TEST REPORT

Report Number: R15110020-E6

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:
2024-03-13

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	2024-03-13	Initial Issue	Charles Moody
V2	2024-03-22	Revised antenna type in section 6.3	B. Kiewra

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

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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: 2024-03-05 TO 2024-03-11

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C: 2024	See Section 2

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.

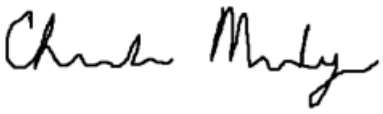
The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. 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 9.3 and 9.4)

FCC Clause	Requirement	Result	Comment
See Comment	Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
15.247 (a) (2)	6dB BW	Compliant	None
15.247 (b) (3)	Output Power		
See Comment	Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	PSD	Compliant	None
15.247 (d)	Conducted Spurious Emissions		
15.209, 15.205	Radiated Emissions		
15.207	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.

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

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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 BLE 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	BLE - 125kbps	10.56	11.38
2402 - 2480	BLE - 500kbps	10.53	11.30
2402 - 2480	BLE - 1Mbps	10.54	11.32
2402 - 2480	BLE - 2Mbps	10.82	12.08
Chain 1			
2402 - 2480	BLE - 125kbps	10.91	12.33
2402 - 2480	BLE - 500kbps	10.83	12.11
2402 - 2480	BLE - 1Mbps	10.77	11.94
2402 - 2480	BLE - 2Mbps	10.63	11.56

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 and data rate with highest PSD as a 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 was run at both 2 Mbps and 125 kbps as worst case for Chain 0 and chain 1 based on power, PSD, and worst-case signal bandwidth. Radiated spurious emissions run on 125kbps for Chain 0 and Chain 1 as worst-case based on PSD.

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.

Supported data rates as provided by the client were 125 kbps, 500 kbps, 1 Mbps, and 2 Mbps.

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

7. MEASUREMENT METHOD

On Time and Duty Cycle: ANSI C63.10, Section 11.6 : Zero-Span Spectrum Analyzer Method.

6 dB BW: ANSI C63.10 Subclause -11.8.1

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter
ANSI C63.10 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10 Subclause -11.10.2 Method PKPSD (peak PSD)

Conducted emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10 Subclause -11.12.1 and 6.10.5, 6.3 to 6.6.

AC Power-line conducted emissions: ANSI C63.10-2020, Section 6.2.

8. 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 - 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)		
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

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

Equip. ID	Description	Manufacturer/Brand	Model Number	Last Cal.	Next Cal.
	18-40 GHz				
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-826	2023-07-20	2025-07-20
204705	Horn Antenna, 26-40GHz	Com-Power	AH-640	2023-07-20	2025-07-20
	Gain-Loss Chains				
225795	Gain-loss string: 18-40GHz	Various	Various	2023-05-17	2024-05-17
	Receiver & Software				
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 - 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

9. ANTENNA PORT TEST RESULTS

9.1. ON TIME AND DUTY CYCLE

LIMITS

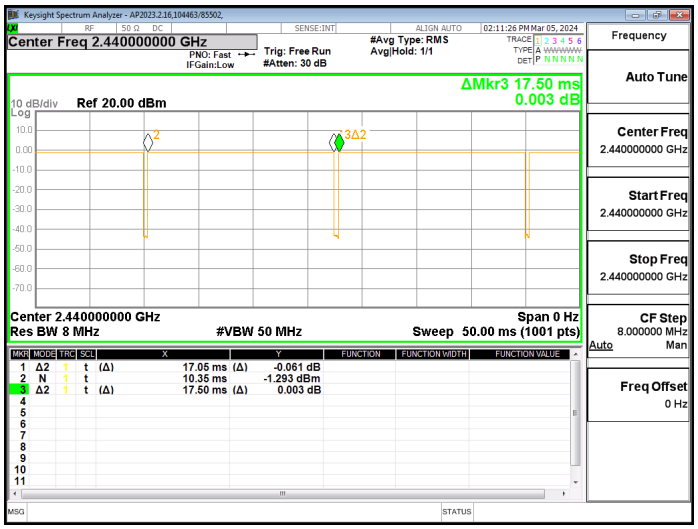
None; for reporting purposes only.

PROCEDURE

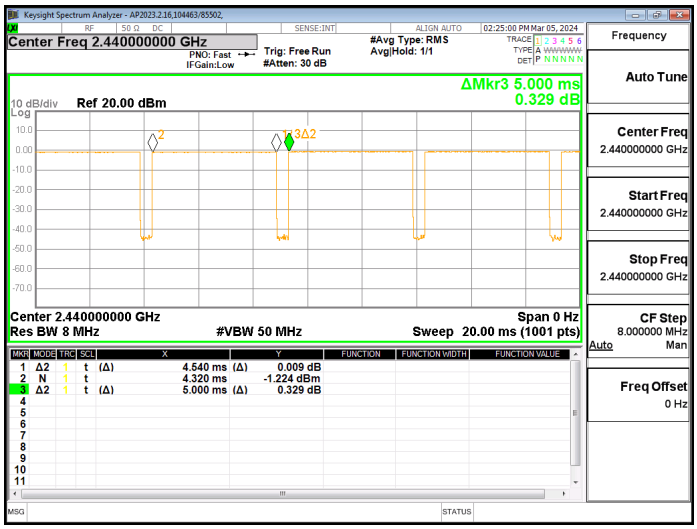
KDB 558074 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

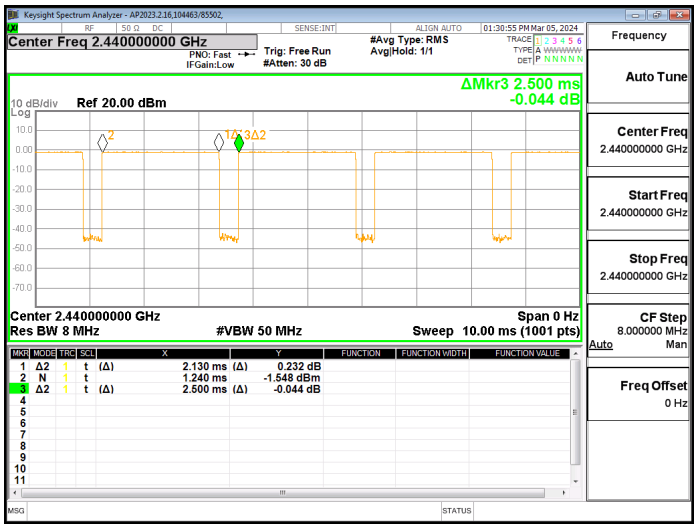
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
BLE - 125kpbs	17.050	17.500	0.97	97.43	0.23	0.059
BLE - 500kpbs	4.540	5.000	0.91	90.80	0.84	0.220
BLE - 1Mpbs	2.130	2.500	0.85	85.20	1.39	0.469
BLE - 2Mpbs	1.075	1.875	0.57	57.33	4.83	0.930



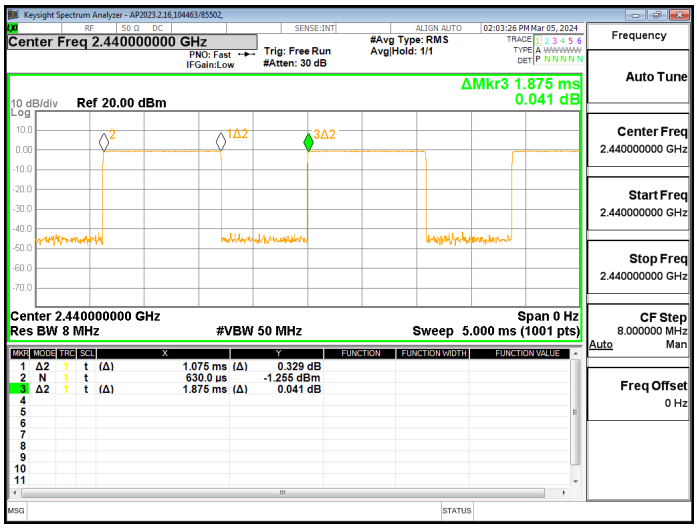
DUTY CYCLE BLE – 125kbps



DUTY CYCLE BLE – 500kbps



DUTY CYCLE BLE – 1Mbps



DUTY CYCLE BLE – 2Mbps

9.2. 6 dB BANDWIDTH

LIMITS

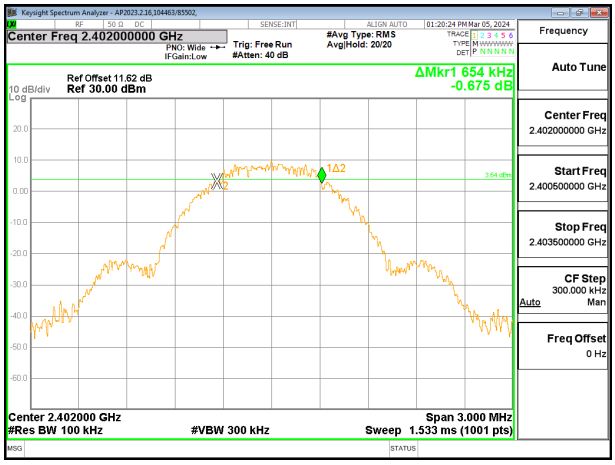
FCC §15.247 (a) (2)
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

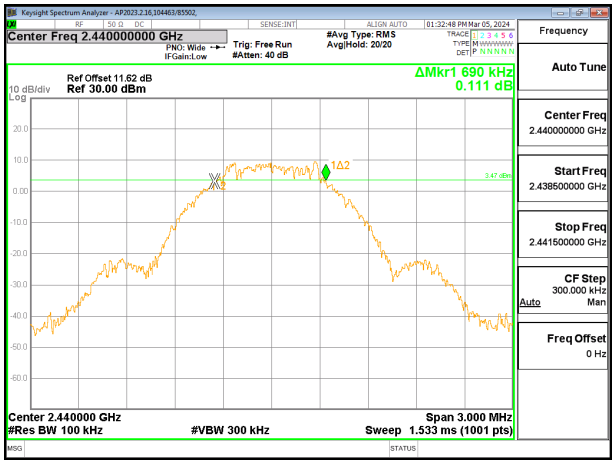
9.2.1. BLE (1Mbps)

Chain 0

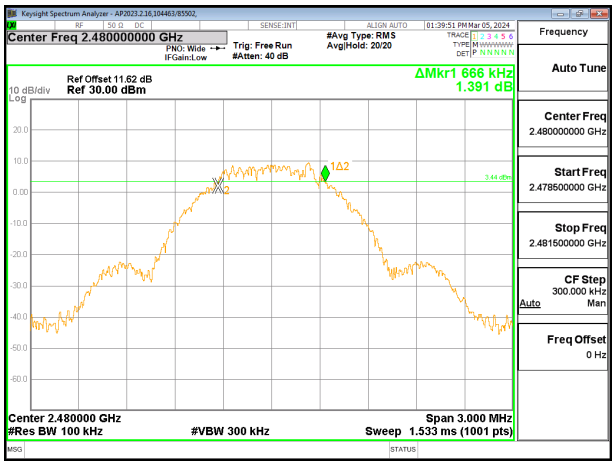
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.654	0.5
Middle	2440	0.690	0.5
High	2480	0.666	0.5



LOW CHANNEL



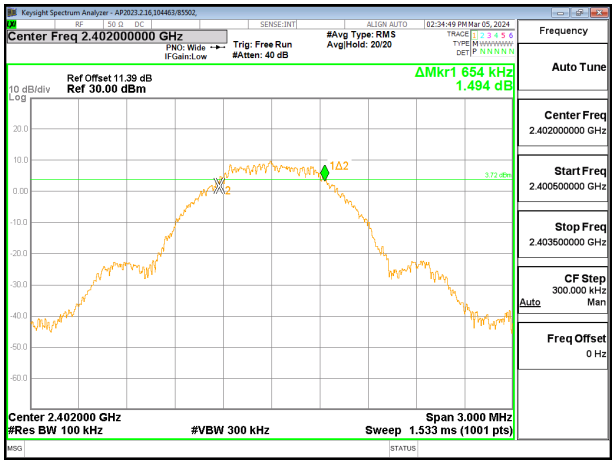
MID CHANNEL



HIGH CHANNEL

Chain 1

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.654	0.5
Middle	2440	0.630	0.5
High	2480	0.699	0.5



