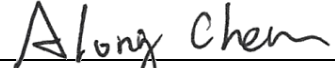


FCC Test Report

FCC ID : P27RP362M
Equipment : AC2100 Wi-Fi Mesh Extender ;
AC2100 Wi-Fi Mesh Router
Model No. : RP362M ; IP3421M
Multiple Listing : Refer to item 1.1.1 for more details
Brand Name : Sercomm
Applicant : Sercomm Corporation
Address : 8F, No. 3-1, YuanQu St., NanKang, Taipei 115,
Taiwan, R.O.C.
Standard : 47 CFR FCC Part 15.247
Received Date : Feb. 12, 2020
Tested Date : Mar. 04 ~ Apr. 08, 2020

We, International Certification Corp., 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 may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Along Chen / Assistant Manager

Approved by:


Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR021202AC	Rev. 01	Initial issue	Apr. 22, 2020

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.830MHz 28.47(Margin -17.53dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz 52.99 (Margin -1.01dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 25.30	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 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name	Description
Sercomm	RP362MXXXXXXXXXX	AC2100 Wi-Fi Mesh Extender	FW: v1.00.01 supports 2 LANs. Indoor AP / Client
Sercomm	IP3421MXXXXXXXXXX	AC2100 Wi-Fi Mesh Router	FW: v1.00.00.001 supports 1 WAN & 1 LAN Indoor AP
- the 1st X should be "blank" or "-"; the rest X could be 0 to 9, A to Z, "blank", "-" or "/" , for marketing purpose. - The above models used the same hardware but with the different firmware. - The above models, model RP362M and IP3421M were selected as a representative one for the final test			

1.1.2 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
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15
Note 1: RF output power specifies that Maximum Conducted (Average) 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.					

1.1.3 Antenna Details

Ant. No.	Model	Type	Connector	Gain (dBi)
1	Dual Ant 1	Dipole	i-pex	2.32
2	Dual ANT 2	Dipole	i-pex	2.22

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12Vdc from AC adapter
-------------------	-----------------------

1.1.5 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: MOSO Model: MSS-H1000WR120-012B0-US I/P: 100-240Vac, 50/60Hz, 0.5A max O/P: 12.0Vdc, 1A Power Line: 1.5m non-shielded without core

Note: There are two designs for the adapter, with or without Y-capacitor.

1.1.6 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	---	---

1.1.7 Test Tool and Duty Cycle

Test Tool	MT7603 QA, V0.0.2.0		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	98.99%	0.04
	11g	92.42%	0.34
	HT20	91.71%	0.38
	HT40	82.25%	0.85

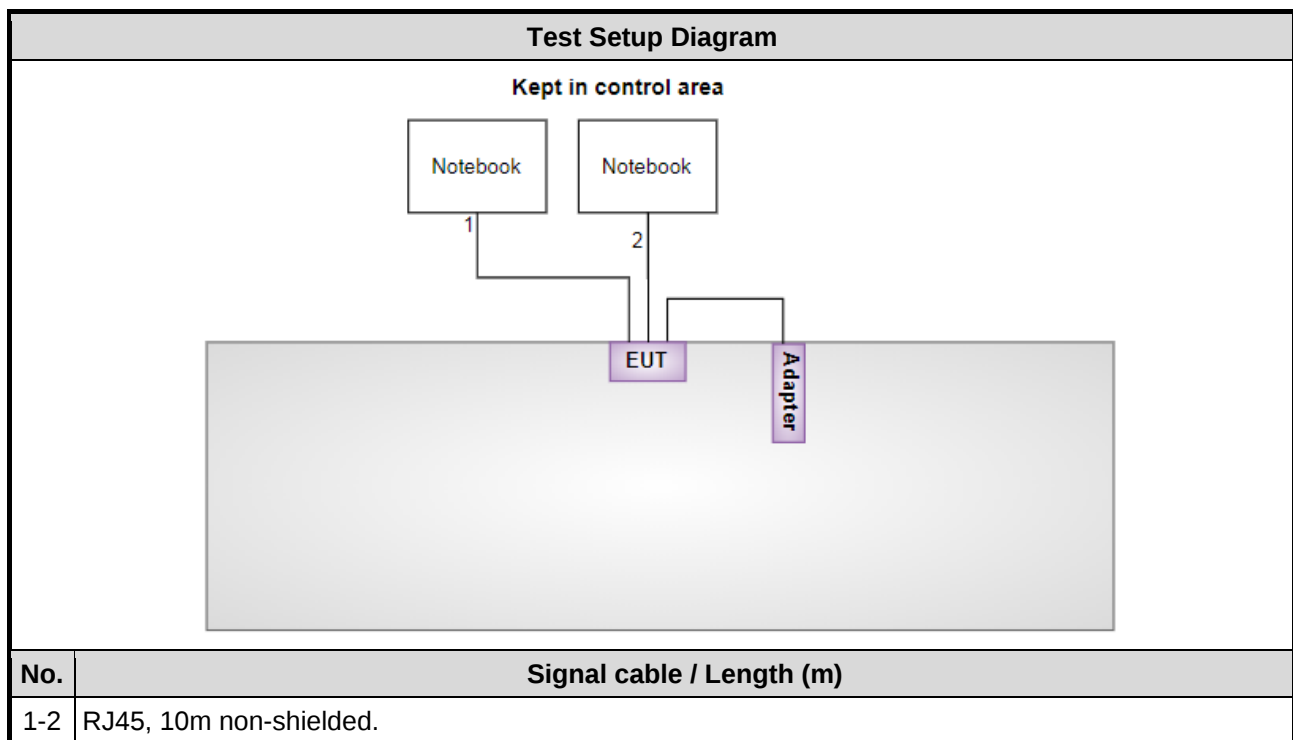
1.1.8 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	24
11b	2437	27
11b	2462	23
11g	2412	18
11g	2437	28
11g	2462	1A
HT20	2412	16
HT20	2437	28
HT20	2462	18
HT40	2422	10
HT40	2437	1B
HT40	2452	14

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E5470	DoC	---
2	Notebook	DELL	Latitude E6440	DoC	---

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Apr. 02, 2020				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Dec. 12, 2019	Dec. 11, 2020
LISN	R&S	ENV216	101579	Mar. 12, 2020	Mar. 11, 2021
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 22, 2019	Oct. 21, 2020
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 chamber 3 / (03CH03-WS)				
Tested Date	Mar. 04 ~ Mar. 13, 2020				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101499	Jan. 09, 2020	Jan. 08, 2021
Receiver	R&S	ESR3	101657	Feb. 14, 2020	Feb. 13, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 17, 2019	Apr. 16, 2020
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Dec. 27, 2019	Dec. 26, 2020
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2019	Nov. 14, 2020
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 13, 2019	Nov. 12, 2020
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 07, 2019	Oct. 06, 2020
Preamplifier	EMC	EMC02325	980187	Aug. 14, 2019	Aug. 13, 2020
Preamplifier	Agilent	83017A	MY53270014	Aug. 07, 2019	Aug. 06, 2020
Preamplifier	EMC	EMC184045B	980192	Aug. 01, 2019	Jul. 31, 2020
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Sep. 27, 2019	Sep. 26, 2020
RF cable-8M	EMC	EMC104-SM-SM-8000	181107	Sep. 27, 2019	Sep. 26, 2020
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Sep. 27, 2019	Sep. 26, 2020
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Sep. 27, 2019	Sep. 26, 2020
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Sep. 27, 2019	Sep. 26, 2020
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Sep. 27, 2019	Sep. 26, 2020
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	Apr. 01 ~ Apr. 08, 2020				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Apr. 17, 2019	Apr. 16, 2020
Power Meter	Anritsu	ML2495A	1241002	Oct. 23, 2019	Oct. 22, 2020
Power Sensor	Anritsu	MA2411B	1207366	Oct. 23, 2019	Oct. 22, 2020
Signal Generator	R&S	SMB100A	175727	Dec. 27, 2019	Dec. 26, 2020
AC POWER SOURCE	APC	AFC-500W	F312060012	Dec. 02, 2019	Dec. 01, 2020
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247

ANSI C63.10-2013

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

1.6 Deviation from Test Standard and Measurement Procedure

None

1.7 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 ≤ 1 GHz	± 3.96 dB
Radiated emission > 1 GHz	± 4.51 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	24°C / 68%	Alex Tsai
Radiated Emissions	03CH03-WS	20°C / 63%	Brad Wu Roger Lu
RF Conducted	TH01-WS	20°C / 64%	Aska Huang

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISSED#: 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	HT20	2437	MCS 0	1, 2
Radiated Emissions ≤1GHz	HT20	2437	MCS 0	1, 2
Radiated Emissions >1GHz	11b	2412 / 2437 / 2462	1 Mbps	1
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	

NOTE:

1. The adapter have two configurations (with Y capacitor / without Y capacitor) had been covered during the pretest, and found that without Y was the worst case and was selected for final test.
2. Thee EUT had been tested by following test configurations.
Configuration 1 , Model name: IP3421M
Configuration 2 , Model name: RP362M

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

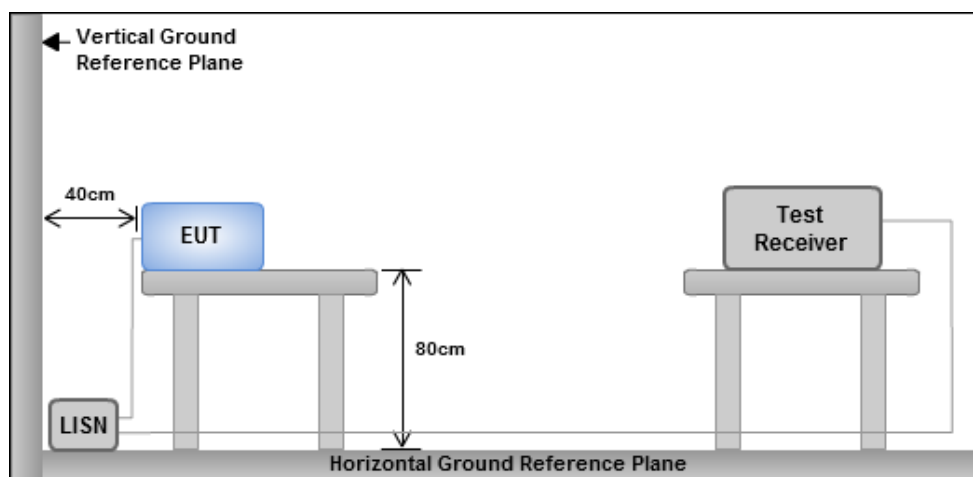
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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.

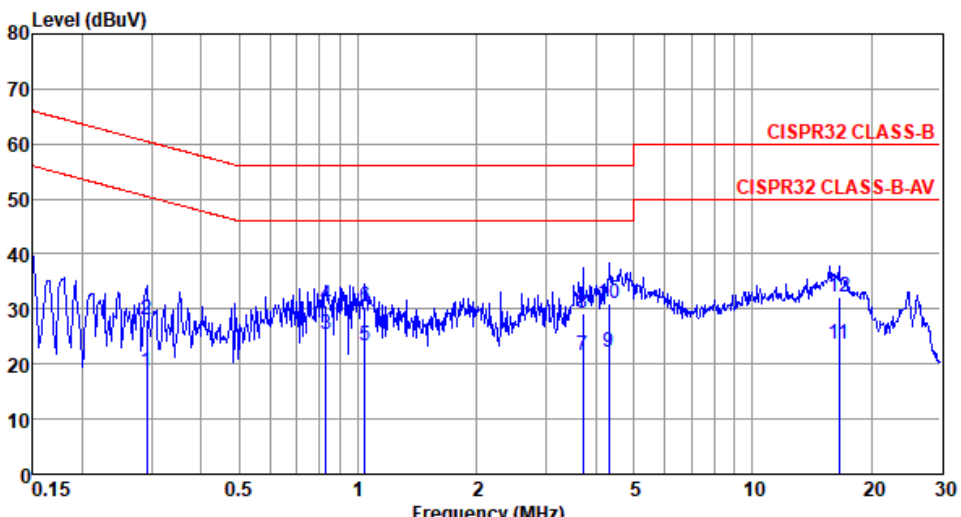
3.1.3 Test Setup



- 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

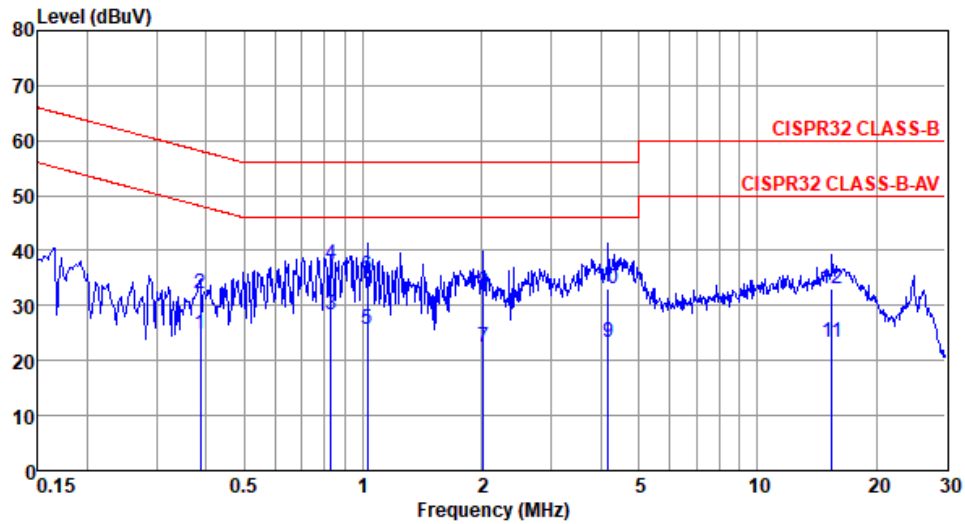
Modulation	HT20	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.291	18.53	50.50	-31.97	8.61	9.63	0.07	Average
2	0.291	27.93	60.50	-32.57	18.01	9.63	0.07	QP
3*	0.830	25.53	46.00	-20.47	15.48	9.63	0.11	Average
4	0.830	30.67	56.00	-25.33	20.62	9.63	0.11	QP
5	1.043	23.27	46.00	-22.73	13.20	9.63	0.12	Average
6	1.043	30.50	56.00	-25.50	20.43	9.63	0.12	QP
7	3.720	21.45	46.00	-24.55	11.15	9.65	0.28	Average
8	3.720	29.23	56.00	-26.77	18.93	9.65	0.28	QP
9	4.315	22.07	46.00	-23.93	11.75	9.65	0.30	Average
10	4.315	31.02	56.00	-24.98	20.70	9.65	0.30	QP
11	16.573	23.73	50.00	-26.27	12.87	9.71	0.62	Average
12	16.573	32.31	60.00	-27.69	21.45	9.71	0.62	QP

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

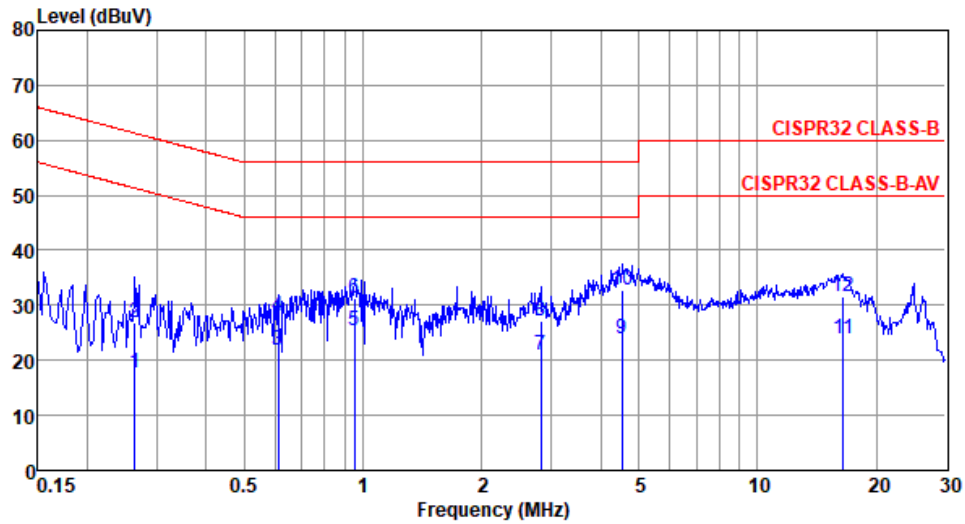
Modulation	HT20	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	1



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.387	24.76	48.12	-23.36	14.86	9.65	0.08	Average
2	0.387	32.28	58.12	-25.84	22.38	9.65	0.08	QP
3*	0.830	28.47	46.00	-17.53	18.52	9.65	0.11	Average
4	0.830	37.53	56.00	-18.47	27.58	9.65	0.11	QP
5	1.027	25.57	46.00	-20.43	15.60	9.65	0.12	Average
6	1.027	35.50	56.00	-20.50	25.53	9.65	0.12	QP
7	2.023	22.40	46.00	-23.60	12.30	9.66	0.18	Average
8	2.023	32.44	56.00	-23.56	22.34	9.66	0.18	QP
9	4.180	23.46	46.00	-22.54	13.24	9.67	0.29	Average
10	4.180	33.14	56.00	-22.86	22.92	9.67	0.29	QP
11	15.470	23.43	50.00	-26.57	12.63	9.80	0.61	Average
12	15.470	32.92	60.00	-27.08	22.12	9.80	0.61	QP

