FCC Test Report

FCC ID	:	**2AAS9-TBMH120**
Equipment	:	**MiniHub Pro V2**
Model No.	:	**TBMH120**
Applicant	:	**Browan Communications Incorporation**
Address	:	**No. 15-1 Zhonghua Road, Hsinchu Industrial Park, Hukou, Hsinchu, Taiwan (R.O.C.), 30352.**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Oct. 05, 2023**
Tested Date	:	**Oct. 20 ~ Oct. 30, 2023**

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: **Approved by:**

Along Chen / Assistant Manager **Gary Chang / Manager**

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
FR070702-01AC	Rev. 01	Initial issue	Nov. 24, 2023

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emission	[dBuV]: 0.207MHz 54.62 (Margin -8.70dB) - QP	Pass
15.247(d) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 2483.50MHz 53.00 (Margin -1.00dB) - AV [dBuV/m at 3m]: 2390.00MHz 53.00 (Margin -1.00dB) - AV	Pass
15.247(b)(3)	Conducted Output Power	Max Power [dBm]: 24.48	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**IEEE Std. 802.11**	**Ch. Freq. (MHz)**	**Channel Number**	**Transmit Chains (N_{TX})**	**Data Rate / MCS**
2400-2483.5	b	2412-2462	1-11 [11]	1	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	1	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	1	MCS 0-7
Note 1: RF output power specifies that Maximum Peak Conducted Output Power. Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation. Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.					

1.1.2 Antenna Details

Ant. No.	Type	Gain (dBi)	Connector	Remarks
1	PIFA	2.72	PCB	---

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	100-240Vac

1.1.4 Accessories

N/A

1.1.5 Channel List

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

1.1.6 Test Tool and Duty Cycle

Test Tool	EspRFTestTool, v3.6		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	91.56%	0.38
	11g	100.00%	0.00
	HT20	100.00%	0.00

1.1.7 Power Index of Test Tool

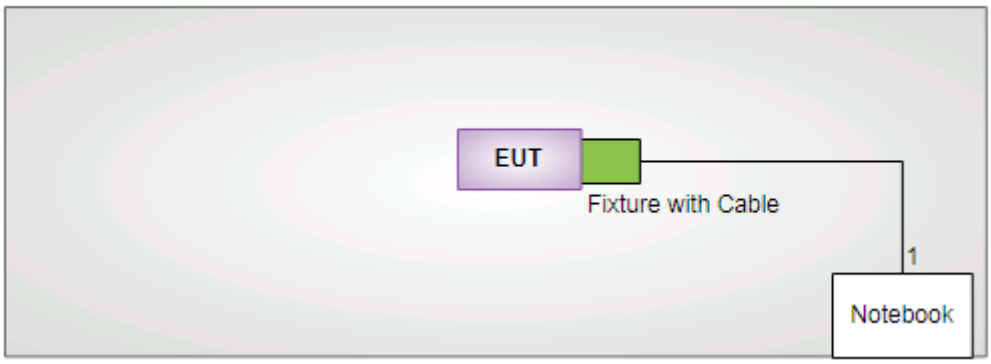
Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	0
11b	2437	0
11b	2462	0
11g	2412	0
11g	2437	0
11g	2462	0
HT20	2412	0
HT20	2437	0
HT20	2462	0

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Remarks**
1	Notebook	DELL	Latitude E5470	DoC	---
2	Fixture with Cable	---	---	---	Provided by applicant.

1.3 Test Setup Chart

Test Setup Diagram



No.	Signal cable / Length (m)
1	USB, 1m shielded.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Oct. 20, 2023				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101658	Feb. 17, 2023	Feb. 16, 2024
LISN	R&S	ENV216	101579	May 09, 2023	May 08, 2024
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127667	Jan .03, 2023	Jan .02, 2024
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 11, 2023	Oct. 10, 2024
50 ohm terminal (Support Unit)	NA	50	01	Jun. 14, 2023	Jun. 13, 2024
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Oct. 26 ~ Oct. 27, 2023				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101657	Mar. 03, 2023	Mar. 02, 2024
Spectrum Analyzer	R&S	FSV40	101498	Nov. 21, 2022	Nov. 20, 2023
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 01, 2022	Oct. 31, 2023
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 31, 2023	Jul. 30, 2024
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Nov. 25, 2022	Nov. 24, 2023
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170508	Dec. 30, 2022	Dec. 29, 2023
Preamplifier	EMC	EMC02325	980225	Jun. 28, 2023	Jun. 27, 2024
Preamplifier	EMC	EMC118A45SE	980898	Jul. 14, 2023	Jul. 13, 2024
Preamplifier	EMC	EMC184045SE	980903	Jul. 17, 2023	Jul. 16, 2024
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 03, 2023	Oct. 02, 2024
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 03, 2023	Oct. 02, 2024
LF cable 11M	EMC	EMCCFD400-NW-NW-11000	200801	Oct. 03, 2023	Oct. 02, 2024
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	160502	Oct. 03, 2023	Oct. 02, 2024
RF Cable	EMC	EMC104-35M-35M-8000	210920	Oct. 03, 2023	Oct. 02, 2024
RF Cable	EMC	EMC104-35M-35M-3000	210922	Oct. 03, 2023	Oct. 02, 2024
HIGHPASS FILTER 1.5-15G	WHK	WHK1.5/15G-10ST	21	Oct. 05, 2023	Oct. 04, 2024
Attenuator	Pasternack	PE7005-10	10-1	Oct. 05, 2023	Oct. 04, 2024
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Oct. 30, 2023				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101910	Apr. 14, 2023	Apr. 13, 2024
Power Meter	Anritsu	ML2495A	1241002	Nov. 23, 2022	Nov. 22, 2023
Power Sensor	Anritsu	MA2411B	1207366	Nov. 23, 2022	Nov. 22, 2023
Attenuator	Pasternack	PE7005-10	10-2	Oct. 05, 2023	Oct. 04, 2024
Measurement Software	Sporton	SENSE-15247_DTS	V5.11	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.130 Hz
Conducted power	±0.808 dB
Power density	±0.583 dB
Conducted emission	±2.715 dB
AC conducted emission	±2.92 dB
Unwanted Emission ≤ 1GHz	±3.41 dB
Unwanted Emission > 1GHz	±4.59 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, 03CH01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
AC Power Line Conducted Emission	11g	2462	6 Mbps	---
Unwanted Emissions ≤ 1GHz	11g	2462	6 Mbps	---
Unwanted Emissions >1GHz Conducted Output Power 6dB bandwidth Power spectral density	11b 11g HT20	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462	1 Mbps 6 Mbps MCS 0	---
NOTE: 1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** results were found as the worst case and were shown in this report.				

3 Transmitter Test Results

3.1 6dB and Occupied Bandwidth

3.1.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.1.2 Test Procedures

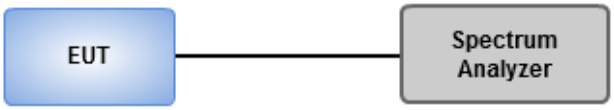
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set resolution bandwidth (RBW) = 1% ~ 5 % of OBW, Video bandwidth = 3 x RBW
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.1.3 Test Setup



3.1.4 Test Results

Ambient Condition	23°C / 65%	**Tested By**	Roger Lu

Refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Limit of Conducted Output Power

Conducted power shall not exceed 1Watt.

Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

Antenna gain > 6dBi

Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

Fixed, point to point operations
Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Test Procedures

A broadband RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.2.3 Test Setup

3.2.4 Test Results

Ambient Condition	23°C / 65%	**Tested By**	Roger Lu

Refer to Appendix B.

3.3 Power Spectral Density

3.3.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.3.2 Test Procedures

Peak PSD

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

Average PSD, duty cycle ≥ 98%

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Sweep time = auto couple.
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
5. Use the peak marker function to determine the maximum amplitude level.

Average PSD, duty cycle < 98%

1 Set the RBW = 3 kHz, VBW = 10 kHz

2 Detector = RMS, Sweep time = auto couple.

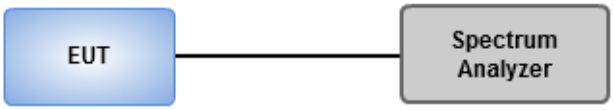
3 Sweep time = auto couple.

4 Employ trace averaging (RMS) mode over a minimum of 100 traces.

5 Use the peak marker function to determine the maximum amplitude level.

6 Add 10 log (1/x), where x is the duty cycle.

3.3.3 Test Setup



3.3.4 Test Results

Ambient Condition	23°C / 65%	**Tested By**	Roger Lu

Refer to Appendix C.

3.4 Unwanted Emissions into Restricted Frequency Bands

3.4.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.4.2 Test Procedures

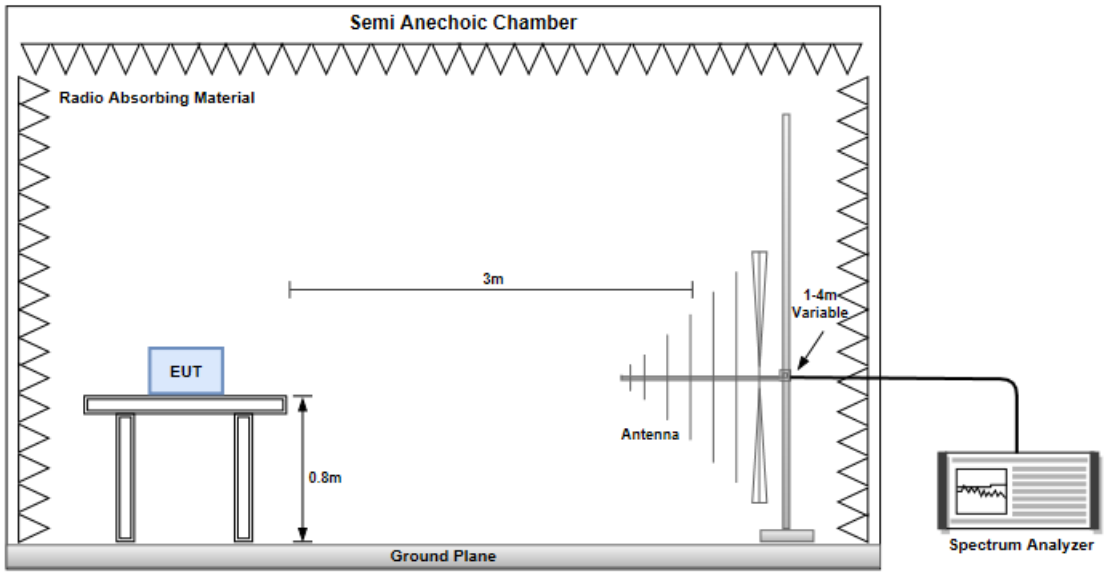
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

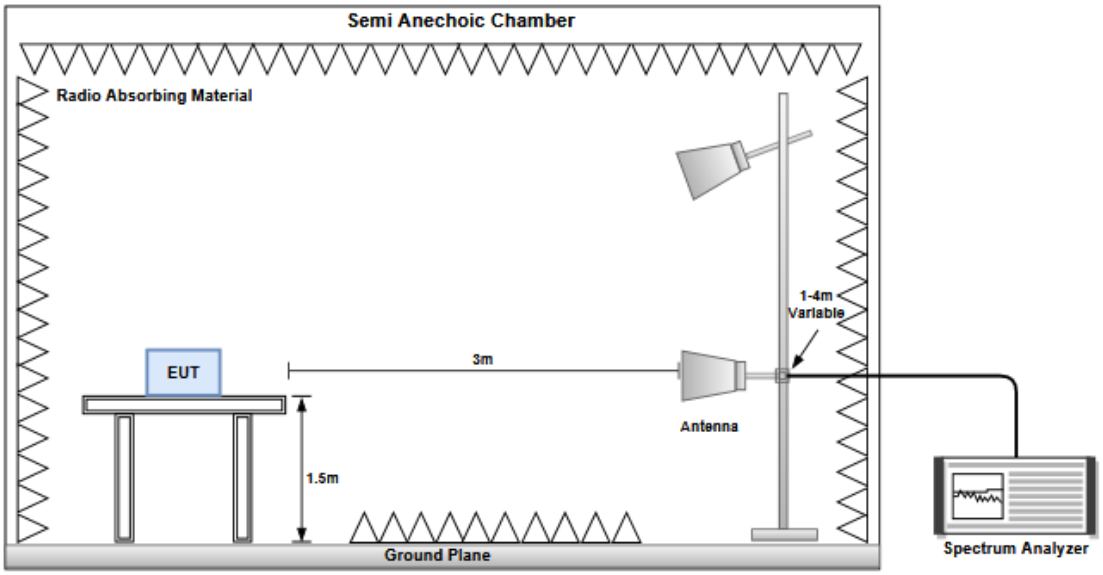
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.4.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.4.4 Test Results

Refer to Appendix D.

3.5 Emissions in Non-Restricted Frequency Bands

3.5.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.5.2 Test Procedures

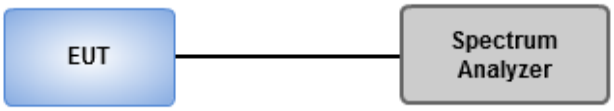
Reference level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

3.5.3 Test Setup



3.5.4 Test Results

Ambient Condition	23°C / 65%	**Tested By**	Roger Lu

Refer to Appendix E.

3.6 AC Power Line Conducted Emissions

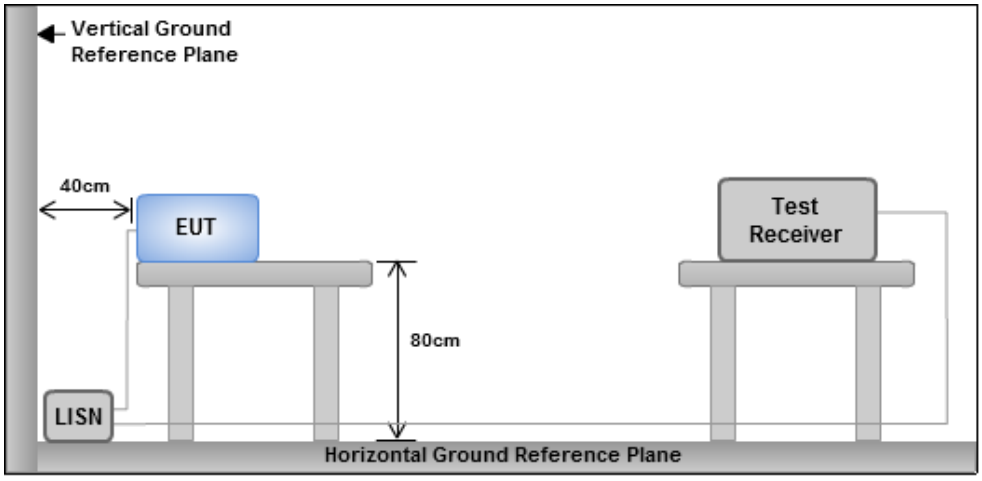
3.6.1 Limit of AC Power Line Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.6.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

3.6.3 Test Setup



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

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.6.4 Test Results

Refer to Appendix F.

