

FCC C2PC Test Report

FCC ID : MXF-WLRGFM100
Equipment : IOT Femto Gateway
Model No. : WLRGFM-100
Brand Name : Browan
Applicant : Gemtek Technology Co., Ltd.
Address : No. 15-1 Zhonghua Road, Hsinchu Industrial
Park, Hukou, Hsinchu, Taiwan, 30352.
Standard : 47 CFR FCC Part 15.247
Received Date : May 17, 2022
Tested Date : May 26 ~ Jun. 09, 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

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Release Record

Report No.	Version	Description	Issued Date
FR741001-04AC	Rev. 01	Initial issue	Jun. 29, 2022

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emission	[dBuV]: 0.576MHz 34.39 (Margin -11.61dB) - AV	Pass
15.247(d) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 2390.00MHz 52.97 (Margin -1.03dB) - AV	Pass
15.247(b)(3)	Conducted Output Power	Max Power [dBm]: 25.93	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

This is a Class II Permissive Change report (C2PC).

This report is issued as a supplementary report to original report no. FR741001-02AC. The modifications are listed as table below:

Changing list

Report No.	Description of the change	Description
FR741001AC	V01	Original report.
FR741001-02AC	V02	C1PC
FR741001-04AC	V02A	C2PC

Item	V01	V02
Pin Direction of LED1,2,3,4	Same	LED 1 / 3: Horizontal LED 2 / 4: Vertical
Pad size for Antenna card	Original design	Modified to bigger size
Location of R116A, R105, R103, R116	Original design	Downward 2~3 mm Direction of R116A is rotated 90o
Lora RF cable connector	I-PEX	MMCX

Item	V02	V02A
MB-PCB version	V02	V02A
RF card connector	MMCX	lpex
RF cable	MMCX, 120mm	MMCX to lpex, 95mm

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]	2	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15

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	Connector	Gain (dBi)	Remark
1	Monopole	No	3.60	---
2	Monopole	No	3.42	---

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	5Vdc from AC adapter
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1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter 1	Brand: PHIHONG Model: PSAF10A-050Q Power Rating: I/P: 100-240Vac, 50/60Hz, 0.28A O/P: 5Vdc, 2A MAX
2	AC adapter 2	Brand: Tenbao Model: SO10WU0500200 Power Rating: I/P: 100-240Vac, 50/60Hz, 0.4A O/P: 5Vdc, 2A MAX
3	AC adapter 3	Brand: ChenYang Model: CC10-050200U Power Rating: I/P: 100-240Vac, 50/60Hz, 0.35A O/P: 5Vdc, 2A MAX
4	USB cable (for charging use)	1.5m non-shielded without core
5	RJ45 cable	0.95m non-shielded without core

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	Putty, V0.60.0.0		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	100.00%	0.00
	11g	89.04%	0.50
	HT20	88.21%	0.54

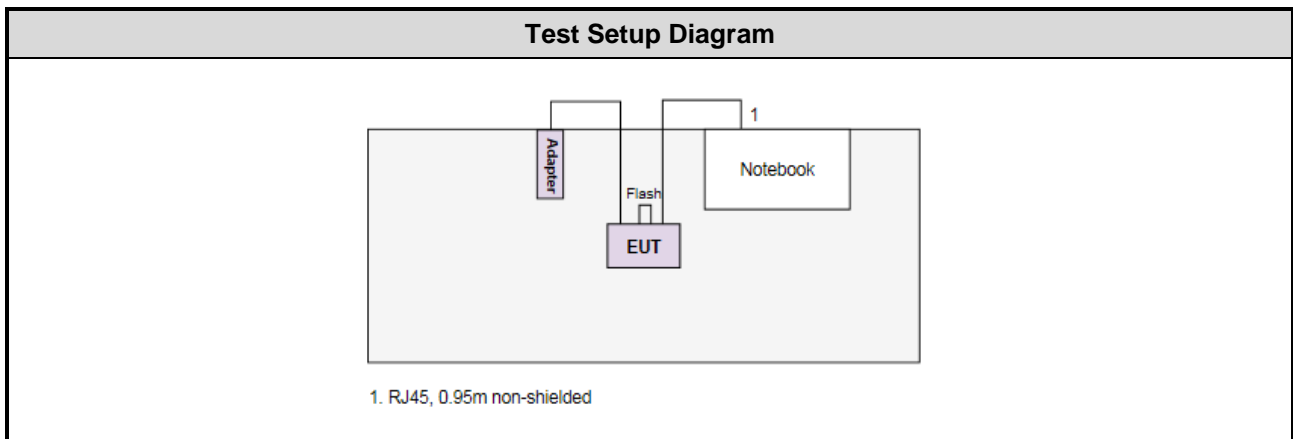
1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	7/12
11b	2437	7/11
11b	2462	7/11
11g	2412	3/7
11g	2437	6/9
11g	2462	4/7
HT20	2412	2/5
HT20	2437	6/9
HT20	2462	3/6

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)
1	Notebook	DELL	Latitude E6430	DoC	RJ45, 0.95m non-shielded.
2	USB 3.0 Flash	Kingston	DTSE9G2	---	---

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Jun. 09, 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. 19, 2021	Oct. 18, 2022
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	Radiated Emission				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	May 26 ~ May 31, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 15, 2022	Mar. 14, 2023
Spectrum Analyzer	R&S	FSV40	101498	Nov. 29, 2021	Nov. 28, 2022
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 08, 2021	Nov. 07, 2022
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jun. 30, 2021	Jun. 29, 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 9170508	Jan. 11, 2022	Jan. 10, 2023
Preamplifier	EMC	EMC02325	980225	Jun. 29, 2021	Jun. 28, 2022
Preamplifier	Agilent	83017A	MY39501308	Sep. 28, 2021	Sep. 27, 2022
Preamplifier	EMC	EMC184045B	980192	Jul. 14, 2021	Jul. 13, 2022
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 05, 2021	Oct. 04, 2022
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 05, 2021	Oct. 04, 2022
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 05, 2021	Oct. 04, 2022
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 05, 2021	Oct. 04, 2022
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	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Jun. 06, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101910	Apr. 18, 2022	Apr. 17, 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	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
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

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

- ✧ The tests reported herein were performed according to the original worst case conditions in original report no. FR741001-02AC.

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
AC Power Line Conducted Emission	11g	2412	6 Mbps	---
Unwanted Emissions \leq 1GHz	11g	2412	6 Mbps	---
Unwanted Emissions $>$ 1GHz	11b 11g HT20	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462	1 Mbps 6 Mbps MCS 0	---
Conducted Output Power 6dB bandwidth Power spectral density	11g HT20	2412 / 2462 2462	6 Mbps MCS 0	---
<p>Note:</p> <p>1. Three adapters (PHIHONG, Tenbao and ChenYang) had been covered during the pre-test and found that PHIHONG adapter was the worst case for radiated emission and ChenYang adapter was the worst case for conducted emission test.</p>				

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

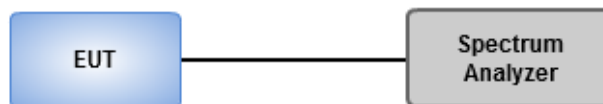
6dB Bandwidth

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	21°C / 63%	Tested By	Aska Huang
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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 $\leq 6\text{dBi}$, no any corresponding reduction is in output power limit.

Antenna gain $> 6\text{dBi}$

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

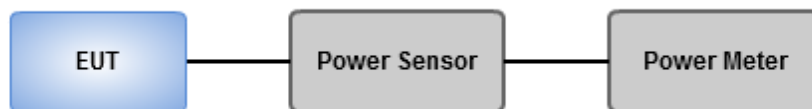
Fixed, point to point operations

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	21°C / 63%	Tested By	Aska Huang
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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.

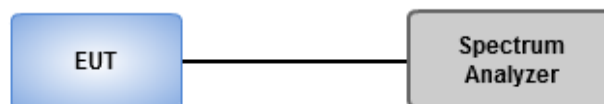
Average PSD, duty cycle \geq 98%

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	21°C / 63%	Tested By	Aska Huang
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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:
Quasi-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

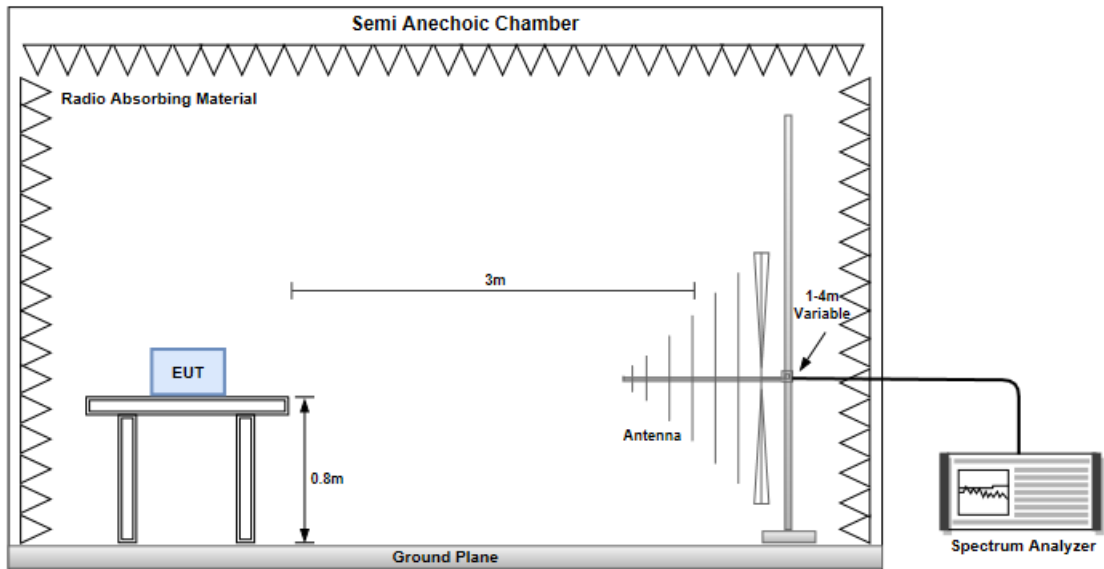
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

