



FCC RADIO TEST REPORT

FCC ID : QXO-AP510I
Equipment : 802.11ax Access Point
Brand Name : Extreme Networks
Model Name : AP510i
Applicant : Extreme Networks, Inc.
6480 Via Del Oro, San Jose, CA 95119
Manufacturer : Extreme Networks, Inc.
6480 Via Del Oro, San Jose, CA 95119
Standard : 47 CFR FCC Part 15.407

The product was received on Nov. 03, 2018, and testing was started from Nov. 14, 2018 and completed on Dec. 18, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.


Approved by: Cliff Chang

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
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History of this test report

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Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.407(a)	Emission Bandwidth	PASS	-
3.3	15.407(a)	Maximum Conducted Output Power	PASS	-
3.4	15.407(a)	Peak Power Spectral Density	PASS	-
3.5	15.407(b)	Unwanted Emissions	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:

1. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.
2. 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.

Reviewed by: Cliff Chang

Report Producer: Wendy Pan



1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20), ax (HEW20)	5180-5240	36-48 [4]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40), ax (HEW40)	5190-5230	38-46 [2]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80), ax (HEW80)	5210	42 [1]
5725-5850		5775	155 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	1TX, 2TX, 4TX
5.15-5.25GHz	802.11n HT20	20	1TX, 2TX, 4TX
5.15-5.25GHz	802.11n HT20-BF	20	2TX, 4TX
5.15-5.25GHz	802.11ac VHT20	20	1TX, 2TX, 4TX
5.15-5.25GHz	802.11ac VHT20-BF	20	2TX, 4TX
5.15-5.25GHz	802.11ax HEW20	20	1TX, 2TX, 4TX
5.15-5.25GHz	802.11ax HEW20-BF	20	2TX, 4TX
5.15-5.25GHz	802.11n HT40	40	1TX, 2TX, 4TX
5.15-5.25GHz	802.11n HT40-BF	40	2TX, 4TX
5.15-5.25GHz	802.11ac VHT40	40	1TX, 2TX, 4TX
5.15-5.25GHz	802.11ac VHT40-BF	40	2TX, 4TX
5.15-5.25GHz	802.11ax HEW40	40	1TX, 2TX, 4TX
5.15-5.25GHz	802.11ax HEW40-BF	40	2TX, 4TX
5.15-5.25GHz	802.11ac VHT80	80	1TX, 2TX, 4TX
5.15-5.25GHz	802.11ac VHT80-BF	80	2TX, 4TX
5.15-5.25GHz	802.11ax HEW80	80	1TX, 2TX, 4TX
5.15-5.25GHz	802.11ax HEW80-BF	80	2TX, 4TX



Band	Mode	BWch (MHz)	Nant
5.725-5.85GHz	802.11a	20	1TX, 2TX, 4TX
5.725-5.85GHz	802.11n HT20	20	1TX, 2TX, 4TX
5.725-5.85GHz	802.11n HT20-BF	20	2TX, 4TX
5.725-5.85GHz	802.11ac VHT20	20	1TX, 2TX, 4TX
5.725-5.85GHz	802.11ac VHT20-BF	20	2TX, 4TX
5.725-5.85GHz	802.11ax HEW20	20	1TX, 2TX, 4TX
5.725-5.85GHz	802.11ax HEW20-BF	20	2TX, 4TX
5.725-5.85GHz	802.11n HT40	40	1TX, 2TX, 4TX
5.725-5.85GHz	802.11n HT40-BF	40	2TX, 4TX
5.725-5.85GHz	802.11ac VHT40	40	1TX, 2TX, 4TX
5.725-5.85GHz	802.11ac VHT40-BF	40	2TX, 4TX
5.725-5.85GHz	802.11ax HEW40	40	1TX, 2TX, 4TX
5.725-5.85GHz	802.11ax HEW40-BF	40	2TX, 4TX
5.725-5.85GHz	802.11ac VHT80	80	1TX, 2TX, 4TX
5.725-5.85GHz	802.11ac VHT80-BF	80	2TX, 4TX
5.725-5.85GHz	802.11ax HEW80	80	1TX, 2TX, 4TX
5.725-5.85GHz	802.11ax HEW80-BF	80	2TX, 4TX

Note:

- ♦ 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- ♦ VHT20, VHT40, VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- ♦ HEW20, HEW40, HEW80 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- ♦ BWch is the nominal channel bandwidth.
- ♦ Nss-Min is the minimum number of spatial streams.
- ♦ Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

Ant.	Port			Brand	Model Name	Antenna Type	Connector	Radio	Antenna Gain(dBi)
	1TX	2TX	4TX						
1	1	1	1	WNC	Starlord 510i	PIFA	I-PEX	R1-5GHz	Note 1
2	-	2	2	WNC	Starlord 510i	PIFA	I-PEX	R1-5GHz	Note 1
3	-	-	3	WNC	Starlord 510i	PIFA	I-PEX	R1-5GHz	Note 1
4	-	-	4	WNC	Starlord 510i	PIFA	I-PEX	R1-5GHz	Note 1
5	R2-1	R2-1	R1-4 R2-1	WNC	Starlord 510i	PIFA	I-PEX	R1-2.4GHz R2-5GHz	Note 1
6	-	R2-2	R1-3 R2-2	WNC	Starlord 510i	PIFA	I-PEX	R1-2.4GHz R2-5GHz	Note 1
7	-	R1-2	R1-2 R2-3	WNC	Starlord 510i	PIFA	I-PEX	R1-2.4GHz R2-5GHz	Note 1
8	R1-1	R1-1	R1-1 R2-4	WNC	Starlord 510i	PIFA	I-PEX	R1-2.4GHz R2-5GHz	Note 1
9	1	-	-	WNC	Starlord 510i	PIFA	I-PEX	R3	Note 1

Note1:

Ant.	Antenna Gain(dBi)			
	WLAN 2.4GHz	WLAN 5GHz	Bluetooth	Thread
1	-	5.89	-	-
2	-	5.36	-	-
3	-	5.67	-	-
4	-	5.36	-	-
5	3.48	4.57	-	-
6	3.80	4.40	-	-
7	3.84	4.98	-	-
8	3.90	5.18	-	-
9	-	-	4.40	4.40

Note2: The above information was declared by manufacturer.

Note3:

For 2.4GHz function:

For IEEE 802.11b/g/n/ax mode (1TX, 2TX, 4TX/4RX):

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX

Port 1 and Port 2 can be use as transmitting antenna.

Port 1 and Port 2 could transmit simultaneously.

For 4TX

Port 1, Port 2, Port 3 and Port 4 can be use as transmitting antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit simultaneously.

For 4RX

Port 1, Port 2, Port 3 and Port 4 can be used as receiving antennas.

Port 1, Port 2, Port 3 and Port 4 could receive simultaneously.

For 5GHz function:



For IEEE 802.11a/n/ac/ax mode (1TX, 2TX, 4TX/4RX):

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX

Port 1 and Port 2 can be use as transmitting antenna.

Port 1 and Port 2 could transmit simultaneously.

For 4TX

Port 1, Port 2, Port 3 and Port 4 can be use as transmitting antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit simultaneously.

For 4RX

Port 1, Port 2, Port 3 and Port 4 can be used as receiving antennas.

Port 1, Port 2, Port 3 and Port 4 could receive simultaneously.

For Bluetooth and Thread mode (1TX/1RX):

Only Port 1 can be use as transmitting/receiving antenna.

**1.1.3 Mode Test Duty Cycle****For Radio 1 / 1T1S Mode:**

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11a	0.955	0.2	2.07m	1k
802.11ax HEW20	0.984	0.07	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ax HEW40	0.963	0.164	772.5u	3k
802.11ax HEW80	0.944	0.25	472.5u	3k

For Radio 1 / 2T2S Mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11ax HEW20	0.972	0.123	926.25u	3k
802.11ax HEW40	0.948	0.232	506.25u	3k
802.11ax HEW80	0.915	0.386	290u	10k

For Radio 1 / 4T1S Mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11a	0.956	0.195	2.066m	1k
802.11ax HEW20	0.986	0.061	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ax HEW40	0.97	0.132	910u	3k
802.11ax HEW80	0.945	0.246	473.75u	3k
802.11ax HEW20-BF	0.886	0.526	1.499m	1k
802.11ax HEW40-BF	0.885	0.531	2.343m	1k
802.11ax HEW80-BF	0.925	0.339	3.835m	300

For Radio 1 / 4T4S Mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11ax HEW20	0.953	0.209	537.5u	3k
802.11ax HEW40	0.923	0.348	330u	10k
802.11ax HEW80	0.89	0.506	221.25u	10k

**For Radio 2 / 1T1S Mode:**

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11a	0.944	0.25	2.065m	1k
802.11ax HEW20	0.986	0.061	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ax HEW40	0.973	0.119	910u	3k
802.11ax HEW80	0.945	0.246	473.75u	3k

For Radio 2 / 2T2S Mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11ax HEW20	0.97	0.132	926.25u	3k
802.11ax HEW40	0.948	0.232	506.25u	3k
802.11ax HEW80	0.912	0.4	290u	10k

For Radio 2 / 4T1S Mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11a	0.951	0.218	2.068m	1k
802.11ax HEW20	0.984	0.07	n/a (DC $\geq$ 0.98)	n/a (DC $\geq$ 0.98)
802.11ax HEW40	0.97	0.132	910u	3k
802.11ax HEW80	0.945	0.246	473.75u	3k
802.11ax HEW20-BF	0.883	0.54	1.499m	1k
802.11ax HEW40-BF	0.881	0.55	2.343m	1k
802.11ax HEW80-BF	0.938	0.278	2.804m	1k

For Radio 2 / 4T4S Mode:

Mode	DC	DCF(dB)	T(s)	VBW(Hz) $\geq 1/T$
802.11ax HEW20	0.953	0.209	537.5u	3k
802.11ax HEW40	0.923	0.348	330u	10k
802.11ax HEW80	0.89	0.506	221.25u	10k

Note:

- ♦ DC is Duty Cycle.
- ♦ DCF is Duty Cycle Factor.

**1.1.4 EUT Operational Condition**

EUT Power Type	From Power Adapter or PoE			
Beamforming Function	☒	With beamforming	☐	Without beamforming
	For 802.11ax in 2.4GHz and 802.11n/ac/ax in 5GHz.			
Function	☐	Outdoor P2M	☒	Indoor P2M
	☐	Fixed P2P	☐	Client
Test Software Version	accessMtool 3.0.0.6			

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

The EUT has three radios, the information as following table:

Radio	Function		
	WLAN 2.4GHz	WLAN 5GHz	Bluetooth/Thread
1	V	V	-
2	-	V	-
3	-	-	V

1.1.6 Table for EUT support function

Function	Support Type	Support Band
AP	Master	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1~4
Client	Slave without Radar Detection (Sensor Mode)	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1+4
Bridge	Master	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1+4
Mesh	Master	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1+4

Note: The above information was declared by manufacturer.

1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR FCC Part 15
- ♦ ANSI C63.10-2013
- ♦ FCC KDB 789033 D02 v02r01
- ♦ FCC KDB 662911 D01 v02r01
- ♦ FCC KDB 412172 D01 v01r01

1.3 Testing Location Information

Testing Location		
☐	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.) TEL : 886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Eddie Weng	23°C / 61%	Nov. 14, 2018 ~ Dec. 17, 2018
Radiated (Below 1GHz) and (Emission Co-location)	03CH01-CB	Paul Chen	22°C / 54%	Nov. 22, 2018 ~ Nov. 23, 2018
Radiated (Above 1GHz)	03CH01-CB	Stim Sung	22°C / 54%	Nov. 22, 2018 ~ Dec. 18, 2018
AC Conduction	CO02-CB	Deven Huang	23°C / 60%	Nov. 26, 2018

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74 x10 ⁻⁸	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

For Radio 1 / 1T1S Mode:

For Conducted measurement and Band Edge Emission test:

Mode	PowerSetting	PowerSetting (dBm)
802.11a_Nss1,(6Mbps)_1TX	-	-
5180MHz	80	20
5200MHz	85	21.25
5240MHz	81	20.25
5745MHz	76	19
5785MHz	73	18.25
5825MHz	77	19.25
802.11ax HEW20_Nss1,(MCS0)_1TX	-	-
5180MHz	74	18.5
5200MHz	86	21.5
5240MHz	86	21.5
5745MHz	79	19.75
5785MHz	78	19.5
5825MHz	88	22
802.11ax HEW40_Nss1,(MCS0)_1TX	-	-
5190MHz	67	16.75
5230MHz	86	21.5
5755MHz	85	21.25
5795MHz	87	21.75
802.11ax HEW80_Nss1,(MCS0)_1TX	-	-
5210MHz	68	17
5775MHz	87	21.75

**For Radio 1 / 2T2S Mode:****For Conducted measurement and Band Edge Emission test:**

Mode	PowerSetting	PowerSetting (dBm)
802.11ax HEW20_Nss2,(MCS0)_2TX	-	-
5180MHz	68	17
5200MHz	85	21.25
5240MHz	86	21.5
5745MHz	79	19.75
5785MHz	78	19.5
5825MHz	88	22
802.11ax HEW40_Nss2,(MCS0)_2TX	-	-
5190MHz	65	16.25
5230MHz	80	20
5755MHz	85	21.25
5795MHz	87	21.75
802.11ax HEW80_Nss2,(MCS0)_2TX	-	-
5210MHz	62	15.5
5775MHz	77	19.25

**For Radio 1 / 4T1S Mode:****For Radiated Emission:**

Mode	PowerSetting
802.11a_Nss1,(6Mbps)_4TX	-
5180MHz	84
5200MHz	85
5240MHz	81
5745MHz	76
5785MHz	73
5825MHz	77
802.11ax HEW20_Nss1,(MCS0)_4TX	-
5180MHz	88
5200MHz	86
5240MHz	86
5745MHz	79
5785MHz	78
5825MHz	88
802.11ax HEW40_Nss1,(MCS0)_4TX	-
5190MHz	87
5230MHz	93
5755MHz	85
5795MHz	87
802.11ax HEW80_Nss1,(MCS0)_4TX	-
5210MHz	91
5775MHz	91

**For Conducted measurement and Band Edge Emission test:**

Mode	PowerSetting	PowerSetting (dBm)
802.11a_Nss1,(6Mbps)_4TX	-	-
5180MHz	68	17
5200MHz	78	19.5
5240MHz	78	19.5
5745MHz	76	19
5785MHz	73	18.25
5825MHz	77	19.25
802.11ax HEW20_Nss1,(MCS0)_4TX	-	-
5180MHz	64	16
5200MHz	81	20.25
5240MHz	81	20.25
5745MHz	79	19.75
5785MHz	78	19.5
5825MHz	88	22
802.11ax HEW40_Nss1,(MCS0)_4TX	-	-
5190MHz	59	14.75
5230MHz	75	18.75
5755MHz	85	21.25
5795MHz	87	21.75
802.11ax HEW80_Nss1,(MCS0)_4TX	-	-
5210MHz	60	15
5775MHz	72	18
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-	-
5180MHz	70	17.5
5200MHz	75	18.75
5240MHz	75	18.75
5745MHz	75	18.75
5785MHz	75	18.75
5825MHz	75	18.75
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-	-
5190MHz	53	13.25
5230MHz	76	19
5755MHz	74	18.5
5795MHz	73	18.25
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	-	-
5210MHz	63	15.75
5775MHz	70	17.5

**For Radio 1 / 4T4S Mode:****For Conducted measurement and Band Edge Emission test:**

Mode	PowerSetting	PowerSetting (dBm)
802.11ax HEW20_Nss4,(MCS0)_4TX	-	-
5180MHz	67	16.75
5200MHz	82	20.5
5240MHz	86	21.5
5745MHz	79	19.75
5785MHz	78	19.5
5825MHz	88	22
802.11ax HEW40_Nss4,(MCS0)_4TX	-	-
5190MHz	60	15
5230MHz	73	18.25
5755MHz	85	21.25
5795MHz	87	21.75
802.11ax HEW80_Nss4,(MCS0)_4TX	-	-
5210MHz	58	14.5
5775MHz	75	18.75

**For Radio 2 / 1T1S Mode:****For Conducted measurement and Band Edge Emission test:**

Mode	PowerSetting	PowerSetting (dBm)
802.11a_Nss1,(6Mbps)_1TX	-	-
5180MHz	79	19.75
5200MHz	81	20.25
5240MHz	76	19
5745MHz	80	20
5785MHz	92	23
5825MHz	83	20.75
802.11ax HEW20_Nss1,(MCS0)_1TX	-	-
5180MHz	74	18.5
5200MHz	78	19.5
5240MHz	75	18.75
5745MHz	97	24.25
5785MHz	93	23.25
5825MHz	86	21.5
802.11ax HEW40_Nss1,(MCS0)_1TX	-	-
5190MHz	69	17.25
5230MHz	79	19.75
5755MHz	94	23.5
5795MHz	96	24
802.11ax HEW80_Nss1,(MCS0)_1TX	-	-
5210MHz	67	16.75
5775MHz	84	21

**For Radio 2 / 2T2S Mode:****For Conducted measurement and Band Edge Emission test:**

Mode	PowerSetting	PowerSetting (dBm)
802.11ax HEW20_Nss2,(MCS0)_2TX	-	-
5180MHz	70	17.5
5200MHz	78	19.5
5240MHz	75	18.75
5745MHz	97	24.25
5785MHz	93	23.25
5825MHz	86	21.5
802.11ax HEW40_Nss2,(MCS0)_2TX	-	-
5190MHz	66	16.5
5230MHz	79	19.75
5755MHz	93	23.25
5795MHz	98	24.5
802.11ax HEW80_Nss2,(MCS0)_2TX	-	-
5210MHz	61	15.25
5775MHz	80	20

**For Radio 2 / 4T1S Mode:****For Radiated Emission:**

Mode	PowerSetting
802.11a_Nss1,(6Mbps)_4TX	-
5180MHz	86
5200MHz	81
5240MHz	76
5745MHz	80
5785MHz	92
5825MHz	83
802.11ax HEW20_Nss1,(MCS0)_4TX	-
5180MHz	88
5200MHz	78
5240MHz	75
5745MHz	97
5785MHz	93
5825MHz	86
802.11ax HEW40_Nss1,(MCS0)_4TX	-
5190MHz	91
5230MHz	79
5755MHz	110
5795MHz	106
802.11ax HEW80_Nss1,(MCS0)_4TX	-
5210MHz	97
5775MHz	110

**For Conducted measurement and Band Edge Emission test:**

Mode	PowerSetting	PowerSetting (dBm)
802.11a_Nss1,(6Mbps)_4TX	-	-
5180MHz	70	17.5
5200MHz	80	20
5240MHz	76	19
5745MHz	80	20
5785MHz	92	23
5825MHz	83	20.75
802.11ax HEW20_Nss1,(MCS0)_4TX	-	-
5180MHz	66	16.5
5200MHz	78	19.5
5240MHz	75	18.75
5745MHz	97	24.25
5785MHz	93	23.25
5825MHz	86	21.5
802.11ax HEW40_Nss1,(MCS0)_4TX	-	-
5190MHz	54	13.5
5230MHz	76	19
5755MHz	84	21
5795MHz	92	23
802.11ax HEW80_Nss1,(MCS0)_4TX	-	-
5210MHz	53	13.25
5775MHz	71	17.75
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-	-
5180MHz	71	17.75
5200MHz	78	19.5
5240MHz	75	18.75
5745MHz	76	19
5785MHz	76	19
5825MHz	76	19
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-	-
5190MHz	53	13.25
5230MHz	79	19.75
5755MHz	76	19
5795MHz	76	19
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	-	-
5210MHz	63	15.75
5775MHz	71	17.75

**For Radio 2 / 4T4S Mode:****For Conducted measurement and Band Edge Emission test:**

Mode	PowerSetting	PowerSetting (dBm)
802.11ax HEW20_Nss4,(MCS0)_4TX	-	-
5180MHz	66	16.5
5200MHz	78	19.5
5240MHz	75	18.75
5745MHz	97	24.25
5785MHz	93	23.25
5825MHz	86	21.5
802.11ax HEW40_Nss4,(MCS0)_4TX	-	-
5190MHz	54	13.5
5230MHz	76	19
5755MHz	84	21
5795MHz	92	23
802.11ax HEW80_Nss4,(MCS0)_4TX	-	-
5210MHz	55	13.75
5775MHz	73	18.25

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests										
Tests Item	AC power-line conducted emissions									
Condition	AC power-line conducted measurement for line and neutral									
Operating Mode	Normal Link									
	Radio 1 with 2.4GHz function	Radio 1 with 5GHz function	Radio 2 with 5GHz function	Radio 3 with Bluetooth	Radio 3 with Thread	EUT GE1	EUT GE2	Adapter	PoE connect with EUT GE1	PoE connect with EUT GE2
1	●	-	●	●	-	●	●	●	-	-
2	-	●	●	●	-	●	●	●	-	-
3	●	-	●	-	●	●	●	●	-	-
4	-	●	●	-	●	●	●	●	-	-
Mode 4 has been evaluated to be the worst case among Mode 1~4, thus measurement for Mode 5 ~ 6 will follow this same test mode.										
5	-	●	●	-	●	●	●	-	●	-
6	-	●	●	-	●	●	●	-	-	●
For operating mode 5 is the worst case and it was record in this test report.										

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth Maximum Conducted Output Power Peak Power Spectral Density
Test Condition	Conducted measurement at transmit chains
Test Mode	Refer to note 1

The Worst Case Mode for Following Conformance Tests												
Tests Item	Unwanted Emissions											
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.											
Operating Mode < 1GHz	Normal Link											
	EUT at Z-axis	EUT at Y-axis	Radio 1 with 2.4GHz function	Radio 1 with 5GHz function	Radio 2 with 5GHz function	Radio 3 with Bluetooth	Radio 3 with Thread	EUT GE1	EUT GE2	Adapter	PoE connect with EUT GE1	PoE connect with EUT GE2
1	●	-	●	-	●	●	-	●	●	●	-	-
2	-	●	●	-	●	●	-	●	●	●	-	-
Mode 2 has been evaluated to be the worst case between Mode 1~2, thus measurement for Mode 3 ~ 5 will follow this same test mode.												
3	-	●	-	●	●	●	-	●	●	●	-	-
4	-	●	●	-	●	-	●	●	●	●	-	-
5	-	●	-	●	●	-	●	●	●	●	-	-
Mode 5 has been evaluated to be the worst case between Mode 1~5, thus measurement for Mode 6 ~ 7 will follow this same test mode.												
6	-	●	-	●	●	-	●	●	●	-	●	-
7	-	●	-	●	●	-	●	●	●	-	-	●
For operating mode 6 is the worst case and it was record in this test report.												
Operating Mode > 1GHz	CTX											
For Radiated Emission Radio 1 / 4T1S Mode: The EUT was performed at Y axis and Z axis and the worst case was found at Z axis. So the measurement will follow this same test configuration. Radio 2 / 4T1S Mode: The EUT was performed at Y axis and Z axis and the worst case was found at Y axis. So the measurement will follow this same test configuration.												
For Band Edge Emission Radio 1 / 1T1S, 2T2S, 4T1S, 4T4S Mode: The EUT was performed at Y axis and Z axis and the worst case was found at Y axis. So the measurement will follow this same test configuration. Radio 2 / 1T1S, 2T2S, 4T1S, 4T4S Mode: The EUT was performed at Y axis and Z axis and the worst case was found at Z axis. So the measurement will follow this same test configuration.												
Test Mode	Refer to note 1											

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Radiated Emission Co-location
Test Condition	Radiated measurement
Operating Mode	Normal Link
The EUT was performed at Y axis and Z axis position and the worst case was found at Z axis. So the measurement will follow this same test configuration.	
1	EUT in Z axis WLAN 2.4GHz (Radio 1) + WLAN 5GHz (Radio 2)
Refer to Appendix F for Radiated Emission Co-location.	



The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	WLAN 2.4GHz (Radio 1) + WLAN 5GHz (Radio 2) + Bluetooth (Radio 3)
2	WLAN 5GHz (Radio 1) + WLAN 5GHz (Radio 2) + Bluetooth (Radio 3)
3	WLAN 2.4GHz (Radio 1) + WLAN 5GHz (Radio 2) + Thread (Radio 3)
4	WLAN 5GHz (Radio 1) + WLAN 5GHz (Radio 2) + Thread (Radio 3)
Refer to Sporton Test Report No.: FA801739-01 for Co-location RF Exposure Evaluation.	

Note:

1. Test Mode:

Test Item	Test Mode								
	802.11a		802.11ax HEW20/40/80						
	1T1S	4T1S	CDD 1T1S	SDM 2T2S	CDD 4T1S	SDM 4T4S	TxBF 2T2S	TxBF 4T1S	TxBF 4T4S
Maximum Conducted Output Power	V	V	V	V	V	V	-	V	-
Emission Bandwidth	V	V	V	V	V	V	-	V	-
Peak Power Spectral Density	V	V	V	V	V	V	-	V	-
Radiated Emission	Cover by CDD 4T1S Max setting	V	Cover by CDD 4T1S Max setting	Cover by CDD 4T1S Max setting	Max setting	Cover by CDD 4T1S Max setting	-	Cover by CDD 4T1S Max setting	-
Band Edge Emission	V	V	V	V	V	V	-	V	-

2. 802.11ax modulation and bandwidth are similar for 802.11n mode for 20MHz / 40MHz and 802.11ac mode for 20/40/80MHz, therefore investigated worst case to representative mode in test report.
3. The PoE is for measurement only, would not be marketed.

PoE information as below:

Power	Brand	Model
PoE	Microsemi	PD-9001GR/AT/AC



2.3 EUT Operation during Test

For CTX Mode:

non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

beamforming mode:

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN 7 were executed.
The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under Telnet and LanTest.
3. Executed " Telnet and LanTest " to link with the remote workstation to transmit and receive packet by WLAN module and transmit duty cycle no less than 98%.

For Normal Link:

During the test, the EUT operation to normal function.

2.4 Accessories

Accessories			
Equipment Name	Brand Holder	Model Name	Rating
Adapter	Powertron Electronics Corp.	PA1045-120HIB300	Intput:100-240V~50-60Hz, 1.0A Output: 12V, 3.0A 36W Max
Others			
Plug*6 (US*1, EU*1, UK*1, AU*1, China*1, BZ*1)			
Bracket*1			



2.5 Support Equipment

For Test Site No: CO02-CB

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Flash disk3.0	Transcend	JetFlash-700	N/A
B	PoE	Microsemi	PD-9001GR/AT/AC	N/A
C	GE1 PC	DELL	T3400	N/A
D	GE2 NB	DELL	E6430	N/A
E	2.4G/5G NB	DELL	E6430	N/A
F	5G NB	DELL	E6430	N/A
G	802.11ax Access Point (Device)	Extreme Networks	AP510i	QXO-AP510I
H	Device NB	DELL	E6430	N/A

For Test Site No: 03CH01-CB (below 1GHz)

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	PC	ASUS	N/A	N/A
B	LAN NB	DELL	E4300	N/A
C	2.4G/5G NB	DELL	E4300	N/A
D	5G NB	DELL	E4300	N/A
E	802.11ax Access Point (Device)	Extreme Networks	AP510i	QXO-AP510I
F	Device NB	DELL	E4300	N/A
G	Flash disk3.0	Transcend	JetFlash-700	N/A
H	PoE	Microsemi	PD-9001GR/AT/AC	N/A

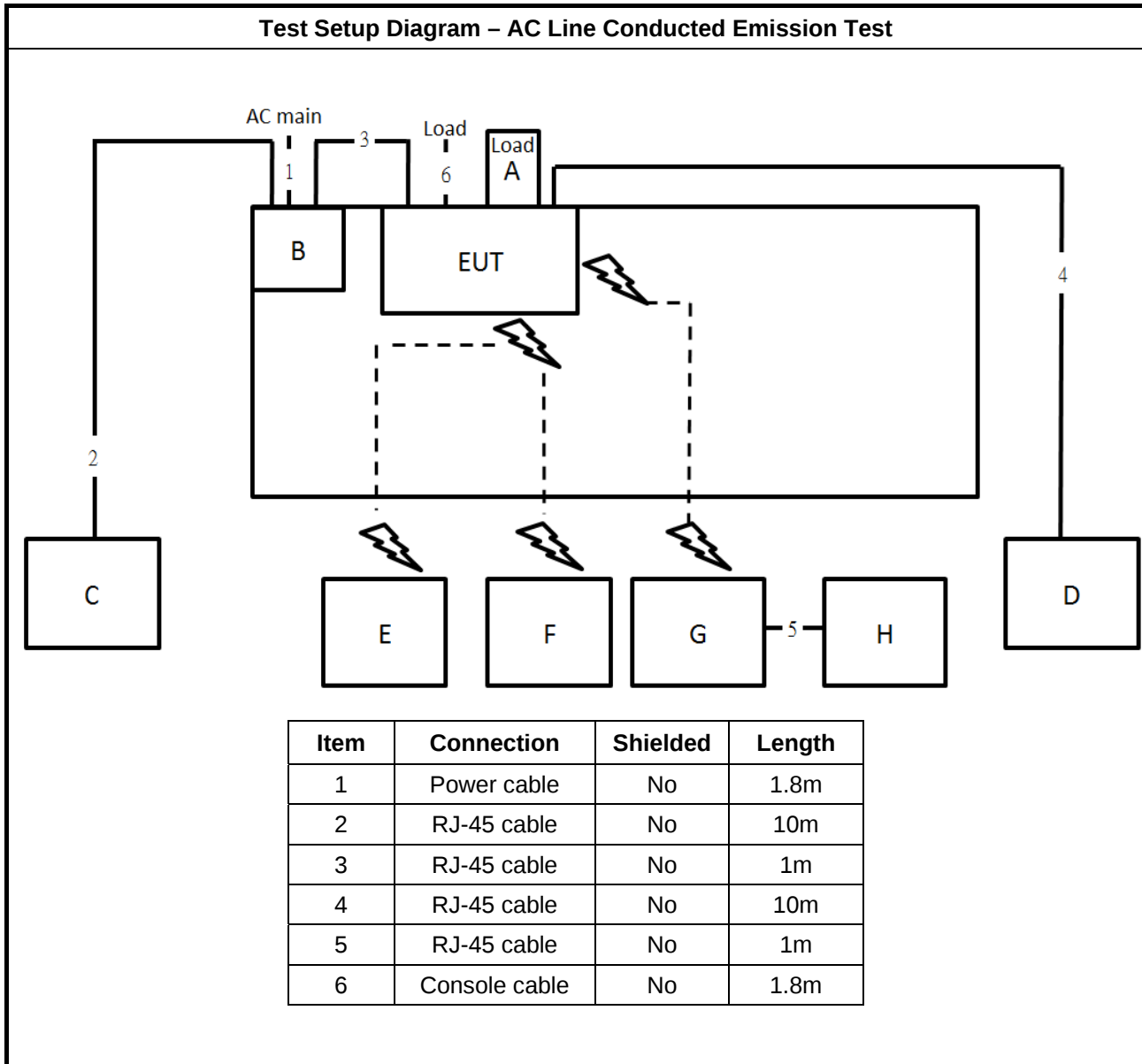
For Test Site No: TH01-CB and 03CH01-CB (above 1GHz, Non-Beamforming Mode)

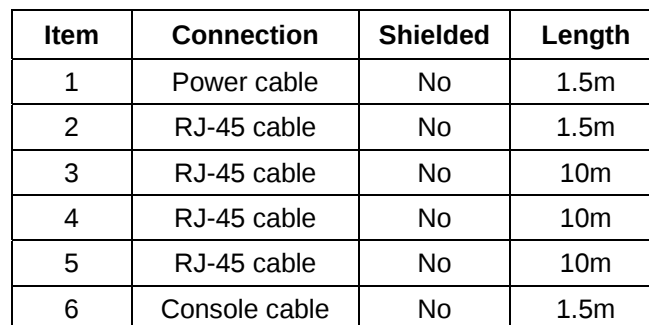
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A

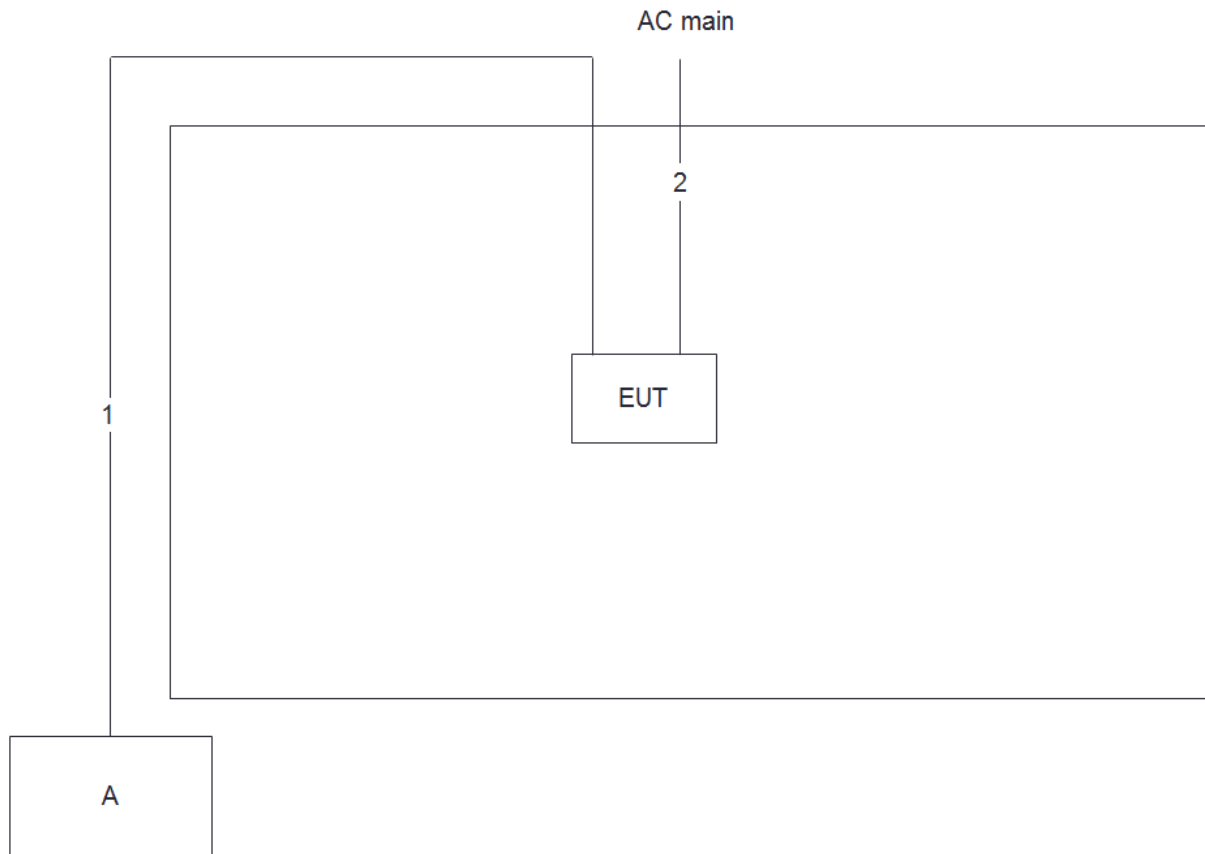
For Test Site No: 03CH01-CB (above 1GHz, Beamforming Mode)

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
C	Notebook	DELL	E4300	N/A
D	WLAN module	Boardcom	BCM 943684MCH5	N/A

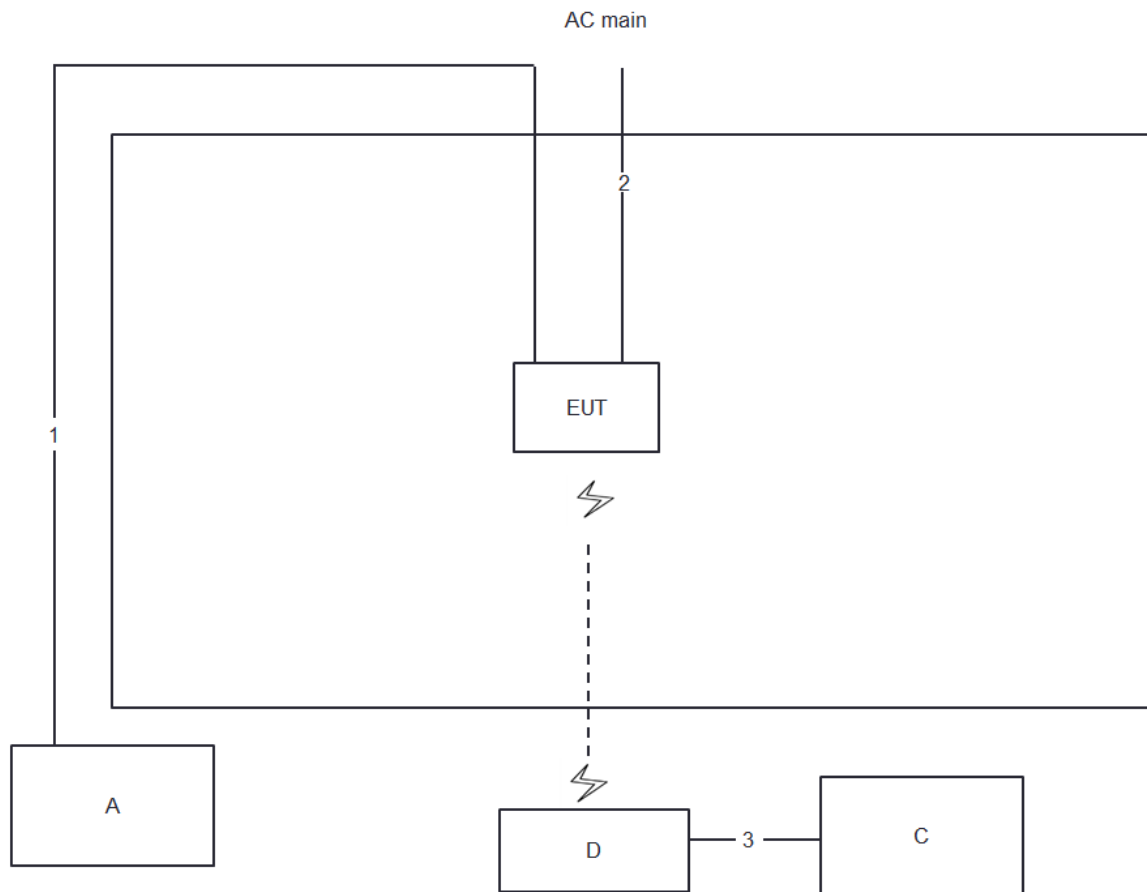
2.6 Test Setup Diagram





Test Setup Diagram - Radiated Test > 1GHz , Non-Beamforming Mode


Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	Power cable	No	1.5m

Test Setup Diagram - Radiated Test > 1GHz , Beamforming Mode


Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	Power cable	No	1.5m
3	RJ-45 cable	No	10m



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line 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.

