

Project No: TM-2412000436P

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Report No.: TMWK2412004780KR FCC ID: 2AGBW9290038165X

Rev.: 01

RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Digital device
Brand Name	PHILIPS , hue, @ignify
Model No.	9290038165
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10-2020 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:



Shawn Wu
Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 22, 2025	Initial Issue	ALL	Peggy Tsai
01	September 2, 2025	See the following Note Rev. (01)	P.61, 62	Peggy Tsai

Rev. (01)

1. Added note in section 4.6.4.

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai, 200233, China
Manufacturer	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai, 200233, China
Equipment	Digital device
Model No.	9290038165
Model Discrepancy	N/A
Trade Name	PHILIPS , hue, ©signify
Received Date	December 31, 2024
Date of Test	January 9 ~ 20, 2025
Power Operation	12V-24VAC, 10VA, 50/60Hz
HW Version	MB: C version SB: B version LB: B version
FW Version	V5.0.10R10DK

Remark:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

1.2 EUT CHANNEL INFORMATION

Frequency Range	802.11b/g/n HT 20/ac VHT 20: 2412MHz ~ 2462MHz 802.11n HT 40/ac VHT 40: 2422MHz ~ 2452MHz
Modulation Type	1. IEEE 802.11b mode: CCK 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT 20 MHz mode : OFDM 4. IEEE 802.11n HT 40 MHz mode : OFDM 5. IEEE 802.11ac VHT 20 MHz mode : OFDM 6. IEEE 802.11ac VHT 40 MHz mode : OFDM
Number of channel	1. IEEE 802.11b mode: 11 Channels 2. IEEE 802.11g mode: 11 Channels 3. IEEE 802.11n HT 20 MHz mode : 11 Channels 4. IEEE 802.11n HT 40 MHz mode : 7 Channels 5. IEEE 802.11ac VHT 20 MHz mode : 11 Channels 6. IEEE 802.11ac VHT 40 MHz mode : 7 Channels

Remark:

Refer as ANSI C63.10-2020 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	☒ PIFA ☐ PCB ☐ Dipole ☐ Coils
Antenna Gain	2.6 dBi
Antenna Connector	i-pex

Notes:

1.The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 2.21 dB
Channel Bandwidth	+/- 2.79 dB
RF output power (Power Meter + Power sensor)	+/- 0.24 dB
Power Spectral density	+/- 2.74 dB
Conducted Bandedge	+/- 2.74 dB
Conducted Spurious Emission	+/- 2.74 dB
Radiated Emission_9kHz-30MHz	+/- 3.492 dB
Radiated Emission_30MHz-200MHz	+/- 3.62 dB
Radiated Emission_200MHz-1GHz	+/- 3.899 dB
Radiated Emission_1GHz-6GHz	+/- 5.063 dB
Radiated Emission_6GHz-18GHz	+/- 5.122 dB
Radiated Emission_18GHz-26GHz	+/- 3.032 dB
Radiated Emission_26GHz-40GHz	+/- 3.271 dB

Remark:

- 1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Ben Yang	-
Radiation	Tony Chao 、 Ray Li	-
RF Conducted	Jerry Chang	-

Remark: The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309

1.6 INSTRUMENT CALIBRATION

Conducted FCC/IC/NCC (All)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
PXA Signal Analyzer	Keysight	N9030B	MY62291089	2024-10-04	2025-10-03
Power Sensor	Anritsu	MA2411B	1911387	2024-08-30	2025-08-29
Power Sensor	Anritsu	MA2411B	1911386	2024-07-19	2025-07-18
Power Meter	Anritsu	ML2496A	2136002	2024-07-19	2025-07-18
DC Blocks	Marvelous Microwave	MVE6411	MVE-001	2024-08-08	2025-08-07
Attenuator	Marvelous Microwave Inc	MVE2213-10	08	2024-11-07	2025-11-06
Software	Radio Test Software Ver. 21				

966A Radiated					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Signal Analyzer	KEYSIGHT	N9010A	MY52220817	2024-03-15	2025-03-14
Thermo-Hygro Meter	WISEWIND	1206	D07	2024-11-26	2025-11-25
Active Loop Antenna	SCHWARZBECK	FMZB 1513-60	1513-60-028	2024-12-11	2025-12-10
Bi-Log Antenna	Sunol Sciences	JB3	A030105	2024-07-12	2025-07-11
Preamplifier	EMEC	EM330	060609	2024-02-21	2025-02-20
Cable	Huber+Suhner	104PEA	20995+21000+182330	2024-08-07	2025-08-06
Horn Antenna	ETC	MCTD 1209	DRH13M02003	2024-12-20	2025-12-19
Preamplifier	HP	8449B	3008A00965	2024-12-18	2025-12-17
Cable	EMCI	EMC101G	221011+221012+221213	2024-10-11	2025-10-10
Attenuator	Mini-Circuits	BW-S9W5	BWS9W5-09-966A-01	2024-02-07	2025-02-06
High Pass Filters	Titan Microwave	T04H30001800070S01	22011402-4	2024-06-12	2025-06-11
Horn Antenna	SCHWARZBECK	BBHA9170	1047	2024-12-06	2025-12-05
Pre-Amplifier	EMCI	EMC184045SE	980860	2024-12-02	2025-12-01
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Site Validation	CCS	966A	N/A	2024-08-03	2025-08-02
Software	e3 V9-210616c				

Remark:

- Each piece of equipment is scheduled for calibration once a year.
- N.C.R. = No Calibration Required.

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AC Mains Conduction					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI	100064	2024-06-14	2025-06-13
LISN	TESEQ	LN2-16N	22012	2024-02-29	2025-02-27
Cable	Woken	SFL402	185A	2024-07-08	2025-07-07
Software	e3 V6-110812				

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

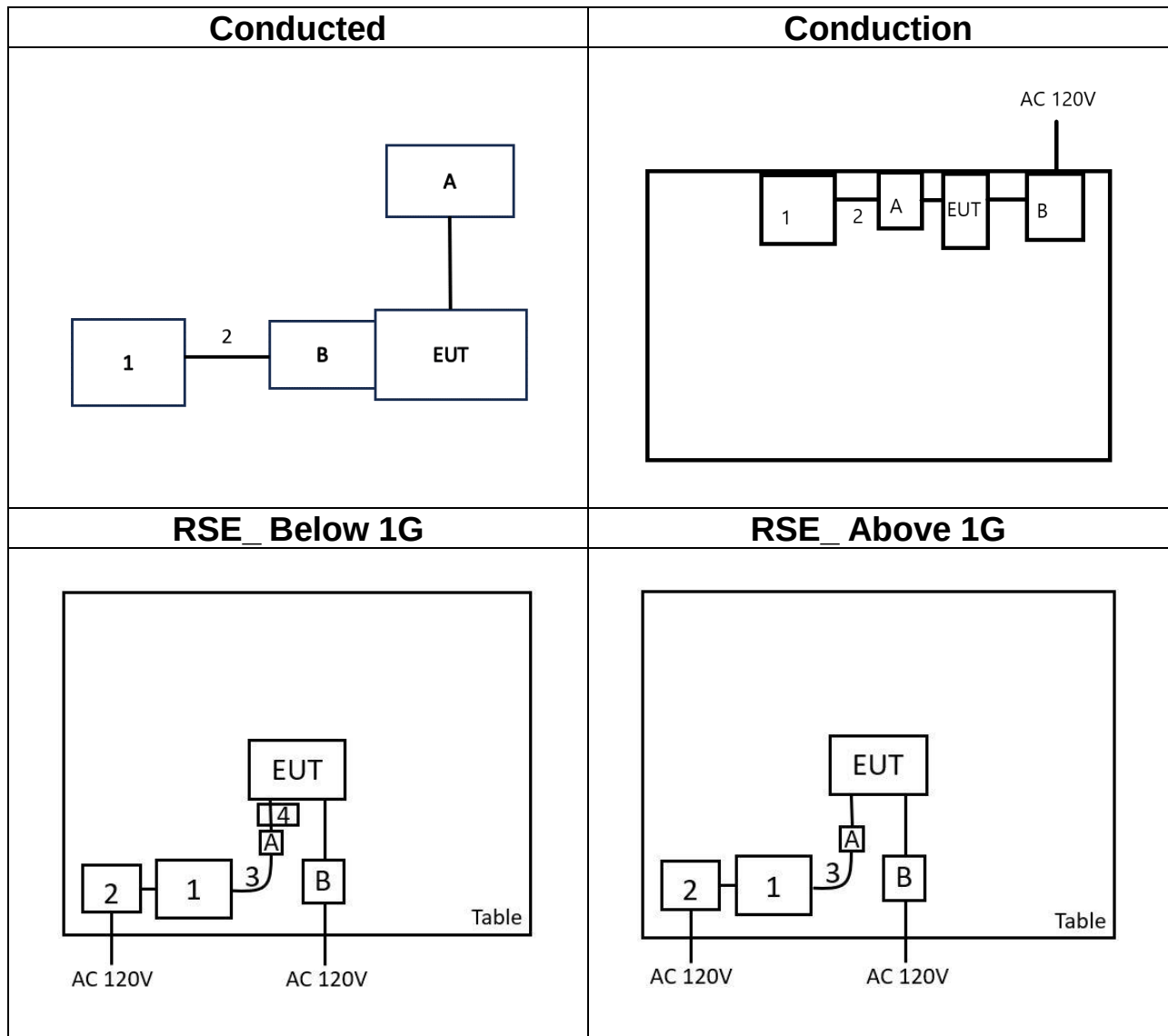
EUT Accessories Equipment						
No.	Equipment	Brand	Model	Series No.	FCC ID	IC
	N/A					

