FCC Test Report

FCC ID	:	**2AAS9-WSMK-161**
Equipment	:	**VENUE Tag**
Model No.	:	**WSMK-161**
Brand Name	:	**BROWAN**
Applicant	:	**BROWAN COMMUNICATIONS INCORPORATION**
Address	:	**No.15-1, Zhonghua Rd., Hsinchu Industrial Park, Hukou Hsinchu Hsien Taiwan 303**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**Aug. 18, 2022**
Tested Date	:	**Aug. 23 ~ Oct. 26, 2022**

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
FR281802AC	Rev. 01	Initial issue	Dec. 06, 2022

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emission	[dBuV]: 19.326MHz 38.15 (Margin -11.85dB) - AV	Pass
15.247(d) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 2483.50MHz 70.38 (Margin -3.62dB) - PK	Pass
15.247(b)(3)	Conducted Output Power	Max Power [dBm]: 26.15	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: DSSS-DBPSK, DQPSK, CCK modulation OFDM- BPSK, QPSK, 16QAM, 64QAM modulation.					

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)				
				2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850
1	ANT5320LL24R2455A	Chip	No	1.7	2.7	2.7	0.8	0.2

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	5V / 0.5A

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	USB type C charging cable	1.2m non-shielded without core
2	Cradle	--

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	adb, V1.0.40		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	98.63%	0.06
	11g	88.09%	0.55
	HT20	96.84%	0.14

1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	76
11b	2412	76
11b	2412	76
11g	2437	68
11g	2437	68
11g	2437	68
HT20	2462	66
HT20	2462	66
HT20	2462	66

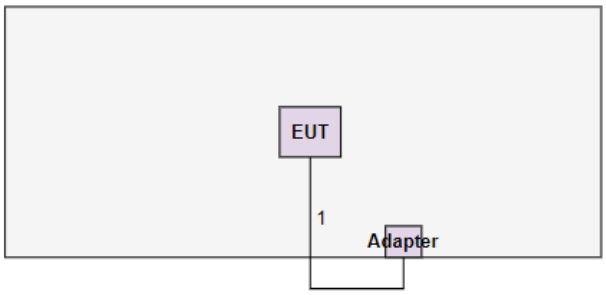
1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Remarks**
1	Notebook	DELL	Latitude 5400	DoC	---
2	Adapter	Samsung	ETA-U90JWs	---	---
3	DC Power Supply	GWINSTEK	GPC-60300	---	---
4	Cradle	---	---	---	---

Note: The support notebook was disconnected from EUT and was removed from test table after sending command to control EUT to transmit continuously

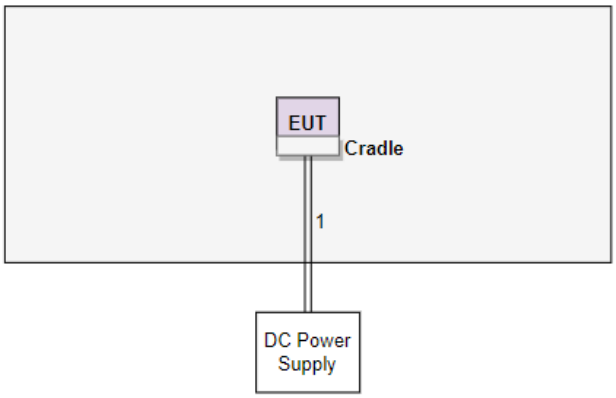
1.3 Test Setup Chart

Test Setup Diagram (Adapter mode)



No.	Signal cable / Length (m)
1	USB type C, 1.2m non-shielded.

Test Setup Diagram (Cradle mode)



No.	Signal cable / Length (m)
1	DC, 10m(x2) non-shielded.

1.4 The Equipment List

Test Item	Radiated Emission below 1GHz				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Oct. 18 ~ Oct. 24, 2022				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101657	Mar. 15, 2022	Mar. 14, 2023
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 08, 2021	Nov. 07, 2022
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 03, 2022	Aug. 02, 2023
Preamplifier	EMC	EMC02325	980225	Jun. 28, 2022	Jun. 27, 2023
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 04, 2022	Oct. 03, 2023
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 04, 2022	Oct. 03, 2023
LF cable 11M	EMC	EMCCFD400-NW-NW-11000	200801	Oct. 04, 2022	Oct. 03, 2023
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	160502	Oct. 04, 2022	Oct. 03, 2023
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission above 1GHz				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Aug. 23 ~ Aug. 24, 2022				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101498	Nov. 29, 2021	Nov. 28, 2022
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 03, 2021	Dec. 02, 2022
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2021	Nov. 03, 2022
Preamplifier	EMC	EMC118A45SE	980898	Jul. 16, 2022	Jul. 15, 2023
Preamplifier	EMC	EMC184045B	980192	Jul. 08, 2022	Jul. 07, 2023
RF Cable	EMC	EMC104-35M-35M-8000	210920	Oct. 05, 2021	Oct. 04, 2022
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 05, 2021	Oct. 04, 2022
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Oct. 20 ~ Oct. 26, 2022				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101658	Feb. 16, 2022	Feb. 15, 2023
LISN	R&S	ENV216	101579	Apr. 21, 2022	Apr. 20, 2023
LISN (Support Unit)	SCHWARZBECK	NSLK 8127	8127667	Jan .07, 2022	Jan .06, 2023
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 17, 2022	Oct. 16, 2023
50 ohm terminal (Support Unit)	NA	50	04	May 10, 2022	May 09, 2023
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Oct. 18, 2022				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101910	Apr. 08, 2022	Apr. 07, 2023
Power Meter	Anritsu	ML2495A	1241002	Nov. 07, 2021	Nov. 06, 2022
Power Sensor	Anritsu	MA2411B	1207366	Nov. 07, 2021	Nov. 06, 2022
Measurement Software	Sporton	SENSE-15247_DTS	V5.10.8.7.3	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	2412	6 Mbps	1, 2
Unwanted Emissions ≤ 1GHz	11g	2412	6 Mbps	1, 2
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	2

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
2. Test configurations are listed as follows:
   1) Test configuration 1: Cradle mode
   2) Test configuration 2: Adapter mode

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

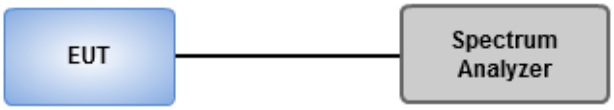
6dB Bandwidth

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 / 64%	**Tested By**	Brad Wu

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 / 64%	**Tested By**	Brad Wu

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 = 30 kHz, VBW = 100 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 = 30 kHz, VBW = 100 kHz. Detector = RMS.

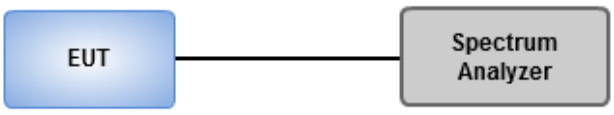
2 Set the sweep time to: ≥ 10 (number of measurement points in sweep) x (total on/off period of the transmitted signal).

3 Perform the measurement over a single sweep.

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

5 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 / 64%	**Tested By**	Brad Wu

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

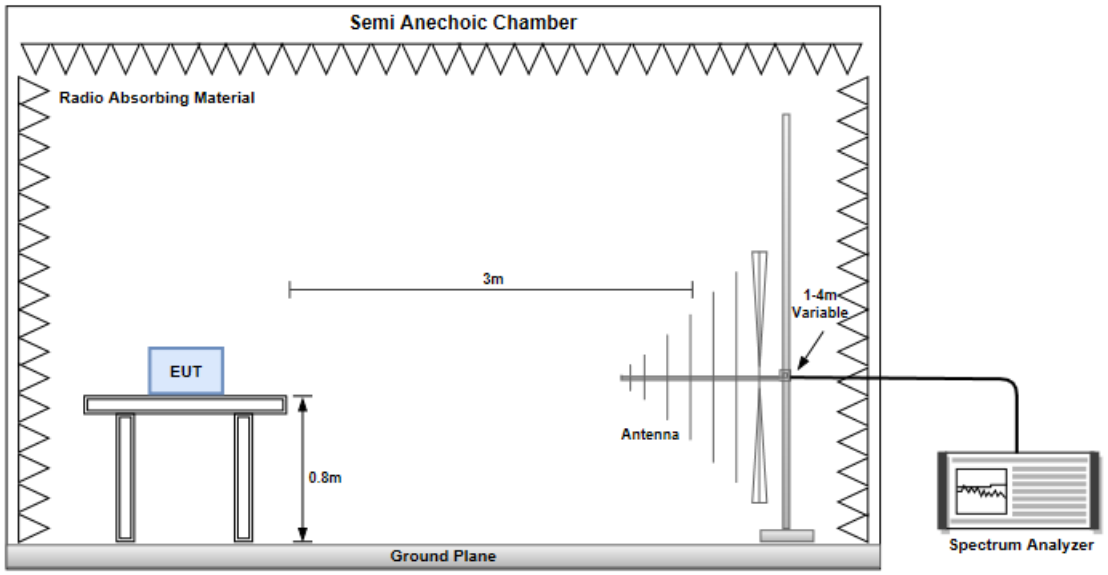
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission 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:

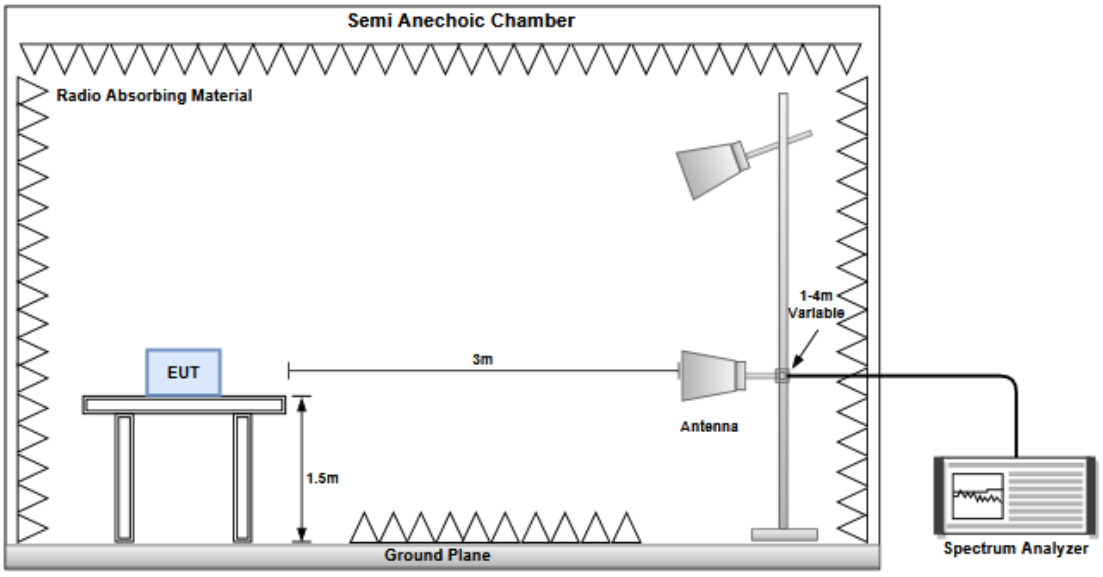
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

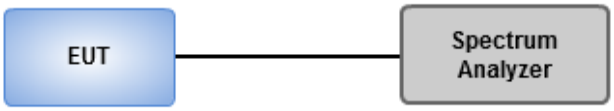
Reference level measurement

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 / 64%	Tested By	Brad Wu

Refer to Appendix E.

3.6 AC Power Line Conducted Emissions

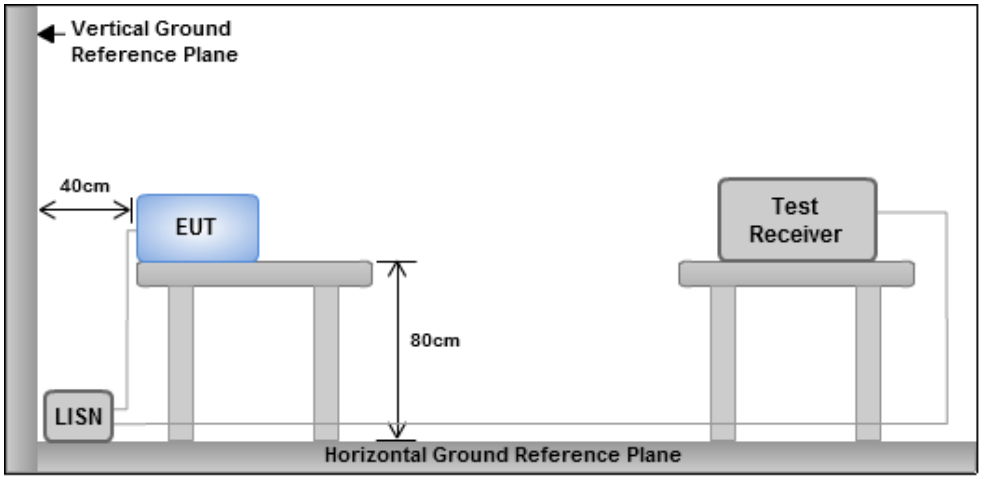
3.6.1 Limit of AC Power Line Conducted Emissions

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 333, 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	9.05M	12.174M	12M2G1D	8.1M	12.087M
802.11g_Nss1,(6Mbps)_1TX	16.325M	16.524M	16M5D1D	15.425M	16.333M
802.11n HT20_Nss1,(MCS0)_1TX	17.375M	17.68M	17M7D1D	15.275M	17.533M

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

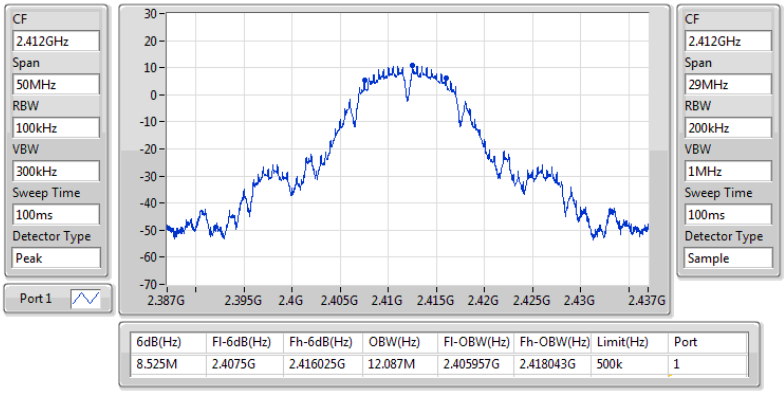
Result

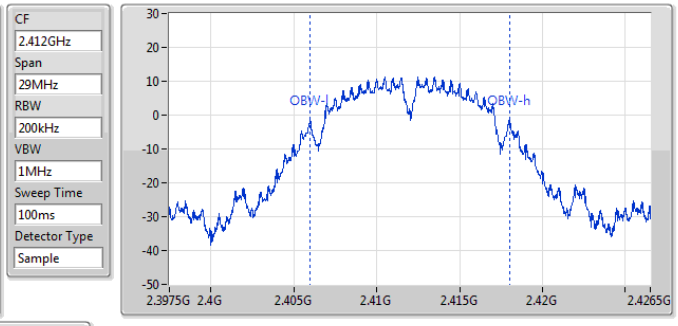
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	8.525M	12.087M
2437MHz	Pass	500k	9.05M	12.101M
2462MHz	Pass	500k	8.1M	12.174M
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	15.425M	16.333M
2437MHz	Pass	500k	16.325M	16.524M
2462MHz	Pass	500k	15.425M	16.418M
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-
2412MHz	Pass	500k	15.275M	17.558M
2437MHz	Pass	500k	17.375M	17.68M
2462MHz	Pass	500k	15.675M	17.533M

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

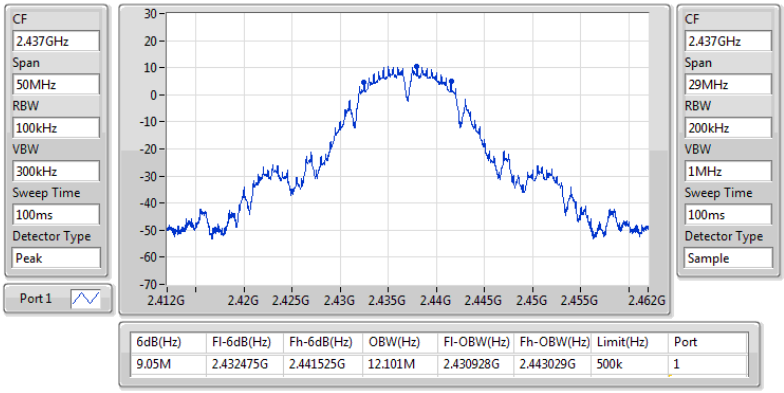


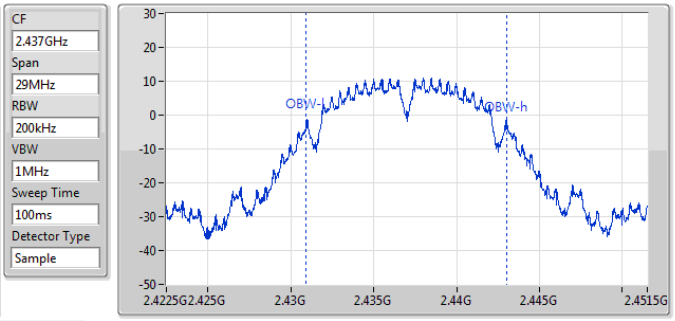


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
8.525M	2.4075G	2.416025G	12.087M	2.405957G	2.418043G	500k	1

