

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT



**FCC Applicant:** Barco NV  
President Kennedypark 35 8500 Kortrijk Belgium

**Product Name:** ClickShare

**Brand Name:** Barco

**Model No.:** CSBTN004

**Model Difference:** N/A

**Report Number:** ER/2021/C0048

**FCC ID:** 2AAED-CSBTN004

**Issue Date:** January 18, 2022

**Date of Test:** December 15, 2021~January 5, 2022

**Date of EUT Received:** December 10, 2021

Approved By \_\_\_\_\_

**Blue Yang**

## We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.247.

The results of this report relate only to the sample identified in this report.

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## Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
ER/2021/C0048	00	Original.	January 18, 2022	Karen Huang	

**Note:**

- 1、The remark "" indicates modification of the report upon requests from certification body.

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## 1 GENERAL INFORMATION

### 1.1 Product Description

Product Name:	ClickShare
Brand Name:	Barco
Model No.:	CSBTN004
Model Difference:	N/A
Hardware Version:	DVT
Firmware Version:	04.11.00.certification_GEN4_1_RF_regulatory_certification-0002-RFCertification
EUT Series No.:	1200051081
Power Supply:	5Vdc

### 1.2 RF Specification

#### WLAN 2.4GHz

Wi-Fi	Frequency Range	Channels	Rated Power in dBm (Peak)	Modulation Technology
802.11b	2412~2472	13	18.77	DSSS
802.11g	2412~2472	13	26.14	OFDM
802.11n20	2412~2472	13	26.58	OFDM
802.11n40	2422~2462	9	26.56	OFDM
Modulation type:		CCK, DQPSK, DBPSK for DSSS		
		64QAM, 16QAM, QPSK, BPSK for OFDM		
Data Rate:		802.11 b: 1/2/5.5/11 Mbps		
		802.11 g: 6/9/12/18/24/36/48/54 Mbps		
		802.11 n_20MHz:6.5 - 72.2Mbps		
		802.11 n_40MHz:13.5 - 150Mbps		

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### 1.3 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Directional Gain (dBi)
Ceramic Chip	Pulse Electronics	W3078	2400~2483.5	1.7	4.71

**Note:**

1. Pre-scanned was done on the above antennas, measurements were demonstrated by using the antenna with the highest gain as the worst case scenarios.
2. Antenna information is provided by the applicant.

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## 1.4 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10:2013

## 1.5 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C	TW0028	
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		

**Note:** Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.

## 1.6 Special Accessories

There are no special accessories used while test was conducted.

## 1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50uH/50 ohm of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

#### 2.3.2 Conducted Test (RF)

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

#### 2.3.3 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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## 2.4 Measurement Results Explanation Example

### 2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

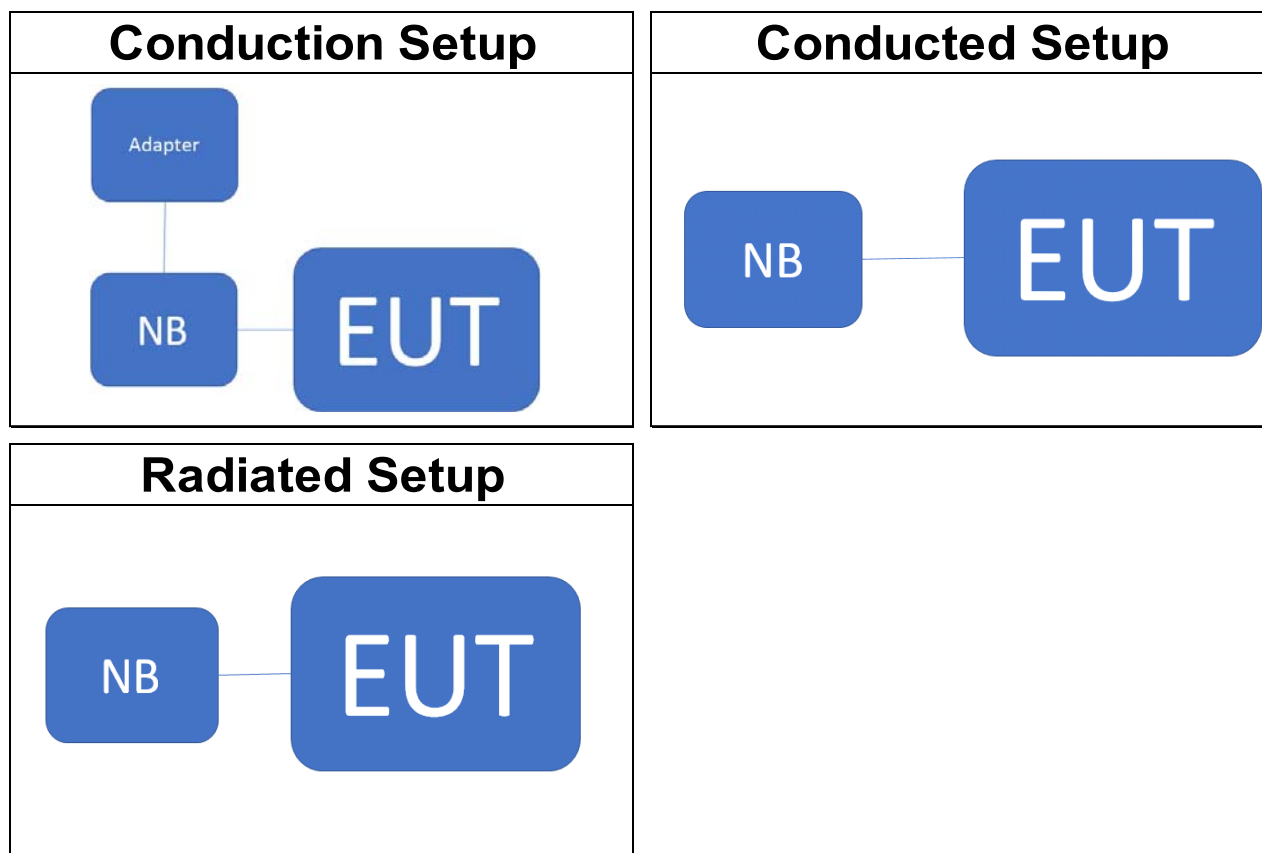
Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

### 2.4.2 For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

## 2.5 Test Configuration



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## 2.6 Control Unit(s)

AC Power-Line Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	Audix	e3	Ver. 9.210322	N.C.R	N.C.R
Notebook	Lenovo	T440P	PC-089AH5	N/A	N/A
Adapter	Lenovo	ADLX90NDC 3A	NA	N/A	N/A
Type C to USB	esense	01-ELS645	NA	N/A	N/A
Conducted Emission Test Site: Conducted 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	Lenovo	T440P	PC-089AH5	N/A	N/A
Radiated Emission Test Site: SAC 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	Audix	e3	Ver. 9.210322	N.C.R	N.C.R
Notebook	Lenovo	T440P	PC-089AH5	N/A	N/A
Type C to USB	esense	01-ELS645	NA	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(a)(2)	Emission Bandwidth	Compliant
§15.205 §15.209 §15.247(d)	Radiated & Conducted Band Edge and Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.203	Antenna Requirement	Compliant

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operatin Frequencies

Modulation of 20MHz nominal bandwidth

CHANNEL	FREQUENCY (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472

Modulation of 40MHz nominal bandwidth

CHANNEL	FREQUENCY (MHz)
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

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## 4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

The gevin UE is pre-scanned among below modes.

Modulation		Transmission Chain								Single Transmission Spatial		Multi Transmission Spatial	
v	802.11 b	v	Ch0	v	Ch1		Ch2		Ch3	v	1TX	v	2TX
v	802.11 g	v	Ch0	v	Ch1		Ch2		Ch3	v	1TX	v	2TX
v	802.11 n	v	Ch0	v	Ch1		Ch2		Ch3	v	SISO	v	MIMO
	802.11 ax		Ch0		Ch1		Ch2		Ch3		SISO		MIMO

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

Conducted					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 13	1,6,11,12,13	DSSS	1	2TX
802.11g	1 to 13	1,6,11,12,13	OFDM	6	2TX
802.11n(HT20)	1 to 13	1,6,11,12,13	OFDM	MCS8	MIMO
802.11n(HT40)	3 to 11	3,4,6,8,9,10,11	OFDM	MCS8	MIMO

RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11g	1 to 13	1,6,11,12,13	OFDM	6	2TX
802.11n(HT40)	3 to 11	3,6,9,10,11	OFDM	MCS8	MIMO

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RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 13	1,6,11,12,13	DSSS	1	2TX
802.11g	1 to 13	1,6,11,12,13	OFDM	6	2TX
802.11n (HT20)	1 to 13	1,6,11,12,13	OFDM	MCS8	MIMO
802.11n (HT40)	3 to 11	3,4,6,8,9,10,11	OFDM	MCS8	MIMO

**Note:**

1. The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.
2. Investigation has been done on Beamforming and CDD configurations for searching the worst case, the **CDD** is determined as the worst case scenario demonstrated in this report.

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.34 dB
Output Power measurement	+/- 1 dB
Emission Bandwidth	+/- 1.53 Hz
Undesignable radiated emission measurement	+/- 1.68 dB
Peak Power Density	+/- 1.62 dB
Temperature	+/- 0.4 °C
Humidity	+/- 3.5 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/-	2.57 dB	9kHz~30MHz
	+/-	4.85 dB	30MHz - 1000MHz
	+/-	4.45 dB	1GHz - 18GHz
	+/-	4.24 dB	18GHz - 40GHz
Polarization: Horizontal	+/-	2.57 dB	9kHz~30MHz
	+/-	4.37 dB	30MHz - 1000MHz
	+/-	4.45 dB	1GHz - 18GHz
	+/-	4.24 dB	18GHz - 40GHz

### Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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## 6 MEASUREMENT EQUIPMENT USED

### 6.1 Emission from AC power line

AC Power-Line Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
LISN	SCHWARZBECK	NSLK 8127	1040	08/10/2021	08/09/2022
Coaxial Cables	N/A	Coaxial Cable	161207	12/07/2021	12/06/2022
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022

### 6.2 Conducted Measurement

Conducted Emission Test Site: Conducted 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	Agilent	N9010A	MY54200716	10/13/2021	10/12/2022
Power Meter	Anritsu	ML2496A	1804001	03/02/2021	03/01/2022
Power Sensor	Anritsu	MA2411B	1726104	03/02/2021	03/01/2022
Power Sensor	Anritsu	MA2411B	1726107	03/02/2021	03/01/2022
Attenuator	Mini-Circuit	BW-S10W2+	4	12/14/2021	12/13/2022
Attenuator	Mini-Circuit	BW-S10W2+	2	12/14/2021	12/13/2022
DC Block	Mini-Circuits	BLK-18-S+	1	12/14/2021	12/13/2022

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### 6.3 Radiated Measurement

Radiated Emission Test Site: SAC 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	SCHWARZBEC K	BBHA9120D	D803	12/20/2021	12/19/2022
Bi-log Antenna	TESEO	CBL 6112D	35242 & AT- N0555	01/13/2021	01/12/2022
Horn Antenna	SCHWARZBEC K	BBHA9170	185	08/06/2021	08/05/2022
Site Cal	SGS	SAC I chamber	N/A	01/01/2022	12/31/2022
Loop Antenna	ETS.LINDGRE N	6502	148045	09/29/2021	09/28/2022
Spectrum Analyzer	Agilent	E4446A	MY51100003	10/26/2021	10/25/2022
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022
Pre-Amplifier	EMC Instruments	EMC184045 B	980135	10/27/2021	10/26/2022
Pre-Amplifier	HP	8449B	3008A01973	12/16/2021	12/15/2022
Pre-Amplifier	HP	8447D	2944A09469	12/16/2021	12/15/2022
Attenuator	Mini-Circuit	BW- S10W2+	4	12/14/2021	12/13/2022
Bandreject Filter 2400- 2483.5	EWT	EWT-14- 0166	M1	12/14/2021	12/13/2022
3.2GHz High Pass Filter	WI	WHKX10- 2624-80SS	3	12/14/2021	12/13/2022
Coaxial Cable	Huber Suhner	succoflex 102	MY2622/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	succoflex 104A	800086/4a	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	EMC 104- SM-SM- 2000	160123	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/16/2021	12/15/2022
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/16/2021	12/15/2022

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## 7 CONDUCTED EMISSION TEST

### 7.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range MHz	Limits (dBuV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
<b>Note</b> 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

### 7.2 Measurement Equipment Used

AC Power-Line Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
LISN	SCHWARZBEC K	NSLK 8127	1040	08/10/2021	08/09/2022
Coaxial Cables	N/A	Coaxial Cable	161207	12/07/2021	12/06/2022
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022

### 7.3 EUT Setup

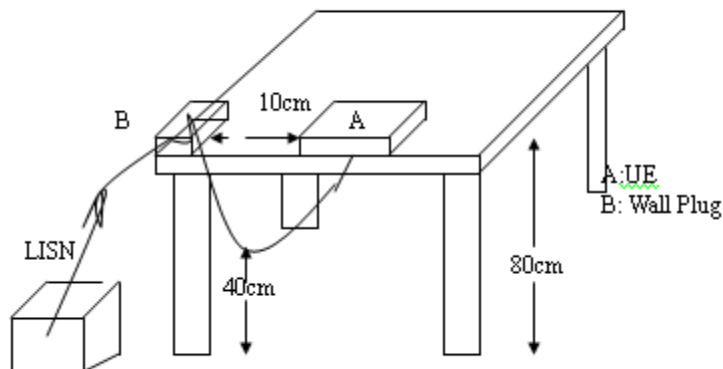
1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

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## 7.4 Test Setup



## 7.5 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed

## 7.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The \* reveals the worst-case results that closet to the limit.

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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number :ER/2021/C0048

Test Site :Conduction 1

Test Mode :WIFI 2.4G

Test Date :2022-01-03

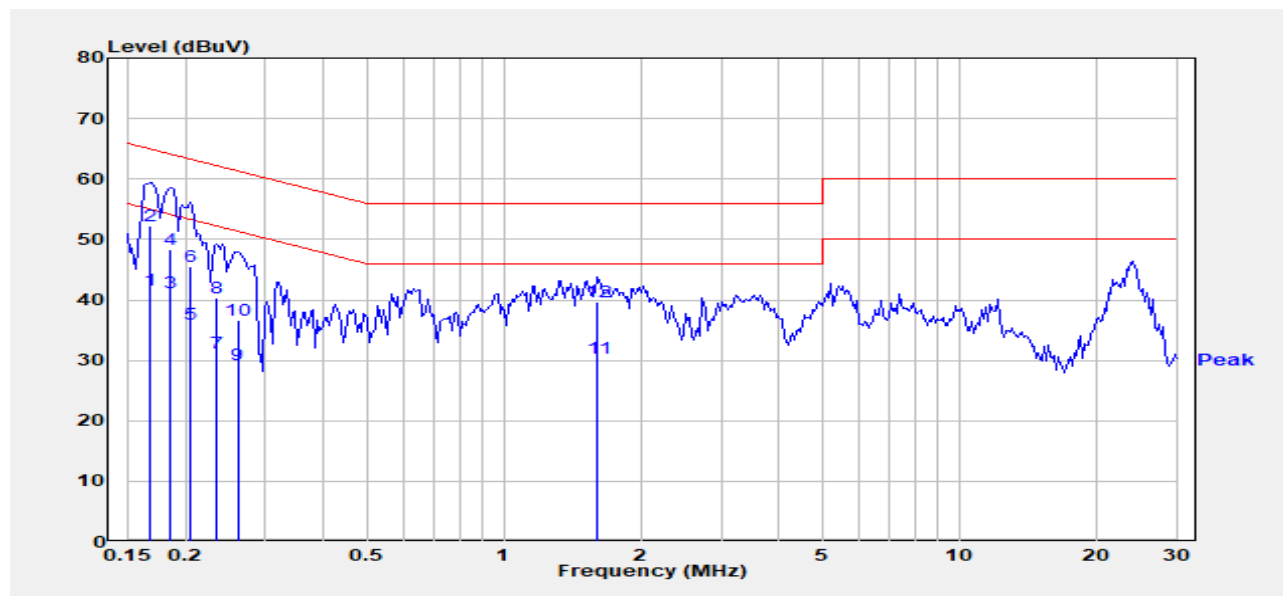
Power :120V/60Hz

Temp./Humi. :22.0/55

Probe :L

Engineer :Neo Tsai

Note :



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level	FS				
MHz	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V	dB $\mu$ V	dB
0.167	Average	41.60	0.02	41.62	55.12	-13.50
0.167	QP	52.30	0.02	52.32	65.12	-12.80
0.185	Average	41.20	0.02	41.22	54.24	-13.02
0.185	QP	48.40	0.02	48.42	64.24	-15.82
0.204	Average	36.00	0.02	36.02	53.45	-17.43
0.204	QP	45.60	0.02	45.62	63.45	-17.83
0.234	Average	31.20	0.02	31.22	52.30	-21.08
0.234	QP	40.20	0.02	40.22	62.30	-22.08
0.260	Average	29.20	0.02	29.22	51.42	-22.20
0.260	QP	36.60	0.02	36.62	61.42	-24.80
1.610	Average	30.20	0.11	30.31	46.00	-15.69
1.610	QP	39.50	0.11	39.61	56.00	-16.39

