

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Report No.: RFBENL-WTW-P24060724

FCC ID: RYK-WNFQ291BEBT

Product: WiFi 7/BT module

Brand: Sparklan

Model No.: WNFQ-291BEI(BT)

Series Model: WNFQ-291BE(BT)

Received Date: 2024/8/16

Test Date: 2024/10/24 ~ 2024/12/20

Issued Date: 2025/4/11

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 723255 / TW2022

Designation Number:

Approved by: _____, **Date:** 2025/4/11
May Chen / Manager

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Prepared by : Phoenix Huang / Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBENL-WTW-P24060724	Original release.	2025/4/11

1 Certificate

Product: WiFi 7/BT module

Brand: Sparklan

Test Model: WNFQ-291BEI(BT)

Series Model: WNFQ-291BE(BT)

Sample Status: Engineering sample

Applicant: SparkLAN Communications, Inc.

Test Date: 2024/10/24 ~ 2024/12/20

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Measurement procedure: ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	N/A	Refer to Note 1 below
15.247(a)(2)	6 dB Bandwidth	N/A	Refer to Note 1 below
15.247(d)	Conducted Out of Band Emissions	N/A	Refer to Note 1 below
15.207	AC Power Conducted Emissions	N/A	Refer to Note 1 below
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -1.0 dB at 199.63 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -11.1 dB at 2483.50 MHz
15.203	Antenna Requirement	Pass	Antenna connector is MHF 4L, I-PEX MHF4, RP-SMA (M), MHF4L to SMA-F not a standard connector.

Note:

- Only RF Output Power and Unwanted Emissions test items were performed for this addendum. The others testing data refer to original test report (Original FCC ID: J9C-QCNCM865).
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.1 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.1 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	WiFi 7/BT module
Brand	Sparklan
Test Model	WNFQ-291BEI(BT)
Series Model	WNFQ-291BE(BT)
Status of EUT	Engineering sample
Power Supply Rating	3.3 Vdc from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDM in VHT mode 4096QAM for OFDMA in 11ax mode 4096QAM for OFDMA in 11be mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to 300 Mbps VHT: up to 400 Mbps 802.11ax: up to 709.1 Mbps 802.11be: up to 688.2 Mbps
Operating Frequency	2.412 GHz ~ 2.472 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20), 802.11be (EHT20): 13 802.11n (HT40), VHT40, 802.11ax (HE40), 802.11be (EHT40): 9
Resource Unit (RU)	Single RU: 26-tone, 52-tone, 106-tone, 242-tone, 484-tone Multi-RU(Small RU):52-tone + 26-tone, 106-tone + 26-tone
Output Power	523.227 mW (27.19 dBm)

Note:

- This report is prepared for FCC class II permissive change. The difference compared with the original design is as the following:
 - ◆ Add Dipole antenna and Chip antenna (Refer to section 3.2)
 - ◆ Change shielding case and add thermal pad.
 - ◆ Change temperature operating range to -40 °C ~ 85 °C
- According to above conditions, there are RF Output Power and Unwanted Emissions test items need to be performed. All data for meeting the requirement is verified.
- All models are listed as below.

Brand	Model	Difference
Sparklan	WNFQ-291BEI(BT)	All models are electrically identical, different model names are for marketing purpose.
	WNFQ-291BE(BT)	

From the above models, model: WNFQ-291BEI(BT) was selected as representative model for the test and its data was recorded in this report.

- There are Bluetooth (EDR, BLE, QHS) and WLAN (2.4 GHz & 5 GHz & 5.9 GHz & 6 GHz) technology used for the EUT.

5. Simultaneously transmission combination.

DBS			
Combination	Technology		
1	WLAN(2.4GHz)_Ant 0+1	WLAN(5GHz)_Ant 0+1	
2	WLAN(2.4GHz)_Ant 0+1	WLAN(6GHz)_Ant 0+1	
HBS+BT			
Combination	Technology		
3	Bluetooth_Ant 0+1	WLAN(5GHz)_Ant 0+1	
4	Bluetooth_Ant 0+1	WLAN(6GHz)_Ant 0+1	
5	WLAN(5GHz_U-NII-1, U-NII-2A)_Ant 0+1	WLAN(5GHz_U-NII-2C, U-NII-3, U-NII-4)_Ant 0+1	Bluetooth
6	WLAN(5GHz_U-NII-1, U-NII-2A)_Ant 0+1	WLAN(6GHz)_Ant 0+1	Bluetooth

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

6. The EUT support OFDMA and Partial RU mode, therefore partial RU combination were investigated and the worst case scenario was identified.
7. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Original									
Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain0/1	Hong-Bo	260-25094	3.53 3.06 3.07 4.81 4.2	2.4~2.4835 5.15~5.25 5.25~5.35 5.47~5.725 5.725~5.850	0.74 1.16 1.18 1.26 1.28	PIFA	MHF 4L	300
2	Chain0/1	Hong-Bo	260-25083	5.09 5.14 5.09 5.16 5.12	5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	1.29 1.35 1.38 1.45 1.50	PIFA	MHF 4L	300
3	Chain0/1	Hong-Bo	260-25084	3.22 3.35 3.42 4.77 4.72 4.71 4.75 4.29 4.81 4.74	2.4~2.4835 5.150~5.250 5.250~5.350 5.470~5.725 5.725~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	0.49 0.76 0.77 0.80 0.84 0.84 0.86 0.91 0.96 0.98	Monopole	MHF 4L	200
Newly									
Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)	
4	Chain0/1	SparkLAN	AD-513AX	3.11 4.46 4.07 4.53 4.06 4.04 3.97	2.4~2.4835 5.150~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	Dipole	I-PEX MHF4	150	
5	Chain0/1	SparkLAN	AD-510AX	2.27 2.88 2.6 3.23 3.34 3.52 3.52	2.4~2.4835 5.150~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	Dipole	RP-SMA (M)	150	
6	Chain0/1	SparkLAN	AD-512AX	2.35 3.00 2.80 2.87 3.02 3.02 2.61	2.4~2.4835 5.150~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	Dipole	RP-SMA (M)	150	
7	Chain0/1	SparkLAN	AD-516AX	1.65 4.3 3.98 4 4 3.91 3.78	2.4~2.4835 5.150~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	Dipole	I-PEX MHF4	250	
8	Chain0/1	Johanson	2450AD18A6050	2 1.5 2.7 2.7 2.7 2.7	2.4~2.4835 5.150~5.850 5.850~5.895 5.925~6.425 6.425~6.525 6.525~6.875 6.875~7.125	Chip	MHF4L to SMA-F	-	

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

2.4 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11be (EHT20)	2TX	2RX
802.11be (EHT40)	2TX	2RX
802.11ax (RU26/52/106/242/484)	2TX	2RX
802.11be (RU26/52/106/242/484 MRU52+26/106+26)	2TX	2RX

Note: The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), VHT mode for 20 MHz (40 MHz), 802.11ax mode for 20 MHz (40 MHz) and 802.11be mode for 20 MHz (40 MHz). Therefore the investigated worst case is the representative mode in test report.

3.3 Channel List

13 channels are provided for 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20), 802.11be (EHT20):

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

9 channels are provided for 802.11n (HT40), VHT40, 802.11ax (HE40), 802.11be (EHT40):

Channel	Frequency	Channel	Frequency
3	2422 MHz	8	2447 MHz
4	2427 MHz	9	2452 MHz
5	2432 MHz	10	2457 MHz
6	2437 MHz	11	2462 MHz
7	2442 MHz		

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. The Dipole and Chip of antenna type in antennas can be used in the following ways: X / Y / Z axis. Pre-scan in these ways and find the worst case as a representative test condition. 2. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates.
Worst Case:	1. Dipole antenna the worst case was found when positioned on (X / Y / Z axis): Y axis 2. Chip antenna the worst case was found when positioned on (X / Y / Z axis): Y axis

Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter	RU/MRU Index
RF Output Power	A	802.11b	CDD	1, 6, 11, 12, 13	DBPSK	1Mb/s	NA
		802.11g		1, 2, 6, 11, 12, 13	BPSK	6Mb/s	NA
		802.11be (EHT20)		1, 2, 6, 11, 12, 13	BPSK	MCS0	NA
		802.11be (EHT40)		3, 4, 6, 8, 9, 10, 11	BPSK	MCS0	NA
		802.11be (EHT20) 26-tone RU		1, 2, 6, 10, 11, 12, 13	BPSK	MCS0	0, 0, 0, 8, 8, 8, 8
		802.11be (EHT20) 52-tone RU		1, 2, 6, 10, 11, 12, 13	BPSK	MCS0	37, 37, 37, 40, 40, 40, 40
		802.11be (EHT20) 106-tone RU		1, 2, 6, 10, 11, 12, 13	BPSK	MCS0	53, 53, 53, 54, 54, 54, 54
Unwanted Emissions below 1 GHz	A, B	802.11b	CDD	1	DBPSK	1Mb/s	NA
Unwanted Emissions above 1 GHz	C, D	802.11g	CDD	13	BPSK	6Mb/s	NA
		802.11be (EHT40)		11	BPSK	MCS0	NA
		802.11be (EHT20) 26-tone RU		13	BPSK	MCS0	8
		802.11be (EHT20) 52-tone RU		13	BPSK	MCS0	40
		802.11be (EHT20) 106-tone RU		13	BPSK	MCS0	54
EUT Configure Mode:	A	EUT only (remove 50 ohm terminator and Connect to the appropriate equipment)					
	B	EUT with 50 ohm terminator					
	C	EUT with Dipole antenna (Model: AD-513AX)					
	D	EUT with Chip antenna (Model: 2450AD18A6050)					

Note: For unwanted emission test items, the tested channel was chosen the worst case as mode represent to report.

3.5 Duty Cycle of Test Signal

802.11b: Duty cycle = 1.362 ms / 1.378 ms x 100% = 98.8%

802.11g: Duty cycle = 2.085 ms / 2.11 ms x 100% = 98.8%

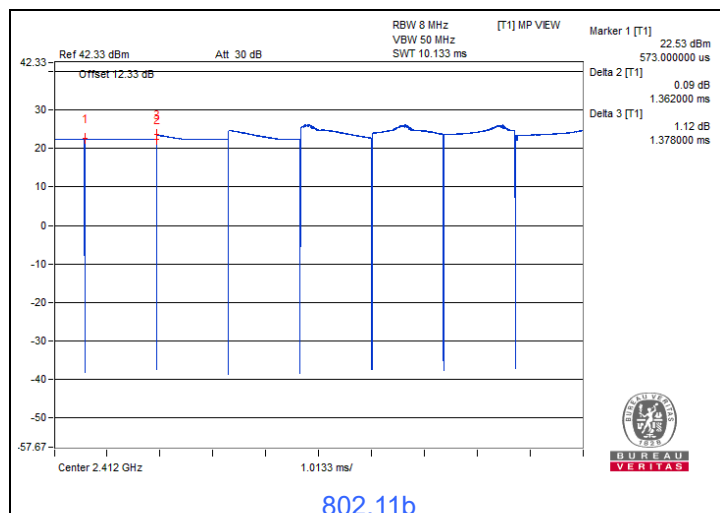
802.11be (EHT20): Duty cycle = 2.713 ms / 2.748 ms x 100% = 98.7%

802.11be (EHT40): Duty cycle = 1.579 ms / 1.601 ms x 100% = 98.6%

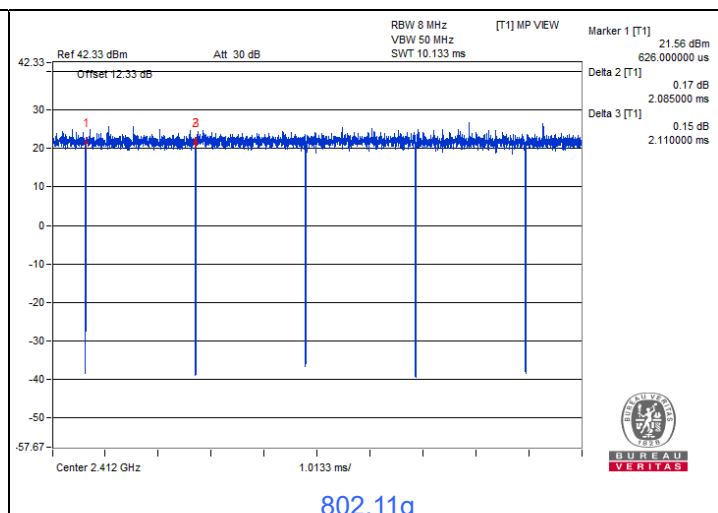
802.11be (EHT20) 26-tone RU: Duty cycle = 5.075 ms / 5.11 ms x 100% = 99.3%

802.11be (EHT20) 52-tone RU: Duty cycle = 5.05 ms / 5.135 ms x 100% = 98.3%

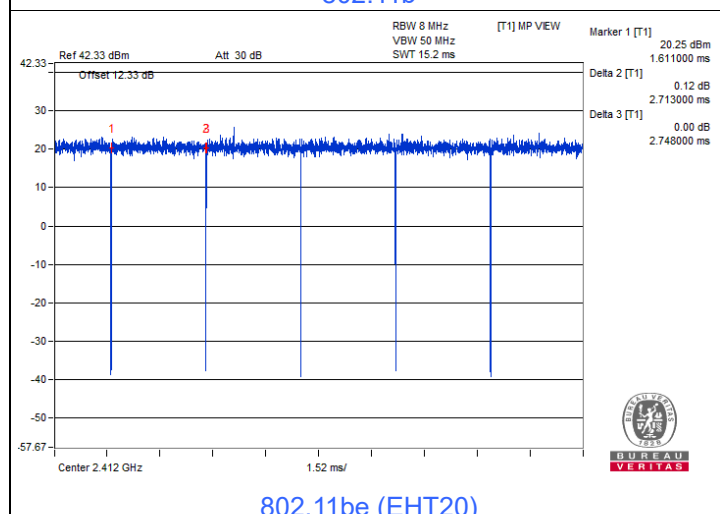
802.11be (EHT20) 106-tone RU: Duty cycle = 3.04 ms / 3.075 ms x 100% = 98.9%



