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FCC PART 95 SUBPART D
TEST REPORT
FOR CB TRANSCEIVERS

APPLICANT	UNIDEN AMERICA CORPORATION
	3001 GATEWAY DRIVE SUITE 130 IRVING TEXAS 75063
FCC ID	AMWUT416
MODEL NUMBER	BearTracker 885
PRODUCT DESCRIPTION	CB RADIO WITH SCANNING RECEIVER
DATE SAMPLE RECEIVED	3/16/2017
DATE TESTED	3/23/2017
TESTED BY	Tim Royer
APPROVED BY	Sid Sanders
TEST RESULTS	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

Report Number	Version Number	Description	Issue Date
331AUT17TestReport	Rev1	Initial Issue	4/10/2017
331AUT17TestReport	Rev1	Changed Applicable Standards Reference, Added 99% Occupied Bandwidth plot	4/19/2017

**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.

Summary

The device under test does:

- ☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- ☐ 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 at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32562

Tested by

Name and Title: Tim Royer, Project Manager/Testing Engineer

Date: 4/7/2017

Reviewed and approved by: _____

Name and Title: Sid Sanders, Engineer

Date: 4/11/17

APPLICANT: UNIDEN AMERICA CORPORATION
FCC ID: AMWUT416
REPORT: 422AUT17TestReport_Rev2

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GENERAL INFORMATION

EUT Specification

EUT Description	CB RADIO WITH SCANNING RECEIVER
FCC ID	AMWUT416
Model Number	BearTracker 885
Serial Number	N/A
Operating Frequency	26.965-27.405 MHz – 40 Channel
No. of Channels	40
Type of Emission	6K00A3E Bn = 2M M = 3000 Bn = 6000
Modulation	A3E
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 checked="" type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
Type of Equipment	<input type="checkbox"/> Fixed
	<input checked="" type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
Test Conditions	The temperature was 26°C with a relative humidity of 50-60%.
Applicable Standards	TIA-603:D, ANSI C63.4:2014 FCC CFR 47 PART 95
Modification of EUT	No modification



TEST REPORT SUMMARY

Rule Part No.	Scope of Work	Status Pass/Fail/NA
2.1046(a), 95.639	RF Power Output	Pass
2.1047(a)(b), 95.637	Modulation Characteristics	---
2.1049(c)(1), 95.635	Occupied Bandwidth	Pass
2.1051, 95.635	Antenna Conducted Emissions	Pass
2.1053, 95.635	Field Strength Spurious Emissions	Pass
2.1055 Part 95.625	Frequency Stability	Pass

RF POWER OUTPUT

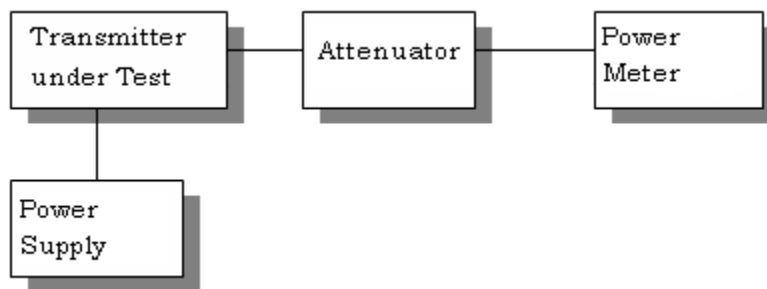
Rule Part No.: Part 2.1033(c), Part 95

Test Requirements: 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: 3.4514 Watts (35.38dBm)

Test Setup Diagram:



