

FCC Test Report

FCC ID : ACQ-HC200
Equipment : HC200
Model No. : HC200
Brand Name : HomeSight
Applicant : ARRIS
Address : 101 Tournament Drive, Horsham
Pennsylvania,United States,19044
Standard : 47 CFR FCC Part 15.247
Received Date : Oct. 01, 2021
Tested Date : Nov. 18 ~ Nov. 25, 2021

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
FR1O0103AC	Rev. 01	Initial issue	Jan. 25, 2022
FR1O0103AC	Rev. 02	Revising input power rating of adapter	Feb. 24, 2022

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.582MHz 34.84 (Margin -11.16dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 4874.00MHz 53.58 (Margin -0.42dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 23.83	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
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	1	MCS 0-7

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.
 Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
 Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequencies (GHz) / Antenna Gain (dBi)				
				2.4-2.4835	5.15-5.25	5.25-5.35	5.47-5.725	5.725-5.85
1	PSAWA-F-L B-02-288	FPC Antenna	UFL	3.76	3.84	3.84	3.89	3.72

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12V from adapter
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1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: NetBit Model: NPD20AD5 Power Rating: I/P: 100-240V~, 50/60Hz, 0.5A O/P: 20.04W 12.0V 1.67A;5V 3.0A Power Line: 1.5m non-shielded without core
2	HDMI	1.73m shielded without core
3	USB type-C	1.8m shielded without core
4	Remote Control	Brand: Omni Remotes Model: RC4630501/01BRP

1.1.5 Channel List

Frequency band (MHz)		2400~2483.5	
802.11 b / g / n HT20		802.11n HT40	
Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	3	2422
2	2417	4	2427
3	2422	5	2432
4	2427	6	2437
5	2432	7	2442
6	2437	8	2447
7	2442	9	2452
8	2447	---	---
9	2452	---	---
10	2457	---	---
11	2462	---	---

1.1.6 Test Tool and Duty Cycle

Test Tool	QRCT, V4.0.001720		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	98.17%	0.08
	11g	95.41%	0.20
	HT20	91.24%	0.40
	HT40	88.82%	0.51

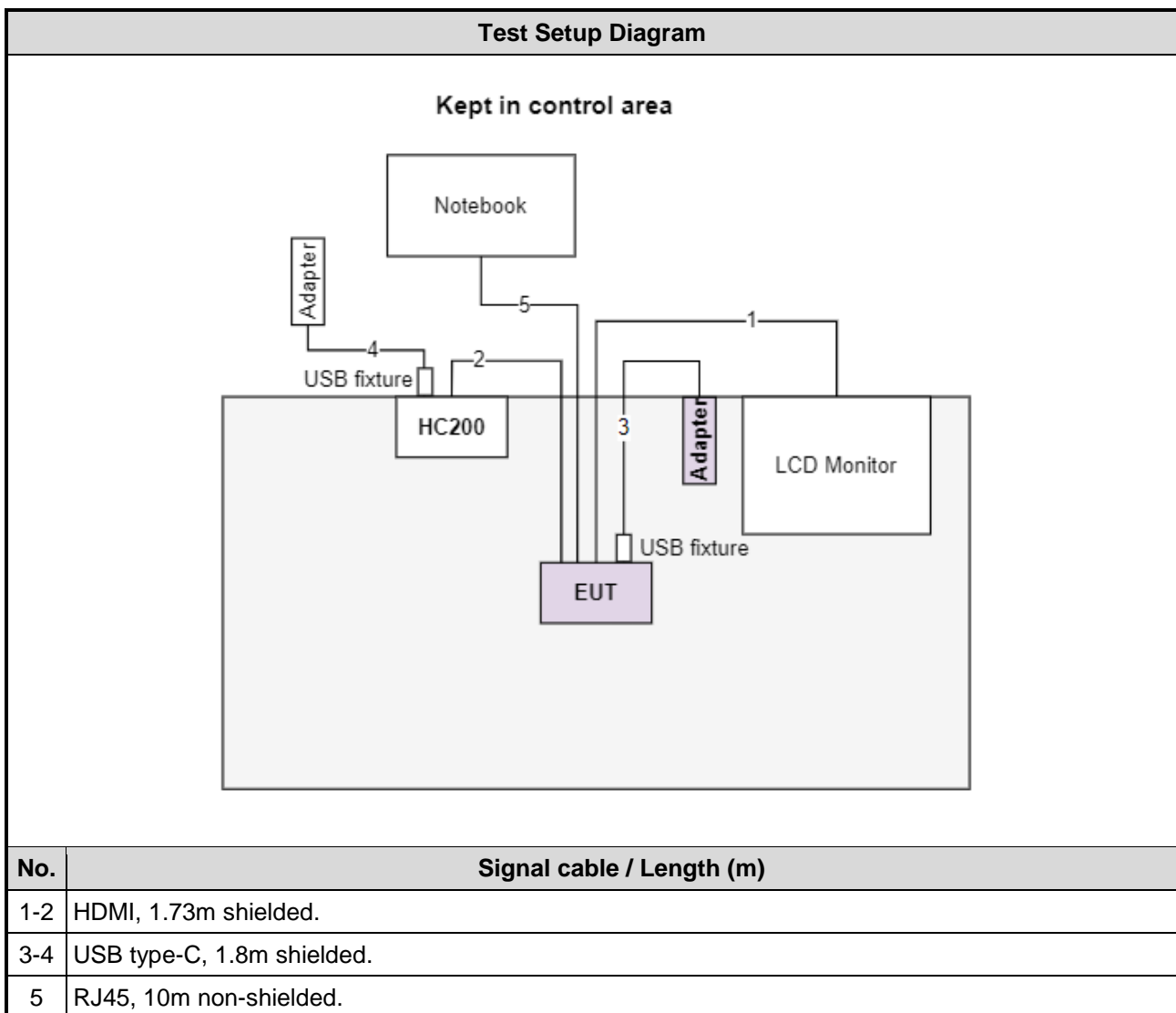
1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	19.5
11b	2437	19.5
11b	2462	17.5
11g	2412	20
11g	2437	20
11g	2462	18.5
HT20	2412	18.5
HT20	2437	18.5
HT20	2462	18
HT40	2422	16
HT40	2437	17
HT40	2452	16.5

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E5470	DoC	---
2	LCD Monitor	ASUS	MX27UCS	---	---
3	USB fixture	---	---	---	Provided by applicant.

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Nov. 23, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
LISN	R&S	ENV216	101579	Mar. 17, 2021	Mar. 16, 2022
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-666	Dec. 29, 2020	Dec. 28, 2021
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 19, 2021	Oct. 18, 2022
50 ohm terminal (Support Unit)	NA	50	04	May 25, 2021	May 24, 2022
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	Nov. 18 ~ Nov. 25, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 12, 2021	Mar. 11, 2022
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2020	Dec. 03, 2021
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. 11, 2020	Dec. 10, 2021
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170508	Dec. 31, 2020	Dec. 30, 2021
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	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 05, 2021	Oct. 04, 2022
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	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	Nov. 23, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2020	Dec. 03, 2021
Power Meter	Anritsu	ML2495A	1218007	Jan. 26, 2021	Jan. 25, 2022
Power Sensor	Anritsu	MA2411B	1207367	Jan. 26, 2021	Jan. 25, 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

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
Radiated emission ≤ 1GHz	±3.41 dB
Radiated 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
Conducted Emissions	11g	2412	6 Mbps	---
Radiated Emissions ≤1GHz	11g	2412	6 Mbps	---
Radiated Emissions >1GHz	11b	2412 / 2437 / 2462	1 Mbps	---
Maximum Output Power	11g	2412 / 2437 / 2462	6 Mbps	
6dB bandwidth	HT20	2412 / 2437 / 2462	MCS 0	
Power spectral density	HT40	2422 / 2437 / 2452	MCS 0	

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of 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.

3.1.2 Test Procedures

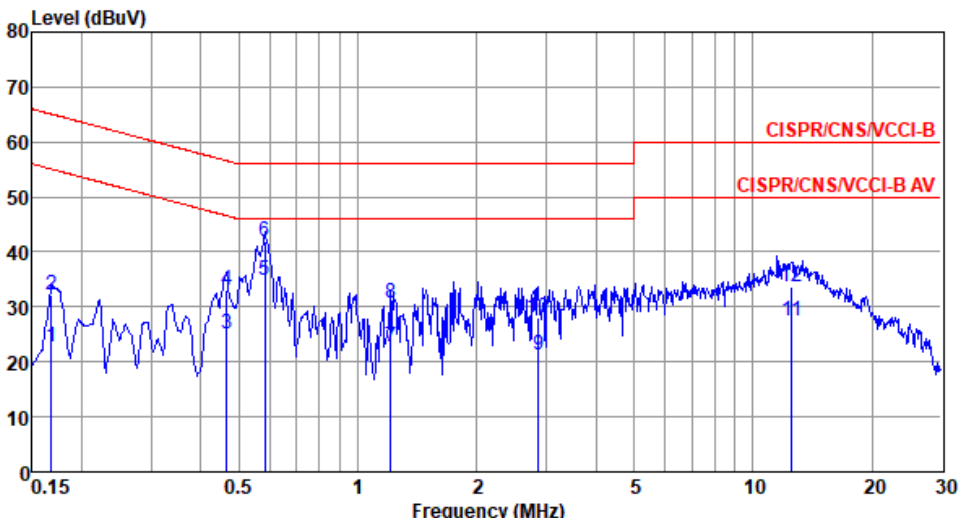
1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels 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.

3.1.3 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

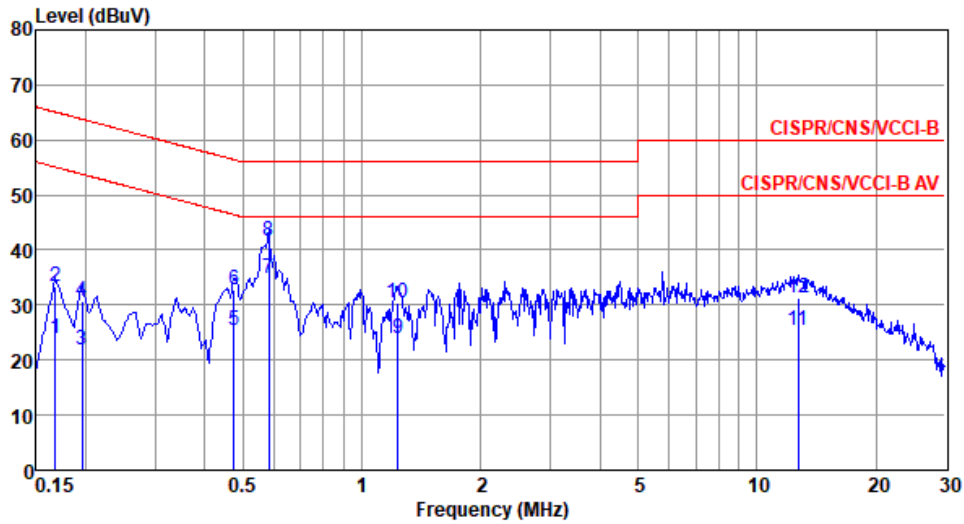
3.1.4 Test Result of Conducted Emissions

Modulation	11g	Test Freq. (MHz)	2412						
Power Phase	Line								
<p>Test by : Brad Wu Temperature: 22°C Humidity: 62%</p>									
									
	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	Remark
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	
			dBuV	dB	dBuV		dB		
1	0.168	22.72	55.08	-32.36	12.77	9.66	0.08	0.21	Average
2	0.168	32.24	65.08	-32.84	22.29	9.66	0.08	0.21	QP
3	0.466	25.01	46.58	-21.57	14.92	9.64	0.09	0.36	Average
4	0.466	32.99	56.58	-23.59	22.90	9.64	0.09	0.36	QP
5*	0.582	34.79	46.00	-11.21	24.68	9.64	0.11	0.36	Average
6	0.582	42.01	56.00	-13.99	31.90	9.64	0.11	0.36	QP
7	1.210	22.63	46.00	-23.37	12.43	9.65	0.17	0.38	Average
8	1.210	30.84	56.00	-25.16	20.64	9.65	0.17	0.38	QP
9	2.869	21.39	46.00	-24.61	11.10	9.67	0.21	0.41	Average
10	2.869	28.12	56.00	-27.88	17.83	9.67	0.21	0.41	QP
11	12.516	27.48	50.00	-22.52	16.78	9.70	0.51	0.49	Average
12	12.516	33.66	60.00	-26.34	22.96	9.70	0.51	0.49	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	11g	Test Freq. (MHz)	2412
Power Phase	Neutral		

Test by : Brad Wu Temperature: 22°C Humidity: 62%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.168	23.91	55.08	-31.17	13.97	9.69	0.08	0.17	Average
2	0.168	33.22	65.08	-31.86	23.28	9.69	0.08	0.17	QP
3	0.195	21.84	53.80	-31.96	11.90	9.68	0.08	0.18	Average
4	0.195	30.75	63.80	-33.05	20.81	9.68	0.08	0.18	QP
5	0.474	25.49	46.45	-20.96	15.52	9.67	0.09	0.21	Average
6	0.474	32.74	56.45	-23.71	22.77	9.67	0.09	0.21	QP
7*	0.582	34.84	46.00	-11.16	24.83	9.67	0.11	0.23	Average
8	0.582	41.55	56.00	-14.45	31.54	9.67	0.11	0.23	QP
9	1.236	23.87	46.00	-22.13	13.73	9.68	0.17	0.29	Average
10	1.236	30.49	56.00	-25.51	20.35	9.68	0.17	0.29	QP
11	12.716	25.34	50.00	-24.66	14.61	9.79	0.51	0.43	Average
12	12.716	31.30	60.00	-28.70	20.57	9.79	0.51	0.43	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).

3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

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

3.2.2 Test Procedures

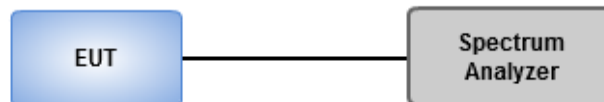
6dB Bandwidth

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.

3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

Ambient Condition	18°C / 63%	Tested By	Aska Huang
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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	8.478M	13.893M	13M9G1D	8.043M	13.531M
802.11g_Nss1,(6Mbps)_1TX	15.435M	16.86M	16M9D1D	13.768M	16.57M
802.11n HT20_Nss1,(MCS0)_1TX	15.725M	17.728M	17M7D1D	13.696M	17.656M
802.11n HT40_Nss1,(MCS0)_1TX	35.797M	36.324M	36M3D1D	35.217M	36.035M

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

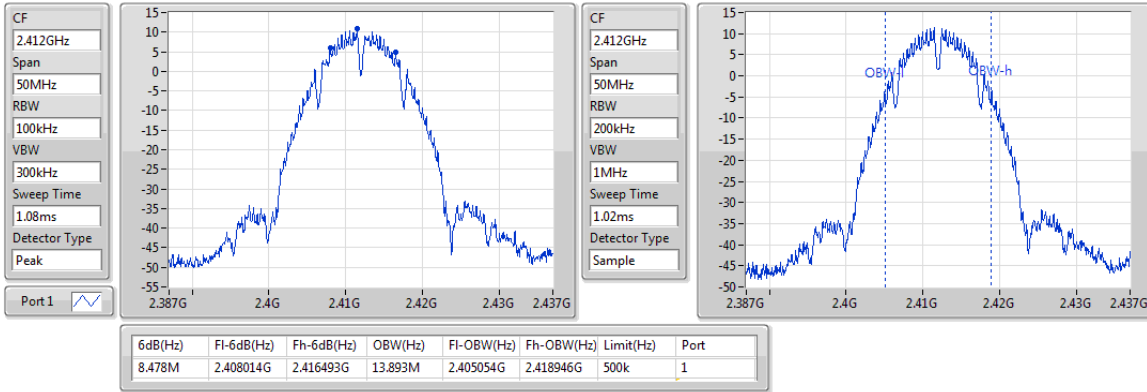
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	8.478M	13.893M
2437MHz	Pass	500k	8.116M	13.531M
2462MHz	Pass	500k	8.043M	13.676M
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	15.435M	16.86M
2437MHz	Pass	500k	13.768M	16.57M
2462MHz	Pass	500k	13.841M	16.57M
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-
2412MHz	Pass	500k	15.145M	17.728M
2437MHz	Pass	500k	13.696M	17.656M
2462MHz	Pass	500k	15.725M	17.728M
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-
2422MHz	Pass	500k	35.797M	36.324M
2437MHz	Pass	500k	35.217M	36.035M
2452MHz	Pass	500k	35.797M	36.324M

