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FCC PART 15 B SUBPART B

RECEIVER TEST REPORT

Applicant	LAW ENFORCEMENT ASSOCIATES INC.
Address	2609 DISCOVERY DR., SUITE 125 RALEIGH NORTH CAROLINA 27616 USA
FCC ID	KAVU4225
Product Description	VHF BODY WORN RADIO - RX
Date Sample Received	3/23/2010
Date Tested	4/9/2010
Tested By	Nam Nguyen
Approved By	Mario R. de Aranzeta
Report Number	665UT10TestReport.doc
Test Results	☒ PASS ☐ FAIL

ACCREDITED
Certificate # 0955-01

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GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

The test results relate only to the items tested.

Summary

The device under test does:
☒ fulfill the general approval requirements as identified in this test report
☐ not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

ACCREDITED
Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, Fl 32669

Authorized Signatory Name:
Mario de Aranzeta C.E.T.
Compliance Engineer/ Lab. Supervisor

Date: 4/9/2010

REPORT SUMMARY

Disclaimer	The test results only relate to the item tested.
Applicable Rule(s)	Pt 15.109, Pt 15.107, ANSI C63.4: 2003

TEST ENVIRONMENT

Test Facility	Timco Engineering, Inc. 849 NW State Road 45 Newberry, FL 32669 USA.
Test Condition in the laboratory	Temperature: 26°C Relative humidity: 50%

TEST SETUP SUMMARY

Test Setup Diagram/ Description	The DUT was placed on the turntable per setup per ANSI C63.4: 2003. A test set up photo is provided for clarification.
Deviation from the standard/procedure	No deviation
Modification of DUT	No modification

DUT SPECIFICATION

DUT Description	VHF BODY WORN RADIO - RX
FCC ID	KAVU4225
DUT Power Source	☐ 110–120Vac/50– 60Hz
	☐ DC Power
	☒ Battery Operated Exclusively
Test Item	☐ Prototype
	☒ Pre-Production
	☐ Production
Type of Equipment	☒ Fixed
	☐ Mobile
	☐ Portable
Laboratory Test Conditions	Temperature: 26°C Humidity: 55%
Modifications to DUT:	☒ No ☐ Yes (explanation below)

TEST EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 3/10/10	3/10/12
AC Voltmeter	HP	400FL	2213A14499	CAL 3/23/09	3/23/11
Antenna: Dipole Kit	Electro-Metrics	TDA-30/1-4	153	CHAR 6/10/09	6/10/11
Frequency Counter	HP	5385A	3242A07460	CAL 5/26/09	5/26/11
Hygro-Thermometer	Extech	445703	0602	CAL 1/30/09	1/30/11
Modulation Analyzer	HP	8901A	3435A06868	CAL 5/26/09	5/26/11
Digital Multimeter	Fluke	FLUKE-77-3	79510405	CAL 5/18/09	5/18/11
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 11/21/09	11/21/11
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 11/22/09	11/22/11
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 11/21/09	11/21/11
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 11/24/09	11/24/11
Temperature Chamber	Tenney Engineering	TTRC	11717-7	CHAR 4/25/10	4/25/12

TEST PROCEDURES

Power line conducted Emission: The test procedure used was ANSI C63.4-2003. The spectrum was scanned from 0.15 to 30 MHz.

Radiation Interference: The test procedure used was ANSI C63.4-2003 using a spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The video bandwidth was always greater than or equal to the RBW.

The frequency was scanned from 30 MHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The DUT was measured in three (3) orthogonal planes when necessary.

Formula Of Conversion Factors: The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBµV) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:

Freq (MHz)	Meter Reading	+ ACF	+CL	= FS
33	20 dBµV	+ 10.36 dB/m	+0.40 dB	=30.36 dBµV/m @ 3m

ANSI C63.4-2003 Measurement Procedures: The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and verticals planes.

ANSI STANDARD C63.4-2003 12.1.1.1 SUPERREGENERATIVE RECEIVER: A Signal Generator was set to the unit under test operating frequency. An un-
Modulated continuous wave (CW) signal was radiated at the super regenerative receiver operating frequency to cohere the characteristic broadband emissions from the receiver.