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

==END==

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	10.025M	13.475M	13M5G1D	10M	13.427M
802.11g_Nss1,(6Mbps)_1TX	16.35M	16.365M	16M4D1D	16.325M	16.349M
802.11n HT20_Nss1,(MCS0)_1TX	16.825M	17.179M	17M2D1D	16.825M	17.149M

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

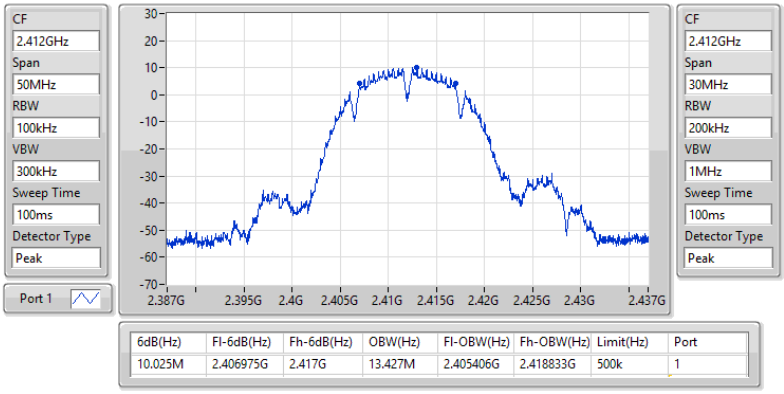
Result

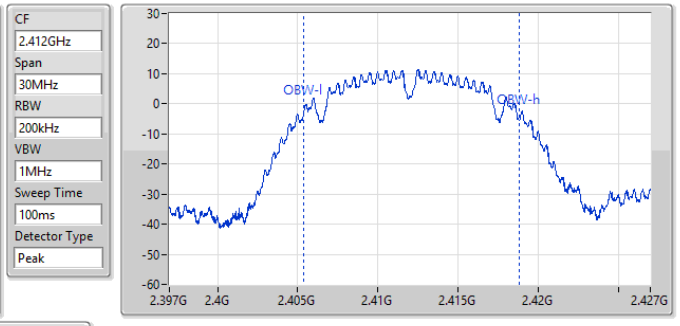
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	10.025M	13.427M
2437MHz	Pass	500k	10M	13.475M
2462MHz	Pass	500k	10.025M	13.459M
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	16.35M	16.355M
2437MHz	Pass	500k	16.35M	16.349M
2462MHz	Pass	500k	16.325M	16.365M
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-
2412MHz	Pass	500k	16.825M	17.166M
2437MHz	Pass	500k	16.825M	17.149M
2462MHz	Pass	500k	16.825M	17.179M

Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **EBW**

2412MHz

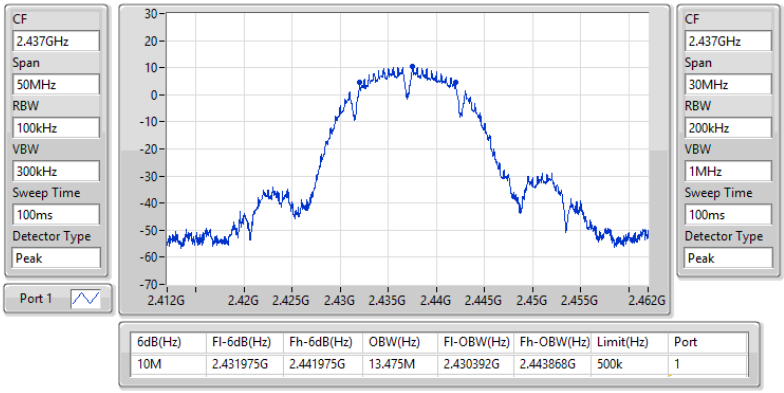


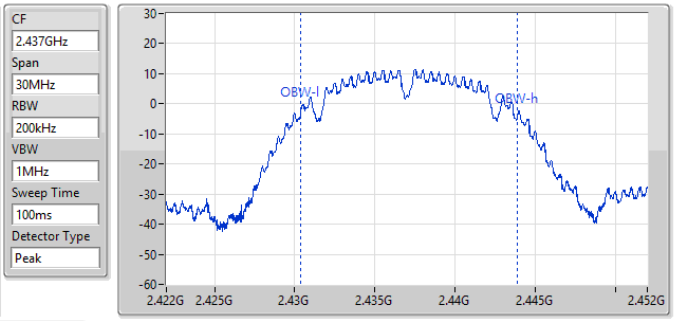


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
10.025M	2.406975G	2.417G	13.427M	2.405406G	2.418833G	500k	1

2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **EBW**

2437MHz

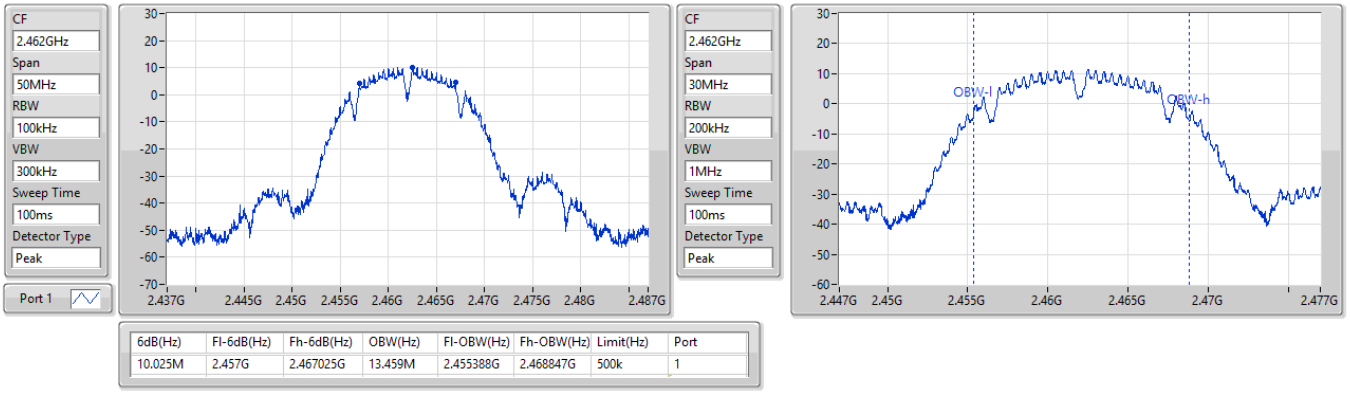




6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
10M	2.431975G	2.441975G	13.475M	2.430392G	2.443868G	500k	1

2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **EBW**

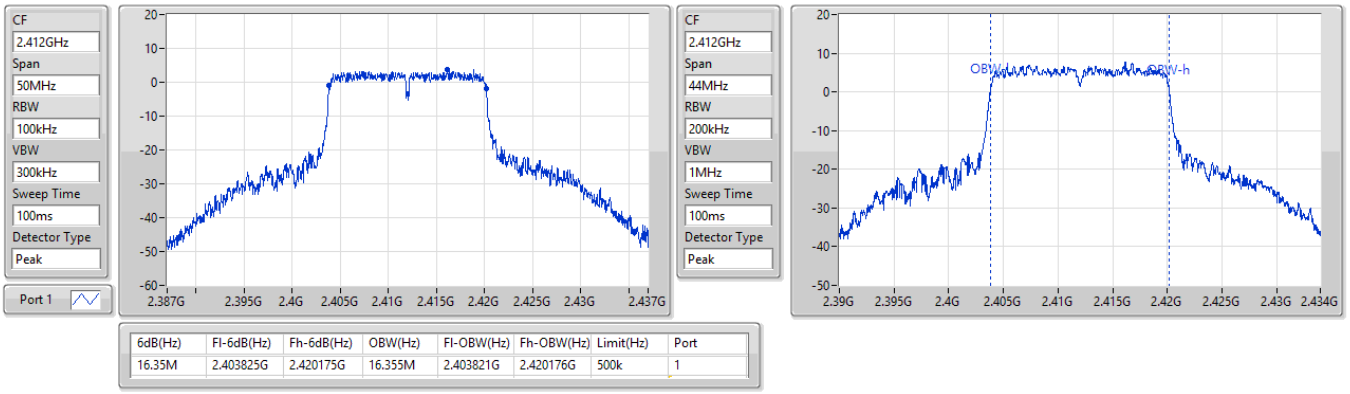
2462MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
10.025M	2.457G	2.467025G	13.459M	2.455388G	2.468847G	500k	1

2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **EBW**

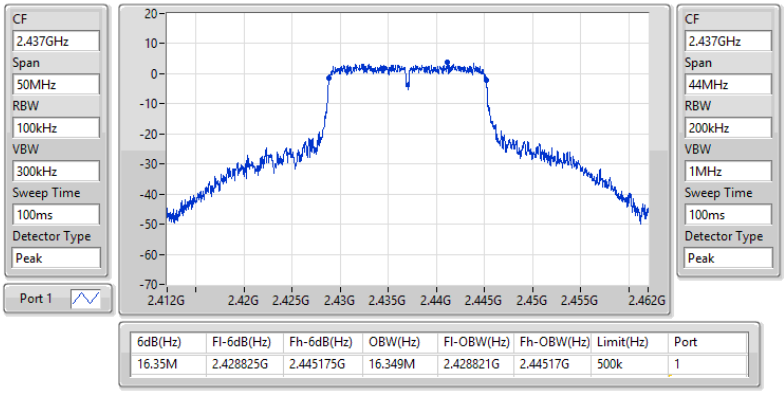
2412MHz

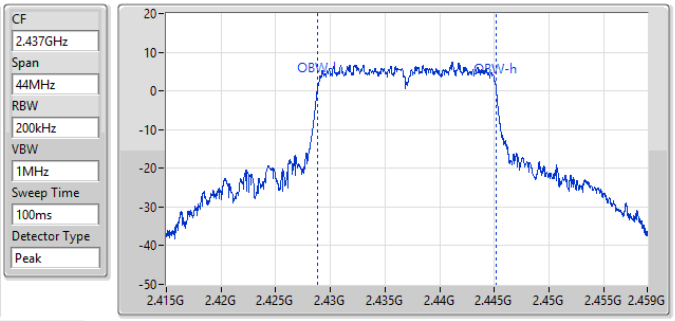


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.35M	2.403825G	2.420175G	16.355M	2.403821G	2.420176G	500k	1

2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **EBW**

2437MHz

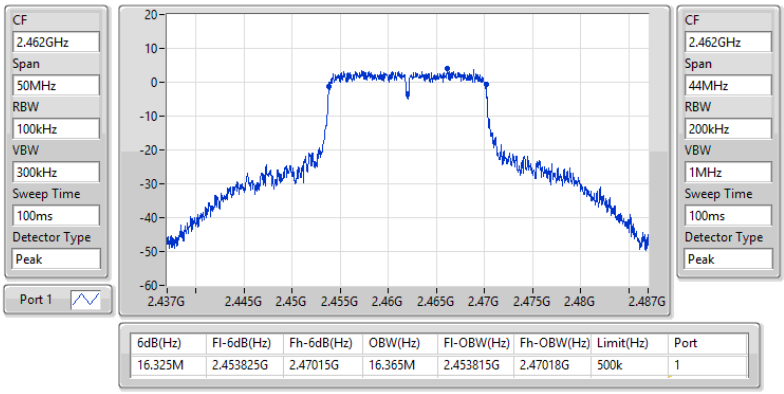


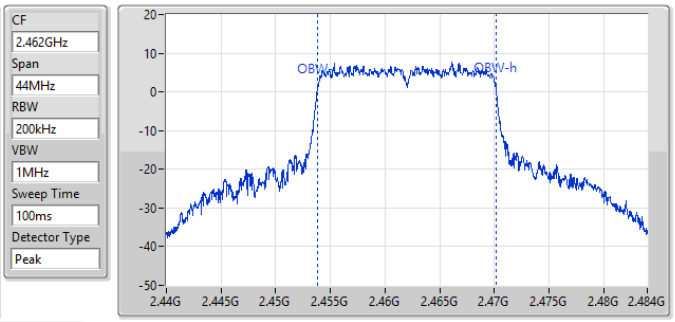


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.35M	2.428825G	2.445175G	16.349M	2.428821G	2.44517G	500k	1

2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **EBW**

2462MHz

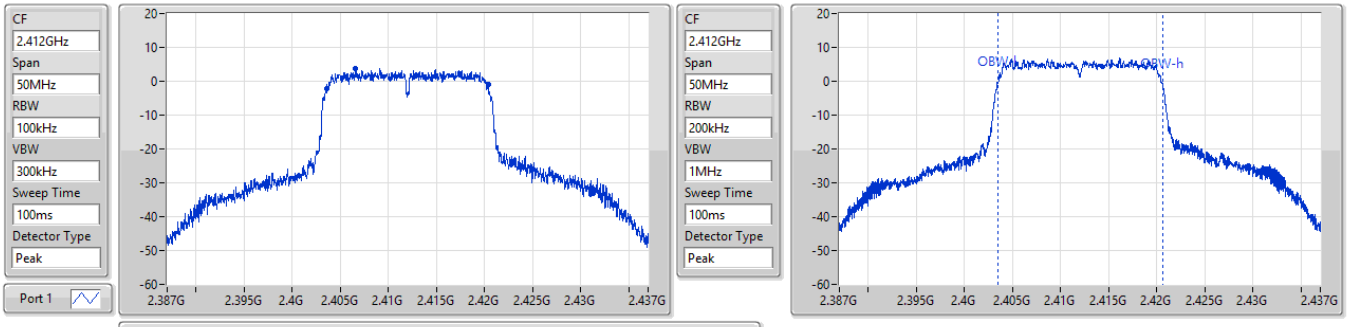




6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.325M	2.453825G	2.47015G	16.365M	2.453815G	2.47018G	500k	1

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **EBW**

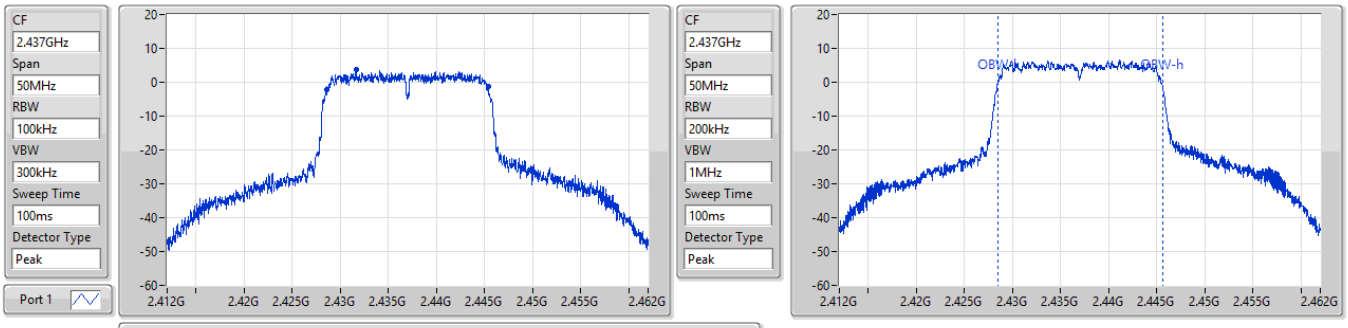
2412MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.825M	2.403575G	2.4204G	17.166M	2.403431G	2.420596G	500k	1

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **EBW**

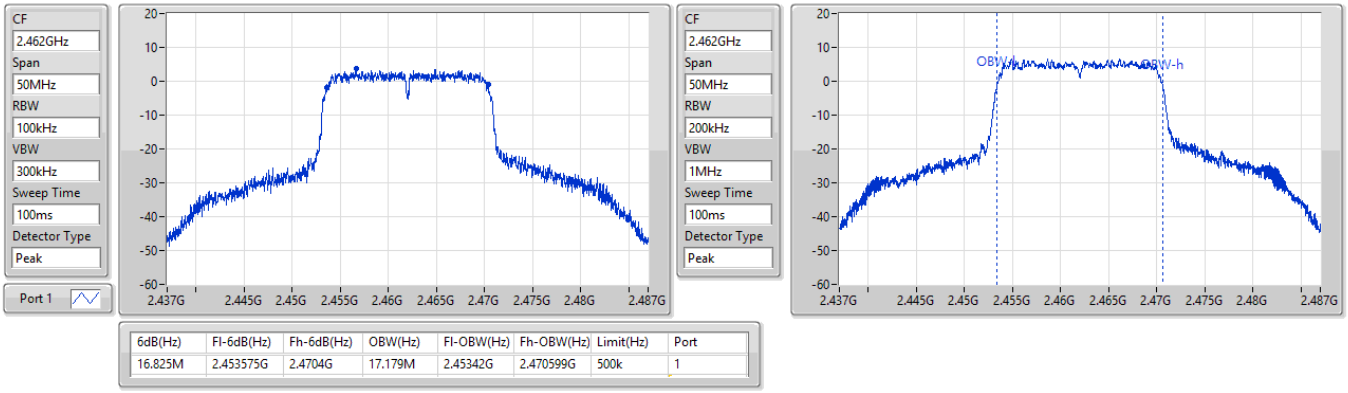
2437MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.825M	2.428575G	2.4454G	17.149M	2.428433G	2.445582G	500k	1