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

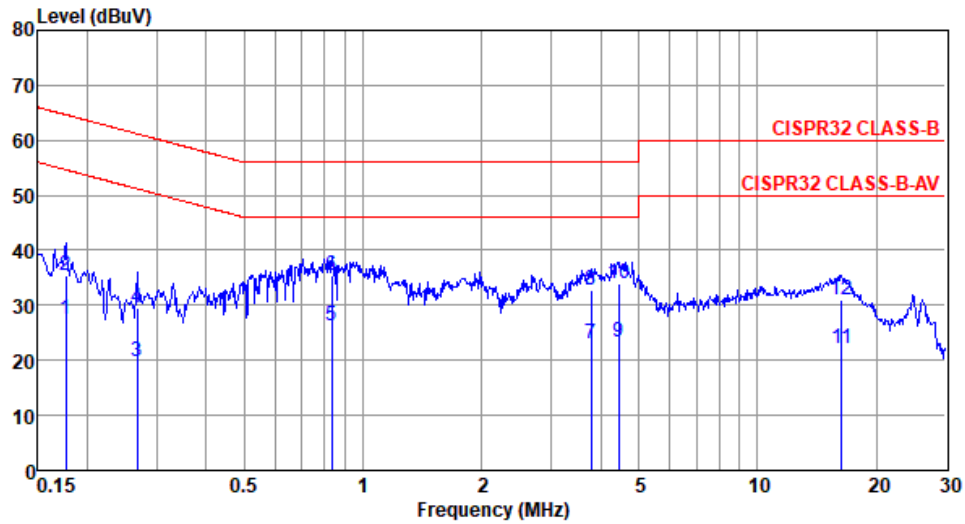
Modulation	HT20	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.264	17.78	51.29	-33.51	7.87	9.63	0.07	Average
2	0.264	26.80	61.29	-34.49	16.89	9.63	0.07	QP
3	0.611	21.77	46.00	-24.23	11.76	9.63	0.10	Average
4	0.611	28.15	56.00	-27.85	18.14	9.63	0.10	QP
5*	0.953	25.25	46.00	-20.75	15.18	9.63	0.12	Average
6	0.953	31.41	56.00	-24.59	21.34	9.63	0.12	QP
7	2.824	20.97	46.00	-25.03	10.75	9.64	0.23	Average
8	2.824	27.30	56.00	-28.70	17.08	9.64	0.23	QP
9	4.525	23.79	46.00	-22.21	13.46	9.66	0.30	Average
10	4.525	32.73	56.00	-23.27	22.40	9.66	0.30	QP
11	16.486	23.84	50.00	-26.16	12.99	9.71	0.62	Average
12	16.486	31.66	60.00	-28.34	20.81	9.71	0.62	QP

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

Modulation	HT20	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	2



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	LISN factor dB	cable loss dB	Remark
1	0.177	27.54	54.64	-27.10	17.69	9.65	0.06	Average
2	0.177	35.46	64.64	-29.18	25.61	9.65	0.06	QP
3	0.267	19.69	51.20	-31.51	9.81	9.65	0.07	Average
4	0.267	29.62	61.20	-31.58	19.74	9.65	0.07	QP
5*	0.835	26.41	46.00	-19.59	16.46	9.65	0.11	Average
6	0.835	35.28	56.00	-20.72	25.33	9.65	0.11	QP
7	3.779	23.07	46.00	-22.93	12.86	9.67	0.28	Average
8	3.779	32.62	56.00	-23.38	22.41	9.67	0.28	QP
9	4.454	23.42	46.00	-22.58	13.17	9.68	0.30	Average
10	4.454	33.93	56.00	-22.07	23.68	9.68	0.30	QP
11	16.312	22.16	50.00	-27.84	11.32	9.81	0.62	Average
12	16.312	30.85	60.00	-29.15	20.01	9.81	0.62	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 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

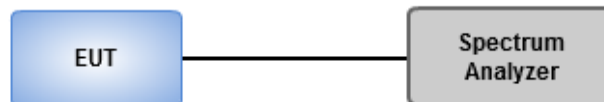
6dB Bandwidth

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

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)_2TX	10.072M	15.123M	15M1G1D	9.783M	14.544M
802.11g_Nss1,(6Mbps)_2TX	16.304M	24.096M	24M1D1D	13.188M	16.353M
802.11n HT20_Nss1,(MCS0)_2TX	16.884M	25.904M	25M9D1D	13.841M	17.511M
802.11n HT40_Nss1,(MCS0)_2TX	35.217M	36.035M	36M0D1D	32.609M	35.89M

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

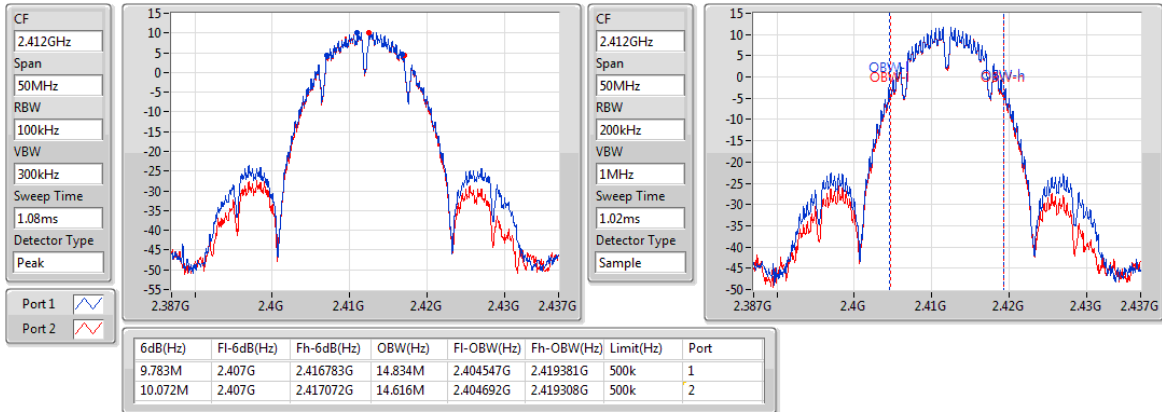
Mode	Result	Limit (Hz)	Port 1 -N dB (Hz)	Port 1 -OBW (Hz)	Port 2 -N dB (Hz)	Port 2 -OBW (Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	9.783M	14.834M	10.072M	14.616M
2437MHz	Pass	500k	10.072M	15.123M	10.072M	15.051M
2462MHz	Pass	500k	9.855M	14.761M	10.072M	14.544M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	13.768M	16.425M	15.072M	16.353M
2437MHz	Pass	500k	15.145M	21.78M	16.304M	24.096M
2462MHz	Pass	500k	13.188M	16.425M	15.942M	16.353M
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	14.13M	17.511M	15.072M	17.511M
2437MHz	Pass	500k	15.072M	23.444M	16.884M	25.904M
2462MHz	Pass	500k	13.841M	17.511M	16.594M	17.511M
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	33.768M	35.89M	32.609M	35.89M
2437MHz	Pass	500k	35.217M	35.89M	35.217M	36.035M
2452MHz	Pass	500k	33.768M	35.89M	33.768M	36.035M

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

802.11b_Nss1,(1Mbps)_2TX

EBW

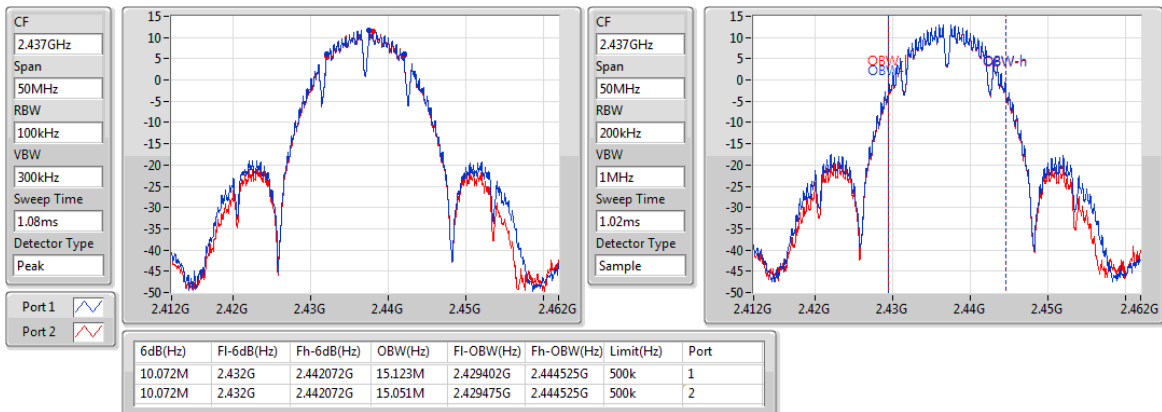
2412MHz



802.11b_Nss1,(1Mbps)_2TX

EBW

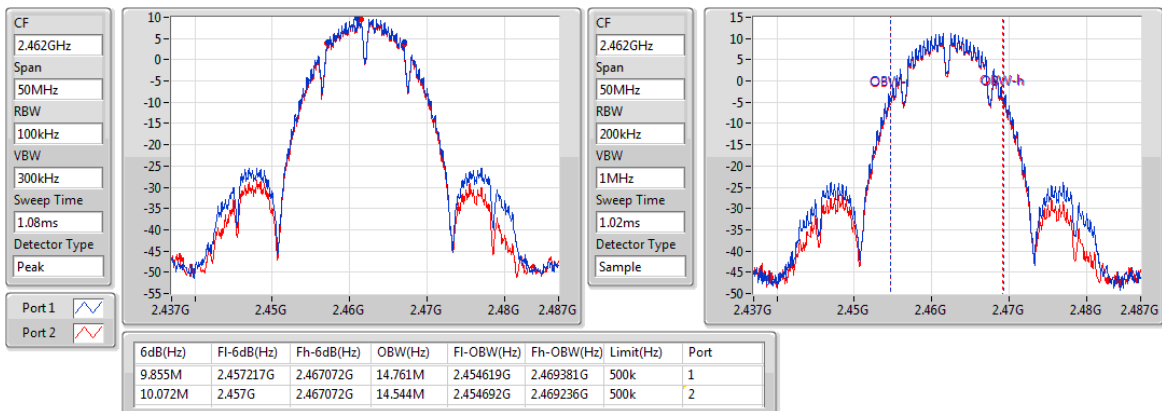
2437MHz



802.11b_Nss1,(1Mbps)_2TX

EBW

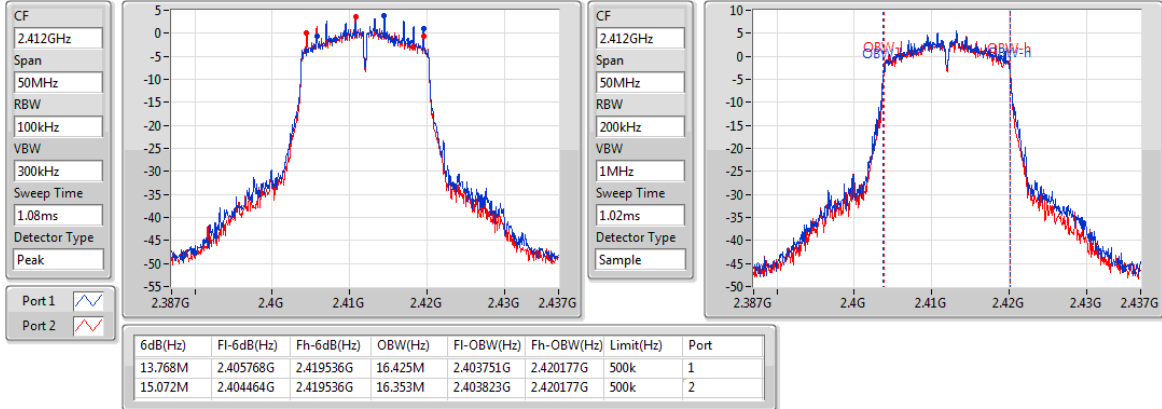
2462MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

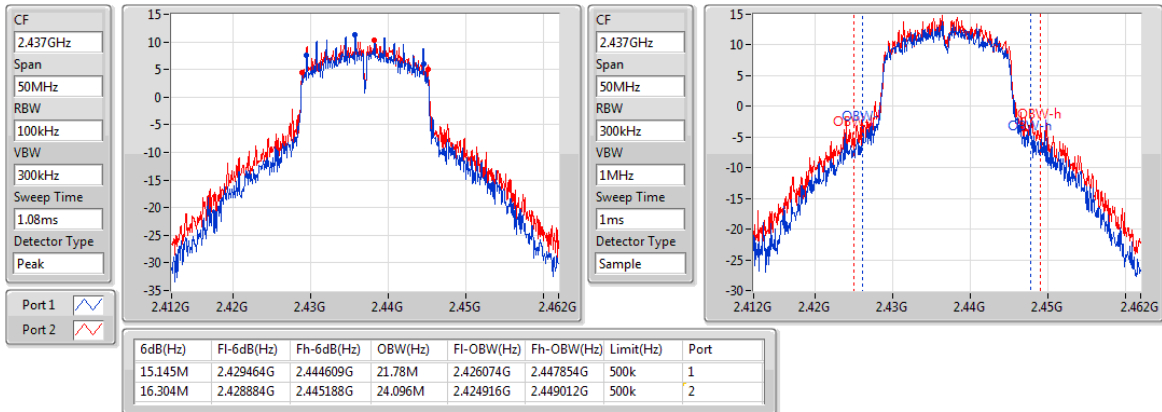
2412MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

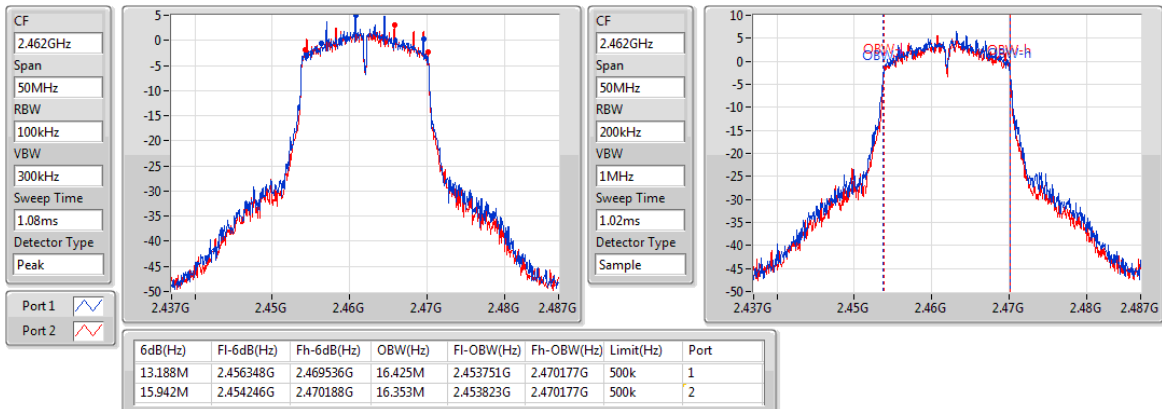
2437MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