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Report Number :ER/2021/C0048

Test Mode :WIFI 2.4G

Power :120V/60Hz

Probe :N

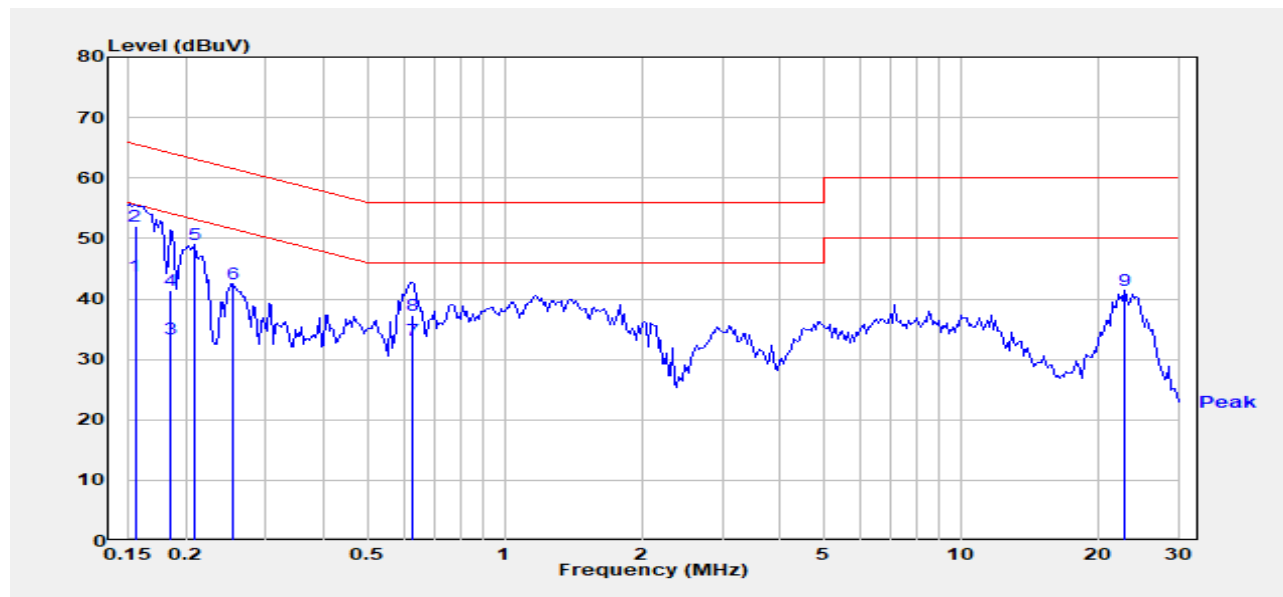
Note: :

Test Site :Conduction 1

Test Date :2022-01-03

Temp./Humi. :22.0/55

Engineer :Neo Tsai



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode		Reading Level		FS		
MHz	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V	dB $\mu$ V	dB
0.155	Average	43.80	0.04	43.84	55.74	-11.90
0.155	QP	52.10	0.04	52.14	65.74	-13.60
0.185	Average	33.20	0.15	33.35	54.24	-20.89
0.185	QP	41.30	0.15	41.45	64.24	-22.79
0.208	Peak	48.78	0.19	48.97	63.27	-14.30
0.255	Peak	42.39	0.14	42.52	61.60	-19.08
0.627	Average	33.00	0.09	33.09	46.00	-12.91
0.627	QP	37.10	0.09	37.19	56.00	-18.81
22.775	Peak	41.03	0.43	41.46	60.00	-18.54

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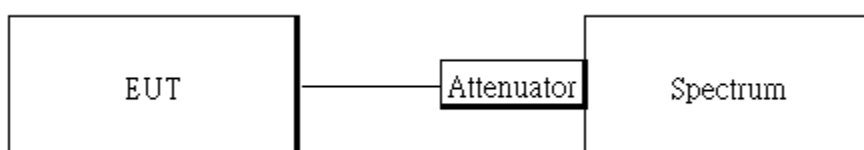
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## 8 DUTY CYCLE OF TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

### 8.1 Test Setup



### 8.2 Measurement Procedure:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

### 8.3 Duty Cycle:

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) = 10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11b	99.86	0.01	0.12	0.01
802.11g	97.55	0.11	0.72	1.00
802.11n_20	97.38	0.12	0.77	1.00
802.11n_40	94.88	0.23	1.54	2.00

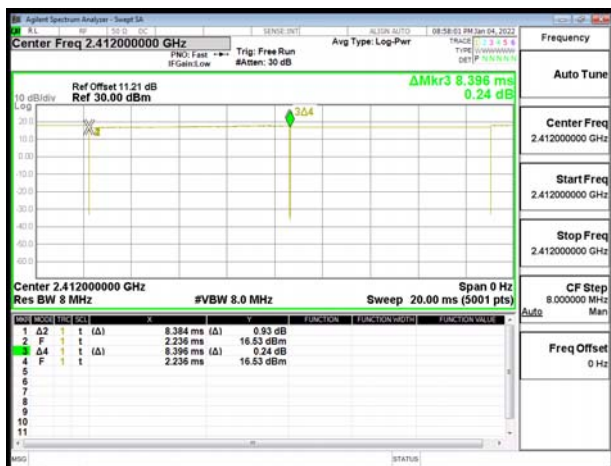
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## 8.4 Duty Cycle test plots

802.11b\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2412MHz



802.11n\_40MHz\_Chain0\_2422MHz



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## 9 PEAK OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

#### Note:

As per section F. 2). e). (ii) of FCC KDB 662911 D01

If antenna gains are not equal and each transmit antenna is driven by only one spatial stream, directional gain may be calculated by either of the following formulas.

$$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

NSS = the number of independent spatial streams of data;

NANT = the total number of antennas

$g_{j,k} = 10^{G_k/20}$  if the kth antenna is being fed by spatial stream j, or zero if it is not;

$G_k$  is the gain in dBi of the kth antenna.

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

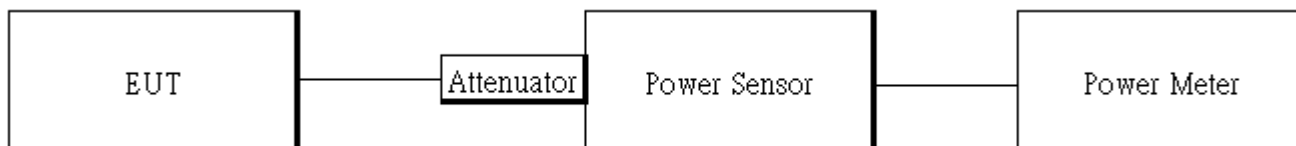
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## 9.2 Test Setup

Power Meter:



## 9.3 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

### Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.
5. MIMO mode: offset is set with "measure and add 10 Log (N)" to measurement for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna, cable loss is specified below.

Cable Loss Offset (dB)
11.21

**\* Note: The duty cycle factor and below is compensated to obtain the maximum value of measurement in average.**

**\* Note: The beamforming and CDD mode follow same power table.**

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## 9.4 Measurement Result

802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	13	15.71	30.00	PASS
6	2437	1	13	15.69	30.00	PASS
11	2462	1	13	15.72	30.00	PASS
12	2467	1	13	15.65	30.00	PASS
13	2472	1	13	15.53	30.00	PASS
802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	1	13	12.98	30.00	PASS
6	2437	1	13	12.97	30.00	PASS
11	2462	1	13	12.98	30.00	PASS
12	2467	1	13	12.96	30.00	PASS
13	2472	1	13	12.95	30.00	PASS
802.11b Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	13	15.49	30.00	PASS
6	2437	1	13	15.33	30.00	PASS
11	2462	1	13	15.42	30.00	PASS
12	2467	1	13	15.36	30.00	PASS
13	2472	1	13	15.28	30.00	PASS
802.11b Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	1	13	12.75	30.00	PASS
6	2437	1	13	12.72	30.00	PASS
11	2462	1	13	12.74	30.00	PASS
12	2467	1	13	12.76	30.00	PASS
13	2472	1	13	12.73	30.00	PASS

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802.11b_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	1	13	15.81	15.51	18.67	30.00	PASS
6	2437	1	13	15.70	15.38	18.55	30.00	PASS
11	2462	1	13	15.73	15.79	18.77	30.00	PASS
12	2467	1	13	15.66	15.38	18.53	30.00	PASS
13	2472	1	13	15.57	15.31	18.45	30.00	PASS
802.11b_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	1	13	13.13	12.76	15.97	30.00	PASS
6	2437	1	13	13.11	12.75	15.95	30.00	PASS
11	2462	1	13	13.04	12.78	15.93	30.00	PASS
12	2467	1	13	13.11	12.79	15.97	30.00	PASS
13	2472	1	13	13.02	12.73	15.90	30.00	PASS

802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	13	23.21	30.00	PASS
6	2437	6	13	23.25	30.00	PASS
11	2462	6	13	23.11	30.00	PASS
12	2467	6	9	18.91	30.00	PASS
13	2472	6	4	14.02	30.00	PASS
802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	6	13	12.98	30.00	PASS
6	2437	6	13	12.96	30.00	PASS
11	2462	6	13	12.95	30.00	PASS
12	2467	6	9	9.16	30.00	PASS
13	2472	6	4	4.16	30.00	PASS

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802.11g Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	13	22.13	30.00	PASS
6	2437	6	13	22.67	30.00	PASS
11	2462	6	13	22.53	30.00	PASS
12	2467	6	9	18.21	30.00	PASS
13	2472	6	4	14.27	30.00	PASS
802.11g Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	6	13	12.66	30.00	PASS
6	2437	6	13	12.60	30.00	PASS
11	2462	6	13	12.54	30.00	PASS
12	2467	6	9	8.85	30.00	PASS
13	2472	6	4	4.04	30.00	PASS

802.11g_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	6	13	23.26	22.19	25.77	30.00	PASS
6	2437	6	13	23.28	22.97	26.14	30.00	PASS
11	2462	6	13	23.14	22.90	26.03	30.00	PASS
12	2467	6	9	19.21	19.18	22.21	30.00	PASS
13	2472	6	4	14.09	14.33	17.22	30.00	PASS
802.11g_2TX								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	6	13	13.02	12.67	15.97	30.00	PASS
6	2437	6	13	13.03	12.65	15.96	30.00	PASS
11	2462	6	13	12.91	12.53	15.84	30.00	PASS
12	2467	6	9	9.15	8.93	12.16	30.00	PASS
13	2472	6	4	4.12	3.96	7.16	30.00	PASS

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## 802.11nHT\_20M Ch0

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	13	23.58	30.00	PASS
6	2437	MCS0	13	23.23	30.00	PASS
11	2462	MCS0	13	23.24	30.00	PASS
12	2467	MCS0	7	17.21	30.00	PASS
13	2472	MCS0	1	11.13	30.00	PASS

## 802.11nHT\_20M Ch0

CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	13	12.99	30.00	PASS
6	2437	MCS0	13	12.97	30.00	PASS
11	2462	MCS0	13	12.98	30.00	PASS
12	2467	MCS0	7	7.28	30.00	PASS
13	2472	MCS0	1	1.45	30.00	PASS

## 802.11nHT\_20M Ch1

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	13	23.03	30.00	PASS
6	2437	MCS0	13	23.24	30.00	PASS
11	2462	MCS0	13	23.07	30.00	PASS
12	2467	MCS0	7	17.28	30.00	PASS
13	2472	MCS0	1	11.07	30.00	PASS

## 802.11nHT\_20M Ch1

CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	13	12.72	30.00	PASS
6	2437	MCS0	13	12.73	30.00	PASS
11	2462	MCS0	13	12.72	30.00	PASS
12	2467	MCS0	7	7.03	30.00	PASS
13	2472	MCS0	1	1.35	30.00	PASS

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## 802.11n\_HT20M MIMO

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	MCS8	13	23.91	23.04	26.51	30.00	PASS
6	2437	MCS8	13	23.51	23.62	26.58	30.00	PASS
11	2462	MCS8	13	23.51	23.52	26.53	30.00	PASS
12	2467	MCS8	7	17.45	17.67	20.57	30.00	PASS
13	2472	MCS8	1	11.48	11.38	14.44	30.00	PASS

## 802.11n\_HT20M MIMO

CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
1	2412	MCS8	13	12.95	12.61	15.91	30.00	PASS
6	2437	MCS8	13	12.97	12.64	15.94	30.00	PASS
11	2462	MCS8	13	12.95	12.62	15.92	30.00	PASS
12	2467	MCS8	7	7.31	7.28	10.43	30.00	PASS
13	2472	MCS8	1	1.36	1.27	4.45	30.00	PASS

## 802.11nHT\_40M Ch0

CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	8	20.32	30.00	PASS
6	2437	MCS0	11	23.47	30.00	PASS
9	2452	MCS0	10	21.48	30.00	PASS
10	2457	MCS0	9	18.63	30.00	PASS
11	2462	MCS0	4	14.54	30.00	PASS

## 802.11nHT\_40M Ch0

CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	8	8.10	30.00	PASS
6	2437	MCS0	11	11.77	30.00	PASS
9	2452	MCS0	10	10.09	30.00	PASS
10	2457	MCS0	9	9.09	30.00	PASS
11	2462	MCS0	4	4.28	30.00	PASS

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802.11nHT_40M Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	8	20.26	30.00	PASS
6	2437	MCS0	11	23.41	30.00	PASS
9	2452	MCS0	10	22.27	30.00	PASS
10	2457	MCS0	9	18.48	30.00	PASS
11	2462	MCS0	4	14.21	30.00	PASS
802.11nHT_40M Ch1						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	8	7.95	30.00	PASS
6	2437	MCS0	11	11.54	30.00	PASS
9	2452	MCS0	10	9.97	30.00	PASS
10	2457	MCS0	9	8.84	30.00	PASS
11	2462	MCS0	4	3.98	30.00	PASS

802.11n_HT40M MIMO								
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power		Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
3	2422	MCS8	8	20.41	20.51	23.47	30.00	PASS
6	2437	MCS8	12	23.52	23.57	26.56	30.00	PASS
9	2452	MCS8	10	22.29	22.46	25.39	30.00	PASS
10	2457	MCS8	9	18.73	18.52	21.64	30.00	PASS
11	2462	MCS8	4	14.62	14.35	17.50	30.00	PASS
802.11n_HT40M MIMO								
CH	Freq. (MHz)	Data Rate	Power set	Avg. Output Power (dBm)		Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
				CH 0	CH 1			
3	2422	MCS8	8	8.21	8.16	11.43	30.00	PASS
6	2437	MCS8	12	11.78	11.71	14.99	30.00	PASS
9	2452	MCS8	10	10.16	10.04	13.34	30.00	PASS
10	2457	MCS8	9	9.21	9.07	12.38	30.00	PASS
11	2462	MCS8	4	4.35	4.05	7.44	30.00	PASS

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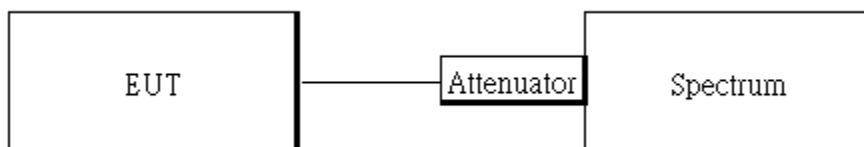
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## 10 EMISSION BANDWIDTH MEASUREMENT

### 10.1 Standard Applicable

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

### 10.2 Test Setup



### 10.3 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set the spectrum analyzer as  
RBW= 100kHz ,  
VBW = 3 X RBW,  
Span= 2 to 5 times of the OBW,  
Sweep=auto,  
Detector = Peak, and Max hold for -6dB Bandwidth test.
5. Repeat above procedures until all test default channel is completed

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## 10.4 6dB Bandwidth

### 802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	10090	$\geq 500$	PASS
2437	<b>10100</b>	$\geq 500$	PASS
2462	<b>10100</b>	$\geq 500$	PASS
2467	<b>10090</b>	$\geq 500$	PASS
2472	<b>10090</b>	$\geq 500$	PASS

### 802.11b Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	10080	$\geq 500$	PASS
2437	<b>10100</b>	$\geq 500$	PASS
2462	10090	$\geq 500$	PASS
2467	<b>10100</b>	$\geq 500$	PASS
2472	<b>10100</b>	$\geq 500$	PASS

### 802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	<b>16380</b>	$\geq 500$	PASS
2437	16370	$\geq 500$	PASS
2462	<b>16380</b>	$\geq 500$	PASS
2467	<b>16380</b>	$\geq 500$	PASS
2472	<b>16380</b>	$\geq 500$	PASS

### 802.11g Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16380	$\geq 500$	PASS
2437	16380	$\geq 500$	PASS
2462	16380	$\geq 500$	PASS
2467	<b>16390</b>	$\geq 500$	PASS
2472	16370	$\geq 500$	PASS