Support Equipment (Conducted)					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(I)	Lenovo	X260	N/A	N/A
2	USB to RS232	SUNBOX	USC-232G	N/A	N/A
A	Adapter	WUYELIN	PS-AC2440	N/A	N/A
B	Test kit	N/A	N/A	N/A	N/A

Support Equipment (Conduction)					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(D)	Lenovo	ThinkPad X260	N/A	N/A
2	USB to RS232	SUNBOX	USC-232G	N/A	N/A
A	Test kit	N/A	N/A	N/A	N/A
B	Adapter	WUYELIN	PS-AC2440	N/A	N/A

Support Equipment (RSE)					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	NB(D)	Lenovo	ThinkPad X260	N/A	N/A
2	Adapter	Lenovo	ADLX45DLC3A	N/A	N/A
3	USB to RS232	SUNBOX	USC-232G	N/A	N/A
4	SUPPRESSION CORES	KINGCORE	RC 16*16*8-M	N/A	N/A
A	Test jig	N/A	N/A	N/A	N/A
B	Adapter	WUYELIN	PS-AC2440	N/A	N/A

1.8 TEST SET UP DIAGRAM



1.9 TEST PROGRAM

The EUT connection corresponds to the surrounding fixture control board. This EUT uses "Tera Term" software and setup command to set the frequency, modulation, and power to allow the sample to continuously transmit.

1.10 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10-2020, FCC Part 2, FCC Part 15.247, KDB 558074.

2. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	Pass
15.247(a)(2)	4.2	6 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(3)	4.3	Output Power Measurement	Pass
15.247(e)	4.4	Power Spectral Density	Pass
15.247(d)	4.5	Conducted Band Edge	Pass
15.247(d)	4.5	Conducted Emission	Pass
15.247(d) 15.205, 15.209	4.6	Radiation Band Edge	Pass
15.247(d) 15.205, 15.209	4.6	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	IEEE 802.11b mode :1Mbps IEEE 802.11g mode :6Mbps IEEE 802.11n HT20 mode :MCS0 IEEE 802.11n HT40 mode :MCS0 IEEE 802.11ac VHT40 mode :MCS0 IEEE 802.11ac VHT40 mode :MCS0
Test Channel Frequencies	IEEE 802.11b mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11g mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT20 mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11n HT40 mode : 1. Lowest Channel : 2422MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2452MHz IEEE 802.11ac VHT20 mode : 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz IEEE 802.11ac VHT40 mode : 1. Lowest Channel : 2422MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2452MHz
Operation Transmitter	IEEE 802.11b mode :1T1R IEEE 802.11g mode :1T1R IEEE 802.11n HT20 mode : 1T1R IEEE 802.11n HT40 mode : 1T1R IEEE 802.11ac VHT20 mode : 1T1R IEEE 802.11ac VHT40 mode : 1T1R

Remark:

1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.
2. Based on FCC Part 15.31(m), the laboratory conducts a comprehensive evaluation of ch low, ch middle, and ch high. Other additional channels only evaluate the radiated restricted bands of operation and powers.

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conduction Emission	
Test Condition	AC Power line conduction emission for line and neutral
Power supply Mode	Mode 1: EUT Power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☐ Placed in fixed position at X-Plane (E2-Plane) ☒ Placed in fixed position at Y-Plane (E1-Plane) ☐ Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

1. The worst mode was record in this test report.
2. AC power line conducted emission were performed the EUT transmit at the highest output power channel as worse case.
3. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Y-Plane) were recorded in this report

3.3 EUT DUTY CYCLE

Temperature: 17.5 ~ 23.6°C

Test date: January 9 ~ 20, 2025

Humidity: 44 ~ 51% RH

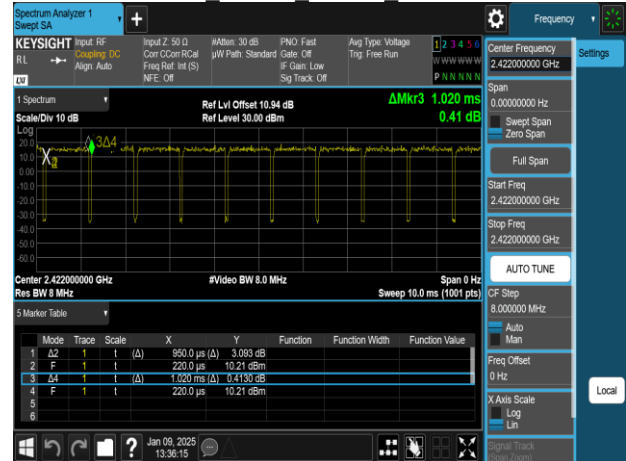
Tested by: Jerry Chang

Mode	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	100.00	0.00	0.00	0.01
802.11g	98.56	0.06	0.49	0.01
802.11n_20	98.56	0.06	0.49	0.01
802.11n_40	93.14	0.31	1.05	2.00
802.11ac_20	98.98	0.04	0.52	0.01
802.11ac_40	96.94	0.13	1.06	2.00

