.6.2	0.4	R	√3	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell*	E.6.3	2.9	R	√3	1	1	1.7	1.7	∞
Post-processing*	E.5	3.9	R	√3	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	0.3	N	1	1	1	0.3	0.3	5
Device Holder Uncertainty*	E.4.1	3.6	N	1	1	1	3.6	3.6	∞
SAR Drift Measurement ⁽²⁾	E.2.9	0.0	R	√3	1	1	0.0	0.0	∞
SAR Power Scaling ⁽³⁾	E.6.5	0.0	R	√3	1	1	0.0	0.0	∞
Phantom and Tissue Parameters									
Phantom Uncertainty*	E.3.1	4.0	R	√3	1	1	2.3	2.3	∞
SAR Correction Uncertainty	E.3.2	1.2	N	1	1	0.84	1.2	1.0	∞
Liquid Conductivity (measurement)	E.3.3	5.0	N	1	0.78	0.71	3.9	3.6	10
Liquid Permittivity (measurement)	E.3.3	5.0	N	1	0.23	0.26	1.2	1.3	10
Liquid Conductivity (Temperature)	E.3.2	0.1	R	√3	0.78	0.71	0.0	0.0	10
Liquid Permittivity Temperature)	E.3.2	0.1	R	√3	0.23	0.26	0.0	0.0	10
Effective Degrees of Freedom⁽¹⁾								V_{eff} =	1057
Combined Standard Uncertainty			RSS				9.8	9.6	
Expanded Uncertainty (95% Confidence Interval)			k=2				19.5	19.3	

Measurement Uncertainty Table in accordance with IEEE Standard 1528-2003

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Table 19.1

Calculation of the Degrees and Effective Degrees of Freedom

$v_i = n - 1$	$v_{\text{eff}} = \frac{u_c^4}{m \sum_{i=1} \frac{c_i^4 u_i^4}{v_i}}$
---------------	---

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APPENDIX A - SAR MEASUREMENT PLOTS

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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Plot F1

Date/Time: 05/10/2015 1:01:02 PM

1334 - 150H 05 Oct 2015

DUT: Uniden; Type: Portable VHF PTT Radio Transceiver; Serial: n/a

Program Notes: 05 Oct 2015, Ambient Temp: 24C; Fluid Temp: 22.1C; Humidity: 25%

Procedure Notes:

Communication System: CW

Frequency: 156.05 MHz; Duty Cycle: 1:1

Medium: TSL_150H[05OC15] Medium parameters used (interpolated): $f = 156.05$ MHz; $\sigma = 0.736$ mho/m; $\epsilon_r = 51.2$; $\rho = 1000$ kg/m³

- Probe: EX3DV4 - SN3600 2015; ConvF(9.42, 9.42, 9.42); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

F1 - 156.05MHz/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.186 mW/g

F1 - 156.05MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

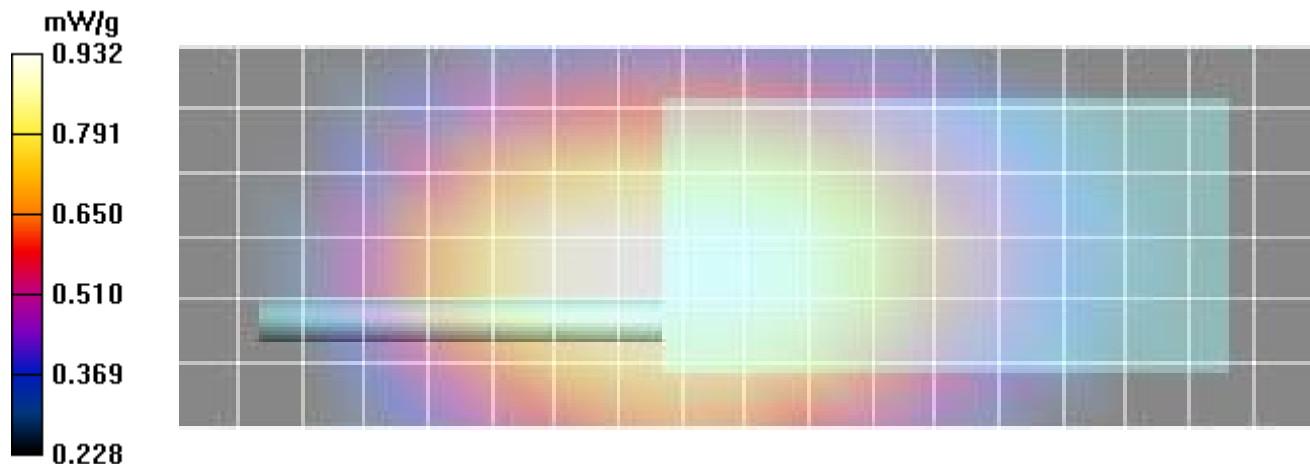
Reference Value = 39.6 V/m; Power Drift = -0.14 dB

Peak SAR (extrapolated) = 1.14 W/kg

SAR(1 g) = 0.895 mW/g; SAR(10 g) = 0.698 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.932 mW/g



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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Plot F2

Date/Time: 05/10/2015 1:14:00 PM

1334 - 150H 05 Oct 2015

DUT: Uniden; Type: Portable VHF PTT Radio Transceiver; Serial: n/a

Program Notes: 05 Oct 2015, Ambient Temp: 24C; Fluid Temp: 22.1C; Humidity: 25%

Procedure Notes:

Communication System: CW

Frequency: 156.9 MHz; Duty Cycle: 1:1

Medium: TSL_150H[05OC15] Medium parameters used (interpolated): $f = 156.9$ MHz; $\sigma = 0.737$ mho/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

- Probe: EX3DV4 - SN3600 2015; ConvF(9.42, 9.42, 9.42); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

