RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-247

Test Standard	**FCC Part 15.247** **IC RSS-247 issue 2 and IC RSS-GEN issue 5**
Product name	**WiFi+Bluetooth 5.2 System on Module**
Brand Name	**TechNexion**
Model No.	**PIXI-IW416**
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: 2013 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 7, 2023	Initial Issue	ALL	Allison Chen

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	TechNexion Ltd. 16F-5, No. 736, Zhongzheng Road, ZhongHe District, 23511, New Taipei City, Taiwan
Manufacturer	TechNexion Ltd. 16F-5, No. 736, Zhongzheng Road, ZhongHe District, 23511, New Taipei City, Taiwan
Equipment	WiFi+Bluetooth 5.2 System on Module
Model Name	PIXI-IW416
Model Discrepancy	N/A
Brand Name	TechNexion
Received Date	May 16, 2023
Date of Test	May 19 ~ June 27, 2023
Power Supply	Power from host system. (DC 3.3V)
HW Version	A1
SW Version	1.0

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.

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1.2 EUT CHANNEL INFORMATION

Frequency Range	802.11b/g/n HT20: 2412 MHz ~ 2462 MHz 802.11n HT40: 2422 MHz ~ 2452 MHz
Modulation Type	1. IEEE 802.11b mode: DSSS 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT20 mode: OFDM 4. IEEE 802.11n HT40 mode: OFDM
Number of channels	1. IEEE 802.11b mode: 11 Channels 2. IEEE 802.11g mode: 11 Channels 3. IEEE 802.11n HT20 mode: 11 Channels 4. IEEE 802.11n HT40 mode: 7 Channels

Remark:
Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 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	☐ PCB ☒ PIFA ☒ Dipole ☐ Coils
Antenna Gain	1. PIFA Antenna Gain: 2.5 dBi 2. Dipole Antenna Gain: 4 dBi
Brand / Model	1. PIFA Antenna: TechNexion / VM2450-25523-OOX-180 2. Dipole Antenna: TechNexion / VM2450-ASSY1005
Antenna connector	MHF

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 and RSS-Gen §6.8.

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1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	± 2.213 dB
Channel Bandwidth	± 2.7 %
RF output power (Power Meter + Power sensor)	± 0.243 dB
Power Spectral density	± 2.739 dB
Conducted Bandedge	± 2.739 dB
Conducted Spurious Emission	± 2.742 dB
Radiated Emission_9kHz-30MHz	± 3.115 dB
Radiated Emission_30MHz-200MHz	± 4.071 dB
Radiated Emission_200MHz-1GHz	± 4.419 dB
Radiated Emission_1GHz-6GHz	± 5.023 dB
Radiated Emission_6GHz-18GHz	± 5.068 dB
Radiated Emission_18GHz-26GHz	± 3.349 dB
Radiated Emission_26GHz-40GHz	± 3.229 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.

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1.5 FACILITIES AND TEST LOCATION

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

AC Powerline Conducted Emission and Conducted:

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

Radiated emission 9kHz to 40GHz:

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

☒ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan 24803

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Tony Chao	-
Radiation	Czerny Lin	-
RF Conducted	David Li	-

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

RF Conducted Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Cal Date**	**Cal Due**
Power Sensor	Anritsu	MA2411B	1911386	2022-08-08	2023-08-07
Power Sensor	Anritsu	MA2411B	1911387	2022-08-08	2023-08-07
EXA Signal Analyzer	Keysight	N9010B	MY60242460	2023-02-20	2024-02-01
Power Meter	Anritsu	ML2496A	2136002	2022-11-24	2023-11-23
Software	Radio Test Software Ver. 21 & E3-Ver: 6.11-20180413				

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

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3M 966 Chamber Test Site (966D_Radiated)					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Cal Date**	**Cal Due**
Antenna	SHWARZBECK	VULB 9168	1277	2023-01-13	2024-01-12
Pre-Amplifier	EMCI	EMC118A45SE	980820	2022-12-23	2023-12-22
Pre-Amplifier	EMCI	EMC330N	980853	2022-12-23	2023-12-22
Coaxial Cable	EMC	EMC101G-KM-KM-9000	220407+211228+230205	2023-03-21	2024-03-20
Signal Generator	Agilent	N9010A	MY52220817	2023-03-09	2024-03-08
Coaxial Cable	EMC	EMCCFD400	211212+211222+211020	2023-03-21	2024-03-20
High Pass Filter	TITAN	T04H30001800070S01	211215-7-1	2023-02-02	2024-02-01
Thermo-Hygro Meter	EDSDS	EDS-A49	966D1	2023-05-11	2024-05-10
Pre-Amplifier	EMCI	EMC184045SE	980872	2023-01-03	2024-01-02
Horn Antenna	RF SPIN	DRH18-E	210301A18ES	2023-02-03	2024-02-02
Horn Antenna	SHWARZBECK	BBHA 9170	1134	2022-12-30	2023-12-29
Loop Antenna	SCHWARZBECK	FMZB 1513-60	1513-60-028	2022-12-27	2023-12-26
Software	e3 V9-210616c				

AC Conducted Emissions Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Cal Date**	**Cal Due**
EMI Test Receiver	R&S	ESCI	100064	2023-06-07	2024-06-06
Cable	EMCI	CFD300-NL	CERF	2023-06-26	2024-06-25
LISN	TESEQ	LN2-16N	22012	2023-03-08	2024-03-07
Software	EZ-EMC(CCS-3A1-CE-wugu)				

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

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1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

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

Support Equipment						
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**	**IC**
1	NB(E)	Lenovo	T460	N/A	N/A	N/A
	N/A					

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, KDB 558074, RSS-247 Issue 2 and RSS-GEN Issue 5.

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2. TEST SUMMARY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
15.203	RSS-GEN 6.8	1.3	Antenna Requirement	Pass
15.207(a)	RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
15.247(a)(2)	RSS-247(5.2)(a)	4.2	6 dB Bandwidth	Pass
-	RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)	RSS-247(5.4)(d)	4.3	Output Power Measurement	Pass
15.247(e)	RSS-247(5.2)(b)	4.4	Power Spectral Density	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Spurious Emission	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.6	Radiation Band Edge	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.6	Radiation Spurious Emission	Pass

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

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

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3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	**AC Power line conducted emission for line and neutral**
Power supply Mode	**Mode 1: EUT power by NB. (Dipole Antenna)** **Mode 2: EUT power by NB. (PIFA Antenna)**
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 System. (Dipole Antenna)** **Mode 2: EUT power by System. (PIFA Antenna)**
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 System. (Dipole Antenna)** **Mode 2: EUT power by System. (PIFA Antenna)**
Worst Mode	☒ **Mode 1** ☒ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

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

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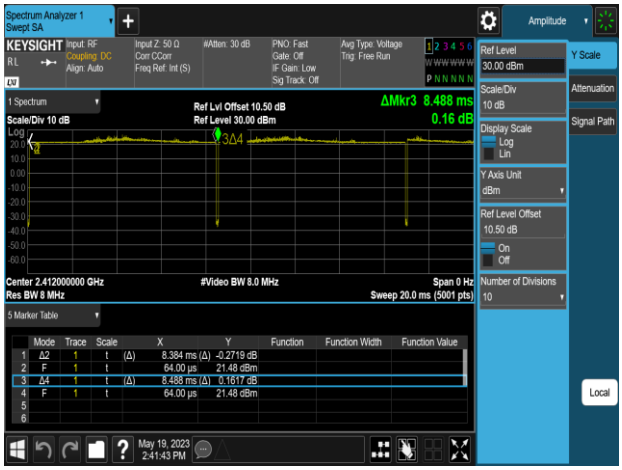
3.3 EUT DUTY CYCLE

Temperature: 22.8~27.1℃ **Test date:** May 19~June 19, 2023

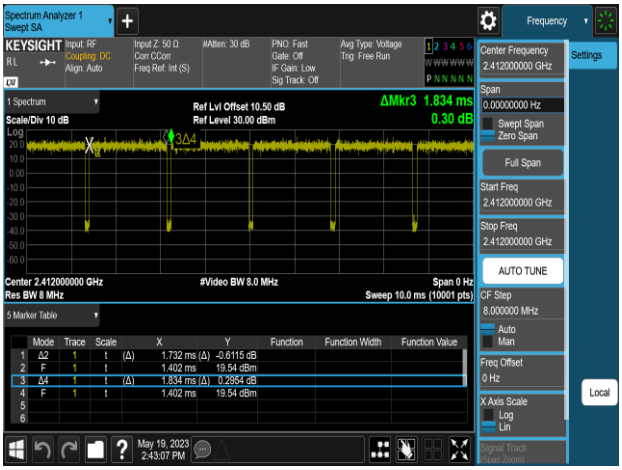
Humidity: 50~64% RH **Tested by:** David Li

Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	98.77	0.05	0.12	0.01
802.11g	94.44	0.25	0.58	1.00
802.11n_20	94.06	0.27	0.62	1.00
802.11n_40	88.59	0.53	1.25	2.00

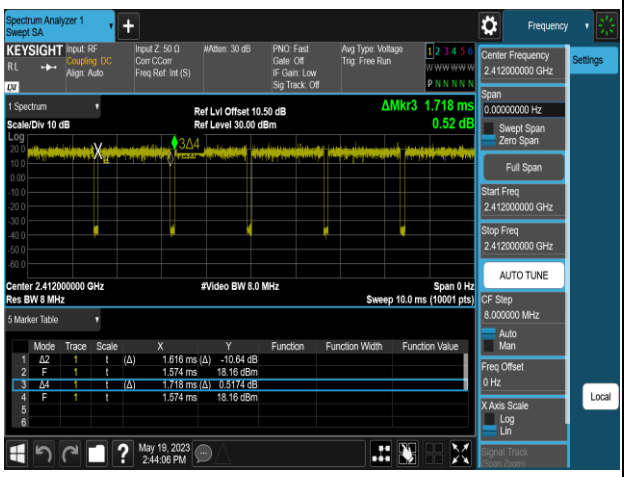
802.11b



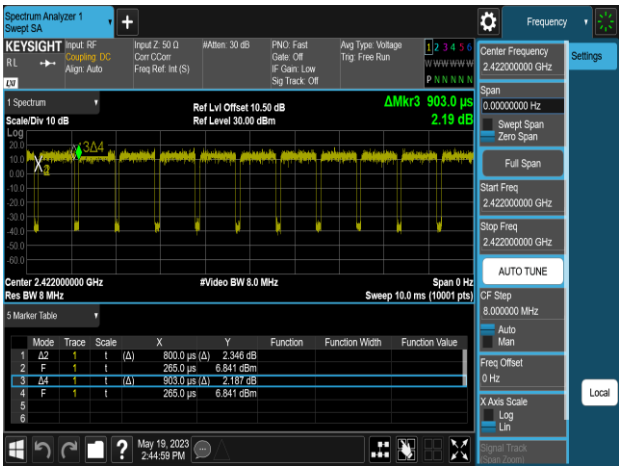
802.11g



802.11n HT20



802.11n HT40



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4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a)(2), RSS-GEN section 8.8,

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

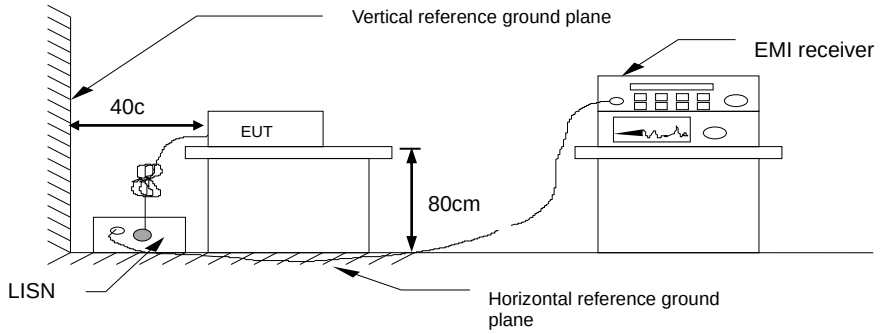
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

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

Pass.

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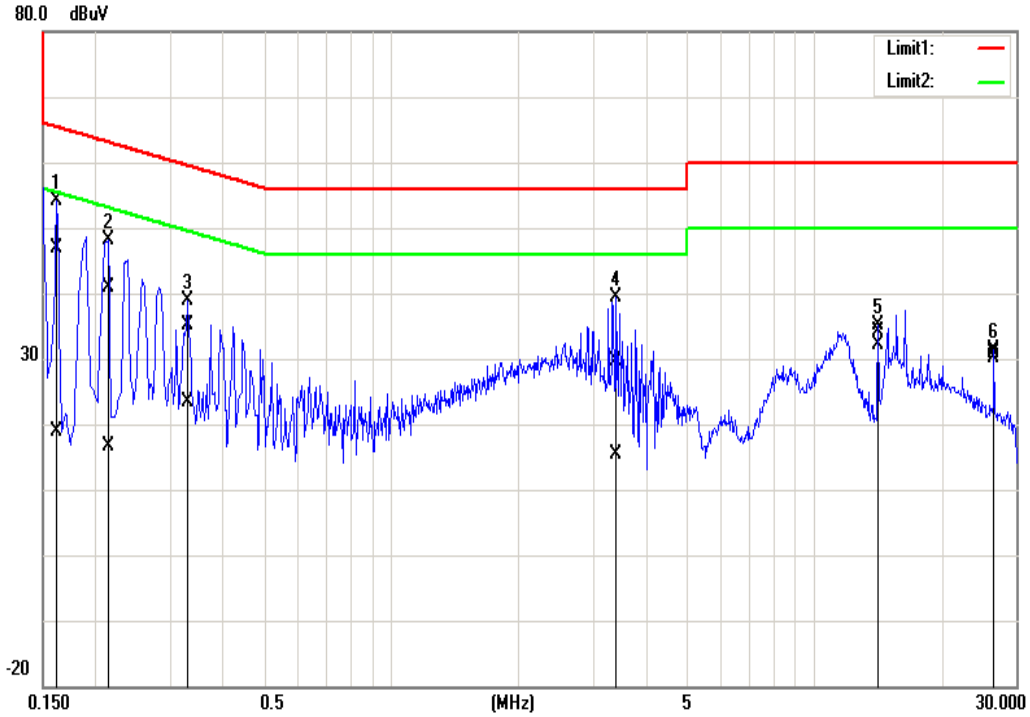
Test Data

Test Mode:	Mode 1	Temp/Hum	24.3(℃)/ 61%RH
Phase:	Line	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (d uV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1620	46.73	18.65	0.15	46.88	18.80	65.36	55.36	-18.48	-36.56	Pass
0.2140	40.61	16.57	0.15	40.76	16.72	63.05	53.05	-22.29	-36.33	Pass
0.3300	34.89	23.19	0.15	35.04	23.34	59.45	49.45	-24.41	-26.11	Pass
3.4140	29.31	15.04	0.24	29.55	15.28	56.00	46.00	-26.45	-30.72	Pass
14.1660	33.81	31.83	0.42	34.23	32.25	60.00	50.00	-25.77	-17.75	Pass
26.6220	30.22	29.57	0.61	30.83	30.18	60.00	50.00	-29.17	-19.82	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