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **EBW**

2462MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.825M	2.453575G	2.4704G	17.179M	2.45342G	2.470599G	500k	1

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	22.15	0.16406
802.11g_Nss1,(6Mbps)_1TX	24.48	0.28054
802.11n HT20_Nss1,(MCS0)_1TX	24.23	0.26485

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.72	22.01	22.01	30.00	24.73	36.00
2437MHz	Pass	2.72	22.12	22.12	30.00	24.84	36.00
2462MHz	Pass	2.72	22.15	22.15	30.00	24.87	36.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.72	24.36	24.36	30.00	27.08	36.00
2437MHz	Pass	2.72	24.42	24.42	30.00	27.14	36.00
2462MHz	Pass	2.72	24.48	24.48	30.00	27.20	36.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.72	24.11	24.11	30.00	26.83	36.00
2437MHz	Pass	2.72	24.16	24.16	30.00	26.88	36.00
2462MHz	Pass	2.72	24.23	24.23	30.00	26.95	36.00

DG = Directional Gain; Port X = Port X output power

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	19.67	0.09268
802.11g_Nss1,(6Mbps)_1TX	17.46	0.05572
802.11n HT20_Nss1,(MCS0)_1TX	17.35	0.05433

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.72	19.53	19.53	-	22.25	-
2437MHz	Pass	2.72	19.65	19.65	-	22.37	-
2462MHz	Pass	2.72	19.67	19.67	-	22.39	-
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.72	17.25	17.25	-	19.97	-
2437MHz	Pass	2.72	17.31	17.31	-	20.03	-
2462MHz	Pass	2.72	17.46	17.46	-	20.18	-
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.72	17.08	17.08	-	19.80	-
2437MHz	Pass	2.72	17.15	17.15	-	19.87	-
2462MHz	Pass	2.72	17.35	17.35	-	20.07	-

DG = Directional Gain; Port X = Port X output power
Note : Conducted average output power is for reference

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_1TX	-4.80
802.11g_Nss1,(6Mbps)_1TX	-11.27
802.11n HT20_Nss1,(MCS0)_1TX	-10.15

RBW = 3kHz;

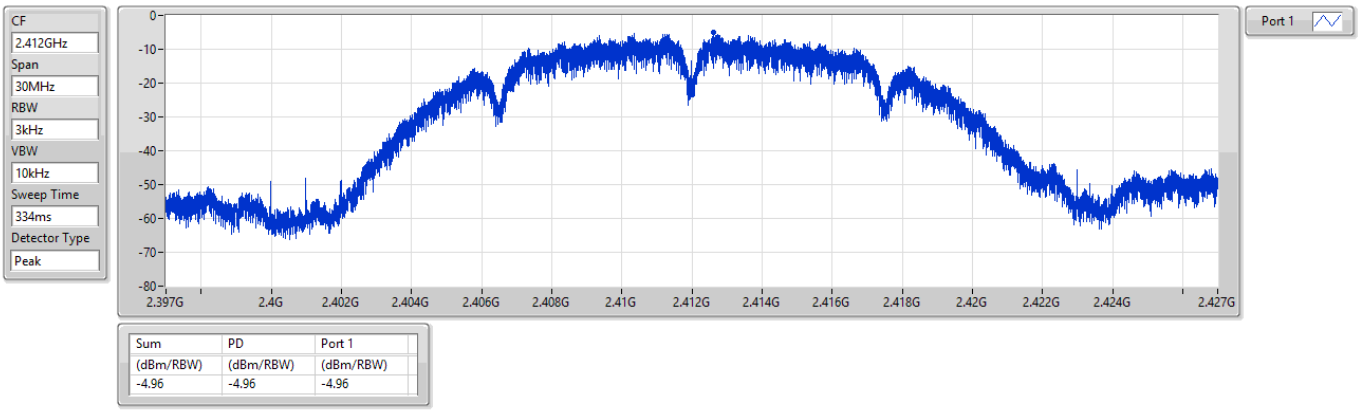
Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.72	-4.96	-4.96	8.00
2437MHz	Pass	2.72	-4.80	-4.80	8.00
2462MHz	Pass	2.72	-5.10	-5.10	8.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.72	-11.39	-11.39	8.00
2437MHz	Pass	2.72	-11.40	-11.40	8.00
2462MHz	Pass	2.72	-11.27	-11.27	8.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	2.72	-10.43	-10.43	8.00
2437MHz	Pass	2.72	-10.82	-10.82	8.00
2462MHz	Pass	2.72	-10.15	-10.15	8.00

DG = Directional Gain; RBW = 3kHz;
PD = Power density; Port X = Port X Power Density;

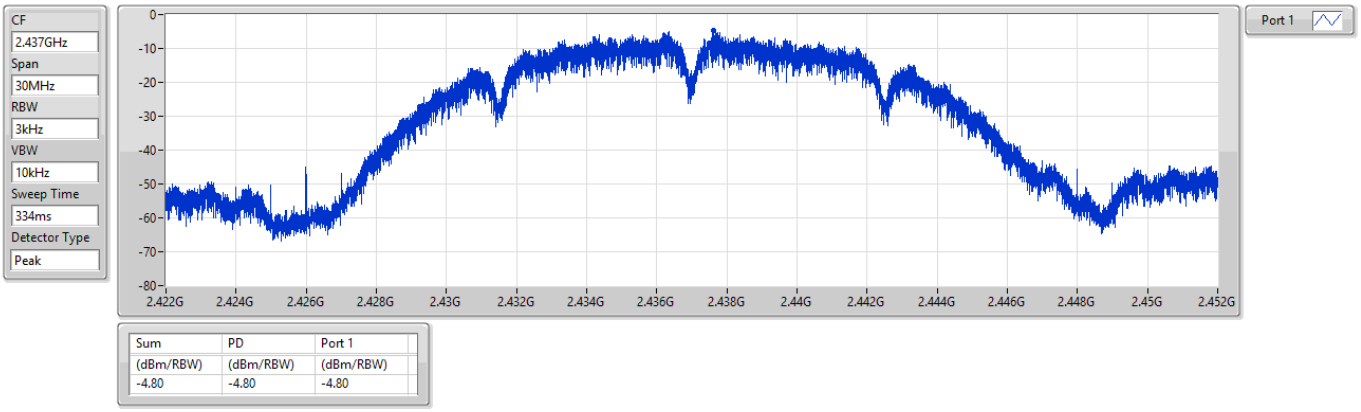
2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **PSD**

2412MHz



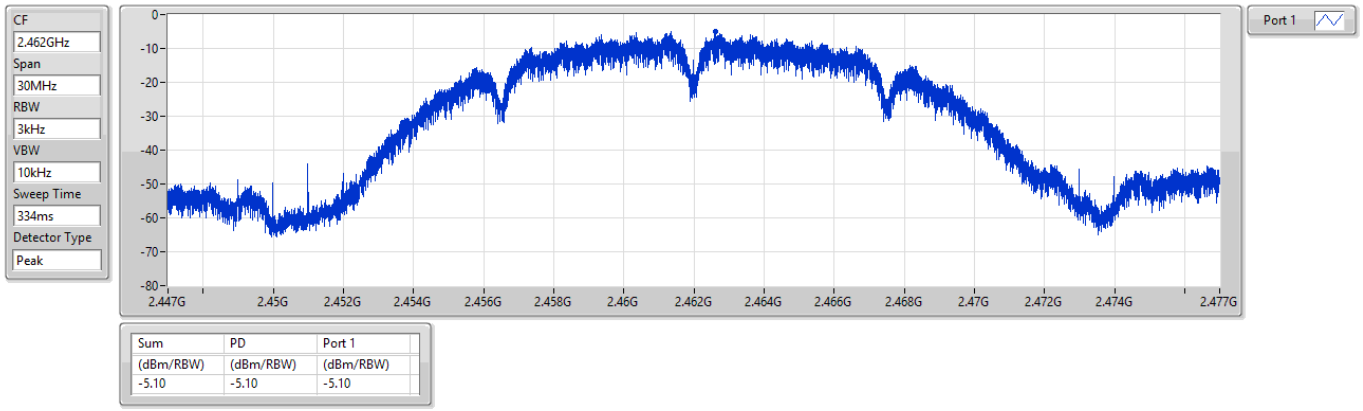
2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **PSD**

2437MHz



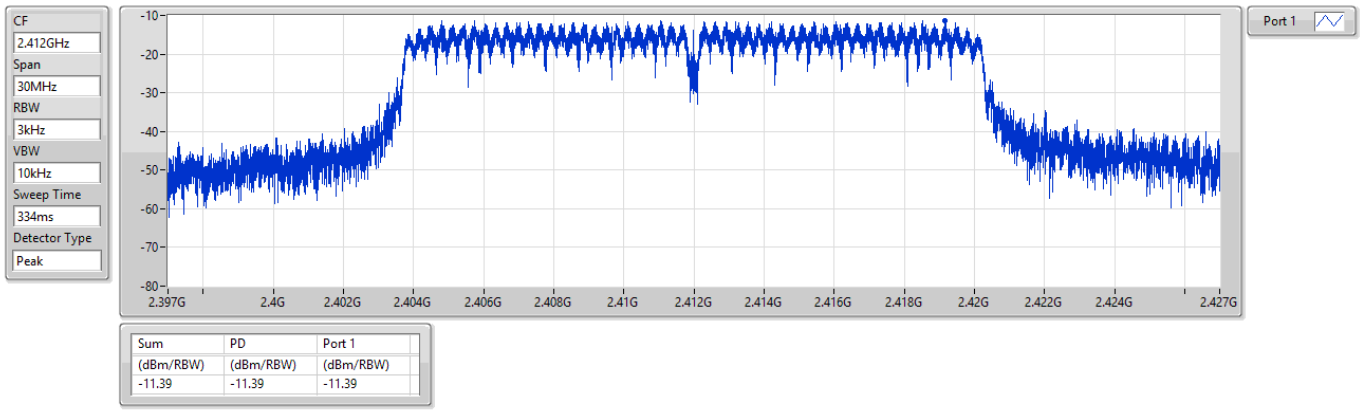
2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **PSD**

2462MHz



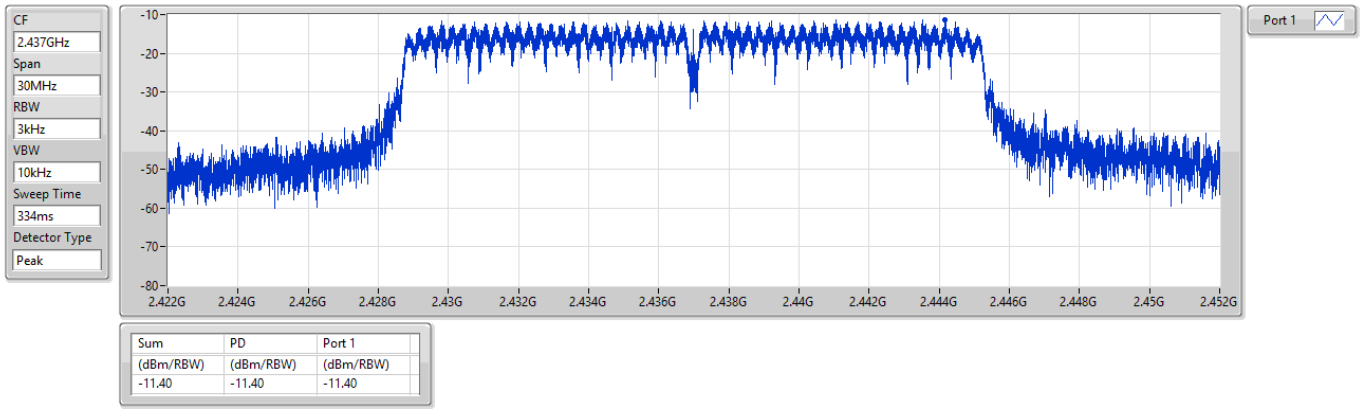
2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **PSD**

2412MHz



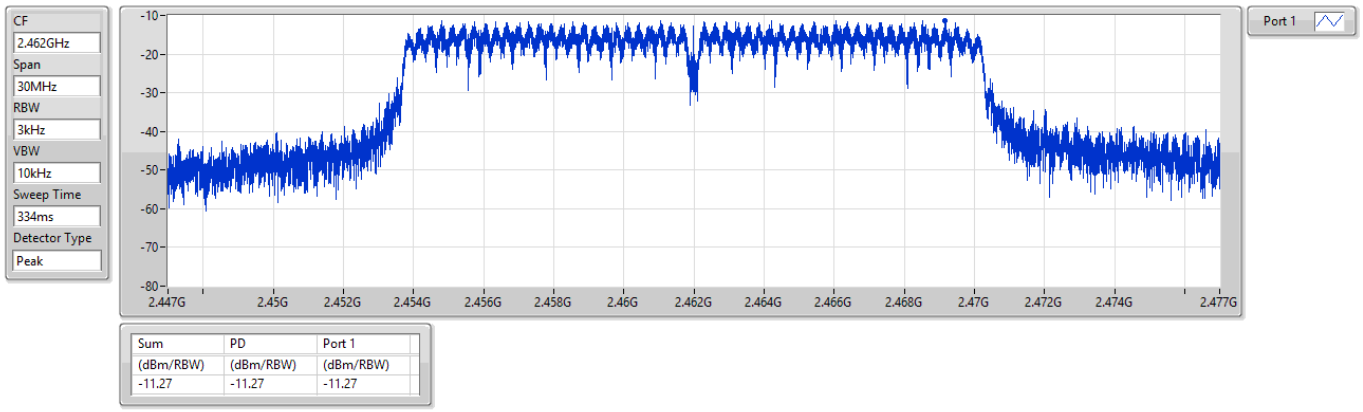
2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **PSD**

2437MHz



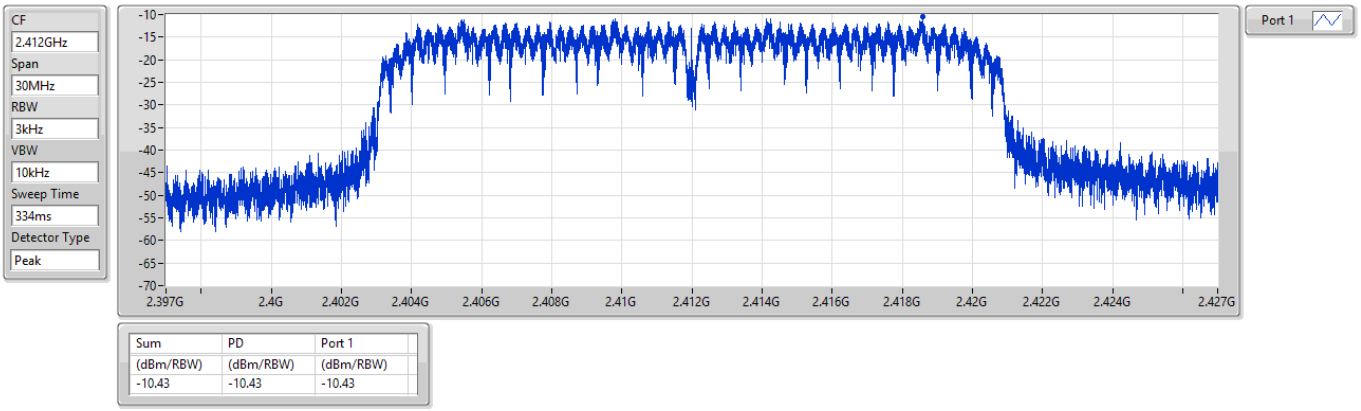
2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **PSD**