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

2437MHz

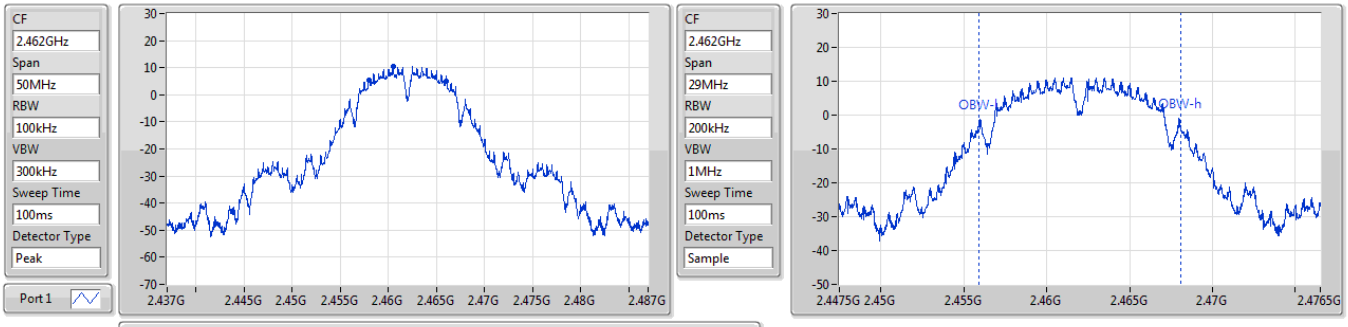




6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
9.05M	2.432475G	2.441525G	12.101M	2.430928G	2.443029G	500k	1

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

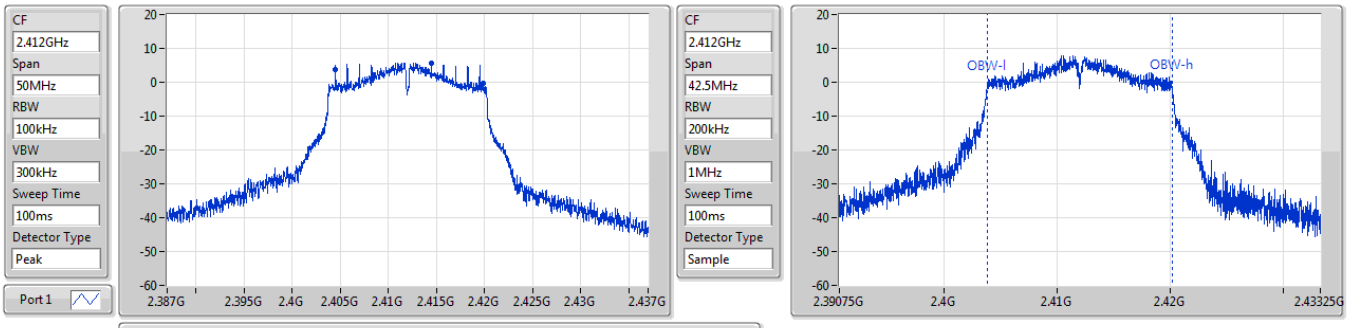
2462MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
8.1M	2.45795G	2.46605G	12.174M	2.455899G	2.468072G	500k	1

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

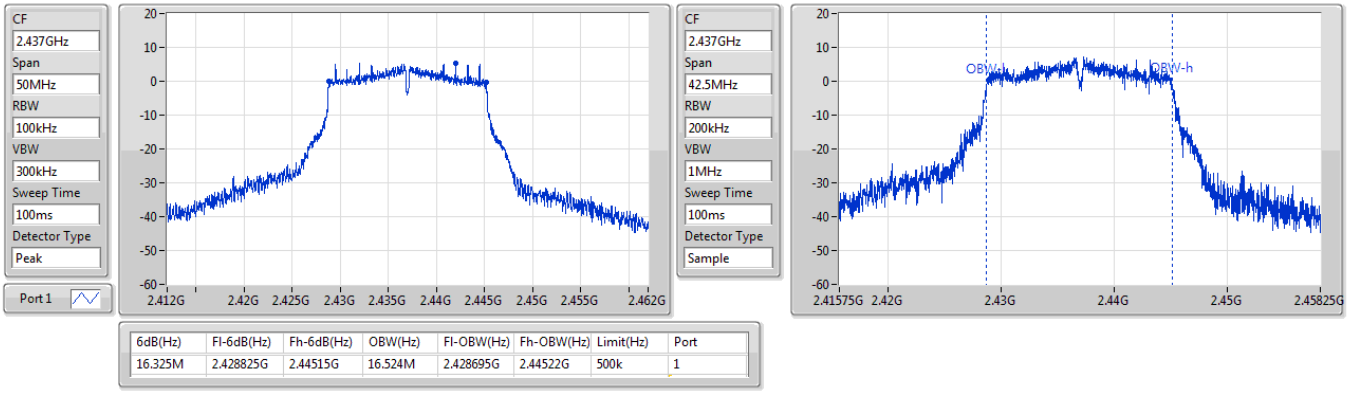
2412MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.425M	2.40445G	2.419875G	16.333M	2.403802G	2.420135G	500k	1

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

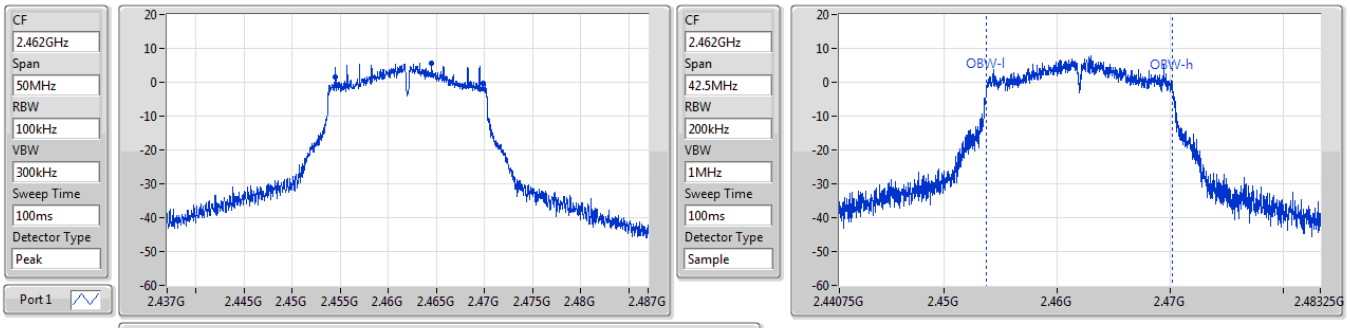
2437MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
16.325M	2.428825G	2.44515G	16.524M	2.428695G	2.44522G	500k	1

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

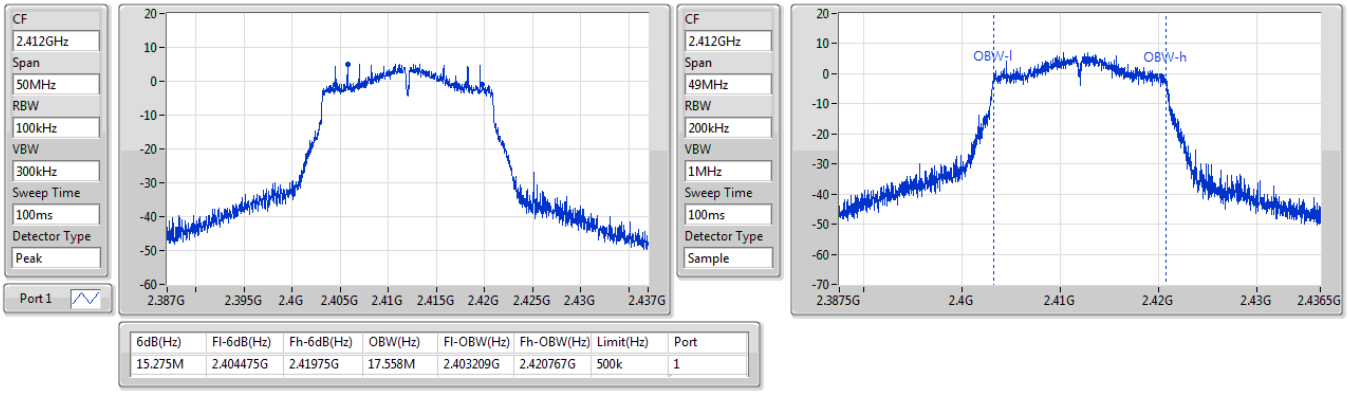
2462MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.425M	2.454425G	2.46985G	16.418M	2.453759G	2.470177G	500k	1

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

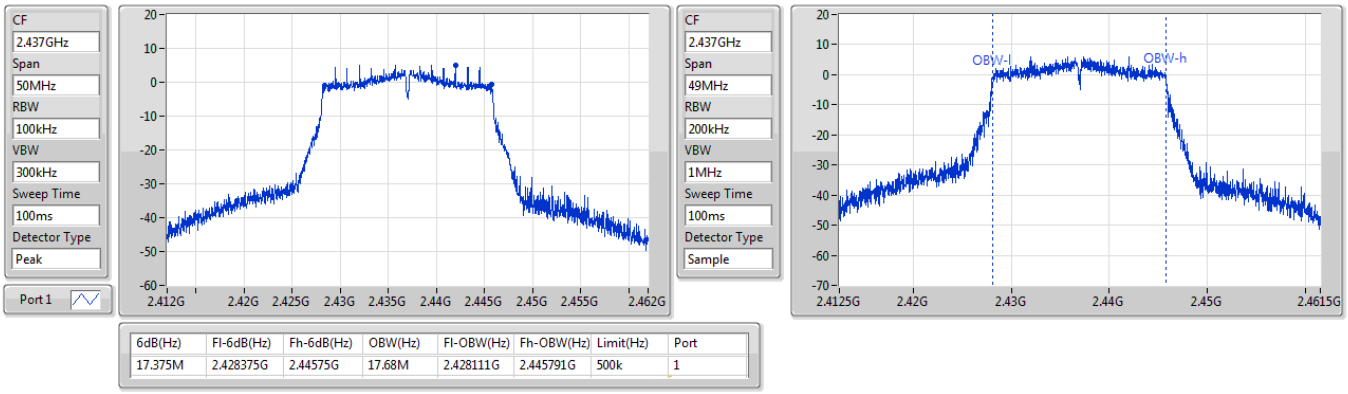
2412MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
15.275M	2.404475G	2.41975G	17.558M	2.403209G	2.420767G	500k	1

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

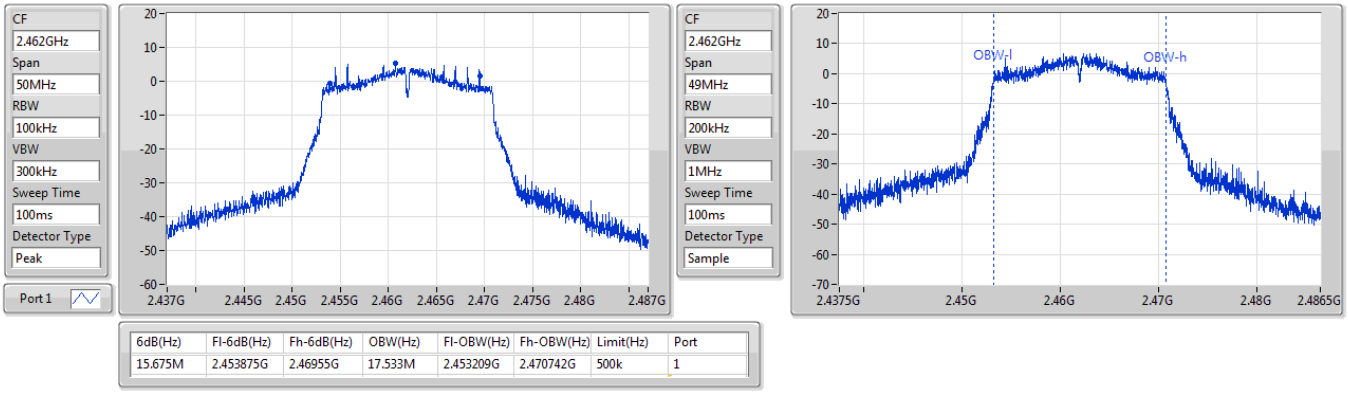
2437MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.375M	2.428375G	2.44575G	17.68M	2.428111G	2.445791G	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
15.675M	2.453875G	2.46955G	17.533M	2.453209G	2.470742G	500k	1

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	22.20	0.16596
802.11g_Nss1,(6Mbps)_1TX	26.15	0.41210
802.11n HT20_Nss1,(MCS0)_1TX	25.95	0.39355

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	1.70	22.20	22.20	30.00	23.90	36.00
2437MHz	Pass	1.70	22.15	22.15	30.00	23.85	36.00
2462MHz	Pass	1.70	22.14	22.14	30.00	23.84	36.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	1.70	26.15	26.15	30.00	27.85	36.00
2437MHz	Pass	1.70	25.70	25.70	30.00	27.40	36.00
2462MHz	Pass	1.70	25.82	25.82	30.00	27.52	36.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	1.70	25.95	25.95	30.00	27.65	36.00
2437MHz	Pass	1.70	25.66	25.66	30.00	27.36	36.00
2462MHz	Pass	1.70	25.55	25.55	30.00	27.25	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	19.25	0.08414
802.11g_Nss1,(6Mbps)_1TX	17.20	0.05248
802.11n HT20_Nss1,(MCS0)_1TX	16.44	0.04406

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	1.70	19.25	19.25	-	20.95	-
2437MHz	Pass	1.70	19.20	19.20	-	20.90	-
2462MHz	Pass	1.70	19.18	19.18	-	20.88	-
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	1.70	17.20	17.20	-	18.90	-
2437MHz	Pass	1.70	17.16	17.16	-	18.86	-
2462MHz	Pass	1.70	17.06	17.06	-	18.76	-
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	1.70	16.44	16.44	-	18.14	-
2437MHz	Pass	1.70	16.35	16.35	-	18.05	-
2462MHz	Pass	1.70	16.33	16.33	-	18.03	-

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	-3.11
802.11g_Nss1,(6Mbps)_1TX	-5.56
802.11n HT20_Nss1,(MCS0)_1TX	-6.47

RBW = 3kHz;

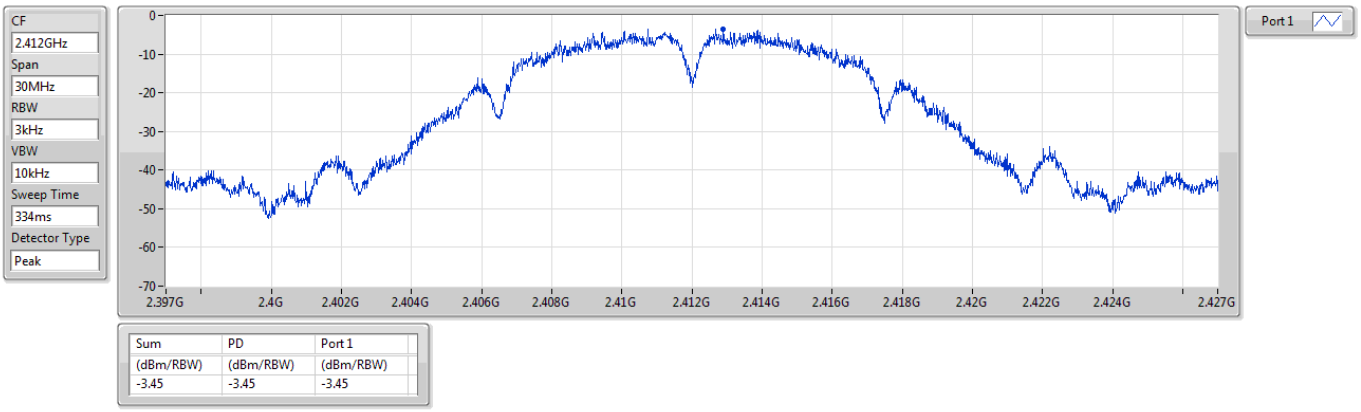
Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.70	-3.45	-3.45	8.00
2437MHz	Pass	1.70	-3.11	-3.11	8.00
2462MHz	Pass	1.70	-3.37	-3.37	8.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.70	-5.81	-5.81	8.00
2437MHz	Pass	1.70	-5.94	-5.94	8.00
2462MHz	Pass	1.70	-5.56	-5.56	8.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	1.70	-6.47	-6.47	8.00
2437MHz	Pass	1.70	-7.56	-7.56	8.00
2462MHz	Pass	1.70	-6.66	-6.66	8.00