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

INPUT POWER: $(13.8\text{v}) (1.17\text{A}) = 16.15 \text{ Watts}$

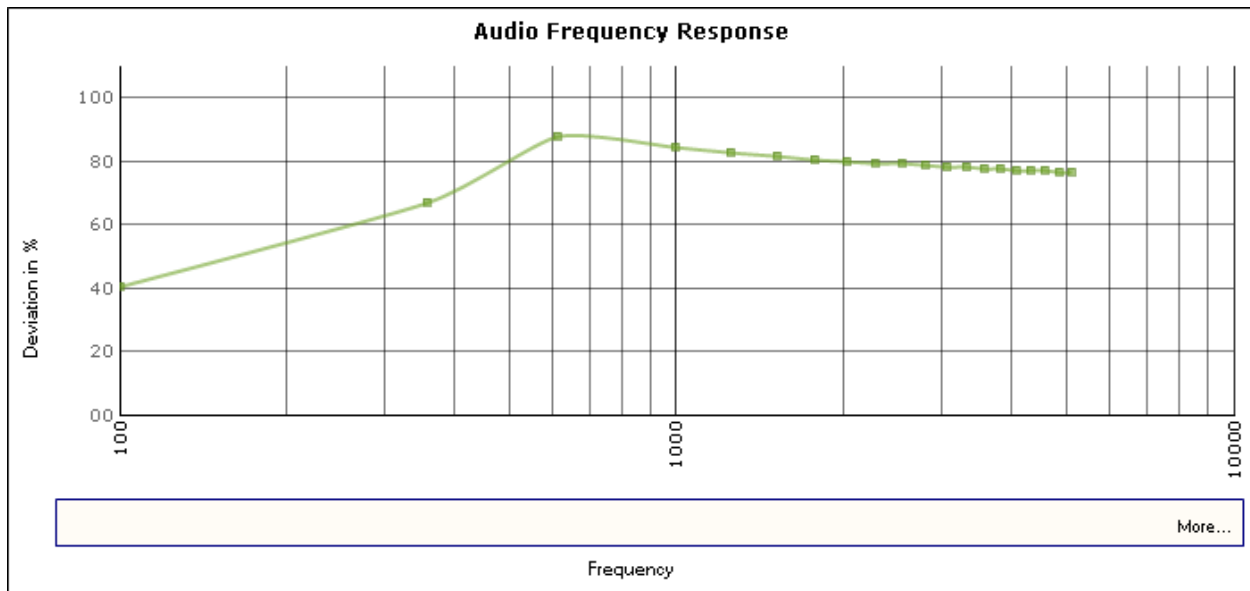
MODULATION CHARACTERISTICS

AUDIO FREQUENCY RESPONSE

Rule Part No.: Part 2.1047(a)

Method of Measurement:

The audio frequency response was measured in accordance with TIA-603: D with no exception. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 – 5000 Hz shall be submitted. The audio frequency response curve is shown below.



