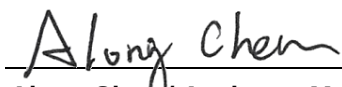


FCC Test Report

FCC ID : I88NBG6818
Equipment : AC2600 Multi-Gigabit Security WiFi Router
Model No. : NBG6818
Brand Name : ZYXEL
Applicant : Zyxel Communications Corporation
Address : No.2 Industry East RD. IX, Hsinchu Science
Park, Hsinchu 30075, Taiwan, R.O.C
Standard : 47 CFR FCC Part 15.247
Received Date : Sep. 23, 2019
Tested Date : Nov. 11 ~ Nov. 14, 2019

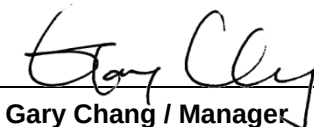
We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval 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
FR992302AC	Rev. 01	Initial issue	Jan. 07, 2020
FR992302AC	Rev. 02	Updated model name of antenna	Jan. 09, 2020

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.192MHz 51.44 (Margin -12.49dB) - QP	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz 53.68 (Margin -0.32dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: <i>Non-beamforming mode</i> 29.36 <i>Beamforming mode</i> 22.94	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]	4	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	4	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	4	MCS 0-31
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	4	MCS 0-31

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, 256QAM modulation..
 Note 4: 802.11n supports beamforming function.

1.1.2 Antenna Details

Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)		
			2400~2483.5	5150~5250	5725~5850
ALX19M-126AA1-A	PIFA	IPEX	0	0	0
ALX19M-126AA1-A	PIFA	IPEX	0	0	0
ALX19M-126AA1-A	PIFA	IPEX	0	0	0
ALX19M-126AA1-A	PIFA	IPEX	0	0	0
ALX19M-126AA1-A	PIFA	IPEX	---	0	0
ALX19M-126AA1-A	PIFA	IPEX	---	0	0
ALX19M-126AA1-A	PIFA	IPEX	---	0	0
ALX19M-126AA1-A	PIFA	IPEX	---	0	0

1.1.3 Power Supply Type of Equipment under Test (EUT)

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

1.1.4 Accessories

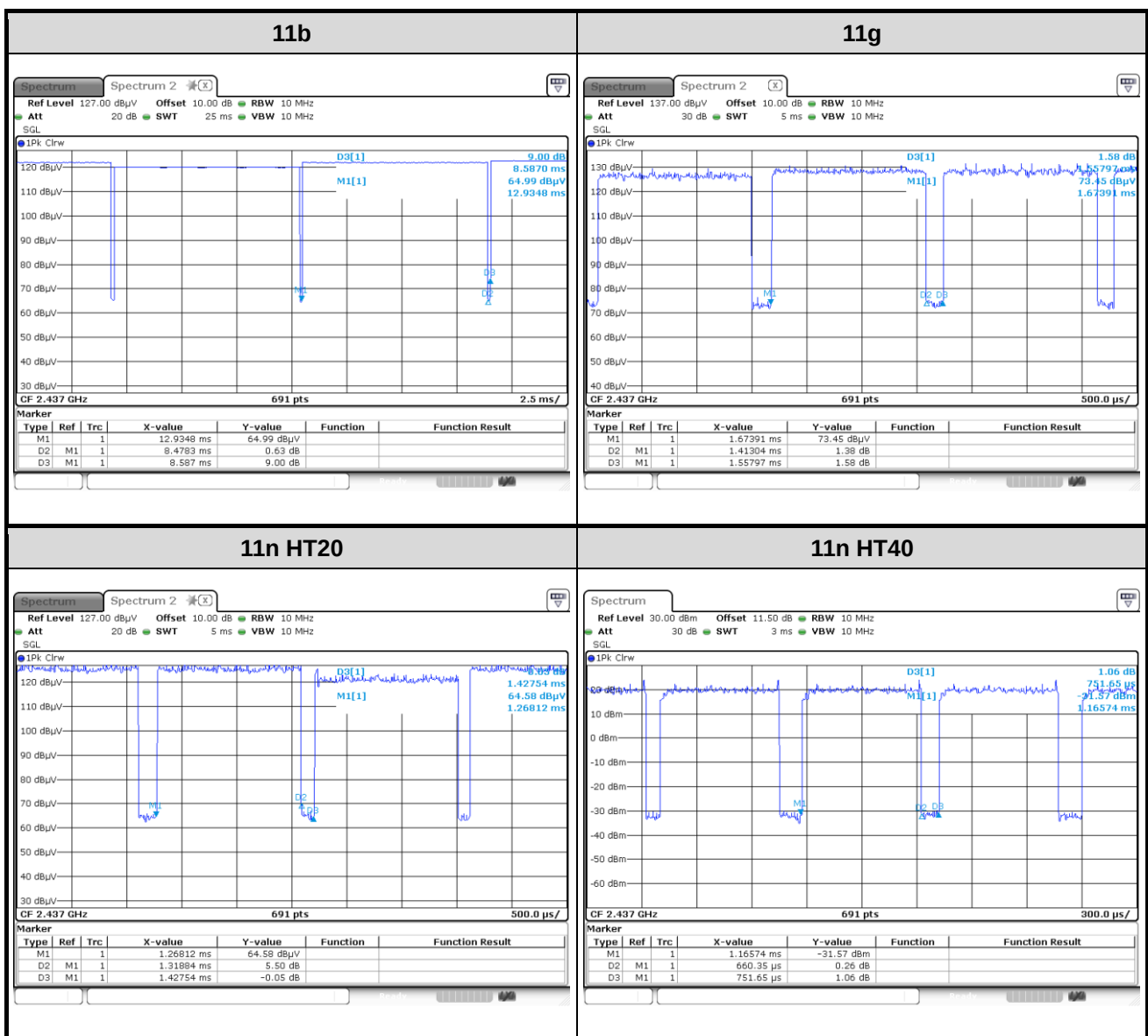
Accessories		
No.	Equipment	Description
1	Adapter	Brand: APD Model: WA-36N12R Power Rating: I/P: 100-240Vac, 50-60Hz 0.9Max O/P: 12Vdc, 3A Power Line: 1.8m non-shielded without core
2	RJ45 cable	Brand: EKSON Model: ZP01-C333 Power Line: 2.15m non-shielded without core

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	MP_TEST, Version: 1.3.8.0		
Duty Cycle and Duty Factor	Mode	Duty cycle (%)	Duty factor (dB)
	11b	98.73%	0.06
	11g	90.70%	0.42
	HT20	92.39%	0.34
	HT40	87.85%	0.56



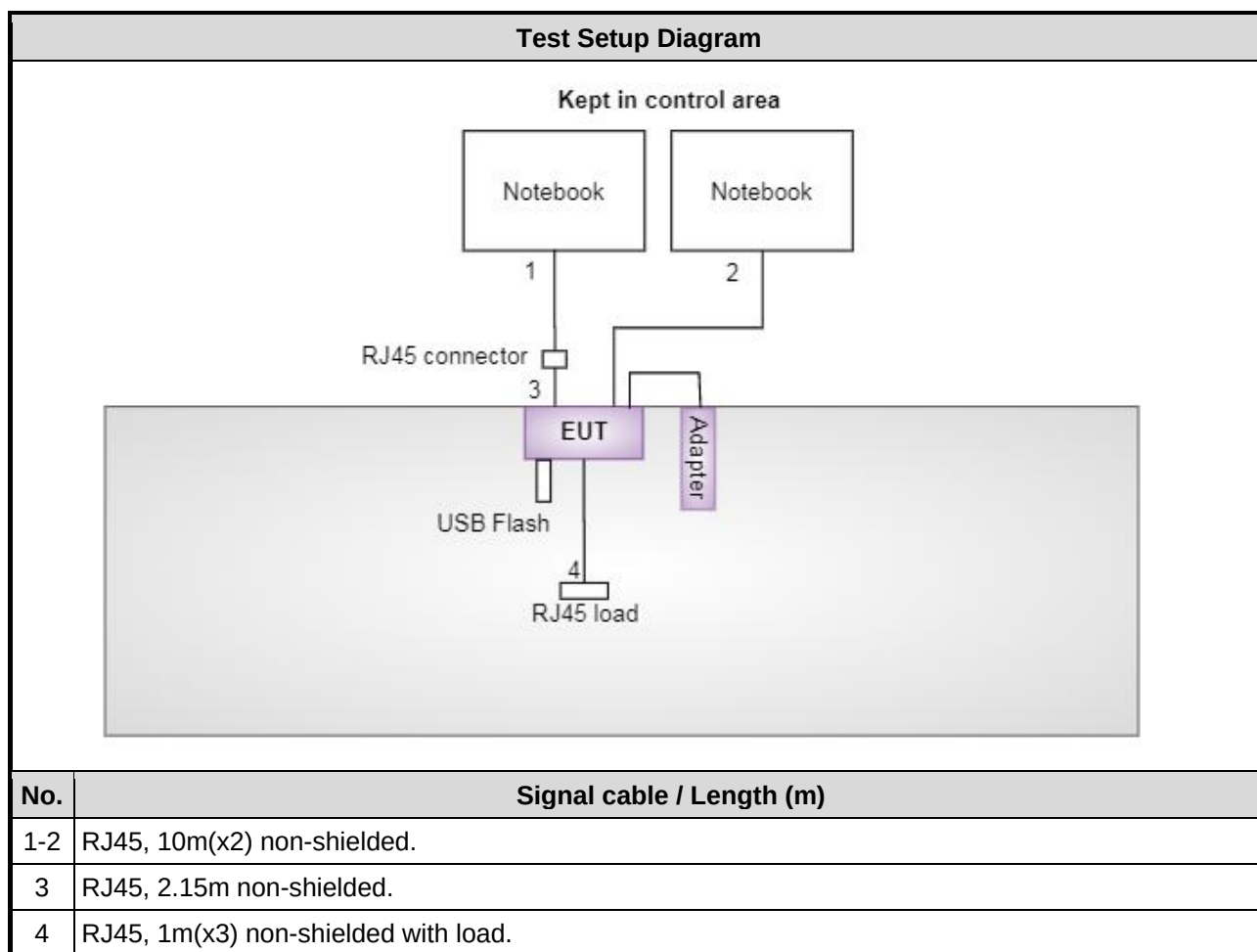
1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	53/54/62/66
11b	2437	61/62/72/74
11b	2462	61/62/72/74
11g	2412	59/59/63/72
11g	2437	88/91/94/102
11g	2462	59/59/63/72
HT20	2412	57/59/63/70
HT20	2437	88/91/94/102
HT20	2462	57/59/63/70
HT40	2422	51/53/57/64
HT40	2437	71/73/79/85
HT40	2452	51/53/57/64

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	USB Flash	Transcend	JetFlash 500 16G	---	---
2	Notebook	DELL	Latitude E6430	DoC	---
3	Notebook	DELL	Latitude E6440	DoC	---
4	RJ45 load	---	---	---	---

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Nov. 11, 2019				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Jan. 08, 2019	Jan. 07, 2020
LISN	R&S	ENV216	101579	Mar. 08, 2019	Mar. 07, 2020
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 chamber1 / (03CH01-WS)				
Tested Date	Nov. 11 ~ Nov. 14, 2019				
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Dec. 27, 2018	Dec. 26, 2019
Receiver	R&S	ESR3	101658	Dec. 11, 2018	Dec. 10, 2019
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 12, 2019	Jul. 11, 2020
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 18, 2018	Dec. 17, 2019
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 15, 2018	Nov. 14, 2019
Loop Antenna	R&S	HFH2-Z2	100315	Jan. 11, 2019	Jan. 10, 2020
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 07, 2019	Oct. 06, 2020
Preamplifier	EMC	EMC02325	980225	Jul. 09, 2019	Jul. 08, 2020
Preamplifier	Agilent	83017A	MY39501308	Oct. 08, 2019	Oct. 07, 2020
Preamplifier	EMC	EMC184045B	980192	Aug. 01, 2019	Jul. 31, 2020
RF Cable	EMC	EMC104-SM-SM-8000	181106	Oct. 07, 2019	Oct. 06, 2020
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 07, 2019	Oct. 06, 2020
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 07, 2019	Oct. 06, 2020
LF cable 1M	EMC	EMCCFD400-NM-NM-1000	160502	Oct. 07, 2019	Oct. 06, 2020
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 07, 2019	Oct. 06, 2020
LF cable 10M	Woken	CFD400NL-LW	CFD400NL-002	Oct. 07, 2019	Oct. 06, 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	Nov. 14, 2019				
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
AC POWER SOURCE	APC	AFC-500W	F312060012	Nov. 29, 2018	Nov. 28, 2019
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

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. 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	± 3.41 dB
Radiated emission > 1 GHz	± 4.59 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	23°C / 68%	Akun Chung
Radiated Emissions	03CH01-WS	23-24°C / 63-64%	Roger Lu Aska Huang
RF Conducted	TH01-WS	22°C / 64%	Brad Wu

- 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	11b	2437	1 Mbps	1
Radiated Emissions ≤1GHz	11b	2437	1 Mbps	1
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	
Maximum Output Power	HT20 HT40	2412 / 2437 / 2462 2422 / 2437 / 2452	MCS 0 MCS 0	2

NOTE:

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
- The EUT had been tested by following test configurations.
 - 1) Configuration 1: Non-Beamforming
 - 2) Configuration 2: Beamforming

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

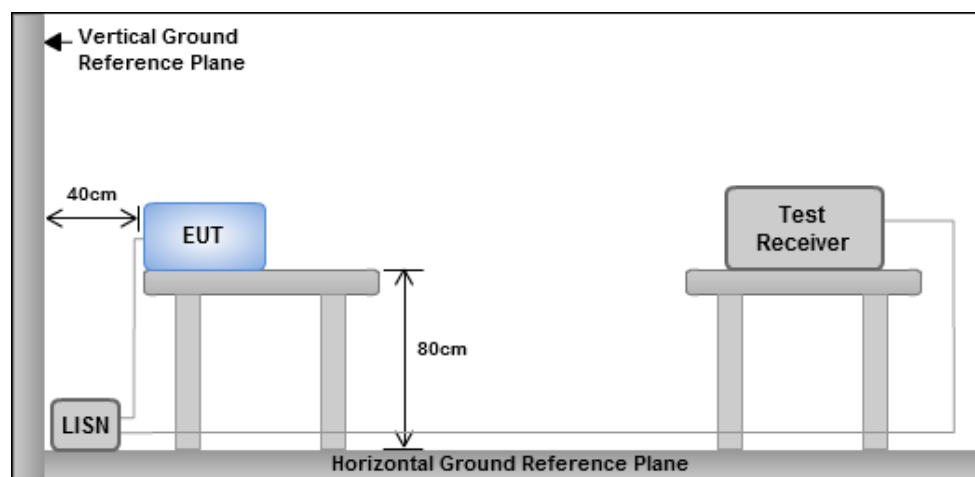
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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.

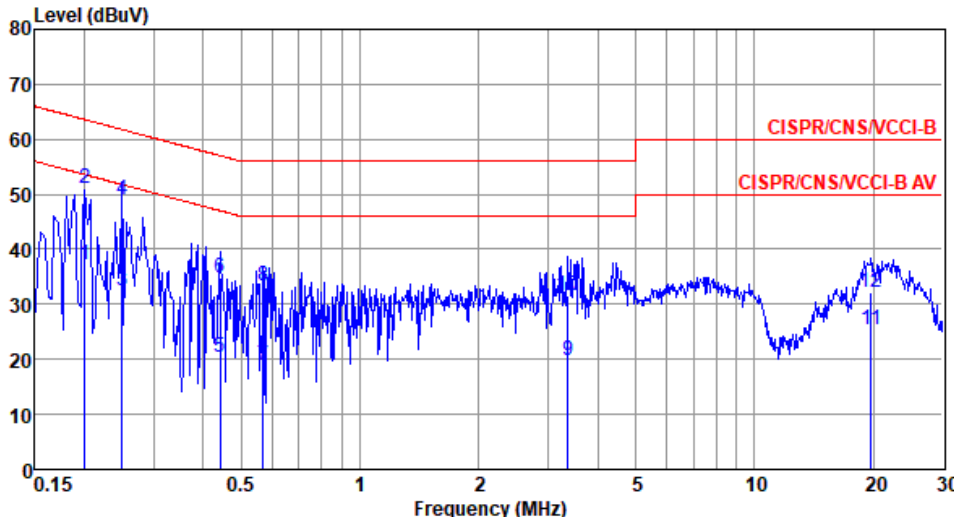
3.1.3 Test Setup



- 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	11b	Test Freq. (MHz)	2437
Power Phase	Line		

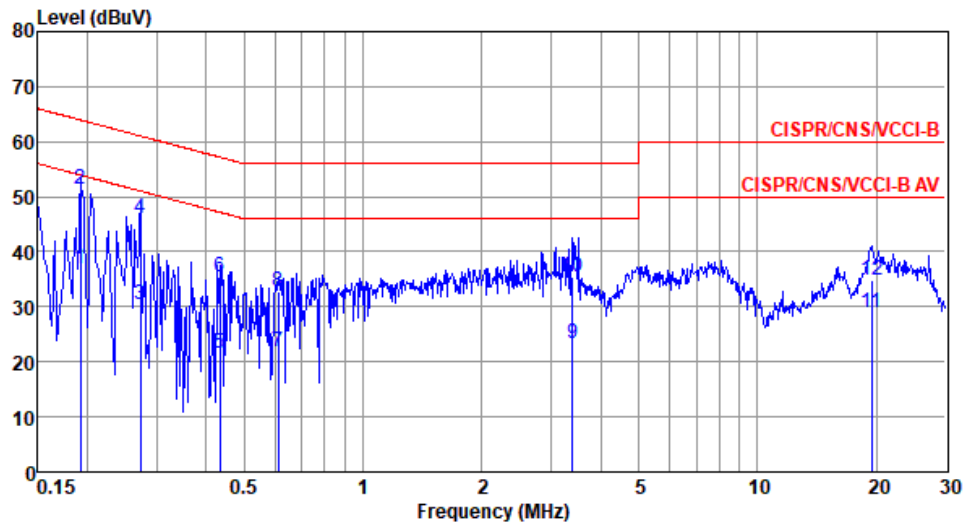


Freq	Level	Limit	Over	Read	LISN	cable		
MHz	dBuV	Line	Limit	Level	factor	loss	Remark	
		dBuV	dB	dBuV	dB	dB		
1	0.201	37.09	53.58	-16.49	27.30	9.54	0.06	Average
2*	0.201	50.94	63.58	-12.64	41.15	9.54	0.06	QP
3	0.249	32.52	51.78	-19.26	22.69	9.55	0.07	Average
4	0.249	48.96	61.78	-12.82	39.13	9.55	0.07	QP
5	0.442	20.45	47.02	-26.57	10.54	9.57	0.08	Average
6	0.442	34.69	57.02	-22.33	24.78	9.57	0.08	QP
7	0.567	18.99	46.00	-27.01	9.03	9.58	0.10	Average
8	0.567	33.33	56.00	-22.67	23.37	9.58	0.10	QP
9	3.364	19.87	46.00	-26.13	9.64	9.61	0.26	Average
10	3.364	31.64	56.00	-24.36	21.41	9.61	0.26	QP
11	19.740	25.36	50.00	-24.64	14.44	9.66	0.66	Average
12	19.740	32.11	60.00	-27.89	21.19	9.66	0.66	QP

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

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	11b	Test Freq. (MHz)	2437
Power Phase	Neutral		