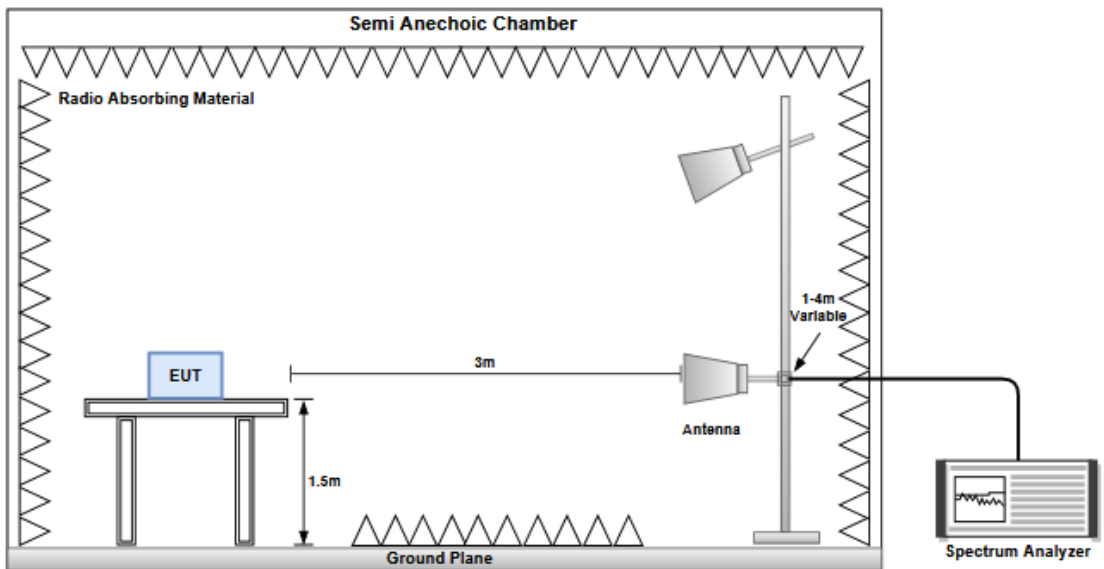
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

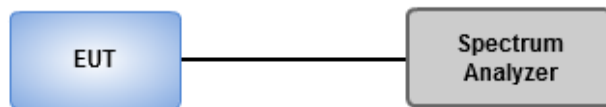
Reference level measurement

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	21°C / 63%	Tested By	Aska Huang
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Refer to Appendix E.

3.6 AC Power Line Conducted Emissions

3.6.1 Limit of AC Power Line Conducted Emissions

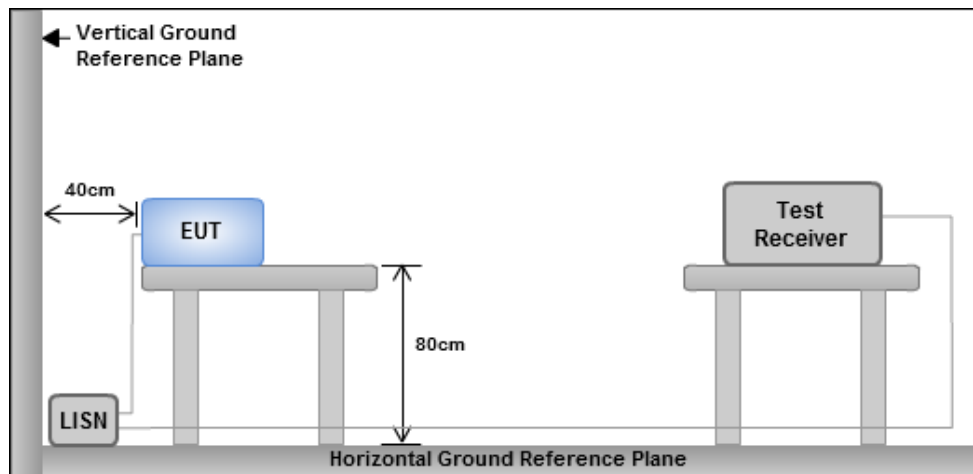
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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	-	-	-	-	-
802.11g_Nss1,(6Mbps)_2TX	16.35M	16.767M	16M8D1D	16.3M	16.667M
802.11n HT20_Nss1,(MCS0)_2TX	17.325M	17.666M	17M7D1D	17.325M	17.641M

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)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.35M	16.667M	16.3M	16.667M
2462MHz	Pass	500k	16.35M	16.767M	16.35M	16.717M
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2462MHz	Pass	500k	17.325M	17.666M	17.325M	17.641M

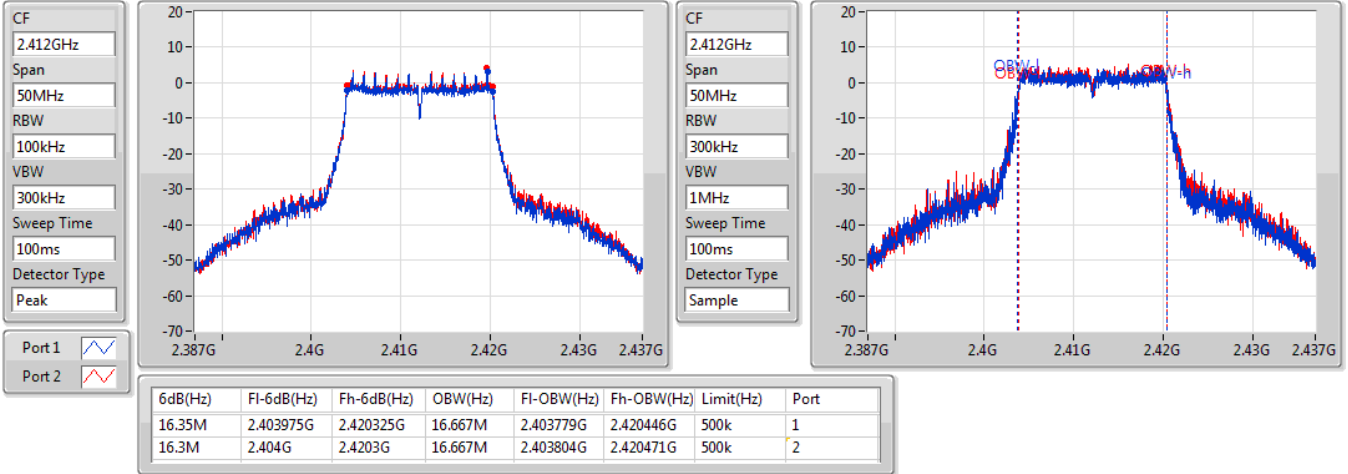
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth



802.11g_Nss1,(6Mbps)_2TX

EBW

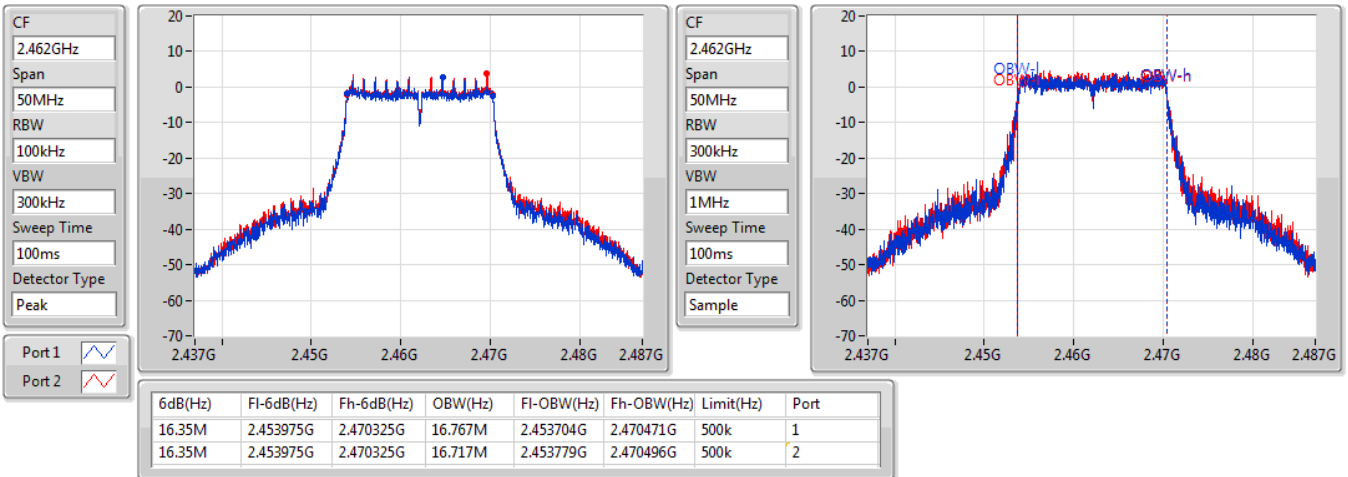
2412MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

2462MHz



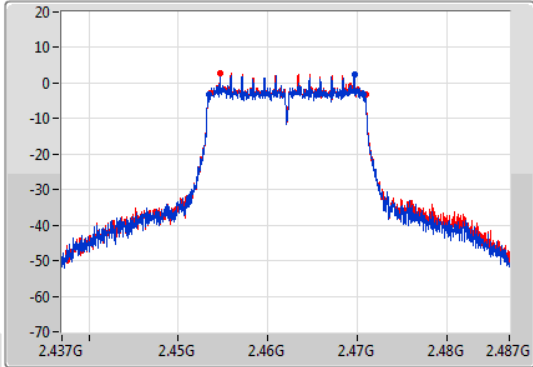


802.11n HT20_Nss1,(MCS0)_2TX

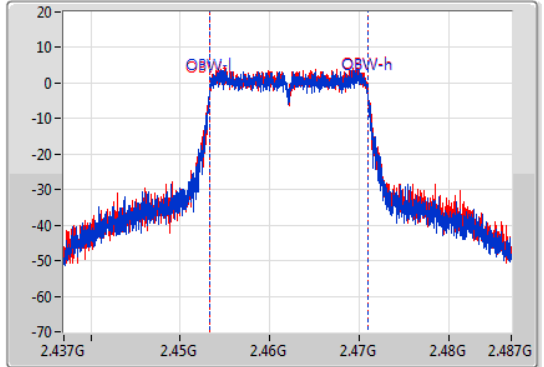
EBW

2462MHz

CF
2.462GHz
Span
50MHz
RBW
100kHz
VBW
300kHz
Sweep Time
100ms
Detector Type
Peak



CF
2.462GHz
Span
50MHz
RBW
300kHz
VBW
1MHz
Sweep Time
100ms
Detector Type
Sample



Port 1
Port 2

6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
17.325M	2.453375G	2.4707G	17.666M	2.453304G	2.470971G	500k	1
17.325M	2.4536G	2.470925G	17.641M	2.453304G	2.470946G	500k	2



Summary of Peak Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11g_Nss1,(6Mbps)_2TX	25.93	0.39174
802.11n HT20_Nss1,(MCS0)_2TX	25.32	0.34041

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.60	22.68	23.15	25.93	30.00	29.53	36.00
2462MHz	Pass	3.60	22.56	22.87	25.73	30.00	29.33	36.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2462MHz	Pass	3.60	22.03	22.57	25.32	30.00	28.92	36.00

