

Test Report

Prepared for: Icom Incorporated

Model: IC-7610

HF Transceiver with Scanning Receiver

Serial Number: 00000091

Project No: p2540009

FCC ID: AFJ38400

Test Results: Pass

To

FCC Part 15.121

Date of Issue: May 30, 2025

On the behalf of the applicant:

Icom Incorporated
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Japan

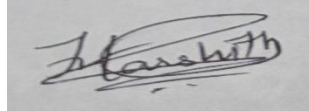
Attention of:

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Prepared By:

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Reviewed / Authorized By:



Harshith Devaraja, EMC Engineer

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Test Results Summary

Test Date Range: May 27, 2025 – May 30, 2025

Specification	Test Name	Pass, Fail, N/A	Comments
FCC			
FCC 15.107	A/C Powerline Conducted Emissions	Pass	Tested with DC source
FCC 15.109	Radiated Emissions	Pass	
15.109(f), 15.111(a)	Conducted Spurious Emissions	Pass	
15.121(b)	Rejection	N/A	EUT is not capable of operating in the Part 22 Cellular Radiotelephone band
Method Deviations/Additions: No			

Statements of conformity are reported as:

- Pass - the measured value is below the acceptance limit, *acceptance limit = test limit*.
- Fail - the measured value is above the acceptance limit, *acceptance limit = test limit*.

References/Methods	Description
ANSI C63.4-2014	Method and Measurements of Radio-Noise Emissions from low-Voltage Electrical and Electronic Equipment in the range 9kHz to 40GHz.
ANSI C63.10: 2020	American National Standard of Protection for Compliance Testing of unlicensed Wireless Devices.
ISO/IEC 17025:2017	General requirements for the Competence of Testing and Calibrations Laboratories

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	May 30, 2025	Harshith Devaraja	Original Document

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

EUT Description

Model:	IC-7610
Serial:	00000091
Description:	HF Transceiver with Scanning Receiver
Additional Information:	The receiver is powered by 13.8 vdc. Receiver Frequency Ranges: 0.030 – 60 MHz Transmitter Frequency Ranges: Refer to user manual This test report contains test data to support a Class II Permissive Change due to the following component changes: 1. PA UNIT 2. TUNER UNIT 3. RF UNIT 4. MAIN CPU The manufacturer claims that the specifications for the changes are as follows: 1. The new components are pin-for-pin compatible. 2. New components have the same basic function as the old ones. 3. No change in radio parameters has occurred. Usage: Table/Desktop
Receipt of Sample(s):	May 15, 2025
EUT Condition:	Visual Damage No State of Development Production/Production Equivalent

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 60 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 60 MHz.

EUT PHOTO



Notifications

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.

Note: These notices are specific to the methods and standards related to the testing within this report. Customers should also consider and review additional legal regulations for import/export documentation and labeling for the countries and geographies under consideration by the manufacturer.

Test and Measurement Data

Standard Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing: FCC Part15.121.

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.

Standard Test Conditions and Engineering Practices

Unless otherwise indicated in the specific measurement results, the ambient temperature was maintained within the range of 10° to 40°C (50° to 104°F) and the relative humidity levels were in the range of 10% to 90%.

Environmental Conditions		
Temperature (°C)	Humidity (%)	Barometric Pressure (mbar)
24.4	25.6	967

Test Setup and Modes of Operation

EUT Operation during Tests

The receiver was tested in normal operating mode.

EUT:

Qty	Description	Manufacturer	Model	S/N
1	HF Transceiver with Scanning Receiver	ICOM Inc	IC-7610	00000091

Accessories:

Qty	Description	Manufacturer	Model	S/N
1	DC Power source	Compliance Testing LLC	I00724	N/A

Cables:

Qty	Description	Length (M)	Ferrites (Y/N)	Shielding Y/N	Shielded Hood Y/N	Termination / Connection
1	DC power supply cable	2	N	N	N	Power source-- EUT