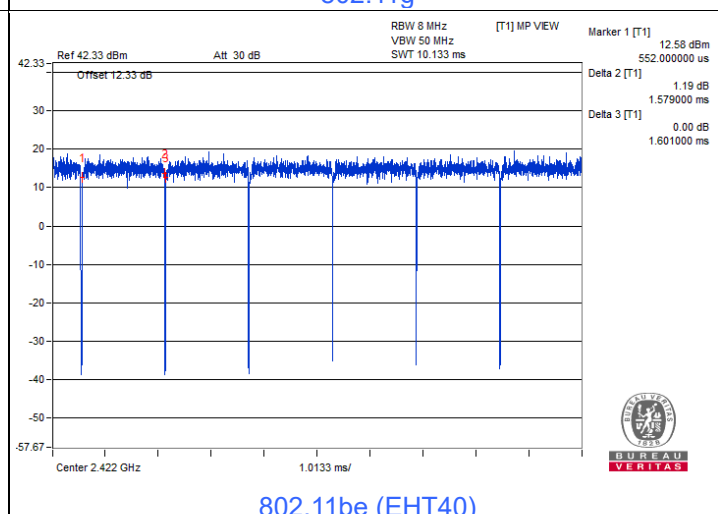
802.11b



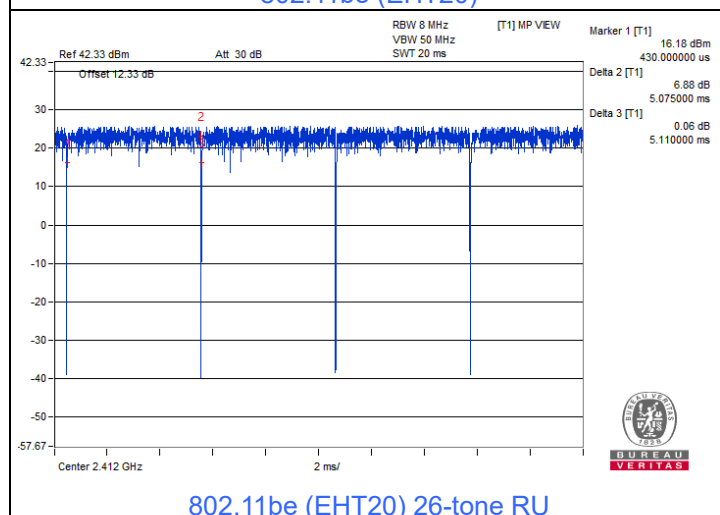
802.11g



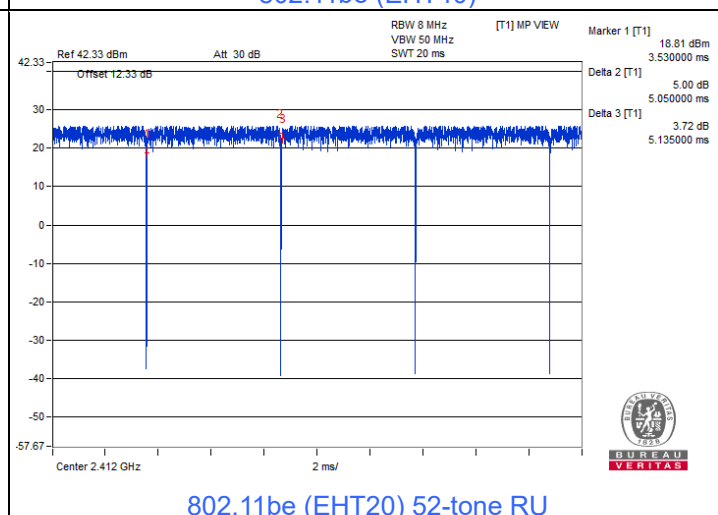
802.11be (EHT20)



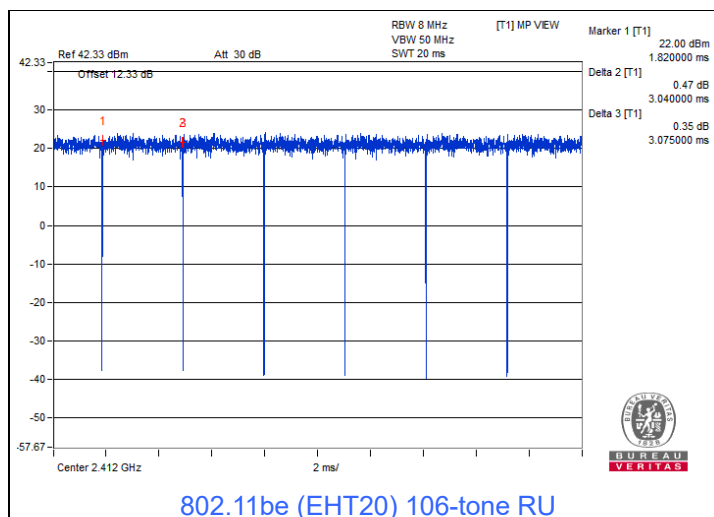
802.11be (EHT40)



802.11be (EHT20) 26-tone RU



802.11be (EHT20) 52-tone RU



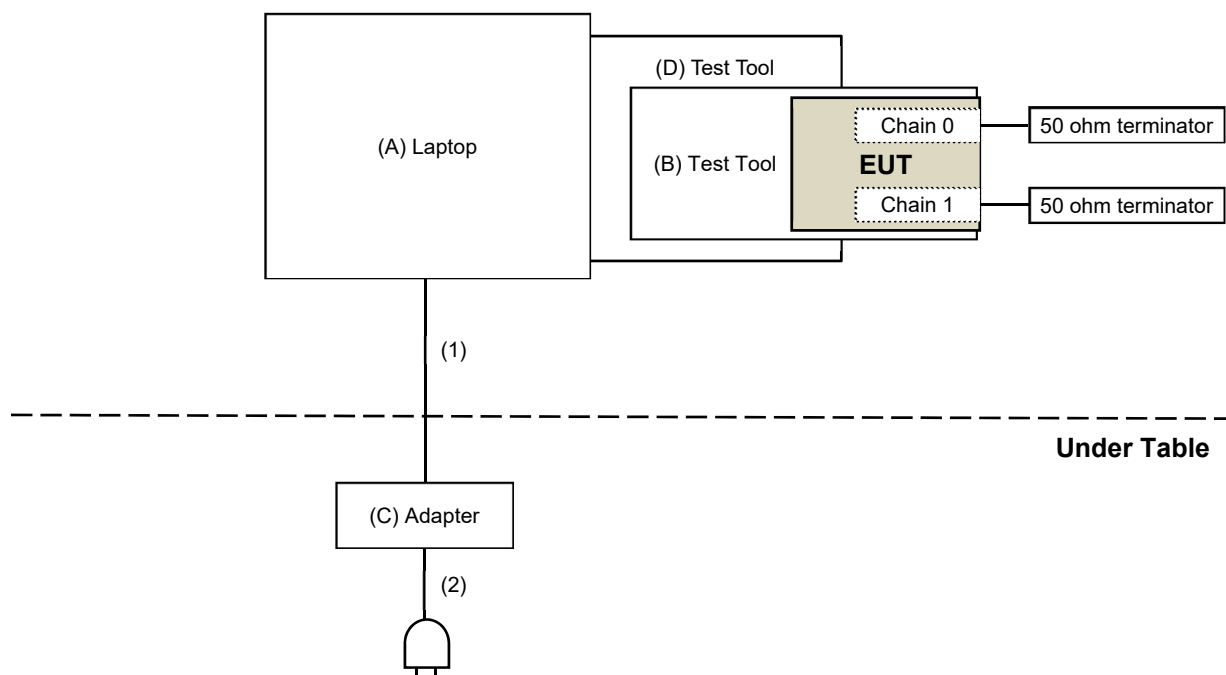
3.6 Test Program Used and Operation Descriptions

Controlling software (WLQN QRCT Module V4.0.00195.4) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For Unwanted Emission test below 1G

Mode B



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Dell	E6430	N/A	N/A	Supplied by applicant
B	Test Tool	Qualcomm	N/A	N/A	N/A	Supplied by applicant
C	Adapter	Dell	LA65NM130	N/A	N/A	Supplied by applicant
D	Test Tool	Qualcomm	N/A	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.8	No	0	Supplied by applicant
2	AC Cable	1	1.5	No	0	Supplied by applicant

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Pulse Power Sensor Anritsu	MA2411B	1726434	2024/6/7	2025/6/6
RF Power Meter Anritsu	ML2495A	1529002	2024/6/7	2025/6/6

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2024/10/26

4.2 Unwanted Emissions below 1 GHz

Mode A

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
MXA Signal Analyzer Keysight	N9020B	MY60112408	2024/3/7	2025/3/6
Software	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2024/10/24

Mode B

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-0842	2024/10/8	2025/10/7
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
EMI Test Receiver R&S	ESR7	102026	2024/3/25	2025/3/24
Fixed Attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2024/3/30	2025/3/29
Loop Antenna TESEQ	HLA 6121	63620	2024/10/17	2025/10/16
Preamplifier EMCI	EMC330N	980538	2024/3/30	2025/3/29
	EMC001340	980142	2024/2/19	2025/2/18
PXA Signal Analyzer Keysight	N9030B	MY57141948	2024/5/20	2025/5/19
RF Coaxial Cable JYBAO	5D-FB	LOOPCAB-001	2024/2/19	2025/2/18
		LOOPCAB-002	2024/2/19	2025/2/18
RF Coaxial Cable PEWC	8D	966-5-1	2024/3/30	2025/3/29
		966-5-2	2024/3/30	2025/3/29
		966-5-3	2024/3/30	2025/3/29
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2024/10/29

4.3 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
EMI Test Receiver R&S	ESR7	102026	2024/3/25	2025/3/24
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2023/11/12 2024/11/10	2024/11/11 2025/11/9
	BBHA 9170	9170-739	2023/11/12 2024/11/10	2024/11/11 2025/11/9
Preamplifier EMCI	EMC12630SE	980509	2024/1/29	2025/1/28
	EMC184045SE	980387	2024/8/8	2025/8/7
PXA Signal Analyzer Keysight	N9030B	MY57141948	2024/5/20	2025/5/19
RF Coaxial Cable EMCI	EMC102-KM-KM-1200	160924	2024/1/29	2025/1/28
	EMC102-KM-KM-4000	200214	2024/1/29	2025/1/28
	EMC104-SM-SM-1500	180503	2024/3/16	2025/3/15
	EMC104-SM-SM-2000	180501	2024/3/16	2025/3/15
	EMC104-SM-SM-6000	180506	2024/3/16	2025/3/15
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2024/10/29 ~ 2024/12/20

5 Limits of Test Items

5.1 RF Output Power

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

5.2 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = $20 \log$ Emission level (uV/m).

5.3 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

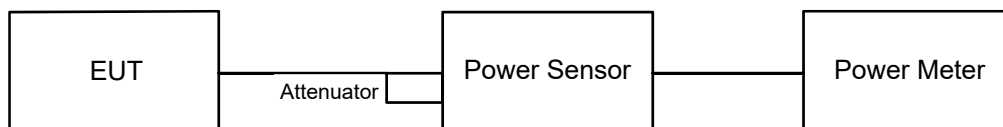
Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = $20 \log$ Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



6.1.2 Test Procedure

Peak Power:

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average Power:

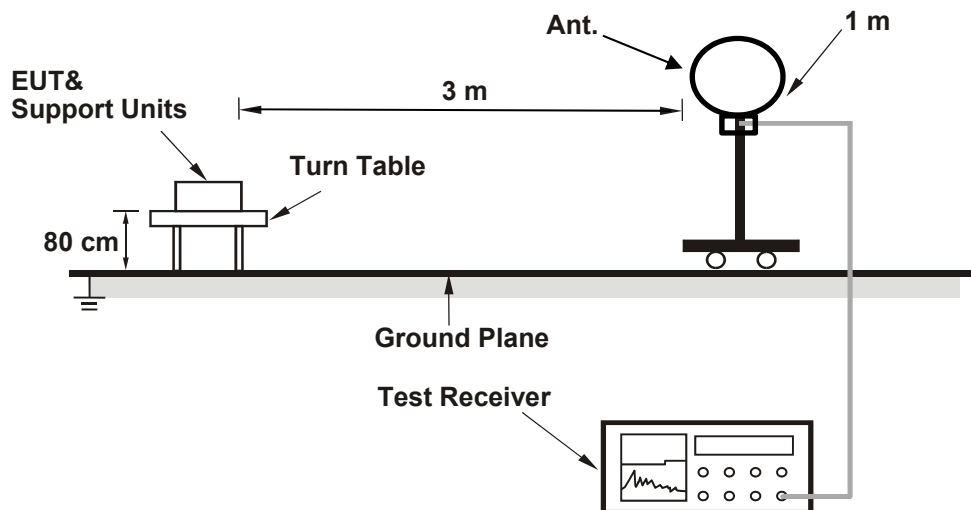
Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

6.2 Unwanted Emissions below 1 GHz

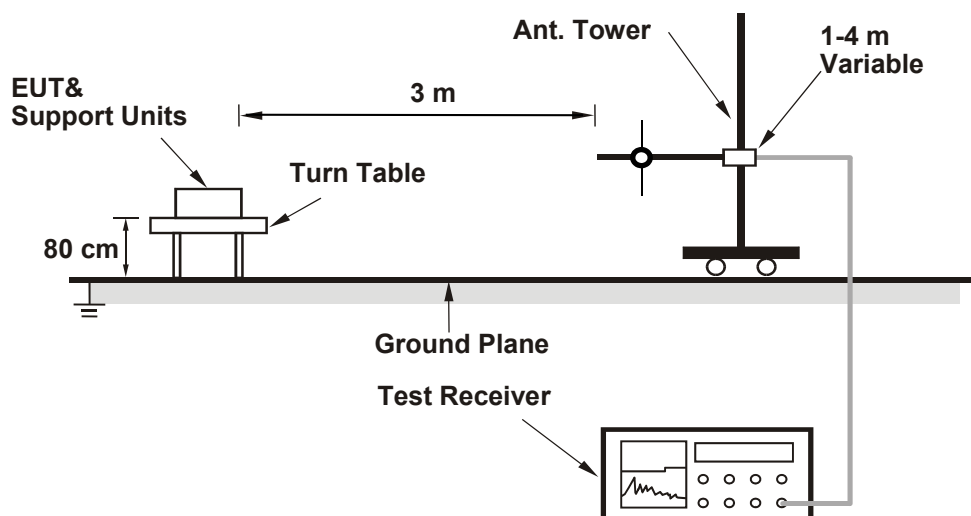
6.2.1 Test Setup

For Radiated Configuration:

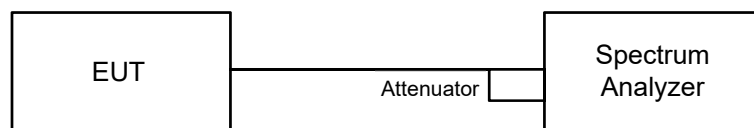
For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For Conducted Configuration:



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.2.2 Test Procedure

Radiated versus Conducted Measurement.

The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.

The following steps was performed:

- a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.
- b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.
- c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.
- d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)
- e. For all of Radiation emission test

For Radiated emission below 30 MHz

- e-1.1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- e-1.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- e-1.3. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- e-1.4. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e-1.5. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

- e-2.1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- e-2.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- e-2.3. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e-2.4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e-2.5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

Radiated versus Conducted Measurement

For Radiated measurement:

The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation).

For Conducted measurement:

The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Unwanted Emission Convert Formula

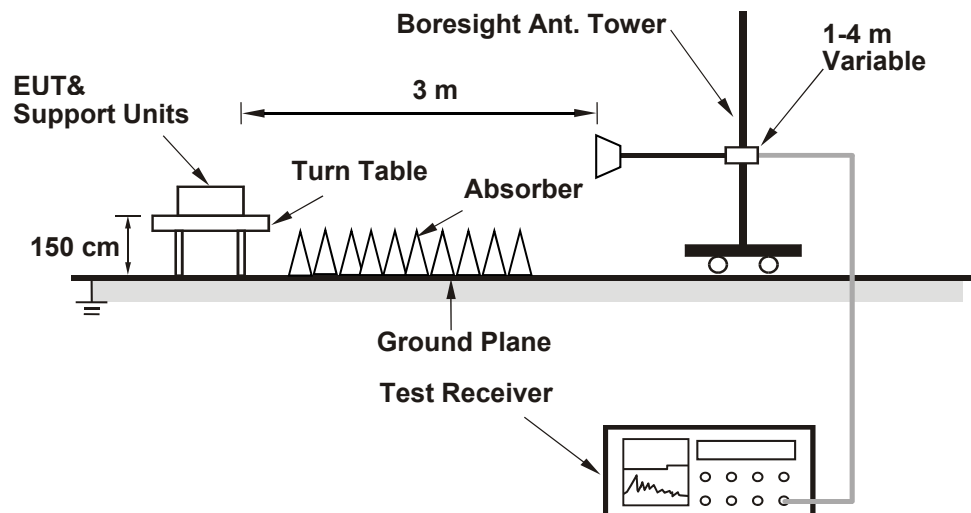
- a. $\text{Emission Level (dBuV/m)} = \text{EIRP Level (dBm)} - 20\log(d) + 104.8$
 $d = \text{measurement distance in 3 meters.}$
- b. $\text{EIRP Level (dBm)} = \text{Raw Value(dBm)} + \text{Correction Factor(dB)}$
- c. Correction Factor is directional gain, and the composite gain will be used when signal support the correlated signal.
 For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands.
 For the band edge the gain for the specific band may have been used.

