

# TEST REPORT

## CERTIFICATE OF CONFORMITY

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

**Report No.:** RFBBQZ-WTW-P22060724

**FCC ID:** PY322100561

**Product:** AX1600 WiFi Router

**Brand:** NETGEAR

**Model No.:** RAX5

**Received Date:** 2022/7/7

**Test Date:** 2022/8/13 ~ 2022/9/28

**Issued Date:** 2022/10/06

**Applicant and** NETGEAR, INC

**Manufacturer:**

**Address:** 350 East Plumeria Drive San Jose, CA 95134

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan

**FCC Registration /** 788550 / TW0003

**Designation Number:**

**Approved by:** \_\_\_\_\_

*Jeremy Lin*

**Date:** \_\_\_\_\_

**2022/10/06**

Jeremy Lin / Project Engineer

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Prepared by : Polly Chien / Specialist

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## Release Control Record

Issue No.	Description	Date Issued
RFBBQZ-WTW-P22060724	Original release.	2022/10/06

## 1 Certificate

**Product:** AX1600 WiFi Router

**Brand:** NETGEAR

**Test Model:** RAX5

**Sample Status:** Engineering sample

**Applicant and Manufacturer:** NETGEAR, INC

**Test Date:** 2022/8/13 ~ 2022/9/28

**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	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -8.66 dB at 0.44600 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -3.5 dB at 70.74 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.1 dB at 2483.50 MHz
15.203	Antenna Requirement	Pass	Antenna connector is IPEX not a standard connector.

Note: 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) (±)
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.79 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.59 dB
	30 MHz ~ 1 GHz	3.64 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 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	AX1600 WiFi Router
Brand	NETGEAR
Test Model	RAX5
Status of EUT	Engineering sample
Power Supply Rating	12 Vdc (adapter)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11n mode and 11ac mode 1024QAM for OFDMA in 11ax mode only
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 400Mbps 802.11ax: up to 573.5Mbps
Operating Frequency	2.412 GHz ~ 2.462 GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 11 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 7
Output Power	CDD Mode: 438.593 mW (26.42 dBm) Beamforming Mode: 391.350 mW (25.93 dBm)

Note:

1. The EUT uses following accessories.

<b>AC Adapter 1</b>			
Brand	Model	Part Number	Specification
Honor	ADS-18FQ-12 12018EPCU-L, ADS-18FQ-12 12018EPC-L	332-11523-02	AC Input: 100-120V, ~60Hz Max, 0.7A DC Output: 12Vdc, 1.5A DC Output Cable: 1.8M / 0core
<b>AC Adapter 2</b>			
Brand	Model	Part Number	Specification
Channel Well Technology Co., Ltd.	2AAJ018F 1	332-11572-01	AC Input: 100-120V ~50/60Hz, 0.6A DC Output: 12Vdc, 1.5A, 18.0W DC Output Cable: 1.8M / 0core
<b>RJ-45</b>			
Specification			
Signal Line : 1.95M			

2. The EUT supports Full RU only.

3. There are WLAN (2.4 GHz), WLAN (5 GHz) and WLAN (5.9 GHz) technology used for the EUT.

4. 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.

ANT. No.	Type	Connector	Frequency Range	Ant 0 (dBi)	Ant 1 (dBi)	Directional Gain (dBi)
2.4	PIFA	IPEX	2400~2483.5MHz	1.44	1.47	4.47
5G	PIFA	IPEX	5150~5250MHz	1.84	1.57	4.72
			5725~5850MHz	2.61	2.60	5.62
5.9G	PIFA	IPEX	5850~5895MHz	2.53	2.60	5.58

\* 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
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX

Note:

1. All of modulation mode support beamforming function except 802.11b/g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz / 40 MHz and 802.11ac mode for 20 MHz / 40 MHz, therefore the manufacturer will control the power for 802.11n/802.11ac mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.



### 3.3 Channel List

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), 802.11ac (VHT20) and 802.11ax (HE20):

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

7 channels are provided for 802.11n (HT40), 802.11ac (VHT40) and 802.11ax (HE40):

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

### 3.4 Test Mode Applicability and Tested Channel Detail

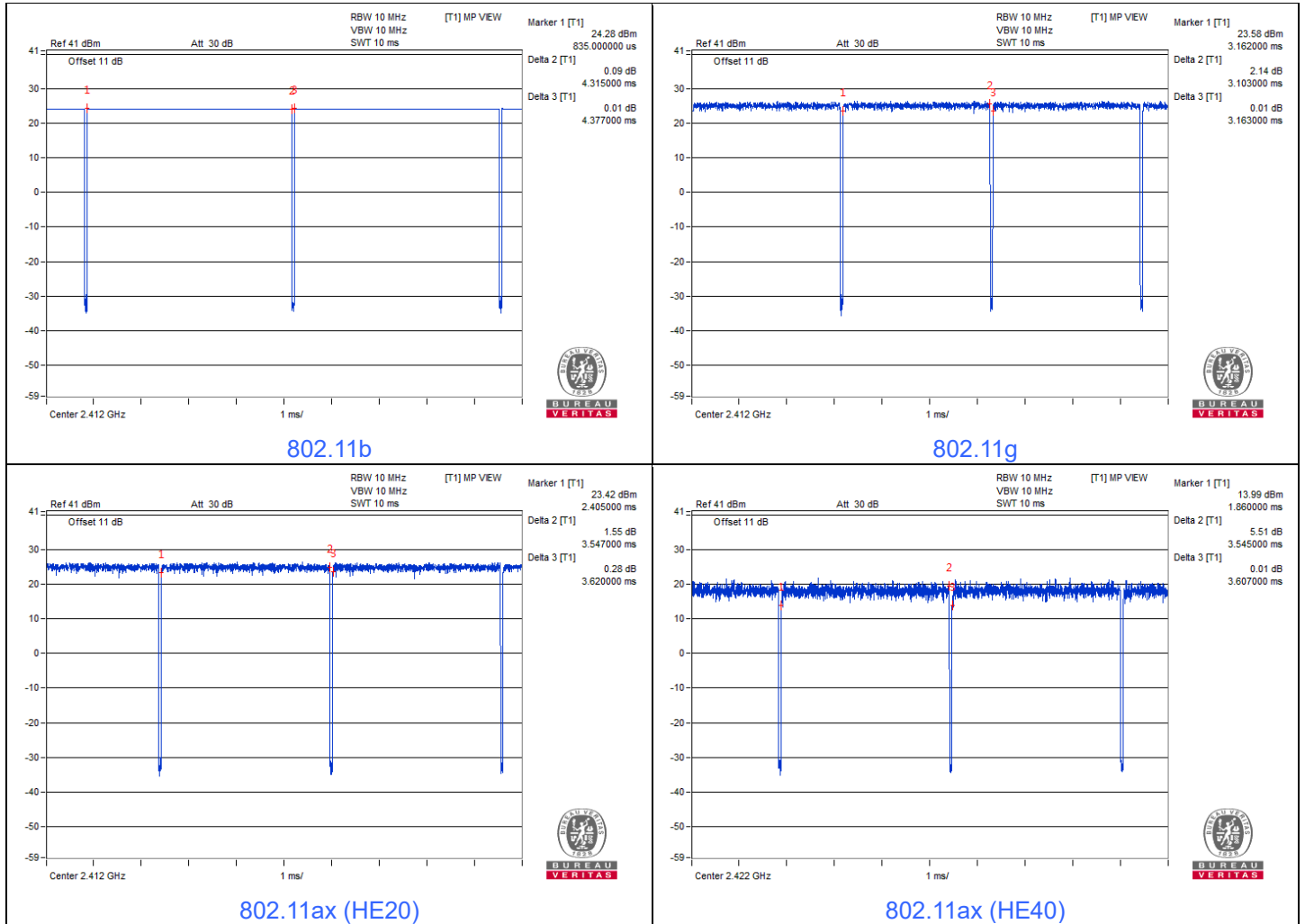
Following channel(s) was (were) selected for the final test as listed below:

Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD & Beamforming	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD & Beamforming	3, 6, 9	BPSK	MCS0
6 dB Bandwidth / Conducted Out of Band Emissions / Power Spectral Density	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0
AC Power Conducted Emissions	A, B	802.11b	CDD	6	DBPSK	1Mb/s
Unwanted Emissions below 1 GHz	A, B	802.11b	CDD	6	DBPSK	1Mb/s
Unwanted Emissions above 1 GHz	A	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
		802.11g	CDD	1, 6, 11	BPSK	6Mb/s
		802.11ax (HE20)	CDD	1, 6, 11	BPSK	MCS0
		802.11ax (HE40)	CDD	3, 6, 9	BPSK	MCS0
EUT Configure Mode:	A	Powered by adapter 1				
	B	Powered by adapter 2				
Note: The EUT is designed to be positioned on the z-plane only.						

### 3.5 Duty Cycle of Test Signal

Duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.  
 Duty cycle of test signal is  $< 98\%$ , duty factor shall be considered.

- 802.11b:** Duty cycle =  $4.315 \text{ ms} / 4.377 \text{ ms} \times 100\% = 98.6\%$
- 802.11g:** Duty cycle =  $3.103 \text{ ms} / 3.163 \text{ ms} \times 100\% = 98.1\%$
- 802.11ax (HE20):** Duty cycle =  $3.547 \text{ ms} / 3.62 \text{ ms} \times 100\% = 98.0\%$
- 802.11ax (HE40):** Duty cycle =  $3.545 \text{ ms} / 3.607 \text{ ms} \times 100\% = 98.3\%$

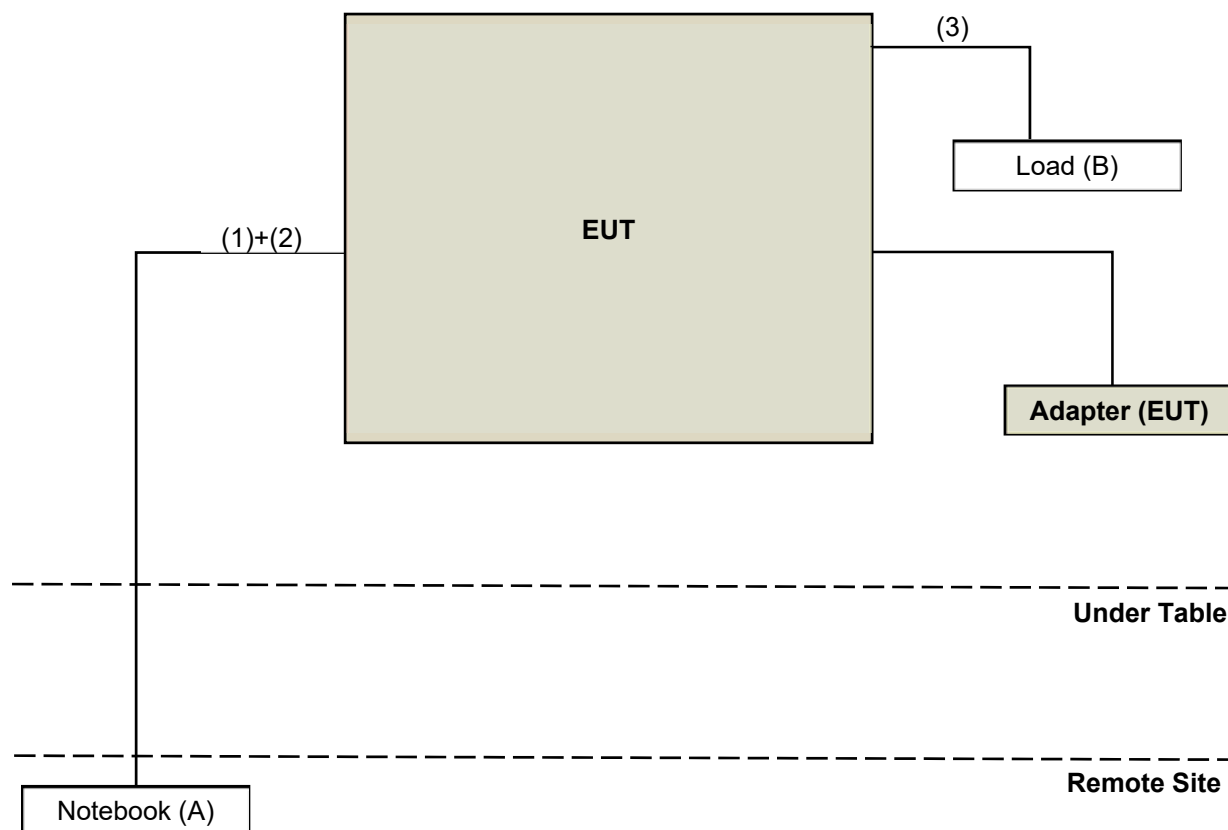


### 3.6 Test Program Used and Operation Descriptions

Controlling software MT7915 QA 0.0.2.33 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

### 3.7 Connection Diagram of EUT and Peripheral Devices

Test Mode A, B



### 3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	DELL	E5430	2RL3YW1	N/A	Provided by Lab
B	Load	N/A	N/A	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	10	N/A	0	Provided by Lab
2	RJ-45 Cable	1	1.95	N/A	0	Accessory of EUT
3	RJ-45 Cable	4	1.5	N/A	0	Provided by Lab

## 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
Peak Power Analyzer KEYSIGHT	8990B	MY51000485	2022/1/18	2023/1/17
Power sensor Keysight	U2021XA	MY55380009	2022/3/23	2023/3/22
Wideband Power Sensor(N1923A) KEYSIGHT	N1923A	MY58020002	2022/1/17	2023/1/16

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2022/9/28

### 4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2022/9/28

### 4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

### 4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get information of the instruments.

#### 4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
DC-LISN SCHWARZBECK MESS- ELETRONIK	NNBM 8126G	8126G-069	2021/11/10	2022/11/9
LISN R&S	ESH3-Z5	100220	2021/11/25	2022/11/24
LISN ROHDE & SCHWARZ	ENV216	101826	2022/3/14	2023/3/13
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2022/1/15	2023/1/14
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
Test Receiver Rohde&Schwarz	ESCI	100613	2021/12/3	2022/12/2
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2022/8/31	2023/8/30

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2022/9/7 ~ 2022/9/27

#### 4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower inn-co GmbH	MA 4000	010303	N/A	N/A
Bi_Log Antenna Schwarbeck	VULB9168	9168-155	2021/11/1	2022/10/31
Loop Antenna TESEQ	HLA 6121	45745	2022/7/27	2023/7/26
Pre_Amplifier Agilent	8447D	2944A10631	2022/5/14	2023/5/13
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2022/1/15	2023/1/14
	EMC102-KM-KM-600	150928	2022/7/9	2023/7/8
	EMC102-KM-KM-3000	150929	2022/7/9	2023/7/8
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101582	2022/4/13	2023/4/12
Test Receiver R&S	ESCI	100424	2021/12/30	2022/12/29
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 3.
2. Tested Date: 2022/9/27

#### 4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower inn-co GmbH	MA 4000	010303	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9170	BBHA9170241	2021/10/26	2022/10/25
Pre-Amplifier EMCI	EMC 184045	980116	2021/10/5	2022/10/4
Pre_Amplifier KEYSIGHT	83017A	MY53270295	2022/5/14	2023/5/13
RF cable HUBER+SUHNER	Sucoflex 104	MY 13380+295012/04	2022/5/14	2023/5/13
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	2022/5/14	2023/5/13
		CABLE-CH9-(250795/4)	2022/1/15	2023/1/14
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2022/1/15	2023/1/14
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101582	2022/4/13	2023/4/12
Test Receiver R&S	ESCI	100424	2021/12/30	2022/12/29
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 3.
2. Tested Date: 2022/8/13 ~ 2022/9/6

## 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  $\geq 40$  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 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

### 5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

### 5.4 Conducted Out of Band Emissions

Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

### 5.5 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.



## 5.6 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 30 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).

## 5.7 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 30 dB below the highest level of the desired power:

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

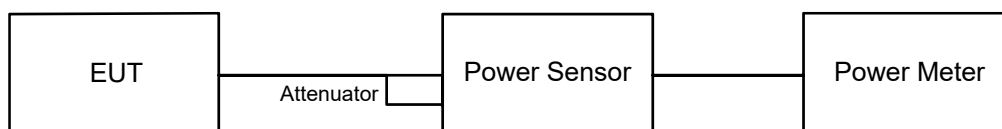
Notes:

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



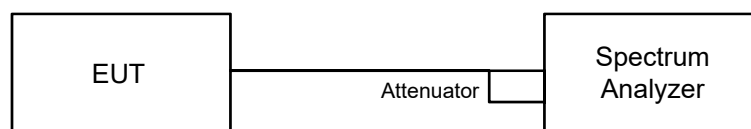
#### 6.1.2 Test Procedure

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 Power Spectral Density

#### 6.2.1 Test Setup



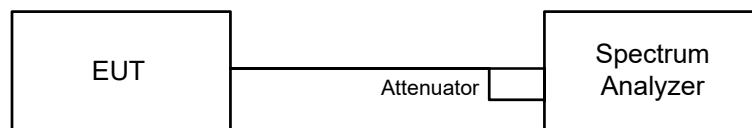
#### 6.2.2 Test Procedure

- a. Measure the duty cycle (x).
- b. Set instrument center frequency to DTS channel center frequency.
- c. Set span to at least 1.5 times the OBW.
- d. Set RBW to: 3 kHz.
- e. Set VBW  $\geq 3 \times$  RBW.
- f. Detector = power averaging (RMS) or sample detector (when RMS not available).
- g. Ensure that the number of measurement points in the sweep  $\geq 2 \times$  span/RBW.
- h. Sweep time = auto couple.
- i. Do not use sweep triggering. Allow sweep to "free run".
- j. Employ trace averaging (RMS) mode over a minimum of 100 traces.
- k. Use the peak marker function to determine the maximum amplitude level.

Note: If Duty cycle < 98%, Add  $10 \log (1/x)$ , where x is the duty cycle measured in step (a), to the measured PSD to compute the average PSD during the actual transmission time.

