

	Date(s) of Evaluation May 24 & 27, 2013	Test Report Serial No. 052313AXI-1234-S	Test Report Revision No. Rev. 1.0 (1st Release)	 
	Test Report Issue Date May 31, 2013	Description of Test(s) Specific Absorption Rate	RF Exposure Category Occupational (Controlled)	

DECLARATION OF COMPLIANCE - SAR RF EXPOSURE EVALUATION (FCC/IC)

Test Lab Information	Name	CELLTECH LABS INC.				
	Address	21-364 Lougheed Road, Kelowna, B.C. V1X 7R8 Canada				
Test Lab Accreditation(s)	A2LA	ISO/IEC 17025:2005 (A2LA Test Lab Certificate No. 2470.01)				
Applicant Information	Name	VERTEX STANDARD USA INC.				
	Address	8000 West Sunrise Blvd. Ft. Lauderdale, FL 33322, USA				
Application Type(s)	FCC	TCB Certification		IC	CB Certification	
Standard(s) Applied	FCC	47 CFR §2.1093		IC	Health Canada Safety Code 6	
Procedure(s) Applied	FCC	OET Bulletin 65, Supplement C		FCC	KDB 447498 D01v05	
	FCC	KDB 643646 D01v01		IC	RSS-102 Issue 4	
	IEEE	1528-2003		IEC	62209-1:2005, 62209-2:2010	
Device Classification(s)	FCC	Licensed Non-Broadcast Transmitter Held to Face (TNF) - FCC Part 90				
	IC	Land Mobile Radio Transmitter/Receiver (27.41-960 MHz) - RSS-119 Issue 11				
Device Identifier(s)	FCC ID:	AXI11153020		IC	10239A-11153020	
Device Model(s) Tested	EVX-534-D0-5 (S/N: 223F250004)			EVX-539-D0-5 (S/N: 223F250010)		
Test Sample Revision No.s	Hardware	n/a		Firmware	n/a	
Date of Sample Receipt	May 23, 2013		Date(s) of SAR Evaluations	May 24 & 27, 2013		
Device Description	Portable FM VHF Push-To-Talk (PTT) Radio Transceiver					
Transmit Frequency Range	FCC	150.8 - 173.4 MHz				
	IC	138.0 - 144.0, 148.0 - 174.0 MHz				
Manuf. Rated Output Power	5 Watts (Conducted)			Manuf. Tolerance Specification	+/- 10%	
Antenna Type(s) Tested	P/N: ATV-16XL					
Battery Type(s) Tested	Li-ion	7.4 V	1350mAh	P/N: FNB-V133LI	a	
	Li-ion	7.4 V	2250 mAh	P/N: FNB-V134LI	b	
Body-worn Accessories Tested	Belt-Clip (contains metal)				P/N: CLIP-20	1
Audio Accessories Tested	See manufacturer's accessory listing (Section 7.0)					
Max. SAR Level(s) Evaluated	Face-held (FCC)	1.12 W/kg	1g	50% PTT duty cycle	Occupational / Controlled Exposure	
	Face-held (IC)	1.23 W/kg	1g	50% PTT duty cycle	Occupational / Controlled Exposure	
	Body-worn (FCC)	2.42 W/kg	1g	50% PTT duty cycle	Occupational / Controlled Exposure	
	Body-worn (IC)	2.61 W/kg	1g	50% PTT duty cycle	Occupational / Controlled Exposure	
FCC Spatial Peak SAR Limit	Head/Body	8.0 W/kg	1g	50% PTT duty cycle	Occupational / Controlled Exposure	
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 Occupational / Controlled 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 1528-2003 and IEC International Standard 62209-1:2005. 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			Mike Meaker	Engineering Technologist	Celltech Labs Inc.	

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

REVISION HISTORY			
REVISION NO.	DESCRIPTION	IMPLEMENTED BY	RELEASE DATE
1.0	Initial Release	Mike Meaker	May 31, 2013

TEST REPORT SIGN-OFF			
DEVICE TESTED BY	REPORT PREPARED BY	QA REVIEW BY	REPORT APPROVED BY
Mike Meaker	Cheri Frangiadakis	Mike Meaker	Mike Meaker

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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Test Lab Certificate No. 2470.01				

1.0 INTRODUCTION

This measurement report demonstrates that the Vertex Standard USA Inc. Model(s): EVX-534-D0-5 and EVX-539-D0-5 Portable VHF PTT Radio Transceiver FCC ID: AXI11153020 complies with the SAR (Specific Absorption Rate) RF exposure requirements of FCC 47 CFR §2.1093 (see reference [1]) and Health Canada's Safety Code 6 (see reference [2]) for the Occupational / Controlled Exposure environment. The measurement procedures described in FCC OET Bulletin 65, Supplement C 01-01 (see reference [3]), IC RSS-102 Issue 4 (see reference [4]), IEEE Standard 1528-2003 (see reference [5]) and IEC Standard 62209-1:2005 (see reference [6]) 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 sideways probe contacts. The sensor systems are also used for mechanical surface detection and probe collision detection. The robot uses a controller with a built in VME-bus computer.

3.0 RF CONDUCTED OUTPUT POWER MEASUREMENTS

MEASURED RF CONDUCTED OUTPUT POWER LEVELS

Test Frequency	Mode	Model: EVX-534-D0-534		Model: EVX-539-D0-539		Method
		Watts	dBm	Watts	dBm	
138.0 MHz	CW	5.30	37.2	5.40	37.3	Average Conducted
144.0 MHz	CW	5.20	37.2	5.30	37.2	Average Conducted
150.8 MHz	CW	5.20	37.2	5.20	37.2	Average Conducted
158.3 MHz	CW	5.30	37.2	5.40	37.3	Average Conducted
165.9 MHz	CW	5.40	37.3	5.50	37.4	Average Conducted
173.4 MHz	CW	5.40	37.3	5.50	37.4	Average Conducted

Notes

- The test channels were selected in accordance with the procedures specified in FCC KDB 447498 (see reference [8]).
- 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 (see reference [15]) and IC RSS-Gen (see reference [16]).

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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Test Lab Certificate No. 2470.01				

4.0 SAR PROBE CALIBRATION & MEASUREMENT FREQUENCIES

The following procedures are recommended for 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 6 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 ≥ 300 MHz, require additional steps (per FCC KDB 865664 D01v01 - see reference [6]).

Probe Calibration Freq.	Device Measurement Freq.	Frequency Interval	± 25 MHz (< 300 MHz)
150 MHz	138.0 MHz	12.0 MHz	< 25 MHz ¹
	158.3 MHz	8.3 MHz	< 25 MHz ¹
	174.3 MHz	24.3 MHz	< 25 MHz ¹
1. The probe calibration and measurement frequency interval is < 50 MHz; therefore the additional steps were not required.			

5.0 NO. OF TEST CHANNELS (N_c)

Antenna Part No.	Antenna Freq. Range	Test Freq. Range	Band	N_c	Test Frequencies (MHz)
ATV-16XL	136 - 174 MHz	138.0 - 144.0 MHz	IC	2	138.0, 144.0
		150.8 - 173.4 MHz	FCC/IC	4	150.8, 158.3, 165.9, 173.4

Note: The number of test channels (N_c) were calculated in accordance with the procedures specified in FCC KDB 447498 (see reference [8]).

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5		
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6.0 MANUFACTURER'S DISCLOSED ACCESSORY LISTING

Accessory ID # for Test Report	ACCESSORY CATEGORY: ANTENNA			
	Part Number	Description	SAR Evaluation	
1	ATV-16XL	Detachable Whip - Untuned (136-174 MHz)	Yes ²	
Accessory ID # for Test Report	ACCESSORY CATEGORY: BATTERY			
	Part Number	Description	SAR Evaluation	
a	FNB-V133LI / FNB-V133LI-UNI	Li-ion (7.4V, 1350mAh)	Yes	
b	FNB-V134LI / FNB-V134LI-UNI	Li-ion (7.4V, 2250mAh)	Yes	
Accessory ID # for Test Report	ACCESSORY CATEGORY: BODY-WORN			
	Part Number	Description	SAR Evaluation	
1	CLIP-20	Belt-clip (contains metal)	Yes	
Accessory ID # for Test Report	ACCESSORY CATEGORY: AUDIO			
	Part Number	Description	Audio Accessory Grouping	SAR Evaluation
G1a	MH-360S	Compact Speaker-Mic	Group 1	No ¹
G1b	MH-450S	Standard Speaker-Mic		Yes
G2a	MH-81A4B	Light duty VOX headset	Group 2	No ¹
G3a	MH-37A4B	Earpiece mic	Group 3	No ¹

Manufacturer's disclosed accessory listing information provided by Vertex Standard USA Inc.

Notes:

1. Audio accessories not evaluated for SAR in accordance with the procedures and provisions of FCC KDB 643646 D01v01r01.

2. Antenna ATV-16XL is not tuned. Antenna is intended to be cut to length in order to tune to desired frequency within the operating range. Manufacturer supplied 3 pretuned samples for low, mid, and high frequencies. These samples were used for SAR testing.

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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7.0 FLUID DIELECTRIC PARAMETERS

FLUID DIELECTRIC PARAMETERS						
Date: 05/24/2013		Frequency: 150 MHz			Tissue: Head	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
0.050	97.08	0.63	52.3	0.76	85.62%	-17.11%
0.060	83.74	0.66	52.3	0.76	60.11%	-13.16%
0.070	83.62	0.66	52.3	0.76	59.89%	-13.16%
0.080	67.92	0.67	52.3	0.76	29.87%	-11.84%
0.090	60.92	0.7	52.3	0.76	16.48%	-7.89%
0.100	54.76	0.71	52.3	0.76	4.70%	-6.58%
0.110	60.77	0.73	52.3	0.76	16.20%	-3.95%
0.120	55.35	0.73	52.3	0.76	5.83%	-3.95%
0.130	55.65	0.73	52.3	0.76	6.41%	-3.95%
0.138*	53.7	0.738	52.3	0.76	2.68%	-2.89%
0.140	53.21	0.74	52.3	0.76	1.74%	-2.63%
0.150	53.54	0.74	52.3	0.76	2.37%	-2.63%
0.1583*	52.8	0.757	52.3	0.76	0.96%	-0.39%
0.160	52.7	0.76	52.3	0.76	0.76%	0.00%
0.170	51.01	0.76	52.3	0.76	-2.47%	0.00%
0.1734*	50.7	0.76	52.3	0.76	-3.06%	0.00%
0.180	50.24	0.76	52.3	0.76	-3.94%	0.00%
0.190	48.96	0.78	52.3	0.76	-6.39%	2.63%
0.200	49.54	0.79	52.3	0.76	-5.28%	3.95%
0.210	49.69	0.8	52.3	0.76	-4.99%	5.26%
0.220	48	0.82	52.3	0.76	-8.22%	7.89%
0.230	47.02	0.83	52.3	0.76	-10.10%	9.21%
0.240	47.37	0.83	52.3	0.76	-9.43%	9.21%
0.250	46.19	0.85	52.3	0.76	-11.68%	11.84%

*interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	ρ (Kg/m ³)
May 24	150 Head	23.0°C	21.2°C	≥ 15 cm	101.6 kPa	32%	1000

FLUID DIELECTRIC PARAMETERS						
Date: 05/27/2013		Frequency: 150 MHz			Tissue: Body	
Freq	Test_e	Test_s	Target_e	Target_s	Deviation Permittivity	Deviation Conductivity
0.050	95.57	0.71	61.9	0.8	54.39%	-11.25%
0.060	91.06	0.69	61.9	0.8	47.11%	-13.75%
0.070	82.63	0.73	61.9	0.8	33.49%	-8.75%
0.080	72.55	0.72	61.9	0.8	17.21%	-10.00%
0.090	71.77	0.72	61.9	0.8	15.95%	-10.00%
0.100	65.95	0.75	61.9	0.8	6.54%	-6.25%
0.110	64.47	0.75	61.9	0.8	4.15%	-6.25%
0.120	63.38	0.74	61.9	0.8	2.39%	-7.50%
0.130	63.06	0.76	61.9	0.8	1.87%	-5.00%
0.138*	61.7	0.768	61.9	0.8	-0.32%	-4.00%
0.140	61.34	0.77	61.9	0.8	-0.90%	-3.75%
0.150	62.87	0.77	61.9	0.8	1.57%	-3.75%
0.1583*	63.4	0.778	61.9	0.8	2.42%	-2.75%
0.160	63.55	0.78	61.9	0.8	2.67%	-2.50%
0.170	61.79	0.78	61.9	0.8	-0.18%	-2.50%
0.1734*	62	0.78	61.9	0.8	0.16%	-2.50%
0.180	62.4	0.78	61.9	0.8	0.81%	-2.50%
0.190	59.74	0.8	61.9	0.8	-3.49%	0.00%
0.200	60.65	0.81	61.9	0.8	-2.02%	1.25%
0.210	59.09	0.82	61.9	0.8	-4.54%	2.50%
0.220	59	0.81	61.9	0.8	-4.68%	1.25%
0.230	58.81	0.83	61.9	0.8	-4.99%	3.75%
0.240	58.9	0.82	61.9	0.8	-4.85%	2.50%
0.250	57.91	0.83	61.9	0.8	-6.45%	3.75%

