

**ELECTROMAGNETIC EMISSIONS  
COMPLIANCE REPORT**

**Applicant:** Westermo Neratec AG  
Rosswiesstrasse 29, 8608 Bubikon, Switzerland

**Manufacturer:** Westermo Neratec AG  
Rosswiesstrasse 29, 8608 Bubikon, Switzerland

**Product Name:** WLAN Access Point

**Brand Name:** WESTERMO

**Model No.:** Ibex-1510-T2G2.5 NA

**ISED PMN:** Ibex-1510

**Report Number:** TERF2410003002ER

**FCC ID** 2AEJD-3628-15102

**IC:** 9301A-362815102

**Date of EUT Received:** Oct. 09, 2024

**Date of Test:** Oct. 09, 2024 ~ Nov. 19, 2024

**Issue Date:** Jan. 10, 2025

Approved By

**Marcus Tseng****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, ISED RSS-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
TERF2410003002ER	00	Original.	Dec. 20, 2024	Yami Kuo	
TERF2410003002ER	01	Revise chapter 1.1	Jan. 10, 2025	Yami Kuo	*

**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:	WLAN Access Point
Brand Name:	WESTERMO
Model No.:	Ibex-1510-T2G2.5 NA
ISED PMN:	Ibex-1510
Hardware Version:	MK1 rev.4
Firmware Version:	6.11.5
EUT Series No.:	3628-15102 00000011 2434
Power Supply:	1.From 120 VAC / 48 VDC PoE adapter. 2.From 24 to 120 VDC to optional DC input connector.
Test Software (Name/Version)	QSPR x86/6.00.00146.1

### 1.2 RF Specification

#### WLAN 2.4GHz

Wi-Fi	Frequency Range	Channels	Rated Power (dBm)		Modulation Technology
			Peak	Avg.	
802.11b	2412~2462	11	27.69	24.87	DSSS
802.11g	2412~2462	11	29.97	24.86	OFDM
802.11n_HT20	2412~2462	11	29.84	24.31	OFDM
802.11n_HT40	2422~2452	7	29.76	24.41	OFDM
802.11ax_HE20	2412~2462	11	29.94	23.78	OFDMA
802.11ax_HE40	2422~2452	7	29.95	24.03	OFDMA
Modulation type:		CCK, DQPSK, DBPSK for DSSS in 802.11b			
		64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11g, 11n			
		1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11ax			
Data Rate:		802.11b: 1/2/5.5/11 Mbps			
		802.11g: 6/9/12/18/24/36/48/54 Mbps			
		802.11n_HT20: up to 144.4Mbps			
		802.11n_HT40: up to 300Mbps			
		802.11ax_HE20: up to 286.8Mbps			
		802.11ax_HE40: up to 573.6Mbps			

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## WLAN 2.4GHz for IC

Wi-Fi	Frequency Range	Channels	Rated Power (dBm)		Rated Power in dBm (EIRP)	Modulation Technology
			Peak	Avg.		
802.11b	2412~2462	11	27.69	24.87	28.87	DSSS
802.11g	2412~2462	11	29.97	24.86	28.86	OFDM
802.11n_HT20	2412~2462	11	29.84	24.31	28.31	OFDM
802.11n_HT40	2422~2452	7	29.76	24.41	28.41	OFDM
802.11ax_HE20	2412~2462	11	29.94	23.78	27.78	OFDMA
802.11ax_HE40	2422~2452	7	29.95	24.03	28.03	OFDMA
Modulation type:		CCK, DQPSK, DBPSK for DSSS in 802.11b				
		64QAM, 16QAM, QPSK, BPSK for OFDM in 802.11g,11n				
		1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA in 802.11ax				
Data Rate:		802.11b: 1/2/5.5/11 Mbps				
		802.11g: 6/9/12/18/24/36/48/54 Mbps				
		802.11n_HT20: up to 144.4Mbps				
		802.11n_HT40: up to 300Mbps				
		802.11ax_HE20: up to 286.8Mbps				
		802.11ax_HE40: up to 573.6Mbps				

### 1.3 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
omni-directional	HUBER+SUHNER	1399.35.0008	2412-2462	4

**Note:** 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  
 RSS-247 issue 3 Aug. 2023  
 RSS-Gen, Issue 5 April 2018, Amendment 2 (February 2021)  
 ANSI C63.10:2013

## 1.5 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designa- tion 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 2		
		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

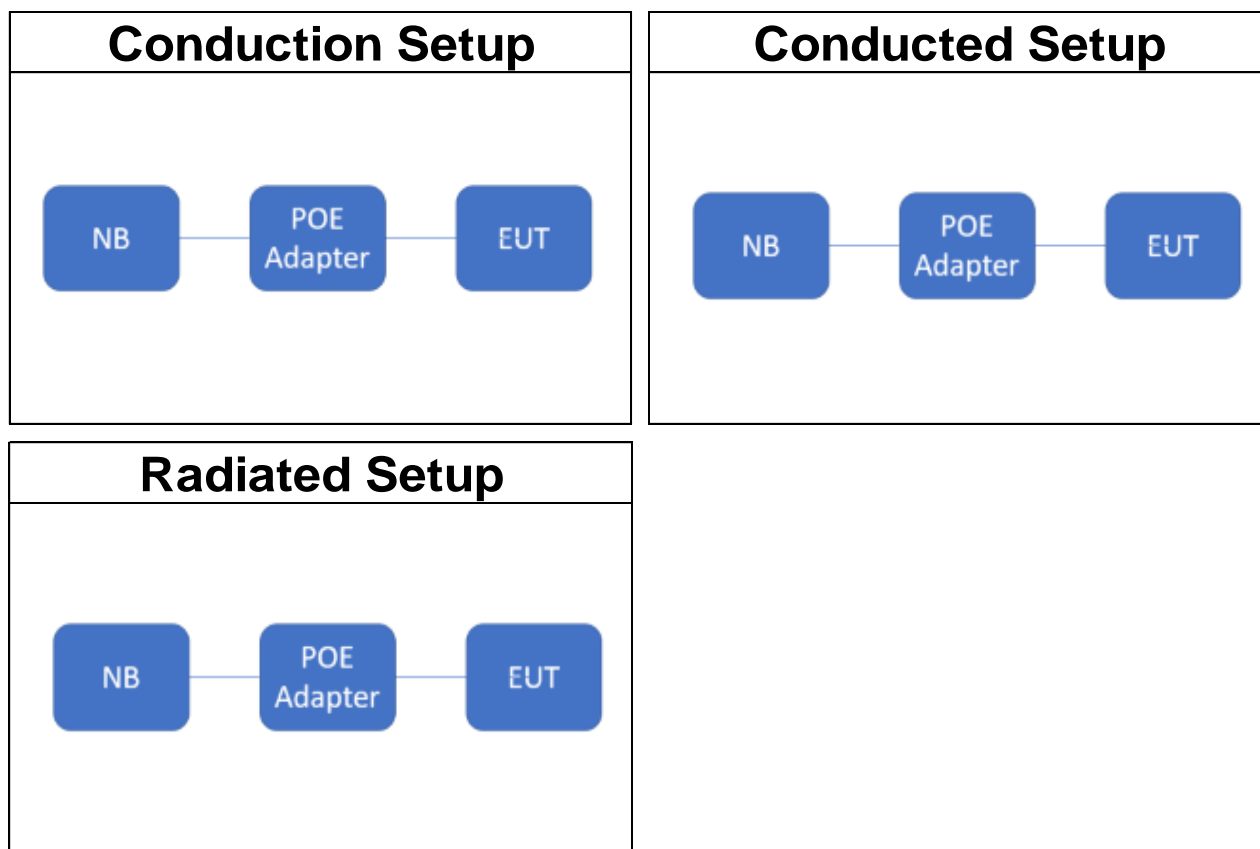
Radiated emission below 30MHz is measured in a 9m\*6m\*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

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.
Notebook	HP	HSN-Q35C-4	5CD2428X3N	N/A	N/A
POE Adapter	Gigabit	PSE301G	N/A	N/A	N/A
Conducted Emission Test Site: Conducted 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
PoE Adapter	FLUIDMESH	GMW241DA-480050G	N/A	N/A	N/A
Notebook	HP	HSN-Q35C-4	5CD2428X3N	N/A	N/A
Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Notebook	HP	HSN-Q35C-4	5CD2428X3N	N/A	N/A
POE Adapter	Gigabit	PSE301G	N/A	N/A	N/A

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### 3 SUMMARY OF TEST RESULTS

FCC Rules	ISED Rules	Description Of Test	Result
§15.207(a)	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	RSS-247 §5.4 d	Peak Output Power	Compliant
§15.247(a)(2)	RSS-247 §5.2 a RSS-Gen §6.7	Emission Bandwidth	Compliant
§15.209 §15.247(d)	RSS-247 §5.5	Conducted Band Edge and Spurious Emission	Compliant
§15.209 §15.247(d)	RSS-247 §5.5	Radiated Band Edge and Spurious Emission	Compliant
§15.205	RSS-Gen § 8.10	Restricted Bands	Compliant
§15.247(e)	RSS-247 §5.2 b	Power Spectral Density	Compliant
§15.203	N/A	Antenna Requirement	Compliant

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operating Frequencies

2400~2483.5 MHz			
20MHz		40MHz	
CH	Freq. (MHz)	CH	Freq. (MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
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 given UE is pre-scanned among below modes.

Modulation	Transmission Chain				Single Transmission Spatial	Multiple Transmission Spatial
<input checked="" type="checkbox"/> 802.11 b	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input type="checkbox"/> 1TX	<input checked="" type="checkbox"/> 2TX
<input checked="" type="checkbox"/> 802.11 g	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input type="checkbox"/> 1TX	<input checked="" type="checkbox"/> 2TX
<input checked="" type="checkbox"/> 802.11 n	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input type="checkbox"/> 1TX	<input checked="" type="checkbox"/> 2TX
<input checked="" type="checkbox"/> 802.11 ax	<input checked="" type="checkbox"/> Ch0	<input checked="" type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input type="checkbox"/> 1TX	<input checked="" type="checkbox"/> 2TX

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 TEST					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	2TX
802.11g	1 to 11	1,6,9,10,11	OFDM	6	2TX
802.11n_HT20	1 to 11	1,6,10,11	OFDM	MCS0	2TX
802.11n_HT40	3 to 9	3,6,7,8,9	OFDM	MCS0	2TX

CONDUCTED TEST						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT
802.11ax_HE20	1 to 11	1,6,10,11	OFDMA	FULL RU	MCS0	2TX
802.11ax_HE40	3 to 9	3,6,7,8,9	OFDMA	FULL RU	MCS0	2TX

TRANSMIT RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11g	1 to 11	6	OFDM	6	2TX

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TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 11	1,6,11	DSSS	1	2TX
802.11g	1 to 11	1,6,9,10,11	OFDM	6	2TX
802.11n_HT20	1 to 11	1,6,10,11	OFDM	MCS0	2TX
802.11n_HT40	3 to 9	3,6,7,8,9	OFDM	MCS0	2TX

TRANSMIT RADIATED EMISSION TEST (ABOVE 1 GHz)						
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	RU CONFIGURATION	DATA RATE (Mbps)	ANTENNA PORT
802.11ax_HE20	1 to 11	1,6,10,11	OFDMA	FULL RU	MCS0	2TX
802.11ax_HE40	3 to 9	3,6,7,8,9	OFDMA	FULL RU	MCS0	2TX

### Note:

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.