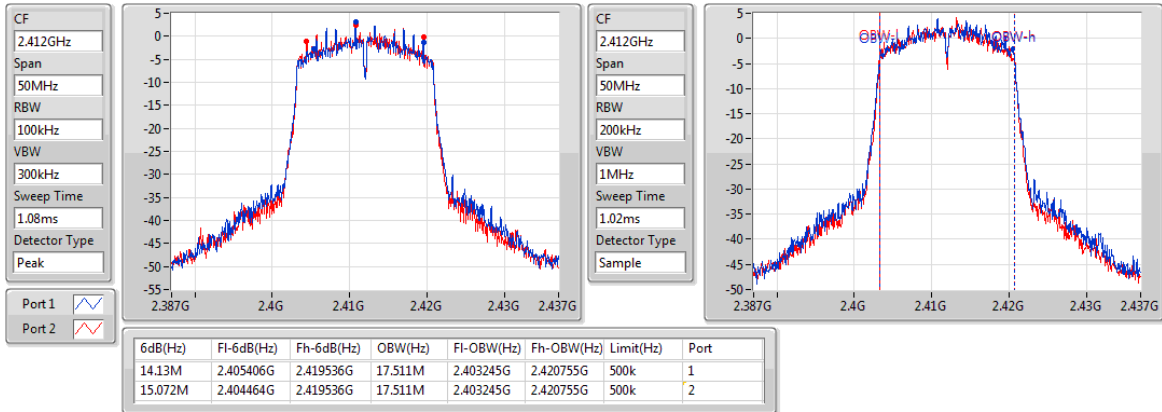
2462MHz



802.11n HT20_Nss1,(MCS0)_2TX

EBW

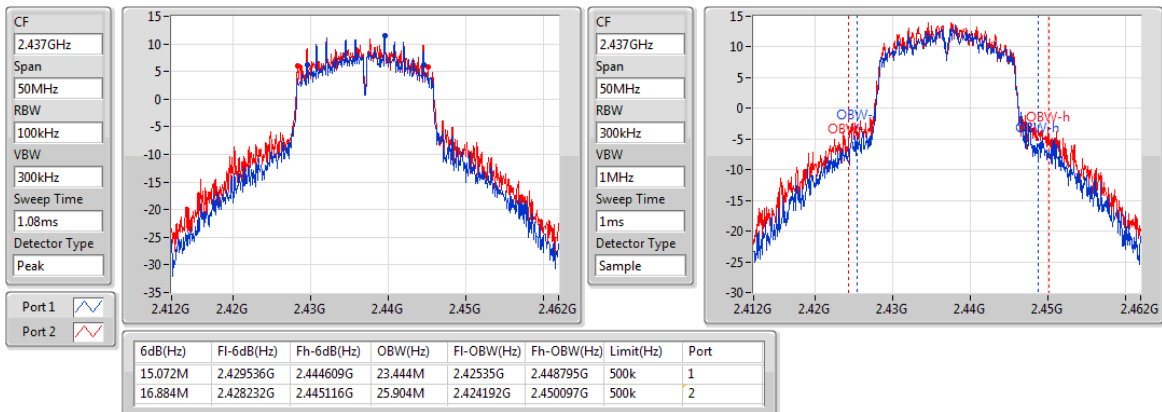
2412MHz



802.11n HT20_Nss1,(MCS0)_2TX

EBW

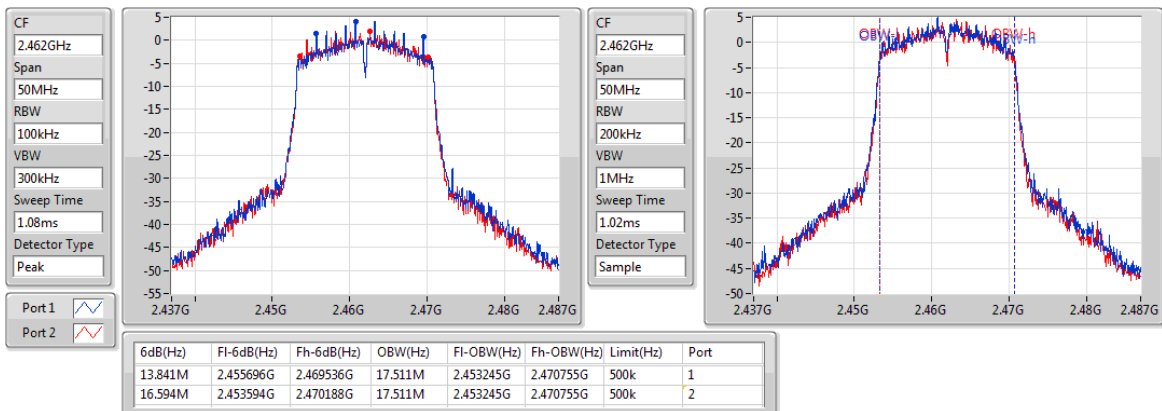
2437MHz



802.11n HT20_Nss1,(MCS0)_2TX

EBW

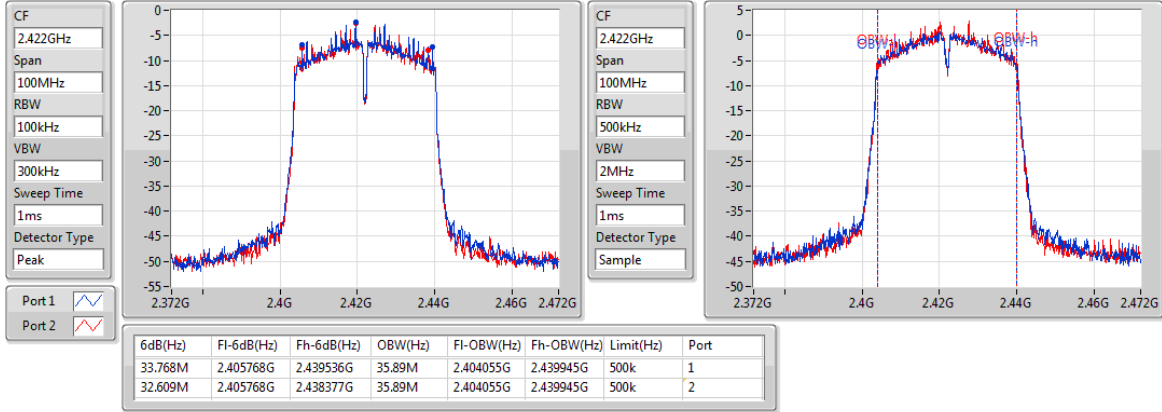
2462MHz



802.11n HT40_Nss1,(MCS0)_2TX

EBW

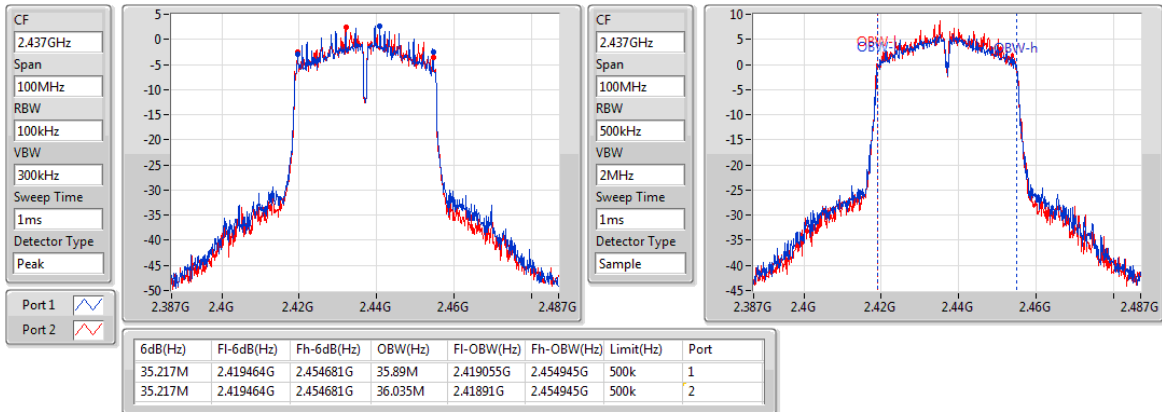
2422MHz



802.11n HT40_Nss1,(MCS0)_2TX

EBW

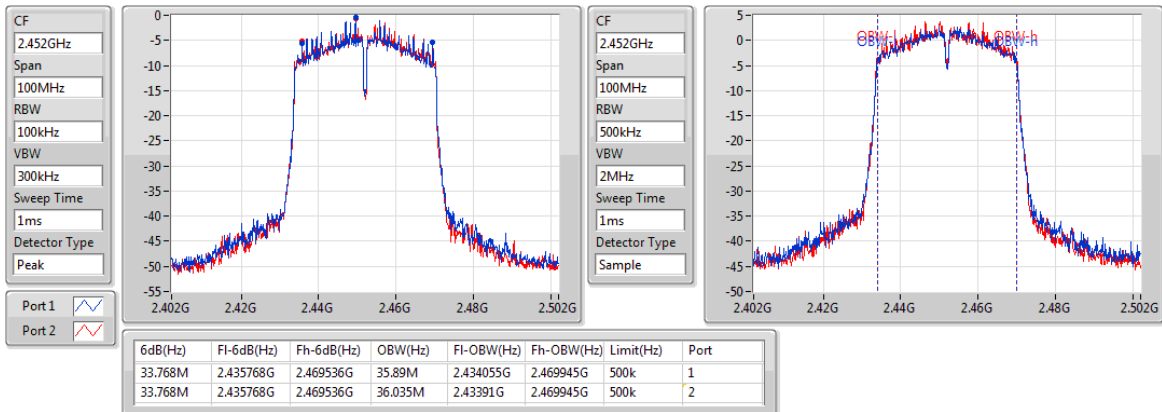
2437MHz



802.11n HT40_Nss1,(MCS0)_2TX

EBW

2452MHz



3.3 RF Output Power

3.3.1 Limit of RF Output Power

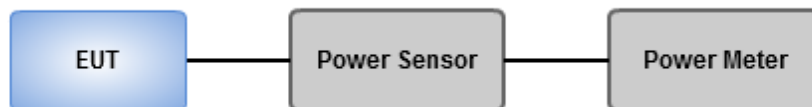
Conducted power shall not exceed 1Watt.

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

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	24.70	0.29512
802.11g_Nss1,(6Mbps)_2TX	25.27	0.33651
802.11n HT20_Nss1,(MCS0)_2TX	25.30	0.33884
802.11n HT40_Nss1,(MCS0)_2TX	18.93	0.07816

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	2.32	20.28	20.41	23.36	30.00	25.68	36.00
2437MHz	Pass	2.32	21.69	21.68	24.70	30.00	27.02	36.00
2462MHz	Pass	2.32	19.65	19.72	22.70	30.00	25.02	36.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	2.32	14.46	14.68	17.58	30.00	19.90	36.00
2437MHz	Pass	2.32	22.26	22.25	25.27	30.00	27.59	36.00
2462MHz	Pass	2.32	15.31	15.53	18.43	30.00	20.75	36.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	2.32	13.54	13.51	16.54	30.00	18.86	36.00
2437MHz	Pass	2.32	22.14	22.43	25.30	30.00	27.62	36.00
2462MHz	Pass	2.32	14.38	14.46	17.43	30.00	19.75	36.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2422MHz	Pass	2.32	10.04	10.39	13.23	30.00	15.55	36.00
2437MHz	Pass	2.32	15.94	15.89	18.93	30.00	21.25	36.00
2452MHz	Pass	2.32	12.11	12.28	15.21	30.00	17.53	36.00

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

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

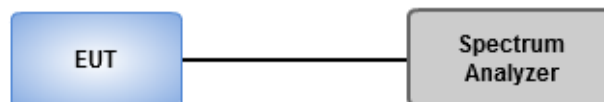
Average PSD, duty cycle $\geq 98\%$

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) $\times$ (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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_2TX	2.55
802.11g_Nss1,(6Mbps)_2TX	1.62
802.11n HT20_Nss1,(MCS0)_2TX	1.30
802.11n HT40_Nss1,(MCS0)_2TX	-8.73

RBW=30 kHz

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.28	-1.40	-1.80	1.09	8.00
2437MHz	Pass	5.28	-0.25	-0.21	2.55	8.00
2462MHz	Pass	5.28	-1.61	-2.48	0.66	8.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.28	-9.14	-9.59	-6.44	8.00
2437MHz	Pass	5.28	-1.56	-1.23	1.62	8.00
2462MHz	Pass	5.28	-8.35	-8.82	-5.67	8.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.28	-10.71	-10.17	-7.47	8.00
2437MHz	Pass	5.28	-2.19	-1.10	1.30	8.00
2462MHz	Pass	5.28	-9.88	-9.45	-6.77	8.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	5.28	-16.75	-17.41	-14.13	8.00
2437MHz	Pass	5.28	-11.50	-11.93	-8.73	8.00
2452MHz	Pass	5.28	-14.81	-15.55	-12.19	8.00

RBW=30 kHz

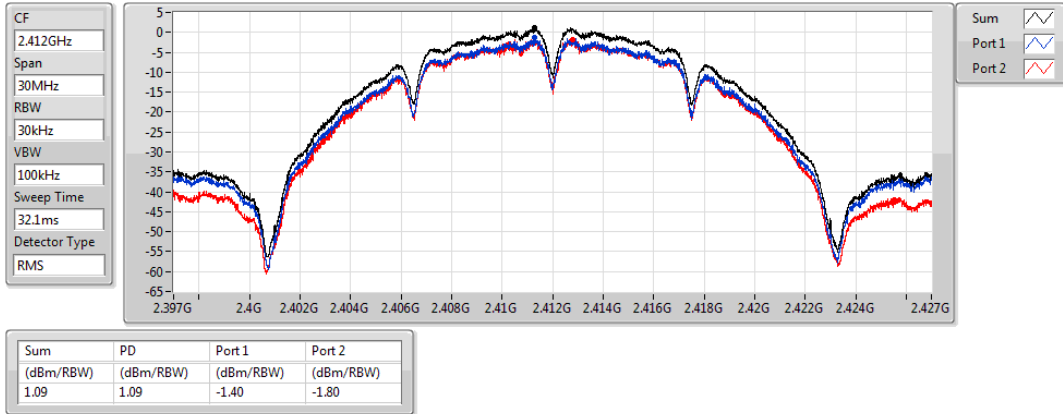
DG = Directional Gain;

PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;

802.11b_Nss1,(1Mbps)_2TX

PSD

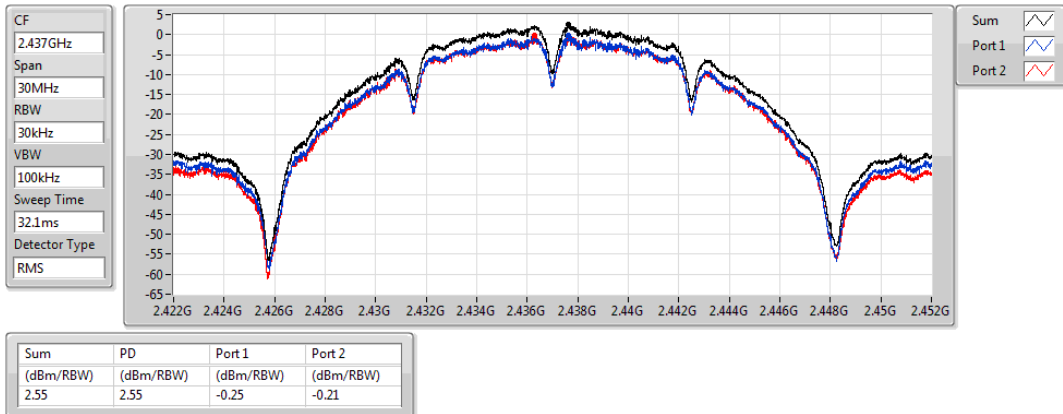
2412MHz



802.11b_Nss1,(1Mbps)_2TX

PSD

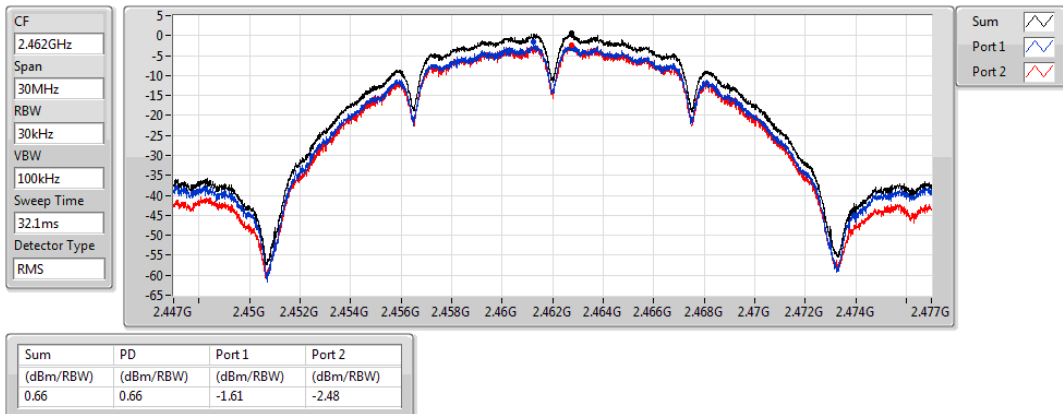
2437MHz



802.11b_Nss1,(1Mbps)_2TX

PSD

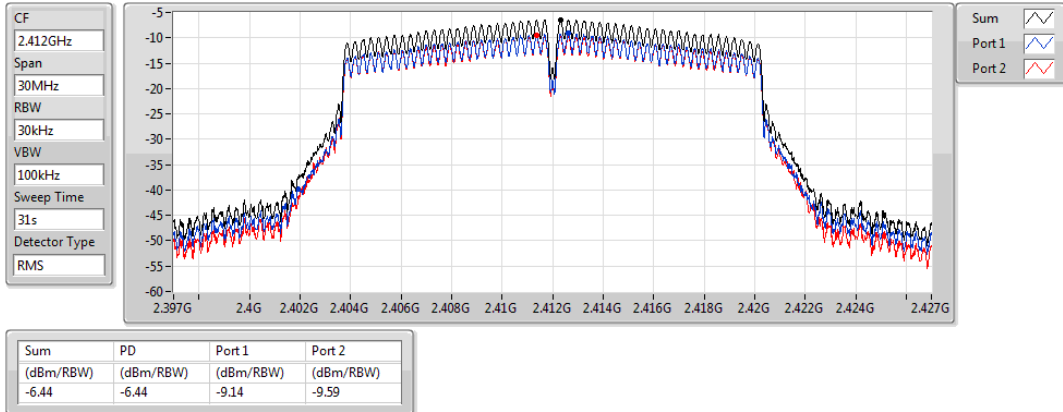
2462MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

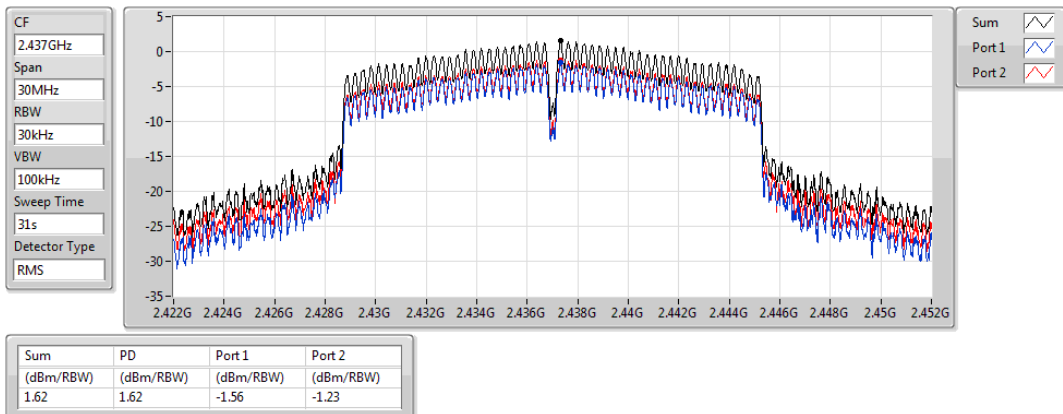
2412MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

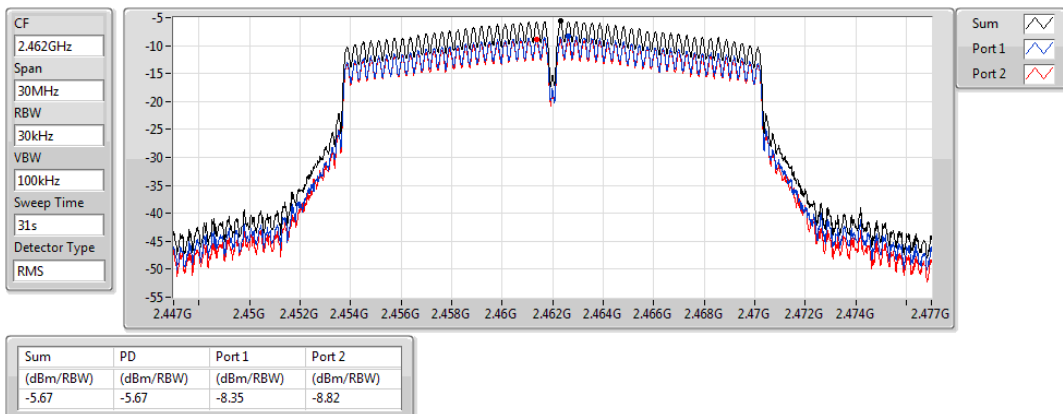
2437MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