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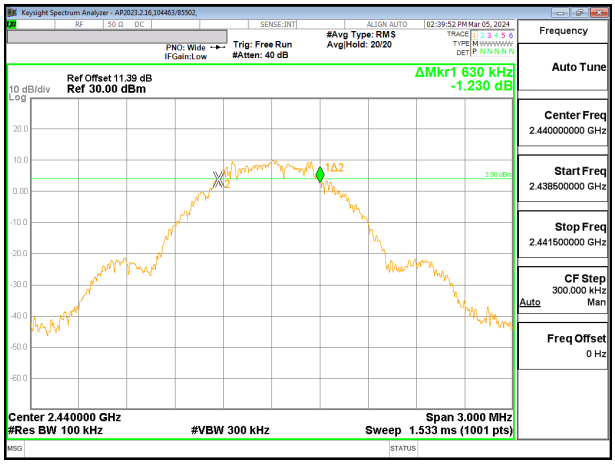

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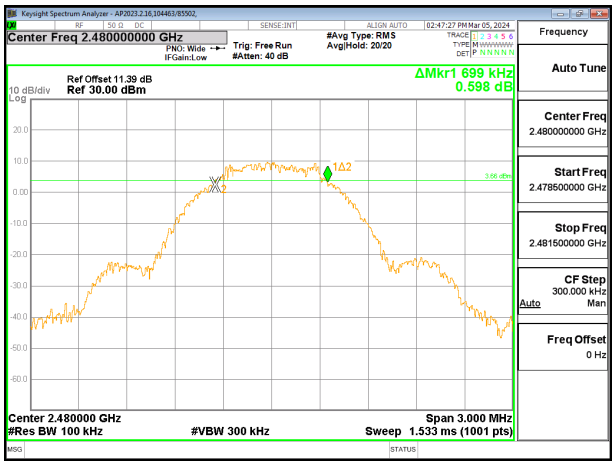
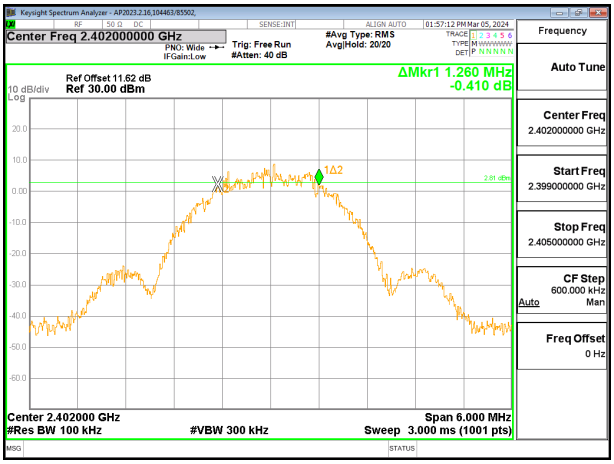


HIGH CHANNEL

9.2.2. BLE (2Mbps)

Chain 0

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.260	0.5
Middle	2440	1.068	0.5
High	2480	1.098	0.5



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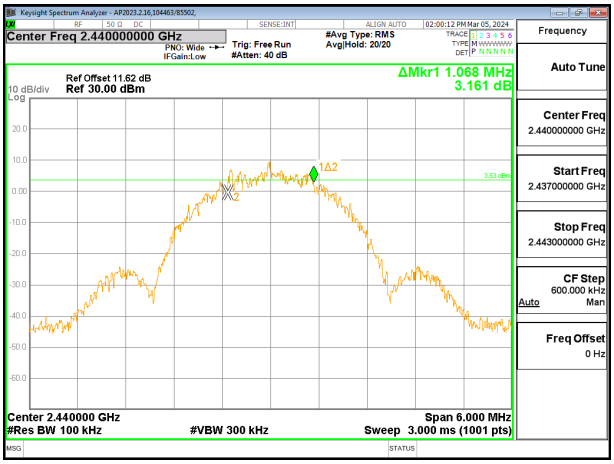

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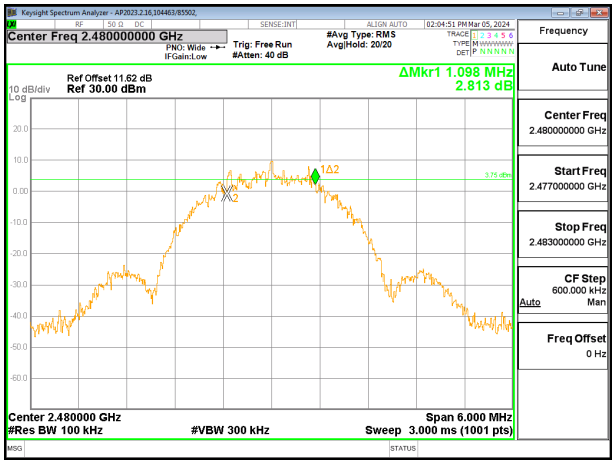
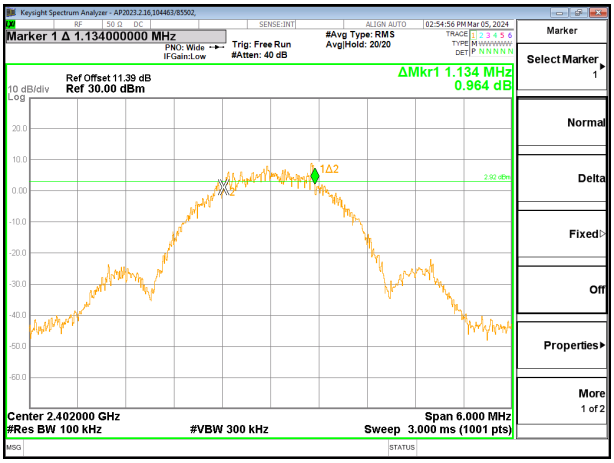


HIGH CHANNEL

Chain 1

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	1.134	0.5
Middle	2440	1.314	0.5
High	2480	1.278	0.5



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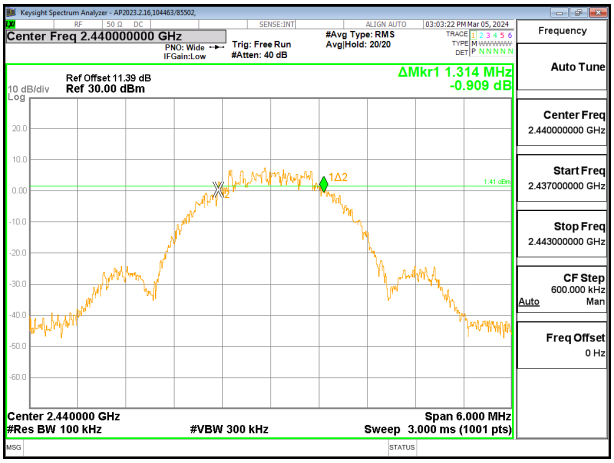


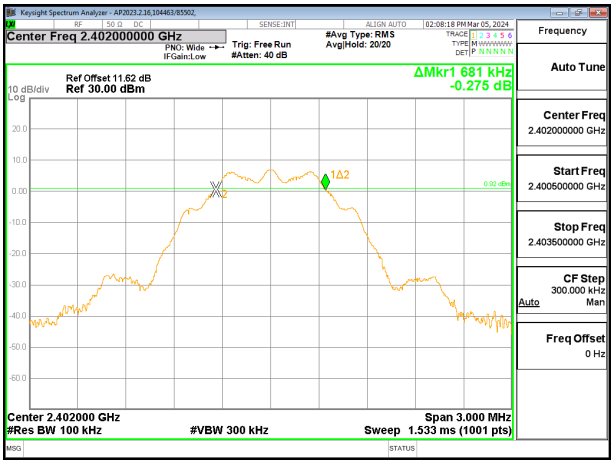
MID CHANNEL

HIGH CHANNEL

9.2.3. BLE (125Kbps)

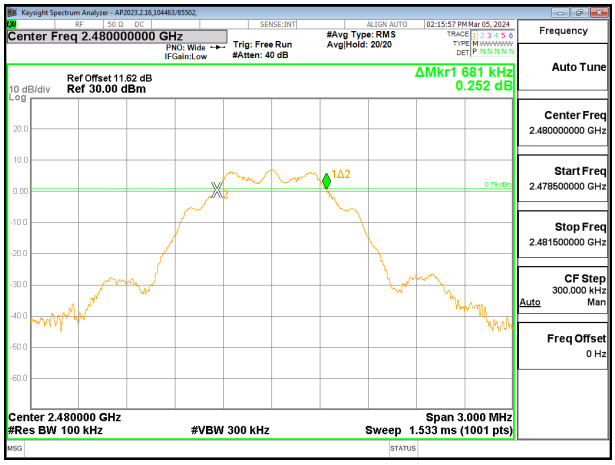
Chain 0

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.681	0.5
Middle	2440	0.675	0.5
High	2480	0.681	0.5



LOW CHANNEL

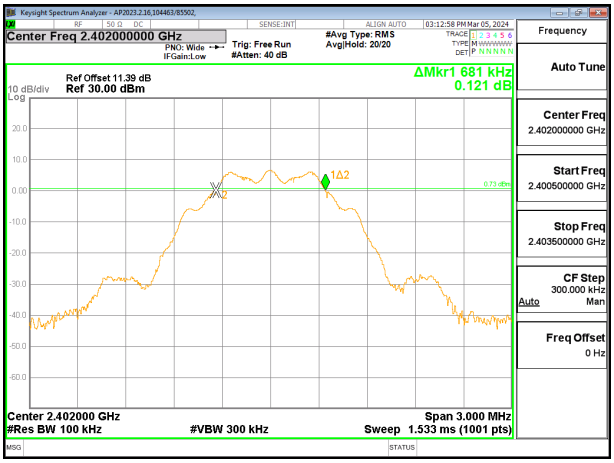
MID CHANNEL



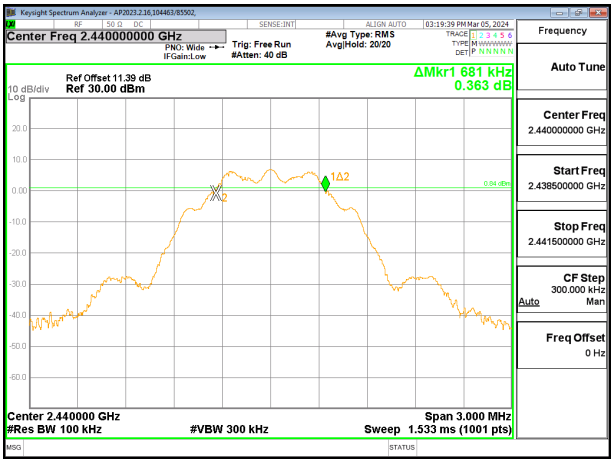
HIGH CHANNEL

Chain 1

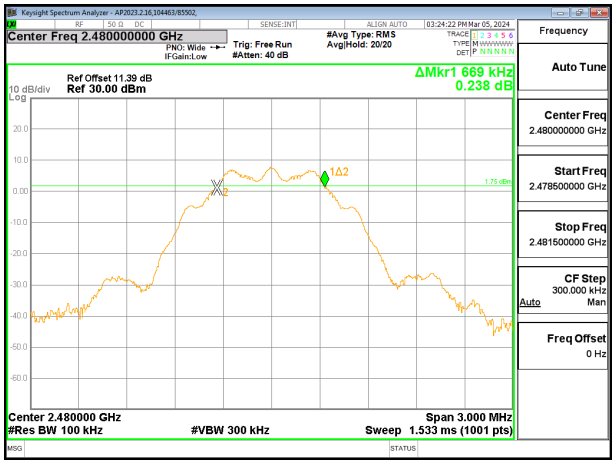
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.681	0.5
Middle	2440	0.681	0.5
High	2480	0.669	0.5