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	LISN factor dB	cable loss dB	Remark
1	0.192	36.87	53.93	-17.06	27.08	9.58	0.06	Average
2*	0.192	51.44	63.93	-12.49	41.65	9.58	0.06	QP
3	0.273	30.36	51.03	-20.67	20.54	9.59	0.07	Average
4	0.273	45.94	61.03	-15.09	36.12	9.59	0.07	QP
5	0.433	21.63	47.20	-25.57	11.77	9.61	0.08	Average
6	0.433	35.47	57.20	-21.73	25.61	9.61	0.08	QP
7	0.611	21.97	46.00	-24.03	12.07	9.62	0.10	Average
8	0.611	32.67	56.00	-23.33	22.77	9.62	0.10	QP
9	3.399	23.32	46.00	-22.68	13.14	9.66	0.26	Average
10	3.399	35.30	56.00	-20.70	25.12	9.66	0.26	QP
11	19.428	29.00	50.00	-21.00	18.03	9.81	0.65	Average
12	19.428	34.97	60.00	-25.03	24.00	9.81	0.65	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

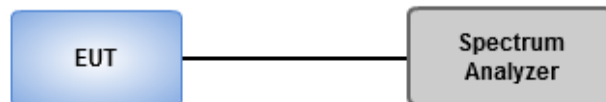
6dB Bandwidth

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) _4TX	10.072M	15.195M	15M2G1D	9.493M	15.051M
802.11g_Nss1,(6Mbps) _4TX	16.377M	16.57M	16M6D1D	16.304M	16.425M
802.11n HT20_Nss1,(MCS0)_4TX	17.101M	17.583M	17M6D1D	16.304M	17.438M
802.11n HT40_Nss1,(MCS0)_4TX	35.072M	35.745M	35M7D1D	33.913M	35.601M

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

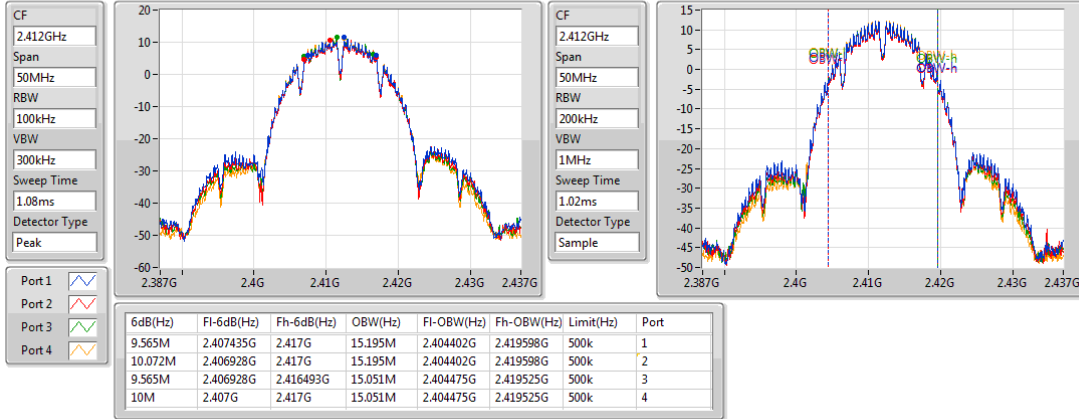
Mode	Result	Limit (Hz)	Port 1 -N dB (Hz)	Port 1 -OBW (Hz)	Port 2 -N dB (Hz)	Port 2 -OBW (Hz)	Port 3 -N dB (Hz)	Port 3 -OBW (Hz)	Port 4 -N dB (Hz)	Port 4 -OBW (Hz)
802.11b_Nss1, (1Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	9.565M	15.195M	10.072M	15.195M	9.565M	15.051M	10M	15.051M
2437MHz	Pass	500k	10.072M	15.051M	9.493M	15.051M	9.565M	15.051M	9.565M	15.051M
2462MHz	Pass	500k	9.493M	15.051M	9.565M	15.123M	9.565M	15.051M	9.565M	15.051M
802.11g_Nss1, (6Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	16.377M	16.498M	16.377M	16.498M	16.377M	16.425M	16.377M	16.425M
2437MHz	Pass	500k	16.304M	16.57M	16.304M	16.57M	16.304M	16.425M	16.377M	16.498M
2462MHz	Pass	500k	16.304M	16.498M	16.304M	16.498M	16.304M	16.498M	16.377M	16.425M
802.11n HT20_ Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	17.101M	17.583M	16.739M	17.583M	16.739M	17.511M	17.101M	17.438M
2437MHz	Pass	500k	16.667M	17.583M	16.884M	17.583M	17.029M	17.583M	16.667M	17.583M
2462MHz	Pass	500k	16.304M	17.438M	16.667M	17.583M	16.957M	17.511M	16.957M	17.583M
802.11n HT40_ Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	500k	33.913M	35.601M	35.072M	35.601M	35.072M	35.601M	35.072M	35.601M
2437MHz	Pass	500k	35.072M	35.745M	35.072M	35.745M	35.072M	35.745M	33.913M	35.745M
2452MHz	Pass	500k	33.913M	35.601M	35.072M	35.601M	35.072M	35.601M	33.913M	35.601M

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

802.11b_Nss1,(1Mbps)_4TX

EBW

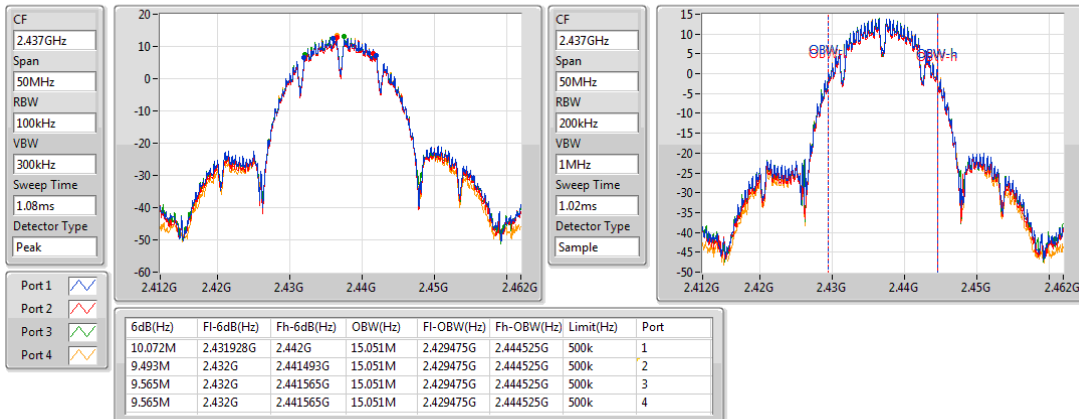
2412MHz



802.11b_Nss1,(1Mbps)_4TX

EBW

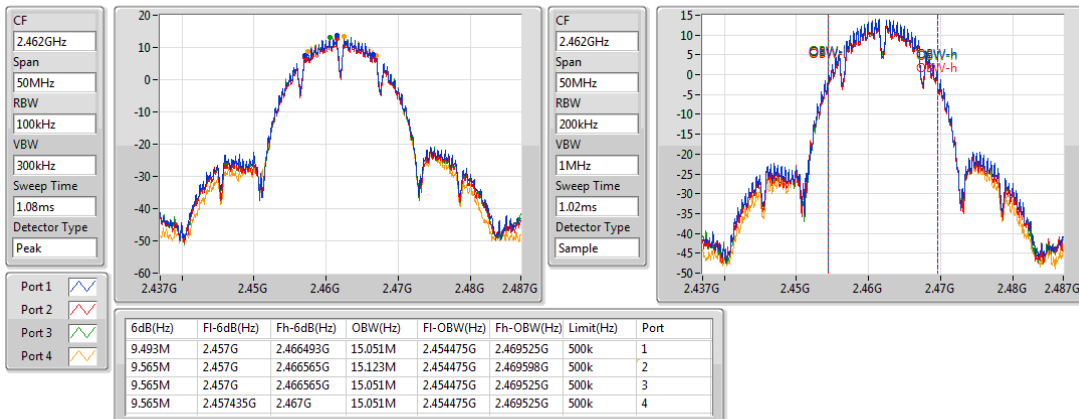
2437MHz



802.11b_Nss1,(1Mbps)_4TX

EBW

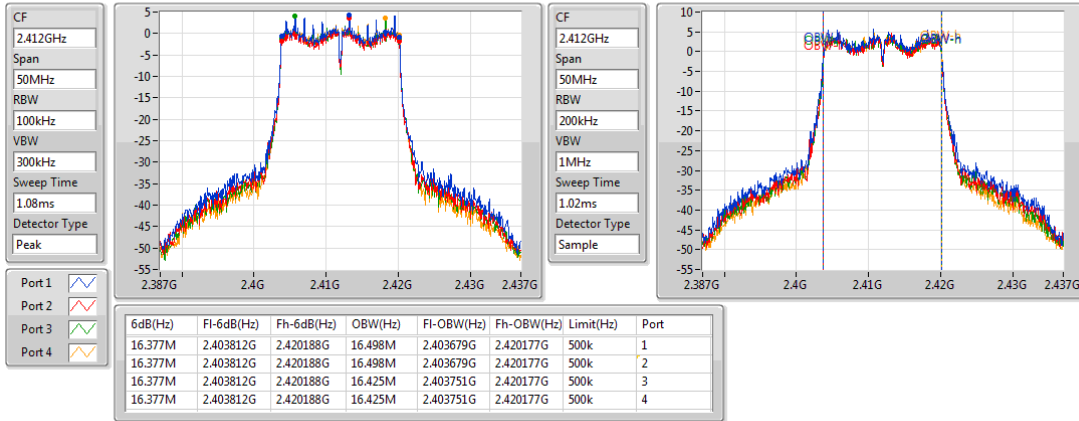
2462MHz



802.11g_Nss1,(6Mbps)_4TX

EBW

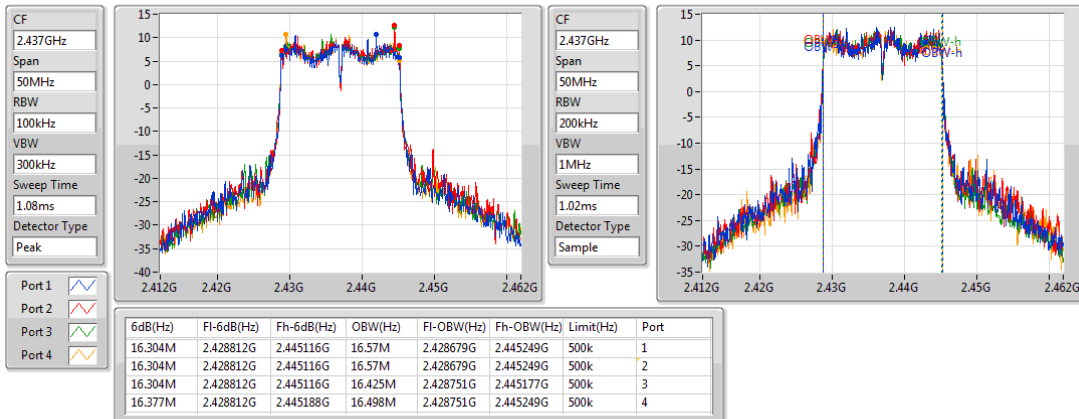
2412MHz



802.11g_Nss1,(6Mbps)_4TX

EBW

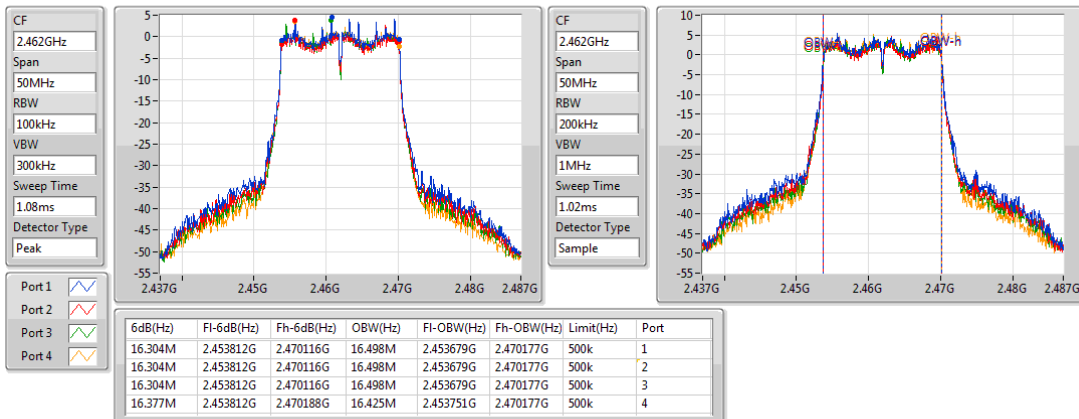
2437MHz



802.11g_Nss1,(6Mbps)_4TX

EBW

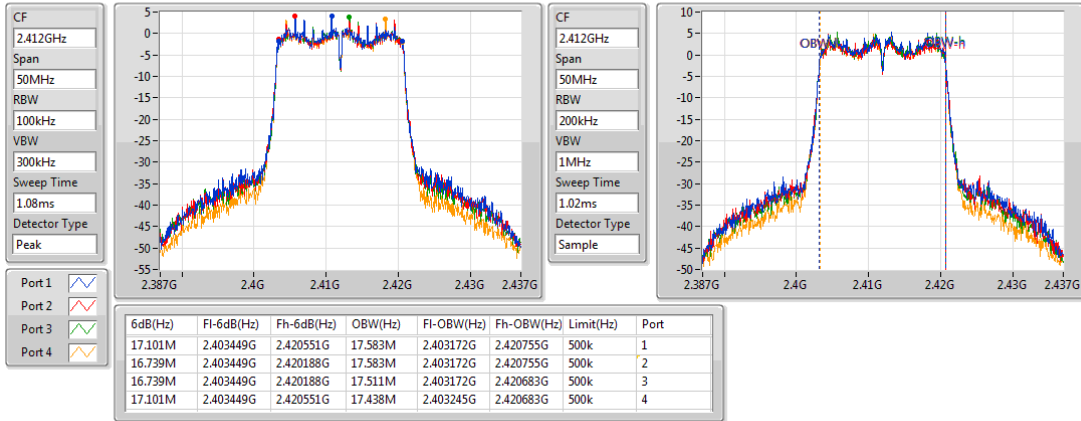
2462MHz



802.11n HT20_Nss1,(MCS0)_4TX

EBW

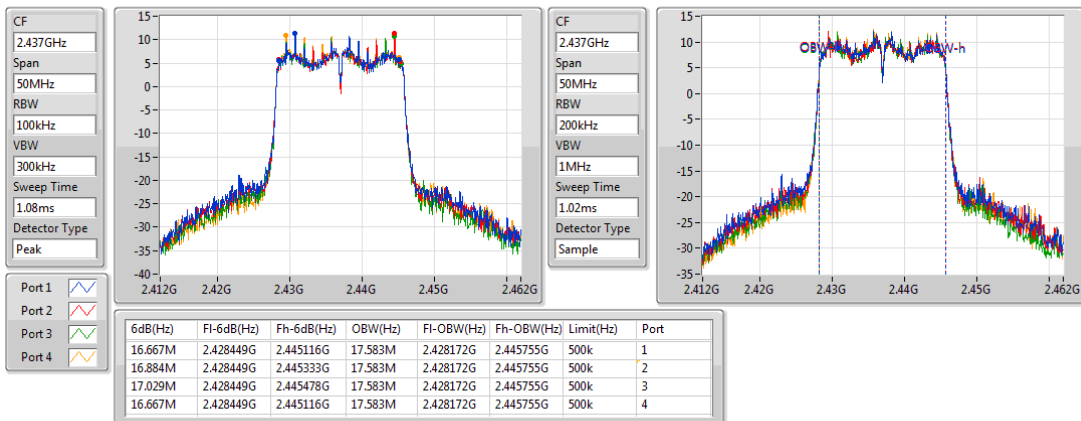
2412MHz



802.11n HT20_Nss1,(MCS0)_4TX

EBW

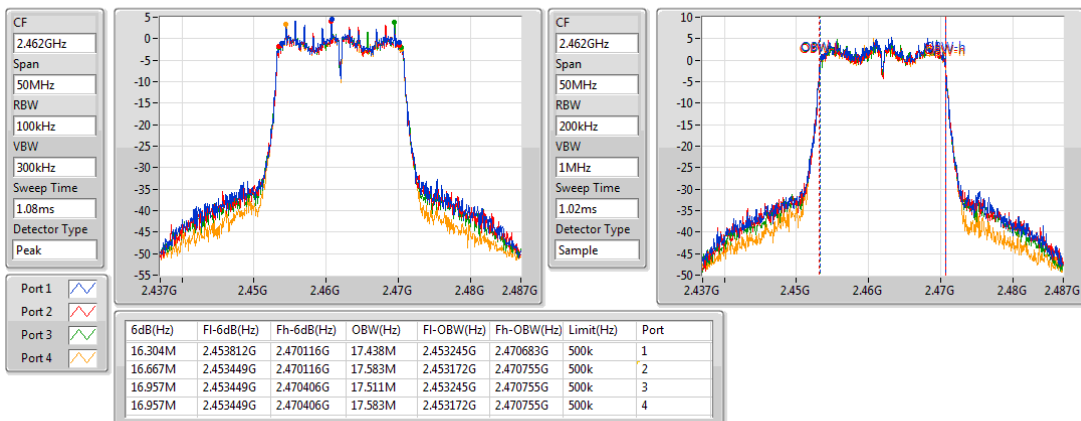
2437MHz



802.11n HT20_Nss1,(MCS0)_4TX

EBW

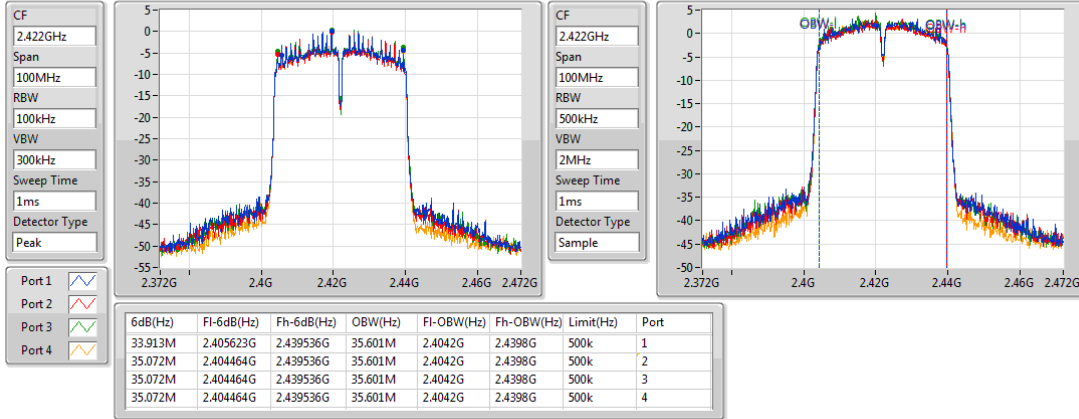
2462MHz



802.11n HT40_Nss1,(MCS0)_4TX

EBW

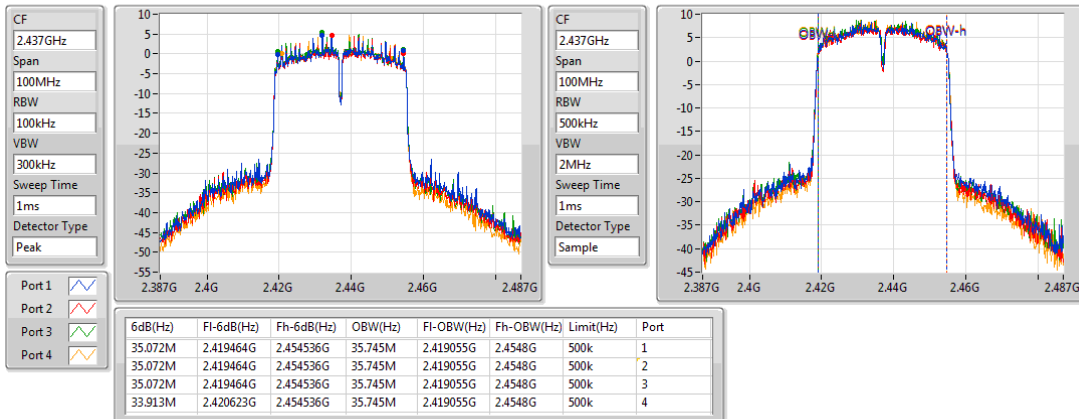
2422MHz



802.11n HT40_Nss1,(MCS0)_4TX

EBW

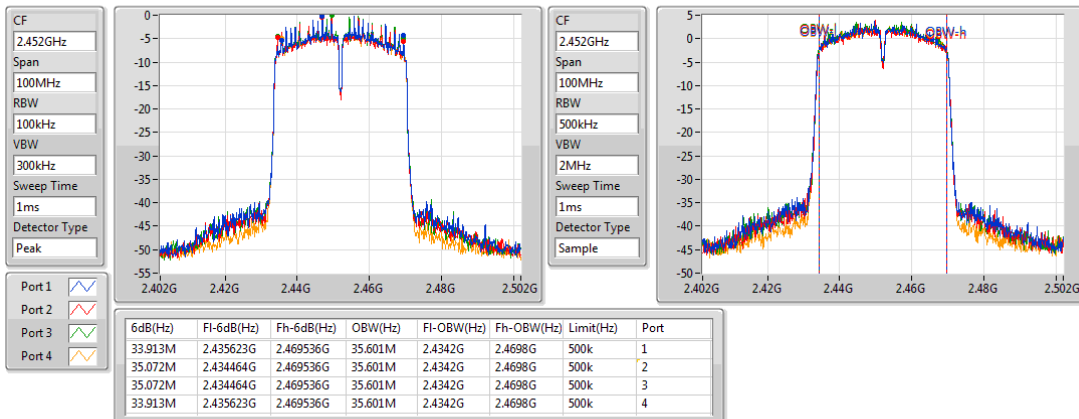
2437MHz



802.11n HT40_Nss1,(MCS0)_4TX

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.

