Test Report

Prepared for: Icom Incorporated

Model: ID-50A

Description: Amateur Radio

Serial Number: 00000202

FCC ID: AFJ438900
IC: 202D-438900

To

FCC Part 15.121

And

IC RSS-215 Issue 2 (June 2009)
IC RSS-135 Issue 2 (June 2009)

Date of Issue: May 17, 2023

On the behalf of the applicant:

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Project No: p2340012

John Michalowicz
Project Test Engineer

Test Results Summary

FCC Specification	ISED Specification	Test Name	Pass, Fail, N/A	Comments
15.109(f), 15.111(a)	RSS 215 5.1 RSS Gen 7.4	Conducted Spurious Emissions	Pass	
15.109	RSS 215 5.1 RSS Gen 7.3	Radiated Spurious Emissions	Pass	
15.107	RSS Gen 7.2	AC Powerline Conducted Emissions	Pass	
15.121(b)	NA	Rejection	N/A	EUT is not capable of operating in the Part 22 Cellular Radiotelephone band

Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	May 17, 2023	John Michalowicz	Original Document
2.0	June 9, 2023	John Michalowicz	Updated tunable frequency range in Additional Information

Current revision of the test report replaces any prior versions. Only the current version of the test report is valid.

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The applicant has been cautioned as to the following

FCC

15.21 – Information to user

The user's manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) – Special Accessories

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in the part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer without an additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in §2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

ANAB

Compliance Testing, LLC, has been accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to the joint ISO-ILAC-IAF Communiqué dated January 2009).

The tests results contained within this test report all fall within our scope of accreditation.

Please refer to http://www.compliancetesting.com/labscope.html for current scope of accreditation.

FCC Site Reg. #349717

IC Site Reg. #2044A-2

Standard Test Conditions Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing: FCC Part 15.121.

In accordance with ANSI C63.10-2014 and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104°F), unless the particular equipment requirements specified testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

Environmental Conditions		
Temperature (°C)	**Humidity (%)**	**Pressure (mbar)**
25.5	32.4	967.5

EUT Description
Model: ID-50A
Description: Transceiver with scanning receiver
Serial Number: 00000202
Additional Information:
Device under test is a VHF AM/FM transceiver with the scanning receiver that works in the 88-174 MHz and 375 – 479 MHz ranges. It works with a Li-ion battery and comes with a rapid charger. It has an external SMA antenna connector with a 50 Ohms impedance.

The transmitter is used for amateur radio service per Part 97 and is exempt from FCC certification.
As stated at one of the FCC Wireless Telecommunications Bureau (WTB) websites for Part 97, the FCC (OET) equipment authorization program does not generally apply to amateur radio service station transmitters.

The scanning receiver was tested to comply with part47 CFR 15.109, 15.111, and 15.121.

This scanning receiver upper operating range is up to 479 MHz, and is not capable of scanning in the Part 22 Cellular Radiotelephone Service band per 15.121(a)(1). Therefor this scanning receiver meets the requirements of section 15.121 (b) by design since it cannot receive any signals above 479 MHz.

EUT Operation during Tests
Receiver was tested on both scanning and non-scanning modes.

Accessories:

Qty	Description	Manufacturer	Model	S/N
1	I.T.E. Power Supply	ICOM	BC-167SA	N/A

Cables: None

Modifications: None

Conducted Spurious Emissions

Engineer: John Michalowicz

Test Date: 5/15/2023

Test Procedure

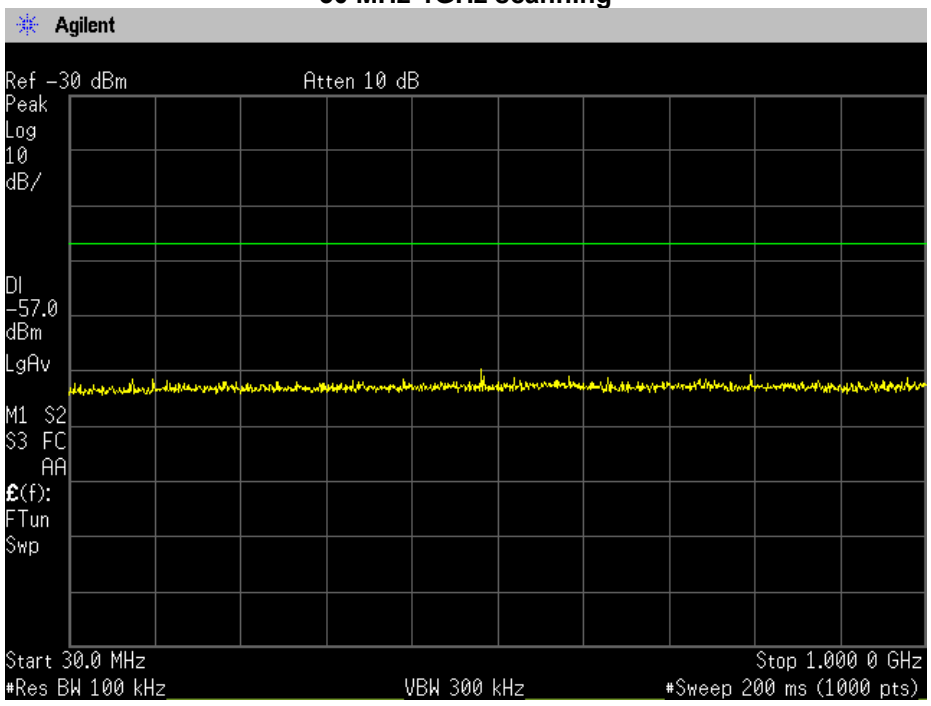
Per FCC section 15.109(f), For a receiver which employs terminals for the connection of an external receiving antenna, the receiver shall be tested to demonstrate compliance with the provisions of this section with an antenna connected to the antenna terminals unless the antenna conducted power is measured as specified in §15.111(a).

