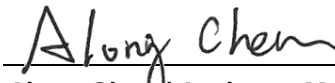


FCC Test Report

FCC ID : ACQ-STREAMTV
Equipment : Stream TV
Model No. : Stream TV
Brand Name : Verizon
Applicant : ARRIS
Address : 101 Tournament Drive, Horsham
Pennsylvania, United States,19044
Standard : 47 CFR FCC Part 15.247
Received Date : Mar. 11, 2021
Tested Date : Mar. 16 ~ Apr. 20, 2021

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It 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:

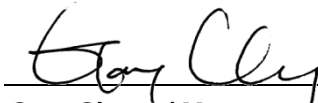

Gary Chang / Manager



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Release Record

Report No.	Version	Description	Issued Date
FR131101AC	Rev. 01	Initial issue	May 13, 2021

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.617MHz 44.41 (Margin -1.59dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 7311.00MHz 52.95 (Margin -1.05dB) - AV [dBuV/m at 3m]: 2483.50MHz 72.95 (Margin -1.05dB) - PK	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 27.91	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]	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	ac (VHT20)	2412-2462	1-11 [11]	2	MCS 0-9
2400-2483.5	ax (HE20)	2412-2462	1-11 [11]	2	MCS 0-11
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power. Note 2: DSSS-DBPSK, DQPSK, CCK modulation OFDM/OFDMA- BPSK, QPSK, 16QAM, 64QAM, 256QAM and 1024QAM modulation.					

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)				
				2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850
1	Ant1	Chip	-	2.7	3.84	3.84	3.84	3.84
2	Ant2	PCB	i-pex(MHF)	3.02	3.82	3.82	3.82	3.82

1.1.3 USB chip

Two sources for USB chip

Source 1	IC PER 3.3V SMD QFN24 GP USB HUB Brand: GENESYS Model: GL852G
Source 2	IC PER 3.3V SMD QFN24 GP USB HUB Brand: GENESYS Model: GL850G

1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	5Vdc from adapter
-------------------	-------------------

1.1.5 Accessories

Accessories		
No.	Equipment	Description
1	AC adapter	Brand: KUANTECH Model: KSC-10C-050200HU I/P: 100-120Vac, 47-63Hz, 0.3A O/P: 5Vdc, 2A Power Line: 1m non-shielded without core (USB-C cable)
2	HDMI	0.95m non-shielded without core
3	Remote control	Model: RC4513101/01BRP Brand: Verizon

1.1.6 Channel List

Channel	Frequency(MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462

1.1.7 Test Tool and Duty Cycle

Test Tool	accessMtool, V3.1.0.2 ; Tera Term V4.66		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	96.11%	0.17
	11g	95.79%	0.19
	ax HE20 RU242	99.54%	0.02
	ax HE20_RU26	99.66%	0.01
	ax HE20_RU52	99.64%	0.02
	ax HE20_RU106	99.61%	0.02

1.1.8 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	86
11b	2437	84
11b	2462	84
11g	2412	62
11g	2437	78
11g	2462	60
ax HE20 RU242	2412	52
ax HE20 RU242	2437	72
ax HE20 RU242	2462	52

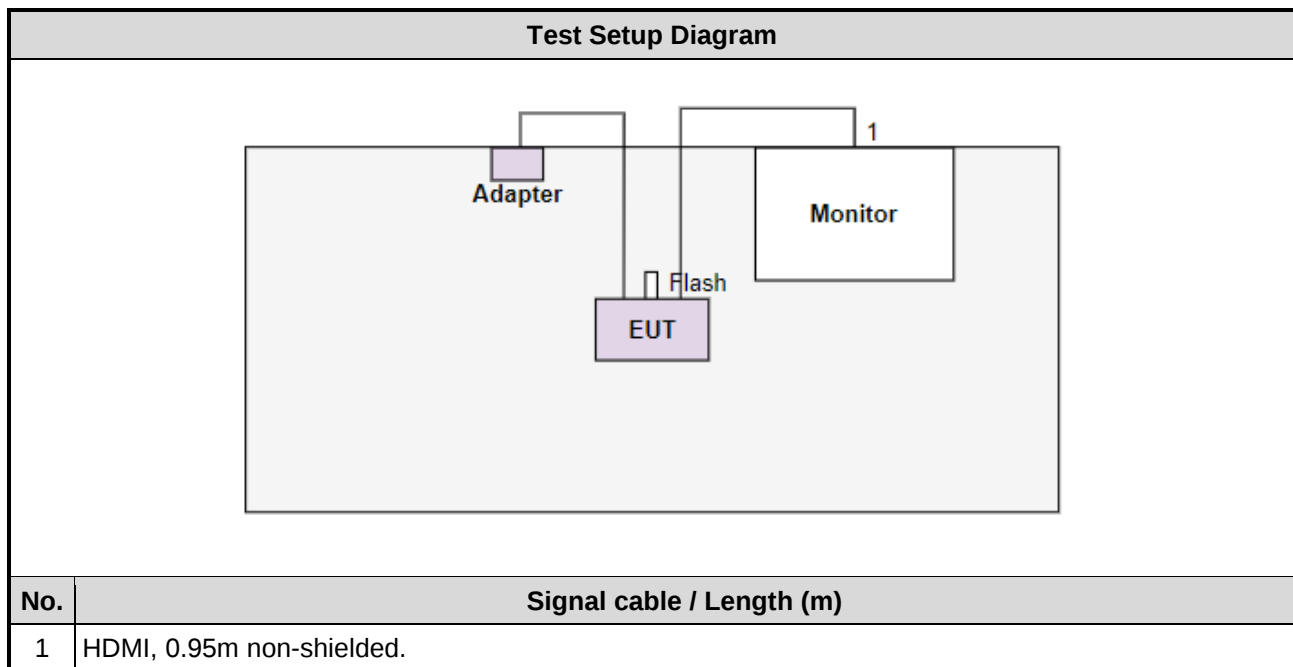
Mode	RU	Index	Channel	Frequency (MHz)	Test Tool Power index
ax HE20	26	0	1	2412	18
			6	2437	38
			11	2462	16
		3	1	2412	18
			6	2437	38
			11	2462	16
		8	1	2412	18
			6	2437	38
			11	2462	16
	52	37	1	2412	30
			6	2437	50
			11	2462	28
		38	1	2412	30
			6	2437	50
			11	2462	28
		40	1	2412	30
			6	2437	50
			11	2462	28
	106	53	1	2412	40
			6	2437	62
			11	2462	38
		54	1	2412	40
			6	2437	62
			11	2462	38

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	LCD Monitor	ASUS	MX27UCS	---	---
2	USB 3.0 flash	Transcend	JetFlash 700	---	---
3	Notebook	DELL	Latitude E5470	DoC	---

Note: The support notebook is connected to EUT via fixture and is disconnected from EUT and removed from test table after sending RF command to control EUT to transmit continuously.

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Apr. 16 ~ Apr. 20, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
LISN	R&S	ENV216	101579	Mar. 17, 2021	Mar. 16, 2022
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 21, 2020	Oct. 20, 2021
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	Mar. 16 ~ Apr. 19, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
Spectrum Analyzer	R&S	FSV40	101498	Dec. 04, 2020	Dec. 03, 2021
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 17, 2020	Nov. 16, 2021
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jul. 10, 2020	Jul. 09, 2021
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 11, 2020	Dec. 10, 2021
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 06, 2020	Nov. 05, 2021
Preamplifier	EMC	EMC02325	980225	Jul. 03, 2020	Jul. 02, 2021
Preamplifier	Agilent	83017A	MY39501308	Sep. 26, 2020	Sep. 25, 2021
Preamplifier	EMC	EMC184045B	980192	Jul. 21, 2020	Jul. 20, 2021
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 06, 2020	Oct. 05, 2021
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 06, 2020	Oct. 05, 2021
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 06, 2020	Oct. 05, 2021
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 06, 2020	Oct. 05, 2021
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Oct. 06, 2020	Oct. 05, 2021
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. 13 ~ Apr. 16, 2021				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101063	Apr. 30, 2020	Apr. 29, 2021
Power Meter	Anritsu	ML2495A	1241002	Nov. 04, 2020	Nov. 03, 2021
Power Sensor	Anritsu	MA2411B	1207366	Nov. 04, 2020	Nov. 03, 2021
Measurement Software	-	SENSE-15247_DTS	V5.10	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247

ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$)).

Measurement Uncertainty	
Parameters	Uncertainty
Bandwidth	± 34.130 Hz
Conducted power	± 0.808 dB
Power density	± 0.583 dB
Conducted emission	± 2.715 dB
AC conducted emission	± 2.92 dB
Radiated emission ≤ 1 GHz	± 3.41 dB
Radiated emission > 1 GHz	± 4.59 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, 03CH01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW2732
- FCC site registration No.: 181692
- ISSED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	ax HE20_RU242	2437	MCS 0	1, 2
Radiated Emissions ≤1GHz	ax HE20_RU242	2437	MCS 0	1, 2
Maximum Output Power	11b 11g ax HE20_RU242	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462	1 Mbps 6 Mbps MCS 0	1
Radiated Emissions >1GHz 6dB bandwidth Power Spectral Density	11b 11g ax HE20_RU242	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462	1 Mbps 6 Mbps MCS 0	1
Maximum Output Power Power Spectral Density	ax HE20_RU26 ax HE20_RU52 ax HE20_RU106	2412 / 2437 / 2462	MCS 0	1
RSE Band Edge	ax HE20_RU26 ax HE20_RU52 ax HE20_RU106	2412 / 2462	MCS 0	1

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **X-plane** results were found as the worst case and were shown in this report.
2. There are two USB chips provided for the test:
Test Configuration 1: USB chip 1, model GL852G
Test Configuration 2: USB chip 2, model GL850G

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

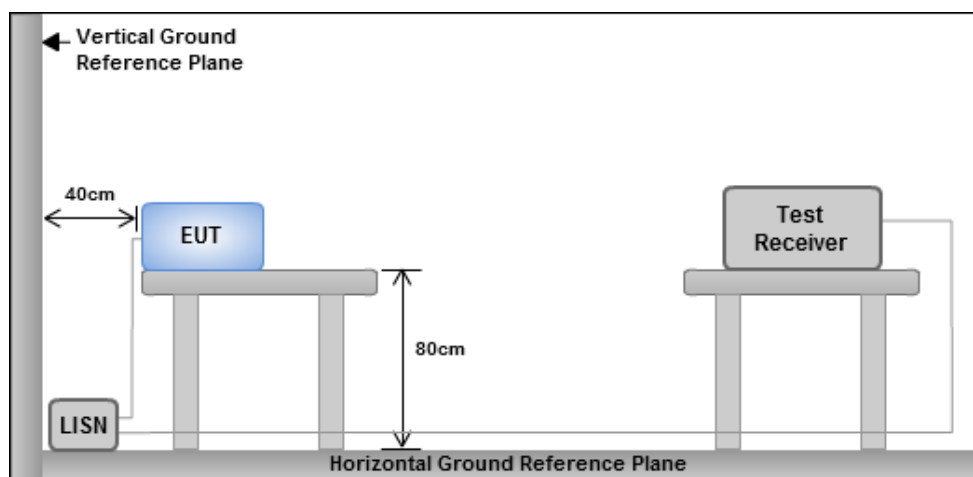
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

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

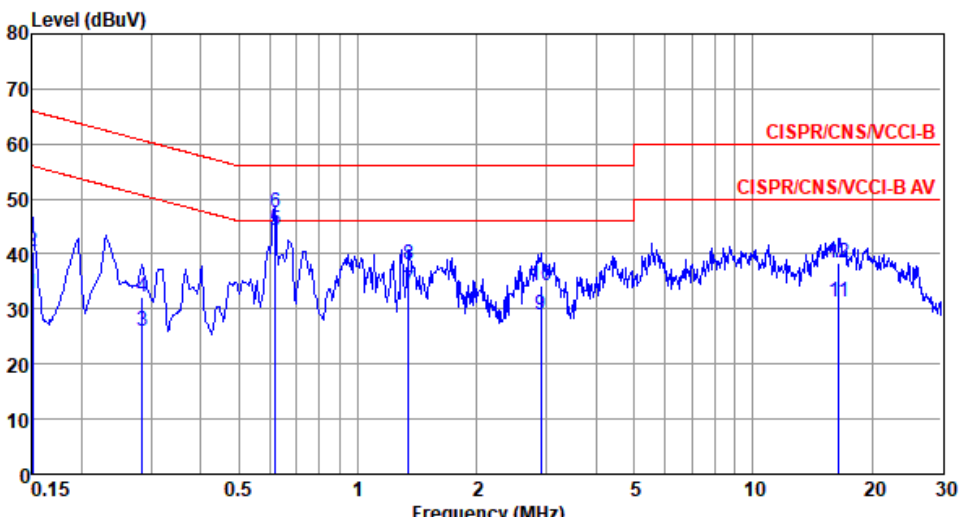


- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

Modulation	ax HE20	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	1

Test by : Alex Tsai Temperature: 22°C Humidity: 60%



	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Remark
1	0.150	32.66	56.00	-23.34	22.78	9.83	0.05	Average
2	0.150	40.57	66.00	-25.43	30.69	9.83	0.05	QP
3	0.285	26.07	50.68	-24.61	16.13	9.87	0.07	Average
4	0.285	32.07	60.68	-28.61	22.13	9.87	0.07	QP
5*	0.617	44.19	46.00	-1.81	34.15	9.94	0.10	Average
6	0.617	47.50	56.00	-8.50	37.46	9.94	0.10	QP
7	1.345	33.39	46.00	-12.61	23.25	9.99	0.15	Average
8	1.345	38.06	56.00	-17.94	27.92	9.99	0.15	QP
9	2.900	28.95	46.00	-17.05	18.69	10.02	0.24	Average
10	2.900	34.32	56.00	-21.68	24.06	10.02	0.24	QP
11	16.486	31.37	50.00	-18.63	20.53	10.22	0.62	Average
12	16.486	38.50	60.00	-21.50	27.66	10.22	0.62	QP

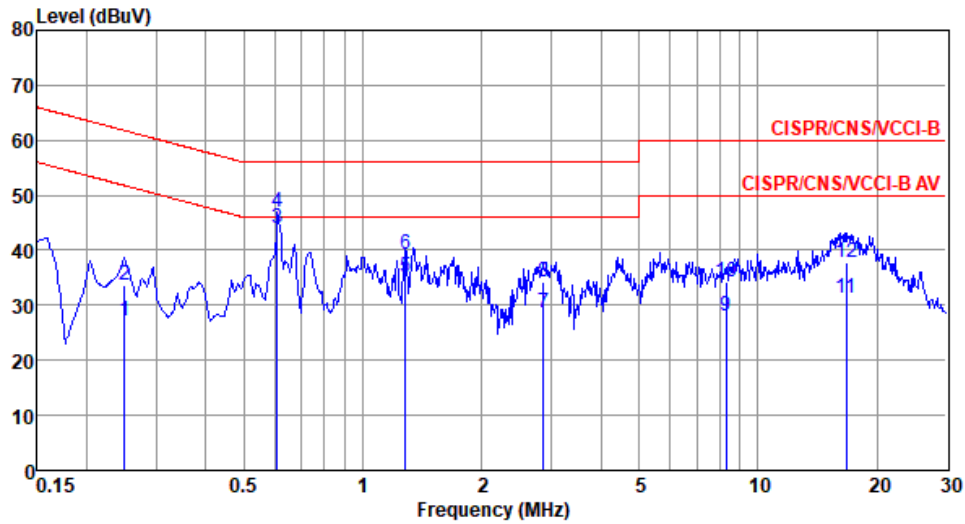
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
 Note 2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	ax HE20	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	1