Notes:

1. In restricted bands below 1000 MHz, add upper bound on ground plane reflection:
 For frequencies between 30 MHz and 1000 MHz, add 4.7 dB.
2. The conducted emission test was considered some factor to compute test result.

6.3 Unwanted Emissions above 1 GHz

6.3.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.3.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko
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For Peak Power

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	21.52	21.15	272.222	24.35	30	Pass
6	2437	21.30	20.88	257.358	24.11	30	Pass
11	2462	21.57	20.79	263.499	24.21	30	Pass
12	2467	19.92	19.96	197.258	22.95	30	Pass
13	2472	14.04	14.08	50.937	17.07	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.65	23.00	431.266	26.35	30	Pass
2	2417	23.19	23.51	432.837	26.36	30	Pass
6	2437	23.38	23.01	417.757	26.21	30	Pass
11	2462	22.02	21.92	314.817	24.98	30	Pass
12	2467	19.55	19.29	175.075	22.43	30	Pass
13	2472	1.55	1.16	2.735	4.37	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.00	23.08	402.762	26.05	30	Pass
2	2417	23.41	23.80	459.164	26.62	30	Pass
6	2437	24.11	23.43	477.925	26.79	30	Pass
11	2462	20.98	20.01	225.545	23.53	30	Pass
12	2467	19.88	19.41	184.572	22.66	30	Pass
13	2472	1.48	0.69	2.578	4.11	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	19.11	19.24	165.416	22.19	30	Pass
4	2427	19.89	19.96	196.582	22.94	30	Pass
6	2437	21.66	21.44	285.87	24.56	30	Pass
8	2447	19.14	18.74	156.852	21.95	30	Pass
9	2452	18.74	18.66	148.268	21.71	30	Pass
10	2457	16.95	16.42	93.398	19.70	30	Pass
11	2462	0.27	-0.25	2.0082	3.03	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 26-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.61	23.23	439.993	26.43	30	Pass
2	2417	23.42	23.31	434.075	26.38	30	Pass
6	2437	24.37	23.56	500.513	26.99	30	Pass
10	2457	23.91	23.18	454.006	26.57	30	Pass
11	2462	23.16	22.89	401.55	26.04	30	Pass
12	2467	21.73	22.30	318.76	25.03	30	Pass
13	2472	-3.46	-3.58	0.8893	-0.51	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 52-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.40	23.06	421.078	26.24	30	Pass
2	2417	23.55	23.19	434.914	26.38	30	Pass
6	2437	24.01	23.40	470.544	26.73	30	Pass
10	2457	24.12	22.55	438.113	26.42	30	Pass
11	2462	21.82	23.06	354.357	25.49	30	Pass
12	2467	20.93	21.32	259.399	24.14	30	Pass
13	2472	-2.22	-2.34	1.1832	0.73	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11be (EHT20) 106-tone RU

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	24.11	23.86	500.853	27.00	30	Pass
2	2417	24.17	23.81	501.652	27.00	30	Pass
6	2437	24.54	23.78	523.227	27.19	30	Pass
10	2457	23.91	23.11	450.681	26.54	30	Pass
11	2462	23.21	22.71	396.049	25.98	30	Pass
12	2467	20.51	20.25	218.386	23.39	30	Pass
13	2472	-0.06	-0.27	1.926	2.85	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.83	18.70	150.515	21.78
6	2437	18.94	18.27	145.486	21.63
11	2462	18.95	18.11	143.238	21.56
12	2467	17.12	17.29	105.103	20.22
13	2472	11.60	11.70	29.245	14.66

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.37	17.74	128.136	21.08
2	2417	18.42	17.85	130.456	21.15
6	2437	18.34	17.75	127.8	21.07
11	2462	16.81	16.46	92.232	19.65
12	2467	14.33	14.08	52.688	17.22
13	2472	-4.03	-3.70	0.8219	-0.85

802.11be (EHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.22	17.37	107.299	20.31
2	2417	17.85	17.99	123.904	20.93
6	2437	18.34	17.82	128.768	21.10
11	2462	14.50	14.36	55.474	17.44
12	2467	13.80	13.70	47.431	16.76
13	2472	-4.84	-4.33	0.6971	-1.57

802.11be (EHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	14.30	14.31	53.893	17.32
4	2427	14.89	14.98	62.309	17.95
6	2437	16.49	16.51	89.337	19.51
8	2447	14.45	14.36	55.151	17.42
9	2452	13.98	13.76	48.772	16.88
10	2457	11.84	11.78	30.342	14.82
11	2462	-4.96	-4.82	0.6488	-1.88

802.11be (EHT20) 26-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.80	17.83	120.93	20.83
2	2417	17.83	18.05	124.5	20.95
6	2437	18.96	17.93	140.791	21.49
10	2457	18.65	17.35	127.607	21.06
11	2462	17.83	17.74	120.103	20.80
12	2467	15.80	15.91	77.013	18.87
13	2472	-8.24	-8.31	0.298	-5.26

802.11be (EHT20) 52-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.92	18.15	127.257	21.05
2	2417	17.75	17.97	122.228	20.87
6	2437	18.86	17.84	137.727	21.39
10	2457	18.74	17.09	125.985	21.00
11	2462	17.52	17.37	111.069	20.46
12	2467	16.00	16.19	81.402	19.11
13	2472	-7.48	-6.98	0.3791	-4.21

802.11be (EHT20) 106-tone RU

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	18.36	18.19	134.466	21.29
2	2417	18.59	18.28	139.575	21.45
6	2437	19.04	18.39	149.192	21.74
10	2457	18.72	17.60	132.017	21.21
11	2462	17.52	17.13	108.135	20.34
12	2467	15.36	15.37	68.791	18.38
13	2472	-4.82	-4.16	0.7133	-1.47

7.2 Unwanted Emissions below 1 GHz

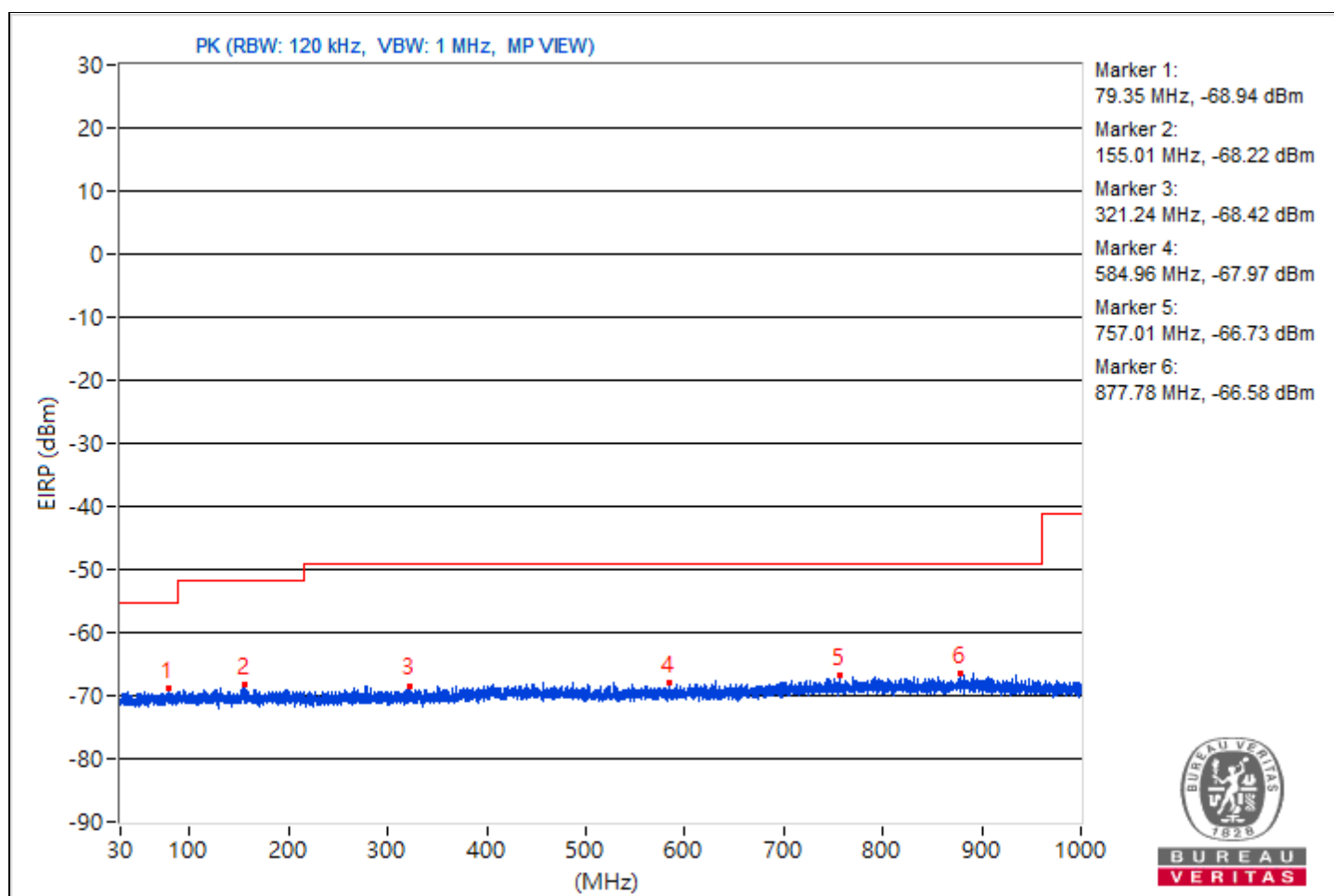
Mode A

RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	30 MHz ~ 1 GHz	Environmental Conditions	22°C, 11% RH
Tested By	Kevin Ko		

Conducted Unwanted Emissions								
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value Chain 0 (dBm)	Raw Value Chain 1 (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	79.35	26.32 PK	40	-13.68	-80.62	-83.46	9.86	-68.94
2	155.01	27.04 PK	43.5	-16.46	-83.07	-79.74	9.86	-68.22
3	321.24	26.84 PK	46	-19.16	-80.06	-83.02	9.86	-68.42
4	584.96	27.29 PK	46	-18.71	-82.45	-79.66	9.86	-67.97
5	757.01	28.53 PK	46	-17.47	-79.15	-80.11	9.86	-66.73
6	877.78	28.68 PK	46	-17.32	-78.56	-80.58	9.86	-66.58

Notes:

1. Margin value = Emission Level - Limit value
2. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



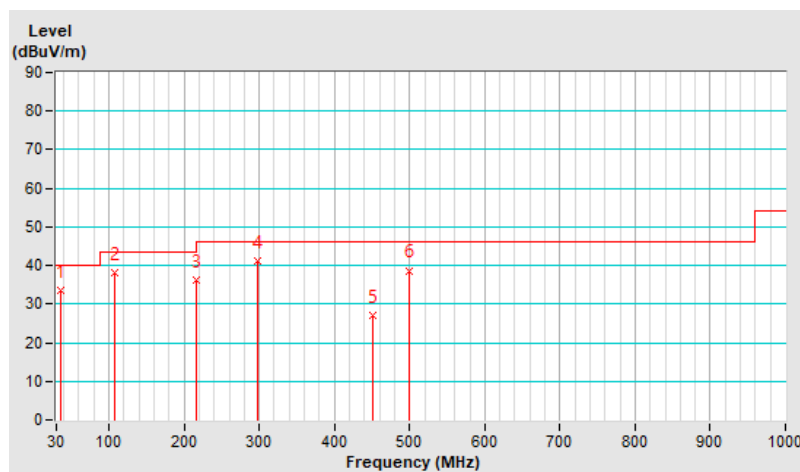
Mode B

RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24 °C, 65 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	35.47	33.6 QP	40.0	-6.4	2.00 H	288	52.0	-18.4
2	108.24	38.2 QP	43.5	-5.3	1.50 H	313	58.9	-20.7
3	216.35	36.1 QP	46.0	-9.9	1.50 H	154	57.0	-20.9
4	297.73	41.3 QP	46.0	-4.7	1.00 H	188	58.3	-17.0
5	450.56	27.2 QP	46.0	-18.8	2.00 H	310	40.0	-12.8
6	499.44	38.7 QP	46.0	-7.3	3.00 H	183	50.7	-12.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

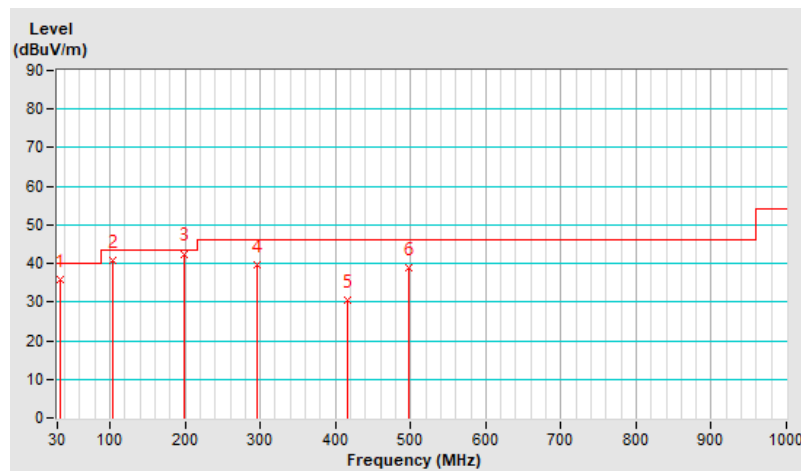


RF Mode	802.11b	Channel	CH 1 : 2412 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	24 °C, 65 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	33.41	35.9 QP	40.0	-4.1	1.00 V	262	54.5	-18.6
2	103.32	40.9 QP	43.5	-2.6	3.00 V	311	62.4	-21.5
3	199.63	42.5 QP	43.5	-1.0	2.00 V	145	63.4	-20.9
4	296.20	39.7 QP	46.0	-6.3	1.00 V	188	56.7	-17.0
5	417.00	30.4 QP	46.0	-15.6	4.00 V	217	44.1	-13.7
6	496.84	38.9 QP	46.0	-7.1	1.50 V	308	50.9	-12.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.3 Unwanted Emissions above 1 GHz