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## 5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 1.54 dB
Output Power measurement	+/- 0.97 dB
Emission Bandwidth	+/- 1.38 Hz
Conducted emission measurement	+/- 0.77 dB
Peak Power Density	+/- 0.61 dB
Temperature	+/- 0.6 °C
Humidity	+/- 3 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/-	1.89 dB	9kHz~30MHz
	+/-	4.15 dB	30MHz - 1000MHz
	+/-	3.43 dB	1GHz - 18GHz
	+/-	3.86 dB	18GHz - 40GHz
Polarization: Horizontal	+/-	1.89 dB	9kHz~30MHz
	+/-	4.02 dB	30MHz - 1000MHz
	+/-	3.43 dB	1GHz - 18GHz
	+/-	3.86 dB	18GHz - 40GHz
Radiated Spurious Emission	+/-	2 dB	33GHz-50GHz
	+/-	1.59 dB	50GHz-60GHz
	+/-	1.7 dB	60GHz-90GHz
	+/-	1.64 dB	90GHz-140GHz
	+/-	3.83 dB	140GHz-220GHz

### 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.
Coaxial Cables	EMC Instruments Corp.	EMCCFD300-BM-BM-3000	161207	06/22/2024	06/21/2025
EMI Test Receiver	R&S	ESCI 7	100759	08/28/2024	08/27/2025
LISN	SCHWARZBECK	NSLK 8127	1040	09/07/2024	09/06/2025
Pulse Limiter	SCHWARZBECK	VTSD 9561F-N	793	06/22/2024	06/21/2025
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R

### 6.2 Conducted Measurement

Conducted Emission Test Site: Conducted 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Attenuator	Mini-Circuits	BW-S10W2+	1	12/12/2023	12/11/2024
DC Block	Mini-Circuits	BLK-18-S+	10	12/12/2023	12/11/2024
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY59071571	06/04/2024	06/03/2025
Power Meter	Anritsu	ML2496A	1804001	04/16/2024	04/15/2025
Power Sensor	Anritsu	MA2411B	1726104	04/16/2024	04/15/2025
Power Sensor	Anritsu	MA2411B	1726107	04/16/2024	04/15/2025
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R

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### 6.3 Radiated Measurement

Radiated Emission Test Site: SAC 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
4G High Pass Filter	WI	WHKX4.0	21	12/12/2023	12/11/2024
Band Reject Filter 2400-2483.5	Titan	T04N2400248350S0 1	23040703-10	12/12/2023	12/11/2024
Attenuator	SUHNER	20dB 18GHz 2W	6620.19.AA	12/12/2023	12/11/2024
Coaxial Cables	EMCI	EMC104-SM-SM-600 +EMC105-SM-SM-2000 +EMC105-SM-SM-1500 +EMC105-SM-SM-10000	RX Cable 9K-18G (220237+220909+220906+240801)	08/30/2024	08/29/2025
Coaxial Cables	Huber Suhner	SUCOFLEX 102	RX Cable 18G-40G MY2630/2+805062/2	08/30/2024	08/29/2025
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242392	12/22/2023	12/21/2024
Horn Antenna	RF SPIN	DRH0844	LE2D05A0844	07/10/2024	07/09/2025
Horn Antenna	RF SPIN	DRH18-E	210303A18-ES	02/16/2024	02/15/2025
Pre-Amplifier	EMCI	EMC118A45SEE	980867	08/30/2024	08/29/2025
Pre-Amplifier	EMCI	EMC184045SEE	9080939	08/30/2024	08/29/2025
Site Cal	SGS	SAC 2	N/A	08/30/2024	08/29/2025
Test Software	Audix	e3	Ver. 9.210616	N.C.R	N.C.R

**NOTE:** N.C.R refers to Not Calibrated Required.

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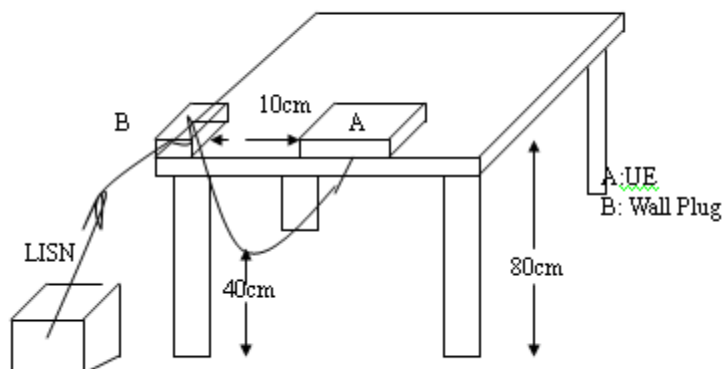


Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

## 7.2 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.

### 7.3 Test Setup



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## 7.4 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.

## 7.5 Measurement Result

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

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

This device supports Dual power inputs from PoE and DC input connector, evaluation has been done on both inputs to determine the worst case scenario is from PoE input, thus the test result of PoE input is demonstrated in the report.

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## AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number :TERF2410003002ER

Test Site :Conduction 1

Operation Mode :WLAN\_2.4G

Test Date :2024-11-19

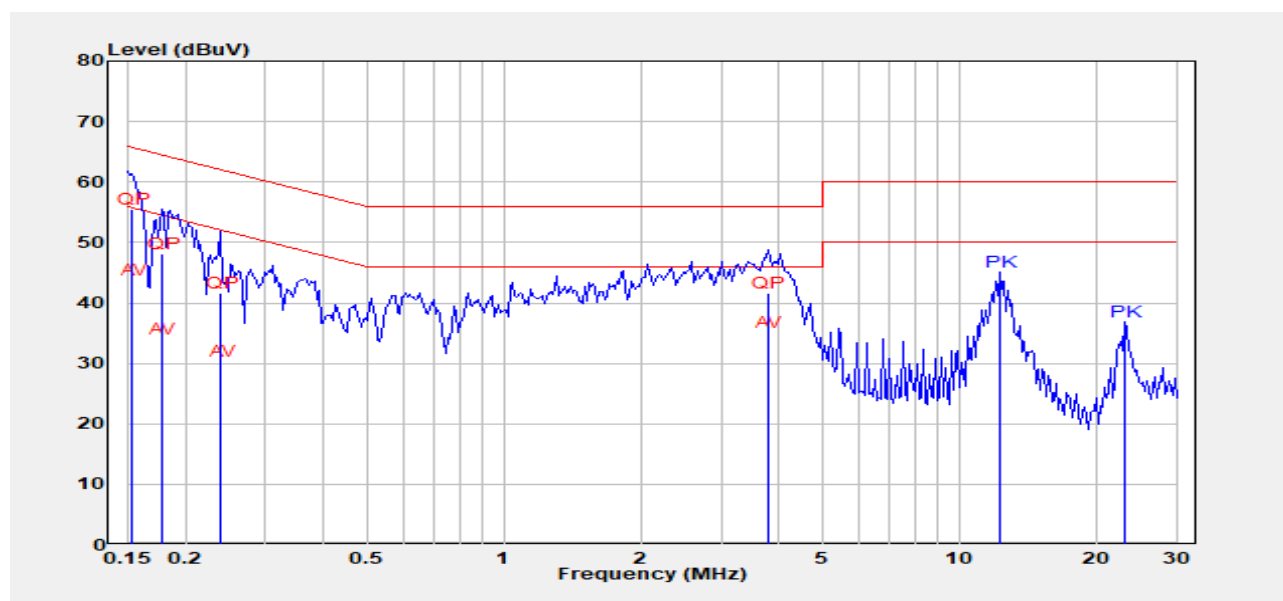
Power :120V/60Hz

Temp./Humi. :20.0°C/78%

Probe :L

Engineer :Bob Chao

Note: :



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS		
	PK/QP/AV	dBμV	dB	dBμV	dBμV	dB
0.153	Average	33.67	10.13	43.80	55.82	-12.02
0.153	QP	45.32	10.13	55.45	65.82	-10.37
0.178	Average	23.80	10.13	33.93	54.59	-20.66
0.178	QP	38.09	10.13	48.22	64.59	-16.37
0.239	Average	20.22	10.14	30.36	52.13	-21.77
0.239	QP	31.39	10.14	41.53	62.13	-20.60
3.799	Average	24.83	10.29	35.12	46.00	-10.88
3.799	QP	31.42	10.29	41.71	56.00	-14.29
12.318	Peak	34.70	10.43	45.12	60.00	-14.88
23.018	Peak	26.32	10.53	36.86	60.00	-23.14

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Report Number :TERF2410003002ER

Operation Mode :WLAN\_2.4G

Power :120V/60Hz

Probe :N

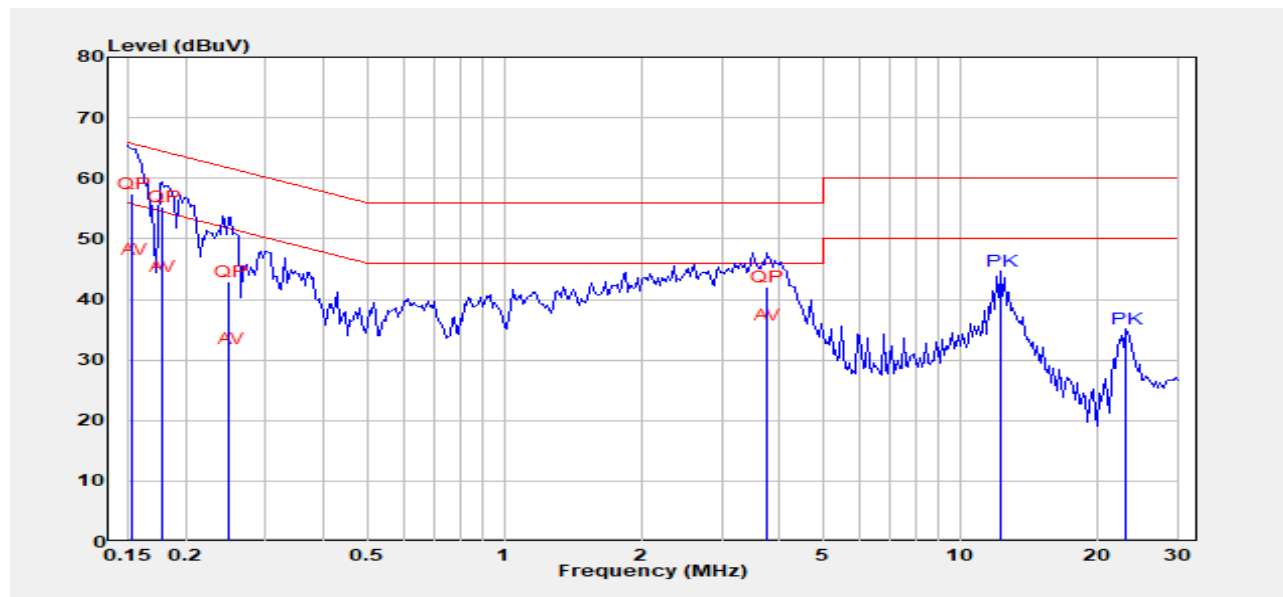
Note: :

Test Site :Conduction 1

Test Date :2024-11-19

Temp./Humi. :20.0°C/78%

Engineer :Bob Chao



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS		
	PK/QP/AV	dB $\mu$ V	dB	dB $\mu$ V	dB $\mu$ V	dB
0.153	Average	36.44	10.12	46.56	55.82	-9.26
0.153	QP	47.43	10.12	57.55	65.82	-8.27
0.178	Average	33.67	10.12	43.79	54.59	-10.80
0.178	QP	45.12	10.12	55.24	64.59	-9.35
0.249	Average	21.76	10.13	31.89	51.78	-19.89
0.249	QP	32.77	10.13	42.90	61.78	-18.88
3.759	Average	25.51	10.30	35.81	46.00	-10.19
3.759	QP	31.77	10.30	42.07	56.00	-13.93
12.318	Peak	34.20	10.46	44.66	60.00	-15.34
23.018	Peak	24.58	10.61	35.19	60.00	-24.81

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## 8 PEAK OUTPUT POWER MEASUREMENT

### 8.1 Standard Applicable

#### 8.1.1 Duty Cycle

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.

#### 8.1.2 FCC

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.

#### 8.1.3 ISED

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt and the e.i.r.p. shall not exceed 4 W.

#### Note:

When the antenna gain is greater than 6 dBi, the power limit attenuated accordingly.

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.

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

where

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

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NSS = the number of independent spatial streams of data;

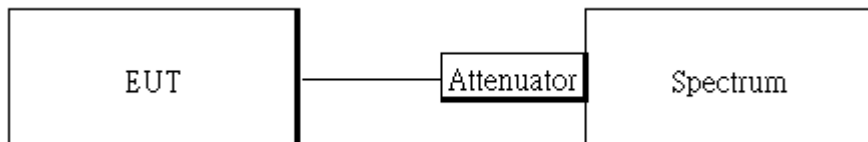
NANT = the total number of antennas

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

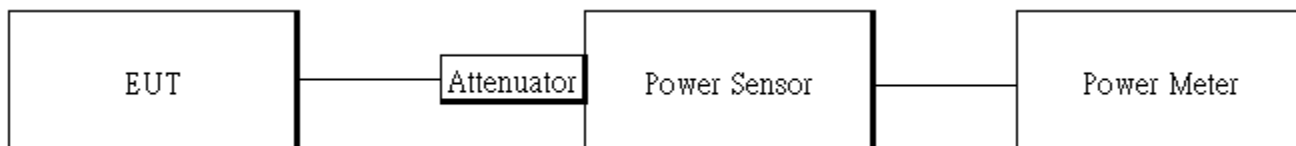
$G_k$  is the gain in dBi of the kth antenna.