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

802.11b_Nss1,(1Mbps)_1TX

EBW

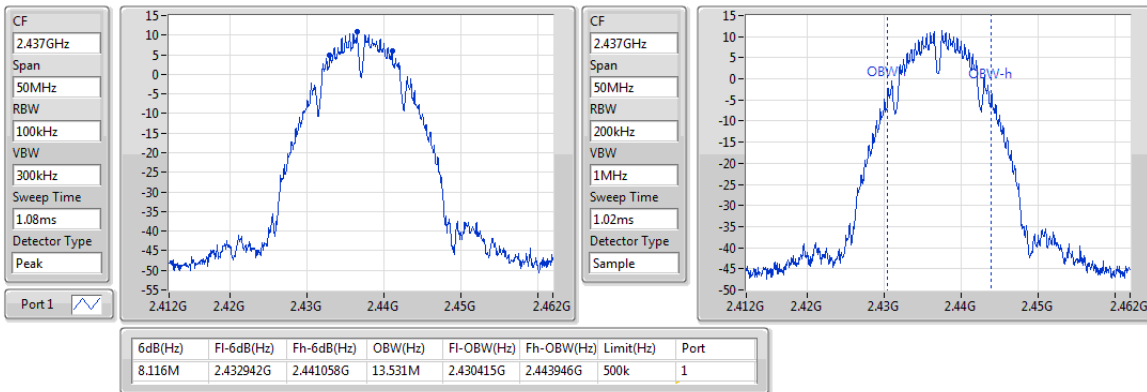
2412MHz



802.11b_Nss1,(1Mbps)_1TX

EBW

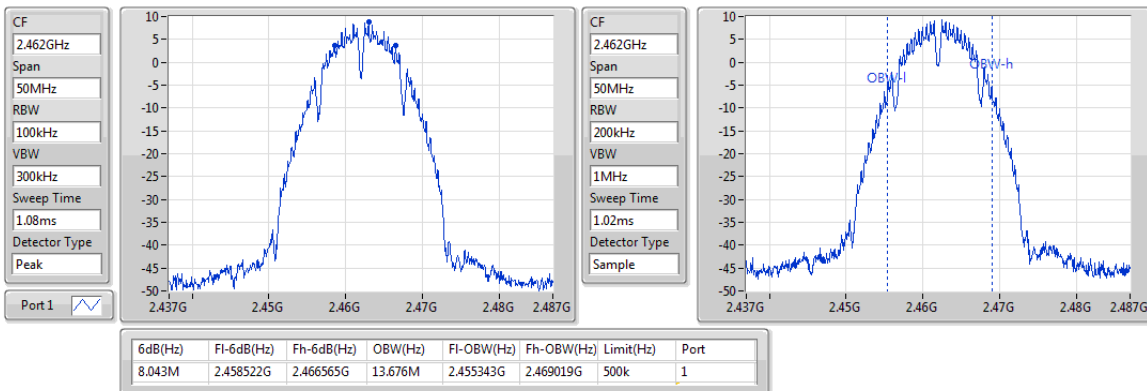
2437MHz



802.11b_Nss1,(1Mbps)_1TX

EBW

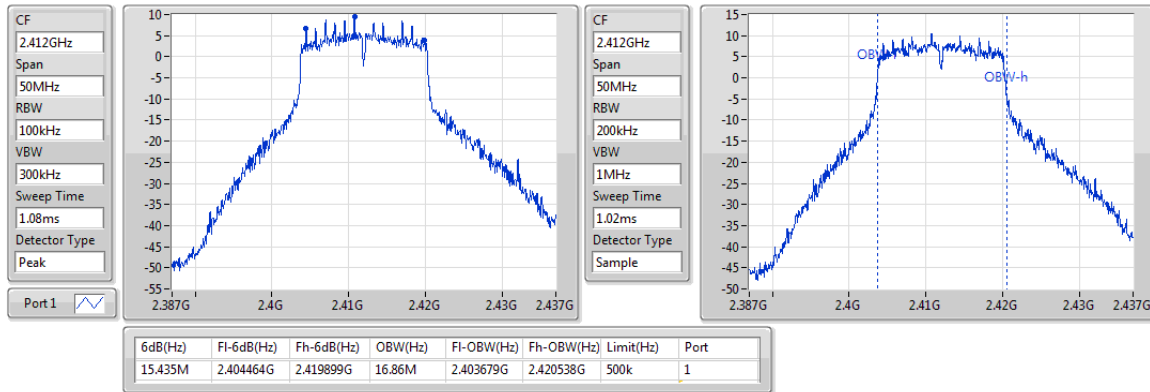
2462MHz



802.11g_Nss1,(6Mbps)_1TX

EBW

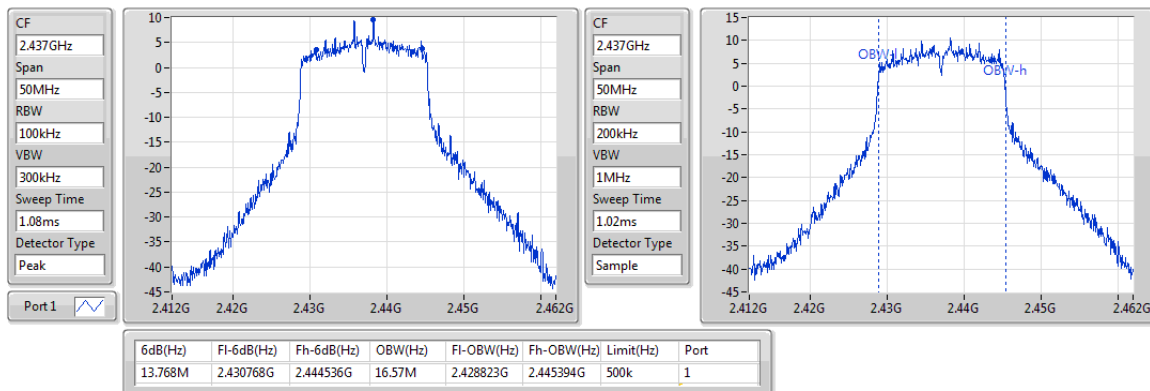
2412MHz



802.11g_Nss1,(6Mbps)_1TX

EBW

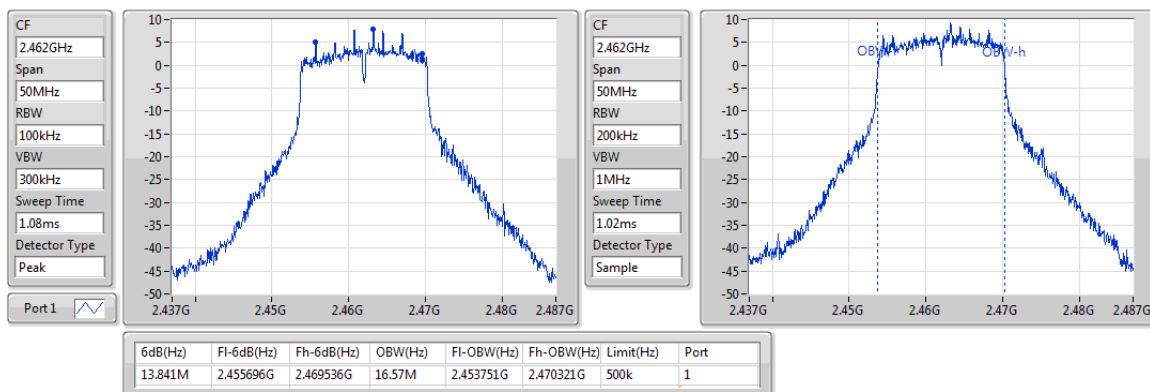
2437MHz



802.11g_Nss1,(6Mbps)_1TX

EBW

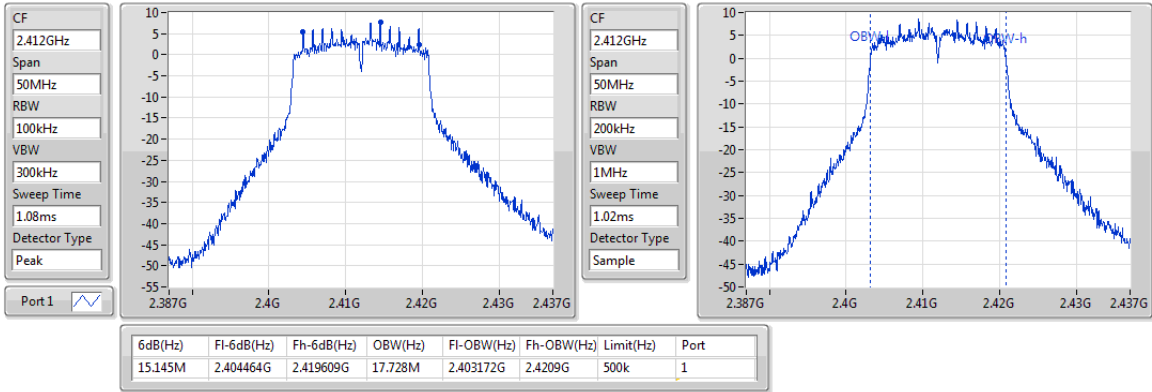
2462MHz



802.11n HT20_Nss1,(MCS0)_1TX

EBW

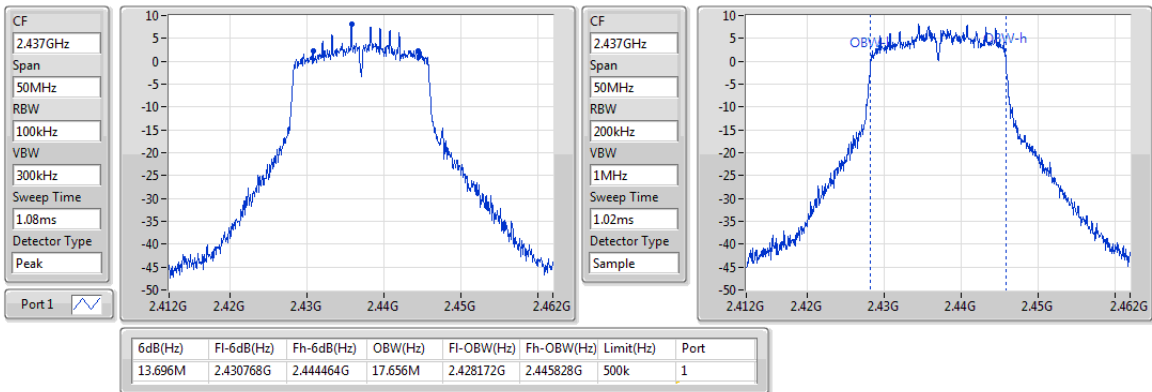
2412MHz



802.11n HT20_Nss1,(MCS0)_1TX

EBW

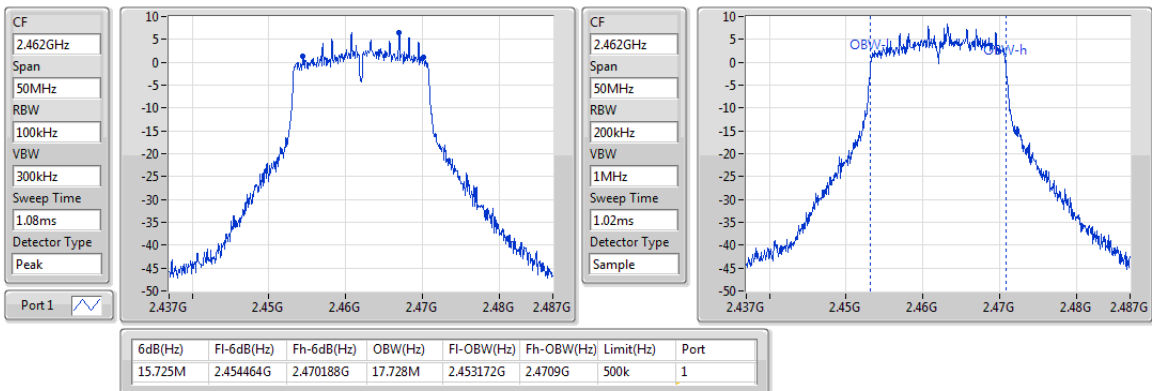
2437MHz



802.11n HT20_Nss1,(MCS0)_1TX

EBW

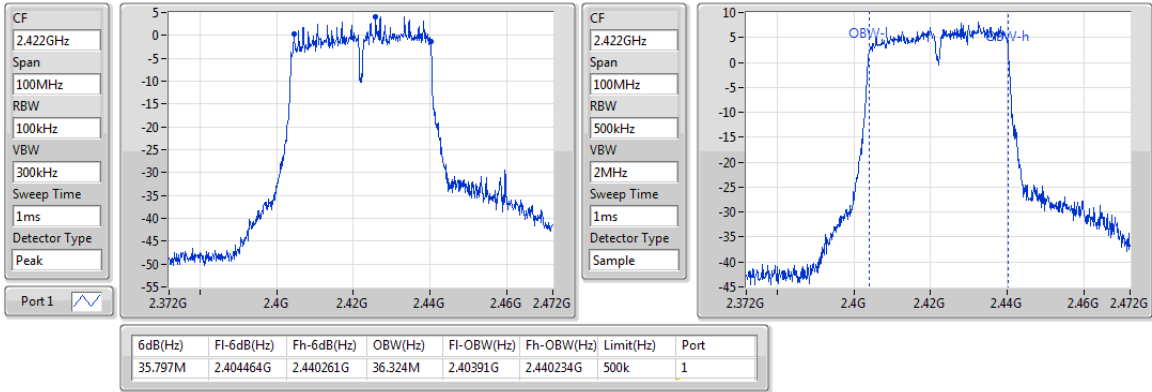
2462MHz



802.11n HT40_Nss1,(MCS0)_1TX

EBW

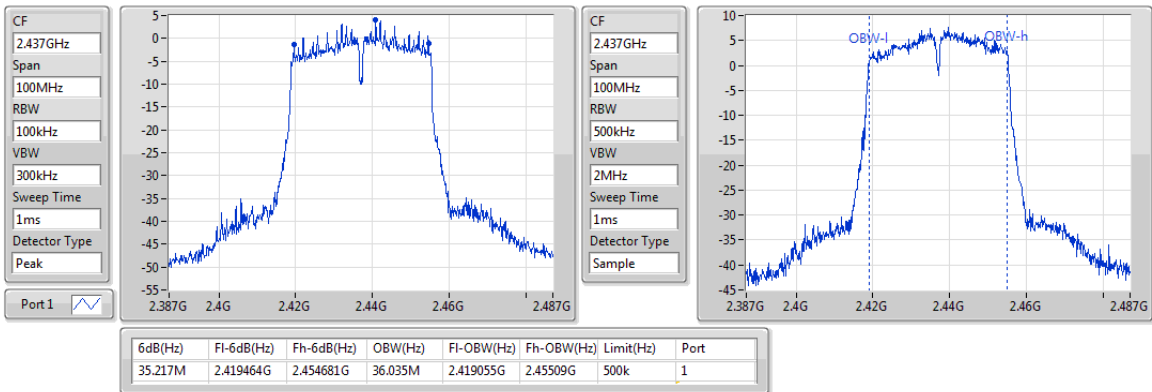
2422MHz



802.11n HT40_Nss1,(MCS0)_1TX

EBW

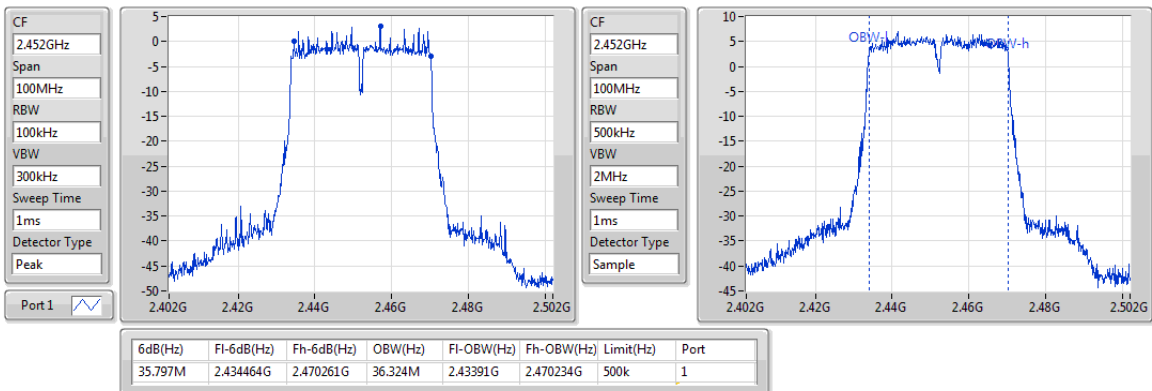
2437MHz



802.11n HT40_Nss1,(MCS0)_1TX

EBW

2452MHz



3.3 RF Output Power

3.3.1 Limit of RF Output Power

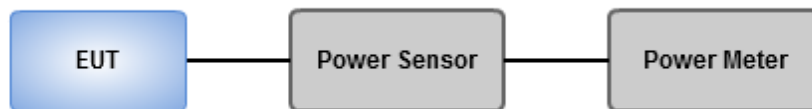
Conducted power shall not exceed 1Watt.

