TEST REPORT

Report Number. : R15511224-E1

Applicant	:	Ademco Inc 2 Corporate Center Drive Melville, NY, 11749
Models	:	SMCO600NV-AC, SMCO600NV SMCO600NV-A, SMCO600NV-AC-A
FCC ID	:	M7U-BT110T
IC	:	10190A-BT110T
EUT Description	:	Wireless Smart Smoke & Carbon Monoxide Alarm
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:
2025-03-18

Prepared by:
UL LLC
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ACCREDITED
CERT #0751.06

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
1	2025-01-09	Initial Issue	Noah Bennett
2	2025-02-19	TCB Feedback 1: -Various typographical corrections and improvements.	Noah Bennett
3	2025-03-14	TCB Feedback 2: -Added ISED Model(s).	Noah Bennett
4	2025-03-18	Updated Model Differences statement in section 6.1 Updated ANSI reference	Noah Bennett

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Ademco Inc
2 Corporate Center Drive
Melville, NY, 11749

EUT DESCRIPTION: Wireless Smart Smoke & Carbon Monoxide Alarm

MODELS: SMCO600NV-AC, SMCO600NV
SMCO600NV-A, SMCO600NV-AC-A

SERIAL NUMBER: 565, 643, 5CFCE152F6EE, 5CFCE152F786, 5CFCE152F786, 5CFCE1512B91, 5CFCE15129AB

SAMPLE RECEIPT DATE: 2024-10-11; 2024-11-13

DATE TESTED: 2024-10-15 thru 2024-12-30

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 For
UL LLC. By:

Mike Antola
Staff Engineer
Consumer Technology Division
UL LLC.

Prepared By:

Noah Bennett
Engineer Project Associate
Consumer Technology Division
UL LLC.

2. TEST RESULTS SUMMARY

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for correctly integrating customer-provided data with measurements performed by UL LLC. Below is a list of information provided by the customer:

1. EUT supported channels, modes, data-rates, and power settings. (Section 6.1; 6.5)
2. Antenna Gain and Type. (Section 6.3)
3. Firmware and Hardware Version of EUT. (Section 6.4)

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	Compliant.	None.
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	Compliant.	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Compliant.	None.
15.207	RSS-Gen 8.8	AC Mains Conducted Emissions	Compliant.	None.

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, Certificate Number 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 2800 Suite Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	825374

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	ULab
Radio Frequency (Spectrum Analyzer)	141.16 Hz
Occupied Bandwidth	1.22%
Power Spectral Density	2.47 dB
RF Power Measurement Direct Method Using Power Meter	1.3 dB (PK) / 0.45 dB (AV)
Unwanted Emissions, Conducted	1.94 dB
Worst Case Radiated Disturbance, 9kHz to 40 GHz	6.01 dB
Time Domain Measurements	3.39%
Temperature	0.57˚C
Humidity	3.39%
DC Supply Voltages	0.57%

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 Wireless Smart Smoke & Carbon Monoxide Alarm. This report covers the full testing of the 2.4GHz Wi-Fi and BLE portion of Chipset 1 only.

The EUT supports the following wireless technologies and modes of operation:

Wireless technologies	Frequency Band(s)	Operating mode(s)	Additional Config
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)	
	5 GHz[1] UNII-1,2,3	802.11a 802.11n (HT20)	
Bluetooth	2.4 GHz	LE (1Mbps Only)	[3]Max Operational Duty Cycle of 1%
802.15.4	2.4GHz	Zigbee (250Kbps Only)	[3]Max Operational Duty Cycle of 1%

Notes:
1) The EUT operated in a 1x1 SISO mode.
2) The EUT has 2 Antennas for Diversity on both chipsets.
3) Operational Duty Cycles apply to chipset 2 only.

The primary distinction between the two variants is their power source: the SMCO600NV-AC operates on AC power with a DC battery backup, whereas the SMCO600NV relies solely on DC battery power. Beyond this, both variants are identical in terms of electrical and mechanical design.

Model(s) SMCO600NV-A and SMCO600NV-AC-A are ISED variants.

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)
1Tx			
2412 - 2462	802.11b	27.31	538.27
2412 - 2462	802.11g	26.80	478.63
2412 - 2462	802.11n HT20	26.67	464.52
2402 - 2480	BLE	8.14	6.52

6.3. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Designation in Documentation	Frequency Range (MHz)	Maximum 3D Gain (dBi)
1	RTL8721DM-VA1-CGT	2412-2462MHz	2.54
		5150-5825MHz	6.32
2		2412-2462MHz	2.34
		5150-5825MHz	4.50

6.4. SOFTWARE AND FIRMWARE

EUT FW Version: 1.0

EUT HW Version: 1.0

EUT Control SW Version: TeraTerm v4.106
YAT Terminal v2.7.2

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. All antennas were tested, with the worst-case scenario per mode being reported

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

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, on both Antenna 1 and Antenna 2. it was determined that X orientation was worst-case orientation for both antennas; therefore, all final radiated testing was performed with the EUT in X orientation.

The worst-case data-rates are as follows:
802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11n HT20 mode: MCS0

For radiated testing, the EUT was connected to AC-Lines as worst-case.

6.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Support Laptop	Lenovo	T14S Gen3	PF4FKVY8	N/A

I/O CABLES

I/O Cable List						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	4 Pin PWR	1	AC In	Unshielded	<3m	Connects EUT to AC Lines
2	3 Pin debug	1	UART	Unshielded	<3m	Used to Program EUT.

TEST SETUP

The EUT was connected to a support laptop to program the EUT for testing. The EUT was set to transmit continuously throughout the test. The support laptop and cable 2 were removed from the chamber for testing.

SETUP DIAGRAM

Please refer to R15511224-EP1 for setup diagrams

7. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
Common Equipment					
90410	Spectrum Analyzer	Keysight Technologies	N9030A	2024-06-14	2025-06-14
248881	Environmental Meter	Control Company	06-662-4	2024-04-10	2026-04-10
SOFTEMI	Antenna Port Software	UL	Version 2022.8.16	NA	NA
Power Software	Boonton Power Analyzer	Boonton	Version 3.0.13.0	NA	NA
Additional Equipment used					
211055	Real-Time Peak Power Sensor 50MHz to 8GHz	Boonton	RTP5000	2024-07-31	2025-07-31
	Attenuators				
226561	SMA Coaxial 10dB Attenuator 25MHz-18GHz	CentricRF	C18S2-10	2024-02-29	2025-02-28
	Cables				
CBL105	Micro-Coax UTiFLEX Cable Assembly, Low Loss	Carlisle Interconnect Technologies	UFB-197C-0-0160-300300	2024-03-01	2025-03-01

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	2024-04-04	2025-04-04
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	2024-04-04	2025-04-04
PS216	AC Power Source	Elgar	CW2501M	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

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
	Gain-Loss Chains				
207640	Gain-loss string: 1-18GHz	Various	Various	2024-05-22	2025-05-22
	Receiver & Software				
197955	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-04-16	2025-04-16
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.
	0.009-30MHz				
135144	Active Loop Antenna	ETS-Lindgren	6502	2024-10-02	2025-10-02
	30-1000 MHz				
159203	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-03-05	2026-03-05
	Gain-Loss Chains				
91975	Gain-loss string: 0.009-30MHz	Various	Various	2024-05-10	2025-05-10
91978	Gain-loss string: 25-1000MHz	Various	Various	2024-05-10	2025-05-10
	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

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

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	1-18 GHz				
135143	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2024-02-07	2026-02-07
	Gain-Loss Chains				
91979	Gain-loss string: 1-18GHz	Various	Various	2024-05-08	2025-05-08
	Receiver & Software				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2024-03-05	2025-03-05
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
170112	10dB Pad, DC-18GHz, 5W	Mini-Circuits	BW-N10W5+	2023-11-09	2024-11-30

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

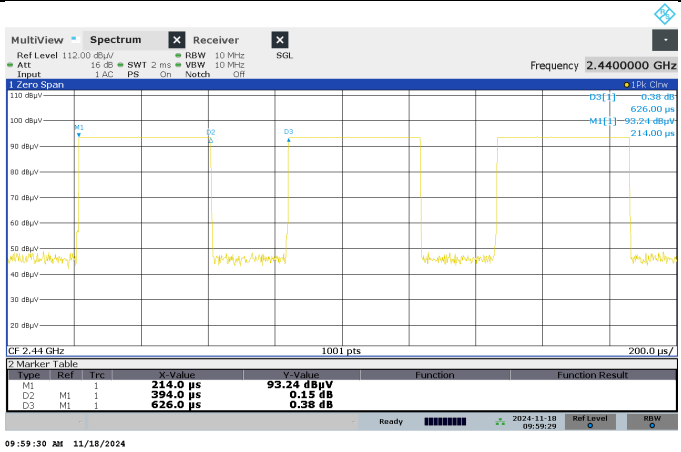
PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method.

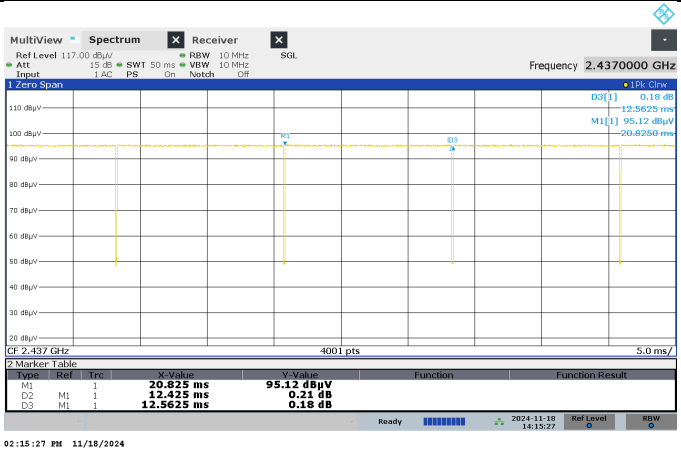
ON TIME AND DUTY CYCLE RESULTS

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						
BLE 1Mbps	0.394	0.626	0.629	62.94%	4.02	2.538
802.11b 1TX	12.425	12.563	0.989	98.91	0.00	0.010
802.11g 1TX	2.063	2.194	0.940	94.03%	0.53	0.485
802.11n20 1TX	1.919	2.050	0.936	93.61%	0.57	0.521

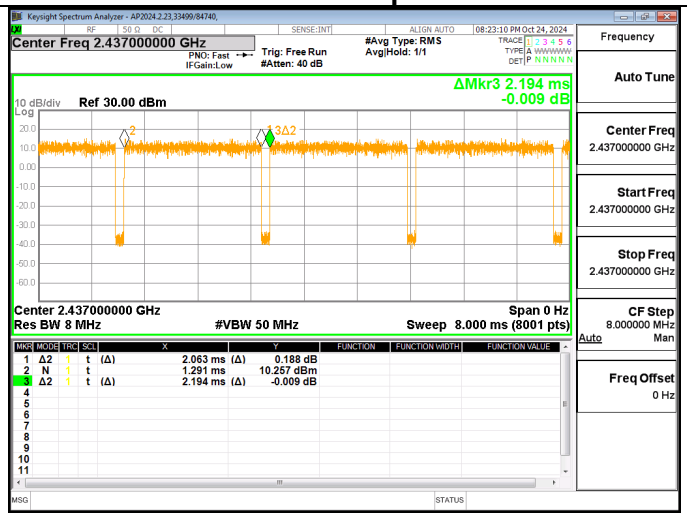
DUTY CYCLE PLOTS



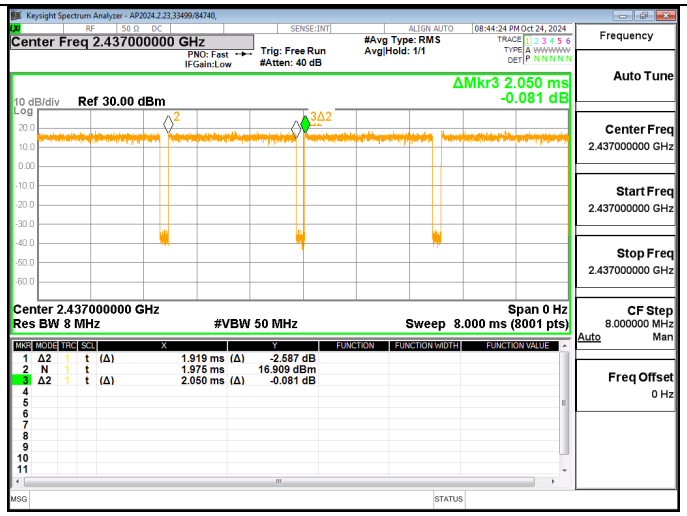
BLE 1Mbps



802.11b



802.11g



802.11nHT20

8.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

PROCEDURE

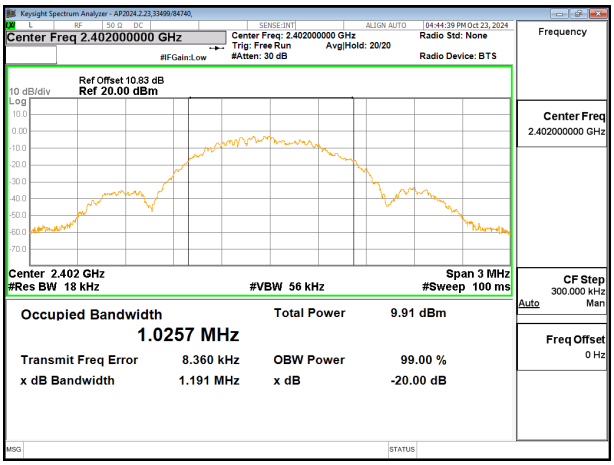
ANSI C63.10-2020 Section 6.9.3

RESULTS

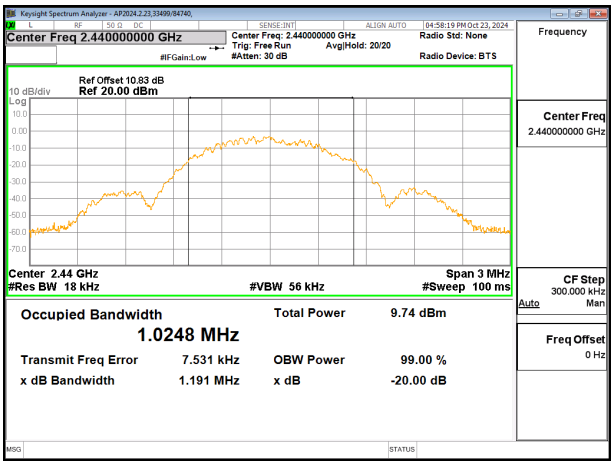
8.2.1. BLE (1Mbps)

Antenna 1

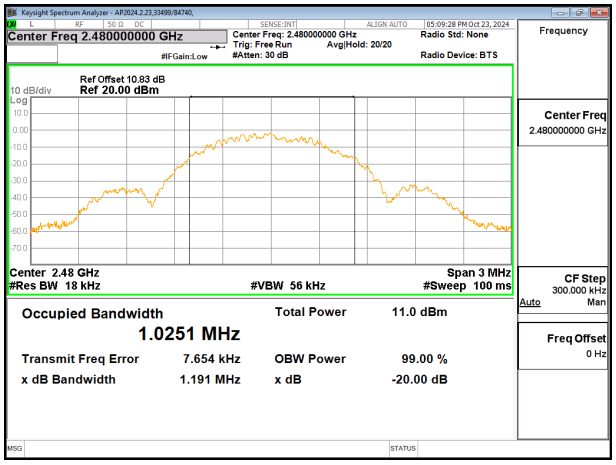
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0257
Middle	2440	1.0248
High	2480	1.0251



LOW CHANNEL



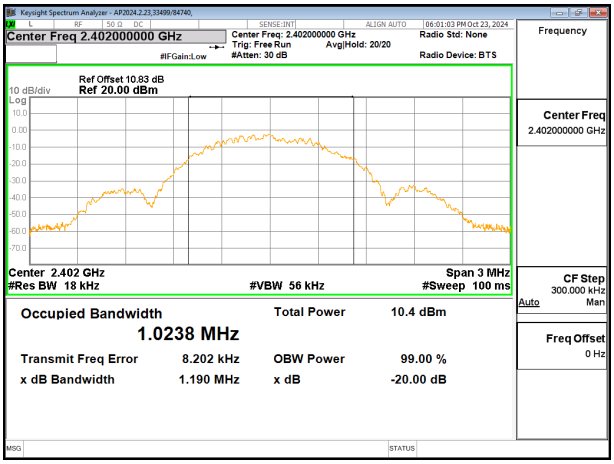
MID CHANNEL



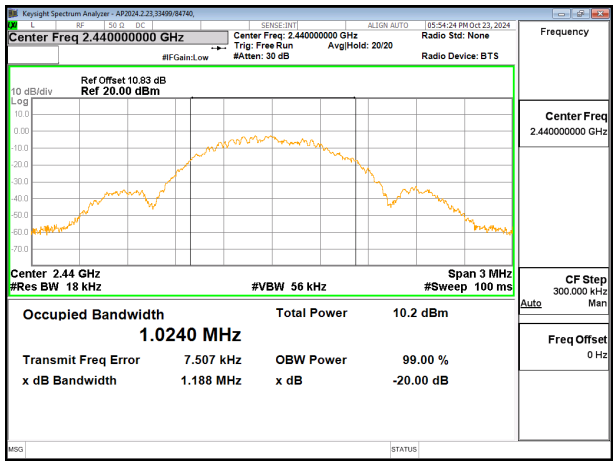
HIGH CHANNEL

Antenna 2

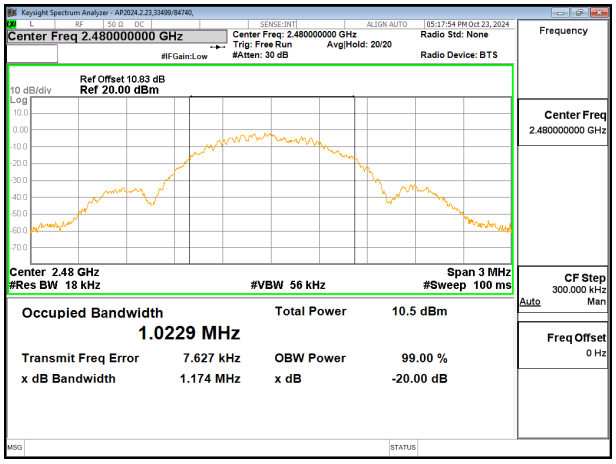
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0238
Middle	2440	1.0240
High	2480	1.0229



LOW CHANNEL



MID CHANNEL

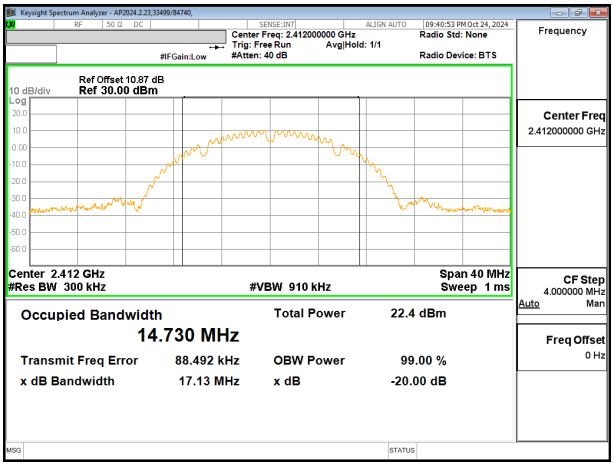


HIGH CHANNEL

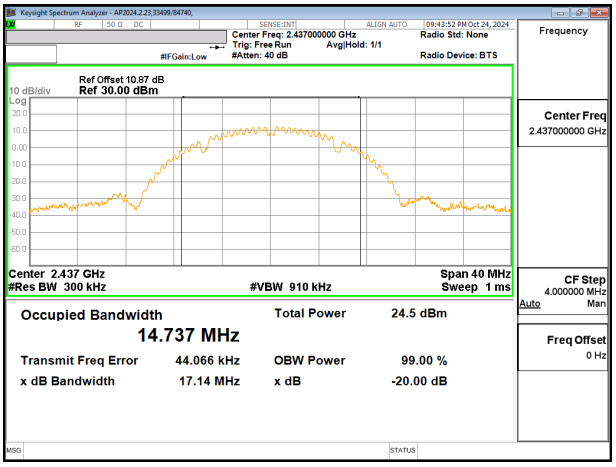
8.2.2. 802.11b MODE

1TX Antenna 1 MODE

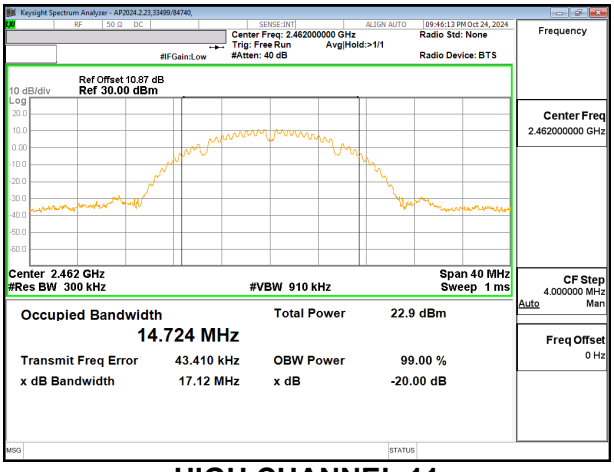
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	14.730
Mid	2437	14.737
High 11	2462	14.724



LOW CHANNEL 1



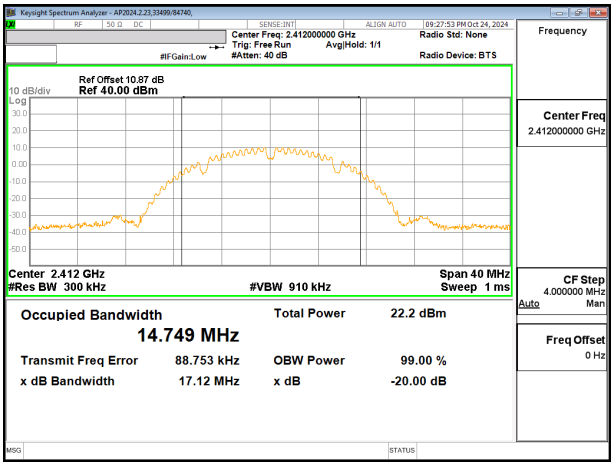
MID CHANNEL 6



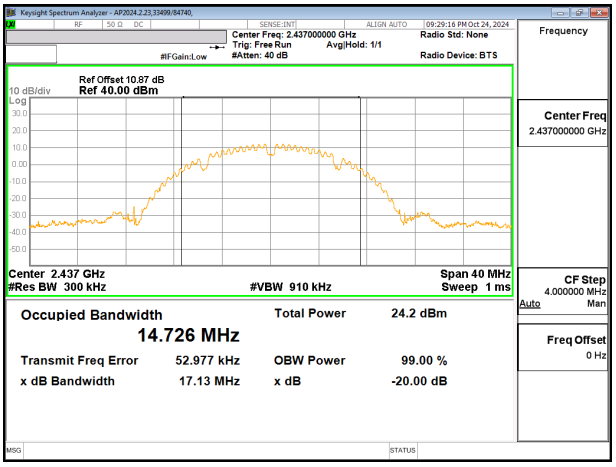
HIGH CHANNEL 11

1TX Antenna 2 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	14.749
Mid	2437	14.726
High 11	2462	14.703



LOW CHANNEL 1



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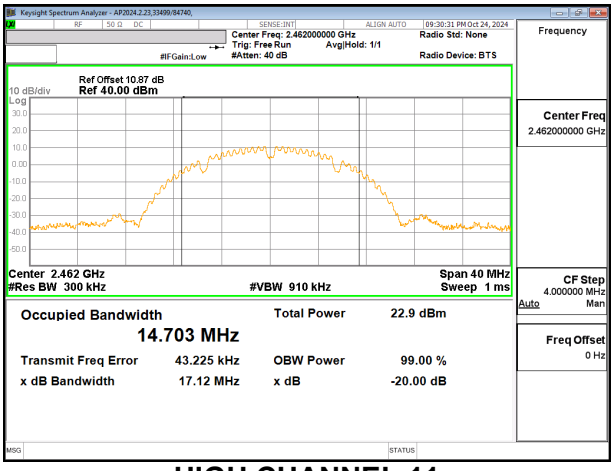
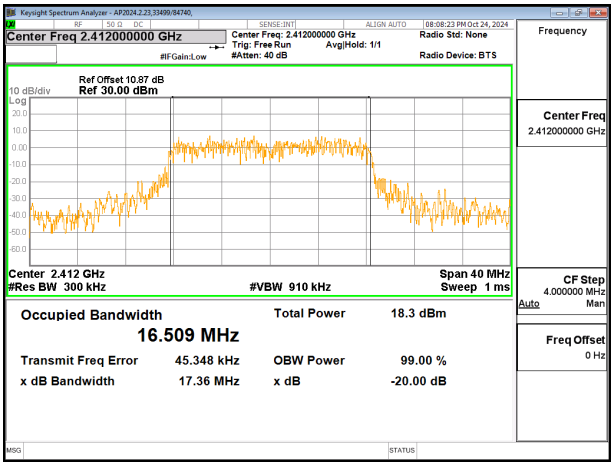


HIGH CHANNEL 11

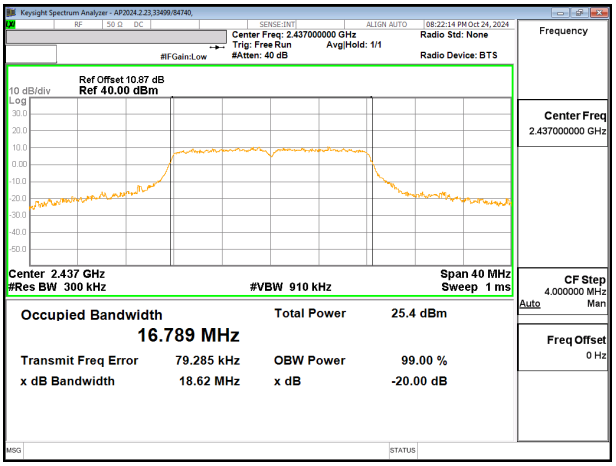
8.2.3. 802.11g MODE

1TX Antenna 1 MODE

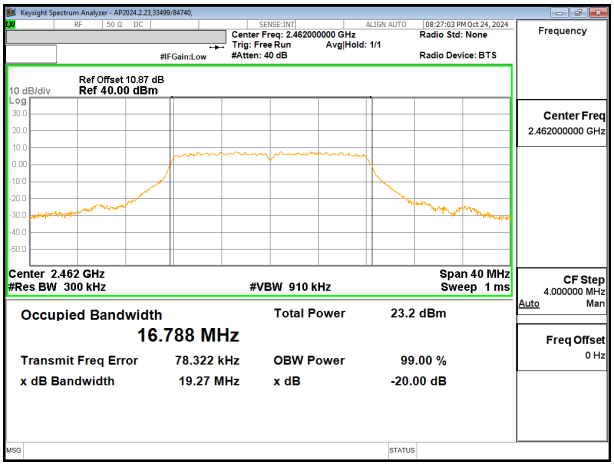
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.509
Mid	2437	16.789
High 11	2462	16.788



LOW CHANNEL 1



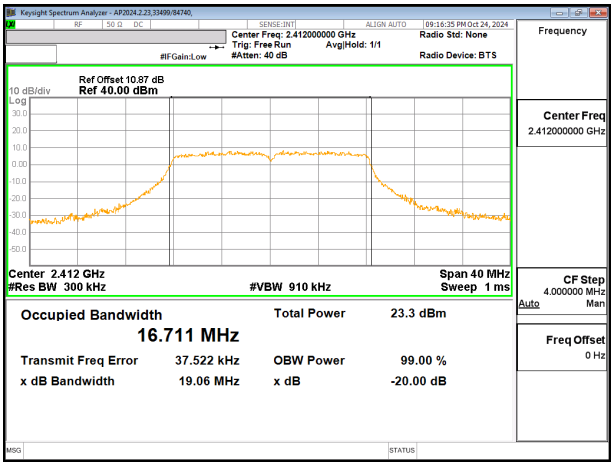
MID CHANNEL 6



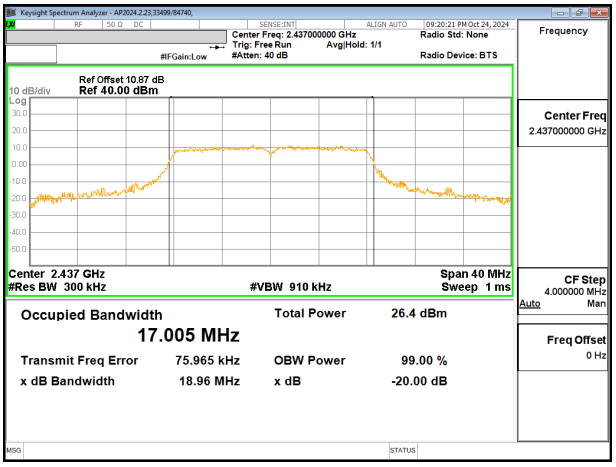
HIGH CHANNEL 11

1TX Antenna 2 MODE

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.711
Mid	2437	17.005
High 11	2462	16.807

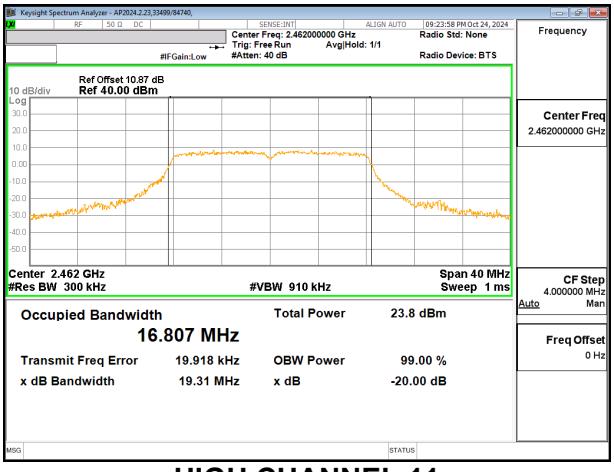


LOW CHANNEL 1



MID CHANNEL 6

HIGH CHANN

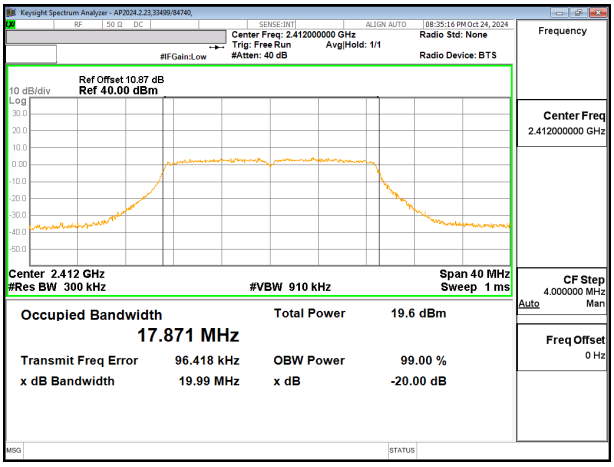


HIGH CHANNEL 11

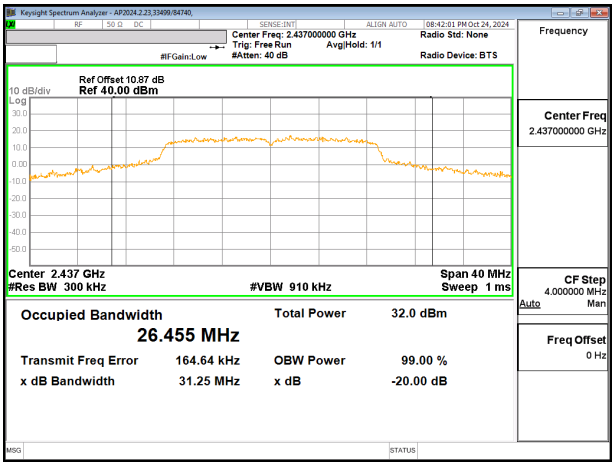
8.2.4. 802.11n HT20 MODE

1TX Antenna 1 MODE

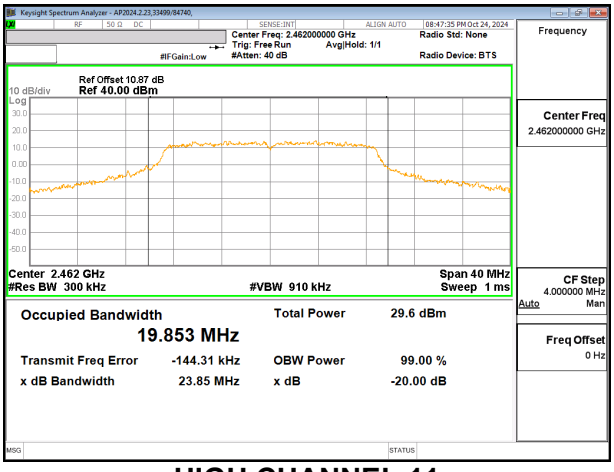
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.871
Mid	2437	26.455
High 11	2462	19.853



LOW CHANNEL 1



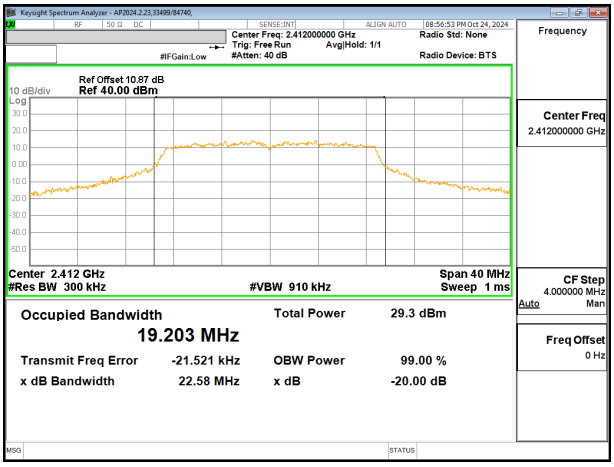
MID CHANNEL 6



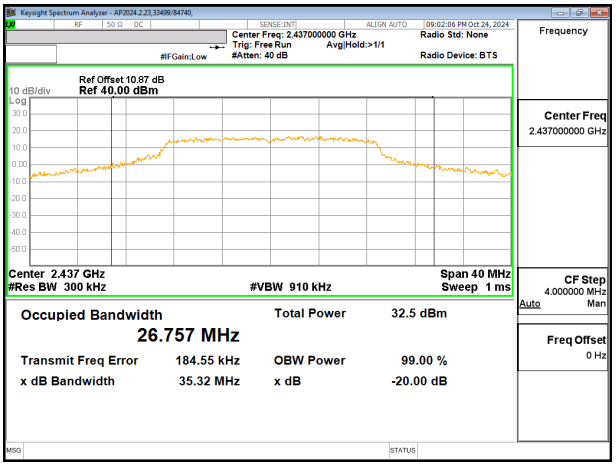
HIGH CHANNEL 11

1TX Antenna 2 MODE

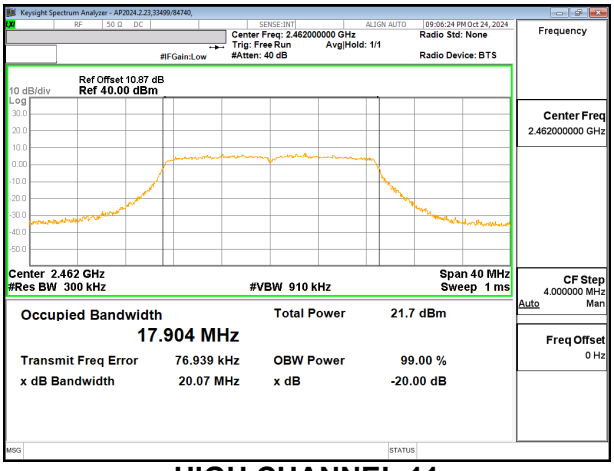
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	19.203
Mid	2437	26.757
High 11	2462	17.904



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

8.3. 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.

PROCEDURE

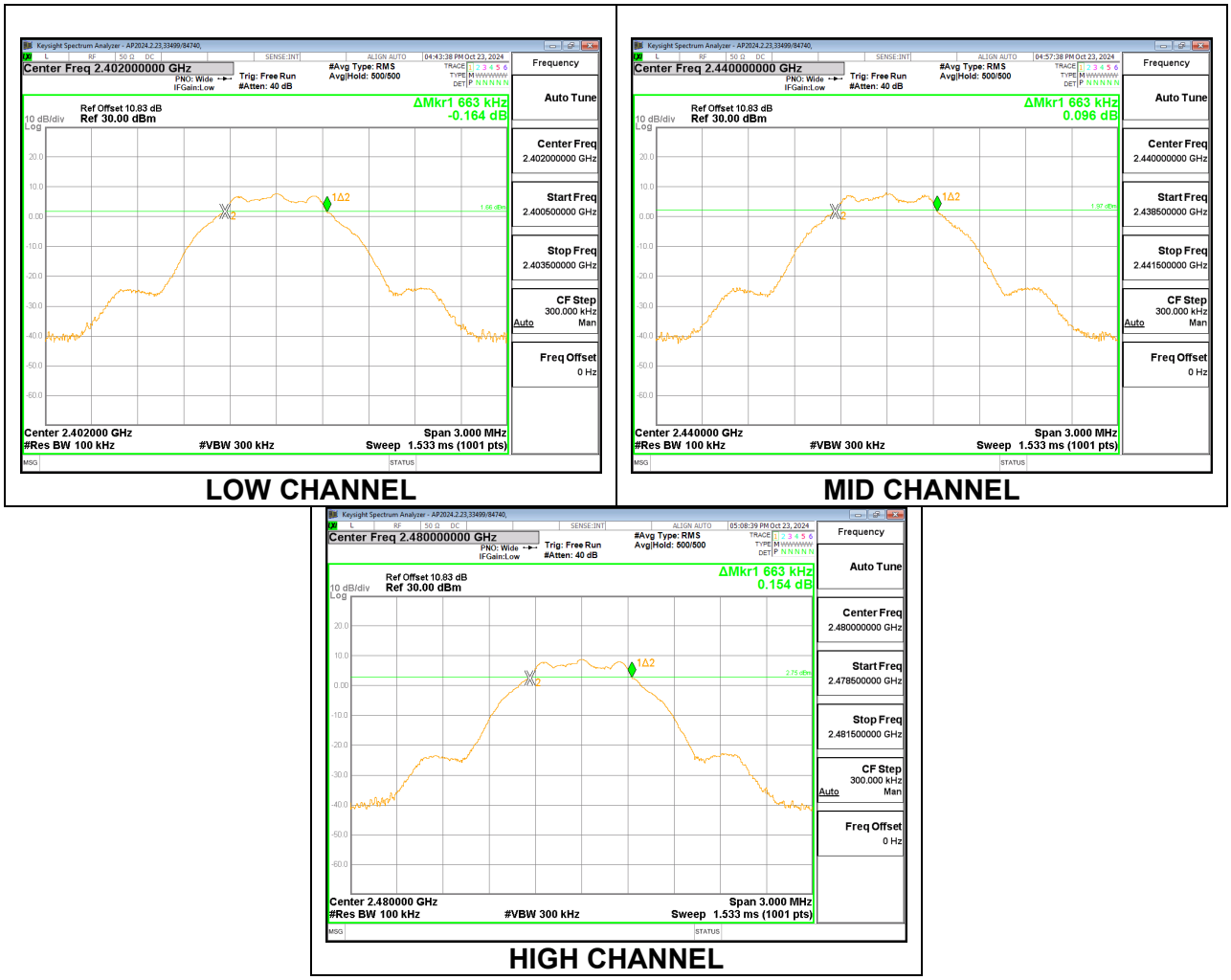
ANSI C63.10 Subclause -11.8.2: RBW ≤ DTS BW

RESULTS

8.3.1. BLE (1Mbps)

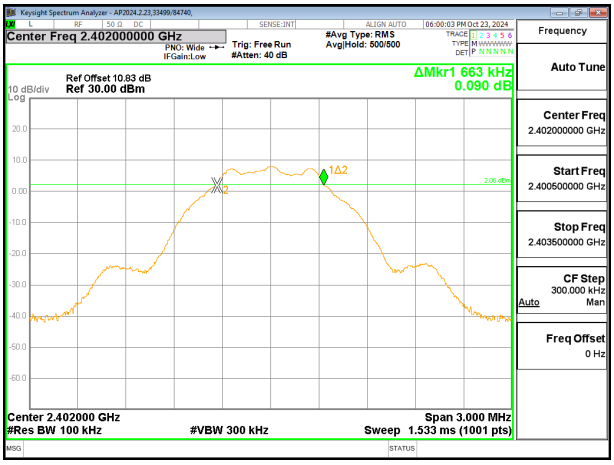
Antenna 1

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6630	0.5
Middle	2440	0.6630	0.5
High	2480	0.6630	0.5

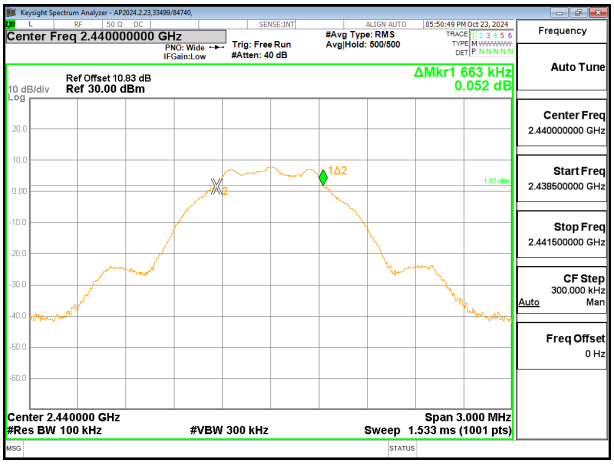


Antenna 2

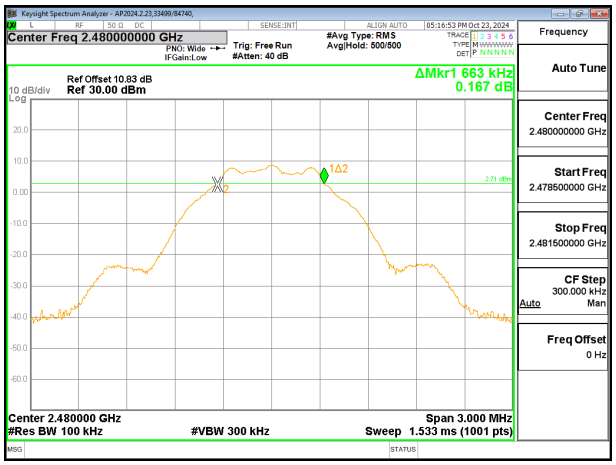
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.6630	0.5
Middle	2440	0.6630	0.5
High	2480	0.6630	0.5



LOW CHANNEL



MID CHANNEL

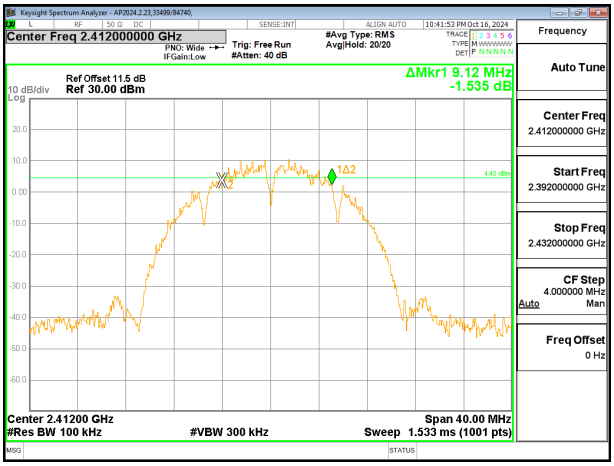


HIGH CHANNEL

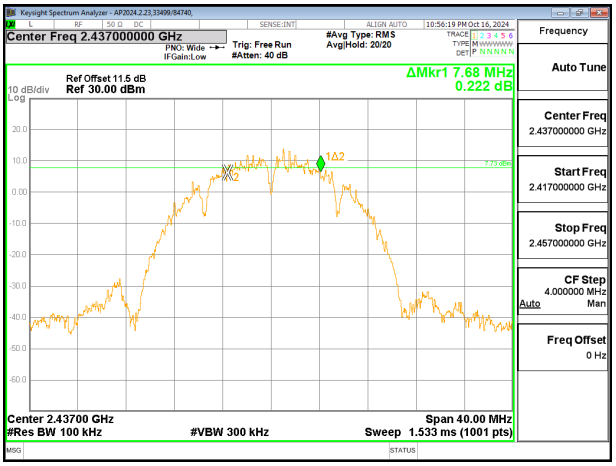
8.3.2. 802.11b MODE

1TX Antenna 1 MODE

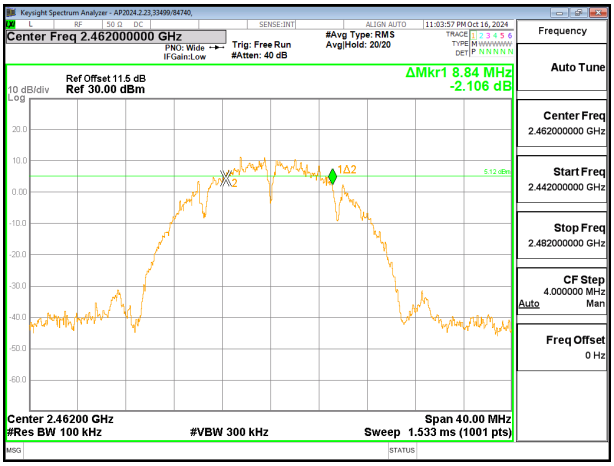
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.12	0.5
Mid	2437	7.68	0.5
High 11	2462	8.84	0.5



LOW CHANNEL 1



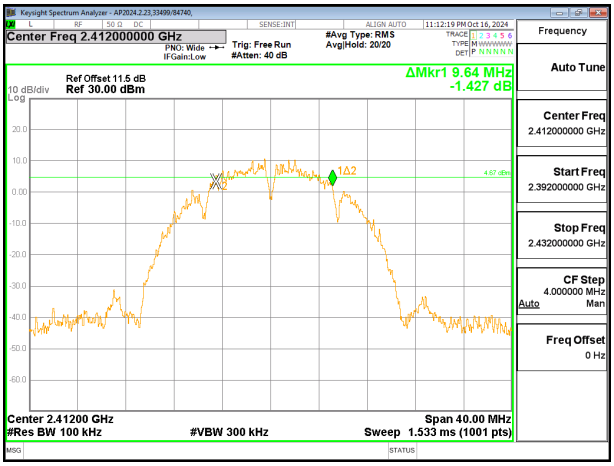
MID CHANNEL 6



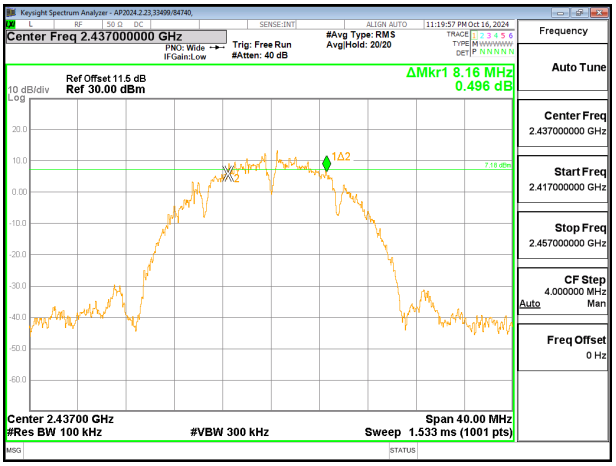
HIGH CHANNEL 11

1TX Antenna 2 MODE

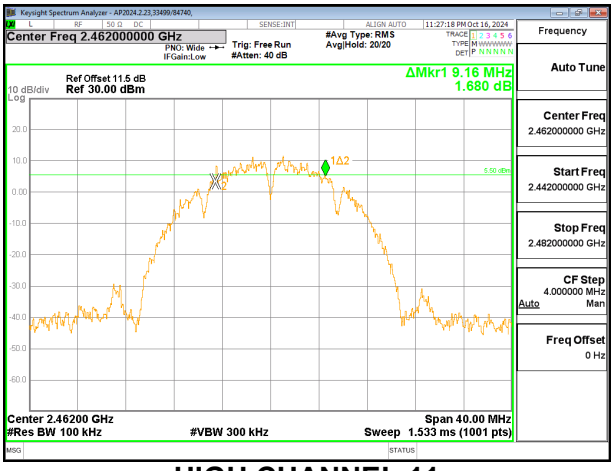
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.64	0.5
Mid	2437	8.16	0.5
High 11	2462	9.16	0.5



LOW CHANNEL 1



MID CHANNEL 6

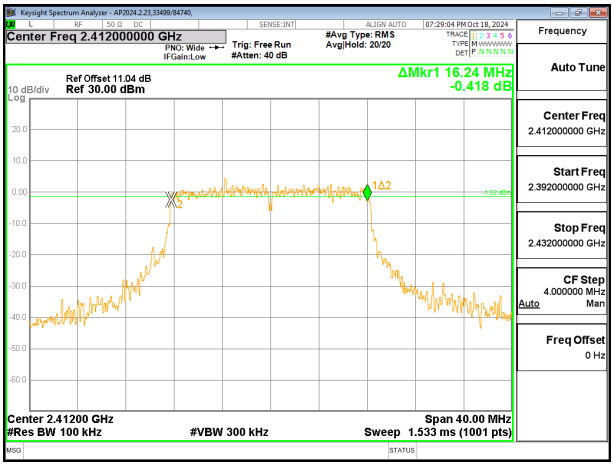


HIGH CHANNEL 11

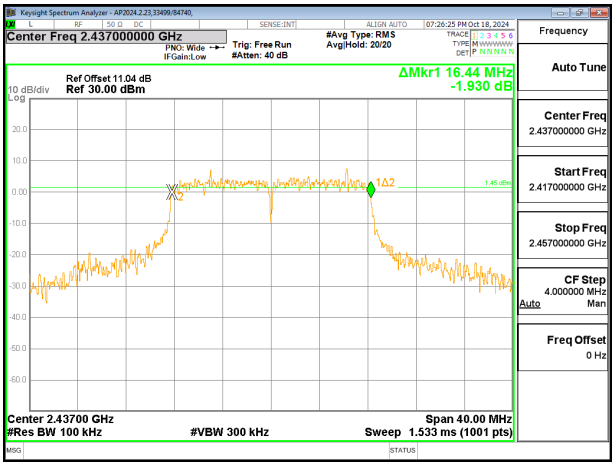
8.3.3. 802.11g MODE

1TX Antenna 1 MODE

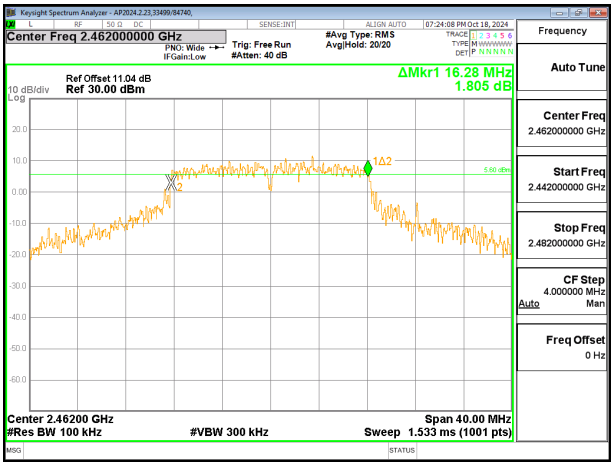
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.24	0.5
Mid	2437	16.44	0.5
High 11	2462	16.28	0.5



LOW CHANNEL 1



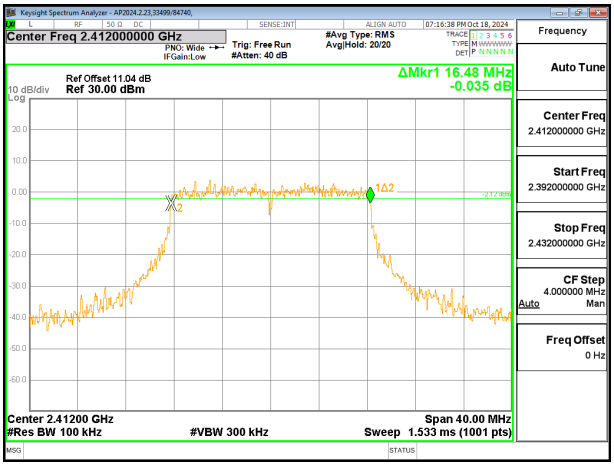
MID CHANNEL 6



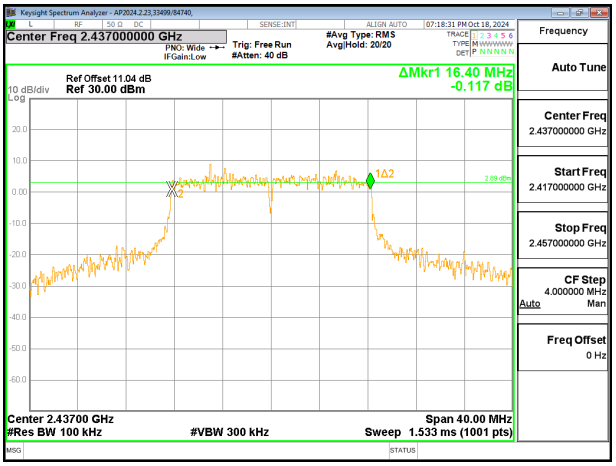
HIGH CHANNEL 11

1TX Antenna 2 MODE

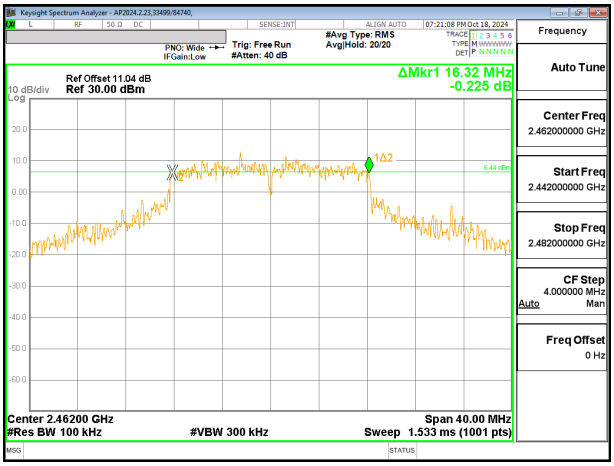
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.48	0.5
Mid	2437	16.40	0.5
High 11	2462	16.32	0.5



LOW CHANNEL 1



MID CHANNEL 6

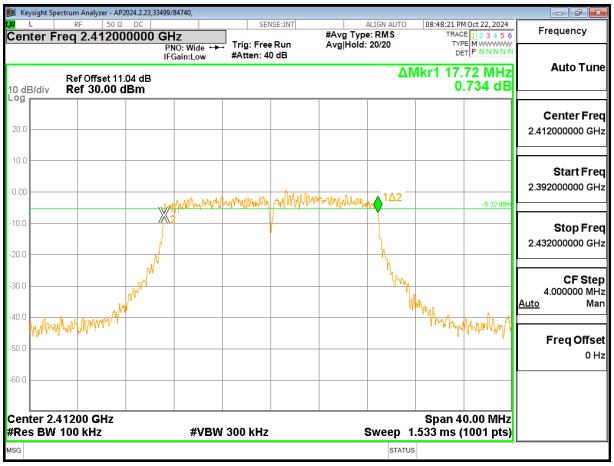


HIGH CHANNEL 11

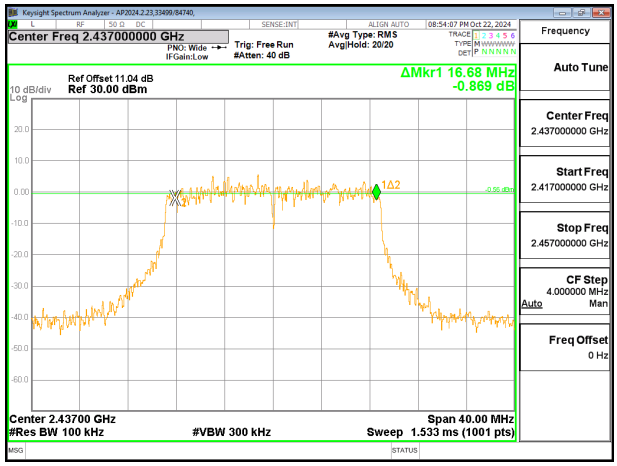
8.3.4. 802.11n HT20 MODE

1TX Antenna 1 MODE

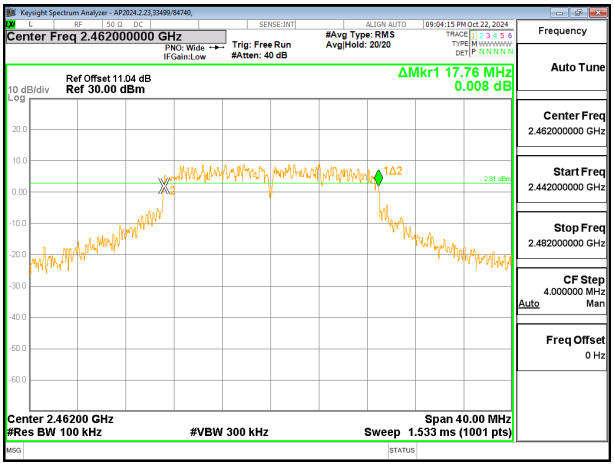
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.72	0.5
Mid	2437	16.68	0.5
High 11	2462	17.76	0.5



LOW CHANNEL 1



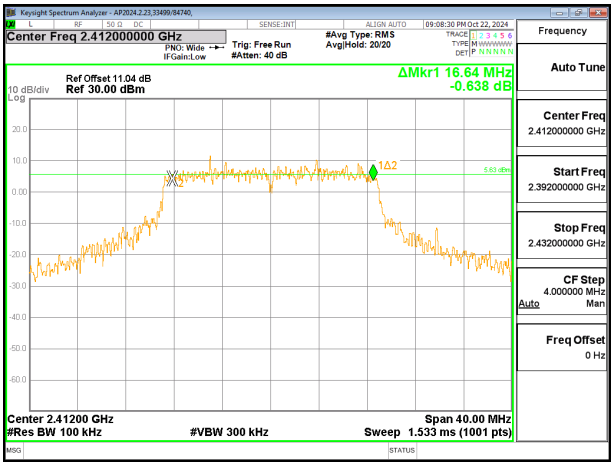
MID CHANNEL 6



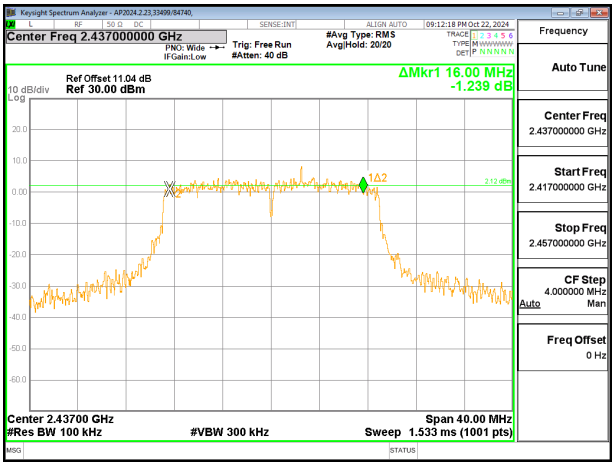
HIGH CHANNEL 11

1TX Antenna 2 MODE

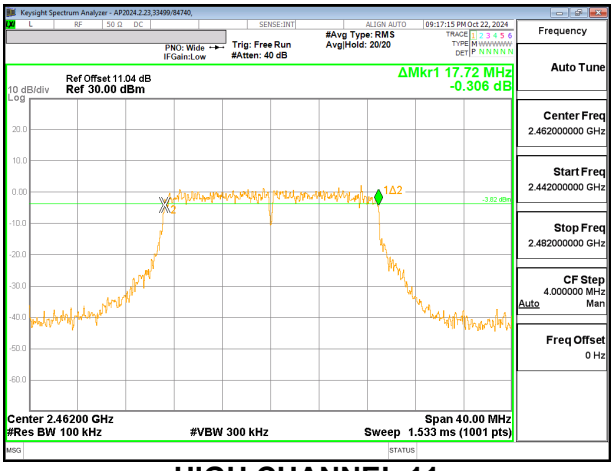
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.64	0.5
Mid	2437	16.00	0.5
High 11	2462	17.72	0.5



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

8.4. 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.

PROCEDURE

Output Power: ANSI C63.10 Subclause -11.9.1.3 Method PKPM1 Peak-reading power meter

The transmitter output is connected to a power meter.

The cable assembly insertion loss (including 1.45 dB EUT cable) was entered as an offset in the power meter to allow for a peak reading of power. Peak output power was read directly from power meter.

DIRECTIONAL ANTENNA GAIN

For 1 TX:
There is only one transmitter output therefore the directional gain is equal to the antenna gain.

8.4.1. BLE (1Mbps)

Antenna 1

Tested By:	33499/84740
Date:	10/23/2024

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	7.440	30	-22.560
Middle	2440	7.220	30	-22.780
High	2480	8.140	30	-21.860

Antenna 2

Tested By:	33499/84740
Date:	10/23/2024

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	7.880	30	-22.120
Middle	2440	7.610	30	-22.390
High	2480	8.010	30	-21.990

RESULTS

8.4.2. 802.11b MODE

Tested By:	105900
Date:	10/15/2024

1TX Antenna 1 MODE

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	22.415	30	-7.585
Middle	2440	24.263	30	-5.737
High	2480	23.175	30	-6.825

1TX Antenna 2 MODE

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	25.574	30	-4.426
Middle	2440	27.314	30	-2.686
High	2480	26.421	30	-3.579

8.4.3. 802.11g MODE

Tested By:	105900
Date:	10/15/2024

1TX Antenna 1 MODE

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	25.365	30	-4.635
Middle	2440	26.527	30	-3.473
High	2480	25.147	30	-4.853

1TX Antenna 2 MODE

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	25.720	30	-4.280
Middle	2440	26.798	30	-3.202
High	2480	25.876	30	-4.124

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12 Laboratory Drive, RTP NC 27606; USA TEL:(919) 549-1400

8.4.4. 802.11n HT20 MODE

Tested By:	105900
Date:	10/15/2024

1TX Antenna 1 MODE

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	23.422	30	-6.578
Middle	2440	26.244	30	-3.756
High	2480	24.819	30	-5.181

1TX Antenna 2 MODE

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	23.766	30	-6.234
Middle	2440	26.674	30	-3.326
High	2480	24.783	30	-5.217

8.5. AVERAGE POWER

LIMITS

None; for reporting purposes only

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss i(ncluding 1.45 dB EUT cable) was entered as an offset in the power meter to allow for a gated average reading of power. Gated average output power was read directly from power meter.

PROCEDURE

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

RESULTS

8.5.1. BLE (1Mbps)

Antenna 1

Tested By:	33499/84740
Date:	10/23/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	7.136
Middle	2440	6.878
High	2480	7.788

Antenna 2

Tested By:	33499/84740
Date:	10/23/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	7.532
Middle	2440	7.297
High	2480	7.734

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8.5.2. 802.11b MODE

1TX Antenna 1 MODE

Tested By:	105900
Date:	10/15/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	20.18
Middle	2437	21.70
High	2462	20.46

1TX Antenna 2 MODE

Tested By:	105900
Date:	10/15/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	19.76
Middle	2437	21.36
High	2462	20.61

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8.5.3. 802.11g MODE

1TX Antenna 1 MODE

Tested By:	105900
Date:	10/15/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	16.90
Middle	2437	19.01
High	2462	16.60

1TX Antenna 2 MODE

Tested By:	105900
Date:	10/15/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	17.28
Middle	2437	20.25
High	2462	17.72

8.5.4. 802.11n HT20 MODE

1TX Antenna 1 MODE

Tested By:	105900
Date:	10/15/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	13.49
Middle	2437	17.02
High	2462	14.87

1TX Antenna 2 MODE

Tested By:	105900
Date:	10/15/24

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	14.70
Middle	2437	18.24
High	2462	14.97

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12 Laboratory Drive, RTP NC 27606; USA TEL:(919) 549-1400

8.6. 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.
BLE (1Mbps)

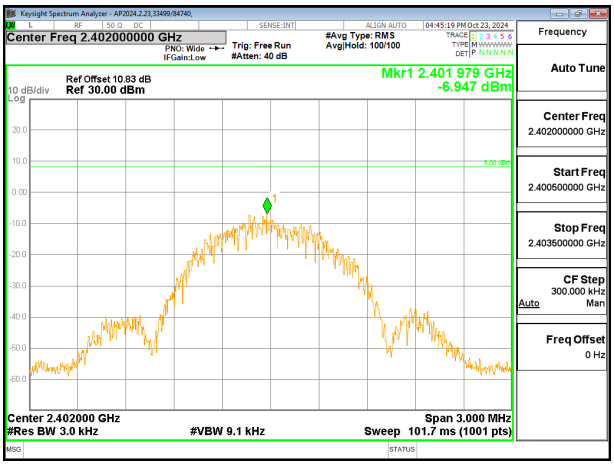
PROCEDURE

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

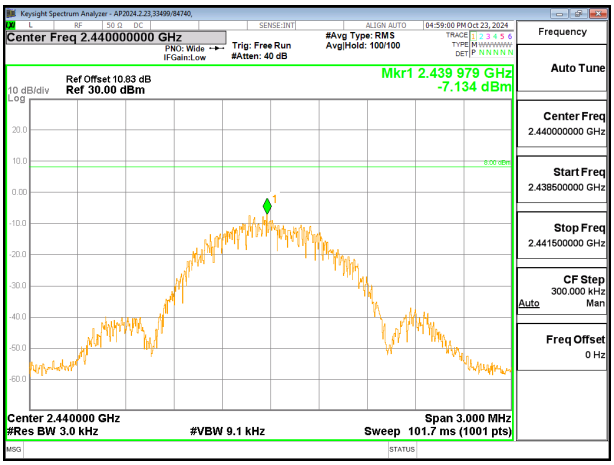
8.6.1. BLE (1Mbps)

Antenna 1

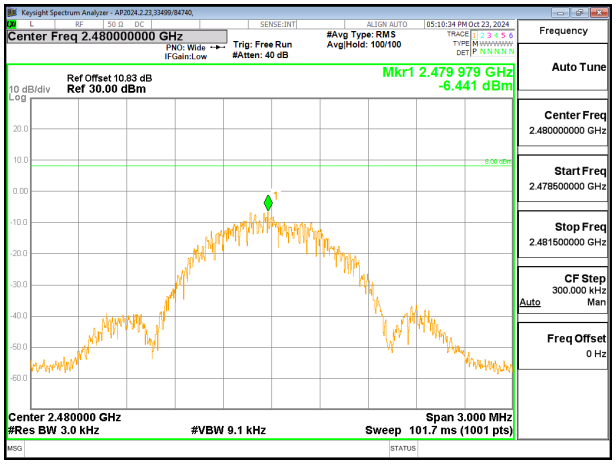
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-6.95	8	-14.95
Middle	2440	-7.13	8	-15.13
High	2480	-6.44	8	-14.44



LOW CHANNEL



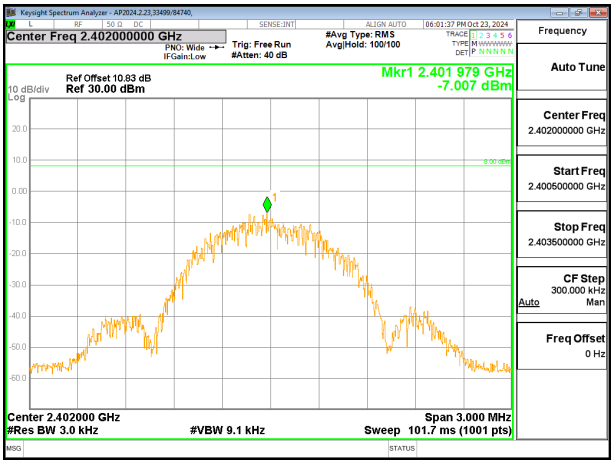
MID CHANNEL



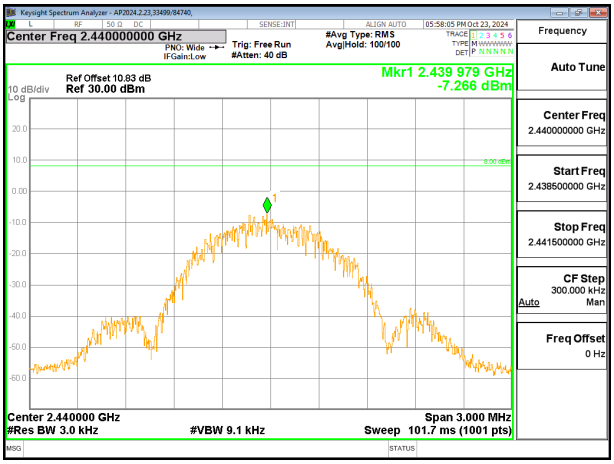
HIGH CHANNEL

Antenna 2

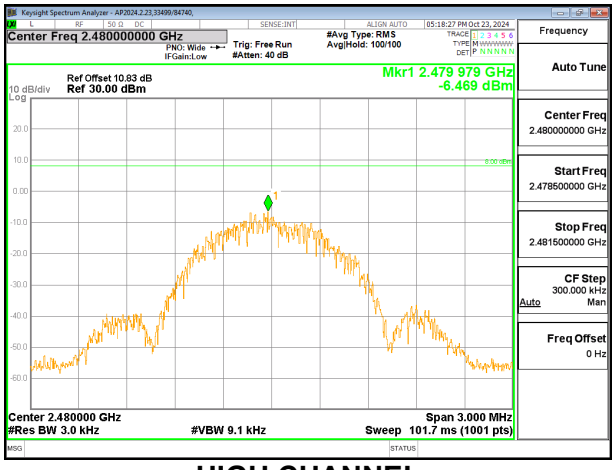
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-7.01	8	-15.01
Middle	2440	-7.27	8	-15.27
High	2480	-6.47	8	-14.47



LOW CHANNEL



MID CHANNEL

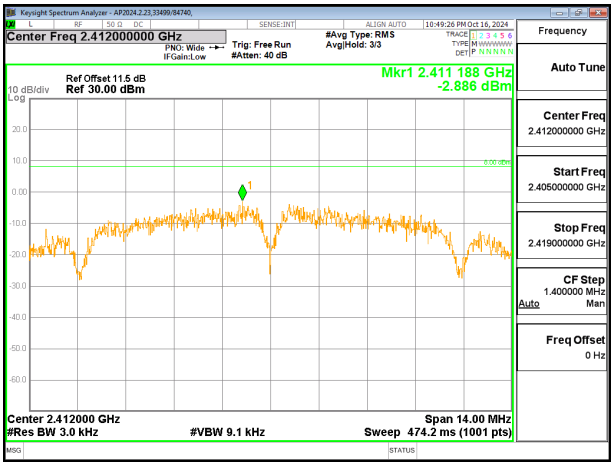


HIGH CHANNEL

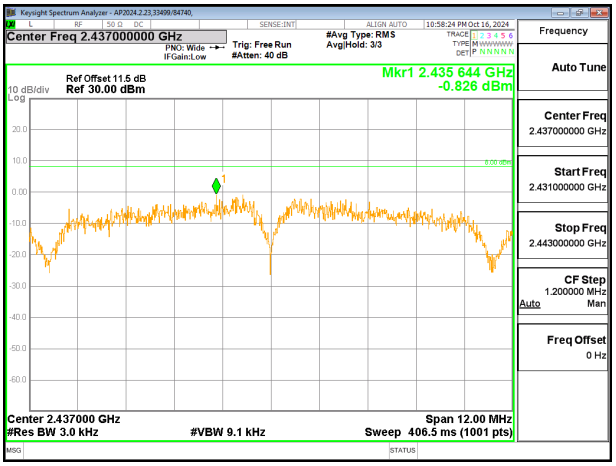
8.6.2. 802.11b MODE

1TX Antenna 1 MODE

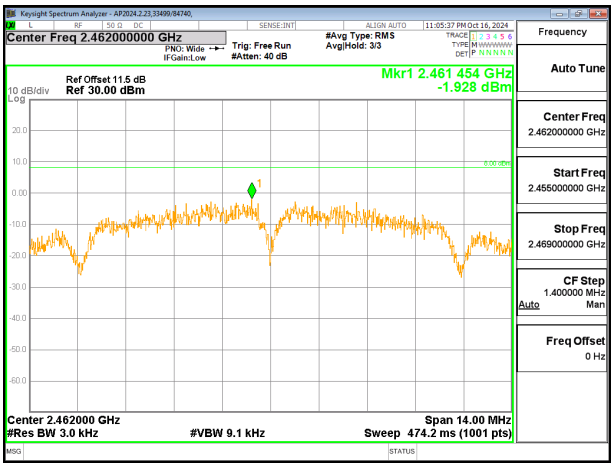
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-2.89	8	-10.89
Middle	2437	-0.83	8	-8.83
High	2462	-1.93	8	-9.93



LOW CHANNEL 1



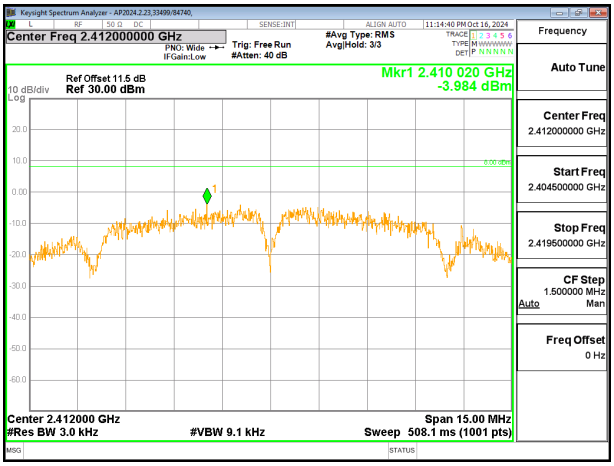
MID CHANNEL 6



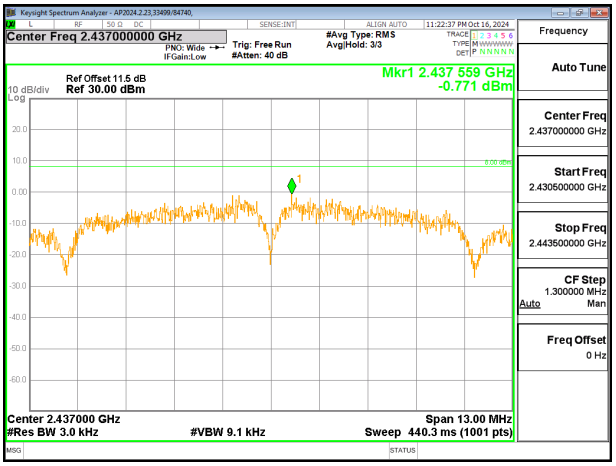
HIGH CHANNEL 11

1TX Antenna 2 MODE

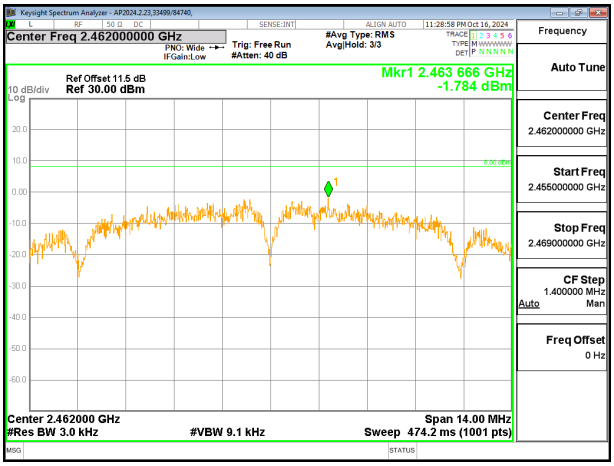
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-3.98	8	-11.98
Middle	2437	-0.77	8	-8.77
High	2462	-1.78	8	-9.78



LOW CHANNEL 1



MID CHANNEL 6

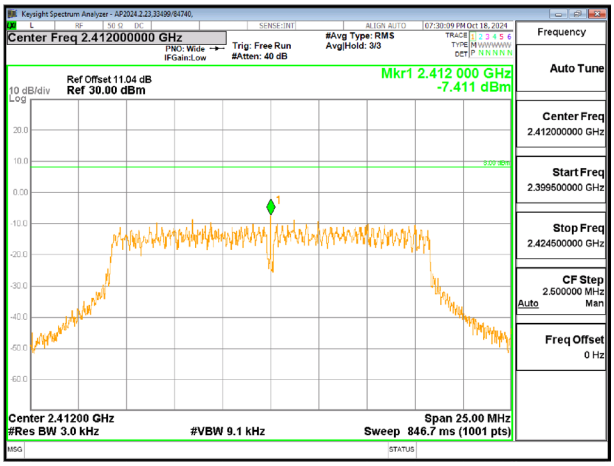


HIGH CHANNEL 11

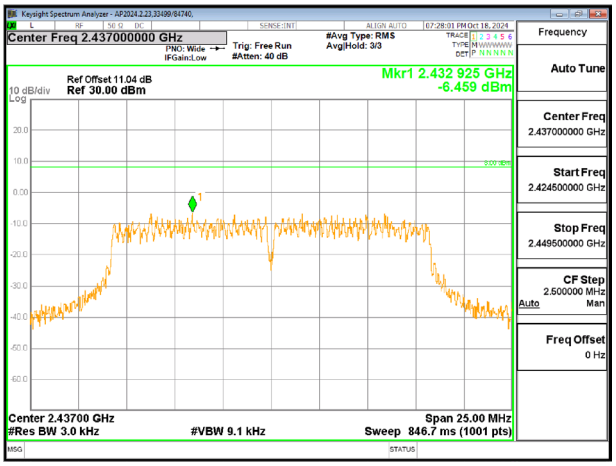
8.6.3. 802.11g MODE

1TX Antenna 1 MODE

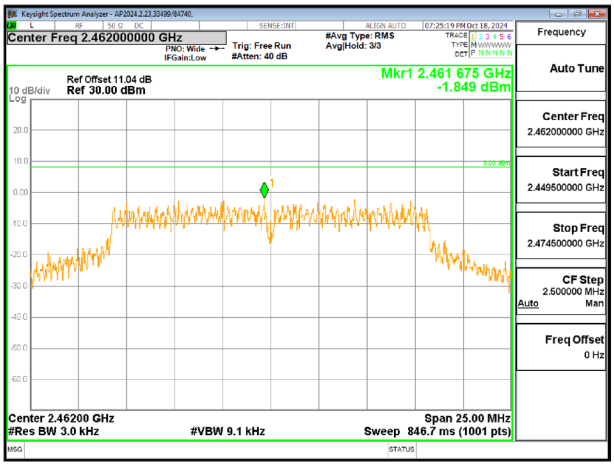
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-7.41	8	-15.41
Middle	2437	-6.46	8	-14.46
High	2462	-1.85	8	-9.85



LOW CHANNEL 1



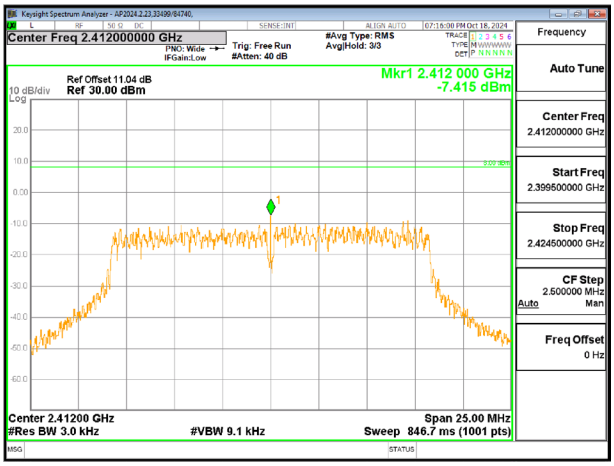
MID CHANNEL 6



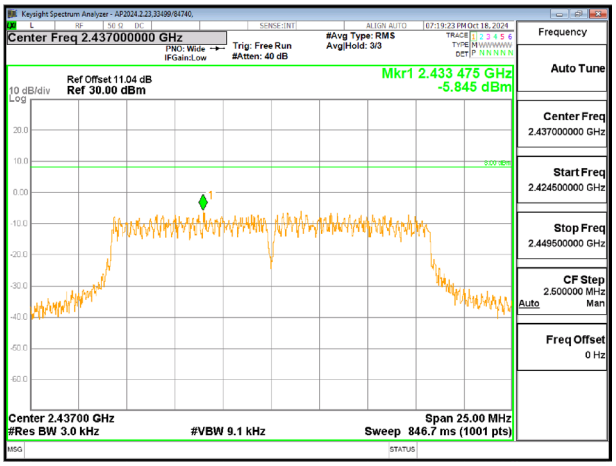
HIGH CHANNEL 11

1TX Antenna 2 MODE

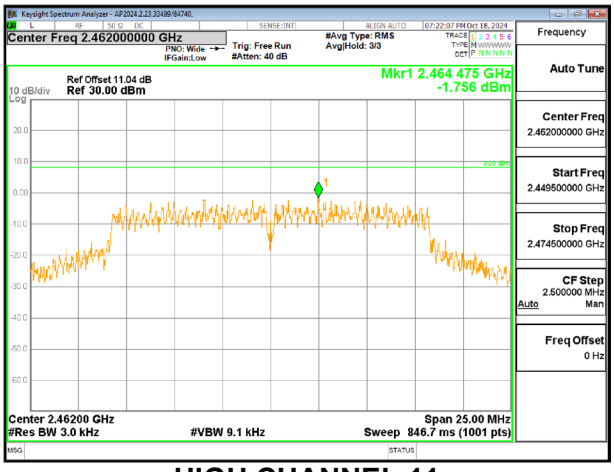
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-7.42	8	-15.42
Middle	2437	-5.85	8	-13.85
High	2462	-1.76	8	-9.76



LOW CHANNEL 1



MID CHANNEL 6

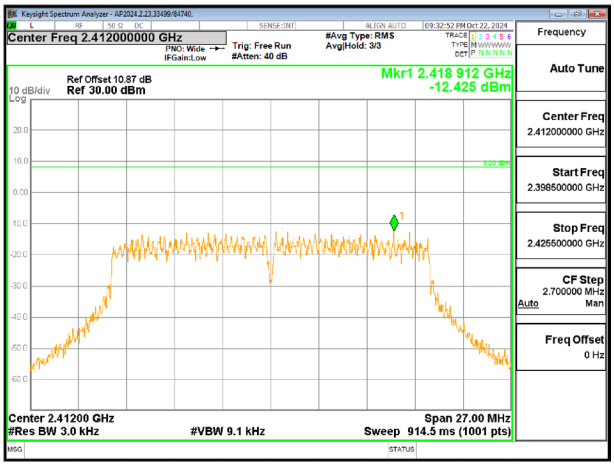


HIGH CHANNEL 11

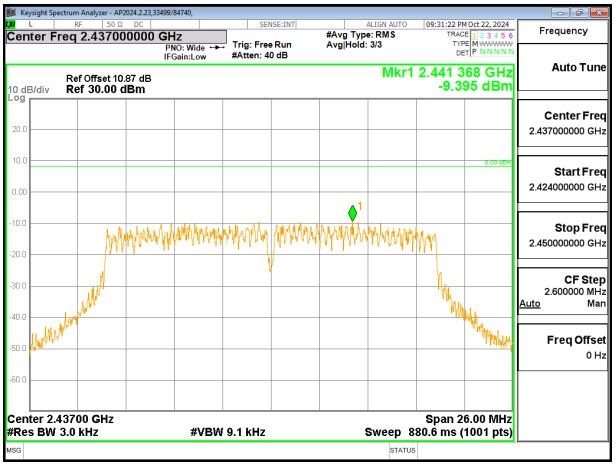
8.6.4. 802.11n HT20 MODE

1TX Antenna 1 MODE

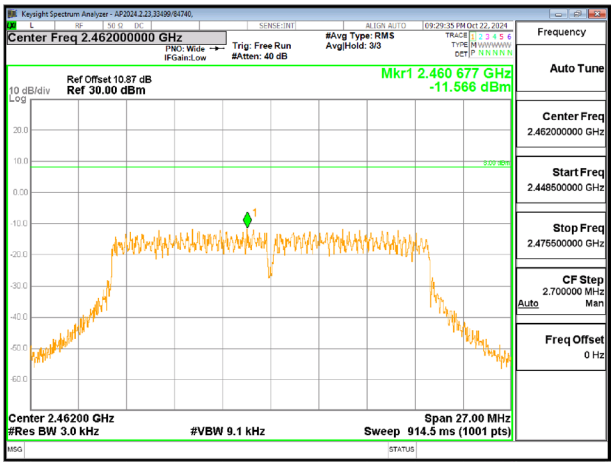
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-12.43	8	-20.43
Middle	2437	-9.40	8	-17.40
High	2462	-11.57	8	-19.57



LOW CHANNEL 1



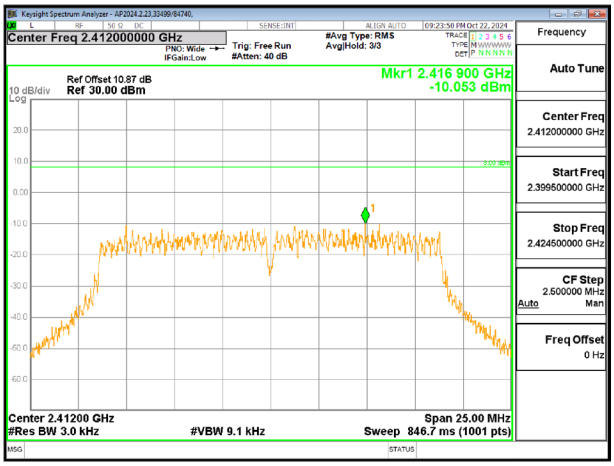
MID CHANNEL 6



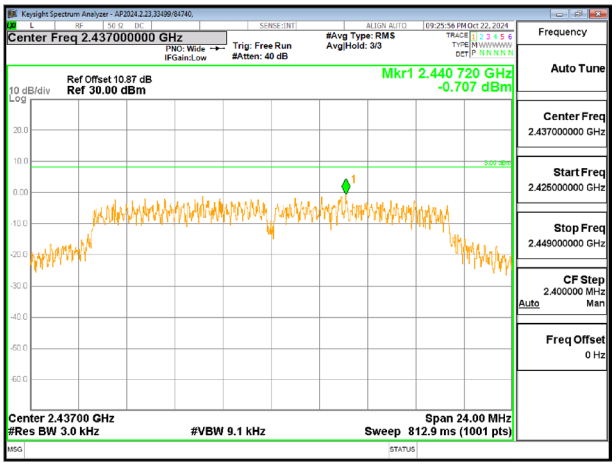
HIGH CHANNEL 11

1TX Antenna 2 MODE

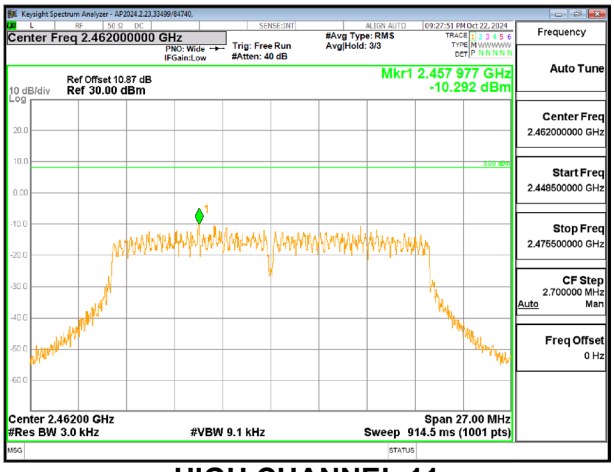
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-10.05	8	-18.05
Middle	2437	-0.71	8	-8.71
High	2462	-10.29	8	-18.29



LOW CHANNEL 1



MID CHANNEL 6



HIGH CHANNEL 11

8.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)
RSS-247 5.5

PROCEDURE

Conducted emissions non-restricted frequency bands: ANSI C63.10 Subclause -11.11 and 6.10
Output power was measured based on a peak measurement; therefore the required attenuation is -20 dBc.

RESULTS