FCC section 15.111(a) states: In addition to the radiated emission limits, receivers that operate (tune) in the frequency range 30 to 960 MHz and CB receivers that provide terminals for the connection of an external receiving antenna may be tested to demonstrate compliance with the provisions of §15.109 with the antenna terminals shielded and terminated with a resistive termination equal to the impedance specified for the antenna, provided these receivers also comply with the following: With the receiver antenna terminal connected to a resistive termination equal to the impedance specified or employed for the antenna, the power at the antenna terminal at any frequency within the range of measurements specified in §15.33 shall not exceed 2.0 nanowatts.

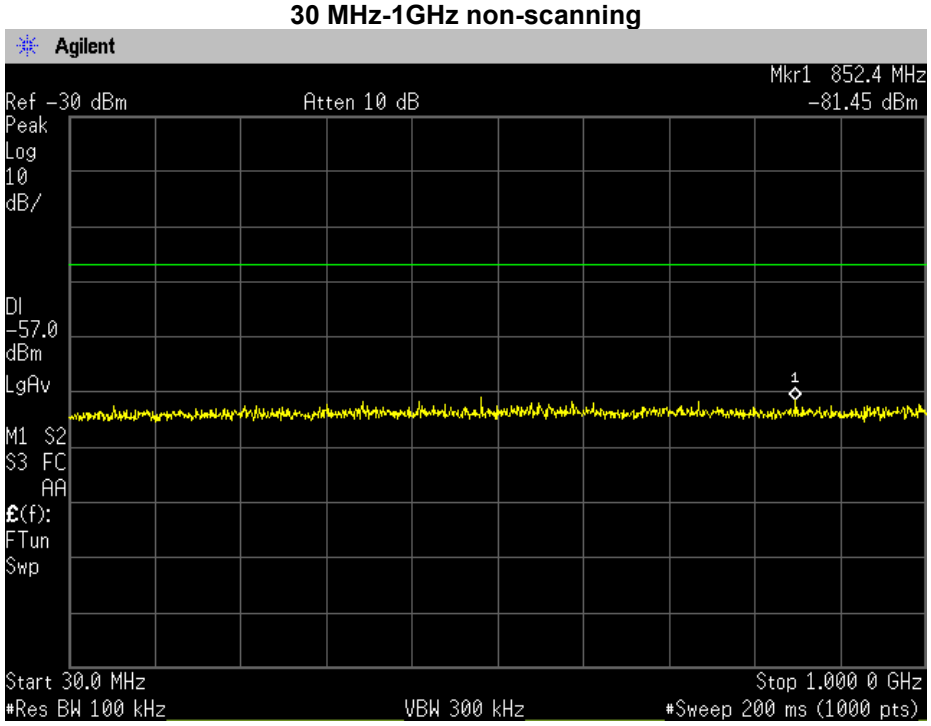
The EUT was connected as shown in the test set-up and tested at both scanning and non-scanning modes. All signals measured at the receiver antenna port were below 2 nanowatts (-57 dBm) for upto 1 GHz and 5 nanowatts (-54 dBm) for above 1 GHz.