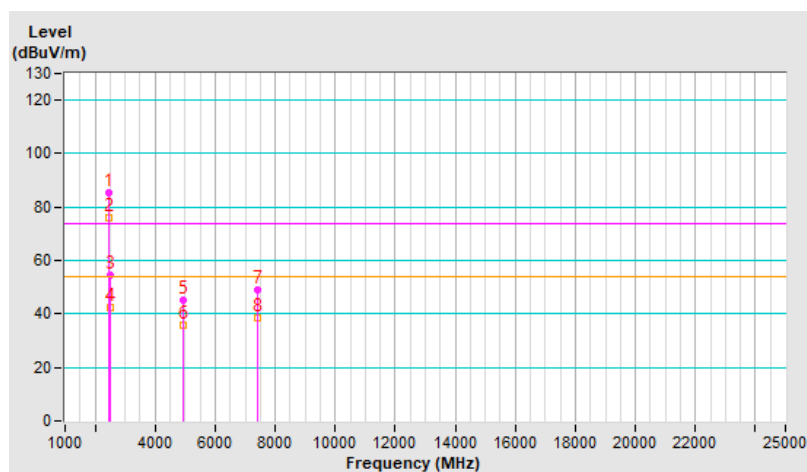
Mode C

RF Mode	802.11g	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	85.6 PK			1.27 H	116	89.0	-3.4
2	*2472.00	75.9 AV			1.27 H	116	79.3	-3.4
3	2483.50	54.5 PK	74.0	-19.5	1.27 H	116	57.9	-3.4
4	2483.50	42.6 AV	54.0	-11.4	1.27 H	116	46.0	-3.4
5	4944.00	45.4 PK	74.0	-28.6	2.57 H	360	43.8	1.6
6	4944.00	35.7 AV	54.0	-18.3	2.57 H	360	34.1	1.6
7	7416.00	49.0 PK	74.0	-25.0	3.01 H	289	41.2	7.8
8	7416.00	38.3 AV	54.0	-15.7	3.01 H	289	30.5	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

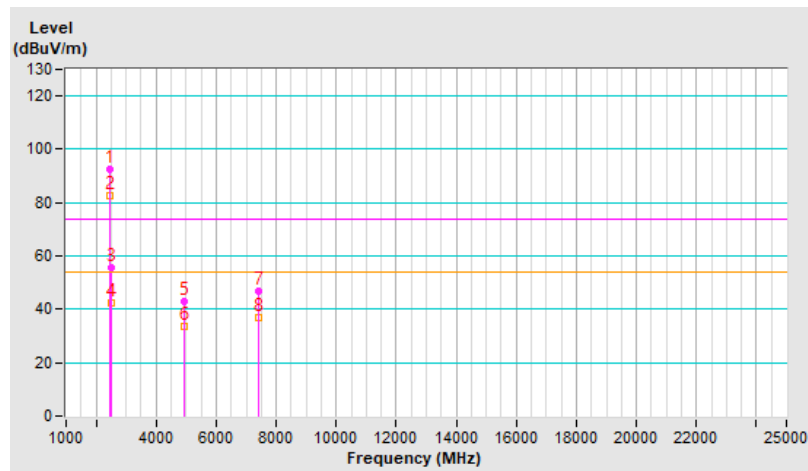


RF Mode	802.11g	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	92.7 PK			1.66 V	3	96.1	-3.4
2	*2472.00	82.8 AV			1.66 V	3	86.2	-3.4
3	2483.50	55.4 PK	74.0	-18.6	1.66 V	3	58.8	-3.4
4	2483.50	42.3 AV	54.0	-11.7	1.66 V	3	45.7	-3.4
5	4944.00	42.8 PK	74.0	-31.2	3.84 V	275	41.2	1.6
6	4944.00	33.6 AV	54.0	-20.4	3.84 V	275	32.0	1.6
7	7416.00	46.7 PK	74.0	-27.3	3.03 V	283	38.9	7.8
8	7416.00	37.1 AV	54.0	-16.9	3.03 V	283	29.3	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

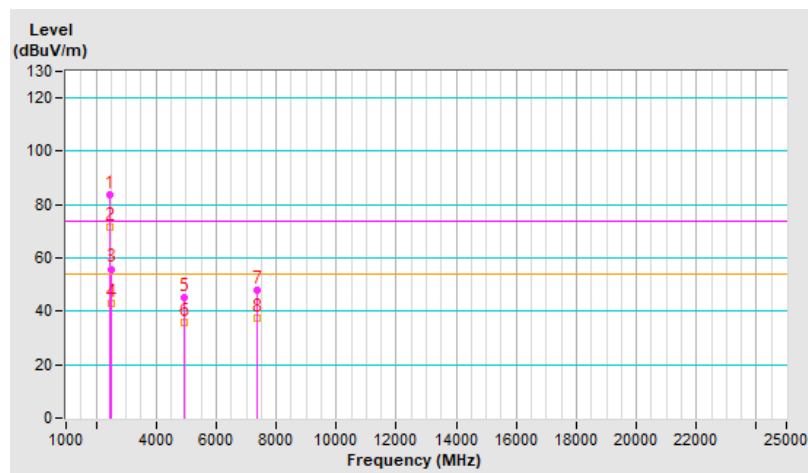


RF Mode	802.11be (EHT40)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	83.6 PK			1.24 H	116	87.1	-3.5
2	*2462.00	71.5 AV			1.24 H	116	75.0	-3.5
3	2483.50	55.9 PK	74.0	-18.1	1.24 H	116	59.3	-3.4
4	2483.50	42.9 AV	54.0	-11.1	1.24 H	116	46.3	-3.4
5	4924.00	45.3 PK	74.0	-28.7	2.64 H	360	43.7	1.6
6	4924.00	36.0 AV	54.0	-18.0	2.64 H	360	34.4	1.6
7	7386.00	47.9 PK	74.0	-26.1	3.09 H	299	40.0	7.9
8	7386.00	37.5 AV	54.0	-16.5	3.09 H	299	29.6	7.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

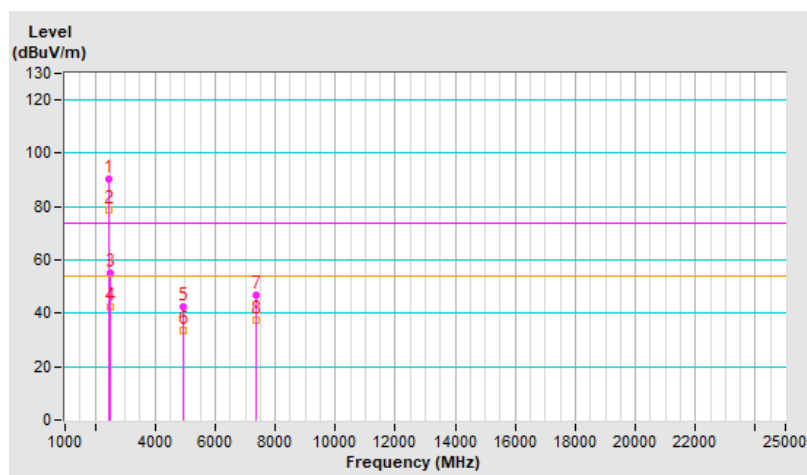


RF Mode	802.11be (EHT40)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	90.1 PK			1.73 V	2	93.6	-3.5
2	*2462.00	78.6 AV			1.73 V	2	82.1	-3.5
3	2483.50	55.2 PK	74.0	-18.8	1.73 V	2	58.6	-3.4
4	2483.50	42.5 AV	54.0	-11.5	1.73 V	2	45.9	-3.4
5	4924.00	42.4 PK	74.0	-31.6	3.80 V	254	40.8	1.6
6	4924.00	33.4 AV	54.0	-20.6	3.80 V	254	31.8	1.6
7	7386.00	46.8 PK	74.0	-27.2	3.08 V	300	38.9	7.9
8	7386.00	37.4 AV	54.0	-16.6	3.08 V	300	29.5	7.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

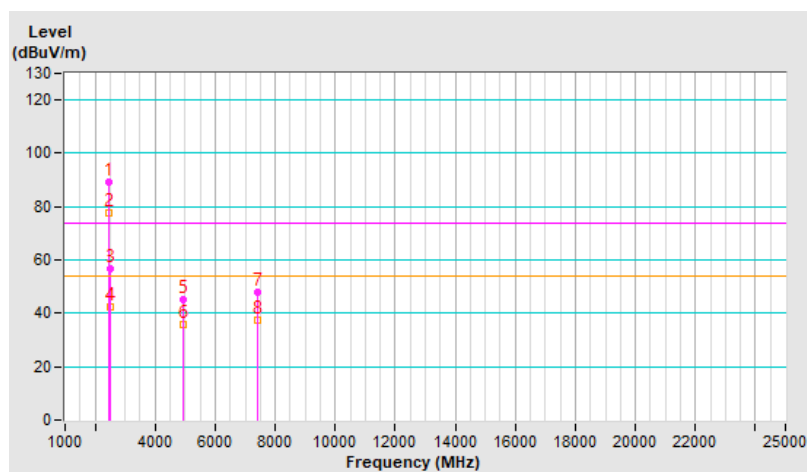


RF Mode	802.11be (EHT20) 26-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	89.2 PK			1.74 H	118	92.6	-3.4
2	*2472.00	77.4 AV			1.74 H	118	80.8	-3.4
3	2483.50	56.5 PK	74.0	-17.5	1.74 H	118	59.9	-3.4
4	2483.50	42.3 AV	54.0	-11.7	1.74 H	118	45.7	-3.4
5	4944.00	45.1 PK	74.0	-28.9	2.58 H	360	43.5	1.6
6	4944.00	35.7 AV	54.0	-18.3	2.58 H	360	34.1	1.6
7	7416.00	48.0 PK	74.0	-26.0	3.03 H	293	40.2	7.8
8	7416.00	37.5 AV	54.0	-16.5	3.03 H	293	29.7	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

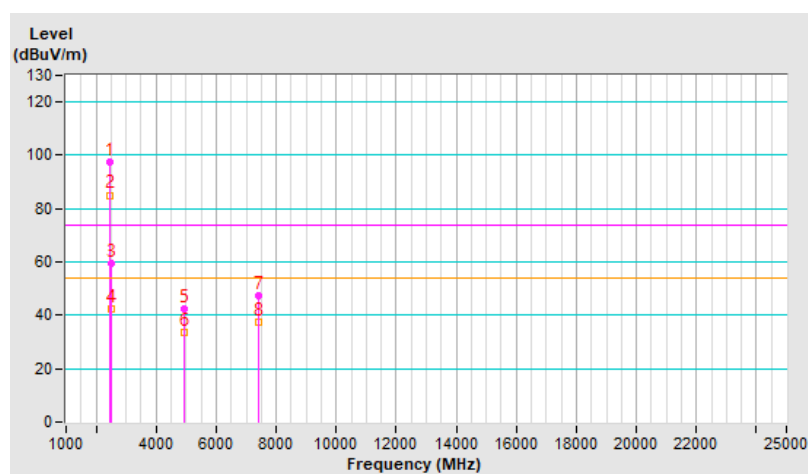


RF Mode	802.11be (EHT20) 26-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	97.5 PK			1.50 V	130	100.9	-3.4
2	*2472.00	85.1 AV			1.50 V	130	88.5	-3.4
3	2483.50	59.6 PK	74.0	-14.4	1.50 V	130	63.0	-3.4
4	2483.50	42.6 AV	54.0	-11.4	1.50 V	130	46.0	-3.4
5	4944.00	42.6 PK	74.0	-31.4	3.86 V	256	41.0	1.6
6	4944.00	33.5 AV	54.0	-20.5	3.86 V	256	31.9	1.6
7	7416.00	47.4 PK	74.0	-26.6	3.08 V	301	39.6	7.8
8	7416.00	37.6 AV	54.0	-16.4	3.08 V	301	29.8	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

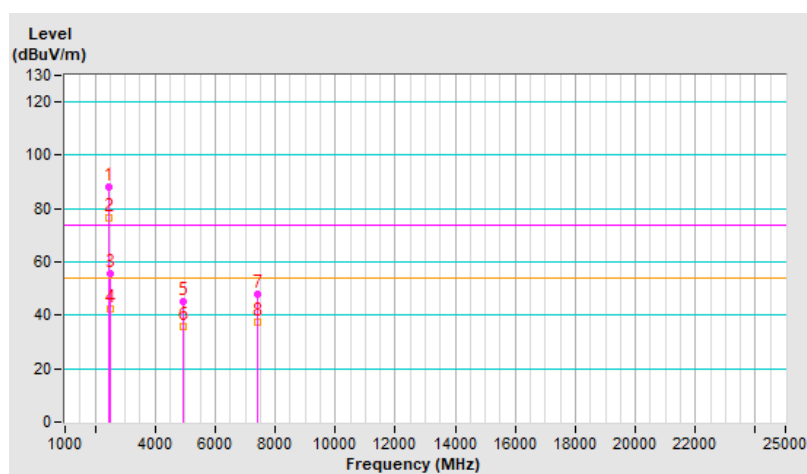


RF Mode	802.11be (EHT20) 52-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	87.9 PK			1.42 H	122	91.3	-3.4
2	*2472.00	76.8 AV			1.42 H	122	80.2	-3.4
3	2483.50	55.6 PK	74.0	-18.4	1.42 H	122	59.0	-3.4
4	2483.50	42.3 AV	54.0	-11.7	1.42 H	122	45.7	-3.4
5	4944.00	45.1 PK	74.0	-28.9	2.64 H	360	43.5	1.6
6	4944.00	35.9 AV	54.0	-18.1	2.64 H	360	34.3	1.6
7	7416.00	47.8 PK	74.0	-26.2	3.13 H	295	40.0	7.8
8	7416.00	37.4 AV	54.0	-16.6	3.13 H	295	29.6	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

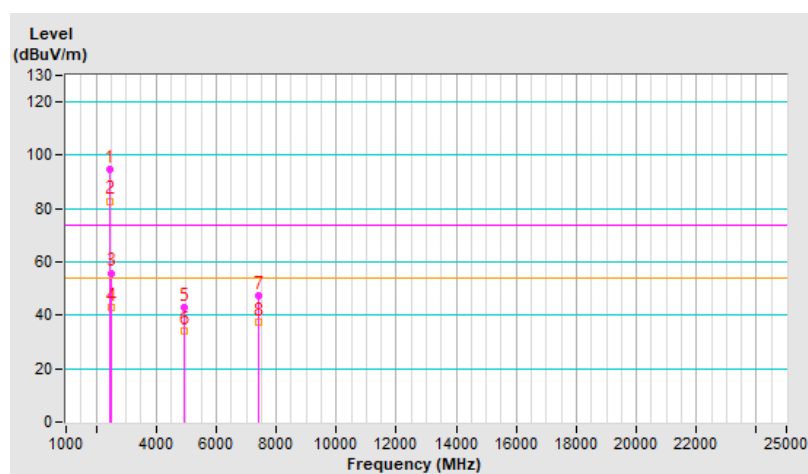


RF Mode	802.11be (EHT20) 52-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	94.5 PK			1.60 V	135	97.9	-3.4
2	*2472.00	82.9 AV			1.60 V	135	86.3	-3.4
3	2483.50	55.9 PK	74.0	-18.1	1.60 V	135	59.3	-3.4
4	2483.50	42.9 AV	54.0	-11.1	1.60 V	135	46.3	-3.4
5	4944.00	42.8 PK	74.0	-31.2	3.79 V	251	41.2	1.6
6	4944.00	33.9 AV	54.0	-20.1	3.79 V	251	32.3	1.6
7	7416.00	47.2 PK	74.0	-26.8	2.98 V	285	39.4	7.8
8	7416.00	37.6 AV	54.0	-16.4	2.98 V	285	29.8	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