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

Summary of Average Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11g_Nss1,(6Mbps)_2TX	17.81	0.06039
802.11n HT20_Nss1,(MCS0)_2TX	17.20	0.05248

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.60	14.57	15.02	17.81	-	21.41	-
2462MHz	Pass	3.60	14.39	14.82	17.62	-	21.22	-
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2462MHz	Pass	3.60	14.01	14.36	17.20	-	20.80	-

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	-
802.11g_Nss1,(6Mbps)_2TX	-10.43
802.11n HT20_Nss1,(MCS0)_2TX	-10.39

RBW = 3kHz;

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	6.52	-12.84	-12.36	-10.48	7.48
2462MHz	Pass	6.52	-13.57	-12.44	-10.43	7.48
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2462MHz	Pass	6.52	-12.25	-12.29	-10.39	7.48

DG = Directional Gain $10 * \log((10^{3.6/20}+10^{3.42/20})^2/2) = 6.52 \text{ dBi} > 6 \text{ dBi}$
Limit shall be reduced to 8 dBm – (6.52 dBi – 6 dBi) = 7.48 dBm

PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;
RBW = 3kHz;

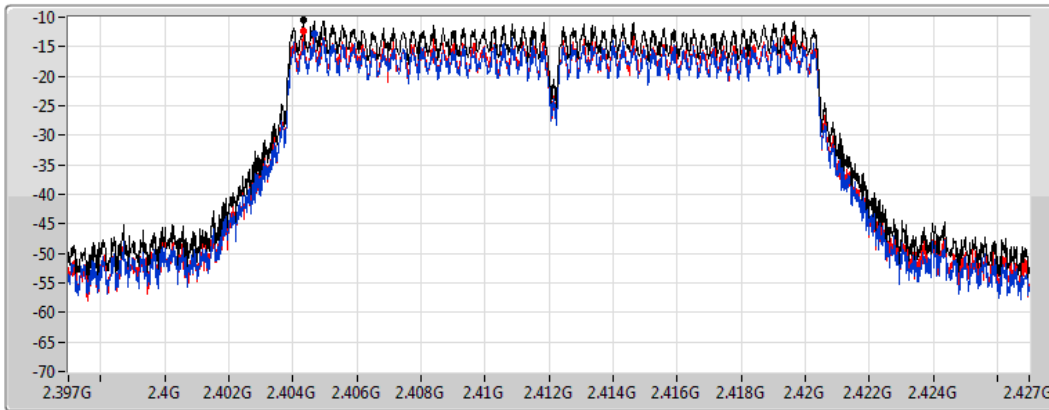


802.11g_Nss1,(6Mbps)_2TX

PSD

2412MHz

CF
2.412GHz
Span
30MHz
RBW
3kHz
VBW
10kHz
Sweep Time
334ms
Detector Type
Peak



Sum
Port 1
Port 2

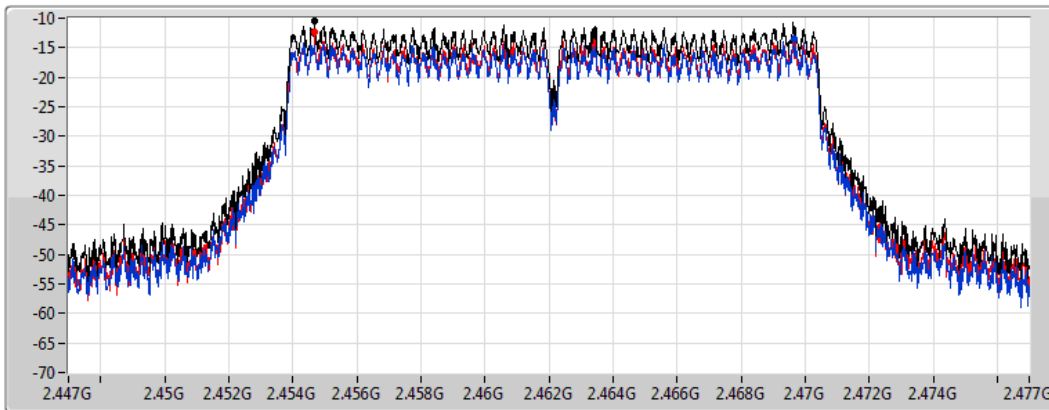
Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.48	-10.48	-12.84	-12.36

802.11g_Nss1,(6Mbps)_2TX

PSD

2462MHz

CF
2.462GHz
Span
30MHz
RBW
3kHz
VBW
10kHz
Sweep Time
334ms
Detector Type
Peak



Sum
Port 1
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.43	-10.43	-13.57	-12.44

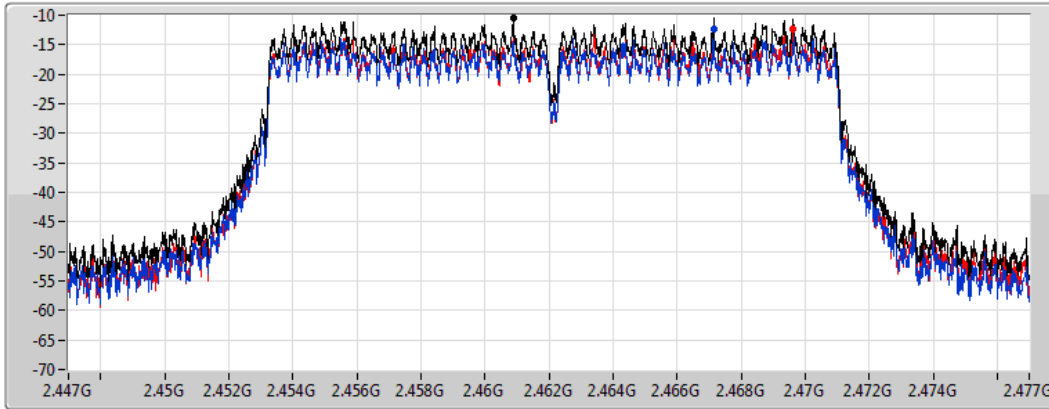


802.11n HT20_Nss1,(MCS0)_2TX

PSD

2462MHz

CF
2.462GHz
Span
30MHz
RBW
3kHz
VBW
10kHz
Sweep Time
334ms
Detector Type
Peak



Sum
Port 1
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-10.39	-10.39	-12.25	-12.29

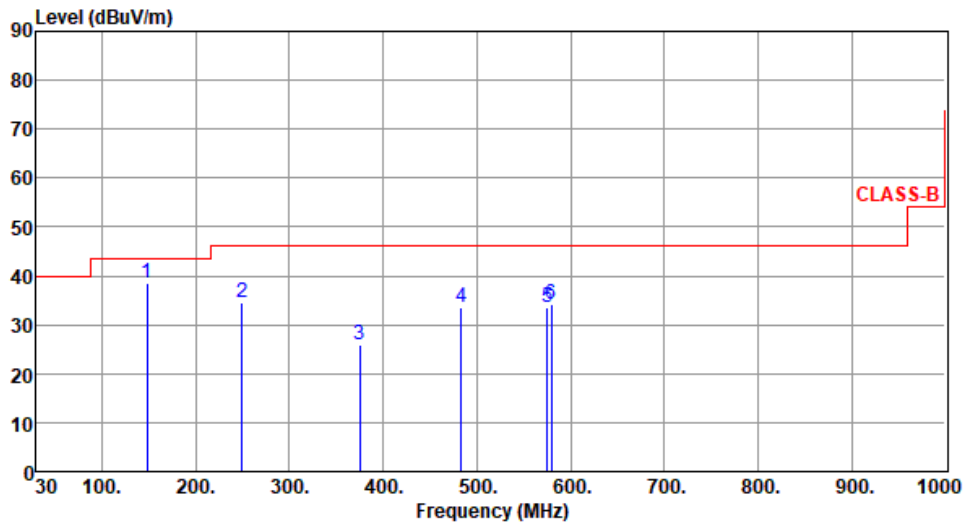


Unwanted Emissions (Below 1GHz)

Modulation	11g	Test Freq. (MHz)	2412
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Polarization	Horizontal
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Test By :Roger Lu Temperature(°C):25 Humidity(%):66



	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	148.56	38.45	43.50	-5.05	47.47	-9.02	Peak	---	---
2	249.45	34.58	46.00	-11.42	44.65	-10.07	Peak	---	---
3	374.89	25.91	46.00	-20.09	32.24	-6.33	Peak	---	---
4	483.59	33.45	46.00	-12.55	37.19	-3.74	Peak	---	---
5	574.98	33.45	46.00	-12.55	35.24	-1.79	Peak	---	---
6	579.45	34.15	46.00	-11.85	35.83	-1.68	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

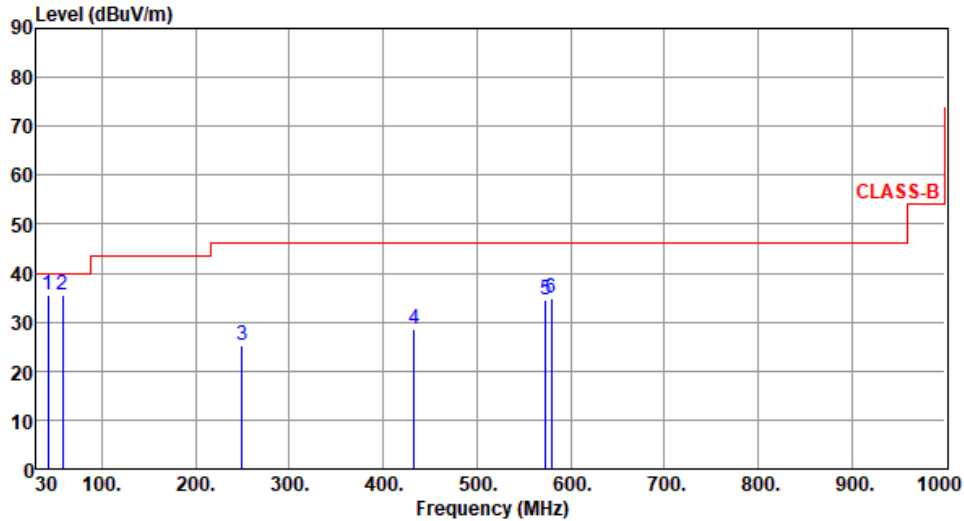
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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 :Roger Lu Temperature(°C):25 Humidity(%):66



	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	42.45	35.45	40.00	-4.55	43.88	-8.43	Peak	---	---
2	58.45	35.67	40.00	-4.33	44.93	-9.26	QP	100	268
3	249.54	25.18	46.00	-20.82	35.25	-10.07	Peak	---	---
4	433.45	28.56	46.00	-17.44	33.28	-4.72	Peak	---	---
5	573.45	34.67	46.00	-11.33	36.49	-1.82	Peak	---	---
6	579.64	34.86	46.00	-11.14	36.53	-1.67	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