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

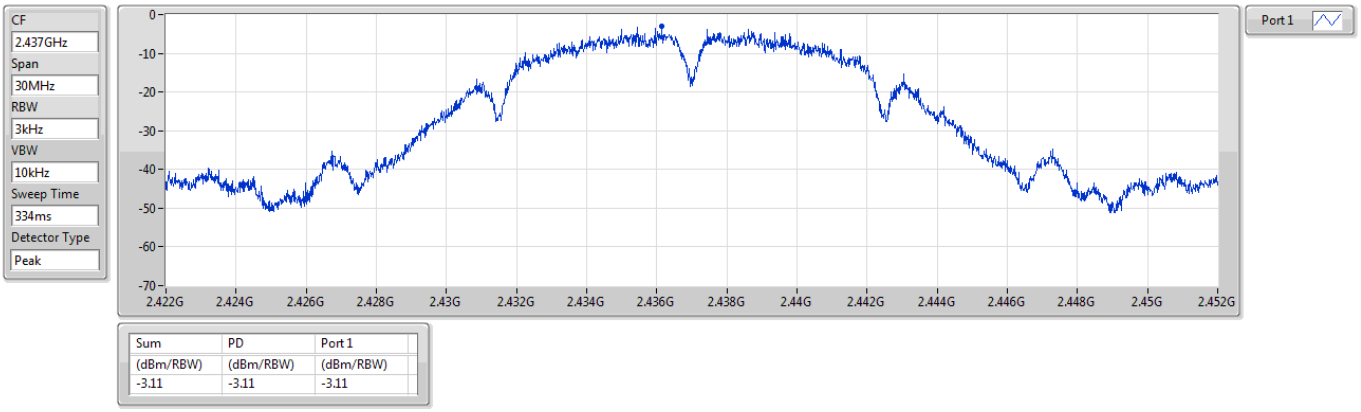
2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **PSD**

2412MHz



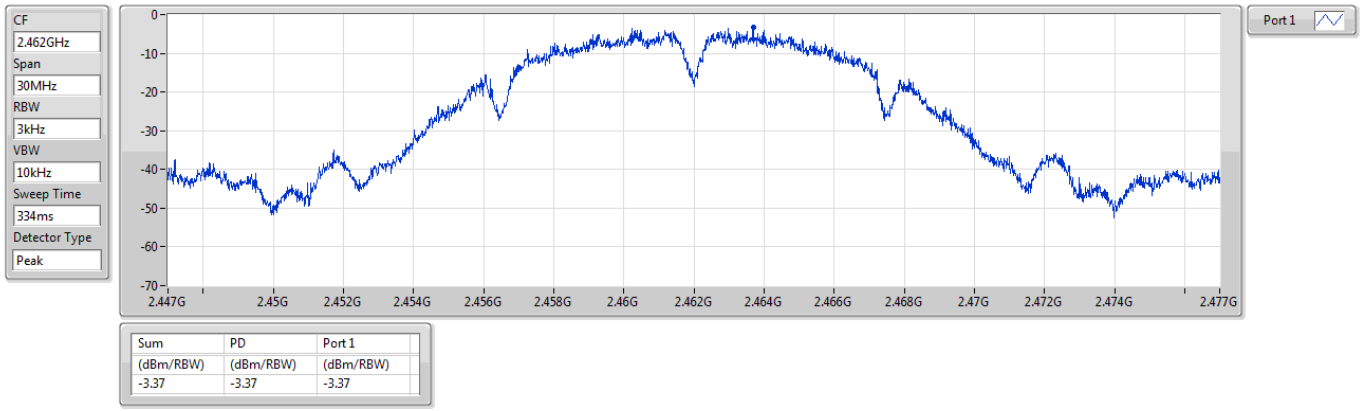
2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **PSD**

2437MHz



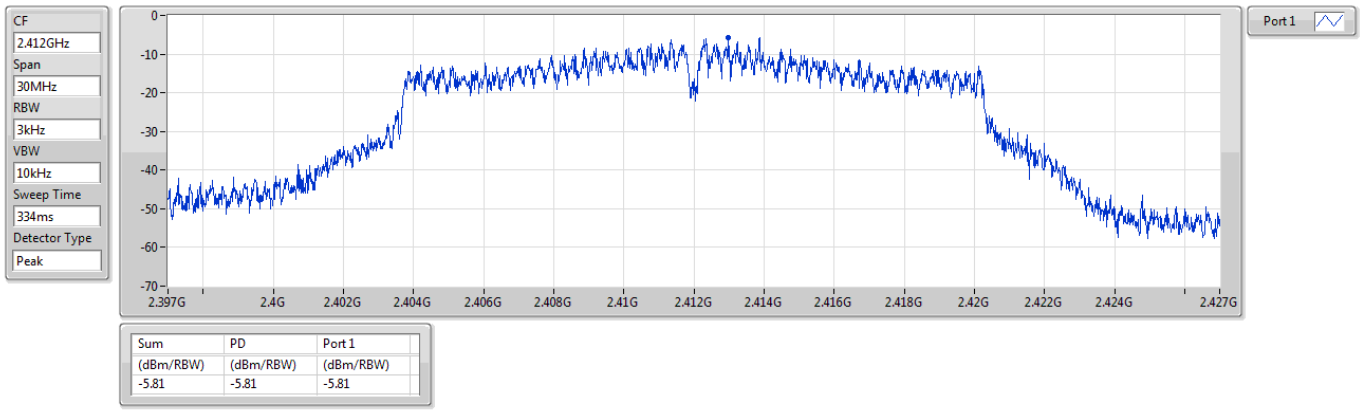
2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX **PSD**

2462MHz



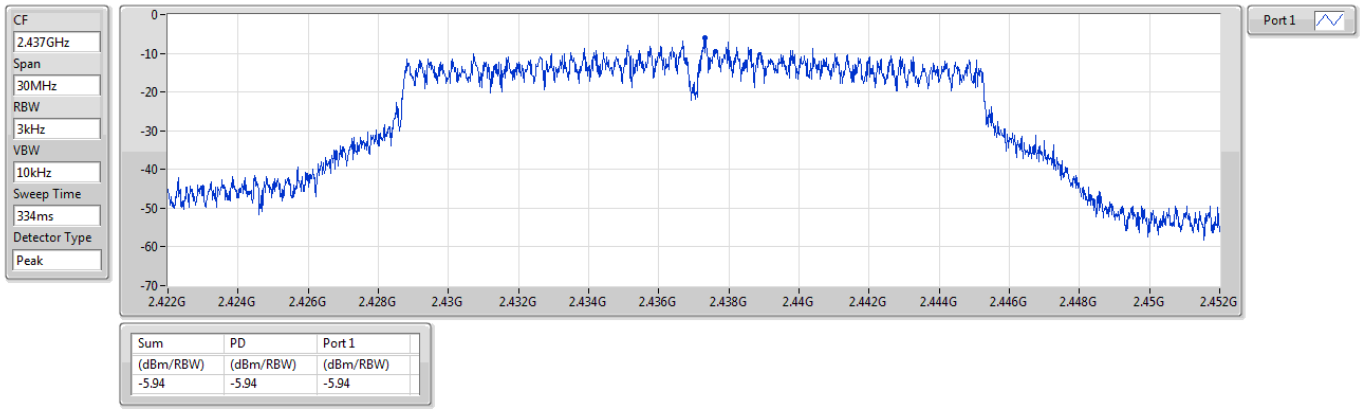
2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **PSD**

2412MHz



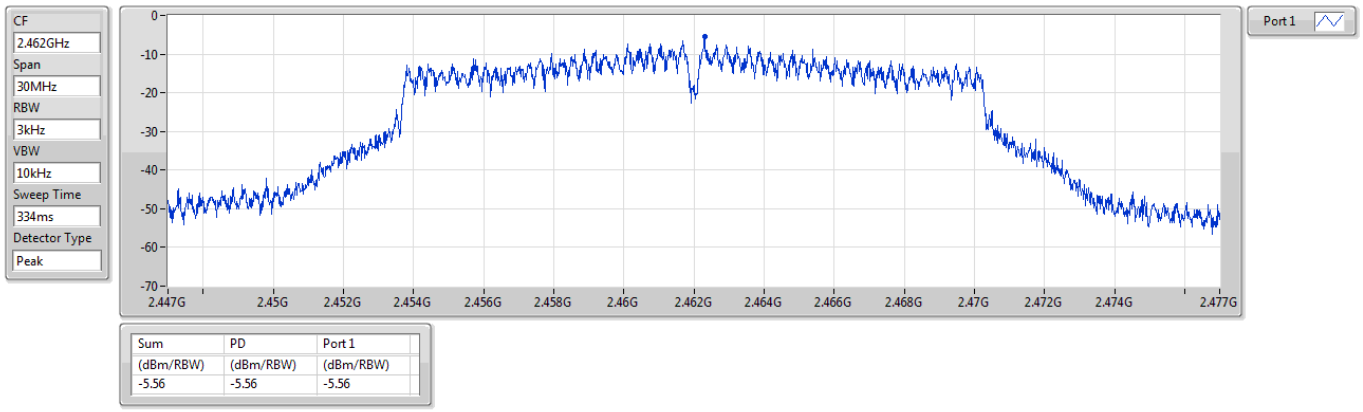
2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **PSD**

2437MHz



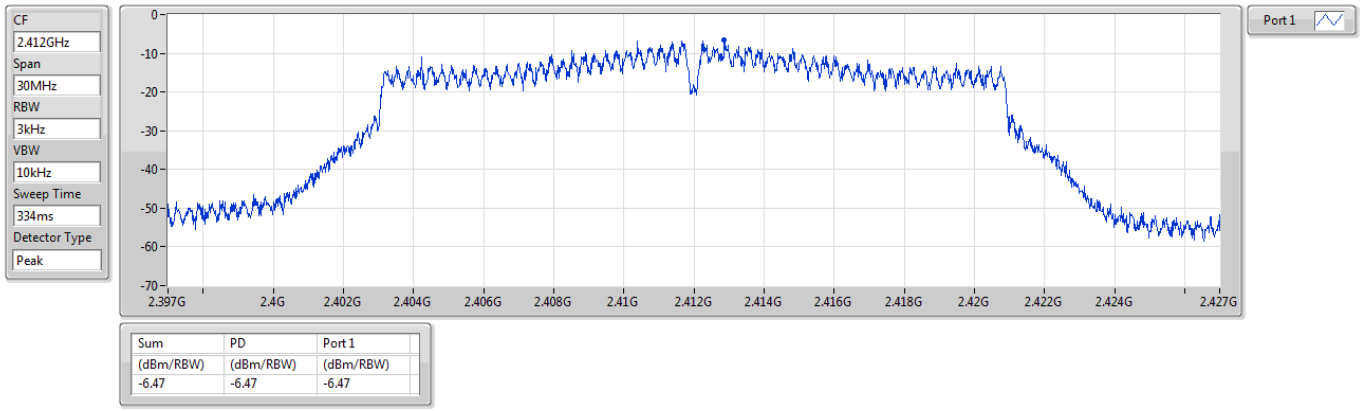
2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX **PSD**

2462MHz



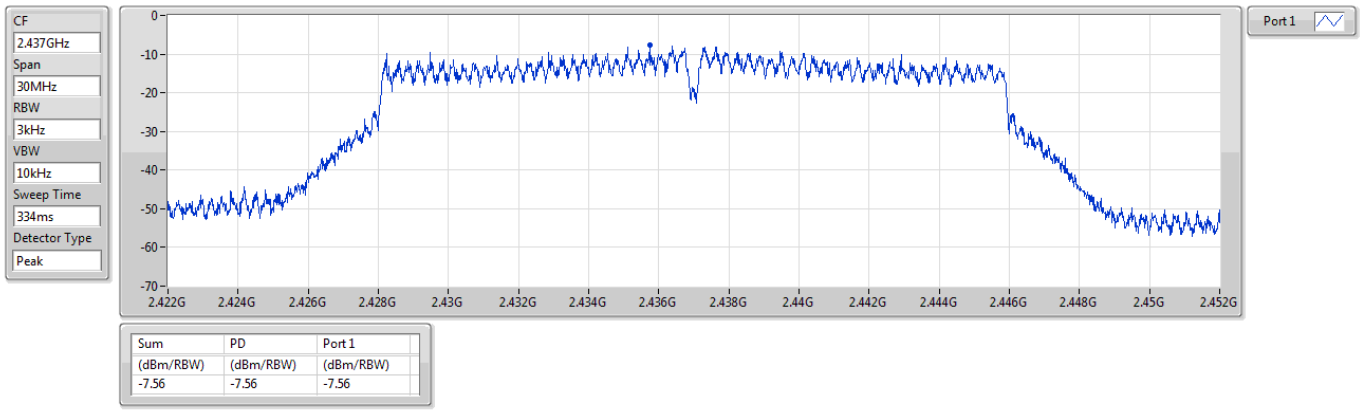
2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **PSD**

2412MHz



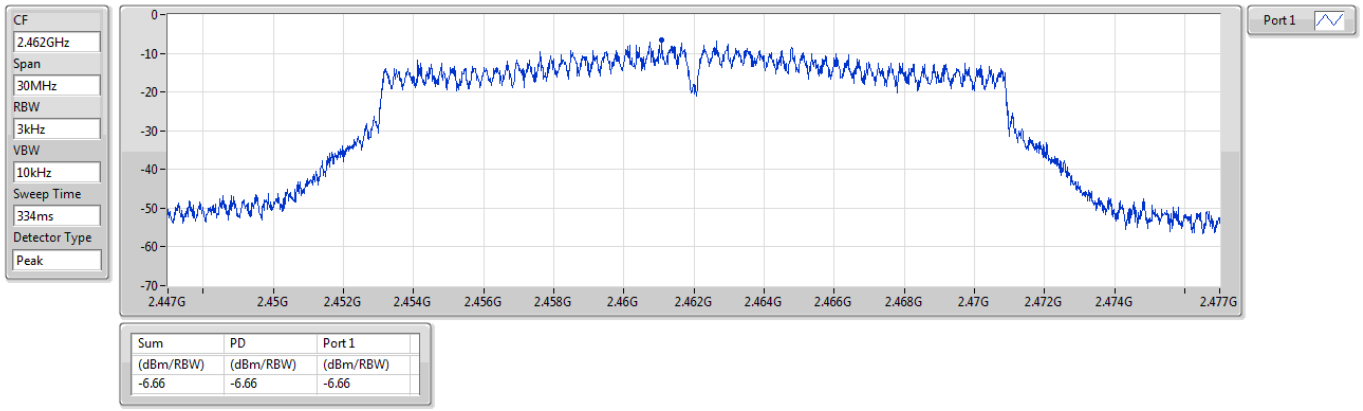
2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX **PSD**

2437MHz



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

2462MHz

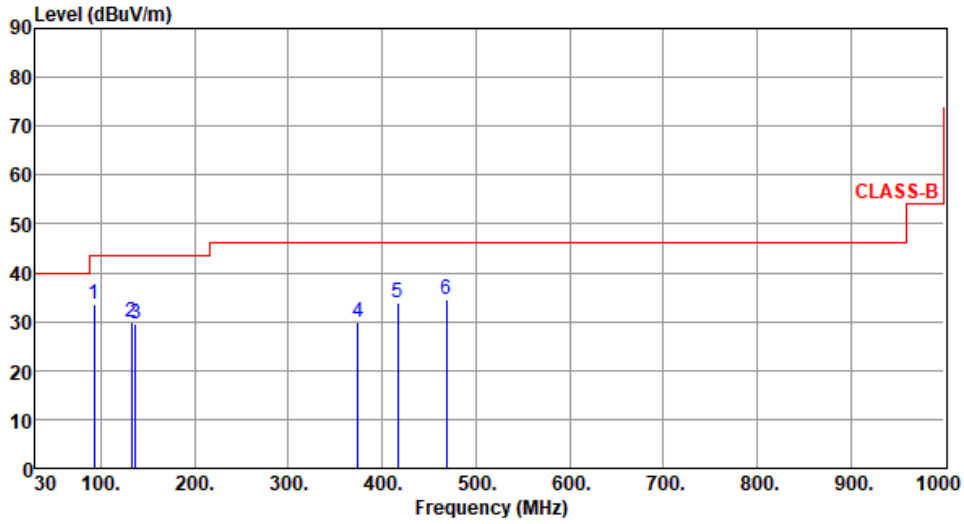


Test configuration 1: Cradle mode

Unwanted Emissions (Below 1GHz)