## 8.2 Test Setup

### 8.2.1 Duty Cycle



### 8.2.2 Output Power:



## 8.3 Measurement Procedure

### 8.3.1 Duty Cycle:

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

### 8.3.2 Output Power

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.

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

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## 8.4 Measurement Result

### 8.4.1 Duty Cycle:

Mode		Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11b		71.67	1.45	1.45	2.00
802.11g		91.69	0.38	0.51	1.00
802.11n_20		80.32	0.95	0.18	1.00
802.11n_40		80.23	0.96	0.18	1.00
Mode	RU Config	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
802.11ax_20	Full	80.15	0.96	0.18	1.00
802.11ax_40	Full	80.25	0.96	0.18	1.00

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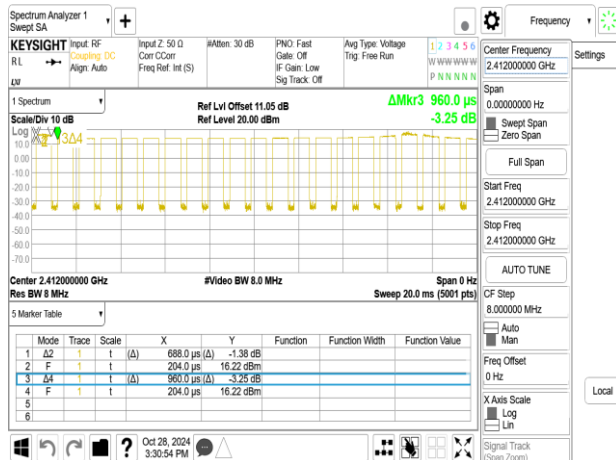
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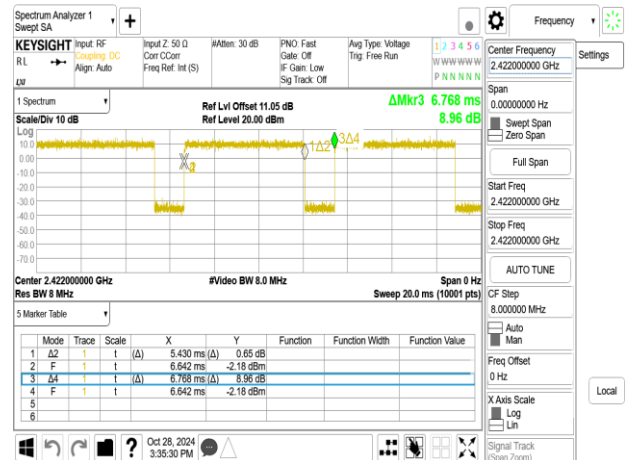


## 8.4.2 Duty Cycle test plots

802.11b\_20MHz\_Chain0\_2412MHz



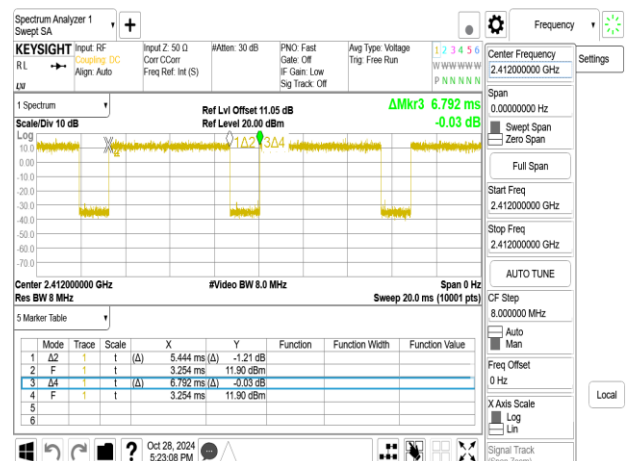
802.11n\_40MHz\_Chain0\_2422MHz



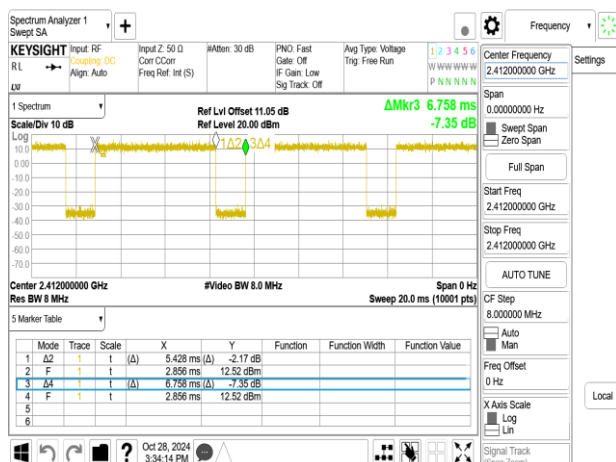
802.11g\_20MHz\_Chain0\_2412MHz



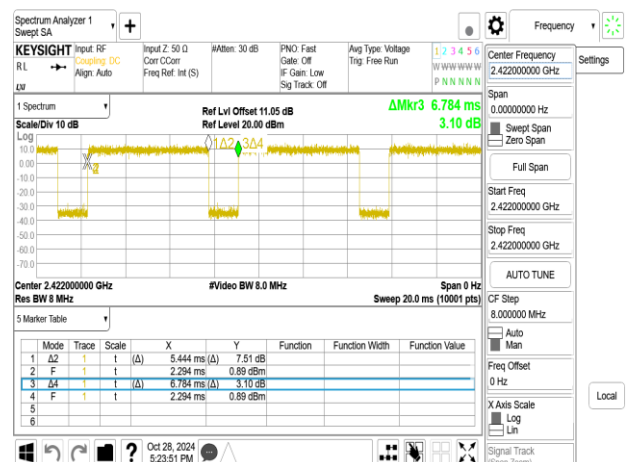
802.11ax\_20MHz\_Chain0\_2412MHz



802.11n\_20MHz\_Chain0\_2412MHz



802.11ax\_40MHz\_Chain0\_2422MHz



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### 8.4.3 Output Power

802.11b Ch0							
CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	22	281.84	24.50	30.00	PASS
6	2437	1	22	276.69	24.42	30.00	PASS
11	2462	1	22	277.33	24.43	30.00	PASS
802.11b Ch0							
CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	22	148.48	21.72	30.00	PASS
6	2437	1	22	143.11	21.56	30.00	PASS
11	2462	1	22	146.10	21.65	30.00	PASS
802.11b Ch1							
CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	22	295.80	24.71	30.00	PASS
6	2437	1	22	293.76	24.68	30.00	PASS
11	2462	1	22	278.61	24.45	30.00	PASS
802.11b Ch1							
CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	22	156.55	21.95	30.00	PASS
6	2437	1	22	154.76	21.90	30.00	PASS
11	2462	1	22	150.54	21.78	30.00	PASS

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802.11b_2TX									
CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	1	22	24.56	24.79	587.06	27.69	30.00	PASS
6	2437	1	22	24.47	24.72	576.38	27.61	30.00	PASS
11	2462	1	22	24.50	24.53	565.63	27.53	30.00	PASS

802.11b_2TX									
CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	1	22	21.75	21.98	307.15	24.87	30.00	PASS
6	2437	1	22	21.61	21.92	300.24	24.77	30.00	PASS
11	2462	1	22	21.68	21.81	298.70	24.75	30.00	PASS

802.11g Ch0							
CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	22	475.34	26.77	30.00	PASS
6	2437	6	22	462.38	26.65	30.00	PASS
9	2452	6	22	489.78	26.90	30.00	PASS
10	2457	6	20.5	385.48	25.86	30.00	PASS
11	2462	6	19.5	311.89	24.94	30.00	PASS

802.11g Ch0							
CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	22	149.17	21.74	30.00	PASS
6	2437	6	22	142.46	21.54	30.00	PASS
9	2452	6	22	149.17	21.74	30.00	PASS
10	2457	6	20.5	105.85	20.25	30.00	PASS
11	2462	6	19.5	85.05	19.30	30.00	PASS

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## 802.11g Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	22	502.34	27.01	30.00	PASS
6	2437	6	22	500.03	26.99	30.00	PASS
9	2452	6	22	474.24	26.76	30.00	PASS
10	2457	6	20.5	374.97	25.74	30.00	PASS
11	2462	6	19.5	331.13	25.20	30.00	PASS

## 802.11g Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	22	154.77	21.90	30.00	PASS
6	2437	6	22	153.70	21.87	30.00	PASS
9	2452	6	22	142.78	21.55	30.00	PASS
10	2457	6	20.5	105.36	20.23	30.00	PASS
11	2462	6	19.5	88.85	19.49	30.00	PASS

## 802.11g\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	6	22	26.83	27.08	992.45	29.97	30.00	PASS
6	2437	6	22	26.75	27.09	984.83	29.93	30.00	PASS
9	2452	6	22	26.98	26.81	978.62	29.91	30.00	PASS
10	2457	6	20.5	25.93	25.81	772.81	28.88	30.00	PASS
11	2462	6	19.5	25.05	25.26	655.63	28.17	30.00	PASS

## 802.11g\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	6	22	21.76	21.95	306.42	24.86	30.00	PASS
6	2437	6	22	21.60	21.94	300.64	24.78	30.00	PASS
9	2452	6	22	21.78	21.59	294.65	24.69	30.00	PASS
10	2457	6	20.5	20.29	20.25	212.67	23.28	30.00	PASS
11	2462	6	19.5	19.33	19.55	175.73	22.45	30.00	PASS

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## 802.11n\_HT\_20M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	22	459.20	26.62	30.00	PASS
6	2437	MCS0	22	449.78	26.53	30.00	PASS
10	2457	MCS0	22	497.74	26.97	30.00	PASS
11	2462	MCS0	18	222.84	23.48	30.00	PASS

## 802.11n\_HT\_20M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	22	133.10	21.24	30.00	PASS
6	2437	MCS0	22	127.40	21.05	30.00	PASS
10	2457	MCS0	22	131.58	21.19	30.00	PASS
11	2462	MCS0	18	54.60	17.37	30.00	PASS

## 802.11n\_HT\_20M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	22	493.17	26.93	30.00	PASS
6	2437	MCS0	22	488.65	26.89	30.00	PASS
10	2457	MCS0	22	468.81	26.71	30.00	PASS
11	2462	MCS0	18	201.84	23.05	30.00	PASS

## 802.11n\_HT\_20M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	22	135.57	21.32	30.00	PASS
6	2437	MCS0	22	134.64	21.29	30.00	PASS
10	2457	MCS0	22	127.11	21.04	30.00	PASS
11	2462	MCS0	18	54.10	17.33	30.00	PASS

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## 802.11n\_HT20M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	MCS0	22	26.70	26.96	964.33	29.84	30.00	PASS
6	2437	MCS0	22	26.59	26.93	949.21	29.77	30.00	PASS
10	2457	MCS0	22	27.03	26.77	980.00	29.91	30.00	PASS
11	2462	MCS0	18	23.51	23.11	429.03	26.32	30.00	PASS

## 802.11n\_HT20M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
1	2412	MCS0	22	21.26	21.34	269.91	24.31	30.00	PASS
6	2437	MCS0	22	21.09	21.36	265.41	24.24	30.00	PASS
10	2457	MCS0	22	21.22	21.08	260.77	24.16	30.00	PASS
11	2462	MCS0	18	17.41	17.36	109.58	20.40	30.00	PASS

## 802.11n\_HT\_40M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	21.5	456.04	26.59	30.00	PASS
6	2437	MCS0	21.5	449.78	26.53	30.00	PASS
7	2442	MCS0	18	208.45	23.19	30.00	PASS
8	2447	MCS0	18.5	258.23	24.12	30.00	PASS
9	2452	MCS0	13	78.34	18.94	30.00	PASS

## 802.11n\_HT\_40M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	21.5	132.94	21.24	30.00	PASS
6	2437	MCS0	21.5	128.13	21.08	30.00	PASS
7	2442	MCS0	18	59.79	17.77	30.00	PASS
8	2447	MCS0	18.5	68.50	18.36	30.00	PASS
9	2452	MCS0	13	19.62	12.93	30.00	PASS

