



849 NW STATE ROAD 45
NEWBERRY, FL 32669 USA
PH: 888.472.2424 OR 352.472.5500
FAX: 352.472.2030
EMAIL: INFO@TIMCOENGR.COM
[HTTP://WWW.TIMCOENGR.COM](http://WWW.TIMCOENGR.COM)

**FCC PART 95 SUBPART D
TEST REPORT
FOR CB TRANSCEIVERS**

APPLICANT	STANDARD COMMUNICATIONS PTY.LTD.
	PO BOX 96 WINSTON HILLS NSW 2153 AUSTRALIA
FCC ID	TXJGX400
MODEL NUMBER	GX400
PRODUCT DESCRIPTION	MARINE CB TRANSCEIVER
DATE SAMPLE RECEIVED	10/13/2014
DATE TESTED	12/17/2014
TESTED BY	Cory Leverett
APPROVED BY	Sid Sanders
TIMCO REPORT NO.	1842AUT14TestReportRev1.docx
TEST RESULTS	<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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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.

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:

Cory Leverett
Engineering Project Manager

Date: 12/17/2014



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GENERAL INFORMATION

EUT Specification

EUT Description	MARINE CB TRANSCEIVER	
FCC ID	TXJGX400	
Model Number	GX400	
Serial Number	N/A	
Operating Frequency	26.965-27.405 MHz	
TEST FREQUENCY	Ch 21 27.215 MHz	Ch 20 27.205 MHz
No. of Channels	40	
Type of Emission	6K00A3E Bn = 2M M = 3000 Bn = 6000	
Modulation	AM	
EUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz	
	<input checked="" type="checkbox"/> DC Power	
	<input type="checkbox"/> Battery Operated Exclusively	
Test Item	<input type="checkbox"/> Prototype	
	<input type="checkbox"/> Pre-Production	
	<input checked="" type="checkbox"/> Production	
Type of Equipment	<input type="checkbox"/> Fixed	
	<input checked="" type="checkbox"/> Mobile	
	<input type="checkbox"/> Portable	

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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 EUT 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 EUT	No modification
Applicable Standards	EIA/TIA-382-A, FCC CFR 47 PART 95

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TEST PROCEDURES

Power Line Conducted Interference: The procedure used was EIA/TIA-382-A using a 50uH LISN. Both lines were observed with the UUT transmitting. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

Bandwidth 20 dB: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW) = 1 MHz and the video bandwidth (VBW) = 3 MHz and the span set as shown on plot.

Power Output: The RF power output was measured at the antenna feed point using a peak power meter.

Antenna Conducted Emissions: The RBW = 100 kHz, VBW = 300 kHz and the span set to 10.0 MHz and the spectrum was scanned from 30 MHz to the 10th Harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz.

Radiation Interference: The test procedure used was EIA/TIA-382-A using an Agilent spectrum receiver with pre-selector. The bandwidth (RBW) of the spectrum EIA/TIA-382-A receiver was 100 kHz up to 1 GHz and 1 MHz above 1 GHz with an appropriate sweep speed. The VBW above 1 GHz was 3 MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

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RF POWER OUTPUT

Rule Part No.: Part 2.1033(c), Part 95.639 (c) (1)

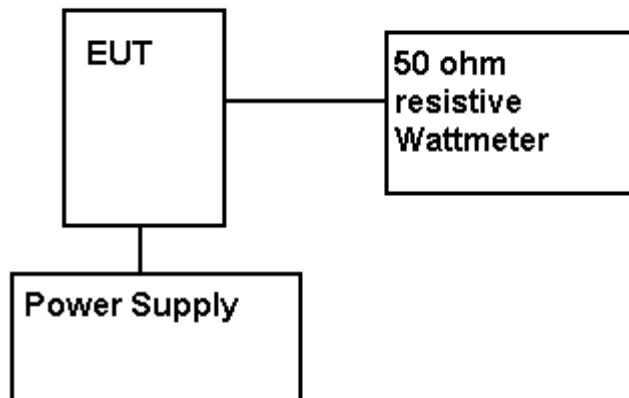
Test Requirements: No CB transmitter, under any condition of modulation, shall exceed: 4 W Carrier power when transmitting emission type A1D or A3E;

Method of Measurement: RF power is measured by connecting a 50-ohm, resistive wattmeter to the RF output connector. With a nominal battery voltage and the transmitter properly adjusted the RF output measures:

