TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart C (Section 15.247)**
Report No.:	RFBEMI-WTW-P22010621
FCC ID:	NOIKBN506
Model No.:	N506
Received Date:	2022/1/18
Test Date:	2022/3/26 ~ 2022/3/31
Issued Date:	2022/5/13
Applicant:	NETRONIX, INC.
Address:	No 945, Boai St, Jubei City. Hsinchu, 30265 Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Approved by: _____ , **Date:** 2022/5/13

May Chen / Manager

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Prepared by : Vivian Huang / Specialist

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Release Control Record

Issue No.	Description	Date Issued
RFBEMI-WTW-P22010621	Original release.	2022/5/13

1 Certificate

Product:	Electronic Display Device
Brand:	Rakuten kobo
Test Model:	N506
Sample Status:	Engineering sample
Applicant:	NETRONIX, INC.
Test Date:	2022/3/26 ~ 2022/3/31
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

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 -17.88 dB at 0.57969 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -10.2 dB at 302.06 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.1 dB at 4824.00 MHz
15.203	Antenna Requirement	Pass	No antenna connector is used.

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	2.5 dB
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.4 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.0 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	Electronic Display Device
Brand	Rakuten kobo
Test Model	N506
FW Version	64214-3202-r12675
Status of EUT	Engineering sample
Power Supply Rating	3.7Vdc from battery or 5 Vdc from USB interface
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11g: up to 54 Mbps 802.11n: up to 72.2 Mbps
Operating Frequency	2412 ~ 2462 MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11
Output Power	149.279 mW (21.74 dBm)
Accessory Device	NA
Cable Supplied	Refer to Note

Note:

1. There are WLAN and Bluetooth technology used for the EUT.
2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	Bluetooth
2	WLAN 5GHz	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

3. The EUT could be supplied with USB cable as following table:

Brand	Material	Model	Signal Line
Yih Fone	PVC	SH-0422	Shielded : Y , 1.0M , Core: N/A
Yih Fone	TPE	SH-0418	
Note: From the above models, the worst model was found in **Model: SH-0418**. Therefore only the test data of the modes were recorded in this report.			

4. The EUT could be supplied with MicroSD card and following different models could be chosen:

No.	Model	Remark
1	SDSDQAB-016G	1st source MicroSD
2	SDSDQAB-032G-1	2nd source MicroSD

5. 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.

Brand	Model	Antenna Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
INPAQ	ACM3-3216-P1-CC-S	0.6	2.4~2.4835	Chip Ant.	NA	NA
		2	5.15~5.85			

*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2. The EUT incorporates a SISO function:

2.4GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11b	1TX	1RX
802.11g	1TX	1RX
802.11n (HT20)	1TX	1RX

3.3 Channel List

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20):

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		

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT can be used in the following ways: X/ Y/ Z. Pre-scan in these ways and find the worst case as a representative test condition. 2. EUT has the following operations/ usages: With USB Adapter/With Laptop. For CE (LISN) Pre-scan these operations/ usages and find the worst case as a representative test condition. 3. EUT has the following operations/ usages: Battery/With USB Adapter. For RE Pre-scan these operations/ usages and find the worst case as a representative test condition. 4. EUT has the following operations/ usages: MicroSD Sandisk 16G/Sandisk 32G. Pre-scan these operations/ usages and find the worst case as a representative test condition.
Worst Case:	1. X/ Y/ Z Worst Condition: RE Below 1GHz Y worst； RE Above 1GHz Z worst 2. With USB Adapter/With Laptop for CE (LISN) Worst Condition: With Laptop for CE (LISN) worst 3. Battery/With USB Adapter for RE Worst Condition: With USB Adapter For RE Worst 4. MicroSD Sandisk 16G/Sandisk 32G Worst Condition: Sandisk 16G Worst 5. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

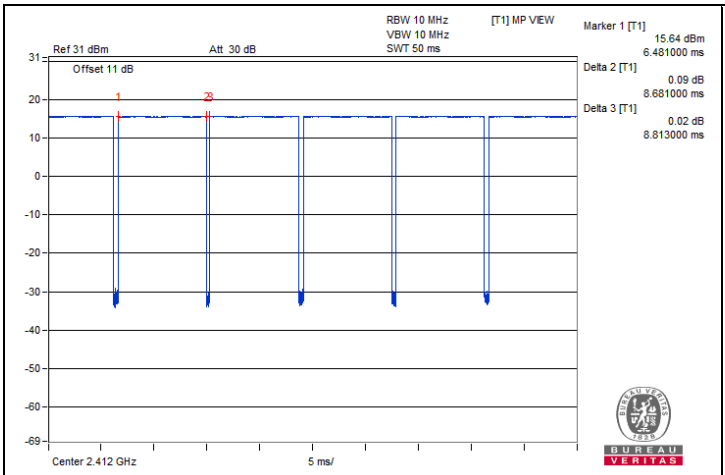
Following channel(s) was (were) selected for the final test as listed below:

Test Item	Mode	Tested Channel	Modulation	Data Rate Parameter
AC Power Conducted Emissions	802.11b	1	DBPSK	1Mb/s
Unwanted Emissions below 1 GHz	802.11b	1	DBPSK	1Mb/s
Unwanted Emissions above 1 GHz	802.11b	1, 6, 11	DBPSK	1Mb/s
	802.11g	1, 6, 11	BPSK	6Mb/s
	802.11n (HT20)	1, 6, 11	BPSK	MCS0
RF Output Power / Power Spectral Density	802.11b	1, 6, 11	DBPSK	1Mb/s
	802.11g	1, 6, 11	BPSK	6Mb/s
	802.11n (HT20)	1, 6, 11	BPSK	MCS0
6 dB Bandwidth / Conducted Out of Band Emissions	802.11b	1, 6, 11	DBPSK	1Mb/s
	802.11g	1, 6, 11	BPSK	6Mb/s
	802.11n (HT20)	1, 6, 11	BPSK	MCS0

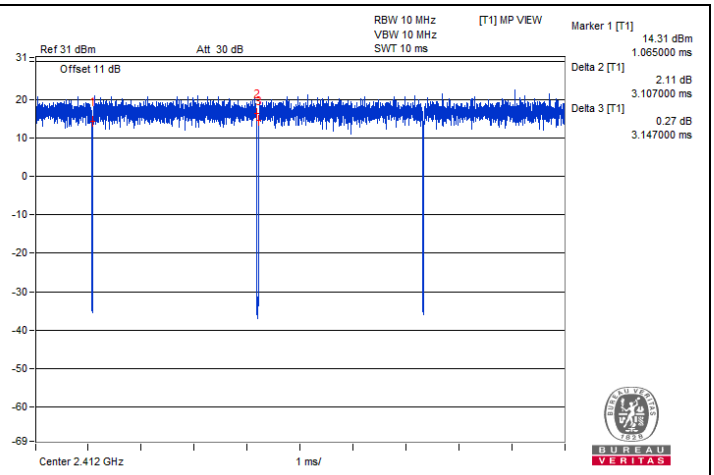
3.5 Duty Cycle of Test Signal

Duty cycle of test signal is >= 98 %, duty factor is not required.
Duty cycle of test signal is < 98 %, duty factor shall be considered.

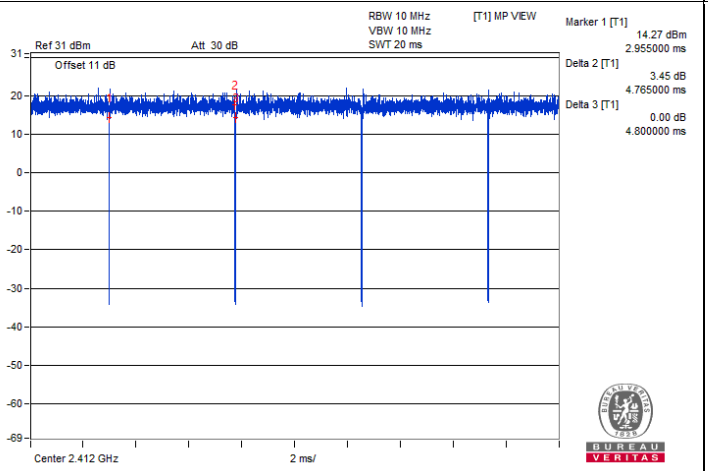
802.11b: Duty cycle = 8.681 ms / 8.813 ms x 100 % = 98.5 %
802.11g: Duty cycle = 3.107 ms / 3.147 ms x 100 % = 98.7 %
802.11n (HT20): Duty cycle = 4.765 ms / 4.8 ms x 100 % = 99.3 %



802.11b



802.11g



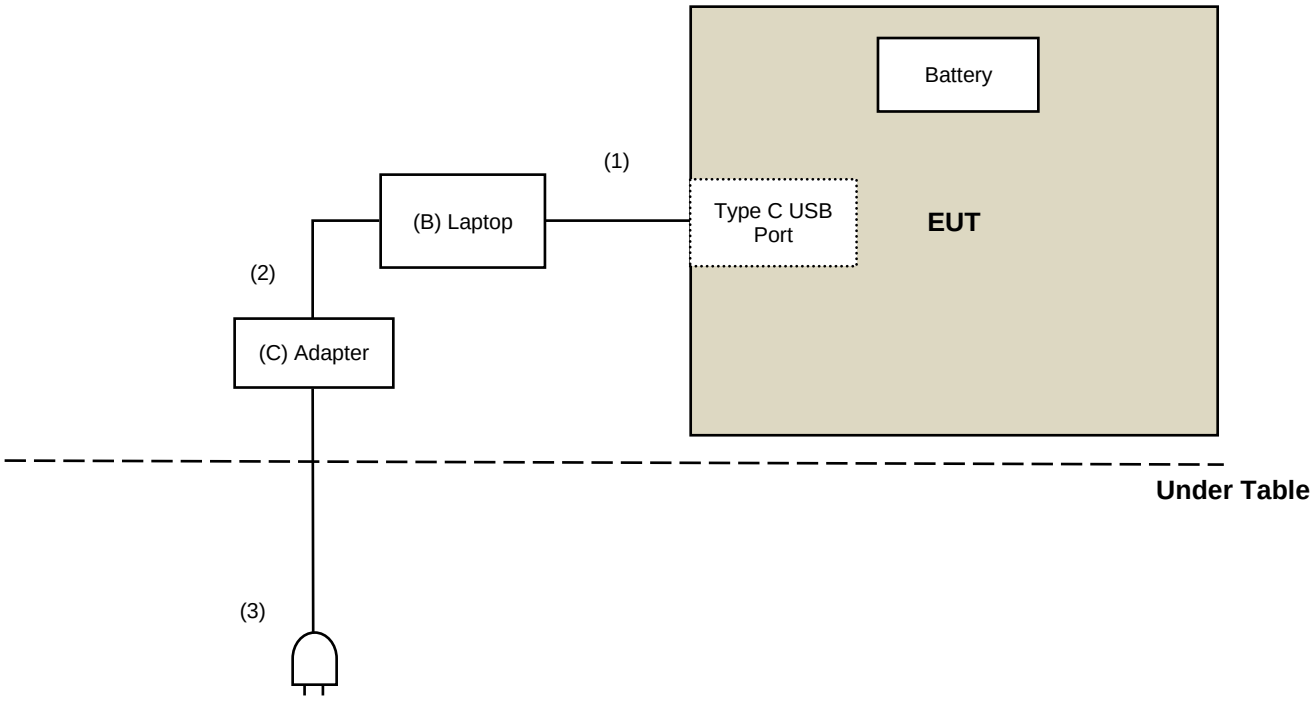
802.11n (HT20)

3.6 Test Program Used and Operation Descriptions

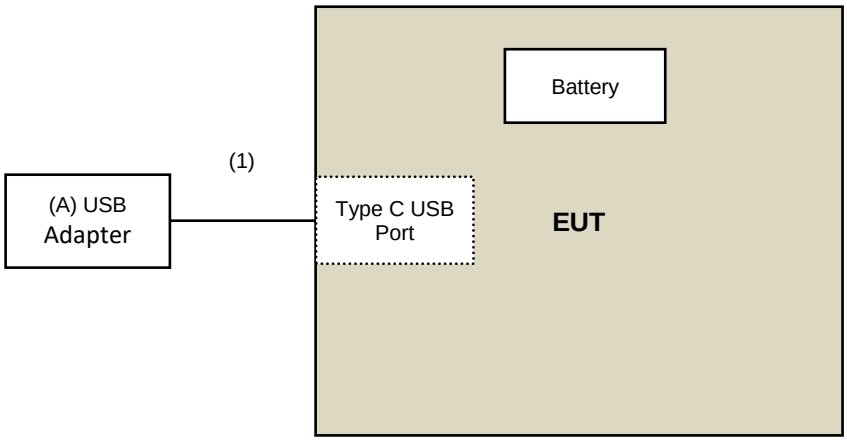
Controlling software (Run Tera Term Ver 4.77.0.0) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For AC Power Conducted Emission test



For Radiated Emission test



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	USB Adapter	ASUS	EXA1205UA	N/A	N/A	Provided by Lab
B	Laptop	Lenovo	20U5S01X00 L14	PF-28LKK7	N/A	Provided by Lab
C	Adapter	Lenovo	ADLX45YLC3D	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB Cable	1	1	Yes	0	Supplied by applicant
2	DC Cable	1	1.8	No	0	Provided by Lab
3	AC Power Cable	1	1	No	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
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2021/4/13	2022/4/12
Power Meter Anritsu	ML2495A	1529002	2021/6/21	2022/6/20
Pulse Power Sensor Anritsu	MA2411B	1339443	2021/5/31	2022/5/30
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100964	2021/5/31	2022/5/30

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/3/26

4.2 Power Spectral Density

Refer to section 4.1 to get information of the instruments.

4.3 6 dB Bandwidth

Refer to section 4.1 to get information of the instruments.