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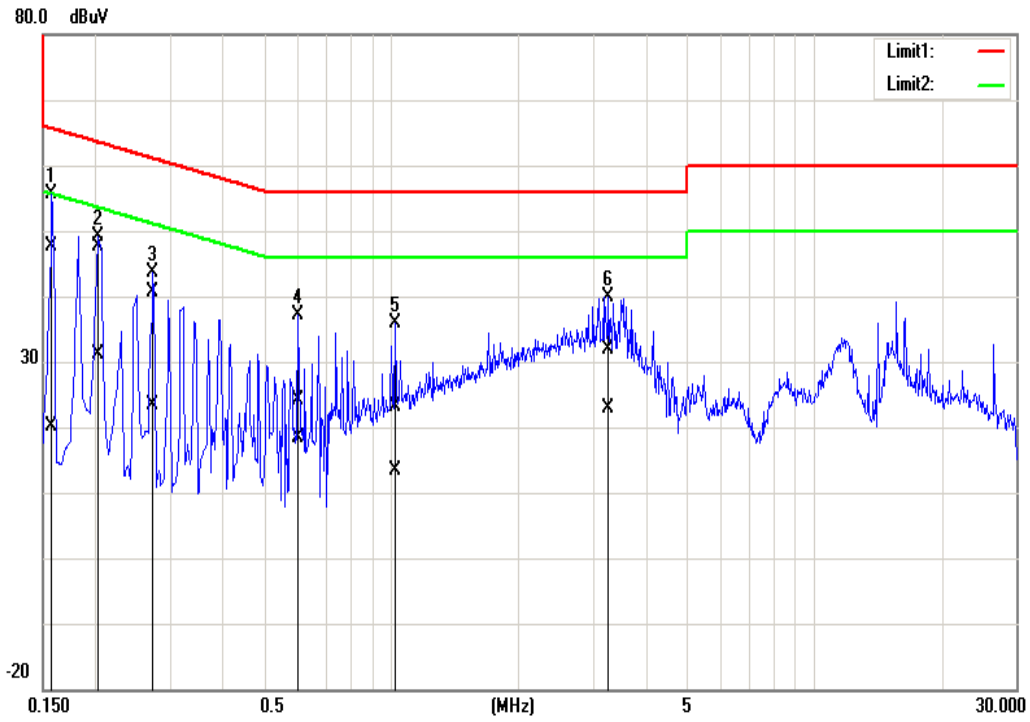
Test Mode:	Mode 1	Temp/Hum	24.3(℃)/ 61%RH
Phase:	Neutral	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao



Frequency (MHz)	Quasi Peak reading dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1580	47.55	20.04	0.20	47.75	20.24	65.57	55.57	-17.82	-35.33	Pass
0.2020	47.34	31.00	0.19	47.53	31.19	63.53	53.53	-16.00	-22.34	Pass
0.2740	40.52	23.26	0.19	40.71	23.45	61.00	51.00	-20.29	-27.55	Pass
0.6020	23.98	18.12	0.19	24.17	18.31	56.00	46.00	-31.83	-27.69	Pass
1.0260	22.87	13.28	0.21	23.08	13.49	56.00	46.00	-32.92	-32.51	Pass
3.2700	31.53	22.53	0.29	31.82	22.82	56.00	46.00	-24.18	-23.18	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

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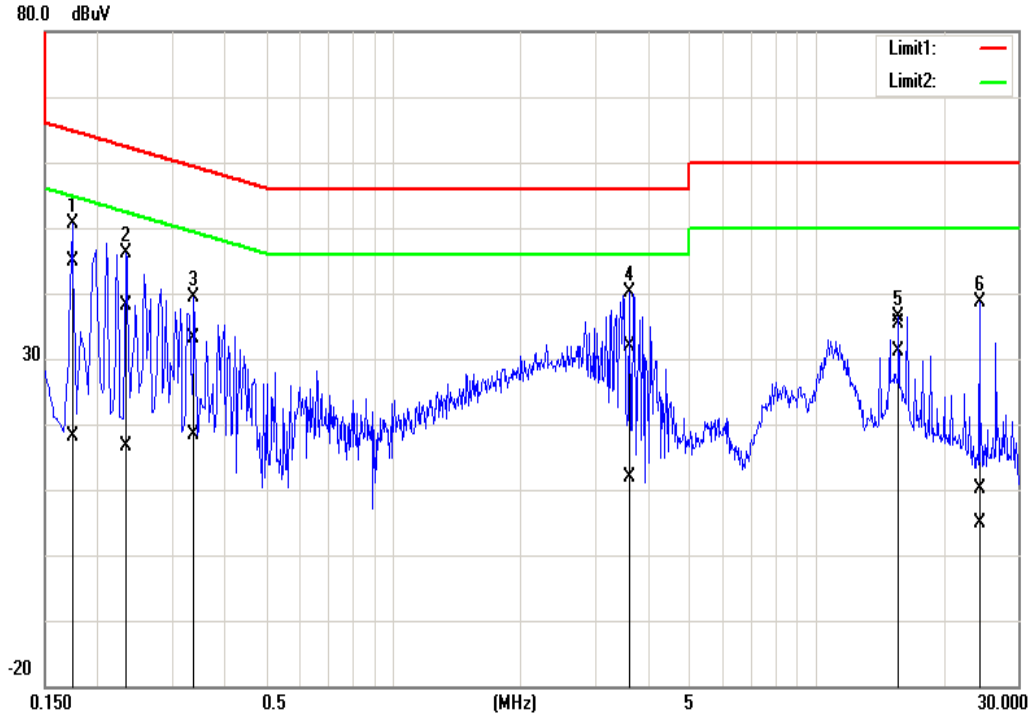
Test Data

Test Mode:	Mode 2	Temp/Hum	24.3(℃)/ 61%RH
Phase:	Line	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (d uV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1740	44.70	18.05	0.15	44.85	18.20	64.77	54.77	-19.92	-36.57	Pass
0.2340	37.92	16.42	0.15	38.07	16.57	62.31	52.31	-24.24	-35.74	Pass
0.3380	32.88	18.14	0.15	33.03	18.29	59.25	49.25	-26.22	-30.96	Pass
3.6100	31.55	11.50	0.26	31.81	11.76	56.00	46.00	-24.19	-34.24	Pass
15.6580	34.87	30.74	0.45	35.32	31.19	60.00	50.00	-24.68	-18.81	Pass
24.2860	9.49	4.36	0.57	10.06	4.93	60.00	50.00	-49.94	-45.07	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

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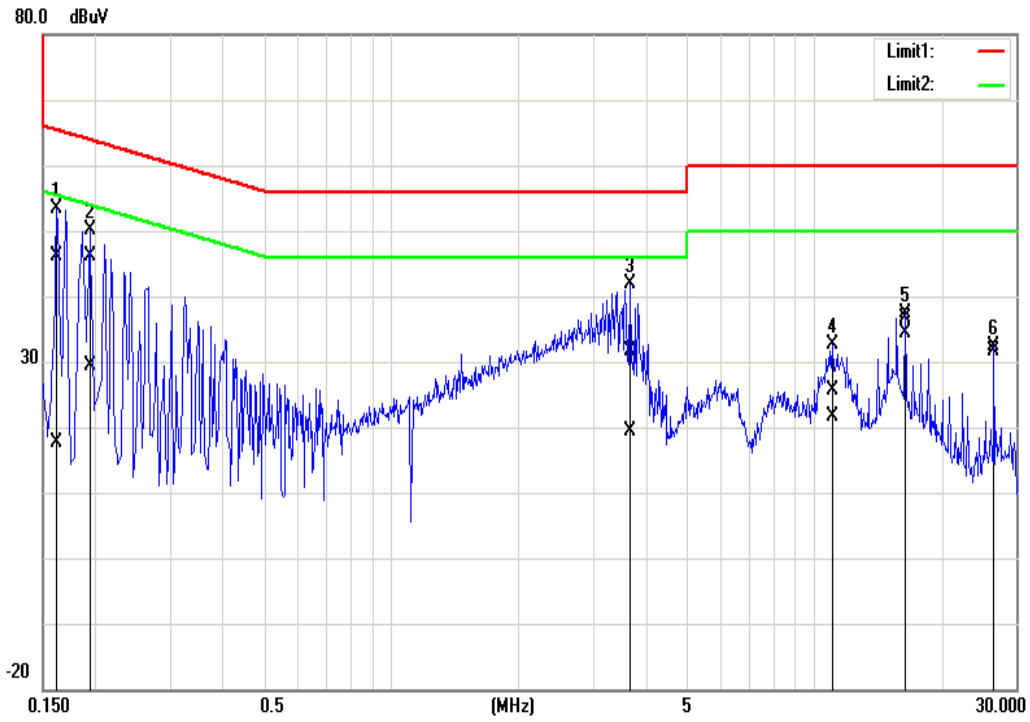
Test Mode:	Mode 2	Temp/Hum	24.3(℃)/ 61%RH
Phase:	Neutral	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao



Frequency (MHz)	Quasi Peak reading dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1620	45.86	17.39	0.20	46.06	17.59	65.36	55.36	-19.30	-37.77	Pass
0.1940	45.90	29.23	0.19	46.09	29.42	63.86	53.86	-17.77	-24.44	Pass
3.6740	31.28	19.14	0.31	31.59	19.45	56.00	46.00	-24.41	-26.55	Pass
11.0740	25.31	21.25	0.41	25.72	21.66	60.00	50.00	-34.28	-28.34	Pass
16.4100	36.06	34.01	0.47	36.53	34.48	60.00	50.00	-23.47	-15.52	Pass
26.6220	31.09	31.08	0.58	31.67	31.66	60.00	50.00	-28.33	-18.34	Pass

Note: 1. Correction factor = LISN loss + Cable loss.