LOW CHANNEL



MID CHANNEL

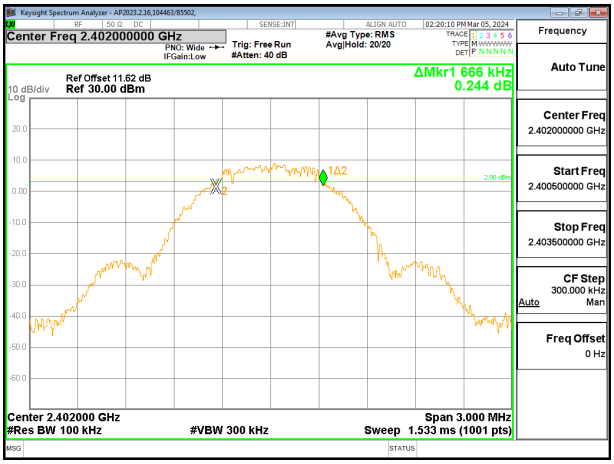


HIGH CHANNEL

9.2.4. BLE (500Kbps)

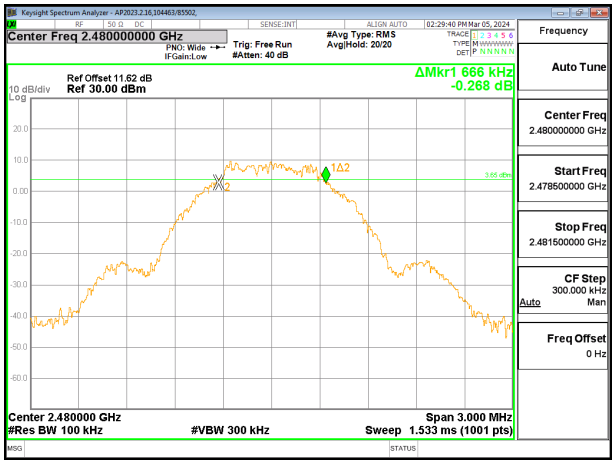
Chain 0

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.666	0.5
Middle	2440	0.666	0.5
High	2480	0.666	0.5



LOW CHANNEL

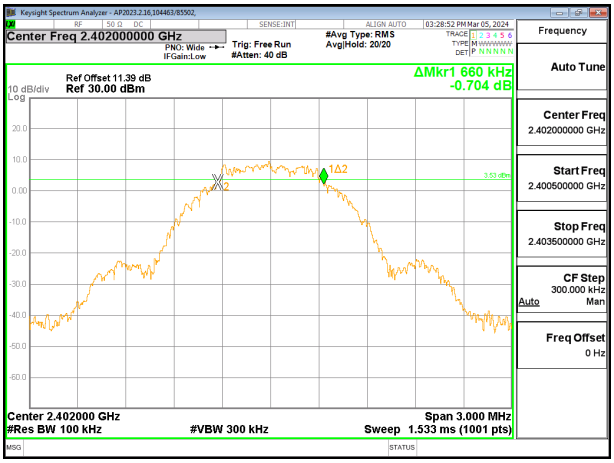
MID CHANNEL



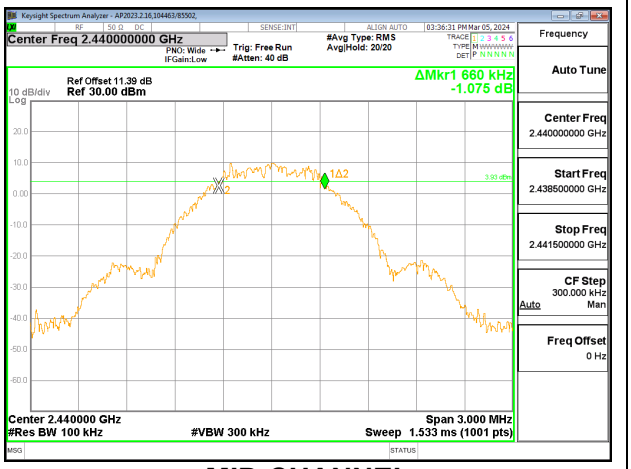
HIGH CHANNEL

Chain 1

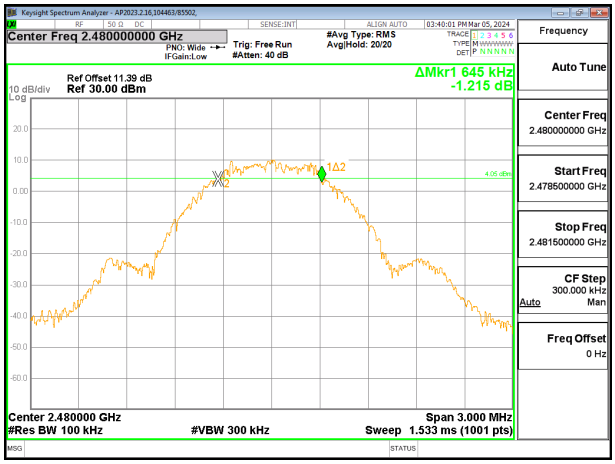
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.660	0.5
Middle	2440	0.660	0.5
High	2480	0.645	0.5



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)
The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE
The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.62 (including 9.71 dB pad, 1.5 dB EUT cable and 0.41 dB test cable) was entered as an offset for chain 0 and 11.39 dB (9.68 dB pad, 1.30 dB EUT cable, and 0.41 dB test cable) was entered as an offset for chain 1, in the power meter to allow for a peak reading of power.
RESULTS

9.3.1. BLE (125Kbps)

Chain 0

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.48	30	-19.520
Middle	2440	10.56	30	-19.440
High	2480	10.45	30	-19.550

Chain 1

Tested By:	104463/85502
Date:	2024/03/05

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.24	30	-19.760
Middle	2440	10.37	30	-19.630
High	2480	10.91	30	-19.090

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9.3.2. BLE (500Kbps)

Chain 0

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.52	30	-19.480
Middle	2440	10.53	30	-19.470
High	2480	10.35	30	-19.650

Chain 1

Tested By:	104463/85502
Date:	2024/03/05

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.23	30	-19.77
Middle	2440	10.11	30	-19.89
High	2480	10.83	30	-19.17

9.3.3. BLE (1Mbps)

Chain 0

Tested By:	104463/85502
Date:	2024/03/05

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.50	30	-19.500
Middle	2440	10.54	30	-19.460
High	2480	10.33	30	-19.670

Chain 1

Tested By:	104463/85502
Date:	2024/03/05

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.14	30	-19.860
Middle	2440	10.09	30	-19.910
High	2480	10.77	30	-19.230

9.3.4. BLE (2Mbps)

Chain 0

Tested By:	85502
Date:	2024-01-02

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.82	30	-19.180
Middle	2440	10.68	30	-19.320
High	2480	10.46	30	-19.540

Chain 1

Tested By:	85502
Date:	2024/01/02

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	10.01	30	-19.990
Middle	2440	10.12	30	-19.880
High	2480	10.63	30	-19.370

9.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 11.62 (including 9.71 dB pad, 1.5 dB EUT cable and 0.41 dB test cable) was entered as an offset for chain 0 and 11.39 dB (9.68 dB pad, 1.30 dB EUT cable, and 0.41 dB test cable) was entered as an offset for chain 1, in the power meter to allow for a gated average reading of power.

RESULTS

9.4.1. BLE (125Kbps)

Chain 0

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.13
Middle	2440	10.20
High	2480	10.02

Chain 1

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	9.82
Middle	2440	9.85
High	2480	10.63

9.4.2. BLE (500Kbps)

Chain 0

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.15
Middle	2440	10.22
High	2480	10.04

Chain 1

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	9.89
Middle	2440	9.89
High	2480	10.55

9.4.3. BLE (1Mbps)

Chain 0

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.08
Middle	2440	10.15
High	2480	9.97

Chain 1

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	9.81
Middle	2440	10.02
High	2480	10.48

9.4.4. BLE (2Mbps)

Chain 0

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	10.22
Middle	2440	10.30
High	2480	10.09

Chain 1

Tested By:	104463/85502
Date:	2024-03-05

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	9.71
Middle	2440	9.72
High	2480	10.52

9.5. POWER SPECTRAL DENSITY

LIMITS

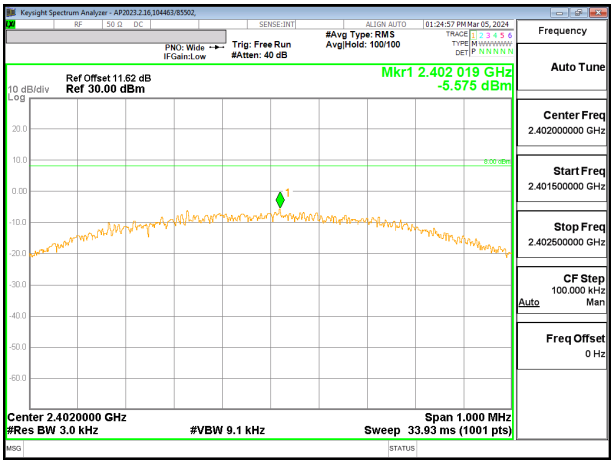
FCC §15.247 (e)
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

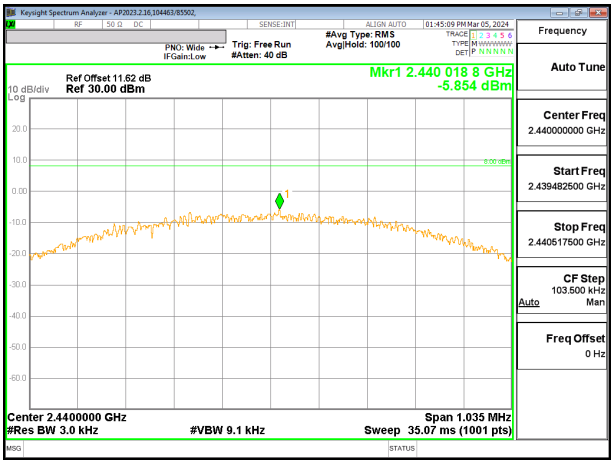
9.5.1. BLE (1Mbps)

Chain 0

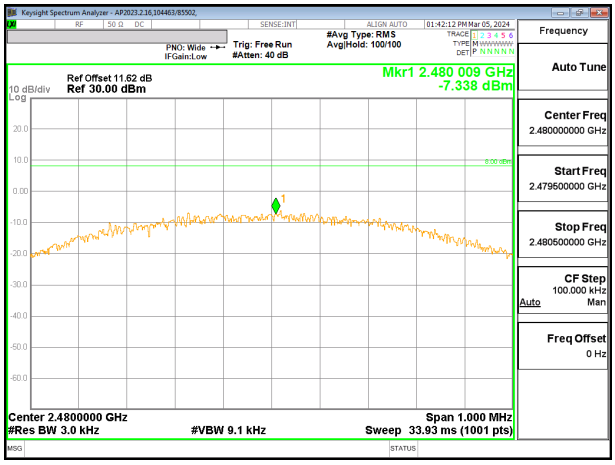
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-5.575	8	-13.58
Middle	2440	-5.854	8	-13.85
High	2480	-7.338	8	-15.34