Modifications to EUT(s) None

15.107 A/C Powerline Conducted Emissions

Engineer: Harshith Devaraja

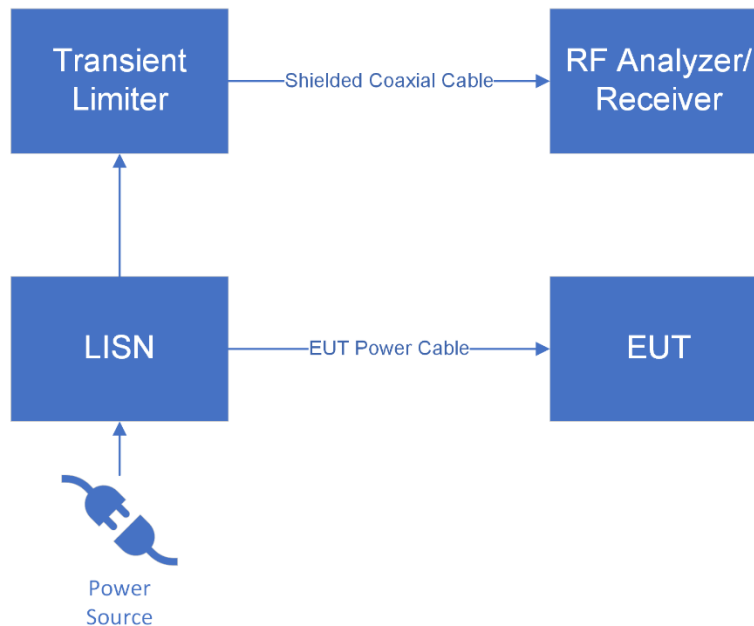
Test Date: May 30, 2025

Test Procedure

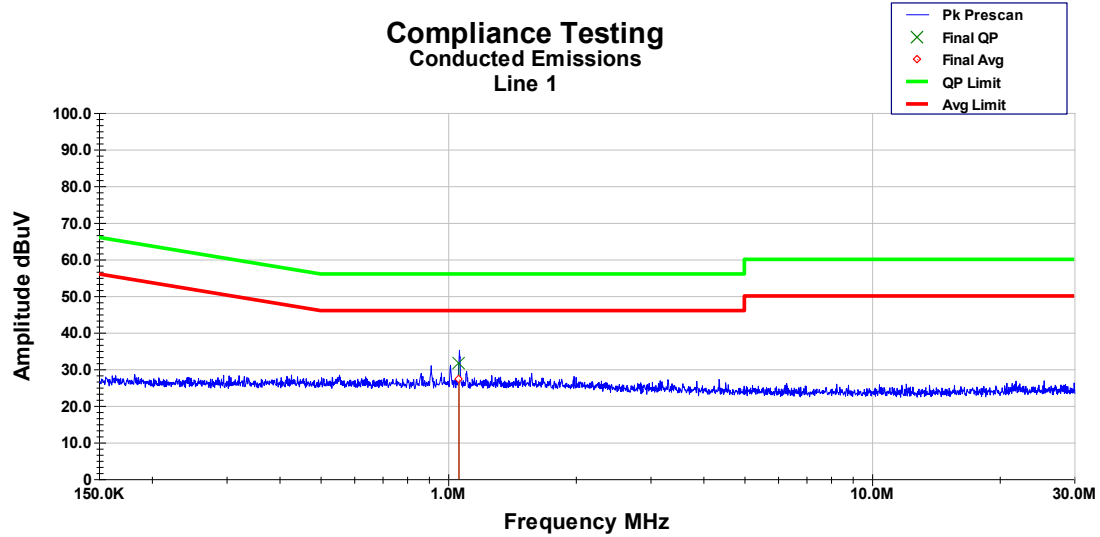
The EUT power cable was connected to a LISN and the monitored output of the LISN was connected to a transient limiter, which then connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were measured and compared to the specification limits.

The EUT is powered by 13.8 vdc. The EUT was powered from a automotive battery at 12.8 vdc. There were no emissions from the 13.8 vdc input port as shown in the test data on the next page.