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## 802.11n\_HT\_40M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	21.5	470.98	26.73	30.00	PASS
6	2437	MCS0	21.5	466.66	26.69	30.00	PASS
7	2442	MCS0	18	230.14	23.62	30.00	PASS
8	2447	MCS0	18.5	244.91	23.89	30.00	PASS
9	2452	MCS0	13	63.10	18.00	30.00	PASS

## 802.11n\_HT\_40M Ch1

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	21.5	140.17	21.47	30.00	PASS
6	2437	MCS0	21.5	144.43	21.60	30.00	PASS
7	2442	MCS0	18	62.76	17.98	30.00	PASS
8	2447	MCS0	18.5	67.71	18.31	30.00	PASS
9	2452	MCS0	13	18.14	12.59	30.00	PASS

## 802.11n\_HT40M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
3	2422	MCS0	21.5	26.66	26.83	945.39	29.76	30.00	PASS
6	2437	MCS0	21.5	26.59	26.77	931.37	29.69	30.00	PASS
7	2442	MCS0	18	23.63	23.67	463.48	26.66	30.00	PASS
8	2447	MCS0	18.5	24.19	24.02	514.77	27.12	30.00	PASS
9	2452	MCS0	13	18.96	18.10	143.27	21.56	30.00	PASS

## 802.11n\_HT40M\_2TX

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
				Ch0	Ch1				
3	2422	MCS0	21.5	21.29	21.51	275.95	24.41	30.00	PASS
6	2437	MCS0	21.5	21.11	21.63	274.45	24.38	30.00	PASS
7	2442	MCS0	18	17.79	18.02	123.41	20.91	30.00	PASS
8	2447	MCS0	18.5	18.40	18.36	137.63	21.39	30.00	PASS
9	2452	MCS0	13	12.97	12.65	38.19	15.82	30.00	PASS

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## 802.11ax\_HE\_20M Ch0

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	full	21.5	458.14	26.61	30.00	PASS
6	2437	MCS0	full	21.5	454.99	26.58	30.00	PASS
10	2457	MCS0	full	21.5	502.34	27.01	30.00	PASS
11	2462	MCS0	full	18	228.03	23.58	30.00	PASS

## 802.11ax\_HE\_20M Ch0

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	full	21.5	115.37	20.62	30.00	PASS
6	2437	MCS0	full	21.5	111.45	20.47	30.00	PASS
10	2457	MCS0	full	21.5	116.71	20.67	30.00	PASS
11	2462	MCS0	full	18	50.71	17.05	30.00	PASS

## 802.11ax\_HE\_20M Ch1

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	full	21.5	494.31	26.94	30.00	PASS
6	2437	MCS0	full	21.5	490.91	26.91	30.00	PASS
10	2457	MCS0	full	21.5	462.38	26.65	30.00	PASS
11	2462	MCS0	full	18	248.89	23.96	30.00	PASS

## 802.11ax\_HE\_20M Ch1

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	full	21.5	119.98	20.79	30.00	PASS
6	2437	MCS0	full	21.5	120.53	20.81	30.00	PASS
10	2457	MCS0	full	21.5	111.71	20.48	30.00	PASS
11	2462	MCS0	full	18	52.86	17.23	30.00	PASS

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## 802.11ax\_HE20M\_2TX

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1				
1	2412	MCS0	full	21.5	26.71	27.01	971.16	29.87	30.00	PASS
6	2437	MCS0	full	21.5	26.67	26.97	962.25	29.83	30.00	PASS
10	2457	MCS0	full	21.5	27.13	26.72	986.31	29.94	30.00	PASS
11	2462	MCS0	full	18	23.64	24.06	485.89	26.87	30.00	PASS

## 802.11ax\_HE20M\_2TX

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1				
1	2412	MCS0	full	21.5	20.68	20.85	238.62	23.78	30.00	PASS
6	2437	MCS0	full	21.5	20.53	20.83	234.09	23.69	30.00	PASS
10	2457	MCS0	full	21.5	20.70	20.53	230.52	23.63	30.00	PASS
11	2462	MCS0	full	18	17.10	17.27	104.64	20.20	30.00	PASS

## 802.11ax\_HE\_40M Ch0

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	full	21.5	484.17	26.85	30.00	PASS
6	2437	MCS0	full	18.5	281.19	24.49	30.00	PASS
7	2442	MCS0	full	18.5	273.53	24.37	30.00	PASS
8	2447	MCS0	full	19.5	381.94	25.82	30.00	PASS
9	2452	MCS0	full	14	105.44	20.23	30.00	PASS

## 802.11ax\_HE\_40M Ch0

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	full	21.5	120.10	20.80	30.00	PASS
6	2437	MCS0	full	18.5	62.60	17.97	30.00	PASS
7	2442	MCS0	full	18.5	58.55	17.68	30.00	PASS
8	2447	MCS0	full	19.5	79.35	19.00	30.00	PASS
9	2452	MCS0	full	14	23.15	13.65	30.00	PASS

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## 802.11ax\_HE\_40M Ch1

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	full	21.5	488.65	26.89	30.00	PASS
6	2437	MCS0	full	18.5	295.12	24.70	30.00	PASS
7	2442	MCS0	full	18.5	283.14	24.52	30.00	PASS
8	2447	MCS0	full	19.5	357.27	25.53	30.00	PASS
9	2452	MCS0	full	14	88.51	19.47	30.00	PASS

## 802.11ax\_HE\_40M Ch1

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	full	21.5	131.09	21.18	30.00	PASS
6	2437	MCS0	full	18.5	65.85	18.19	30.00	PASS
7	2442	MCS0	full	18.5	66.46	18.23	30.00	PASS
8	2447	MCS0	full	19.5	77.72	18.91	30.00	PASS
9	2452	MCS0	full	14	21.70	13.37	30.00	PASS

## 802.11ax\_HE40M\_2TX

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Peak Output Power (dBm)		Total Peak Output Power (mW)	Total Peak Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1				
3	2422	MCS0	full	21.5	26.91	26.96	987.50	29.95	30.00	PASS
6	2437	MCS0	full	18.5	24.63	24.76	589.63	27.71	30.00	PASS
7	2442	MCS0	full	18.5	24.46	24.58	566.33	27.53	30.00	PASS
8	2447	MCS0	full	19.5	25.90	25.62	753.80	28.77	30.00	PASS
9	2452	MCS0	full	14	20.29	19.55	197.06	22.95	30.00	PASS

## 802.11ax\_HE40M\_2TX

CH	Freq. (MHz)	Data Rate	RU Config	Power Setting	Avg. Output Power (dBm)		Total Avg. Output Power (mW)	Total Avg. Output Power (dBm)	Limit (dBm)	RESULT
					Ch0	Ch1				
3	2422	MCS0	full	21.5	20.82	21.22	252.96	24.03	30.00	PASS
6	2437	MCS0	full	18.5	18.02	18.24	129.93	21.14	30.00	PASS
7	2442	MCS0	full	18.5	17.71	18.25	125.73	20.99	30.00	PASS
8	2447	MCS0	full	19.5	19.04	18.94	158.35	22.00	30.00	PASS
9	2452	MCS0	full	14	13.68	13.41	45.22	16.55	30.00	PASS

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#### 8.4.4 EIRP

802.11b Ch0							
CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	1	21.72	4.00	25.72	36	PASS
6	2437	1	21.56	4.00	25.56	36	PASS
11	2462	1	21.65	4.00	25.65	36	PASS

802.11b Ch1							
CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	1	21.95	4.00	25.95	36	PASS
6	2437	1	21.90	4.00	25.90	36	PASS
11	2462	1	21.78	4.00	25.78	36	PASS

802.11b_2TX									
CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
			Ch0	Ch1					
1	2412	1	21.75	21.98	24.87	4.00	28.87	36	PASS
6	2437	1	21.61	21.92	24.77	4.00	28.77	36	PASS
11	2462	1	21.68	21.81	24.75	4.00	28.75	36	PASS

802.11g Ch0							
CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	6	21.74	4.00	25.74	36	PASS
6	2437	6	21.54	4.00	25.54	36	PASS
9	2452	6	21.74	4.00	25.74	36	PASS
10	2457	6	20.25	4.00	24.25	36	PASS
11	2462	6	19.30	4.00	23.30	36	PASS

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## 802.11g Ch1

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	6	21.90	4.00	25.90	36	PASS
6	2437	6	21.87	4.00	25.87	36	PASS
9	2452	6	21.55	4.00	25.55	36	PASS
10	2457	6	20.23	4.00	24.23	36	PASS
11	2462	6	19.49	4.00	23.49	36	PASS

## 802.11g\_2TX

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
			Ch0	Ch1					
1	2412	6	21.76	21.95	24.86	4.00	28.86	36	PASS
6	2437	6	21.60	21.94	24.78	4.00	28.78	36	PASS
9	2452	6	21.78	21.59	24.69	4.00	28.69	36	PASS
10	2457	6	20.29	20.25	23.28	4.00	27.28	36	PASS
11	2462	6	19.33	19.55	22.45	4.00	26.45	36	PASS

## 802.11n\_HT\_20M Ch0

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	21.24	4.00	25.24	36	PASS
6	2437	MCS0	21.05	4.00	25.05	36	PASS
10	2457	MCS0	21.19	4.00	25.19	36	PASS
11	2462	MCS0	17.37	4.00	21.37	36	PASS

## 802.11n\_HT\_20M Ch1

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	21.32	4.00	25.32	36	PASS
6	2437	MCS0	21.29	4.00	25.29	36	PASS
10	2457	MCS0	21.04	4.00	25.04	36	PASS
11	2462	MCS0	17.33	4.00	21.33	36	PASS

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## 802.11n\_HT20M\_2TX

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
			Ch0	Ch1					
1	2412	MCS0	21.26	21.34	24.31	4.00	28.31	36	PASS
6	2437	MCS0	21.09	21.36	24.24	4.00	28.24	36	PASS
10	2457	MCS0	21.22	21.08	24.16	4.00	28.16	36	PASS
11	2462	MCS0	17.41	17.36	20.40	4.00	24.40	36	PASS

## 802.11n\_HT\_40M\_Ch0

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	21.24	4.00	25.24	36	PASS
6	2437	MCS0	21.08	4.00	25.08	36	PASS
7	2442	MCS0	17.77	4.00	21.77	36	PASS
8	2447	MCS0	18.36	4.00	22.36	36	PASS
9	2452	MCS0	12.93	4.00	16.93	36	PASS

## 802.11n\_HT\_40M\_Ch1

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	21.47	4.00	25.47	36	PASS
6	2437	MCS0	21.60	4.00	25.60	36	PASS
7	2442	MCS0	17.98	4.00	21.98	36	PASS
8	2447	MCS0	18.31	4.00	22.31	36	PASS
9	2452	MCS0	12.59	4.00	16.59	36	PASS

## 802.11n\_HT40M\_2TX

CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
			Ch0	Ch1					
3	2422	MCS0	21.29	21.51	24.41	4.00	28.41	36	PASS
6	2437	MCS0	21.11	21.63	24.38	4.00	28.38	36	PASS
7	2442	MCS0	17.79	18.02	20.91	4.00	24.91	36	PASS
8	2447	MCS0	18.40	18.36	21.39	4.00	25.39	36	PASS
9	2452	MCS0	12.97	12.65	15.82	4.00	19.82	36	PASS

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## 802.11ax\_HE\_20M Ch0

CH	Freq. (MHz)	Data Rate	RU Config	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit	RESULT
1	2412	MCS0	full	20.62	4.00	24.62	36	PASS
6	2437	MCS0	full	20.47	4.00	24.47	36	PASS
10	2457	MCS0	full	20.67	4.00	24.67	36	PASS
11	2462	MCS0	full	17.05	4.00	21.05	36	PASS

## 802.11ax\_HE\_20M Ch1

CH	Freq. (MHz)	Data Rate	RU Config	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit	RESULT
1	2412	MCS0	full	20.79	4.00	24.79	36	PASS
6	2437	MCS0	full	20.81	4.00	24.81	36	PASS
10	2457	MCS0	full	20.48	4.00	24.48	36	PASS
11	2462	MCS0	full	17.23	4.00	21.23	36	PASS

