

TEST REPORT

Report Number: R15626970-E2

Applicant : Garmin International Inc.
1200 East 151st Street
Olathe, KS 66062-3426, USA

Model : A04807

FCC ID : IPH-04807

IC : 1792A-04807

EUT Description : Extremity Worn Digital Transceiver

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C
ISED RSS-247 ISSUE 3
ISED RSS-GEN ISSUE 5 + A1 + A2

Date Of Issue:
2025-07-23

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REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2025-07-23	Initial Issue	Manish Baral

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Garmin International Inc.
1200 East 151st Street
Olathe, KS 66062-3426, USA

EUT DESCRIPTION: Extremity Worn Digital Transceiver

MODEL: A04807

SERIAL NUMBER: 511423961, 511423988

SAMPLE RECEIPT DATE: 2025-03-04

DATE TESTED: 2025-03-21 TO 2025-04-30

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Refer to Section 2
ISED RSS-247 Issue 3	
ISED RSS-GEN Issue 5 + A1 + A2	

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released
For UL LLC By:

Prepared By:



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Consumer, Medical and IT Segment
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UL LLC

2. TEST RESULTS SUMMARY

This report contains info provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

Below is a list of the data/info provided by the customer:

- 1) Antenna gain and type (see section 6.3)
- 2) Worst-case data rates (see section 6.5)

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 11.6.
See Comment	RSS-GEN 6.7	20dB BW/99% OBW	Reporting purposes only	ANSI C63.10 Sections 6.9.2 and 6.9.3
15.247 (a)(1)	RSS-247 (5.1) (b)	Hopping Frequency Separation	Compliant	None
15.247 (a)(1)(iii)	RSS-247 (5.1) (d)	Number of Hopping Channels		
15.247 (a)(1)(iii)	RSS-247 (5.1) (d)	Average Time of Occupancy		
15.247 (b)(1)	RSS-247 (5.4) (b)	Output Power		
See Comment		Average Power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (d)	RSS-247 (5.5)	Conducted Spurious Emissions	Compliant	None
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions		
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions		

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC 47 CFR Part 2, FCC 47 CFR Part 15, ANSI C63.10-2020, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A1 + A2, and RSS-247 Issue 3.

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification # 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building: 12 Laboratory Dr Durham, NC 27713, USA	US0067	2180C	825374
<input checked="" type="checkbox"/>	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radio Frequency (Spectrum Analyzer)	141.2 Hz
Occupied Channel Bandwidth	1.22%
RF output power, conducted	1.3 dB (PK) 0.45 dB (AV)
Power Spectral Density, conducted	2.47 dB
Unwanted Emissions, conducted	1.94 dB
All emissions, radiated	6.01 dB
Conducted Emissions (0.150-30MHz) - LISN	3.40 dB
Temperature	0.57°C
Humidity	3.39%
DC Supply voltages	1.70%
Time	3.39%

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is an extremity worn digital transceiver with BT, BLE, ANT/ANT+, 802.11b/g/n 2.4GHz WLAN, NFC, and Global Navigation Satellite System (GNSS) receiver. This report covers full testing on the BT radio.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	Basic GFSK	13.35	21.63
2402 - 2480	Enhanced DQPSK	14.77	29.99
2402 - 2480	Enhanced 8PSK	14.70	29.51

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:
The radio utilizes an antenna with the following type and maximum gain:

Type	Frequency Range (MHz)	Maximum Gain (dBi)
Slot	2402-2480	-6.41

6.4. SOFTWARE AND FIRMWARE

FW Version: 16.29.

6.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel and mode with the highest average output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, and Z. The worst-case orientation was determined to be the Z-orientation; therefore, all testing was performed with the EUT in the Z-orientation.

Note: Only worst case plots are included to reduce report size.

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	21AJS0KL00	PF4FKVZE	-

I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Proprietary	1	USB-C	Shielded	<3m	Program/Charge EUT

SETUP DIAGRAMS

Please refer to R15626970-EP2 for setup diagrams

7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 1)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
0.009-30MHz					
135144	Active Loop Antenna	ETS-Lindgren	6502	2024-10-02	2025-10-02
30-1000 MHz					
90629	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-30	2026-01-30
1-18 GHz					
135143	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-02-07	2026-02-07
18-40 GHz					
91186	Horn Antenna, 18-26.5GHz	Antenna Research Associates	MWH-1826/B	2024-05-16	2025-05-16
Gain-Loss Chains					
91974	Gain-loss string: 0.009-30MHz	Various	Various	2024-05-08	2025-05-08
91976	Gain-loss string: 25-1000MHz	Various	Various	2024-05-08	2025-05-08
91979	Gain-loss string: 1-18GHz	Various	Various	2024-05-08	2025-05-08
135999	Gain-loss string: 18-40GHz	Various	Various	2024-05-08	2025-05-08
Receiver & Software					
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-08-29	2025-08-29
81018	Spectrum Analyzer	Agilent	E4446A	2024-07-31	2025-07-31
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
241205	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Conducted Room 1					
90411	Spectrum Analyzer	Keysight Technologies	N9030A	2024-08-01	2025-08-01
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
SOFTEMI	Antenna Port Software	UL	Version 2024.4.23	NA	NA
Power Software	Boonton Power Analyzer	Boonton	Version 3.0.13.0	NA	NA
Additional Equipment used					
211057	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2024-08-01	2025-08-01

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
70374	EMI Test Receiver	ROHDE & SCHWARZ	ESC17	2024-07-30	2025-07-30
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2024-04-04	2025-04-30
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
80391	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2024-08-01	2025-08-01
52859	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2024-04-04	2025-04-30
236852	CW-AC Power Source	Ametek	CW2501	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

s

8. MEASUREMENT METHODS

On Time and Duty Cycle: ANSI C63.10-2020 Section 11.6

Occupied BW (20dB): ANSI C63.10-2020 Section 6.9.2

Occupied BW (99%): ANSI C63.10-2020 Section 6.9.3

Carrier Frequency Separation: ANSI C63.10-2020 Section 7.8.2

Number of Hopping Frequencies: ANSI C63.10-2020 Section 7.8.3

Time of Occupancy (Dwell Time): ANSI C63.10-2020 Section 7.8.4

Output Power: ANSI C63.10-2020 Section 7.8.5

Conducted Spurious Emissions: ANSI C63.10-2020 Section 7.8.7

Conducted Band-Edge: ANSI C63.10-2020 Section 7.8.7.2 and 6.10.4

Radiated Band-edge: ANSI C63.10-2020 Section 6.10.5

Radiated Spurious Emissions: ANSI C63.10-2020 Sections 6.3 to 6.6 and 7.8.8

AC Power Line Conducted Emissions: ANSI C63.10-2020, Section 6.2.

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

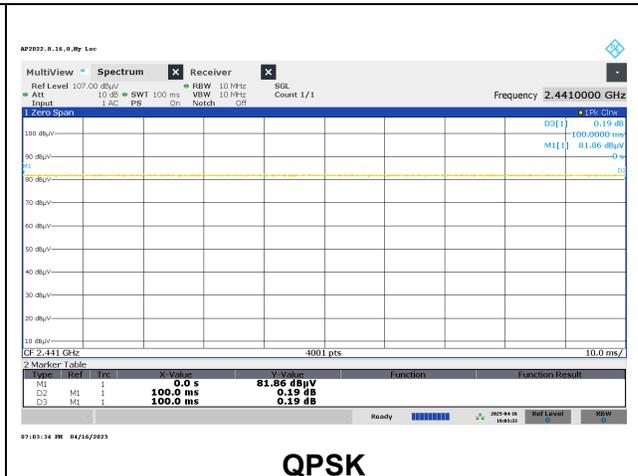
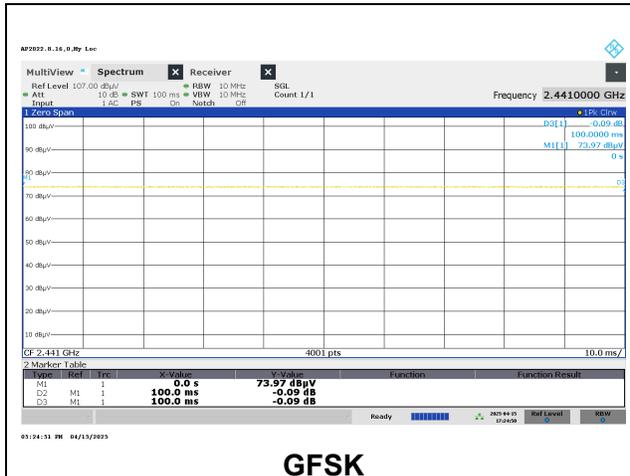
LIMITS

None; for reporting purposes only.

PROCEDURE

ANSI C63.10, Section 11.6: Zero-Span Spectrum Analyzer Method.

Mode	ON Time B (ms)	Period (ms)	Duty Cycle x (lineari)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/T Minimum VBW (kHz)
GFSK	100.00	100.00	1.000	100.00	0.00	0.010
QPSK	100.00	100.00	1.000	100.00	0.00	0.010
8PSK	100.00	100.00	1.000	100.00	0.00	0.010



Tested By: 84740/11993
 Date: 2025-04-15, 2025-04-16

9.2. 20 dB AND 99% BANDWIDTH

LIMITS

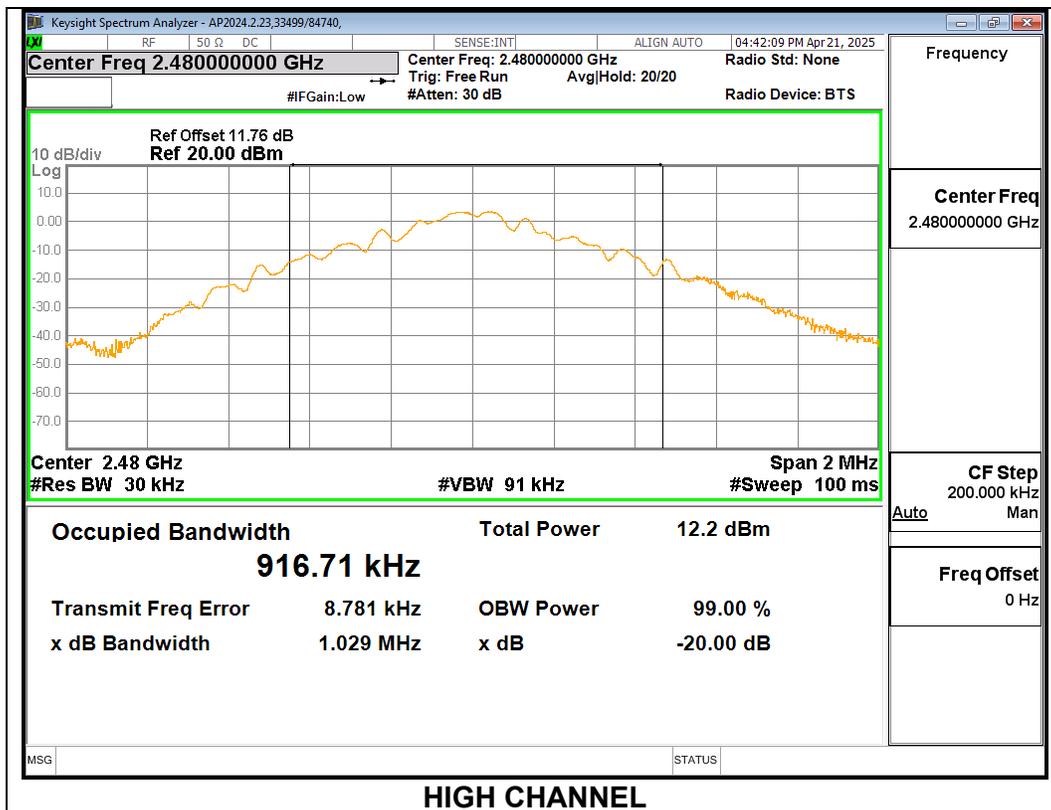
None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1-5% of the 20 dB bandwidth. The VBW is set to \geq RBW. The sweep time is coupled.

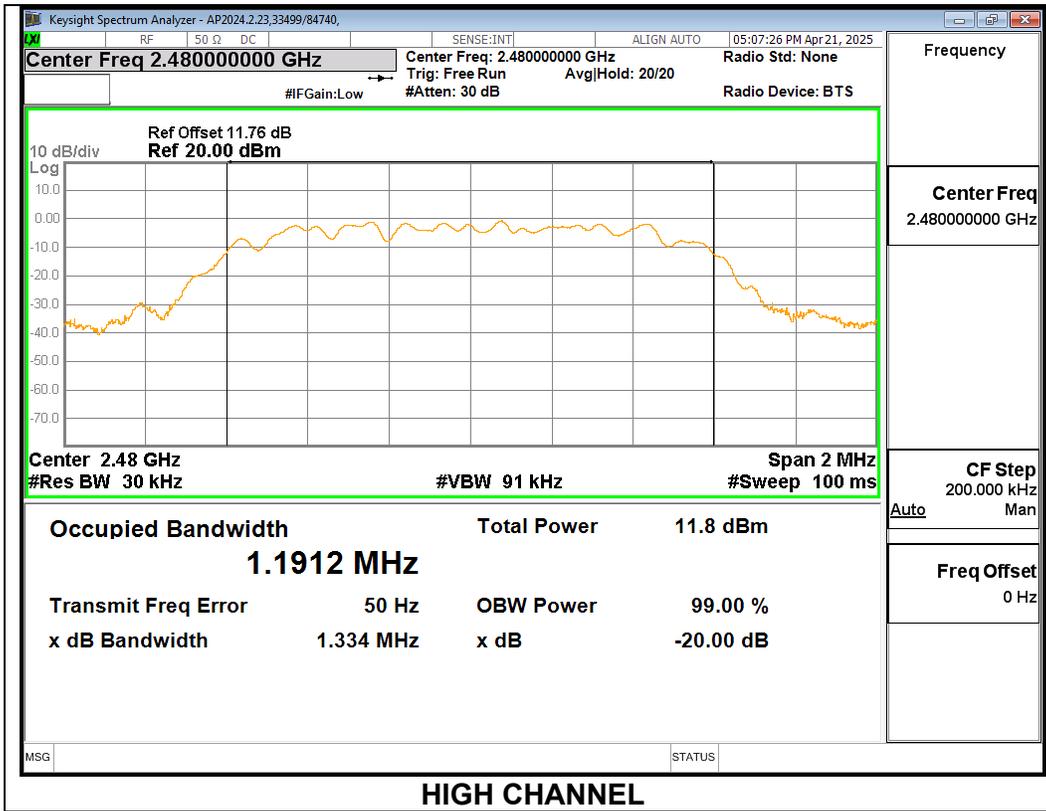
9.2.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.031	0.927
Mid	2441	1.029	0.908
High	2480	1.029	0.917



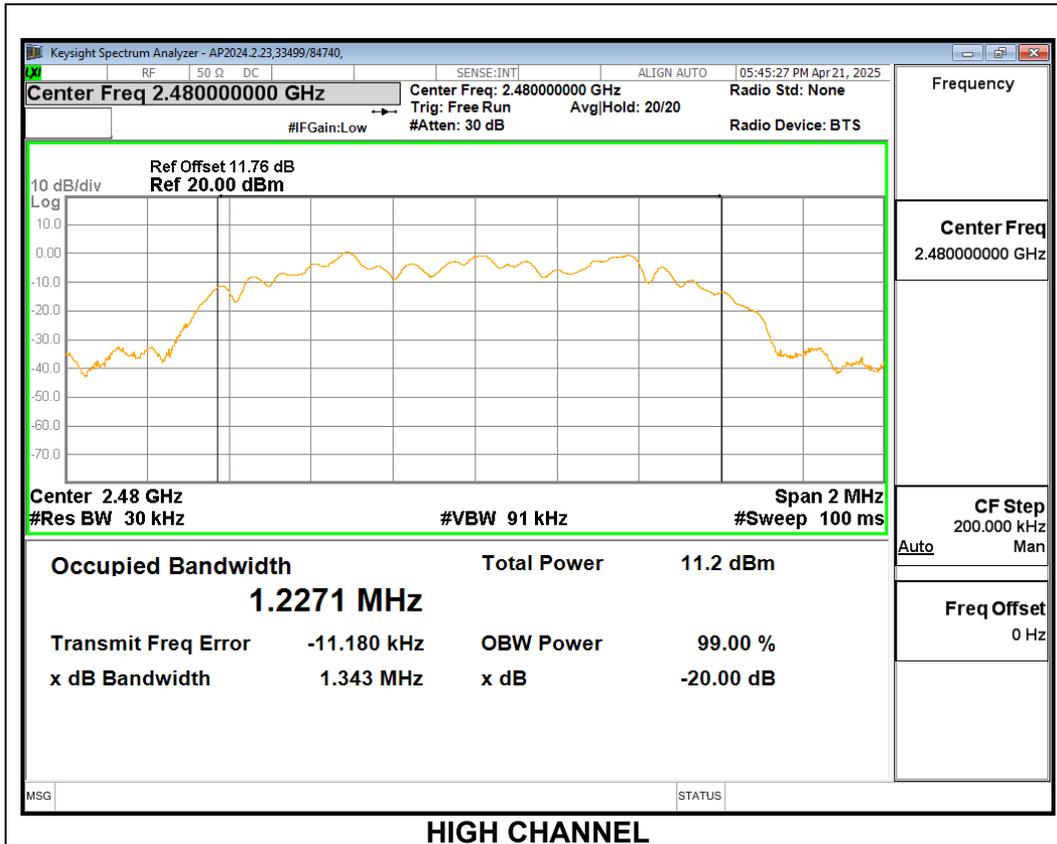
9.2.2. BLUETOOTH BASIC DATA RATE QPSK MODULATION

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.342	1.164
Mid	2441	1.334	1.190
High	2480	1.334	1.191



9.2.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	99% Bandwidth (MHz)
Low	2402	1.353	1.2302
Mid	2441	1.343	1.2256
High	2480	1.343	1.2271



9.3. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)
RSS-247 (5.1) (b)

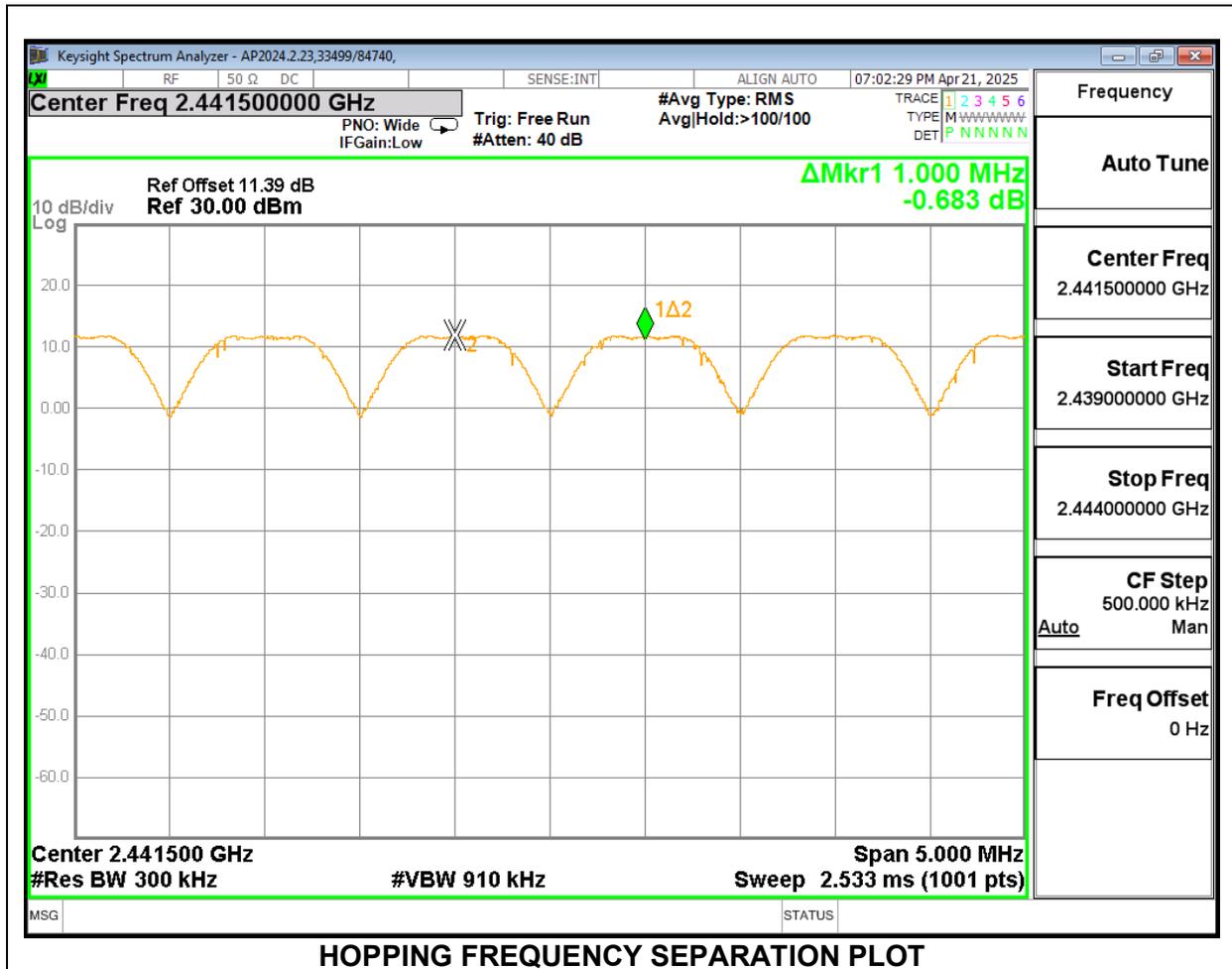
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 300 kHz and the VBW is set to $VBW \geq RBW$. The sweep time is coupled.

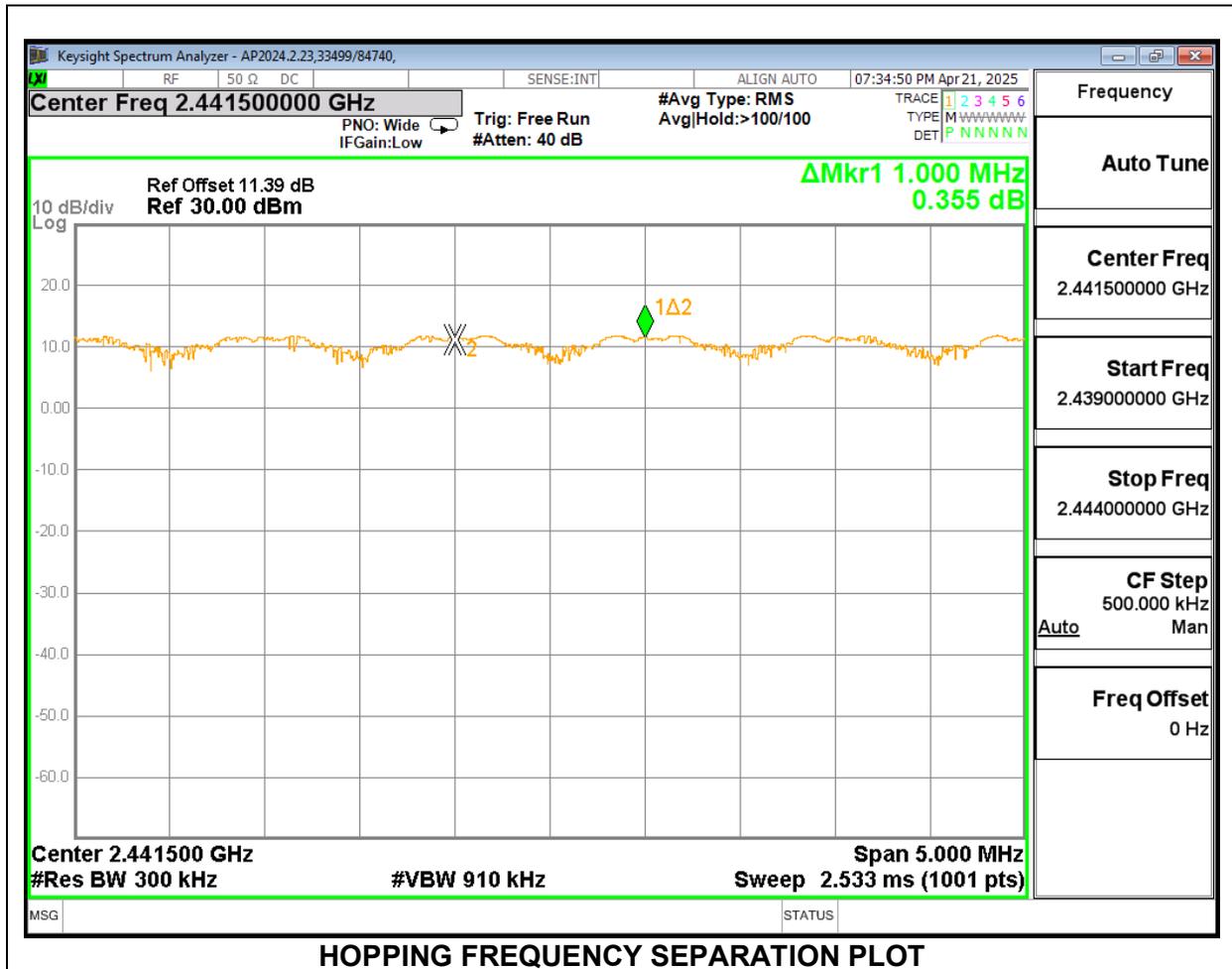
9.3.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION



$$(20\text{dB BW}) \times (2/3) = (1.031 \text{ MHz}) \times (2/3) = 0.687333 \text{ MHz}$$

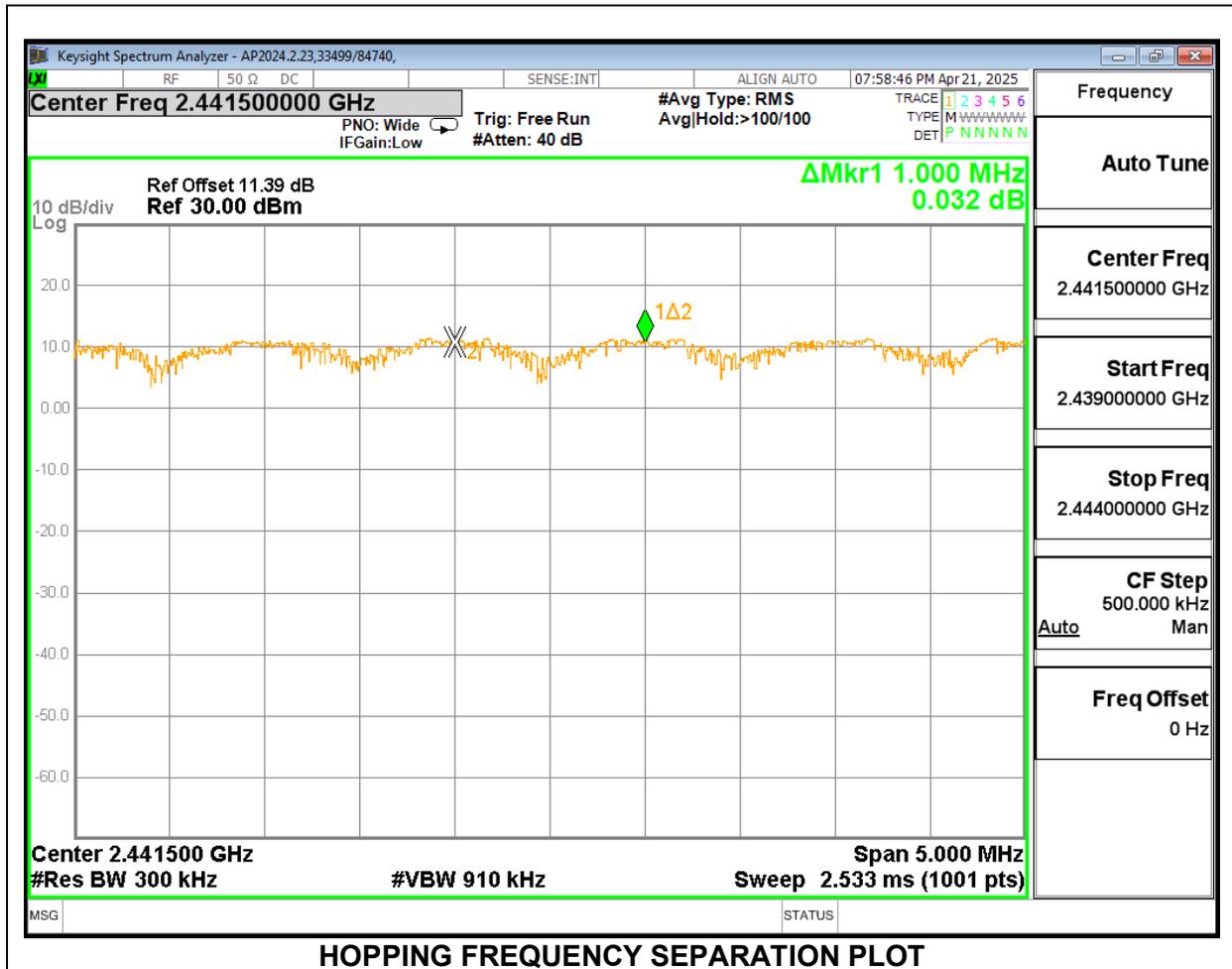
$$0.687333 \text{ MHz} < 1 \text{ MHz}$$