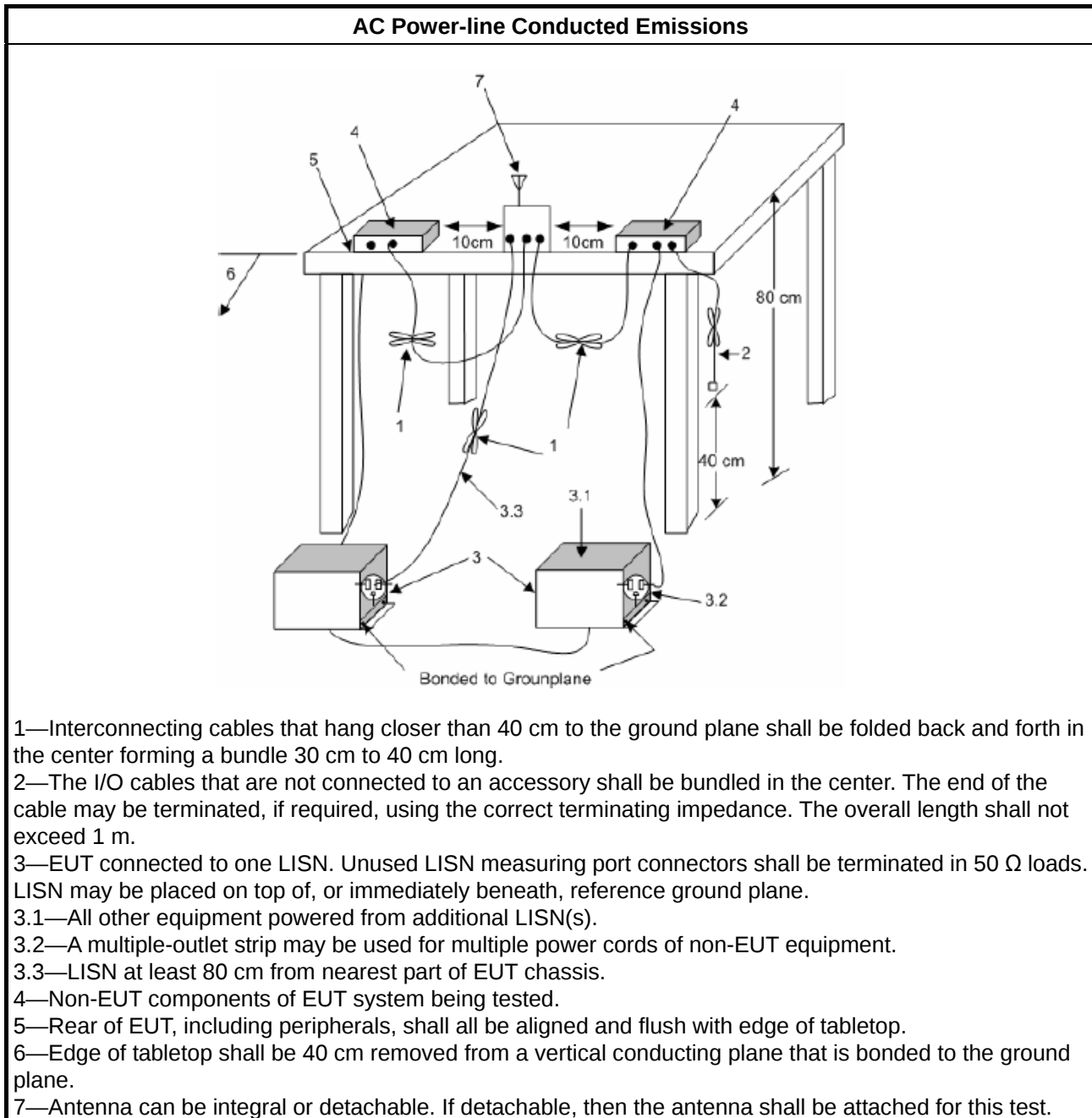
3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

Emission Bandwidth Limit	
UNII Devices	
☒	For the 5.15-5.25 GHz band, N/A
☐	For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
☐	For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.
☒	For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq$ 500kHz.
LE-LAN Devices	
☐	For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.
☐	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐	For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq$ 500kHz.

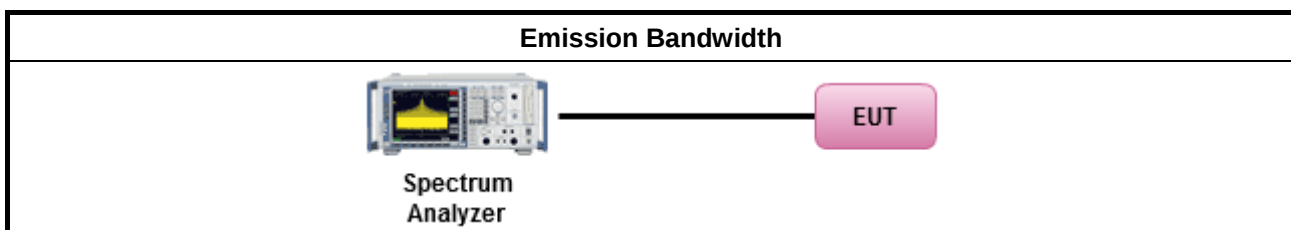
3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.2.3 Test Procedures

Test Method	
For the emission bandwidth shall be measured using one of the options below:	
☒	Refer as FCC KDB 789033, clause C for EBW and clause D for OBW measurement.
☐	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.
☐	Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
UNII Devices	
☒ For the 5.15-5.25 GHz band:	
☐	- Outdoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$. e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm] - Indoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ - Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$. - Mobile or Portable Client: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.
☐	For the 5.25-5.35 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.
☐	For the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.
☒ For the 5.725-5.85 GHz band:	
☐	- Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$. - Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.
LE-LAN Devices	
☐	For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or 10 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.
☐	For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz
☐ For the 5.725-5.85 GHz band:	
☐	- Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$. - Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.
P_{Out} = maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.	

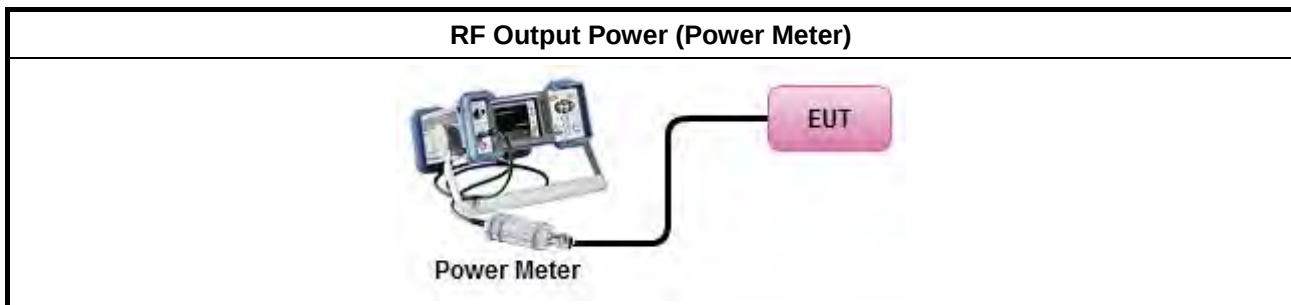
3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

Test Method	
Maximum Conducted Output Power	
	Average over on/off periods with duty factor
☐	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
☐	Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wideband RF power meter and average over on/off periods with duty factor
☒	Refer as FCC KDB 789033, clause E Method PM-G (using an RF average power meter).
For conducted measurement.	
	If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit	
UNII Devices	
☒ For the 5.15-5.25 GHz band:	
☐	- Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$. - Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$. - Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 17 - (G_{TX} - 23)$. - Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.
☐	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.
☐	For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.
☒ For the 5.725-5.85 GHz band:	
☐	- Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then $PPSD = 30 - (G_{TX} - 6)$. - Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
LE-LAN Devices	
☐	For the 5.15-5.25 GHz band, the e.i.r.p. peak power spectral density (PPSD) ≤ 10 dBm/MHz.
☐	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz.
☐	e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below: -13 dBW/MHz for $0^\circ \leq \theta < 8^\circ$; -13 - 0.716 (θ-8) dBW/MHz for $8^\circ \leq \theta < 40^\circ$ -35.9 - 1.22 (θ-40) dBW/MHz for $40^\circ \leq \theta \leq 45^\circ$; -42 dBW/MHz for $\theta > 45^\circ$
☐	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz.
☐ For the 5.725-5.85 GHz band:	
☐	- Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then $PPSD = 30 - (G_{TX} - 6)$. - Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
PPSD = peak power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz G_{TX} = the maximum transmitting antenna directional gain in dBi.	

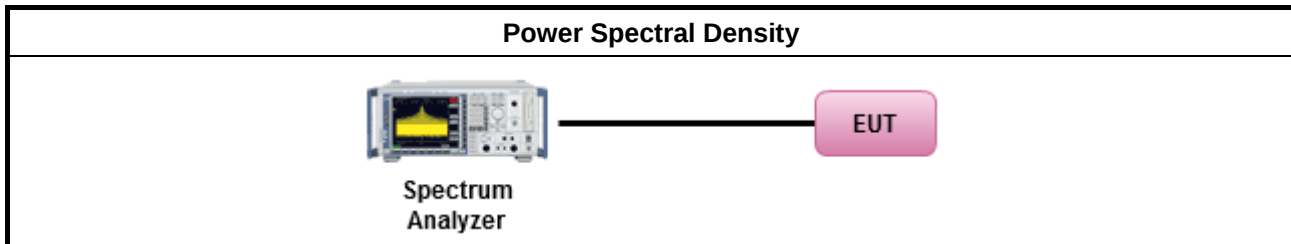
3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

Test Method	
Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:	
☐	Refer as FCC KDB 789033, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth
[duty cycle ≥ 98% or external video / power trigger]	
☒	Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).
☐	Refer as FCC KDB 789033, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)
duty cycle < 98% and average over on/off periods with duty factor	
☒	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
☐	Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
For conducted measurement.	
If the EUT supports multiple transmit chains using options given below:	
☒	Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.
☐	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,
☐	Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.
If multiple transmit chains, EIRP PPSD calculation could be following as methods: $PPSD_{total} = PPSD_1 + PPSD_2 + \dots + PPSD_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = PPSD_{total} + DG$	

3.4.4 Test Setup



3.4.5 Test Result of Peak Power Spectral Density

Refer as Appendix D

3.5 Unwanted Emissions

3.5.1 Transmitter Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz 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: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
☒ 5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
☐ 5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
☐ 5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
☒ 5.725 - 5.85 GHz	all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of



linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

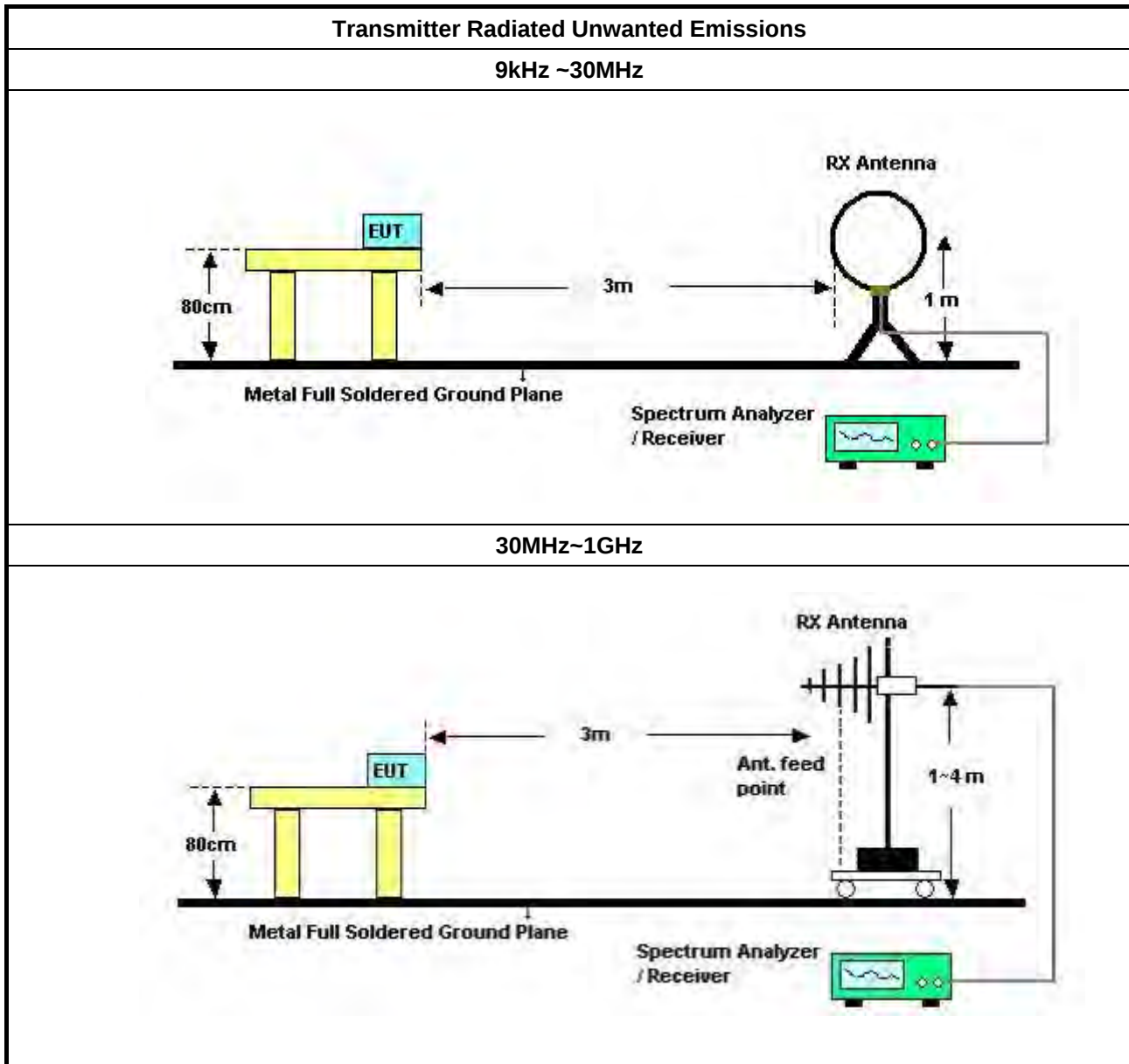
3.5.2 Measuring Instruments

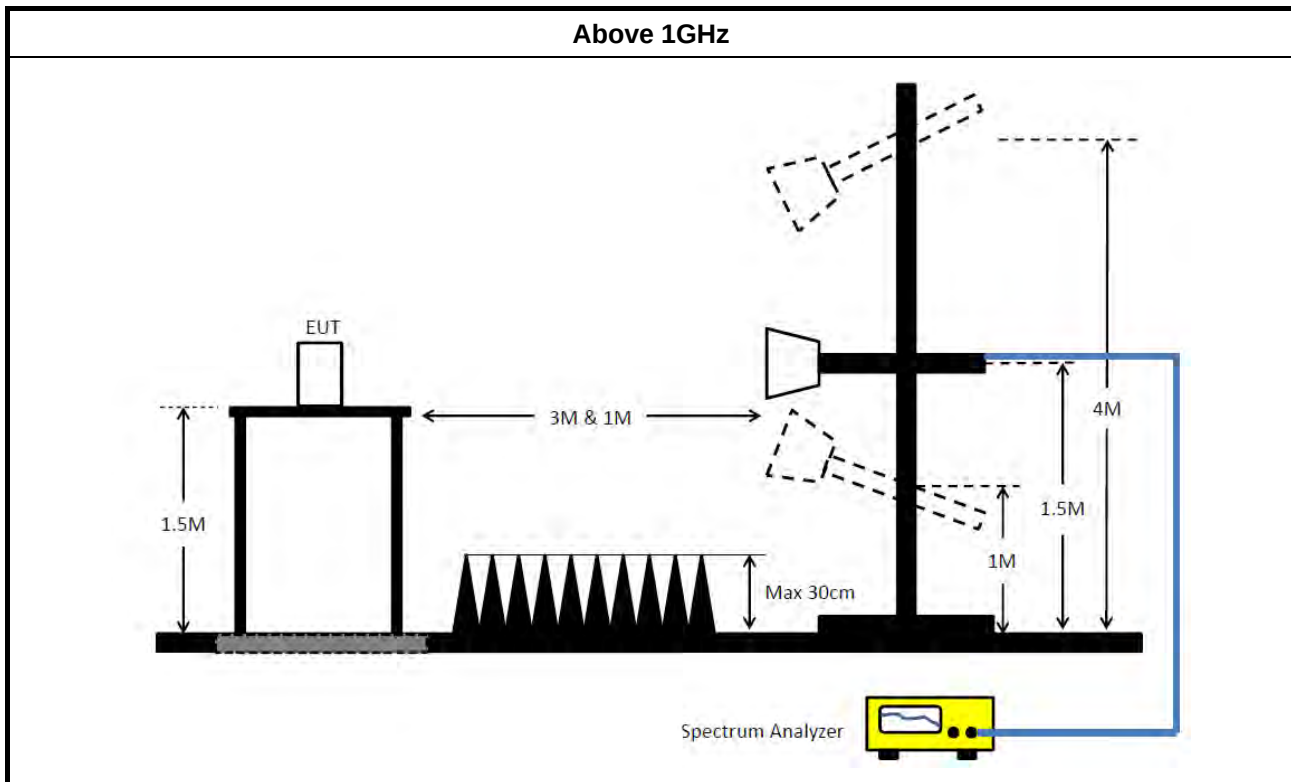
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method	
Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).	
The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].	
For the transmitter unwanted emissions shall be measured using following options below:	
	Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
	Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.
	☐ Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).
	☒ Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).
	☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq$ 1/T, where T is pulse time.
	☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	☒ Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.
	☐ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
	For radiated measurement.
	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
	The any unwanted emissions level shall not exceed the fundamental emission level.
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.	

3.5.4 Test Setup





3.5.5 Transmitter Unwanted Emissions (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

3.5.6 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E



4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 21, 2018	Nov. 20, 2019	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 05, 2018	Nov. 04, 2019	Conduction (CO02-CB)
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	Jan. 17, 2018	Jan. 16, 2019	Conduction (CO02-CB)
COND Cable	Woken	Cable	2	0.15MHz ~ 30MHz	Nov. 06, 2018	Nov. 05, 2019	Conduction (CO02-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO02-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 27, 2018	Aug. 26, 2019	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2018	Mar. 15, 2019	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 13, 2018	Nov. 12, 2019	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jun. 28, 2018	Jun. 27, 2019	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2018	May 01, 2019	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 09, 2018	Jan. 08, 2019	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 04, 2018	Jul. 03, 2019	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Oct. 03, 2018	Oct. 02, 2019	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS	100359	9kHz ~ 2.75GHz	Jul. 03, 2018	Jul. 02, 2019	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 21, 2017	Dec. 20, 2018	Conducted (TH01-CB)



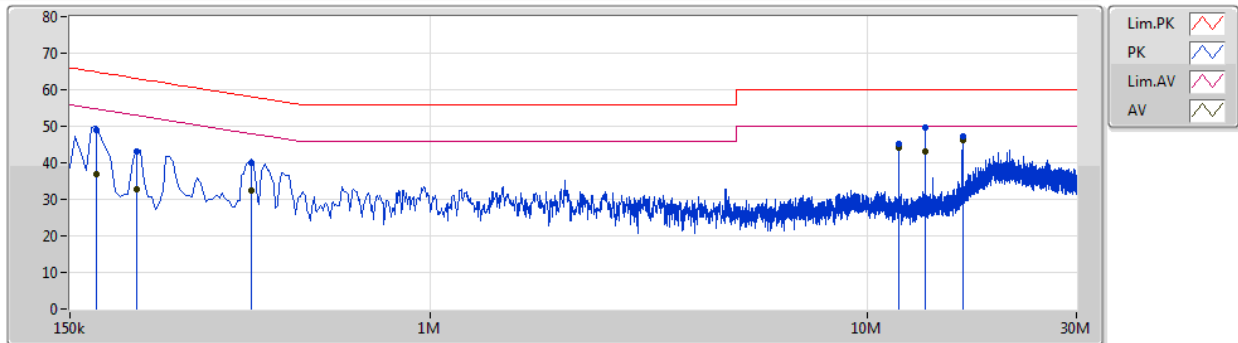
Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 05, 2018	Nov. 04, 2019	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.

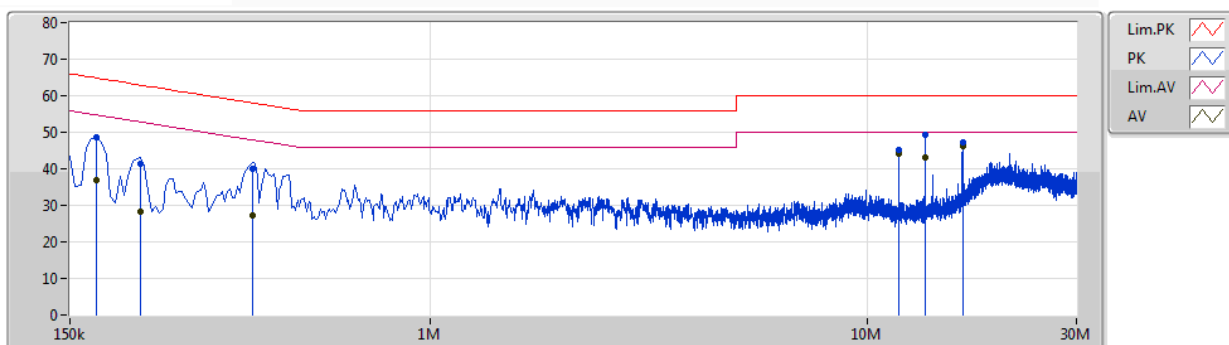
Test Mode	Mode 5	Frequency Range	0.15 MHz to 30 MHz
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Line



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	AF (dB)	CL (dB)	AT (dB)			
QP	172.5k	48.90	64.83	-15.93	10.18	Line	-	38.72	10.16	0.02	-			
AV	172.5k	37.04	54.83	-17.79	10.18	Line	-	26.86	10.16	0.02	-			
QP	213k	43.14	63.09	-19.95	10.18	Line	-	32.96	10.16	0.02	-			
AV	213k	32.76	53.09	-20.33	10.18	Line	-	22.58	10.16	0.02	-			
QP	388.5k	40.05	58.10	-18.05	10.18	Line	-	29.87	10.16	0.02	-			
AV	388.5k	32.54	48.10	-15.56	10.18	Line	-	22.36	10.16	0.02	-			
QP	11.76M	45.05	60.00	-14.95	10.43	Line	-	34.62	10.34	0.09	-			
AV	11.76M	44.21	50.00	-5.79	10.43	Line	-	33.78	10.34	0.09	-			
QP	13.56M	49.51	60.00	-10.49	10.46	Line	-	39.05	10.36	0.10	-			
AV	13.56M	42.95	50.00	-7.05	10.46	Line	-	32.49	10.36	0.10	-			
QP	16.463M	47.26	60.00	-12.74	10.49	Line	-	36.77	10.38	0.11	-			
AV	16.463M	46.29	50.00	-3.71	10.49	Line	"Worst"	35.80	10.38	0.11	-			

Neutral



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	AF (dB)	CL (dB)	AT (dB)			
QP	172.5k	48.56	64.83	-16.27	10.19	Neutral	-	38.37	10.17	0.02	-			
AV	172.5k	36.90	54.83	-17.93	10.19	Neutral	-	26.71	10.17	0.02	-			
QP	217.5k	41.54	62.92	-21.38	10.19	Neutral	-	31.35	10.17	0.02	-			
AV	217.5k	28.33	52.92	-24.59	10.19	Neutral	-	18.14	10.17	0.02	-			
QP	393k	39.88	58.01	-18.13	10.19	Neutral	-	29.69	10.17	0.02	-			
AV	393k	27.12	48.01	-20.89	10.19	Neutral	-	16.93	10.17	0.02	-			
QP	11.76M	45.02	60.00	-14.98	10.43	Neutral	-	34.59	10.34	0.09	-			
AV	11.76M	44.20	50.00	-5.80	10.43	Neutral	-	33.77	10.34	0.09	-			
QP	13.56M	49.19	60.00	-10.81	10.46	Neutral	-	38.73	10.36	0.10	-			
AV	13.56M	43.03	50.00	-6.97	10.46	Neutral	-	32.57	10.36	0.10	-			
QP	16.467M	47.21	60.00	-12.79	10.48	Neutral	-	36.73	10.37	0.11	-			
AV	16.467M	46.25	50.00	-3.75	10.48	Neutral	"Worst"	35.77	10.37	0.11	-			

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	42.275M	17.266M	17M3D1D	38.8M	16.817M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	16.325M	16.842M	16M8D1D	16.3M	16.767M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

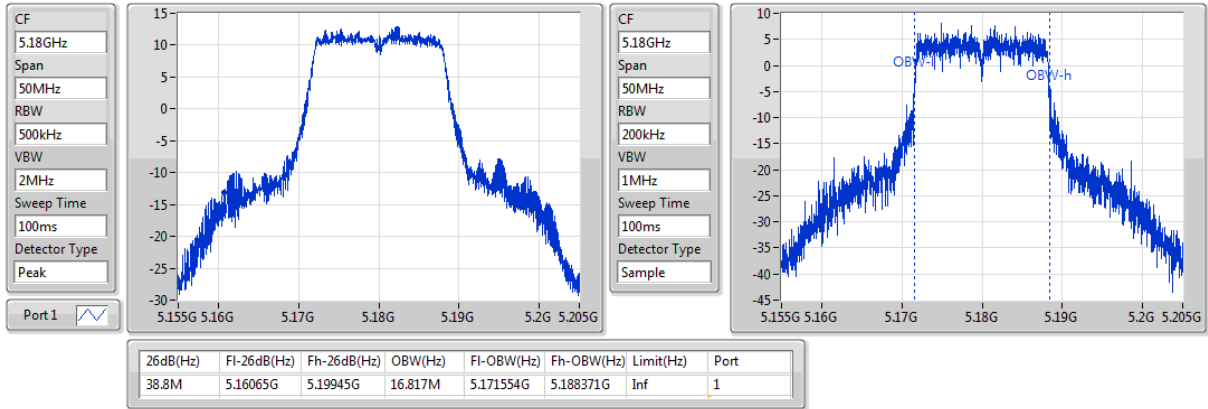
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-
5180MHz	Pass	Inf	38.8M	16.817M
5200MHz	Pass	Inf	42.275M	17.266M
5240MHz	Pass	Inf	39.375M	16.817M
5745MHz	Pass	500k	16.3M	16.817M
5785MHz	Pass	500k	16.325M	16.767M
5825MHz	Pass	500k	16.325M	16.842M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

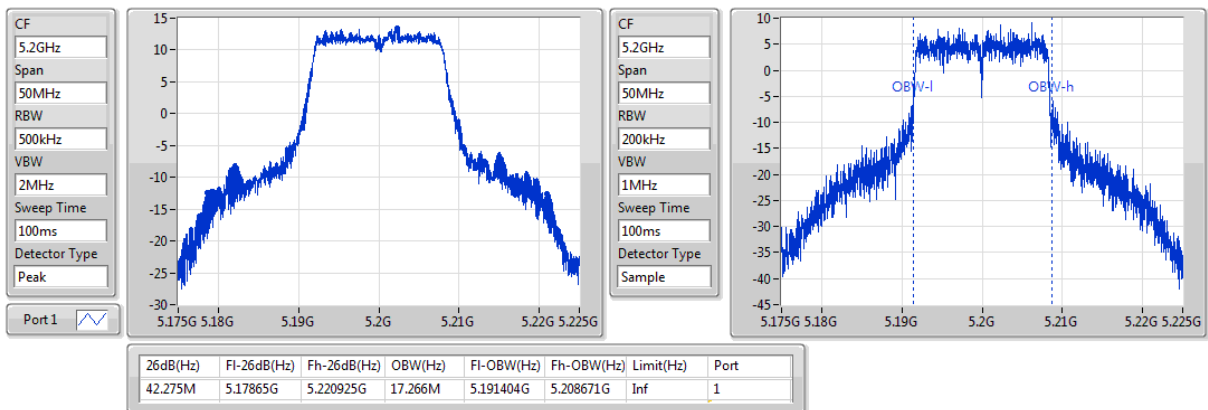
Port X-OBW = Port X 99% occupied bandwidth;