*interpolated using DASY4 software

Test Date	Fluid Type	Ambient Temperature	Fluid Temperature	Fluid Depth	Atmospheric Pressure	Relative Humidity	ρ (Kg/m ³)
May 27	150 Body	22.0°C	20.9°C	≥ 15 cm	101.2 kPa	37%	1000

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Test Lab Certificate No. 2470.01

8.0 SAR MEASUREMENT SUMMARY

Table 1

FACE-HELD SAR EVALUATION RESULTS

Table 1				FACE-HELD SAR EVALUATION RESULTS															
C	Test Date(s): May 24, 2013			1		2		3		4		5		6		7		8	
R	Antenna Tested	Test Freq. (MHz)	Cond. Pwr (W)	SAR W/kg 1g						SAR W/kg 1g									
				Battery (a)				Default Battery (b)											
				100% ptt d/f		50% ptt d/f		Drift (dB)		50%+droop		100% ptt d/f		50% ptt d/f		Drift dB		50%+droop	
Radio Model Tested: EVX-539-D0-5																			
1	ATV-16XL (LOW)	138.0	5.4	F4	2.11	1.06		-0.229		1.11		F1	2.18	1.09		-0.202		1.14	
2		144.0	5.3	N/A						N/A									
3	ATV-16XL (MID)	150.8	5.2	N/A						N/A									
4		158.3	5.4	F5	2.19	1.10		-0.401		1.20		F2	1.91	0.955		-0.289		1.02	
5	ATV-16XL (HIGH)	165.9	5.5	N/A						N/A									
6		173.4	5.5	N/A						F3	0.473	0.237		-0.592		0.271			
Radio Model Tested: EVX-534-D0-5 (Worst-Case)																			
7	ATV-16XL (MID)	158.3	5.3	F6	2.05	1.03		-0.319		1.10		N/A							
SAR LIMITS						HEAD			SPATIAL PEAK				RF EXPOSURE CATEGORY						
FCC 47 CFR 2.1093		Health Canada Safety Code 6				8.0 W/kg			1g averaging				Occupational / Controlled						
Notes																			
Test Mode = CW (Unmodulated Continuous Wave)								Phantom = Barski Planar Phantom											
Battery		Front of DUT Distance to Planar Phantom (see Appendix D)				Antenna Distance to Planar Phantom (see Appendix D)													
a		2.5 cm				3.9 cm													
b		2.5 cm				3.9 cm													
C = Column; R = Row				F1-Fx (F = Face) denotes the corresponding Face SAR Plot # as shown in Appendix A															

Test Procedures applied in accordance with FCC KDB 643646 D01v01 (see reference [10])

1. For face-held configuration, the highest capacity battery was selected as the default battery (battery "b").
2. The SAR evaluations commenced at the highest output power channel per antenna and frequency range.
3. When the head SAR of an antenna tested on the highest output power channel using the default battery is ≤ 3.5 W/kg (50% PTT duty factor), testing of all other required channels is not necessary.
4. When the SAR for all antennas tested using the default battery is ≤ 4.0 W/kg, test additional batteries using the antenna and channel configuration that resulted in the highest SAR.
5. When test reduction applies, the slots for such configurations are denoted with N/A (Not Applicable).

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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9.0 SAR SCALING (TUNE-UP TOLERANCE)

SAR LEVELS SCALED TO MANUFACTURER'S TUNE-UP TOLERANCE									
Test Config.	Freq. (MHz)	Plot	Antenna	Battery	Conducted Power (W)	SAR Level 1g (W/kg)	Drift (dB)	Scale to 5.5 W (5 W + 10%)	Scaled SAR 1g (W/kg)
FCC (scaled without drift)									
Face-held	158.3	F5	Mid	a	5.4	1.10	-0.401	+0.1 dB	1.12
Body-worn	158.3	B2	Mid	a	5.4	2.37	-0.333	+0.1 dB	2.42
IC (scaled with drift)									
Face-held	158.3	F5	Mid	a	5.4	1.10	-0.401	+0.1 dB	1.23
Body-worn	158.3	B2	Mid	a	5.4	2.37	-0.333	+0.1 dB	2.61

Notes:

1. Only the highest SAR values for head and body per frequency band are scaled.
2. The resulting value is the reported SAR.
3. The scaled SAR levels are below the FCC/IC Occupational SAR Limit of 8.0 W/kg.

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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Test Lab Certificate No. 2470.01

10.0 DETAILS OF SAR EVALUATION

- The number of test frequencies and the test channels evaluated for SAR were selected in accordance with the procedures described in FCC KDB 447498 (see reference [8]).
- SAR was tested on Radio Model: EVX-539-D0-5. Radio Model: EVX-534-D0-5 was tested in the worst-case configuration for face and body.
- The manufacturer provided 3 tuned test samples of the ATV-16XL antenna. For testing purposes each tuned sample was treated as a separate antenna. The 3 samples cover the entire operating range of the radio. The samples are tuned for low, mid and high frequencies and cover 136-150MHz, 150-162MHz, and 162-174MHz respectively.
- The DUT was evaluated for SAR in accordance with the procedures described in FCC KDB 643646 D01v01 (see reference [10]).
- Each SAR evaluation was performed with a fully charged battery. The radio was allowed a cooldown period and the battery was swapped between the area and zoom scan evaluations.
- The SAR droop of the DUT was measured by the DASY4 system for the duration of the SAR evaluations. The measured SAR droop was added to the measured SAR levels to report scaled SAR levels as shown in the SAR test data tables. A SAR-versus-Time power droop evaluation was performed (see Appendix A).
- The fluid temperature was measured prior to and after the SAR evaluations. The fluid temperature remained within $\pm 2^{\circ}\text{C}$ during the SAR evaluations.
- The dielectric parameters of the simulated tissue mixtures were measured prior to the SAR evaluations using a Dielectric Probe Kit and a Network Analyzer (see Appendix C).
- The DUT was tested at the maximum conducted output power level preset by the manufacturer in 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.

11.0 SAR EVALUATION PROCEDURES

- 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.
 - 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.

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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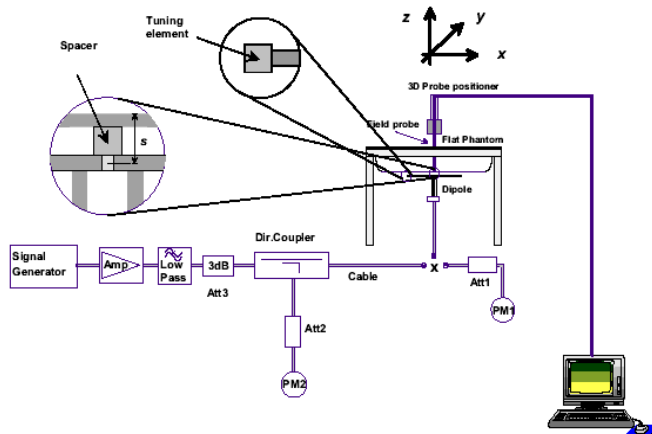
12.0 SYSTEM PERFORMANCE CHECK

Prior to the SAR evaluations, system verifications were performed with a planar phantom and SPEAG 300 MHz dipole (see Appendix B) in accordance with the procedures described in FCC KDB 865664 (see reference [9]). The system was verified to meet the internally generated SAR target using 150MHz tissue-equivalent medium with a 300 MHz validation dipole transmitting at 300 MHz (see Appendix E). 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 for measured fluid dielectric parameters). A forward power of 398 mW was applied to the dipole for 150 Head and 250 mW was applied for 150 Body.

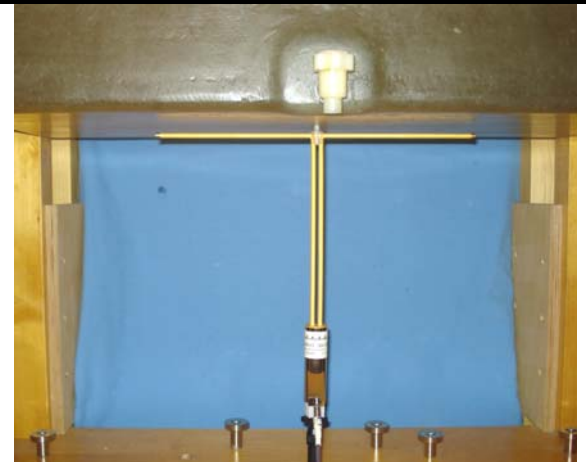
SYSTEM PERFORMANCE CHECK EVALUATIONS

Test Date	Equiv. Tissue Freq. (MHz)	SAR 1g (W/kg)			Dielectric Constant ϵ_r			Conductivity σ (mho/m)			ρ (kg/m ³)	Amb. Temp. (°C)	Fluid Temp. (°C)	Fluid Depth (cm)	Humid. (%)	Barom. Press. (kPa)
		Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.	SPEAG Target	Meas.	Dev.						
May 24	Head 150	0.953	0.892	-6.4%	52.3 $\pm 5\%$	53.5	+2.3%	0.76 $\pm 5\%$	0.74	-2.6%	1000	23	21.2	≥ 15	32	101.6
May 27	Body 150	0.653	0.606	-7.2%	61.9 $\pm 5\%$	62.9	+1.6%	0.80 $\pm 5\%$	0.77	-3.8%	1000	22	20.9	≥ 15	37	101.2

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 $\pm 2^\circ\text{C}$ 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 300 MHz Validation Dipole Setup

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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Test Lab Certificate No. 2470.01				

13.0 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 (see references [12] and [13]) in accordance with the procedures and requirements specified in IEEE Standard 1528-2003 (see reference [5]) and IEC Standard 62209-1:2005 (see reference [6]). 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	150 MHz BODY
Water	38.35 %	46.6 %
Sugar	55.5%	49.7 %
Salt	5.15%	2.6 %
HEC	0.9%	1.0 %
Bactericide	0.1%	0.1 %

14.0 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:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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15.0 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	ET3DV6
Serial No.	1590
Construction	Triangular core fiber optic detection system
Frequency	10 MHz to 6 GHz
Linearity	±0.2 dB (30 MHz to 3 GHz)
<u>Phantom</u>	
Type	Barski Planar Phantom
Shell Material	Fiberglass
Thickness	2.0 ±0.1 mm
Volume	Approx. 70 liters

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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16.0 PROBE SPECIFICATION (ET3DV6)

Construction:	Symmetrical design with triangular core; Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, glycol)
Calibration:	In air from 10 MHz to 2.5 GHz In head simulating tissue at frequencies of 900 MHz and 1.8 GHz (accuracy $\pm 8\%$)
Frequency:	10 MHz to > 6 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity:	± 0.2 dB in head tissue (rotation around probe axis) ± 0.4 dB in head tissue (rotation normal to probe axis)
Dynamic Range:	5 μ W/g to > 100 mW/g; Linearity: ± 0.2 dB
Surface Detect:	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces
Dimensions:	Overall length: 330 mm; Tip length: 16 mm; Body diameter: 12 mm; Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application:	General dosimetry up to 3 GHz; Compliance tests of mobile phone



ET3DV6 E-Field Probe

17.0 BARSKI PLANAR PHANTOM

The Barski Planar Phantom is a fiberglass shell phantom with a 2.0 mm (+/-0.2mm) thick device measurement area at the center of the phantom for SAR evaluations of devices with a larger surface area than the planar section of the SAM phantom. The planar phantom is integrated in a wooden table. The planar phantom was used for the DUT SAR evaluations and the system performance check evaluations. See Appendix G for dimensions and specifications of the Barski Planar Phantom.



Barski Planar Phantom

18.0 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. For evaluations of larger devices a Plexiglas platform is attached to the device holder.