Antenna gain $\leq 6\text{dBi}$, no any corresponding reduction is in output power limit.

3.3.2 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.

3.3.3 Test Setup



3.3.4 Test Result of Maximum Output Power

Ambient Condition	18°C / 63%	Tested By	Aska Huang
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Summary of Peak Conducted Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	22.03	0.15959
802.11g_Nss1,(6Mbps)_1TX	23.83	0.24155
802.11n HT20_Nss1,(MCS0)_1TX	22.64	0.18365
802.11n HT40_Nss1,(MCS0)_1TX	22.41	0.17418

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	3.76	22.03	22.03	30.00	25.79	36.00
2437MHz	Pass	3.76	21.95	21.95	30.00	25.71	36.00
2462MHz	Pass	3.76	19.77	19.77	30.00	23.53	36.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	3.76	23.83	23.83	30.00	27.59	36.00
2437MHz	Pass	3.76	23.82	23.82	30.00	27.58	36.00
2462MHz	Pass	3.76	22.31	22.31	30.00	26.07	36.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	3.76	22.64	22.64	30.00	26.40	36.00
2437MHz	Pass	3.76	22.55	22.55	30.00	26.31	36.00
2462MHz	Pass	3.76	22.02	22.02	30.00	25.78	36.00
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2422MHz	Pass	3.76	22.13	22.13	30.00	25.89	36.00
2437MHz	Pass	3.76	22.25	22.25	30.00	26.01	36.00
2452MHz	Pass	3.76	22.41	22.41	30.00	26.17	36.00

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

Summary of Conducted (Average) Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	19.65	0.09226
802.11g_Nss1,(6Mbps)_1TX	19.44	0.08790
802.11n HT20_Nss1,(MCS0)_1TX	17.72	0.05916
802.11n HT40_Nss1,(MCS0)_1TX	16.88	0.04875

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	3.76	19.65	19.65	-	23.41	-
2437MHz	Pass	3.76	19.56	19.56	-	23.32	-
2462MHz	Pass	3.76	17.51	17.51	-	21.27	-
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	3.76	19.44	19.44	-	23.20	-
2437MHz	Pass	3.76	19.42	19.42	-	23.18	-
2462MHz	Pass	3.76	17.80	17.80	-	21.56	-
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	3.76	17.72	17.72	-	21.48	-
2437MHz	Pass	3.76	17.61	17.61	-	21.37	-
2462MHz	Pass	3.76	16.92	16.92	-	20.68	-
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-
2422MHz	Pass	3.76	16.44	16.44	-	20.20	-
2437MHz	Pass	3.76	16.49	16.49	-	20.25	-
2452MHz	Pass	3.76	16.88	16.88	-	20.64	-

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

Note : Conducted average output power is for reference only

3.4 Power Spectral Density

3.4.1 Limit of Power Spectral Density

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

3.4.2 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.

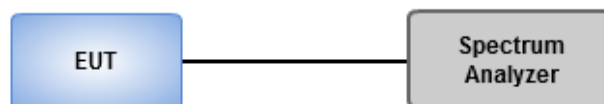
Average PSD, duty cycle $\geq 98\%$

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.

3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Ambient Condition	18°C / 63%	Tested By	Aska Huang
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Summary

Mode	PD (dBm/3kHz)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_1TX	-2.44
802.11g_Nss1,(6Mbps)_1TX	-5.73
802.11n HT20_Nss1,(MCS0)_1TX	-6.96
802.11n HT40_Nss1,(MCS0)_1TX	-11.00

Result

Mode	Result	DG (dBi)	Port 1 (dBm/3kHz)	PD (dBm/3kHz)	PD Limit (dBm/3kHz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	3.76	-2.44	-2.44	8.00
2437MHz	Pass	3.76	-2.56	-2.56	8.00
2462MHz	Pass	3.76	-4.54	-4.54	8.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	3.76	-5.89	-5.89	8.00
2437MHz	Pass	3.76	-5.73	-5.73	8.00
2462MHz	Pass	3.76	-8.01	-8.01	8.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	3.76	-6.96	-6.96	8.00
2437MHz	Pass	3.76	-7.27	-7.27	8.00
2462MHz	Pass	3.76	-9.01	-9.01	8.00
802.11n HT40_Nss1,(MCS0)_1TX	-	-	-	-	-
2422MHz	Pass	3.76	-11.08	-11.08	8.00
2437MHz	Pass	3.76	-11.00	-11.00	8.00
2452MHz	Pass	3.76	-12.24	-12.24	8.00

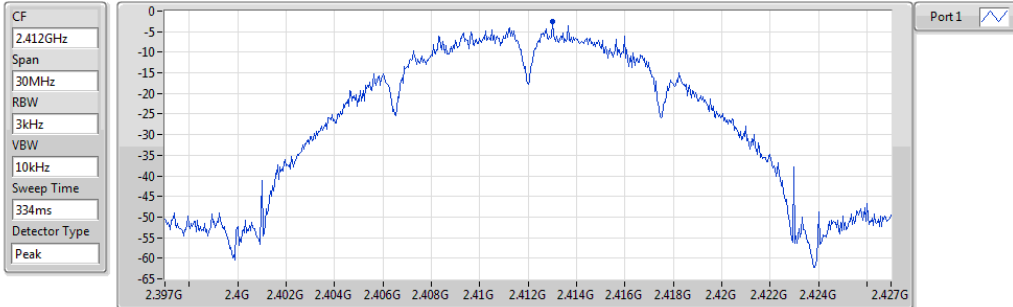
DG = Directional Gain;

PD = Power density; Port X = Port X power density;

802.11b_Nss1,(1Mbps)_1TX

PSD

2412MHz

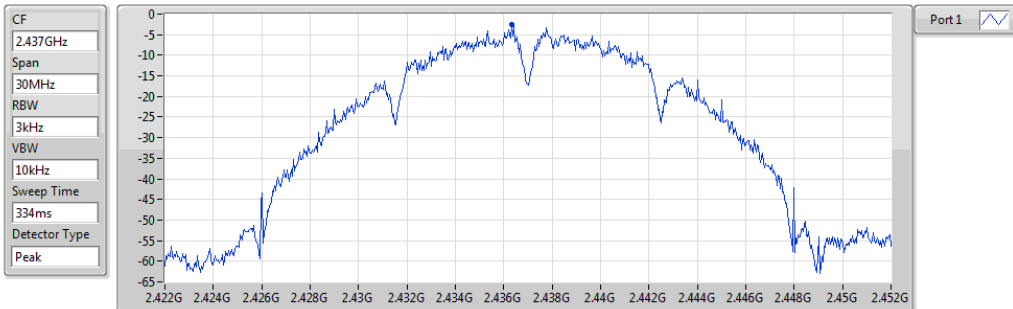


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-2.44	-2.44	-2.44

802.11b_Nss1,(1Mbps)_1TX

PSD

2437MHz

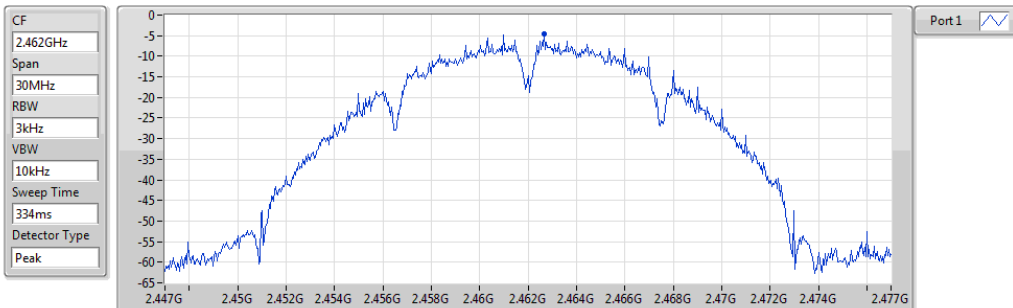


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-2.56	-2.56	-2.56

802.11b_Nss1,(1Mbps)_1TX

PSD

2462MHz

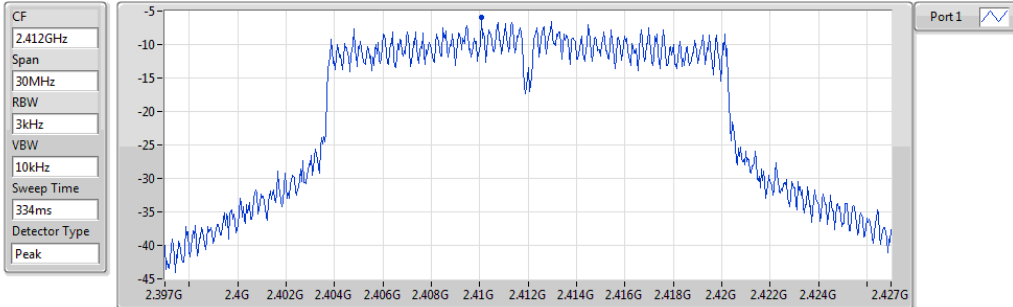


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-4.54	-4.54	-4.54

802.11g_Nss1,(6Mbps)_1TX

PSD

2412MHz

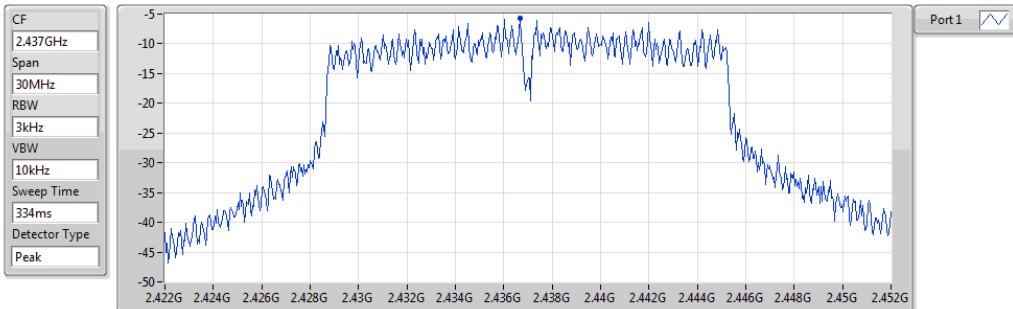


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-5.89	-5.89	-5.89

802.11g_Nss1,(6Mbps)_1TX

PSD

2437MHz

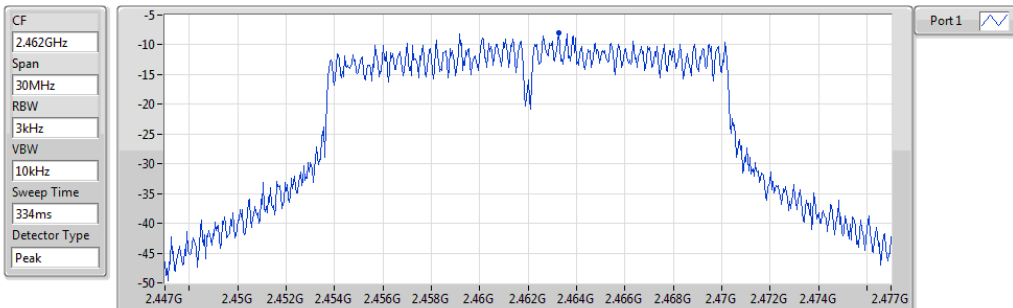


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-5.73	-5.73	-5.73

802.11g_Nss1,(6Mbps)_1TX

PSD

2462MHz

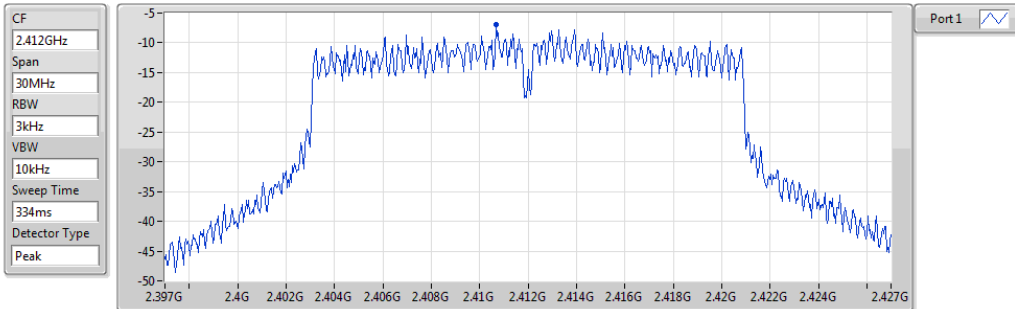


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-8.01	-8.01	-8.01

802.11n HT20_Nss1,(MCS0)_1TX

PSD

2412MHz

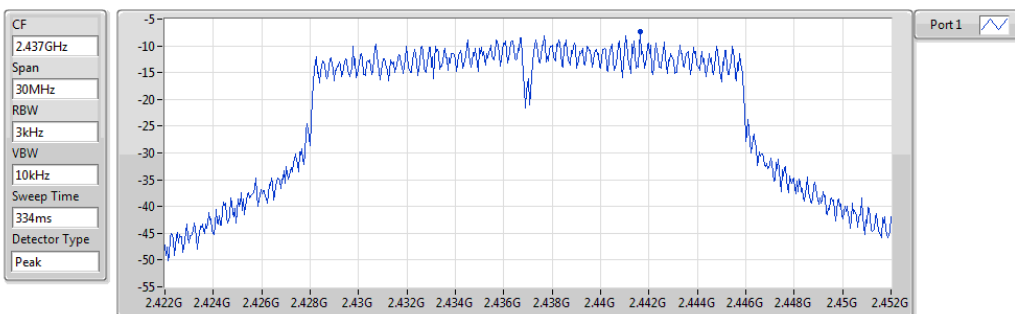


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-6.96	-6.96	-6.96

802.11n HT20_Nss1,(MCS0)_1TX

PSD

2437MHz

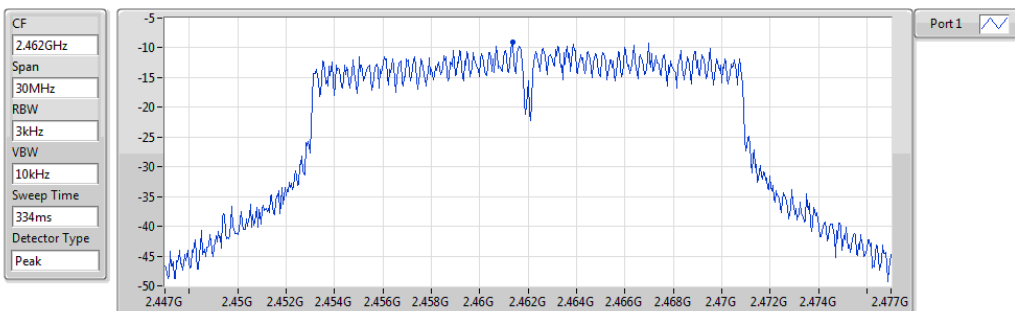


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-7.27	-7.27	-7.27

802.11n HT20_Nss1,(MCS0)_1TX

PSD

2462MHz

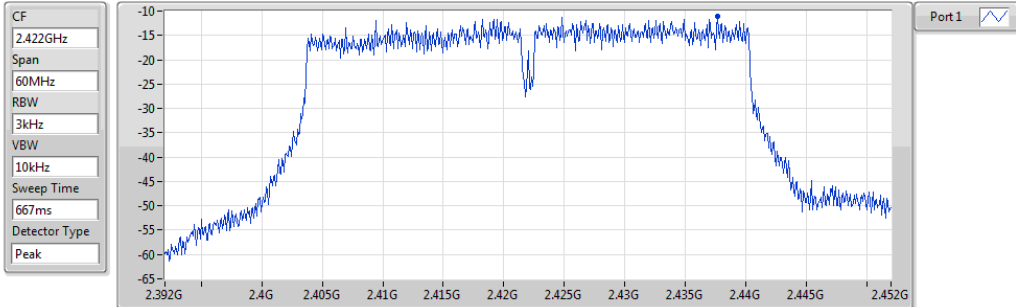


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.01	-9.01	-9.01

802.11n HT40_Nss1,(MCS0)_1TX

PSD

2422MHz

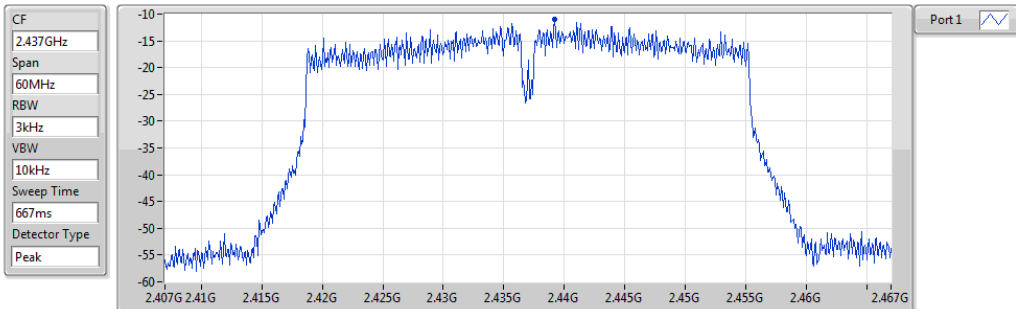


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.08	-11.08	-11.08

802.11n HT40_Nss1,(MCS0)_1TX

PSD

2437MHz

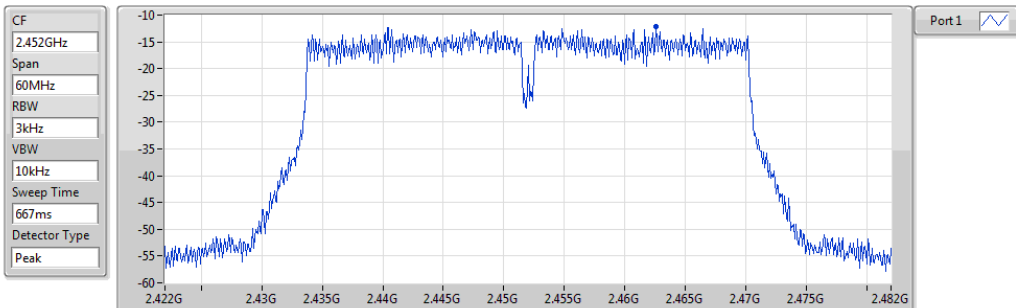


Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-11.00	-11.00	-11.00

802.11n HT40_Nss1,(MCS0)_1TX

PSD

2452MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-12.24	-12.24	-12.24

3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 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.