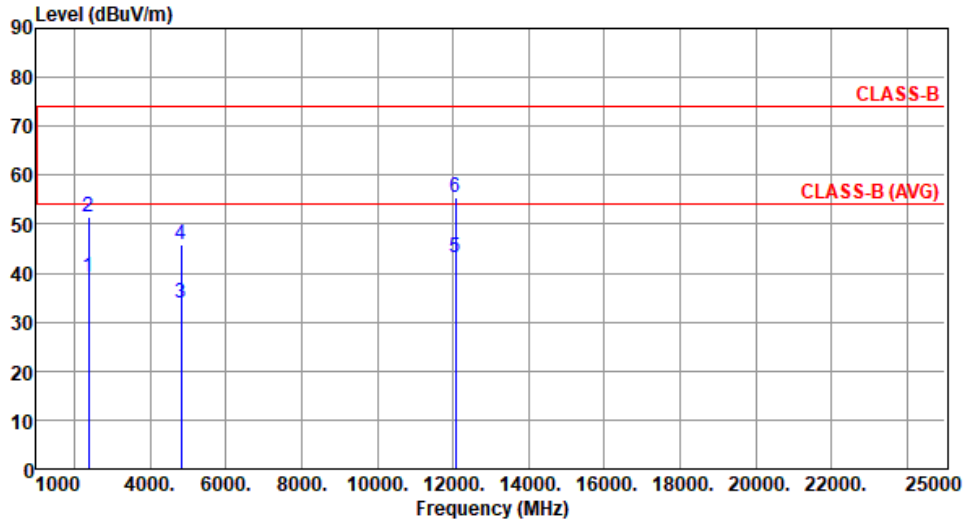
Modulation	11b	Test Freq. (MHz)	2412						
Polarization	Horizontal								
Test By :Roger Lu Temperature(°C):24 Humidity(%):63									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	43.11	54.00	-10.89	45.86	-2.75	Average	100	185
2	2390.00	53.62	74.00	-20.38	56.37	-2.75	Peak	100	185
3	4824.00	36.89	54.00	-17.11	32.75	4.14	Average	100	15
4	4824.00	46.73	74.00	-27.27	42.59	4.14	Peak	100	15
5	12060.00	43.03	54.00	-10.97	29.24	13.79	Average	100	60
6	12060.00	55.36	74.00	-18.64	41.57	13.79	Peak	100	60

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(°C):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	2390.00	39.04	54.00	-14.96	41.79	-2.75	Average	388	145
2	2390.00	51.43	74.00	-22.57	54.18	-2.75	Peak	388	145
3	4824.00	33.72	54.00	-20.28	29.58	4.14	Average	100	233
4	4824.00	45.68	74.00	-28.32	41.54	4.14	Peak	100	233
5	12060.00	43.06	54.00	-10.94	29.27	13.79	Average	100	30
6	12060.00	55.42	74.00	-18.58	41.63	13.79	Peak	100	30

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

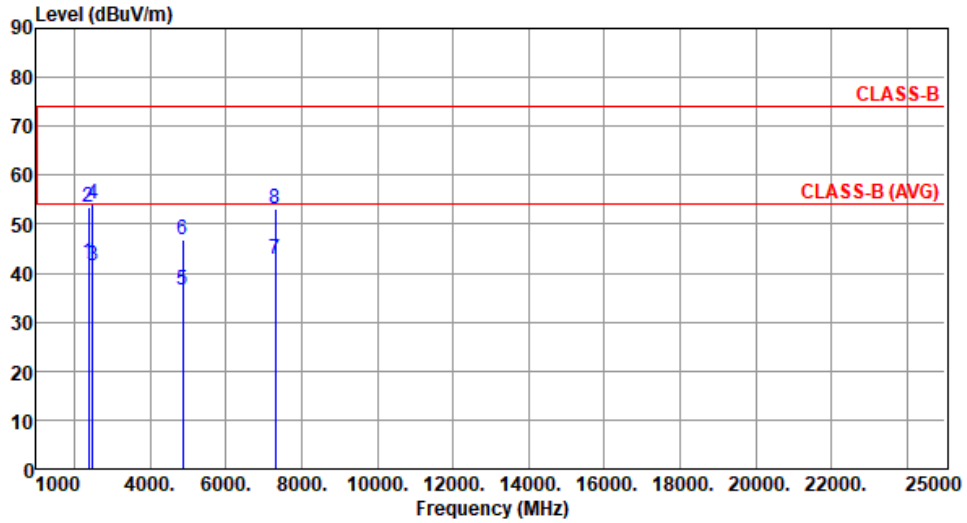
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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

Test By : Roger Lu Temperature(°C):25 Humidity(%):68



	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	42.04	54.00	-11.96	44.79	-2.75	Average	100	182
2	2390.00	53.37	74.00	-20.63	56.12	-2.75	Peak	100	182
3	2483.50	41.40	54.00	-12.60	44.10	-2.70	Average	100	182
4	2483.50	54.17	74.00	-19.83	56.87	-2.70	Peak	100	182
5	4874.00	36.69	54.00	-17.31	32.56	4.13	Average	100	14
6	4874.00	46.83	74.00	-27.17	42.70	4.13	Peak	100	14
7	7311.00	42.94	54.00	-11.06	33.66	9.28	Average	100	318
8	7311.00	53.27	74.00	-20.73	43.99	9.28	Peak	100	318

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

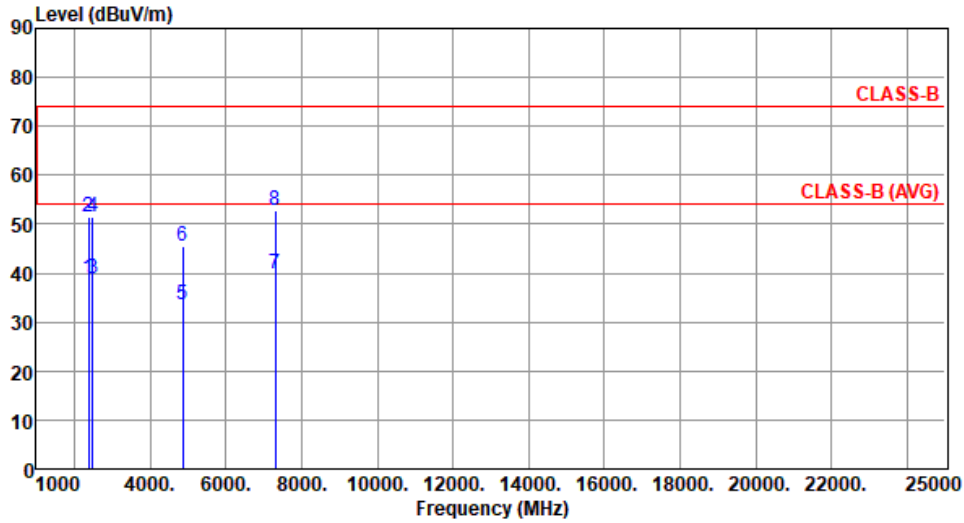
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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

Test By :Roger Lu Temperature(°C):25 Humidity(%):68



	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	38.83	54.00	-15.17	41.58	-2.75	Average	385	145
2	2390.00	51.40	74.00	-22.60	54.15	-2.75	Peak	385	145
3	2483.50	38.95	54.00	-15.05	41.65	-2.70	Average	385	145
4	2483.50	51.49	74.00	-22.51	54.19	-2.70	Peak	385	145
5	4874.00	33.46	54.00	-20.54	29.33	4.13	Average	100	230
6	4874.00	45.42	74.00	-28.58	41.29	4.13	Peak	100	230
7	7311.00	39.97	54.00	-14.03	30.69	9.28	Average	100	226
8	7311.00	52.72	74.00	-21.28	43.44	9.28	Peak	100	226

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

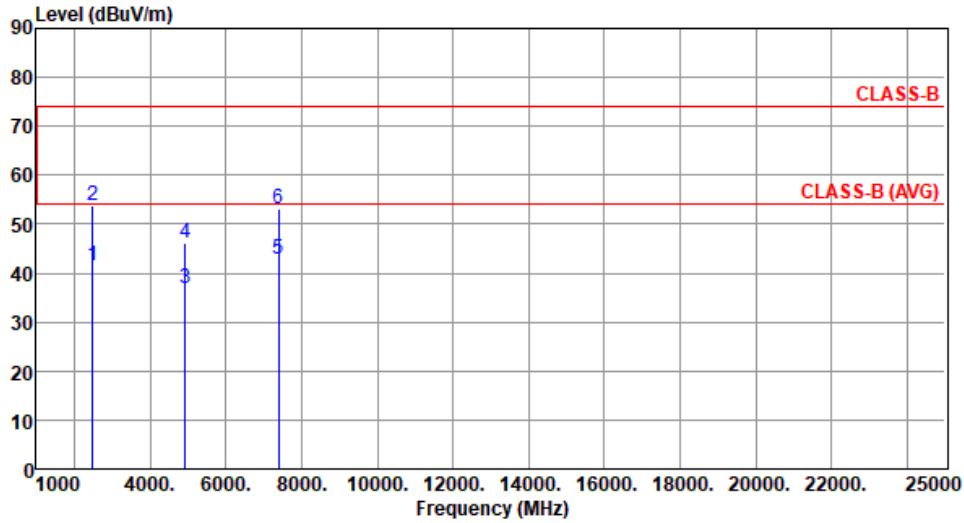
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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

Test By : Roger Lu Temperature(°C):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	2483.50	41.37	54.00	-12.63	44.07	-2.70	Average	100	183
2	2483.50	53.73	74.00	-20.27	56.43	-2.70	Peak	100	183
3	4924.00	36.94	54.00	-17.06	32.88	4.06	Average	100	16
4	4924.00	46.21	74.00	-27.79	42.15	4.06	Peak	100	16
5	7386.00	42.79	54.00	-11.21	33.54	9.25	Average	100	320
6	7386.00	53.13	74.00	-20.87	43.88	9.25	Peak	100	320

