TEST REPORT

Report Number: R15110020-E8

Applicant	:	Sony Corporation 1-7-1 Konan Minato-Ku Tokyo, 108-0075, Japan
FCC ID	:	PY7-13187R
EUT Description	:	GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C: 2024

Date Of Issue:
2024-03-25

Prepared by:
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 U.S.A.
TEL: (919) 549-1400

CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2024-03-18	Initial Issue	Charles Moody
V2	2024-03-25	Revised antenna type in section 6.3	B. Kiewra

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0075, Japan
EUT DESCRIPTION:	GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT & NFC
SERIAL NUMBER:	QV77005FL3, QV7700KFLQ, QV7700NWLQ, QV7700G0LQ
SAMPLE RECEIPT DATE:	2023-12-26 TO 2024-01-29
DATE TESTED:	2024-02-06 TO 2024-03-17

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C: 2024	Complies

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.

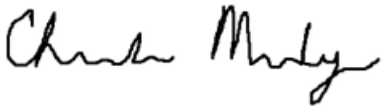
The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. 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:

Mike Antola
Staff Engineer
Consumer Technology Division
UL LLC

Prepared By:



Charles Moody
Engineer
Consumer Technology Division
UL LLC

2. TEST RESULTS SUMMARY

This report contains data provided by the applicant 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 provided by the customer:
1) Antenna gain and type (see section 6.3)
2) Cable loss (see sections 9.6 and 9.7)

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	Per ANSI C63.10, Section 11.6.
See Comment	20dB BW	Reporting purposes only	ANSI C63.10 Sections 6.9.2.
15.247 (a)(1)	Hopping Frequency Separation	Compliant	None
15.247 (a)(1)(iii)	Number of Hopping Channels		
15.247 (a)(1)(iii)	Average Time of Occupancy		
15.247 (b)(1)	Output Power		
See Comment	Average Power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (d)	Conducted Spurious Emissions	Compliant	None

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 C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, and KDB 414788 D01 Radiated Test Site v01r01.

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
☐	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	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	U_{Lab}
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%

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 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 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 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE/5G Phone with BT, DTS,/UNII a/b/g/n/ac/ax, GPS, WPT & NFC. This report covers the full emissions testing of the Bluetooth 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)
Chain 0			
2402 - 2480	Basic GFSK	13.19	20.84
2402 - 2480	Enhanced DQPSK	13.04	20.14
2402 - 2480	Enhanced 8PSK	13.66	23.23
Chain 1			
2402 - 2480	Basic GFSK	13.75	23.71
2402 - 2480	Enhanced DQPSK	13.60	22.91
2402 - 2480	Enhanced 8PSK	13.59	22.86

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

Chain	Designation in Documentation	Type	Frequency Range (MHz)	Maximum Gain (dBi)
0	WLAN Main/Bluetooth#1	Loop	2402-2480	-1.02
1	WLAN Sub/Bluetooth#2	Monopole	2402-2480	-2.69

6.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was 0.220.

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 with highest 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 and high channels, with mid channel added for radiated emissions. Bandedge and spurious emissions were run at GFSK and 8PSK to cover DQPSK.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation for chain 0 and chain 1. Therefore, all final radiated testing was performed with the EUT in X orientation for both chains.

Worst-case data rates as provided by the client were:

GFSK mode: DH5
8PSK mode: 3-DH5

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Power Adapter	Sony	Type: AC-0540-JP	3223W09206247	--
Headphones	Sony	--	--	--
Support Laptop	Lenovo	Yoga 7 16IAP7	PF49WDF9	--

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	USB-C	USB	<3M	Connects EUT to Power Adapter
2	3.5mm	1	AUX	Non-Shielded	<3M	Connected to Headphones

TEST SETUP

The EUT is connected to a support laptop prior to testing to configure the radio. Test software exercised the radio card. For testing, the EUT was connected to the power adapter.

SETUP DIAGRAMS

Please refer to R15110020-EP3 for setup diagrams

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7. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Common Equipment				
	Conducted Room 1				
90411	Spectrum Analyzer	Keysight Technologies	N9030A	2023-08-02	2024-08-02
179892	Environmental Meter	Fisher Scientific	15-077-963	2023-07-26	2024-06-31
211055	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2023-08-01	2024-08-01
211057	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2023-08-01	2024-08-01
76022	DC Regulated Power Supply	CircuitSpecialists.Com	CSI3005X5	NA	NA
Power Software	Boonton Power Analyzer	Boonton	Version 3.0.13.0	NA	NA
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	NA	NA
	Additional Equipment				
CBL028	SMA Cable	Sucoflex	104PEA	2024-02-16	2025-02-16
CBL029	SMA Cable	Sucoflex	104PEA	2024-02-16	2025-02-16
226563	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-02-29	2025-02-29
226559	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-02-29	2025-02-29

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

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2023-04-04	2024-04-04
179892	Environmental Meter	Fisher Scientific	15-077-963	2023-07-26	2024-06-31
80391	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2023-07-31	2024-07-31
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2023-08-01	2024-08-01
52859	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2023-04-04	2024-04-04
PS214	AC Power Source	Elgar	CW2501M	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Miscellaneous (if needed)				
84681	ANSI C63.4 1m extension cable.	UL	Per Annex B of ANSI C63.4	2023-09-18	2024-09-18

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Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 4)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
89509	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-05-23	2025-05-23
	18-40 GHz				
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-826	2023-07-20	2025-07-20
	Gain-Loss Chains				
207640	Gain-loss string: 1-18GHz	Various	Various	2023-05-17	2024-05-17
225795	Gain-loss string: 18-40GHz	Various	Various	2023-05-17	2024-05-17
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-04-10	2024-04-10
81018	Spectrum Analyzer	Agilent	E4446A	2023-08-01	2024-08-01
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
241204	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 2)

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
86408	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-06-19	2025-06-19
	Gain-Loss Chains				
91977	Gain-loss string: 1-18GHz	Various	Various	2023-06-06	2024-06-06
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-04-10	2024-04-10
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
	Additional Equipment used				
200540	Environmental Meter	Fisher Scientific	15-077-963	2023-07-19	2025-07-19

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	2024-01-24	2025-01-24
	30-1000 MHz				
90629	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-30	2026-01-30
	Gain-Loss Chains				
91974	Gain-loss string: 0.009-30MHz	Various	Various	2023-05-16	2024-05-16
91976	Gain-loss string: 25-1000MHz	Various	Various	2023-05-16	2024-05-16
	Receiver & Software				
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2023-07-19	2024-07-19
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

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8. MEASUREMENT METHODS

On Time and Duty Cycle: ANSI C63.10-2013 Section 11.6

Occupied BW (20dB): ANSI C63.10-2013 Section 6.9.2

Carrier Frequency Separation: ANSI C63.10-2013 Section 7.8.2

Number of Hopping Frequencies: ANSI C63.10-2013 Section 7.8.3

Time of Occupancy (Dwell Time): ANSI C63.10-2013 Section 7.8.4

Peak Output Power: ANSI C63.10-2013 Section 7.8.5

Conducted Spurious Emissions: ANSI C63.10-2013 Section 7.8.8

Conducted Band-Edge: ANSI C63.10-2013 Section 6.10.4

General Radiated Spurious Emissions: ANSI C63.10-2013 Section 6.3 to 6.6

Radiated Band-edge: ANSI C63.10-2013 Section 6.10.5

AC Power-line conducted emissions: ANSI C63.10-2013, Section 6.2

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

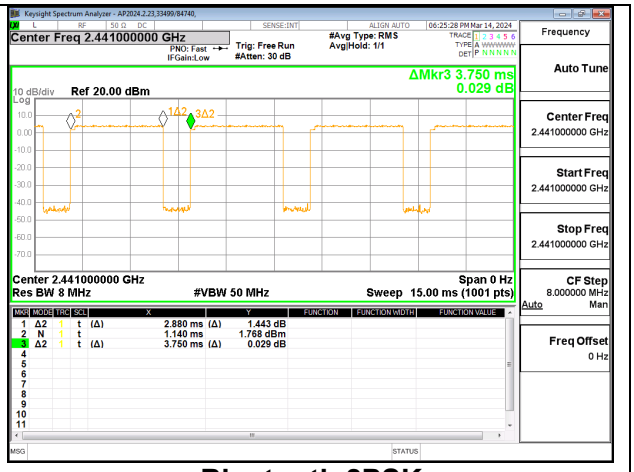
None; for reporting purposes only.

PROCEDURE

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

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	1/T Minimum VBW (kHz)
Bluetooth GFSK	2.880	3.750	0.768	76.80	0.347
Bluetooth 8PSK	2.880	3.750	0.768	76.80	0.347

Bluetooth GFSK



Bluetooth 8PSK

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9.2. 20 dB BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

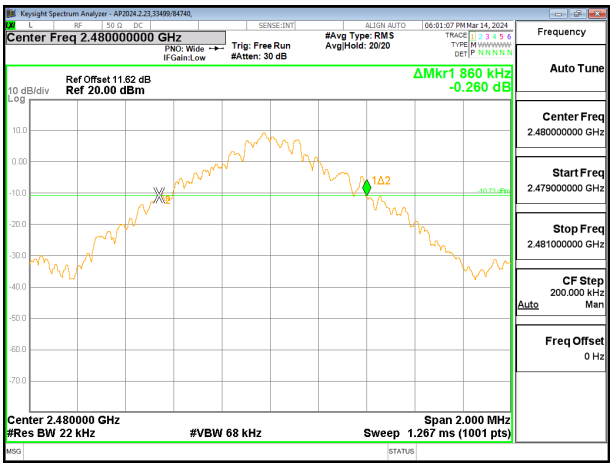
The transmitter output is connected to a spectrum analyzer. The RBW is set to ≥ 1% of the 20 dB bandwidth. The VBW is set to ≥ RBW. The sweep time is coupled.

RESULTS

9.2.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Chain 0

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	0.876
Mid	2441	0.934
High	2480	0.860



HIGH CHANNEL

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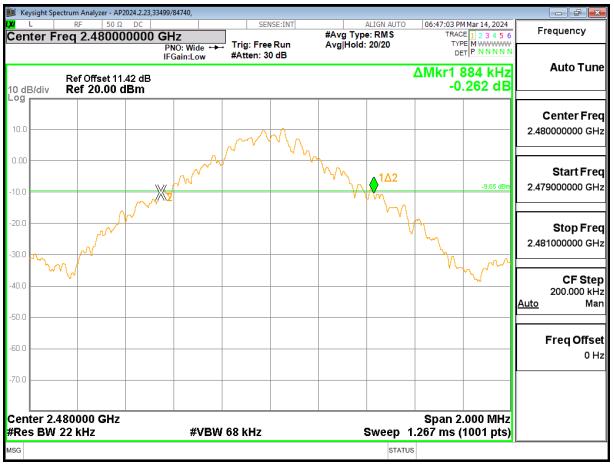
Chain 1

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	0.944
Mid	2441	0.928
High	2480	0.884



HIGH CHANNEL

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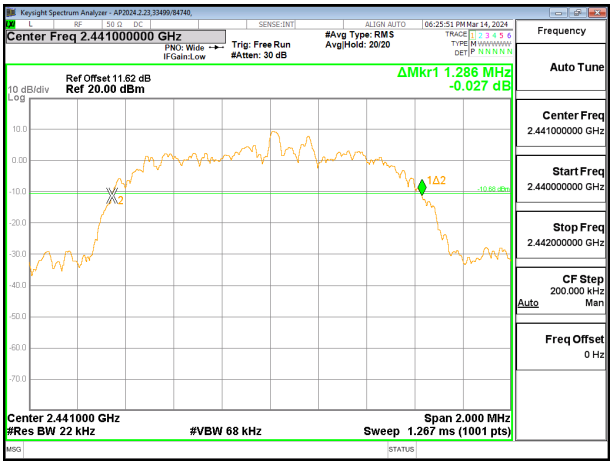
9.2.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Chain 0

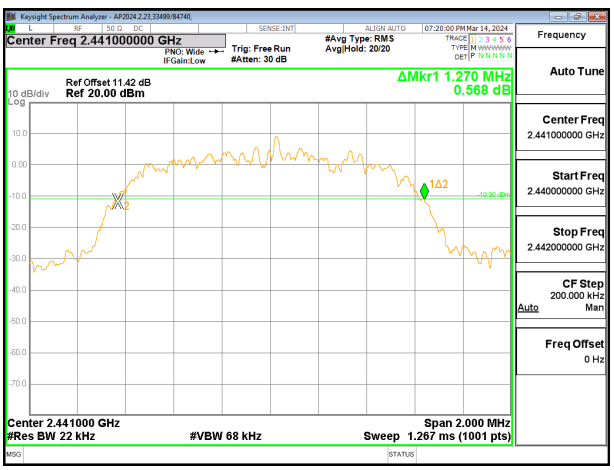
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	1.350
Mid	2441	1.286
High	2480	1.380



MID CHANNEL

Chain 1

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low	2402	1.358
Mid	2441	1.270
High	2480	1.348



MID CHANNEL

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9.3. HOPPING FREQUENCY SEPARATION

LIMITS

FCC §15.247 (a) (1)

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

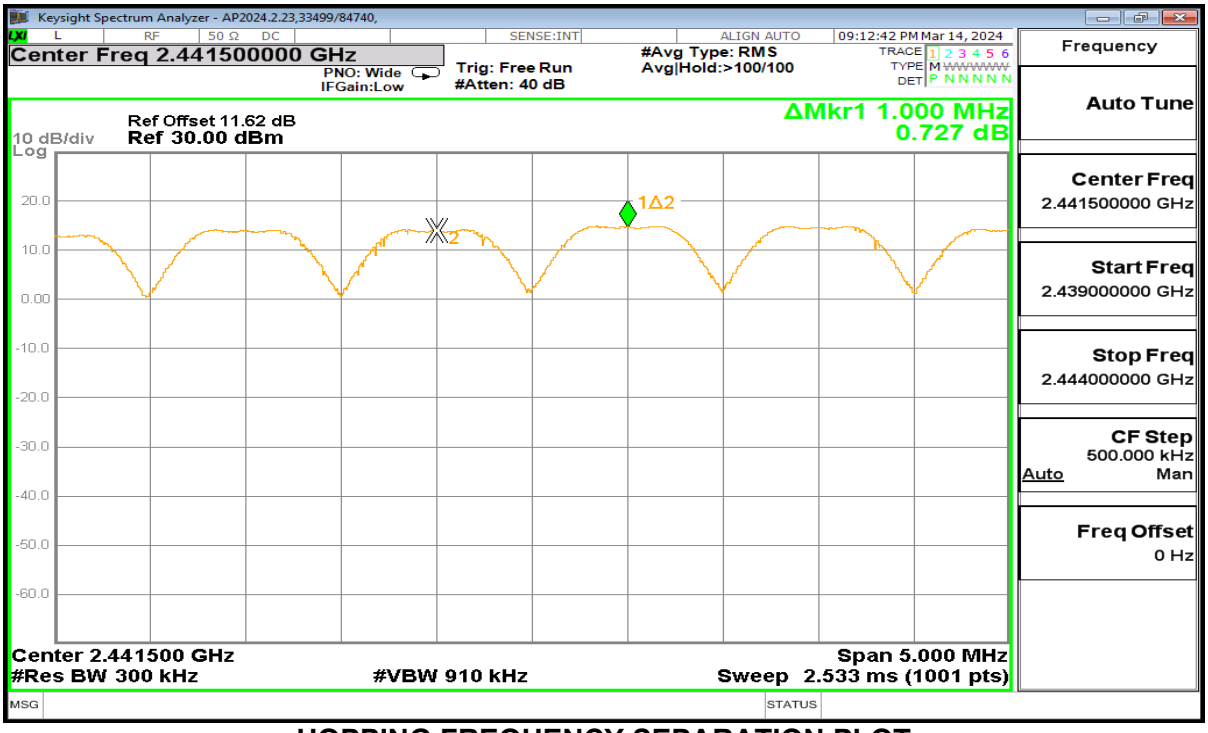
TEST PROCEDURE

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

RESULTS

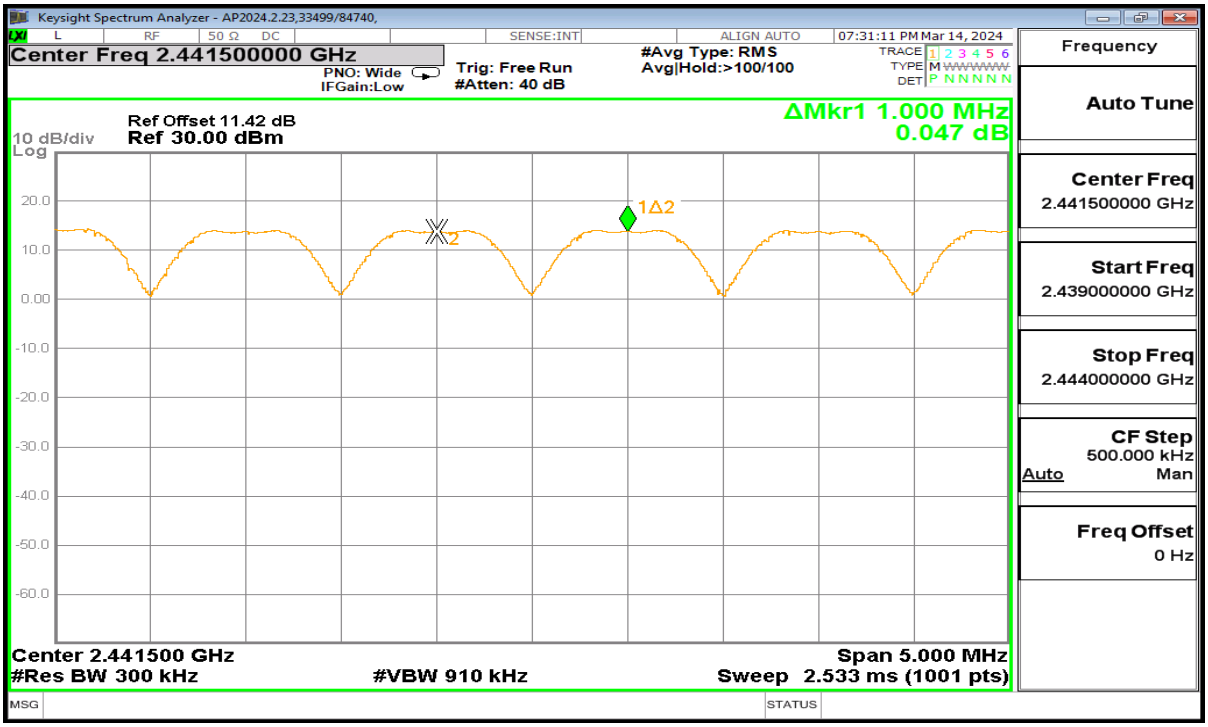
9.3.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Chain 0



HOPPING FREQUENCY SEPARATION PLOT

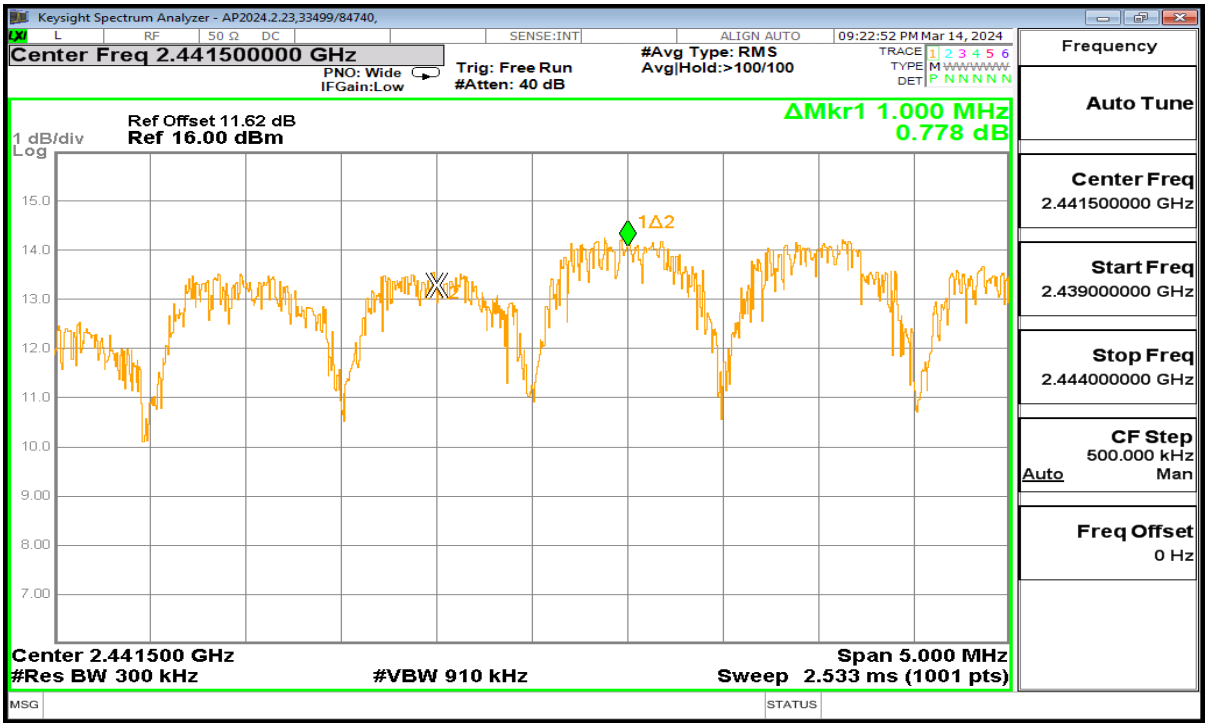
Chain 1



HOPPING FREQUENCY SEPARATION PLOT

9.3.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Chain 0



HOPPING FREQUENCY SEPARATION PLOT

Since output power is <125mW (21dBm), Separation can be > 2/3 20dB BW

Separation (MHz)	20dB BW (MHz)	2/3 dB BW (MHz)	Margin (MHz)
1.000	1.286	0.857	-0.143

