

TEST REPORT

Report Number: R15626956-E1

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

Model : A04809

FCC ID : IPH-04809

IC : 1792A-04809

EUT Description : Extremity Worn Digital Transceiver

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

Date Of Issue:

2025-08-14

Prepared by:

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REPORT REVISION HISTORY

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	2025-08-14	Initial Issue	Chandler Stanley

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: Extremity Worn Digital Transceiver

MODEL: A04809

SERIAL NUMBER: 510595432 / 8U9000023

SAMPLE RECEIPT DATE: 2025-05-07, 2025-06-03, 2025-06-16, 2025-06-20 and
2025-06-23

DATE TESTED: 2025-05-12 To 2025-08-08

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Complies
ISED RSS-247 Issue 3	Complies
ISED RSS-GEN Issue 5 + A1 + A2	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
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2. TEST RESULTS SUMMARY

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

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

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

FCC Clause	ISED Clause	Requirement	Result	Comment
See Comment		Duty Cycle	Reporting purposes only	ANSI C63.10 Section 11.6.
-	RSS-GEN 6.7	99% OBW	Reporting purposes only	ANSI C63.10 Section 6.9.3.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Compliant	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power		
See Comment		Average power	Reporting purposes only	Per ANSI C63.10, Section 11.9.2.3.2.
15.247 (e)	RSS-247 5.2 (b)	PSD	Compliant	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions		
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions		
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions		

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A1 + A2, and RSS-247 Issue 3.

4. FACILITIES AND ACCREDITATION

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

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

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

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

5.2. DECISION RULES

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

5.3. MEASUREMENT UNCERTAINTY

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

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

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

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

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

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Final Voltage (dBuV)} = \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \text{LISN Insertion Loss}$$

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

6. EQUIPMENT UNDER TEST

6.1. EUT DESCRIPTION

The EUT is an extremity worn digital transceiver with BT, BLE, ANT/ANT+, 802.11b/g/n 2.4GHz WLAN, NFC, WWAN (NTN, LTE Cat M1), and Global Navigation Satellite System (GNSS) receiver. This report covers full testing on the BLE, ANT/ANT+, and 2.4 GHz WLAN radios.

6.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2472	802.11b	19.50	89.13
2412 - 2472	802.11g	21.91	155.24
2412 - 2472	802.11n HT20	21.64	145.88
2402 - 2480	ANT/ANT+	3.98	2.50
2402 - 2480	BLE 1Mbps	3.93	2.47
2402 - 2480	BLE 2Mbps	4.09	2.56

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna's gain and type, as provided by the manufacturer are as follows:
The radio utilizes a slot antenna, with a maximum gain of -1.04 dBi.

6.4. SOFTWARE AND FIRMWARE

SW Ver 16.17
HW Rev V5

6.5. WORST-CASE CONFIGURATION AND MODE

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

Apart from conducted power measurements for 2.4 WLAN, all other conducted measurements were taken at the mid channel power setting (highest) for all channels.

Power is not distributed equally among all channels and therefore radiated spurious emissions between 1GHz and 18GHz were performed on mid channel and the highest power low and high channel. Band edge scans were performed on all inner/outer channels up to mid channel power.

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

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adaptor	Garmin/Phihong	AQ27A-59CFA	N/A	N/A

I/O CABLES

I/O Cable List						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Proprietary	1	4 pin Proprietary	Non-Shielded	<3m	Used for charging only

TEST SETUP

EUT was configured using its own built-in push buttons prior to testing. For final emissions testing, the EUT was connected to AC mains.

SETUP DIAGRAMS

Please refer to R15626956-EP1 for setup diagrams

7. MEASUREMENT METHOD

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

6 dB BW: ANSI C63.10-2020 Subclause -11.8.2

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

Output Power: ANSI C63.10-2020 Subclause -11.9.1.2 Method PKPM1 Peak-reading power meter
ANSI C63.10-2020 Subclause -11.9.2.3.2 Method AVGPM-G (Measurement using a gated RF average-reading power meter)

PSD: ANSI C63.10-2020 Subclause -11.10.2 Method PKPSD (peak PSD)

Conducted emissions non-restricted frequency bands: ANSI C63.10-2020 Subclause -11.11 and 6.10.4

Radiated emissions restricted frequency bands: ANSI C63.10-2020 Subclause -11.12.1 and 6.10.5

General radiated emissions: ANSI C63.10 Subclause - 6.3-6.6

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.
Conducted Room 1					
90416	Spectrum Analyzer	Keysight Technologies	N9030A	2024-09-23	2025-09-23
214284	Spectrum Analyzer	Rohde & Schwarz	FSW50	2025-03-14	2026-03-14
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
Pad II	SMA Coaxial 10dB Attenuator	CentricRF	C18S2-10	2025-05-25	2026-05-25
Pad IV	SMA Coaxial 10dB Attenuator	CentricRF	C18S2-10	2024-08-17	2025-08-17
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	NA	NA
211057	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2024-08-01	2025-08-01
Power Software	Boonton Power Analyzer	Boonton	Version 3.0.13.0	NA	NA

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					
88761	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-10-05	2025-10-05
Gain-Loss Chains					
91977	Gain-loss string: 1-18GHz	Various	Various	2025-05-31	2026-05-31
Receiver & Software					
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-08-29	2025-08-29
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

Note: All equipment was in calibration at the time of testing.

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

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
0.009-30MHz					
135144	Active Loop Antenna	ETS-Lindgren	6502	2024-10-02	2025-10-02
30-1000 MHz					
90629	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-30	2026-01-30
1-18 GHz					
135143	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-02-07	2026-02-07
18-26.5 GHz					
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-826	2023-07-20	2025-07-20
Gain-Loss Chains					
91974	Gain-loss string: 0.009-30MHz	Various	Various	2024-05-08	2025-05-31
91976	Gain-loss string: 25-1000MHz	Various	Various	2024-05-08	2025-05-31
91979	Gain-loss string: 1-18GHz	Various	Various	2024-05-08	2025-05-31
135999	Gain-loss string: 18-40GHz	Various	Various	2024-05-08	2025-05-31
91974	Gain-loss string: 0.009-30MHz	Various	Various	2025-05-31	2026-05-31
91976	Gain-loss string: 25-1000MHz	Various	Various	2025-05-31	2026-05-31
91979	Gain-loss string: 1-18GHz	Various	Various	2025-05-31	2026-05-31
135999	Gain-loss string: 18-40GHz	Various	Various	2025-05-31	2026-05-31
Receiver & Software					
206496	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-08-29	2025-08-29
81018	Spectrum Analyzer	Agilent	E4446A	2024-07-31	2025-07-31
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
241205	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05

Test Equipment Used - 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	2025-05-31
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-04-09	2026-04-09
Gain-Loss Chains					
207640	Gain-loss string: 1-18GHz	Various	Various	2024-05-22	2025-05-31
207640	Gain-loss string: 1-18GHz	Various	Various	2025-06-13	2026-06-13
Receiver & Software					
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2025-04-21	2026-04-21
90416	Spectrum Analyzer	Keysight	N9030A	2024-09-23	2025-09-23
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	2025-04-17	2026-04-17
179892	Environmental Meter	Fisher Scientific	15-077-963	2024-08-12	2025-08-12
80391	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2024-08-01	2025-08-01
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2024-08-01	2025-08-01
52859	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2025-04-17	2026-04-17
236852	AC Power Source	California instruments	NA	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

9. ANTENNA PORT TEST RESULTS

NOTE: In order to reduce report size, only representative plots are shown for some tests.

9.1. ON TIME AND DUTY CYCLE

LIMITS

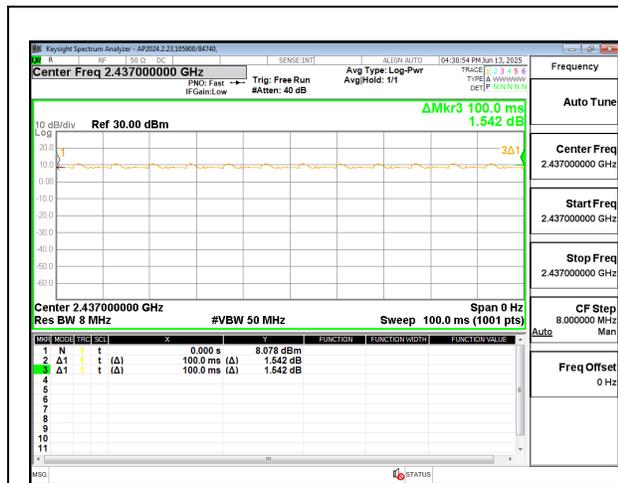
None; for reporting purposes only.

PROCEDURE

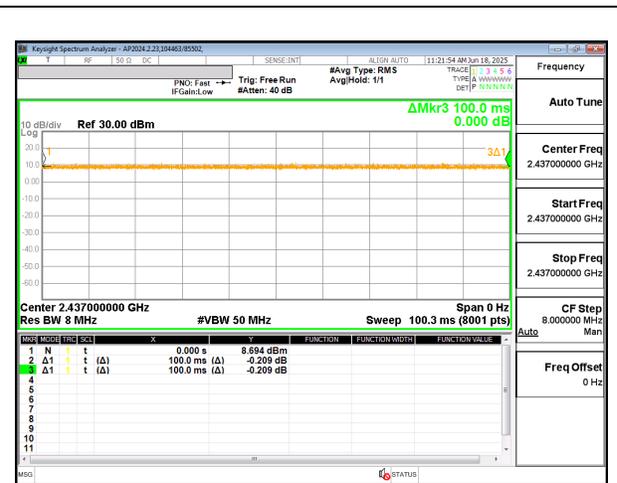
KDB 558074 Zero-Span Spectrum Analyzer Method.

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)
2.4GHz Band						
802.11b	100.00	100.00	1.000	100.00	0.00	0.010
802.11g	100.00	100.00	1.000	100.00	0.00	0.010
802.11n HT20	100.00	100.00	1.000	100.00	0.00	0.010
BLE 1 Mbps	100.00	100.00	1.000	100.00	0.00	0.010
BLE 2 Mbps	100.00	100.00	1.000	100.00	0.00	0.010
ANT	100.00	100.00	1.000	100.00	0.00	0.010



DUTY CYCLE – 11b



DUTY CYCLE – 11g



9.2. 99% BANDWIDTH

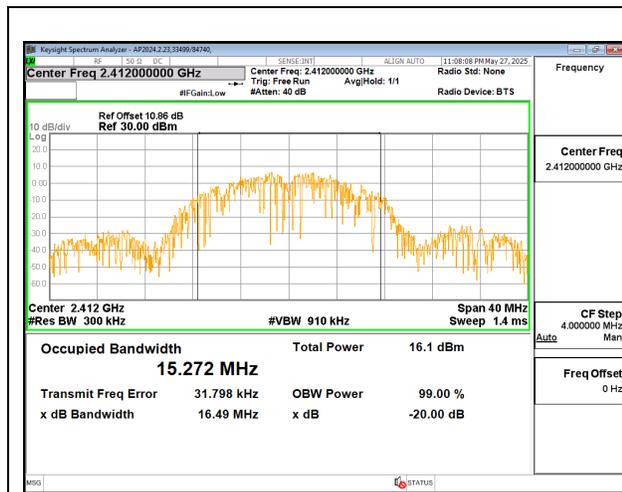
LIMITS

None; for reporting purposes only.