3.5.2 Test Procedures

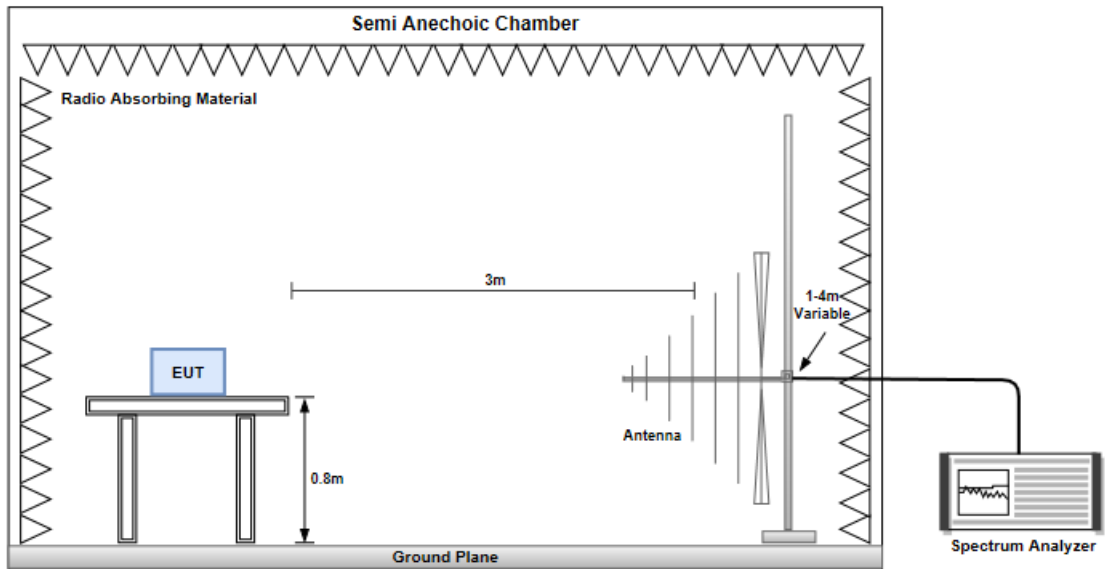
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

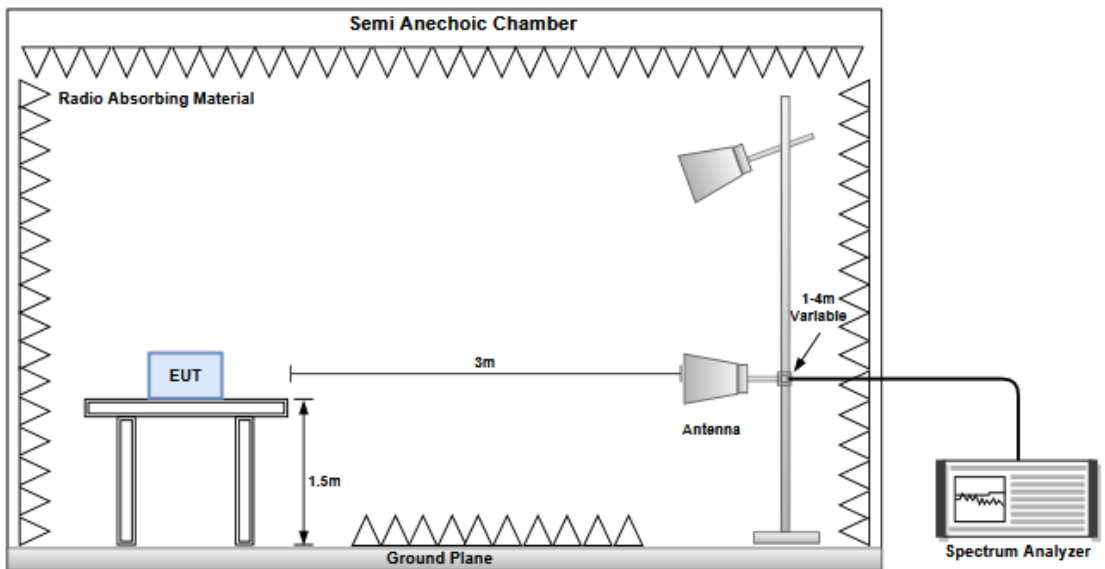
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

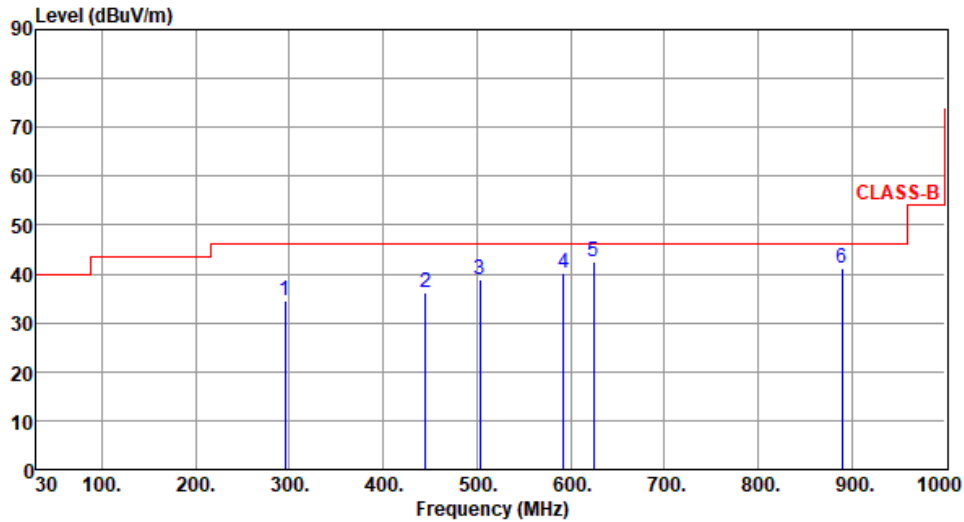
Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz

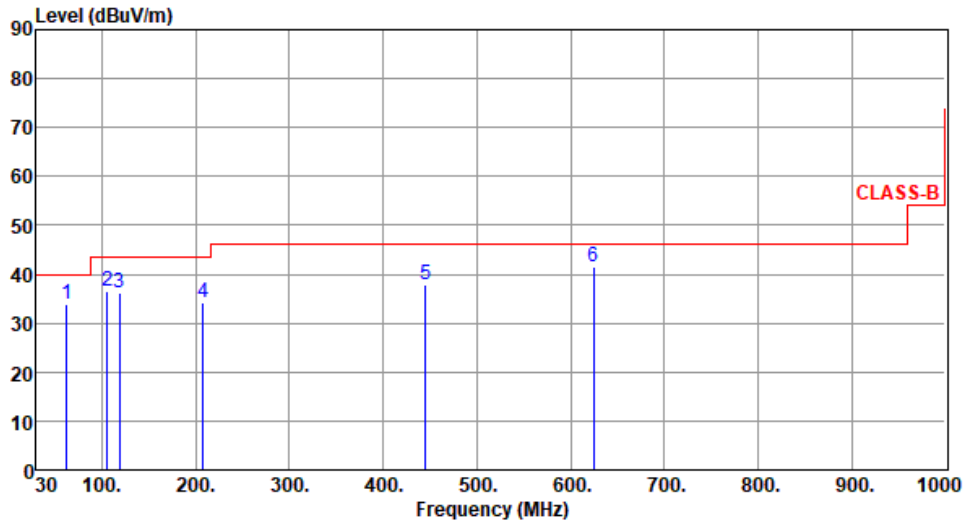


3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	11g	Test Freq. (MHz)	2412						
Polarization	Horizontal								
Test By :Brad Wu Temperature(°C):23 Humidity(%):65									
 <p>The graph plots Level (dBuV/m) on the y-axis (0 to 90) against Frequency (MHz) on the x-axis (30 to 1000). A red line represents the CLASS-B limit, which is constant at 46 dBuV/m from 30 MHz to 900 MHz and then steps up to 55 dBuV/m at 1000 MHz. Six blue vertical lines indicate emission peaks at 295.78 MHz, 445.16 MHz, 503.36 MHz, 592.60 MHz, 624.61 MHz, and 889.42 MHz. The peak levels are 34.52, 36.26, 38.77, 40.13, 42.46, and 41.15 dBuV/m respectively.</p>									
	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	295.78	34.52	46.00	-11.48	42.73	-8.21	Peak	---	---
2	445.16	36.26	46.00	-9.74	40.62	-4.36	Peak	---	---
3	503.36	38.77	46.00	-7.23	41.98	-3.21	Peak	---	---
4	592.60	40.13	46.00	-5.87	41.47	-1.34	Peak	---	---
5	624.61	42.46	46.00	-3.54	42.93	-0.47	Peak	---	---
6	889.42	41.15	46.00	-4.85	37.93	3.22	Peak	---	---
<p>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.</p>									

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

Test By :Brad Wu Temperature(°C):23 Humidity(%):65



	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	62.01	33.72	40.00	-6.28	43.37	-9.65	Peak	---	---
2	105.66	36.60	43.50	-6.90	48.87	-12.27	Peak	---	---
3	118.27	36.22	43.50	-7.28	47.08	-10.86	Peak	---	---
4	207.51	34.05	43.50	-9.45	46.01	-11.96	Peak	---	---
5	445.16	37.69	46.00	-8.31	42.05	-4.36	Peak	---	---
6	624.61	41.57	46.00	-4.43	42.04	-0.47	Peak	---	---

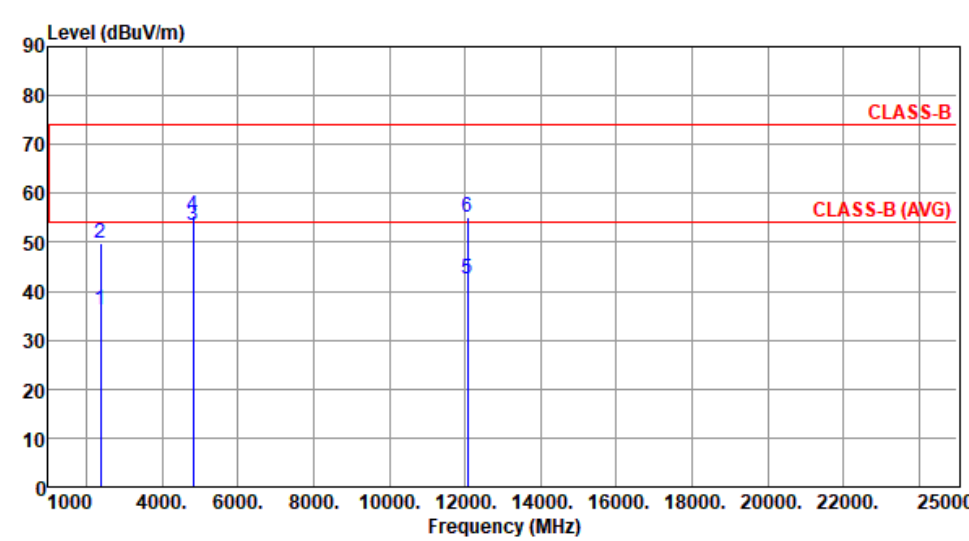
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

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

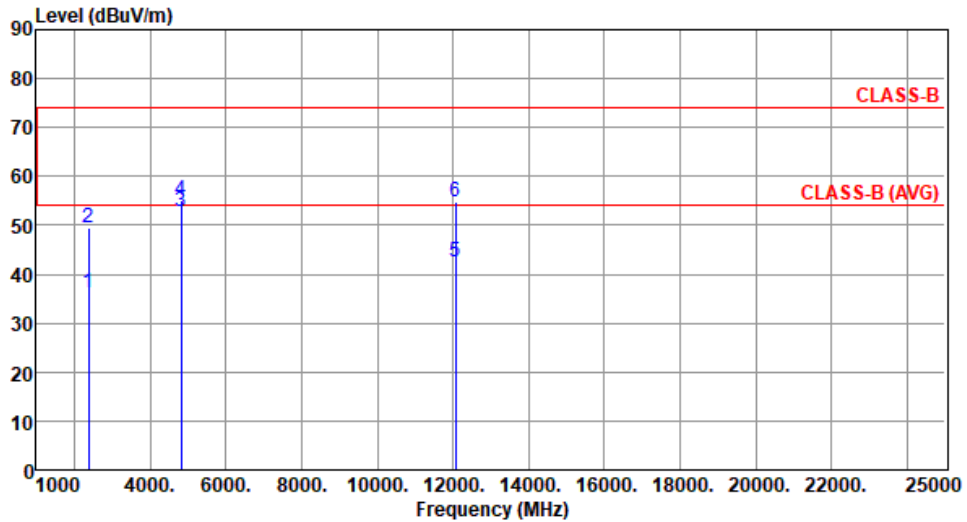
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11b

Modulation	11b	Test Freq. (MHz)	2412						
Polarization	Horizontal								
Test By : Roger Lu Temperature(°C):23 Humidity(%):65									
									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	2390.00	36.35	54.00	-17.65	39.18	-2.83	Average	301	24
2	2390.00	49.74	74.00	-24.26	52.57	-2.83	Peak	301	24
3	4824.00	53.50	54.00	-0.50	50.17	3.33	Average	100	263
4	4824.00	55.47	74.00	-18.53	52.14	3.33	Peak	100	263
5	12060.00	42.63	54.00	-11.37	29.26	13.37	Average	100	100
6	12060.00	55.05	74.00	-18.95	41.68	13.37	Peak	100	100
<p>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).</p>									

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

Test By :Roger Lu Temperature(°C):23 Humidity(%):65



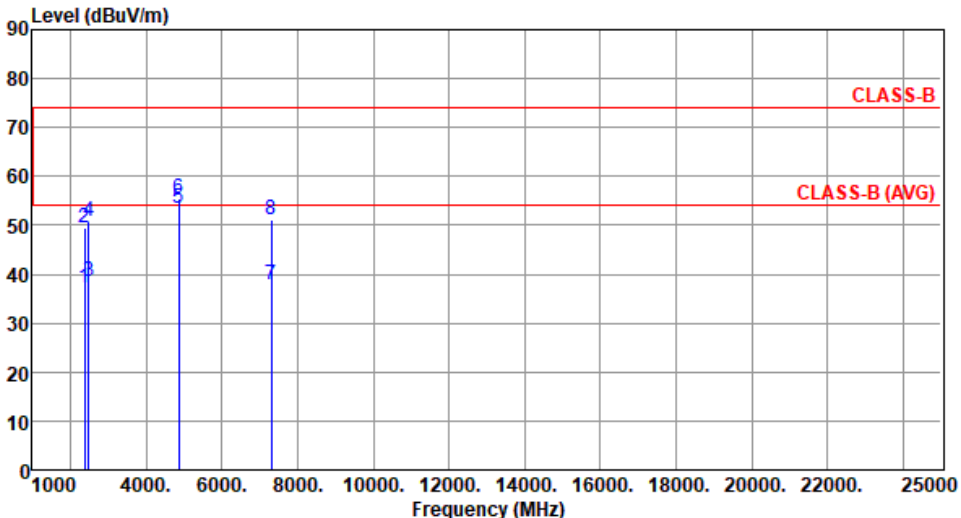
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	36.28	54.00	-17.72	39.11	-2.83	Average	104	39
2	2390.00	49.64	74.00	-24.36	52.47	-2.83	Peak	104	39
3	4824.00	52.79	54.00	-1.21	49.46	3.33	Average	114	0
4	4824.00	55.10	74.00	-18.90	51.77	3.33	Peak	114	0
5	12060.00	42.49	54.00	-11.51	29.12	13.37	Average	100	30
6	12060.00	54.74	74.00	-19.26	41.37	13.37	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):23	Humidity(%):65