2462MHz



2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **PSD**

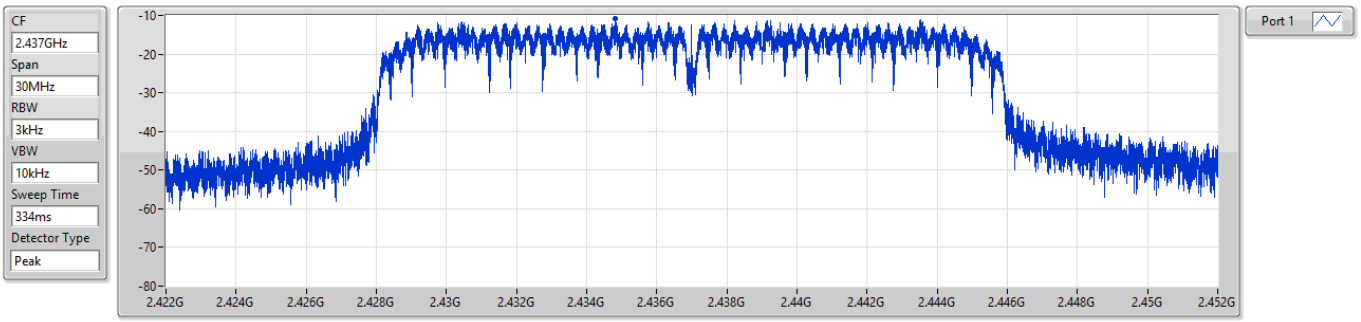
2412MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.43	-10.43	-10.43

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **PSD**

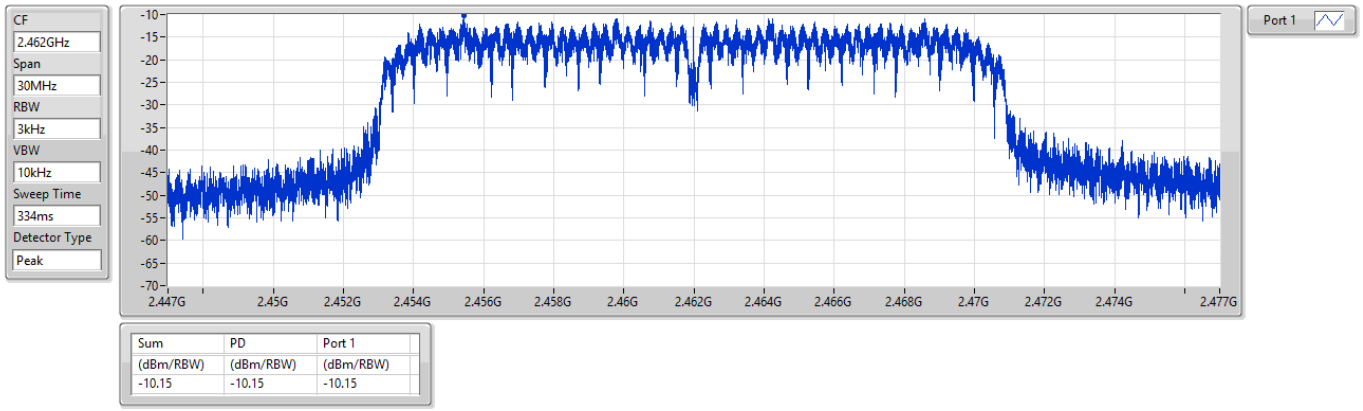
2437MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.82	-10.82	-10.82

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **PSD**

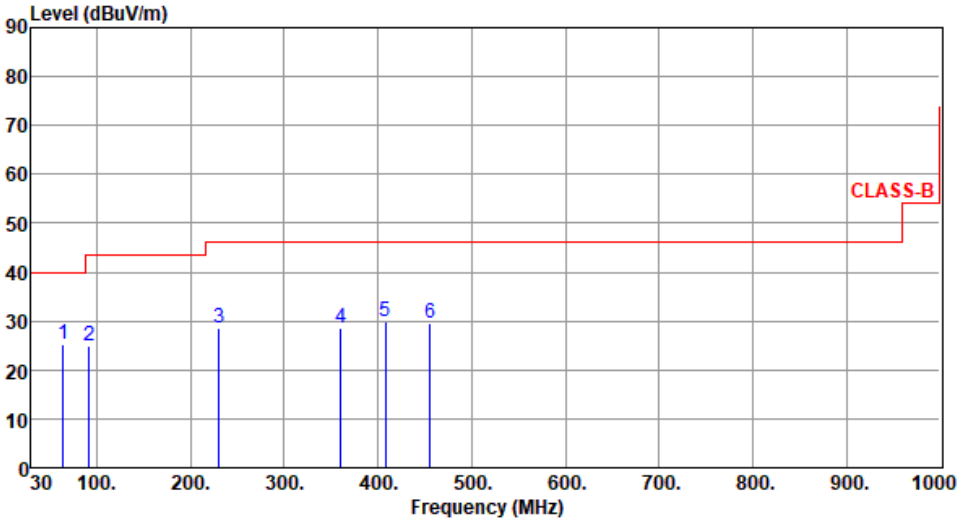
2462MHz



Unwanted Emissions (Below 1GHz)

Modulation	11g	**Test Freq. (MHz)**	2462
Polarization	Horizontal		

Test By :Paul Lin Temperature(℃):25 Humidity(%):63

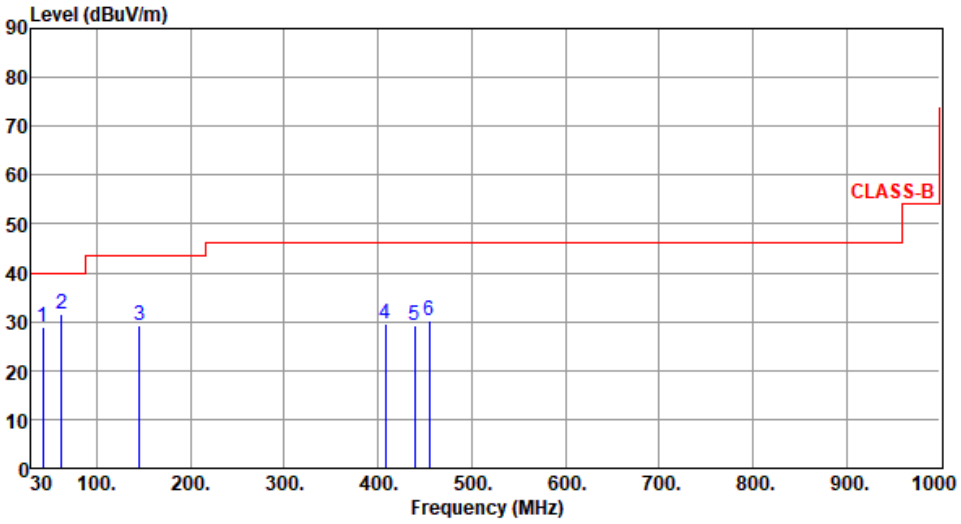


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	63.95	25.27	40.00	-14.73	34.89	-9.62	Peak	---	---
2	92.08	25.02	43.50	-18.48	39.33	-14.31	Peak	---	---
3	230.79	28.49	46.00	-17.51	39.89	-11.40	Peak	---	---
4	360.77	28.58	46.00	-17.42	35.25	-6.67	Peak	---	---
5	408.30	29.73	46.00	-16.27	34.85	-5.12	Peak	---	---
6	455.83	29.70	46.00	-16.30	33.65	-3.95	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	11g	**Test Freq. (MHz)**	2462
Polarization	Vertical		

Test By :Paul Lin Temperature(℃):25 Humidity(%):63



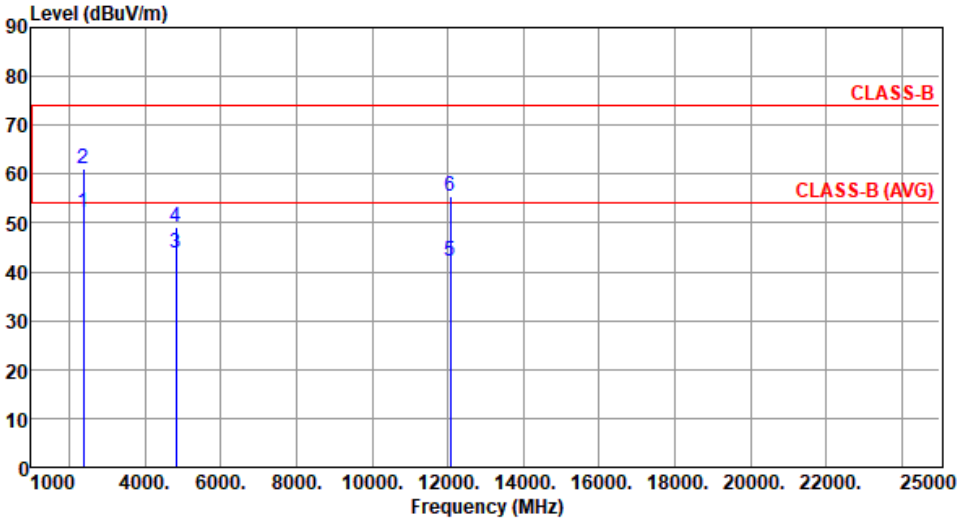
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	42.61	28.97	40.00	-11.03	37.36	-8.39	Peak	---	---
2	62.01	31.52	40.00	-8.48	40.84	-9.32	Peak	---	---
3	145.43	29.06	43.50	-14.44	38.00	-8.94	Peak	---	---
4	408.30	29.39	46.00	-16.61	34.51	-5.12	Peak	---	---
5	439.34	29.34	46.00	-16.66	33.58	-4.24	Peak	---	---
6	454.86	30.12	46.00	-15.88	34.09	-3.97	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Unwanted Emission (Above 1GHz) for 11b

Modulation	11b	**Test Freq. (MHz)**	2412
Polarization	Horizontal		

Test By :Brad Wu Temperature(℃):23 Humidity(%):67

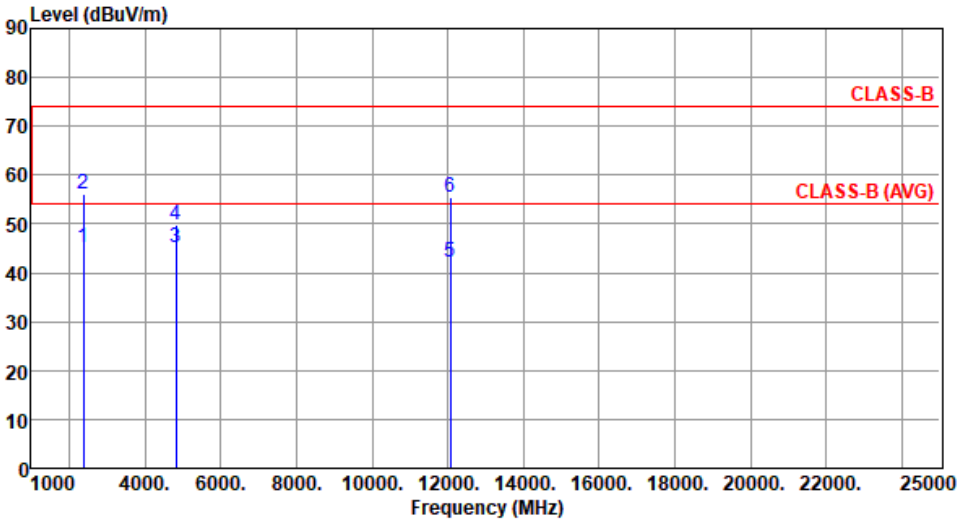


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	52.08	54.00	-1.92	56.34	-4.26	Average	294	348
2	2390.00	61.05	74.00	-12.95	65.31	-4.26	Peak	294	348
3	4824.00	43.98	54.00	-10.02	44.24	-0.26	Average	142	346
4	4824.00	49.10	74.00	-24.90	49.36	-0.26	Peak	142	346
5	12060.00	42.24	54.00	-11.76	35.50	6.74	Average	100	36
6	12060.00	55.51	74.00	-18.49	48.77	6.74	Peak	100	36

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11b	**Test Freq. (MHz)**	2412
Polarization	Vertical		

Test By :Brad Wu Temperature(℃):23 Humidity(%):67

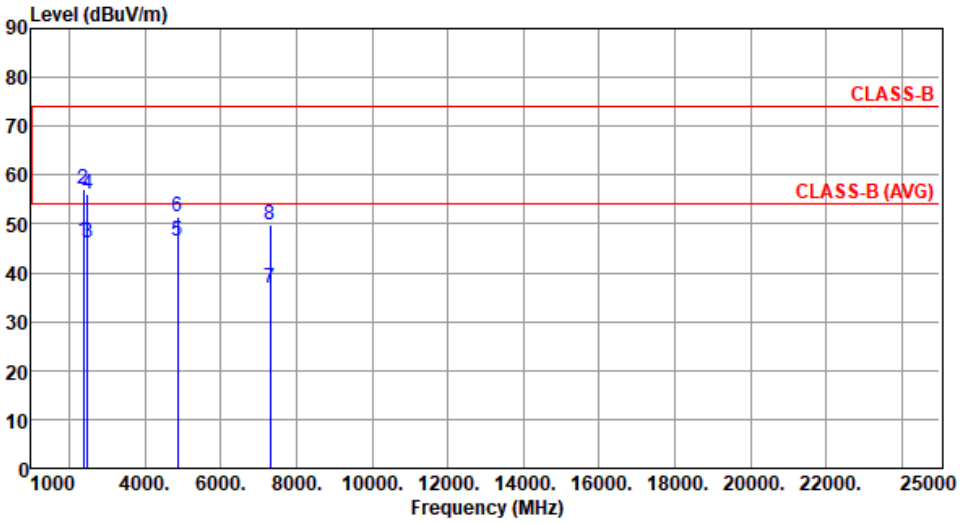


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	45.06	54.00	-8.94	49.32	-4.26	Average	103	249
2	2390.00	56.29	74.00	-17.71	60.55	-4.26	Peak	103	249
3	4824.00	45.03	54.00	-8.97	45.29	-0.26	Average	146	332
4	4824.00	49.71	74.00	-24.29	49.97	-0.26	Peak	146	332
5	12060.00	42.33	54.00	-11.67	35.59	6.74	Average	100	21
6	12060.00	55.33	74.00	-18.67	48.59	6.74	Peak	100	21

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11b	**Test Freq. (MHz)**	2437
Polarization	Horizontal		

Test By :Brad Wu Temperature(℃):23 Humidity(%):67

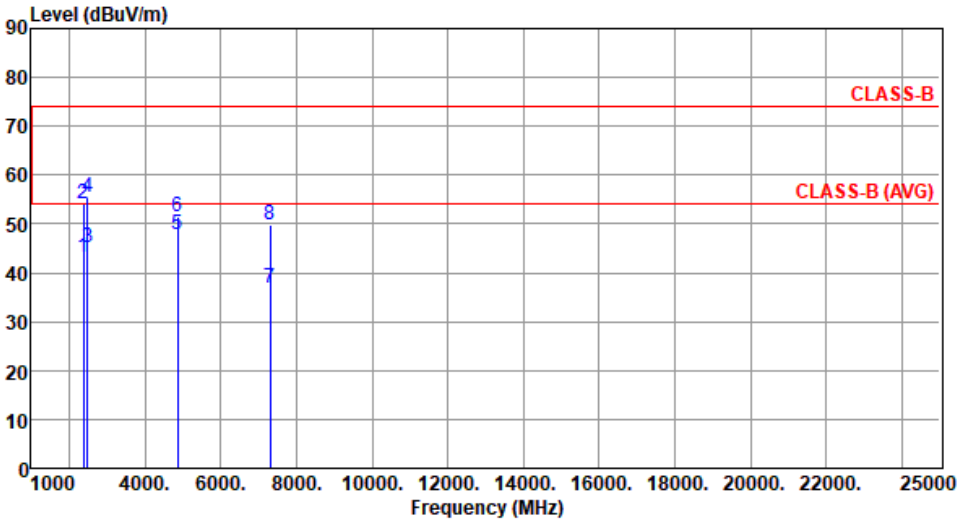


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	46.59	54.00	-7.41	50.85	-4.26	Average	316	358
2	2390.00	57.26	74.00	-16.74	61.52	-4.26	Peak	316	358
3	2483.50	46.29	54.00	-7.71	50.74	-4.45	Average	316	358
4	2483.50	56.00	74.00	-18.00	60.45	-4.45	Peak	316	358
5	4874.00	46.45	54.00	-7.55	46.70	-0.25	Average	145	355
6	4874.00	51.32	74.00	-22.68	51.57	-0.25	Peak	145	355
7	7311.00	36.81	54.00	-17.19	31.35	5.46	Average	100	21
8	7311.00	49.80	74.00	-24.20	44.34	5.46	Peak	100	21