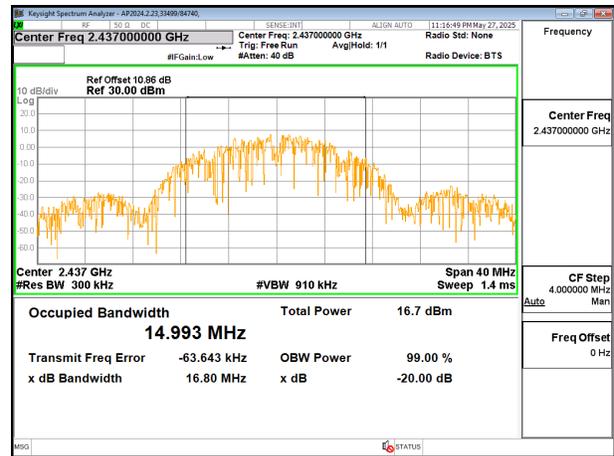
RESULTS

9.2.1. 802.11b MODE

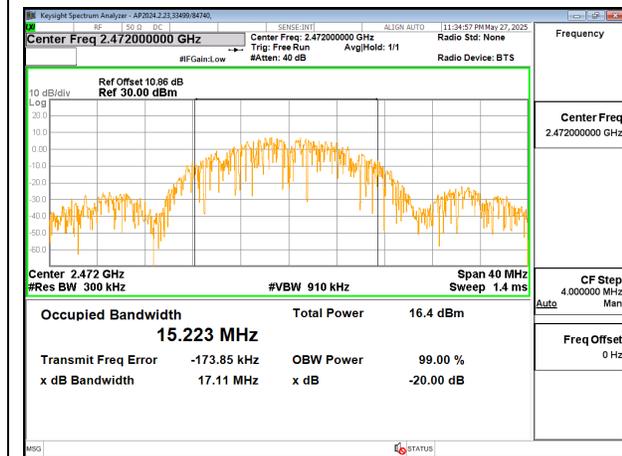
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	15.272
Mid	2437	14.993
High 13	2472	15.223



LOW CHANNEL 1



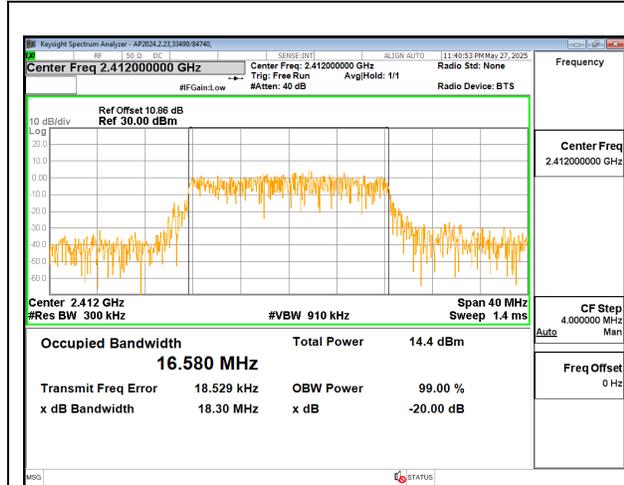
MID CHANNEL 6



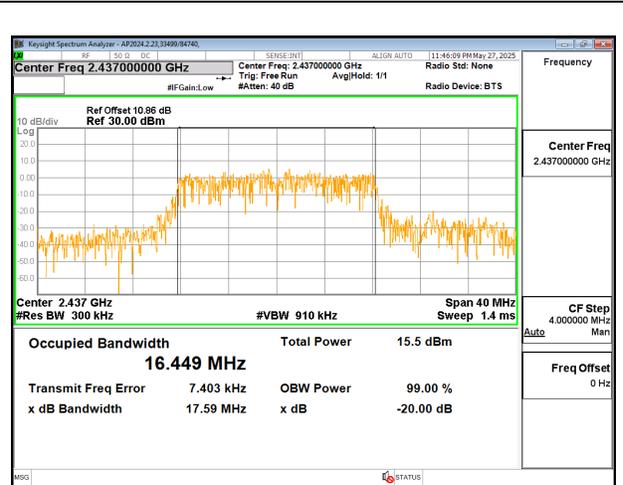
HIGH CHANNEL 13

9.2.2. 802.11g MODE

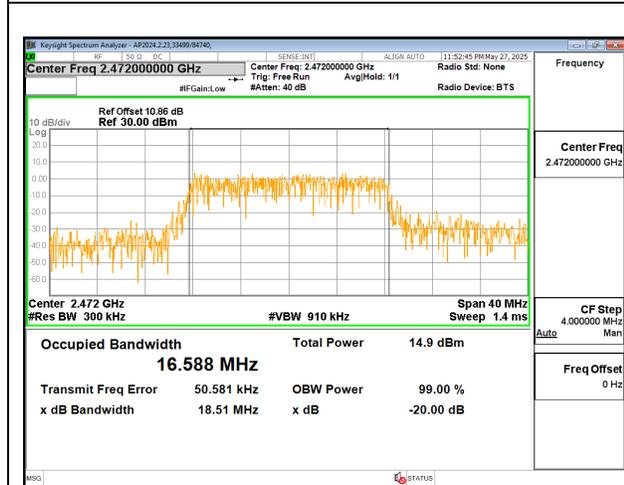
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.580
Mid	2437	16.449
High 13	2472	16.588



LOW CHANNEL 1



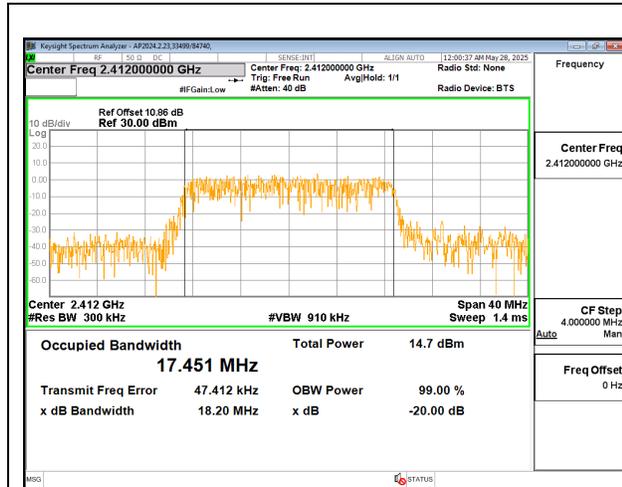
MID CHANNEL 6



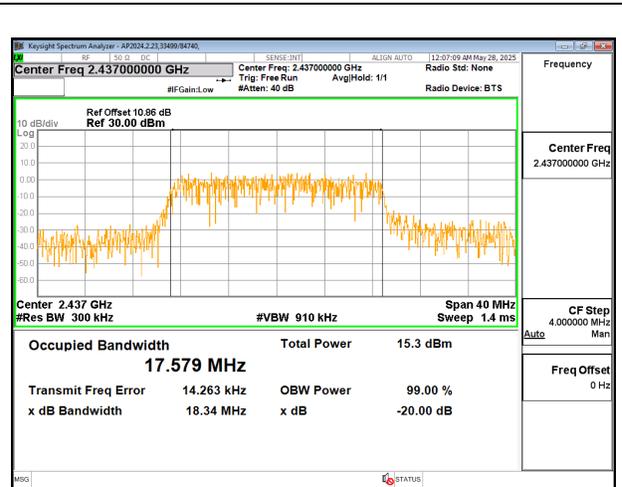
HIGH CHANNEL 13

9.2.3. 802.11n HT20 MODE

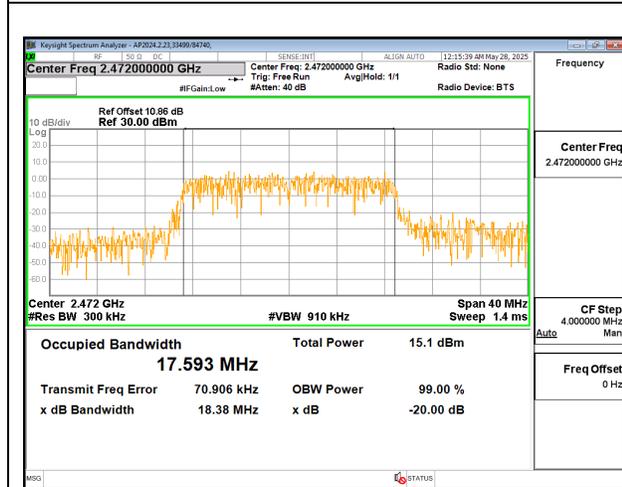
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.451
Mid	2437	17.579
High 13	2472	17.593



LOW CHANNEL 1



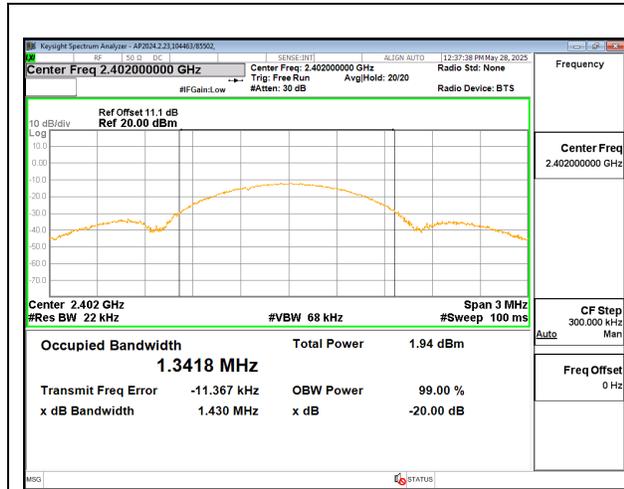
MID CHANNEL 6



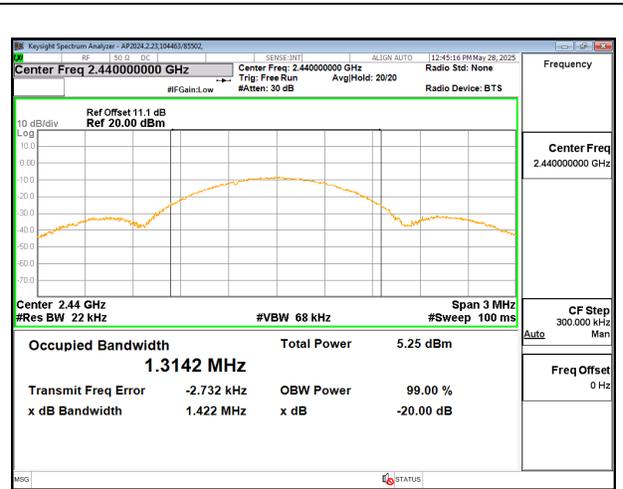
HIGH CHANNEL 13

9.2.4. BLE (1Mbps)

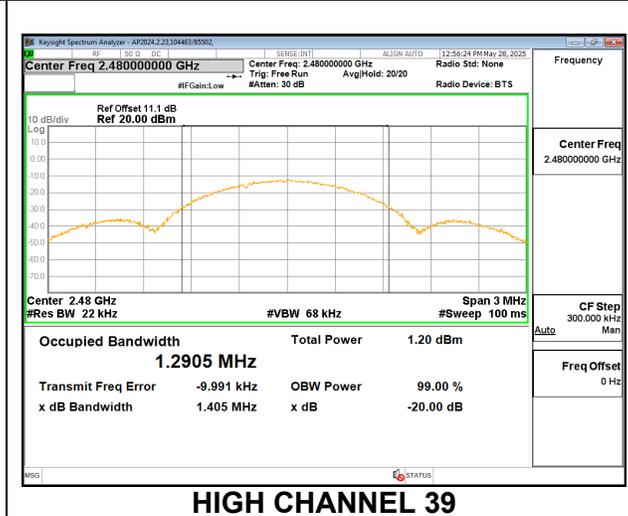
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 37	2402	1.3418
Low 0	2404	1.3739
Middle 17	2440	1.3142
High 35	2476	1.3203
High 36	2478	1.3721
High 39	2480	1.2905



LOW CHANNEL 37



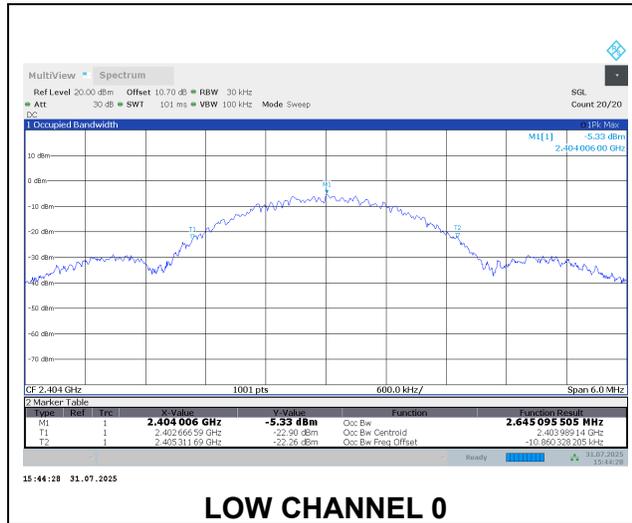
MID CHANNEL 17



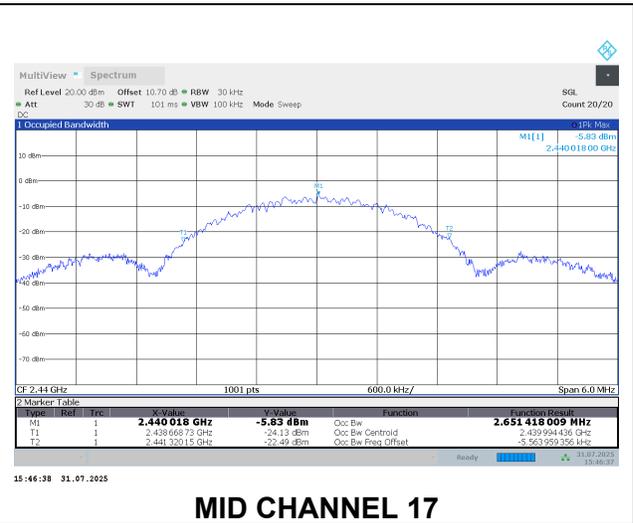
HIGH CHANNEL 39

9.2.5. BLE (2Mbps)

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low 0	2404	2.6451
Middle 17	2440	2.6514
High 35	2476	2.5861
High 36	2478	2.6062



