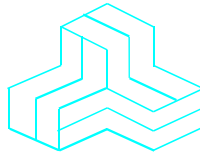


RF TEST REPORT



Procaster FM
Model No.: FMTX200
FCCID: VCJ-FMTX200

Applicant:

Chezradio Inc.
18 Kingsgate Place
Bolton, ON
Canada L7E 5Z5

Tested in Accordance With

Federal Communications Commission (FCC)
Part 15, Subpart C
15.239 Operation in the band 88-108 MHz

UltraTech's File No.: 24VIDC008-FCC15.239

This Test report is Issued under the Authority of
Tri M. Luu
Vice President of Engineering
UltraTech Group of Labs

Date: December 10, 2024

Report Prepared by: Santhosh Fernandez

Tested by: Angus Au

Issued Date: December 10, 2024

Test Dates: September 9- December 6, 2024

- The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.
- This report must not be used by the client to claim product endorsement by any agency of the US Government.
- This test report shall not be reproduced, except in full, without a written approval from UltraTech.

UltraTech

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Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com



0685



APEC TEL CA0001



1309



CA 0001/2049



AT-1945



SL2-IN-E-
1119R



Korea KCC-
RRA

CA0001

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Sec. 15.239 - Operation within the band 88-108 MHz
Title:	Code of Federal Regulations (CFR), Title 47 Telecommunication, Part 15, Subpart C - Intentional Radiators
Purpose of Test:	To gain FCC Equipment Certification for FCC Part 15C.
Test Procedures:	ANSI C63.4 and ANSI C63.10
Environmental Classification:	Commercial, industrial or business environment

1.2. NORMATIVE REFERENCES

Publication	Year	Title
FCC CFR Parts 0-19, 80-End	2024	Code of Federal Regulations (CFR), Title 47 – Telecommunication, Part 15 Radio Frequency Devices
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz
ANSI C63.10	2020	American National Standard for Testing Unlicensed Wireless Devices

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT	
Name:	Chezradio Inc.
Address:	18 Kingsgate Place Bolton, ON Canada L7E 5Z5
Contact Person:	Mr. Gerry Herlinger Phone #: +14162780467 Email Address: info@chezradio.com

MANUFACTURER	
Name:	Chezradio Inc.
Address:	18 Kingsgate Place Bolton, ON Canada L7E 5Z5
Contact Person:	Mr. Gerry Herlinger Phone #: +14162780467 Email Address: info@chezradio.com

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name:	Chezradio Inc.
Product Name:	Procaster FM
Model Name or Number:	FMTX200
Serial Number:	Test Sample
Type of Equipment:	Low Power FM Broadcasting Transmitters
External Power Supply:	120VAC to 12V DC
Transmitting/Receiving Antenna Type:	Integral

2.3. FUNCTION OF THE DEVICE

Low noise hi-fi device capable of transmitting mono/stereo FM signals

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2.4. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER	
Equipment Type:	Portable
Intended Operating Environment:	☐ Commercial ☐ Light Industry & Heavy Industry
Power Supply Requirement:	AC 120V 60Hz to 12VAC or 12V DC Adaptor
RF Output Power Rating:	45.83 uV/m @ 3m
Operating Frequency Range:	88.1– 107.9 MHz
RF Output Impedance:	50 Ohms
Channel Spacing:	100 kHz
Occupied Bandwidth (26dB):	153.9 kHz
Antenna Connector Type:	Integral
Antenna Details:	Manufacturer: Bingfu Type: 7-Section Whip 640x9mm 1dBi gain

2.5. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	DC Input	1	2.1mm Barrel	Non-shielded
2	Audio Input	1	3.5mm tip/ring	Shielded

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EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

Temperature:	21°C
Humidity:	51%
Pressure:	102 kPa
Power Input Source:	AC 120V 60Hz using adaptor

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

Operating Modes:	The transmitter was operated in a continuous transmission mode as specified in the Test Data.
Special Test Software:	None
Special Hardware Used:	None
Transmitter Test Antenna:	The EUT is tested with the transmitter antenna

Transmitter Test Signals	
Frequency Band(s):	
▪ 88.1 – 107.9 MHz band:	Near lowest, near middle & near highest frequencies in each frequency band that the transmitter covers: 88.1, 98.7 & 107.9 MHz
Transmitter Wanted Output Test Signals:	
▪ RF Power Output (measured maximum output power):	45.83 uV/m @ 3m
▪ Normal Test Modulation:	Modulated with a 2.5kHz signal(Sine wave) at 1Vp-p level
▪ Modulating Signal Source:	External

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EXHIBIT 4. SUMMARY OF TEST RESULTS

4.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- Power Line Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(H).

Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with ANAB File No.: AT-1945.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC 15 Rules	Test Requirements	Applicability (Yes/No)
15.203	Transmitting Antenna	Yes
15.205	Restricted Bands of operation	Yes
15.239(b)	Radiated Emissions	Yes
15.239(a)	Emission Bandwidth	Yes
15.239(c)	Spurious Emissions/Out of Band	Yes
15.207 (a)	Power line Conducted Emission*	Yes
15.209	Radiated Emissions	Yes

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

None

4.4. DEVIATION OF STANDARD TEST PROCEDURES

None

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EXHIBIT 5. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

5.1. RADIATED EMISSION (FUNDAMENTAL), SECTION 15.239(B)

5.1.1. Limits

The field strength of any emissions within the permitted 200 kHz band shall not exceed 250 microvolts/meter at 3 meters. The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in § 15.35 for limiting peak emissions apply.

5.1.2. Method of Measurements

AS per ANSI 63.10

5.1.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
EMI Receiver	Rohde & Schwarz	ESU40	100037	20Hz–40 GHz	18 Sep 2025
Biconilog Antenna	EMCO	3142C	00034792	26-2000MHz	16 Dec 2025
Power supply	Nice Power	SPS1203	-	0 – 120Vdc	Output Verified
Multimeter	Fluke	8842A	5021295		10 Mar 2025