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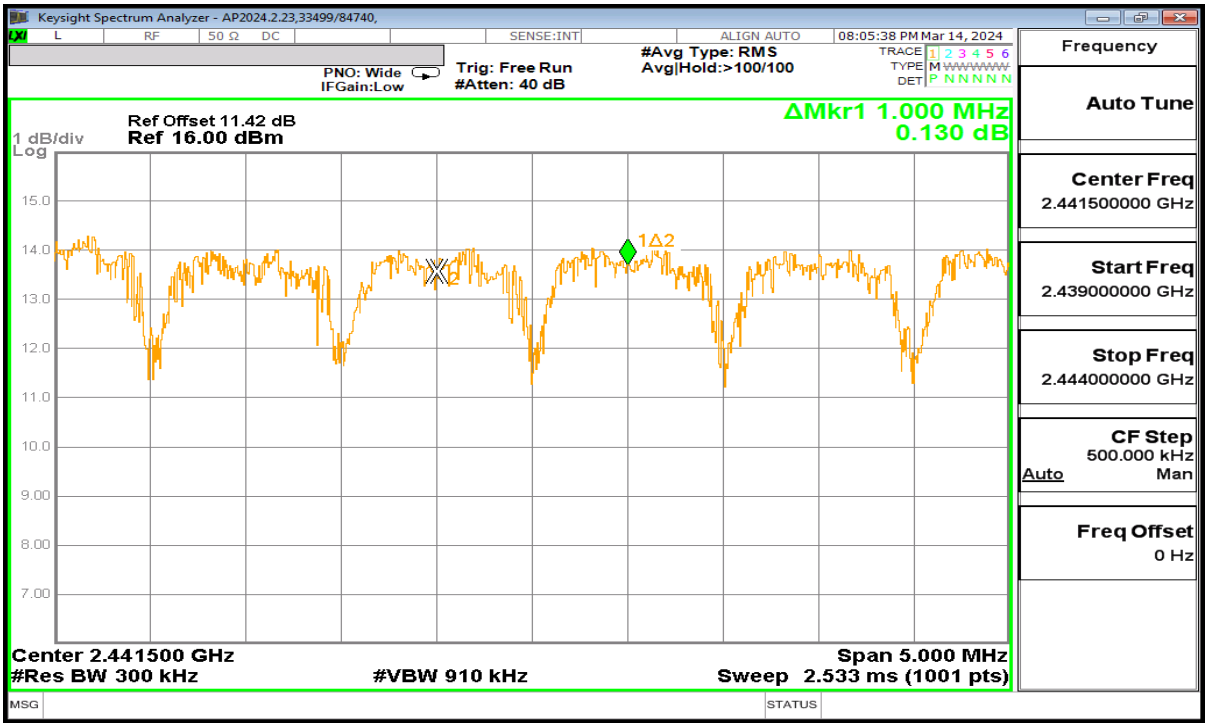
Chain 1



HOPPING FREQUENCY SEPARATION PLOT

Since output power is <125mW (21dBm), Separation can be > 2/3 20dB BW

Separation (MHz)	20dB BW (MHz)	2/3 dB BW (MHz)	Margin (MHz)
1.000	1.270	0.847	-0.153

9.4. NUMBER OF HOPPING CHANNELS

LIMITS

FCC §15.247 (a) (1) (iii)

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

TEST PROCEDURE

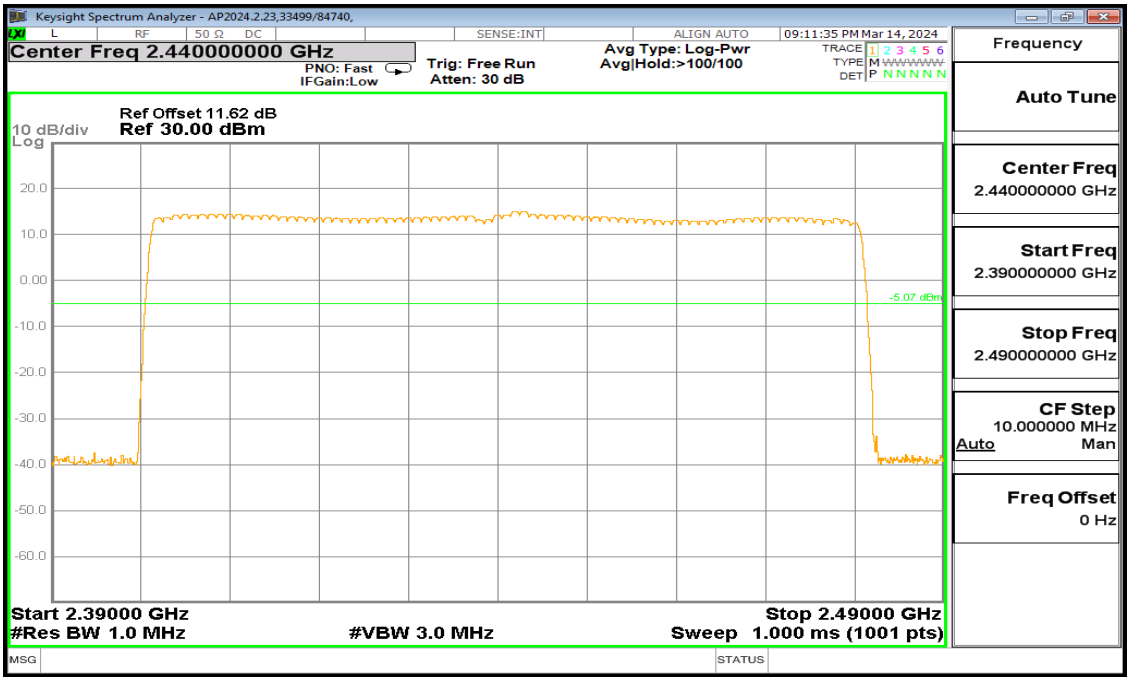
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to a maximum of 1 % of the span. The analyzer is set to Max Hold.

Normal Mode: 79 Channels Observed

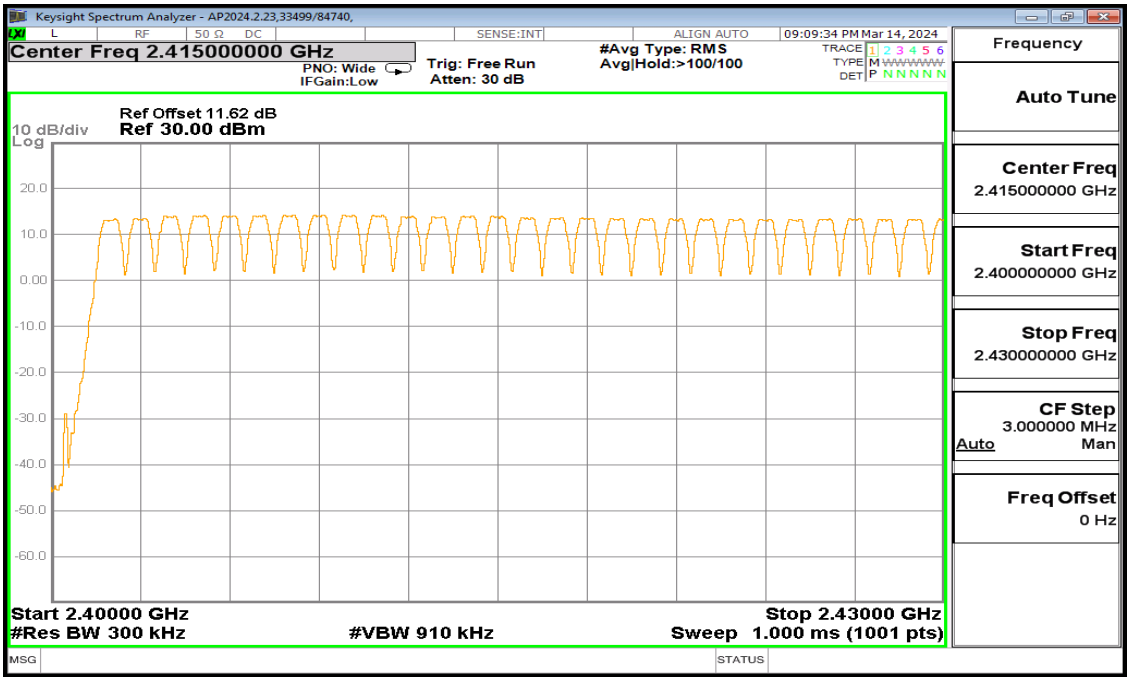
RESULTS

9.4.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

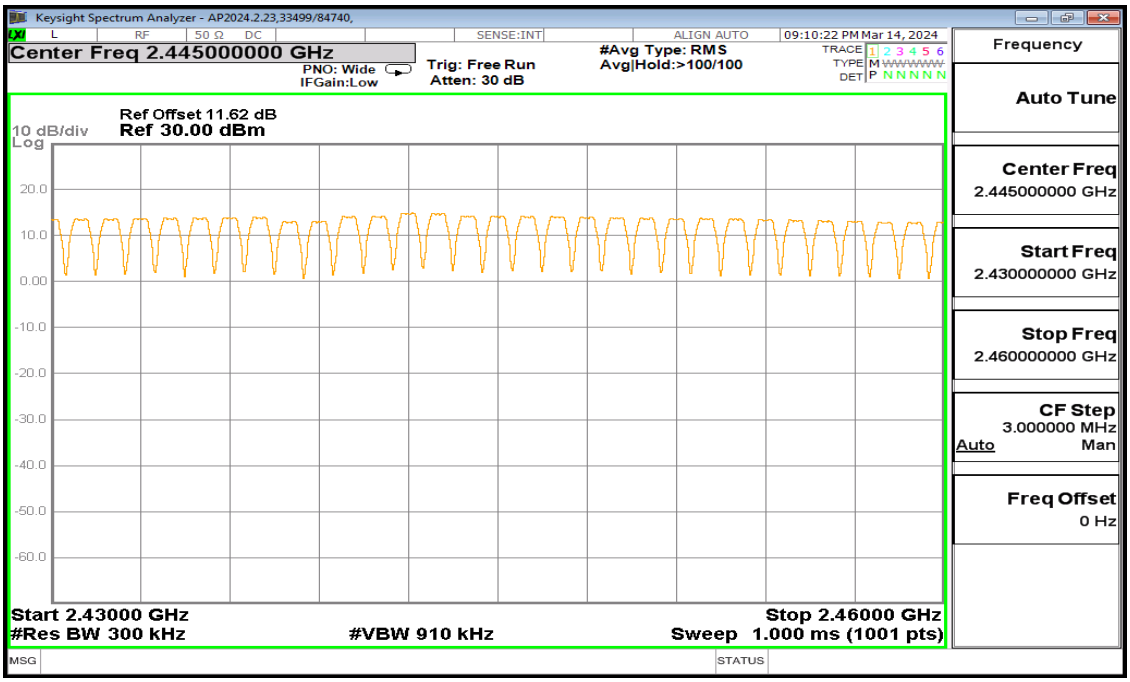
Chain 0



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3



30MHz SPAN, SEGMENT 2 OF 3

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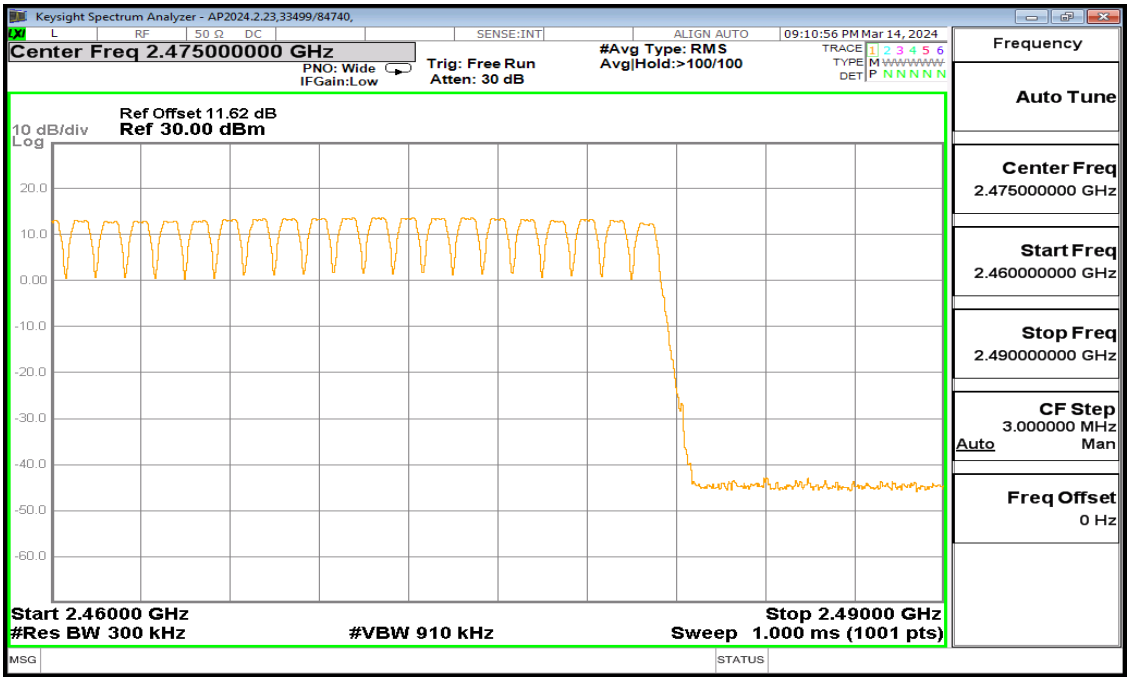
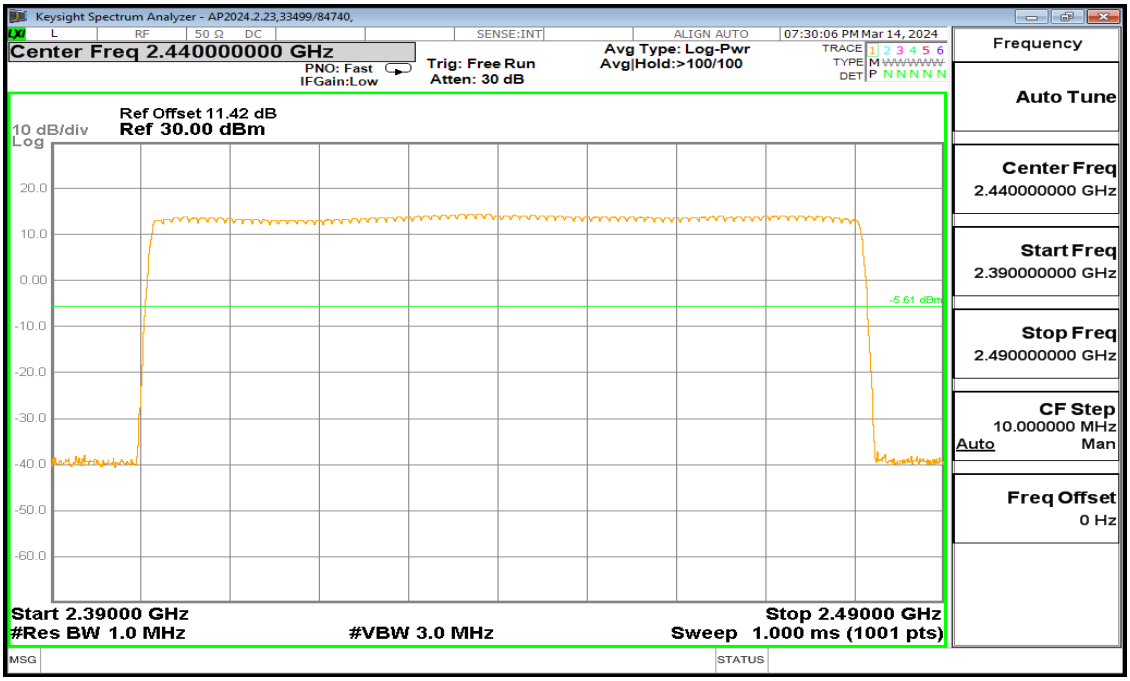
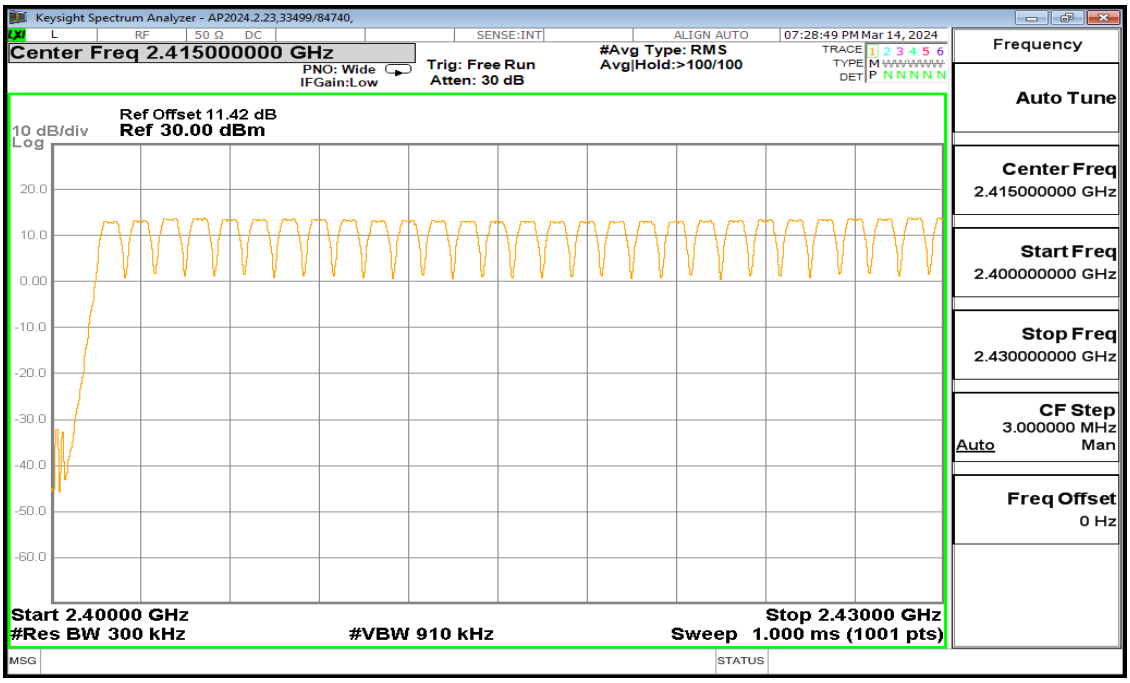