## 802.11ax\_HE20M\_2TX

CH	Freq. (MHz)	Data Rate	RU Config	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit	RESULT
				Ch0	Ch1					
1	2412	MCS0	full	20.68	20.85	23.78	4.00	27.78	36	PASS
6	2437	MCS0	full	20.53	20.83	23.69	4.00	27.69	36	PASS
10	2457	MCS0	full	20.70	20.53	23.63	4.00	27.63	36	PASS
11	2462	MCS0	full	17.10	17.27	20.20	4.00	24.20	36	PASS

## 802.11ax\_HE\_40M Ch0

CH	Freq. (MHz)	Data Rate	RU Config	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit	RESULT
3	2422	MCS0	full	20.80	4.00	24.80	36	PASS
6	2437	MCS0	full	17.97	4.00	21.97	36	PASS
7	2442	MCS0	full	17.68	4.00	21.68	36	PASS
8	2447	MCS0	full	19.00	4.00	23.00	36	PASS
9	2452	MCS0	full	13.65	4.00	17.65	36	PASS

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## 802.11ax\_HE\_40M Ch1

CH	Freq. (MHz)	Data Rate	RU Config	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit	RESULT
3	2422	MCS0	full	21.18	4.00	25.18	36	PASS
6	2437	MCS0	full	18.19	4.00	22.19	36	PASS
7	2442	MCS0	full	18.23	4.00	22.23	36	PASS
8	2447	MCS0	full	18.91	4.00	22.91	36	PASS
9	2452	MCS0	full	13.37	4.00	17.37	36	PASS

## 802.11ax\_HE40M\_2TX

CH	Freq. (MHz)	Data Rate	RU Config	Avg. Output Power (dBm)		Total Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit	RESULT
				Ch0	Ch1					
3	2422	MCS0	full	20.82	21.22	24.03	4.00	28.03	36	PASS
6	2437	MCS0	full	18.02	18.24	21.14	4.00	25.14	36	PASS
7	2442	MCS0	full	17.71	18.25	20.99	4.00	24.99	36	PASS
8	2447	MCS0	full	19.04	18.94	22.00	4.00	26.00	36	PASS
9	2452	MCS0	full	13.68	13.41	16.55	4.00	20.55	36	PASS

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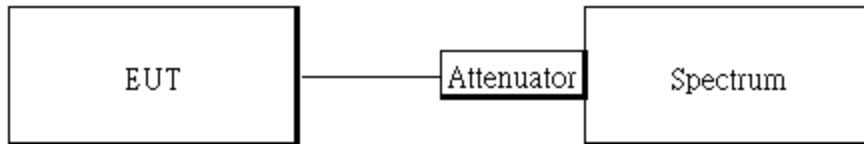
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## 9 EMISSION BANDWIDTH MEASUREMENT

### 9.1 Standard Applicable

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

### 9.2 Test Setup



### 9.3 Measurement Procedure:

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

#### 9.3.1 6dB BW measurements

1. The testing follows the Measurement Procedure of the KDB 558074 D01.
2. Set the spectrum analyzer as  
RBW= 100 kHz ,  
VBW = 3 X RBW,  
Span= 2 to 5 times of the OBW,  
Sweep=auto, Detector = Peak, and Max hold.
3. Mark the upper and lower frequencies of -6dB.
4. Repeat above procedures until all test default channel is completed.

#### 9.3.2 99% BW measurements

1. The testing follows the Measurement Procedure of the RSS-Gen section 6.7.
2. Set the spectrum analyzer as  
RBW= 1 % to 5% of 99%,  
VBW  $\geq$  3 X RBW,  
Span= large enough to capture all products of the modulation process  
Sweep=auto, Detector = Peak, and Max hold.
3. Mark the upper and lower frequencies of 99%.
4. Repeat above procedures until all test default channel is completed.

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## 9.4 Measurement Result:

### 9.4.1 6dB BW measurements

#### 802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	8101.00	$\geq 500$	PASS
2437	8090.00	$\geq 500$	PASS
2462	<b>8123.00</b>	$\geq 500$	PASS

#### 802.11b Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	<b>8067.00</b>	$\geq 500$	PASS
2437	7668.00	$\geq 500$	PASS
2462	7650.00	$\geq 500$	PASS

#### 802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	<b>16340.00</b>	$\geq 500$	PASS
2437	16320.00	$\geq 500$	PASS
2462	15850.00	$\geq 500$	PASS

#### 802.11g Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15640.00	$\geq 500$	PASS
2437	15750.00	$\geq 500$	PASS
2462	<b>15760.00</b>	$\geq 500$	PASS

#### 802.11n\_HT\_20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	<b>17300.00</b>	$\geq 500$	PASS
2437	16910.00	$\geq 500$	PASS
2462	16950.00	$\geq 500$	PASS

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## 802.11n\_HT\_20M Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	15950.00	$\geq 500$	PASS
2437	15760.00	$\geq 500$	PASS
2462	15940.00	$\geq 500$	PASS

## 802.11n\_HT\_40M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	35510.00	$\geq 500$	PASS
2437	35470.00	$\geq 500$	PASS
2452	35540.00	$\geq 500$	PASS

## 802.11n\_HT\_40M Ch1

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	34760.00	$\geq 500$	PASS
2437	35730.00	$\geq 500$	PASS
2452	35780.00	$\geq 500$	PASS

## 802.11ax\_HE\_20M Ch0

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2412	full	18690.00	$\geq 500$	PASS
2437	full	18330.00	$\geq 500$	PASS
2462	full	17630.00	$\geq 500$	PASS

## 802.11ax\_HE\_20M Ch1

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2412	full	17730.00	$\geq 500$	PASS
2437	full	16670.00	$\geq 500$	PASS
2462	full	17940.00	$\geq 500$	PASS

## 802.11ax\_HE\_40M Ch0

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2422	full	37340.00	$\geq 500$	PASS
2437	full	37330.00	$\geq 500$	PASS
2452	full	37830.00	$\geq 500$	PASS

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## 802.11ax\_HE\_40M Ch1

Freq. (MHz)	RU Config	6dB BW (kHz)	Limit (kHz)	Result
2422	full	37250.00	$\geq 500$	PASS
2437	full	37070.00	$\geq 500$	PASS
2452	full	<b>37470.00</b>	$\geq 500$	PASS

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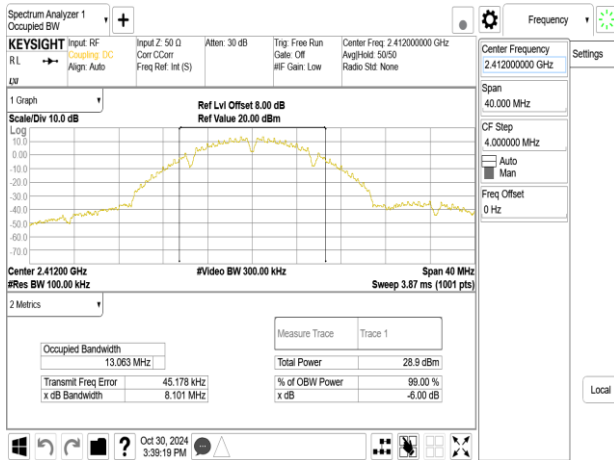
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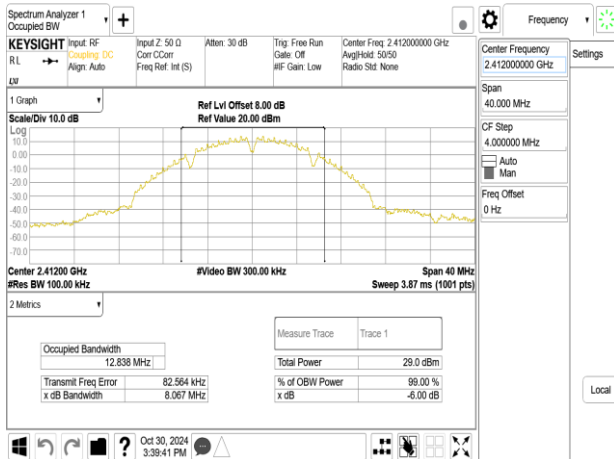
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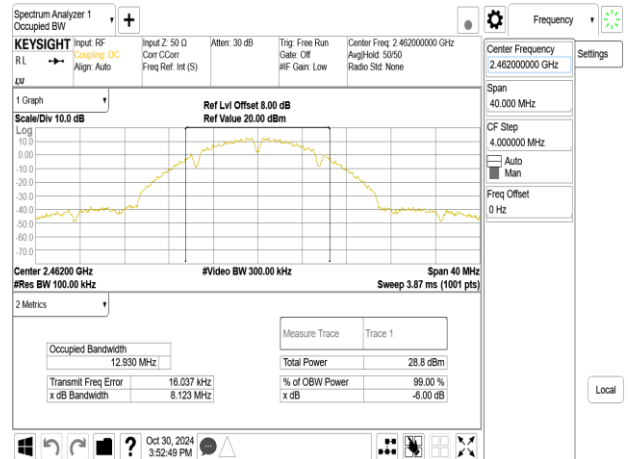
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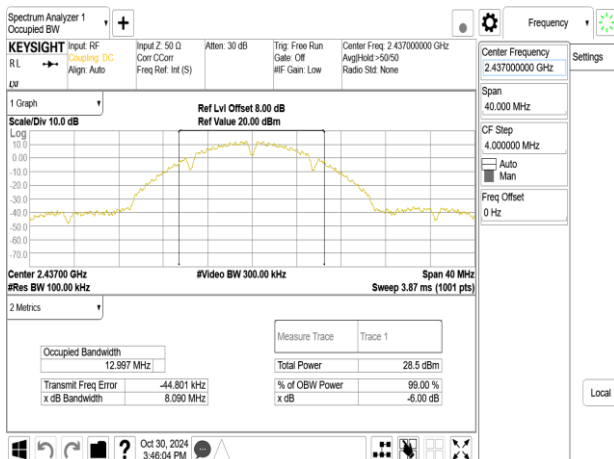
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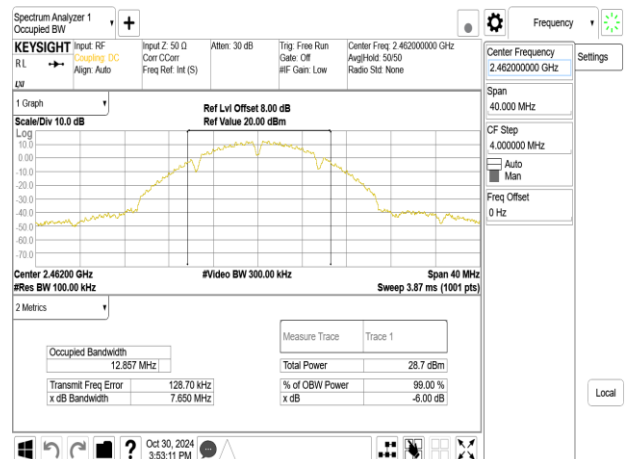
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802.11b\_20MHz\_Chain0\_2437MHz



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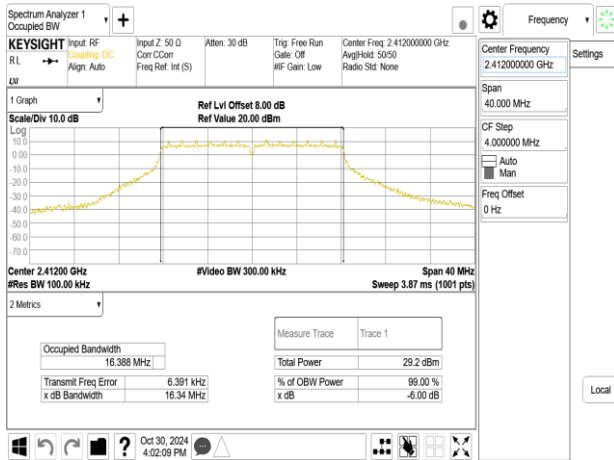