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## 802.11nHT\_20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	<b>17590</b>	$\geq 500$	PASS
2437	<b>17590</b>	$\geq 500$	PASS
2462	<b>17590</b>	$\geq 500$	PASS
2467	<b>17580</b>	$\geq 500$	PASS
2472	17570	$\geq 500$	PASS

## 802.11nHT\_20M Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	<b>17600</b>	$\geq 500$	PASS
2437	<b>17600</b>	$\geq 500$	PASS
2462	<b>17600</b>	$\geq 500$	PASS
2467	<b>17600</b>	$\geq 500$	PASS
2472	<b>17600</b>	$\geq 500$	PASS

## 802.11nHT\_40M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	35680	$\geq 500$	PASS
2437	<b>36060</b>	$\geq 500$	PASS
2452	35820	$\geq 500$	PASS
2457	<b>36010</b>	$\geq 500$	PASS
2462	35810	$\geq 500$	PASS

## 802.11nHT\_40M Ch1

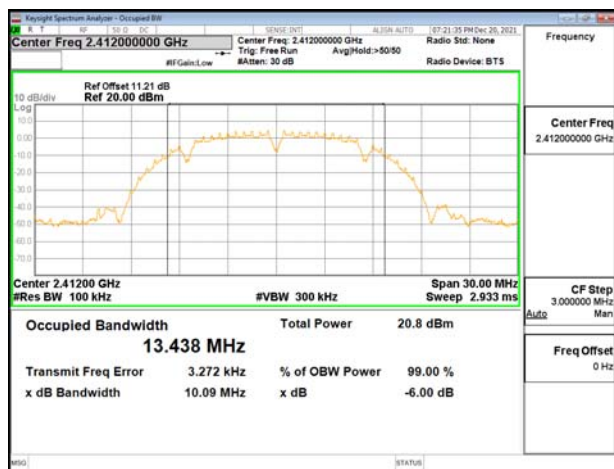
Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	35400	$\geq 500$	PASS
2437	<b>35830</b>	$\geq 500$	PASS
2452	35820	$\geq 500$	PASS
2457	<b>35830</b>	$\geq 500$	PASS
2462	35510	$\geq 500$	PASS

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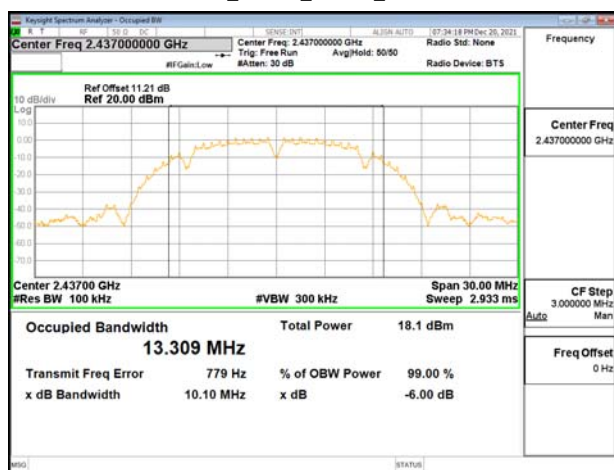
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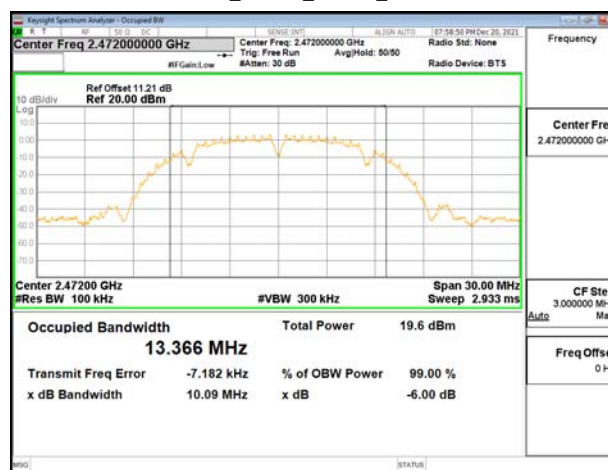
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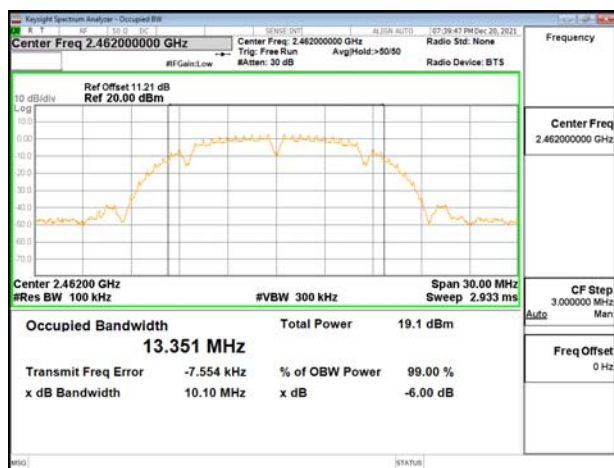
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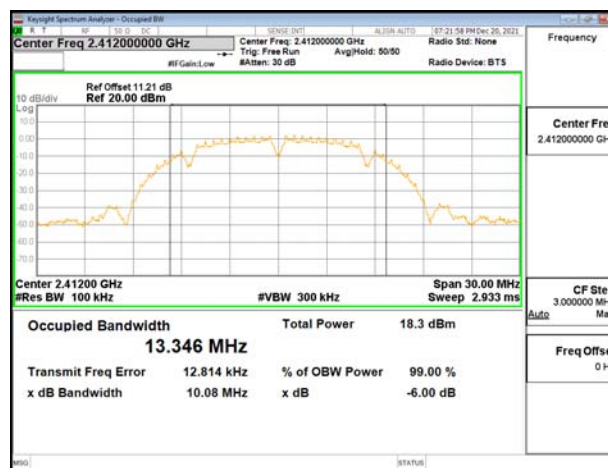
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802.11b\_20MHz\_Chain0\_2462MHz



802.11b\_20MHz\_Chain1\_2412MHz

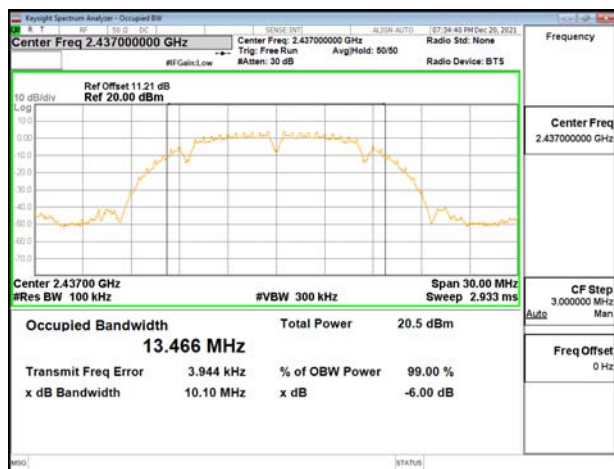


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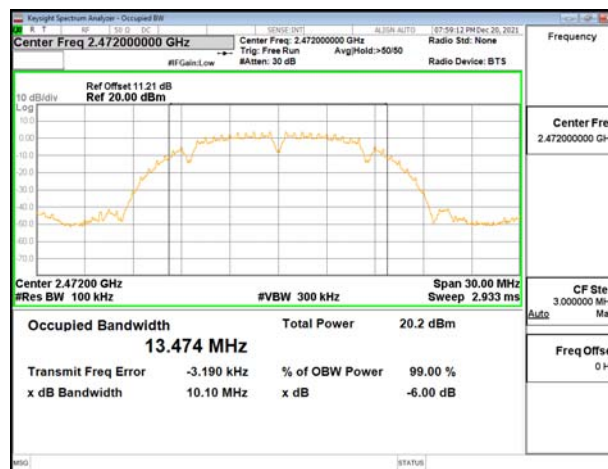
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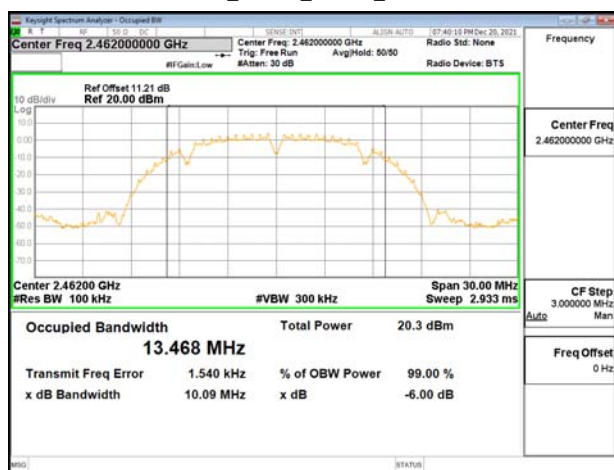
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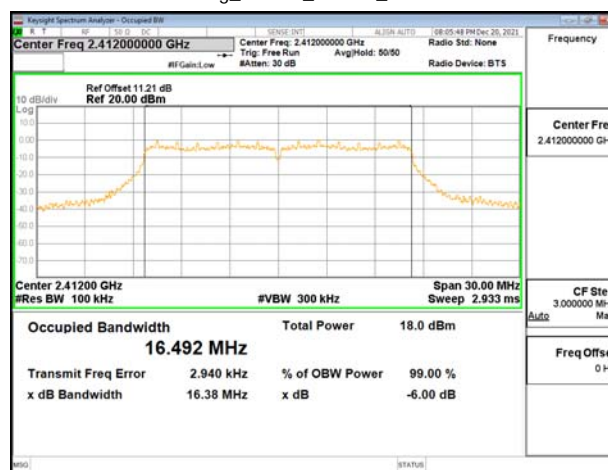
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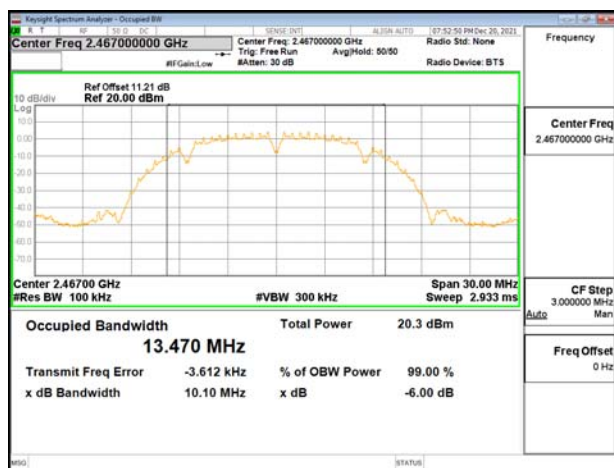
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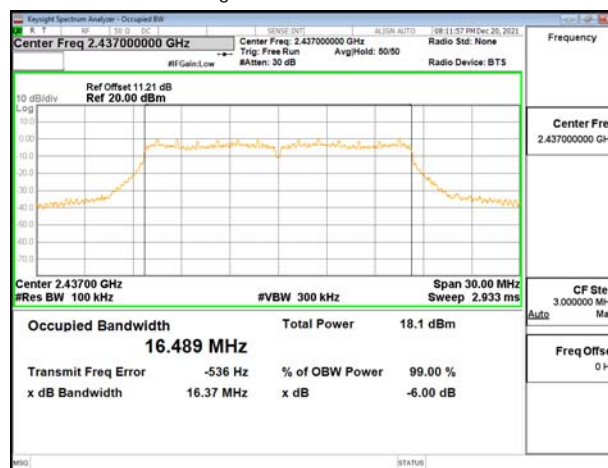
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802.11b\_20MHz\_Chain1\_2467MHz



802.11g\_20MHz\_Chain0\_2437MHz

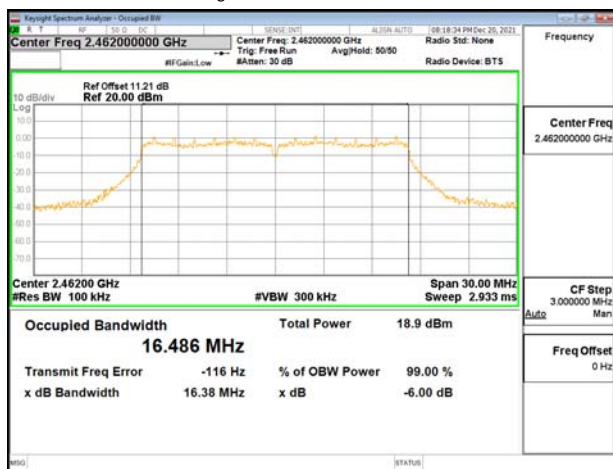


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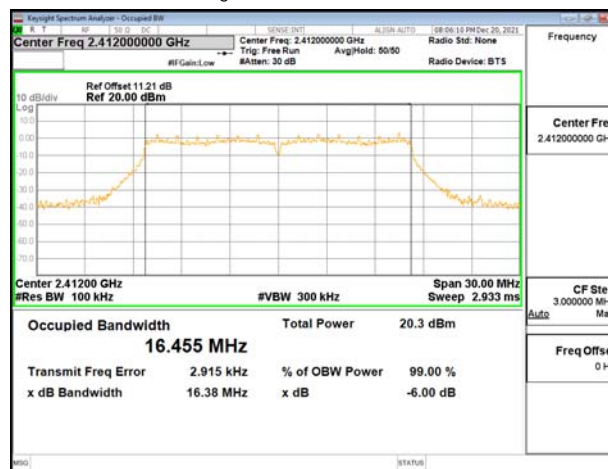
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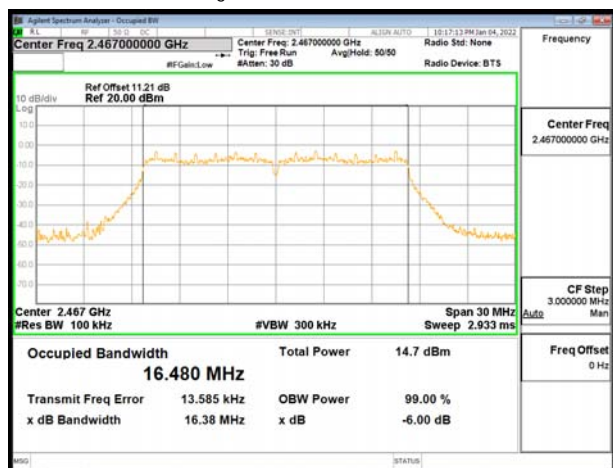
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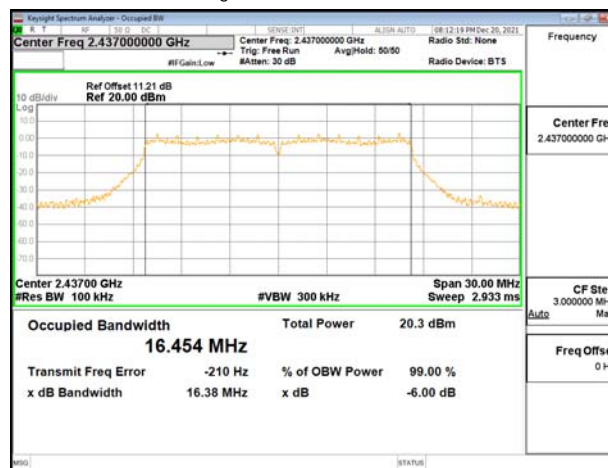
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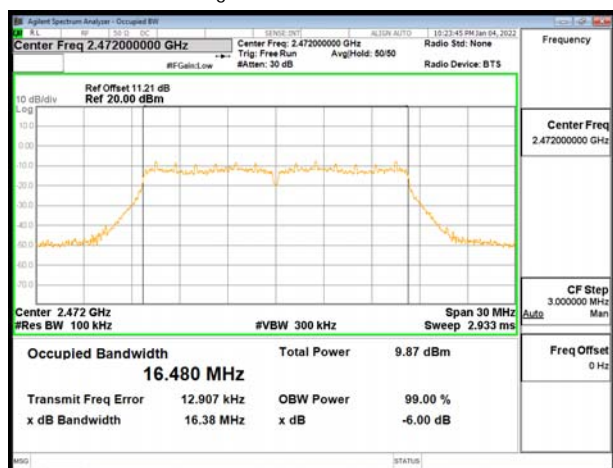
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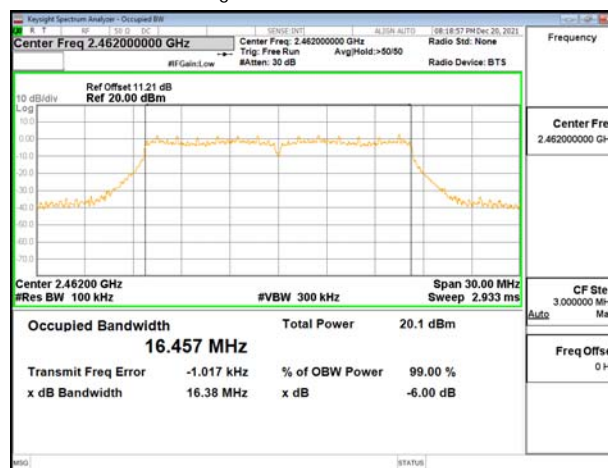
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802.11g\_20MHz\_Chain0\_2472MHz