9.3.2. BLUETOOTH BASIC DATA RATE QPSK MODULATION



$(20\text{dB BW}) \times (2/3) = (1.342 \text{ MHz}) \times (2/3) = 0.89466 \text{ MHz}$
 $0.89466 \text{ MHz} < 1 \text{ MHz}$

9.3.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION



$$(20\text{dB BW}) \times (2/3) = (1.353 \text{ MHz}) \times (2/3) = 0.902 \text{ MHz}$$
$$0.902 \text{ MHz} < 1 \text{ MHz}$$

9.4. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)
RSS-247 (5.1) (d)

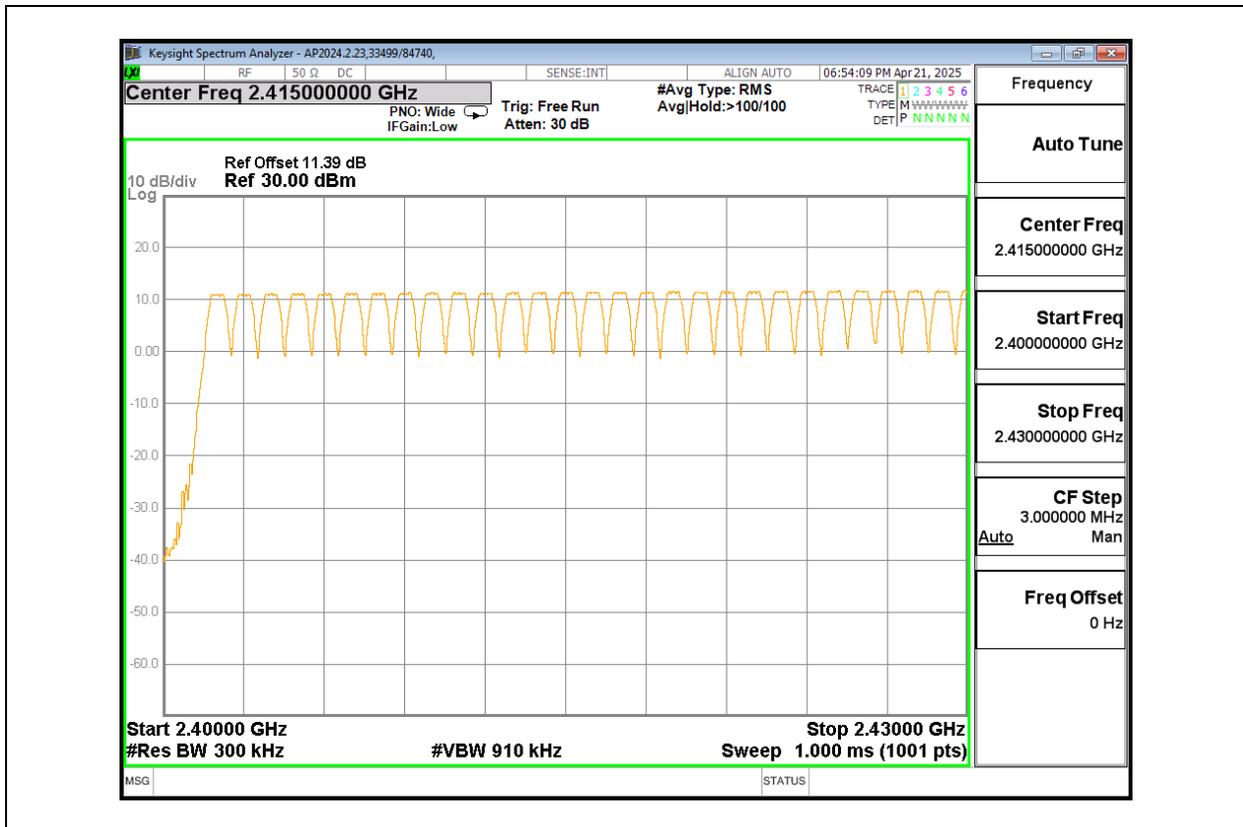
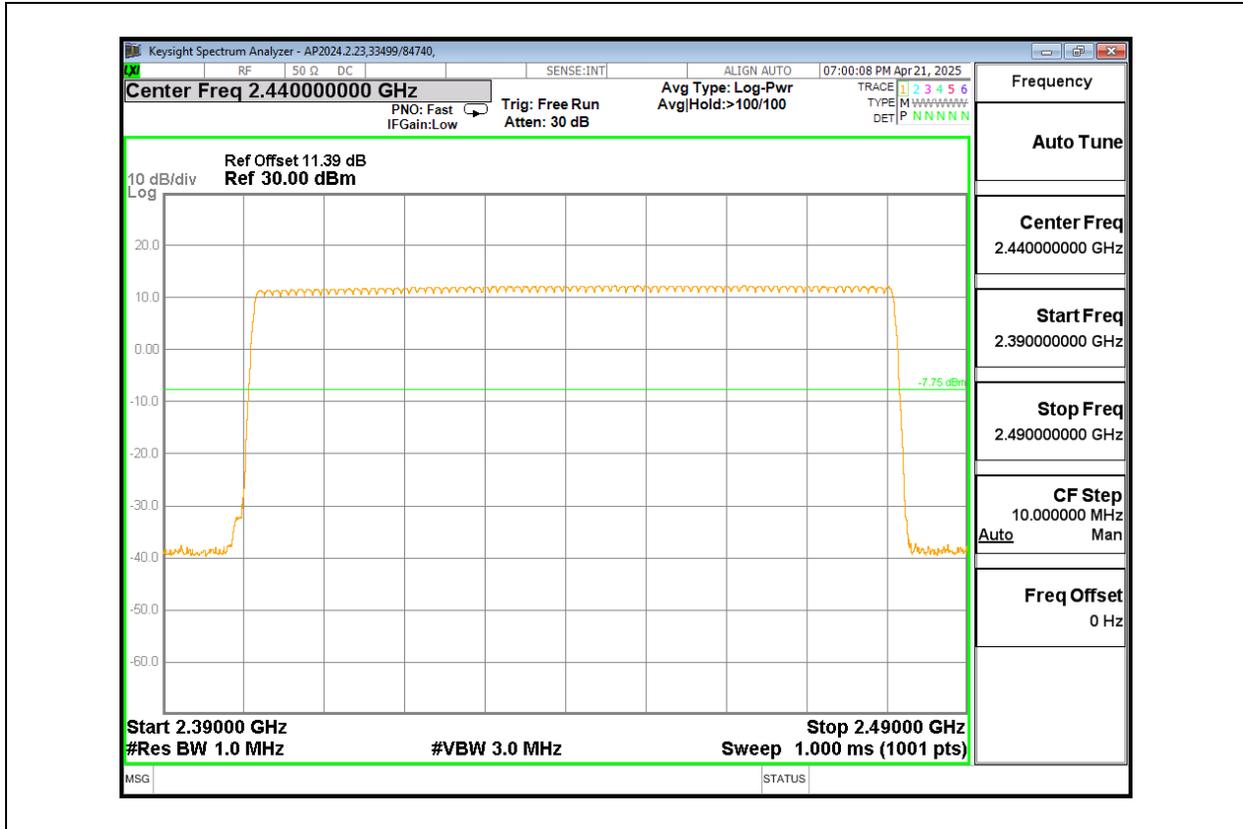
Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

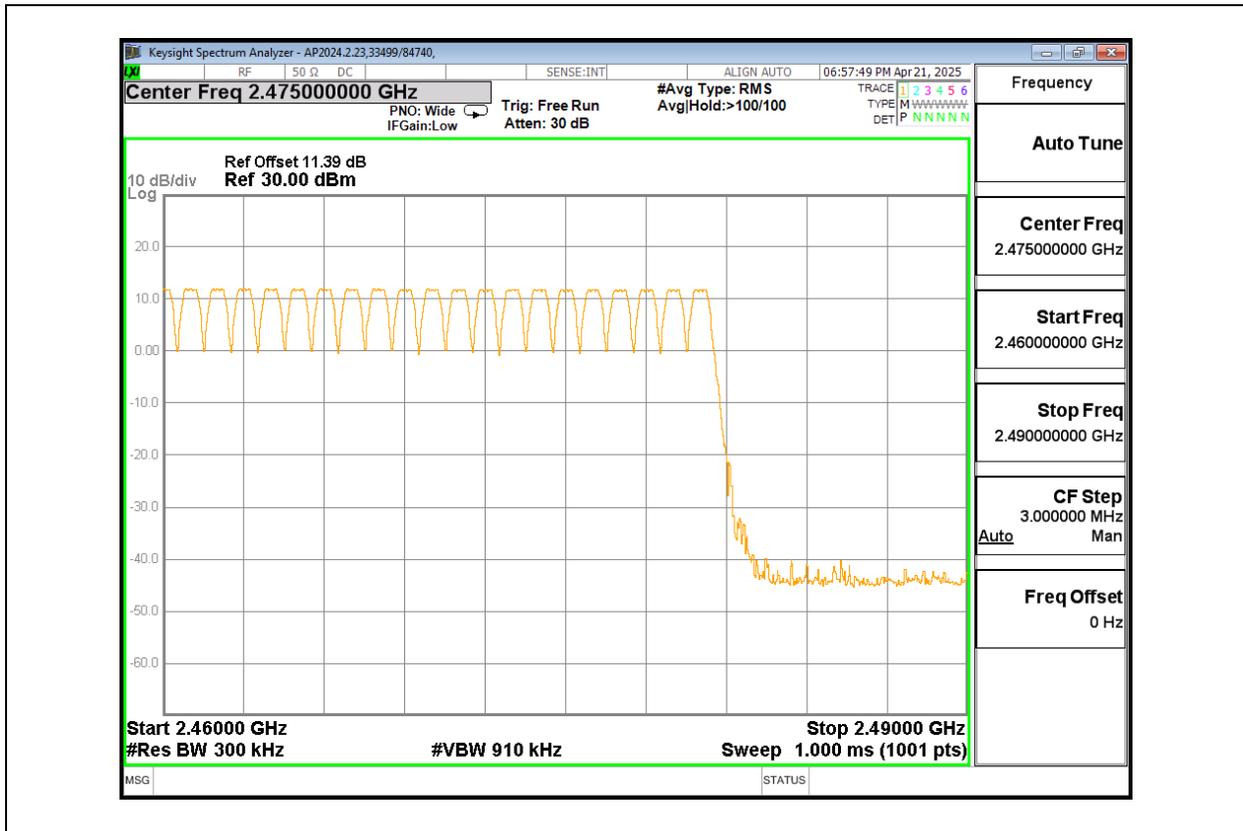
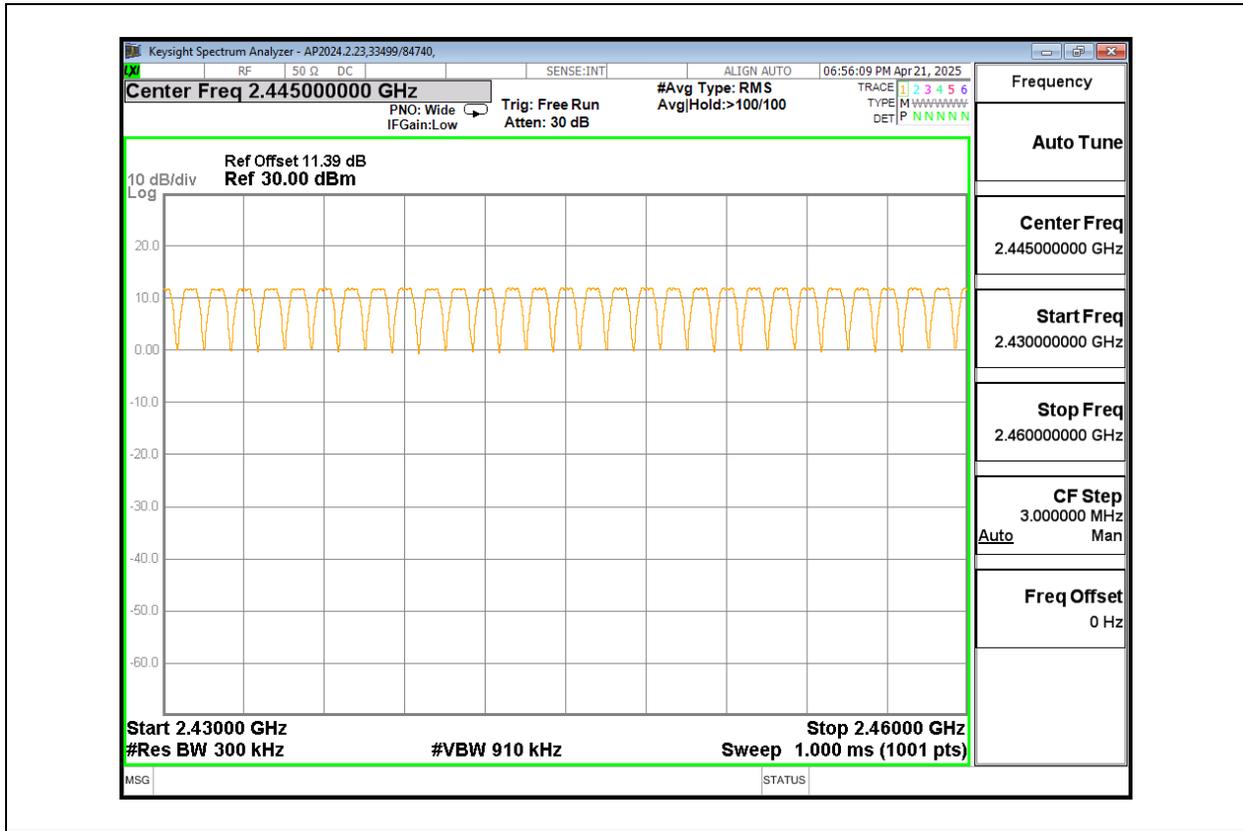
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

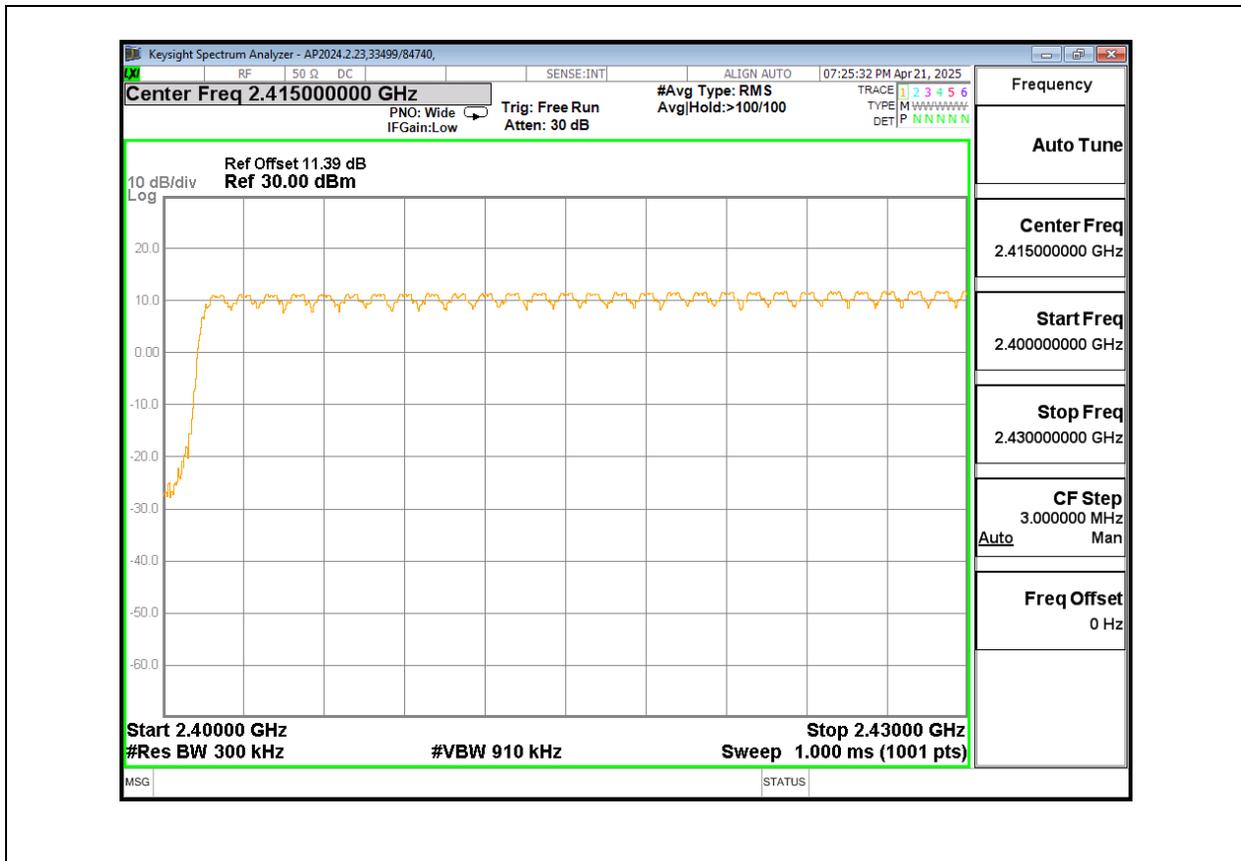
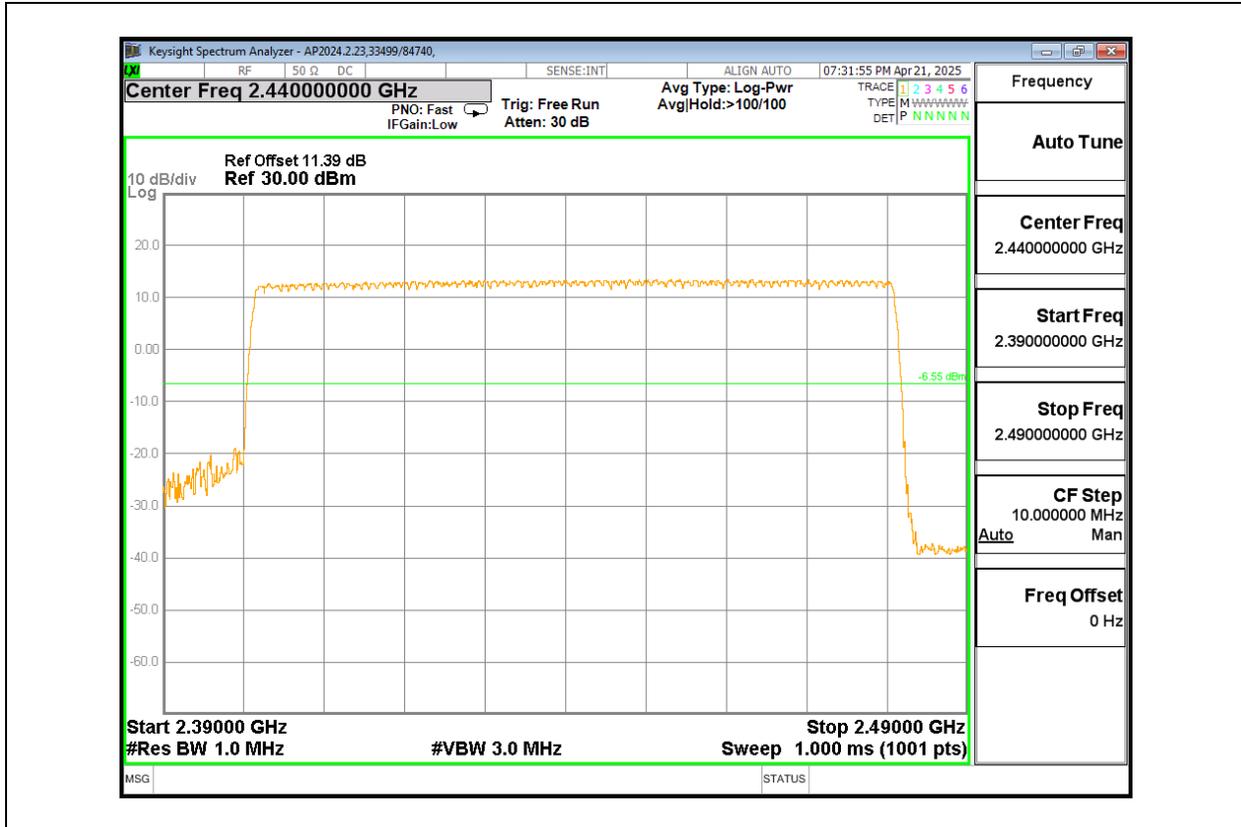
Normal Mode: 79 Channels Observed

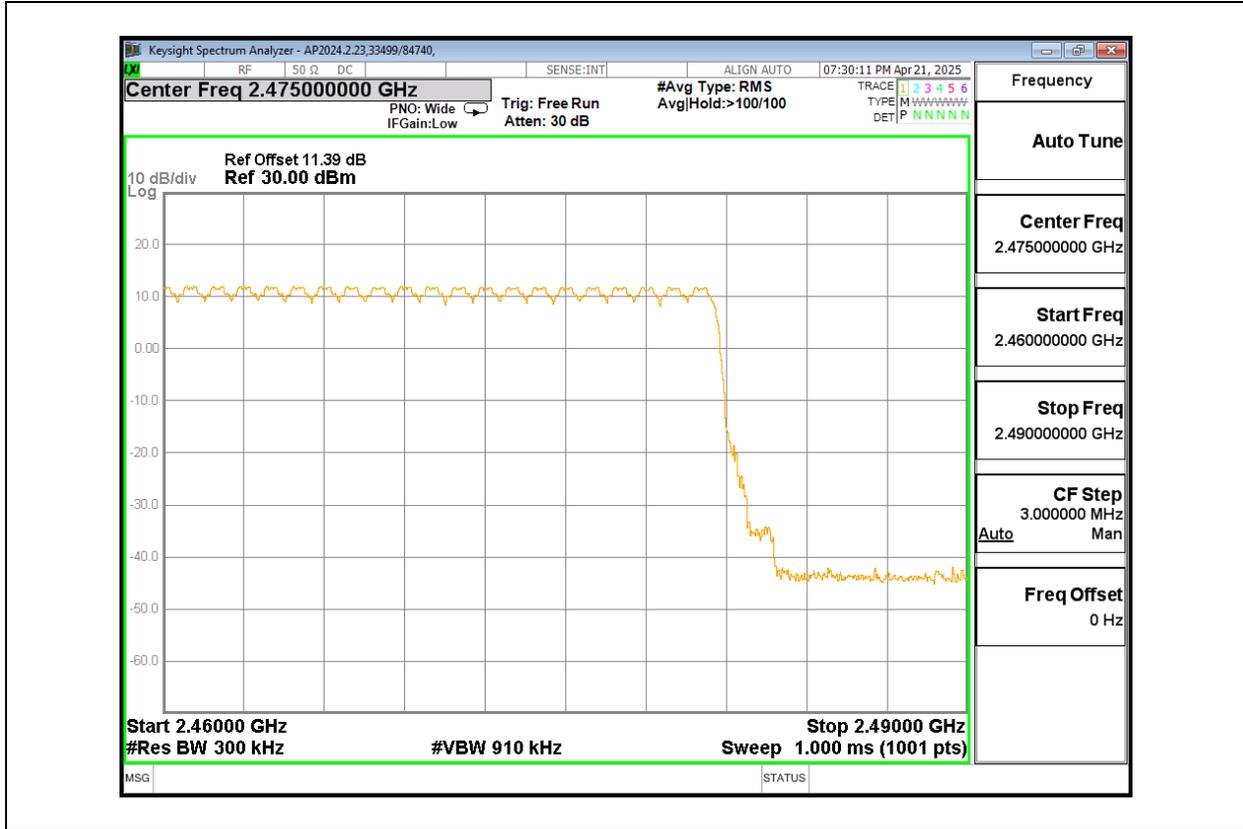
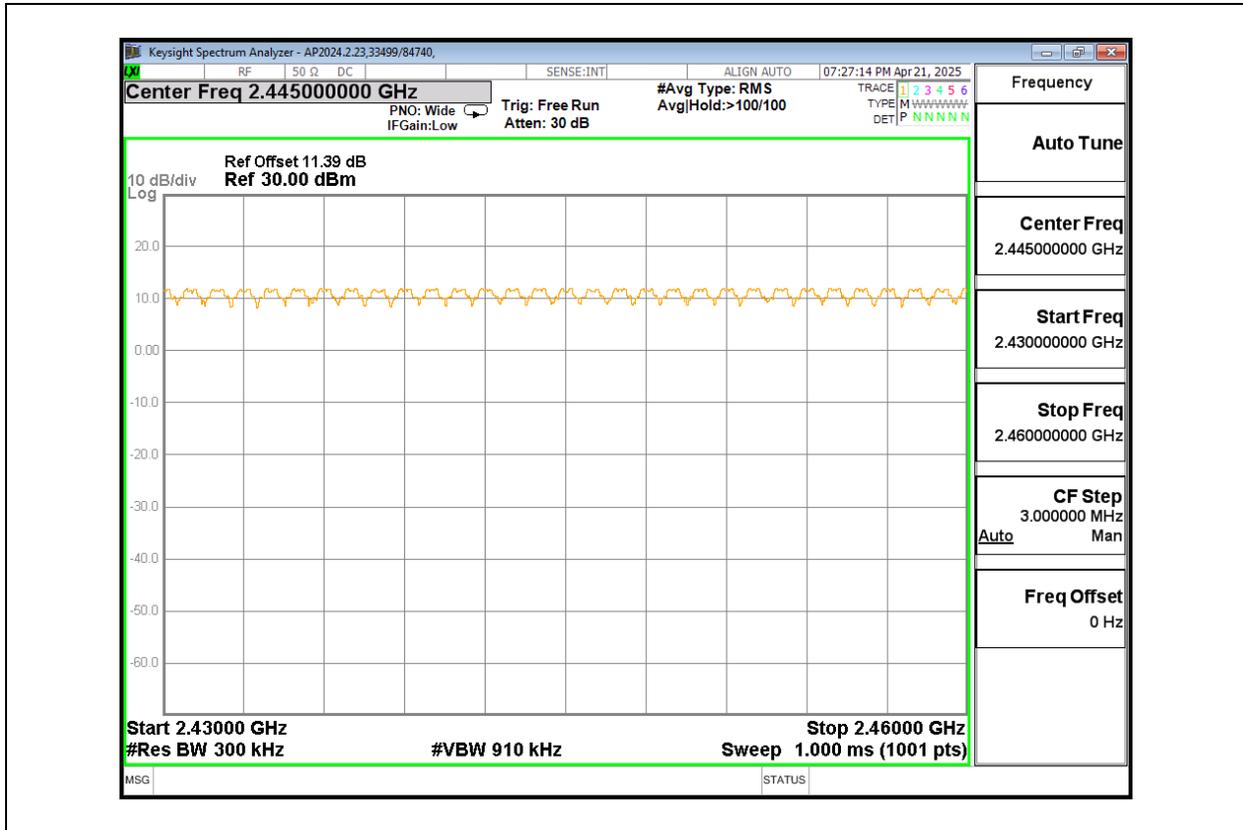
9.4.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION



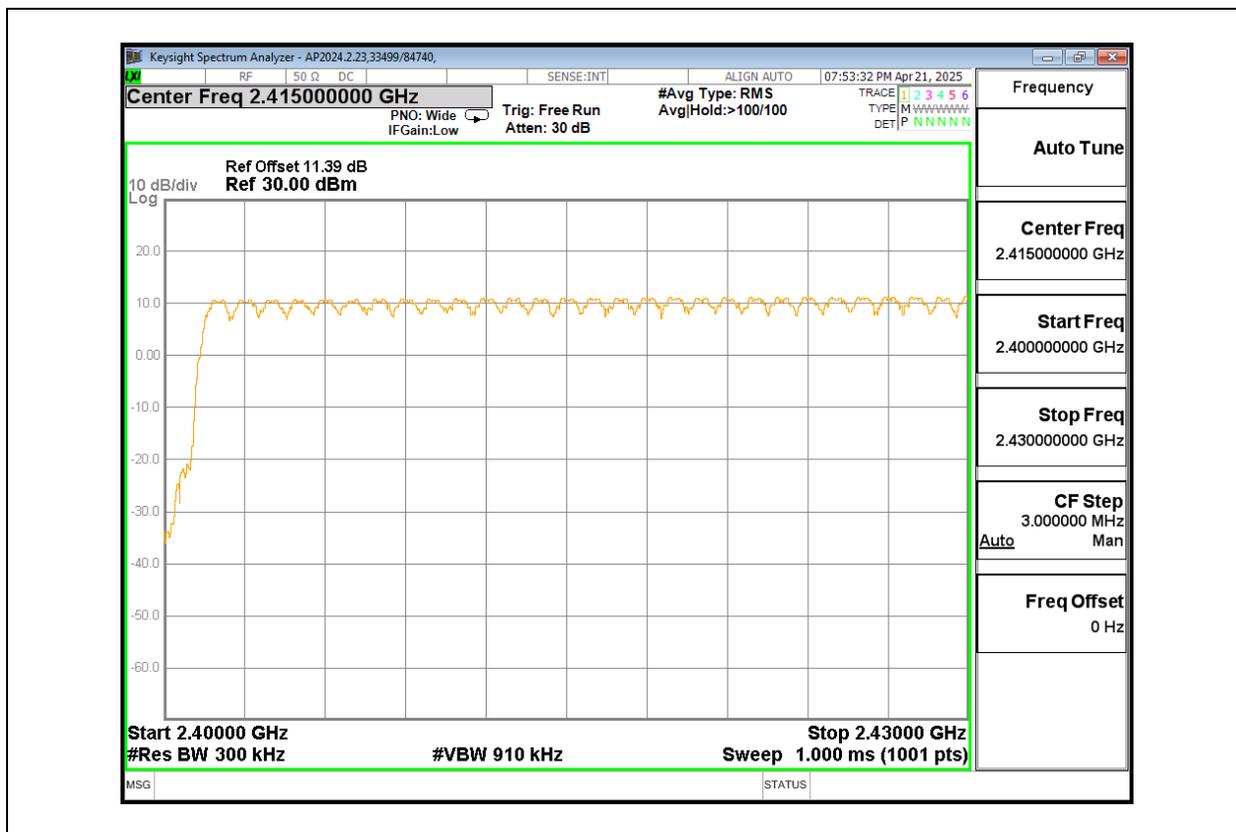
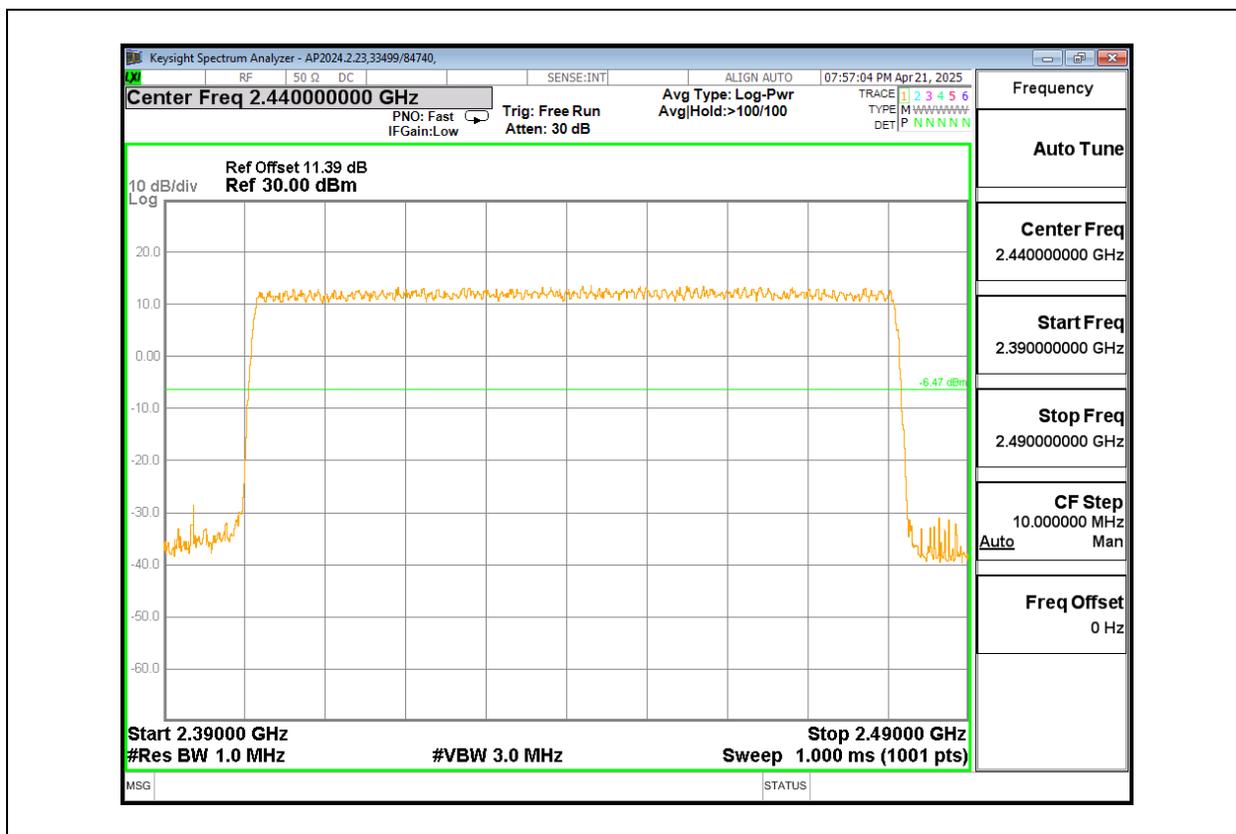


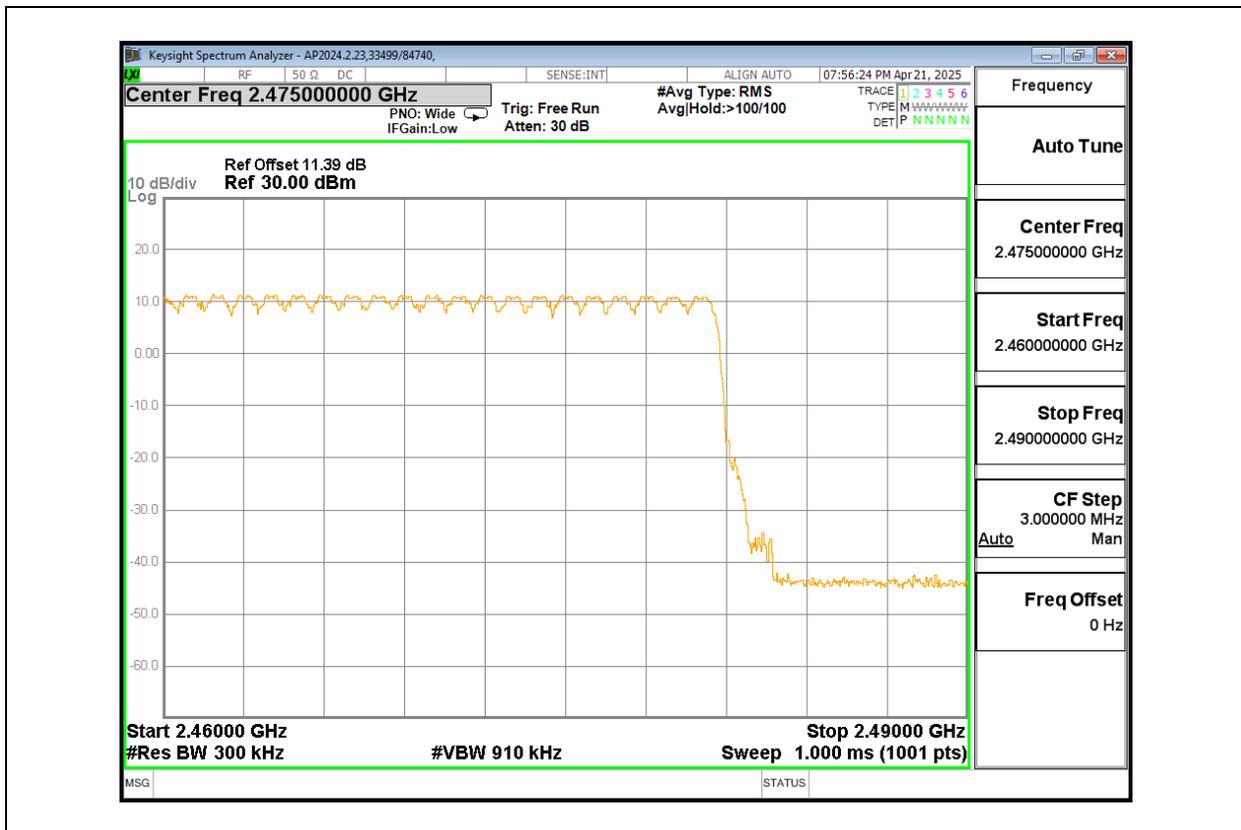
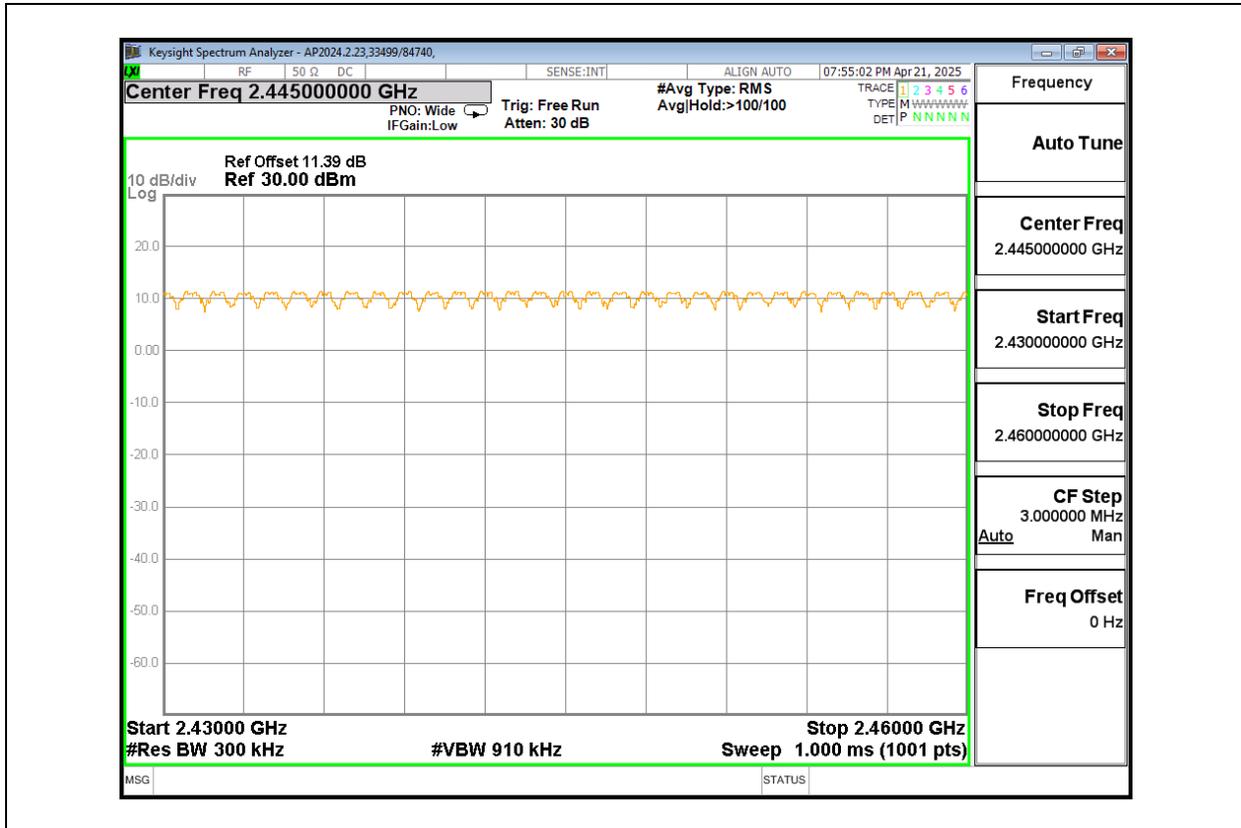
9.4.2. BLUETOOTH BASIC DATA RATE QPSK MODULATION





9.4.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION





9.5. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)
 RSS-247 (5.1) (d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

TEST PROCEDURE

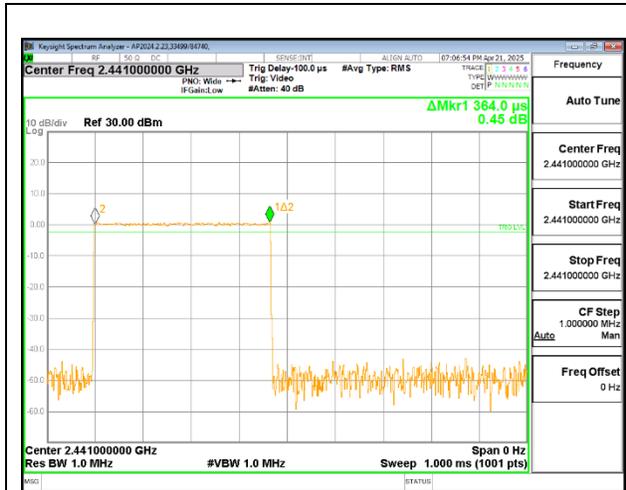
The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 3.16 second period (79 channels * 0.4 s) is equal to $10 * (\# \text{ of pulses in } 3.16 \text{ s}) * \text{ pulse width}$.

For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to $10 * (\# \text{ of pulses in } 0.8 \text{ s}) * \text{ pulse width}$.

9.5.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.364	32	0.1165	0.4	-0.2835
DH3	1.618	18	0.2912	0.4	-0.1088
DH5	2.86	9	0.2574	0.4	-0.1426
GFSK AFH Mode					
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
DH1	0.364	8	0.02912	0.4	-0.3709
DH3	1.618	4.5	0.07281	0.4	-0.3272
DH5	2.86	2.25	0.06435	0.4	-0.3357



PULSE WIDTH – DH1



PULSE WIDTH – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



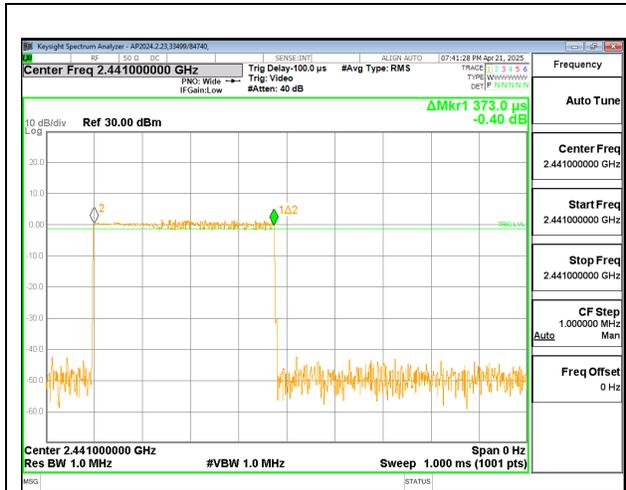
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



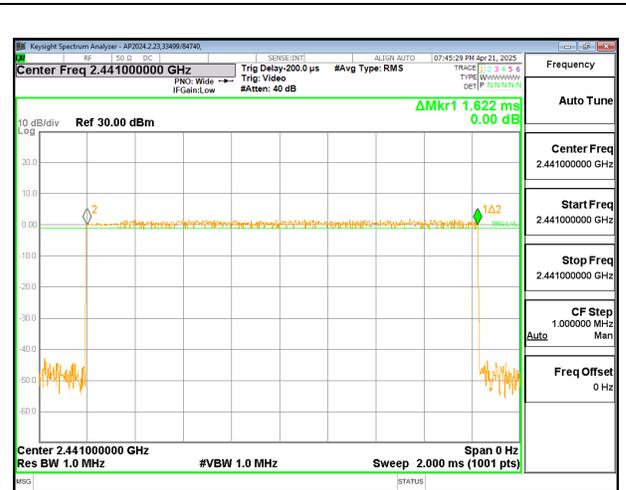
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

9.5.2. BLUETOOTH BASIC DATA RATE QPSK MODULATION

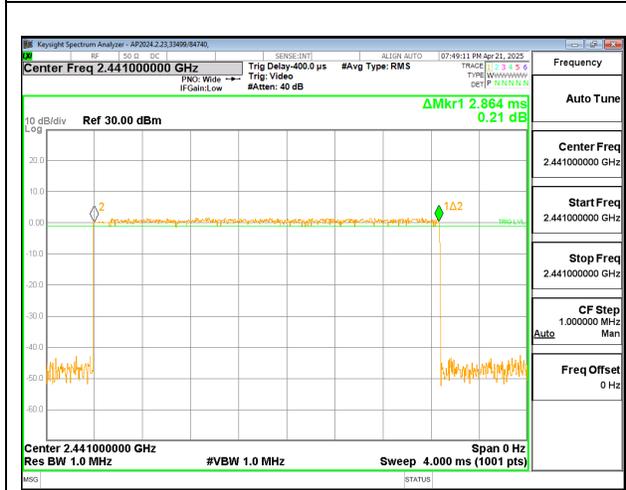
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
QPSK Normal Mode					
DH1	0.373	32	0.1194	0.4	-0.2806
DH3	1.622	19	0.3082	0.4	-0.0918
DH5	2.864	6	0.1718	0.4	-0.2282
QPSK AFH Mode					
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
DH1	0.373	8	0.02984	0.4	-0.3702
DH3	1.622	4.75	0.07705	0.4	-0.3230
DH5	2.864	1.5	0.04296	0.4	-0.3570



PULSE WIDTH – DH1



PULSE WIDTH – DH3



PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



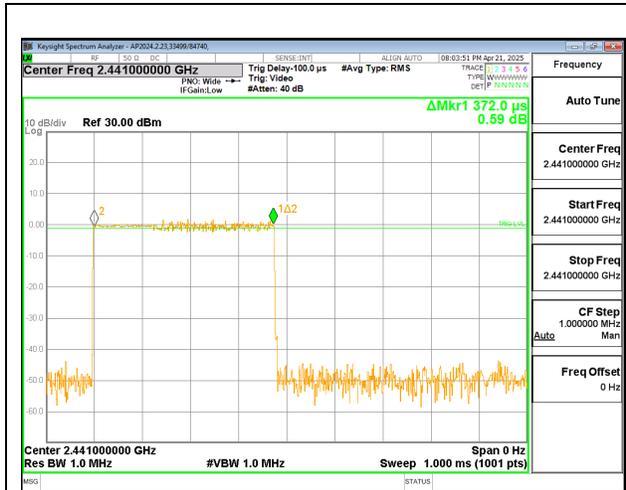
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



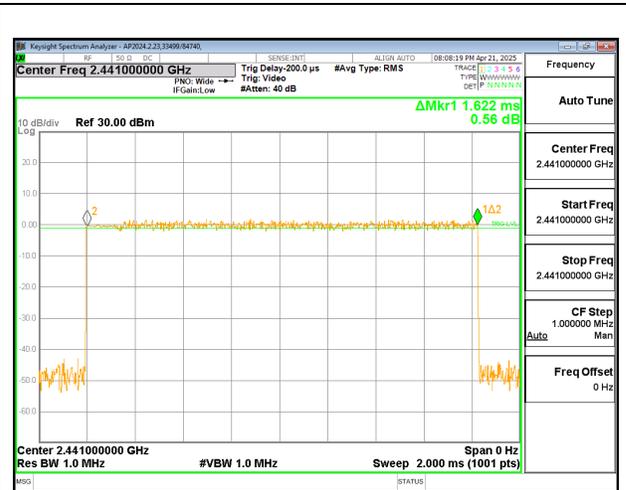
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

9.5.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

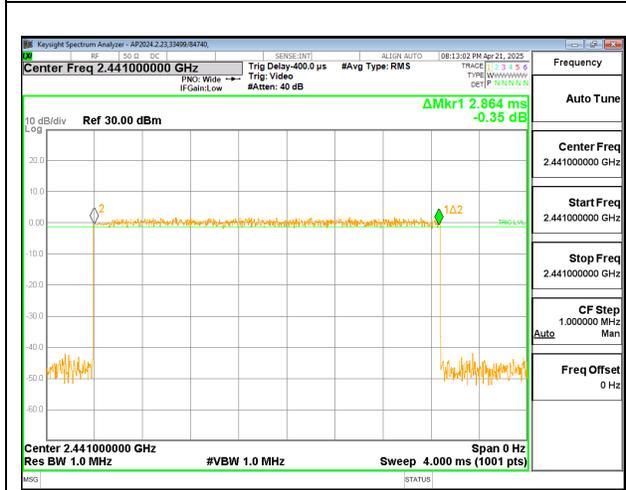
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
DH1	0.372	32	0.1190	0.4	-0.2810
DH3	1.622	18	0.2920	0.4	-0.1080
DH5	2.864	11	0.3150	0.4	-0.0850
8PSK AFH Mode					
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
DH1	0.372	8	0.02976	0.4	-0.3702
DH3	1.622	4.5	0.07299	0.4	-0.3270
DH5	2.864	2.75	0.07876	0.4	-0.3212



PULSE WIDTH – DH1



PULSE WIDTH – DH3



PULSE WIDTH – DH5



**NUMBER OF PULSES IN 3.16 SECOND
OBSERVATION PERIOD – DH1**



**NUMBER OF PULSES IN 3.16 SECOND
OBSERVATION PERIOD – DH3**



**NUMBER OF PULSES IN 3.16 SECOND
OBSERVATION PERIOD – DH5**

9.6. OUTPUT POWER

LIMITS

§15.247 (b) (1)
RSS-247 (5.4) (b)

The maximum antenna gain is less than 6 dBi, therefore the limit is 30 dBm. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts

TEST PROCEDURE

Measurements performed using a wideband gated RF power meter.

The cable assembly insertion loss of 9.98 dB (including 0.68 dB cable and a 9.98dB pad) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable connected to a power meter via wideband power sensor. Peak output power was read directly from power meter.

9.6.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Tested By:	104463/85502
Date:	2025-04-16

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	12.76	21	-8.24
Middle	2441	13.35	21	-7.65
High	2480	13.02	21	-7.98

9.6.2. BLUETOOTH ENHANCED DATA RATE DQPSK MODULATION

Tested By:	104463/85502
Date:	2025-04-16

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.69	21	-9.31
Middle	2441	14.77	21	-6.23
High	2480	14.65	21	-6.35

9.6.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Tested By:	104463/85502
Date:	2025-04-16

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	11.12	21	-9.88
Middle	2441	14.7	21	-6.3
High	2480	14.66	21	-6.34

9.7. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

Measurements performed using a wideband gated RF power meter.

The cable assembly insertion loss of 9.98 dB (including 0.68 dB cable and a 9.98dB pad) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable connected to a power meter via wideband power sensor. Gated average output power was read directly from power meter.

9.7.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Tested By:	104463/85502
Date	2025-04-16

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	12.126
Middle	2441	12.703
High	2480	12.43

9.7.2. BLUETOOTH ENHANCED DATA RATE DQPSK MODULATION

Tested By:	104463/85502
Date	2025-04-16

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	11.027
Middle	2441	12.066
High	2480	11.877

9.7.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Tested By:	104463/85502
Date	2025-04-16

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	10.443
Middle	2441	11.594
High	2480	11.589

9.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)
RSS-247 5.5

Limit = -20 dBc

TEST PROCEDURE

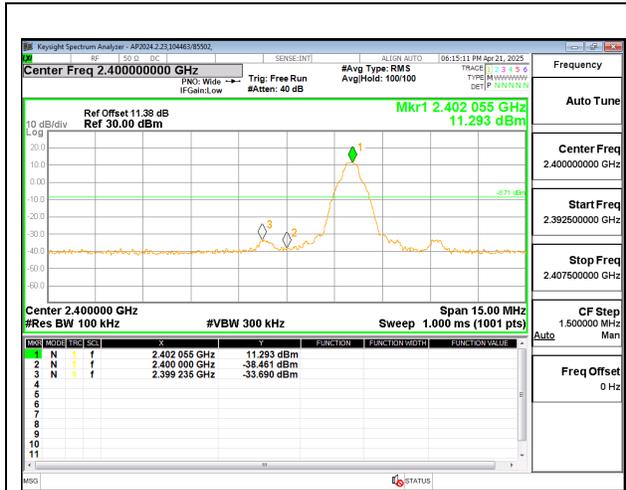
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

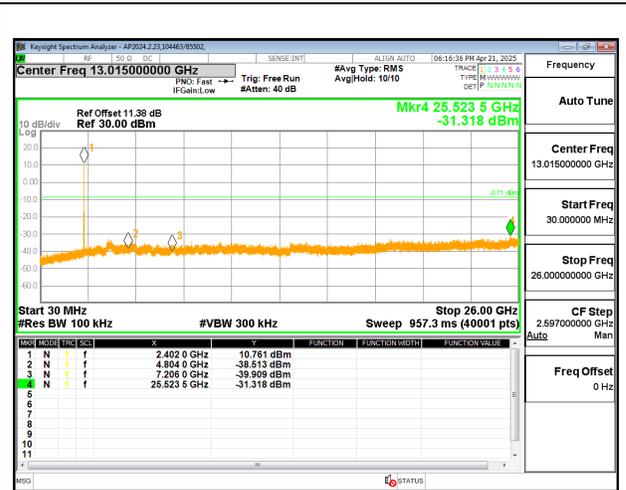
The bandedges at 2.4 and 2.4835 GHz are investigated with the transmitter set to the normal hopping and hopping modes.

9.8.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

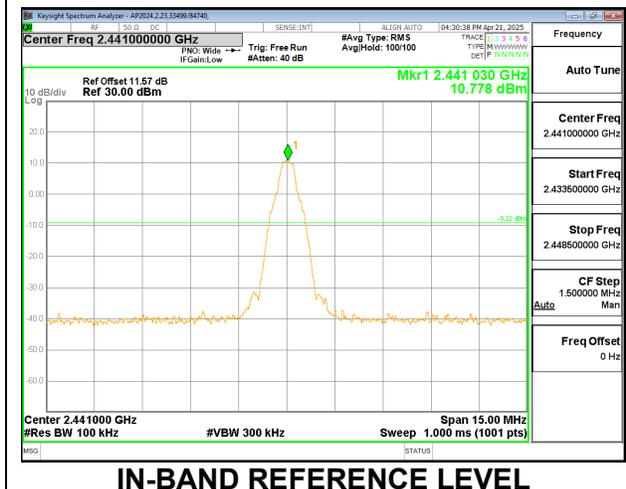
SPURIOUS EMISSIONS, NON-HOPPING



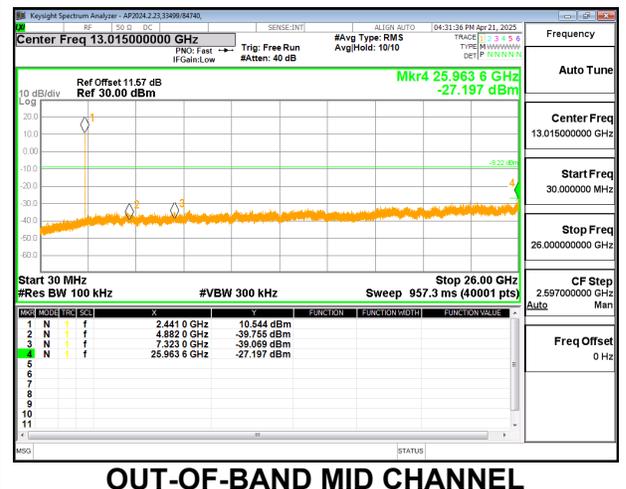
LOW CHANNEL BANDEDGE



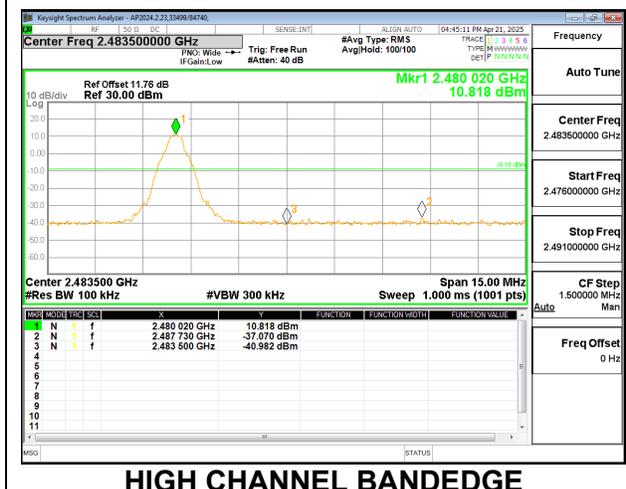
OUT-OF-BAND LOW CHANNEL



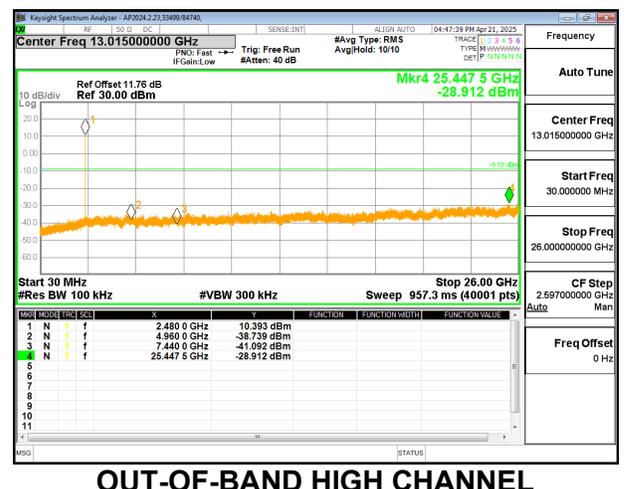
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