Test Data: OUTPUT POWER: HIGH – 4 Watts

	dBm	Watts
HIGH Power	36.0	4.0
Low Power		

Test Setup Diagram:



Part 2.1033 (C)(8) DC Input into the final amplifier

INPUT POWER: $(13.8V)(0.72A) = 9.9 \text{ Watts}$

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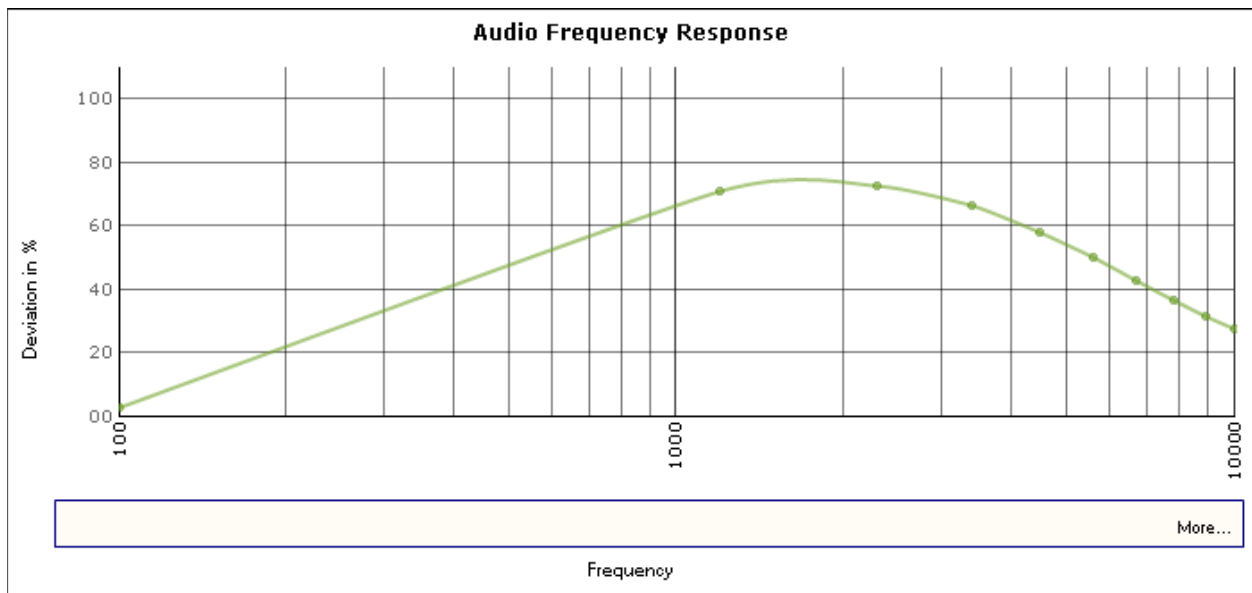
MODULATION CHARACTERISTICS

AUDIO FREQUENCY RESPONSE

Rule Part No.: Part 2.1047(a)(b)

Method of Measurement:

The audio frequency response was measured in accordance with EIA/TIA-382-A with no exception. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 – 5000Hz shall be submitted. The audio frequency response curve is shown below.