Test Results

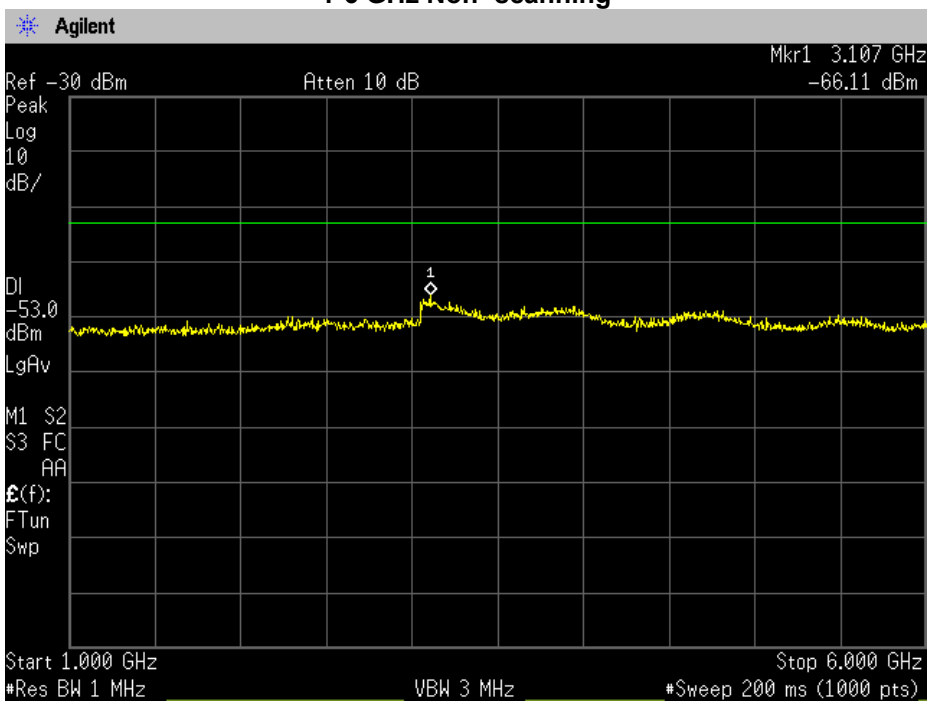
30 MHz-1GHz scanning



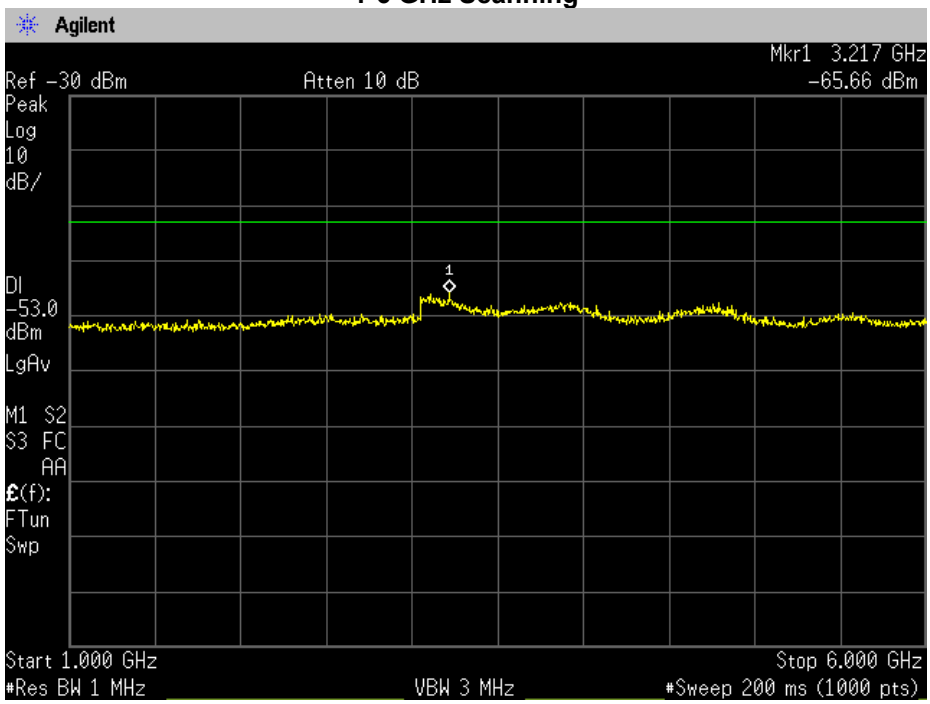
30 MHz-1GHz non-scanning



1-6 GHz Non- scanning



1-6 GHz Scanning



15.107 A/C Powerline Conducted Emissions

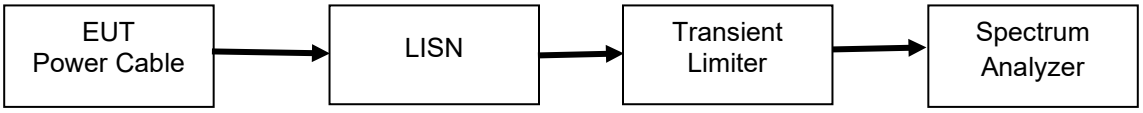
Engineer: John Michalowicz

Test Date: 5/16/23

Test Procedure

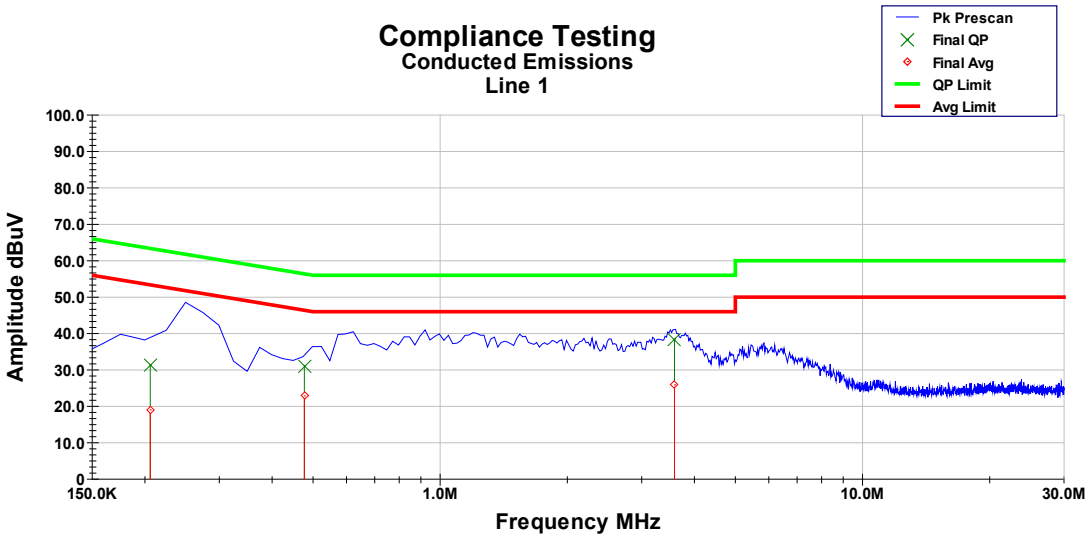
The EUT power cable was connected to a LISN and the monitored output of the LISN was connected to a transient limiter, which then connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were measured and compared to the specification limits.