4.4 Conducted Out of Band Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2021/4/13	2022/4/12
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100964	2021/5/31	2022/5/30

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2022/3/26

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohms Terminator	50	3	2021/10/27	2022/10/26
Fixed attenuator STI	STI02-2200-10	005	2021/8/27	2022/8/26
LISN R&S	ESH3-Z5	848773/004	2021/10/29	2022/10/28
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2021/9/25	2022/9/24
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2021/10/13	2022/10/12

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2022/3/31

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	2021/9/23	2022/9/22
Loop Antenna TESEQ	HLA 6121	45745	2021/7/21	2022/7/20
MXE EMI Receiver(20 Hz to 44 GHz) Keysight	N9038A	MY54450088	2021/7/6	2022/7/5
Pre_Amplifier EMCI	EMC001340	980142	2021/5/24	2022/5/23
Pre_Amplifier Mini-Circuits	ZFL-1000VH2	QA0838008	2021/10/19	2022/10/18
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/1/6	2023/1/5
		LOOPCAB-002	2022/1/6	2023/1/5
RF Coaxial Cable COMMATE/PEWC	8D	001	2022/2/26	2023/2/25
		966-3-2	2022/2/26	2023/2/25
		966-3-3	2022/2/26	2023/2/25
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2021/4/26	2022/4/25
Trilog Broadband Antenna Schwarzbeck	VULB 9168	9168-361	2021/10/26	2022/10/25

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2022/3/30

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	N/A	N/A
Fix tool for Boresight antenna tower BV	FBA-01	FBA_SIP01	N/A	N/A
Horn Antenna Schwarzbeck	BBHA9120-D	9120D-406	2021/11/14	2022/11/13
	BBHA 9170	9170-739	2021/11/14	2022/11/13
MXE EMI Receiver(20 Hz to 44 GHz) Keysight	N9038A	MY54450088	2021/7/6	2022/7/5
Pre_Amplifier EMCI	EMC12630SE	980384	2022/1/10	2023/1/9
	EMC184045SE	980387	2022/1/10	2023/1/9
RF Cable EMCI	EMC104-SM-SM-6000	210201	2021/5/13	2022/5/12
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/1/10	2023/1/9
RF Coaxial Cable EMCI	EMC104-SM-SM-1500	180504	2021/4/26	2022/4/25
	EMC104-SM-SM-2000	180601	2021/6/8	2022/6/7
	EMC-KM-KM-4000	200214	2022/3/8	2023/3/7
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer KEYSIGHT	N9030B	MY57142938	2021/4/26	2022/4/25
Spectrum Analyzer Keysight	N9030A	MY54490679	2021/7/9	2022/7/8

Notes:

1. The test was performed in 966 Chamber No. 3.
2. Tested Date: 2022/3/26 ~ 2022/3/30

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)

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 20 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 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).

5.7 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 20 dB below the highest level of the desired power:

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

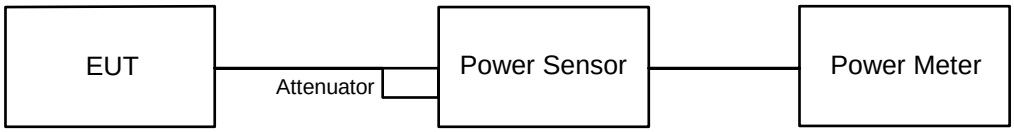
Notes:

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



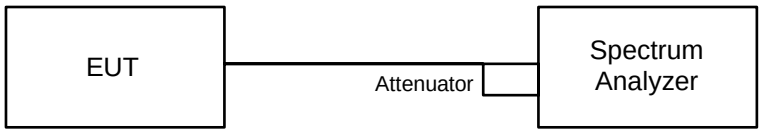
6.1.2 Test Procedure

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 Power Spectral Density

6.2.1 Test Setup

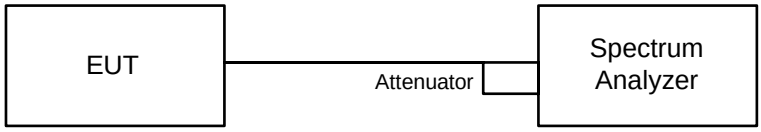


6.2.2 Test Procedure

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

6.3 6 dB Bandwidth

6.3.1 Test Setup

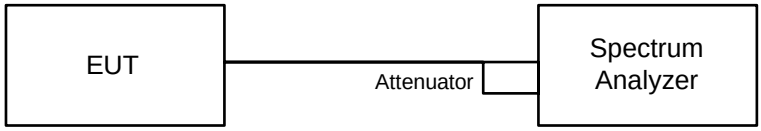


6.3.2 Test Procedure

a. Set resolution bandwidth (RBW) = 100 kHz.
b. Set the video bandwidth (VBW) ≥ 3 x 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

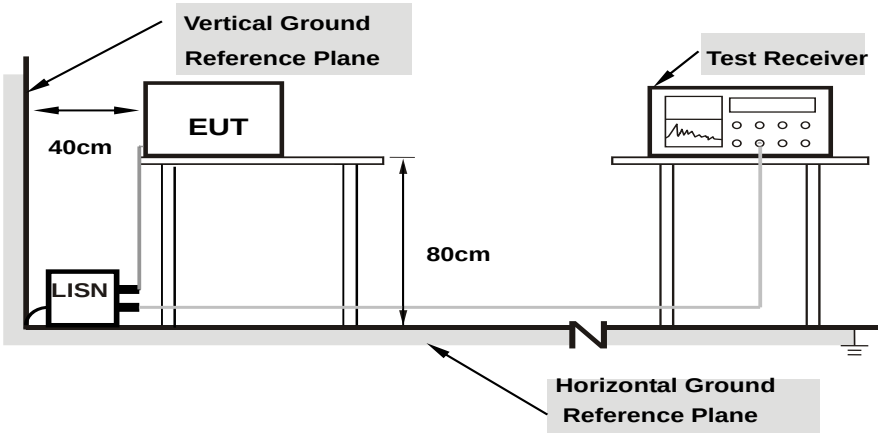
a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 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

a. The EUT was 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

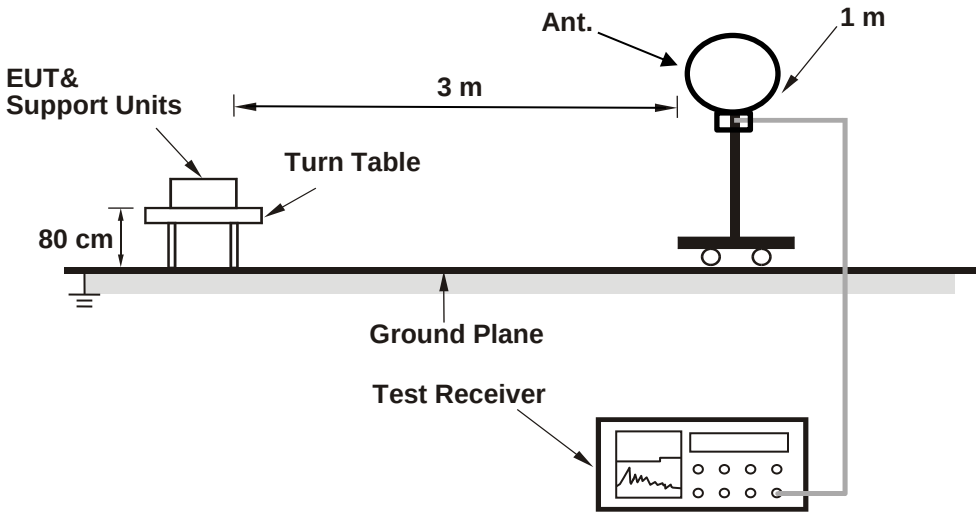
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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.

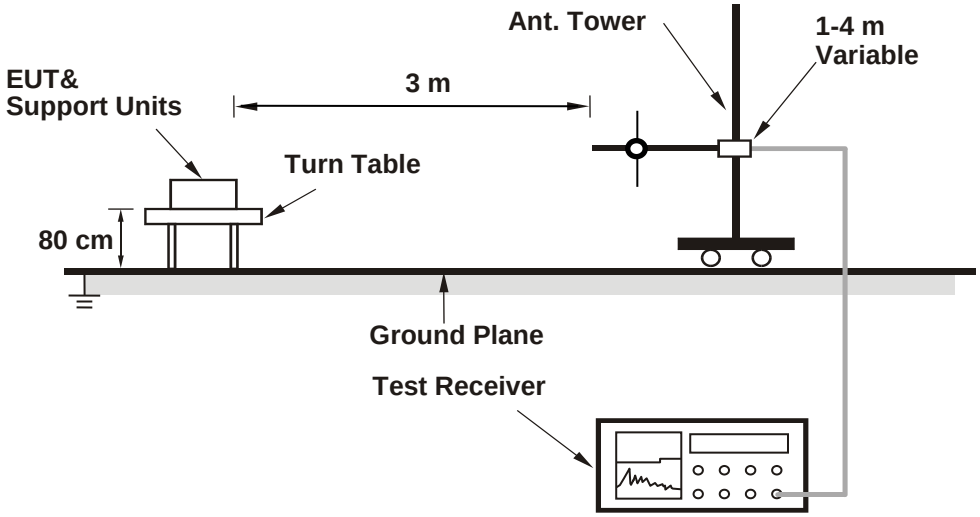
6.6 Unwanted Emissions below 1 GHz

6.6.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. 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.

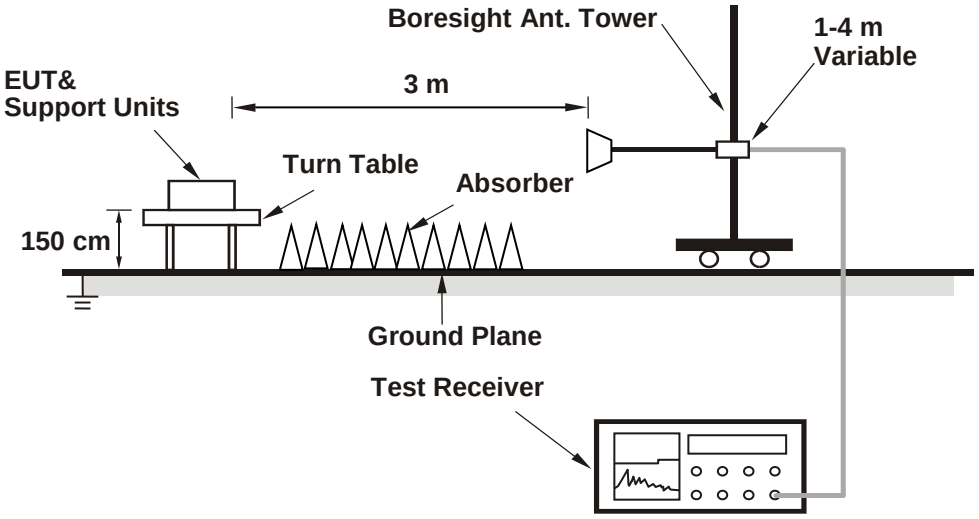
Notes:

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 Radiated emission above 1 GHz



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

6.7.2 Test Procedure

a. 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.

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 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:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
3. 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:	3.7 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Gary Cheng

For Peak Power

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	29.923	14.76	30	Pass
6	2437	27.99	14.47	30	Pass
11	2462	26.73	14.27	30	Pass

Note: The antenna gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	122.744	20.89	30	Pass
6	2437	114.551	20.59	30	Pass
11	2462	109.144	20.38	30	Pass

Note: The antenna gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
1	2412	149.279	21.74	30	Pass
6	2437	136.773	21.36	30	Pass
11	2462	127.35	21.05	30	Pass

Note: The antenna gain is 0.6 dBi < 6 dBi, so the output power limit shall not be reduced.

For Average Power

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	15.812	11.99
6	2437	14.894	11.73
11	2462	14.421	11.59

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	15.596	11.93
6	2437	14.997	11.76
11	2462	14.555	11.63

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	15.524	11.91
6	2437	14.928	11.74
11	2462	14.289	11.55

7.2 Power Spectral Density

Input Power:	3.7 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Gary Cheng

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-5.08	8.00	Pass
6	2437	-5.59	8.00	Pass
11	2462	-5.33	8.00	Pass

Note: The antenna gain is 0.6 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-12.68	8.00	Pass
6	2437	-12.77	8.00	Pass
11	2462	-13.24	8.00	Pass

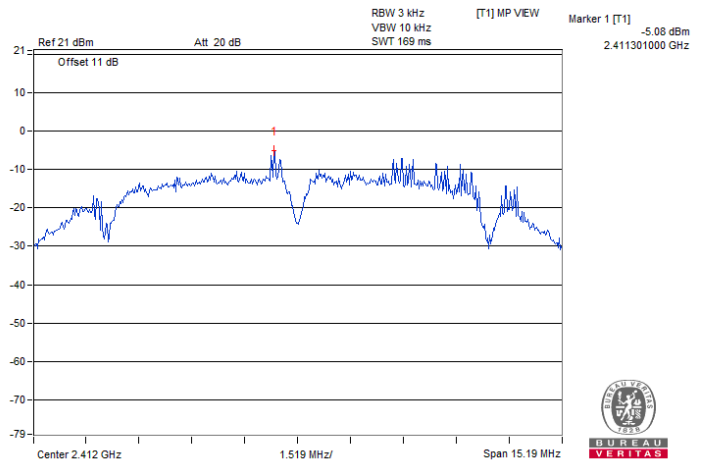
Note: The antenna gain is 0.6 dBi < 6 dBi, so the power density limit shall not be reduced.

802.11n (HT20)

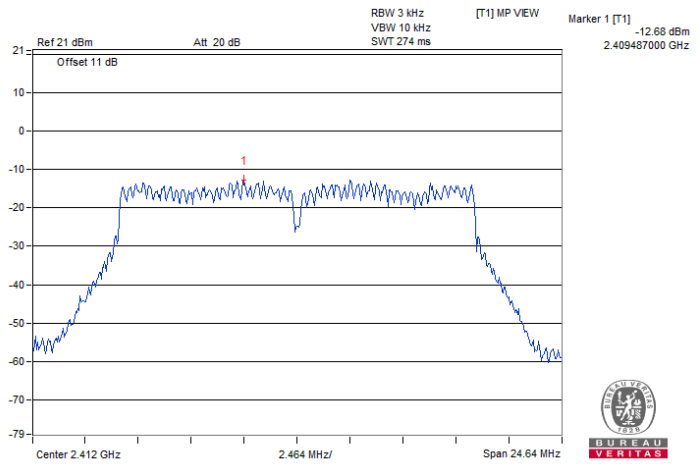
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
1	2412	-11.17	8.00	Pass
6	2437	-11.66	8.00	Pass
11	2462	-11.60	8.00	Pass

Note: The antenna gain is 0.6 dBi < 6 dBi, so the power density limit shall not be reduced.