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4.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a)(2), RSS-247 section 5.2(a),

6 dB Bandwidth ：

Limit	Shall be at least 500kHz

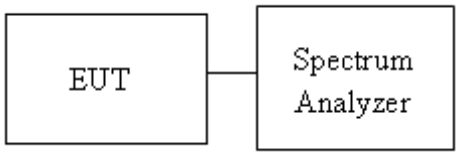
Occupied Bandwidth(99%) ： For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as ANSI C63.10: 2013,

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



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4.2.4 Test Result

Temperature:	22.8~27.1℃	**Test date:**	May 19~June 19, 2023
Humidity:	50~64% RH	**Tested by:**	David Li

Test mode: IEEE 802.11b mode / 2412-2462 MHz				
Channel	**Frequency (MHz)**	**OBW (99%) (MHz)**	**6dB BW (kHz)**	**6dB limit (kHz)**
1	2412	11.952	9153.00	≥500
6	2437	11.945	9146.00	
11	2462	**11.956**	**9154.00**	

Test mode: IEEE 802.11g mode / 2412-2462 MHz				
Channel	**Frequency (MHz)**	**OBW (99%) (MHz)**	**6dB BW (kHz)**	**6dB limit (kHz)**
1	2412	16.787	**16390.00**	≥500
6	2437	**16.793**	**16390.00**	
11	2462	16.791	**16390.00**	

Test mode: IEEE 802.11n HT20 mode / 2412-2462 MHz				
Channel	**Frequency (MHz)**	**OBW (99%) (MHz)**	**6dB BW (kHz)**	**6dB limit (kHz)**
1	2412	**17.708**	**17600.00**	≥500
6	2437	17.707	**17600.00**	
11	2462	17.701	17580.00	

Test mode: IEEE 802.11n HT40 mode / 2422-2452 MHz				
Channel	**Frequency (MHz)**	**OBW (99%) (MHz)**	**6dB BW (kHz)**	**6dB limit (kHz)**
3	2422	37.741	35850.00	≥500
6	2437	**37.747**	**35860.00**	
9	2452	37.734	**35860.00**	

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Test Data (6dB BANDWIDTH)

IEEE 802.11b mode

Low CH

Mid CH

High CH

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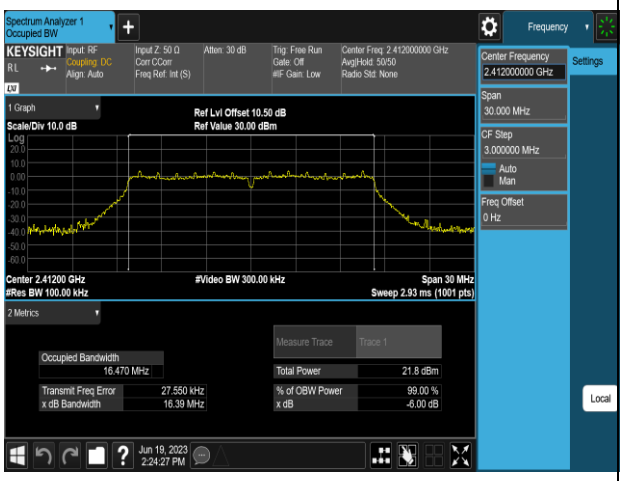
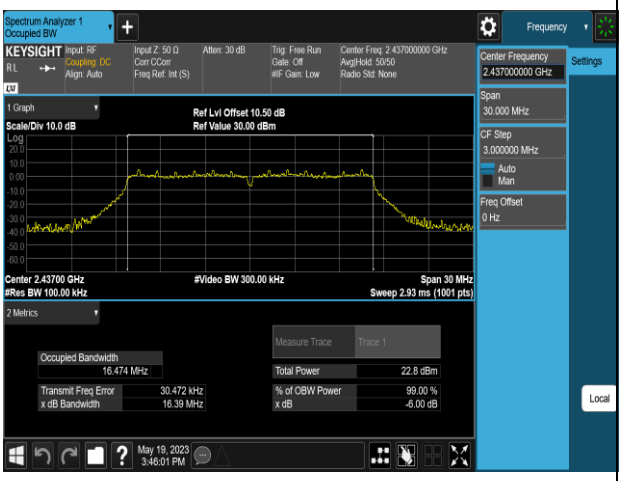
IEEE 802.11g mode

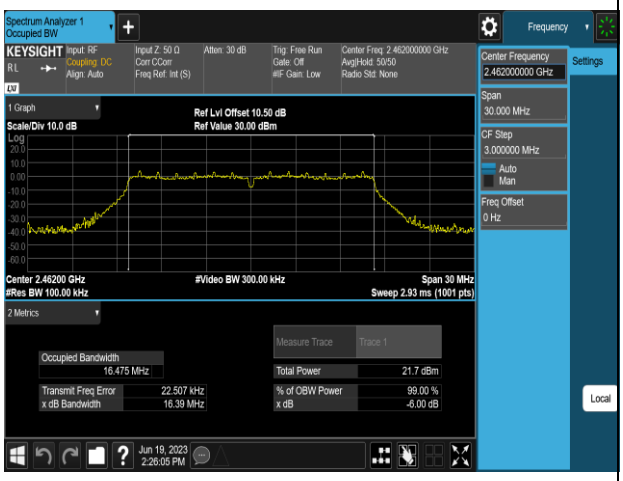
Low CH



Mid CH



High CH



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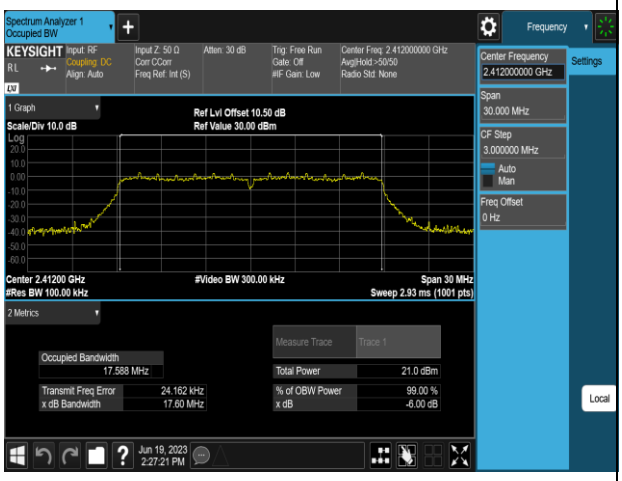
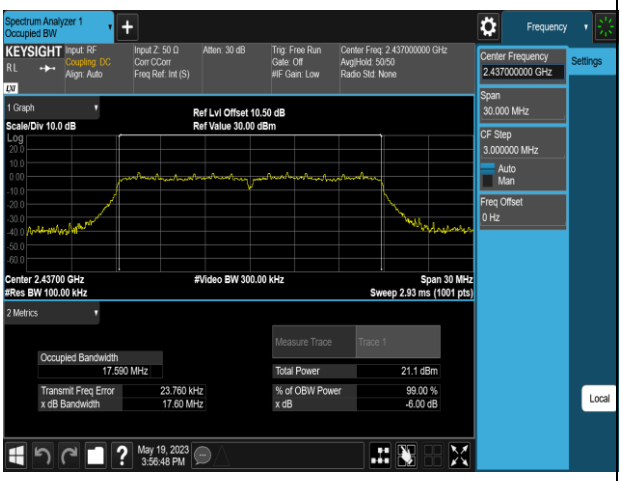
IEEE 802.11n HT20 mode