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

Test By :Akun Chung Temperature(℃):23 Humidity(%):63

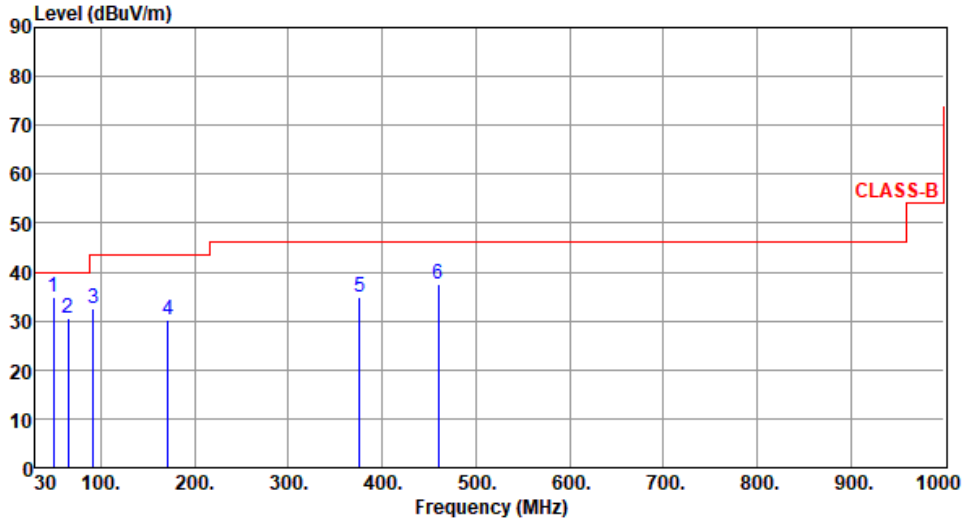


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	93.05	33.56	43.50	-9.94	47.69	-14.13	Peak	---	---
2	132.82	29.87	43.50	-13.63	40.01	-10.14	Peak	---	---
3	136.70	29.72	43.50	-13.78	39.48	-9.76	Peak	---	---
4	374.35	29.97	46.00	-16.03	36.25	-6.28	Peak	---	---
5	417.03	33.90	46.00	-12.10	39.07	-5.17	Peak	---	---
6	468.44	34.50	46.00	-11.50	38.34	-3.84	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)**	2412
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 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	49.40	34.85	40.00	-5.15	43.14	-8.29	Peak	---	---
2	64.92	30.54	40.00	-9.46	40.55	-10.01	Peak	---	---
3	92.08	32.63	43.50	-10.87	47.14	-14.51	Peak	---	---
4	171.62	30.13	43.50	-13.37	39.58	-9.45	Peak	---	---
5	376.29	34.88	46.00	-11.12	41.07	-6.19	Peak	---	---
6	459.71	37.55	46.00	-8.45	41.54	-3.99	Peak	---	---

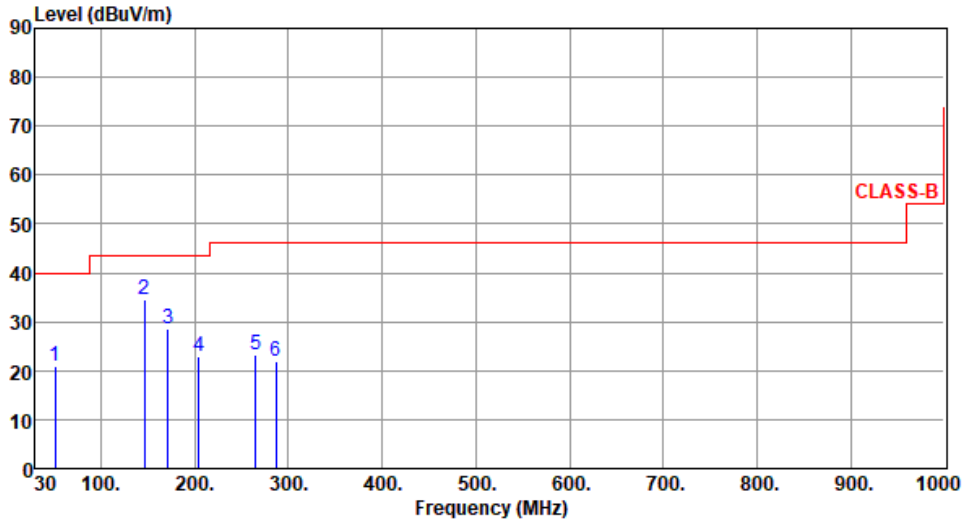
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Test configuration 2: Adapter mode

Unwanted Emissions (Below 1GHz)

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

Test By :Akun Chung- Temperature(℃):24 Humidity(%):63

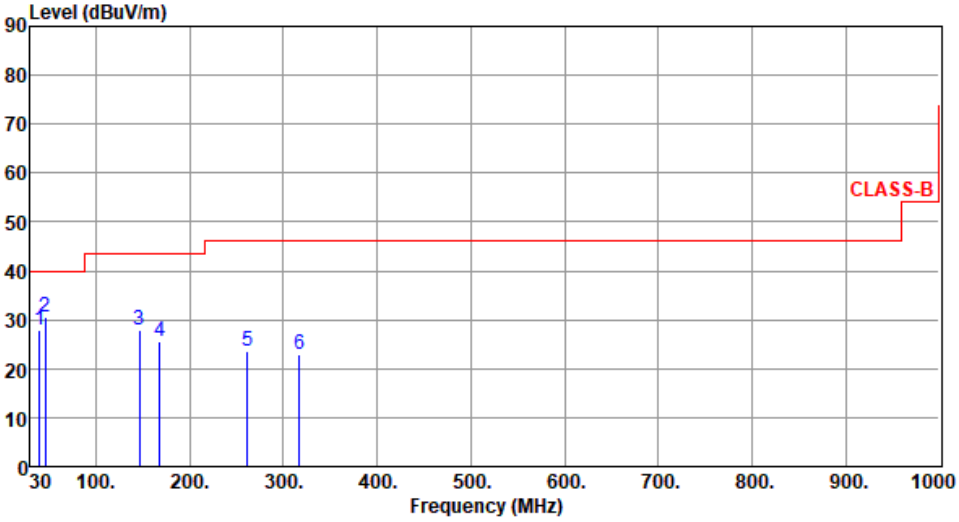


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	51.34	21.02	40.00	-18.98	29.22	-8.20	Peak	---	---
2	146.40	34.49	43.50	-9.01	43.48	-8.99	Peak	---	---
3	171.62	28.61	43.50	-14.89	38.06	-9.45	Peak	---	---
4	204.60	23.03	43.50	-20.47	34.97	-11.94	Peak	---	---
5	264.74	23.21	46.00	-22.79	32.34	-9.13	Peak	---	---
6	287.05	21.84	46.00	-24.16	30.33	-8.49	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)**	2412
Polarization	Vertical		

Test By :Akun Chung- Temperature(℃):24 Humidity(%):63



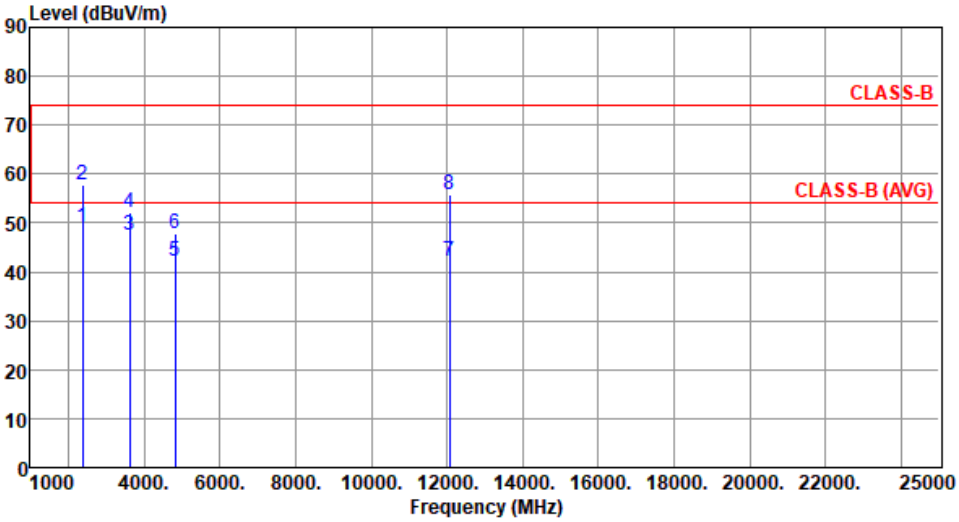
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	39.70	27.90	40.00	-12.10	36.51	-8.61	Peak	---	---
2	45.52	30.52	40.00	-9.48	38.73	-8.21	Peak	---	---
3	146.40	27.98	43.50	-15.52	36.97	-8.99	Peak	---	---
4	167.74	25.60	43.50	-17.90	34.90	-9.30	Peak	---	---
5	261.83	23.71	46.00	-22.29	33.08	-9.37	Peak	---	---
6	317.12	22.98	46.00	-23.02	30.58	-7.60	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 :Roger Lu- Temperature(℃):26 Humidity(%):63

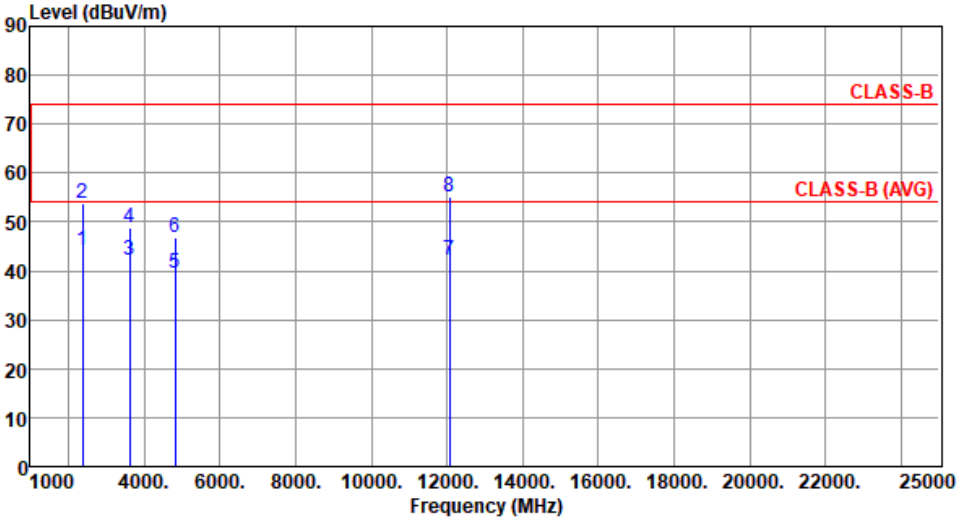


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	49.00	54.00	-5.00	54.22	-5.22	Average	371	180
2	2390.00	57.70	74.00	-16.30	62.92	-5.22	Peak	371	180
3	3618.00	47.43	54.00	-6.57	50.23	-2.80	Average	100	60
4	3618.00	52.29	74.00	-21.71	55.09	-2.80	Peak	100	60
5	4824.00	42.19	54.00	-11.81	43.07	-0.88	Average	128	78
6	4824.00	47.75	74.00	-26.25	48.63	-0.88	Peak	128	78
7	12060.00	42.17	54.00	-11.83	36.37	5.80	Average	100	64
8	12060.00	55.87	74.00	-18.13	50.07	5.80	Peak	100	64

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

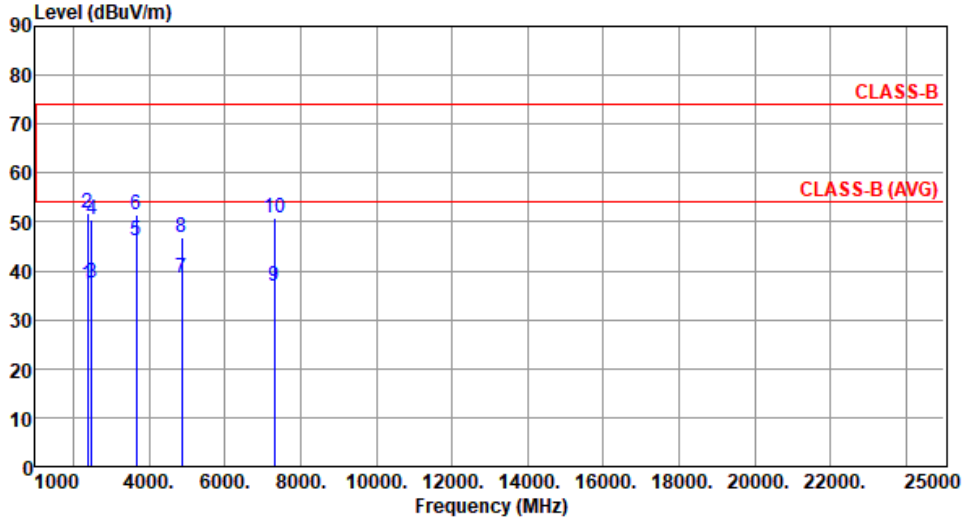


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	44.29	54.00	-9.71	49.51	-5.22	Average	313	121
2	2390.00	53.77	74.00	-20.23	58.99	-5.22	Peak	313	121
3	3618.00	42.32	54.00	-11.68	45.12	-2.80	Average	390	258
4	3618.00	48.89	74.00	-25.11	51.69	-2.80	Peak	390	258
5	4824.00	39.55	54.00	-14.45	40.43	-0.88	Average	100	41
6	4824.00	46.85	74.00	-27.15	47.73	-0.88	Peak	100	41
7	12060.00	42.11	54.00	-11.89	36.31	5.80	Average	100	121
8	12060.00	55.15	74.00	-18.85	49.35	5.80	Peak	100	121

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 :Roger Lu- Temperature(℃):26 Humidity(%):61

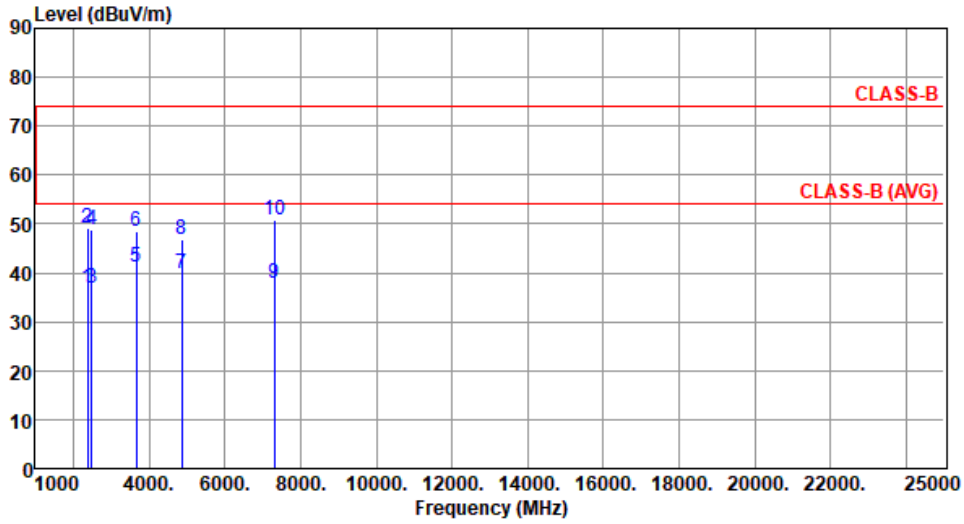


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.28	54.00	-16.72	42.50	-5.22	Average	352	169
2	2390.00	51.68	74.00	-22.32	56.90	-5.22	Peak	352	169
3	2483.50	37.50	54.00	-16.50	42.81	-5.31	Average	352	169
4	2483.50	50.63	74.00	-23.37	55.94	-5.31	Peak	352	169
5	3655.50	46.02	54.00	-7.98	48.81	-2.79	Average	156	58
6	3655.50	51.33	74.00	-22.67	54.12	-2.79	Peak	156	58
7	4874.00	38.56	54.00	-15.44	39.50	-0.94	Average	294	160
8	4874.00	46.77	74.00	-27.23	47.71	-0.94	Peak	294	160
9	7311.00	36.99	54.00	-17.01	32.66	4.33	Average	126	48
10	7311.00	50.68	74.00	-23.32	46.35	4.33	Peak	126	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	11b	**Test Freq. (MHz)**	2437
Polarization	Vertical		

Test By :Roger Lu- Temperature(℃):26 Humidity(%):61

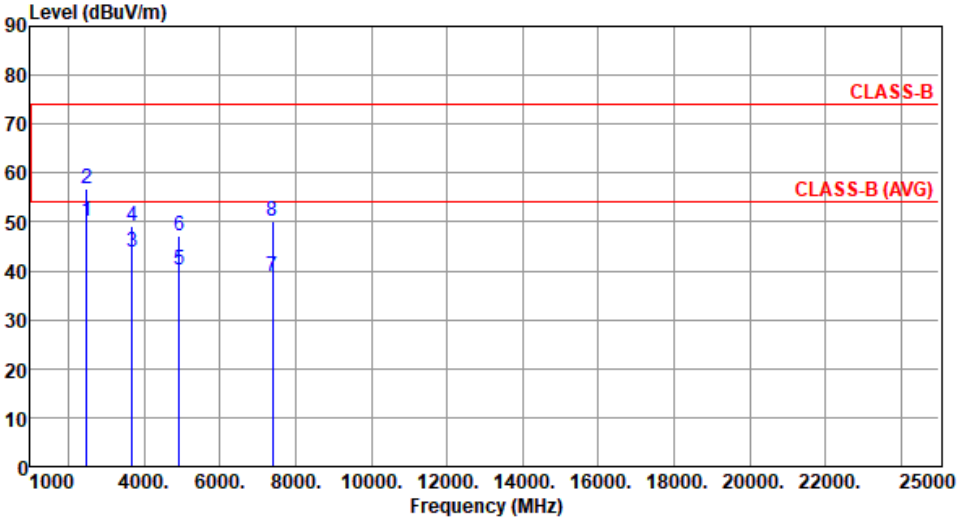


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	36.90	54.00	-17.10	42.12	-5.22	Average	342	86
2	2390.00	49.08	74.00	-24.92	54.30	-5.22	Peak	342	86
3	2483.50	36.86	54.00	-17.14	42.17	-5.31	Average	342	86
4	2483.50	48.82	74.00	-25.18	54.13	-5.31	Peak	342	86
5	3655.50	41.02	54.00	-12.98	43.81	-2.79	Average	355	262
6	3655.50	48.37	74.00	-25.63	51.16	-2.79	Peak	355	262
7	4874.00	39.87	54.00	-14.13	40.81	-0.94	Average	319	53
8	4874.00	46.71	74.00	-27.29	47.65	-0.94	Peak	319	53
9	7311.00	37.84	54.00	-16.16	33.51	4.33	Average	116	172
10	7311.00	50.71	74.00	-23.29	46.38	4.33	Peak	116	172