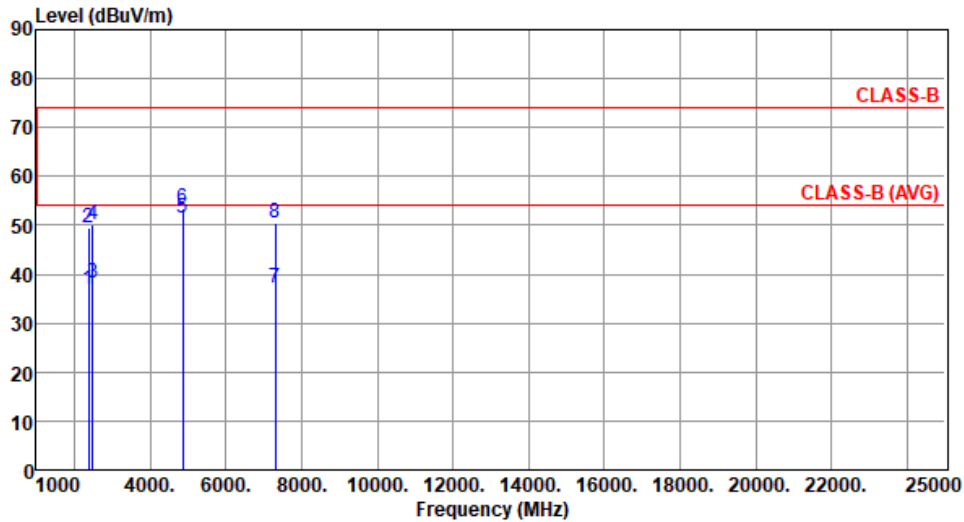


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.35	54.00	-16.65	40.18	-2.83	Average	293	24
2	2390.00	49.44	74.00	-24.56	52.27	-2.83	Peak	293	24
3	2483.50	38.63	54.00	-15.37	41.42	-2.79	Average	293	24
4	2483.50	50.68	74.00	-23.32	53.47	-2.79	Peak	293	24
5	4874.00	53.58	54.00	-0.42	50.26	3.32	Average	100	258
6	4874.00	55.44	74.00	-18.56	52.12	3.32	Peak	100	258
7	7311.00	37.76	54.00	-16.24	28.87	8.89	Average	100	320
8	7311.00	51.01	74.00	-22.99	42.12	8.89	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)	2437
Polarization	Vertical		

Test By :Roger Lu Temperature(°C):23 Humidity(%):65

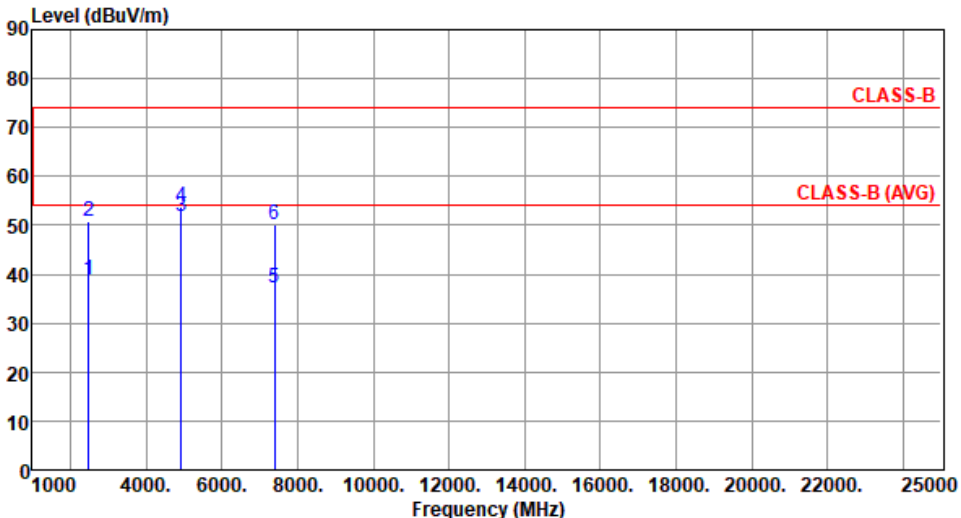


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	36.76	54.00	-17.24	39.59	-2.83	Average	105	42
2	2390.00	49.33	74.00	-24.67	52.16	-2.83	Peak	105	42
3	2483.50	38.07	54.00	-15.93	40.86	-2.79	Average	105	42
4	2483.50	50.11	74.00	-23.89	52.90	-2.79	Peak	105	42
5	4874.00	51.57	54.00	-2.43	48.25	3.32	Average	109	358
6	4874.00	53.53	74.00	-20.47	50.21	3.32	Peak	109	358
7	7311.00	37.24	54.00	-16.76	28.35	8.89	Average	100	50
8	7311.00	50.45	74.00	-23.55	41.56	8.89	Peak	100	50

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).

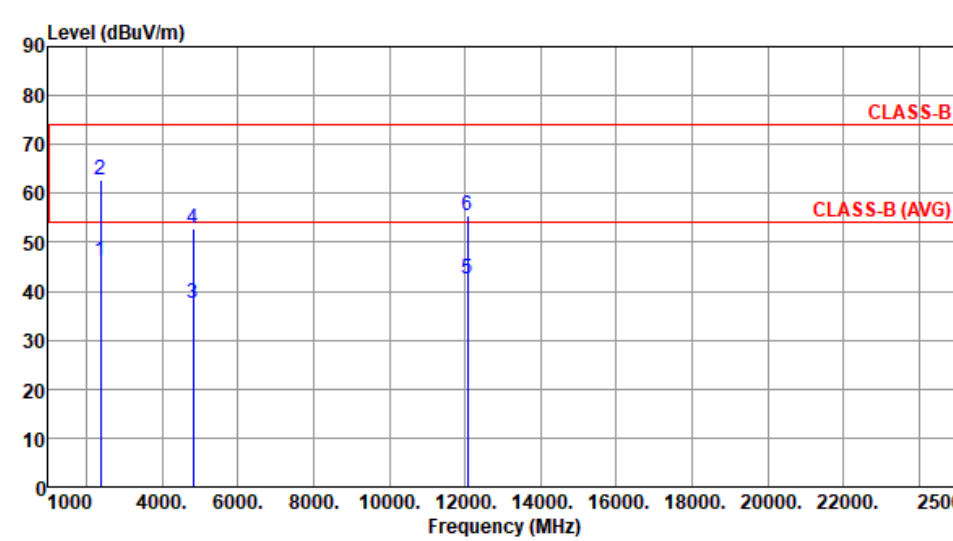
Modulation	11b	Test Freq. (MHz)	2462						
Polarization	Horizontal								
Test By :Roger Lu Temperature(°C):23 Humidity(%):65									
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	38.81	54.00	-15.19	41.60	-2.79	Average	316	33
2	2483.50	50.67	74.00	-23.33	53.46	-2.79	Peak	316	33
3	4924.00	51.79	54.00	-2.21	48.39	3.40	Average	100	272
4	4924.00	53.96	74.00	-20.04	50.56	3.40	Peak	100	272
5	7386.00	37.25	54.00	-16.75	28.37	8.88	Average	100	40
6	7386.00	50.00	74.00	-24.00	41.12	8.88	Peak	100	40
<p>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).</p>									

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Vertical		
Test By : Roger Lu		Temperature(°C): 23	Humidity(%): 65

	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	38.11	54.00	-15.89	40.90	-2.79	Average	103	38
2	2483.50	50.33	74.00	-23.67	53.12	-2.79	Peak	103	38
3	4924.00	53.54	54.00	-0.46	50.14	3.40	Average	102	359
4	4924.00	55.73	74.00	-18.27	52.33	3.40	Peak	102	359
5	7386.00	37.23	54.00	-16.77	28.35	8.88	Average	100	60
6	7386.00	50.47	74.00	-23.53	41.59	8.88	Peak	100	60

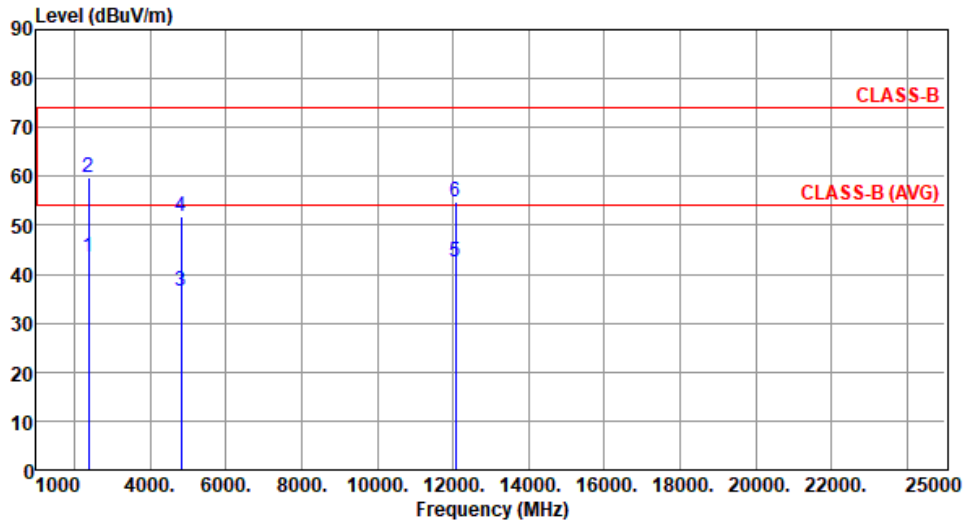
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g

Modulation	11g	Test Freq. (MHz)	2412						
Polarization	Horizontal								
Test By : Roger Lu Temperature(°C):23 Humidity(%):65									
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	46.19	54.00	-7.81	49.02	-2.83	Average	299	35
2	2390.00	62.92	74.00	-11.08	65.75	-2.83	Peak	299	35
3	4824.00	37.60	54.00	-16.40	34.27	3.33	Average	100	265
4	4824.00	52.66	74.00	-21.34	49.33	3.33	Peak	100	265
5	12060.00	42.49	54.00	-11.51	29.12	13.37	Average	100	60
6	12060.00	55.58	74.00	-18.42	42.21	13.37	Peak	100	60
<p>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).</p>									

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

Test By :Roger Lu Temperature(°C):23 Humidity(%):65



	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	43.49	54.00	-10.51	46.32	-2.83	Average	105	36
2	2390.00	59.72	74.00	-14.28	62.55	-2.83	Peak	105	36
3	4824.00	36.45	54.00	-17.55	33.12	3.33	Average	100	345
4	4824.00	51.68	74.00	-22.32	48.35	3.33	Peak	100	345
5	12060.00	42.42	54.00	-11.58	29.05	13.37	Average	100	30
6	12060.00	54.96	74.00	-19.04	41.59	13.37	Peak	100	30

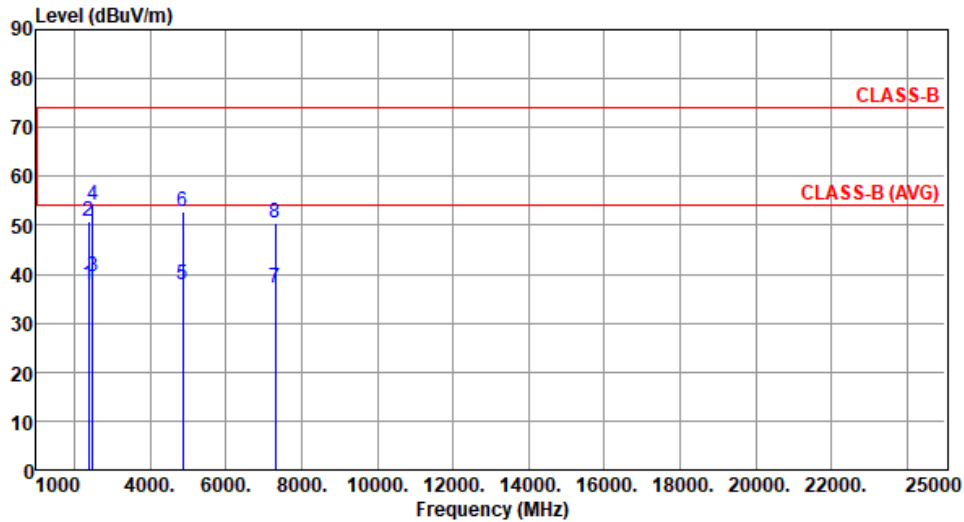
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*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):23 Humidity(%):65

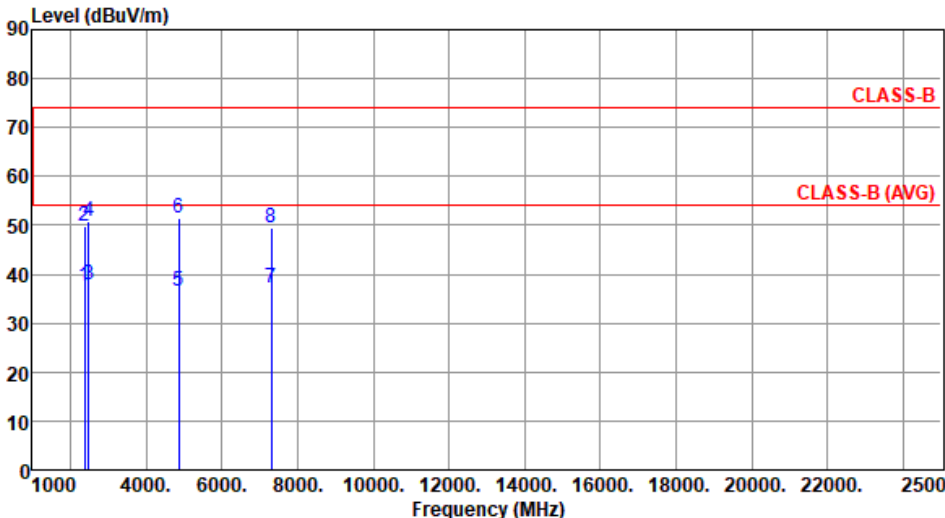


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	37.72	54.00	-16.28	40.55	-2.83	Average	324	28
2	2390.00	50.74	74.00	-23.26	53.57	-2.83	Peak	324	28
3	2483.50	39.60	54.00	-14.40	42.39	-2.79	Average	324	28
4	2483.50	54.19	74.00	-19.81	56.98	-2.79	Peak	324	28
5	4874.00	37.83	54.00	-16.17	34.51	3.32	Average	100	270
6	4874.00	52.81	74.00	-21.19	49.49	3.32	Peak	100	270
7	7311.00	37.15	54.00	-16.85	28.26	8.89	Average	100	40
8	7311.00	50.57	74.00	-23.43	41.68	8.89	Peak	100	40

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

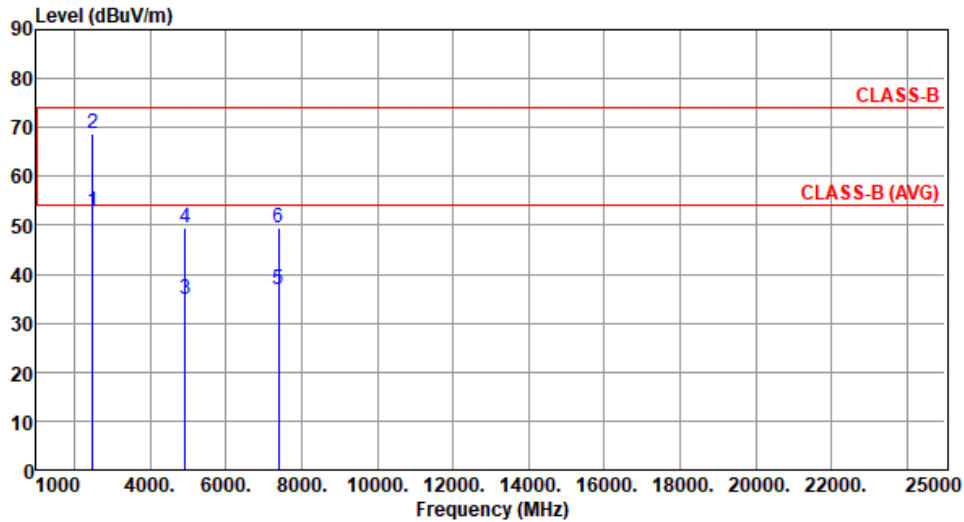
*Factor includes antenna factor , cable loss and amplifier gain