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

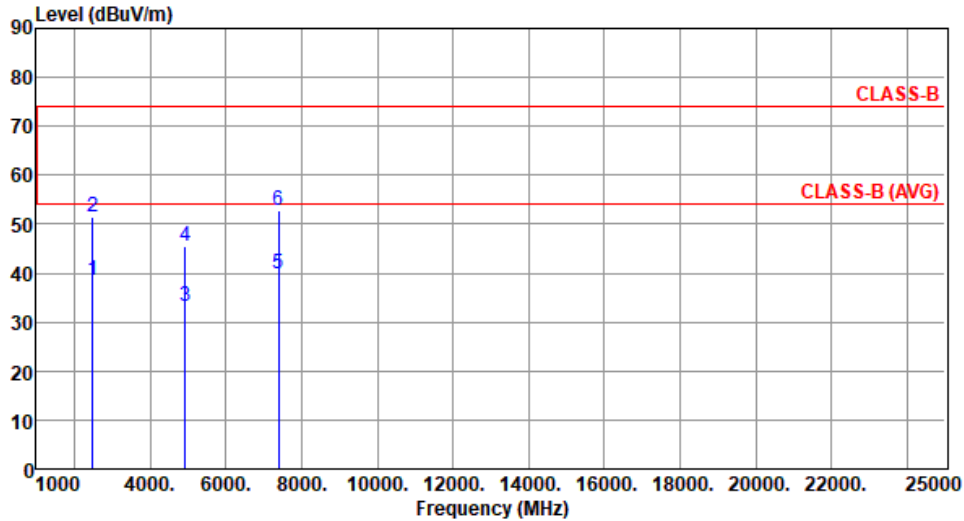
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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

Test By :Roger Lu Temperature(°C):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	2483.50	38.51	54.00	-15.49	41.21	-2.70	Average	381	149
2	2483.50	51.49	74.00	-22.51	54.19	-2.70	Peak	381	149
3	4924.00	33.31	54.00	-20.69	29.25	4.06	Average	100	232
4	4924.00	45.62	74.00	-28.38	41.56	4.06	Peak	100	232
5	7386.00	39.70	54.00	-14.30	30.45	9.25	Average	100	229
6	7386.00	52.83	74.00	-21.17	43.58	9.25	Peak	100	229

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(°C):25 Humidity(%):68									
	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	52.89	54.00	-1.11	55.64	-2.75	Average	107	172
2	2390.00	71.63	74.00	-2.37	74.38	-2.75	Peak	107	172
3	4824.00	32.16	54.00	-21.84	28.02	4.14	Average	100	30
4	4824.00	44.70	74.00	-29.30	40.56	4.14	Peak	100	30
5	12060.00	42.93	54.00	-11.07	29.14	13.79	Average	100	40
6	12060.00	56.09	74.00	-17.91	42.30	13.79	Peak	100	40

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).

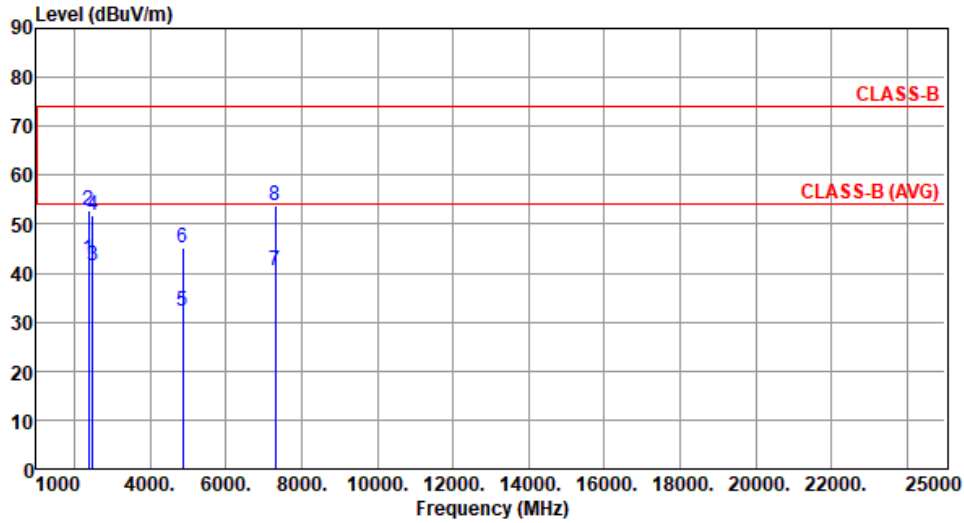


Modulation	11g	Test Freq. (MHz)	2412						
Polarization	Vertical								
Test By : Roger Lu Temperature(°C):25 Humidity(%):68									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	47.64	54.00	-6.36	50.39	-2.75	Average	390	143
2	2390.00	65.87	74.00	-8.13	68.62	-2.75	Peak	390	143
3	4824.00	32.03	54.00	-21.97	27.89	4.14	Average	100	60
4	4824.00	44.62	74.00	-29.38	40.48	4.14	Peak	100	60
5	12060.00	42.80	54.00	-11.20	29.01	13.79	Average	100	30
6	12060.00	55.93	74.00	-18.07	42.14	13.79	Peak	100	30
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(°C):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	2390.00	42.71	54.00	-11.29	45.46	-2.75	Average	100	179
2	2390.00	52.83	74.00	-21.17	55.58	-2.75	Peak	100	179
3	2483.50	41.62	54.00	-12.38	44.32	-2.70	Average	100	179
4	2483.50	51.84	74.00	-22.16	54.54	-2.70	Peak	100	179
5	4874.00	32.27	54.00	-21.73	28.14	4.13	Average	100	28
6	4874.00	45.30	74.00	-28.70	41.17	4.13	Peak	100	28
7	7311.00	40.50	54.00	-13.50	31.22	9.28	Average	100	322
8	7311.00	53.94	74.00	-20.06	44.66	9.28	Peak	100	322

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

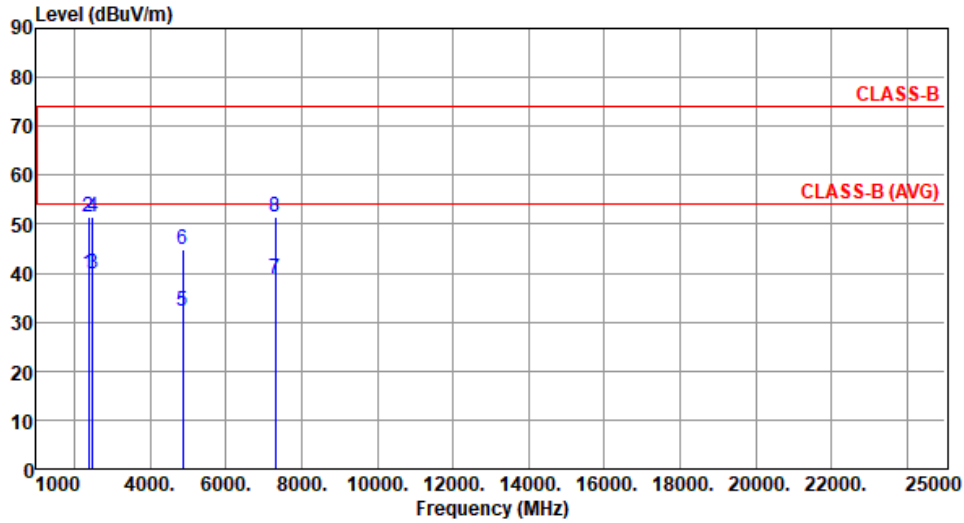
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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

Test By : Roger Lu Temperature(°C):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	2390.00	39.90	54.00	-14.10	42.65	-2.75	Average	376	148
2	2390.00	51.44	74.00	-22.56	54.19	-2.75	Peak	376	148
3	2483.50	39.78	54.00	-14.22	42.48	-2.70	Average	376	148
4	2483.50	51.32	74.00	-22.68	54.02	-2.70	Peak	376	148
5	4874.00	32.15	54.00	-21.85	28.02	4.13	Average	100	230
6	4874.00	44.72	74.00	-29.28	40.59	4.13	Peak	100	230
7	7311.00	38.86	54.00	-15.14	29.58	9.28	Average	100	225
8	7311.00	51.43	74.00	-22.57	42.15	9.28	Peak	100	225

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

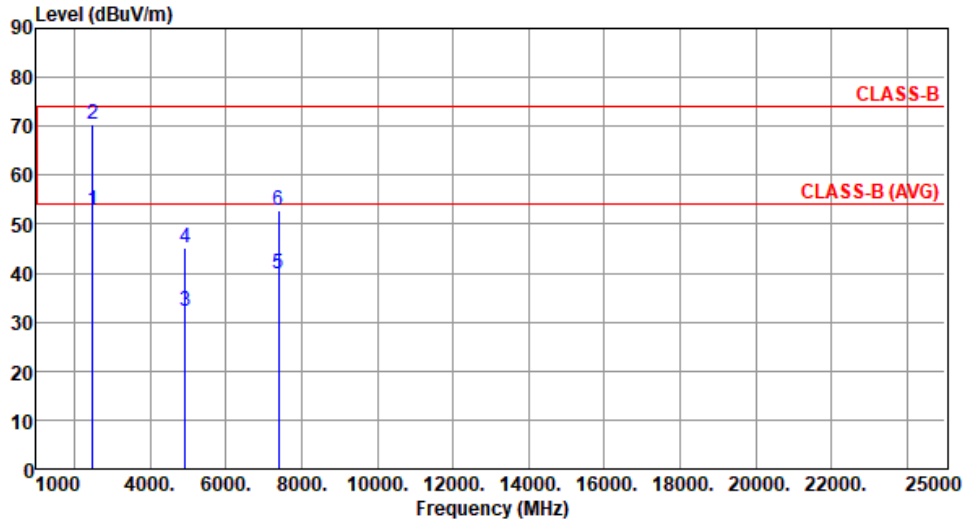
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



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

Test By :Roger Lu Temperature(°C):25 Humidity(%):68



	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	52.95	54.00	-1.05	55.65	-2.70	Average	147	191
2	2483.50	70.31	74.00	-3.69	73.01	-2.70	Peak	147	191
3	4924.00	32.11	54.00	-21.89	28.05	4.06	Average	100	22
4	4924.00	45.09	74.00	-28.91	41.03	4.06	Peak	100	22
5	7386.00	39.79	54.00	-14.21	30.54	9.25	Average	100	325
6	7386.00	52.74	74.00	-21.26	43.49	9.25	Peak	100	325

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).