Test Setup

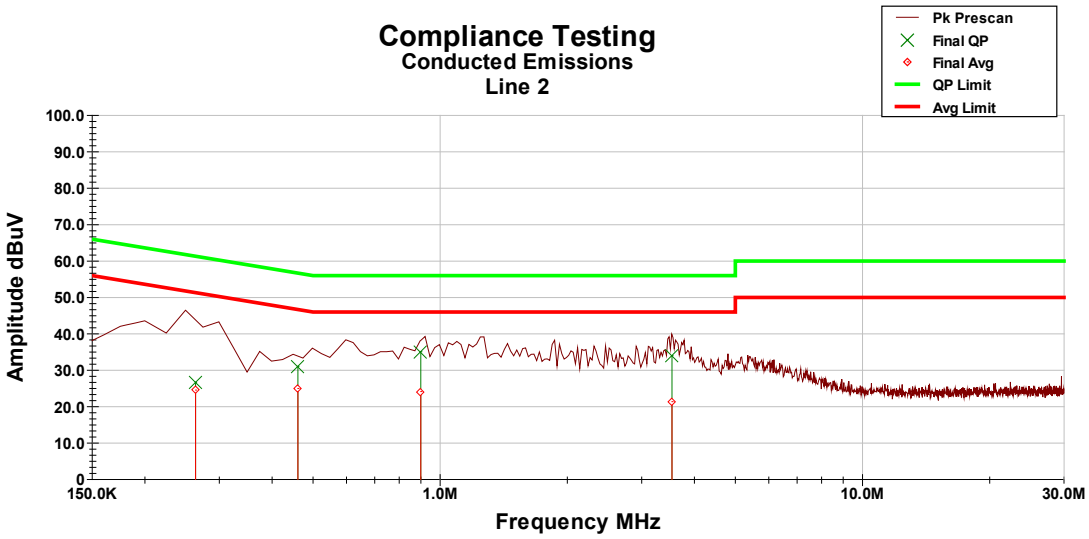


Conducted Emissions Test Results

Line 1 Peak Plot



Line 2 Peak Plot



All peak readings are below the quasi peak and average limits; therefore, no tabular data was recorded.

15.109 Radiated Emissions

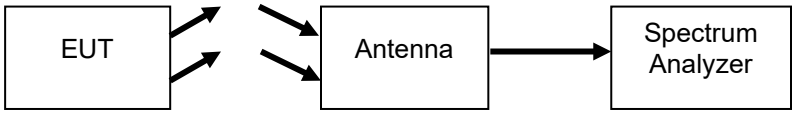
Engineer: John Michalowicz

Test Date: 5/16/2023

Test Procedure

The EUT was tested in a semi-anechoic chamber with the turntable set 3m from the receiving antenna. A spectrum analyzer was used to verify that the EUT met the requirements for Radiated Emissions. The EUT was tested by rotating it 360 degrees with the antennas in both the vertical and horizontal orientation while raised from 1 to 4 meters to ensure the signal levels were maximized. All emissions from 30 MHz to 1 GHz were examined.