### 6.3 6 dB Bandwidth

#### 6.3.1 Test Setup

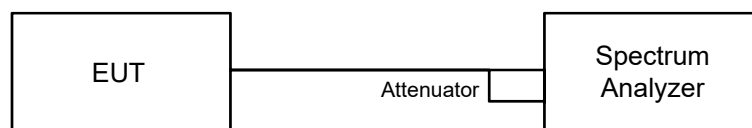


#### 6.3.2 Test Procedure

- a. Set resolution bandwidth (RBW) = 100 kHz.
- b. Set the video bandwidth (VBW)  $\geq 3 \times$  RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 6.4 Conducted Out of Band Emissions

#### 6.4.1 Test Setup



#### 6.4.2 Test Procedure

##### MEASUREMENT PROCEDURE REF

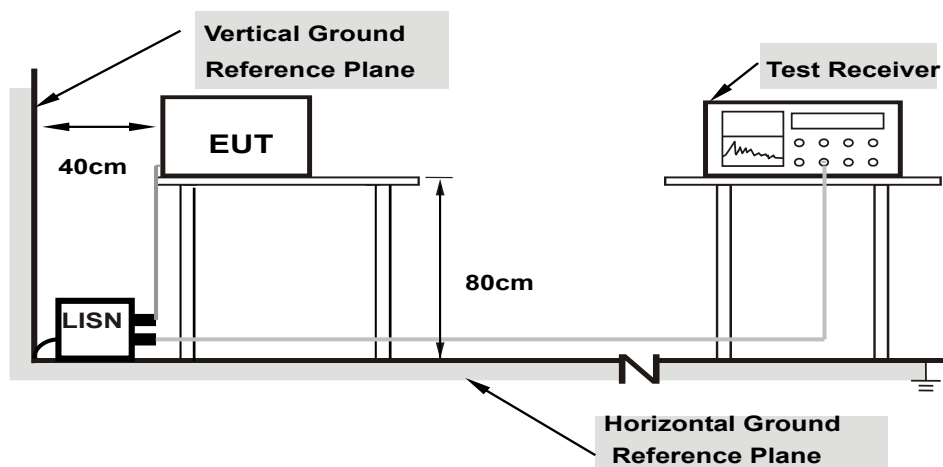
- a. Set the RBW = 100 kHz.
- b. Set the VBW  $\geq 300$  kHz.
- c. Detector = peak.
- d. Sweep time = auto couple.
- e. Trace mode = max hold.
- f. Allow trace to fully stabilize.
- g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

##### MEASUREMENT PROCEDURE OOBE

- a. Set RBW = 100 kHz.
- b. Set VBW  $\geq 300$  kHz.
- c. Detector = peak.
- d. Sweep = auto couple.
- e. Trace Mode = max hold.
- f. Allow trace to fully stabilize.
- g. Use the peak marker function to determine the maximum amplitude level.

## 6.5 AC Power Conducted Emissions

### 6.5.1 Test Setup



**Note: 1.Support units were connected to second LISN.**

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

### 6.5.2 Test Procedure

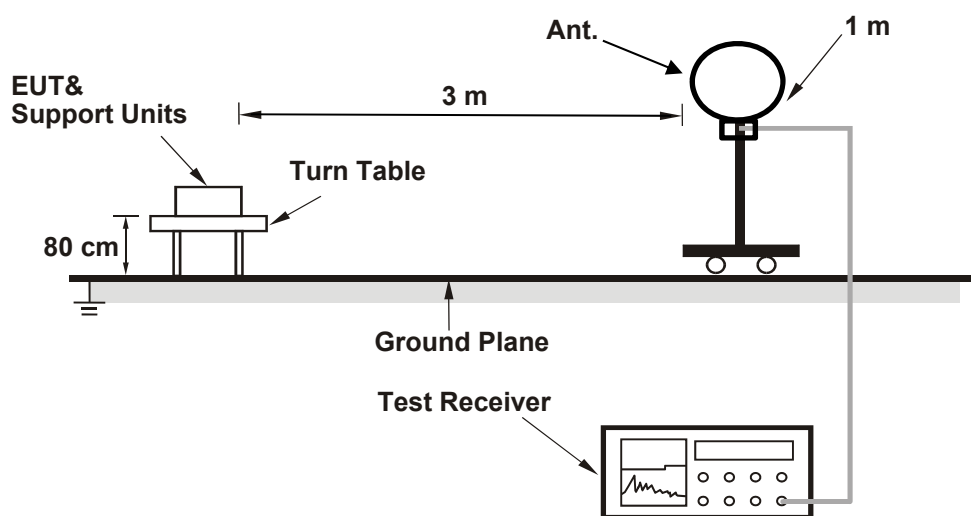
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

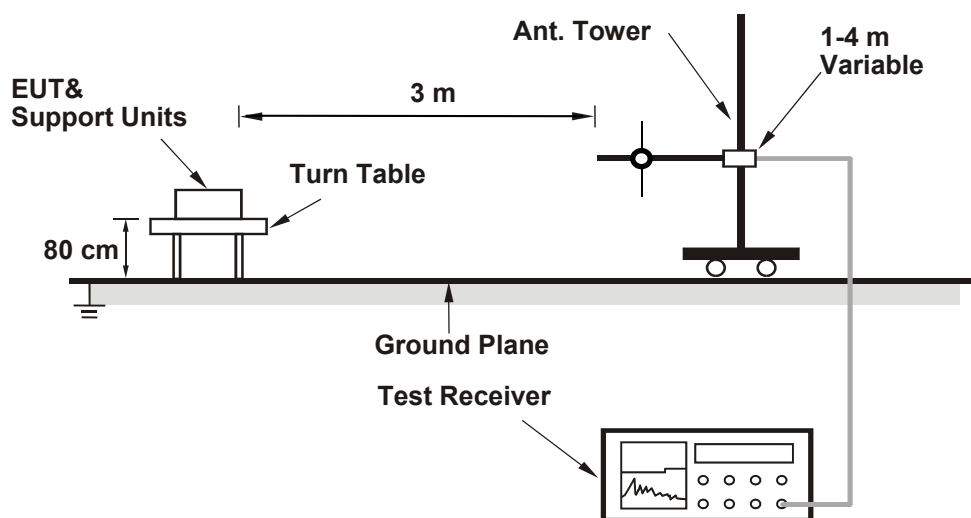
## 6.6 Unwanted Emissions below 1 GHz

### 6.6.1 Test Setup

#### For Radiated emission below 30 MHz



#### For Radiated emission above 30 MHz



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

## 6.6.2 Test Procedure

### For Radiated emission below 30 MHz

- a. 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.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. 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. 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

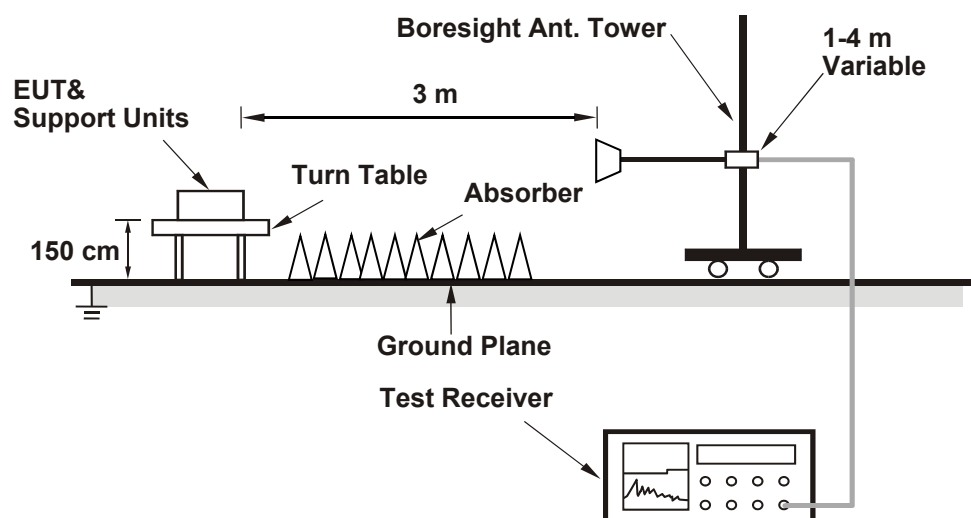
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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. 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.

## 6.7 Unwanted Emissions above 1 GHz

### 6.7.1 Test Setup



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

### 6.7.2 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:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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#### 802.11b CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	23.36	23.33	432.049	26.36	30	Pass
6	2437	23.62	23.19	438.593	26.42	30	Pass
11	2462	22.26	22.11	330.822	25.20	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.47 dBi < 6 dBi, so the output power limit shall not be reduced.

#### 802.11g CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	19.06	18.73	155.183	21.91	30	Pass
6	2437	23.17	23.02	407.939	26.11	30	Pass
11	2462	18.48	18.34	138.703	21.42	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.47 dBi < 6 dBi, so the output power limit shall not be reduced.

#### 802.11ax (HE20) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	18.56	18.52	142.901	21.55	30	Pass
6	2437	22.97	22.86	391.35	25.93	30	Pass
11	2462	18.52	18.37	139.828	21.46	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.47 dBi < 6 dBi, so the output power limit shall not be reduced.



### 802.11ax (HE40) CDD

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	17.51	17.43	111.699	20.48	30	Pass
6	2437	18.30	18.11	132.323	21.22	30	Pass
9	2452	17.92	17.71	120.964	20.83	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 1.47 dBi < 6 dBi, so the output power limit shall not be reduced.

### 802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	18.56	18.52	142.901	21.55	30	Pass
6	2437	22.97	22.86	391.350	25.93	30	Pass
11	2462	18.52	18.37	139.828	21.46	30	Pass

Notes:

1. Directional gain =  $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
2. The directional gain is 4.47 dBi < 6 dBi, so the output power limit shall not be reduced.

### 802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	17.51	17.43	111.699	20.48	30	Pass
6	2437	18.30	18.11	132.323	21.22	30	Pass
9	2452	17.92	17.71	120.964	20.83	30	Pass

Notes:

1. Directional gain =  $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
2. The directional gain is 4.47 dBi < 6 dBi, so the output power limit shall not be reduced.

## 7.2 Power Spectral Density

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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### 802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-8.29	-8.50	-5.38	8.00	Pass
6	2437	-8.18	-8.43	-5.29	8.00	Pass
11	2462	-8.52	-8.74	-5.62	8.00	Pass

#### Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
3. The directional gain is 4.47 dBi < 6 dBi, so the power density limit shall not be reduced.

### 802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-13.79	-14.10	-10.93	8.00	Pass
6	2437	-10.52	-10.70	-7.60	8.00	Pass
11	2462	-14.33	-14.49	-11.40	8.00	Pass

#### Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
3. The directional gain is 4.47 dBi < 6 dBi, so the power density limit shall not be reduced.

### 802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-14.83	-15.01	-11.91	8.00	Pass
6	2437	-9.40	-9.52	-6.45	8.00	Pass
11	2462	-14.87	-15.02	-11.93	8.00	Pass

#### Notes:

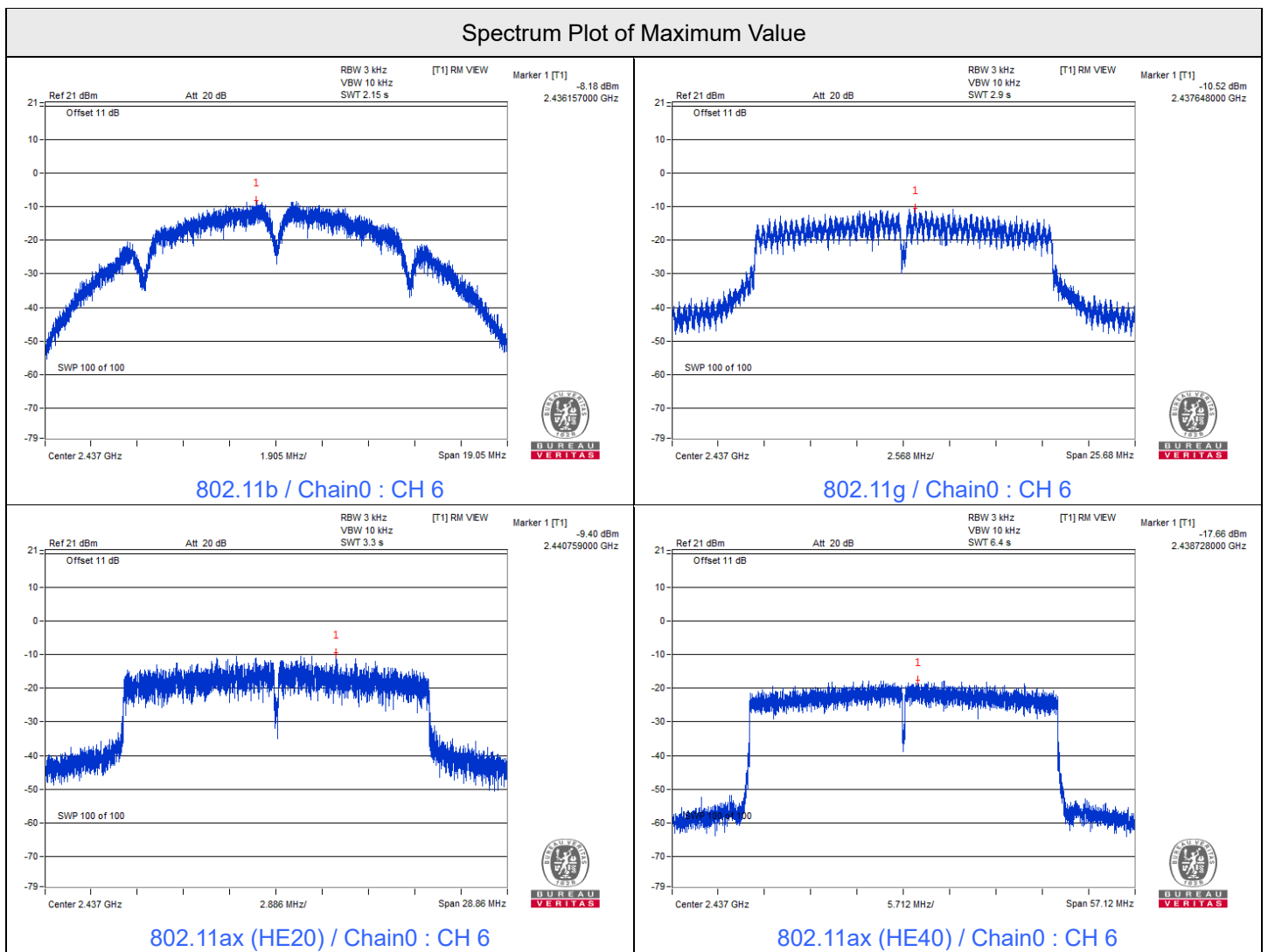
1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
3. The directional gain is 4.47 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
3	2422	-18.45	-18.53	-15.48	8.00	Pass
6	2437	-17.66	-17.89	-14.76	8.00	Pass
9	2452	-18.34	-18.51	-15.41	8.00	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain =  $10 \log[(10^{\text{Chain0}/20} + 10^{\text{Chain1}/20})^2 / 2]$
3. The directional gain is 4.47 dBi < 6 dBi, so the power density limit shall not be reduced.



### 7.3 6 dB Bandwidth

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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#### 802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	8.10	8.11	0.5	Pass
6	2437	8.01	8.13	0.5	Pass
11	2462	8.08	8.06	0.5	Pass

#### 802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	15.18	15.53	0.5	Pass
6	2437	15.21	15.16	0.5	Pass
11	2462	15.18	15.19	0.5	Pass

#### 802.11ax (HE20)

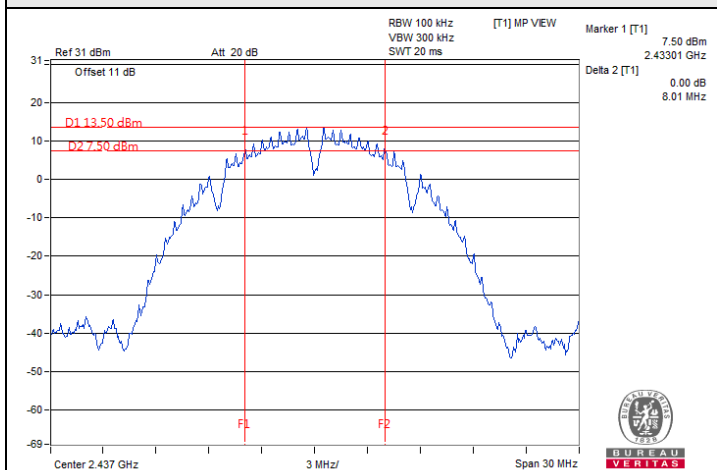
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	18.53	18.49	0.5	Pass
6	2437	18.06	18.35	0.5	Pass
11	2462	18.38	17.89	0.5	Pass

#### 802.11ax (HE40)

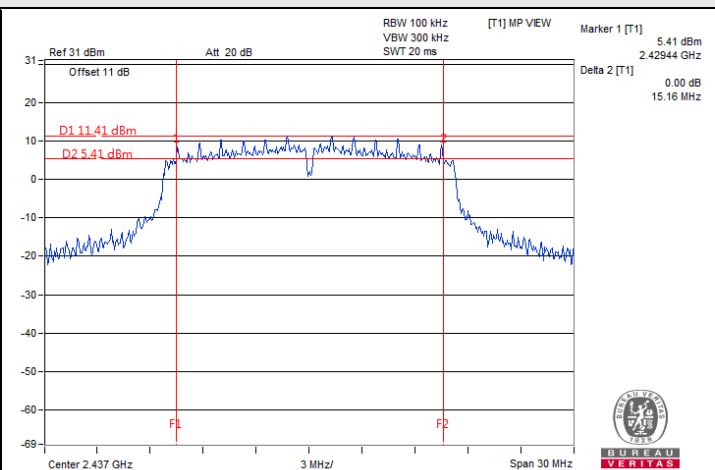
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	2422	36.61	37.63	0.5	Pass
6	2437	37.46	36.47	0.5	Pass
9	2452	37.44	35.52	0.5	Pass