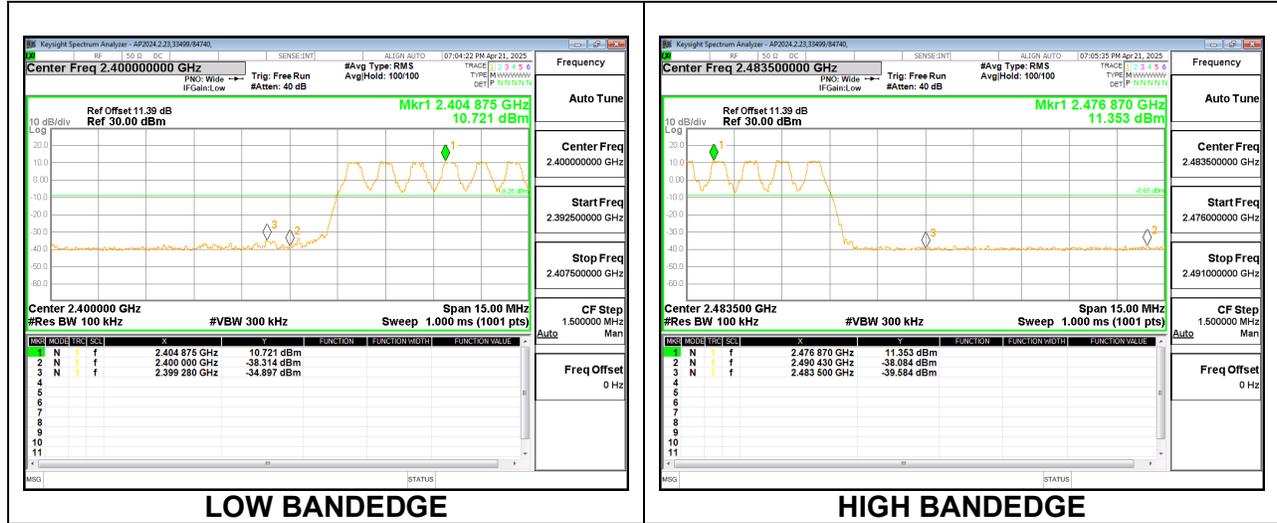


HIGH CHANNEL BANDEDGE



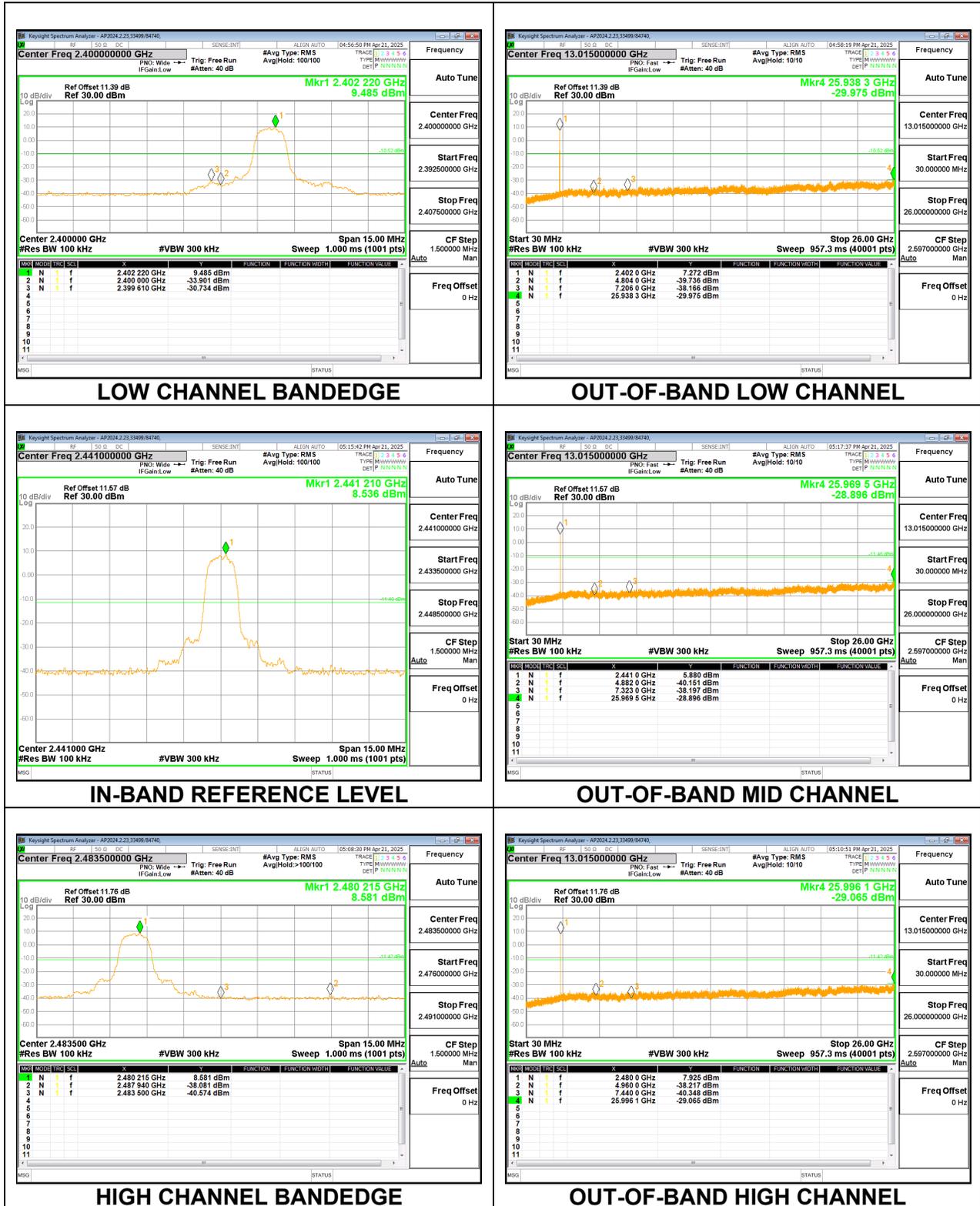
OUT-OF-BAND HIGH CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



9.8.2. BLUETOOTH BASIC DATA RATE QPSK MODULATION

SPURIOUS EMISSIONS, NON-HOPPING

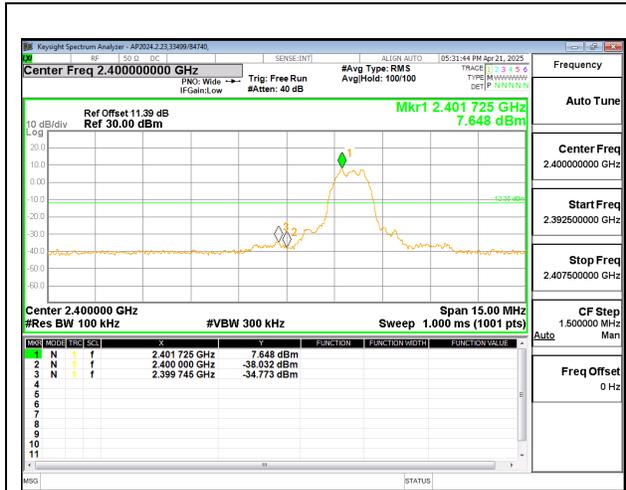


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



9.8.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

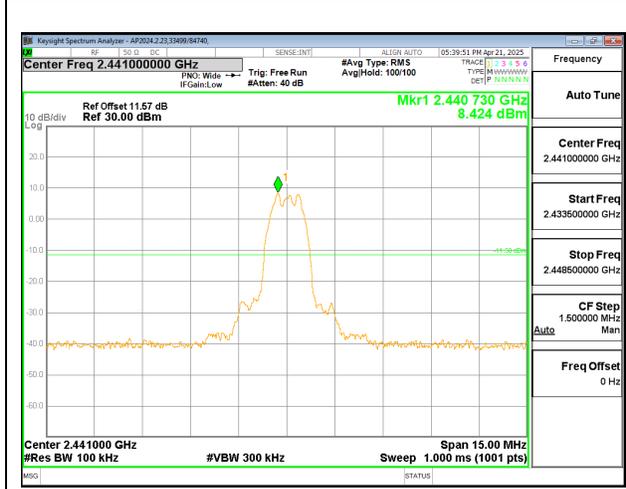
SPURIOUS EMISSIONS, NON-HOPPING



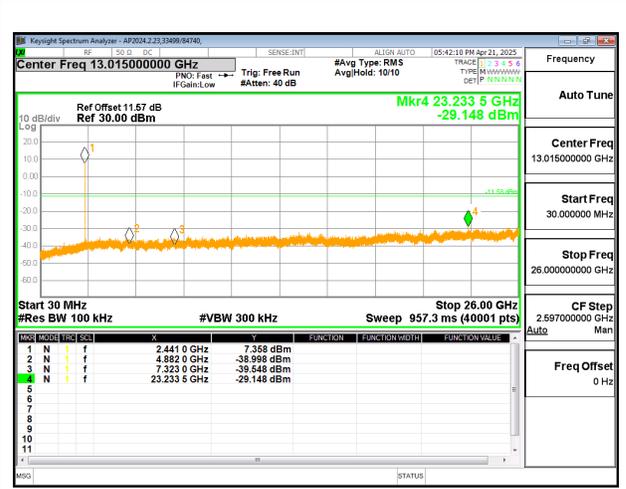
LOW CHANNEL BANDEDGE



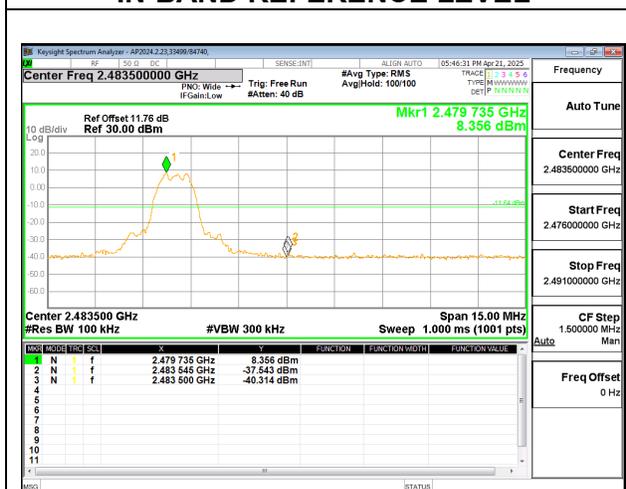
OUT-OF-BAND LOW CHANNEL



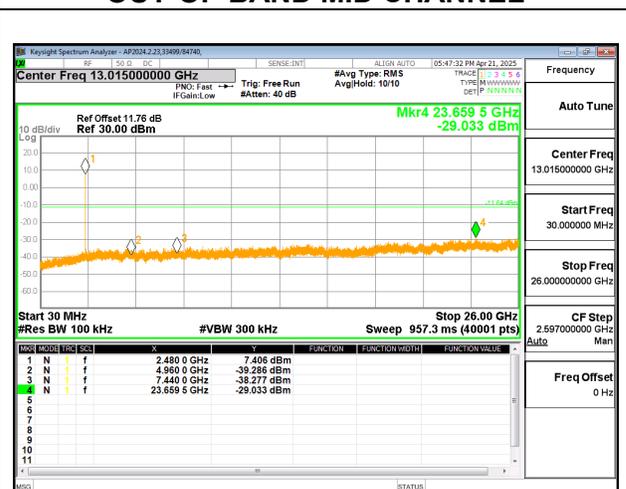
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



10. RADIATED TEST RESULTS

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

IC RSS-GEN Clause 8.9 and 8.10

Frequency Range (kHz)	Field Strength Limit (uA/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	6.37/F(kHz) @ 300 m	-
0.490-1.705	63.7/F(kHz) @ 30 m	-
1.705 - 30	0.08 @ 30m	-
Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3MHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements. Reduced VBW method of averaging was used of 1/Ton where Ton = on time of the signal. For this testing, the on time was approximately 100 ms which yields a minimum VBW of 10 Hz.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

3D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel).

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

KDB 414788 Open Field Site (OFS) and Chamber Correlation Justification

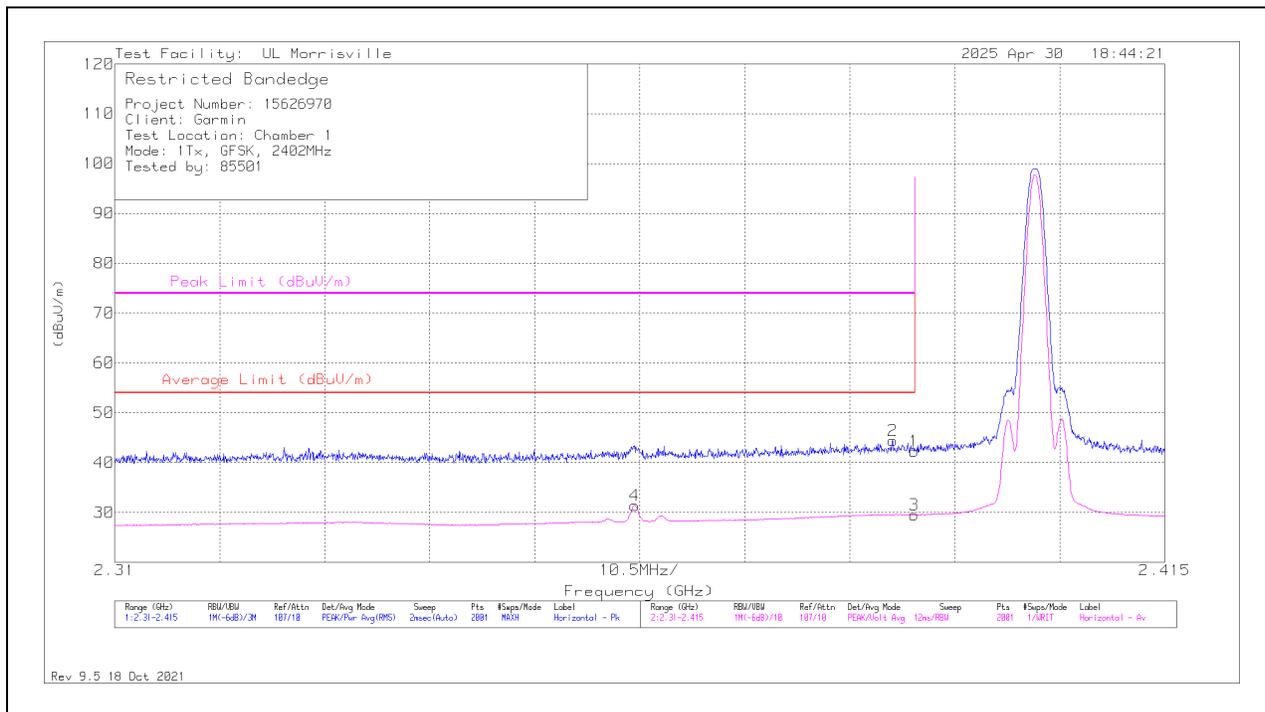
OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.38996	34.37	Pk	31.9	-24	42.27	-	-	74	-31.73	201	129	H
2	*** 2.38781	36.43	Pk	31.9	-23.9	44.43	-	-	74	-29.57	201	129	H
3	*** 2.38996	21.64	VA1T	31.9	-24	29.54	54	-24.46	-	-	201	129	H
4	*** 2.36198	23.92	VA1T	31.9	-24.4	31.42	54	-22.58	-	-	201	129	H

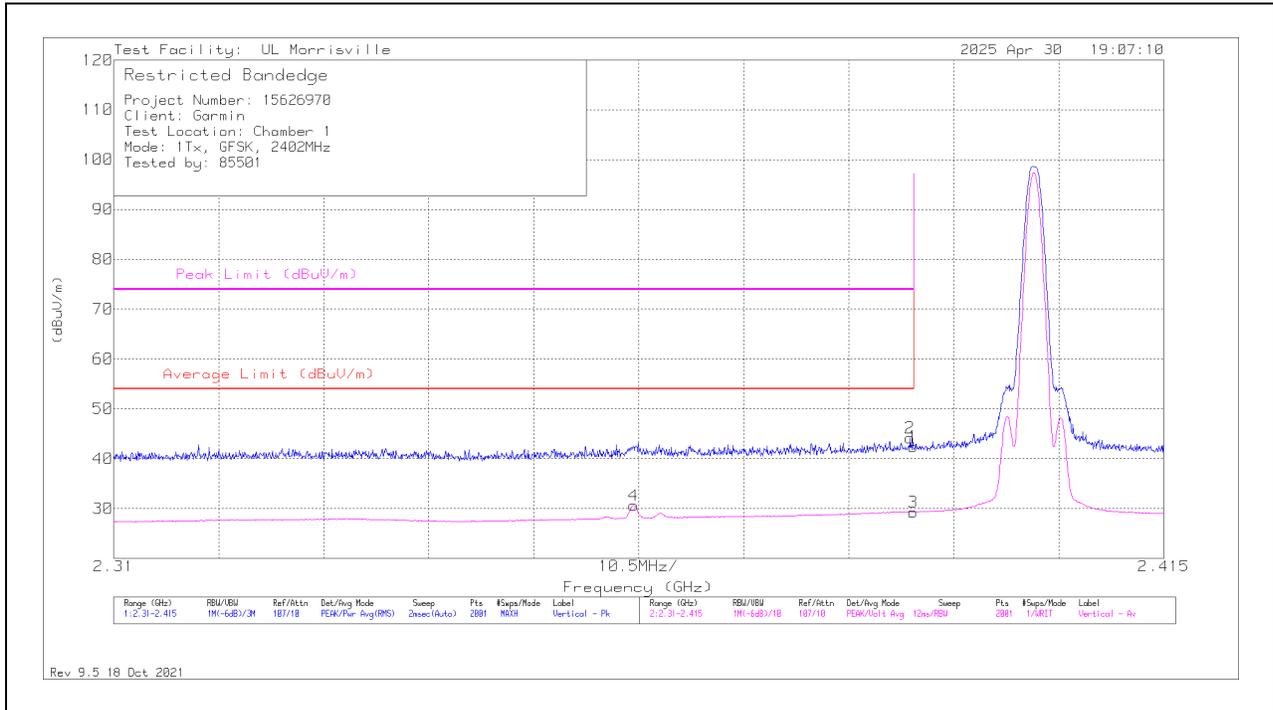
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

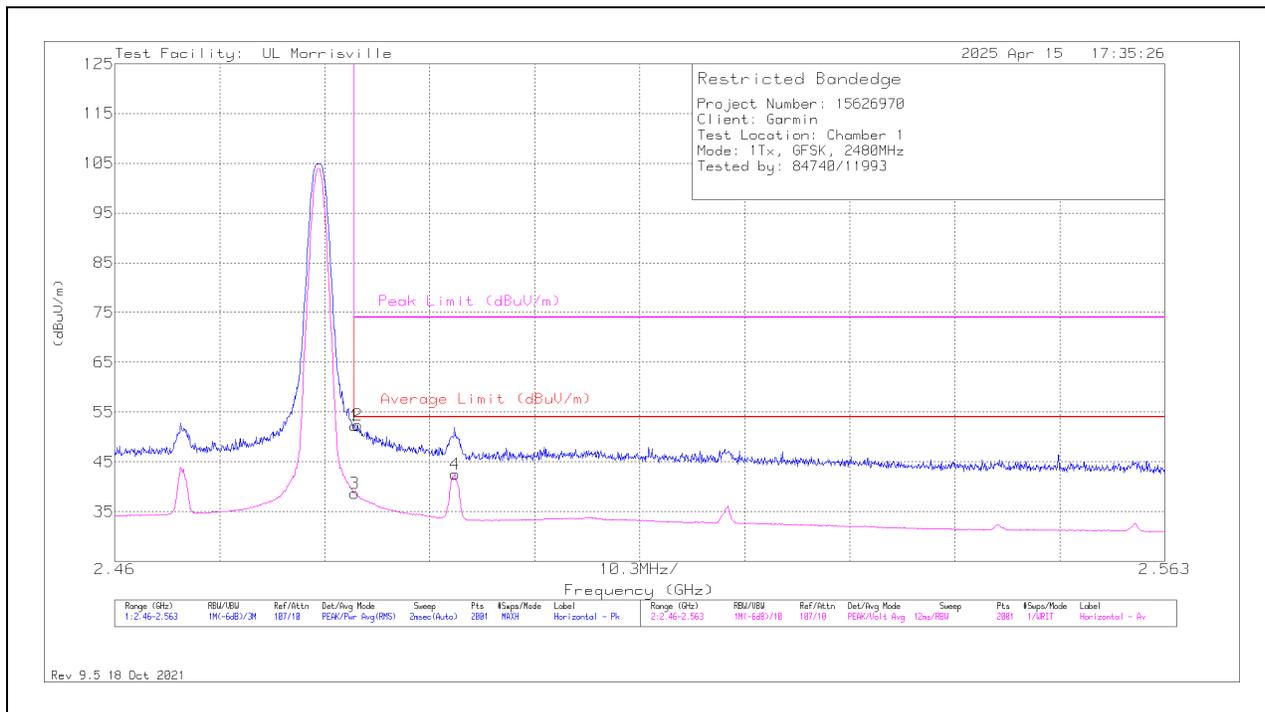


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.38996	34.54	Pk	31.9	-24	42.44	-	-	74	-31.56	232	214	V
2	*** 2.38964	36.28	Pk	31.9	-24	44.18	-	-	74	-29.82	232	214	V
3	*** 2.38996	21.39	VA1T	31.9	-24	29.29	54	-24.71	-	-	232	214	V
4	** 2.36198	23.08	VA1T	31.9	-24.4	30.58	54	-23.42	-	-	232	214	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

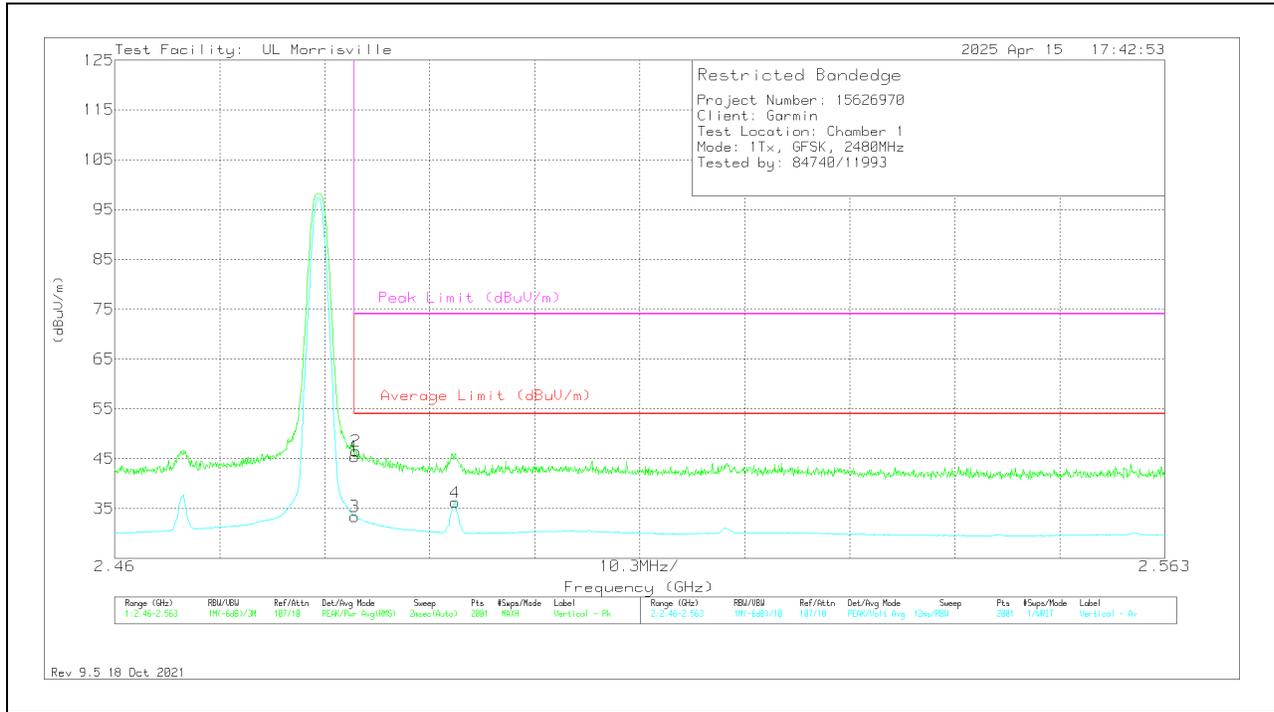
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.48354	43.71	Pk	32.2	-23.7	52.21	-	-	74	-21.79	209	132	H
2	*** 2.48384	43.86	Pk	32.2	-23.7	52.36	-	-	74	-21.64	209	132	H
3	*** 2.48354	30.11	VA1T	32.2	-23.7	38.61	54	-15.39	-	-	209	132	H
4	*** 2.49337	34.59	VA1T	32.3	-24.4	42.49	54	-11.51	-	-	209	132	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

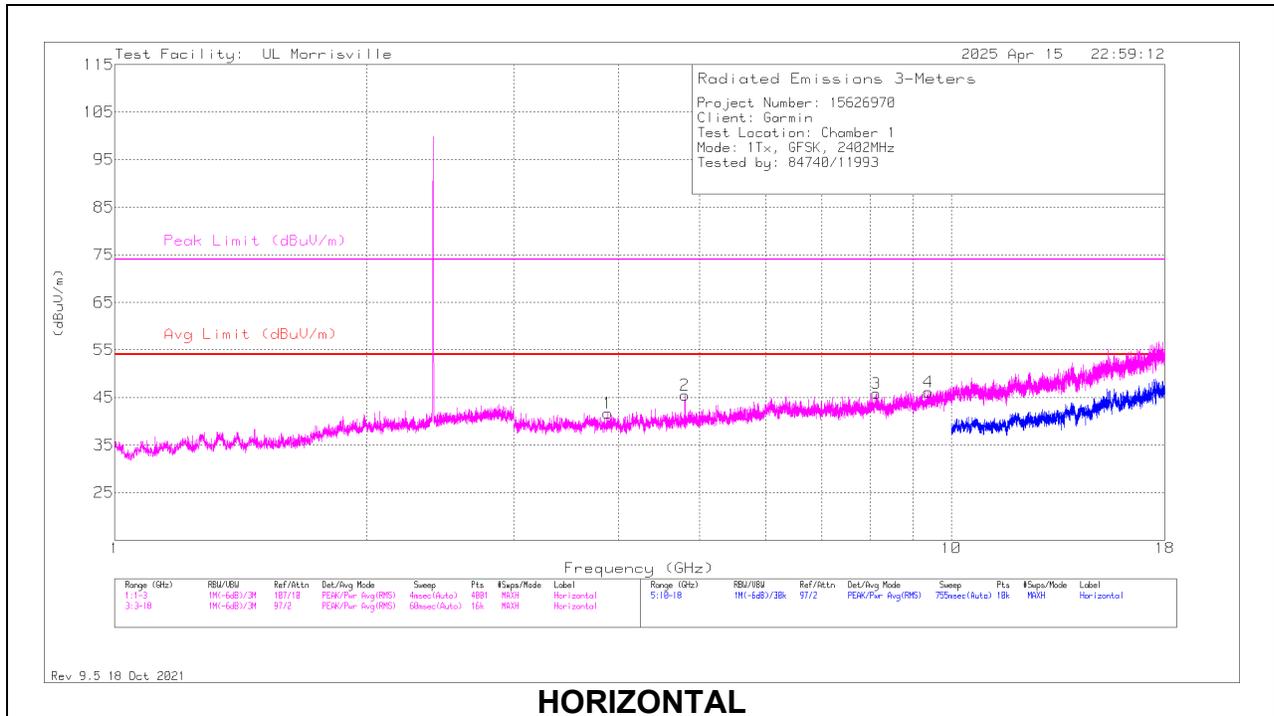


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.48354	36.92	Pk	32.2	-23.7	45.42	-	-	74	-28.58	311	141	V
2	*** 2.48364	38.06	Pk	32.2	-23.7	46.56	-	-	74	-27.44	311	141	V
3	*** 2.48354	24.91	VA1T	32.2	-23.7	33.41	54	-20.59	-	-	311	141	V
4	*** 2.49337	28.3	VA1T	32.3	-24.4	36.2	54	-17.8	-	-	311	141	V