Antenna gain $> 6\text{dBi}$

Non Fixed, point to point operations.

The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

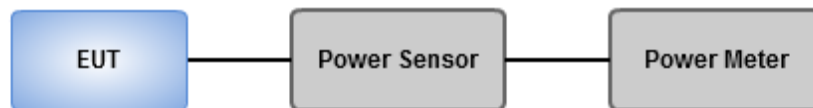
Fixed, point to point operations

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

3.3.2 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

Non-beamforming mode

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_4TX	29.36	0.86298
802.11g_Nss1,(6Mbps)_4TX	28.95	0.78524
802.11n HT20_Nss1,(MCS0)_4TX	28.96	0.78705
802.11n HT40_Nss1,(MCS0)_4TX	25.38	0.34514

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11b_Nss1, (1Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	0.00	21.69	21.32	21.28	21.61	27.50	30.00	27.50	36.00
2437MHz	Pass	0.00	23.58	23.08	23.29	23.41	29.36	30.00	29.36	36.00
2462MHz	Pass	0.00	23.16	22.95	23.12	23.26	29.14	30.00	29.14	36.00
802.11g_Nss1, (6Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	0.00	16.79	16.42	16.24	16.21	22.44	30.00	22.44	36.00
2437MHz	Pass	0.00	22.85	23.12	22.68	23.06	28.95	30.00	28.95	36.00
2462MHz	Pass	0.00	16.87	16.41	16.15	16.34	22.47	30.00	22.47	36.00
802.11n HT20_ Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	0.00	15.84	16.02	15.91	15.58	21.86	30.00	21.86	36.00
2437MHz	Pass	0.00	22.96	23.14	22.58	23.06	28.96	30.00	28.96	36.00
2462MHz	Pass	0.00	16.08	16.25	16.02	15.81	22.06	30.00	22.06	36.00
802.11n HT40_ Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	0.00	14.58	14.81	14.76	14.12	20.60	30.00	20.60	36.00
2437MHz	Pass	0.00	19.21	19.28	19.64	19.31	25.38	30.00	25.38	36.00
2452MHz	Pass	0.00	14.41	14.62	14.89	13.78	20.46	30.00	20.46	36.00

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

Beamforming mode

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11n HT20-BF_Nss1,(MCS0)_4TX	22.94	0.19679
802.11n HT40-BF_Nss1,(MCS0)_4TX	19.36	0.08630

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11n HT20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	6.02	9.82	10	9.89	9.56	15.84	29.98	21.86	36.00
2437MHz	Pass	6.02	16.94	17.12	16.56	17.04	22.94	29.98	28.96	36.00
2462MHz	Pass	6.02	10.06	10.23	10	9.79	16.04	29.98	22.06	36.00
802.11n HT40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	6.02	8.56	8.79	8.74	8.1	14.58	29.98	20.60	36.00
2437MHz	Pass	6.02	13.19	13.26	13.62	13.29	19.36	29.98	25.38	36.00
2452MHz	Pass	6.02	8.39	8.6	8.87	7.76	14.44	29.98	20.46	36.00

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

Directional gain = 0 dBi + 10*log(4/1) = 6.02 dBi > 6 dBi,

Limit shall be reduced to 30 dBm – (6.02 dBi – 6 dBi) = 29.98 dBm

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.

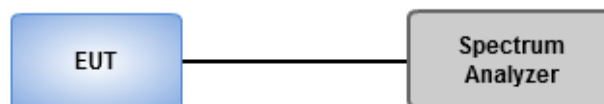
Average PSD, duty cycle $\geq 98\%$

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) $\times$ (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)_4TX	5.87
802.11g_Nss1,(6Mbps)_4TX	3.58
802.11n HT20_Nss1,(MCS0)_4TX	3.62
802.11n HT40_Nss1,(MCS0)_4TX	-2.79

RBW=30kHz

Result

Mode	Result	DG (dBi)	Port 1 (dBm/ RBW)	Port 2 (dBm/R BW)	Port 3 (dBm/R BW)	Port 4 (dBm/R BW)	PD (dBm/R BW)	PD Limit (dBm/R BW)
802.11b_Nss1,(1Mbps)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	6.02	-1.36	-1.81	-1.43	-1.18	4.16	7.98
2437MHz	Pass	6.02	0.38	-0.04	0.43	0.71	5.87	7.98
2462MHz	Pass	6.02	0.43	-0.23	0.42	0.45	5.81	7.98
802.11g_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	6.02	-8.57	-9.20	-9.09	-8.81	-2.97	7.98
2437MHz	Pass	6.02	-2.42	-2.31	-2.64	-2.18	3.58	7.98
2462MHz	Pass	6.02	-8.66	-9.30	-9.33	-8.95	-3.08	7.98
802.11n HT20_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	6.02	-8.95	-9.29	-9.06	-9.31	-3.14	7.98
2437MHz	Pass	6.02	-2.27	-2.41	-2.59	-2.27	3.62	7.98
2462MHz	Pass	6.02	-9.06	-9.68	-9.37	-9.39	-3.54	7.98
802.11n HT40_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	6.02	-13.42	-13.63	-13.29	-13.64	-7.59	7.98
2437MHz	Pass	6.02	-8.76	-9.10	-8.54	-8.56	-2.79	7.98
2452MHz	Pass	6.02	-13.44	-13.88	-13.18	-13.65	-7.55	7.98

DG = Directional Gain; RBW=30kHz

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

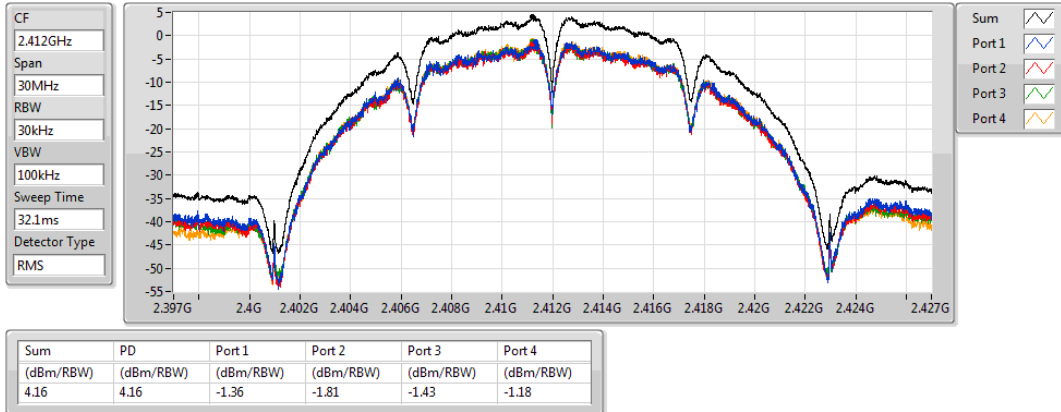
Directional gain = $0 \text{ dBi} + 10 \cdot \log(4/1) = 6.02 \text{ dBi} > 6 \text{ dBi}$,

Limit shall be reduced to $8 \text{ dBm} - (6.02 \text{ dBi} - 6 \text{ dBi}) = 7.98 \text{ dBm}$