802.11a_Nss1,(6Mbps)_1TX
EBW
5180MHz

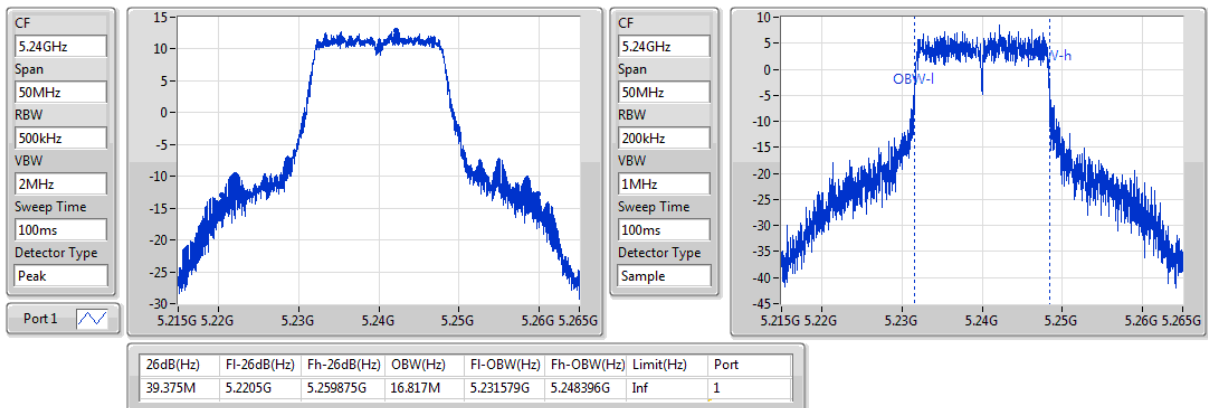
06/12/2018


802.11a_Nss1,(6Mbps)_1TX
EBW
5200MHz

06/12/2018

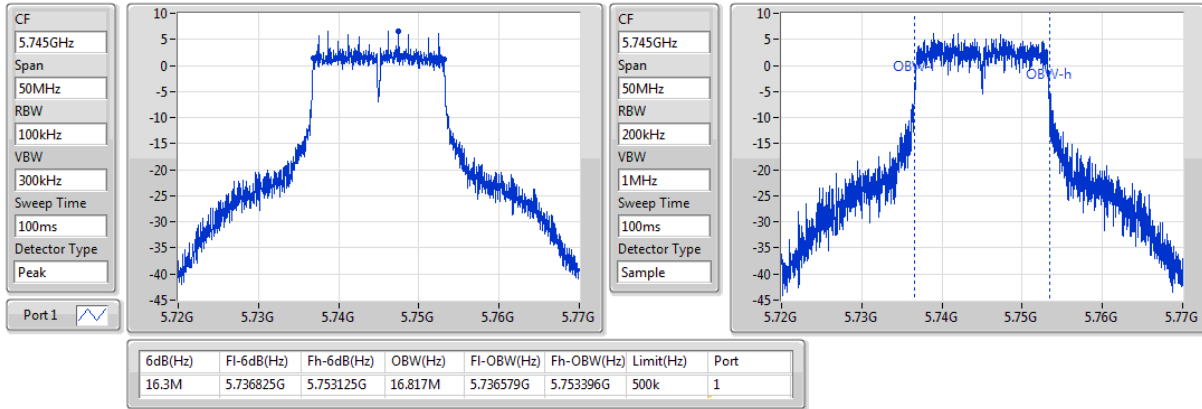

802.11a_Nss1,(6Mbps)_1TX
EBW
5240MHz

06/12/2018

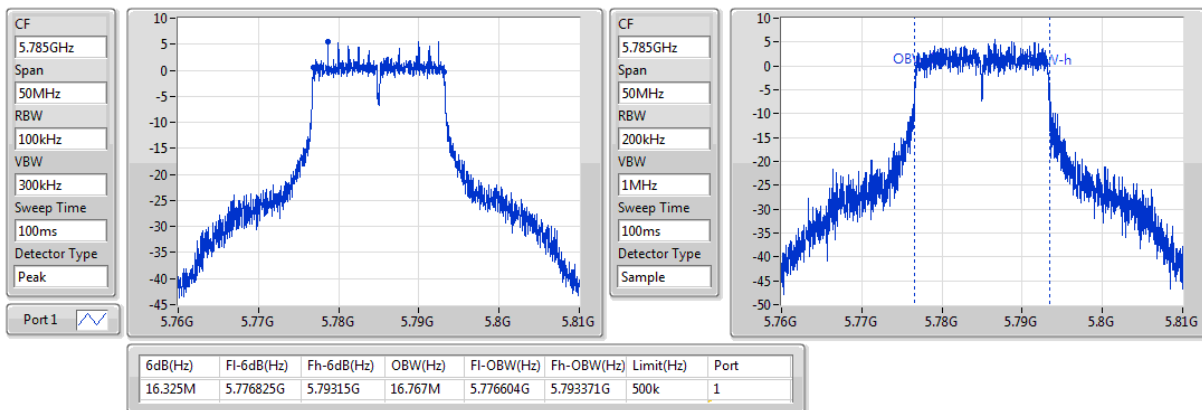


802.11a_Nss1,(6Mbps)_1TX
EBW
5745MHz

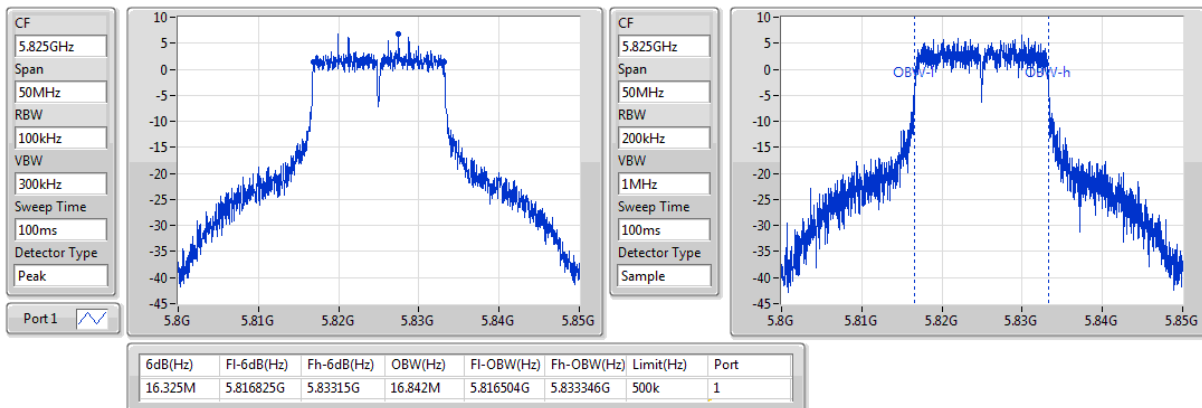
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802.11a_Nss1,(6Mbps)_1TX
EBW
5785MHz

06/12/2018


802.11a_Nss1,(6Mbps)_1TX
EBW
5825MHz

06/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_1TX	42.25M	19.465M	19M5D1D	26.15M	18.991M
802.11ax HEW40_Nss1,(MCS0)_1TX	79.2M	38.131M	38M1D1D	40M	37.631M
802.11ax HEW80_Nss1,(MCS0)_1TX	81.7M	77.161M	77M2D1D	81.7M	77.161M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_1TX	18.775M	25.187M	25M2D1D	18.7M	19.115M
802.11ax HEW40_Nss1,(MCS0)_1TX	37.15M	44.128M	44M1D1D	36.65M	40.28M
802.11ax HEW80_Nss1,(MCS0)_1TX	75.8M	95.452M	95M5D1D	75.8M	95.452M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

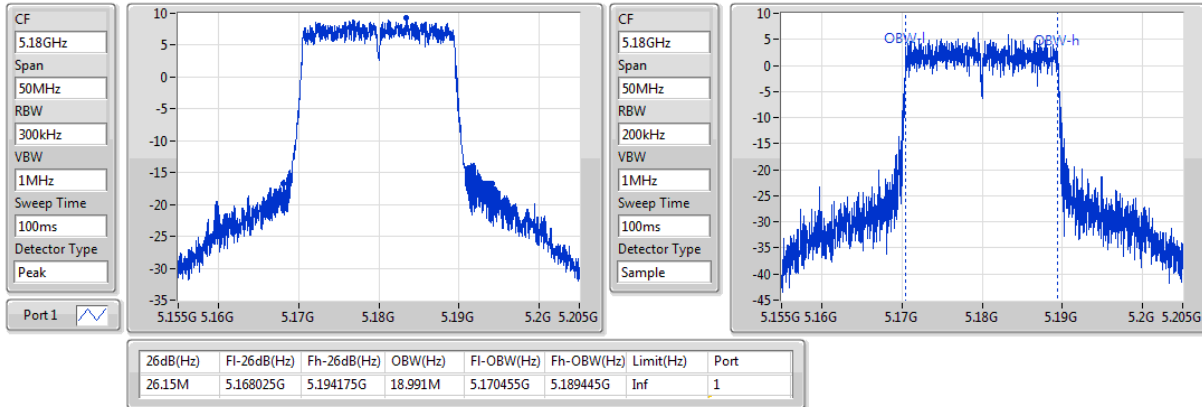
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11ax HEW20_Nss1,(MCS0)_1TX	-	-	-	-
5180MHz	Pass	Inf	26.15M	18.991M
5200MHz	Pass	Inf	42.25M	19.465M
5240MHz	Pass	Inf	40.8M	19.19M
5745MHz	Pass	500k	18.775M	19.115M
5785MHz	Pass	500k	18.725M	19.19M
5825MHz	Pass	500k	18.7M	25.187M
802.11ax HEW40_Nss1,(MCS0)_1TX	-	-	-	-
5190MHz	Pass	Inf	40M	37.631M
5230MHz	Pass	Inf	79.2M	38.131M
5755MHz	Pass	500k	37.15M	40.28M
5795MHz	Pass	500k	36.65M	44.128M
802.11ax HEW80_Nss1,(MCS0)_1TX	-	-	-	-
5210MHz	Pass	Inf	81.7M	77.161M
5775MHz	Pass	500k	75.8M	95.452M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

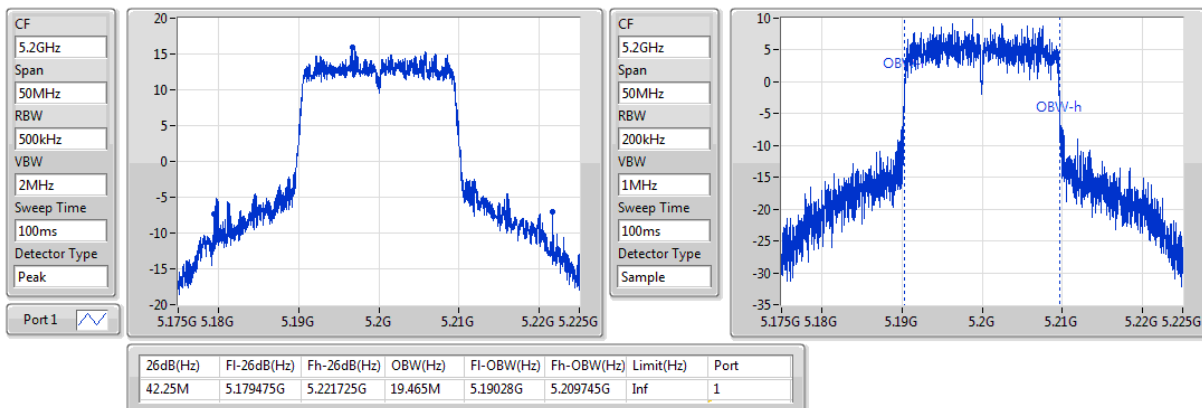
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5180MHz

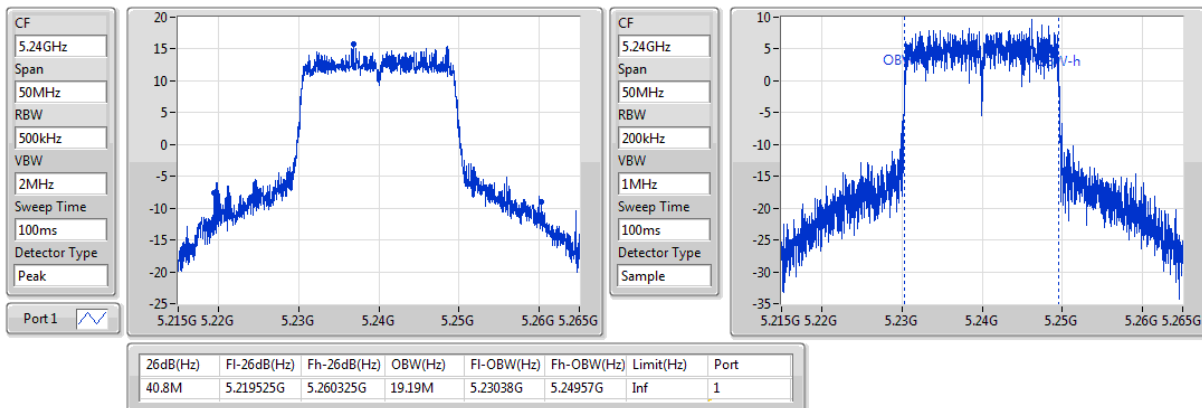
06/12/2018


802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5200MHz

06/12/2018

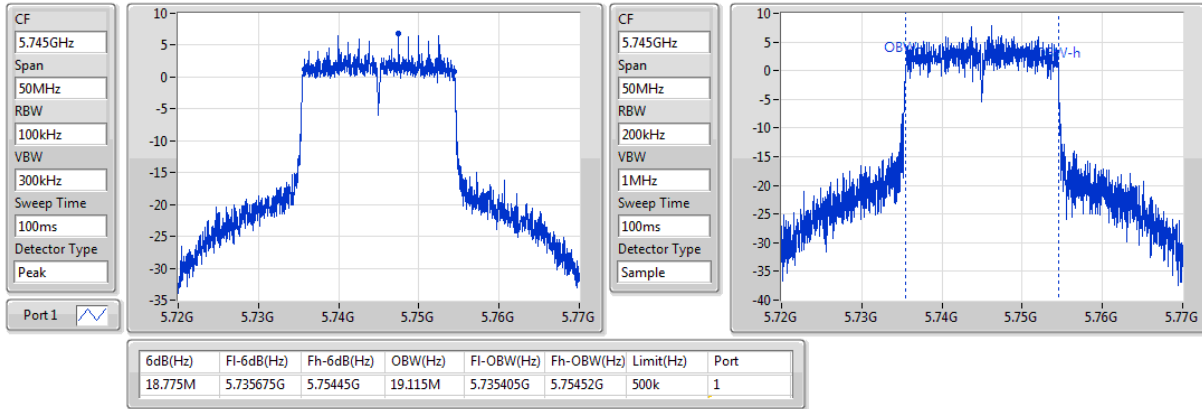

802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5240MHz

06/12/2018

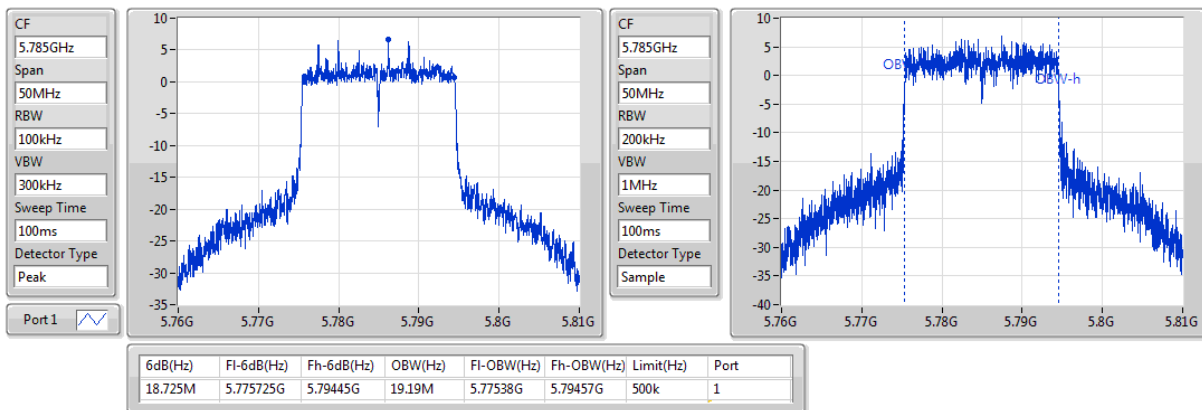


802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5745MHz

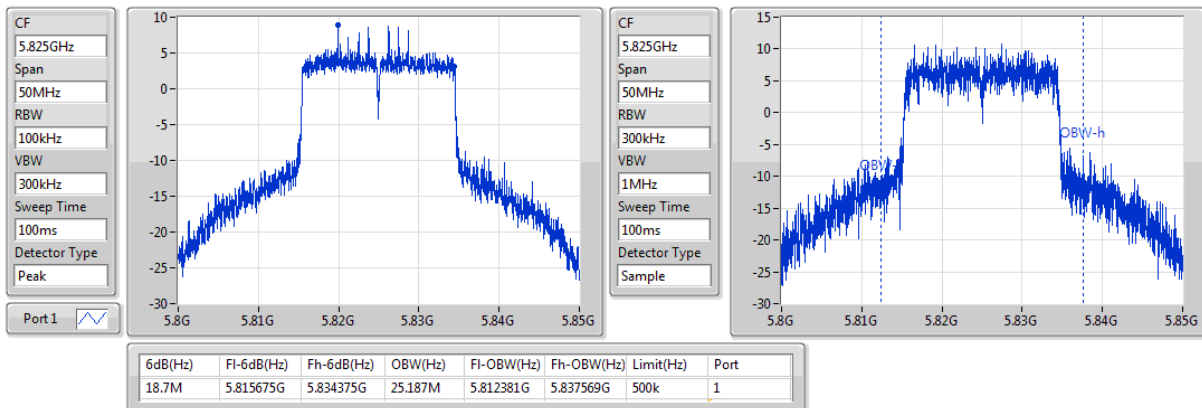
06/12/2018


802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5785MHz

06/12/2018

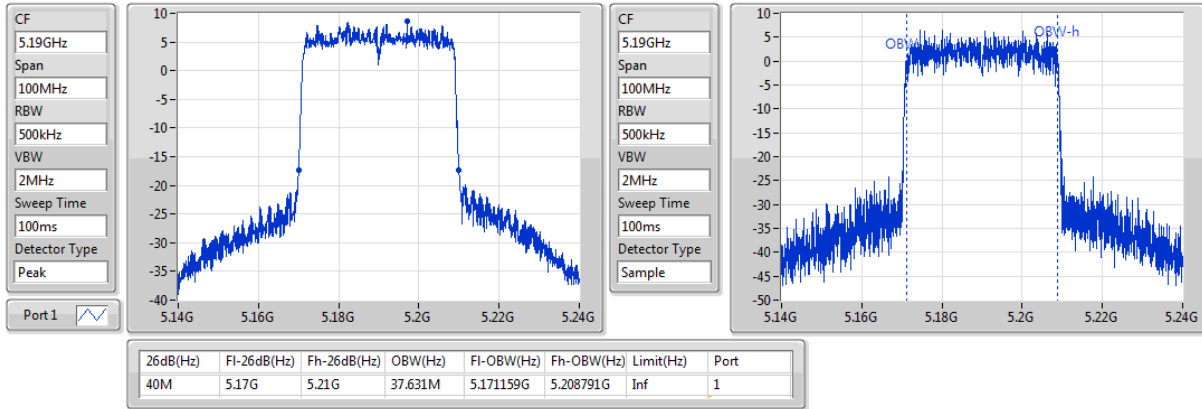

802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5825MHz

06/12/2018

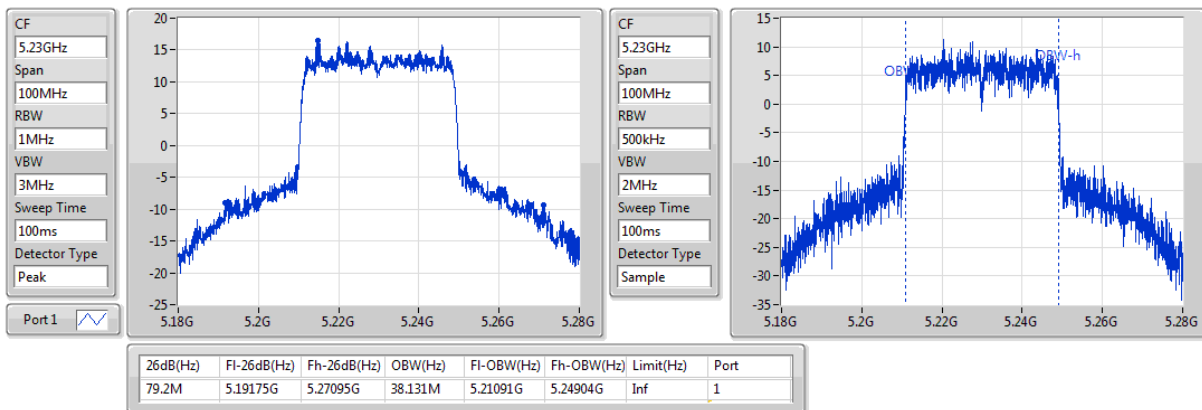


802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5190MHz

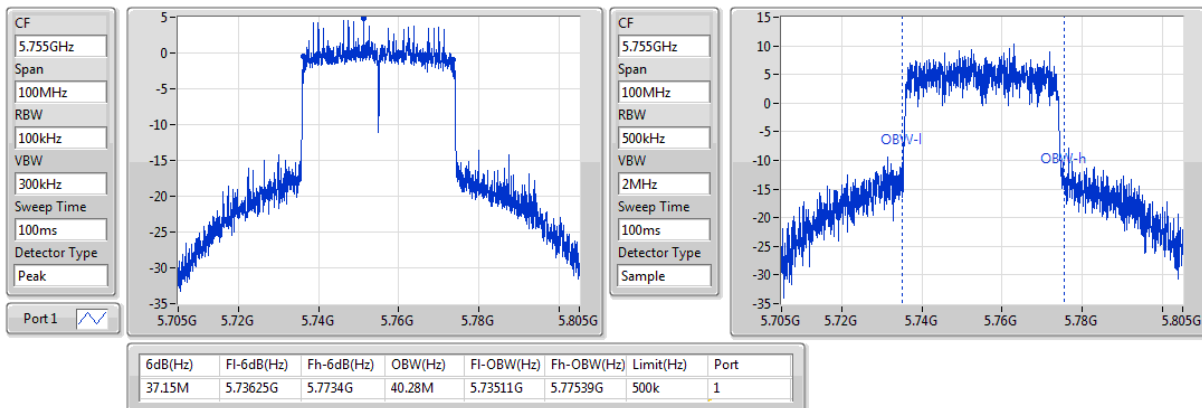
06/12/2018


802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5230MHz

06/12/2018

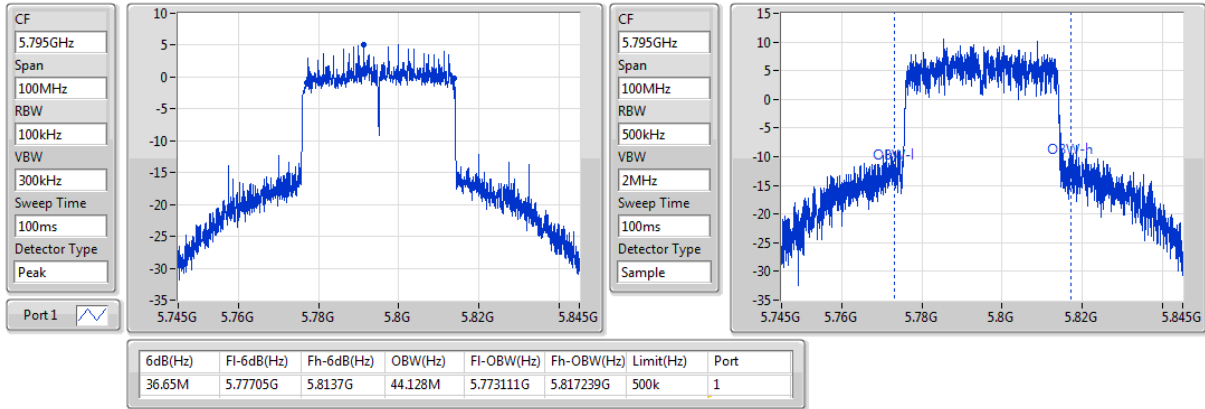

802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5755MHz

06/12/2018

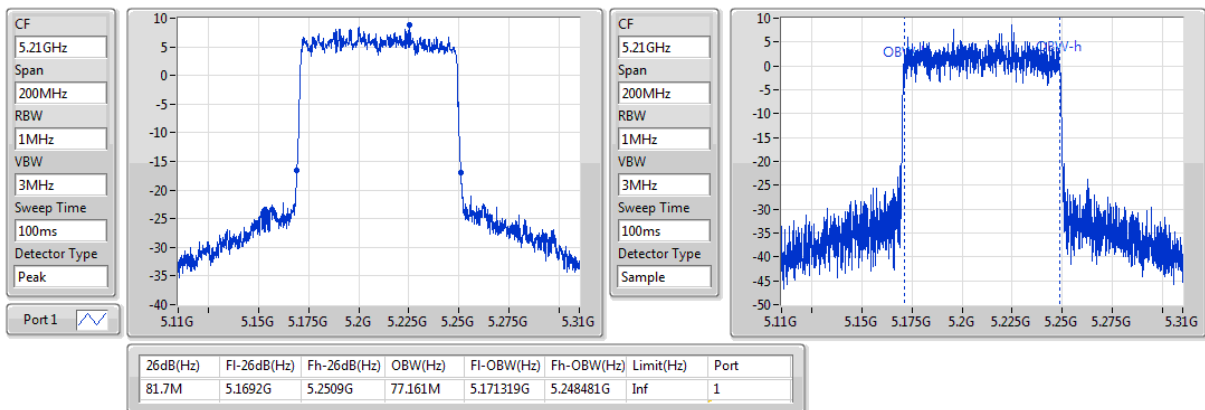


802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5795MHz

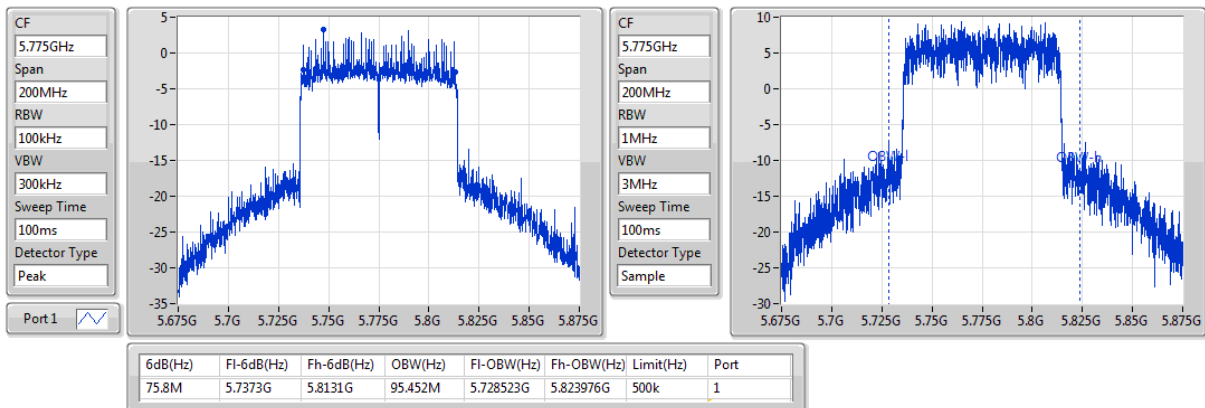
06/12/2018


802.11ax HEW80_Nss1,(MCS0)_1TX
EBW
5210MHz

06/12/2018


802.11ax HEW80_Nss1,(MCS0)_1TX
EBW
5775MHz

06/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20_Nss2,(MCS0)_2TX	44.15M	19.29M	19M3D1D	21.75M	18.966M
802.11ax HEW40_Nss2,(MCS0)_2TX	70.95M	37.781M	37M8D1D	40M	37.531M
802.11ax HEW80_Nss2,(MCS0)_2TX	81.5M	76.962M	77M0D1D	81.5M	76.762M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20_Nss2,(MCS0)_2TX	18.8M	25.837M	25M8D1D	18.575M	19.04M
802.11ax HEW40_Nss2,(MCS0)_2TX	37.35M	45.277M	45M3D1D	36.55M	40.08M
802.11ax HEW80_Nss2,(MCS0)_2TX	76.2M	77.661M	77M7D1D	75.1M	77.561M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

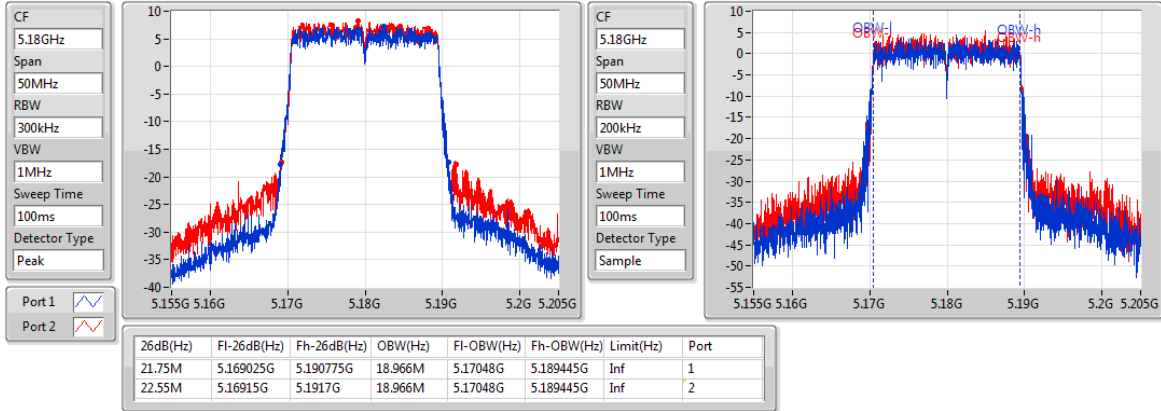
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11ax HEW20_Nss2,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	21.75M	18.966M	22.55M	18.966M
5200MHz	Pass	Inf	38.625M	19.165M	44.15M	19.265M
5240MHz	Pass	Inf	37.75M	19.29M	42.55M	19.165M
5745MHz	Pass	500k	18.575M	19.115M	18.725M	19.04M
5785MHz	Pass	500k	18.775M	19.115M	18.8M	19.04M
5825MHz	Pass	500k	18.65M	25.837M	18.625M	21.889M
802.11ax HEW40_Nss2,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	Inf	40M	37.631M	40M	37.531M
5230MHz	Pass	Inf	70.95M	37.781M	70.4M	37.731M
5755MHz	Pass	500k	36.95M	40.08M	37.3M	43.928M
5795MHz	Pass	500k	36.55M	43.678M	37.35M	45.277M
802.11ax HEW80_Nss2,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	Inf	81.5M	76.762M	81.5M	76.962M
5775MHz	Pass	500k	76.2M	77.561M	75.1M	77.661M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

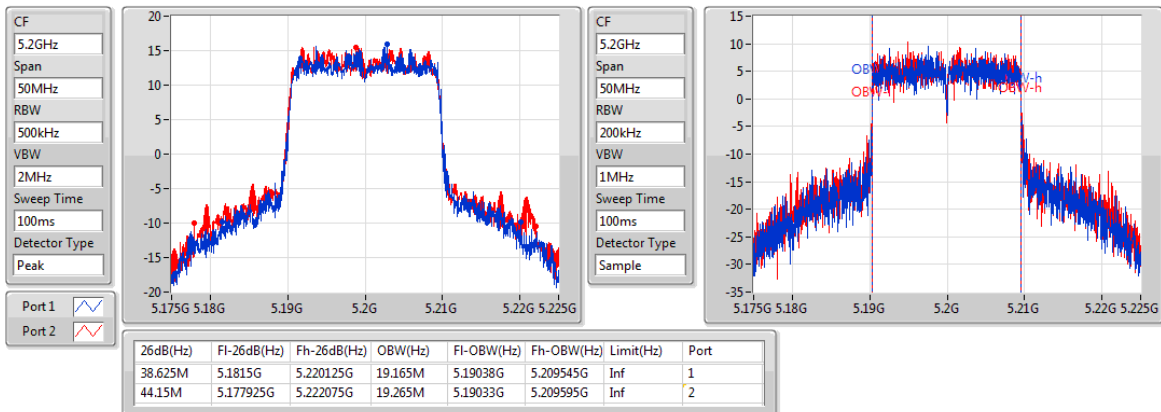
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5180MHz

