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**FCC PART 90 AND IC RSS-119  
 CLASS II PERMISSIVE CHANGE  
 TEST REPORT**

<b>APPLICANT</b>	DANIELS ELECTRONICS LTD.
	43 ERIE STREET VICTORIA, BC V8V 1P8 CANADA
<b>FCC ID</b>	H4JVT-4E150
<b>IC CERTIFICATION</b>	142A-VT4E150
<b>MODEL NUMBER</b>	VT-4E150
<b>PRODUCT DESCRIPTION</b>	VHF BASE STATION TRANSMITTER
<b>DATE SAMPLE RECEIVED</b>	09/07/2010
<b>DATE TESTED</b>	10/25/2010
<b>TESTED BY</b>	NAM NGUYEN
<b>APPROVED BY</b>	MARIO R. DE ARANZETA
<b>TIMCO REPORT NO.</b>	2136AT10TestReport.pdf
<b>TEST RESULTS</b>	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
 WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



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FCC ID: H4JVT-4E150  
IC CERT #: 142A-VT4E150  
Report: Y:\D\Danelec\2136AT10\2136AT10TestReport.doc

**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: 2005 requirements.



Testing 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:** February 23, 2011

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**GENERAL INFORMATION**  
**DUT Specification**

<b>DUT Description</b>	VHF BASE STATION TRANSMITTERS
<b>FCC ID</b>	H4JVT-4E150
<b>IC Certification</b>	142A-VTE150
<b>Model Number</b>	VT-4E150
<b>Serial Number</b>	N/A
<b>Operating Frequency</b>	136.0-174.0 MHz
<b>Type of Emission</b>	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D, 9K20F1D, 16K0G3E, 16K0G2B
<b>DUT Power Source</b>	<input type="checkbox"/> 110-120Vac/50- 60Hz
	<input checked="" type="checkbox"/> DC Power 12V
	<input type="checkbox"/> Battery Operated Exclusively
<b>Test Item</b>	<input type="checkbox"/> Prototype
	<input checked="" type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
<b>Type of Equipment</b>	<input checked="" type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
<b>Test Conditions</b>	The temperature was 26°C with a relative humidity of 50%.
<b>Modification to the DUT</b>	None
<b>Test Exercise</b>	The DUT was placed in continuous transmit mode.
<b>Applicable Standards</b>	ANSI/TIA 603-C:2004, FCC CFR 47 Part 90, IC RSS-119, RSS-GEN
<b>Test Facility</b>	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA.

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## **MODULATION CHARACTERISTICS**

**Part 2.1033(c)**

**Part 2.1033(c) (4)** Type of Emission: 16K0G3E, 16K0G2B

**FCC Part 90.209, IC RSS-119 5.5**

**FCC Part 90.207**

Type of Emission: 16K0G3E, 16K0G2B

$$B_n = 2M + 2DK$$

$$M = 3000$$

$$D = 4700$$

$$K=1$$

$$B_n = 2(3000)+2(4700) = 15.4k$$

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## OCCUPIED BANDWIDTH

### **FCC Part 2.1049(c), RSS-GEN 4.6 EMISSION BANDWIDTH FCC Part 90.210(b) RSS-119 4.2 25kHz Channel Spacing**

Data in the plots show that on any frequency removed from the assigned frequency by more than 50%, but not more than 100%: At least 25dB. On any frequency removed from the assigned frequency by more than 100%, but not more than 250%: At least 35 dB. On any frequency removed from the assigned frequency by more than 250%, of the authorized bandwidth: At least  $43 + 10\log(P)$ dB.

### **Part 90.210(c) 12.5kHz Channel Spacing Not Equipped with a Low Pass Filter**

For transmitters that are not equipped with an audio low pass filter pursuant to S90.211 (b), the power of any emission must be attenuated below the un-modulated carrier output power as follows; (1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 5 kHz but not more than 10 kHz: At least  $83 \log(f_d/5)$  dB; (2) ON any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 10 kHz, but not more than 250% of the authorized bandwidth: At least  $29 \log(f_d/11)$ dB or 50 dB, whichever is the lesser attenuation; (3) On any frequency removed from the center of the authorized bandwidth by more than 250% of the authorized bandwidth: At least  $43+10 \log(P_0)$ dB.