802.11b_Nss1,(1Mbps)_4TX

PSD

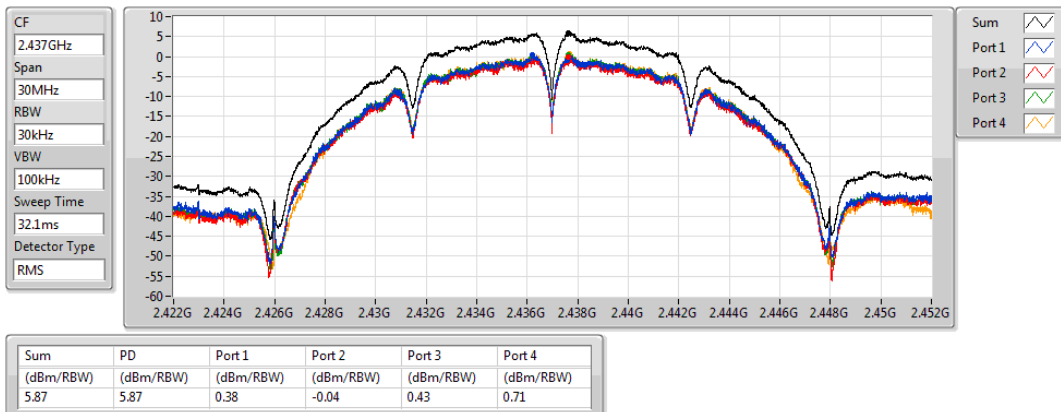
2412MHz



802.11b_Nss1,(1Mbps)_4TX

PSD

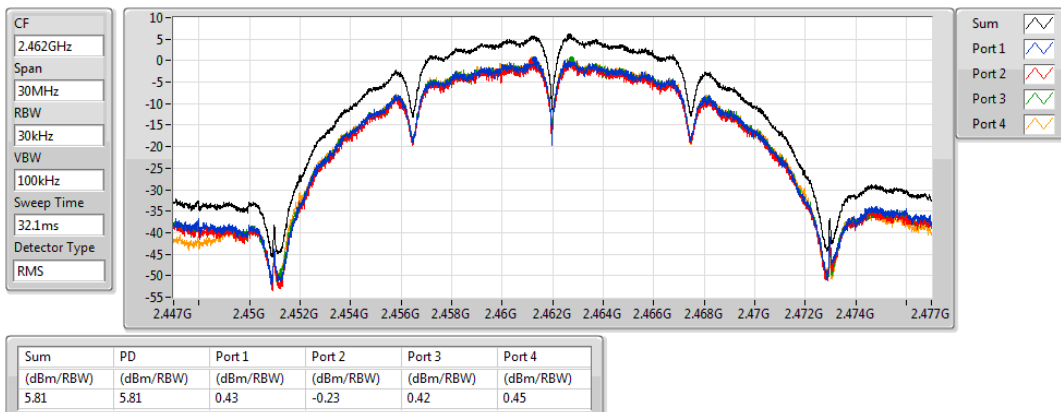
2437MHz



802.11b_Nss1,(1Mbps)_4TX

PSD

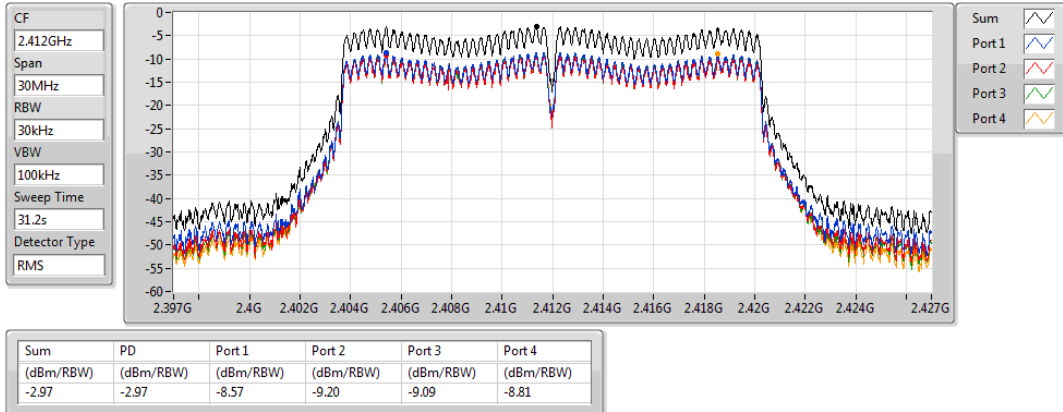
2462MHz



802.11g_Nss1,(6Mbps)_4TX

PSD

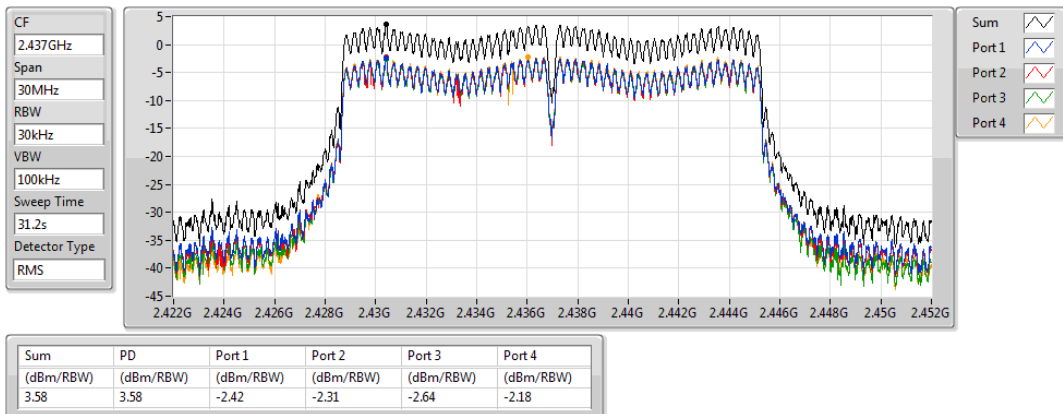
2412MHz



802.11g_Nss1,(6Mbps)_4TX

PSD

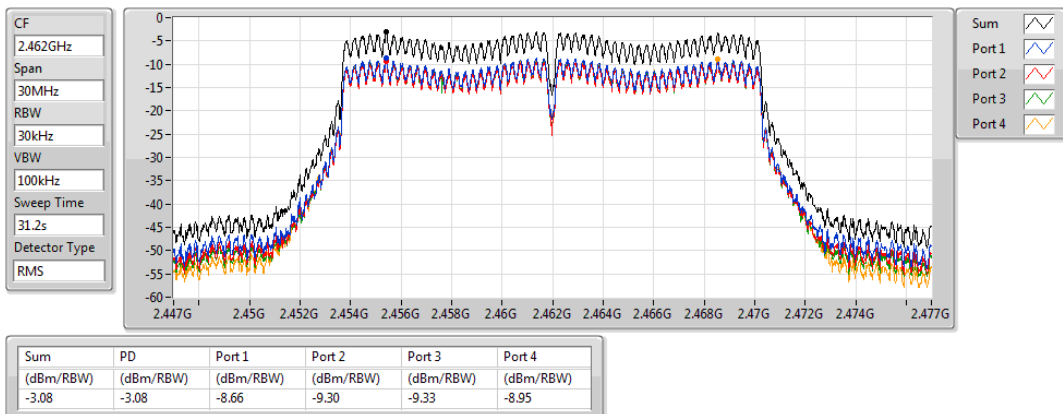
2437MHz



802.11g_Nss1,(6Mbps)_4TX

PSD

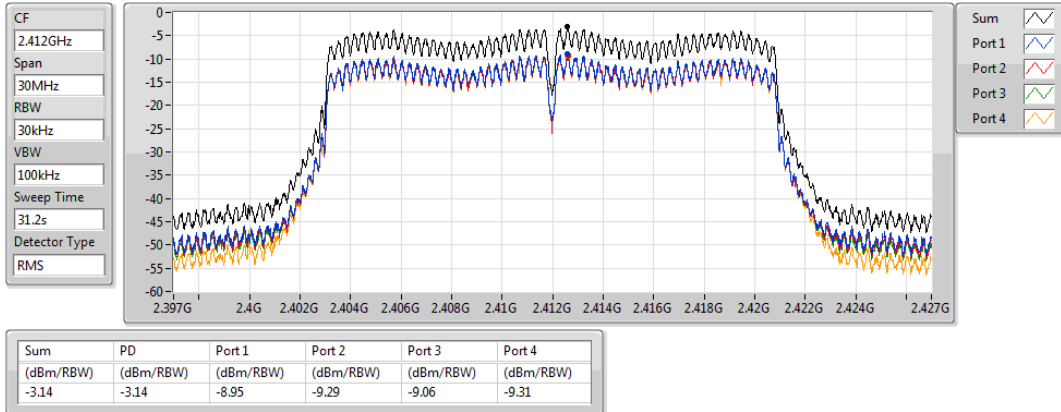
2462MHz



802.11n HT20_Nss1,(MCS0)_4TX

PSD

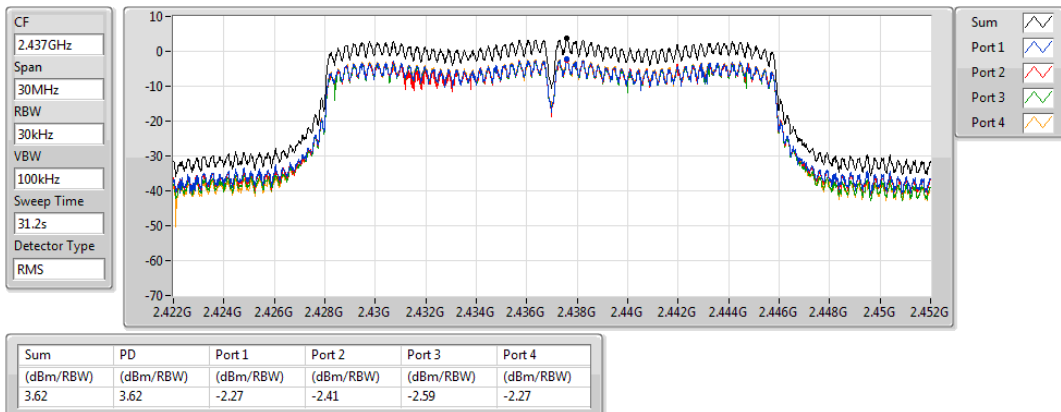
2412MHz



802.11n HT20_Nss1,(MCS0)_4TX

PSD

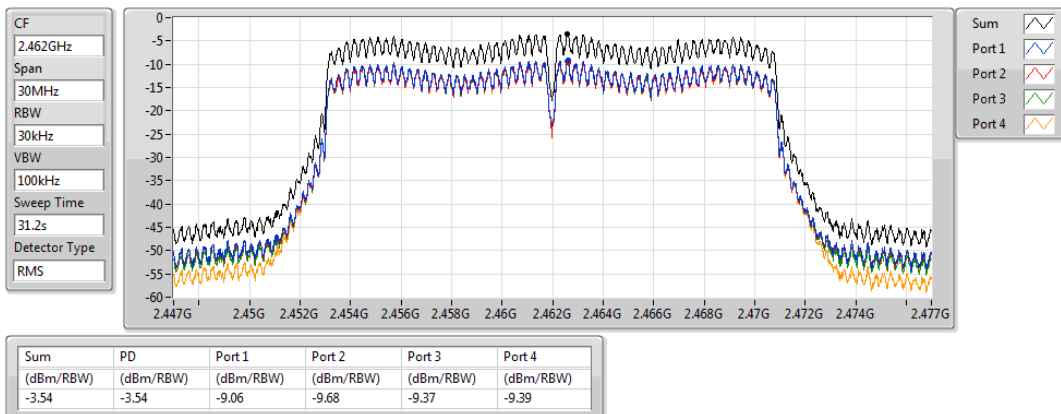
2437MHz



802.11n HT20_Nss1,(MCS0)_4TX

PSD

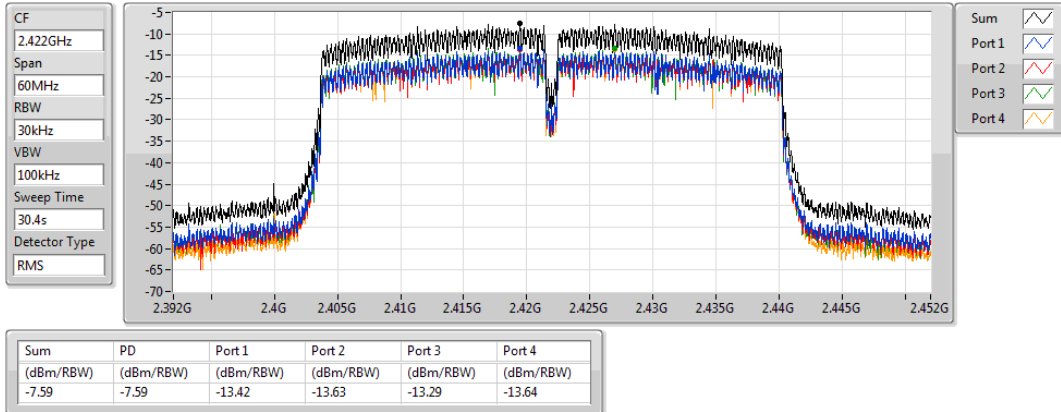
2462MHz



802.11n HT40_Nss1,(MCS0)_4TX

PSD

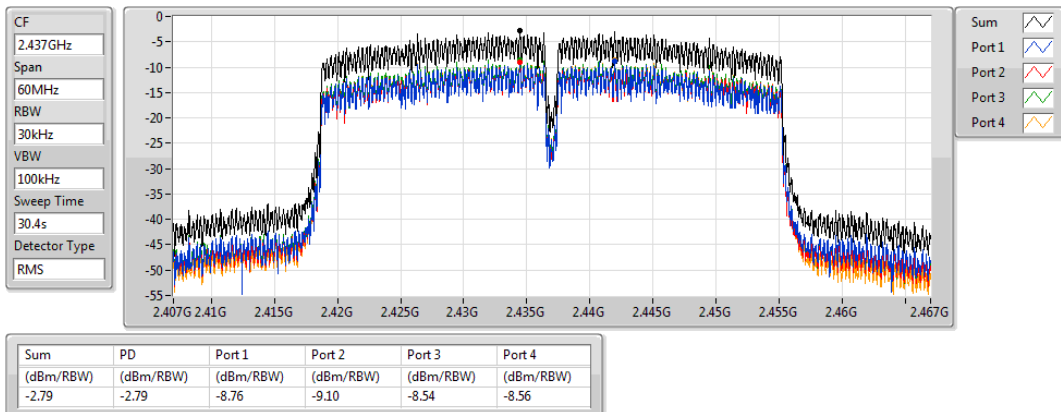
2422MHz



802.11n HT40_Nss1,(MCS0)_4TX

PSD

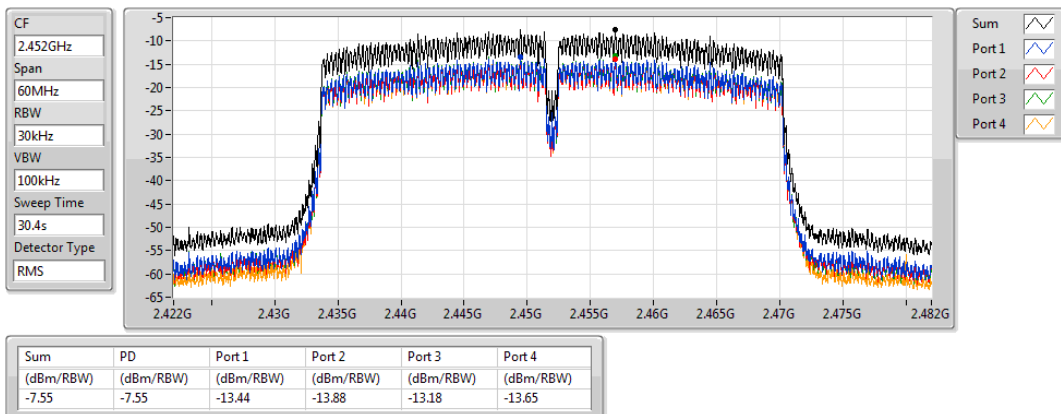
2437MHz



802.11n HT40_Nss1,(MCS0)_4TX

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:
Quasi-Peak value is measured for frequency below 1GHz except for 9~90 kHz, 110~490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.5.2 Test Procedures

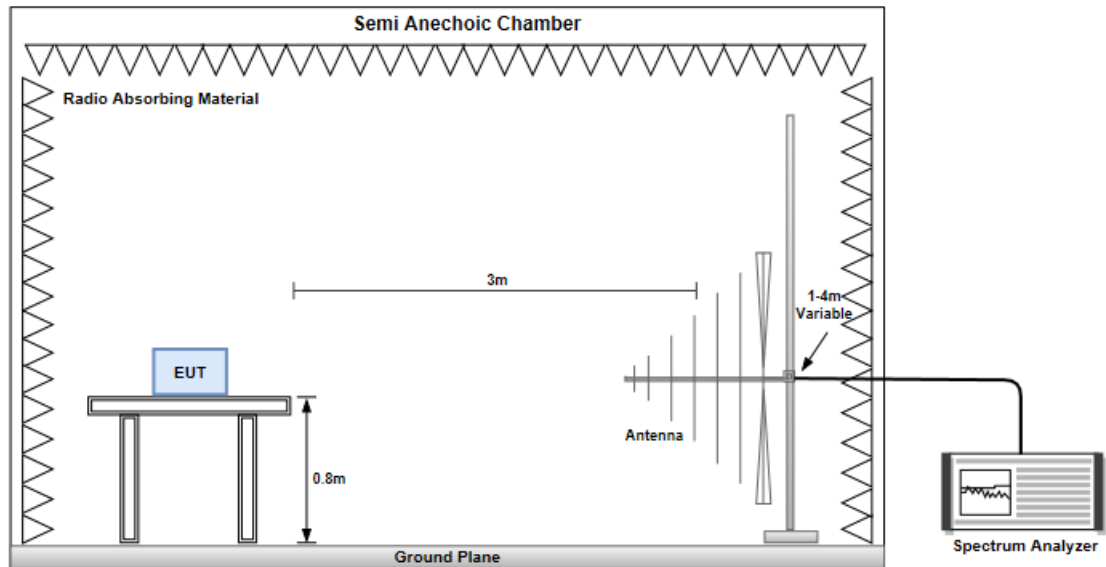
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

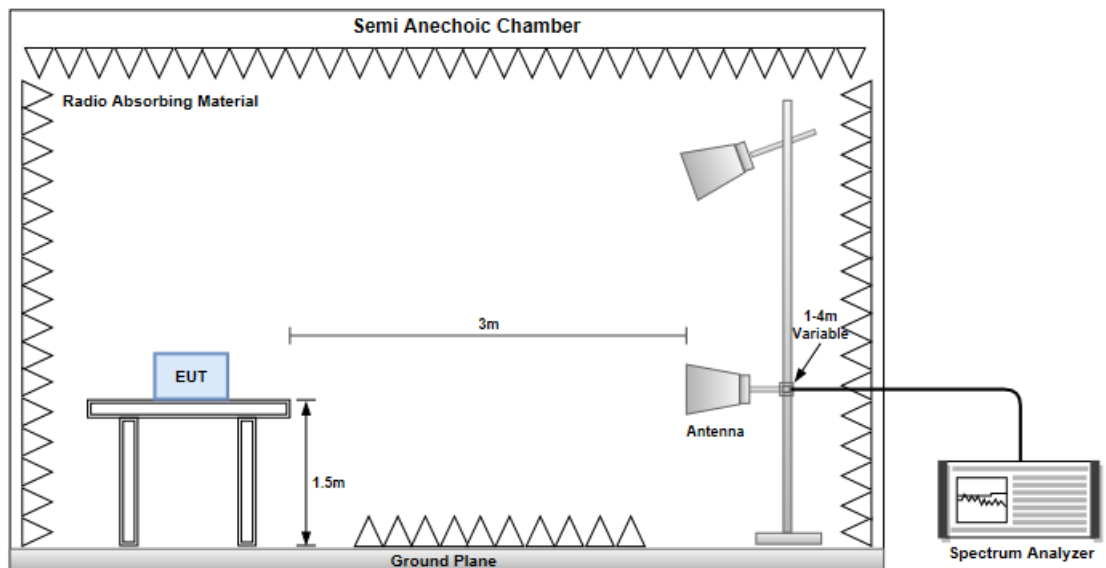
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz

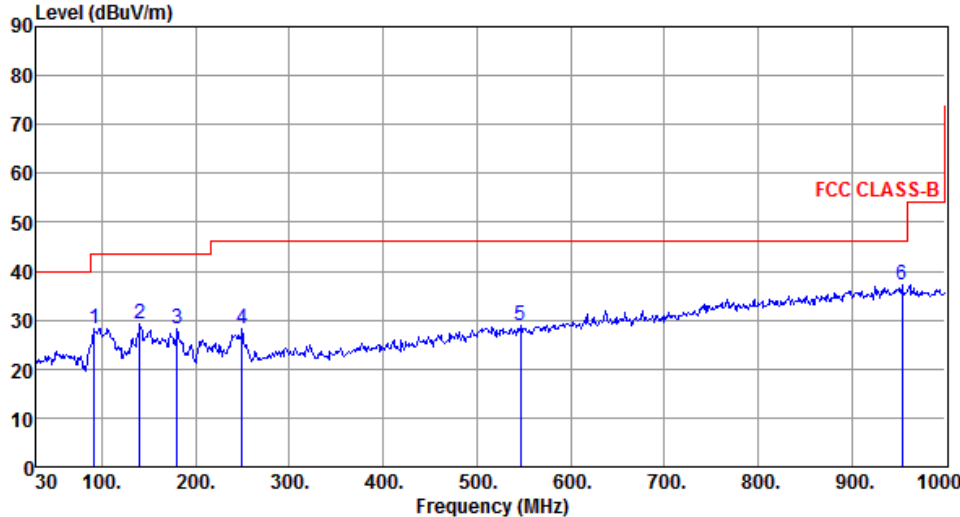


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

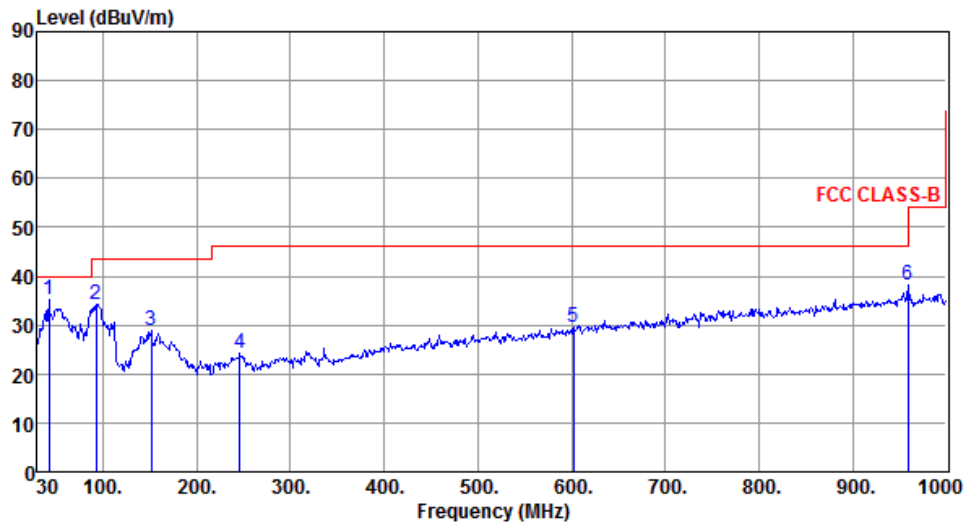
Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	92.08	28.30	43.50	-15.20	42.37	-14.07	Peak	---	---
2	140.58	29.18	43.50	-14.32	38.04	-8.86	Peak	---	---
3	180.35	28.28	43.50	-15.22	38.22	-9.94	Peak	---	---
4	249.22	28.09	46.00	-17.91	38.05	-9.96	Peak	---	---
5	547.01	28.94	46.00	-17.06	31.44	-2.50	Peak	---	---
6	953.44	37.26	46.00	-8.74	32.48	4.78	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	11b	Test Freq. (MHz)	2437
Polarization	Vertical		



	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	42.61	35.05	40.00	-4.95	43.31	-8.26	Peak	---	---
2	93.05	34.17	43.50	-9.33	48.15	-13.98	Peak	---	---
3	151.25	28.90	43.50	-14.60	37.27	-8.37	Peak	---	---
4	246.31	24.13	46.00	-21.87	34.10	-9.97	Peak	---	---
5	602.30	29.39	46.00	-16.61	30.31	-0.92	Peak	---	---
6	959.26	38.22	46.00	-7.78	33.39	4.83	Peak	---	---

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

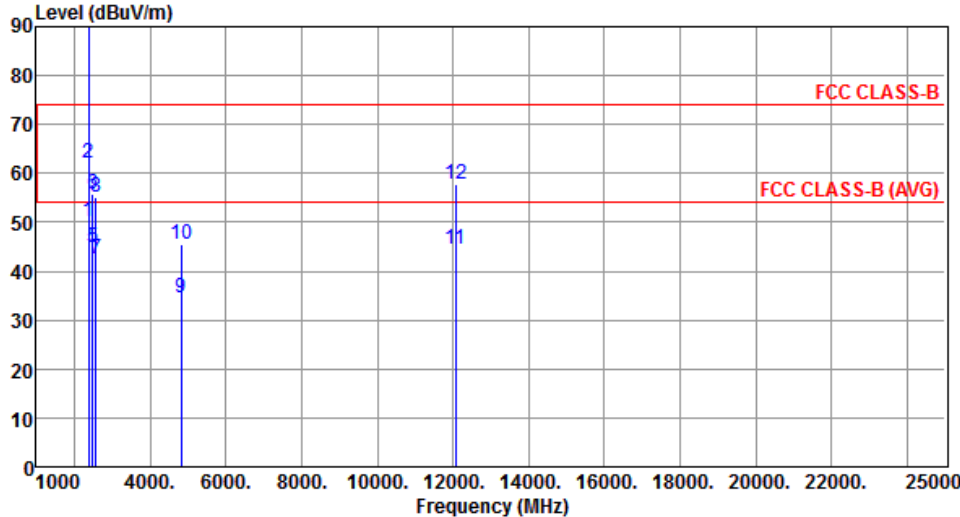
*Factor includes antenna factor , cable loss and amplifier gain

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		



	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	50.20	54.00	-3.80	53.02	-2.82	Average	100	13
2	2390.00	62.00	74.00	-12.00	64.82	-2.82	Peak	100	13
3 *	2412.00	112.11			114.96	-2.85	Average	100	13
4 *	2412.00	114.38			117.23	-2.85	Peak	100	13
5	2492.00	44.75	54.00	-9.25	47.75	-3.00	Average	100	8
6	2492.00	55.64	74.00	-18.36	58.64	-3.00	Peak	100	8
7	2572.00	42.36	54.00	-11.64	45.26	-2.90	Average	100	8
8	2572.00	55.25	74.00	-18.75	58.15	-2.90	Peak	100	8
9	4824.00	34.58	54.00	-19.42	31.03	3.55	Average	231	46
10	4824.00	45.58	74.00	-28.42	42.03	3.55	Peak	231	46
11	12060.00	44.53	54.00	-9.47	30.70	13.83	Average	100	310
12	12060.00	57.74	74.00	-16.26	43.91	13.83	Peak	100	310

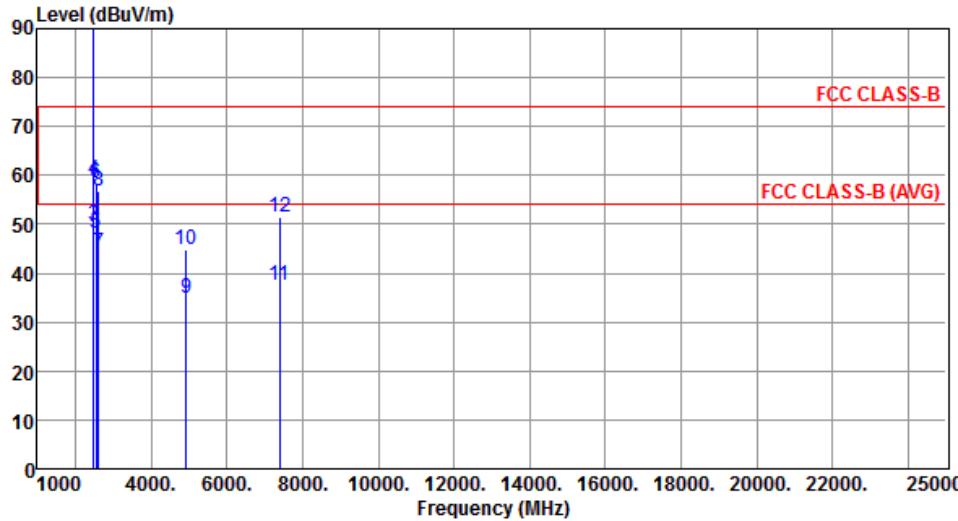
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV/m) + Factor* (dB)
 *Factor includes antenna factor , cable loss and amplifier gain
 Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).
 Note 3: "*" is Peak / Average value of fundamental frequency