Test Setup



Settings below 1 GHz

RBW = 120 KHz

VBW = 300 KHz

Detector – Quasi Peak

Settings above 1 GHz

RBW = 1 MHz

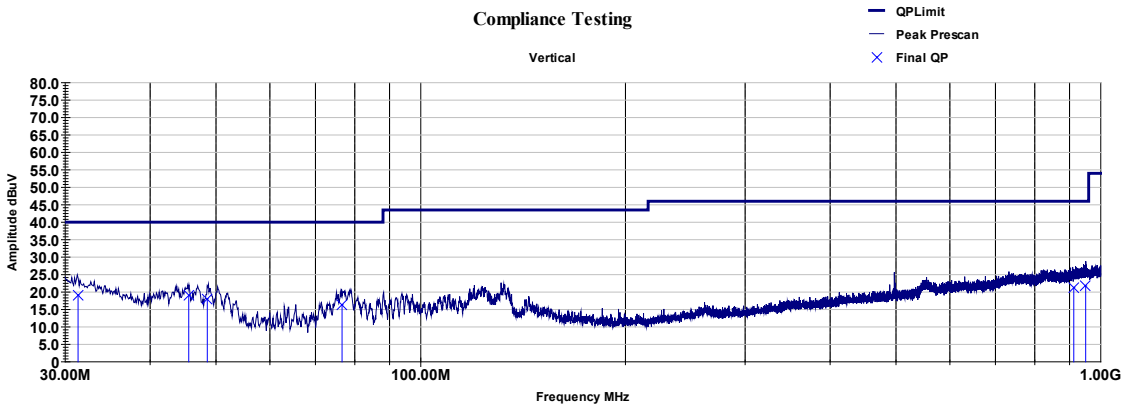
VBW = 3 MHz

Detector – Peak

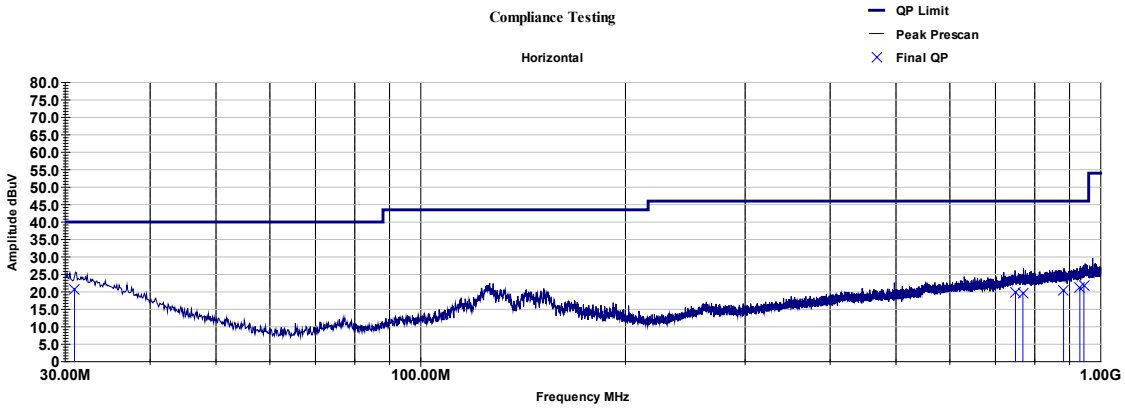
Sample Calculations

Corrected Value = Measured Value + Correction factor

Correction factor = ACF + Cable loss

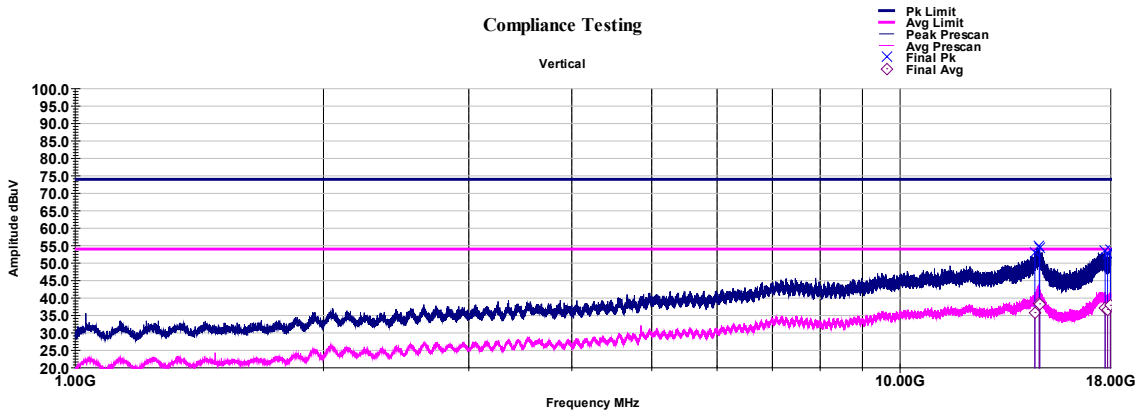


Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
31.335	86.00	120.00	40.70	-21.60	19.10	40.00	-20.90
45.585	191.00	105.00	48.14	-29.14	19.00	40.00	-21.00
48.542	348.00	100.00	48.73	-30.70	18.00	40.00	-22.00
76.619	236.00	100.00	48.39	-32.06	16.30	40.00	-23.70
912.791	163.00	100.00	32.85	-11.54	21.30	46.00	-24.70
950.209	143.00	175.00	32.58	-10.85	21.70	46.00	-24.30
Final = Raw + Path Loss							
Margin = Final - Limit							

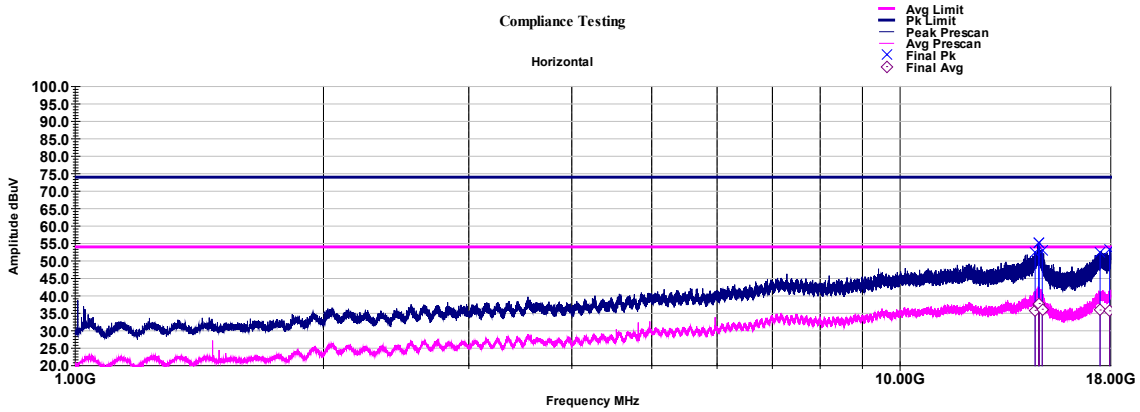


Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
30.958	330.00	365.00	40.49	-19.68	20.80	40.00	-19.20
749.292	258.00	100.00	33.21	-13.38	19.80	46.00	-26.20
768.247	151.00	132.00	33.06	-13.43	19.60	46.00	-26.40
881.809	261.00	394.00	32.62	-12.19	20.40	46.00	-25.60
931.757	344.00	105.00	32.41	-11.20	21.20	46.00	-24.80
944.556	340.00	390.00	32.64	-10.98	21.70	46.00	-24.30
Final = Raw + Path Loss							
Margin = Final - Limit							