Results are for reporting Only

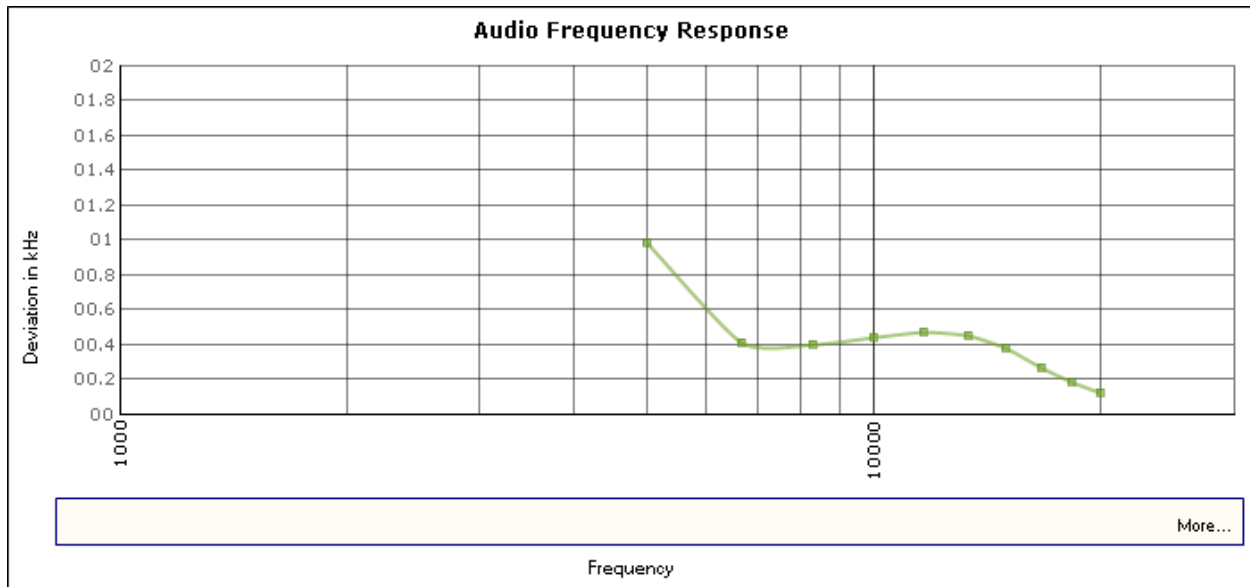
MODULATION CHARACTERISTICS

AUDIO FREQUENCY LOW FILTER RESPONSE

Rule Part No.: Part 2.1047(a)

Method of Measurement:

The audio frequency response was measured in accordance with TIA-603:D with no exception. A curve or equivalent data showing the frequency response of the audio low filter shall be submitted. The audio frequency low filter curve is shown below.



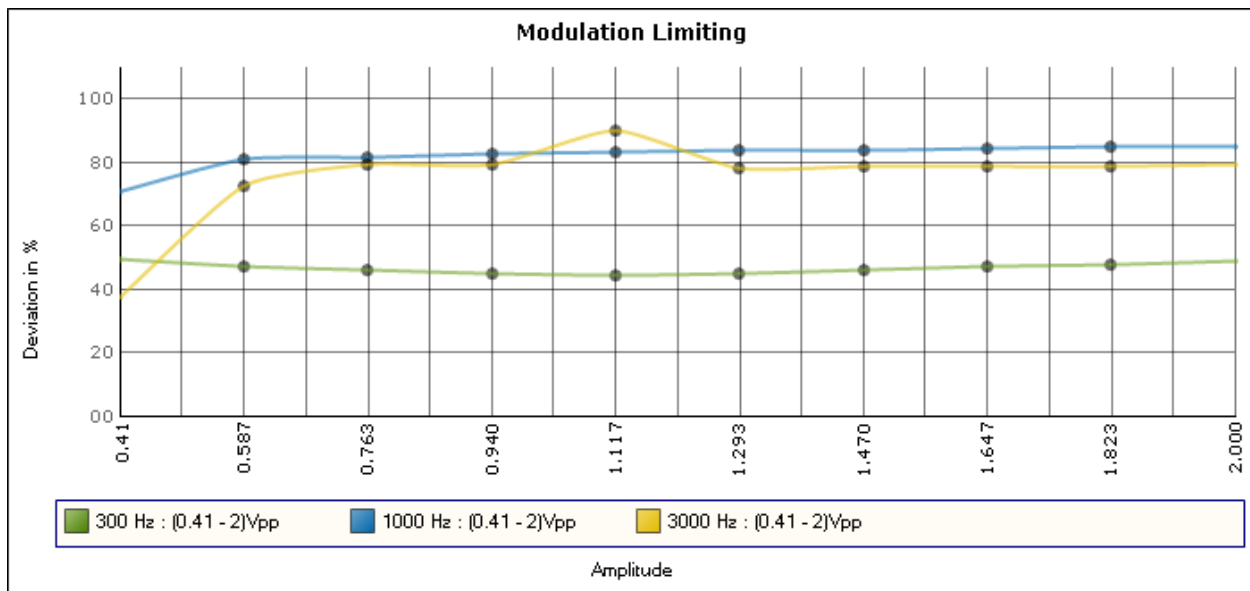
Results are for reporting Only

AUDIO INPUT VS MODULATION

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

Test Requirements: Modulation must be greater than 85% and cannot 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. Curves are provided for audio input frequencies of 300, 1000, and 3000 Hz.