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

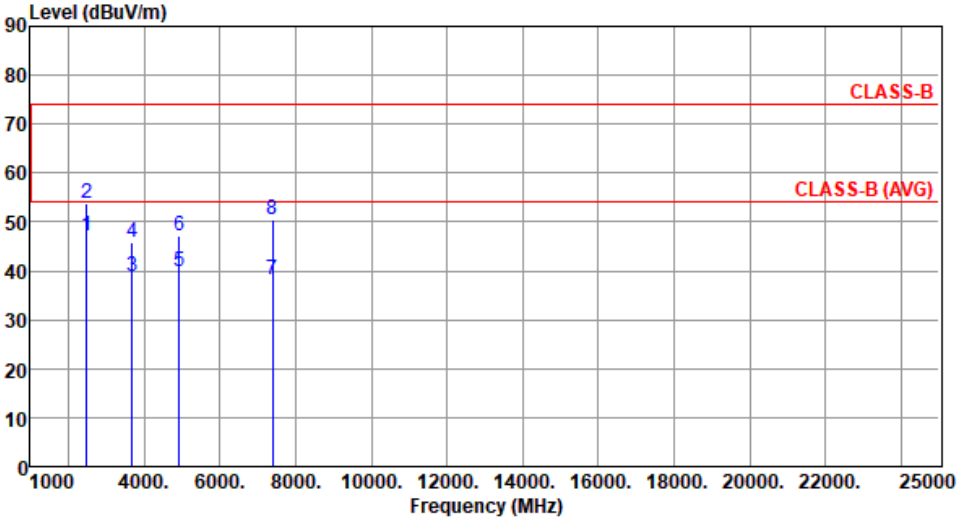


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	50.20	54.00	-3.80	55.51	-5.31	Average	347	176
2	2483.50	56.95	74.00	-17.05	62.26	-5.31	Peak	347	176
3	3693.00	43.77	54.00	-10.23	46.68	-2.91	Average	157	69
4	3693.00	49.10	74.00	-24.90	52.01	-2.91	Peak	157	69
5	4924.00	40.32	54.00	-13.68	41.37	-1.05	Average	100	158
6	4924.00	47.14	74.00	-26.86	48.19	-1.05	Peak	100	158
7	7386.00	38.88	54.00	-15.12	34.62	4.26	Average	108	72
8	7386.00	50.24	74.00	-23.76	45.98	4.26	Peak	108	72

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 :Roger Lu- Temperature(℃):26 Humidity(%):63



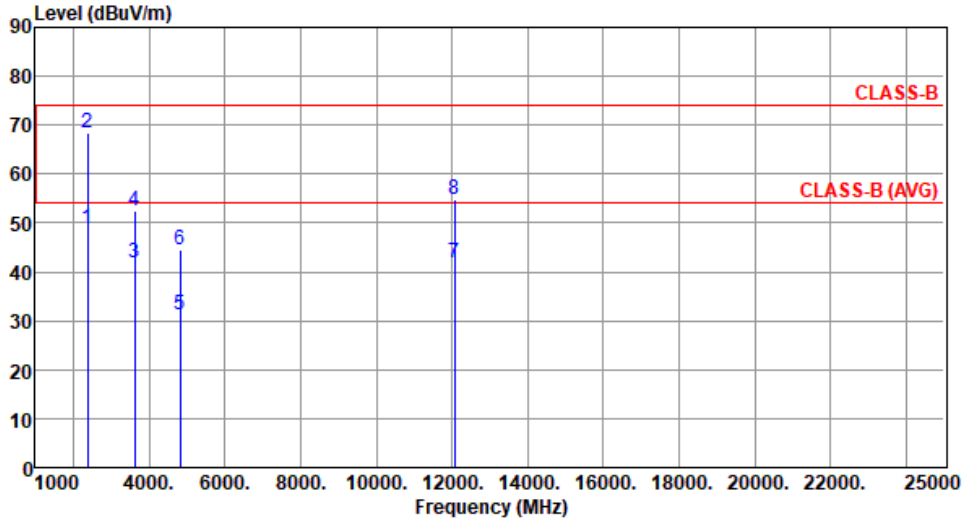
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	47.04	54.00	-6.96	52.35	-5.31	Average	376	133
2	2483.50	53.95	74.00	-20.05	59.26	-5.31	Peak	376	133
3	3693.00	38.71	54.00	-15.29	41.62	-2.91	Average	321	263
4	3693.00	45.75	74.00	-28.25	48.66	-2.91	Peak	321	263
5	4924.00	39.80	54.00	-14.20	40.85	-1.05	Average	100	43
6	4924.00	47.20	74.00	-26.80	48.25	-1.05	Peak	100	43
7	7386.00	38.12	54.00	-15.88	33.86	4.26	Average	119	172
8	7386.00	50.64	74.00	-23.36	46.38	4.26	Peak	119	172

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

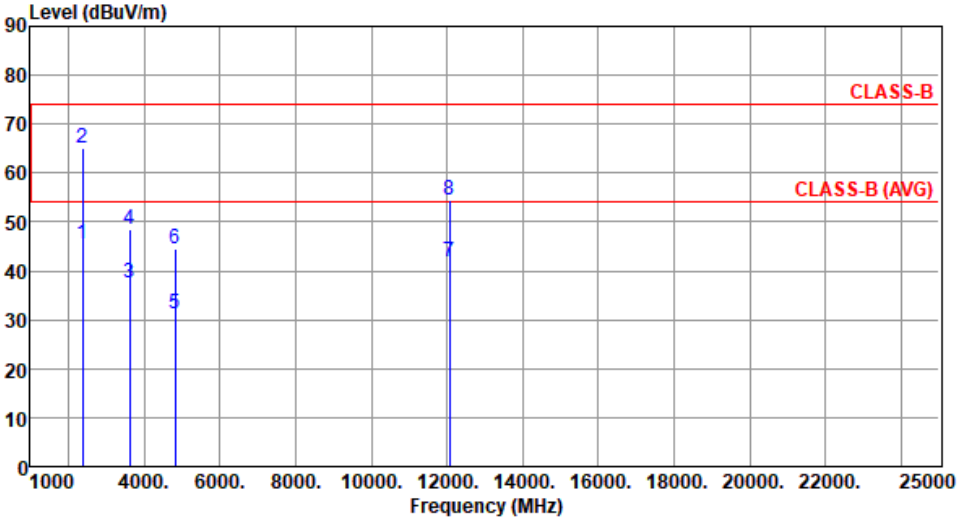


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	48.79	54.00	-5.21	54.01	-5.22	Average	100	42
2	2390.00	68.33	74.00	-5.67	73.55	-5.22	Peak	100	42
3	3618.00	41.87	54.00	-12.13	44.67	-2.80	Average	100	53
4	3618.00	52.61	74.00	-21.39	55.41	-2.80	Peak	100	53
5	4824.00	31.13	54.00	-22.87	32.01	-0.88	Average	100	49
6	4824.00	44.35	74.00	-29.65	45.23	-0.88	Peak	100	49
7	12060.00	41.78	54.00	-12.22	35.98	5.80	Average	100	163
8	12060.00	54.68	74.00	-19.32	48.88	5.80	Peak	100	163

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

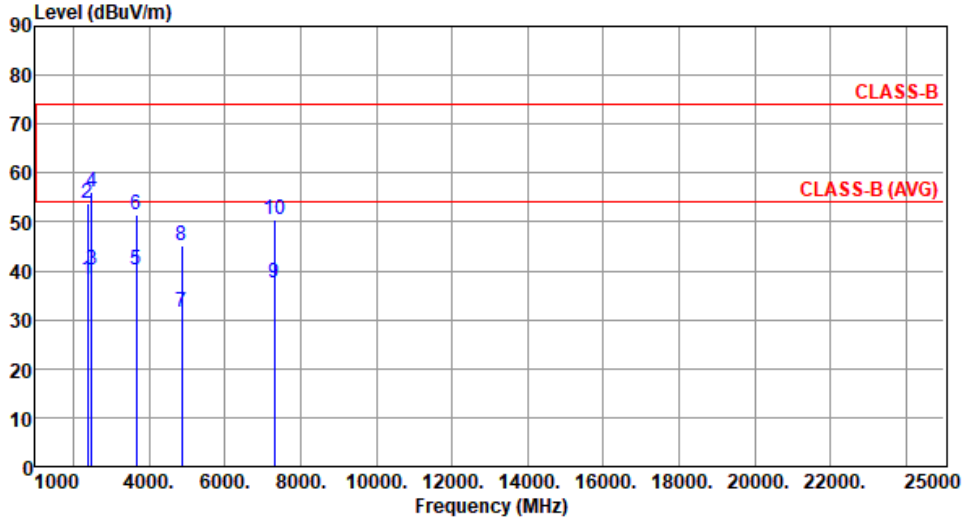


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	45.55	54.00	-8.45	50.77	-5.22	Average	359	138
2	2390.00	65.06	74.00	-8.94	70.28	-5.22	Peak	359	138
3	3618.00	37.45	54.00	-16.55	40.25	-2.80	Average	356	248
4	3618.00	48.48	74.00	-25.52	51.28	-2.80	Peak	356	248
5	4824.00	31.33	54.00	-22.67	32.21	-0.88	Average	100	162
6	4824.00	44.37	74.00	-29.63	45.25	-0.88	Peak	100	162
7	12060.00	41.97	54.00	-12.03	36.17	5.80	Average	100	58
8	12060.00	54.43	74.00	-19.57	48.63	5.80	Peak	100	58

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

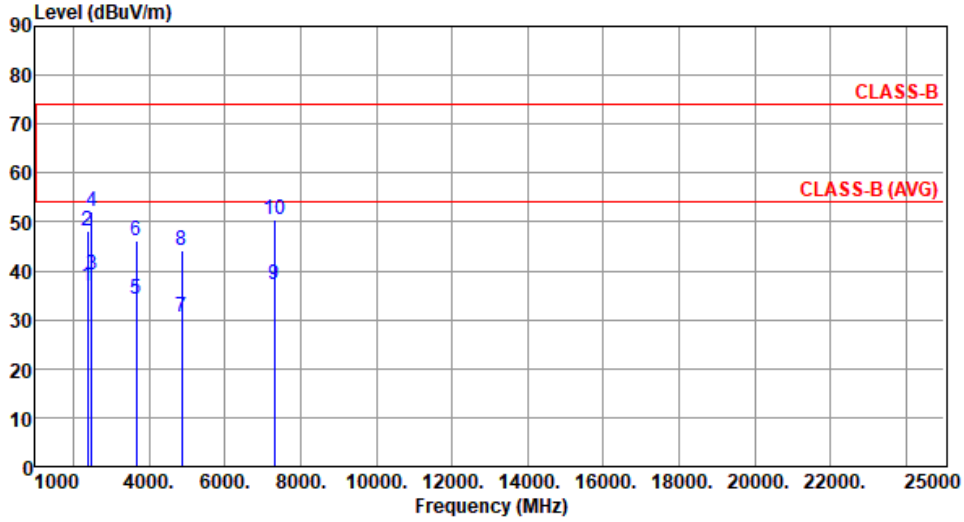


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	38.35	54.00	-15.65	43.57	-5.22	Average	360	176
2	2390.00	53.87	74.00	-20.13	59.09	-5.22	Peak	360	176
3	2483.50	40.18	54.00	-13.82	45.49	-5.31	Average	360	176
4	2483.50	56.06	74.00	-17.94	61.37	-5.31	Peak	360	176
5	3655.50	40.17	54.00	-13.83	42.96	-2.79	Average	100	53
6	3655.50	51.49	74.00	-22.51	54.28	-2.79	Peak	100	53
7	4874.00	31.49	54.00	-22.51	32.43	-0.94	Average	100	132
8	4874.00	45.05	74.00	-28.95	45.99	-0.94	Peak	100	132
9	7311.00	37.45	54.00	-16.55	33.12	4.33	Average	100	79
10	7311.00	50.35	74.00	-23.65	46.02	4.33	Peak	100	79

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

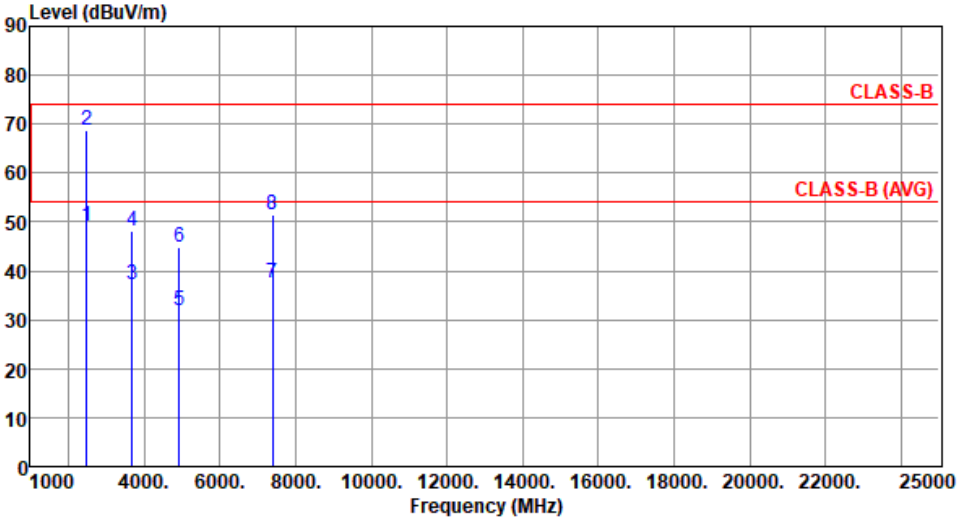


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	36.75	54.00	-17.25	41.97	-5.22	Average	388	125
2	2390.00	48.02	74.00	-25.98	53.24	-5.22	Peak	388	125
3	2483.50	39.13	54.00	-14.87	44.44	-5.31	Average	388	125
4	2483.50	52.19	74.00	-21.81	57.50	-5.31	Peak	388	125
5	3655.50	34.19	54.00	-19.81	36.98	-2.79	Average	304	251
6	3655.50	46.30	74.00	-27.70	49.09	-2.79	Peak	304	251
7	4874.00	30.59	54.00	-23.41	31.53	-0.94	Average	100	16
8	4874.00	44.22	74.00	-29.78	45.16	-0.94	Peak	100	16
9	7311.00	37.34	54.00	-16.66	33.01	4.33	Average	100	122
10	7311.00	50.55	74.00	-23.45	46.22	4.33	Peak	100	122

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

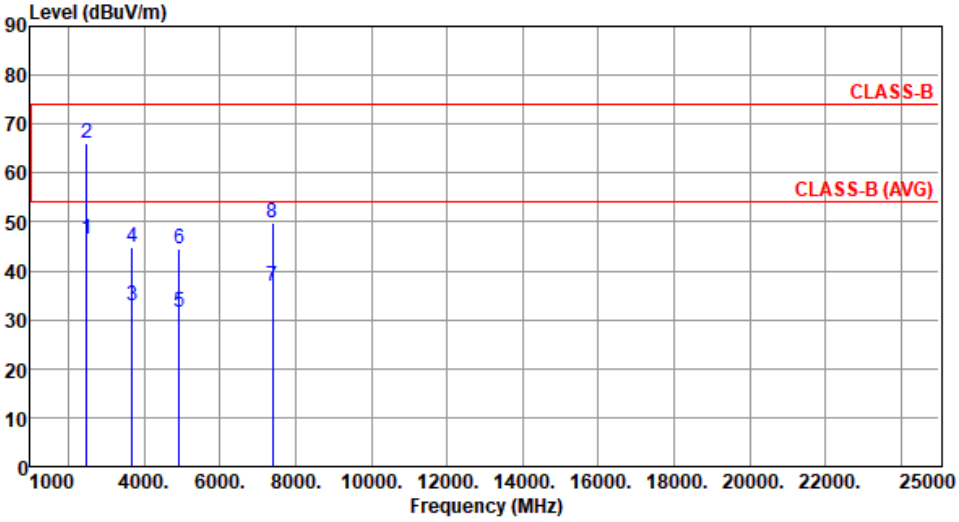


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	49.24	54.00	-4.76	54.55	-5.31	Average	351	169
2	2483.50	68.90	74.00	-5.10	74.21	-5.31	Peak	351	169
3	3693.00	37.20	54.00	-16.80	40.11	-2.91	Average	134	58
4	3693.00	48.23	74.00	-25.77	51.14	-2.91	Peak	134	58
5	4924.00	31.86	54.00	-22.14	32.91	-1.05	Average	100	15
6	4924.00	44.76	74.00	-29.24	45.81	-1.05	Peak	100	15
7	7386.00	37.62	54.00	-16.38	33.36	4.26	Average	100	89
8	7386.00	51.45	74.00	-22.55	47.19	4.26	Peak	100	89