30MHz SPAN, SEGMENT 3 OF 3

Chain 1



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

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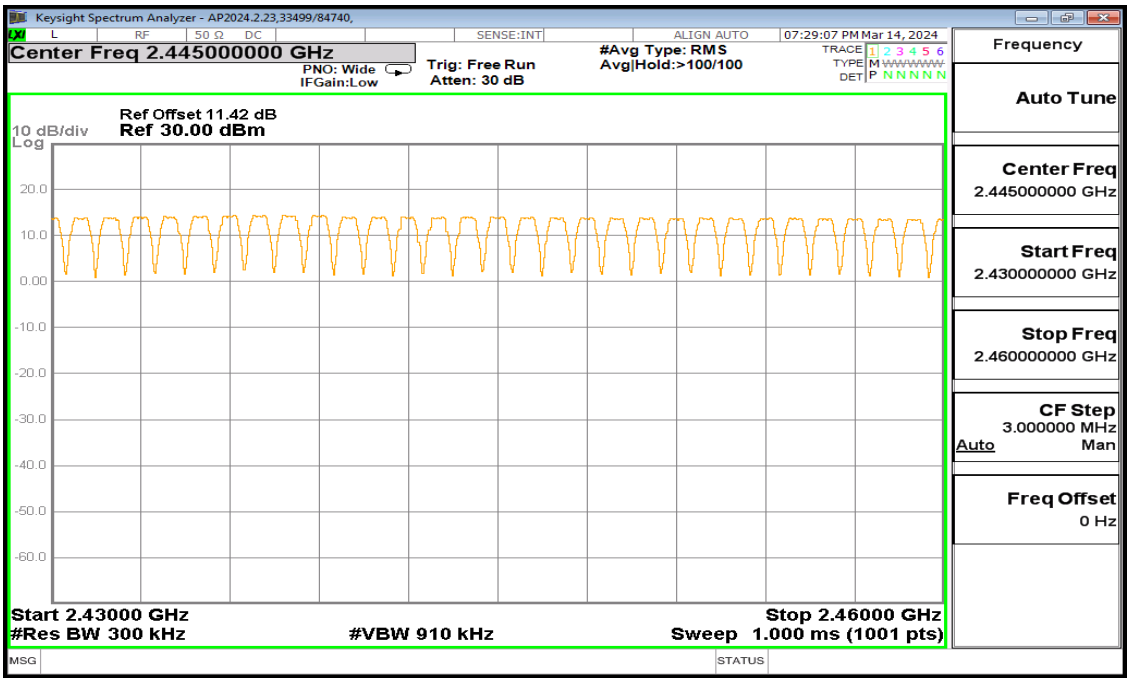
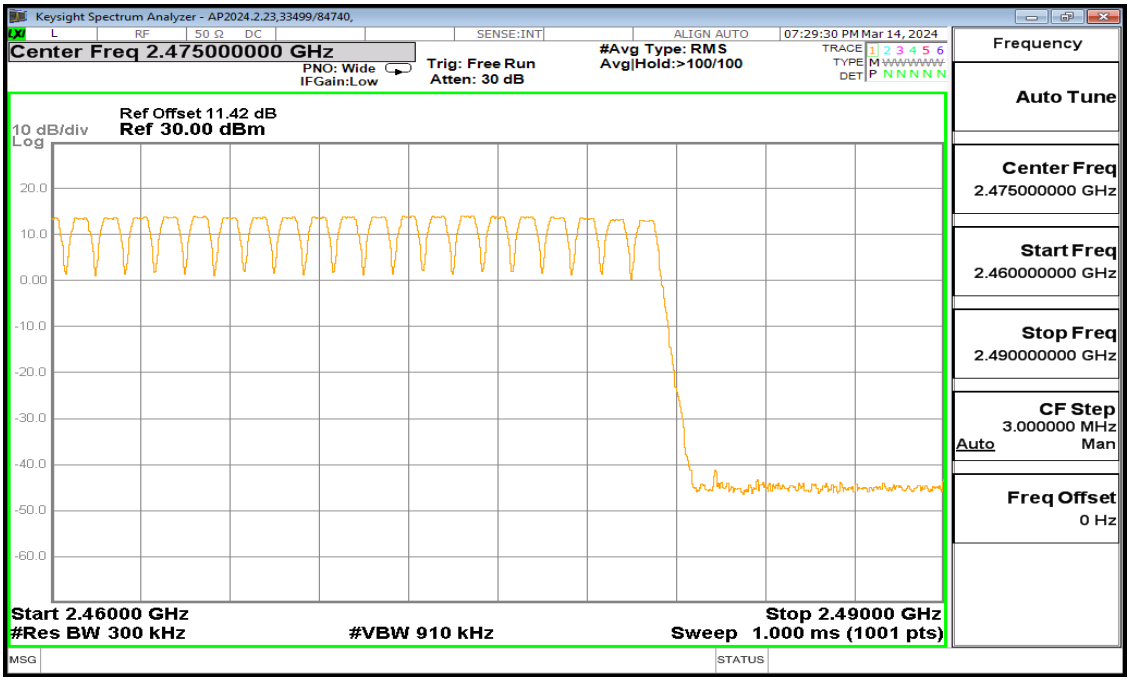


30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

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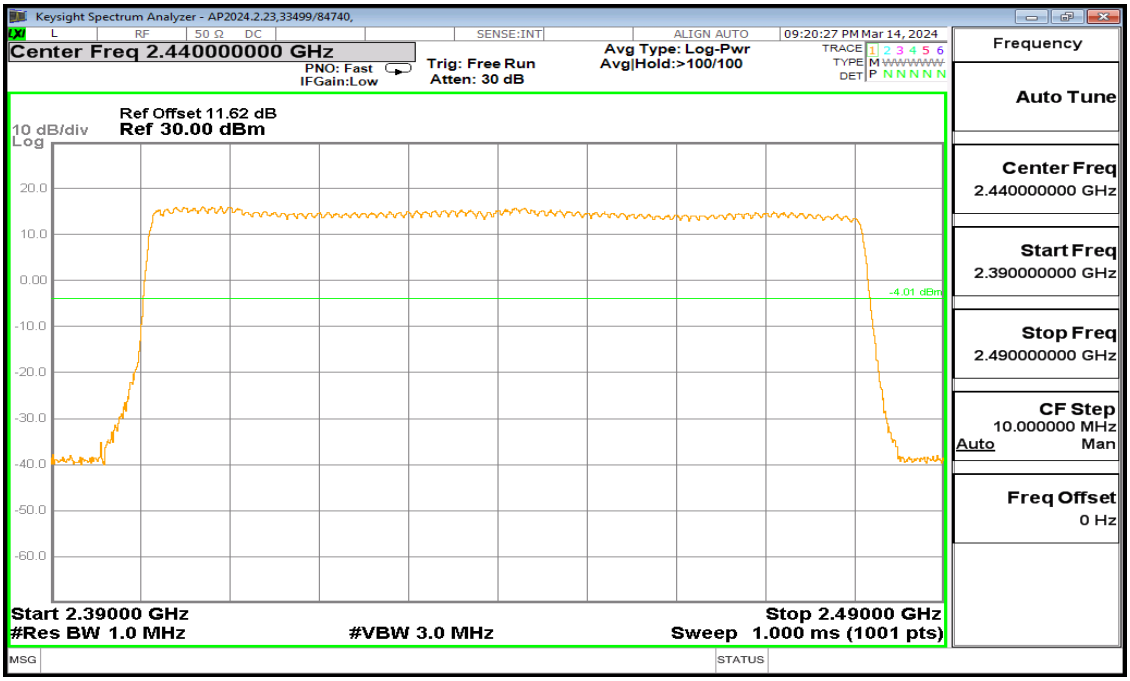
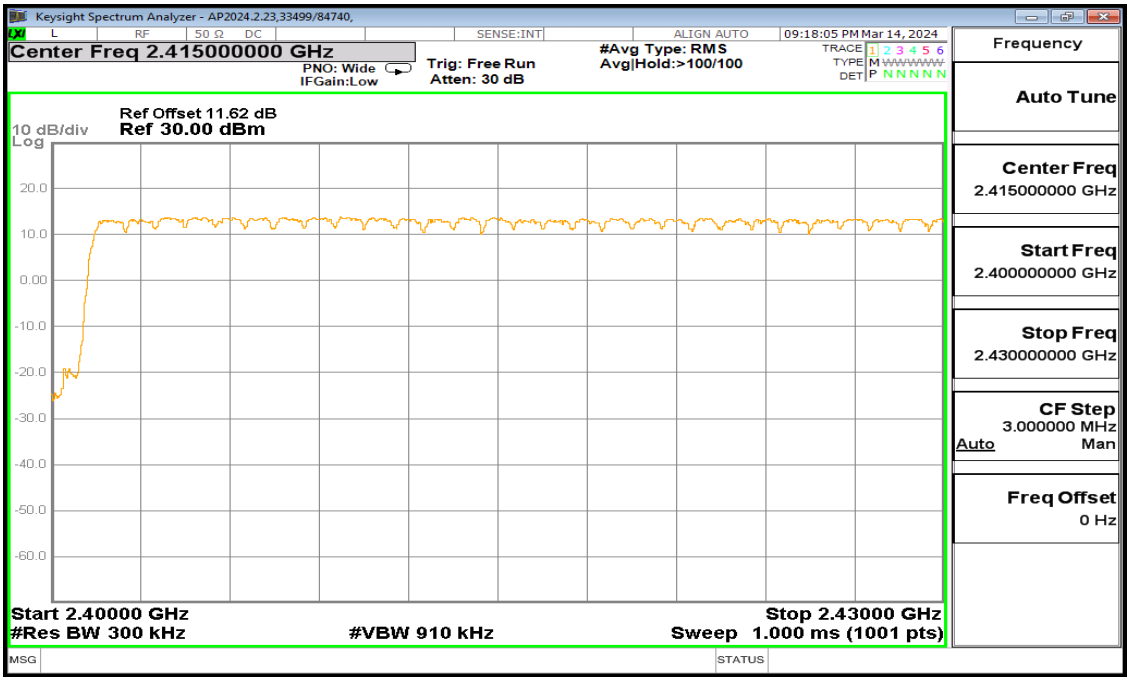
9.4.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Chain 0



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

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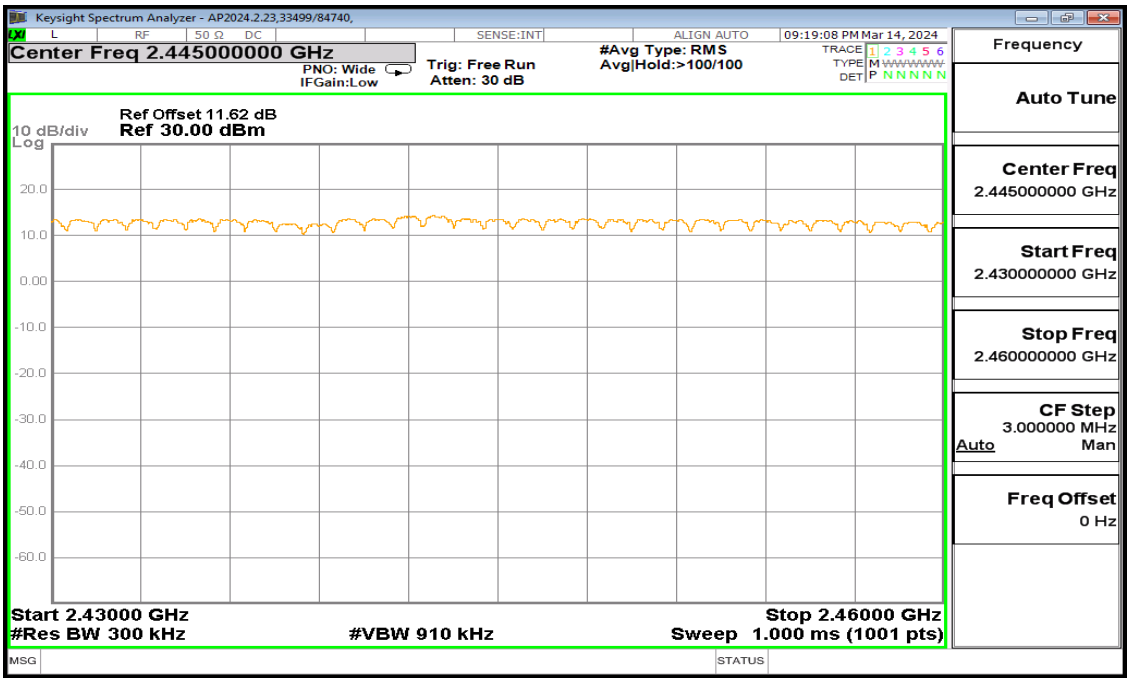
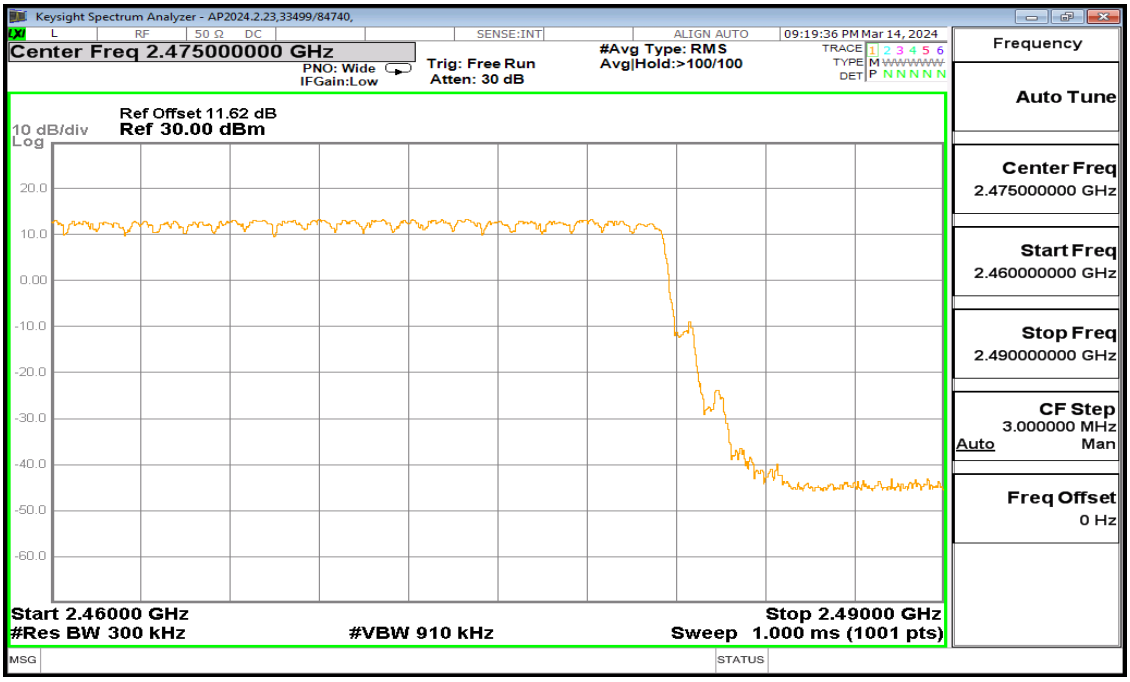


30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

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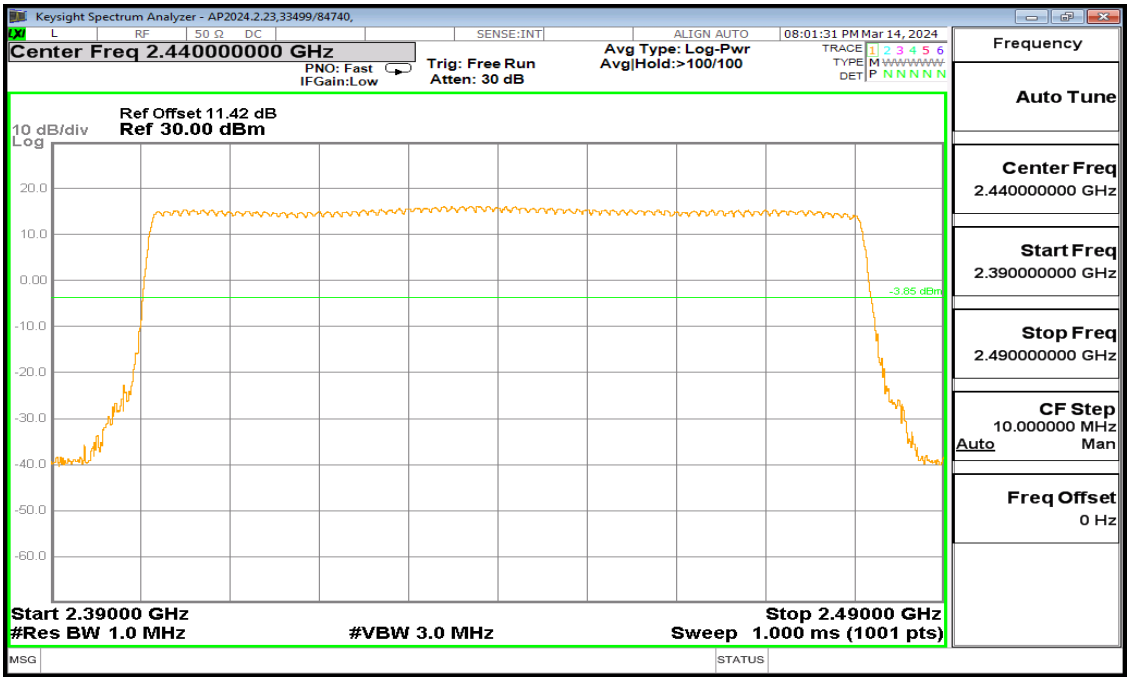
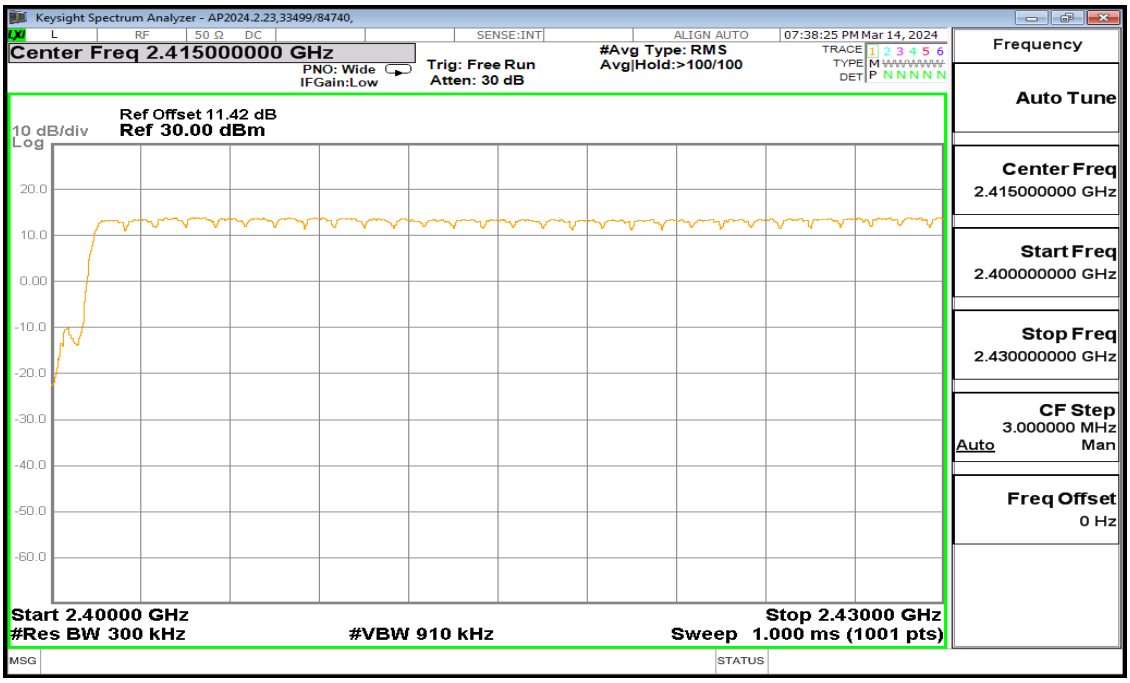
Chain 1



100MHz SPAN



30MHz SPAN, SEGMENT 1 OF 3

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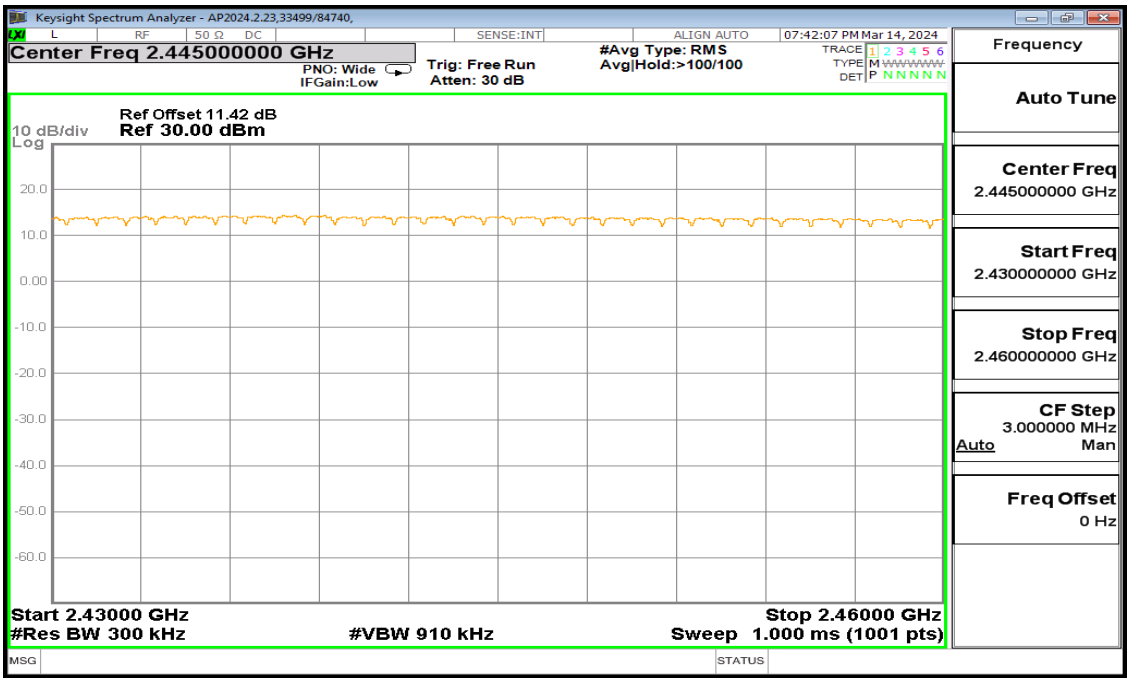
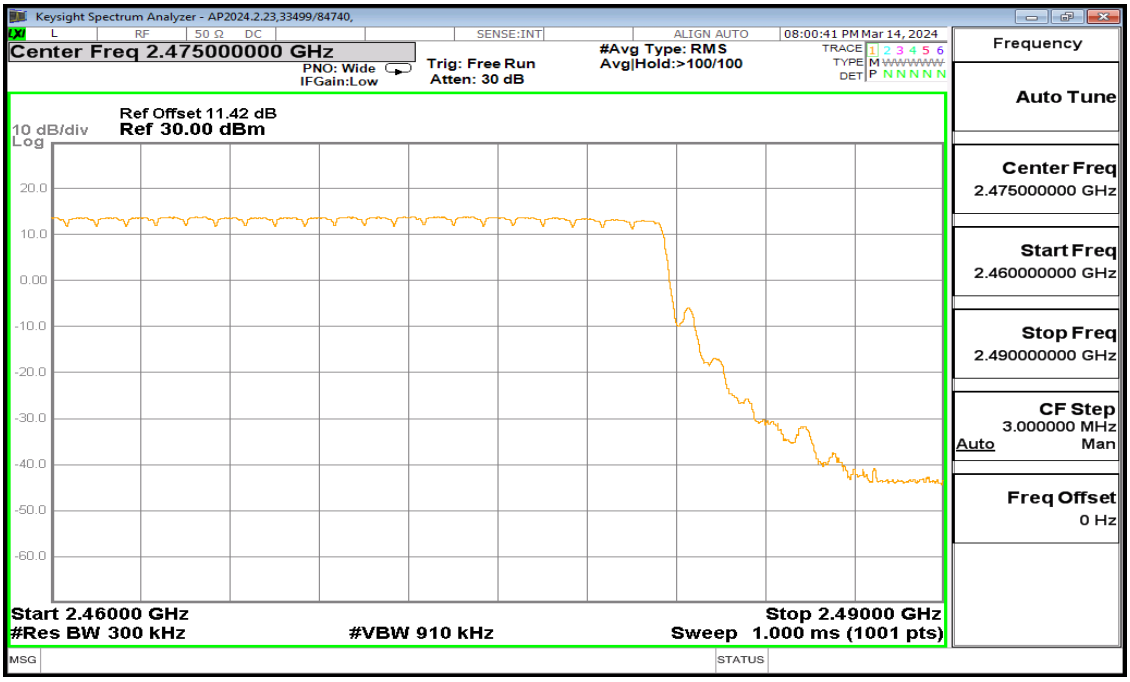


30MHz SPAN, SEGMENT 2 OF 3



30MHz SPAN, SEGMENT 3 OF 3

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9.5. AVERAGE TIME OF OCCUPANCY

LIMITS

FCC §15.247 (a) (1) (iii)

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 * (# of pulses in 3.16 s) * pulse width.