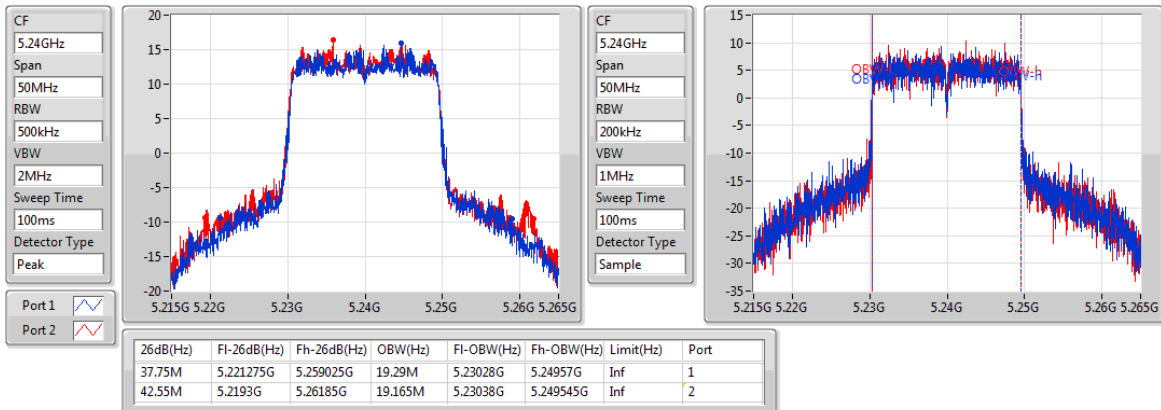
06/12/2018


802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5200MHz

06/12/2018

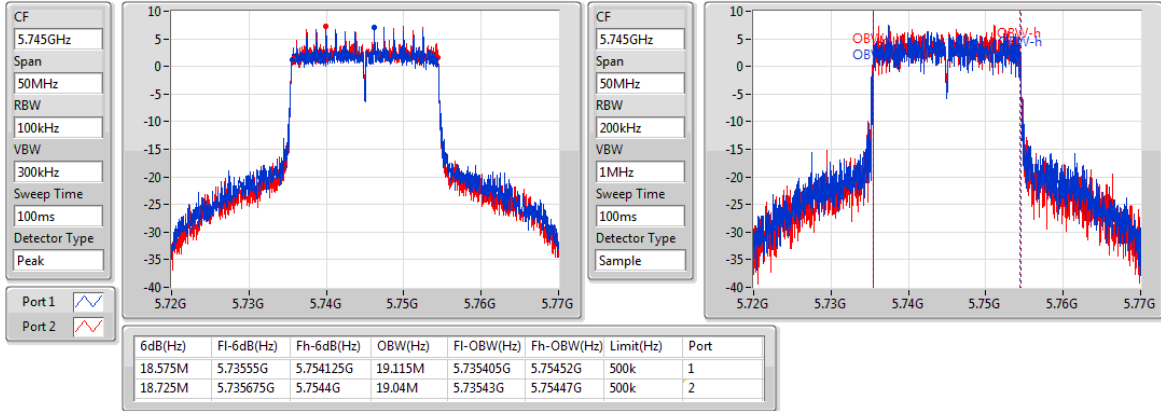

802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5240MHz

06/12/2018

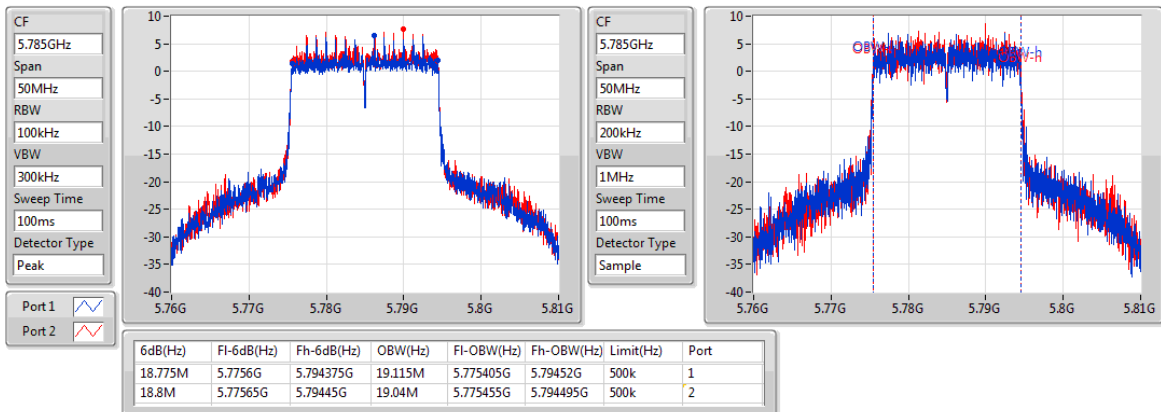


802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5745MHz

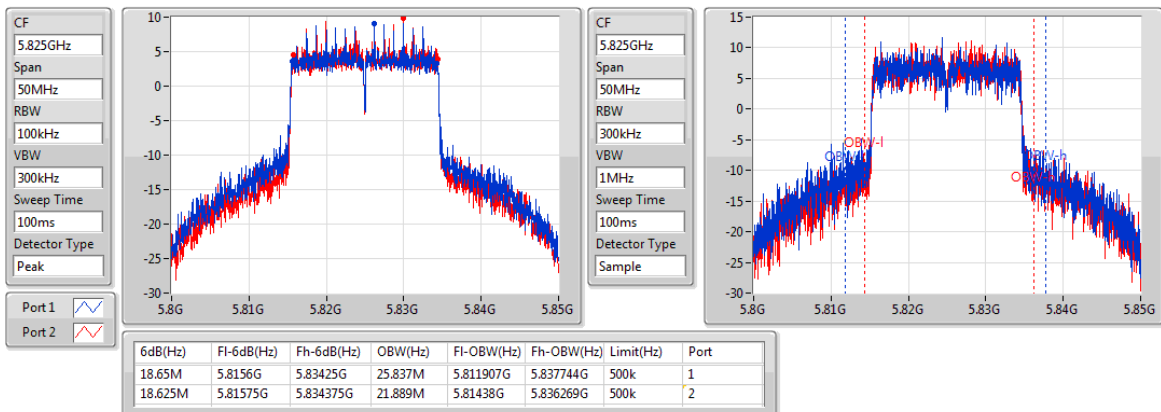
06/12/2018


802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5785MHz

06/12/2018

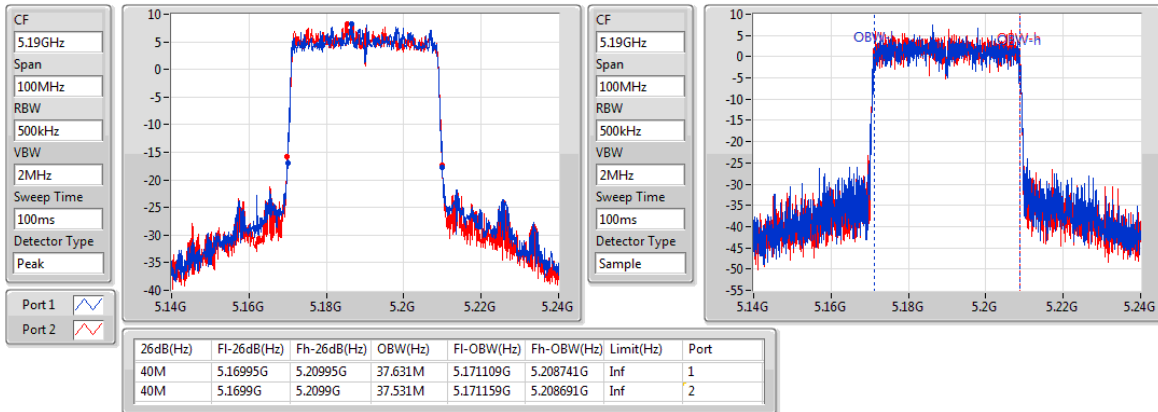

802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5825MHz

06/12/2018

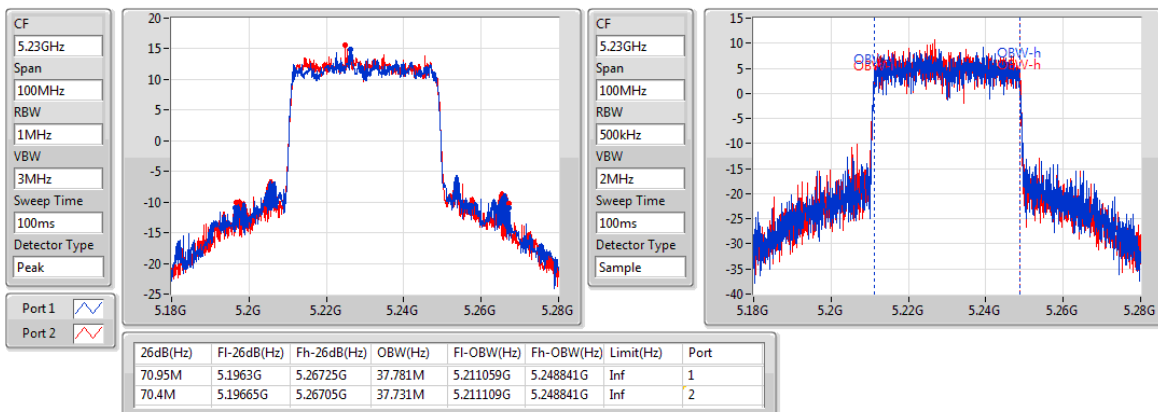


802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5190MHz

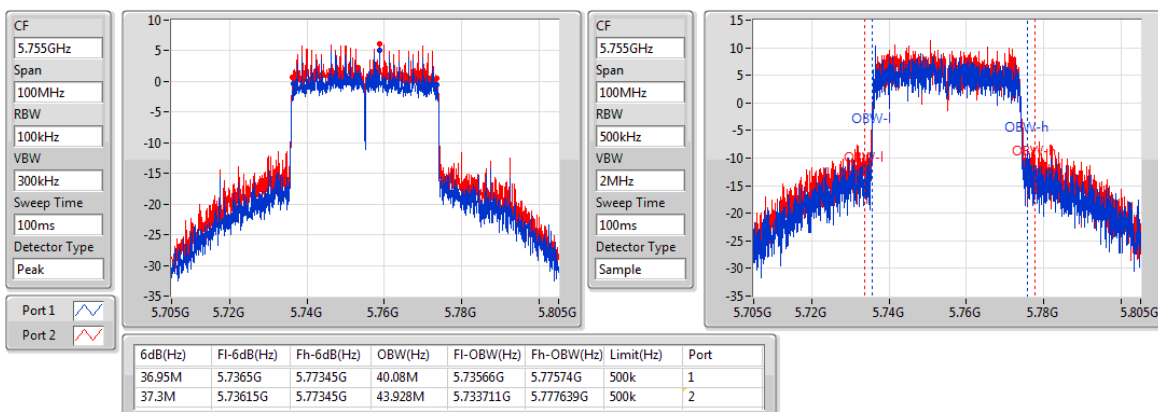
06/12/2018


802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5230MHz

06/12/2018

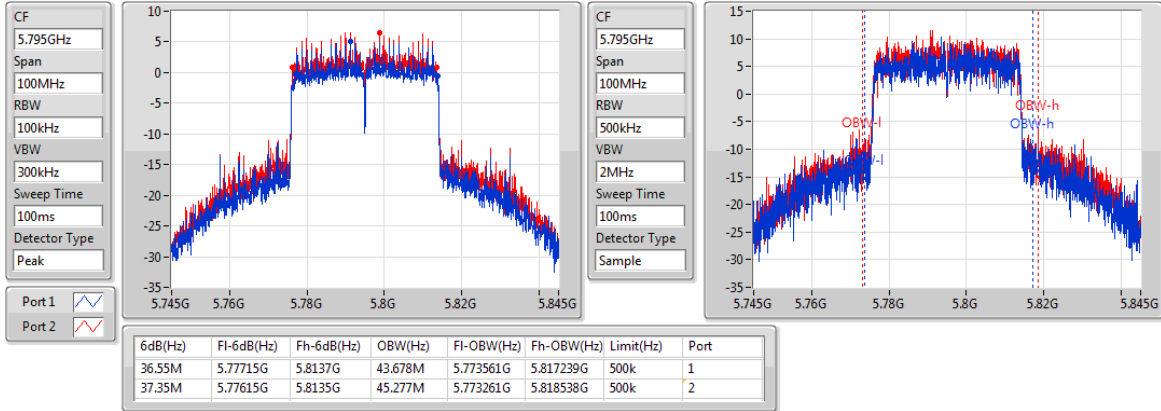

802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5755MHz

06/12/2018

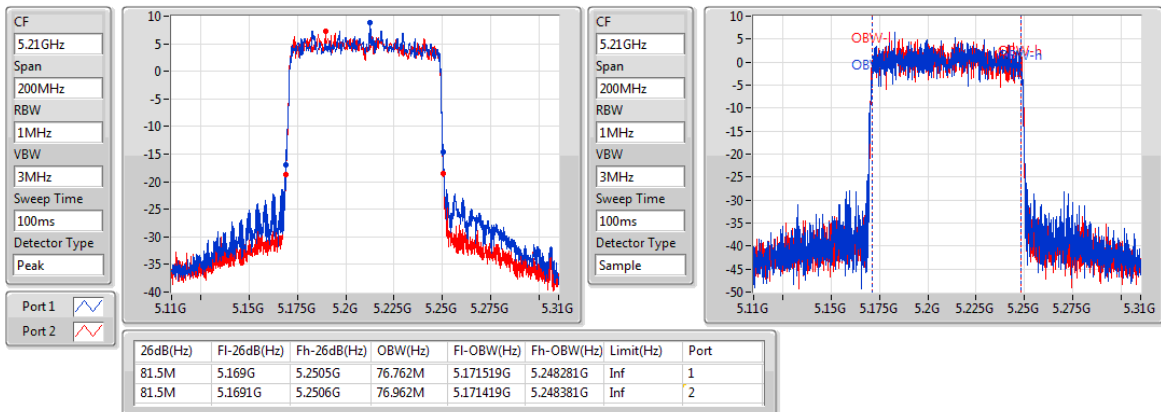


802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5795MHz

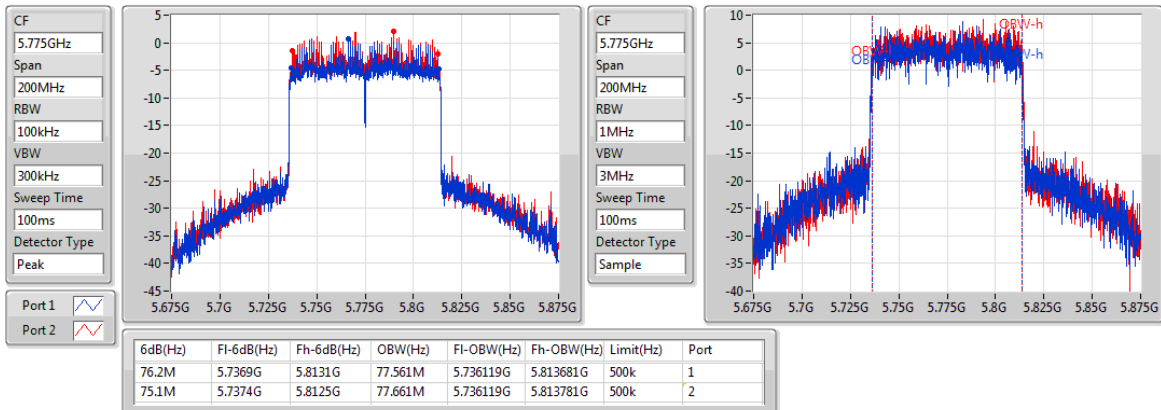
06/12/2018


802.11ax HEW80_Nss2,(MCS0)_2TX
EBW
5210MHz

06/12/2018


802.11ax HEW80_Nss2,(MCS0)_2TX
EBW
5775MHz

06/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_4TX	38.45M	16.692M	16M7D1D	21.35M	16.542M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_4TX	16.35M	16.817M	16M8D1D	16.3M	16.617M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

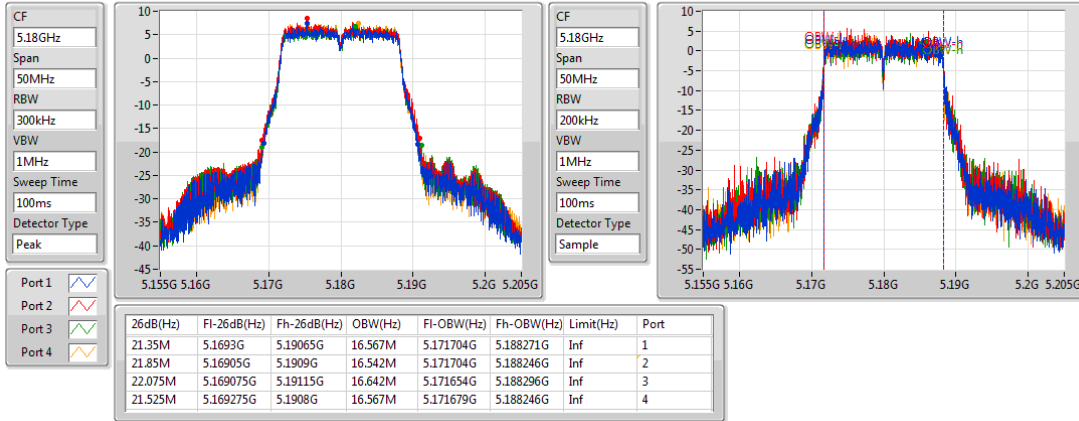
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
802.11a_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	21.35M	16.567M	21.85M	16.542M	22.075M	16.642M	21.525M	16.567M
5200MHz	Pass	Inf	33.675M	16.617M	28.4M	16.692M	36.45M	16.667M	28.2M	16.617M
5240MHz	Pass	Inf	38.45M	16.692M	26.875M	16.667M	33.725M	16.692M	27.275M	16.592M
5745MHz	Pass	500k	16.325M	16.792M	16.3M	16.667M	16.3M	16.817M	16.325M	16.692M
5785MHz	Pass	500k	16.35M	16.717M	16.325M	16.617M	16.325M	16.692M	16.325M	16.642M
5825MHz	Pass	500k	16.325M	16.817M	16.3M	16.692M	16.325M	16.817M	16.35M	16.742M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

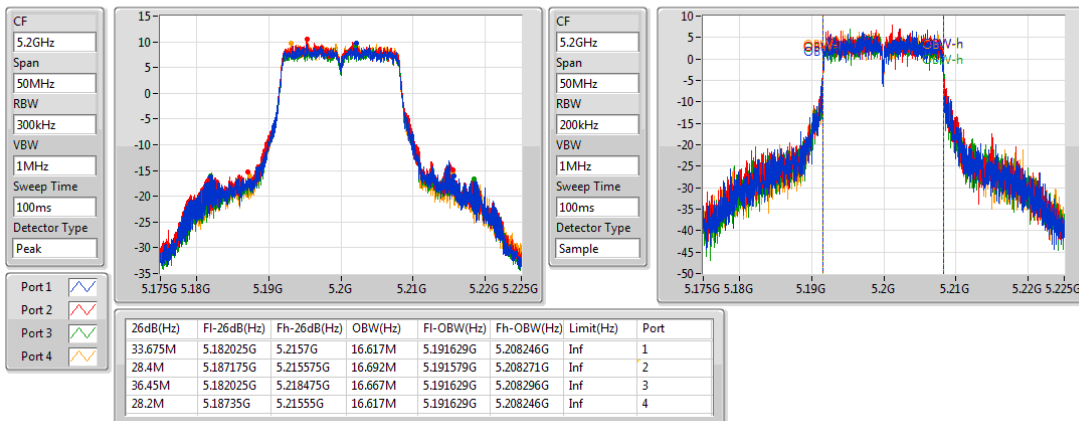
Port X-OBW = Port X 99% occupied bandwidth;

802.11a_Nss1,(6Mbps)_4TX
EBW
5180MHz

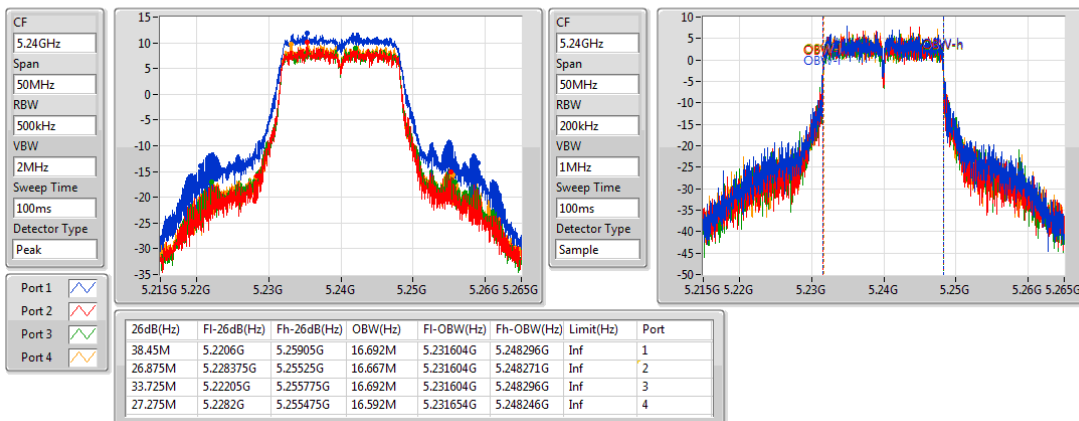
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802.11a_Nss1,(6Mbps)_4TX
EBW
5200MHz

06/12/2018

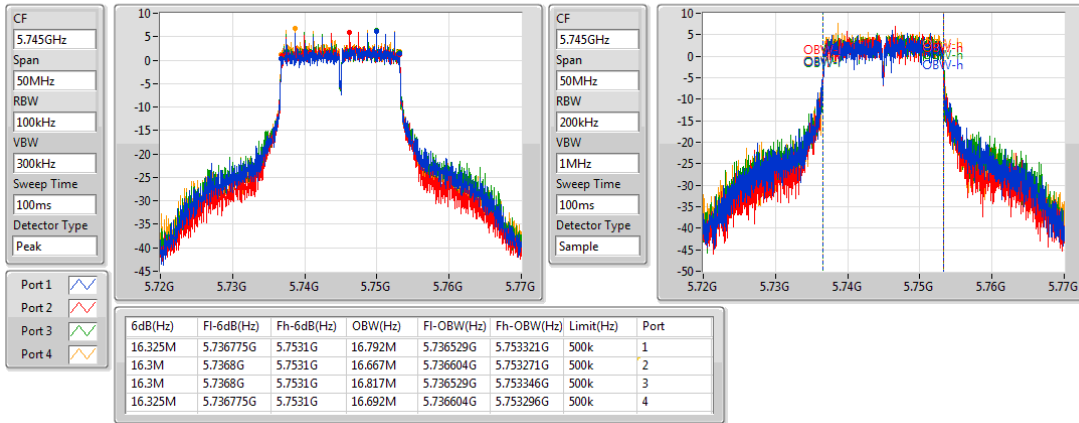

802.11a_Nss1,(6Mbps)_4TX
EBW
5240MHz

06/12/2018

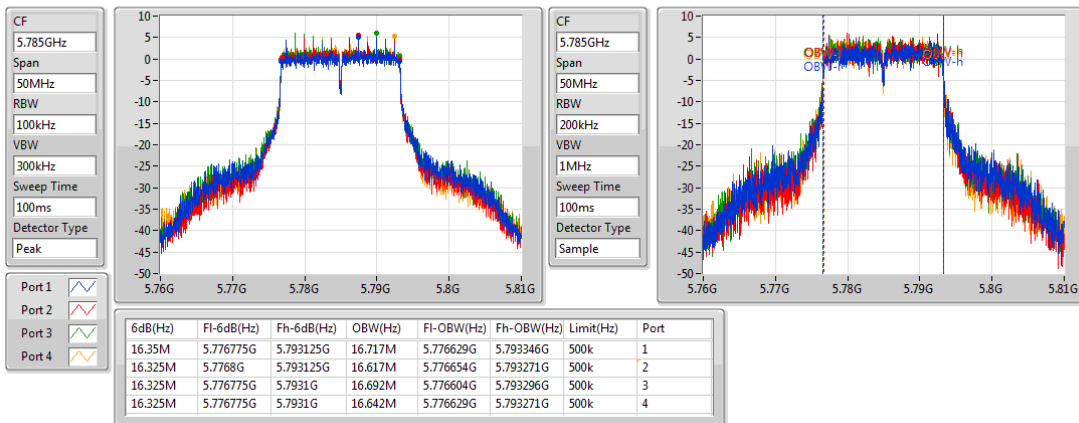


802.11a_Nss1,(6Mbps)_4TX
EBW
5745MHz

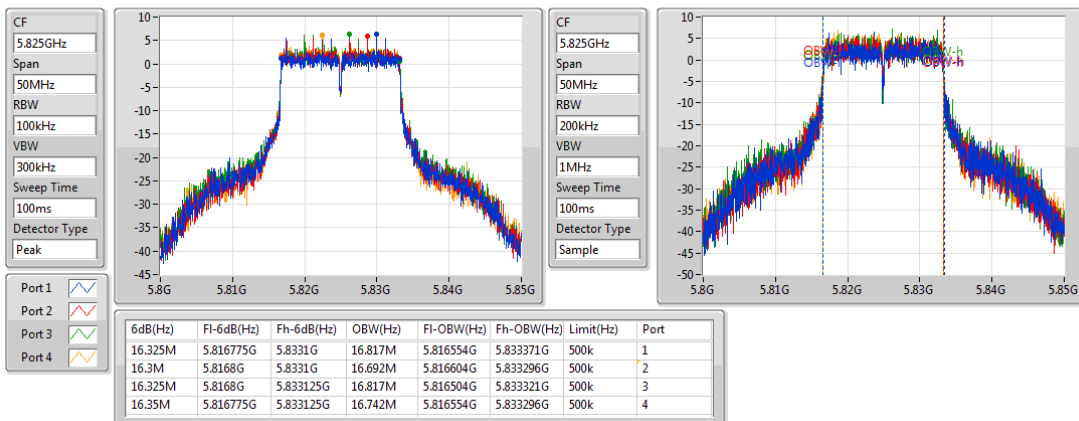
06/12/2018


802.11a_Nss1,(6Mbps)_4TX
EBW
5785MHz

06/12/2018


802.11a_Nss1,(6Mbps)_4TX
EBW
5825MHz

06/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_4TX	40.625M	19.14M	19M1D1D	21.225M	18.966M
802.11ax HEW40_Nss1,(MCS0)_4TX	46.9M	37.631M	37M6D1D	39.85M	37.531M
802.11ax HEW80_Nss1,(MCS0)_4TX	81.4M	77.161M	77M2D1D	81.2M	76.962M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_4TX	18.975M	24.563M	24M6D1D	18.6M	19.09M
802.11ax HEW40_Nss1,(MCS0)_4TX	37.5M	45.577M	45M6D1D	36.35M	38.731M
802.11ax HEW80_Nss1,(MCS0)_4TX	77.2M	77.361M	77M4D1D	76.5M	77.161M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

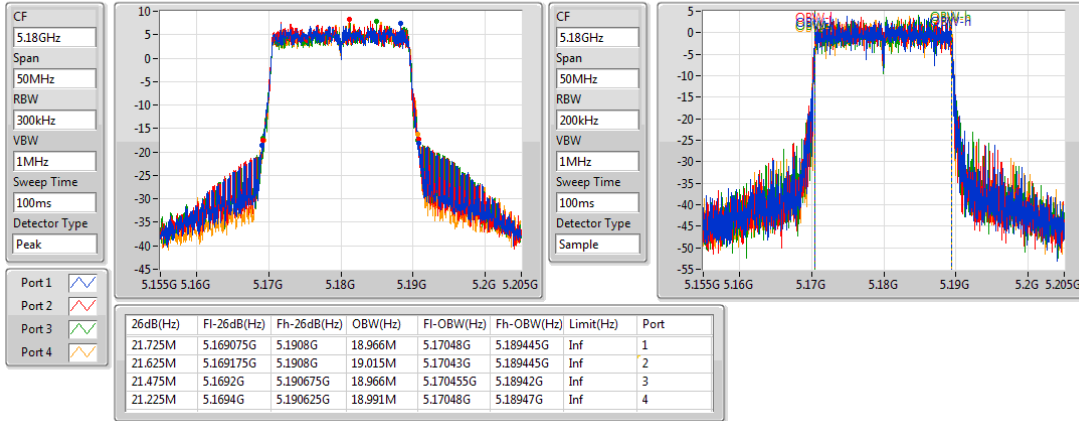
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
802.11ax HEW20_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	21.725M	18.966M	21.625M	19.015M	21.475M	18.966M	21.225M	18.991M
5200MHz	Pass	Inf	39.075M	19.065M	36.925M	19.115M	40.625M	19.115M	36.975M	19.04M
5240MHz	Pass	Inf	38.9M	19.14M	36.825M	19.09M	36.35M	19.04M	32.575M	19.04M
5745MHz	Pass	500k	18.6M	19.14M	18.75M	19.09M	18.7M	19.165M	18.875M	19.14M
5785MHz	Pass	500k	18.625M	19.165M	18.85M	19.09M	18.85M	19.14M	18.975M	19.09M
5825MHz	Pass	500k	18.725M	24.563M	18.75M	21.739M	18.825M	23.088M	18.8M	21.739M
802.11ax HEW40_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	Inf	39.85M	37.631M	40.15M	37.531M	40.1M	37.631M	40.2M	37.581M
5230MHz	Pass	Inf	46.9M	37.631M	41.05M	37.581M	44.2M	37.631M	40.3M	37.631M
5755MHz	Pass	500k	37.05M	39.88M	36.45M	41.879M	37.3M	38.731M	36.9M	39.43M
5795MHz	Pass	500k	37.45M	39.88M	36.35M	45.577M	37.1M	45.027M	37.5M	43.128M
802.11ax HEW80_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	Inf	81.3M	76.962M	81.2M	77.061M	81.4M	77.161M	81.3M	76.962M
5775MHz	Pass	500k	76.7M	77.261M	77M	77.361M	76.5M	77.161M	77.2M	77.161M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

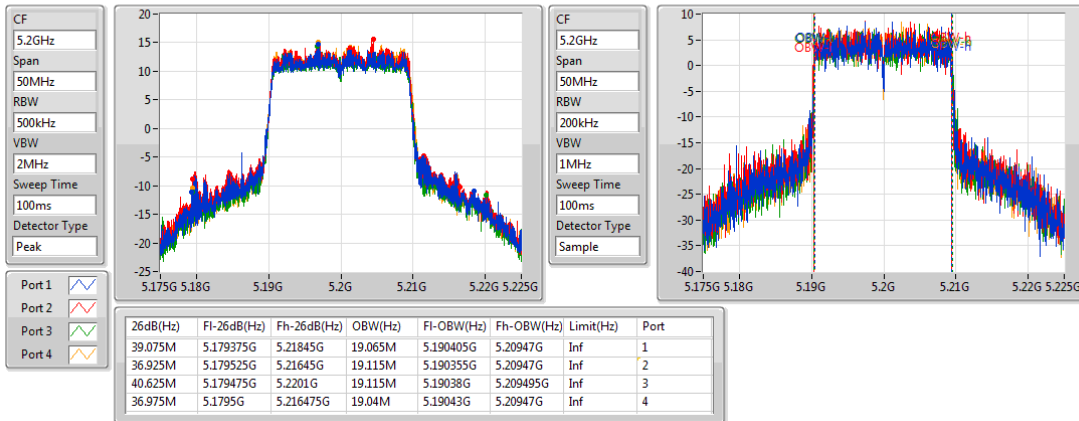
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5180MHz