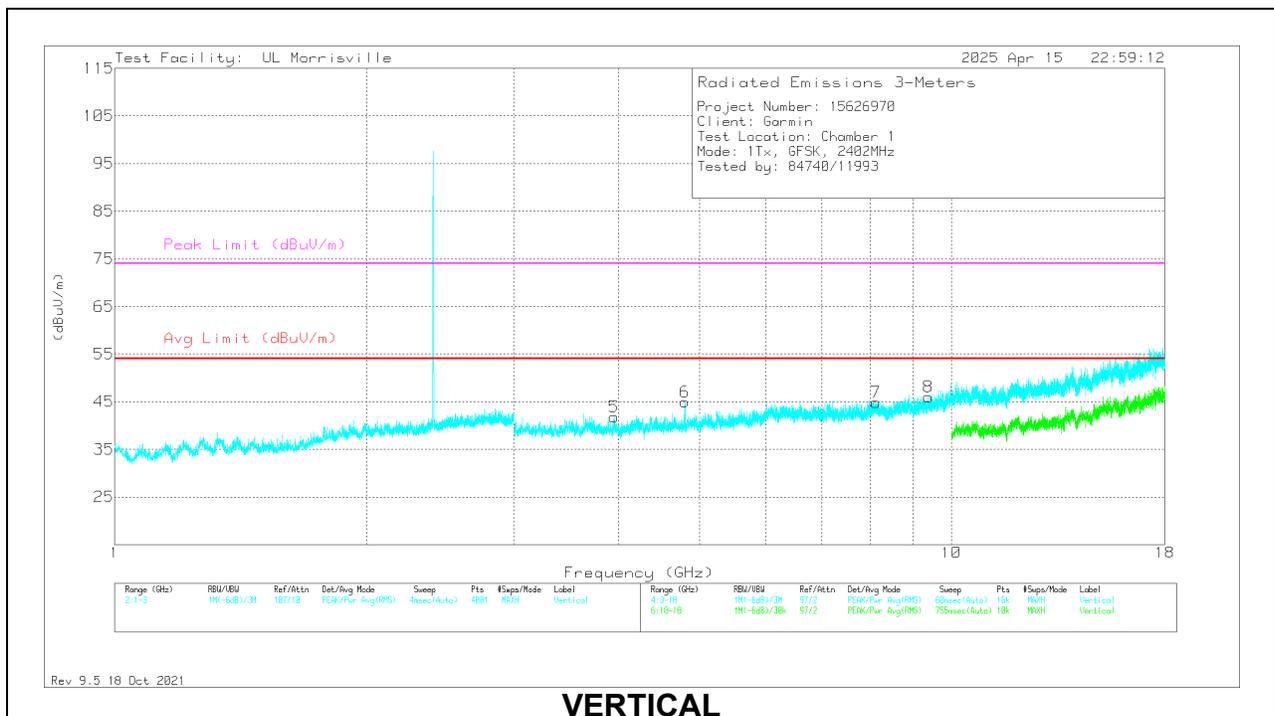
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

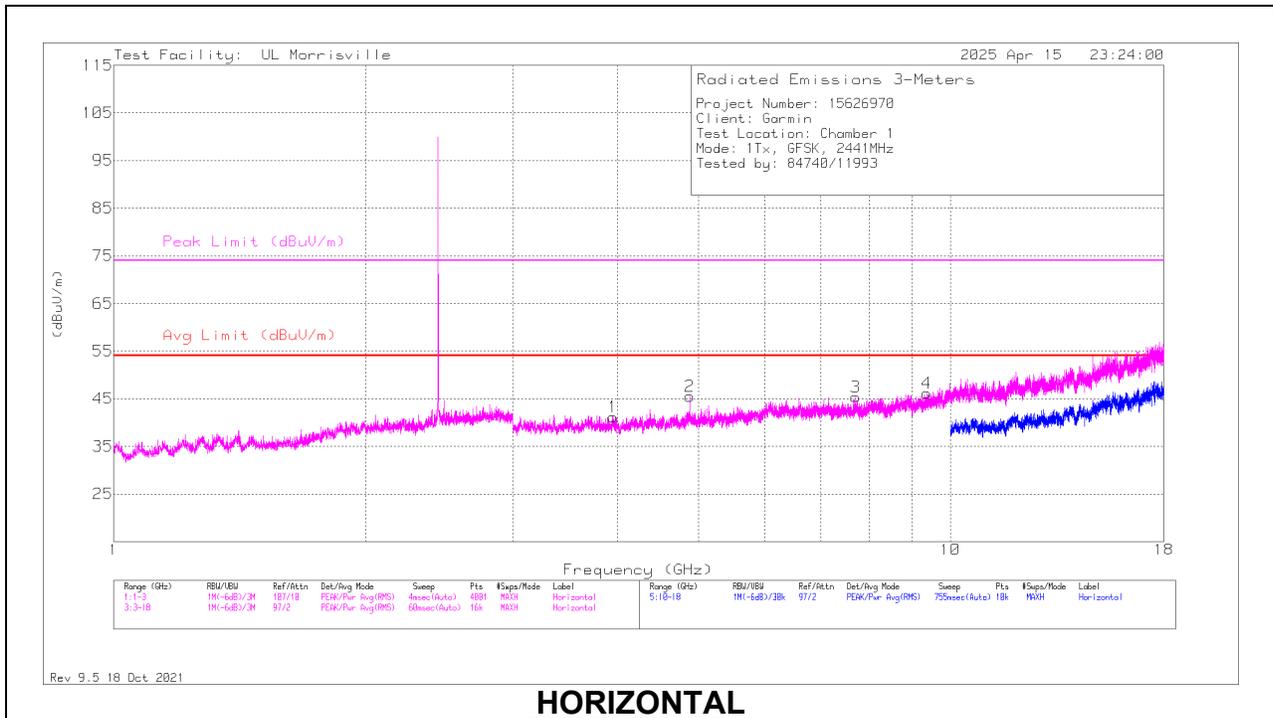
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 3.885	53.02	Pk	32.9	-44.2	41.72	54	-12.28	74	-32.28	0-360	101	H
2	*** 4.80375	57.2	Pk	33.9	-45.6	45.5	54	-8.5	74	-28.5	0-360	101	H
3	*** 8.13656	50.83	Pk	35.9	-40.9	45.83	54	-8.17	74	-28.17	0-360	101	H
4	*** 9.39563	49.9	Pk	36.3	-40.1	46.1	54	-7.9	74	-27.9	0-360	199	H
5	*** 3.95531	53.34	Pk	32.9	-44.4	41.84	54	-12.16	74	-32.16	0-360	200	V
6	*** 4.80375	56.64	Pk	33.9	-45.6	44.94	54	-9.06	74	-29.06	0-360	200	V
7	*** 8.13281	50.08	Pk	35.9	-41.1	44.88	54	-9.12	74	-29.12	0-360	101	V
8	*** 9.38719	50.15	Pk	36.2	-40.3	46.05	54	-7.95	74	-27.95	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

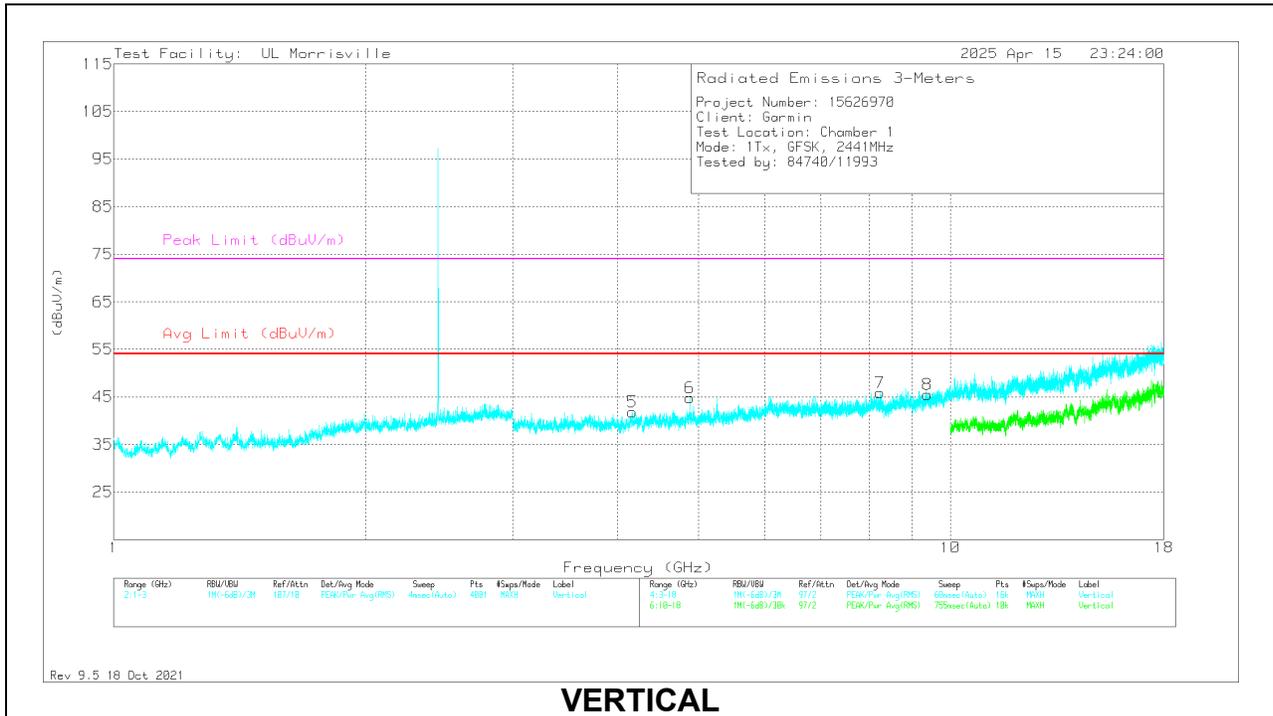
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

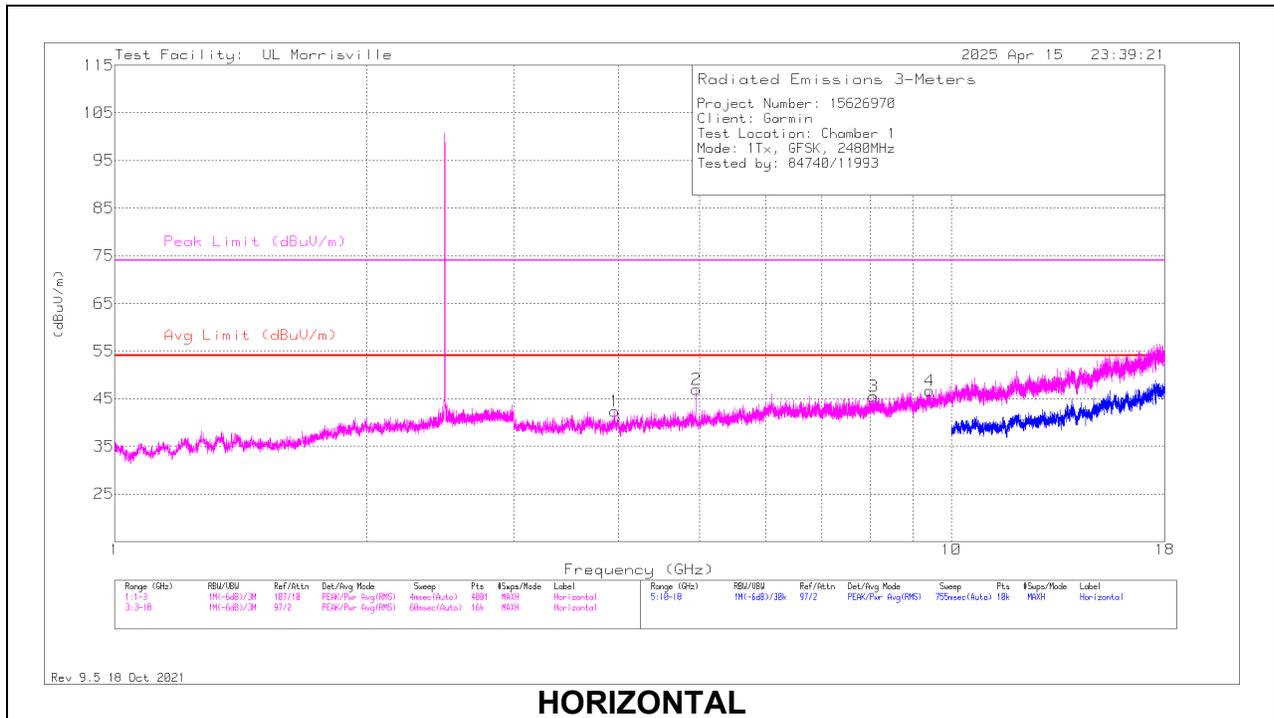
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 3.95344	52.8	Pk	32.9	-44.5	41.2	54	-12.8	74	-32.8	0-360	200	H
2	*** 4.88156	56.17	Pk	34	-44.7	45.47	54	-8.53	74	-28.53	0-360	101	H
3	*** 7.71188	50.72	Pk	35.7	-41	45.42	54	-8.58	74	-28.58	0-360	101	H
4	*** 9.37875	50.23	Pk	36.2	-40.3	46.13	54	-7.87	74	-27.87	0-360	200	H
5	*** 4.16813	53.88	Pk	33.4	-45.5	41.78	54	-12.22	74	-32.22	0-360	200	V
6	*** 4.88156	55.55	Pk	34	-44.7	44.85	54	-9.15	74	-29.15	0-360	101	V
7	*** 8.24531	50.68	Pk	35.9	-40.7	45.88	54	-8.12	74	-28.12	0-360	101	V
8	*** 9.38719	49.64	Pk	36.2	-40.3	45.54	54	-8.46	74	-28.46	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

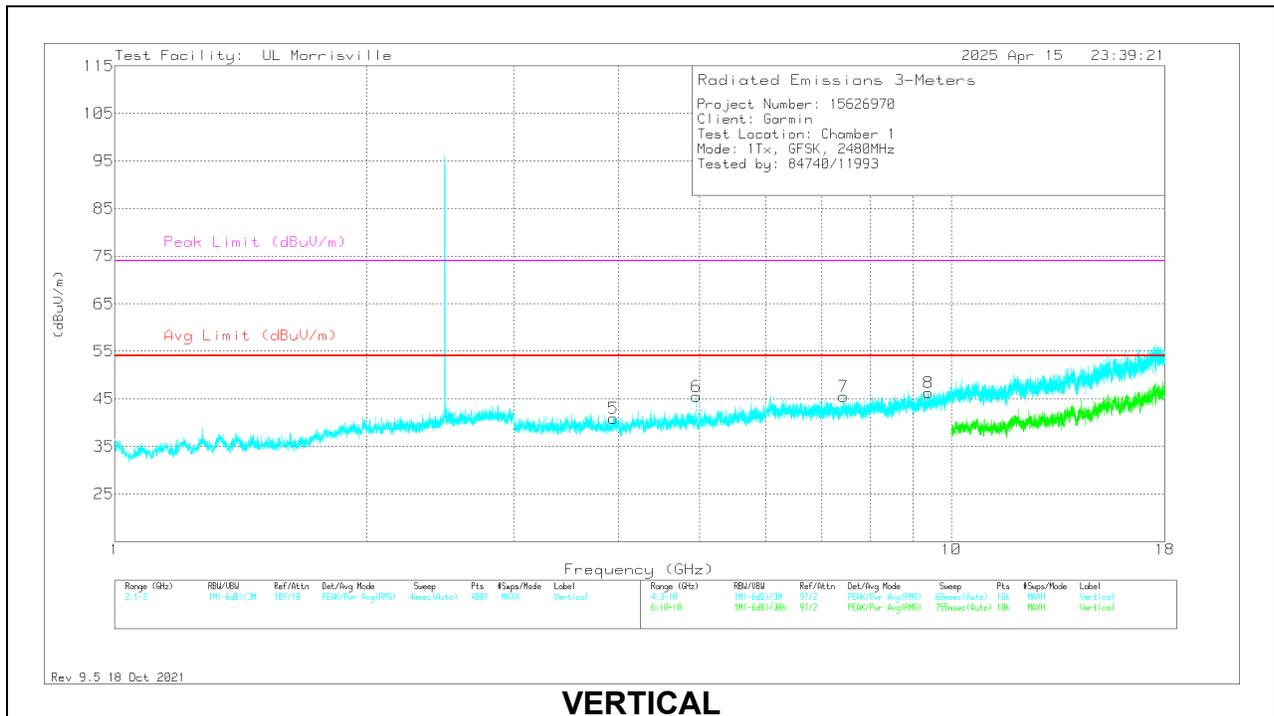
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 3.95813	53.77	Pk	32.9	-44.3	42.37	54	-11.63	74	-31.63	0-360	101	H
2	* ** 4.95938	57.55	Pk	34.2	-44.8	46.95	54	-7.05	74	-27.05	0-360	101	H
3	* ** 8.07563	51.01	Pk	35.9	-41.4	45.51	54	-8.49	74	-28.49	0-360	101	H
4	* ** 9.41719	50.08	Pk	36.3	-39.7	46.68	54	-7.32	74	-27.32	0-360	199	H
5	* ** 3.94688	52.49	Pk	32.9	-44.5	40.89	54	-13.11	74	-33.11	0-360	200	V
6	* ** 4.95938	56.09	Pk	34.2	-44.8	45.49	54	-8.51	74	-28.51	0-360	101	V
7	* ** 7.43813	51.07	Pk	35.4	-41	45.47	54	-8.53	74	-28.53	0-360	101	V
8	* ** 9.39469	49.94	Pk	36.3	-40	46.24	54	-7.76	74	-27.76	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

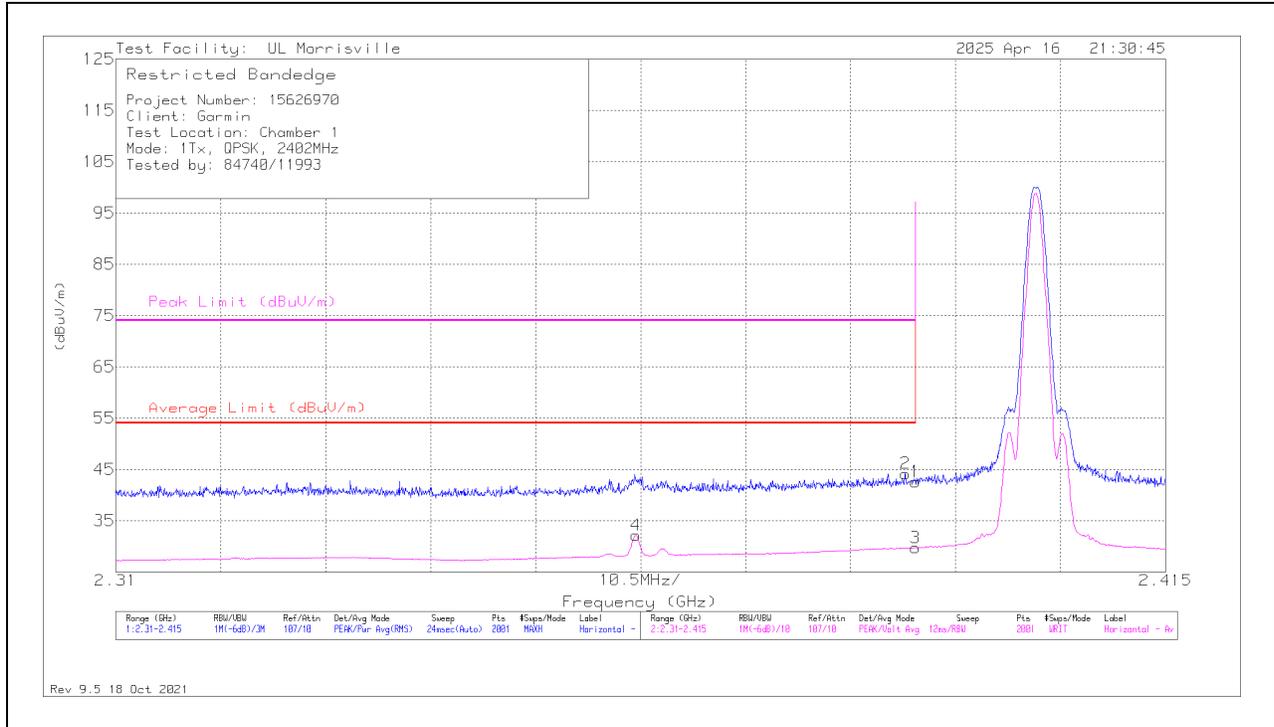
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

10.1.2. BLUETOOTH BASIC DATA RATE QPSK MODULATION

BANDEDGE (LOW CHANNEL)

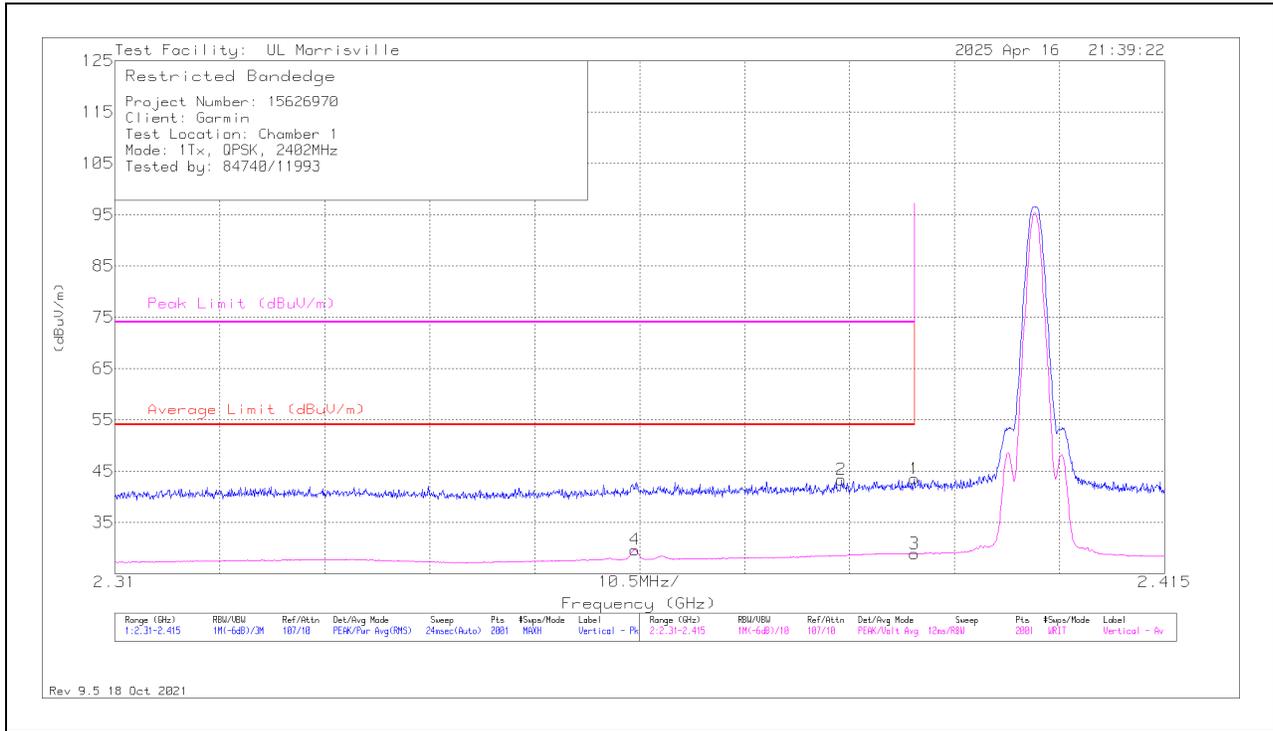
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	34.67	Pk	31.9	-24	42.57	-	-	74	-31.43	256	115	H
2	* ** 2.38896	36.27	Pk	31.9	-24	44.17	-	-	74	-29.83	256	115	H
3	* ** 2.38996	21.8	VA1T	31.9	-24	29.7	54	-24.3	-	-	256	115	H
4	* ** 2.36203	24.64	VA1T	31.9	-24.4	32.14	54	-21.86	-	-	256	115	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

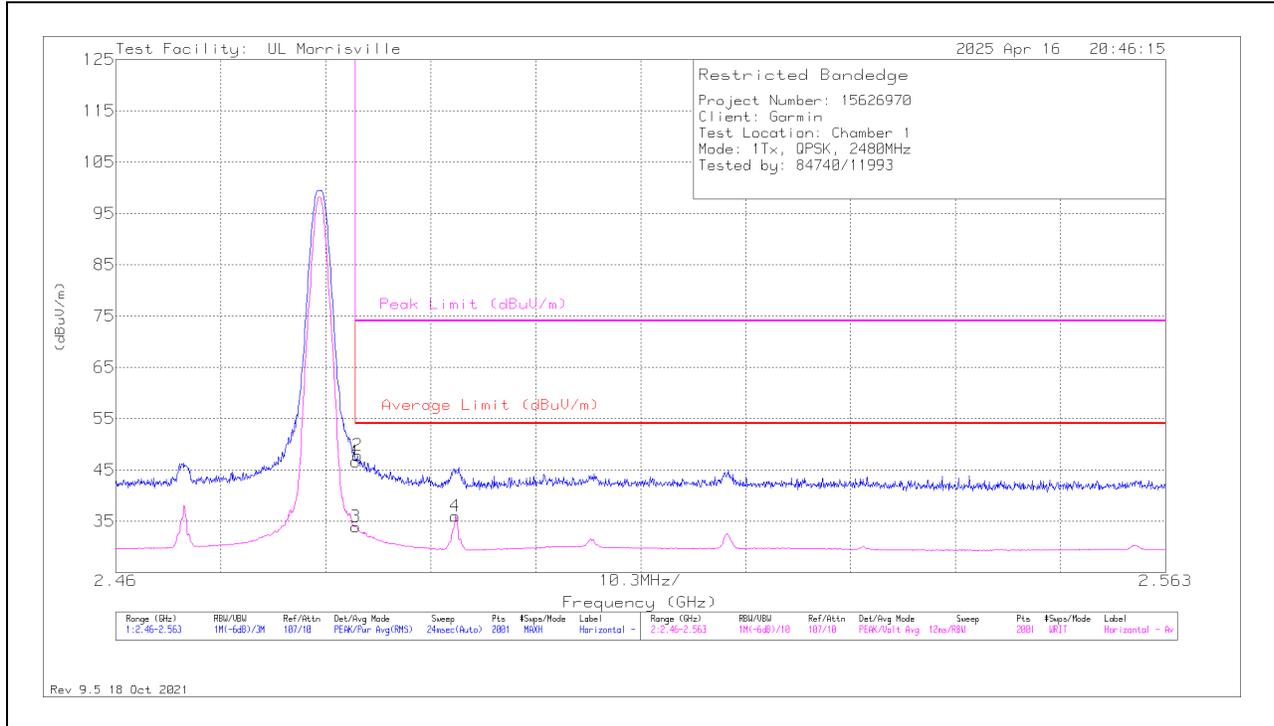


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.38996	35.61	Pk	31.9	-24	43.51	-	-	74	-30.49	196	168	V
2	*** 2.38266	35.43	Pk	31.9	-24	43.33	-	-	74	-30.67	196	168	V
3	*** 2.38996	20.99	VA1T	31.9	-24	28.89	54	-25.11	-	-	196	168	V
4	*** 2.36203	22.16	VA1T	31.9	-24.4	29.66	54	-24.34	-	-	196	168	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.48354	38.14	Pk	32.2	-23.7	46.64	-	-	74	-27.36	268	176	H
2	*** 2.48374	39.31	Pk	32.2	-23.7	47.81	-	-	74	-26.19	268	176	H
3	*** 2.48354	25.41	VA1T	32.2	-23.7	33.91	54	-20.09	-	-	268	176	H
4	*** 2.49332	28.09	VA1T	32.3	-24.4	35.99	54	-18.01	-	-	268	176	H

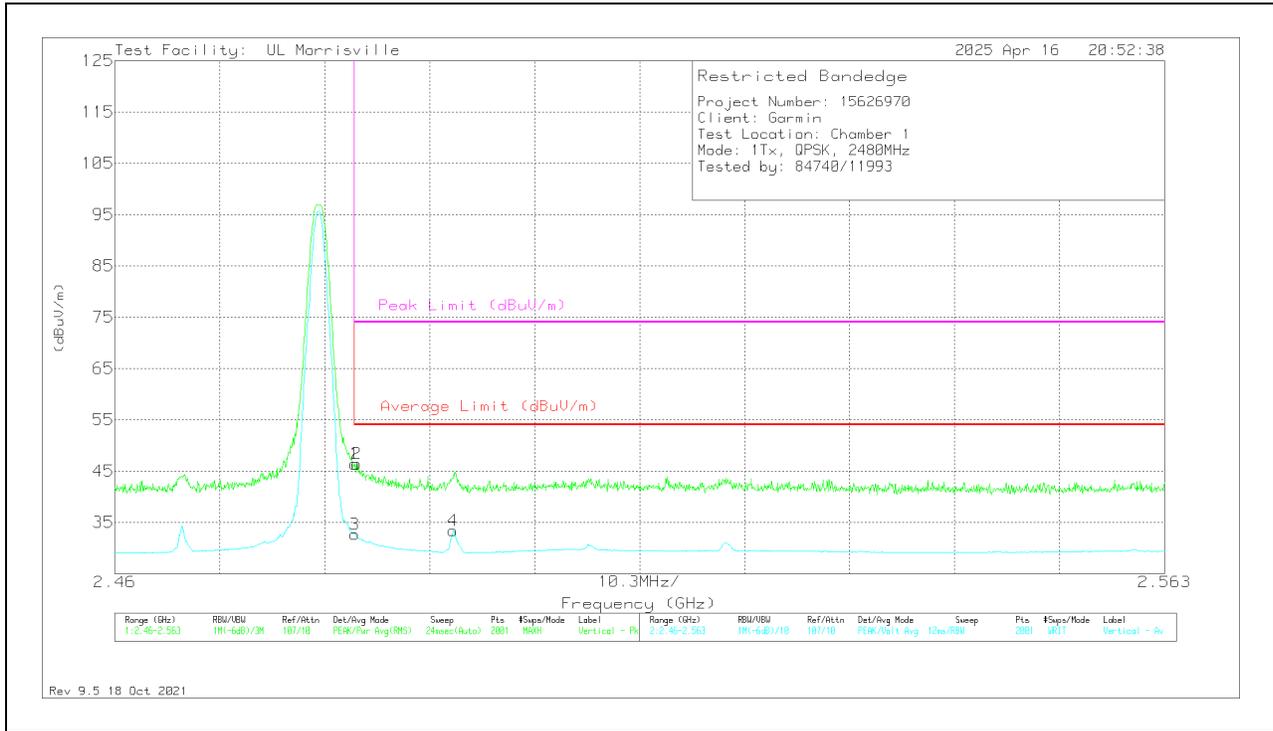
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