Modulation	11b	Test Freq. (MHz)	2412																																																																																																																																		
Polarization	Vertical																																																																																																																																				
Level (dBUV/m) 90 80 70 60 50 40 30 20 10 0 2 3 4 5 6 7 8 9 10 11 12 1000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000 25000 Frequency (MHz) FCC CLASS-B FCC CLASS-B (AVG) <table><tr><th></th><th>Freq. MHz</th><th>Emission level dBUV/m</th><th>Limit dBUV/m</th><th>Margin dB</th><th>SA reading dBUV</th><th>Factor dB</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr><tr><td>1</td><td>2390.00</td><td>53.47</td><td>54.00</td><td>-0.53</td><td>56.29</td><td>-2.82</td><td>Average</td><td>283</td><td>59</td></tr><tr><td>2</td><td>2390.00</td><td>65.08</td><td>74.00</td><td>-8.92</td><td>67.90</td><td>-2.82</td><td>Peak</td><td>283</td><td>59</td></tr><tr><td>3 *</td><td>2412.00</td><td>113.37</td><td></td><td></td><td>116.22</td><td>-2.85</td><td>Average</td><td>375</td><td>138</td></tr><tr><td>4 *</td><td>2412.00</td><td>115.69</td><td></td><td></td><td>118.54</td><td>-2.85</td><td>Peak</td><td>375</td><td>138</td></tr><tr><td>5</td><td>2492.00</td><td>43.48</td><td>54.00</td><td>-10.52</td><td>46.48</td><td>-3.00</td><td>Average</td><td>100</td><td>251</td></tr><tr><td>6</td><td>2492.00</td><td>55.10</td><td>74.00</td><td>-18.90</td><td>58.10</td><td>-3.00</td><td>Peak</td><td>100</td><td>251</td></tr><tr><td>7</td><td>2572.00</td><td>41.44</td><td>54.00</td><td>-12.56</td><td>44.34</td><td>-2.90</td><td>Average</td><td>100</td><td>211</td></tr><tr><td>8</td><td>2572.00</td><td>53.95</td><td>74.00</td><td>-20.05</td><td>56.85</td><td>-2.90</td><td>Peak</td><td>100</td><td>211</td></tr><tr><td>9</td><td>4824.00</td><td>37.69</td><td>54.00</td><td>-16.31</td><td>34.14</td><td>3.55</td><td>Average</td><td>219</td><td>97</td></tr><tr><td>10</td><td>4824.00</td><td>46.21</td><td>74.00</td><td>-27.79</td><td>42.66</td><td>3.55</td><td>Peak</td><td>219</td><td>97</td></tr><tr><td>11</td><td>12060.00</td><td>44.61</td><td>54.00</td><td>-9.39</td><td>30.78</td><td>13.83</td><td>Average</td><td>100</td><td>183</td></tr><tr><td>12</td><td>12060.00</td><td>57.50</td><td>74.00</td><td>-16.50</td><td>43.67</td><td>13.83</td><td>Peak</td><td>100</td><td>183</td></tr></table>					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	53.47	54.00	-0.53	56.29	-2.82	Average	283	59	2	2390.00	65.08	74.00	-8.92	67.90	-2.82	Peak	283	59	3 *	2412.00	113.37			116.22	-2.85	Average	375	138	4 *	2412.00	115.69			118.54	-2.85	Peak	375	138	5	2492.00	43.48	54.00	-10.52	46.48	-3.00	Average	100	251	6	2492.00	55.10	74.00	-18.90	58.10	-3.00	Peak	100	251	7	2572.00	41.44	54.00	-12.56	44.34	-2.90	Average	100	211	8	2572.00	53.95	74.00	-20.05	56.85	-2.90	Peak	100	211	9	4824.00	37.69	54.00	-16.31	34.14	3.55	Average	219	97	10	4824.00	46.21	74.00	-27.79	42.66	3.55	Peak	219	97	11	12060.00	44.61	54.00	-9.39	30.78	13.83	Average	100	183	12	12060.00	57.50	74.00	-16.50	43.67	13.83	Peak	100	183
	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	53.47	54.00	-0.53	56.29	-2.82	Average	283	59																																																																																																																												
2	2390.00	65.08	74.00	-8.92	67.90	-2.82	Peak	283	59																																																																																																																												
3 *	2412.00	113.37			116.22	-2.85	Average	375	138																																																																																																																												
4 *	2412.00	115.69			118.54	-2.85	Peak	375	138																																																																																																																												
5	2492.00	43.48	54.00	-10.52	46.48	-3.00	Average	100	251																																																																																																																												
6	2492.00	55.10	74.00	-18.90	58.10	-3.00	Peak	100	251																																																																																																																												
7	2572.00	41.44	54.00	-12.56	44.34	-2.90	Average	100	211																																																																																																																												
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9	4824.00	37.69	54.00	-16.31	34.14	3.55	Average	219	97																																																																																																																												
10	4824.00	46.21	74.00	-27.79	42.66	3.55	Peak	219	97																																																																																																																												
11	12060.00	44.61	54.00	-9.39	30.78	13.83	Average	100	183																																																																																																																												
12	12060.00	57.50	74.00	-16.50	43.67	13.83	Peak	100	183																																																																																																																												
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: "*" is Peak / Average value of fundamental frequency																																																																																																																																					

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		
Level (dBUV/m) </			

Modulation	11b	Test Freq. (MHz)	2437																																																																																																																																																						
Polarization	Vertical																																																																																																																																																								
Level (dBUV/m) 90 80 70 60 50 40 30 20 10 0 1000 4000 6000 8000 10000 12000 14000 16000 18000 20000 22000 25000 Frequency (MHz) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 2390 2390 2437 2437 2483 2483 2517 2517 2597 2597 4874 4874 7311 7311 43.10 56.90 114.63 117.31 43.67 59.36 47.55 57.40 48.79 58.57 43.58 48.49 41.81 52.48 54.00 74.00 54.00 74.00 54.00 74.00 54.00 74.00 54.00 74.00 54.00 74.00 54.00 74.00 -10.90 -17.10 -10.33 -14.64 -6.45 -16.60 -5.21 -15.43 -10.42 -25.51 -12.19 -21.52 45.92 59.72 117.49 120.17 46.63 62.32 50.54 60.39 51.61 61.39 39.99 44.90 32.62 43.29 -2.82 -2.82 -2.86 -2.86 -2.96 -2.96 -2.99 -2.99 -2.82 -2.82 3.59 3.59 9.19 9.19 Average Peak Average Peak Average Peak Average Peak Average Peak Average Peak Average Peak 340 340 340 340 340 340 325 325 338 338 287 287 256 256 75 75 75 75 75 75 237 237 53 53 93 93 100 100 FCC CLASS-B FCC CLASS-B (AVG) <table><tr><th></th><th>Freq. MHz</th><th>Emission level dBUV/m</th><th>Limit dBUV/m</th><th>Margin dB</th><th>SA reading dBUV</th><th>Factor dB</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr><tr><td>1</td><td>2390.00</td><td>43.10</td><td>54.00</td><td>-10.90</td><td>45.92</td><td>-2.82</td><td>Average</td><td>340</td><td>75</td></tr><tr><td>2</td><td>2390.00</td><td>56.90</td><td>74.00</td><td>-17.10</td><td>59.72</td><td>-2.82</td><td>Peak</td><td>340</td><td>75</td></tr><tr><td>3 *</td><td>2437.00</td><td>114.63</td><td></td><td></td><td>117.49</td><td>-2.86</td><td>Average</td><td>340</td><td>75</td></tr><tr><td>4 *</td><td>2437.00</td><td>117.31</td><td></td><td></td><td>120.17</td><td>-2.86</td><td>Peak</td><td>340</td><td>75</td></tr><tr><td>5</td><td>2483.50</td><td>43.67</td><td>54.00</td><td>-10.33</td><td>46.63</td><td>-2.96</td><td>Average</td><td>340</td><td>75</td></tr><tr><td>6</td><td>2483.50</td><td>59.36</td><td>74.00</td><td>-14.64</td><td>62.32</td><td>-2.96</td><td>Peak</td><td>340</td><td>75</td></tr><tr><td>7</td><td>2517.00</td><td>47.55</td><td>54.00</td><td>-6.45</td><td>50.54</td><td>-2.99</td><td>Average</td><td>325</td><td>237</td></tr><tr><td>8</td><td>2517.00</td><td>57.40</td><td>74.00</td><td>-16.60</td><td>60.39</td><td>-2.99</td><td>Peak</td><td>325</td><td>237</td></tr><tr><td>9</td><td>2597.00</td><td>48.79</td><td>54.00</td><td>-5.21</td><td>51.61</td><td>-2.82</td><td>Average</td><td>338</td><td>53</td></tr><tr><td>10</td><td>2597.00</td><td>58.57</td><td>74.00</td><td>-15.43</td><td>61.39</td><td>-2.82</td><td>Peak</td><td>338</td><td>53</td></tr><tr><td>11</td><td>4874.00</td><td>43.58</td><td>54.00</td><td>-10.42</td><td>39.99</td><td>3.59</td><td>Average</td><td>287</td><td>93</td></tr><tr><td>12</td><td>4874.00</td><td>48.49</td><td>74.00</td><td>-25.51</td><td>44.90</td><td>3.59</td><td>Peak</td><td>287</td><td>93</td></tr><tr><td>13</td><td>7311.00</td><td>41.81</td><td>54.00</td><td>-12.19</td><td>32.62</td><td>9.19</td><td>Average</td><td>256</td><td>100</td></tr><tr><td>14</td><td>7311.00</td><td>52.48</td><td>74.00</td><td>-21.52</td><td>43.29</td><td>9.19</td><td>Peak</td><td>256</td><td>100</td></tr></table> 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: "*" is Peak / Average value of fundamental frequency					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	43.10	54.00	-10.90	45.92	-2.82	Average	340	75	2	2390.00	56.90	74.00	-17.10	59.72	-2.82	Peak	340	75	3 *	2437.00	114.63			117.49	-2.86	Average	340	75	4 *	2437.00	117.31			120.17	-2.86	Peak	340	75	5	2483.50	43.67	54.00	-10.33	46.63	-2.96	Average	340	75	6	2483.50	59.36	74.00	-14.64	62.32	-2.96	Peak	340	75	7	2517.00	47.55	54.00	-6.45	50.54	-2.99	Average	325	237	8	2517.00	57.40	74.00	-16.60	60.39	-2.99	Peak	325	237	9	2597.00	48.79	54.00	-5.21	51.61	-2.82	Average	338	53	10	2597.00	58.57	74.00	-15.43	61.39	-2.82	Peak	338	53	11	4874.00	43.58	54.00	-10.42	39.99	3.59	Average	287	93	12	4874.00	48.49	74.00	-25.51	44.90	3.59	Peak	287	93	13	7311.00	41.81	54.00	-12.19	32.62	9.19	Average	256	100	14	7311.00	52.48	74.00	-21.52	43.29	9.19	Peak	256	100
	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	43.10	54.00	-10.90	45.92	-2.82	Average	340	75																																																																																																																																																
2	2390.00	56.90	74.00	-17.10	59.72	-2.82	Peak	340	75																																																																																																																																																
3 *	2437.00	114.63			117.49	-2.86	Average	340	75																																																																																																																																																
4 *	2437.00	117.31			120.17	-2.86	Peak	340	75																																																																																																																																																
5	2483.50	43.67	54.00	-10.33	46.63	-2.96	Average	340	75																																																																																																																																																
6	2483.50	59.36	74.00	-14.64	62.32	-2.96	Peak	340	75																																																																																																																																																
7	2517.00	47.55	54.00	-6.45	50.54	-2.99	Average	325	237																																																																																																																																																
8	2517.00	57.40	74.00	-16.60	60.39	-2.99	Peak	325	237																																																																																																																																																
9	2597.00	48.79	54.00	-5.21	51.61	-2.82	Average	338	53																																																																																																																																																
10	2597.00	58.57	74.00	-15.43	61.39	-2.82	Peak	338	53																																																																																																																																																
11	4874.00	43.58	54.00	-10.42	39.99	3.59	Average	287	93																																																																																																																																																
12	4874.00	48.49	74.00	-25.51	44.90	3.59	Peak	287	93																																																																																																																																																
13	7311.00	41.81	54.00	-12.19	32.62	9.19	Average	256	100																																																																																																																																																
14	7311.00	52.48	74.00	-21.52	43.29	9.19	Peak	256	100																																																																																																																																																

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



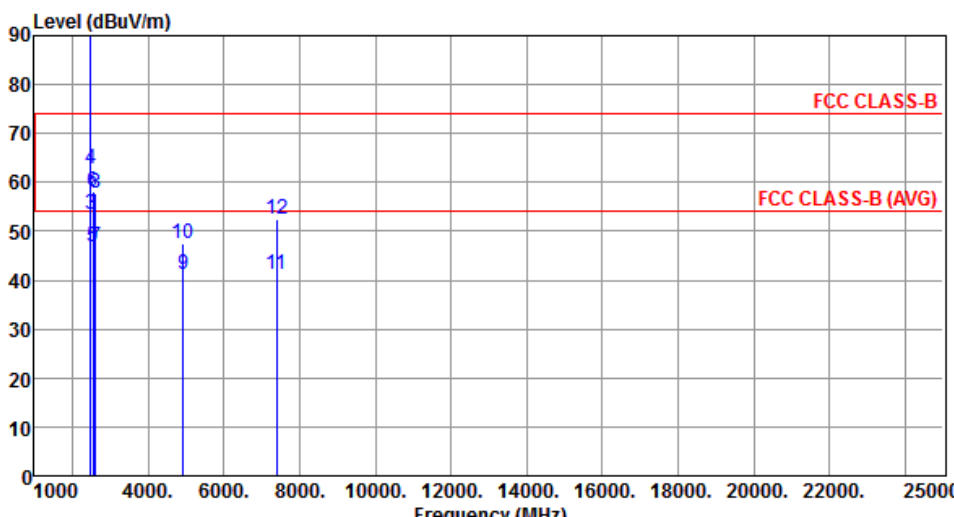
		Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	113.56			116.47	-2.91	Average	390	357
2	*	2462.00	116.43			119.34	-2.91	Peak	390	357
3		2483.50	49.88	54.00	-4.12	52.84	-2.96	Average	110	15
4		2483.50	59.09	74.00	-14.91	62.05	-2.96	Peak	110	15
5		2542.00	48.13	54.00	-5.87	51.10	-2.97	Average	258	309
6		2542.00	58.59	74.00	-15.41	61.56	-2.97	Peak	258	309
7		2622.00	44.16	54.00	-9.84	46.85	-2.69	Average	100	216
8		2622.00	56.73	74.00	-17.27	59.42	-2.69	Peak	100	216
9		4924.00	34.84	54.00	-19.16	31.15	3.69	Average	100	48
10		4924.00	44.88	74.00	-29.12	41.19	3.69	Peak	100	48
11		7386.00	37.67	54.00	-16.33	28.74	8.93	Average	100	258
12		7386.00	51.54	74.00	-22.46	42.61	8.93	Peak	100	258

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: "*" is Peak / Average value of fundamental frequency

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



		Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
		MHz	level			reading			High	Table
			dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	*	2462.00	114.61			117.52	-2.91	Average	390	259
2	*	2462.00	117.70			120.61	-2.91	Peak	390	259
3		2483.50	53.39	54.00	-0.61	56.35	-2.96	Average	217	256
4		2483.50	62.82	74.00	-11.18	65.78	-2.96	Peak	217	256
5		2542.00	46.74	54.00	-7.26	49.71	-2.97	Average	175	227
6		2542.00	58.27	74.00	-15.73	61.24	-2.97	Peak	175	227
7		2622.00	46.90	54.00	-7.10	49.59	-2.69	Average	272	126
8		2622.00	57.95	74.00	-16.05	60.64	-2.69	Peak	272	126
9		4924.00	41.23	54.00	-12.77	37.54	3.69	Average	269	95
10		4924.00	47.38	74.00	-26.62	43.69	3.69	Peak	269	95
11		7386.00	41.22	54.00	-12.78	32.29	8.93	Average	100	72
12		7386.00	52.43	74.00	-21.57	43.50	8.93	Peak	100	72

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

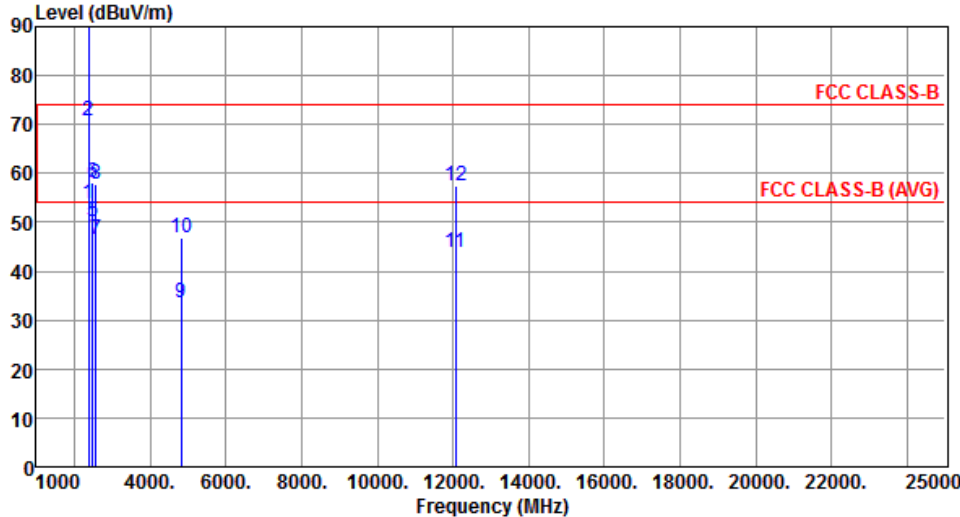
*Factor includes antenna factor , cable loss and amplifier gain

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

Note 3: "*" is Peak / Average value of fundamental frequency

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

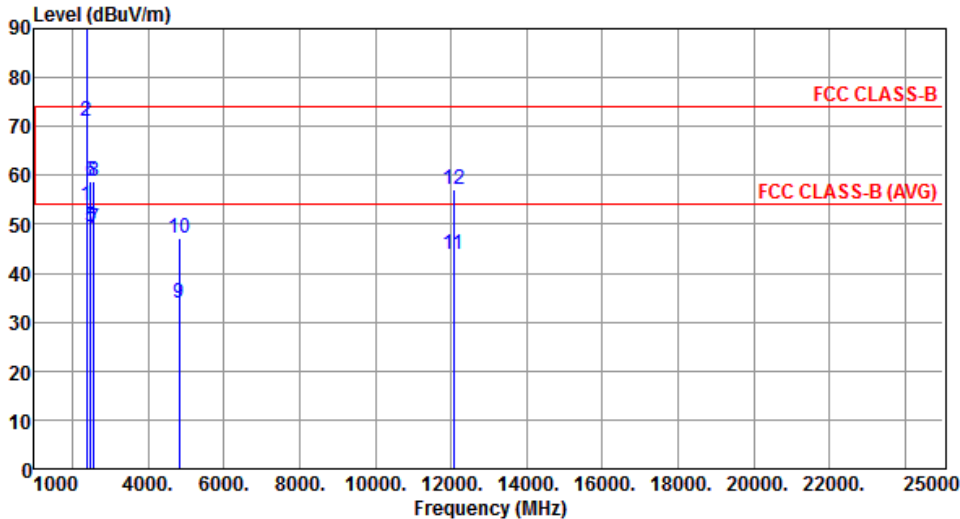
Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
	MHz	level	dBuV/m	dB	reading	dB		High	Table
					dBuV			cm	deg
1	2390.00	53.65	54.00	-0.35	56.47	-2.82	Average	286	5
2	2390.00	70.90	74.00	-3.10	73.72	-2.82	Peak	286	5
3 *	2412.00	103.11			105.96	-2.85	Average	286	5
4 *	2412.00	112.67			115.52	-2.85	Peak	286	5
5	2492.00	50.04	54.00	-3.96	53.04	-3.00	Average	286	5
6	2492.00	58.24	74.00	-15.76	61.24	-3.00	Peak	286	5
7	2572.00	46.45	54.00	-7.55	49.35	-2.90	Average	286	5
8	2572.00	57.71	74.00	-16.29	60.61	-2.90	Peak	286	5
9	4824.00	33.68	54.00	-20.32	30.13	3.55	Average	100	188
10	4824.00	46.71	74.00	-27.29	43.16	3.55	Peak	100	188
11	12060.00	43.89	54.00	-10.11	30.06	13.83	Average	100	162
12	12060.00	57.43	74.00	-16.57	43.60	13.83	Peak	100	162