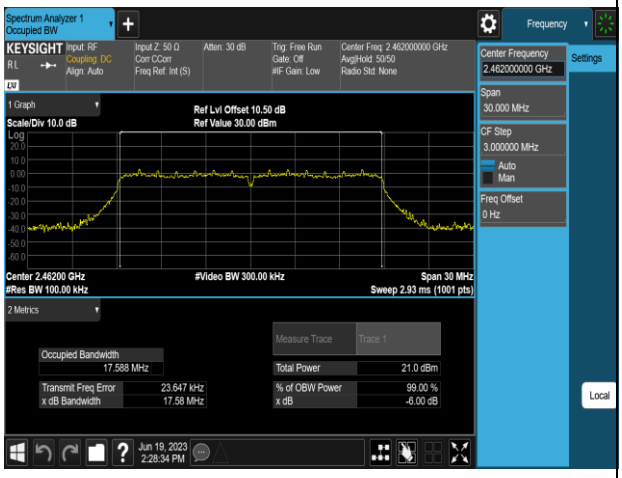
Low CH



Mid CH



High CH



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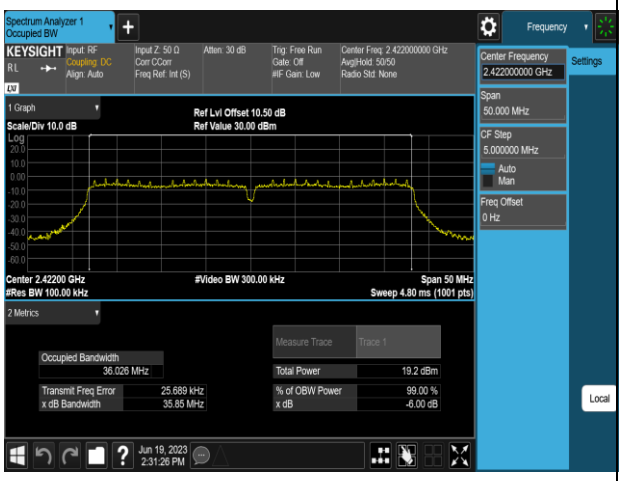
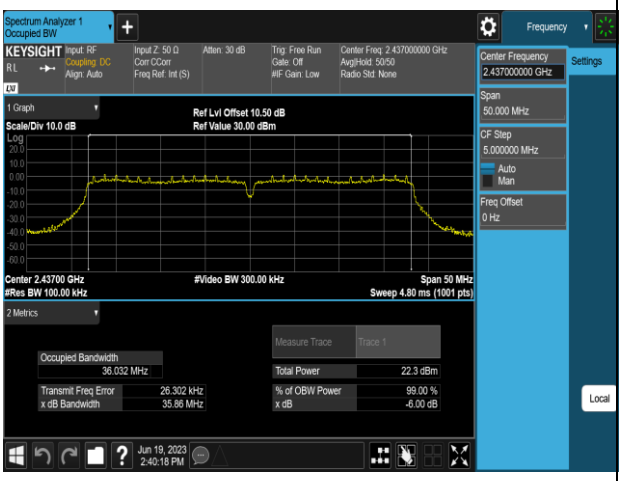
IEEE 802.11n HT40 mode

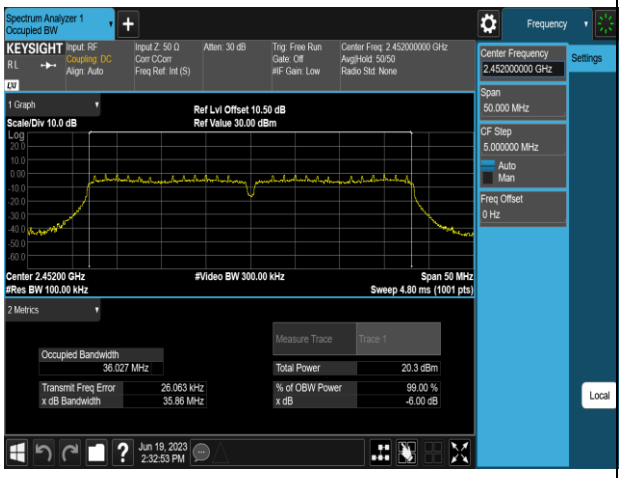
Low CH



Mid CH



High CH



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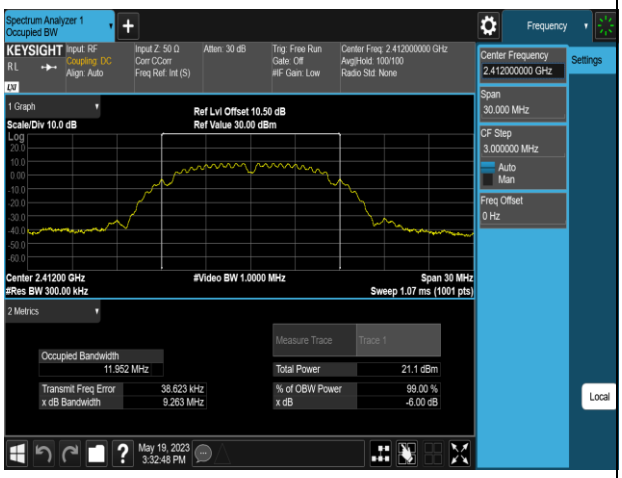
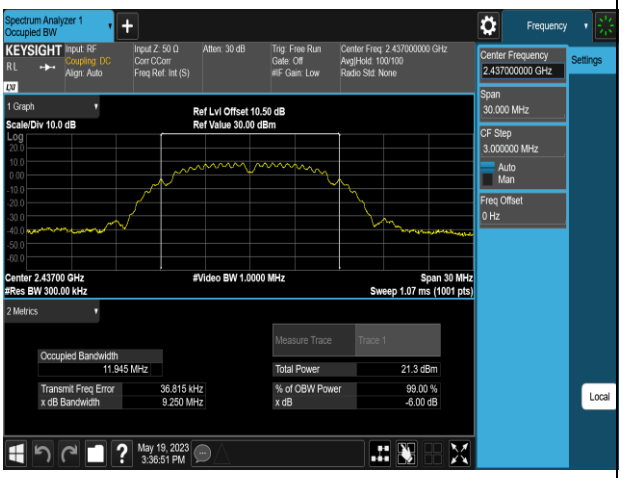
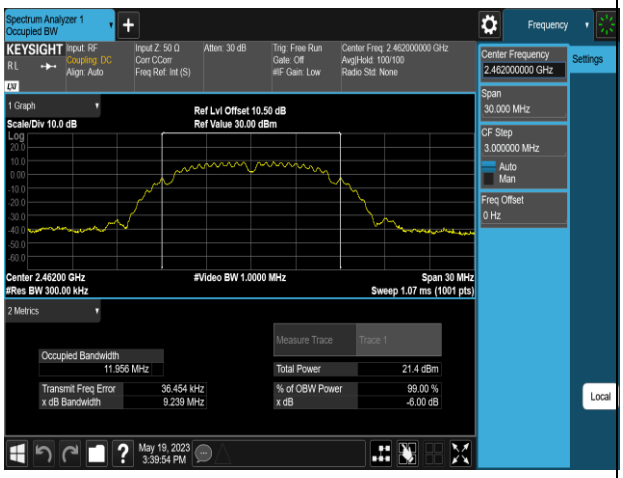
Test Data (BANDWIDTH 99%)

IEEE 802.11b mode	
Low CH	**Mid CH**
	
High CH	
	

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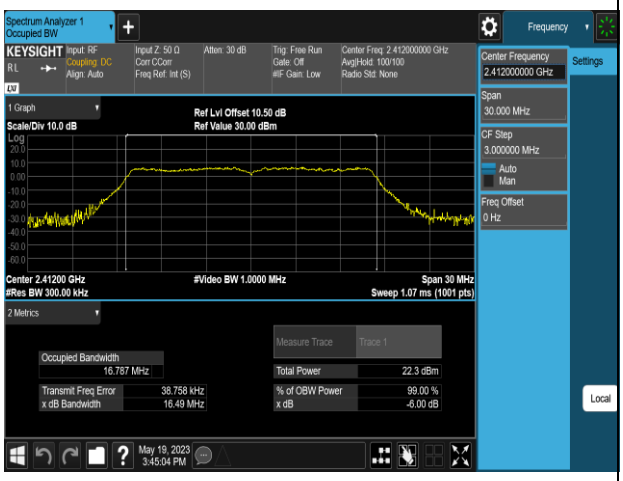
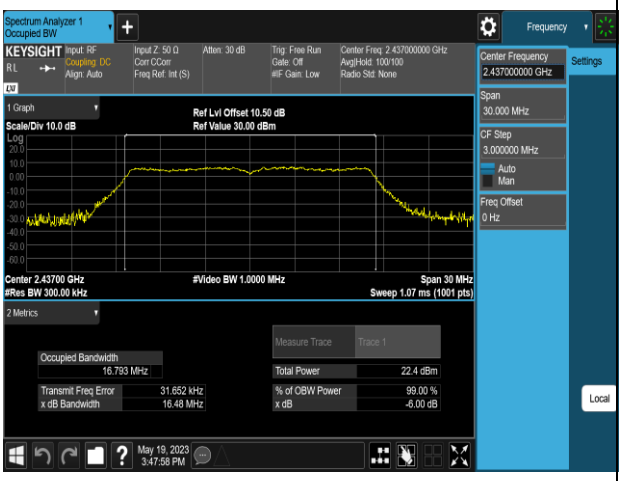
IEEE 802.11g mode