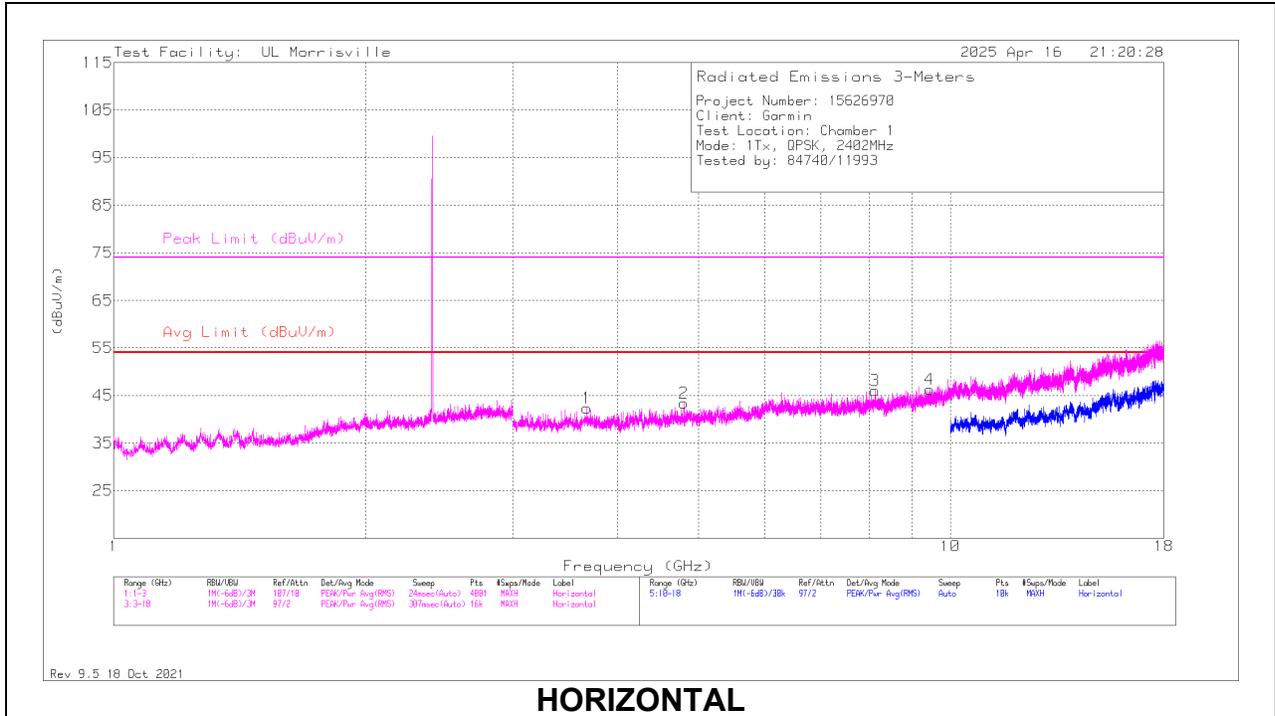


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.48354	37.89	Pk	32.2	-23.7	46.39	-	-	74	-27.61	188	187	V
2	*** 2.48374	37.88	Pk	32.2	-23.7	46.38	-	-	74	-27.62	188	187	V
3	*** 2.48354	24.14	VA1T	32.2	-23.7	32.64	54	-21.36	-	-	188	187	V
4	*** 2.49317	25.48	VA1T	32.3	-24.4	33.38	54	-20.62	-	-	188	187	V

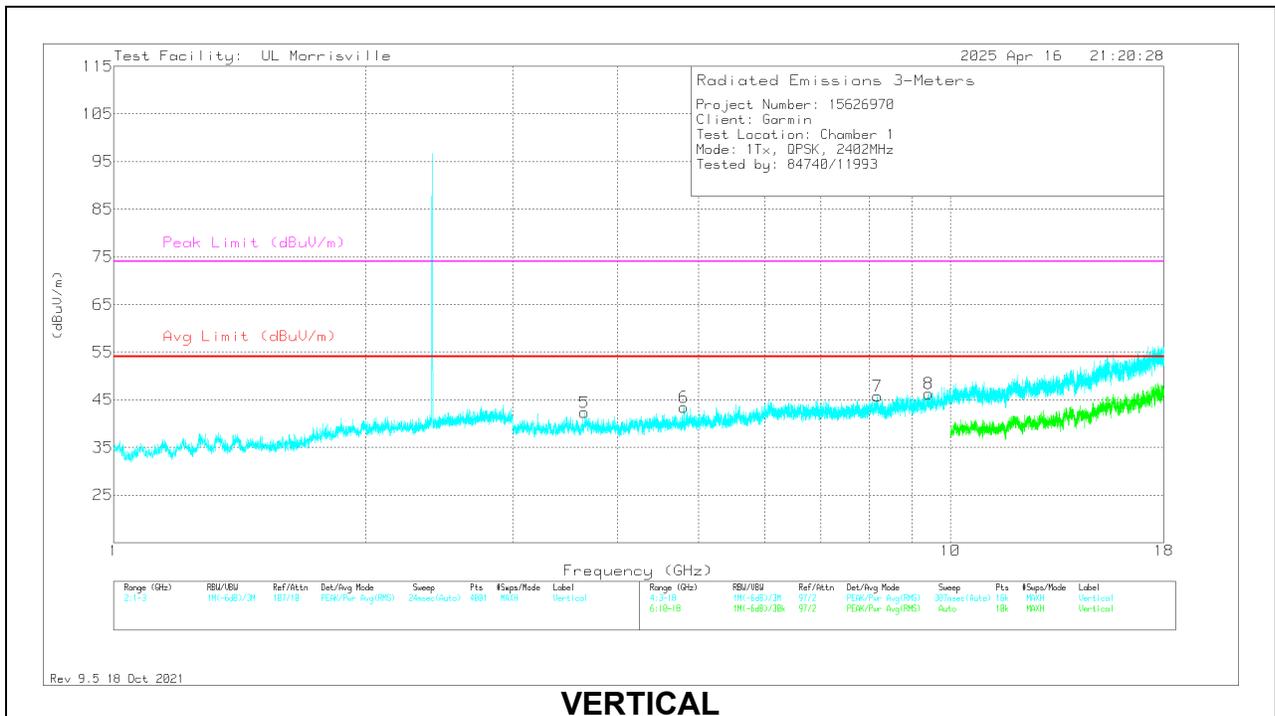
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL

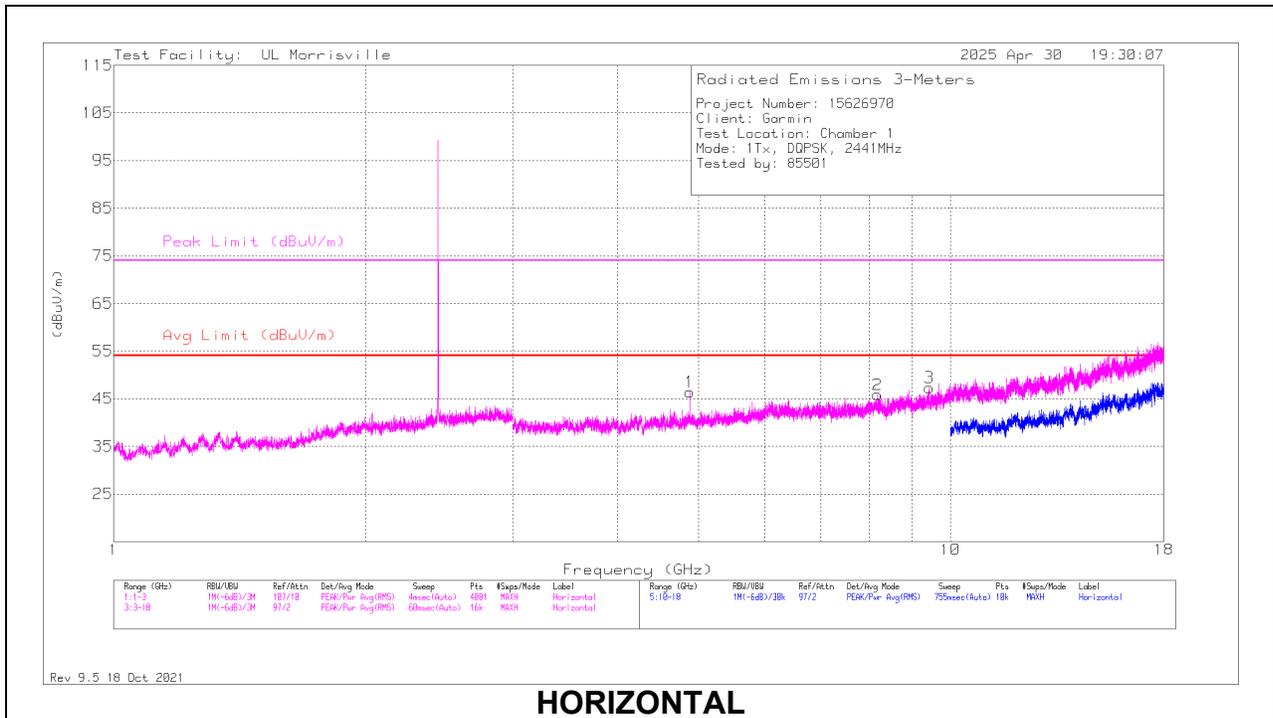


VERTICAL

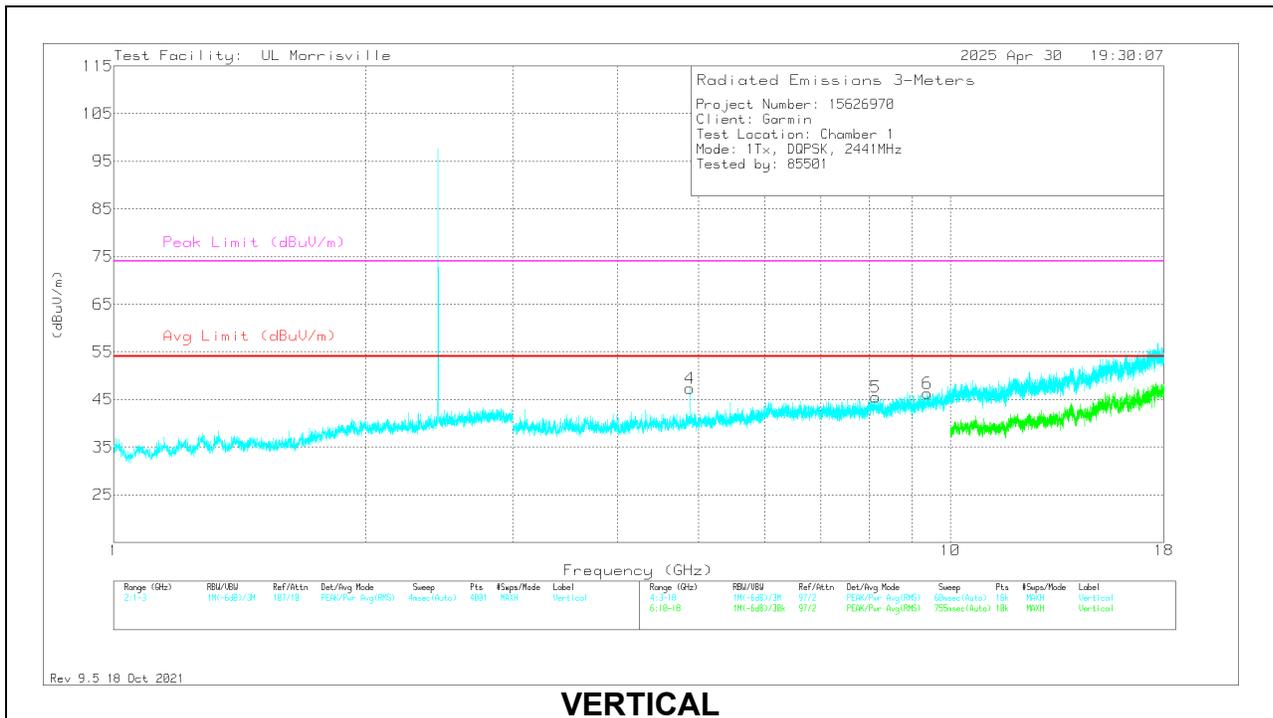
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 3.68063	53.64	Pk	33.2	-44.5	42.34	54	-11.66	74	-31.66	0-360	199	H
2	* ** 4.80375	55.1	Pk	33.9	-45.6	43.4	54	-10.6	74	-30.6	0-360	101	H
3	* ** 8.13469	51.08	Pk	35.9	-41	45.98	54	-8.02	74	-28.02	0-360	101	H
4	* ** 9.44719	50.85	Pk	36.3	-40.9	46.25	54	-7.75	74	-27.75	0-360	101	H
5	* ** 3.65344	53.2	Pk	33.1	-44	42.3	54	-11.7	74	-31.7	0-360	200	V
6	* ** 4.80375	55.09	Pk	33.9	-45.6	43.39	54	-10.61	74	-30.61	0-360	200	V
7	* ** 8.19	50.62	Pk	35.9	-40.8	45.72	54	-8.28	74	-28.28	0-360	200	V
8	* ** 9.41531	49.72	Pk	36.3	-39.7	46.32	54	-7.68	74	-27.68	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

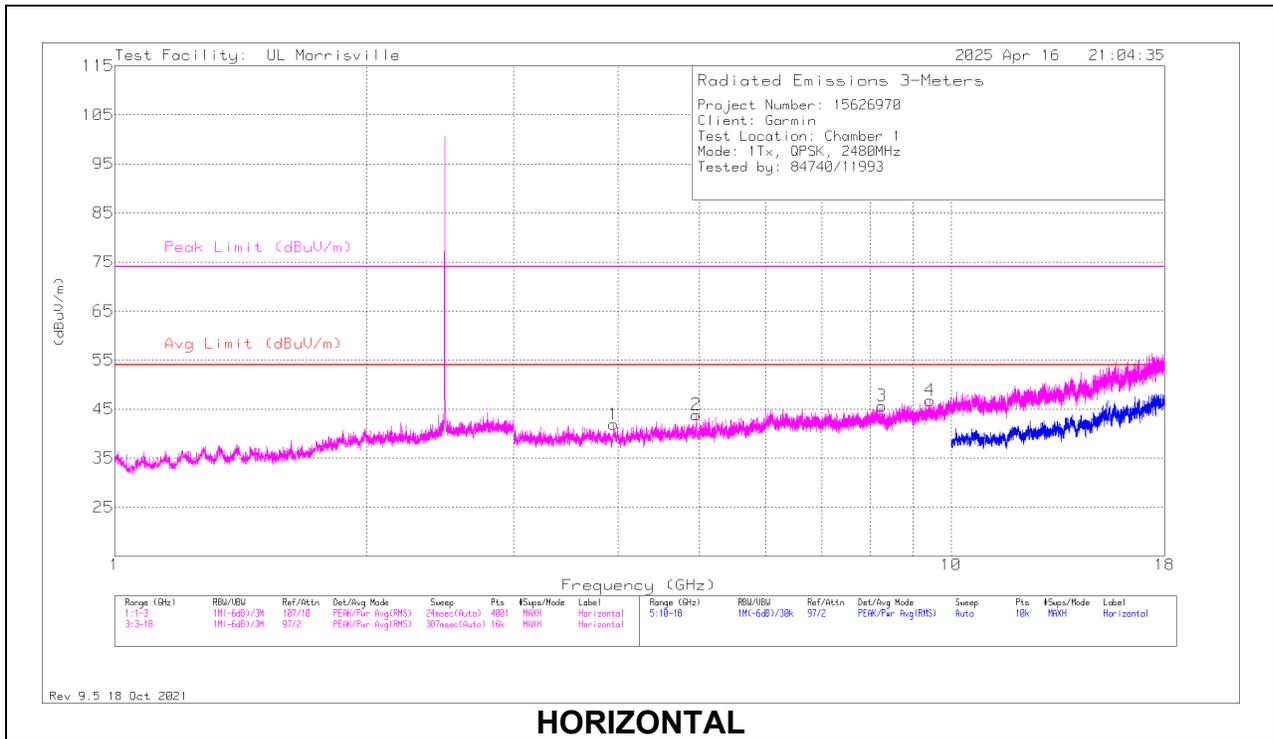
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.88156	57.15	Pk	34	-44.7	46.45	54	-7.55	74	-27.55	0-360	100	H
2	* ** 8.18531	50.83	Pk	35.9	-40.9	45.83	54	-8.17	74	-28.17	0-360	199	H
3	* ** 9.43406	51.32	Pk	36.3	-40.3	47.32	54	-6.68	74	-26.68	0-360	100	H
4	* ** 4.88156	58.01	Pk	34	-44.7	47.31	54	-6.69	74	-26.69	0-360	199	V
5	* ** 8.14219	50.55	Pk	35.9	-40.9	45.55	54	-8.45	74	-28.45	0-360	100	V
6	* ** 9.39	50.23	Pk	36.2	-40.2	46.23	54	-7.77	74	-27.77	0-360	199	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

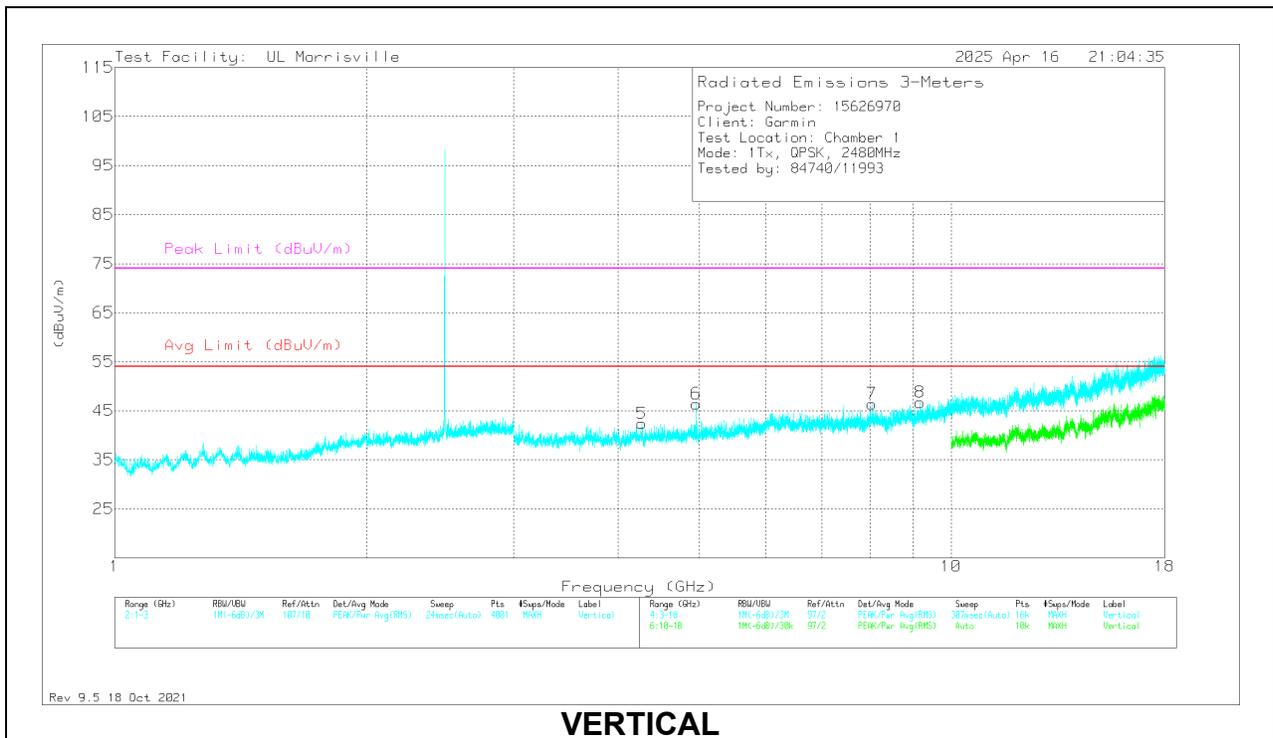
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 3.95156	53.49	Pk	32.9	-44.5	41.89	54	-12.11	74	-32.11	0-360	101	H
2	* ** 4.95938	54.44	Pk	34.2	-44.8	43.84	54	-10.16	74	-30.16	0-360	101	H
3	* ** 8.26688	50.25	Pk	35.9	-40.5	45.65	54	-8.35	74	-28.35	0-360	101	H
4	* ** 9.43313	50.78	Pk	36.3	-40.3	46.78	54	-7.22	74	-27.22	0-360	200	H
5	* ** 4.26938	53.2	Pk	33.7	-44.5	42.4	54	-11.6	74	-31.6	0-360	200	V
6	* ** 4.95938	57.01	Pk	34.2	-44.8	46.41	54	-7.59	74	-27.59	0-360	200	V
7	* ** 8.04469	51.52	Pk	35.9	-41	46.42	54	-7.58	74	-27.58	0-360	200	V
8	* ** 9.18563	50.4	Pk	36	-39.7	46.7	54	-7.3	74	-27.3	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

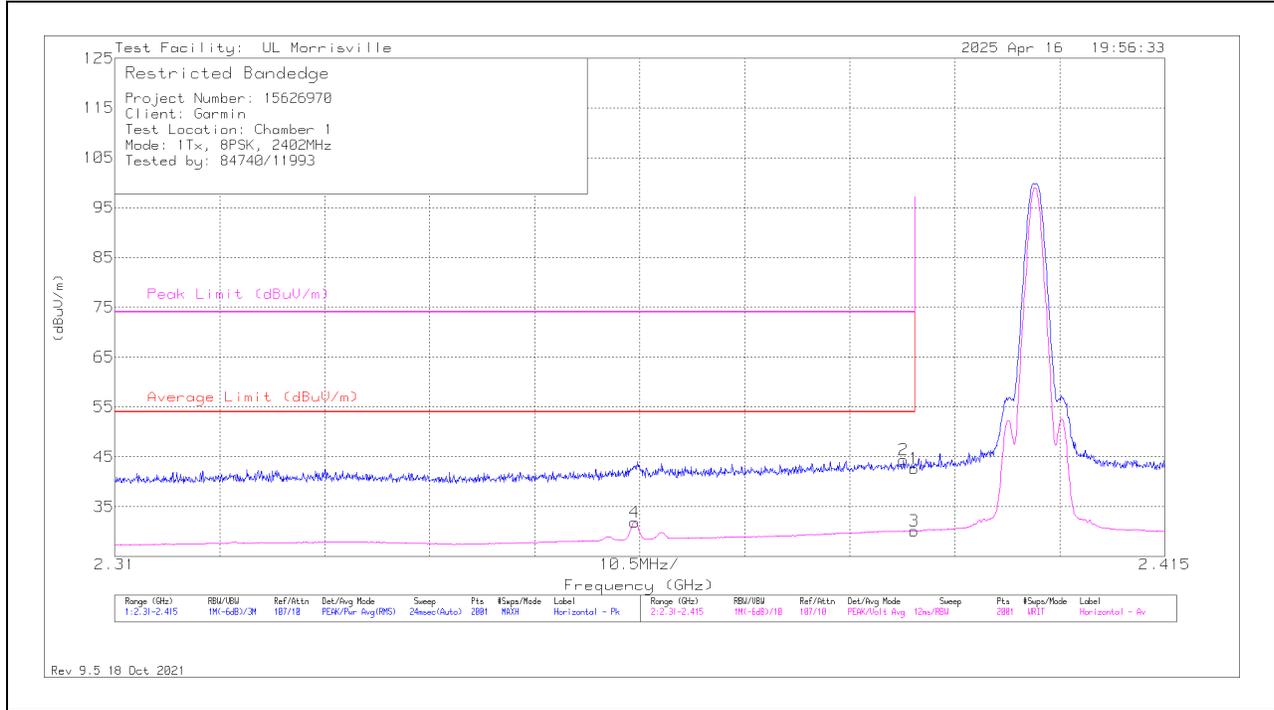
** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

10.1.3. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

BANDEDGE (LOW CHANNEL)

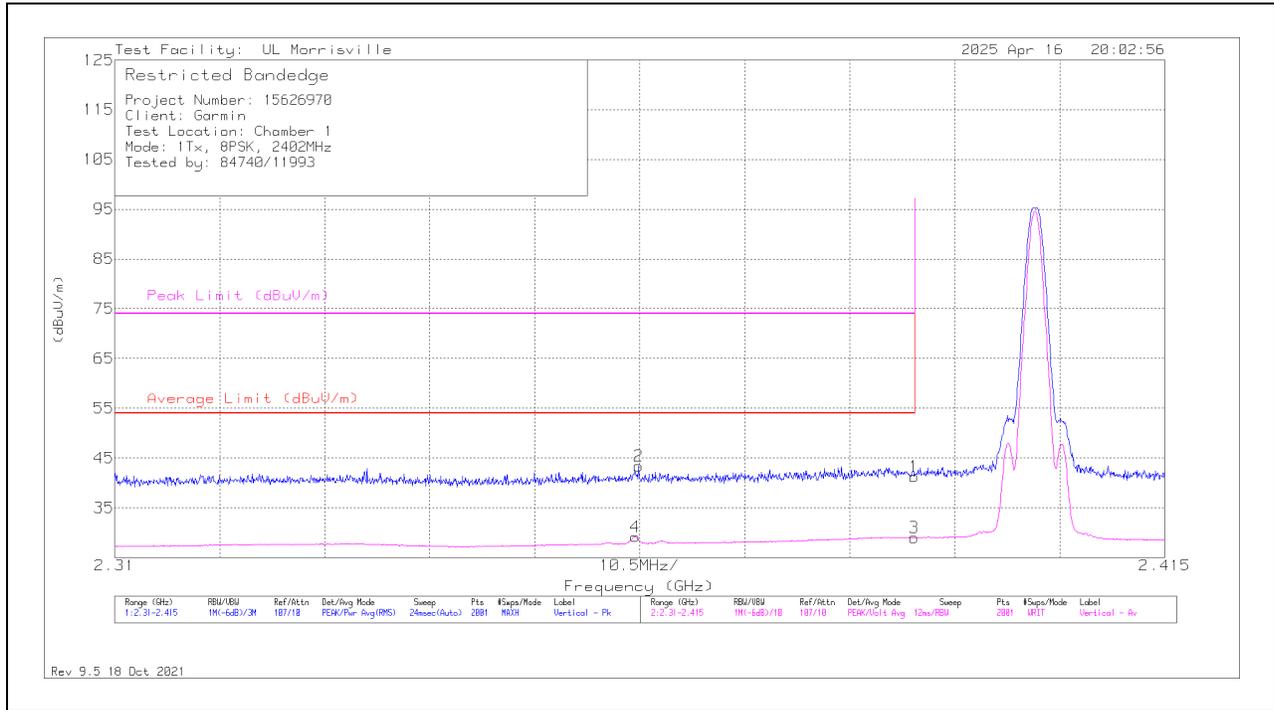
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.38996	34.75	Pk	31.9	-24	42.65	-	-	74	-31.35	261	116	H
2	*** 2.38886	36.49	Pk	31.9	-24	44.39	-	-	74	-29.61	261	116	H
3	* ** 2.38996	22.26	VA1T	31.9	-24	30.16	54	-23.84	-	-	261	116	H
4	* ** 2.36198	24.42	VA1T	31.9	-24.4	31.92	54	-22.08	-	-	261	116	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