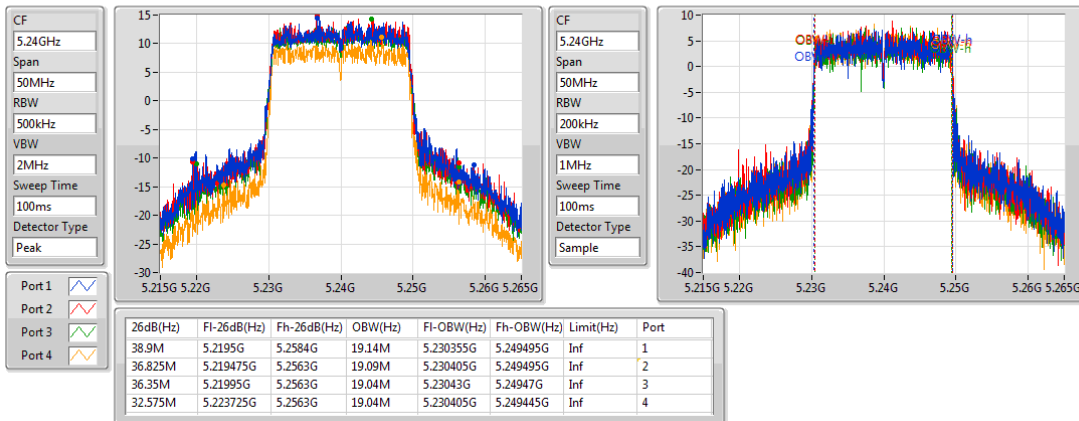
06/12/2018


802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5200MHz

06/12/2018

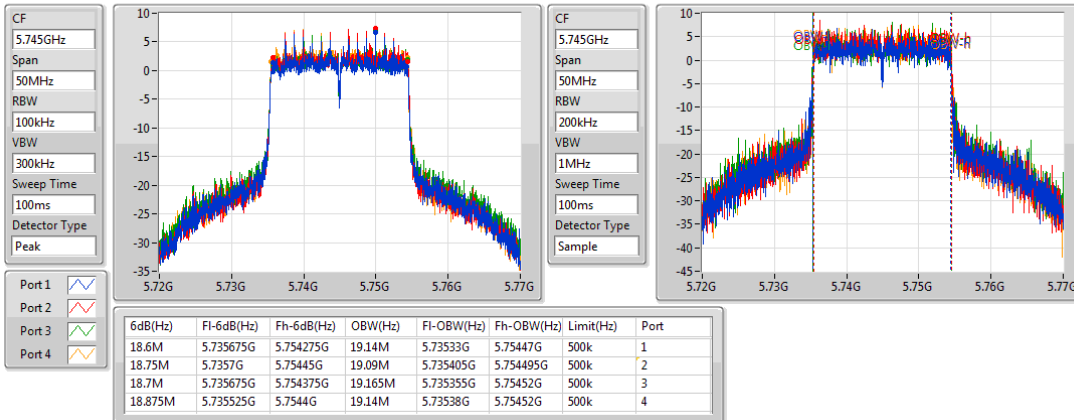

802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5240MHz

06/12/2018

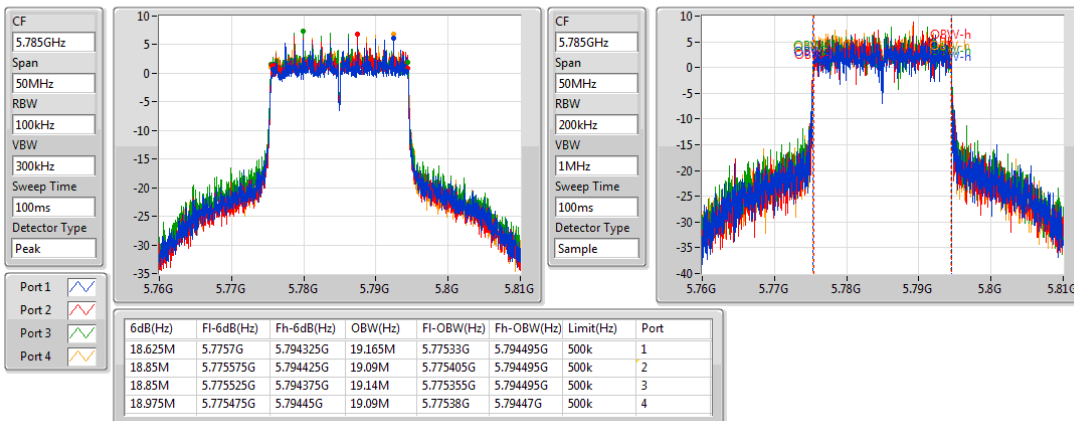


802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5745MHz

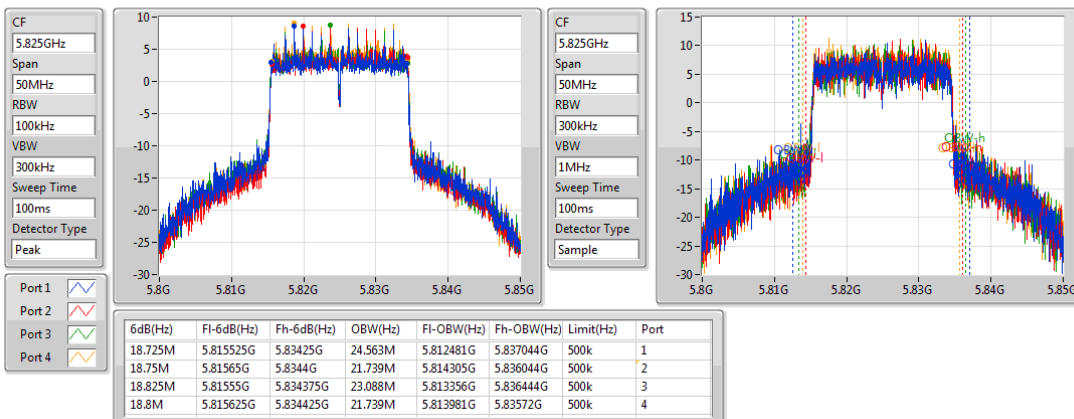
06/12/2018


802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5785MHz

06/12/2018

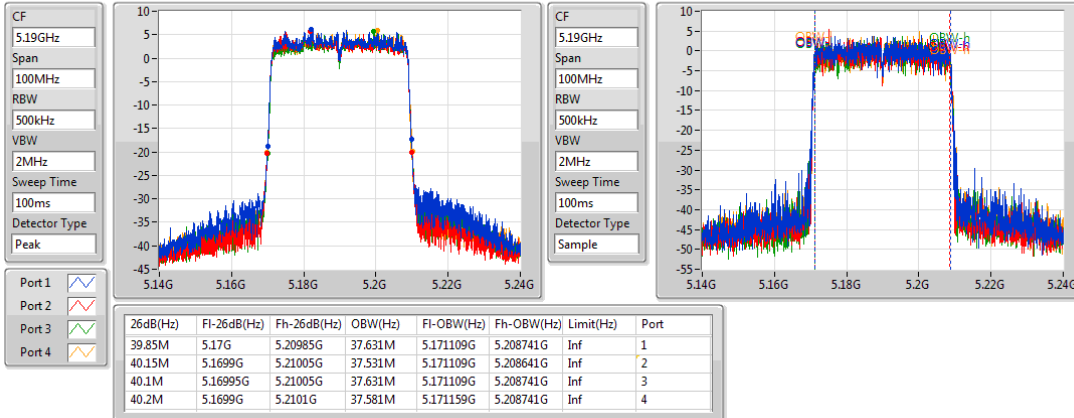

802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5825MHz

06/12/2018

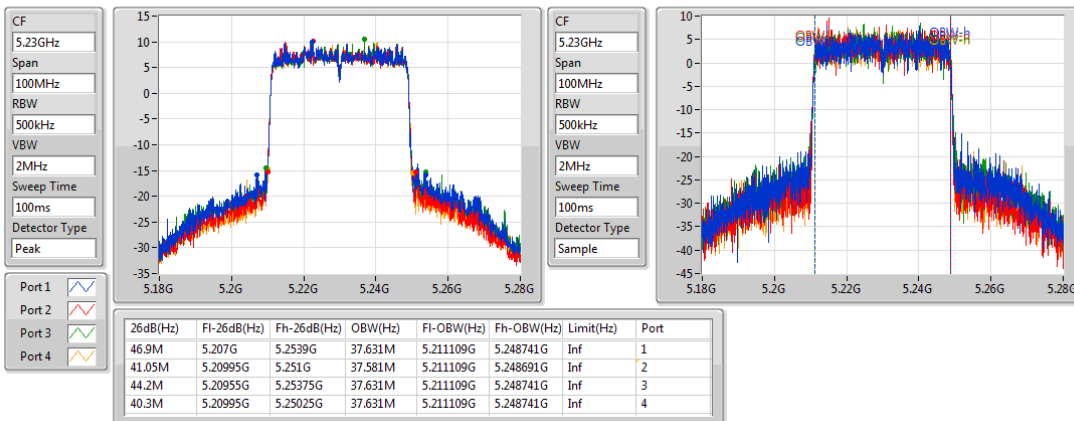


802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5190MHz

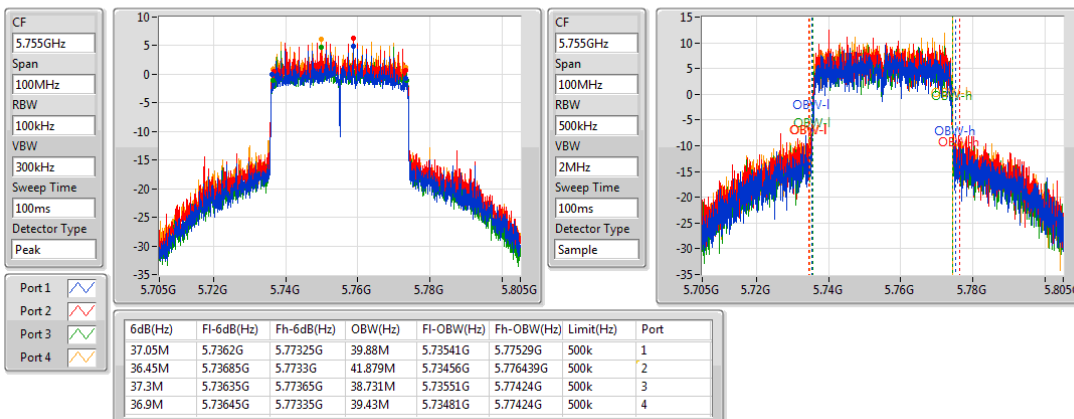
06/12/2018


802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5230MHz

06/12/2018

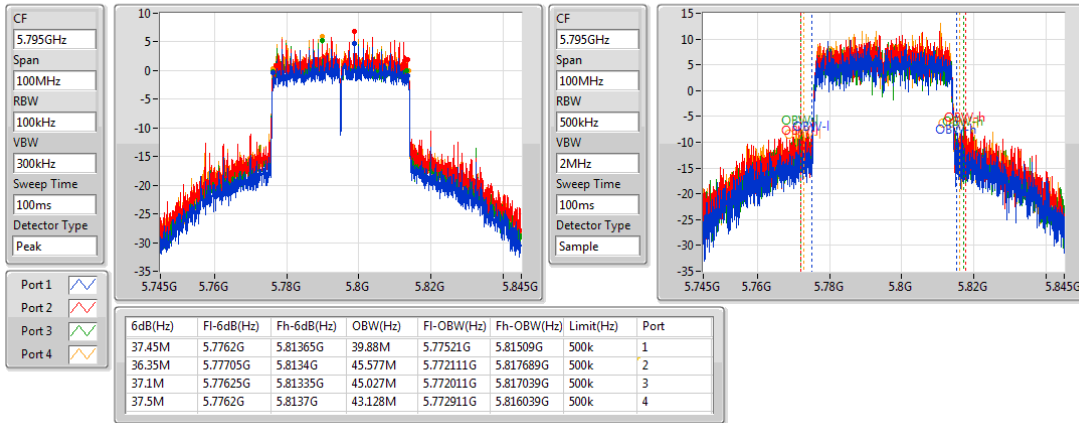

802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5755MHz

06/12/2018

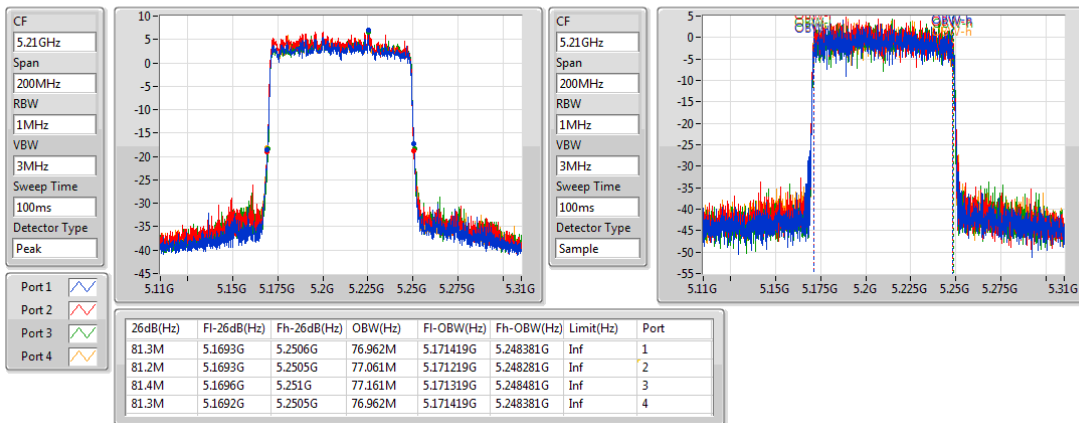


802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5795MHz

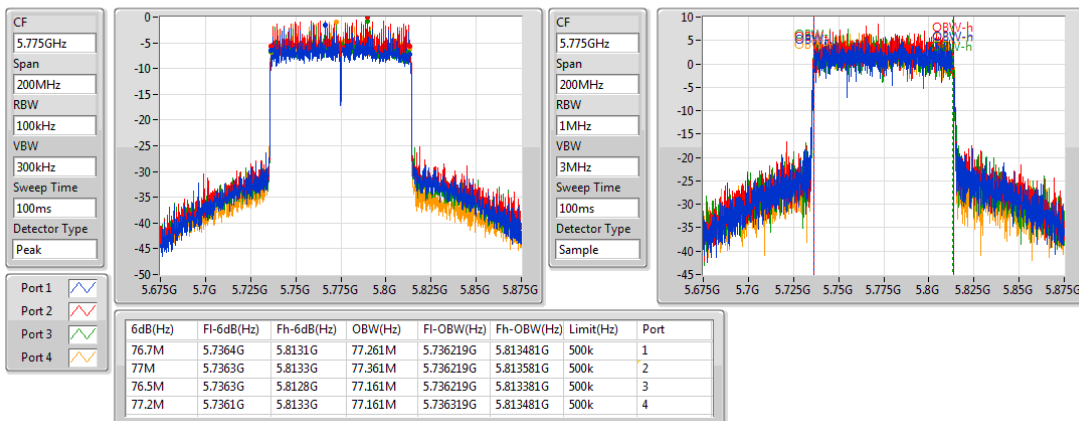
06/12/2018


802.11ax HEW80_Nss1,(MCS0)_4TX
EBW
5210MHz

06/12/2018


802.11ax HEW80_Nss1,(MCS0)_4TX
EBW
5775MHz

06/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	36.25M	19.065M	19M1D1D	21.5M	18.941M
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	49.4M	37.681M	37M7D1D	39.95M	37.531M
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	81.4M	77.261M	77M3D1D	81M	76.762M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	18.975M	19.165M	19M2D1D	18.85M	19.04M
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	37.6M	38.181M	38M2D1D	37M	37.731M
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	77.5M	77.361M	77M4D1D	76.8M	77.061M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

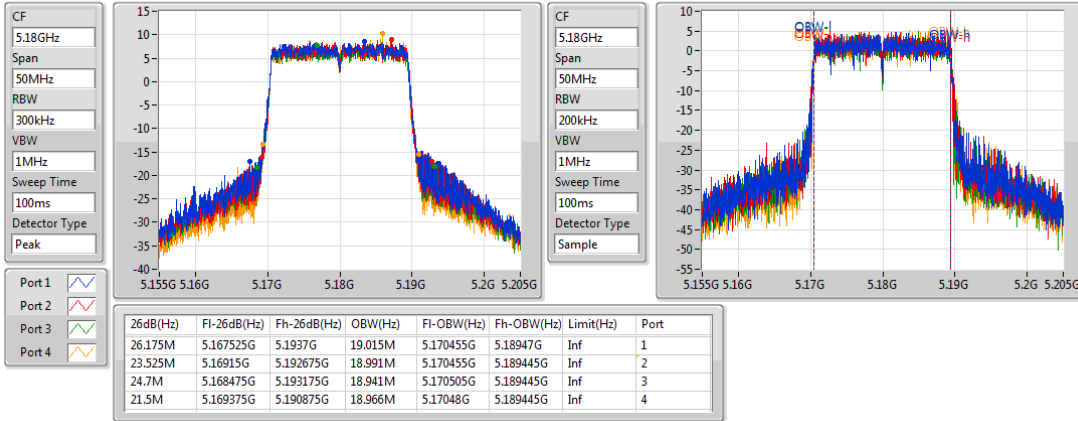
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	26.175M	19.015M	23.525M	18.991M	24.7M	18.941M	21.5M	18.966M
5200MHz	Pass	Inf	24.55M	18.991M	26.5M	19.065M	26.45M	19.04M	24.925M	18.966M
5240MHz	Pass	Inf	35.225M	18.991M	36.25M	19.065M	28.05M	19.015M	25.875M	18.966M
5745MHz	Pass	500k	18.85M	19.09M	18.95M	19.09M	18.925M	19.165M	18.975M	19.065M
5785MHz	Pass	500k	18.875M	19.115M	18.9M	19.115M	18.925M	19.115M	18.925M	19.04M
5825MHz	Pass	500k	18.875M	19.09M	18.925M	19.065M	18.925M	19.065M	18.925M	19.04M
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	Inf	39.95M	37.531M	40.15M	37.681M	40.05M	37.581M	40M	37.581M
5230MHz	Pass	Inf	44.25M	37.631M	49.4M	37.681M	44.2M	37.581M	44.4M	37.581M
5755MHz	Pass	500k	37.2M	37.881M	37M	38.181M	37.6M	37.981M	37.6M	37.731M
5795MHz	Pass	500k	37.25M	37.931M	37M	38.031M	37.45M	37.931M	37.25M	37.781M
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	Inf	81.3M	76.762M	81.1M	77.261M	81M	77.061M	81.4M	76.962M
5775MHz	Pass	500k	76.8M	77.161M	77.5M	77.261M	76.8M	77.361M	76.9M	77.061M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

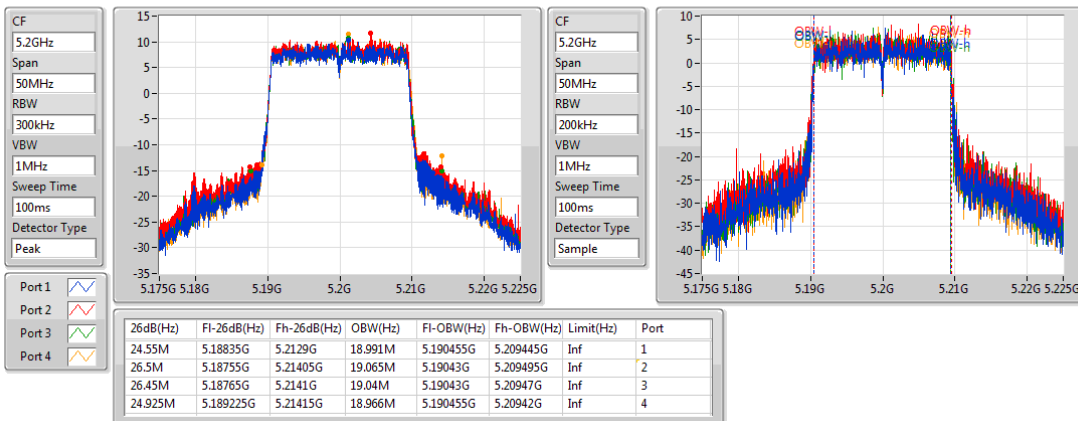
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20-BF_Nss1,(MCS0)_4TX
EBW
5180MHz

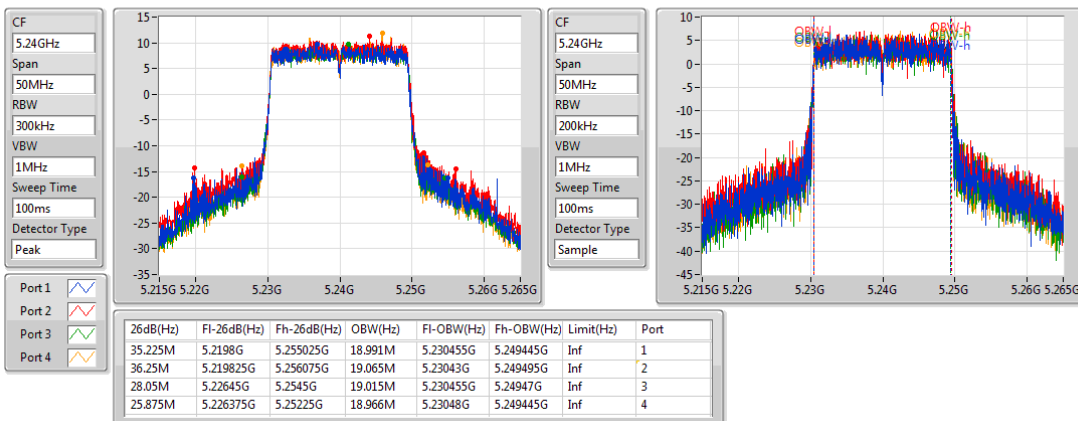
13/12/2018


802.11ax HEW20-BF_Nss1,(MCS0)_4TX
EBW
5200MHz

04/12/2018

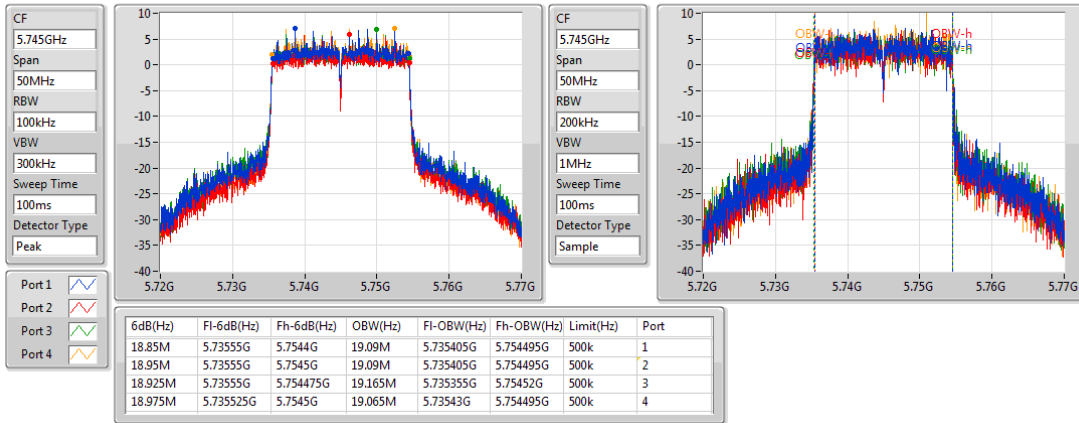

802.11ax HEW20-BF_Nss1,(MCS0)_4TX
EBW
5240MHz

04/12/2018

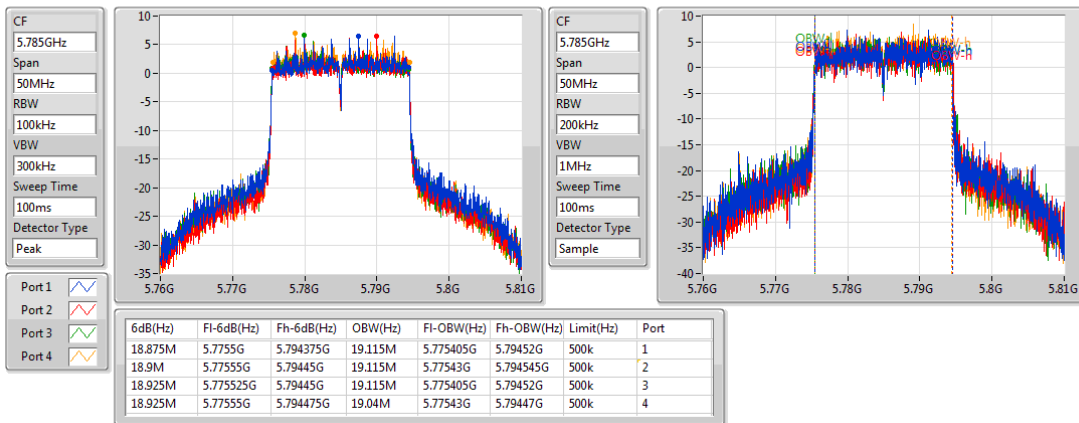


802.11ax HEW20-BF_Nss1,(MCS0)_4TX
EBW
5745MHz

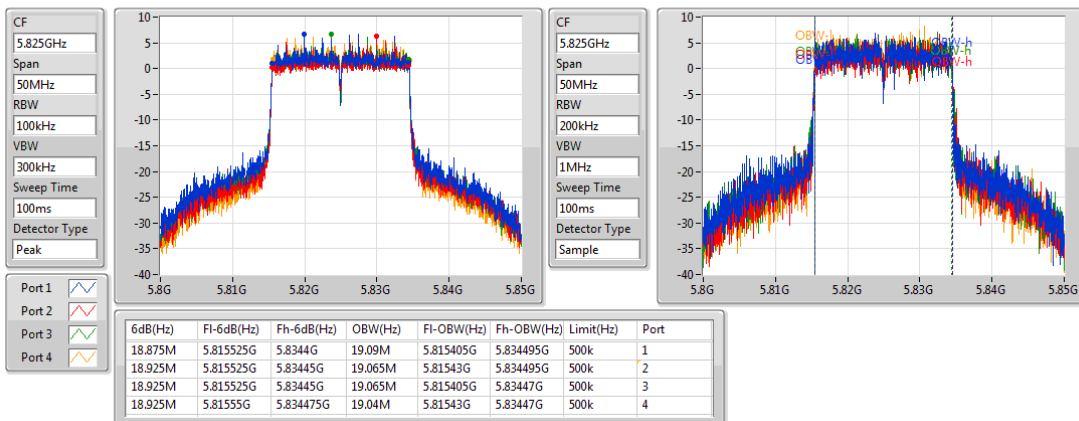
04/12/2018


802.11ax HEW20-BF_Nss1,(MCS0)_4TX
EBW
5785MHz

04/12/2018

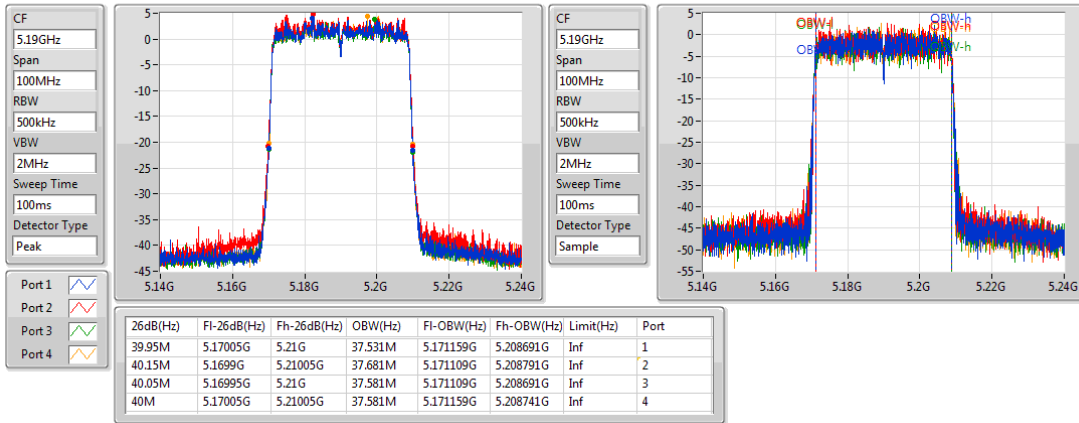

802.11ax HEW20-BF_Nss1,(MCS0)_4TX
EBW
5825MHz

04/12/2018

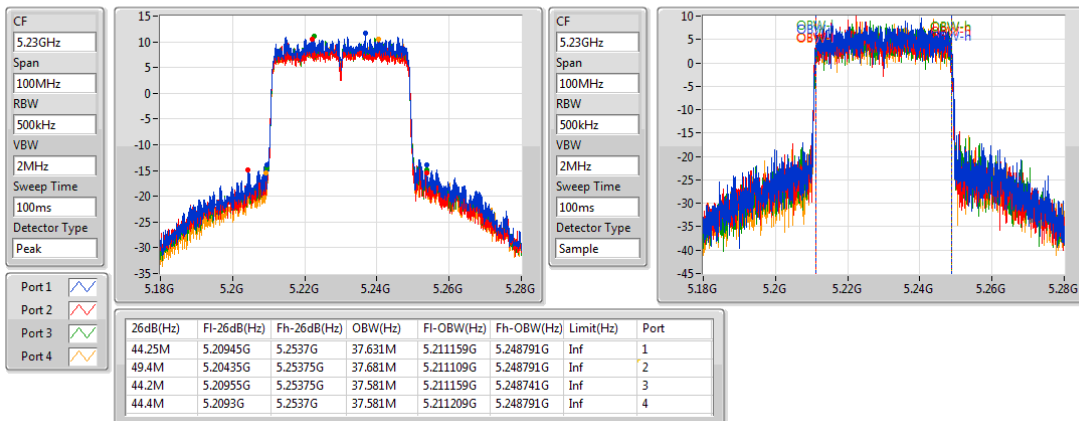


802.11ax HEW40-BF_Nss1,(MCS0)_4TX
EBW
5190MHz

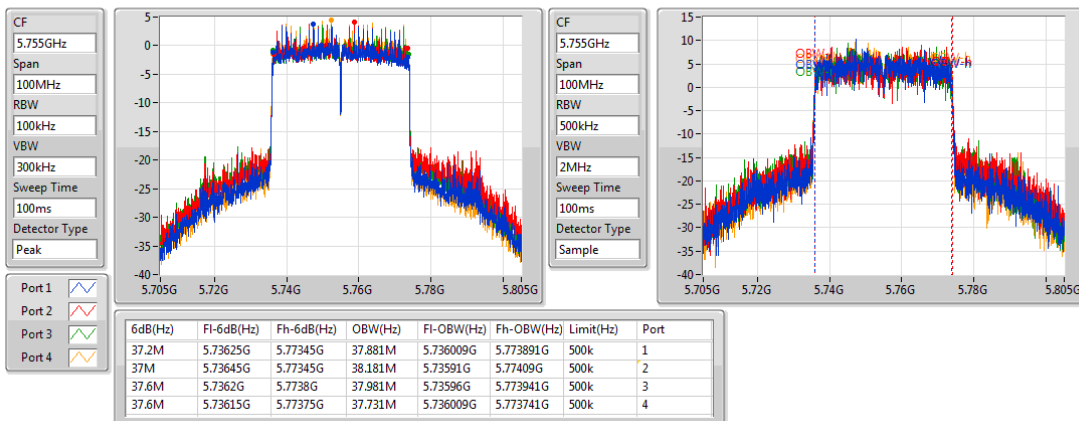
13/12/2018


802.11ax HEW40-BF_Nss1,(MCS0)_4TX
EBW
5230MHz

17/12/2018

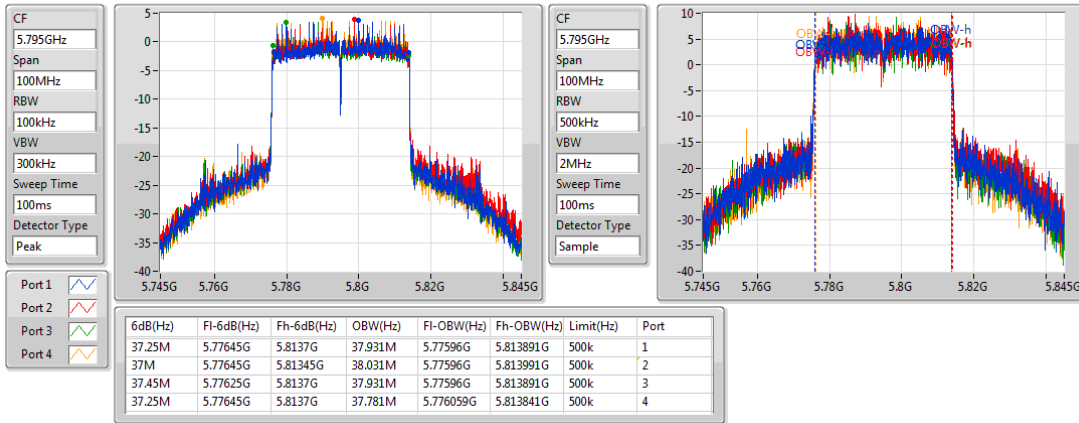

802.11ax HEW40-BF_Nss1,(MCS0)_4TX
EBW
5755MHz

04/12/2018

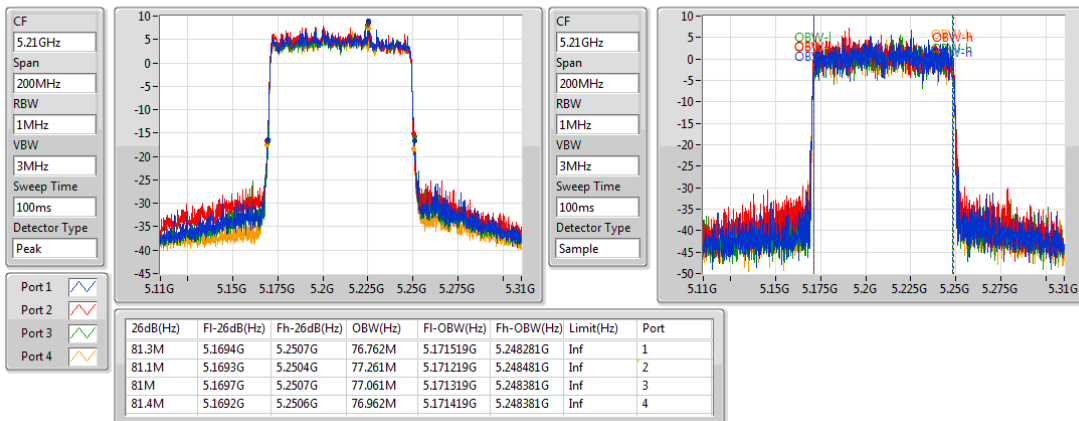


802.11ax HEW40-BF_Nss1,(MCS0)_4TX
EBW
5795MHz

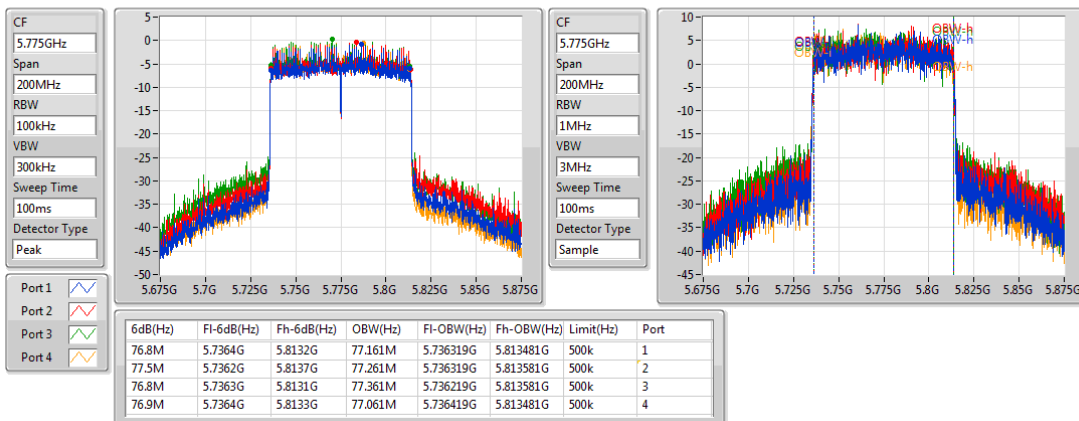
04/12/2018


802.11ax HEW80-BF_Nss1,(MCS0)_4TX
EBW
5210MHz

13/12/2018


802.11ax HEW80-BF_Nss1,(MCS0)_4TX
EBW
5775MHz

13/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20_Nss4,(MCS0)_4TX	40.975M	19.14M	19M1D1D	21.375M	18.916M
802.11ax HEW40_Nss4,(MCS0)_4TX	50M	37.731M	37M7D1D	40M	37.481M
802.11ax HEW80_Nss4,(MCS0)_4TX	81.7M	77.161M	77M2D1D	81.2M	76.862M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20_Nss4,(MCS0)_4TX	18.925M	24.563M	24M6D1D	18.35M	19.04M
802.11ax HEW40_Nss4,(MCS0)_4TX	37.5M	48.576M	48M6D1D	36.3M	38.831M
802.11ax HEW80_Nss4,(MCS0)_4TX	76.5M	77.461M	77M5D1D	75.3M	77.361M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

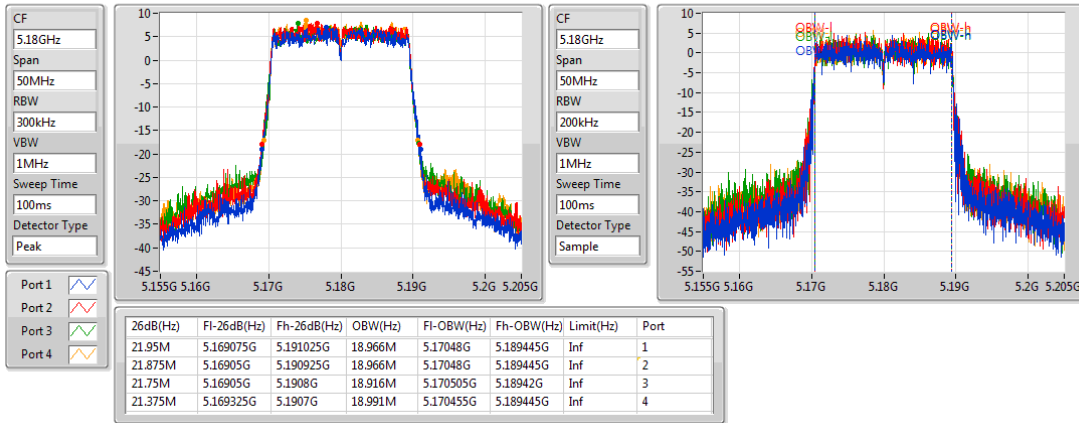
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
802.11ax HEW20_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	21.95M	18.966M	21.875M	18.966M	21.75M	18.916M	21.375M	18.991M
5200MHz	Pass	Inf	36.35M	19.065M	38.825M	19.09M	39.7M	19.09M	36.575M	19.015M
5240MHz	Pass	Inf	39.325M	19.115M	40.275M	19.14M	40.825M	19.115M	40.975M	19.14M
5745MHz	Pass	500k	18.925M	19.09M	18.6M	19.065M	18.8M	19.14M	18.9M	19.04M
5785MHz	Pass	500k	18.7M	19.14M	18.9M	19.04M	18.7M	19.09M	18.925M	19.065M
5825MHz	Pass	500k	18.675M	23.538M	18.35M	20.24M	18.775M	24.563M	18.9M	21.639M
802.11ax HEW40_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	Inf	40.25M	37.731M	40M	37.481M	40.15M	37.581M	40.15M	37.631M
5230MHz	Pass	Inf	47.5M	37.481M	50M	37.481M	40.4M	37.581M	40.2M	37.581M
5755MHz	Pass	500k	36.9M	41.629M	36.55M	41.379M	37.5M	40.68M	37.1M	38.831M
5795MHz	Pass	500k	36.9M	43.228M	36.3M	48.526M	36.55M	48.576M	36.65M	45.427M
802.11ax HEW80_Nss4,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	Inf	81.2M	77.061M	81.2M	77.161M	81.7M	76.862M	81.7M	76.862M
5775MHz	Pass	500k	76.5M	77.461M	75.3M	77.461M	76.2M	77.361M	76.4M	77.361M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

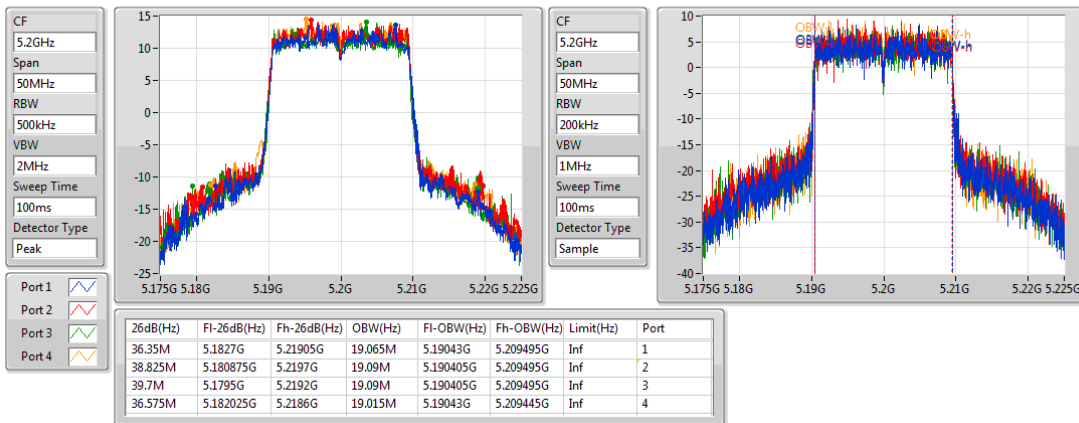
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20_Nss4,(MCS0)_4TX
EBW
5180MHz