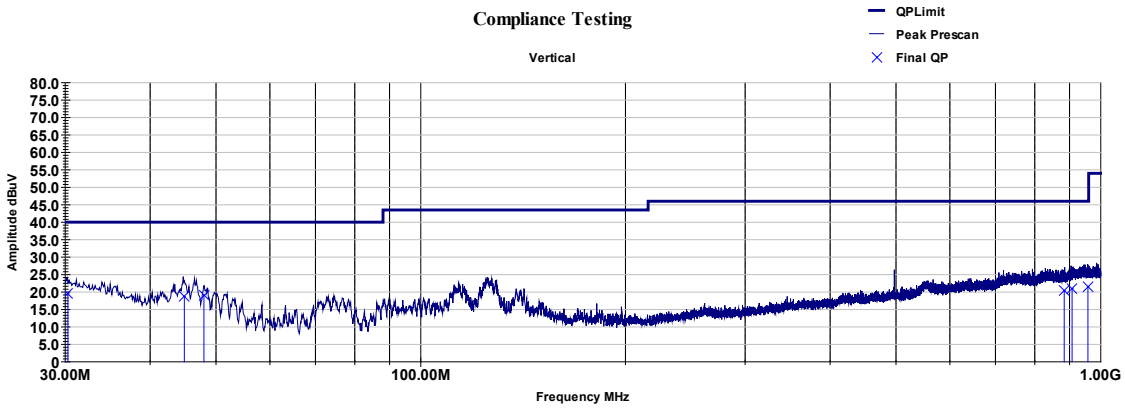
Scanning 1- 18 GHz



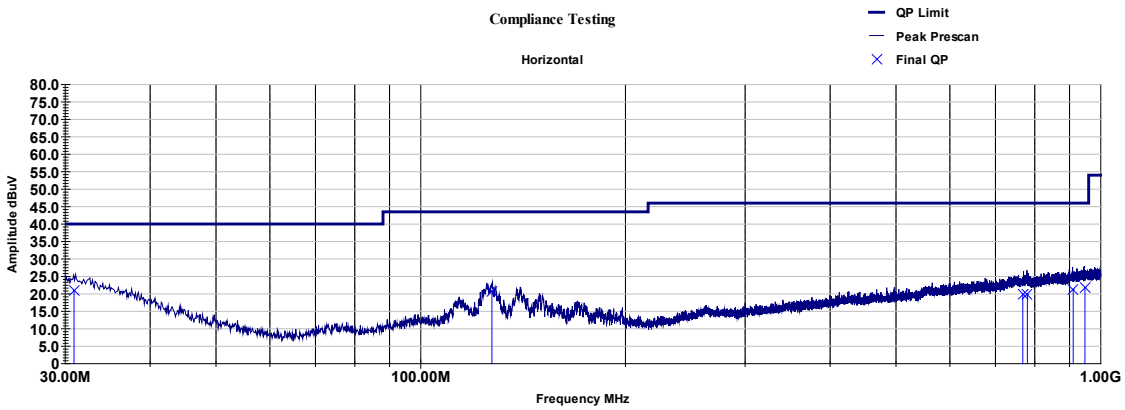
Frequency	Azimuth	Height	Raw Pk	Raw Avg	Correction	Final Pk	Pk Limit	Pk Margin	Final Avg	Avg Limit	Avg Margin
MHz	deg	cm	dBuV	dBuV	dB	dBuV/m	dBuV/m	dB	dBuV/m	dBuV/m	dB
14563299750	310.00	151.00	37.64	20.34	15.49	53.13	74.00	-20.87	35.84	54	-18.16
14744196000	105.00	395.00	38.42	21.82	16.55	54.97	74.00	-19.03	38.38	54	-15.62
14763886500	310.00	395.00	38.05	21.98	16.35	54.40	74.00	-19.60	38.33	54	-15.67
17722932250	256.00	395.00	38.46	21.86	15.19	53.65	74.00	-20.35	37.05	54	-16.95
17843713000	22.00	100.00	37.81	21.80	14.89	52.70	74.00	-21.31	36.68	54	-17.32
17982103750	310.00	395.00	38.65	22.64	15.25	53.90	74.00	-20.10	37.89	54	-16.11
Final = Raw + Path Loss											
Margin = Final - Limit											



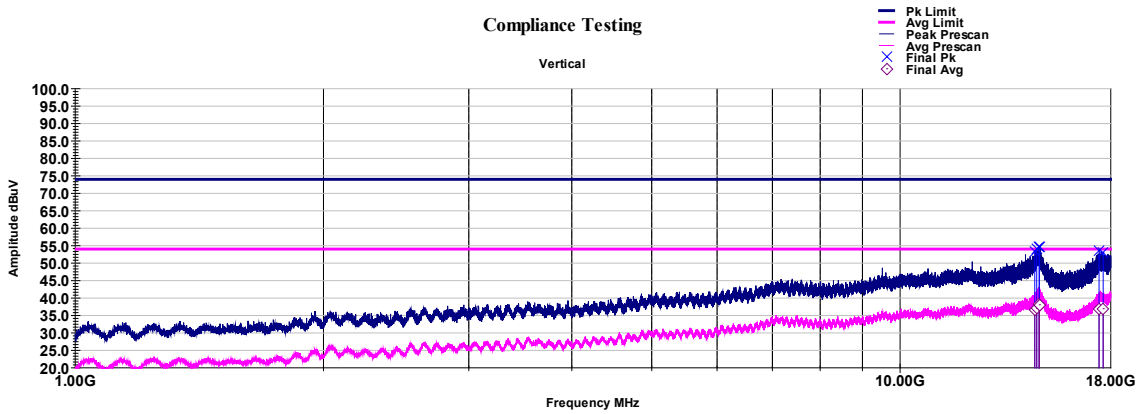
Frequency	Azimuth	Height	Raw Pk	Raw Avg	Correction	Final Pk	Pk Limit	Pk Margin	Final Avg	Avg Limit	Avg Margin
MHz	deg	cm	dBuV	dBuV	dB	dBuV/m	dBuV/m	dB	dBuV/m	dBuV/m	dB
14576999500	304.00	400.00	36.82	20.16	15.66	52.48	74.00	-21.52	35.82	54	-18.18
14718736750	336.00	100.00	38.51	20.78	16.70	55.20	74.00	-18.80	37.48	54	-16.53
14747142250	89.00	132.00	38.54	21.25	16.54	55.08	74.00	-18.92	37.79	54	-16.21
14870096000	342.00	162.00	38.06	21.13	15.03	53.09	74.00	-20.91	36.16	54	-17.84
17474291250	0.00	223.00	36.91	20.30	15.65	52.55	74.00	-21.45	35.95	54	-18.05
17945161750	18.00	390.00	38.28	20.61	15.10	53.38	74.00	-20.62	35.71	54	-18.29
Final = Raw + Path Loss											
Margin = Final - Limit											