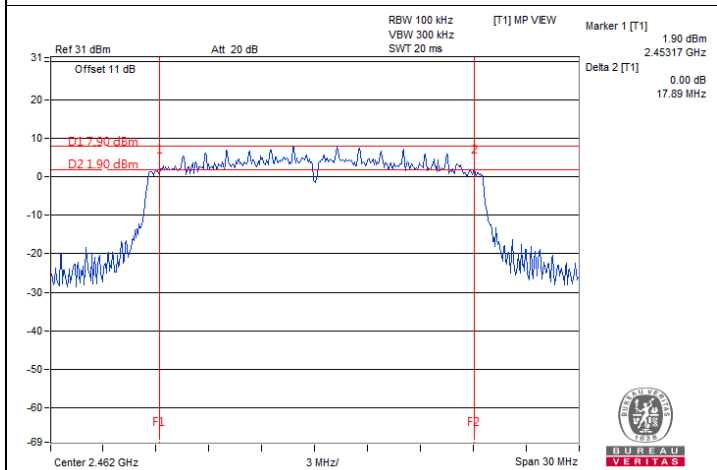
### Spectrum Plot of Minimum Value



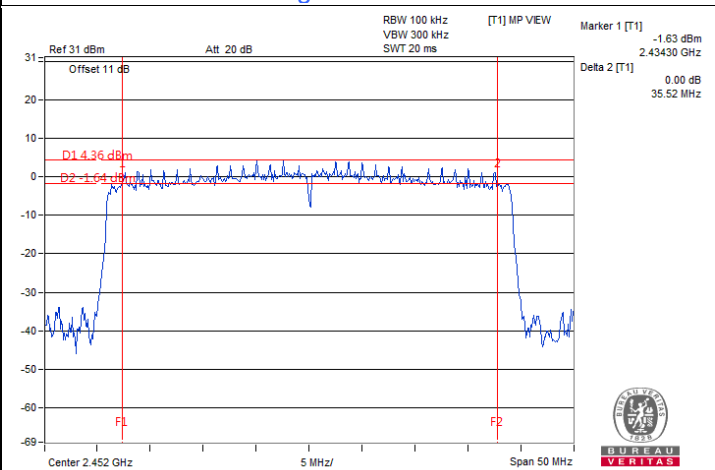
802.11b / Chain0 : CH 6



802.11g / Chain1 : CH 6



802.11ax (HE20) / Chain1 : CH 11

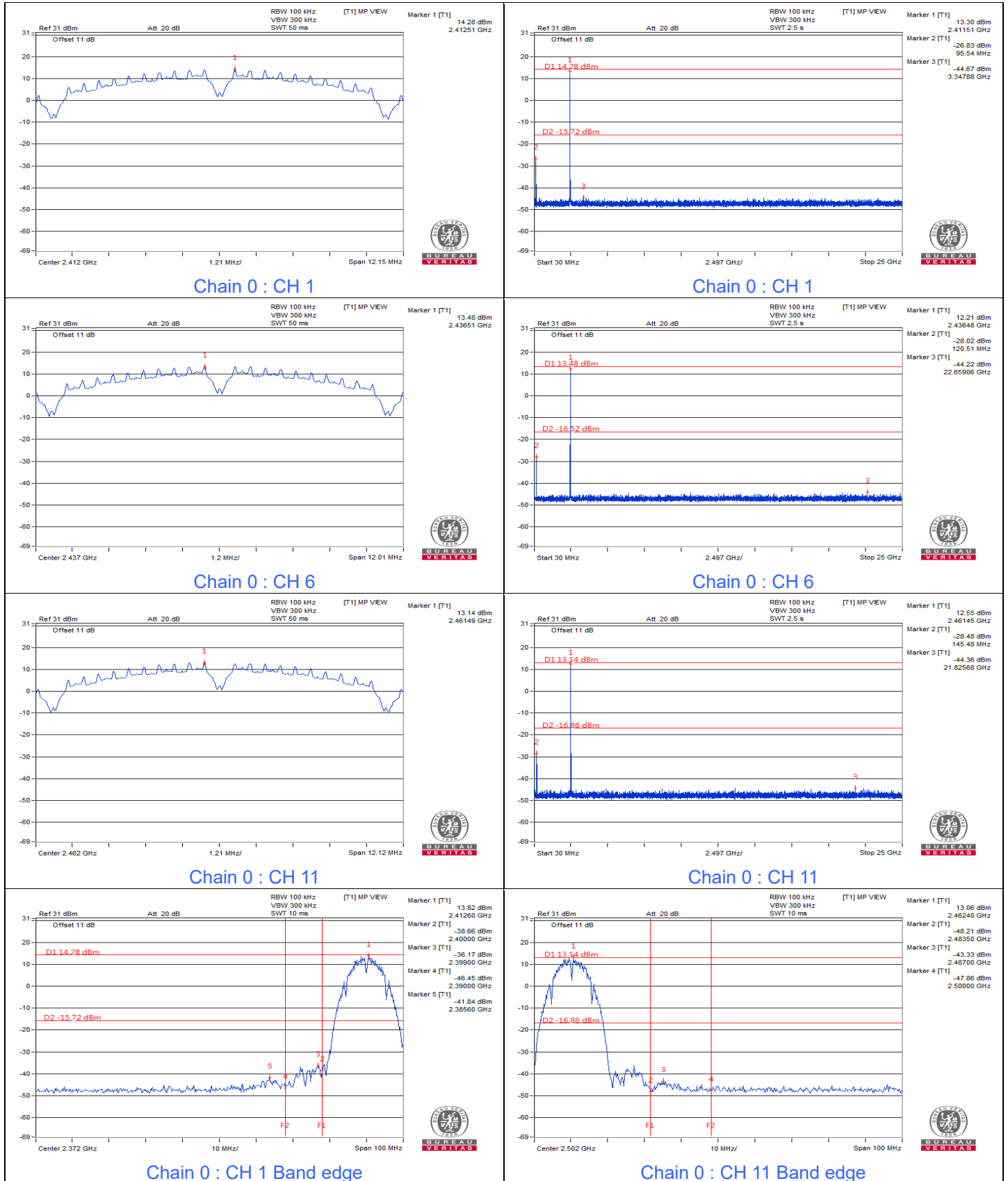


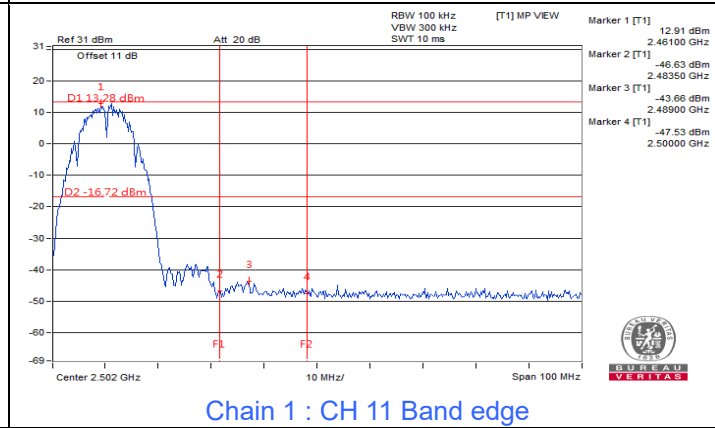
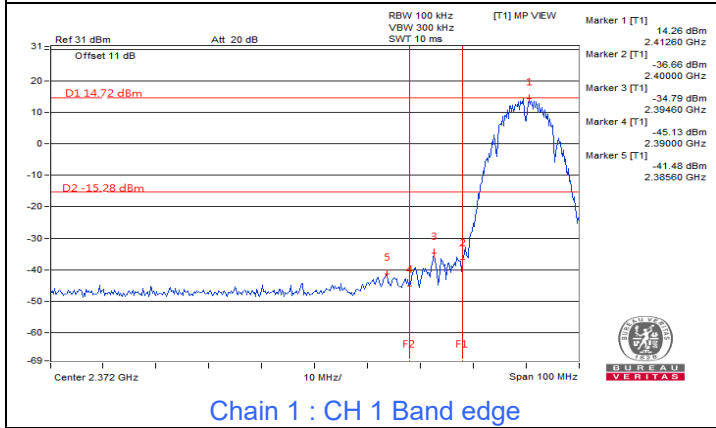
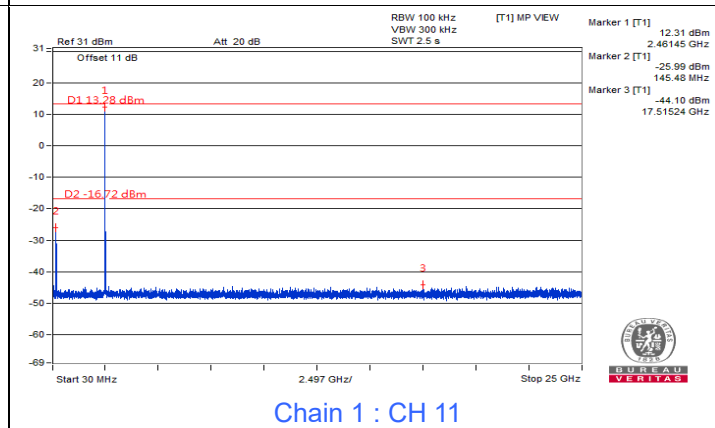
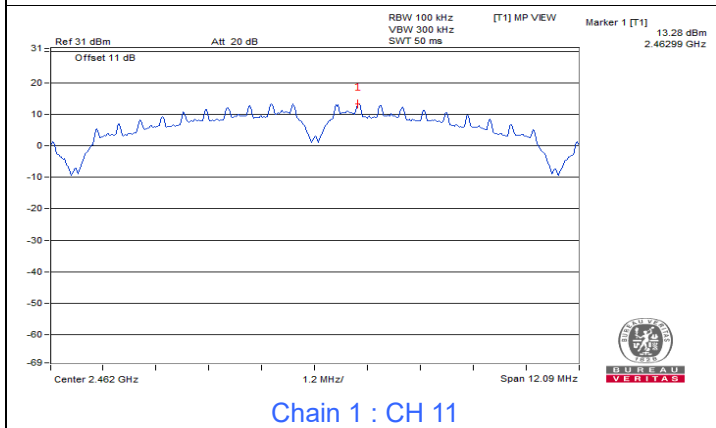
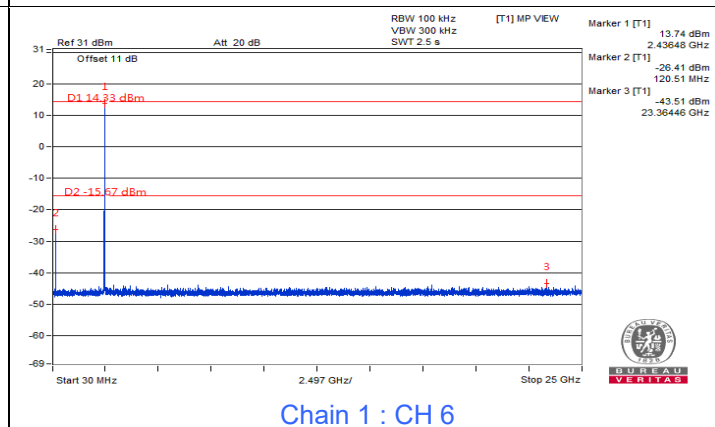
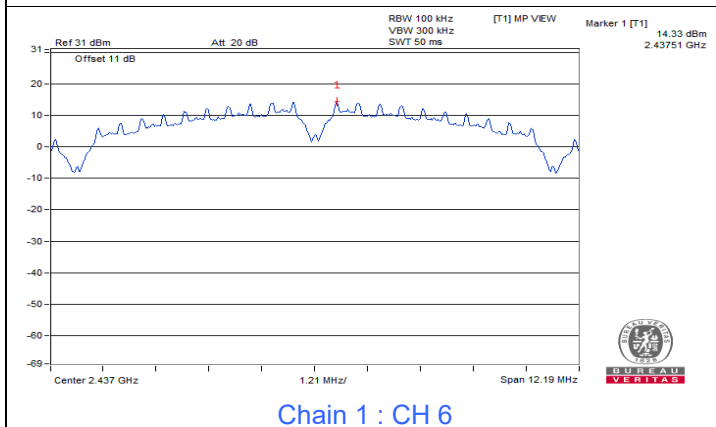
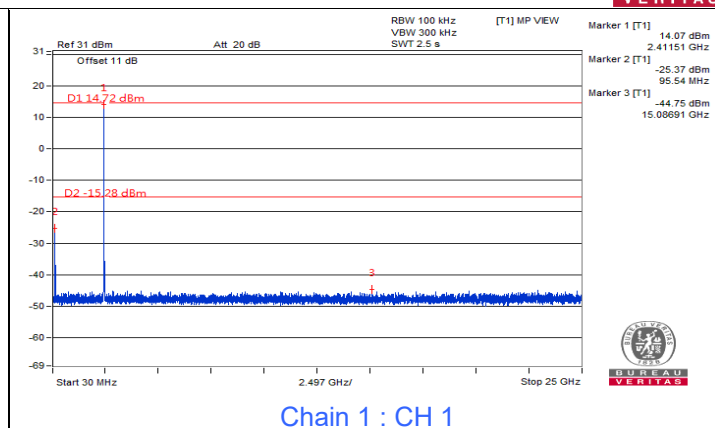
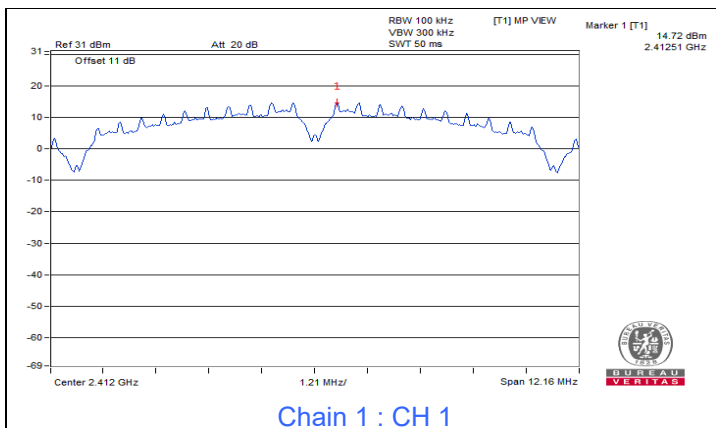
802.11ax (HE40) / Chain1 : CH 9

### 7.4 Conducted Out of Band Emissions

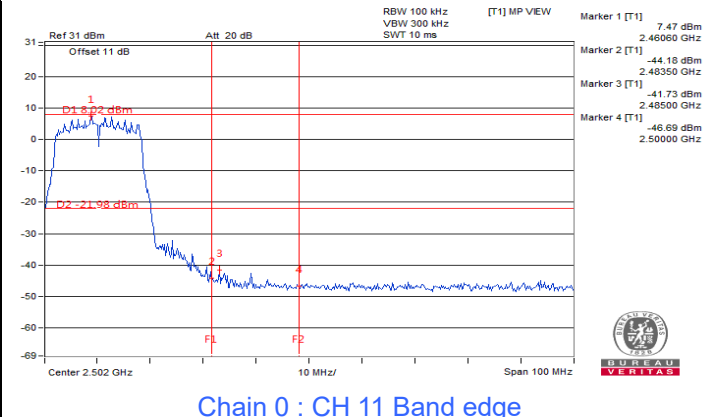
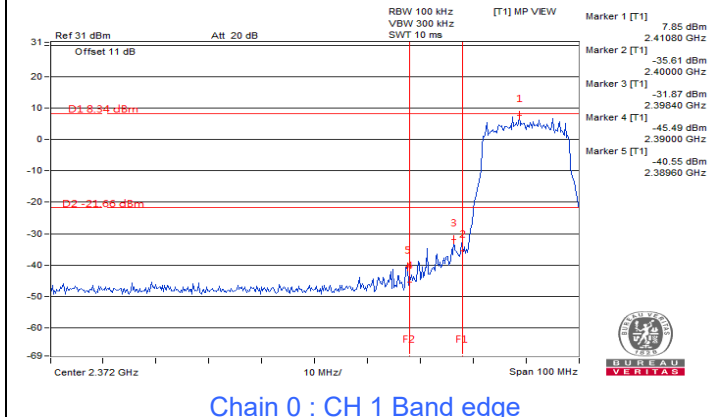
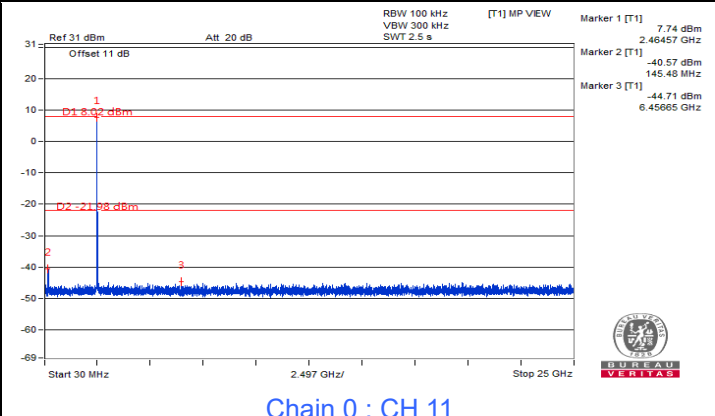
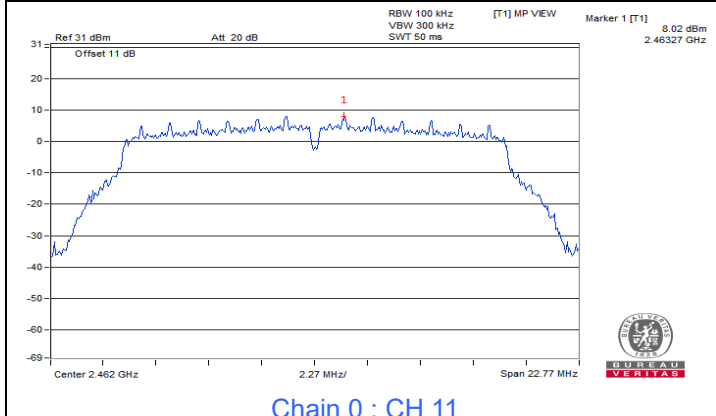
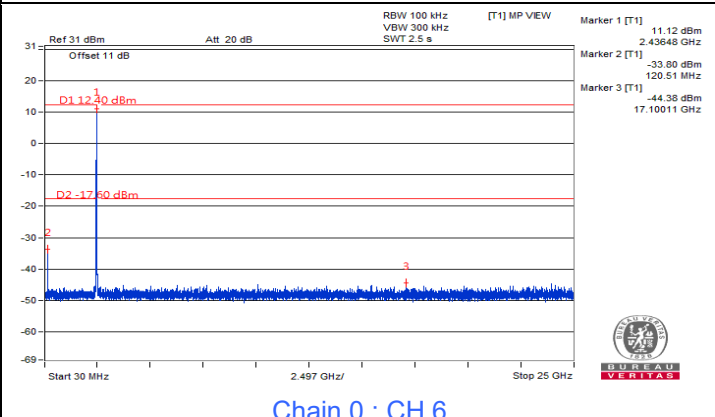
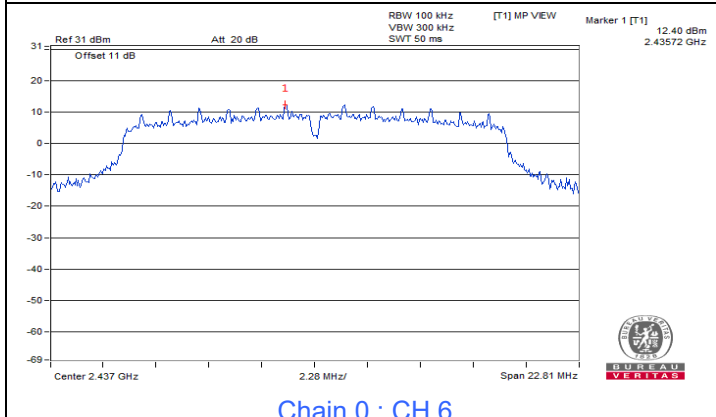
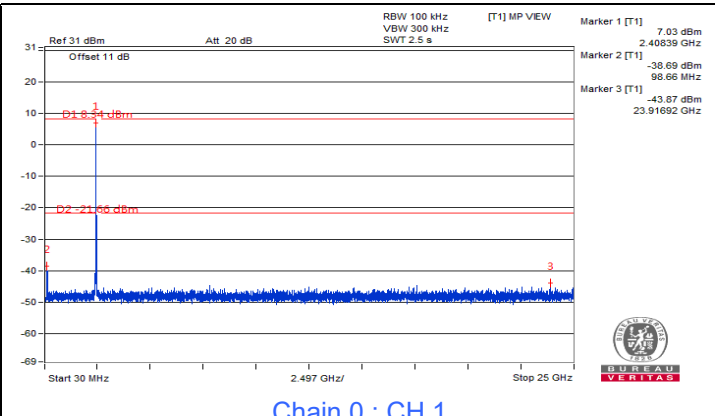
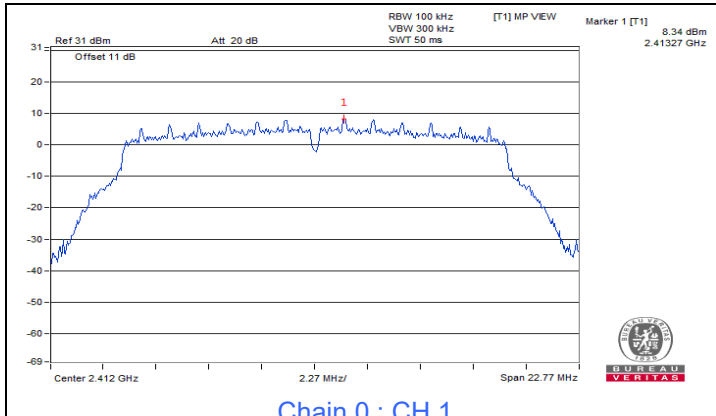
Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Wayne Lin
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#### 802.11b