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

Modulation	11g	Test Freq. (MHz)	2437						
Polarization	Vertical								
Test By :Roger Lu		Temperature(°C):23	Humidity(%):65						
									
	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	37.44	54.00	-16.56	40.27	-2.83	Average	109	36
2	2390.00	49.76	74.00	-24.24	52.59	-2.83	Peak	109	36
3	2483.50	37.76	54.00	-16.24	40.55	-2.79	Average	109	36
4	2483.50	50.81	74.00	-23.19	53.60	-2.79	Peak	109	36
5	4874.00	36.55	54.00	-17.45	33.23	3.32	Average	100	350
6	4874.00	51.56	74.00	-22.44	48.24	3.32	Peak	100	350
7	7311.00	37.18	54.00	-16.82	28.29	8.89	Average	100	40
8	7311.00	49.52	74.00	-24.48	40.63	8.89	Peak	100	40
<p>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).</p>									

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

Test By :Roger Lu Temperature(°C):23 Humidity(%):65

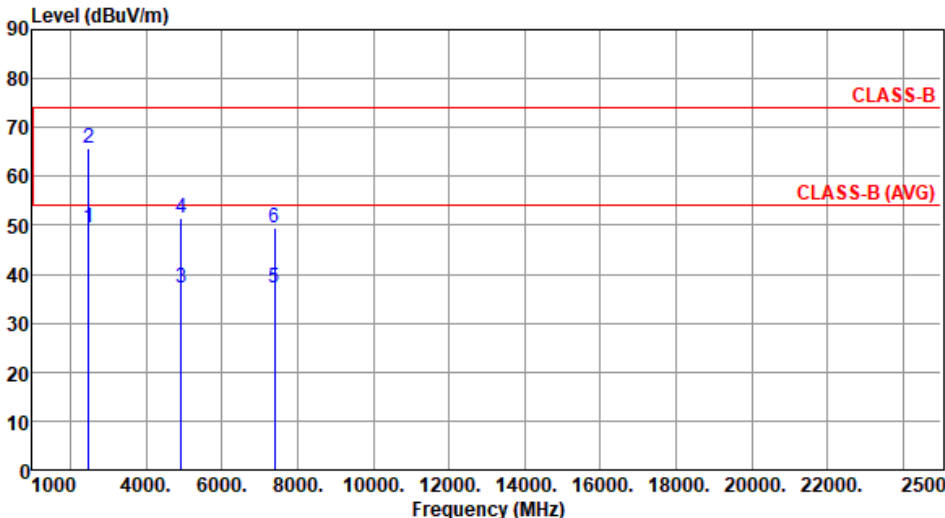


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	52.72	54.00	-1.28	55.51	-2.79	Average	280	36
2	2483.50	68.60	74.00	-5.40	71.39	-2.79	Peak	280	36
3	4924.00	34.99	54.00	-19.01	31.59	3.40	Average	100	265
4	4924.00	49.61	74.00	-24.39	46.21	3.40	Peak	100	265
5	7386.00	37.00	54.00	-17.00	28.12	8.88	Average	100	30
6	7386.00	49.34	74.00	-24.66	40.46	8.88	Peak	100	30

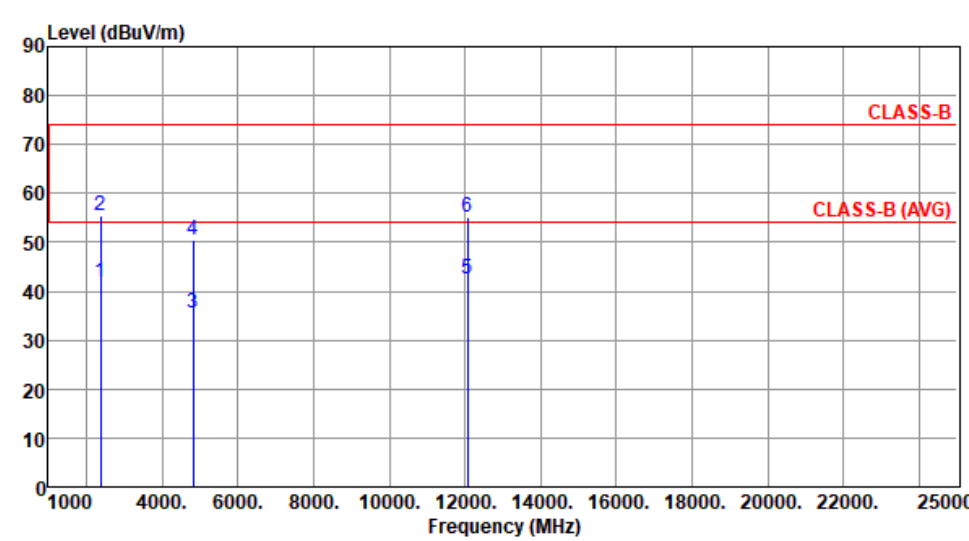
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

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

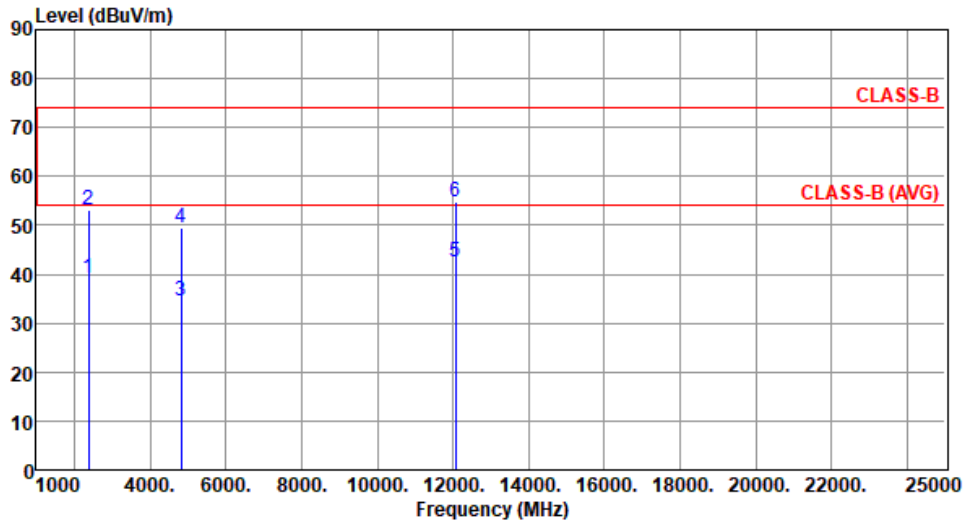
Modulation	11g	Test Freq. (MHz)	2462						
Polarization	Vertical								
Test By : Roger Lu		Temperature(°C): 23	Humidity(%): 65						
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	49.48	54.00	-4.52	52.27	-2.79	Average	105	33
2	2483.50	65.66	74.00	-8.34	68.45	-2.79	Peak	105	33
3	4924.00	37.16	54.00	-16.84	33.76	3.40	Average	100	349
4	4924.00	51.51	74.00	-22.49	48.11	3.40	Peak	100	349
5	7386.00	37.33	54.00	-16.67	28.45	8.88	Average	100	60
6	7386.00	49.47	74.00	-24.53	40.59	8.88	Peak	100	60
<p>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).</p>									

3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20

Modulation	HT20	Test Freq. (MHz)	2412						
Polarization	Horizontal								
Test By :Brad Wu Temperature(°C):23 Humidity(%):65									
									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	2390.00	41.74	54.00	-12.26	44.57	-2.83	Average	302	32
2	2390.00	55.56	74.00	-18.44	58.39	-2.83	Peak	302	32
3	4824.00	35.49	54.00	-18.51	32.16	3.33	Average	100	267
4	4824.00	50.40	74.00	-23.60	47.07	3.33	Peak	100	267
5	12060.00	42.52	54.00	-11.48	29.15	13.37	Average	100	90
6	12060.00	55.04	74.00	-18.96	41.67	13.37	Peak	100	90
<p>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).</p>									

Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		

Test By :Brad Wu Temperature(°C):23 Humidity(%):65

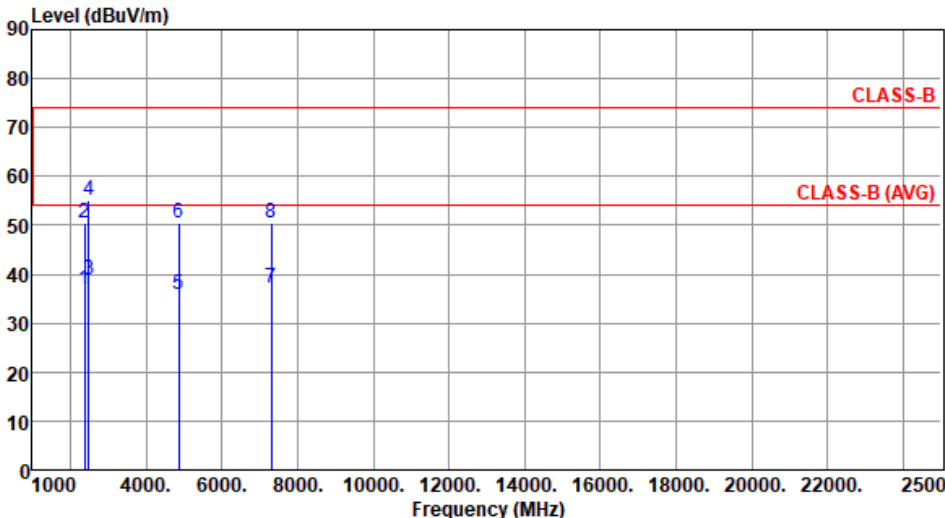


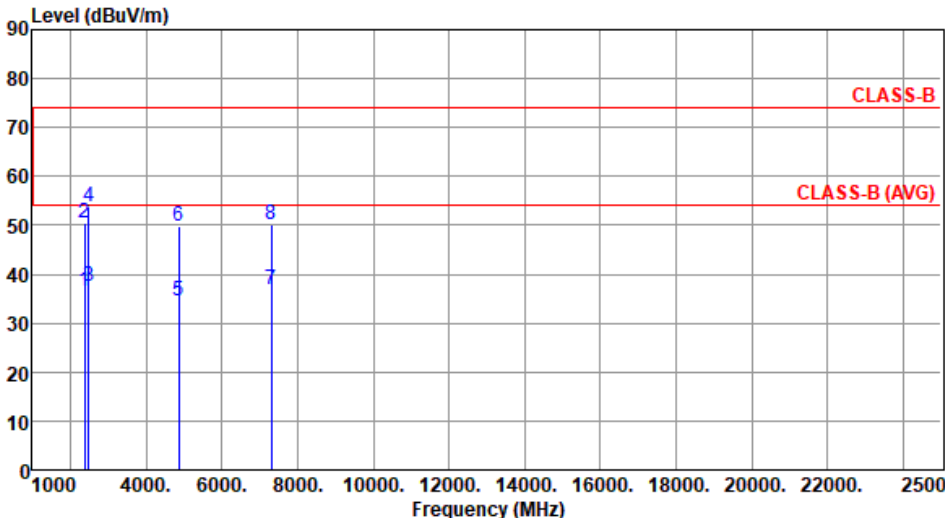
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	39.03	54.00	-14.97	41.86	-2.83	Average	107	42
2	2390.00	53.19	74.00	-20.81	56.02	-2.83	Peak	107	42
3	4824.00	34.63	54.00	-19.37	31.30	3.33	Average	100	348
4	4824.00	49.37	74.00	-24.63	46.04	3.33	Peak	100	348
5	12060.00	42.42	54.00	-11.58	29.05	13.37	Average	100	20
6	12060.00	54.83	74.00	-19.17	41.46	13.37	Peak	100	20

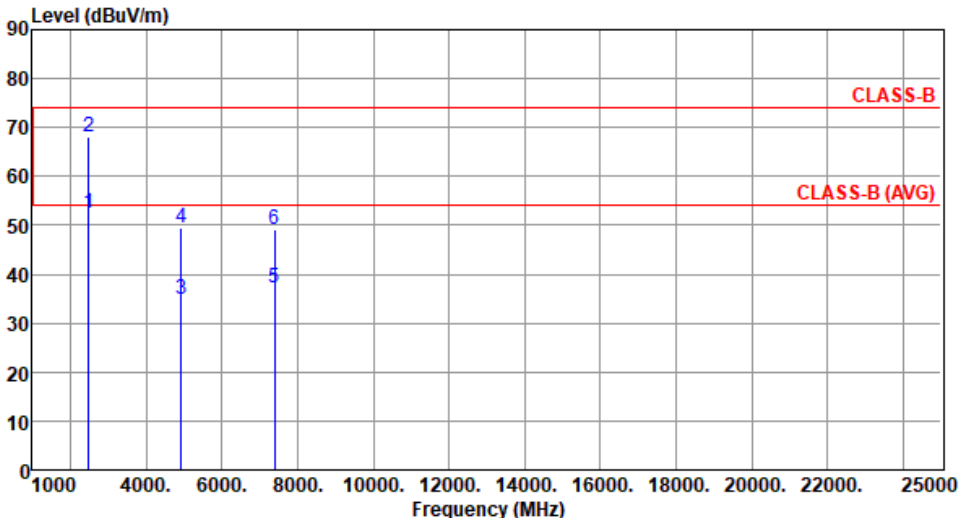
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

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

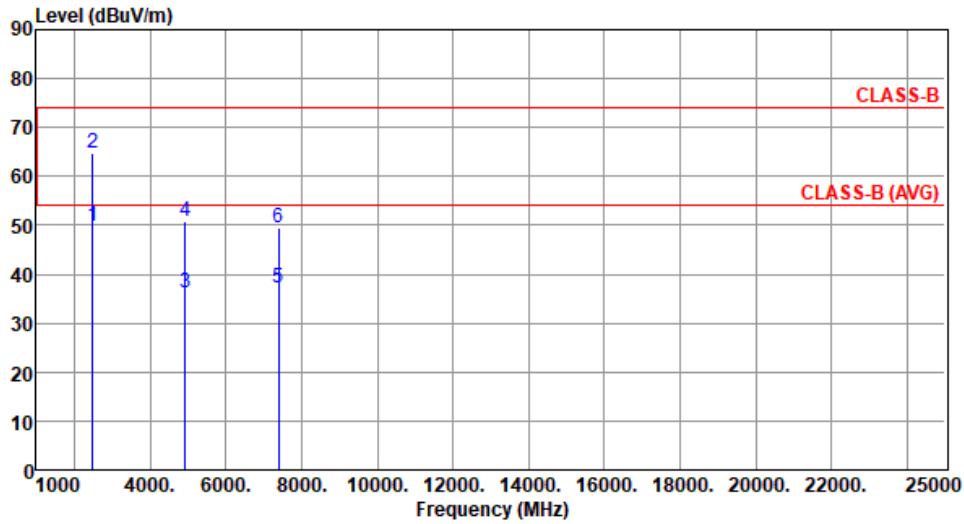
Modulation	HT20	Test Freq. (MHz)	2437						
Polarization	Horizontal								
Test By	:Brad Wu	Temperature(°C):23	Humidity(%):65						
									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	36.83	54.00	-17.17	39.66	-2.83	Average	298	31
2	2390.00	50.56	74.00	-23.44	53.39	-2.83	Peak	298	31
3	2483.50	38.73	54.00	-15.27	41.52	-2.79	Average	298	31
4	2483.50	55.28	74.00	-18.72	58.07	-2.79	Peak	298	31
5	4874.00	35.78	54.00	-18.22	32.46	3.32	Average	100	266
6	4874.00	50.64	74.00	-23.36	47.32	3.32	Peak	100	266
7	7311.00	37.04	54.00	-16.96	28.15	8.89	Average	100	50
8	7311.00	50.34	74.00	-23.66	41.45	8.89	Peak	100	50
<p>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).</p>									

Modulation	HT20	Test Freq. (MHz)	2437						
Polarization	Vertical								
Test By :Brad Wu		Temperature(°C):23	Humidity(%):65						
									
	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	36.65	54.00	-17.35	39.48	-2.83	Average	108	34
2	2390.00	50.42	74.00	-23.58	53.25	-2.83	Peak	108	34
3	2483.50	37.37	54.00	-16.63	40.16	-2.79	Average	108	34
4	2483.50	53.71	74.00	-20.29	56.50	-2.79	Peak	108	34
5	4874.00	34.54	54.00	-19.46	31.22	3.32	Average	100	346
6	4874.00	49.78	74.00	-24.22	46.46	3.32	Peak	100	346
7	7311.00	36.91	54.00	-17.09	28.02	8.89	Average	100	20
8	7311.00	50.18	74.00	-23.82	41.29	8.89	Peak	100	20
<p>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).</p>									