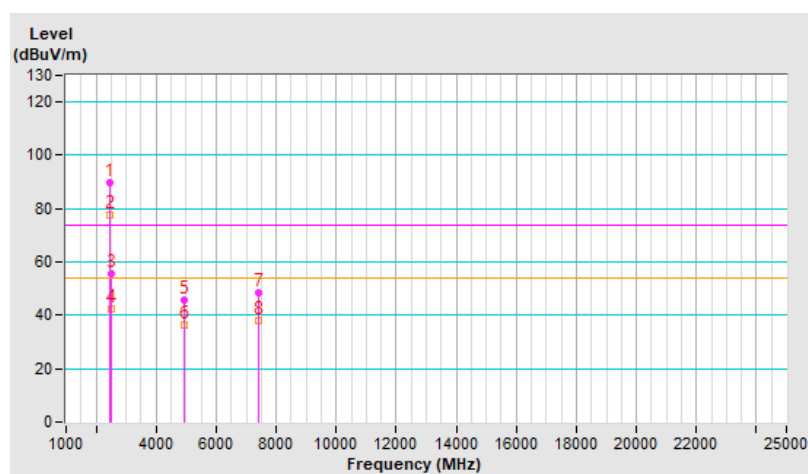


RF Mode	802.11be (EHT20) 106-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	89.8 PK			1.42 H	116	93.2	-3.4
2	*2472.00	77.9 AV			1.42 H	116	81.3	-3.4
3	2483.50	55.6 PK	74.0	-18.4	1.42 H	116	59.0	-3.4
4	2483.50	42.6 AV	54.0	-11.4	1.42 H	116	46.0	-3.4
5	4944.00	45.5 PK	74.0	-28.5	2.60 H	360	43.9	1.6
6	4944.00	36.1 AV	54.0	-17.9	2.60 H	360	34.5	1.6
7	7416.00	48.5 PK	74.0	-25.5	3.07 H	295	40.7	7.8
8	7416.00	37.9 AV	54.0	-16.1	3.07 H	295	30.1	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

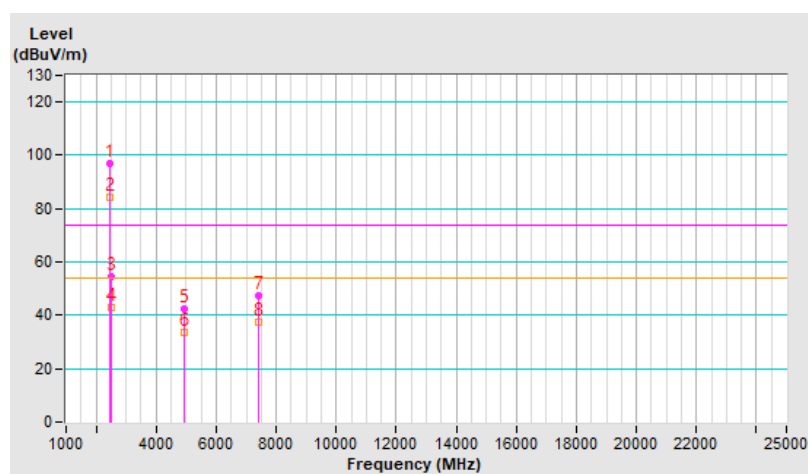


RF Mode	802.11be (EHT20) 106-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	21 °C, 64 % RH
Tested By	Willy Lin		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	96.7 PK			2.08 V	108	100.1	-3.4
2	*2472.00	84.2 AV			2.08 V	108	87.6	-3.4
3	2483.50	54.3 PK	74.0	-19.7	2.08 V	108	57.7	-3.4
4	2483.50	42.9 AV	54.0	-11.1	2.08 V	108	46.3	-3.4
5	4944.00	42.5 PK	74.0	-31.5	3.80 V	262	40.9	1.6
6	4944.00	33.6 AV	54.0	-20.4	3.80 V	262	32.0	1.6
7	7416.00	47.1 PK	74.0	-26.9	3.03 V	293	39.3	7.8
8	7416.00	37.4 AV	54.0	-16.6	3.03 V	293	29.6	7.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.



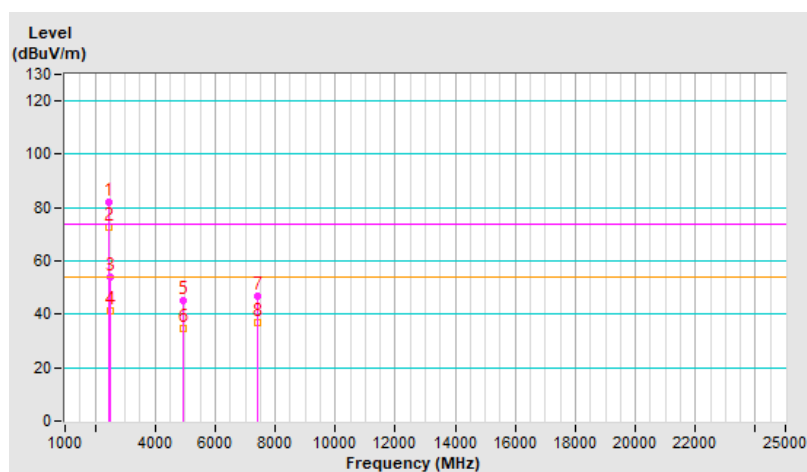
Mode D

RF Mode	802.11g	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	81.9 PK			1.20 H	166	85.5	-3.6
2	*2472.00	72.7 AV			1.20 H	166	76.3	-3.6
3	2483.50	53.9 PK	74.0	-20.1	1.20 H	166	57.5	-3.6
4	2483.50	41.4 AV	54.0	-12.6	1.20 H	166	45.0	-3.6
5	4944.00	44.9 PK	74.0	-29.1	2.03 H	312	43.5	1.4
6	4944.00	34.6 AV	54.0	-19.4	2.03 H	312	33.2	1.4
7	7416.00	46.9 PK	74.0	-27.1	2.78 H	277	39.4	7.5
8	7416.00	37.1 AV	54.0	-16.9	2.78 H	277	29.6	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

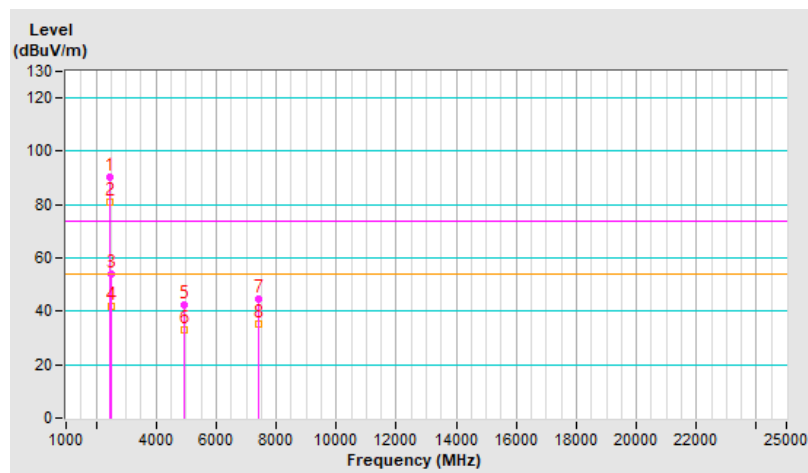


RF Mode	802.11g	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	90.2 PK			2.37 V	94	93.8	-3.6
2	*2472.00	80.8 AV			2.37 V	94	84.4	-3.6
3	2483.50	54.2 PK	74.0	-19.8	2.37 V	94	57.8	-3.6
4	2483.50	41.7 AV	54.0	-12.3	2.37 V	94	45.3	-3.6
5	4944.00	42.2 PK	74.0	-31.8	3.21 V	203	40.8	1.4
6	4944.00	32.9 AV	54.0	-21.1	3.21 V	203	31.5	1.4
7	7416.00	44.5 PK	74.0	-29.5	2.91 V	211	37.0	7.5
8	7416.00	35.3 AV	54.0	-18.7	2.91 V	211	27.8	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

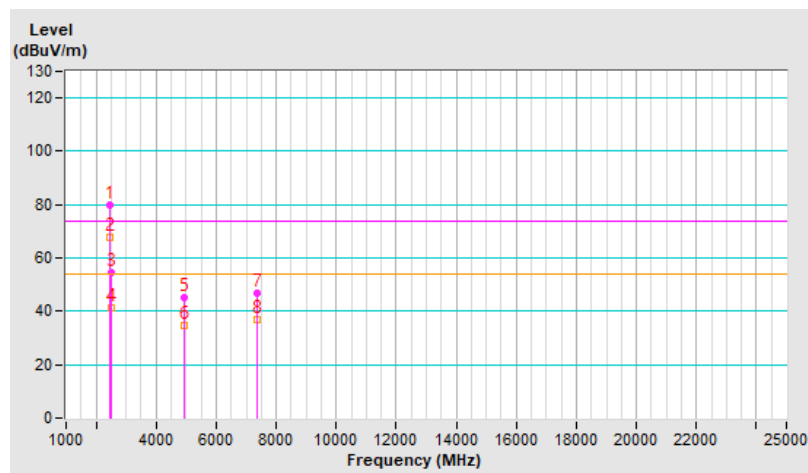


RF Mode	802.11be (EHT40)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	80.1 PK			3.11 H	190	83.8	-3.7
2	*2462.00	67.8 AV			3.11 H	190	71.5	-3.7
3	2483.50	54.7 PK	74.0	-19.3	3.11 H	190	58.3	-3.6
4	2483.50	41.3 AV	54.0	-12.7	3.11 H	190	44.9	-3.6
5	4924.00	45.0 PK	74.0	-29.0	2.00 H	297	43.6	1.4
6	4924.00	34.5 AV	54.0	-19.5	2.00 H	297	33.1	1.4
7	7386.00	46.7 PK	74.0	-27.3	2.81 H	292	39.3	7.4
8	7386.00	36.9 AV	54.0	-17.1	2.81 H	292	29.5	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

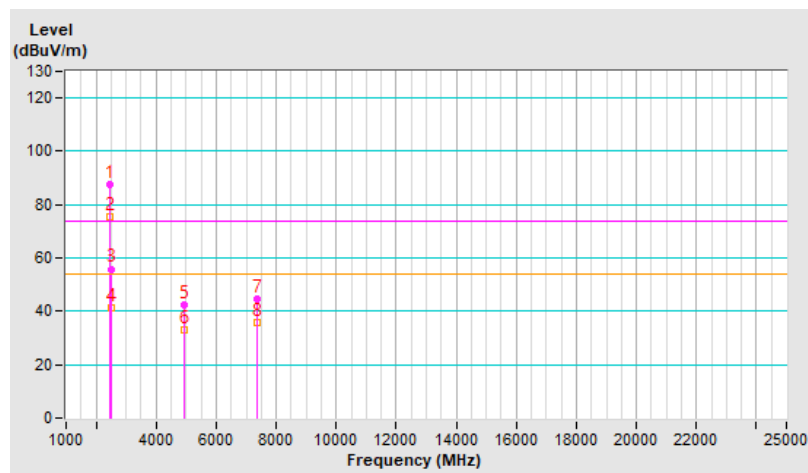


RF Mode	802.11be (EHT40)	Channel	CH 11 : 2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	87.5 PK			2.54 V	96	91.2	-3.7
2	*2462.00	75.5 AV			2.54 V	96	79.2	-3.7
3	2483.50	55.9 PK	74.0	-18.1	2.54 V	96	59.5	-3.6
4	2483.50	41.5 AV	54.0	-12.5	2.54 V	96	45.1	-3.6
5	4924.00	42.3 PK	74.0	-31.7	3.26 V	191	40.9	1.4
6	4924.00	33.2 AV	54.0	-20.8	3.26 V	191	31.8	1.4
7	7386.00	44.8 PK	74.0	-29.2	2.97 V	217	37.4	7.4
8	7386.00	35.6 AV	54.0	-18.4	2.97 V	217	28.2	7.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

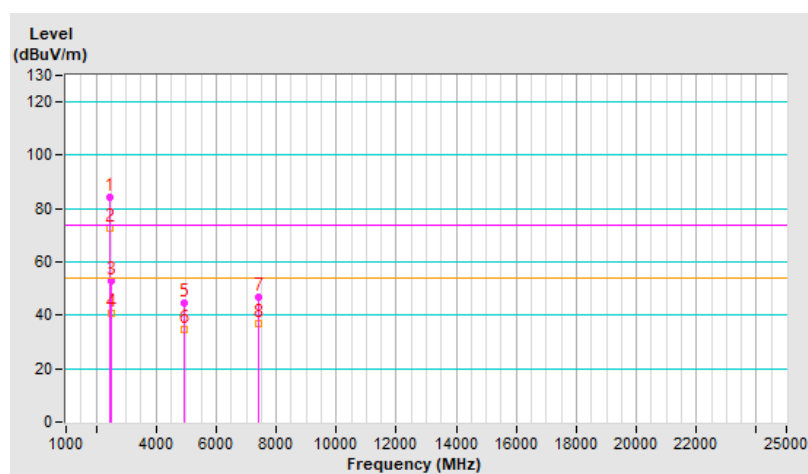


RF Mode	802.11be (EHT20) 26-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	84.3 PK			3.67 H	172	87.9	-3.6
2	*2472.00	72.8 AV			3.67 H	172	76.4	-3.6
3	2483.50	53.1 PK	74.0	-20.9	3.67 H	172	56.7	-3.6
4	2483.50	40.8 AV	54.0	-13.2	3.67 H	172	44.4	-3.6
5	4944.00	44.8 PK	74.0	-29.2	2.02 H	304	43.4	1.4
6	4944.00	34.7 AV	54.0	-19.3	2.02 H	304	33.3	1.4
7	7416.00	46.8 PK	74.0	-27.2	2.83 H	288	39.3	7.5
8	7416.00	36.7 AV	54.0	-17.3	2.83 H	288	29.2	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

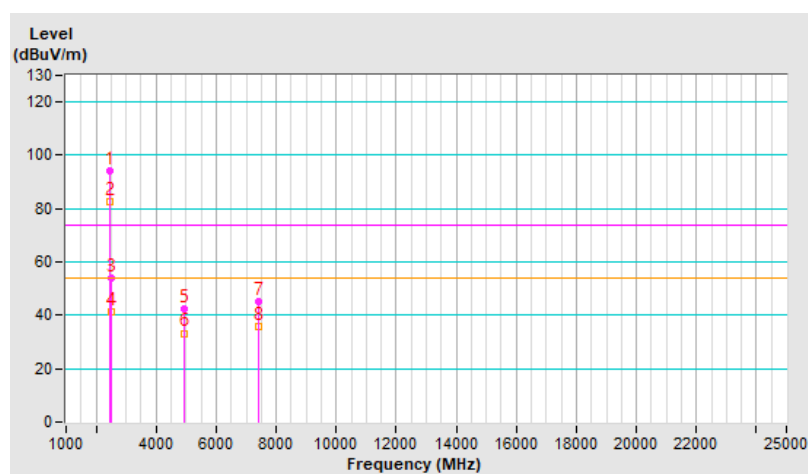


RF Mode	802.11be (EHT20) 26-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	94.1 PK			2.86 V	118	97.7	-3.6
2	*2472.00	82.4 AV			2.86 V	118	86.0	-3.6
3	2483.50	54.2 PK	74.0	-19.8	2.86 V	118	57.8	-3.6
4	2483.50	41.1 AV	54.0	-12.9	2.86 V	118	44.7	-3.6
5	4944.00	42.4 PK	74.0	-31.6	3.22 V	216	41.0	1.4
6	4944.00	33.3 AV	54.0	-20.7	3.22 V	216	31.9	1.4
7	7416.00	44.9 PK	74.0	-29.1	2.92 V	222	37.4	7.5
8	7416.00	35.8 AV	54.0	-18.2	2.92 V	222	28.3	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