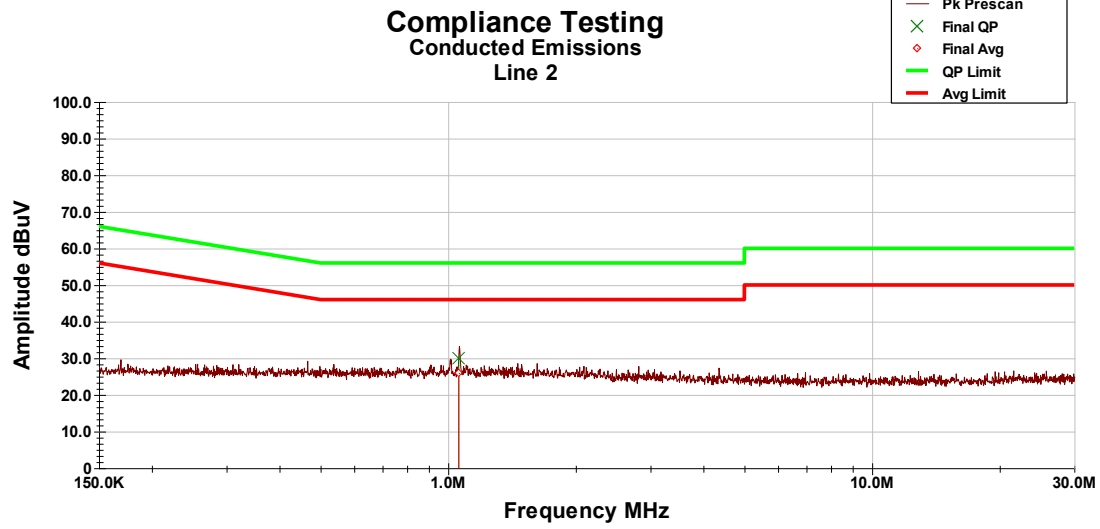
Basic Test Setup



Conducted Emissions Test Results



Frequency (MHz)	Raw QP dBuV	Raw Avg dBuV	Path Loss dB	Final QP dBuV	Final Avg dBuV	QP Limit dBuV	QP Margin dB	Avg Limit dBuV	Avg Margin dB
1.0606 MHz	21.50	17.10	10.10	31.60	27.20	56.00	-24.40	46.00	-18.80
Final = Raw + Path Loss									
Margin = Final - Limit									



Frequency (MHz)	Raw QP dBuV	Raw Avg dBuV	Path Loss dB	Final QP dBuV	Final Avg dBuV	QP Limit dBuV	QP Margin dB	Avg Limit dBuV	Avg Margin dB
1.0595 MHz	19.84	15.90	10.10	29.90	25.90	56.00	-26.10	46.00	-20.10
Final = Raw + Path Loss									
Margin = Final - Limit									