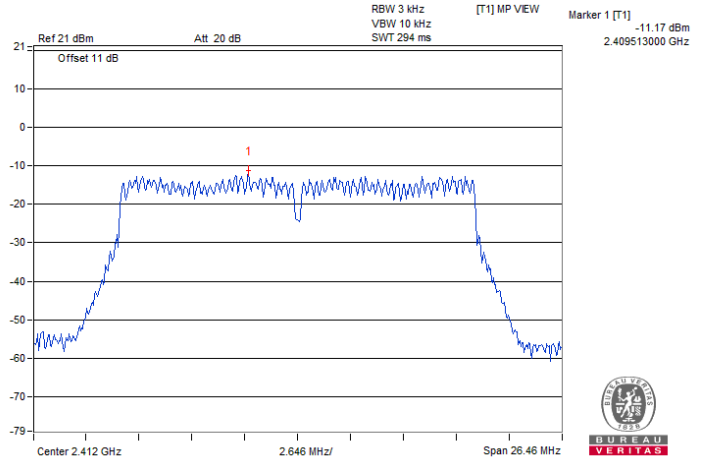
Spectrum Plot of Maximum Value



802.11b : CH 1



802.11g : CH 1



802.11n (HT20) : CH 1

7.3 6 dB Bandwidth

Input Power:	3.7 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Gary Cheng

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2412	10.13	0.5	Pass
6	2437	10.12	0.5	Pass
11	2462	10.12	0.5	Pass

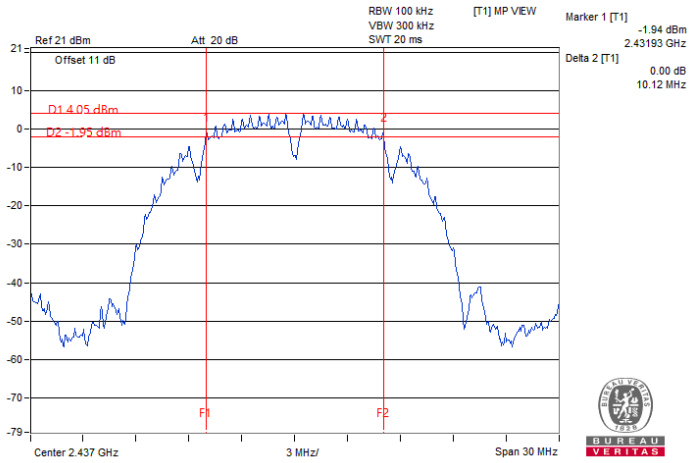
802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2412	16.43	0.5	Pass
6	2437	16.43	0.5	Pass
11	2462	16.44	0.5	Pass

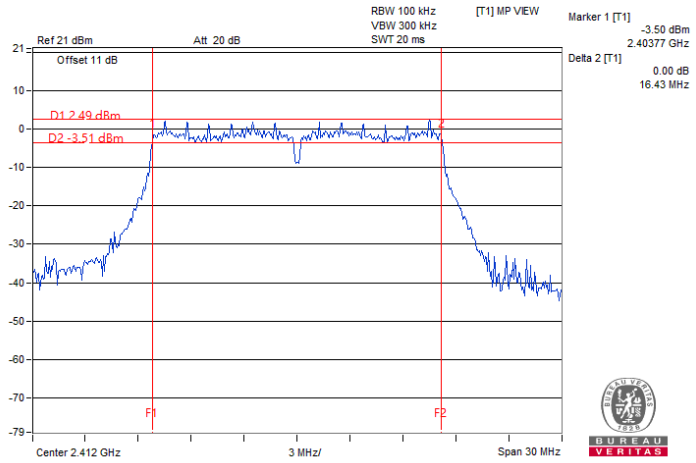
802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Test Result
1	2412	17.64	0.5	Pass
6	2437	17.66	0.5	Pass
11	2462	17.65	0.5	Pass

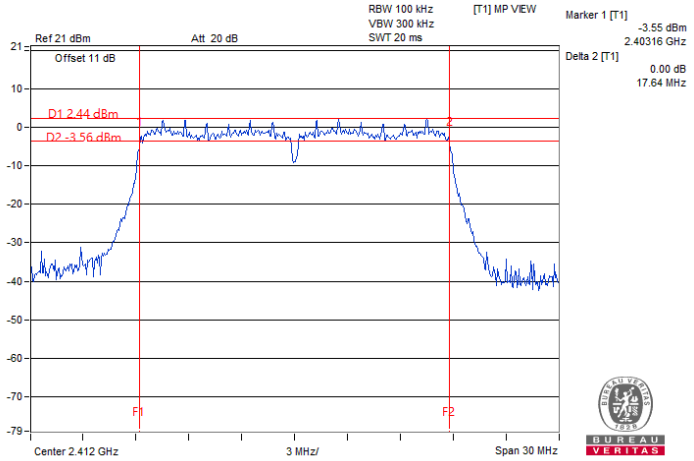
Spectrum Plot of Minimum Value



802.11b : CH 6



802.11g : CH 1

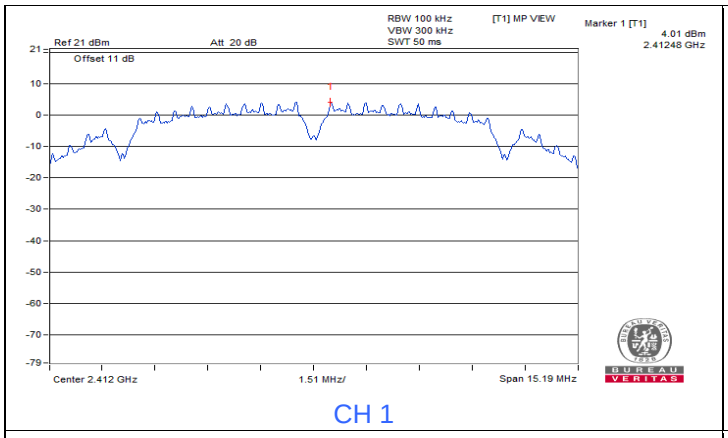


802.11n (HT20) : CH 1

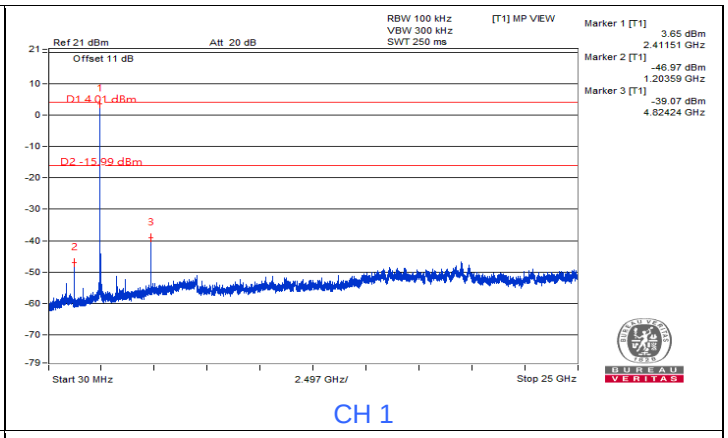
7.4 Conducted Out of Band Emissions

Input Power:	3.7 Vdc	Environmental Conditions:	25 °C, 60 % RH	Tested By:	Gary Cheng

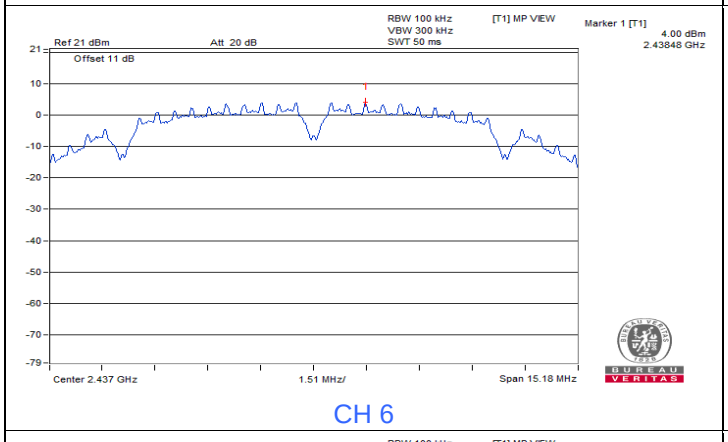
802.11b



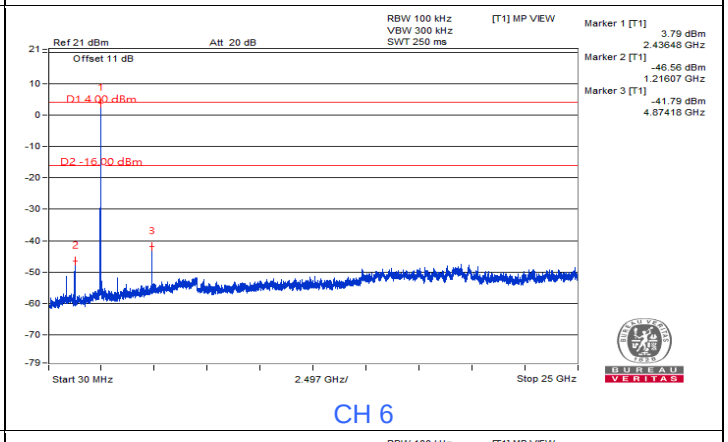
CH 1



CH 1



CH 6



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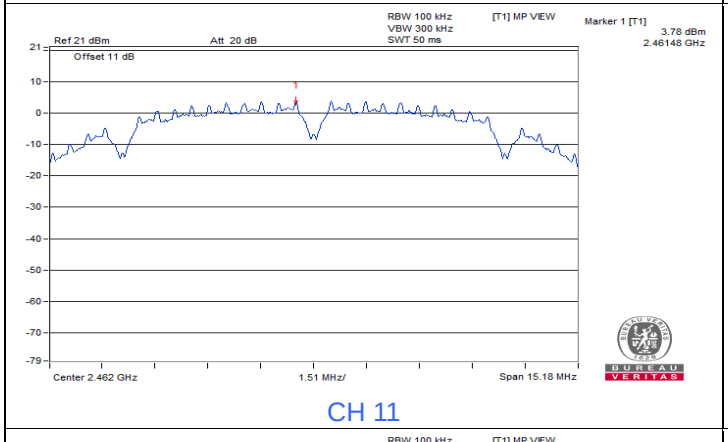
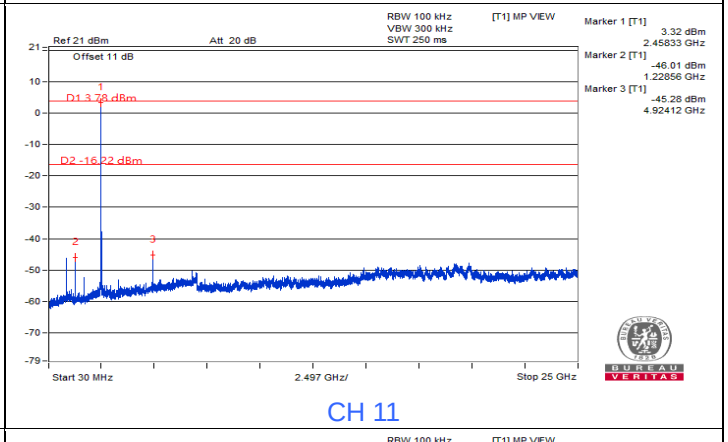


CH 11



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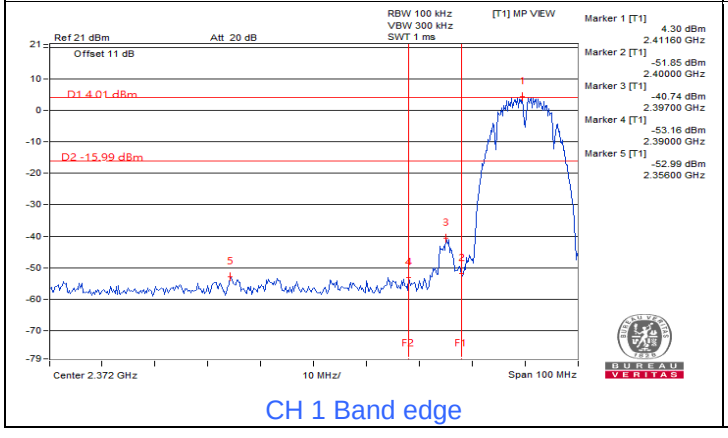
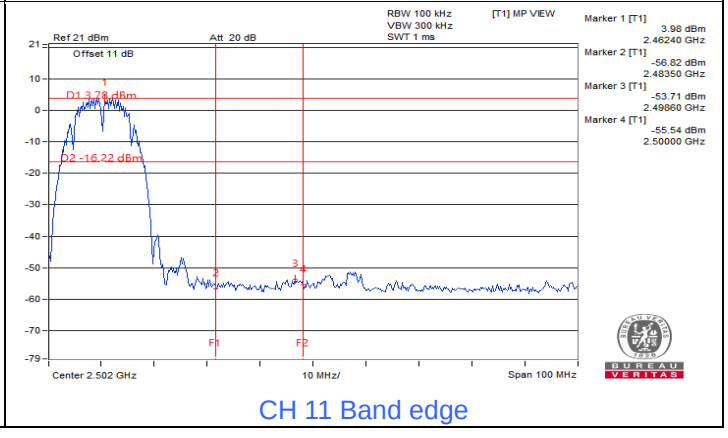
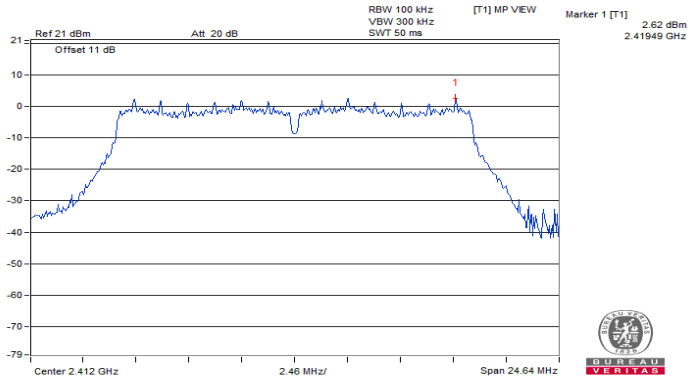