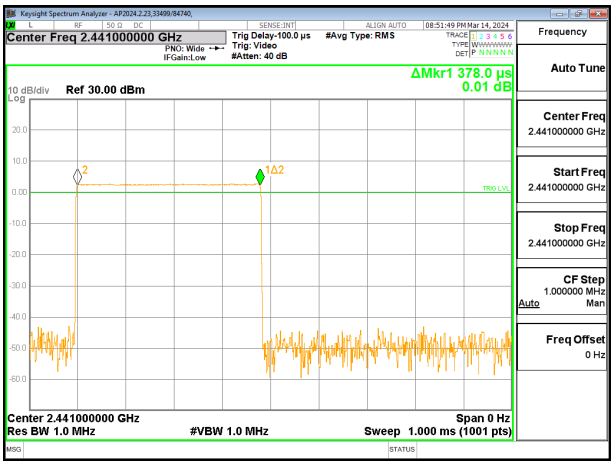
For AFH mode, the average time of occupancy in the specified 8 second period (20 channels * 0.4 seconds) is equal to 10 * (# of pulses in 0.8 s) * pulse width.

RESULTS

9.5.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Chain 0

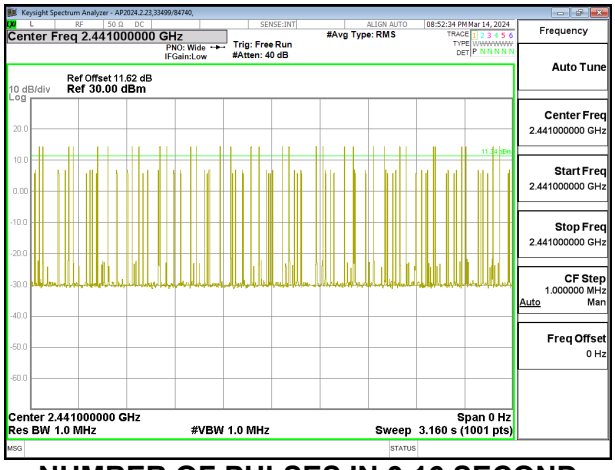
DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK Normal Mode					
DH1	0.378	32	0.1210	0.4	-0.2790
DH3	1.632	15	0.2448	0.4	-0.1552
DH5	2.876	13	0.3739	0.4	-0.0261
DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.378	8	0.03024	0.4	-0.3698
DH3	1.632	3.75	0.06120	0.4	-0.3388
DH5	2.876	3.25	0.09347	0.4	-0.3065



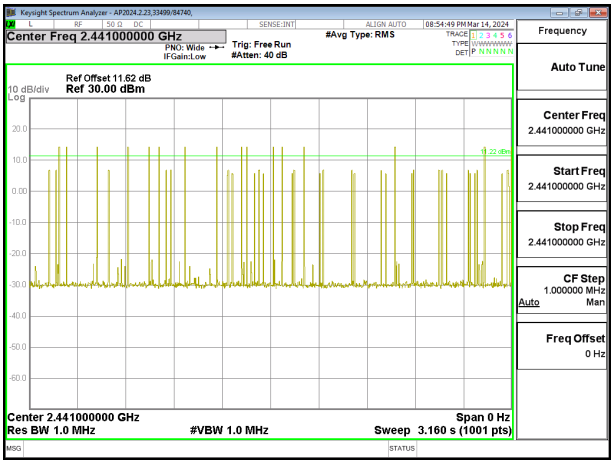
PULSE WIDTH – DH1

PULSE WIDTH – DH3

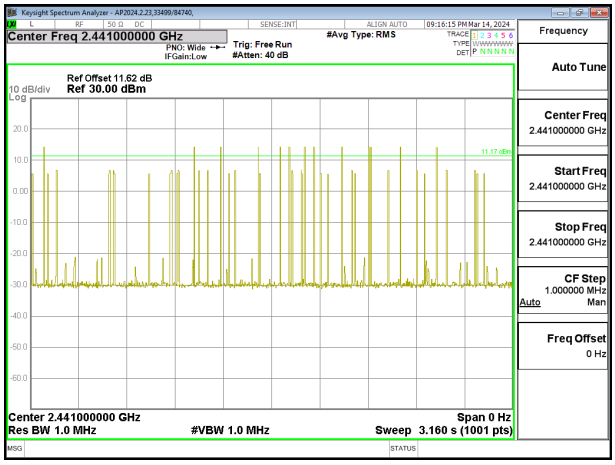
PULSE WIDTH – DH5



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

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Chain 1

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	0.379	32	0.1213	0.4	-0.2787
DH3	1.632	13	0.2122	0.4	-0.1878
DH5	2.876	9	0.2588	0.4	-0.1412

DH Packet	Pulse Width (sec)	Number of Pulses in 0.8 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
GFSK AFH Mode					
DH1	0.379	8	0.03032	0.4	-0.3697
DH3	1.632	3.25	0.05304	0.4	-0.3470
DH5	2.876	2.25	0.06471	0.4	-0.3353

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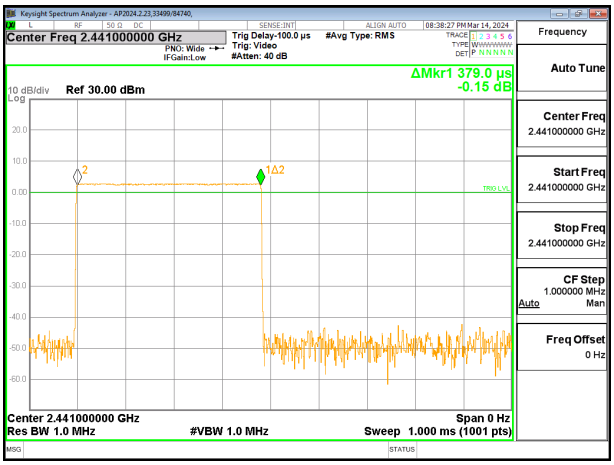
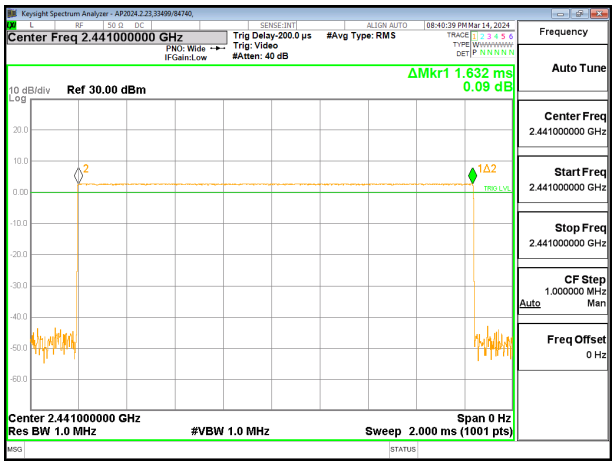
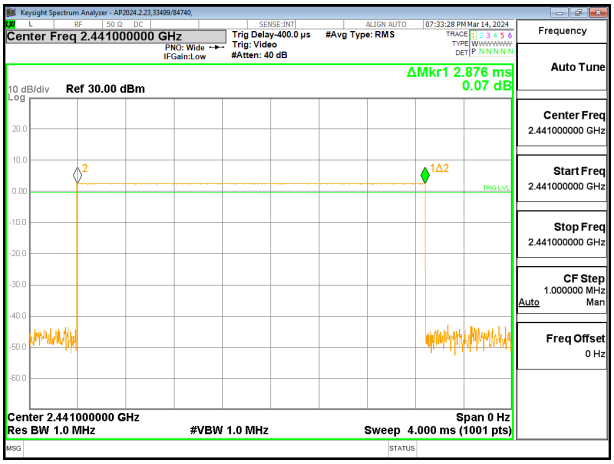


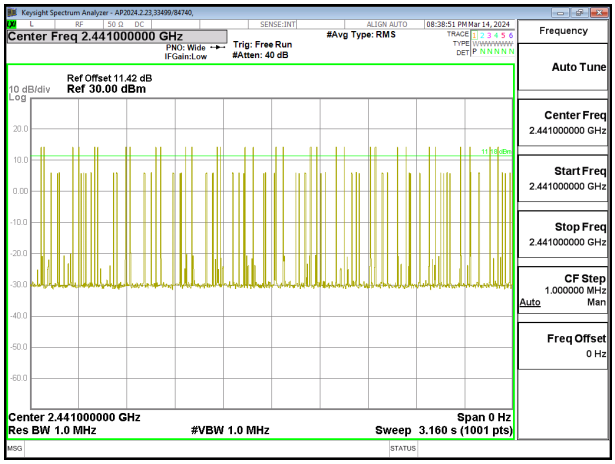
PULSE WIDTH – DH1



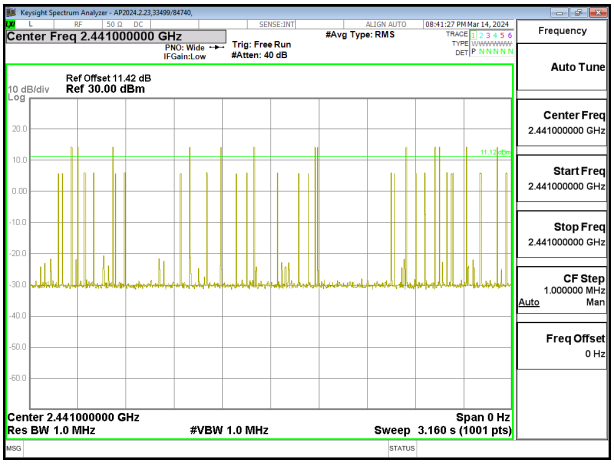
PULSE WIDTH – DH3



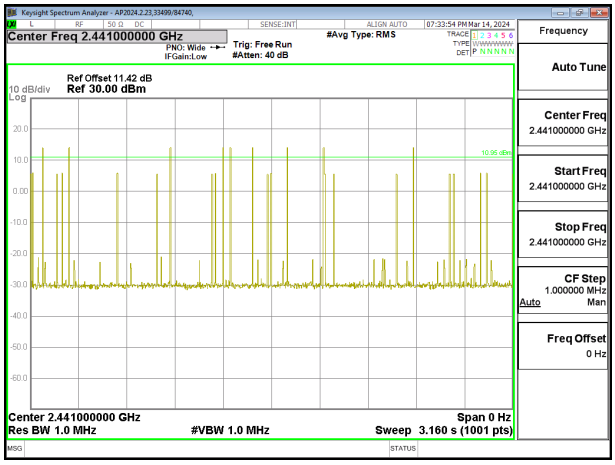
PULSE WIDTH – DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH3



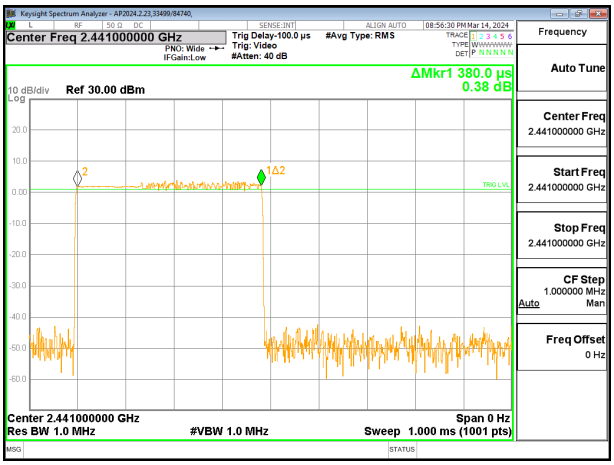
NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – DH5

9.5.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

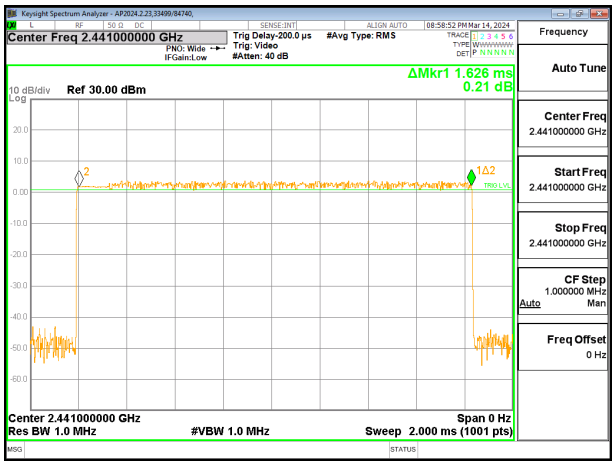
Chain 0

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
3DH1	0.38	31	0.1178	0.4	-0.2822
3DH3	1.626	14	0.22764	0.4	-0.1724
3DH5	2.875	12	0.345	0.4	-0.055

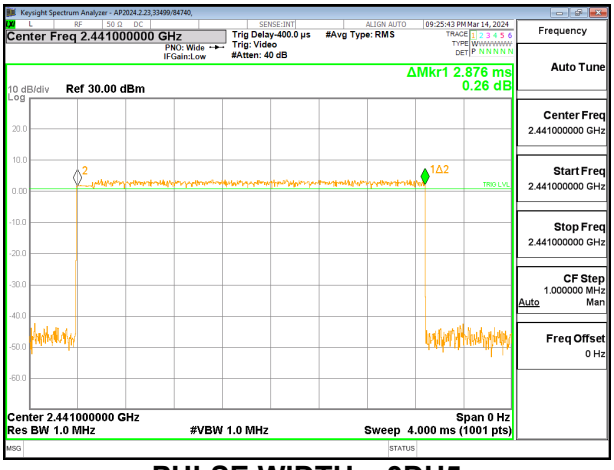
Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.



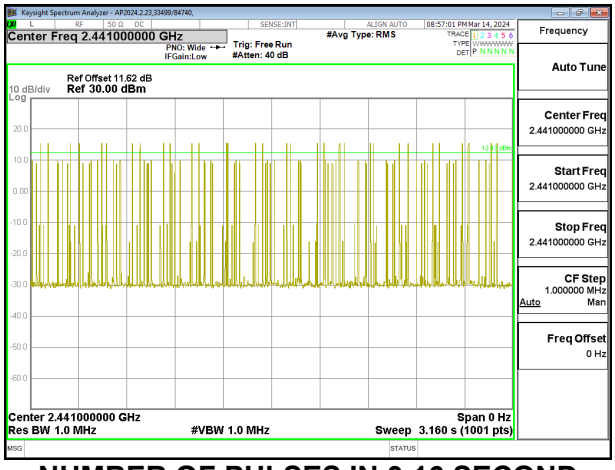
PULSE WIDTH – 3DH1



PULSE WIDTH – 3DH3

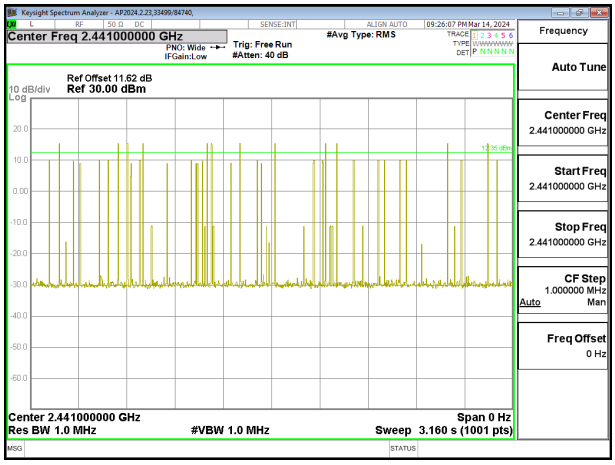


PULSE WIDTH – 3DH5



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH1

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH3



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH5

Chain 1

DH Packet	Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
8PSK Normal Mode					
3DH1	0.38	32	0.1216	0.4	-0.2784
3DH3	1.628	17	0.27676	0.4	-0.1232
3DH5	2.872	8	0.22976	0.4	-0.1702

Note: for AFH(8PSK) mode, please refer to the results of AFH(GFSK) mode; the channel selection and hopping rate are the same for both EDR and Basic Rate operation, data for Basic Rate demonstrates compliance with channel occupancy when AFH is employed.

Note: The 3DH5 Number of Pulses in 3.16 seconds plot has been sent to the lab for a remeasurement.

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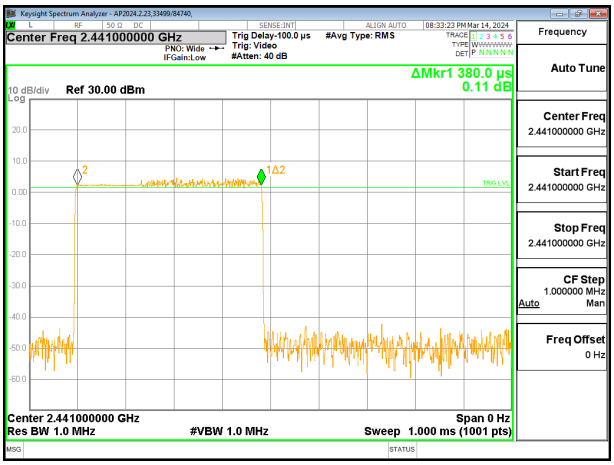
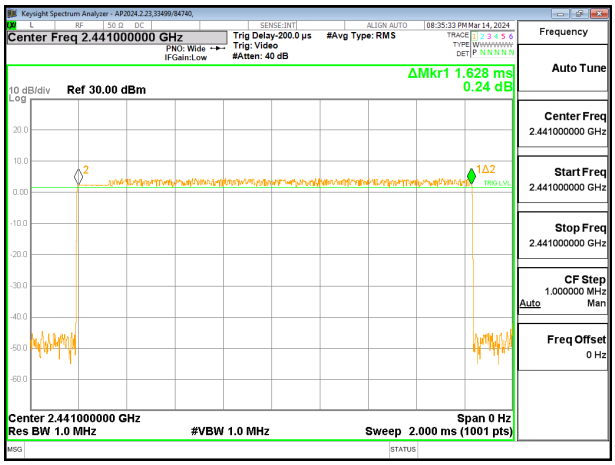
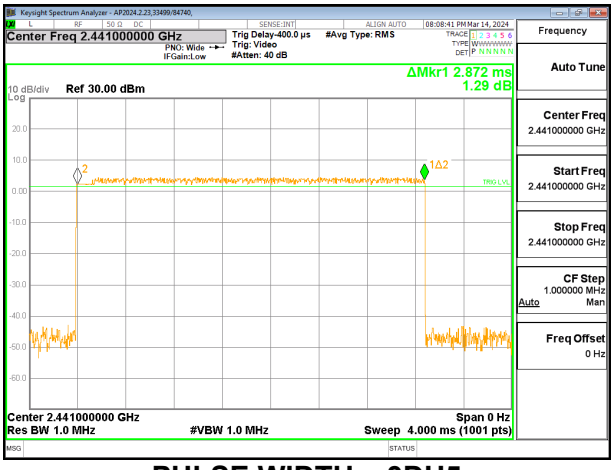


PULSE WIDTH – 3DH1

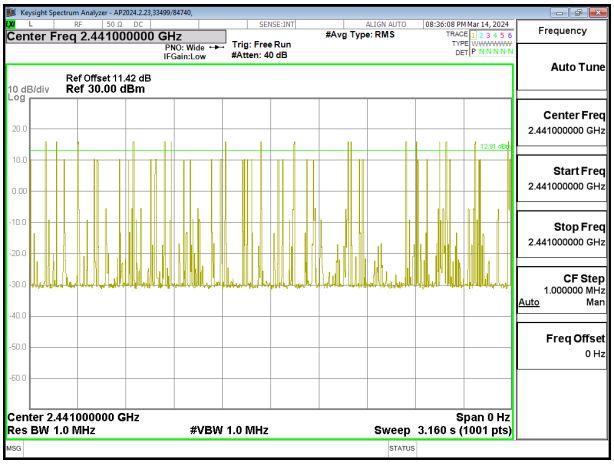


PULSE WIDTH – 3DH3



PULSE WIDTH – 3DH5

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH1



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH3

NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD – 3DH5

9.6. OUTPUT POWER

LIMITS

§15.247 (b) (1)

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

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.43 dB (including 9.68 dB pad and 1.75 dB EUT cable and test cable) was entered as an offset for chain 0 and 11.73 dB (9.68 dB pad and 2.05 dB EUT and test cable) was entered as an offset for chain 1, in the power meter to allow for a peak reading of power.