5.1.4. Test Arrangement



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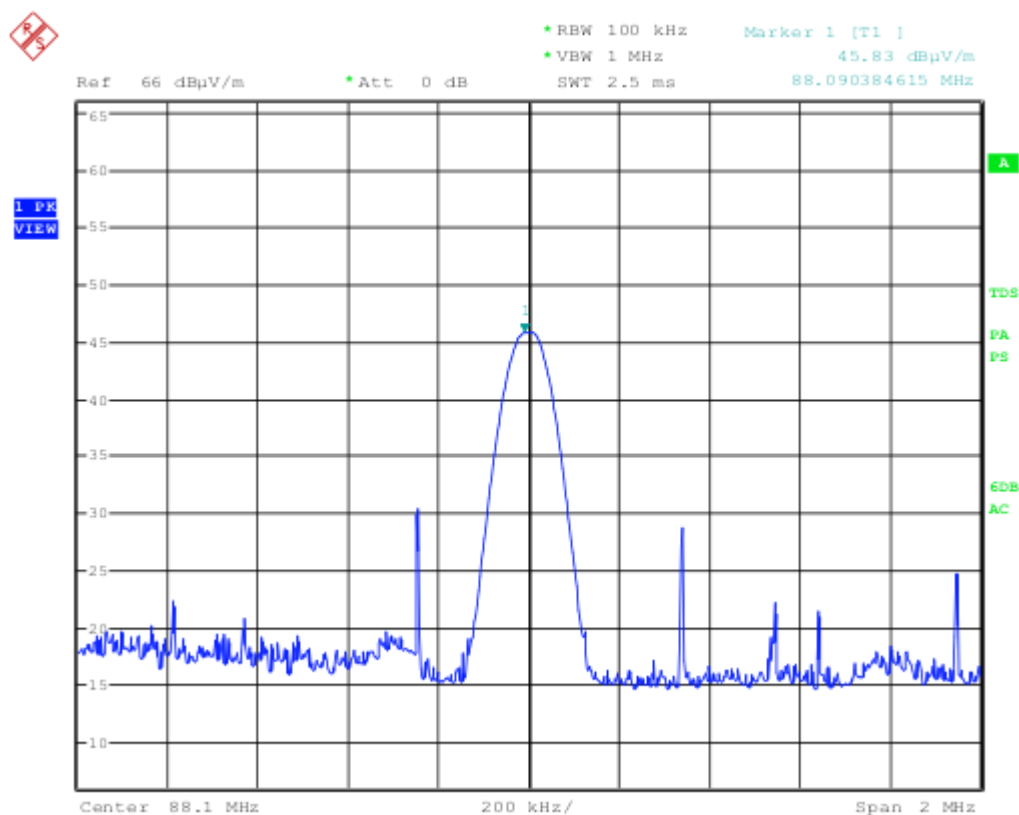
All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

5.1.5. Test Data

Measurements were made at 3m

Test Frequency (MHz)	Measuring Antenna Polarization	Peak Radiated Field Strength @3m (dBuV/m)	Radiated Field limit @3m (dBuV/m)
88.1	V	45.83	47.95
	H	45.10	47.95
98.7	V	38.89	47.95
	H	36.47	47.95
107.9	V	45.07	47.95
	H	40.81	47.95

5.1.5.1. Plot of Tx Fundamental at 88.1 MHz- Vertical



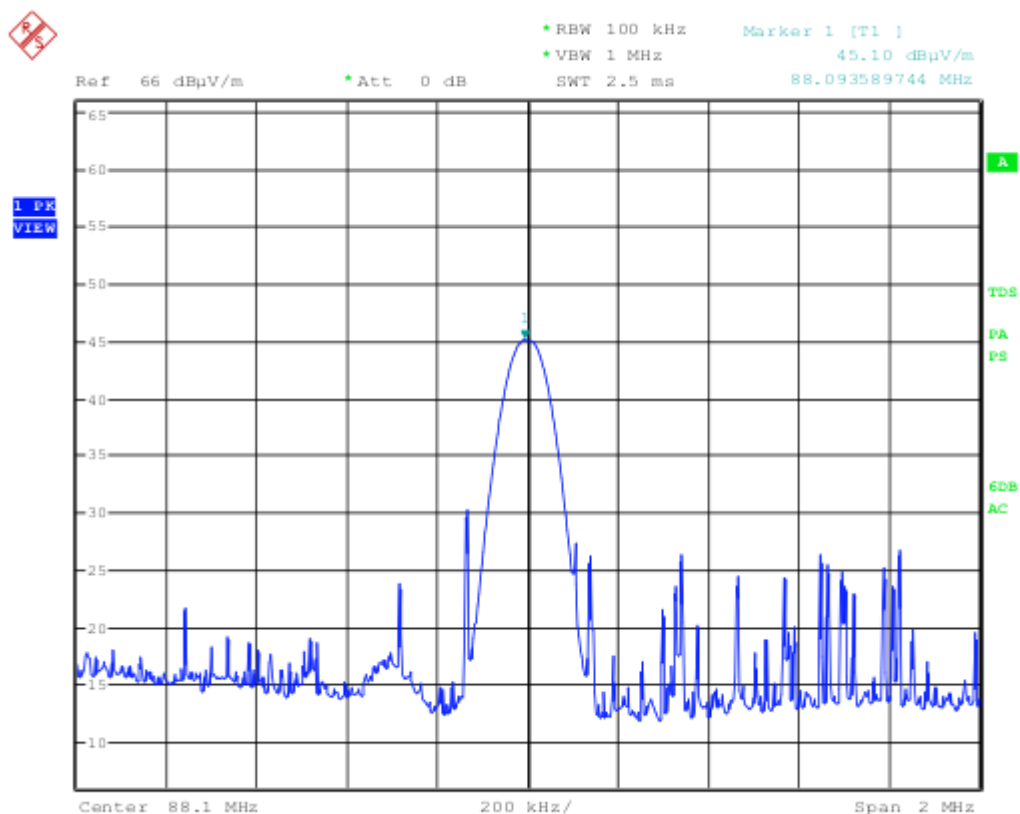
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5.1.5.2. Plot of Tx Fundamental at 88.1 MHz- Horizontal



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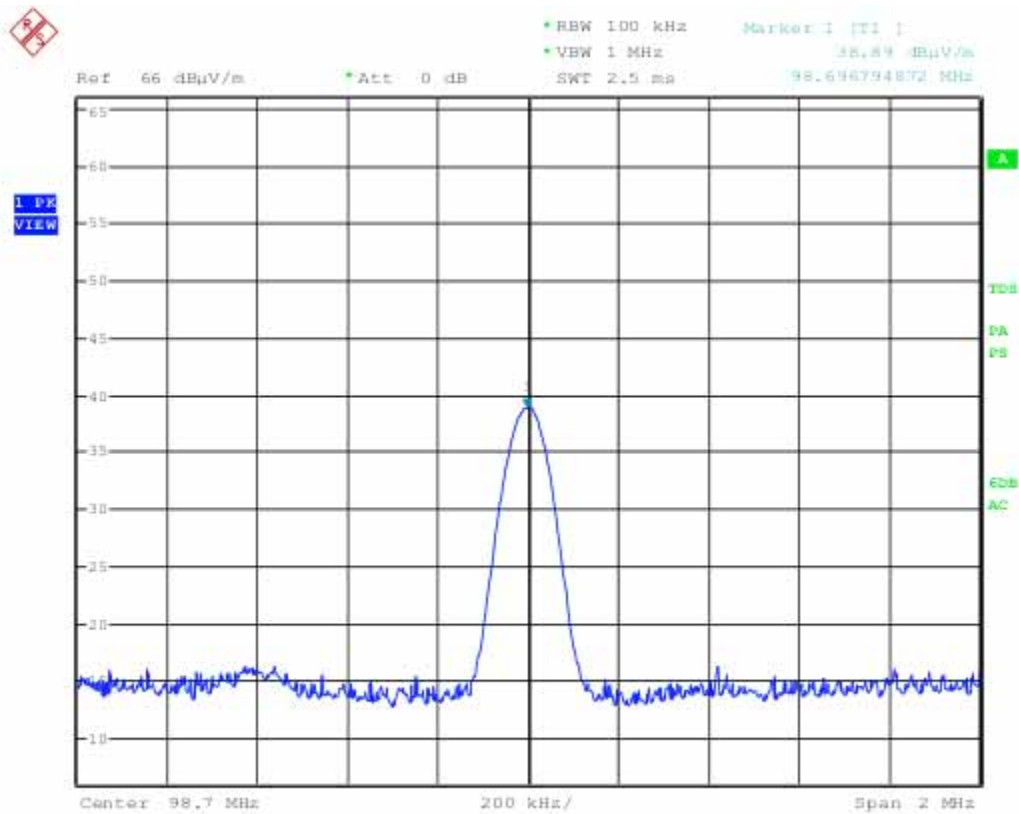
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Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: <http://www.ultratech-labs.com>