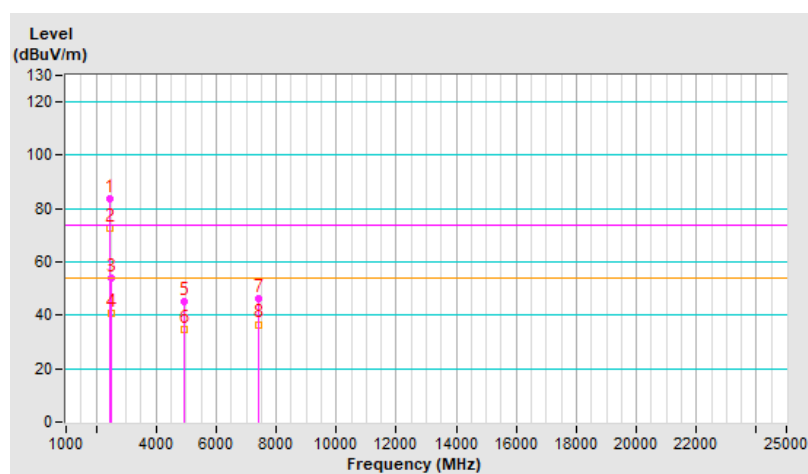


RF Mode	802.11be (EHT20) 52-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	83.6 PK			1.04 H	112	87.2	-3.6
2	*2472.00	72.6 AV			1.04 H	112	76.2	-3.6
3	2483.50	54.2 PK	74.0	-19.8	1.04 H	112	57.8	-3.6
4	2483.50	40.6 AV	54.0	-13.4	1.04 H	112	44.2	-3.6
5	4944.00	44.9 PK	74.0	-29.1	2.08 H	324	43.5	1.4
6	4944.00	34.5 AV	54.0	-19.5	2.08 H	324	33.1	1.4
7	7416.00	46.4 PK	74.0	-27.6	2.75 H	274	38.9	7.5
8	7416.00	36.6 AV	54.0	-17.4	2.75 H	274	29.1	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

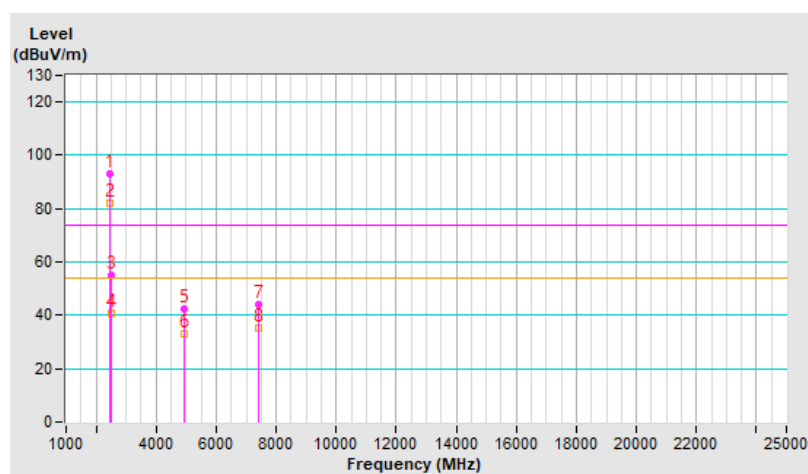


RF Mode	802.11be (EHT20) 52-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	93.3 PK			2.18 V	94	96.9	-3.6
2	*2472.00	82.3 AV			2.18 V	94	85.9	-3.6
3	2483.50	55.1 PK	74.0	-18.9	2.18 V	94	58.7	-3.6
4	2483.50	40.9 AV	54.0	-13.1	2.18 V	94	44.5	-3.6
5	4944.00	42.6 PK	74.0	-31.4	3.16 V	200	41.2	1.4
6	4944.00	33.1 AV	54.0	-20.9	3.16 V	200	31.7	1.4
7	7416.00	44.2 PK	74.0	-29.8	2.94 V	196	36.7	7.5
8	7416.00	35.2 AV	54.0	-18.8	2.94 V	196	27.7	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

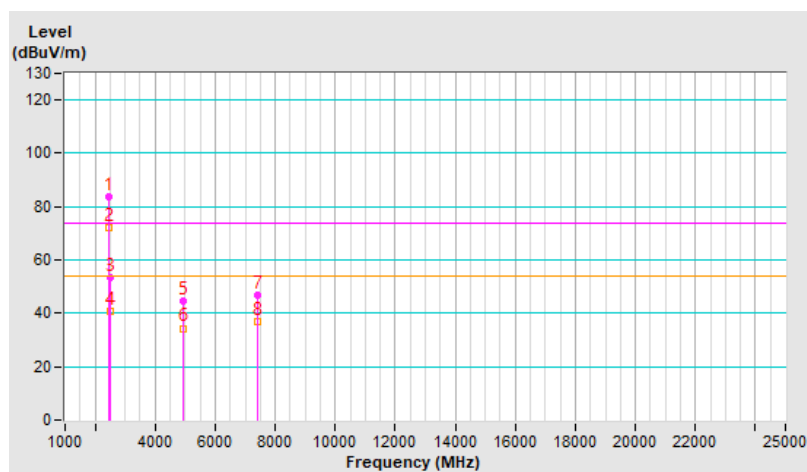


RF Mode	802.11be (EHT20) 106-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	83.7 PK			1.02 H	118	87.3	-3.6
2	*2472.00	72.3 AV			1.02 H	118	75.9	-3.6
3	2483.50	53.6 PK	74.0	-20.4	1.02 H	118	57.2	-3.6
4	2483.50	40.8 AV	54.0	-13.2	1.02 H	118	44.4	-3.6
5	4944.00	44.6 PK	74.0	-29.4	2.08 H	309	43.2	1.4
6	4944.00	34.4 AV	54.0	-19.6	2.08 H	309	33.0	1.4
7	7416.00	46.7 PK	74.0	-27.3	2.78 H	275	39.2	7.5
8	7416.00	36.9 AV	54.0	-17.1	2.78 H	275	29.4	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

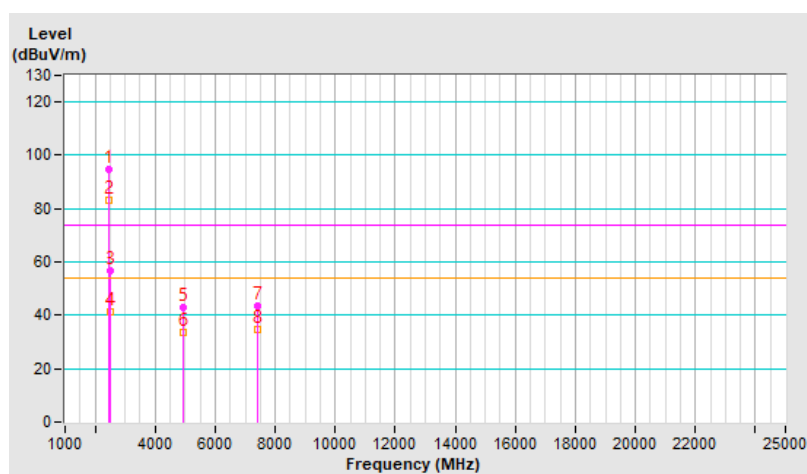


RF Mode	802.11be (EHT20) 106-tone RU	Channel	CH 13 : 2472 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25 °C, 75 % RH
Tested By	Tank Wu		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	94.7 PK			2.70 V	93	98.3	-3.6
2	*2472.00	83.1 AV			2.70 V	93	86.7	-3.6
3	2483.50	56.7 PK	74.0	-17.3	2.70 V	93	60.3	-3.6
4	2483.50	41.2 AV	54.0	-12.8	2.70 V	93	44.8	-3.6
5	4944.00	42.8 PK	74.0	-31.2	3.11 V	186	41.4	1.4
6	4944.00	33.4 AV	54.0	-20.6	3.11 V	186	32.0	1.4
7	7416.00	43.6 PK	74.0	-30.4	2.88 V	192	36.1	7.5
8	7416.00	34.8 AV	54.0	-19.2	2.88 V	192	27.3	7.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * " : Fundamental frequency, the limit was restricted at the RF Output Power.

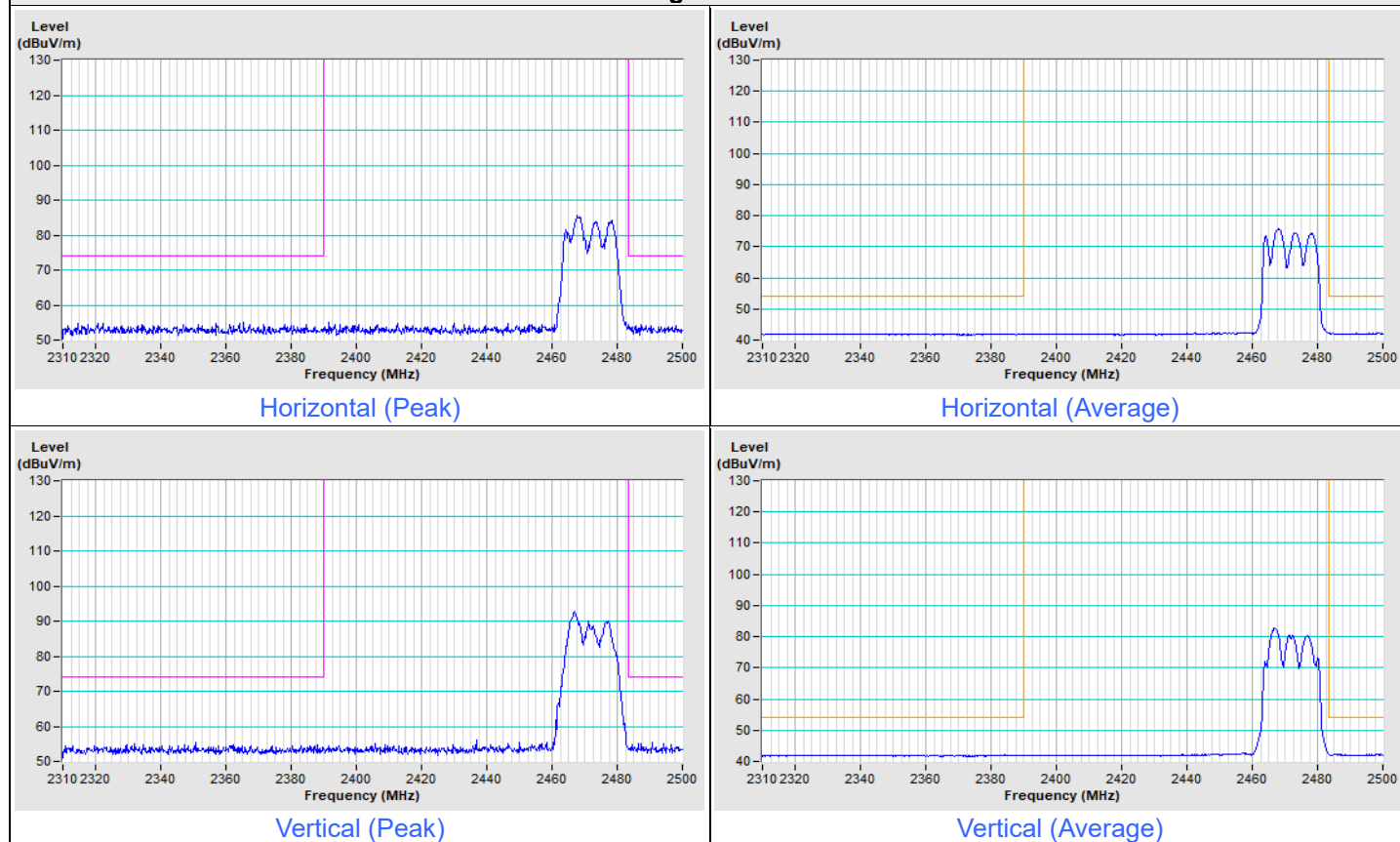


Plot of Band Edge

Mode C

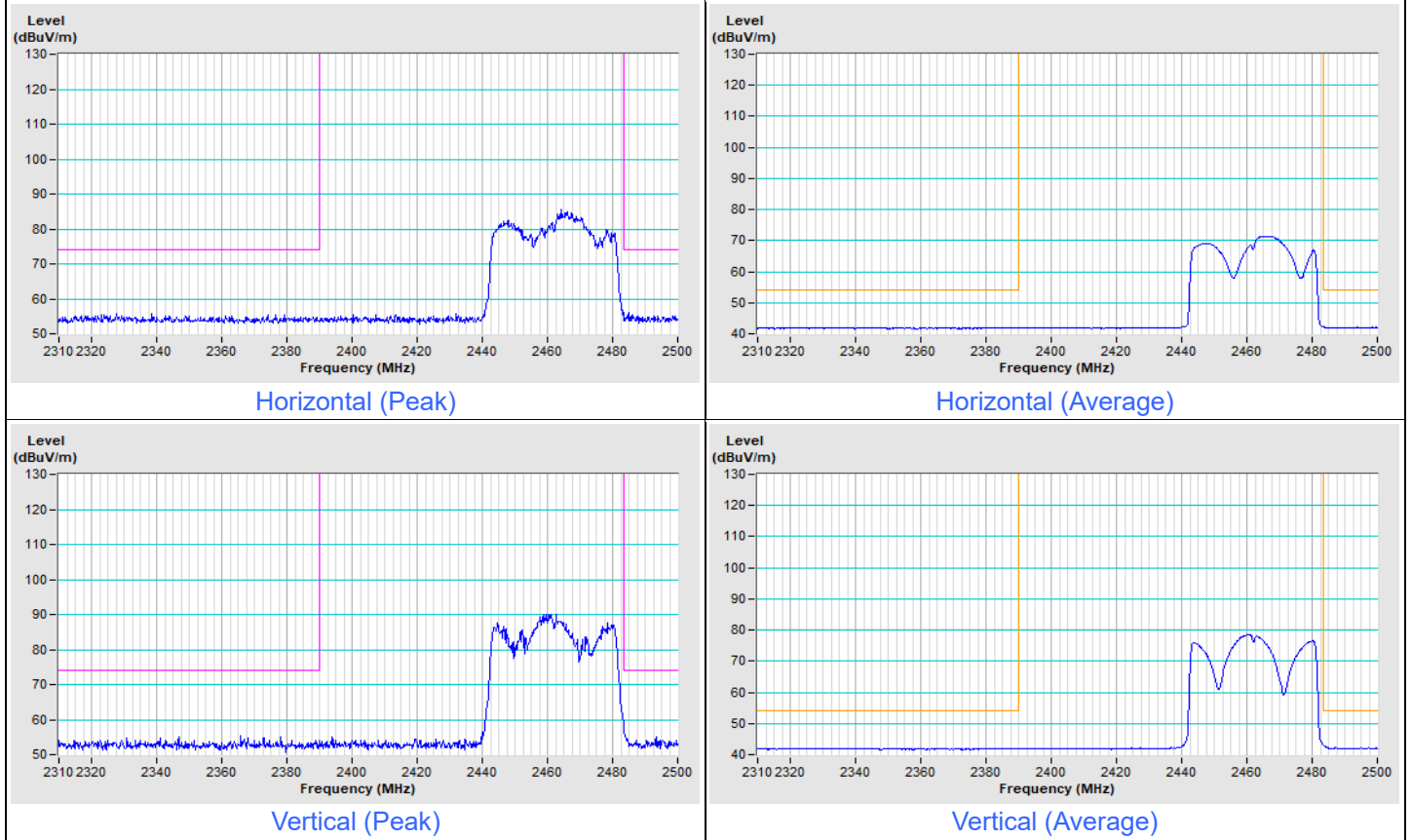
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11g Channel 13