CH 1 Band edge

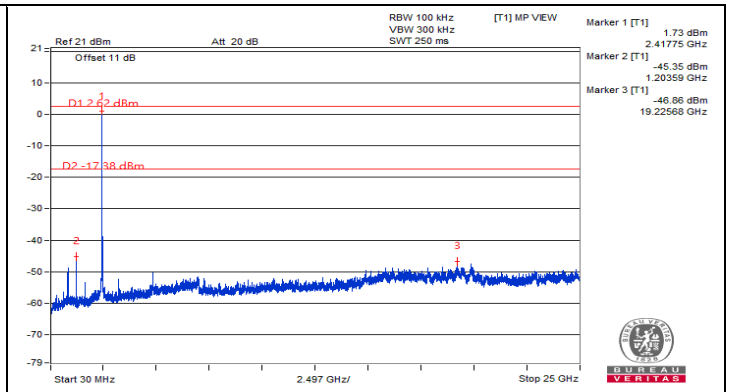


CH 11 Band edge

802.11g



CH 1



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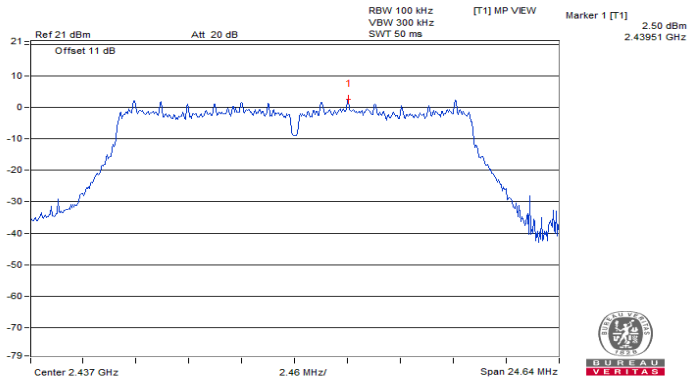

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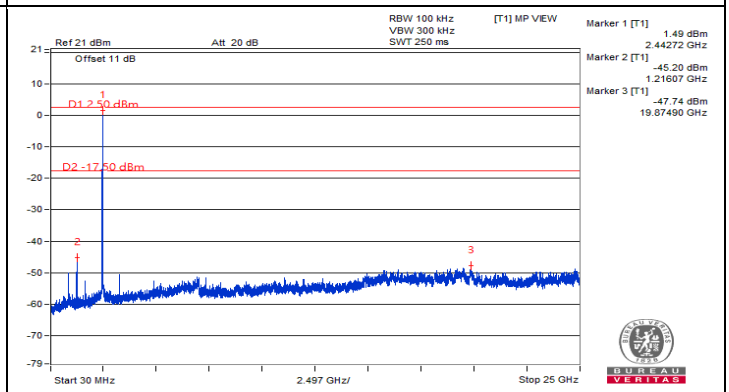

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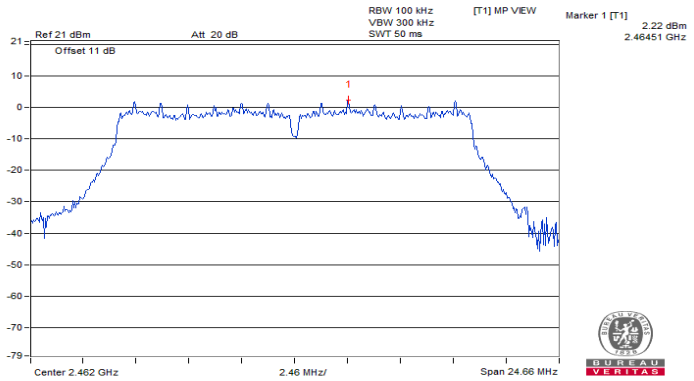

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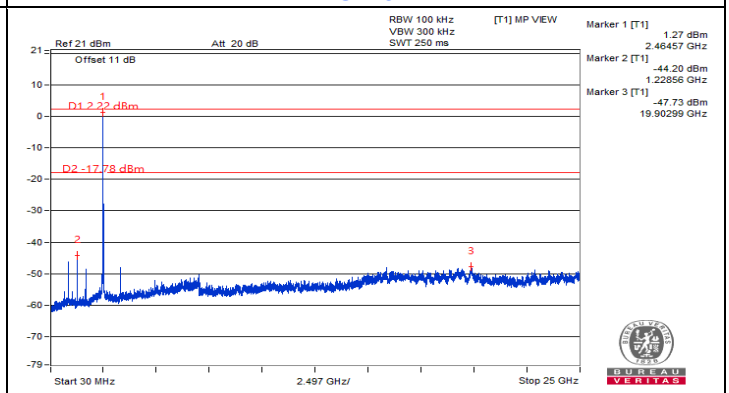
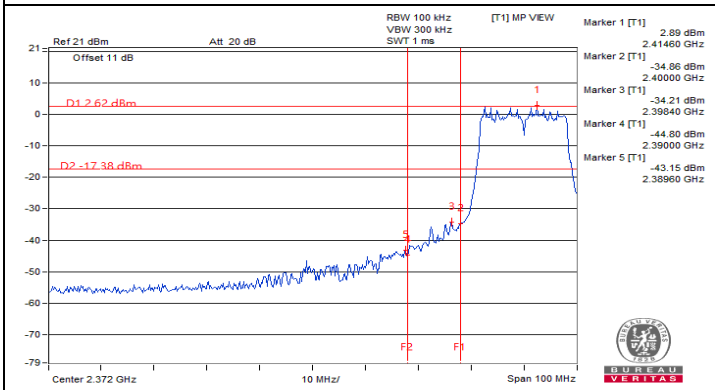
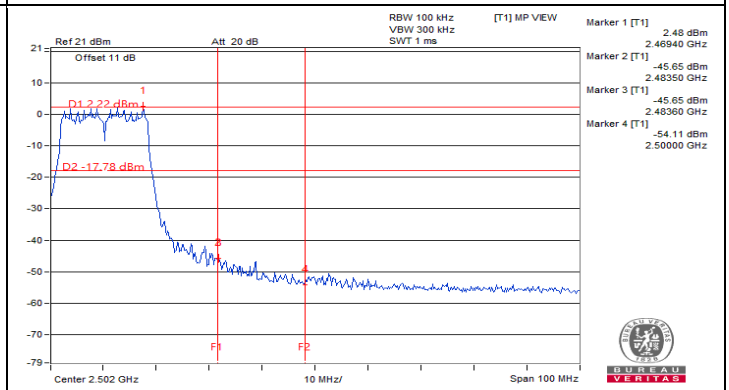


CH 11

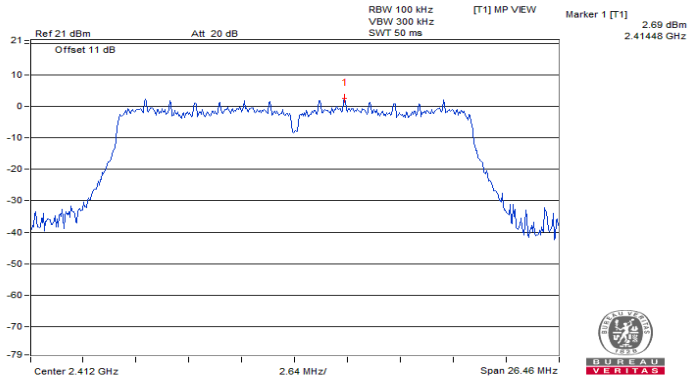


CH 1 Band edge

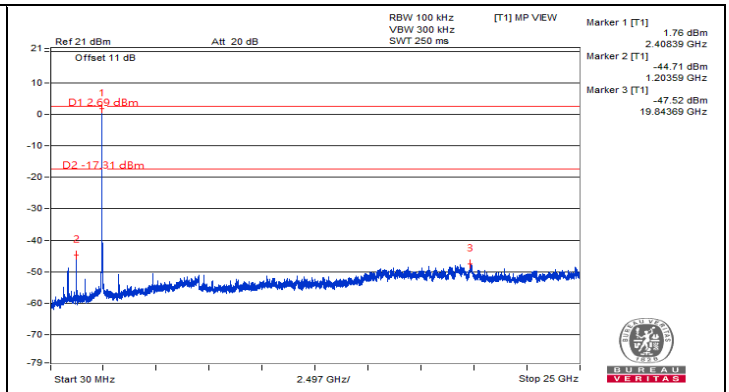


CH 11 Band edge

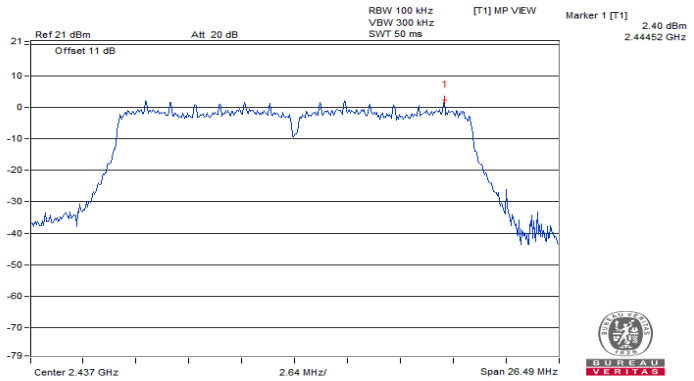
802.11n (HT20)



CH 1



CH 1



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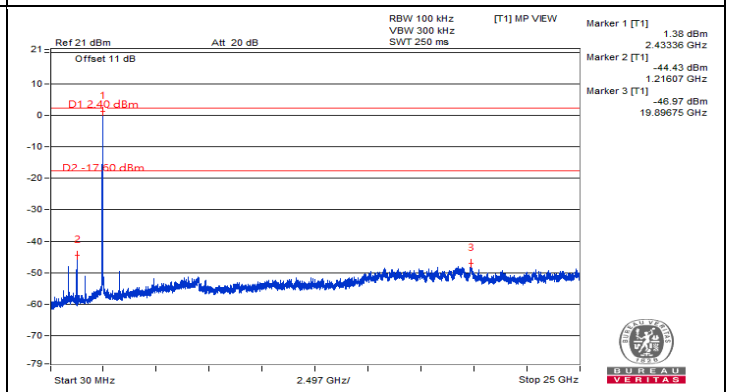
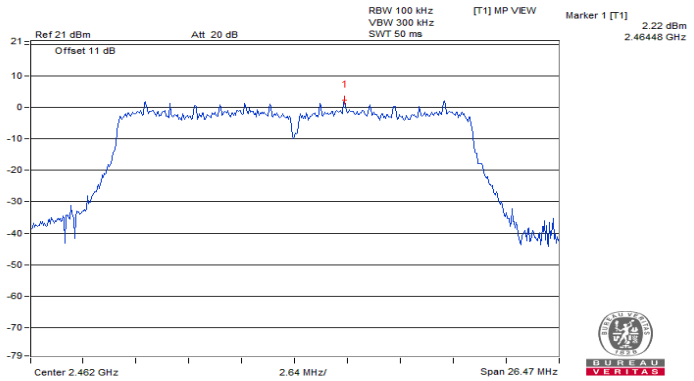
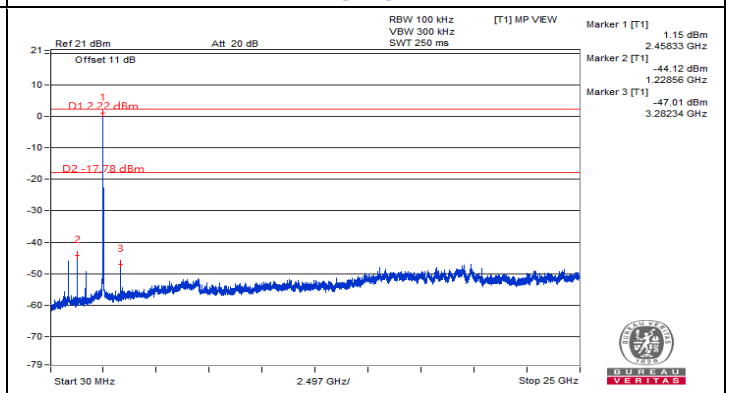


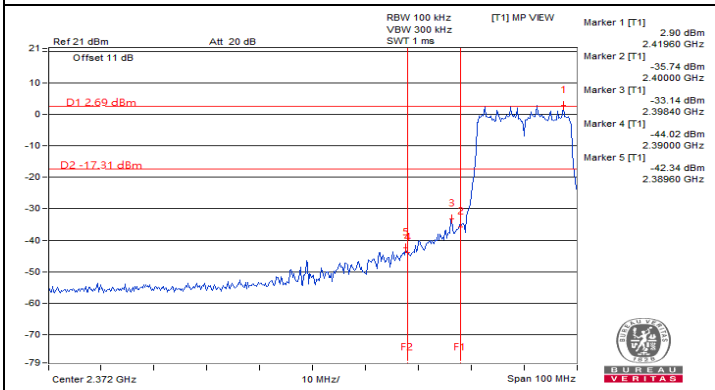
CH 6



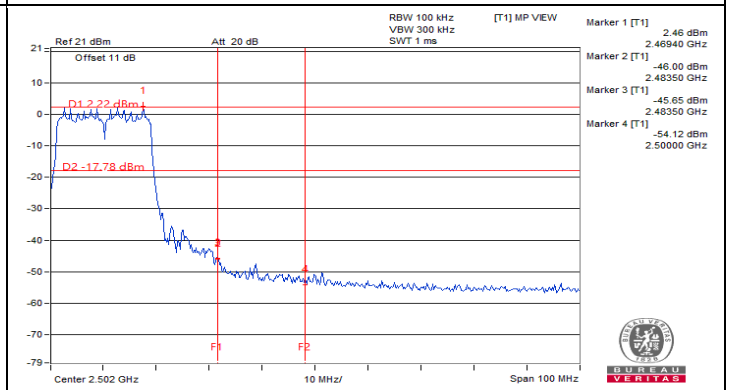
CH 11



CH 11



CH 1 Band edge



CH 11 Band edge

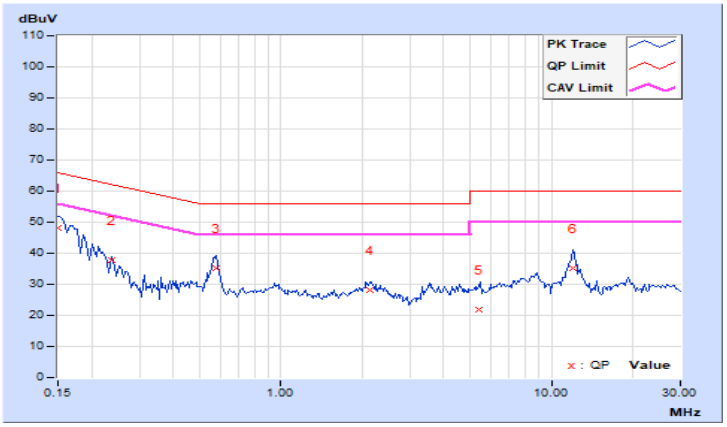
7.5 AC Power Conducted Emissions

RF Mode	TX 802.11b	**Channel**	CH 1：2412 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 66 % RH
Tested By	Tom Yang		