802.11g\_20MHz\_Chain1\_2462MHz



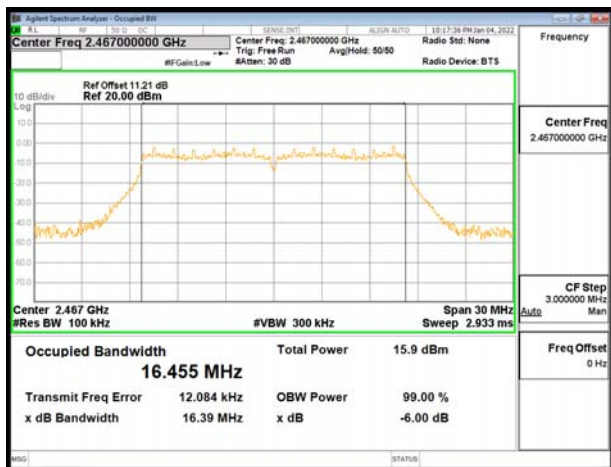
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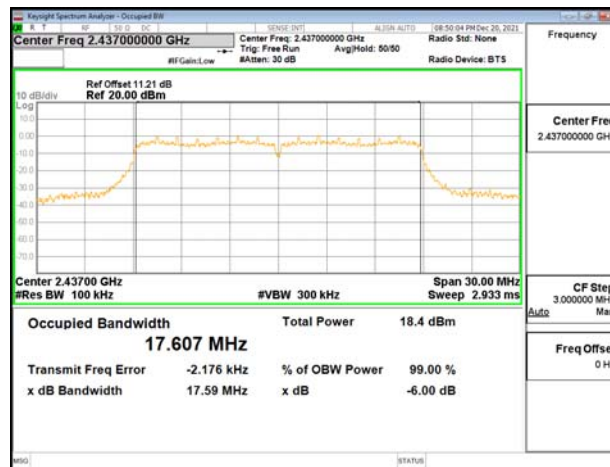
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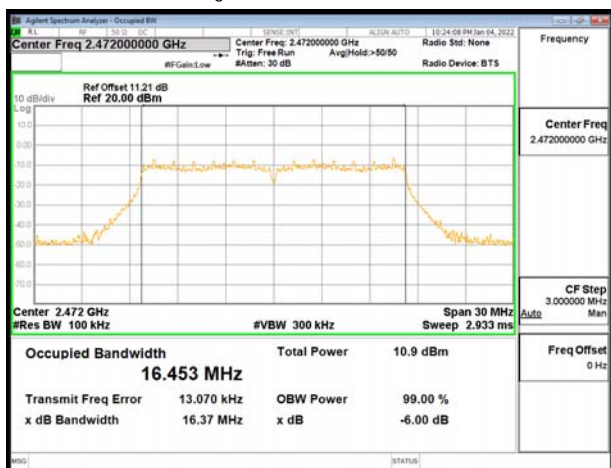
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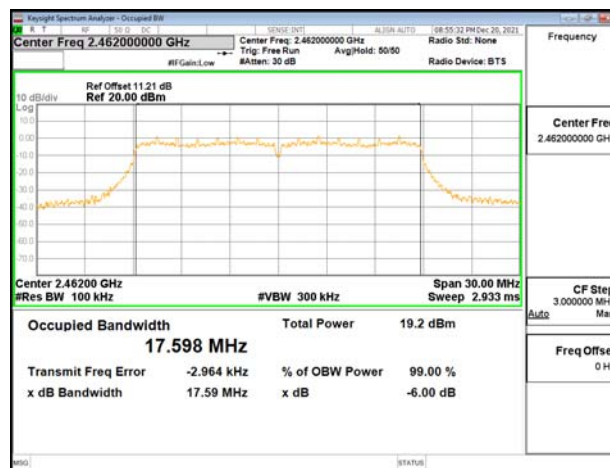
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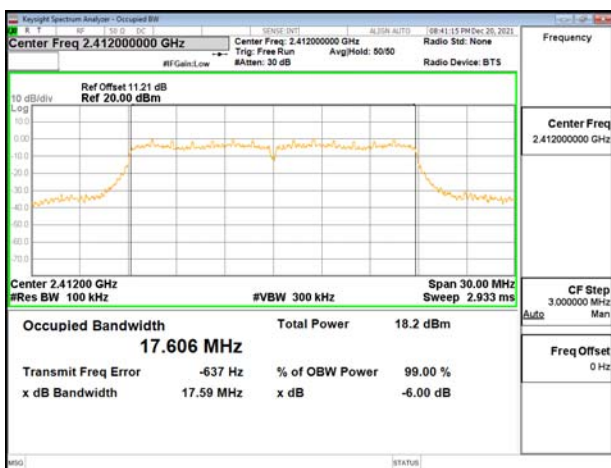
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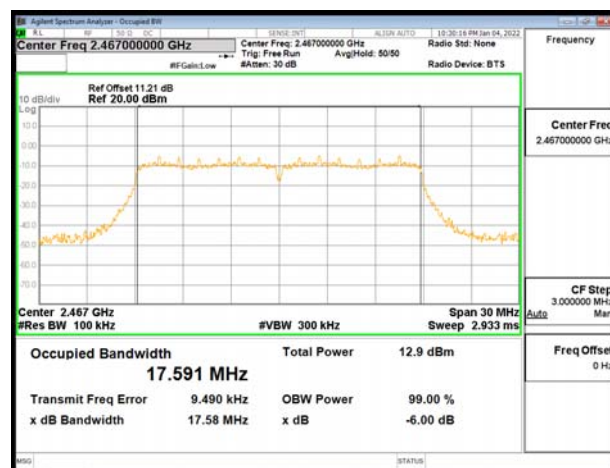
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802.11n\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2467MHz

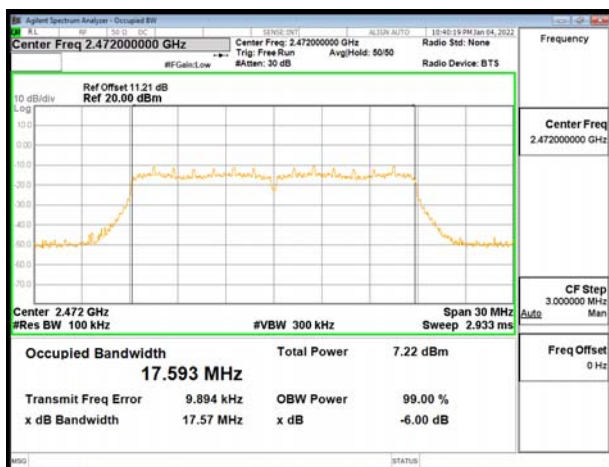


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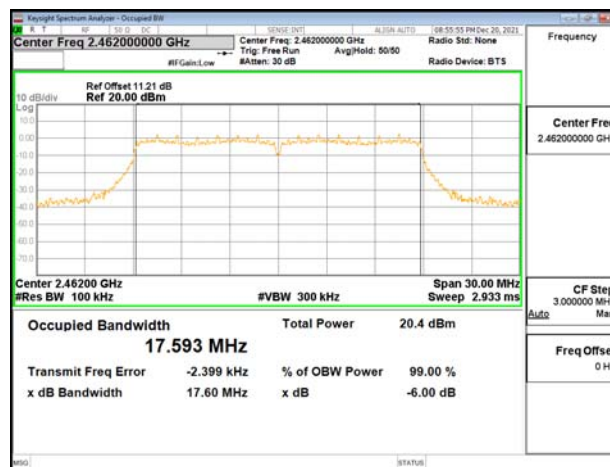
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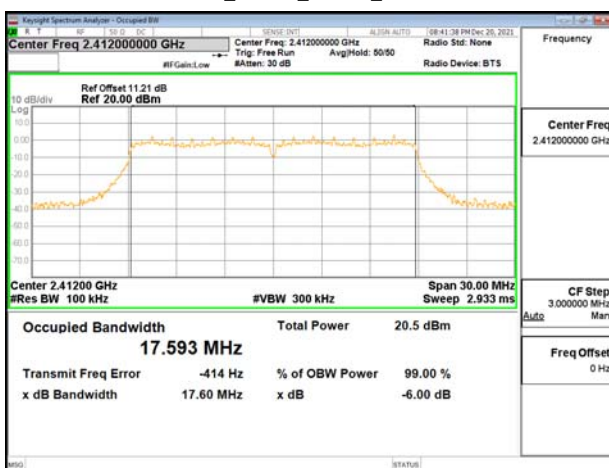
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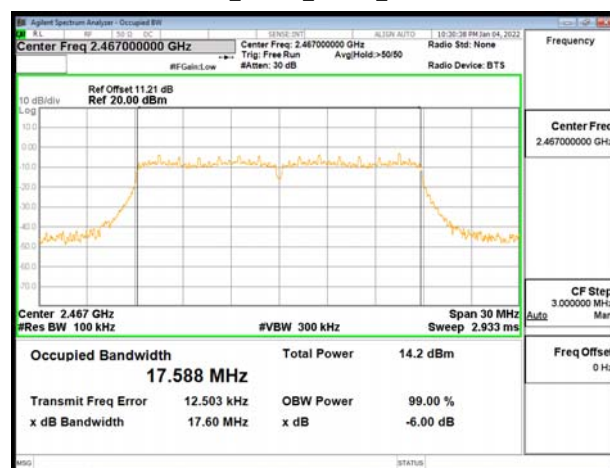
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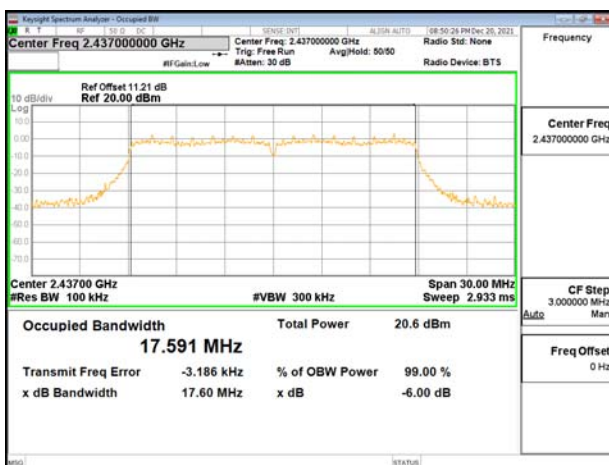
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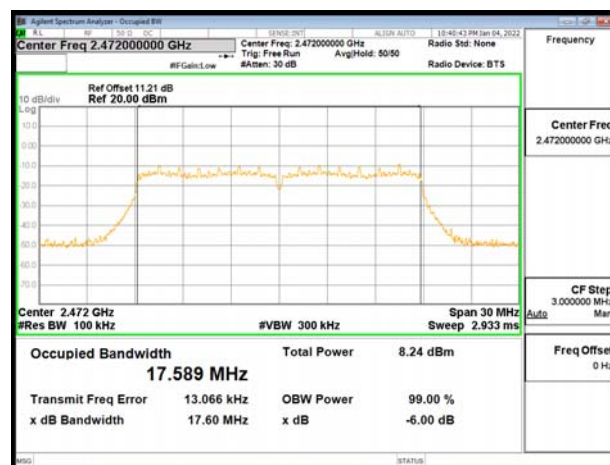
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802.11n\_20MHz\_Chain1\_2437MHz



802.11n\_20MHz\_Chain1\_2472MHz

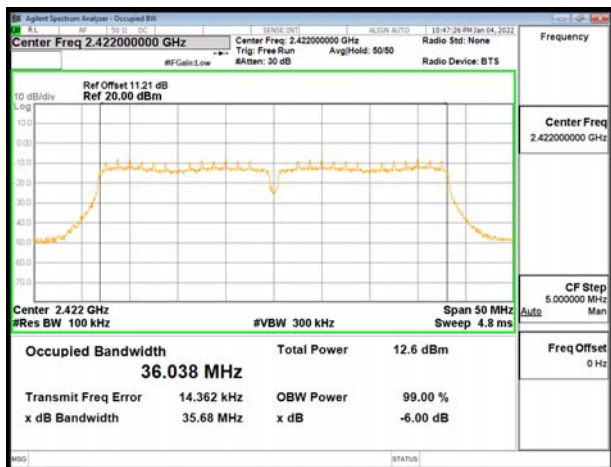


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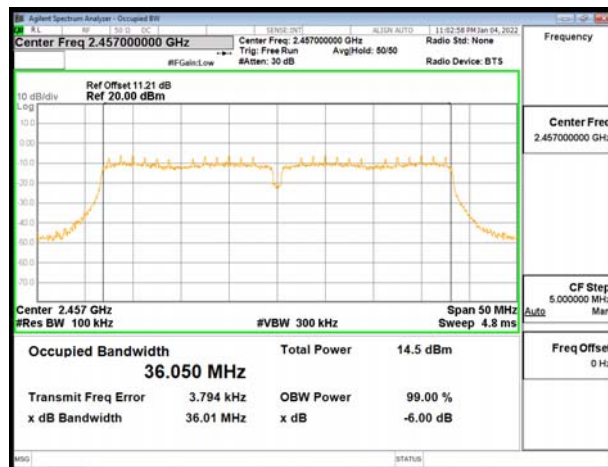
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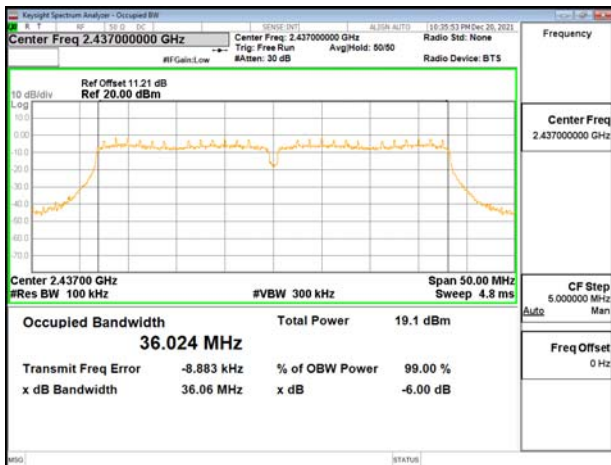
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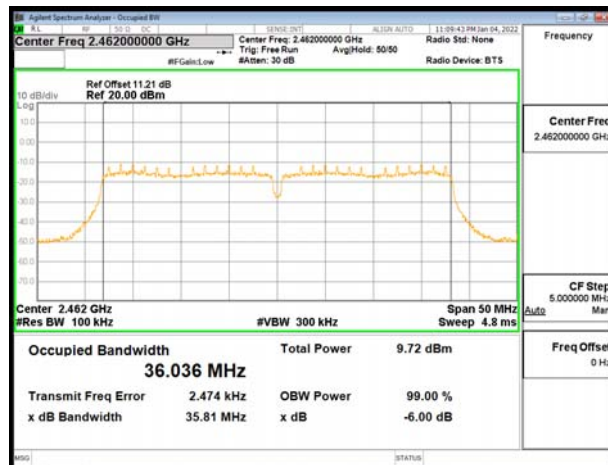
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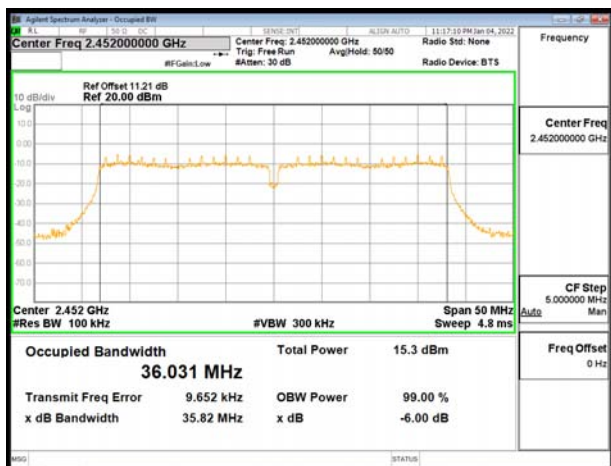
802.11n\_40MHz\_Chain0\_2437MHz