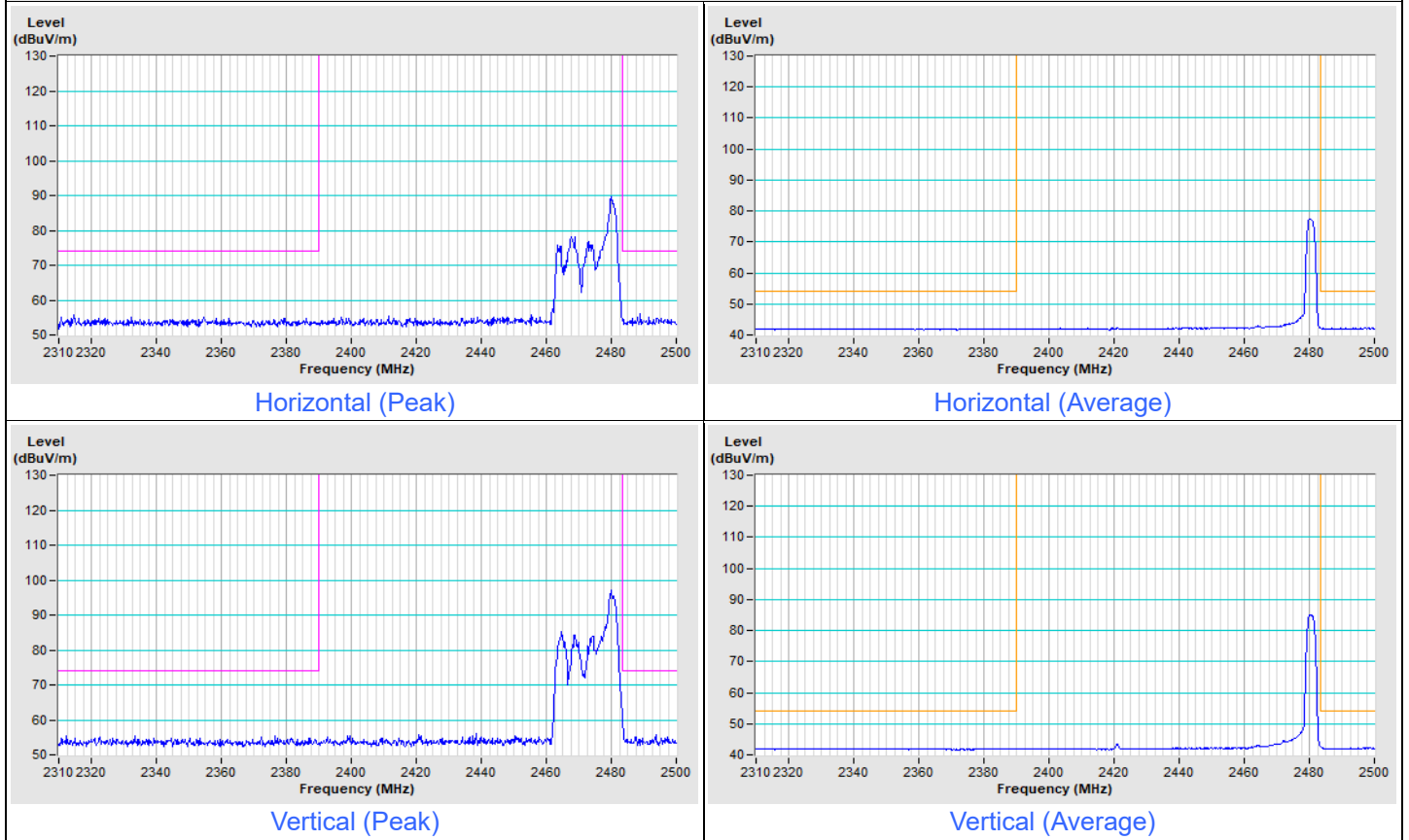
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11be (EHT40) Channel 11

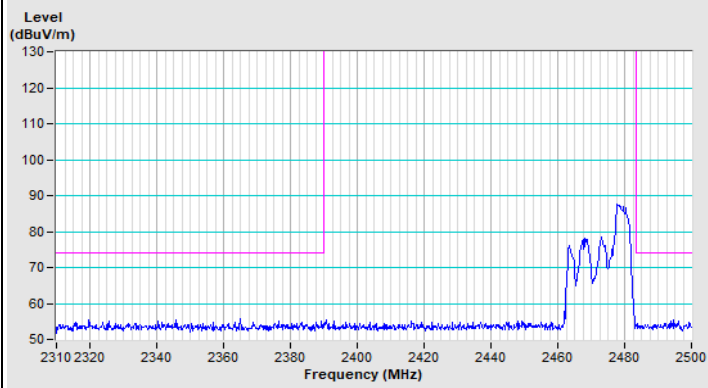


Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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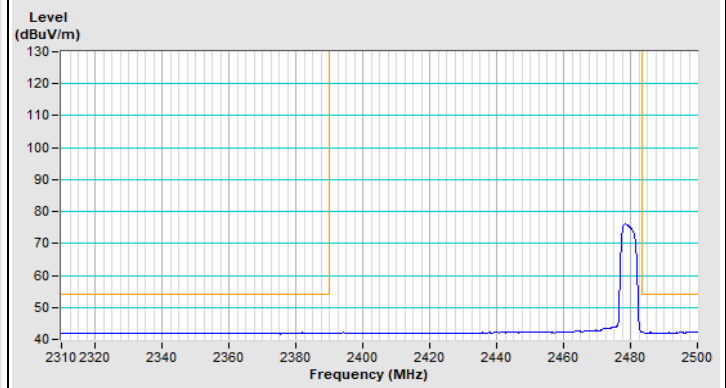
802.11be (EHT20) 26-tone RU Channel 13



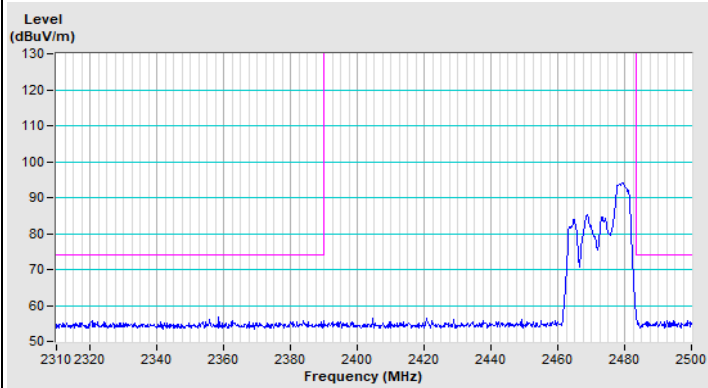
802.11be (EHT20) 52-tone RU Channel 13



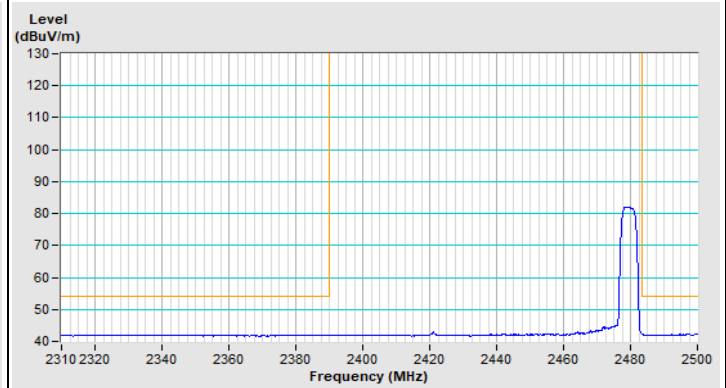
Horizontal (Peak)



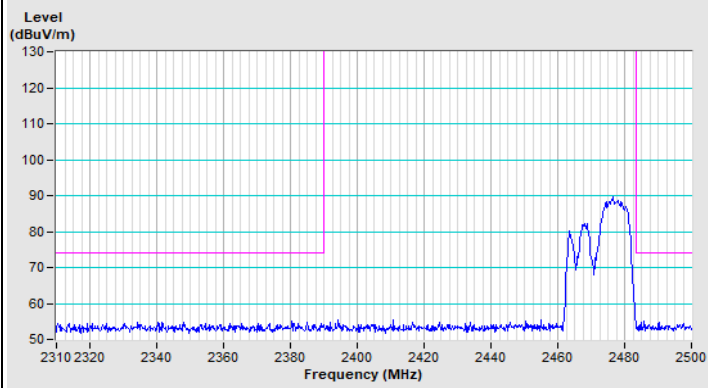
Horizontal (Average)



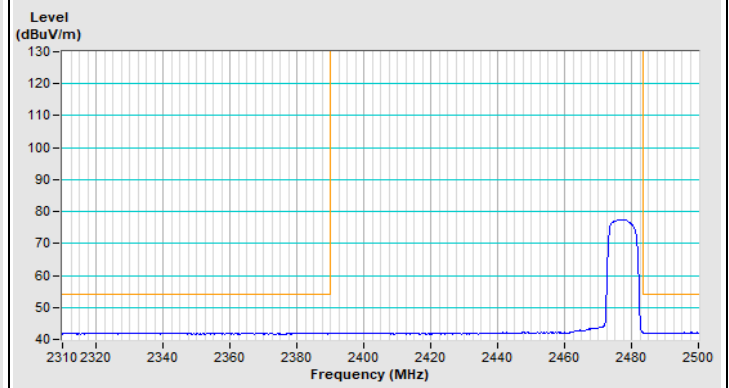
Vertical (Peak)



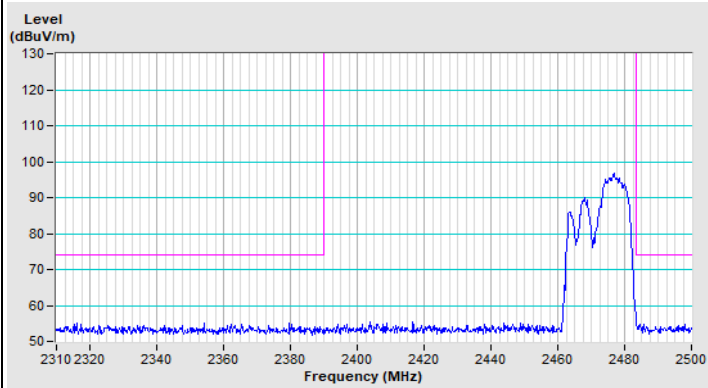
Vertical (Average)

802.11be (EHT20) 106-tone RU Channel 13

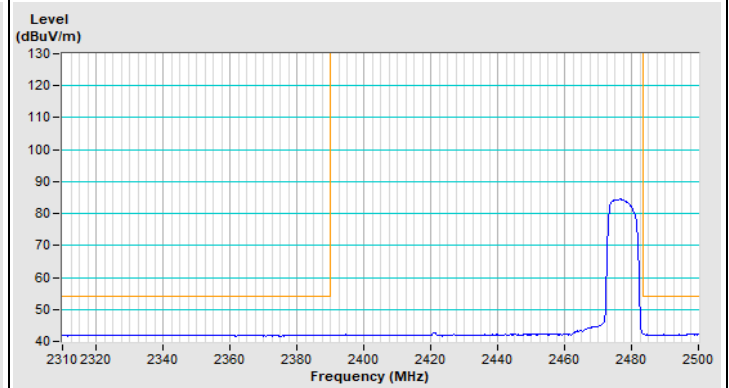
Horizontal (Peak)



Horizontal (Average)



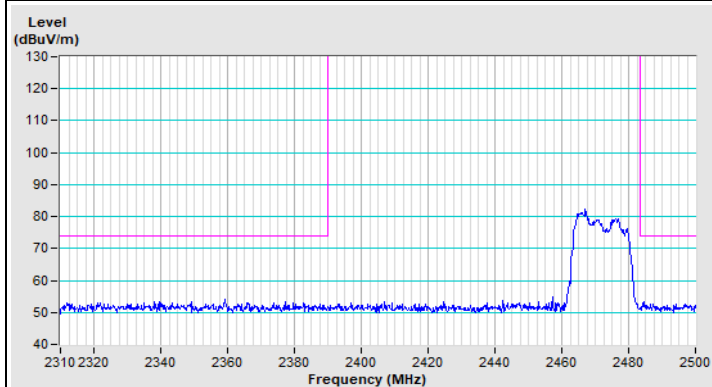
Vertical (Peak)



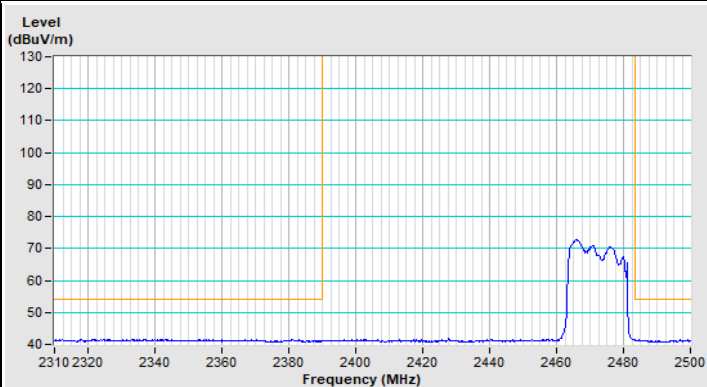
Vertical (Average)

Mode D

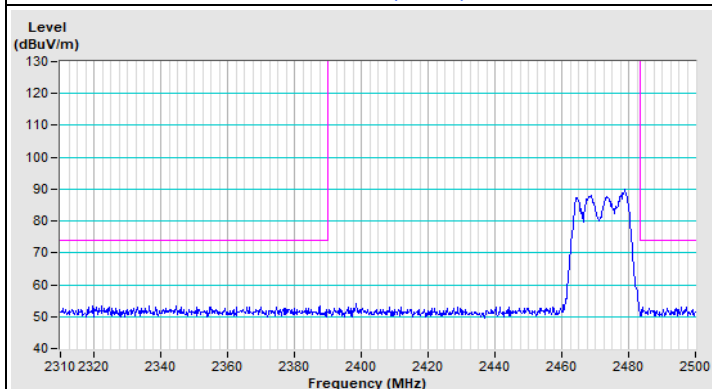
802.11g Channel 13



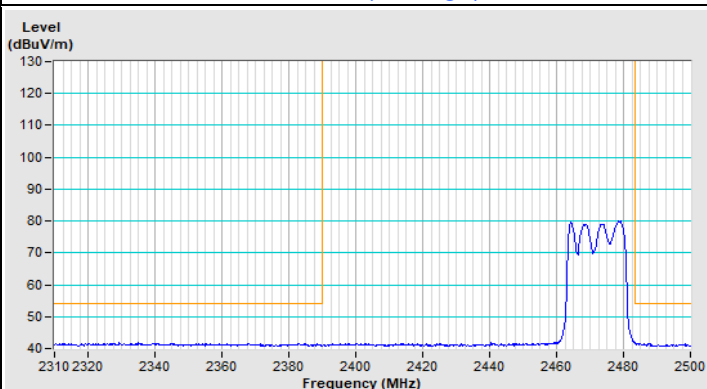
Horizontal (Peak)