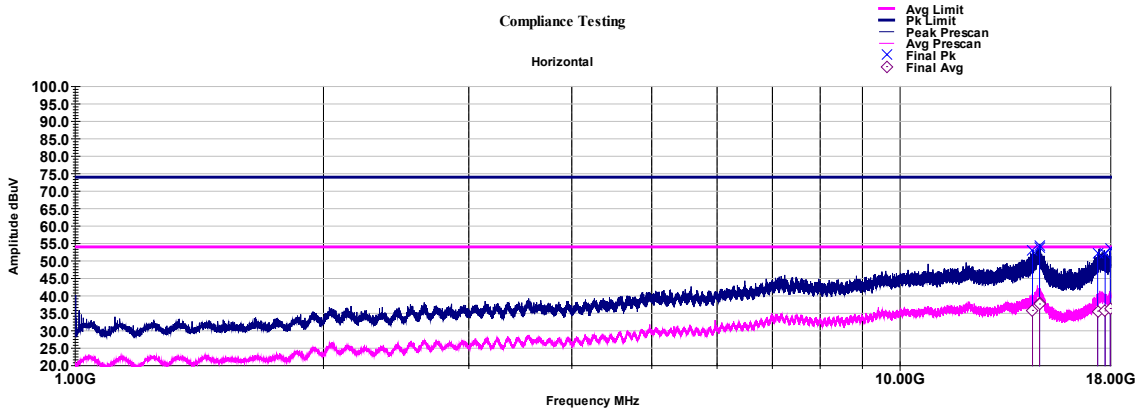
Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
30.286	231.00	166.00	40.56	-21.05	19.50	40.00	-20.50
44.915	187.00	105.00	47.46	-28.79	18.70	40.00	-21.30
47.989	15.00	100.00	49.52	-30.41	19.10	40.00	-20.90
883.736	296.00	326.00	32.62	-12.22	20.40	46.00	-25.60
907.627	237.00	132.00	32.61	-11.65	21.00	46.00	-25.00
957.536	10.00	389.00	32.34	-10.76	21.60	46.00	-24.40
Final = Raw + Path Loss							
Margin = Final - Limit							



Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
30.915	160.00	175.00	40.47	-19.66	20.80	40.00	-19.20
127.236	270.00	325.00	47.21	-26.52	20.70	43.50	-22.80
768.027	261.00	136.00	33.21	-13.43	19.80	46.00	-26.20
780.197	153.00	147.00	33.24	-13.40	19.80	46.00	-26.20
911.088	166.00	100.00	32.92	-11.64	21.30	46.00	-24.70
947.918	167.00	100.00	32.78	-10.97	21.80	46.00	-24.20
Final = Raw + Path Loss							
Margin = Final - Limit							



Frequency	Azimuth	Height	Raw Pk	Raw Avg	Correction	Final Pk	Pk Limit	Pk Margin	Final Avg	Avg Limit	Avg Margin
MHz	deg	cm	dBuV	dBuV	dB	dBuV/m	dBuV/m	dB	dBuV/m	dBuV/m	dB
14563120250	339.00	359.00	37.77	21.07	15.49	53.27	74.00	-20.74	36.56	54	-17.44
14640772000	100.00	325.00	37.75	20.64	16.40	54.15	74.00	-19.85	37.04	54	-16.96
14741714250	164.00	372.00	38.07	21.67	16.57	54.64	74.00	-19.36	38.23	54	-15.77
14750251250	246.00	320.00	38.18	21.55	16.52	54.70	74.00	-19.30	38.07	54	-15.93
17424293000	47.00	376.00	38.14	21.41	15.45	53.59	74.00	-20.41	36.86	54	-17.14
17625485750	281.00	368.00	37.38	21.43	15.51	52.89	74.00	-21.11	36.93	54	-17.07
Final = Raw + Path Loss											
Margin = Final - Limit											



Frequency	Azimuth	Height	Raw Pk	Raw Avg	Correction	Final Pk	Pk Limit	Pk Margin	Final Avg	Avg Limit	Avg Margin
MHz	deg	cm	dBuV	dBuV	dB	dBuV/m	dBuV/m	dB	dBuV/m	dBuV/m	dB
14470479250	216.00	100.00	38.61	21.43	14.39	53.00	74.00	-21.00	35.82	54	-18.18
14756048750	0.00	100.00	37.36	21.50	16.45	53.80	74.00	-20.20	37.95	54	-16.05
14756048750	0.00	100.00	37.36	21.50	16.45	53.80	74.00	-20.20	37.95	54	-16.05
14756048750	0.00	100.00	37.36	21.50	16.45	53.80	74.00	-20.20	37.95	54	-16.05
14756308500	107.00	400.00	37.80	21.21	16.44	54.25	74.00	-19.76	37.65	54	-16.35
14756048750	0.00	100.00	37.36	21.50	16.45	53.80	74.00	-20.20	37.95	54	-16.05
17357183500	0.00	105.00	37.21	20.55	15.08	52.29	74.00	-21.71	35.63	54	-18.37
17723188000	251.00	373.00	36.85	20.50	15.19	52.04	74.00	-21.96	35.70	54	-18.30
17981003750	166.00	352.00	38.20	21.12	15.25	53.45	74.00	-20.55	36.37	54	-17.63