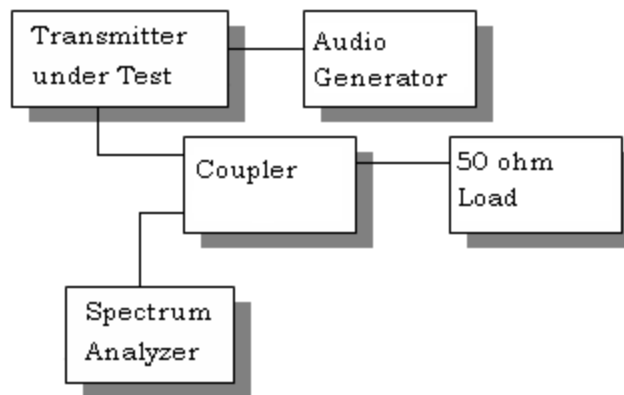
Results are for reporting Only

OCCUPIED BANDWIDTH

Rule Part No.: 2.1049, 95.631

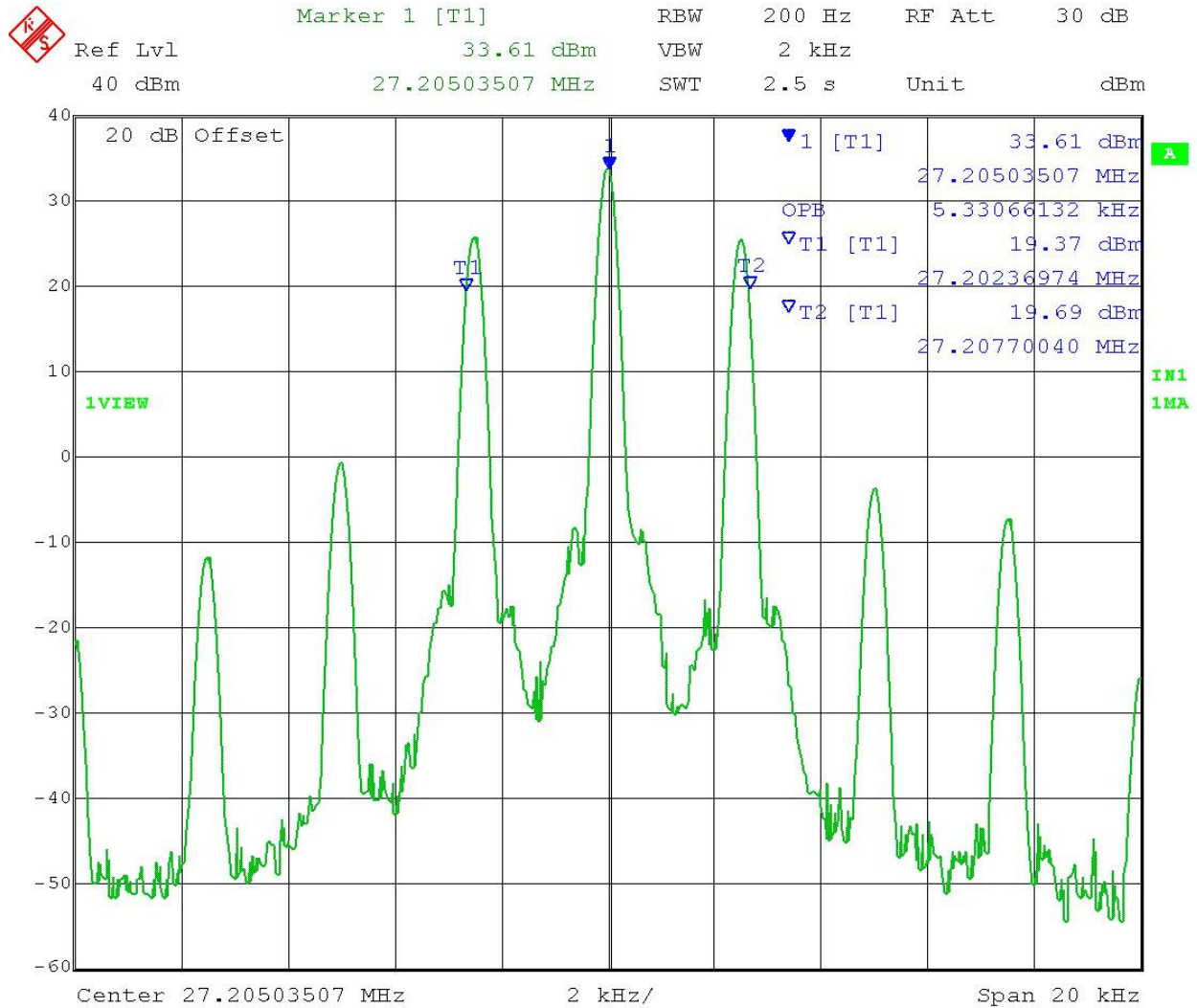
95.635(8) Data in the plots shows that the sidebands from greater than 50% to 100% of the authorized bandwidth must be attenuated by at least 25 dB and from 100 to 250% the sidebands must be attenuated by at least 35 dB. Beyond 250% the sidebands must be attenuated by at least $53 + 10\log (TP)$. The transmitter was modulated with 2500 Hz, adjusted for 50% modulation plus 16 dB. The spectrum analyzer was set with the unmodulated carrier at the top of the screen. The test procedure diagram and occupied bandwidth photographs follow.