Device Holder

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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19.0 TEST EQUIPMENT LIST

TEST EQUIPMENT		ASSET NO.	SERIAL NO.	DATE CALIBRATED	CALIBRATION INTERVAL
USED	DESCRIPTION				
x	Schmid & Partner DASY4 System	-	-	-	-
x	-DASY4 Measurement Server	00158	1078	CNR	CNR
x	-Robot	00046	599396-01	CNR	CNR
x	-DAE4	00019	353	19-Apr-12	Biennial
x	-ET3DV6 E-Field Probe	00017	1590	24-Apr-13	Annual
x	-D300V3 Validation Dipole	00216	1009	17-Apr-12 / 8-Jan-13	Triennial
x	-Barski Planar Phantom	00155	03-01	CNR	CNR
x	HP 85070C Dielectric Probe Kit	00033	none	CNR	CNR
x	Gigatronics 8652A Power Meter	00007	1835272	03-May-12	Biennial
x	Gigatronics 80701A Power Sensor	00014	1833542	03-May-12	Biennial
x	Gigatronics 80334A Power Sensor	-	1837001	03-May-12	Biennial
x	HP 8753ET Network Analyzer	00134	US39170292	26-Apr-12	Biennial
x	Rohde & Schwarz SMR20 Signal Generator	00006	100104	02-May-12	Biennial
x	Amplifier Research 5S1G4 Power Amplifier	00106	26235	CNR	CNR
Abbr.	CNR = Calibration Not Required				

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
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20.0 MEASUREMENT UNCERTAINTIES

UNCERTAINTY BUDGET FOR DEVICE EVALUATION (IEC 62209-2:2010)									
Source of Uncertainty	IEC 62209-2 Section	Tolerance / Uncertainty ±%	Probability Distribution	Divisor	ci 1g	ci 10g	Standard Uncertainty ±% (1g)	Standard Uncertainty ±% (10g)	V _i or V _{eff}
Measurement System									
Probe Calibration (150 MHz)	7.2.2.1	10.0	Normal	1	1	1	10.0	10.0	∞
Isotropy	7.2.2.2	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Boundary Effect	7.2.2.6	2.5	Rectangular	1.732050808	1	1	1.4	1.4	∞
Linearity	7.2.2.3	4.7	Rectangular	1.732050808	1	1	2.7	2.7	∞
Detection Limits	7.2.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Readout Electronics	7.2.2.7	0.3	Normal	1	1	1	0.3	0.3	∞
Response Time	7.2.2.8	0.8	Rectangular	1.732050808	1	1	0.5	0.5	∞
Integration Time	7.2.2.9	2.6	Rectangular	1.732050808	1	1	1.5	1.5	∞
RF Ambient Conditions	7.2.4.5	3	Rectangular	1.732050808	1	1	1.7	1.7	∞
Probe Positioner Mechanical Restrictions	7.2.3.1	0.4	Rectangular	1.732050808	1	1	0.2	0.2	∞
Probe Positioning wrt Phantom Shell	7.2.3.3	2.9	Rectangular	1.732050808	1	1	1.7	1.7	∞
Post-processing	7.2.5	1	Rectangular	1.732050808	1	1	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	7.2.3.4.3	2.9	Normal	1	1	1	2.9	2.9	12
Device Holder Uncertainty	7.2.3.4.2	3.6	Normal	1	1	1	3.6	3.6	8
Drift of Output Power (meas. SAR drift)	7.2.2.10	0	Rectangular	1.732050808	1	1	0.0	0.0	∞
Phantom and Tissue Parameters									
Phantom Uncertainty	7.2.3.2	4	Rectangular	1.732050808	1	1	2.3	2.3	∞
SAR Correction Algorithm for deviations in permittivity and conductivity	7.2.4.3	1.2	Normal	1	1	0.81	1.2	0.97	∞
Liquid Conductivity (measured)	7.2.4.3	4	Normal	1	0.78	0.71	3.1	2.8	∞
Liquid Permittivity (measured)	7.2.4.3	3.06	Normal	1	0.23	0.26	0.7	0.8	∞
Liquid Permittivity - temp. uncertainty	7.2.4.4	1.04	Rectangular	1.732050808	0.78	0.71	0.5	0.4	∞
Liquid Conductivity - temp. uncertainty	7.2.4.4	1.97	Rectangular	1.732050808	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty	7.3.1		RSS				12.83	12.75	
Expanded Uncertainty (95% Confidence Interval)	7.3.2		k=2				25.66	25.50	

Measurement Uncertainty Table in accordance with International Standard IEC 62209-2:2010

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

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21.0 REFERENCES

- [1] Federal Communications Commission - "Radiofrequency radiation exposure evaluation: portable devices"; Rule Part 47 CFR §2.1093.
- [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 (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)", Radio Standards Specification RSS-102 Issue 4: March 2010.
- [5] IEEE Standard 1528-2003 - "Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques": December 2003.
- [6] IEC International Standard 62209-1:2005 - "Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures."
- [7] International Standard IEC 62209-2 Edition 1.0 2010-03 - "Human exposure to radio frequency fields from hand-held & body-mounted wireless communication devices - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)".
- [8] Federal Communications Commission, Office of Engineering and Technology - "Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies"; KDB 447498 D01 v05: October 2012.
- [9] Federal Communications Commission, Office of Engineering and Technology - "SAR Measurement Requirements for 100 MHz to 6 GHz"; KDB 865664 D01v01: October 2012.
- [10] Federal Communications Commission, Office of Engineering and Technology - "SAR Test Reduction Considerations for Occupational PTT Radios", KDB 643646 D01v01: December 2010.
- [12] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 16 Application Note, Head Tissue Recipe: Sept. 2005.
- [13] Schmid & Partner Engineering AG - DASY4 Manual V4.6, Chapter 17 Application Note, Body Tissue Recipe: Sept. 2005.
- [14] ISO/IEC 17025 - "General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)."
- [15] Federal Communications Commission - "Measurements Required: RF Power Output"; Rule Part 47 CFR §2.1046.
- [16] Industry Canada - "General Requirements and Information for the Certification of Radiocommunication Equipment", Radio Standards Specification RSS-Gen Issue 3: December 2010.

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APPENDIX A - SAR MEASUREMENT PLOTS

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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Plot F1

Date Tested: 05/24/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174

Frequency: 138 MHz; Duty Cycle: 1:1

Medium: HSL150 Medium parameters used (interpolated): $f = 138 \text{ MHz}$; $\sigma = 0.738 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LOW - 134LI - 138.0MHz/Area Scan (7x22x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.19 mW/g

LOW - 134LI - 138.0MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

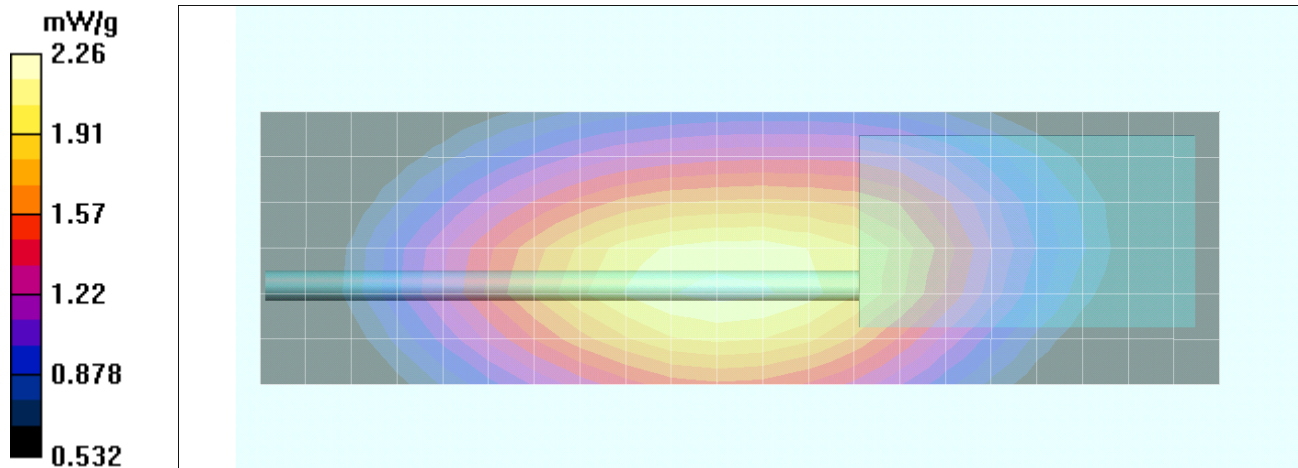
Reference Value = 52.7 V/m; Power Drift = -0.202 dB

Peak SAR (extrapolated) = 3.14 W/kg

SAR(1 g) = 2.18 mW/g; SAR(10 g) = 1.65 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.26 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

Plot F2

Date Tested: 05/24/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174

Frequency: 158.3 MHz; Duty Cycle: 1:1

Medium: HSL150 Medium parameters used (interpolated): $f = 158.3 \text{ MHz}$; $\sigma = 0.757 \text{ mho/m}$; $\epsilon_r = 52.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

MID - 134LI - 158.3MHz/Area Scan (7x22x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.98 mW/g

MID - 134LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

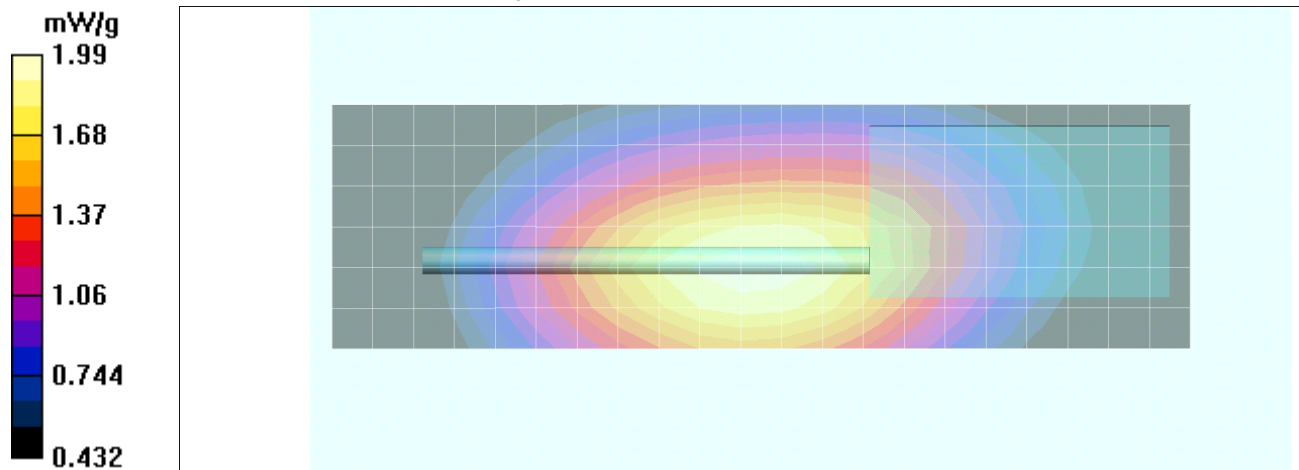
Reference Value = 48.8 V/m; Power Drift = -0.289 dB

Peak SAR (extrapolated) = 2.79 W/kg

SAR(1 g) = 1.91 mW/g; SAR(10 g) = 1.43 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.99 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Plot F3

Date Tested: 05/24/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174

Frequency: 173.4 MHz; Duty Cycle: 1:1

Medium: HSL150 Medium parameters used (interpolated): $f = 173.4 \text{ MHz}$; $\sigma = 0.76 \text{ mho/m}$; $\epsilon_r = 50.7$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

HIGH - 134LI - 173.4MHz/Area Scan (7x22x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.496 mW/g

HIGH - 134LI - 173.4MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

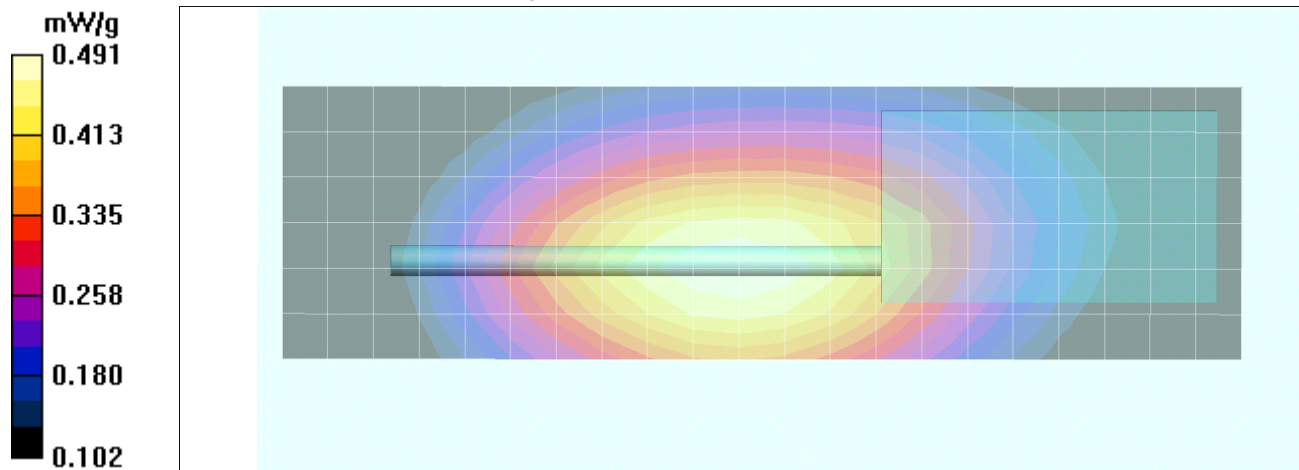
Reference Value = 25.1 V/m; Power Drift = -0.592 dB