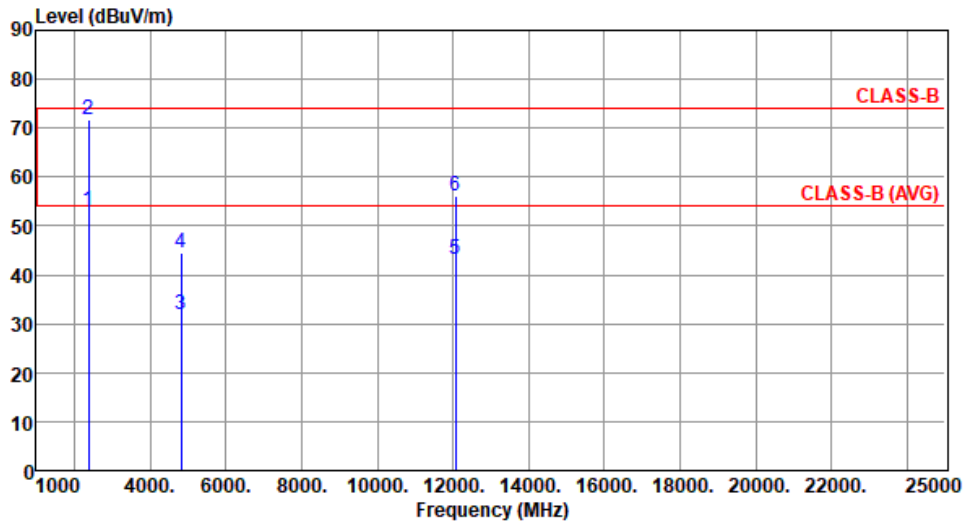
Modulation	11g	Test Freq. (MHz)	2462																																																																							
Polarization	Vertical																																																																									
Test By : Roger Lu Temperature(°C):25 Humidity(%):68																																																																										
<p>The graph plots Level (dBuV/m) on the y-axis (0 to 90) against Frequency (MHz) on the x-axis (1000 to 25000). Two horizontal red lines represent CLASS-B limits: one at approximately 75 dBuV/m and another at approximately 55 dBuV/m. Six vertical blue lines represent emission peaks, labeled 1 through 6, with their corresponding data listed in the table below.</p>																																																																										
	<table border="1"> <thead> <tr> <th></th> <th>Freq. MHz</th> <th>Emission level dBuV/m</th> <th>Limit dBuV/m</th> <th>Margin dB</th> <th>SA reading dBuV</th> <th>Factor dB/m</th> <th>Remark</th> <th>ANT High cm</th> <th>Turn Table deg</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2483.50</td> <td>48.19</td> <td>54.00</td> <td>-5.81</td> <td>50.89</td> <td>-2.70</td> <td>Average</td> <td>379</td> <td>142</td> </tr> <tr> <td>2</td> <td>2483.50</td> <td>65.75</td> <td>74.00</td> <td>-8.25</td> <td>68.45</td> <td>-2.70</td> <td>Peak</td> <td>379</td> <td>142</td> </tr> <tr> <td>3</td> <td>4924.00</td> <td>31.93</td> <td>54.00</td> <td>-22.07</td> <td>27.87</td> <td>4.06</td> <td>Average</td> <td>100</td> <td>30</td> </tr> <tr> <td>4</td> <td>4924.00</td> <td>44.85</td> <td>74.00</td> <td>-29.15</td> <td>40.79</td> <td>4.06</td> <td>Peak</td> <td>100</td> <td>30</td> </tr> <tr> <td>5</td> <td>7386.00</td> <td>38.53</td> <td>54.00</td> <td>-15.47</td> <td>29.28</td> <td>9.25</td> <td>Average</td> <td>100</td> <td>60</td> </tr> <tr> <td>6</td> <td>7386.00</td> <td>51.41</td> <td>74.00</td> <td>-22.59</td> <td>42.16</td> <td>9.25</td> <td>Peak</td> <td>100</td> <td>60</td> </tr> </tbody> </table>		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	48.19	54.00	-5.81	50.89	-2.70	Average	379	142	2	2483.50	65.75	74.00	-8.25	68.45	-2.70	Peak	379	142	3	4924.00	31.93	54.00	-22.07	27.87	4.06	Average	100	30	4	4924.00	44.85	74.00	-29.15	40.79	4.06	Peak	100	30	5	7386.00	38.53	54.00	-15.47	29.28	9.25	Average	100	60	6	7386.00	51.41	74.00	-22.59	42.16	9.25	Peak	100	60			
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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(°C):25 Humidity(%):68



	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	52.97	54.00	-1.03	55.72	-2.75	Average	111	175
2	2390.00	71.87	74.00	-2.13	74.62	-2.75	Peak	111	175
3	4824.00	32.03	54.00	-21.97	27.89	4.14	Average	100	60
4	4824.00	44.59	74.00	-29.41	40.45	4.14	Peak	100	60
5	12060.00	43.03	54.00	-10.97	29.24	13.79	Average	100	80
6	12060.00	56.24	74.00	-17.76	42.45	13.79	Peak	100	80

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

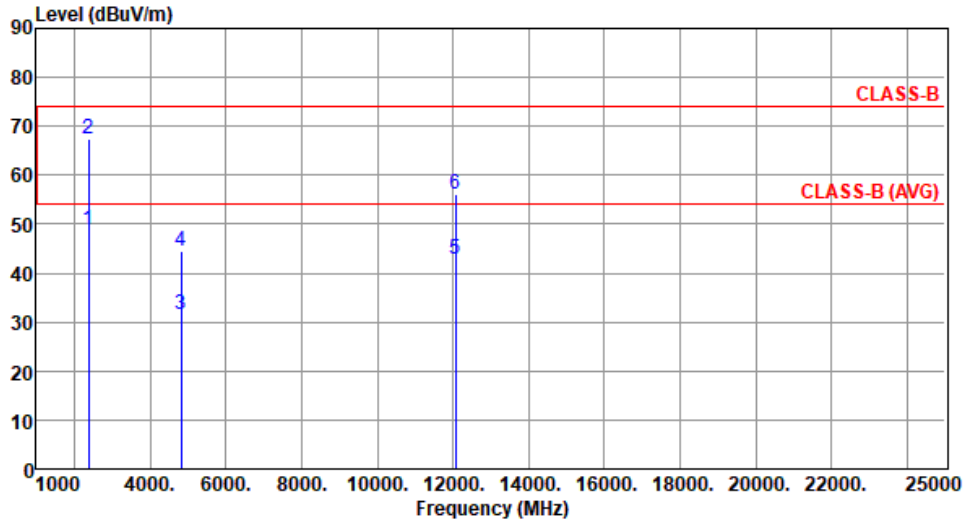
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		

Test By : Roger Lu Temperature(°C):25 Humidity(%):68



	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	48.89	54.00	-5.11	51.64	-2.75	Average	113	179
2	2390.00	67.50	74.00	-6.50	70.25	-2.75	Peak	113	179
3	4824.00	31.70	54.00	-22.30	27.56	4.14	Average	100	40
4	4824.00	44.42	74.00	-29.58	40.28	4.14	Peak	100	40
5	12060.00	42.90	54.00	-11.10	29.11	13.79	Average	100	90
6	12060.00	56.09	74.00	-17.91	42.30	13.79	Peak	100	90

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

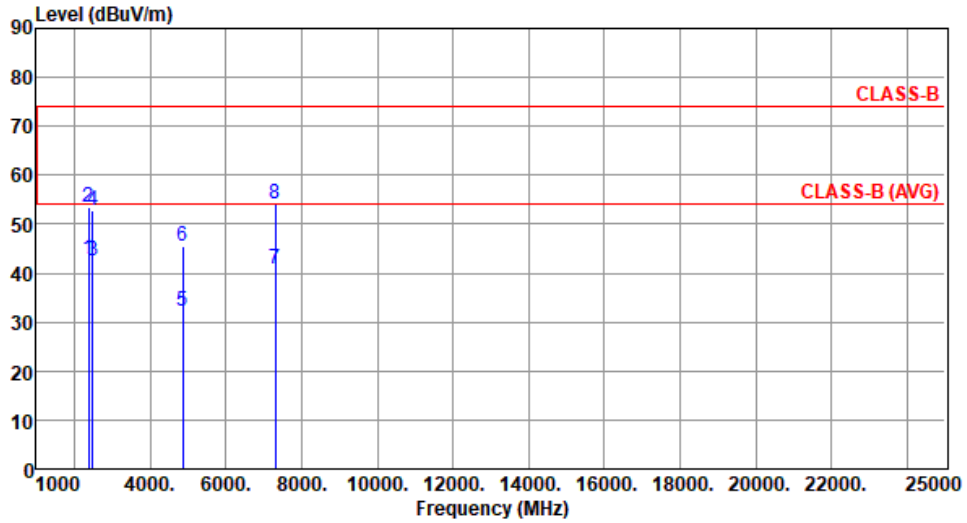
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		

Test By : Roger Lu Temperature(°C):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	2390.00	42.90	54.00	-11.10	45.65	-2.75	Average	100	178
2	2390.00	53.40	74.00	-20.60	56.15	-2.75	Peak	100	178
3	2483.50	42.51	54.00	-11.49	45.21	-2.70	Average	100	178
4	2483.50	52.89	74.00	-21.11	55.59	-2.70	Peak	100	178
5	4874.00	32.38	54.00	-21.62	28.25	4.13	Average	100	31
6	4874.00	45.42	74.00	-28.58	41.29	4.13	Peak	100	31
7	7311.00	40.73	54.00	-13.27	31.45	9.28	Average	100	326
8	7311.00	54.17	74.00	-19.83	44.89	9.28	Peak	100	326

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

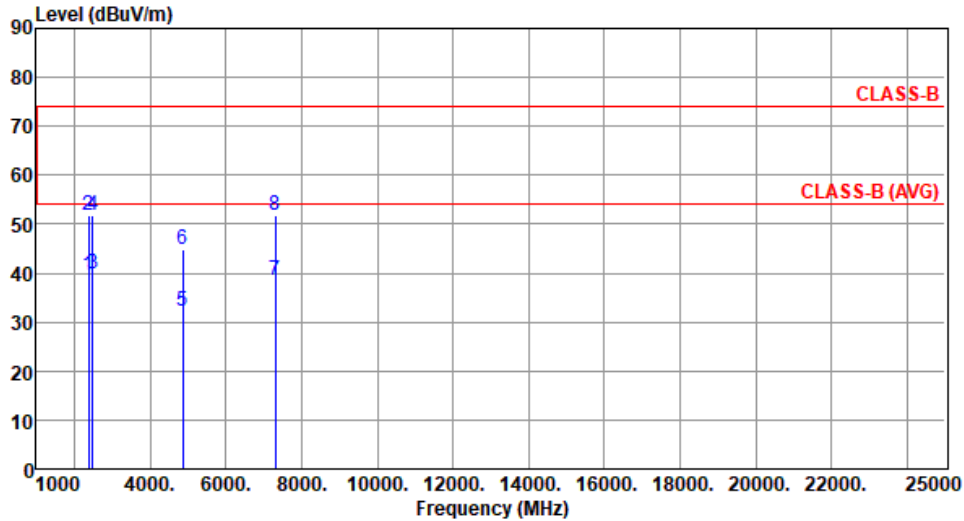
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		