RADIATED SPURIOUS EMISSIONS

Rules Part No.: 15.109

Requirements:

Frequency MHz	Limits
30 – 88	40.0 dBµV/m measured @ 3 meters
88 – 216	43.5 dBµV/m measured @ 3 meters
216 – 960	46.0 dBµV/m measured @ 3 meters
Above 960	54.0 dBµV/m measured @ 3 meters

Test Data:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
162	94.3	12.3	H	0.64	10.56	23.5	20
162	108.2	11.7	V	0.66	11.11	23.47	20.03
162	120.4	9.7	V	0.67	11.19	21.56	21.94
162	124.9	14.3	H	0.67	11.48	26.45	17.05
162	180.3	11.9	H	0.82	13.68	26.4	17.1
162	189.1	15.3	H	0.86	13.96	30.12	13.38
162	204	14.5	V	0.91	11.7	27.11	16.39
162	204	17.8	H	0.91	12.02	30.73	12.77
162	262.8	20	H	1.03	13.07	34.1	11.9
162	285.2	19.5	H	1.07	13.9	34.47	11.53
162	300.2	17.5	H	1.1	14.42	33.02	12.98
162	300.4	12	V	1.1	14.43	27.53	18.47
162	312.2	11.5	V	1.11	15.01	27.62	18.38
162	339.2	13	V	1.14	14.59	28.73	17.27
162	357.6	11.9	H	1.16	15	28.06	17.94
162	375.6	14.7	V	1.18	15.21	31.09	14.91
162	384.4	14.7	V	1.18	15.43	31.31	14.69
162	480.2	14.8	H	1.28	17.7	33.78	12.22
162	480.4	19.3	V	1.28	17.32	37.9	8.1
162	504.2	12.5	V	1.31	18.15	31.96	14.04

TEST DATA CONTD.

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
162	547.2	12.6	H	1.44	18.52	32.56	13.44
162	552.4	13.3	V	1.46	18.1	32.86	13.14
162	564.8	11.9	H	1.49	18.75	32.14	13.86
162	576.4	12.6	H	1.53	18.83	32.96	13.04
162	576.6	12.2	V	1.53	18.4	32.13	13.87
162	600.2	15.6	V	1.6	18.61	35.81	10.19
162	624	16.3	V	1.62	19.24	37.16	8.84
162	624.2	13.9	H	1.62	19.6	35.12	10.88
162	672	13.2	H	1.67	20.76	35.63	10.37
162	684.8	15.2	V	1.68	20.5	37.38	8.62
162	744	13.4	V	1.79	20.72	35.91	10.09
162	744	15.1	H	1.79	21.42	38.31	7.69
162	768	13.7	V	1.84	20.78	36.32	9.68
162	768	14.1	H	1.84	21.52	37.46	8.54
162	792	14.2	H	1.88	21.6	37.68	8.32
162	816	11.7	V	1.91	21.22	34.83	11.17
162	816	13.1	H	1.91	21.82	36.83	9.17

POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.107

Requirements:

Frequency (MHz)	Quasi Peak Limits (dBµV)	Average Limits (dBµV)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

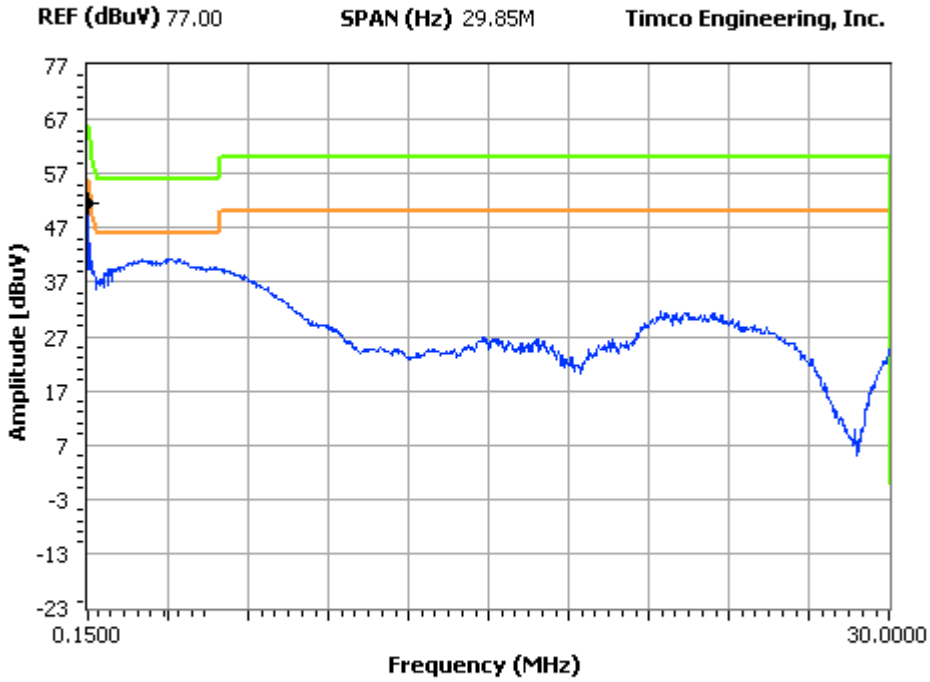
Test Data: The following plots represent the emissions for power line conducted. Both lines were observed.