F2 - 156.9MHz/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.01 mW/g

F2 - 156.9MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

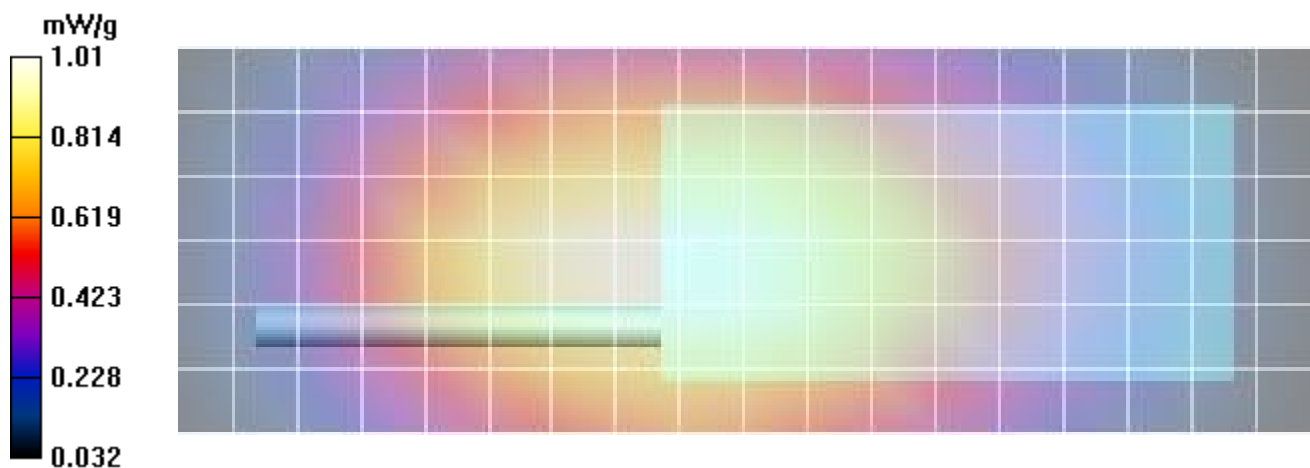
Reference Value = 38.8 V/m; Power Drift = -0.042 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.941 mW/g; SAR(10 g) = 0.731 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.981 mW/g



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
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Test Lab Certificate No. 2470.01

Plot F3

Date/Time: 05/10/2015 1:30:34 PM

1334 - 150H 05 Oct 2015

DUT: Uniden; Type: Portable VHF PTT Radio Transceiver; Serial: n/a

Program Notes: 05 Oct 2015, Ambient Temp: 24C; Fluid Temp: 22.1C; Humidity: 25%

Procedure Notes:

Communication System: CW

Frequency: 157.425 MHz; Duty Cycle: 1:1

Medium: TSL_150H[05OC15] Medium parameters used (interpolated): $f = 157.425 \text{ MHz}$; $\sigma = 0.737 \text{ mho/m}$; $\epsilon_r = 51.4$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600 2015; ConvF(9.42, 9.42, 9.42); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

F3 - 157.425MHz/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.15 mW/g

F3 - 157.425MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

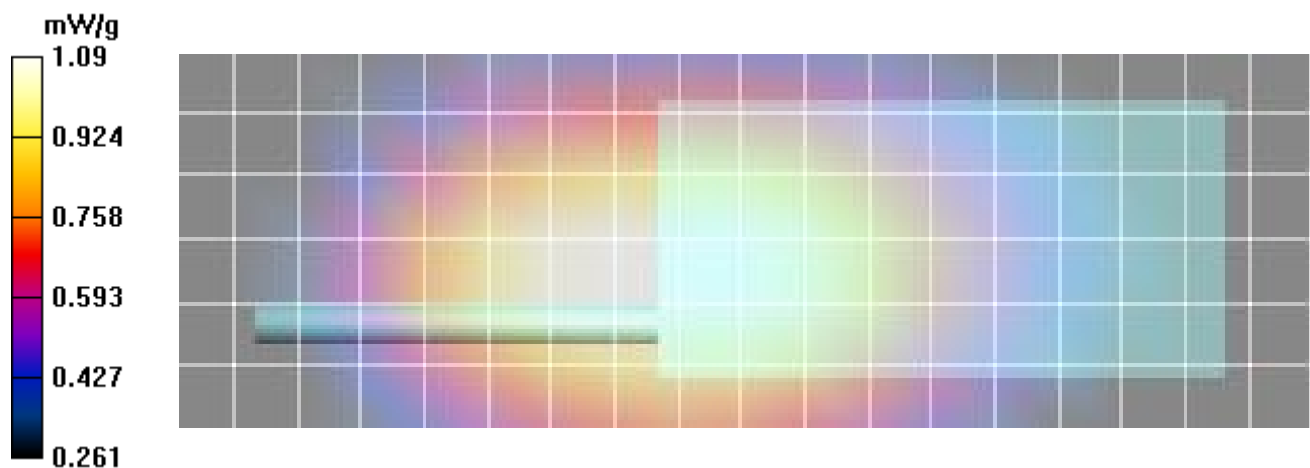
Reference Value = 41.1 V/m; Power Drift = -0.152 dB

Peak SAR (extrapolated) = 1.34 W/kg

SAR(1 g) = 1.249 mW/g; SAR(10 g) = 0.968 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