RESULTS

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9.6.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Chain 0

Tested By:	33499/44389
Date:	2024-03-14

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.04	21	-7.96
Middle	2441	13.19	21	-7.81
High	2480	12.8	21	-8.2

Chain 1

Tested By:	33499/44389
Date:	2024-03-14

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.37	21	-7.63
Middle	2441	13.46	21	-7.54
High	2480	13.75	21	-7.25

9.6.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Chain 0

Tested By:	33499/44389
Date:	2024-03-14

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.05	21	-7.95
Middle	2441	13.66	21	-7.34
High	2480	12.68	21	-8.32

Chain 1

Tested By:	33499/44389
Date:	2024-03-14

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.14	21	-7.86
Middle	2441	13.15	21	-7.85
High	2480	13.59	21	-7.41

9.6.3. BLUETOOTH ENHANCED DATA RATE DQPSK MODULATION

Chain 0

Tested By:	33499/44389
Date:	2024-03-14

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.04	21	-7.96
Middle	2441	13.02	21	-7.98
High	2480	12.66	21	-8.34

Chain 1

Tested By:	33499/44389
Date:	2024-03-14

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	13.13	21	-7.87
Middle	2441	13.17	21	-7.83
High	2480	13.6	21	-7.4

9.7. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

The cable assembly insertion loss of 11.43 dB (including 9.68 dB pad and 1.75 dB EUT cable and test cable) was entered as an offset for chain 0 and 11.73 dB (9.68 dB pad and 2.05 dB EUT and test cable) was entered as an offset for chain 1, in the power meter to allow for a gated average reading of power.

RESULTS

9.7.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Chain 0

Tested By:	33499/44389
Date	2024-03-14

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	13.02
Middle	2441	13.15
High	2480	12.77

Chain 1

Tested By:	33499/44389
Date	2024-03-14

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	13.12
Middle	2441	13.22
High	2480	13.71

9.7.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

Chain 0

Tested By:	33499/44389
Date	2024-03-14

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	12.94
Middle	2441	13.41
High	2480	12.57

Chain 1

Tested By:	33499/44389
Date	2024-03-14

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	13.00
Middle	2441	12.91
High	2480	13.42

9.7.3. BLUETOOTH ENHANCED DATA RATE DQPSK MODULATION

Chain 0

Tested By:	33499/44389
Date	2024-03-14

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	12.94
Middle	2441	12.93
High	2480	12.56

Chain 1

Tested By:	33499/44389
Date	2024-03-14

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	13.00
Middle	2441	12.91
High	2480	13.41

9.8. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

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 mode.

RESULTS

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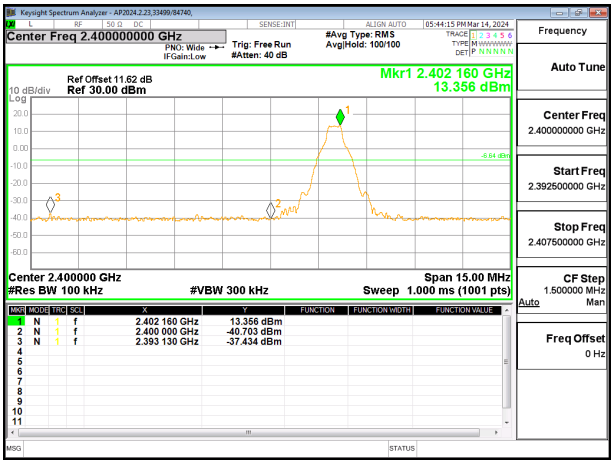
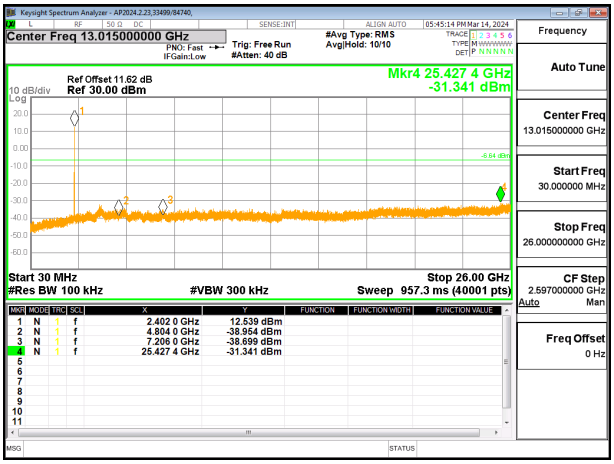
9.8.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

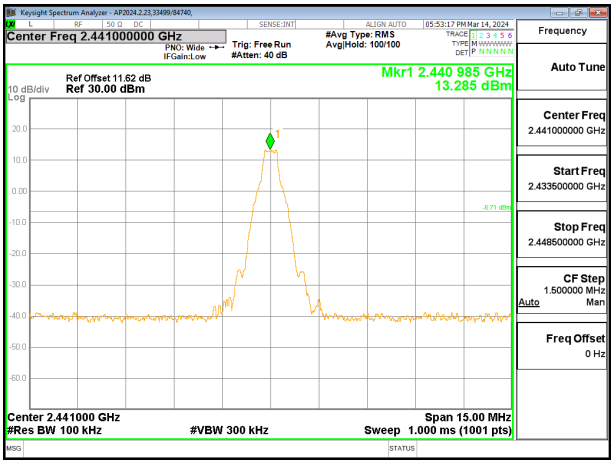
Chain 0 SPURIOUS EMISSIONS, NON-HOPPING



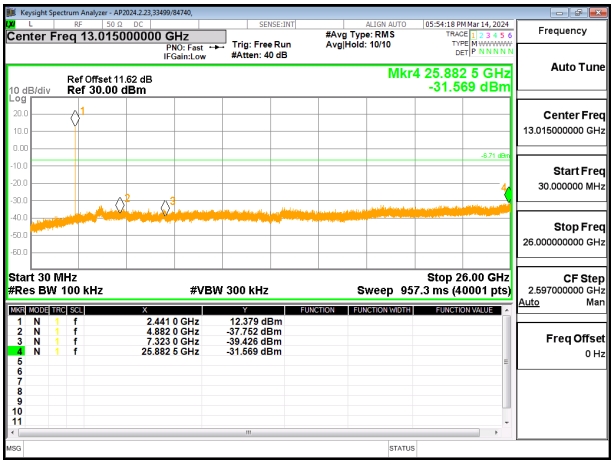
LOW CHANNEL BANDEDGE



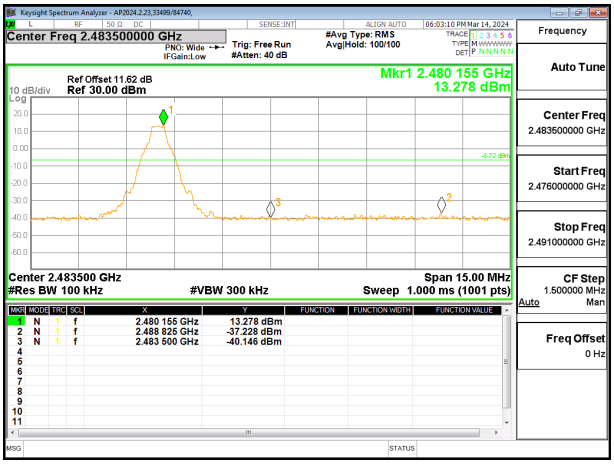
OUT-OF-BAND LOW CHANNEL



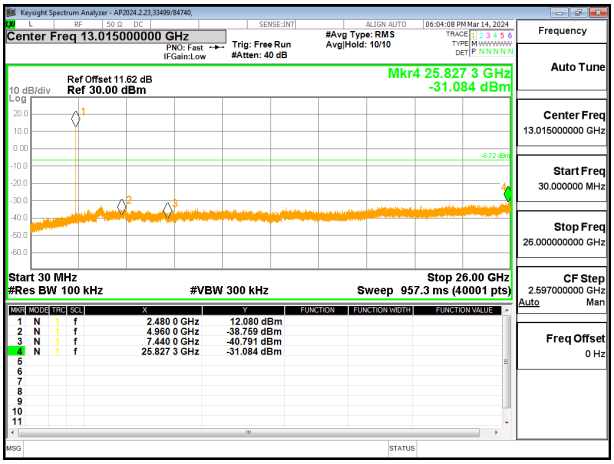
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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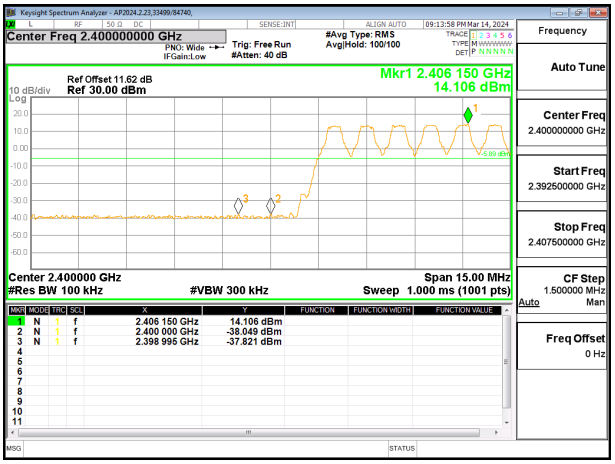
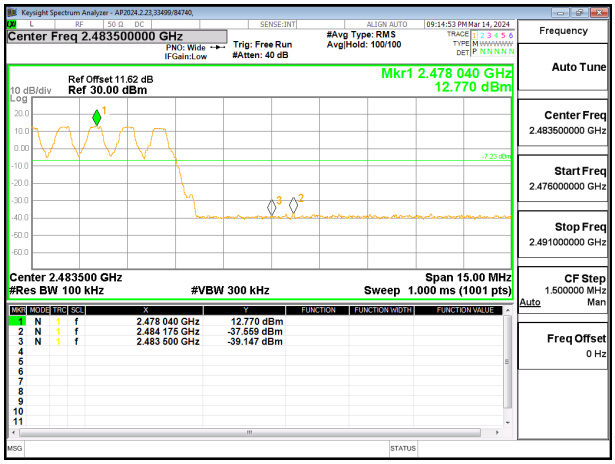
Chain 0 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

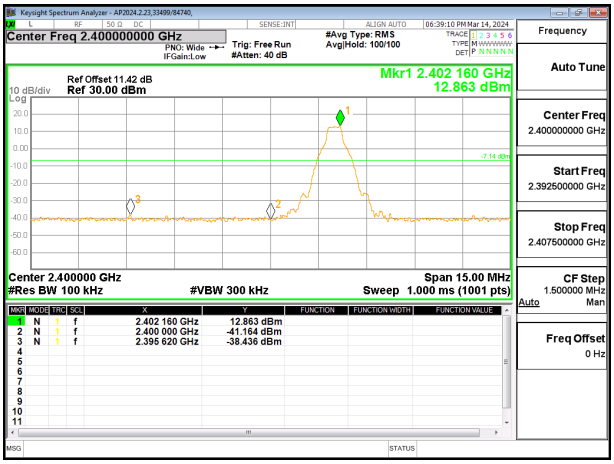


LOW BANDEDGE

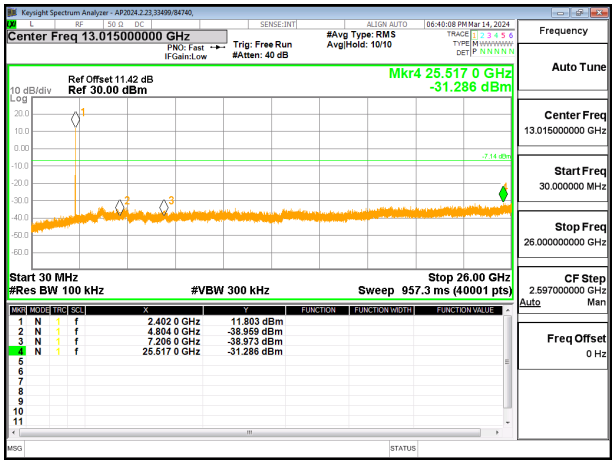


HIGH BANDEDGE

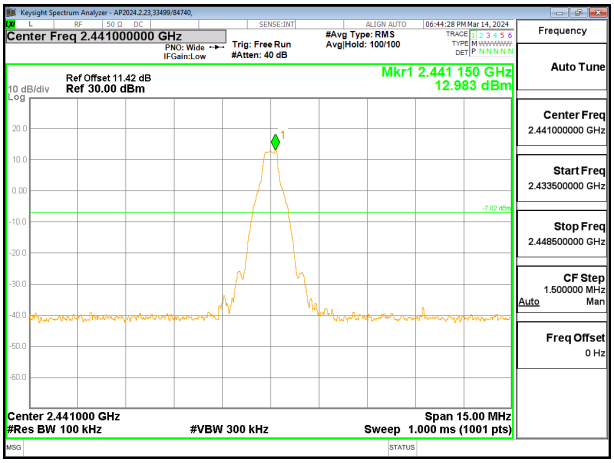
Chain 1 SPURIOUS EMISSIONS, NON-HOPPING



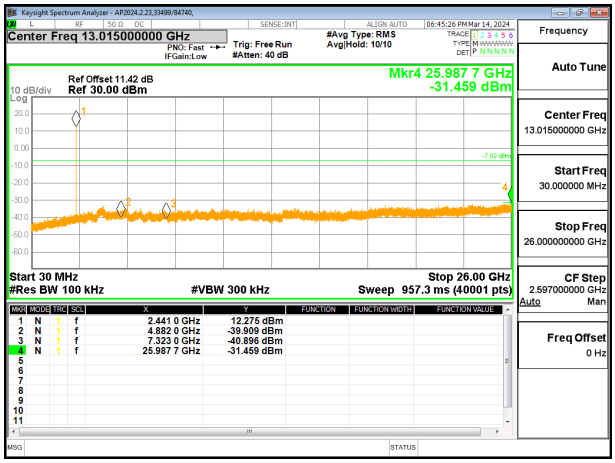
LOW CHANNEL BANDEDGE



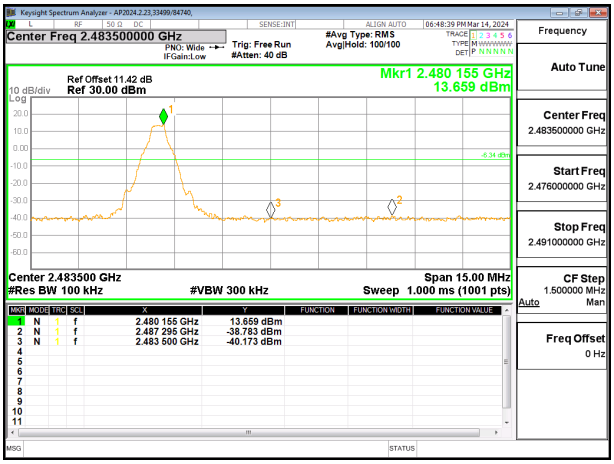
OUT-OF-BAND LOW CHANNEL



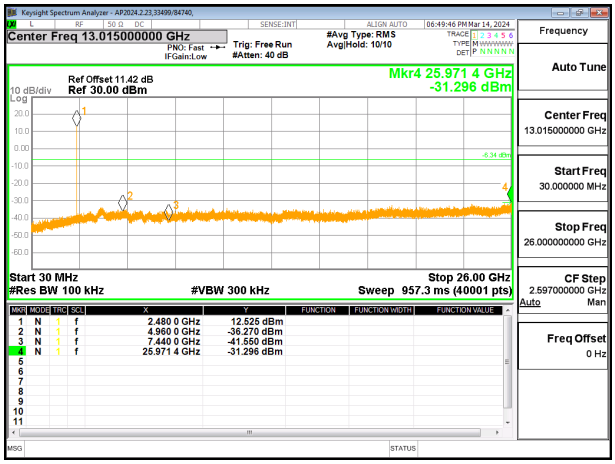
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



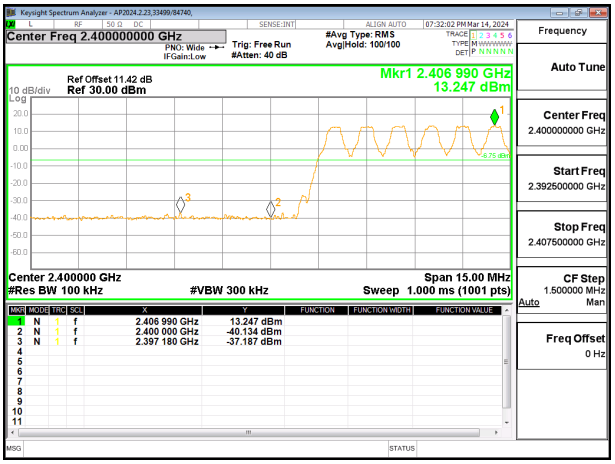
HIGH CHANNEL BANDEDGE



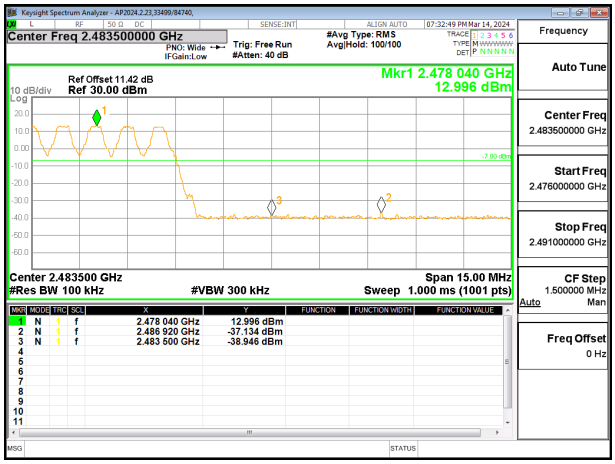
OUT-OF-BAND HIGH CHANNEL

UL LLC
12 Laboratory Drive, Research Triangle Park, NC 27709, USA TEL:(919) 549-1400

Chain 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



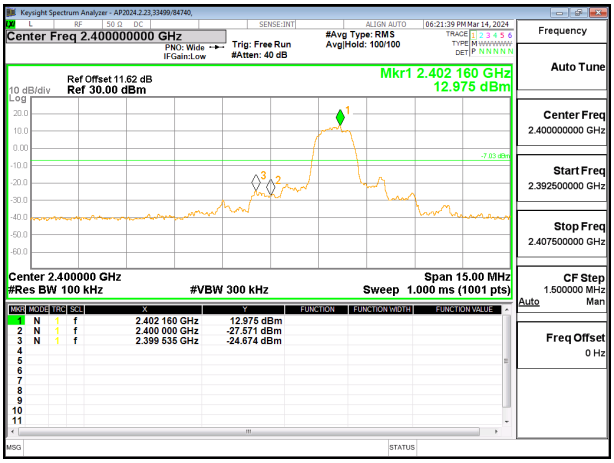
LOW BANDEDGE



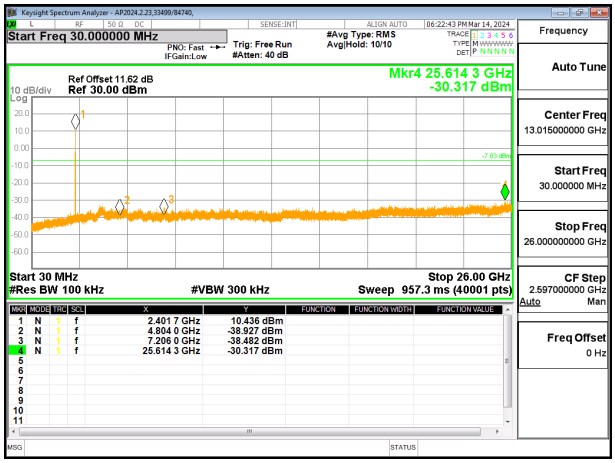
HIGH BANDEDGE

9.8.2. BLUETOOTH ENHANCED DATA RATE 8PSK MODULATION

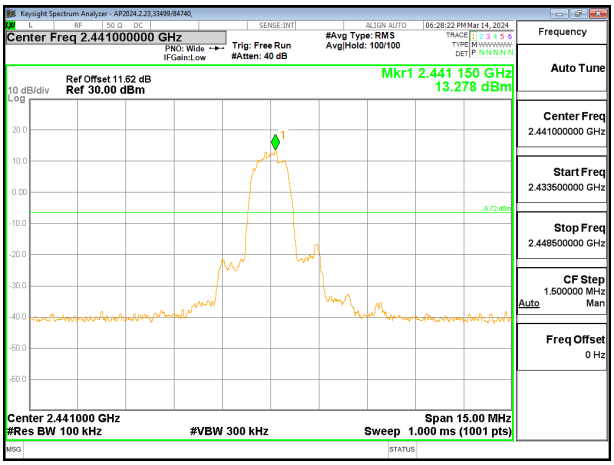
Chain 0 SPURIOUS EMISSIONS, NON-HOPPING



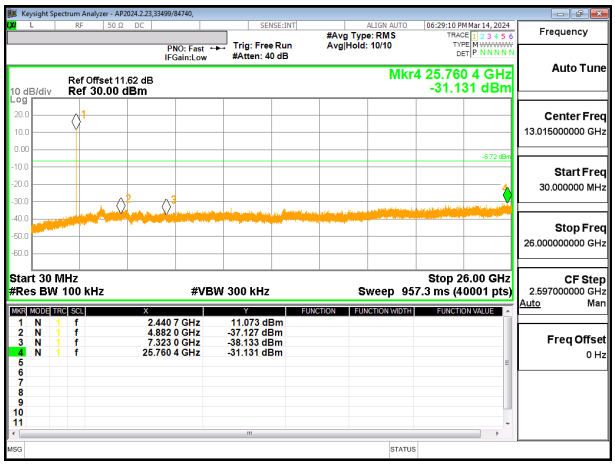
LOW CHANNEL BANDEDGE



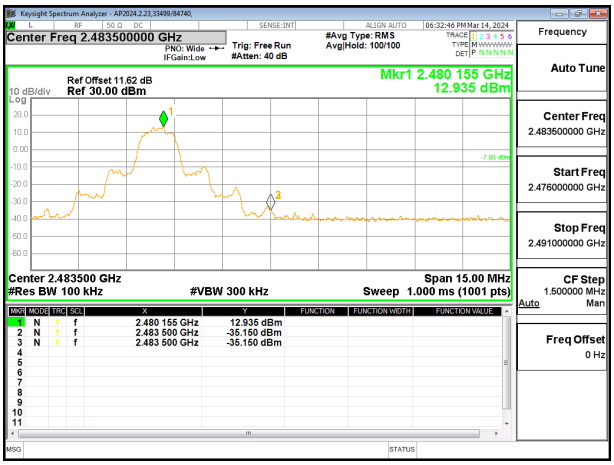
OUT-OF-BAND LOW CHANNEL



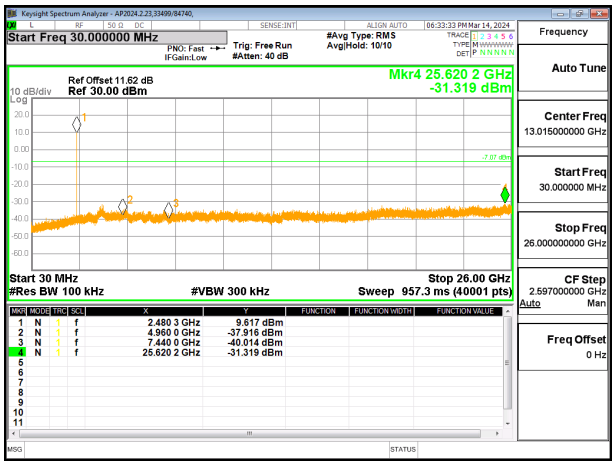
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