Modulation	HT20	Test Freq. (MHz)	2462						
Polarization	Horizontal								
Test By	:Brad Wu	Temperature(°C):23	Humidity(%):65						
									
	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	52.43	54.00	-1.57	55.22	-2.79	Average	312	36
2	2483.50	68.06	74.00	-5.94	70.85	-2.79	Peak	312	36
3	4924.00	34.96	54.00	-19.04	31.56	3.40	Average	100	268
4	4924.00	49.51	74.00	-24.49	46.11	3.40	Peak	100	268
5	7386.00	37.03	54.00	-16.97	28.15	8.88	Average	100	20
6	7386.00	49.17	74.00	-24.83	40.29	8.88	Peak	100	20
<p>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).</p>									

Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		

Test By :Brad Wu Temperature(°C):23 Humidity(%):65



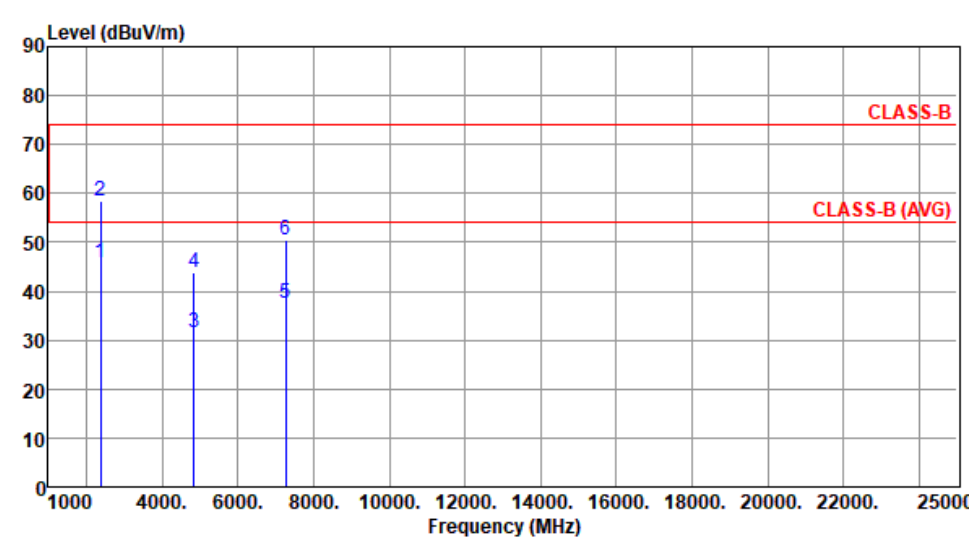
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2483.50	49.71	54.00	-4.29	52.50	-2.79	Average	105	37
2	2483.50	64.88	74.00	-9.12	67.67	-2.79	Peak	105	37
3	4924.00	36.29	54.00	-17.71	32.89	3.40	Average	100	351
4	4924.00	50.69	74.00	-23.31	47.29	3.40	Peak	100	351
5	7386.00	37.13	54.00	-16.87	28.25	8.88	Average	100	40
6	7386.00	49.34	74.00	-24.66	40.46	8.88	Peak	100	40

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

*Factor includes antenna factor , cable loss and amplifier gain

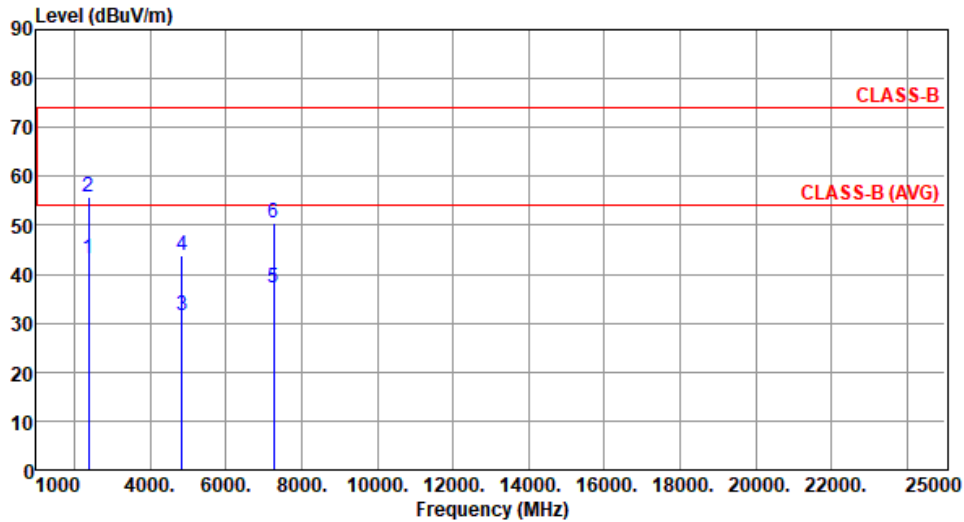
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.5.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40

Modulation	HT40		Test Freq. (MHz)	2422					
Polarization	Horizontal								
Test By :Brad Wu		Temperature(°C):23		Humidity(%):65					
									
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	2390.00	45.85	54.00	-8.15	48.68	-2.83	Average	327	28
2	2390.00	58.60	74.00	-15.40	61.43	-2.83	Peak	327	28
3	4844.00	31.57	54.00	-22.43	28.26	3.31	Average	100	40
4	4844.00	43.99	74.00	-30.01	40.68	3.31	Peak	100	40
5	7266.00	37.44	54.00	-16.56	28.56	8.88	Average	100	90
6	7266.00	50.55	74.00	-23.45	41.67	8.88	Peak	100	90
<p>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).</p>									

Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		

Test By :Brad Wu Temperature(°C):23 Humidity(%):65



	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	43.12	54.00	-10.88	45.95	-2.83	Average	100	41
2	2390.00	55.67	74.00	-18.33	58.50	-2.83	Peak	100	41
3	4844.00	31.46	54.00	-22.54	28.15	3.31	Average	100	20
4	4844.00	43.77	74.00	-30.23	40.46	3.31	Peak	100	20
5	7266.00	37.27	54.00	-16.73	28.39	8.88	Average	100	80
6	7266.00	50.33	74.00	-23.67	41.45	8.88	Peak	100	80

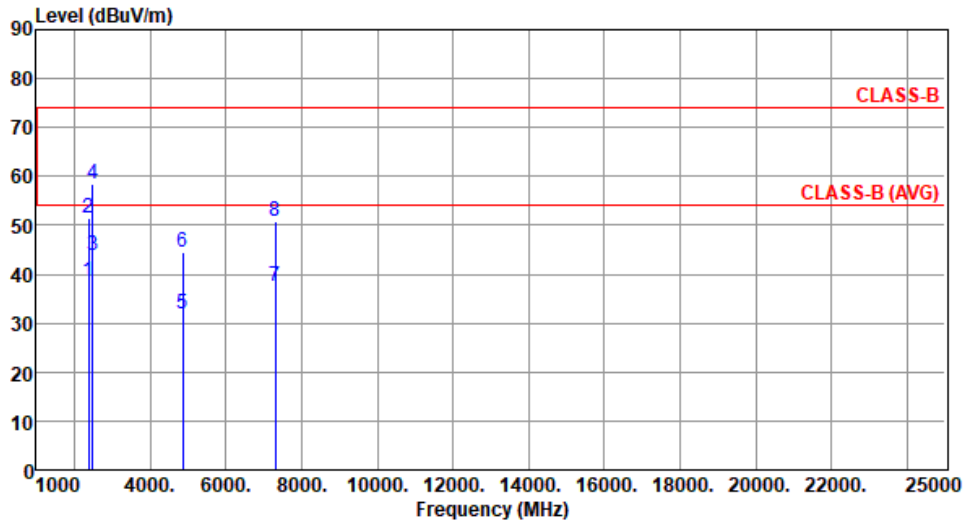
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

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

Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		

Test By :Brad Wu Temperature(°C):23 Humidity(%):65



	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	38.58	54.00	-15.42	41.41	-2.83	Average	324	28
2	2390.00	51.49	74.00	-22.51	54.32	-2.83	Peak	324	28
3	2483.50	43.85	54.00	-10.15	46.64	-2.79	Average	324	28
4	2483.50	58.35	74.00	-15.65	61.14	-2.79	Peak	324	28
5	4874.00	31.91	54.00	-22.09	28.59	3.32	Average	100	50
6	4874.00	44.58	74.00	-29.42	41.26	3.32	Peak	100	50
7	7311.00	37.57	54.00	-16.43	28.68	8.89	Average	100	40
8	7311.00	50.68	74.00	-23.32	41.79	8.89	Peak	100	40

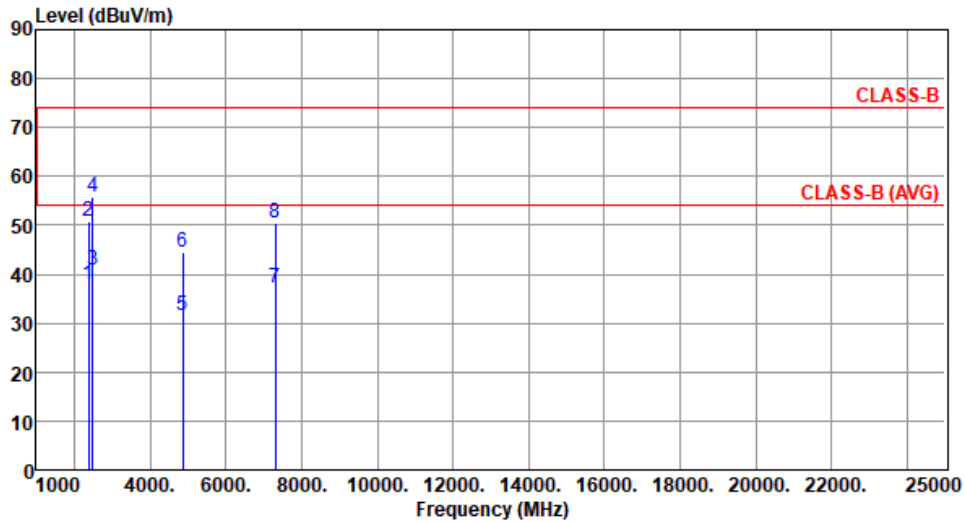
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

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

Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		

Test By :Brad Wu Temperature(°C):23 Humidity(%):65



	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	37.74	54.00	-16.26	40.57	-2.83	Average	107	38
2	2390.00	50.76	74.00	-23.24	53.59	-2.83	Peak	107	38
3	2483.50	40.81	54.00	-13.19	43.60	-2.79	Average	107	38
4	2483.50	55.77	74.00	-18.23	58.56	-2.79	Peak	107	38
5	4874.00	31.57	54.00	-22.43	28.25	3.32	Average	100	40
6	4874.00	44.47	74.00	-29.53	41.15	3.32	Peak	100	40
7	7311.00	37.21	54.00	-16.79	28.32	8.89	Average	100	30
8	7311.00	50.33	74.00	-23.67	41.44	8.89	Peak	100	30

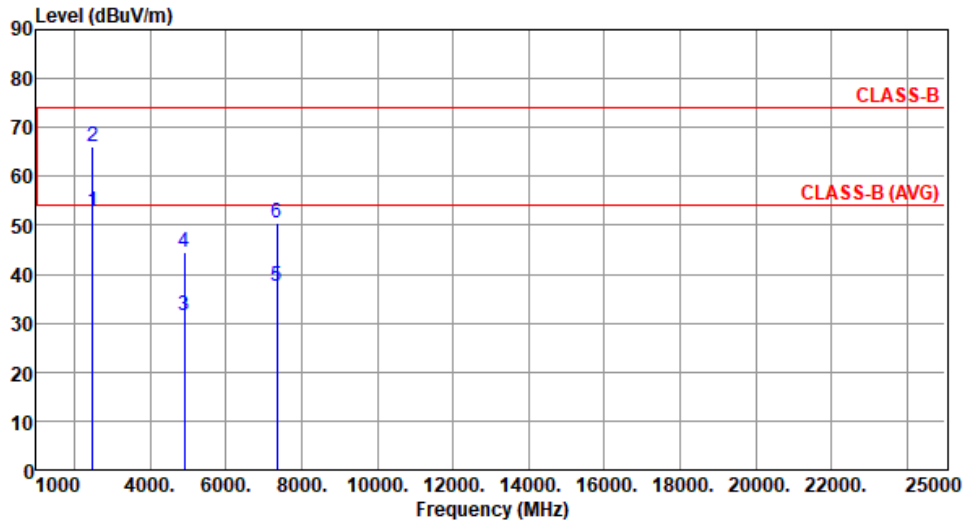
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

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

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		

Test By :Roger Lu Temperature(°C):23 Humidity(%):65



	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	52.97	54.00	-1.03	55.76	-2.79	Average	284	29
2	2483.50	66.22	74.00	-7.78	69.01	-2.79	Peak	284	29
3	4904.00	31.68	54.00	-22.32	28.33	3.35	Average	100	90
4	4904.00	44.59	74.00	-29.41	41.24	3.35	Peak	100	90
5	7356.00	37.50	54.00	-16.50	28.55	8.95	Average	100	20
6	7356.00	50.59	74.00	-23.41	41.64	8.95	Peak	100	20

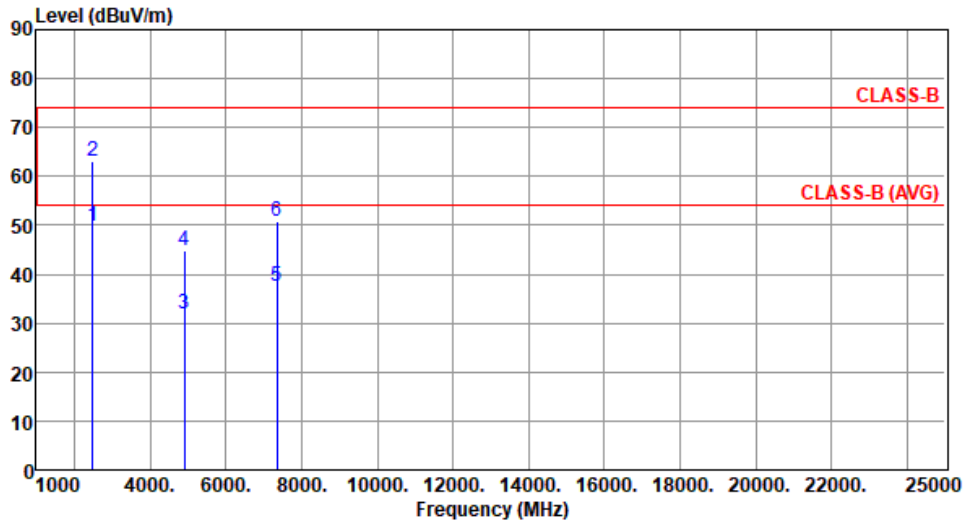
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m)

*Factor includes antenna factor , cable loss and amplifier gain

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

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Vertical		

Test By :Roger Lu Temperature(°C):23 Humidity(%):65



	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	49.83	54.00	-4.17	52.62	-2.79	Average	100	33
2	2483.50	63.25	74.00	-10.75	66.04	-2.79	Peak	100	33
3	4904.00	31.79	54.00	-22.21	28.44	3.35	Average	100	100
4	4904.00	44.93	74.00	-29.07	41.58	3.35	Peak	100	100
5	7356.00	37.59	54.00	-16.41	28.64	8.95	Average	100	30
6	7356.00	50.72	74.00	-23.28	41.77	8.95	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).

3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 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.