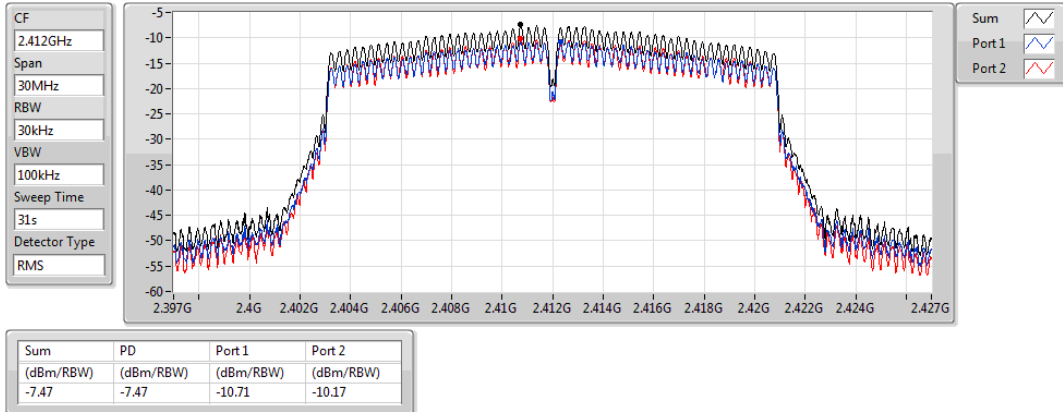
2462MHz



802.11n HT20_Nss1,(MCS0)_2TX

PSD

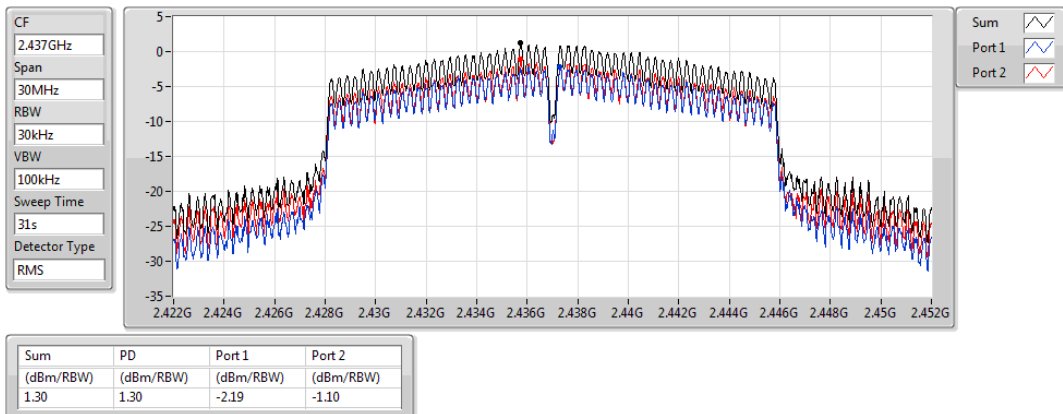
2412MHz



802.11n HT20_Nss1,(MCS0)_2TX

PSD

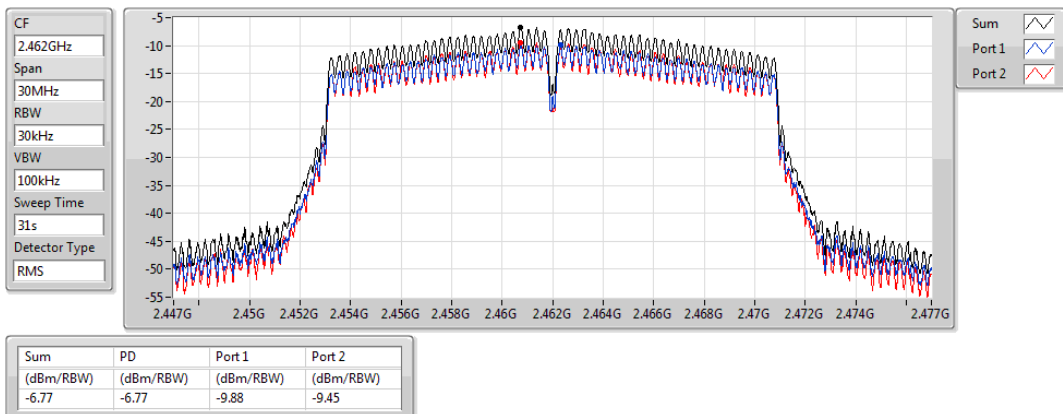
2437MHz



802.11n HT20_Nss1,(MCS0)_2TX

PSD

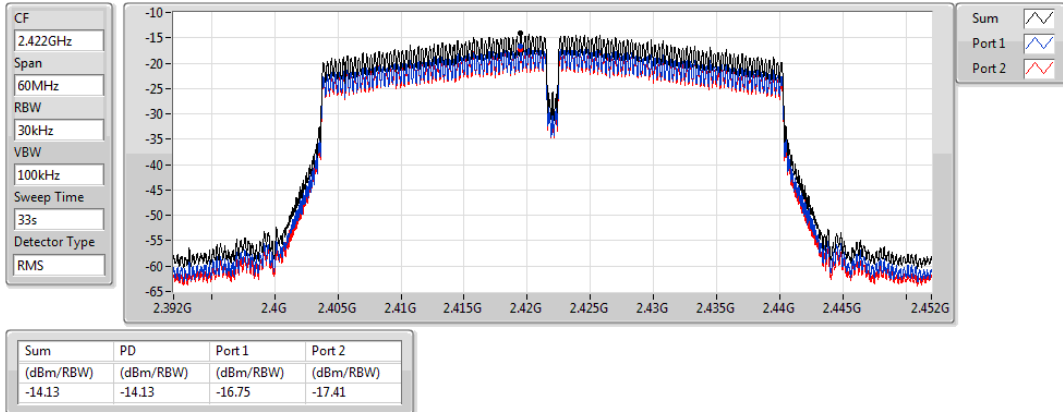
2462MHz



802.11n HT40_Nss1,(MCS0)_2TX

PSD

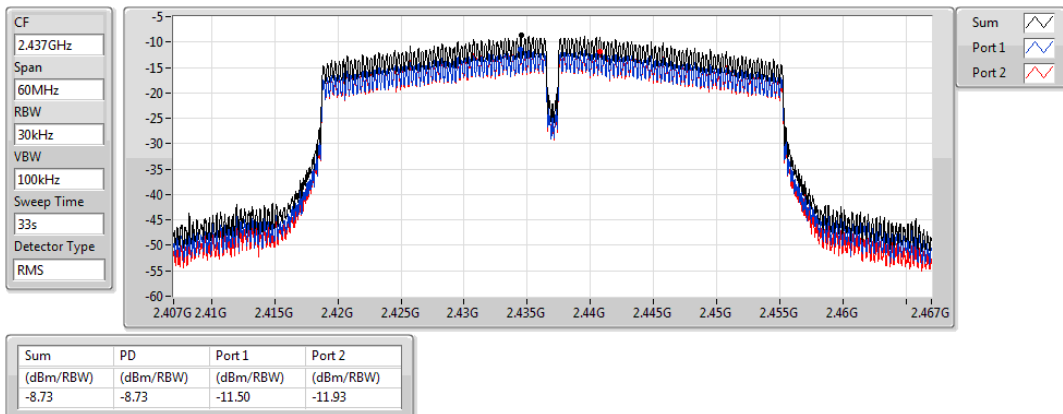
2422MHz



802.11n HT40_Nss1,(MCS0)_2TX

PSD

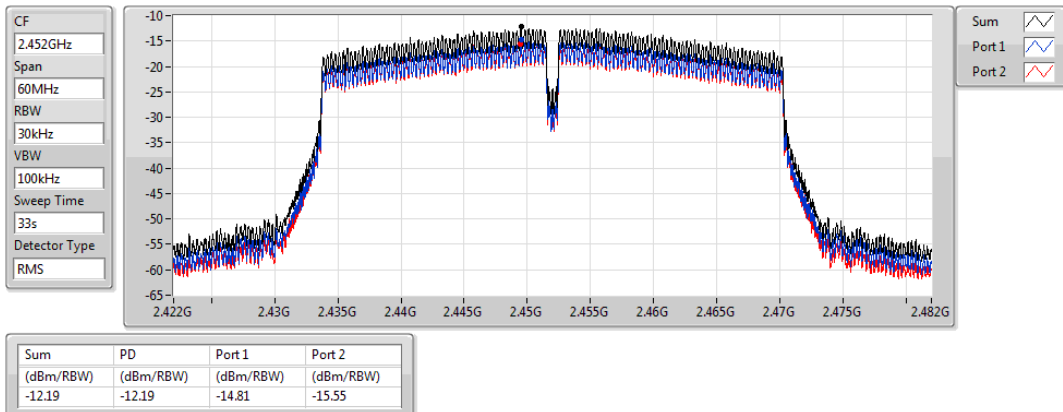
2437MHz



802.11n HT40_Nss1,(MCS0)_2TX

PSD

2452MHz



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

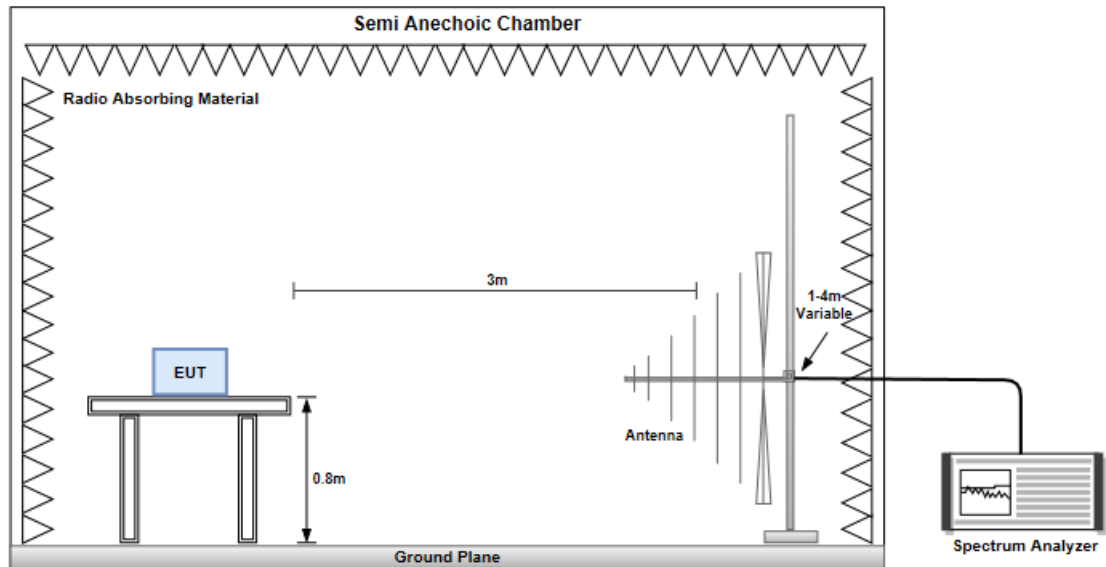
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

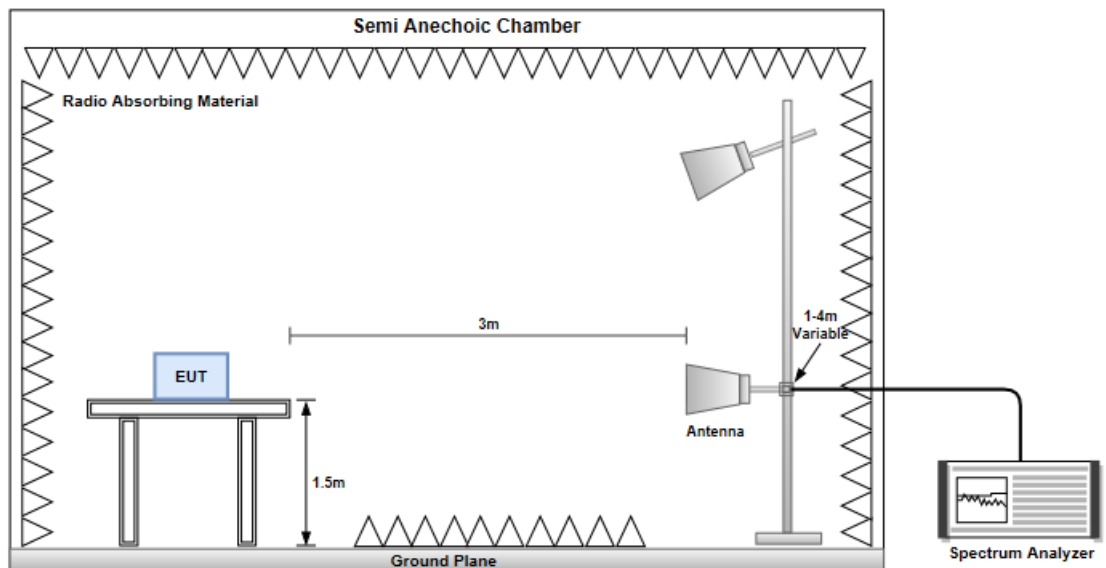
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

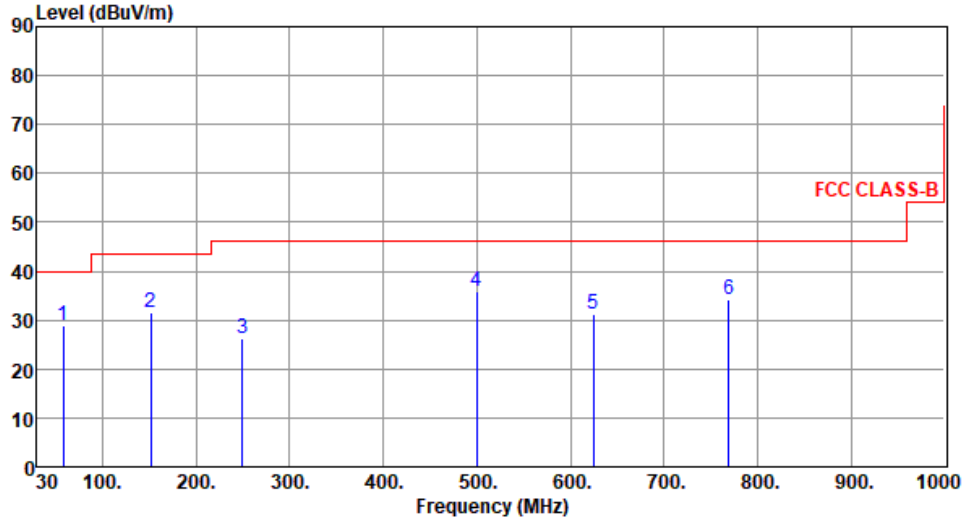


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	1

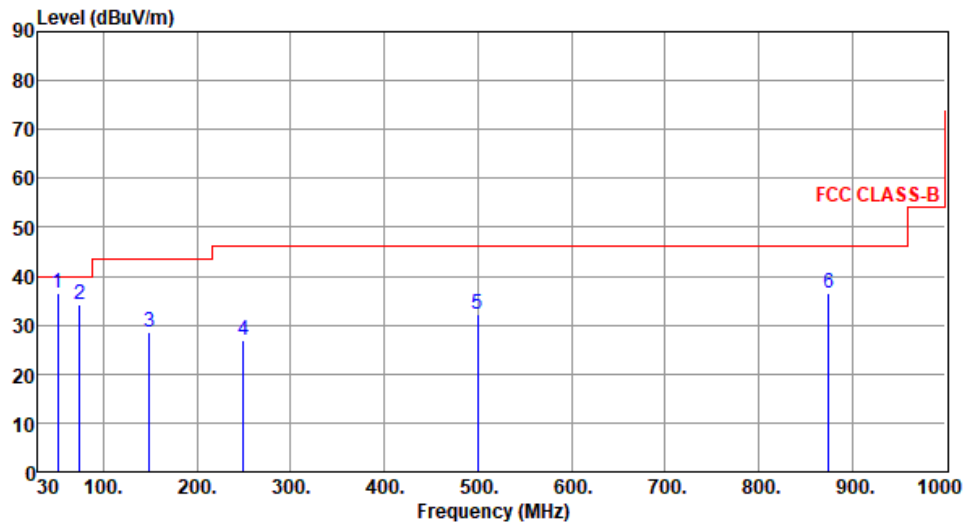


The graph displays the radiated unwanted emissions for HT20 modulation. The y-axis represents the Level in dBuV/m, ranging from 0 to 90. The x-axis represents the Frequency in MHz, ranging from 30 to 1000. A red line indicates the FCC CLASS-B limit, which is 40 dBuV/m from 30 to 100 MHz, 45 dBuV/m from 100 to 1000 MHz, and 55 dBuV/m from 1000 to 10000 MHz. Six measured peaks are labeled with blue numbers 1 through 6, corresponding to the data in the table below.

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	58.13	28.96	40.00	-11.04	38.09	-9.13	Peak	---	---
2	151.25	31.50	43.50	-12.00	40.14	-8.64	Peak	---	---
3	249.22	26.32	46.00	-19.68	36.29	-9.97	Peak	---	---
4	499.48	35.70	46.00	-10.30	38.75	-3.05	Peak	---	---
5	624.61	31.30	46.00	-14.70	31.44	-0.14	Peak	---	---
6	769.14	34.30	46.00	-11.70	31.65	2.65	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
 *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	HT20	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	51.34	36.62	40.00	-3.38	45.28	-8.66	Peak	---	---
2	74.62	34.06	40.00	-5.94	45.94	-11.88	Peak	---	---
3	149.31	28.72	43.50	-14.78	37.47	-8.75	Peak	---	---
4	249.22	26.83	46.00	-19.17	36.80	-9.97	Peak	---	---
5	499.48	32.24	46.00	-13.76	35.29	-3.05	Peak	---	---
6	874.87	36.46	46.00	-9.54	32.70	3.76	Peak	---	---

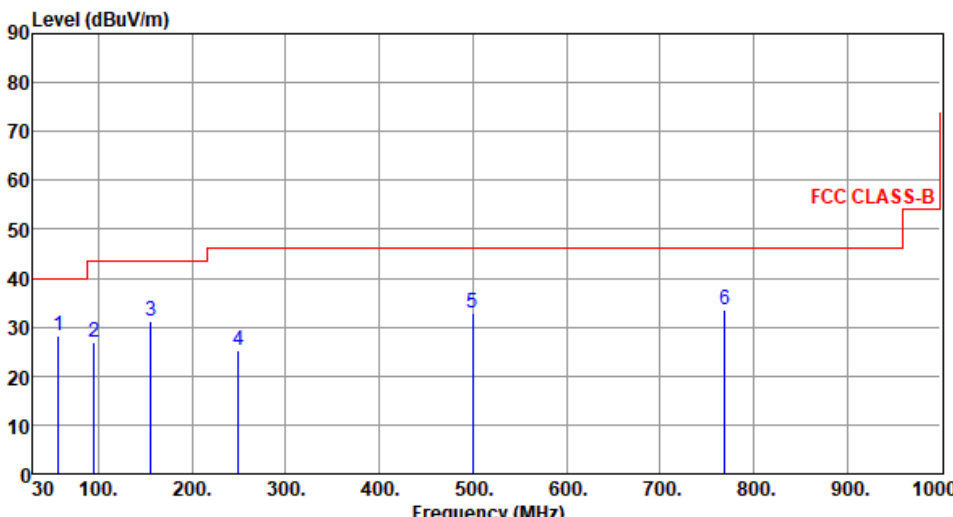
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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.