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5.1.5.3. Plot of Tx Fundamental at 98.7 MHz- Vertical



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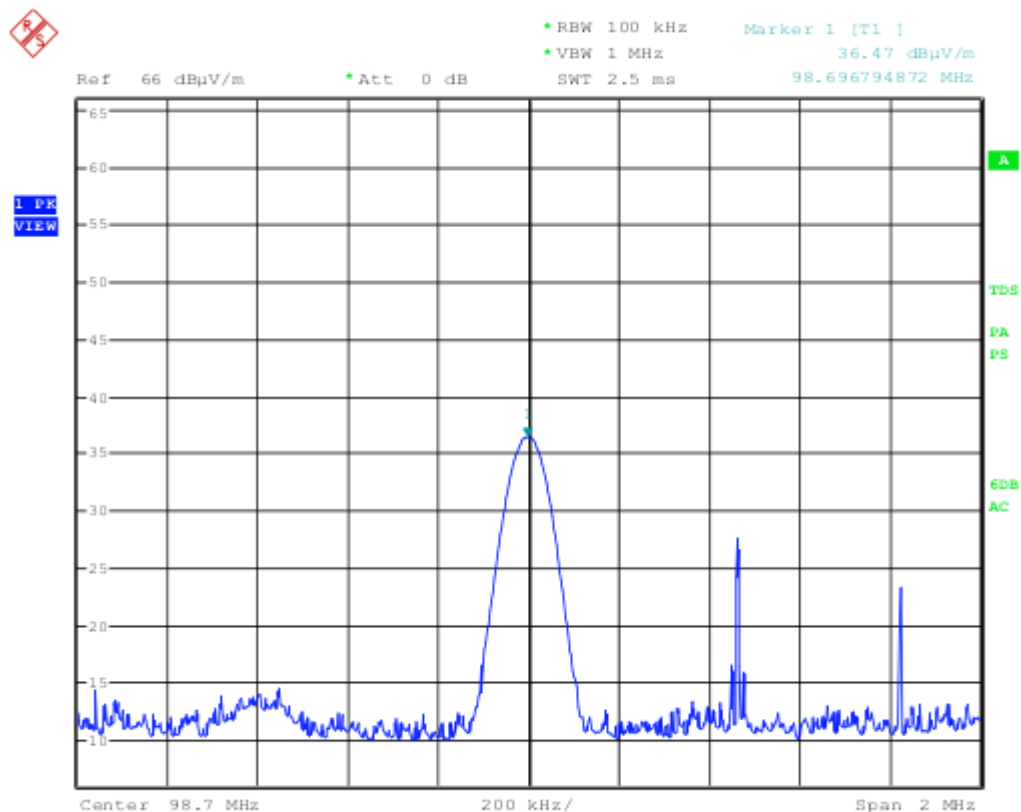
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5.1.5.4. Plot of Tx Fundamental at 98.7 MHz- Horizontal



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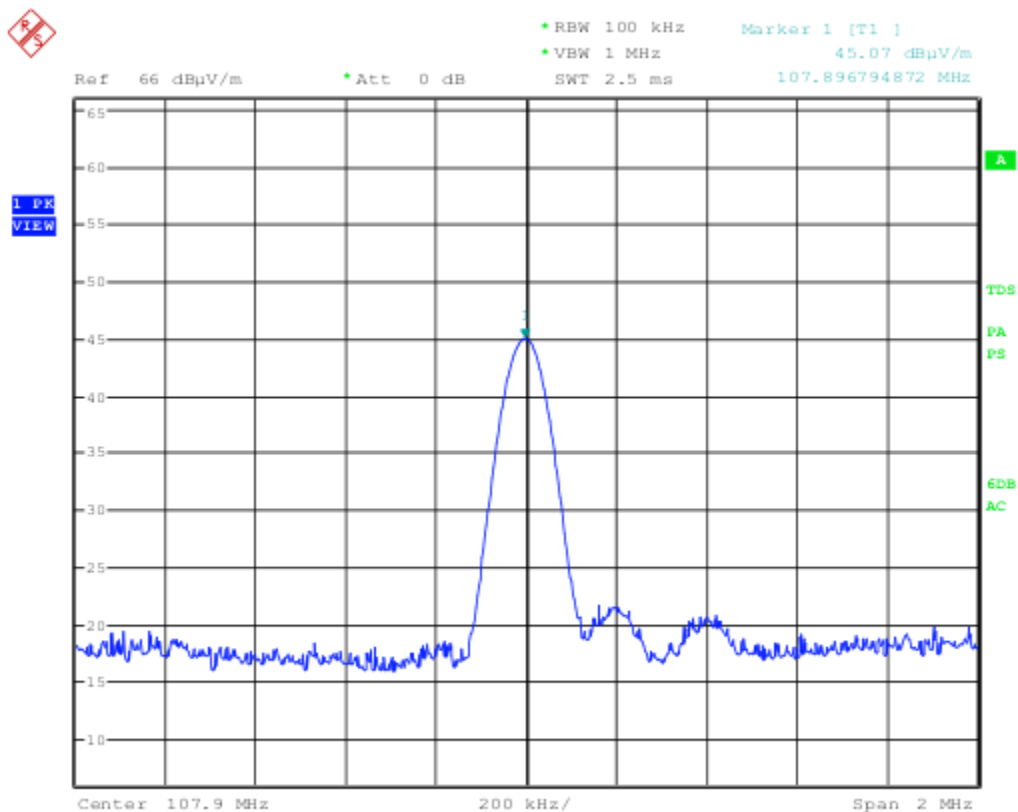
3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
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5.1.5.5. Plot of Tx Fundamental at 107.9 MHz- Vertical