Test By : Roger Lu Temperature(°C):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	2390.00	39.59	54.00	-14.41	42.34	-2.75	Average	381	146
2	2390.00	51.75	74.00	-22.25	54.50	-2.75	Peak	381	146
3	2483.50	39.73	54.00	-14.27	42.43	-2.70	Average	381	146
4	2483.50	51.84	74.00	-22.16	54.54	-2.70	Peak	381	146
5	4874.00	32.19	54.00	-21.81	28.06	4.13	Average	100	70
6	4874.00	44.78	74.00	-29.22	40.65	4.13	Peak	100	70
7	7311.00	38.64	54.00	-15.36	29.36	9.28	Average	100	60
8	7311.00	51.65	74.00	-22.35	42.37	9.28	Peak	100	60

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

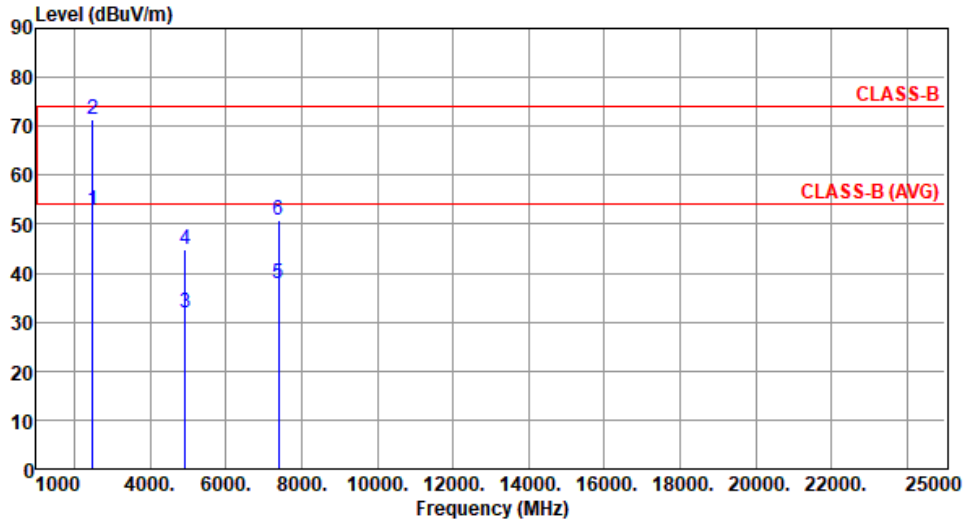
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Horizontal		

Test By : Roger Lu Temperature(°C):25 Humidity(%):68



	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	52.89	54.00	-1.11	55.59	-2.70	Average	107	170
2	2483.50	71.38	74.00	-2.62	74.08	-2.70	Peak	107	170
3	4924.00	31.85	54.00	-22.15	27.79	4.06	Average	100	25
4	4924.00	44.93	74.00	-29.07	40.87	4.06	Peak	100	25
5	7386.00	37.73	54.00	-16.27	28.48	9.25	Average	100	60
6	7386.00	50.90	74.00	-23.10	41.65	9.25	Peak	100	60

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

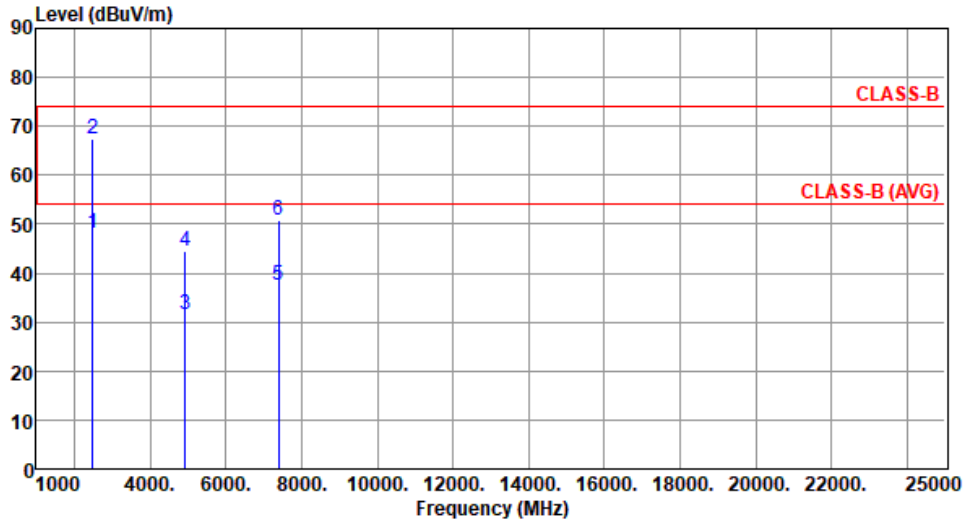
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).



Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		

Test By :Roger Lu Temperature(°C):25 Humidity(%):68

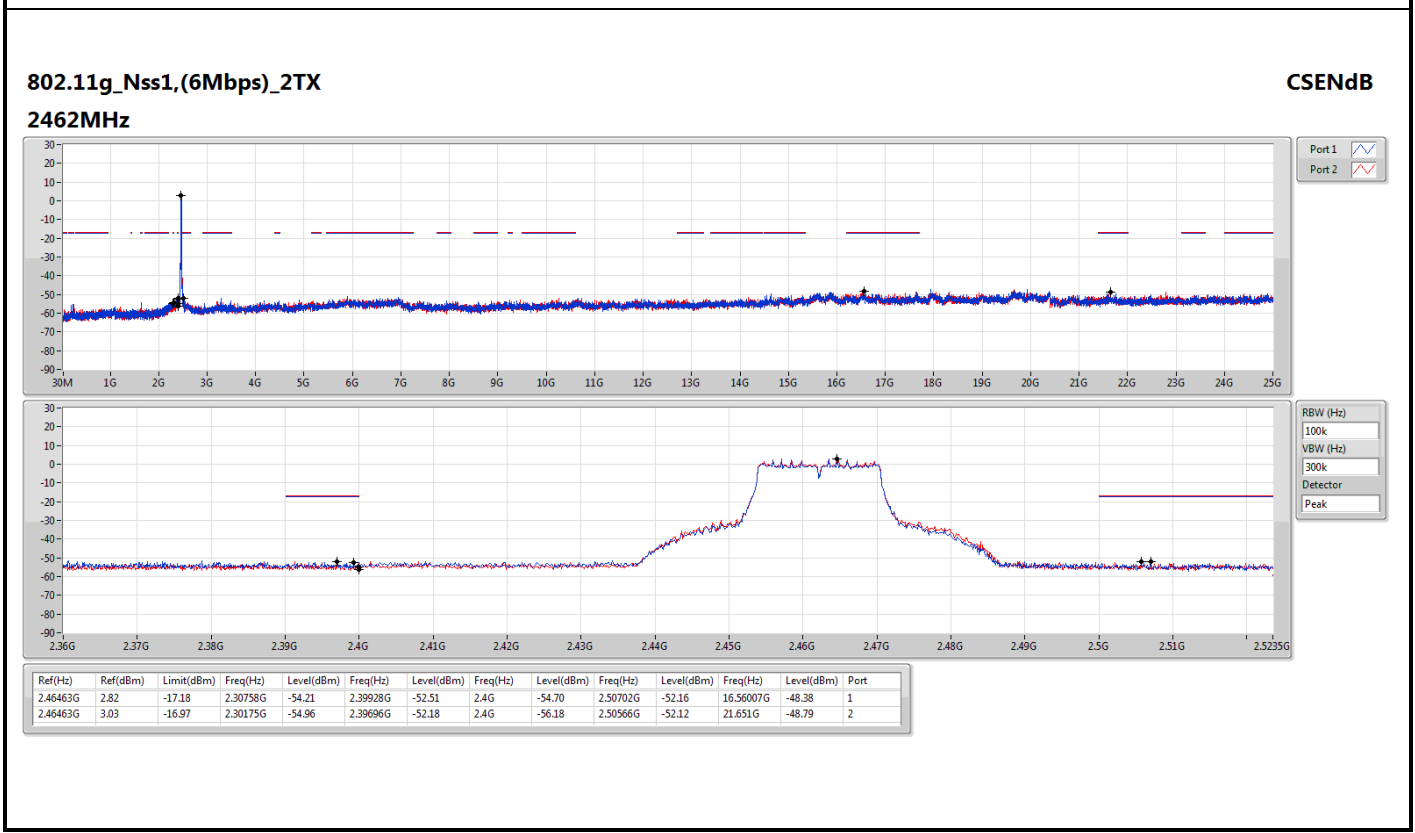
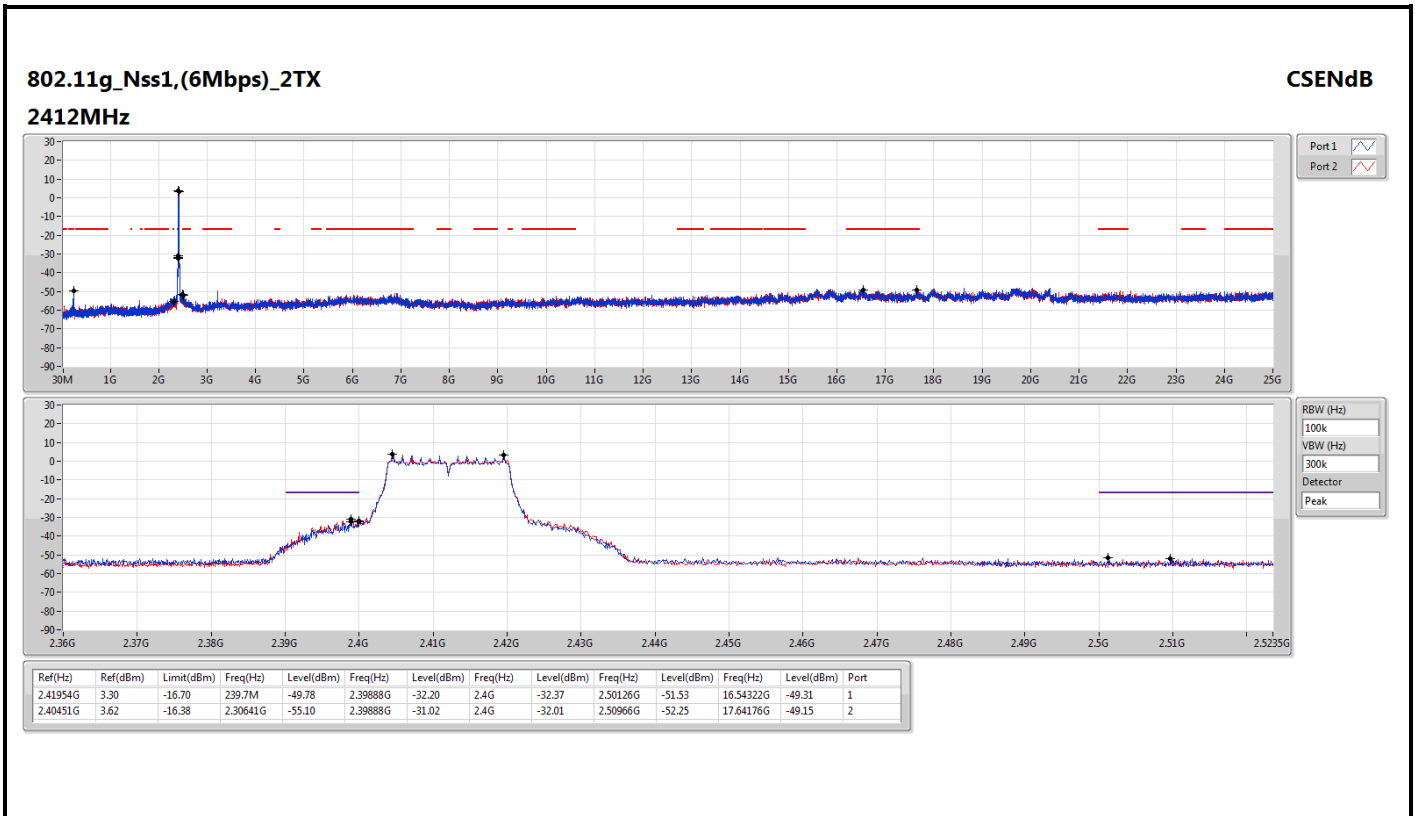