LOW CHANNEL



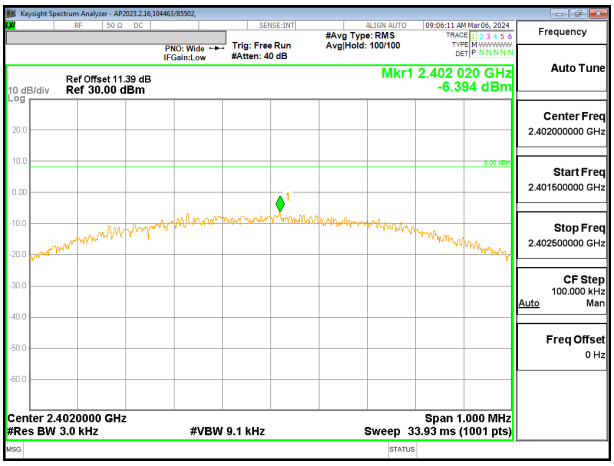
MID CHANNEL



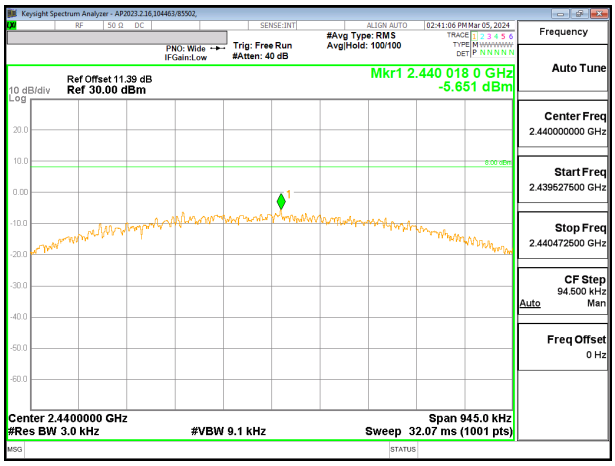
HIGH CHANNEL

Chain 1

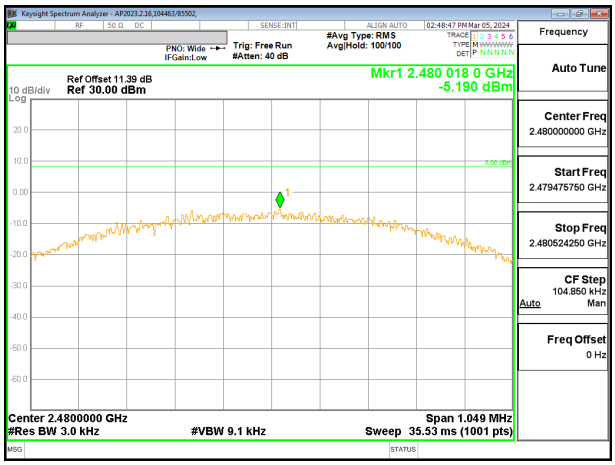
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-6.394	8	-14.39
Middle	2440	-5.651	8	-13.65
High	2480	-5.190	8	-13.19



LOW CHANNEL



MID CHANNEL

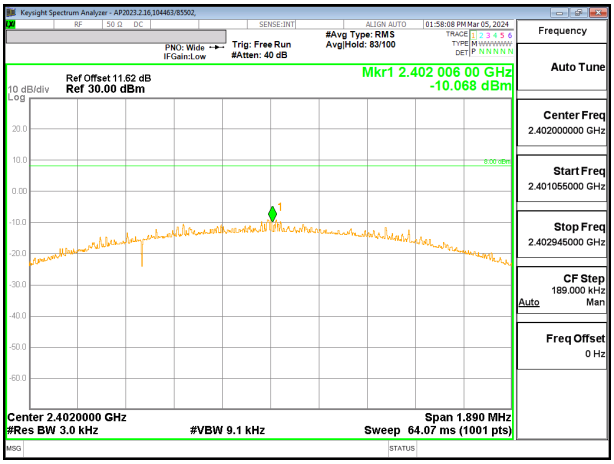


HIGH CHANNEL

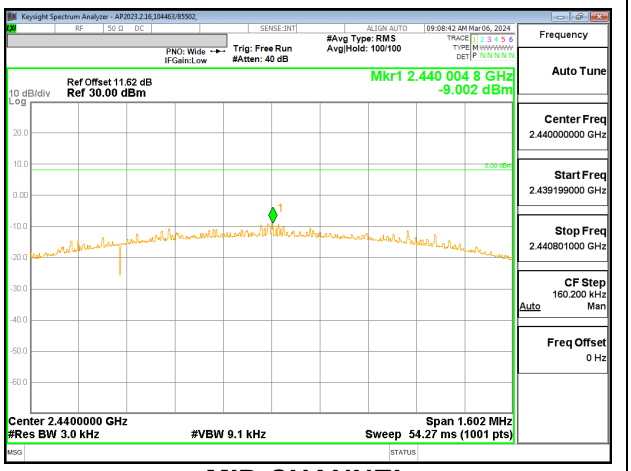
9.5.2. BLE (2Mbps)

Chain 0

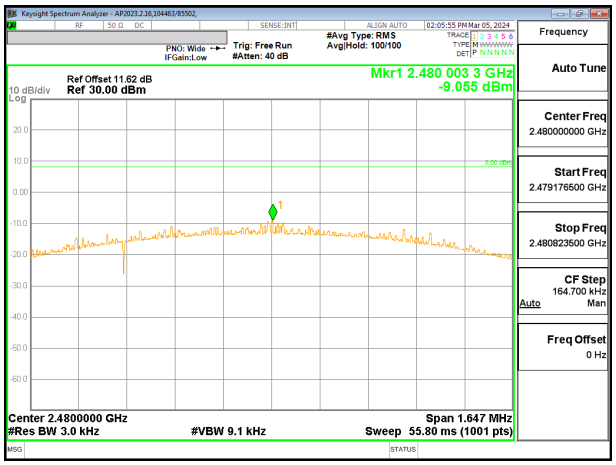
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-10.068	8	-18.07
Middle	2440	-9.002	8	-17.00
High	2480	-9.055	8	-17.06



LOW CHANNEL



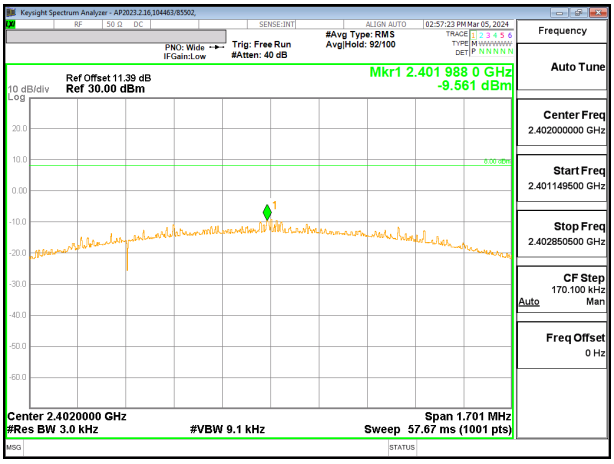
MID CHANNEL



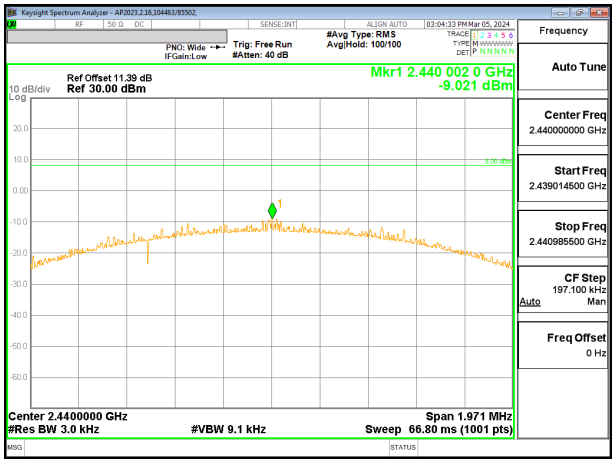
HIGH CHANNEL

Chain 1

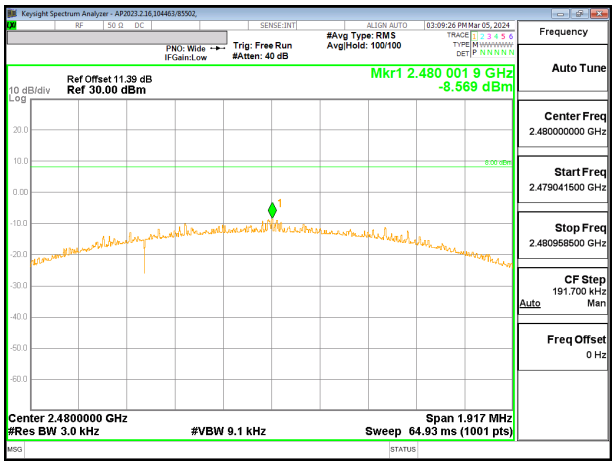
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-9.561	8	-17.56
Middle	2440	-9.021	8	-17.02
High	2480	-8.569	8	-16.57



LOW CHANNEL



MID CHANNEL

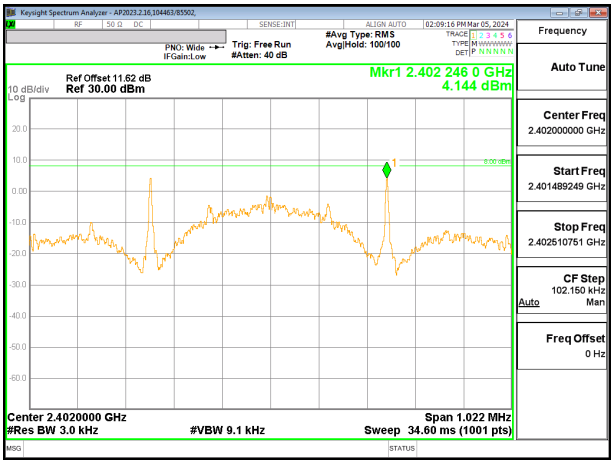


HIGH CHANNEL

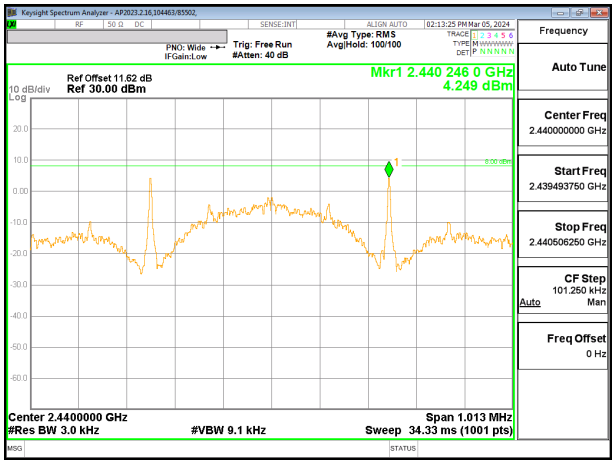
9.5.3. BLE (125Kbps)

Chain 0

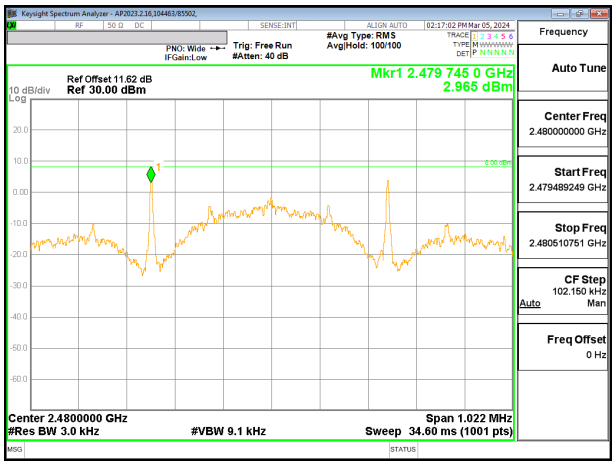
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	4.144	8	-3.86
Middle	2440	4.249	8	-3.75
High	2480	2.965	8	-5.04



LOW CHANNEL



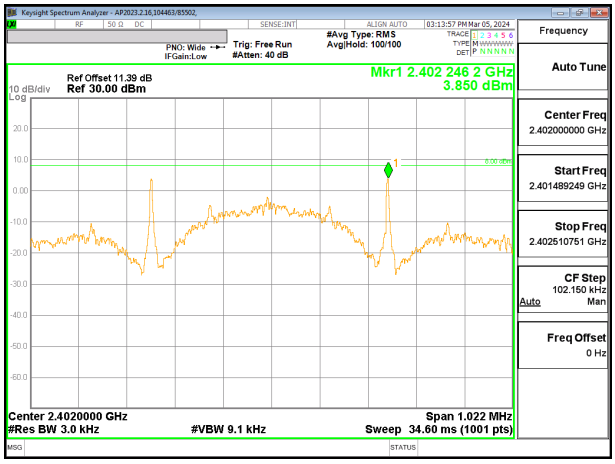
MID CHANNEL



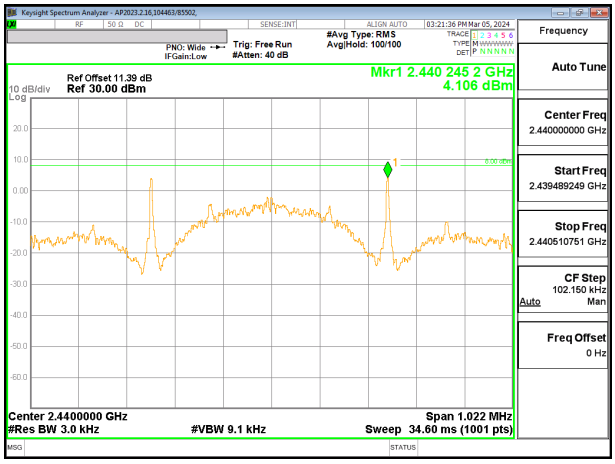
HIGH CHANNEL

Chain 1

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.850	8	-4.15
Middle	2440	4.106	8	-3.89
High	2480	4.649	8	-3.35