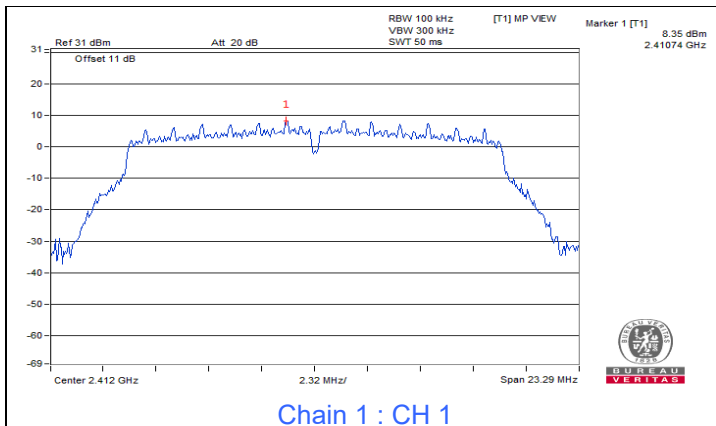




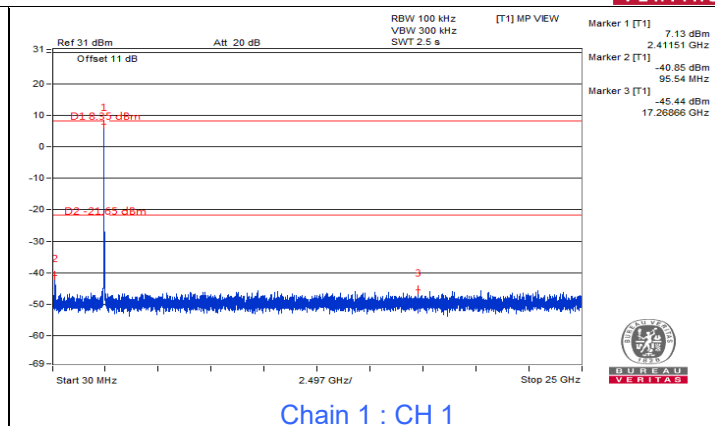
802.11g



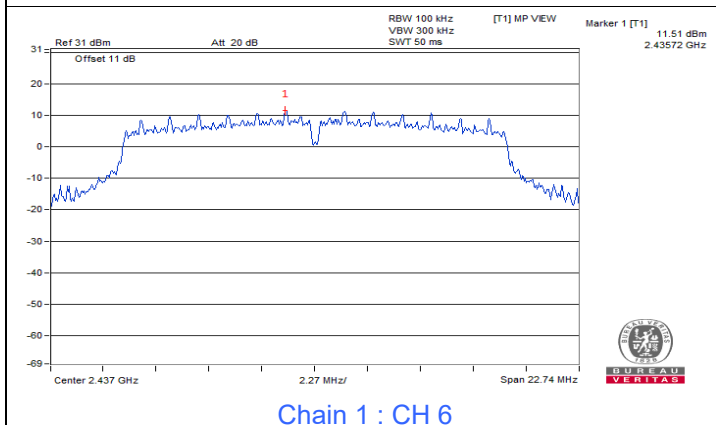




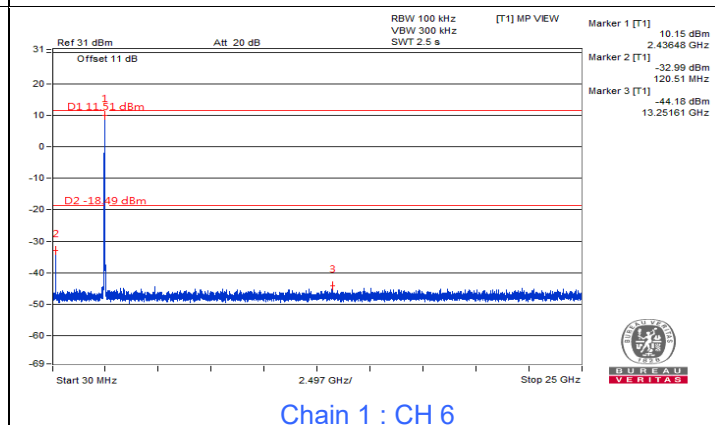
Chain 1 : CH 1



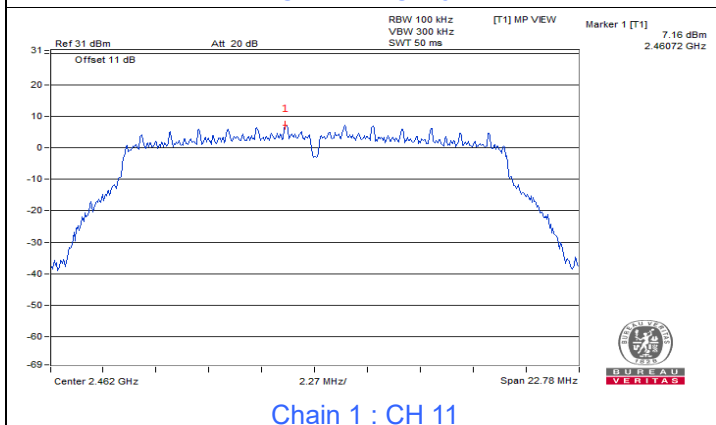
Chain 1 : CH 1



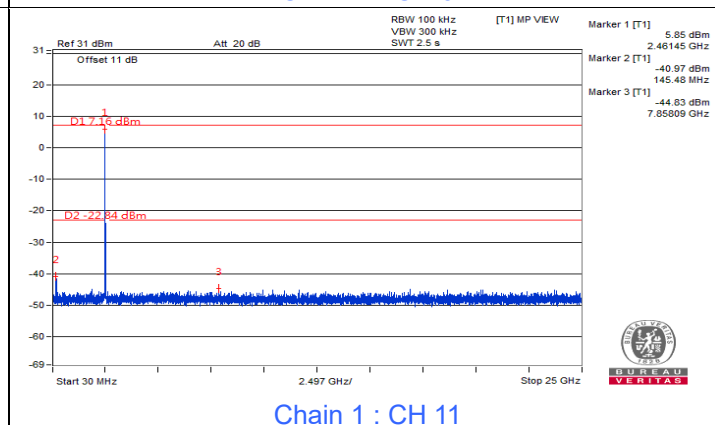
Chain 1 : CH 6



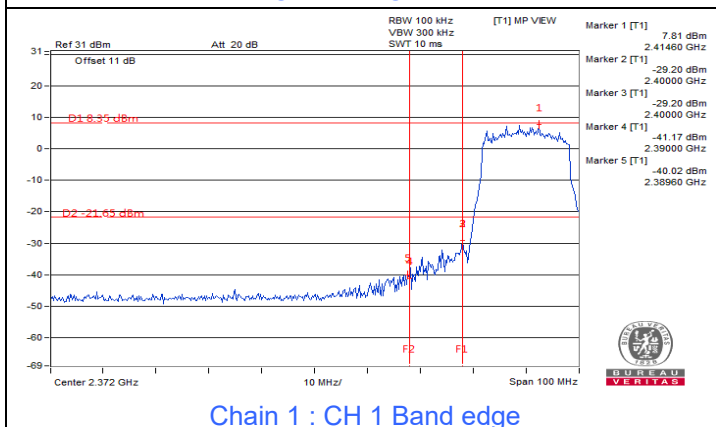
Chain 1 : CH 6



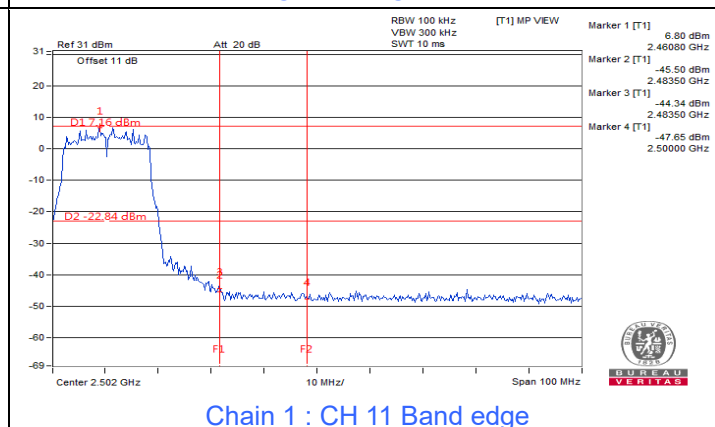
Chain 1 : CH 11



Chain 1 : CH 11



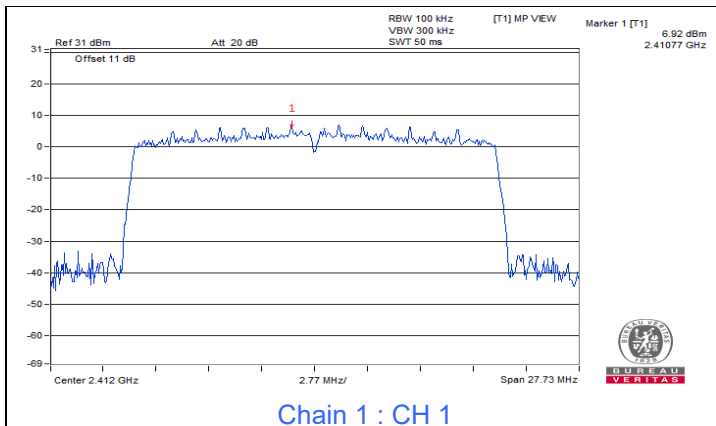
Chain 1 : CH 1 Band edge



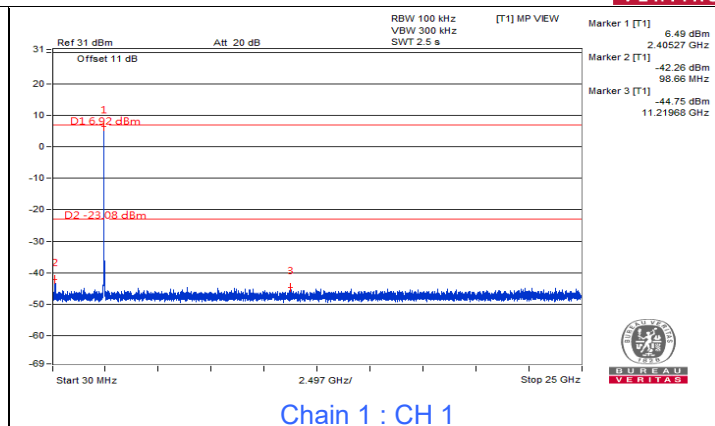
Chain 1 : CH 11 Band edge

802.11ax (HE20)

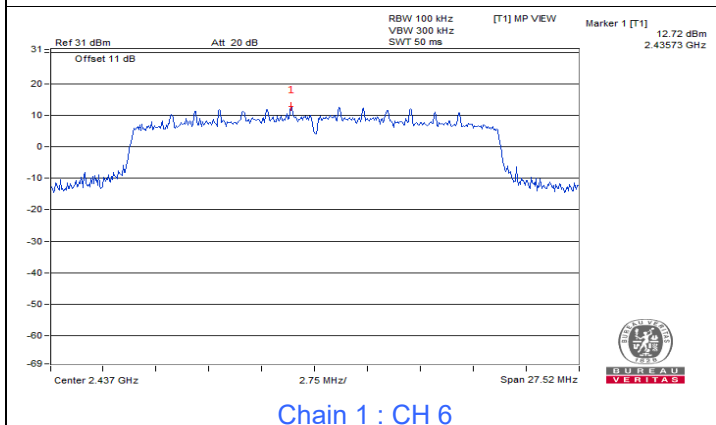




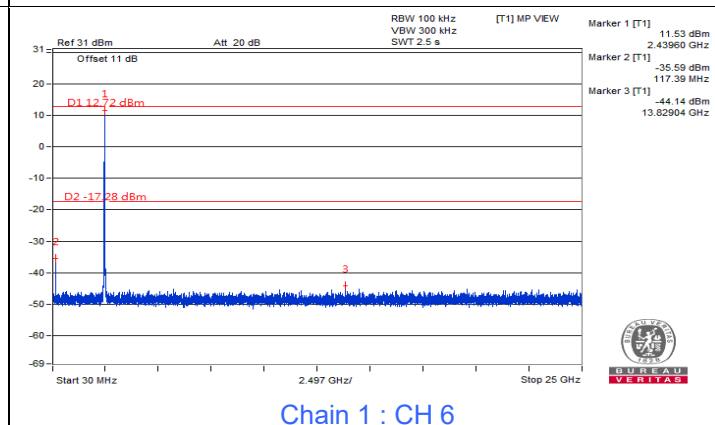
Chain 1 : CH 1



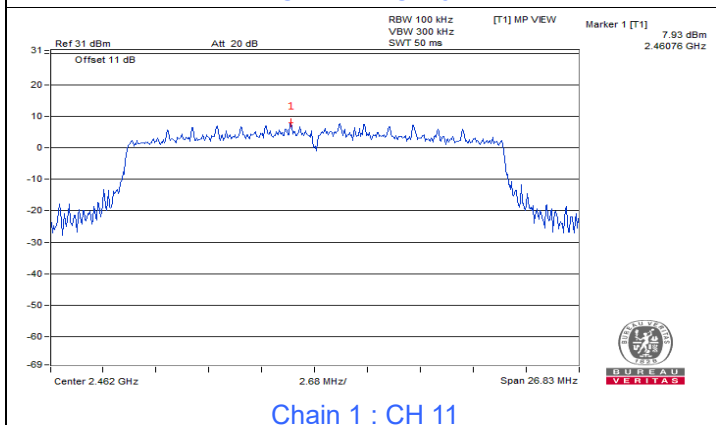
Chain 1 : CH 1



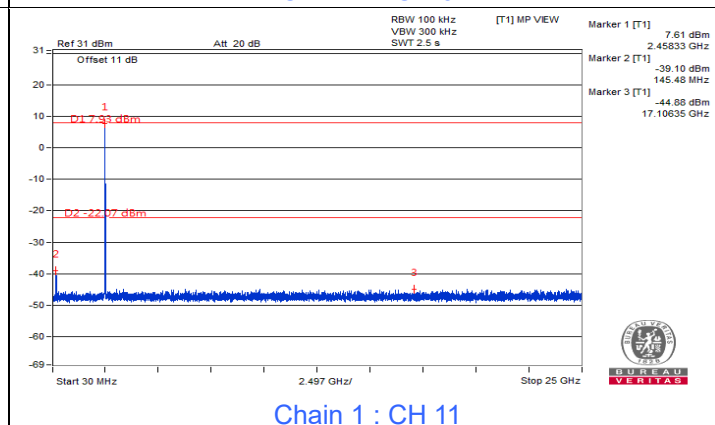
Chain 1 : CH 6



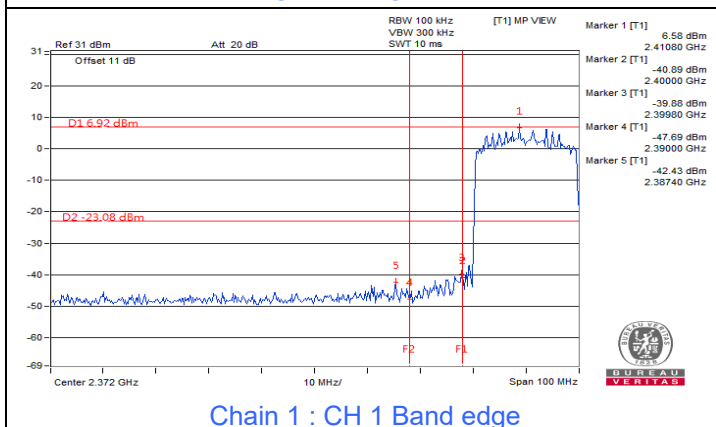
Chain 1 : CH 6



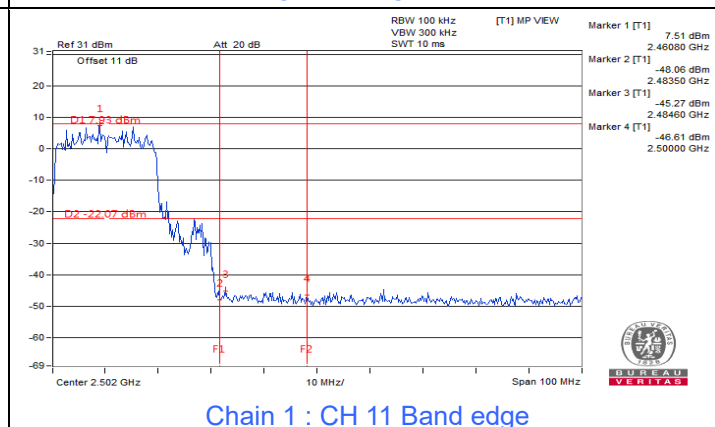
Chain 1 : CH 11



Chain 1 : CH 11



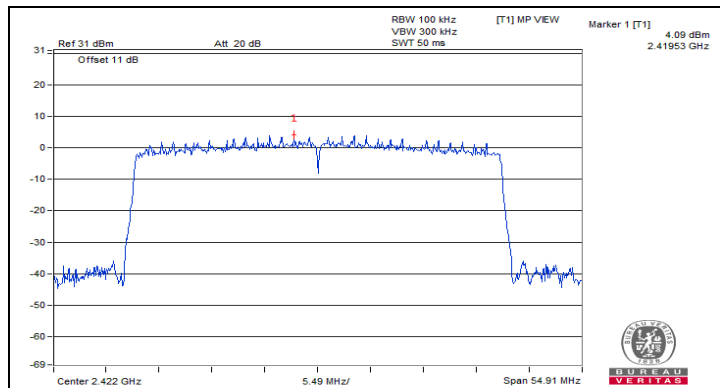
Chain 1 : CH 1 Band edge



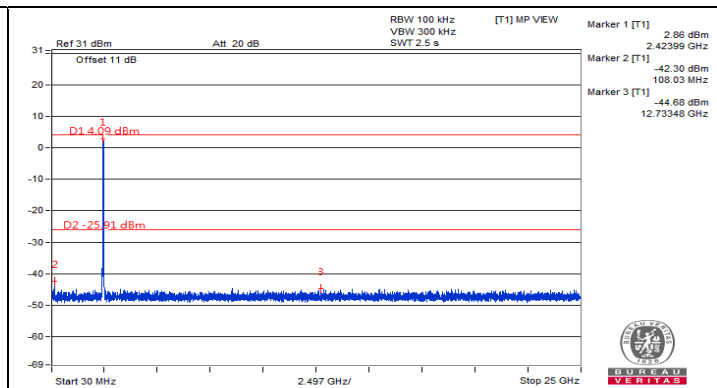
Chain 1 : CH 11 Band edge



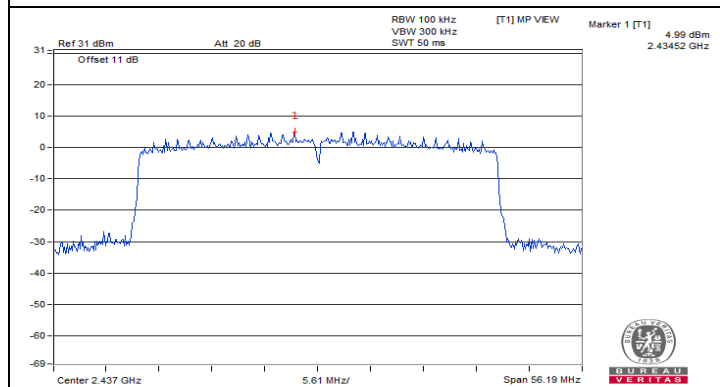
### 802.11ax (HE40)



