

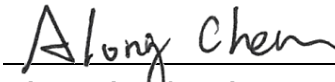
FCC Test Report

FCC ID : 2AJAC-AN820API
Equipment : Araknis Networks 820-series Wi-Fi 6 AX3600
Indoor Wireless Access Point
Model No. : AN-820-AP-I
Brand Name : Araknis Networks
Applicant : Snap One, LLC
Address : 1800 Continental Blvd Suite 200-300 Charlotte,
North Carolina 28273 USA
Standard : 47 CFR FCC Part 15.247
Received Date : Nov. 22, 2021
Tested Date : Dec. 25, 2021 ~ Jan. 12, 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:

Approved by:


Along Chen / Assistant Manager

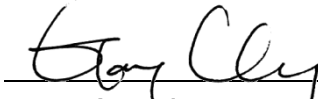

Gary Chang / Manager

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Release Record

Report No.	Version	Description	Issued Date
FR1N2202AC	Rev. 01	Initial issue	Mar. 07, 2022

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.437MHz 45.07 (Margin -2.04dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 2390.00MHz 53.25 (Margin -0.75dB) – AV	Pass
15.247(b)(3)	Maximum Output Power	Max Power [dBm]: 29.84	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS
2400-2483.5	b	2412-2462	1-11 [11]	4	1-11 Mbps
2400-2483.5	g	2412-2462	1-11 [11]	4	6-54 Mbps
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	4	MCS 0-31
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	4	MCS 0-31
2400-2483.5	ax (HE20)	2412-2462	1-11 [11]	4	MCS 0-11
2400-2483.5	ax (HE40)	2422-2452	3-9 [7]	4	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: 802.11ax supports beamforming function.

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	5718A0660300	PIFA	UFL	4.67	--	--	--	--
2	5718A0374300	PIFA	UFL	4.67	--	--	--	--
3	5718A0673300	PIFA	UFL	4.67	--	--	--	--
4	5718A0386300	PIFA	UFL	4.67	--	--	--	--
5	5718A0424300	PIFA	UFL	--	4.99	4.99	4.99	4.99
6	5718A0212300	PIFA	UFL	--	4.99	4.99	4.99	4.99
7	5718A0212300	PIFA	UFL	--	4.99	4.99	4.99	4.99
8	5718A0529300	PIFA	UFL	--	4.99	4.99	4.99	4.99

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	12V from AC adapter 54V from POE
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Note: The above power supplies are not bundled in market.

1.1.4 Accessories

Accessories		
No.	Equipment	Description
1	RJ45 cable	0.24m non-shielded without core

1.1.5 Channel List

Frequency band (MHz)		2400~2483.5	
802.11bg / 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

Test Tool	QSPR, V5.0-00195		
Duty Cycle and Duty Factor	Mode	Duty Cycle (%)	Duty Factor (dB)
	11b	64.09%	1.93
	11g	92.73%	0.33
	ax HE20-OFDMA	94.09%	0.26
	ax HE40-OFDMA	82.90%	0.81

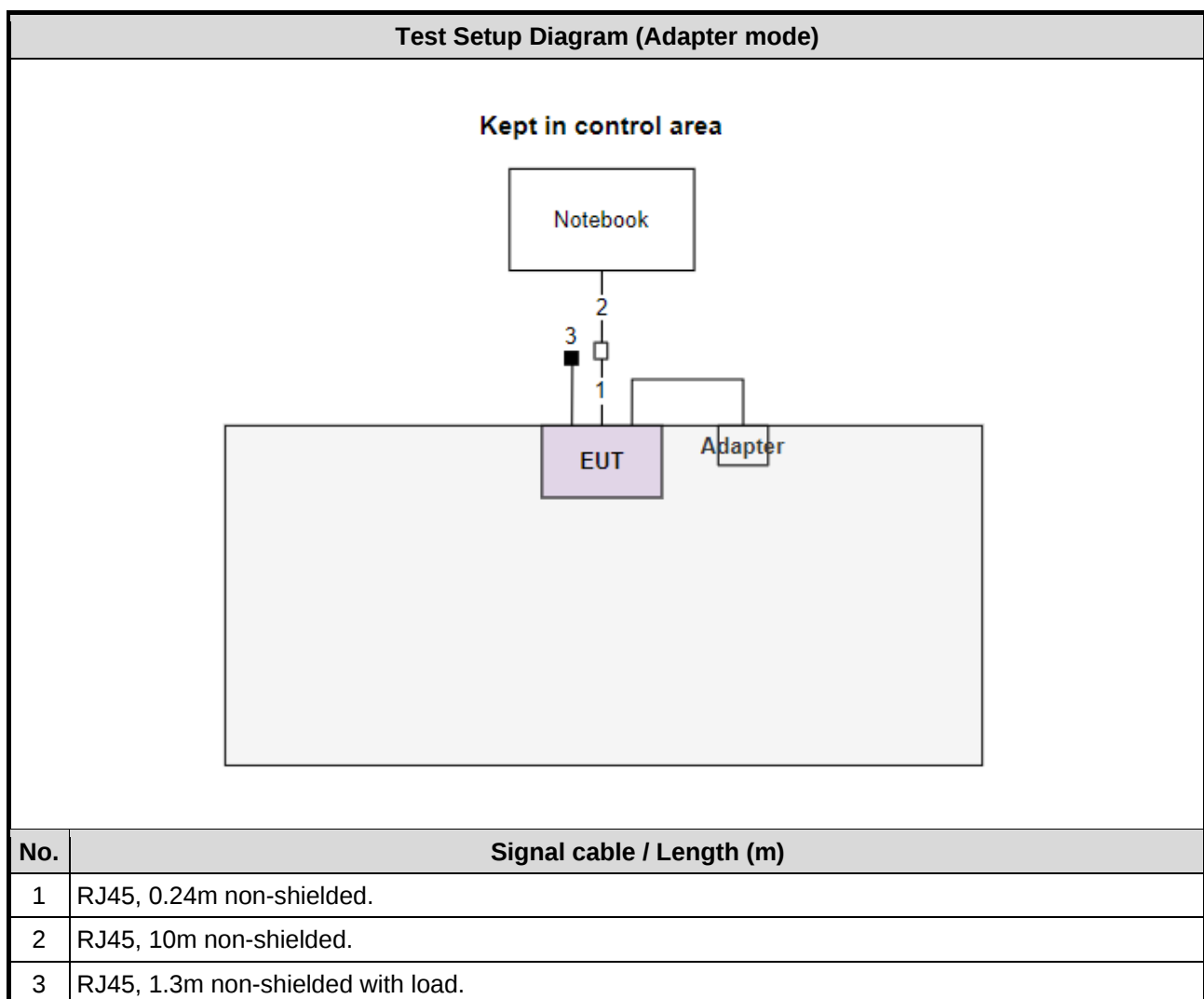
1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)	Power Index
11b	2412	22.5
11b	2437	23.5
11b	2462	23.5
11g	2412	18.5
11g	2437	23.5
11g	2462	19.5
ax HE20-OFDMA	2412	17.5
ax HE20-OFDMA	2437	24
ax HE20-OFDMA	2462	17.5
ax HE40-OFDMA	2422	15
ax HE40-OFDMA	2437	16.5
ax HE40-OFDMA	2452	15.5

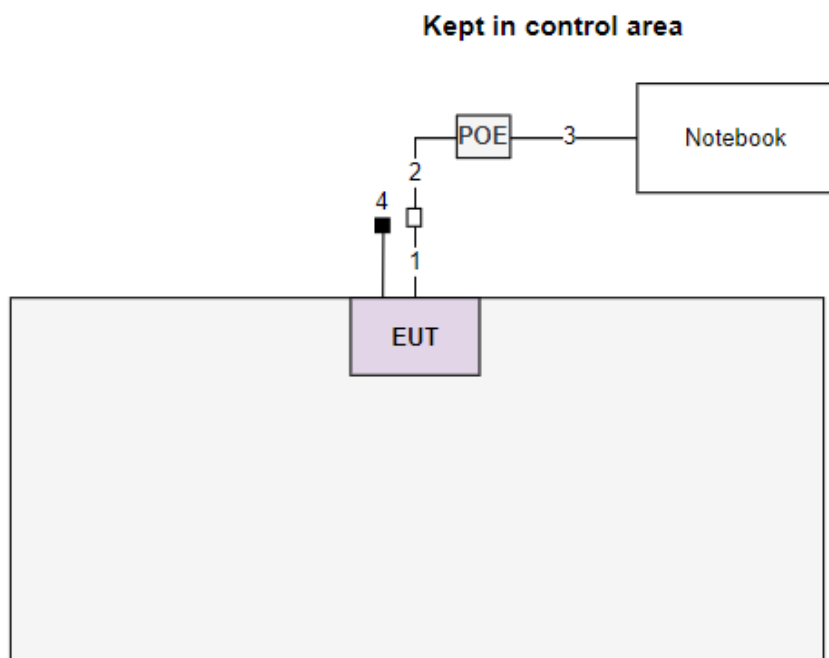
1.2 Local Support Equipment List

Support Equipment List					
No.	Equipment	Brand	Model	FCC ID	Remarks
1	Notebook	DELL	Latitude E5470	DoC	---
2	Adapter	ASIAN POWER DEVICES INC.	WA-48B12FU	---	Remarks: I/P: 100-240V~, 50~60Hz, 1.5A Max. O/P: 12V=4A 48W (Provided by applicant.)
3	POE	EnGenius	PNA60BGS-54	---	Remarks: I/P: 100-240V~, 50~60Hz, 1.5A O/P: 54V=1.11A (Provided by applicant.)
4	RJ45 load	ICC	---	---	---

1.3 Test Setup Chart



Test Setup Diagram (POE mode)



No.	Signal cable / Length (m)
1	RJ45, 0.24m non-shielded.
2	RJ45, 10m non-shielded.
3	RJ45, 1.3m non-shielded.
4	RJ45, 1.3m non-shielded with load.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Jan. 03, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101658	Feb. 08, 2021	Feb. 07, 2022
LISN	R&S	ENV216	101579	Mar. 17, 2021	Mar. 16, 2022
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127-477	Feb. 25, 2021	Feb. 24, 2022
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 19, 2021	Oct. 18, 2022
50 ohm terminal (Support Unit)	NA	50	04	May 25, 2021	May 24, 2022
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber3 / (03CH03-WS)				
Tested Date	Dec. 25, 2021 ~ Jan. 07, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Receiver	R&S	ESR3	101657	Mar. 12, 2021	Mar. 11, 2022
Spectrum Analyzer	R&S	FSV40	101499	Mar. 02, 2021	Mar. 01, 2022
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 08, 2021	Nov. 07, 2022
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	May 06, 2021	May 05, 2022
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Dec. 20, 2021	Dec. 19, 2022
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2021	Nov. 03, 2022
Preamplifier	EMC	EMC02325	980187	Jul. 26, 2021	Jul. 25, 2022
Preamplifier	Agilent	83017A	MY39501309	Sep. 06, 2021	Sep. 05, 2022
Preamplifier	EMC	EMC184045B	980192	Jul. 14, 2021	Jul. 13, 2022
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 05, 2021	Oct. 04, 2022
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Sep. 24, 2021	Sep. 23, 2022
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Sep. 24, 2021	Sep. 23, 2022
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Sep. 24, 2021	Sep. 23, 2022
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Sep. 24, 2021	Sep. 23, 2022
RF cable-8M	EMC	EMC104-SM-SM-8000	181107	Sep. 24, 2021	Sep. 23, 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	Jan. 12, 2022				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Spectrum Analyzer	R&S	FSV40	101498	Nov. 29, 2021	Nov. 28, 2022
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	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	± 3.96 dB
Radiated emission > 1 GHz	± 4.9 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-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.)
Test Site	03CH03-WS
Address of Test Site	No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.)