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11b	**Test Freq. (MHz)**	2437
Polarization	Vertical		

Test By :Brad Wu Temperature(℃):23 Humidity(%):67

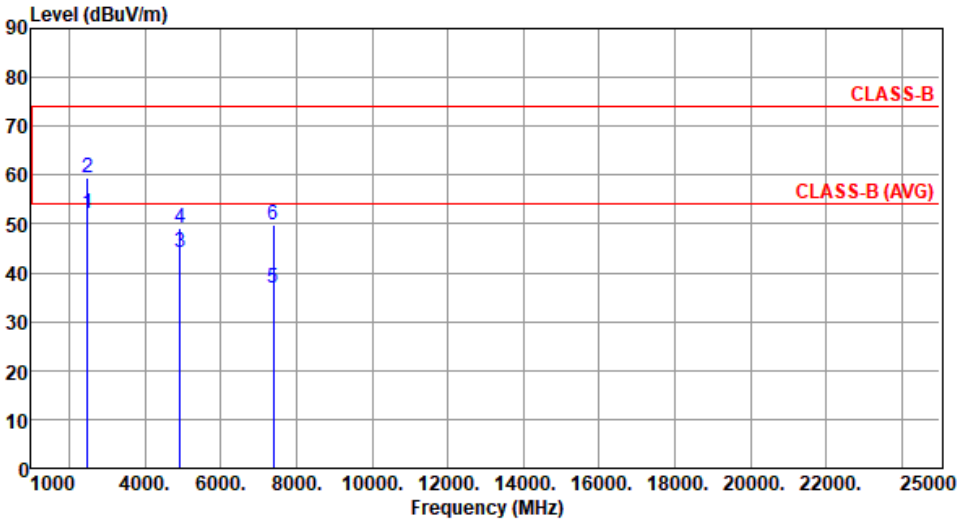


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	43.14	54.00	-10.86	47.40	-4.26	Average	100	264
2	2390.00	54.12	74.00	-19.88	58.38	-4.26	Peak	100	264
3	2483.50	45.00	54.00	-9.00	49.45	-4.45	Average	100	264
4	2483.50	55.39	74.00	-18.61	59.84	-4.45	Peak	100	264
5	4874.00	47.73	54.00	-6.27	47.98	-0.25	Average	127	331
6	4874.00	51.51	74.00	-22.49	51.76	-0.25	Peak	127	331
7	7311.00	36.79	54.00	-17.21	31.33	5.46	Average	100	28
8	7311.00	49.90	74.00	-24.10	44.44	5.46	Peak	100	28

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11b	**Test Freq. (MHz)**	2462
Polarization	Horizontal		

Test By :Paul Lin Temperature(℃):25 Humidity(%):64.

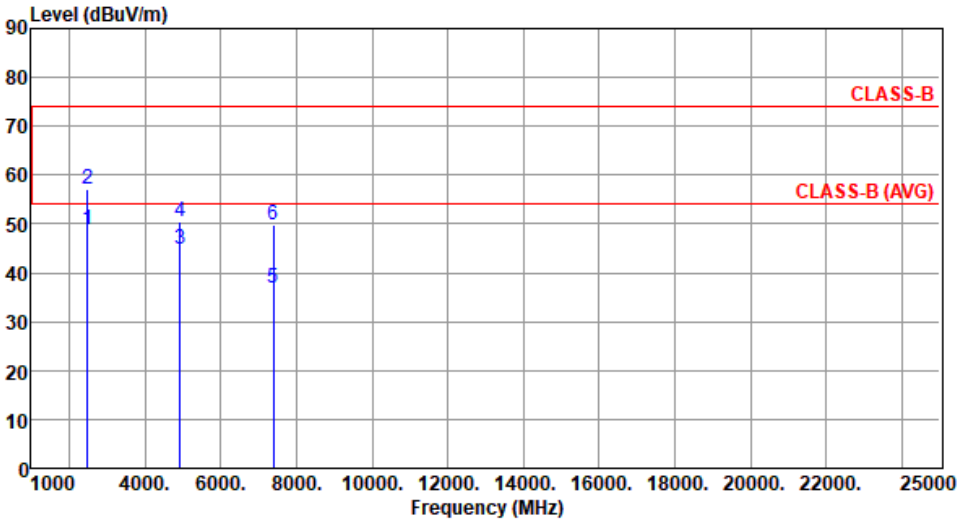


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	52.09	54.00	-1.91	56.54	-4.45	Average	300	345
2	2483.50	59.43	74.00	-14.57	63.88	-4.45	Peak	300	345
3	4924.00	44.03	54.00	-9.97	44.22	-0.19	Average	145	359
4	4924.00	49.18	74.00	-24.82	49.37	-0.19	Peak	145	359
5	7386.00	36.75	54.00	-17.25	31.42	5.33	Average	100	25
6	7386.00	49.86	74.00	-24.14	44.53	5.33	Peak	100	25

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11b	**Test Freq. (MHz)**	2462
Polarization	Vertical		

Test By :Paul Lin Temperature(℃):25 Humidity(%):64.



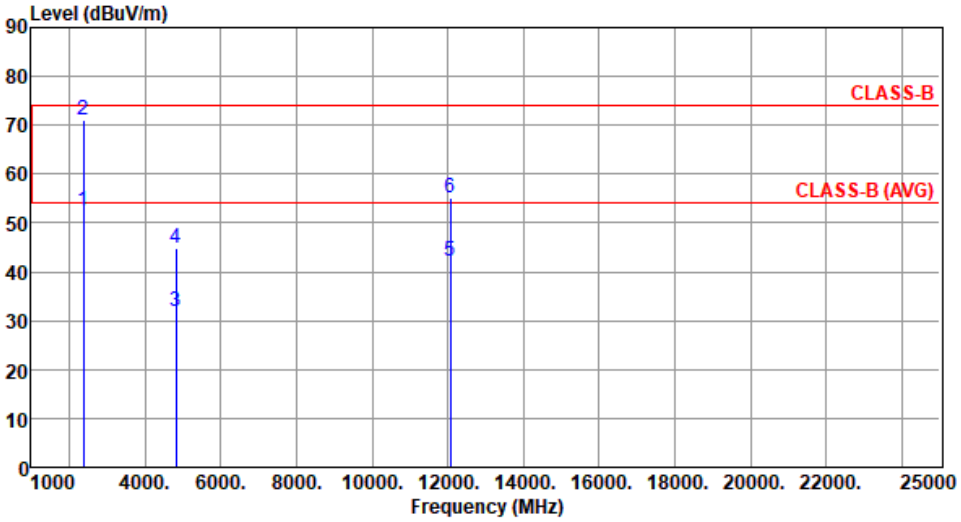
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	48.97	54.00	-5.03	53.42	-4.45	Average	130	288
2	2483.50	56.98	74.00	-17.02	61.43	-4.45	Peak	130	288
3	4924.00	44.87	54.00	-9.13	45.06	-0.19	Average	120	336
4	4924.00	50.58	74.00	-23.42	50.77	-0.19	Peak	120	336
5	7386.00	36.82	54.00	-17.18	31.49	5.33	Average	100	42
6	7386.00	49.86	74.00	-24.14	44.53	5.33	Peak	100	42

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Unwanted Emissions (Above 1GHz) for 11g

Modulation	11g	**Test Freq. (MHz)**	2412
Polarization	Horizontal		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

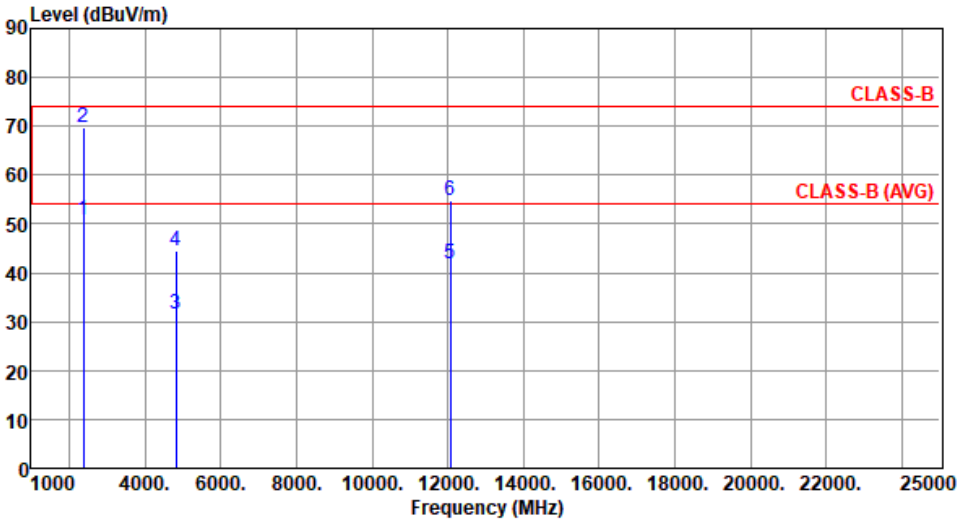


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	52.40	54.00	-1.60	56.66	-4.26	Average	230	353
2	2390.00	71.04	74.00	-2.96	75.30	-4.26	Peak	230	353
3	4824.00	31.73	54.00	-22.27	31.99	-0.26	Average	100	61
4	4824.00	44.84	74.00	-29.16	45.10	-0.26	Peak	100	61
5	12060.00	42.27	54.00	-11.73	35.53	6.74	Average	100	48
6	12060.00	54.98	74.00	-19.02	48.24	6.74	Peak	100	48

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11g	**Test Freq. (MHz)**	2412
Polarization	Vertical		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

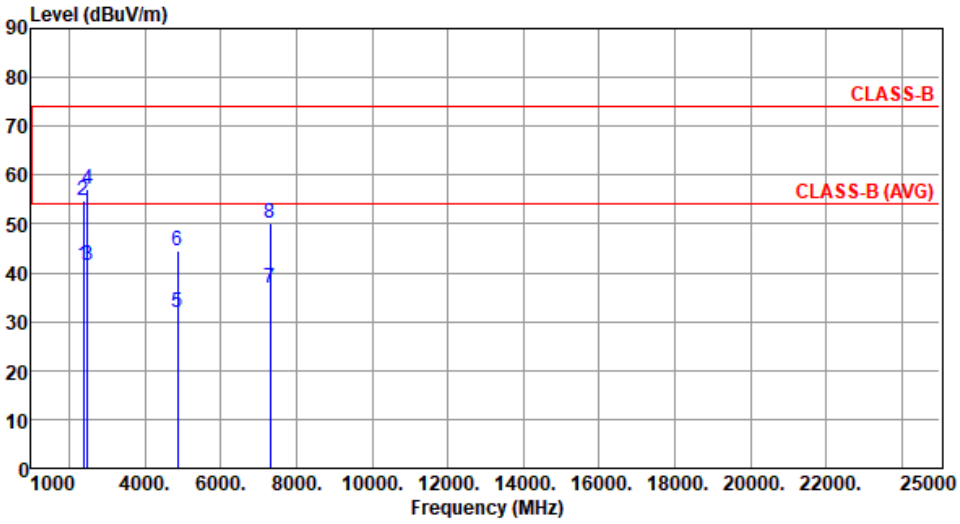


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	50.95	54.00	-3.05	55.21	-4.26	Average	203	268
2	2390.00	69.71	74.00	-4.29	73.97	-4.26	Peak	203	268
3	4824.00	31.65	54.00	-22.35	31.91	-0.26	Average	100	322
4	4824.00	44.59	74.00	-29.41	44.85	-0.26	Peak	100	322
5	12060.00	41.99	54.00	-12.01	35.25	6.74	Average	100	28
6	12060.00	54.89	74.00	-19.11	48.15	6.74	Peak	100	28

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11g	**Test Freq. (MHz)**	2437
Polarization	Horizontal		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

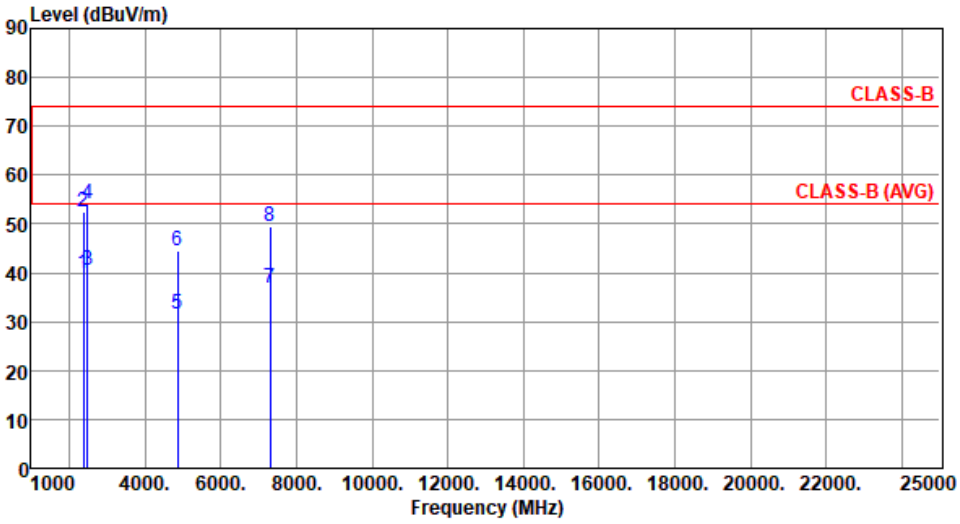


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	41.51	54.00	-12.49	45.77	-4.26	Average	235	344
2	2390.00	54.74	74.00	-19.26	59.00	-4.26	Peak	235	344
3	2483.50	41.41	54.00	-12.59	45.86	-4.45	Average	235	344
4	2483.50	56.96	74.00	-17.04	61.41	-4.45	Peak	235	344
5	4874.00	31.81	54.00	-22.19	32.06	-0.25	Average	100	42
6	4874.00	44.41	74.00	-29.59	44.66	-0.25	Peak	100	42
7	7311.00	36.77	54.00	-17.23	31.31	5.46	Average	100	37
8	7311.00	50.06	74.00	-23.94	44.60	5.46	Peak	100	37

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11g	**Test Freq. (MHz)**	2437
Polarization	Vertical		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

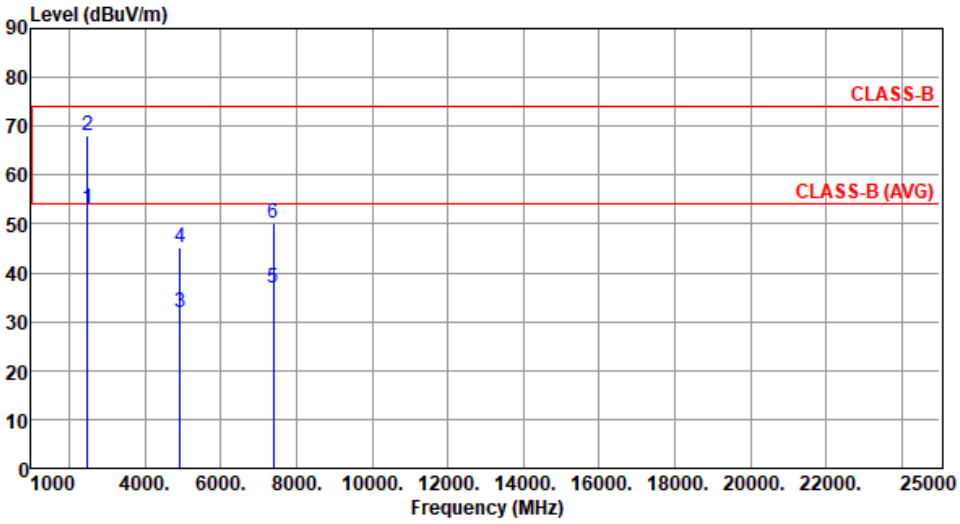


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	40.02	54.00	-13.98	44.28	-4.26	Average	100	269
2	2390.00	52.61	74.00	-21.39	56.87	-4.26	Peak	100	269
3	2483.50	40.41	54.00	-13.59	44.86	-4.45	Average	100	269
4	2483.50	54.29	74.00	-19.71	58.74	-4.45	Peak	100	269
5	4874.00	31.51	54.00	-22.49	31.76	-0.25	Average	100	324
6	4874.00	44.42	74.00	-29.58	44.67	-0.25	Peak	100	324
7	7311.00	36.71	54.00	-17.29	31.25	5.46	Average	100	24
8	7311.00	49.63	74.00	-24.37	44.17	5.46	Peak	100	24