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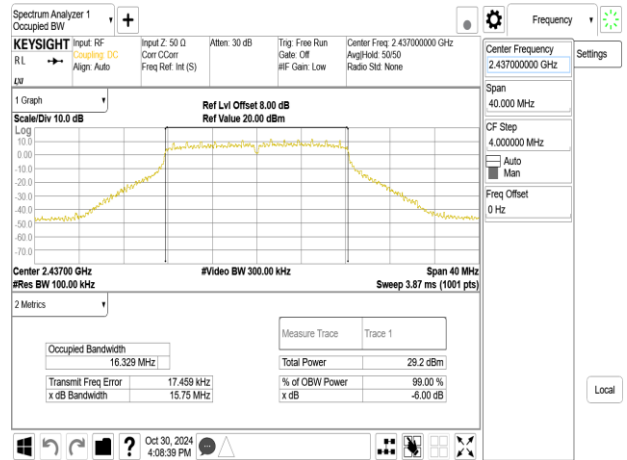
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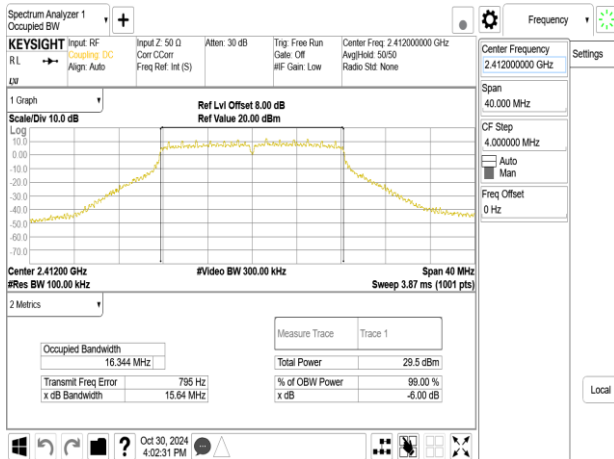
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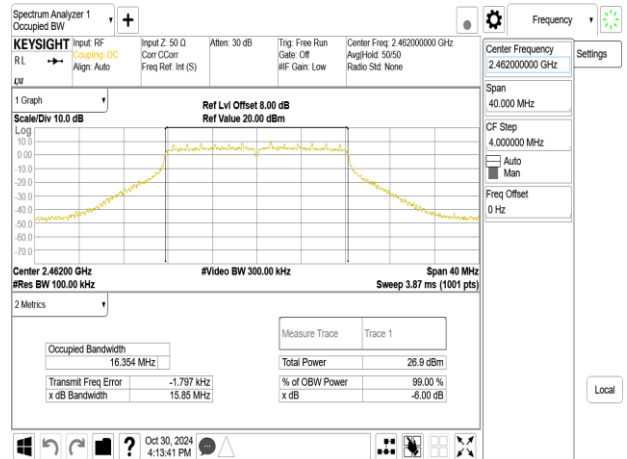
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802.11g\_20MHz\_Chain1\_2412MHz



802.11g\_20MHz\_Chain0\_2462MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain1\_2462MHz



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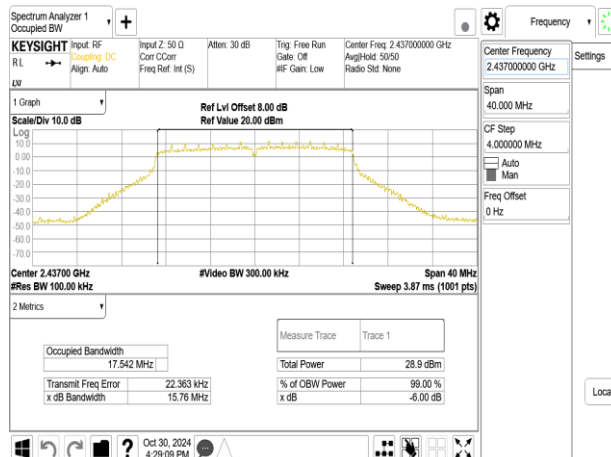
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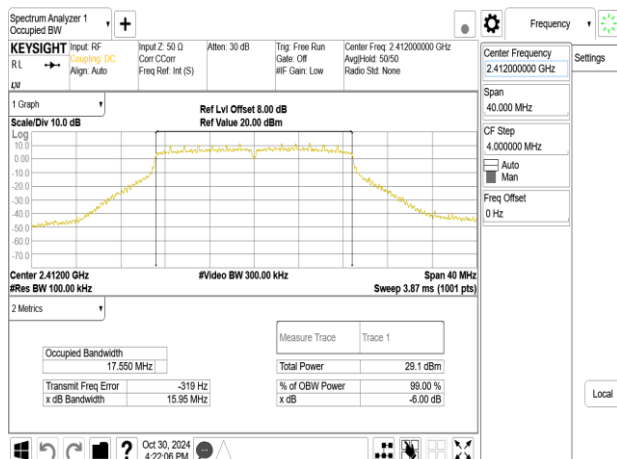
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802.11n\_20MHz\_Chain1\_2437MHz



802.11n\_20MHz\_Chain1\_2412MHz



802.11n\_20MHz\_Chain0\_2462MHz



802.11n\_20MHz\_Chain0\_2437MHz



802.11n\_20MHz\_Chain1\_2462MHz

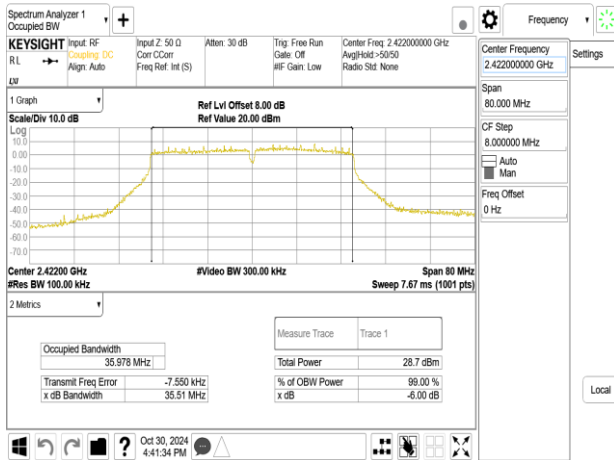


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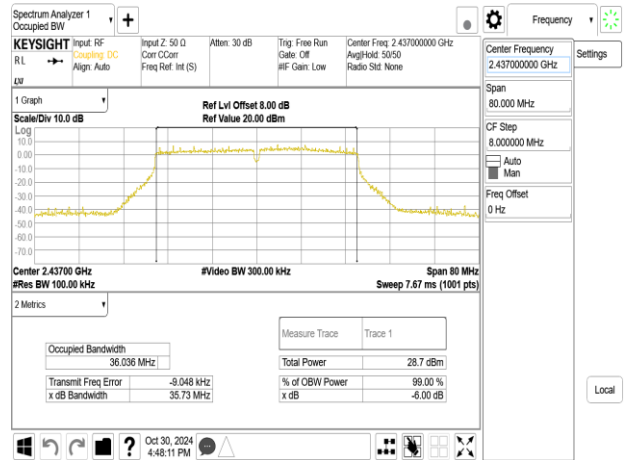
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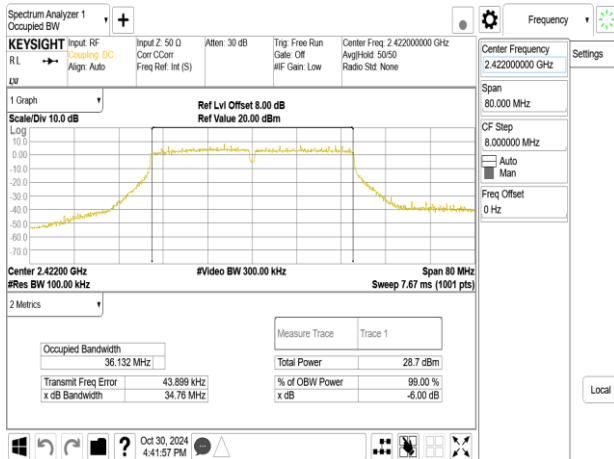
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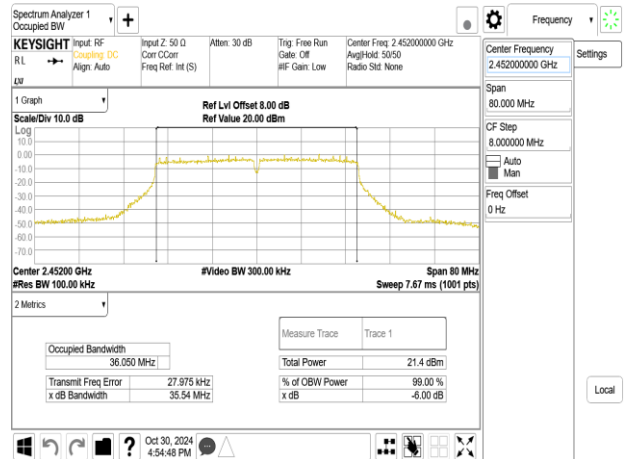
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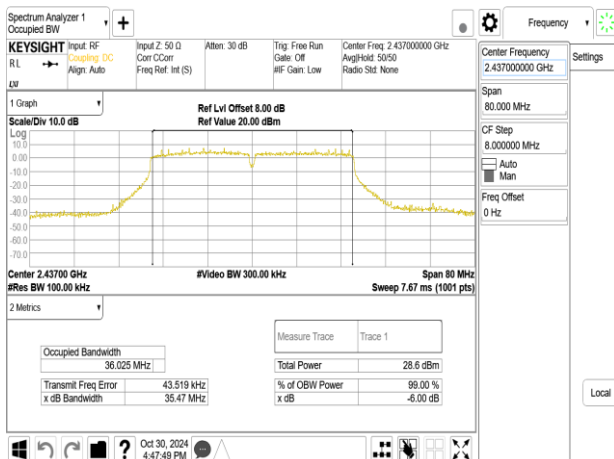
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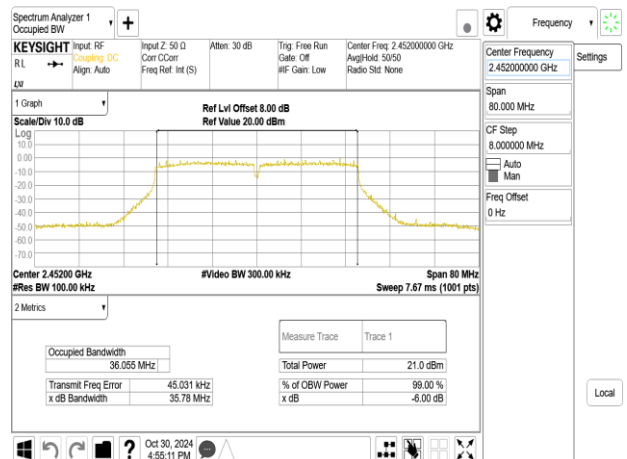
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802.11n\_40MHz\_Chain0\_2437MHz