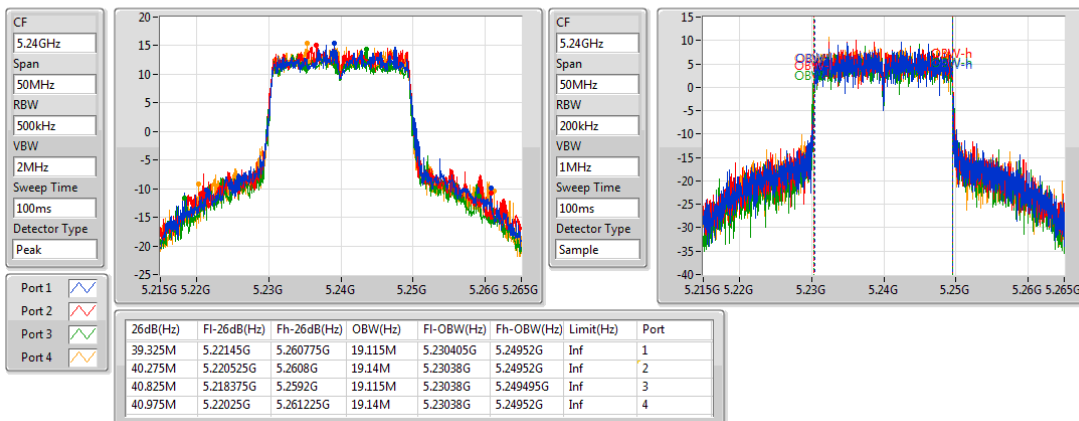
06/12/2018


802.11ax HEW20_Nss4,(MCS0)_4TX
EBW
5200MHz

06/12/2018

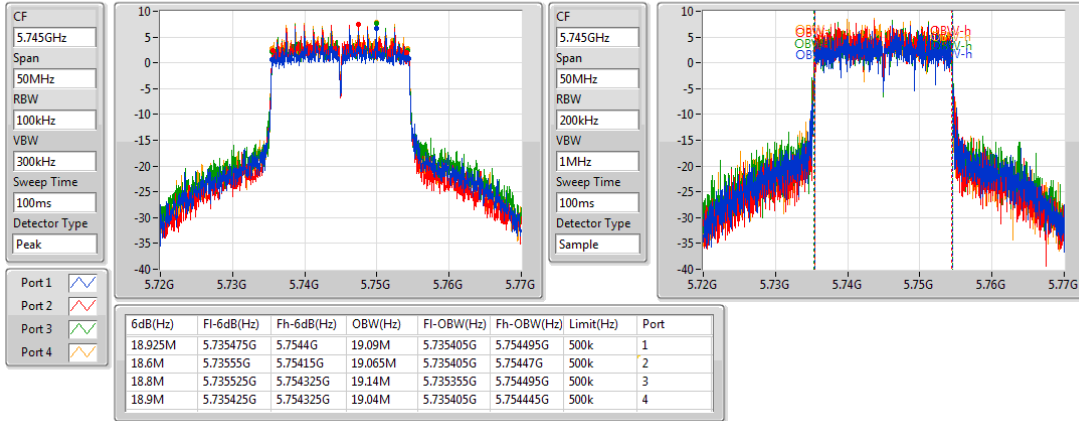

802.11ax HEW20_Nss4,(MCS0)_4TX
EBW
5240MHz

06/12/2018

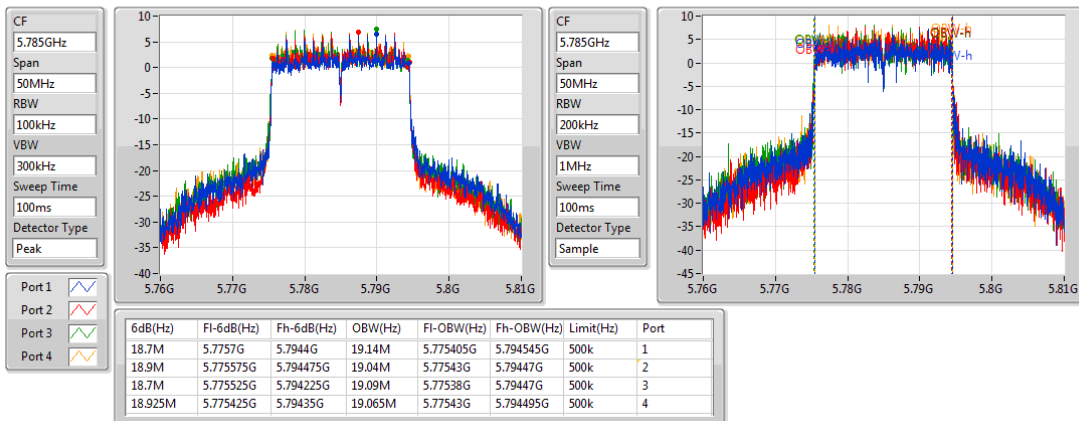


802.11ax HEW20_Nss4,(MCS0)_4TX
EBW
5745MHz

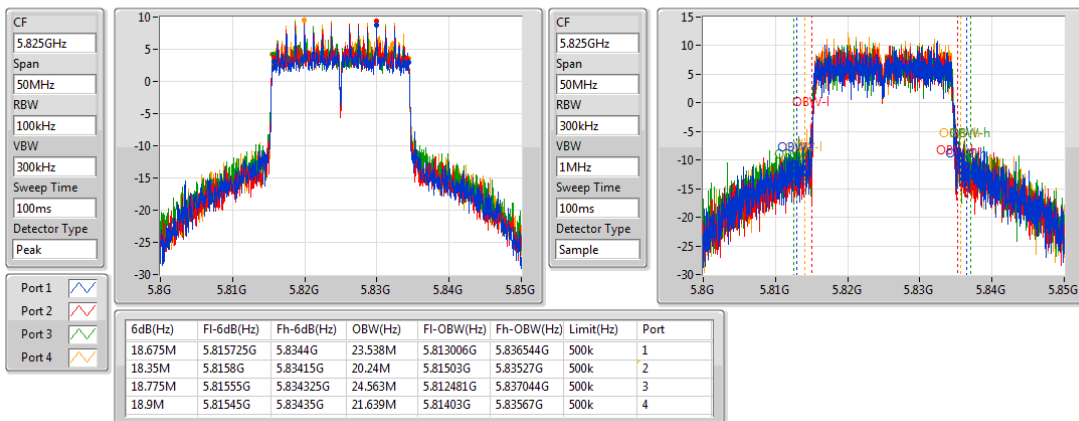
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802.11ax HEW20_Nss4,(MCS0)_4TX
EBW
5785MHz

06/12/2018

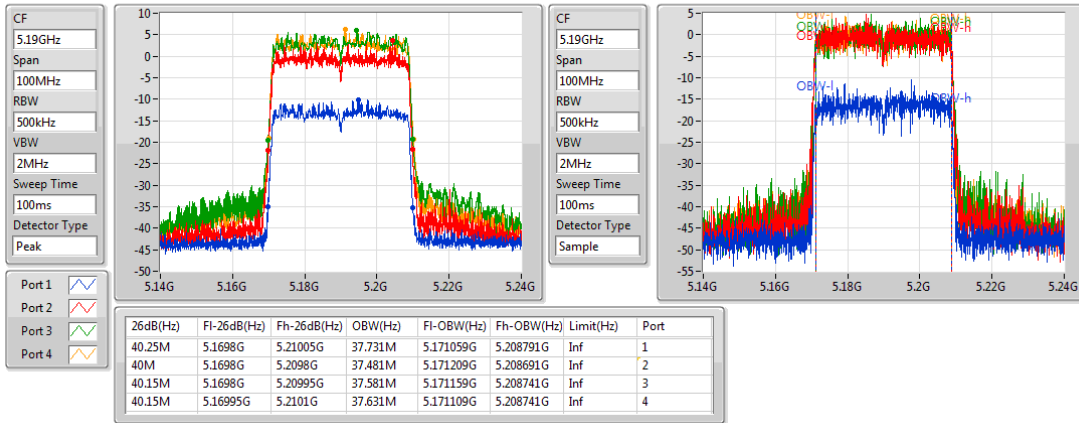

802.11ax HEW20_Nss4,(MCS0)_4TX
EBW
5825MHz

06/12/2018

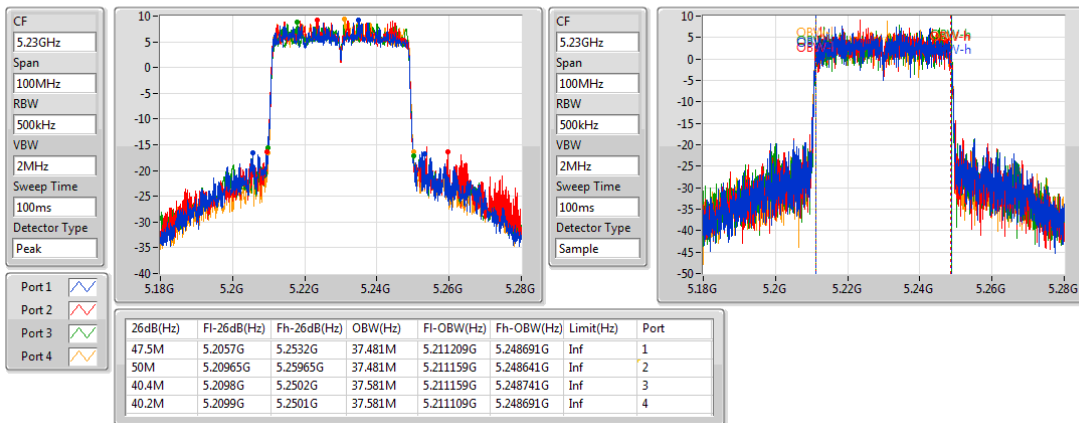


802.11ax HEW40_Nss4,(MCS0)_4TX
EBW
5190MHz

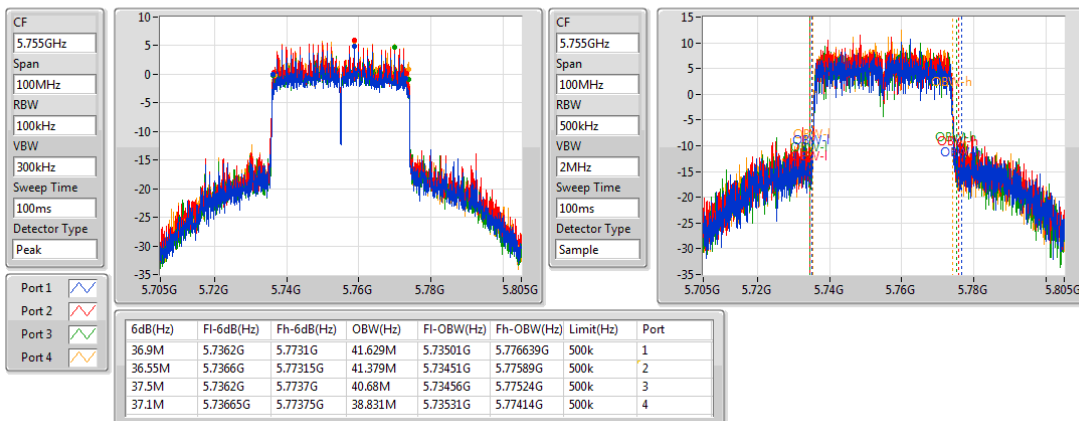
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802.11ax HEW40_Nss4,(MCS0)_4TX
EBW
5230MHz

06/12/2018

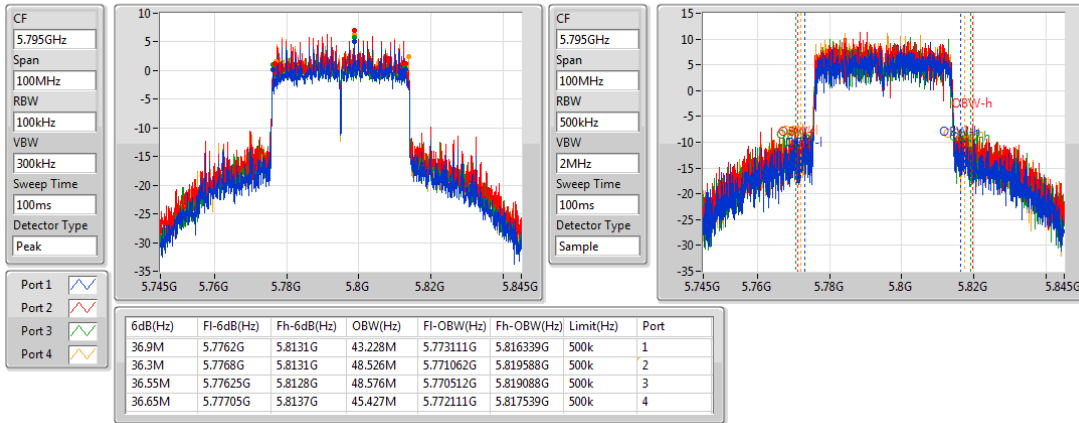

802.11ax HEW40_Nss4,(MCS0)_4TX
EBW
5755MHz

06/12/2018

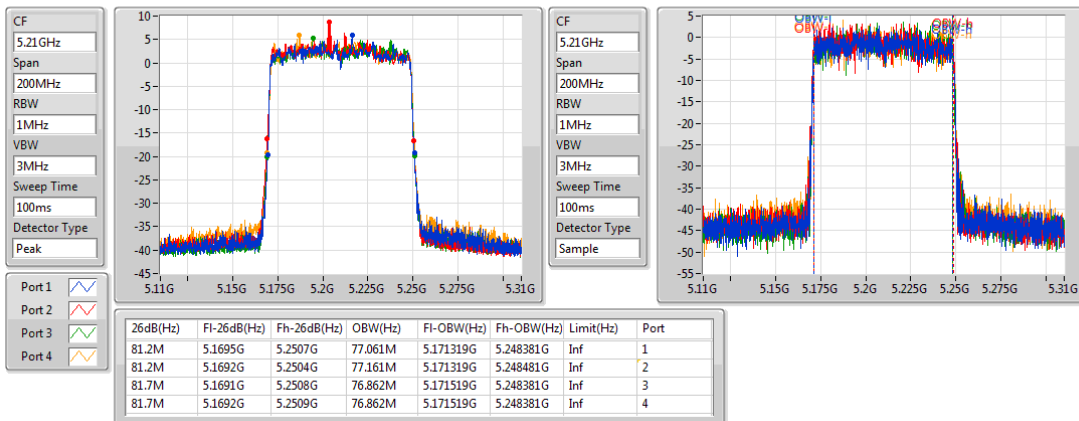


802.11ax HEW40_Nss4,(MCS0)_4TX
EBW
5795MHz

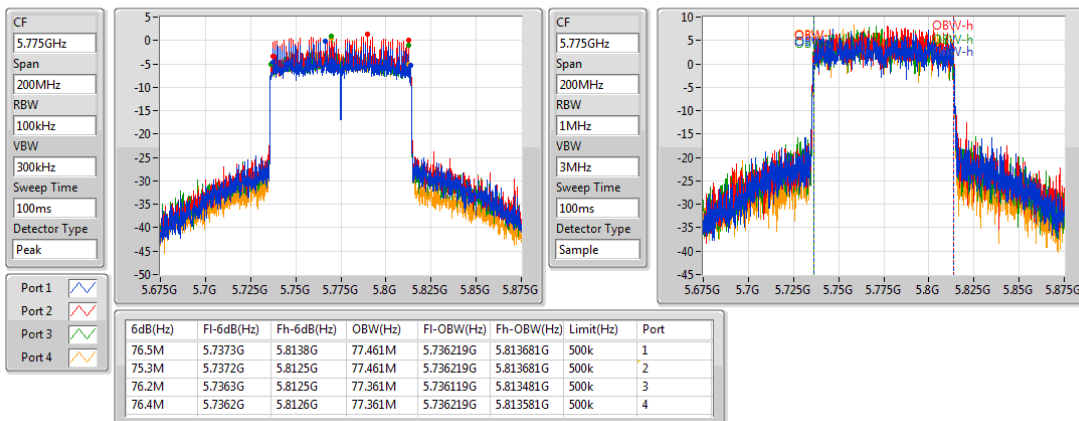
06/12/2018


802.11ax HEW80_Nss4,(MCS0)_4TX
EBW
5210MHz

06/12/2018


802.11ax HEW80_Nss4,(MCS0)_4TX
EBW
5775MHz

06/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	38.475M	16.792M	16M8D1D	27.275M	16.617M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_1TX	16.325M	25.912M	25M9D1D	16.3M	16.867M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

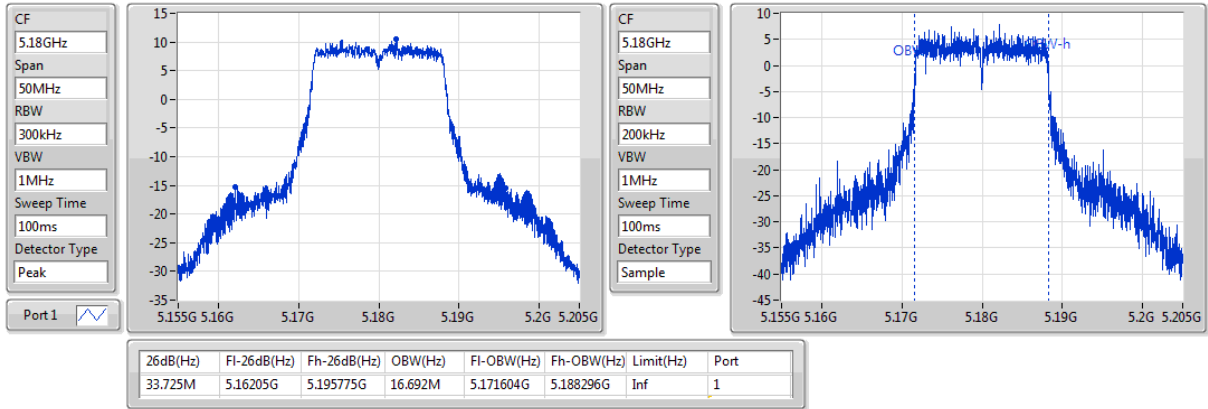
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11a_Nss1,(6Mbps)_1TX	-	-	-	-
5180MHz	Pass	Inf	33.725M	16.692M
5200MHz	Pass	Inf	38.475M	16.792M
5240MHz	Pass	Inf	27.275M	16.617M
5745MHz	Pass	500k	16.325M	16.867M
5785MHz	Pass	500k	16.3M	25.912M
5825MHz	Pass	500k	16.3M	17.716M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

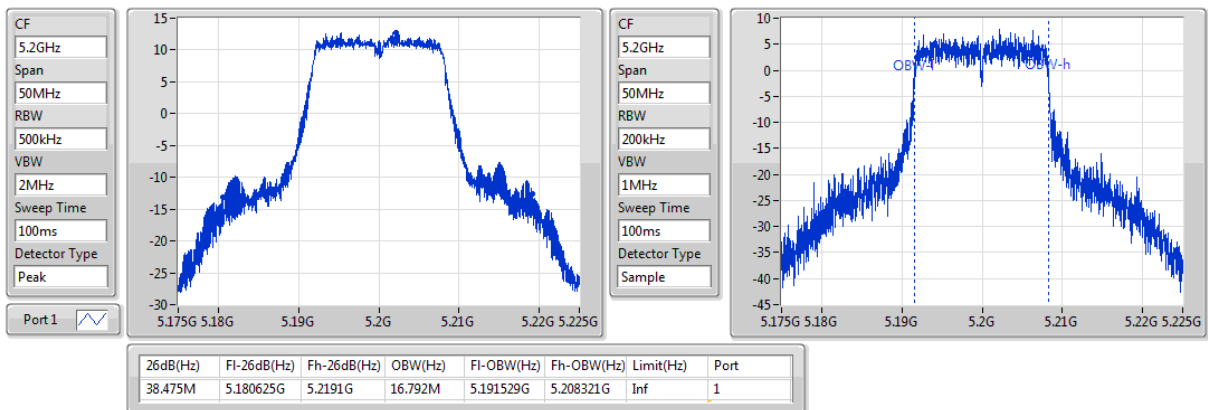
Port X-OBW = Port X 99% occupied bandwidth;

802.11a_Nss1,(6Mbps)_1TX
EBW
5180MHz

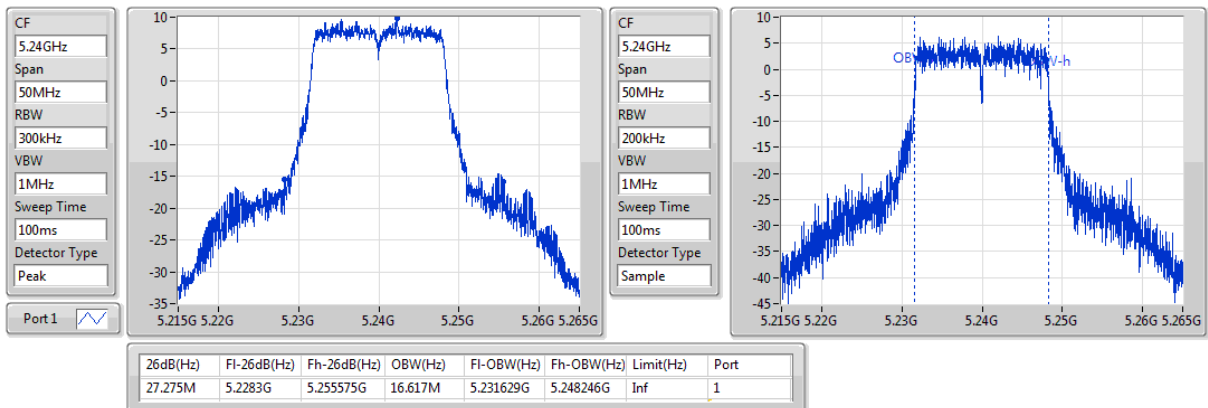
04/12/2018


802.11a_Nss1,(6Mbps)_1TX
EBW
5200MHz

04/12/2018

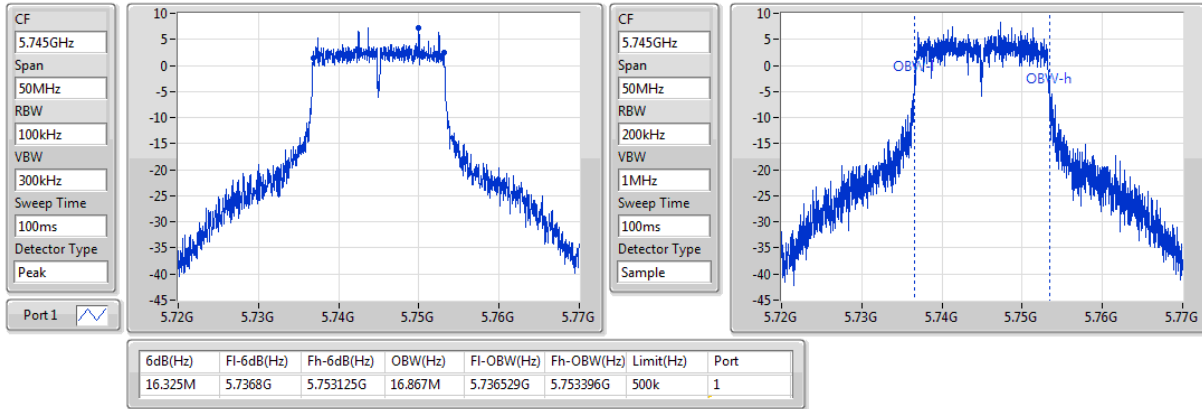

802.11a_Nss1,(6Mbps)_1TX
EBW
5240MHz

04/12/2018

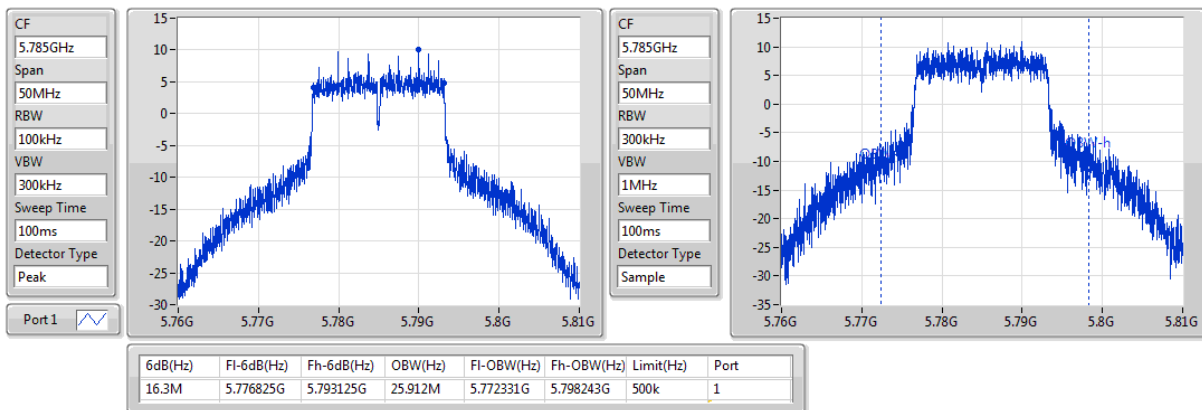


802.11a_Nss1,(6Mbps)_1TX
EBW
5745MHz

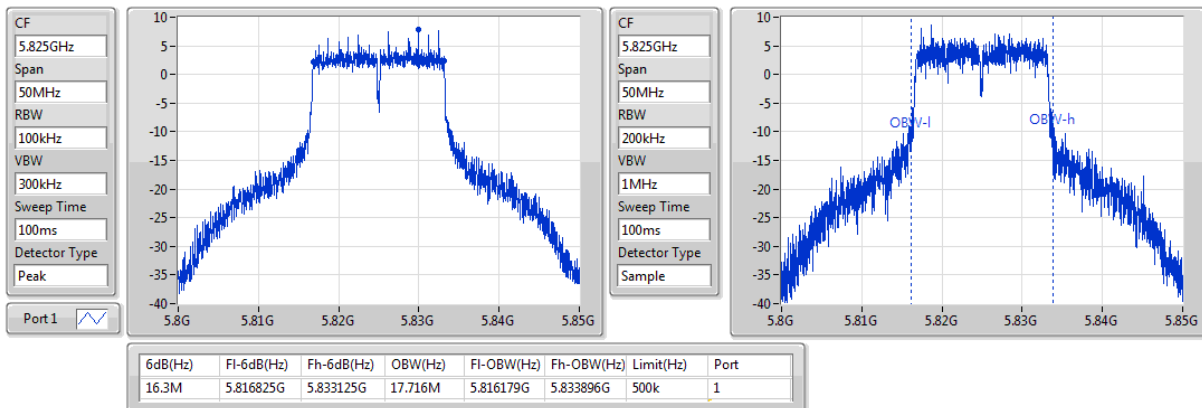
04/12/2018


802.11a_Nss1,(6Mbps)_1TX
EBW
5785MHz

04/12/2018


802.11a_Nss1,(6Mbps)_1TX
EBW
5825MHz

04/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_1TX	36.525M	19.065M	19M1D1D	25.425M	19.015M
802.11ax HEW40_Nss1,(MCS0)_1TX	58.9M	37.681M	37M7D1D	39.9M	37.681M
802.11ax HEW80_Nss1,(MCS0)_1TX	81.8M	77.161M	77M2D1D	81.8M	77.161M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_1TX	18.725M	29.635M	29M6D1D	18.375M	22.189M
802.11ax HEW40_Nss1,(MCS0)_1TX	36.7M	67.316M	67M3D1D	36.65M	59.62M
802.11ax HEW80_Nss1,(MCS0)_1TX	76.2M	83.558M	83M6D1D	76.2M	83.558M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

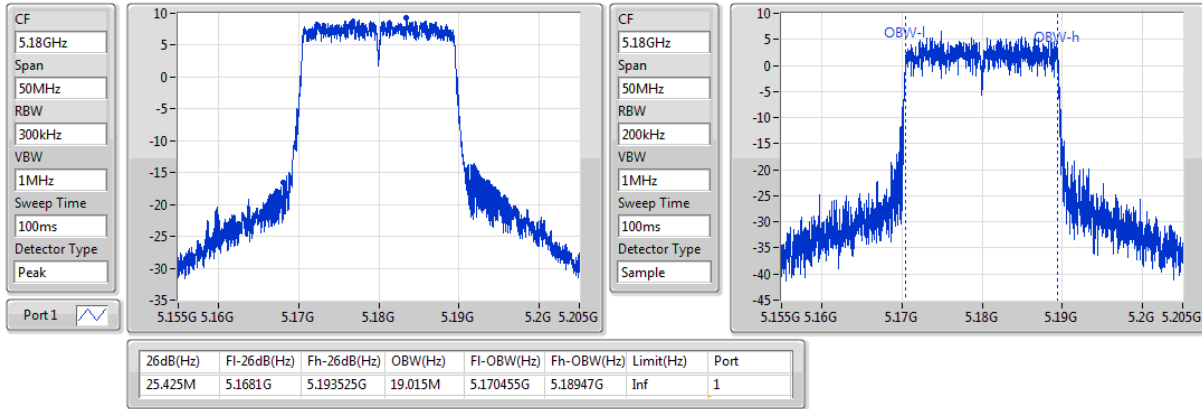
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
802.11ax HEW20_Nss1,(MCS0)_1TX	-	-	-	-
5180MHz	Pass	Inf	25.425M	19.015M
5200MHz	Pass	Inf	36.525M	19.065M
5240MHz	Pass	Inf	36.425M	19.015M
5745MHz	Pass	500k	18.725M	29.635M
5785MHz	Pass	500k	18.625M	28.911M
5825MHz	Pass	500k	18.375M	22.189M
802.11ax HEW40_Nss1,(MCS0)_1TX	-	-	-	-
5190MHz	Pass	Inf	39.9M	37.681M
5230MHz	Pass	Inf	58.9M	37.681M
5755MHz	Pass	500k	36.7M	59.62M
5795MHz	Pass	500k	36.65M	67.316M
802.11ax HEW80_Nss1,(MCS0)_1TX	-	-	-	-
5210MHz	Pass	Inf	81.8M	77.161M
5775MHz	Pass	500k	76.2M	83.558M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

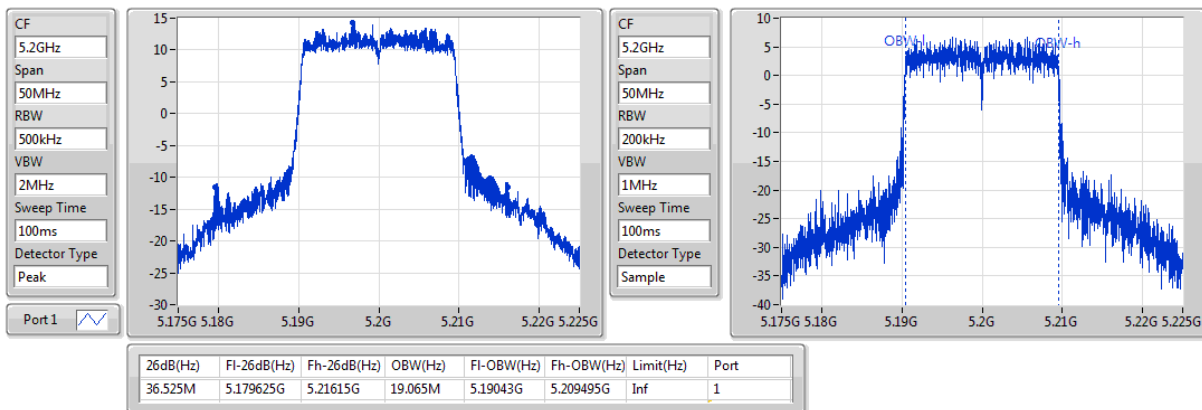
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5180MHz