LOW CHANNEL



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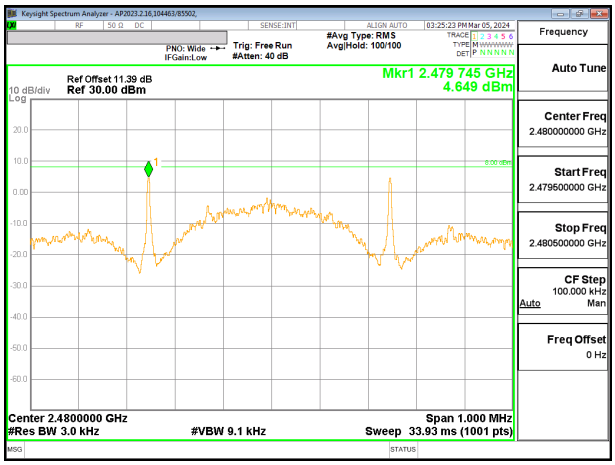
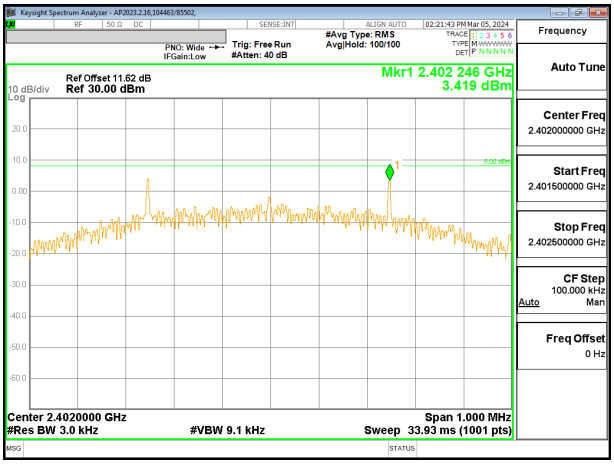


HIGH CHANNEL

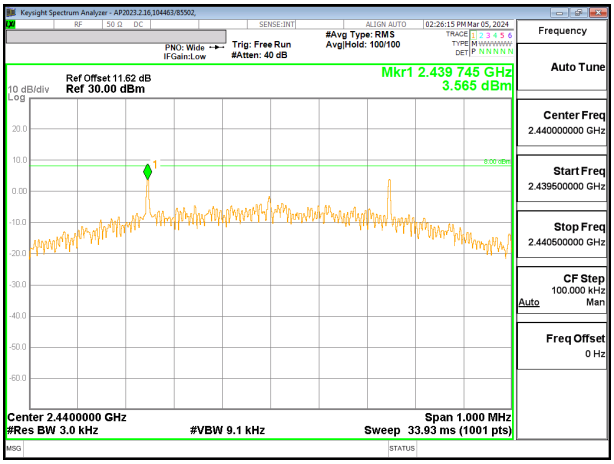
9.5.4. BLE (500Kbps)

Chain 0

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	3.419	8	-4.58
Middle	2440	3.565	8	-4.44
High	2480	3.599	8	-4.40



LOW CHANNEL



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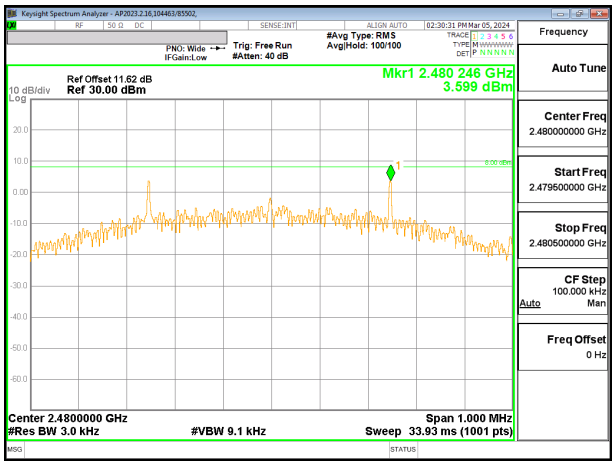
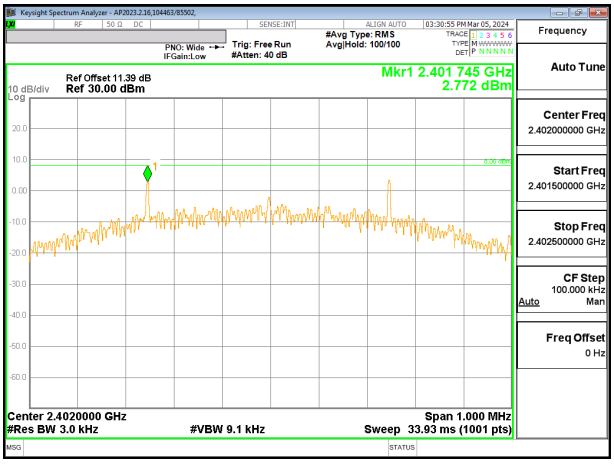


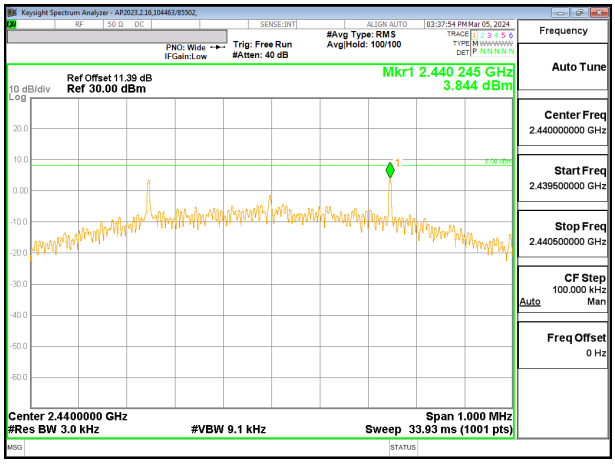
HIGH CHANNEL

Chain 1

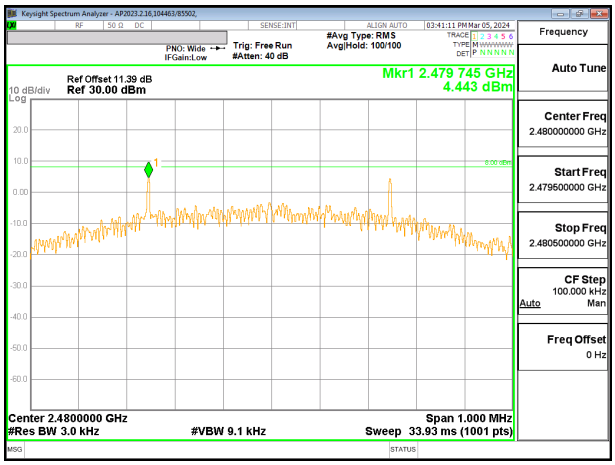
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	2.772	8	-5.23
Middle	2440	3.844	8	-4.16
High	2480	4.443	8	-3.56



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

9.6. CONDUCTED SPURIOUS EMISSIONS

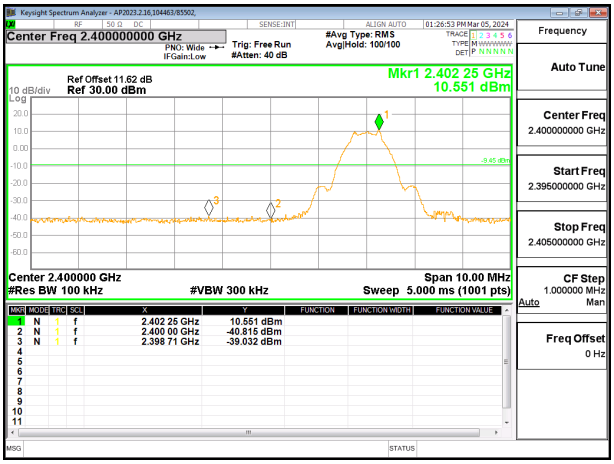
LIMITS

FCC §15.247 (d)
Output power was measured based on the use of a peak measurement; therefore the required attenuation is -20 dBc.

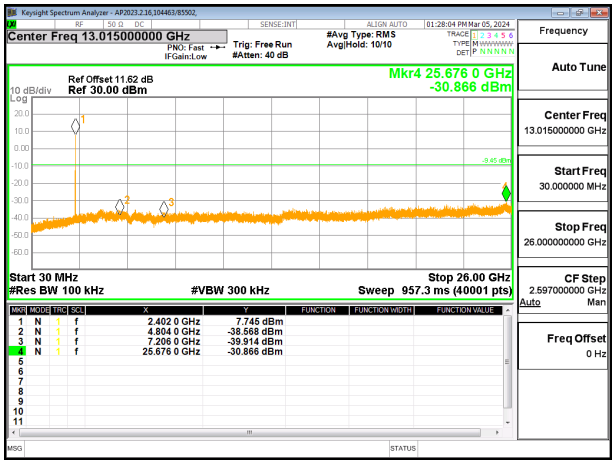
RESULTS

9.6.1. BLE (1Mbps)

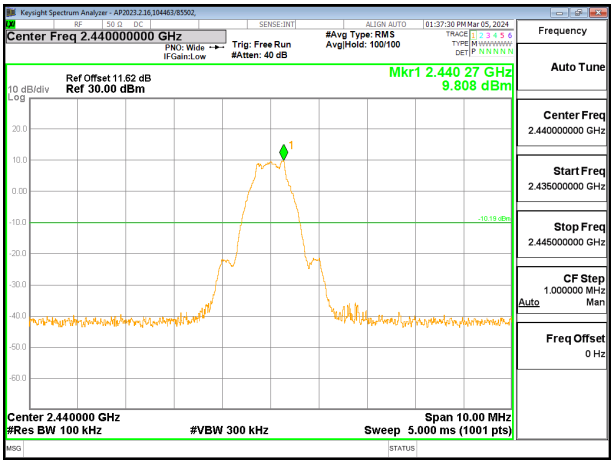
Chain 0



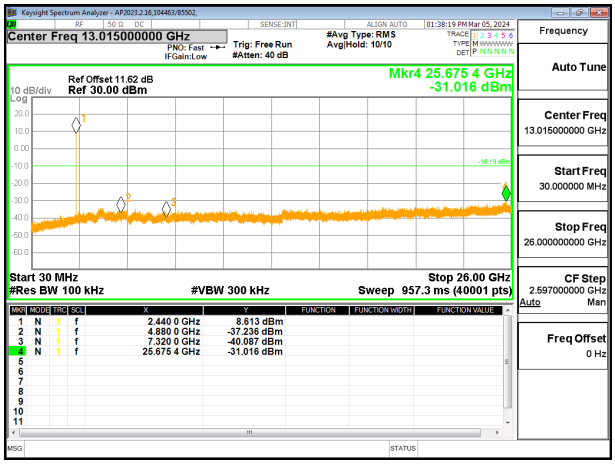
LOW CHANNEL BANDEDGE



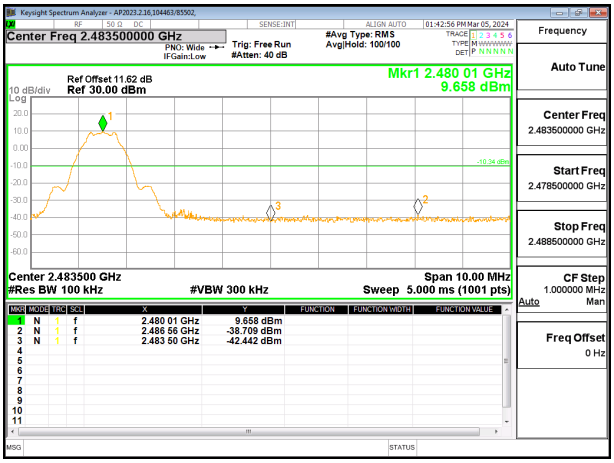
OUT-OF-BAND LOW CHANNEL



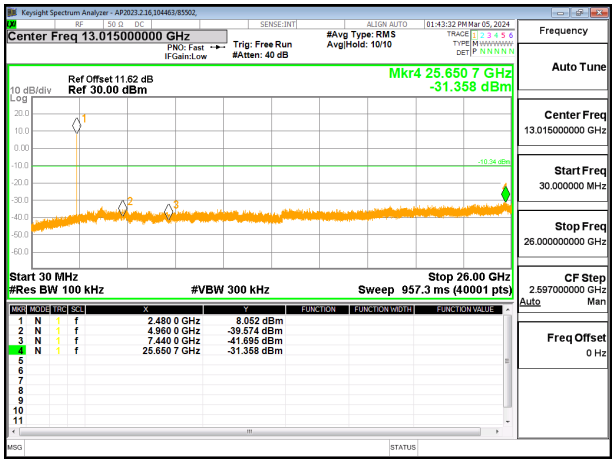
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