Peak SAR (extrapolated) = 0.691 W/kg

SAR(1 g) = 0.473 mW/g; SAR(10 g) = 0.354 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.491 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

Plot F4

Date Tested: 05/24/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174

Frequency: 138 MHz; Duty Cycle: 1:1

Medium: HSL150 Medium parameters used (interpolated): $f = 138 \text{ MHz}$; $\sigma = 0.738 \text{ mho/m}$; $\epsilon_r = 53.7$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LOW - 133LI - 138.0MHz/Area Scan (7x22x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.15 mW/g

LOW - 133LI - 138.0MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=7.5mm, dy=7.5mm, dz=5mm

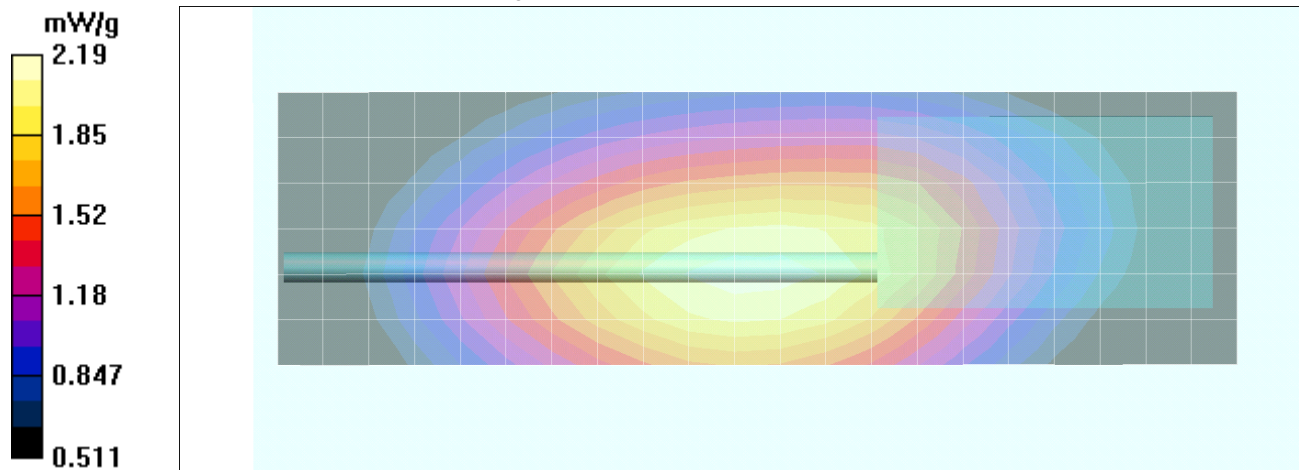
Reference Value = 52.0 V/m; Power Drift = -0.229 dB

Peak SAR (extrapolated) = 3.05 W/kg

SAR(1 g) = 2.11 mW/g; SAR(10 g) = 1.6 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.19 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

Plot F5

Date Tested: 05/24/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174

Frequency: 158.3 MHz; Duty Cycle: 1:1

Medium: HSL150 Medium parameters used (interpolated): $f = 158.3 \text{ MHz}$; $\sigma = 0.757 \text{ mho/m}$; $\epsilon_r = 52.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

MID - 133LI - 158.3MHz/Area Scan (7x22x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.28 mW/g

MID - 133LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

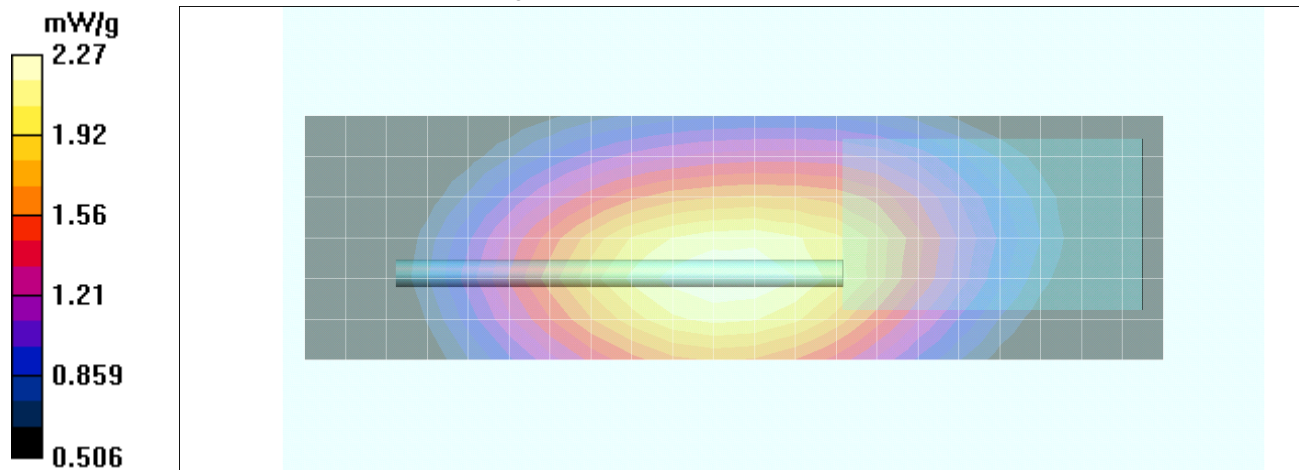
Reference Value = 53.5 V/m; Power Drift = -0.401 dB

Peak SAR (extrapolated) = 3.19 W/kg

SAR(1 g) = 2.19 mW/g; SAR(10 g) = 1.65 mW/g

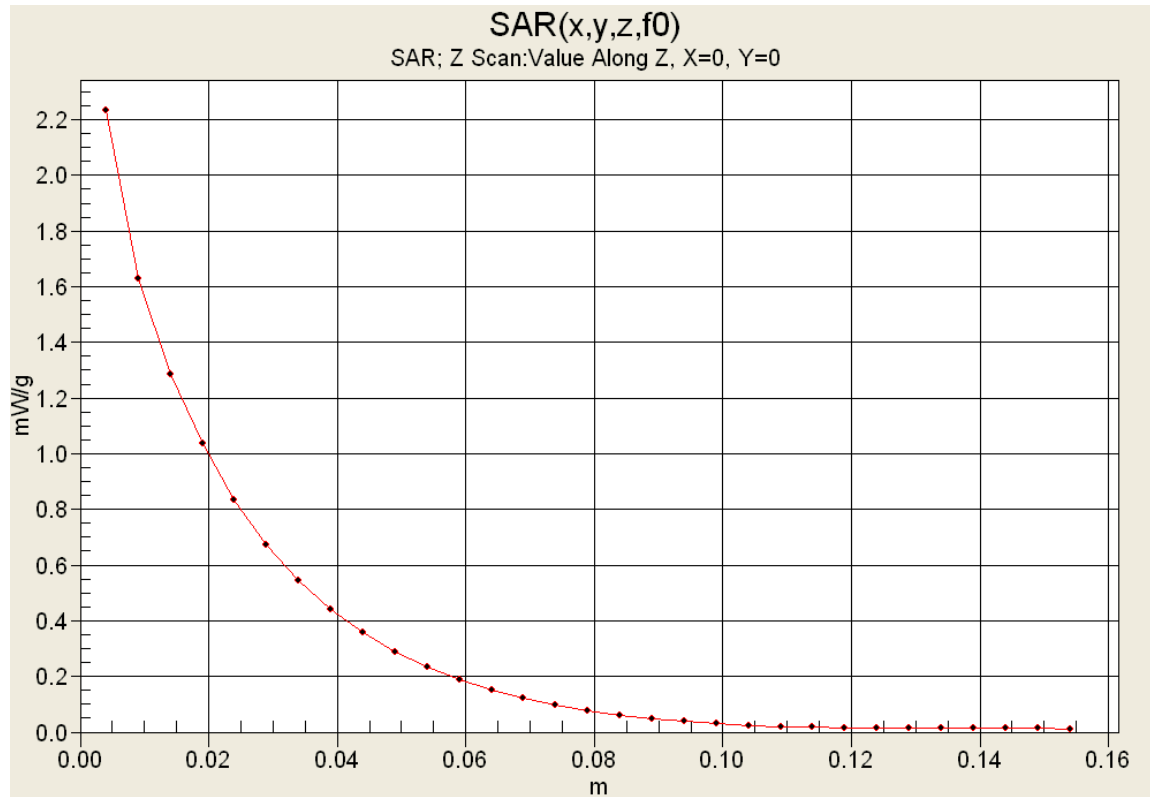
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.27 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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Z-Axis Scan



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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

Plot F6

Date Tested: 05/24/2013

DUT: EVX-534-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Communication System: VHF 136-174

Frequency: 158.3 MHz; Duty Cycle: 1:1

Medium: HSL150 Medium parameters used (interpolated): $f = 158.3 \text{ MHz}$; $\sigma = 0.757 \text{ mho/m}$; $\epsilon_r = 52.8$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

MID - 133LI - 158.3MHz - 534/Area Scan (7x22x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.06 mW/g

MID - 133LI - 158.3MHz - 534/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

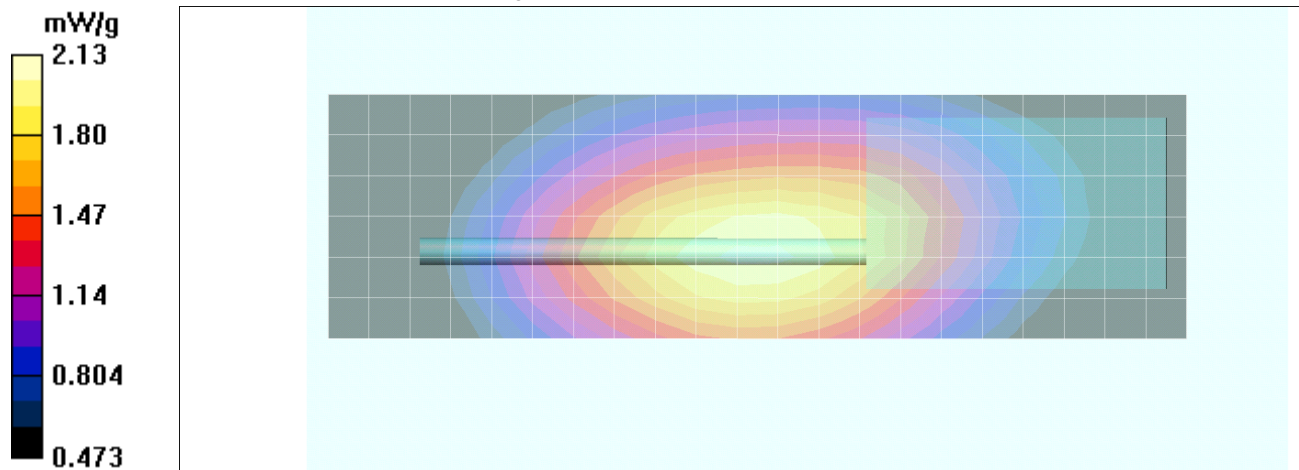
Reference Value = 50.2 V/m; Power Drift = -0.319 dB

Peak SAR (extrapolated) = 2.97 W/kg

SAR(1 g) = 2.05 mW/g; SAR(10 g) = 1.55 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 2.13 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

Plot B1

Date Tested: 05/27/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174

Frequency: 138 MHz; Duty Cycle: 1:1

Medium: M150 Medium parameters used (interpolated): $f = 138 \text{ MHz}$; $\sigma = 0.768 \text{ mho/m}$; $\epsilon_r = 61.7$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

LOW - 133LI - 138.0MHz/Area Scan (7x22x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.355 mW/g