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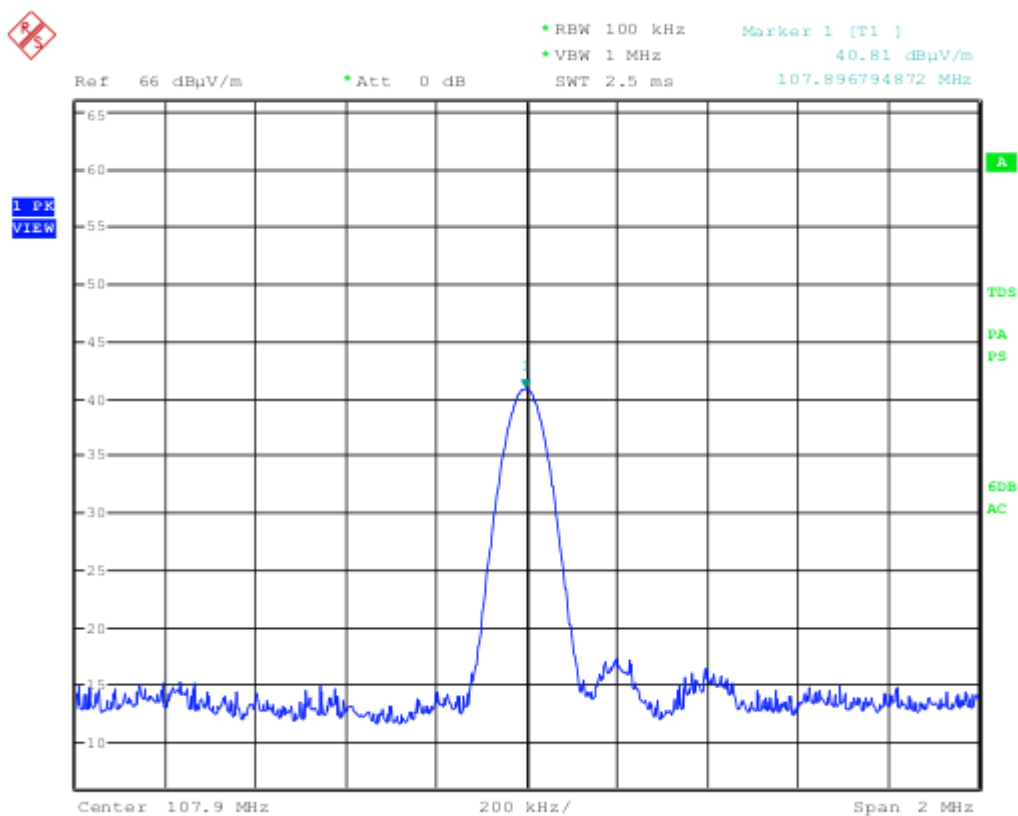
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5.1.5.6. Plot of Tx Fundamental at 107.9 MHz- Horizontal



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5.2. OCCUPIED BANDWIDTH @FCC 15.239(A)

5.2.1. Limits

Emissions from the intentional radiator shall be confined within a band 200 kHz wide centered on the operating frequency. The 200 kHz band shall lie wholly within the frequency range of 88-108 MHz.

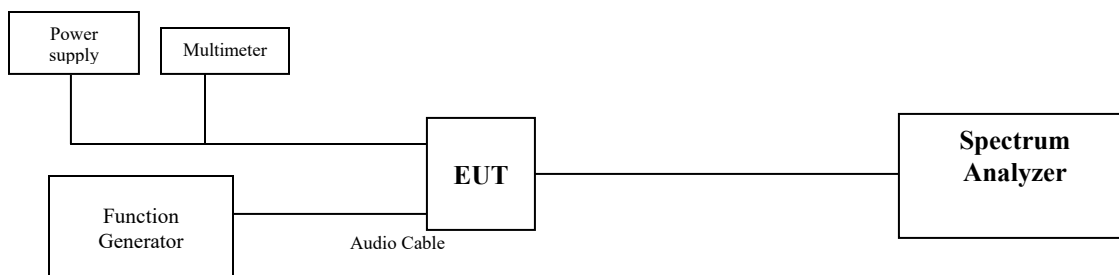
5.2.2. Method of Measurements

The measurements were performed in accordance with Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4.

5.2.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
Spectrum Analyzer	Rohde & Schwarz	ESU40	100037	20Hz–40 GHz	18 Sep 2025
Function Generator	Standford Research Systems	DS340	28492	-	27 Mar 2025
Power supply	Nice Power	SPS1203	-	0 – 120Vdc	Output Verified
Multimeter	Fluke	8842A	5021295	-	10 Mar 2025

5.2.4. Test Arrangement



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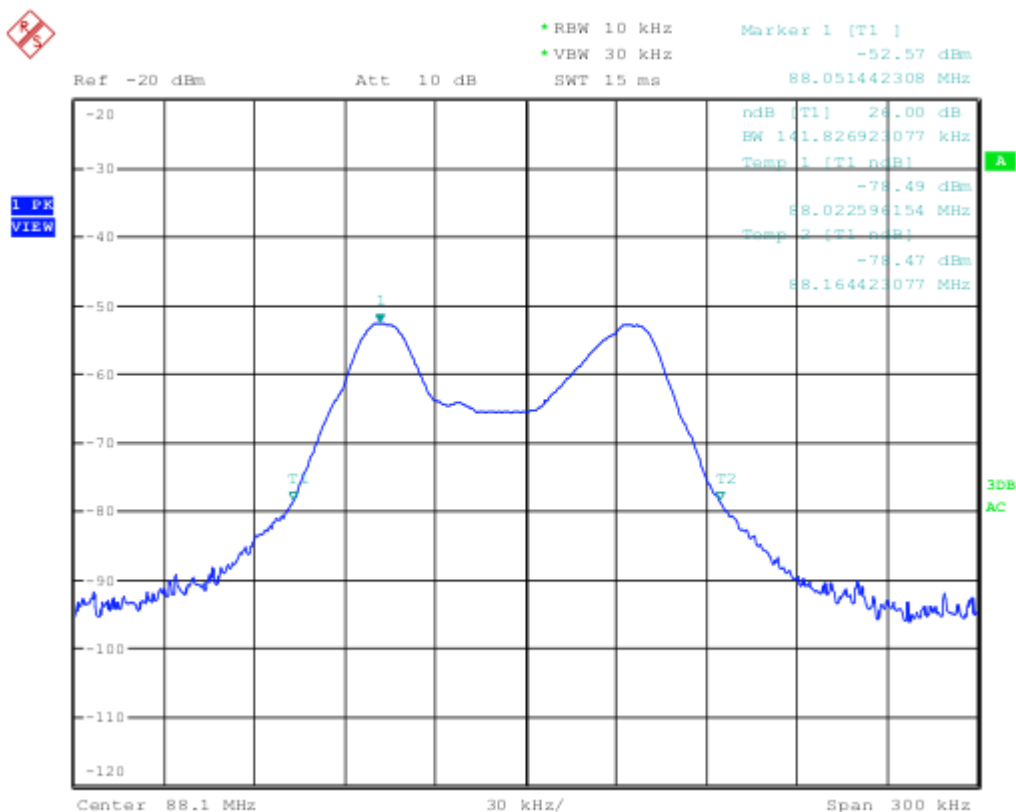
All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

5.2.5. Test Data

Test Frequency (MHz)	Occupied Bandwidth (kHz)
	26 dB BW
88.1	141.83
98.7	146.63
107.9	153.85

See the following test data plots measurements for 26dB Occupied Bandwidth (plots # 1 to 3):