Test by : Alex Tsai

Temperature: 22°C

Humidity: 60%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Remark
1	0.249	27.24	51.78	-24.54	17.33	9.84	0.07	Average
2	0.249	33.54	61.78	-28.24	23.63	9.84	0.07	QP
3*	0.608	44.02	46.00	-1.98	34.06	9.86	0.10	Average
4	0.608	46.90	56.00	-9.10	36.94	9.86	0.10	QP
5	1.282	35.10	46.00	-10.90	25.05	9.91	0.14	Average
6	1.282	39.38	56.00	-16.62	29.33	9.91	0.14	QP
7	2.869	28.70	46.00	-17.30	18.50	9.96	0.24	Average
8	2.869	34.28	56.00	-21.72	24.08	9.96	0.24	QP
9	8.323	28.10	50.00	-21.90	17.66	10.06	0.38	Average
10	8.323	34.12	60.00	-25.88	23.68	10.06	0.38	QP
11	16.750	31.38	50.00	-18.62	20.49	10.26	0.63	Average
12	16.750	37.89	60.00	-22.11	27.00	10.26	0.63	QP

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

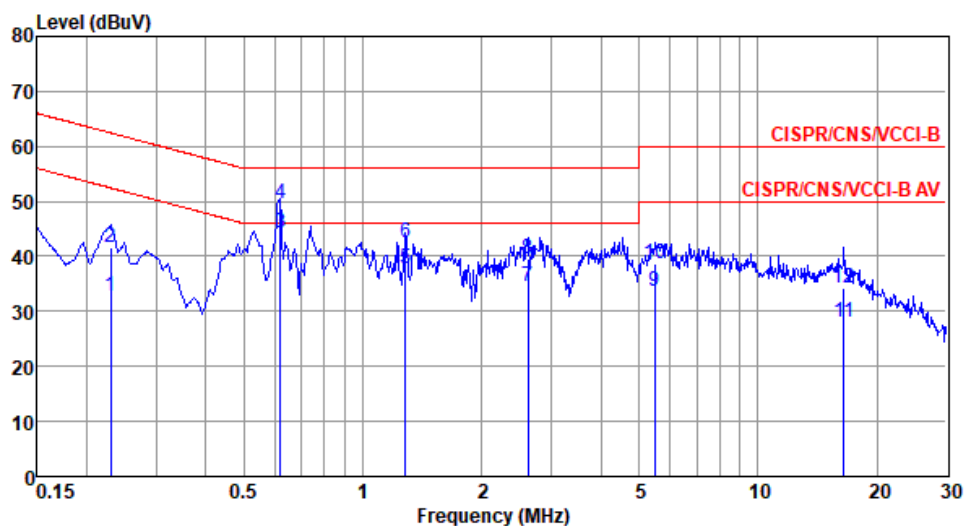
2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

Modulation	ax HE20	Test Freq. (MHz)	2437
Power Phase	Line	Test Configuration	2

Test by : Alex Tsai

Temperature: 20°C

Humidity: 66%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Remark
1	0.230	32.73	52.44	-19.71	22.82	9.85	0.06	Average
2	0.230	41.70	62.44	-20.74	31.79	9.85	0.06	QP
3*	0.617	44.41	46.00	-1.59	34.37	9.94	0.10	Average
4	0.617	49.56	56.00	-6.44	39.52	9.94	0.10	QP
5	1.282	37.81	46.00	-8.19	27.68	9.99	0.14	Average
6	1.282	42.56	56.00	-13.44	32.43	9.99	0.14	QP
7	2.622	34.64	46.00	-11.36	24.40	10.02	0.22	Average
8	2.622	39.65	56.00	-16.35	29.41	10.02	0.22	QP
9	5.476	33.62	50.00	-16.38	23.23	10.06	0.33	Average
10	5.476	38.73	60.00	-21.27	28.34	10.06	0.33	QP
11	16.486	28.19	50.00	-21.81	17.35	10.22	0.62	Average
12	16.486	34.26	60.00	-25.74	23.42	10.22	0.62	QP

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

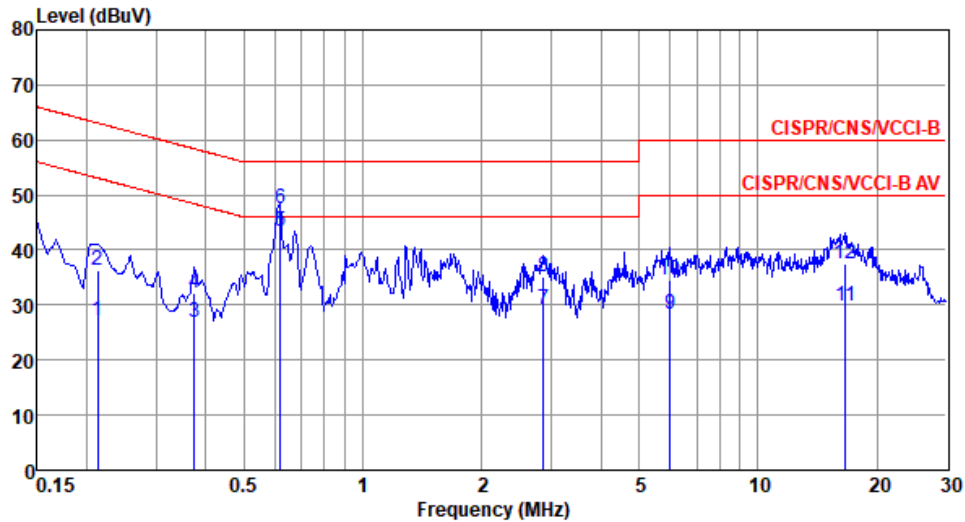
2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

Modulation	ax HE20	Test Freq. (MHz)	2437
Power Phase	Neutral	Test Configuration	2

Test by : Alex Tsai

Temperature: 20°C

Humidity: 66%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Remark
1	0.213	27.26	53.10	-25.84	17.37	9.83	0.06	Average
2	0.213	36.32	63.10	-26.78	26.43	9.83	0.06	QP
3	0.375	26.79	48.39	-21.60	16.86	9.85	0.08	Average
4	0.375	32.31	58.39	-26.08	22.38	9.85	0.08	QP
5*	0.617	43.34	46.00	-2.66	33.38	9.86	0.10	Average
6	0.617	47.46	56.00	-8.54	37.50	9.86	0.10	QP
7	2.869	29.20	46.00	-16.80	19.00	9.96	0.24	Average
8	2.869	34.99	56.00	-21.01	24.79	9.96	0.24	QP
9	5.993	28.25	50.00	-21.75	17.89	10.02	0.34	Average
10	5.993	34.52	60.00	-25.48	24.16	10.02	0.34	QP
11	16.661	29.68	50.00	-20.32	18.79	10.26	0.63	Average
12	16.661	37.52	60.00	-22.48	26.63	10.26	0.63	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

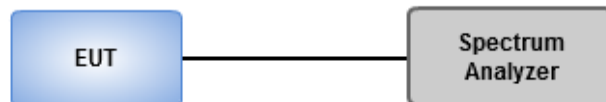
6dB Bandwidth

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

Ambient Condition	24°C / 66%	Tested By	Aska Huang
--------------------------	------------	------------------	------------

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	7.609M	13.242M	13M2G1D	7.536M	12.229M
802.11g_Nss1,(6Mbps)_2TX	16.377M	17.366M	17M4D1D	16.232M	16.425M
802.11ax HEW20_RU242_Index61_Nss1,(MCS0) _2TX	19.058M	19.103M	19M1D1D	18.913M	18.958M

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

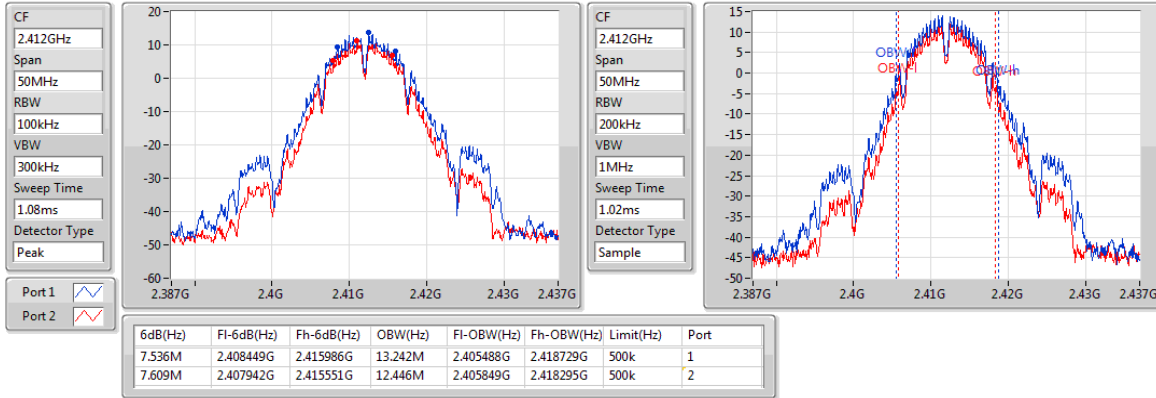
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	7.536M	13.242M	7.609M	12.446M
2437MHz	Pass	500k	7.609M	12.735M	7.609M	12.229M
2462MHz	Pass	500k	7.609M	12.808M	7.609M	12.373M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.377M	16.498M	16.377M	16.498M
2437MHz	Pass	500k	16.377M	17.004M	16.377M	17.366M
2462MHz	Pass	500k	16.377M	16.57M	16.232M	16.425M
802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	18.986M	19.03M	18.913M	18.958M
2437MHz	Pass	500k	19.058M	19.103M	18.913M	19.03M
2462MHz	Pass	500k	19.058M	18.958M	19.058M	18.958M

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

802.11b_Nss1,(1Mbps)_2TX

EBW

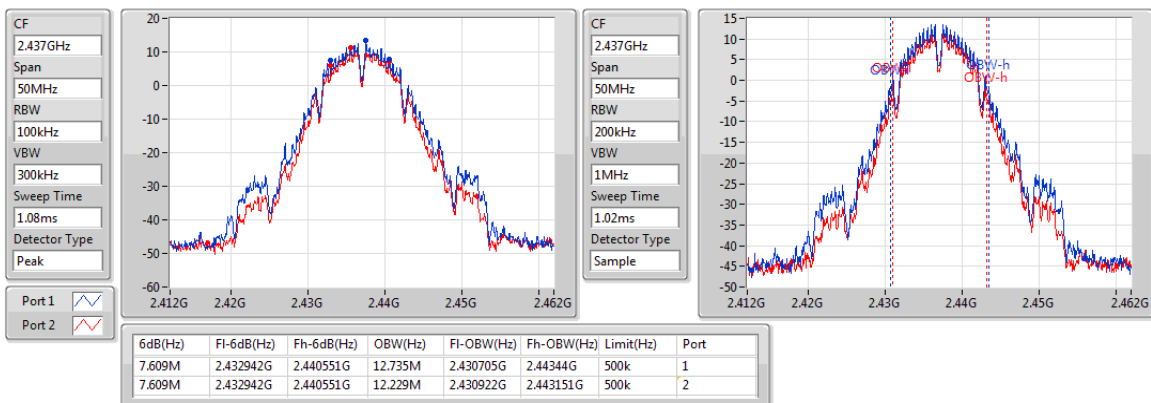
2412MHz



802.11b_Nss1,(1Mbps)_2TX

EBW

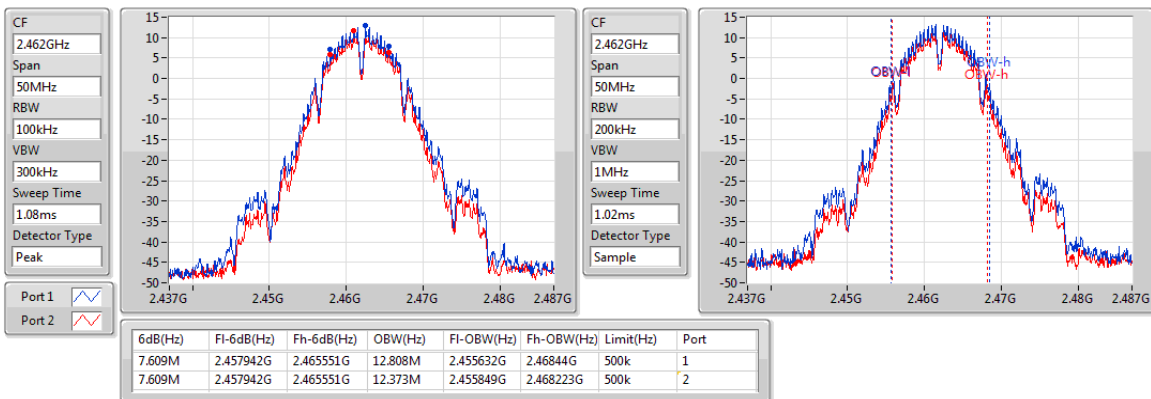
2437MHz



802.11b_Nss1,(1Mbps)_2TX

EBW

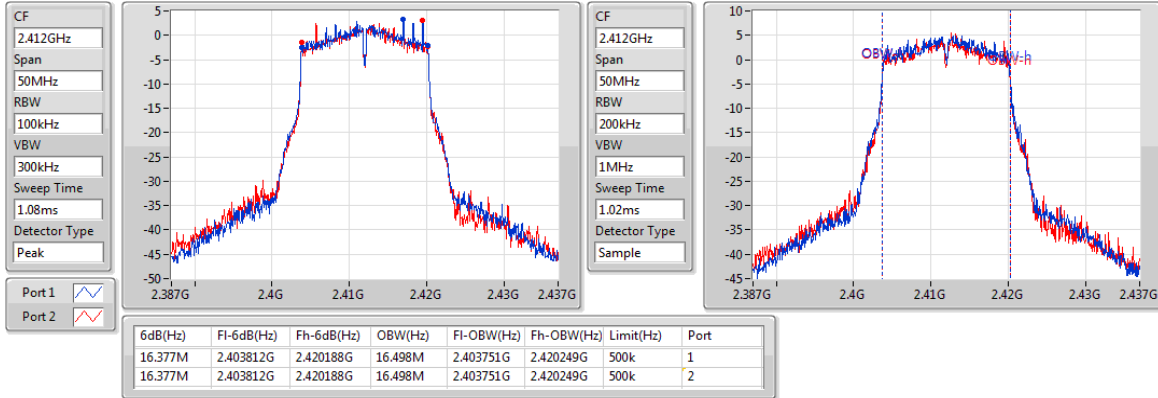
2462MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