LOW - 133LI - 138.0MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

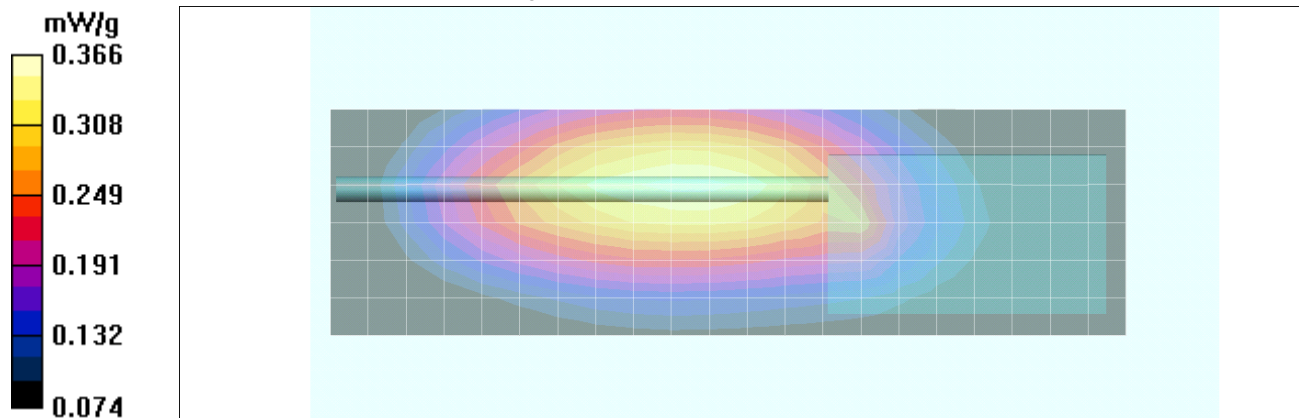
Reference Value = 19.1 V/m; Power Drift = -0.228 dB

Peak SAR (extrapolated) = 0.524 W/kg

SAR(1 g) = 0.351 mW/g; SAR(10 g) = 0.260 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.366 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Plot B2

Date Tested: 05/27/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174

Frequency: 158.3 MHz; Duty Cycle: 1:1

Medium: M150 Medium parameters used (interpolated): $f = 158.3 \text{ MHz}$; $\sigma = 0.778 \text{ mho/m}$; $\epsilon_r = 63.4$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

MID - 133LI - 158.3MHz/Area Scan (7x22x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 5.56 mW/g

MID - 133LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

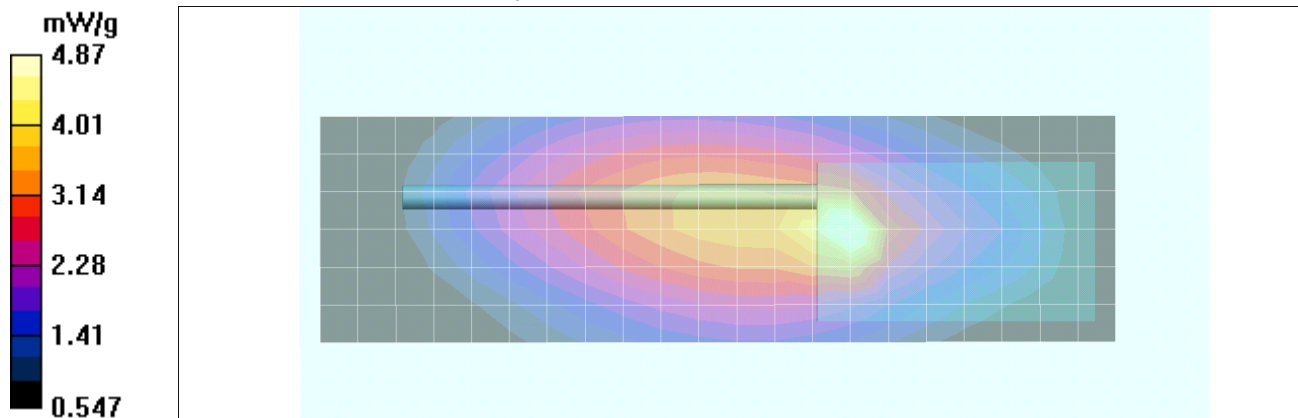
Reference Value = 66.9 V/m; Power Drift = -0.333 dB

Peak SAR (extrapolated) = 11.7 W/kg

SAR(1 g) = 4.73 mW/g; SAR(10 g) = 2.85 mW/g

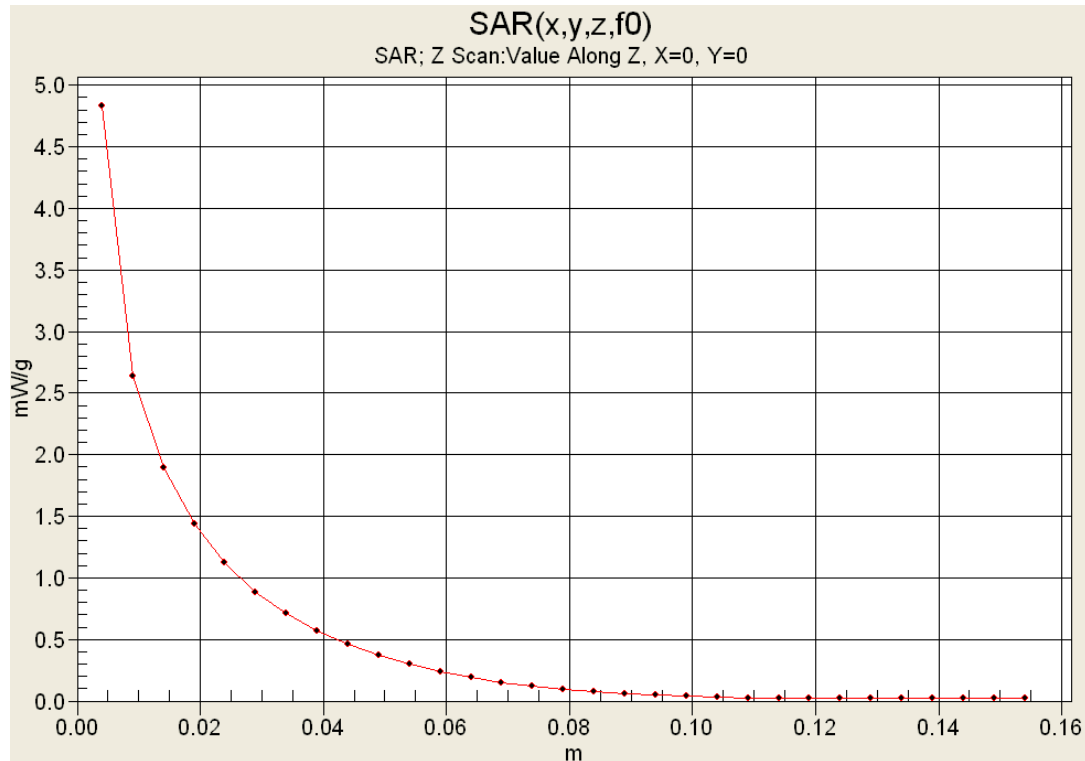
Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 4.87 mW/g

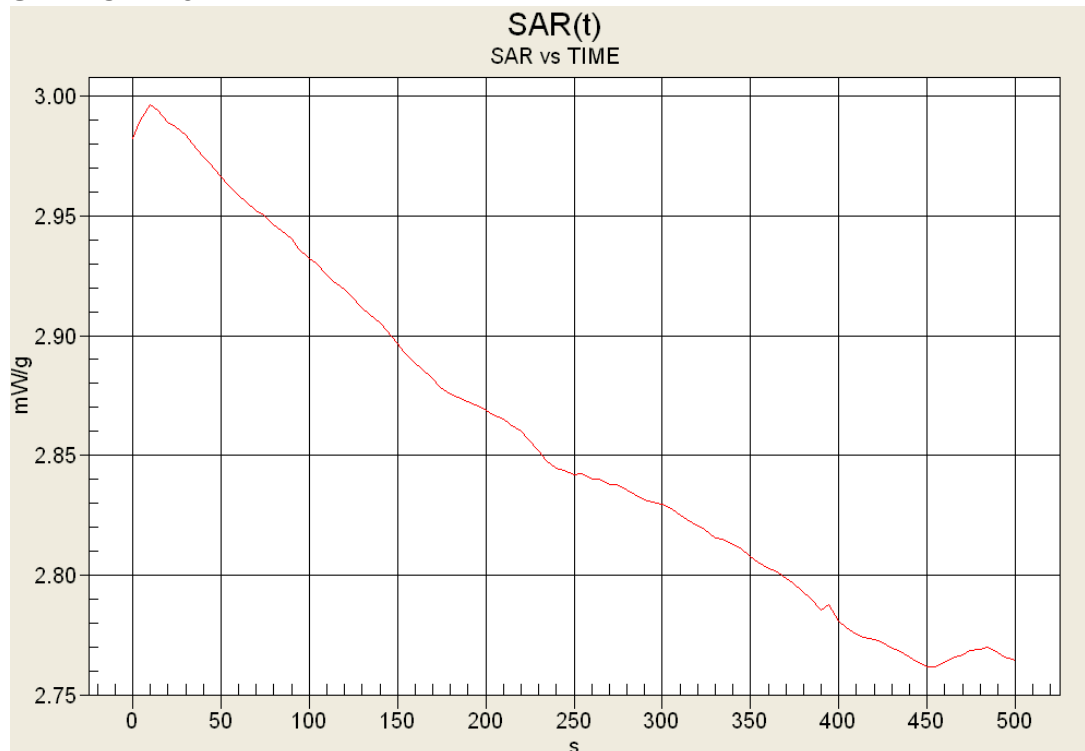


Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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Z-Axis Scan



SAR-Vs-Time



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Plot B3

Date Tested: 05/27/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174

Frequency: 173.4 MHz; Duty Cycle: 1:1

Medium: M150 Medium parameters used (interpolated): $f = 173.4 \text{ MHz}$; $\sigma = 0.78 \text{ mho/m}$; $\epsilon_r = 62$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

HIGH - 133LI - 173.4MHz/Area Scan (7x22x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.577 mW/g

HIGH - 133LI - 173.4MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

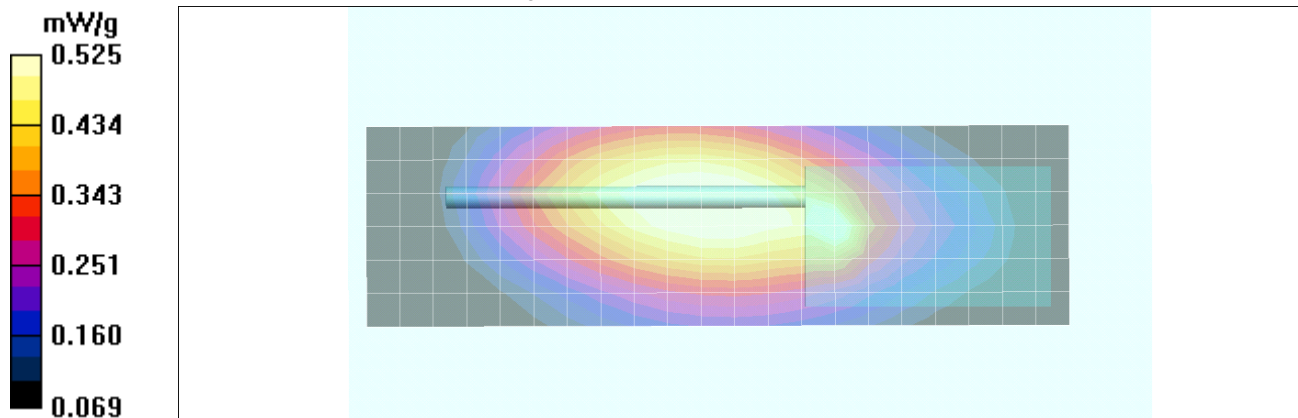
Reference Value = 25.4 V/m; Power Drift = -0.585 dB

Peak SAR (extrapolated) = 1.04 W/kg

SAR(1 g) = 0.502 mW/g; SAR(10 g) = 0.331 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.525 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

Plot B4

Date Tested: 05/27/2013

DUT: EVX-539-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174

Frequency: 158.3 MHz; Duty Cycle: 1:1

Medium: M150 Medium parameters used (interpolated): $f = 158.3 \text{ MHz}$; $\sigma = 0.778 \text{ mho/m}$; $\epsilon_r = 63.4$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

MID - 134LI - 158.3MHz/Area Scan (7x22x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 3.49 mW/g