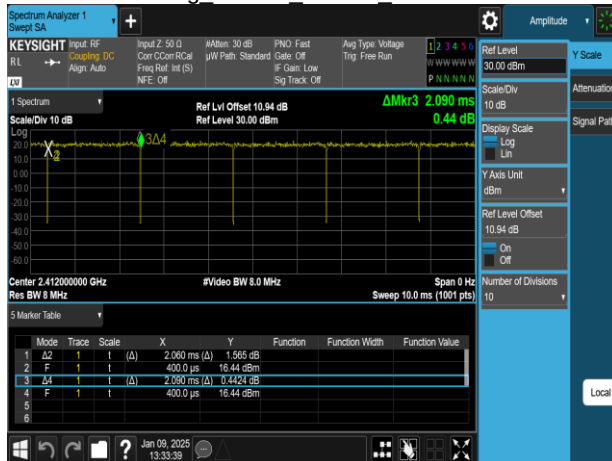
802.11b 20MHz Chain0 2412MHz



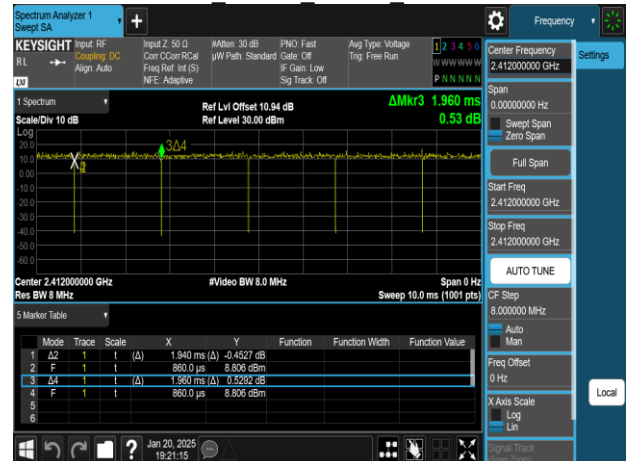
802.11n 40MHz Chain0 2422MHz



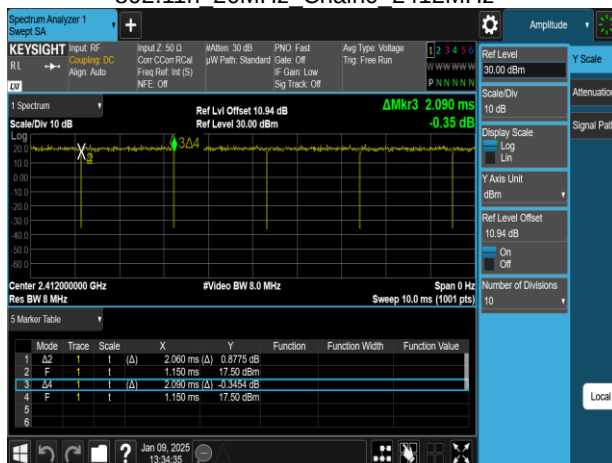
802.11g 20MHz Chain0 2412MHz



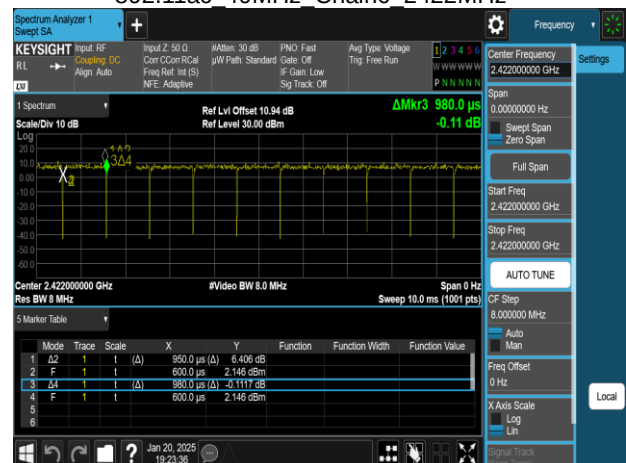
802.11ac 20MHz Chain0 2412MHz



802.11n 20MHz Chain0 2412MHz



802.11ac 40MHz Chain0 2422MHz



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a)(2),

Frequency Range (MHz)	Limits(dBμV)	
	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

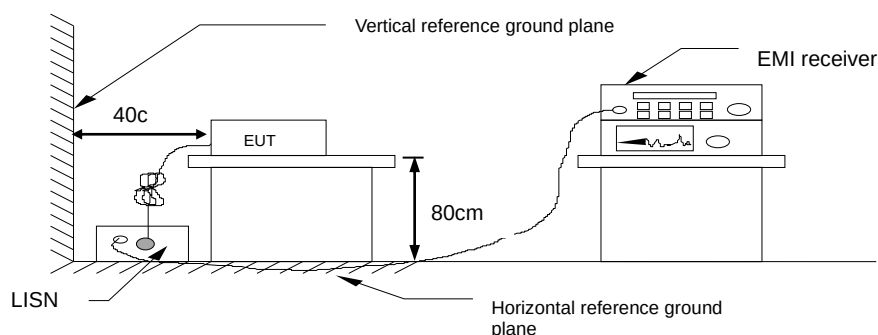
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10-2020,

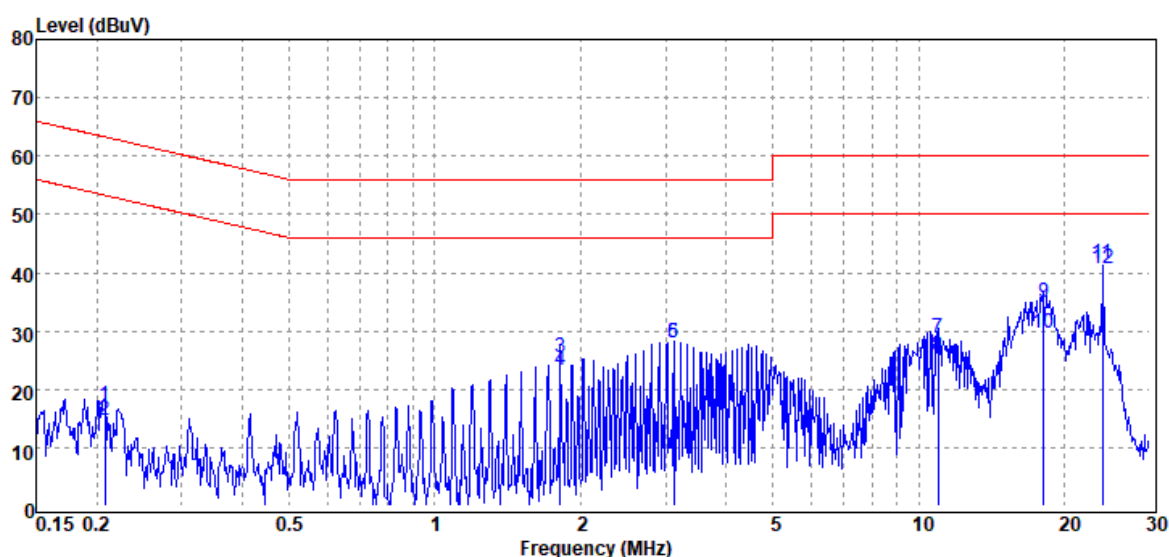
1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

Project No	: TM-2412000436P	Test Date	: 2025-01-20
Operation Mode	: 2.4G	Temp./Humi.	: 23.4°C / 54%
Test Chamber	: Conduction	Engineer	: Ben Yang
Probe	: LINE	Test Voltage	: AC 120V/60Hz
Note	:		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.208	QP	16.81	0.39	17.20	63.27	-46.07
0.208	Average	14.37	0.39	14.76	53.27	-38.51
1.819	QP	25.41	0.18	25.59	56.00	-30.41
1.819	Average	23.15	0.18	23.33	46.00	-22.67
3.119	QP	27.85	0.22	28.07	56.00	-27.93
3.119	Average	27.68	0.22	27.90	46.00	-18.10
10.966	QP	28.44	0.38	28.82	60.00	-31.18
10.966	Average	25.45	0.38	25.83	50.00	-24.17
18.090	QP	34.37	0.46	34.83	60.00	-25.17
18.090	Average	29.14	0.46	29.60	50.00	-20.40
24.000	QP	41.02	0.54	41.56	60.00	-18.44
24.000	Average	40.25	0.54	40.79	50.00	-9.21

Note: 1. Actual FS= Spectrum Read Level + Factor

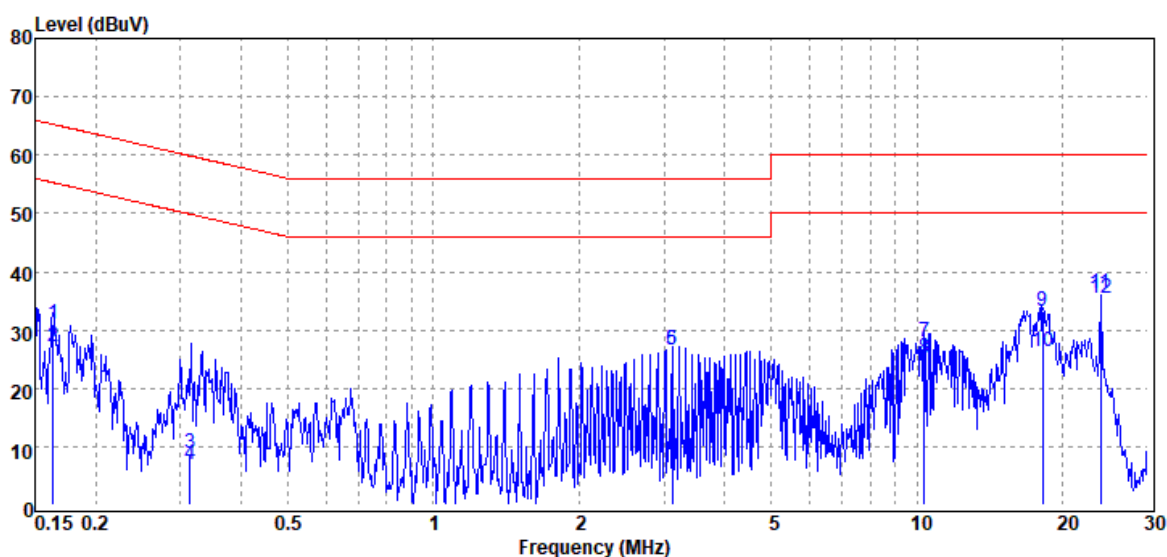
Note: 2. Margin= Actual FS - Limit

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Project No : TM-2412000436P
Operation Mode : 2.4G
Test Chamber : Conduction
Probe : NEUTRAL
Note :