Plot # 1
Occupied Bandwidth
Carrier Frequency: 88.1 MHz



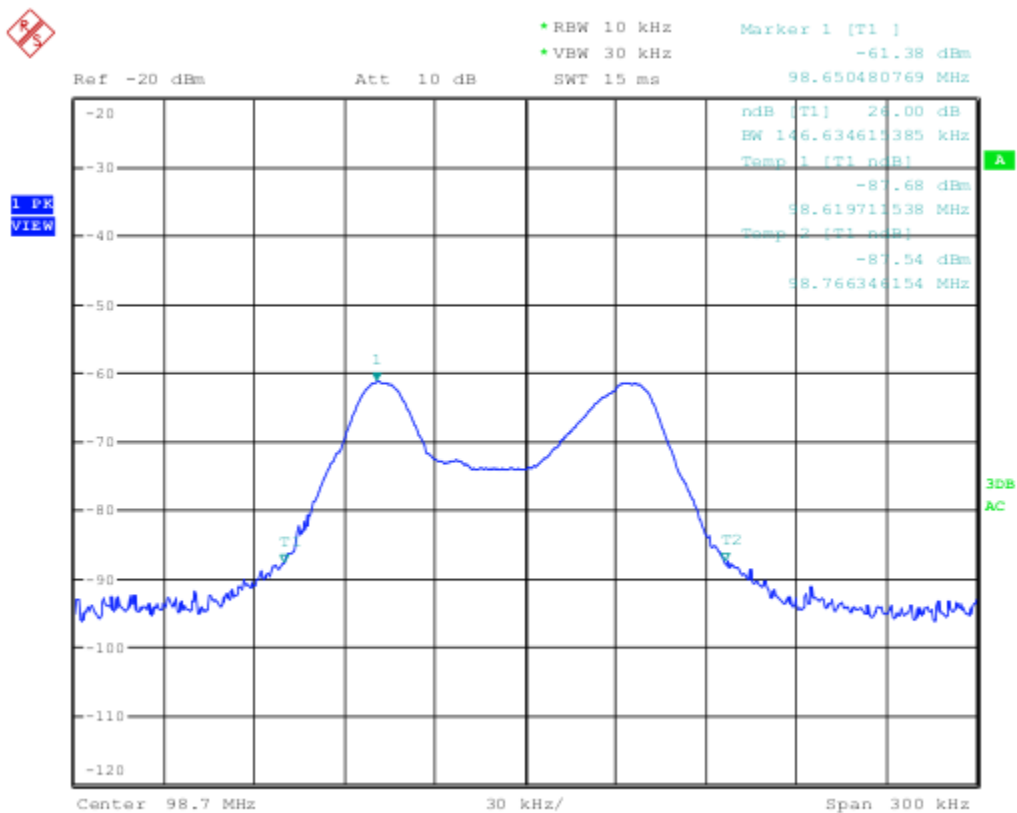
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Plot # 2
Occupied Bandwidth
Carrier Frequency: 98.7 MHz



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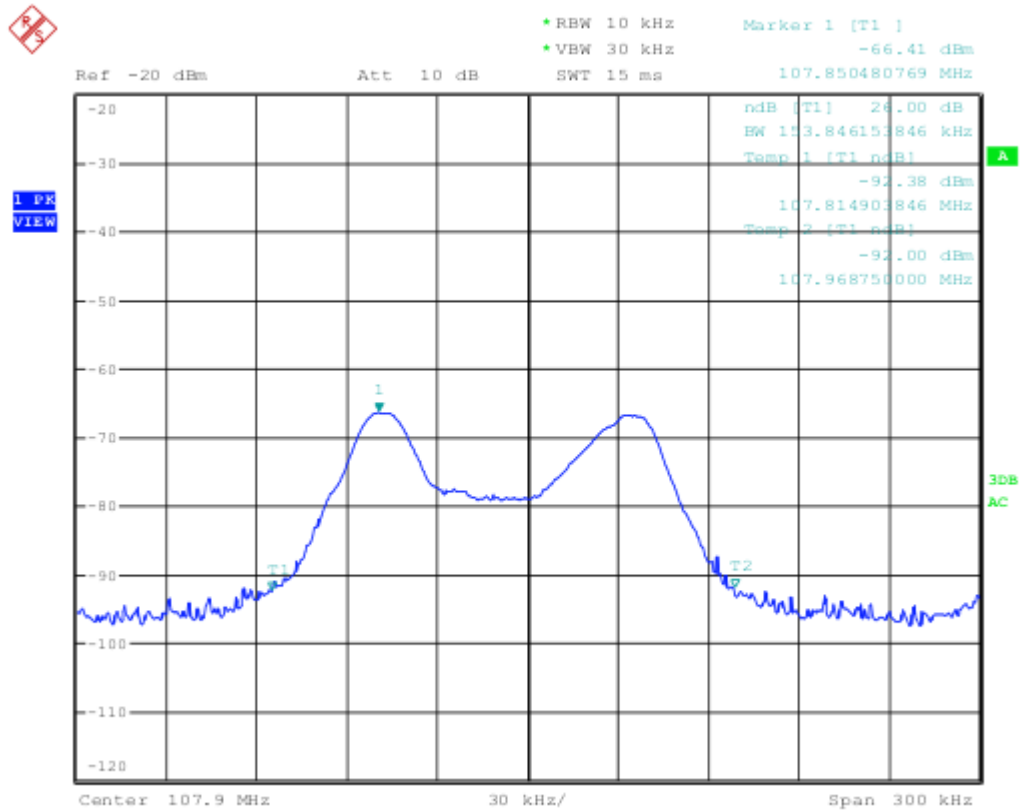
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Plot # 3
Occupied Bandwidth
Carrier Frequency: 107.9 MHz



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5.3. OUT OF BAND EMISSIONS @ FCC 15.239 (C)

5.3.1. Limits

The field strength of any emissions radiated on any frequency outside of the specified 200 kHz band shall not exceed the general radiated emission limits in § 15.209

Spurious Frequency (MHz)	Field Strength at 3 meters	
	($\mu\text{V/m}$)	(dB $\mu\text{V/m}$)
30 – 88	100	40.0
88 – 216	150	43.5

5.3.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 for measurement methods

5.3.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
EMI Receiver	Rohde & Schwarz	ESU40	100037	20Hz–40 GHz	18 Sep 2025
Biconilog Antenna	EMCO	3142C	00034792	26-2000MHz	16 Dec 2025
Power supply	Nice Power	SPS1203	-	0 – 120Vdc	Output Verified
Multimeter	Fluke	8842A	5021295		10 Mar 2025

5.3.4. Test Arrangement



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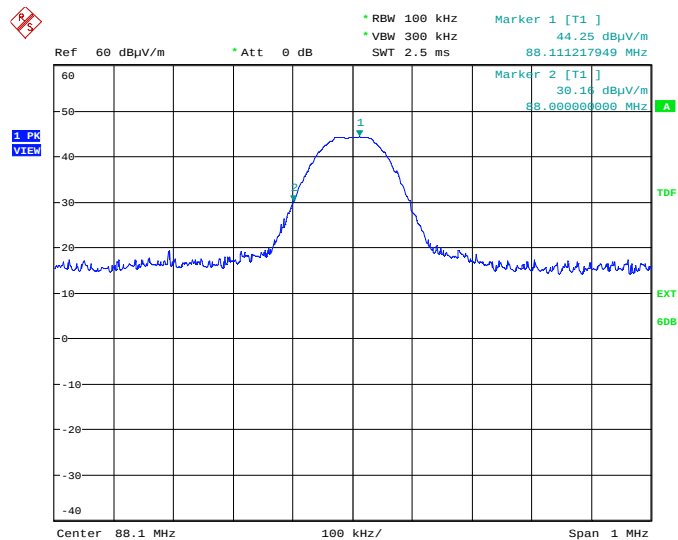
All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