MID - 134LI - 158.3MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

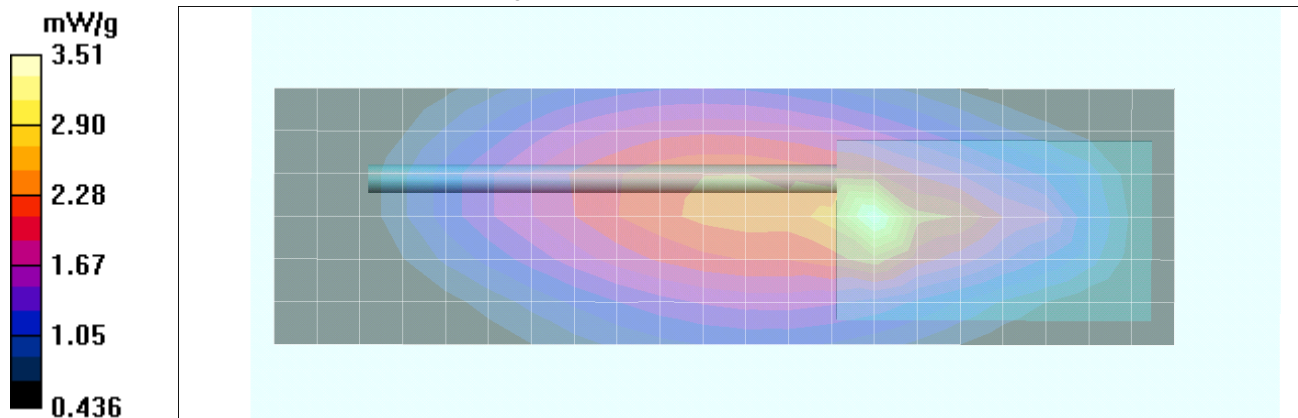
Reference Value = 55.9 V/m; Power Drift = -0.321 dB

Peak SAR (extrapolated) = 7.66 W/kg

SAR(1 g) = 3.31 mW/g; SAR(10 g) = 2.04 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 3.51 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

Plot B5

Date Tested: 05/27/2013

DUT: EVX-534-D0-5; Type: VHF PTT Radio Transceiver; Serial: Not Specified

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Communication System: VHF 136-174

Frequency: 158.3 MHz; Duty Cycle: 1:1

Medium: M150 Medium parameters used (interpolated): $f = 158.3 \text{ MHz}$; $\sigma = 0.778 \text{ mho/m}$; $\epsilon_r = 63.4$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used))Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

MID - 133LI - 158.3MHz - 534/Area Scan (7x22x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 3.83 mW/g

MID - 133LI - 158.3MHz - 534/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=7.5\text{mm}$, $dy=7.5\text{mm}$, $dz=5\text{mm}$

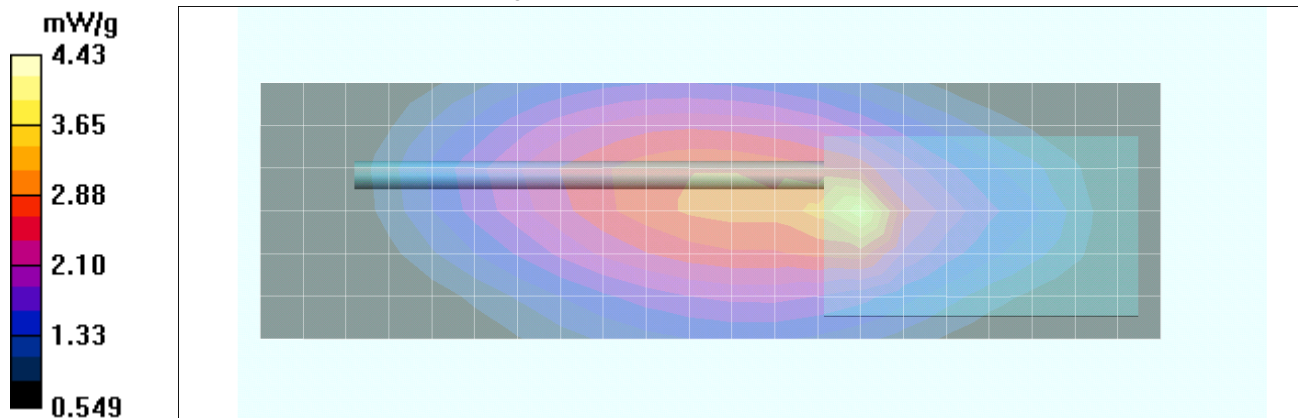
Reference Value = 67.1 V/m; Power Drift = -0.256 dB

Peak SAR (extrapolated) = 9.81 W/kg

SAR(1 g) = 4.34 mW/g; SAR(10 g) = 2.74 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 4.43 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 Vertex Standard
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

APPENDIX B - SYSTEM PERFORMANCE CHECK PLOTS

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	 
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	
Test Lab Certificate No. 2470.01				

System Performance Check - 150 MHz Head

Date Tested: 05/24/2013

DUT: Dipole 300 MHz; Type: D300V3; Serial: 1009; Calibrated: 17/04/2012

Program Notes: Ambient Temp: 23C; Fluid Temp: 21.2C; Barometric Pressure: 101.6 kPa; Humidity: 32%

Procedure Notes: 300 MHz Dipole transmitting at 300 MHz using 150 MHz SAR probe calibration and 150 MHz tissue dielectric parameters

Communication System: CW

Frequency: 150 MHz; Duty Cycle: 1:1

Medium: HSL150 Medium parameters used: $f = 150 \text{ MHz}$; $\sigma = 0.74 \text{ mho/m}$; $\epsilon_r = 53.5$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(9.31, 9.31, 9.31); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Head d=15mm, Pin = 398mW 2/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.928 mW/g

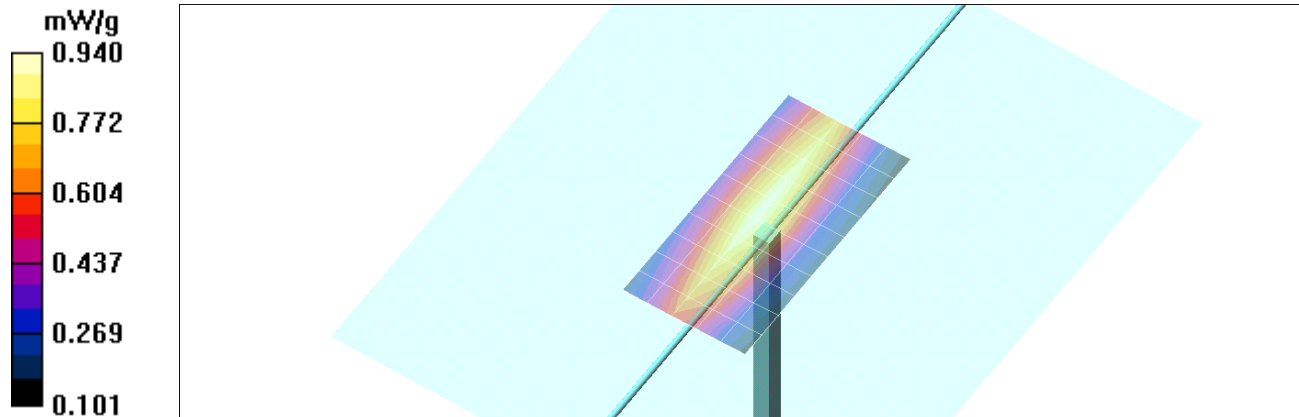
Head d=15mm, Pin = 398mW 2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 34.5 V/m; Power Drift = -0.072 dB

Peak SAR (extrapolated) = 1.51 W/kg

SAR(1 g) = 0.892 mW/g; SAR(10 g) = 0.585 mW/g

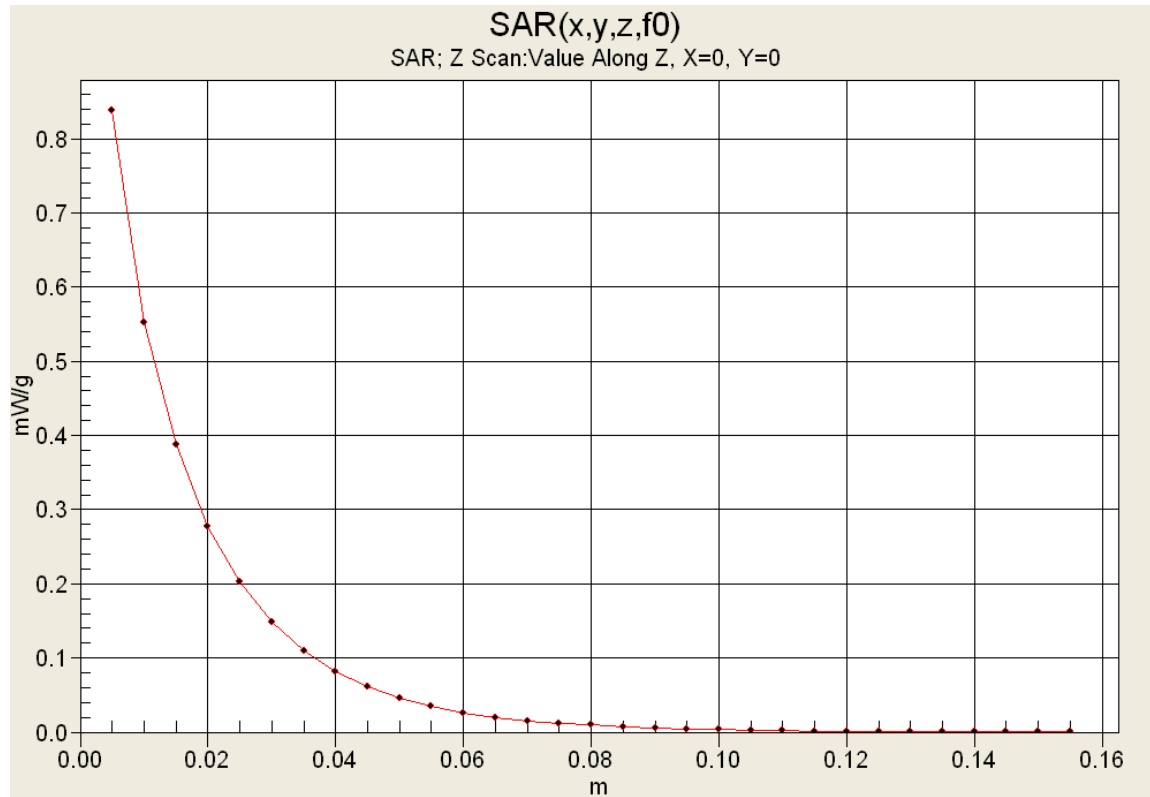
Maximum value of SAR (measured) = 0.940 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	
Test Lab Certificate No. 2470.01				

Z-Axis Scan



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	
Test Lab Certificate No. 2470.01				

System Performance Check - 150 MHz Body

Date Tested: 05/27/2013

DUT: Dipole 300 MHz Body; Type: D300V3; Serial: 1009; Calibrated: 01/08/2013

Program Notes: Ambient Temp: 22C; Fluid Temp: 20.9C; Barometric Pressure: 101.2 kPa; Humidity: 37%

Procedure Notes: 300 MHz Dipole transmitting at 300 MHz using 150 MHz SAR probe calibration and 150 MHz tissue dielectric parameters

Communication System: CW

Frequency: 150 MHz; Duty Cycle: 1:1

Medium: M150 Medium parameters used: $f = 150 \text{ MHz}$; $\sigma = 0.77 \text{ mho/m}$; $\epsilon_r = 62.9$; $\rho = 1000 \text{ kg/m}^3$

- Probe: ET3DV6 - SN1590; ConvF(8.65, 8.65, 8.65); Calibrated: 24/04/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn353; Calibrated: 19/04/2012
- Phantom: Barski Industries; Type: Fiberglass Planar; Serial: 03-01
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 186

Body d=15mm, Pin = 250mW/Area Scan (6x11x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (measured) = 0.587 mW/g

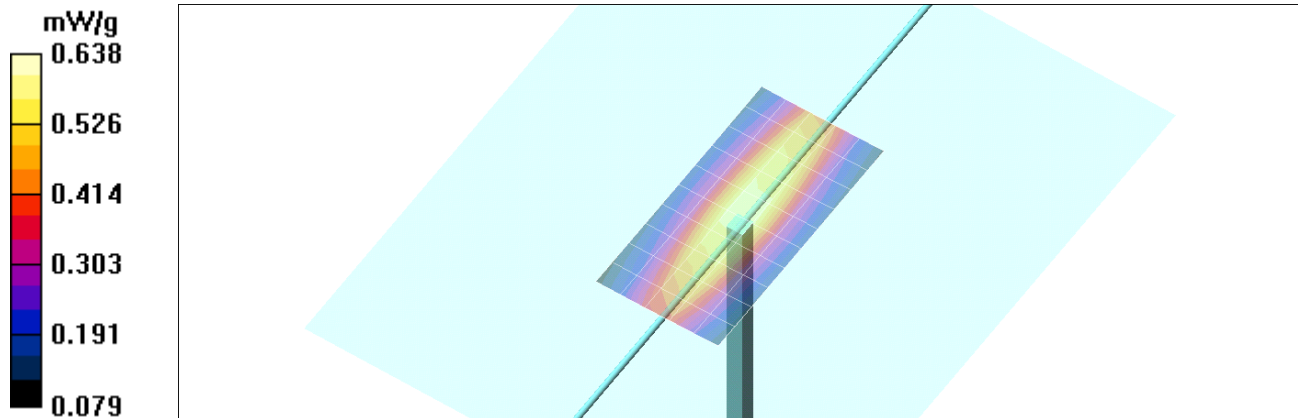
Body d=15mm, Pin = 250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29.0 V/m; Power Drift = -0.044 dB