Test Date : 2025-01-20
Temp./Humi. : 23.4°C / 54%
Engineer : Ben Yang
Test Voltage : AC 120V/60Hz



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Read Level dBμV	Factor dB	Actual FS dBμV	Limit dBμV	Margin dB
0.163	QP	30.87	0.17	31.04	65.29	-34.25
0.163	Average	26.82	0.17	26.99	55.29	-28.30
0.314	QP	8.62	0.35	8.97	59.87	-50.90
0.314	Average	6.46	0.35	6.81	49.87	-43.06
3.119	QP	26.42	0.19	26.61	56.00	-29.39
3.119	Average	26.31	0.19	26.50	46.00	-19.50
10.336	QP	27.66	0.34	28.00	60.00	-32.00
10.336	Average	24.81	0.34	25.15	50.00	-24.85
18.196	QP	32.65	0.43	33.08	60.00	-26.92
18.196	Average	25.94	0.43	26.37	50.00	-23.63
24.000	QP	35.88	0.50	36.38	60.00	-23.62
24.000	Average	34.87	0.50	35.37	50.00	-14.63

Note: 1. Actual FS= Spectrum Read Level + Factor

Note: 2. Margin= Actual FS - Limit

4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a)(2),

6 dB Bandwidth :

Limit	Shall be at least 500kHz
-------	--------------------------

Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as KDB 558074 D01 and ANSI C63.10-2020,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup

Refer to section 1.8.

4.2.4 Test Result

Temperature: 17.5 ~ 23.6°C
Humidity: 44 ~ 51% RH

Test date: January 9 ~ 20, 2025
Tested by: Jerry Chang

6dB BANDWIDTH

802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	9094	≥ 500	PASS
2437	9046	≥ 500	PASS
2462	8604	≥ 500	PASS

802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16370	≥ 500	PASS
2437	16330	≥ 500	PASS
2462	16360	≥ 500	PASS

802.11n_HT_20M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	17590	≥ 500	PASS
2437	17580	≥ 500	PASS
2462	17590	≥ 500	PASS

802.11n_HT_40M Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2422	36430	≥ 500	PASS
2437	36430	≥ 500	PASS
2452	36420	≥ 500	PASS