LOW CHANNEL 0



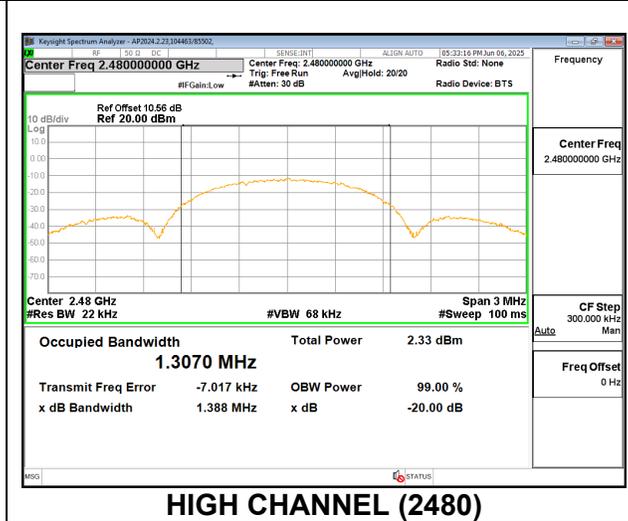
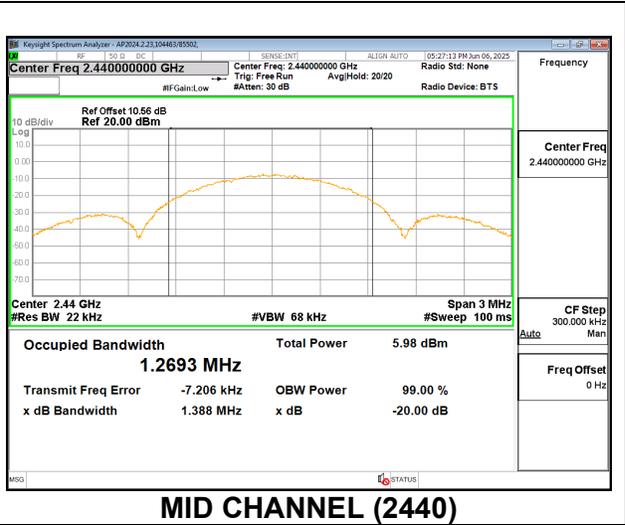
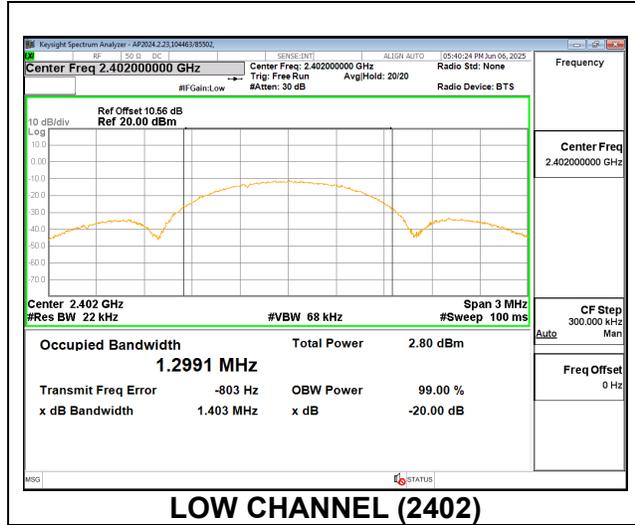
MID CHANNEL 17



HIGH CHANNEL 36

9.2.6. ANT

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.2991
Low	2404	1.2954
Middle	2440	1.2693
High	2478	1.2987
High	2480	1.3070



9.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)
 RSS-247 5.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

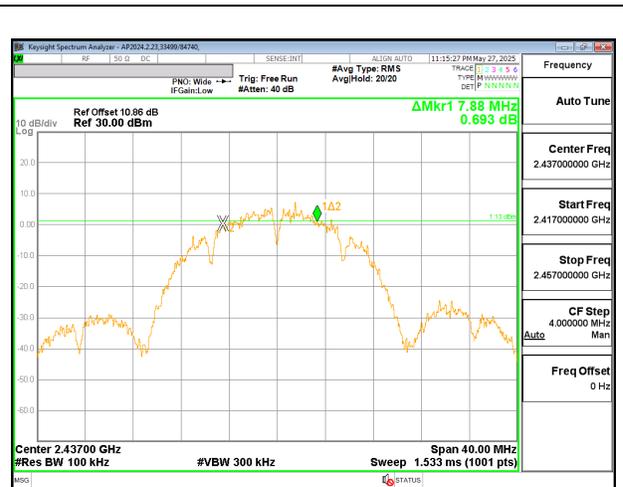
RESULTS

9.3.1. 802.11b MODE

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	8.40	0.5
Mid	2437	7.88	0.5
High 13	2472	9.16	0.5



LOW CHANNEL 1



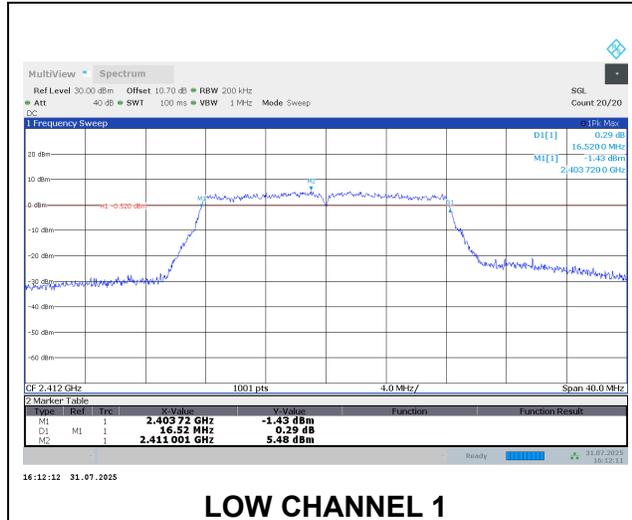
MID CHANNEL 6



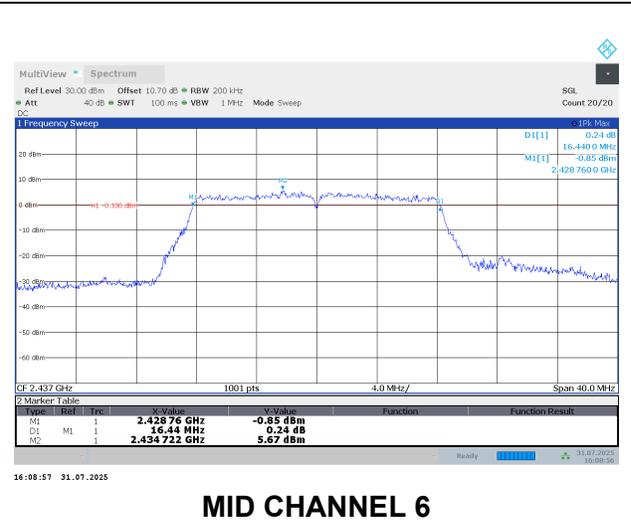
HIGH CHANNEL 13

9.3.2. 802.11g MODE

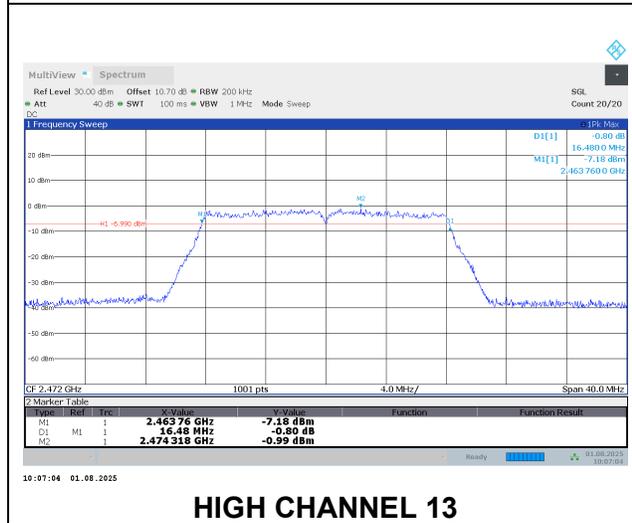
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.52	0.5
Mid	2437	16.44	0.5
High 13	2472	16.48	0.5



LOW CHANNEL 1



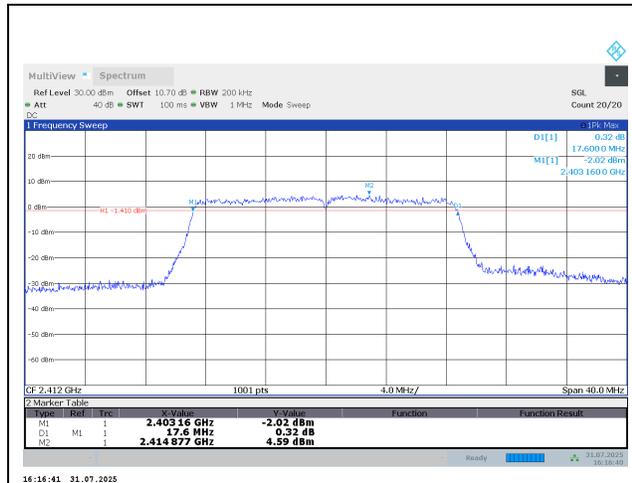
MID CHANNEL 6



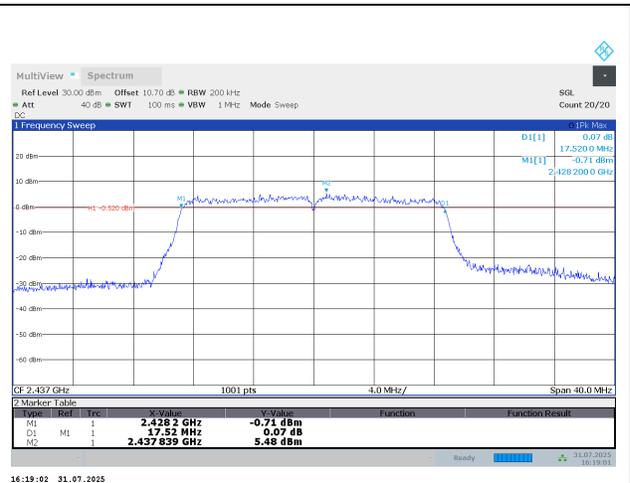
HIGH CHANNEL 13

9.3.3. 802.11n HT20 MODE

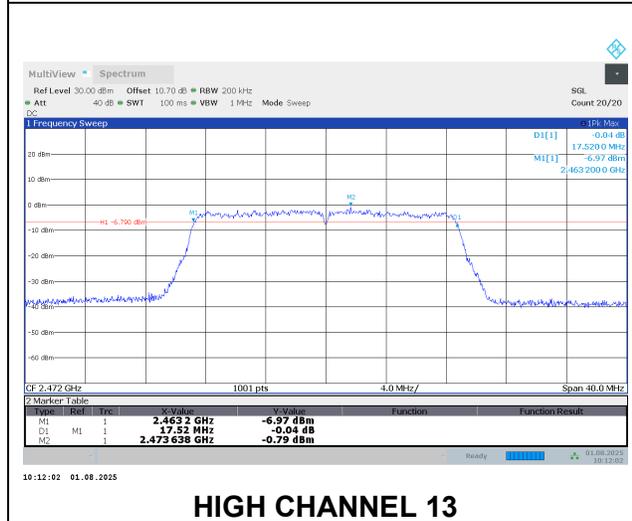
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.60	0.5
Mid	2437	17.52	0.5
High 13	2472	17.52	0.5