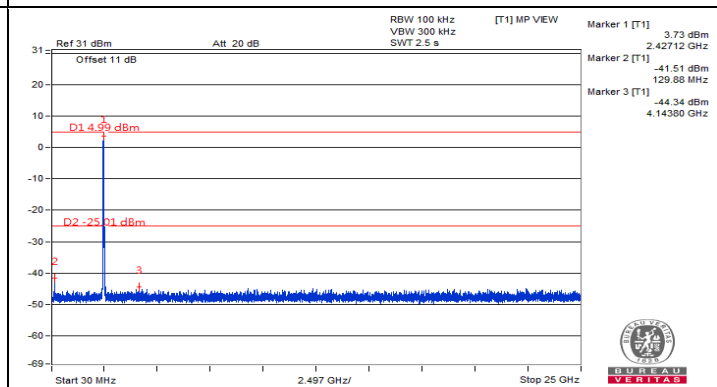
Chain 0 : CH 3



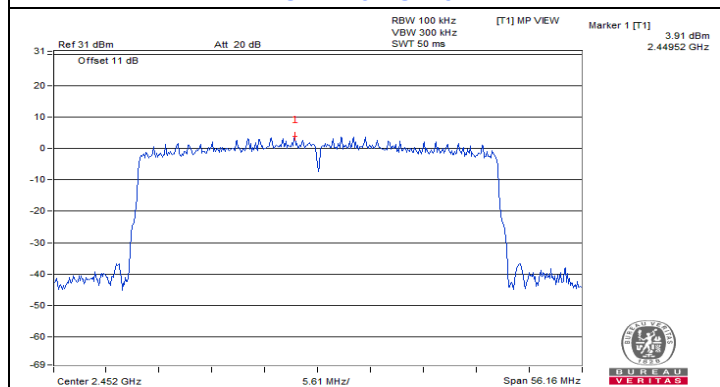
Chain 0 : CH 3



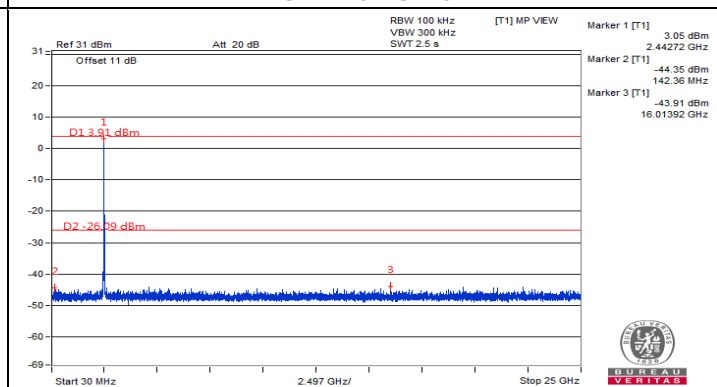
Chain 0 : CH 6



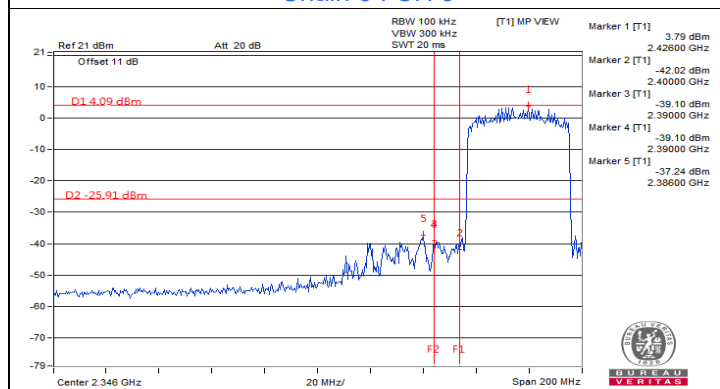
Chain 0 : CH 6



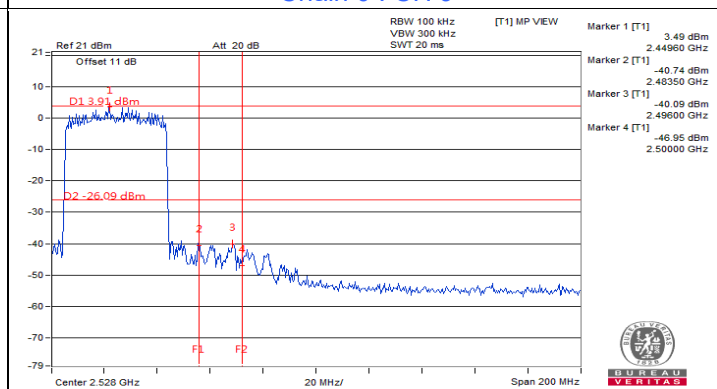
Chain 0 : CH 9



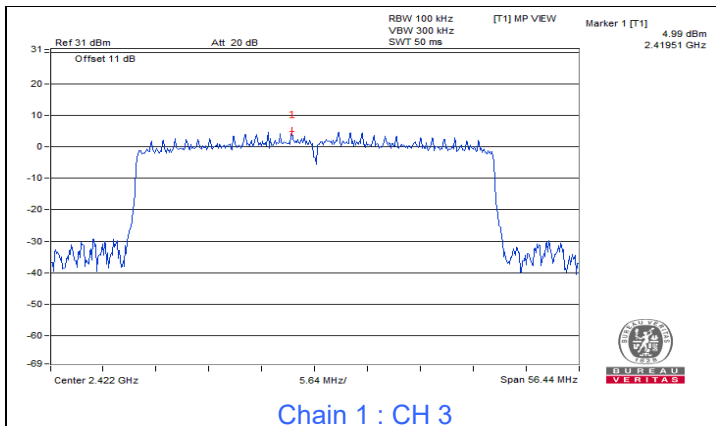
Chain 0 : CH 9



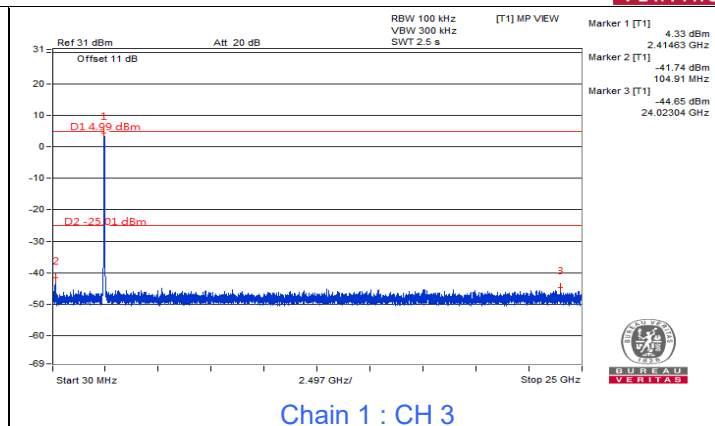
Chain 0 : CH 3 Band edge



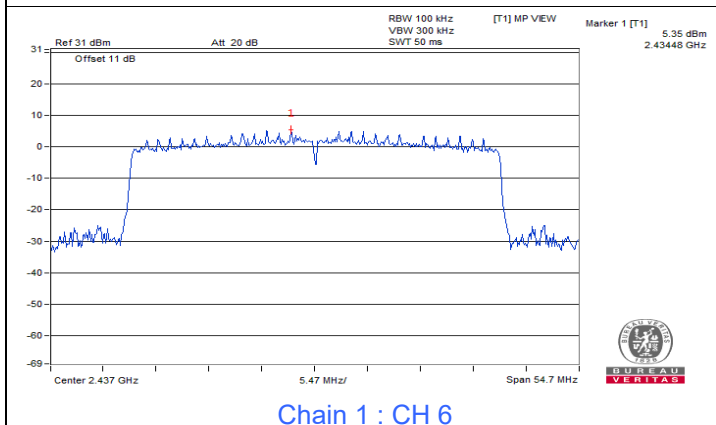
Chain 0 : CH 9 Band edge



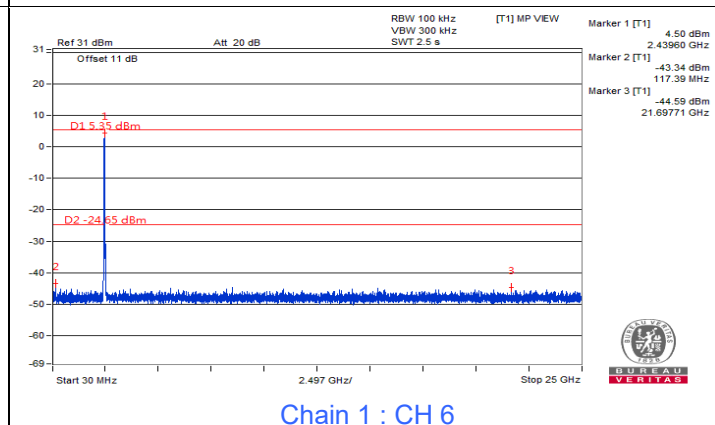
Chain 1 : CH 3



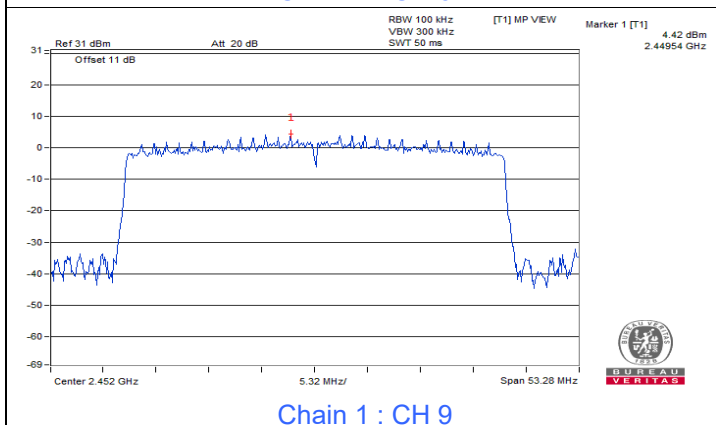
Chain 1 : CH 3



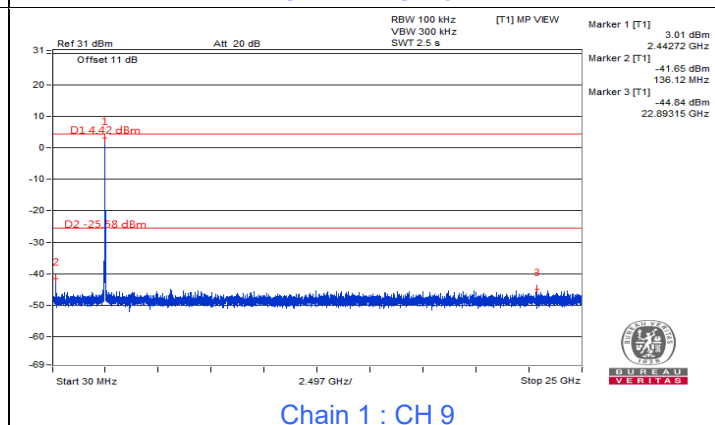
Chain 1 : CH 6



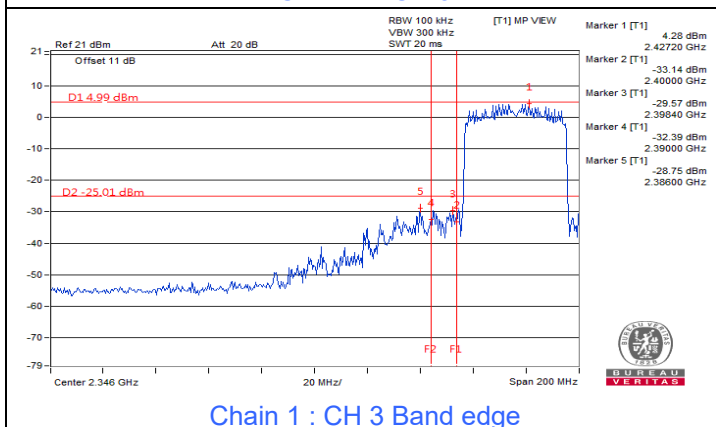
Chain 1 : CH 6



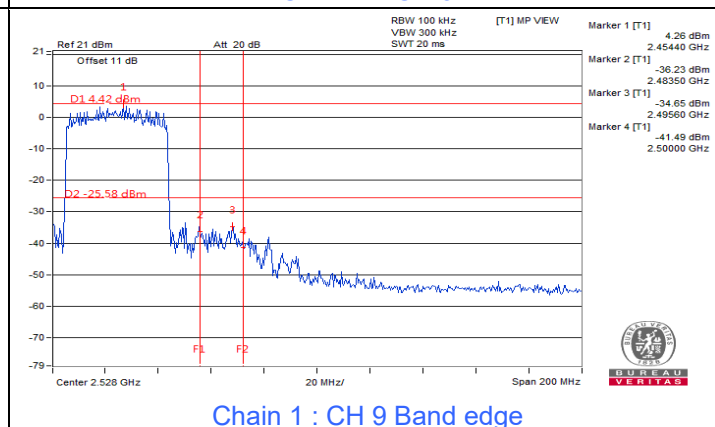
Chain 1 : CH 9



Chain 1 : CH 9



Chain 1 : CH 3 Band edge



Chain 1 : CH 9 Band edge

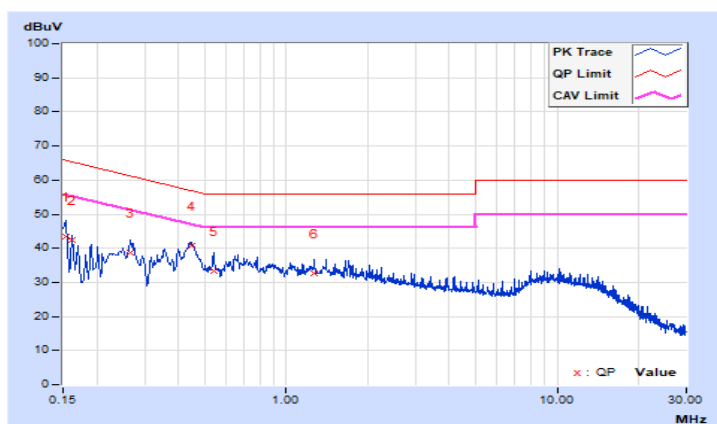
## 7.5 AC Power Conducted Emissions

RF Mode	TX 802.11b	Channel	CH 6 : 2437 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23°C, 66% RH
Tested By	Titan HSU	Test Mode	A

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.68	33.73	23.12	43.41	32.80	65.78	55.78	-22.37	-22.98
2	0.16200	9.69	32.73	22.34	42.42	32.03	65.36	55.36	-22.94	-23.33
3	0.26600	9.75	28.91	23.23	38.66	32.98	61.24	51.24	-22.58	-18.26
<b>4</b>	<b>0.44600</b>	<b>9.80</b>	<b>31.07</b>	<b>28.49</b>	<b>40.87</b>	<b>38.29</b>	<b>56.95</b>	<b>46.95</b>	<b>-16.08</b>	<b>-8.66</b>
5	0.53800	9.81	23.49	20.43	33.30	30.24	56.00	46.00	-22.70	-15.76
6	1.27000	9.86	22.69	19.53	32.55	29.39	56.00	46.00	-23.45	-16.61

### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

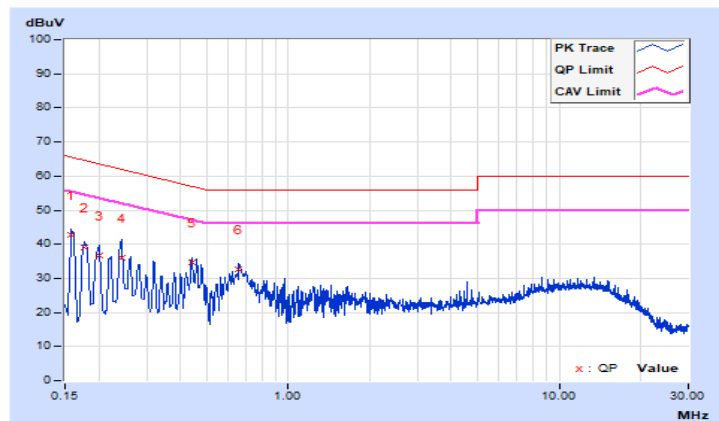


<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	150 kHz ~ 30 MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 66% RH
<b>Tested By</b>	Titan HSU	<b>Test Mode</b>	A

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.69	32.94	18.03	42.63	27.72	65.57	55.57	-22.94	-27.85
2	0.17800	9.70	29.40	15.47	39.10	25.17	64.58	54.58	-25.48	-29.41
3	0.20200	9.72	27.02	13.79	36.74	23.51	63.53	53.53	-26.79	-30.02
4	0.24200	9.74	26.17	14.72	35.91	24.46	62.03	52.03	-26.12	-27.57
5	0.44178	9.81	24.88	17.56	34.69	27.37	57.03	47.03	-22.34	-19.66
6	0.65800	9.83	22.72	16.74	32.55	26.57	56.00	46.00	-23.45	-19.43

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

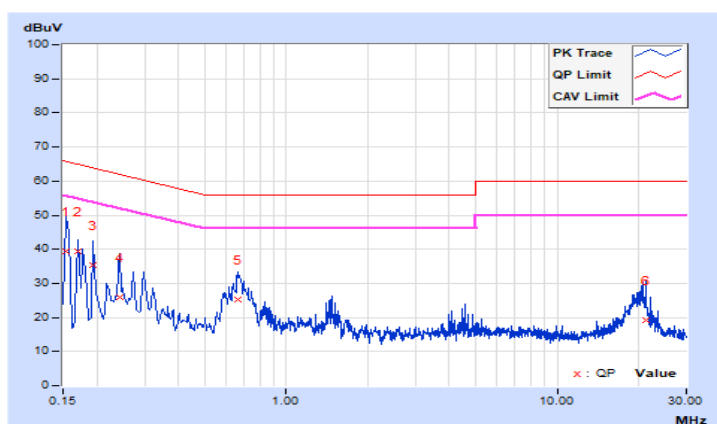


<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	150 kHz ~ 30 MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 66% RH
<b>Tested By</b>	Titan HSU	<b>Test Mode</b>	B