BANDWIDTH 99%

802.11b Ch0

Freq. (MHz)	99% BW (MHz)
2412	12.270
2437	12.301
2462	12.217

802.11g Ch0

Freq. (MHz)	99% BW (MHz)
2412	16.927
2437	16.949
2462	16.905

802.11n_HT20M Ch0

Freq. (MHz)	99% BW (MHz)
2412	18.065
2437	18.061
2462	18.048

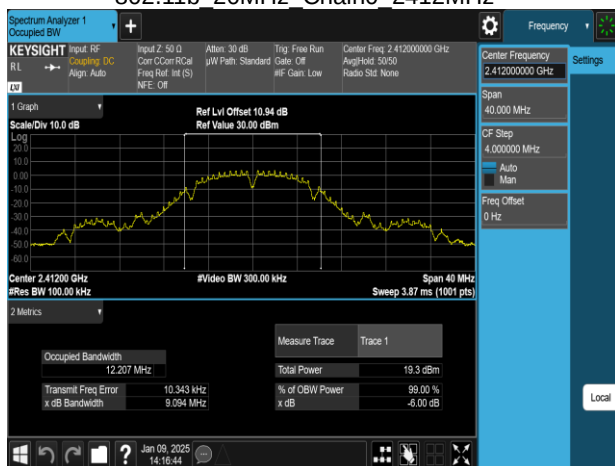
802.11n_HT40M Ch0

Freq. (MHz)	99% BW (MHz)
2422	36.607
2437	36.622
2452	36.620

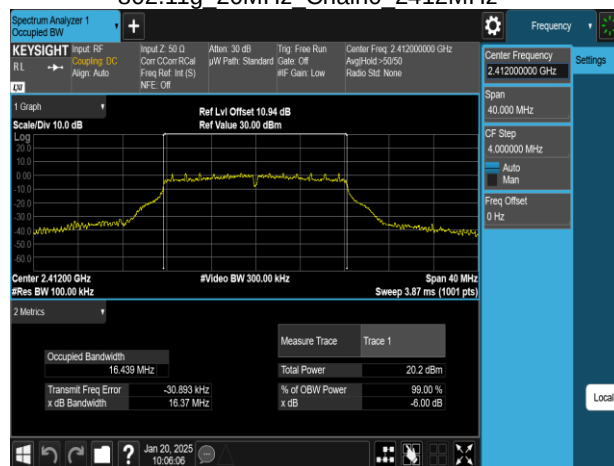
Test Data

6dB BANDWIDTH

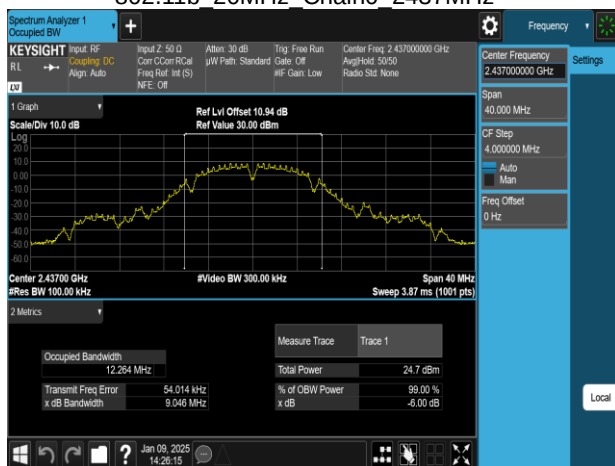
802.11b 20MHz Chain0 2412MHz



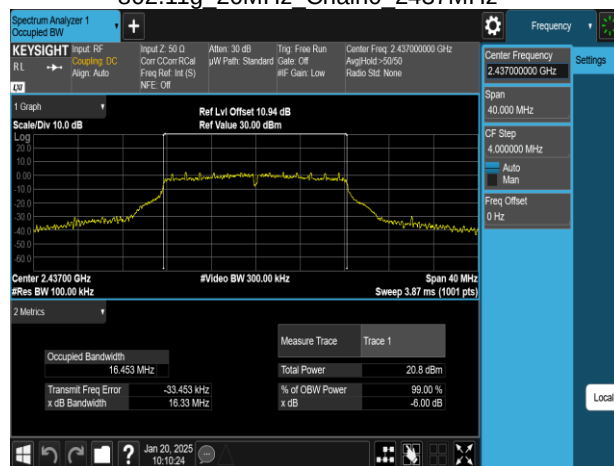
802.11g 20MHz Chain0 2412MHz



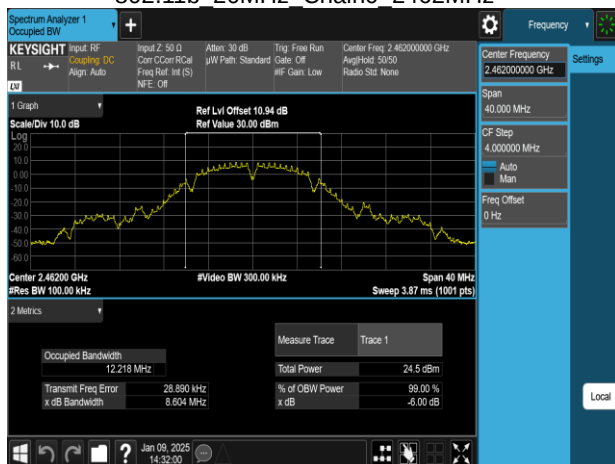
802.11b 20MHz Chain0 2437MHz



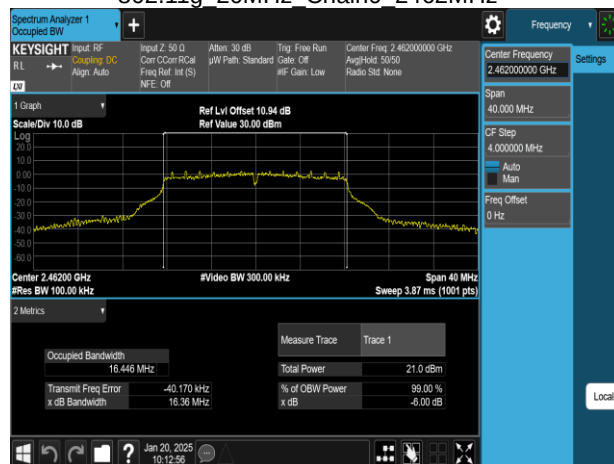
802.11g 20MHz Chain0 2437MHz



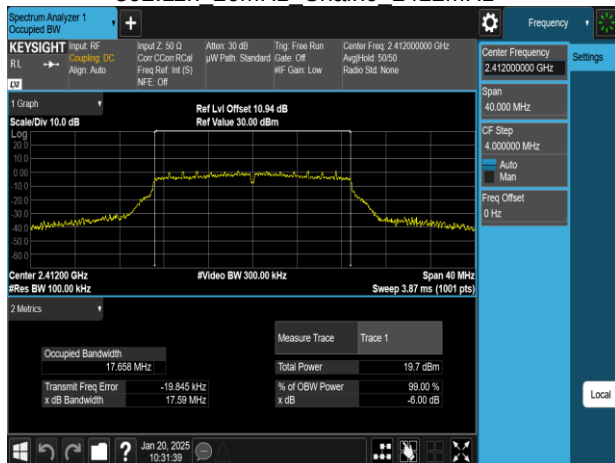
802.11b 20MHz Chain0 2462MHz



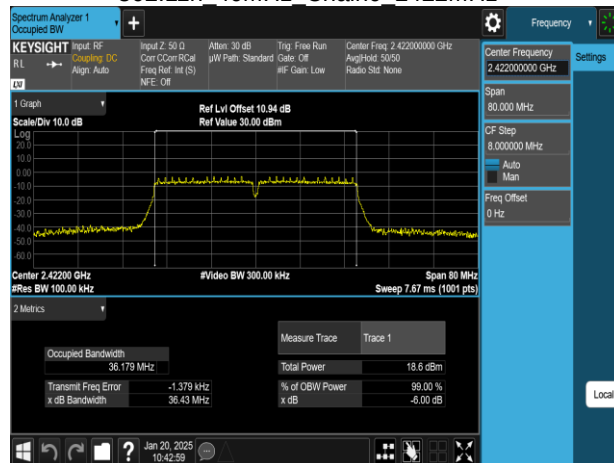
802.11g 20MHz Chain0 2462MHz



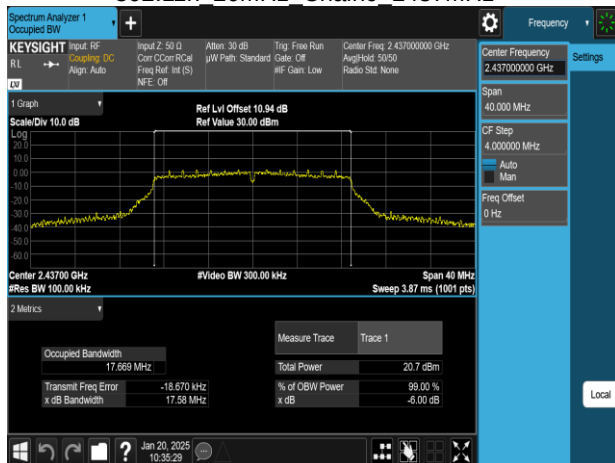
802.11n 20MHz Chain0 2412MHz



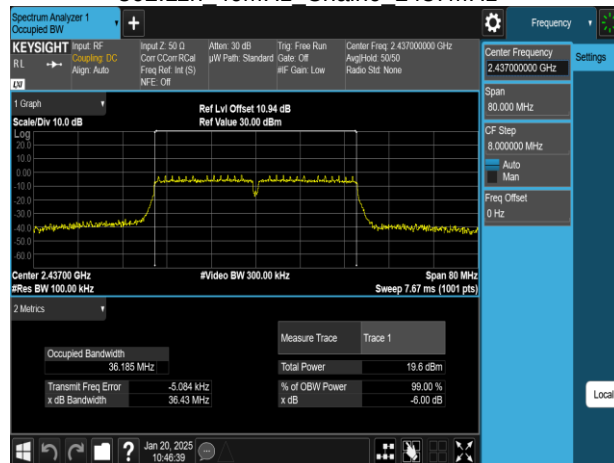
802.11n 40MHz Chain0 2422MHz



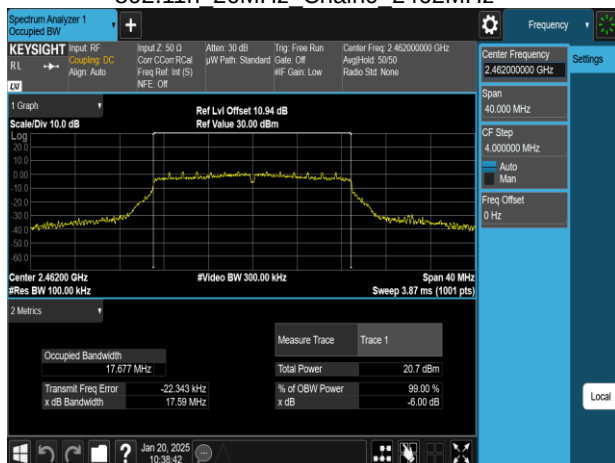
802.11n 20MHz Chain0 2437MHz



802.11n 40MHz Chain0 2437MHz



802.11n 20MHz Chain0 2462MHz



802.11n 40MHz Chain0 2452MHz

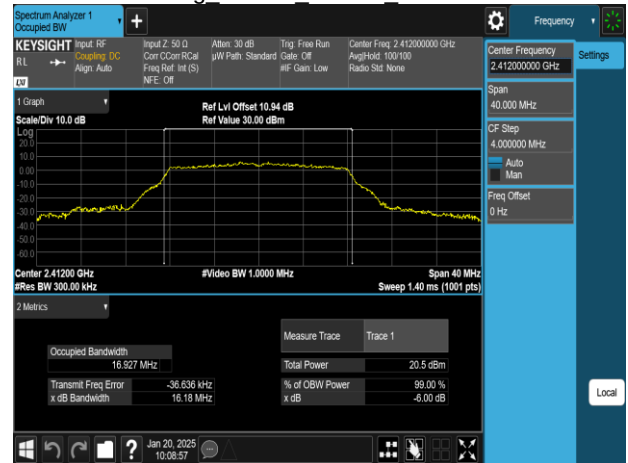


BANDWIDTH 99%

802.11b 20MHz Chain0 2412MHz