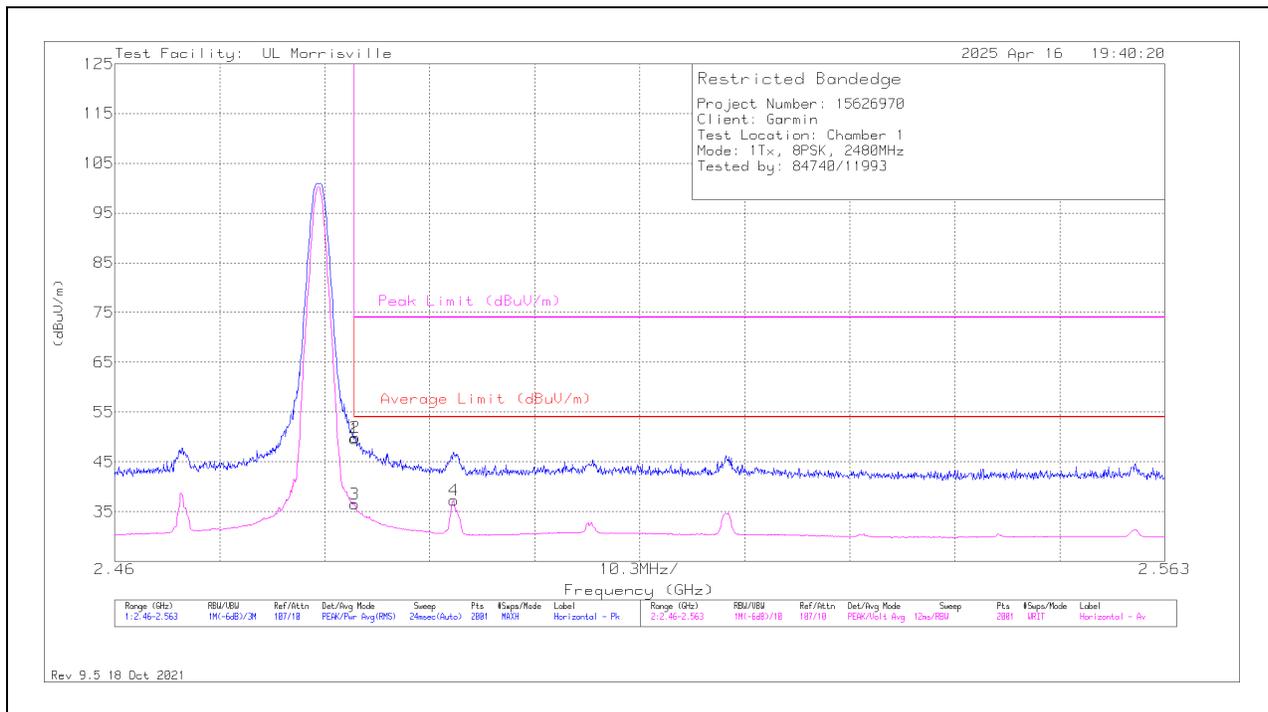


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.38996	33.38	Pk	31.9	-24	41.28	-	-	74	-32.72	191	166	V
2	*** 2.3624	35.87	Pk	31.9	-24.4	43.37	-	-	74	-30.63	191	166	V
3	*** 2.38996	21.14	VA1T	31.9	-24	29.04	54	-24.96	-	-	191	166	V
4	*** 2.36203	21.68	VA1T	31.9	-24.4	29.18	54	-24.82	-	-	191	166	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

BANDEDGE (HIGH CHANNEL)

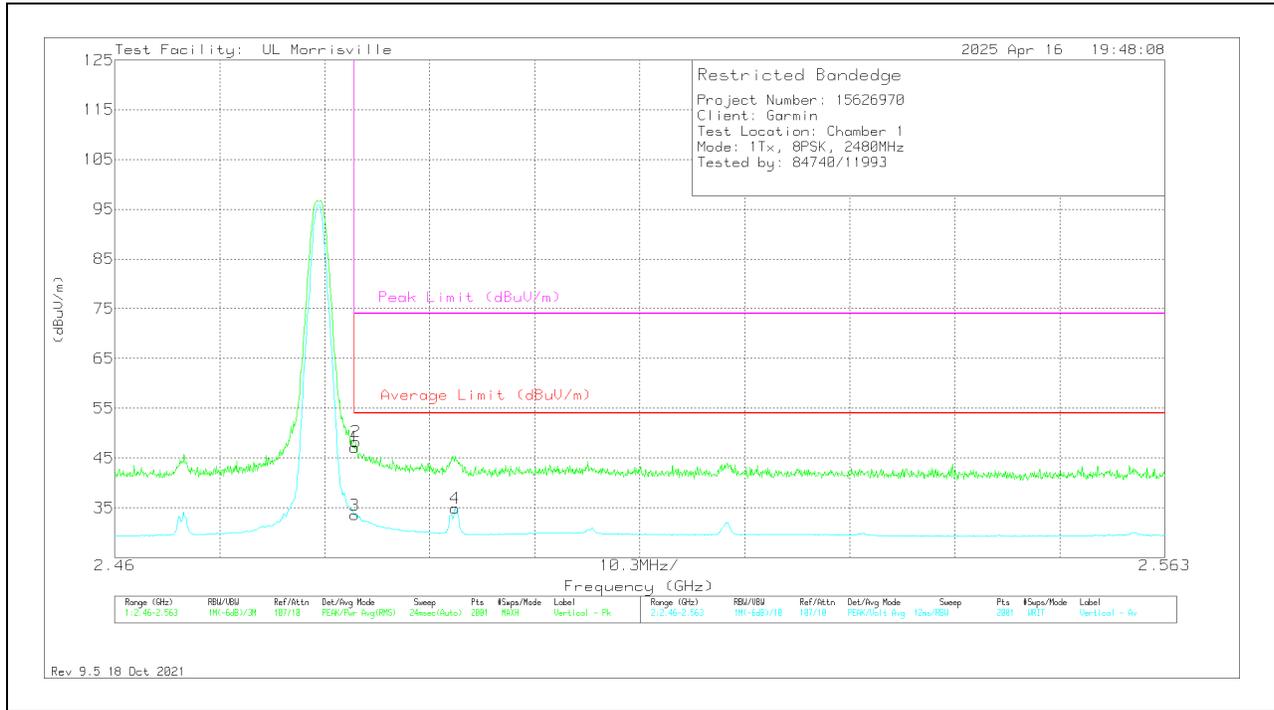
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.48354	41.17	Pk	32.2	-23.7	49.67	-	-	74	-24.33	252	107	H
2	*** 2.48359	41.39	Pk	32.2	-23.7	49.89	-	-	74	-24.11	252	107	H
3	*** 2.48354	27.96	VA1T	32.2	-23.7	36.46	54	-17.54	-	-	252	107	H
4	*** 2.49327	29.33	VA1T	32.3	-24.4	37.23	54	-16.77	-	-	252	107	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

VERTICAL RESULT

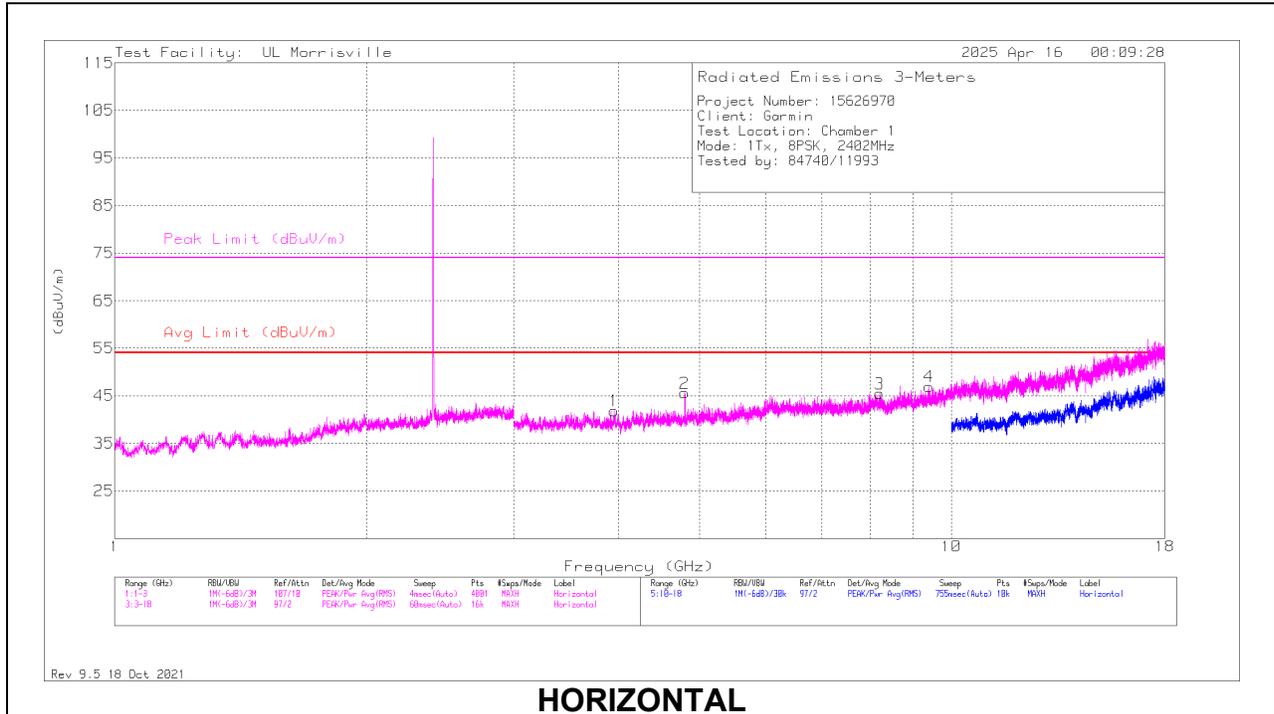


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 2.48354	38.61	Pk	32.2	-23.7	47.11	-	-	74	-26.89	307	118	V
2	*** 2.48364	39.74	Pk	32.2	-23.7	48.24	-	-	74	-25.76	307	118	V
3	*** 2.48354	25.06	VA1T	32.2	-23.7	33.56	54	-20.44	-	-	307	118	V
4	*** 2.49337	27.01	VA1T	32.3	-24.4	34.91	54	-19.09	-	-	307	118	V

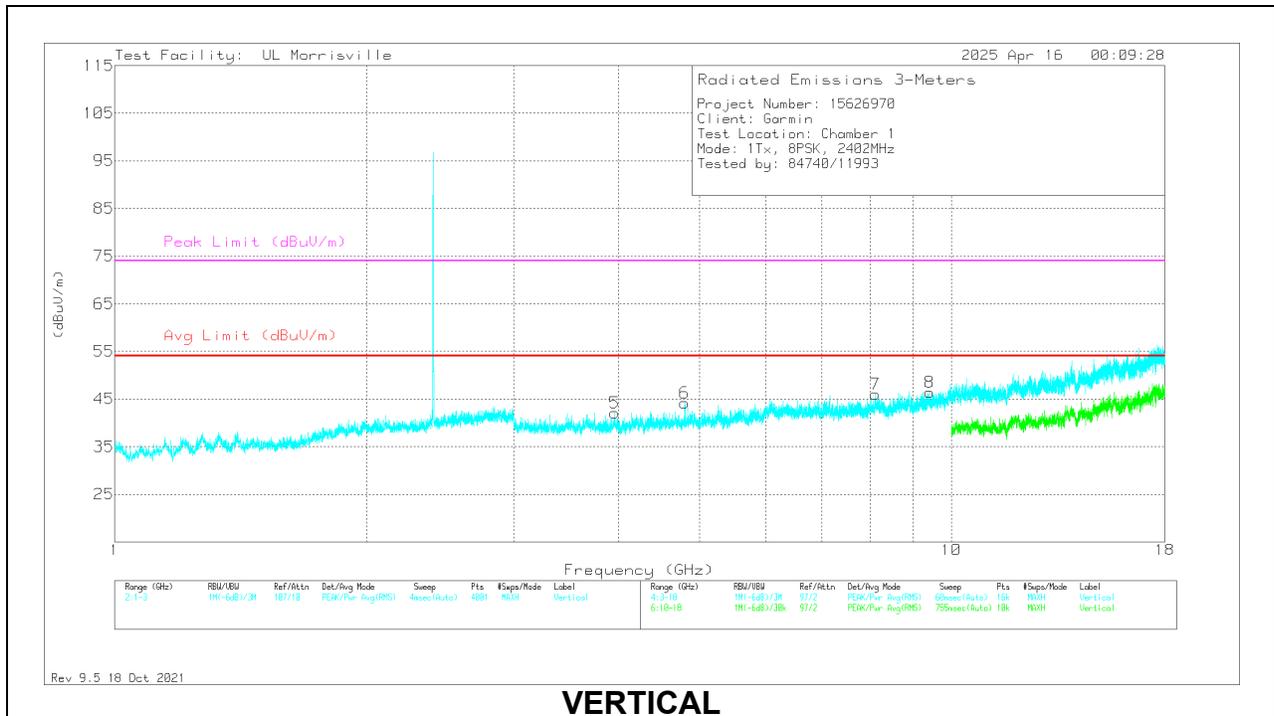
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector
 VA1T - Linear Voltage Average VB=1/Ton where: Ton is transmit duration

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL

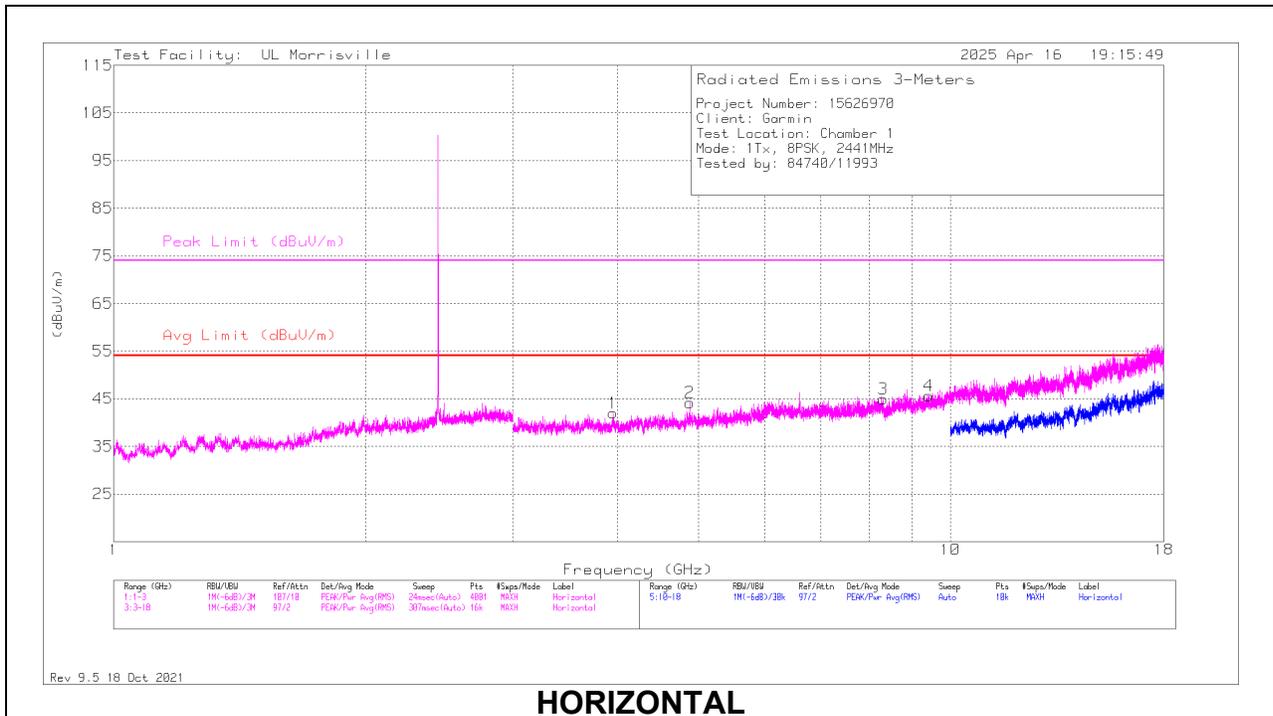


VERTICAL

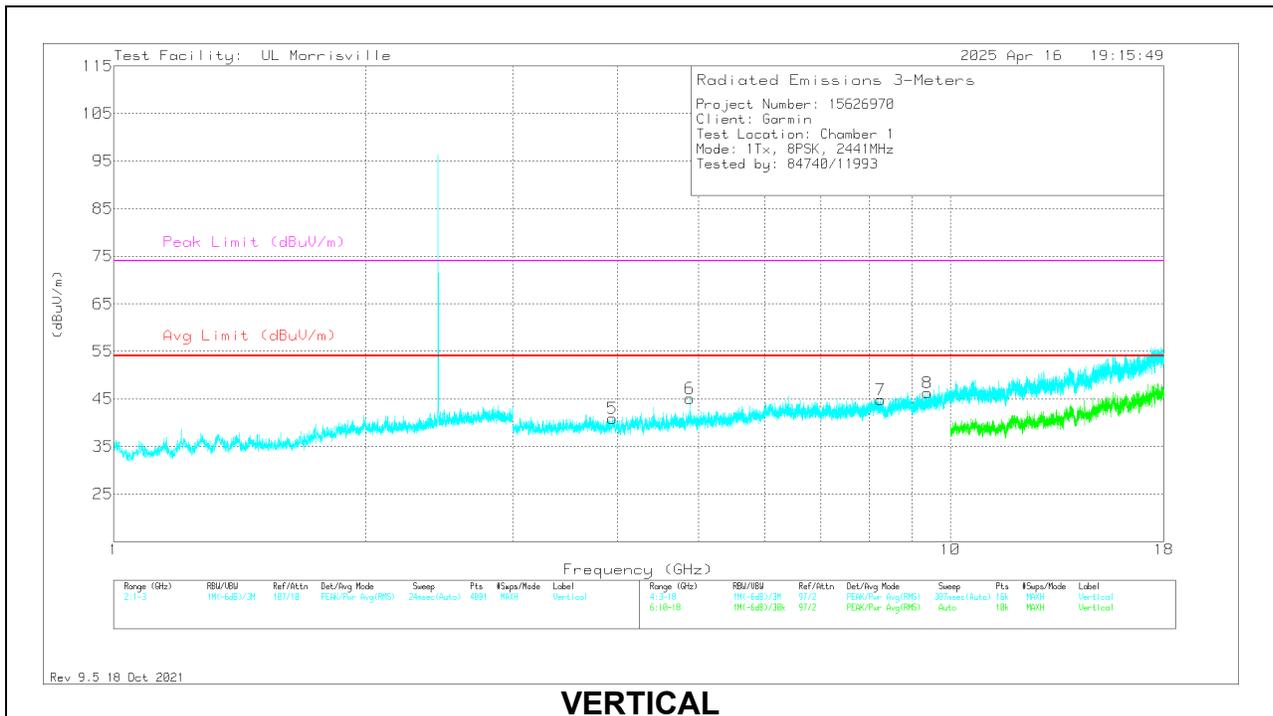
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 3.95156	53.42	Pk	32.9	-44.5	41.82	54	-12.18	74	-32.18	0-360	101	H
2	* ** 4.80281	57.26	Pk	33.9	-45.6	45.56	54	-8.44	74	-28.44	0-360	101	H
3	* ** 8.20688	50.53	Pk	35.9	-41	45.43	54	-8.57	74	-28.57	0-360	101	H
4	* ** 9.4125	50.69	Pk	36.3	-40.1	46.89	54	-7.11	74	-27.11	0-360	101	H
5	* ** 3.96	53.45	Pk	32.9	-44.3	42.05	54	-11.95	74	-31.95	0-360	101	V
6	* ** 4.80281	55.89	Pk	33.9	-45.6	44.19	54	-9.81	74	-29.81	0-360	200	V
7	* ** 8.10938	51.15	Pk	35.9	-41	46.05	54	-7.95	74	-27.95	0-360	101	V
8	* ** 9.41625	49.75	Pk	36.3	-39.6	46.45	54	-7.55	74	-27.55	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector

MID CHANNEL RESULTS



HORIZONTAL

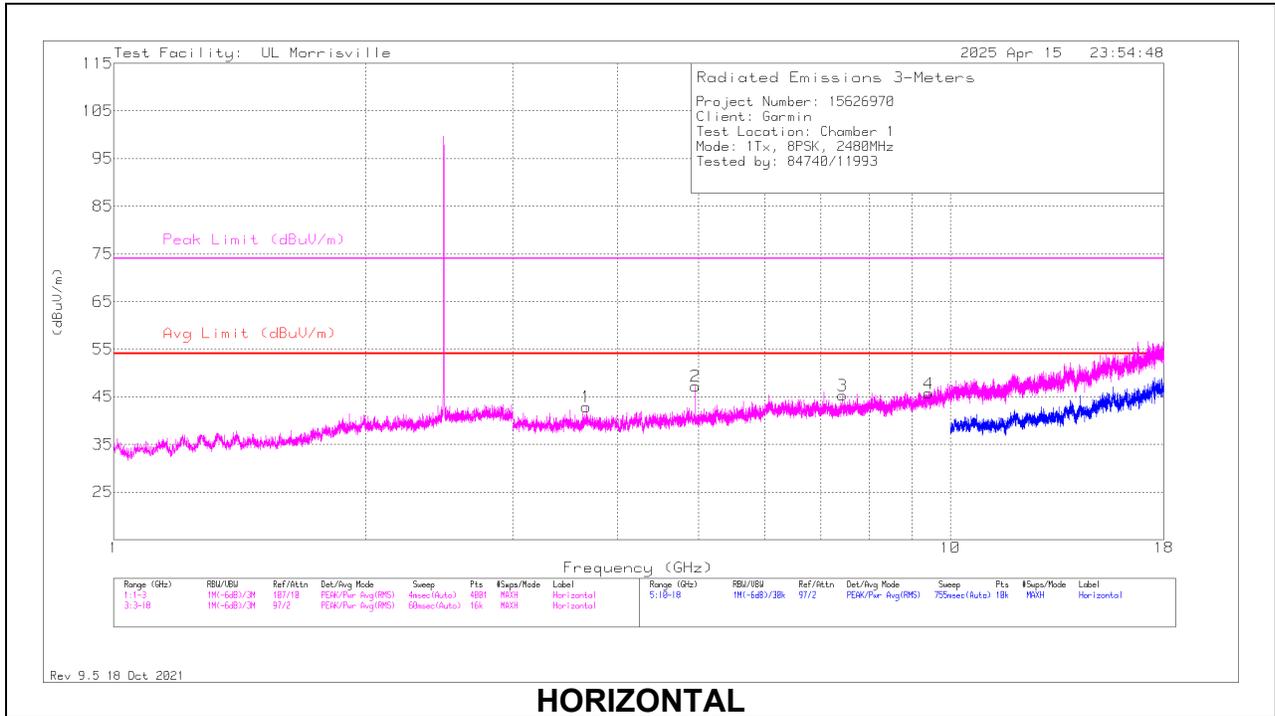


VERTICAL

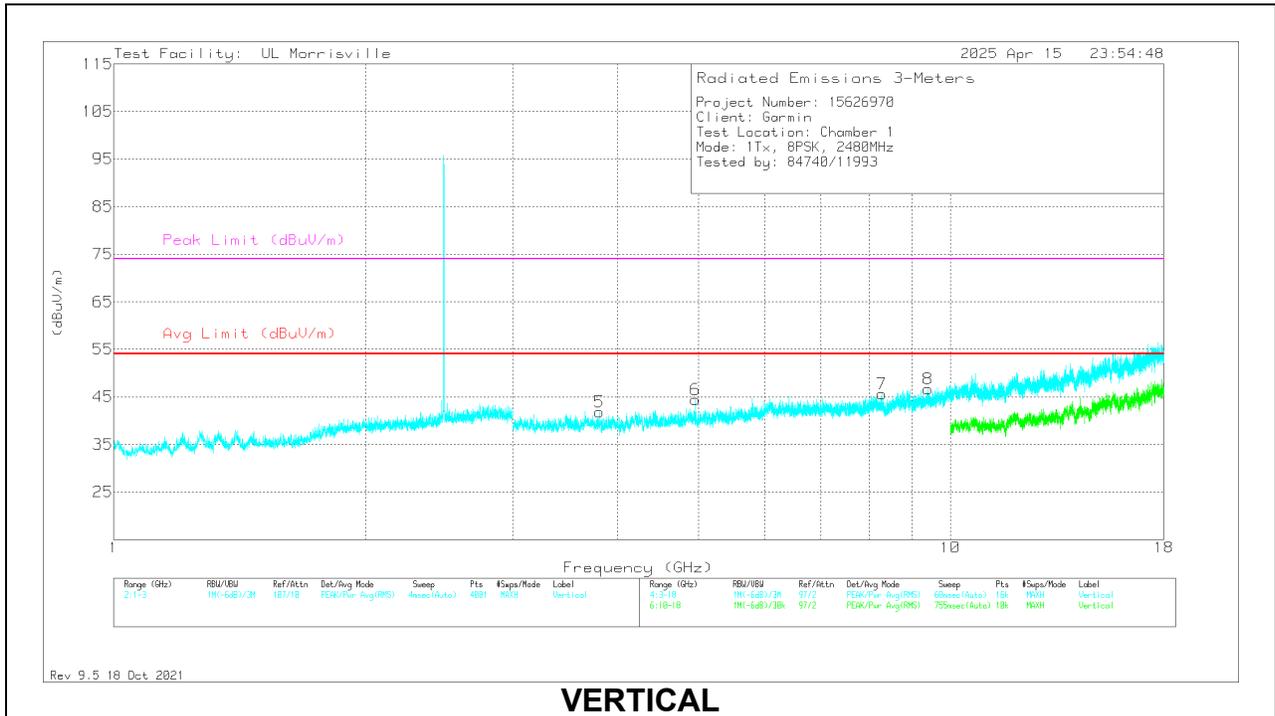
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 3.95531	53.52	Pk	32.9	-44.4	42.02	54	-11.98	74	-31.98	0-360	101	H
2	* ** 4.88156	54.87	Pk	34	-44.7	44.17	54	-9.83	74	-29.83	0-360	101	H
3	* ** 8.31844	49.94	Pk	35.8	-40.8	44.94	54	-9.06	74	-29.06	0-360	200	H
4	* ** 9.41719	48.99	Pk	36.3	-39.7	45.59	54	-8.41	74	-28.41	0-360	200	H
5	* ** 3.94781	52.49	Pk	32.9	-44.5	40.89	54	-13.11	74	-33.11	0-360	101	V
6	* ** 4.8825	55.88	Pk	34	-44.8	45.08	54	-8.92	74	-28.92	0-360	101	V
7	* ** 8.26219	49.53	Pk	35.9	-40.6	44.83	54	-9.17	74	-29.17	0-360	101	V
8	* ** 9.38625	50.51	Pk	36.2	-40.4	46.31	54	-7.69	74	-27.69	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 ** - indicates frequency in Taiwan NCC LP0002 Restricted Band
 Pk - Peak detector

HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	135143 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 3.67406	53.93	Pk	33.2	-44.2	42.93	54	-11.07	74	-31.07	0-360	199	H
2	* ** 4.95938	57.83	Pk	34.2	-44.8	47.23	54	-6.77	74	-26.77	0-360	101	H
3	* ** 7.44	50.99	Pk	35.4	-41.1	45.29	54	-8.71	74	-28.71	0-360	101	H
4	* ** 9.41531	49.09	Pk	36.3	-39.7	45.69	54	-8.31	74	-28.31	0-360	101	H
5	* ** 3.80719	52.58	Pk	33.1	-43.8	41.88	54	-12.12	74	-32.12	0-360	200	V
6	* ** 4.96031	55.09	Pk	34.2	-44.8	44.49	54	-9.51	74	-29.51	0-360	200	V
7	* ** 8.27813	50.62	Pk	35.9	-40.9	45.62	54	-8.38	74	-28.38	0-360	101	V
8	* ** 9.40031	50.9	Pk	36.3	-40.5	46.7	54	-7.3	74	-27.3	0-360	200	V

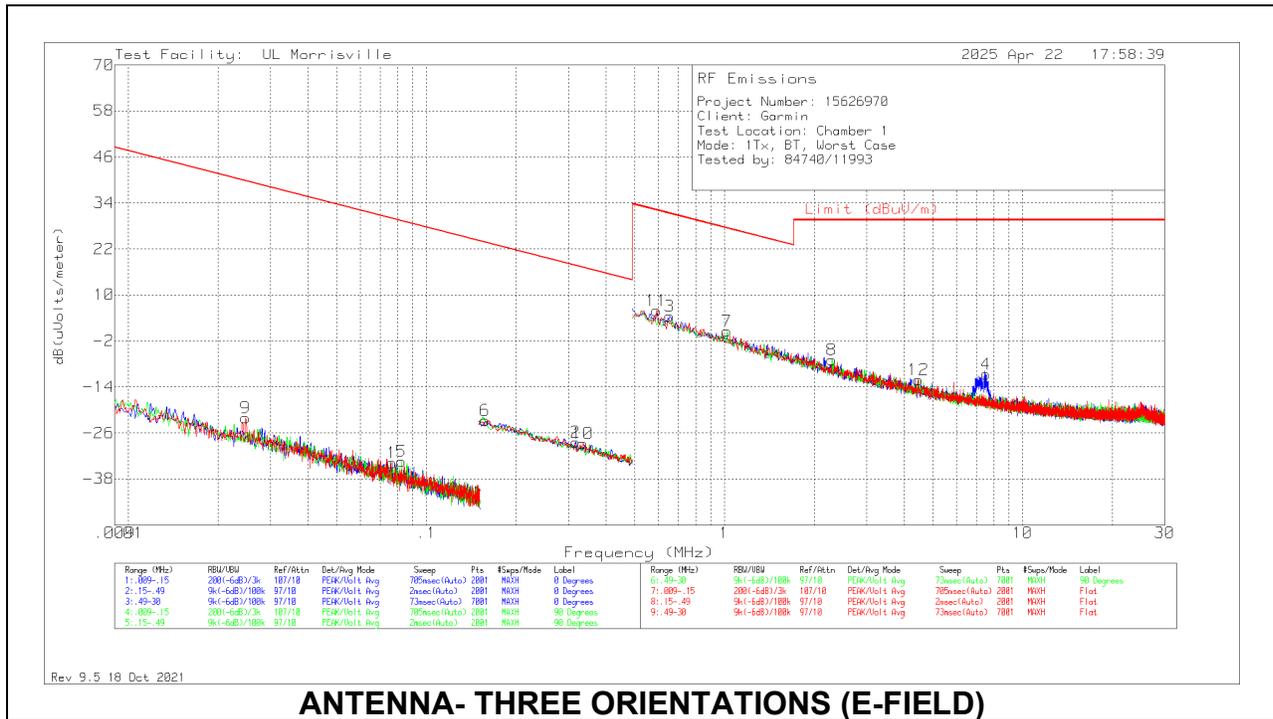
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