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.68	29.57	11.23	39.25	20.91	65.78	55.78	-26.53	-34.87
2	0.17000	9.70	29.55	10.59	39.25	20.29	64.96	54.96	-25.71	-34.67
3	0.19400	9.72	25.70	8.41	35.42	18.13	63.86	53.86	-28.44	-35.73
4	0.24200	9.74	16.30	8.54	26.04	18.28	62.03	52.03	-35.99	-33.75
5	0.66200	9.82	15.48	12.19	25.30	22.01	56.00	46.00	-30.70	-23.99
6	21.27800	10.16	8.88	1.71	19.04	11.87	60.00	50.00	-40.96	-38.13

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value





<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	150 kHz ~ 30 MHz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	23°C, 66% RH
<b>Tested By</b>	Titan HSU	<b>Test Mode</b>	B

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.69	35.77	12.76	45.46	22.45	65.57	55.57	-20.11	-33.12
2	0.18200	9.71	25.92	10.59	35.63	20.30	64.39	54.39	-28.76	-34.09
3	0.25400	9.74	19.26	9.34	29.00	19.08	61.63	51.63	-32.63	-32.55
4	0.30200	9.77	20.17	15.41	29.94	25.18	60.19	50.19	-30.25	-25.01
5	0.64902	9.83	18.77	12.71	28.60	22.54	56.00	46.00	-27.40	-23.46
6	20.66200	10.20	11.58	5.44	21.78	15.64	60.00	50.00	-38.22	-34.36

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 7.6 Unwanted Emissions below 1 GHz

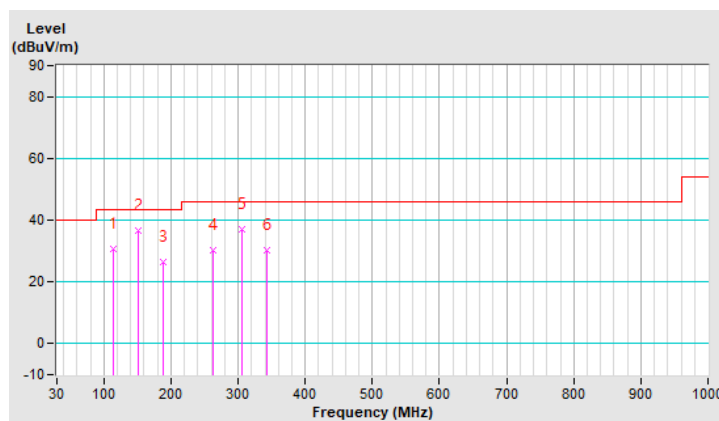
<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	9 kHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	21°C, 68% RH
<b>Tested By</b>	Luis Lee	<b>Test Mode</b>	A

### 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	113.42	30.6 QP	43.5	-12.9	1.01 H	155	42.0	-11.4
2	152.22	36.6 QP	43.5	-6.9	1.01 H	154	45.1	-8.5
3	189.08	26.6 QP	43.5	-16.9	1.50 H	328	37.6	-11.0
4	262.80	30.2 QP	46.0	-15.8	1.01 H	155	38.9	-8.7
5	305.48	37.0 QP	46.0	-9.0	1.50 H	146	44.2	-7.2
6	342.34	30.4 QP	46.0	-15.6	1.50 H	343	37.1	-6.7

### 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 emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

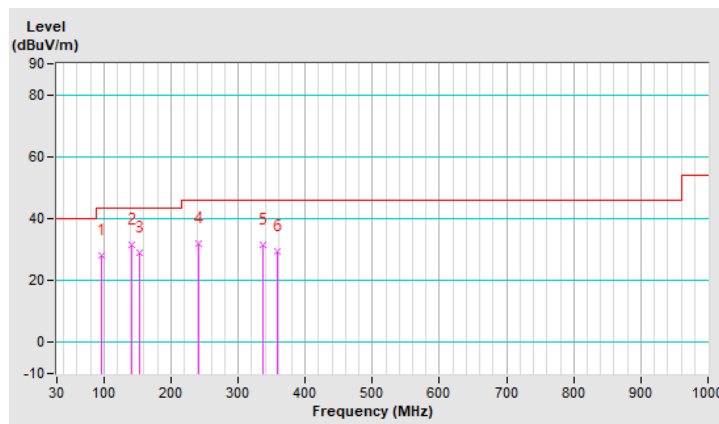


<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	9 kHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	21°C, 68% RH
<b>Tested By</b>	Luis Lee	<b>Test Mode</b>	A

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	95.96	28.3 QP	43.5	-15.2	1.00 V	351	42.4	-14.1
2	140.58	31.7 QP	43.5	-11.8	1.00 V	351	40.7	-9.0
3	154.16	29.0 QP	43.5	-14.5	1.49 V	243	37.5	-8.5
4	241.46	31.8 QP	46.0	-14.2	1.00 V	217	41.3	-9.5
5	336.52	31.4 QP	46.0	-14.6	1.00 V	140	38.1	-6.7
6	357.86	29.6 QP	46.0	-16.4	1.49 V	250	36.1	-6.5

**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 of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

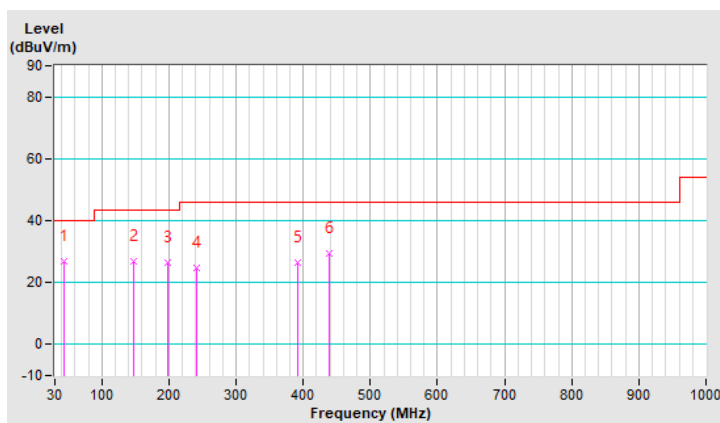


<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	9 kHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	21°C, 68% RH
<b>Tested By</b>	Luis Lee	<b>Test Mode</b>	B

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	43.58	27.0 QP	40.0	-13.0	1.00 H	343	36.2	-9.2
2	146.40	26.8 QP	43.5	-16.7	1.49 H	262	35.4	-8.6
3	198.78	26.3 QP	43.5	-17.2	1.49 H	290	37.8	-11.5
4	241.46	24.8 QP	46.0	-21.2	1.00 H	342	34.3	-9.5
5	390.84	26.6 QP	46.0	-19.4	1.00 H	342	32.5	-5.9
6	439.34	29.5 QP	46.0	-16.5	1.00 H	342	34.3	-4.8

**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 of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

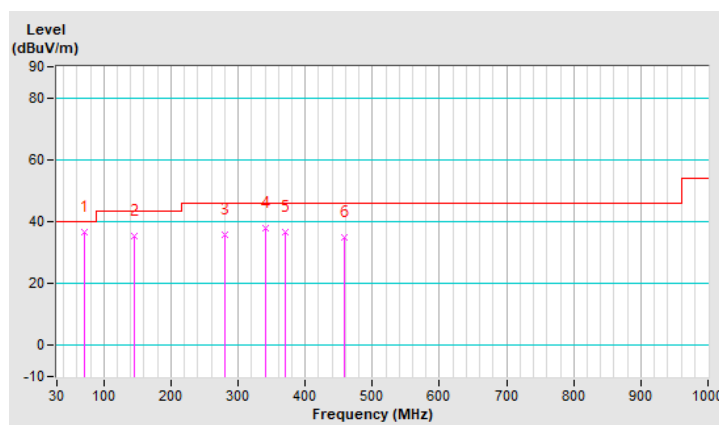


<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	9 kHz ~ 1 GHz	<b>Detector Function &amp; Bandwidth</b>	(QP) RB = 120kHz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	21°C, 68% RH
<b>Tested By</b>	Luis Lee	<b>Test Mode</b>	B

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	70.74	36.5 QP	40.0	-3.5	1.50 V	347	47.4	-10.9
2	144.46	35.3 QP	43.5	-8.2	1.01 V	161	44.1	-8.8
3	280.26	35.7 QP	46.0	-10.3	1.50 V	344	43.5	-7.8
4	340.40	37.7 QP	46.0	-8.3	1.50 V	340	44.4	-6.7
5	369.50	36.8 QP	46.0	-9.2	1.50 V	342	43.0	-6.2
6	458.74	35.0 QP	46.0	-11.0	1.50 V	342	39.6	-4.6

**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 emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



### 7.7 Unwanted Emissions above 1 GHz

<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 1 : 2412 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	2390.00	60.4 PK	74.0	-13.6	2.17 H	59	25.5	34.9
2	2390.00	49.5 AV	54.0	-4.5	2.17 H	59	14.6	34.9
3	*2412.00	113.3 PK			2.17 H	59	78.4	34.9
4	*2412.00	110.8 AV			2.17 H	59	75.9	34.9
5	4824.00	58.5 PK	74.0	-15.5	1.58 H	304	44.9	13.6
6	4824.00	53.3 AV	54.0	-0.7	1.58 H	304	39.7	13.6

#### 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	2387.10	62.4 PK	74.0	-11.6	1.44 V	146	27.4	35.0
2	2387.10	53.6 AV	54.0	-0.4	1.44 V	146	18.6	35.0
3	*2412.00	114.3 PK			1.44 V	146	79.4	34.9
4	*2412.00	111.8 AV			1.44 V	146	76.9	34.9
5	4824.00	55.9 PK	74.0	-18.1	1.52 V	36	42.3	13.6
6	4824.00	49.4 AV	54.0	-4.6	1.52 V	36	35.8	13.6

#### 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.



<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	24°C, 70% RH
<b>Tested By</b>	Greg 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	*2437.00	115.3 PK			2.09 H	82	80.4	34.9
2	*2437.00	112.7 AV			2.09 H	82	77.8	34.9
3	4874.00	57.3 PK	74.0	-16.7	1.24 H	298	43.8	13.5
4	4874.00	53.5 AV	54.0	-0.5	1.24 H	298	40.0	13.5

**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	*2437.00	115.9 PK			1.55 V	150	81.0	34.9
2	*2437.00	113.2 AV			1.55 V	150	78.3	34.9
3	4874.00	56.7 PK	74.0	-17.3	1.58 V	46	43.2	13.5
4	4874.00	49.9 AV	54.0	-4.1	1.58 V	46	36.4	13.5

**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.



<b>RF Mode</b>	TX 802.11b	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	113.9 PK			2.12 H	59	79.0	34.9
2	*2462.00	111.4 AV			2.12 H	59	76.5	34.9
3	2488.70	61.8 PK	74.0	-12.2	2.12 H	59	27.0	34.8
4	2488.70	53.1 AV	54.0	-0.9	2.12 H	59	18.3	34.8
5	4924.00	58.1 PK	74.0	-15.9	1.17 H	311	44.9	13.2
6	4924.00	53.0 AV	54.0	-1.0	1.17 H	311	39.8	13.2

**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	114.9 PK			1.22 V	93	80.0	34.9
2	*2462.00	112.4 AV			1.22 V	93	77.5	34.9
3	2483.50	62.8 PK	74.0	-11.2	1.22 V	93	28.0	34.8
<b>4</b>	<b>2483.50</b>	<b>53.9 AV</b>	<b>54.0</b>	<b>-0.1</b>	<b>1.22 V</b>	<b>93</b>	<b>19.1</b>	<b>34.8</b>
5	4924.00	54.6 PK	74.0	-19.4	1.63 V	48	41.4	13.2
6	4924.00	49.7 AV	54.0	-4.3	1.63 V	48	36.5	13.2

**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.





<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 1 : 2412 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	2390.00	71.3 PK	74.0	-2.7	2.13 H	71	36.4	34.9
2	2390.00	49.3 AV	54.0	-4.7	2.13 H	71	14.4	34.9
3	*2412.00	114.1 PK			2.13 H	71	79.2	34.9
4	*2412.00	104.3 AV			2.13 H	71	69.4	34.9
5	4824.00	54.3 PK	74.0	-19.7	1.59 H	308	40.7	13.6
6	4824.00	40.9 AV	54.0	-13.1	1.59 H	308	27.3	13.6

**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	2390.00	73.8 PK	74.0	-0.2	1.00 V	105	38.9	34.9
2	2390.00	50.7 AV	54.0	-3.3	1.00 V	105	15.8	34.9
3	*2412.00	115.3 PK			1.00 V	105	80.4	34.9
4	*2412.00	105.4 AV			1.00 V	105	70.5	34.9
5	4824.00	54.0 PK	74.0	-20.0	1.59 V	46	40.4	13.6
6	4824.00	40.7 AV	54.0	-13.3	1.59 V	46	27.1	13.6

**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.



<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	2390.00	70.2 PK	74.0	-3.8	2.17 H	60	35.3	34.9
2	2390.00	50.8 AV	54.0	-3.2	2.17 H	60	15.9	34.9
3	*2437.00	117.6 PK			2.17 H	60	82.7	34.9
4	*2437.00	107.8 AV			2.17 H	60	72.9	34.9
5	2483.50	72.2 PK	74.0	-1.8	2.17 H	60	37.4	34.8
6	2483.50	51.3 AV	54.0	-2.7	2.17 H	60	16.5	34.8
7	4874.00	54.8 PK	74.0	-19.2	1.63 H	314	41.3	13.5
8	4874.00	41.1 AV	54.0	-12.9	1.63 H	314	27.6	13.5

**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	2390.00	71.2 PK	74.0	-2.8	1.55 V	146	36.3	34.9
2	2390.00	51.3 AV	54.0	-2.7	1.55 V	146	16.4	34.9
3	*2437.00	118.6 PK			1.55 V	146	83.7	34.9
4	*2437.00	108.9 AV			1.55 V	146	74.0	34.9
5	2483.70	73.5 PK	74.0	-0.5	1.55 V	146	38.7	34.8
6	2483.70	51.7 AV	54.0	-2.3	1.55 V	146	16.9	34.8
7	4874.00	54.4 PK	74.0	-19.6	1.63 V	54	40.9	13.5
8	4874.00	40.9 AV	54.0	-13.1	1.63 V	54	27.4	13.5

**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.



<b>RF Mode</b>	TX 802.11g	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	113.9 PK			2.17 H	62	79.0	34.9
2	*2462.00	104.0 AV			2.17 H	62	69.1	34.9
3	2483.50	72.1 PK	74.0	-1.9	2.17 H	62	37.3	34.8
4	2483.50	49.0 AV	54.0	-5.0	2.17 H	62	14.2	34.8
5	4924.00	54.0 PK	74.0	-20.0	1.57 H	303	40.8	13.2
6	4924.00	40.6 AV	54.0	-13.4	1.57 H	303	27.4	13.2

**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	115.0 PK			1.55 V	198	80.1	34.9
2	*2462.00	105.2 AV			1.55 V	198	70.3	34.9
3	2485.50	73.4 PK	74.0	-0.6	1.55 V	198	38.6	34.8
4	2485.50	50.0 AV	54.0	-4.0	1.55 V	198	15.2	34.8
5	4924.00	53.7 PK	74.0	-20.3	1.57 V	56	40.5	13.2
6	4924.00	40.3 AV	54.0	-13.7	1.57 V	56	27.1	13.2

**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.



<b>RF Mode</b>	TX 802.11ax (HE20)	<b>Channel</b>	CH 1 : 2412 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	2390.00	72.5 PK	74.0	-1.5	2.13 H	63	37.6	34.9
2	2390.00	49.3 AV	54.0	-4.7	2.13 H	63	14.4	34.9
3	*2412.00	115.9 PK			2.13 H	63	81.0	34.9
4	*2412.00	103.5 AV			2.13 H	63	68.6	34.9
5	4824.00	54.4 PK	74.0	-19.6	1.49 H	311	40.8	13.6
6	4824.00	41.0 AV	54.0	-13.0	1.49 H	311	27.4	13.6

**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	2388.70	73.7 PK	74.0	-0.3	1.99 V	306	38.8	34.9
2	2388.70	50.3 AV	54.0	-3.7	1.99 V	306	15.4	34.9
3	*2412.00	117.3 PK			1.99 V	306	82.4	34.9
4	*2412.00	104.8 AV			1.99 V	306	69.9	34.9
5	4824.00	53.8 PK	74.0	-20.2	1.54 V	43	40.2	13.6
6	4824.00	40.9 AV	54.0	-13.1	1.54 V	43	27.3	13.6

**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.



<b>RF Mode</b>	TX 802.11ax (HE20)	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	2390.00	70.8 PK	74.0	-3.2	2.18 H	65	35.9	34.9
2	2390.00	52.5 AV	54.0	-1.5	2.18 H	65	17.6	34.9
3	*2437.00	120.2 PK			2.18 H	65	85.3	34.9
4	*2437.00	107.7 AV			2.18 H	65	72.8	34.9
5	2483.50	71.8 PK	74.0	-2.2	2.18 H	65	37.0	34.8
6	2483.50	53.0 AV	54.0	-1.0	2.18 H	65	18.2	34.8
7	4874.00	55.0 PK	74.0	-19.0	1.58 H	304	41.5	13.5
8	4874.00	41.2 AV	54.0	-12.8	1.58 H	304	27.7	13.5

**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	2390.00	71.6 PK	74.0	-2.4	1.54 V	160	36.7	34.9
2	2390.00	53.3 AV	54.0	-0.7	1.54 V	160	18.4	34.9
3	*2437.00	121.5 PK			1.54 V	160	86.6	34.9
4	*2437.00	108.8 AV			1.54 V	160	73.9	34.9
5	2483.50	72.5 PK	74.0	-1.5	1.54 V	160	37.7	34.8
6	2483.50	53.4 AV	54.0	-0.6	1.54 V	160	18.6	34.8
7	4874.00	54.5 PK	74.0	-19.5	1.53 V	44	41.0	13.5
8	4874.00	41.0 AV	54.0	-13.0	1.53 V	44	27.5	13.5

**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.



<b>RF Mode</b>	TX 802.11ax (HE20)	<b>Channel</b>	CH 11 : 2462 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	115.4 PK			2.20 H	61	80.5	34.9
2	*2462.00	102.9 AV			2.20 H	61	68.0	34.9
3	2485.10	73.2 PK	74.0	-0.8	2.20 H	61	38.4	34.8
4	2485.10	51.3 AV	54.0	-2.7	2.20 H	61	16.5	34.8
5	4924.00	54.2 PK	74.0	-19.8	1.62 H	305	41.0	13.2
6	4924.00	40.6 AV	54.0	-13.4	1.62 H	305	27.4	13.2

**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	116.6 PK			1.54 V	197	81.7	34.9
2	*2462.00	104.0 AV			1.54 V	197	69.1	34.9
3	2485.10	73.8 PK	74.0	-0.2	1.54 V	197	39.0	34.8
4	2485.10	51.6 AV	54.0	-2.4	1.54 V	197	16.8	34.8
5	4924.00	54.0 PK	74.0	-20.0	1.64 V	49	40.8	13.2
6	4924.00	40.5 AV	54.0	-13.5	1.64 V	49	27.3	13.2