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	0.15000	10.05	37.98	20.49	48.03	30.54	66.00	56.00	-17.97	-25.46
2	0.23594	10.05	27.83	13.61	37.88	23.66	62.24	52.24	-24.36	-28.58
3	**0.57969**	**10.08**	**25.14**	**18.04**	**35.22**	**28.12**	**56.00**	**46.00**	**-20.78**	**-17.88**
4	2.14453	10.17	18.10	12.59	28.27	22.76	56.00	46.00	-27.73	-23.24
5	5.42578	10.34	11.53	5.66	21.87	16.00	60.00	50.00	-38.13	-34.00
6	11.96875	10.73	24.44	18.13	35.17	28.86	60.00	50.00	-24.83	-21.14

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

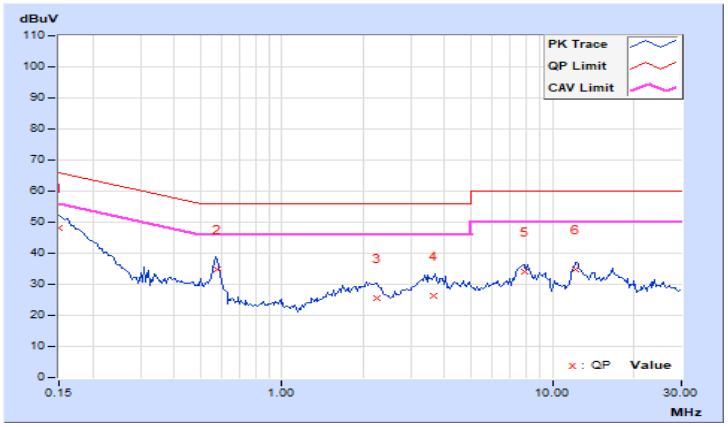


RF Mode	TX 802.11b	**Channel**	CH 1：2412 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 66 % RH
Tested By	Tom Yang		

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	0.15000	10.02	37.96	21.16	47.98	31.18	66.00	56.00	-18.02	-24.82
2	0.57969	10.05	24.69	18.02	34.74	28.07	56.00	46.00	-21.26	-17.93
3	2.23438	10.14	15.45	7.37	25.59	17.51	56.00	46.00	-30.41	-28.49
4	3.63672	10.20	16.16	7.04	26.36	17.24	56.00	46.00	-29.64	-28.76
5	7.85938	10.39	23.58	18.51	33.97	28.90	60.00	50.00	-26.03	-21.10
6	12.21875	10.59	24.35	18.43	34.94	29.02	60.00	50.00	-25.06	-20.98

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



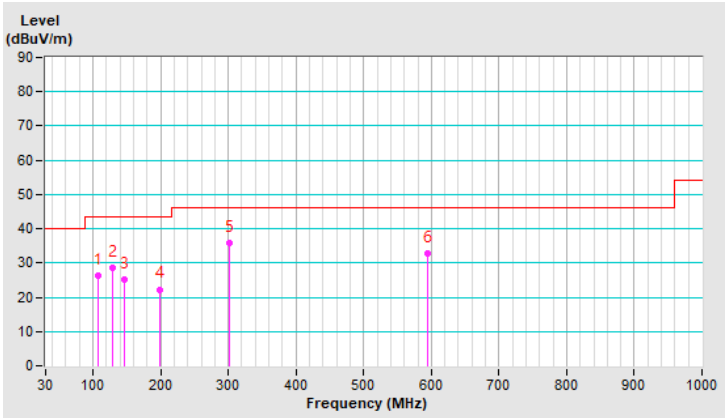
7.6 Unwanted Emissions below 1 GHz

RF Mode	TX 802.11b	**Channel**	CH 1：2412 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Nelson Teng		

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	106.80	26.4 QP	43.5	-17.1	1.00 H	360	37.8	-11.4
2	128.16	28.5 QP	43.5	-15.0	1.00 H	247	37.8	-9.3
3	147.18	25.3 QP	43.5	-18.2	3.00 H	299	33.3	-8.0
4	198.00	22.3 QP	43.5	-21.2	1.00 H	114	33.5	-11.2
5	**302.06**	**35.8 QP**	**46.0**	**-10.2**	**1.00 H**	**203**	**43.4**	**-7.6**
6	594.01	32.9 QP	46.0	-13.1	1.00 H	360	33.5	-0.6

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.

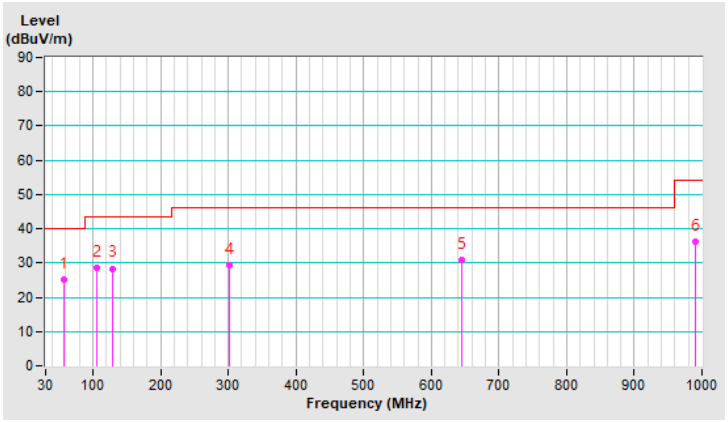


RF Mode	TX 802.11b	**Channel**	CH 1：2412 MHz
Frequency Range	9 kHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Nelson Teng		

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	56.87	25.2 QP	40.0	-14.8	2.00 V	360	33.9	-8.7
2	105.64	28.6 QP	43.5	-14.9	3.00 V	348	40.2	-11.6
3	128.16	28.4 QP	43.5	-15.1	2.00 V	360	37.7	-9.3
4	301.72	29.2 QP	46.0	-16.8	3.00 V	292	36.8	-7.6
5	644.33	30.8 QP	46.0	-15.2	3.00 V	0	30.7	0.1
6	990.01	36.1 QP	54.0	-17.9	1.00 V	333	30.8	5.3

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.



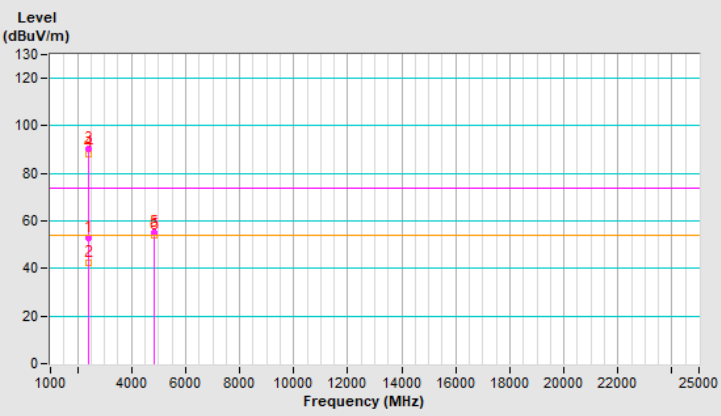
7.7 Unwanted Emissions above 1 GHz

RF Mode	TX 802.11b	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	2386.62	53.1 PK	74.0	-20.9	1.24 H	242	54.1	-1.0
2	2386.62	42.2 AV	54.0	-11.8	1.24 H	242	43.2	-1.0
3	*2412.00	90.3 PK			1.24 H	242	91.4	-1.1
4	*2412.00	88.4 AV			1.24 H	242	89.5	-1.1
5	4824.00	54.9 PK	74.0	-19.1	2.35 H	304	51.2	3.7
6	**4824.00**	**53.9 AV**	**54.0**	**-0.1**	**2.35 H**	**304**	**50.2**	**3.7**

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.
5. " * ": Fundamental frequency.

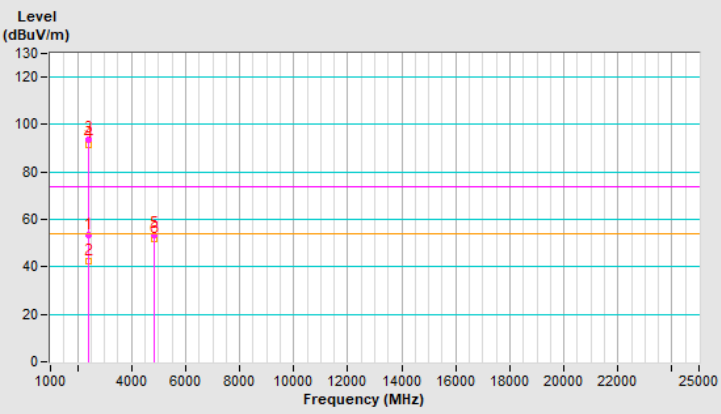


RF Mode	TX 802.11b	**Channel**	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Spencer Liao		

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	53.4 PK	74.0	-20.6	3.34 V	51	54.4	-1.0
2	2390.00	42.6 AV	54.0	-11.4	3.34 V	51	43.6	-1.0
3	*2412.00	93.9 PK			3.34 V	51	95.0	-1.1
4	*2412.00	91.7 AV			3.34 V	51	92.8	-1.1
5	4824.00	53.7 PK	74.0	-20.3	3.92 V	99	50.0	3.7
6	4824.00	51.8 AV	54.0	-2.2	3.92 V	99	48.1	3.7

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.
5. " * ": Fundamental frequency.

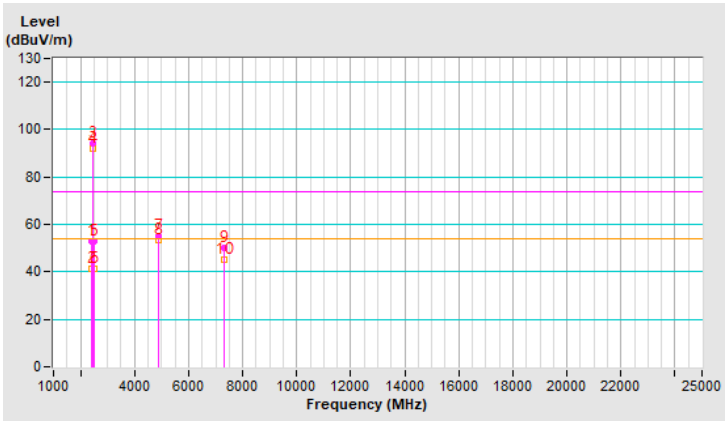


RF Mode	TX 802.11b	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	52.9 PK	74.0	-21.1	1.20 H	242	53.9	-1.0
2	2390.00	41.3 AV	54.0	-12.7	1.20 H	242	42.3	-1.0
3	*2437.00	94.2 PK			1.20 H	242	95.3	-1.1
4	*2437.00	92.2 AV			1.20 H	242	93.3	-1.1
5	2483.50	52.9 PK	74.0	-21.1	1.20 H	242	54.2	-1.3
6	2483.50	41.1 AV	54.0	-12.9	1.20 H	242	42.4	-1.3
7	4874.00	55.2 PK	74.0	-18.8	2.16 H	310	51.5	3.7
8	4874.00	53.2 AV	54.0	-0.8	2.16 H	310	49.5	3.7
9	7311.00	50.1 PK	74.0	-23.9	1.97 H	336	40.4	9.7
10	7311.00	44.9 AV	54.0	-9.1	1.97 H	336	35.2	9.7

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.
5. " * ": Fundamental frequency.

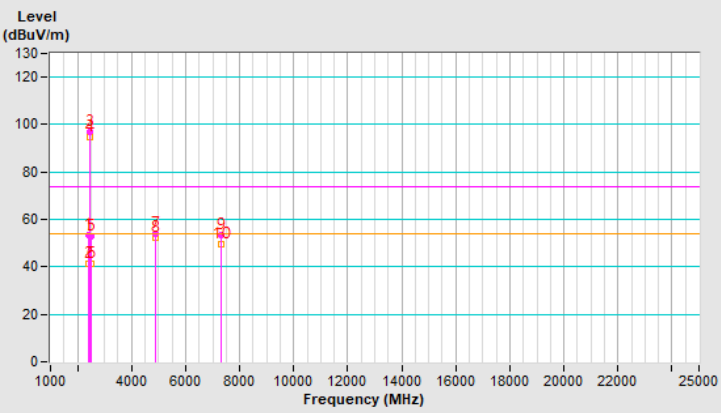


RF Mode	TX 802.11b	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	53.4 PK	74.0	-20.6	2.88 V	233	54.4	-1.0
2	2390.00	41.2 AV	54.0	-12.8	2.88 V	233	42.2	-1.0
3	*2437.00	96.9 PK			2.88 V	233	98.0	-1.1
4	*2437.00	94.8 AV			2.88 V	233	95.9	-1.1
5	2483.50	53.0 PK	74.0	-21.0	2.88 V	233	54.3	-1.3
6	2483.50	41.3 AV	54.0	-12.7	2.88 V	233	42.6	-1.3
7	4874.00	54.2 PK	74.0	-19.8	3.92 V	109	50.5	3.7
8	4874.00	52.1 AV	54.0	-1.9	3.92 V	109	48.4	3.7
9	7311.00	53.5 PK	74.0	-20.5	3.44 V	94	43.8	9.7
10	7311.00	49.5 AV	54.0	-4.5	3.44 V	94	39.8	9.7

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.
5. " * ": Fundamental frequency.