Conducted Emissions Test Setup Photo



15.109 Radiated Emissions

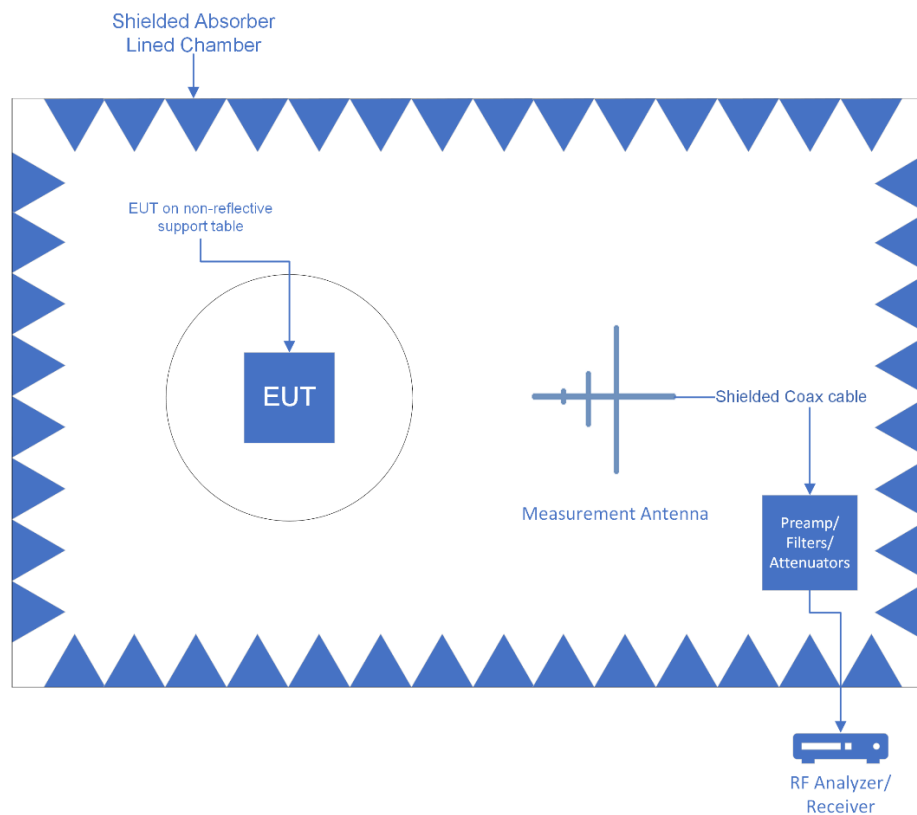
Engineer: John Michalowicz

Test Date: May 27, 2025

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.

Basic Test Setup



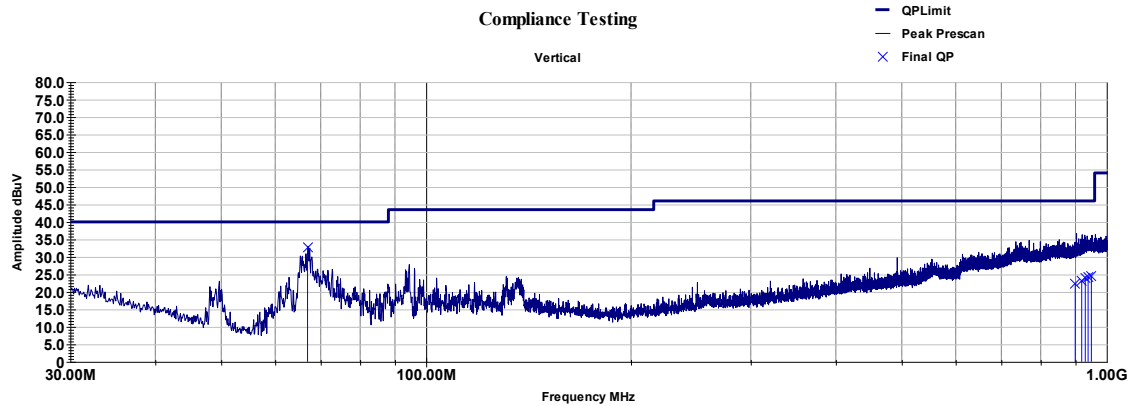
	Settings Below 1GHz	Settings Above 1GHz
RBW	120 kHz	1 MHz
VBW	300 kHz	3 MHz
Detector	Quasi Peak	Peak / Average

Sample Calculations

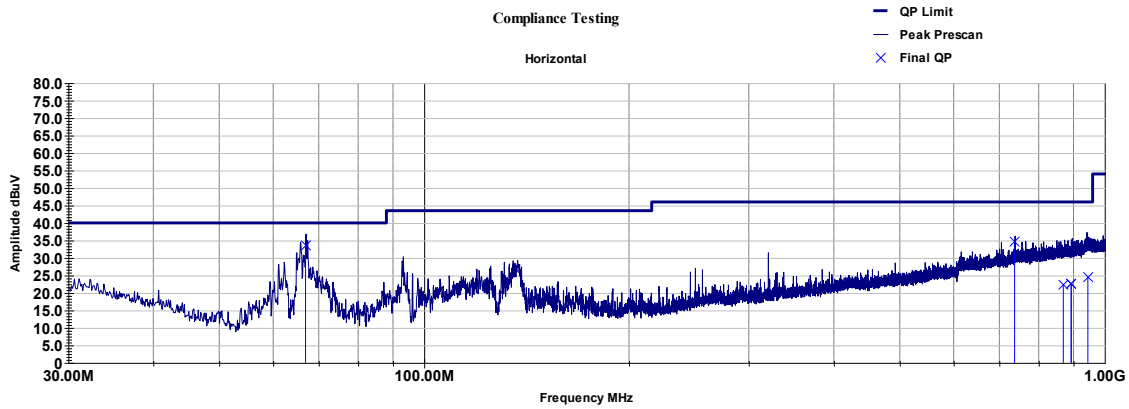
Corrected Value = Measured Value + Correction factor