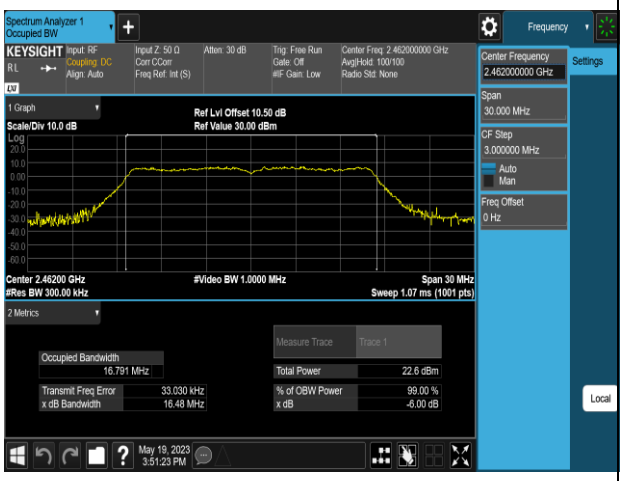
Low CH



Mid CH



High CH



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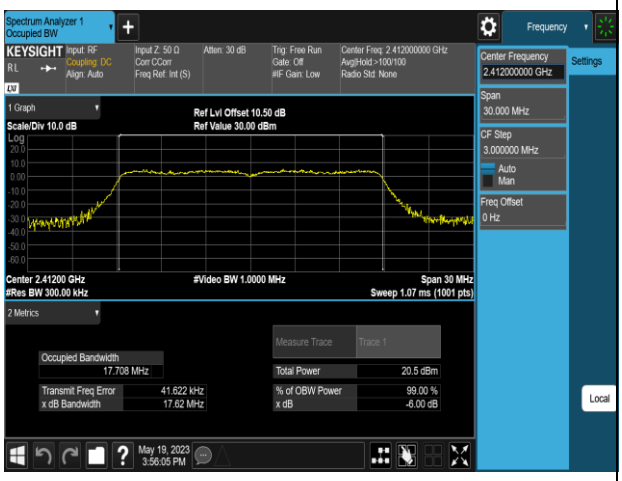
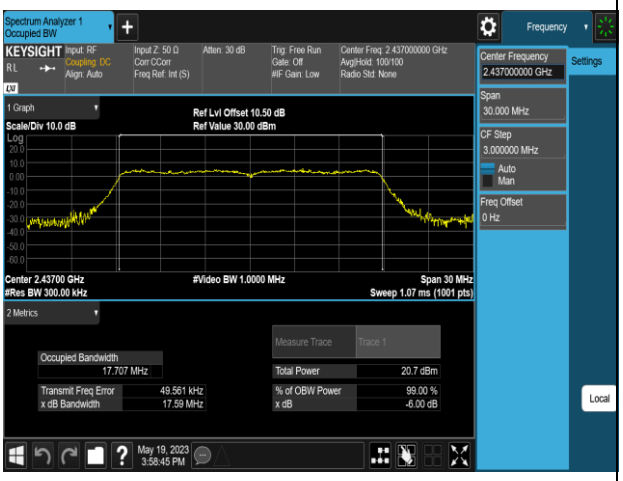
IEEE 802.11n HT20 mode

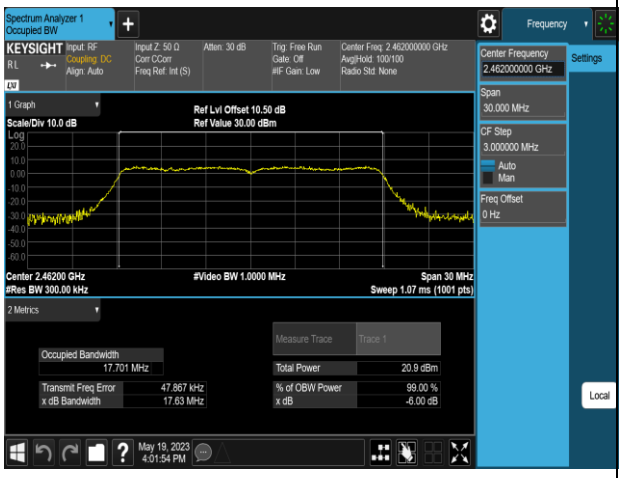
Low CH



Mid CH



High CH



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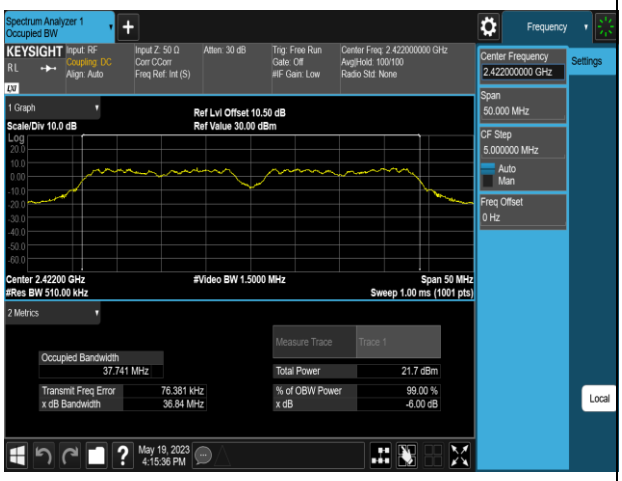
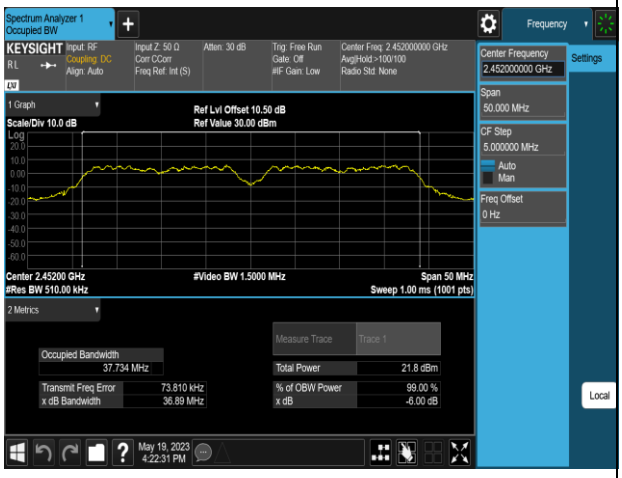
IEEE 802.11n HT40 mode

Low CH



Mid CH

High CH



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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b), §RSS-247 section 5.4(d)

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：

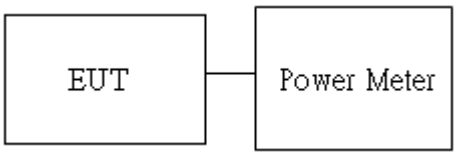
Average output power：For reporting purposes only.

4.3.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

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



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4.3.4 Test Result

Temperature:	22.8~27.1℃	**Test date:**	May 19~June 19, 2023
Humidity:	50~64% RH	**Tested by:**	David Li

Peak Output Power

Test Mode: IEEE 802.11b Mode

802.11b Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Peak Output Power (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	1	13	18.08	30.00	PASS
6	2437	1	16.5	20.88	30.00	PASS
11	2462	1	16.5	**20.96**	30.00	PASS

Test Mode: IEEE 802.11g Mode

802.11g Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Peak Output Power (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	6	14	24.70	30.00	PASS
6	2437	6	15.5	**25.53**	30.00	PASS
11	2462	6	14	24.60	30.00	PASS

Test Mode: IEEE 802.11n HT20 Mode

802.11n_HT_20M Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Peak Output Power (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	MCS0	13	**23.91**	30.00	PASS
6	2437	MCS0	13.5	23.85	30.00	PASS
11	2462	MCS0	13	23.89	30.00	PASS

Test Mode: IEEE 802.11n HT40 Mode

802.11n_HT_40M Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Peak Output Power (dBm)**	**Limit (dBm)**	**RESULT**
3	2422	MCS0	11	22.84	30.00	PASS
6	2437	MCS0	14.5	**25.37**	30.00	PASS
9	2452	MCS0	12	23.89	30.00	PASS

Note: Since DG<6dBi, there is no need to modify the limit value.