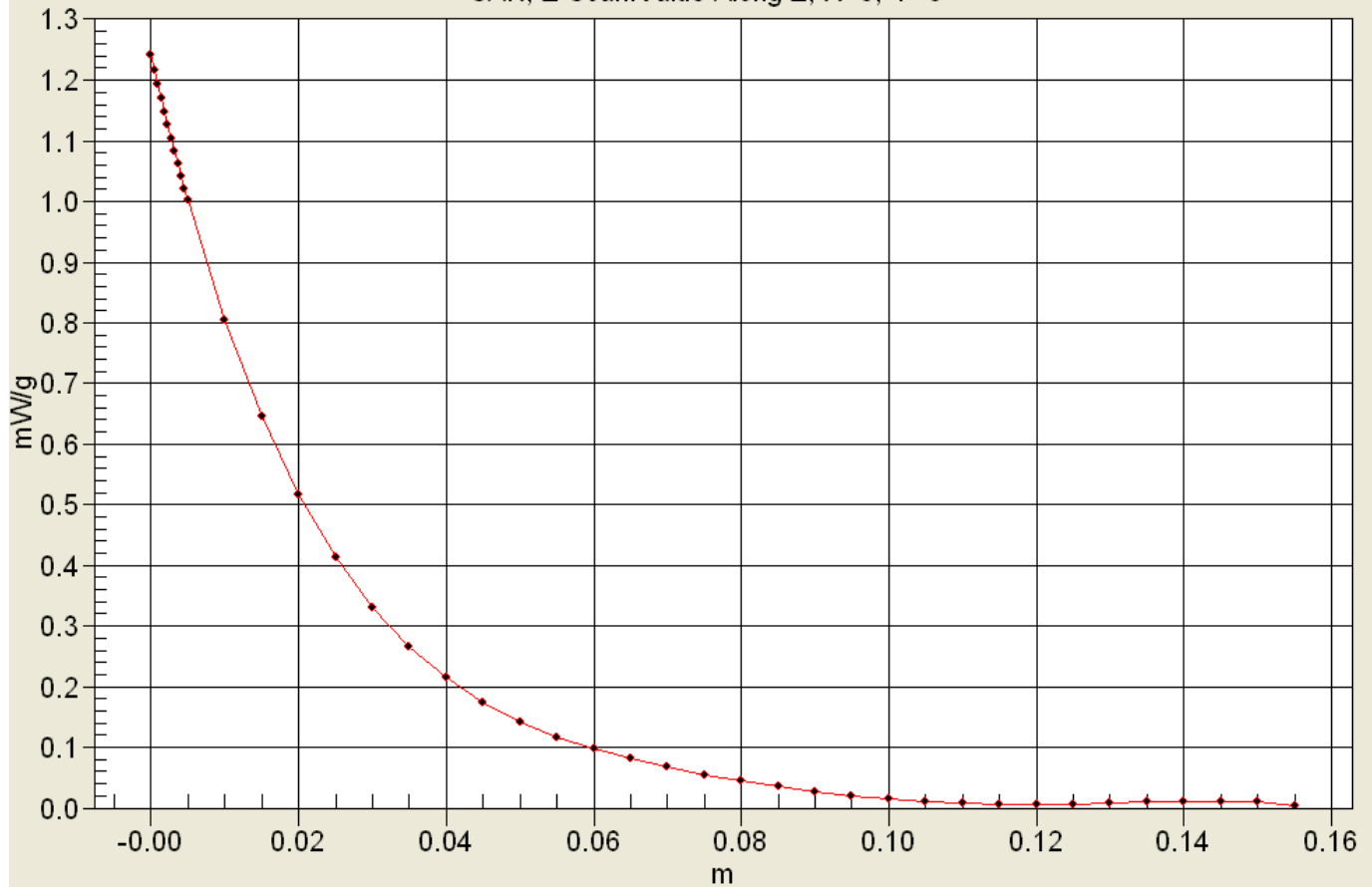
Maximum value of SAR (measured) = 1.09 mW/g



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
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Interpolated SAR(x,y,z,f0)

SAR; Z Scan: Value Along Z, X=0, Y=0



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Plot B1

Date/Time: 05/10/2015 8:47:06 AM

1334 - 150B 05 Oct 2015

DUT: Uniden; Type: Portable VHF PTT Radio Transceiver; Serial: n/a

Program Notes: 05 Oct 2015, Ambient Temp: 24C; Fluid Temp: 22.1C; Humidity: 25%

Procedure Notes:

Communication System: CW

Frequency: 156.05 MHz; Duty Cycle: 1:1

Medium: TSL_150B[01OC15] Medium parameters used (interpolated): $f = 156.05$ MHz; $\sigma = 0.768$ mho/m; $\epsilon_r = 66.4$; $\rho = 1000$ kg/m³

- Probe: EX3DV4 - SN3600 2015; ConvF(8.94, 8.94, 8.94); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

B1 - 156.05MHz/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.44 mW/g

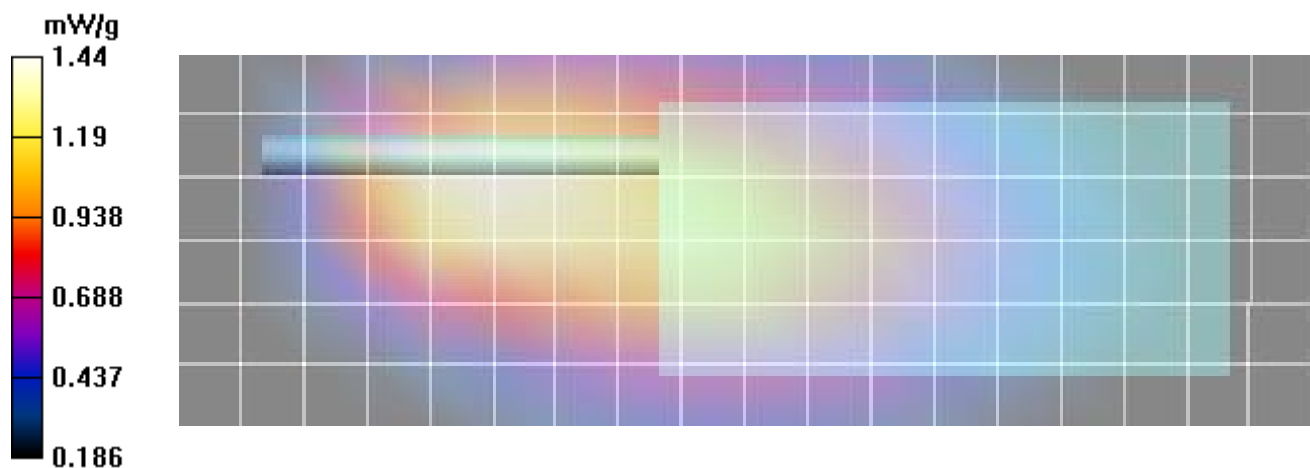
B1 - 156.05MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 41.1 V/m; Power Drift = -0.196 dB

Peak SAR (extrapolated) = 2.00 W/kg

SAR(1 g) = 1.525 mW/g; SAR(10 g) = 1.083 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)