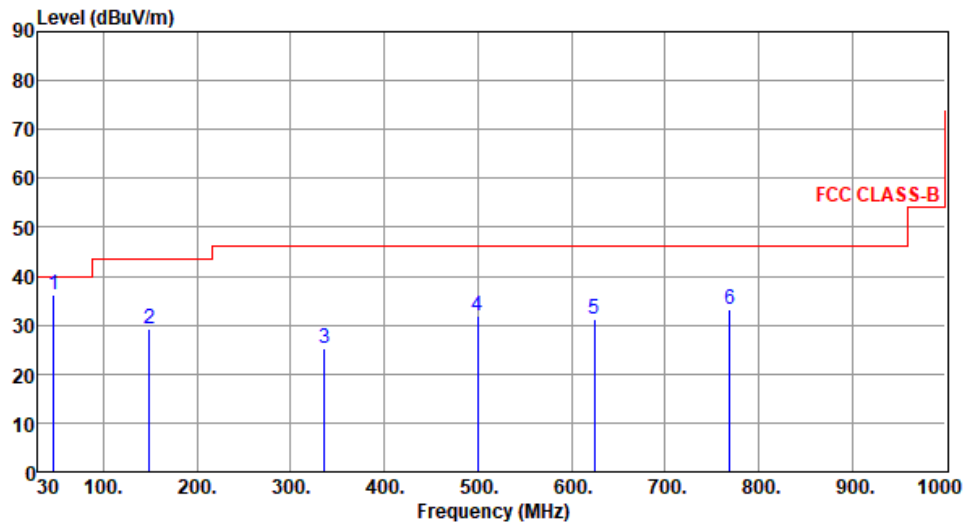
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	2



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	57.16	28.32	40.00	-11.68	37.28	-8.96	Peak	---	---
2	94.99	26.86	43.50	-16.64	41.22	-14.36	Peak	---	---
3	156.10	31.23	43.50	-12.27	39.77	-8.54	Peak	---	---
4	249.22	25.34	46.00	-20.66	35.31	-9.97	Peak	---	---
5	499.48	32.98	46.00	-13.02	36.03	-3.05	Peak	---	---
6	769.14	33.46	46.00	-12.54	30.81	2.65	Peak	---	---

Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
*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	HT20	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	46.49	36.05	40.00	-3.95	44.65	-8.60	Peak	---	---
2	149.31	29.26	43.50	-14.24	38.01	-8.75	Peak	---	---
3	336.52	25.36	46.00	-20.64	32.48	-7.12	Peak	---	---
4	499.48	31.74	46.00	-14.26	34.79	-3.05	Peak	---	---
5	624.61	31.15	46.00	-14.85	31.29	-0.14	Peak	---	---
6	769.14	33.34	46.00	-12.66	30.69	2.65	Peak	---	---

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

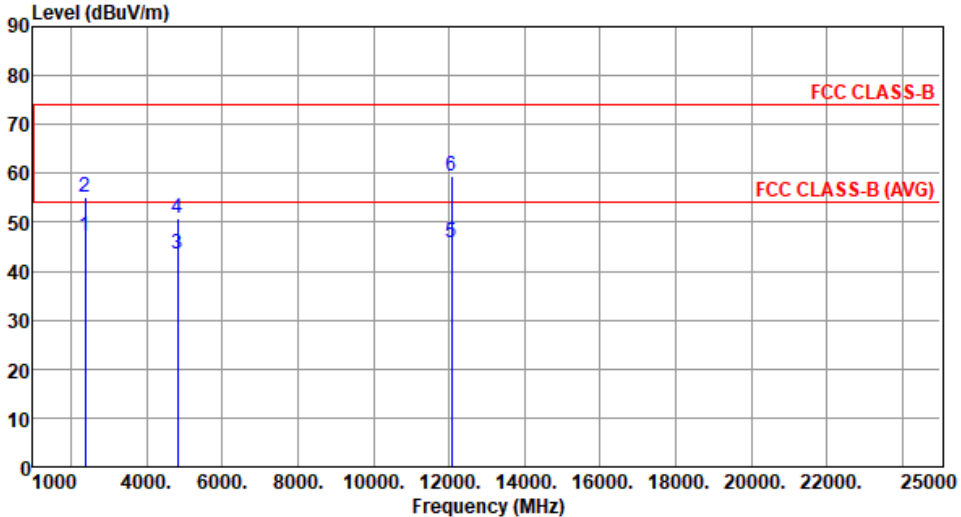
*Factor includes antenna factor , cable loss and amplifier gain

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

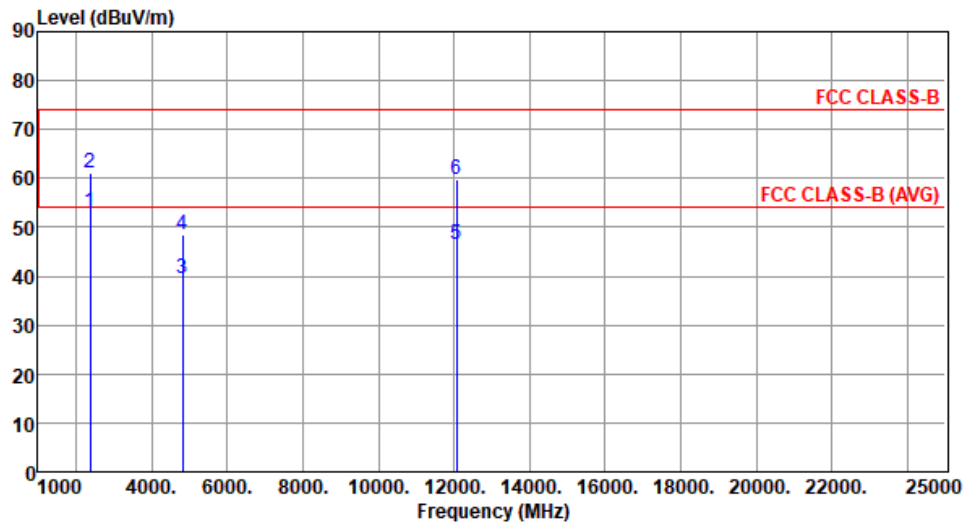
Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	47.24	54.00	-6.76	47.00	0.24	Average	126	323
2	2390.00	55.26	74.00	-18.74	55.02	0.24	Peak	126	323
3	4824.00	43.61	54.00	-10.39	37.11	6.50	Average	100	339
4	4824.00	50.67	74.00	-23.33	44.17	6.50	Peak	100	339
5	12060.00	45.89	54.00	-8.11	29.65	16.24	Average	100	80
6	12060.00	59.39	74.00	-14.61	43.15	16.24	Peak	100	80

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



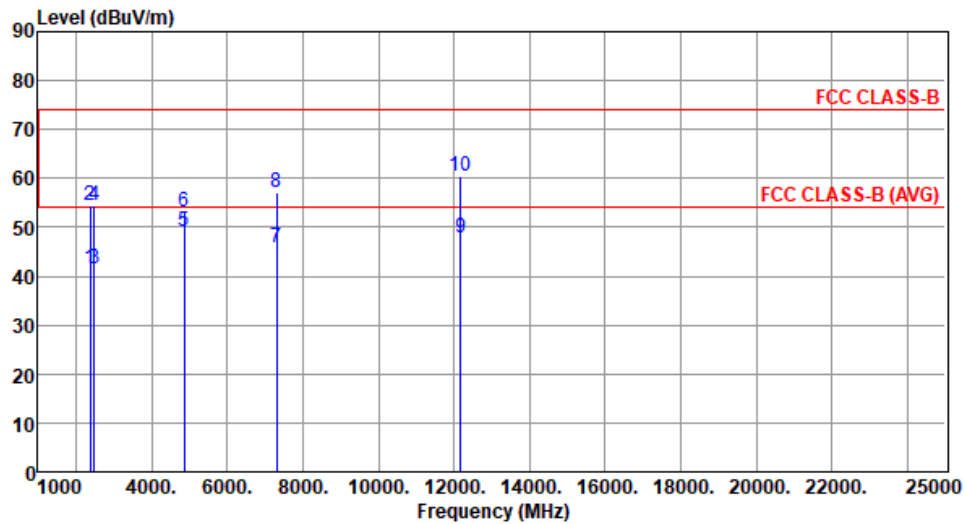
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.99	54.00	-1.01	52.75	0.24	Average	222	236
2	2390.00	61.09	74.00	-12.91	60.85	0.24	Peak	222	236
3	4824.00	39.67	54.00	-14.33	33.17	6.50	Average	100	303
4	4824.00	48.45	74.00	-25.55	41.95	6.50	Peak	100	303
5	12060.00	46.34	54.00	-7.66	30.10	16.24	Average	100	202
6	12060.00	59.64	74.00	-14.36	43.40	16.24	Peak	100	202

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

*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 Configuration	1



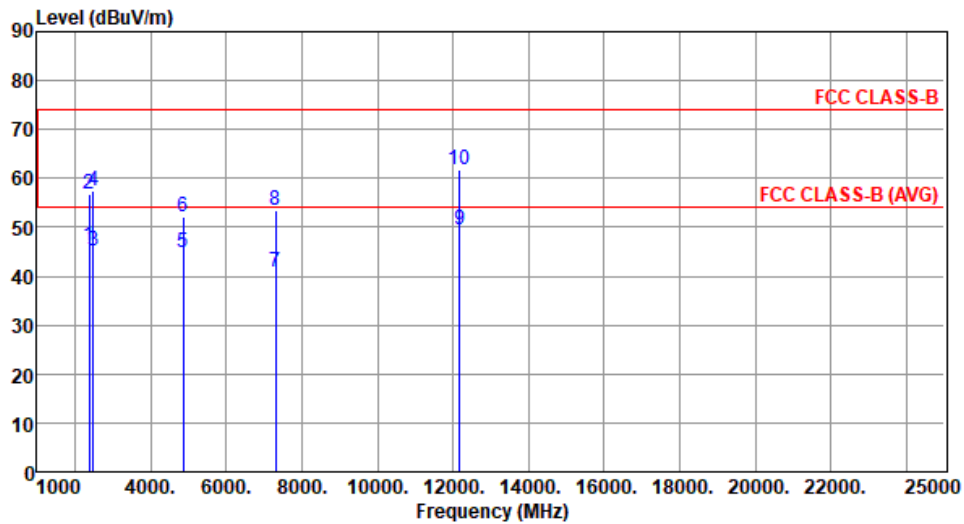
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	41.50	54.00	-12.50	41.26	0.24	Average	125	321
2	2390.00	54.36	74.00	-19.64	54.12	0.24	Peak	125	321
3	2483.50	41.62	54.00	-12.38	41.37	0.25	Average	125	321
4	2483.50	54.55	74.00	-19.45	54.30	0.25	Peak	125	321
5	4874.00	49.04	54.00	-4.96	42.56	6.48	Average	100	339
6	4874.00	53.27	74.00	-20.73	46.79	6.48	Peak	100	339
7	7311.00	45.81	54.00	-8.19	34.05	11.76	Average	185	321
8	7311.00	57.01	74.00	-16.99	45.25	11.76	Peak	185	321
9	12185.00	47.69	54.00	-6.31	31.37	16.32	Average	100	85
10	12185.00	60.36	74.00	-13.64	44.04	16.32	Peak	100	85

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

*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 Configuration	1



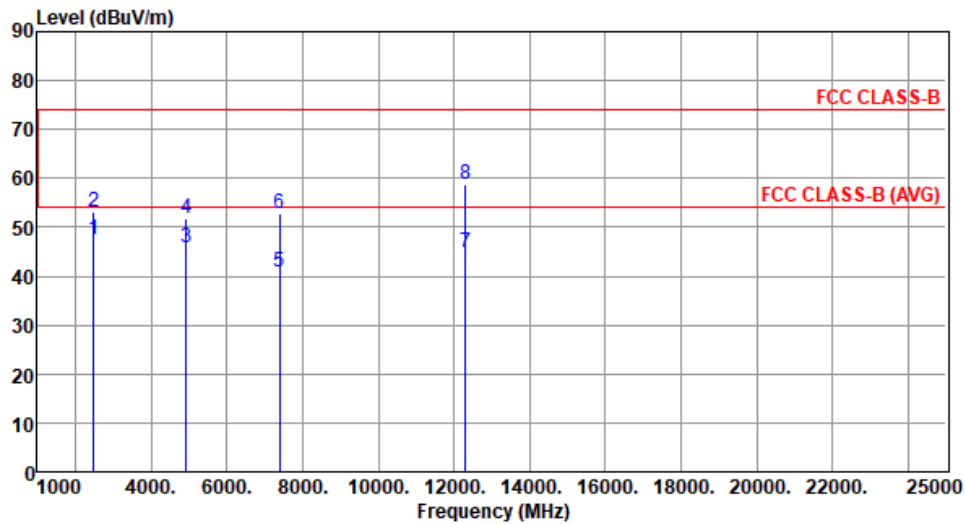
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.06	54.00	-7.94	45.82	0.24	Average	231	131
2	2390.00	56.90	74.00	-17.10	56.66	0.24	Peak	231	131
3	2483.50	45.12	54.00	-8.88	44.87	0.25	Average	231	131
4	2483.50	57.37	74.00	-16.63	57.12	0.25	Peak	231	131
5	4874.00	44.93	54.00	-9.07	38.45	6.48	Average	111	292
6	4874.00	52.15	74.00	-21.85	45.67	6.48	Peak	111	292
7	7311.00	40.89	54.00	-13.11	29.13	11.76	Average	100	20
8	7311.00	53.37	74.00	-20.63	41.61	11.76	Peak	100	20
9	12185.00	49.37	54.00	-4.63	33.05	16.32	Average	100	206
10	12185.00	61.69	74.00	-12.31	45.37	16.32	Peak	100	206

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

*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 Configuration	1



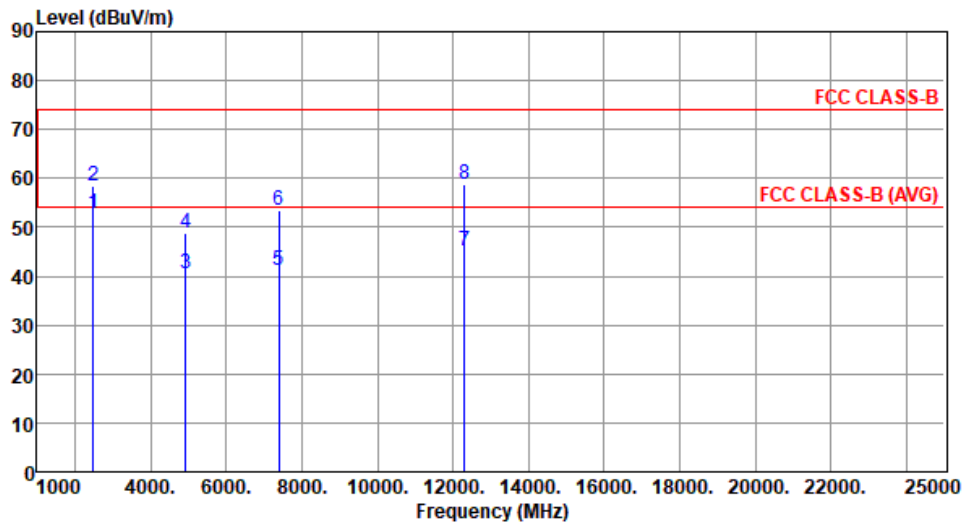
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	47.45	54.00	-6.55	47.20	0.25	Average	124	326
2	2483.50	53.12	74.00	-20.88	52.87	0.25	Peak	124	326
3	4924.00	45.69	54.00	-8.31	39.18	6.51	Average	102	342
4	4924.00	51.67	74.00	-22.33	45.16	6.51	Peak	102	342
5	7386.00	40.93	54.00	-13.07	29.12	11.81	Average	100	30
6	7386.00	52.93	74.00	-21.07	41.12	11.81	Peak	100	30
7	12310.00	44.97	54.00	-9.03	29.02	15.95	Average	100	80
8	12310.00	58.63	74.00	-15.37	42.68	15.95	Peak	100	80

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

*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 Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.85	54.00	-1.15	52.60	0.25	Average	244	267
2	2483.50	58.51	74.00	-15.49	58.26	0.25	Peak	244	267
3	4924.00	40.53	54.00	-13.47	34.02	6.51	Average	122	288
4	4924.00	48.94	74.00	-25.06	42.43	6.51	Peak	122	288
5	7386.00	41.06	54.00	-12.94	29.25	11.81	Average	100	320
6	7386.00	53.40	74.00	-20.60	41.59	11.81	Peak	100	320
7	12310.00	45.21	54.00	-8.79	29.26	15.95	Average	100	200
8	12310.00	58.85	74.00	-15.15	42.90	15.95	Peak	100	200

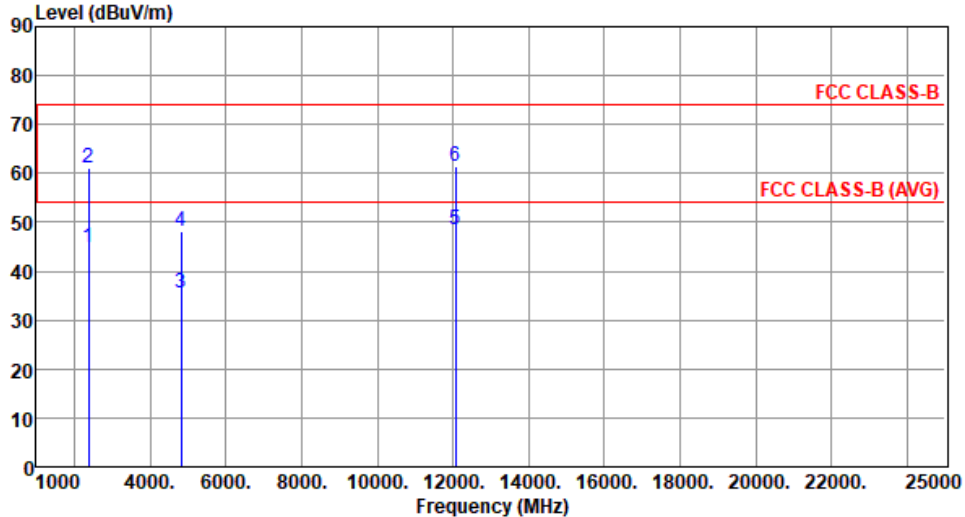
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*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

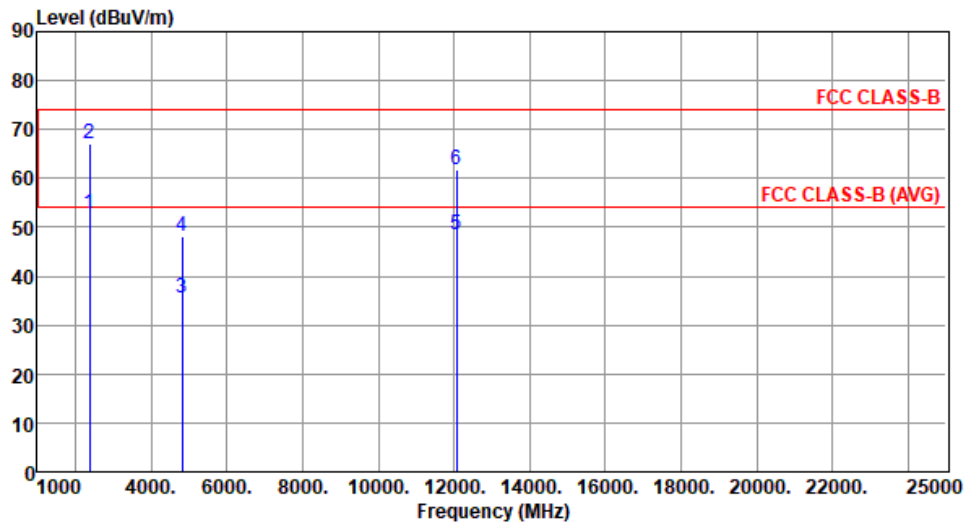
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	44.95	54.00	-9.05	44.71	0.24	Average	121	325
2	2390.00	61.22	74.00	-12.78	60.98	0.24	Peak	121	325
3	4824.00	35.52	54.00	-18.48	29.02	6.50	Average	100	94
4	4824.00	48.16	74.00	-25.84	41.66	6.50	Peak	100	94
5	12060.00	48.49	54.00	-5.51	32.25	16.24	Average	100	119
6	12060.00	61.55	74.00	-12.45	45.31	16.24	Peak	100	119