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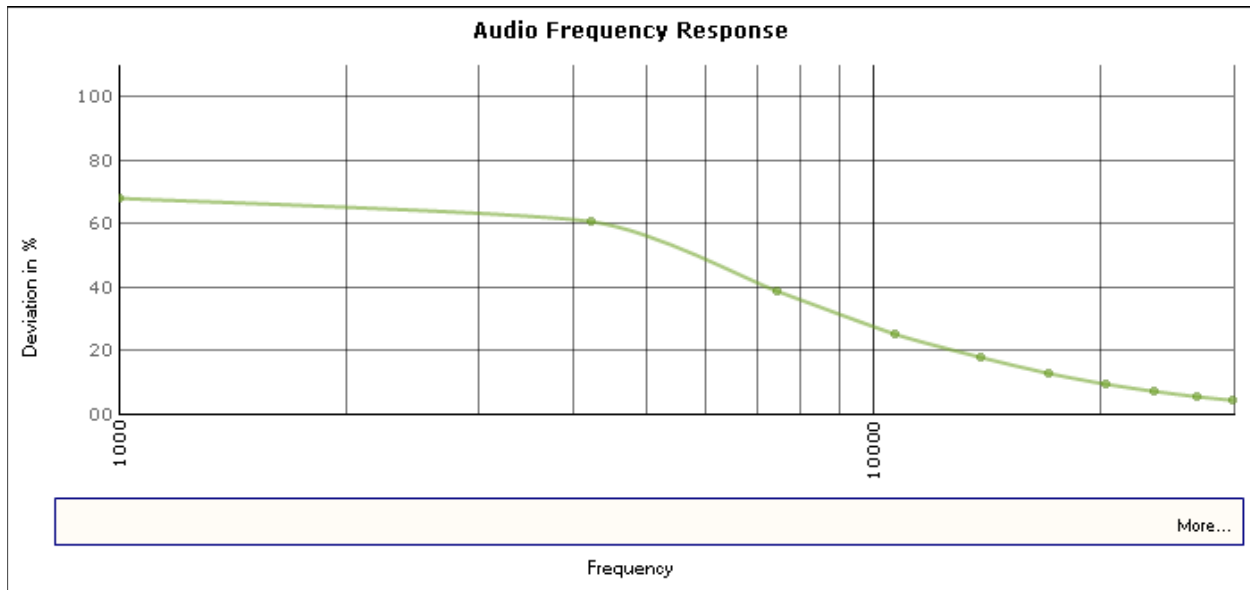
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AUDIO LOW PASS FILTER RESPONSE

Rule Part No.: Part 2.1047(a)(b)

Required for voice modulated communication equipment

For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all the circuitry installed between the modulation limiter and the modulated stage shall be submitted.



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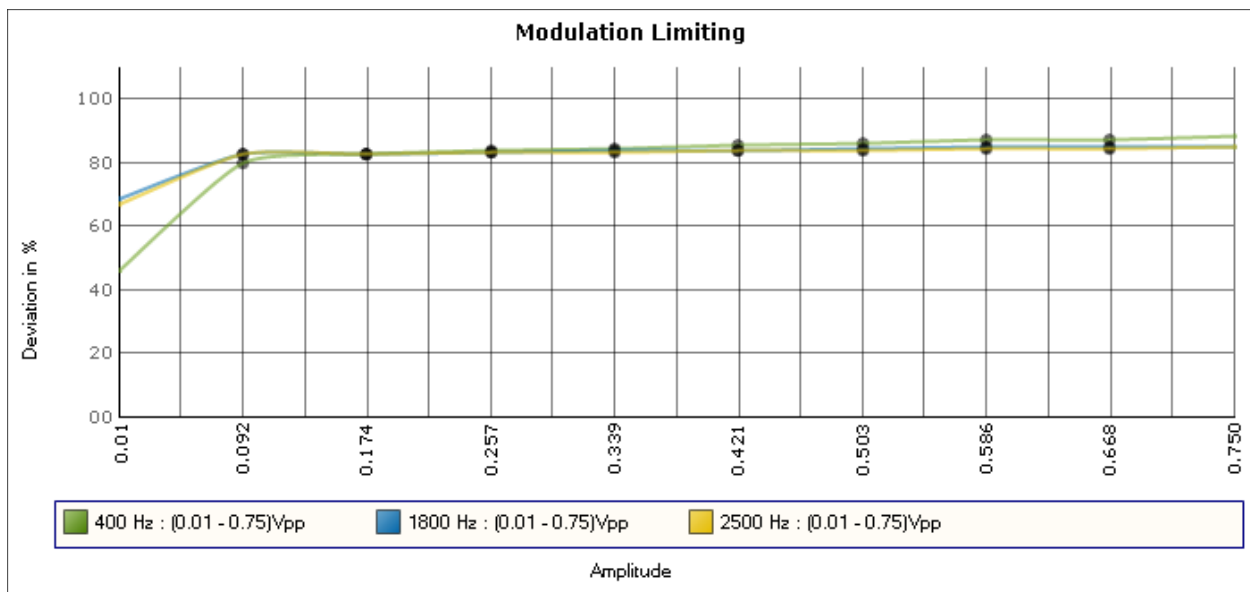
AUDIO INPUT VS MODULATION

Rule Part No.: Part 2.1047(a)(b), 95.637 (c)

Test Requirements: (c) The modulation must be greater than 85% but must not exceed 100%.