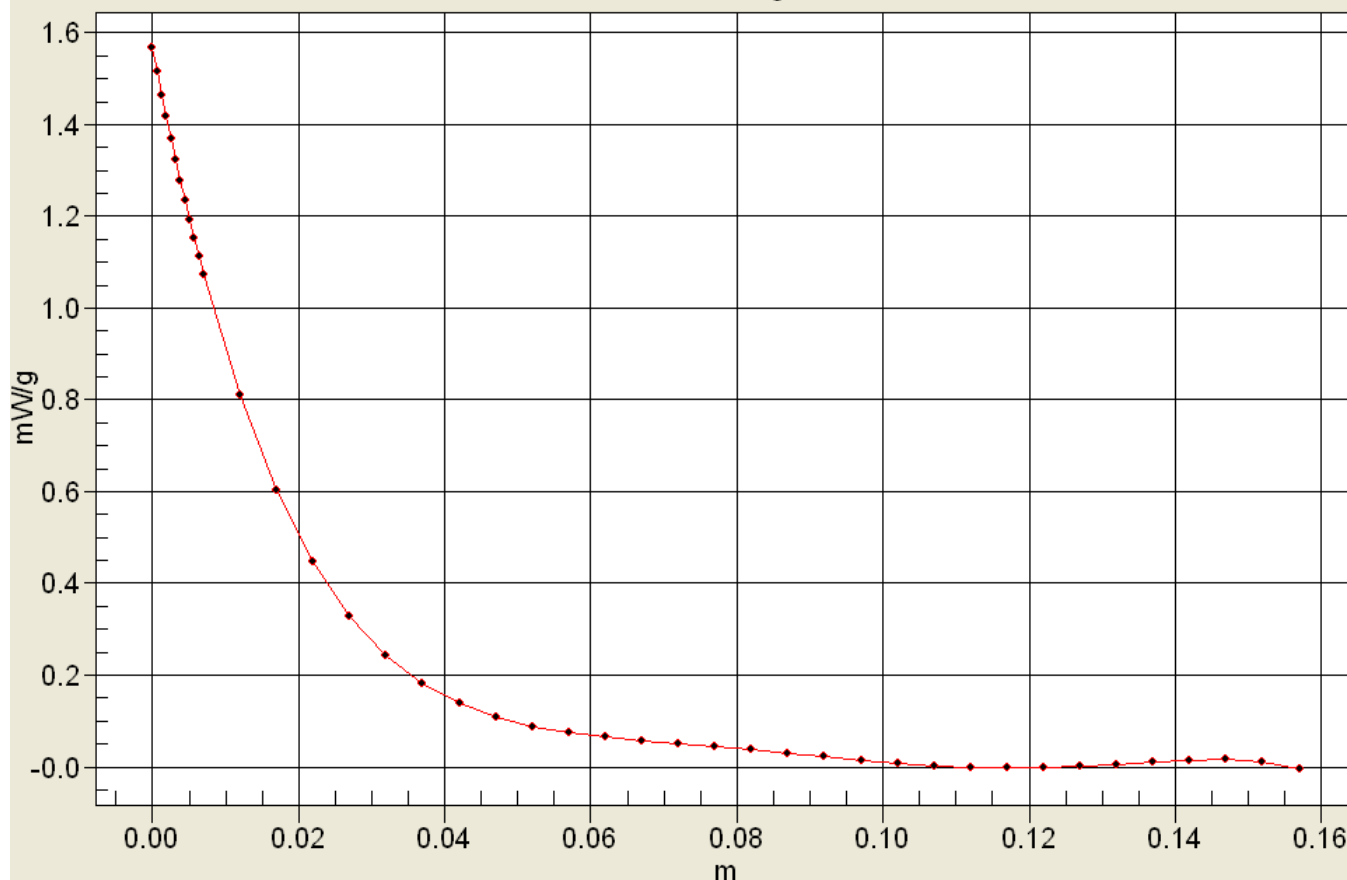
Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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	<u>Date(s) of Evaluation</u> Oct 5 2015	<u>Test Report Serial No.</u> 100115AMW-1334	<u>Test Report Revision No.</u> Rev. 1.1	
	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

Interpolated SAR(x,y,z,f0)

SAR; Z Scan: Value Along Z, X=0, Y=0



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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	<u>Date(s) of Evaluation</u> Oct 5 2015	<u>Test Report Serial No.</u> 100115AMW-1334	<u>Test Report Revision No.</u> Rev. 1.1	
	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

Plot B2

Date/Time: 05/10/2015 9:16:20 AM

1334 - 150B 05 Oct 2015

DUT: Uniden; Type: Portable VHF PTT Radio Transceiver; Serial: n/a

Program Notes: 05 Oct 2015, Ambient Temp: 24C; Fluid Temp: 22.1C; Humidity: 25%

Procedure Notes:

Communication System: CW

Frequency: 156.9 MHz; Duty Cycle: 1:1

Medium: TSL_150B[01OC15] Medium parameters used (interpolated): $f = 156.9 \text{ MHz}$; $\sigma = 0.77 \text{ mho/m}$; $\epsilon_r = 66.3$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600 2015; ConvF(8.94, 8.94, 8.94); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