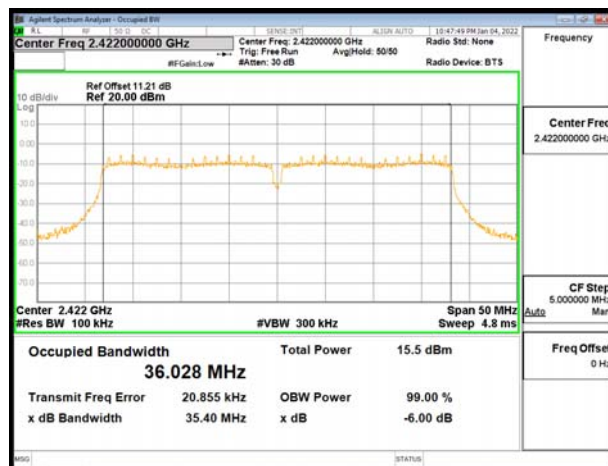
802.11n\_40MHz\_Chain0\_2462MHz



802.11n\_40MHz\_Chain0\_2452MHz



802.11n\_40MHz\_Chain1\_2422MHz



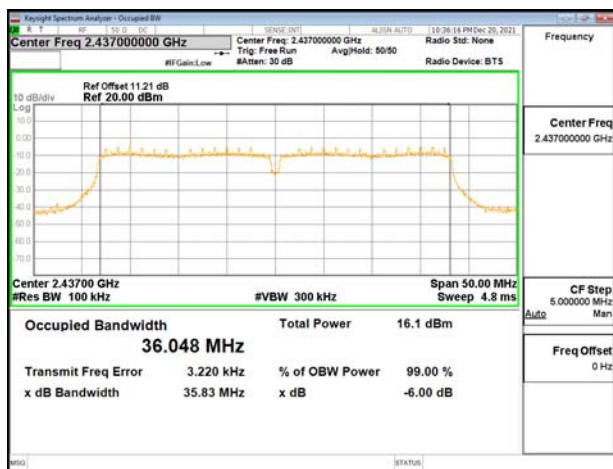
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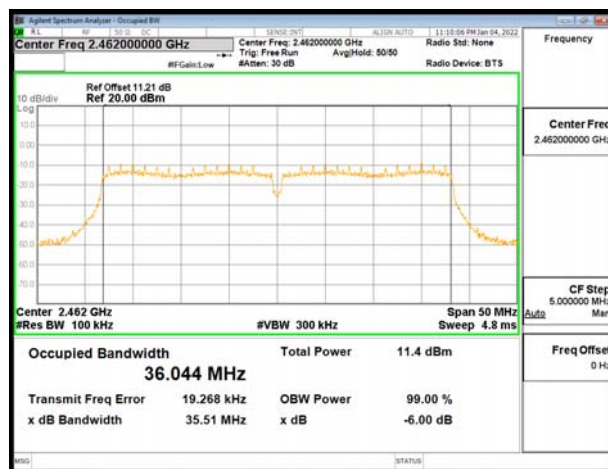
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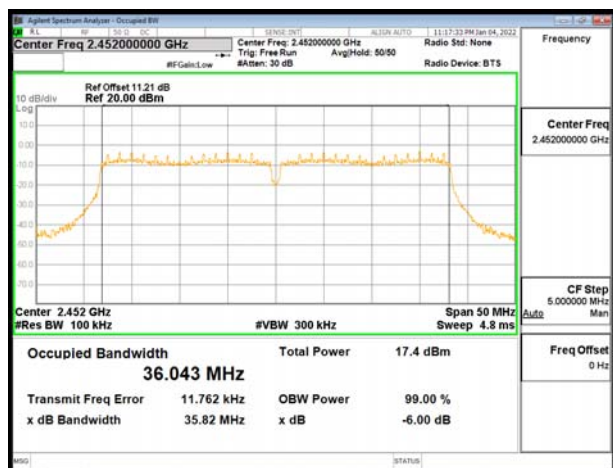
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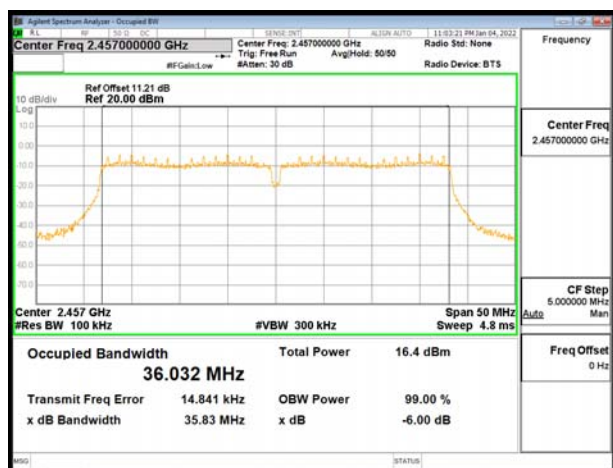
802.11n\_40MHz\_Chain1\_2462MHz



802.11n\_40MHz\_Chain1\_2452MHz



802.11n\_40MHz\_Chain1\_2457MHz



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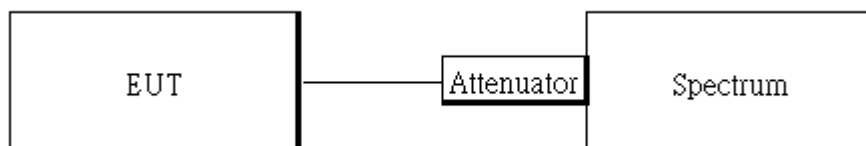
## 11 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

### 11.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

### 11.2 Test Setup



### 11.3 Measurement Procedure

#### Reference Level of Emission Limit:

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 100kHz & VBW = 300 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

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**Conducted Band Edge:**

1. To connect Antenna Port of EUT to Spectrum.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
6. Mark the highest reading of the emission as the reference level measurement.
7. Set DL as the limit = reading on marker of reference level measurement – 20dBm
8. Mark the highest readings of the emissions outside of 2400MHz~2483.5MHz.
9. Repeat above procedures until all default test channel (low, middle, and high) was complete.
10. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

**Conducted Spurious Emission:**

1. To connect Antenna Port of EUT to Spectrum
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Set RBW = 100 kHz & VBW= 300 kHz, Detector =Peak, Sweep = Auto.
4. Allow trace to fully stabilize.
5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Repeat above procedures until all default test channel measured were complete.
7. MIMO mode: offset is set following “measure and add 10 Log (N)” on spectrum to measure for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna.

**Note:**

*For test of MIMO mode, the highest emission of worst case employing Measure and add 10 log (N) technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome.*

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## 11.4 Measurement Result

802.11b Ch0

Reference Level of Limit			Reference Level of Limit		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)	Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	4.30	-15.70	2412	1.872	-18.13
2437	1.61	-18.39	2437	3.96	-16.04
2462	2.604	-17.40	2462	3.867	-16.13
2467	2.90	-17.10	2467	3.80	-16.20
2472	2.95	-17.05	2472	3.58	-16.42

802.11b Ch1

802.11g Ch0

Reference Level of Limit 802.11g mode			Reference Level of Limit 802.11g mode		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)	Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	0.35	-19.65	2412	2.826	-17.17
2437	0.43	-19.57	2437	2.773	-17.23
2462	1.231	-18.77	2462	2.62	-17.38
2467	-2.93	-22.93	2467	-1.44	-21.44
2472	-7.76	-27.76	2472	-6.45	-26.45

802.11g Ch1

802.11nHT\_20M Ch0

Reference Level of Limit 802.11n20 MODE			Reference Level of Limit 802.11ac20 MODE		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)	Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2412	0.310	-19.69	2412	2.83	-17.17
2437	0.414	-19.59	2437	2.793	-17.21
2462	1.27	-18.73	2462	2.63	-17.37
2467	-5.01	-25.01	2467	-3.41	-23.41
2472	-10.59	-30.59	2472	-9.37	-29.37

802.11nHT\_20M Ch1

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802.11nHT\_40M Ch0

Reference Level of Limit 802.11n40 MODE		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2422	-8.00	-28.00
2437	-1.631	-21.63
2452	-5.43	-25.43
2457	-6.20	-26.20
2462	-11.01	-31.01

802.11nHT\_40M Ch1

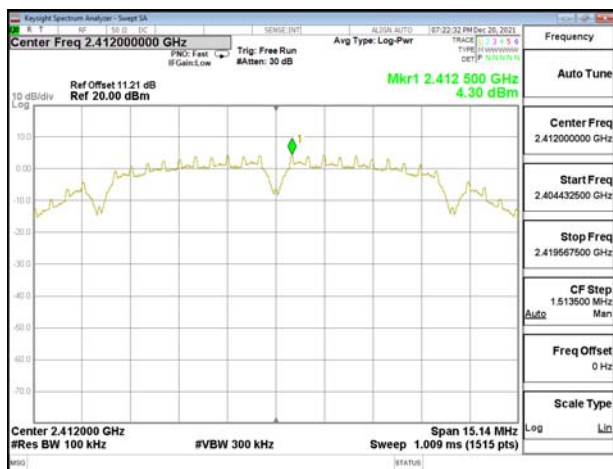
Reference Level of Limit 802.11ac40 MODE		
Freq. (MHz)	PSD (dBm)	Reference Level of Limit (dBm)
2422	-4.78	-24.78
2437	-4.283	-24.28
2452	-2.930	-22.93
2457	-3.98	-23.98
2462	-8.91	-28.91

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802.11b\_20MHz\_Chain0\_2412MHz



802.11b\_20MHz\_Chain0\_2467MHz



802.11b\_20MHz\_Chain0\_2437MHz



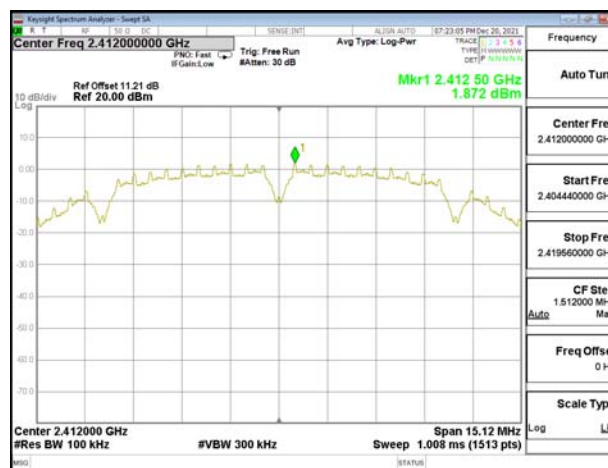
802.11b\_20MHz\_Chain0\_2472MHz



802.11b\_20MHz\_Chain0\_2462MHz



802.11b\_20MHz\_Chain1\_2412MHz



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802.11b\_20MHz\_Chain1\_2437MHz



802.11b\_20MHz\_Chain1\_2472MHz



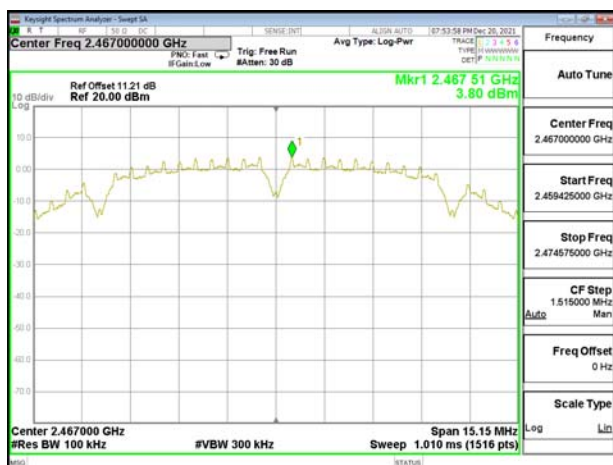
802.11b\_20MHz\_Chain1\_2462MHz



802.11g\_20MHz\_Chain0\_2412MHz



802.11b\_20MHz\_Chain1\_2467MHz



802.11g\_20MHz\_Chain0\_2437MHz



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802.11g\_20MHz\_Chain0\_2462MHz



802.11g\_20MHz\_Chain1\_2412MHz



802.11g\_20MHz\_Chain0\_2467MHz



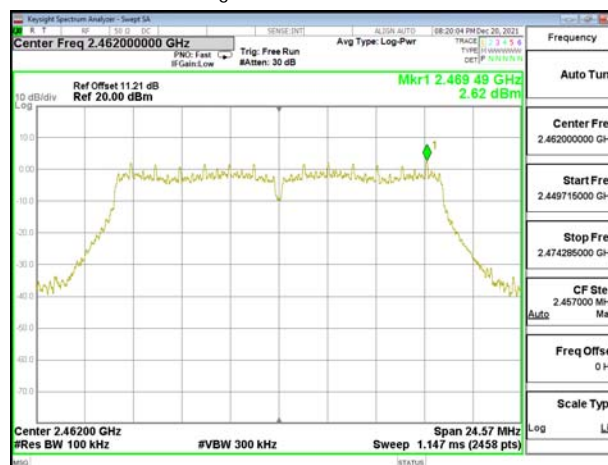
802.11g\_20MHz\_Chain1\_2437MHz



802.11g\_20MHz\_Chain0\_2472MHz



802.11g\_20MHz\_Chain1\_2462MHz



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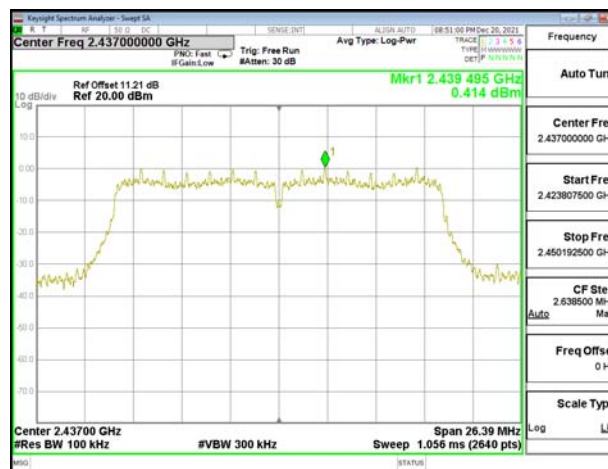
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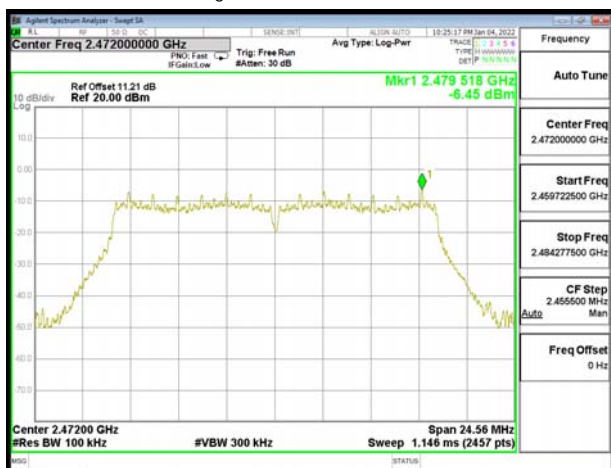
802.11g\_20MHz\_Chain1\_2467MHz



802.11n\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain1\_2472MHz



802.11n\_20MHz\_Chain0\_2462MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2467MHz



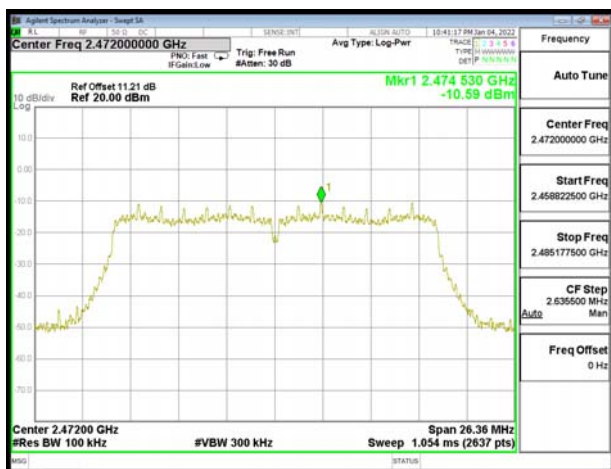
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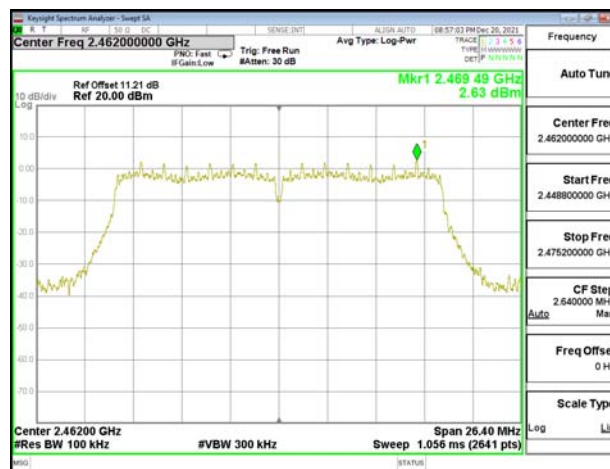
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802.11n\_20MHz\_Chain0\_2472MHz



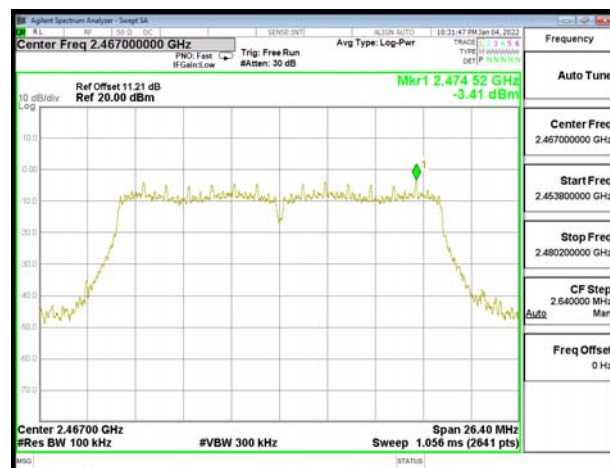
802.11n\_20MHz\_Chain1\_2462MHz



802.11n\_20MHz\_Chain1\_2412MHz



802.11n\_20MHz\_Chain1\_2467MHz



802.11n\_20MHz\_Chain1\_2437MHz



802.11n\_20MHz\_Chain1\_2472MHz



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802.11n\_40MHz\_Chain0\_2422MHz