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISSED#: 10807A
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Non-beamforming mode				
Conducted Emissions	ax HE20-OFDMA	2437	MCS 0	1, 2
Radiated Emissions ≤1GHz	ax HE20-OFDMA	2437	MCS 0	1, 2
Maximum Output Power 6dB bandwidth Power spectral density Radiated Emissions >1GHz	11b 11g ax HE20-OFDMA ax HE40-OFDMA	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462 2422 / 2437 / 2452	1 Mbps 6 Mbps MCS 0 MCS 0	1
Beamforming mode				
Maximum Output Power	ax HE20-OFDMA ax HE40-OFDMA	2412 / 2437 / 2462 2422 / 2437 / 2452	MCS 0 MCS 0	1
NOTE: 1. Test Configurations are listed as follows: 1) Test Configuration 1: POE mode 2) Test Configuration 2: Adapter mode				

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

POE mode

3.1.4 Test Result of Conducted Emissions

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437						
Power Phase	Line								
Test by : Joe Liao Temperature: 22°C Humidity: 62%									
Level (dBuV) Frequency (MHz)									
	Freq	Level	Limit	Over	Read	Factor	Cable	Aux	Remark
	MHz	dBuV	Line	Limit	Level	dB	loss	dB	
			dBuV	dB	dBuV		dB		
1	0.150	35.27	56.00	-20.73	25.33	9.66	0.08	0.20	Average
2	0.150	51.19	66.00	-14.81	41.25	9.66	0.08	0.20	QP
3*	0.437	39.83	47.11	-7.28	29.74	9.64	0.09	0.36	Average
4	0.437	43.18	57.11	-13.93	33.09	9.64	0.09	0.36	QP
5	2.190	24.19	46.00	-21.81	13.94	9.66	0.20	0.39	Average
6	2.190	39.17	56.00	-16.83	28.92	9.66	0.20	0.39	QP
7	2.285	24.01	46.00	-21.99	13.75	9.66	0.20	0.40	Average
8	2.285	40.70	56.00	-15.30	30.44	9.66	0.20	0.40	QP
9	2.334	24.97	46.00	-21.03	14.71	9.66	0.20	0.40	Average
10	2.334	40.37	56.00	-15.63	30.11	9.66	0.20	0.40	QP
11	2.594	25.19	46.00	-20.81	14.93	9.66	0.20	0.40	Average
12	2.594	40.92	56.00	-15.08	30.66	9.66	0.20	0.40	QP
13	19.021	34.37	50.00	-15.63	23.42	9.68	0.64	0.63	Average
14	19.021	39.84	60.00	-20.16	28.89	9.68	0.64	0.63	QP
15	21.035	31.91	50.00	-18.09	20.90	9.68	0.67	0.66	Average
16	21.035	38.40	60.00	-21.60	27.39	9.68	0.67	0.66	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).

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

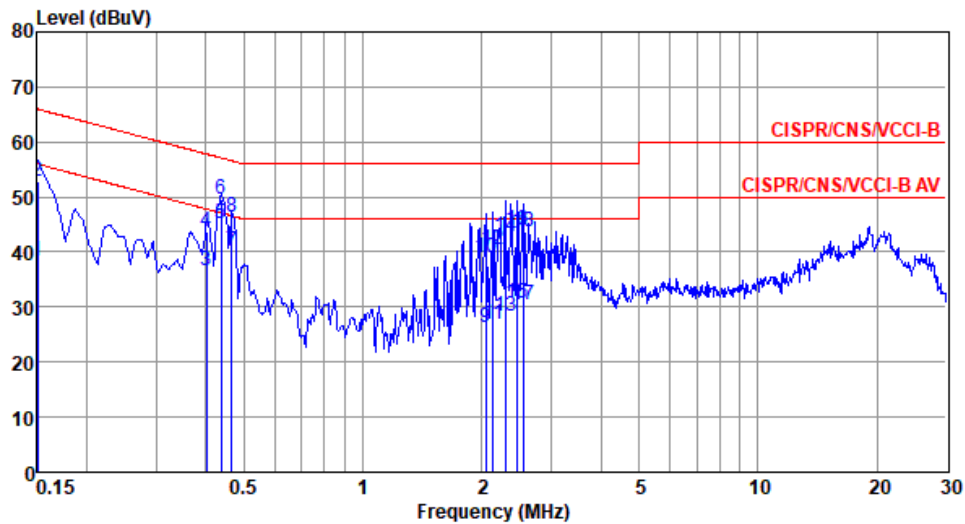
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437
Power Phase	Neutral		

Test by : Joe Liao

Temperature: 22°C

Humidity: 62%



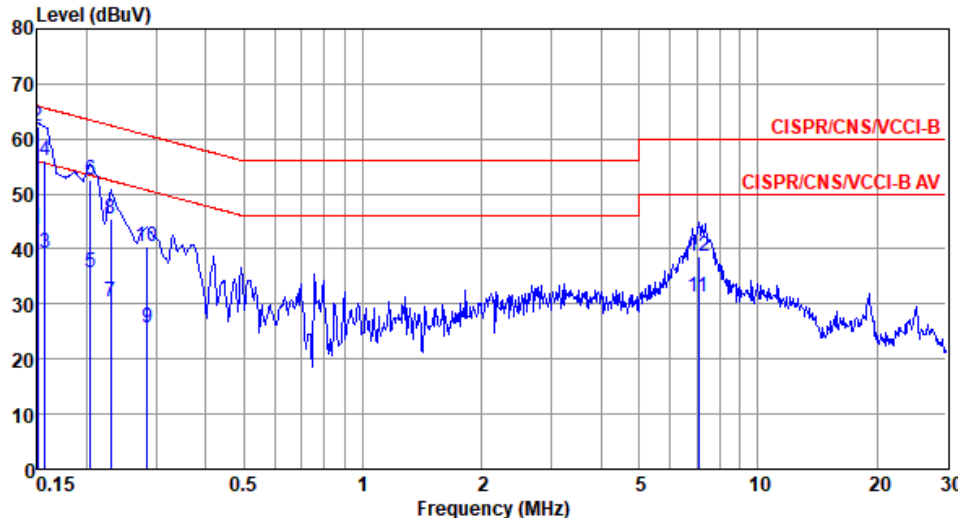
	Freq MHz	Level dBuV	Limit Line dBuV	Over Limit dB	Read Level dBuV	Factor dB	Cable loss dB	Aux dB	Remark
1	0.150	38.23	56.00	-17.77	28.30	9.69	0.08	0.16	Average
2	0.150	52.83	66.00	-13.17	42.90	9.69	0.08	0.16	QP
3	0.402	36.56	47.81	-11.25	26.62	9.67	0.08	0.19	Average
4	0.402	43.60	57.81	-14.21	33.66	9.67	0.08	0.19	QP
5*	0.437	45.07	47.11	-2.04	35.11	9.67	0.09	0.20	Average
6	0.437	49.60	57.11	-7.51	39.64	9.67	0.09	0.20	QP
7	0.466	40.15	46.58	-6.43	30.18	9.67	0.09	0.21	Average
8	0.466	46.35	56.58	-10.23	36.38	9.67	0.09	0.21	QP
9	2.044	26.38	46.00	-19.62	16.19	9.69	0.20	0.30	Average
10	2.044	38.93	56.00	-17.07	28.74	9.69	0.20	0.30	QP
11	2.133	26.87	46.00	-19.13	16.68	9.69	0.20	0.30	Average
12	2.133	40.44	56.00	-15.56	30.25	9.69	0.20	0.30	QP
13	2.297	28.33	46.00	-17.67	18.13	9.69	0.20	0.31	Average
14	2.297	42.85	56.00	-13.15	32.65	9.69	0.20	0.31	QP
15	2.448	30.82	46.00	-15.18	20.62	9.69	0.20	0.31	Average
16	2.448	43.90	56.00	-12.10	33.70	9.69	0.20	0.31	QP
17	2.540	30.41	46.00	-15.59	20.21	9.69	0.20	0.31	Average
18	2.540	43.65	56.00	-12.35	33.45	9.69	0.20	0.31	QP

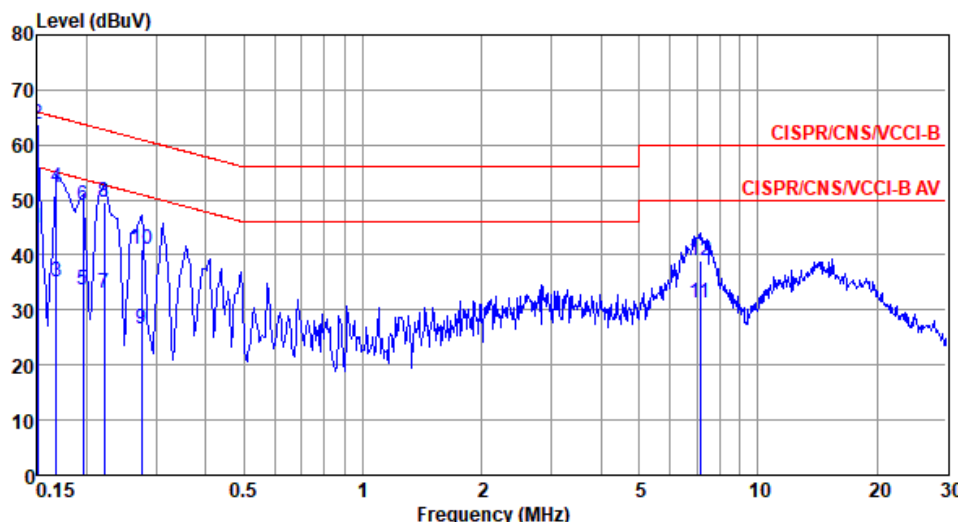
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).

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

Adapter mode

3.1.5 Test Result of Conducted Emissions

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437																																																																																																																																		
Power Phase	Line																																																																																																																																				
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Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437																																																																																																																																																						
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3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

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

3.2.2 Test Procedures

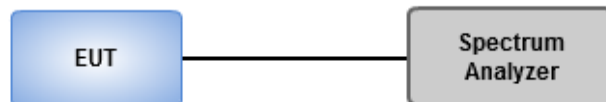
6dB Bandwidth

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

Occupied Bandwidth

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

3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

Ambient Condition	18°C / 65%	Tested By	Aska Huang
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Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_4TX	8.551M	13.025M	13M0G1D	6.594M	12.952M
802.11g_Nss1,(6Mbps)_4TX	16.377M	16.498M	16M5D1D	16.232M	16.353M
802.11ax HEW20_OFDMA_Nss1,(MCS0)_4TX	18.986M	19.03M	19M0D1D	18.623M	18.813M
802.11ax HEW40_OFDMA_Nss1,(MCS0)_4TX	38.116M	37.916M	37M9D1D	37.971M	37.771M

Max-N dB = Maximum 6dB down bandwidth; **Max-OBW** = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; **Min-OBW** = Minimum 99% occupied bandwidth;

Result

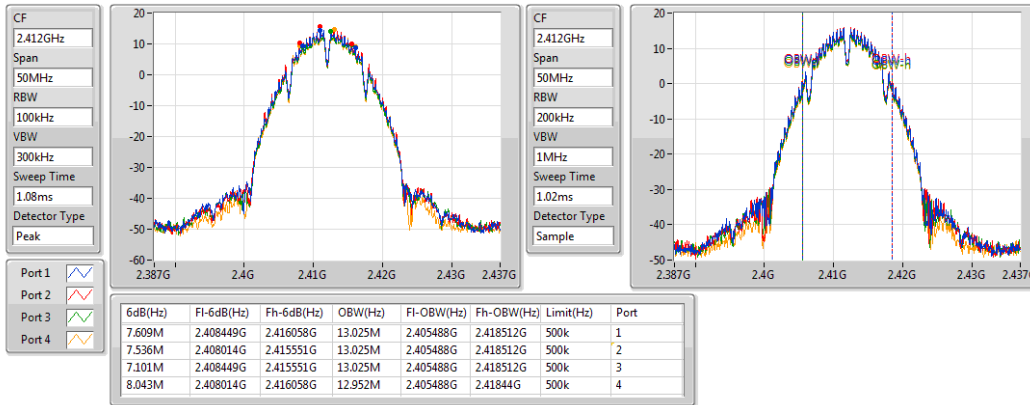
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
802.11b_Nss1,(1Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	7.609M	13.025M	7.536M	13.025M	7.101M	13.025M	8.043M	12.952M
2437MHz	Pass	500k	7.609M	13.025M	7.609M	13.025M	6.594M	13.025M	7.029M	12.952M
2462MHz	Pass	500k	8.551M	13.025M	7.029M	13.025M	7.536M	13.025M	7.536M	12.952M
802.11g_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	16.377M	16.353M	16.304M	16.353M	16.304M	16.353M	16.377M	16.353M
2437MHz	Pass	500k	16.232M	16.425M	16.377M	16.425M	16.304M	16.498M	16.304M	16.425M
2462MHz	Pass	500k	16.377M	16.353M	16.304M	16.353M	16.377M	16.353M	16.377M	16.353M
802.11ax HEW20_OFDMA_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	18.768M	18.886M	18.913M	18.886M	18.623M	18.886M	18.696M	18.813M
2437MHz	Pass	500k	18.696M	19.03M	18.986M	19.03M	18.623M	18.958M	18.623M	18.958M
2462MHz	Pass	500k	18.986M	18.886M	18.913M	18.958M	18.913M	18.886M	18.623M	18.813M
802.11ax HEW40_OFDMA_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	500k	38.116M	37.771M	37.971M	37.771M	38.116M	37.916M	37.971M	37.771M
2437MHz	Pass	500k	37.971M	37.916M	37.971M	37.916M	37.971M	37.771M	37.971M	37.771M
2452MHz	Pass	500k	38.116M	37.916M	37.971M	37.771M	37.971M	37.771M	37.971M	37.916M