B2 - 156.9MHz/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.24 mW/g

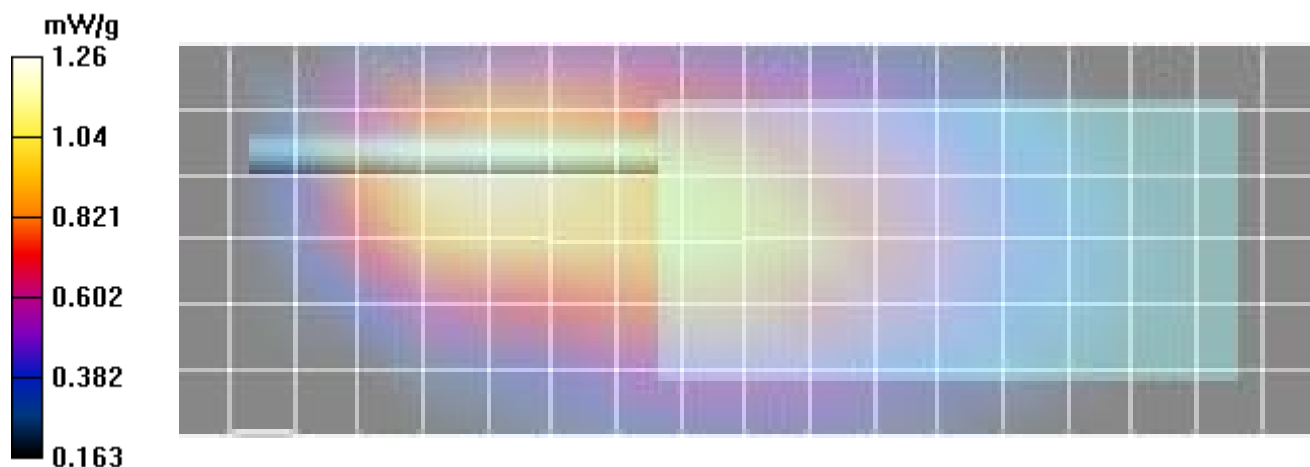
B2 - 156.9MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 36.4 V/m; Power Drift = -0.049 dB

Peak SAR (extrapolated) = 1.75 W/kg

SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.841 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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	<u>Date(s) of Evaluation</u> Oct 5 2015	<u>Test Report Serial No.</u> 100115AMW-1334	<u>Test Report Revision No.</u> Rev. 1.1	
	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

Plot B3

Date/Time: 05/10/2015 9:57:17 AM

1334 - 150B 05 Oct 2015

DUT: Uniden; Type: Portable VHF PTT Radio Transceiver; Serial: n/a

Program Notes: 05 Oct 2015, Ambient Temp: 24C; Fluid Temp: 22.1C; Humidity: 25%

Procedure Notes:

Communication System: CW

Frequency: 157.425 MHz; Duty Cycle: 1:1

Medium: TSL_150B[01OC15] Medium parameters used (interpolated): $f = 157.425$ MHz; $\sigma = 0.772$ mho/m; $\epsilon_r = 66.3$; $\rho = 1000$ kg/m³

- Probe: EX3DV4 - SN3600 2015; ConvF(8.94, 8.94, 8.94); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

B3 - 157.425MHz/Area Scan (7x19x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.32 mW/g

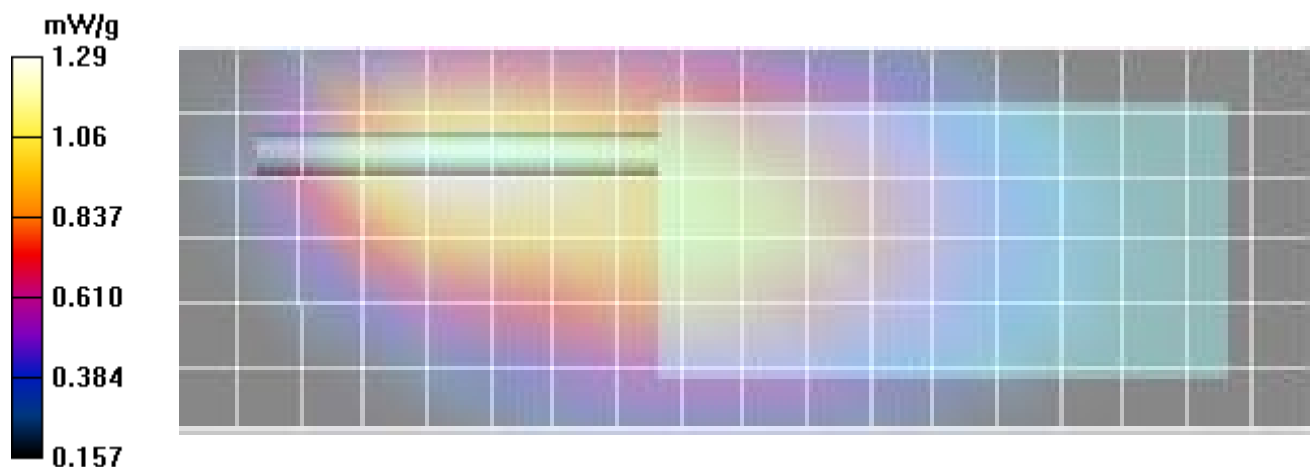
B3 - 157.425MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 37.3 V/m; Power Drift = -0.254 dB