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: "*" is Peak / Average value of fundamental frequency

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



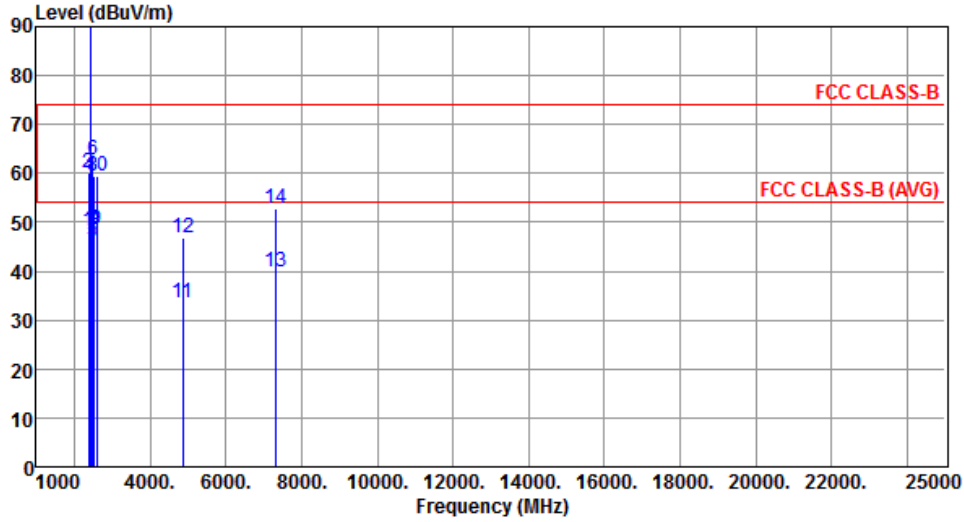
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	53.68	54.00	-0.32	56.50	-2.82	Average	311	71
2	2390.00	71.14	74.00	-2.86	73.96	-2.82	Peak	311	71
3 *	2412.00	103.75			106.60	-2.85	Average	311	71
4 *	2412.00	113.78			116.63	-2.85	Peak	311	71
5	2492.00	49.53	54.00	-4.47	52.53	-3.00	Average	311	71
6	2492.00	58.90	74.00	-15.10	61.90	-3.00	Peak	311	71
7	2572.00	49.09	54.00	-4.91	51.99	-2.90	Average	311	71
8	2572.00	58.71	74.00	-15.29	61.61	-2.90	Peak	311	71
9	4824.00	33.73	54.00	-20.27	30.18	3.55	Average	100	212
10	4824.00	47.25	74.00	-26.75	43.70	3.55	Peak	100	212
11	12060.00	43.91	54.00	-10.09	30.08	13.83	Average	100	352
12	12060.00	57.15	74.00	-16.85	43.32	13.83	Peak	100	352

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: "*" is Peak / Average value of fundamental frequency

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

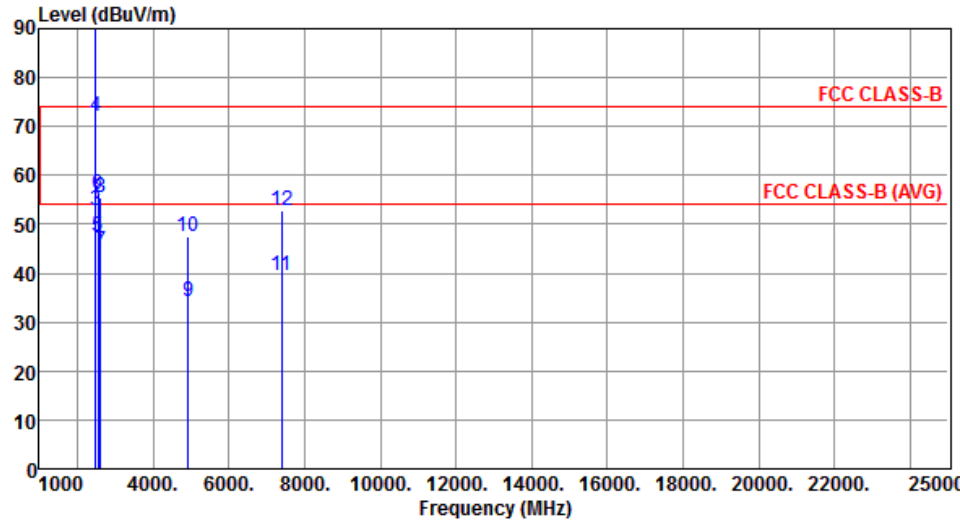


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	48.11	54.00	-5.89	50.93	-2.82	Average	322	2
2	2390.00	60.16	74.00	-13.84	62.98	-2.82	Peak	322	2
3 *	2437.00	110.11			112.97	-2.86	Average	322	2
4 *	2437.00	120.32			123.18	-2.86	Peak	322	2
5	2483.50	46.11	54.00	-7.89	49.07	-2.96	Average	322	351
6	2483.50	62.90	74.00	-11.10	65.86	-2.96	Peak	322	351
7	2517.00	48.16	54.00	-5.84	51.15	-2.99	Average	322	2
8	2517.00	59.55	74.00	-14.45	62.54	-2.99	Peak	322	2
9	2597.00	48.48	54.00	-5.52	51.30	-2.82	Average	322	351
10	2597.00	59.31	74.00	-14.69	62.13	-2.82	Peak	322	351
11	4874.00	33.60	54.00	-20.40	30.01	3.59	Average	100	106
12	4874.00	46.86	74.00	-27.14	43.27	3.59	Peak	100	106
13	7311.00	39.84	54.00	-14.16	30.65	9.19	Average	100	233
14	7311.00	52.77	74.00	-21.23	43.58	9.19	Peak	100	233

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: "*" is Peak / Average value of fundamental frequency

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		
Level (dBUV/m)			

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



		Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	103.39			106.30	-2.91	Average	314	3
2	*	2462.00	113.62			116.53	-2.91	Peak	314	3
3		2483.50	52.89	54.00	-1.11	55.85	-2.96	Average	314	3
4		2483.50	72.06	74.00	-1.94	75.02	-2.96	Peak	314	3
5		2542.00	47.50	54.00	-6.50	50.47	-2.97	Average	314	3
6		2542.00	56.07	74.00	-17.93	59.04	-2.97	Peak	314	3
7		2622.00	44.62	54.00	-9.38	47.31	-2.69	Average	314	3
8		2622.00	55.50	74.00	-18.50	58.19	-2.69	Peak	314	3
9		4924.00	34.37	54.00	-19.63	30.68	3.69	Average	100	238
10		4924.00	47.33	74.00	-26.67	43.64	3.69	Peak	100	238
11		7386.00	39.38	54.00	-14.62	30.45	8.93	Average	100	194
12		7386.00	52.89	74.00	-21.11	43.96	8.93	Peak	100	194

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

*Factor includes antenna factor , cable loss and amplifier gain

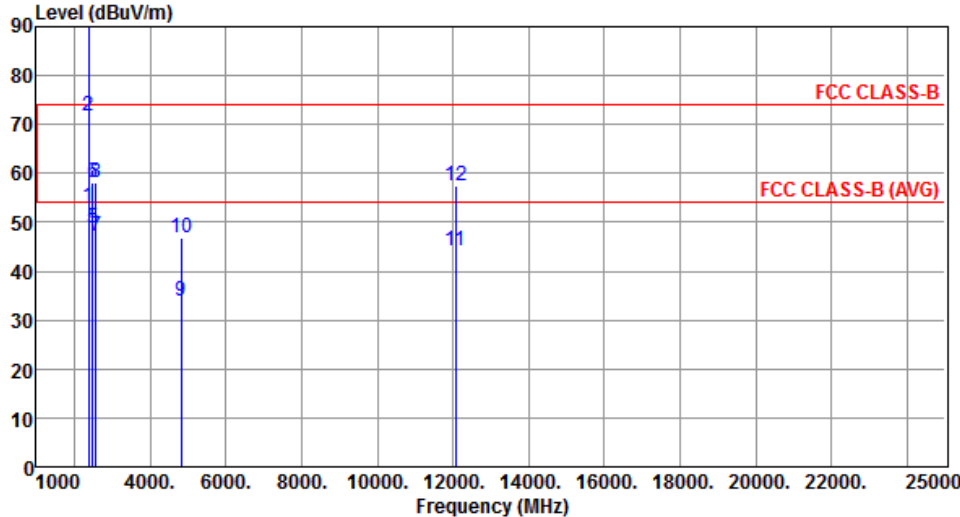
Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m).

Note 3: "*" is Peak / Average value of fundamental frequency

Modulation		11g			Test Freq. (MHz)		2462			
Polarization		Vertical								
Level (dBuV/m)										

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

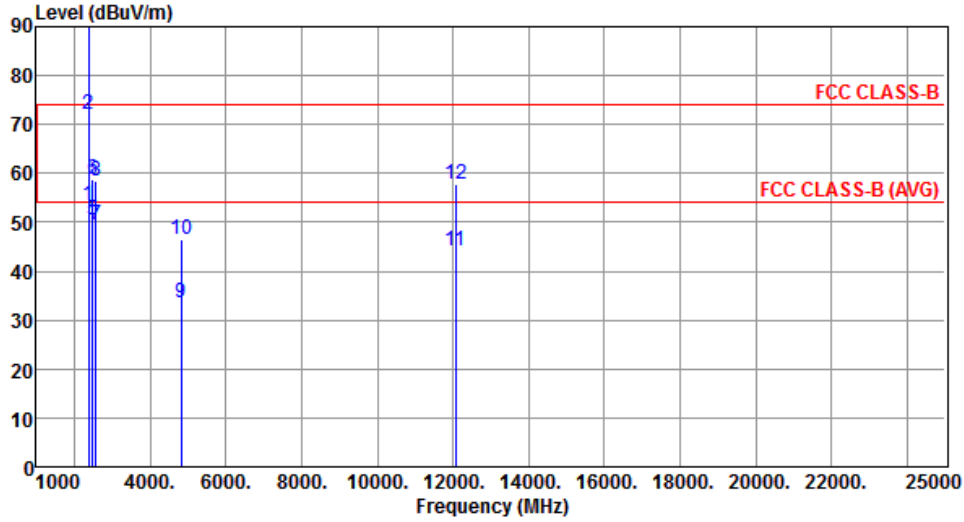
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Horizontal		



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2390.00	53.06	54.00	-0.94	55.88	-2.82	Average	328	0
2	2390.00	71.73	74.00	-2.27	74.55	-2.82	Peak	328	0
3 *	2412.00	101.85			104.70	-2.85	Average	257	0
4 *	2412.00	112.00			114.85	-2.85	Peak	257	0
5	2492.00	48.82	54.00	-5.18	51.82	-3.00	Average	257	5
6	2492.00	58.25	74.00	-15.75	61.25	-3.00	Peak	257	5
7	2572.00	47.21	54.00	-6.79	50.11	-2.90	Average	257	5
8	2572.00	58.01	74.00	-15.99	60.91	-2.90	Peak	257	5
9	4824.00	33.92	54.00	-20.08	30.37	3.55	Average	100	338
10	4824.00	46.94	74.00	-27.06	43.39	3.55	Peak	100	338
11	12060.00	44.13	54.00	-9.87	30.30	13.83	Average	100	167
12	12060.00	57.32	74.00	-16.68	43.49	13.83	Peak	100	167

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: "*" is Peak / Average value of fundamental frequency

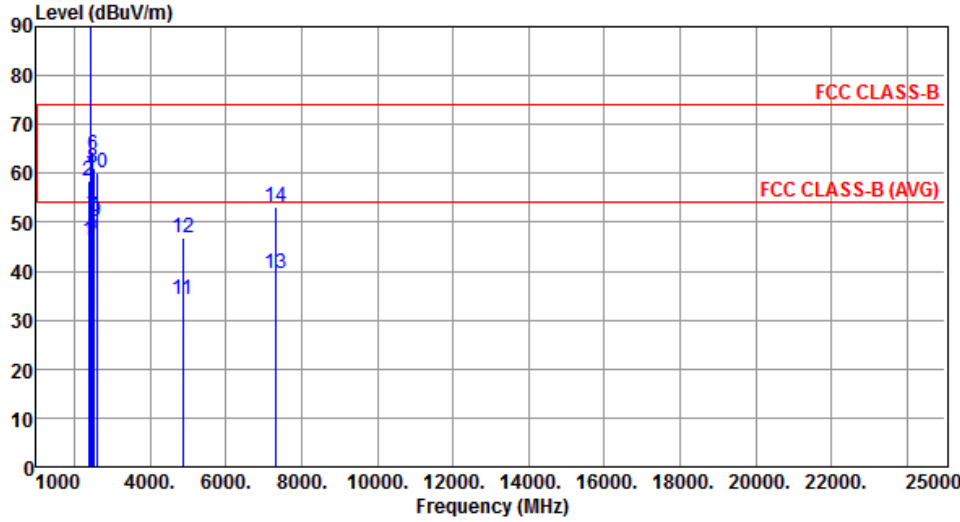
Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



	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	53.56	54.00	-0.44	56.38	-2.82	Average	315	54
2	2390.00	71.94	74.00	-2.06	74.76	-2.82	Peak	315	54
3 *	2412.00	102.89			105.74	-2.85	Average	315	54
4 *	2412.00	113.01			115.86	-2.85	Peak	315	54
5	2492.00	50.50	54.00	-3.50	53.50	-3.00	Average	315	54
6	2492.00	58.92	74.00	-15.08	61.92	-3.00	Peak	315	54
7	2572.00	49.43	54.00	-4.57	52.33	-2.90	Average	315	45
8	2572.00	58.30	74.00	-15.70	61.20	-2.90	Peak	315	45
9	4824.00	33.70	54.00	-20.30	30.15	3.55	Average	100	144
10	4824.00	46.61	74.00	-27.39	43.06	3.55	Peak	100	144
11	12060.00	44.11	54.00	-9.89	30.28	13.83	Average	100	216
12	12060.00	57.66	74.00	-16.34	43.83	13.83	Peak	100	216

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: "*" is Peak / Average value of fundamental frequency

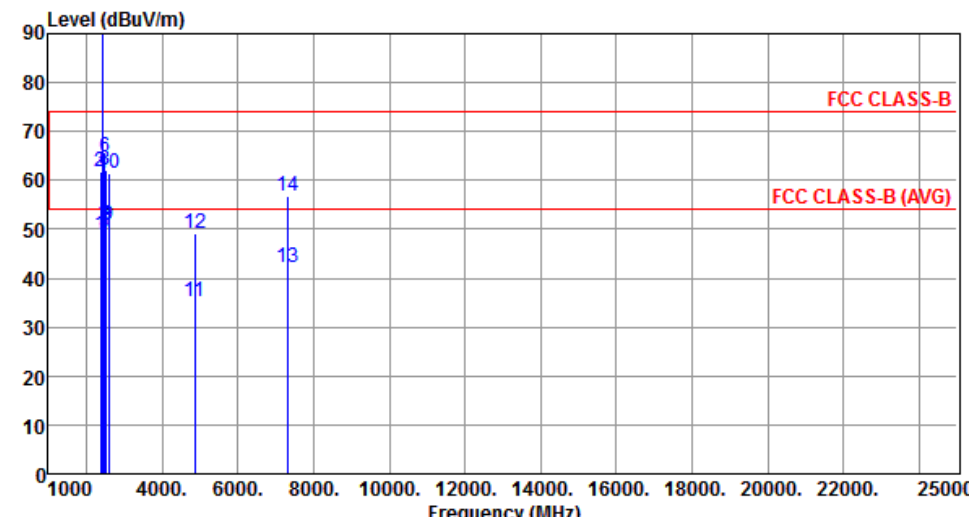
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	46.15	54.00	-7.85	48.97	-2.82	Average	352	1
2	2390.00	58.55	74.00	-15.45	61.37	-2.82	Peak	352	1
3 *	2437.00	109.02			111.88	-2.86	Average	352	1
4 *	2437.00	117.85			120.71	-2.86	Peak	352	1
5	2483.50	47.65	54.00	-6.35	50.61	-2.96	Average	352	1
6	2483.50	63.60	74.00	-10.40	66.56	-2.96	Peak	352	1
7	2517.00	51.23	54.00	-2.77	54.22	-2.99	Average	352	333
8	2517.00	61.01	74.00	-12.99	64.00	-2.99	Peak	352	333
9	2597.00	50.16	54.00	-3.84	52.98	-2.82	Average	352	295
10	2597.00	60.22	74.00	-13.78	63.04	-2.82	Peak	352	295
11	4874.00	34.14	54.00	-19.86	30.55	3.59	Average	100	326
12	4874.00	46.77	74.00	-27.23	43.18	3.59	Peak	100	326
13	7311.00	39.64	54.00	-14.36	30.45	9.19	Average	100	92
14	7311.00	52.98	74.00	-21.02	43.79	9.19	Peak	100	92

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: "*" is Peak / Average value of fundamental frequency

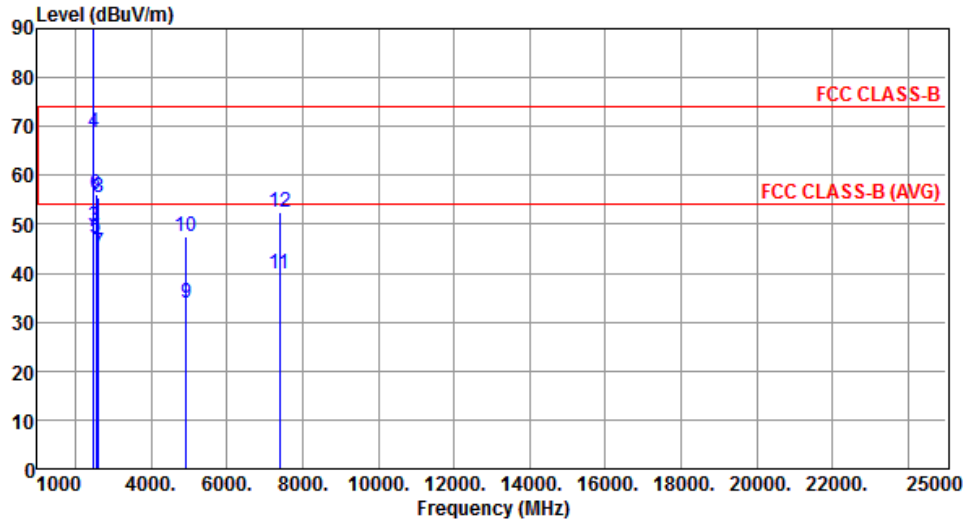
Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	48.81	54.00	-5.19	51.63	-2.82	Average	329	75
2	2390.00	61.71	74.00	-12.29	64.53	-2.82	Peak	329	75
3 *	2437.00	109.81			112.67	-2.86	Average	329	75
4 *	2437.00	120.31			123.17	-2.86	Peak	329	75
5	2483.50	49.35	54.00	-4.65	52.31	-2.96	Average	329	75
6	2483.50	64.64	74.00	-9.36	67.60	-2.96	Peak	329	75
7	2517.00	50.43	54.00	-3.57	53.42	-2.99	Average	329	81
8	2517.00	61.98	74.00	-12.02	64.97	-2.99	Peak	329	81
9	2597.00	50.74	54.00	-3.26	53.56	-2.82	Average	329	77
10	2597.00	61.34	74.00	-12.66	64.16	-2.82	Peak	329	77
11	4874.00	35.27	54.00	-18.73	31.68	3.59	Average	100	278
12	4874.00	49.30	74.00	-24.70	45.71	3.59	Peak	100	278
13	7311.00	42.02	54.00	-11.98	32.83	9.19	Average	100	161
14	7311.00	56.84	74.00	-17.16	47.65	9.19	Peak	100	161