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

802.11b_Nss1,(1Mbps)_4TX

EBW

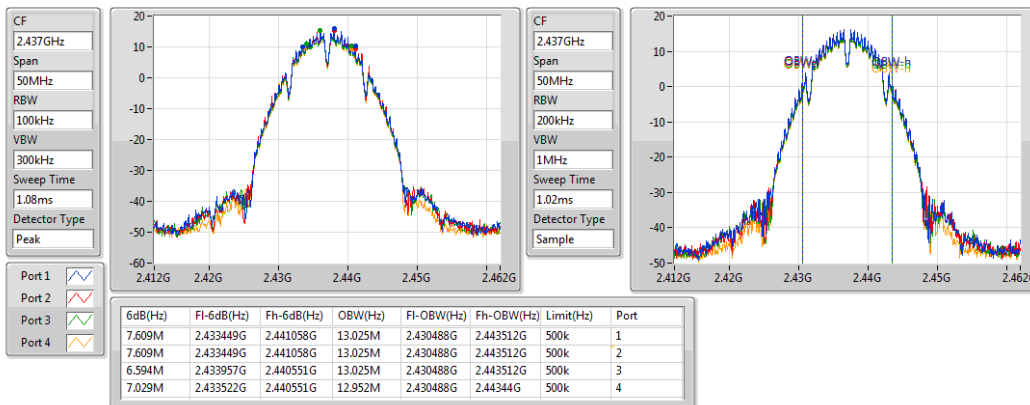
2412MHz



802.11b_Nss1,(1Mbps)_4TX

EBW

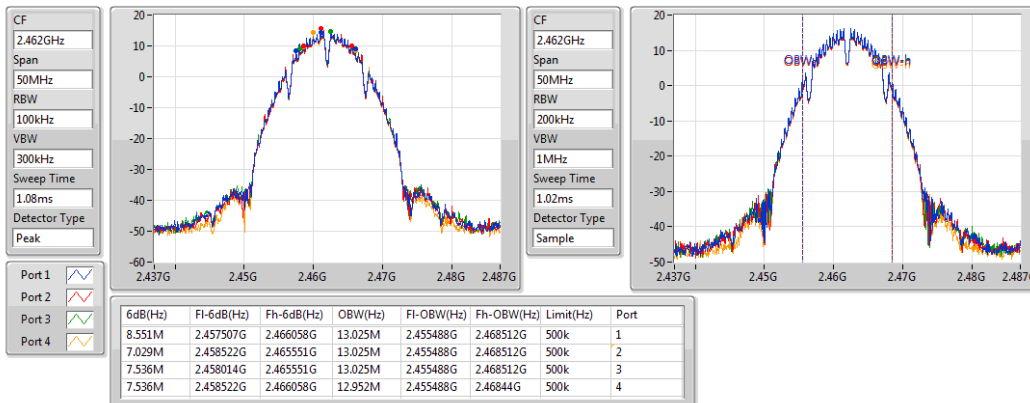
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802.11b_Nss1,(1Mbps)_4TX

EBW

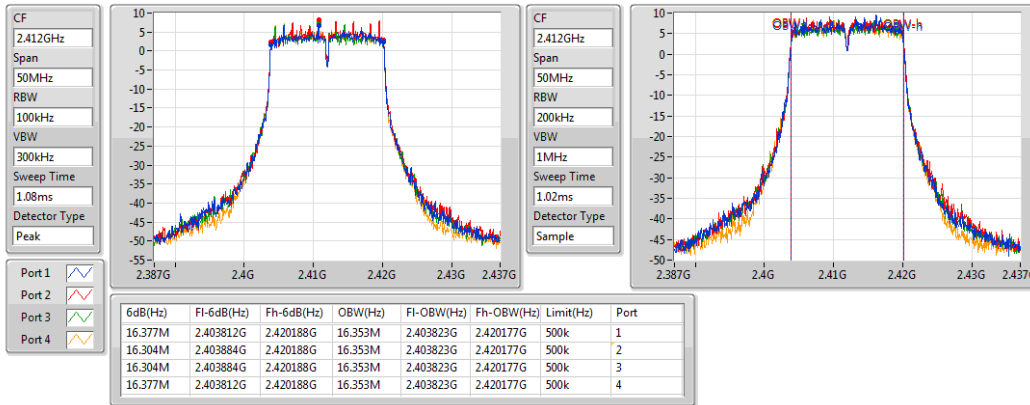
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802.11g_Nss1,(6Mbps)_4TX

EBW

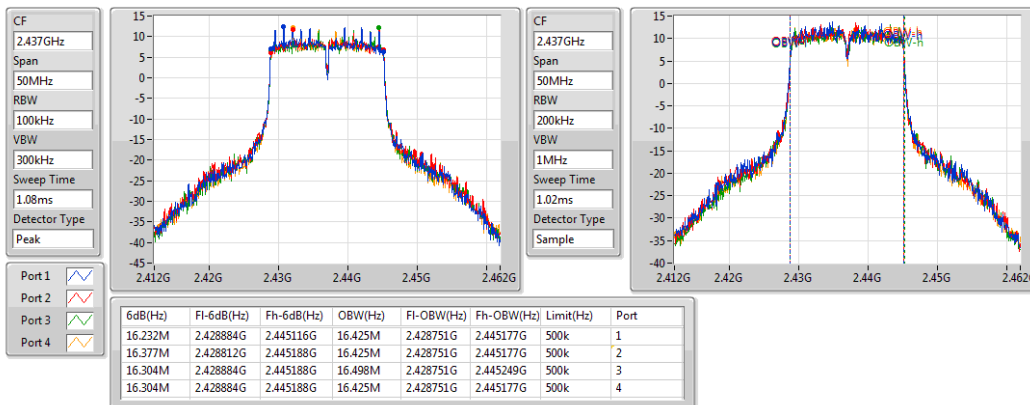
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802.11g_Nss1,(6Mbps)_4TX

EBW

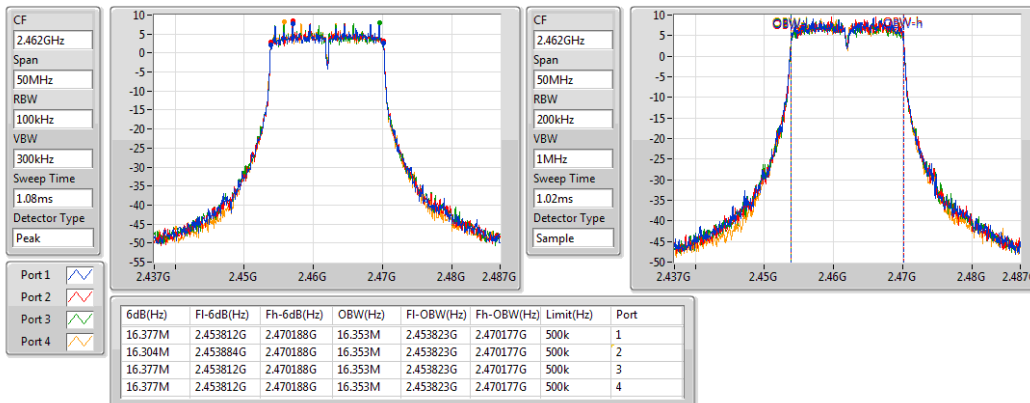
2437MHz



802.11g_Nss1,(6Mbps)_4TX

EBW

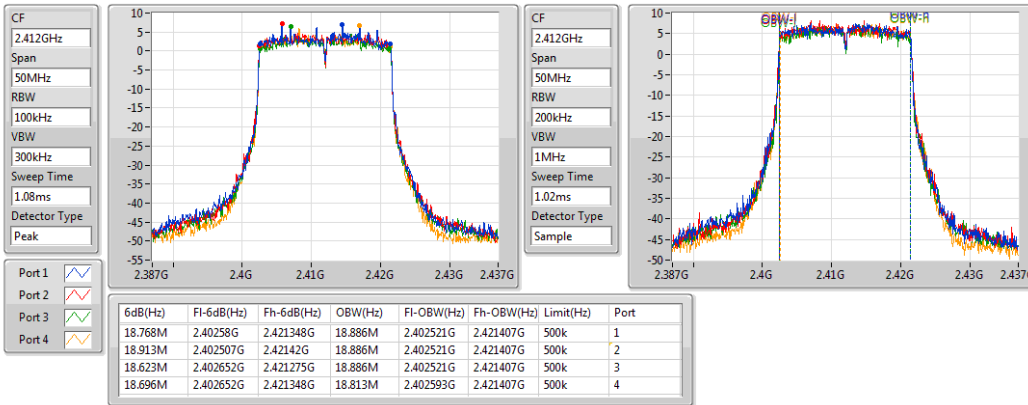
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11AX20_Nss1,(MCS0)_4TX

EBW

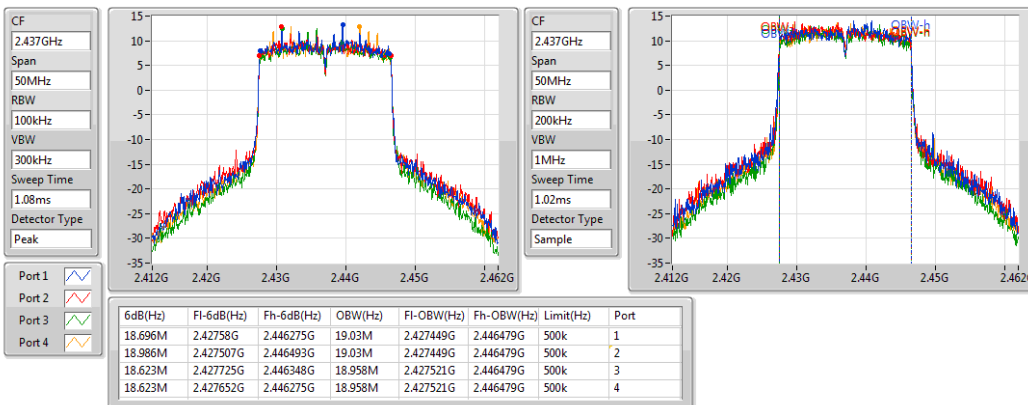
2412MHz



11AX20_Nss1,(MCS0)_4TX

EBW

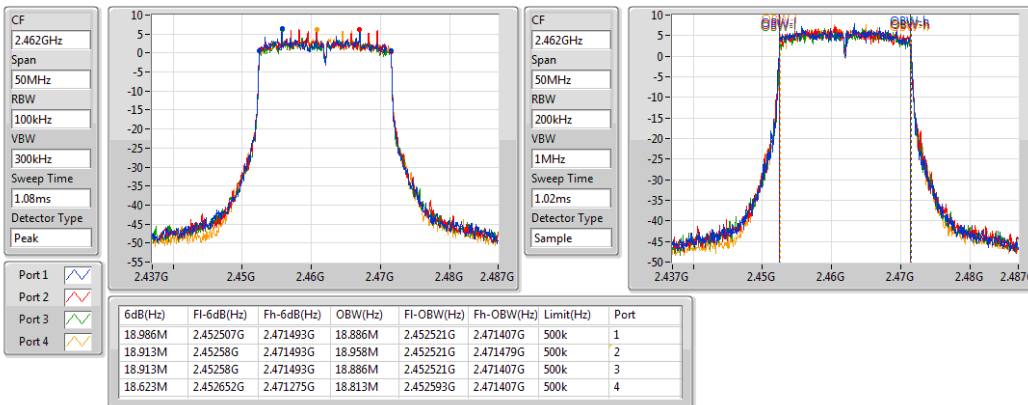
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11AX20_Nss1,(MCS0)_4TX

EBW

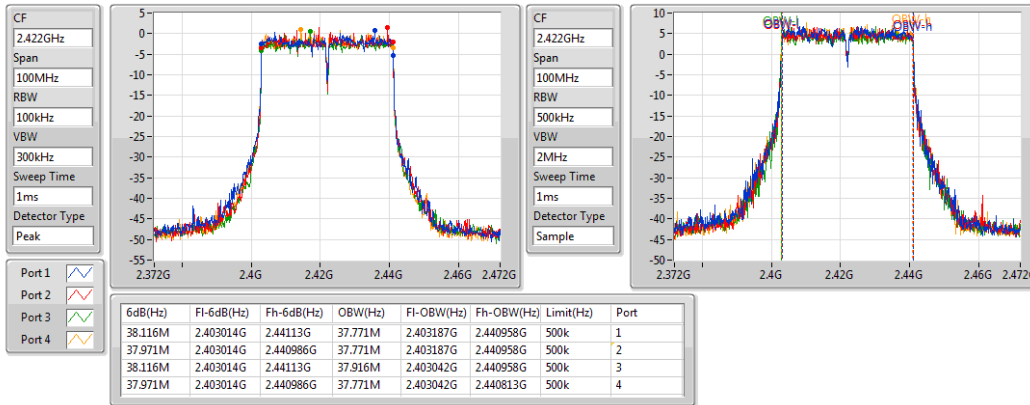
2462MHz



11AX40_Nss1,(MCS0)_4TX

EBW

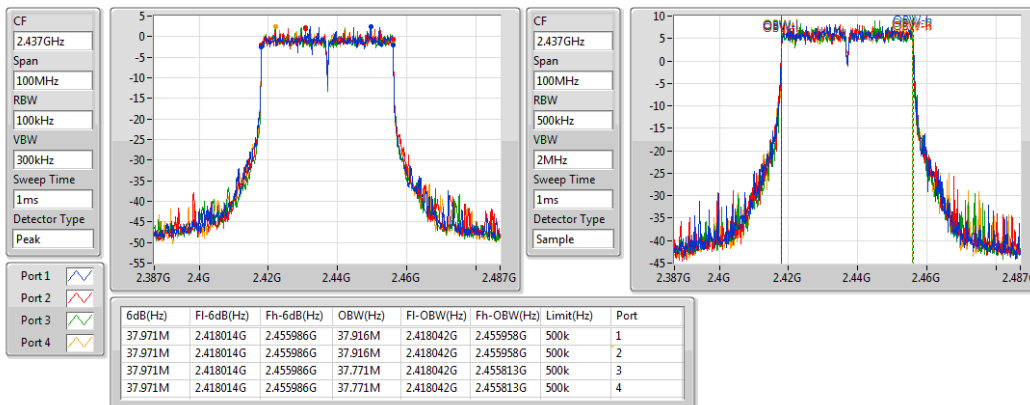
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11AX40_Nss1,(MCS0)_4TX

EBW

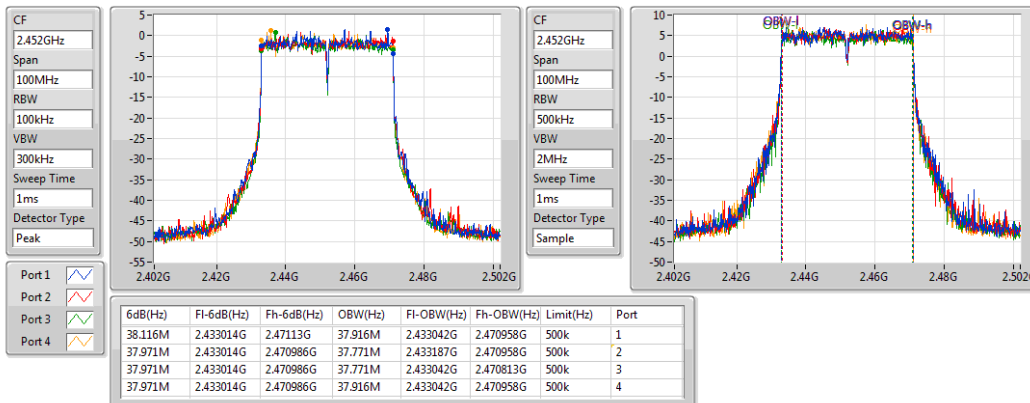
2437MHz



11AX40_Nss1,(MCS0)_4TX

EBW

2452MHz



3.3 RF Output Power

3.3.1 Limit of RF Output Power

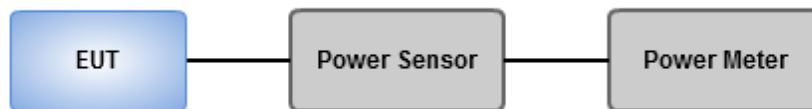
Conducted power shall not exceed 1Watt.

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

3.3.2 Test Procedures

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

3.3.3 Test Setup



3.3.4 Test Result of Maximum Output Power

Ambient Condition	18°C / 65%	Tested By	Aska Huang
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Non-beamforming mode

Summary of Conducted (Average) Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_4TX	29.68	0.92897
802.11g_Nss1,(6Mbps)_4TX	29.25	0.84140
11AX20_Nss1,(MCS0)_4TX	29.84	0.96383
11AX40_Nss1,(MCS0)_4TX	22.53	0.17906

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11b_Nss1,(1Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	4.67	23.21	23.53	22.60	22.33	28.96	30.00	33.63	36.00
2437MHz	Pass	4.67	23.86	23.61	23.71	23.15	29.61	30.00	34.28	36.00
2462MHz	Pass	4.67	23.48	23.71	23.62	23.81	29.68	30.00	34.35	36.00
802.11g_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	4.67	18.87	19.29	18.62	18.75	24.91	30.00	29.58	36.00
2437MHz	Pass	4.67	23.32	23.36	23.12	23.1	29.25	30.00	33.92	36.00
2462MHz	Pass	4.67	19.43	19.54	19.41	19.35	25.45	30.00	30.12	36.00
11AX20_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	4.67	18.27	18.64	17.75	17.98	24.19	30.00	28.86	36.00
2437MHz	Pass	4.67	23.98	24.05	23.55	23.66	29.84	30.00	34.51	36.00
2462MHz	Pass	4.67	17.81	17.72	17.43	17.71	23.69	30.00	28.36	36.00
11AX40_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	4.67	15.56	15.55	14.86	15.31	21.35	30.00	26.02	36.00
2437MHz	Pass	4.67	16.71	16.73	16.2	16.37	22.53	30.00	27.20	36.00
2452MHz	Pass	4.67	15.73	15.41	14.88	15.53	21.42	30.00	26.09	36.00

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

Beamforming mode

Summary of Conducted (Average) Output Power

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11ax HEW20_OFDMA,BF_Nss1,(MCS0)_4TX	23.82	0.24099
802.11ax HEW40_OFDMA,BF_Nss1,(MCS0)_4TX	16.51	0.04477

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Port 3 (dBm)	Port 4 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11ax HEW20_OFDMA,BF_Nss1,(MC S0)_4TX	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	10.69	12.25	12.62	11.73	11.96	18.17	25.31	28.86	36.00
2437MHz	Pass	10.69	17.96	18.03	17.53	17.64	23.82	25.31	34.51	36.00
2462MHz	Pass	10.69	11.79	11.7	11.41	11.69	17.67	25.31	28.36	36.00
802.11ax HEW40_OFDMA,BF_Nss1,(MC S0)_4TX	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	10.69	9.54	9.53	8.84	9.29	15.33	25.31	26.02	36.00
2437MHz	Pass	10.69	10.69	10.71	10.18	10.35	16.51	25.31	27.20	36.00
2452MHz	Pass	10.69	9.71	9.39	8.86	9.51	15.40	25.31	26.09	36.00

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

Directional gain = $4.67\text{dBi} + 10 \cdot \log(4/1) = 10.69\text{ dBi} > 6\text{dBi}$, limit shall be reduced to $30\text{dBm} - (10.69\text{dBi} - 6\text{dBi}) = 25.31\text{dBm}$.

3.4 Power Spectral Density

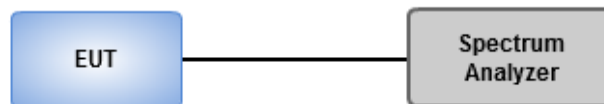
3.4.1 Limit of Power Spectral Density

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

3.4.2 Test Procedures

- 1 Set the RBW = 30 kHz, VBW = 100 kHz. Detector = RMS.
- 2 Set the sweep time to: ≥ 10 (number of measurement points in sweep) x (total on/off period of the transmitted signal).
- 3 Perform the measurement over a single sweep.
- 4 Use the peak marker function to determine the maximum amplitude level.
- 5 Add $10 \log (1/x)$, where x is the duty cycle.

3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Ambient Condition	18°C / 65%	Tested By	Aska Huang
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Summary

Mode	PD (dBm/3kHz)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_4TX	2.12
802.11g_Nss1,(6Mbps)_4TX	-3.09
802.11ax HEW20_OFDMA_Nss1,(MCS0)_4TX	-2.53
802.11ax HEW40_OFDMA_Nss1,(MCS0)_4TX	-13.32

Result

Mode	Result	DG (dBi)	Port 1 (dBm/3kHz)	Port 2 (dBm/3kHz)	Port 3 (dBm/3kHz)	Port 4 (dBm/3kHz)	PD (dBm/3kHz)	PD Limit (dBm/3kHz)
802.11b_Nss1,(1Mbps)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	10.69	-2.58	-3.01	-4.03	-3.82	1.59	3.31
2437MHz	Pass	10.69	-3.69	-2.78	-4.02	-3.55	2.12	3.31
2462MHz	Pass	10.69	-3.80	-3.97	-3.20	-3.31	1.83	3.31
802.11g_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	10.69	-12.33	-12.13	-12.96	-12.47	-7.37	3.31
2437MHz	Pass	10.69	-7.80	-8.31	-8.45	-8.58	-3.09	3.31
2462MHz	Pass	10.69	-12.25	-11.73	-11.72	-11.13	-6.51	3.31
802.11ax HEW20_OFDMA_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2412MHz	Pass	10.69	-14.22	-13.82	-13.72	-14.56	-9.28	3.31
2437MHz	Pass	10.69	-8.63	-7.64	-9.04	-7.42	-2.53	3.31
2462MHz	Pass	10.69	-14.74	-12.34	-15.23	-14.70	-8.87	3.31
802.11ax HEW40_OFDMA_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-
2422MHz	Pass	10.69	-19.93	-19.96	-20.20	-19.89	-15.15	3.31
2437MHz	Pass	10.69	-17.81	-18.36	-19.23	-18.03	-13.32	3.31
2452MHz	Pass	10.69	-19.67	-19.80	-19.10	-19.07	-14.48	3.31

DG = Directional Gain

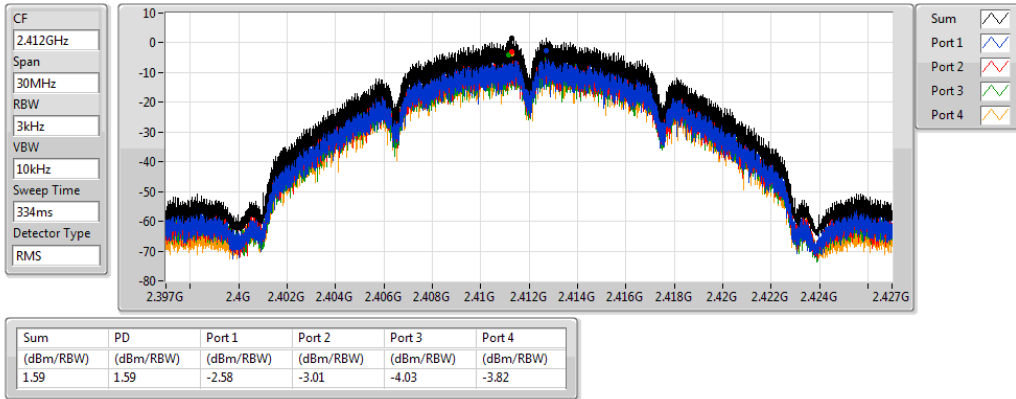
Directional gain = $4.67\text{dBi} + 10 \cdot \log(4/1) = 10.69\text{ dBi} > 6\text{dBi}$, limit shall be reduced to $8\text{ dBm} - (10.69\text{dBi} - 6\text{dBi}) = 3.31\text{dBm}$.

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)_4TX

PSD

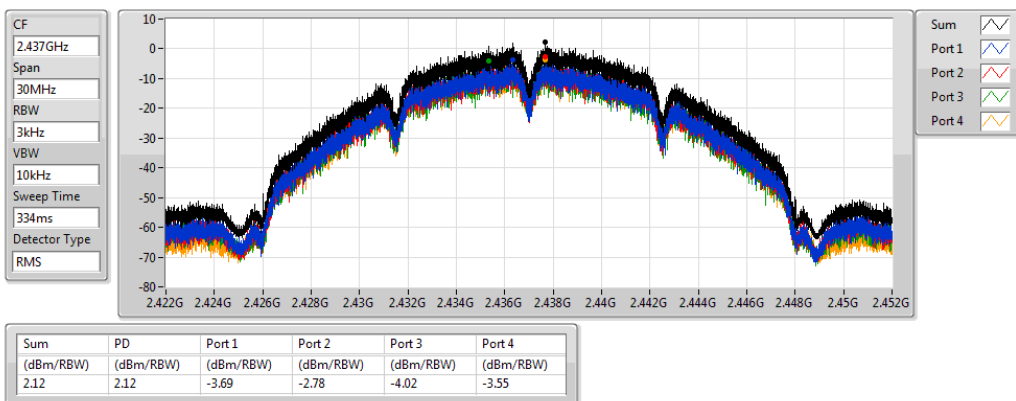
2412MHz



802.11b_Nss1,(1Mbps)_4TX

PSD

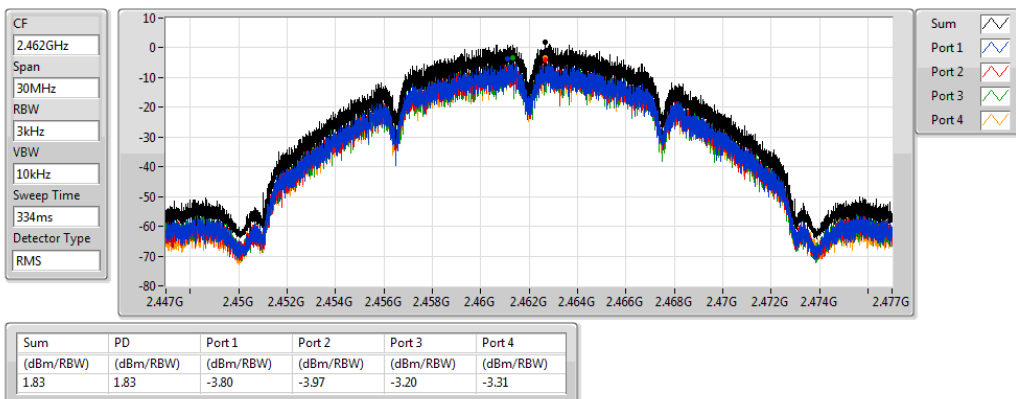
2437MHz



802.11b_Nss1,(1Mbps)_4TX

PSD

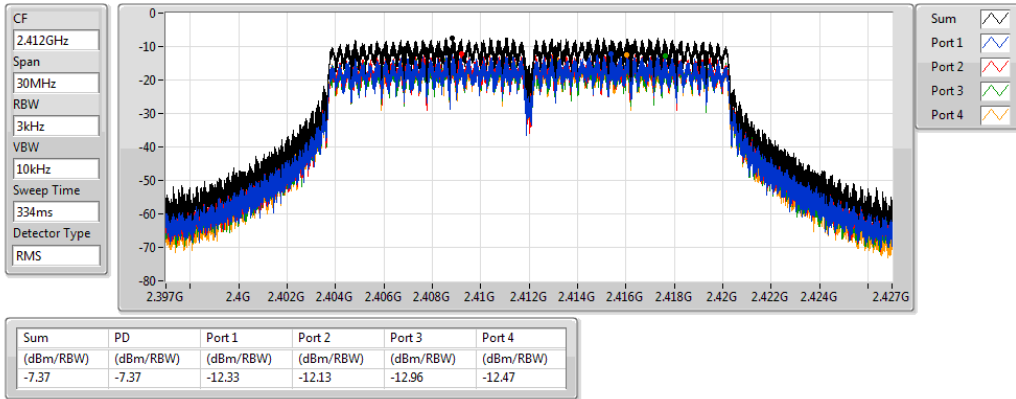
2462MHz



802.11g_Nss1,(6Mbps)_4TX

PSD

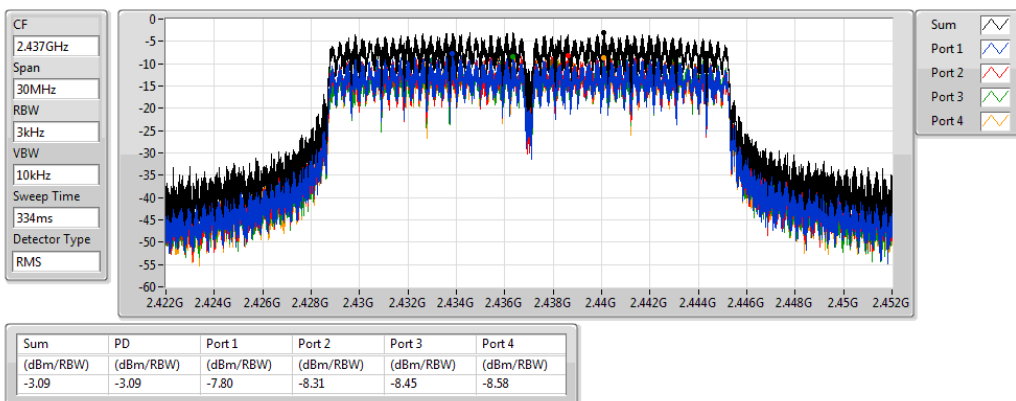
2412MHz



802.11g_Nss1,(6Mbps)_4TX

PSD

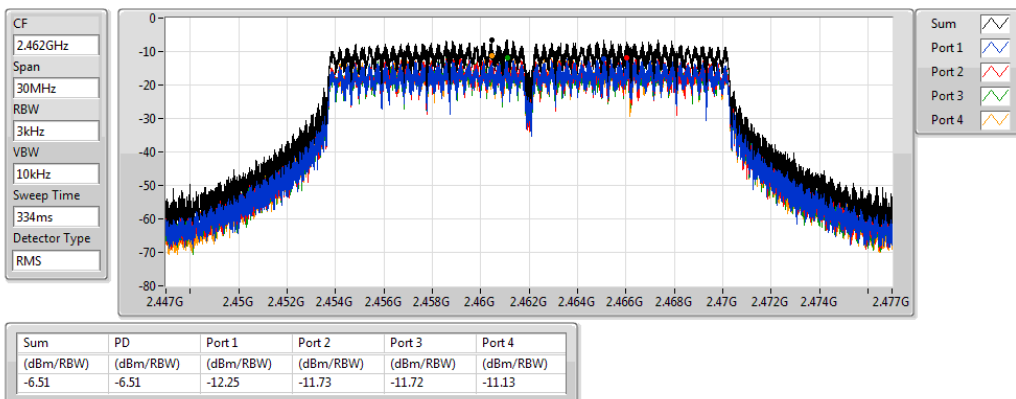
2437MHz



802.11g_Nss1,(6Mbps)_4TX

PSD

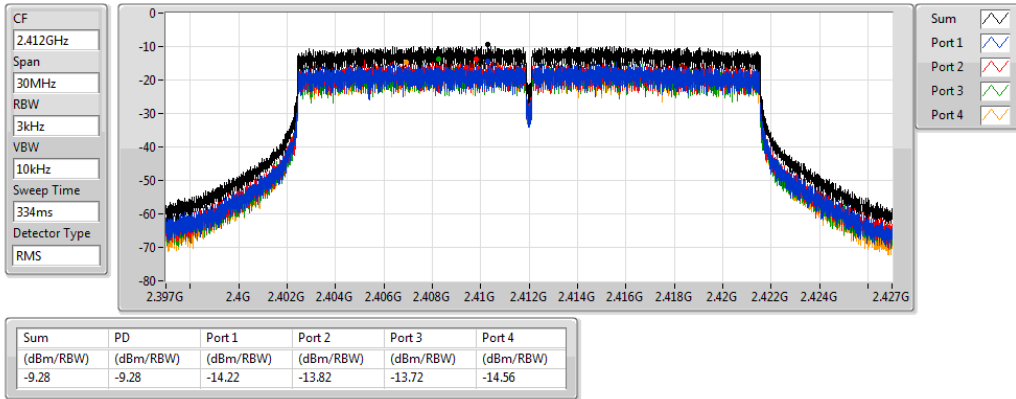
2462MHz



11AX20_Nss1,(MCS0)_4TX

PSD

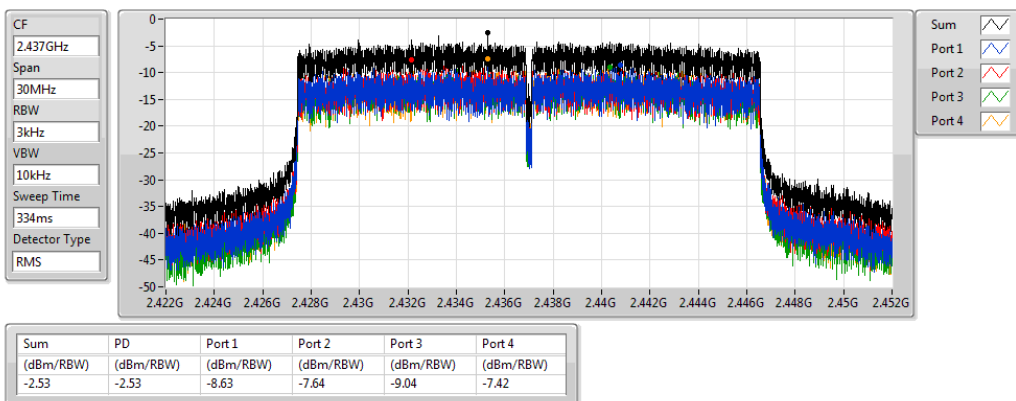
2412MHz



11AX20_Nss1,(MCS0)_4TX

PSD

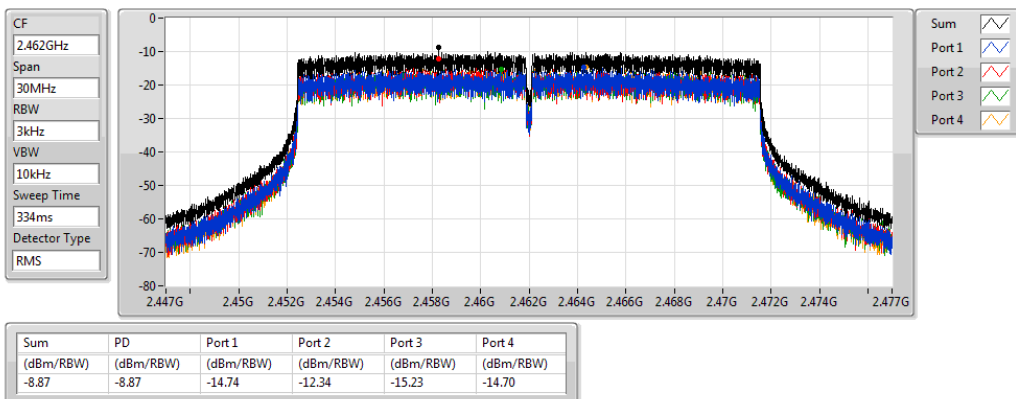
2437MHz



11AX20_Nss1,(MCS0)_4TX

PSD

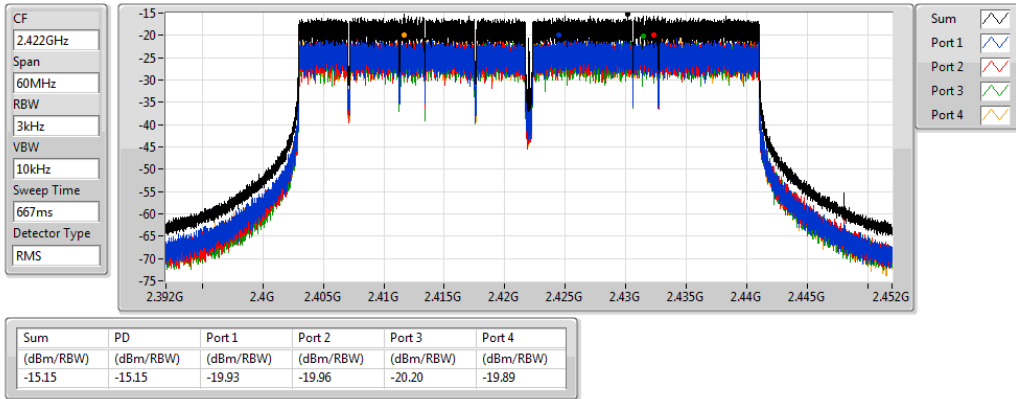
2462MHz



11AX40_Nss1,(MCS0)_4TX

PSD

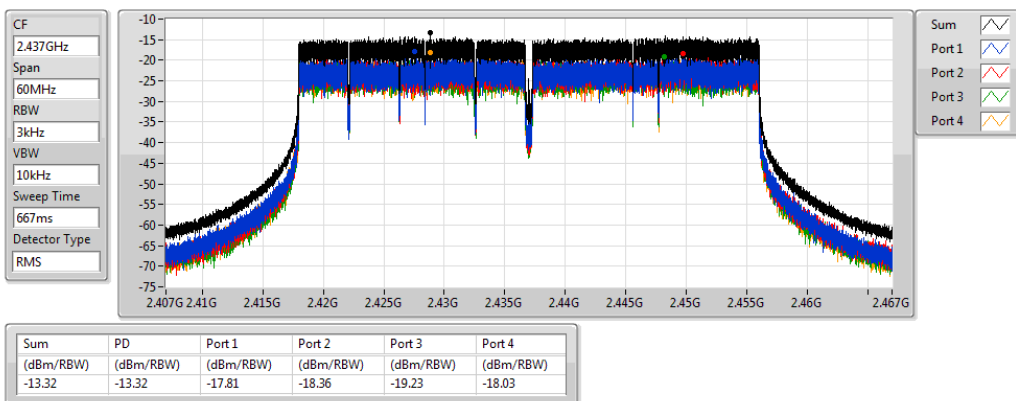
2422MHz



11AX40_Nss1,(MCS0)_4TX

PSD

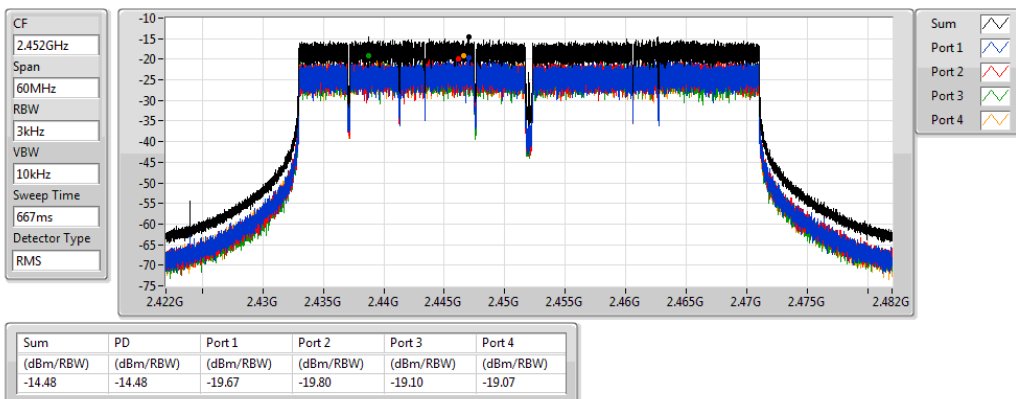
2437MHz



11AX40_Nss1,(MCS0)_4TX

PSD

2452MHz



3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

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

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

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

3.5.2 Test Procedures

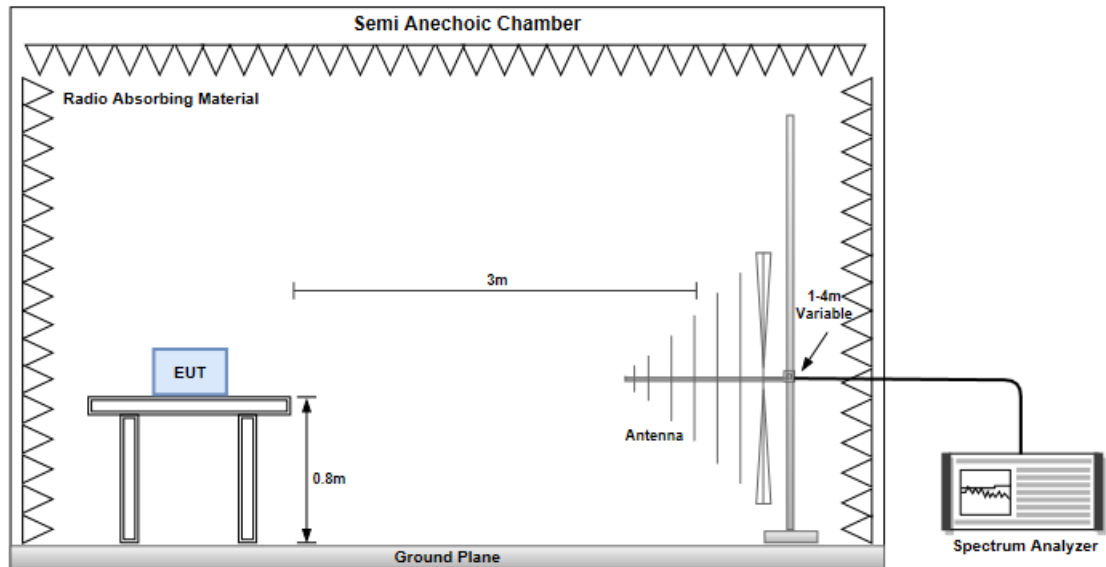
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission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

Note:

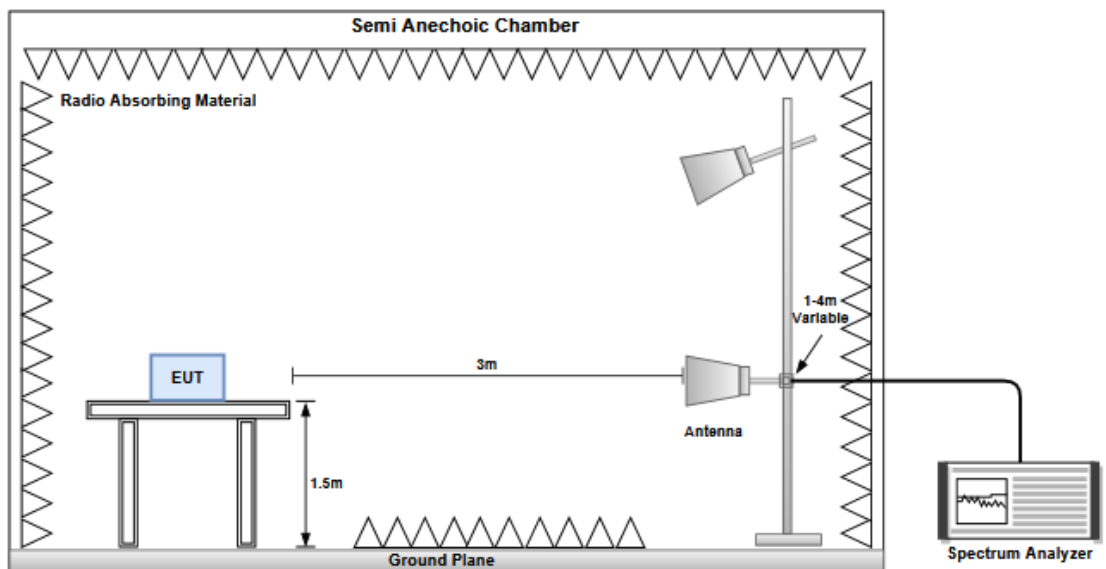
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above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

3.5.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



POE mode

3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	ax HE20-OFDMA		Test Freq. (MHz)		2437	
Polarization	Horizontal					
Test By :Akun Chung Temperature(°C):23 Humidity(%):69						
Level (dBuV/m)						

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):23 Humidity(%):69			
Level (dBUV/m)			

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(%):69			
Level (dBuV/m)			

Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m) <			

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBuV/m) <			

Modulation	11b	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m) <			

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m)			

Modulation	11b	Test Freq. (MHz)	2462
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
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(%):69			
Level (dBuV/m)			

Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m)			

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBuV/m) </			

Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBuV/m)			

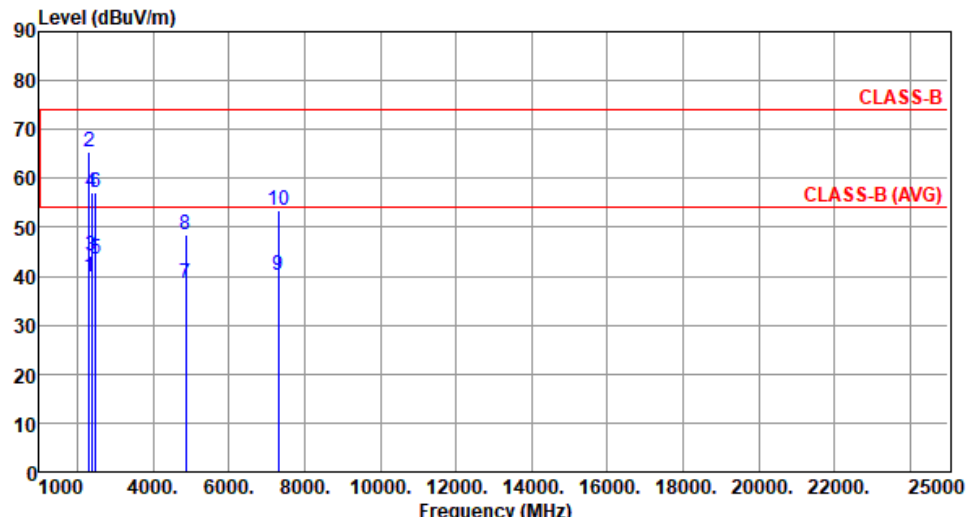
Modulation	11g	Test Freq. (MHz)	2462
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBuV/m) </			

Modulation	11g	Test Freq. (MHz)	2462
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m)			

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

Modulation	ax HE20-OFDMA		Test Freq. (MHz)	2412	
Polarization	Horizontal				
Test By :Akun Chung Temperature(°C):23 Humidity(%):65					
Level (dBUV/m) </					

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2412
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):23 Humidity(%):65			
Level (dBuV/m) <			

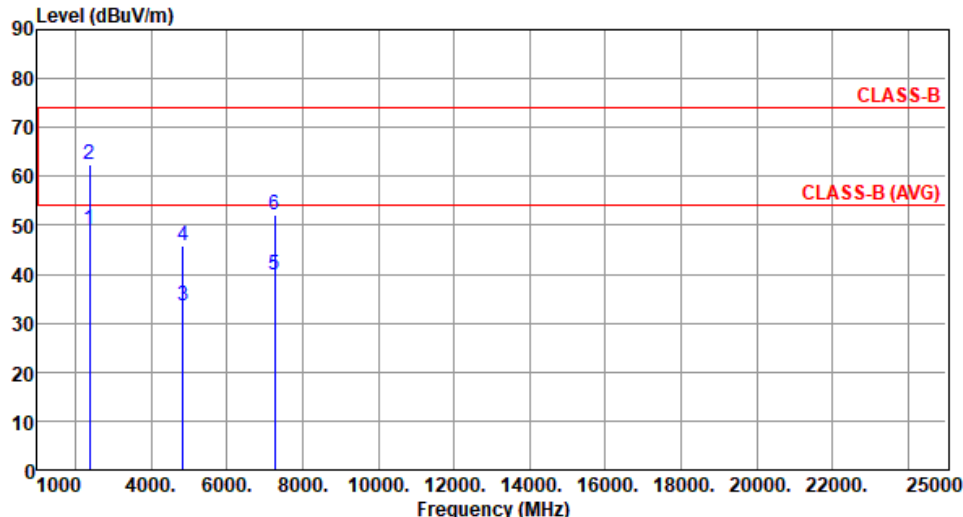
Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437																																																																																																														
Polarization	Horizontal																																																																																																																
Test By :Akun Chung Temperature(°C):23 Humidity(%):65																																																																																																																	
Level (dBuV/m)  <table><tr><th></th><th>Freq. MHz</th><th>Emission level dBuV/m</th><th>Limit dBuV/m</th><th>Margin dB</th><th>SA reading dBuV</th><th>Factor dB/m</th><th>Remark</th><th>ANT High cm</th><th>Turn Table deg</th></tr><tr><td>1</td><td>2317.00</td><td>39.99</td><td>54.00</td><td>-14.01</td><td>41.40</td><td>-1.41</td><td>Average</td><td>304</td><td>162</td></tr><tr><td>2</td><td>2317.00</td><td>65.39</td><td>74.00</td><td>-8.61</td><td>66.80</td><td>-1.41</td><td>Peak</td><td>304</td><td>162</td></tr><tr><td>3</td><td>2390.00</td><td>44.03</td><td>54.00</td><td>-9.97</td><td>45.52</td><td>-1.49</td><td>Average</td><td>271</td><td>113</td></tr><tr><td>4</td><td>2390.00</td><td>57.10</td><td>74.00</td><td>-16.90</td><td>58.59</td><td>-1.49</td><td>Peak</td><td>271</td><td>113</td></tr><tr><td>5</td><td>2483.50</td><td>43.59</td><td>54.00</td><td>-10.41</td><td>45.17</td><td>-1.58</td><td>Average</td><td>271</td><td>113</td></tr><tr><td>6</td><td>2483.50</td><td>57.27</td><td>74.00</td><td>-16.73</td><td>58.85</td><td>-1.58</td><td>Peak</td><td>271</td><td>113</td></tr><tr><td>7</td><td>4874.00</td><td>38.53</td><td>54.00</td><td>-15.47</td><td>33.20</td><td>5.33</td><td>Average</td><td>327</td><td>181</td></tr><tr><td>8</td><td>4874.00</td><td>48.51</td><td>74.00</td><td>-25.49</td><td>43.18</td><td>5.33</td><td>Peak</td><td>327</td><td>181</td></tr><tr><td>9</td><td>7311.00</td><td>40.33</td><td>54.00</td><td>-13.67</td><td>29.44</td><td>10.89</td><td>Average</td><td>100</td><td>185</td></tr><tr><td>10</td><td>7311.00</td><td>53.43</td><td>74.00</td><td>-20.57</td><td>42.54</td><td>10.89</td><td>Peak</td><td>100</td><td>185</td></tr></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	2317.00	39.99	54.00	-14.01	41.40	-1.41	Average	304	162	2	2317.00	65.39	74.00	-8.61	66.80	-1.41	Peak	304	162	3	2390.00	44.03	54.00	-9.97	45.52	-1.49	Average	271	113	4	2390.00	57.10	74.00	-16.90	58.59	-1.49	Peak	271	113	5	2483.50	43.59	54.00	-10.41	45.17	-1.58	Average	271	113	6	2483.50	57.27	74.00	-16.73	58.85	-1.58	Peak	271	113	7	4874.00	38.53	54.00	-15.47	33.20	5.33	Average	327	181	8	4874.00	48.51	74.00	-25.49	43.18	5.33	Peak	327	181	9	7311.00	40.33	54.00	-13.67	29.44	10.89	Average	100	185	10	7311.00	53.43	74.00	-20.57	42.54	10.89	Peak	100	185
	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	2317.00	39.99	54.00	-14.01	41.40	-1.41	Average	304	162																																																																																																								
2	2317.00	65.39	74.00	-8.61	66.80	-1.41	Peak	304	162																																																																																																								
3	2390.00	44.03	54.00	-9.97	45.52	-1.49	Average	271	113																																																																																																								
4	2390.00	57.10	74.00	-16.90	58.59	-1.49	Peak	271	113																																																																																																								
5	2483.50	43.59	54.00	-10.41	45.17	-1.58	Average	271	113																																																																																																								
6	2483.50	57.27	74.00	-16.73	58.85	-1.58	Peak	271	113																																																																																																								
7	4874.00	38.53	54.00	-15.47	33.20	5.33	Average	327	181																																																																																																								
8	4874.00	48.51	74.00	-25.49	43.18	5.33	Peak	327	181																																																																																																								
9	7311.00	40.33	54.00	-13.67	29.44	10.89	Average	100	185																																																																																																								
10	7311.00	53.43	74.00	-20.57	42.54	10.89	Peak	100	185																																																																																																								
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).																																																																																																																	

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):23 Humidity(%):65			
Level (dBuV/m)			

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2462
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):23 Humidity(%):65			
Level (dBUV/m)			

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2462
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):23 Humidity(%):65			
Level (dBUV/m) </			

3.5.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for ax HE40-OFDMA

Modulation	ax HE40-OFDMA		Test Freq. (MHz)	2422																																																																							
Polarization	Horizontal																																																																										
Test By :Akun Chung Temperature(°C):24 Humidity(%):69																																																																											
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>49.04</td><td>54.00</td><td>-4.96</td><td>50.53</td><td>-1.49</td><td>Average</td><td>322</td><td>156</td></tr><tr><td>2</td><td>2390.00</td><td>62.43</td><td>74.00</td><td>-11.57</td><td>63.92</td><td>-1.49</td><td>Peak</td><td>322</td><td>156</td></tr><tr><td>3</td><td>4844.00</td><td>33.59</td><td>54.00</td><td>-20.41</td><td>28.26</td><td>5.33</td><td>Average</td><td>100</td><td>40</td></tr><tr><td>4</td><td>4844.00</td><td>45.78</td><td>74.00</td><td>-28.22</td><td>40.45</td><td>5.33</td><td>Peak</td><td>100</td><td>40</td></tr><tr><td>5</td><td>7266.00</td><td>39.88</td><td>54.00</td><td>-14.12</td><td>29.04</td><td>10.84</td><td>Average</td><td>100</td><td>40</td></tr><tr><td>6</td><td>7266.00</td><td>52.12</td><td>74.00</td><td>-21.88</td><td>41.28</td><td>10.84</td><td>Peak</td><td>100</td><td>40</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	2390.00	49.04	54.00	-4.96	50.53	-1.49	Average	322	156	2	2390.00	62.43	74.00	-11.57	63.92	-1.49	Peak	322	156	3	4844.00	33.59	54.00	-20.41	28.26	5.33	Average	100	40	4	4844.00	45.78	74.00	-28.22	40.45	5.33	Peak	100	40	5	7266.00	39.88	54.00	-14.12	29.04	10.84	Average	100	40	6	7266.00	52.12	74.00	-21.88	41.28	10.84	Peak	100	40
	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	49.04	54.00	-4.96	50.53	-1.49	Average	322	156																																																																		
2	2390.00	62.43	74.00	-11.57	63.92	-1.49	Peak	322	156																																																																		
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6	7266.00	52.12	74.00	-21.88	41.28	10.84	Peak	100	40																																																																		
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV) + Factor* (dB/m) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).																																																																											

Modulation	ax HE40-OFDMA	Test Freq. (MHz)	2422
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m) <			

Modulation	ax HE40-OFDMA	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBuV/m) <			

Modulation	ax HE40-OFDMA	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBuV/m) <			

Modulation	ax HE40-OFDMA	Test Freq. (MHz)	2452
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m)			

Modulation	ax HE40-OFDMA	Test Freq. (MHz)	2452
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):24 Humidity(%):69			
Level (dBUV/m) <			

Adapter mode

3.5.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437
Polarization	Horizontal		
Test By :Akun Chung Temperature(°C):23 Humidity(%):69			
Level (dBuV/m)			

Modulation	ax HE20-OFDMA	Test Freq. (MHz)	2437
Polarization	Vertical		
Test By :Akun Chung Temperature(°C):23 Humidity(%):69			
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 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

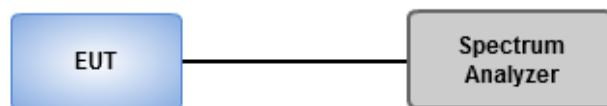
Reference level measurement

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

Emission level measurement

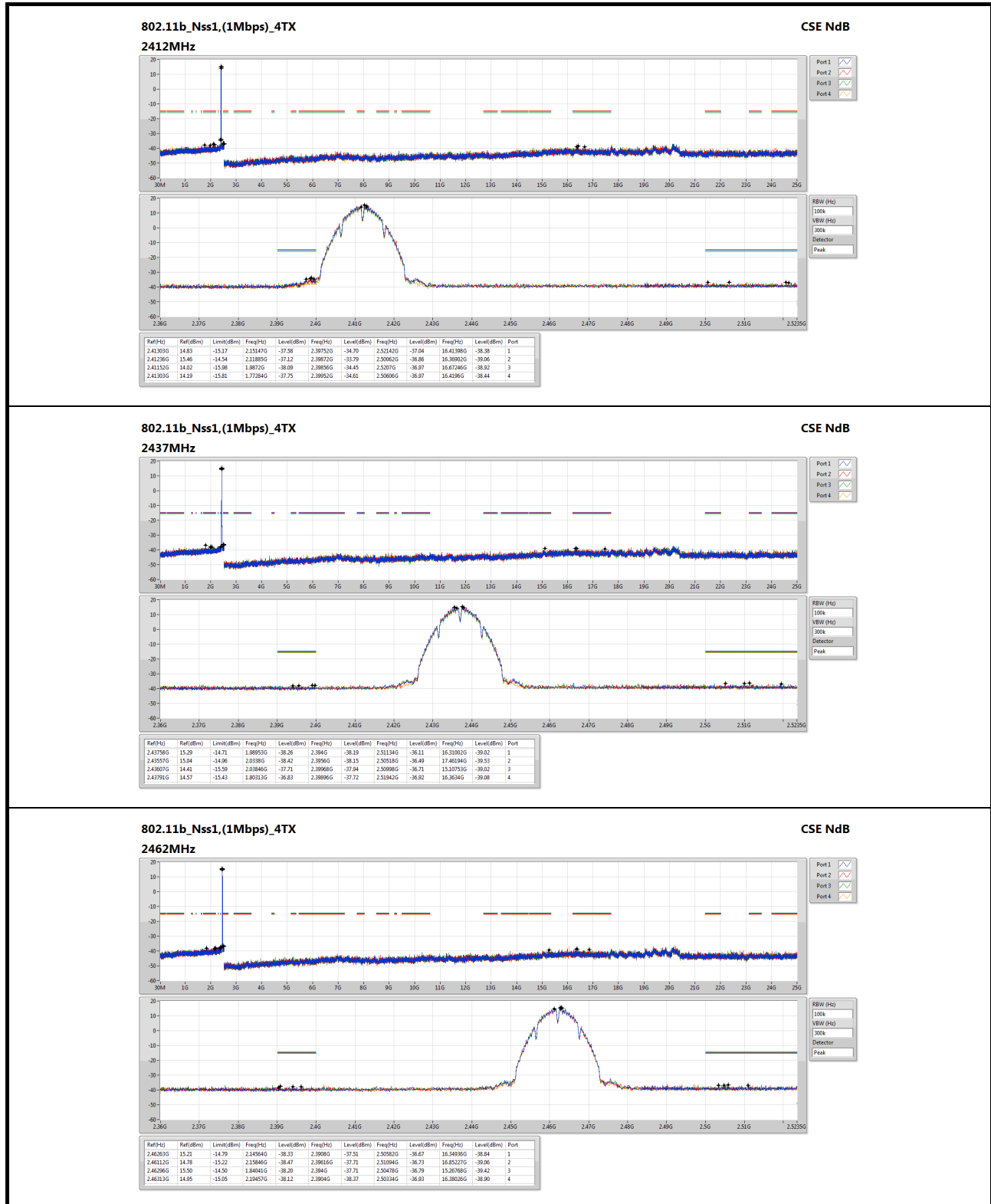
1. Set RBW=100kHz, VBW = 300kHz , Detector = Peak, Sweep time = Auto
2. Trace = max hold , Allow Trace to fully stabilize
3. Scan Frequency range is up to 25GHz
4. Use the peak marker function to determine the maximum amplitude level

3.6.3 Test Setup



3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands

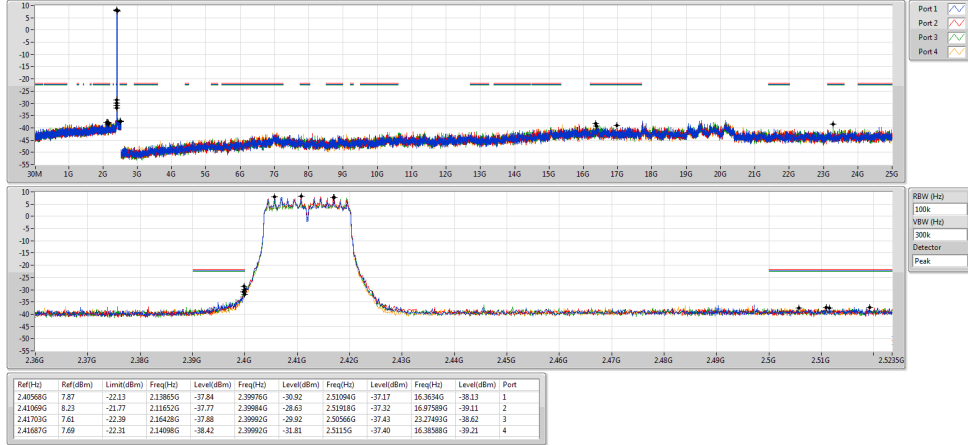
Ambient Condition	18°C / 65%	Tested By	Aska Huang
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802.11g_Nss1,(6Mbps)_4TX

CSE NdB

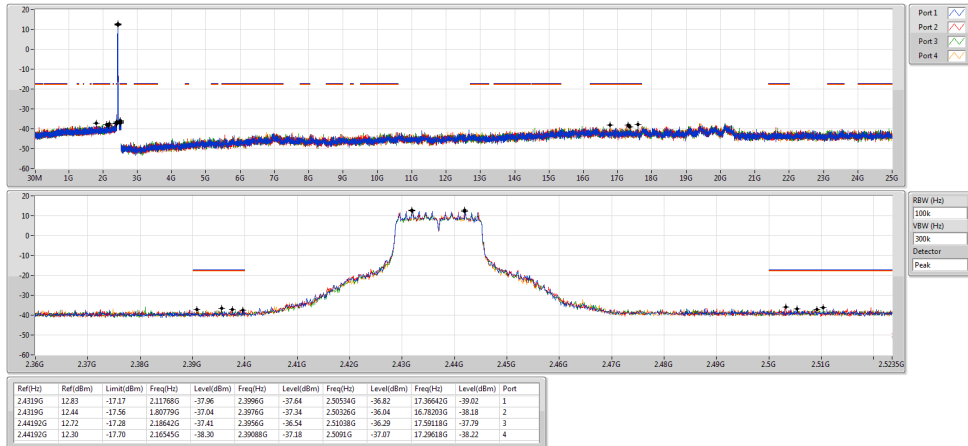
2412MHz



802.11g_Nss1,(6Mbps)_4TX

CSE NdB

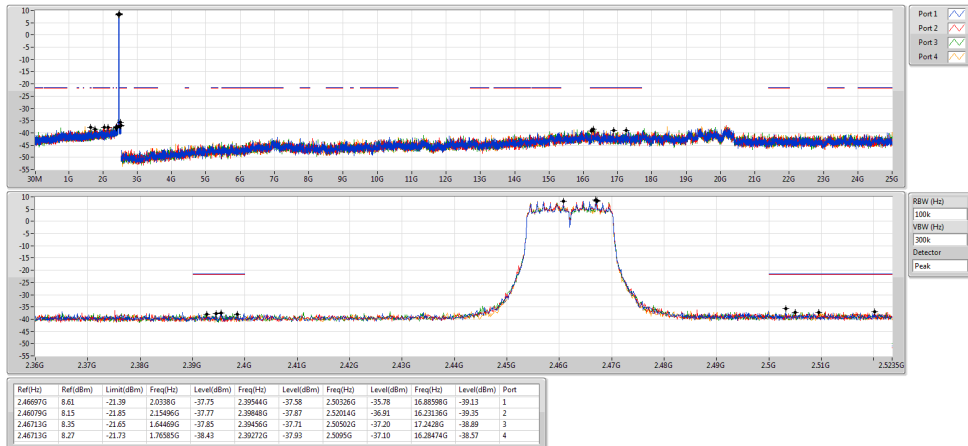
2437MHz



802.11g_Nss1,(6Mbps)_4TX

CSE NdB

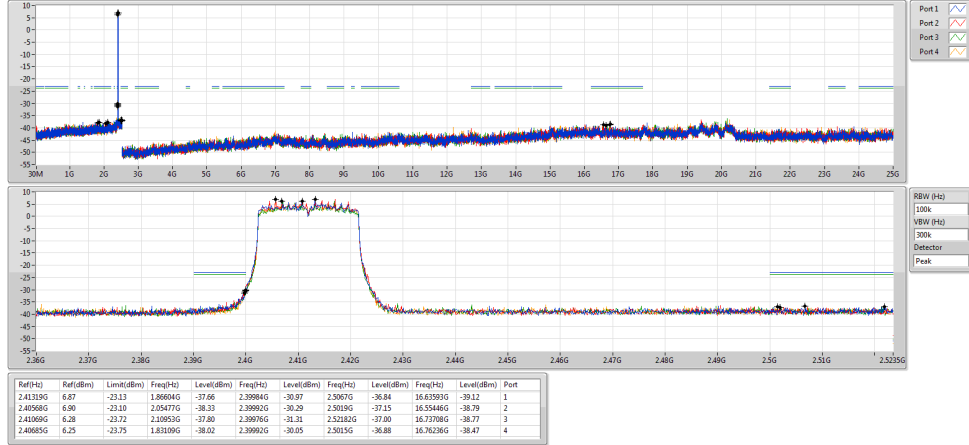
2462MHz



11AX20_Nss1,(MCS0)_4TX

CSE NdB

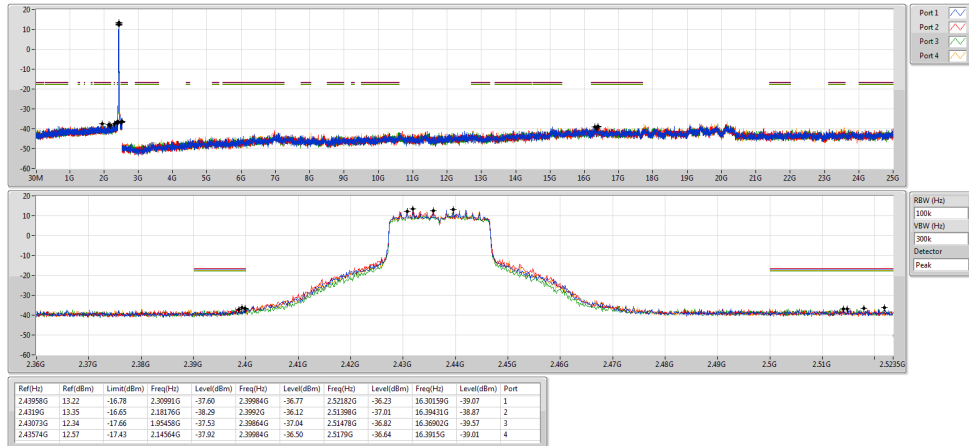
2412MHz



11AX20_Nss1,(MCS0)_4TX

CSE NdB

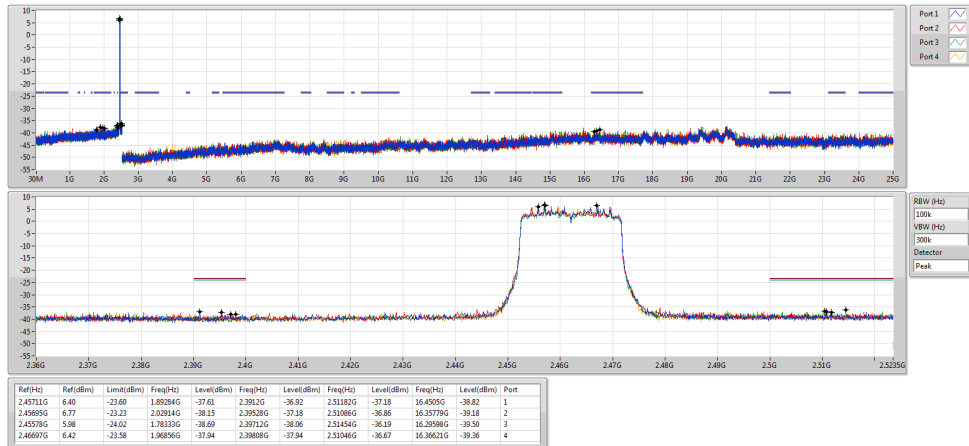
2437MHz



11AX20_Nss1,(MCS0)_4TX

CSE NdB

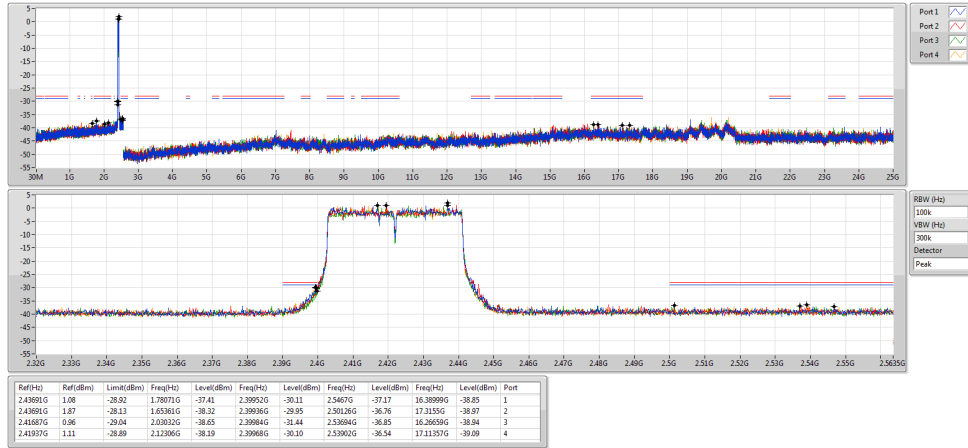
2462MHz



11AX40_Nss1,(MCS0)_4TX

2422MHz

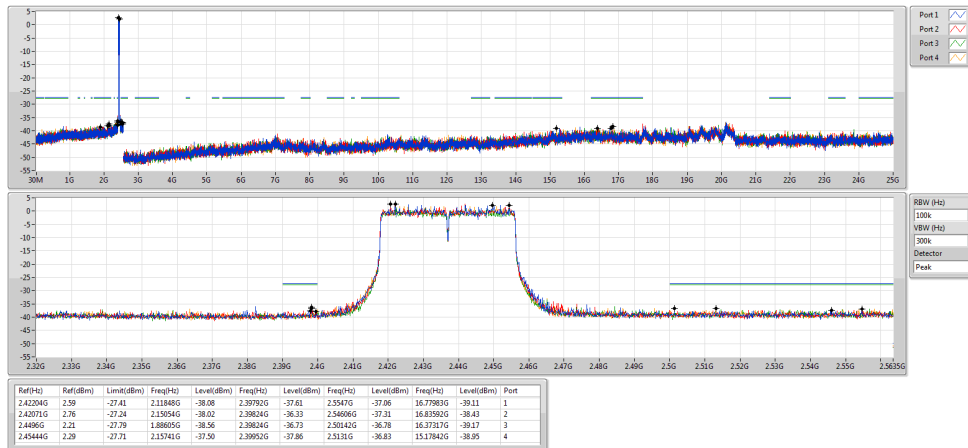
CSE NdB



11AX40_Nss1,(MCS0)_4TX

2437MHz

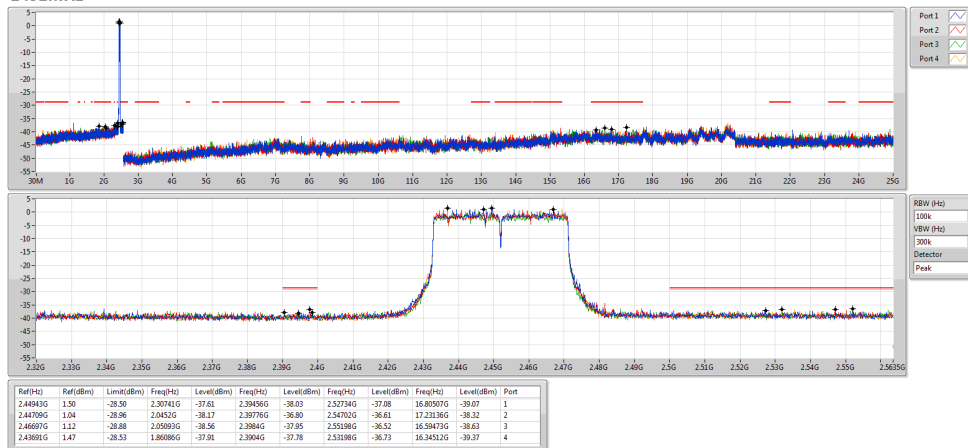
CSE NdB



11AX40_Nss1,(MCS0)_4TX

2452MHz

CSE NdB



4 Test laboratory information

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

International Certification 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==