Peak SAR (extrapolated) = 1.78 W/kg

SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.864 mW/g

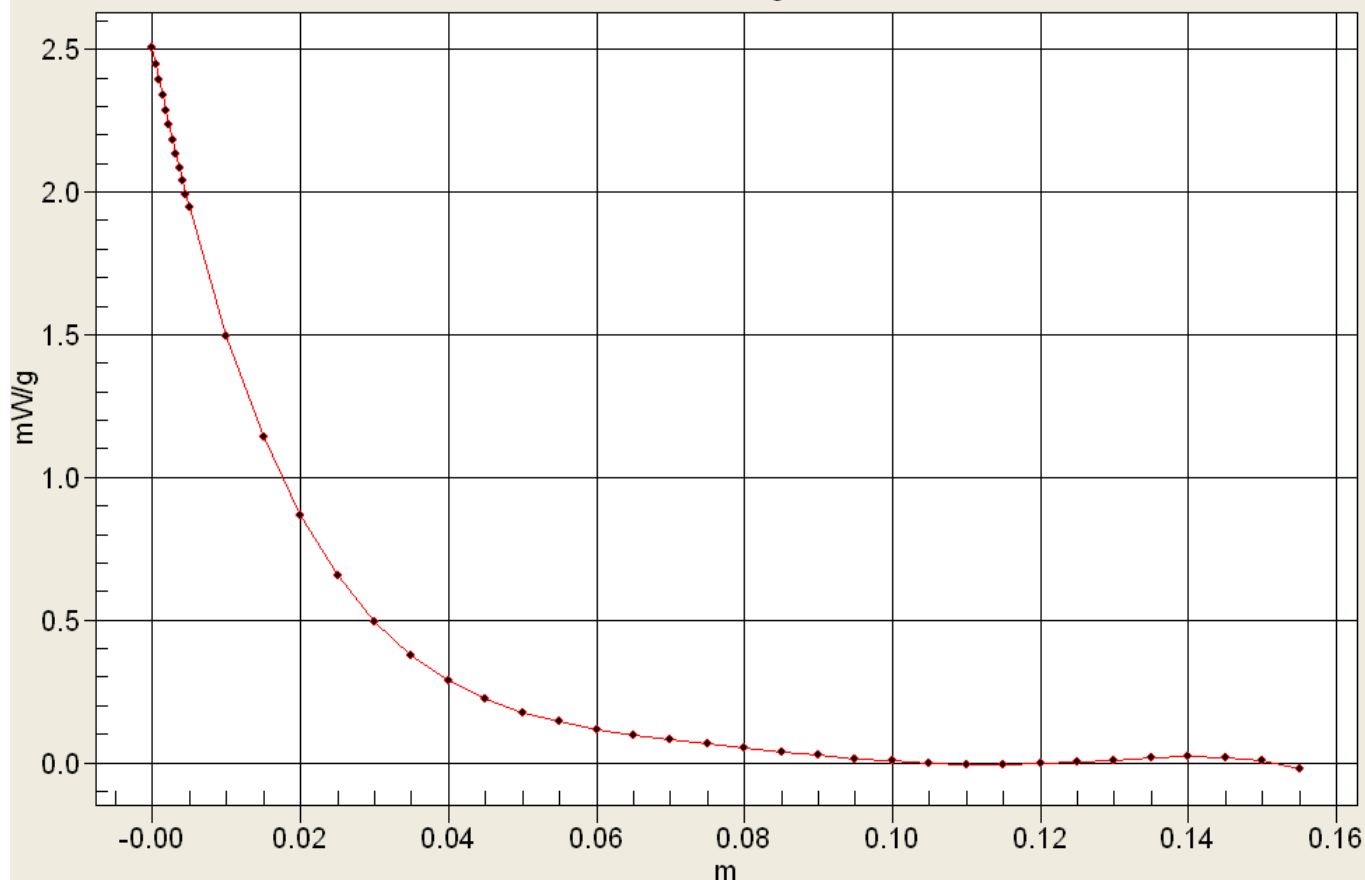
[Info: Interpolated medium parameters used for SAR evaluation.](#)



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Interpolated SAR(x,y,z,f0) SAR; Z Scan: Value Along Z, X=0, Y=0



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS

Date/Time: 05/10/2015 12:26:22 PM

SPC 150H - 05 Oct 2015

DUT: Dipole 150 MHz CLA-150; Type: CLA-150; Serial: 4007; Calibrated: 4 March 2014

Program Notes: 05 Oct 2015 Ambient Temp: 24C; Fluid Temp: 22.1C; Humidity: 25%

Procedure Notes: 150MHz CLA, 1.0W Input, 150B TSL, TS=3.89

Communication System: CW

Frequency: 150 MHz; Duty Cycle: 1:1

Medium: TSL_150H[05OC15] Medium parameters used: $f = 150 \text{ MHz}$; $\sigma = 0.73 \text{ mho/m}$; $\epsilon_r = 50.2$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600 2015; ConvF(9.42, 9.42, 9.42); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Head d=0mm, Pin = 1.0W, TS = [3.474][3.86][4.246]/Area Scan (5x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 4.16 mW/g

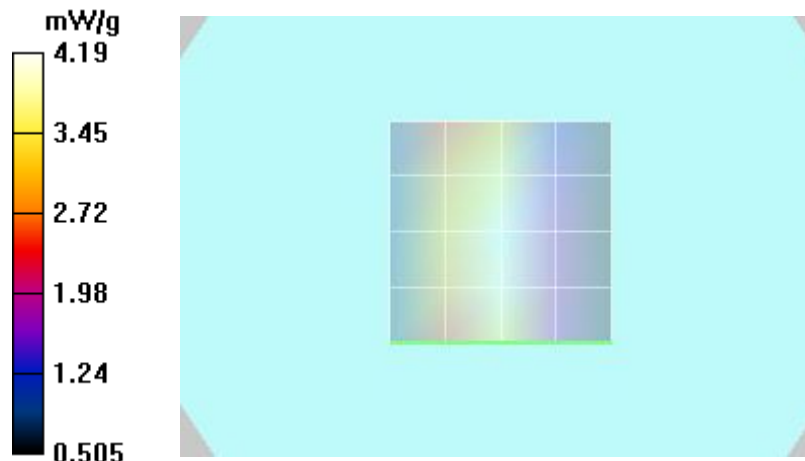
Head d=0mm, Pin = 1.0W, TS = [3.474][3.86][4.246]/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 72.0 V/m; Power Drift = 0.136 dB