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: "*" is Peak / Average value of fundamental frequency

Modulation	HT20		Test Freq. (MHz)		2462	
Polarization	Horizontal					



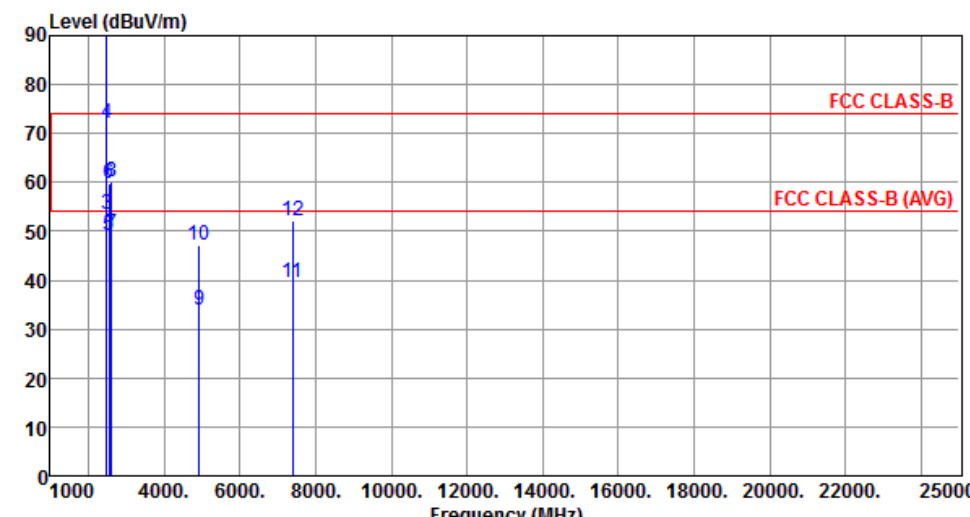
		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	102.88			105.79	-2.91	Average	346	356
2	*	2462.00	113.03			115.94	-2.91	Peak	346	356
3		2483.50	49.51	54.00	-4.49	52.47	-2.96	Average	346	356
4		2483.50	68.88	74.00	-5.12	71.84	-2.96	Peak	346	356
5		2542.00	47.30	54.00	-6.70	50.27	-2.97	Average	293	7
6		2542.00	56.03	74.00	-17.97	59.00	-2.97	Peak	293	7
7		2622.00	44.31	54.00	-9.69	47.00	-2.69	Average	293	35
8		2622.00	55.54	74.00	-18.46	58.23	-2.69	Peak	293	35
9		4924.00	33.80	54.00	-20.20	30.11	3.69	Average	100	76
10		4924.00	47.57	74.00	-26.43	43.88	3.69	Peak	100	76
11		7386.00	39.86	54.00	-14.14	30.93	8.93	Average	100	133
12		7386.00	52.50	74.00	-21.50	43.57	8.93	Peak	100	133

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: "*" is Peak / Average value of fundamental frequency

Modulation	HT20	Test Freq. (MHz)	2462
Polarization	Vertical		



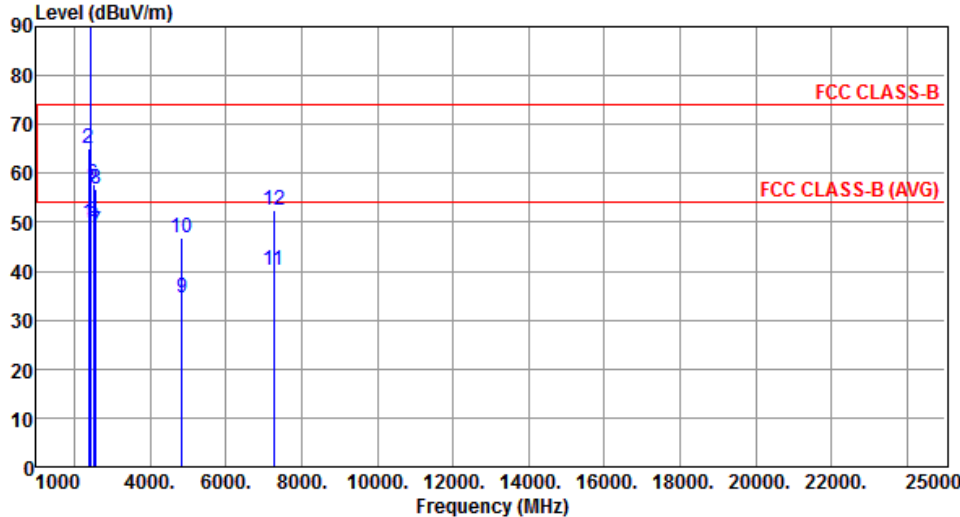
The graph displays the emission level in dBuV/m on the y-axis (0 to 90) against frequency in MHz on the x-axis (1000 to 25000). Two horizontal red lines represent the FCC CLASS-B limits: a solid line at 75 dBuV/m and an average line at 55 dBuV/m. Several vertical blue lines represent measured peaks, labeled 9 through 12. Peak 12 is the highest, reaching approximately 52 dBuV/m at 7386 MHz. Peaks 9 and 10 are at 4924 MHz, peaks 11 and 12 are at 7386 MHz, and peaks 1 through 8 are clustered between 2462 MHz and 2622 MHz.

	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2462.00	103.18		106.09	-2.91	Average	309	80
2	*	2462.00	113.30		116.21	-2.91	Peak	309	80
3		2483.50	53.59	54.00	-0.41	56.55	-2.96	Average	309
4		2483.50	71.97	74.00	-2.03	74.93	-2.96	Peak	309
5		2542.00	49.12	54.00	-4.88	52.09	-2.97	Average	309
6		2542.00	59.78	74.00	-14.22	62.75	-2.97	Peak	309
7		2622.00	49.63	54.00	-4.37	52.32	-2.69	Average	309
8		2622.00	60.24	74.00	-13.76	62.93	-2.69	Peak	309
9		4924.00	33.90	54.00	-20.10	30.21	3.69	Average	100
10		4924.00	47.12	74.00	-26.88	43.43	3.69	Peak	100
11		7386.00	39.40	54.00	-14.60	30.47	8.93	Average	100
12		7386.00	52.14	74.00	-21.86	43.21	8.93	Peak	100

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: "*" is Peak / Average value of fundamental frequency

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

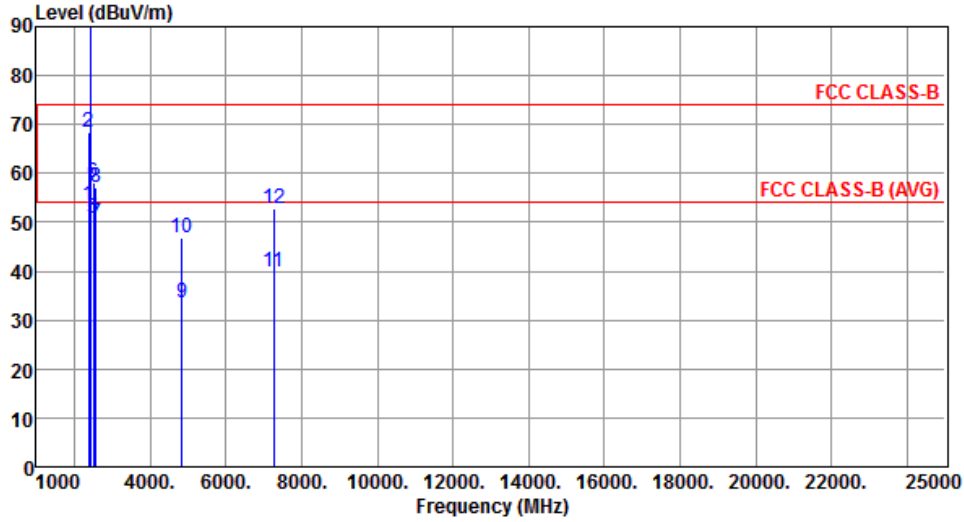
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Horizontal		



	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	49.74	54.00	-4.26	52.56	-2.82	Average	280	10
2	2390.00	64.98	74.00	-9.02	67.80	-2.82	Peak	280	10
3 *	2422.00	96.50			99.35	-2.85	Average	280	10
4 *	2422.00	106.40			109.25	-2.85	Peak	280	10
5	2502.00	49.98	54.00	-4.02	52.99	-3.01	Average	280	350
6	2502.00	57.88	74.00	-16.12	60.89	-3.01	Peak	280	350
7	2582.00	48.27	54.00	-5.73	51.13	-2.86	Average	280	350
8	2582.00	56.72	74.00	-17.28	59.58	-2.86	Peak	280	350
9	4844.00	34.42	54.00	-19.58	30.86	3.56	Average	100	102
10	4844.00	46.81	74.00	-27.19	43.25	3.56	Peak	100	102
11	7266.00	40.02	54.00	-13.98	30.79	9.23	Average	100	326
12	7266.00	52.62	74.00	-21.38	43.39	9.23	Peak	100	326

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: "*" is Peak / Average value of fundamental frequency

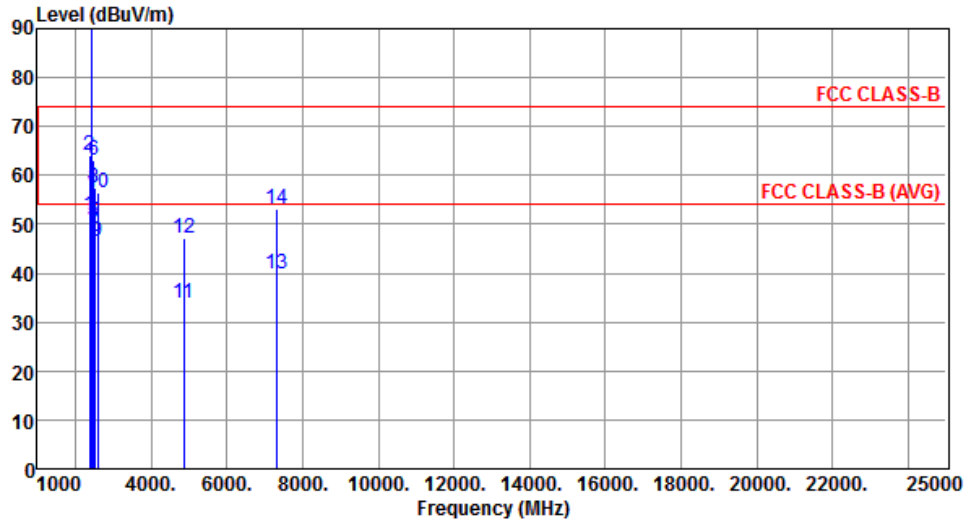
Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		



	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	53.55	54.00	-0.45	56.37	-2.82	Average	338	333
2	2390.00	68.46	74.00	-5.54	71.28	-2.82	Peak	338	333
3 *	2422.00	97.26			100.11	-2.85	Average	338	333
4 *	2422.00	107.34			110.19	-2.85	Peak	338	333
5	2502.00	50.75	54.00	-3.25	53.76	-3.01	Average	338	42
6	2502.00	58.01	74.00	-15.99	61.02	-3.01	Peak	338	42
7	2582.00	49.96	54.00	-4.04	52.82	-2.86	Average	338	42
8	2582.00	57.07	74.00	-16.93	59.93	-2.86	Peak	338	42
9	4844.00	33.69	54.00	-20.31	30.13	3.56	Average	100	155
10	4844.00	46.89	74.00	-27.11	43.33	3.56	Peak	100	155
11	7266.00	39.75	54.00	-14.25	30.52	9.23	Average	100	77
12	7266.00	52.84	74.00	-21.16	43.61	9.23	Peak	100	77

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: "*" is Peak / Average value of fundamental frequency

Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Horizontal		



	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	51.88	54.00	-2.12	54.70	-2.82	Average	281	9
2	2390.00	64.09	74.00	-9.91	66.91	-2.82	Peak	281	9
3 *	2437.00	101.97			104.83	-2.86	Average	281	9
4 *	2437.00	110.62			113.48	-2.86	Peak	281	9
5	2483.50	50.47	54.00	-3.53	53.43	-2.96	Average	281	9
6	2483.50	63.14	74.00	-10.86	66.10	-2.96	Peak	281	9
7	2517.00	48.59	54.00	-5.41	51.58	-2.99	Average	281	7
8	2517.00	57.31	74.00	-16.69	60.30	-2.99	Peak	281	7
9	2597.00	46.64	54.00	-7.36	49.46	-2.82	Average	281	7
10	2597.00	56.51	74.00	-17.49	59.33	-2.82	Peak	281	7
11	4874.00	33.76	54.00	-20.24	30.17	3.59	Average	100	134
12	4874.00	47.21	74.00	-26.79	43.62	3.59	Peak	100	134
13	7311.00	39.87	54.00	-14.13	30.68	9.19	Average	100	184
14	7311.00	53.12	74.00	-20.88	43.93	9.19	Peak	100	184

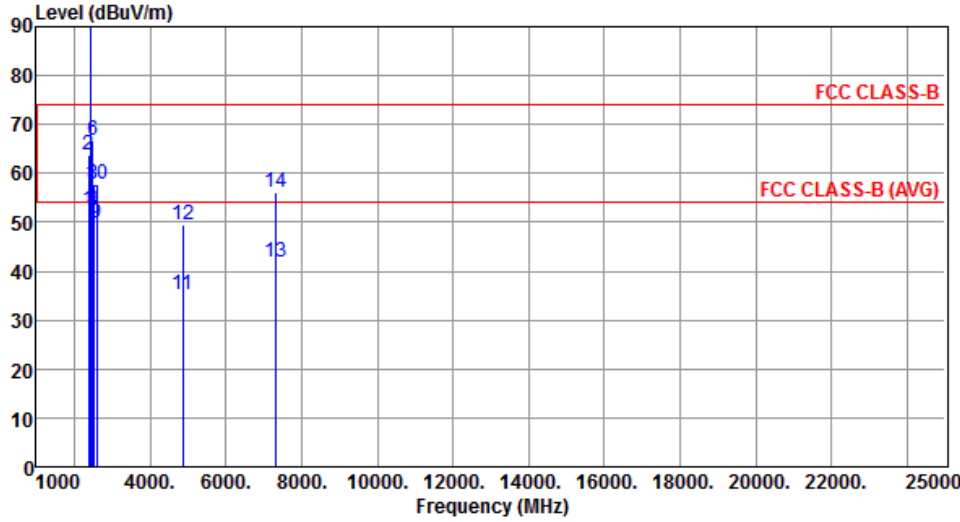
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

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

Note 3: "*" is Peak / Average value of fundamental frequency

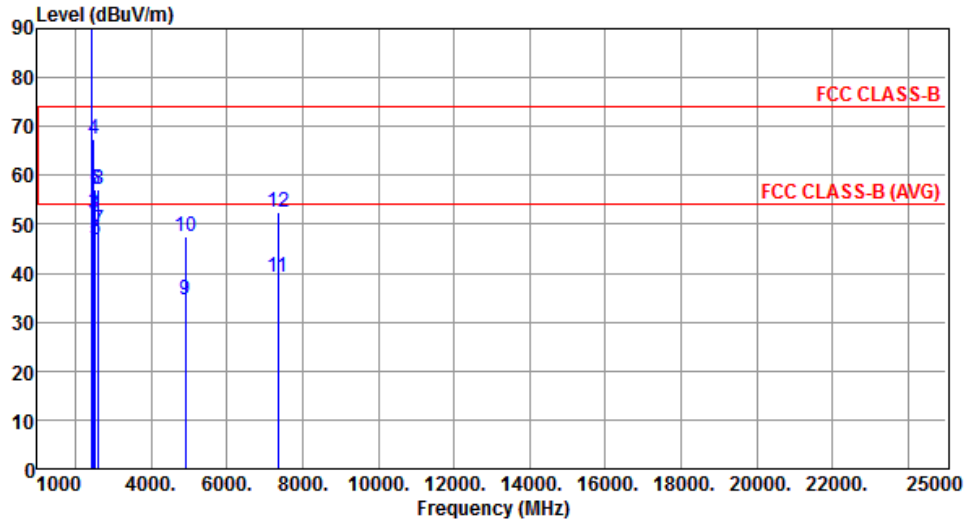
Modulation	HT40	Test Freq. (MHz)	2437
Polarization	Vertical		



	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	52.51	54.00	-1.49	55.33	-2.82	Average	317	54
2	2390.00	63.82	74.00	-10.18	66.64	-2.82	Peak	317	54
3 *	2437.00	102.42			105.28	-2.86	Average	317	54
4 *	2437.00	113.03			115.89	-2.86	Peak	317	54
5	2483.50	53.58	54.00	-0.42	56.54	-2.96	Average	317	21
6	2483.50	66.64	74.00	-7.36	69.60	-2.96	Peak	317	21
7	2517.00	50.52	54.00	-3.48	53.51	-2.99	Average	317	54
8	2517.00	57.81	74.00	-16.19	60.80	-2.99	Peak	317	54
9	2597.00	49.71	54.00	-4.29	52.53	-2.82	Average	317	37
10	2597.00	57.89	74.00	-16.11	60.71	-2.82	Peak	317	37
11	4874.00	35.33	54.00	-18.67	31.74	3.59	Average	100	275
12	4874.00	49.42	74.00	-24.58	45.83	3.59	Peak	100	275
13	7311.00	41.88	54.00	-12.12	32.69	9.19	Average	100	16
14	7311.00	56.18	74.00	-17.82	46.99	9.19	Peak	100	16

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: "*" is Peak / Average value of fundamental frequency

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Horizontal		



		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	96.23			99.11	-2.88	Average	347	10
2	*	2452.00	105.30			108.18	-2.88	Peak	347	10
3		2483.50	52.21	54.00	-1.79	55.17	-2.96	Average	347	10
4		2483.50	67.46	74.00	-6.54	70.42	-2.96	Peak	347	10
5		2532.00	46.77	54.00	-7.23	49.75	-2.98	Average	347	10
6		2532.00	57.12	74.00	-16.88	60.10	-2.98	Peak	347	10
7		2612.00	48.86	54.00	-5.14	51.60	-2.74	Average	347	169
8		2612.00	57.21	74.00	-16.79	59.95	-2.74	Peak	347	169
9		4904.00	34.46	54.00	-19.54	30.83	3.63	Average	100	355
10		4904.00	47.58	74.00	-26.42	43.95	3.63	Peak	100	355
11		7356.00	39.20	54.00	-14.80	30.14	9.06	Average	100	12
12		7356.00	52.37	74.00	-21.63	43.31	9.06	Peak	100	12