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 :Roger Lu- Temperature(℃):26 Humidity(%):63



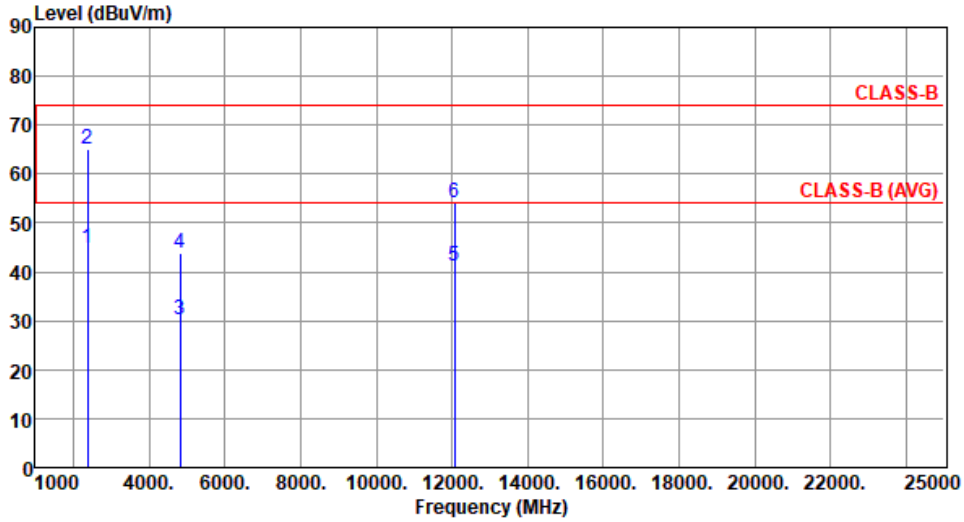
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	46.51	54.00	-7.49	51.82	-5.31	Average	384	140
2	2483.50	66.23	74.00	-7.77	71.54	-5.31	Peak	384	140
3	3693.00	32.75	54.00	-21.25	35.66	-2.91	Average	296	243
4	3693.00	44.77	74.00	-29.23	47.68	-2.91	Peak	296	243
5	4924.00	31.40	54.00	-22.60	32.45	-1.05	Average	100	126
6	4924.00	44.44	74.00	-29.56	45.49	-1.05	Peak	100	126
7	7386.00	36.76	54.00	-17.24	32.50	4.26	Average	100	56
8	7386.00	49.73	74.00	-24.27	45.47	4.26	Peak	100	56

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

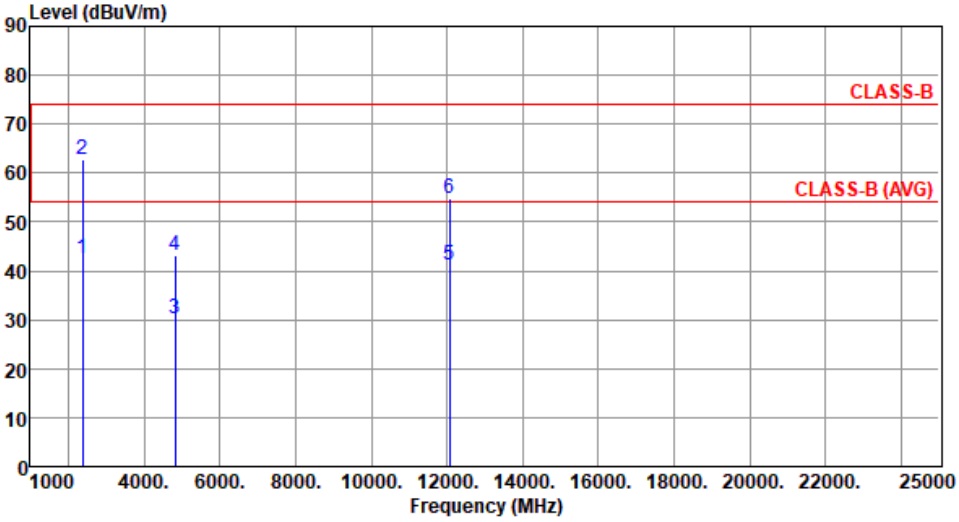


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	44.80	54.00	-9.20	50.02	-5.22	Average	359	184
2	2390.00	64.98	74.00	-9.02	70.20	-5.22	Peak	359	184
3	4824.00	30.24	54.00	-23.76	31.12	-0.88	Average	100	128
4	4824.00	43.77	74.00	-30.23	44.65	-0.88	Peak	100	128
5	12060.00	41.16	54.00	-12.84	35.36	5.80	Average	100	47
6	12060.00	54.05	74.00	-19.95	48.25	5.80	Peak	100	47

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

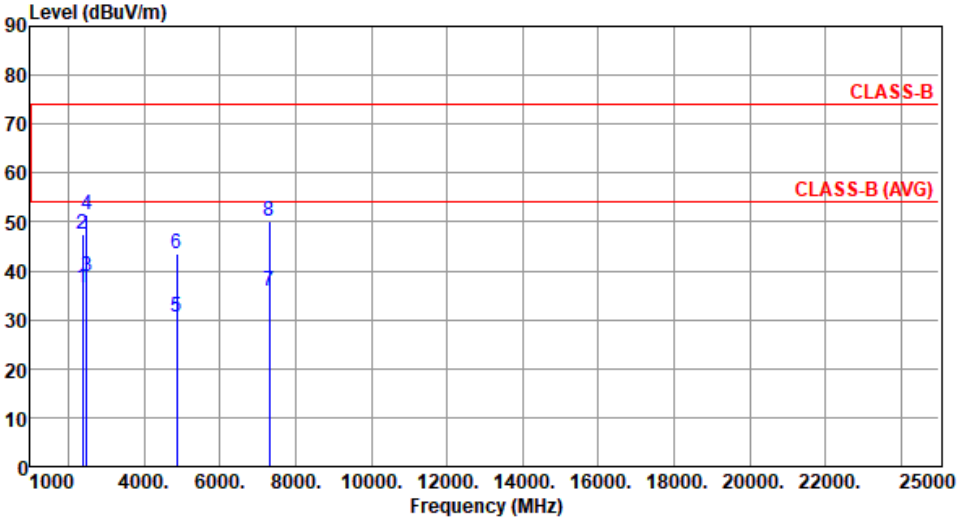


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	42.62	54.00	-11.38	47.84	-5.22	Average	390	137
2	2390.00	62.69	74.00	-11.31	67.91	-5.22	Peak	390	137
3	4824.00	30.16	54.00	-23.84	31.04	-0.88	Average	100	126
4	4824.00	43.26	74.00	-30.74	44.14	-0.88	Peak	100	126
5	12060.00	41.03	54.00	-12.97	35.23	5.80	Average	100	89
6	12060.00	54.91	74.00	-19.09	49.11	5.80	Peak	100	150

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

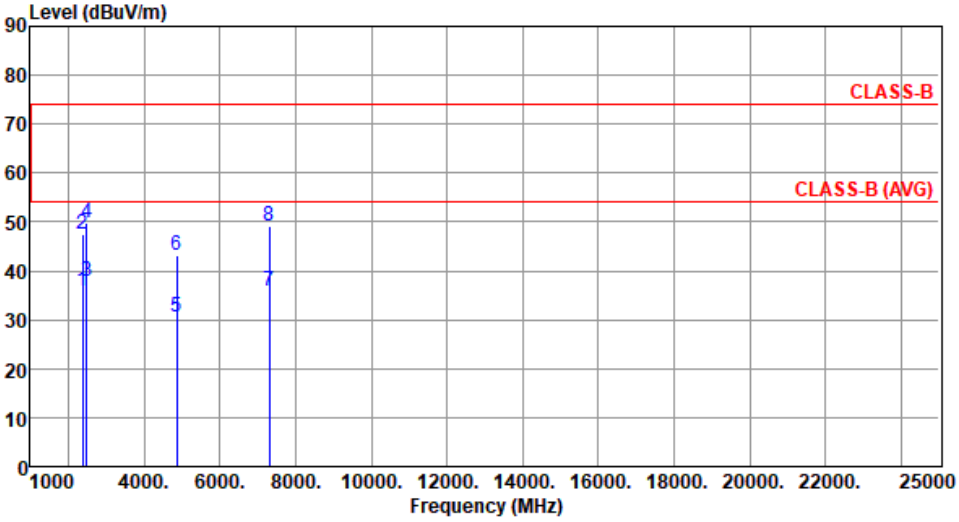


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	36.59	54.00	-17.41	41.81	-5.22	Average	352	178
2	2390.00	47.38	74.00	-26.62	52.60	-5.22	Peak	352	178
3	2483.50	38.72	54.00	-15.28	44.03	-5.31	Average	352	178
4	2483.50	51.62	74.00	-22.38	56.93	-5.31	Peak	352	178
5	4874.00	30.39	54.00	-23.61	31.33	-0.94	Average	100	122
6	4874.00	43.62	74.00	-30.38	44.56	-0.94	Peak	100	122
7	7311.00	35.71	54.00	-18.29	31.38	4.33	Average	100	122
8	7311.00	50.04	74.00	-23.96	45.71	4.33	Peak	100	122

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

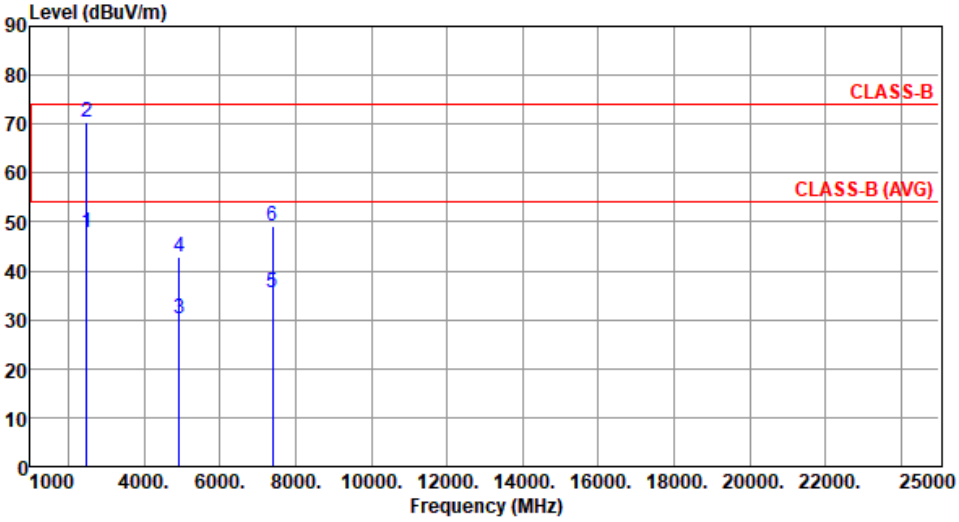


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	35.96	54.00	-18.04	41.18	-5.22	Average	390	136
2	2390.00	47.34	74.00	-26.66	52.56	-5.22	Peak	390	136
3	2483.50	37.81	54.00	-16.19	43.12	-5.31	Average	390	136
4	2483.50	49.80	74.00	-24.20	55.11	-5.31	Peak	390	136
5	4874.00	30.45	54.00	-23.55	31.39	-0.94	Average	100	24
6	4874.00	43.31	74.00	-30.69	44.25	-0.94	Peak	100	24
7	7311.00	35.93	54.00	-18.07	31.60	4.33	Average	100	126
8	7311.00	49.12	74.00	-24.88	44.79	4.33	Peak	100	126

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

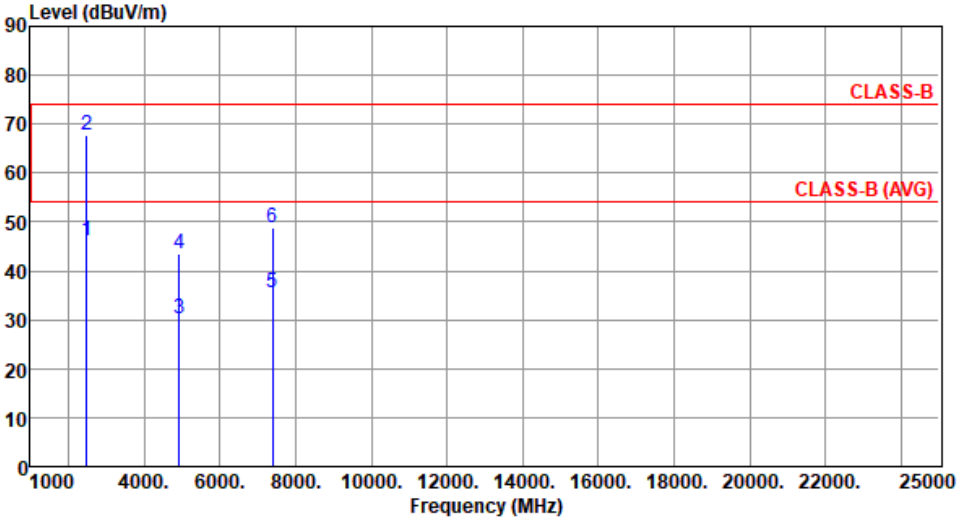


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	47.79	54.00	-6.21	53.10	-5.31	Average	344	172
2	2483.50	70.38	74.00	-3.62	75.69	-5.31	Peak	344	172
3	4924.00	30.26	54.00	-23.74	31.31	-1.05	Average	100	212
4	4924.00	42.78	74.00	-31.22	43.83	-1.05	Peak	100	212
5	7386.00	35.69	54.00	-18.31	31.43	4.26	Average	100	22
6	7386.00	49.02	74.00	-24.98	44.76	4.26	Peak	100	22

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 :Roger Lu- Temperature(℃):26 Humidity(%):63

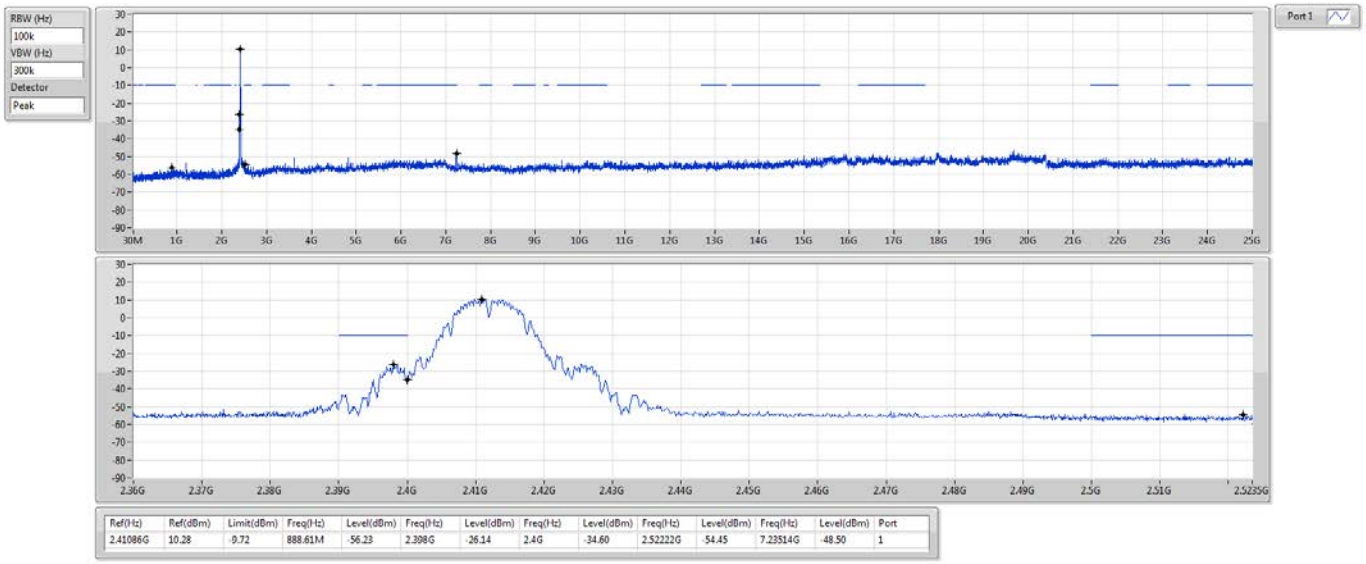


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	46.28	54.00	-7.72	51.59	-5.31	Average	384	132
2	2483.50	67.82	74.00	-6.18	73.13	-5.31	Peak	384	132
3	4924.00	30.29	54.00	-23.71	31.34	-1.05	Average	100	62
4	4924.00	43.44	74.00	-30.56	44.49	-1.05	Peak	100	62
5	7386.00	35.65	54.00	-18.35	31.39	4.26	Average	100	127
6	7386.00	48.74	74.00	-25.26	44.48	4.26	Peak	100	127