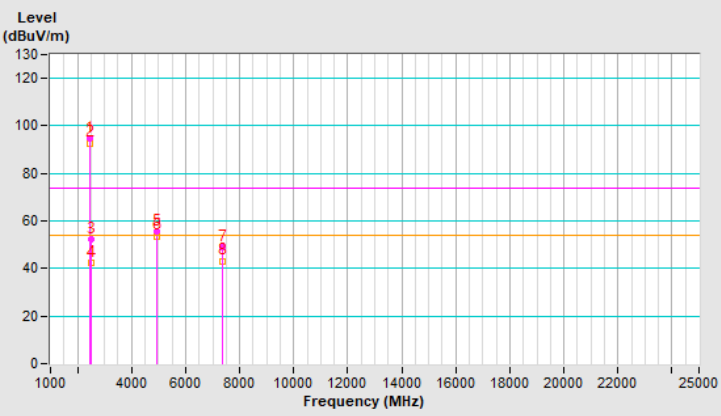


RF Mode	TX 802.11b	**Channel**	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Spencer Liao		

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	94.9 PK			1.22 H	237	96.1	-1.2
2	*2462.00	92.8 AV			1.22 H	237	94.0	-1.2
3	2483.50	52.3 PK	74.0	-21.7	1.22 H	237	53.6	-1.3
4	2483.50	42.2 AV	54.0	-11.8	1.22 H	237	43.5	-1.3
5	4924.00	55.6 PK	74.0	-18.4	3.38 H	351	51.8	3.8
6	4924.00	53.7 AV	54.0	-0.3	3.38 H	351	49.9	3.8
7	7386.00	49.0 PK	74.0	-25.0	1.73 H	335	39.1	9.9
8	7386.00	43.2 AV	54.0	-10.8	1.73 H	335	33.3	9.9

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.

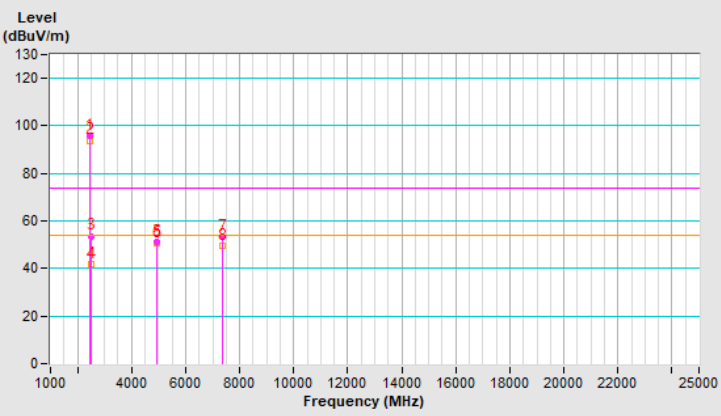


RF Mode	TX 802.11b	**Channel**	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Spencer Liao		

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	96.0 PK			3.20 V	42	97.2	-1.2
2	*2462.00	93.9 AV			3.20 V	42	95.1	-1.2
3	2483.50	53.7 PK	74.0	-20.3	3.20 V	42	55.0	-1.3
4	2483.50	41.6 AV	54.0	-12.4	3.20 V	42	42.9	-1.3
5	4924.00	51.3 PK	74.0	-22.7	1.68 V	2	47.5	3.8
6	4924.00	50.7 AV	54.0	-3.3	1.68 V	2	46.9	3.8
7	7386.00	53.6 PK	74.0	-20.4	3.59 V	107	43.7	9.9
8	7386.00	49.8 AV	54.0	-4.2	3.59 V	107	39.9	9.9

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.

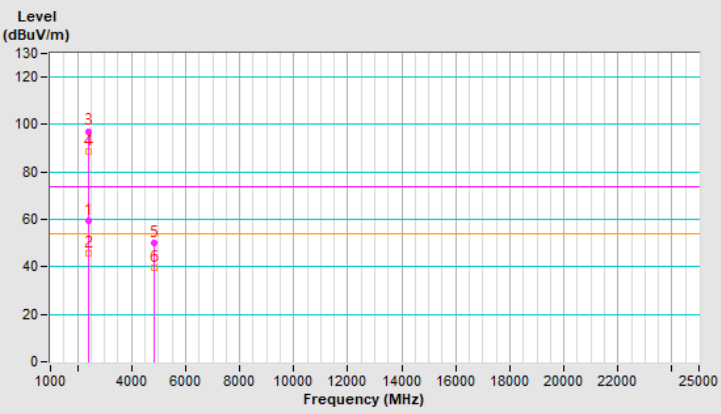


RF Mode	TX 802.11g	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	59.3 PK	74.0	-14.7	1.23 H	242	60.3	-1.0
2	2390.00	45.8 AV	54.0	-8.2	1.23 H	242	46.8	-1.0
3	*2412.00	97.2 PK			1.23 H	242	98.3	-1.1
4	*2412.00	88.5 AV			1.23 H	242	89.6	-1.1
5	4824.00	50.3 PK	74.0	-23.7	1.45 H	151	46.6	3.7
6	4824.00	39.6 AV	54.0	-14.4	1.45 H	151	35.9	3.7

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.
5. " * ": Fundamental frequency.

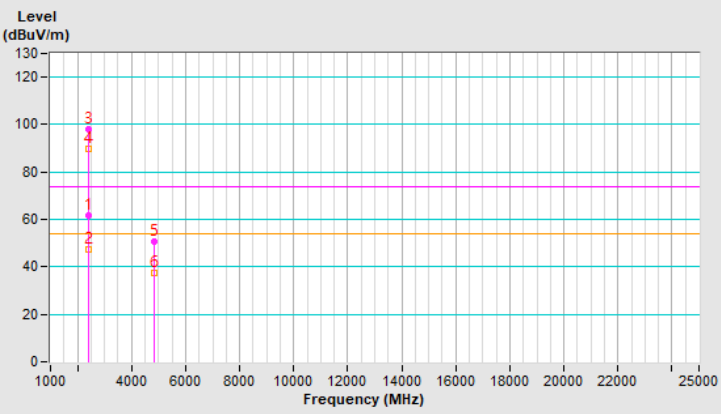


RF Mode	TX 802.11g	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	61.6 PK	74.0	-12.4	3.29 V	48	62.6	-1.0
2	2390.00	47.2 AV	54.0	-6.8	3.29 V	48	48.2	-1.0
3	*2412.00	98.1 PK			3.29 V	48	99.2	-1.1
4	*2412.00	90.0 AV			3.29 V	48	91.1	-1.1
5	4824.00	50.5 PK	74.0	-23.5	2.09 V	193	46.8	3.7
6	4824.00	37.5 AV	54.0	-16.5	2.09 V	193	33.8	3.7

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.
5. " * ": Fundamental frequency.

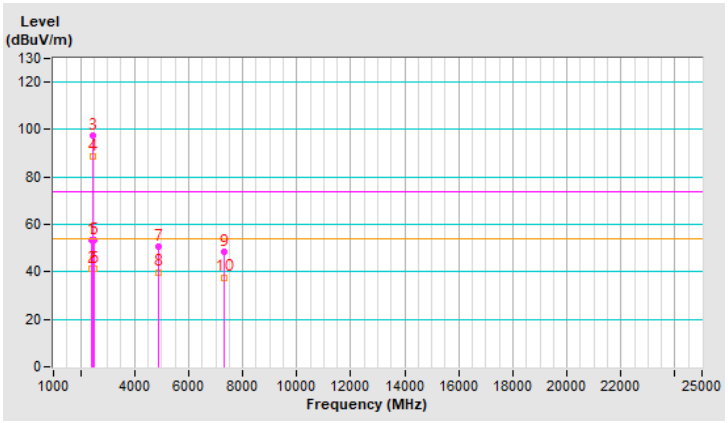


RF Mode	TX 802.11g	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	53.3 PK	74.0	-20.7	1.26 H	245	54.3	-1.0
2	2390.00	41.5 AV	54.0	-12.5	1.26 H	245	42.5	-1.0
3	*2437.00	97.5 PK			1.26 H	245	98.6	-1.1
4	*2437.00	88.5 AV			1.26 H	245	89.6	-1.1
5	2483.50	53.2 PK	74.0	-20.8	1.26 H	245	54.5	-1.3
6	2483.50	41.3 AV	54.0	-12.7	1.26 H	245	42.6	-1.3
7	4874.00	50.7 PK	74.0	-23.3	1.46 H	156	47.0	3.7
8	4874.00	39.9 AV	54.0	-14.1	1.46 H	156	36.2	3.7
9	7311.00	48.2 PK	74.0	-25.8	1.86 H	209	38.5	9.7
10	7311.00	37.7 AV	54.0	-16.3	1.86 H	209	28.0	9.7

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.
5. " * ": Fundamental frequency.

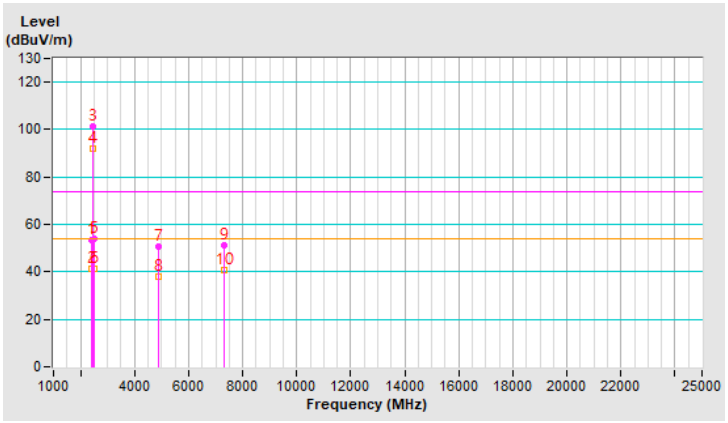


RF Mode	TX 802.11g	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	53.4 PK	74.0	-20.6	2.87 V	225	54.4	-1.0
2	2390.00	41.5 AV	54.0	-12.5	2.87 V	225	42.5	-1.0
3	*2437.00	101.1 PK			2.87 V	225	102.2	-1.1
4	*2437.00	91.9 AV			2.87 V	225	93.0	-1.1
5	2483.50	54.1 PK	74.0	-19.9	2.87 V	225	55.4	-1.3
6	2483.50	41.4 AV	54.0	-12.6	2.87 V	225	42.7	-1.3
7	4874.00	50.8 PK	74.0	-23.2	2.13 V	179	47.1	3.7
8	4874.00	37.8 AV	54.0	-16.2	2.13 V	179	34.1	3.7
9	7311.00	51.0 PK	74.0	-23.0	3.18 V	282	41.3	9.7
10	7311.00	40.5 AV	54.0	-13.5	3.18 V	282	30.8	9.7

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.
5. " * ": Fundamental frequency.

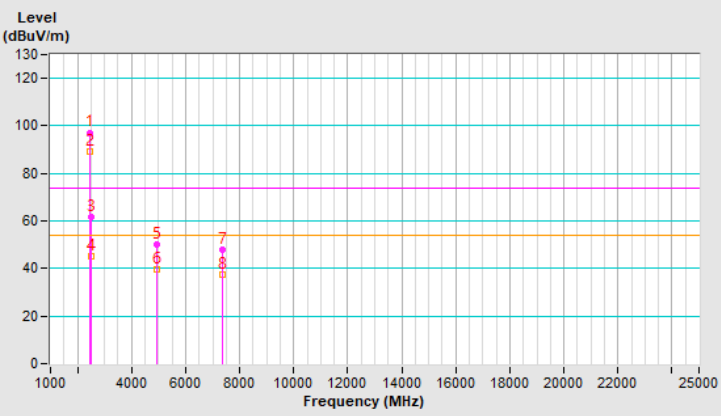


RF Mode	TX 802.11g	**Channel**	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Spencer Liao		

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	97.2 PK			1.24 H	242	98.4	-1.2
2	*2462.00	89.0 AV			1.24 H	242	90.2	-1.2
3	2483.50	61.8 PK	74.0	-12.2	1.24 H	242	63.1	-1.3
4	2483.50	45.0 AV	54.0	-9.0	1.24 H	242	46.3	-1.3
5	4924.00	50.2 PK	74.0	-23.8	1.47 H	162	46.4	3.8
6	4924.00	39.5 AV	54.0	-14.5	1.47 H	162	35.7	3.8
7	7386.00	48.1 PK	74.0	-25.9	1.86 H	204	38.2	9.9
8	7386.00	37.6 AV	54.0	-16.4	1.86 H	204	27.7	9.9

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.

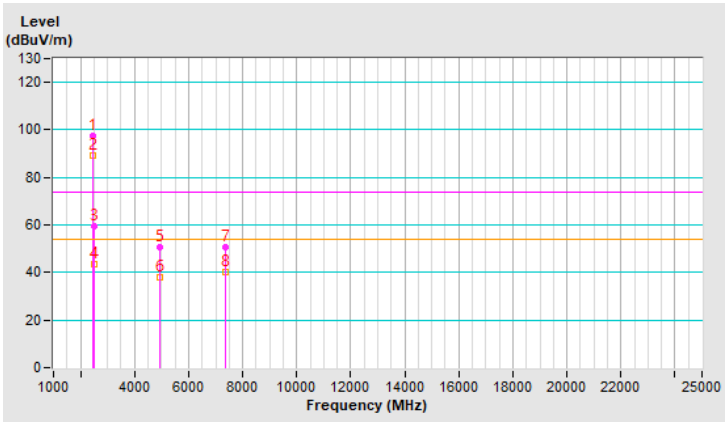


RF Mode	TX 802.11g	Channel	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	97.7 PK			3.20 V	42	98.9	-1.2
2	*2462.00	89.4 AV			3.20 V	42	90.6	-1.2
3	2483.50	59.7 PK	74.0	-14.3	3.20 V	42	61.0	-1.3
4	2483.50	43.7 AV	54.0	-10.3	3.20 V	42	45.0	-1.3
5	4924.00	50.9 PK	74.0	-23.1	2.18 V	179	47.1	3.8
6	4924.00	38.1 AV	54.0	-15.9	2.18 V	179	34.3	3.8
7	7386.00	50.8 PK	74.0	-23.2	3.23 V	297	40.9	9.9
8	7386.00	40.3 AV	54.0	-13.7	3.23 V	297	30.4	9.9

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.