802.11n\_40MHz\_Chain1\_2452MHz



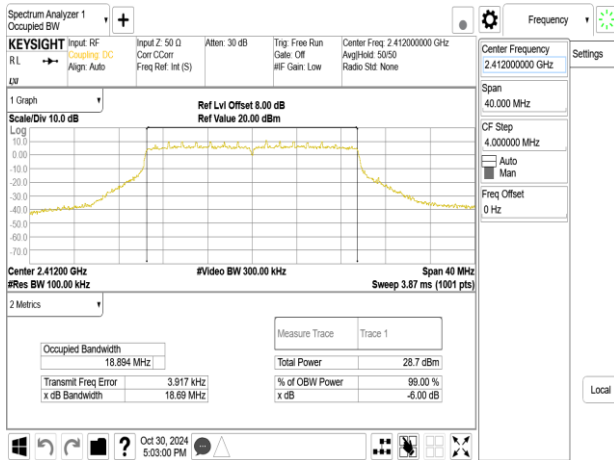
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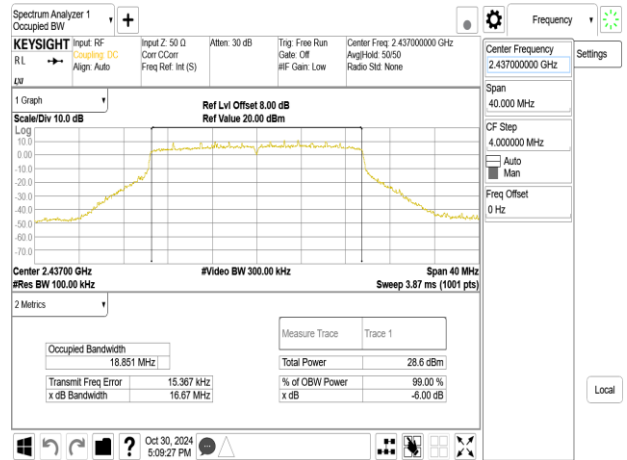
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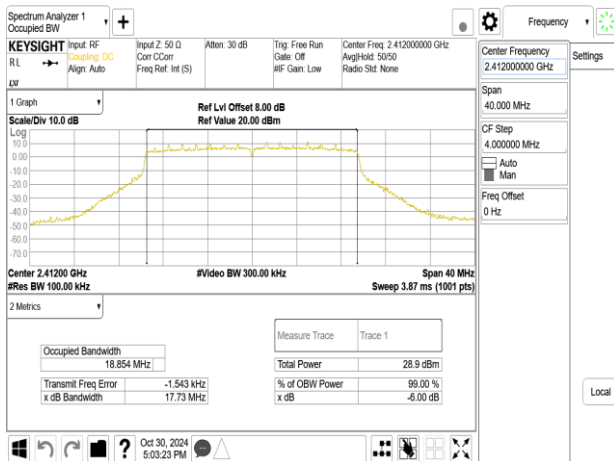
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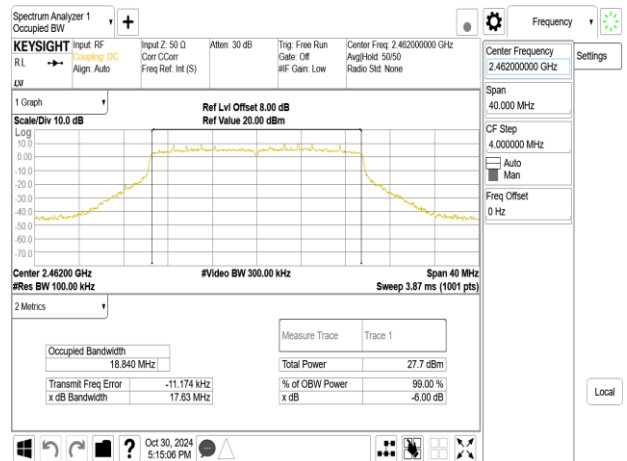
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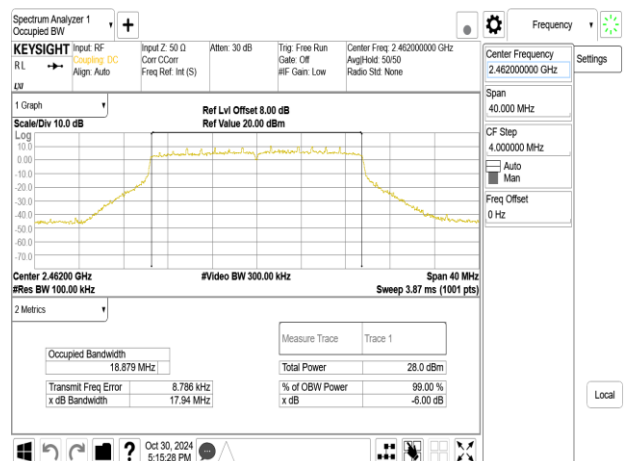
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802.11ax\_20MHz\_Chain0\_2437MHz



802.11ax\_20MHz\_Chain1\_2462MHz

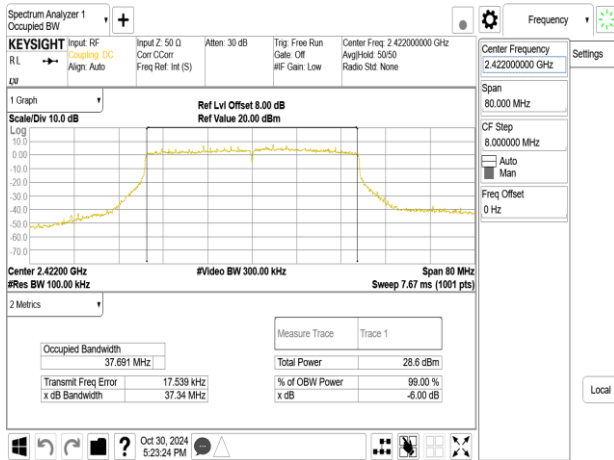


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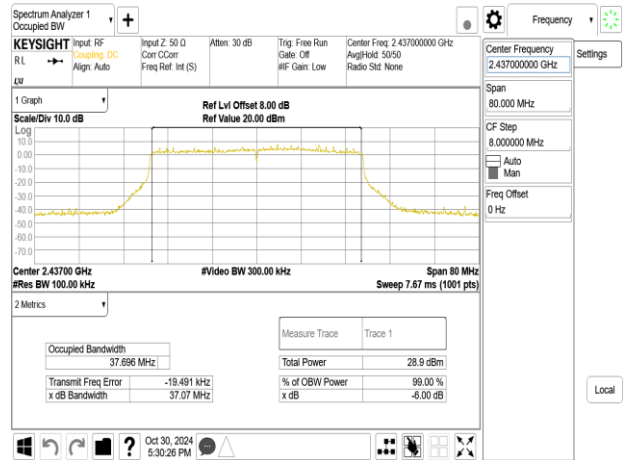
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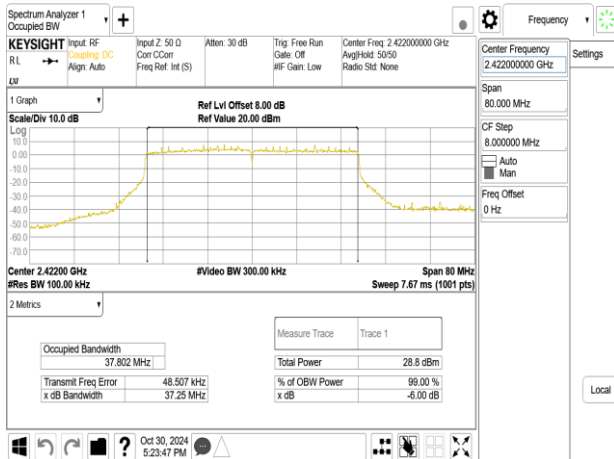
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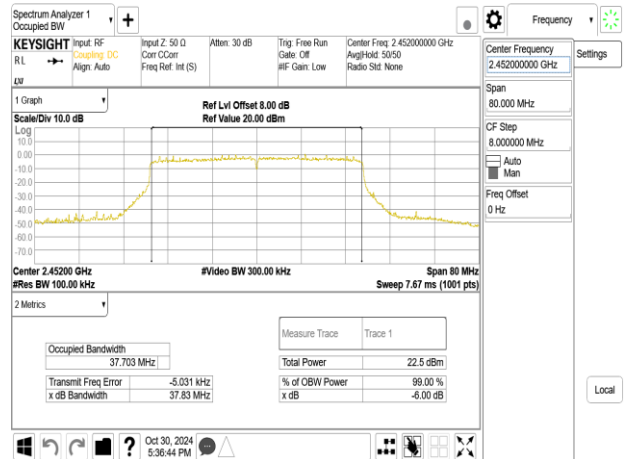
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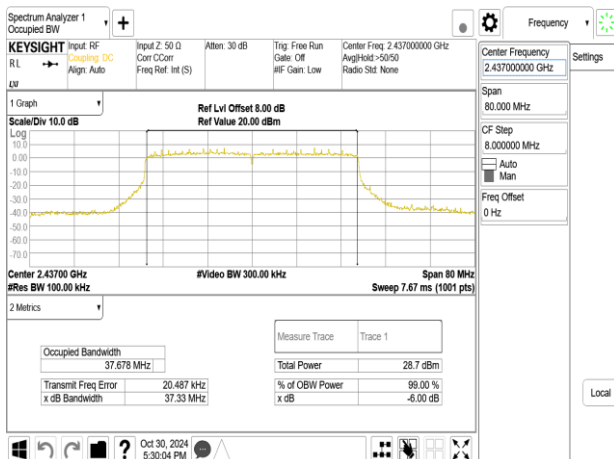
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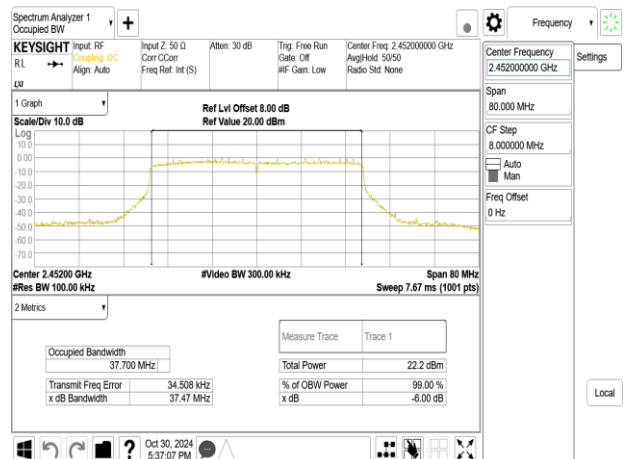
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802.11ax\_40MHz\_Chain0\_2437MHz



802.11ax\_40MHz\_Chain1\_2452MHz



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## 9.4.2 99% Bandwidth

### 802.11b Ch0

Freq. (MHz)	99% BW (MHz)
2412	13.071
2437	13.041
2462	12.967

### 802.11b Ch1

Freq. (MHz)	99% BW (MHz)
2412	12.873
2437	12.828
2462	12.874

### 802.11g Ch0

Freq. (MHz)	99% BW (MHz)
2412	16.53
2437	16.5
2462	16.446

### 802.11g Ch1

Freq. (MHz)	99% BW (MHz)
2412	16.419
2437	16.406
2462	16.44

### 802.11n\_HT20M Ch0

Freq. (MHz)	99% BW (MHz)
2412	17.693
2437	17.662
2462	17.592

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## 802.11n\_HT20M Ch1

Freq. (MHz)	99% BW (MHz)
2412	17.59
2437	17.585
2462	<b>17.599</b>

## 802.11n\_HT40M Ch0

Freq. (MHz)	99% BW (MHz)
2422	36.067
2437	<b>36.116</b>
2452	36.107

## 802.11n\_HT40M Ch1

Freq. (MHz)	99% BW (MHz)
2422	<b>36.161</b>
2437	36.098
2452	36.126

## 802.11ax\_HE20M Ch0

Freq. (MHz)	RU Config	99% BW (MHz)
2412	full	18.951
2437	full	<b>18.955</b>
2462	full	18.888

## 802.11ax\_HE20M Ch1

Freq. (MHz)	RU Config	99% BW (MHz)
2412	full	18.907
2437	full	18.904
2462	full	<b>18.914</b>

## 802.11ax\_HE40M Ch0

Freq. (MHz)	RU Config	99% BW (MHz)
2422	full	37.679
2437	full	37.68
2452	full	<b>37.734</b>

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## 802.11ax\_HE40M Ch1

Freq. (MHz)	RU Config	99% BW (MHz)
2422	full	37.811
2437	full	37.748
2452	full	37.731