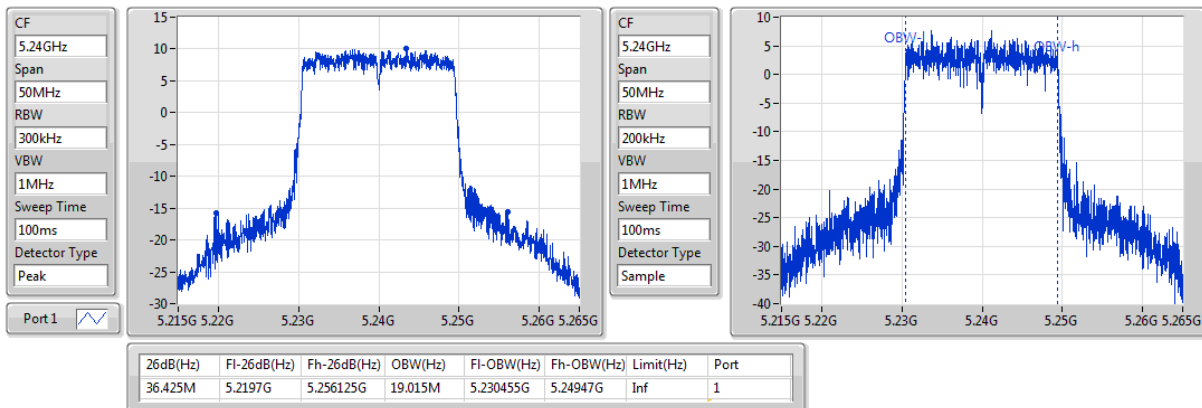
04/12/2018


802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5200MHz

04/12/2018

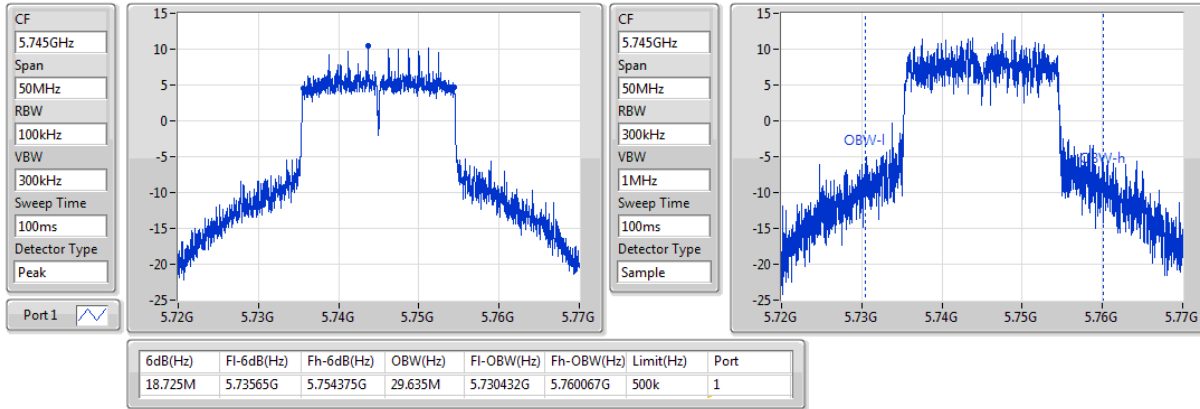

802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5240MHz

04/12/2018

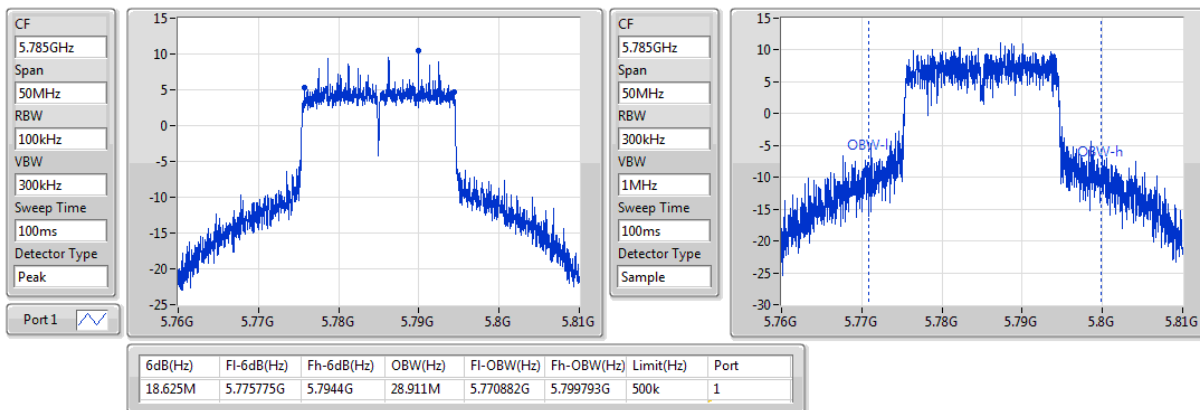


802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5745MHz

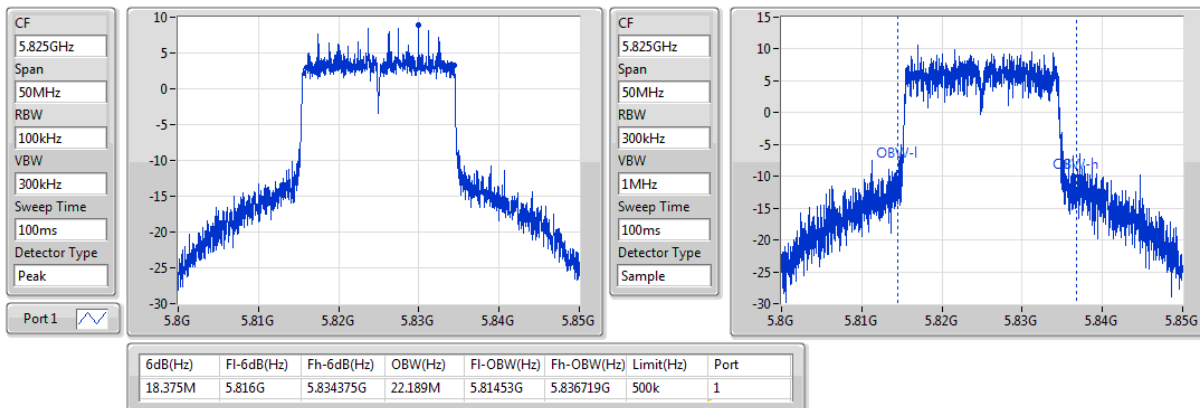
04/12/2018


802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5785MHz

04/12/2018

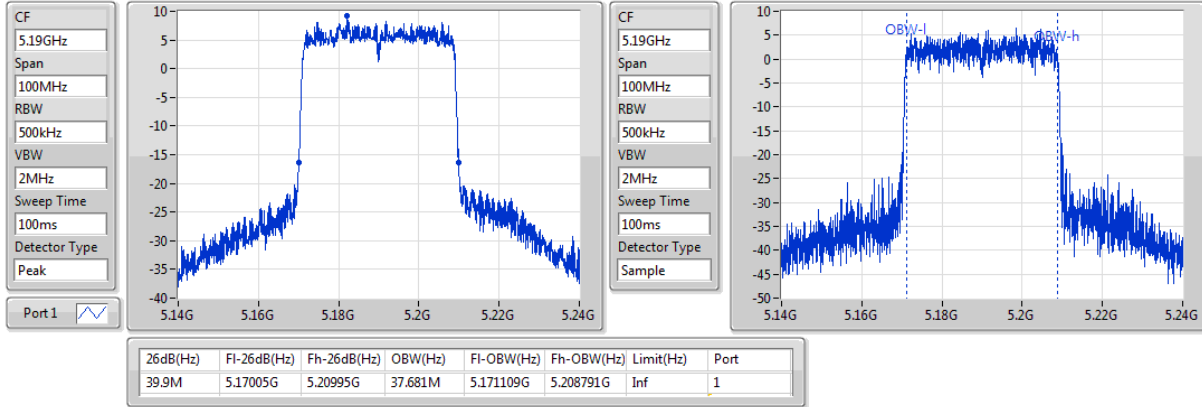

802.11ax HEW20_Nss1,(MCS0)_1TX
EBW
5825MHz

04/12/2018

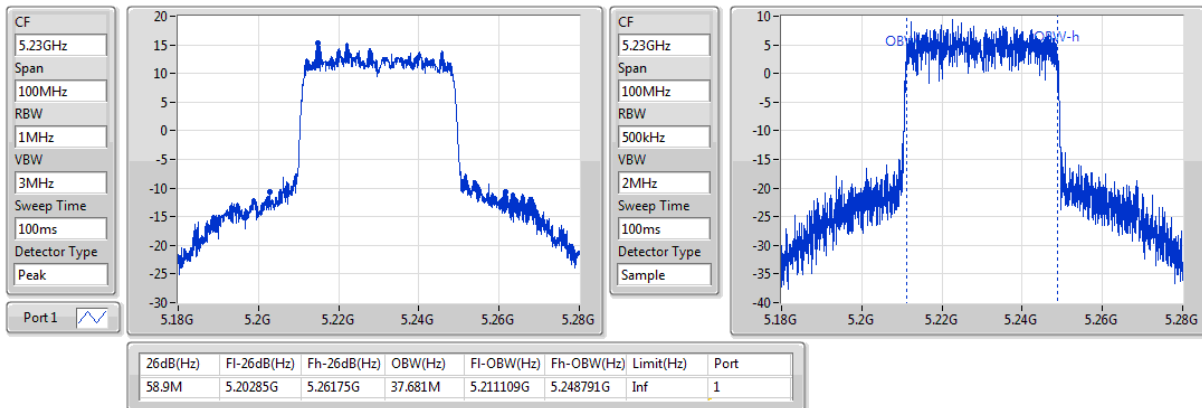


802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5190MHz

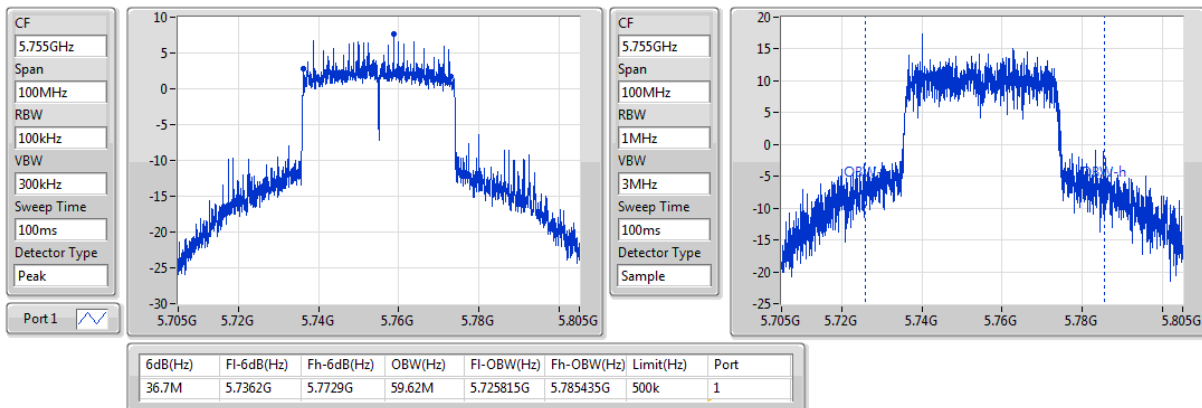
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802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5230MHz

04/12/2018

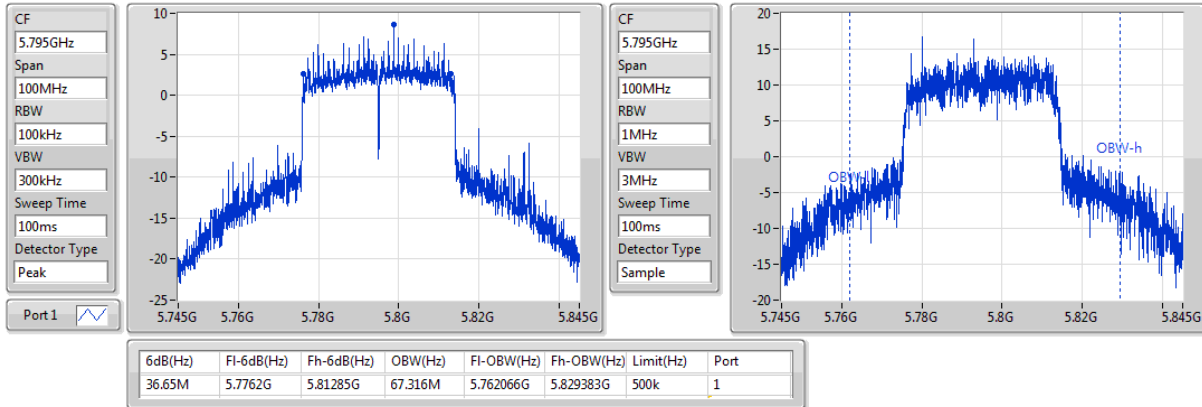

802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5755MHz

04/12/2018

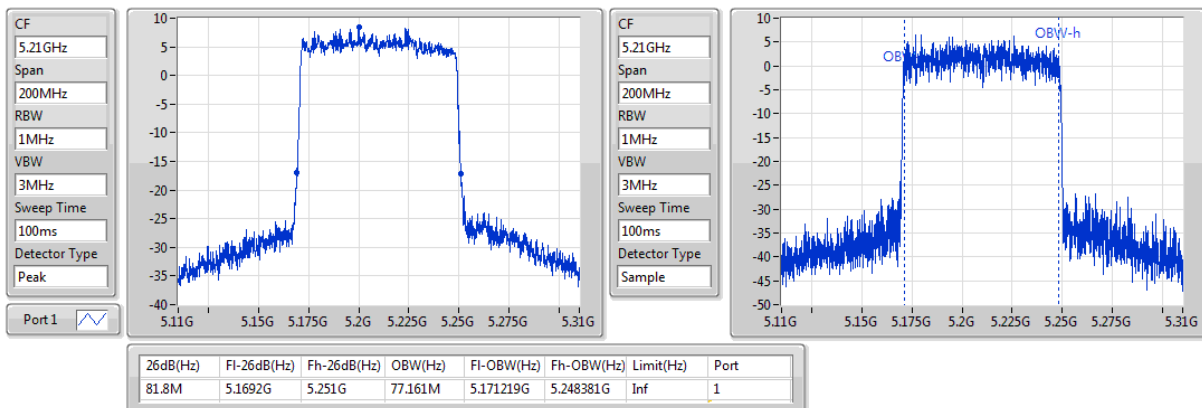


802.11ax HEW40_Nss1,(MCS0)_1TX
EBW
5795MHz

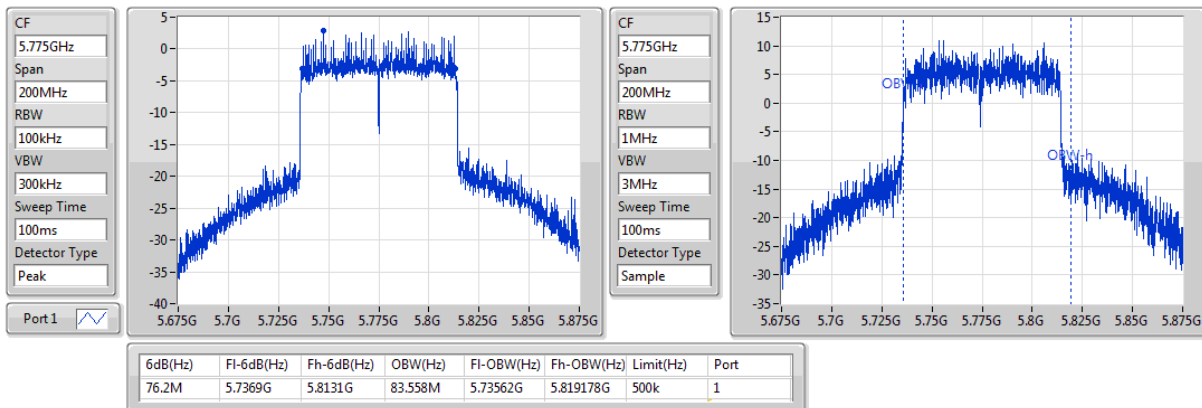
04/12/2018


802.11ax HEW80_Nss1,(MCS0)_1TX
EBW
5210MHz

04/12/2018


802.11ax HEW80_Nss1,(MCS0)_1TX
EBW
5775MHz

04/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20_Nss2,(MCS0)_2TX	29.875M	19.015M	19M0D1D	21.725M	18.916M
802.11ax HEW40_Nss2,(MCS0)_2TX	42.9M	37.631M	37M6D1D	39.9M	37.531M
802.11ax HEW80_Nss2,(MCS0)_2TX	81.5M	77.061M	77M1D1D	81.5M	76.762M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20_Nss2,(MCS0)_2TX	18.825M	29.41M	29M4D1D	18.5M	19.54M
802.11ax HEW40_Nss2,(MCS0)_2TX	37.25M	69.965M	70M0D1D	35.8M	53.573M
802.11ax HEW80_Nss2,(MCS0)_2TX	75.8M	77.661M	77M7D1D	75.4M	77.661M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

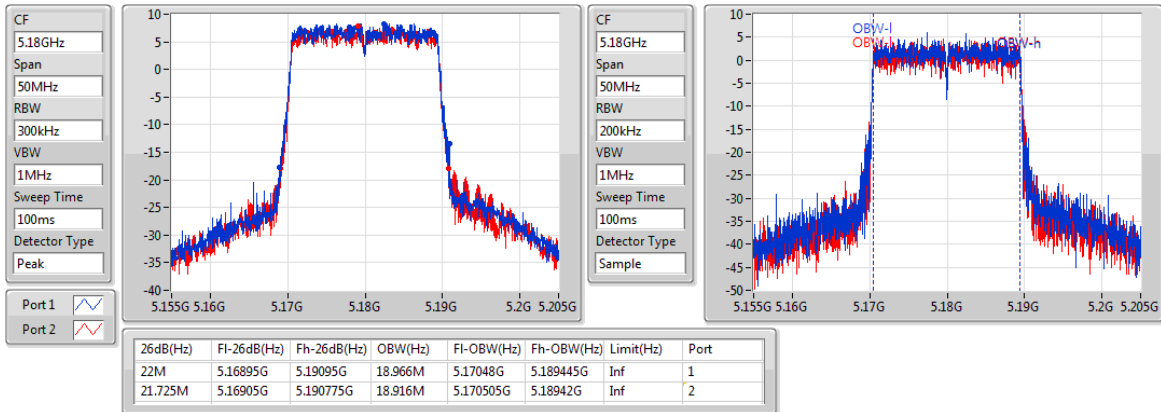
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11ax HEW20_Nss2,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	22M	18.966M	21.725M	18.916M
5200MHz	Pass	Inf	29.4M	19.015M	29.875M	19.015M
5240MHz	Pass	Inf	25M	18.991M	28.875M	18.966M
5745MHz	Pass	500k	18.6M	29.41M	18.5M	28.561M
5785MHz	Pass	500k	18.6M	27.161M	18.6M	24.588M
5825MHz	Pass	500k	18.825M	20.465M	18.625M	19.54M
802.11ax HEW40_Nss2,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	Inf	39.95M	37.531M	39.9M	37.531M
5230MHz	Pass	Inf	40.3M	37.631M	42.9M	37.631M
5755MHz	Pass	500k	35.95M	58.221M	37.25M	53.573M
5795MHz	Pass	500k	35.8M	69.965M	36.55M	60.87M
802.11ax HEW80_Nss2,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	Inf	81.5M	76.762M	81.5M	77.061M
5775MHz	Pass	500k	75.8M	77.661M	75.4M	77.661M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

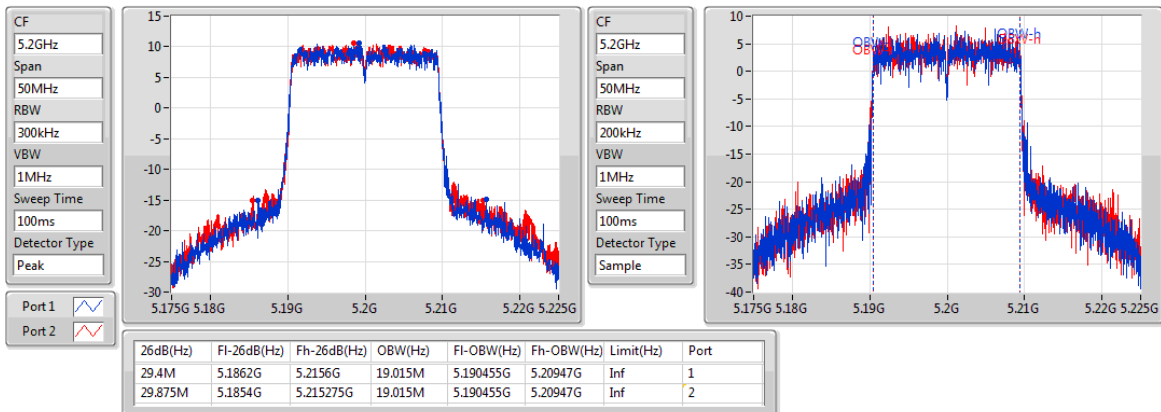
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5180MHz

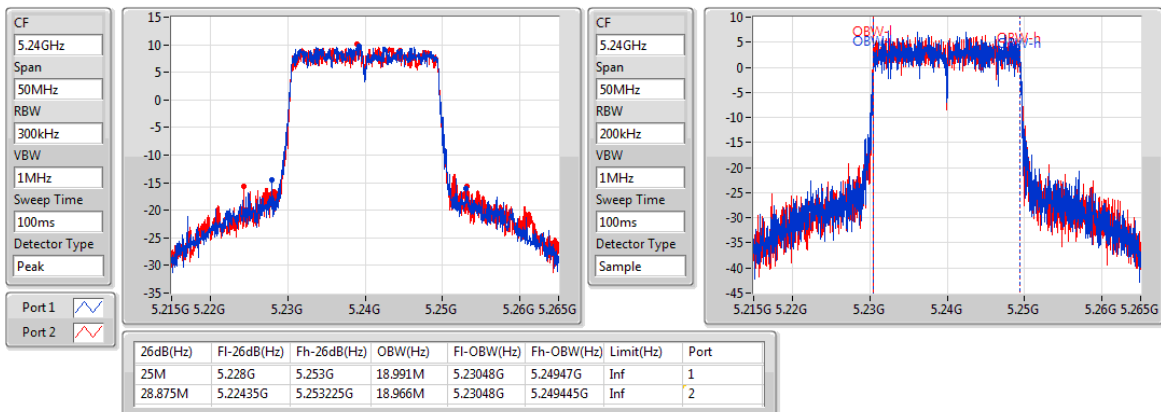
04/12/2018


802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5200MHz

04/12/2018

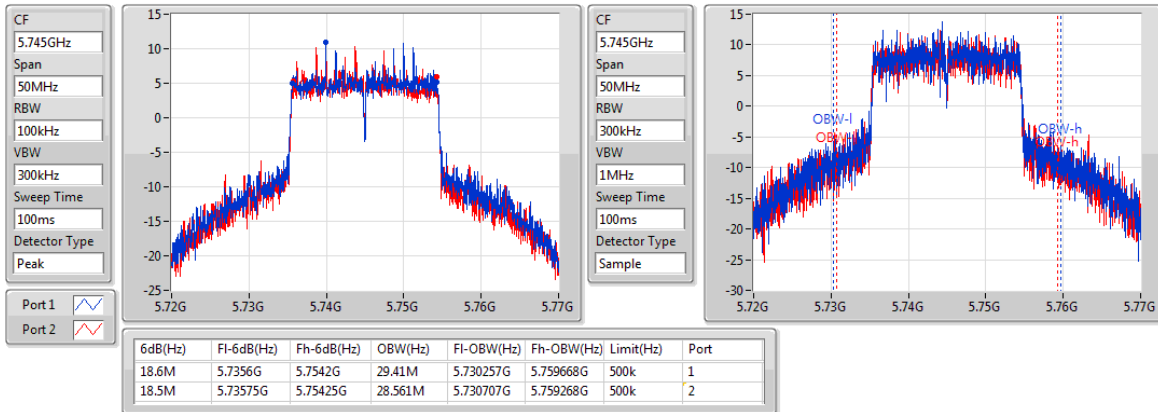

802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5240MHz

04/12/2018

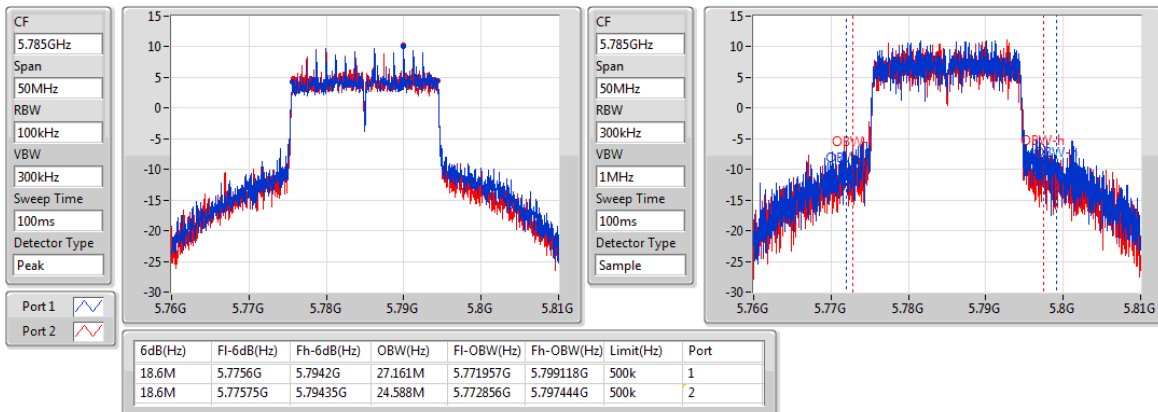


802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5745MHz

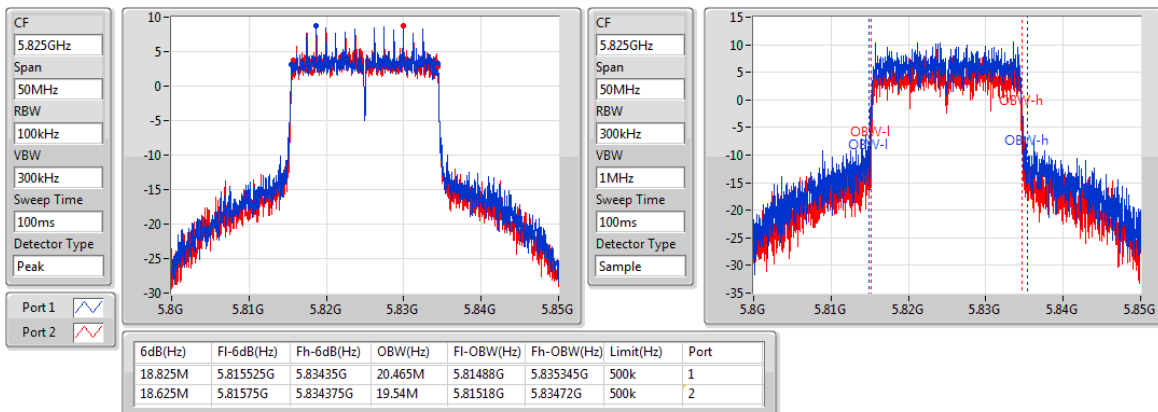
04/12/2018


802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5785MHz

04/12/2018

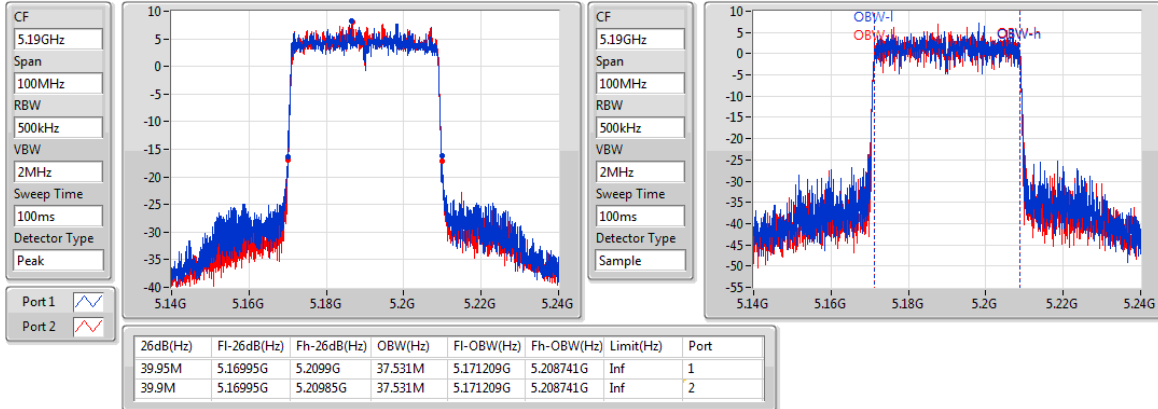

802.11ax HEW20_Nss2,(MCS0)_2TX
EBW
5825MHz

04/12/2018

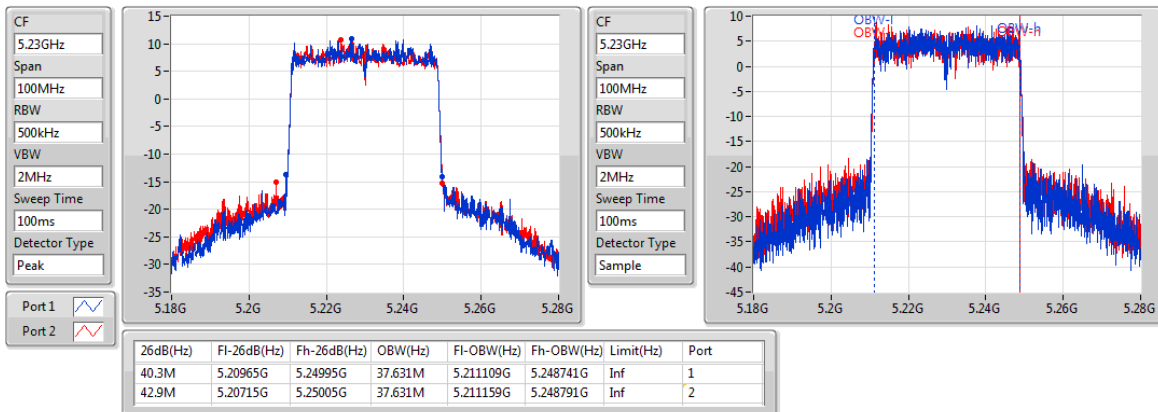


802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5190MHz

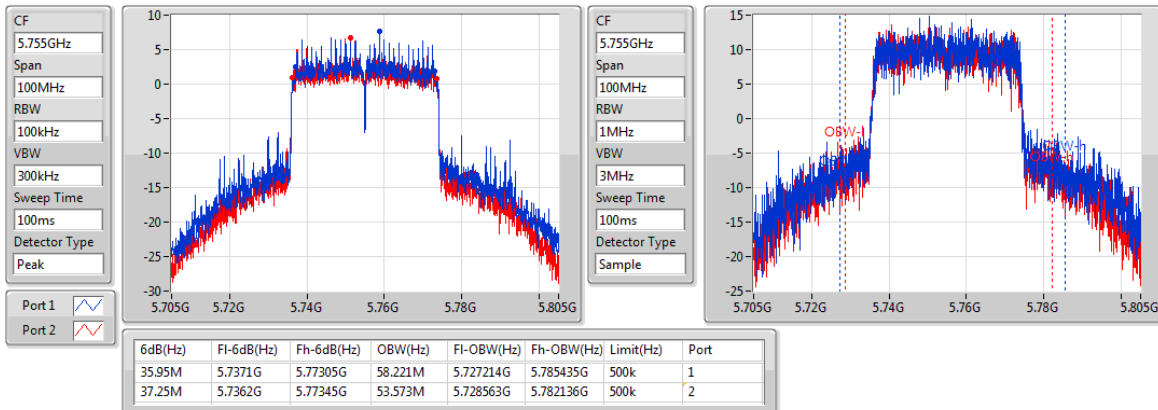
04/12/2018


802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5230MHz

17/12/2018

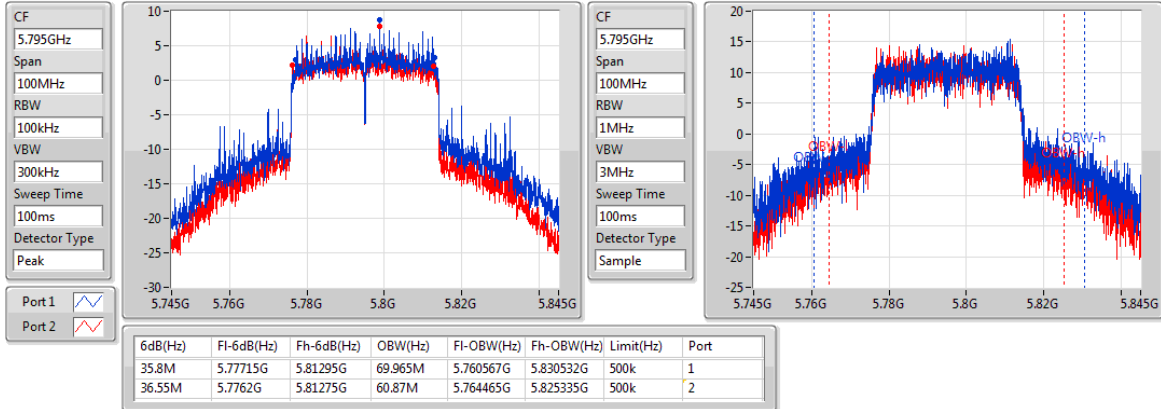

802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5755MHz

04/12/2018

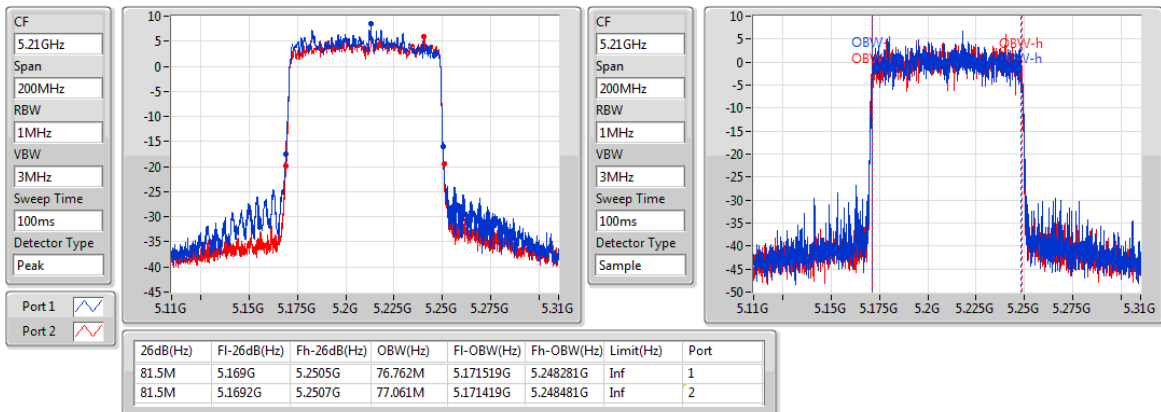


802.11ax HEW40_Nss2,(MCS0)_2TX
EBW
5795MHz

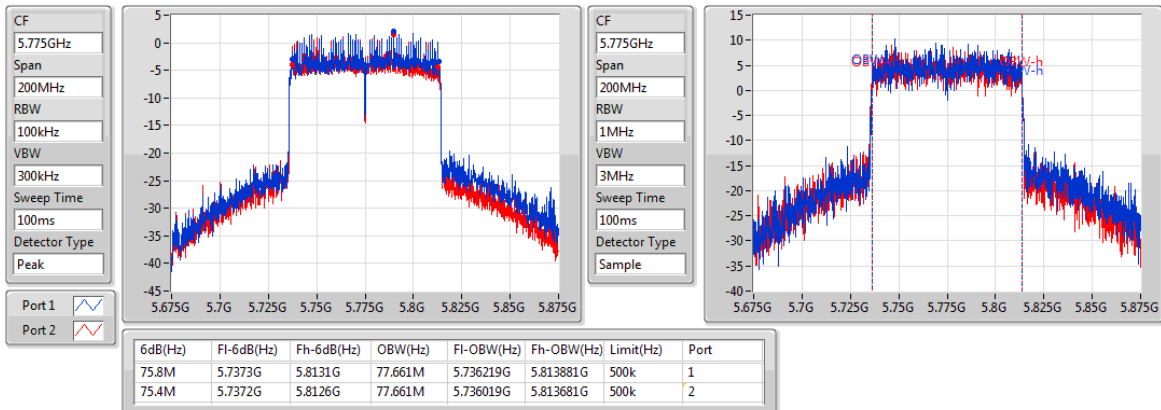
04/12/2018


802.11ax HEW80_Nss2,(MCS0)_2TX
EBW
5210MHz

04/12/2018


802.11ax HEW80_Nss2,(MCS0)_2TX
EBW
5775MHz

04/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_4TX	36.325M	16.667M	16M7D1D	21.525M	16.542M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_4TX	16.35M	25.737M	25M7D1D	16.3M	16.767M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