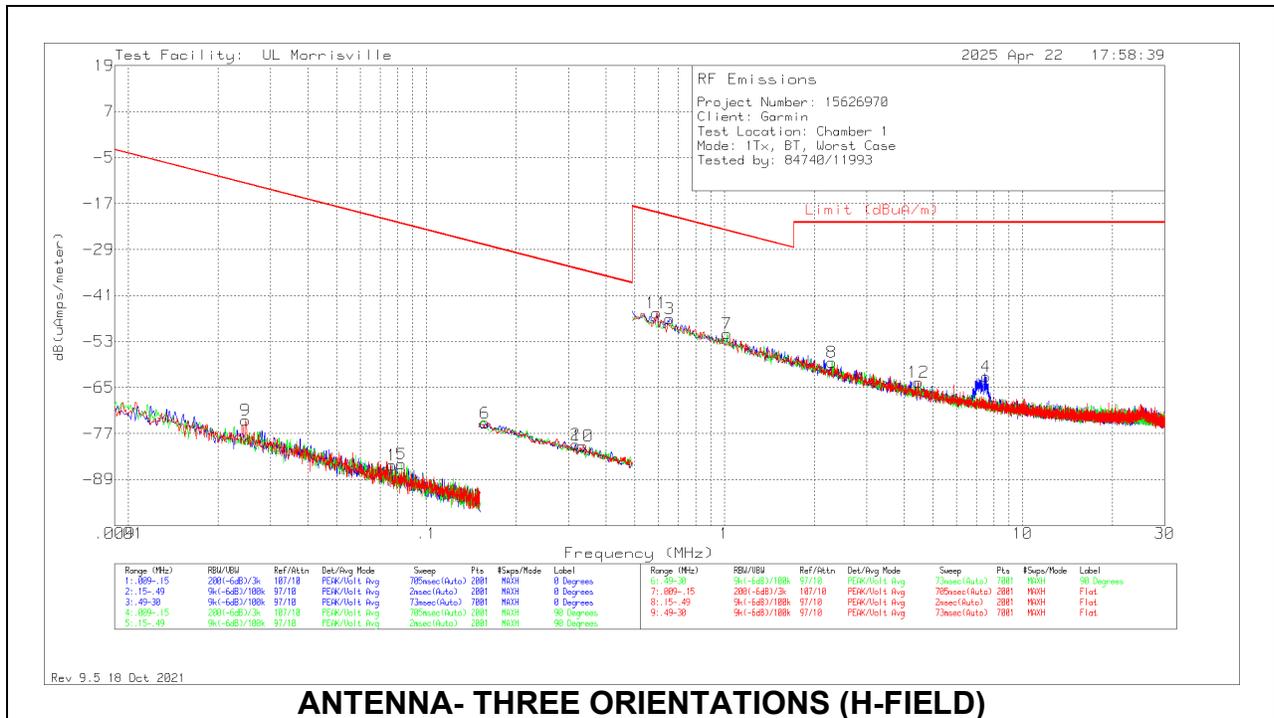
10.2. WORST CASE SPURIOUS BELOW 30MHZ

Note: All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz – 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ANT (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	QP/AV Limit (dBuV/m)	PK Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
9	.02476	44.23	Pk	13.6	.1	-80	-22.07	39.73	59.73	-61.8	0-360	Flat
1	.07666	34.95	Pk	11.2	.1	-80	-33.75	29.91	49.91	-63.66	0-360	0 degs
5	.08249	35.19	Pk	11.2	.1	-80	-33.51	29.28	49.28	-62.79	0-360	90 degs
6	.15731	46.12	Pk	11	.1	-80	-22.78	23.67	43.67	-46.45	0-360	90 degs
2	.31686	40.6	Pk	10.9	.1	-80	-28.4	17.59	37.59	-45.99	0-360	0 degs
10	.33564	40.27	Pk	10.9	.1	-80	-28.73	17.09	37.09	-45.82	0-360	Flat
11	.59118	34.88	Pk	11	.1	-40	5.98	32.17	-	-26.19	0-360	Flat
3	.65442	33.35	Pk	11	.1	-40	4.45	31.29	-	-26.84	0-360	0 degs
7	1.02122	29.45	Pk	11	.1	-40	.55	27.42	-	-26.87	0-360	90 degs
8	2.29445	21.81	Pk	11.1	.2	-40	-6.89	29.54	-	-36.43	0-360	90 degs
12	4.46569	16.64	Pk	10.9	.3	-40	-12.16	29.54	-	-41.7	0-360	Flat
4	7.54337	18.26	Pk	10.7	.4	-40	-10.64	29.54	-	-40.18	0-360	0 degs

Pk - Peak detector

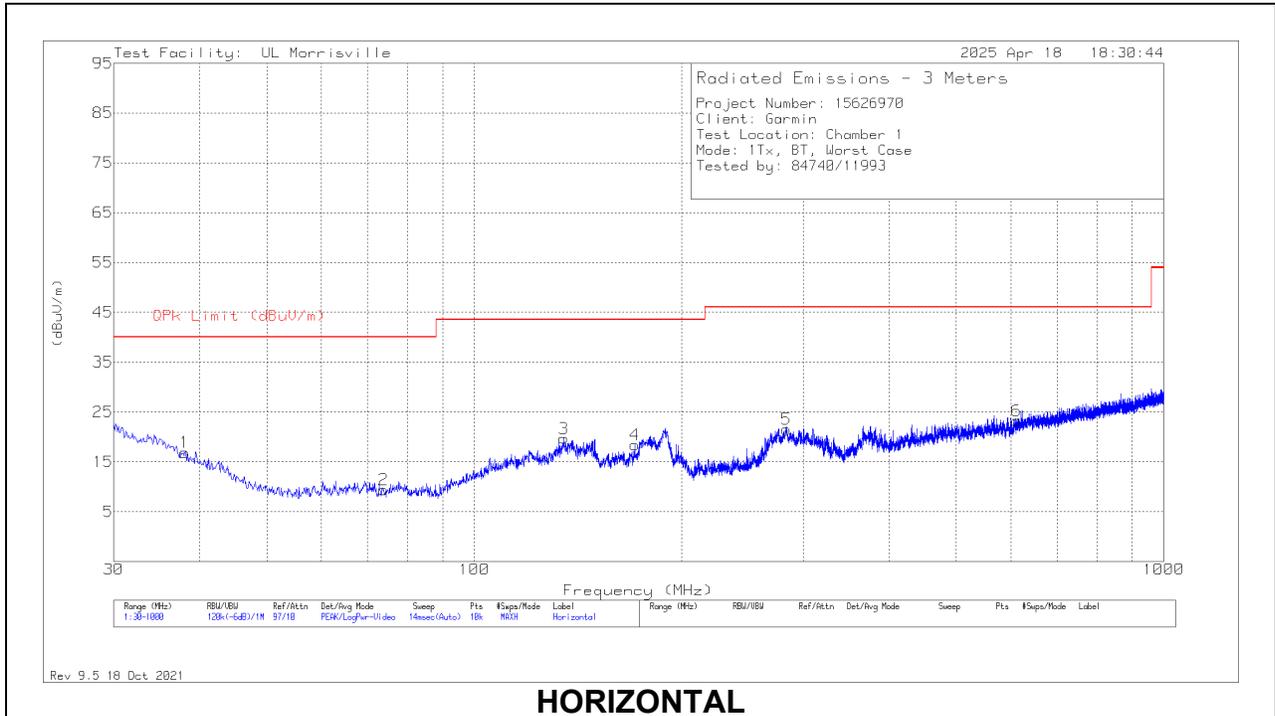


ANTENNA- THREE ORIENTATIONS (H-FIELD)

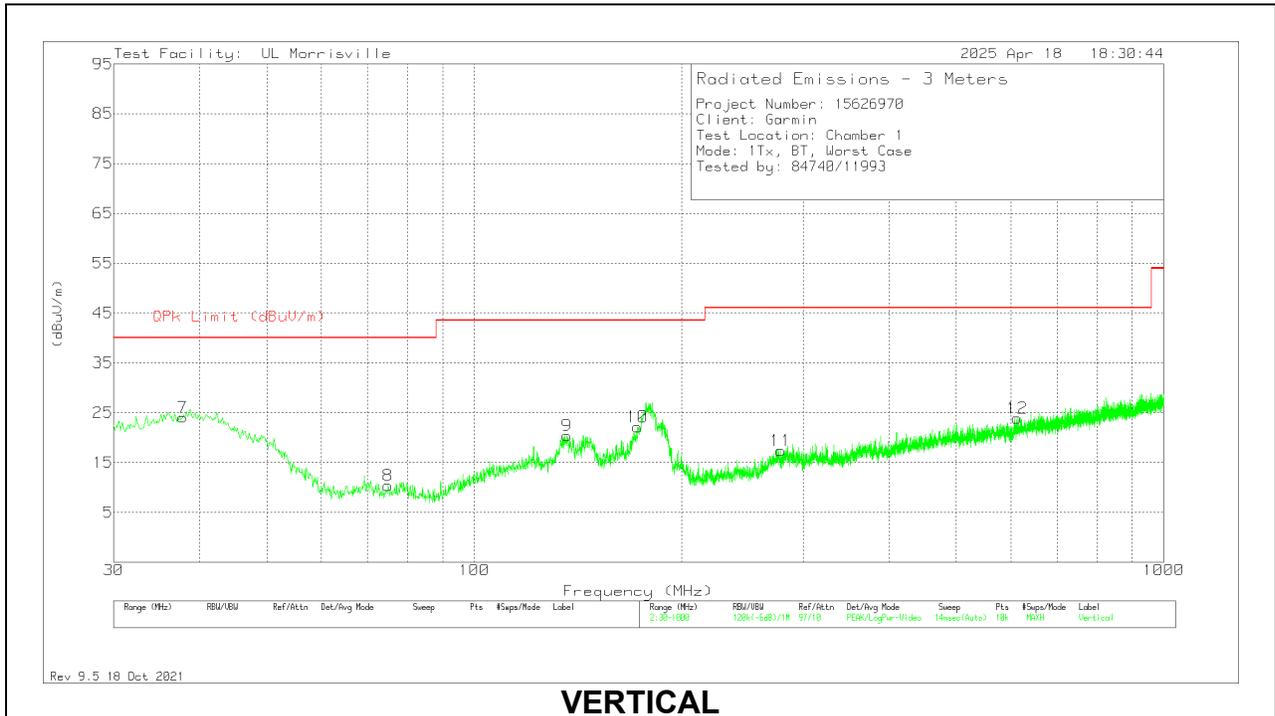
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ANT (dB/m)	Gain/Loss (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uAmps/meter)	QP/AV Limit (dBuA/m)	PK Limit (dBuA/m)	Margin (dB)	Azimuth (Degs)	Loop Angle
9	.02476	44.23	Pk	-37.9	.1	-80	-73.57	-11.77	8.23	-61.8	0-360	Flat
1	.07666	34.95	Pk	-40.3	.1	-80	-85.25	-21.59	-1.59	-63.66	0-360	0 degs
5	.08249	35.19	Pk	-40.3	.1	-80	-85.01	-22.22	-2.22	-62.79	0-360	90 degs
6	.15731	46.12	Pk	-40.5	.1	-80	-74.28	-27.83	-7.83	-46.45	0-360	90 degs
2	.31686	40.6	Pk	-40.6	.1	-80	-79.9	-33.91	-13.91	-45.99	0-360	0 degs
10	.33564	40.27	Pk	-40.6	.1	-80	-80.23	-34.41	-14.41	-45.82	0-360	Flat
11	.59118	34.88	Pk	-40.5	.1	-40	-45.52	-19.33	-	-26.19	0-360	Flat
3	.65442	33.35	Pk	-40.5	.1	-40	-47.05	-20.21	-	-26.84	0-360	0 degs
7	1.02122	29.45	Pk	-40.5	.1	-40	-50.95	-24.08	-	-26.87	0-360	90 degs
8	2.29445	21.81	Pk	-40.4	.2	-40	-58.39	-21.96	-	-36.43	0-360	90 degs
12	4.46569	16.64	Pk	-40.6	.3	-40	-63.66	-21.96	-	-41.7	0-360	Flat
4	7.54337	18.26	Pk	-40.8	.4	-40	-62.14	-21.96	-	-40.18	0-360	0 degs

Pk - Peak detector

10.3. WORST CASE SPURIOUS 30-1000MHZ



HORIZONTAL



VERTICAL

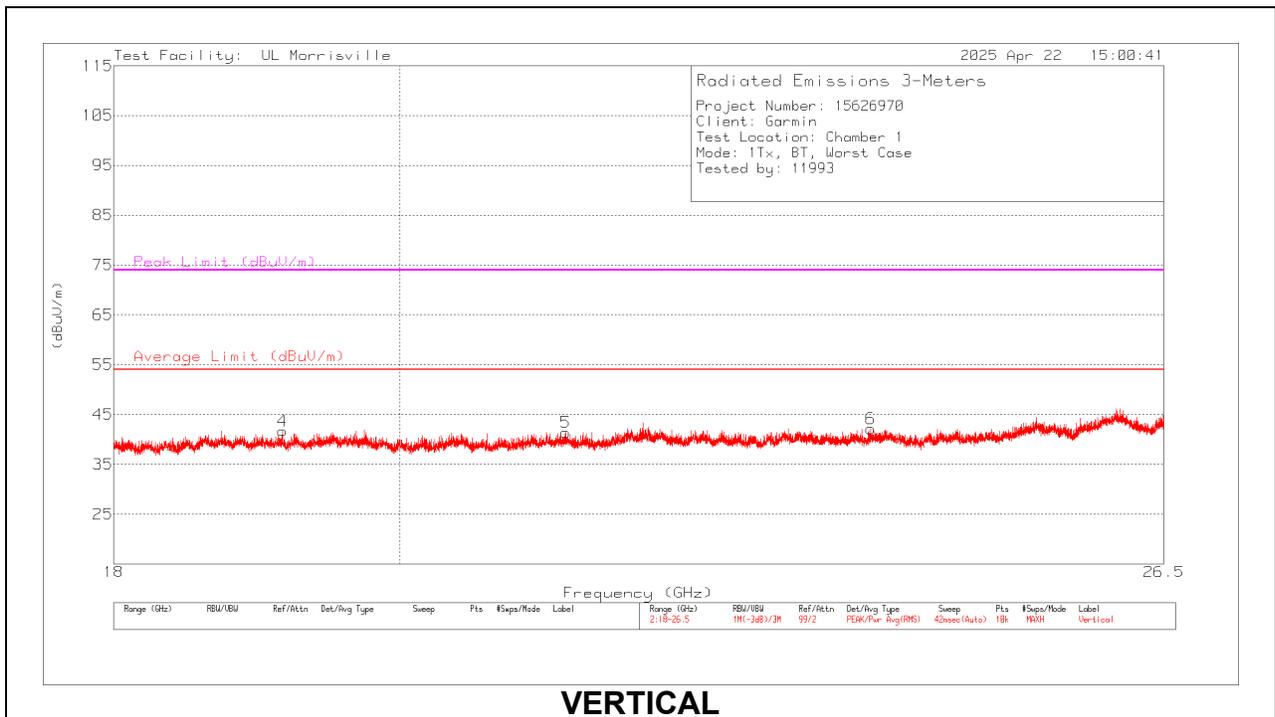
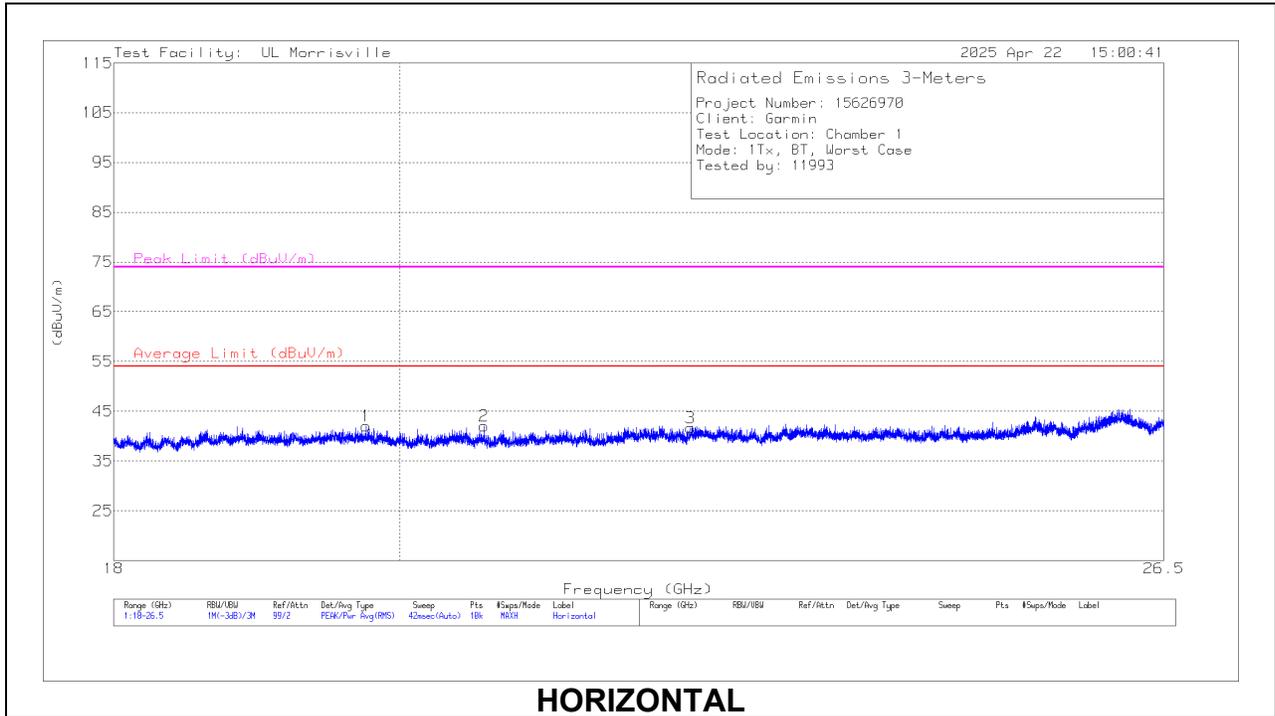
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	*** 38.051	27.45	Pk	21.2	-31.8	16.85	40	-23.15	0-360	99	H
2	*** 73.941	26.44	Pk	14.5	-31.5	9.44	40	-30.56	0-360	300	H
3	*** 134.857	30.31	Pk	19.8	-30.4	19.71	43.52	-23.81	0-360	199	H
4	*** 170.844	30.74	Pk	18	-30.3	18.44	43.52	-25.08	0-360	99	H
5	*** 283.655	31.09	Pk	19.5	-29.1	21.49	46.02	-24.53	0-360	99	H
6	*** 611.127	26.63	Pk	25	-28.4	23.23	46.02	-22.79	0-360	99	H
7	*** 37.76	34.49	Pk	21.4	-31.8	24.09	40	-15.91	0-360	100	V
8	*** 75.008	27.5	Pk	14.4	-31.5	10.4	40	-29.6	0-360	100	V
9	*** 136.312	31.54	Pk	19.7	-30.8	20.44	43.52	-23.08	0-360	100	V
10	*** 172.59	34.84	Pk	17.9	-30.6	22.14	43.52	-21.38	0-360	100	V
11	*** 278.514	27.92	Pk	19.5	-30	17.42	46.02	-28.6	0-360	100	V
12	*** 612.97	26.96	Pk	25.1	-28.2	23.86	46.02	-22.16	0-360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

10.4. WORST CASE SPURIOUS 18-26GHz



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	Horn (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 19.75422	49.66	Pk	32.6	-40.2	42.06	54	-11.94	74	-31.94	0-360	101	H
2	* ** 20.63134	49.51	Pk	32.6	-40.1	42.01	54	-11.99	74	-31.99	0-360	200	H
3	* ** 22.26147	48.42	Pk	33.4	-40.2	41.62	54	-12.38	74	-32.38	0-360	150	H
4	* ** 19.15418	49.21	Pk	32.6	-40.1	41.71	54	-12.29	74	-32.29	0-360	150	V
5	* ** 21.25942	48.69	Pk	32.7	-40	41.39	54	-12.61	74	-32.61	0-360	200	V
6	* ** 23.78877	48.1	Pk	34	-39.9	42.2	54	-11.8	74	-31.8	0-360	101	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

** - indicates frequency in Taiwan NCC LP0002 Restricted Band

Pk - Peak detector

11. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)
RSS-Gen 8.8

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

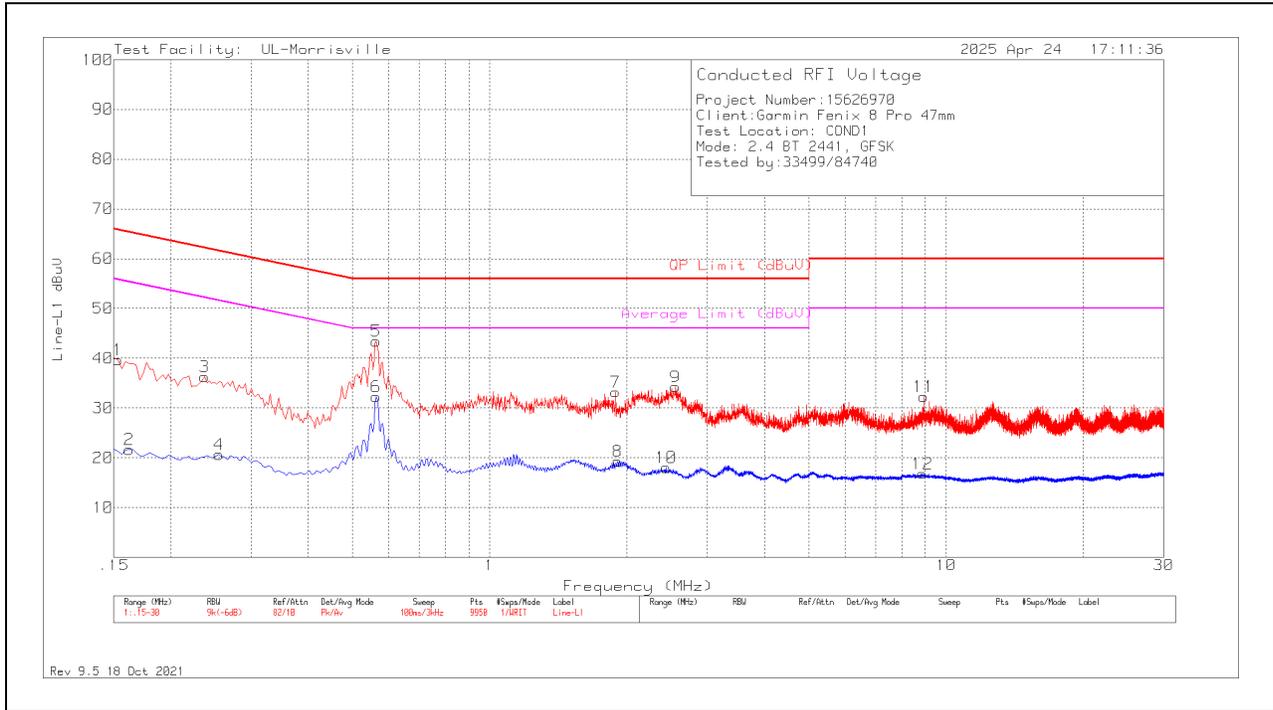
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both lines.

11.1. AC POWER LINE

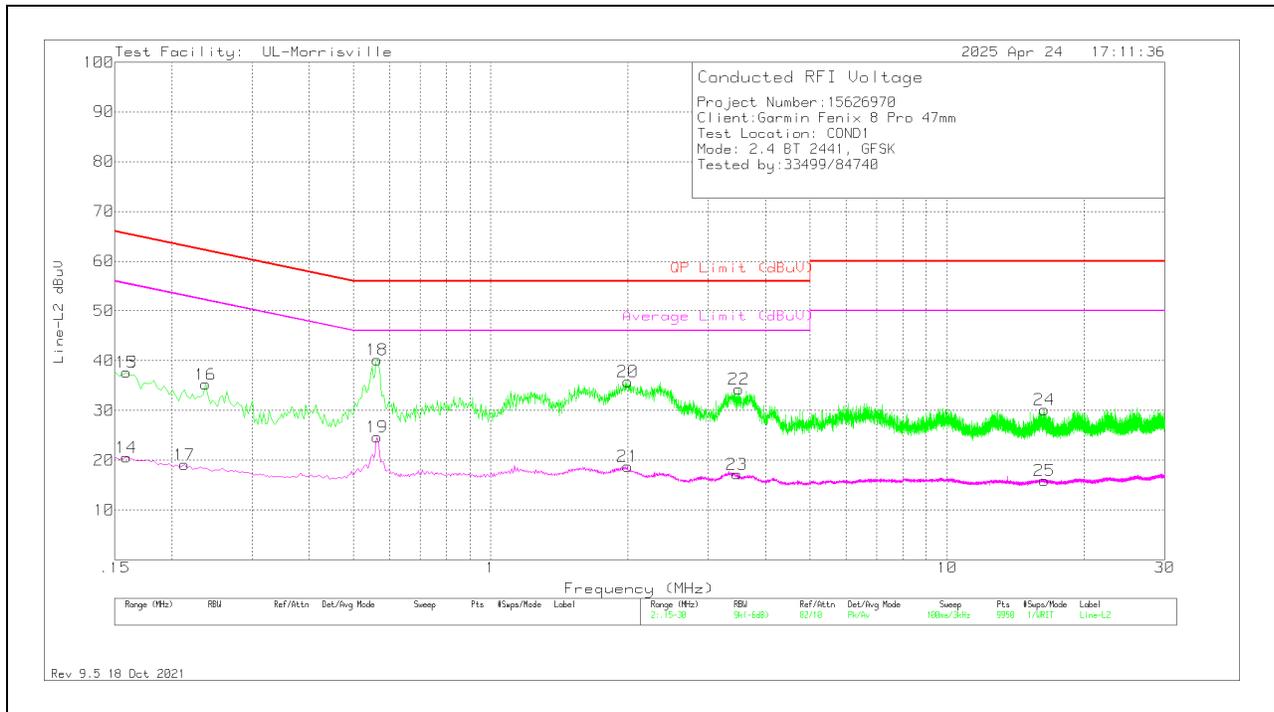
LINE 1 RESULTS



Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
1	.153	19.46	Pk	.2	0	20	39.66	65.84	-26.18	-	-
2	.162	1.48	Av	.2	0	20	21.68	-	-	55.36	-33.68
3	.237	16.2	Pk	.1	0	20	36.3	62.2	-25.9	-	-
4	.255	.54	Av	.1	0	20	20.64	-	-	51.59	-30.95
5	.564	23.33	Pk	0	.1	20	43.43	56	-12.57	-	-
6	.564	12.15	Av	0	.1	20	32.25	-	-	46	-13.75
7	1.89	13.12	Pk	0	.1	20	33.22	56	-22.78	-	-
8	1.908	-8.5	Av	0	.1	20	19.25	-	-	46	-26.75
10	2.433	-2.09	Av	0	.1	20	18.01	-	-	46	-27.99
9	2.553	14.13	Pk	0	.1	20	34.23	56	-21.77	-	-
12	8.871	-3.48	Av	.1	.2	20	16.82	-	-	50	-33.18
11	8.931	11.95	Pk	.1	.2	20	32.25	60	-27.75	-	-

Pk - Peak detector
 Av - Average detection

LINE 2 RESULTS



Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	171083 (dB)	Atten (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
13	.159	17.46	Pk	.2	0	20	37.66	65.52	-27.86	-	-
14	.159	.38	Av	.2	0	20	20.58	-	-	55.52	-34.94
15	.159	17.46	Pk	.2	0	20	37.66	65.52	-27.86	-	-
17	.213	-1.01	Av	.1	0	20	19.09	-	-	53.09	-34
16	.237	15.13	Pk	.1	0	20	35.23	62.2	-26.97	-	-
18	.564	20.1	Pk	0	.1	20	40.2	56	-15.8	-	-
19	.564	4.57	Av	0	.1	20	24.67	-	-	46	-21.33
21	1.995	-1.35	Av	0	.1	20	18.75	-	-	46	-27.25
20	1.998	15.66	Pk	0	.1	20	35.76	56	-20.24	-	-
23	3.468	-2.9	Av	0	.1	20	17.2	-	-	46	-28.8
22	3.501	14.16	Pk	0	.1	20	34.26	56	-21.74	-	-
25	16.344	-4.58	Av	.2	.3	20	15.92	-	-	50	-34.08
24	16.359	9.62	Pk	.2	.3	20	30.12	60	-29.88	-	-

PK - Peak detector
 Av - Average detection

12. SETUP PHOTOS

Please refer to R15626970-EP2 for setup photos.

END OF TEST REPORT