802.11n\_40MHz\_Chain0\_2457MHz



802.11n\_40MHz\_Chain0\_2437MHz



802.11n\_40MHz\_Chain0\_2462MHz



802.11n\_40MHz\_Chain0\_2452MHz



802.11n\_40MHz\_Chain1\_2422MHz



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802.11n\_40MHz\_Chain1\_2437MHz



802.11n\_40MHz\_Chain1\_2462MHz



802.11n\_40MHz\_Chain1\_2452MHz



802.11n\_40MHz\_Chain1\_2457MHz



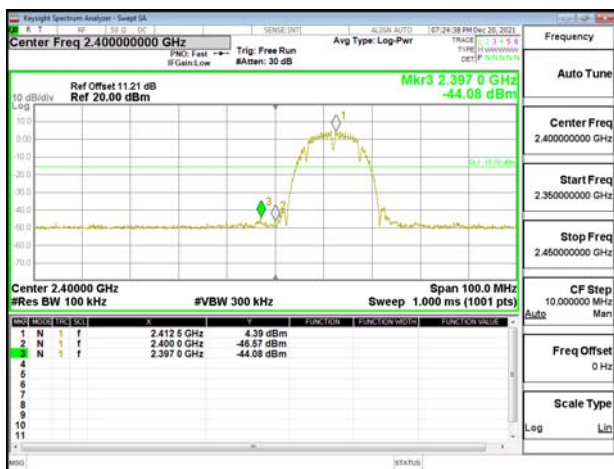
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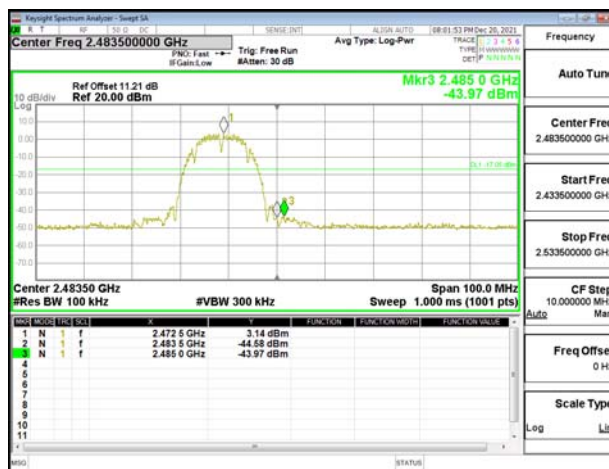
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802.11b\_20MHz\_Chain0\_2412MHz



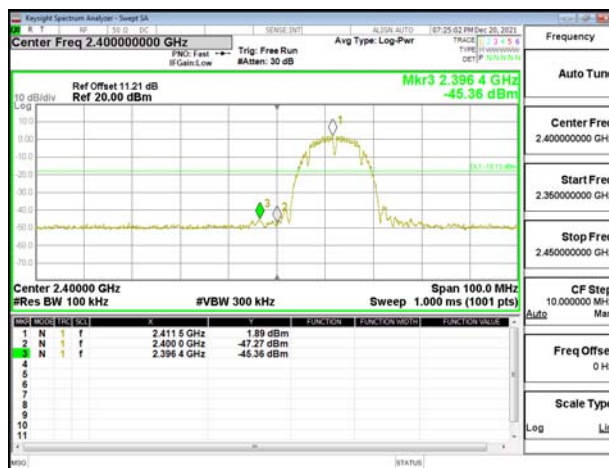
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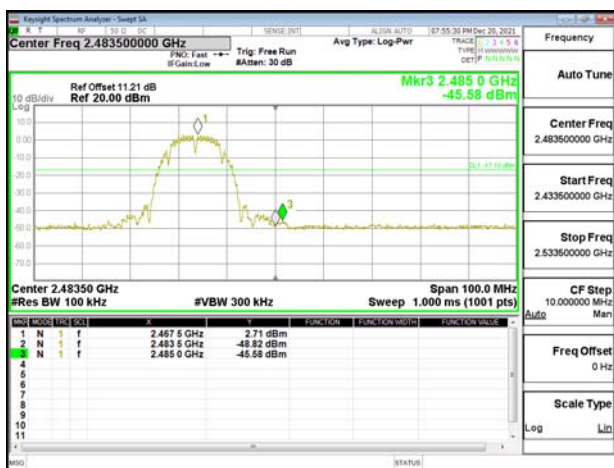
802.11b\_20MHz\_Chain0\_2462MHz



802.11b\_20MHz\_Chain1\_2412MHz



802.11b\_20MHz\_Chain0\_2467MHz



802.11b\_20MHz\_Chain1\_2462MHz

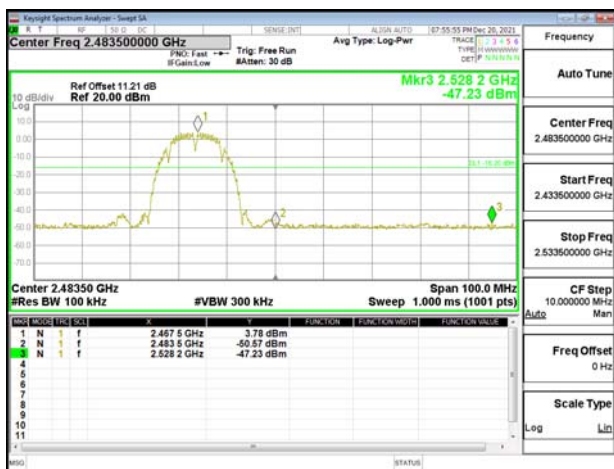


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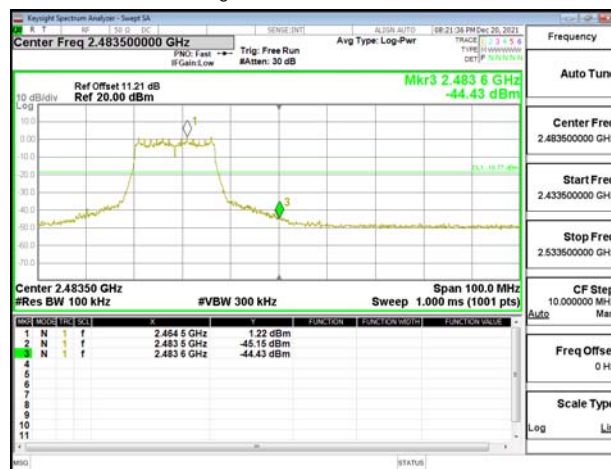
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802.11b\_20MHz\_Chain1\_2467MHz



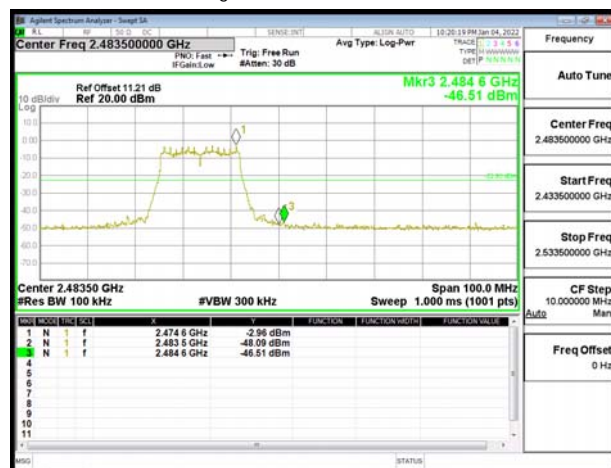
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802.11b\_20MHz\_Chain1\_2472MHz



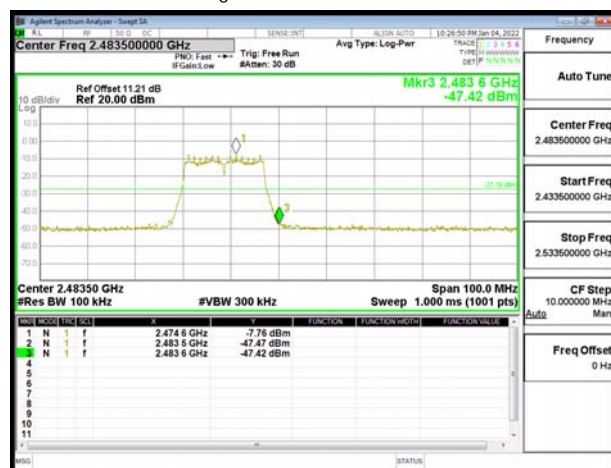
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802.11g\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain0\_2472MHz



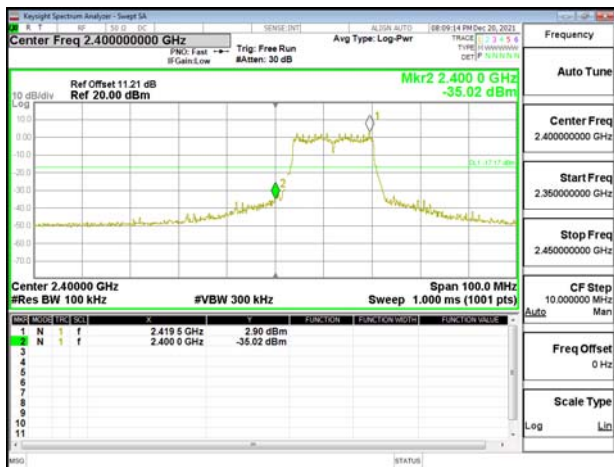
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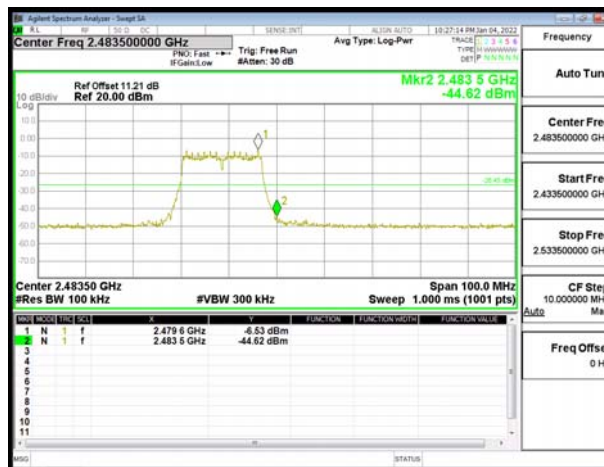
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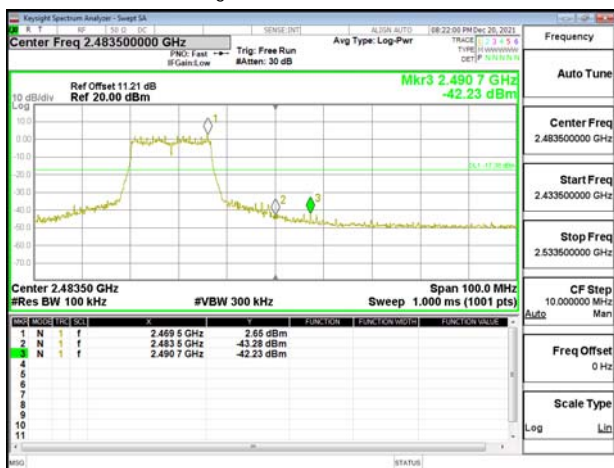
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802.11g\_20MHz\_Chain1\_2472MHz



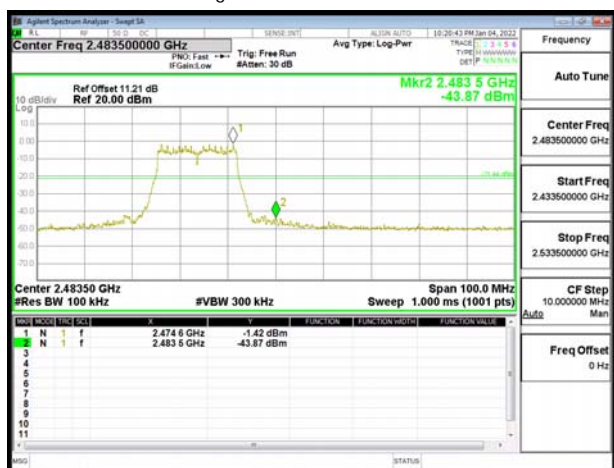
802.11g\_20MHz\_Chain1\_2462MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11g\_20MHz\_Chain1\_2467MHz



802.11n\_20MHz\_Chain0\_2462MHz

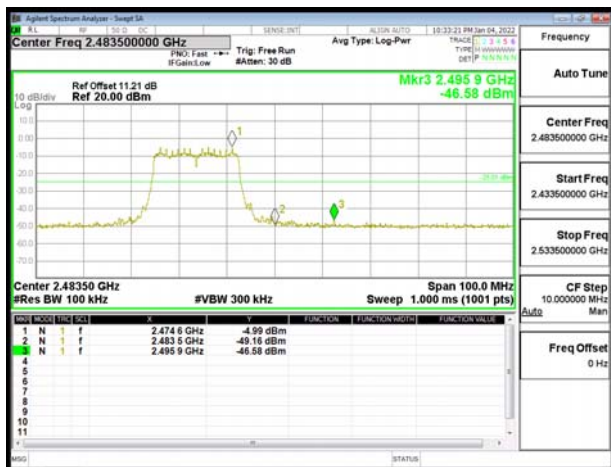


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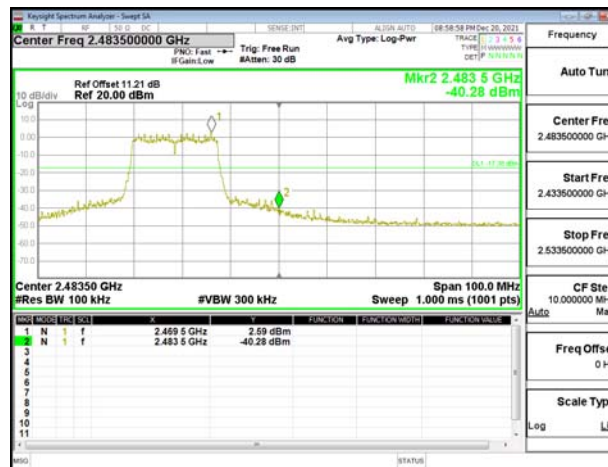
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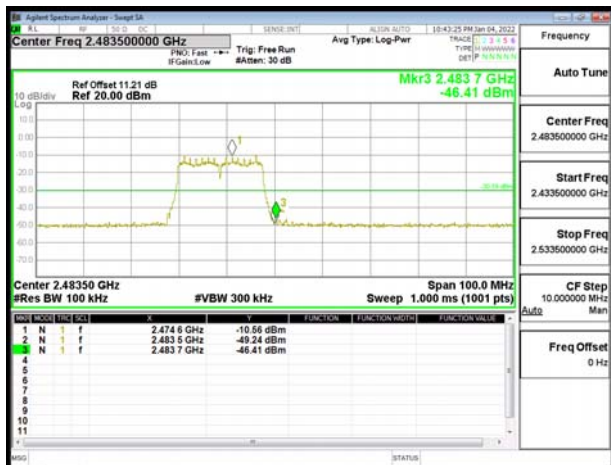
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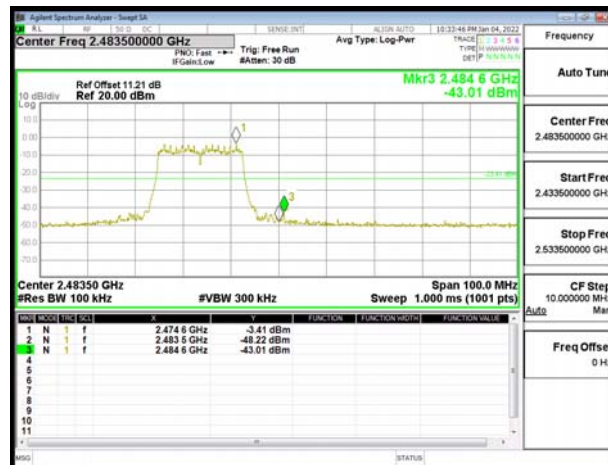
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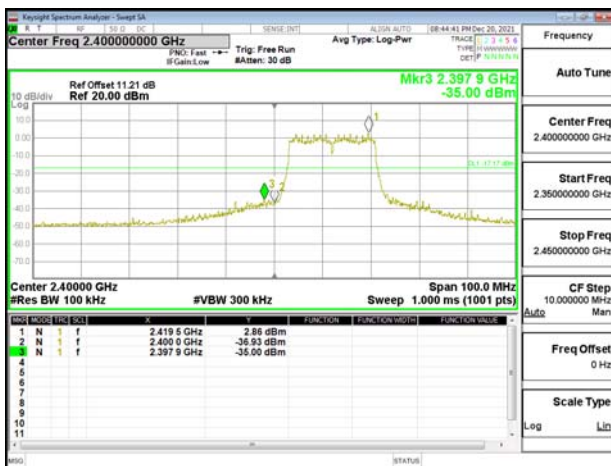
802.11n\_20MHz\_Chain0\_2472MHz