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



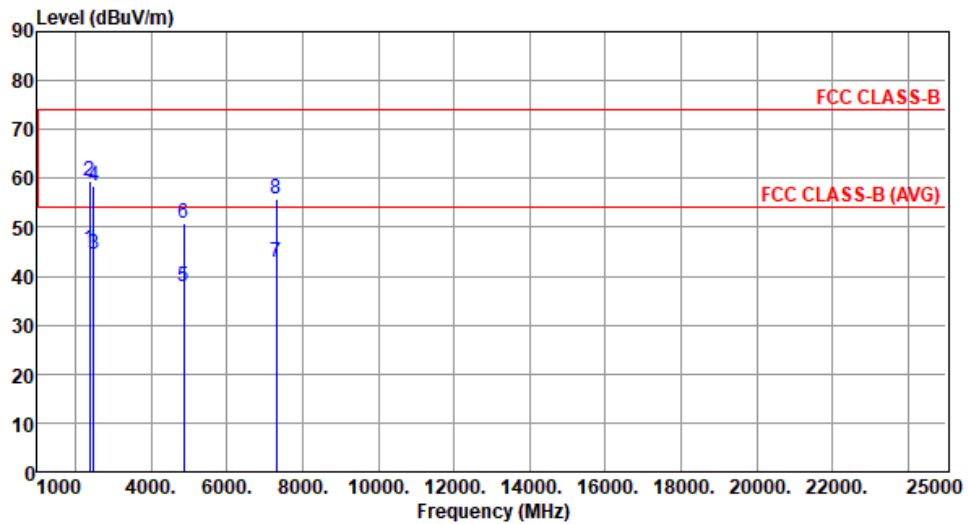
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.80	54.00	-1.20	52.56	0.24	Average	266	269
2	2390.00	67.18	74.00	-6.82	66.94	0.24	Peak	266	269
3	4824.00	35.68	54.00	-18.32	29.18	6.50	Average	100	62
4	4824.00	48.25	74.00	-25.75	41.75	6.50	Peak	100	62
5	12060.00	48.52	54.00	-5.48	32.28	16.24	Average	100	195
6	12060.00	61.69	74.00	-12.31	45.45	16.24	Peak	100	195

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

*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 Configuration	1



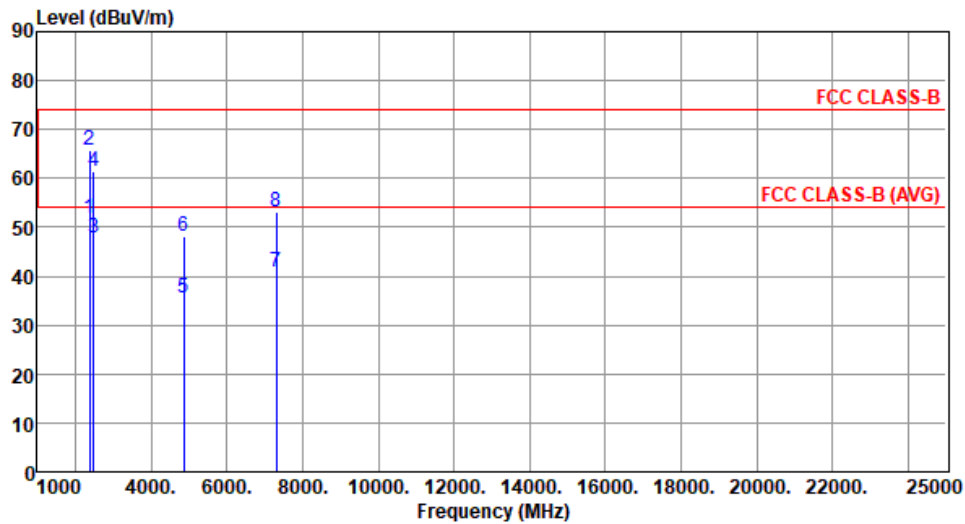
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.50	54.00	-8.50	45.26	0.24	Average	123	324
2	2390.00	59.39	74.00	-14.61	59.15	0.24	Peak	123	324
3	2483.50	44.55	54.00	-9.45	44.30	0.25	Average	123	324
4	2483.50	58.54	74.00	-15.46	58.29	0.25	Peak	123	324
5	4874.00	38.02	54.00	-15.98	31.54	6.48	Average	100	342
6	4874.00	50.68	74.00	-23.32	44.20	6.48	Peak	100	342
7	7311.00	42.89	54.00	-11.11	31.13	11.76	Average	192	330
8	7311.00	55.84	74.00	-18.16	44.08	11.76	Peak	192	330

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

*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 Configuration	1



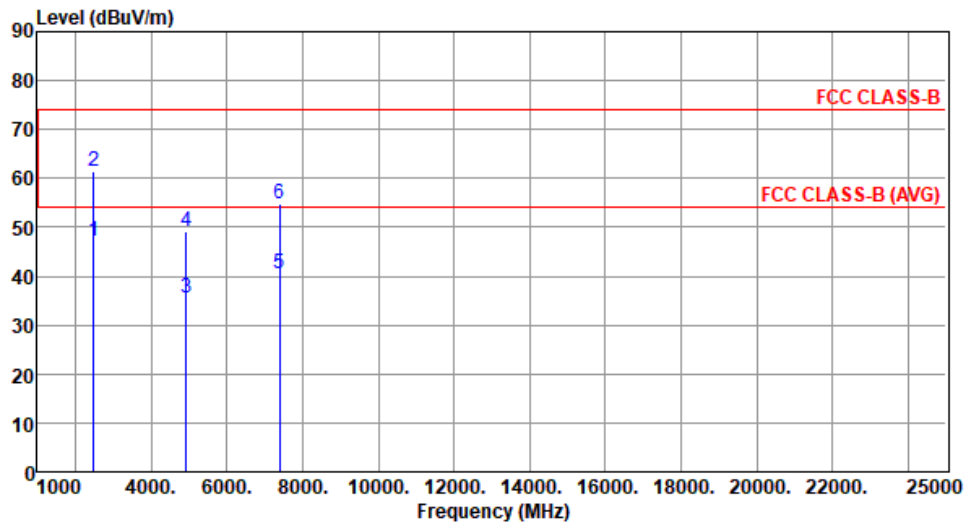
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	51.89	54.00	-2.11	51.65	0.24	Average	227	267
2	2390.00	65.69	74.00	-8.31	65.45	0.24	Peak	227	267
3	2483.50	47.68	54.00	-6.32	47.43	0.25	Average	227	267
4	2483.50	61.28	74.00	-12.72	61.03	0.25	Peak	227	267
5	4874.00	35.68	54.00	-18.32	29.20	6.48	Average	100	279
6	4874.00	48.07	74.00	-25.93	41.59	6.48	Peak	100	279
7	7311.00	40.87	54.00	-13.13	29.11	11.76	Average	100	60
8	7311.00	52.97	74.00	-21.03	41.21	11.76	Peak	100	60

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

*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 Configuration	1



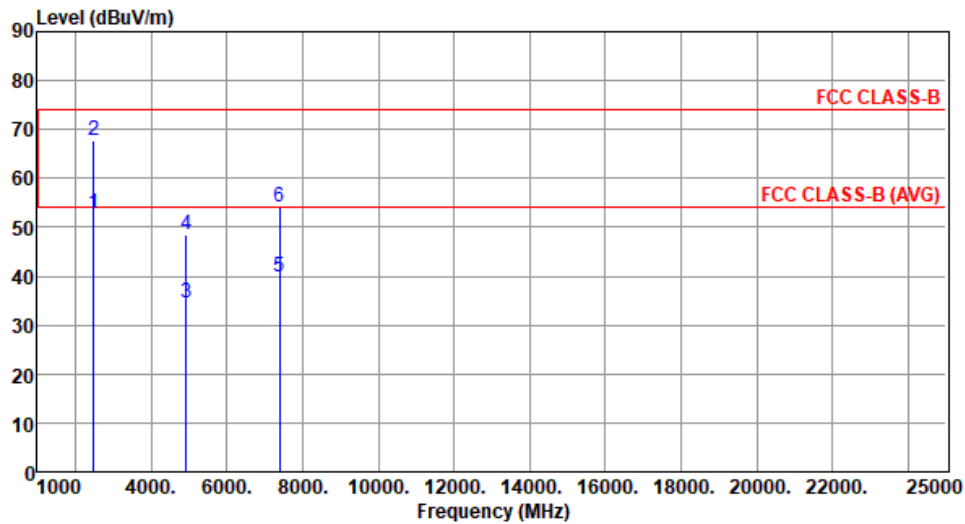
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	47.11	54.00	-6.89	46.86	0.25	Average	128	330
2	2483.50	61.48	74.00	-12.52	61.23	0.25	Peak	128	330
3	4924.00	35.37	54.00	-18.63	28.86	6.51	Average	100	347
4	4924.00	49.03	74.00	-24.97	42.52	6.51	Peak	100	347
5	7386.00	40.50	54.00	-13.50	28.69	11.81	Average	100	331
6	7386.00	54.65	74.00	-19.35	42.84	11.81	Peak	100	331

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

*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 Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.93	54.00	-1.07	52.68	0.25	Average	219	274
2	2483.50	67.77	74.00	-6.23	67.52	0.25	Peak	219	274
3	4924.00	34.68	54.00	-19.32	28.17	6.51	Average	100	284
4	4924.00	48.62	74.00	-25.38	42.11	6.51	Peak	100	284
5	7386.00	39.92	54.00	-14.08	28.11	11.81	Average	100	82
6	7386.00	54.07	74.00	-19.93	42.26	11.81	Peak	100	82

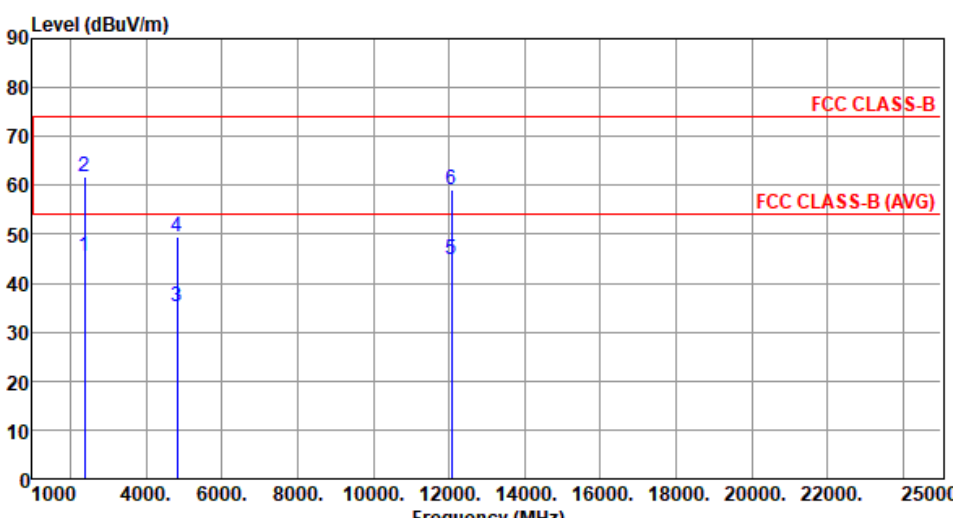
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

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

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

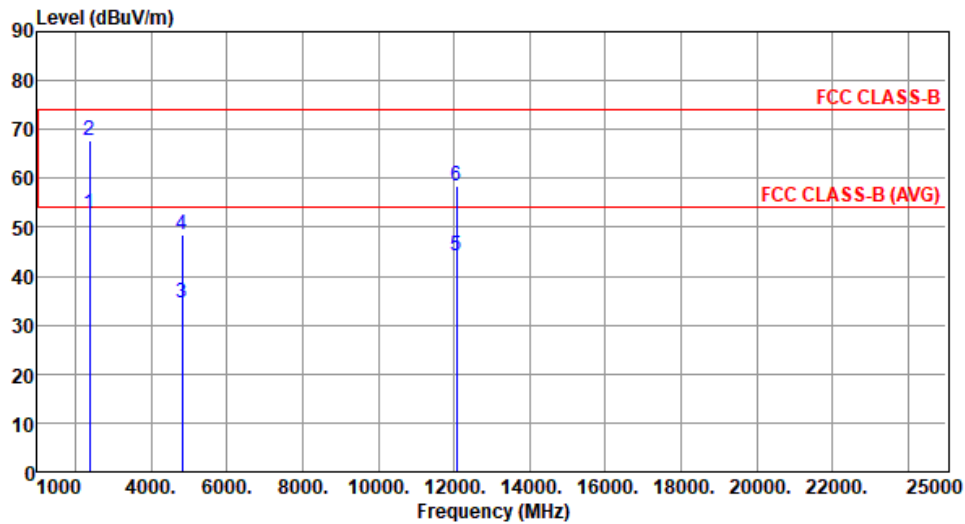
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	45.49	54.00	-8.51	45.25	0.24	Average	125	324
2	2390.00	61.76	74.00	-12.24	61.52	0.24	Peak	125	324
3	4824.00	35.12	54.00	-18.88	28.62	6.50	Average	100	341
4	4824.00	49.33	74.00	-24.67	42.83	6.50	Peak	100	341
5	12060.00	44.95	54.00	-9.05	28.71	16.24	Average	100	332
6	12060.00	58.99	74.00	-15.01	42.75	16.24	Peak	100	332

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



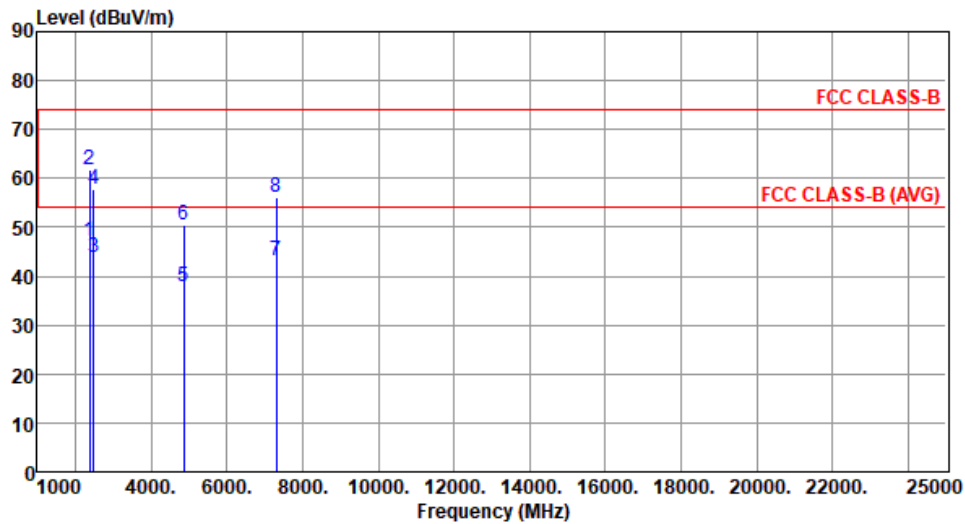
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.82	54.00	-1.18	52.58	0.24	Average	217	256
2	2390.00	67.91	74.00	-6.09	67.67	0.24	Peak	217	256
3	4824.00	34.63	54.00	-19.37	28.13	6.50	Average	100	281
4	4824.00	48.55	74.00	-25.45	42.05	6.50	Peak	100	281
5	12060.00	44.34	54.00	-9.66	28.10	16.24	Average	100	61
6	12060.00	58.35	74.00	-15.65	42.11	16.24	Peak	100	61

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

*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 Configuration	1



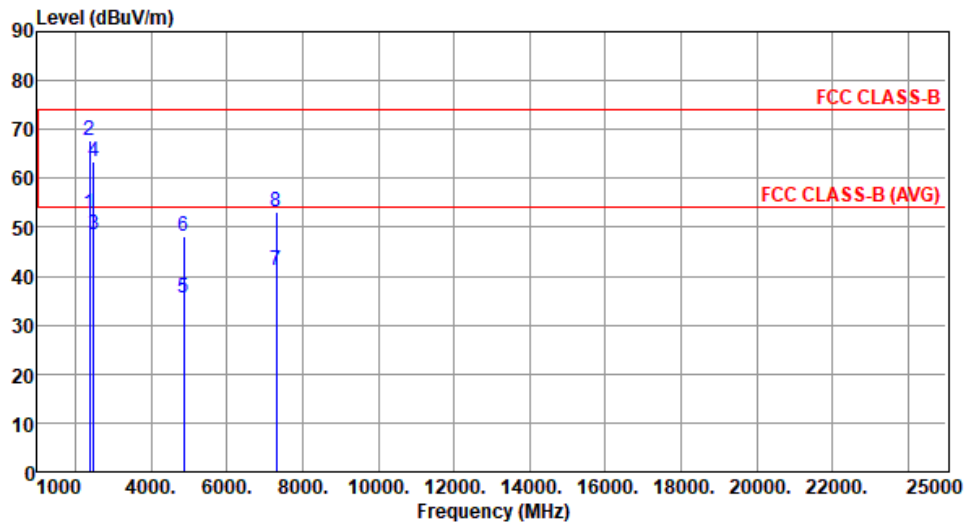
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	47.09	54.00	-6.91	46.85	0.24	Average	112	325
2	2390.00	61.65	74.00	-12.35	61.41	0.24	Peak	112	325
3	2483.50	43.74	54.00	-10.26	43.49	0.25	Average	112	325
4	2483.50	57.64	74.00	-16.36	57.39	0.25	Peak	112	325
5	4874.00	37.97	54.00	-16.03	31.49	6.48	Average	100	345
6	4874.00	50.63	74.00	-23.37	44.15	6.48	Peak	100	345
7	7311.00	43.01	54.00	-10.99	31.25	11.76	Average	199	331
8	7311.00	56.13	74.00	-17.87	44.37	11.76	Peak	199	331