Test procedure diagram



OCCUPIED BANDWIDTH PLOT

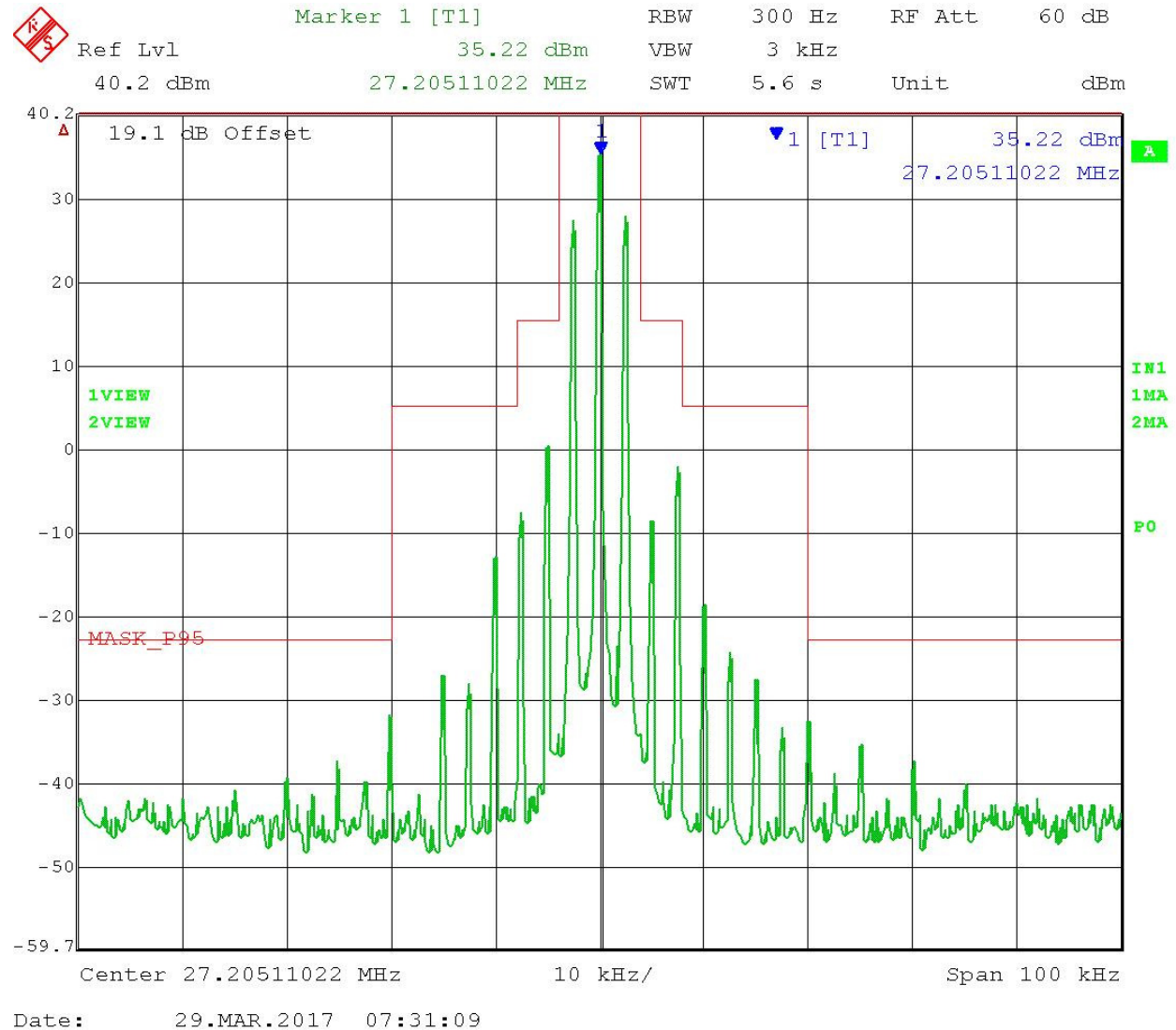
Test Data: 99% OBW Plot



Date: 27.MAR.2017 07:54:48

OCCUPIED BANDWIDTH PLOT

Test Data: Spectrum Mask Plot





SPURIOUS EMISSIONS AT ANTENNA TERMINALS (CONDUCTED)

Rule Part No.: Part 2.1051(a)

Requirements: $53 + 10 \log (P) = 59.0 \text{ dB}$. Any emissions above 54 MHz must be 60 dBc.

Method of Measurement: The carrier was modulated 100% using a 2500 Hz tone. 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 Data:

Test Data: Channel # 19

	dBm	Watts	Limit dBc
Mean Power Output	40.26	10.62	60
	Frequency MHz	Level dBc	Margin dB
	54.46	60	0.3
	81.69	65	4.6
	108.92	80	20.0
	136.15	82	21.7
	163.38	80	20.5
	190.61	74	14.2
	217.84	80	20.0
	245.07	81	21.3
	272.30	84	24.1

FIELD STRENGTH OF SPURIOUS EMISSIONS

Rule Parts. No.: Part 2.1053, 95.635(b) (8) (9)

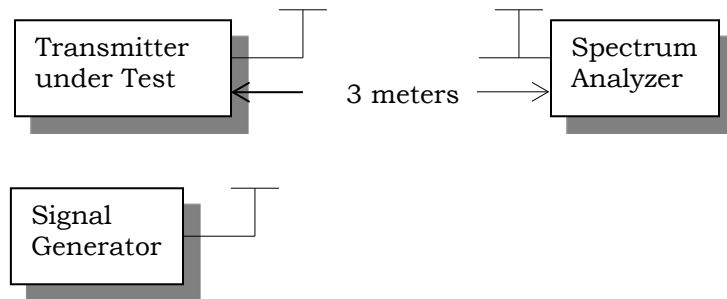
Requirements: Emissions must be attenuated by at least the following below the output of the transmitter.

At least $43 + 10\log(T)$ 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 TIA-603: Using the substitution method.

Test Setup Diagram:



Test Data:

FIELD STRENGTH OF SPURIOUS EMISSIONS

Test Data:

Tuned Freq MHz	Emission Frequency MHz	Antenna Polarity	erp (dBmW)	Margin
27.20	53.75	V	-61.3900	41.65
27.20	55.01	V	-51.4904	31.75
27.20	81.24	V	-61.3726	41.63
27.20	81.60	V	-58.7707	39.03
27.20	108.80	V	-49.5165	29.78
27.20	136.00	V	-56.5558	36.82
27.20	163.20	V	-54.2185	34.48
27.20	190.40	H	-47.6651	27.93
27.20	217.60	V	-61.6805	41.94
27.20	244.80	V	-59.8888	40.15
27.20	246.66	H	-62.4355	42.70
27.20	272.00	H	-55.5822	35.84

FREQUENCY STABILITY

Rule Parts. No.: 2.1055(a) (b) (d), 95.625(b)

Requirements: must be maintained within a frequency tolerance of 0.005%.