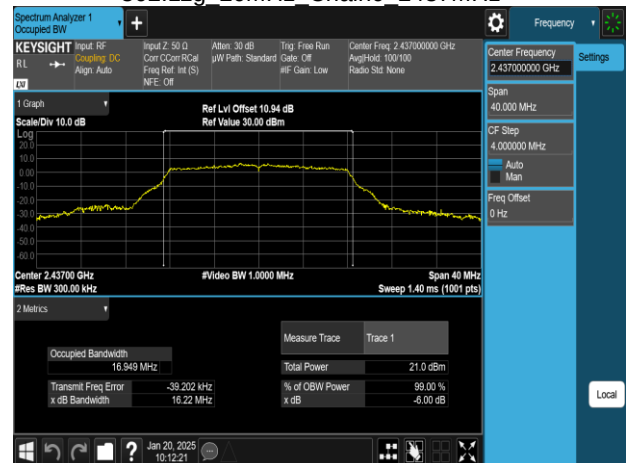
802.11g 20MHz Chain0 2412MHz



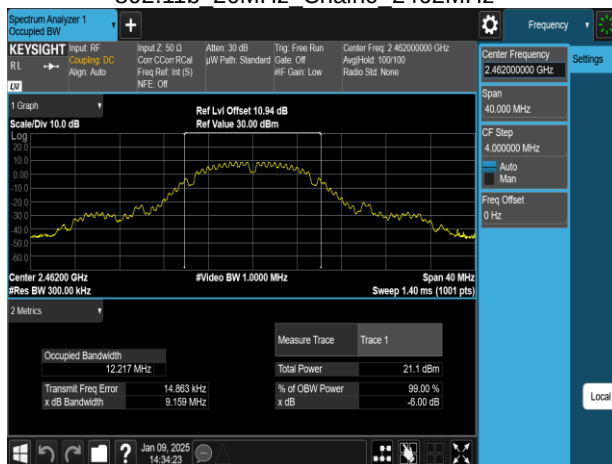
802.11b 20MHz Chain0 2437MHz



802.11g 20MHz Chain0 2437MHz



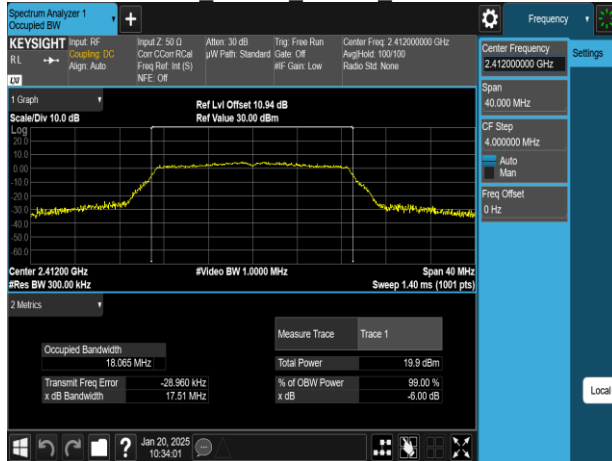
802.11b 20MHz Chain0 2462MHz



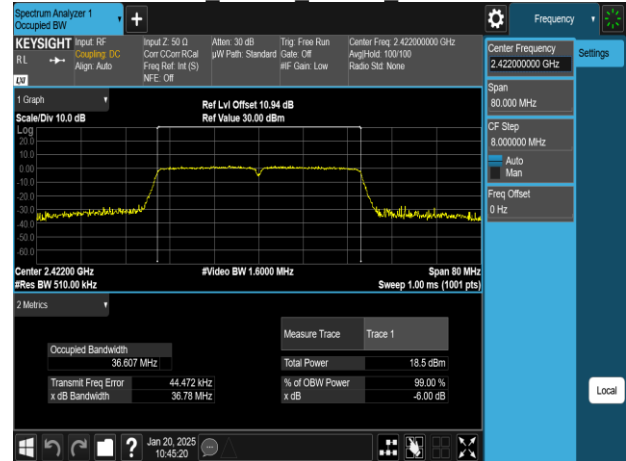
802.11g 20MHz Chain0 2462MHz



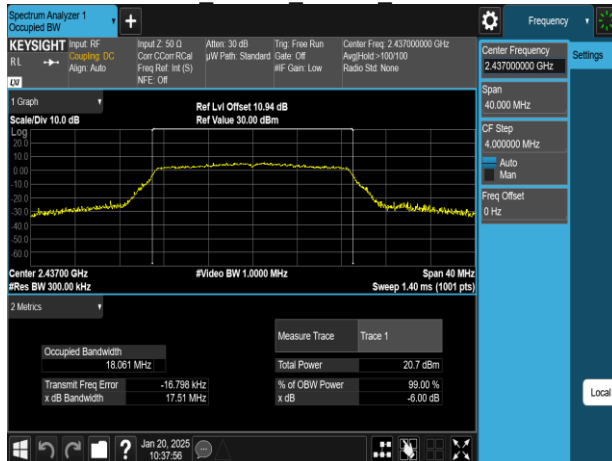
802.11n 20MHz Chain0 2412MHz



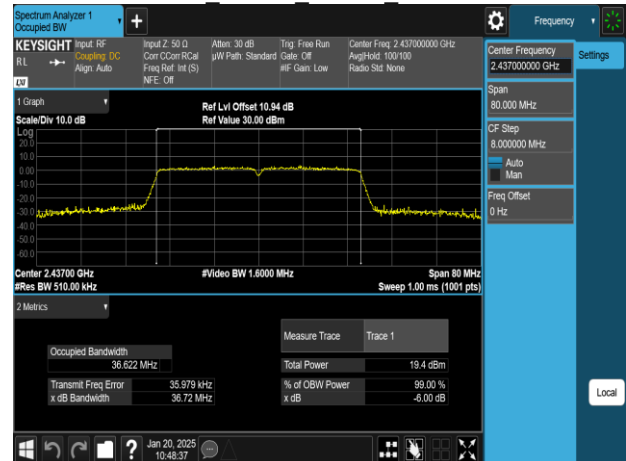
802.11n 40MHz Chain0 2422MHz



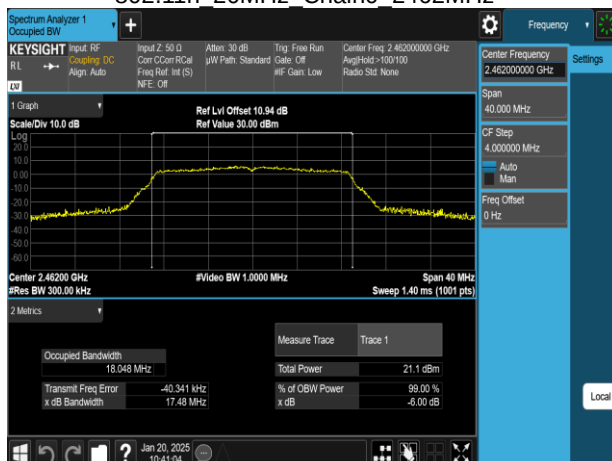
802.11n 20MHz Chain0 2437MHz



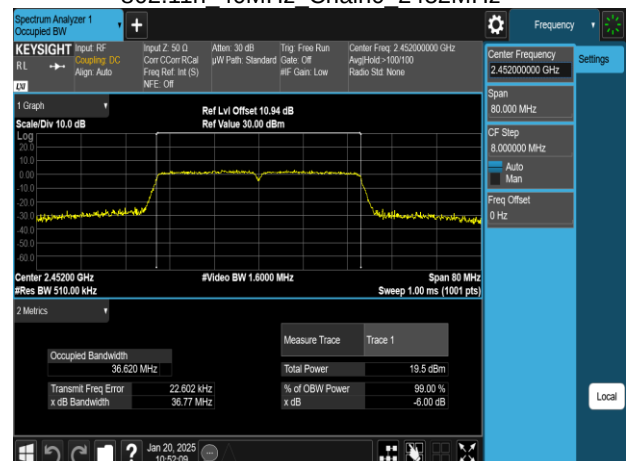
802.11n 40MHz Chain0 2437MHz



802.11n 20MHz Chain0 2462MHz



802.11n 40MHz Chain0 2452MHz



4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b),

FCC

Peak output power :

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm) and the e.i.r.p. shall not exceed 4Watt(36 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☒ Antenna not exceed 6 dBi : 30dBm ☐ Antenna with DG greater than 6 dBi : [Limit = 30 – (DG – 6)] ☐ Point-to-point operation :
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Average output power : For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as KDB 558074 D01.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup

Refer to section 1.8.