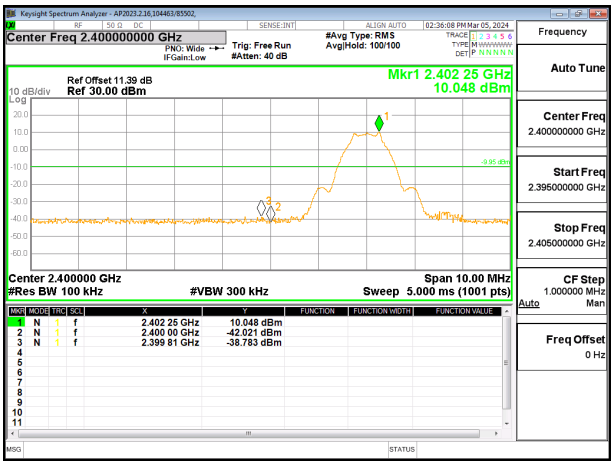


HIGH CHANNEL BANDEDGE

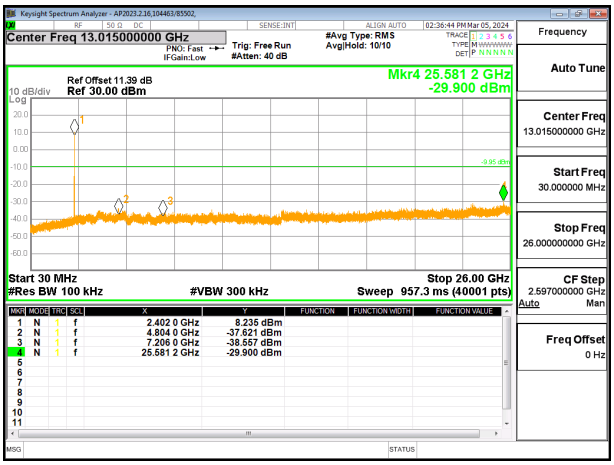


OUT-OF-BAND HIGH CHANNEL

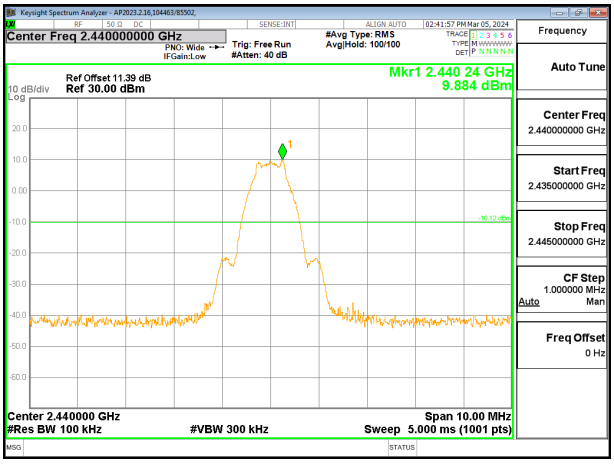
Chain 1



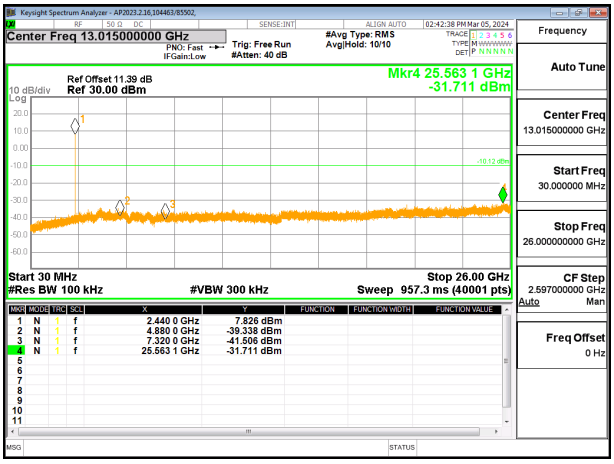
LOW CHANNEL BANDEDGE



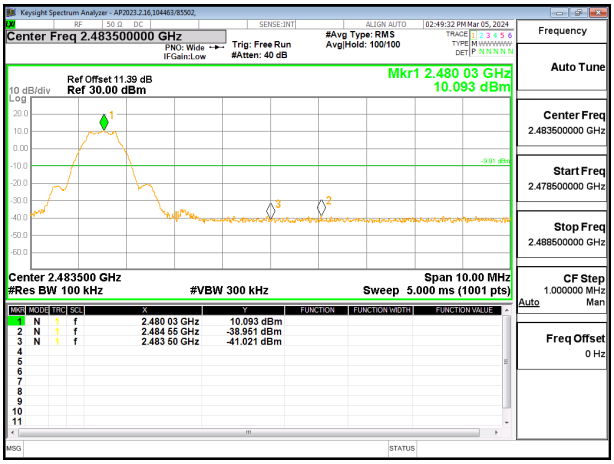
OUT-OF-BAND LOW CHANNEL



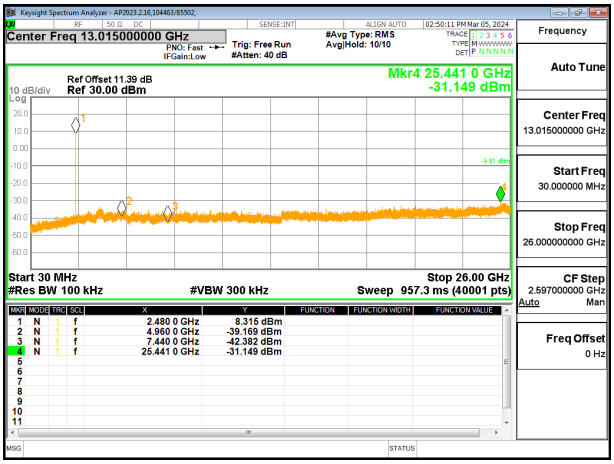
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



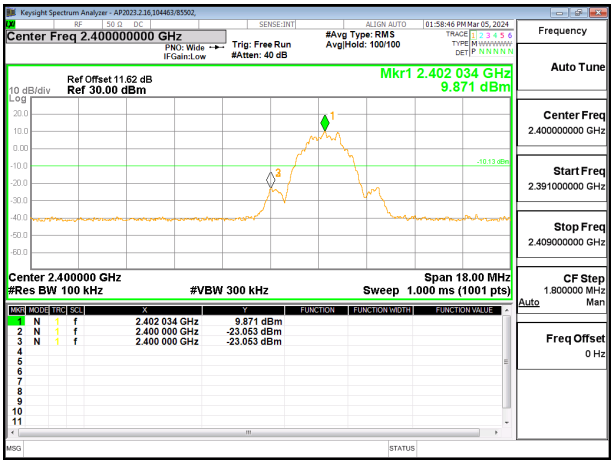
HIGH CHANNEL BANDEDGE



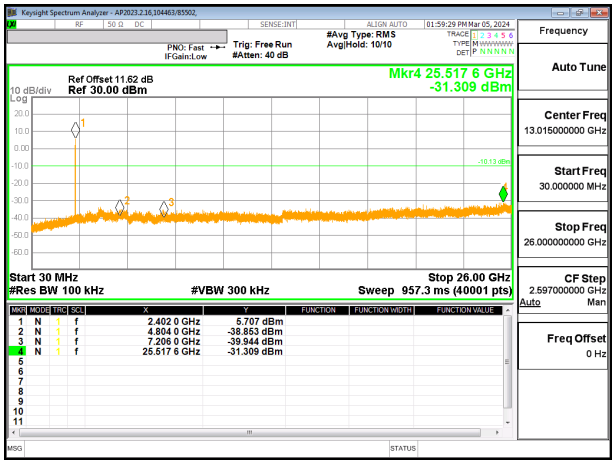
OUT-OF-BAND HIGH CHANNEL

9.6.2. BLE (2Mbps)

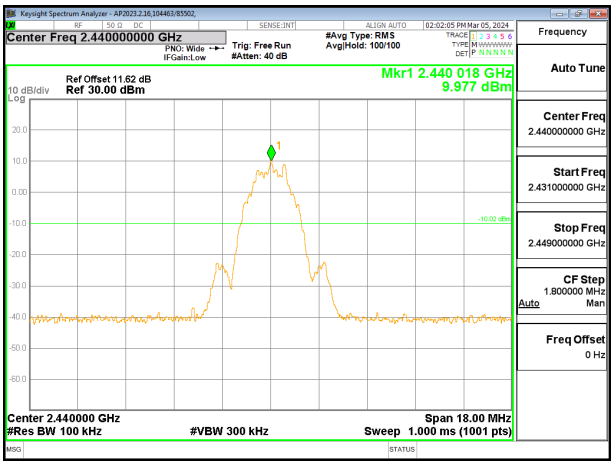
Chain 0



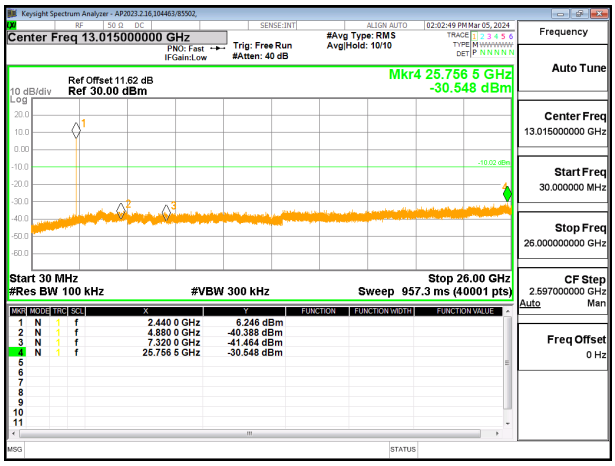
LOW CHANNEL BANDEDGE



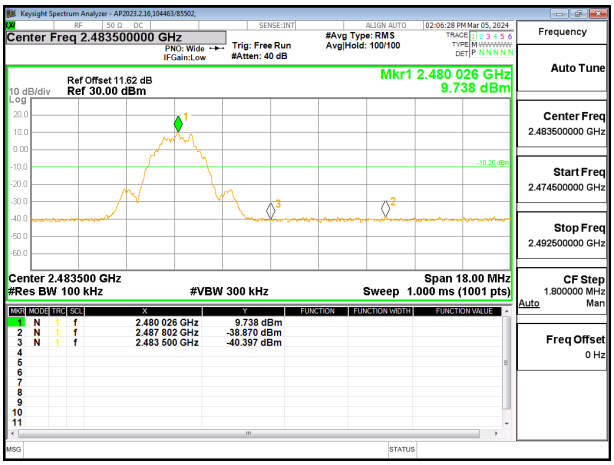
OUT-OF-BAND LOW CHANNEL



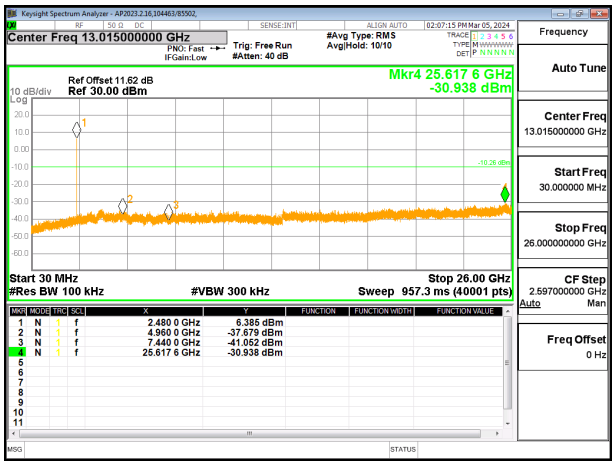
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