UL LLC
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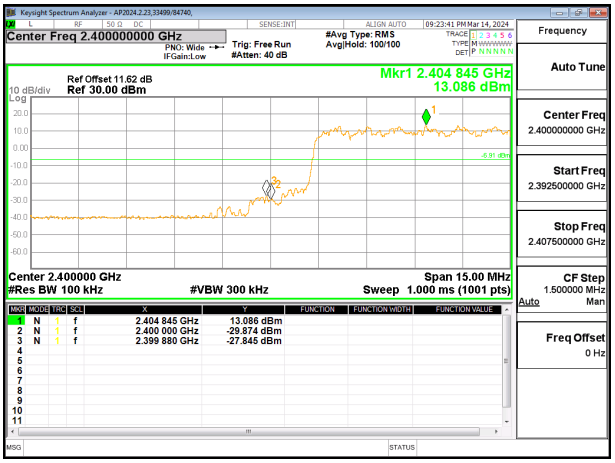
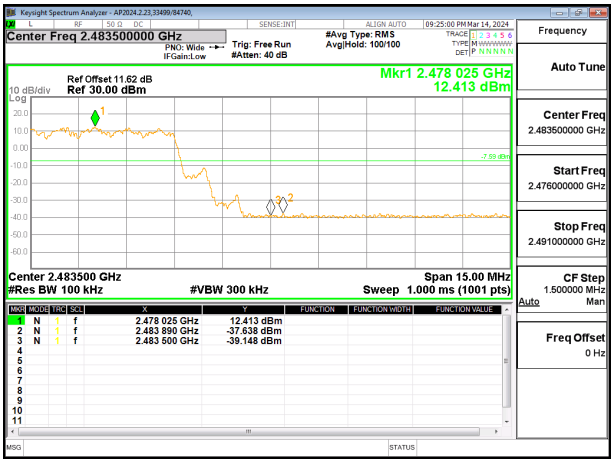
Chain 0 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

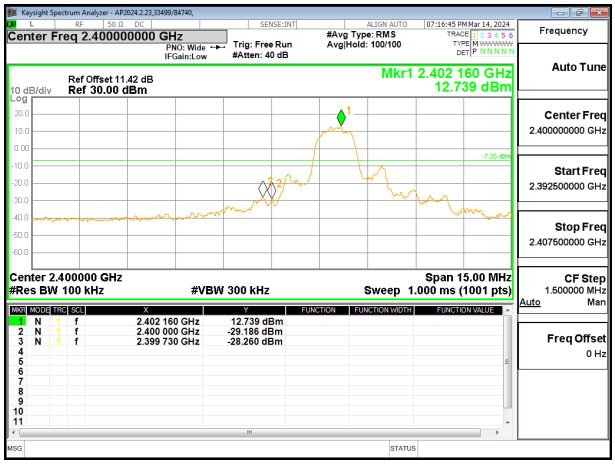


LOW BANDEDGE

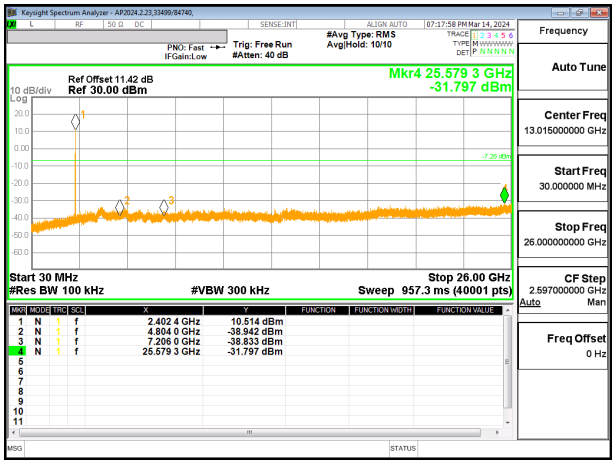


HIGH BANDEDGE

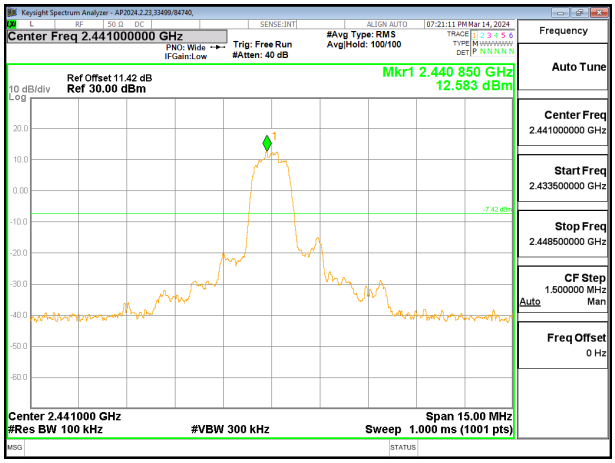
Chain 1 SPURIOUS EMISSIONS, NON-HOPPING



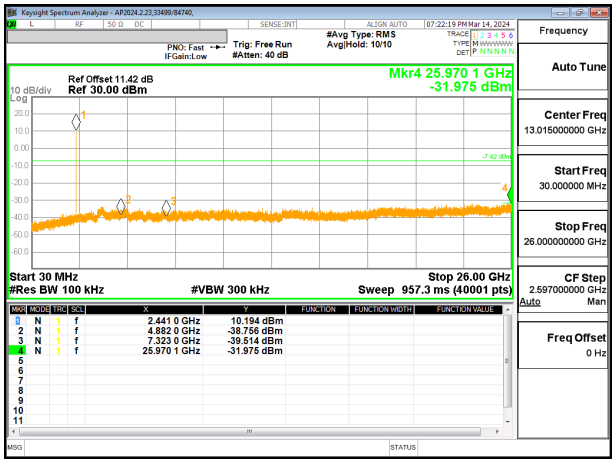
LOW CHANNEL BANDEDGE



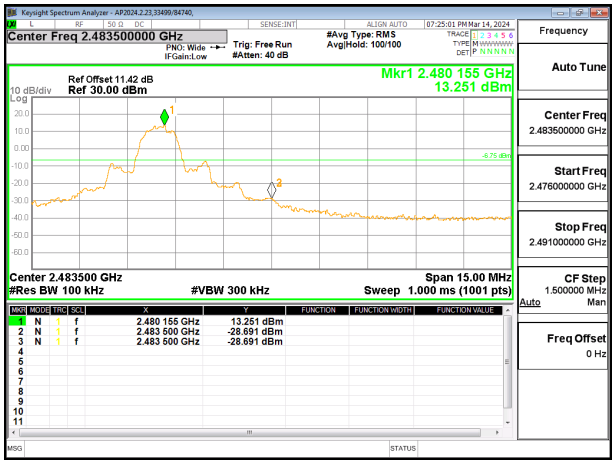
OUT-OF-BAND LOW CHANNEL



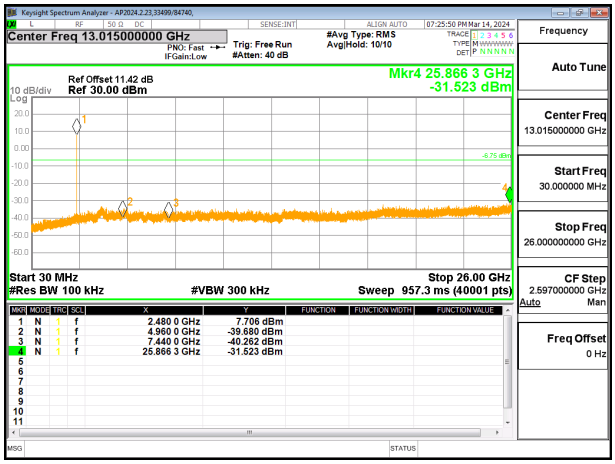
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



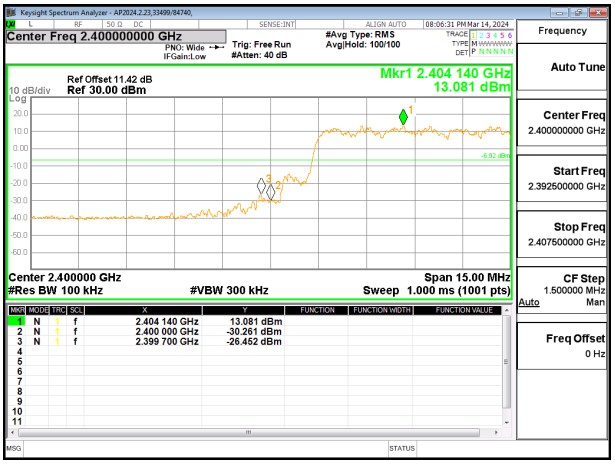
HIGH CHANNEL BANDEDGE



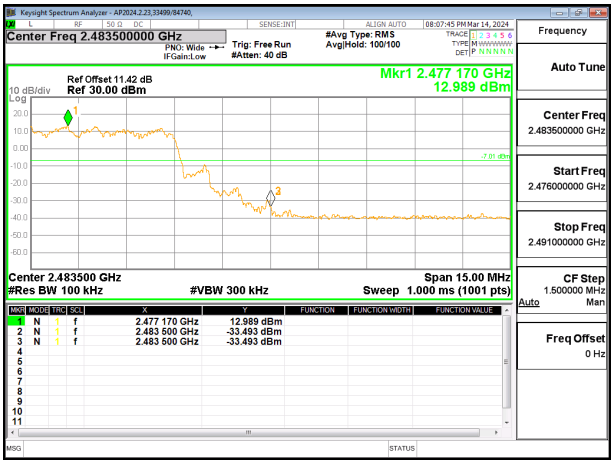
OUT-OF-BAND HIGH CHANNEL

UL LLC
12 Laboratory Drive, Research Triangle Park, NC 27709, USA TEL:(919) 549-1400

Chain 1 SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON



LOW BANDEDGE



HIGH BANDEDGE

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

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 and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. Reduced VBW averaging was calculated by dividing 1/Ton

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).

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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.

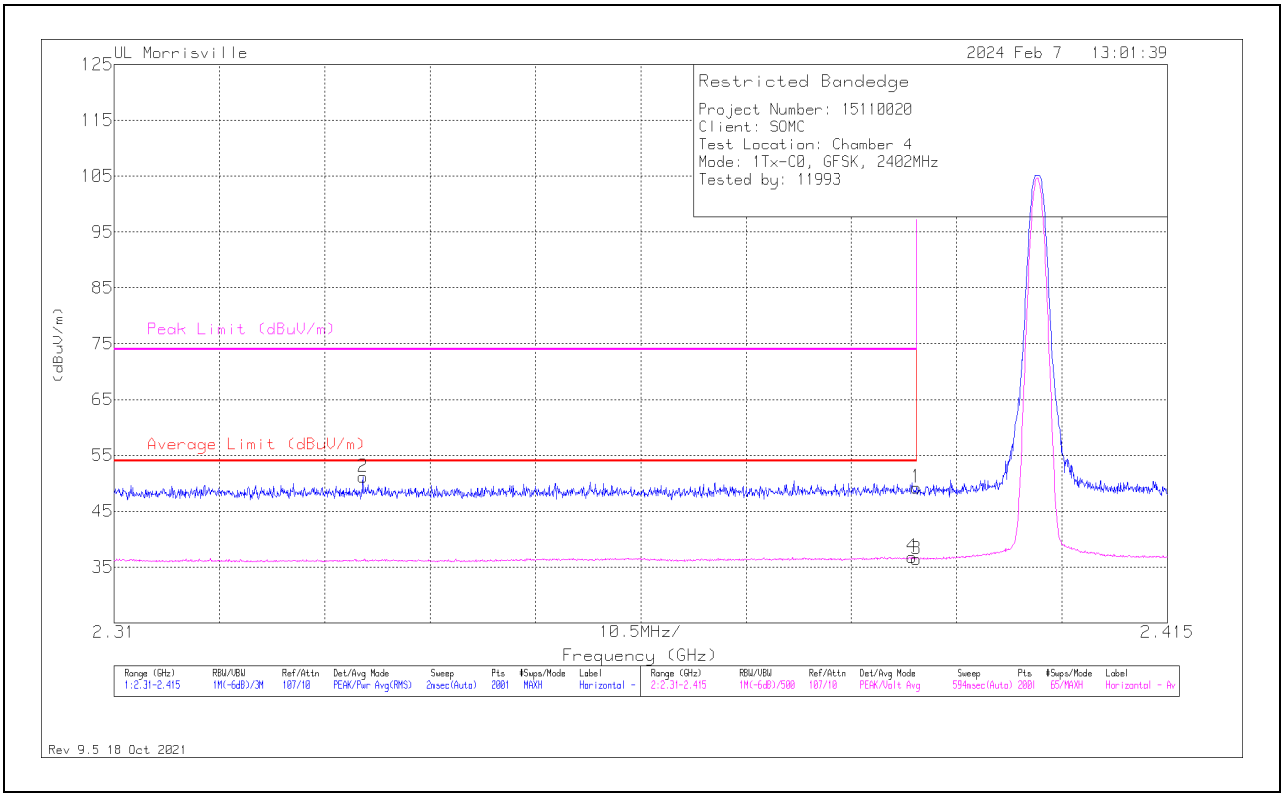
10.1. TRANSMITTER ABOVE 1 GHz

10.1.1. BLUETOOTH BASIC DATA RATE GFSK MODULATION

Chain 0

BANDEDGE (LOW CHANNEL)

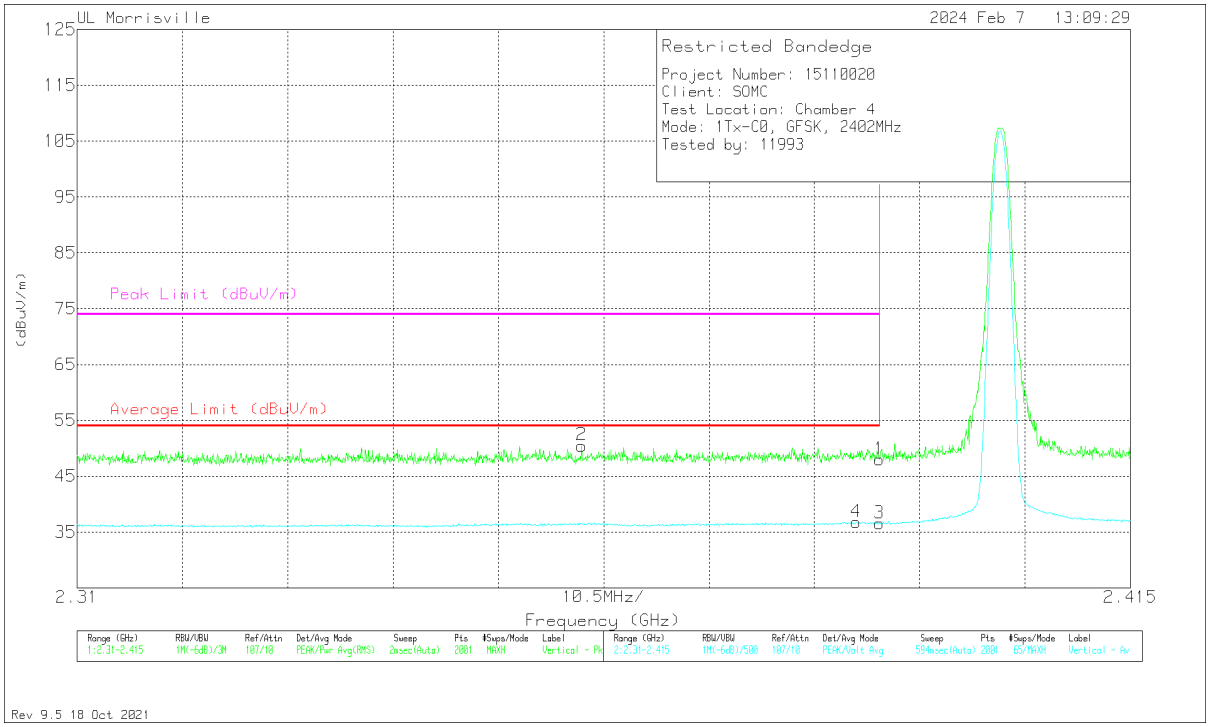
HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	30.46	Pk	32	-13.2	49.26	-	-	74	-24.74	37	346	H
2	* ** 2.33483	32.36	Pk	31.9	-13.1	51.16	-	-	74	-22.84	37	346	H
3	* ** 2.38996	17.62	V1TV	32	-13.2	36.42	54	-17.58	-	-	37	346	H
4	* ** 2.38954	18.04	V1TV	32	-13.2	36.84	54	-17.16	-	-	37	346	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