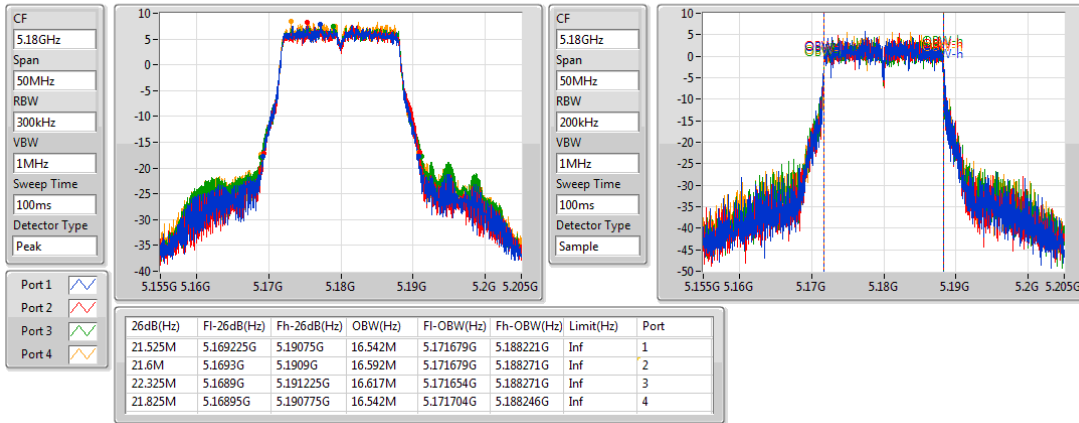
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
802.11a_Nss1,(6Mbps)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	21.525M	16.542M	21.6M	16.592M	22.325M	16.617M	21.825M	16.542M
5200MHz	Pass	Inf	26.325M	16.617M	22.25M	16.642M	27.275M	16.667M	26.65M	16.592M
5240MHz	Pass	Inf	27M	16.642M	22.325M	16.592M	36.325M	16.667M	27.05M	16.567M
5745MHz	Pass	500k	16.3M	16.867M	16.325M	16.767M	16.3M	16.917M	16.3M	17.091M
5785MHz	Pass	500k	16.35M	25.737M	16.325M	22.489M	16.3M	24.238M	16.3M	24.263M
5825MHz	Pass	500k	16.325M	18.041M	16.3M	17.066M	16.3M	18.791M	16.3M	17.541M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

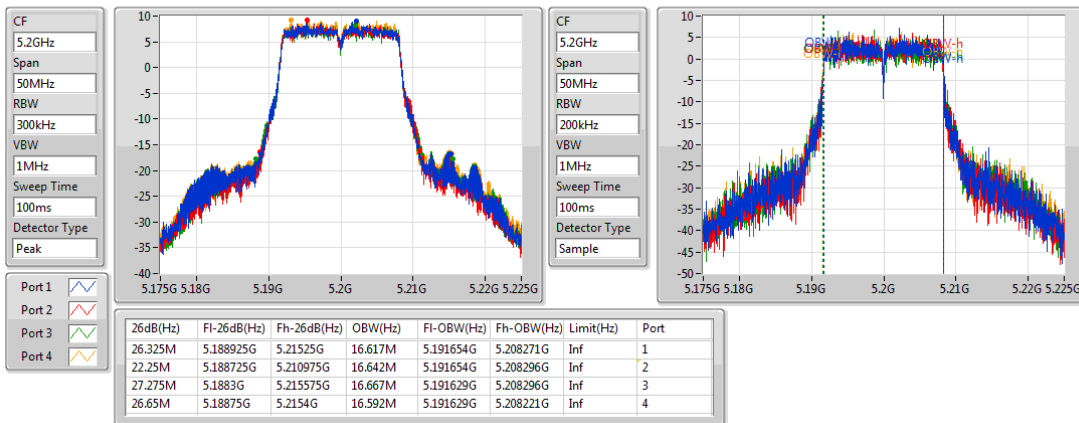
Port X-OBW = Port X 99% occupied bandwidth;

802.11a_Nss1,(6Mbps)_4TX
EBW
5180MHz

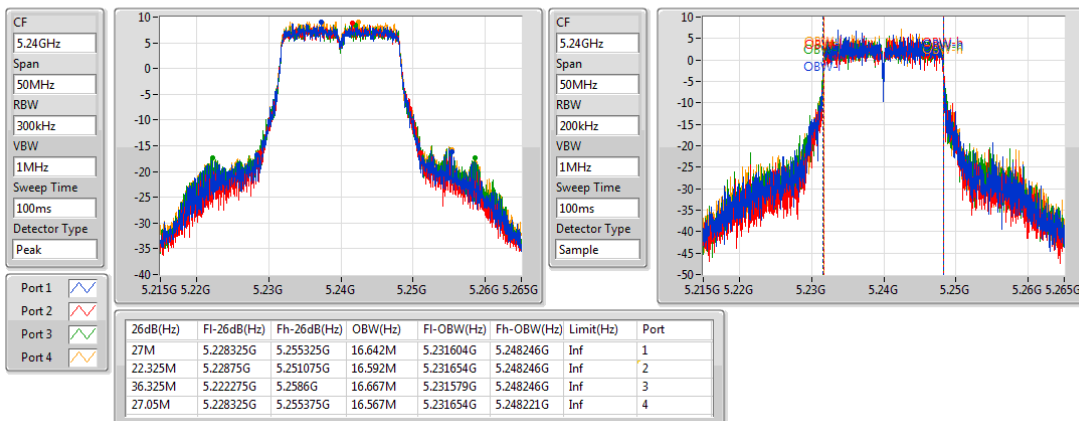
04/12/2018


802.11a_Nss1,(6Mbps)_4TX
EBW
5200MHz

04/12/2018

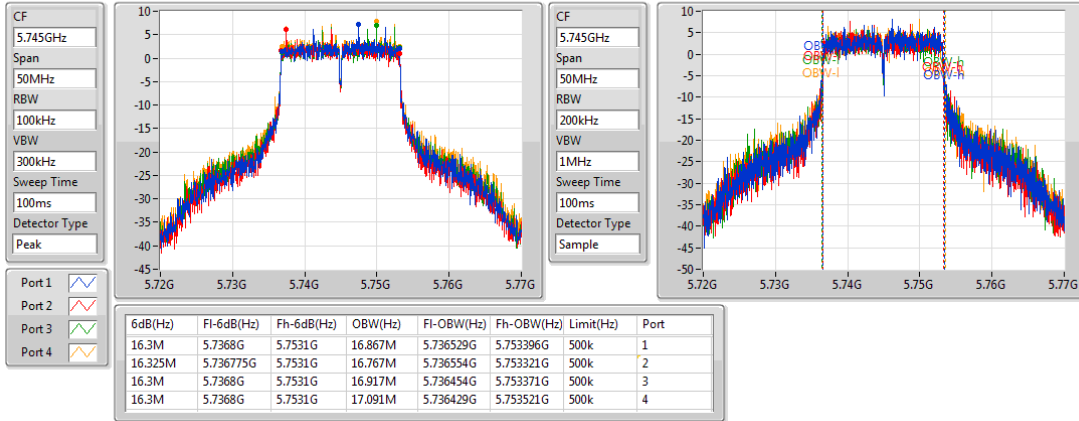

802.11a_Nss1,(6Mbps)_4TX
EBW
5240MHz

04/12/2018

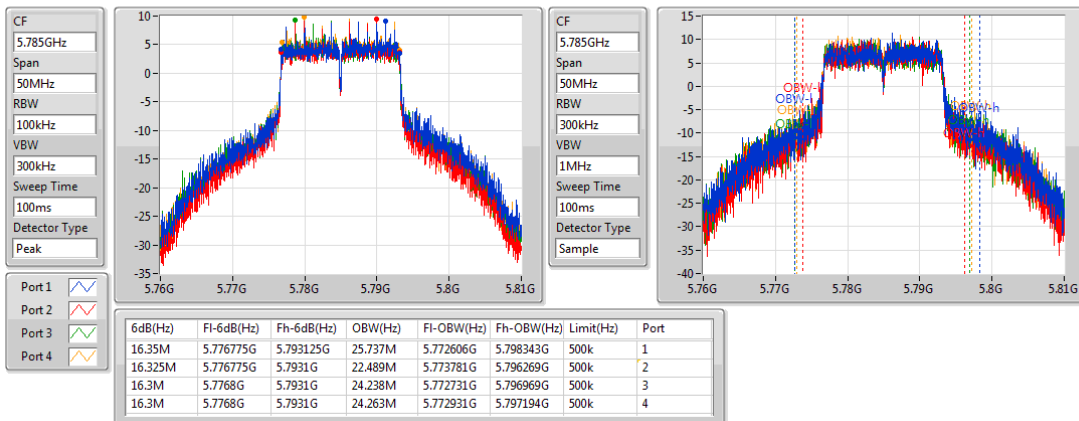


802.11a_Nss1,(6Mbps)_4TX
EBW
5745MHz

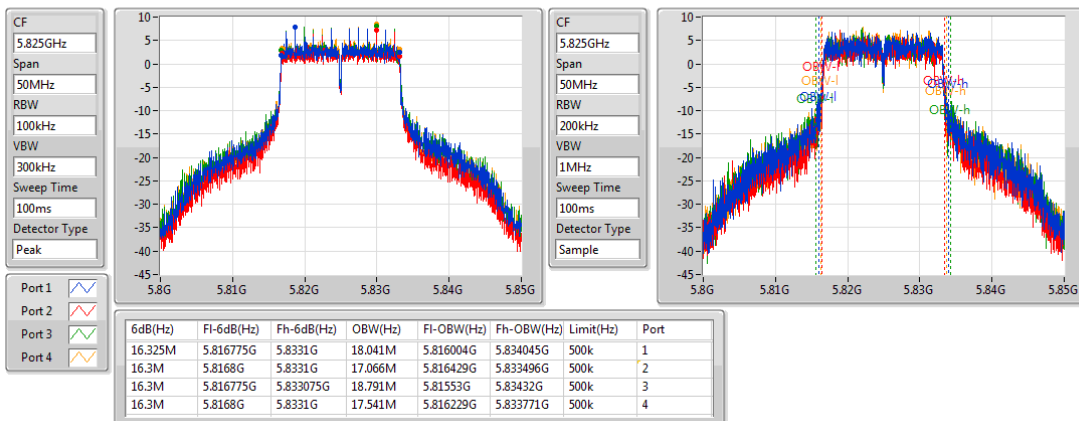
04/12/2018


802.11a_Nss1,(6Mbps)_4TX
EBW
5785MHz

04/12/2018


802.11a_Nss1,(6Mbps)_4TX
EBW
5825MHz

04/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_4TX	31.55M	19.04M	19M0D1D	21.65M	18.941M
802.11ax HEW40_Nss1,(MCS0)_4TX	49.2M	37.681M	37M7D1D	40M	37.481M
802.11ax HEW80_Nss1,(MCS0)_4TX	81.7M	77.161M	77M2D1D	81.2M	76.962M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_4TX	18.925M	30.985M	31M0D1D	18.4M	19.79M
802.11ax HEW40_Nss1,(MCS0)_4TX	37.55M	59.57M	59M6D1D	36.5M	37.981M
802.11ax HEW80_Nss1,(MCS0)_4TX	76.8M	77.361M	77M4D1D	76.5M	77.061M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Min-OBW = Minimum 99% occupied bandwidth;

Result

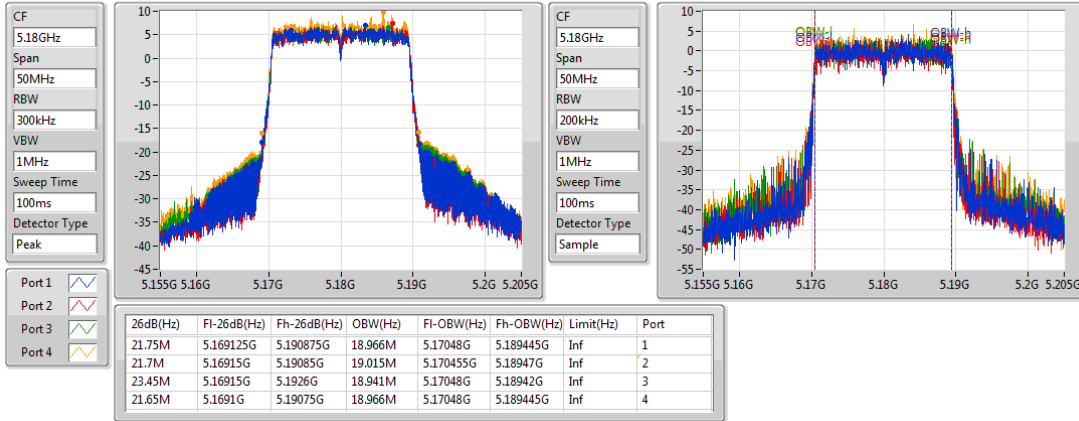
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)	Port 3-N dB (Hz)	Port 3-OBW (Hz)	Port 4-N dB (Hz)	Port 4-OBW (Hz)
802.11ax HEW20_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	21.75M	18.966M	21.7M	19.015M	23.45M	18.941M	21.65M	18.966M
5200MHz	Pass	Inf	31.55M	18.991M	24.325M	19.015M	31.375M	19.015M	31.25M	19.015M
5240MHz	Pass	Inf	28.775M	19.015M	24.775M	18.991M	29.575M	19.04M	23.1M	19.015M
5745MHz	Pass	500k	18.425M	29.835M	18.85M	27.811M	18.45M	30.885M	18.825M	30.985M
5785MHz	Pass	500k	18.675M	29.235M	18.4M	24.488M	18.625M	28.561M	18.65M	26.437M
5825MHz	Pass	500k	18.75M	20.615M	18.875M	19.79M	18.7M	21.814M	18.925M	20.19M
802.11ax HEW40_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	Inf	40M	37.531M	40.1M	37.531M	40.05M	37.481M	40.15M	37.481M
5230MHz	Pass	Inf	44.2M	37.631M	49.2M	37.631M	44.15M	37.681M	42.05M	37.681M
5755MHz	Pass	500k	37.1M	40.98M	37.15M	37.981M	37.15M	38.281M	37.55M	38.381M
5795MHz	Pass	500k	36.75M	59.57M	36.5M	47.976M	37.2M	54.823M	37.55M	54.773M
802.11ax HEW80_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	Inf	81.7M	77.161M	81.5M	77.061M	81.2M	76.962M	81.6M	76.962M
5775MHz	Pass	500k	76.6M	77.261M	76.5M	77.261M	76.8M	77.361M	76.6M	77.061M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

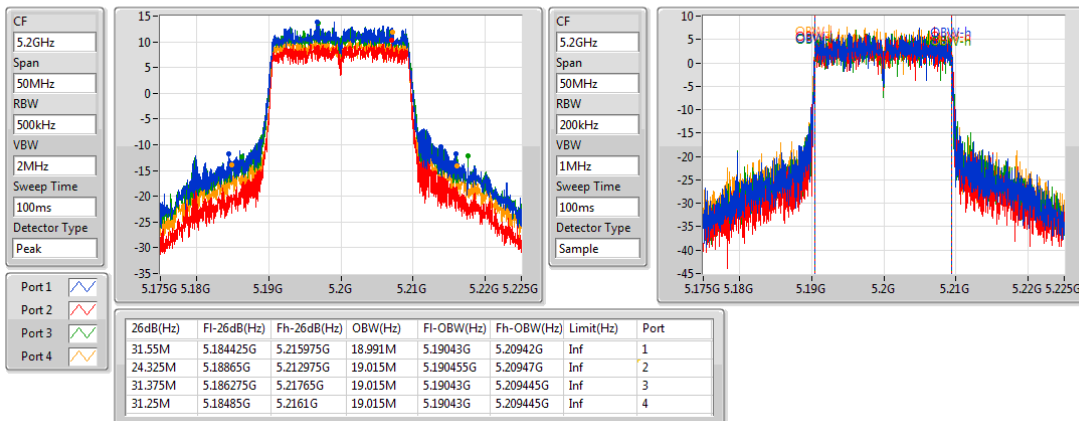
Port X-OBW = Port X 99% occupied bandwidth;

802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5180MHz

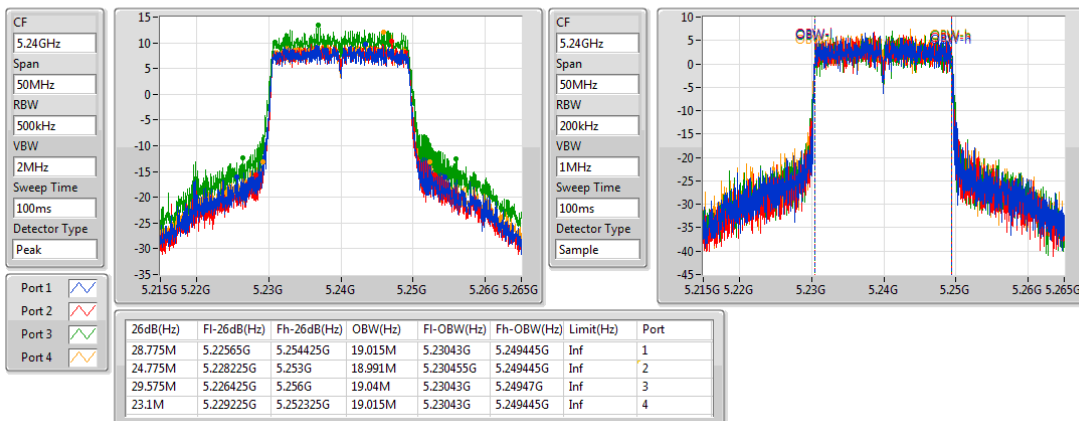
04/12/2018


802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5200MHz

04/12/2018

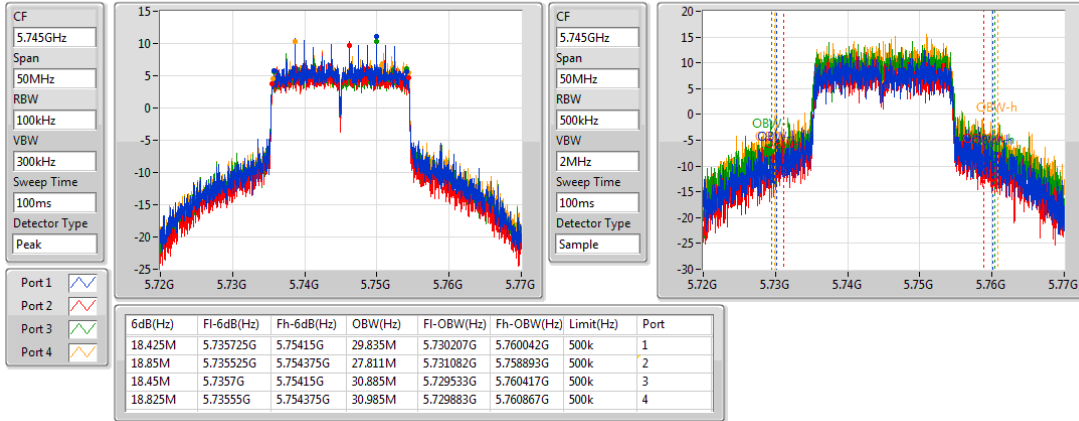

802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5240MHz

04/12/2018

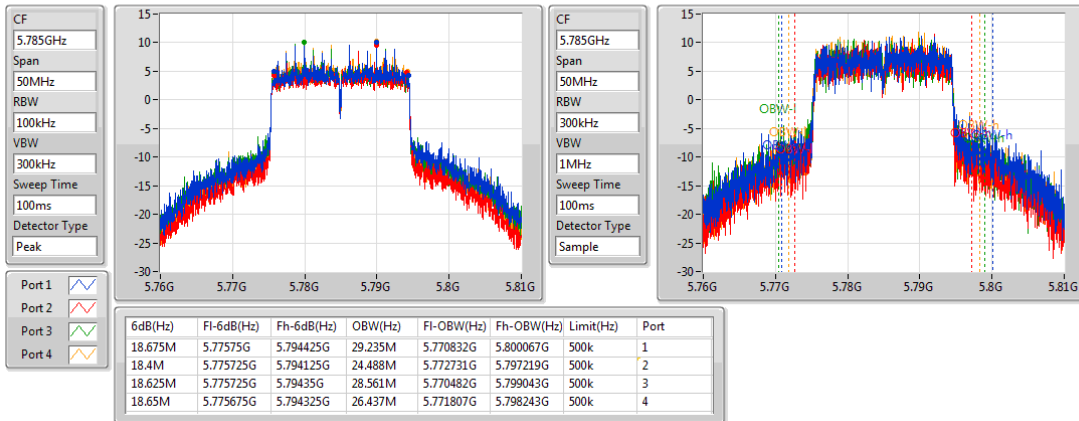


802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5745MHz

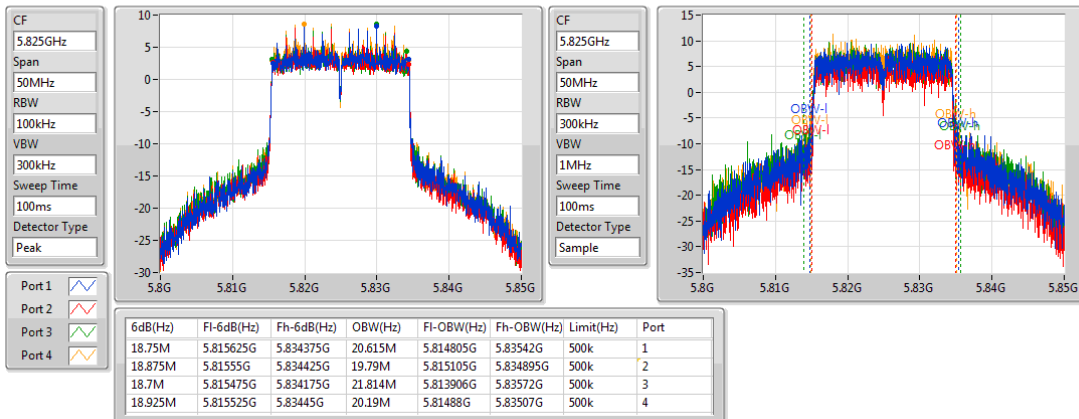
04/12/2018


802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5785MHz

04/12/2018

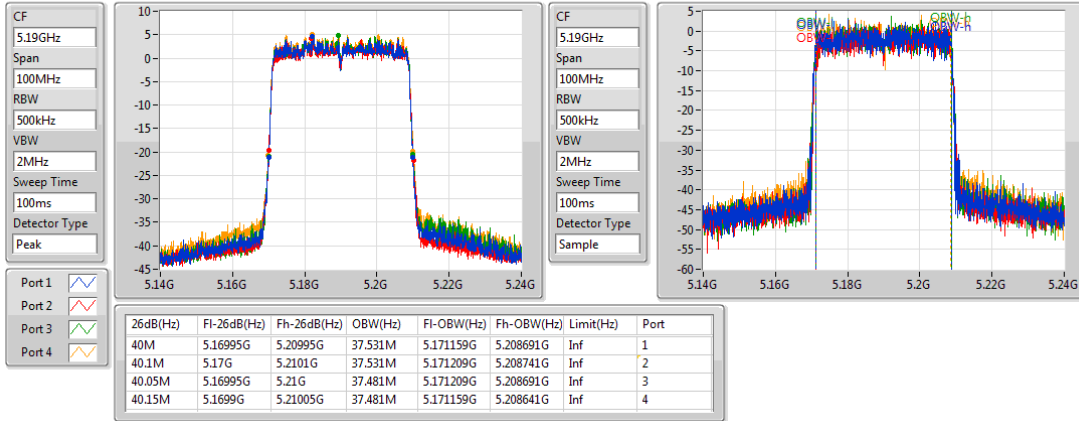

802.11ax HEW20_Nss1,(MCS0)_4TX
EBW
5825MHz

04/12/2018

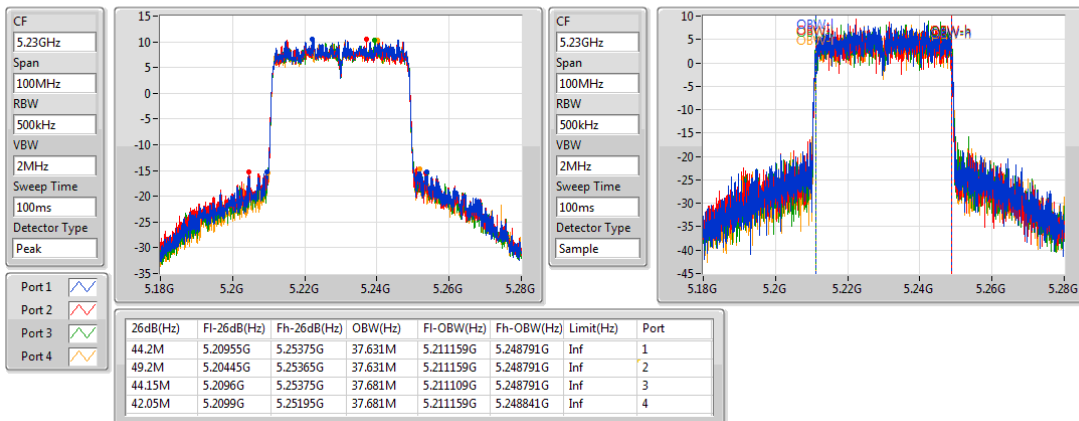


802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5190MHz

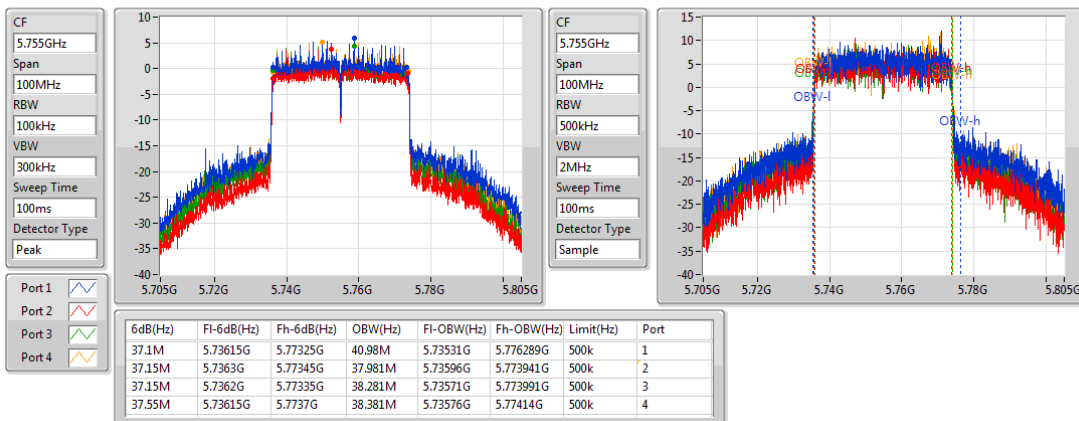
04/12/2018


802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5230MHz

17/12/2018

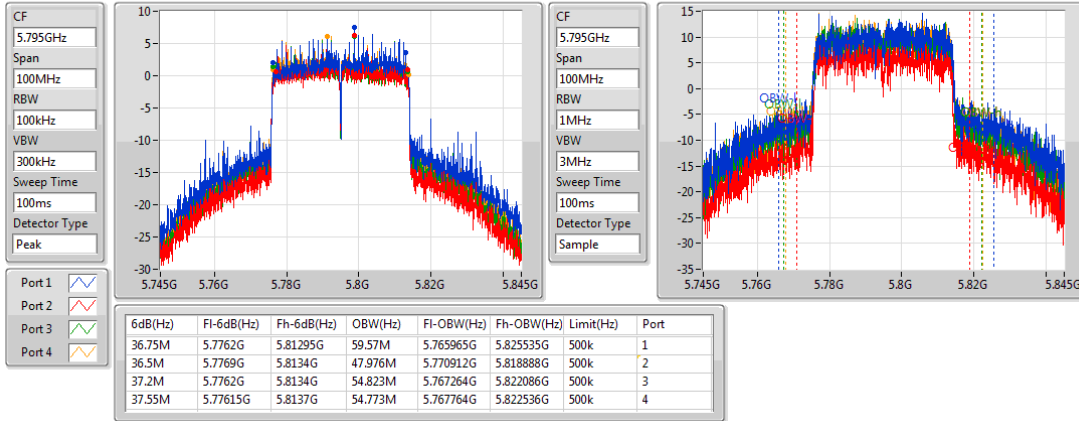

802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5755MHz

04/12/2018

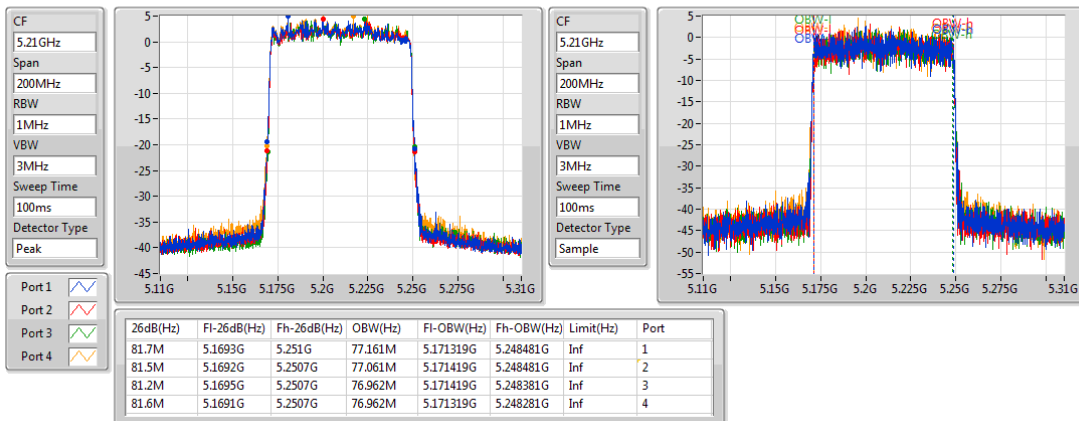


802.11ax HEW40_Nss1,(MCS0)_4TX
EBW
5795MHz

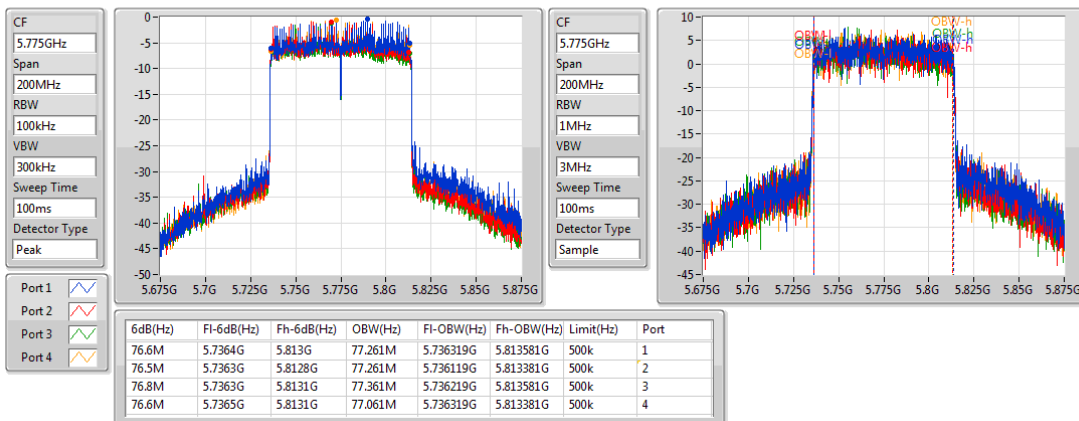
04/12/2018


802.11ax HEW80_Nss1,(MCS0)_4TX
EBW
5210MHz

04/12/2018


802.11ax HEW80_Nss1,(MCS0)_4TX
EBW
5775MHz

04/12/2018



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	36.225M	19.015M	19M0D1D	21.75M	18.941M
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	69.75M	37.781M	37M8D1D	39.95M	37.481M
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	81.7M	77.261M	77M3D1D	81.1M	76.962M
5.725-5.85GHz	-	-	-	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	19.025M	20.09M	20M1D1D	18.675M	19.165M
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	37.55M	50.875M	50M9D1D	36.95M	37.931M
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	76.9M	77.361M	77M4D1D	75.2M	76.962M

Max-N dB = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

Max-OBW = Maximum 99% occupied bandwidth;

Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

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)
802.11ax HEW20-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5180MHz	Pass	Inf	24.05M	18.966M	24.575M	18.941M	26.05M	18.991M	21.75M	18.991M
5200MHz	Pass	Inf	27.65M	18.966M	36.225M	19.015M	28.075M	18.966M	23.05M	19.015M
5240MHz	Pass	Inf	28.025M	18.991M	25.725M	18.991M	29.9M	19.015M	23.15M	19.015M
5745MHz	Pass	500k	18.725M	19.29M	18.675M	19.29M	19M	19.29M	18.95M	19.415M
5785MHz	Pass	500k	18.675M	19.815M	18.9M	19.215M	18.75M	19.165M	18.9M	19.215M
5825MHz	Pass	500k	18.875M	20.09M	18.925M	19.165M	19.025M	19.265M	18.925M	19.415M
802.11ax HEW40-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5190MHz	Pass	Inf	39.95M	37.531M	40.1M	37.481M	40.15M	37.631M	40.1M	37.531M
5230MHz	Pass	Inf	54.65M	37.731M	69.3M	37.731M	69.45M	37.781M	69.75M	37.781M
5755MHz	Pass	500k	36.95M	50.875M	37.05M	38.131M	37.55M	43.528M	37.25M	42.729M
5795MHz	Pass	500k	37.45M	42.329M	36.95M	37.931M	37.2M	38.231M	37.1M	38.331M
802.11ax HEW80-BF_Nss1,(MCS0)_4TX	-	-	-	-	-	-	-	-	-	-
5210MHz	Pass	Inf	81.7M	76.962M	81.1M	76.962M	81.3M	77.261M	81.7M	76.962M
5775MHz	Pass	500k	75.2M	77.261M	76.5M	76.962M	76.1M	77.361M	76.9M	77.061M

Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

Port X-OBW = Port X 99% occupied bandwidth;