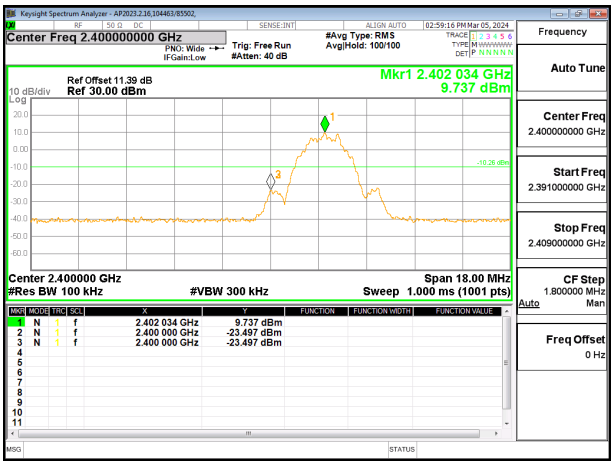


HIGH CHANNEL BANDEDGE

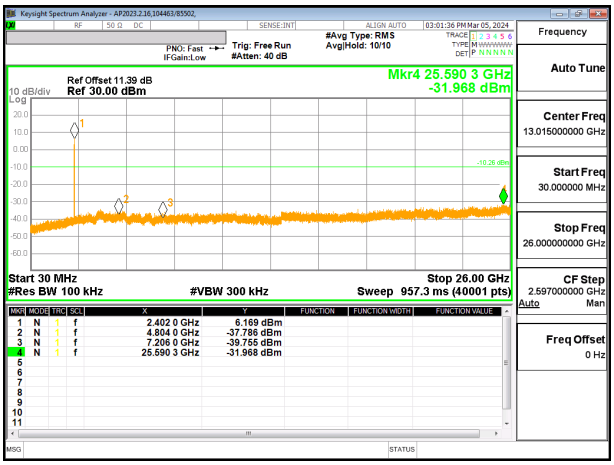


OUT-OF-BAND HIGH CHANNEL

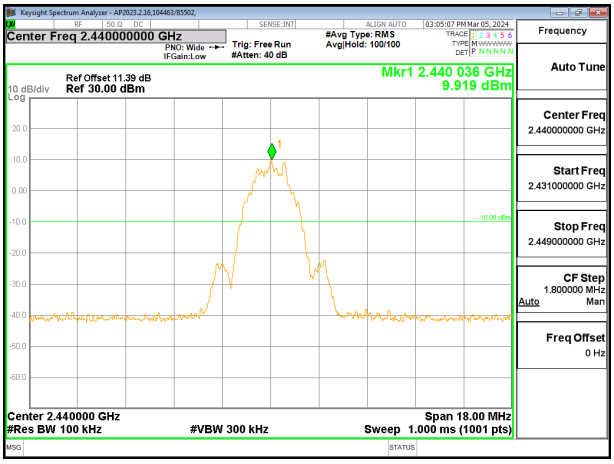
Chain 1



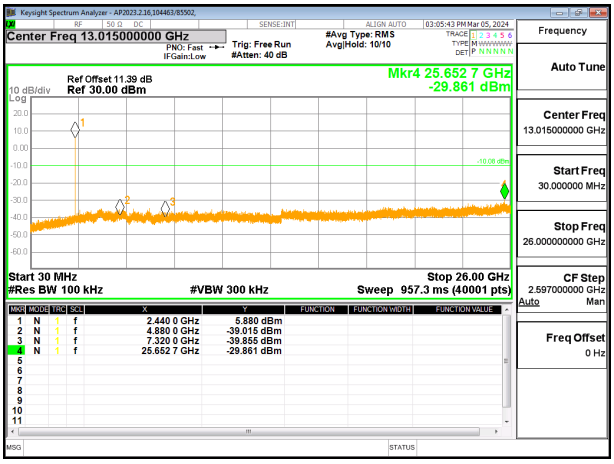
LOW CHANNEL BANDEDGE



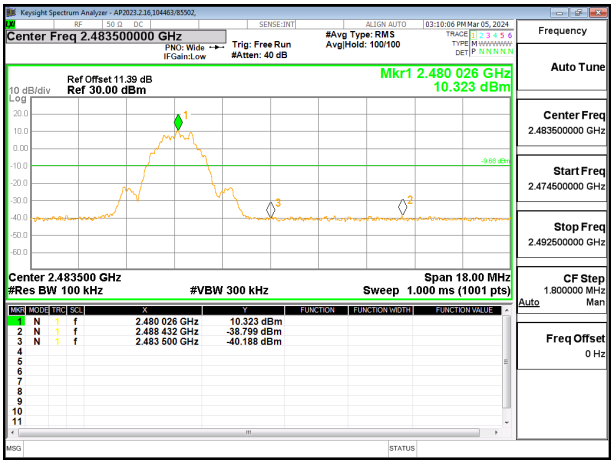
OUT-OF-BAND LOW CHANNEL



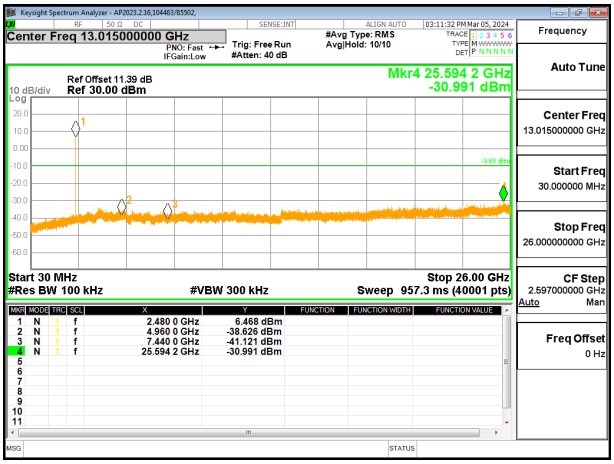
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



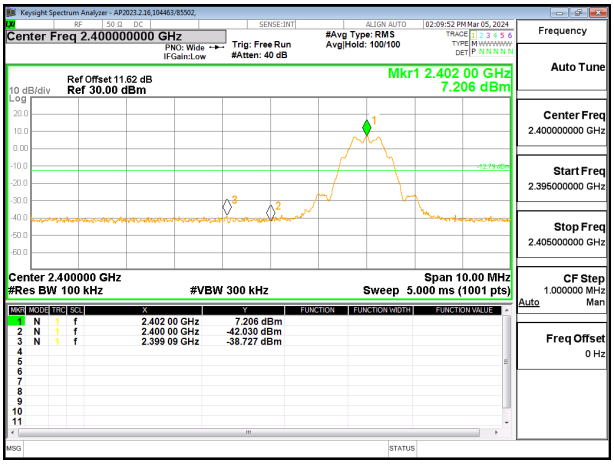
HIGH CHANNEL BANDEDGE



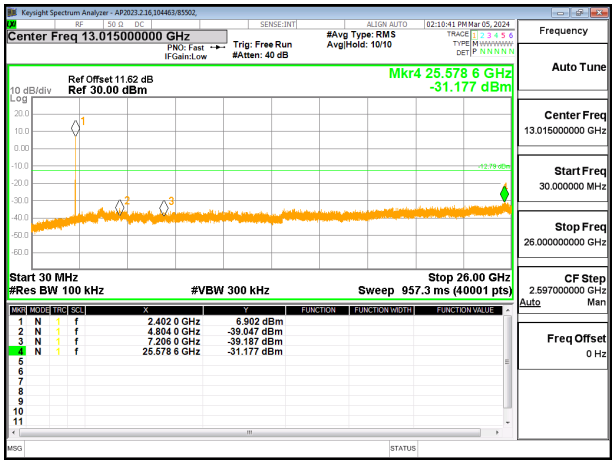
OUT-OF-BAND HIGH CHANNEL

9.6.3. BLE (125Kbps)

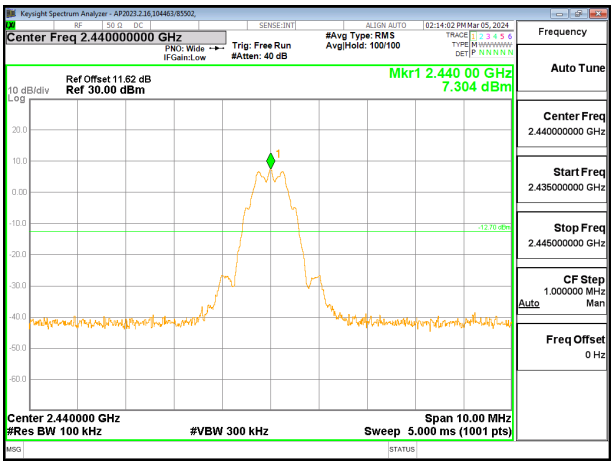
Chain 0



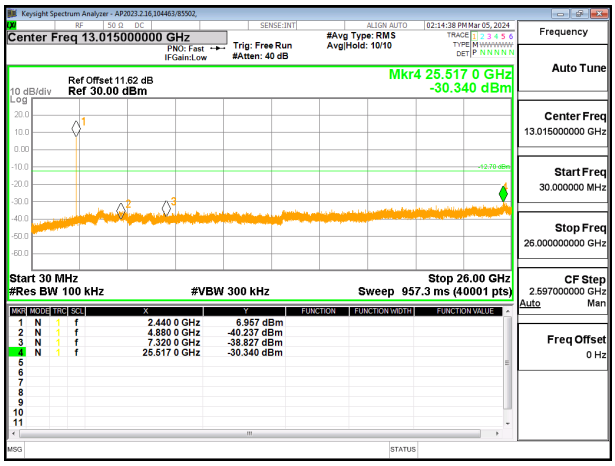
LOW CHANNEL BANDEDGE



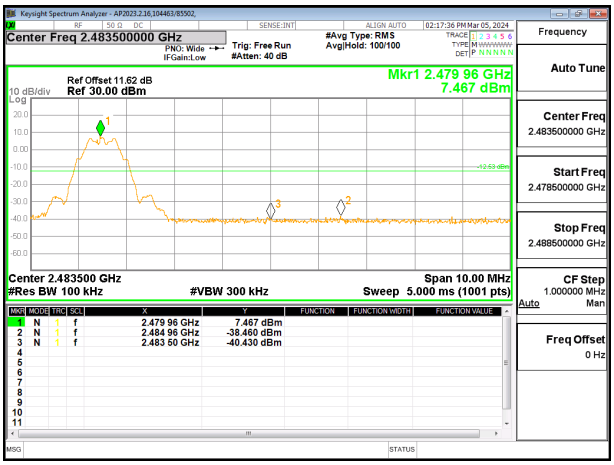
OUT-OF-BAND LOW CHANNEL



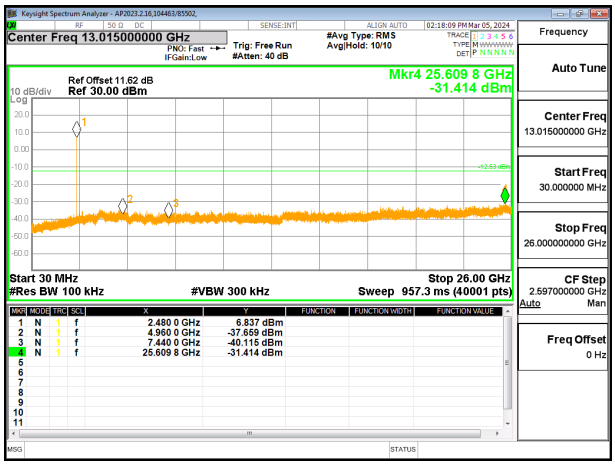
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