Correction factor = Antenna Correction Factor + Cable loss + Preamp/Attenuator Factor

Radiated Emissions 30-1000MHz



Frequency	Azimuth	Height	Raw QP	Correction	Final QP	Limit	QP Margin
MHz	deg	cm	dBuV	dB	dBuV/m	dBuV/m	dB
66.942	225.00	183.00	57.76	-24.93	32.80	40.00	-7.20
898.978	219.00	389.00	25.38	-2.96	22.40	46.00	-23.60
919.044	69.00	355.00	25.29	-2.10	23.20	46.00	-22.80
930.067	289.00	359.00	25.35	-1.51	23.80	46.00	-22.20
938.819	53.00	320.00	25.35	-1.15	24.20	46.00	-21.80
949.435	349.00	325.00	25.39	-0.98	24.40	46.00	-21.60
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
66.946	251.00	325.00	58.64	-25.04	33.60	40.00	-6.40
737.281	350.00	100.00	40.04	-5.27	34.80	46.00	-11.20
869.234	189.00	400.00	25.61	-3.37	22.20	46.00	-23.80
892.68	82.00	356.00	25.54	-3.02	22.50	46.00	-23.50
892.68	82.00	356.00	25.54	-3.02	22.50	46.00	-23.50
893.06	323.00	325.00	25.50	-3.01	22.50	46.00	-23.50
892.68	82.00	356.00	25.54	-3.02	22.50	46.00	-23.50
944.68	113.00	377.00	25.59	-1.21	24.40	46.00	-21.60
Final = Raw + Path Loss							

Margin = Final - Limit

Radiated Emissions Test Setup Photos



Conducted Spurious Emissions

Engineer: John Michalowicz

Test Date: May 27, 2025

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.

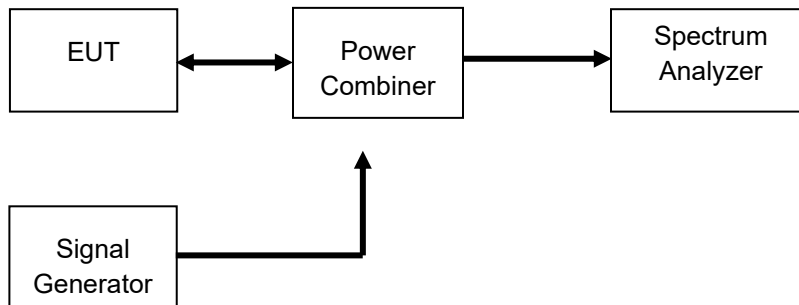
The EUT was connected as shown in the test set-up.

A receive signal at the low, middle, high frequencies of the band was injected to the receiver input and the conducted spurious emissions was measured from 30 – 1000 MHz with the receiver scanning and with the receiver scanning stopped.

It was observed during preliminary testing of the scanning receiver that the operating mode did not alter the receiver spurious emissions.