POWERLINE CONDUCTED PLOT – LINE 1

NOTES:

LAW ENFORCEMENT ASSOCIATES INC. - VHF BODY WORN RADIO - RX
POWER LINE CONDUCTED PLOT - LINE 1

FCC 15.107 Mask Class B



RBW	VBW	ST (sec)
10 kHz	10 kHz	895m

Center Frequency (Hz) 15.075M

Marker Delta (Hz) 0.00

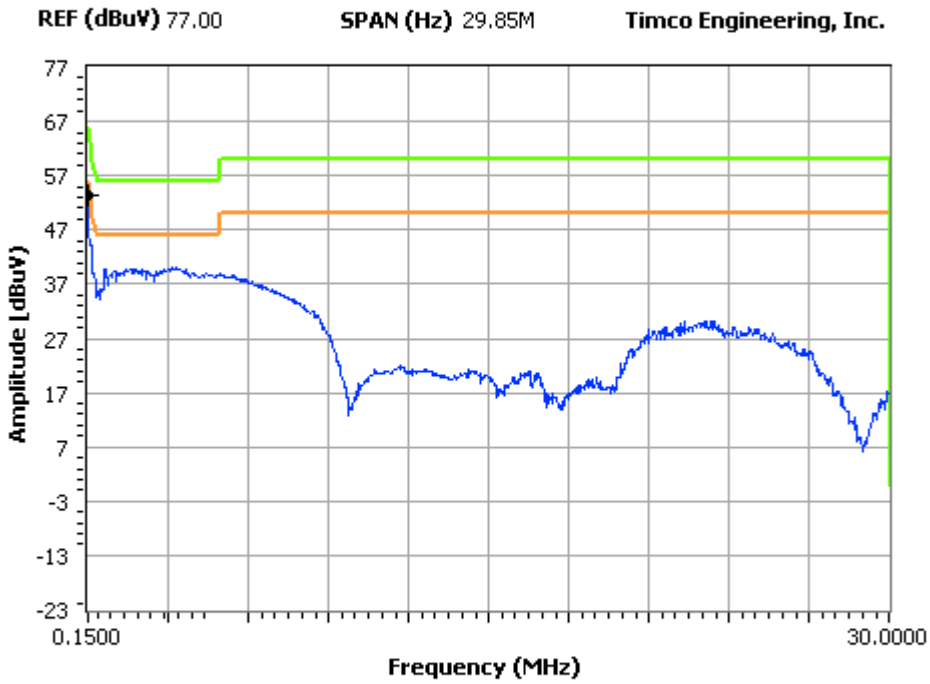
Peak	0.150	51.40
MKR2	0.000	0.00
MKR3	0.000	0.00
HWMK	23.076	6.27

POWERLINE CONDUCTED PLOT – LINE 2

NOTES:

LAW ENFORCEMENT ASSOCIATES INC. - VHF BODY WORN RADIO - RX
POWER LINE CONDUCTED PLOT - LINE 2

FCC 15.107 Mask Class B



RBW	VBW	ST (sec)
10 kHz	10 kHz	895m

Center Frequency (Hz) 15.075M

Marker Delta (Hz) 0.00

Peak	0.150	53.50
MKR2	0.000	0.00
MKR3	0.000	0.00
HWMK	23.076	6.27

RADIATED EMISSIONS TEST SETUP PHOTO

POWERLINE CONDUCTED EMISSIONS TEST SET UP PHOTO