VERTICAL RESULT

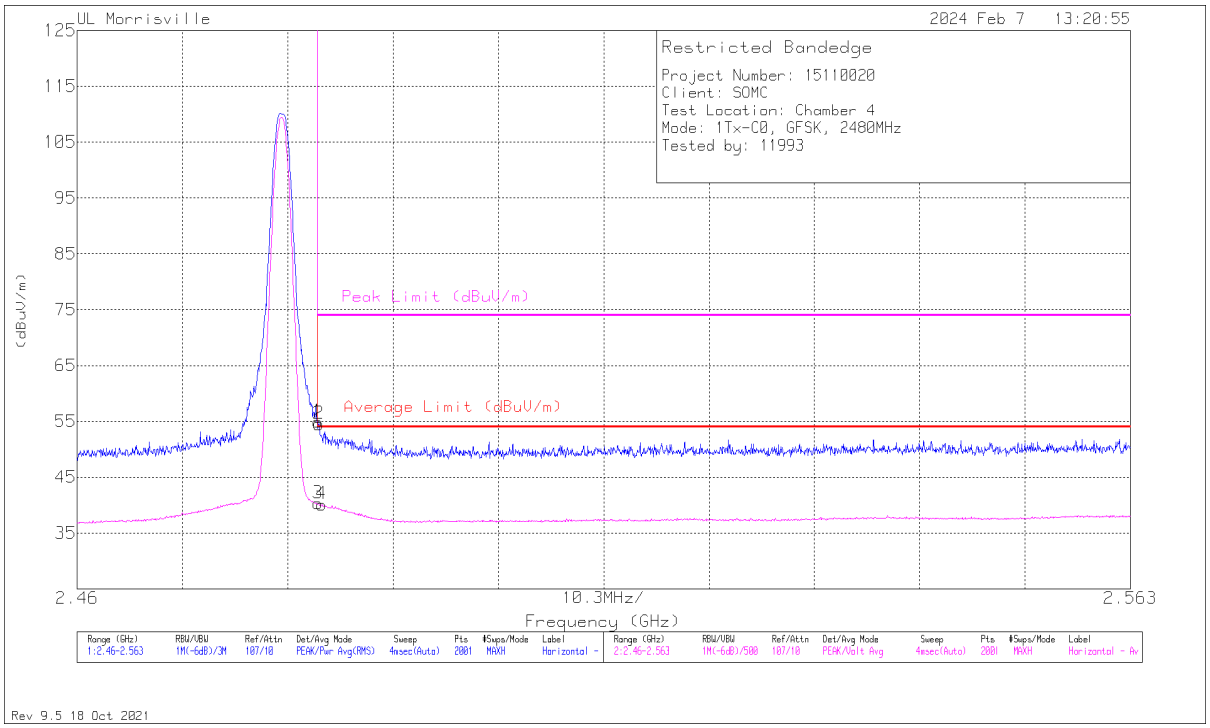


Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.38996	29.18	Pk	32	-13.2	47.98	-	-	74	-26.02	123	352	V
2	* ** 2.3603	31.6	Pk	31.9	-13	50.5	-	-	74	-23.5	123	352	V
3	* ** 2.38996	17.75	V1TV	32	-13.2	36.55	54	-17.45	-	-	123	352	V
4	* ** 2.38765	17.89	V1TV	32	-13.1	36.79	54	-17.21	-	-	123	352	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	35.52	Pk	32.3	-12.9	54.92	-	-	74	-19.08	77	100	H
2	* ** 2.48364	35.15	Pk	32.3	-12.9	54.55	-	-	74	-19.45	77	100	H
3	* ** 2.48354	20.91	V1TV	32.3	-12.9	40.31	54	-13.69	-	-	77	100	H
4	* ** 2.4839	20.74	V1TV	32.3	-12.9	40.14	54	-13.86	-	-	77	100	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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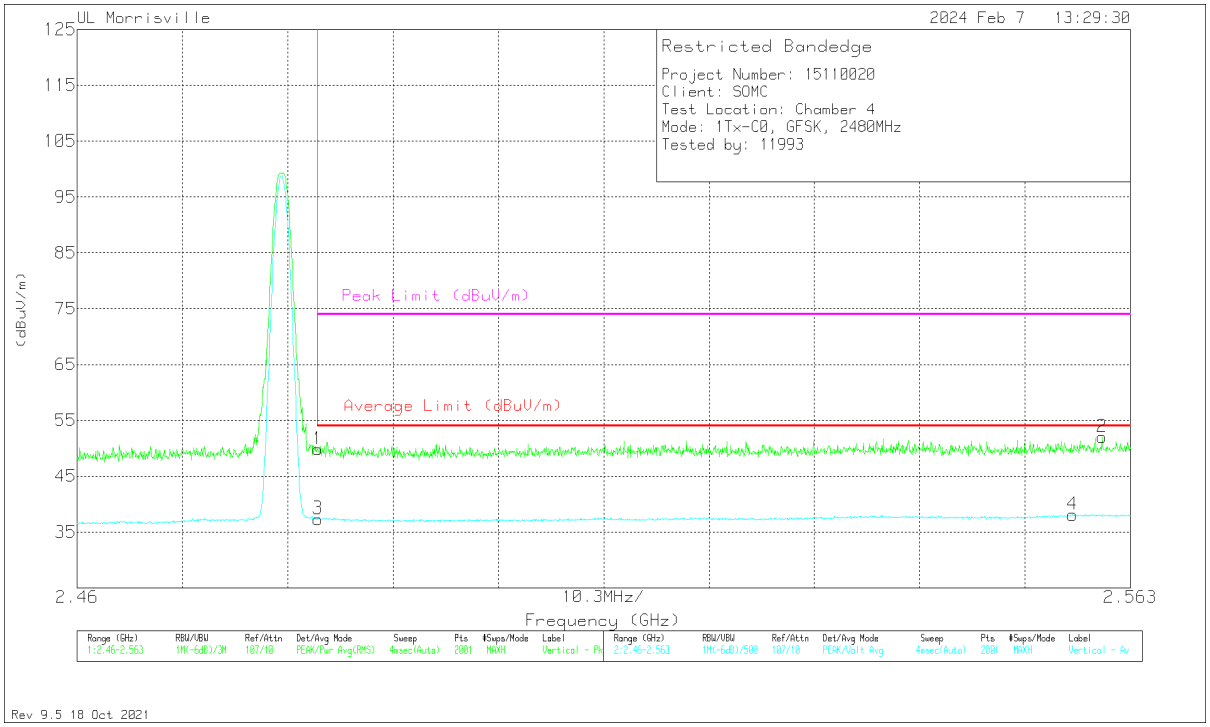
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	30.41	Pk	32.3	-12.9	49.81	-	-	74	-24.19	173	381	V
2	** 2.56022	32.31	Pk	32.5	-12.8	52.01	-	-	74	-21.99	173	381	V
3	* ** 2.48354	17.93	V1TV	32.3	-12.9	37.33	54	-16.67	-	-	173	381	V
4	** 2.55734	18.3	V1TV	32.5	-12.7	38.1	54	-15.9	-	-	173	381	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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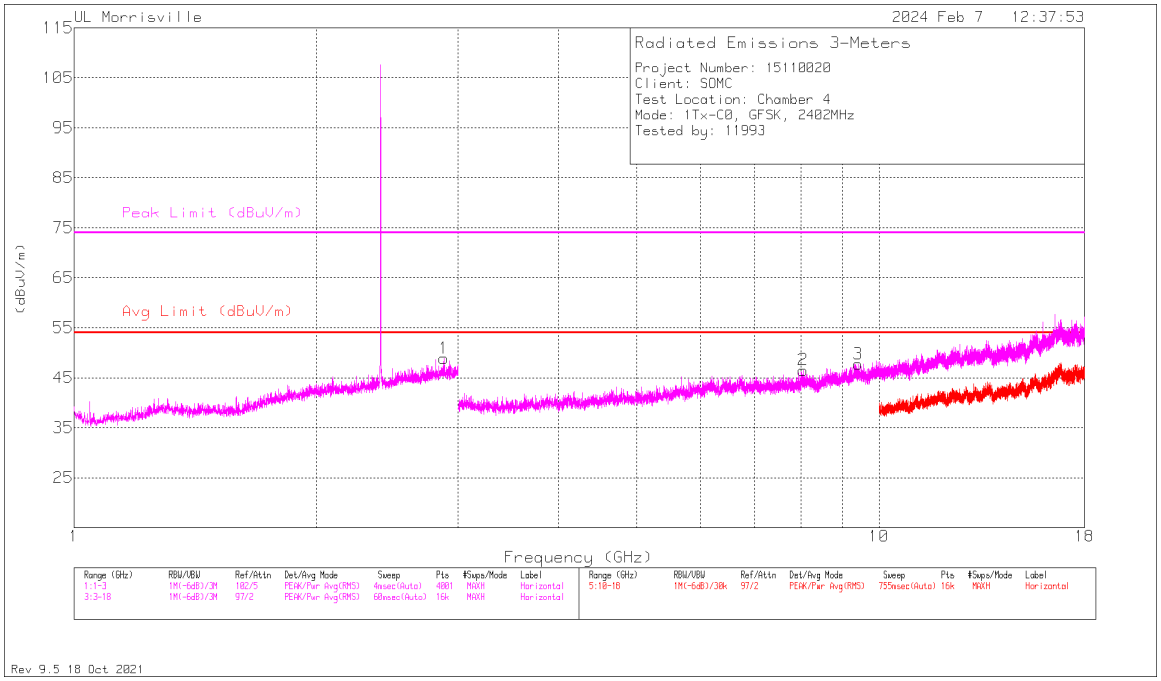
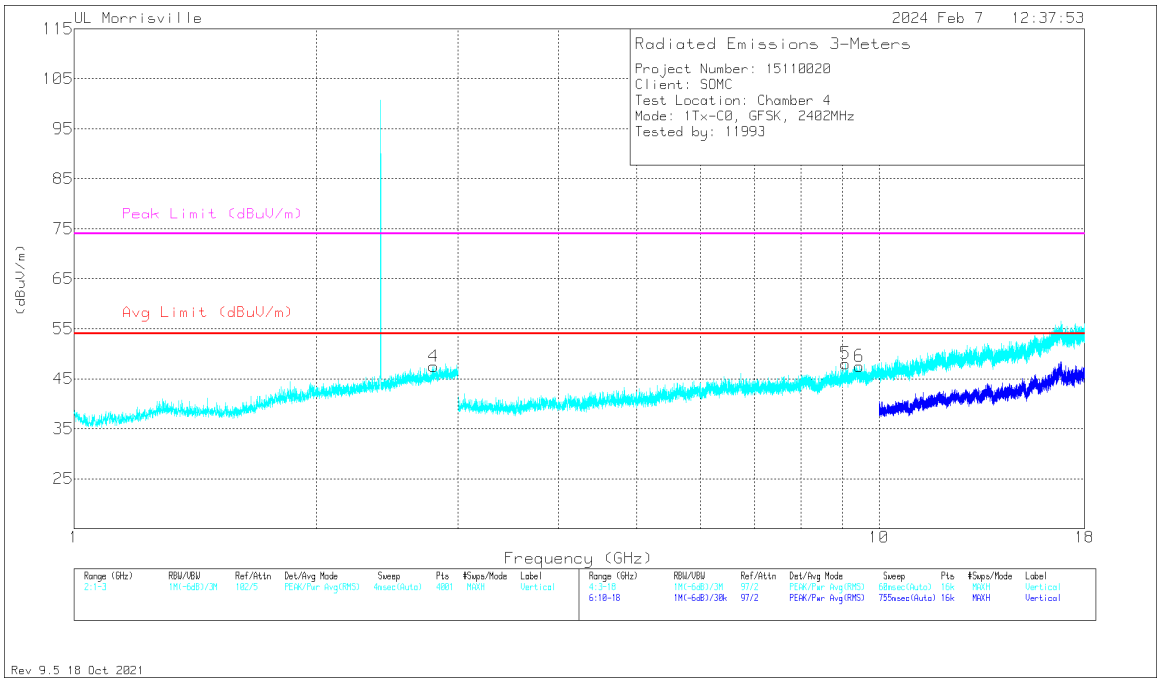
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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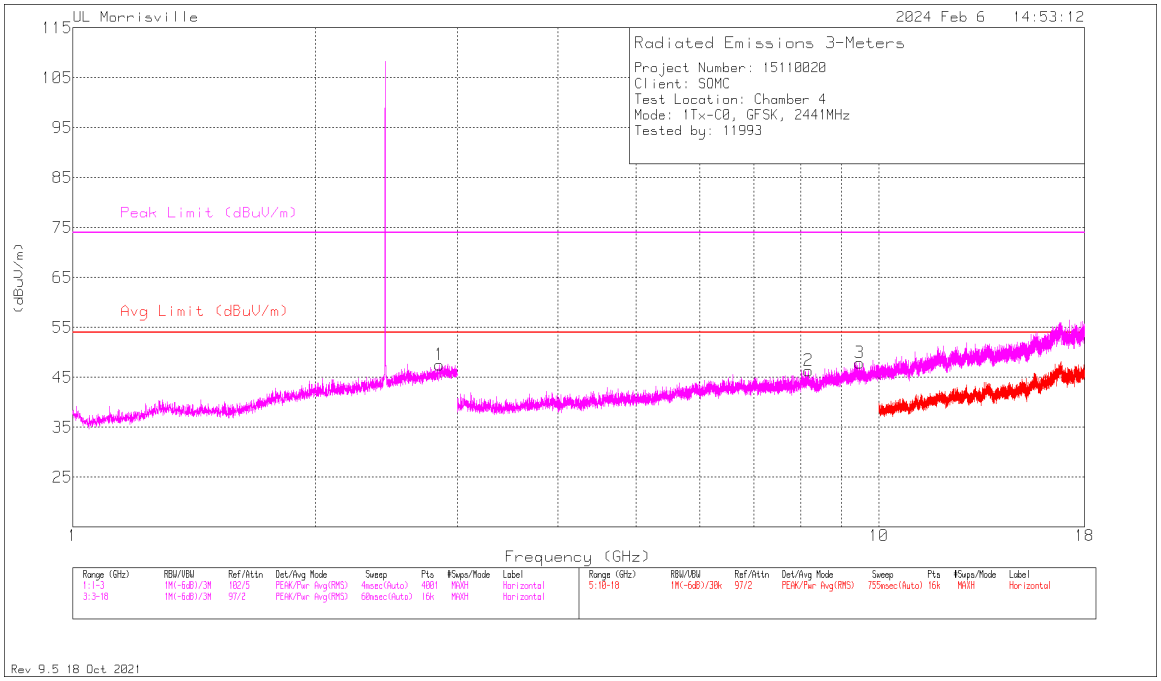
RADIATED EMISSIONS

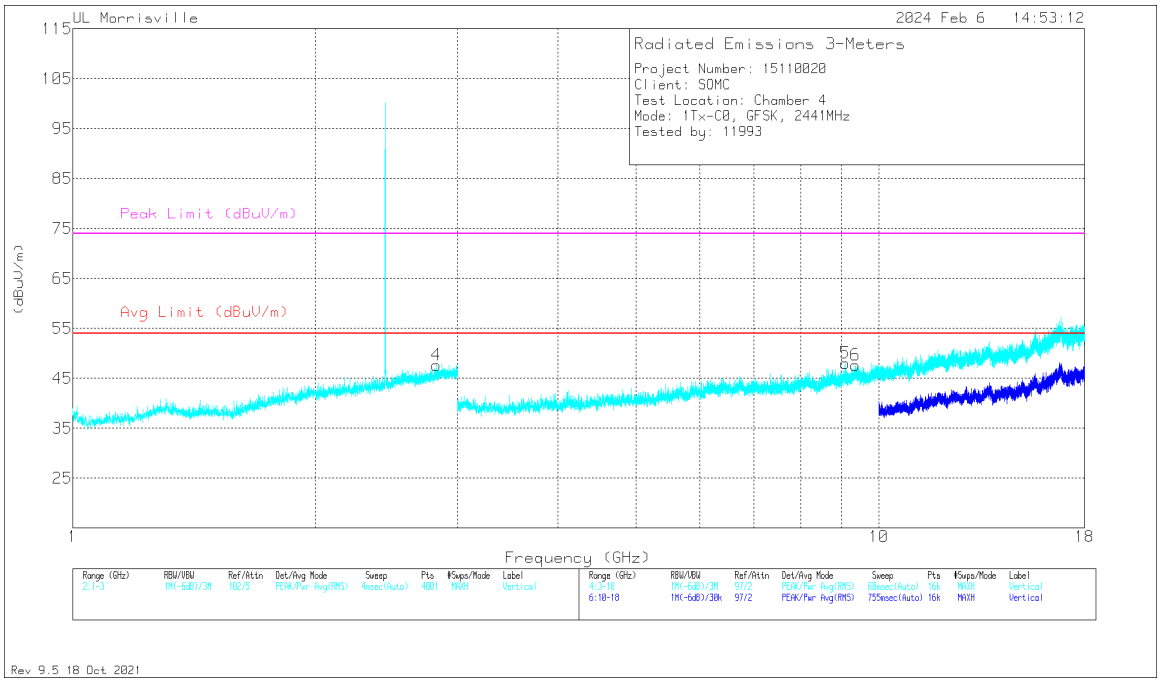
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.87789	28.22	PK2	32.4	-12	48.62	-	-	74	-25.38	134	145	H
	* ** 2.8785	13.9	V1TV	32.4	-12	34.3	54	-19.7	-	-	134	145	H
4	* ** 2.797	27.15	Pk	32.6	-12.3	47.45	54	-6.55	74	-26.55	0-360	200	V
2	* ** 8.04844	38.32	Pk	35.8	-27.6	46.52	54	-7.48	74	-27.48	0-360	100	H
3	* ** 9.41531	36.52	Pk	36.6	-25.4	47.72	54	-6.28	74	-26.28	0-360	100	H
5	* ** 9.08454	36.77	PK2	36.3	-24.9	48.17	-	-	74	-25.83	121	389	V
	* ** 9.08496	22.65	V1TV	36.3	-24.9	34.05	54	-19.95	-	-	121	389	V
6	* ** 9.45563	36.6	Pk	36.7	-25.8	47.5	54	-6.5	74	-26.5	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
PK2 - Maximum Peak
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration. VBW is set to 500 Hz.

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 2.8505	27.57	Pk	32.4	-12.4	47.57	54	-6.43	74	-26.43	0-360	100	H
4	* ** 2.8255	27.5	Pk	32.4	-12.2	47.7	54	-6.3	74	-26.3	0-360	200	V
2	* ** 8.17969	37.35	Pk	35.8	-26.8	46.35	54	-7.65	74	-27.65	0-360	100	H
3	* ** 9.46969	36.59	Pk	36.7	-25.4	47.89	54	-6.11	74	-26.11	0-360	100	H
5	* ** 9.07697	36.85	PK2	36.3	-25	48.15	-	-	74	-25.85	112	105	V
	* ** 9.08433	22.77	V1TV	36.3	-24.9	34.17	54	-19.83	-	-	112	105	V
6	* ** 9.35906	35.81	Pk	36.5	-24.7	47.61	54	-6.39	74	-26.39	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
PK2 - Maximum Peak
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration. VBW is set to 500 Hz.

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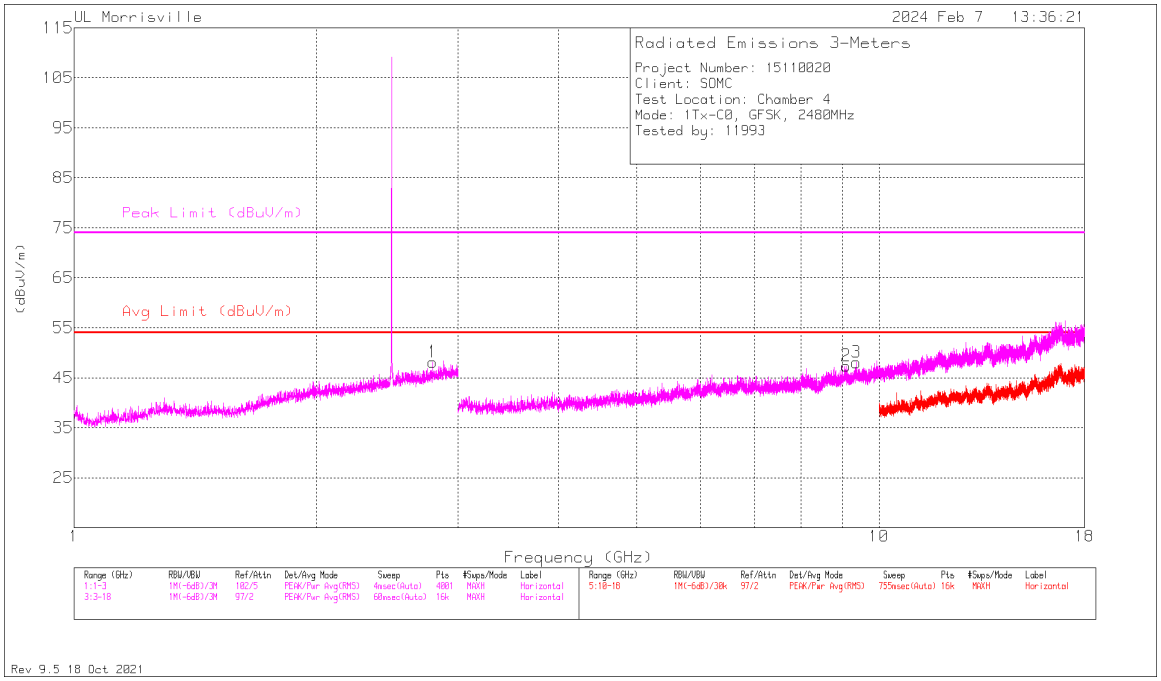
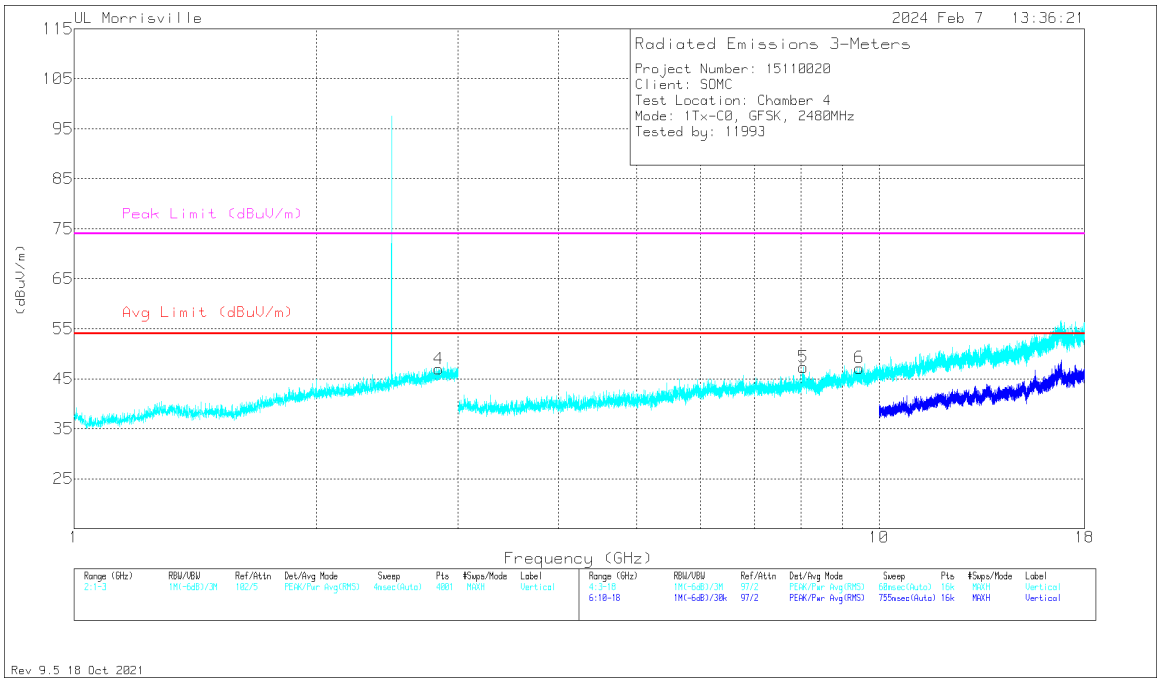
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 2.78946	28.89	PK2	32.6	-12.4	49.09	-	-	74	-24.91	224	261	H
	* ** 2.79001	13.84	V1TV	32.6	-12.4	34.04	54	-19.96	-	-	224	261	H
4	* ** 2.8375	27.07	Pk	32.3	-12.4	46.97	54	-7.03	74	-27.03	0-360	200	V
2	* ** 9.10406	35.96	Pk	36.3	-24.9	47.36	54	-6.64	74	-26.64	0-360	100	H
3	* ** 9.37625	37.2	PK2	36.6	-25	48.8	-	-	74	-25.2	8	223	H
	* ** 9.37723	23.14	V1TV	36.6	-25	34.74	54	-19.26	-	-	8	223	H
5	* ** 8.05875	39.2	Pk	35.8	-27.7	47.3	54	-6.7	74	-26.7	0-360	200	V
6	* ** 9.45188	36.25	Pk	36.7	-25.8	47.15	54	-6.85	74	-26.85	0-360	200	V