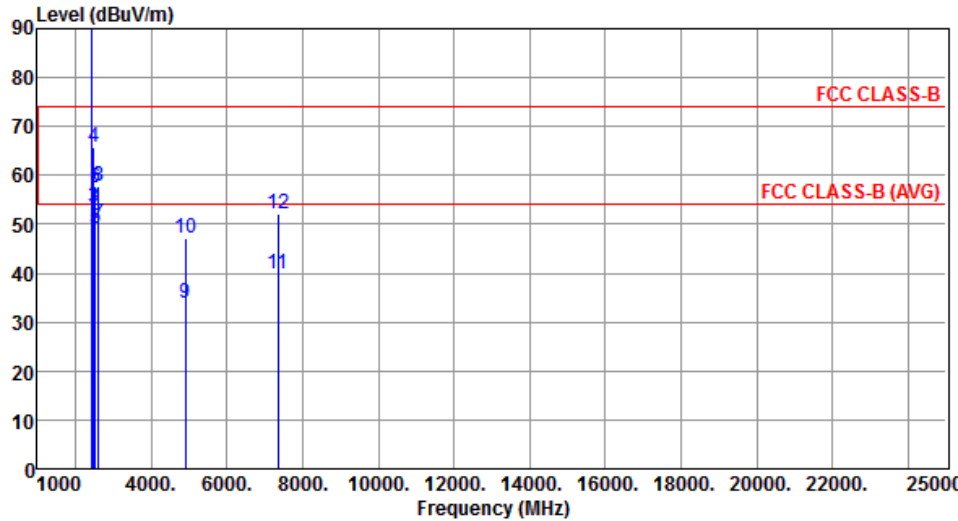
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

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

Note 3: "*" is Peak / Average value of fundamental frequency

Modulation	HT40	Test Freq. (MHz)	2452
Polarization	Vertical		



		Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB	Remark	ANT High cm	Turn Table deg
1	*	2452.00	97.04			99.92	-2.88	Average	285	81
2	*	2452.00	106.86			109.74	-2.88	Peak	285	81
3		2483.50	53.61	54.00	-0.39	56.57	-2.96	Average	285	81
4		2483.50	65.81	74.00	-8.19	68.77	-2.96	Peak	285	81
5		2532.00	49.04	54.00	-4.96	52.02	-2.98	Average	285	81
6		2532.00	57.37	74.00	-16.63	60.35	-2.98	Peak	285	81
7		2612.00	50.08	54.00	-3.92	52.82	-2.74	Average	318	72
8		2612.00	57.68	74.00	-16.32	60.42	-2.74	Peak	318	72
9		4904.00	33.72	54.00	-20.28	30.09	3.63	Average	100	182
10		4904.00	47.19	74.00	-26.81	43.56	3.63	Peak	100	182
11		7356.00	39.95	54.00	-14.05	30.89	9.06	Average	100	100
12		7356.00	52.26	74.00	-21.74	43.20	9.06	Peak	100	100

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: "*" is Peak / Average value of fundamental frequency

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

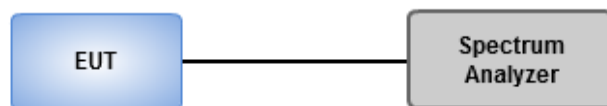
Reference level measurement

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

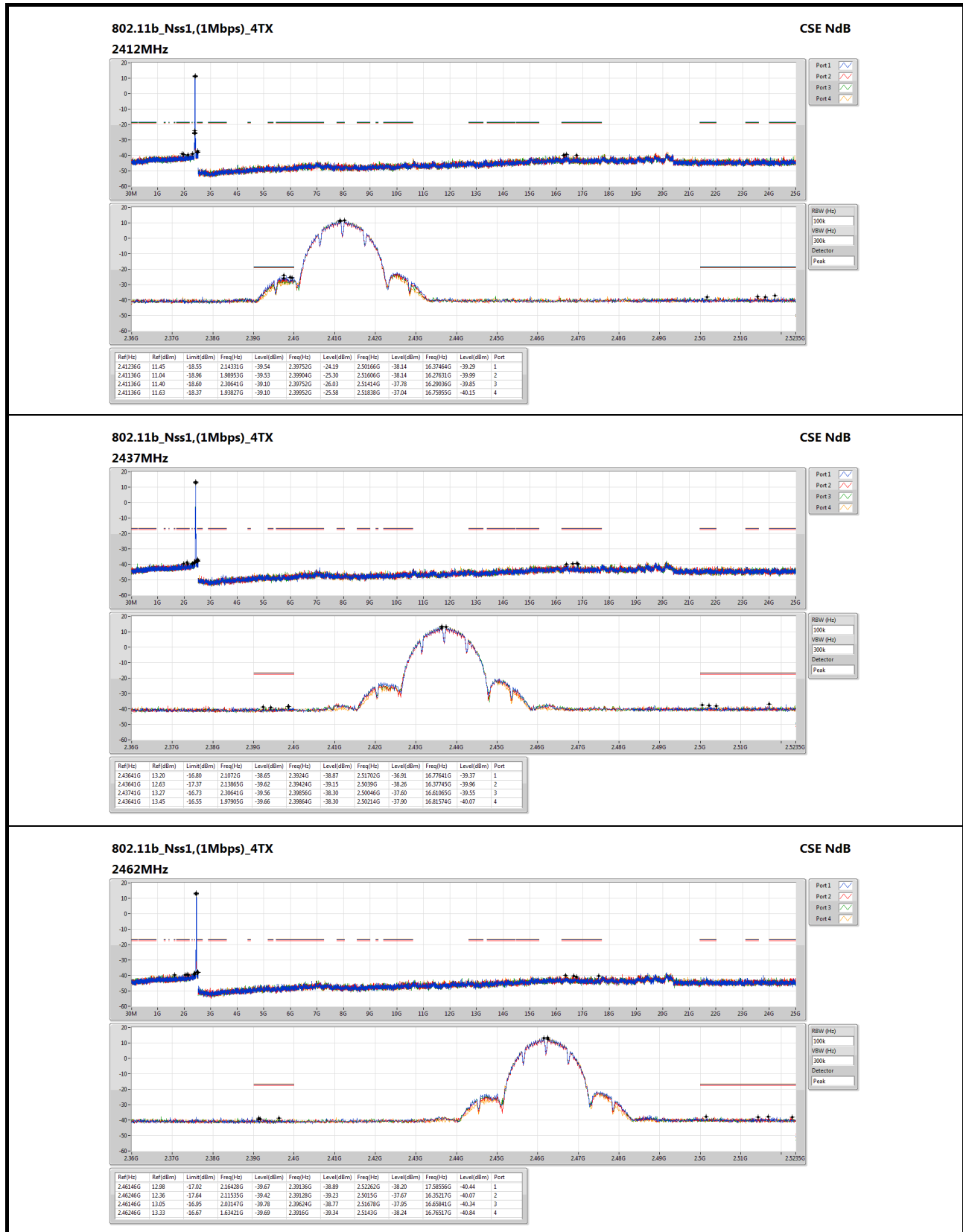
Emission level measurement

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

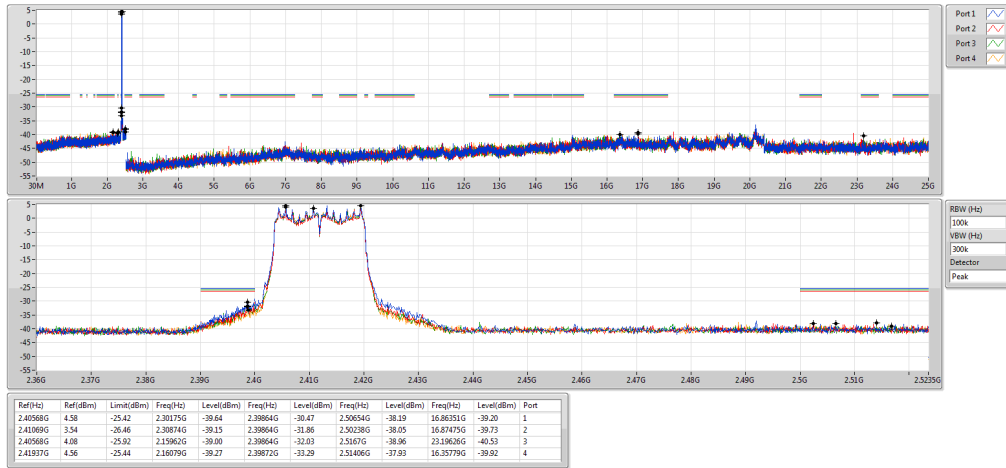


3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands



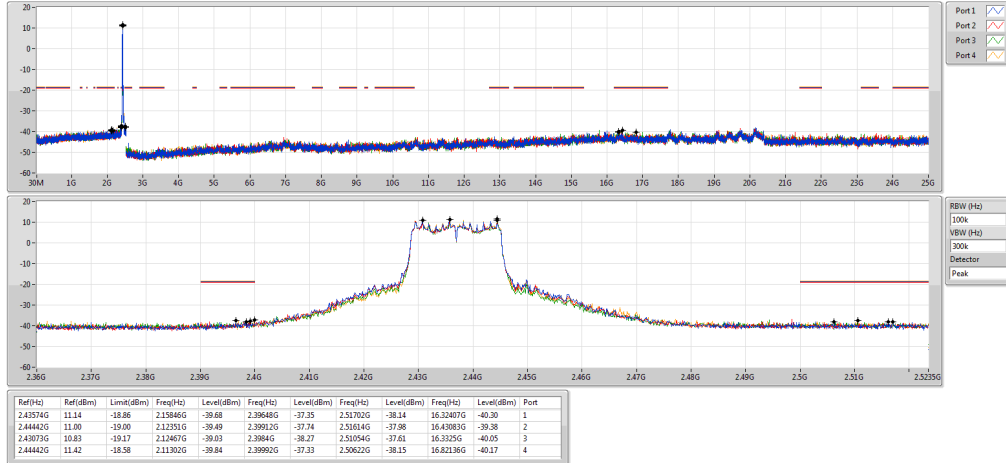
802.11g_Nss1,(6Mbps)_4TX
2412MHz

CSE NdB



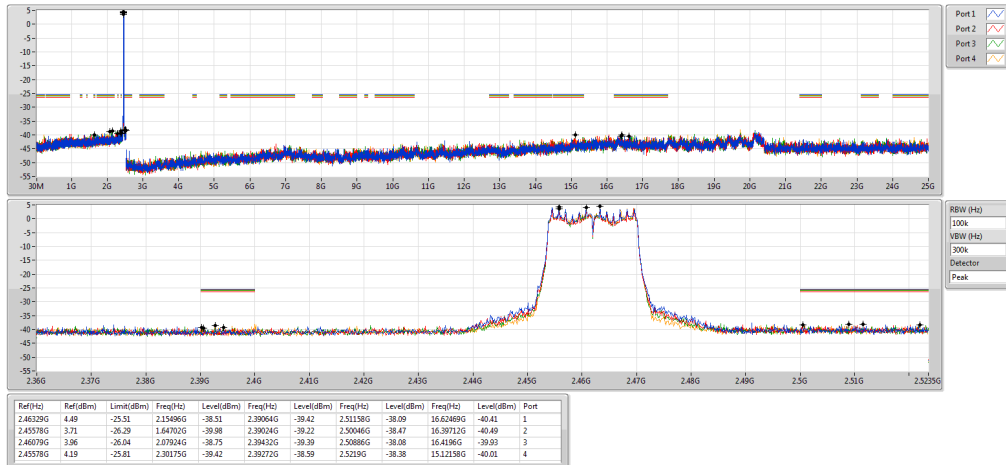
802.11g_Nss1,(6Mbps)_4TX
2437MHz

CSE NdB



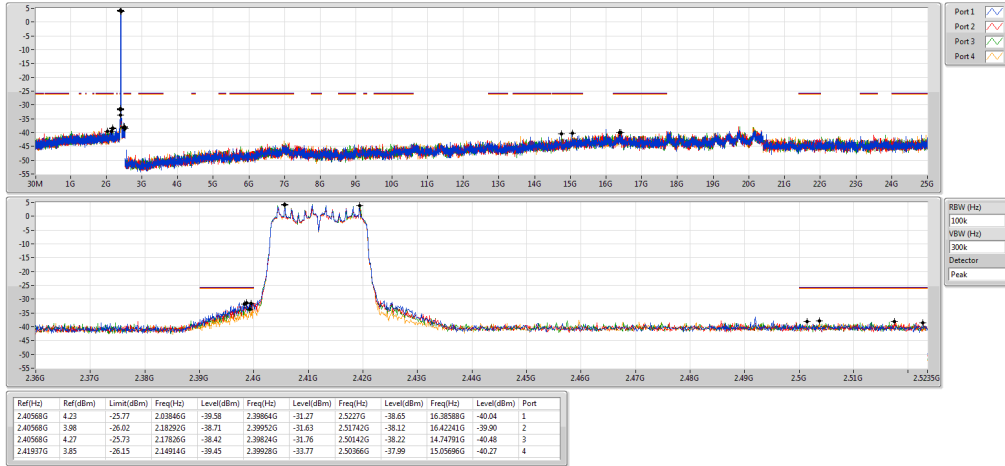
802.11g_Nss1,(6Mbps)_4TX
2462MHz

CSE NdB



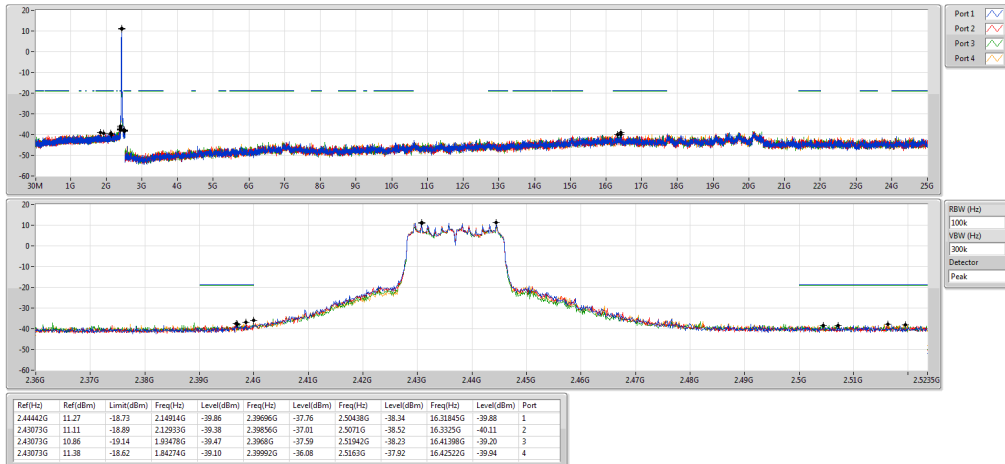
802.11n HT20_Nss1,(MCS0)_4TX
2412MHz

CSE NdB



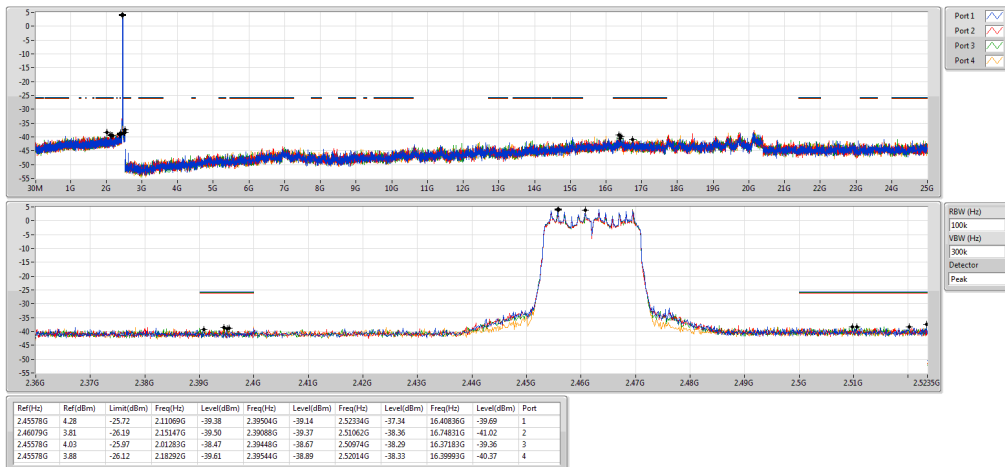
802.11n HT20_Nss1,(MCS0)_4TX
2437MHz

CSE NdB



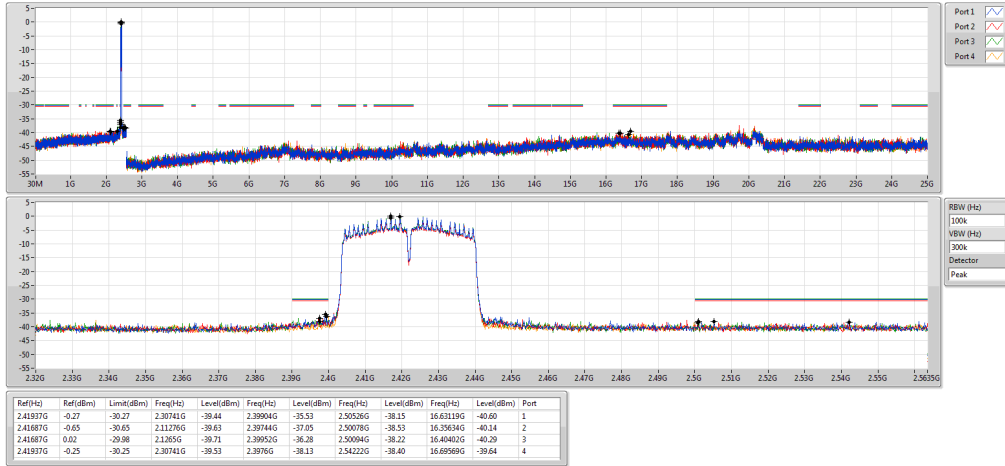
802.11n HT20_Nss1,(MCS0)_4TX
2462MHz

CSE NdB



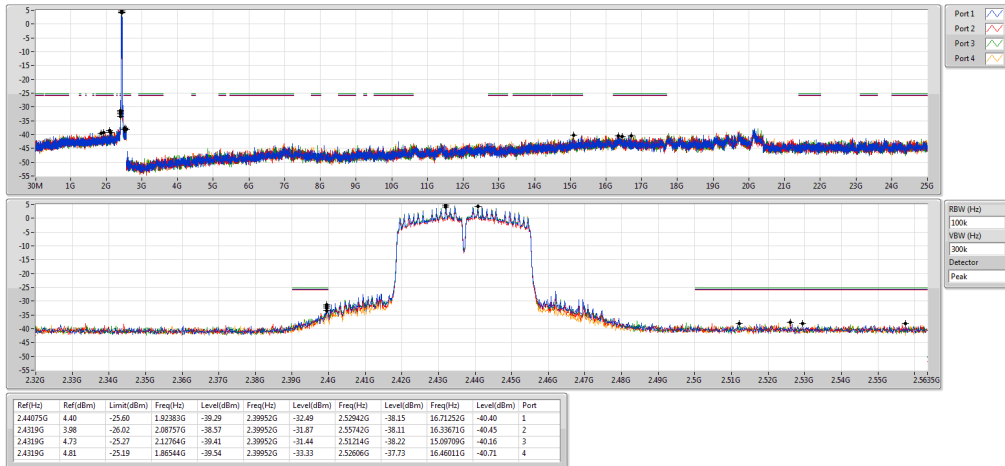
802.11n HT40_Nss1,(MCS0)_4TX
2422MHz

CSE NdB



802.11n HT40_Nss1,(MCS0)_4TX
2437MHz

CSE NdB



802.11n HT40_Nss1,(MCS0)_4TX
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

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