Method of Measurement: The audio input level needed for a particular percentage of modulation was measured in accordance with EIA/TIA-382-A. The audio input curves versus modulation are shown below. The frequency at which the highest modulation was found was 1800 Hz. Curves are provided for audio input frequencies of 400 Hz, 1800 Hz, & 2500 Hz.

Test data:



Meets Requirements

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OCCUPIED BANDWIDTH

Rule Part: 2.1049, 95.635 (b)

95.635(b) Requirements:

(1) At least 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.

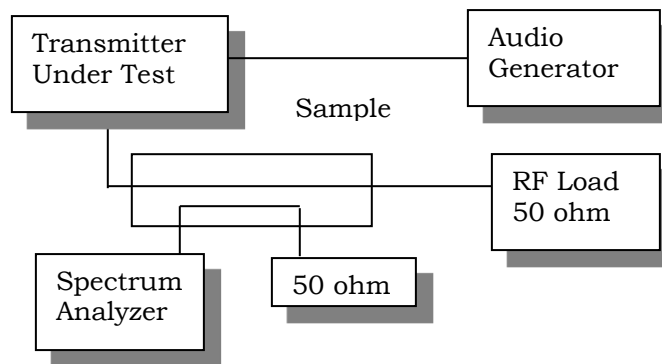
(3) At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth.

(8) At least $53 + 10 \log_{10}(T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%.

(9) At least 60 dB on any frequency twice or greater than twice the fundamental frequency.

Radiotelephone transmitter with modulation limiter.

Test Setup Diagram:



Test Data: See the plots below

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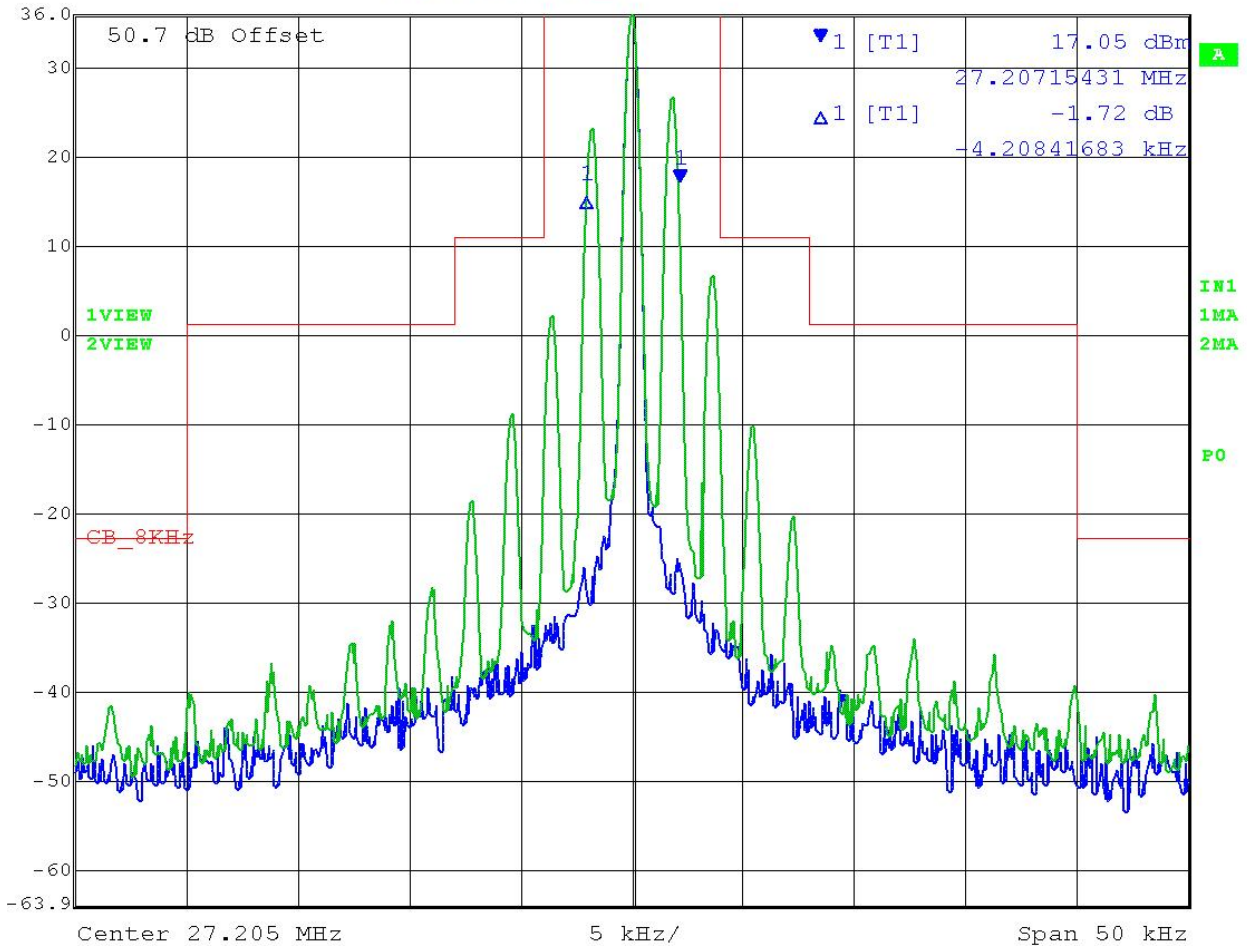
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OCCUPIED BANDWIDTH PLOT