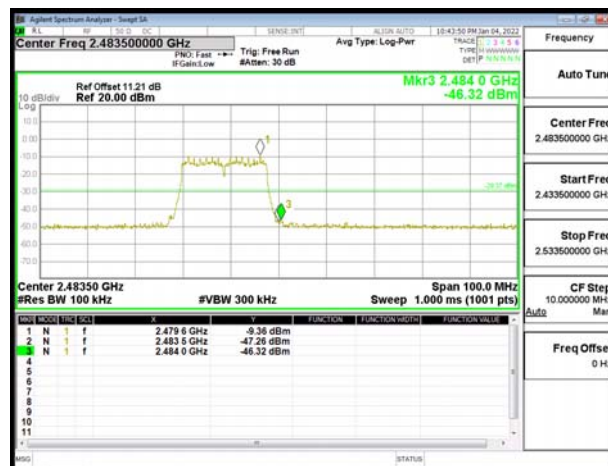
802.11n\_20MHz\_Chain1\_2467MHz



802.11n\_20MHz\_Chain1\_2412MHz



802.11n\_20MHz\_Chain1\_2472MHz



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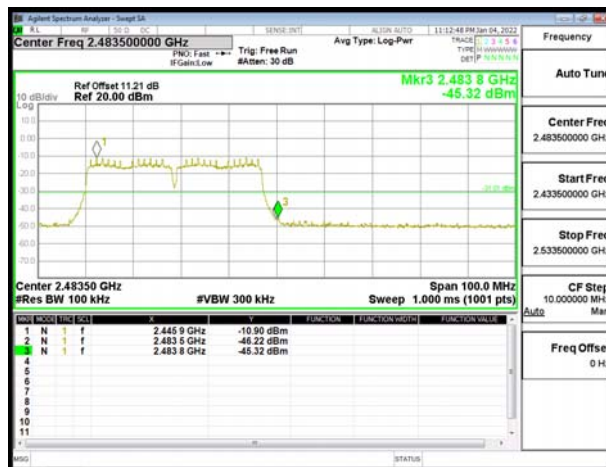
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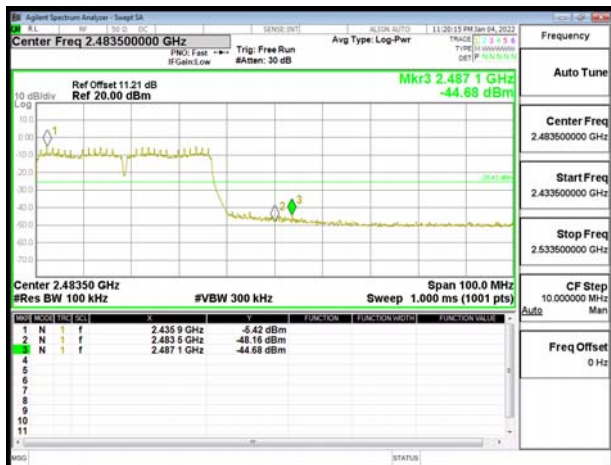
802.11n\_40MHz\_Chain0\_2422MHz



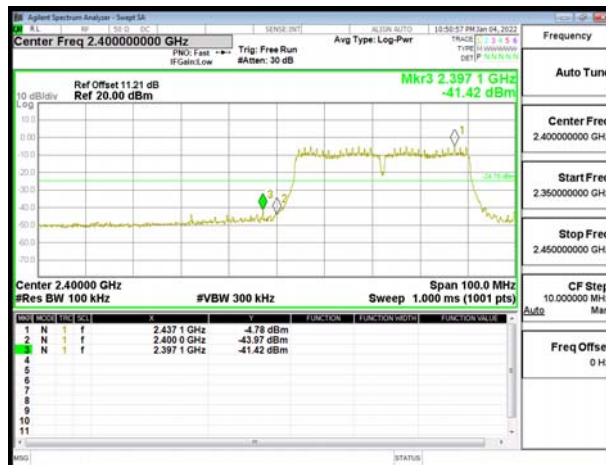
802.11n\_40MHz\_Chain0\_2462MHz



802.11n\_40MHz\_Chain0\_2452MHz



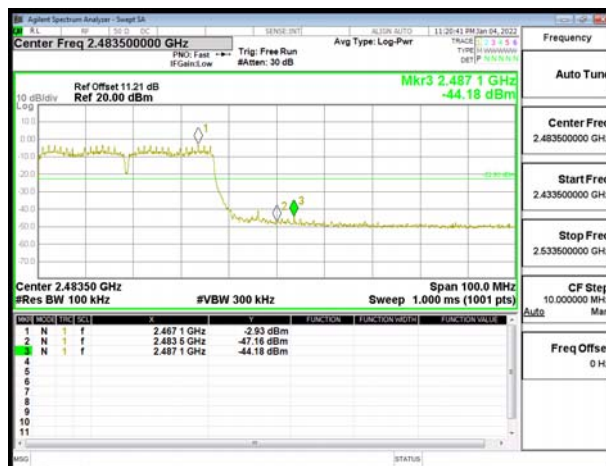
802.11n\_40MHz\_Chain1\_2422MHz



802.11n\_40MHz\_Chain0\_2457MHz



802.11n\_40MHz\_Chain1\_2452MHz



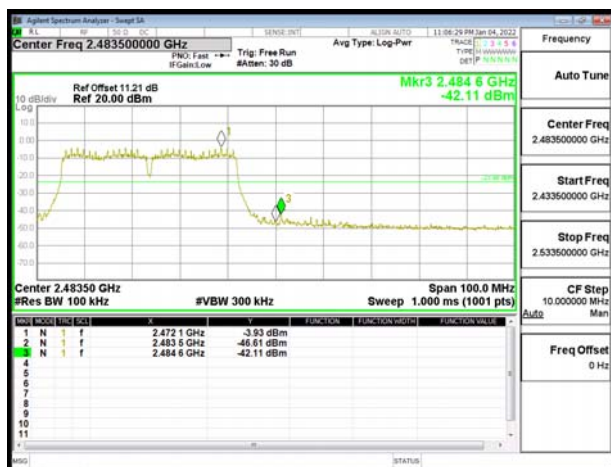
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802.11n\_40MHz\_Chain1\_2457MHz



802.11n\_40MHz\_Chain1\_2462MHz

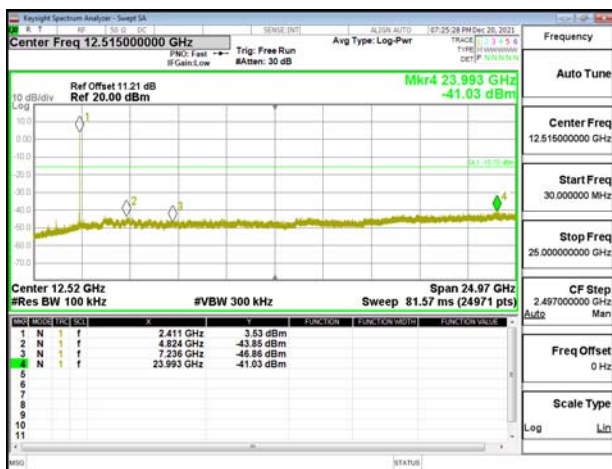


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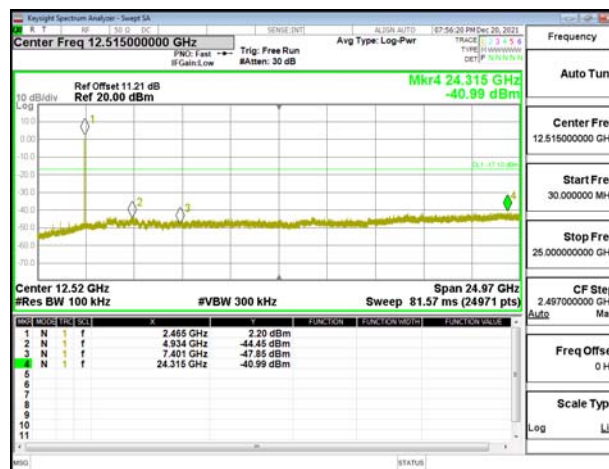
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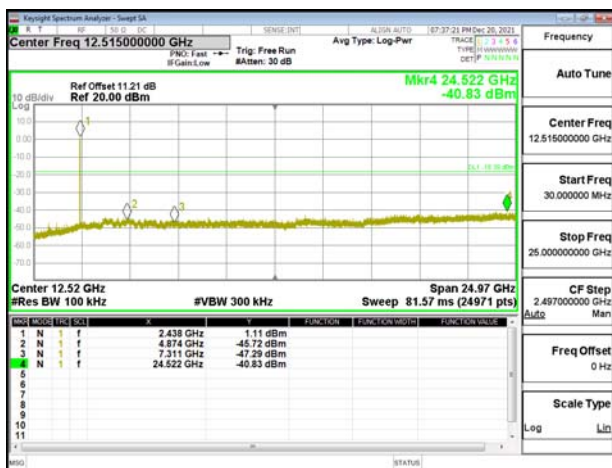
802.11b\_20MHz\_Chain0\_2412MHz



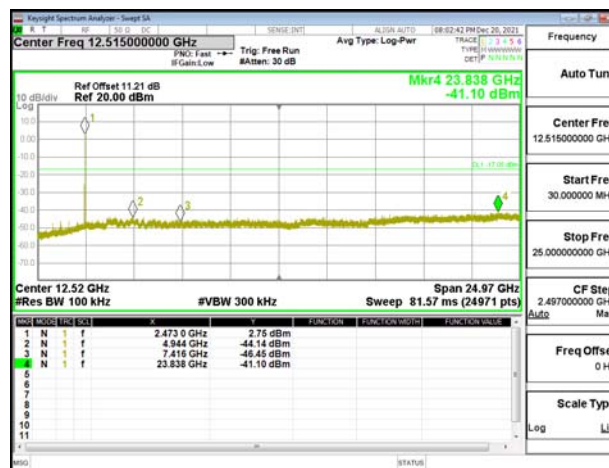
802.11b\_20MHz\_Chain0\_2467MHz



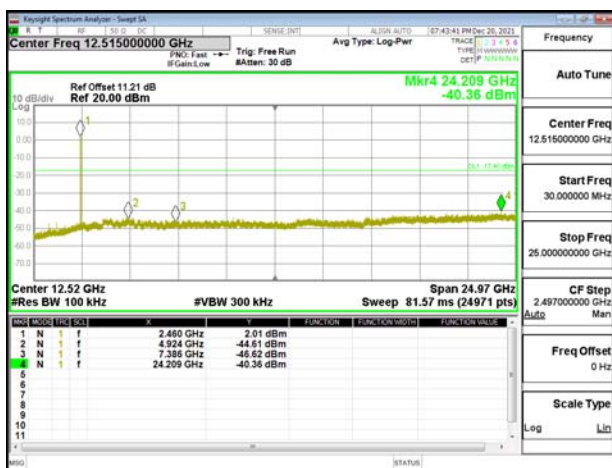
802.11b\_20MHz\_Chain0\_2437MHz



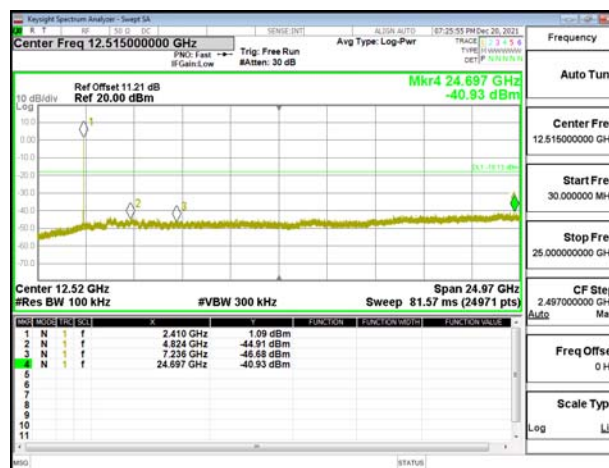
802.11b\_20MHz\_Chain0\_2472MHz



802.11b\_20MHz\_Chain0\_2462MHz



802.11b\_20MHz\_Chain1\_2412MHz

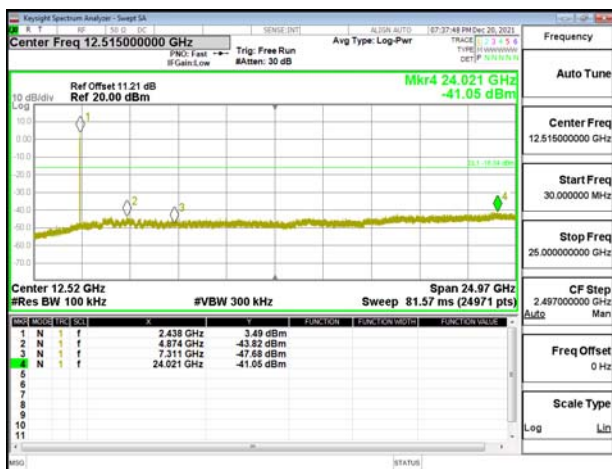


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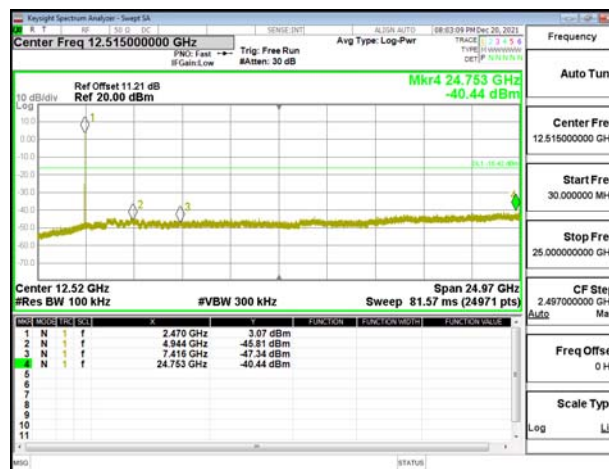
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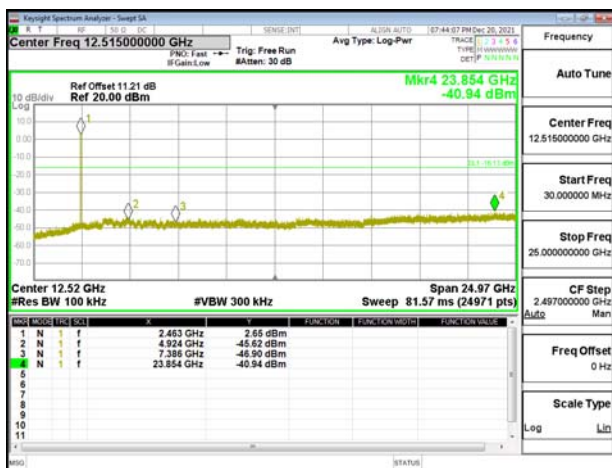
802.11b\_20MHz\_Chain1\_2437MHz



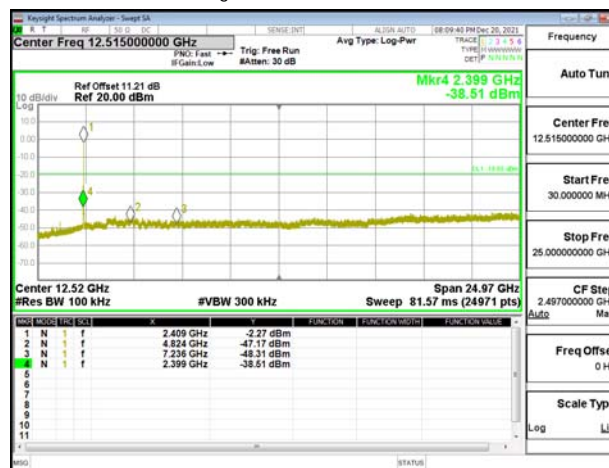
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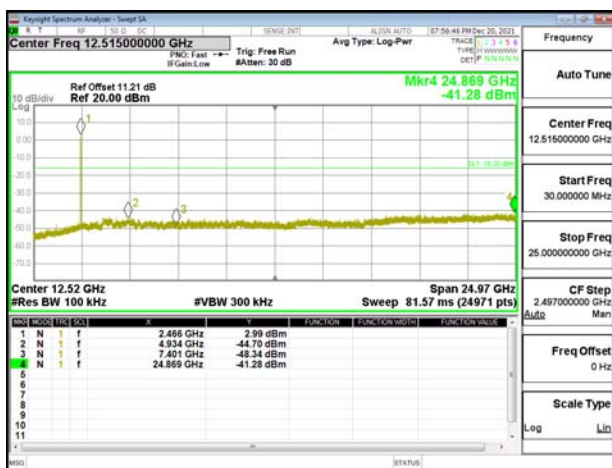
802.11b\_20MHz\_Chain1\_2462MHz