### **Part 90.210(d) Emission Mask D - 12.5 kHz channel BW equipment.**

For transmitters designed to operate with a 12.5 kHz channel bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

- (1) On any frequency from the center of the authorized bandwidth  $f_0$  to 5.625 kHz removed from  $f_0$ : Zero dB.
- (2) On any frequency from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least  $7.27(f_d - 2.88 \text{ kHz})$  dB.
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 12.5 kHz: At least  $50 + 10\log(P)$  dB or 70 dB, whichever is the lesser attenuation.

### **Part 90.210(e) Emission Mask E – 6.25 kHz channel BW equipment.**

For transmitters designed to operate with a 6.25 kHz bandwidth, any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth as follows:

- (1) On any frequency from the center of the authorized bandwidth  $f_0$  to 3.0 kHz removed from  $f_0$ : Zero dB.
- (2) On any frequency from the center of the authorized bandwidth by a displacement frequency ( $f_d$  in kHz) of more than 3.0 kHz but no more than 4.6 kHz: At least  $30 + 16.67(f_d - 3.0 \text{ kHz})$  or  $55 + 10 \log(P)$  or 65, whichever is the lesser attenuation.
- (3) On any frequency removed from the center of the authorized bandwidth by more than 4.6kHz: At least  $55 + 10\log(P)$  dB or 65 dB, whichever is the lesser attenuation.

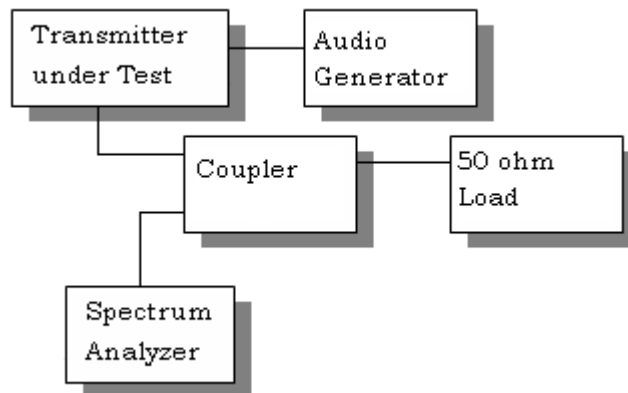
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## OCCUPIED BANDWIDTH MEASUREMENT

**Test procedure:** ANSI/TIA-603-C:2004 para 2.2.11.

### Test Setup Diagram:

#### OCCUPIED BANDWIDTH MEASUREMENT



**Test Data:** See the plots below

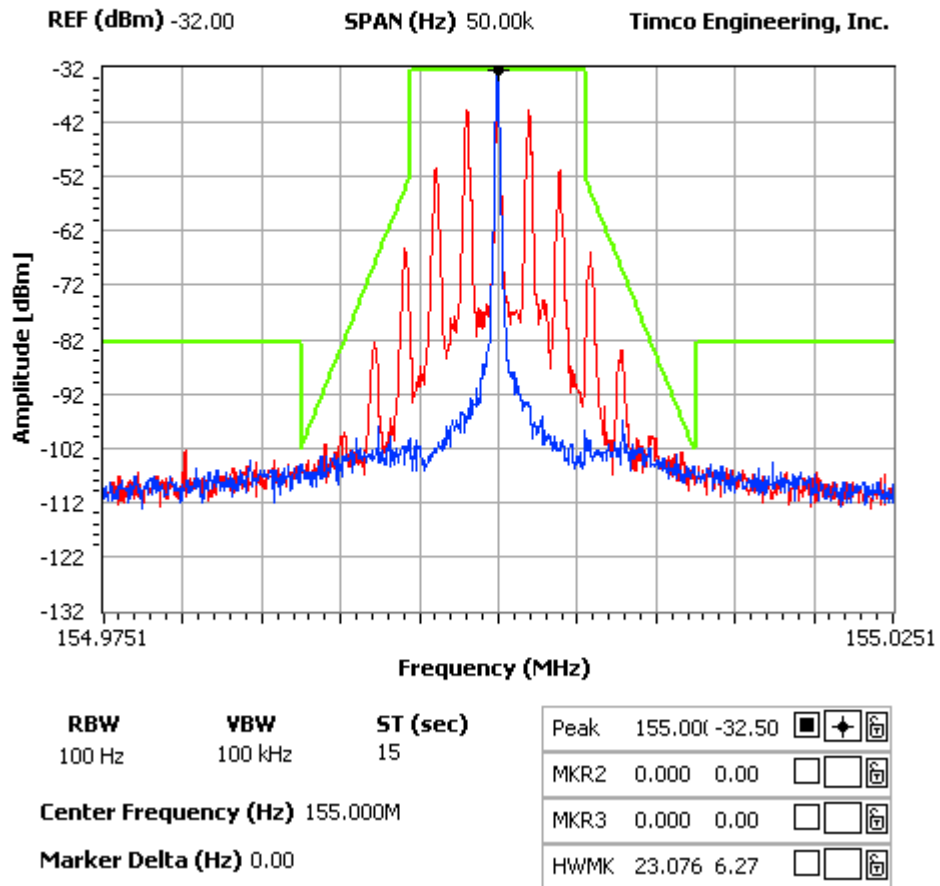
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### 12.5 kHz