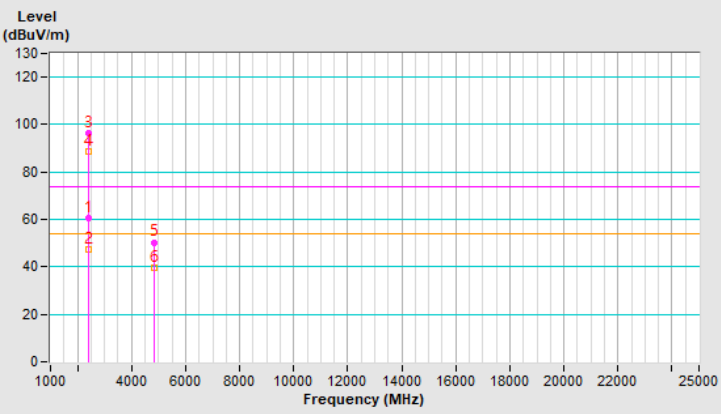


RF Mode	TX 802.11n (HT20)	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	60.6 PK	74.0	-13.4	1.19 H	242	61.6	-1.0
2	2390.00	47.1 AV	54.0	-6.9	1.19 H	242	48.1	-1.0
3	*2412.00	96.6 PK			1.19 H	242	97.7	-1.1
4	*2412.00	88.5 AV			1.19 H	242	89.6	-1.1
5	4824.00	50.4 PK	74.0	-23.6	1.49 H	143	46.7	3.7
6	4824.00	39.6 AV	54.0	-14.4	1.49 H	143	35.9	3.7

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.
5. " * ": Fundamental frequency.

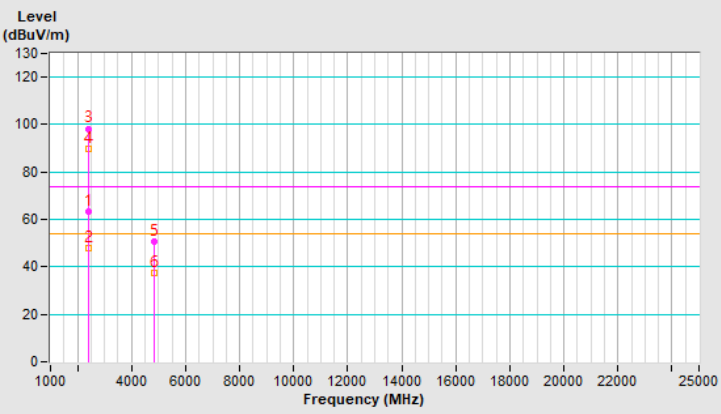


RF Mode	TX 802.11n (HT20)	**Channel**	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Spencer Liao		

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	63.2 PK	74.0	-10.8	3.28 V	48	64.2	-1.0
2	2390.00	47.7 AV	54.0	-6.3	3.28 V	48	48.7	-1.0
3	*2412.00	98.3 PK			3.28 V	48	99.4	-1.1
4	*2412.00	89.9 AV			3.28 V	48	91.0	-1.1
5	4824.00	50.5 PK	74.0	-23.5	2.16 V	175	46.8	3.7
6	4824.00	37.4 AV	54.0	-16.6	2.16 V	175	33.7	3.7

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.
5. " * ": Fundamental frequency.

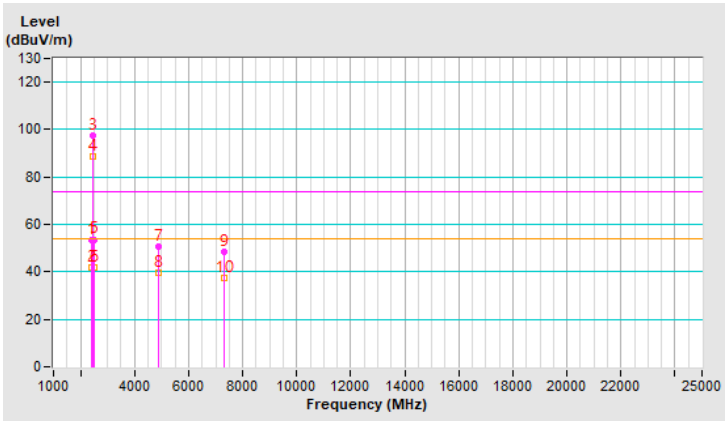


RF Mode	TX 802.11n (HT20)	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	53.6 PK	74.0	-20.4	1.25 H	243	54.6	-1.0
2	2390.00	41.6 AV	54.0	-12.4	1.25 H	243	42.6	-1.0
3	*2437.00	97.7 PK			1.25 H	243	98.8	-1.1
4	*2437.00	88.8 AV			1.25 H	243	89.9	-1.1
5	2483.50	53.7 PK	74.0	-20.3	1.25 H	243	55.0	-1.3
6	2483.50	41.7 AV	54.0	-12.3	1.25 H	243	43.0	-1.3
7	4874.00	50.7 PK	74.0	-23.3	1.50 H	156	47.0	3.7
8	4874.00	39.8 AV	54.0	-14.2	1.50 H	156	36.1	3.7
9	7311.00	48.2 PK	74.0	-25.8	1.84 H	198	38.5	9.7
10	7311.00	37.6 AV	54.0	-16.4	1.84 H	198	27.9	9.7

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.
5. " * ": Fundamental frequency.

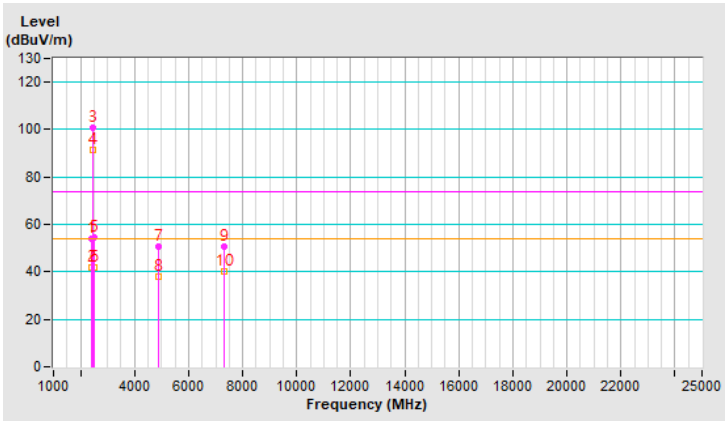


RF Mode	TX 802.11n (HT20)	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	Environmental Conditions	25 °C, 65 % RH
Tested By	Spencer Liao		

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	53.8 PK	74.0	-20.2	2.88 V	232	54.8	-1.0
2	2390.00	41.7 AV	54.0	-12.3	2.88 V	232	42.7	-1.0
3	*2437.00	100.6 PK			2.88 V	232	101.7	-1.1
4	*2437.00	91.5 AV			2.88 V	232	92.6	-1.1
5	2483.50	54.3 PK	74.0	-19.7	2.88 V	232	55.6	-1.3
6	2483.50	41.8 AV	54.0	-12.2	2.88 V	232	43.1	-1.3
7	4874.00	50.8 PK	74.0	-23.2	2.18 V	164	47.1	3.7
8	4874.00	37.8 AV	54.0	-16.2	2.18 V	164	34.1	3.7
9	7311.00	50.8 PK	74.0	-23.2	3.21 V	278	41.1	9.7
10	7311.00	40.3 AV	54.0	-13.7	3.21 V	278	30.6	9.7

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.
5. " * ": Fundamental frequency.

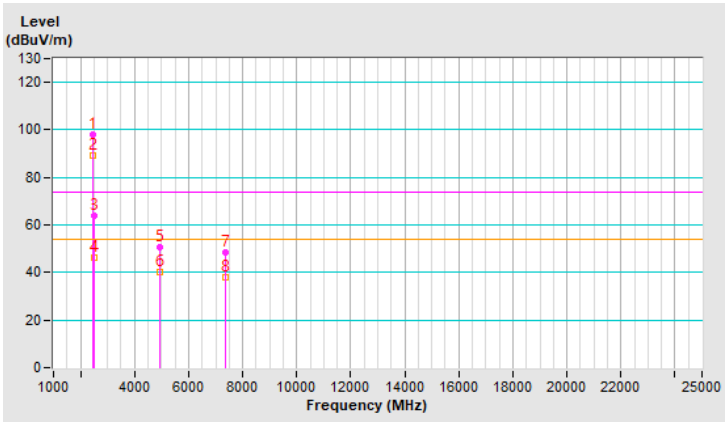


RF Mode	TX 802.11n (HT20)	**Channel**	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Spencer Liao		

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	98.1 PK			1.16 H	243	99.3	-1.2
2	*2462.00	89.3 AV			1.16 H	243	90.5	-1.2
3	2483.50	63.8 PK	74.0	-10.2	1.16 H	243	65.1	-1.3
4	2483.50	46.0 AV	54.0	-8.0	1.16 H	243	47.3	-1.3
5	4924.00	50.9 PK	74.0	-23.1	1.48 H	147	47.1	3.8
6	4924.00	40.2 AV	54.0	-13.8	1.48 H	147	36.4	3.8
7	7386.00	48.5 PK	74.0	-25.5	1.80 H	221	38.6	9.9
8	7386.00	37.9 AV	54.0	-16.1	1.80 H	221	28.0	9.9

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.

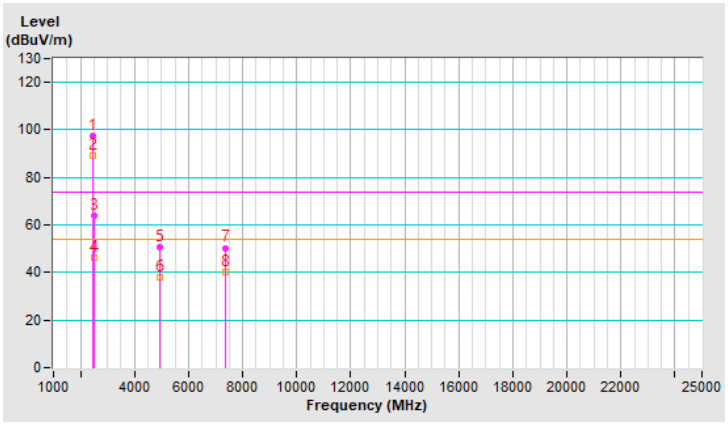


RF Mode	TX 802.11n (HT20)	**Channel**	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power (System)	120Vac, 60Hz	**Environmental Conditions**	25 °C, 65 % RH
Tested By	Spencer Liao		

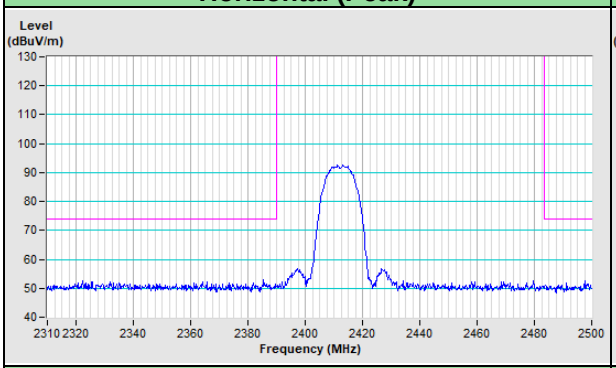
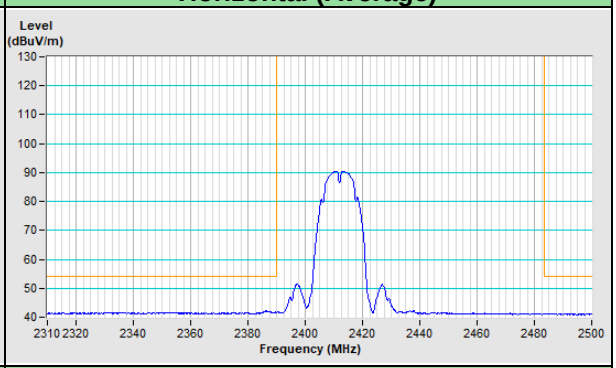
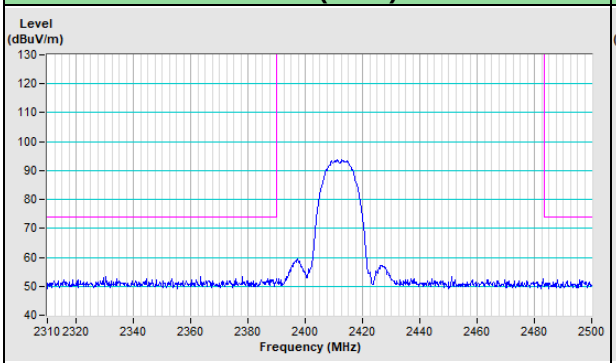
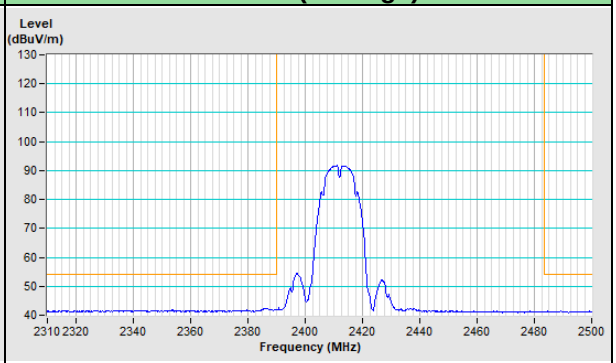
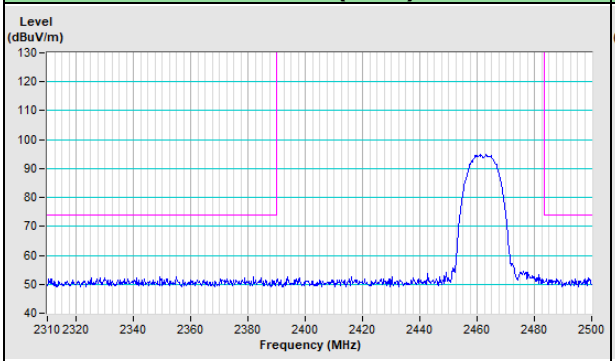
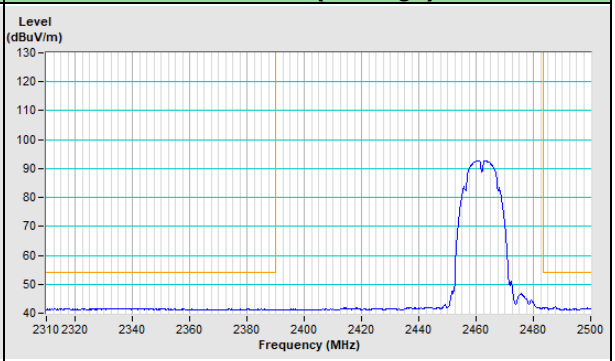
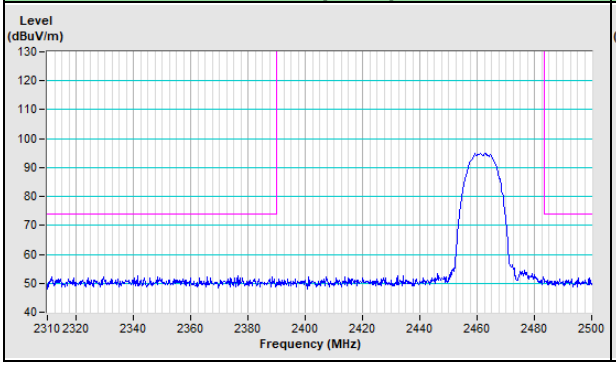
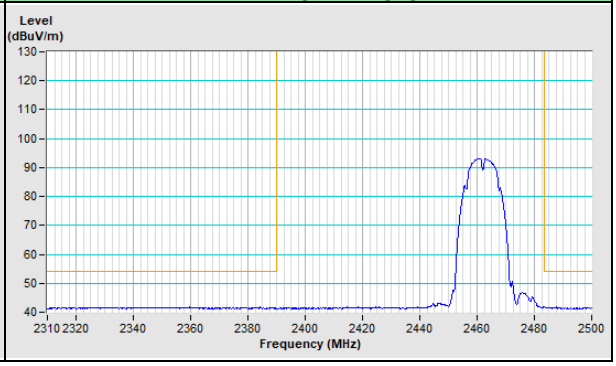
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*2462.00	97.5 PK			3.96 V	41	98.7	-1.2
2	*2462.00	89.0 AV			3.96 V	41	90.2	-1.2
3	2483.50	64.0 PK	74.0	-10.0	3.96 V	41	65.3	-1.3
4	2483.50	46.0 AV	54.0	-8.0	3.96 V	41	47.3	-1.3
5	4924.00	50.6 PK	74.0	-23.4	2.17 V	171	46.8	3.8
6	4924.00	37.8 AV	54.0	-16.2	2.17 V	171	34.0	3.8
7	7386.00	50.4 PK	74.0	-23.6	3.19 V	288	40.5	9.9
8	7386.00	40.0 AV	54.0	-14.0	3.19 V	288	30.1	9.9