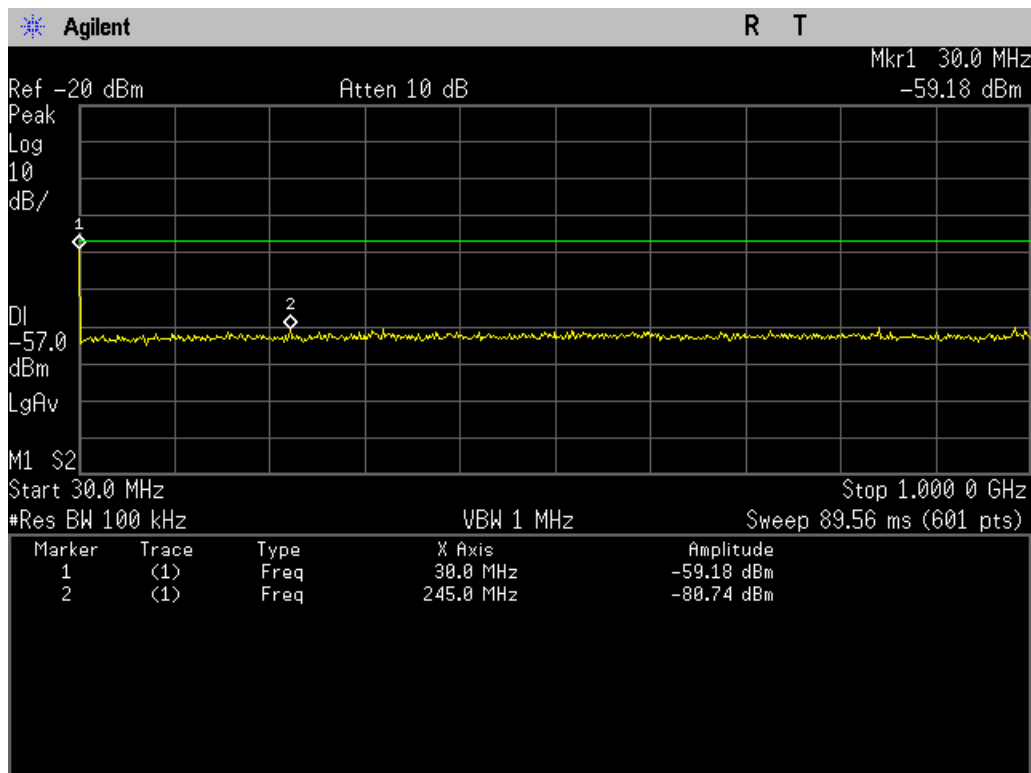
All signals measured at the receiver antenna port were below 2 nanowatts (-57 dBm).