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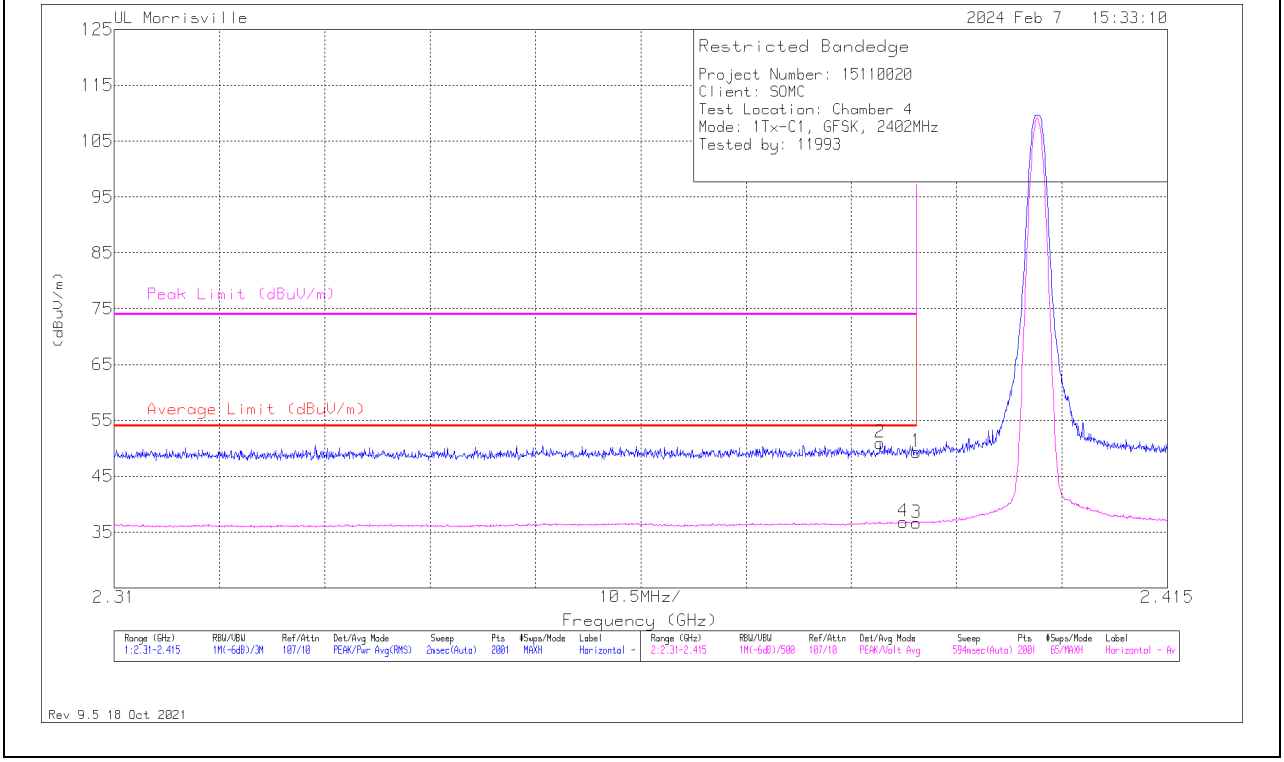
Pk - Peak detector
PK2 - Maximum Peak
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration. VBW is set to 500 Hz.

Chain 1

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	30.58	Pk	32	-13.2	49.38	-	-	74	-24.62	90	103	H
2	* ** 2.38634	32.08	Pk	32	-13.1	50.98	-	-	74	-23.02	90	103	H
3	* ** 2.38996	17.88	V1TV	32	-13.2	36.68	54	-17.32	-	-	90	103	H
4	* ** 2.38865	18.05	V1TV	32	-13.2	36.85	54	-17.15	-	-	90	103	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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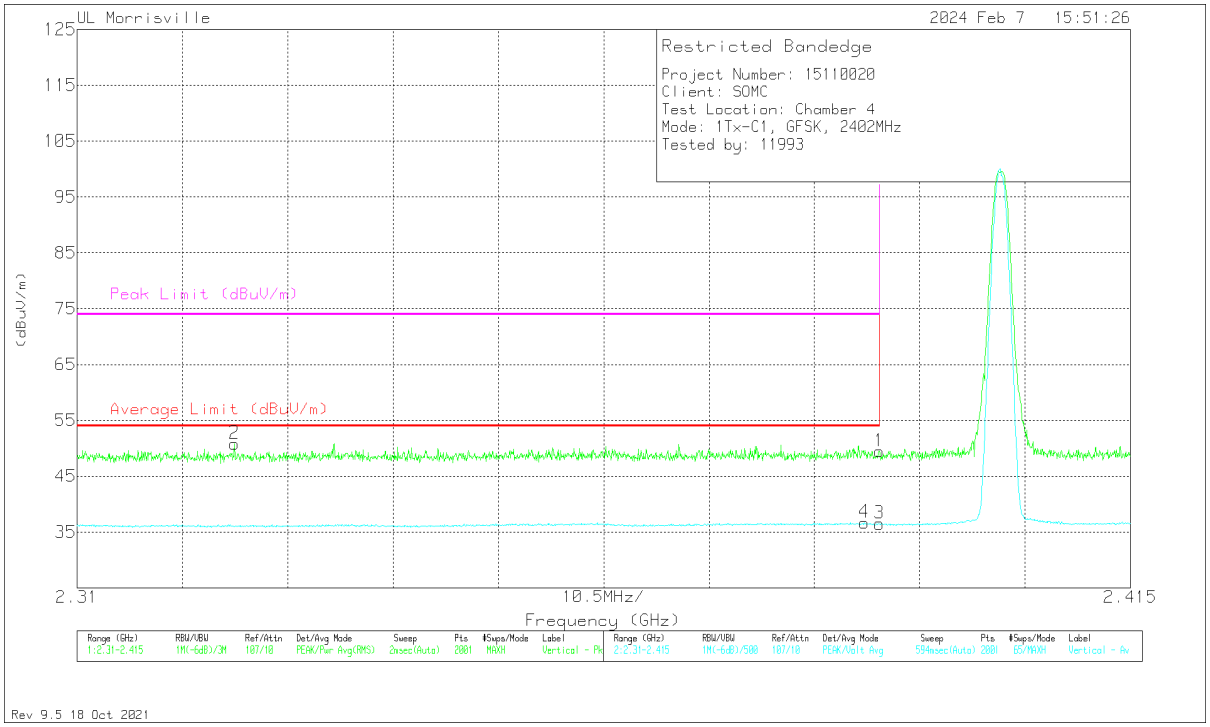
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	30.64	Pk	32	-13.2	49.44	-	-	74	-24.56	297	104	V
2	* ** 2.3257	32.13	Pk	31.9	-13.2	50.83	-	-	74	-23.17	297	104	V
3	* ** 2.38996	17.7	V1TV	32	-13.2	36.5	54	-17.5	-	-	297	104	V
4	* ** 2.38849	17.91	V1TV	32	-13.2	36.71	54	-17.29	-	-	297	104	V

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Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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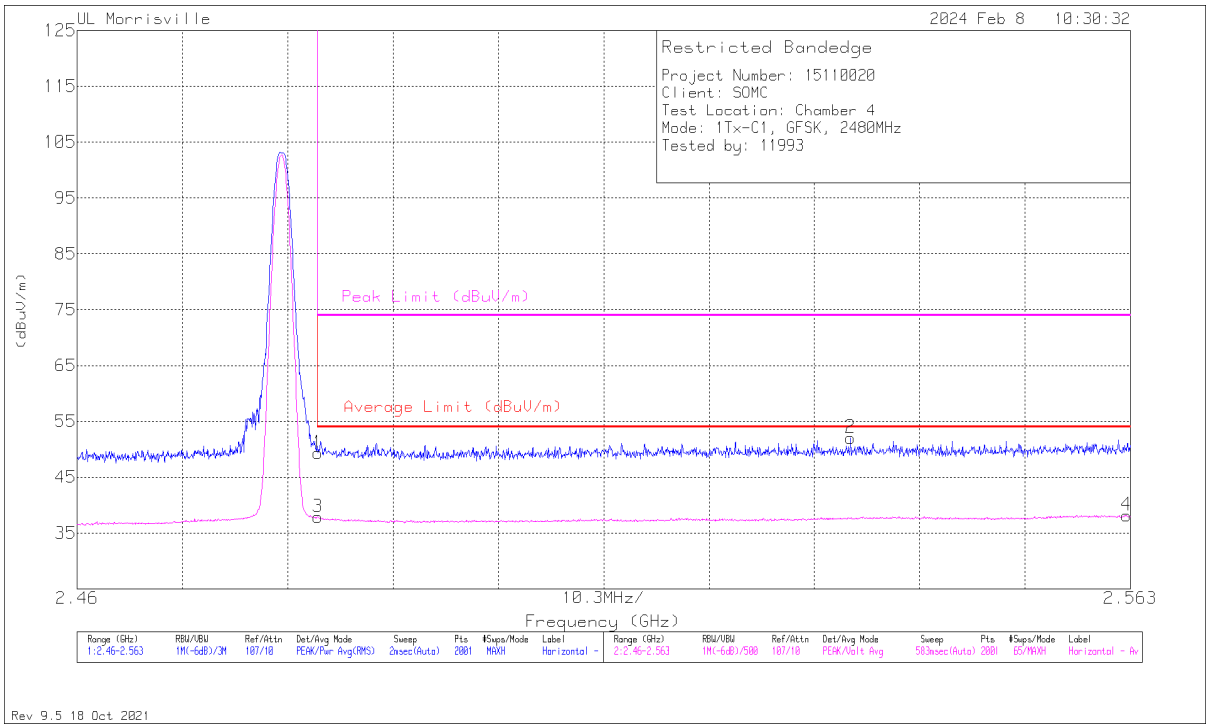
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	29.94	Pk	32.3	-12.9	49.34	-	-	74	-24.66	221	268	H
2	** 2.53565	32.46	Pk	32.5	-12.9	52.06	-	-	74	-21.94	221	268	H
3	* ** 2.48354	18.47	V1TV	32.3	-12.9	37.87	54	-16.13	-	-	221	268	H
4	** 2.56264	18.48	V1TV	32.5	-12.8	38.18	54	-15.82	-	-	221	268	H

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Pk - Peak detector
V1TV - U-NII: VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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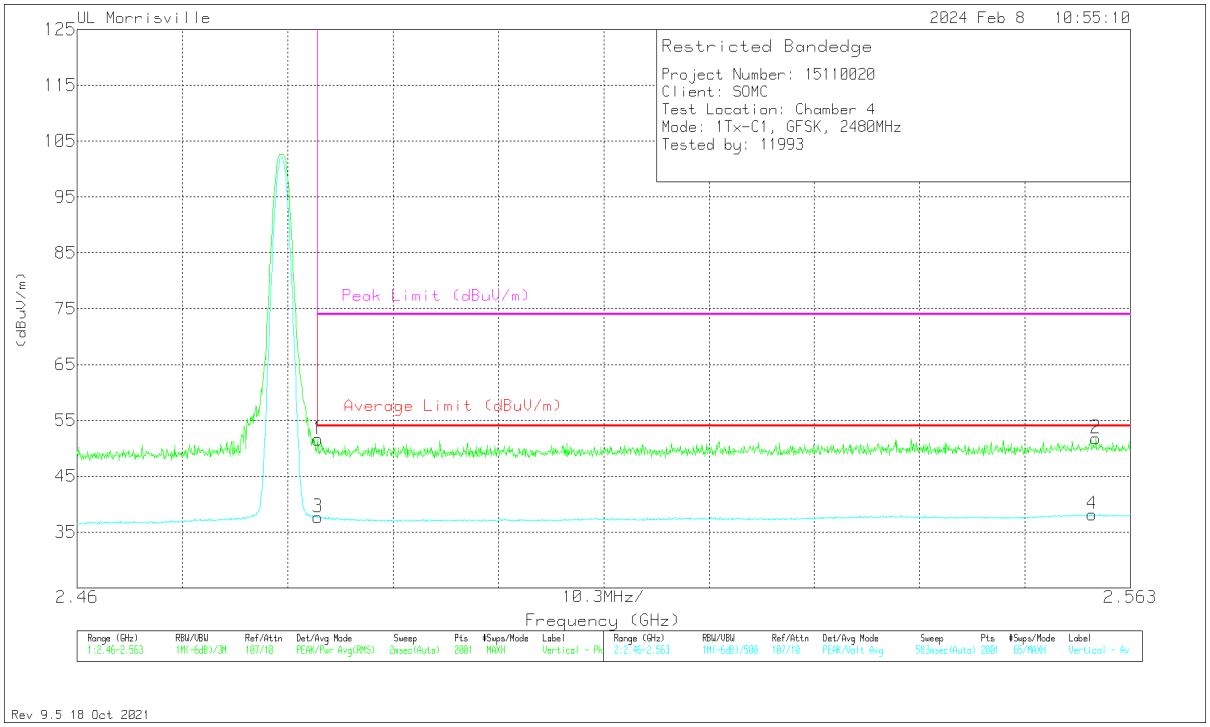
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	32.21	Pk	32.3	-12.9	51.61	-	-	74	-22.39	73	335	V
2	** 2.5596	32.01	Pk	32.5	-12.7	51.81	-	-	74	-22.19	73	335	V
3	* ** 2.48354	18.29	V1TV	32.3	-12.9	37.69	54	-16.31	-	-	73	335	V
4	** 2.55924	18.39	V1TV	32.5	-12.7	38.19	54	-15.81	-	-	73	335	V

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Pk - Peak detector
V1TV - VB=1/Ton, Linear Voltage Average where: Ton is packet duration

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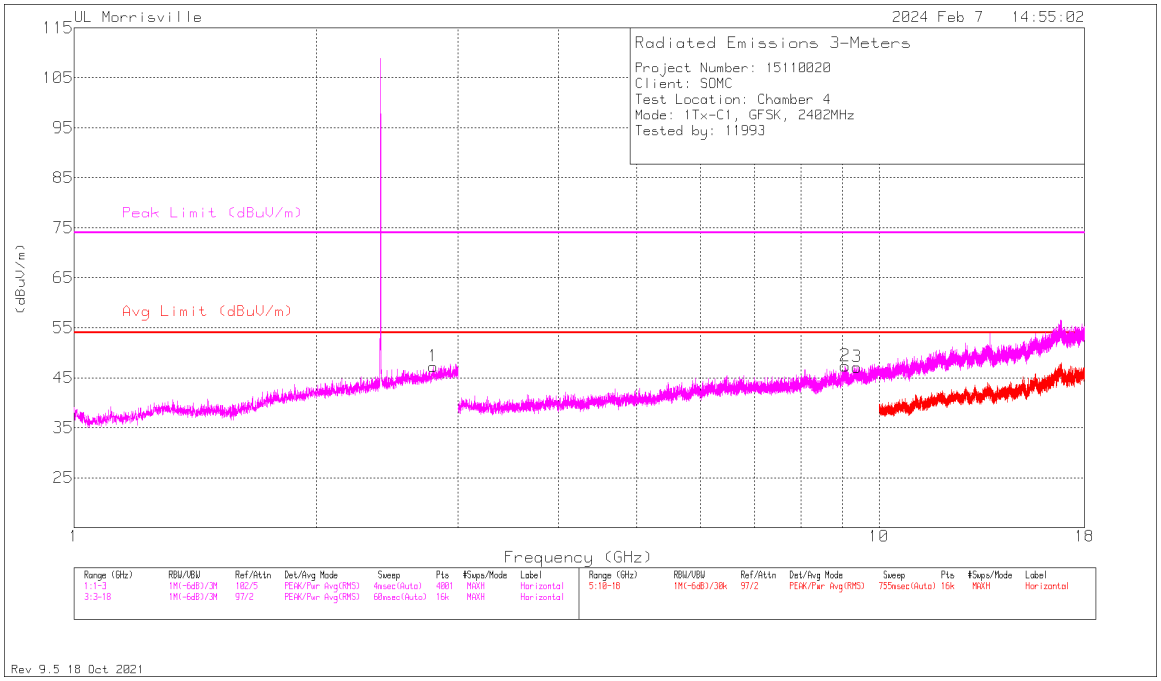
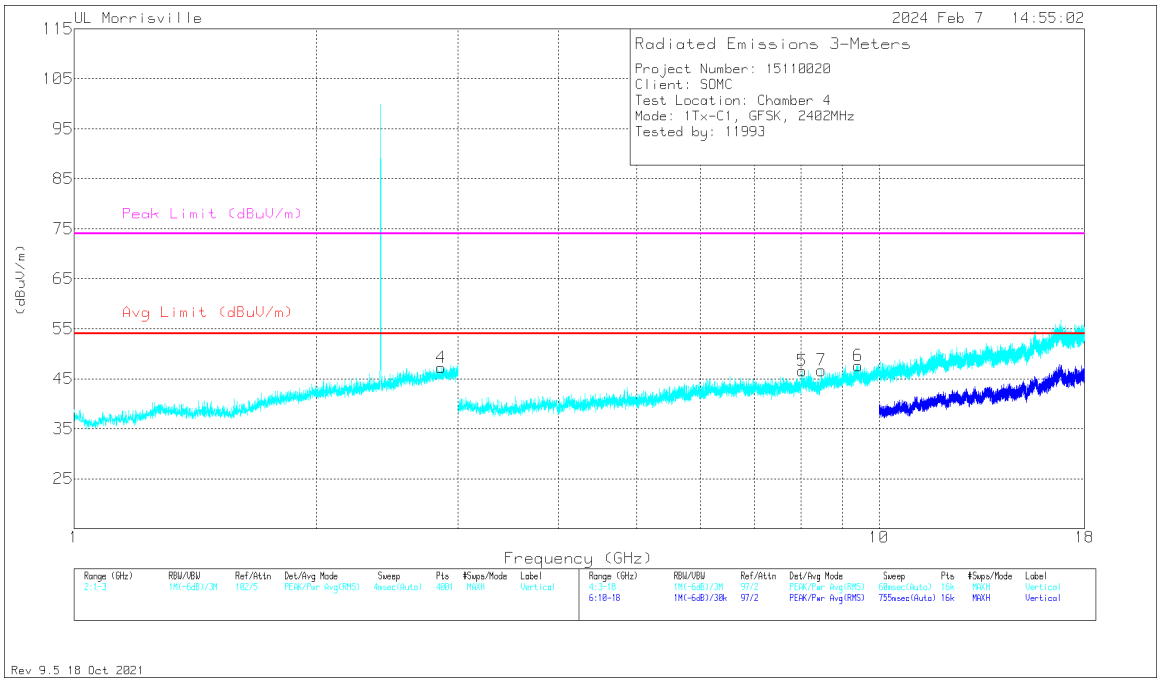
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	89509 ACF (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	* ** 2.794	26.98	Pk	32.6	-12.3	47.28	54	-6.72	74	-26.72	0-360	100	H
4	* ** 2.8585	26.91	Pk	32.4	-12.1	47.21	54	-6.79	74	-26.79	0-360	200	V
2	* ** 9.07688	36.06	Pk	36.3	-25	47.36	54	-6.64	74	-26.64	0-360	100	H
3	* ** 9.38344	35.55	Pk	36.6	-25	47.15	54	-6.85	74	-26.85	0-360	100	H
5	* ** 8.03063	38.26	Pk	35.8	-27.5	46.56	54	-7.44	74	-27.44	0-360	200	V
6	* ** 9.42094	36.67	Pk	36.6	-25.7	47.57	54	-6.43	74	-26.43	0-360	200	V
7	* ** 8.48344	36.97	Pk	35.8	-26.1	46.67	54	-7.33	74	-27.33	0-360	200	V

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