Peak SAR (extrapolated) = 1.01 W/kg

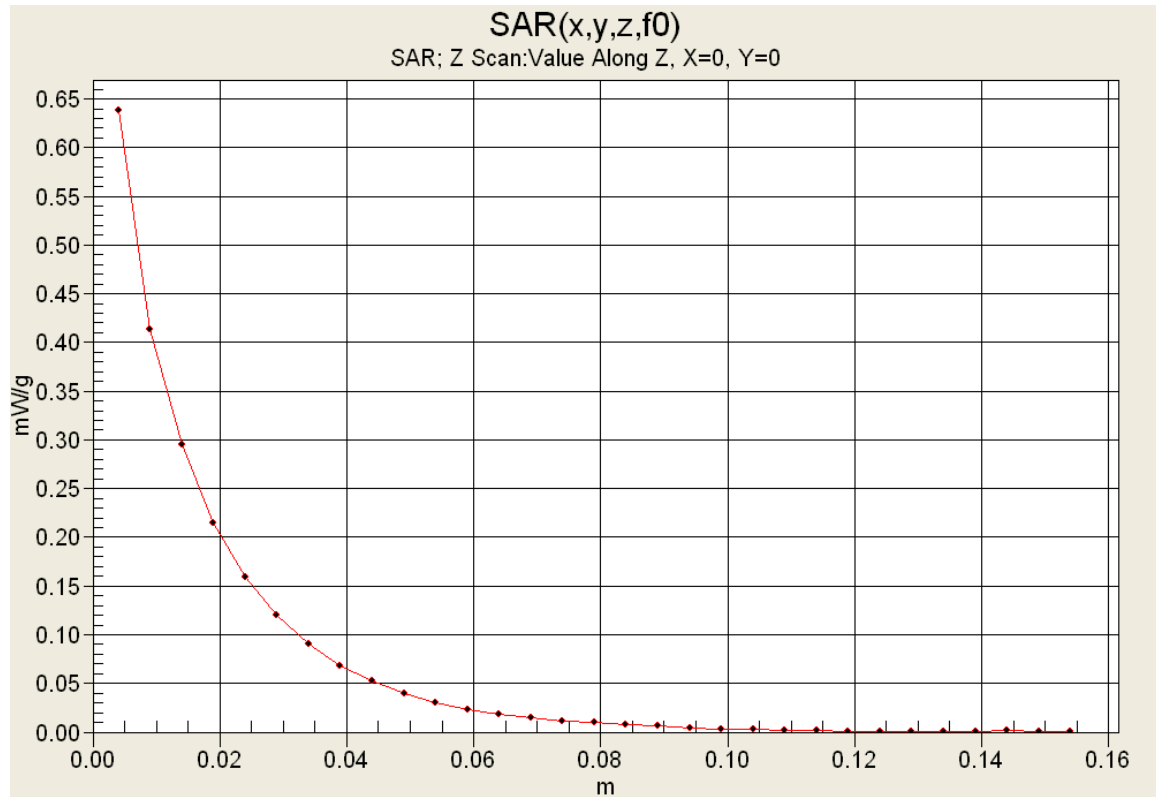
SAR(1 g) = 0.606 mW/g; SAR(10 g) = 0.405 mW/g

Maximum value of SAR (measured) = 0.638 mW/g



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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Z-Axis Scan



	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

APPENDIX C - MEASURED FLUID DIELECTRIC PARAMETERS

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

150 MHz Head

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

24/May/2013

Freq 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
0.0500	56.97	0.69	97.08	0.63
0.0600	56.50	0.69	83.74	0.66
0.0700	56.03	0.70	83.62	0.66
0.0800	55.57	0.71	67.92	0.67
0.0900	55.10	0.72	60.92	0.70
0.1000	54.63	0.72	54.76	0.71
0.1100	54.17	0.73	60.77	0.73
0.1200	53.70	0.74	55.35	0.73
0.1300	53.23	0.75	55.65	0.73
0.1400	52.77	0.75	53.21	0.74
0.1500	52.30	0.76	53.54	0.74
0.1600	51.83	0.77	52.70	0.76
0.1700	51.37	0.77	51.01	0.76
0.1800	50.90	0.78	50.24	0.76
0.1900	50.43	0.79	48.96	0.78
0.2000	49.97	0.80	49.54	0.79
0.2100	49.50	0.80	49.69	0.80
0.2200	49.03	0.81	48.00	0.82
0.2300	48.57	0.82	47.02	0.83
0.2400	48.10	0.83	47.37	0.83
0.2500	47.63	0.83	46.19	0.85

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

150 MHz Body

Celltech Labs Inc.

Test Result for UIM Dielectric Parameter

27/May/2013

Freq Frequency(GHz)

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
0.0500	64.37	0.72	95.57	0.71
0.0600	64.12	0.73	91.06	0.69
0.0700	63.87	0.74	82.63	0.73
0.0800	63.63	0.74	72.55	0.72
0.0900	63.38	0.75	71.77	0.72
0.1000	63.13	0.76	65.95	0.75
0.1100	62.89	0.77	64.47	0.75
0.1200	62.64	0.78	63.38	0.74
0.1300	62.39	0.78	63.06	0.76
0.1400	62.15	0.79	61.34	0.77
0.1500	61.90	0.80	62.87	0.77
0.1600	61.65	0.81	63.55	0.78
0.1700	61.41	0.82	61.79	0.78
0.1800	61.16	0.82	62.40	0.78
0.1900	60.91	0.83	59.74	0.80
0.2000	60.67	0.84	60.65	0.81
0.2100	60.42	0.85	59.09	0.82
0.2200	60.17	0.86	59.00	0.81
0.2300	59.93	0.86	58.81	0.83
0.2400	59.68	0.87	58.90	0.82
0.2500	59.43	0.88	57.91	0.83

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

APPENDIX D - SAR TEST SETUP & DUT PHOTOGRAPHS

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	
Test Lab Certificate No. 2470.01				

FACE-HELD SAR TEST SETUP PHOTOGRAPHS



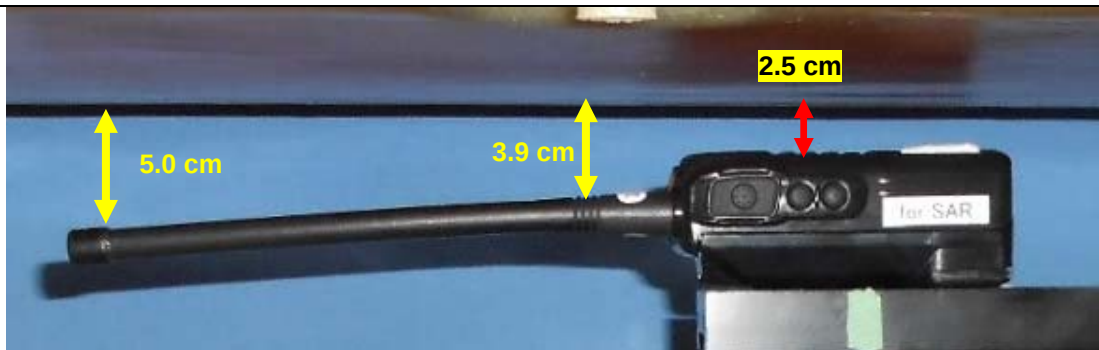
Face-held SAR Configuration Test Setup

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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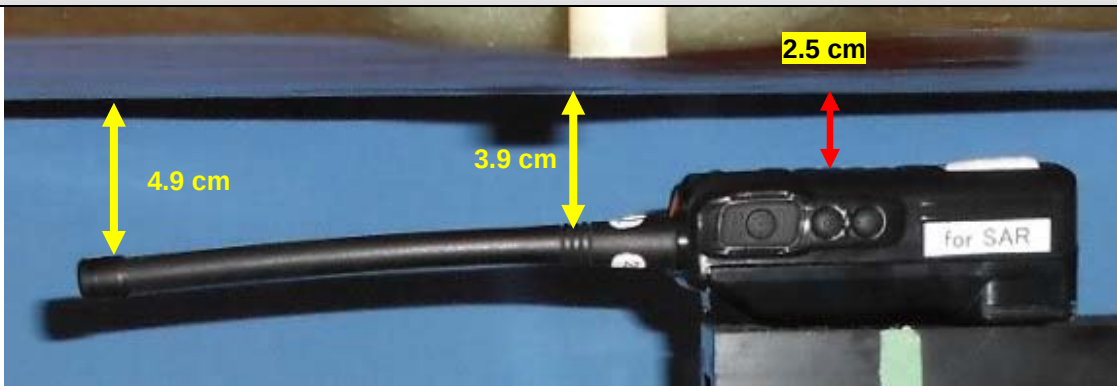
	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

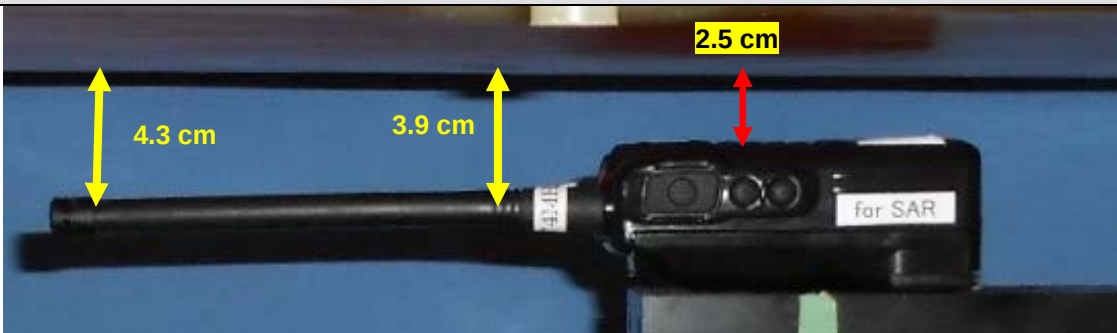
FACE-HELD SAR TEST SETUP PHOTOGRAPHS



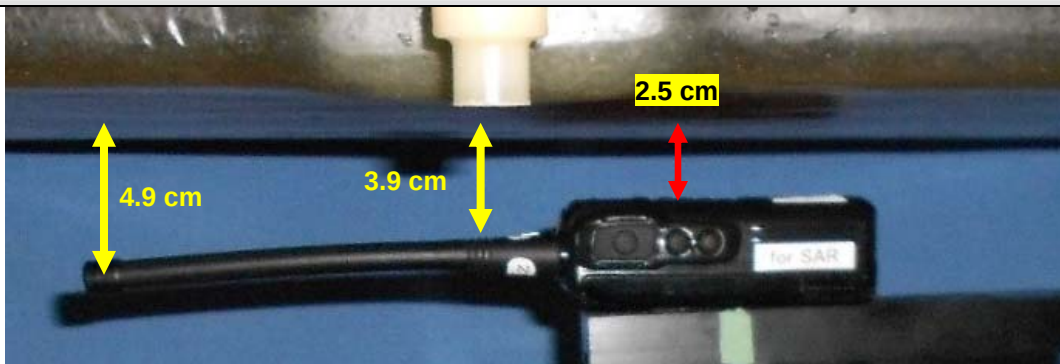
Face-held SAR Configuration - Antenna Low, Battery b



Face-held SAR Configuration - Antenna Mid, Battery b



Face-held SAR Configuration - Antenna High, Battery b



Face-held SAR Configuration - Antenna Mid, Battery a

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

BODY-WORN SAR TEST SETUP PHOTOGRAPHS (WITH DEFAULT AUDIO ACC.)