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Average Output Power

Test Mode: IEEE 802.11b Mode

802.11b Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Avg. Output Power (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	1	13	13.99	30.00	PASS
6	2437	1	16.5	16.77	30.00	PASS
11	2462	1	16.5	**16.86**	30.00	PASS

Test Mode: IEEE 802.11g Mode

802.11g Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Avg. Output Power (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	6	14	14.56	30.00	PASS
6	2437	6	15.5	**15.39**	30.00	PASS
11	2462	6	14	14.42	30.00	PASS

Test Mode: IEEE 802.11n HT20 Mode

802.11n_HT_20M Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Avg. Output Power (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	MCS0	13	13.81	30.00	PASS
6	2437	MCS0	13.5	**13.82**	30.00	PASS
11	2462	MCS0	13	13.79	30.00	PASS

Test Mode: IEEE 802.11n HT40 Mode

802.11n_HT_40M Ch0						
CH	**Freq. (MHz)**	**Data Rate**	**Power set**	**Avg. Output Power (dBm)**	**Limit (dBm)**	**RESULT**
3	2422	MCS0	11	11.76	30.00	PASS
6	2437	MCS0	14.5	**14.43**	30.00	PASS
9	2452	MCS0	12	12.81	30.00	PASS

Note: Since DG<6dBi, there is no need to modify the limit value.

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EIRP

Test Mode: IEEE 802.11b Mode

802.11b Ch0							
CH	**Freq. (MHz)**	**Data Rate**	**Avg. Output Power (dBm)**	**Antenna Gain (dBi)**	**EIRP (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	1	13.99	4.00	17.99	36	PASS
6	2437	1	16.77	4.00	20.77	36	PASS
11	2462	1	16.86	4.00	**20.86**	36	PASS

Test Mode: IEEE 802.11g Mode

802.11g Ch0							
CH	**Freq. (MHz)**	**Data Rate**	**Avg. Output Power (dBm)**	**Antenna Gain (dBi)**	**EIRP (dBm)**	**Limit (dBm)**	**RESULT**
1	2412	6	14.56	4.00	18.56	36	PASS
6	2437	6	15.39	4.00	**19.39**	36	PASS
11	2462	6	14.42	4.00	18.42	36	PASS

Test Mode: IEEE 802.11n HT20 Mode

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	13.81	4.00	17.81	36	PASS
6	2437	MCS0	13.82	4.00	**17.82**	36	PASS
11	2462	MCS0	13.79	4.00	17.79	36	PASS

Test Mode: IEEE 802.11n HT40 Mode

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	11.76	4.00	15.76	36	PASS
6	2437	MCS0	14.43	4.00	**18.43**	36	PASS
9	2452	MCS0	12.81	4.00	16.81	36	PASS

Note: Since DG<6dBi, there is no need to modify the limit value.

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4.4 POWER SPECTRAL DENSITY

4.4.1 Test Limit

According to §15.247(e), RSS-247 section 5.2(b),

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.

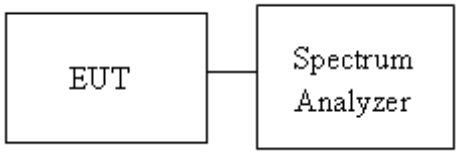
Limit	☒ Antenna not exceed 6 dBi：8dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 8 – (DG – 6)] ☐ Point-to-point operation：

4.4.2 Test Procedure

Test method Refer as ANSI C63.10:2013,

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 and Duty Factor 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



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4.4.4 Test Result

Temperature: 22.8~27.1℃ **Test date:** May 19~June 19, 2023

Humidity: 50~64% RH **Tested by:** David Li

POWER DENSITY 802.11b				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-6.07	-6.07	8.00	PASS
2437	-2.10	-2.10	8.00	PASS
2462	-2.93	-2.93	8.00	PASS

POWER DENSITY 802.11g				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-11.66	-11.66	8.00	PASS
2437	-11.01	-11.01	8.00	PASS
2462	-11.42	-11.42	8.00	PASS

POWER DENSITY 802.11n HT20				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412	-11.4	-11.40	8.00	PASS
2437	-11.78	-11.78	8.00	PASS
2462	-12.51	-12.51	8.00	PASS

POWER DENSITY 802.11n HT40				
Freq. (MHz)	Ch0 PSD	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422	-17.39	-17.39	8.00	PASS
2437	-14.44	-14.44	8.00	PASS
2452	-16.02	-16.02	8.00	PASS

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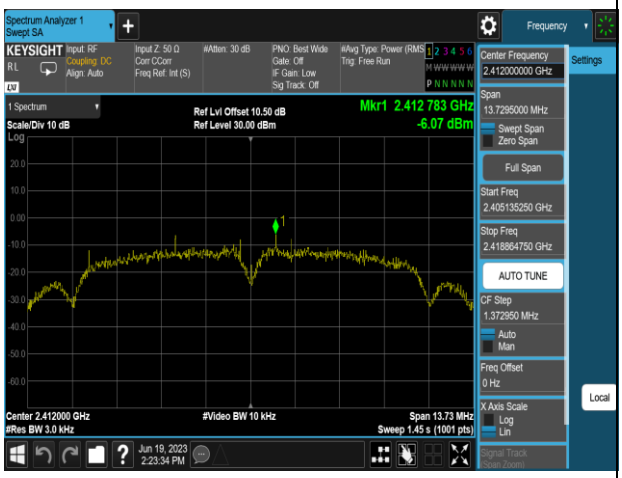
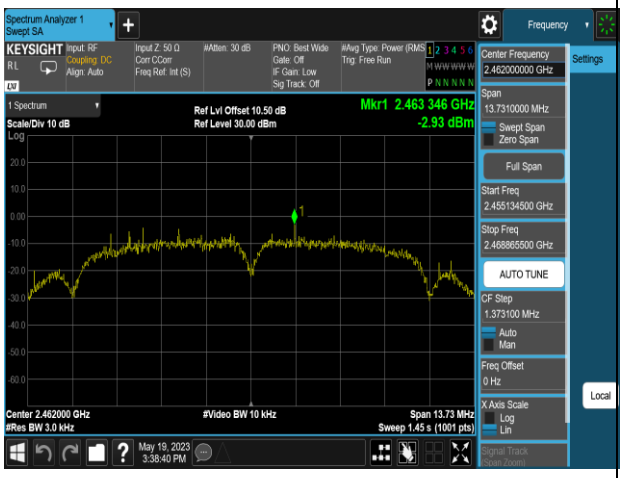
Test Data:

IEEE 802.11b mode	
Low CH	**Mid CH**
	
High CH	
	

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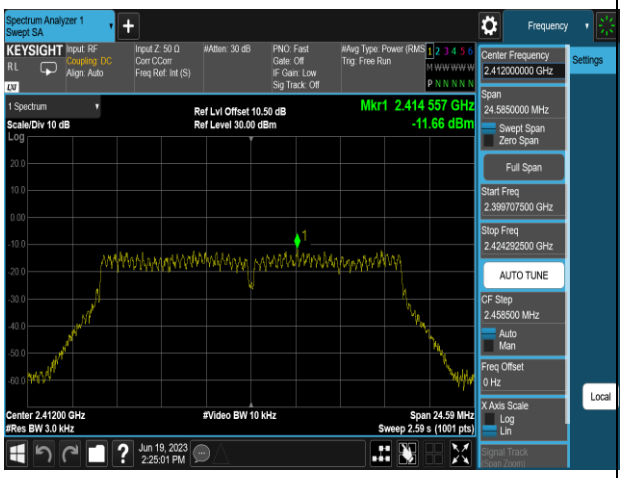
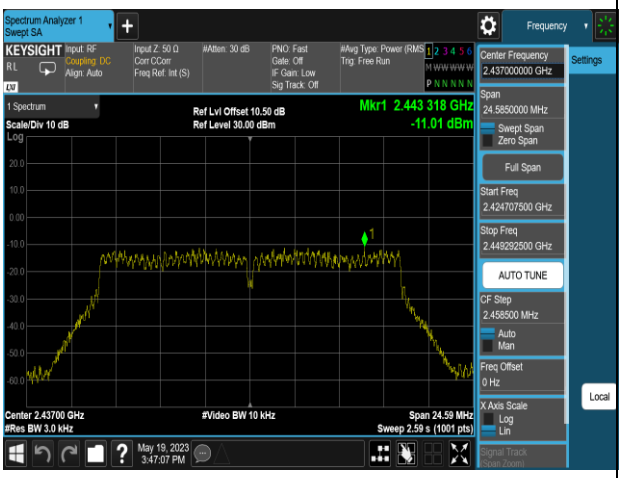
IEEE 802.11g mode