**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.



<b>RF Mode</b>	TX 802.11ax (HE40)	<b>Channel</b>	CH 3 : 2422 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	2390.00	72.9 PK	74.0	-1.1	2.14 H	69	38.0	34.9
2	2390.00	49.9 AV	54.0	-4.1	2.14 H	69	15.0	34.9
3	*2422.00	112.0 PK			2.14 H	69	77.1	34.9
4	*2422.00	99.4 AV			2.14 H	69	64.5	34.9
5	4844.00	54.3 PK	74.0	-19.7	1.57 H	301	40.7	13.6
6	4844.00	40.8 AV	54.0	-13.2	1.57 H	301	27.2	13.6

**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	2390.00	73.7 PK	74.0	-0.3	1.64 V	154	38.8	34.9
2	2390.00	50.5 AV	54.0	-3.5	1.64 V	154	15.6	34.9
3	*2422.00	112.8 PK			1.64 V	154	77.9	34.9
4	*2422.00	100.3 AV			1.64 V	154	65.4	34.9
5	4844.00	54.0 PK	74.0	-20.0	1.47 V	39	40.4	13.6
6	4844.00	40.5 AV	54.0	-13.5	1.47 V	39	26.9	13.6

**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.



<b>RF Mode</b>	TX 802.11ax (HE40)	<b>Channel</b>	CH 6 : 2437 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	2390.00	72.5 PK	74.0	-1.5	2.15 H	63	37.6	34.9
2	2390.00	50.1 AV	54.0	-3.9	2.15 H	63	15.2	34.9
3	*2437.00	112.9 PK			2.15 H	63	78.0	34.9
4	*2437.00	100.3 AV			2.15 H	63	65.4	34.9
5	2483.50	72.2 PK	74.0	-1.8	2.15 H	63	37.4	34.8
6	2483.50	50.6 AV	54.0	-3.4	2.15 H	63	15.8	34.8
7	4874.00	54.3 PK	74.0	-19.7	1.59 H	315	40.8	13.5
8	4874.00	40.8 AV	54.0	-13.2	1.59 H	315	27.3	13.5

**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	2390.00	73.2 PK	74.0	-0.8	1.54 V	147	38.3	34.9
2	2390.00	50.5 AV	54.0	-3.5	1.54 V	147	15.6	34.9
3	*2437.00	114.2 PK			1.54 V	147	79.3	34.9
4	*2437.00	101.2 AV			1.54 V	147	66.3	34.9
5	2483.50	72.8 PK	74.0	-1.2	1.54 V	147	38.0	34.8
6	2483.50	51.0 AV	54.0	-3.0	1.54 V	147	16.2	34.8
7	4874.00	54.1 PK	74.0	-19.9	1.64 V	56	40.6	13.5
8	4874.00	40.7 AV	54.0	-13.3	1.64 V	56	27.2	13.5

**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.





<b>RF Mode</b>	TX 802.11ax (HE40)	<b>Channel</b>	CH 9 : 2452 MHz
<b>Frequency Range</b>	1 GHz ~ 25 GHz	<b>Detector Function &amp; Bandwidth</b>	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
<b>Input Power</b>	120 Vac, 60 Hz	<b>Environmental Conditions</b>	22°C, 70% RH
<b>Tested By</b>	Greg 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	*2452.00	112.1 PK			2.13 H	79	77.2	34.9
2	*2452.00	98.9 AV			2.13 H	79	64.0	34.9
3	2484.20	72.9 PK	74.0	-1.1	2.13 H	79	38.1	34.8
4	2484.20	50.9 AV	54.0	-3.1	2.13 H	79	16.1	34.8
5	4904.00	54.0 PK	74.0	-20.0	1.59 H	306	40.6	13.4
6	4904.00	40.5 AV	54.0	-13.5	1.59 H	306	27.1	13.4

**Antenna Polarity & Test Distance : Vertical at 3 m**

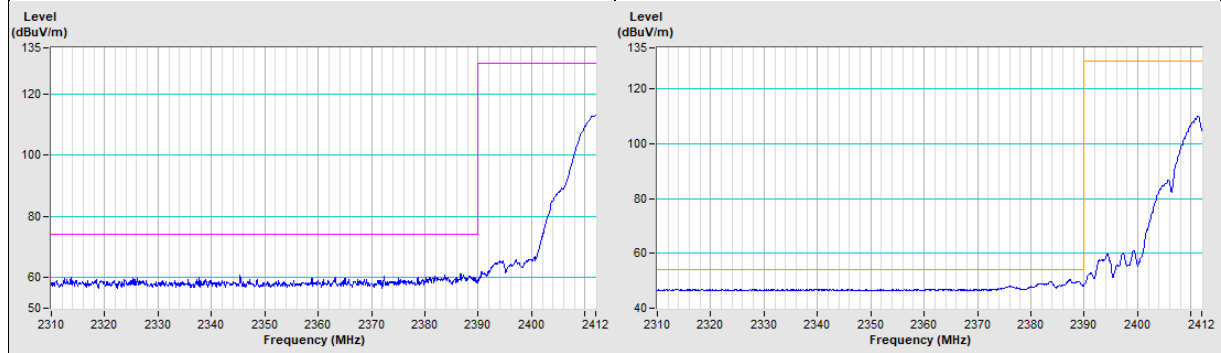
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	112.9 PK			1.81 V	189	78.0	34.9
2	*2452.00	99.9 AV			1.81 V	189	65.0	34.9
3	2490.90	73.5 PK	74.0	-0.5	1.81 V	189	38.7	34.8
4	2490.90	50.3 AV	54.0	-3.7	1.81 V	189	15.5	34.8
5	4904.00	53.9 PK	74.0	-20.1	1.32 V	62	40.5	13.4
6	4904.00	40.1 AV	54.0	-13.9	1.32 V	62	26.7	13.4

**Remarks:**

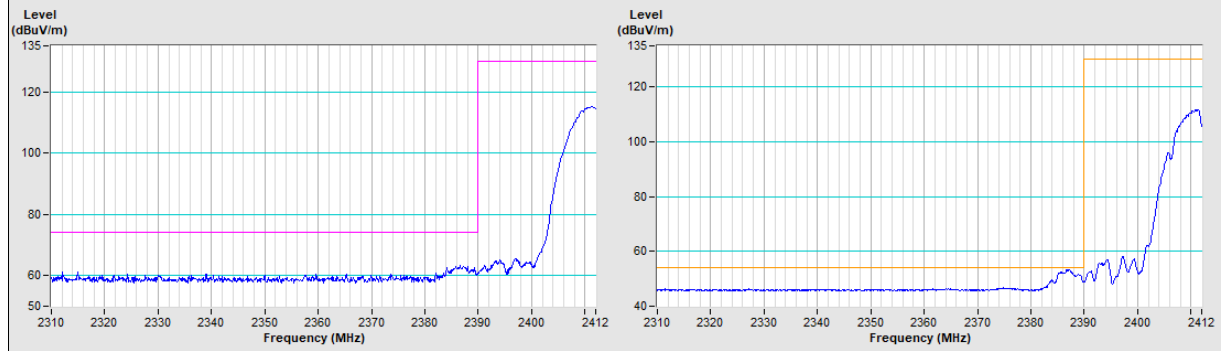
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " \* ": Fundamental frequency,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

### 802.11b Channel 1

<b>Horizontal (Peak)</b>	<b>Horizontal (Average)</b>
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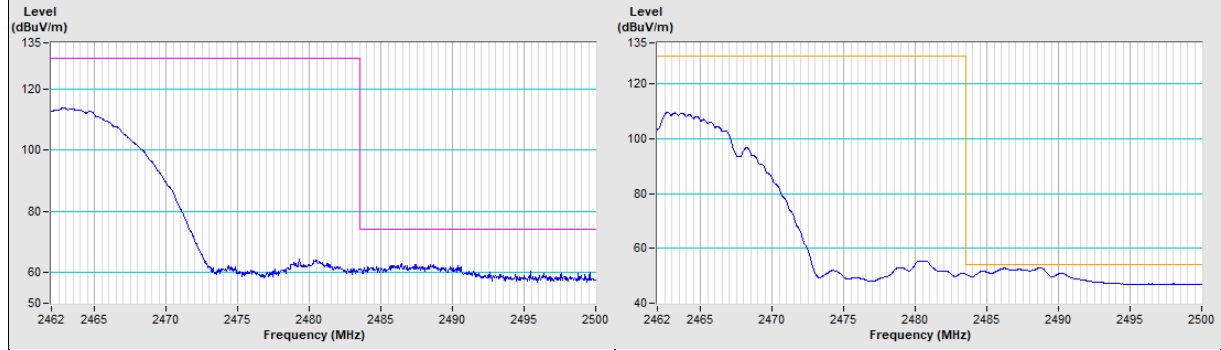


<b>Vertical (Peak)</b>	<b>Vertical (Average)</b>
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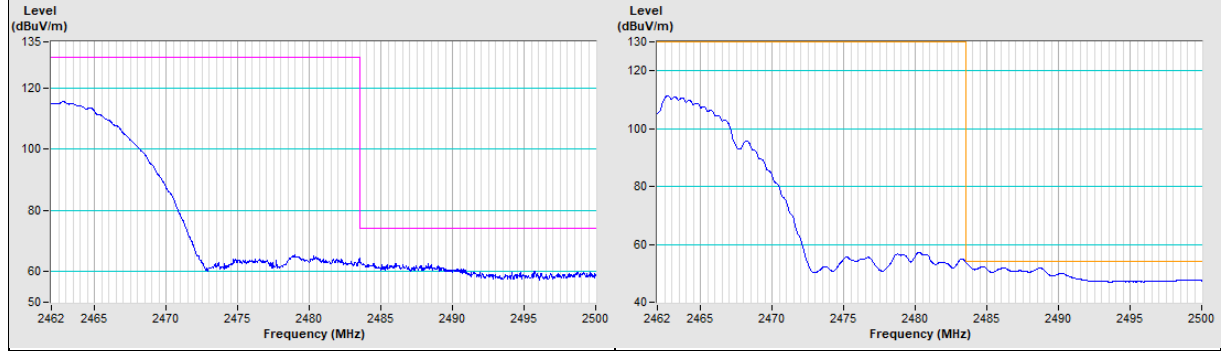


### 802.11b Channel 11

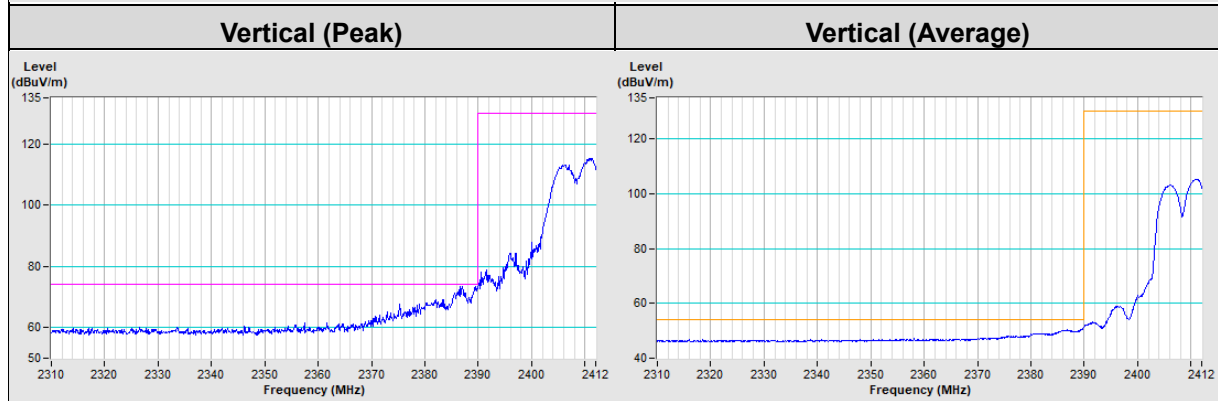
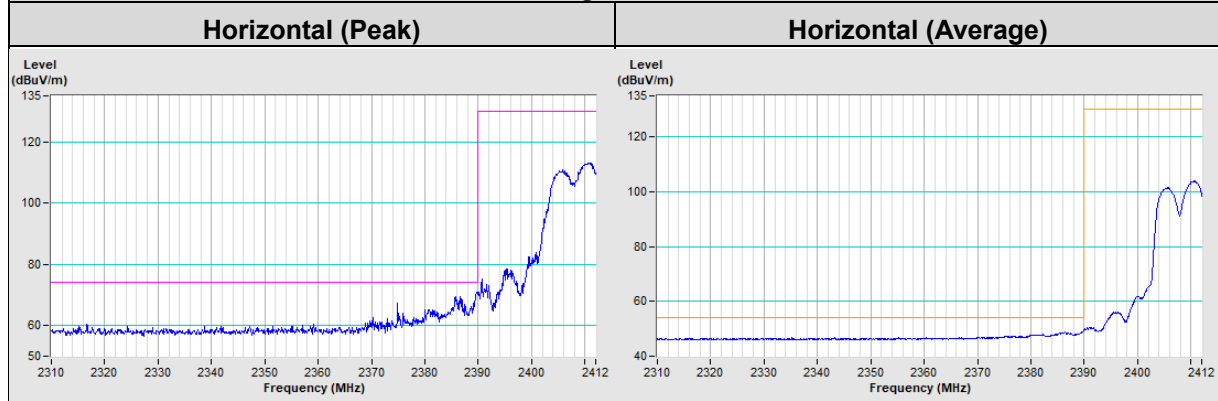
<b>Horizontal (Peak)</b>	<b>Horizontal (Average)</b>
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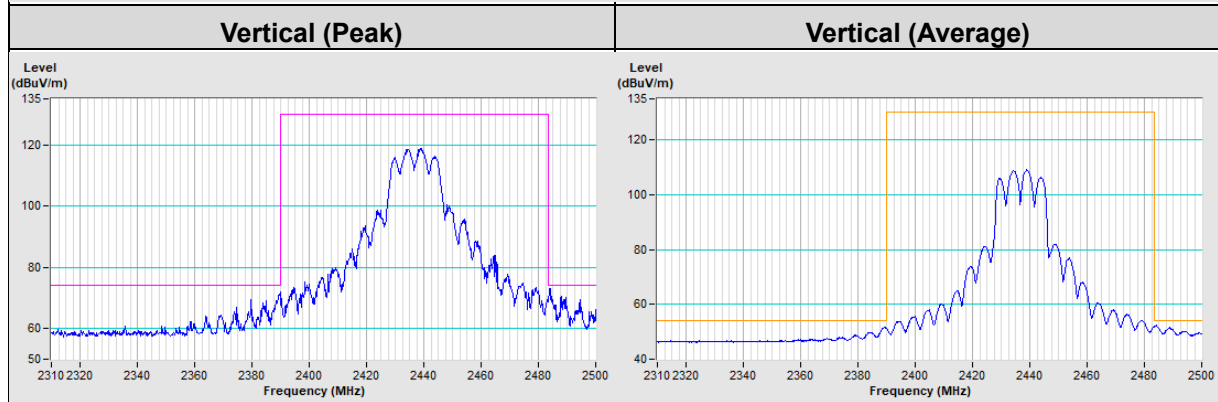
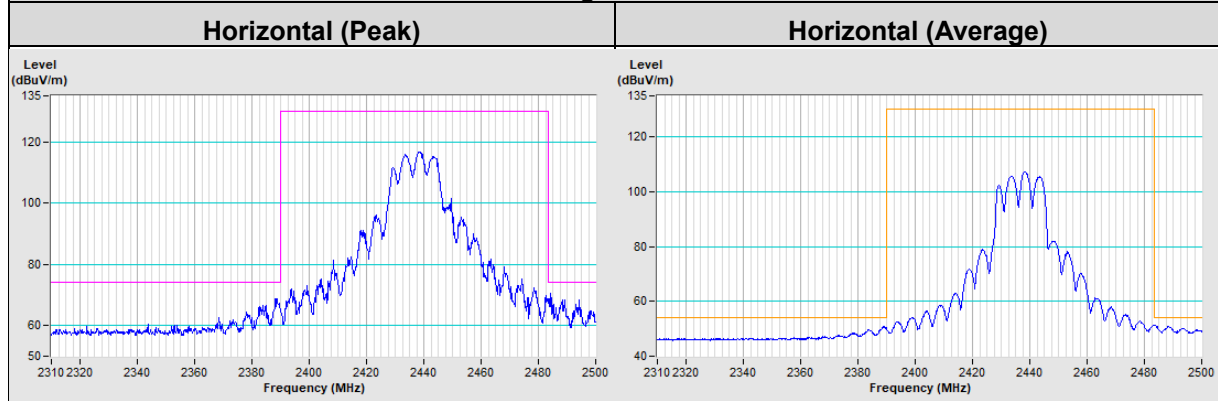
<b>Vertical (Peak)</b>	<b>Vertical (Average)</b>
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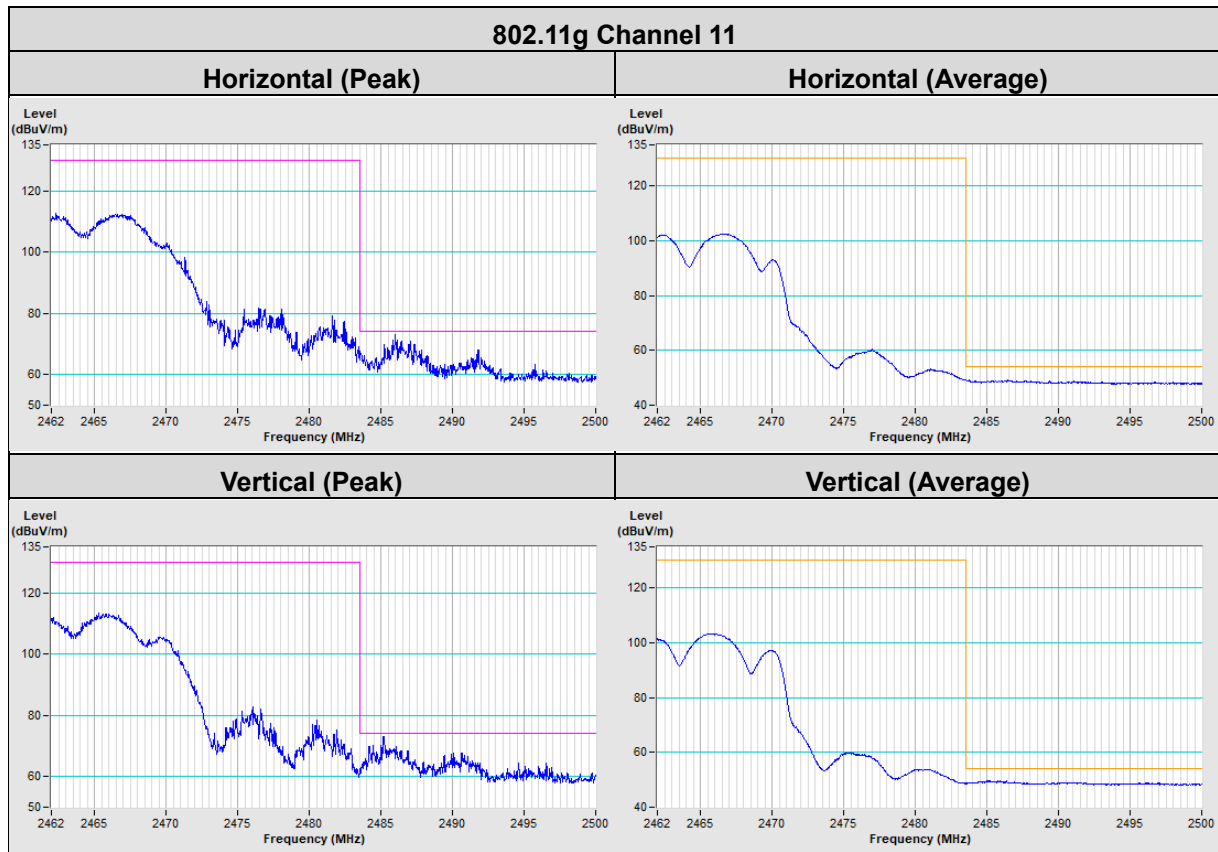