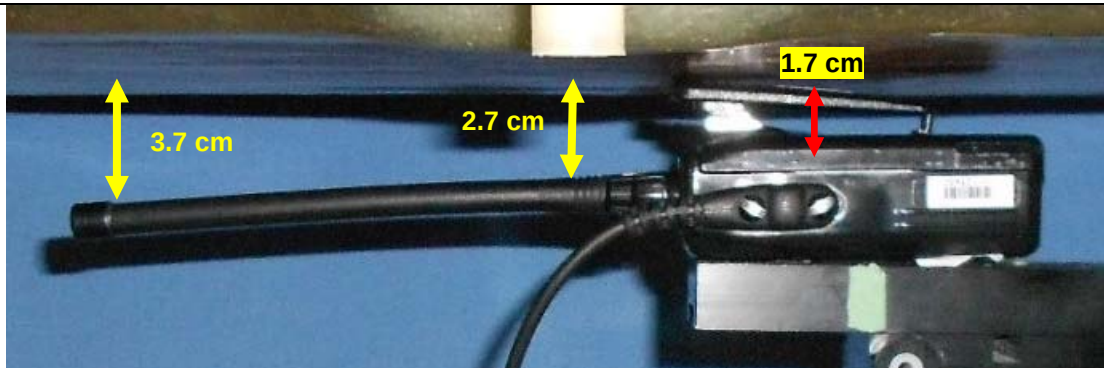


Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5	138 – 174 MHz		
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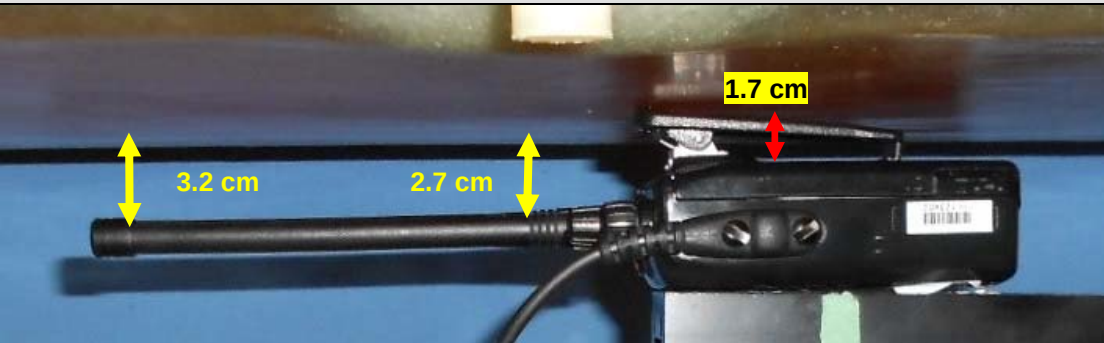
	Date(s) of Evaluation May 24 & 27, 2013	Test Report Serial No. 052313AXI-1234-S	Test Report Revision No. Rev. 1.0 (1st Release)	
	Test Report Issue Date May 31, 2013	Description of Test(s) Specific Absorption Rate	RF Exposure Category Occupational (Controlled)	

Test Lab Certificate No. 2470.01

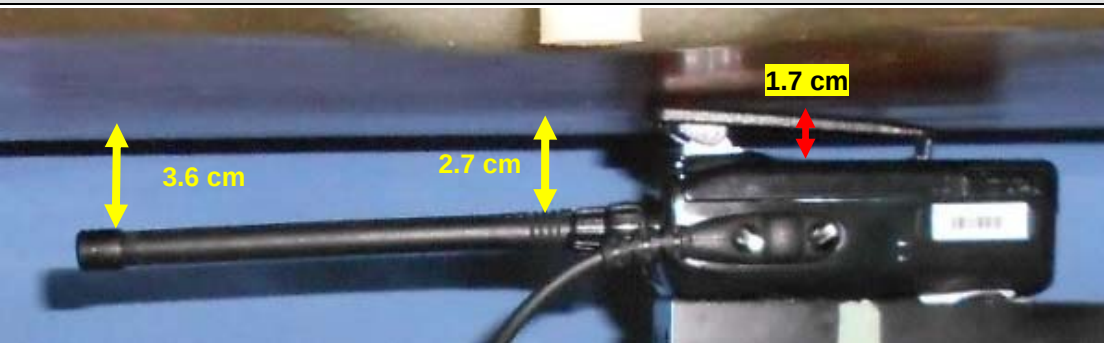
BODY-WORN SAR TEST SETUP PHOTOGRAPHS (WITH DEFAULT AUDIO ACC.)



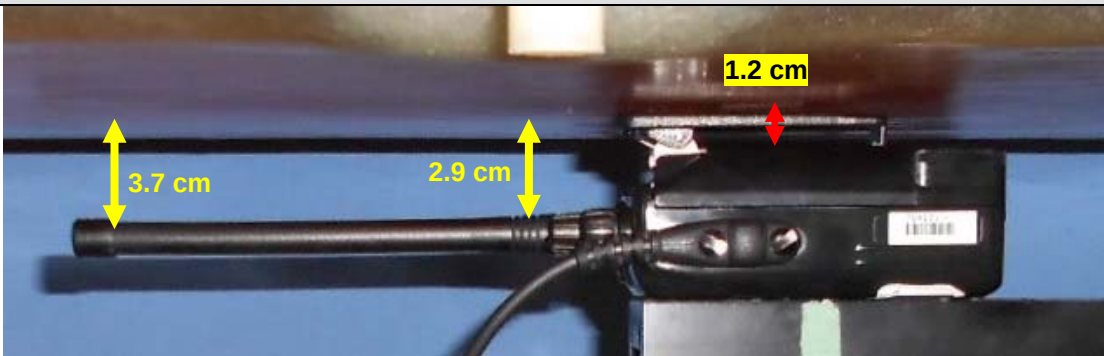
Body-worn SAR Configuration - Antenna Low, Battery a, Audio G1b



Body-worn SAR Configuration - Antenna Mid, Battery a, Audio G1b



Body-worn SAR Configuration - Antenna High, Battery a, Audio G1B



Body-worn SAR Configuration - Antenna Mid, Battery b, Audio G1b

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS

Radio Model: EVX-539-D0-5



Radio Front



Radio Left Side



Radio Back



Radio Right Side



Radio Top



Radio Bottom

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	 
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS

Radio Model: EVX-534-D0-5



Radio Front



Radio Left Side



Radio Back



Radio Right Side



Radio Top



Radio Bottom

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	  Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

DUT PHOTOGRAPHS



Back of Radio without battery



Side of Radio with Battery a and Belt-clip accessory



Side of Radio with Battery b and Belt-clip accessory



Belt-clip accessory

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DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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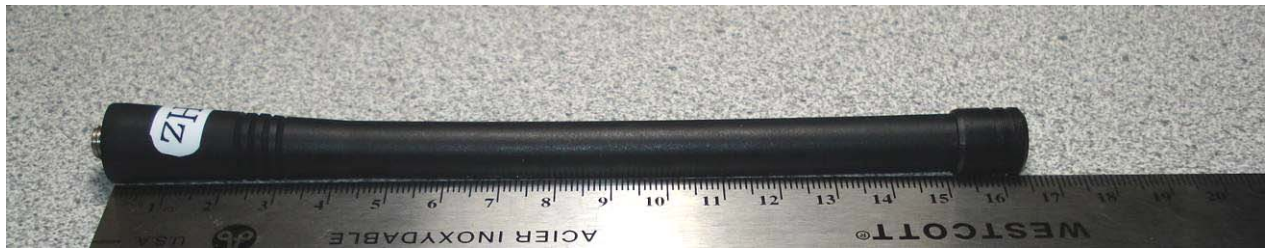
	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	 
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS



Antenna 1 (Low 136-150 MHz)



Antenna 1 (Mid 150-162 MHz)



Antenna 1 (High 162-174 MHz)

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 Testing and Engineering Services Lab	<u>Date(s) of Evaluation</u> May 24 & 27, 2013	<u>Test Report Serial No.</u> 052313AXI-1234-S	<u>Test Report Revision No.</u> Rev. 1.0 (1st Release)	 Test Lab Certificate No. 2470.01
	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

DUT PHOTOGRAPHS



Battery a - Front



Battery a - Side



Battery a - Back



Battery a - Side



Battery a - Top



Battery a - Bottom

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	Test Report Issue Date May 31, 2013	Description of Test(s) Specific Absorption Rate	RF Exposure Category Occupational (Controlled)	

Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS



Battery b - Front



Battery b - Side



Battery b - Back



Battery b - Side



Battery b - Top



Battery b - Bottom

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI1153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 - 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS



Audio Accessory G1a

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS



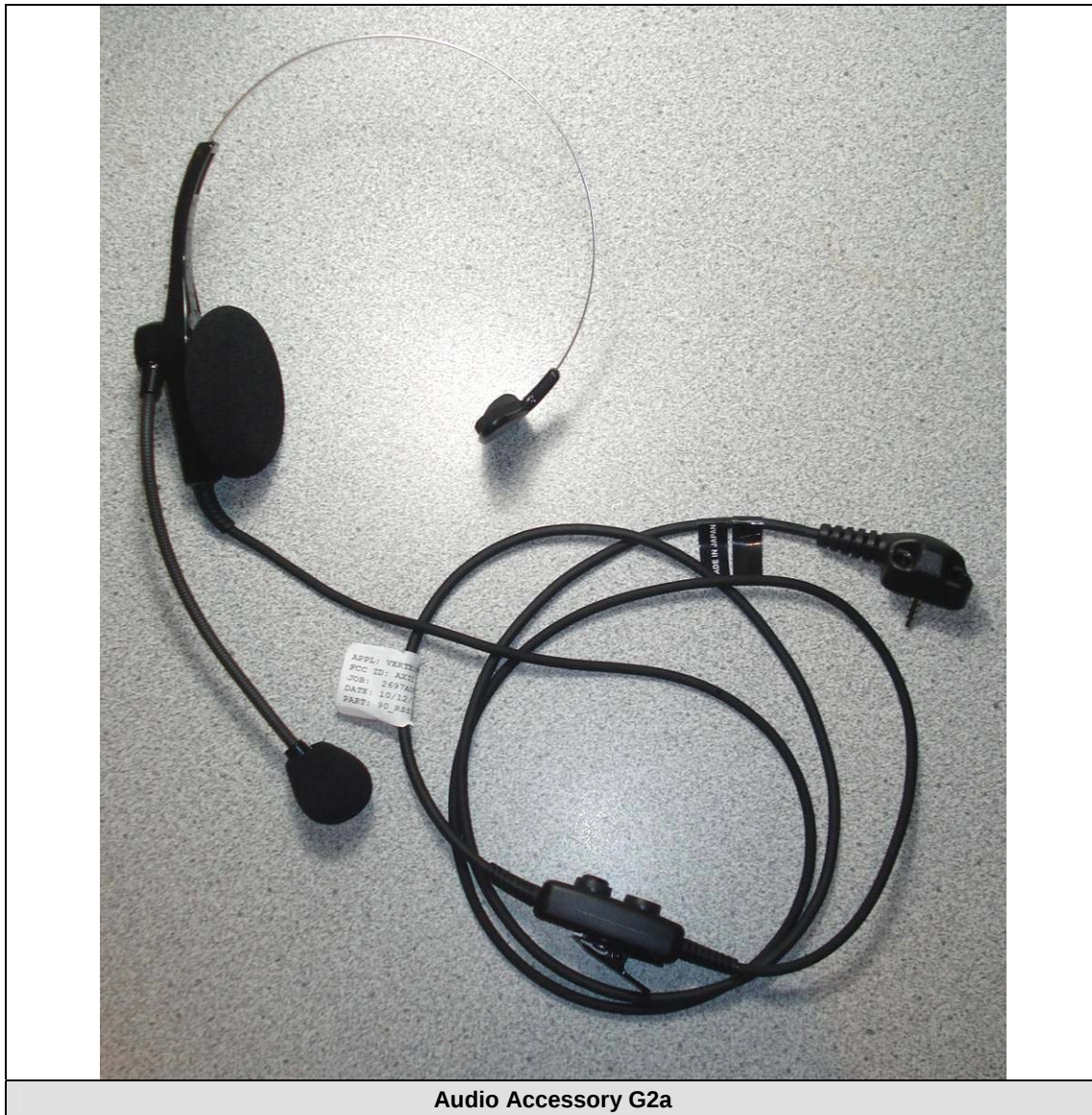
Audio Accessory G1b

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS



Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	
DUT Type:	Portable VHF PTT Radio Transceiver	Models:	EVX-534/539-D0-5		138 – 174 MHz	
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	<u>Test Report Issue Date</u> May 31, 2013	<u>Description of Test(s)</u> Specific Absorption Rate	<u>RF Exposure Category</u> Occupational (Controlled)	

Test Lab Certificate No. 2470.01

DUT PHOTOGRAPHS



Audio Accessory G3a

Applicant:	Vertex Standard USA Inc.	FCC ID:	AXI11153020	IC ID:	10239A-11153020	 <i>Vertex Standard</i>
DUT Type:	Portable VHF PTT Radio Transceiver		Models:	EVX-534/539-D0-5	138 – 174 MHz	
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