3.6.2 Test Procedures

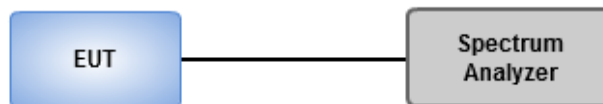
Reference level measurement

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

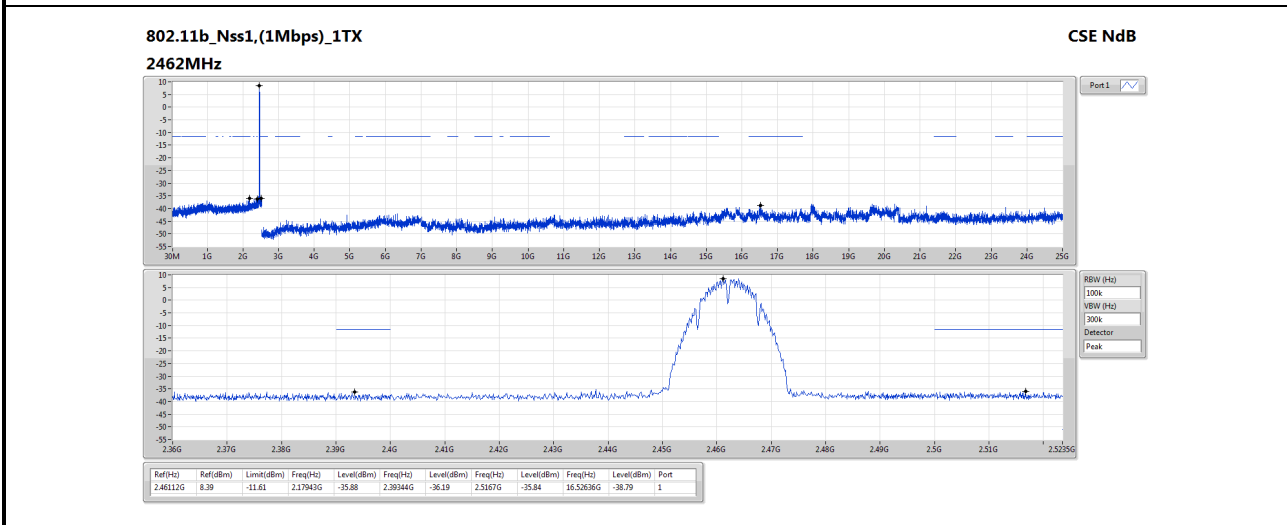
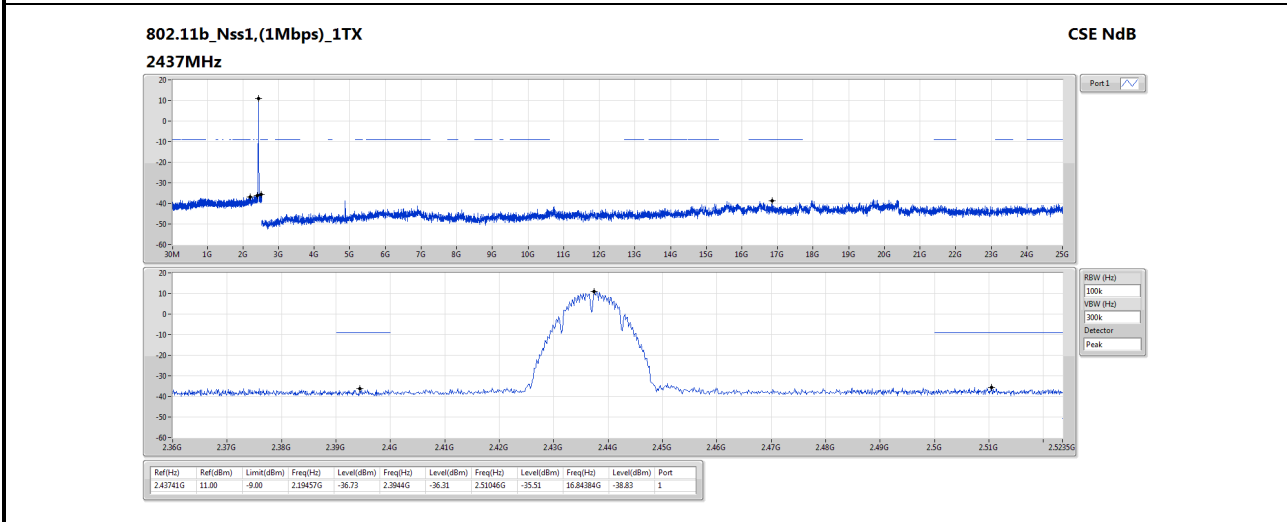
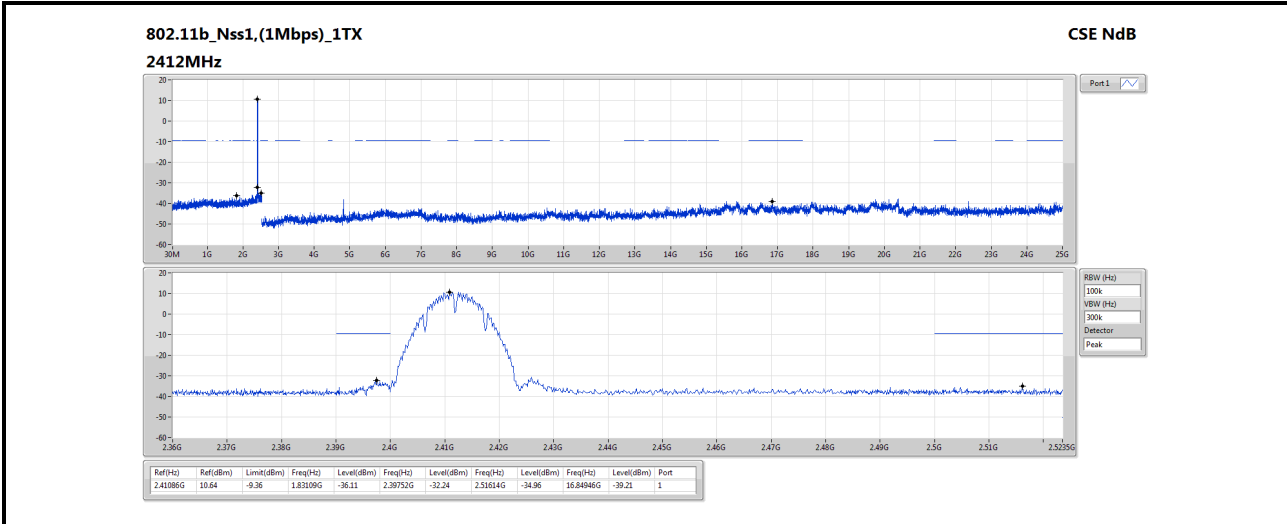
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

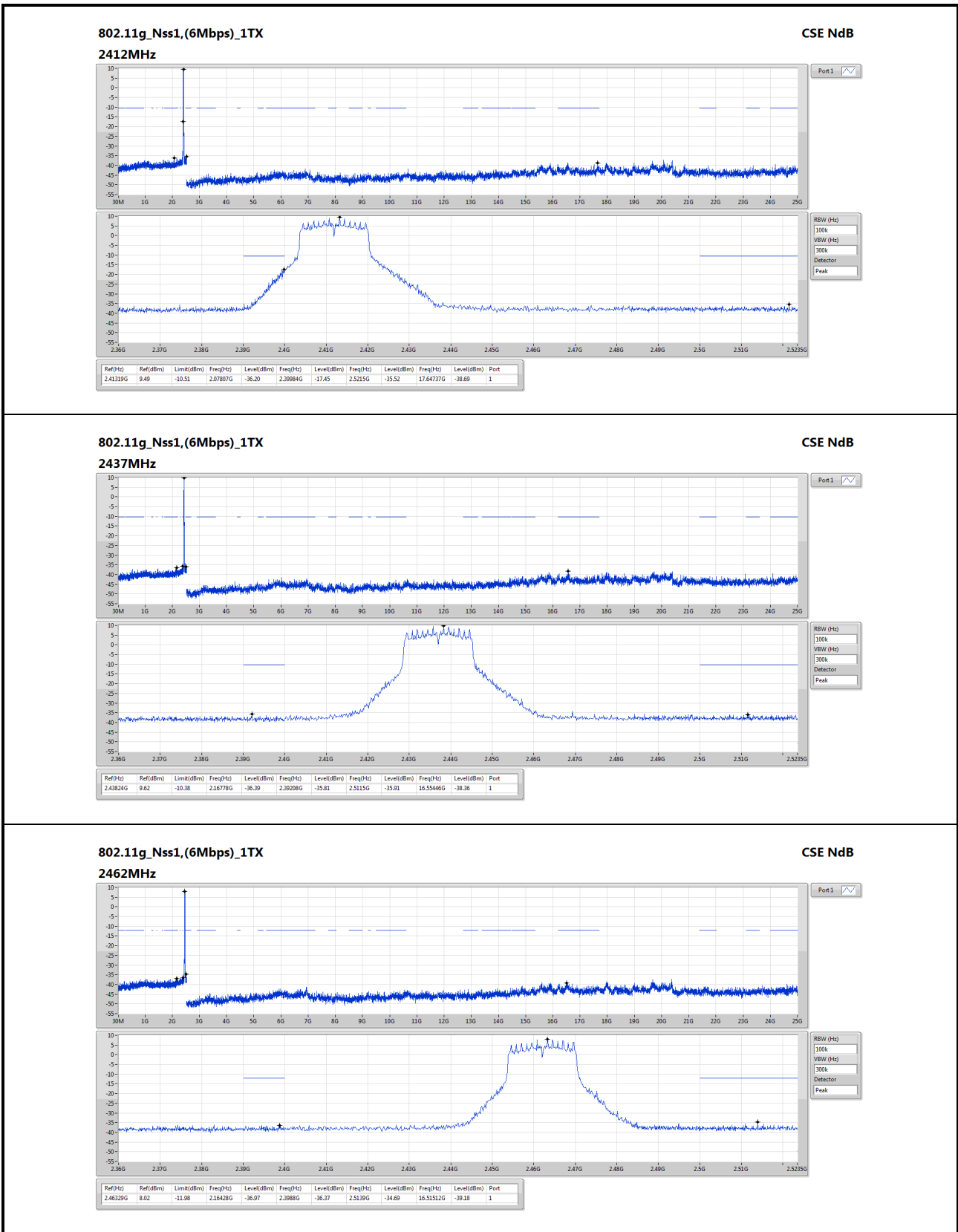
3.6.3 Test Setup

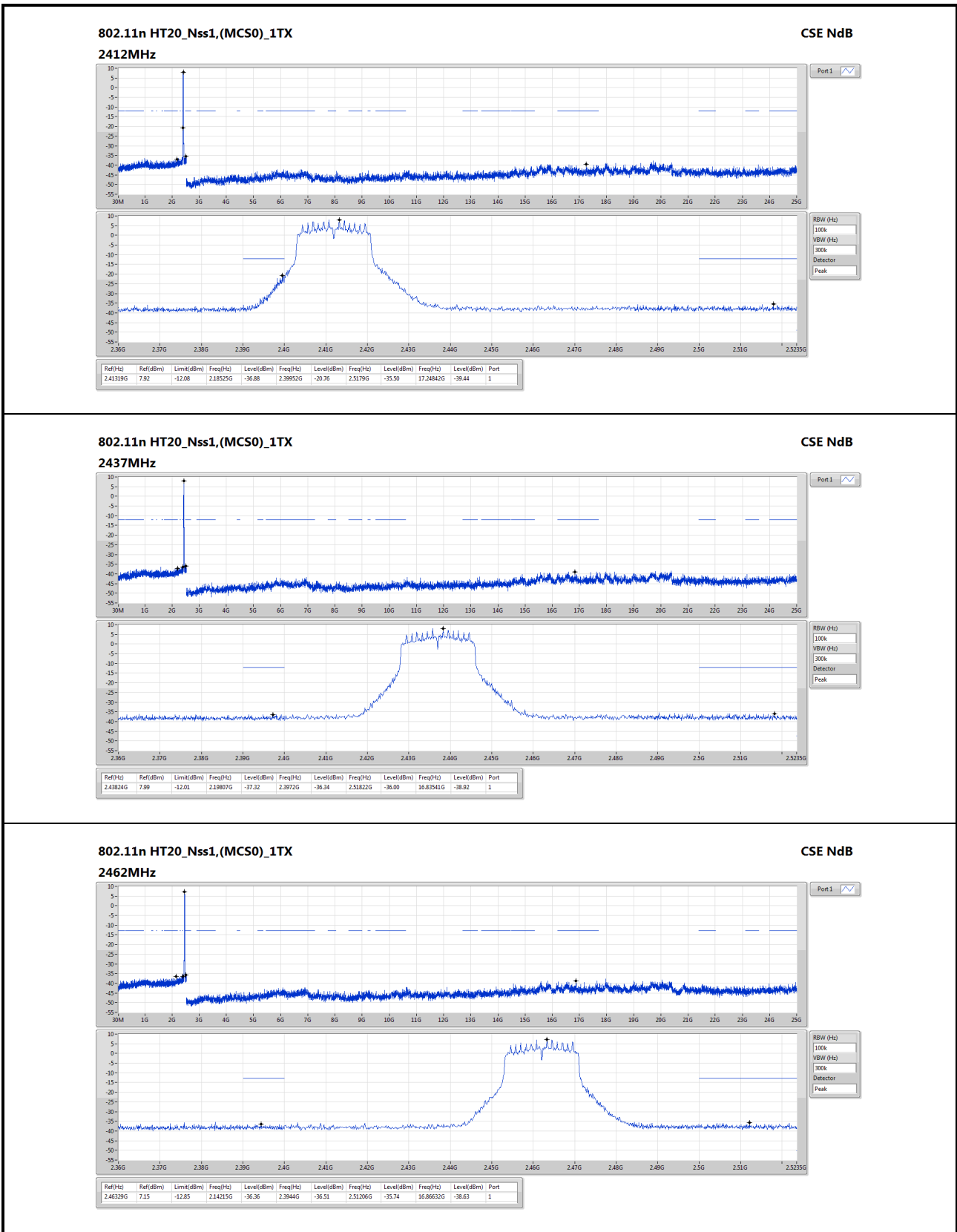


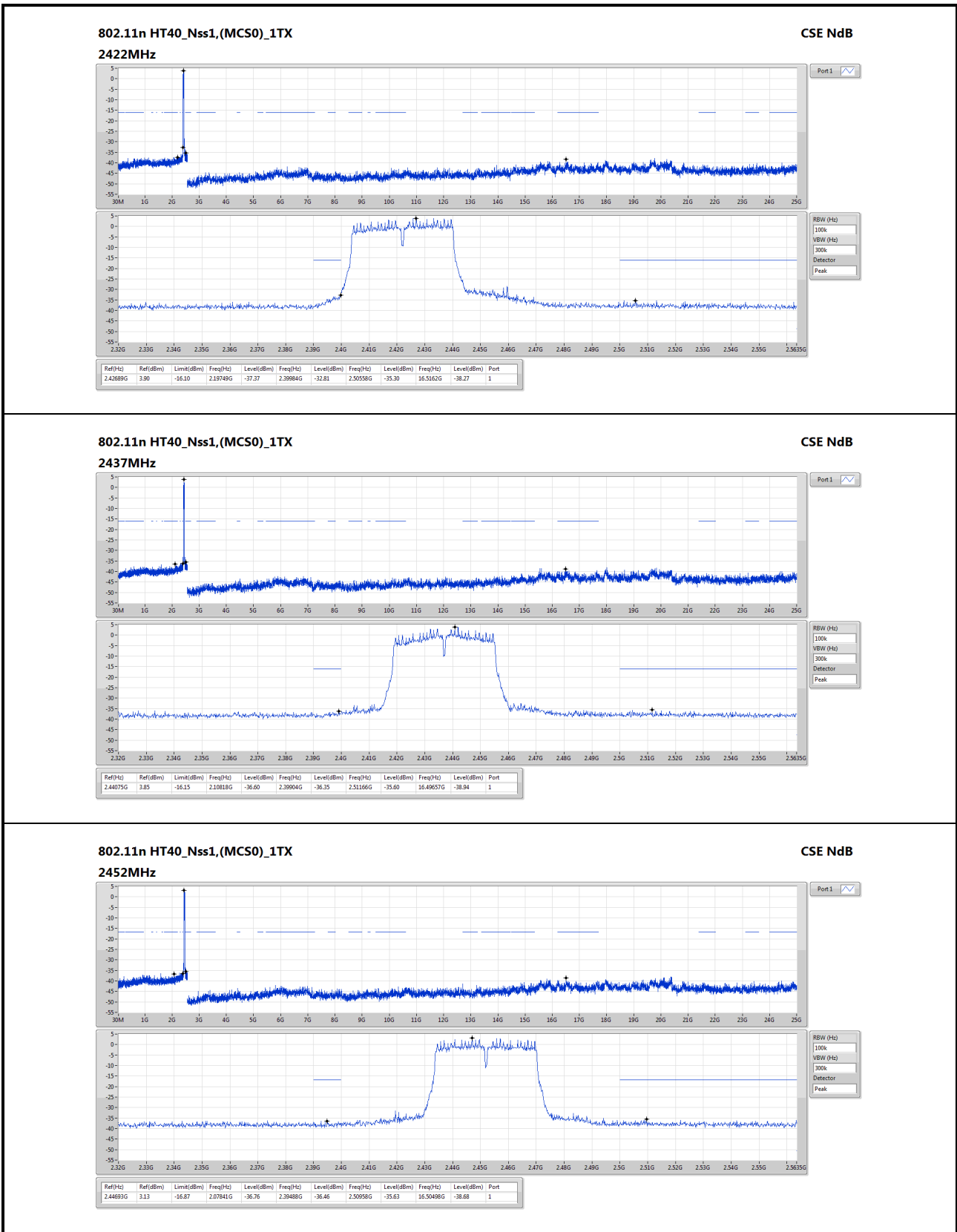
3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands

Ambient Condition	18°C / 63%	Tested By	Aska Huang
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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==