5.3.5. Test Data

5.3.5.1. Band Edge

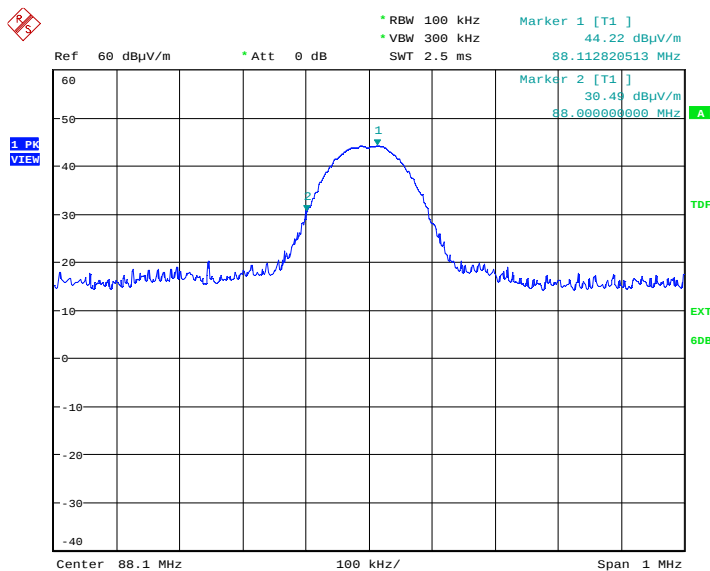
88.1 MHz - Limit@3m is 40dBuV/m at the edge

Vertical



Date: 27.NOV.2024 11:55:39

Horizontal



Date: 27.NOV.2024 11:56:45

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File #: 24VIDC008-FCC15.239

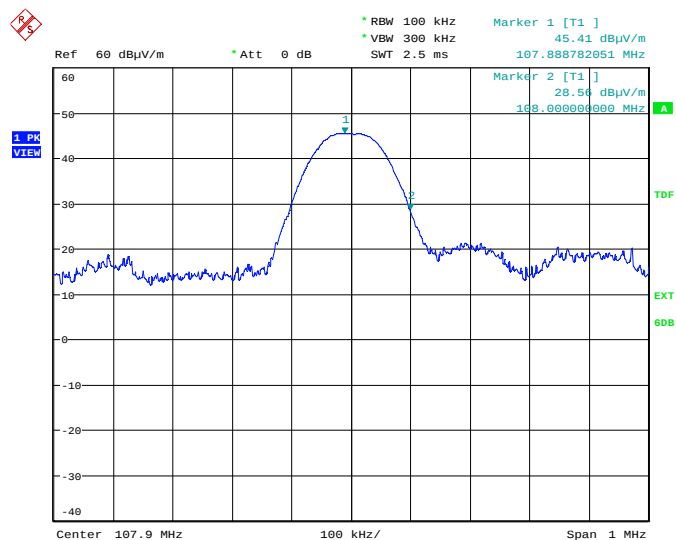
December 10, 2024

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

107.9 MHz - Limit@3m is 43.5dBuV/m at the edge

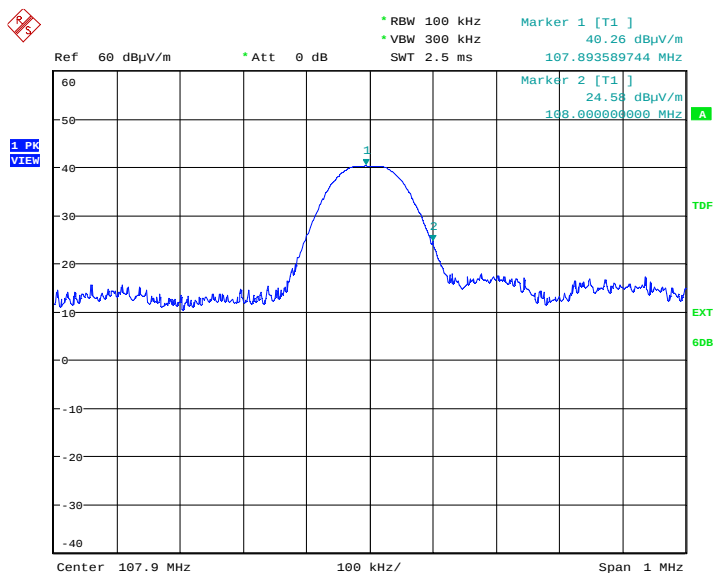
Vertical

Peak



Date: 27.NOV.2024 11:50:11

Horizontal



Date: 27.NOV.2024 11:51:01

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5.3.5.2. *Spurious Emissions*

Emissions were scanned from 30 MHz to the 10th harmonic of the fundamental at 3m distance for the worst case orientation and emissions are recorded below:

5.3.5.2.1. *Near Lowest Frequency (88.1 MHz)*

No significant emissions found

5.3.5.2.2. *Near Middle Frequency (98.7 MHz)*

No significant emissions found

5.3.5.2.3. *Near Highest Frequency (107.9 MHz)*

No significant emissions found

5.4. RADIATED EMISSIONS-UNINTENTIONAL [15.109(A)]

5.4.1. Limits

The equipment shall meet the limits of the following table:

Frequency of emission (MHz)	ICES-Class B Limits*		FCC Part 15 B -Class B Limits*	
	(dB μ V/m at 3 m)	(dB μ V/m at 10 m)	(dB μ V/m at 3 m)	(dB μ V/m at 10 m)
30 – 88	40.0	30	40.0	29.5
88 – 216	43.5	33.1	43.5	33.1
216-230	46	35.6	46	35.6
230 – 960	47	37		
Above 960	54.0	43.5	54.0	43.5

*below 1000 MHz limits are in QP, above 1GHz limits are average with peaks not to exceed 20dB above this limit.

5.4.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-2004 & ANSI C63.4 for method of measurements.

5.4.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
EMI Receiver	Rohde & Schwarz	ESU40	100037	20Hz–40 GHz	18 Sep 2025
Biconilog Antenna	EMCO	3142C	00034792	26-2000MHz	16 Dec 2025
Power supply	Nice Power	SPS1203	-	0 – 120Vdc	Output Verified
Multimeter	Fluke	8842A	5021295		10 Mar 2025

5.4.4. Test Arrangement



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5.4.5. Test Data

- The measuring receiver shall be tuned over the frequency range 30 MHz to 1 GHz @ 3m
- All spurious emissions that are in excess of 20 dB below the specified limit shall be recorded.