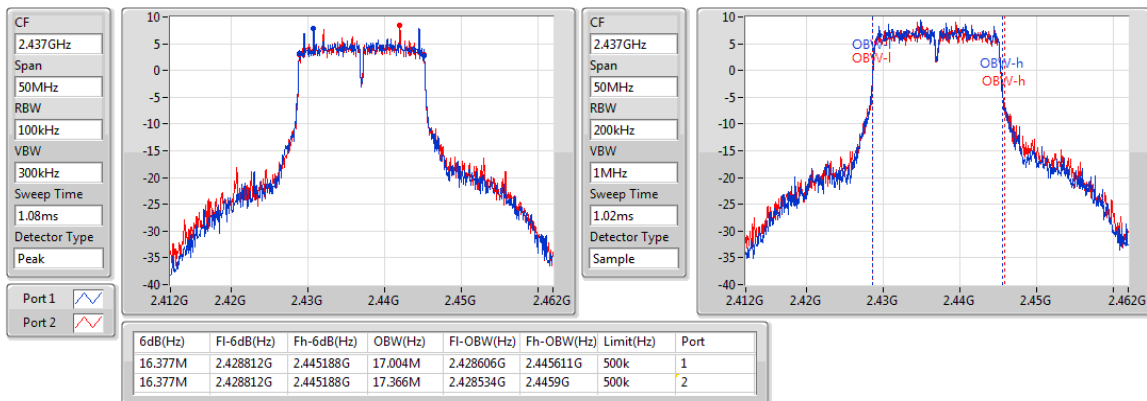
2412MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

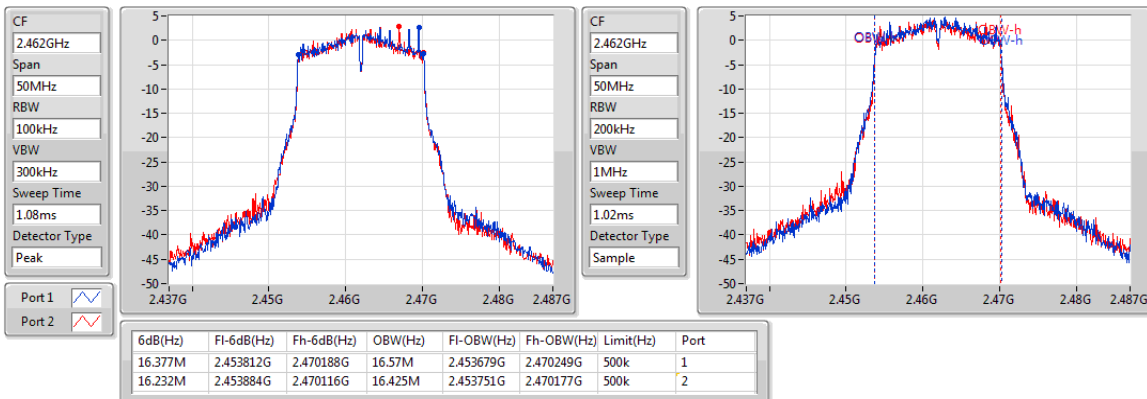
2437MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

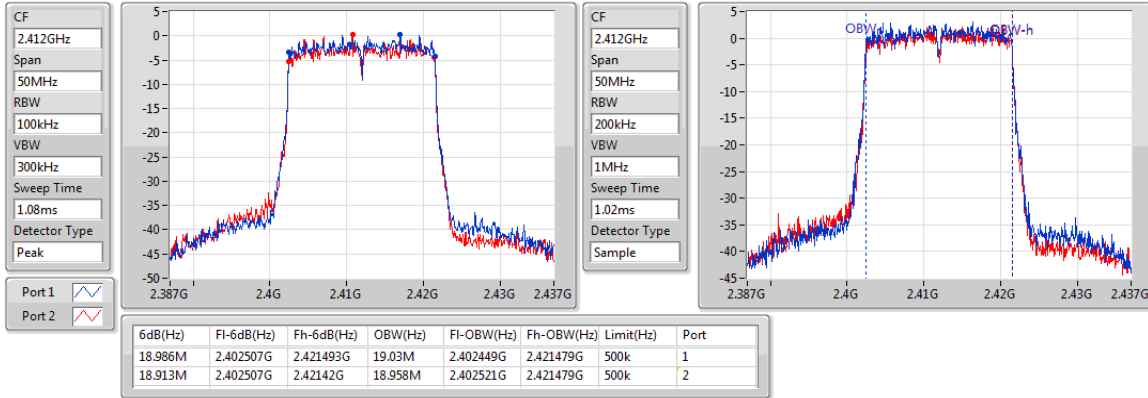
2462MHz



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX

EBW

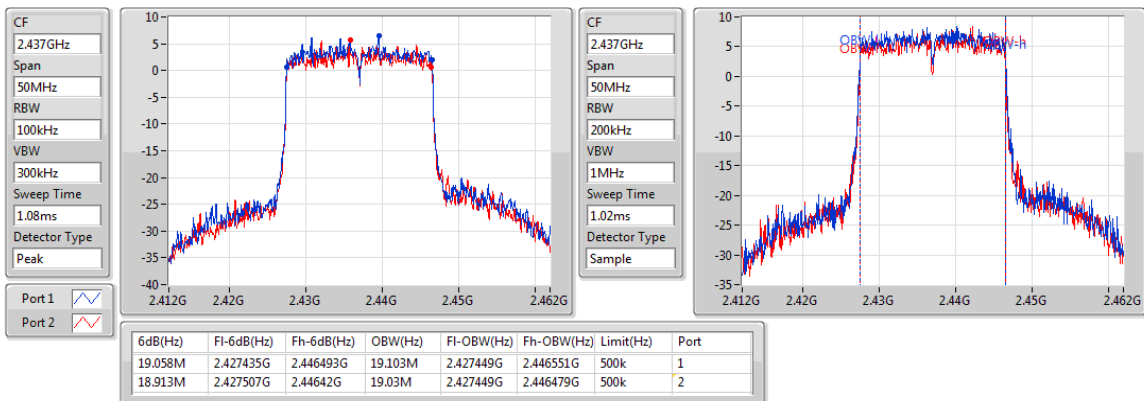
2412MHz



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX

EBW

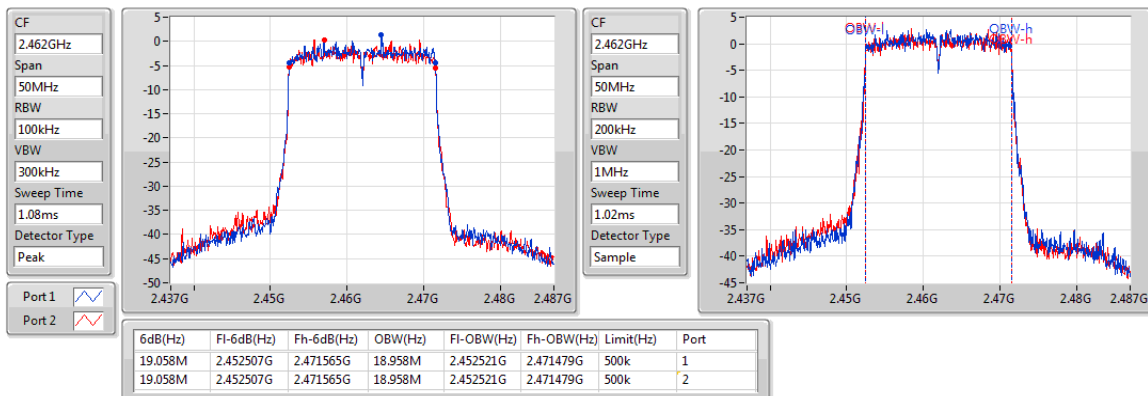
2437MHz



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX

EBW

2462MHz



3.3 RF Output Power

3.3.1 Limit of RF Output Power

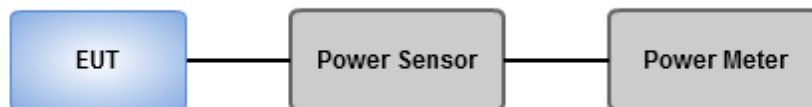
Conducted power shall not exceed 1Watt.

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

3.3.2 Test Procedures

A broadband RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup



3.3.4 Test Result of Maximum Output Power

Ambient Condition	24°C / 66%	Tested By	Aska Huang
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Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	26.04	0.40179
802.11g_Nss1,(6Mbps)_2TX	27.75	0.59566
802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX	27.91	0.61802

Summary of Peak Conducted Output Power

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	3.02	23.71	22.22	26.04	30.00	29.06	36.00
2437MHz	Pass	3.02	23.4	21.72	25.65	30.00	28.67	36.00
2462MHz	Pass	3.02	22.99	21.93	25.50	30.00	28.52	36.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	23.77	23.39	26.59	30.00	29.61	36.00
2437MHz	Pass	3.02	25.01	24.45	27.75	30.00	30.77	36.00
2462MHz	Pass	3.02	23.48	23.31	26.41	30.00	29.43	36.00
802.11ax HEW20_RU242_Index61_Nss1,(MCS0) _2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	22.16	22.02	25.10	30.00	28.12	36.00
2437MHz	Pass	3.02	25.16	24.62	27.91	30.00	30.93	36.00
2462MHz	Pass	3.02	22.06	22.43	25.26	30.00	28.28	36.00

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

Summary of Conducted (Average) Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	23.52	0.22491
802.11g_Nss1,(6Mbps)_2TX	22.03	0.15959
802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX	20.95	0.12445

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	3.02	21.25	19.61	23.52	-	26.54	-
2437MHz	Pass	3.02	20.47	19.15	22.87	-	25.89	-
2462MHz	Pass	3.02	20.35	19.22	22.83	-	25.85	-
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	15.23	14.72	17.99	-	21.01	-
2437MHz	Pass	3.02	19.31	18.71	22.03	-	25.05	-
2462MHz	Pass	3.02	14.67	14.39	17.54	-	20.56	-
802.11ax HEW20_RU242_Index61_Nss1,(MCS0) _2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	13.29	12.71	16.02	-	19.04	-
2437MHz	Pass	3.02	18.08	17.79	20.95	-	23.97	-
2462MHz	Pass	3.02	13.21	12.85	16.04	-	19.06	-

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

Note : Conducted average output power is for reference only

3.3.5 Test Result of Maximum Output Power_11ax Partial RU mode

Ambient Condition	23°C / 65%	Tested By	Aska Huang
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Summary of Peak Conducted Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX	21.05	0.12735
802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX	22.01	0.15885
802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX	21.58	0.14388
802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX	24.32	0.27040
802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX	24.75	0.29854
802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX	24.49	0.28119
802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX	27.12	0.51523
802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX	27.24	0.52966

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	13.10	12.85	15.99	30.00	19.01	36.00
2437MHz	Pass	3.02	18.35	17.71	21.05	30.00	24.07	36.00
2462MHz	Pass	3.02	12.73	12.68	15.72	30.00	18.74	36.00
802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	14.25	13.93	17.10	30.00	20.12	36.00
2437MHz	Pass	3.02	19.33	18.65	22.01	30.00	25.03	36.00
2462MHz	Pass	3.02	13.61	13.36	16.50	30.00	19.52	36.00
802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	13.61	13.32	16.48	30.00	19.50	36.00
2437MHz	Pass	3.02	18.82	18.31	21.58	30.00	24.60	36.00
2462MHz	Pass	3.02	12.92	12.59	15.77	30.00	18.79	36.00
802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	16.62	16.18	19.42	30.00	22.44	36.00
2437MHz	Pass	3.02	21.56	21.05	24.32	30.00	27.34	36.00
2462MHz	Pass	3.02	15.72	15.71	18.73	30.00	21.75	36.00
802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	17.43	17.26	20.36	30.00	23.38	36.00
2437MHz	Pass	3.02	21.89	21.59	24.75	30.00	27.77	36.00
2462MHz	Pass	3.02	16.81	16.23	19.54	30.00	22.56	36.00
802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	16.79	16.63	19.72	30.00	22.74	36.00
2437MHz	Pass	3.02	21.43	21.53	24.49	30.00	27.51	36.00
2462MHz	Pass	3.02	16.17	15.74	18.97	30.00	21.99	36.00
802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	18.91	18.85	21.89	30.00	24.91	36.00
2437MHz	Pass	3.02	24.22	23.99	27.12	30.00	30.14	36.00
2462MHz	Pass	3.02	18.85	18.45	21.66	30.00	24.68	36.00
802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	19.23	18.75	22.01	30.00	25.03	36.00
2437MHz	Pass	3.02	24.32	24.13	27.24	30.00	30.26	36.00
2462MHz	Pass	3.02	18.89	18.64	21.78	30.00	24.80	36.00

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

Summary of Conducted (Average) Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX	12.18	0.01652
802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX	13.25	0.02113
802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX	12.77	0.01892
802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX	15.00	0.03162
802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX	15.55	0.03589
802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX	15.30	0.03388
802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX	18.34	0.06823
802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX	18.65	0.07328

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	4.32	3.81	7.08	-	10.10	-
2437MHz	Pass	3.02	9.57	8.72	12.18	-	15.20	-
2462MHz	Pass	3.02	3.86	3.59	6.74	-	9.76	-
802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	5.25	4.89	8.08	-	11.10	-
2437MHz	Pass	3.02	10.67	9.76	13.25	-	16.27	-
2462MHz	Pass	3.02	4.65	4.31	7.49	-	10.51	-
802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	4.76	4.33	7.56	-	10.58	-
2437MHz	Pass	3.02	9.99	9.52	12.77	-	15.79	-
2462MHz	Pass	3.02	3.99	3.72	6.87	-	9.89	-
802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	7.55	7.11	10.35	-	13.37	-
2437MHz	Pass	3.02	12.23	11.73	15.00	-	18.02	-
2462MHz	Pass	3.02	6.71	6.67	9.70	-	12.72	-
802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	8.21	7.74	10.99	-	14.01	-
2437MHz	Pass	3.02	12.82	12.23	15.55	-	18.57	-
2462MHz	Pass	3.02	7.74	7.31	10.54	-	13.56	-
802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	7.76	7.32	10.56	-	13.58	-
2437MHz	Pass	3.02	12.55	12.01	15.30	-	18.32	-
2462MHz	Pass	3.02	7.19	6.69	9.96	-	12.98	-
802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	10.06	9.61	12.85	-	15.87	-
2437MHz	Pass	3.02	15.47	15.19	18.34	-	21.36	-
2462MHz	Pass	3.02	9.73	9.38	12.57	-	15.59	-
802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.02	10.28	9.68	13.00	-	16.02	-
2437MHz	Pass	3.02	15.93	15.33	18.65	-	21.67	-
2462MHz	Pass	3.02	10.13	9.67	12.92	-	15.94	-

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

Note : Conducted average output power is for reference only

3.4 Power Spectral Density

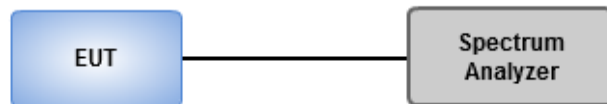
3.4.1 Limit of Power Spectral Density

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

3.4.2 Test Procedures

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.

3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Ambient Condition	24°C / 66%	Tested By	Aska Huang
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Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_2TX	1.15
802.11g_Nss1,(6Mbps)_2TX	-3.36
802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX	-5.89

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	5.87	-0.65	-1.70	1.15	8.00
2437MHz	Pass	5.87	-1.38	-3.38	0.37	8.00
2462MHz	Pass	5.87	-0.55	-1.76	0.95	8.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-8.54	-9.44	-6.83	8.00
2437MHz	Pass	5.87	-4.96	-5.87	-3.36	8.00
2462MHz	Pass	5.87	-9.33	-9.26	-7.19	8.00
802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-12.78	-12.58	-11.23	8.00
2437MHz	Pass	5.87	-7.38	-8.56	-5.89	8.00
2462MHz	Pass	5.87	-12.93	-12.72	-11.25	8.00

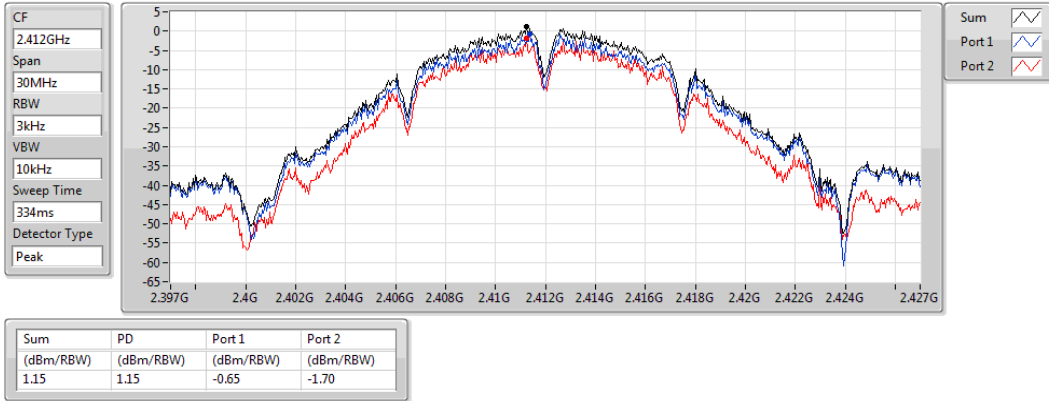
DG = Directional Gain= $10 * \log((10^{2.7/20} + 10^{3.02/20})^2 / 2) = 5.87$ dBi

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

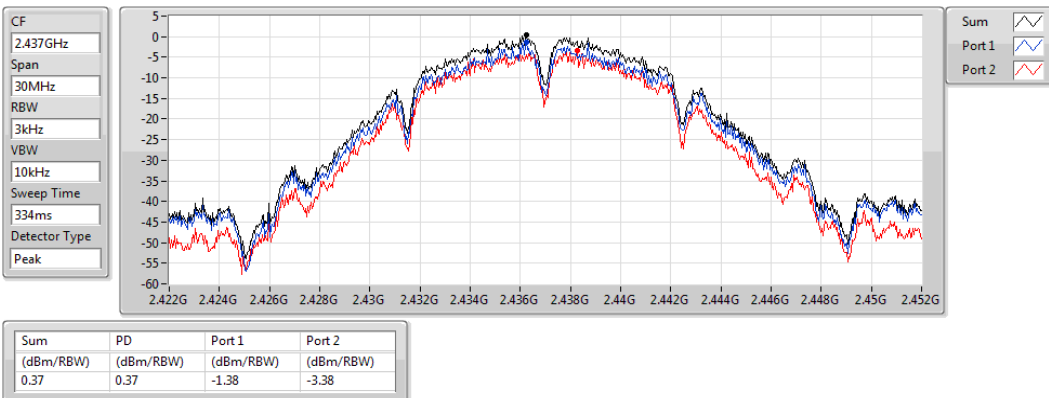
2412MHz



802.11b_Nss1,(1Mbps)_2TX

PSD

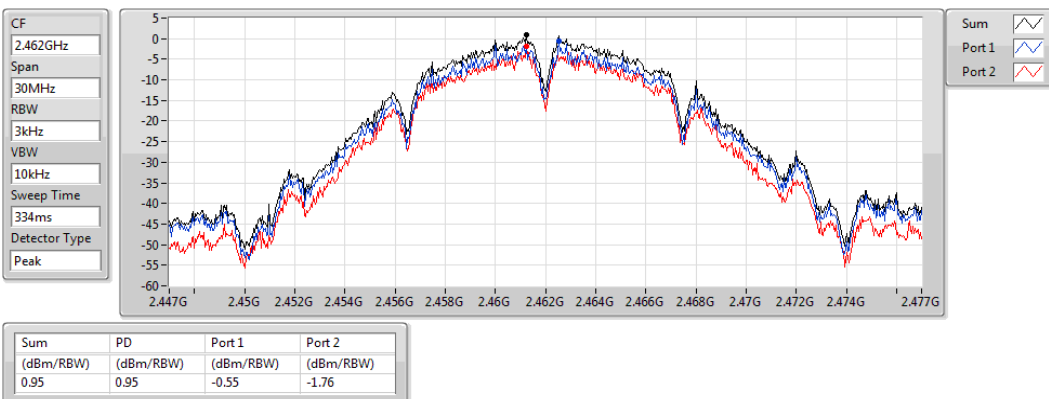
2437MHz



802.11b_Nss1,(1Mbps)_2TX

PSD

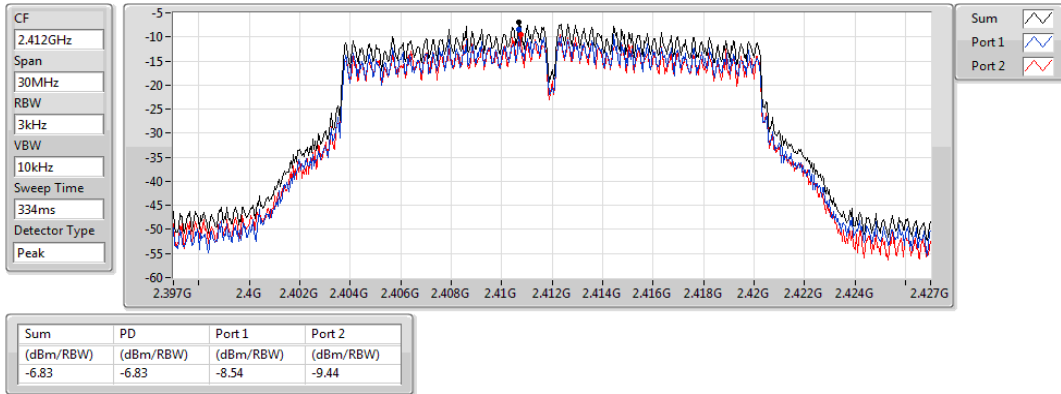
2462MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

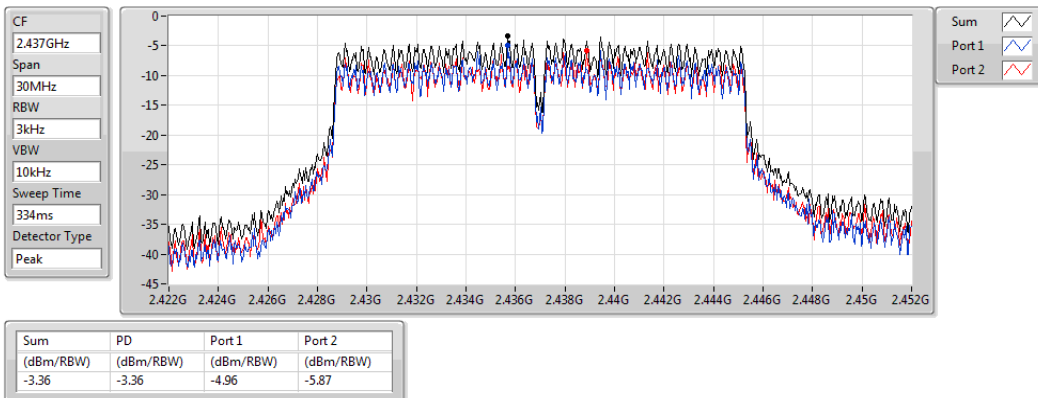
2412MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

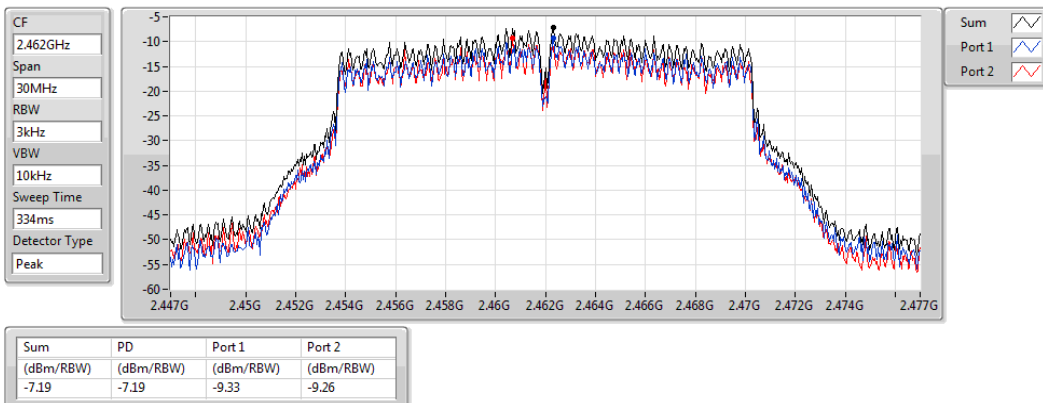
2437MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

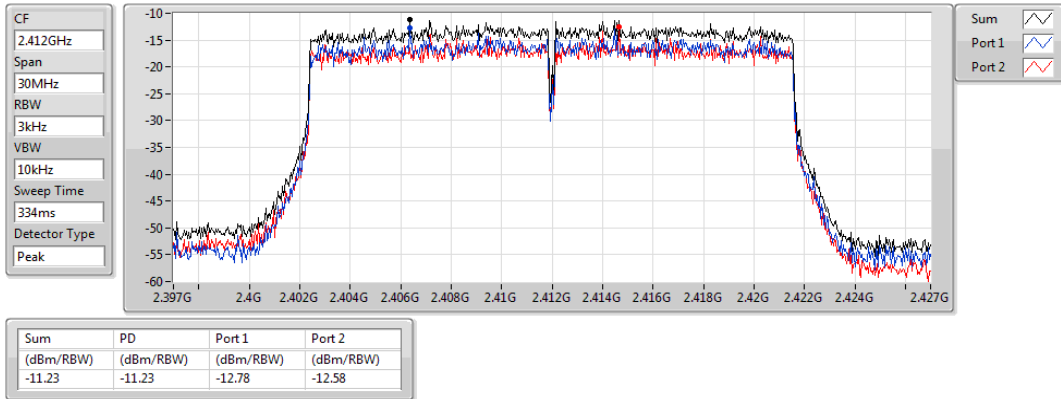
2462MHz



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX

PSD

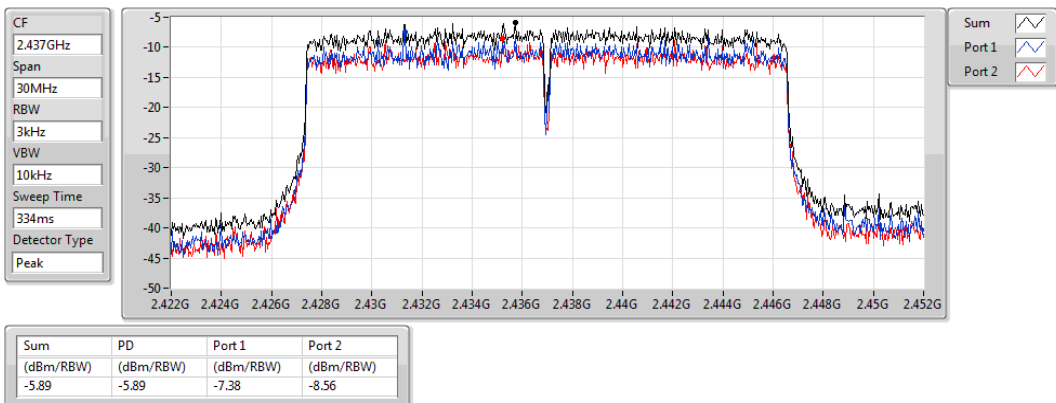
2412MHz



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX

PSD

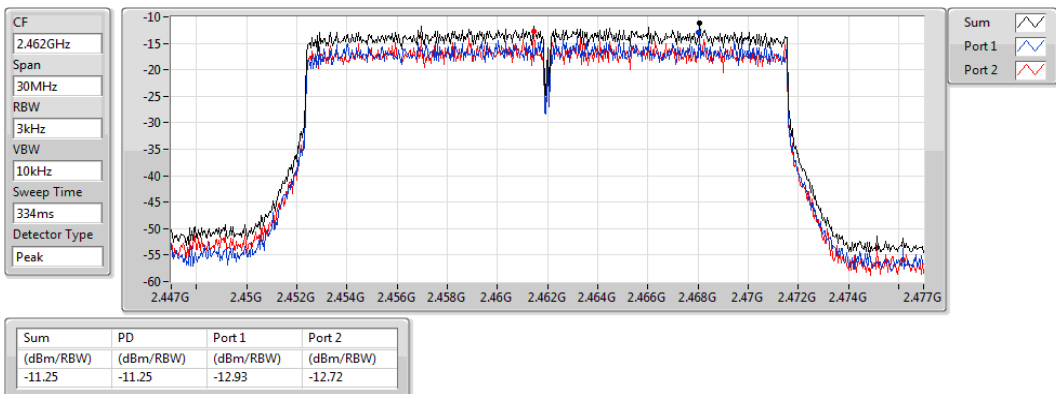
2437MHz



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX

PSD

2462MHz



3.4.5 Test Result of Power Spectral Density_11ax Partial RU mode

Ambient Condition	23°C / 65%	Tested By	Aska Huang
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Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX	-6.81
802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX	-6.12
802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX	-6.14
802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX	-6.32
802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX	-6.00
802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX	-6.19
802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX	-6.11
802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX	-6.18

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-14.44	-14.87	-12.00	8.00
2437MHz	Pass	5.87	-8.20	-9.85	-6.81	8.00
2462MHz	Pass	5.87	-14.16	-15.69	-12.55	8.00
802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-13.55	-13.84	-11.43	8.00
2437MHz	Pass	5.87	-7.71	-8.98	-6.12	8.00
2462MHz	Pass	5.87	-13.88	-14.55	-11.54	8.00
802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-14.07	-14.08	-11.52	8.00
2437MHz	Pass	5.87	-8.32	-9.41	-6.14	8.00
2462MHz	Pass	5.87	-13.44	-15.35	-11.83	8.00
802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-13.47	-14.01	-11.81	8.00
2437MHz	Pass	5.87	-8.63	-9.03	-6.32	8.00
2462MHz	Pass	5.87	-13.93	-14.82	-11.88	8.00
802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-13.06	-13.87	-11.43	8.00
2437MHz	Pass	5.87	-8.79	-7.94	-6.00	8.00
2462MHz	Pass	5.87	-12.79	-13.11	-11.39	8.00
802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-13.62	-13.81	-11.45	8.00
2437MHz	Pass	5.87	-7.69	-8.84	-6.19	8.00
2462MHz	Pass	5.87	-14.28	-13.11	-11.50	8.00
802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-14.43	-14.07	-11.91	8.00
2437MHz	Pass	5.87	-8.09	-8.14	-6.11	8.00
2462MHz	Pass	5.87	-13.43	-13.53	-11.34	8.00
802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.87	-12.67	-13.95	-11.36	8.00
2437MHz	Pass	5.87	-7.90	-8.33	-6.18	8.00
2462MHz	Pass	5.87	-13.55	-12.89	-11.58	8.00

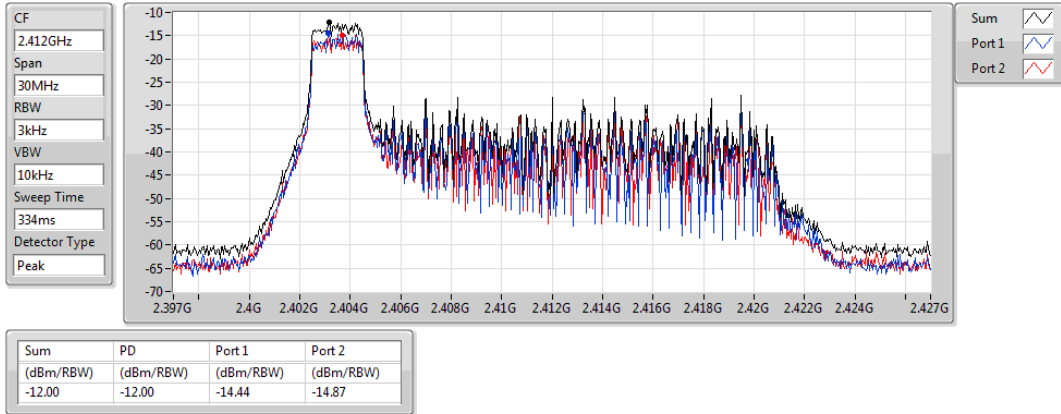
DG = Directional Gain= $10 * \log((10^{2.7/20} + 10^{3.02/20})^2 / 2) = 5.87$ dBi

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

802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX

PSD

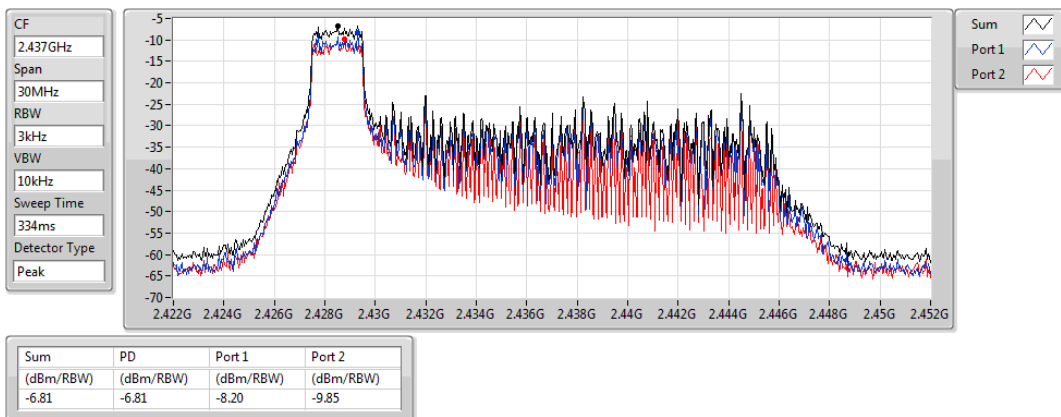
2412MHz



802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX

PSD

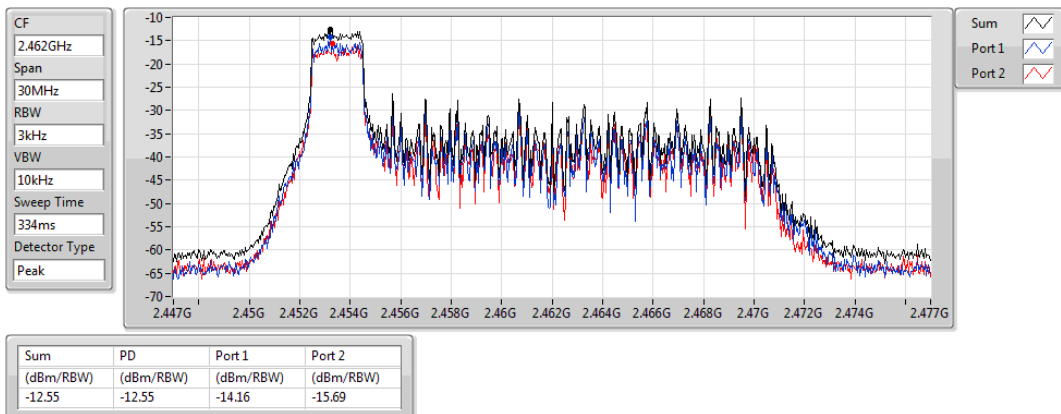
2437MHz



802.11ax HEW20_RU26_Index0_Nss1,(MCS0)_2TX

PSD

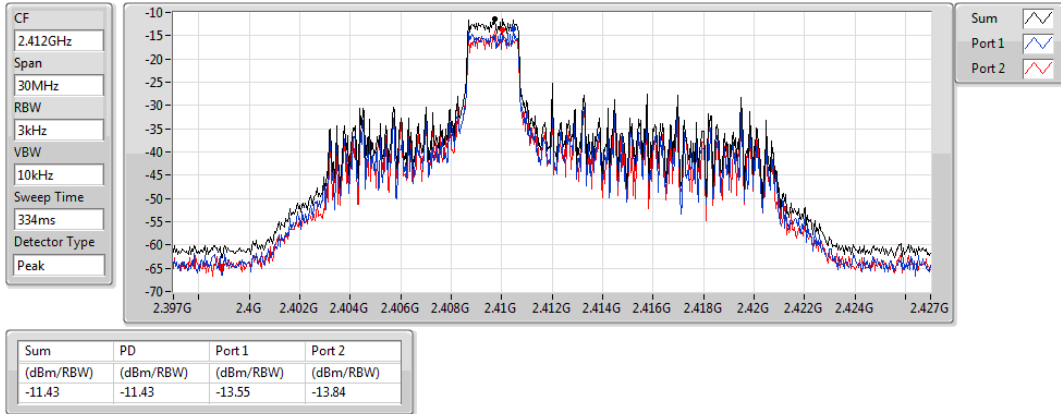
2462MHz



802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX

PSD

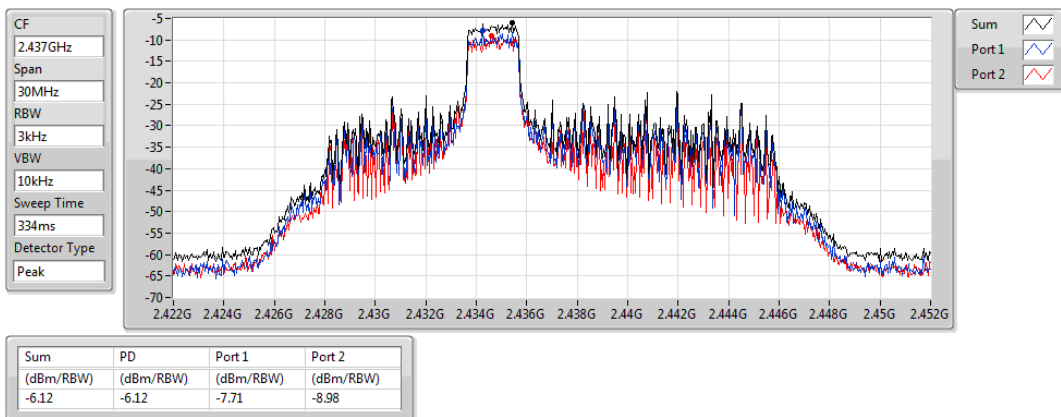
2412MHz



802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX

PSD

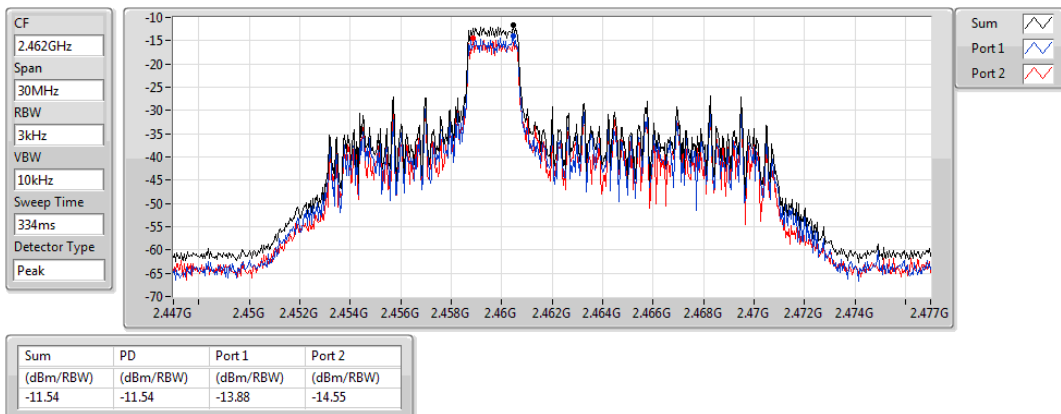
2437MHz



802.11ax HEW20_RU26_Index3_Nss1,(MCS0)_2TX

PSD

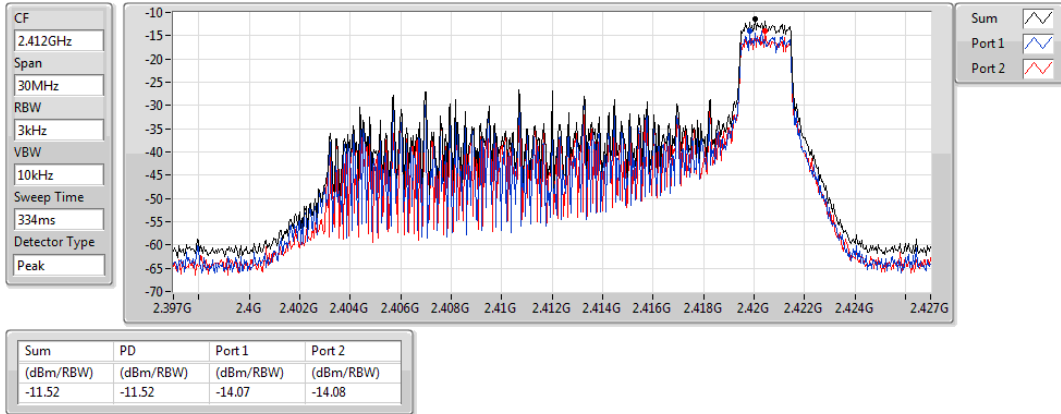
2462MHz



802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX

PSD

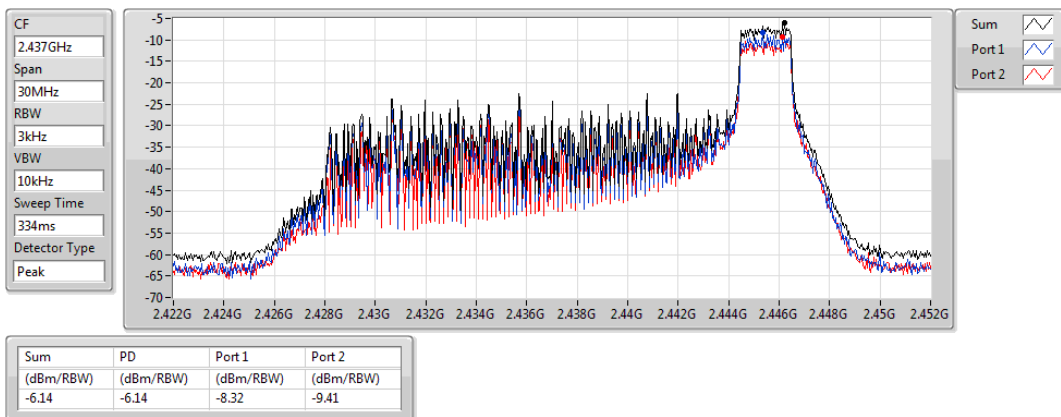
2412MHz



802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX

PSD

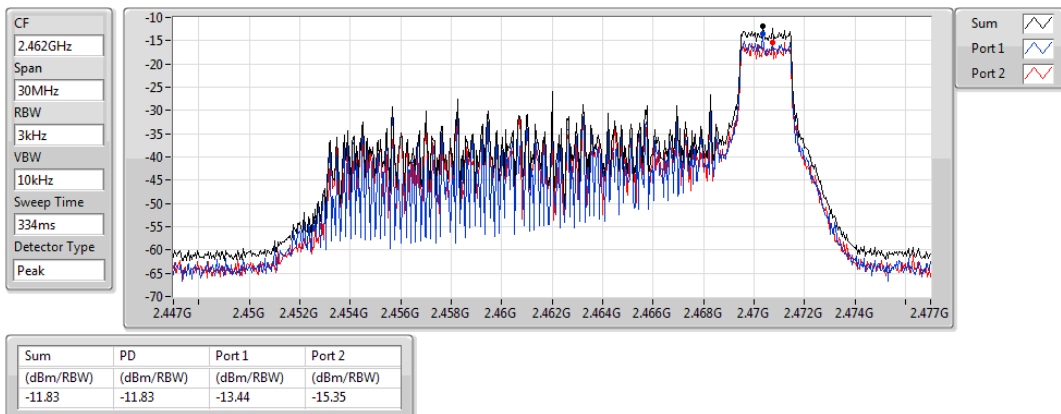
2437MHz



802.11ax HEW20_RU26_Index8_Nss1,(MCS0)_2TX

PSD

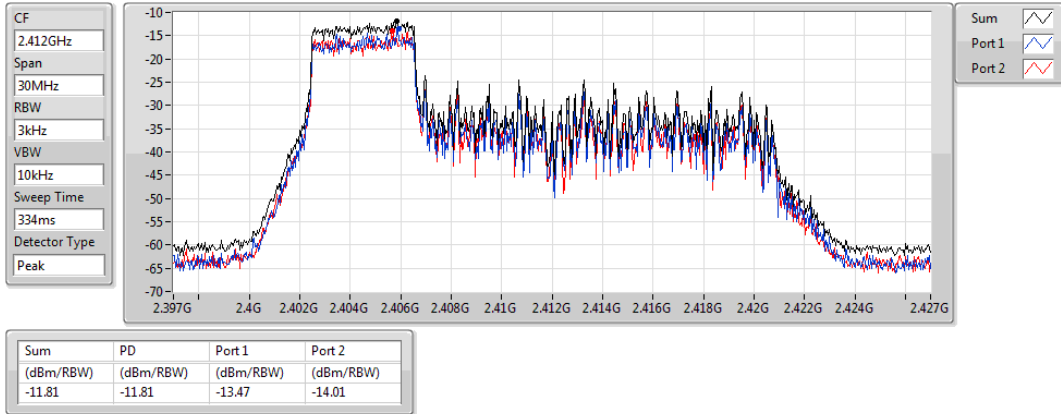
2462MHz



802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX

PSD

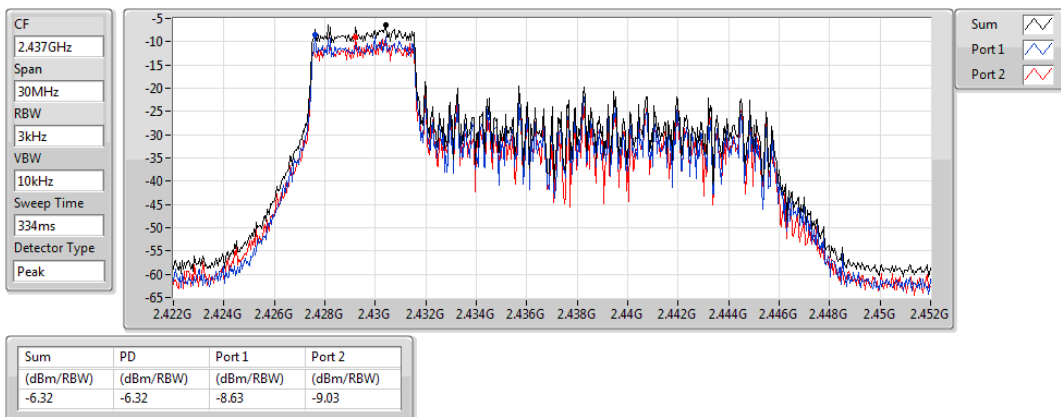
2412MHz



802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX

PSD

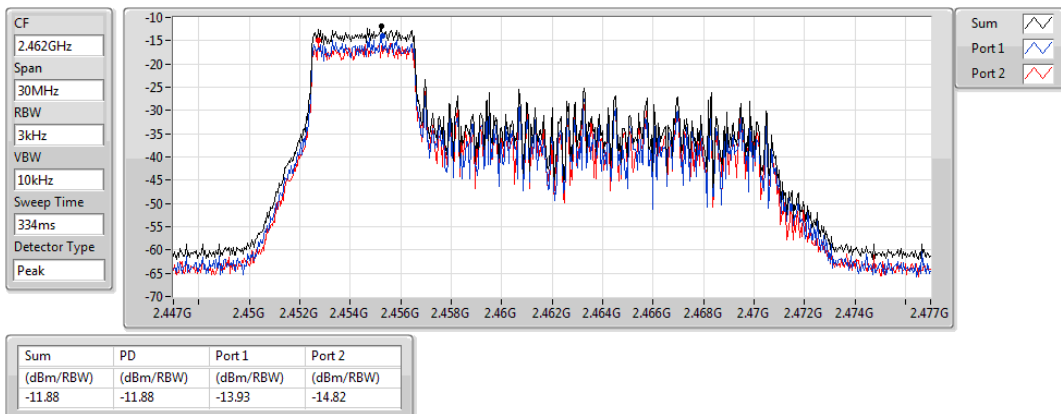
2437MHz



802.11ax HEW20_RU52_Index37_Nss1,(MCS0)_2TX

PSD

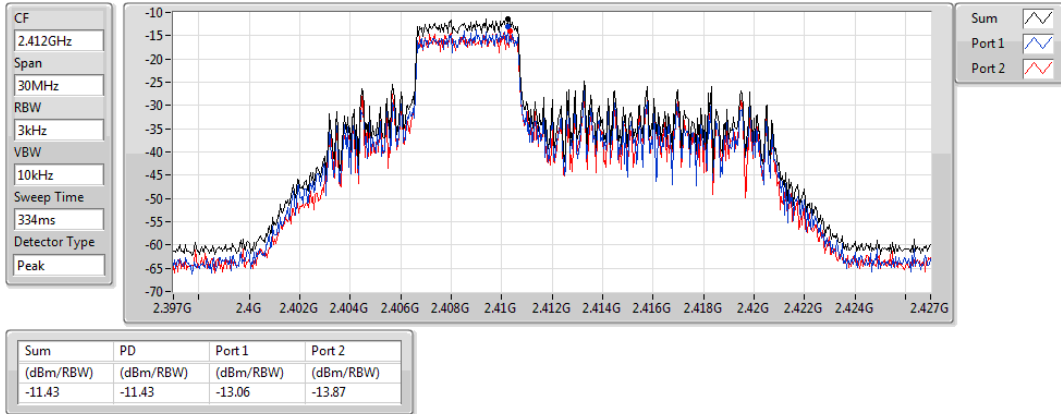
2462MHz



802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX

PSD

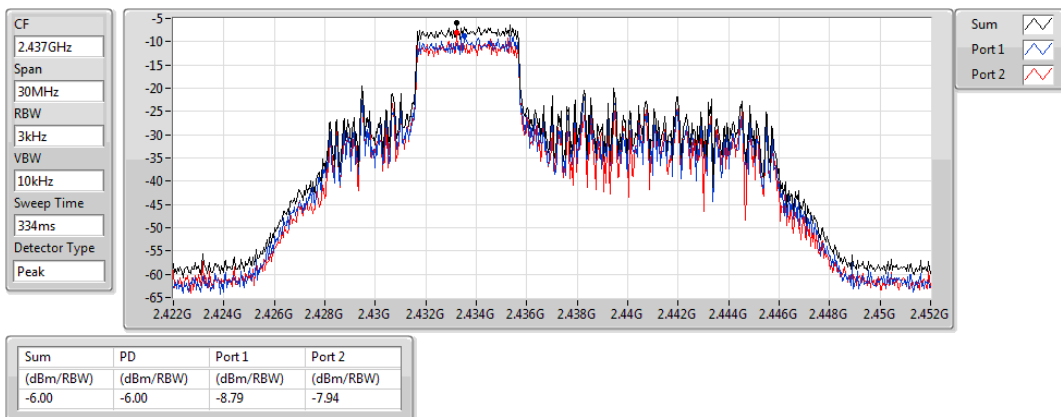
2412MHz



802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX

PSD

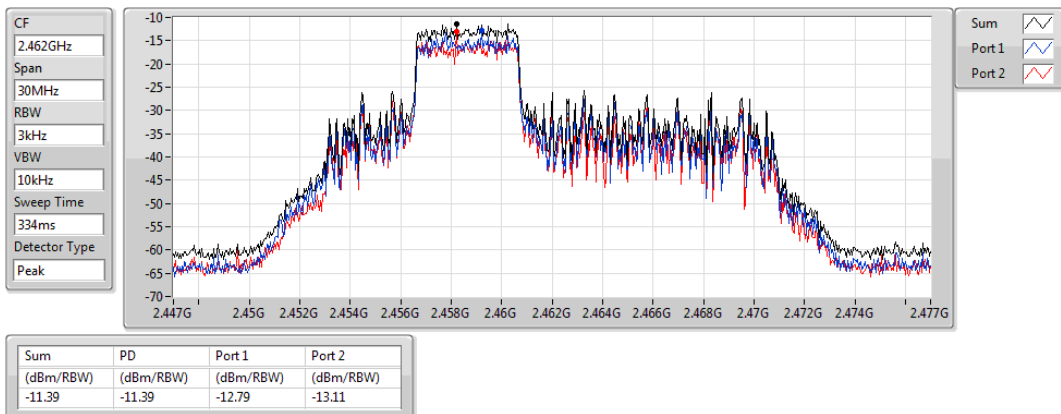
2437MHz



802.11ax HEW20_RU52_Index38_Nss1,(MCS0)_2TX

PSD

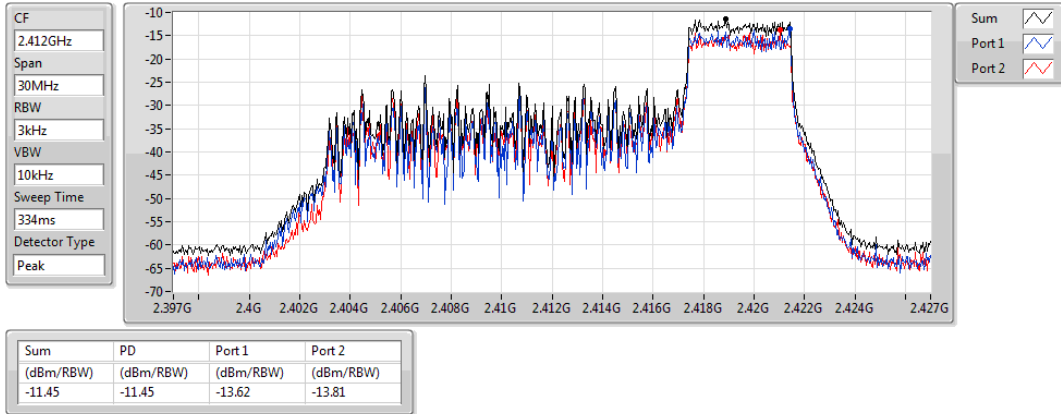
2462MHz



802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX

PSD

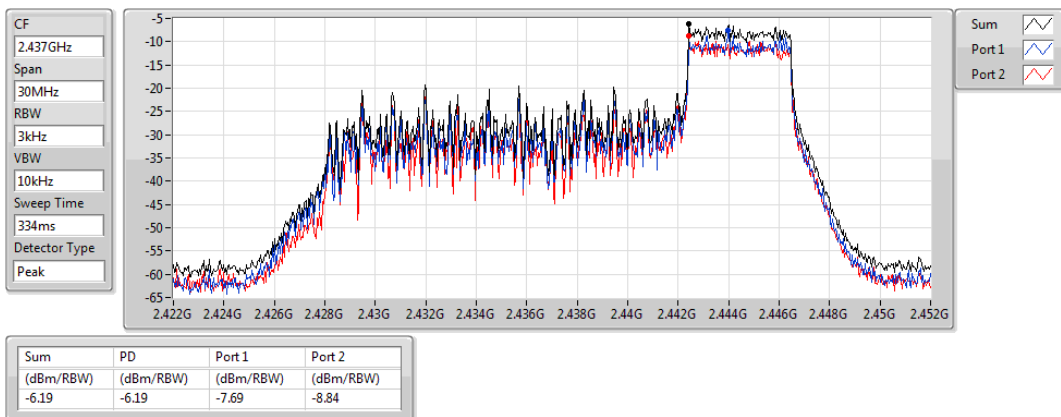
2412MHz



802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX

PSD

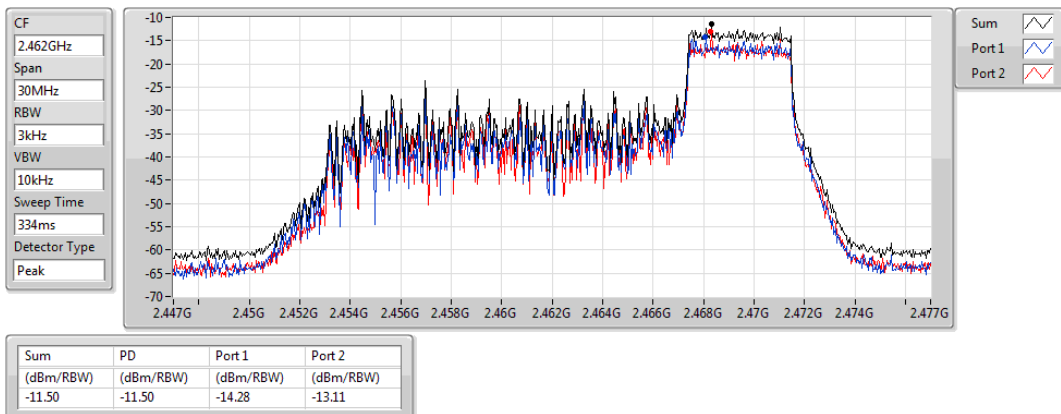
2437MHz



802.11ax HEW20_RU52_Index40_Nss1,(MCS0)_2TX

PSD

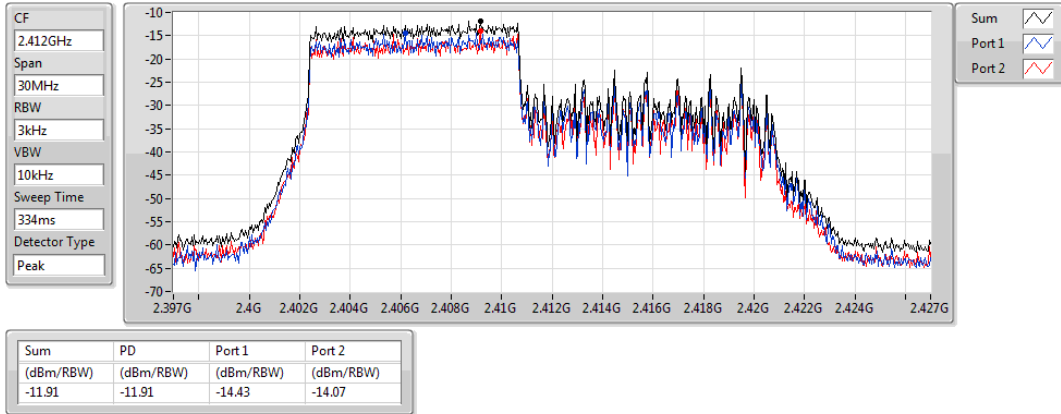
2462MHz



802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX

PSD

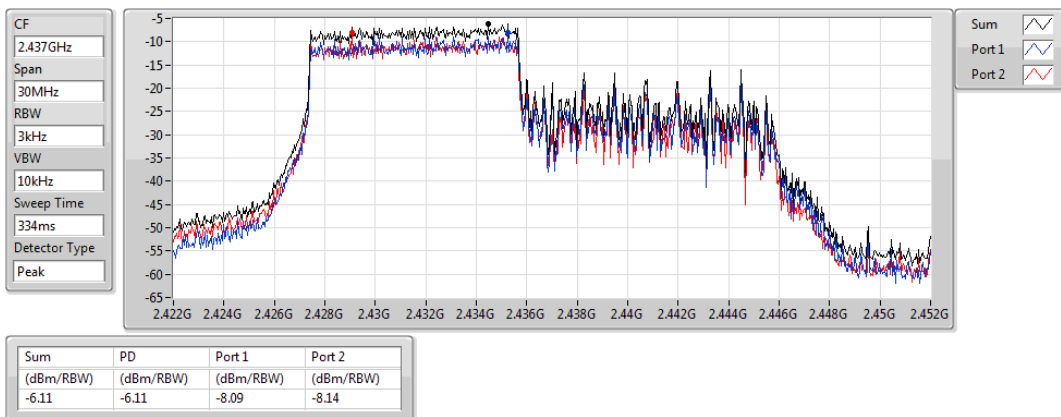
2412MHz



802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX

PSD

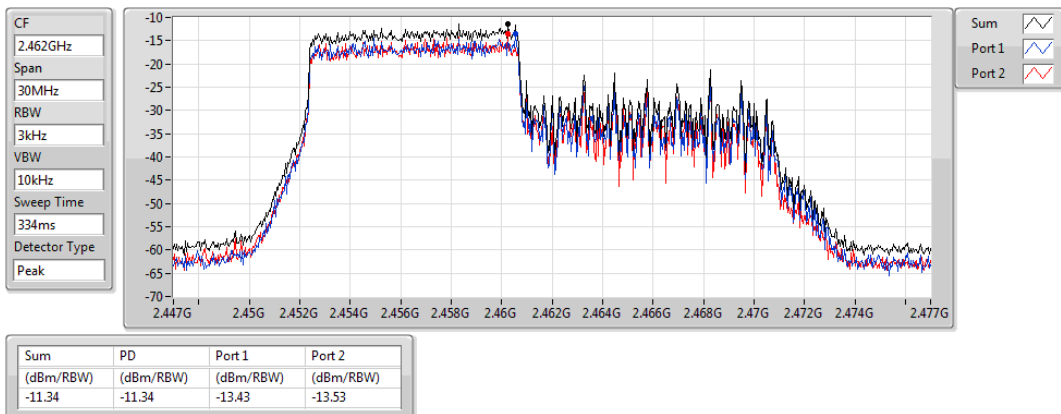
2437MHz



802.11ax HEW20_RU106_Index53_Nss1,(MCS0)_2TX

PSD

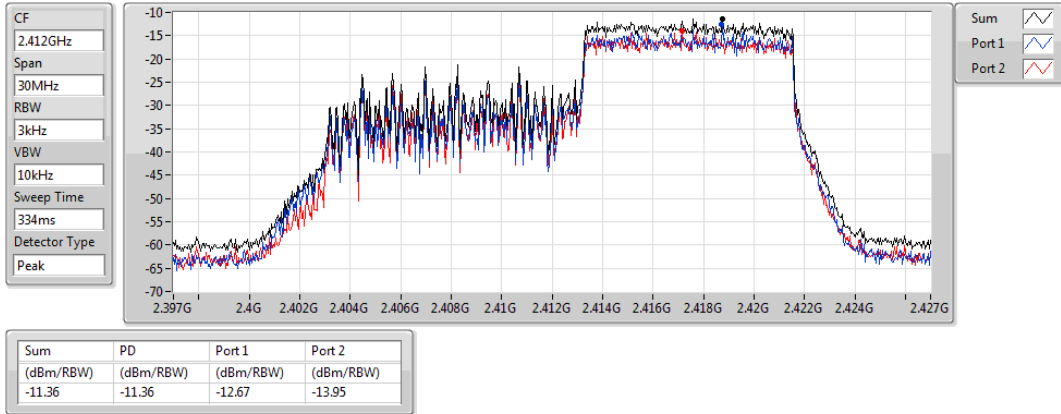
2462MHz



802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX

PSD

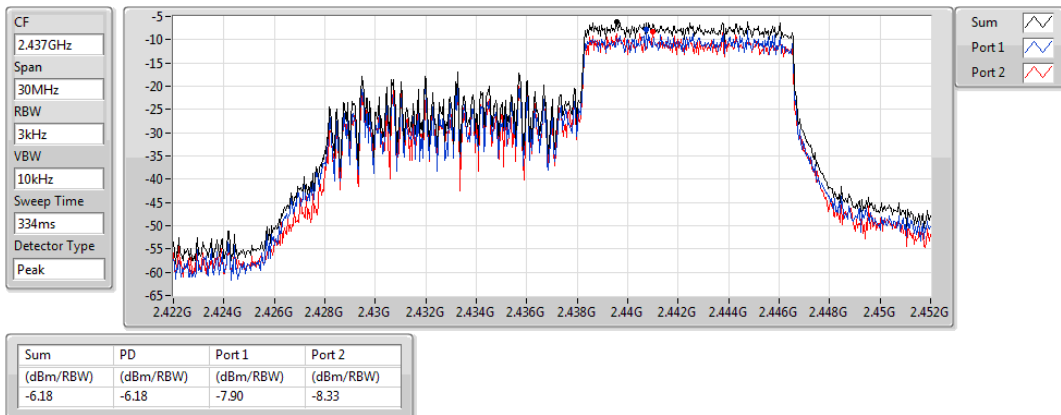
2412MHz



802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX

PSD

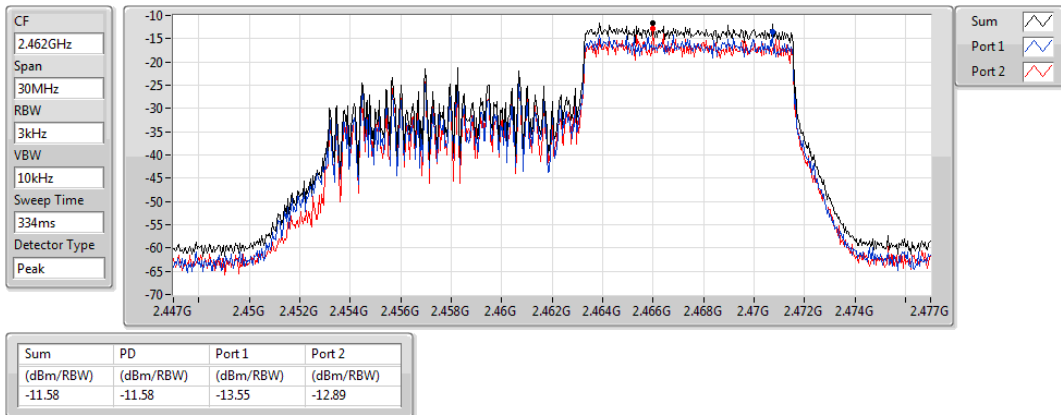
2437MHz



802.11ax HEW20_RU106_Index54_Nss1,(MCS0)_2TX

PSD

2462MHz



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

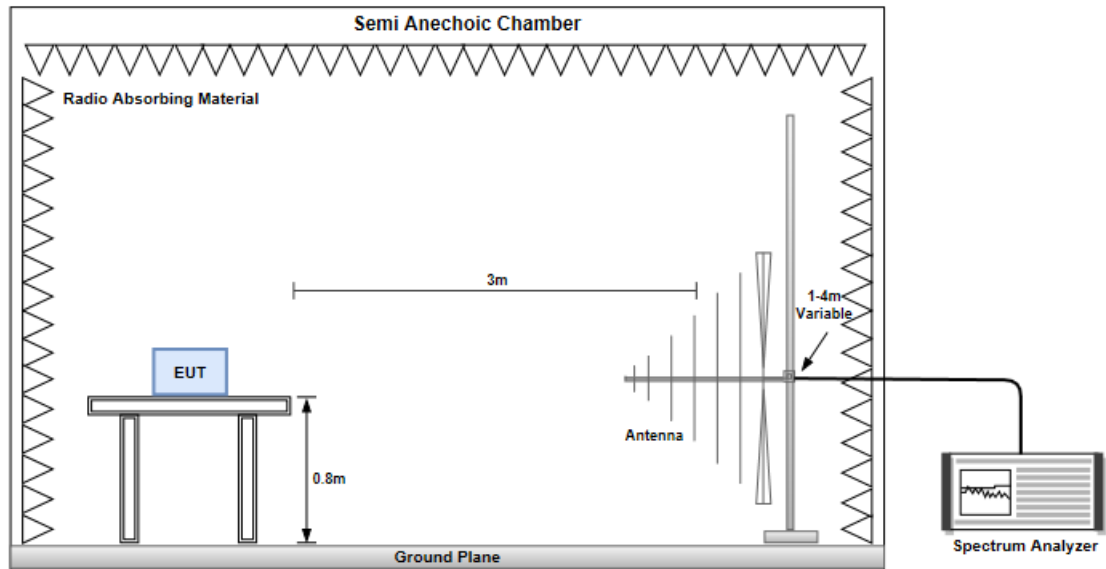
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

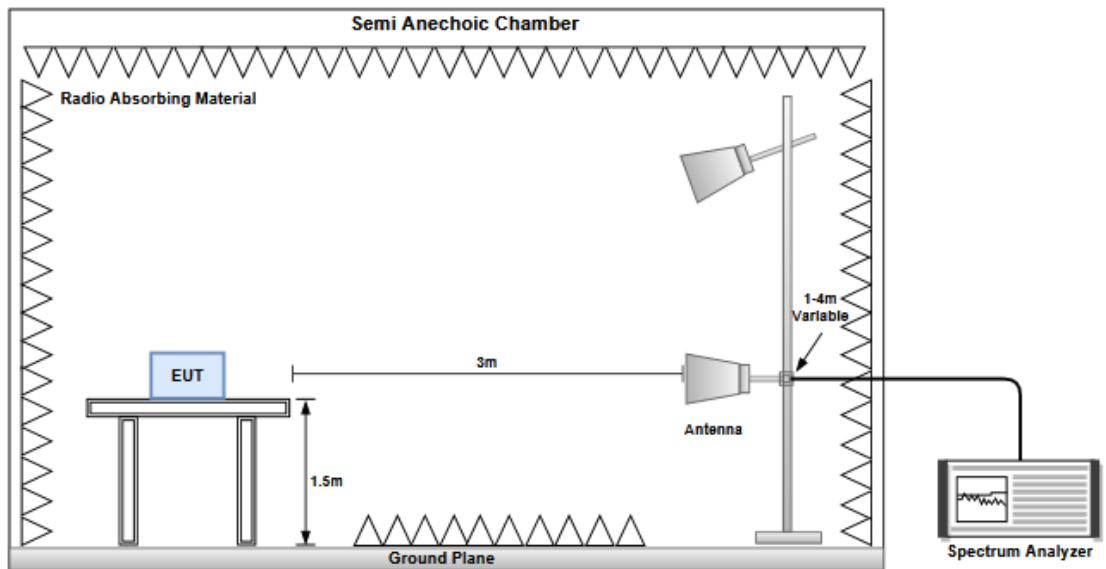
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz

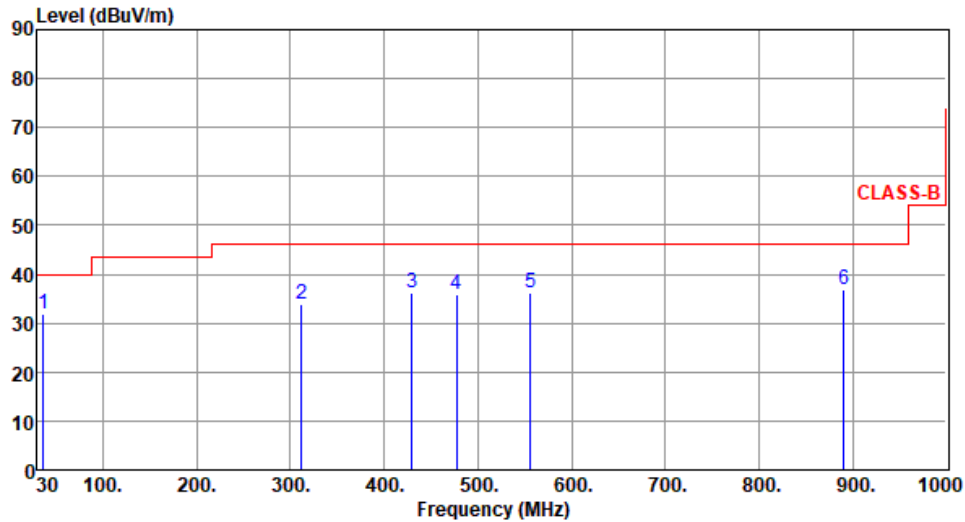


3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	ax HE20_RU242	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	1
Test By :Akun Chung Temperature(°C):22 Humidity(%):65			
Level (dBuV/m) <			

Modulation	ax HE20_RU242	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	1

Test By :Akun Chung Temperature(°C):22 Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	36.79	31.95	40.00	-8.05	40.96	-9.01	Peak	---	---
2	312.27	34.02	46.00	-11.98	41.68	-7.66	Peak	---	---
3	429.64	36.31	46.00	-9.69	41.13	-4.82	Peak	---	---
4	477.17	35.78	46.00	-10.22	39.50	-3.72	Peak	---	---
5	555.74	36.23	46.00	-9.77	38.44	-2.21	Peak	---	---
6	890.39	36.87	46.00	-9.13	33.25	3.62	Peak	---	---

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

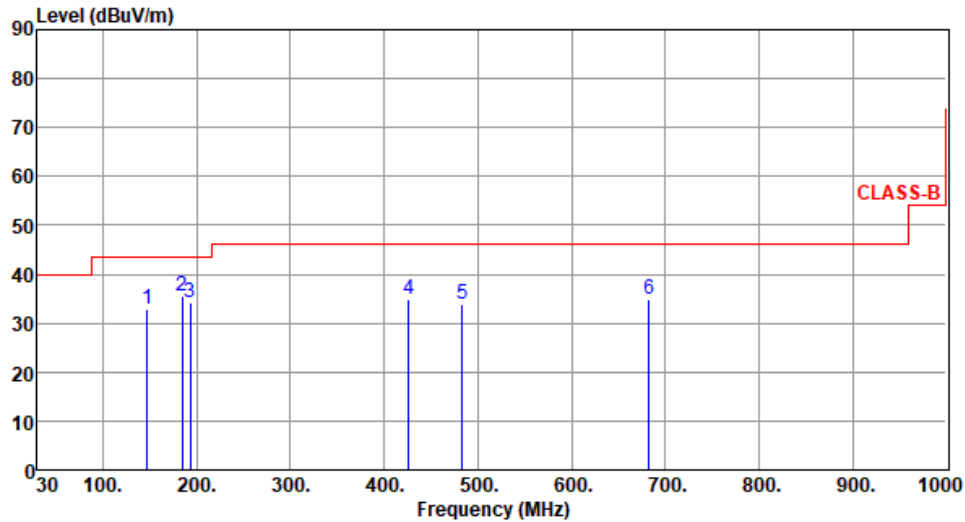
*Factor includes antenna factor , cable loss and amplifier gain

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

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

Modulation	ax HE20_RU242	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	2

Test By :Akun Chung Temperature(°C):22 Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	147.32	32.98	43.50	-10.52	41.83	-8.85	Peak	---	---
2	184.15	35.44	43.50	-8.06	46.22	-10.78	Peak	---	---
3	193.54	34.28	43.50	-9.22	45.98	-11.70	Peak	---	---
4	425.89	34.95	46.00	-11.05	39.93	-4.98	Peak	---	---
5	483.66	33.85	46.00	-12.15	37.50	-3.65	Peak	---	---
6	682.24	34.87	46.00	-11.13	34.95	-0.08	Peak	---	---

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

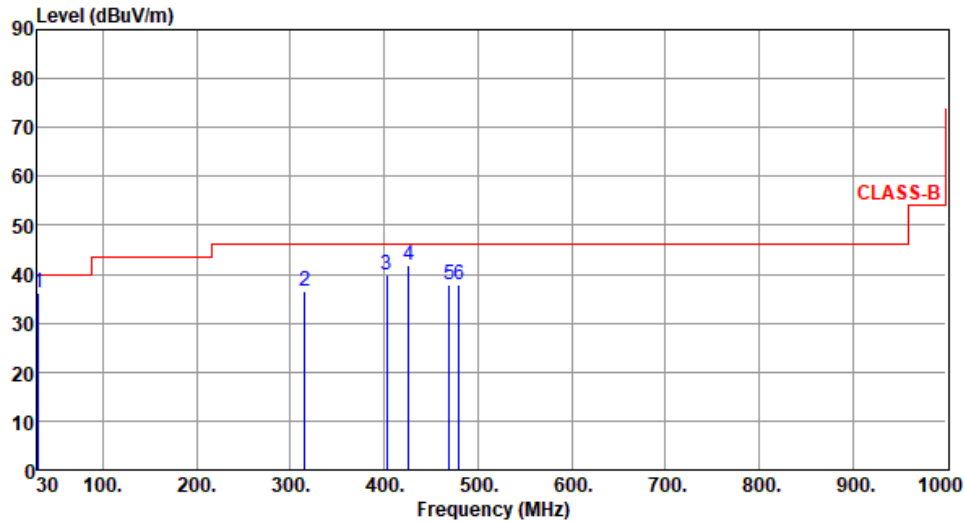
*Factor includes antenna factor , cable loss and amplifier gain

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

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

Modulation	ax HE20_RU242	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	2

Test By :Akun Chung Temperature(°C):22 Humidity(%):65



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	31.55	36.22	40.00	-3.78	45.84	-9.62	Peak	---	---
2	315.54	36.57	46.00	-9.43	44.10	-7.53	Peak	---	---
3	403.24	39.85	46.00	-6.15	45.58	-5.73	Peak	---	---
4	426.58	41.87	46.00	-4.13	46.83	-4.96	Peak	---	---
5	469.88	37.75	46.00	-8.25	41.64	-3.89	Peak	---	---
6	479.63	37.93	46.00	-8.07	41.59	-3.66	Peak	---	---

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

*Factor includes antenna factor , cable loss and amplifier gain

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

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

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

Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBUV/m) <			

Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBUV/m) </			

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m)			

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m) <			

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m) <			

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBUV/m) <			

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

Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m) <			

Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBUV/m)			

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m) <			

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m)			

Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m) </			

Modulation	11g	Test Freq. (MHz)	2462
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):67			
Level (dBuV/m) <			

3.5.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for ax HE20

Modulation	ax HE20		Test Freq. (MHz)		2412	
Polarization	Horizontal					
Test By :Akun Chung Temperature(°C):22 Humidity(%):64						
Level (dBuV/m)						

Modulation	ax HE20	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):22 Humidity(%):64			
Level (dBUV/m) <			

Modulation	ax HE20	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):22 Humidity(%):64			
Level (dBuV/m)			

Modulation	ax HE20	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):22 Humidity(%):64			
Level (dBuV/m)			

Modulation	ax HE20	Test Freq. (MHz)	2462
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):22 Humidity(%):64			
Level (dBuV/m)			

Modulation	ax HE20	Test Freq. (MHz)	2462
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):22 Humidity(%):64			
Level (dBuV/m) <			

3.5.8 RSE Band Edge_11ax Partial RU mode

Modulation	ax HE20_RU26 index 0		Test Freq. (MHz)	2412	
Polarization	Horizontal				
Test By :Akun Chung Temperature(°C):23 Humidity(%):66					
Level (dBUV/m) </					

Modulation	ax HE20_RU26 index 0		Test Freq. (MHz)	2412	
Polarization	Vertical				
Test By :Akun Chung Temperature(°C):23 Humidity(%):66					
Level (dBuV/m)					

Modulation	ax HE20_RU52 index 37		Test Freq. (MHz)		2412	
Polarization	Horizontal					
Test By :Akun Chung Temperature(°C):23 Humidity(%):66						
Level (dBuV/m) <						

Modulation	ax HE20_RU52 index 37		Test Freq. (MHz)	2412	
Polarization	Vertical				
Test By :Akun Chung Temperature(°C):23 Humidity(%):66					
Level (dBuV/m)					

Modulation	ax HE20_RU106 index 53		Test Freq. (MHz)		2412	
Polarization	Horizontal					
Test By :Akun Chung Temperature(°C):23 Humidity(%):66						
Level (dBUV/m) </						

Modulation	ax HE20_RU106 index 53		Test Freq. (MHz)		2412	
Polarization	Vertical					
Test By :Akun Chung Temperature(°C):23 Humidity(%):66						
Level (dBuV/m) </						

Modulation	ax HE20_RU26 index 8		Test Freq. (MHz)		2462	
Polarization	Horizontal					
Test By :Akun Chung Temperature(°C):23 Humidity(%):66						
Level (dBuV/m) <						

Modulation	ax HE20_RU26 index 8		Test Freq. (MHz)	2462	
Polarization	Vertical				
Test By :Akun Chung Temperature(°C):23 Humidity(%):66					
Level (dBuV/m) </					

Modulation	ax HE20_RU52 index 40		Test Freq. (MHz)		2462	
Polarization	Horizontal					
Test By :Akun Chung Temperature(°C):23 Humidity(%):66						
Level (dBUV/m)						

Modulation	ax HE20_RU52 index 40		Test Freq. (MHz)	2462	
Polarization	Vertical				
Test By :Akun Chung Temperature(°C):23 Humidity(%):66					
Level (dBuV/m)					

Modulation	ax HE20_RU106 index 54		Test Freq. (MHz)	2462	
Polarization	Horizontal				
Test By :Akun Chung Temperature(°C):23 Humidity(%):66					
Level (dBUV/m)					

Modulation	ax HE20_RU106 index 54		Test Freq. (MHz)	2462	
Polarization	Vertical				
Test By :Akun Chung Temperature(°C):23 Humidity(%):66					
Level (dBuV/m)					

3.6 Emissions in Non-Restricted Frequency Bands

3.6.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

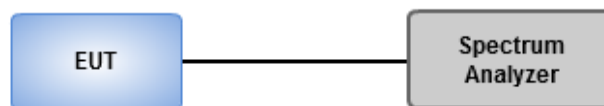
Reference level measurement

1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

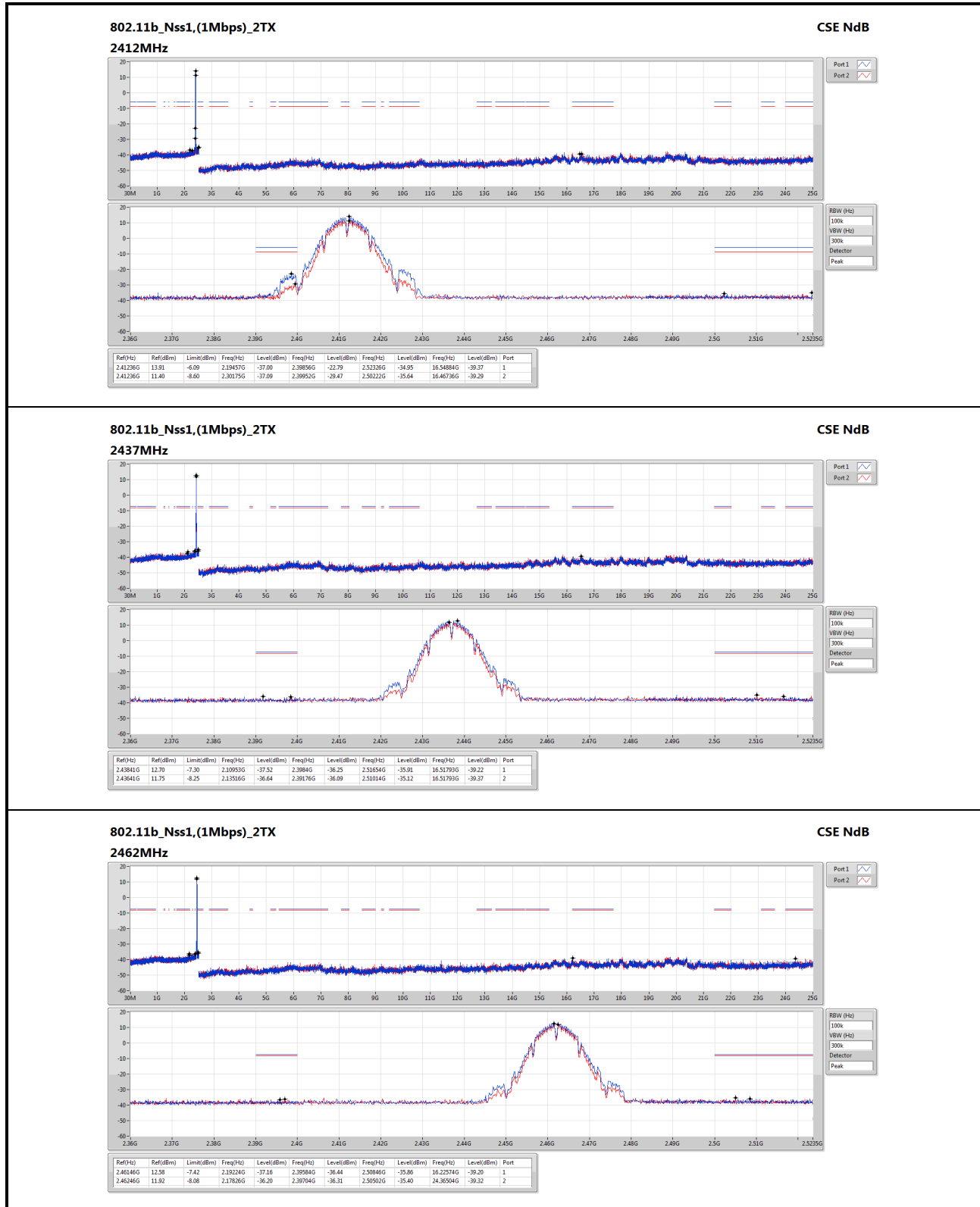
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

3.6.3 Test Setup



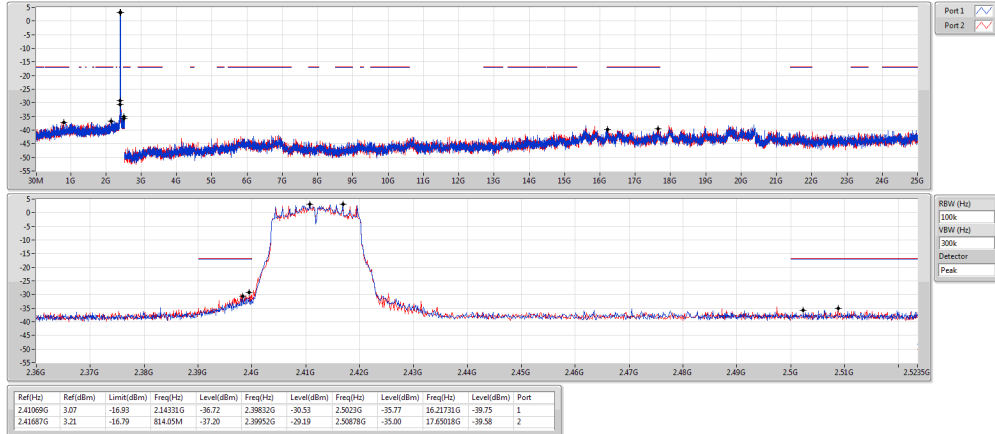
3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands

Ambient Condition	24°C / 66%	Tested By	Aska Huang
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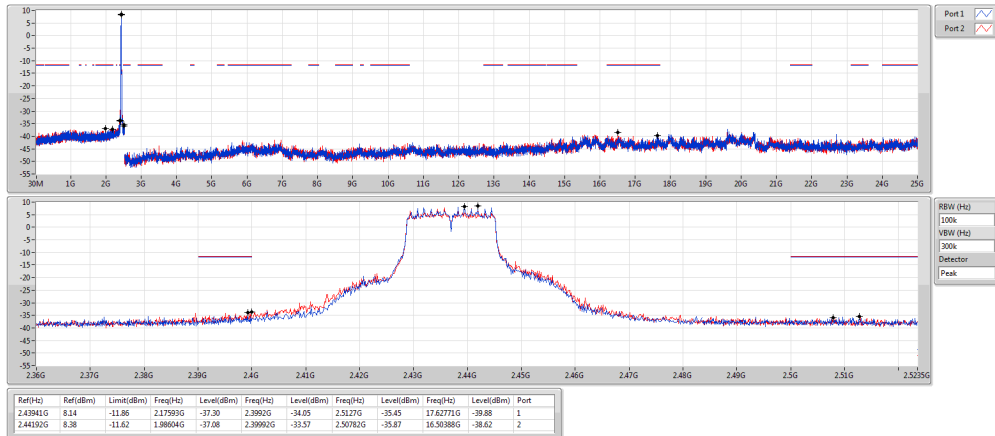
802.11g_Nss1,(6Mbps)_2TX
2412MHz

CSE NdB



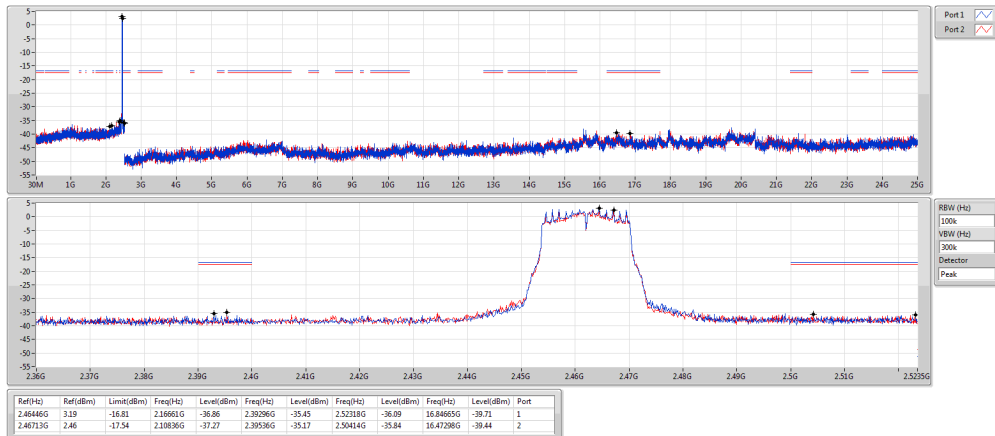
802.11g_Nss1,(6Mbps)_2TX
2437MHz

CSE NdB



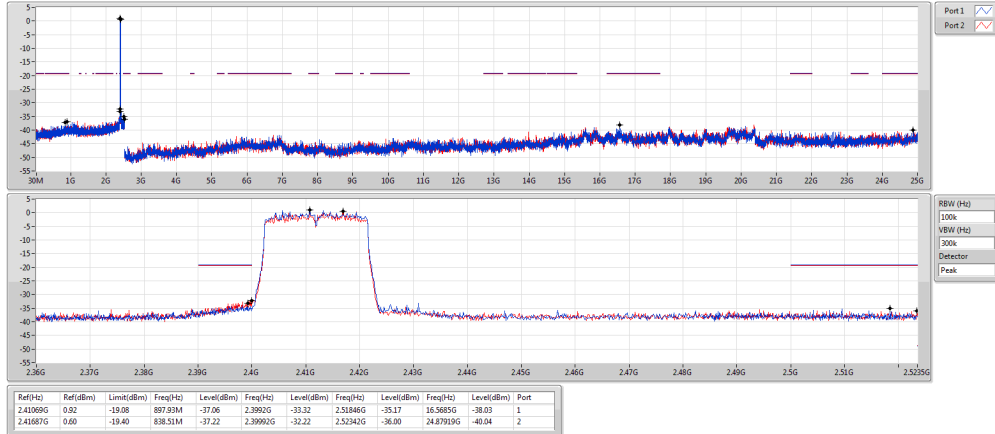
802.11g_Nss1,(6Mbps)_2TX
2462MHz

CSE NdB



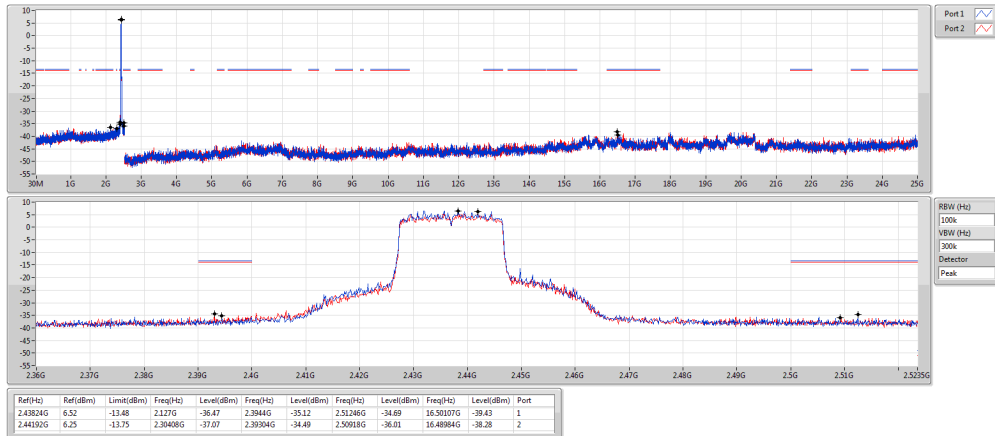
802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX
2412MHz

CSE NdB



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX
2437MHz

CSE NdB



802.11ax HEW20_RU242_Index61_Nss1,(MCS0)_2TX
2462MHz

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 Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <http://www.icertifi.com.tw>.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou
District, New Taipei City, Taiwan
(R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)
No.2-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 333, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666

Fax: 886-3-318-0345

Email: ICC_Service@icertifi.com.tw

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