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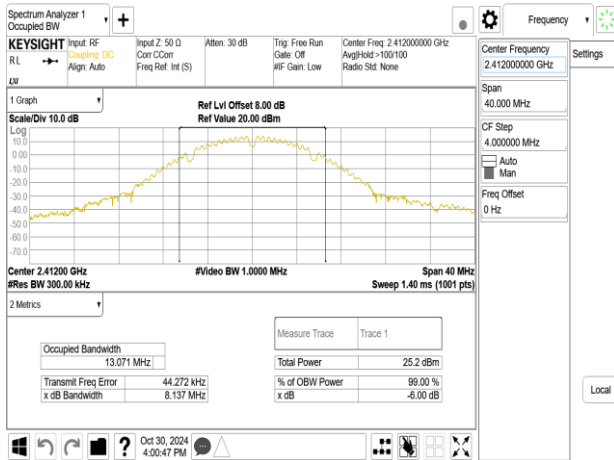
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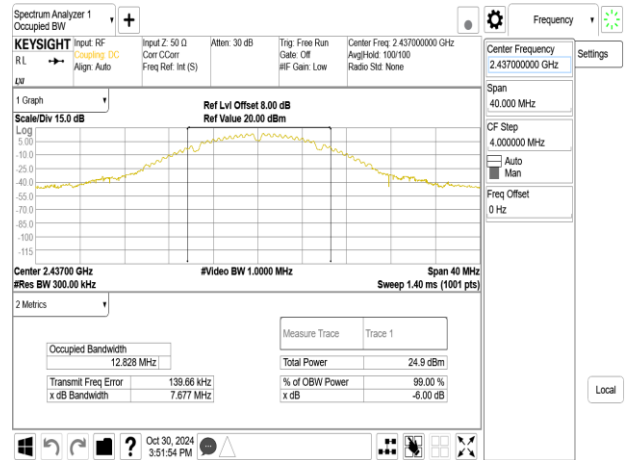
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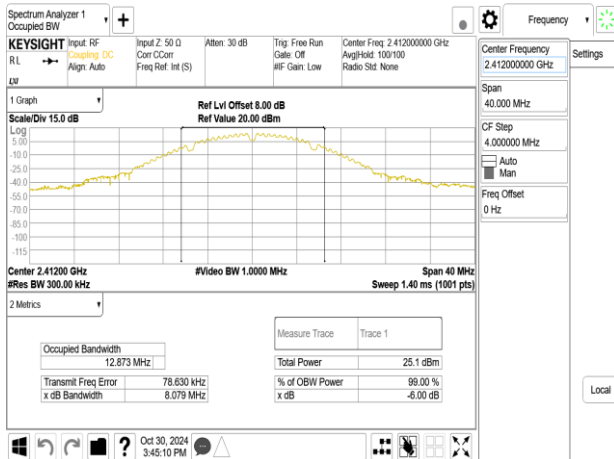
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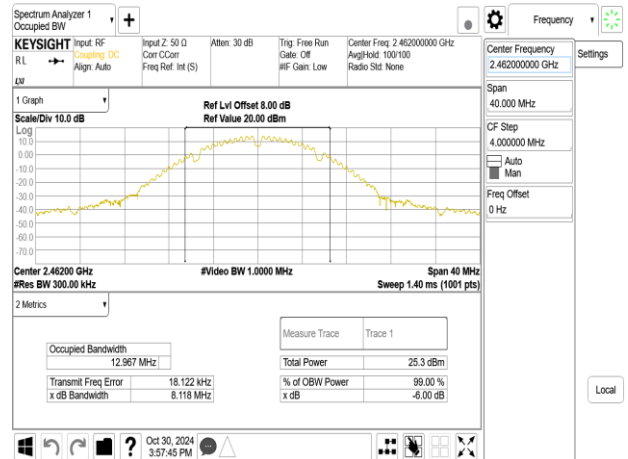
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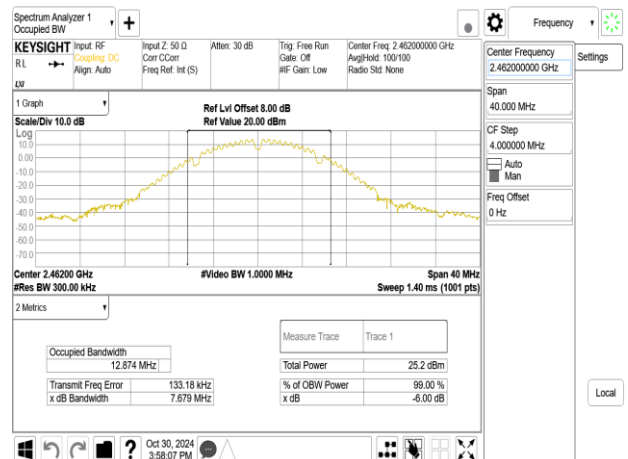
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802.11b\_20MHz\_Chain0\_2437MHz



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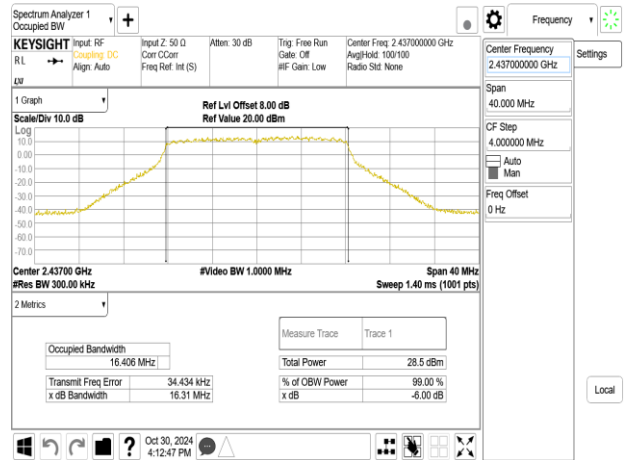
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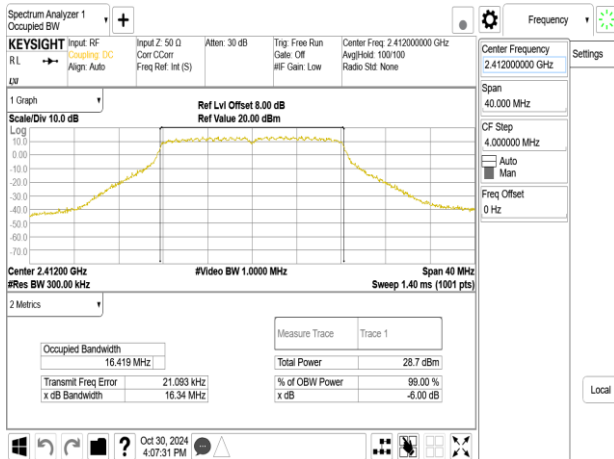
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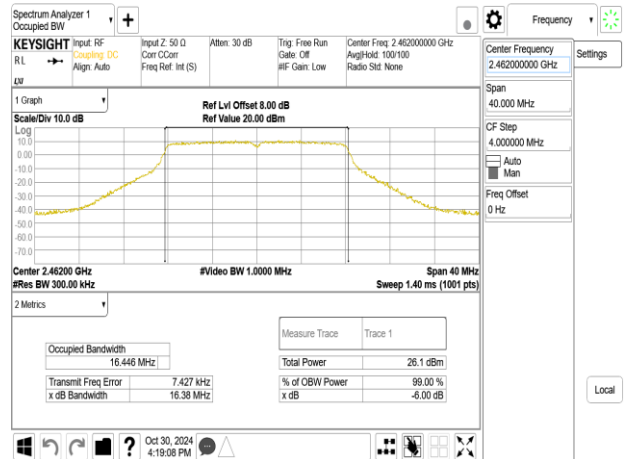
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802.11g\_20MHz\_Chain1\_2412MHz



802.11g\_20MHz\_Chain0\_2462MHz



802.11g\_20MHz\_Chain0\_2437MHz



802.11g\_20MHz\_Chain1\_2462MHz

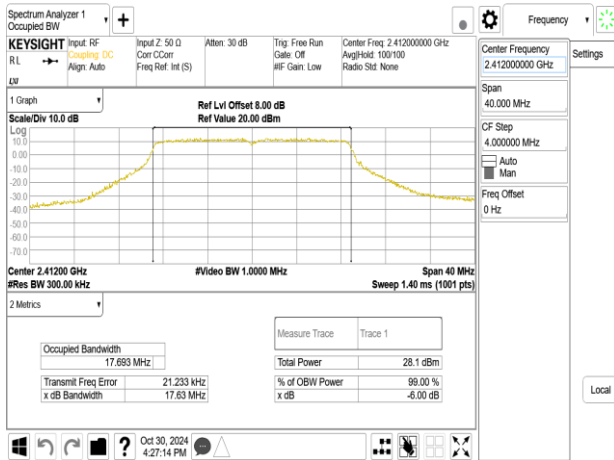


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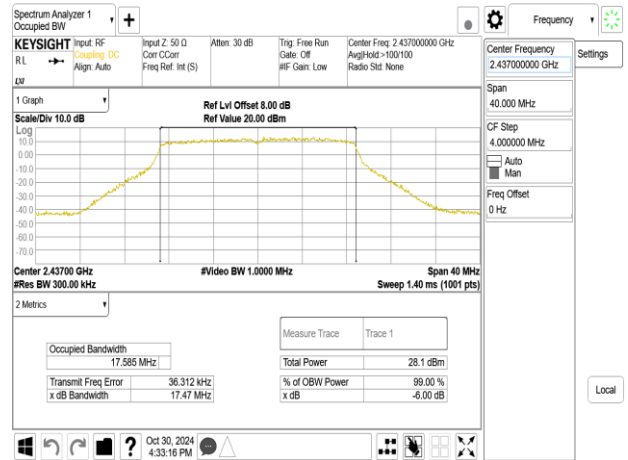
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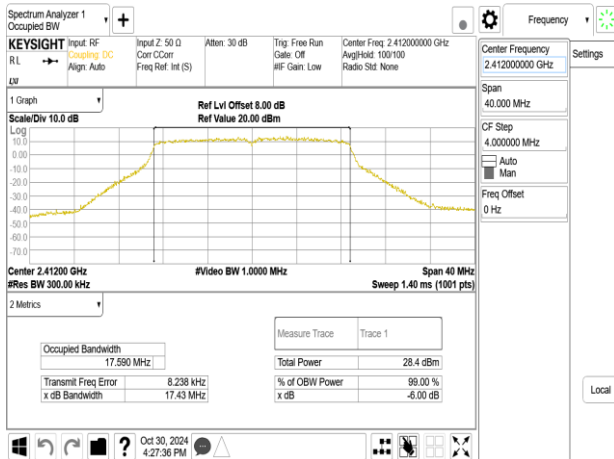
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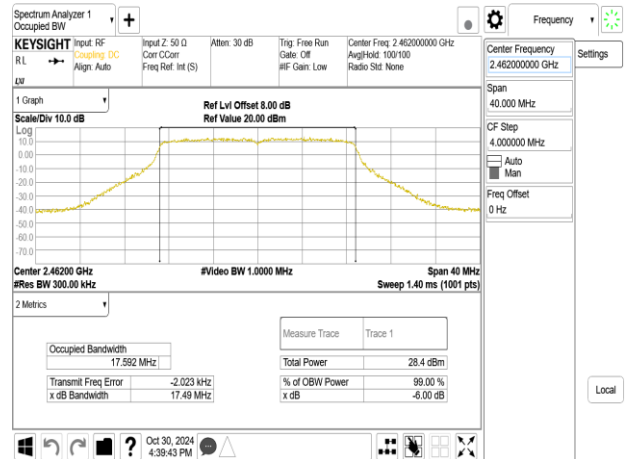
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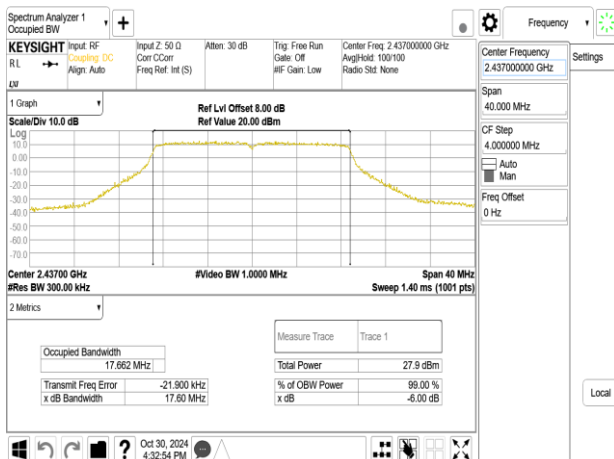
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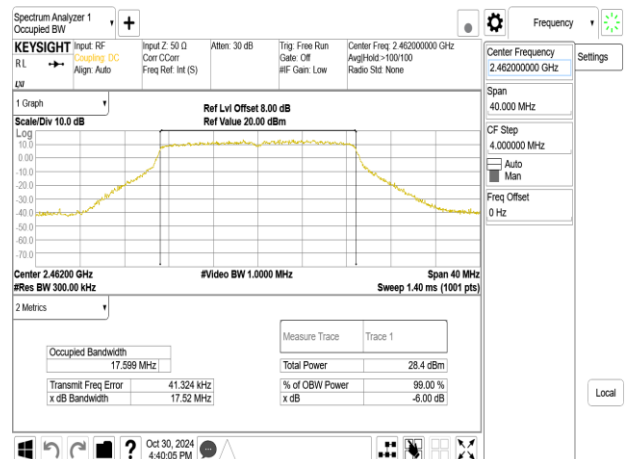
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802.11n\_20MHz\_Chain0\_2437MHz



802.11n\_20MHz\_Chain1\_2462MHz



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