Peak SAR (extrapolated) = 6.05 W/kg

SAR(1 g) = 3.91 mW/g; SAR(10 g) = 2.59 mW/g

Maximum value of SAR (measured) = 4.19 mW/g



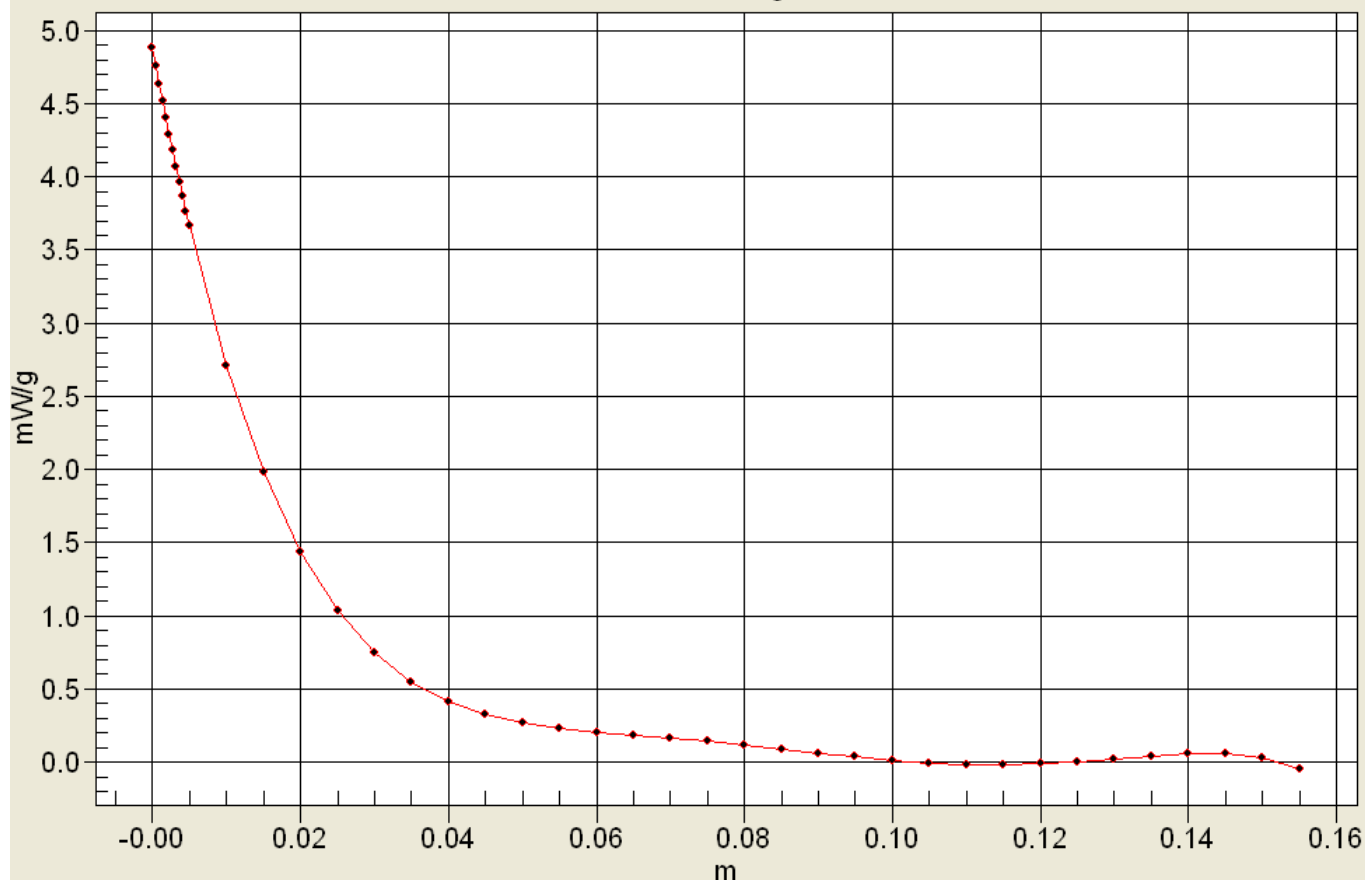
Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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	<u>Date(s) of Evaluation</u> Oct 5 2015	<u>Test Report Serial No.</u> 100115AMW-1334	<u>Test Report Revision No.</u> Rev. 1.1	
	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

Interpolated SAR(x,y,z,f0)

SAR; Z Scan: Value Along Z, X=0, Y=0



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

Date/Time: 01/10/2015 11:07:44 AM

SPC 150B - 01 Oct 2015

DUT: Dipole 150 MHz CLA-150; Type: CLA-150; Serial: 4007; Calibrated: 4 March 2014

Program Notes: 01 Oct 2015 Ambient Temp: 24C; Fluid Temp: 23.0C; Humidity: 25%

Procedure Notes: 150MHz CLA, 1.0W Input, 150B TSL, TS=3.89

Communication System: CW

Frequency: 150 MHz; Duty Cycle: 1:1

Medium: TSL_150B[01OC15] Medium parameters used: $f = 150 \text{ MHz}$; $\sigma = 0.75 \text{ mho/m}$; $\epsilon_r = 66.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: EX3DV4 - SN3600 2015; ConvF(8.94, 8.94, 8.94); Calibrated: 23/04/2015
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn370 2015; Calibrated: 23/04/2015
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body d=0mm, Pin = 1.0W, TS = [3.510][3.90][4.290]/Area Scan (5x5x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 3.82 mW/g

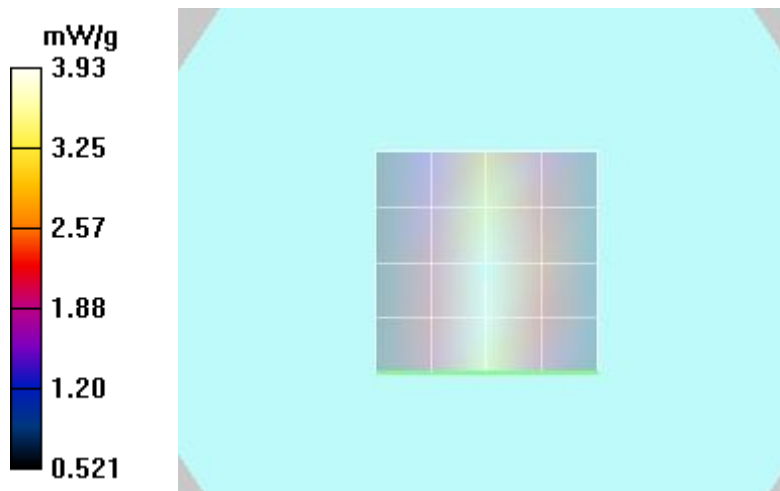
Body d=0mm, Pin = 1.0W, TS = [3.510][3.90][4.290]/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

Reference Value = 71.6 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 5.59 W/kg

SAR(1 g) = 3.67 mW/g; SAR(10 g) = 2.46 mW/g

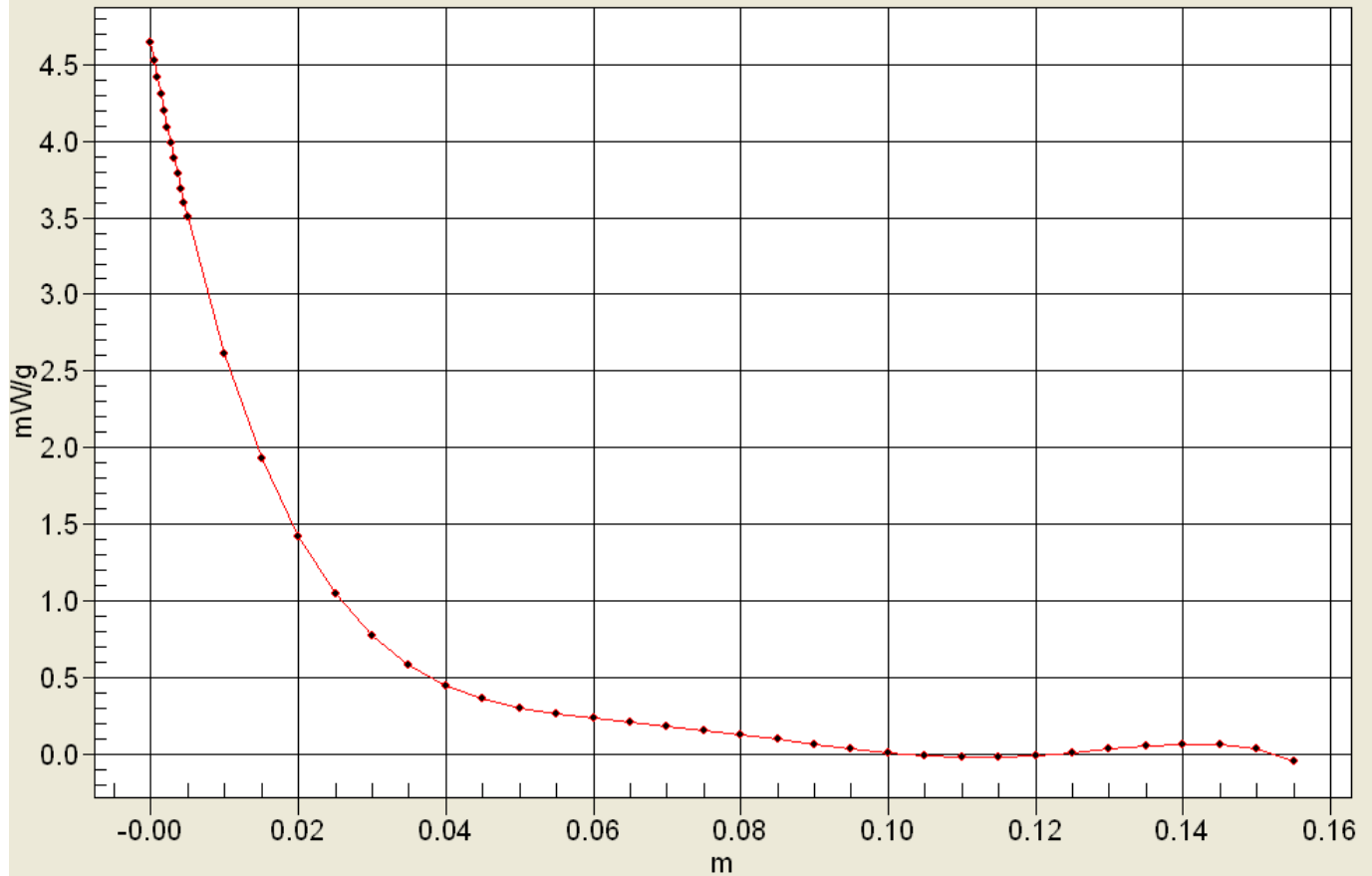
Maximum value of SAR (measured) = 3.93 mW/g



Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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Interpolated SAR(x,y,z,f0)

SAR; Z Scan: Value Along Z, X=0, Y=0



	<u>Date(s) of Evaluation</u> Oct 5 2015	<u>Test Report Serial No.</u> 100115AMW-1334	<u>Test Report Revision No.</u> Rev. 1.1	
	<u>Test Report Issue Date</u> Oct 8 2015	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Gen. Pop. / Uncontrolled	

Test Lab Certificate No. 2470.01

APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

Aprel Laboratory
 Test Result for UIM Dielectric Parameter
 Thu 01/Oct/2015 10:04:53
 Freq Frequency(GHz)
 FCC_eH FCC Bulletin 65 Supplement C (June 2001) Limits for Head Epsilon
 FCC_sH FCC 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
0.1000	63.13	0.76	70.58	0.71
0.1100	62.89	0.77	70.29	0.72
0.1200	62.64	0.78	66.62	0.73
0.1300	62.39	0.78	66.65	0.76
0.1400	62.15	0.79	65.14	0.74
0.1500	61.90	0.80	66.78	0.75
0.1600	61.65	0.81	66.07	0.78
0.1700	61.41	0.82	64.97	0.79
0.1800	61.16	0.82	65.63	0.78
0.1900	60.91	0.83	66.47	0.79
0.2000	60.67	0.84	65.80	0.80

Aprel Laboratory
 Test Result for UIM Dielectric Parameter
 Mon 05/Oct/2015 12:24:54
 Freq Frequency(GHz)
 FCC_eH FCC OET 65 Supplement C (June 2001) Limits for Head Epsilon
 FCC_sH FCC OET 65 Supplement C (June 2001) Limits for Head Sigma
 Test_e Epsilon of UIM
 Test_s Sigma of UIM

Freq	FCC_eH	FCC_sH	Test_e	Test_s
0.1000	54.63	0.72	59.28	0.68
0.1100	54.17	0.73	58.86	0.69
0.1200	53.70	0.74	52.79	0.69
0.1300	53.23	0.75	54.84	0.71
0.1400	52.77	0.75	51.75	0.71
0.1500	52.30	0.76	50.16	0.73
0.1600	51.83	0.77	51.87	0.74
0.1700	51.37	0.77	51.69	0.76
0.1800	50.90	0.78	50.34	0.76
0.1900	50.43	0.79	49.70	0.74
0.2000	49.97	0.80	48.90	0.76

Applicant:	Uniden America Corporation		FCC ID:	AMWUT653	IC:	513C-UT653	
Model(s):	Atlantis 150	DUT Type:	Portable Marine Band PTT Radio Transceiver			VHF	
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