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**

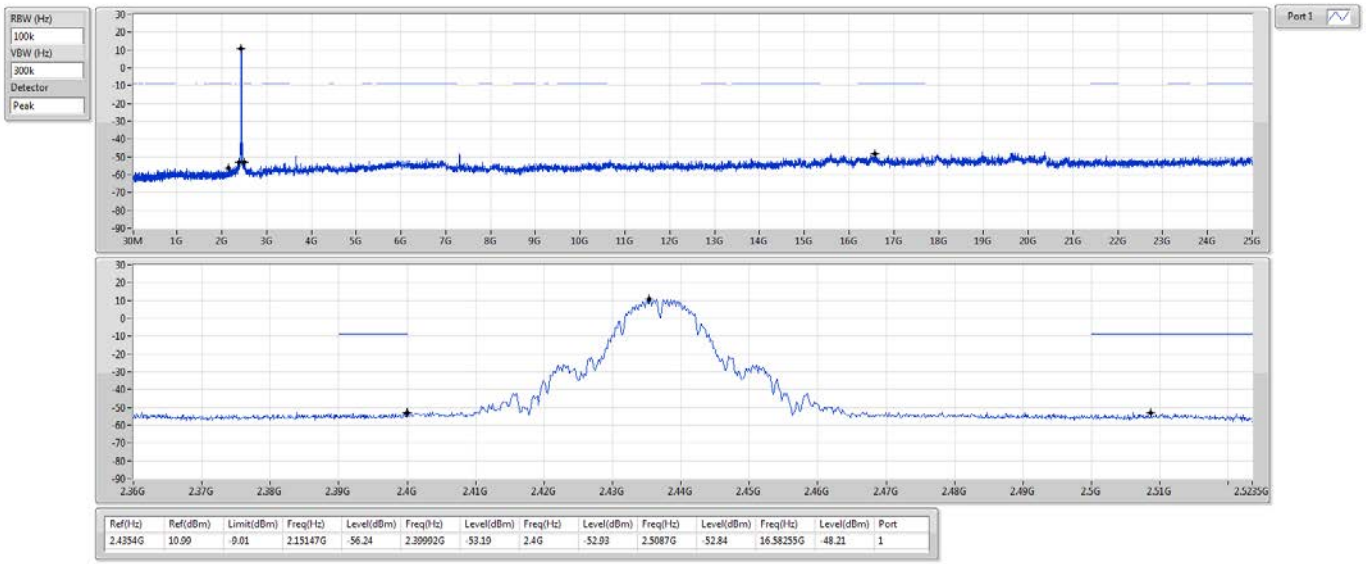
2412MHz



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
2.41086G	10.28	-9.72	888.61M	-56.23	2.398G	-26.14	2.4G	-34.60	2.52222G	-54.45	7.23514G	-48.50	1

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

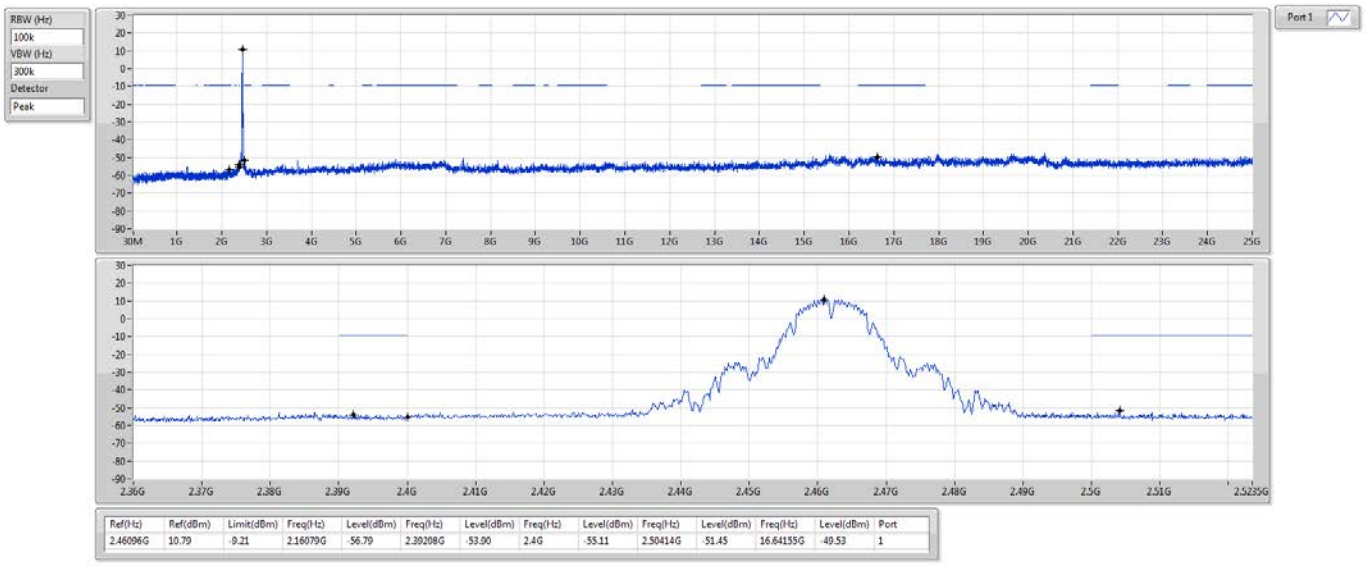
2437MHz



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
2.4354G	10.99	-9.01	2.15147G	-56.24	2.39992G	-53.19	2.4G	-52.93	2.5087G	-52.84	16.58255G	-48.21	1

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

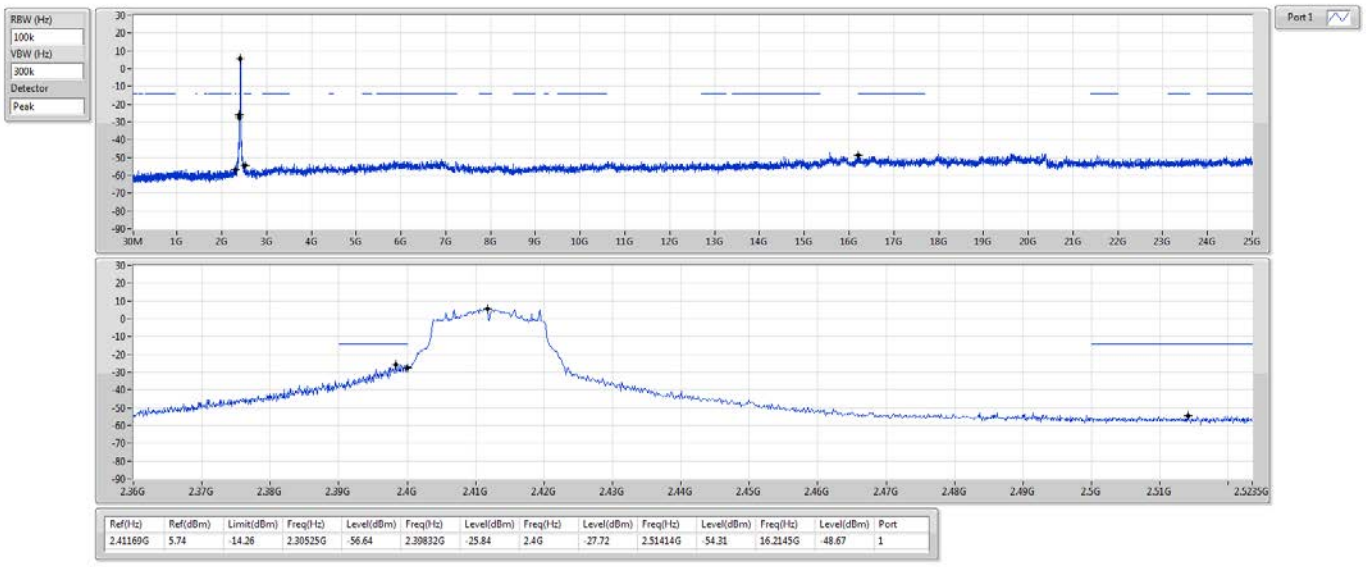
2462MHz



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
2.46096G	10.79	-9.21	2.16079G	-56.79	2.39208G	-53.90	2.4G	-55.11	2.50414G	-51.45	16.64155G	-49.53	1

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

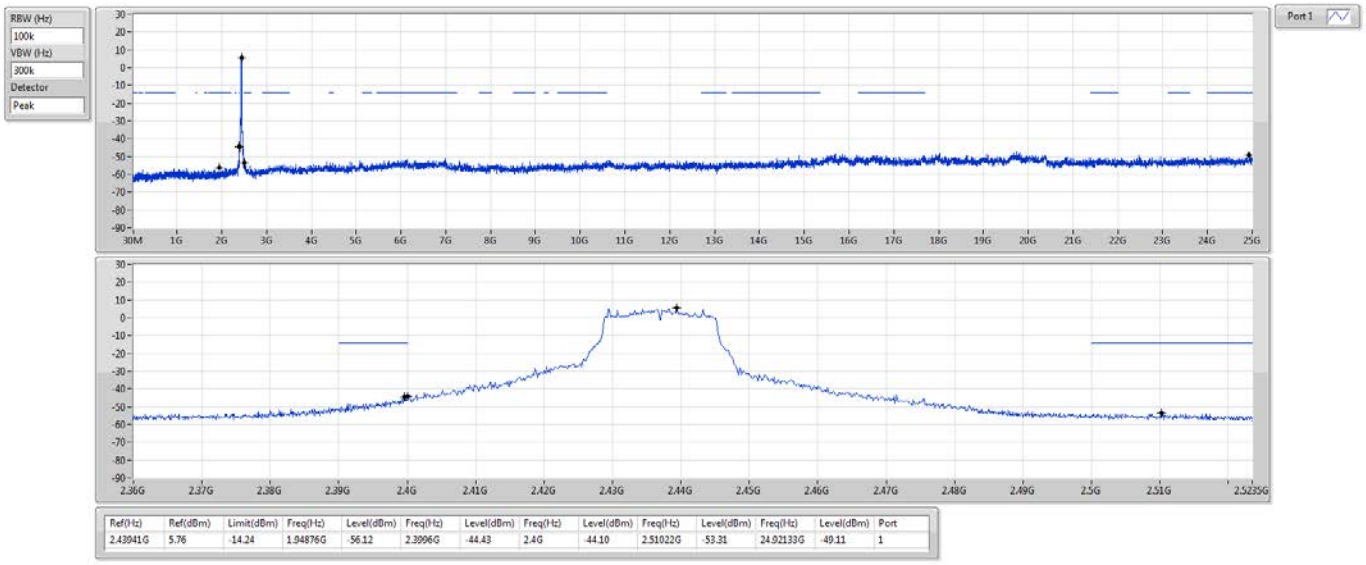
2412MHz



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
2.41169G	5.74	-14.26	2.30525G	-56.64	2.39832G	-25.84	2.4G	-27.72	2.51414G	-54.31	16.2145G	-48.67	1

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

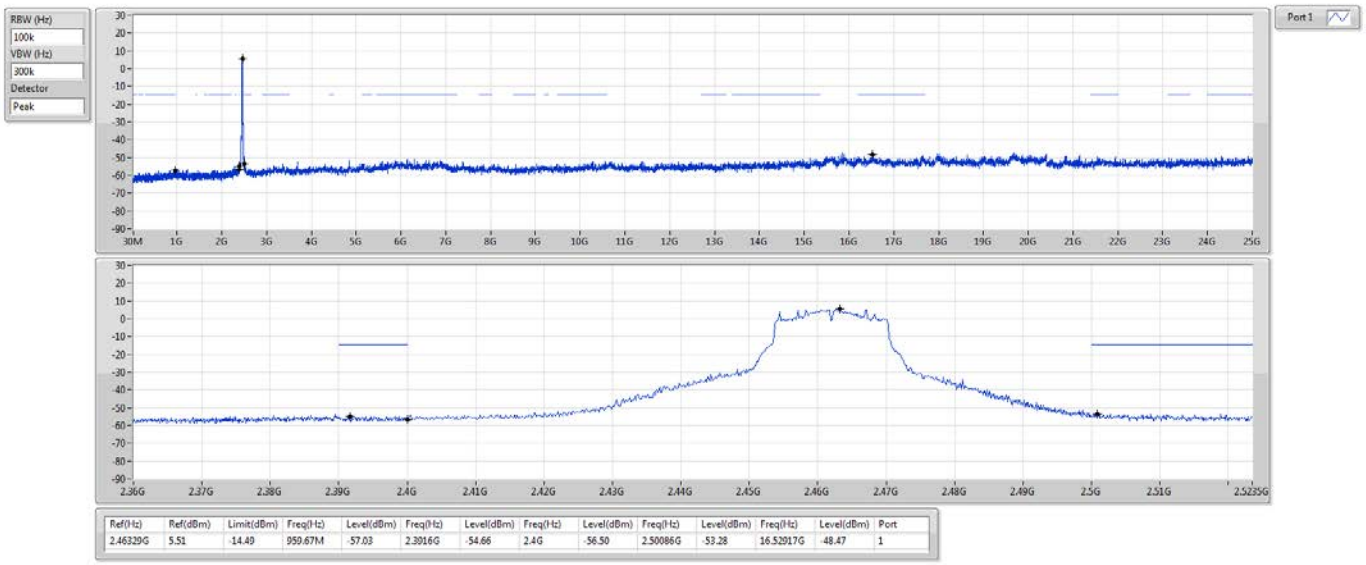
2437MHz



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
2.43941G	5.76	-14.24	1.94876G	-56.12	2.3996G	-44.43	2.4G	-44.10	2.51022G	-53.31	24.92133G	-49.11	1

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

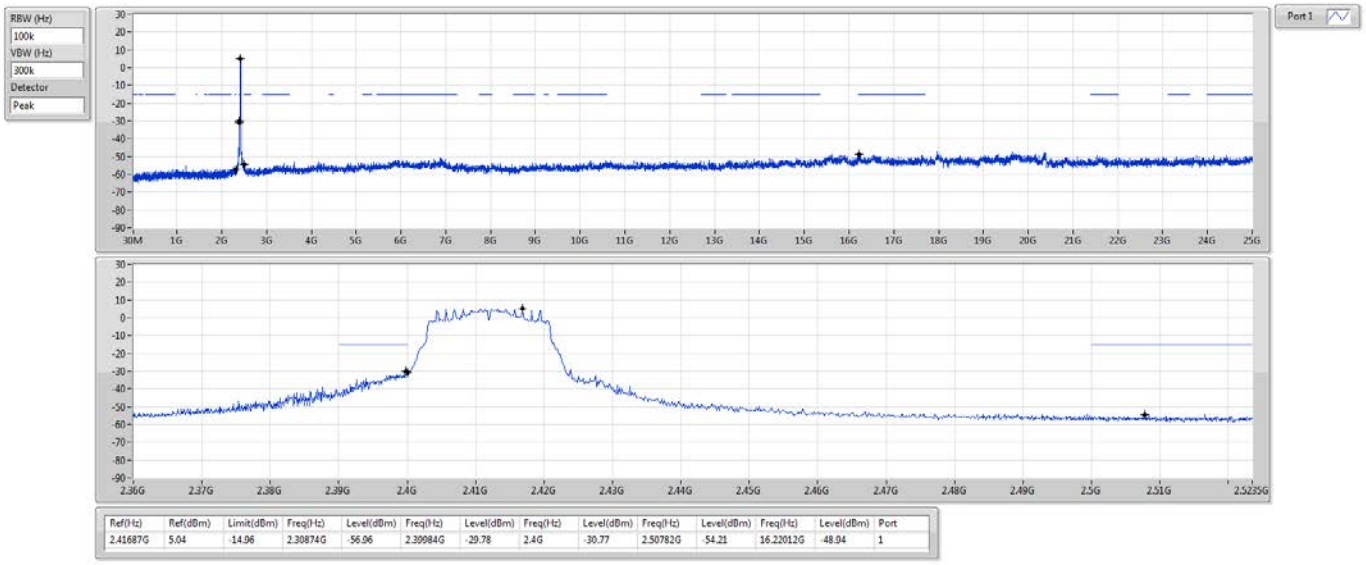
2462MHz



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
2.46329G	5.51	-14.49	959.67M	-57.03	2.3916G	-54.66	2.4G	-56.50	2.50086G	-53.28	16.52917G	-48.47	1