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11g	**Test Freq. (MHz)**	2462
Polarization	Horizontal		

Test By :Paul Lin Temperature(℃):25 Humidity(%):64

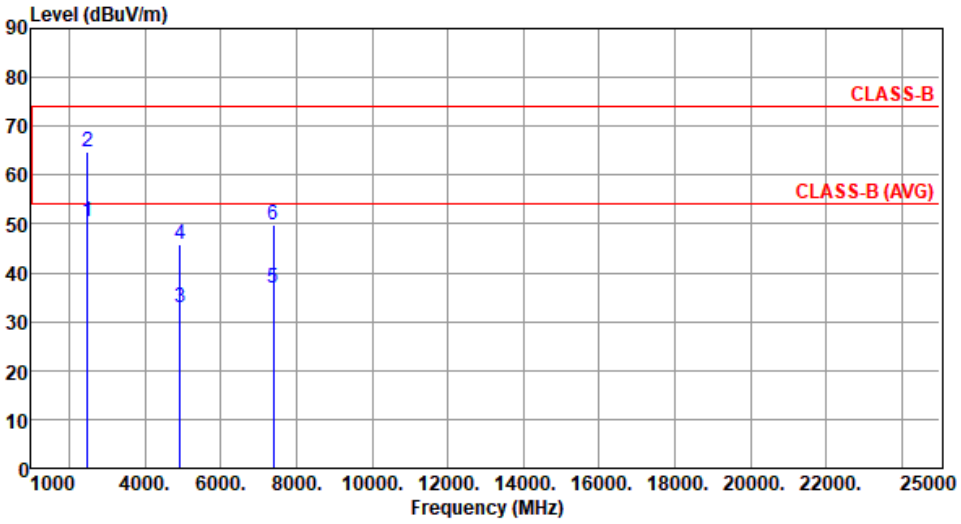


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	53.00	54.00	-1.00	57.45	-4.45	Average	100	355
2	2483.50	68.14	74.00	-5.86	72.59	-4.45	Peak	100	355
3	4924.00	32.00	54.00	-22.00	32.19	-0.19	Average	100	13
4	4924.00	45.06	74.00	-28.94	45.25	-0.19	Peak	100	13
5	7386.00	36.94	54.00	-17.06	31.61	5.33	Average	100	37
6	7386.00	50.30	74.00	-23.70	44.97	5.33	Peak	100	37

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	11g	**Test Freq. (MHz)**	2462
Polarization	Vertical		

Test By :Paul Lin Temperature(℃):25 Humidity(%):64



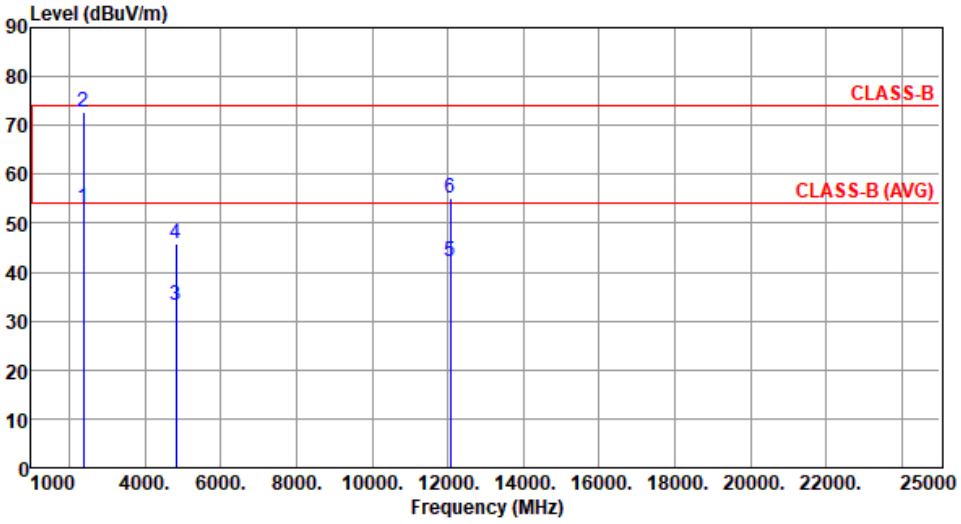
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	50.54	54.00	-3.46	54.99	-4.45	Average	103	118
2	2483.50	64.62	74.00	-9.38	69.07	-4.45	Peak	103	118
3	4924.00	33.01	54.00	-20.99	33.20	-0.19	Average	100	323
4	4924.00	45.92	74.00	-28.08	46.11	-0.19	Peak	100	323
5	7386.00	36.90	54.00	-17.10	31.57	5.33	Average	100	34
6	7386.00	49.74	74.00	-24.26	44.41	5.33	Peak	100	34

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Unwanted Emissions (Above 1GHz) for HT20

Modulation	HT20	**Test Freq. (MHz)**	2412
Polarization	Horizontal		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

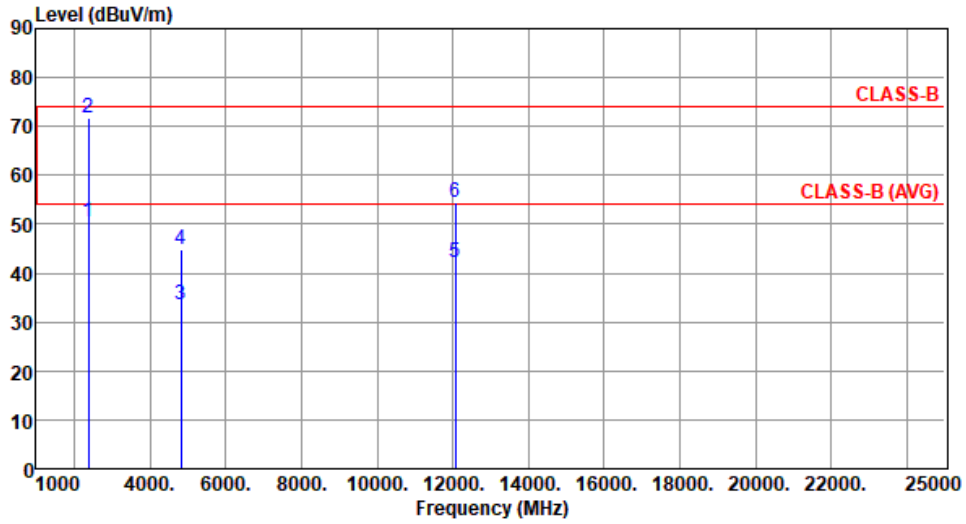


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	53.00	54.00	-1.00	57.26	-4.26	Average	278	4
2	2390.00	72.89	74.00	-1.11	77.15	-4.26	Peak	278	4
3	4824.00	33.09	54.00	-20.91	33.35	-0.26	Average	100	2
4	4824.00	45.70	74.00	-28.30	45.96	-0.26	Peak	100	2
5	12060.00	42.21	54.00	-11.79	35.47	6.74	Average	100	41
6	12060.00	55.04	74.00	-18.96	48.30	6.74	Peak	100	41

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT20	**Test Freq. (MHz)**	2412
Polarization	Vertical		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

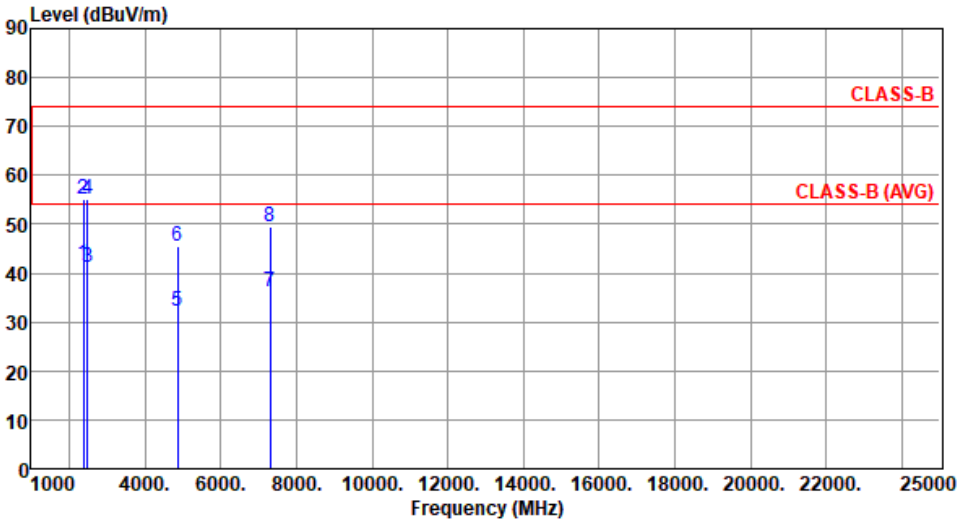


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	50.38	54.00	-3.62	54.64	-4.26	Average	151	107
2	2390.00	71.89	74.00	-2.11	76.15	-4.26	Peak	151	107
3	4824.00	33.52	54.00	-20.48	33.78	-0.26	Average	100	328
4	4824.00	44.90	74.00	-29.10	45.16	-0.26	Peak	100	328
5	12060.00	42.24	54.00	-11.76	35.50	6.74	Average	100	34
6	12060.00	54.59	74.00	-19.41	47.85	6.74	Peak	100	34

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT20	**Test Freq. (MHz)**	2437
Polarization	Horizontal		

Test By :Brad Wu Temperature(℃):23 Humidity(%):67

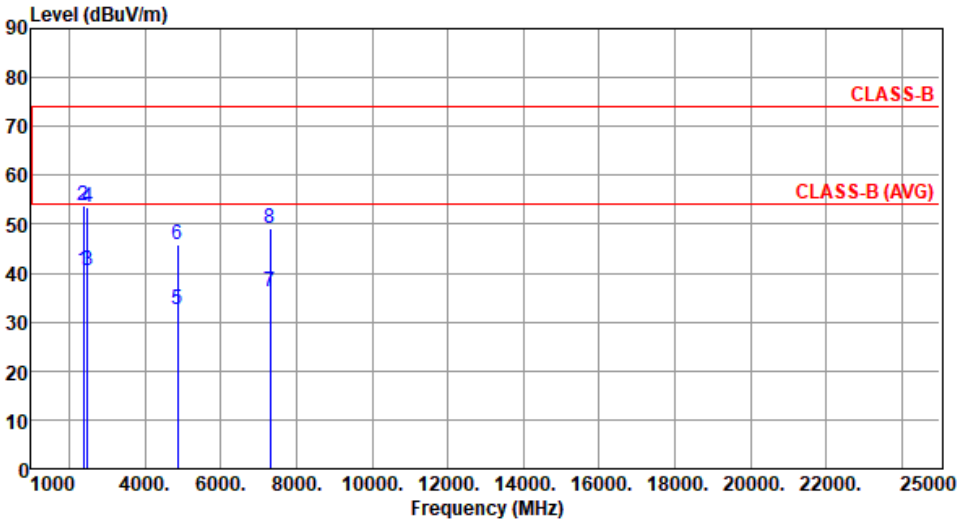


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	41.69	54.00	-12.31	45.95	-4.26	Average	317	2
2	2390.00	55.05	74.00	-18.95	59.31	-4.26	Peak	317	2
3	2483.50	41.09	54.00	-12.91	45.54	-4.45	Average	317	2
4	2483.50	55.02	74.00	-18.98	59.47	-4.45	Peak	317	2
5	4874.00	32.07	54.00	-21.93	32.32	-0.25	Average	100	15
6	4874.00	45.63	74.00	-28.37	45.88	-0.25	Peak	100	15
7	7311.00	36.23	54.00	-17.77	30.77	5.46	Average	100	24
8	7311.00	49.57	74.00	-24.43	44.11	5.46	Peak	100	24

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT20	**Test Freq. (MHz)**	2437
Polarization	Vertical		

Test By :Brad Wu Temperature(℃):23 Humidity(%):67

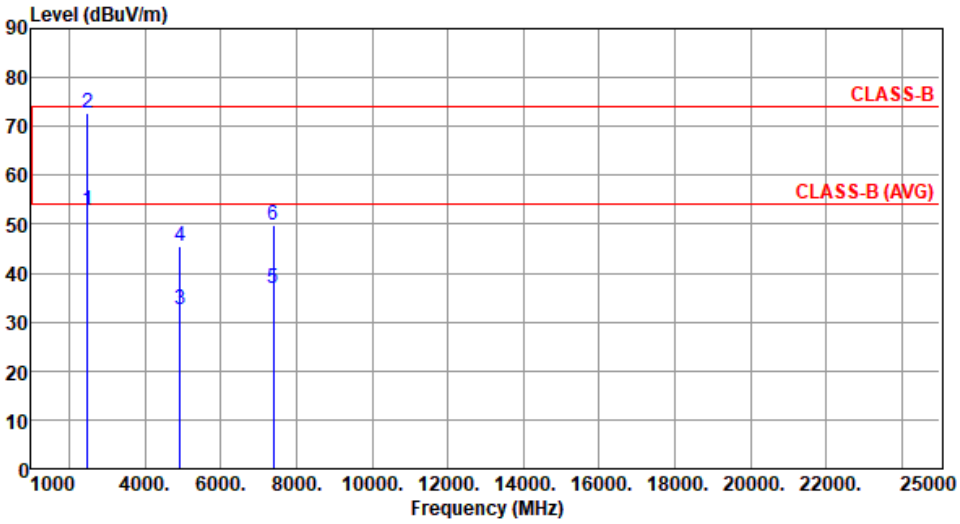


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	40.53	54.00	-13.47	44.79	-4.26	Average	178	304
2	2390.00	53.78	74.00	-20.22	58.04	-4.26	Peak	178	304
3	2483.50	40.45	54.00	-13.55	44.90	-4.45	Average	178	304
4	2483.50	53.48	74.00	-20.52	57.93	-4.45	Peak	178	304
5	4874.00	32.41	54.00	-21.59	32.66	-0.25	Average	100	344
6	4874.00	45.85	74.00	-28.15	46.10	-0.25	Peak	100	344
7	7311.00	36.10	54.00	-17.90	30.64	5.46	Average	100	29
8	7311.00	49.00	74.00	-25.00	43.54	5.46	Peak	100	29

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT20	**Test Freq. (MHz)**	2462
Polarization	Horizontal		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

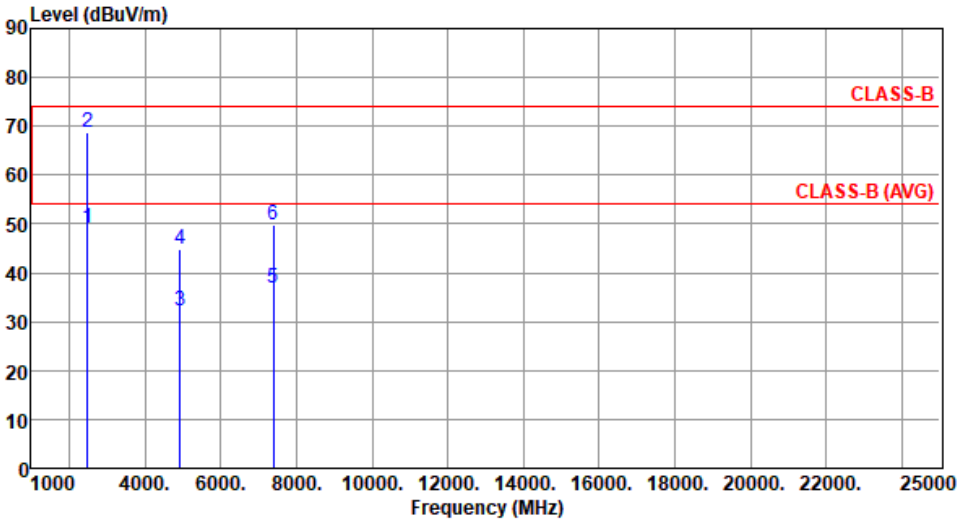


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	52.79	54.00	-1.21	57.24	-4.45	Average	266	353
2	2483.50	72.63	74.00	-1.37	77.08	-4.45	Peak	266	353
3	4924.00	32.39	54.00	-21.61	32.58	-0.19	Average	100	16
4	4924.00	45.36	74.00	-28.64	45.55	-0.19	Peak	100	16
5	7386.00	36.98	54.00	-17.02	31.65	5.33	Average	100	59
6	7386.00	49.85	74.00	-24.15	44.52	5.33	Peak	100	59