Horizontal (Average)



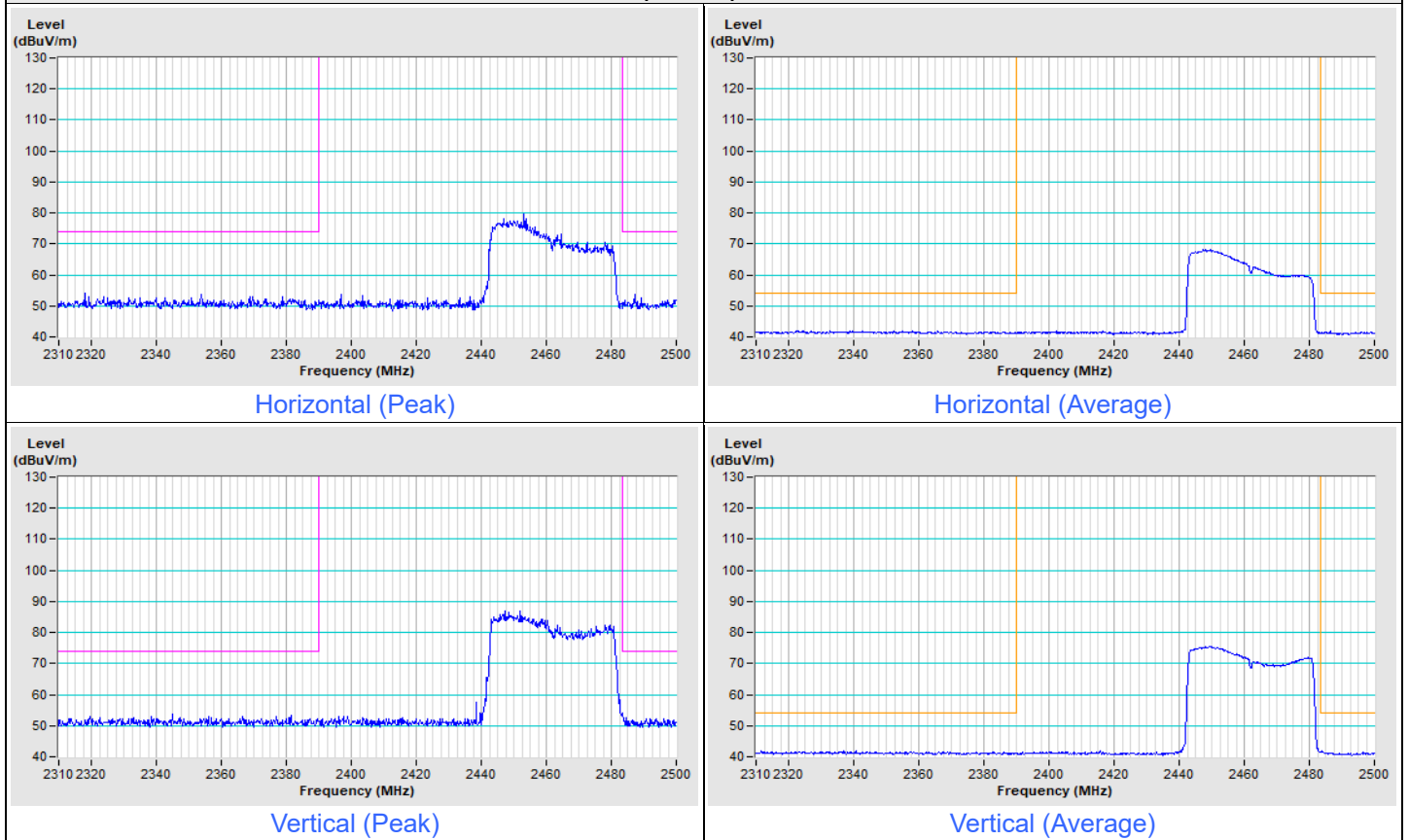
Vertical (Peak)



Vertical (Average)

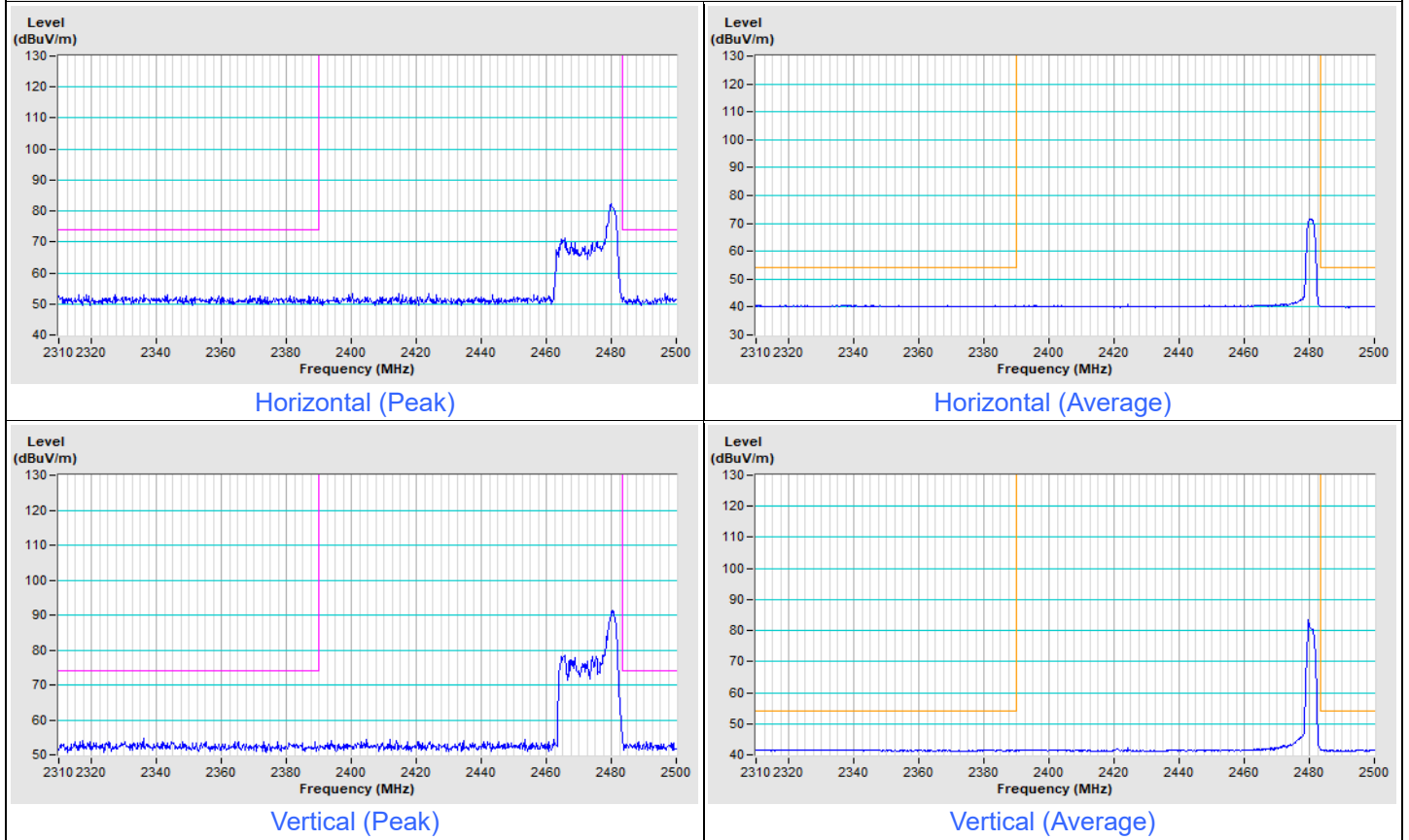
Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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802.11be (EHT40) Channel 11

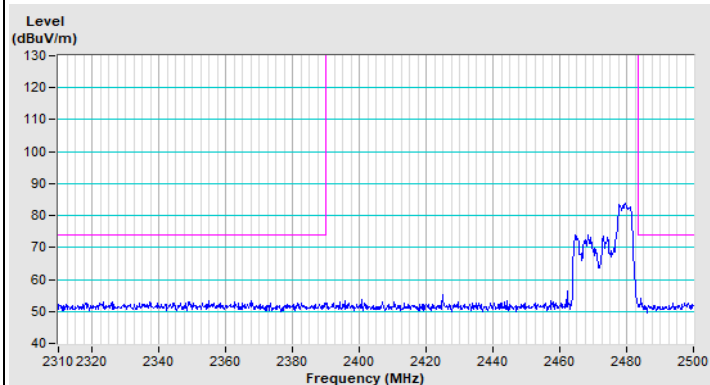


Frequency Range	2.31 GHz ~ 2.5 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
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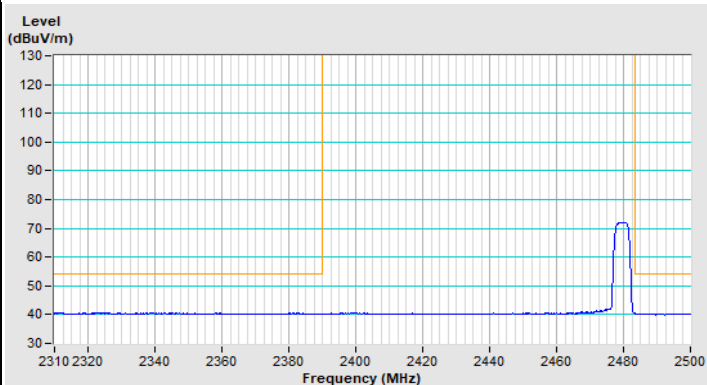
802.11be (EHT20) 26-tone RU Channel 13



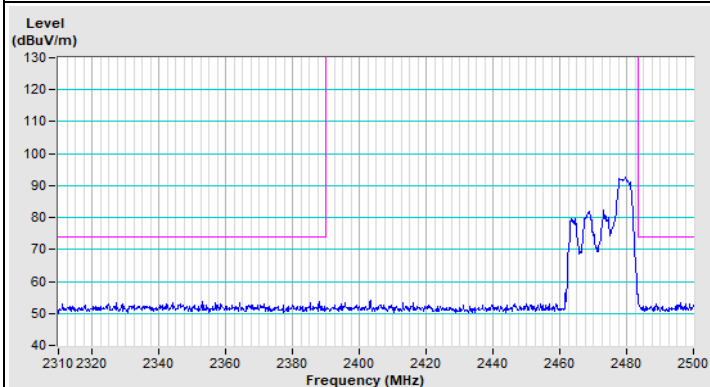
802.11be (EHT20) 52-tone RU Channel 13



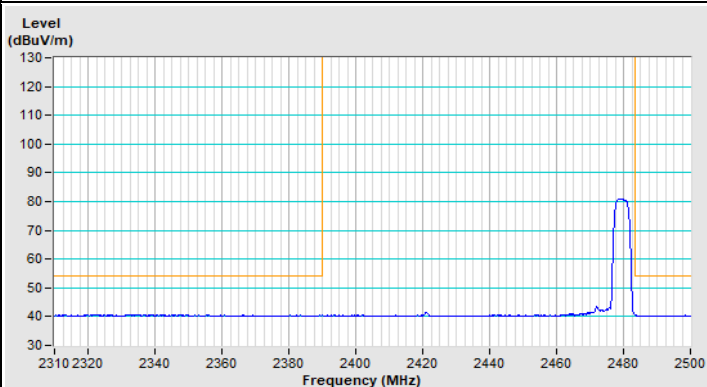
Horizontal (Peak)



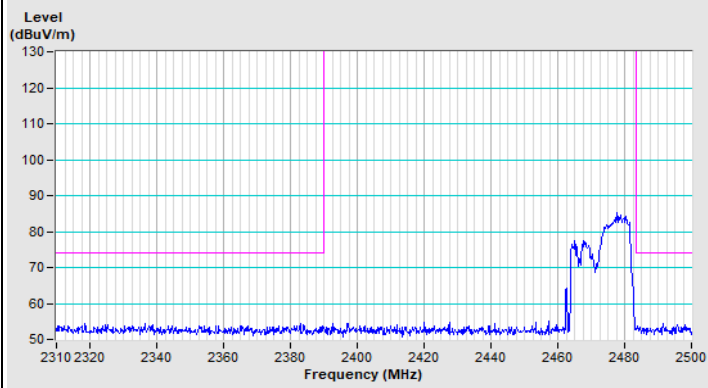
Horizontal (Average)



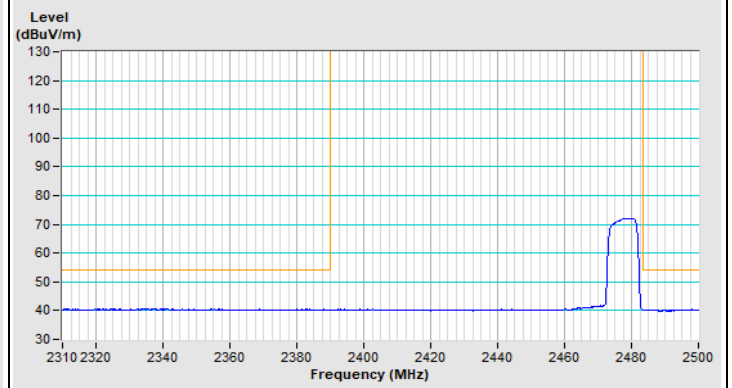
Vertical (Peak)



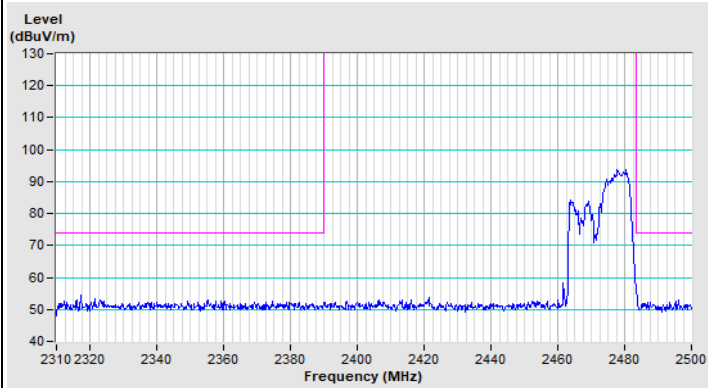
Vertical (Average)

802.11be (EHT20) 106-tone RU Channel 13

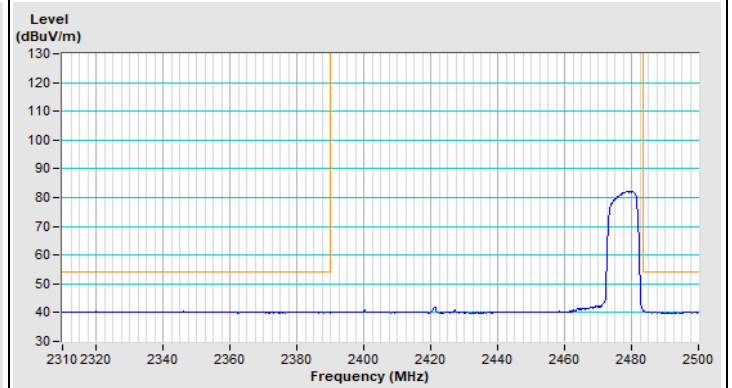
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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