20 dB Measured Bandwidth = 4.2 KHz



Ref Lvl	36 dBm	Marker 1 [T1]	17.05 dBm	RBW	300 Hz	RF Att	20 dB
			27.20715431 MHz	VBW	1 kHz		
				SWT	2.8 s	Unit	dBm



Date: 17.DEC.2014 11:16:50

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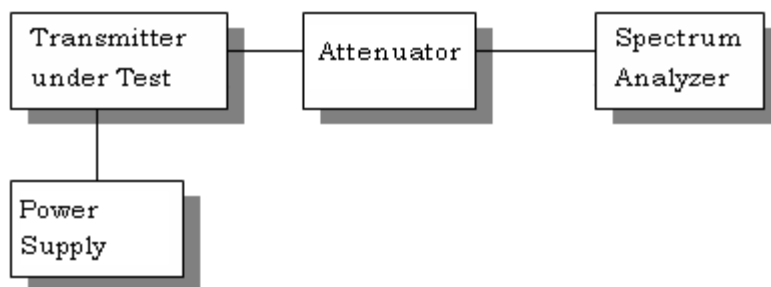
SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)

Rule Part No.: Part 2.1051(a), 95.635 (b) 1, 3, 8 & 9

Requirements: $53 + 10\log(4) = 59$ dBc. Any emissions above greater than twice the fundamental must be 60 dBc.

Method of Measurement: Using a 2500 Hz tone, the carrier was modulated at a level 16 dB higher than the level required for 50% modulation. The spectrum was scanned from 0.4 to at least the 10th harmonic of the fundamental. The measurements were made in accordance with standard EIA/TIA-382-A.

Test Setup Diagram:



Test Data: Table of Emissions

	Limit dBc	Margin
Power Output	60	
Frequency	dBc	dB
27.2	0	NA
54.4	63.59	3.59
81.6	75.1	15.1
108.8	76.6	16.6
136	74.05	14.05
163.2	79.92	19.92
190.4	77.6	17.6
217.6	81.03	21.03
244.8	79.62	19.62
272	79.34	19.34

Results Meet Requirements

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RADIATED SPURIOUS EMISSIONS

Rule Parts. No.: Part 2.1053, 95.635(b)(8)(9), RSS-236 issue 1

Requirements: Emissions must be attenuated by at least the following below the output of the transmitter.

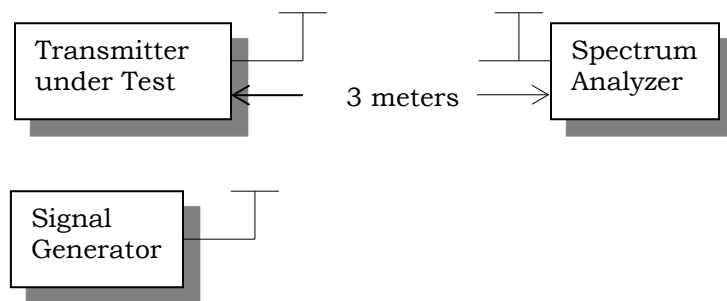
$$53 + 10\log(4.00) = 59.0 \text{ dB or}$$

FCC Limit for: 8kHz Authorized BW

At least $53 + 10\log(T)$ dB on any frequency removed from the center of the authorized bandwidth by more than 250%. At least 60dB on any frequency twice or greater than twice the fundamental.