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	HT20	**Test Freq. (MHz)**	2462
Polarization	Vertical		

Test By :Paul Lin Temperature(℃):23 Humidity(%):67

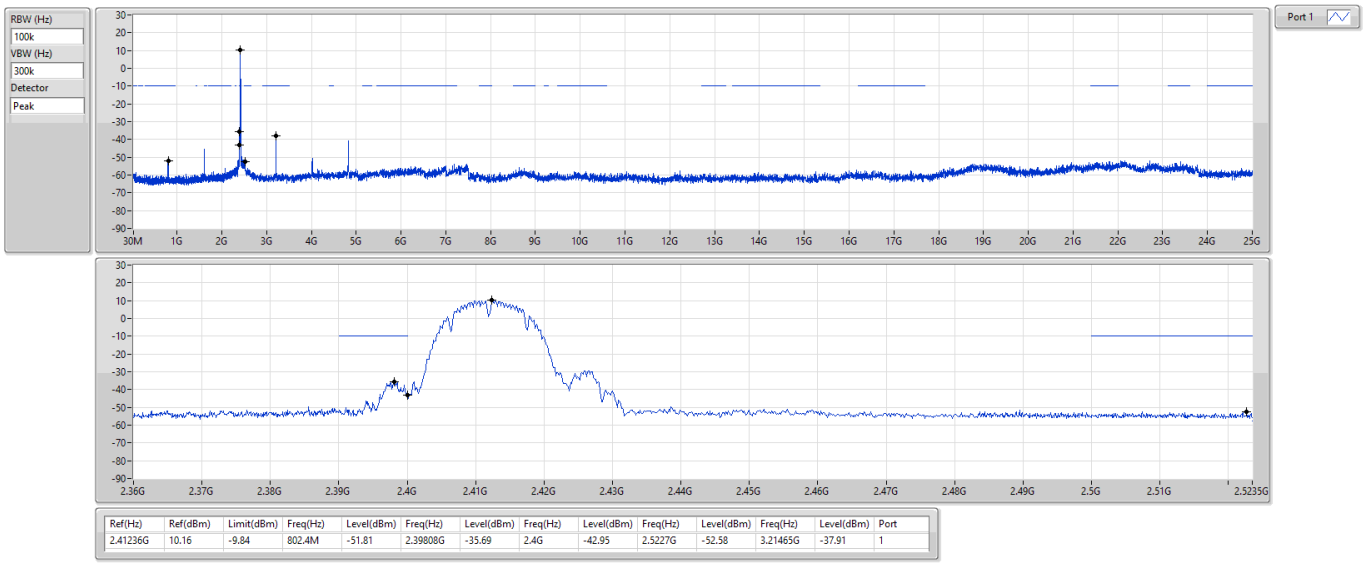


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	49.08	54.00	-4.92	53.53	-4.45	Average	132	106
2	2483.50	68.84	74.00	-5.16	73.29	-4.45	Peak	132	106
3	4924.00	32.18	54.00	-21.82	32.37	-0.19	Average	100	327
4	4924.00	44.68	74.00	-29.32	44.87	-0.19	Peak	100	327
5	7386.00	36.83	54.00	-17.17	31.50	5.33	Average	100	28
6	7386.00	49.95	74.00	-24.05	44.62	5.33	Peak	100	28

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **CSENdB**

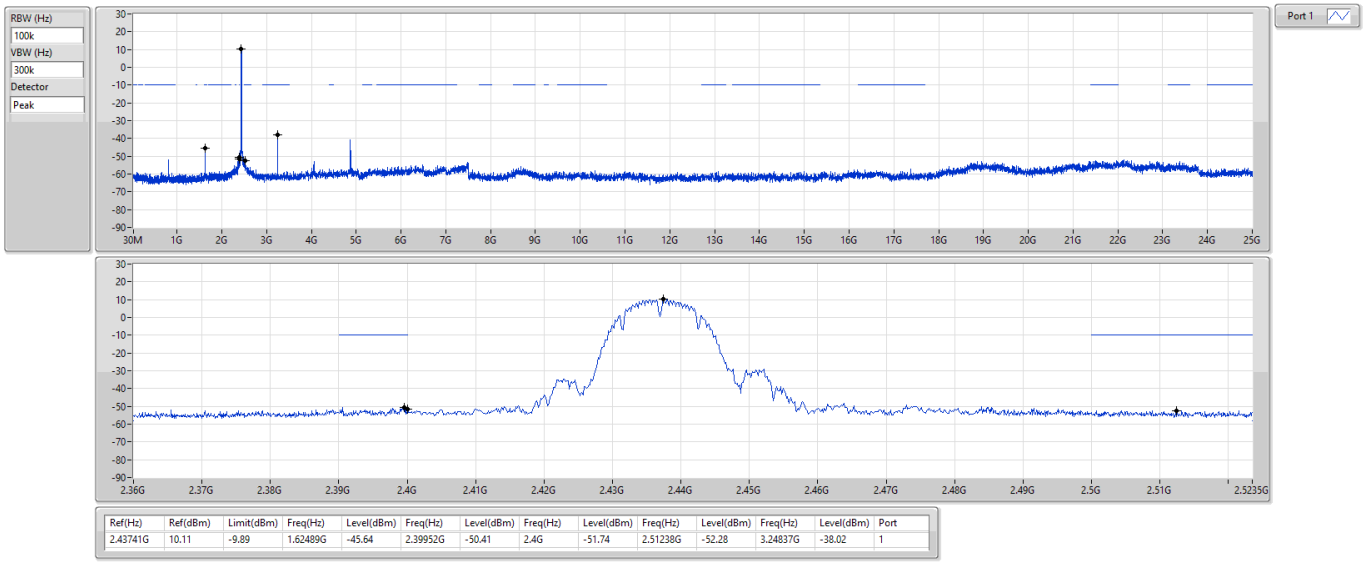
2412MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.41236G	10.16	-9.84	802.4M	-51.81	2.39808G	-35.69	2.4G	-42.95	2.5227G	-52.58	3.21465G	-37.91	1

2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **CSENdB**

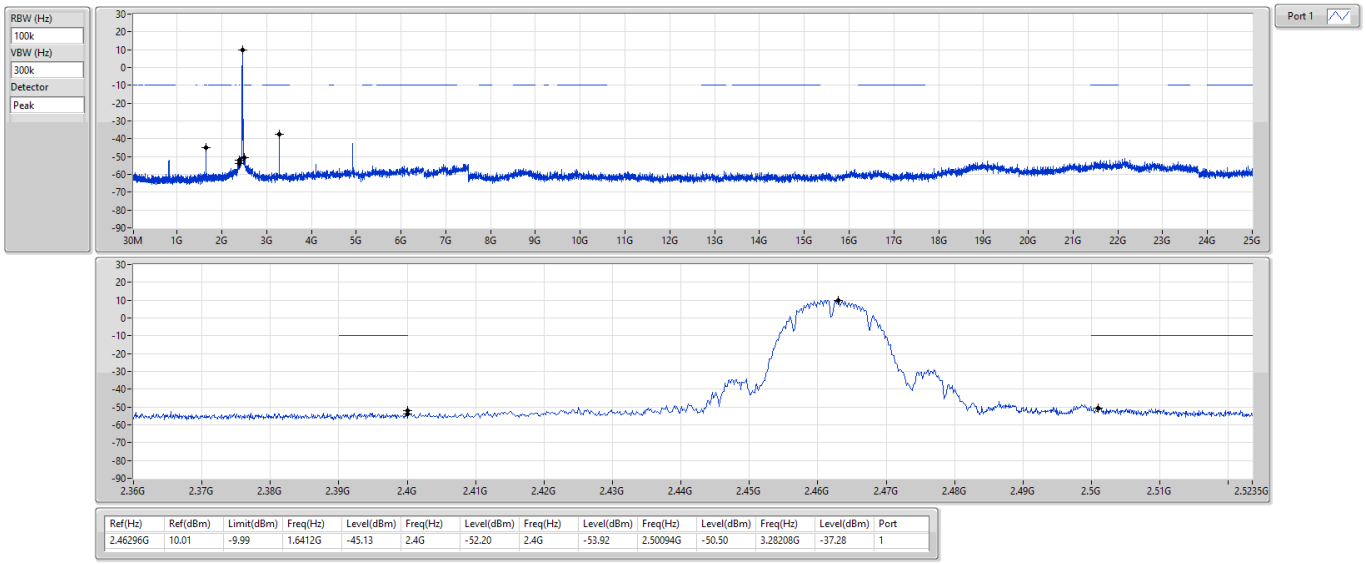
2437MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43741G	10.11	-9.89	1.62489G	-45.64	2.39952G	-50.41	2.4G	-51.74	2.51238G	-52.28	3.24837G	-38.02	1

2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **CSENdB**

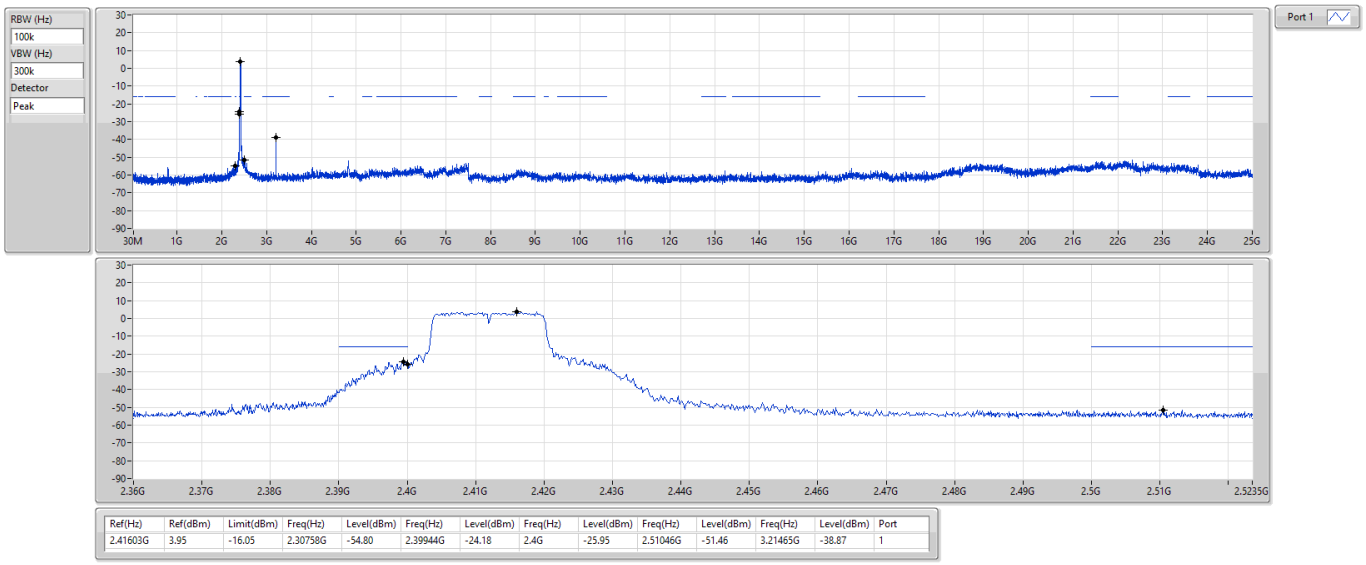
2462MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.46296G	10.01	-9.99	1.6412G	-45.13	2.4G	-52.20	2.4G	-53.92	2.50094G	-50.50	3.28208G	-37.28	1

2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **CSENdB**

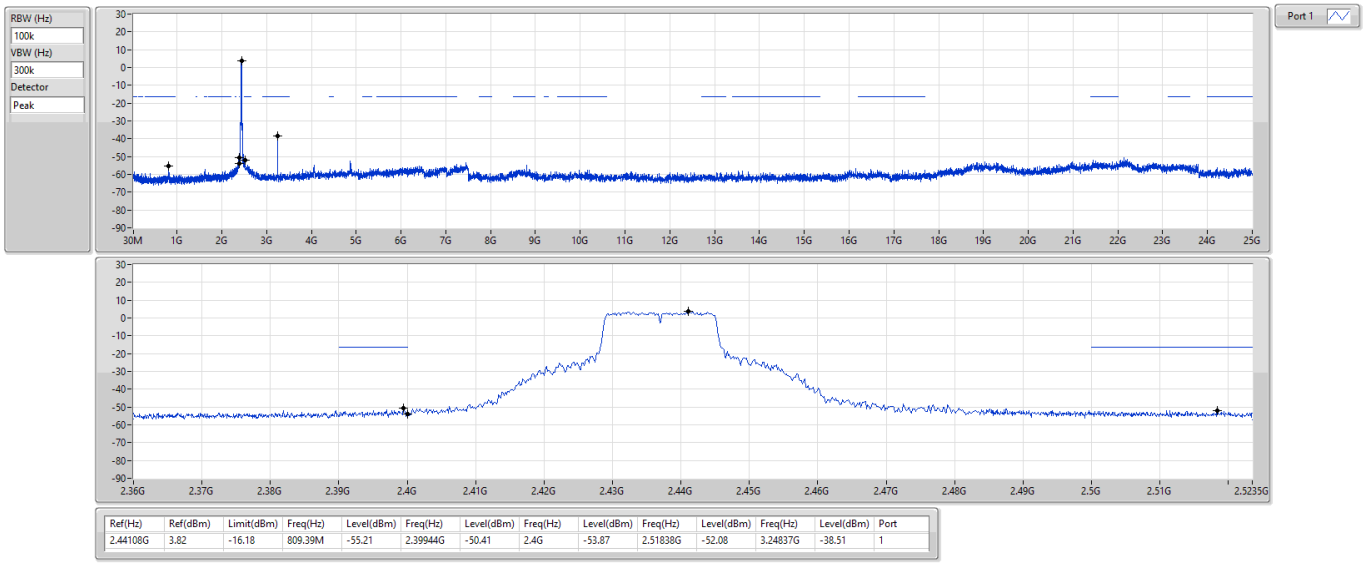
2412MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.41603G	3.95	-16.05	2.30758G	-54.80	2.39944G	-24.18	2.4G	-25.95	2.51046G	-51.46	3.21465G	-38.87	1