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

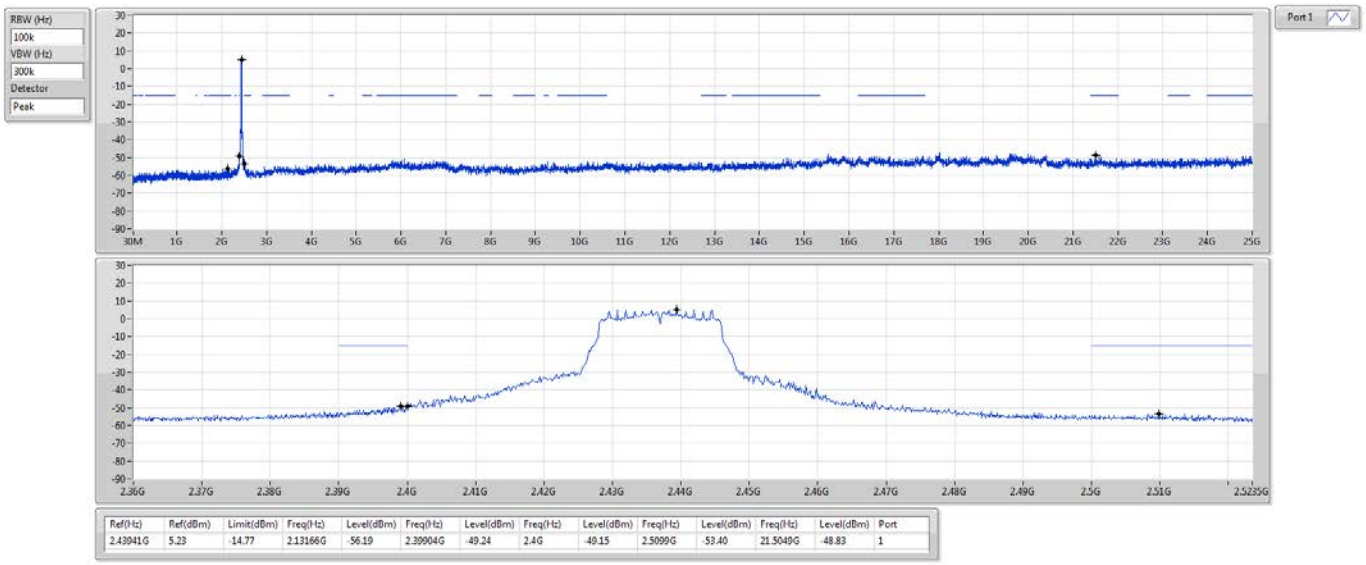
2412MHz



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
2.41687G	5.04	-14.96	2.30874G	-56.96	2.39984G	-29.78	2.4G	-30.77	2.50782G	-54.21	16.22012G	-48.94	1

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

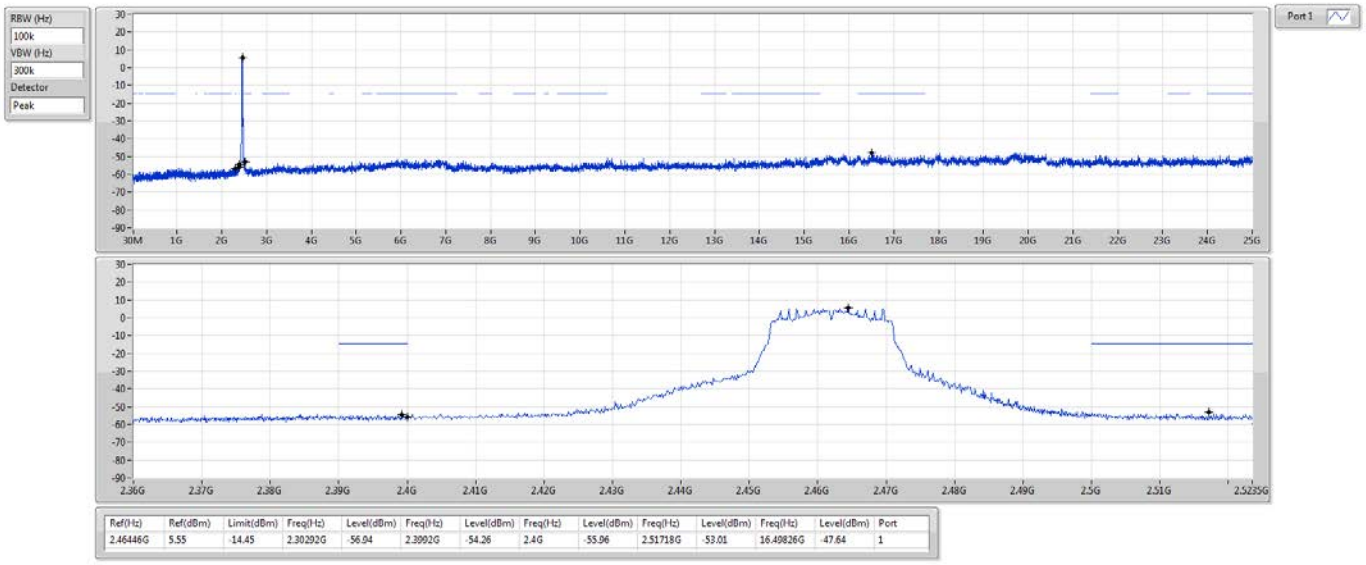
2437MHz



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
2.43941G	5.23	-14.77	2.13166G	-56.19	2.39904G	-49.24	2.4G	-49.15	2.5099G	-53.40	21.5049G	-48.83	1

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

2462MHz

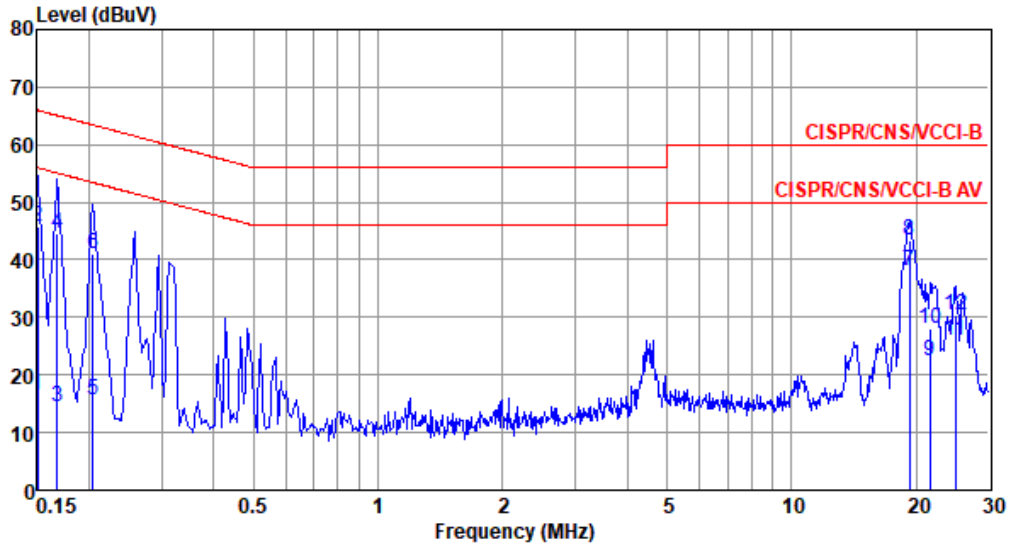


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.46446G	5.55	-14.45	2.30292G	-56.94	2.3992G	-54.26	2.4G	-55.96	2.51718G	-53.01	16.49826G	-47.64	1

Test configuration 1: Cradle mode

Modulation Mode	11g	Test Freq. (MHz)	2412
Power Phase	Line		

Test by : Joe Liao Temperature: 20°C Humidity: 63%

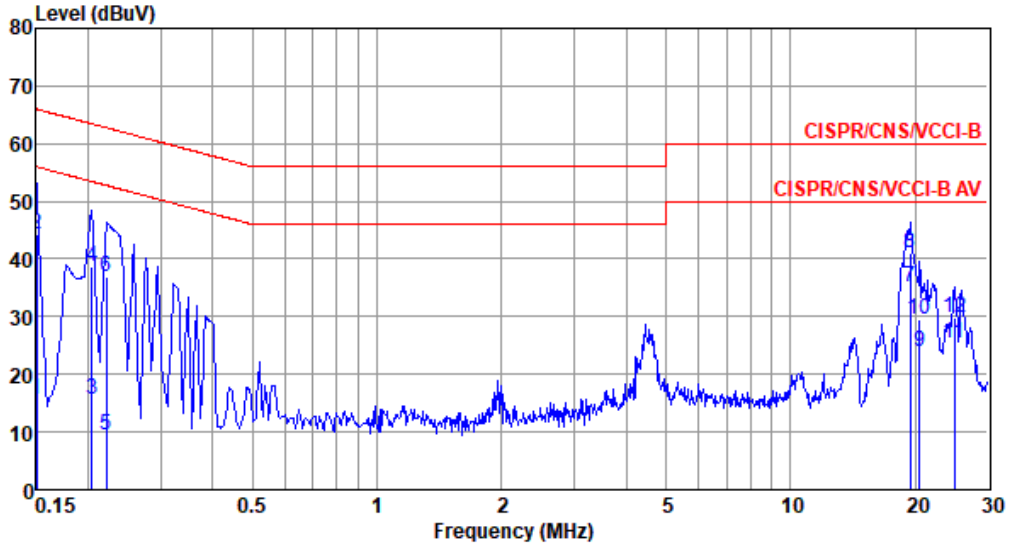


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.150	16.52	56.00	-39.48	6.78	9.68	0.06	0.00	Average
2	0.150	45.76	66.00	-20.24	36.02	9.68	0.06	0.00	QP
3	0.168	14.49	55.08	-40.59	4.75	9.68	0.06	0.00	Average
4	0.168	44.49	65.08	-20.59	34.75	9.68	0.06	0.00	QP
5	0.204	15.66	53.45	-37.79	5.92	9.68	0.06	0.00	Average
6	0.204	41.14	63.45	-22.31	31.40	9.68	0.06	0.00	QP
7*	19.326	38.15	50.00	-11.85	27.92	9.73	0.50	0.00	Average
8	19.326	43.50	60.00	-16.50	33.27	9.73	0.50	0.00	QP
9	21.600	22.33	50.00	-27.67	12.09	9.72	0.52	0.00	Average
10	21.600	28.05	60.00	-31.95	17.81	9.72	0.52	0.00	QP
11	24.922	26.04	50.00	-23.96	15.80	9.70	0.54	0.00	Average
12	24.922	30.55	60.00	-29.45	20.31	9.70	0.54	0.00	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)**	2412
Power Phase	Neutral		

Test by : Joe Liao Temperature: 20°C Humidity: 63%



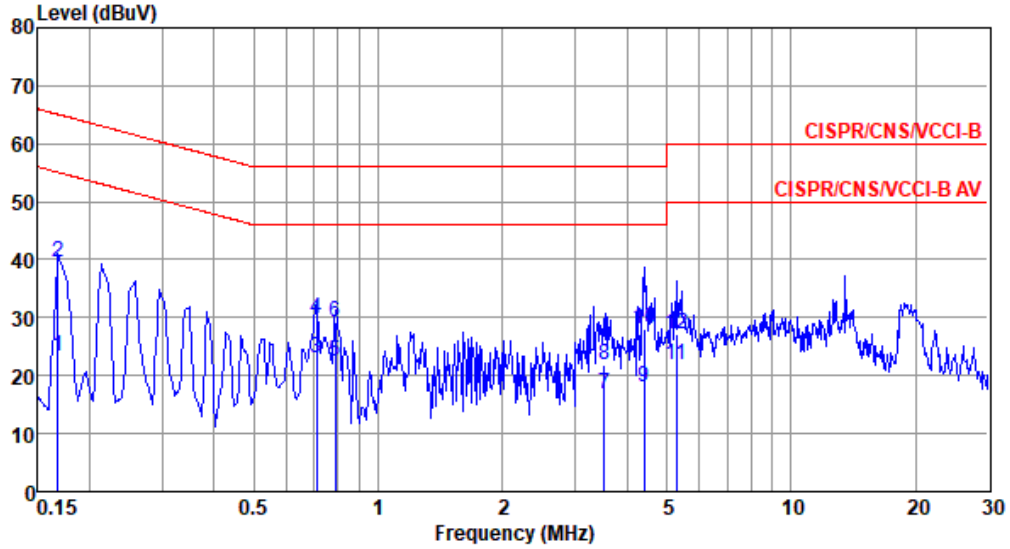
	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.150	15.55	56.00	-40.45	5.88	9.61	0.06	0.00	Average
2	0.150	44.33	66.00	-21.67	34.66	9.61	0.06	0.00	QP
3	0.204	15.56	53.45	-37.89	5.89	9.61	0.06	0.00	Average
4	0.204	38.65	63.45	-24.80	28.98	9.61	0.06	0.00	QP
5	0.222	9.55	52.74	-43.19	-0.12	9.61	0.06	0.00	Average
6	0.222	36.92	62.74	-25.82	27.25	9.61	0.06	0.00	QP
7*	19.428	35.03	50.00	-14.97	24.74	9.79	0.50	0.00	Average
8	19.428	41.05	60.00	-18.95	30.76	9.79	0.50	0.00	QP
9	20.486	23.86	50.00	-26.14	13.56	9.79	0.51	0.00	Average
10	20.486	29.39	60.00	-30.61	19.09	9.79	0.51	0.00	QP
11	24.922	25.38	50.00	-24.62	15.06	9.78	0.54	0.00	Average
12	24.922	29.84	60.00	-30.16	19.52	9.78	0.54	0.00	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).

Test configuration 2: Adapter mode

Modulation Mode	11g	Test Freq. (MHz)	2412
Power Phase	Line		

Test by : Joe Liao Temperature: 21°C Humidity: 64%

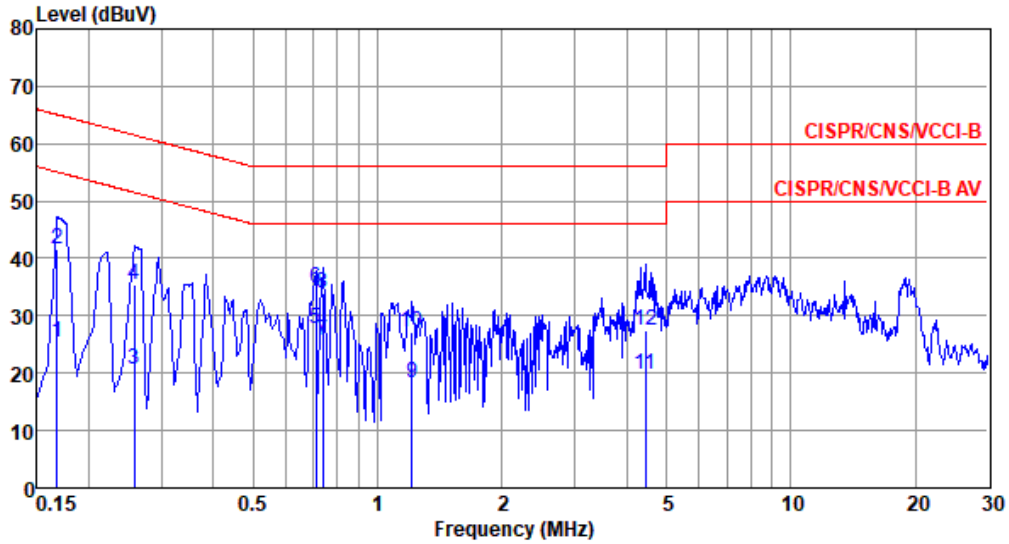


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.168	23.28	55.08	-31.80	13.36	9.68	0.06	0.18	Average
2	0.168	39.63	65.08	-25.45	29.71	9.68	0.06	0.18	QP
3*	0.708	22.90	46.00	-23.10	12.81	9.68	0.09	0.32	Average
4	0.708	29.84	56.00	-26.16	19.75	9.68	0.09	0.32	QP
5	0.788	22.41	46.00	-23.59	12.31	9.68	0.10	0.32	Average
6	0.788	29.08	56.00	-26.92	18.98	9.68	0.10	0.32	QP
7	3.529	16.70	46.00	-29.30	6.42	9.70	0.17	0.41	Average
8	3.529	21.70	56.00	-34.30	11.42	9.70	0.17	0.41	QP
9	4.407	17.97	46.00	-28.03	7.65	9.70	0.20	0.42	Average
10	4.407	28.05	56.00	-27.95	17.73	9.70	0.20	0.42	QP
11	5.277	21.73	50.00	-28.27	11.36	9.71	0.23	0.43	Average
12	5.277	27.28	60.00	-32.72	16.91	9.71	0.23	0.43	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)**	2412
Power Phase	Neutral		

Test by : Joe Liao Temperature: 21°C Humidity: 64%



	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.168	25.44	55.08	-29.64	15.59	9.61	0.06	0.18	Average
2	0.168	41.53	65.08	-23.55	31.68	9.61	0.06	0.18	QP
3	0.258	20.55	51.51	-30.96	10.65	9.61	0.06	0.23	Average
4	0.258	35.50	61.51	-26.01	25.60	9.61	0.06	0.23	QP
5*	0.708	27.87	46.00	-18.13	17.85	9.61	0.09	0.32	Average
6	0.708	34.79	56.00	-21.21	24.77	9.61	0.09	0.32	QP
7	0.735	25.83	46.00	-20.17	15.81	9.61	0.09	0.32	Average
8	0.735	33.82	56.00	-22.18	23.80	9.61	0.09	0.32	QP
9	1.210	18.28	46.00	-27.72	8.21	9.61	0.12	0.34	Average
10	1.210	27.18	56.00	-28.82	17.11	9.61	0.12	0.34	QP
11	4.454	19.77	46.00	-26.23	9.50	9.65	0.20	0.42	Average
12	4.454	27.40	56.00	-28.60	17.13	9.65	0.20	0.42	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).