LOW CHANNEL 1



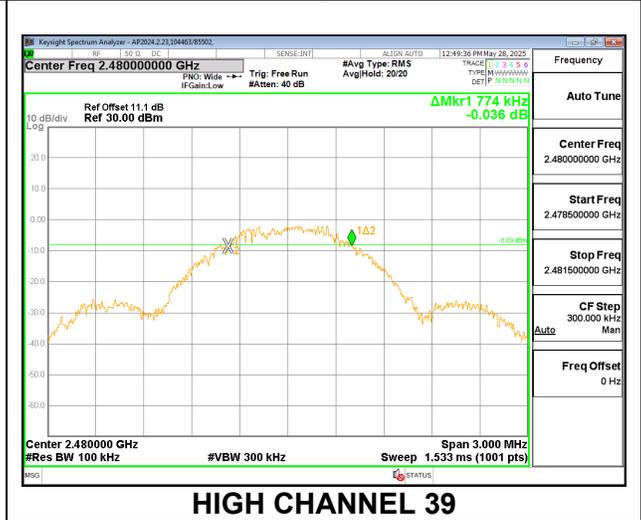
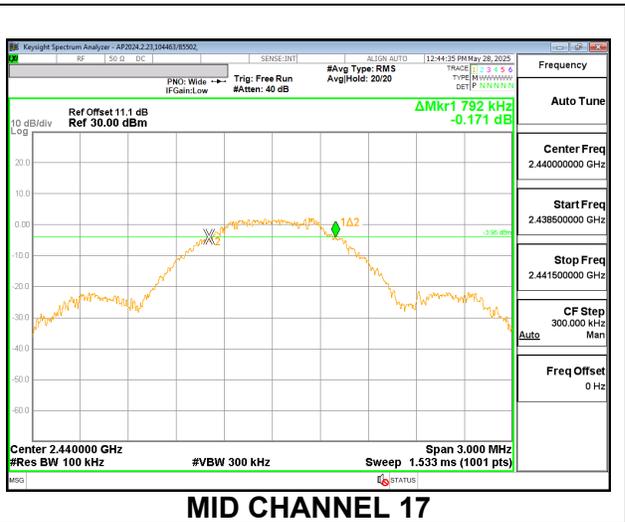
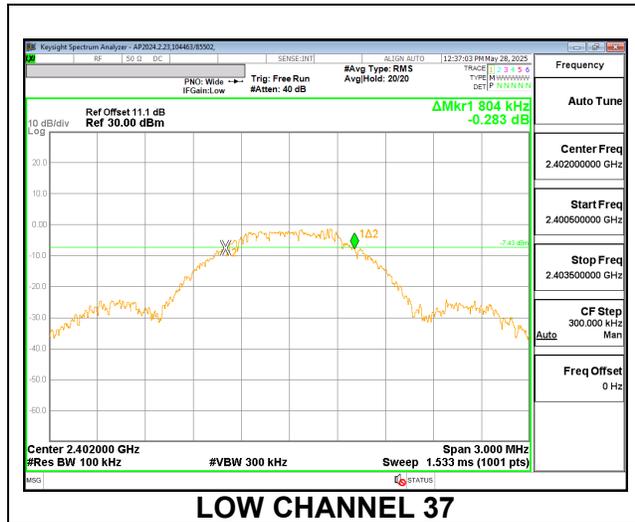
MID CHANNEL 6



HIGH CHANNEL 13

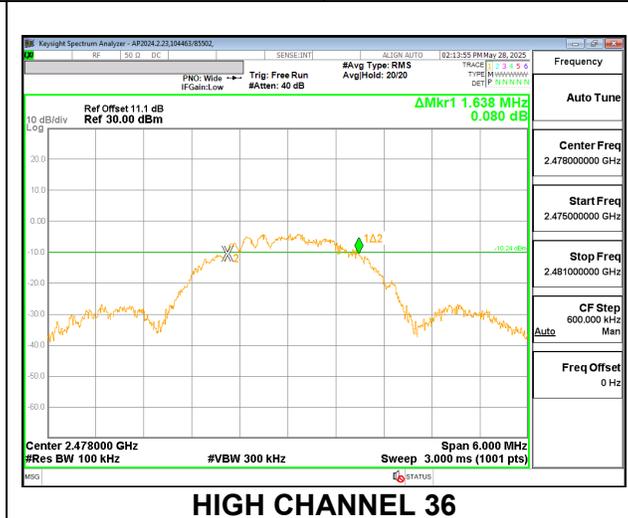
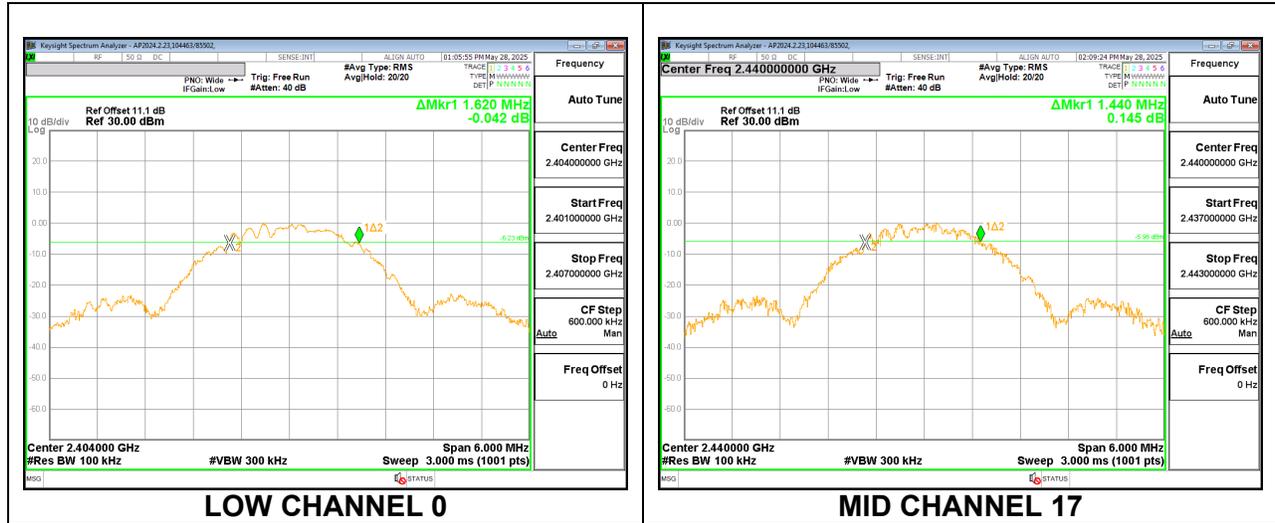
9.3.4. BLE (1Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 37	2402	0.804	0.5
Low 0	2404	0.798	0.5
Middle 17	2440	0.792	0.5
High 35	2476	0.813	0.5
High 36	2478	0.864	0.5
High 39	2480	0.774	0.5



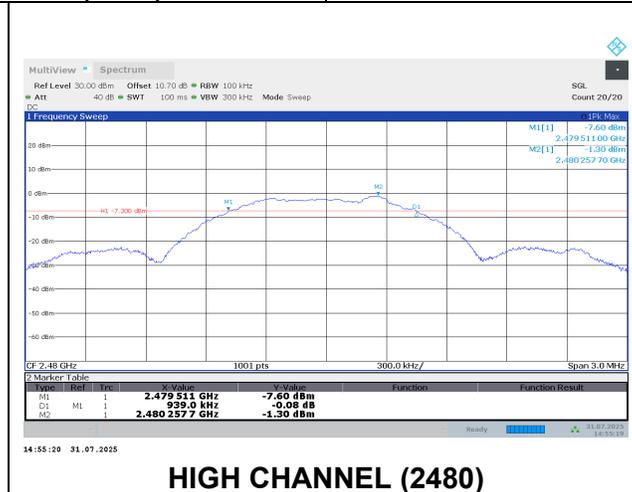
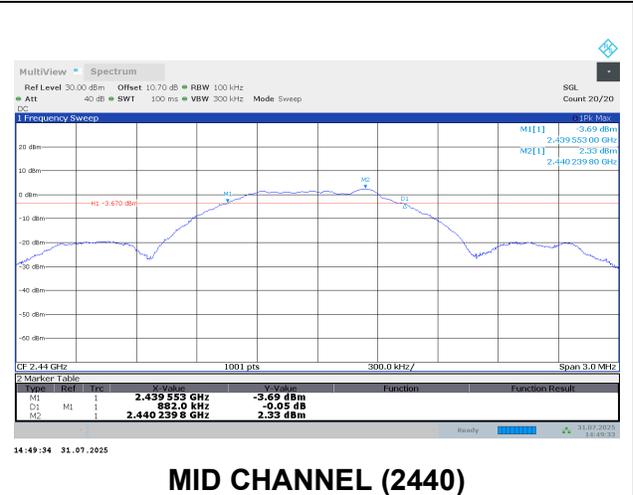
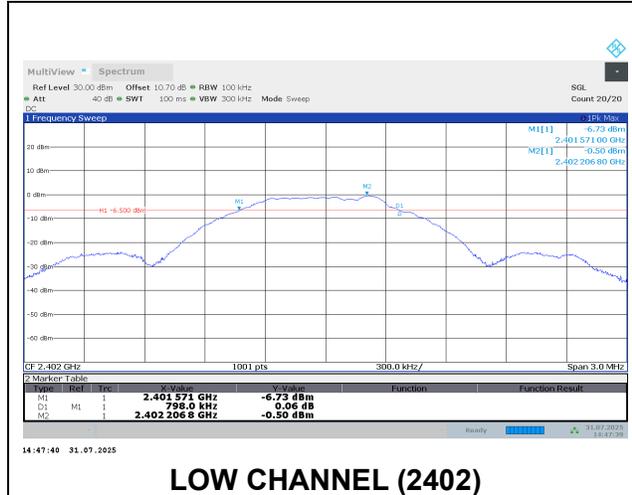
9.3.5. BLE (2Mbps)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low 0	2404	1.620	0.5
Middle 17	2440	1.440	0.5
High 35	2476	1.434	0.5
High 36	2478	1.638	0.5



9.3.6. ANT

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.798	0.5
Low	2404	0.891	0.5
Middle	2440	0.882	0.5
High	2478	0.801	0.5
High	2480	0.939	0.5



9.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)
RSS-247 5.4 (d)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a power meter.

For 2.4 WLAN, the cable assembly insertion loss of 12.37 dB (including 10 dB pad and 2.37 dB cable) was entered as an offset in the power meter.

For BLE, the cable assembly insertion loss of 10.35 dB (including 9.66 dB pad and 0.69 dB cable) was entered as an offset in the power meter.

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

9.4.1. 802.11b MODE

Test Engineer:	104463/85502
Test Date:	2025-06-30

Results

Channel	Frequency (MHz)	Measured Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	19.50	19.50	30.00	-10.50
Mid 6	2437	18.73	18.73	30.00	-11.27
High 11	2462	18.59	18.59	30.00	-11.41
High 12	2467	12.01	12.01	30.00	-17.99
High 13	2472	10.19	10.19	30.00	-19.81

9.4.2. 802.11g MODE

Test Engineer:	104463/85502
Test Date:	2025-06-30

Channel	Frequency (MHz)	Measured Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	20.35	20.35	30.00	-9.65
Low 2	2417	20.88	20.88	30.00	-9.12
Mid 6	2437	21.91	21.91	30.00	-8.09
High 10	2457	20.55	20.55	30.00	-9.45
High 11	2462	19.37	19.37	30.00	-10.63
High 12	2467	15.56	15.56	30.00	-14.44
High 13	2472	15.26	15.26	30.00	-14.74

9.4.3. 802.11n HT20 MODE

Test Engineer:	104463/85502
Test Date:	2025-06-30

Results

Channel	Frequency (MHz)	Measured Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low 1	2412	21.04	21.04	30.00	-8.96
Mid 6	2437	21.64	21.64	30.00	-8.36
High 10	2457	21.16	21.16	30.00	-8.84
High 11	2462	19.58	19.58	30.00	-10.42
High 12	2467	17.64	17.64	30.00	-12.36
High 13	2472	16.06	16.06	30.00	-13.94

9.4.4. BLE (1Mbps)

Tested By:	105900/84740
Date:	2025-05-12

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low 37	2402	0.800	30	-29.200
Low 0	2404	3.980	30	-26.020
Middle 17	2440	3.850	30	-26.150
High 35	2476	3.520	30	-26.480
High 36	2478	-0.230	30	-30.230
High 39	2480	0.130	30	-29.870

9.4.5. BLE (2Mbps)

Tested By:	105900/84740
Date:	2025-05-12

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low 0	2404	3.890	30	-26.110
Middle 17	2440	3.930	30	-26.070
High 35	2476	3.710	30	-26.290
High 36	2478	0.150	30	-29.850

9.4.6. ANT

Tested By:	105900/84740
Date:	2025-05-12

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	0.900	30	-29.100
Low	2404	4.090	30	-25.910
Middle	2440	4.010	30	-25.990
High	2478	3.780	30	-26.220
High	2480	0.220	30	-29.780

9.5. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

The transmitter output is connected to a power meter.