Frequency	Vertical (dBuV/m)		Horizontal(dBuV/m)		Limits	Margin (dB)	
(MHz)	Peak	QP	Peak	QP	dBuV/m	Vertical	Horizontal
97.39	27.39	--	24.25	--	40	-12.61	-15.75
231.34	31.78	--	27.49	--	46	-14.22	-18.51
348.1	31.3	--	28.44	--	46	-14.7	-17.56
442.63	30.71	--	28.86	--	46	-15.29	-17.14
622.52	29.85	--	27.15	--	46	-16.15	-18.85
704.64	33.62	--	30.51	--	46	-12.38	-15.49

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5.5. POWERLINE CONDUCTED EMISSION [47 CFR 15.207(A)]

5.5.1. Limit(s)

The equipment shall meet the limits of the following table:

Frequency of emission (MHz)	Conducted Limits (dB μ V)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

*Decreases linearly with the logarithm of the frequency

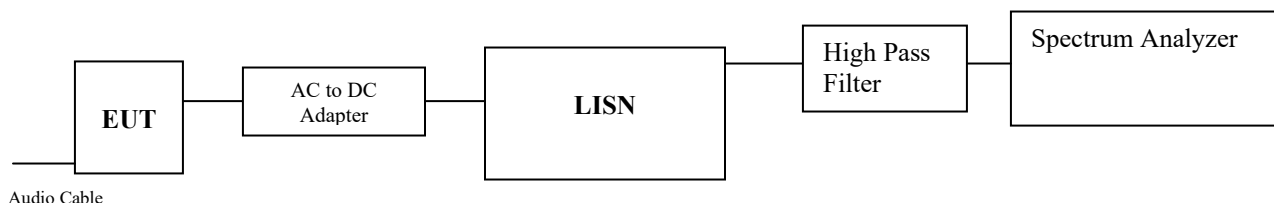
5.5.2. Method of Measurements

Refer to ANSI C63.4.

5.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
Spectrum Analyzer	Agilent	E7401A	US40240432	9 kHz–22 GHz	Nov 06, 2024
High Pass filter	Rohde & Schwarz	EZ-25	830164/007	Cut off 150kHz	Oct 12, 2024
LISN	NSLK 8127	NSLK 8127	8127276	9 kHz–30 MHz	Dec 11, 2024
AC to DC adapter	Tri-Mag	L6R06H-120	-	12Vdc	-

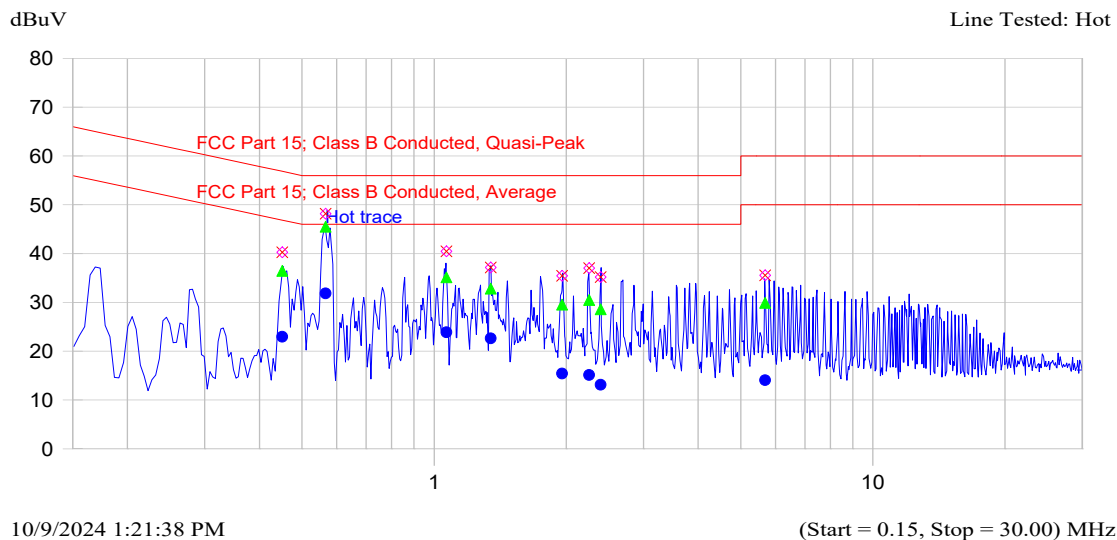
5.5.4. Test Arrangement



5.5.5. Test Data

Configuration #1 Using Power supply: Tri-Mag, Model: L6R06H-120, Input: 100-240Vac 50/60Hz 0.3A, Output: 12Vdc

Description: Line Voltage: 120Vac
Setup Name: FCC 15 Class B
Customer Name: CHEZRADIO
Project Number: VIDC-008Q
Operator Name: Angus
EUT Name: Low Power FM Transmitter



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.451	40.3	36.5	-20.4	23.0	-23.9	Hot trace
0.565	48.2	45.5	-10.5	31.8	-14.2	Hot trace
1.066	40.5	35.1	-20.9	23.9	-22.1	Hot trace
1.345	37.1	32.8	-23.2	22.6	-23.4	Hot trace
1.957	35.4	29.6	-26.4	15.4	-30.6	Hot trace
2.255	37.0	30.5	-25.5	15.1	-30.9	Hot trace

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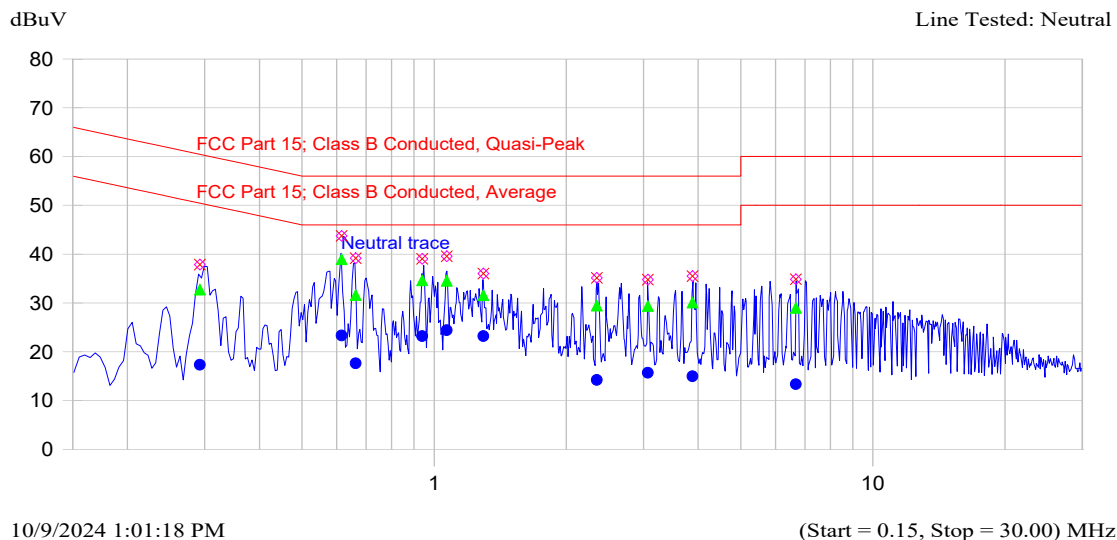
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Description: Line Voltage: 120Vac
Setup Name: FCC 15 Class B
Customer Name: CHEZRADIO
Project Number: VIDC-008Q
Operator Name: Angus
EUT Name: Low Power FM Transmitter