Final = Raw + Path Loss

Margin = Final - Limit

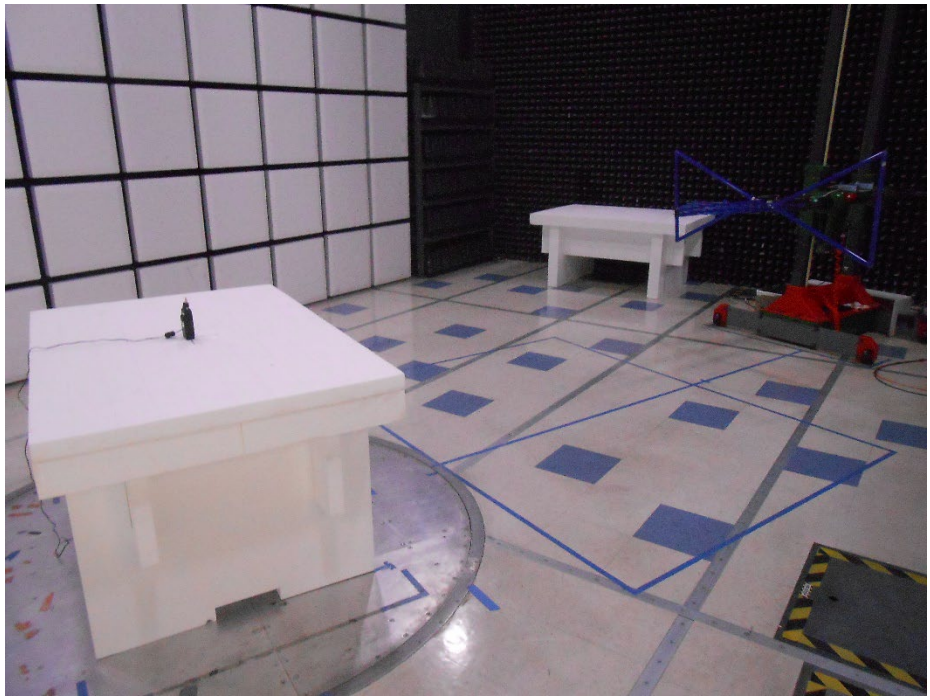
Test Equipment Utilized

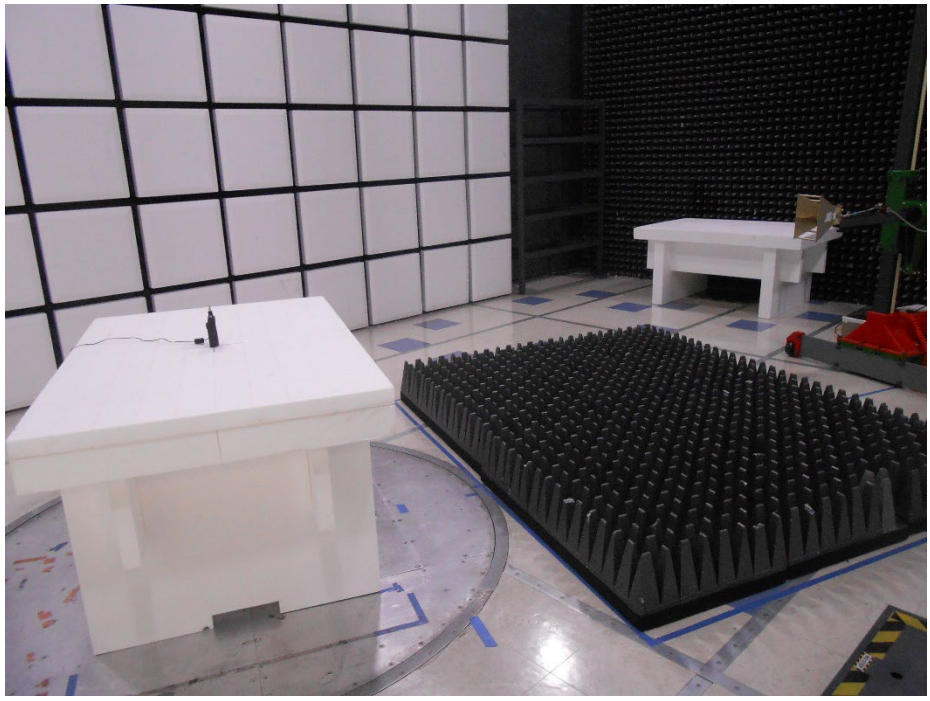
Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
EMI Receiver	Hewlett Packard	85462A	i00033	6/14/22	6/14/23
Horn Antenna	ARA	DRG-118/A	i00271	08/11/22	08/10/24
Bilog antenna	Teseq	CBL 6111C	i00267	8/10/22	8/10/24
LISN	COM-Power	LI-125A	i00447	4/19/22	4/19/24
LISN	COM-Power	LI-125A	i00449	4/19/22	4/19/24
EMI Receiver	Keysight	N9038A	i00552	02/23/23	02/23/24
Semi-Anechoic Chamber	CT	N/A	i00276	6/27/22	6/27/23
Preamplifier (0.01-50GHz)	Eravant	SBB-0115034018-2F2F-E3	i00650	N/A	N/A
Temp./humidity/pressure monitor (CI station)	Omega Engineering	iBTHX-W-5	i00686	1/5/23	1/5/24
Tile7	ETS-Lindgren	7.7.1.5	i00548	n/a	

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT

Radiated Emissions Test Setup Photos





A/C Conducted Emissions Test Setup Photos