2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **CSENdB**

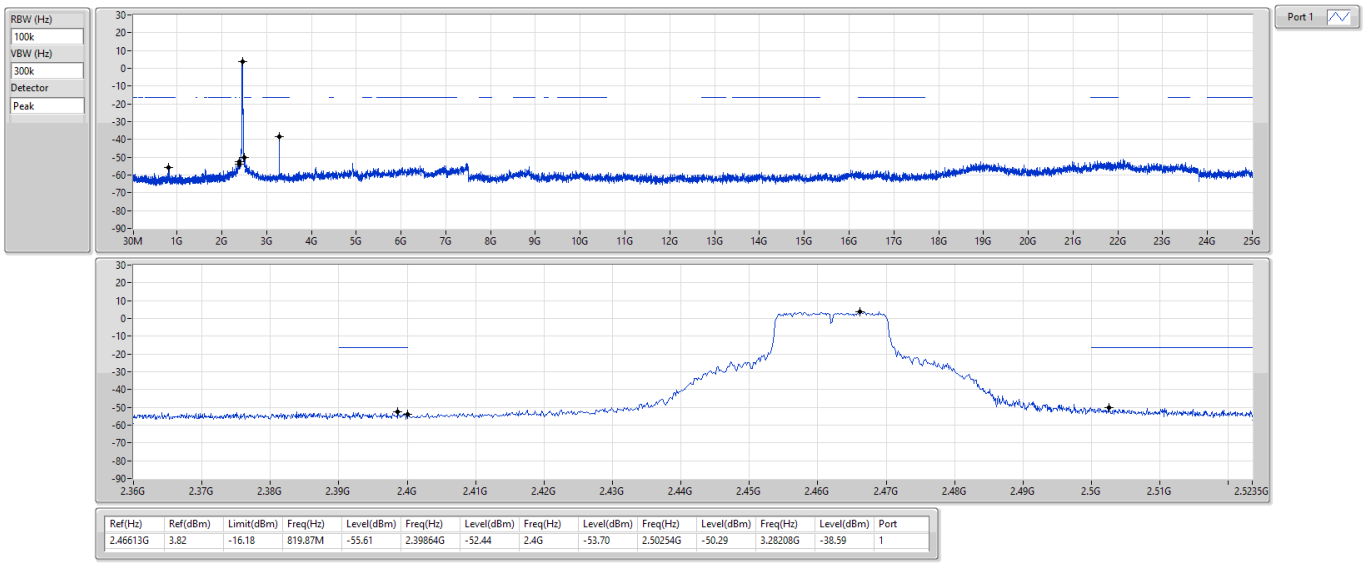
2437MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.44108G	3.82	-16.18	809.39M	-55.21	2.39944G	-50.41	2.4G	-53.87	2.51838G	-52.08	3.24837G	-38.51	1

2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **CSENdB**

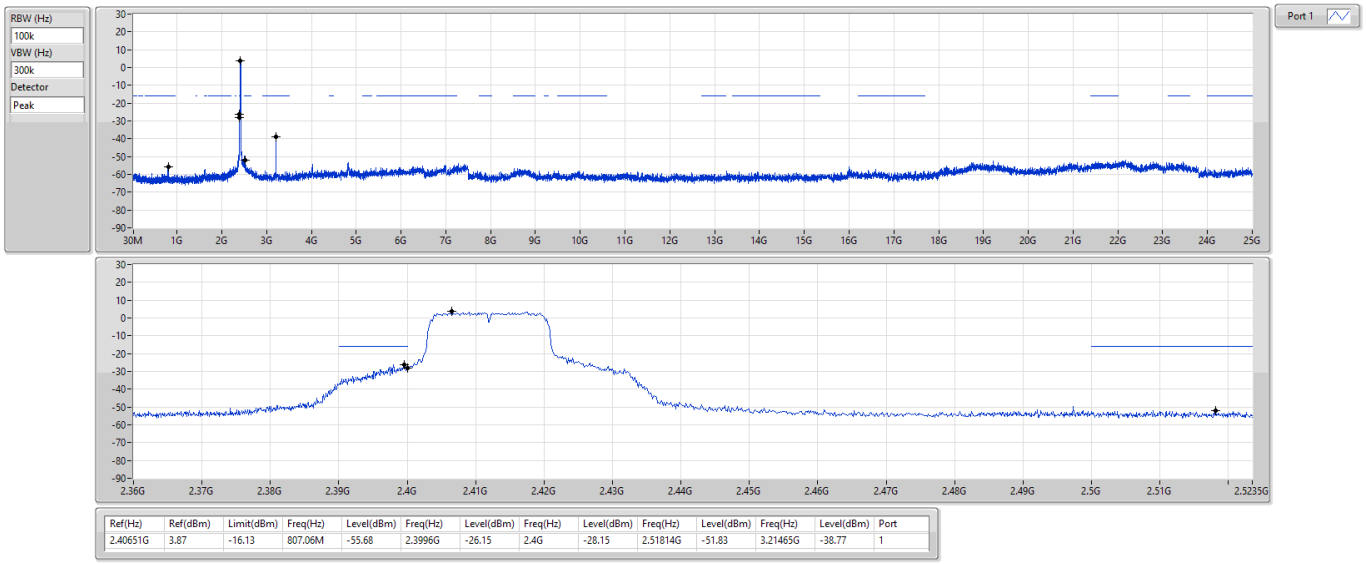
2462MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.46613G	3.82	-16.18	819.87M	-55.61	2.39864G	-52.44	2.4G	-53.70	2.50254G	-50.29	3.28208G	-38.59	1

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **CSENdB**

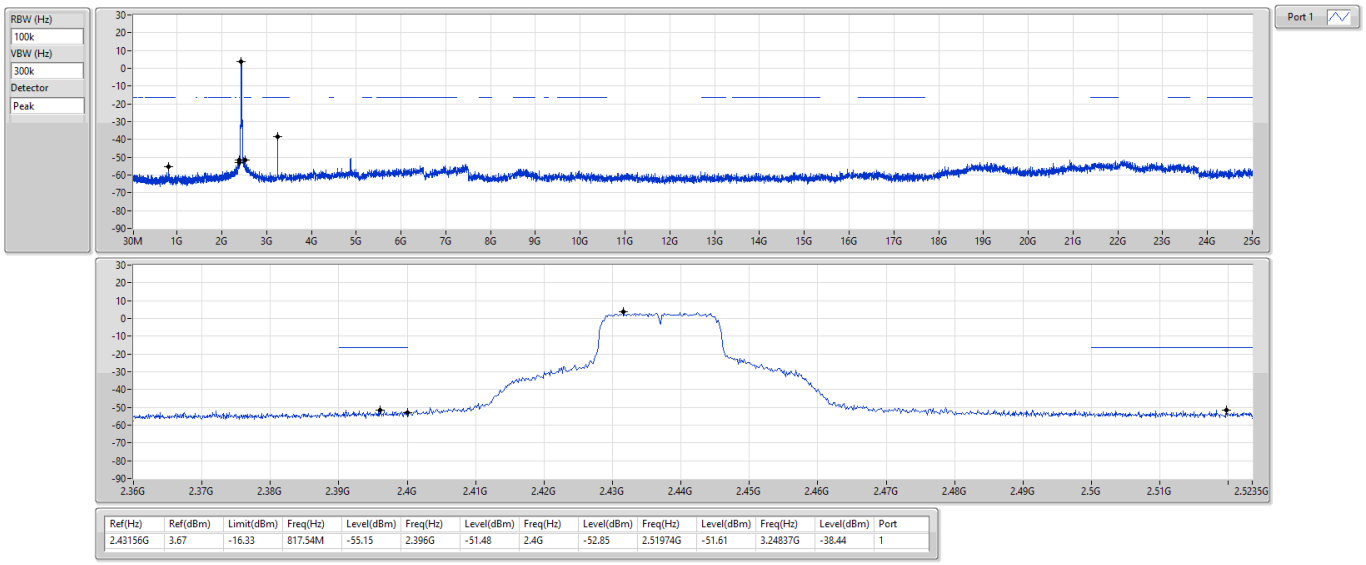
2412MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40651G	3.87	-16.13	807.06M	-55.68	2.3996G	-26.15	2.4G	-28.15	2.51814G	-51.83	3.21465G	-38.77	1

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **CSENdB**

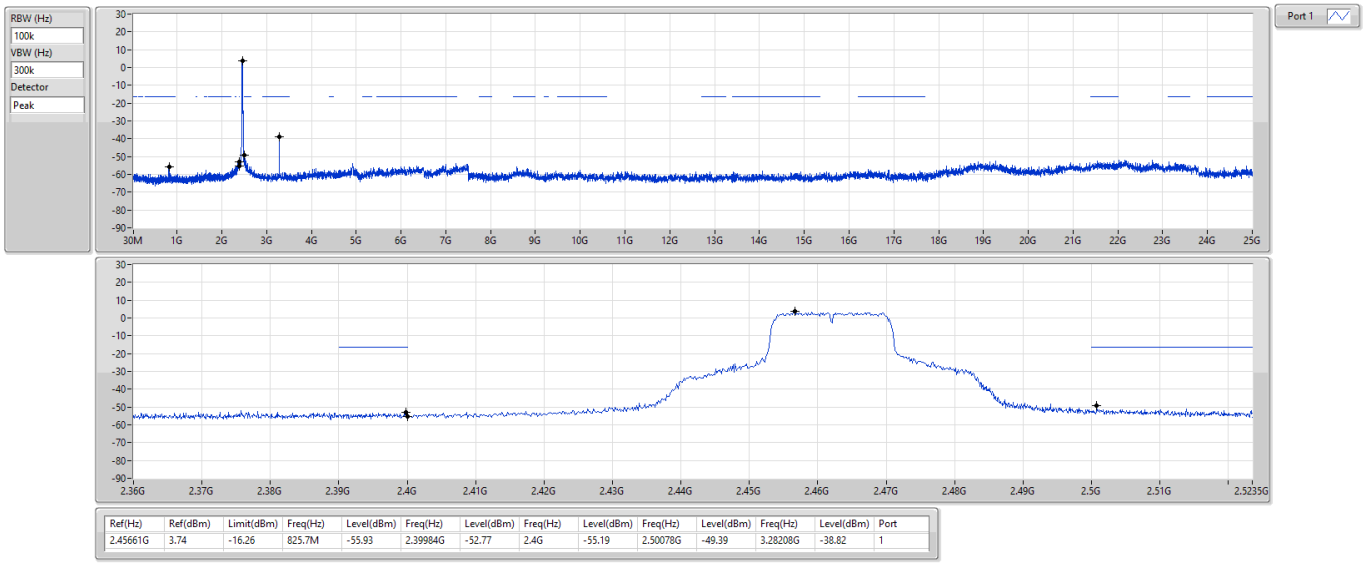
2437MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.43156G	3.67	-16.33	817.54M	-55.15	2.396G	-51.48	2.4G	-52.85	2.51974G	-51.61	3.24837G	-38.44	1

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **CSENdB**

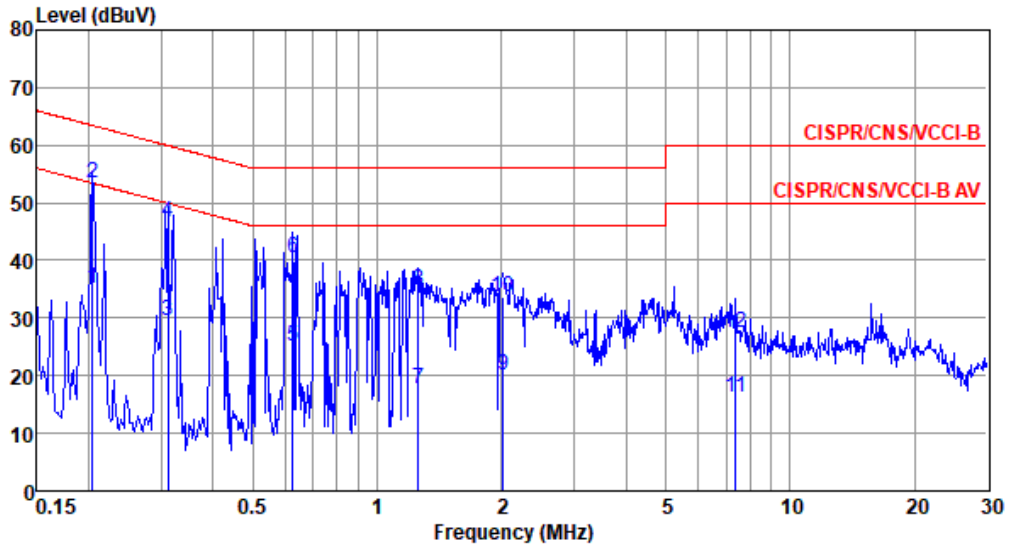
2462MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.45661G	3.74	-16.26	825.7M	-55.93	2.39984G	-52.77	2.4G	-55.19	2.50078G	-49.39	3.28208G	-38.82	1

Modulation Mode	11g	**Test Freq. (MHz)**	2462
Power Phase	Line		

Test by : Joe Liao Temperature: 25°C Humidity: 67%

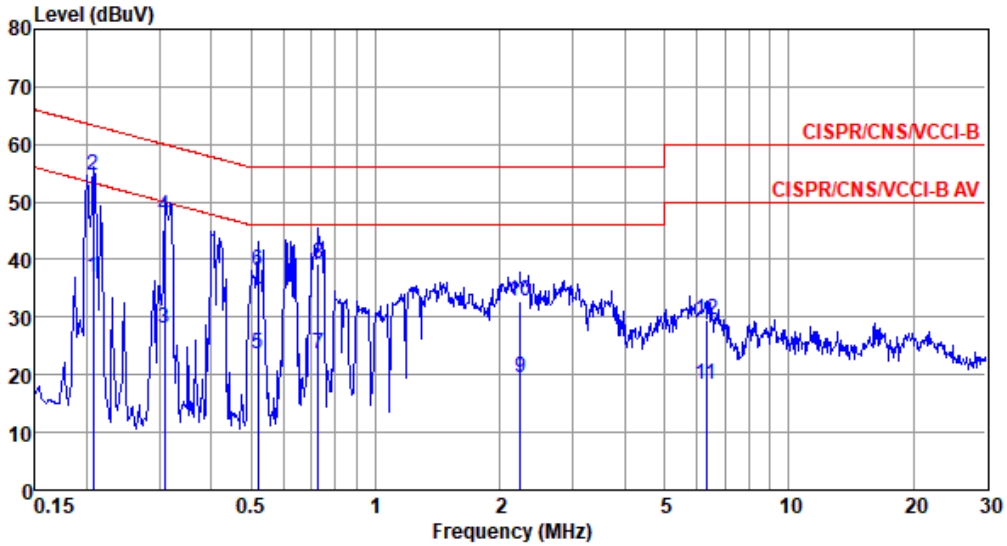


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.204	35.04	53.45	-18.41	25.11	9.62	0.06	0.25	Average
2*	0.204	53.56	63.45	-9.89	43.63	9.62	0.06	0.25	QP
3	0.312	29.51	49.93	-20.42	19.52	9.62	0.07	0.30	Average
4	0.312	46.50	59.93	-13.43	36.51	9.62	0.07	0.30	QP
5	0.624	25.21	46.00	-20.79	15.17	9.62	0.08	0.34	Average
6	0.624	40.59	56.00	-15.41	30.55	9.62	0.08	0.34	QP
7	1.255	17.74	46.00	-28.26	7.64	9.63	0.10	0.37	Average
8	1.255	34.73	56.00	-21.27	24.63	9.63	0.10	0.37	QP
9	2.023	20.21	46.00	-25.79	10.09	9.63	0.11	0.38	Average
10	2.023	33.64	56.00	-22.36	23.52	9.63	0.11	0.38	QP
11	7.368	16.15	50.00	-33.85	5.74	9.68	0.29	0.44	Average
12	7.368	27.58	60.00	-32.42	17.17	9.68	0.29	0.44	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation Mode	11g	**Test Freq. (MHz)**	2462
Power Phase	Neutral		

Test by : Joe Liao Temperature: 25°C Humidity: 67%



	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.207	36.88	53.32	-16.44	27.02	9.63	0.06	0.17	Average
2*	0.207	54.62	63.32	-8.70	44.76	9.63	0.06	0.17	QP
3	0.308	28.19	50.02	-21.83	18.28	9.62	0.07	0.22	Average
4	0.308	47.40	60.02	-12.62	37.49	9.62	0.07	0.22	QP
5	0.518	23.69	46.00	-22.31	13.73	9.62	0.08	0.26	Average
6	0.518	37.95	56.00	-18.05	27.99	9.62	0.08	0.26	QP
7	0.727	23.56	46.00	-22.44	13.56	9.63	0.09	0.28	Average
8	0.727	39.30	56.00	-16.70	29.30	9.63	0.09	0.28	QP
9	2.237	19.59	46.00	-26.41	9.48	9.64	0.12	0.35	Average
10	2.237	32.80	56.00	-23.20	22.69	9.64	0.12	0.35	QP
11	6.319	18.31	50.00	-31.69	7.96	9.68	0.26	0.41	Average
12	6.319	29.51	60.00	-30.49	19.16	9.68	0.26	0.41	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).