For 2.4 WLAN, the cable assembly insertion loss of 12.37 dB (including 10 dB pad and 2.37 dB cable) was entered as an offset in the power meter.

For BLE and ANT, the cable assembly insertion loss of 10.35 dB (including 9.66 dB pad and 0.69 dB cable) was entered as an offset in the power meter.

The power output was measured on the EUT antenna port using SMA cable with 10dB attenuator connected to a power meter via wideband power sensor. Gated average output power was read directly from power meter.

RESULTS

9.5.1. 802.11b MODE

Test Engineer:	104463/85502
Test Date:	2025-06-30

Channel	Frequency (MHz)	Power (dBm)
Low	2412	17.41
Mid	2437	16.53
High	2462	16.36
High	2467	9.67
High	2472	7.87

9.5.2. 802.11g MODE

Test Engineer:	104463/85502
Test Date:	2025-06-30

Channel	Frequency (MHz)	Power (dBm)
Low	2412	14.14
Low	2417	15.01
Mid	2437	16.46
High	2457	14.57
High	2462	12.71
High	2467	8.90
High	2472	8.65

9.5.3. 802.11n HT20 MODE

Test Engineer:	104463/85502
Test Date:	2025-06-30

Channel	Frequency (MHz)	Power (dBm)
Low	2412	14.25
Mid	2437	14.86
High	2457	14.63
High	2462	12.33
High	2467	9.91
High	2472	8.67

9.5.4. BLE (1Mbps)

Tested By:	105900/84740
Date:	2025-05-12

Channel	Frequency (MHz)	AV power (dBm)
Low 37	2402	0.416
Low 0	2404	3.675
Middle 17	2440	3.535
High 35	2476	3.189
High 36	2478	-0.666
High 39	2480	-0.244

9.5.5. BLE (2Mbps)

Tested By:	105900/84740
Date:	2025-05-12

Channel	Frequency (MHz)	AV power (dBm)
Low 0	2404	3.554
Middle 17	2440	3.579
High 35	2476	3.372
High 36	2478	-0.232

9.5.6. ANT

Tested By:	105900/84740
Date:	2025-05-12

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	0.535
Low	2404	3.784
Middle	2440	3.658
High	2478	3.543
High	2480	-0.139

9.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)
RSS-247 (5.2) (b)

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

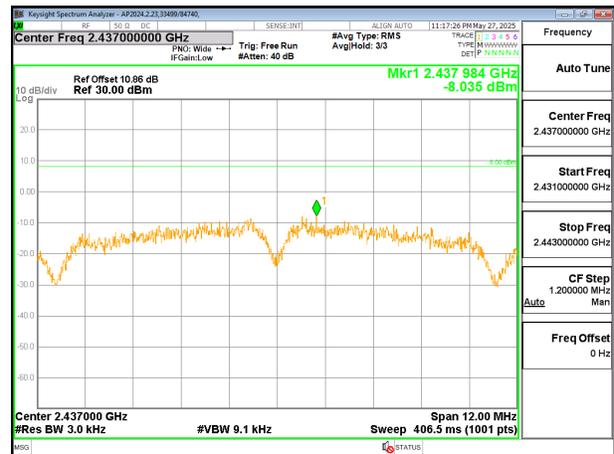
9.6.1. 802.11b MODE

PSD Results

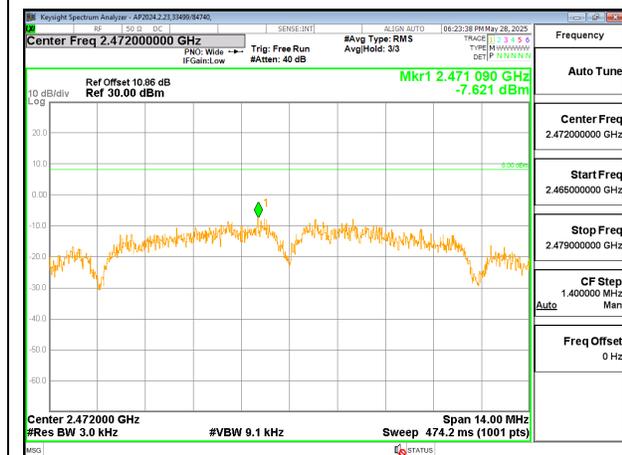
Channel	Frequency (MHz)	Meas. (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low 1	2412	-8.442	-8.44	8.0	-16.4
Mid 6	2437	-8.035	-8.04	8.0	-16.0
High 13	2472	-7.621	-7.62	8.0	-15.6



LOW CHANNEL 1



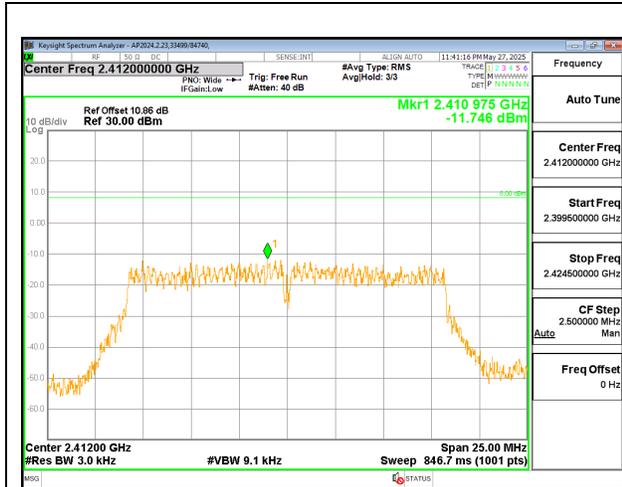
MID CHANNEL 6



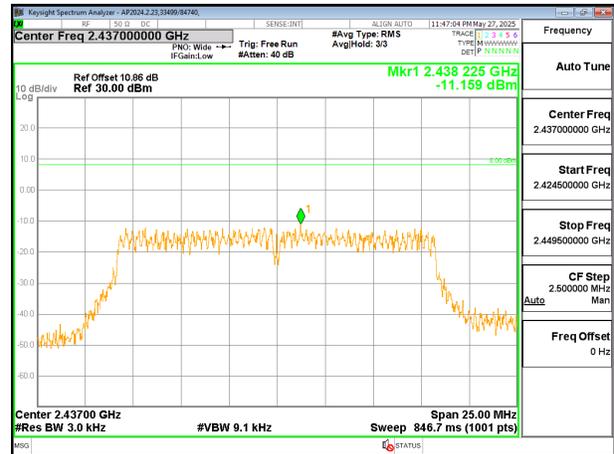
HIGH CHANNEL 13

9.6.2. 802.11g MODE

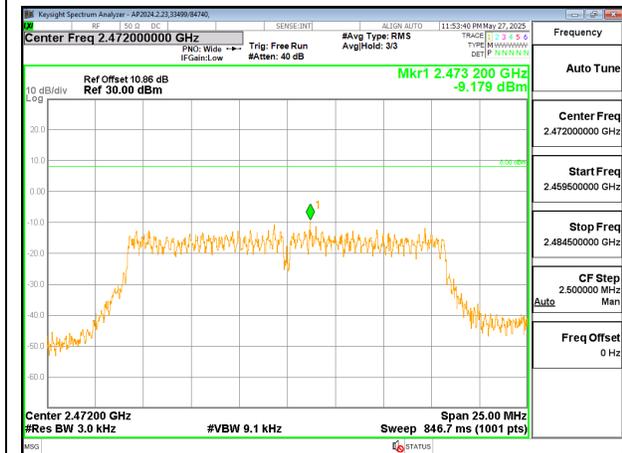
Channel	Frequency (MHz)	Meas. (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low 1	2412	-11.746	-11.75	8.0	-19.7
Mid 6	2437	-11.159	-11.16	8.0	-19.2
High 13	2472	-9.179	-9.18	8.0	-17.2



LOW CHANNEL 1



MID CHANNEL 6

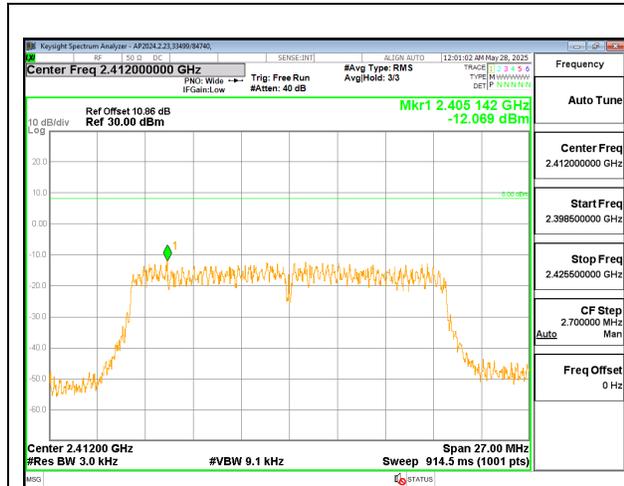


HIGH CHANNEL 13

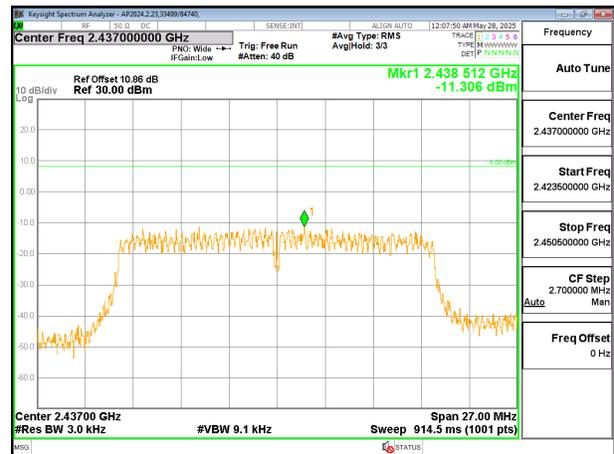
9.6.3. 802.11n HT20 MODE

PSD Results

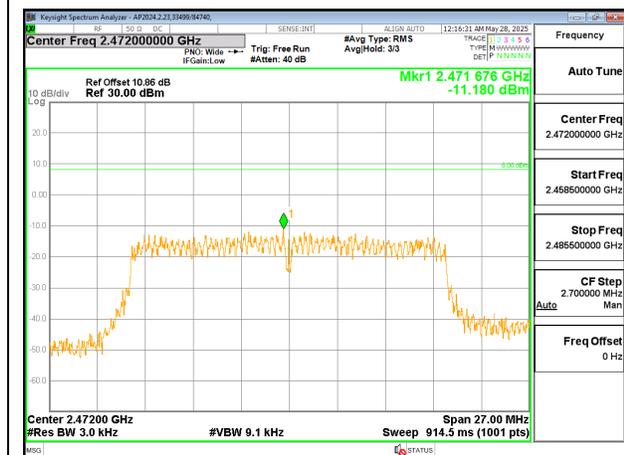
Channel	Frequency (MHz)	Meas. (dBm)	Total Corr'd PSD (dBm)	Limit (dBm)	Margin (dB)
Low 1	2412	-12.069	-12.07	8.0	-20.1
Mid 6	2437	-11.306	-11.31	8.0	-19.3
High 13	2472	-11.180	-11.18	8.0	-19.2



LOW CHANNEL 1



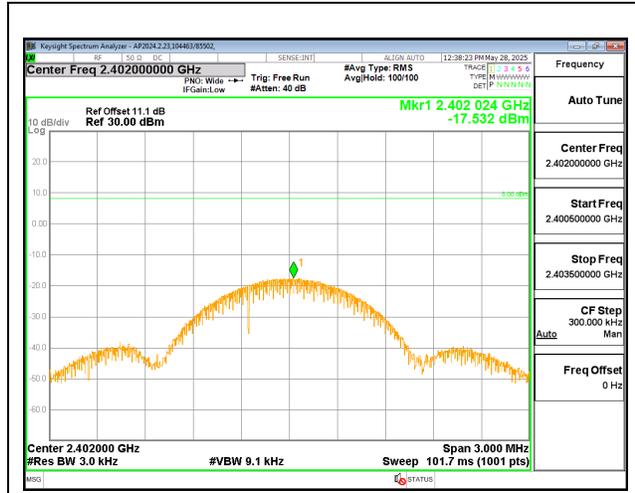
MID CHANNEL 6



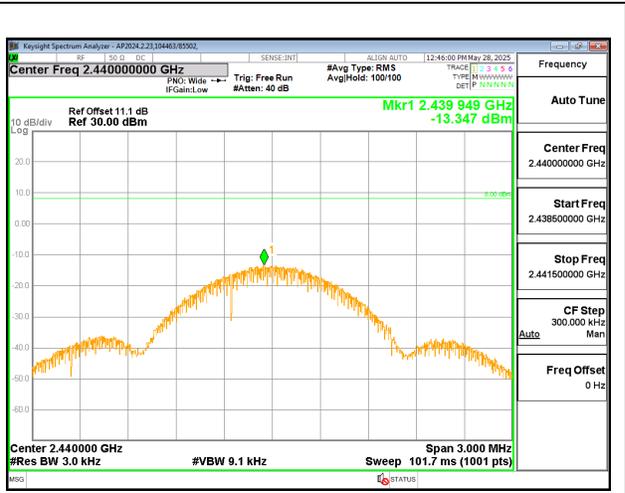
HIGH CHANNEL 13

9.6.4. BLE (1Mbps)

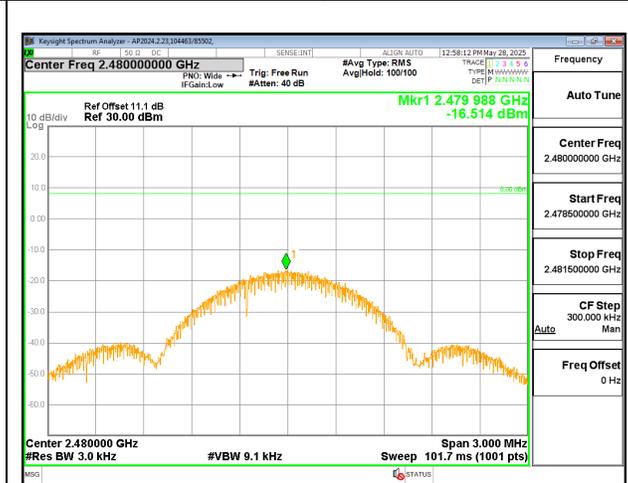
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 37	2402	-17.532	8	-25.53
Low 0	2404	-13.280	8	-21.28
Middle 17	2440	-13.347	8	-21.35
High 35	2476	-12.920	8	-20.92
High 36	2478	-17.800	8	-25.80
High 39	2480	-16.514	8	-24.51



LOW CHANNEL 37



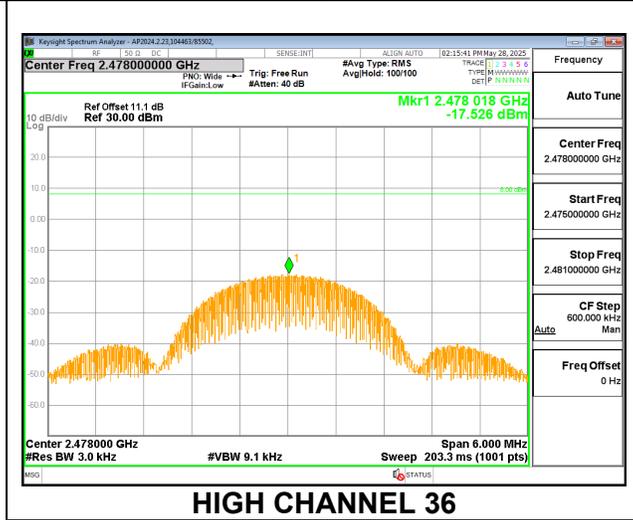
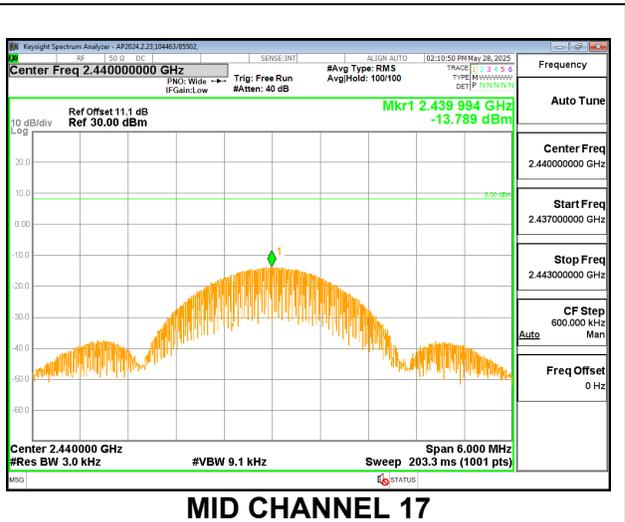
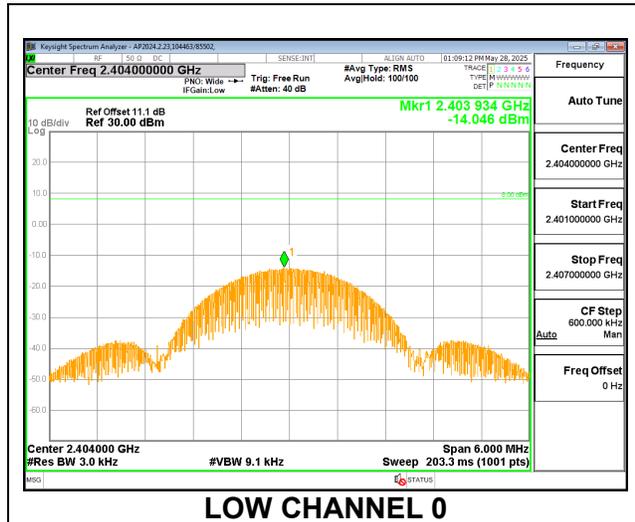
MID CHANNEL 17



HIGH CHANNEL 39

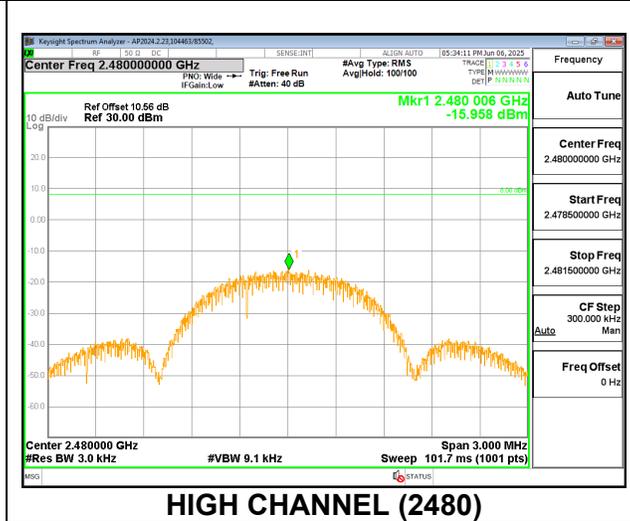
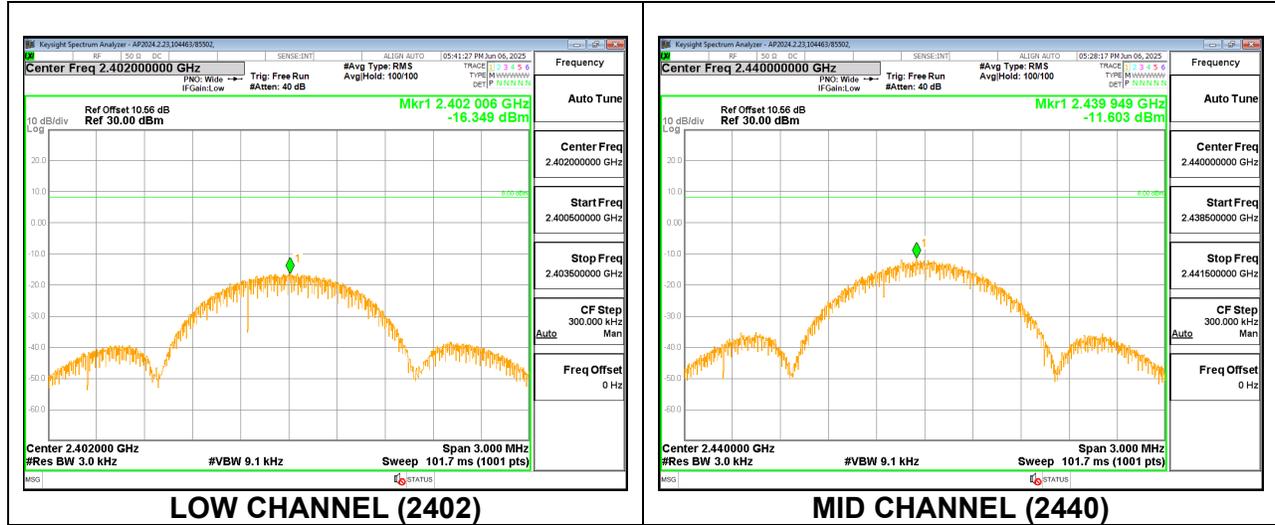
9.6.5. BLE (2Mbps)

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low 0	2404	-14.046	8	-22.05
Middle 17	2440	-13.789	8	-21.79
High 35	2476	-13.280	8	-21.28
High 36	2478	-17.526	8	-25.53



9.6.6. ANT

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-16.349	8	-24.35
Low	2404	-12.759	8	-20.76
Middle	2440	-11.603	8	-19.60
High	2478	-12.249	8	-20.25
High	2480	-15.958	8	-23.96



9.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

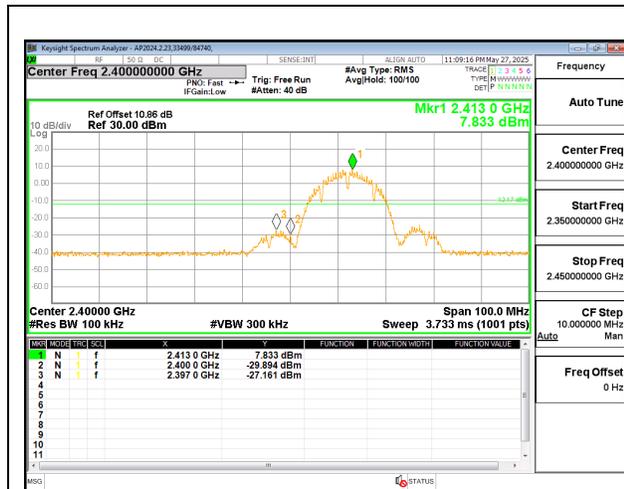
FCC §15.247 (d)
RSS-247 5.5

PROCEDURE

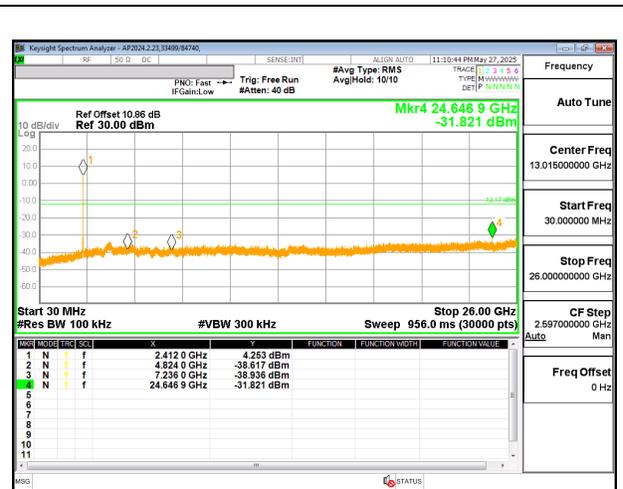
Output power was measured based on the use of a peak measurement; therefore, the required attenuation is -20 dBc.

RESULTS

9.7.1. 802.11b MODE



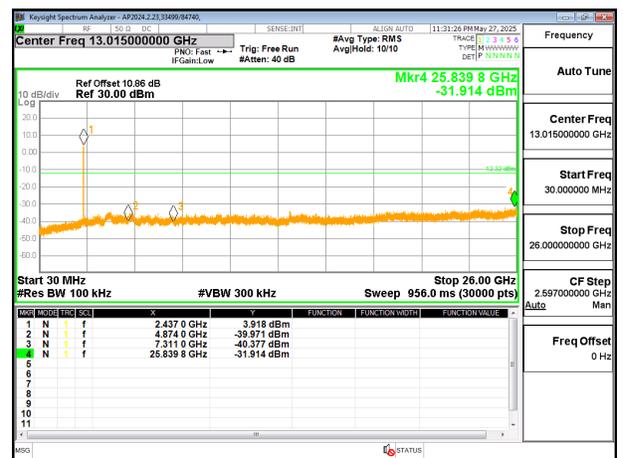
LOW CHANNEL 1 BANDEDGE



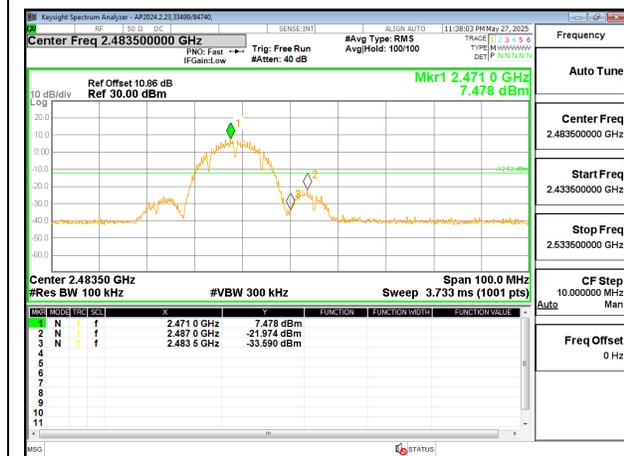
OUT-OF-BAND LOW CHANNEL 1



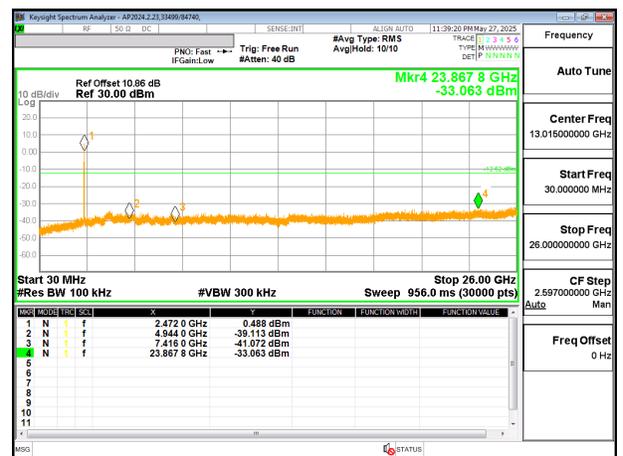
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 13 BANDEDGE

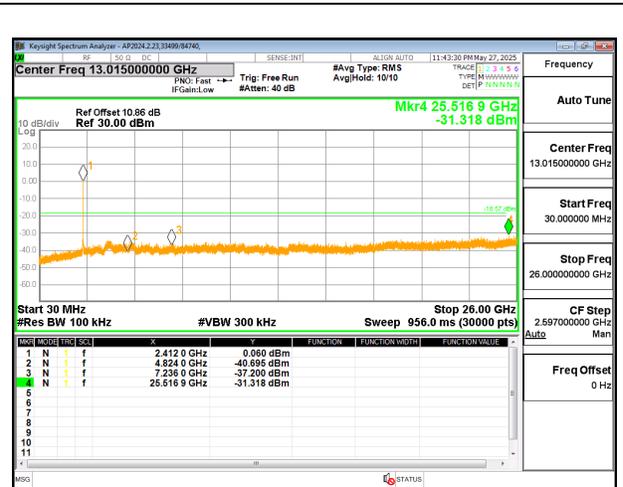


OUT-OF-BAND HIGH CHANNEL 13

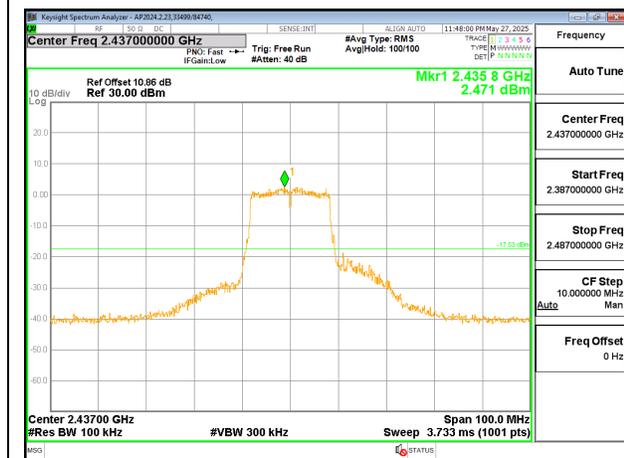
9.7.2. 802.11g MODE



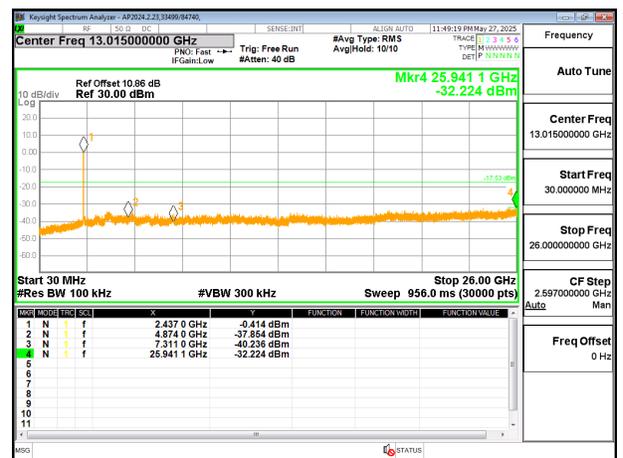
LOW CHANNEL 1 BANDEDGE



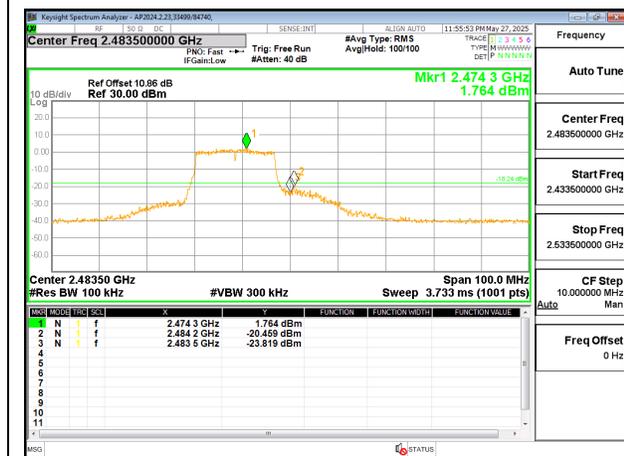
OUT-OF-BAND LOW CHANNEL 1



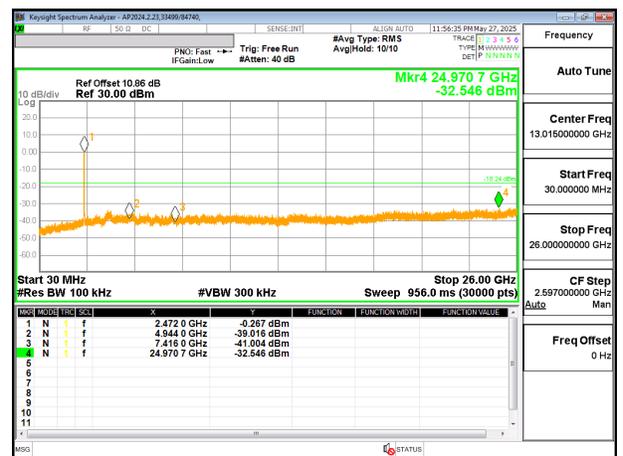
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 13 BANDEDGE

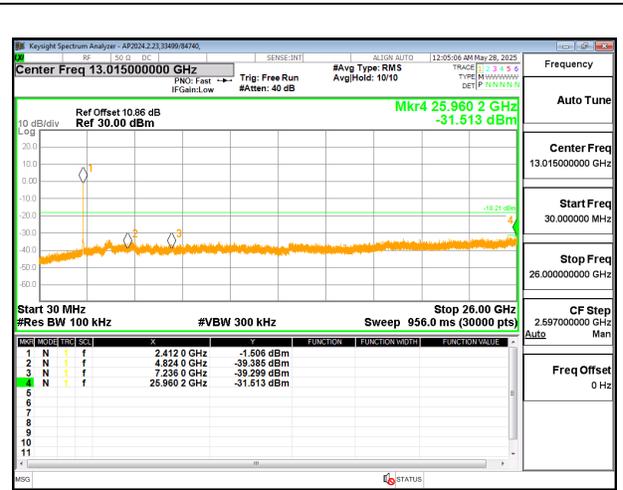


OUT-OF-BAND HIGH CHANNEL 13

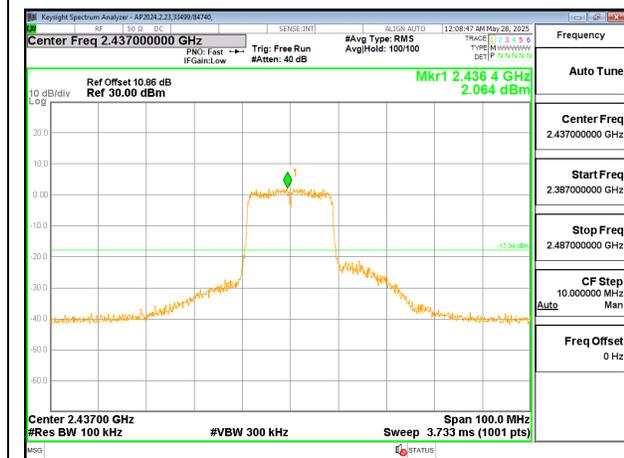
9.7.3. 802.11n HT20 MODE



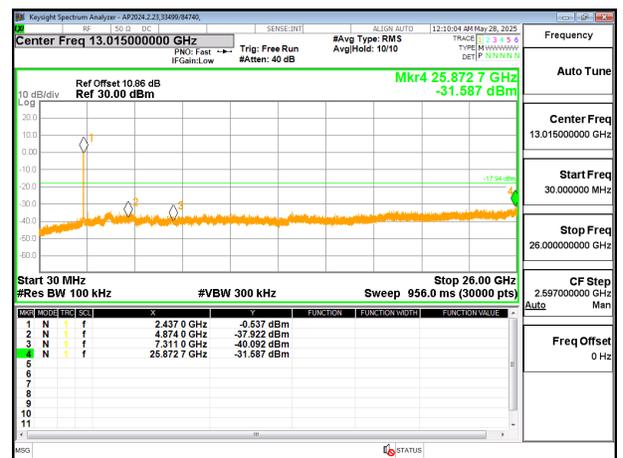
LOW CHANNEL 1 BANDEGE



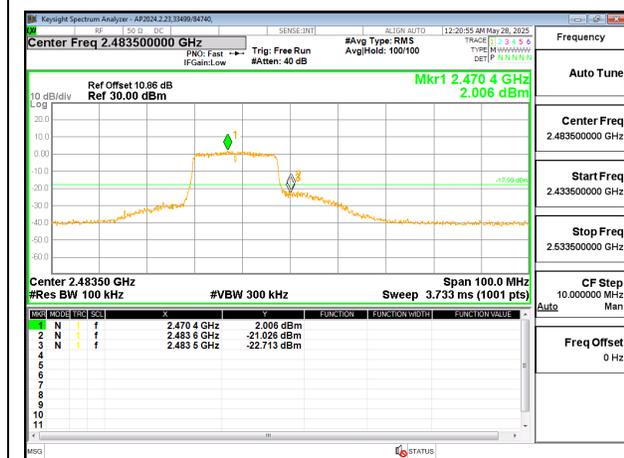
OUT-OF-BAND LOW CHANNEL 1



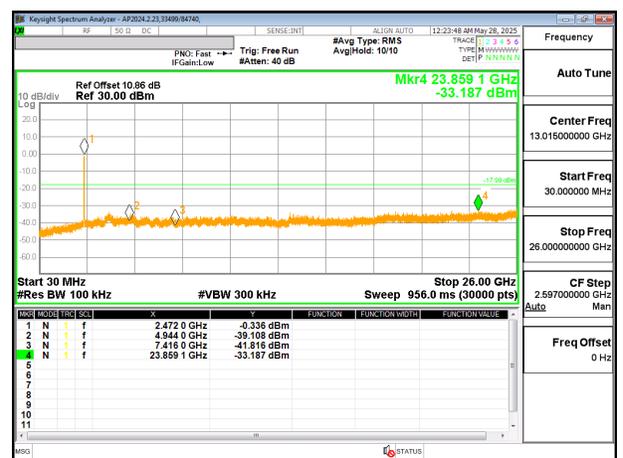
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL 13 BANDEGE

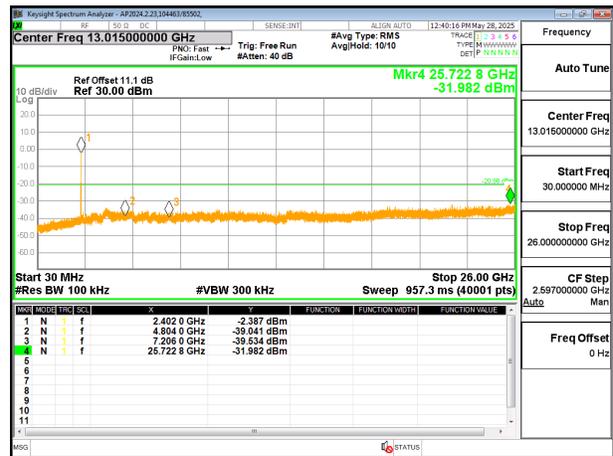


OUT-OF-BAND HIGH CHANNEL 13

9.7.4. BLE (1Mbps)



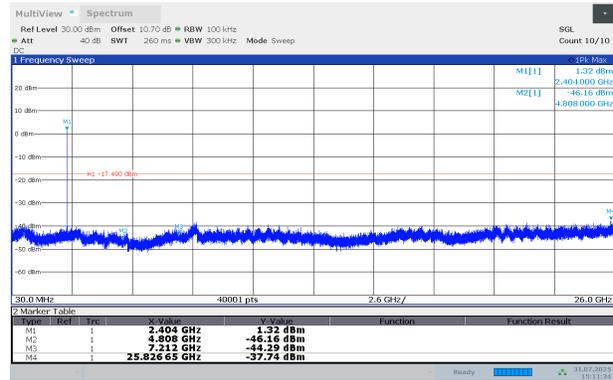
LOW CHANNEL 37 BANDEDGE



OUT-OF-BAND LOW CHANNEL 37



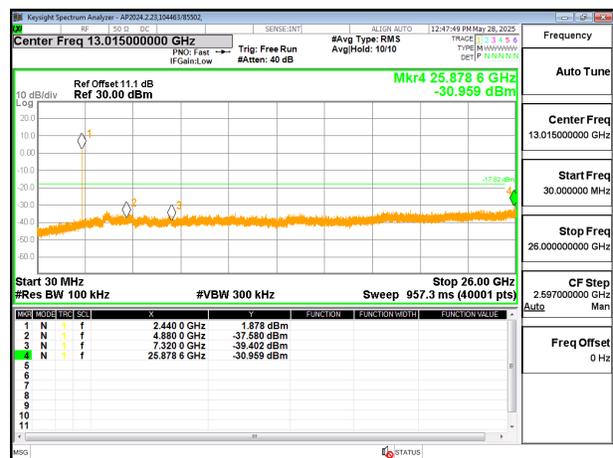
LOW CHANNEL 0 BANDEDGE



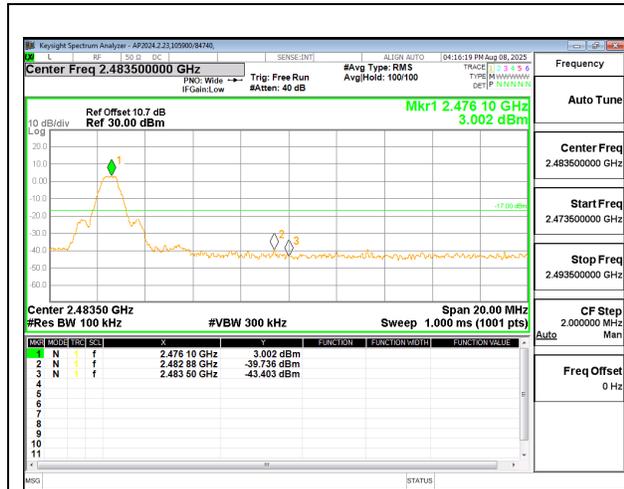
OUT-OF-BAND LOW CHANNEL 0



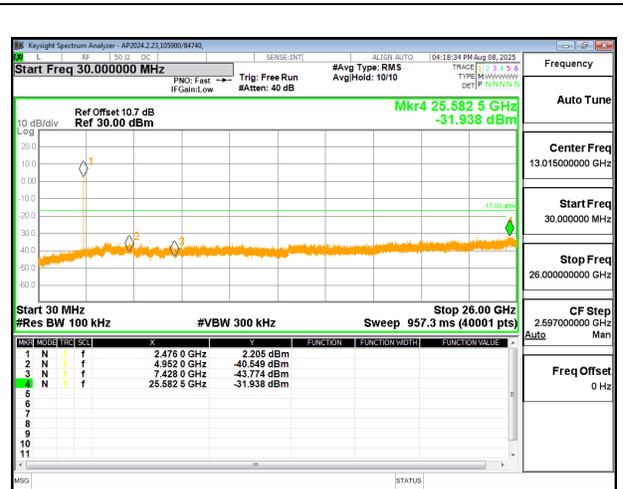
MID CHANNEL 17 IN-BAND REFERENCE LEVEL



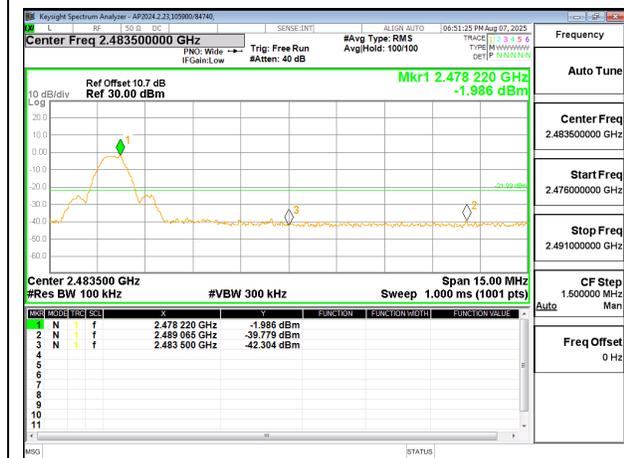
OUT-OF-BAND MID CHANNEL 17



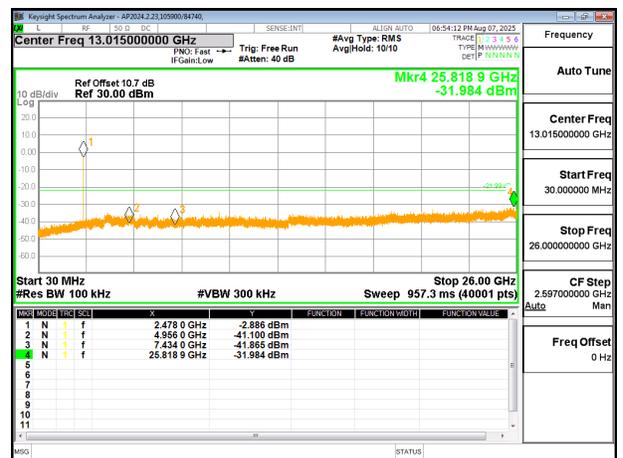
HIGH CHANNEL 35 BANDEDGE



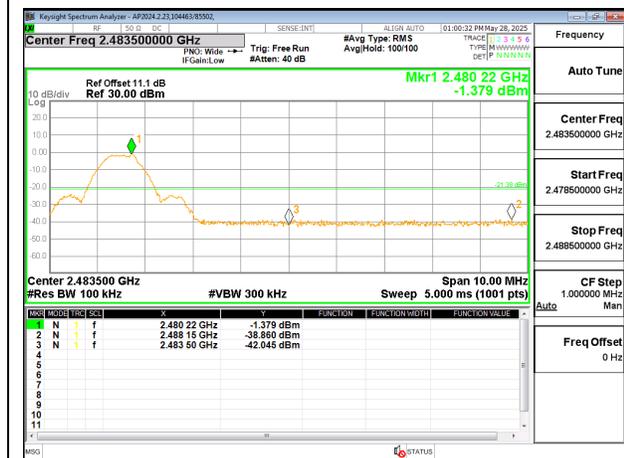
OUT-OF-BAND HIGH CHANNEL 35



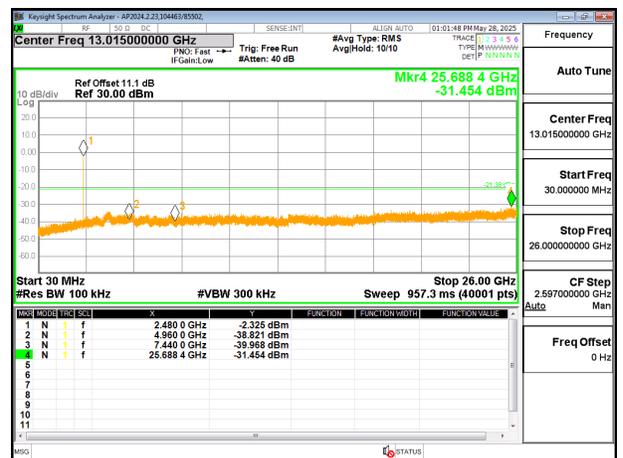
HIGH CHANNEL 36 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 36



HIGH CHANNEL 39 BANDEDGE

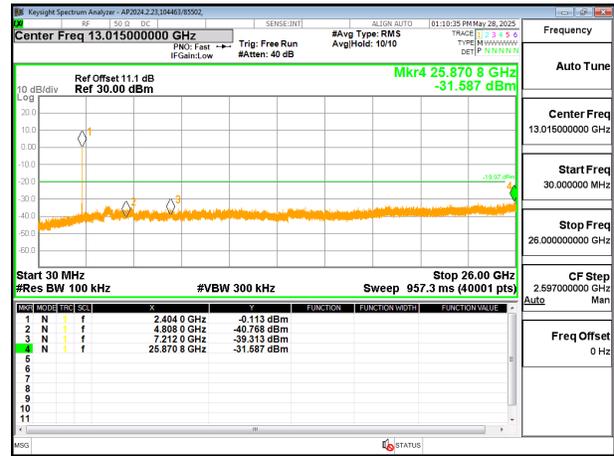


OUT-OF-BAND HIGH CHANNEL 39

9.7.5. BLE (2Mbps)



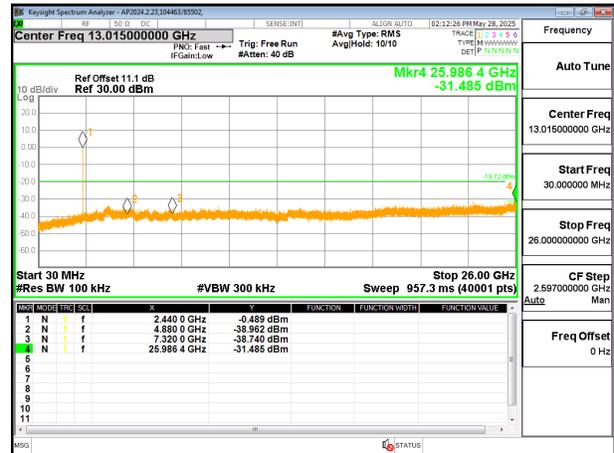
LOW CHANNEL 0 BANDEDGE



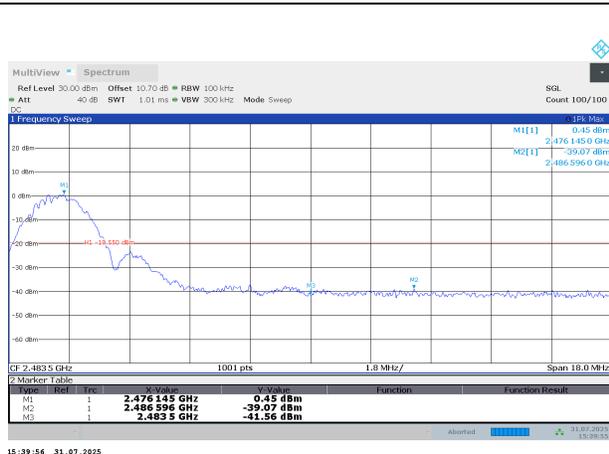
OUT-OF-BAND LOW CHANNEL 0



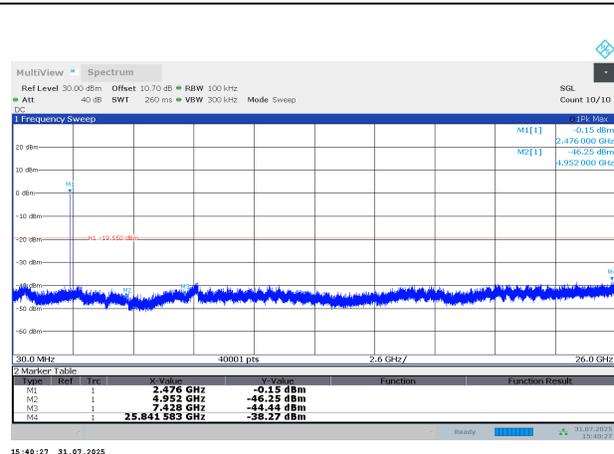
MID CHANNEL 17 IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL 17



HIGH CHANNEL 35 BANDEDGE



OUT-OF-BAND HIGH CHANNEL 35