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	48.19	54.00	-5.81	50.89	-2.70	Average	388	149
2	2483.50	67.46	74.00	-6.54	70.16	-2.70	Peak	388	149
3	4924.00	31.71	54.00	-22.29	27.65	4.06	Average	100	70
4	4924.00	44.62	74.00	-29.38	40.56	4.06	Peak	100	70
5	7386.00	37.51	54.00	-16.49	28.26	9.25	Average	100	90
6	7386.00	50.72	74.00	-23.28	41.47	9.25	Peak	100	90

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

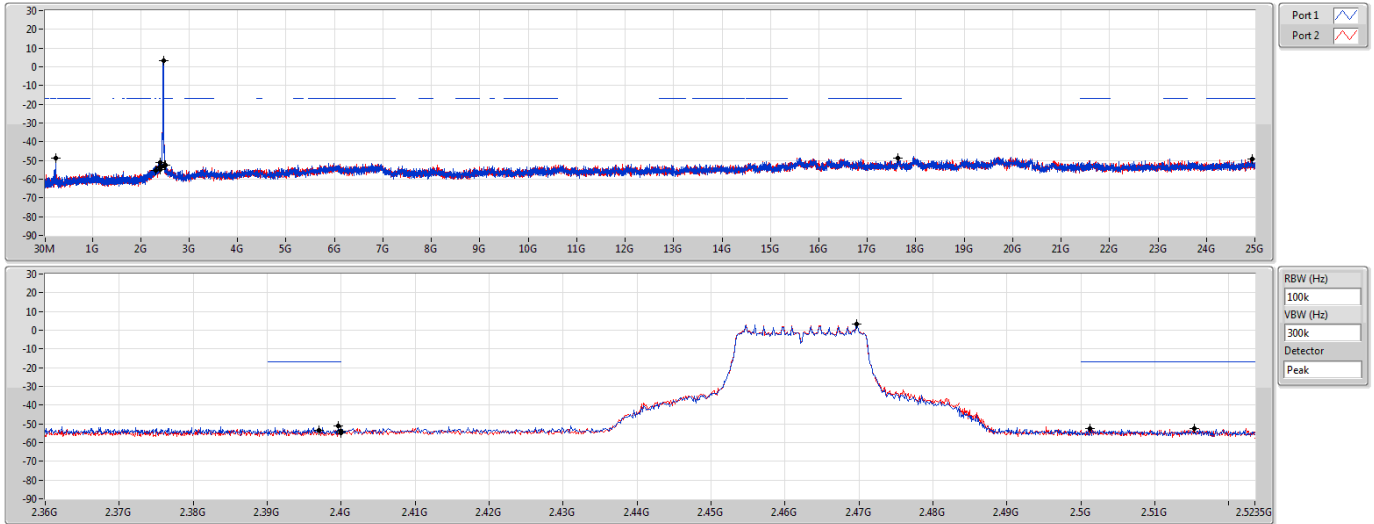
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).





802.11n HT20_Nss1,(MCS0)_2TX
2462MHz

CSEndB

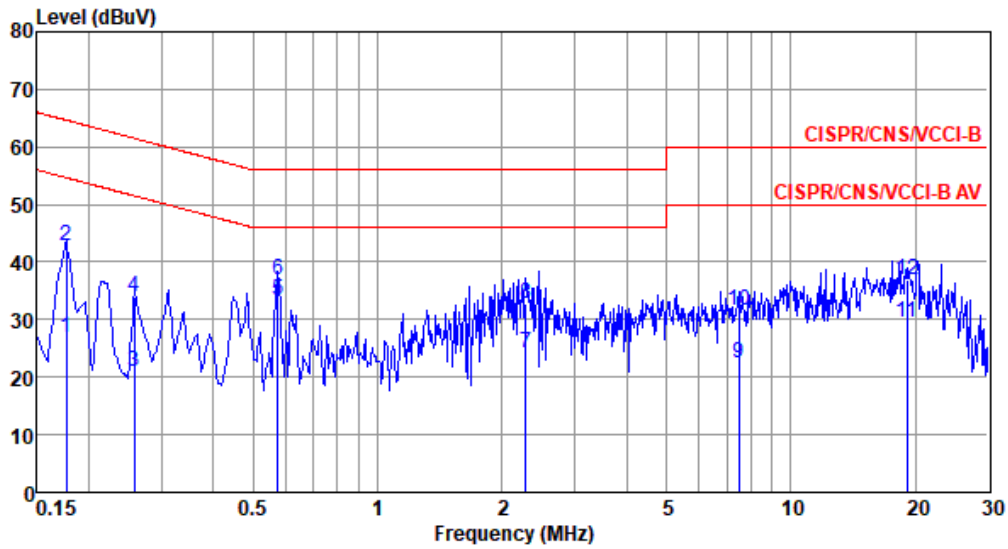


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.46964G	3.06	-16.94	239.7M	-48.72	2.3996G	-51.27	2.4G	-54.78	2.50126G	-52.34	17.6249G	-48.71	1
2.46964G	3.09	-16.91	2.30874G	-55.41	2.39704G	-53.29	2.4G	-54.12	2.51526G	-52.66	24.94381G	-49.29	2



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

Test by : Joe Liao Temperature: 22°C Humidity: 61%



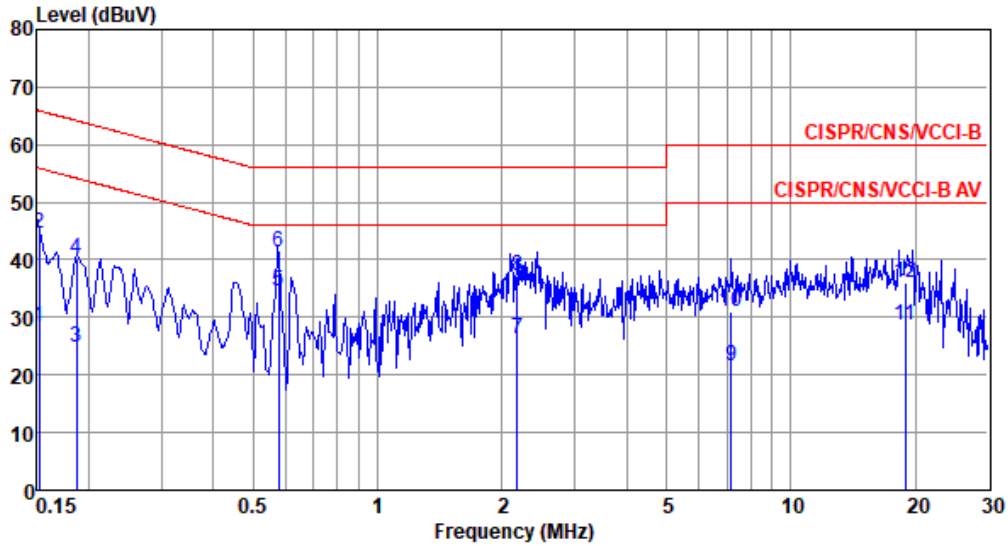
	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.177	26.91	54.64	-27.73	16.94	9.68	0.08	0.21	Average
2	0.177	42.73	64.64	-21.91	32.76	9.68	0.08	0.21	QP
3	0.258	21.07	51.51	-30.44	11.04	9.68	0.08	0.27	Average
4	0.258	33.87	61.51	-27.64	23.84	9.68	0.08	0.27	QP
5*	0.573	33.42	46.00	-12.58	23.28	9.67	0.11	0.36	Average
6	0.573	37.01	56.00	-18.99	26.87	9.67	0.11	0.36	QP
7	2.285	24.28	46.00	-21.72	13.99	9.69	0.20	0.40	Average
8	2.285	32.72	56.00	-23.28	22.43	9.69	0.20	0.40	QP
9	7.486	22.35	50.00	-27.65	11.82	9.73	0.37	0.43	Average
10	7.486	31.50	60.00	-28.50	20.97	9.73	0.37	0.43	QP
11	19.122	29.43	50.00	-20.57	18.43	9.73	0.64	0.63	Average
12	19.122	36.83	60.00	-23.17	25.83	9.73	0.64	0.63	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: 22°C Humidity: 61%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.152	28.31	55.91	-27.60	18.46	9.61	0.08	0.16	Average
2	0.152	44.47	65.91	-21.44	34.62	9.61	0.08	0.16	QP
3	0.186	24.82	54.20	-29.38	14.96	9.61	0.08	0.17	Average
4	0.186	40.08	64.20	-24.12	30.22	9.61	0.08	0.17	QP
5*	0.576	34.39	46.00	-11.61	24.44	9.61	0.11	0.23	Average
6	0.576	41.36	56.00	-14.64	31.41	9.61	0.11	0.23	QP
7	2.178	26.13	46.00	-19.87	16.01	9.62	0.20	0.30	Average
8	2.178	37.12	56.00	-18.88	27.00	9.62	0.20	0.30	QP
9	7.175	21.66	50.00	-28.34	11.27	9.67	0.36	0.36	Average
10	7.175	30.90	60.00	-29.10	20.51	9.67	0.36	0.36	QP
11	18.920	28.71	50.00	-21.29	17.84	9.78	0.64	0.45	Average
12	18.920	35.92	60.00	-24.08	25.05	9.78	0.64	0.45	QP

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