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 worst 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:

Temperature	Frequency MHz	Cycles	PPM
25°C (reference)	24205010		
-30°C	24205062	52000000	2.148
-20°C	24205058	48000000	1.983
-10°C	24205055	45000000	1.859
0°C	24205067	57000000	2.355
10°C	24205062	52000000	2.148
20°C	24205056	46000000	1.900
30°C	24204992	-18000000	-0.744
40°C	24205032	22000000	0.909
50°C	24205049	39000000	1.611

Battery Voltage	Frequency	Cycles	PPM
-15%	24205010	0	0.000
15%	24205010	0	0.000

EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Band Reject Filter 5.6 GHz	Micro-Tronics	BRM50716-02	-G008	05/13/16	05/13/18
24 Volt Power Supply	Astron	VLS-25M	9510040	N/A	N/A
12 Volt Power Supply	Astron	RS-12A	9312779	N/A	N/A
12 Volt Power Supply	Astron	VS-50M	9001191	N/A	N/A
Coaxial Cable - BMBM-0065-01 Black DC-2G	Belden		BMBM-0065-01	07/18/16	07/18/18
Attenuator K 6dB 2W DC-40G	Narda	4768-6	1044-3	06/25/15	06/25/17
DC Power Supply	HP	6286A	1744A03842	N/A	N/A
Antenna: Biconical 1096 Chamber	Eaton	94455-1	1096	07/14/15	07/14/17
Antenna: Log-Periodic 1122	Electro-Metrics	LPA-25	1122	07/14/15	07/14/17
Temperature Chamber LARGE	Tenney Engineering	TTRC	11717-7	09/01/16	09/01/18
Digital Multimeter	Fluke	77	35053830	10/21/15	10/21/17
Frequency Counter Large Chamber	HP	5352B	2632A00165	07/01/15	07/01/17
Coaxial Cable - Chamber 3 cable set (backup)	Micro-Coax	Chamber 3 cable set (backup)	KMKM-0244-02 ; KMKM-0670-01; KFKF-0197-00	N/A	N/A
CHAMBER	Panashield	3M	N/A	04/25/16	12/31/17
Sweep/Signal Generator	Anritsu	68369B	985112	10/28/15	10/28/17
EMI Test Receiver R & S ESIB 40 Screen Room	Rohde & Schwarz	ESIB 40	100274	08/16/16	08/16/18

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Software: Field Strength Program	Timco	N/A	Version 4.10.7.0	N/A	N/A
Antenna: Active Loop	ETS-Lindgren	6502	00062529	11/18/15	11/18/17
Type K J Thermometer	Martel	303	080504494	10/26/15	10/26/17
Modulation Analyzer	HP	8901A	3050A05856	04/16/15	04/16/17
EMI Test Receiver R & S ESU 40 Chamber	Rohde & Schwarz	ESU 40	100320	04/01/16	04/01/18
Coaxial Cable - BMBM- 0130-00 Black	Alpha Wire		BMBM-0130- 00	05/24/16	05/24/18
Function Generator	Standford	DS340	25200	02/02/16	02/02/18
Attenuator N 20dB 2W DC- 13G	Narda	757C	30201	05/22/15	05/22/17
Tunable Notch Filter 15-30 MHz	Eagle	TNF-200	15-30 MHz (# 17)	07/01/15	07/01/17
Bore-sight Antenna Positioning Tower	Sunol Sciences	TLT2	N/A	N/A	N/A

*** EMI RECEIVER SOFTWARE VERSION**

The receiver firmware used was version 4.43 Service Pack 3