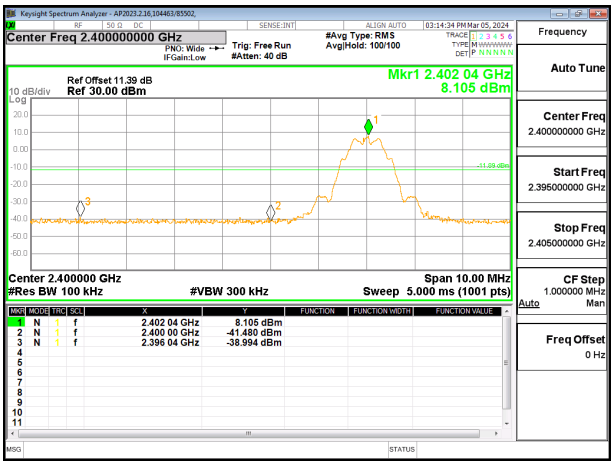


HIGH CHANNEL BANDEDGE

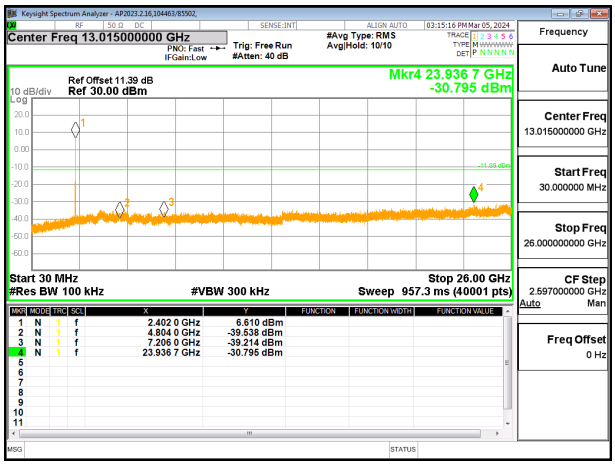


OUT-OF-BAND HIGH CHANNEL

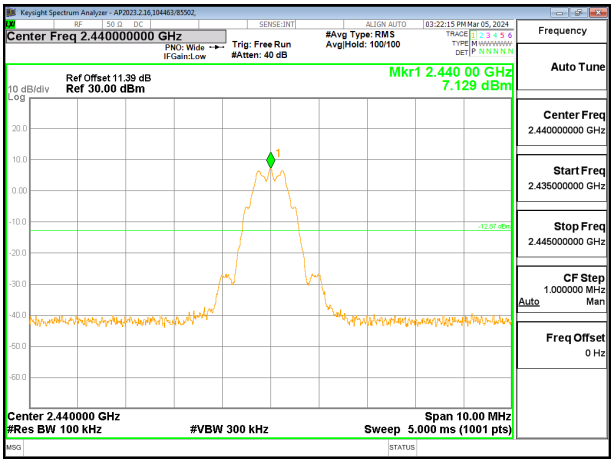
Chain 1



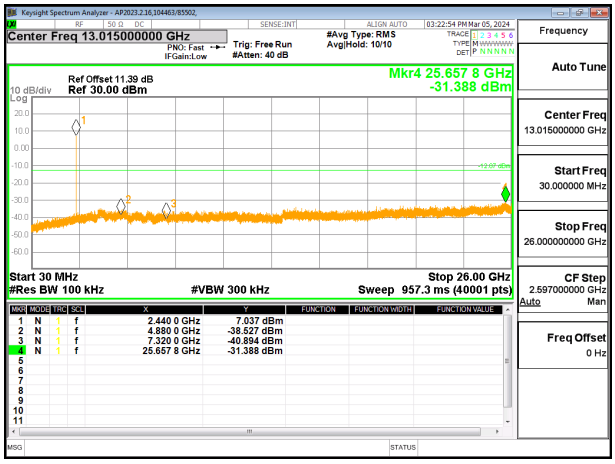
LOW CHANNEL BANDEDGE



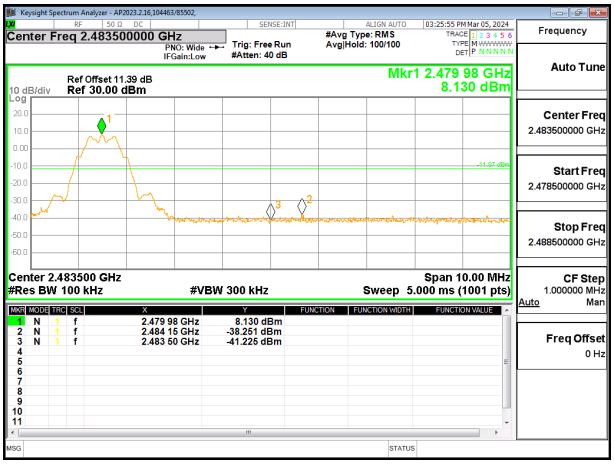
OUT-OF-BAND LOW CHANNEL



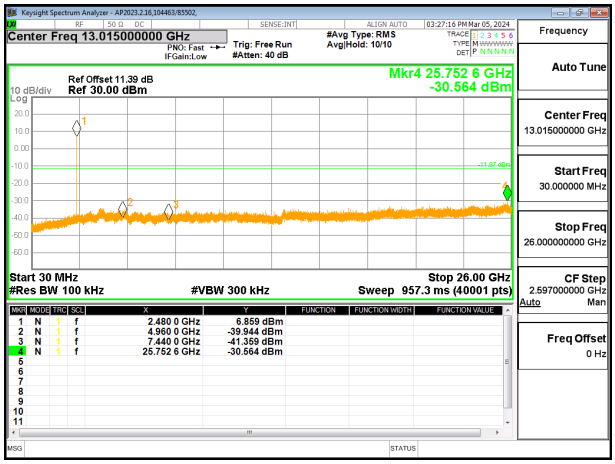
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



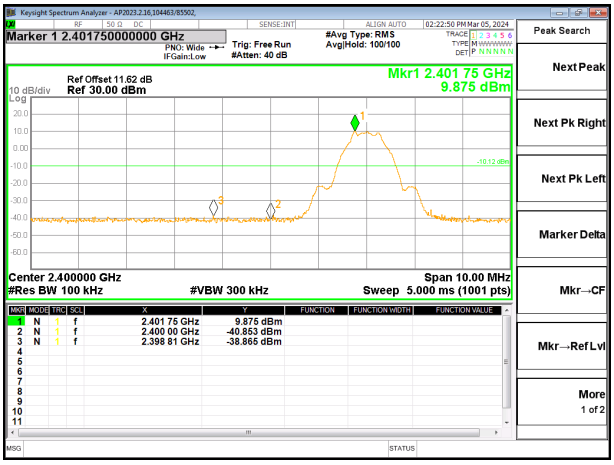
HIGH CHANNEL BANDEDGE



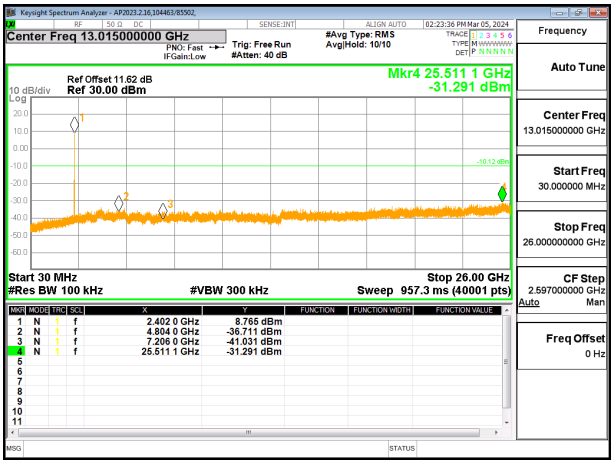
OUT-OF-BAND HIGH CHANNEL

9.6.4. BLE (500Kbps)

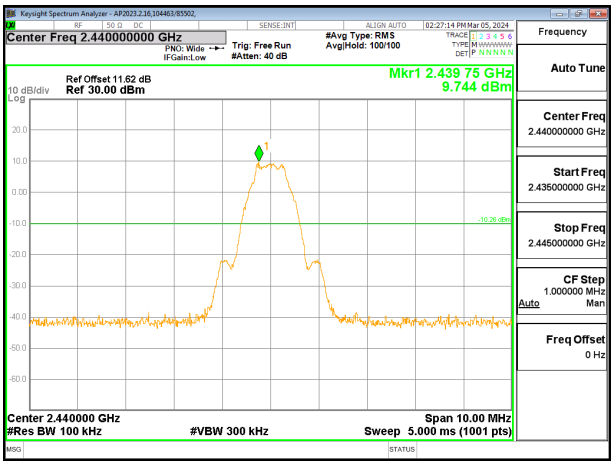
Chain 0



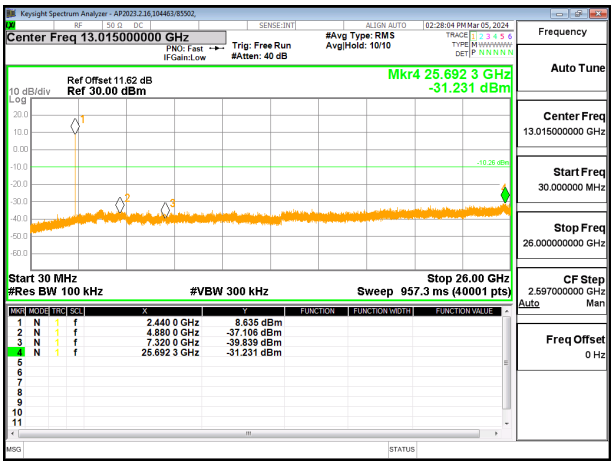
LOW CHANNEL BANDEDGE



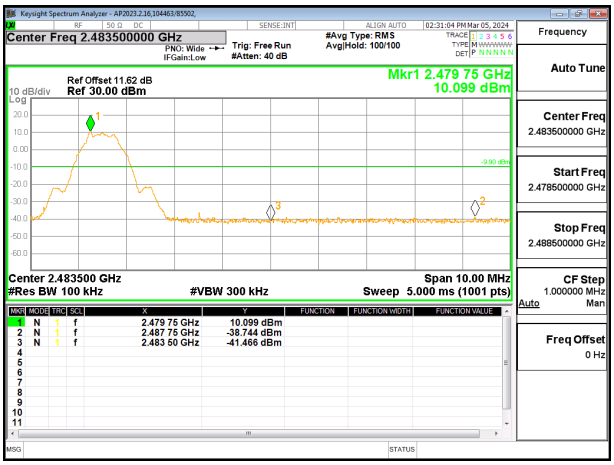
OUT-OF-BAND LOW CHANNEL



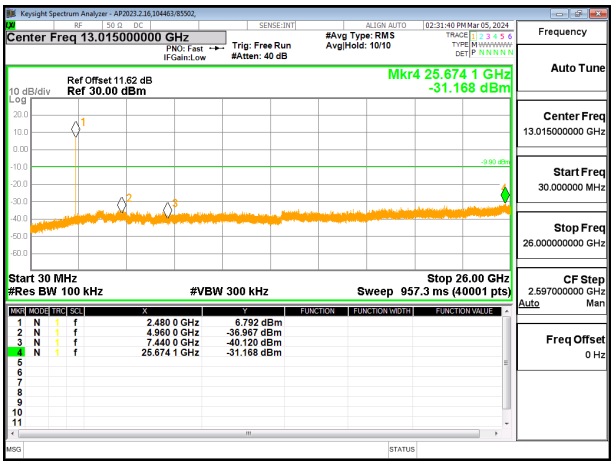
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL