



# TEST REPORT

**Report Number. :** R13916296-E3

**Applicant :** Ademco Inc.  
251 Little Falls Dr.  
Wilmington, DE 19808, U.S.A

**Model :** ADTZWMX

**FCC ID :** CFS8DLWFZWX

**IC :** 573F-WFZWX

**EUT Description :** Radio Module

**Test Standard(s) :** FCC 47 CFR PART 15 SUBPART C: 2021  
ISED RSS-247 ISSUE 2: 2017  
ISED RSS-GEN ISSUE 5 + A2: 2021

**Date Of Issue:**  
2021-10-15

**Prepared by:**  
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## REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
V1	2021-09-27	Initial Issue	Niklas Haydon
V2	2021-10-15	Added full conducted data.	Haley Ackun

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Ademco Inc.  
251 Little Falls Dr.  
Wilmington, DE 19808, U.S.A

**EUT DESCRIPTION:** WiFi Module

**MODEL:** ADTZWMX

**SERIAL NUMBER:** 200-01939V3 REV C

**SAMPLE RECEIPT DATE:** 2021-08-03

**DATE TESTED:** 2021-08-06 to 2021-08-26, 2021-10-13 to 2021-10-14

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C: 2021	Refer to Section 2
ISED RSS-247 Issue 2: 2017	Refer to Section 2
ISED RSS-GEN Issue 5 + A2: 2021	Refer to 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.

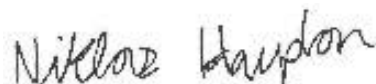
This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For  
UL LLC. By:



Brian Kiewra  
Project Engineer  
Consumer Technology Division  
UL LLC

Prepared By:



Niklas Haydon  
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.

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	Complies	None.
15.247 (a) (2)	RSS-247 5.2 (a)	6dB BW	Complies	None.
15.247 (b) (3)	RSS-247 5.4 (d)	Output Power	Complies	None.
See Comment		Average power	Complies	None.
15.247 (e)	RSS-247 5.2 (b)	PSD	Complies	None.
15.247 (d)	RSS-247 5.5	Conducted Spurious Emissions	Complies	None.
15.209, 15.205	RSS-GEN 8.9, 8.10	Radiated Emissions	Complies	None
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: 2021, ANSI C63.10-2013, KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, RSS-GEN Issue 5 + A2: 2021, and RSS-247 Issue 2: 2017.

### 4. FACILITIES AND ACCREDITATION

UL LLC is accredited 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 RTP, NC 27709, U.S.A	US0067	2180C	703469
<input checked="" type="checkbox"/>	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560	US0067	27265	703469

## 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 a radio module that supports 2.4 WLAN and Z-Wave. This report covers testing for the 2.4 WLAN radio only.

### 6.2. MAXIMUM OUTPUT POWER

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

#### Antenna 1

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>1Tx</b>			
2412 - 2462	802.11b	16.96	49.66
2412 - 2462	802.11g	21.58	143.88

#### Antenna 2

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>1Tx</b>			
2412 - 2462	802.11b	20.3	107.15
2412 - 2462	802.11g	21.32	135.52

#### Antennas 1 & 2

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
<b>2Tx</b>			
2412 - 2462	802.11n HT20 CDD	23.26	211.84

### 6.3. DESCRIPTION OF AVAILABLE ANTENNAS

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

The radio utilizes two integrated PCB antennas, with a maximum gain of 3.5 dBi for each.

## 6.4. SOFTWARE AND FIRMWARE

The EUT software installed during testing was 01.006571-162.

The test utility software used during testing was 01.006571-162.

## 6.5. WORST-CASE CONFIGURATION AND MODE

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

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels. The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z. For antenna 1, antenna 2, and antenna 1 + antenna 2 it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

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

802.11b SISO mode: 11 Mbps  
802.11g SISO mode: 54 Mbps  
802.11n HT20 MIMO mode: MCS0

\*Note: The EUT only supports SISO for 802.11b/ 802.11g and MIMO for 802.11nHT20.

## 6.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	HP	14-dk1003dx	5CG016B3DL	-
Power Supply	Resideo	ADS-25STA-12C	300-11260	-

### I/O CABLES

Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length	Remarks
1	1	1	I/O	AC Mains	<3m	None

### TEST SETUP

The EUT is installed in a host laptop computer during the tests. Test software exercised the radio card.

### SETUP DIAGRAM

Please refer to R13916296-EP2 for setup diagrams.

## 7. MEASUREMENT METHOD

Duty Cycle: ANSI C63.10-2013 Section 11.6

6 dB BW: ANSI C63.10 Subclause -11.8.1

Occupied BW (99%): ANSI C63.10-2013 Section 6.9.3

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)

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

Emissions restricted frequency bands: ANSI C63.10 Subclause - 11.12.1 and 6.10.5

Radiated Spurious Emissions: ANS C63.10-2013 Sections 6.3, 6.4, 6.5, 6.6

AC Power Line Conducted Emissions: ANSI C63.10-2013, 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 - Radiated Disturbance Emissions Test Equipment (Morrisville - North Chamber)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	<b>0.009-30MHz</b>				
AT0059	Active Loop Antenna	EMCO	6502	2020-08-06	2021-08-31
	<b>30-1000 MHz</b>				
AT0066	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB1	2021-02-19	2022-02-19
	<b>1-18 GHz</b>				
AT0078	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2020-11-19	2021-11-19
	<b>18-40 GHz</b>				
AT0063	Horn Antenna, 18-26.5GHz	ARA	MWH-1826/B	2020-10-30	2021-10-30
	<b>Gain-Loss Chains</b>				
N-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2021-07-20	2022-07-20
N-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2021-07-20	2022-07-20
N-SAC03	Gain-loss string: 1-18GHz	Various	Various	2021-07-20	2022-07-20
N-SAC04	Gain-loss string: 18-40GHz	Various	Various	2021-07-20	2022-07-20
	<b>Receiver &amp; Software</b>				
197954	Spectrum Analyzer	Rohde & Schwarz	ESW44	2021-03-30	2022-03-30
SOFTEMI	EMI Software	UL	Version 9.5 (24 Jun 2021)		
	<b>Additional Equipment used</b>				
s/n 181474341	Environmental Meter	Fisher Scientific	15-077-963	2020-08-06	2021-08-06

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
HI0091	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12
HI0090	Environmental Meter	Fisher Scientific	161016511	2021-07-12	2022-07-12
PWM001	RF Power Meter	Keysight Technologies	N1912A	2021-07-16	2022-07-16
PWS004	Peak and Avg Power Sensor, 50MHz to 6GHz	Keysight Technologies	E9323A	2020-08-12	2021-08-12
SA0025	Spectrum Analyzer	Keysight Technologies	N9030A	2021-04-01	2022-04-21
SOFTEMI	Antenna Port Software	UL	Version 2021.05.28 and 2021.9.30		

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	2021-04-05	2022-04-05
CDECABLE001	ANSI C63.4 1m extension cable.	UL	Per Annex B of ANSI C63.4	2020-08-08	2021-08-08
HI0090	Environmental Meter	Fisher Scientific	15-077-963	2021-07-12	2022-07-12
LISN003	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2020-08-18	2021-08-18
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2020-08-18	2021-08-18
ATA222	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2021-04-05	2022-04-05
PS215	AC Power Source	Elgar	CW2501M (s/n 1523A02397)	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (04 Mar 2021)		

## 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.  
 ANSI C63.10 Section 11.6

#### ON TIME AND DUTY CYCLE RESULTS

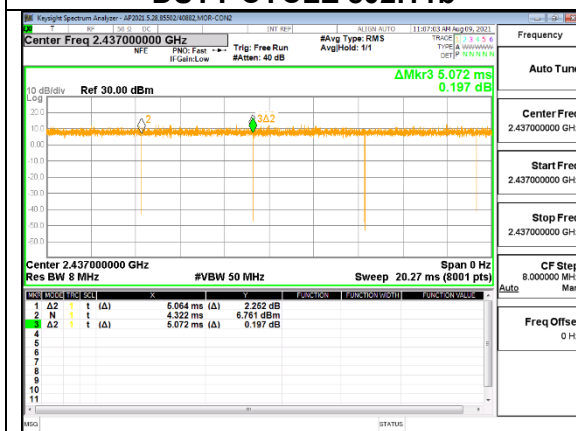
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11b	1.778	1.784	0.997	99.66%	0.00	0.010
802.11g	0.364	0.370	0.984	98.38%	0.00	0.010
802.11n HT20	5.064	5.072	0.998	99.84%	0.00	0.010



DUTY CYCLE 802.11b



DUTY CYCLE 802.11g



DUTY CYCLE 802.11n HT20

## 9.1. 99% BANDWIDTH

### LIMITS

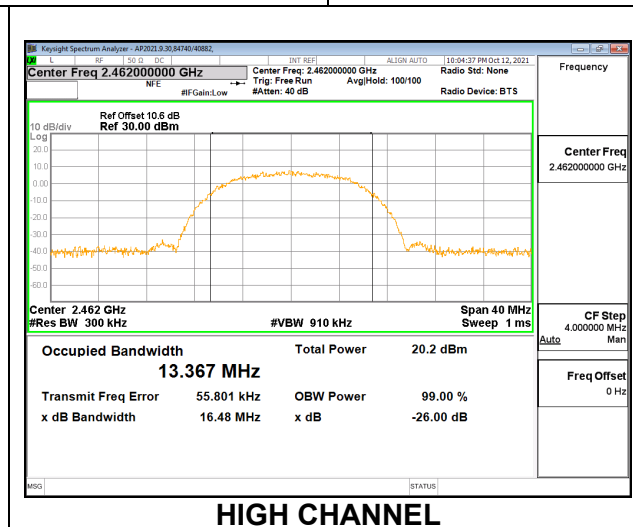
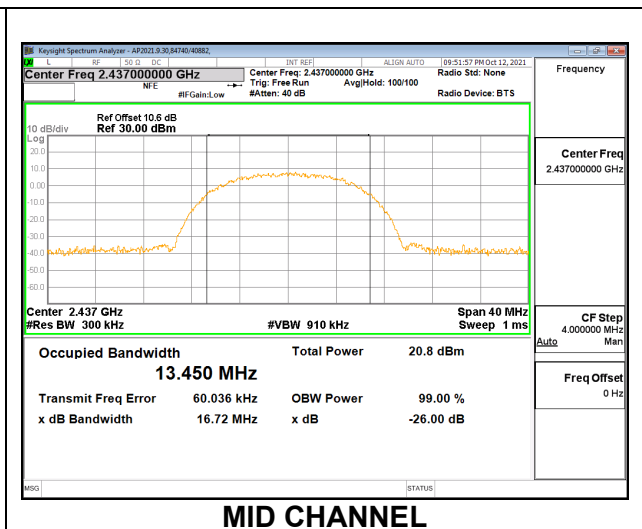
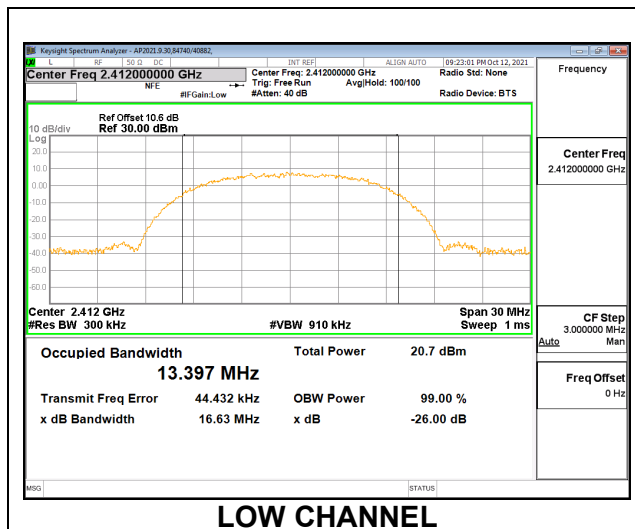
None; for reporting purposes only.

### RESULTS

#### 9.1.1. 2.4 WLAN- Antenna 1

##### 802.11b

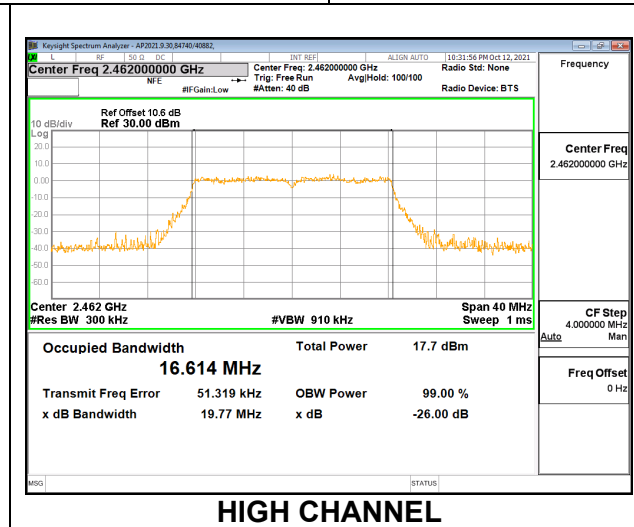
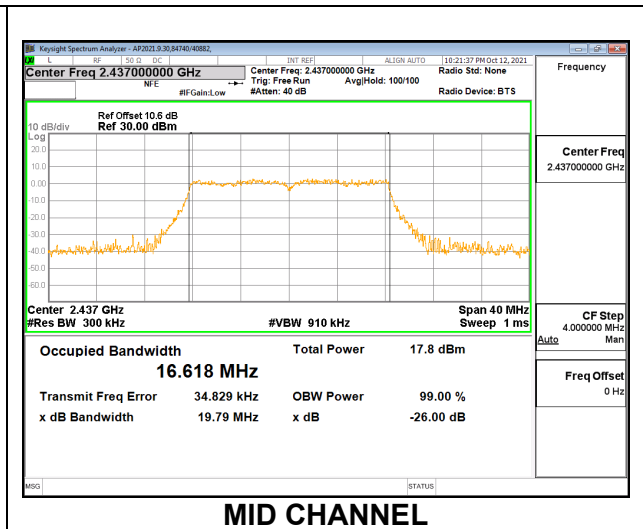
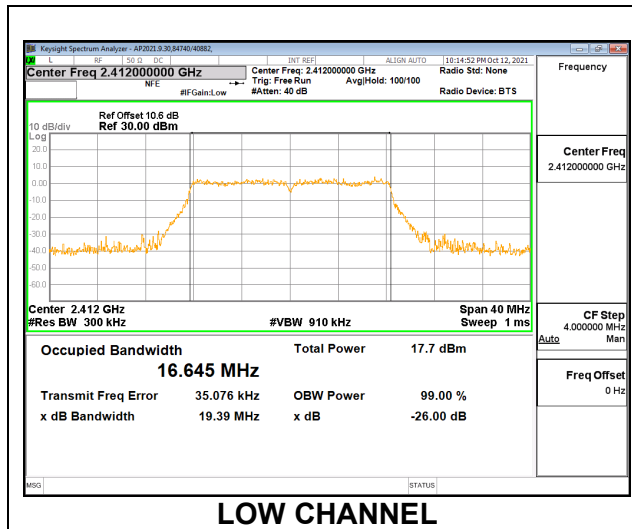
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.397
Middle	2437	13.450
High	2462	13.367





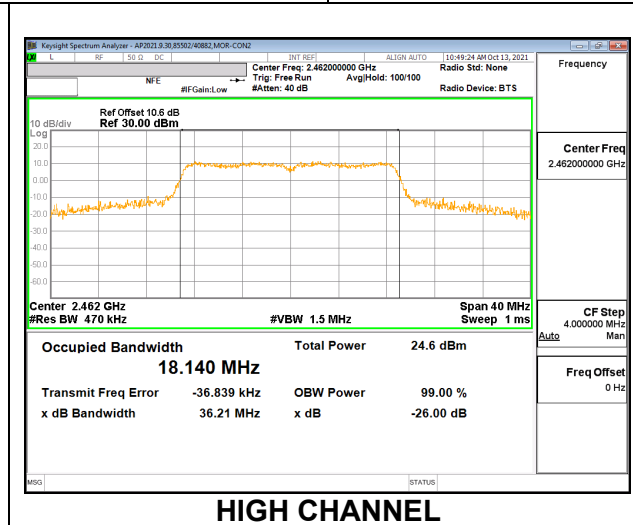
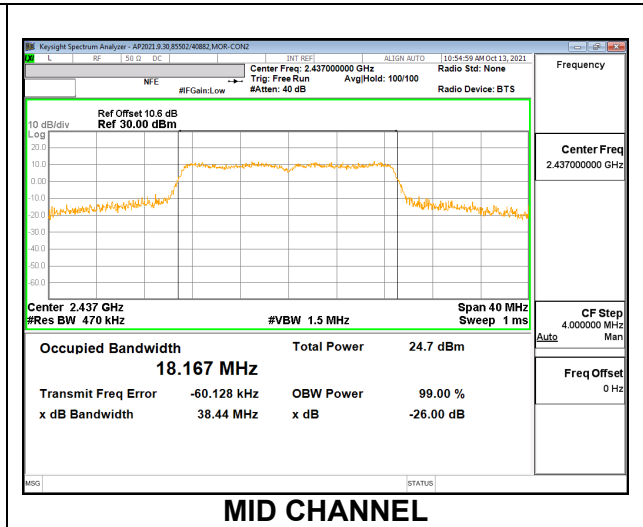
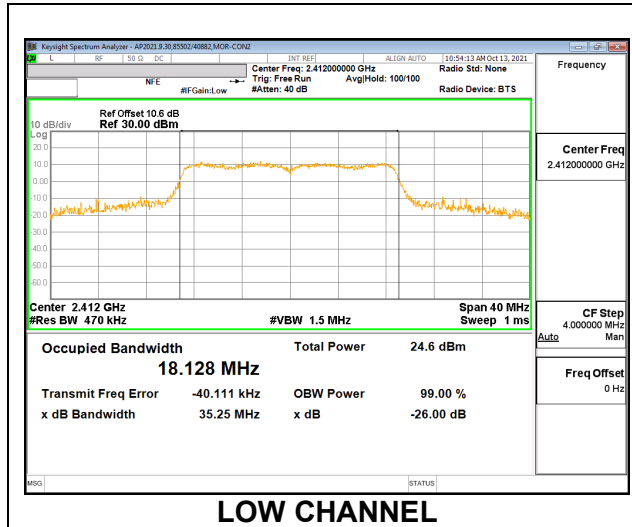
**802.11g**

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.645
Middle	2437	16.618
High	2462	16.614



**802.11nHT20 2TX Antenna 1 + Antenna 2 CDD MODE**

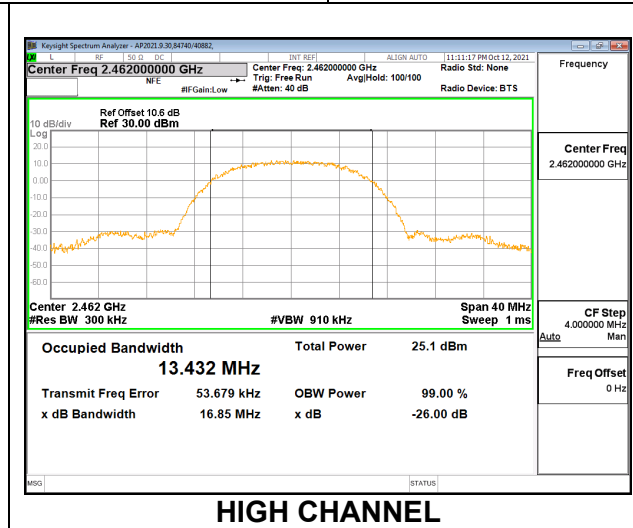
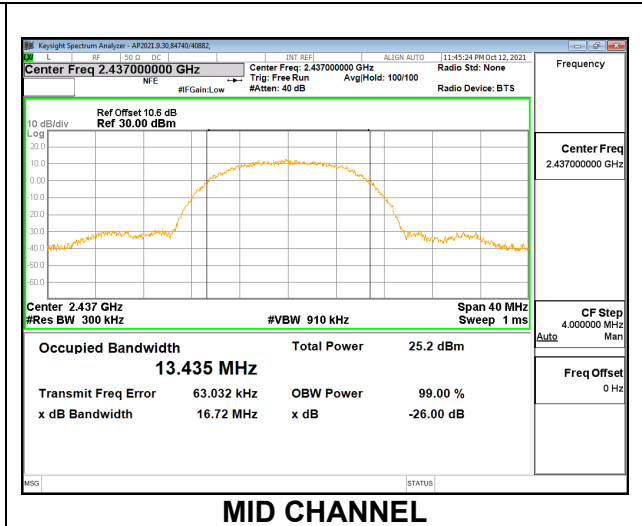
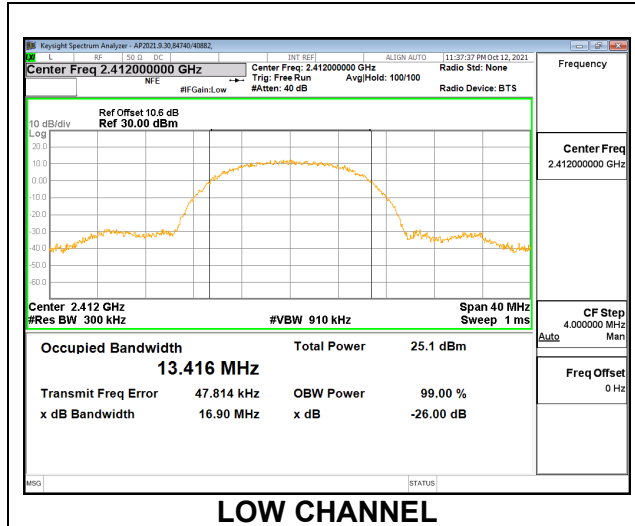
Channel	Frequency (MHz)	99% Bandwidth Antenna 1 (MHz)
Low 1	2412	18.128
Mid 6	2437	18.167
High 11	2462	18.140



9.1.2. 2.4 WLAN- Antenna 2

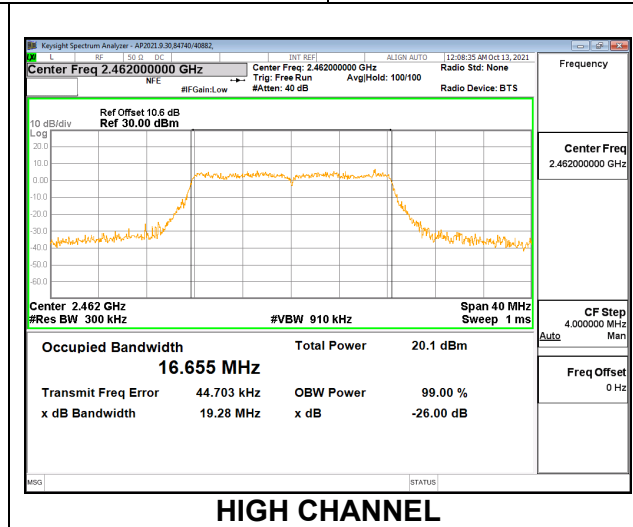
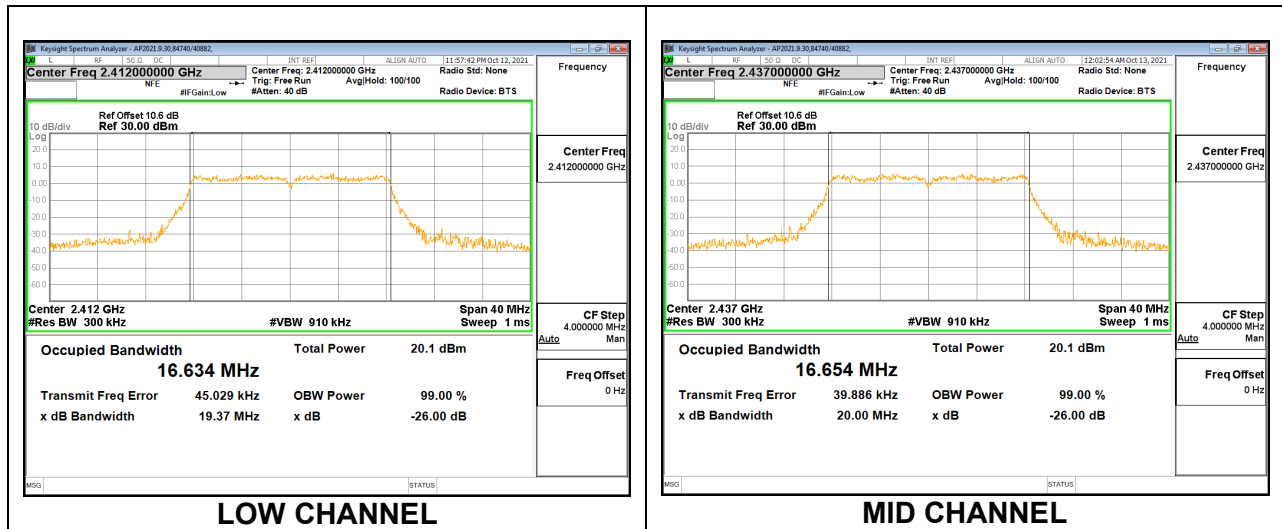
802.11b

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.416
Middle	2437	13.435
High	2462	13.432



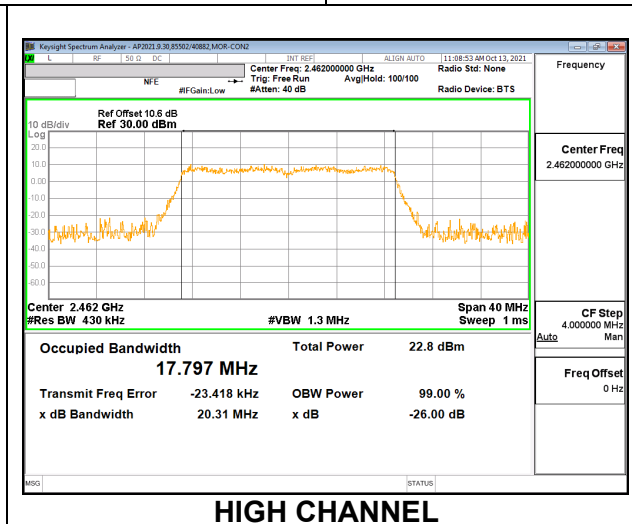
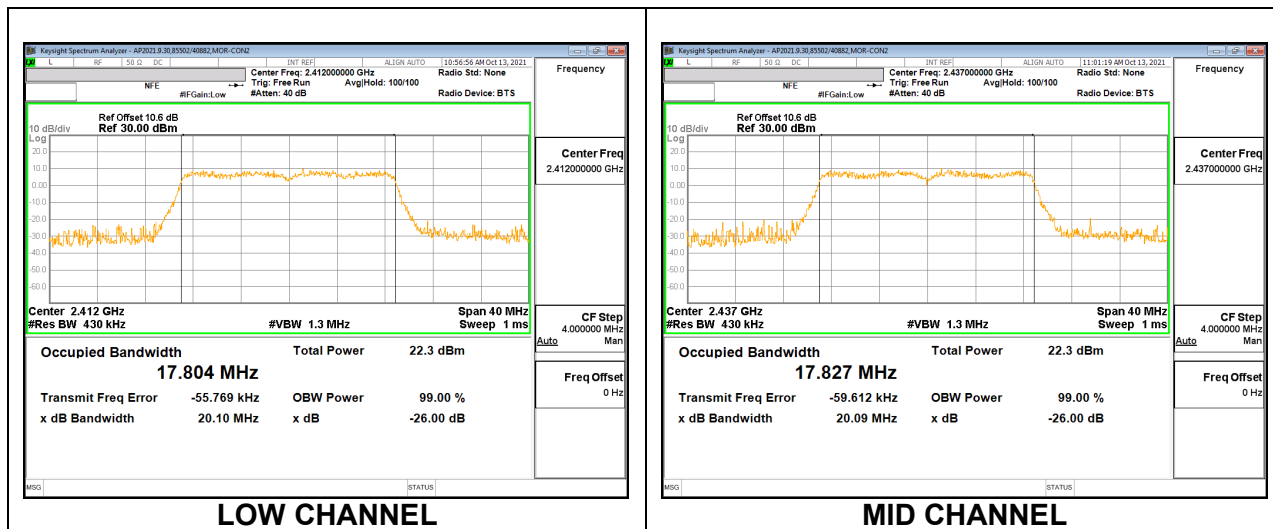
**802.11g**

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.634
Middle	2437	16.654
High	2462	16.655



**802.11nHT20 2TX Antenna 1 + Antenna 2 CDD MODE**

Channel	Frequency (MHz)	99% Bandwidth Antenna 2 (MHz)
Low 1	2412	17.804
Mid 6	2437	17.827
High 11	2462	17.797



## 9.2. 6 dB BANDWIDTH

### LIMITS

FCC §15.247 (a) (2)

RSS-247 5.2 (a)

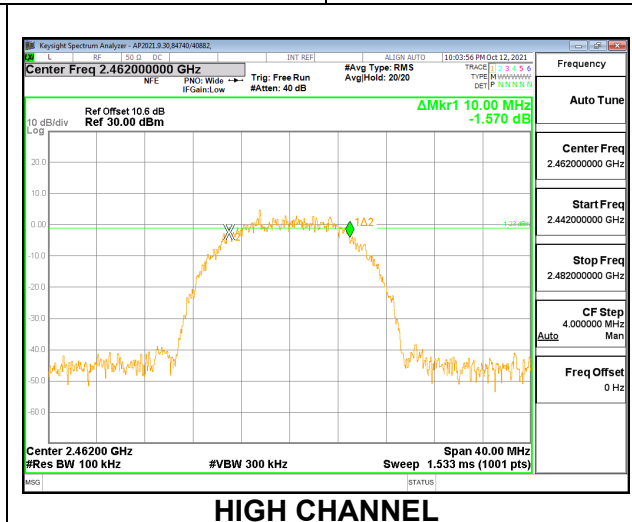
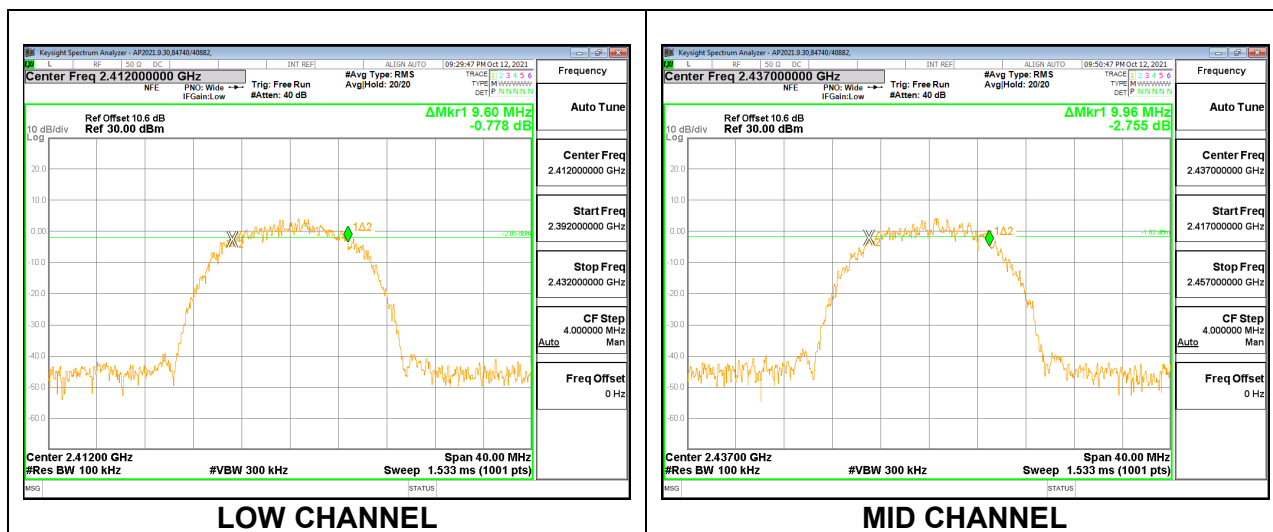
The minimum 6 dB bandwidth shall be at least 500 kHz.

### RESULTS

9.2.1. 2.4 WLAN- Antenna 1

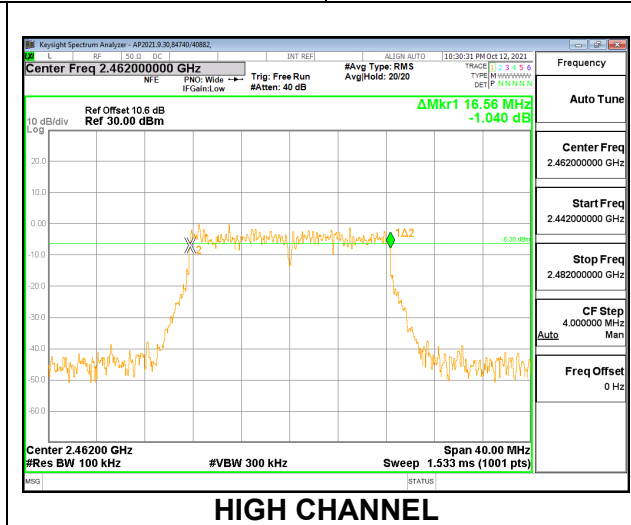
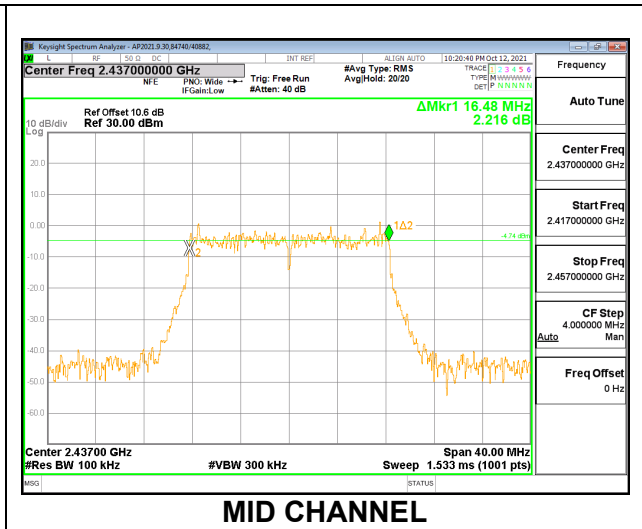
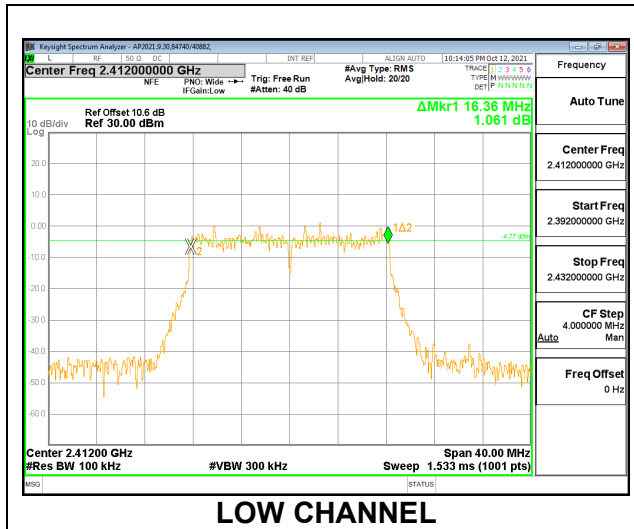
802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.60	0.5
Middle	2437	9.96	0.5
High	2462	10.00	0.5



**802.11g**

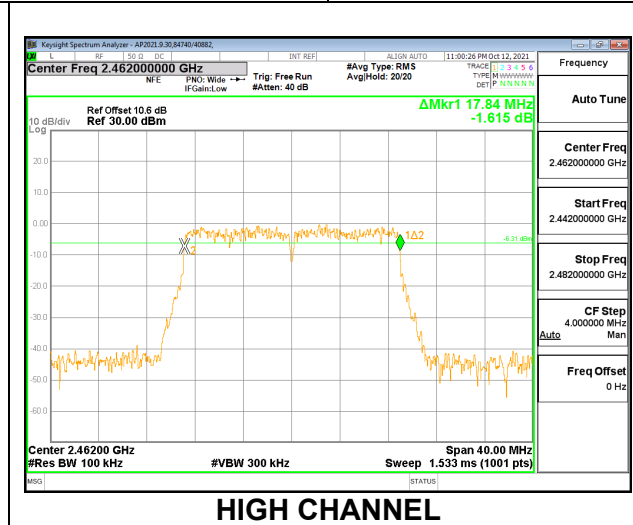
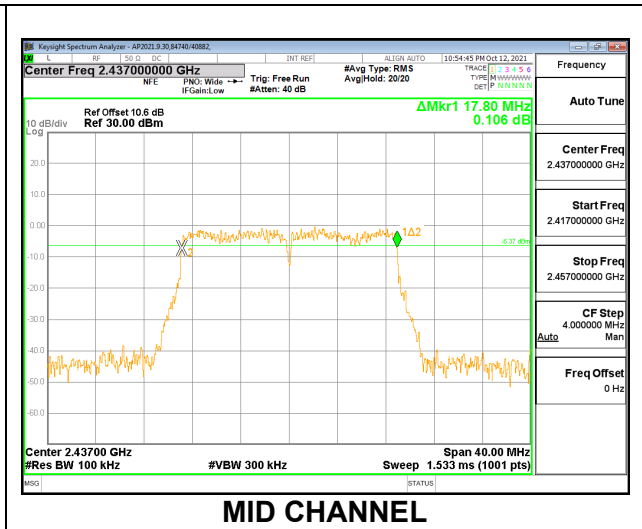
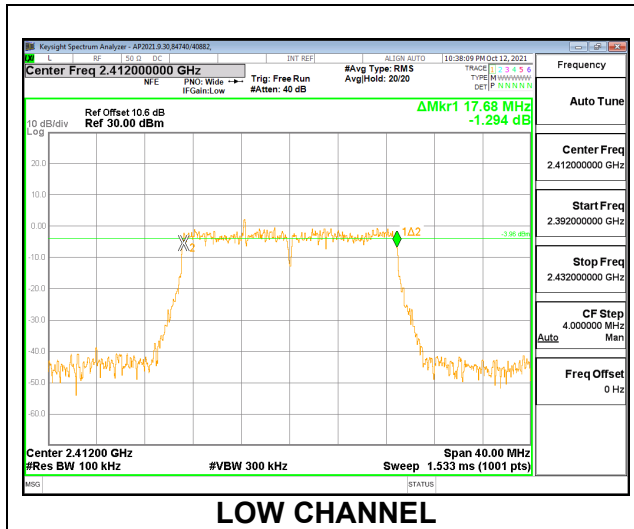
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.36	0.5
Middle	2437	16.48	0.5
High	2462	16.56	0.5





**2TX Antenna 1 + Antenna 2 CDD MODE**

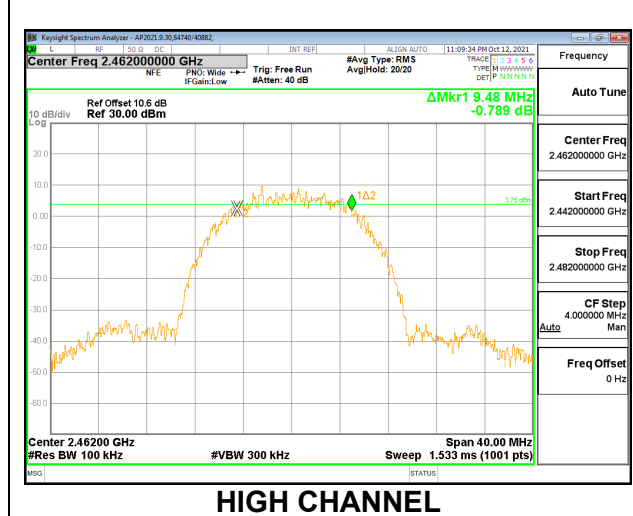
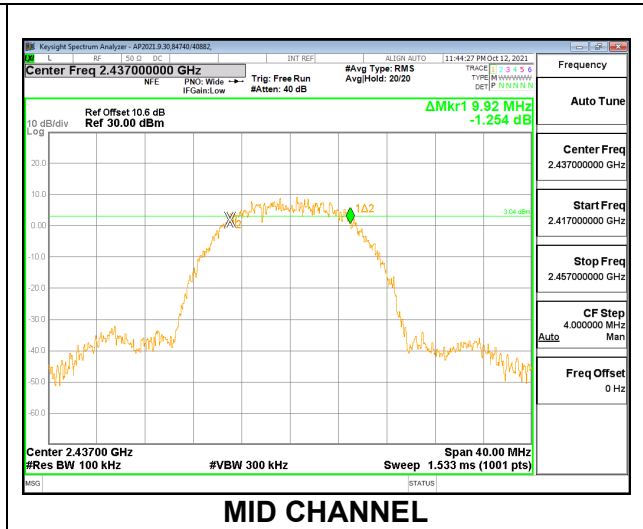
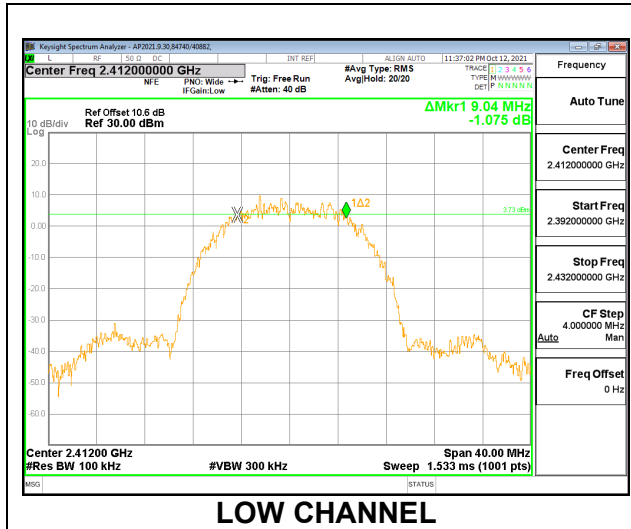
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.68	0.5
Middle	2437	17.80	0.5
High	2462	17.84	0.5



9.2.1. 2.4 WLAN- Antenna 2

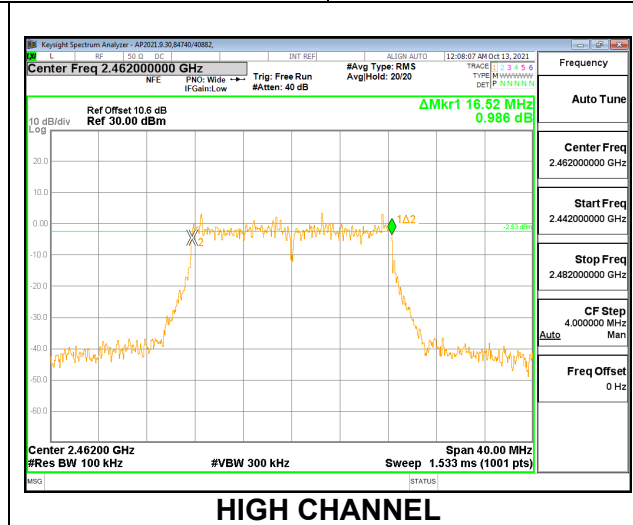
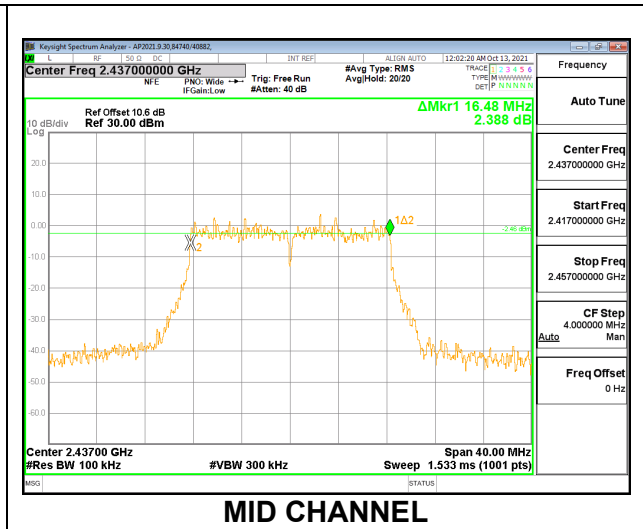
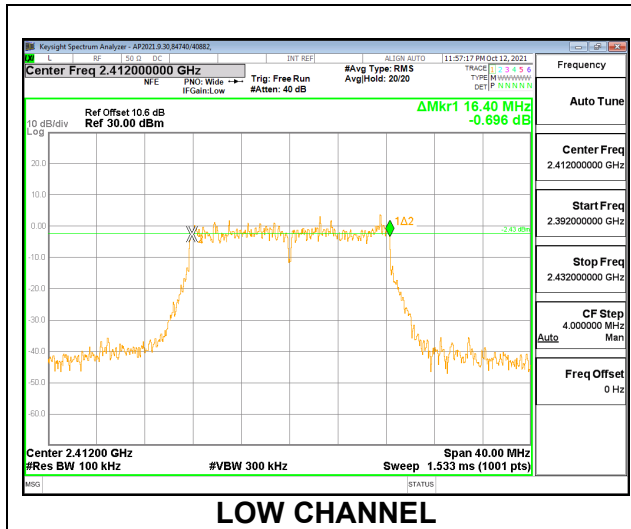
802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.04	0.5
Middle	2437	9.92	0.5
High	2462	9.48	0.5



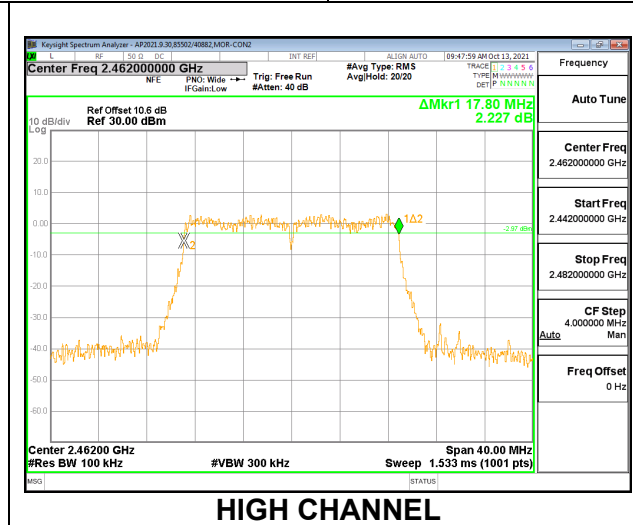
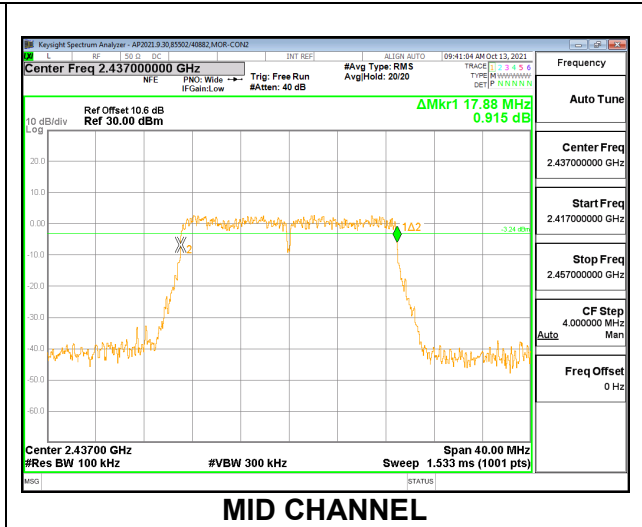
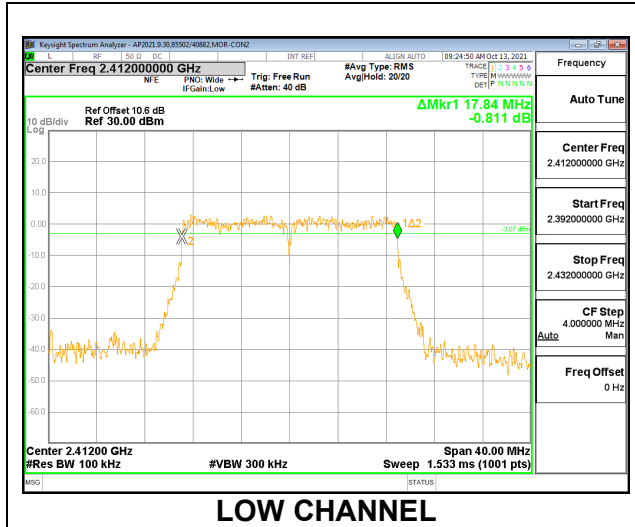
**802.11g**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.40	0.5
Middle	2437	16.48	0.5
High	2462	16.52	0.5



**2TX Antenna 1 + Antenna 2 CDD MODE**

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.84	0.5
Middle	2437	17.88	0.5
High	2462	17.80	0.5



### **9.3. OUTPUT POWER**

#### **LIMITS**

FCC §15.247 (b) (3)

RSS-247 5.4 (d)

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 peak power meter.

The cable assembly insertion loss of 10.50 dB (0.5 dB cable and 10.00dB pad) was entered as an offset in the power meter.

#### **RESULTS**

**9.3.1. 2.4 WLAN-Antenna 1**

**802.11b**

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Peak Power Reading (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>
Low	2412	16.95	30	-13.050
Middle	2437	16.96	30	-13.040
High	2462	16.96	30	-13.040

**802.11g**

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Peak Power Reading (dBm)</b>	<b>Limit (dBm)</b>	<b>Margin (dB)</b>
Low	2412	20.70	30	-9.300
Middle	2437	20.57	30	-9.430
High	2462	21.58	30	-8.420

**802.11nHT20 2TX Antenna 1 + Antenna 2 CDD MODE**

<b>Test Engineer:</b>	85502/40882
<b>Test Date:</b>	2021-08-06

**Limits**

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC/ISED Power Limit (dBm)	ISED EIRP Limit (dBm)	Max Power (dBm)
Low 1	2412	3.50	30.00	36	30.00
Mid 6	2437	3.50	30.00	36	30.00
High 11	2462	3.50	30.00	36	30.00

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd Power</b>
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**Results**

Channel	Frequency (MHz)	Antenna 1 Meas Power (dBm)	Antenna 2 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi n (dB)
Low 1	2412	23.26	22.11	25.73	30.00	-4.27
Mid 6	2437	23.05	21.42	25.32	30.00	-4.68
High 11	2462	23.08	21.57	25.40	30.00	-4.60

### 9.3.1. 2.4 WLAN-Antenna 2

#### 802.11b

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2412	20.30	30	-9.700
Middle	2437	20.23	30	-9.770
High	2462	20.19	30	-9.810

#### 802.11g

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2412	21.32	30	-8.680
Middle	2437	21.02	30	-8.980
High	2462	20.50	30	-9.500



## 9.4. AVERAGE POWER

### LIMITS

None; for reporting purposes only.

### TEST PROCEDURE

The transmitter output is connected to a gated average power meter.

The cable assembly insertion loss of 10.50 dB (0.5 dB cable and 10.00dB pad) was entered as an offset in the power meter.

### RESULTS

#### 9.4.1. 2.4 WLAN- Antenna 1

##### 802.11b

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>AV power (dBm)</b>
Low	2412	14.21
Middle	2437	14.17
High	2462	14.10

##### 802.11g

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

<b>Channel</b>	<b>Frequency (MHz)</b>	<b>AV power (dBm)</b>
Low	2412	11.51
Middle	2437	11.64
High	2462	11.54

**802.11nHT20 2TX Antenna 1 + Antenna 2 CDD MODE**

<b>Test Engineer:</b>	85502/40882
<b>Test Date:</b>	2021-08-06

Channel	Frequency (MHz)	Antenna 1 Power (dBm)	Antenna 2 Power (dBm)	Total Power (dBm)
Low 1	2412	14.94	12.40	16.86
Mid 6	2437	14.82	12.35	16.77
High 11	2462	14.77	12.29	16.71

**9.4.1. 2.4 WLAN- Antenna 2**

**802.11b**

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	17.50
Middle	2437	17.44
High	2462	17.44

**802.11g**

<b>Tested By:</b>	85502/40882
<b>Date:</b>	2021-08-06

Channel	Frequency (MHz)	AV power (dBm)
Low	2412	12.10
Middle	2437	12.04
High	2462	12.06

## 9.5. POWER SPECTRAL DENSITY

### LIMITS

FCC §15.247 (e)

RSS-247 (5.2) (b)

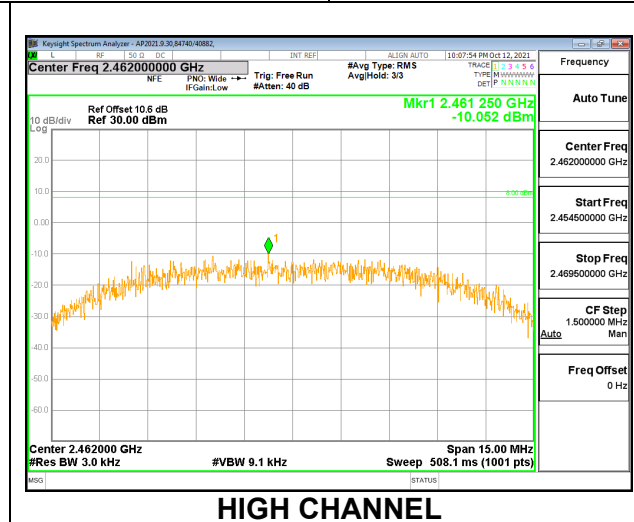
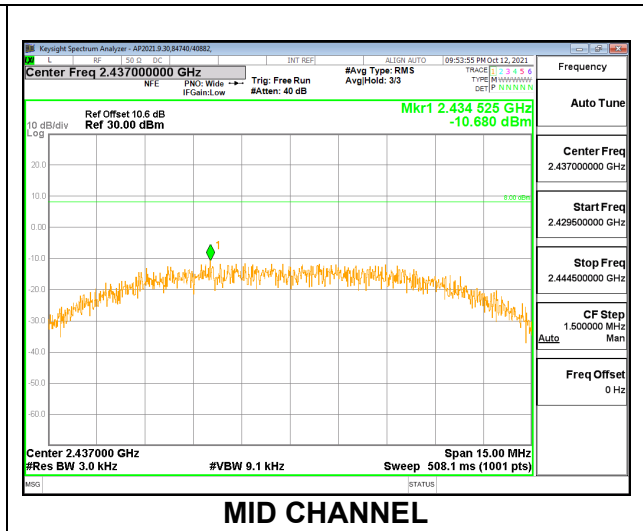
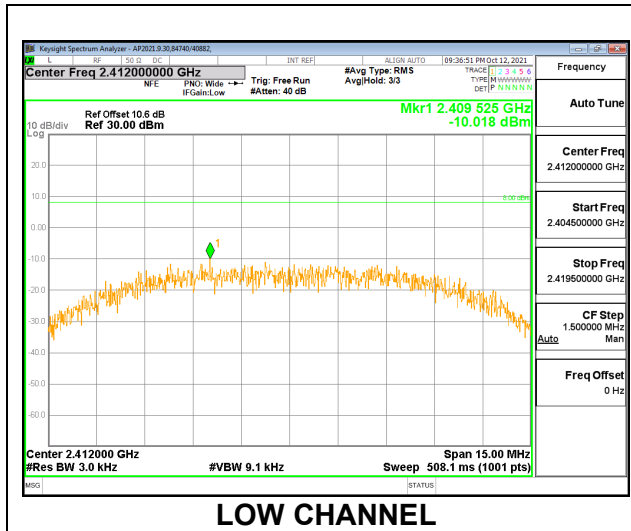
The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### RESULTS

9.5.1. 2.4 WLAN- Antenna 1

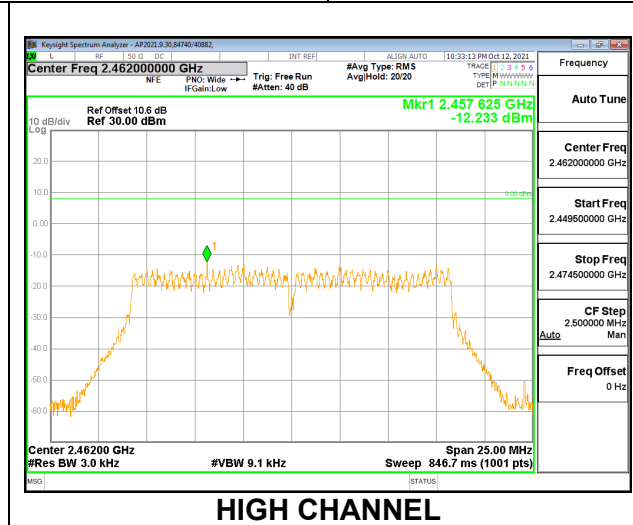
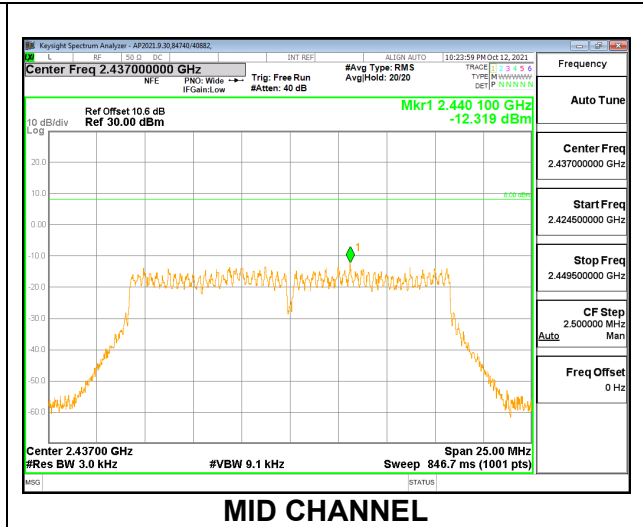
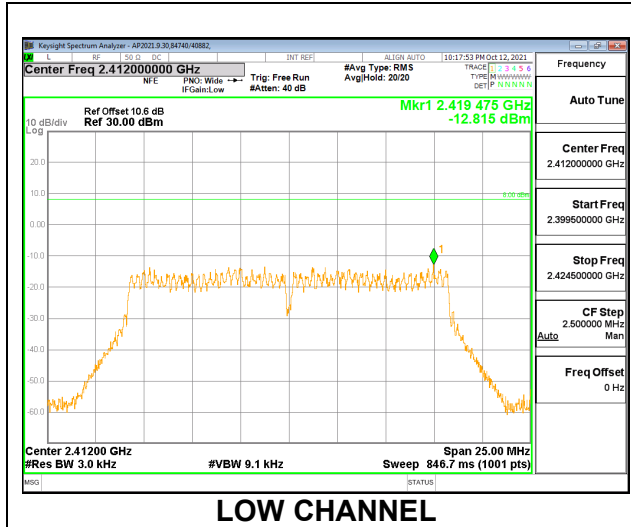
802.11b

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-10.018	8	-18.02
Middle	2437	-10.680	8	-18.68
High	2462	-10.052	8	-18.05



**802.11g**

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-12.815	8	-20.82
Middle	2437	-12.319	8	-20.32
High	2462	-12.233	8	-20.23



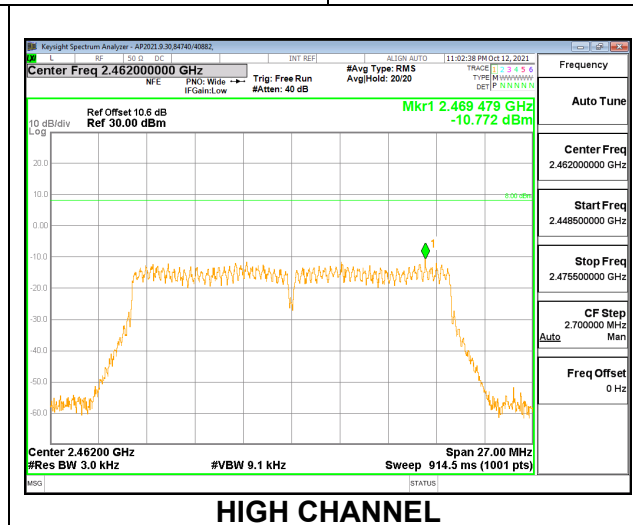
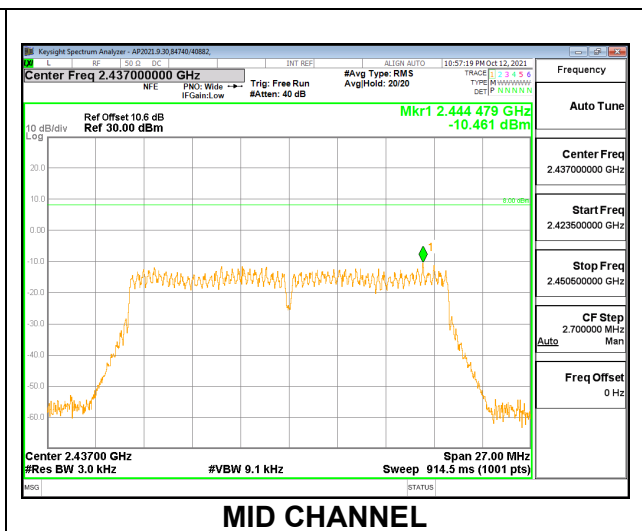
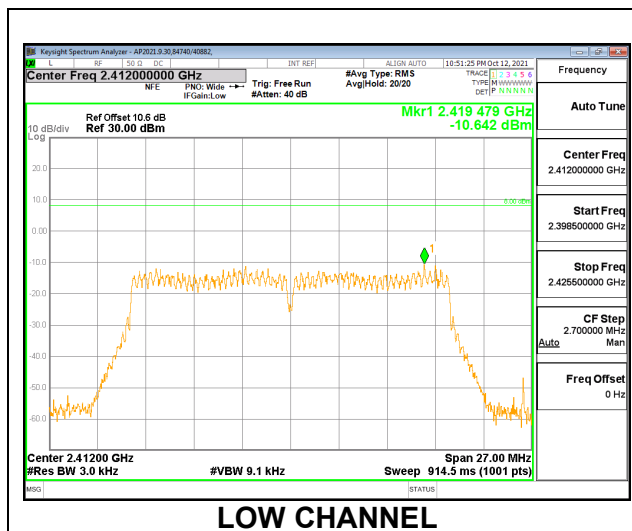
**2TX Antenna 1 + Antenna 2 CDD MODE**

<b>Duty Cycle CF (dB)</b>	0.00	<b>Included in Calculations of Corr'd PSD</b>
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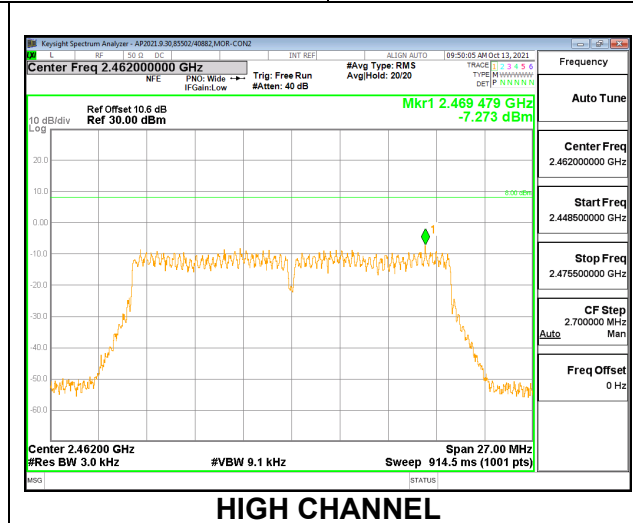
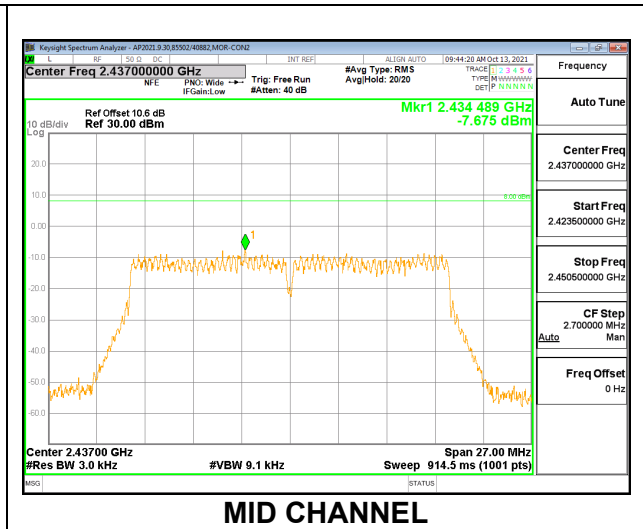
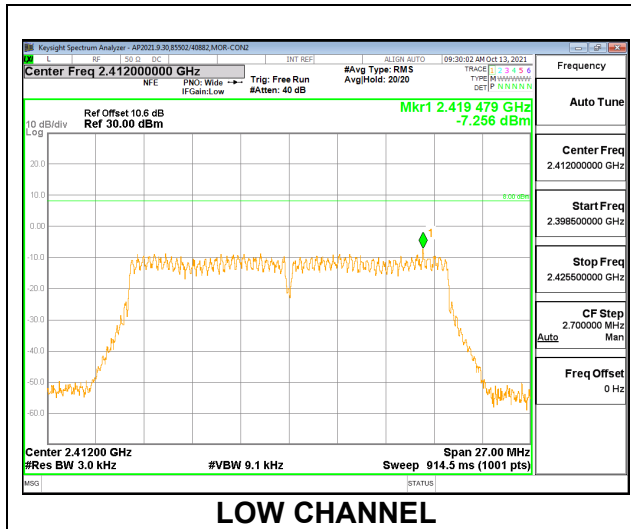
**PSD Results**

Channel	Frequency (MHz)	Antenna 1 Meas (dBm/ 3kHz)	Antenna 2 Meas (dBm/ 3kHz)	Total Corr'd PSD (dBm/ 3kHz)	Limit (dBm/ 3kHz)	Margin (dB)
Low 1	2412	-10.642	-7.256	-5.62	8.0	-13.6
Mid 6	2437	-10.461	-7.675	-5.84	8.0	-13.8
High 11	2462	-10.772	-7.273	-5.67	8.0	-13.7

**Antenna 1**



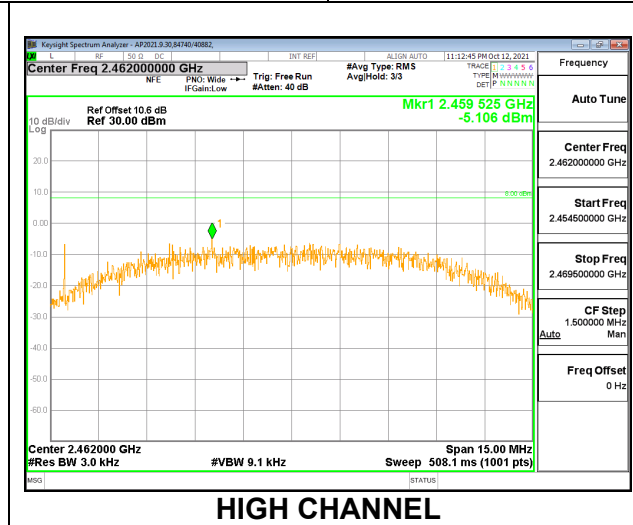
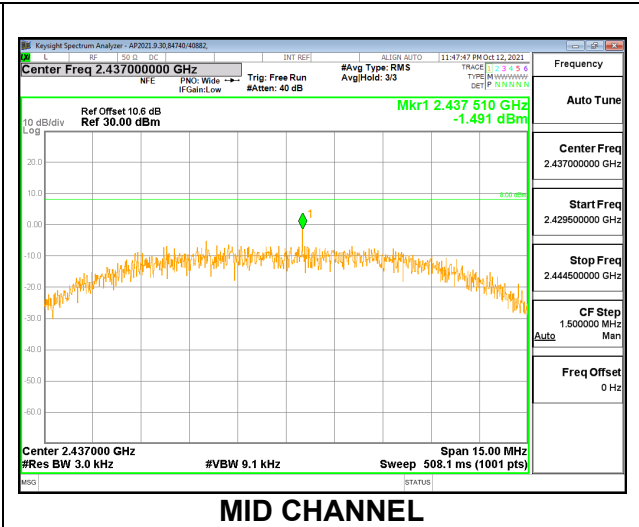
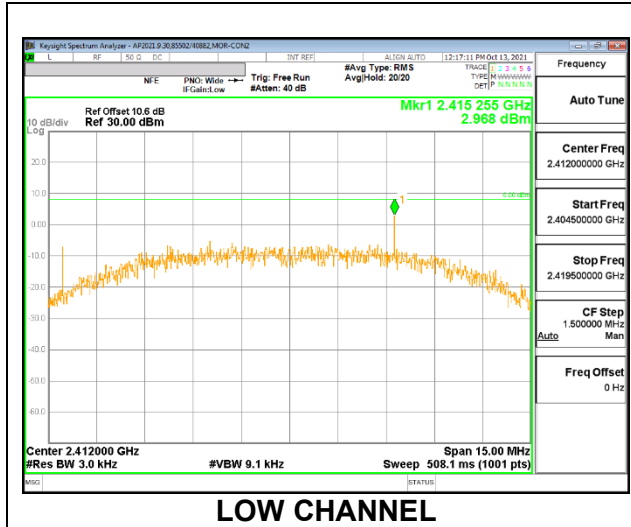
**Antenna 2**



### 9.5.1. 2.4 WLAN- Antenna 2

#### 802.11b

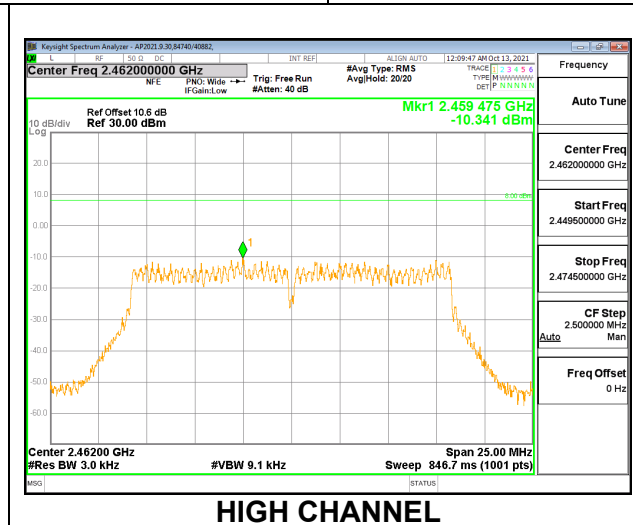
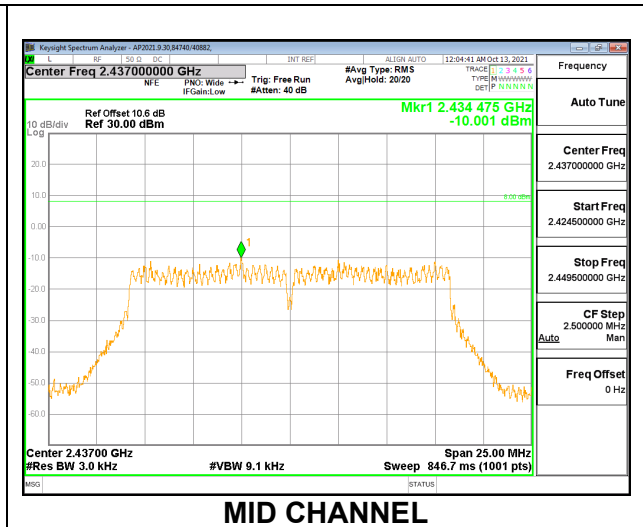
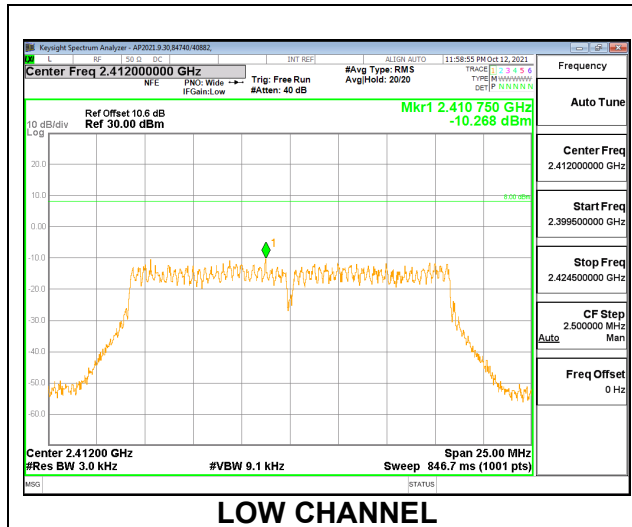
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	2.968	8	-5.03
Middle	2437	-1.491	8	-9.49
High	2462	-5.106	8	-13.11





**802.11g**

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2412	-10.268	8	-18.27
Middle	2437	-10.001	8	-18.00
High	2462	-10.341	8	-18.34



## 9.6. CONDUCTED SPURIOUS EMISSIONS

### LIMITS

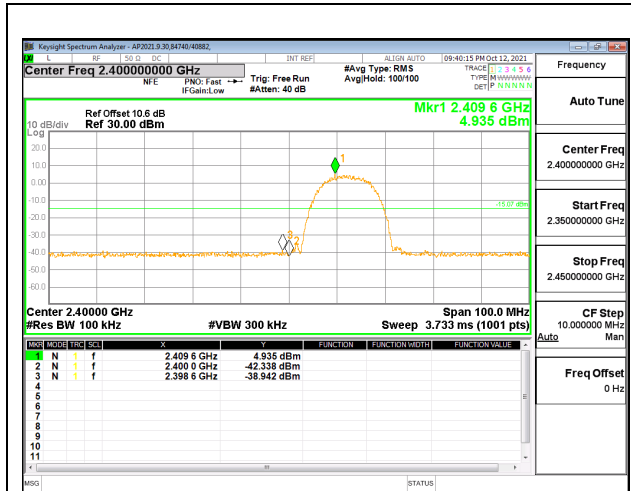
FCC §15.247 (d)

RSS-247 5.5

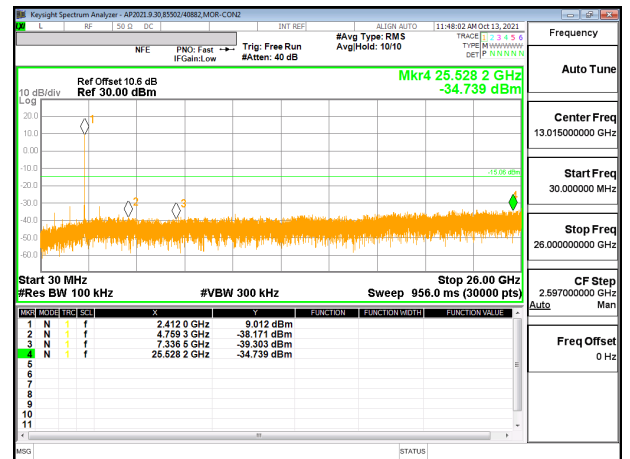
Output power was measured based on the use of a peak measurement, therefore the required attenuation is -20 dBc.

### RESULTS

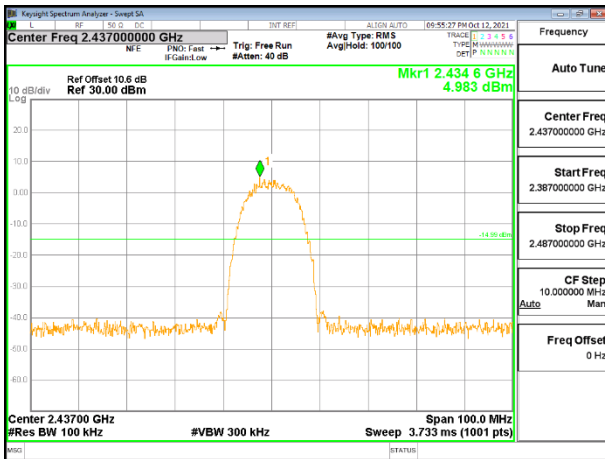
9.6.1. 2.4 WLAN-Antenna 1 (802.11b)



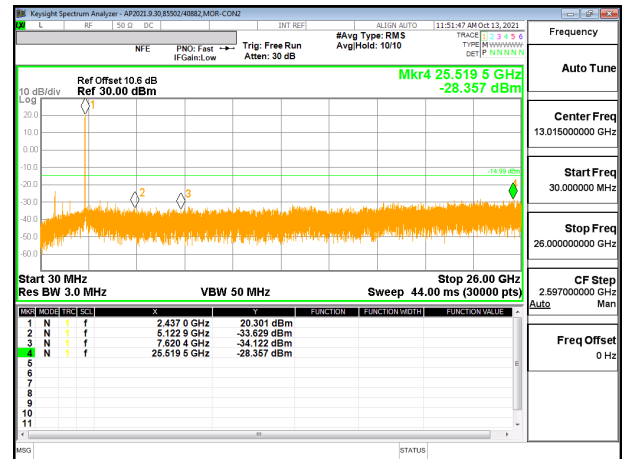
LOW CHANNEL BANDEDGE



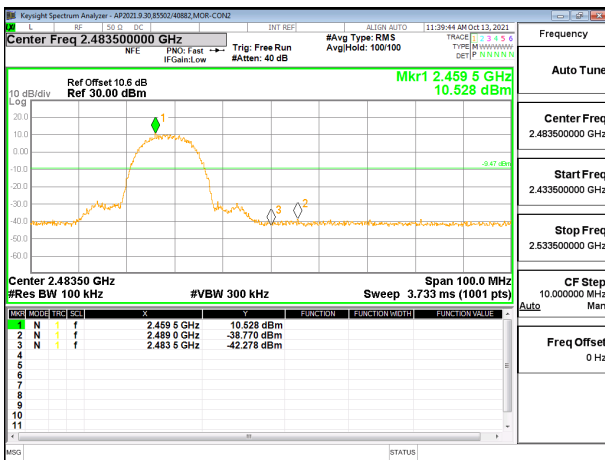
OUT-OF-BAND LOW CHANNEL



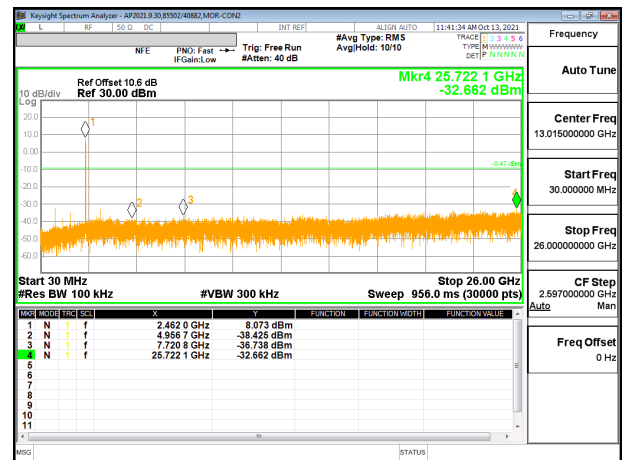
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

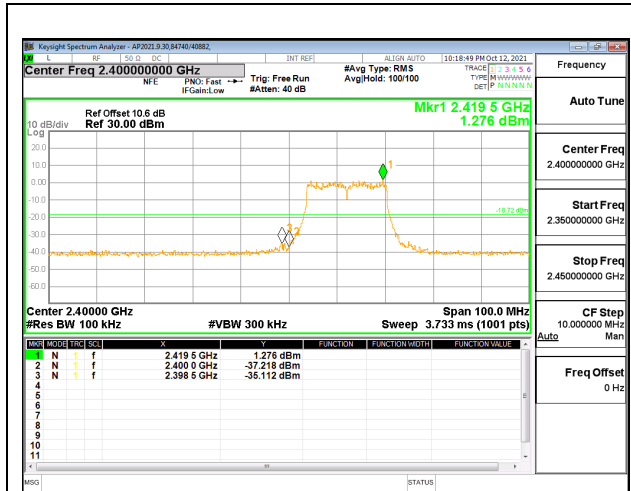


HIGH CHANNEL BANDEDGE

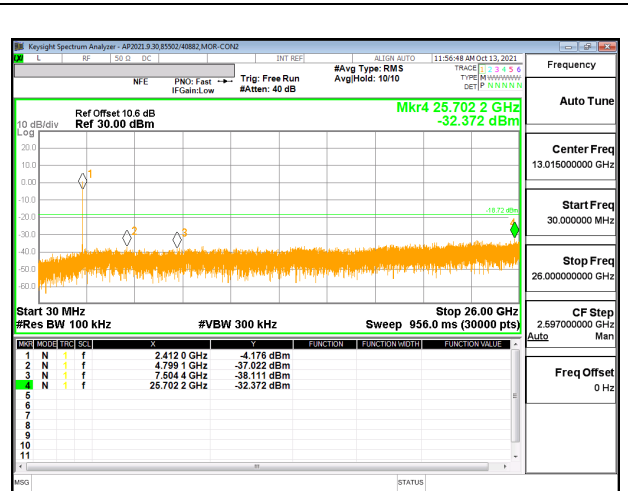


OUT-OF-BAND HIGH CHANNEL

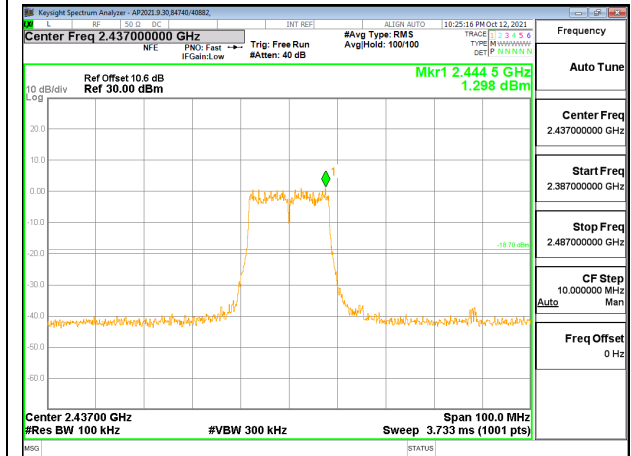
9.6.1. 2.4 WLAN-Antenna 1 (802.11g)



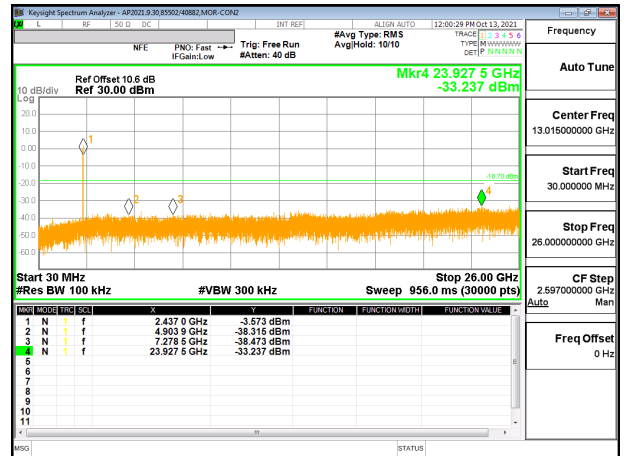
LOW CHANNEL BANDEDGE



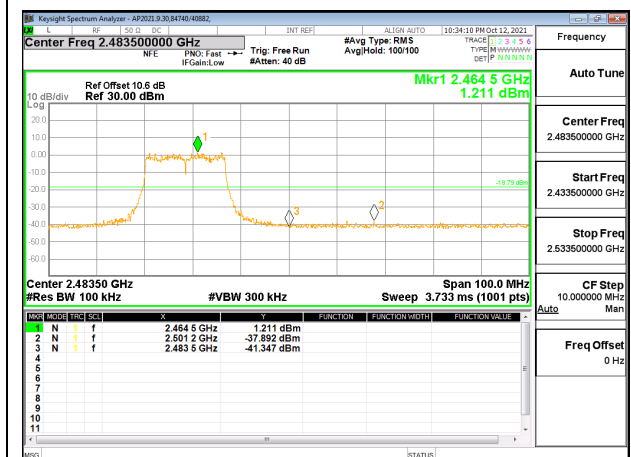
OUT-OF-BAND LOW CHANNEL



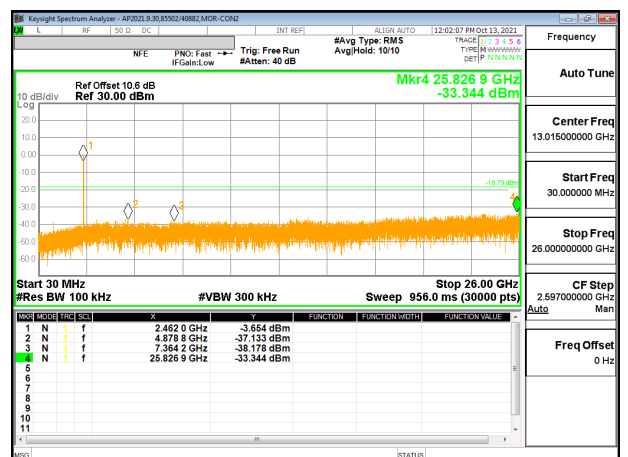
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

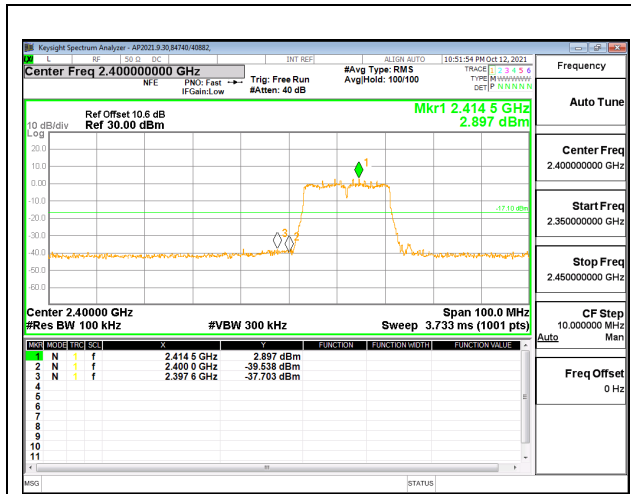


HIGH CHANNEL BANDEDGE

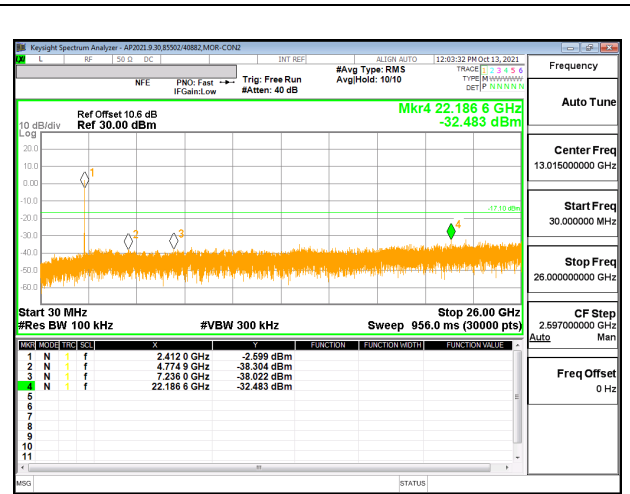


OUT-OF-BAND HIGH CHANNEL

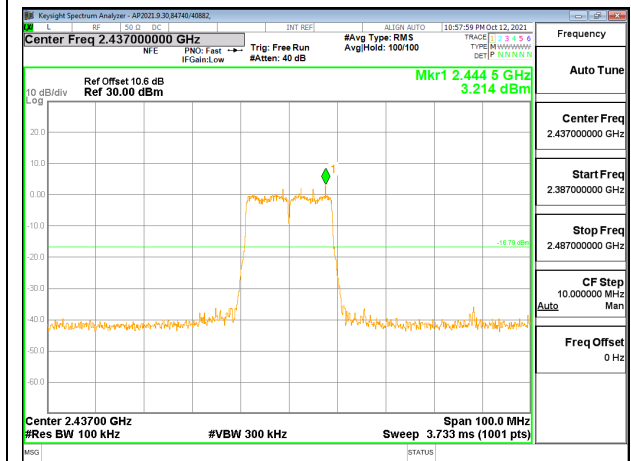
9.6.1. 2.4 WLAN-Antenna 1 (802.11nHT20) 2TX Antenna 1 + Antenna 2 CDD MODE



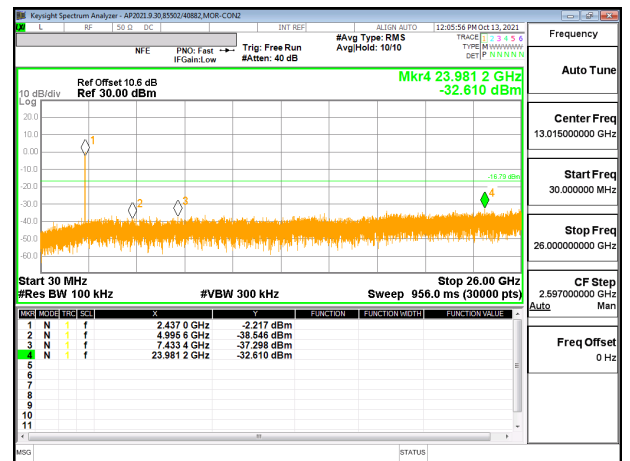
LOW CHANNEL BANDEDGE



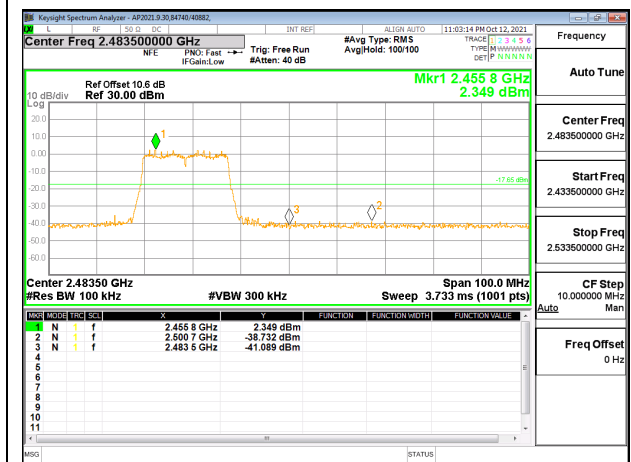
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

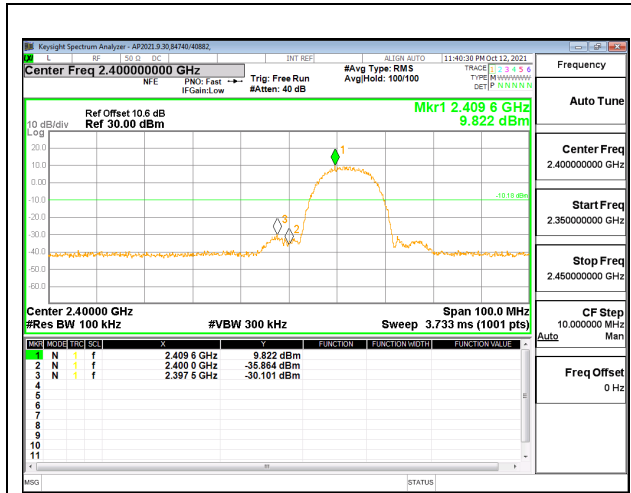


HIGH CHANNEL BANDEDGE

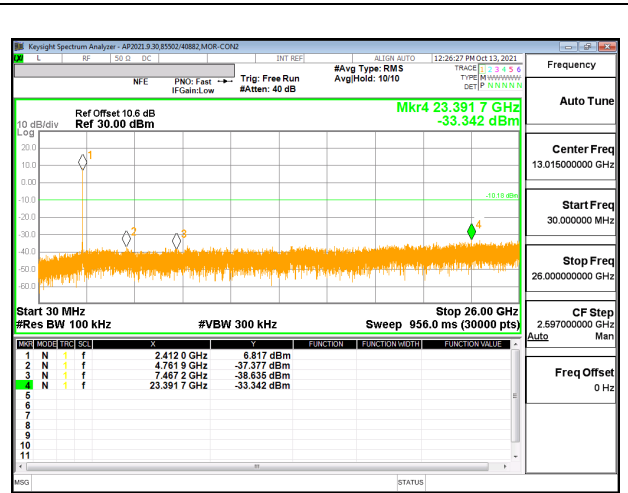


OUT-OF-BAND HIGH CHANNEL

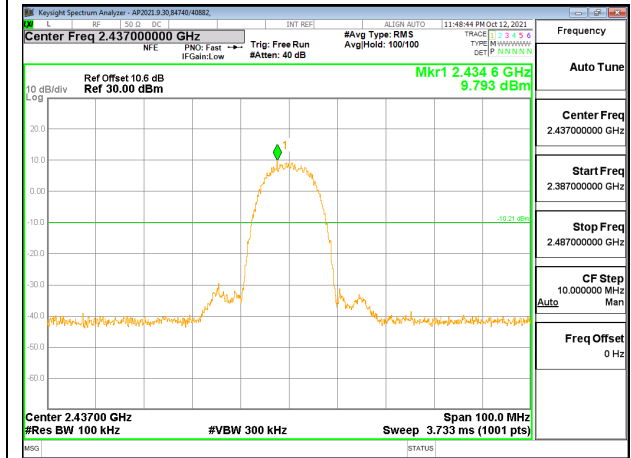
9.6.2. 2.4 WLAN-Antenna 2 (802.11b)



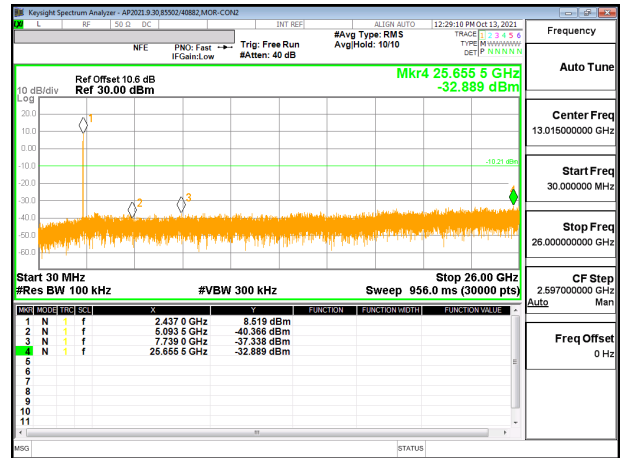
LOW CHANNEL BANDEDGE



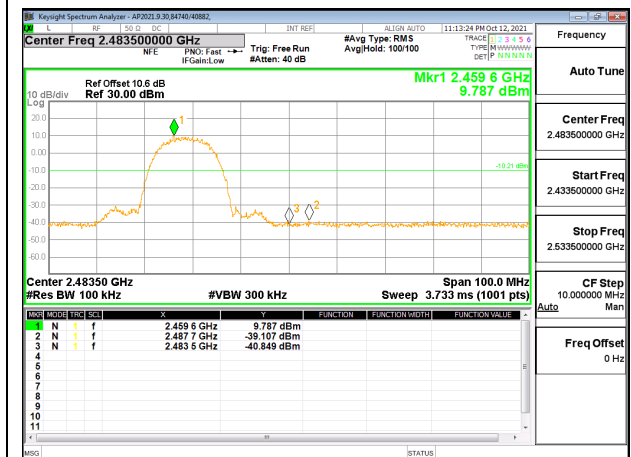
OUT-OF-BAND LOW CHANNEL



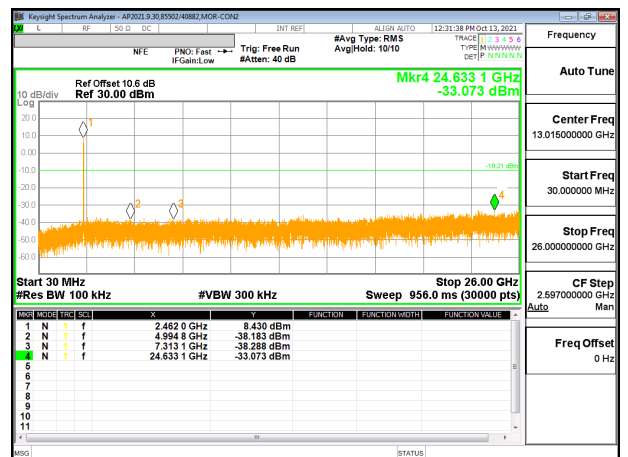
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

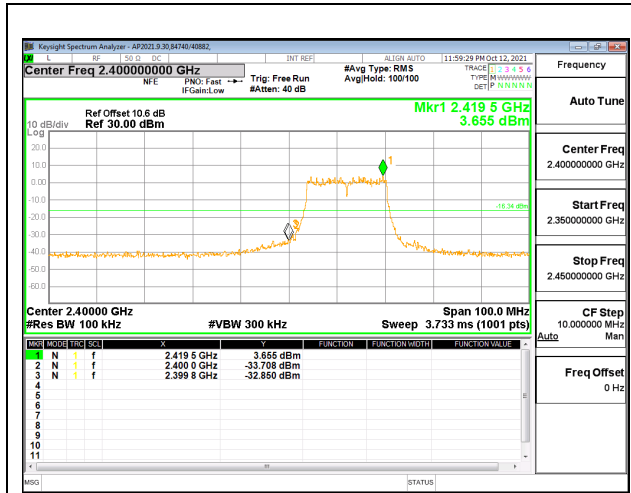


HIGH CHANNEL BANDEDGE

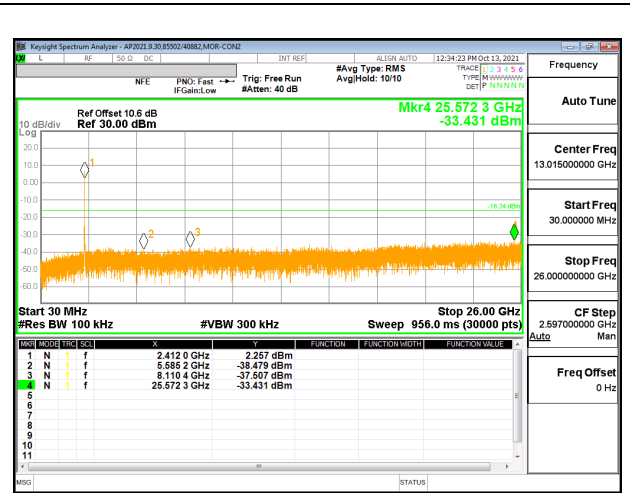


OUT-OF-BAND HIGH CHANNEL

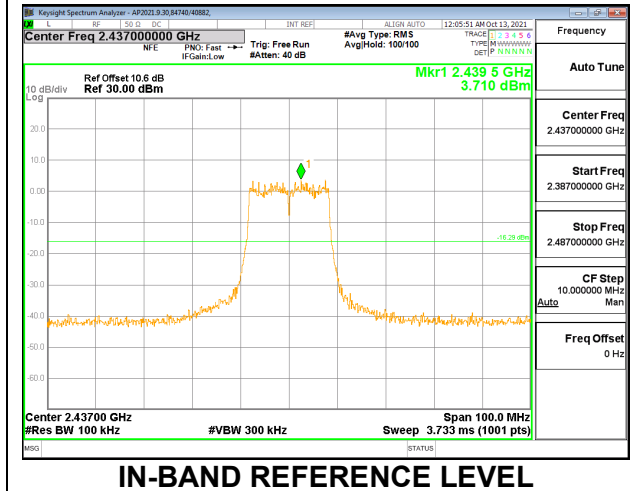
9.6.3. 2.4 WLAN-Antenna 2 (802.11g)



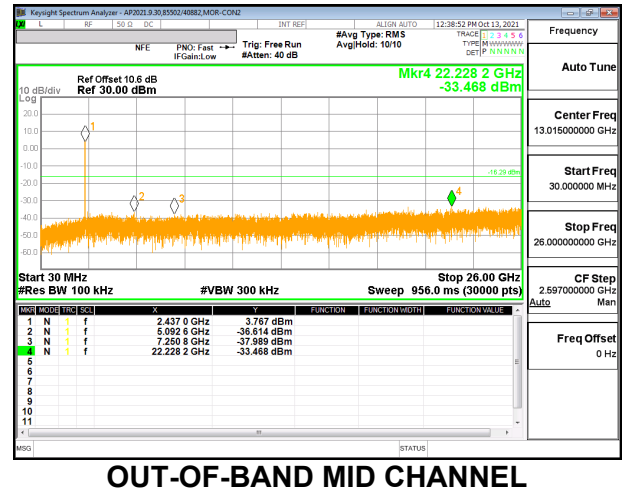
LOW CHANNEL BANDEDGE



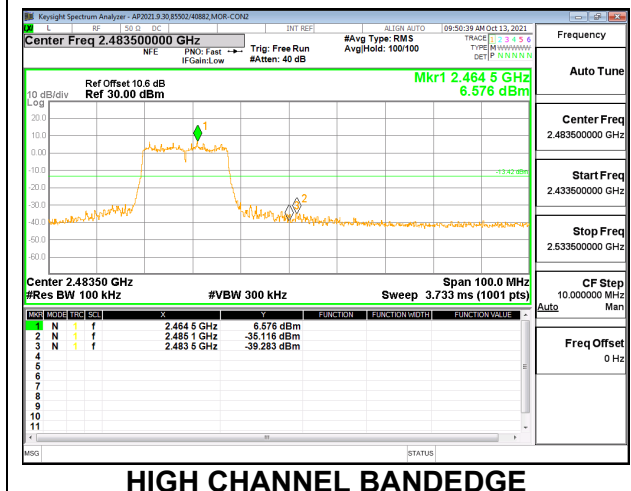
OUT-OF-BAND LOW CHANNEL



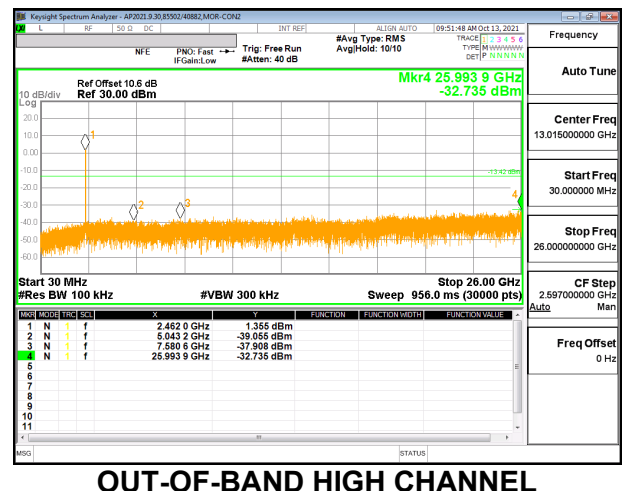
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL