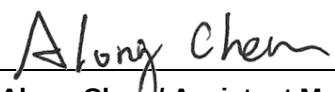


FCC Test Report

FCC ID : I88WX3310-1
Equipment : AX5400 Gigabit Wireless Extender
Model No. : WX3310-B1
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 : Aug. 26, 2022
Tested Date : Sep. 06 ~ Oct. 07, 2022

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:


Along Chen / Assistant Manager

Approved by:

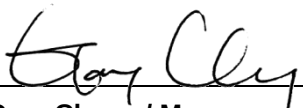

Gary Chang / Manager

Table of Contents

1	GENERAL DESCRIPTION	5
1.1	Information.....	5
1.2	Local Support Equipment List	10
1.3	Test Setup Chart	10
1.4	The Equipment List	11
1.5	Test Standards	12
1.6	Reference Guidance	12
1.7	Deviation from Test Standard and Measurement Procedure.....	12
1.8	Measurement Uncertainty	12
2	TEST CONFIGURATION.....	13
2.1	Testing Facility	13
2.2	The Worst Test Modes and Channel Details	13
3	TRANSMITTER TEST RESULTS	14
3.1	6dB and Occupied Bandwidth.....	14
3.2	Conducted Output Power	15
3.3	Power Spectral Density	16
3.4	Unwanted Emissions into Restricted Frequency Bands	17
3.5	Emissions in Non-Restricted Frequency Bands.....	19
3.6	AC Power Line Conducted Emissions	20
4	TEST LABORATORY INFORMATION	21

Appendix A. 6dB and Occupied Bandwidth

Appendix B. Conducted Output Power

Appendix C. Power Spectral Density

Appendix D. Unwanted Emissions into Restricted Frequency Bands

Appendix E. Emissions in Non-Restricted Frequency Bands

Appendix F. AC Power Line Conducted Emissions

Release Record

Report No.	Version	Description	Issued Date
FR282601AC	Rev. 01	Initial issue	Oct. 26, 2022

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emission	[dBuV]: 0.592MHz 37.27 (Margin -8.73dB) - AV	Pass
15.247(d) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 2390.00MHz 73.68 (Margin -0.32dB) - PK	Pass
15.247(b)(3)	Conducted Output Power	Max Power [dBm]: Non-beamforming mode 29.67 Beamforming mode 28.70	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	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15
2400-2483.5	ax (HE20)	2412-2462	1-11 [11]	2	MCS 0-11
2400-2483.5	ax (HE40)	2422-2452	3-9 [7]	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.
 Note 3: 802.11n/ax supports beamforming function.

1.1.2 Antenna Details

Ant. Model	Type	Connector	Operating Frequencies (MHz) / Antenna Gain (dBi)				
			2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850
Ant1 (RFPCA242309IMLB901)	PIFA	ipex	2.99	2.33	2.99	4.08	4.06
Ant2 (RFPCA242311IMLB901)	PIFA	ipex	3.28	1.27	1.18	1.51	2.11
Ant3 (RFPCA221116IM5B901)	PIFA	ipex	--	5.01	4.1	3.76	3.67
Ant4 (RFPCA232007IMLB901)	PIFA	ipex	--	4.09	3.32	2.64	4.21

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	AC adapter	Brand: MNC Model: MAUS-1201501801 I/P: 100-240Vac, 50/60Hz, 0.5A O/P: 12Vdc, 1.5A Power Line: 1.5m non-shielded without core
2	RJ45 cable	Brand: EKSON Model: HQ01-C434 1.8m non-shielded without core

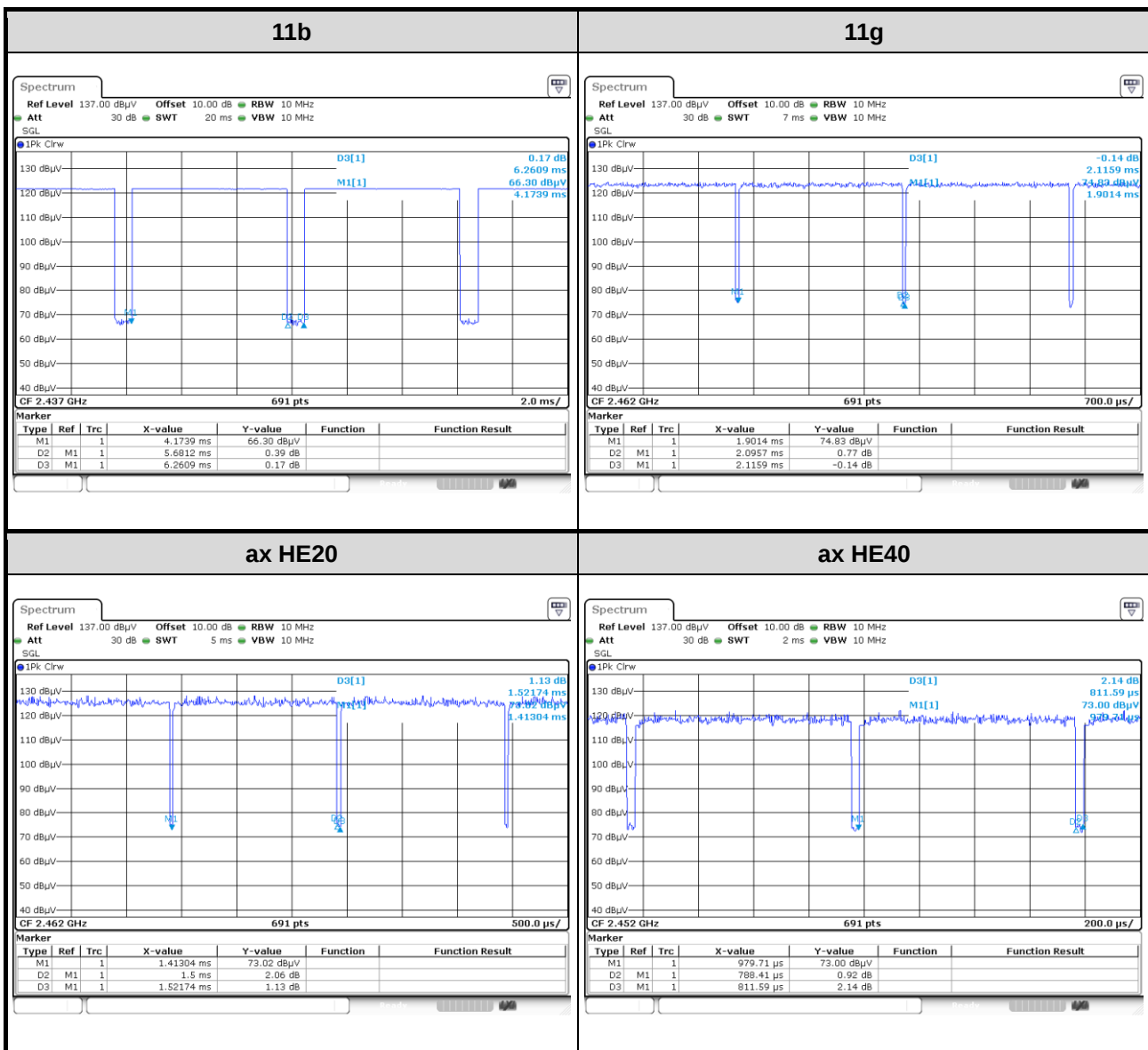
1.1.5 Channel List

Frequency band (MHz)		2400~2483.5	
802.11 b / g / n HT20 / ax HE20		802.11n HT40 / ax HE40	
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

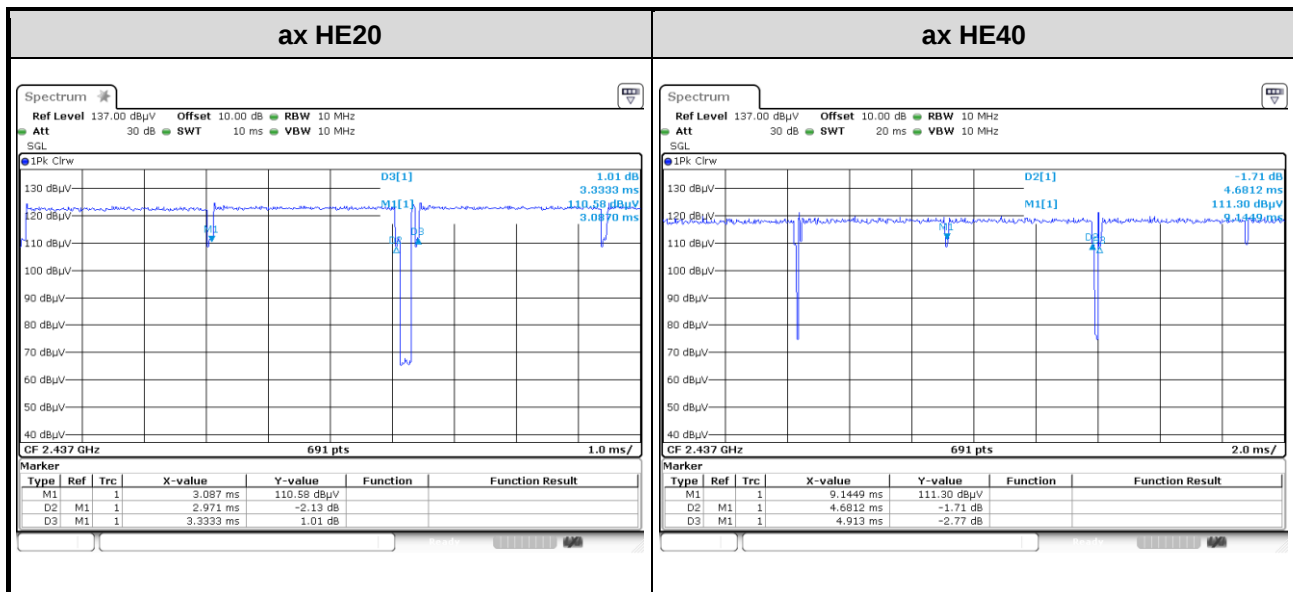
Non-beamforming mode

Test Tool	accessMTool, version: 3.2.1.5		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	90.74%	0.42
	11g	99.05%	0.04
	ax HE20	98.57%	0.06
	ax HE40	97.14%	0.13



Beamforming mode

Test Tool	accessMTool, version: 3.2.1.5		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	ax HE20	89.13%	0.50
	ax HE40	95.28%	0.21



1.1.7 Power Index of Test Tool

Non-beamforming mode

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	104
11b	2437	104
11b	2462	102
11g	2412	78
11g	2437	104
11g	2462	80
ax HE20	2412	76
ax HE20	2437	102
ax HE20	2462	74
ax HE40	2422	76
ax HE40	2437	82
ax HE40	2452	74

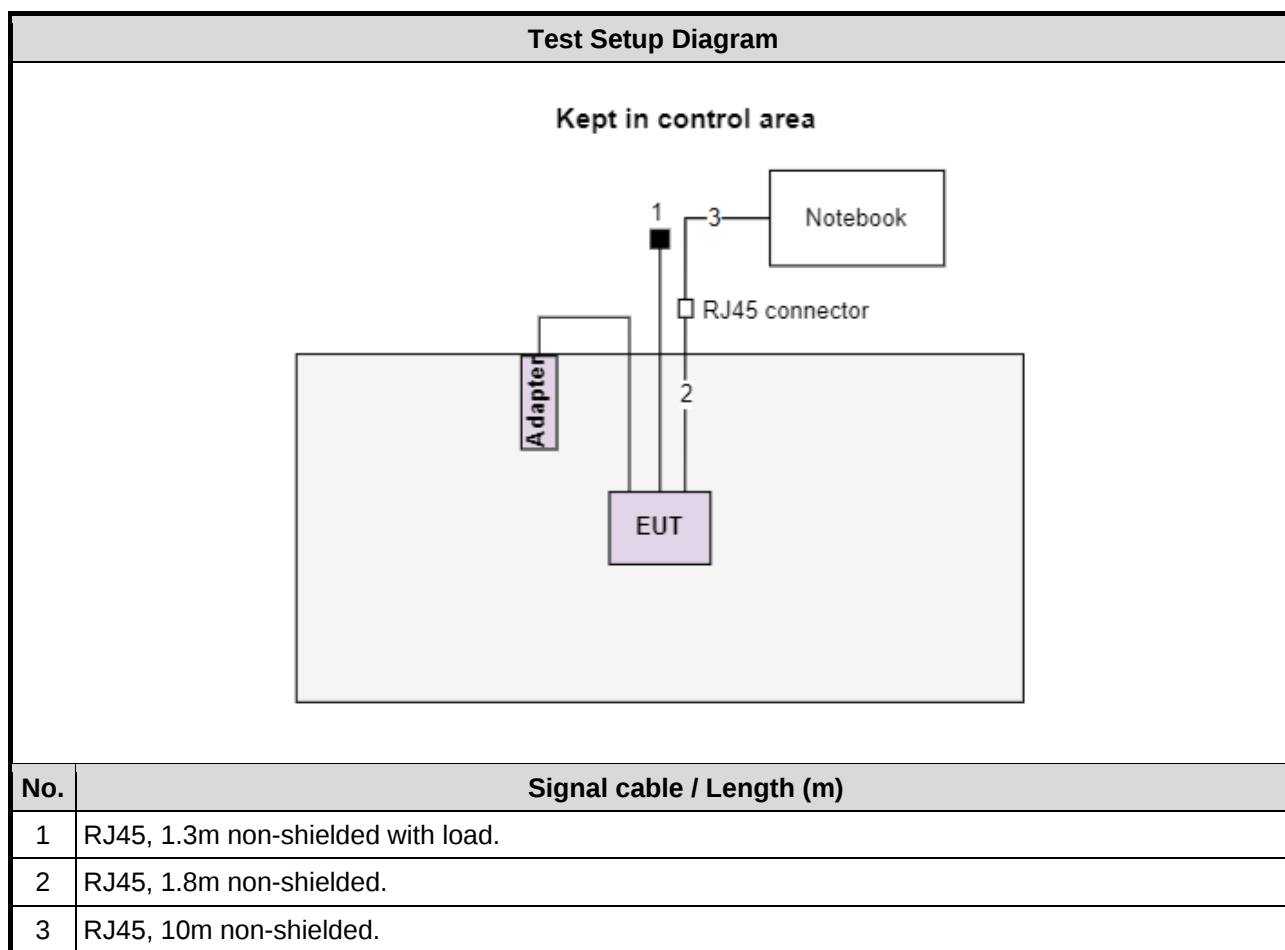
Beamforming mode

Modulation Mode	Test Frequency (MHz)	Power Index
ax HE20	2412	76
ax HE20	2437	102
ax HE20	2462	74
ax HE40	2422	76
ax HE40	2437	82
ax HE40	2452	74

1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E6440	DoC	---
2	RJ45 Load	---	---	---	---

1.3 Test Setup Chart



1.4 The Equipment List

Test Item	Radiated Emission below 1GHz				
Test Site	966 chamber1 / (03CH01-WS)				
Tested Date	Sep. 06 ~ Sep. 23, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 15, 2022	Mar. 14, 2023
Spectrum Analyzer	R&S	FSV40	101498	Nov. 29, 2021	Nov. 28, 2022
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 08, 2021	Nov. 07, 2022
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Aug. 03, 2022	Aug. 02, 2023
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Dec. 03, 2021	Dec. 02, 2022
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2021	Nov. 03, 2022
Preamplifier	EMC	EMC02325	980225	Jun. 28, 2022	Jun. 27, 2023
Preamplifier	EMC	EMC118A45SE	980898	Jul. 16, 2022	Jul. 15, 2023
Preamplifier	EMC	EMC184045B	980192	Jul. 08, 2022	Jul. 07, 2023
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 05, 2021	Oct. 04, 2022
LF cable 3M	Woken	CFD400NL-LW	CFD400NL-001	Oct. 05, 2021	Oct. 04, 2022
LF cable 11M	EMC	EMCCFD400-NW-N W-11000	200801	Oct. 05, 2021	Oct. 04, 2022
LF cable 1M	EMC	EMCCFD400-NM-N M-1000	160502	Oct. 05, 2021	Oct. 04, 2022
RF Cable	EMC	EMC104-35M-35M- 8000	210920	Oct. 05, 2021	Oct. 04, 2022
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Oct. 05, 2021	Oct. 04, 2022
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Oct. 07, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101910	Apr. 18, 2022	Apr. 17, 2023
Power Meter	Anritsu	ML2495A	1241002	Nov. 07, 2021	Nov. 06, 2022
Power Sensor	Anritsu	MA2411B	1207366	Nov. 07, 2021	Nov. 06, 2022
Measurement Software	Sporton	SENSE-15247_DTS	V5.10.7.18	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Sep. 27, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 16, 2022	Feb. 15, 2023
LISN	R&S	ENV216	101579	Apr. 21, 2022	Apr. 20, 2023
LISN (Support Unit)	SCHWARZBECK	NSLK 8127	8127667	Jan. 07, 2022	Jan. 06, 2023
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 19, 2021	Oct. 18, 2022
50 ohm terminal (Support Unit)	NA	50	04	May 10, 2022	May 09, 2023
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

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

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

2 Test Configuration

2.1 Testing Facility

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

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

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Non-beamforming mode				
AC Power Line Conducted Emission	11b	2412	1 Mbps	---
Unwanted Emissions ≤ 1GHz	11b	2412	1 Mbps	---
Unwanted Emissions >1GHz	11b	2412 / 2437 / 2462	1 Mbps	---
Conducted Output Power	11g	2412 / 2437 / 2462	6 Mbps	
6dB bandwidth	ax HE20	2412 / 2437 / 2462	MCS 0	
Power Spectral Density	ax HE40	2422 / 2437 / 2452	MCS 0	
Beamforming mode				
Conducted Output Power	ax HE20	2412 / 2437 / 2462	MCS 0	---
Power Spectral Density	ax HE40	2422 / 2437 / 2452	MCS 0	
NOTE:				
1. There are two ways to placed the EUT. One is wall-mounted, and the other is with stand. Two options had been covered during the pretest and found that the wall-mounted was the worst case for final test.				
2. Non-beamforming and beamforming mode had been covered during the pretest. The worst mode is Non-beamforming thus Non-beamforming is tested for all test items.				

3 Transmitter Test Results

3.1 6dB and Occupied Bandwidth

3.1.1 Limit of 6dB Bandwidth

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

3.1.2 Test Procedures

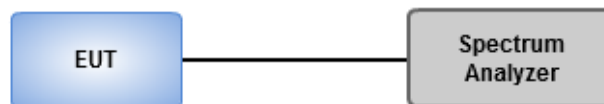
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set resolution bandwidth (RBW) = 1% ~ 5 % of OBW, Video bandwidth = 3 x RBW
2. Detector = Sample, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.1.3 Test Setup



3.1.4 Test Results

Ambient Condition	23°C / 65%	Tested By	Roger Lu
-------------------	------------	-----------	----------

Refer to Appendix A.

3.2 Conducted Output Power

3.2.1 Limit of Conducted Output Power

Conducted power shall not exceed 1Watt.

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

Antenna gain $> 6\text{dBi}$

Non Fixed, point to point operations.

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

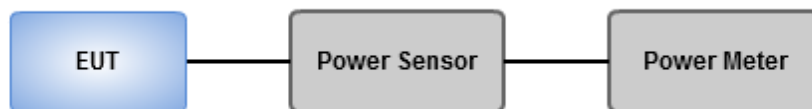
Fixed, point to point operations

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

3.2.2 Test Procedures

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

3.2.3 Test Setup



3.2.4 Test Results

Ambient Condition	23°C / 65%	Tested By	Roger Lu
-------------------	------------	-----------	----------

Refer to Appendix B.

3.3 Power Spectral Density

3.3.1 Limit of Power Spectral Density

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

3.3.2 Test Procedures

Peak PSD

1. Set the RBW = 3 kHz, VBW = 10 kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

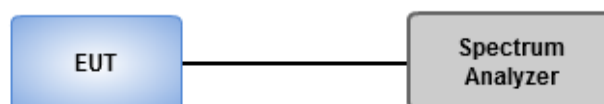
Average PSD, duty cycle $\geq 98\%$

1. Set the RBW = 30 kHz, VBW = 100 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Sweep time = auto couple.
4. Employ trace averaging (RMS) mode over a minimum of 100 traces.
5. Use the peak marker function to determine the maximum amplitude level.

Average PSD, duty cycle $< 98\%$

1. Set the RBW = 30 kHz, VBW = 100 kHz. Detector = RMS.
2. Set the sweep time to: ≥ 10 (number of measurement points in sweep) $\times$ (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.

3.3.3 Test Setup



3.3.4 Test Results

Ambient Condition	23°C / 65%	Tested By	Roger Lu
-------------------	------------	-----------	----------

Refer to Appendix C.

3.4 Unwanted Emissions into Restricted Frequency Bands

3.4.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

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

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

3.4.2 Test Procedures

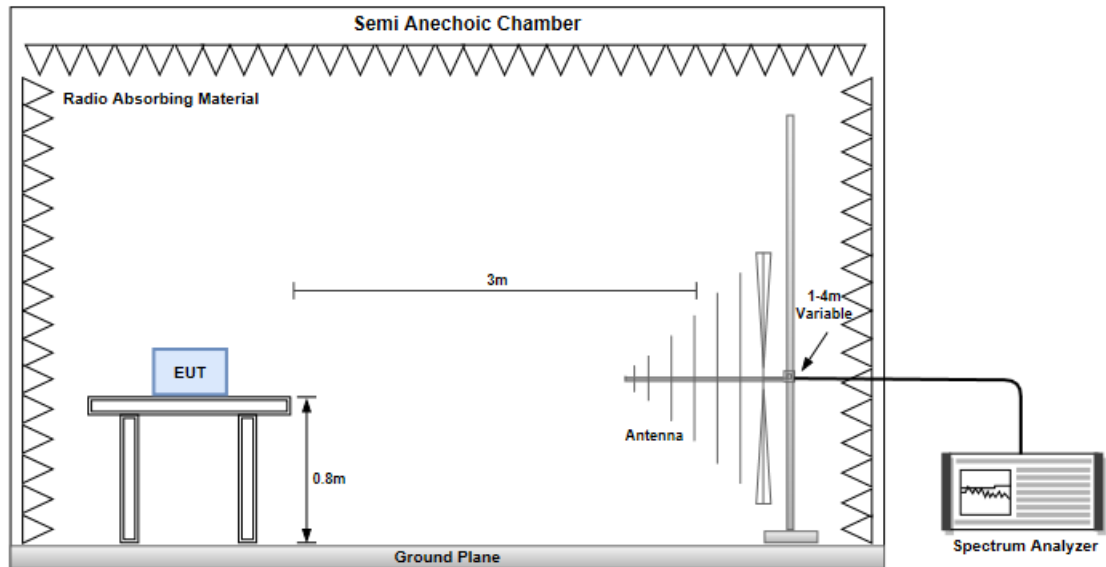
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

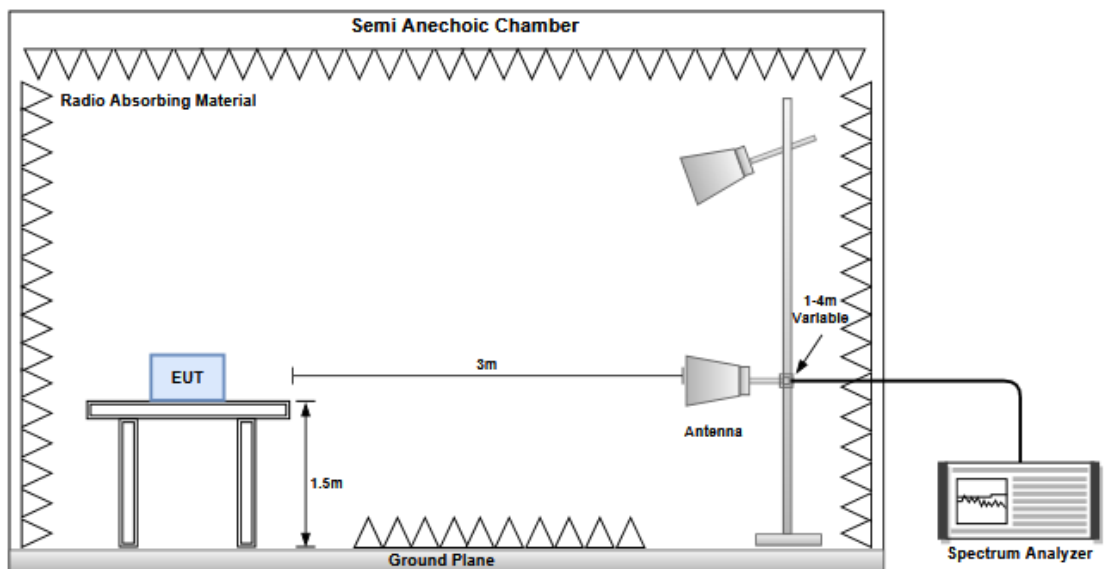
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.4.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.4.4 Test Results

Refer to Appendix D.

3.5 Emissions in Non-Restricted Frequency Bands

3.5.1 Emissions in Non-Restricted Frequency Bands Limit

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.5.2 Test Procedures

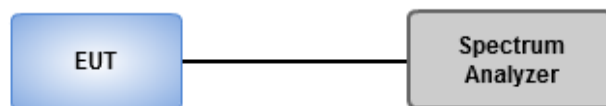
Reference level measurement

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

Emission level measurement

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

3.5.3 Test Setup



3.5.4 Test Results

Ambient Condition	23°C / 65%	Tested By	Roger Lu
-------------------	------------	-----------	----------

Refer to Appendix E.

3.6 AC Power Line Conducted Emissions

3.6.1 Limit of AC Power Line Conducted Emissions

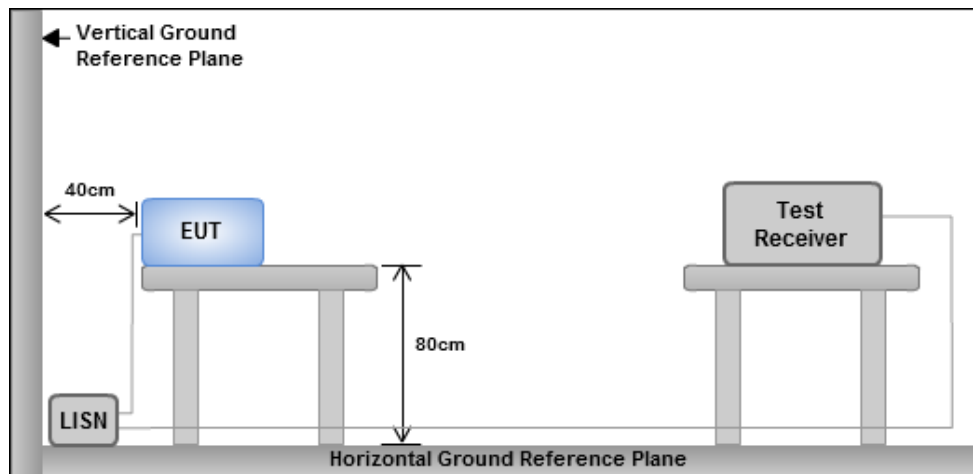
Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

Note 1: * Decreases with the logarithm of the frequency.

3.6.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

3.6.3 Test Setup



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

3.6.4 Test Results

Refer to Appendix F.

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

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

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

Linkou

Tel: 886-2-2601-1640

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

Kwei Shan

Tel: 886-3-271-8666

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

Kwei Shan Site II

Tel: 886-3-271-8640

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

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

Tel: 886-3-271-8666

Fax: 886-3-318-0345

Email: ICC_Service@icertifi.com.tw

==END==

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	7.55M	12.044M	12M0G1D	7.025M	11.719M
802.11g_Nss1,(6Mbps)_2TX	16.35M	18.441M	18M5D1D	16.3M	16.692M
802.11ax HEW20_Nss1,(MCS0)_2TX	18.975M	19.39M	19M4D1D	18.7M	18.991M
802.11ax HEW40_Nss1,(MCS0)_2TX	37.65M	37.681M	37M7D1D	36.85M	37.581M

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

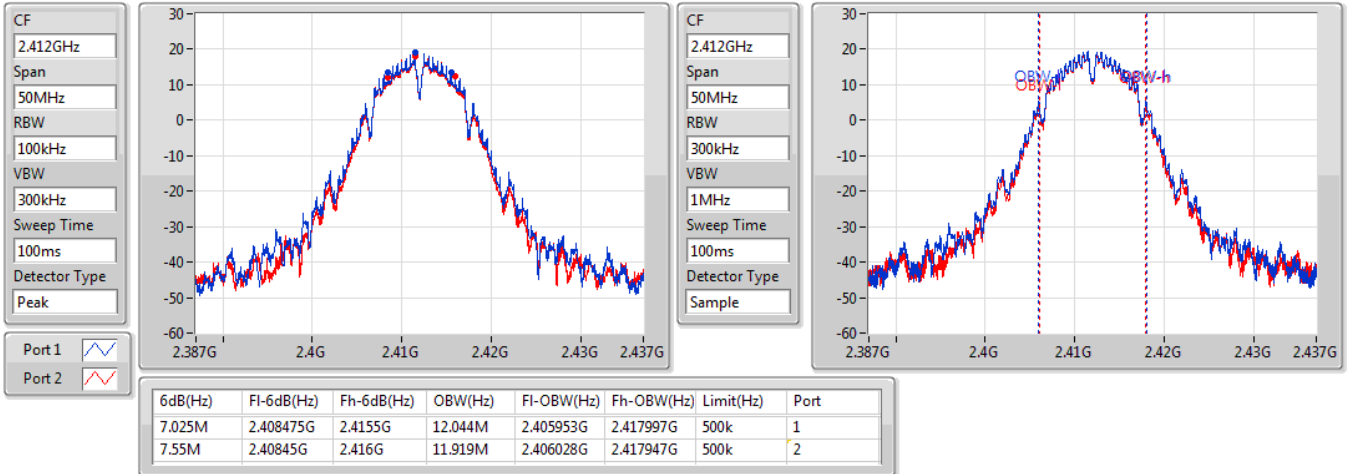
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	7.025M	12.044M	7.55M	11.919M
2437MHz	Pass	500k	7.525M	12.044M	7.05M	11.919M
2462MHz	Pass	500k	7.5M	11.769M	7.05M	11.719M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.325M	16.767M	16.325M	16.742M
2437MHz	Pass	500k	16.3M	18.441M	16.325M	18.066M
2462MHz	Pass	500k	16.35M	16.742M	16.325M	16.692M
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	18.975M	19.015M	18.975M	19.015M
2437MHz	Pass	500k	18.7M	19.39M	18.725M	19.34M
2462MHz	Pass	500k	18.9M	18.991M	18.95M	18.991M
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	36.85M	37.631M	37.65M	37.631M
2437MHz	Pass	500k	37.3M	37.581M	37.6M	37.681M
2452MHz	Pass	500k	37.1M	37.681M	37.65M	37.681M

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

802.11b_Nss1,(1Mbps)_2TX

EBW

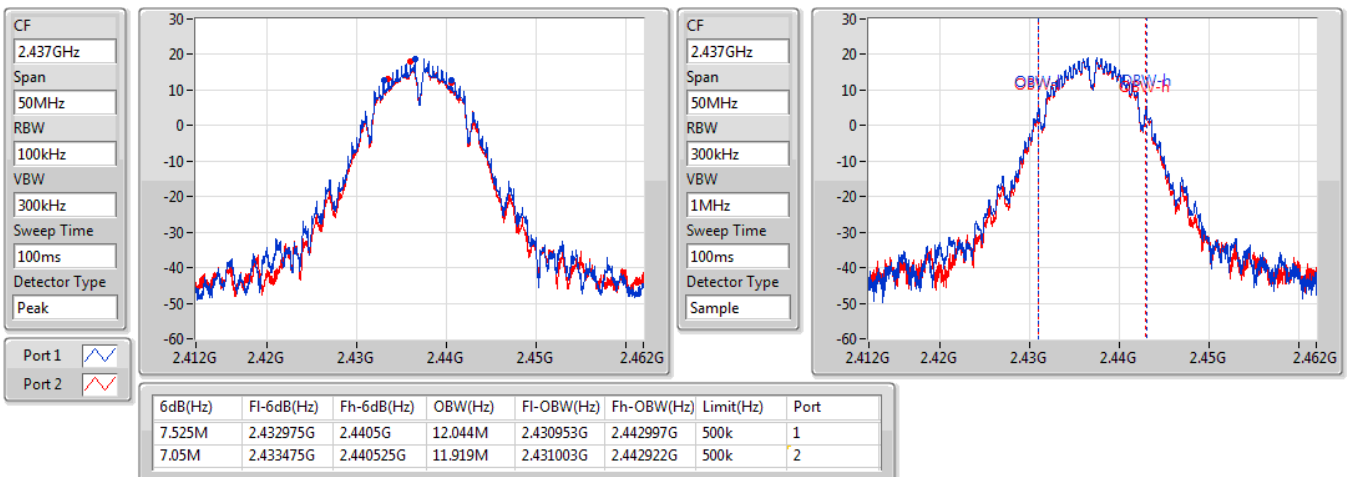
2412MHz



802.11b_Nss1,(1Mbps)_2TX

EBW

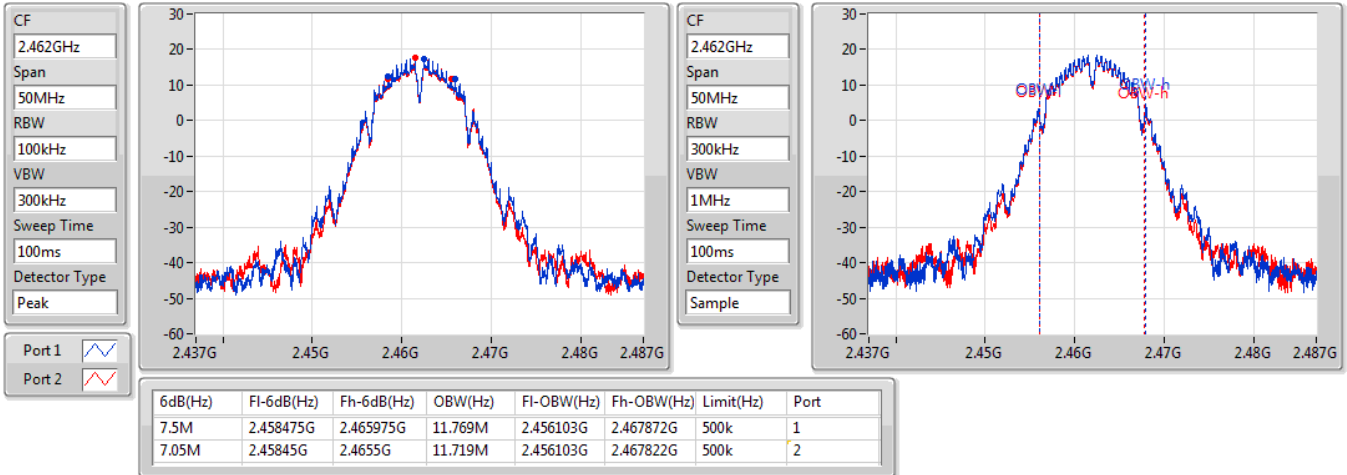
2437MHz



802.11b_Nss1,(1Mbps)_2TX

EBW

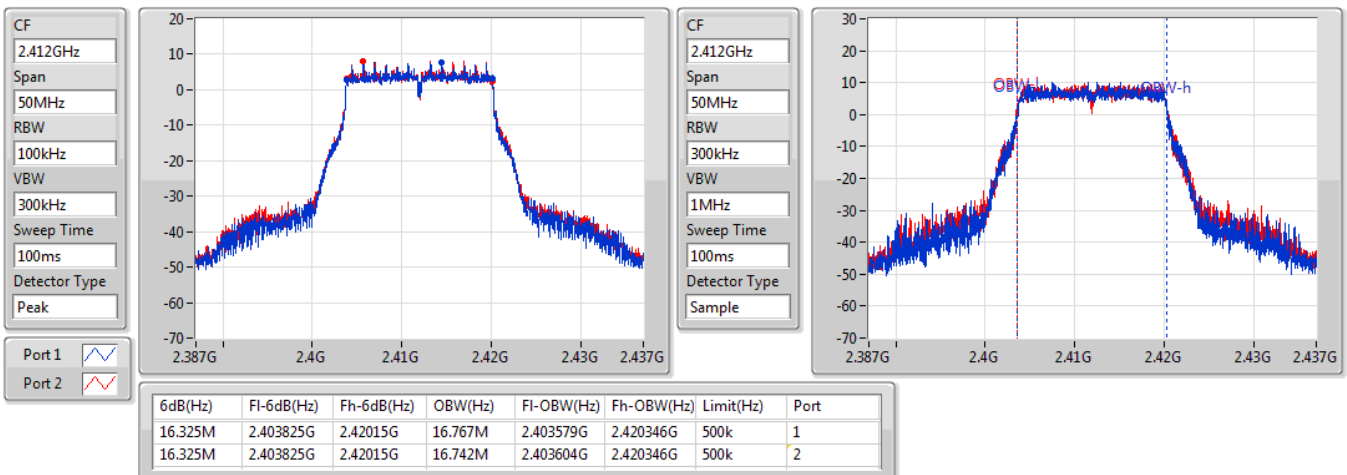
2462MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

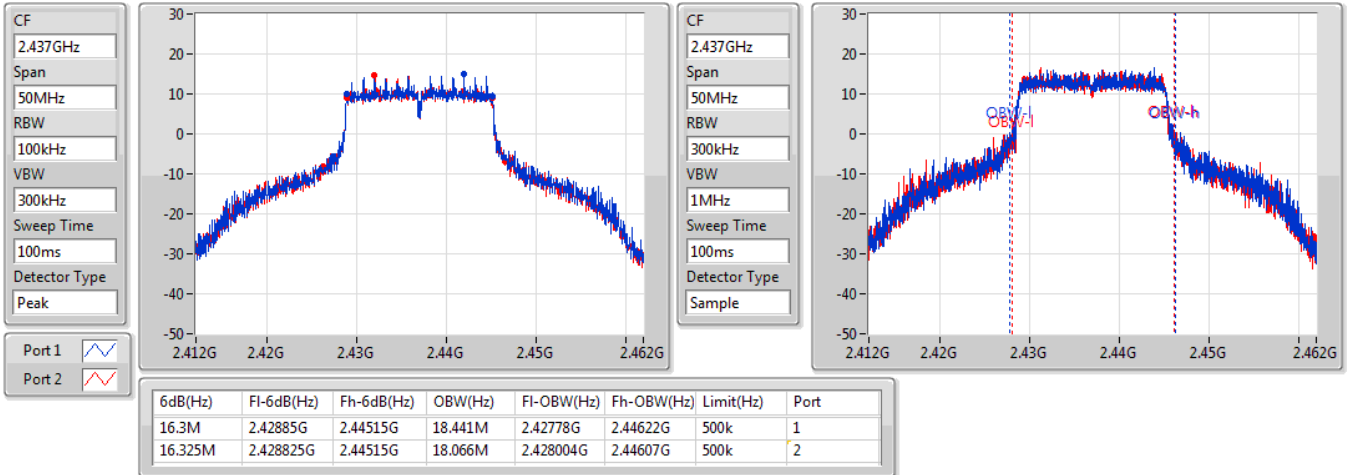
2412MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

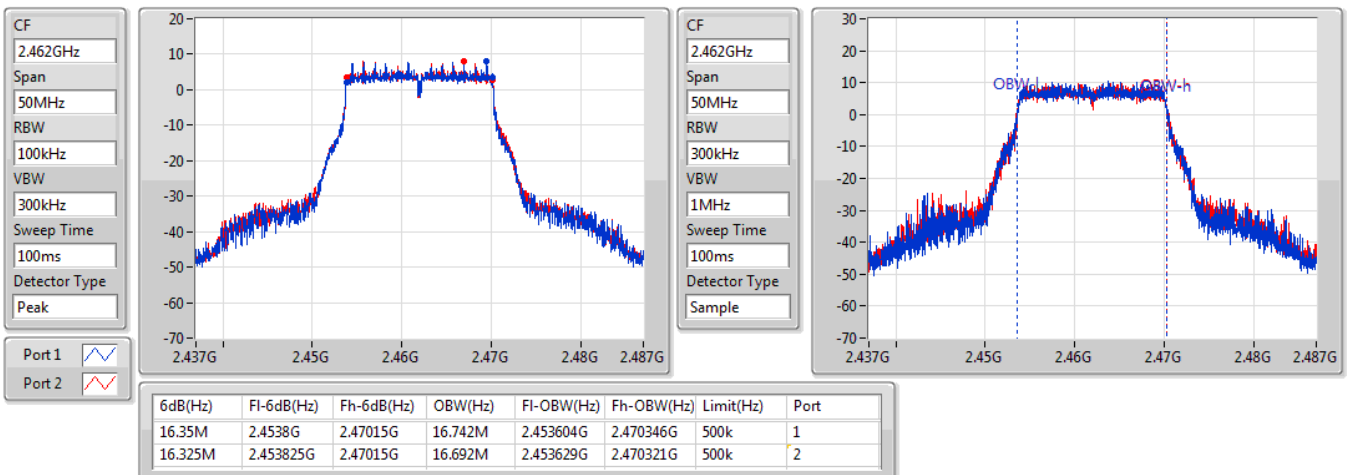
2437MHz



802.11g_Nss1,(6Mbps)_2TX

EBW

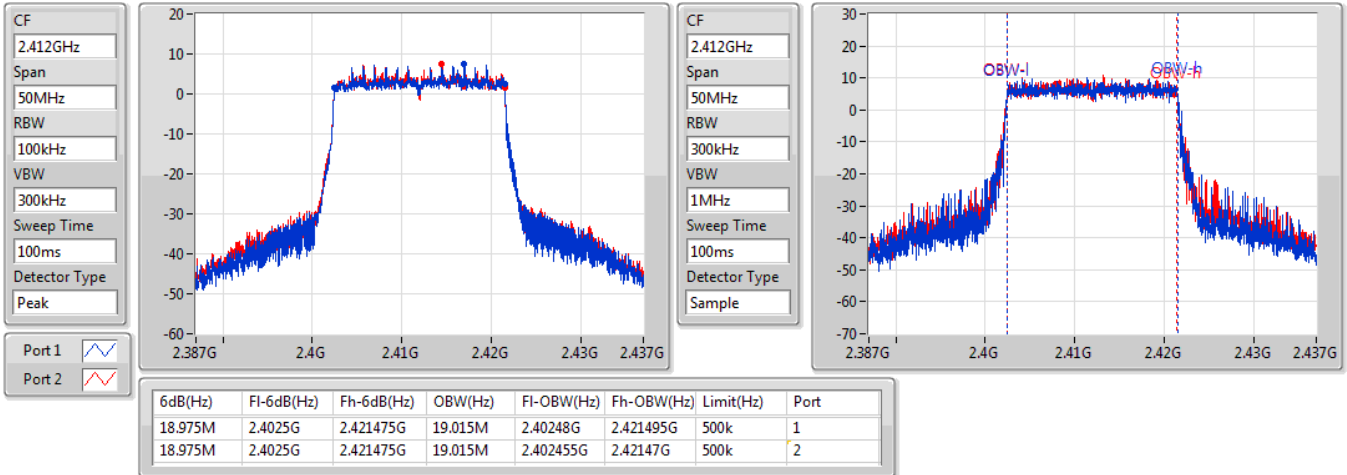
2462MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

EBW

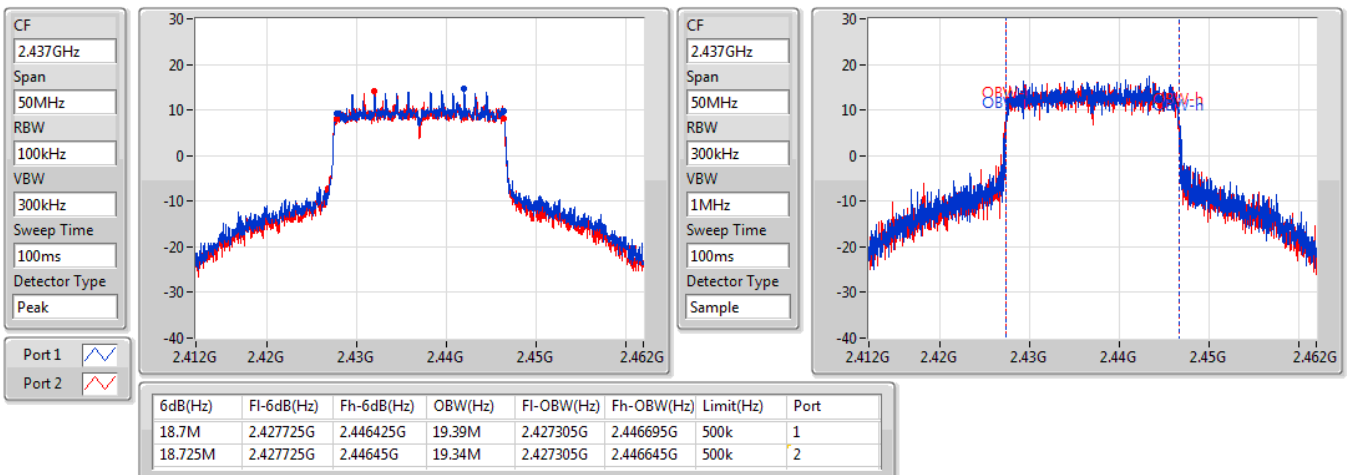
2412MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

EBW

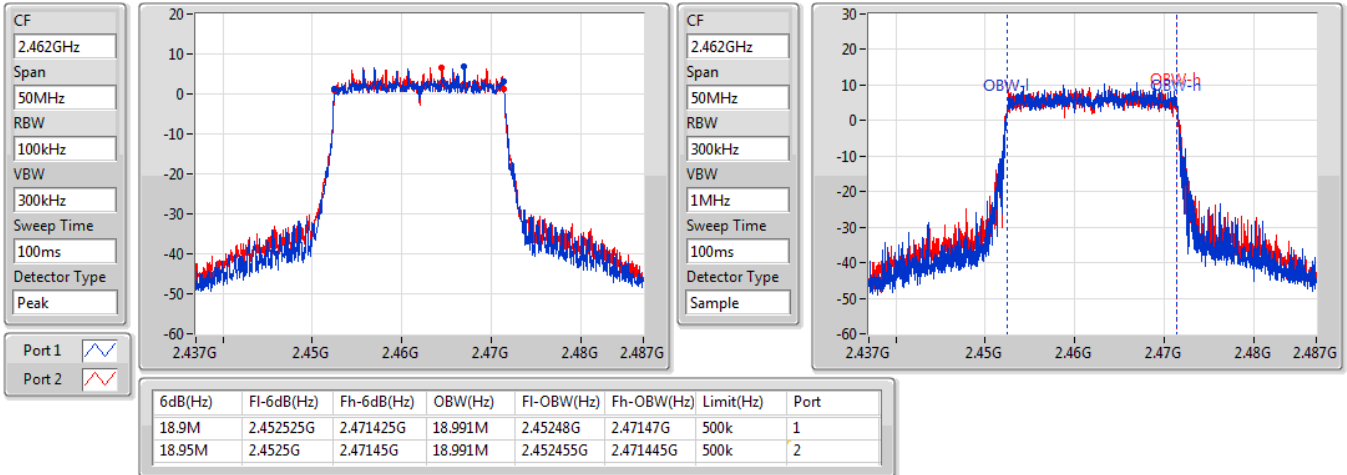
2437MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

EBW

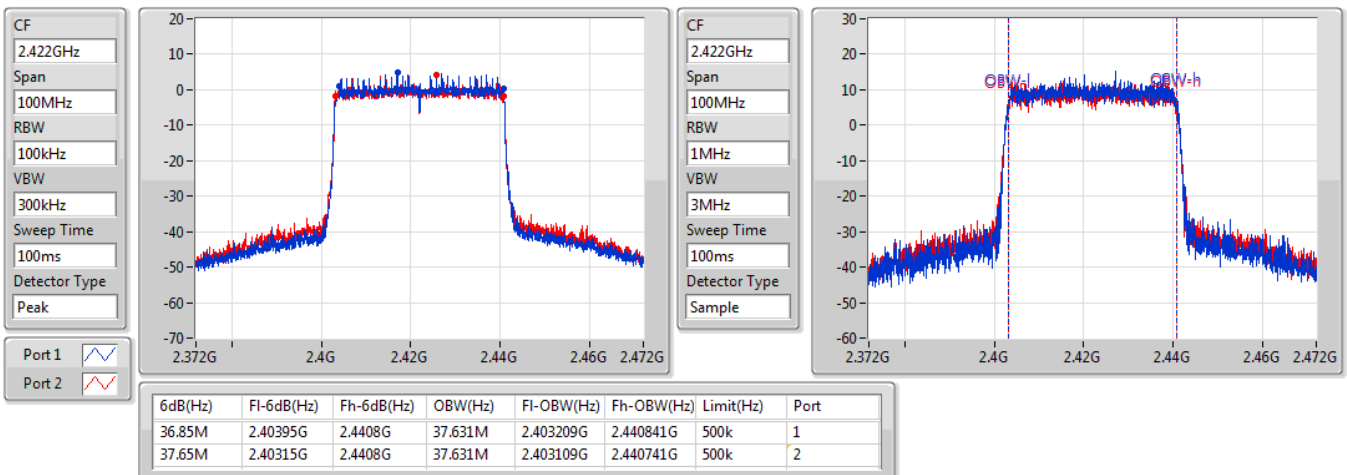
2462MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

EBW

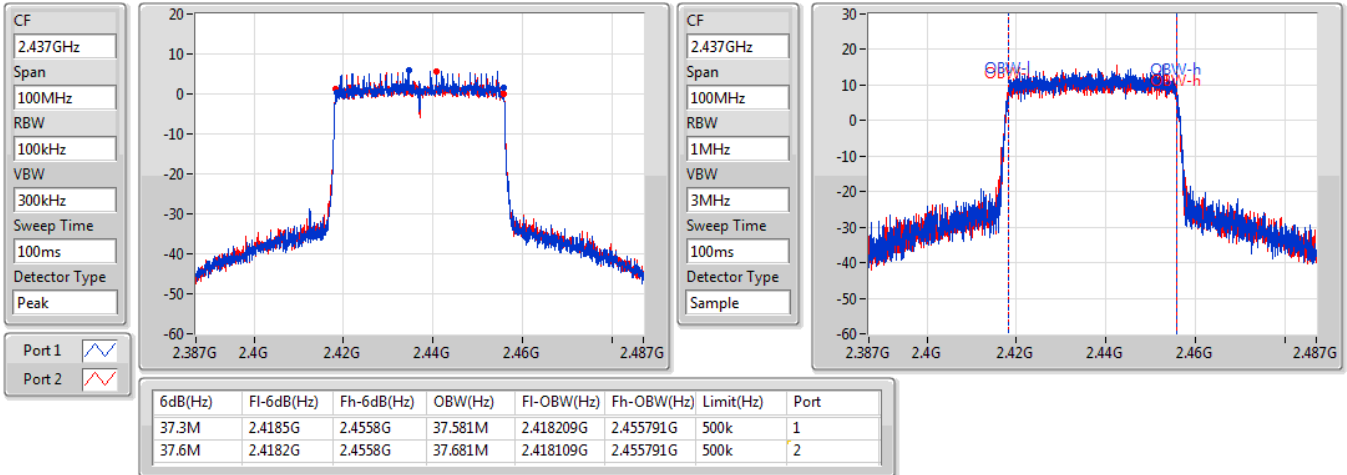
2422MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

EBW

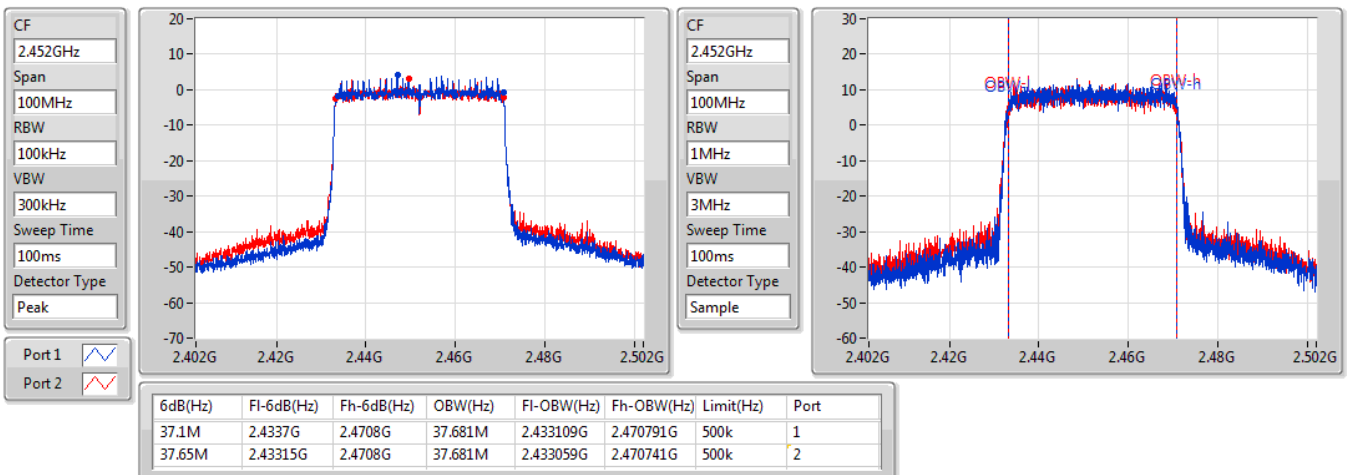
2437MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

EBW

2452MHz





Non-beamforming mode

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	29.67	0.92683
802.11g_Nss1,(6Mbps)_2TX	29.07	0.80724
802.11ax HEW20_Nss1,(MCS0)_2TX	28.78	0.75509
802.11ax HEW40_Nss1,(MCS0)_2TX	23.63	0.23067

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	3.28	26.8	26.51	29.67	30.00	32.95	36.00
2437MHz	Pass	3.28	26.62	26.31	29.48	30.00	32.76	36.00
2462MHz	Pass	3.28	26.01	25.55	28.80	30.00	32.08	36.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.28	19.82	20.11	22.98	30.00	26.26	36.00
2437MHz	Pass	3.28	26.18	25.93	29.07	30.00	32.35	36.00
2462MHz	Pass	3.28	20.2	20.21	23.22	30.00	26.50	36.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.28	19.72	19.81	22.78	30.00	26.06	36.00
2437MHz	Pass	3.28	25.81	25.73	28.78	30.00	32.06	36.00
2462MHz	Pass	3.28	19.02	19.07	22.06	30.00	25.34	36.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2422MHz	Pass	3.28	19.43	19.08	22.27	30.00	25.55	36.00
2437MHz	Pass	3.28	20.82	20.4	23.63	30.00	26.91	36.00
2452MHz	Pass	3.28	18.62	18.34	21.49	30.00	24.77	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	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	28.70	0.74131
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	23.55	0.22646

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-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2412MHz	Pass	3.61	19.66	19.74	22.71	30.00	26.32	36.00
2437MHz	Pass	3.61	25.73	25.65	28.70	30.00	32.31	36.00
2462MHz	Pass	3.61	19.01	18.99	22.01	30.00	25.62	36.00
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
2422MHz	Pass	3.61	19.32	19	22.17	30.00	25.78	36.00
2437MHz	Pass	3.61	20.77	20.29	23.55	30.00	27.16	36.00
2452MHz	Pass	3.61	18.53	18.26	21.41	30.00	25.02	36.00

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

Directional gain is measured. Please refer to antenna test report.

**Non-beamforming mode****Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_2TX	1.13
802.11g_Nss1,(6Mbps)_2TX	3.93
802.11ax HEW20_Nss1,(MCS0)_2TX	3.84
802.11ax HEW40_Nss1,(MCS0)_2TX	1.65

RBW = 3kHz;

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	3.61	-1.68	-0.95	1.13	8.00
2437MHz	Pass	3.61	-2.12	-1.82	-0.01	8.00
2462MHz	Pass	3.61	-1.78	-3.37	-0.32	8.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.61	-2.51	-6.75	-1.12	8.00
2437MHz	Pass	3.61	2.52	-1.64	3.93	8.00
2462MHz	Pass	3.61	-1.96	-8.13	-1.02	8.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.61	-3.18	-8.16	-1.98	8.00
2437MHz	Pass	3.61	2.67	-2.43	3.84	8.00
2462MHz	Pass	3.61	-3.75	-9.30	-2.68	8.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	3.61	-0.73	-7.43	0.11	8.00
2437MHz	Pass	3.61	0.84	-6.06	1.65	8.00
2452MHz	Pass	3.61	-1.35	-7.60	-0.43	8.00

DG = Directional Gain; RBW = 3kHz;

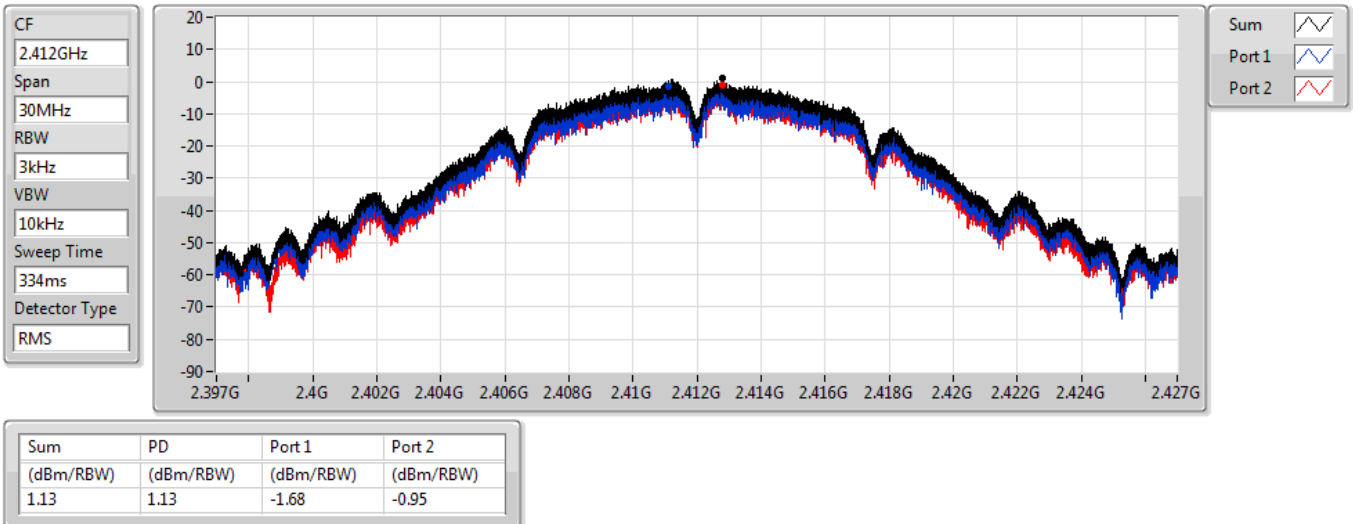
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

Directional gain is measured. Please refer to antenna test report.

802.11b_Nss1,(1Mbps)_2TX

PSD

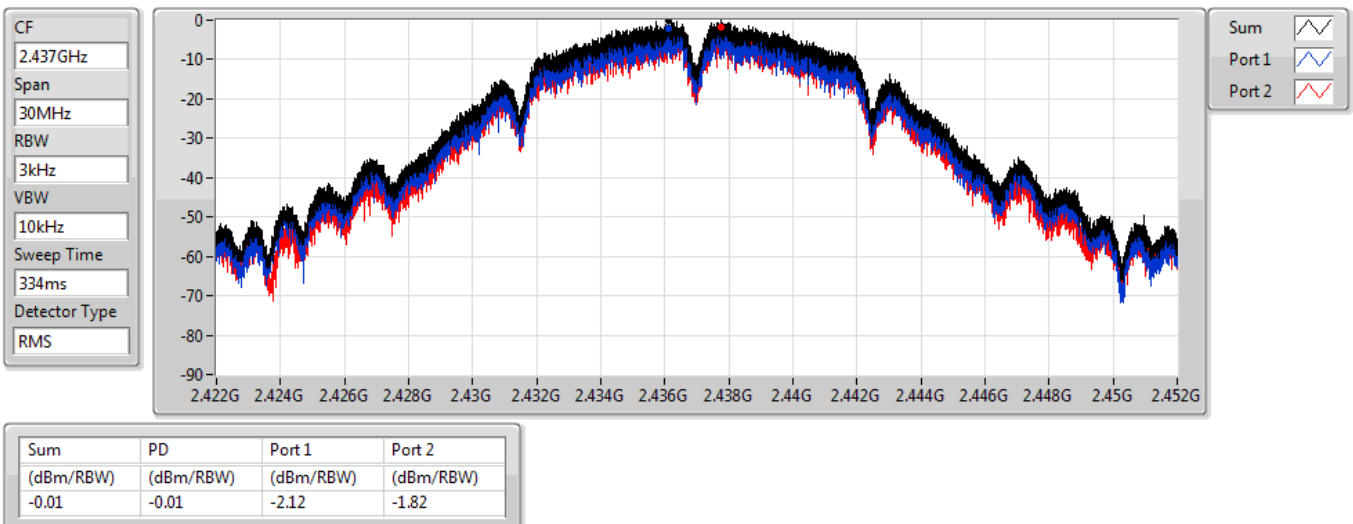
2412MHz



802.11b_Nss1,(1Mbps)_2TX

PSD

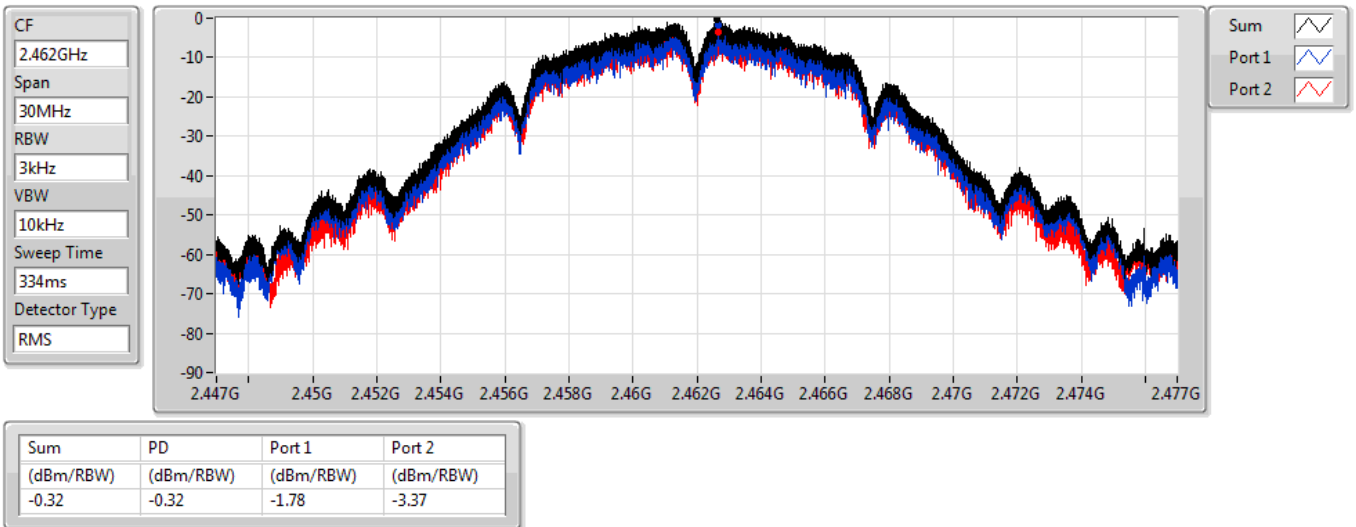
2437MHz



802.11b_Nss1,(1Mbps)_2TX

PSD

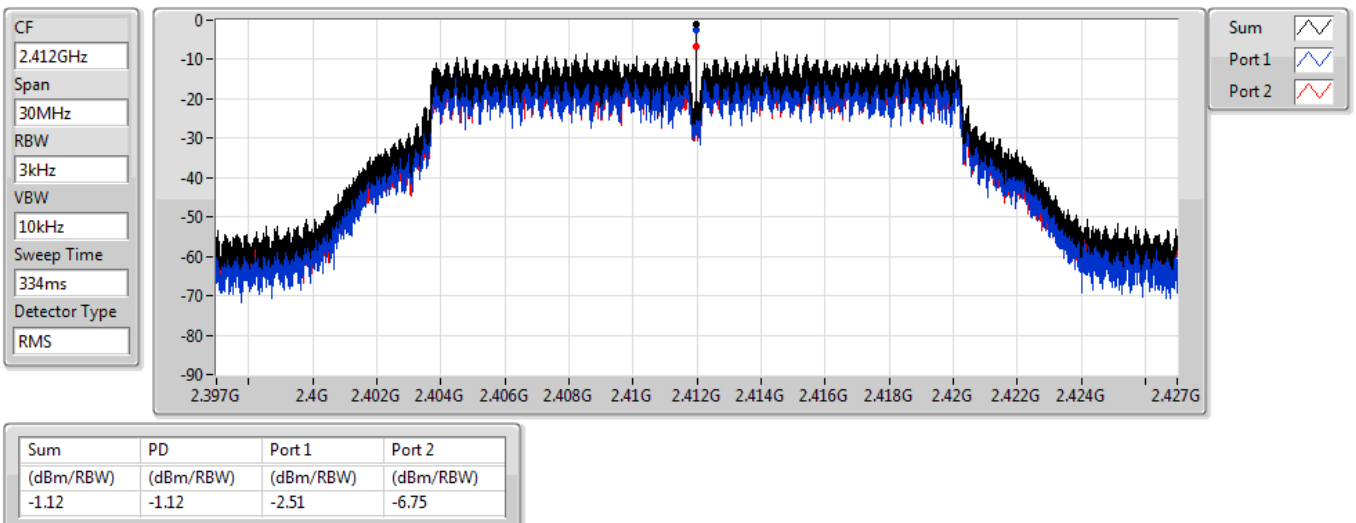
2462MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

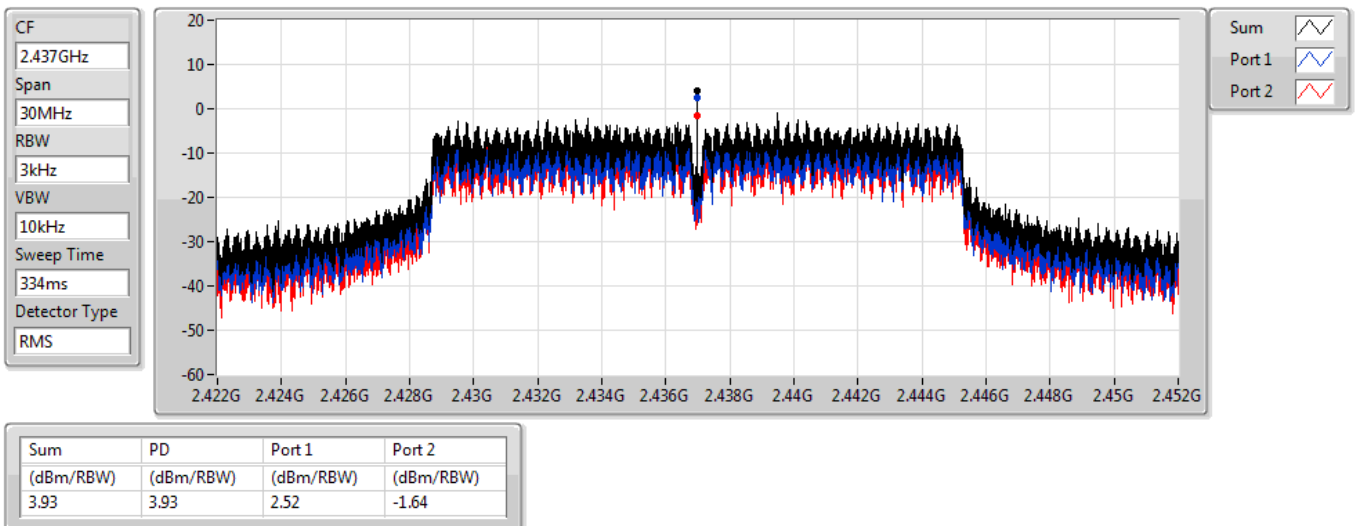
2412MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

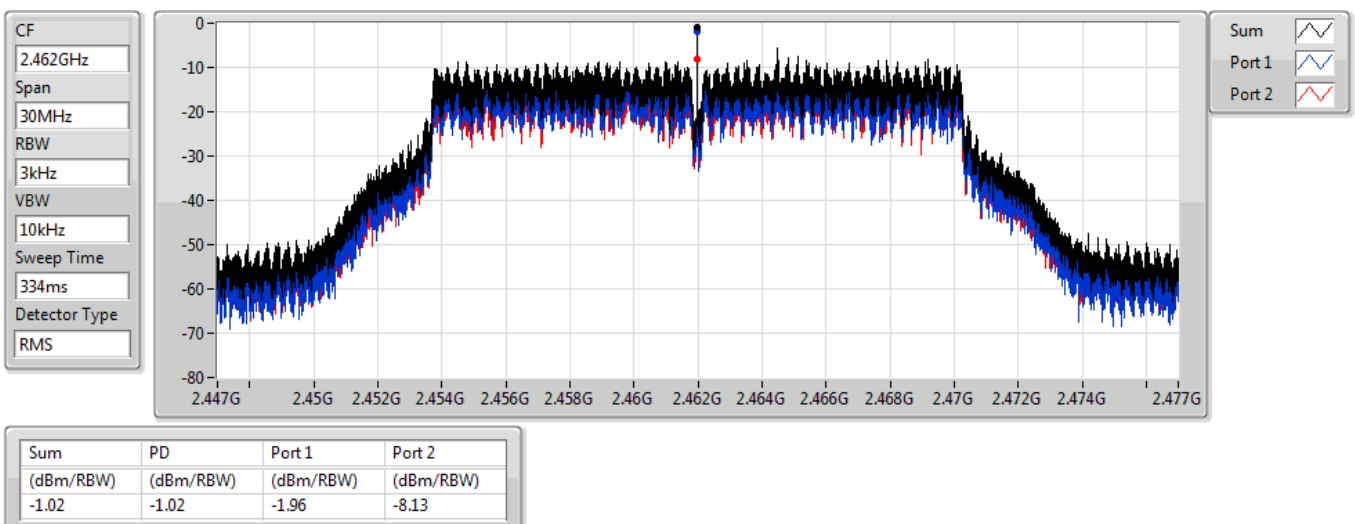
2437MHz



802.11g_Nss1,(6Mbps)_2TX

PSD

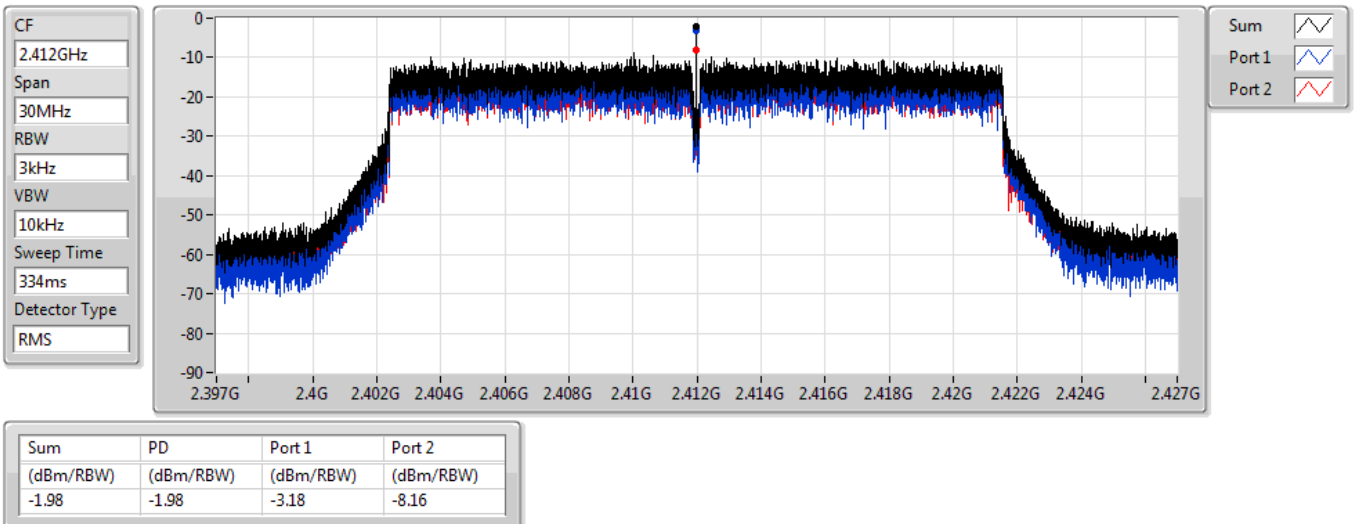
2462MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

PSD

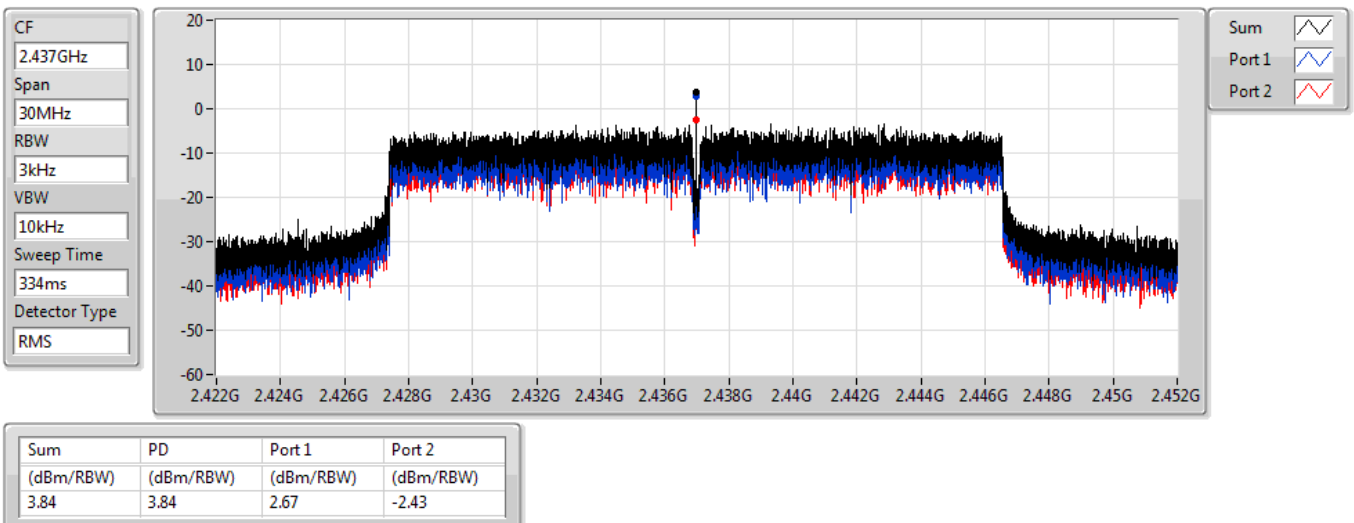
2412MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

PSD

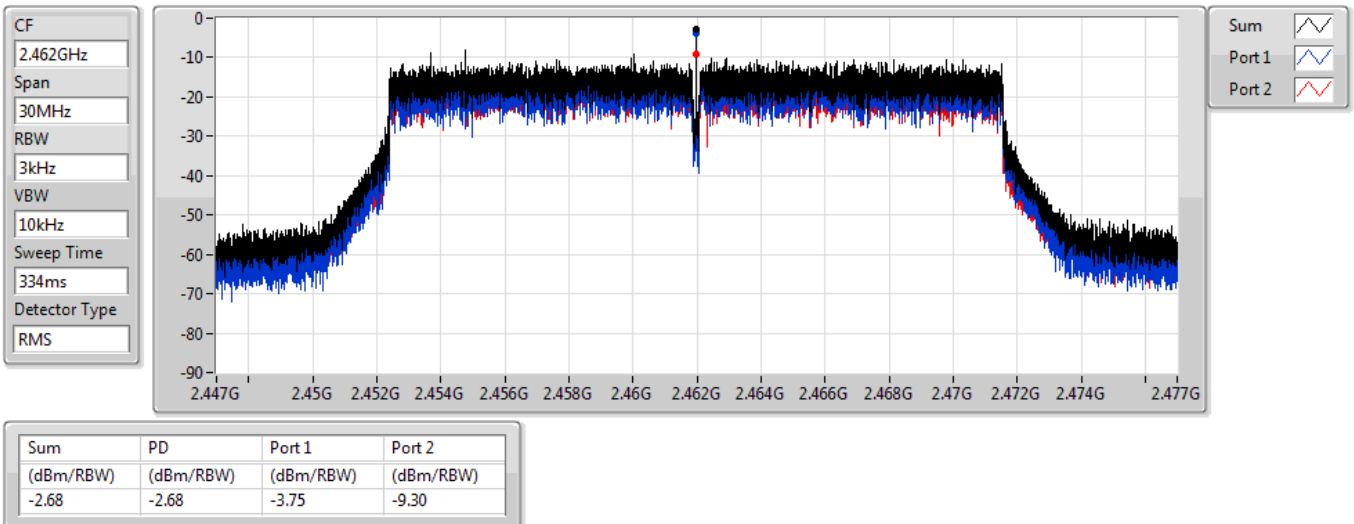
2437MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

PSD

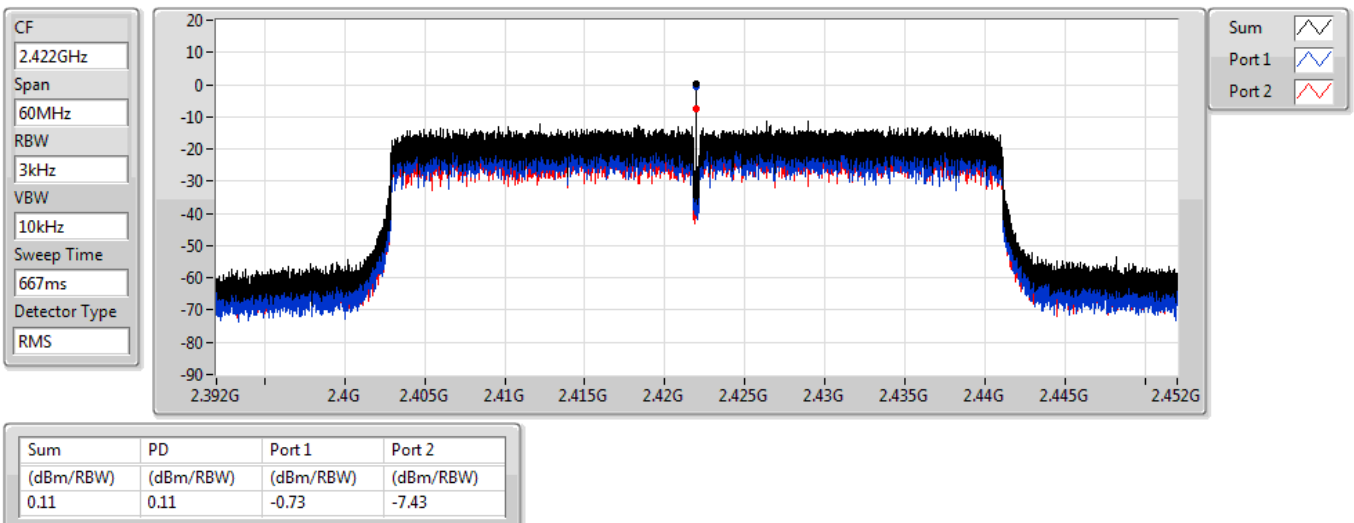
2462MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

PSD

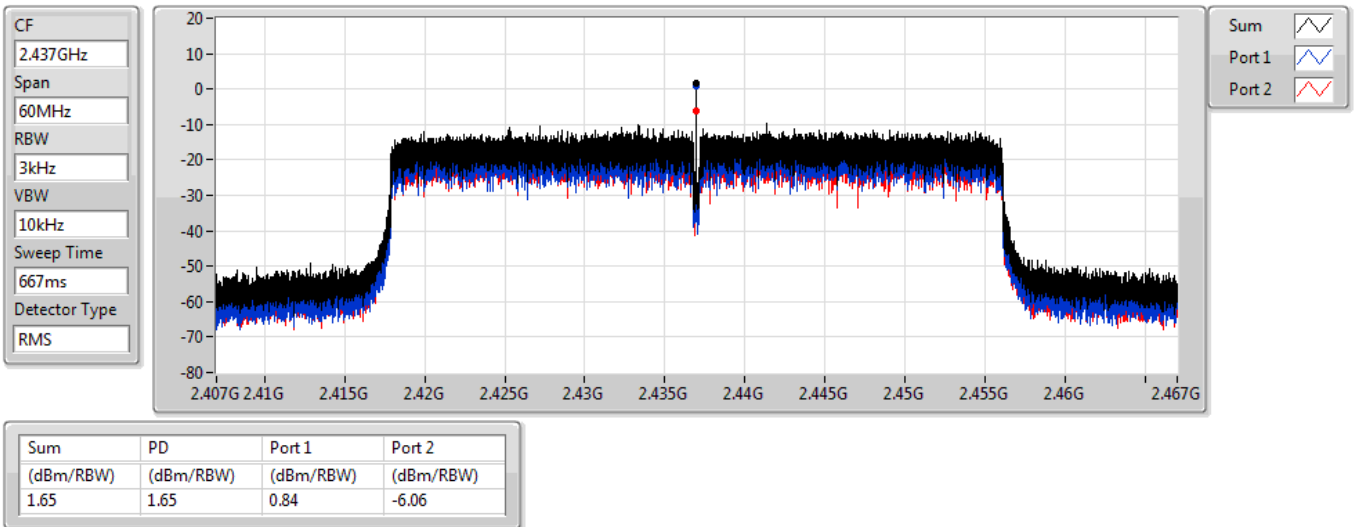
2422MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

PSD

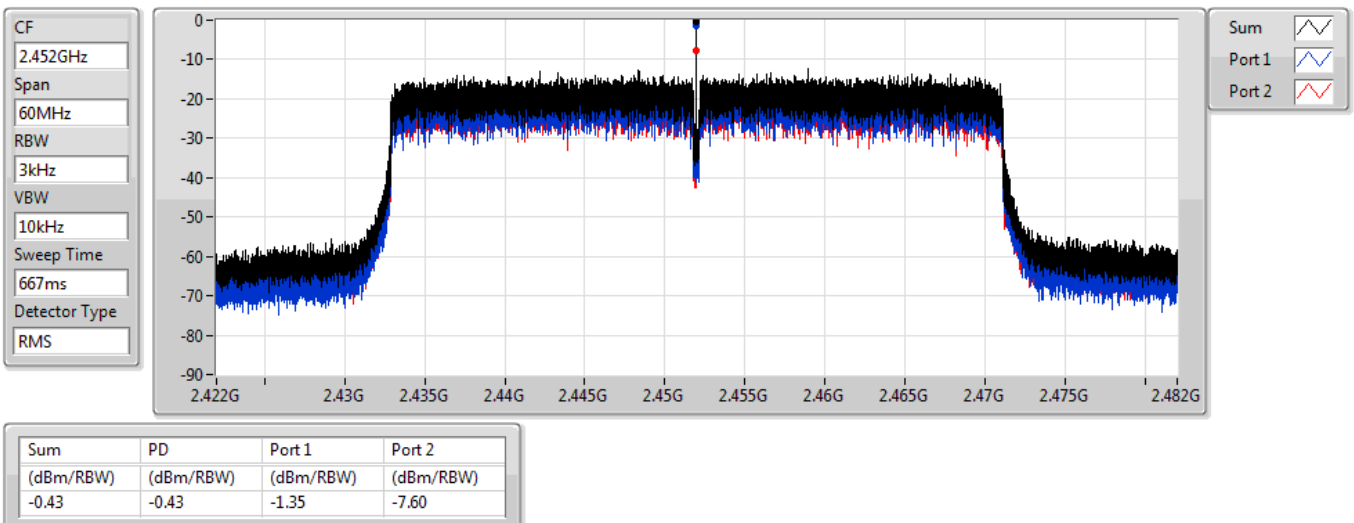
2437MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

PSD

2452MHz



**Beamforming mode****Summary**

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-3.27
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-11.75

RBW = 3kHz;

Result

Mode	Result	DG (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.61	-10.10	8.00	-12.40	-11.60
2437MHz	Pass	3.61	-3.27	8.00	-4.40	-7.35
2462MHz	Pass	3.61	-10.83	8.00	-12.36	-13.05
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	3.61	-12.57	8.00	-14.17	-14.53
2437MHz	Pass	3.61	-11.75	8.00	-12.07	-13.46
2452MHz	Pass	3.61	-14.29	8.00	-16.25	-15.28

DG = Directional Gain; RBW = 3kHz;

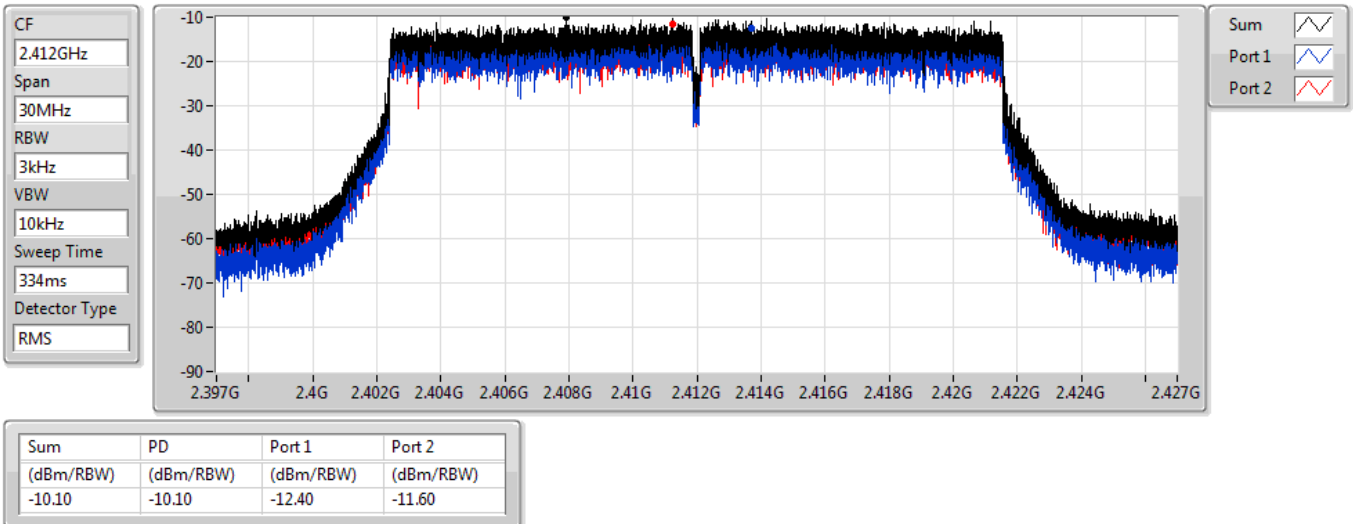
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

Directional gain is measured. Please refer to antenna test report.

802.11ax HEW20-BF_Nss1,(MCS0)_2TX

PSD

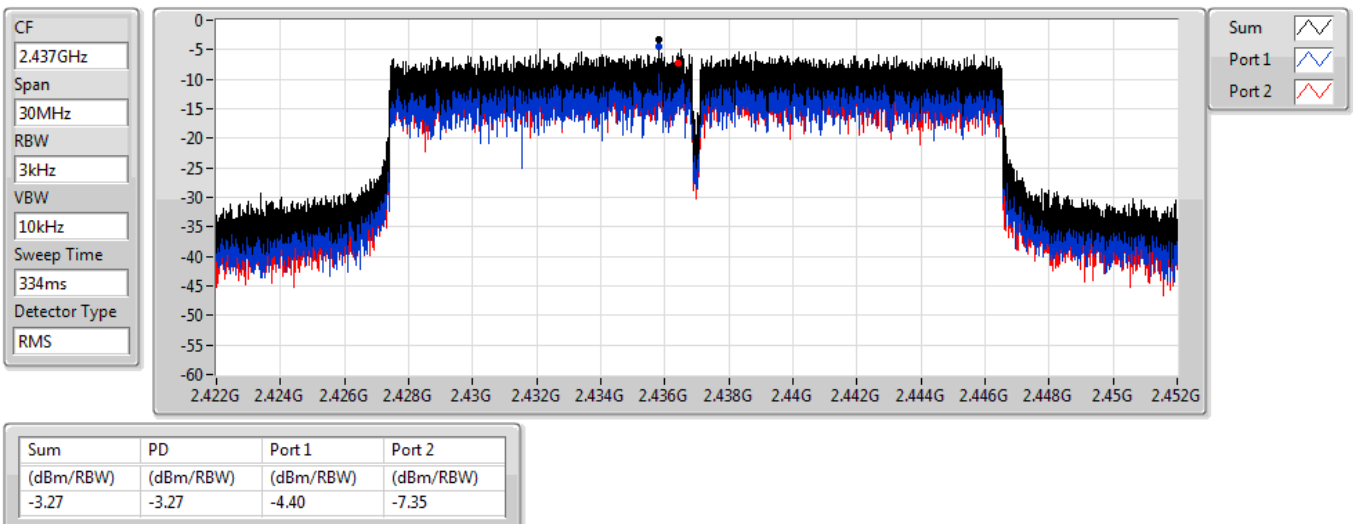
2412MHz



802.11ax HEW20-BF_Nss1,(MCS0)_2TX

PSD

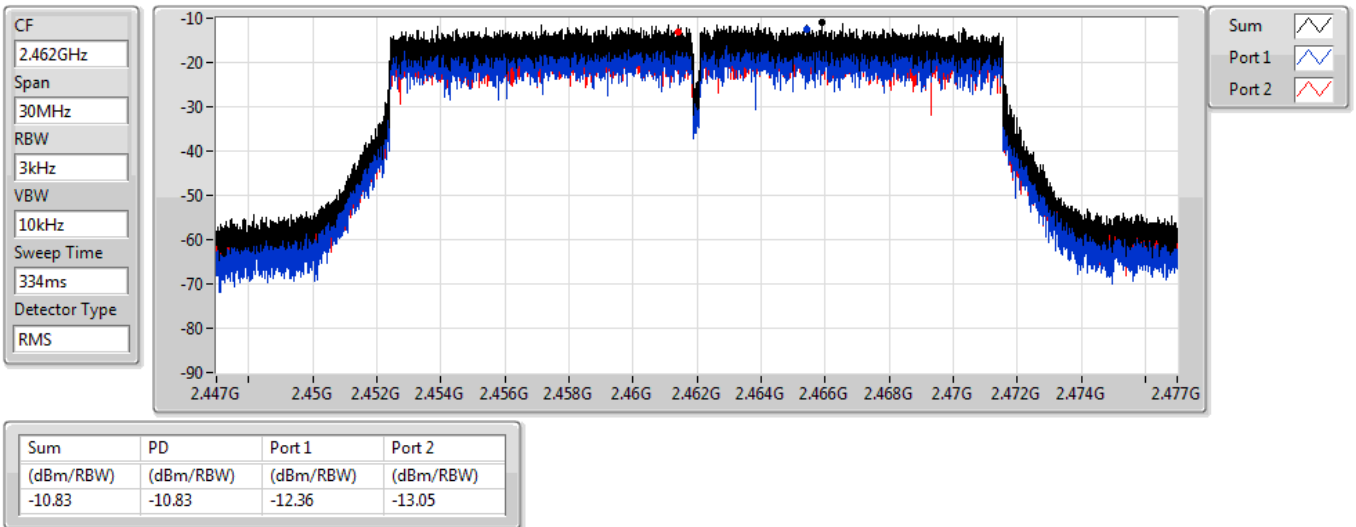
2437MHz



802.11ax HEW20-BF_Nss1,(MCS0)_2TX

PSD

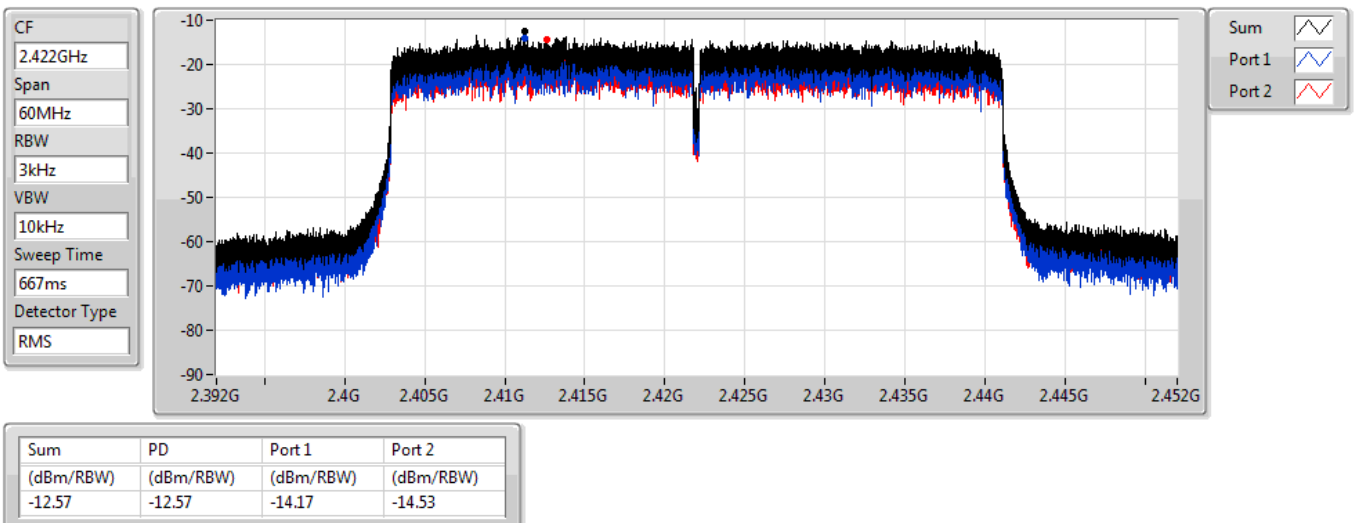
2462MHz



802.11ax HEW40-BF_Nss1,(MCS0)_2TX

PSD

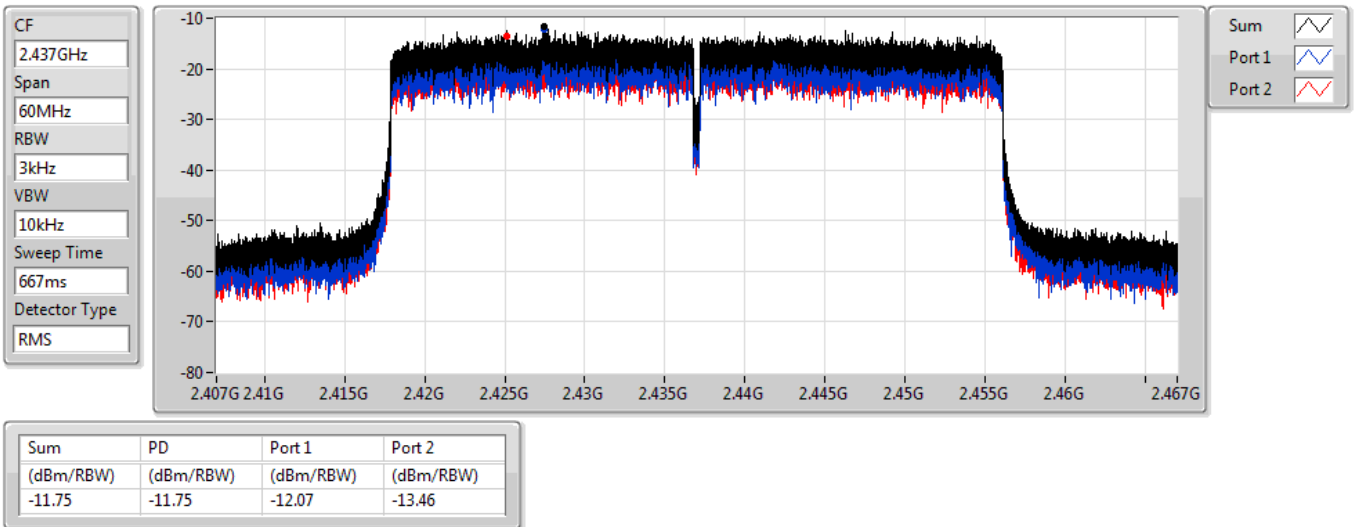
2422MHz



802.11ax HEW40-BF_Nss1,(MCS0)_2TX

PSD

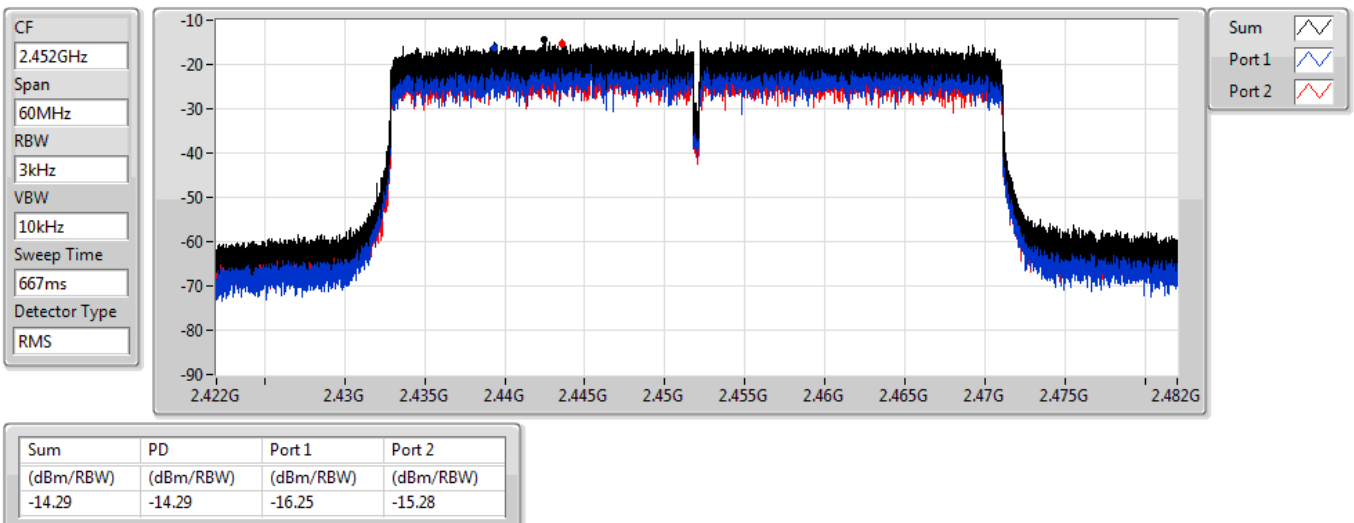
2437MHz



802.11ax HEW40-BF_Nss1,(MCS0)_2TX

PSD

2452MHz





Unwanted Emissions (Below 1GHz)

Modulation	11b	Test Freq. (MHz)	2412																																																																						
Polarization	Horizontal																																																																								
Test By :Roger Lu- Temperature(°C):24 Humidity(%):66																																																																									
Level (dBuV/m) CLASS-B Frequency (MHz) <table><thead><tr><th></th><th>Freq. MHz</th><th>Emission level dBuV/m</th><th>Limit dBuV/m</th><th>Margin dB</th><th>SA reading dBuV</th><th>Factor dB/m</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr></thead><tbody><tr><td>1</td><td>82.38</td><td>27.27</td><td>40.00</td><td>-12.73</td><td>41.42</td><td>-14.15</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>2</td><td>138.64</td><td>33.20</td><td>43.50</td><td>-10.30</td><td>42.66</td><td>-9.46</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>3</td><td>218.18</td><td>26.92</td><td>46.00</td><td>-19.08</td><td>38.90</td><td>-11.98</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>4</td><td>292.87</td><td>25.65</td><td>46.00</td><td>-20.35</td><td>34.04</td><td>-8.39</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>5</td><td>371.44</td><td>29.21</td><td>46.00</td><td>-16.79</td><td>35.65</td><td>-6.44</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>6</td><td>424.79</td><td>28.89</td><td>46.00</td><td>-17.11</td><td>33.84</td><td>-4.95</td><td>Peak</td><td>---</td><td>---</td></tr></tbody></table> 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.					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	82.38	27.27	40.00	-12.73	41.42	-14.15	Peak	---	---	2	138.64	33.20	43.50	-10.30	42.66	-9.46	Peak	---	---	3	218.18	26.92	46.00	-19.08	38.90	-11.98	Peak	---	---	4	292.87	25.65	46.00	-20.35	34.04	-8.39	Peak	---	---	5	371.44	29.21	46.00	-16.79	35.65	-6.44	Peak	---	---	6	424.79	28.89	46.00	-17.11	33.84	-4.95	Peak	---	---
	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	82.38	27.27	40.00	-12.73	41.42	-14.15	Peak	---	---																																																																
2	138.64	33.20	43.50	-10.30	42.66	-9.46	Peak	---	---																																																																
3	218.18	26.92	46.00	-19.08	38.90	-11.98	Peak	---	---																																																																
4	292.87	25.65	46.00	-20.35	34.04	-8.39	Peak	---	---																																																																
5	371.44	29.21	46.00	-16.79	35.65	-6.44	Peak	---	---																																																																
6	424.79	28.89	46.00	-17.11	33.84	-4.95	Peak	---	---																																																																



Modulation	11b	Test Freq. (MHz)	2412																																																																						
Polarization	Vertical																																																																								
Test By :Roger Lu- Temperature(°C):24 Humidity(%):66																																																																									
Level (dBUV/m) <table><thead><tr><th></th><th>Freq. MHz</th><th>Emission level dBUV/m</th><th>Limit dBUV/m</th><th>Margin dB</th><th>SA reading dBUV</th><th>Factor dB/m</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr></thead><tbody><tr><td>1</td><td>45.54</td><td>34.91</td><td>40.00</td><td>-5.09</td><td>43.17</td><td>-8.26</td><td>QP</td><td>100</td><td>178</td></tr><tr><td>2</td><td>97.90</td><td>29.64</td><td>43.50</td><td>-13.86</td><td>43.31</td><td>-13.67</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>3</td><td>138.64</td><td>27.91</td><td>43.50</td><td>-15.59</td><td>37.37</td><td>-9.46</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>4</td><td>258.92</td><td>25.17</td><td>46.00</td><td>-20.83</td><td>34.79</td><td>-9.62</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>5</td><td>326.82</td><td>25.86</td><td>46.00</td><td>-20.14</td><td>33.36</td><td>-7.50</td><td>Peak</td><td>---</td><td>---</td></tr><tr><td>6</td><td>421.88</td><td>28.29</td><td>46.00</td><td>-17.71</td><td>33.35</td><td>-5.06</td><td>Peak</td><td>---</td><td>---</td></tr></tbody></table>					Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg	1	45.54	34.91	40.00	-5.09	43.17	-8.26	QP	100	178	2	97.90	29.64	43.50	-13.86	43.31	-13.67	Peak	---	---	3	138.64	27.91	43.50	-15.59	37.37	-9.46	Peak	---	---	4	258.92	25.17	46.00	-20.83	34.79	-9.62	Peak	---	---	5	326.82	25.86	46.00	-20.14	33.36	-7.50	Peak	---	---	6	421.88	28.29	46.00	-17.71	33.35	-5.06	Peak	---	---
	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	45.54	34.91	40.00	-5.09	43.17	-8.26	QP	100	178																																																																
2	97.90	29.64	43.50	-13.86	43.31	-13.67	Peak	---	---																																																																
3	138.64	27.91	43.50	-15.59	37.37	-9.46	Peak	---	---																																																																
4	258.92	25.17	46.00	-20.83	34.79	-9.62	Peak	---	---																																																																
5	326.82	25.86	46.00	-20.14	33.36	-7.50	Peak	---	---																																																																
6	421.88	28.29	46.00	-17.71	33.35	-5.06	Peak	---	---																																																																
Note 1: Emission Level (dBUV/m) = SA Reading (dBUV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBUV/m) – Limit (dBUV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.																																																																									

Unwanted Emission (Above 1GHz) for 11b

Modulation	11b	Test Freq. (MHz)	2412
Polarization	Horizontal		
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61			
Level (dBUV/m)			



Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61			
Level (dBUV/m) </			



Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Roger Lu- Temperature(°C):25 Humidity(%):63			
Level (dBuV/m)			



Modulation	11b	Test Freq. (MHz)	2437																																																																																																														
Polarization	Vertical																																																																																																																
Test By :Roger Lu- Temperature(°C):25 Humidity(%):63																																																																																																																	
Level (dBuV/m) Frequency (MHz) <table><thead><tr><th></th><th>Freq. MHz</th><th>Emission level dBuV/m</th><th>Limit dBuV/m</th><th>Margin dB</th><th>SA reading dBuV</th><th>Factor dB/m</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr></thead><tbody><tr><td>1</td><td>2390.00</td><td>44.61</td><td>54.00</td><td>-9.39</td><td>49.83</td><td>-5.22</td><td>Average</td><td>100</td><td>274</td></tr><tr><td>2</td><td>2390.00</td><td>57.00</td><td>74.00</td><td>-17.00</td><td>62.22</td><td>-5.22</td><td>Peak</td><td>100</td><td>274</td></tr><tr><td>3 *</td><td>2437.00</td><td>112.76</td><td></td><td></td><td>118.10</td><td>-5.34</td><td>Average</td><td>100</td><td>274</td></tr><tr><td>4 *</td><td>2437.00</td><td>115.40</td><td></td><td></td><td>120.74</td><td>-5.34</td><td>Peak</td><td>100</td><td>274</td></tr><tr><td>5</td><td>2483.50</td><td>45.47</td><td>54.00</td><td>-8.53</td><td>50.78</td><td>-5.31</td><td>Average</td><td>100</td><td>274</td></tr><tr><td>6</td><td>2483.50</td><td>57.73</td><td>74.00</td><td>-16.27</td><td>63.04</td><td>-5.31</td><td>Peak</td><td>100</td><td>274</td></tr><tr><td>7</td><td>4874.00</td><td>41.26</td><td>54.00</td><td>-12.74</td><td>42.20</td><td>-0.94</td><td>Average</td><td>224</td><td>343</td></tr><tr><td>8</td><td>4874.00</td><td>47.45</td><td>74.00</td><td>-26.55</td><td>48.39</td><td>-0.94</td><td>Peak</td><td>224</td><td>343</td></tr><tr><td>9</td><td>7311.00</td><td>44.48</td><td>54.00</td><td>-9.52</td><td>40.15</td><td>4.33</td><td>Average</td><td>180</td><td>158</td></tr><tr><td>10</td><td>7311.00</td><td>53.25</td><td>74.00</td><td>-20.75</td><td>48.92</td><td>4.33</td><td>Peak</td><td>180</td><td>158</td></tr></tbody></table> 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:"*" is Peak / Average value of fundamental frequency					Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg	1	2390.00	44.61	54.00	-9.39	49.83	-5.22	Average	100	274	2	2390.00	57.00	74.00	-17.00	62.22	-5.22	Peak	100	274	3 *	2437.00	112.76			118.10	-5.34	Average	100	274	4 *	2437.00	115.40			120.74	-5.34	Peak	100	274	5	2483.50	45.47	54.00	-8.53	50.78	-5.31	Average	100	274	6	2483.50	57.73	74.00	-16.27	63.04	-5.31	Peak	100	274	7	4874.00	41.26	54.00	-12.74	42.20	-0.94	Average	224	343	8	4874.00	47.45	74.00	-26.55	48.39	-0.94	Peak	224	343	9	7311.00	44.48	54.00	-9.52	40.15	4.33	Average	180	158	10	7311.00	53.25	74.00	-20.75	48.92	4.33	Peak	180	158
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg																																																																																																								
1	2390.00	44.61	54.00	-9.39	49.83	-5.22	Average	100	274																																																																																																								
2	2390.00	57.00	74.00	-17.00	62.22	-5.22	Peak	100	274																																																																																																								
3 *	2437.00	112.76			118.10	-5.34	Average	100	274																																																																																																								
4 *	2437.00	115.40			120.74	-5.34	Peak	100	274																																																																																																								
5	2483.50	45.47	54.00	-8.53	50.78	-5.31	Average	100	274																																																																																																								
6	2483.50	57.73	74.00	-16.27	63.04	-5.31	Peak	100	274																																																																																																								
7	4874.00	41.26	54.00	-12.74	42.20	-0.94	Average	224	343																																																																																																								
8	4874.00	47.45	74.00	-26.55	48.39	-0.94	Peak	224	343																																																																																																								
9	7311.00	44.48	54.00	-9.52	40.15	4.33	Average	180	158																																																																																																								
10	7311.00	53.25	74.00	-20.75	48.92	4.33	Peak	180	158																																																																																																								



Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		
Test By :Roger Lu- Temperature(°C):25 Humidity(%):63			
Level (dBUV/m)			



Modulation		11b		Test Freq. (MHz)		2462	
Polarization		Vertical					
Test By		:Roger Lu-		Temperature(°C):25		Humidity(%):63	
Level (dBuV/m)							



Unwanted Emissions (Above 1GHz) for 11g

Modulation	11g	Test Freq. (MHz)	2412
Polarization	Horizontal		
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61			
Level (dBuV/m)			



Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61			
Level (dBUV/m)			



Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61			
Level (dBUV/m)			



Modulation	11g	Test Freq. (MHz)	2437						
Polarization	Vertical								
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61									
Level (dBUV/m) Frequency (MHz)									
	Freq.	Emission	Limit	Margin	SA	Factor	Remark	ANT	Turn
	MHz	level			reading			High	Table
		dBuV/m	dBuV/m	dB	dBuV	dB/m		cm	deg
1	2390.00	50.85	54.00	-3.15	56.07	-5.22	Average	280	233
2	2390.00	71.55	74.00	-2.45	76.77	-5.22	Peak	280	233
3 *	2437.00	107.70			113.04	-5.34	Average	267	232
4 *	2437.00	118.67			124.01	-5.34	Peak	267	232
5	2483.50	50.16	54.00	-3.84	55.47	-5.31	Average	269	223
6	2483.50	70.12	74.00	-3.88	75.43	-5.31	Peak	269	223
7	4874.00	34.15	54.00	-19.85	35.09	-0.94	Average	100	294
8	4874.00	46.71	74.00	-27.29	47.65	-0.94	Peak	100	294
9	7311.00	41.09	54.00	-12.91	36.76	4.33	Average	197	157
10	7311.00	53.66	74.00	-20.34	49.33	4.33	Peak	197	157

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



Modulation		11g		Test Freq. (MHz)		2462	
Polarization		Horizontal					
Test By		:Roger Lu-		Temperature(°C):26		Humidity(%):61	
Level (dBuV/m) </							



Modulation		11g		Test Freq. (MHz)		2462			
Polarization		Vertical							
Test By		:Roger Lu-		Temperature(°C):26		Humidity(%):61			
Level (dBUV/m) </									



Unwanted Emissions (Above 1GHz) for ax HE20

Modulation	ax HE20		Test Freq. (MHz)		2412	
Polarization	Horizontal					
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61						
Level (dBuV/m) </						



Modulation	ax HE20		Test Freq. (MHz)	2412	
Polarization	Vertical				
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61					
Level (dBUV/m) </					



Modulation	ax HE20	Test Freq. (MHz)	2437																																																																																																														
Polarization	Horizontal																																																																																																																
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61																																																																																																																	
Level (dBuV/m) Frequency (MHz) <table><thead><tr><th></th><th>Freq. MHz</th><th>Emission level dBuV/m</th><th>Limit dBuV/m</th><th>Margin dB</th><th>SA reading dBuV</th><th>Factor dB/m</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr></thead><tbody><tr><td>1</td><td>2390.00</td><td>51.64</td><td>54.00</td><td>-2.36</td><td>56.86</td><td>-5.22</td><td>Average</td><td>277</td><td>199</td></tr><tr><td>2</td><td>2390.00</td><td>69.56</td><td>74.00</td><td>-4.44</td><td>74.78</td><td>-5.22</td><td>Peak</td><td>277</td><td>199</td></tr><tr><td>3 *</td><td>2437.00</td><td>107.29</td><td></td><td></td><td>112.63</td><td>-5.34</td><td>Average</td><td>271</td><td>212</td></tr><tr><td>4 *</td><td>2437.00</td><td>118.85</td><td></td><td></td><td>124.19</td><td>-5.34</td><td>Peak</td><td>271</td><td>212</td></tr><tr><td>5</td><td>2483.50</td><td>49.49</td><td>54.00</td><td>-4.51</td><td>54.80</td><td>-5.31</td><td>Average</td><td>271</td><td>193</td></tr><tr><td>6</td><td>2483.50</td><td>66.81</td><td>74.00</td><td>-7.19</td><td>72.12</td><td>-5.31</td><td>Peak</td><td>271</td><td>193</td></tr><tr><td>7</td><td>4874.00</td><td>33.56</td><td>54.00</td><td>-20.44</td><td>34.50</td><td>-0.94</td><td>Average</td><td>100</td><td>12</td></tr><tr><td>8</td><td>4874.00</td><td>47.29</td><td>74.00</td><td>-26.71</td><td>48.23</td><td>-0.94</td><td>Peak</td><td>100</td><td>12</td></tr><tr><td>9</td><td>7311.00</td><td>37.91</td><td>54.00</td><td>-16.09</td><td>33.58</td><td>4.33</td><td>Average</td><td>100</td><td>126</td></tr><tr><td>10</td><td>7311.00</td><td>50.62</td><td>74.00</td><td>-23.38</td><td>46.29</td><td>4.33</td><td>Peak</td><td>100</td><td>126</td></tr></tbody></table> 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:"*" is Peak / Average value of fundamental frequency					Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg	1	2390.00	51.64	54.00	-2.36	56.86	-5.22	Average	277	199	2	2390.00	69.56	74.00	-4.44	74.78	-5.22	Peak	277	199	3 *	2437.00	107.29			112.63	-5.34	Average	271	212	4 *	2437.00	118.85			124.19	-5.34	Peak	271	212	5	2483.50	49.49	54.00	-4.51	54.80	-5.31	Average	271	193	6	2483.50	66.81	74.00	-7.19	72.12	-5.31	Peak	271	193	7	4874.00	33.56	54.00	-20.44	34.50	-0.94	Average	100	12	8	4874.00	47.29	74.00	-26.71	48.23	-0.94	Peak	100	12	9	7311.00	37.91	54.00	-16.09	33.58	4.33	Average	100	126	10	7311.00	50.62	74.00	-23.38	46.29	4.33	Peak	100	126
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg																																																																																																								
1	2390.00	51.64	54.00	-2.36	56.86	-5.22	Average	277	199																																																																																																								
2	2390.00	69.56	74.00	-4.44	74.78	-5.22	Peak	277	199																																																																																																								
3 *	2437.00	107.29			112.63	-5.34	Average	271	212																																																																																																								
4 *	2437.00	118.85			124.19	-5.34	Peak	271	212																																																																																																								
5	2483.50	49.49	54.00	-4.51	54.80	-5.31	Average	271	193																																																																																																								
6	2483.50	66.81	74.00	-7.19	72.12	-5.31	Peak	271	193																																																																																																								
7	4874.00	33.56	54.00	-20.44	34.50	-0.94	Average	100	12																																																																																																								
8	4874.00	47.29	74.00	-26.71	48.23	-0.94	Peak	100	12																																																																																																								
9	7311.00	37.91	54.00	-16.09	33.58	4.33	Average	100	126																																																																																																								
10	7311.00	50.62	74.00	-23.38	46.29	4.33	Peak	100	126																																																																																																								



Modulation	ax HE20	Test Freq. (MHz)	2437						
Polarization	Vertical								
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61									
Level (dBUV/m) Frequency (MHz)									
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	53.31	54.00	-0.69	58.53	-5.22	Average	254	230
2	2390.00	73.58	74.00	-0.42	78.80	-5.22	Peak	254	230
3 *	2437.00	106.41			111.75	-5.34	Average	280	235
4 *	2437.00	119.13			124.47	-5.34	Peak	280	235
5	2483.50	52.55	54.00	-1.45	57.86	-5.31	Average	246	230
6	2483.50	70.18	74.00	-3.82	75.49	-5.31	Peak	246	230
7	4874.00	33.56	54.00	-20.44	34.50	-0.94	Average	100	224
8	4874.00	46.56	74.00	-27.44	47.50	-0.94	Peak	100	224
9	7311.00	39.22	54.00	-14.78	34.89	4.33	Average	100	334
10	7311.00	50.51	74.00	-23.49	46.18	4.33	Peak	100	334

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



Modulation		ax HE20			Test Freq. (MHz)		2462			
Polarization		Horizontal								
Test By		:Roger Lu-			Temperature(°C):26		Humidity(%):61			
Level (dBUV/m)										



Modulation		ax HE20			Test Freq. (MHz)		2462			
Polarization		Vertical								
Test By		:Roger Lu-		Temperature(°C):26		Humidity(%):61				
Level (dBUV/m) </										



Unwanted Emissions (Above 1GHz) for ax HE40

Modulation	ax HE40		Test Freq. (MHz)		2422	
Polarization	Horizontal					
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61						
Level (dBuV/m) </						



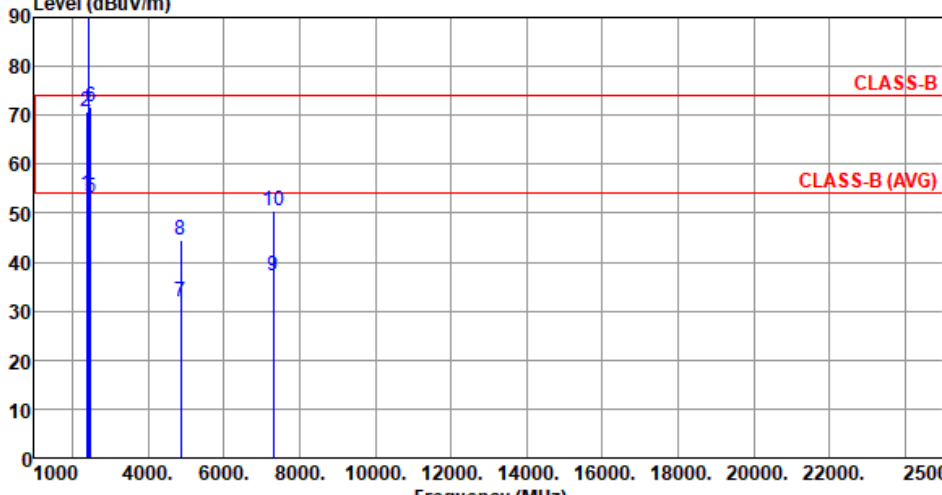
Modulation	ax HE40	Test Freq. (MHz)	2422
Polarization	Vertical		
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61			
Level (dBUV/m)			



Modulation	ax HE40	Test Freq. (MHz)	2437						
Polarization	Horizontal								
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61									
Level (dBuV/m) Frequency (MHz)									
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	52.56	54.00	-1.44	57.78	-5.22	Average	250	200
2	2390.00	70.10	74.00	-3.90	75.32	-5.22	Peak	250	200
3 *	2437.00	102.41			107.75	-5.34	Average	283	224
4 *	2437.00	111.39			116.73	-5.34	Peak	283	224
5	2483.50	53.00	54.00	-1.00	58.31	-5.31	Average	262	223
6	2483.50	69.99	74.00	-4.01	75.30	-5.31	Peak	262	223
7	4874.00	31.93	54.00	-22.07	32.87	-0.94	Average	100	126
8	4874.00	44.56	74.00	-29.44	45.50	-0.94	Peak	100	126
9	7311.00	36.98	54.00	-17.02	32.65	4.33	Average	100	58
10	7311.00	50.64	74.00	-23.36	46.31	4.33	Peak	100	58

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



Modulation	ax HE40	Test Freq. (MHz)	2437						
Polarization	Vertical								
Test By :Roger Lu- Temperature(°C):26 Humidity(%):61									
Level (dBUV/m)  Frequency (MHz)									
	Freq. MHz	Emission level dBUV/m	Limit dBUV/m	Margin dB	SA reading dBUV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2390.00	53.66	54.00	-0.34	58.88	-5.22	Average	205	224
2	2390.00	70.58	74.00	-3.42	75.80	-5.22	Peak	205	224
3 *	2437.00	101.80			107.14	-5.34	Average	219	254
4 *	2437.00	111.77			117.11	-5.34	Peak	219	254
5	2483.50	53.26	54.00	-0.74	58.57	-5.31	Average	218	219
6	2483.50	71.84	74.00	-2.16	77.15	-5.31	Peak	218	219
7	4874.00	31.77	54.00	-22.23	32.71	-0.94	Average	100	162
8	4874.00	44.34	74.00	-29.66	45.28	-0.94	Peak	100	162
9	7311.00	37.06	54.00	-16.94	32.73	4.33	Average	100	63
10	7311.00	50.31	74.00	-23.69	45.98	4.33	Peak	100	63

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



Modulation		ax HE40			Test Freq. (MHz)		2452			
Polarization		Horizontal								
Test By		:Roger Lu-			Temperature(°C):26		Humidity(%):61			
Level (dBUV/m)										

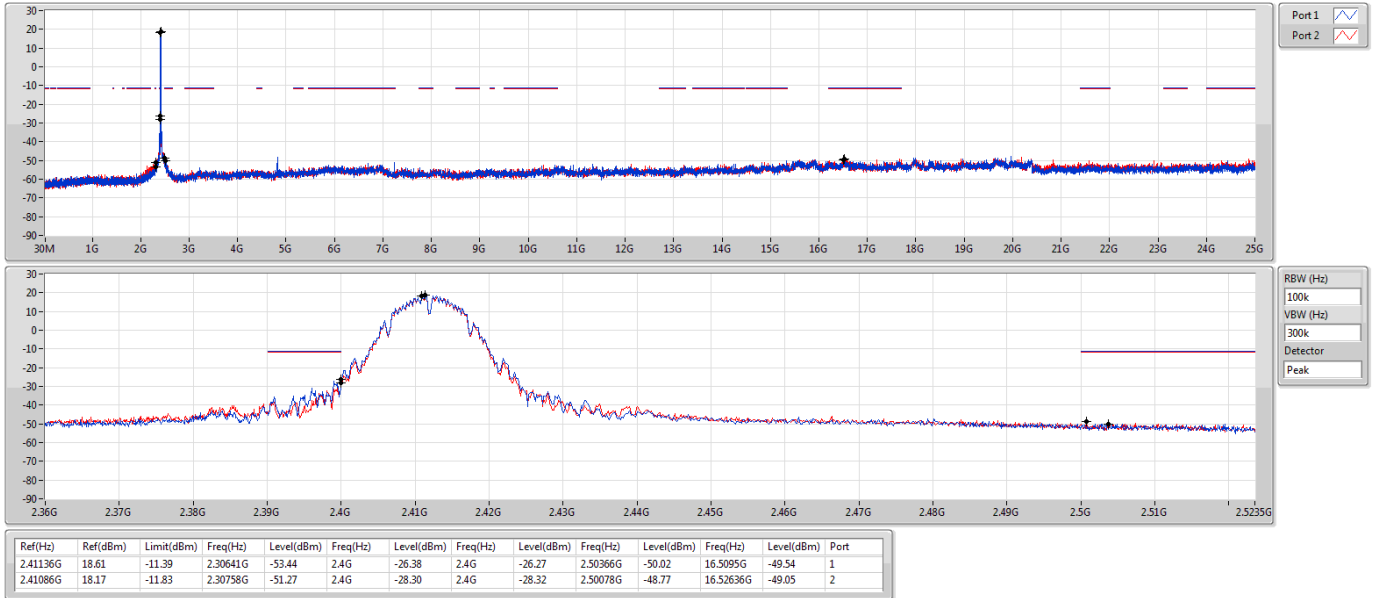


Modulation		ax HE40			Test Freq. (MHz)		2452		
Polarization		Vertical							
Test By		:Roger Lu-			Temperature(°C):26		Humidity(%):61		
Level (dBUV/m) </									

802.11b_Nss1,(1Mbps)_2TX

CSENdB

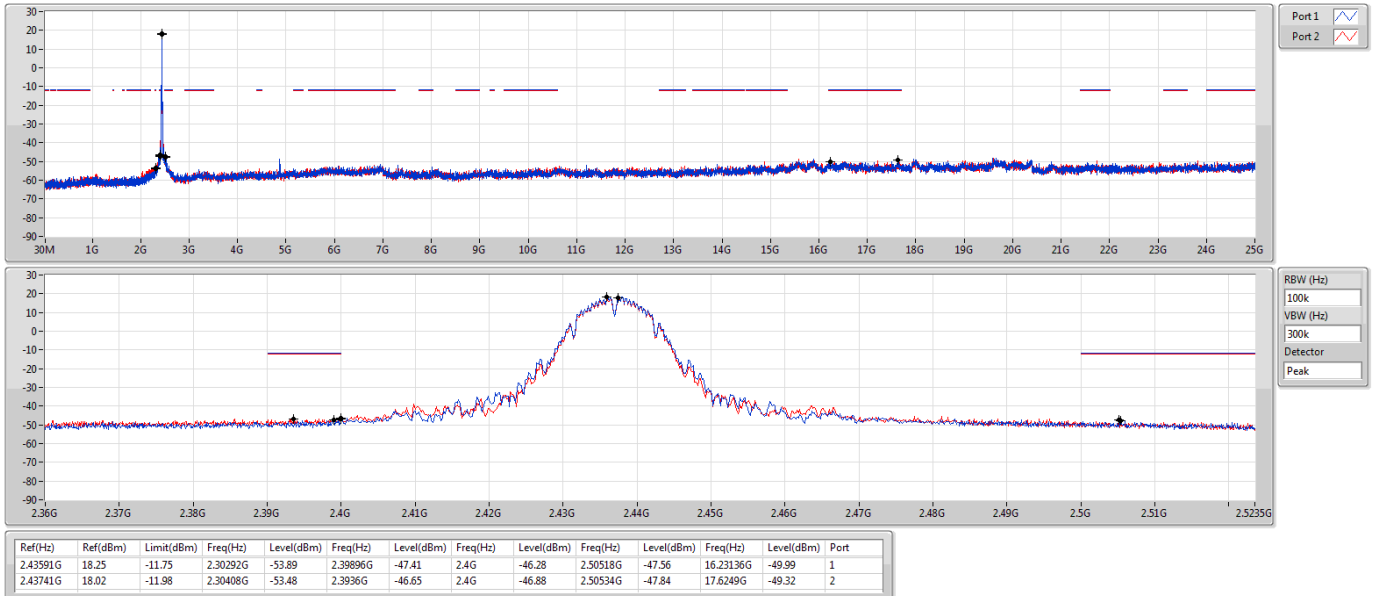
2412MHz



802.11b_Nss1,(1Mbps)_2TX

CSENdB

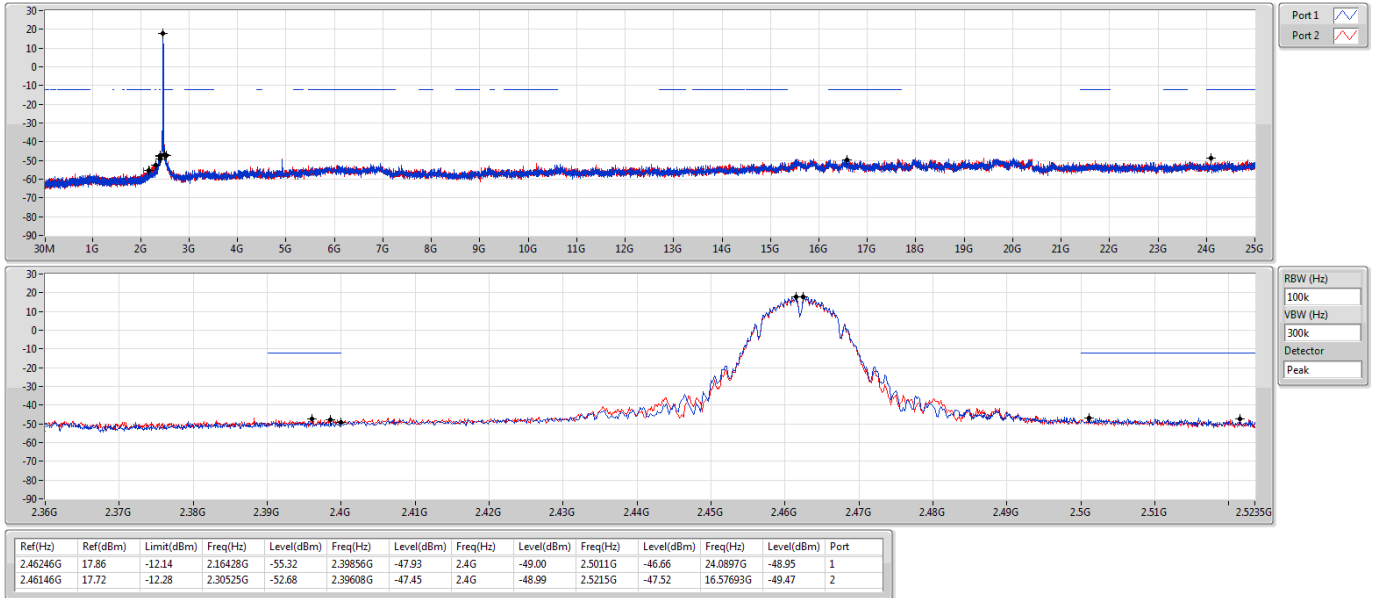
2437MHz



802.11b_Nss1,(1Mbps)_2TX

CSEndB

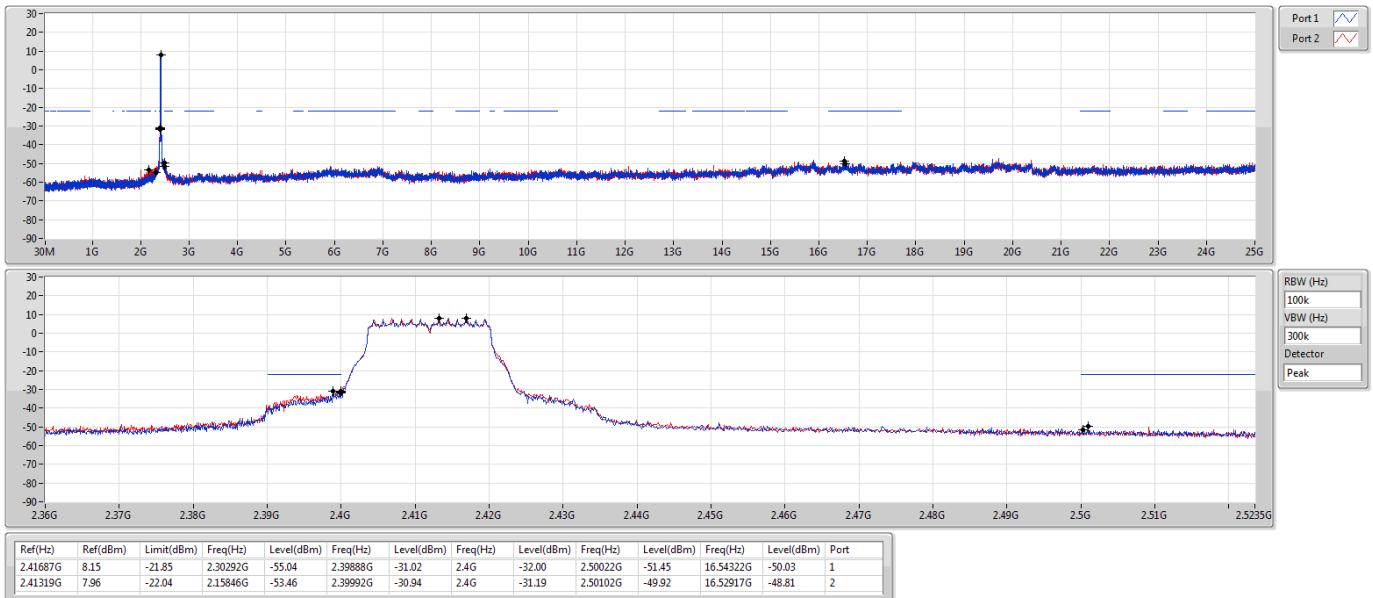
2462MHz



802.11g_Nss1,(6Mbps)_2TX

CSEndB

2412MHz

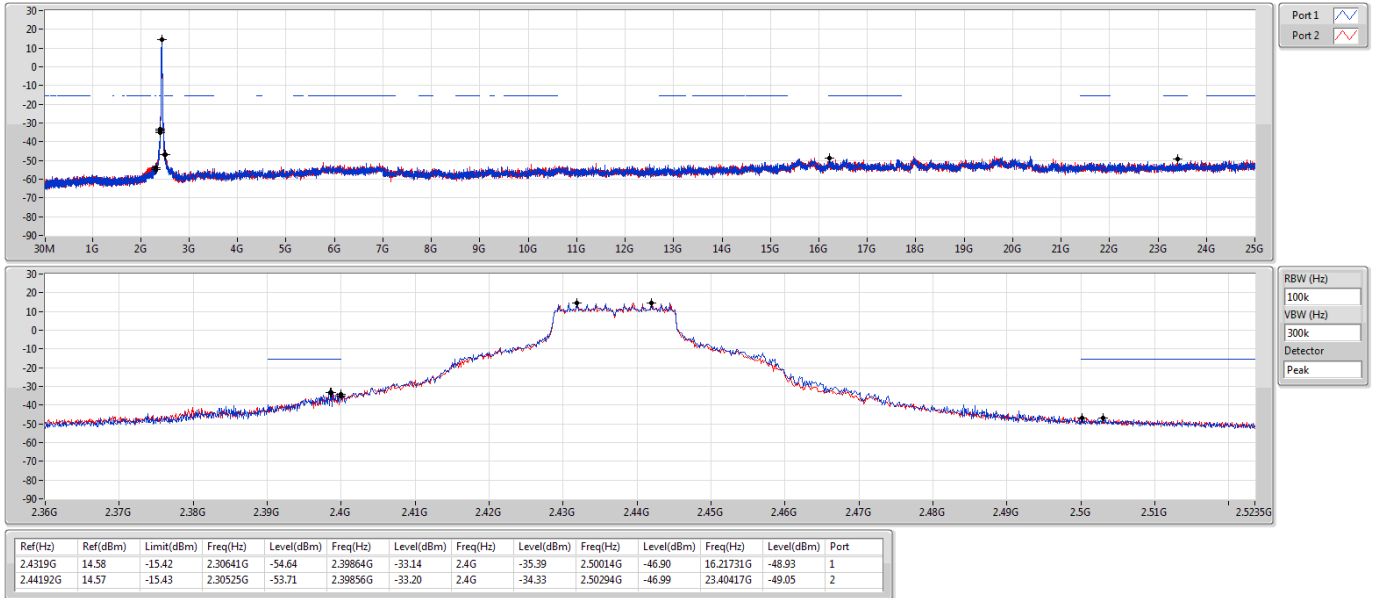




802.11g_Nss1,(6Mbps)_2TX

CSEndB

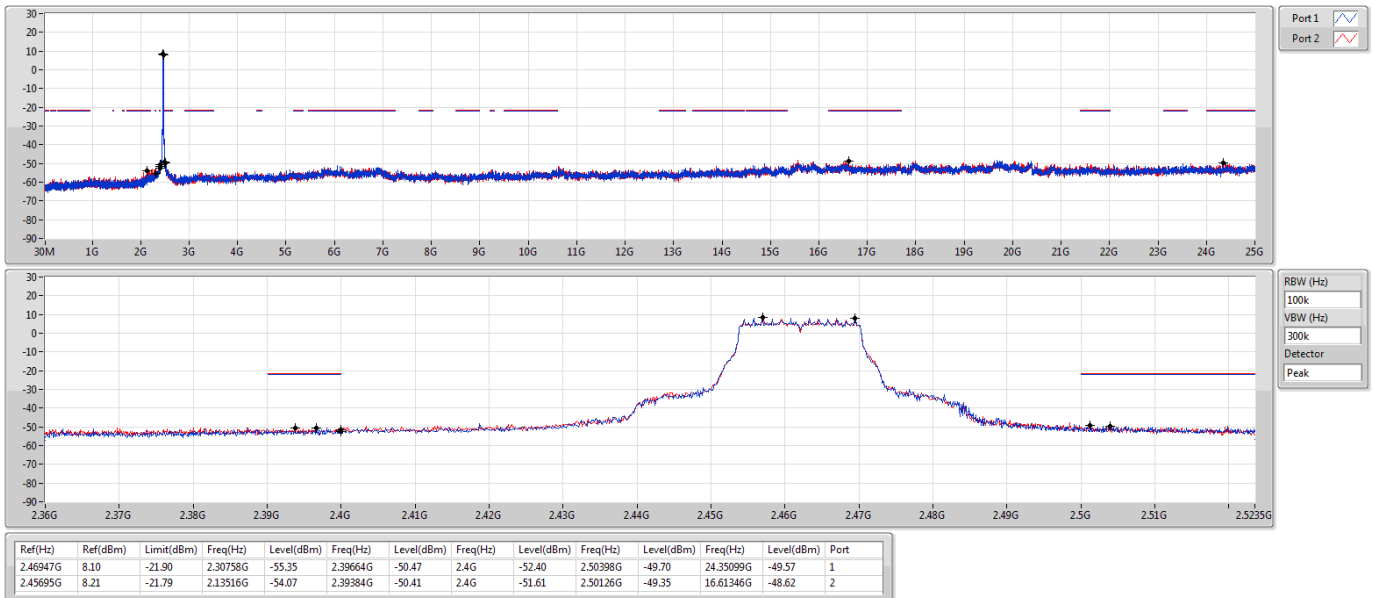
2437MHz



802.11g_Nss1,(6Mbps)_2TX

CSEndB

2462MHz

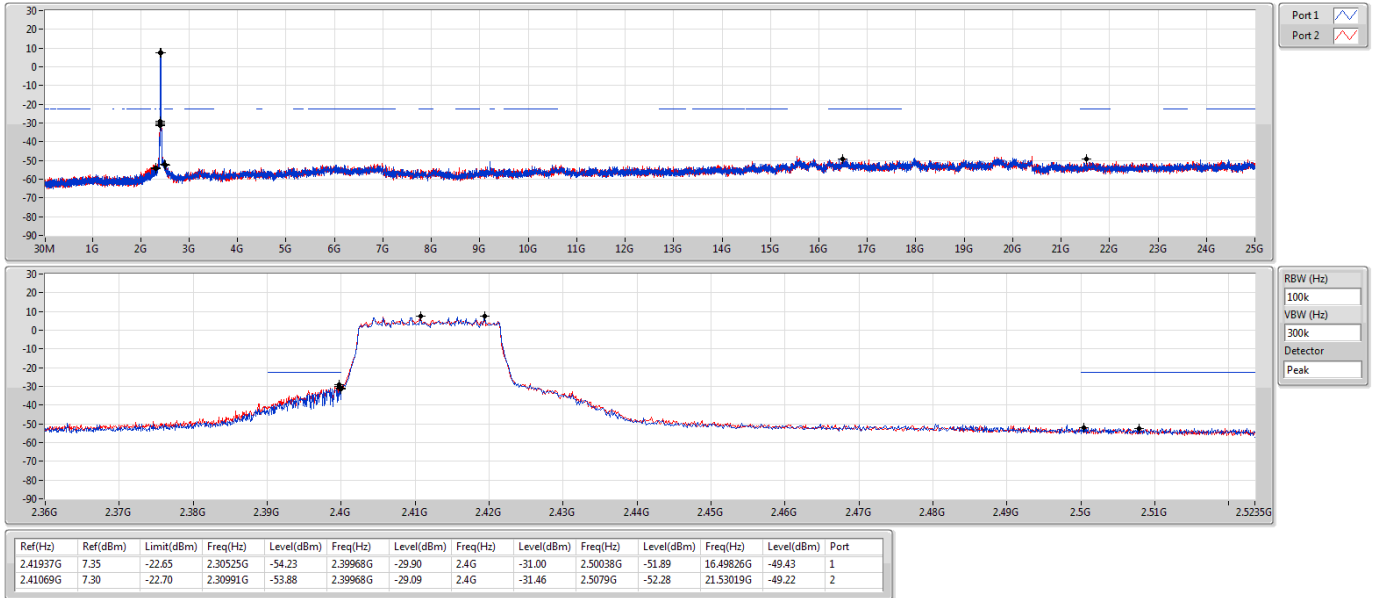




802.11ax HEW20_Nss1,(MCS0)_2TX

CSEndB

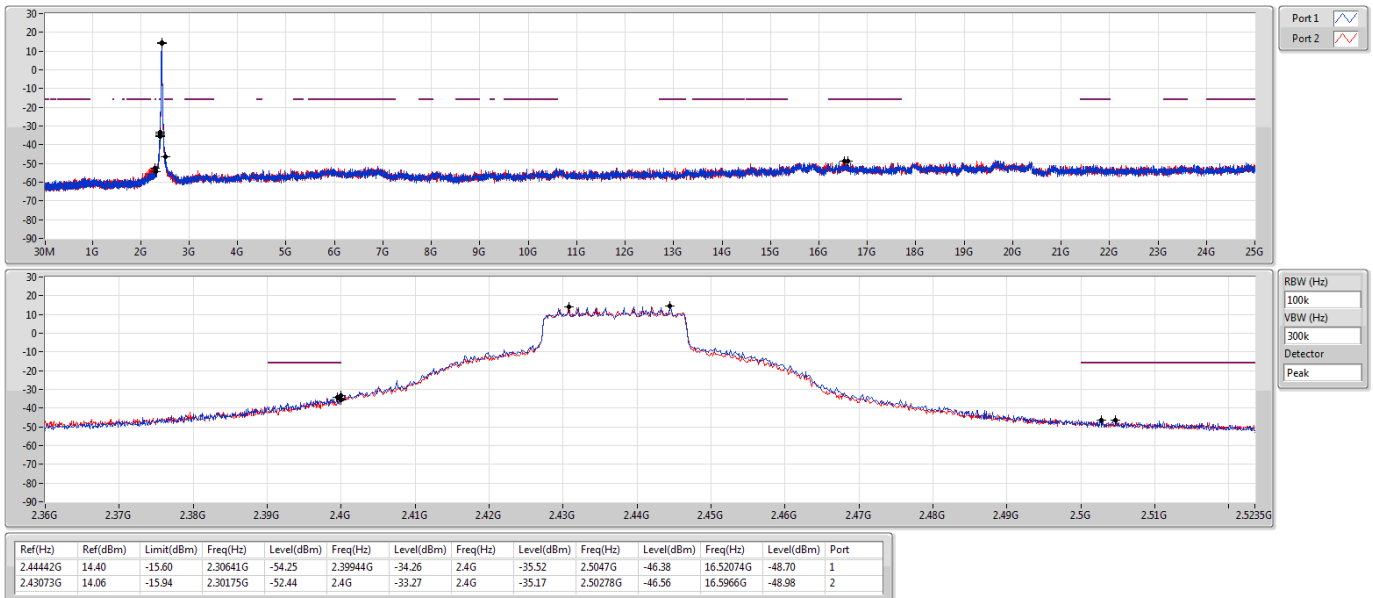
2412MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

CSEndB

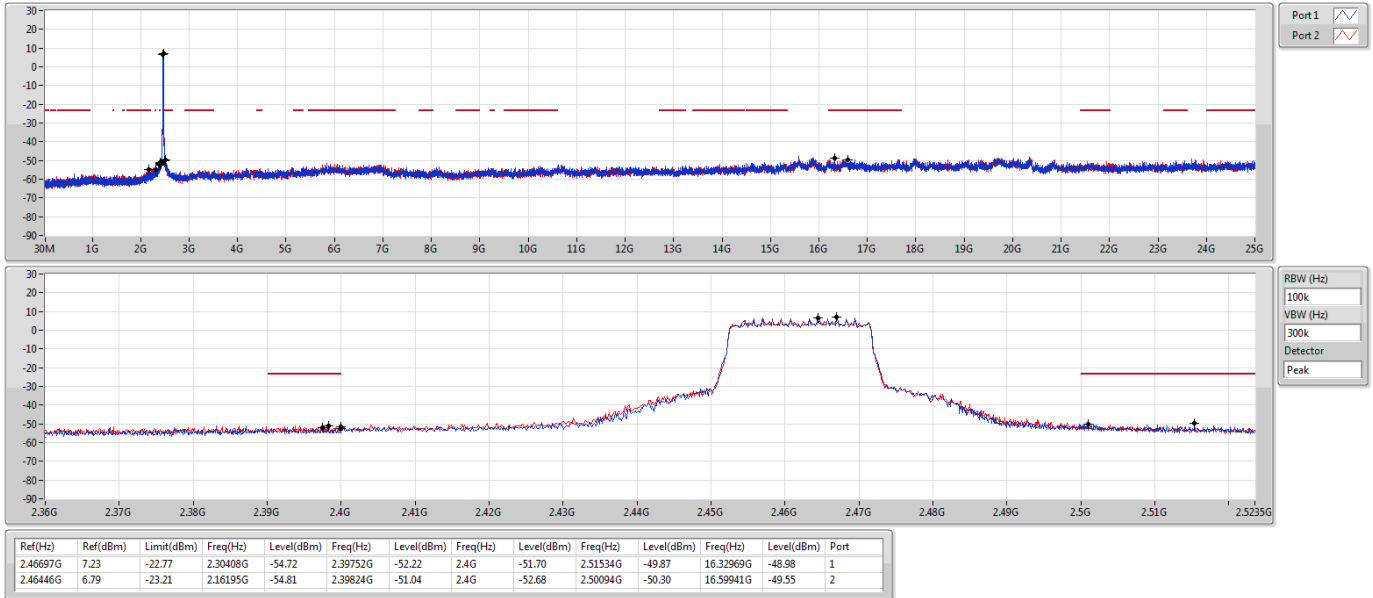
2437MHz



802.11ax HEW20_Nss1,(MCS0)_2TX

CSEndB

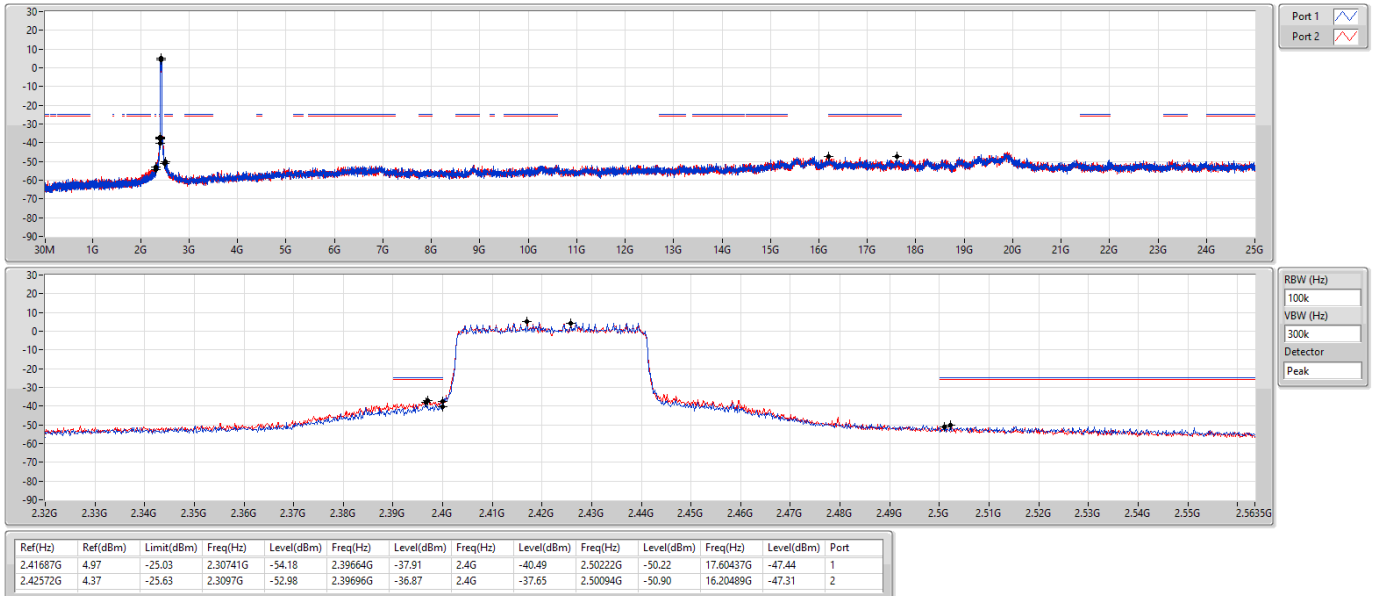
2462MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

CSEndB

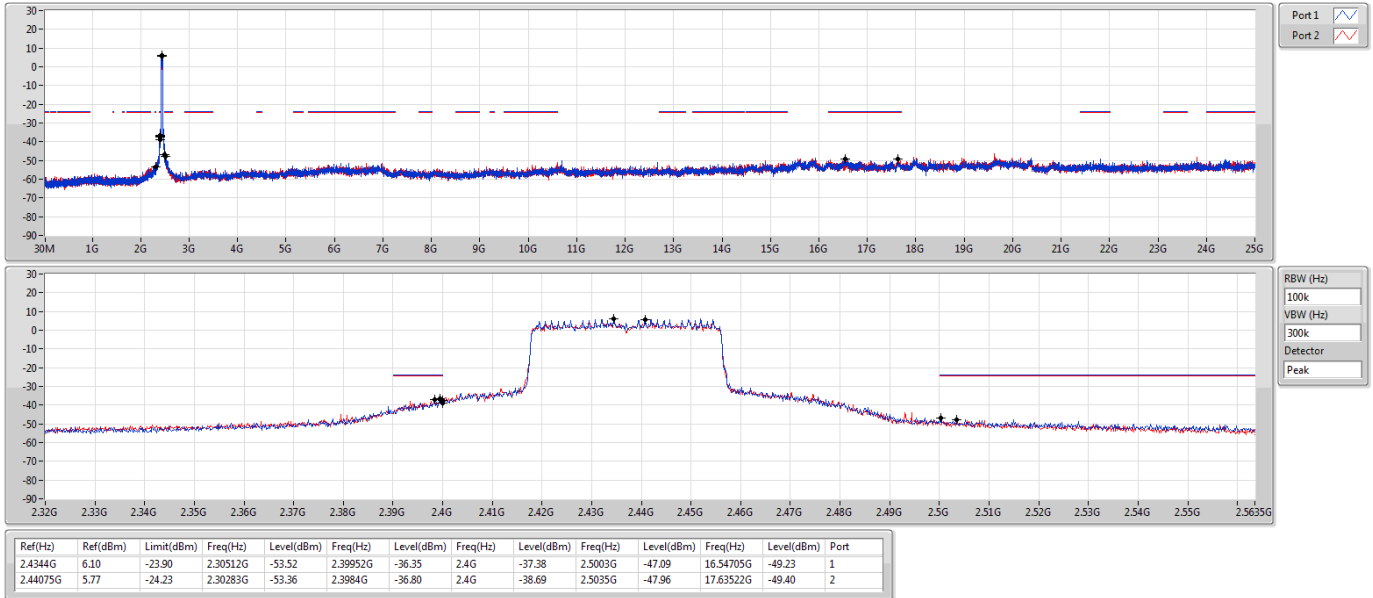
2422MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

CSEndB

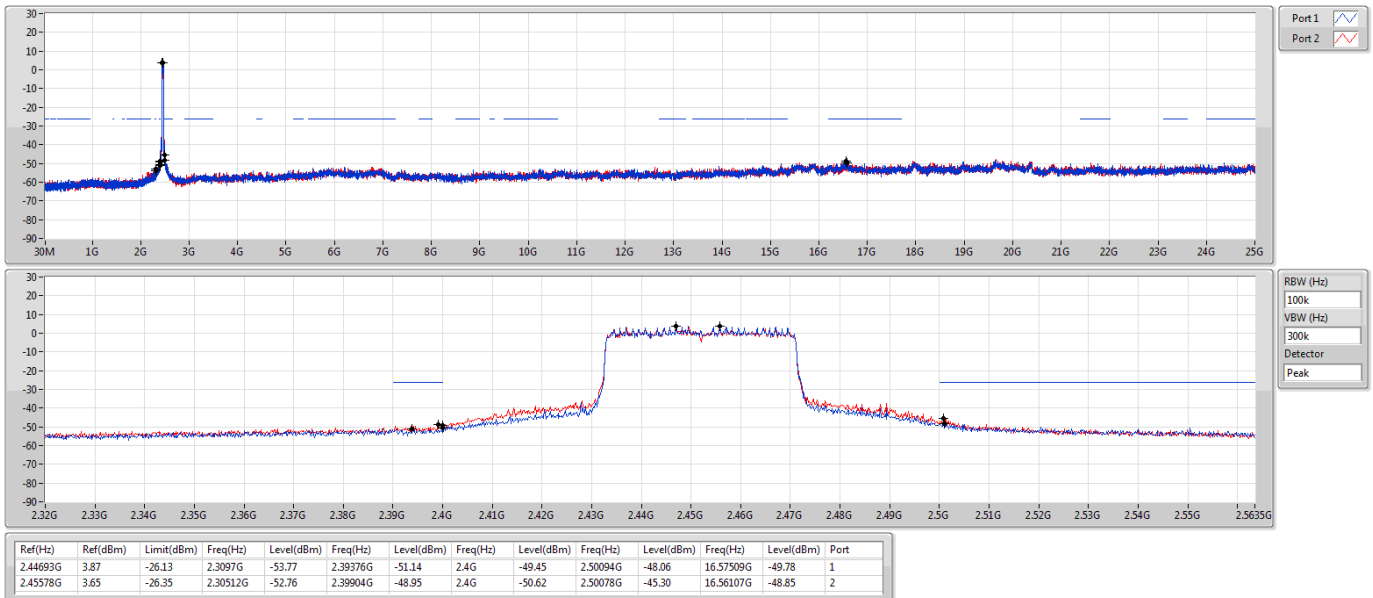
2437MHz



802.11ax HEW40_Nss1,(MCS0)_2TX

CSEndB

2452MHz



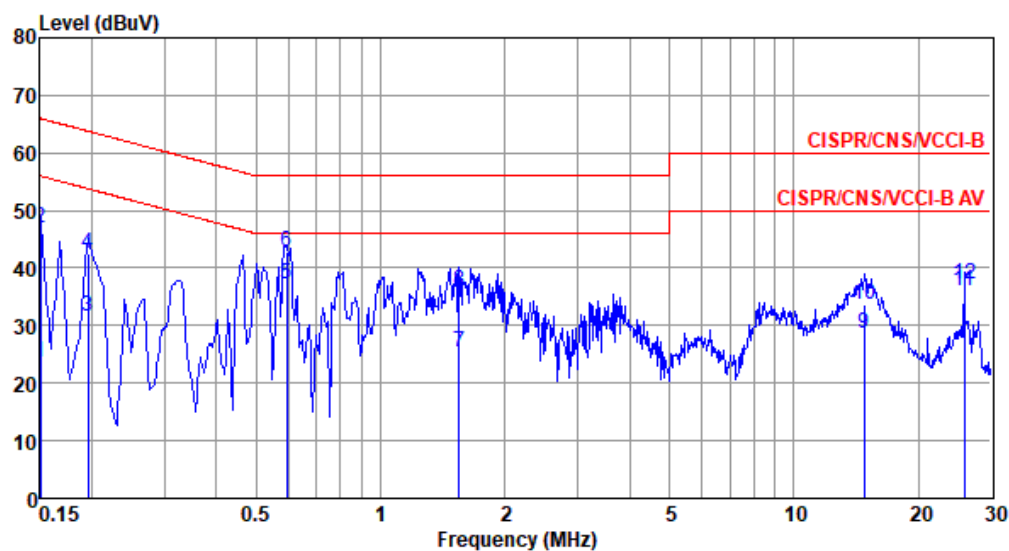


Modulation Mode	11b	Test Freq. (MHz)	2412
Power Phase	Line		

Test by : Joe Liao

Temperature: 24°C

Humidity: 60%



	Freq MHz	Level dBUV	Limit Line dBUV	Over Limit dB	Read Level dBUV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.150	23.55	56.00	-32.45	13.79	9.68	0.08	0.00	Average
2	0.150	46.98	66.00	-19.02	37.22	9.68	0.08	0.00	QP
3	0.195	31.49	53.80	-22.31	21.73	9.68	0.08	0.00	Average
4	0.195	42.63	63.80	-21.17	32.87	9.68	0.08	0.00	QP
5*	0.592	37.27	46.00	-8.73	27.49	9.67	0.11	0.00	Average
6	0.592	42.92	56.00	-13.08	33.14	9.67	0.11	0.00	QP
7	1.552	25.44	46.00	-20.56	15.56	9.69	0.19	0.00	Average
8	1.552	36.11	56.00	-19.89	26.23	9.69	0.19	0.00	QP
9	14.828	28.54	50.00	-21.46	18.25	9.73	0.56	0.00	Average
10	14.828	33.63	60.00	-26.37	23.34	9.73	0.56	0.00	QP
11	25.873	36.09	50.00	-13.91	25.69	9.69	0.71	0.00	Average
12	25.873	37.21	60.00	-22.79	26.81	9.69	0.71	0.00	QP

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

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

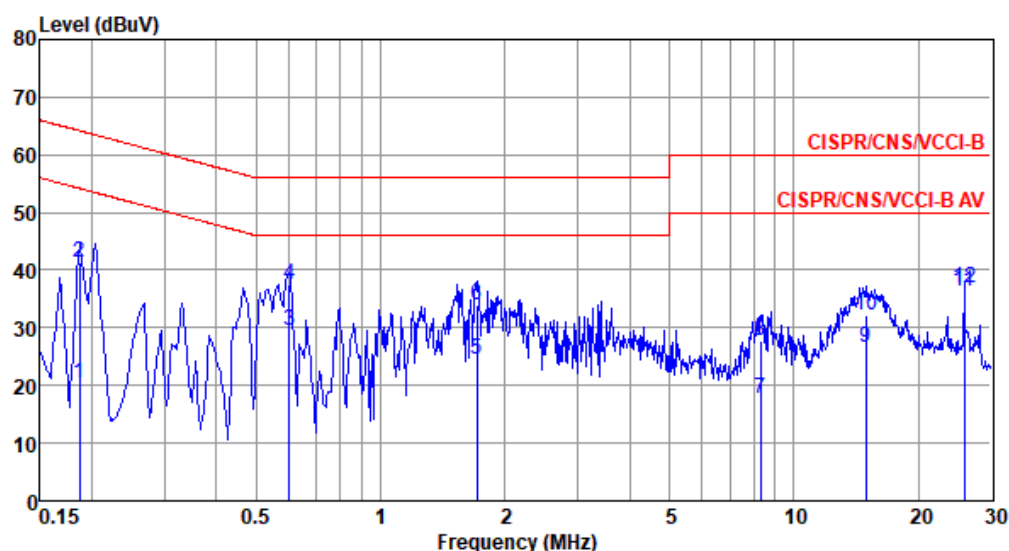


Modulation Mode	11b	Test Freq. (MHz)	2412
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 24°C

Humidity: 60%



	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	Remark
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	
			dBuV	dB	dBuV		dB		
1	0.186	20.46	54.20	-33.74	10.77	9.61	0.08	0.00	Average
2	0.186	41.41	64.20	-22.79	31.72	9.61	0.08	0.00	QP
3	0.601	29.65	46.00	-16.35	19.92	9.61	0.12	0.00	Average
4	0.601	37.63	56.00	-18.37	27.90	9.61	0.12	0.00	QP
5	1.707	24.57	46.00	-21.43	14.76	9.62	0.19	0.00	Average
6	1.707	33.81	56.00	-22.19	24.00	9.62	0.19	0.00	QP
7	8.323	17.65	50.00	-32.35	7.57	9.68	0.40	0.00	Average
8	8.323	27.78	60.00	-32.22	17.70	9.68	0.40	0.00	QP
9	14.907	26.65	50.00	-23.35	16.34	9.75	0.56	0.00	Average
10	14.907	32.17	60.00	-27.83	21.86	9.75	0.56	0.00	QP
11*	25.873	36.29	50.00	-13.71	25.80	9.78	0.71	0.00	Average
12	25.873	37.02	60.00	-22.98	26.53	9.78	0.71	0.00	QP

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

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