4.3.4 Test Result

Temperature: 17.5 ~ 23.6°C Test date: January 9 ~ 20, 2025
Humidity: 44 ~ 51% RH Tested by: Jerry Chang

Peak & Average 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	71	100.69	20.03	30.00	PASS
6	2437	1	71	101.16	20.05	30.00	PASS
11	2462	1	71	104.23	20.18	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	71	54.08	17.33	30.00	PASS
6	2437	1	71	54.83	17.39	30.00	PASS
11	2462	1	71	56.62	17.53	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	54	169.04	22.28	30.00	PASS
6	2437	6	56	175.39	22.44	30.00	PASS
11	2462	6	56	177.01	22.48	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	54	20.48	13.11	30.00	PASS
6	2437	6	56	23.30	13.67	30.00	PASS
11	2462	6	56	23.51	13.71	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offsetted to the power meter for Avg. power and cable loss has been offsetted for Peak power measurement.

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	51	155.96	21.93	30.00	PASS
6	2437	MCS0	55	163.68	22.14	30.00	PASS
11	2462	MCS0	55	165.20	22.18	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	51	17.23	12.36	30.00	PASS
6	2437	MCS0	55	20.67	13.15	30.00	PASS
11	2462	MCS0	55	20.81	13.18	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	46	127.64	21.06	30.00	PASS
6	2437	MCS0	50	142.89	21.55	30.00	PASS
9	2452	MCS0	50	148.25	21.71	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	46	13.90	11.43	30.00	PASS
6	2437	MCS0	50	15.92	12.02	30.00	PASS
9	2452	MCS0	50	16.29	12.12	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offsetted to the power meter for Avg. power and cable loss has been offsetted for Peak power measurement.

802.11ac_VHT_20M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	51	153.82	21.87	30.00	PASS
6	2437	MCS0	55	128.53	21.09	30.00	PASS
11	2462	MCS0	55	163.31	22.13	30.00	PASS

802.11ac_VHT_20M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	51	17.00	12.30	30.00	PASS
6	2437	MCS0	55	20.39	13.09	30.00	PASS
11	2462	MCS0	55	20.53	13.12	30.00	PASS

802.11ac_VHT_40M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Peak Output Power (mW)	Peak Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	46	126.47	21.02	30.00	PASS
6	2437	MCS0	50	138.36	21.41	30.00	PASS
9	2452	MCS0	50	145.55	21.63	30.00	PASS

802.11ac_VHT_40M Ch0

CH	Freq. (MHz)	Data Rate	Power Setting	Avg. Output Power (mW)	Avg. Output Power (dBm)	Limit (dBm)	RESULT
3	2422	MCS0	46	13.17	11.19	30.00	PASS
6	2437	MCS0	50	15.15	11.80	30.00	PASS
9	2452	MCS0	50	15.43	11.88	30.00	PASS

Note: Measured by power meter, cable loss + Duty cycle factor has been offsetted to the power meter for Avg. power and cable loss has been offsetted for Peak power measurement.

4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e),

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Limit	☒ Antenna not exceed 6 dBi : 8dBm ☐ Antenna with DG greater than 6 dBi : [Limit = 8 – (DG – 6)] ☐ Point-to-point operation :
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4.4.2 Test Procedure

Test method Refer as KDB 558074 D01

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 10kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

4.4.3 Test Setup

Refer to section 1.8.

4.4.4 Test Result

Temperature: 17.5 ~ 23.6°C
Humidity: 44 ~ 51% RH

Test date: January 9 ~ 20, 2025
Tested by: Jerry Chang

POWER DENSITY 802.11b				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-9.81	-9.81	8.00	PASS
2437	-5.91	-5.91	8.00	PASS
2462	-4.15	-4.15	8.00	PASS

POWER DENSITY 802.11g				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-10.58	-10.58	8.00	PASS
2437	-10.26	-10.26	8.00	PASS
2462	-9.81	-9.81	8.00	PASS

POWER DENSITY 802.11n HT20				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-11.65	-11.65	8.00	PASS
2437	-10.10	-10.10	8.00	PASS
2462	-10.00	-10.00	8.00	PASS

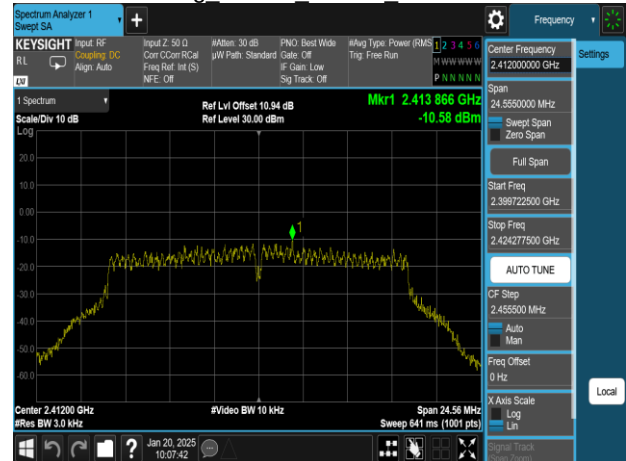
POWER DENSITY 802.11n HT40				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	-17.11	-17.11	8.00	PASS
2437	-16.84	-16.84	8.00	PASS
2452	-15.43	-15.43	8.00	PASS