Test Setup

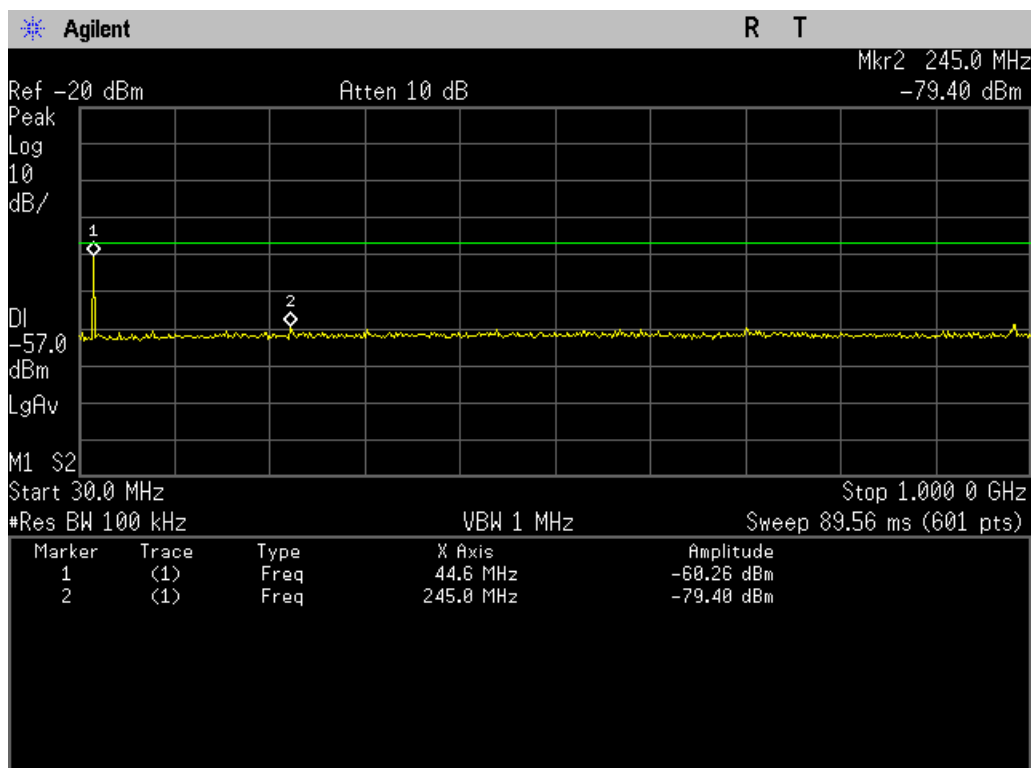


Conducted Receiver Spurious Test Data

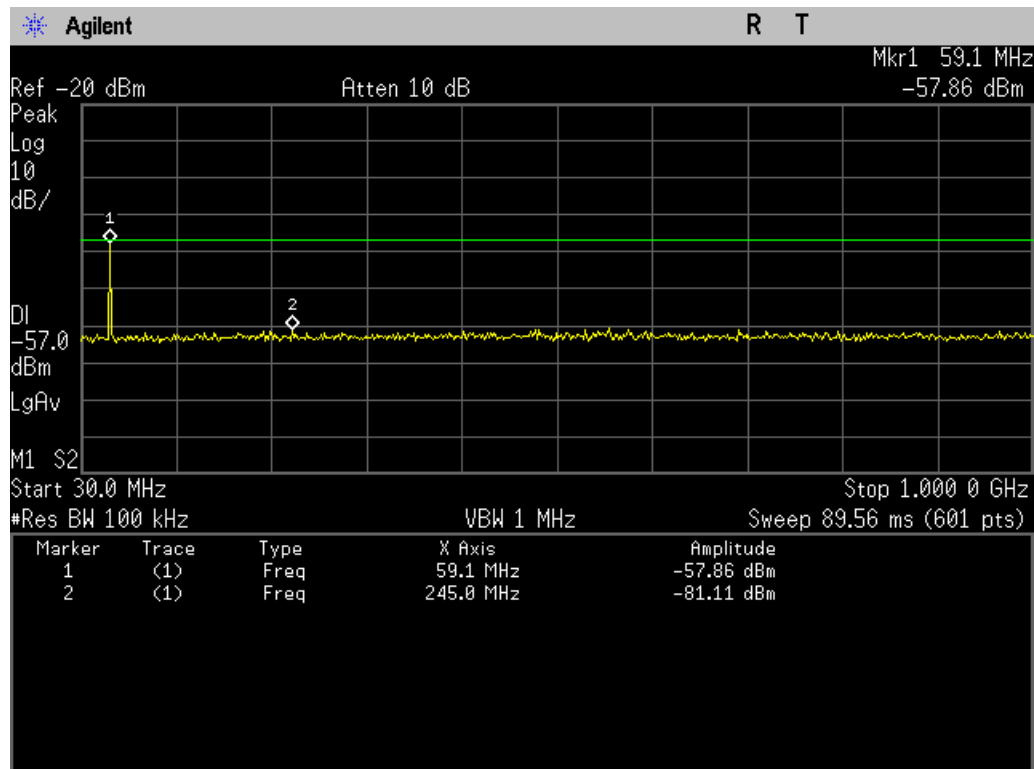
Input signal 30 MHz



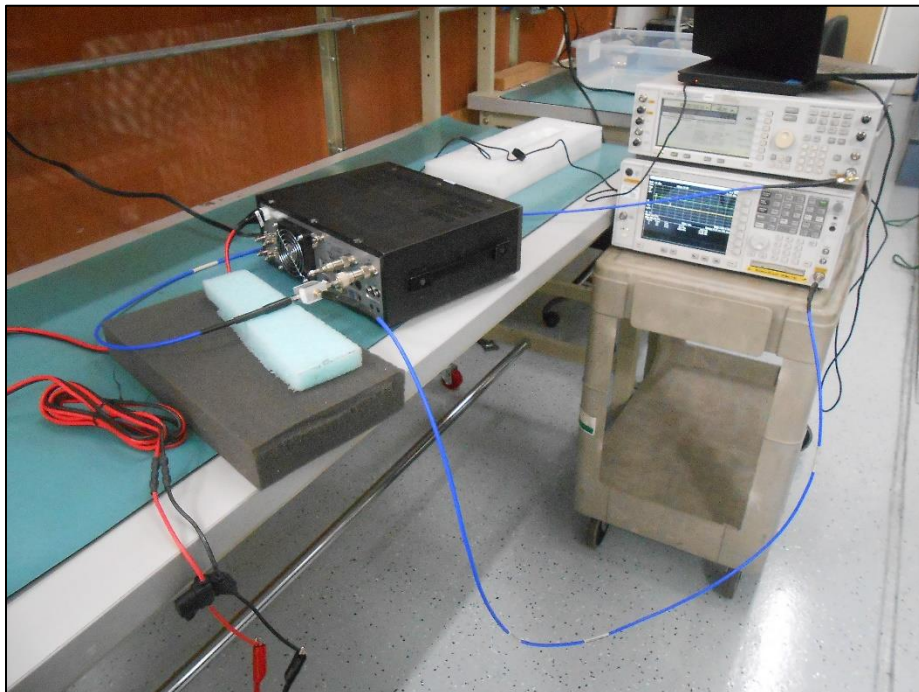
Input signal 45 MHz



Input signal 59 MHz



Conducted Spurious Emissions Test Setup Photo



Test Equipment Utilized

Description	Manufacturer	Model #	CT Asset #	Last Cal Date	Cal Due Date
Temp./humidity/pressure monitor (Main Lab)	Omega Engineering	iBTHX-W-5	i00686	1/25/25	1/25/26
Temp./humidity/pressure monitor (Main Lab)	Omega Engineering	iBTHX-W-5	i00631	8/7/24	8/7/25
3 Meter Semi-Anechoic Chamber	Panashield	3 Meter Semi-Anechoic Chamber	i00428	7/13/23	7/13/26
44GHz EMI receiver	Keysight	N9038A	i00552	3/17/25	3/17/26
Bi-Log Antenna	Schaffner	CBL 6111D	i00349	2/27/25	2/27/27
Preamplifier	COM-Power	PAM-103	i00734	Verified on: 6/27/24	
EMI Receiver	HP	85462A	i00033	6/25/24	6/25/25
Transient Limiter	Com-Power	LIT-153	i00123	Verified on: PTV	
AC Power Source	Behlman	BL 6000	i00362	NCR	
LISN	COM-Power	LI-125A	i00446	3/18/24	3/18/26