**NOTES:**

DANIELS ELECTRONICS LTD. - FCC ID: H4JVT-4E150  
 OCCUPIED BANDWIDTH PLOT

**FCC 90.210 Mask D**



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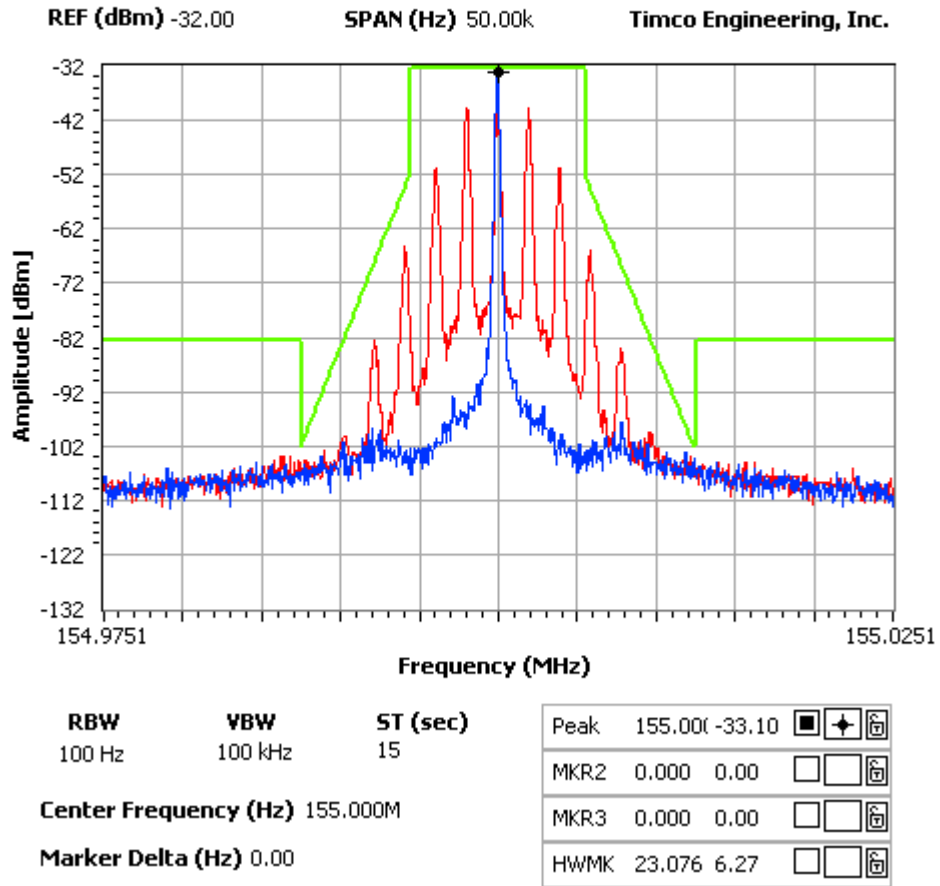


### 12.5 kHz – DIGITAL

**NOTES:**

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OCCUPIED BANDWIDTH PLOT

**FCC 90.210 Mask D**



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## EMC 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

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