### 802.11g Channel 1



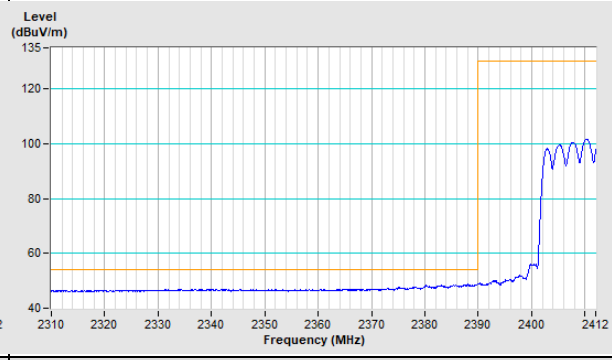
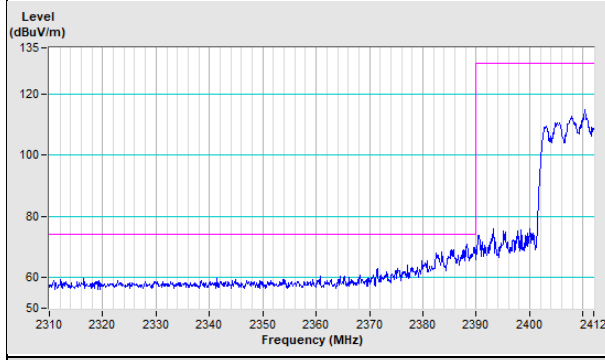
### 802.11g Channel 6





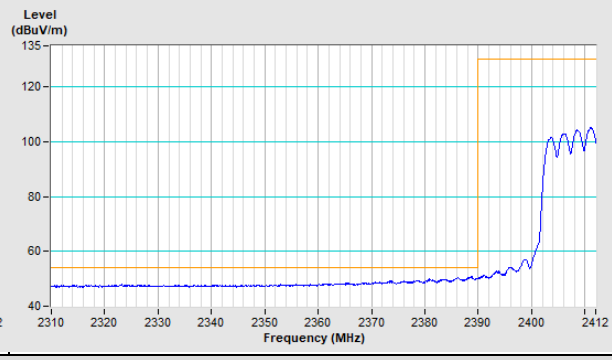
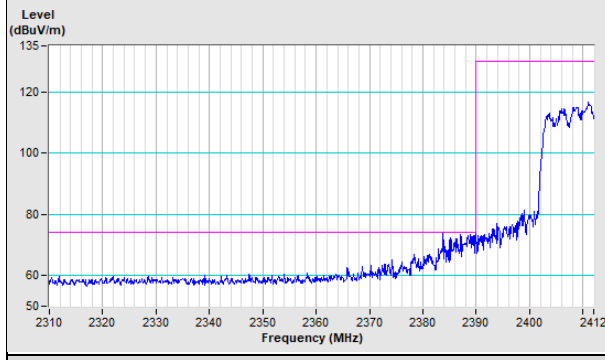
### 802.11ax (HE20) Channel 1

**Horizontal (Peak)** **Horizontal (Average)**



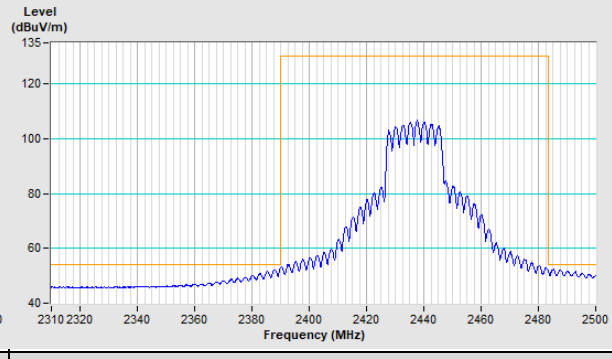
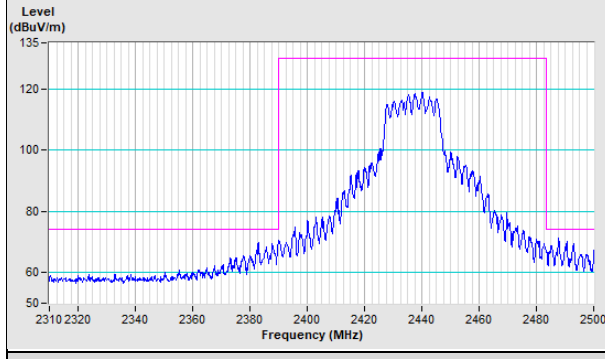
**Vertical (Peak)**

**Vertical (Average)**



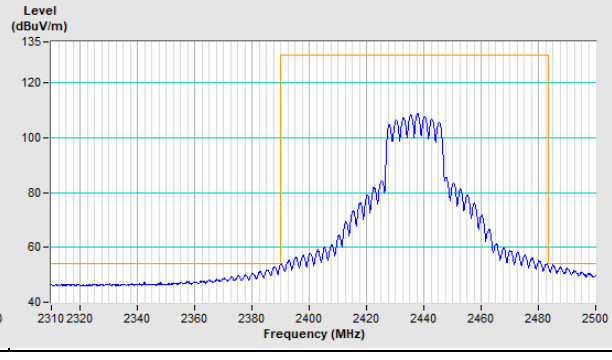
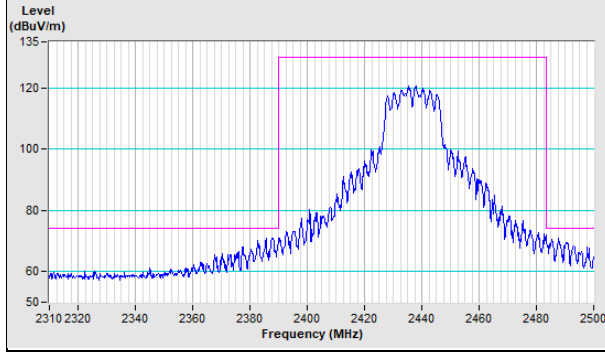
### 802.11ax (HE20) Channel 6

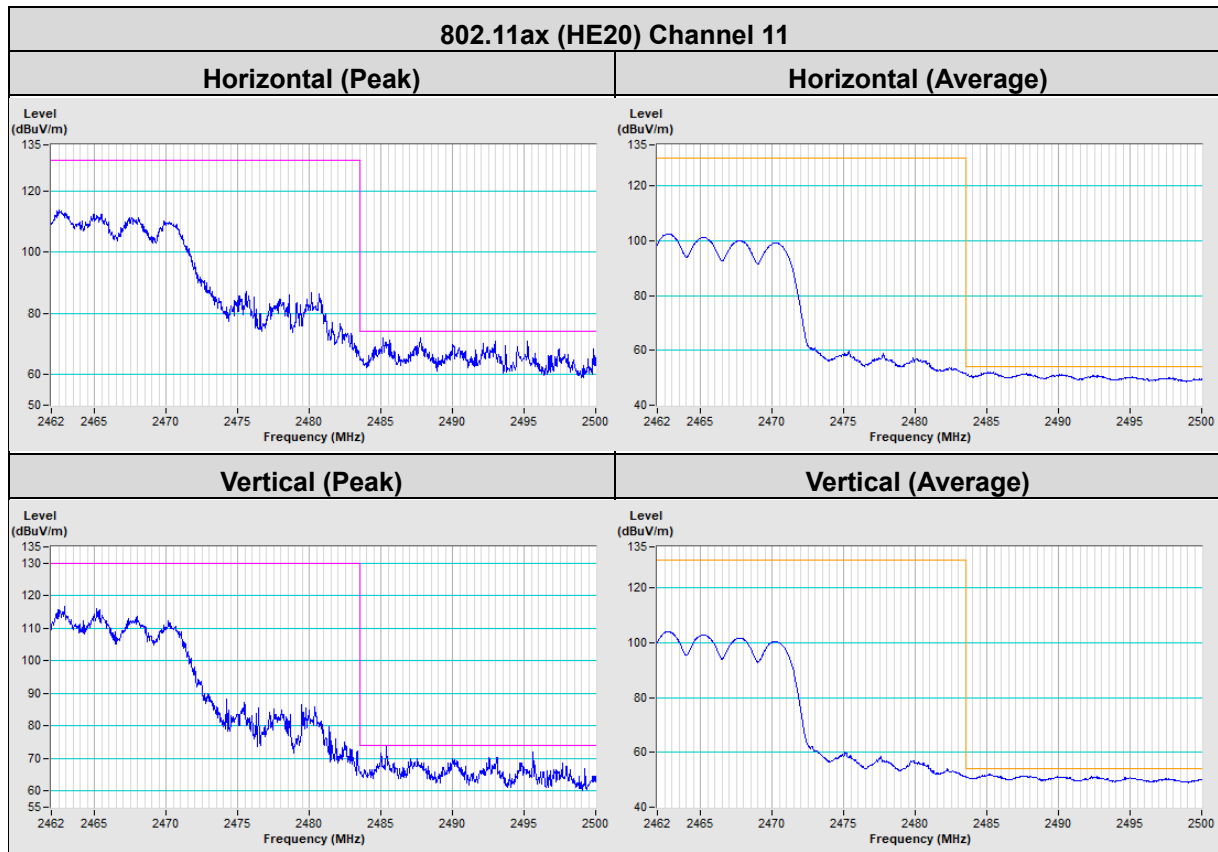
**Horizontal (Peak)** **Horizontal (Average)**



**Vertical (Peak)**

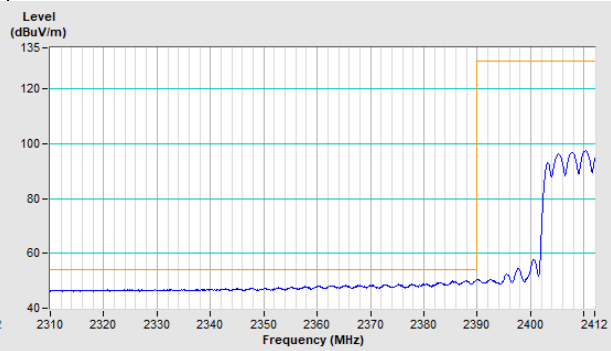
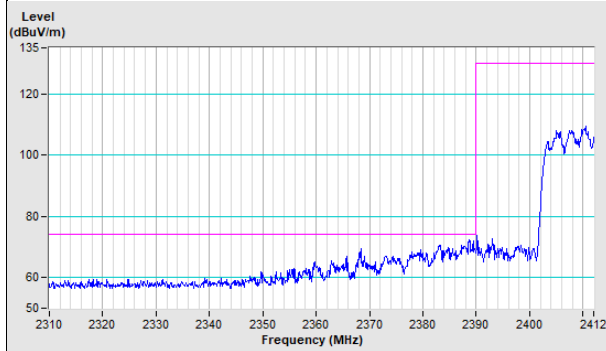
**Vertical (Average)**





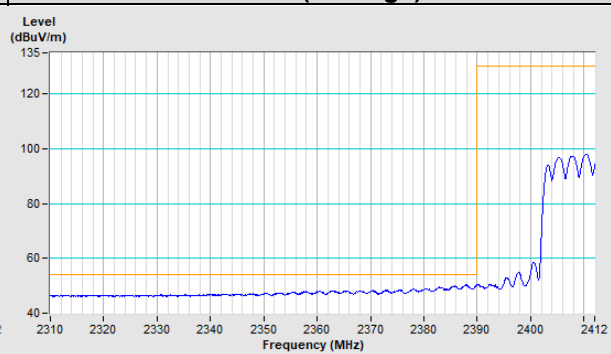
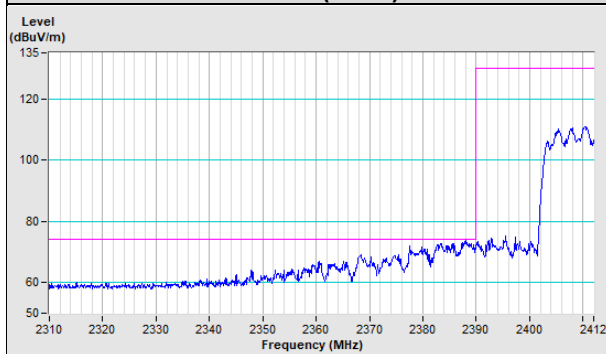
### 802.11ax (HE40) Channel 3

**Horizontal (Peak)** **Horizontal (Average)**



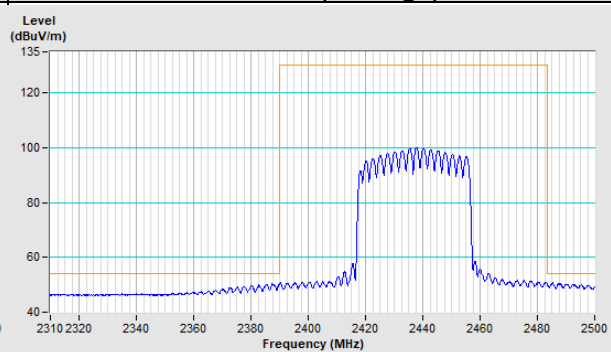
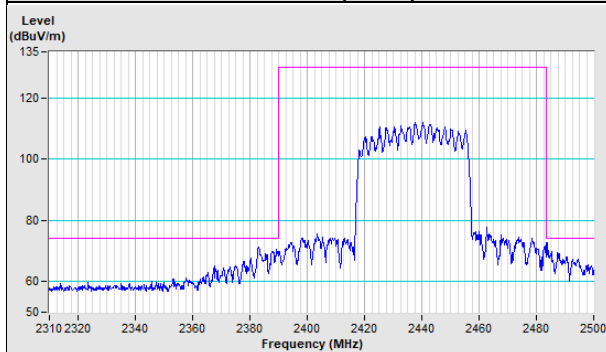
**Vertical (Peak)**

**Vertical (Average)**



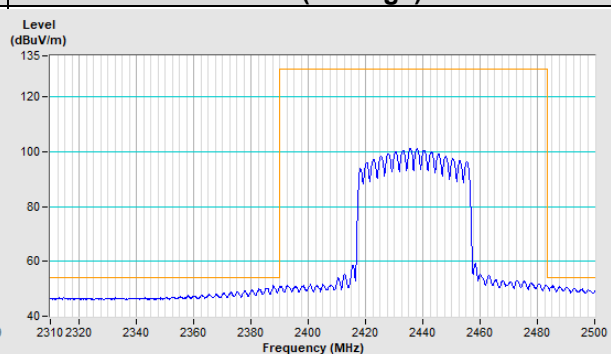
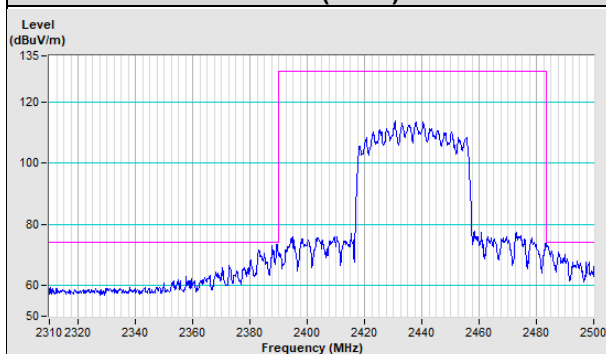
### 802.11ax (HE40) Channel 6

**Horizontal (Peak)** **Horizontal (Average)**



**Vertical (Peak)**

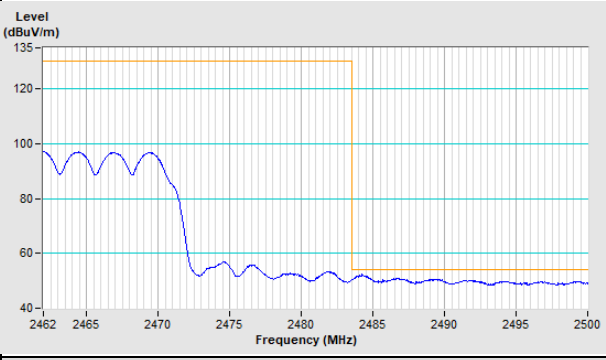
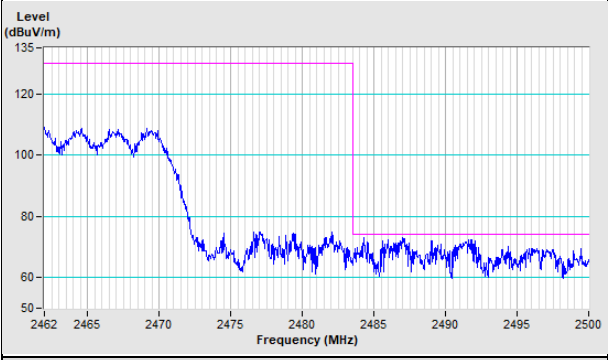
**Vertical (Average)**



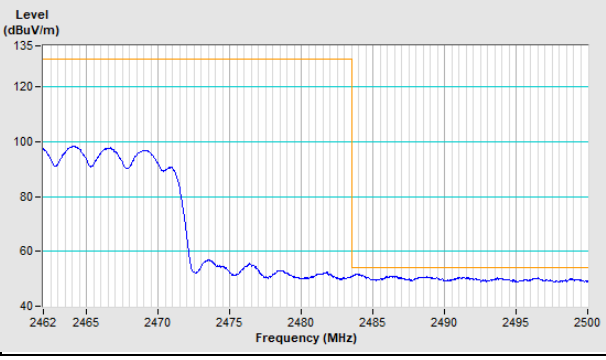
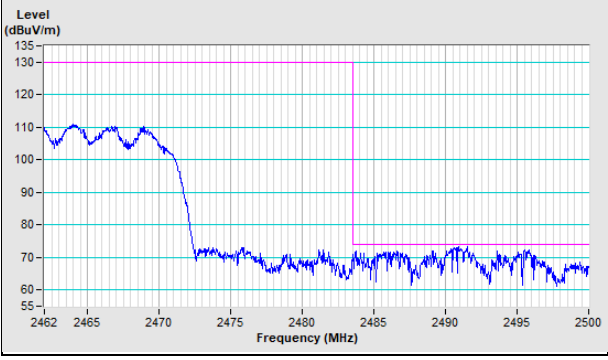


### 802.11ax (HE40) Channel 9

**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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**Web Site:** <http://ee.bureauveritas.com.tw>

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

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