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

*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 Configuration	1



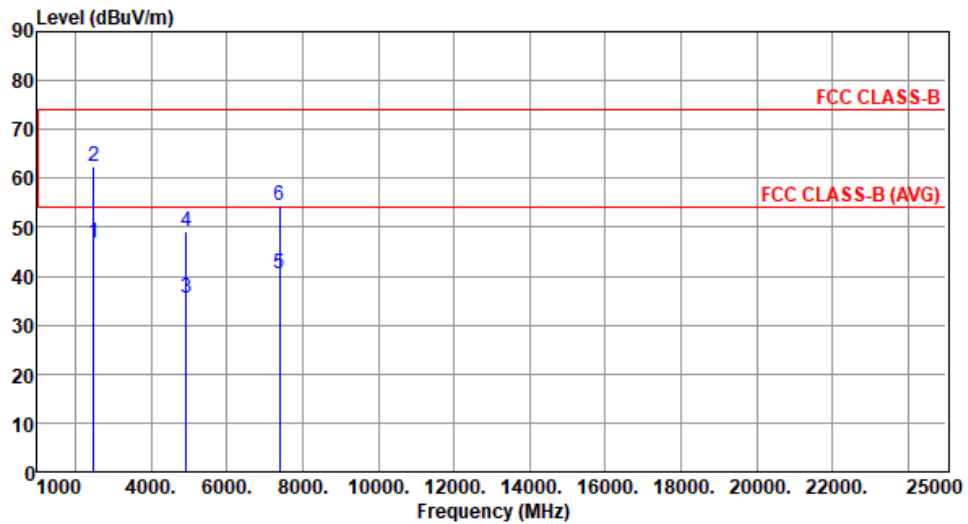
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.68	54.00	-1.32	52.44	0.24	Average	219	255
2	2390.00	67.63	74.00	-6.37	67.39	0.24	Peak	219	255
3	2483.50	48.46	54.00	-5.54	48.21	0.25	Average	219	255
4	2483.50	63.46	74.00	-10.54	63.21	0.25	Peak	219	255
5	4874.00	35.63	54.00	-18.37	29.15	6.48	Average	100	281
6	4874.00	48.10	74.00	-25.90	41.62	6.48	Peak	100	281
7	7311.00	41.01	54.00	-12.99	29.25	11.76	Average	100	50
8	7311.00	53.14	74.00	-20.86	41.38	11.76	Peak	100	50

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

*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 Configuration	1



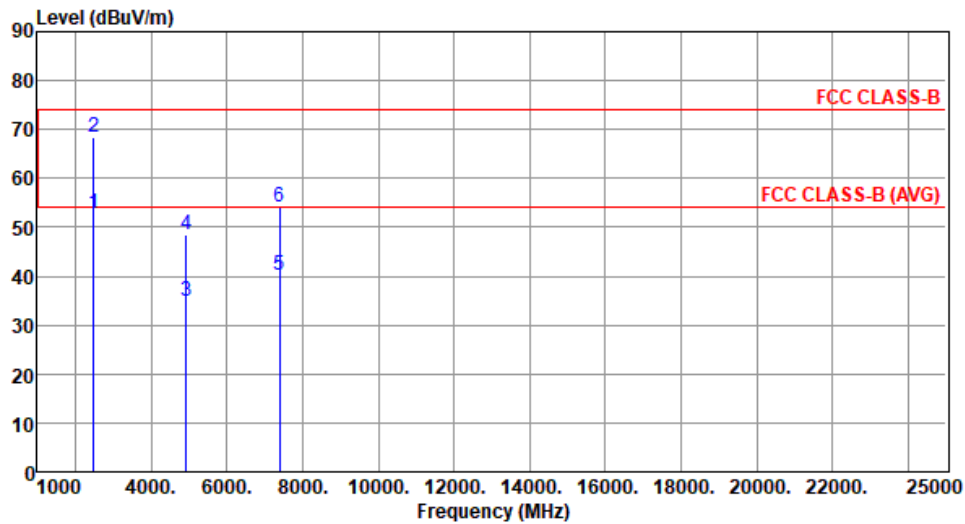
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	46.67	54.00	-7.33	46.42	0.25	Average	120	326
2	2483.50	62.49	74.00	-11.51	62.24	0.25	Peak	120	326
3	4924.00	35.38	54.00	-18.62	28.87	6.51	Average	100	344
4	4924.00	49.03	74.00	-24.97	42.52	6.51	Peak	100	344
5	7386.00	40.56	54.00	-13.44	28.75	11.81	Average	100	321
6	7386.00	54.55	74.00	-19.45	42.74	11.81	Peak	100	321

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

*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 Configuration	1



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.85	54.00	-1.15	52.60	0.25	Average	218	270
2	2483.50	68.26	74.00	-5.74	68.01	0.25	Peak	218	270
3	4924.00	34.74	54.00	-19.26	28.23	6.51	Average	100	287
4	4924.00	48.60	74.00	-25.40	42.09	6.51	Peak	100	287
5	7386.00	40.23	54.00	-13.77	28.42	11.81	Average	100	55
6	7386.00	54.03	74.00	-19.97	42.22	11.81	Peak	100	55

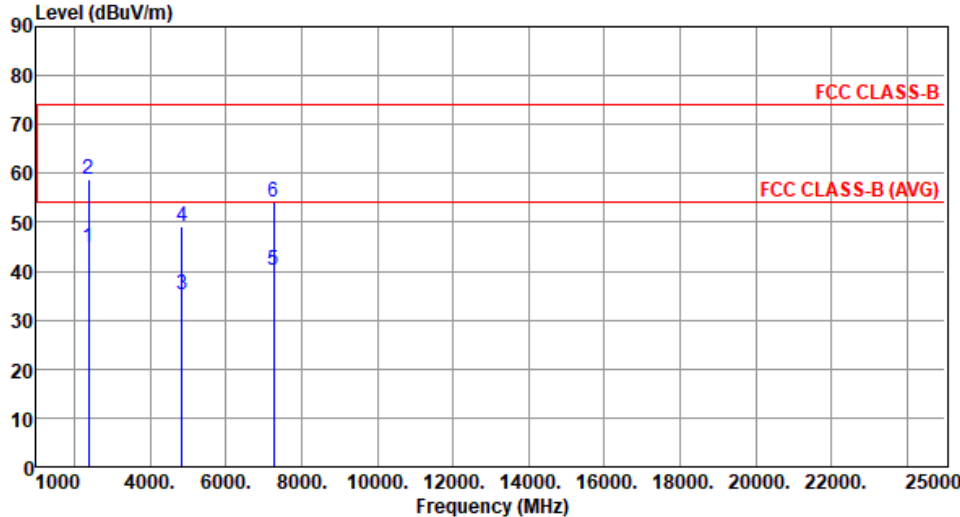
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)

*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

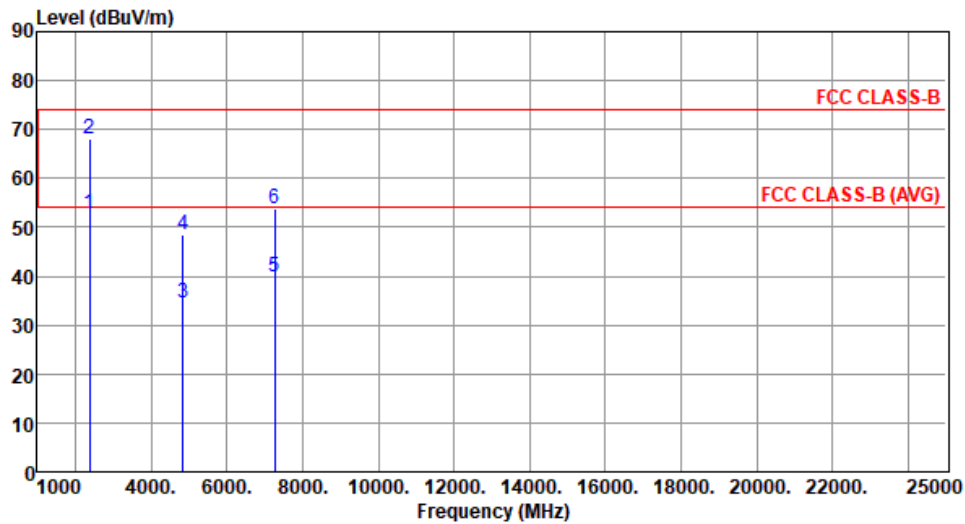
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	44.73	54.00	-9.27	44.49	0.24	Average	119	49
2	2390.00	58.88	74.00	-15.12	58.64	0.24	Peak	119	49
3	4844.00	35.09	54.00	-18.91	28.54	6.55	Average	100	341
4	4844.00	49.12	74.00	-24.88	42.57	6.55	Peak	100	341
5	7266.00	40.17	54.00	-13.83	28.56	11.61	Average	100	325
6	7266.00	54.11	74.00	-19.89	42.50	11.61	Peak	100	325

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
 *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)	2422
Polarization	Vertical	Test Configuration	1



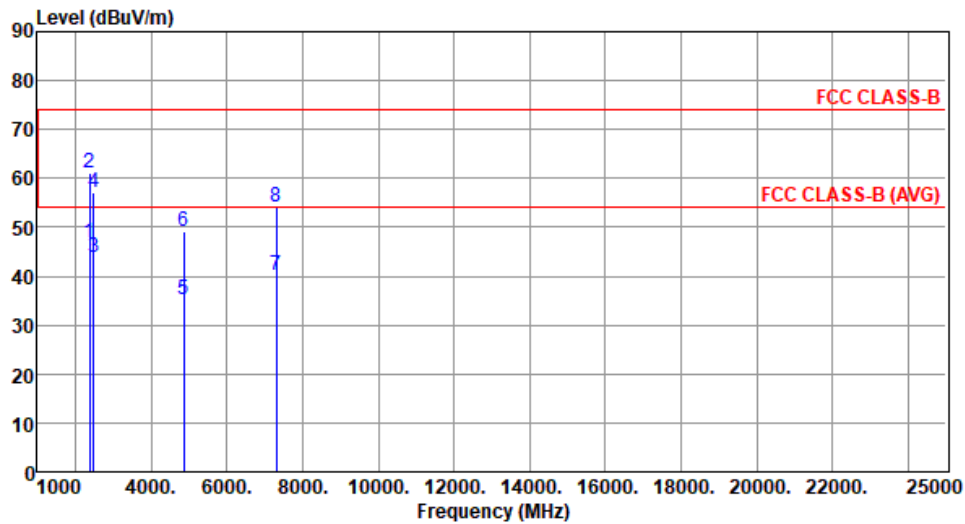
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.92	54.00	-1.08	52.68	0.24	Average	236	271
2	2390.00	68.18	74.00	-5.82	67.94	0.24	Peak	236	271
3	4844.00	34.66	54.00	-19.34	28.11	6.55	Average	100	283
4	4844.00	48.59	74.00	-25.41	42.04	6.55	Peak	100	283
5	7266.00	39.80	54.00	-14.20	28.19	11.61	Average	100	58
6	7266.00	53.66	74.00	-20.34	42.05	11.61	Peak	100	58

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

*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 Configuration	1



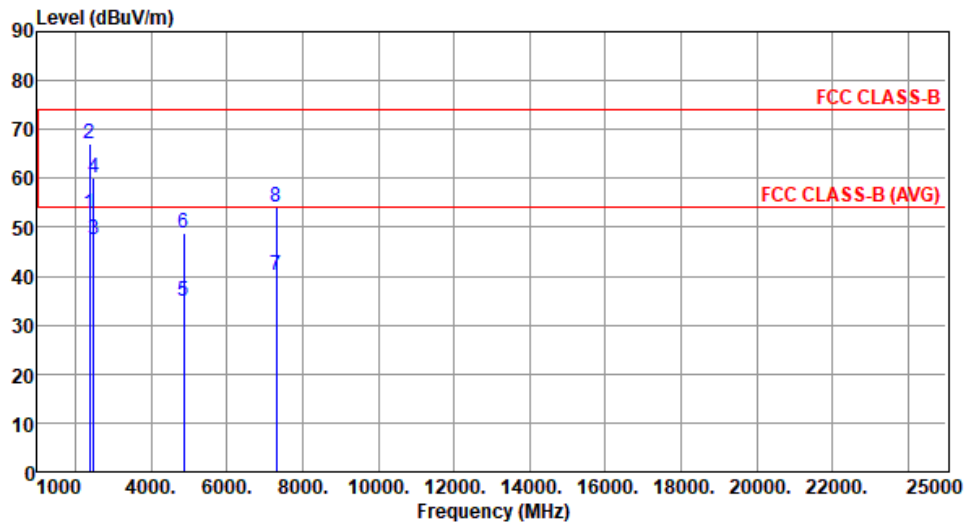
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	46.66	54.00	-7.34	46.42	0.24	Average	130	329
2	2390.00	61.19	74.00	-12.81	60.95	0.24	Peak	130	329
3	2483.50	43.71	54.00	-10.29	43.46	0.25	Average	130	329
4	2483.50	57.21	74.00	-16.79	56.96	0.25	Peak	130	329
5	4874.00	35.07	54.00	-18.93	28.59	6.48	Average	100	335
6	4874.00	49.02	74.00	-24.98	42.54	6.48	Peak	100	335
7	7311.00	40.28	54.00	-13.72	28.52	11.76	Average	100	321
8	7311.00	54.25	74.00	-19.75	42.49	11.76	Peak	100	321

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

*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 Configuration	1



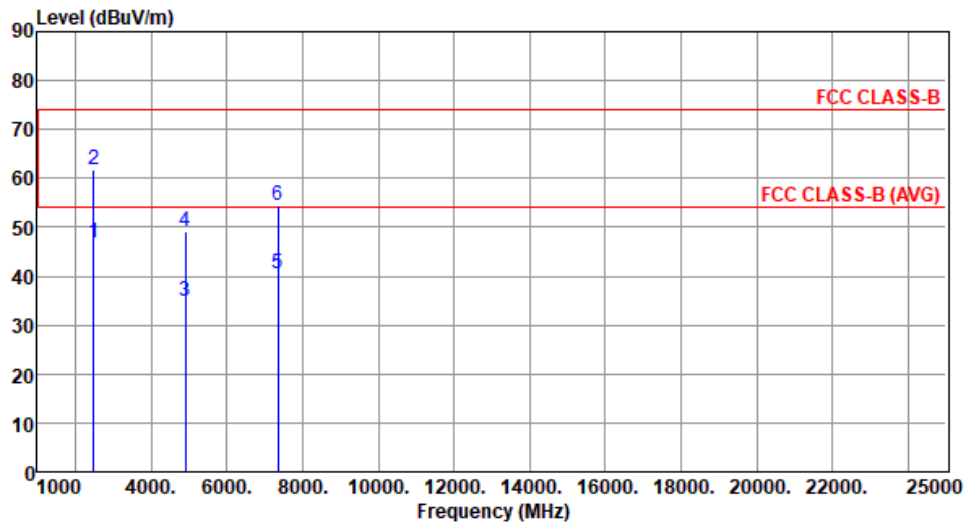
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	52.77	54.00	-1.23	52.53	0.24	Average	254	246
2	2390.00	67.13	74.00	-6.87	66.89	0.24	Peak	254	246
3	2483.50	47.53	54.00	-6.47	47.28	0.25	Average	254	246
4	2483.50	60.15	74.00	-13.85	59.90	0.25	Peak	254	246
5	4874.00	34.92	54.00	-19.08	28.44	6.48	Average	100	263
6	4874.00	48.92	74.00	-25.08	42.44	6.48	Peak	100	263
7	7311.00	40.16	54.00	-13.84	28.40	11.76	Average	100	52
8	7311.00	54.14	74.00	-19.86	42.38	11.76	Peak	100	52

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

*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 Configuration	1



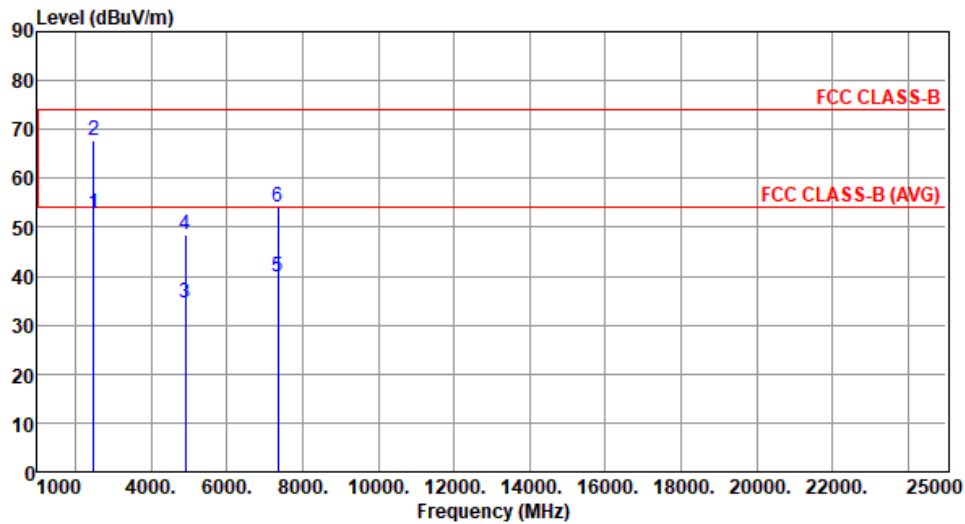
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	46.89	54.00	-7.11	46.64	0.25	Average	119	327
2	2483.50	61.71	74.00	-12.29	61.46	0.25	Peak	119	327
3	4904.00	35.01	54.00	-18.99	28.59	6.42	Average	100	327
4	4904.00	49.01	74.00	-24.99	42.59	6.42	Peak	100	327
5	7356.00	40.41	54.00	-13.59	28.59	11.82	Average	100	322
6	7356.00	54.44	74.00	-19.56	42.62	11.82	Peak	100	322

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

*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 Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	52.85	54.00	-1.15	52.60	0.25	Average	217	274
2	2483.50	67.59	74.00	-6.41	67.34	0.25	Peak	217	274
3	4904.00	34.59	54.00	-19.41	28.17	6.42	Average	100	252
4	4904.00	48.57	74.00	-25.43	42.15	6.42	Peak	100	252
5	7356.00	39.99	54.00	-14.01	28.17	11.82	Average	100	59
6	7356.00	54.02	74.00	-19.98	42.20	11.82	Peak	100	59

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

*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 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