Test Data

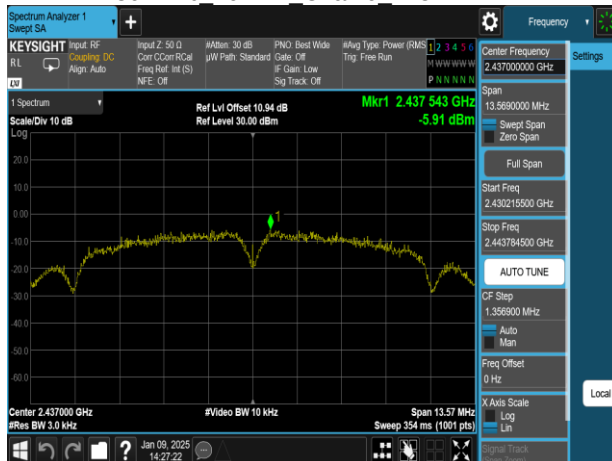
802.11b 20MHz Chain0 2412MHz



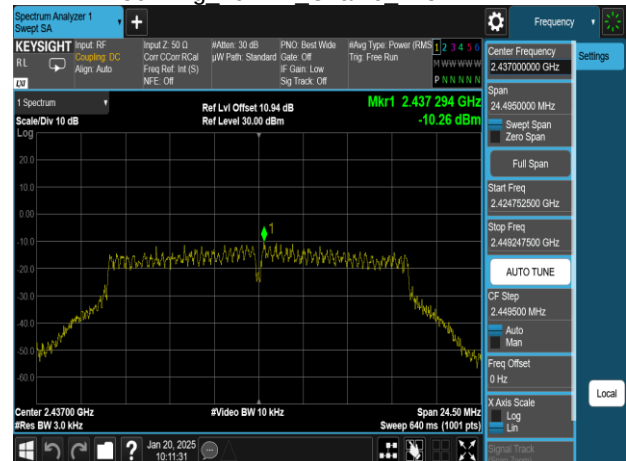
802.11g 20MHz Chain0 2412MHz



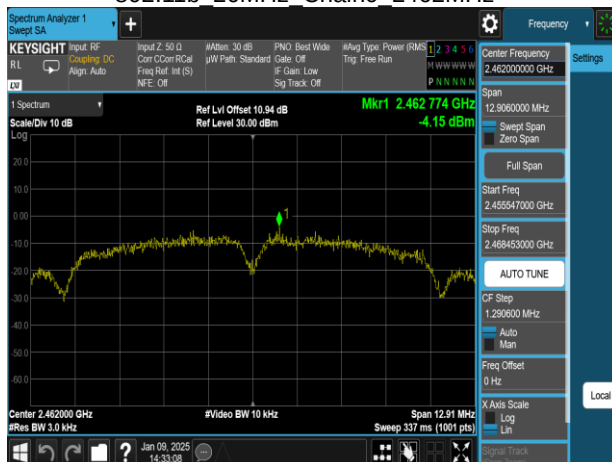
802.11b 20MHz Chain0 2437MHz



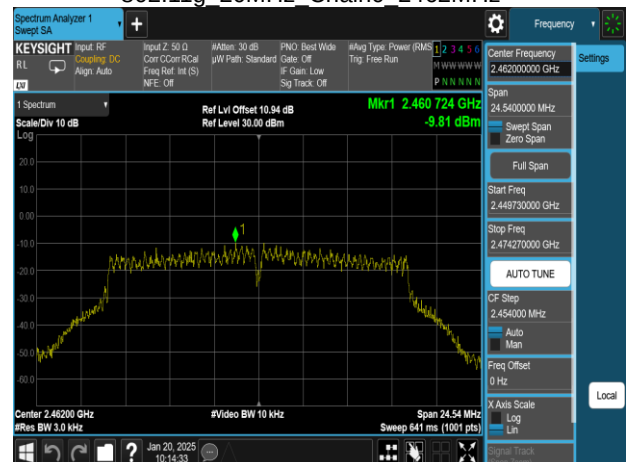
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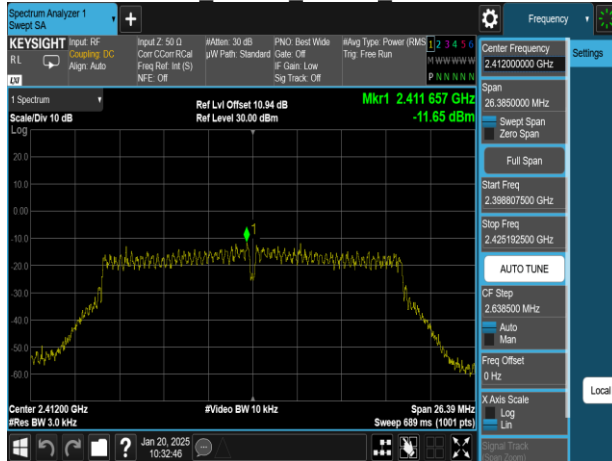
802.11b 20MHz Chain0 2462MHz



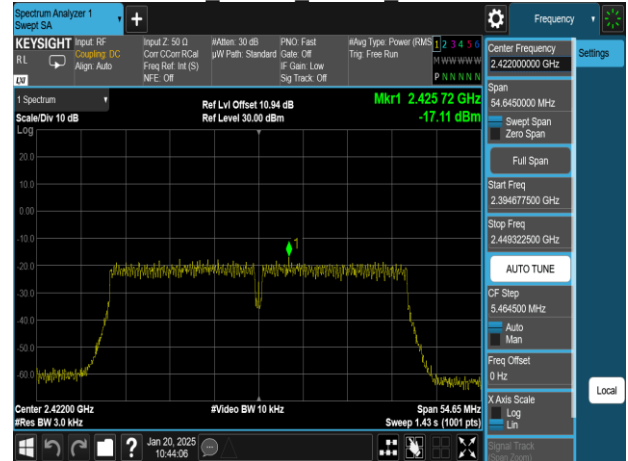
802.11g 20MHz Chain0 2462MHz



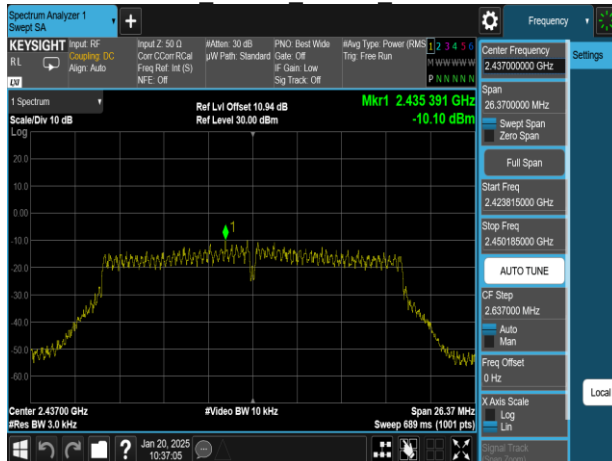
802.11n 20MHz Chain0 2412MHz



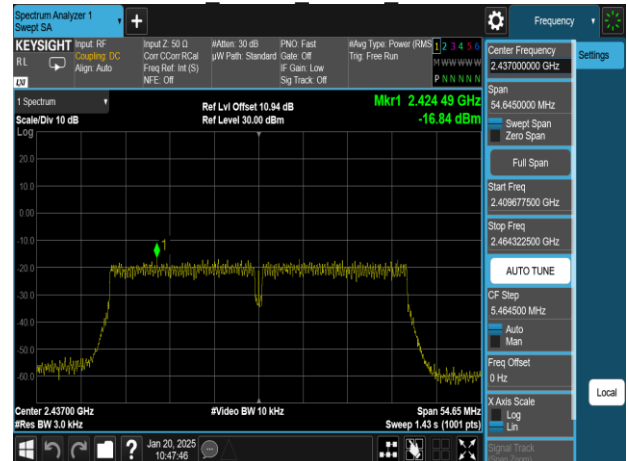
802.11n 40MHz Chain0 2422MHz



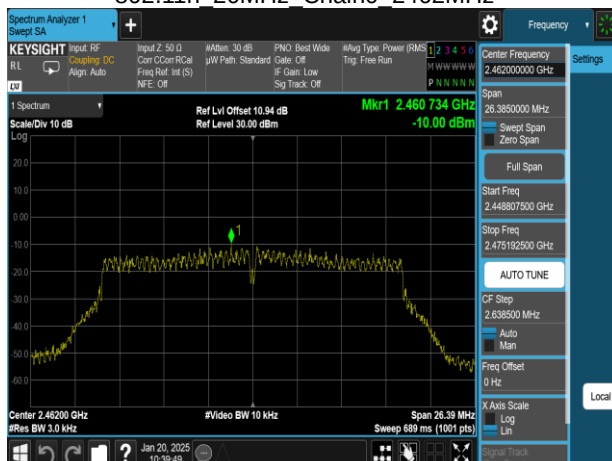
802.11n 20MHz Chain0 2437MHz



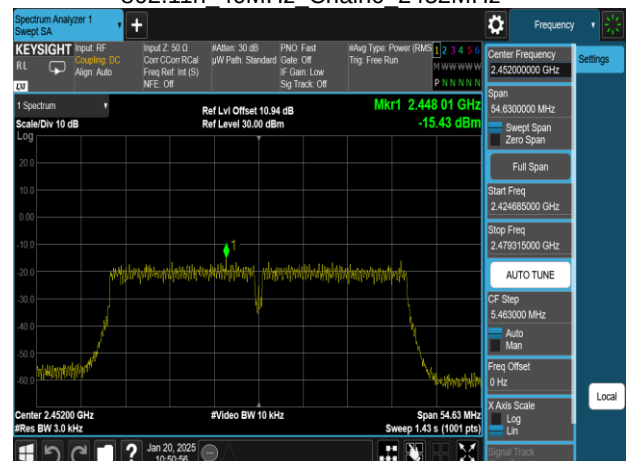
802.11n 40MHz Chain0 2437MHz



802.11n 20MHz Chain0 2462MHz



802.11n 40MHz Chain0 2452MHz



4.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.5.1 Test Limit

According to §15.247(d),

In any 100 kHz bandwidth outside the authorized frequency band,

Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement 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).

4.5.2 Test Procedure

Test method Refer as KDB 662911 D01, KDB 558074 D01.

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

4.5.3 Test Setup

Refer to section 1.8.

4.5.4 Test Result

Temperature:	17.5 ~ 23.6°C	Test date:	January 9 ~ 20, 2025
Humidity:	44 ~ 51% RH	Tested by:	Jerry Chang

Reference Level

802.11b 20MHz Chain0 2412MHz



802.11g 20MHz Chain0 2412MHz



802.11b 20MHz Chain0 2437MHz



802.11g 20MHz Chain0 2437MHz



802.11b 20MHz Chain0 2462MHz



802.11g 20MHz Chain0 2462MHz



802.11n 20MHz Chain0 2412MHz



802.11n 40MHz Chain0 2422MHz



802.11n 20MHz Chain0 2437MHz



802.11n 40MHz Chain0 2437MHz



802.11n 20MHz Chain0 2462MHz



802.11n 40MHz Chain0 2452MHz



Band Edge

802.11b 20MHz Chain0 2412MHz



802.11g 20MHz Chain0 2412MHz



802.11b 20MHz Chain0 2462MHz



802.11g 20MHz Chain0 2462MHz