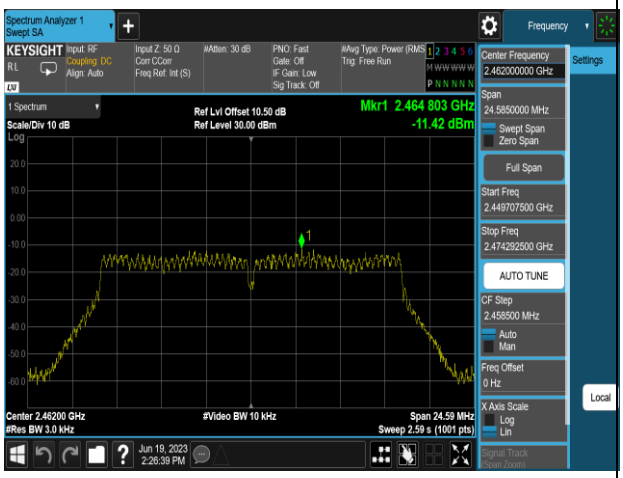
Low CH



Mid CH



High CH



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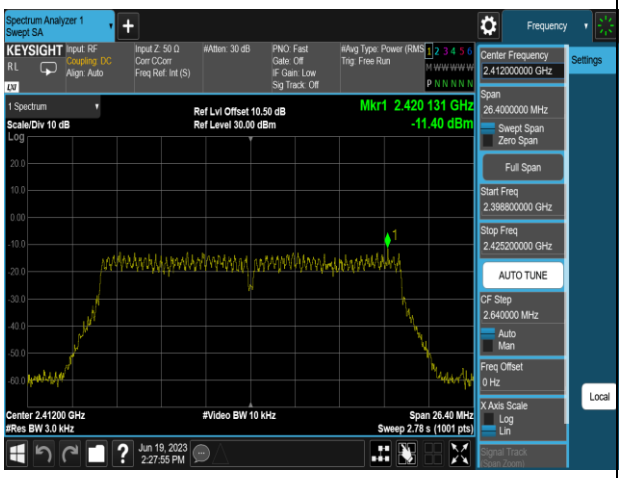
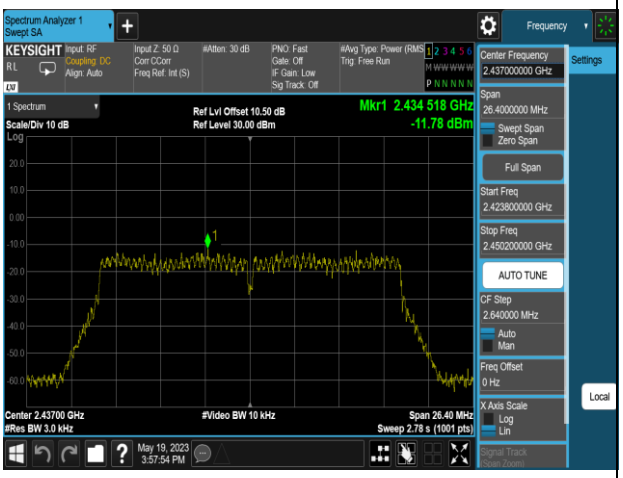
IEEE 802.11n HT20 mode

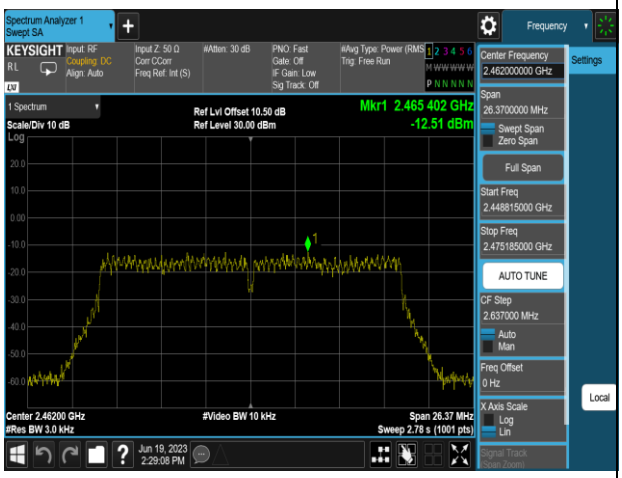
Low CH



Mid CH



High CH



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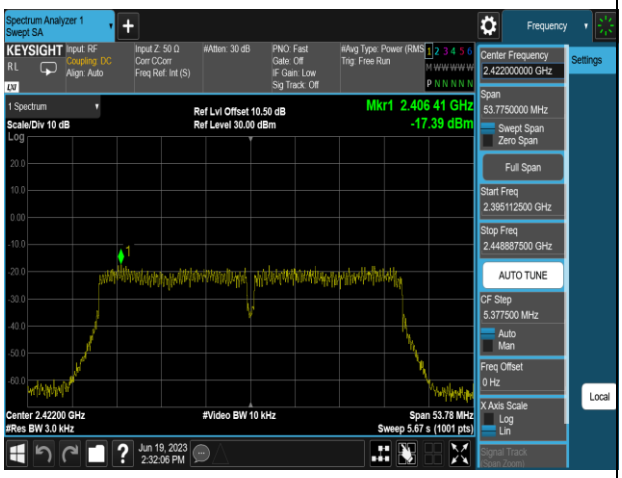
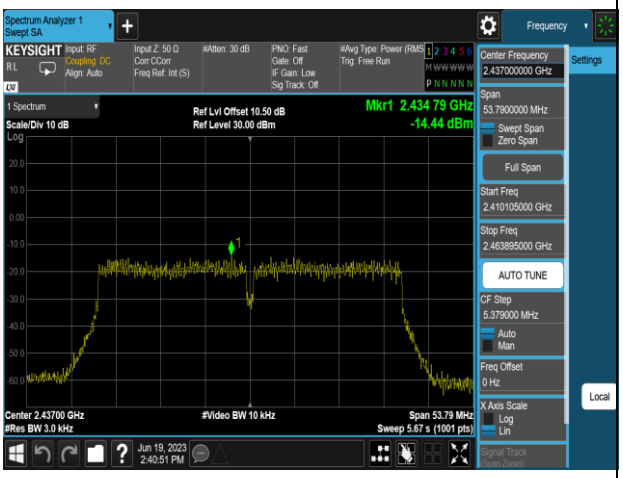
IEEE 802.11n HT40 mode

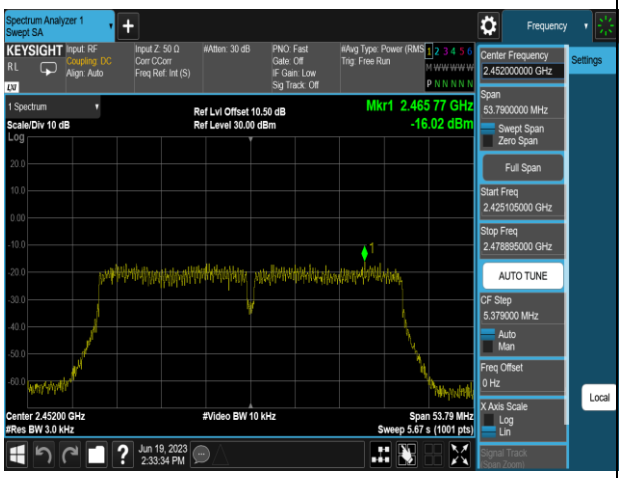
Low CH



Mid CH



High CH



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