METHOD OF MEASUREMENT: The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned from 30 MHz to at least the tenth harmonic of the fundamental. This test was conducted per EIA/TIA-382-A using the substitution method. Measurements were made at the test site of TIMCO ENGINEERING, INC. located at 849 NW State Road 45, Newberry, FL 32669.

Test Setup Diagram:



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RADIATED SPURIOUS EMISSIONS

Test Data: Table of Emissions

Emission Frequency (MHz)	Power Mode	ERP Power Output (dBm)	ERP Power Output (Watts)	FCC Requirement dB	Bandwidth - BW - kHz
27.88	Hi	36.00	3.98	60	8 KHz
Emission Frequency (MHz)	Ant. Polarity	Below Carrier (dBc)	Margin		
55.76	V	99.08	43.08		
83.64	H	84.02	28.02		
111.52	V	68.58	12.58		
139.40	H	88.44	32.44		
167.28	H	70.66	14.66		
195.16	H	76.33	20.33		
223.04	H	84.63	28.63		
250.92	H	76.54	20.54		
278.80	H	84.55	28.55		

Results Meet Requirements

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FREQUENCY STABILITY

Rule Part: 2.1055(a)(b)(d)

Temperature and voltage tests were performed to verify that the frequency remains within the .005%, 50 ppm specification limit. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 °C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15-second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -30 °C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15-second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 °C.

Readings were also taken at $\pm 15\%$ of the battery voltage of 13.8 VDC.

Test Data:

Reference Frequency 27.67998 MHz

Battery (%)	Frequency)	Frequency Stability (ppm)
-15	27.67998 MHz	0
0	27.67998 MHz	0
15	27.67998 MHz	-0.01

Temperature(C)	Frequency)	Frequency Stability (ppm)
-30	27.68001 MHz	1.15
-20	27.68002 MHz	1.43
-10	27.68007 MHz	3.22
0	27.68009 MHz	3.94
10	27.68007 MHz	3.29
20	27.68003 MHz	1.73
30	27.67998 MHz	0.04
40	27.67995 MHz	-1.33
50	27.67994 MHz	-1.65

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EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
DC Power Supply	HP	6286A	1744A03842	NA	NA
Antenna: Biconnical Chamber	Eaton Chamber	94455-1	1057	06/14/13	06/14/15
Antenna: Log-Periodic Chamber	Eaton	96005	1243	05/31/13	05/31/15
DC Power Supply	HP	6264B	2032A04119	05/06/13	05/06/15
Temperature Chamber LARGE	Tenney Engineering	TTRC	11717-7	08/19/14	08/19/16
AC Voltmeter	HP	400FL	2213A14728	06/26/13	06/26/15
Digital Multimeter	Fluke	77	35053830	08/22/13	08/22/15
Audio Analyzer	HP	8903B	3011A13084	08/22/13	08/22/15
DC Power Supply	HP	6286A	2411A09414	NA	NA
Frequency Counter Large Chamber	HP	5352B	2632A00165	06/26/13	06/26/15
Frequency Counter Small Chamber	HP	5385A	3242A07460	06/16/13	06/16/15
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	12/31/13	12/31/15
Audio Analyzer	HP	8903A	2336A03066	08/30/13	08/30/15
Temperature Chamber Small	Thermotron Corp.	S1.2 Mini Max	25-1420-09	08/20/14	08/20/16
EMI Test Receiver R & S ESIB 40	Rohde & Schwarz	ESIB 40	100274	08/12/14	08/12/16
Software: Field Strength Program	Timco	N/A	Version 4.0	NA	NA
Hygro-Thermometer	Extech	445703	0602	06/20/13	06/20/15
Signal Generator R & S SMIQ 02	Rohde & Schwarz	SMIQ02	DE24678	06/11/14	06/11/16
30 dB Attenuator	Narda	769-30	10267	03/15/13	03/15/15
Signal Generator HP 8648C	HP	8648C	3623A02898	08/29/13	08/29/15

* EMI RECEIVER SOFTWARE VERSION

The receiver firmware used was version 4.43 Service Pack 3

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