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.

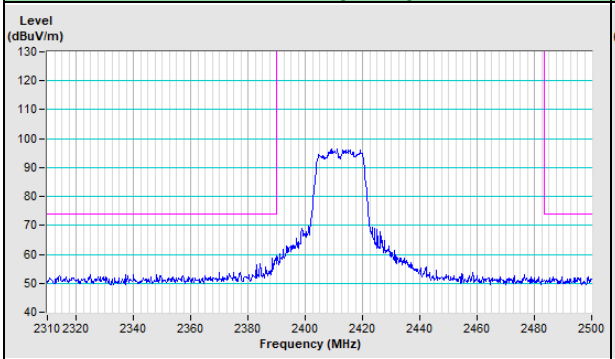


Plot of Band Edge

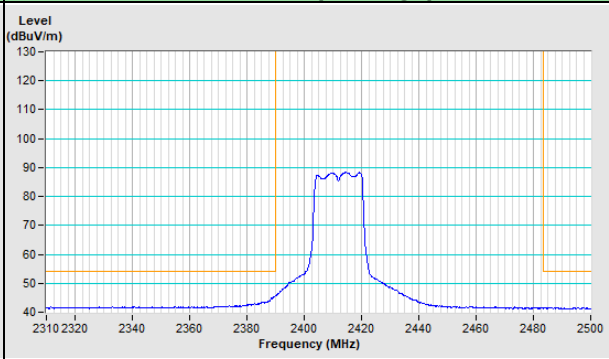
802.11b Channel 1	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11b Channel 11	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11g Channel 1

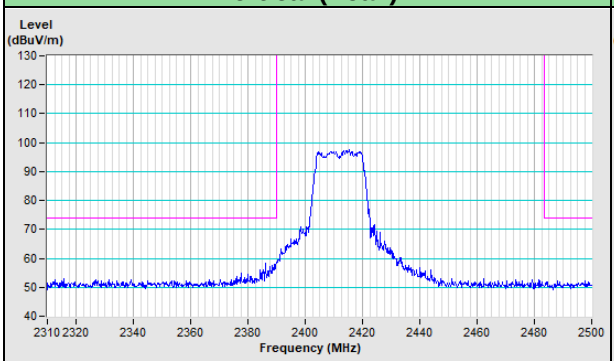
Horizontal (Peak)



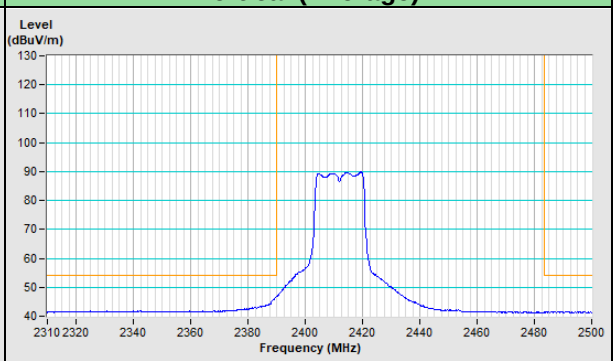
Horizontal (Average)



Vertical (Peak)

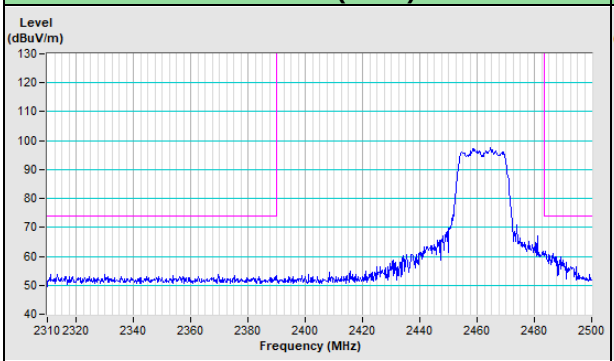


Vertical (Average)

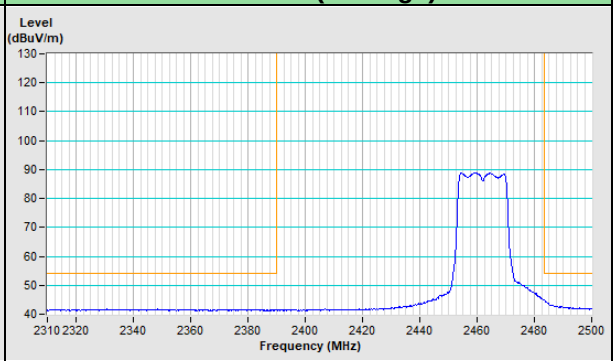


802.11g Channel 11

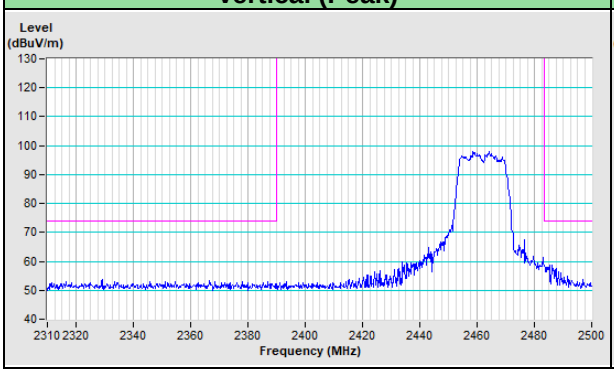
Horizontal (Peak)



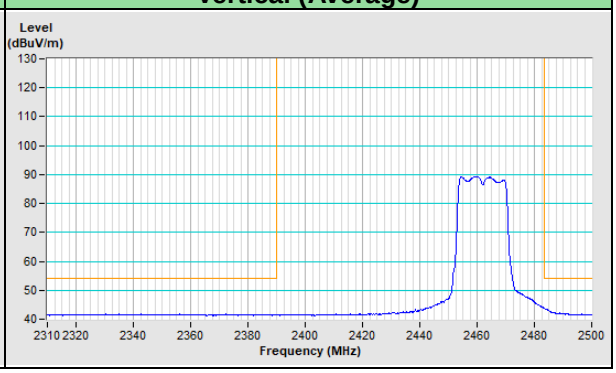
Horizontal (Average)

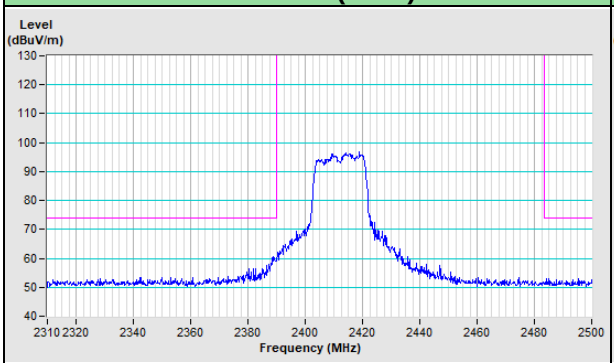
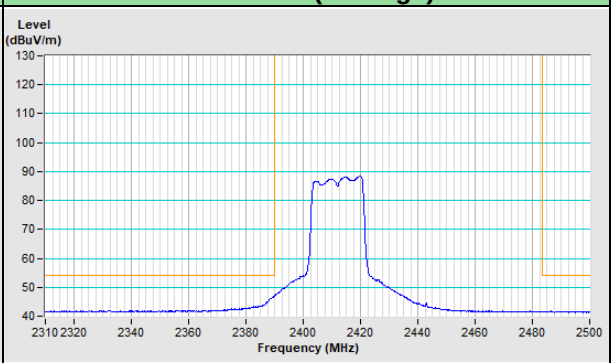
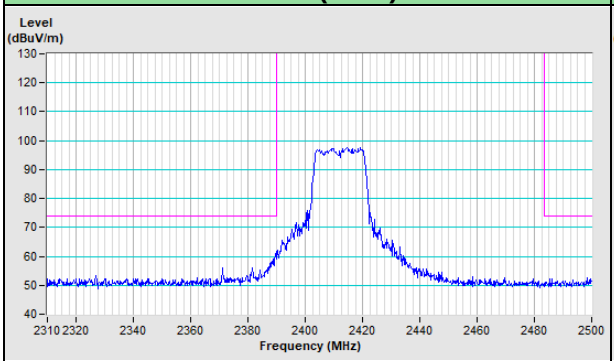
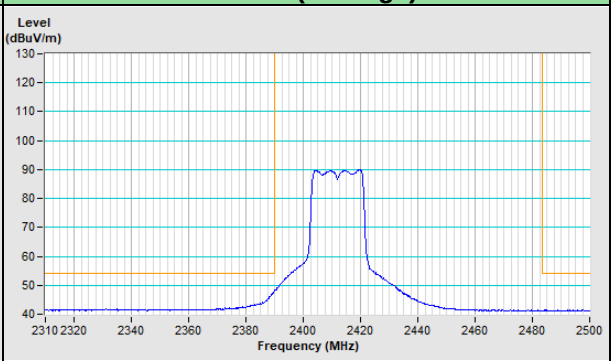
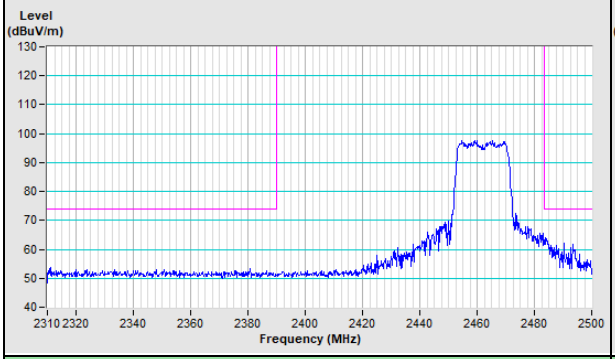
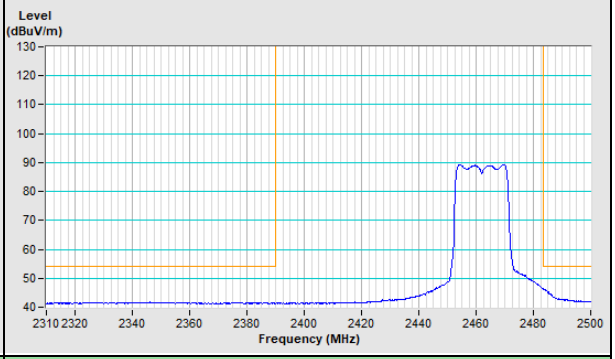
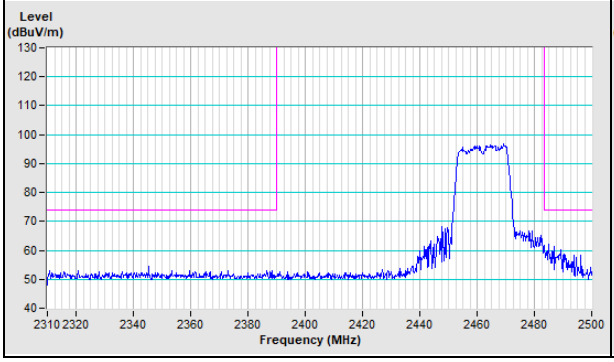
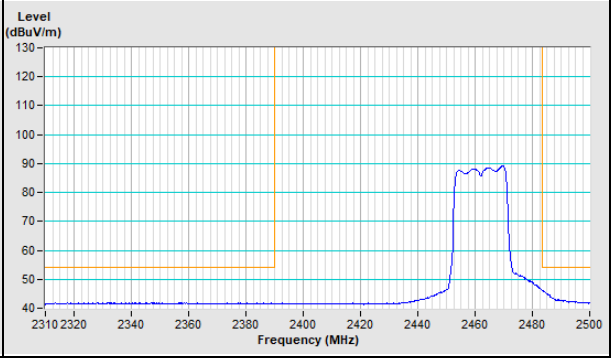


Vertical (Peak)



Vertical (Average)



802.11n (HT20) Channel 1	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
802.11n (HT20) Channel 11	
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.

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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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