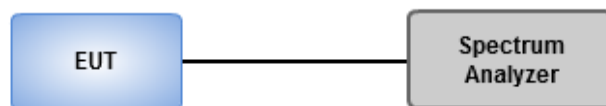
Reference level measurement

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

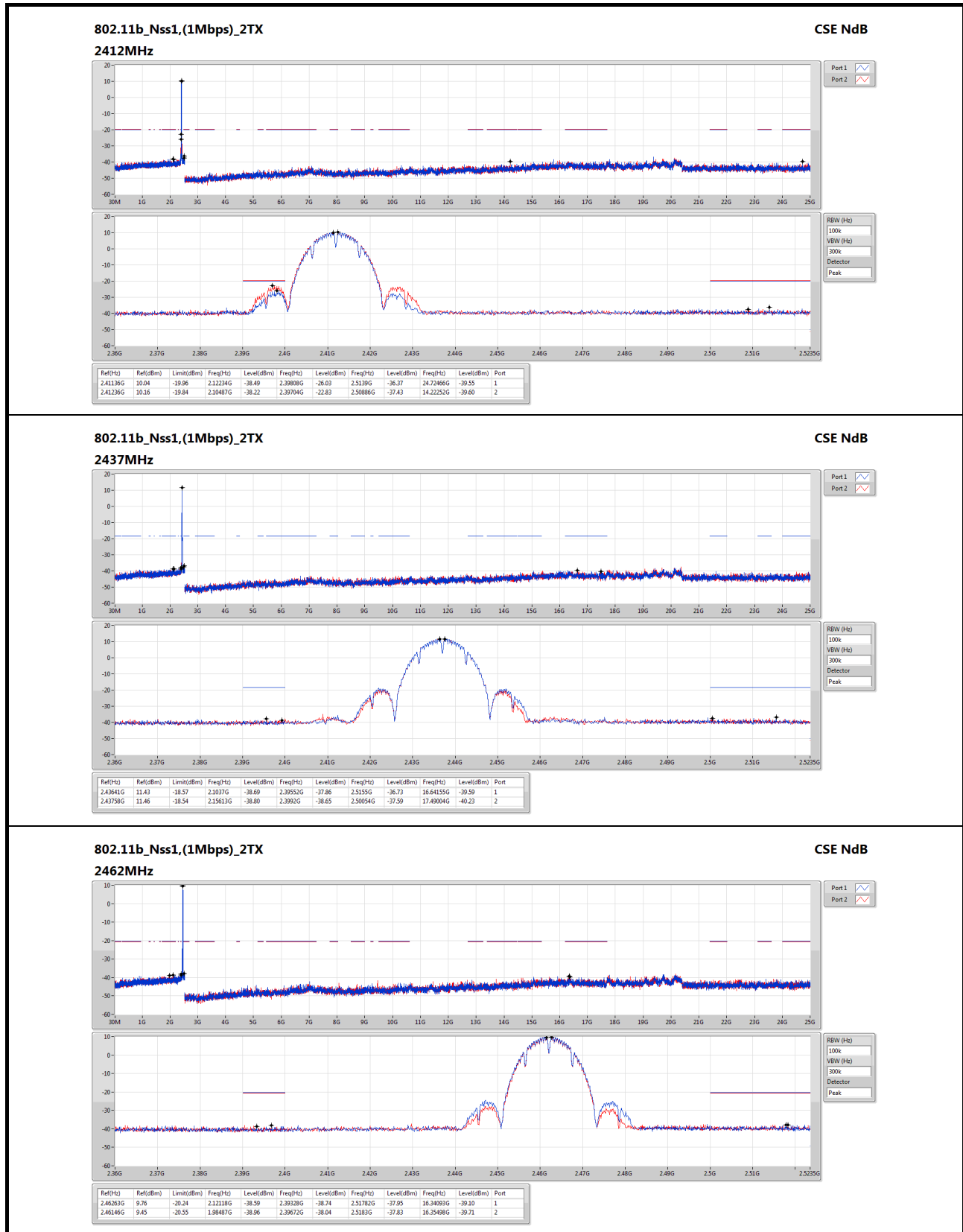
Emission level measurement

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

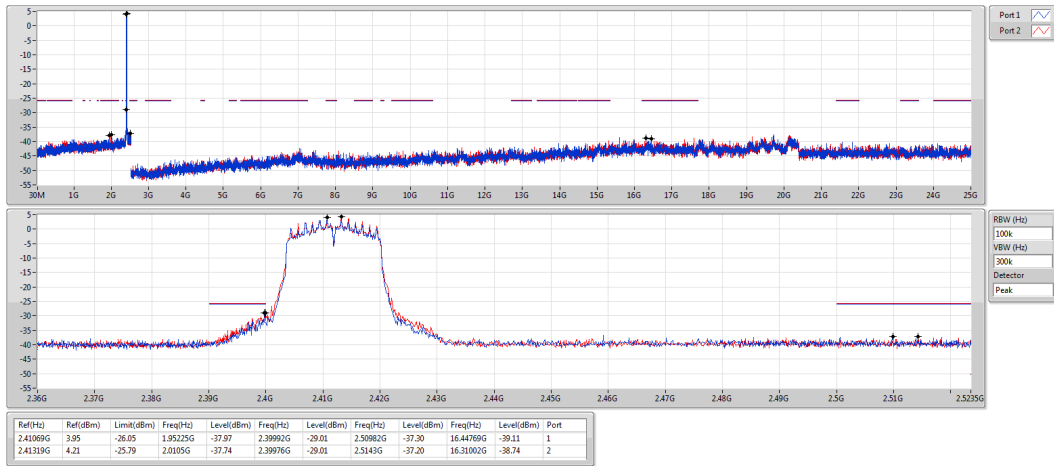


3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands



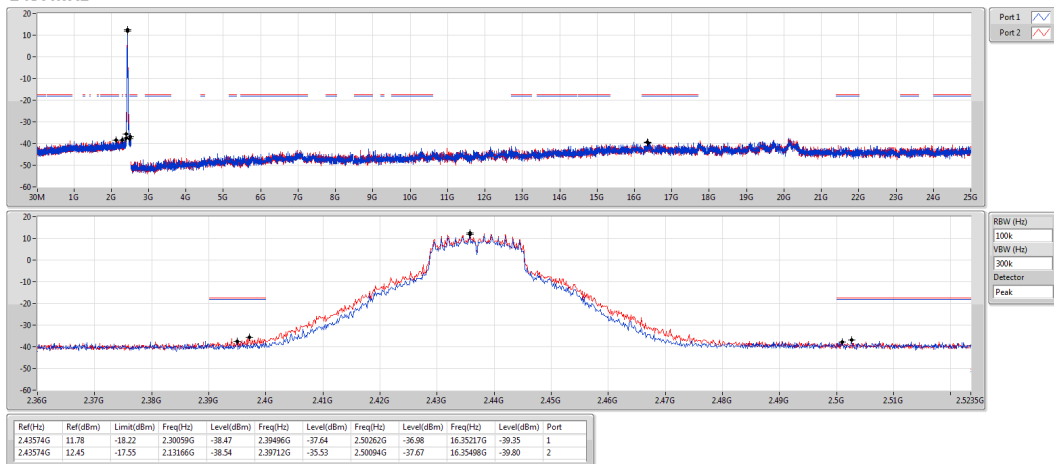
802.11g_Nss1,(6Mbps)_2TX
2412MHz

CSE NdB



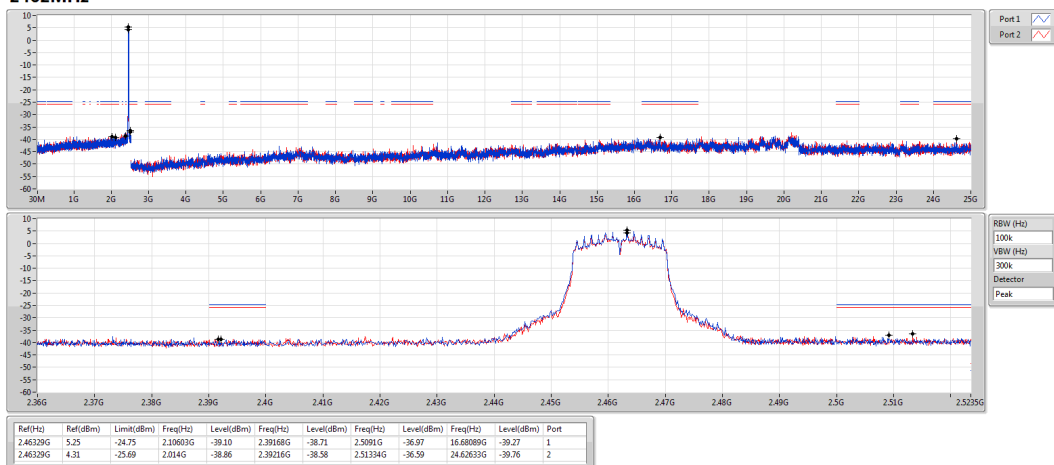
802.11g_Nss1,(6Mbps)_2TX
2437MHz

CSE NdB



802.11g_Nss1,(6Mbps)_2TX
2462MHz

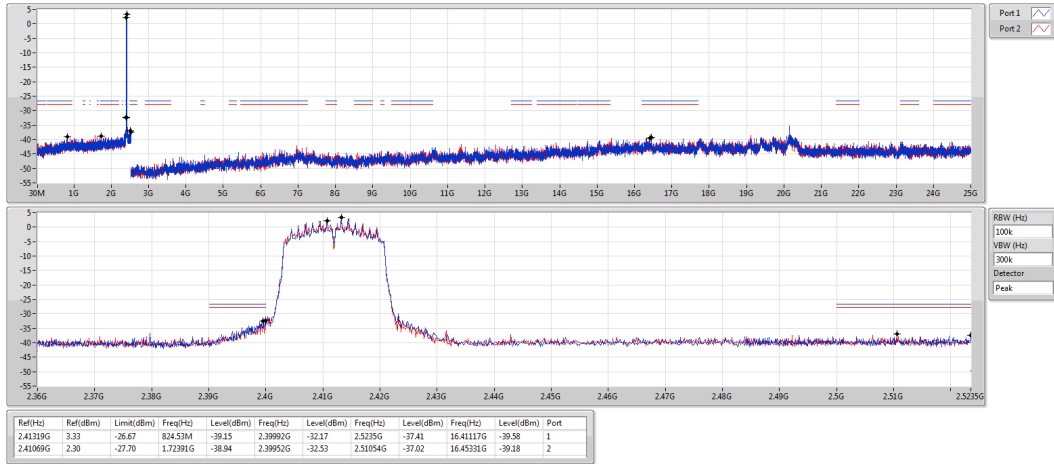
CSE NdB



802.11n HT20_Nss1,(MCS0)_2TX

CSE NdB

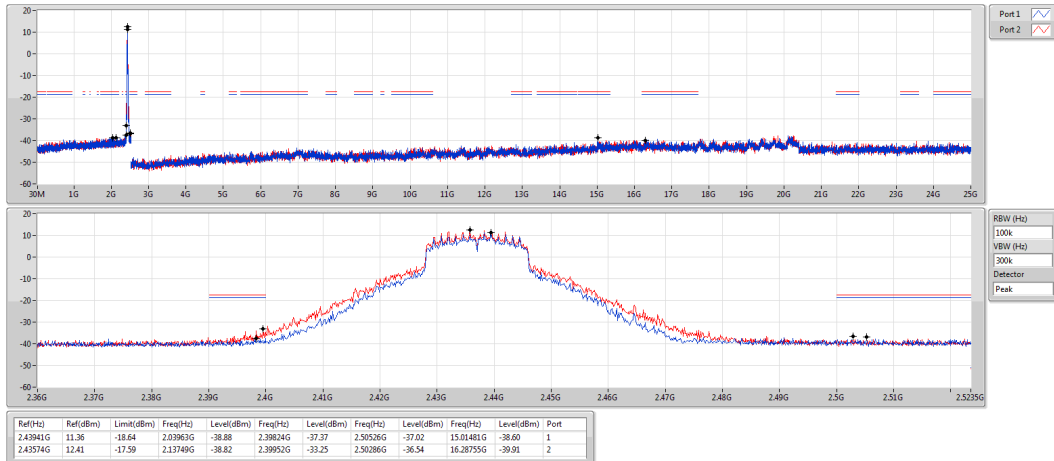
2412MHz



802.11n HT20_Nss1,(MCS0)_2TX

CSE NdB

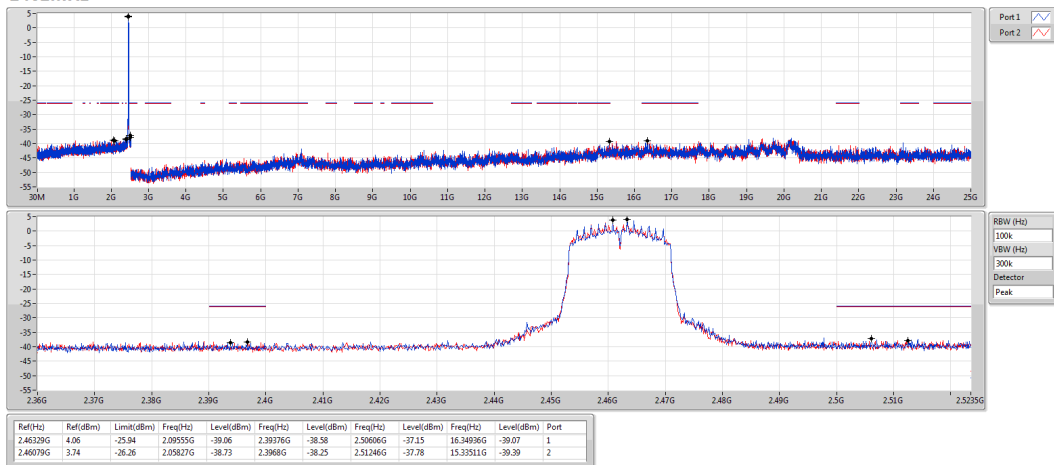
2437MHz



802.11n HT20_Nss1,(MCS0)_2TX

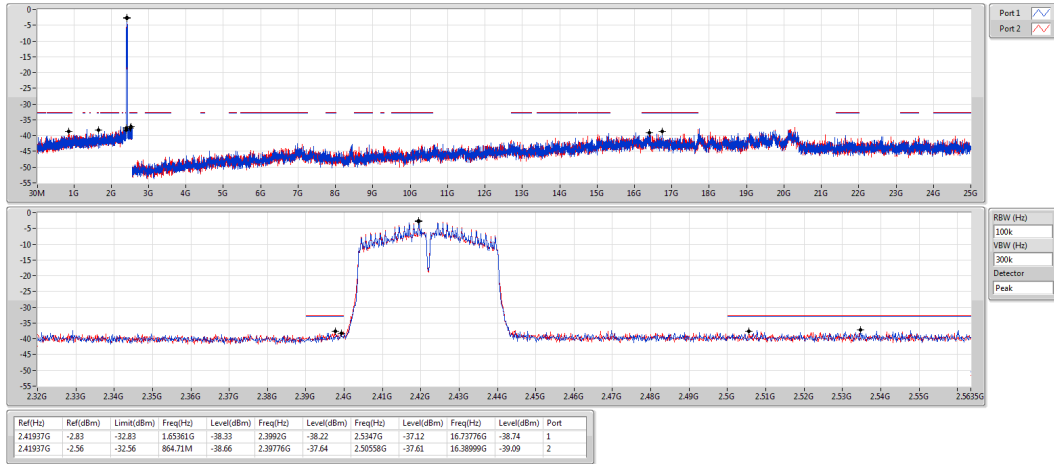
CSE NdB

2462MHz



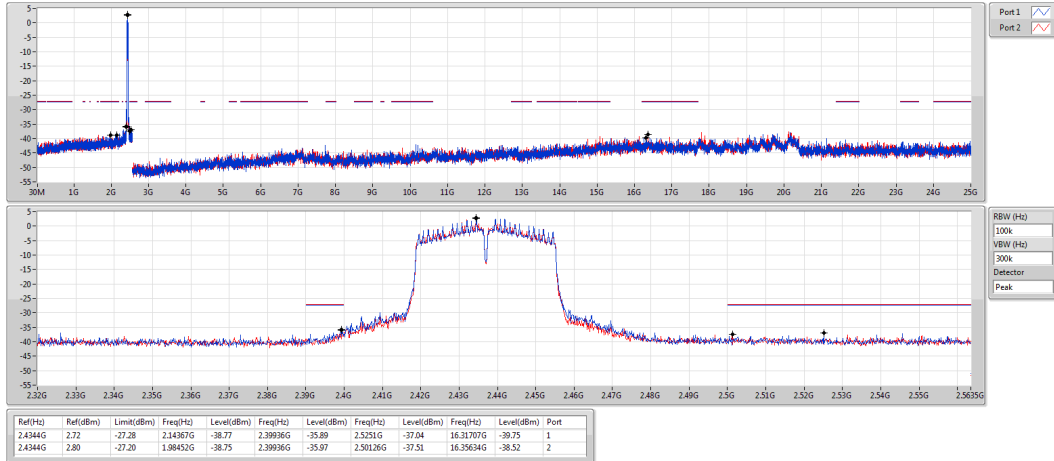
802.11n HT40_Nss1,(MCS0)_2TX
2422MHz

CSE NdB



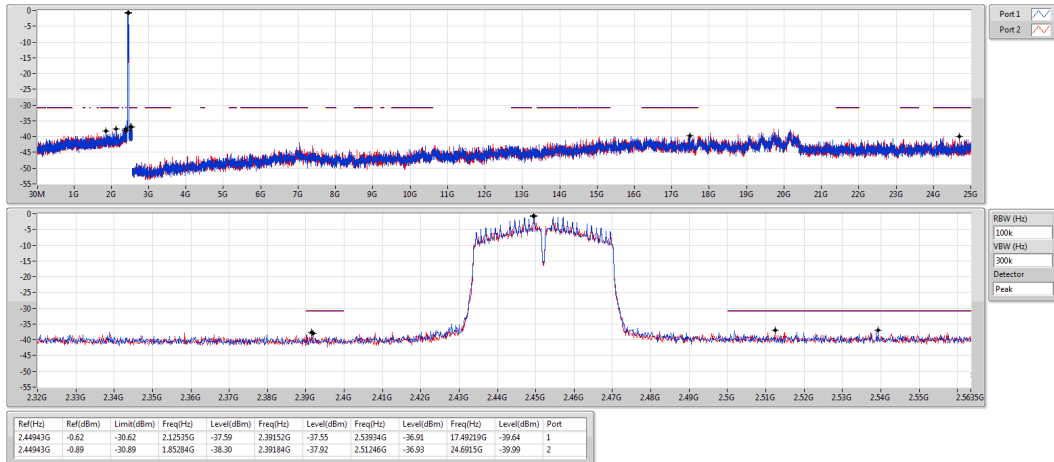
802.11n HT40_Nss1,(MCS0)_2TX
2437MHz

CSE NdB



802.11n HT40_Nss1,(MCS0)_2TX
2452MHz

CSE NdB



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 Corp (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 District, Tao Yuan City
333, Taiwan, R.O.C.

Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd
St., Kwei Shan District, 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: 886-3-318-0155

Email: ICC_Service@icertifi.com.tw

==END==