LISN	COM-Power	LI-125A	i00448	3/18/24	3/18/26
Signal Generator	Agilent	E4438C	i00490	10/15/24	10/15/2025
PSA Spectrum Analyzer	Agilent	E4448A	i00688	10/26/24	10/26/25

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.

Measurement Uncertainty

Measurement Uncertainty for Compliance Testing is listed in the table below.

Measurement	U_{lab}
Radio Frequency	$\pm 3.3 \times 10^{-8}$
RF Power, conducted	± 1.5 dB
RF Power Density, conducted	± 1.0 dB
Conducted Emissions	± 1.8 dB
Radiated Emissions 9kHz-30MHz	± 3.6 dB
Radiated Emissions 30MHz-1000MHz	± 4.25 dB
Radiated Emissions – 1GHz-18GHz	± 4.5 dB
Temperature	± 1.5 deg C
Humidity	± 4.3 %
DC voltage	± 0.20 VDC
AC Voltage	± 1.2 VAC

The reported expanded uncertainty $\pm U_{lab}$ (dB) has been estimated at a 95% confidence level ($k=2$)
 U_{lab} is less than or equal to U_{EMC} therefore;

- Compliance is deemed to occur if no measured disturbance exceeds the disturbance limit.
- Non-Compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

END OF TEST REPORT