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.293	37.8	32.8	-27.7	17.3	-33.1	Neutral trace
0.616	43.8	39.0	-17.0	23.3	-22.7	Neutral trace
0.662	39.2	31.6	-24.4	17.6	-28.4	Neutral trace
0.939	39.0	34.7	-21.3	23.2	-22.8	Neutral trace
1.068	39.6	34.5	-21.5	24.4	-21.6	Neutral trace
1.295	36.0	31.6	-24.4	23.2	-22.8	Neutral trace
2.347	35.2	29.5	-26.5	14.2	-31.8	Neutral trace
3.071	34.8	29.4	-26.6	15.7	-30.3	Neutral trace
3.880	35.5	30.1	-25.9	15.0	-31.0	Neutral trace
6.681	34.9	29.0	-31.0	13.4	-36.6	Neutral trace

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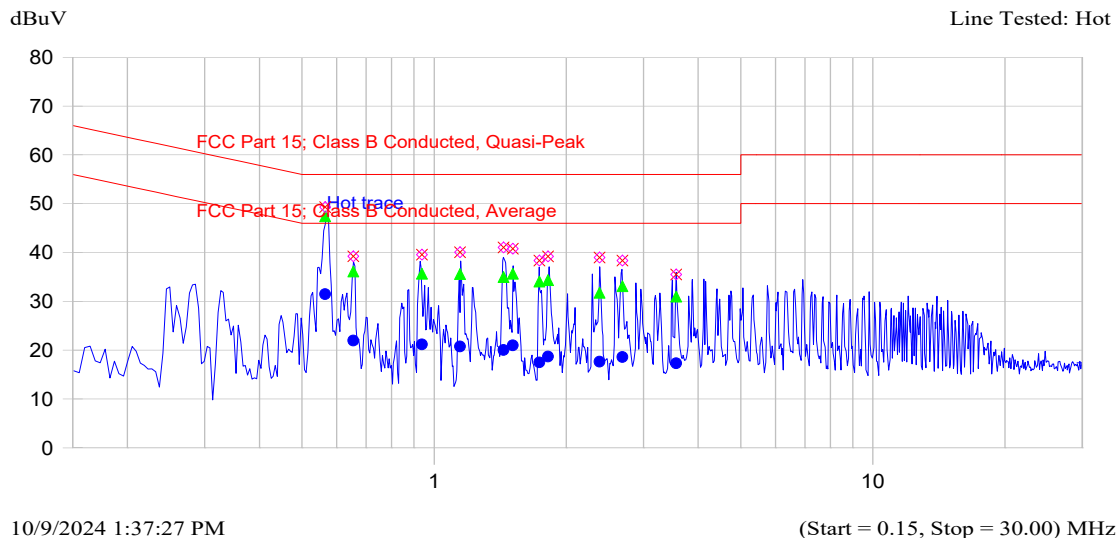
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Configuration #2 Using Power supply: Thomson, Model: HA35U-12025A, Input: 120Vac 60Hz 6W, Output: 12Vac

Description: Line Voltage: 120Vac
Setup Name: FCC 15 Class B
Customer Name: CHEZRADIO
Project Number: VIDC-008Q
Operator Name: Angus
EUT Name: Low Power FM Transmitter



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.565	49.3	47.4	-8.6	31.5	-14.5	Hot trace
0.654	39.2	36.1	-19.9	22.0	-24.0	Hot trace
0.939	39.6	35.7	-20.3	21.2	-24.8	Hot trace
1.146	40.1	35.6	-20.4	20.8	-25.2	Hot trace
1.440	41.0	35.0	-21.0	20.0	-26.0	Hot trace
1.511	40.8	35.7	-20.3	21.0	-25.0	Hot trace
1.738	38.3	34.0	-22.0	17.5	-28.5	Hot trace
1.819	39.2	34.4	-21.6	18.7	-27.3	Hot trace
2.382	39.0	31.8	-24.2	17.7	-28.3	Hot trace
2.686	38.3	33.1	-22.9	18.6	-27.4	Hot trace
3.561	35.5	31.0	-25.0	17.3	-28.7	Hot trace

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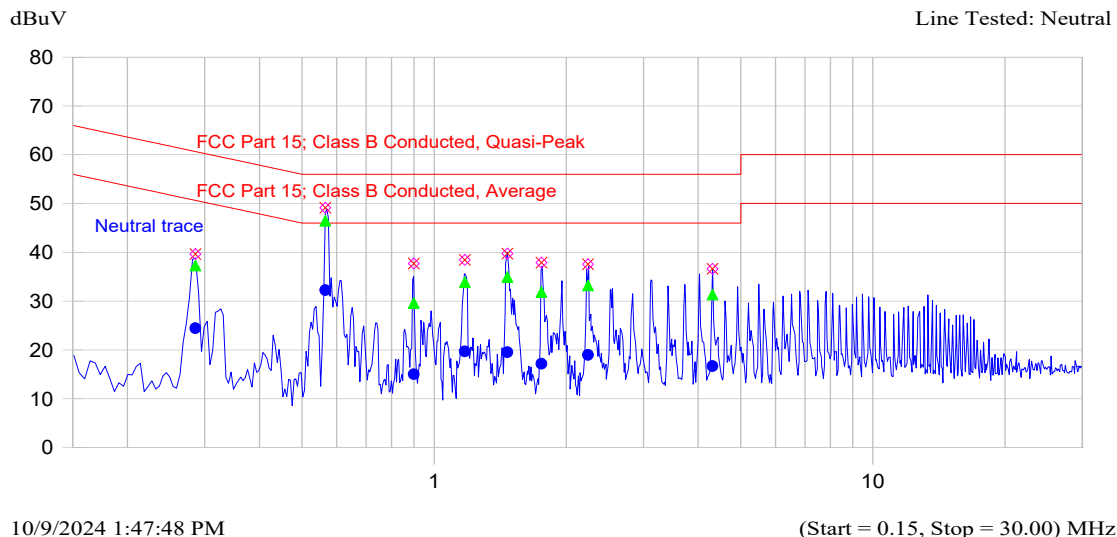
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Description: Line Voltage: 120Vac
Setup Name: FCC 15 Class B
Customer Name: CHEZRADIO
Project Number: VIDC-008Q
Operator Name: Angus
EUT Name: Low Power FM Transmitter



Current List

Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.286	39.6	37.3	-23.3	24.5	-26.2	Neutral trace
0.565	49.1	46.5	-9.5	32.3	-13.7	Neutral trace
0.899	37.7	29.6	-26.4	15.0	-31.0	Neutral trace
1.174	38.5	33.9	-22.1	19.7	-26.3	Neutral trace
1.470	39.7	35.0	-21.0	19.6	-26.4	Neutral trace
1.756	37.9	31.9	-24.1	17.2	-28.8	Neutral trace
2.242	37.6	33.2	-22.8	19.0	-27.0	Neutral trace
4.307	36.6	31.4	-24.6	16.7	-29.3	Neutral trace

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EXHIBIT 6. MEASUREMENT UNCERTAINTY

Test description		Uncertainty
Radiated Emissions	<30 MHz	+/-2.69dB
	30-1000 MHz	+/-4.20dB
	>1 GHz	+/-2.70dB
Frequency Stability		+/-1.2 Hz
Power Line Conducted Emission		+ 2.62dB
Occupied bandwidth		+/-0.2Hz

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

END OF REPORT

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