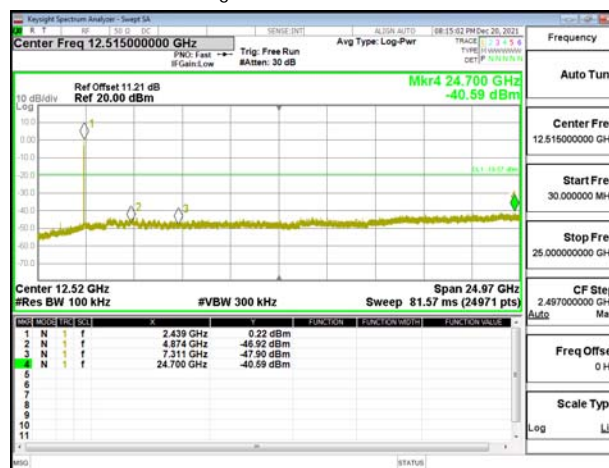
802.11g\_20MHz\_Chain0\_2412MHz



802.11b\_20MHz\_Chain1\_2467MHz



802.11g\_20MHz\_Chain0\_2437MHz

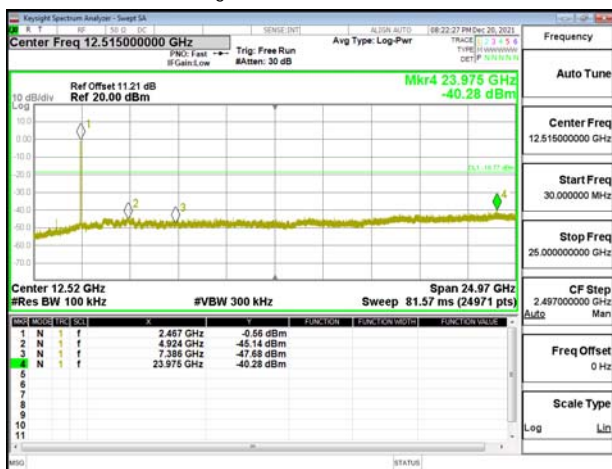


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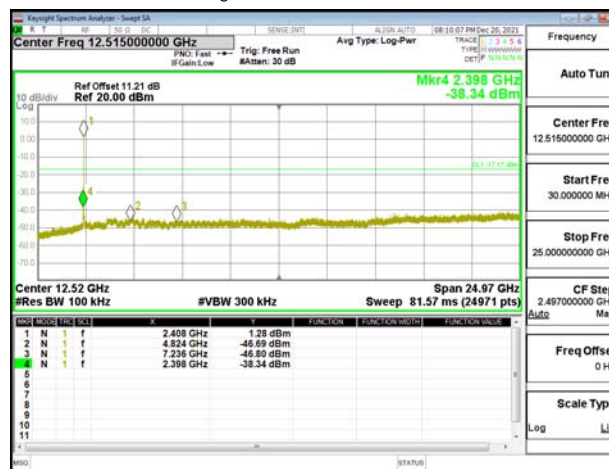
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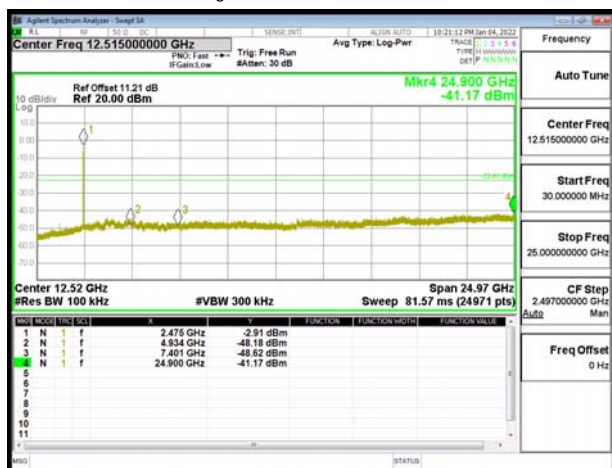
802.11g\_20MHz\_Chain0\_2462MHz



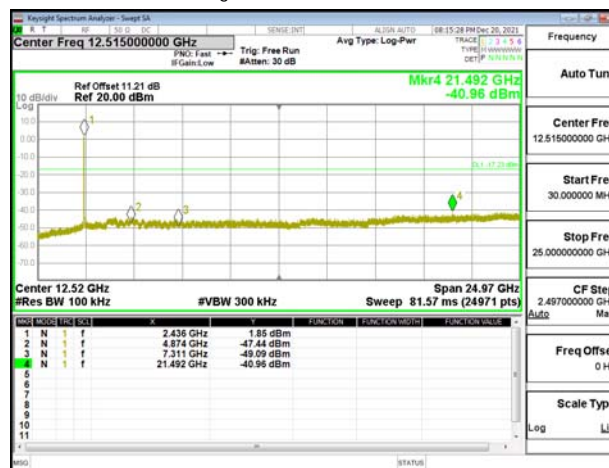
802.11g\_20MHz\_Chain1\_2412MHz



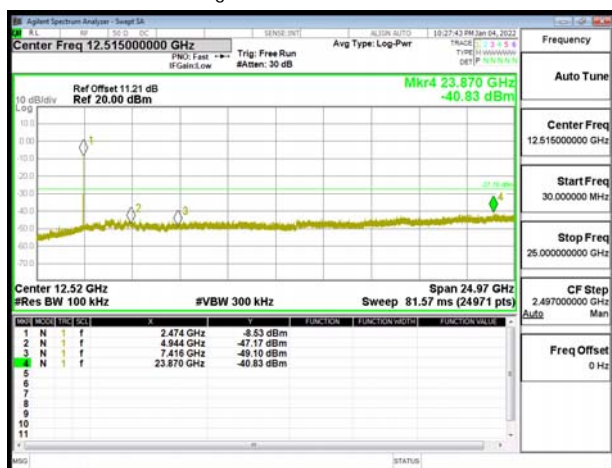
802.11g\_20MHz\_Chain0\_2467MHz



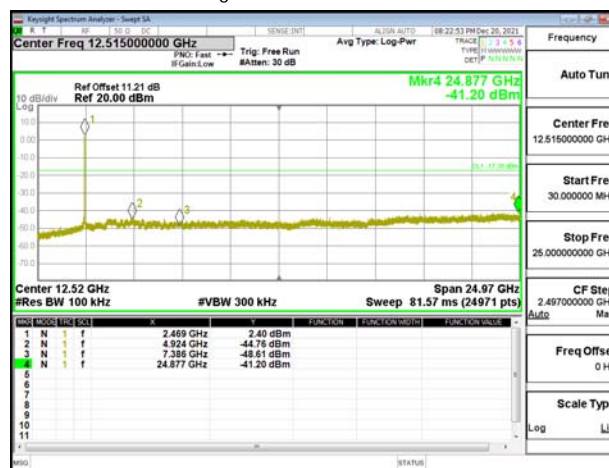
802.11g\_20MHz\_Chain1\_2437MHz



802.11g\_20MHz\_Chain0\_2472MHz



802.11g\_20MHz\_Chain1\_2462MHz



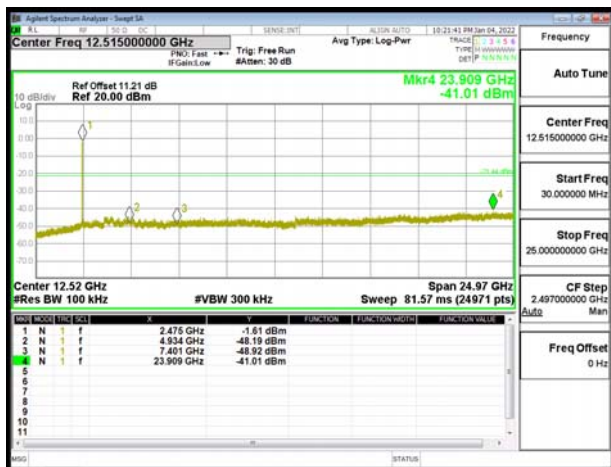
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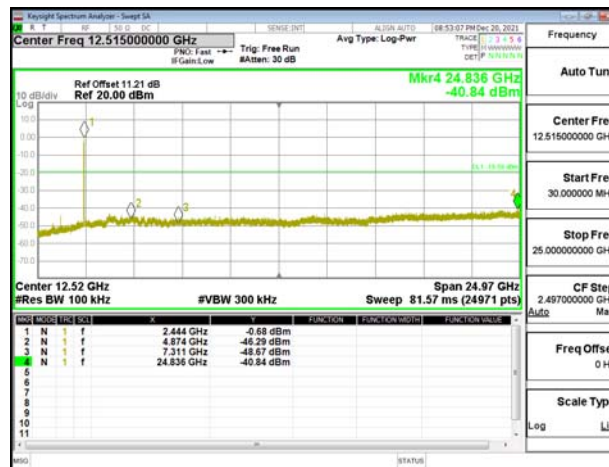
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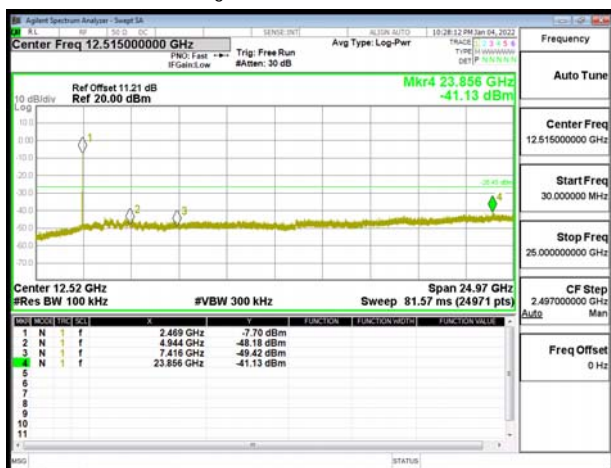
802.11g\_20MHz\_Chain1\_2467MHz



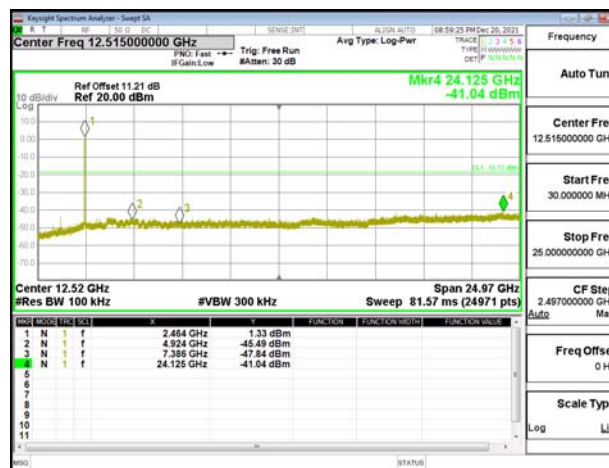
802.11n\_20MHz\_Chain0\_2437MHz



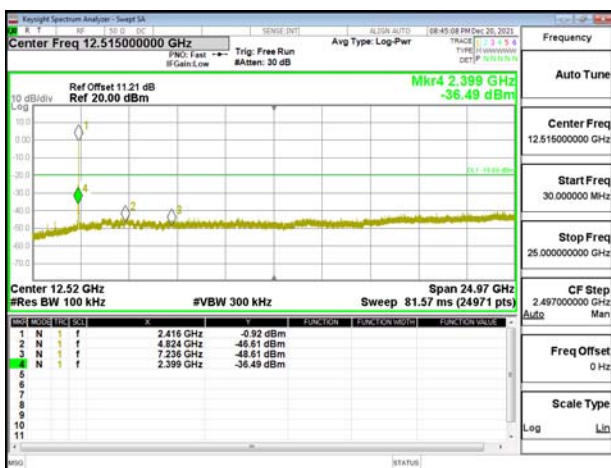
802.11g\_20MHz\_Chain1\_2472MHz



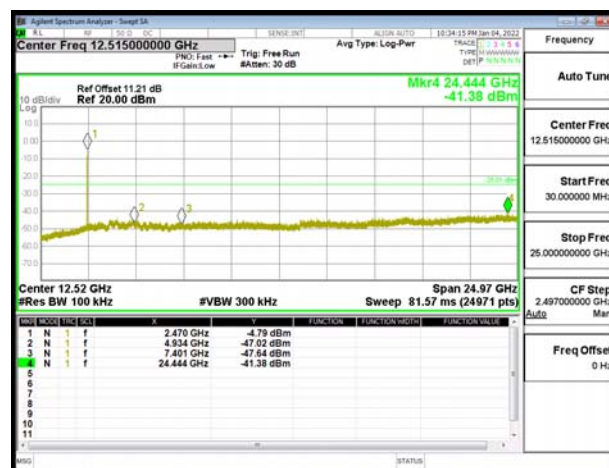
802.11n\_20MHz\_Chain0\_2462MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2467MHz

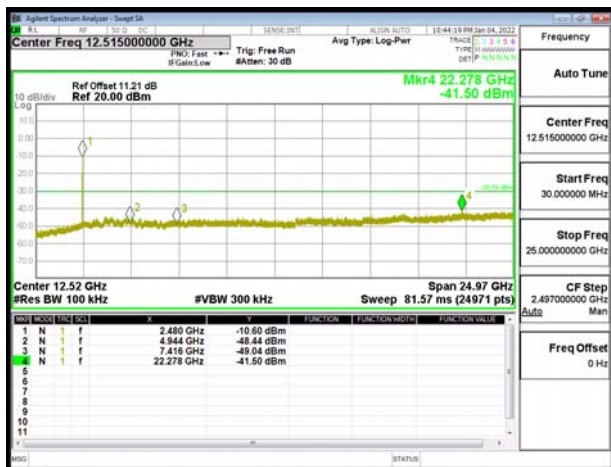


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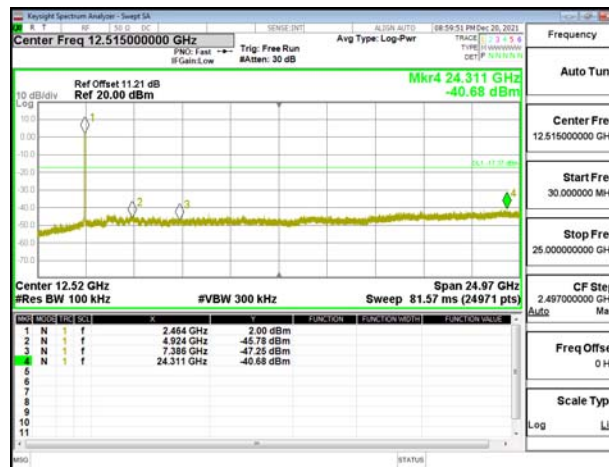
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802.11n\_20MHz\_Chain0\_2472MHz



802.11n\_20MHz\_Chain1\_2462MHz



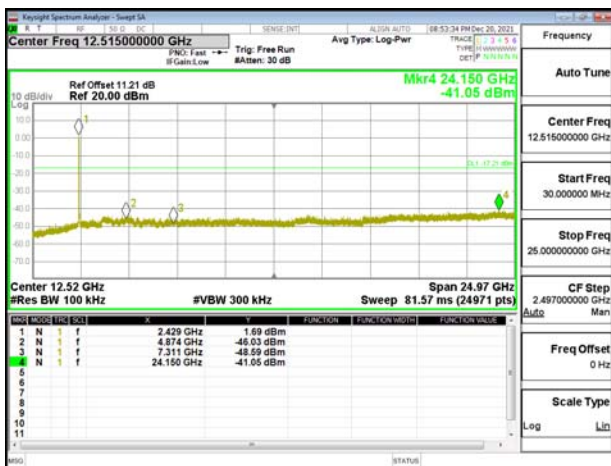
802.11n\_20MHz\_Chain1\_2412MHz



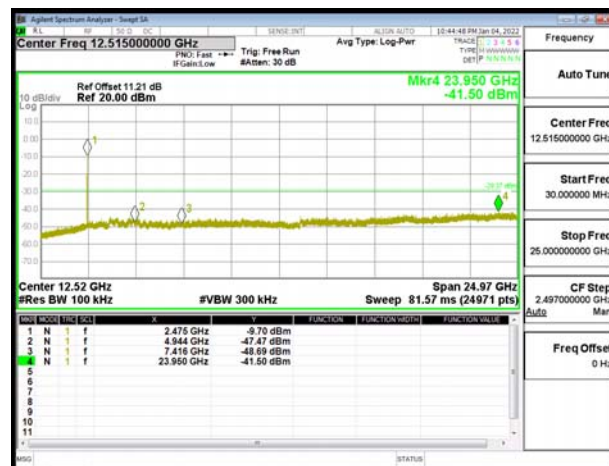
802.11n\_20MHz\_Chain1\_2467MHz



802.11n\_20MHz\_Chain1\_2437MHz



802.11n\_20MHz\_Chain1\_2472MHz



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