

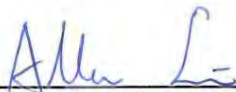
FCC Test Report

FCC ID : 2AA2U-UCW4026MCS
Equipment : Set Top Box
Brand Name : Technicolor
Model Name : UCW4026MCS
Applicant : Cal-Comp Electronics & Communications Company Limited
3th FL., No. 99, Sec. 5, Nanjing E. Rd. Taipei 105 Taiwan
Manufacturer : Cal-Comp Electronics & Communications Company Limited
No. 147, Sec. 3, Beishen Rd., Shenkeng Dist., 222 New Taipei City, TAIWAN
Standard : 47 CFR FCC Part 15.407

The product was received on Jul. 19, 2018, and testing was started from Jul. 31, 2018 and completed on Aug. 02, 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: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



Table of Contents

HISTORY OF THIS TEST REPORT3

SUMMARY OF TEST RESULT4

1 GENERAL DESCRIPTION5

1.1 Information.....5

1.2 Testing Applied Standards8

1.3 Testing Location Information8

1.4 Measurement Uncertainty8

2 TEST CONFIGURATION OF EUT.....9

2.1 Test Condition9

2.2 Test Channel Mode9

2.3 The Worst Case Measurement Configuration11

2.4 Accessories12

2.5 Support Equipment.....12

2.6 Test Setup Diagram13

3 TRANSMITTER TEST RESULT14

3.1 AC Power-line Conducted Emissions14

3.2 Emission Bandwidth16

3.3 Maximum Conducted Output Power17

3.4 Peak Power Spectral Density.....19

3.5 Unwanted Emissions.....21

3.6 Test Equipment and Calibration Data25

APPENDIX A. TEST RESULTS OF AC POWER-LINE CONDUCTED EMISSIONS

APPENDIX B. TEST RESULTS OF EMISSION BANDWIDTH

APPENDIX C. TEST RESULTS OF MAXIMUM CONDUCTED OUTPUT POWER

APPENDIX D. TEST RESULTS OF PEAK POWER SPECTRAL DENSITY

APPENDIX E. TEST RESULTS OF UNWANTED EMISSIONS

APPENDIX F. TEST PHOTOS

PHOTOGRAPHS OF EUT V01



History of this test report

Report No.	Version	Description	Issued Date
FR871710AN	01	Initial issue of report	Aug. 24, 2018



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	-

Reviewed by: Jackson Tsai

Report Producer: Debby Hung



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)	5180-5240	36-48 [4]
5250-5350		5260-5320	52-64 [4]
5470-5725		5500-5700	100-140 [11]
Straddle 5720		5720	144 [1]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40)	5190-5230	38-46 [2]
5250-5350		5270-5310	54-62 [2]
5470-5725		5510-5670	102-134 [5]
Straddle 5710		5710	142 [1]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80)	5210	42 [1]
5250-5350		5290	58 [1]
5470-5725		5530-5610	106-122 [2]
Straddle 5690		5690	138 [1]
5725-5850		5775	155 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	2TX
5.25-5.35GHz	802.11a	20	2TX
5.47-5.725GHz	802.11a	20	2TX
5.725-5.85GHz	802.11a	20	2TX
5.15-5.25GHz	802.11ac VHT20	20	2TX
5.25-5.35GHz	802.11ac VHT20	20	2TX
5.47-5.725GHz	802.11ac VHT20	20	2TX
5.725-5.85GHz	802.11ac VHT20	20	2TX
5.15-5.25GHz	802.11ac VHT40	40	2TX
5.25-5.35GHz	802.11ac VHT40	40	2TX
5.47-5.725GHz	802.11ac VHT40	40	2TX
5.725-5.85GHz	802.11ac VHT40	40	2TX
5.15-5.25GHz	802.11ac VHT80	80	2TX

Band	Mode	BWch (MHz)	Nant
5.25-5.35GHz	802.11ac VHT80	80	2TX
5.47-5.725GHz	802.11ac VHT80	80	2TX
5.725-5.85GHz	802.11ac VHT80	80	2TX

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.
- ◆ BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	Hongbo	-	PIFA Antenna	Murata
2	Hongbo	-	PIFA Antenna	I-PEX
3	Hongbo	-	PIFA Antenna	Murata

Ant.	Port	Gain (dBi)		
		2.4G	5G	BT
1	2	2.61	3.67	-
2	1	2.60	3.64	-
3	1	-	-	1.92

For 2.4 GHz function:

For IEEE 802.11b mode (1TX/1RX)

Support diversity function and pre-tested Ant. 1 and Ant. 2 on each single chain, the worst case was Ant. 1 and it was record in this test report.

For IEEE 802.11g/n mode (2TX/2RX)

Ant. 1 and Ant. 2 could transmit/receive simultaneously.

For 5 GHz function:

For IEEE 802.11a/n mode (2TX/2RX)

Ant. 1 and Ant. 2 could transmit/receive simultaneously.

For Bluetooth function:

For Bluetooth mode (1TX/1RX)

Only Ant. 3 can be used as transmitting/receiving antenna.

1.1.3 EUT Information

Operational Condition			
EUT Power Type	From AC Adapter		
EUT Function	<input type="checkbox"/> Outdoor	<input type="checkbox"/> Indoor	
	<input type="checkbox"/> Fixed P2P	<input checked="" type="checkbox"/> Client	
Beamforming Function	<input type="checkbox"/> With beamforming	<input checked="" type="checkbox"/> Without beamforming	
Weather Band	<input checked="" type="checkbox"/> With 5600~5650MHz	<input type="checkbox"/> Without 5600~5650MHz	
Type of EUT			
<input checked="" type="checkbox"/>	Stand-alone		
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device)		
	Combined Equipment - Brand Name / Model No.:	...	
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems)		
	Host System - Brand Name / Model No.:	...	
<input type="checkbox"/>	Other:		

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.986	0.061	n/a (DC≥0.98)	n/a (DC≥0.98)
802.11ac VHT20	0.79	1.024	1.93m	1k
802.11ac VHT40	0.974	0.114	957.813u	3k
802.11ac VHT80	0.948	0.232	465.625u	3k

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
- ◆ KDB 789033 D02 v02r01
- ◆ KDB 662911 D01 v02r01

1.3 Testing Location Information

Testing Location		
<input checked="" type="checkbox"/>	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
Test site Designation No. TW1190 with FCC.		
<input type="checkbox"/>	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.) TEL : 886-3-656-9065 FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.		

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Andy	24.5°C / 64.5%	01/Aug/2018
Radiated	03CH03-HY	Jeff	23.5°C / 65%	31/Jul/2018
AC Conduction	CO04-HY	Jeremy	20.5°C / 62%	02/Aug/2018

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)	3.6 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%
Temperature	0.7 °C	Confidence levels of 95%
Humidity	4 %	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Condition

Condition Item	Abbreviation/Remark	Remark
RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

2.2 Test Channel Mode

Test Software	Dos
Mode	PowerSetting
802.11a_Nss1,(6Mbps)_2TX	-
5180MHz	70
5200MHz	76
5240MHz	76
5260MHz	76
5300MHz	76
5320MHz	68
5500MHz	68
5580MHz	77
5700MHz	62
5720MHz Straddle 5.47-5.725GHz	78
5720MHz Straddle 5.725-5.85GHz	78
5745MHz	85
5785MHz	85
5825MHz	85
802.11ac VHT20_Nss1,(MCS0)_2TX	-
5180MHz	69
5200MHz	80
5240MHz	80
5260MHz	79
5300MHz	79
5320MHz	67
5500MHz	67






Mode	PowerSetting
5580MHz	81
5700MHz	63
5720MHz Straddle 5.47-5.725GHz	80
5720MHz Straddle 5.725-5.85GHz	80
5745MHz	85
5785MHz	85
5825MHz	85
802.11ac VHT40_Nss1,(MCS0)_2TX	-
5190MHz	58
5230MHz	79
5270MHz	78
5310MHz	58
5510MHz	58
5550MHz	77
5670MHz	69
5710MHz Straddle 5.47-5.725GHz	76
5710MHz Straddle 5.725-5.85GHz	76
5755MHz	85
5795MHz	85
802.11ac VHT80_Nss1,(MCS0)_2TX	-
5210MHz	58
5290MHz	62
5530MHz	60
5610MHz	73
5690MHz Straddle 5.47-5.725GHz	78
5690MHz Straddle 5.725-5.85GHz	78
5775MHz	67

2.3 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	CTX
1	Adapter mode

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

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	CTX		
1	Adapter mode		
Operating Mode > 1GHz	CTX		
Orthogonal Planes of EUT	X Plane	Y Plane	Z Plane
			
Worst Planes of EUT			V

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis
Operating Mode	CTX
1	Bluetooth+WLAN 2.4GHz
2	Bluetooth+WLAN 5GHz
Refer to Sporton Test Report No.: FA871710 for Co-location RF Exposure Evaluation.	

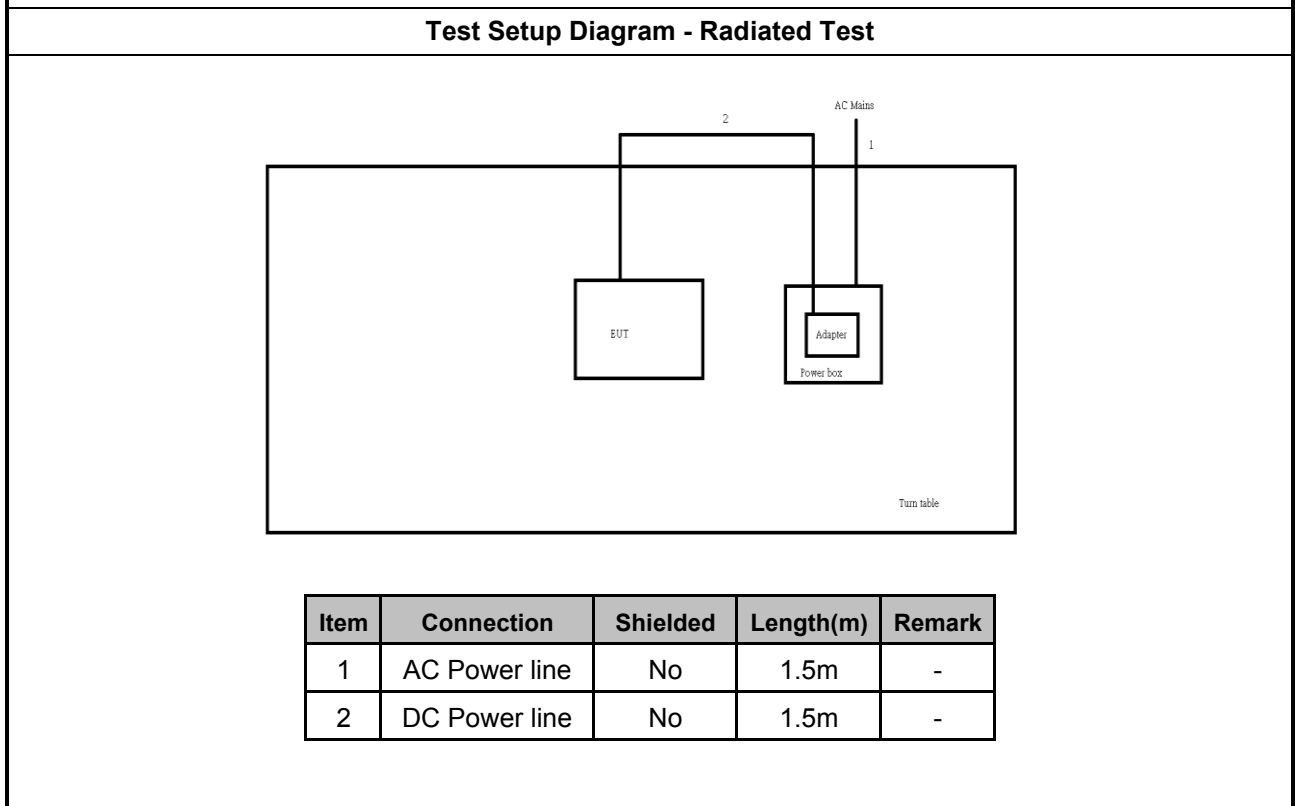
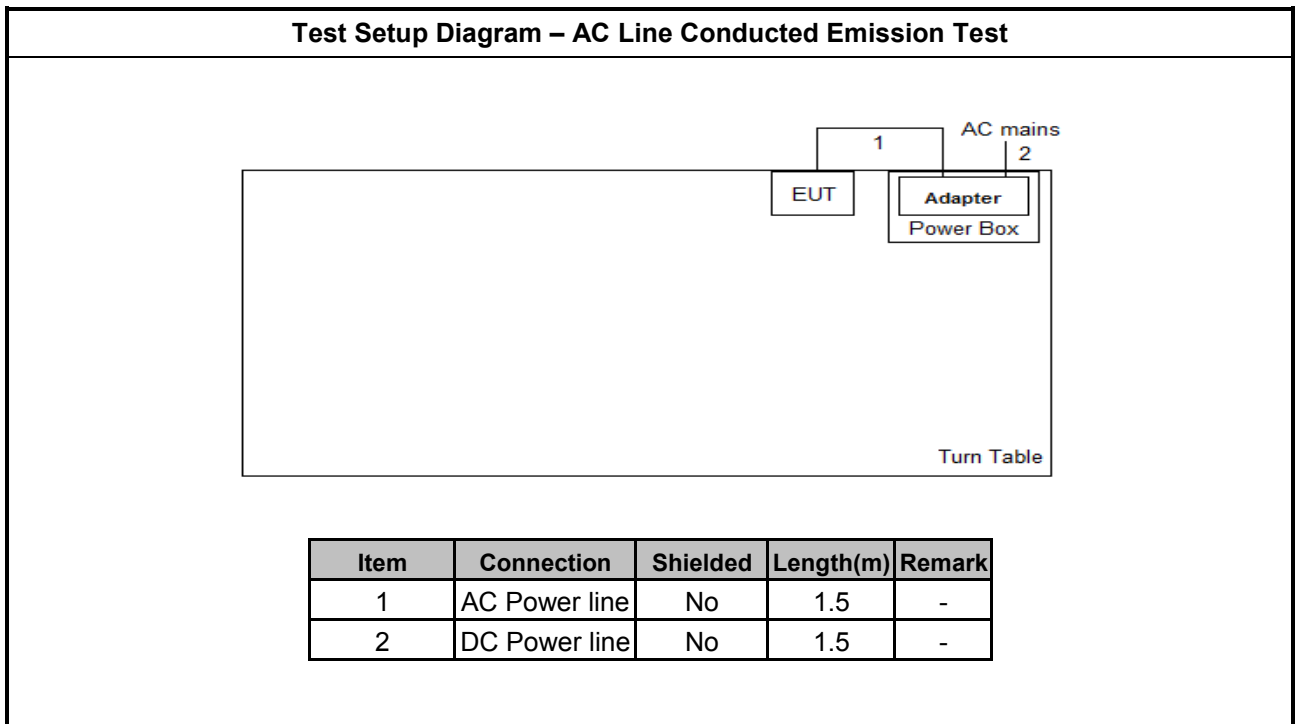
2.4 Accessories

Accessories				
AC Adapter	Brand Name	Acbel	Model Name	WAH033
	Power Rating	I/P: <u>100</u> - <u>240</u> Vac, <u>0.6</u> A, O/P: <u>12</u> Vdc, <u>1.5</u> A		
	Power Cord	1.5 meter, Non-Shielded cable, w/o ferrite core		
remote control	Brand Name	-	Model Name	-
HDMI Cable	Power Cord	1.7 meter, Shielded cable, w/o ferrite core		

2.5 Support Equipment

Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E5410	R33002 / DOC
2	Adapter for NB	DELL	HA65NM130	R35737 / DOC
3	AC Power Source	GW	APS-9102	-

2.6 Test Setup Diagram



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.

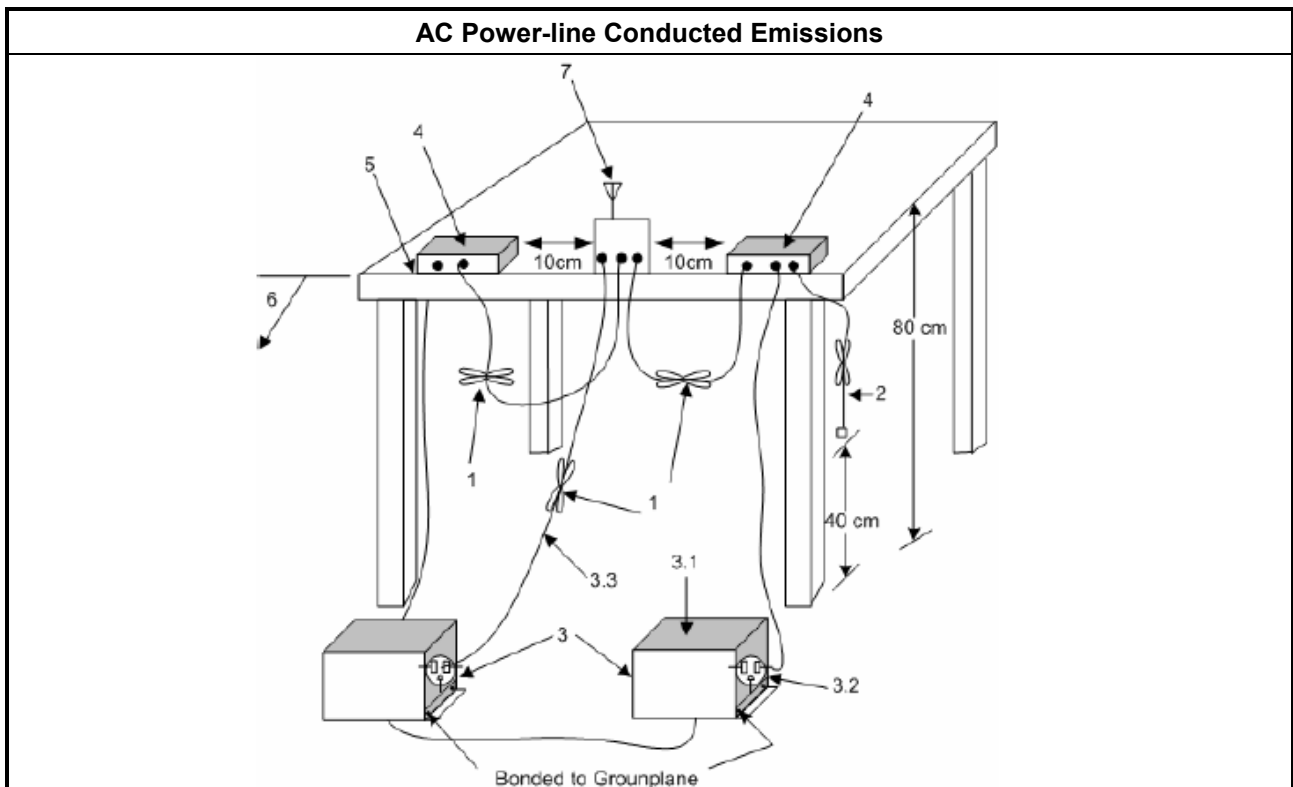
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> 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	
<input checked="" type="checkbox"/>	For the 5.15-5.25 GHz band, N/A
<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	For the 5.725-5.85 GHz band, 6 dB emission bandwidth \geq 500kHz.

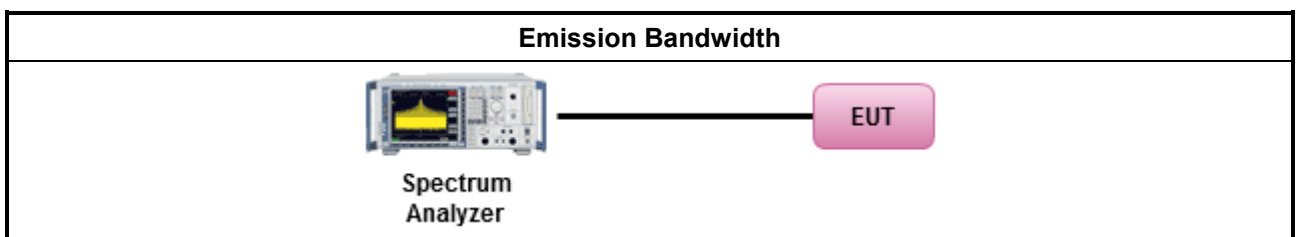
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ For the emission bandwidth shall be measured using one of the options below: 	
<input checked="" type="checkbox"/>	Refer as KDB 789033, clause C for EBW and clause D for OBW measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.
<input type="checkbox"/>	Refer as IC RSS-Gen, clause 6.7 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	
<input checked="" type="checkbox"/> For the 5.15-5.25 GHz band:	
	<ul style="list-style-type: none"> ▪ 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 $\leq 125mW$ [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 $P_{Out} = 24 - (G_{TX} - 6)$.
<input checked="" type="checkbox"/> For the 5.25-5.35 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.47-5.725 GHz band, the maximum conducted output power (P_{Out}) shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 24 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.725-5.85 GHz band:	
	<ul style="list-style-type: none"> ▪ 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.	

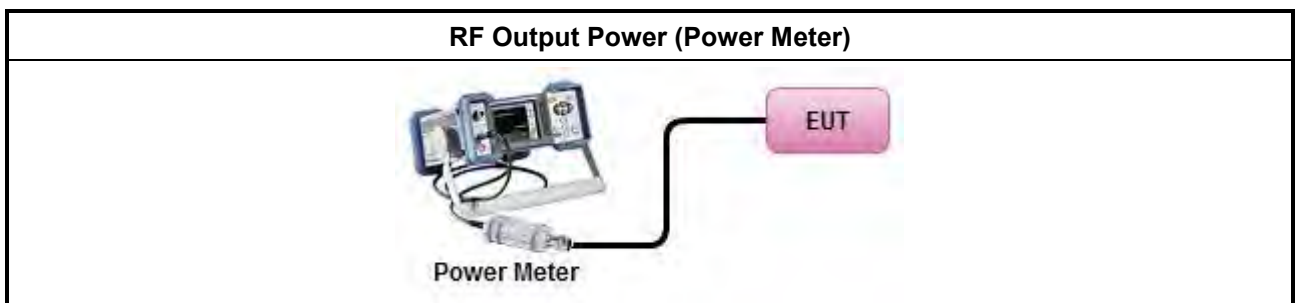
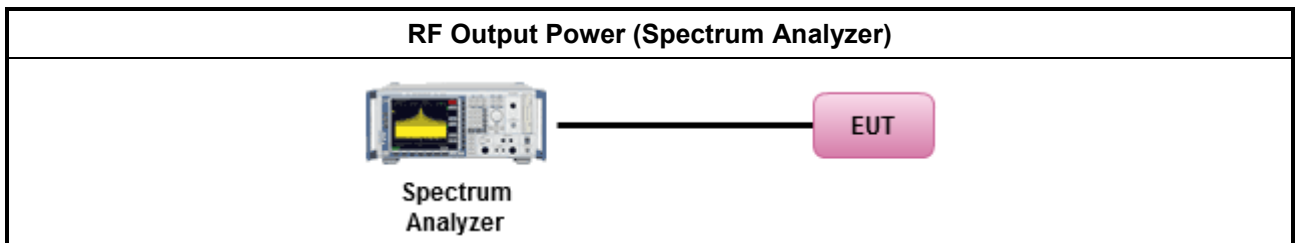
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> Maximum Conducted Output Power 	
	Duty cycle $\geq 98\%$
<input checked="" type="checkbox"/>	Refer as KDB 789033, clause E Method SA-2 (spectral trace averaging).
	Duty cycle $< 98\%$
<input type="checkbox"/>	Refer as 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	
<input checked="" type="checkbox"/>	Refer as KDB 789033, clause E Method PM (using an RF average power meter).
<ul style="list-style-type: none"> For conducted measurement. 	
	<ul style="list-style-type: none"> If the EUT supports multiple transmit chains using options given below: Refer as 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.
	<ul style="list-style-type: none"> 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	
<input checked="" type="checkbox"/> For the 5.15-5.25 GHz band:	
	<ul style="list-style-type: none"> ▪ 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 $PPSD = 11 - (G_{TX} - 6)$.
<input checked="" type="checkbox"/> For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX} > 6$ dBi, then $PPSD = 11 - (G_{TX} - 6)$.	
<input checked="" type="checkbox"/> For the 5.725-5.85 GHz band:	
	<ul style="list-style-type: none"> ▪ 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.
<p>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</p> <p>G_{TX} = the maximum transmitting antenna directional gain in dBi.</p>	

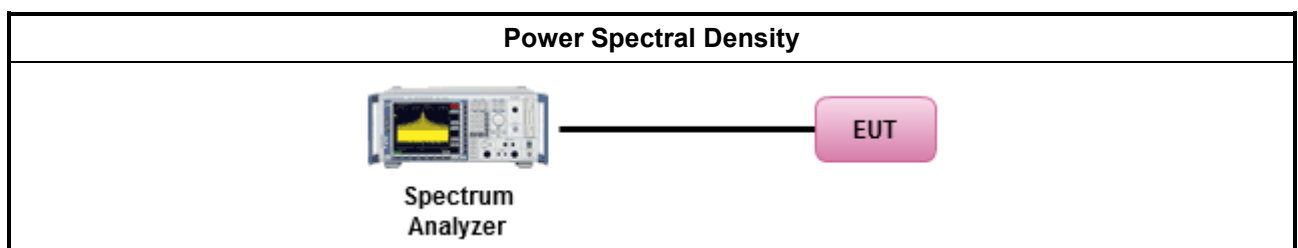
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ 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: 	
<input type="checkbox"/>	Refer as 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%	
<input checked="" type="checkbox"/>	Refer as KDB 789033, clause E Method SA-2 (spectral trace averaging).
Duty cycle < 98%	
<input checked="" type="checkbox"/>	Refer as KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
<ul style="list-style-type: none"> ▪ For conducted measurement. 	
<ul style="list-style-type: none"> ▪ If the EUT supports multiple transmit chains using options given below: 	
	<ul style="list-style-type: none"> ▪ Measure and sum the spectra across the outputs. Refer as 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.
	<ul style="list-style-type: none"> ▪ 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 Radiated 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	5.650-5700 GHz: e.i.r.p. -27 ~ 10 dBm [68.2 ~ 105.2 dBuV/m@3m] 5.700-5720 GHz: e.i.r.p. 10 ~ 15.6 dBm [105.2 ~ 110.8 dBuV/m@3m] 5.720-5725 GHz: e.i.r.p. 15.6 ~ 27 dBm [110.8 ~ 122.2 dBuV/m@3m] 5.850-5.855 GHz: e.i.r.p. 27 ~ 15.6 dBm [122.2 ~ 110.8 dBuV/m@3m] 5.855-5.875 GHz: e.i.r.p. 15.6 ~ 10 dBm [110.8 ~ 105.2 dBuV/m@3m] 5.875-5.925 GHz: e.i.r.p. 10 ~ -27 dBm [105.2 ~ 68.2dBuV/m@3m] Other un-restricted band: e.i.r.p. -27 dBm [68.2 dBuV/m@3m]

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).

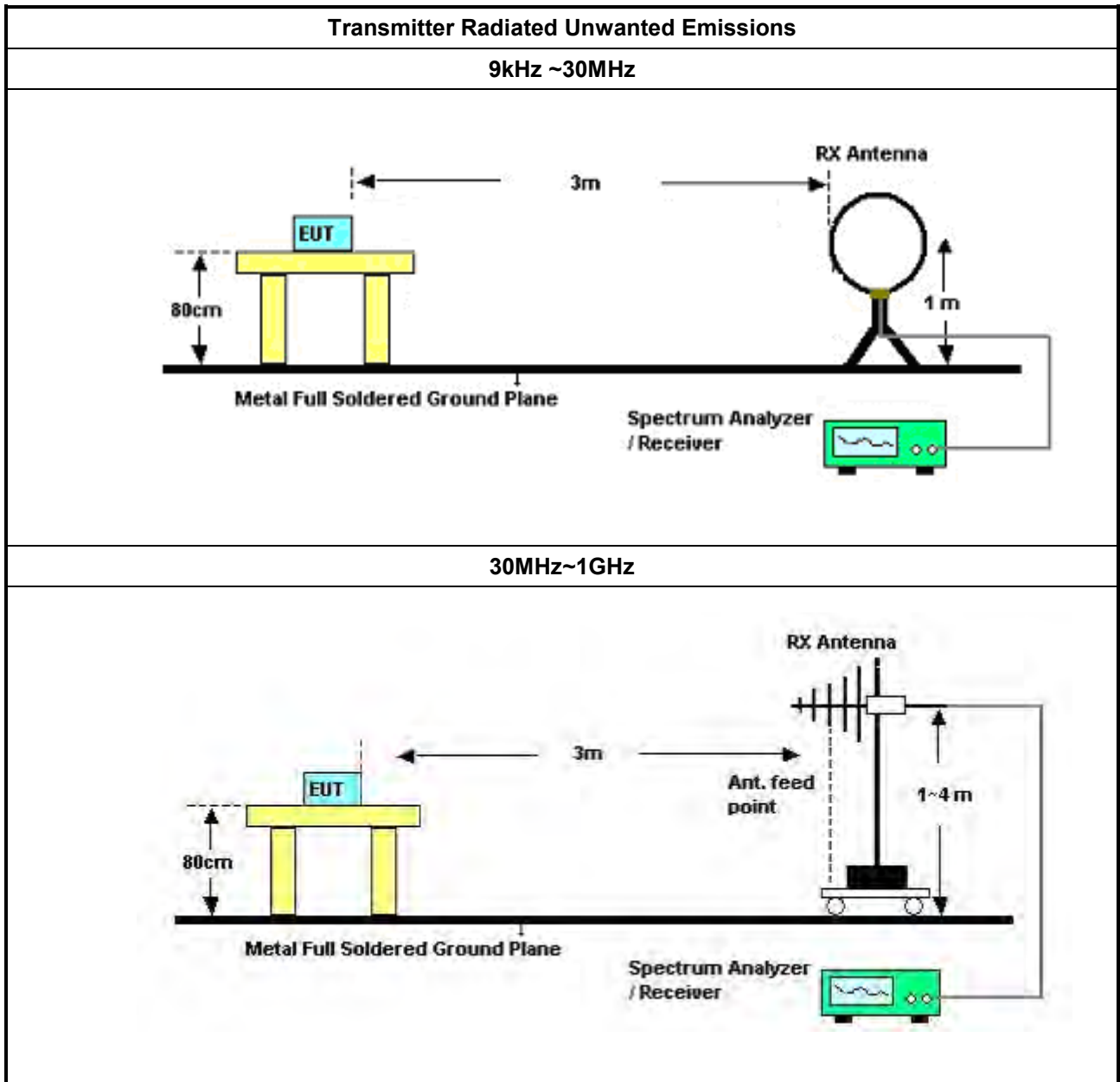
3.5.2 Measuring Instruments

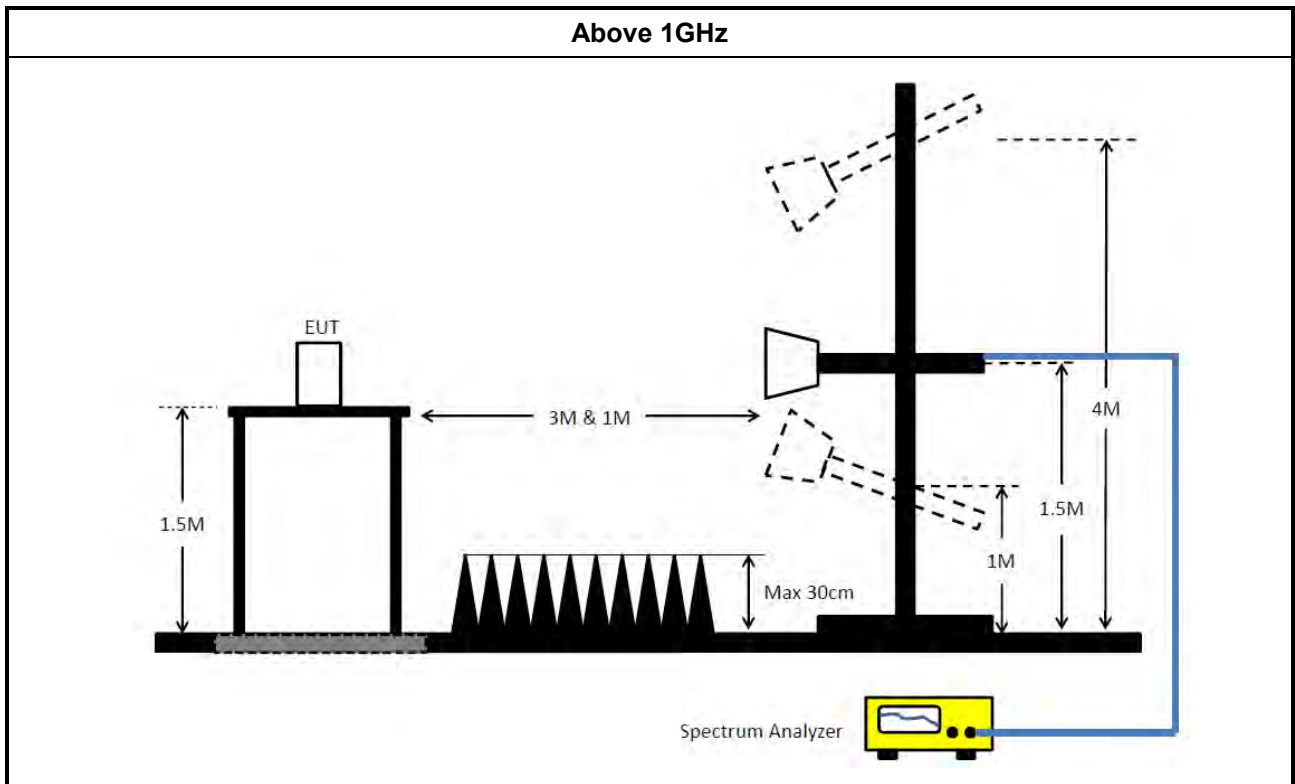
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ 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). 	
<ul style="list-style-type: none"> ▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. 	
<ul style="list-style-type: none"> ▪ For the transmitter unwanted emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> ▪ Refer as KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
	<ul style="list-style-type: none"> ▪ Refer as KDB 789033, clause G)1) for unwanted emissions into restricted bands.
	<input checked="" type="checkbox"/> Refer as KDB 789033, G)6) Method VB (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW.
	<input checked="" type="checkbox"/> Refer as KDB 789033, clause G)5) (ANSI C63.10, clause 4.1.4.2.2), measurement procedure peak limit.
<ul style="list-style-type: none"> ▪ For radiated measurement. 	
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
	<ul style="list-style-type: none"> ▪ Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
<ul style="list-style-type: none"> ▪ The any unwanted emissions level shall not exceed the fundamental emission level. 	
<ul style="list-style-type: none"> ▪ 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)

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

3.5.6 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E



3.6 Test Equipment and Calibration Data

Instrument for AC Conduction

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102051	9KHz ~ 3.6GHz	03/May/2018	02/May/2019
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	17/Nov/2017	16/Nov/2018
RF Cable-CON	HUBER+SUHNER	RG213/U	0761183202000 1	9kHz ~ 30MHz	06/Oct/2017	05/Oct/2018
AC POWER	APC	AFC-11005G	F310050055	47Hz~63Hz 5~300V	NCR	NCR
Impuls Begrenzer Puls e Limiter	SCHWARZBEC K	VTSD 9561-F	9561-F041	9 kHz ~ 30 MHz	12/Oct/2017	11/Oct/2018

NCR : Non-Calibration Require

Instrument for Radiated Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	31/Oct/2017	30/Oct/2018
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	1GHz ~ 18GHz 3m	01/Nov/2017	31/Oct/2018
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	23/Apr/2018	19/Apr/2019
Microwave System Preamp	KEYSIGHT	83017A	MY53270196	1GHz ~ 26.5GHz	31/Aug/2017	30/Aug/2018
Signal Analyzer	R&S	FSP40	100305	10Hz ~ 40GHz	04/Jan/2018	03/Jan/2019
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	29/Jan/2018	28/Jan/2019
RF Cable-high	SUHNER	SUCOFLEX 106	CB222	1GHz ~ 40GHz	29/Jan/2018	28/Jan/2019
Bilog Antenna	SCHAFFNER	CBL 6112B	2723	30MHz ~ 1GHz	09/Sep/2017	08/Sep/2018
Receiver	R&S	ESCS 30	100354	9kHz ~ 2.75GHz	08/Dec/2017	07/Dec/2018
Broadband Horn Antenna	SCHWARZBEC K	BBHA 9170	BBHA 9170154	18GHz ~ 40GHz	06/Feb/ 2018	05/Feb/2019
Double Ridged Guide Horn Antenna	SCHWARZBEC K	BBHA 9120 D	BBHA 9120 D 1531	1GHz ~ 18GHz	18/Apr/ 2018	17/Apr/2019
Amplifier	MITEQ	TTA1840-35-HG	1864481	18GHz ~ 40GHz	24/Aug/2017	23/Aug/2018
Loop Antenna	TESEQ	HLA 6120	31244	9kHz ~ 30MHz	28/Mar/2018	27/Mar/2019



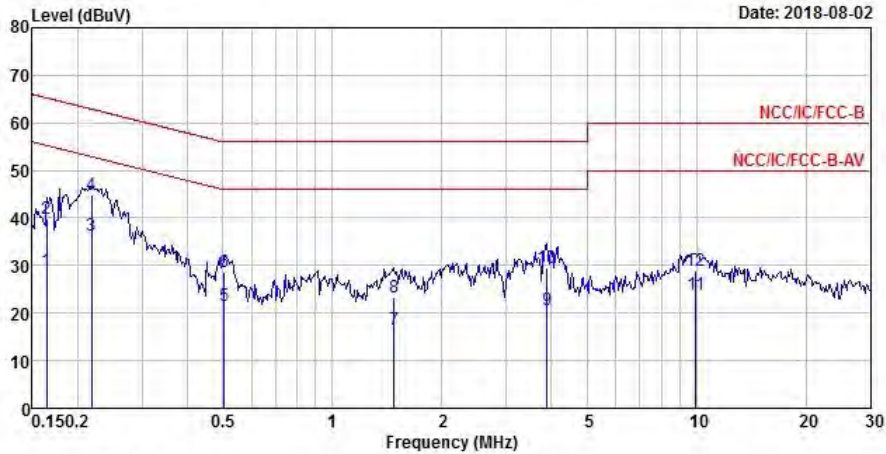
Instrument for Conducted Test

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101013	9kHz~40GHz	05/Feb/2018	04/Feb/2019
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	05/Feb/2018	04/Feb/2019
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	05/Feb/2018	04/Feb/2019
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10710/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10709/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-1m	HUBER+SUHNER	SUCOFLEX_104	MY37332/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
RF Cable-1m	HUBER+SUHNER	SUCOFLEX_104	MY37333/4	30MHz ~ 26.5GHz	25/Aug/2017	24/Aug/2018
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	26/Jul/2018	25/Jul/2019



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Neutral
Operating Function	Adapter mode		



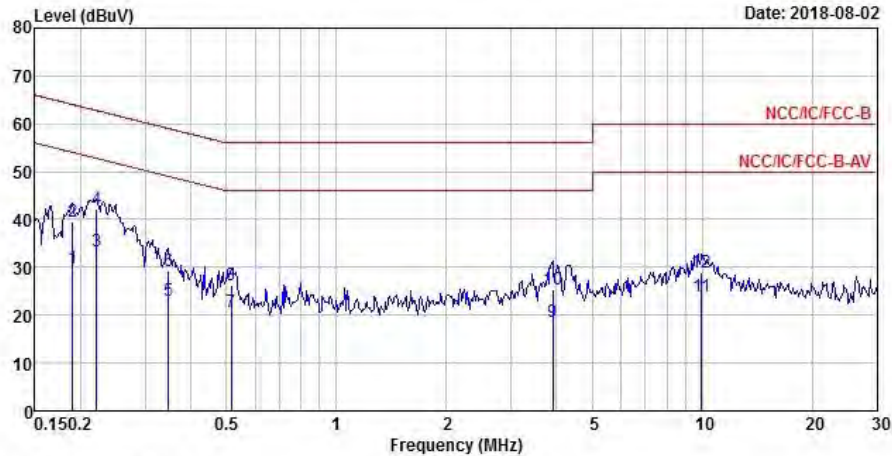
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.16	29.03	-26.22	55.25	19.37	9.63	0.03	Average
2	0.16	39.98	-25.27	65.25	30.32	9.63	0.03	QP
3	0.22	36.27	-16.61	52.88	26.64	9.62	0.01	Average
4	0.22	45.01	-17.87	62.88	35.38	9.62	0.01	QP
5	0.50	21.55	-24.45	46.00	11.87	9.61	0.07	Average
6	0.50	28.57	-27.43	56.00	18.89	9.61	0.07	QP
7	1.48	16.44	-29.56	46.00	6.81	9.63	0.00	Average
8	1.48	23.31	-32.69	56.00	13.68	9.63	0.00	QP
9	3.88	20.79	-25.21	46.00	11.07	9.64	0.08	Average
10	3.88	29.62	-26.38	56.00	19.90	9.64	0.08	QP
11	9.97	23.99	-26.01	50.00	14.10	9.69	0.20	Average
12	9.97	29.04	-30.96	60.00	19.15	9.69	0.20	QP

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



AC Power-line Conducted Emissions Result

Operating Mode	1	Power Phase	Line
Operating Function	Adapter mode		



	Freq	Level	Over	Limit	Read	LISN	Cable	Remark
	MHz	dBuV	Limit	Line	Level	Factor	Loss	
			dB	dBuV	dBuV	dB	dB	
1	0.19	29.93	-24.09	54.02	20.30	9.62	0.01	Average
2	0.19	39.50	-24.52	64.02	29.87	9.62	0.01	QP
3 MAX	0.22	33.32	-19.47	52.79	23.69	9.62	0.01	Average
4	0.22	42.32	-20.47	62.79	32.69	9.62	0.01	QP
5	0.35	23.13	-25.87	49.00	13.44	9.61	0.08	Average
6	0.35	29.15	-29.85	59.00	19.46	9.61	0.08	QP
7	0.52	20.71	-25.29	46.00	11.03	9.61	0.07	Average
8	0.52	26.35	-29.65	56.00	16.67	9.61	0.07	QP
9	3.90	18.66	-27.34	46.00	8.95	9.63	0.08	Average
10	3.90	25.53	-30.47	56.00	15.82	9.63	0.08	QP
11	9.97	23.81	-26.19	50.00	13.95	9.66	0.20	Average
12	9.97	28.94	-31.06	60.00	19.08	9.66	0.20	QP

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.
 Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

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)_2TX	35.05M	16.842M	16M8D1D	21.525M	16.642M
802.11ac_VHT20_Nss1,(MCS0)_2TX	42.6M	18.191M	18M2D1D	21.9M	17.766M
802.11ac_VHT40_Nss1,(MCS0)_2TX	92.6M	37.331M	37M3D1D	39.95M	36.232M
802.11ac_VHT80_Nss1,(MCS0)_2TX	82M	75.762M	75M8D1D	81.9M	75.762M
5.25-5.35GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	37.3M	17.016M	17M0D1D	21.675M	16.617M
802.11ac_VHT20_Nss1,(MCS0)_2TX	46.525M	18.466M	18M5D1D	21.725M	17.791M
802.11ac_VHT40_Nss1,(MCS0)_2TX	98.9M	37.431M	37M4D1D	39.75M	36.232M
802.11ac_VHT80_Nss1,(MCS0)_2TX	82.1M	75.762M	75M8D1D	81.5M	75.562M
5.47-5.725GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	36.325M	17.141M	17M1D1D	21.525M	13.763M
802.11ac_VHT20_Nss1,(MCS0)_2TX	46.05M	19.615M	19M6D1D	21.675M	14.348M
802.11ac_VHT40_Nss1,(MCS0)_2TX	98.55M	37.481M	37M5D1D	39.65M	33.373M
802.11ac_VHT80_Nss1,(MCS0)_2TX	138.4M	76.162M	76M2D1D	81.8M	73.013M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	16.35M	25.287M	25M3D1D	3.14M	11.134M
802.11ac_VHT20_Nss1,(MCS0)_2TX	17.6M	26.912M	26M9D1D	3.76M	12.354M
802.11ac_VHT40_Nss1,(MCS0)_2TX	36.35M	52.124M	52M1D1D	3.14M	26.927M
802.11ac_VHT80_Nss1,(MCS0)_2TX	75.7M	75.862M	75M9D1D	2.84M	37.201M

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

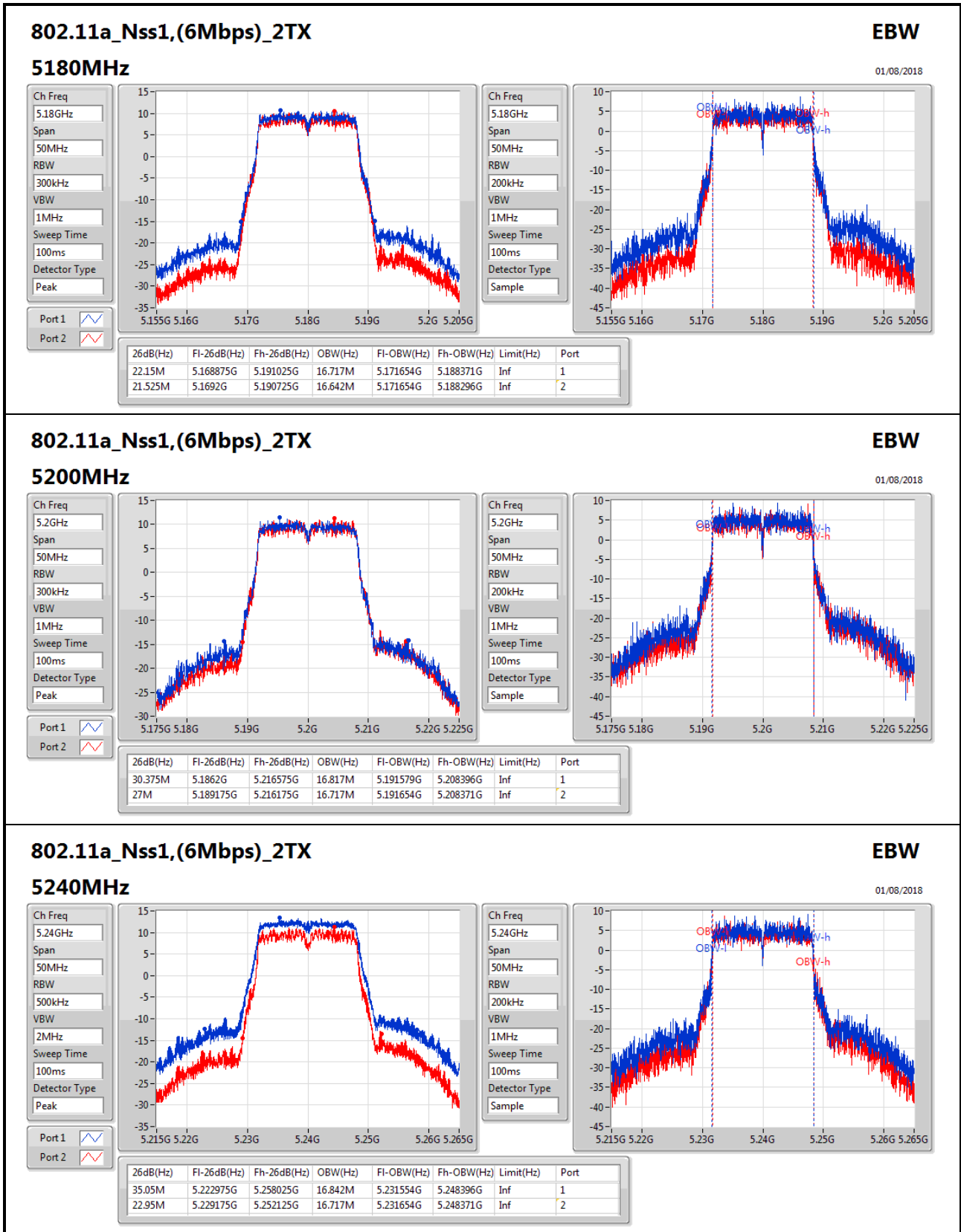
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	Inf	22.15M	16.717M	21.525M	16.642M
5200MHz_TnomVnom	Pass	Inf	30.375M	16.817M	27M	16.717M
5240MHz_TnomVnom	Pass	Inf	35.05M	16.842M	22.95M	16.717M
5260MHz_TnomVnom	Pass	Inf	37.3M	16.892M	26.95M	16.792M
5300MHz_TnomVnom	Pass	Inf	37.275M	17.016M	31.125M	16.792M
5320MHz_TnomVnom	Pass	Inf	21.775M	16.642M	21.675M	16.617M
5500MHz_TnomVnom	Pass	Inf	21.575M	16.642M	21.6M	16.617M
5580MHz_TnomVnom	Pass	Inf	36.325M	16.892M	35.125M	17.141M
5700MHz_TnomVnom	Pass	Inf	21.775M	16.642M	21.525M	16.642M
5720MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	Inf	22.155M	13.763M	24.36M	14.183M
5720MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	500k	3.14M	11.134M	3.16M	11.414M
5745MHz_TnomVnom	Pass	500k	16.05M	24.188M	16.35M	25.287M
5785MHz_TnomVnom	Pass	500k	16.3M	23.413M	16.325M	22.314M
5825MHz_TnomVnom	Pass	500k	16.3M	21.639M	16.325M	20.79M
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	Inf	21.9M	17.841M	21.925M	17.766M
5200MHz_TnomVnom	Pass	Inf	40.525M	18.116M	39.5M	18.091M
5240MHz_TnomVnom	Pass	Inf	42.6M	18.141M	38.775M	18.191M
5260MHz_TnomVnom	Pass	Inf	41.575M	18.241M	39.175M	18.166M
5300MHz_TnomVnom	Pass	Inf	46.525M	18.466M	32.025M	18.141M
5320MHz_TnomVnom	Pass	Inf	22.025M	17.841M	21.725M	17.791M
5500MHz_TnomVnom	Pass	Inf	21.975M	17.741M	21.75M	17.791M
5580MHz_TnomVnom	Pass	Inf	46.05M	19.115M	45.6M	19.615M
5700MHz_TnomVnom	Pass	Inf	21.925M	17.866M	21.675M	17.791M
5720MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	Inf	23.595M	14.348M	27.165M	14.768M
5720MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	500k	3.76M	12.354M	3.86M	12.694M
5745MHz_TnomVnom	Pass	500k	17.575M	26.462M	17.55M	26.912M
5785MHz_TnomVnom	Pass	500k	16.6M	25.912M	17.6M	25.162M
5825MHz_TnomVnom	Pass	500k	17.525M	23.413M	17.55M	24.363M
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz_TnomVnom	Pass	Inf	40.35M	36.232M	39.95M	36.282M
5230MHz_TnomVnom	Pass	Inf	91.15M	36.582M	92.6M	37.331M
5270MHz_TnomVnom	Pass	Inf	92.75M	36.682M	98.9M	37.431M
5310MHz_TnomVnom	Pass	Inf	40.4M	36.232M	39.75M	36.232M
5510MHz_TnomVnom	Pass	Inf	40.5M	36.232M	39.65M	36.282M
5550MHz_TnomVnom	Pass	Inf	92.6M	36.882M	98.55M	37.481M
5670MHz_TnomVnom	Pass	Inf	40.3M	36.332M	44.95M	36.382M
5710MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	Inf	62.65M	33.373M	65.415M	34.388M
5710MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	500k	3.14M	26.927M	3.14M	27.586M
5755MHz_TnomVnom	Pass	500k	36.3M	50.975M	36.25M	52.124M
5795MHz_TnomVnom	Pass	500k	36.35M	50.375M	36.35M	50.775M
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz_TnomVnom	Pass	Inf	82M	75.762M	81.9M	75.762M

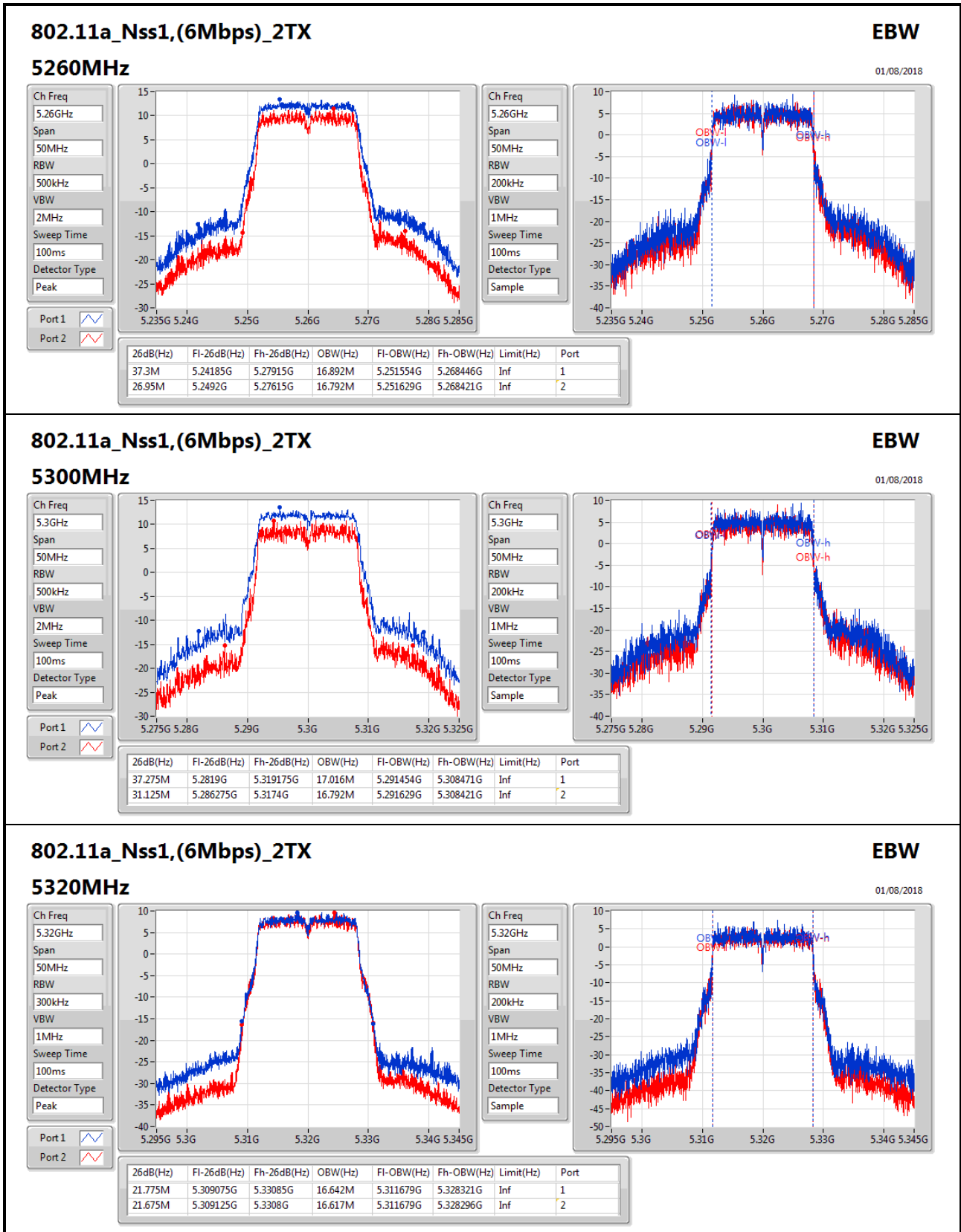


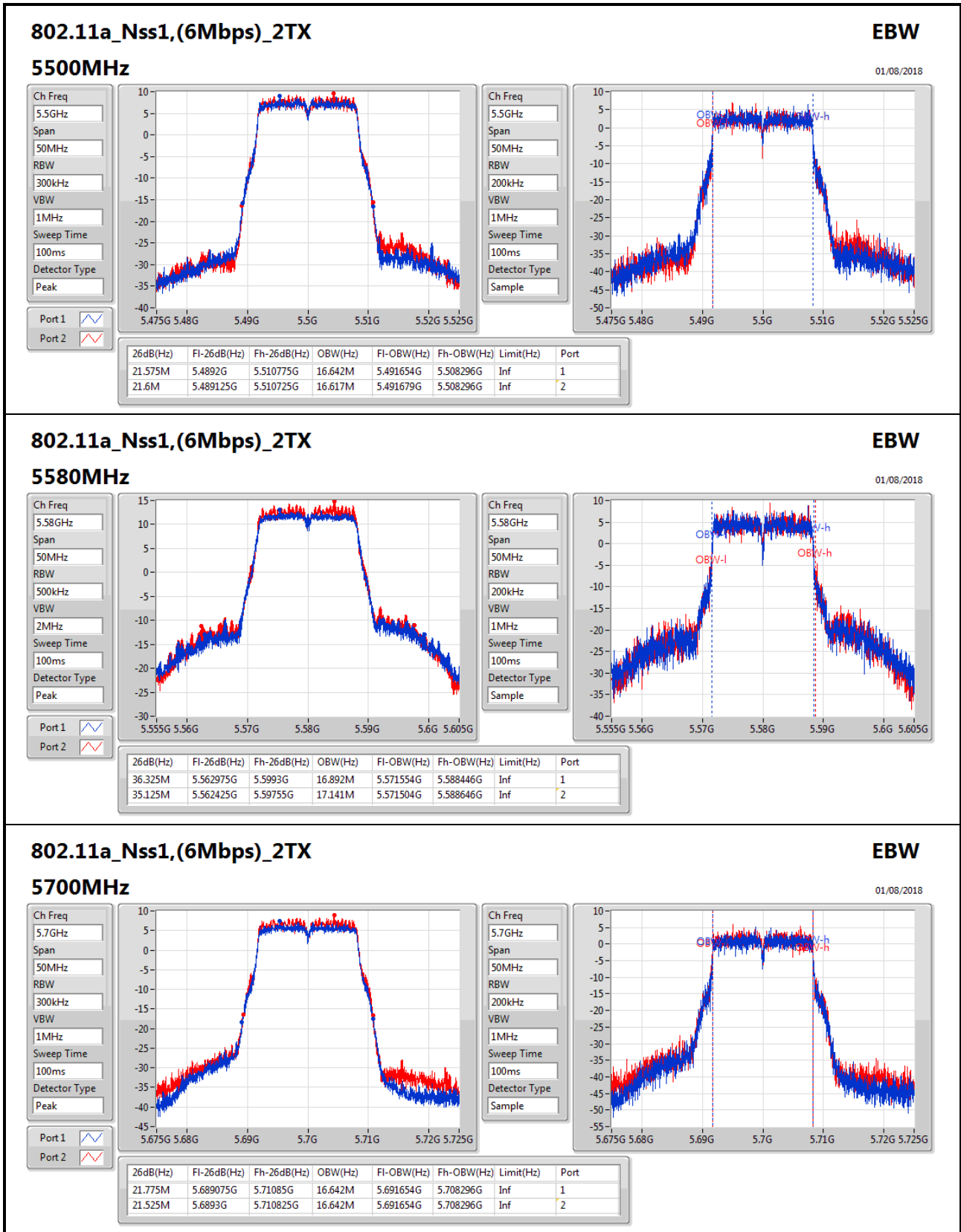
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
5290MHz_TnomVnom	Pass	Inf	82.1M	75.562M	81.5M	75.762M
5530MHz_TnomVnom	Pass	Inf	82.9M	75.662M	81.8M	75.862M
5610MHz_TnomVnom	Pass	Inf	138.4M	76.162M	134.6M	76.162M
5690MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	Inf	122.175M	73.013M	135.9M	73.238M
5690MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	500k	2.84M	37.201M	3.12M	37.301M
5775MHz_TnomVnom	Pass	500k	75.5M	75.662M	75.7M	75.862M

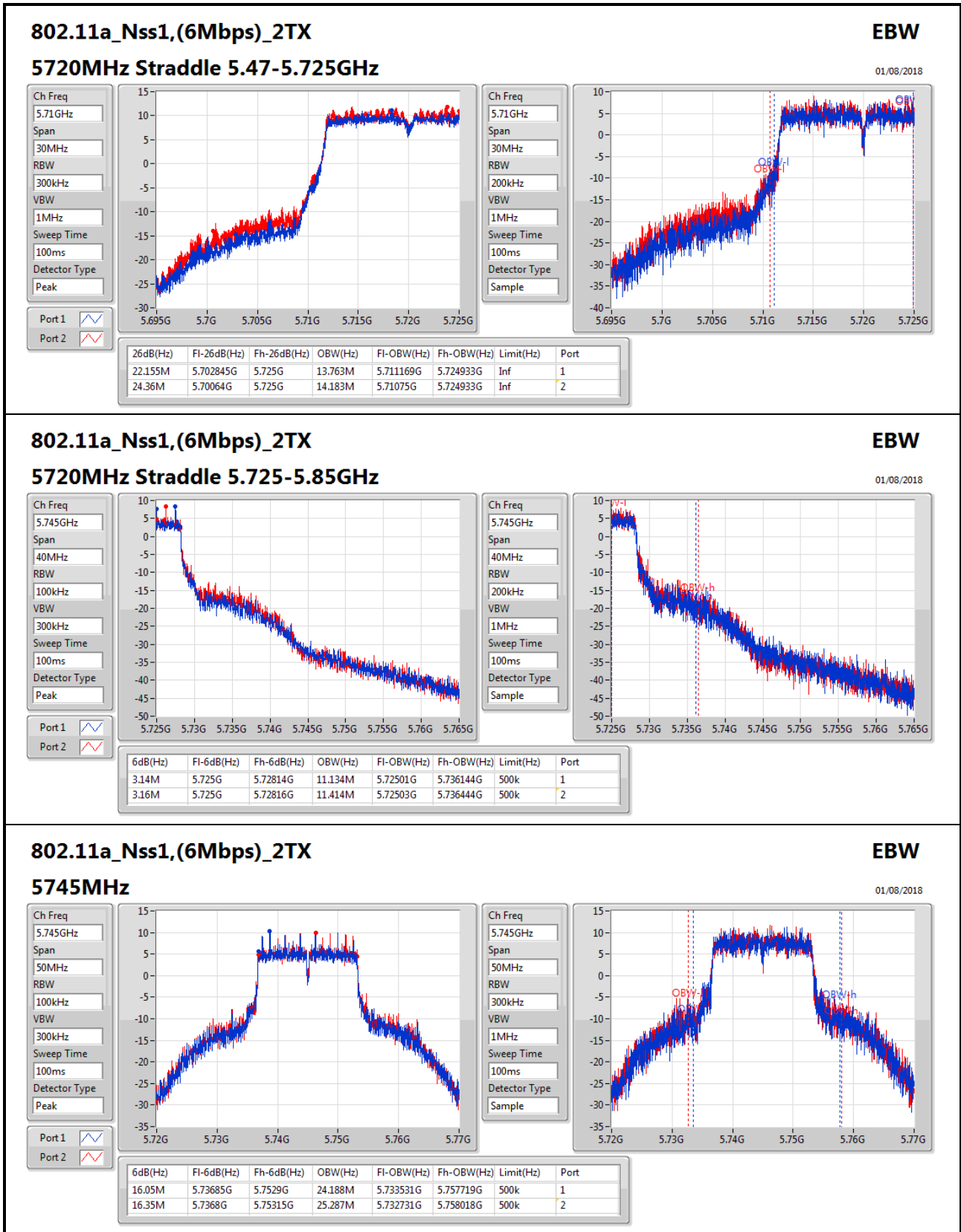
Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

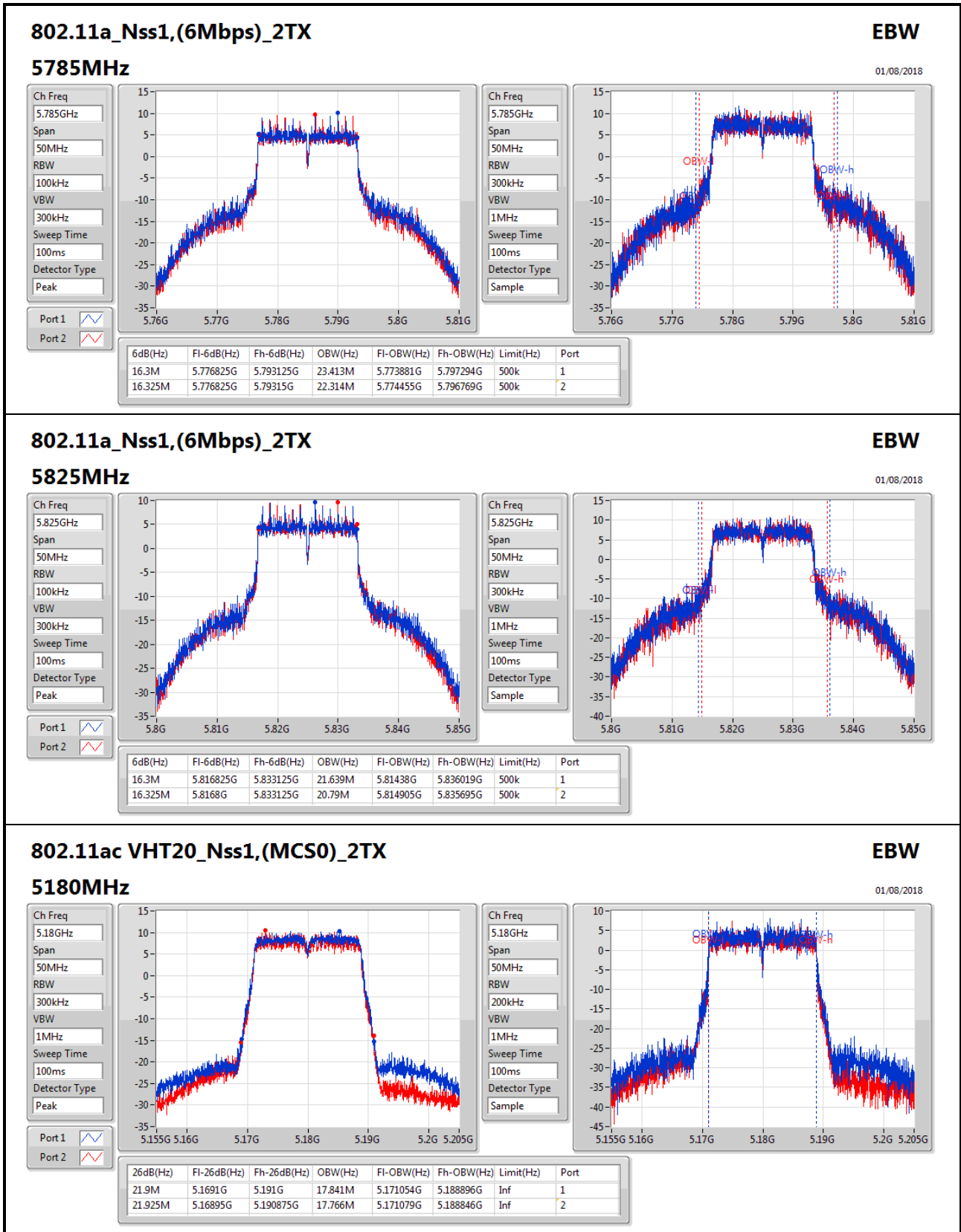
Port X-OBW = Port X 99% occupied bandwidth;

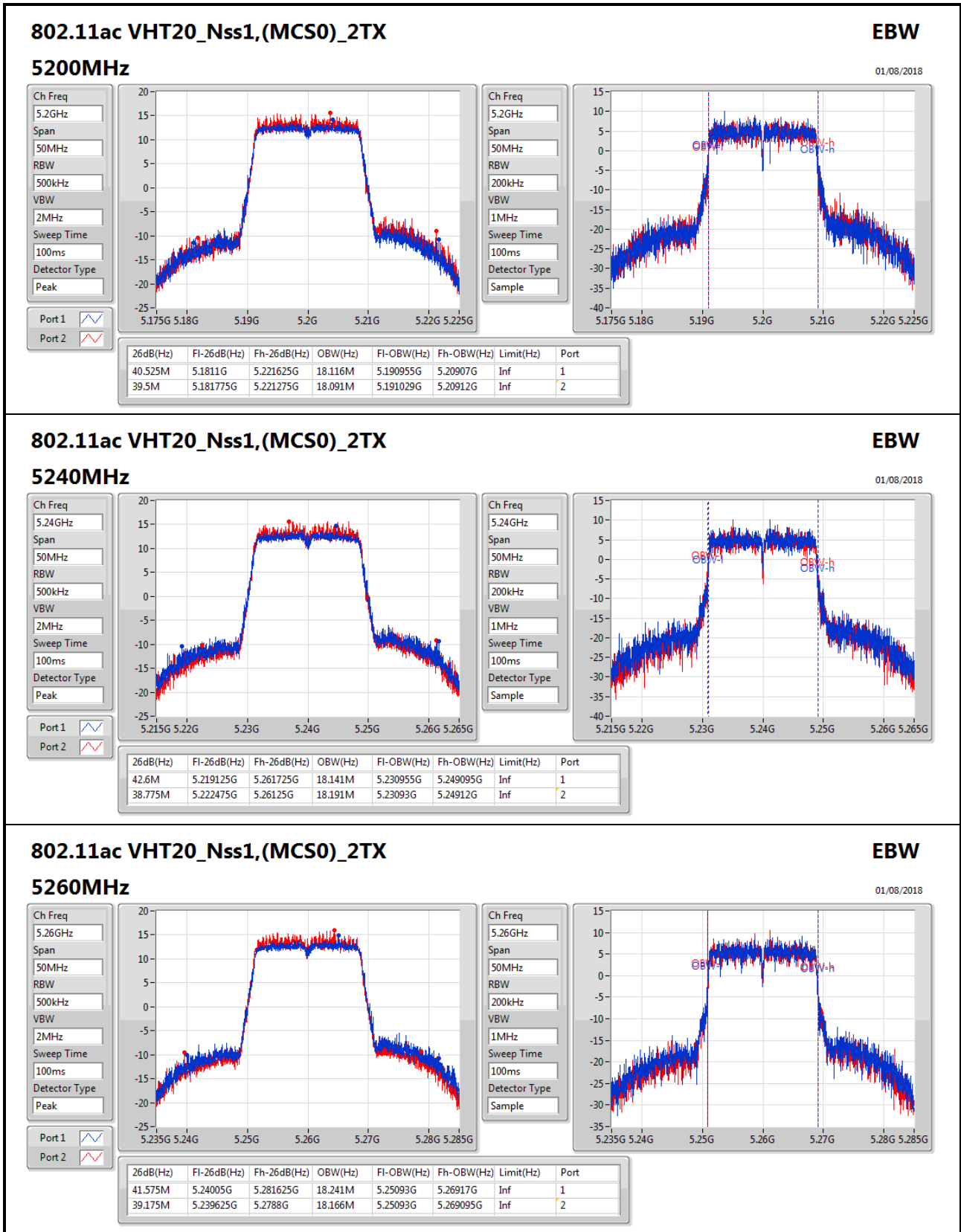


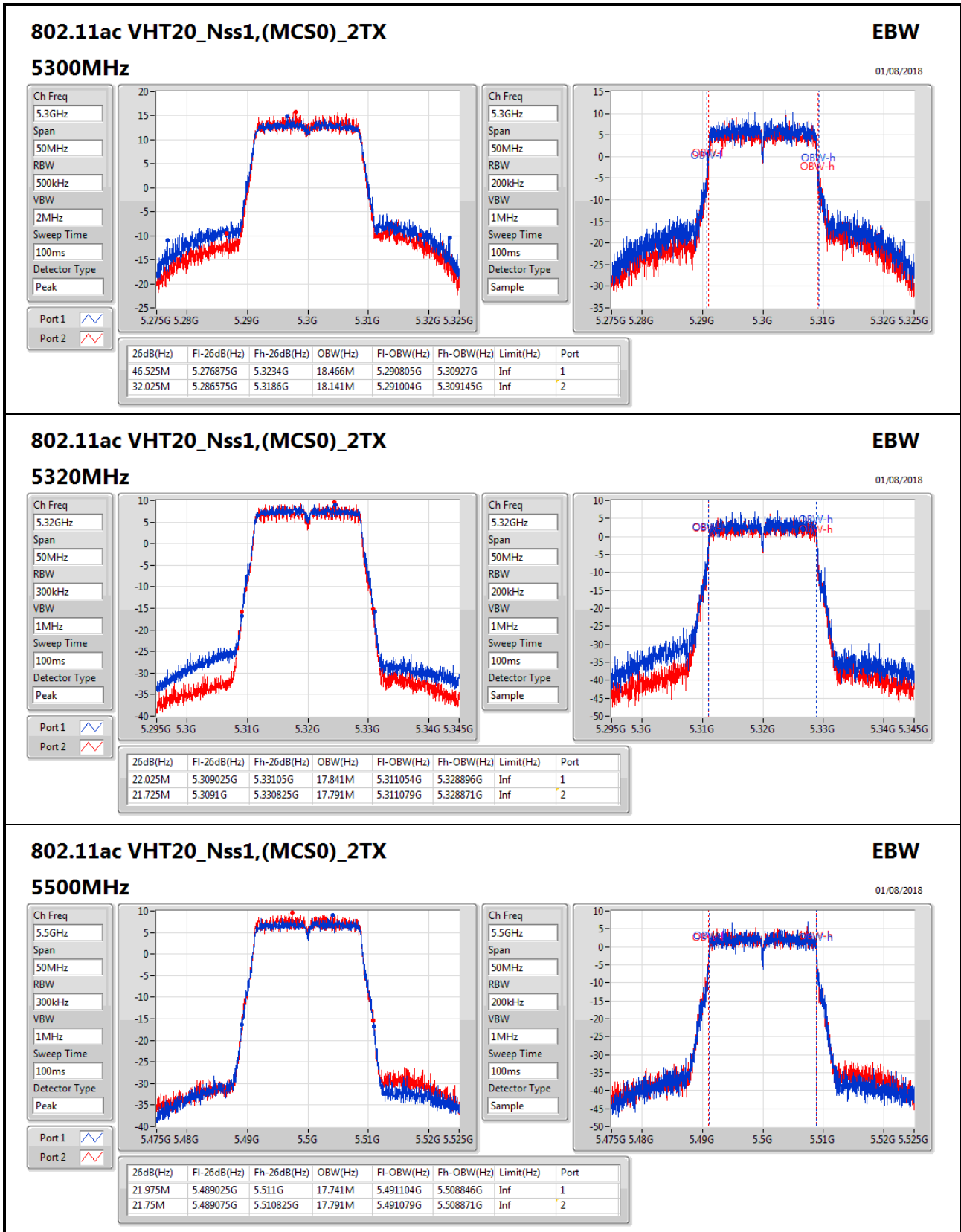


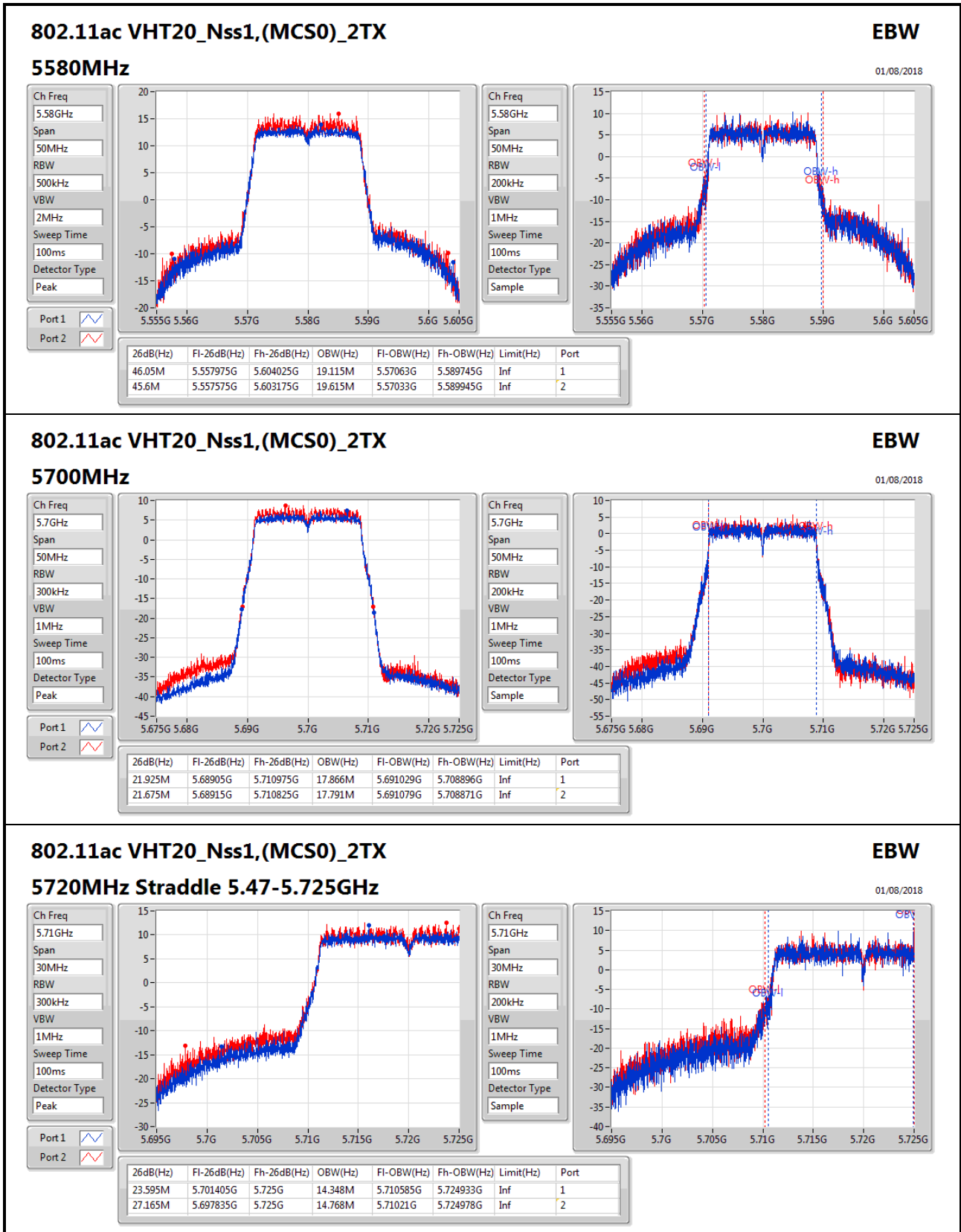


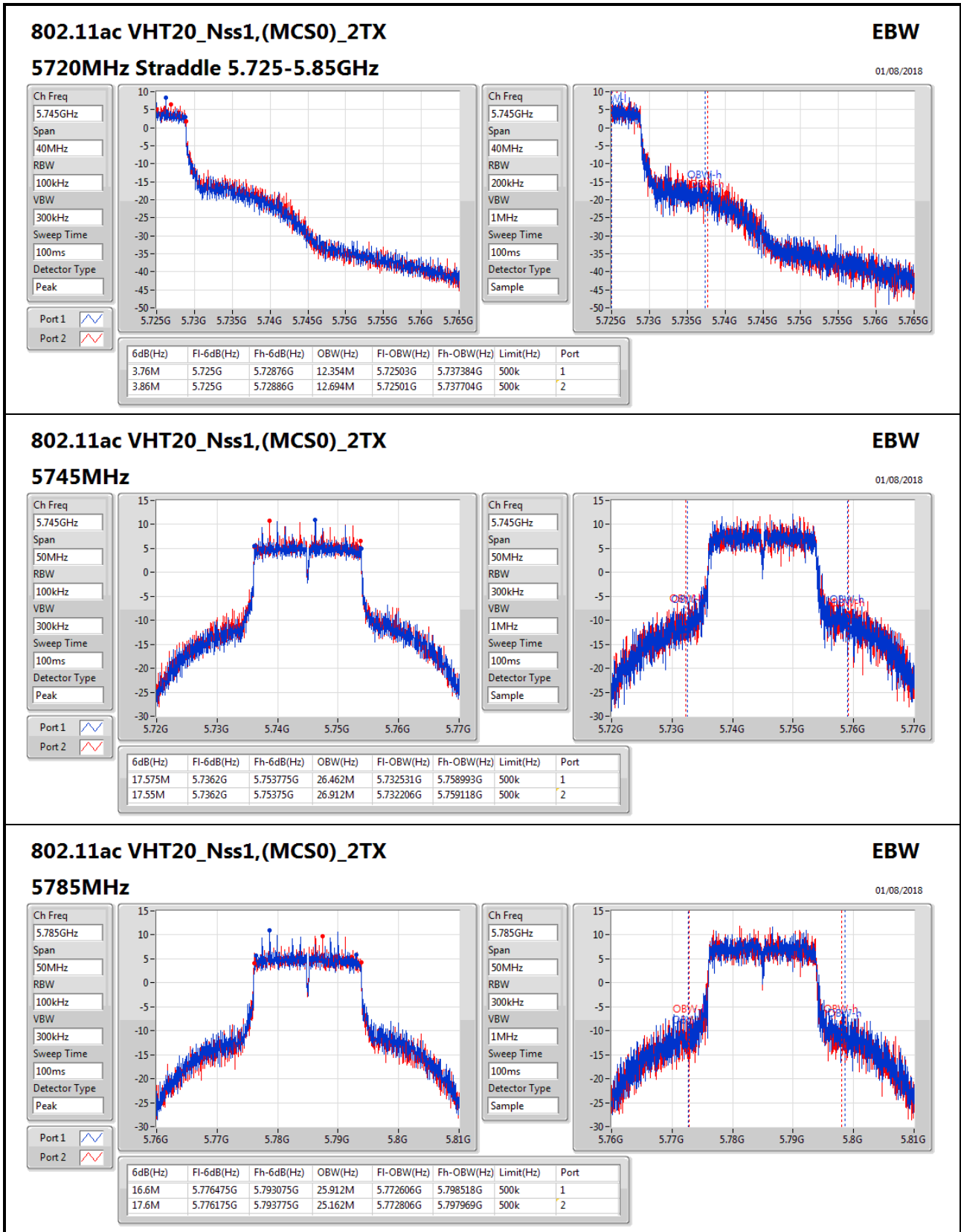


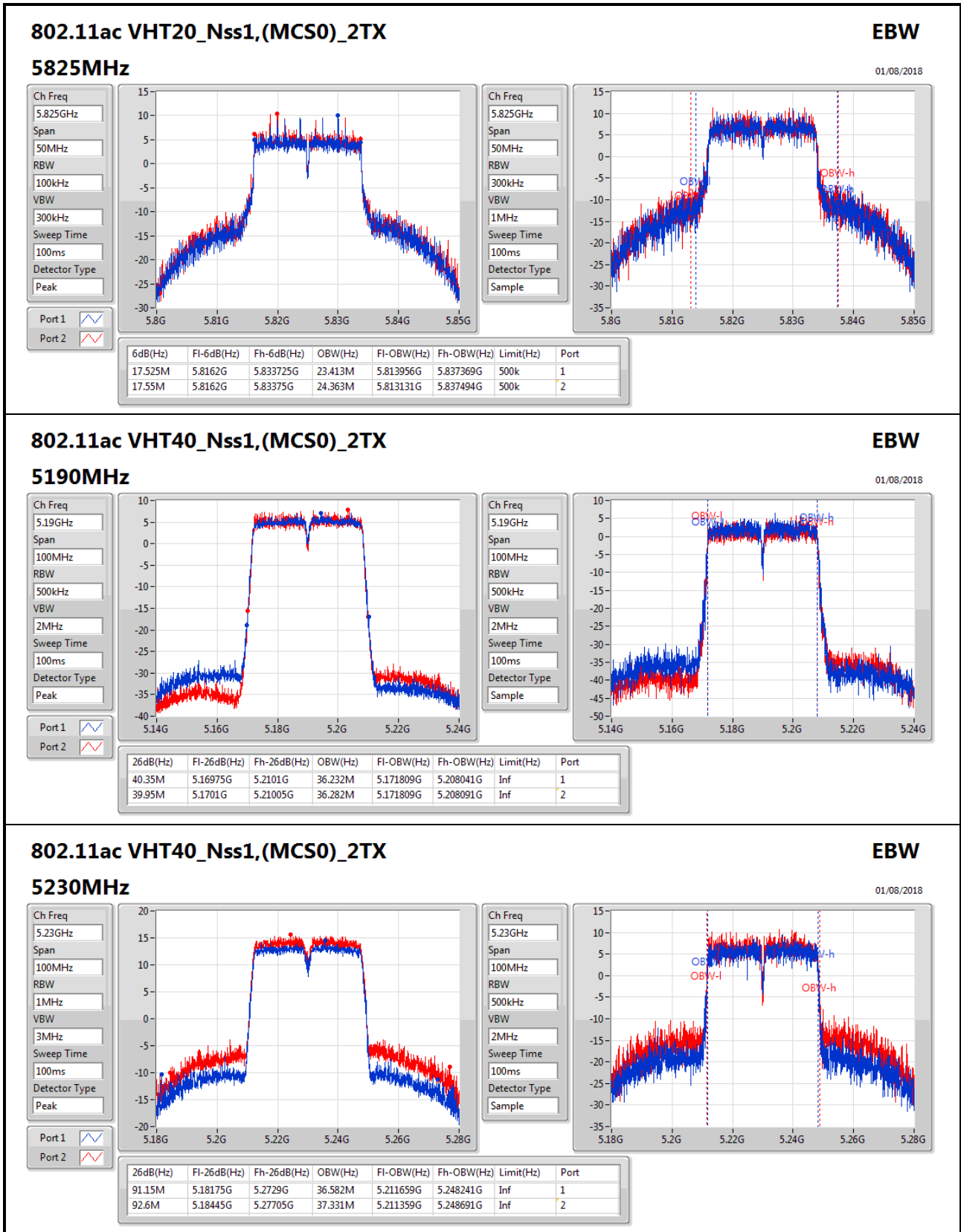


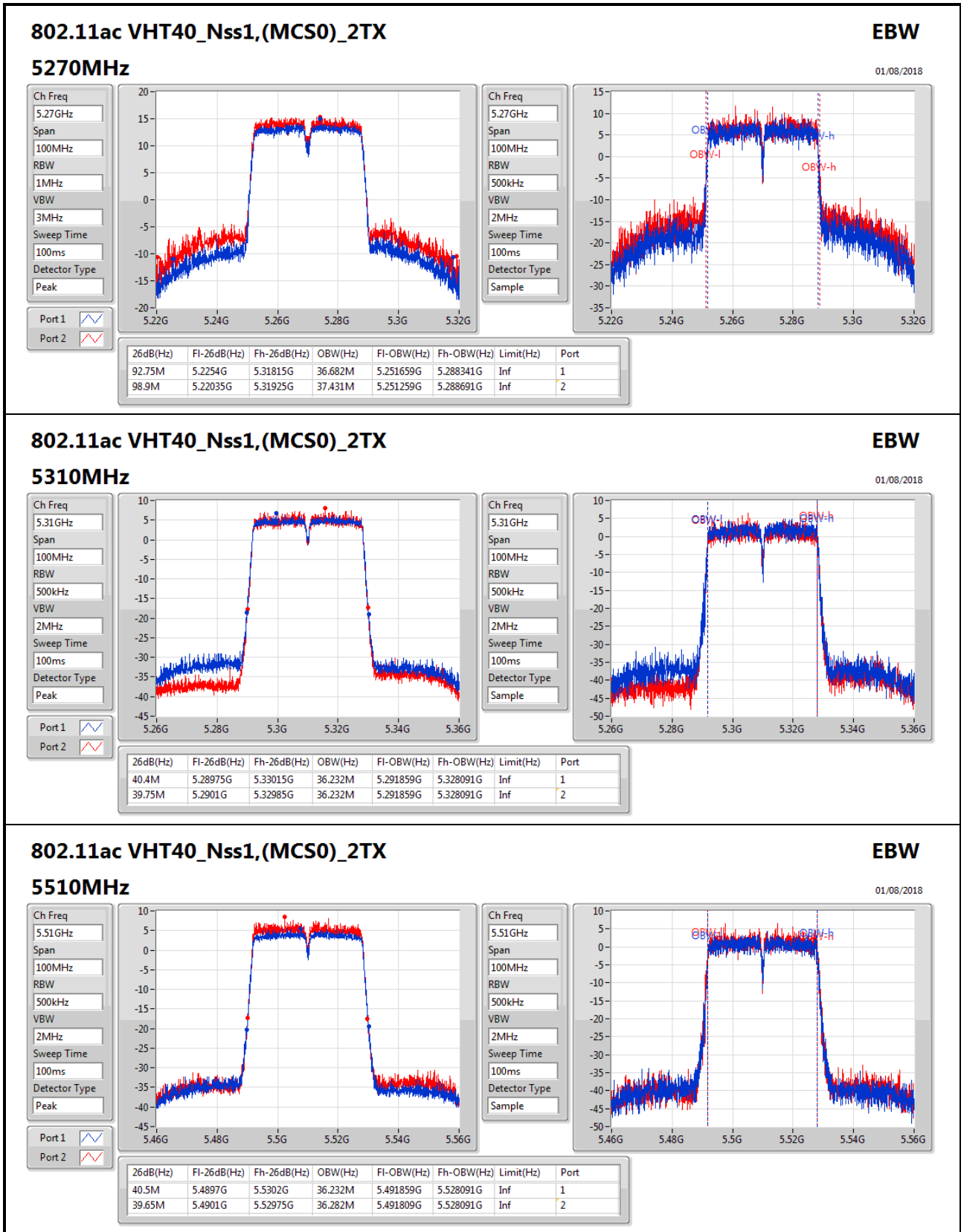


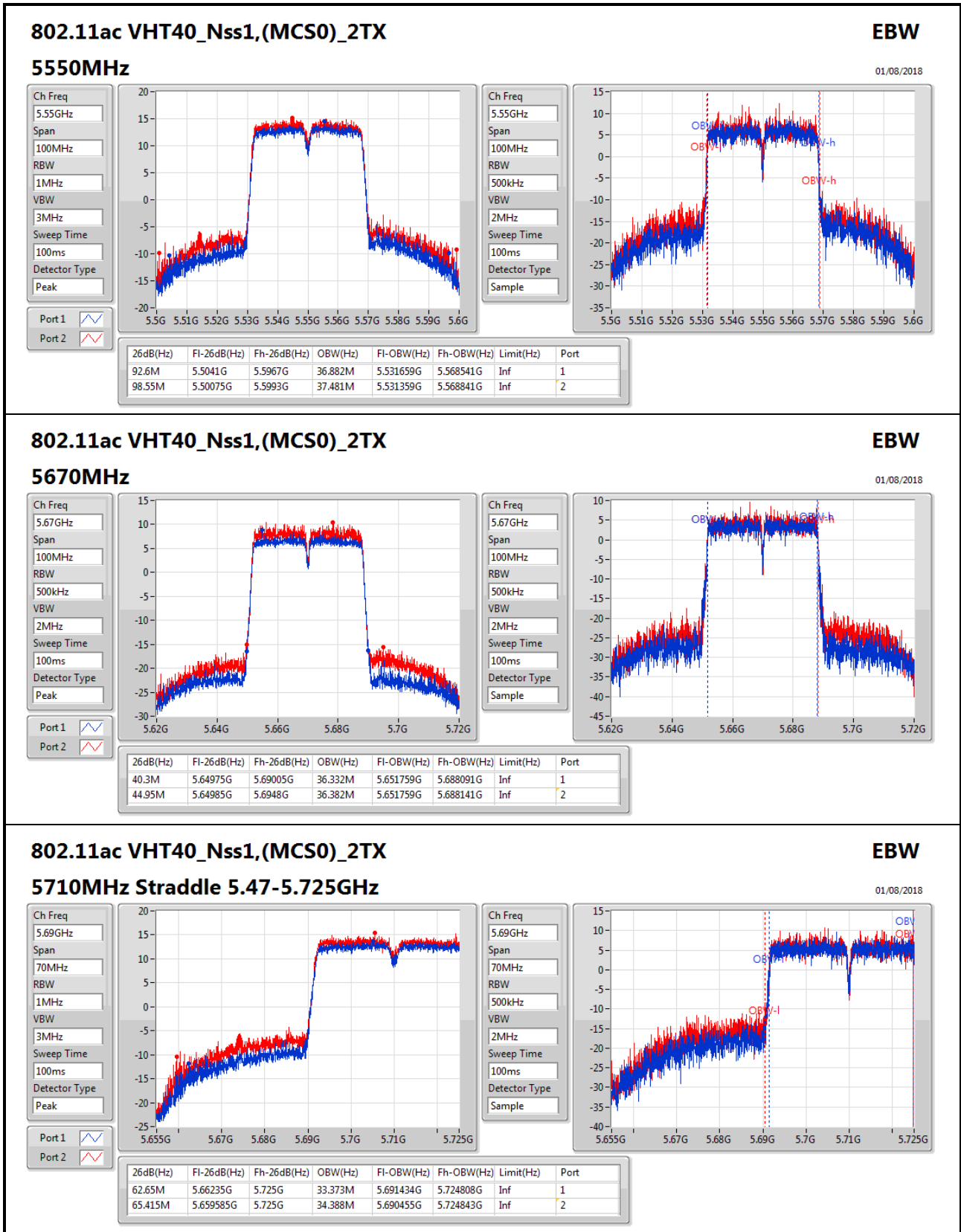


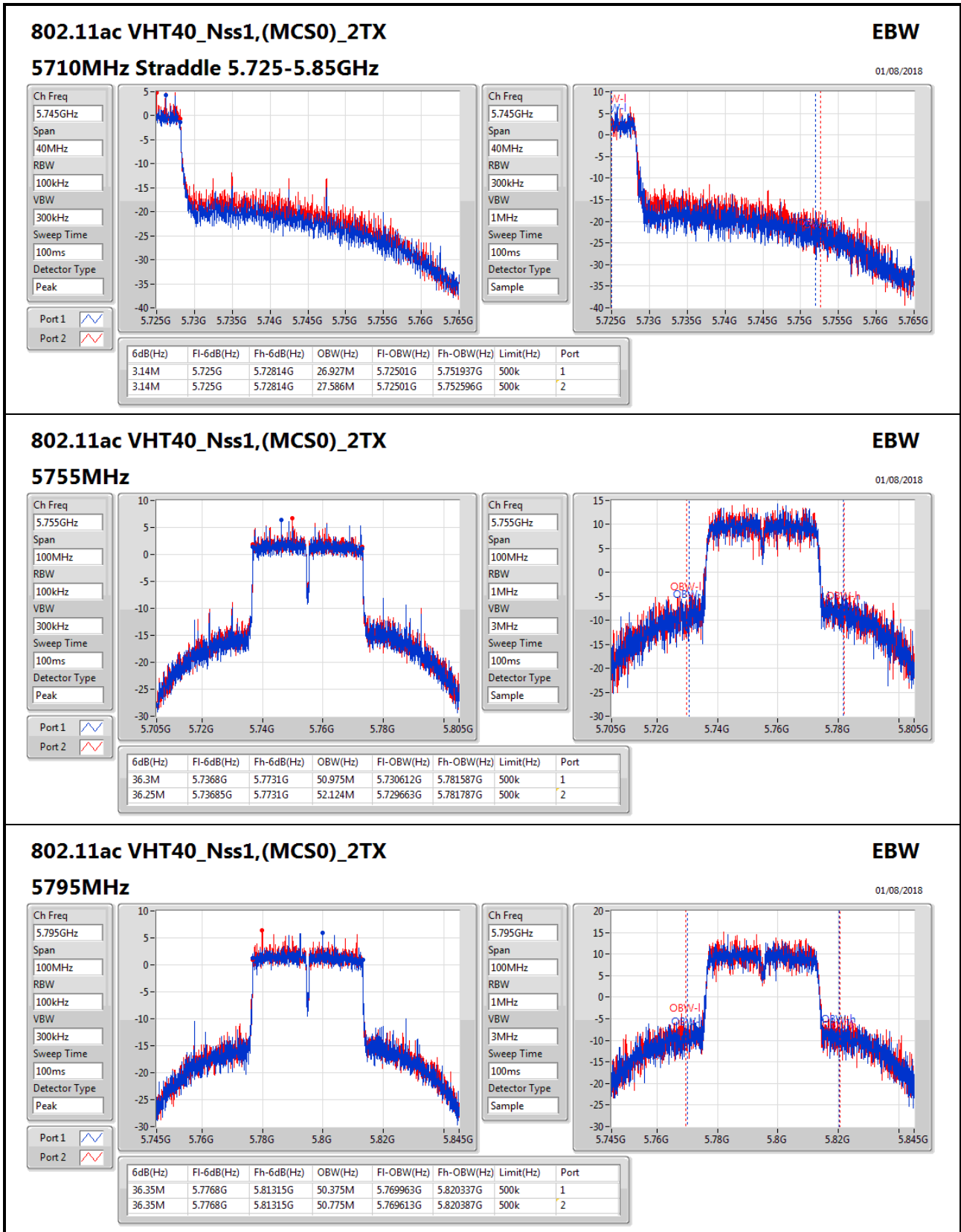


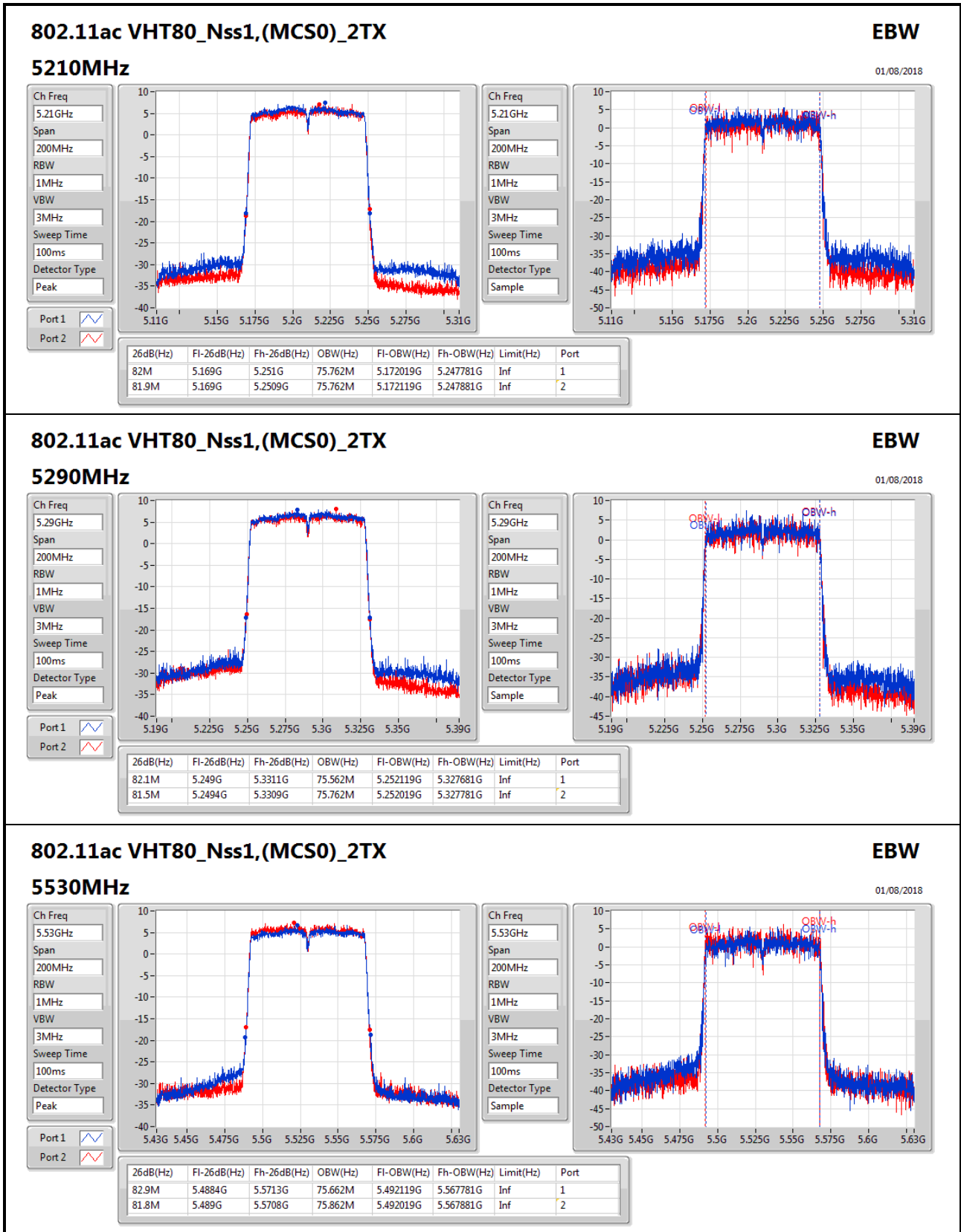


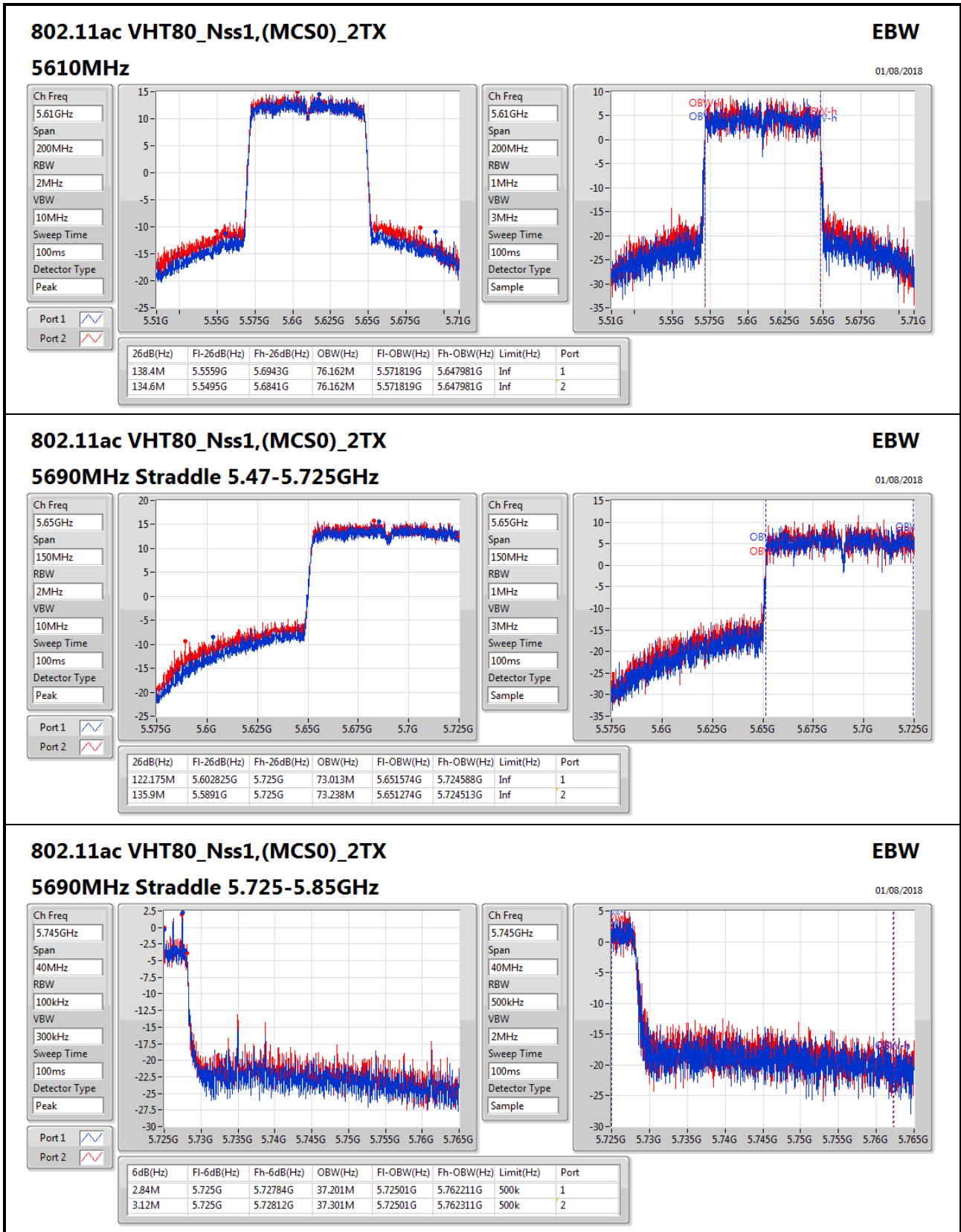


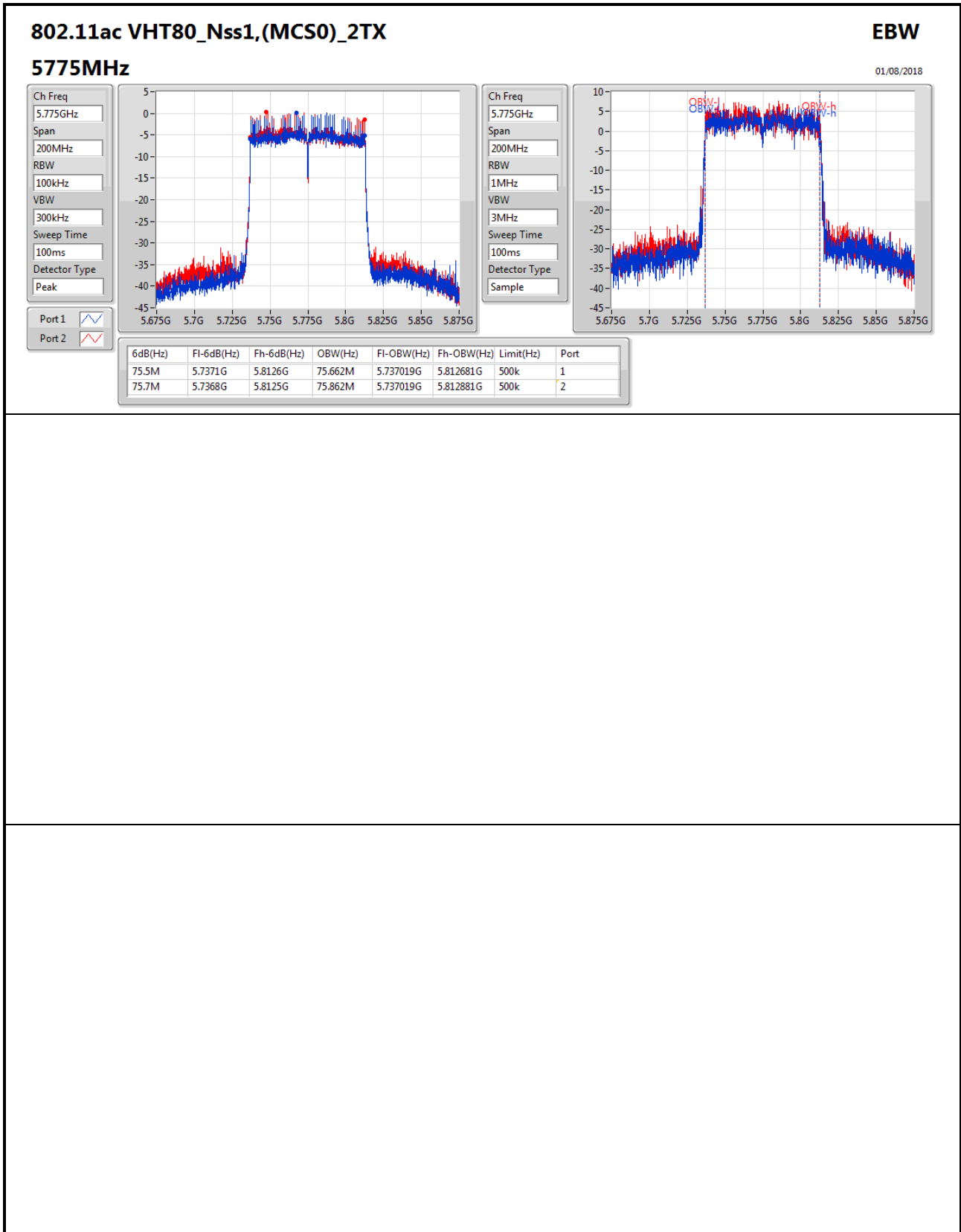














Summary

Mode	Total Power (dBm)	Total Power (W)	EIRP (dBm)	EIRP (W)
5.15-5.25GHz	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	22.63	0.18323	26.30	0.42658
802.11ac VHT20_Nss1,(MCS0)_2TX	23.31	0.21429	26.98	0.49888
802.11ac VHT40_Nss1,(MCS0)_2TX	23.03	0.20091	26.70	0.46774
802.11ac VHT80_Nss1,(MCS0)_2TX	18.17	0.06561	21.84	0.15276
5.25-5.35GHz	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	22.65	0.18408	26.32	0.42855
802.11ac VHT20_Nss1,(MCS0)_2TX	23.27	0.21232	26.94	0.49431
802.11ac VHT40_Nss1,(MCS0)_2TX	23.07	0.20277	26.74	0.47206
802.11ac VHT80_Nss1,(MCS0)_2TX	18.85	0.07674	22.52	0.17865
5.47-5.725GHz	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	22.50	0.17783	26.17	0.41400
802.11ac VHT20_Nss1,(MCS0)_2TX	23.27	0.21232	26.94	0.49431
802.11ac VHT40_Nss1,(MCS0)_2TX	22.86	0.19320	26.53	0.44978
802.11ac VHT80_Nss1,(MCS0)_2TX	22.80	0.19055	26.47	0.44361
5.725-5.85GHz	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	23.74	0.23659	27.41	0.55081
802.11ac VHT20_Nss1,(MCS0)_2TX	23.98	0.25003	27.65	0.58210
802.11ac VHT40_Nss1,(MCS0)_2TX	23.43	0.22029	27.10	0.51286
802.11ac VHT80_Nss1,(MCS0)_2TX	19.48	0.08872	23.15	0.20654



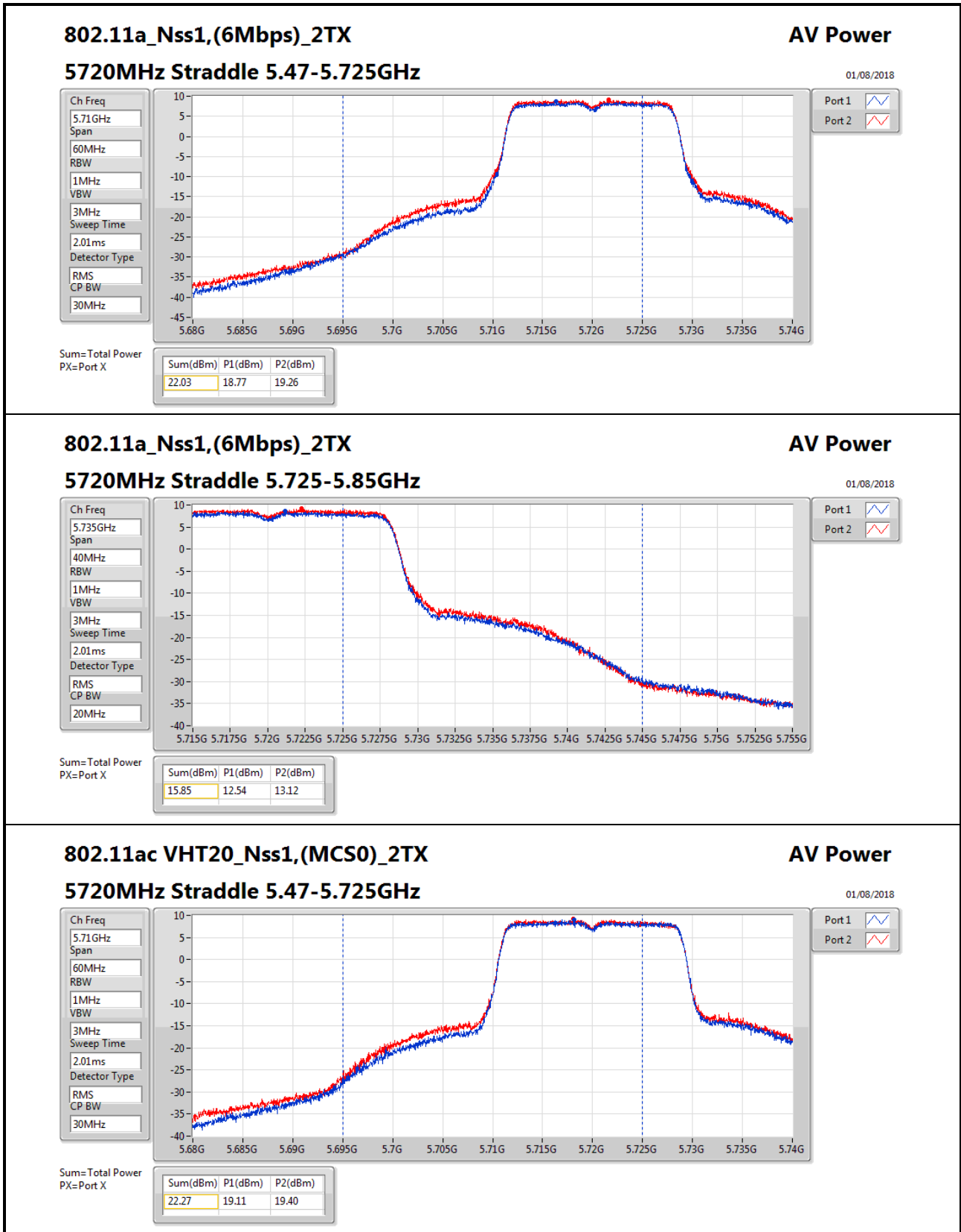
Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	3.67	19.21	18.40	21.83	24.00	25.50	30.00
5200MHz_TnomVnom	Pass	3.67	19.78	19.31	22.56	24.00	26.23	30.00
5240MHz_TnomVnom	Pass	3.67	19.96	19.25	22.63	24.00	26.30	30.00
5260MHz_TnomVnom	Pass	3.67	19.81	19.46	22.65	24.00	26.32	30.00
5300MHz_TnomVnom	Pass	3.67	19.94	19.27	22.63	24.00	26.30	30.00
5320MHz_TnomVnom	Pass	3.67	18.17	17.34	20.79	24.00	24.46	30.00
5500MHz_TnomVnom	Pass	3.67	17.57	17.48	20.54	24.00	24.21	30.00
5580MHz_TnomVnom	Pass	3.67	19.42	19.56	22.50	24.00	26.17	30.00
5700MHz_TnomVnom	Pass	3.67	15.70	16.40	19.07	24.00	22.74	30.00
5720MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	3.67	18.77	19.26	22.03	24.00	25.70	30.00
5720MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	3.67	12.54	13.12	15.85	30.00	19.52	36.00
5745MHz_TnomVnom	Pass	3.67	20.59	20.87	23.74	30.00	27.41	36.00
5785MHz_TnomVnom	Pass	3.67	20.45	20.45	23.46	30.00	27.13	36.00
5825MHz_TnomVnom	Pass	3.67	20.13	20.10	23.13	30.00	26.80	36.00
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	3.67	18.99	18.04	21.55	24.00	25.22	30.00
5200MHz_TnomVnom	Pass	3.67	20.37	20.17	23.28	24.00	26.95	30.00
5240MHz_TnomVnom	Pass	3.67	20.37	20.23	23.31	24.00	26.98	30.00
5260MHz_TnomVnom	Pass	3.67	20.40	20.11	23.27	24.00	26.94	30.00
5300MHz_TnomVnom	Pass	3.67	20.51	19.91	23.23	24.00	26.90	30.00
5320MHz_TnomVnom	Pass	3.67	17.60	16.90	20.27	24.00	23.94	30.00
5500MHz_TnomVnom	Pass	3.67	17.04	17.12	20.09	24.00	23.76	30.00
5580MHz_TnomVnom	Pass	3.67	20.19	20.33	23.27	24.00	26.94	30.00
5700MHz_TnomVnom	Pass	3.67	15.72	16.30	19.03	24.00	22.70	30.00
5720MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	3.67	19.11	19.40	22.27	24.00	25.94	30.00
5720MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	3.67	13.76	13.88	16.83	30.00	20.50	36.00
5745MHz_TnomVnom	Pass	3.67	20.95	20.99	23.98	30.00	27.65	36.00
5785MHz_TnomVnom	Pass	3.67	20.81	20.77	23.80	30.00	27.47	36.00
5825MHz_TnomVnom	Pass	3.67	20.34	20.62	23.49	30.00	27.16	36.00
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5190MHz_TnomVnom	Pass	3.67	16.17	15.33	18.78	24.00	22.45	30.00
5230MHz_TnomVnom	Pass	3.67	19.57	20.42	23.03	24.00	26.70	30.00
5270MHz_TnomVnom	Pass	3.67	19.75	20.34	23.07	24.00	26.74	30.00
5310MHz_TnomVnom	Pass	3.67	15.41	15.00	18.22	24.00	21.89	30.00
5510MHz_TnomVnom	Pass	3.67	14.81	15.29	18.07	24.00	21.74	30.00
5550MHz_TnomVnom	Pass	3.67	19.60	20.09	22.86	24.00	26.53	30.00
5670MHz_TnomVnom	Pass	3.67	17.51	18.05	20.80	24.00	24.47	30.00
5710MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	3.67	19.23	19.76	22.51	24.00	26.18	30.00
5710MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	3.67	8.96	9.36	12.17	30.00	15.84	36.00
5755MHz_TnomVnom	Pass	3.67	20.34	20.49	23.43	30.00	27.10	36.00
5795MHz_TnomVnom	Pass	3.67	20.20	20.17	23.20	30.00	26.87	36.00
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5210MHz_TnomVnom	Pass	3.67	15.49	14.80	18.17	24.00	21.84	30.00



Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
5290MHz_TnomVnom	Pass	3.67	16.22	15.42	18.85	24.00	22.52	30.00
5530MHz_TnomVnom	Pass	3.67	14.98	15.28	18.14	24.00	21.81	30.00
5610MHz_TnomVnom	Pass	3.67	18.12	18.52	21.33	24.00	25.00	30.00
5690MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	3.67	19.59	19.99	22.80	24.00	26.47	30.00
5690MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	3.67	5.50	5.61	8.57	30.00	12.24	36.00
5775MHz_TnomVnom	Pass	3.67	16.55	16.39	19.48	30.00	23.15	36.00

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



802.11ac VHT20_Nss1,(MCS0)_2TX

5720MHz Straddle 5.47-5.725GHz

AV Power

01/08/2018

Ch Freq
5.71GHz

Span
60MHz

RBW
1MHz

VBW
3MHz

Sweep Time
2.01ms

Detector Type
RMS

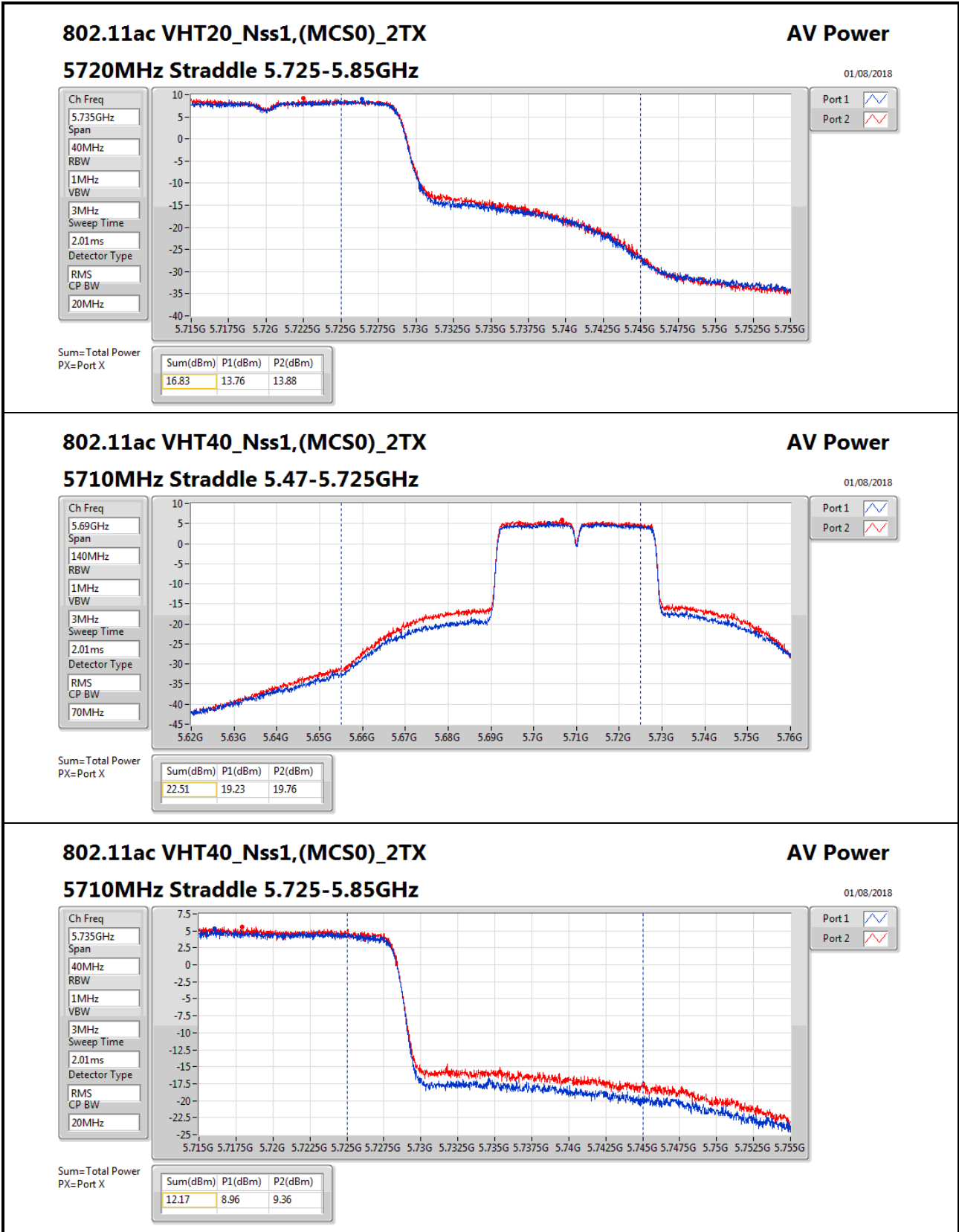
CP BW
30MHz

Port 1

Port 2

Sum=Total Power
PX=Port X

Sum(dBm)	P1(dBm)	P2(dBm)
22.27	19.11	19.40



802.11ac VHT40_Nss1,(MCS0)_2TX

5710MHz Straddle 5.725-5.85GHz

AV Power

01/08/2018

Ch Freq
5.735GHz

Span
40MHz

RBW
1MHz

VBW
3MHz

Sweep Time
2.01ms

Detector Type
RMS

CP BW
20MHz

Port 1

Port 2

Sum=Total Power
PX=Port X

Sum(dBm)	P1(dBm)	P2(dBm)
12.17	8.96	9.36



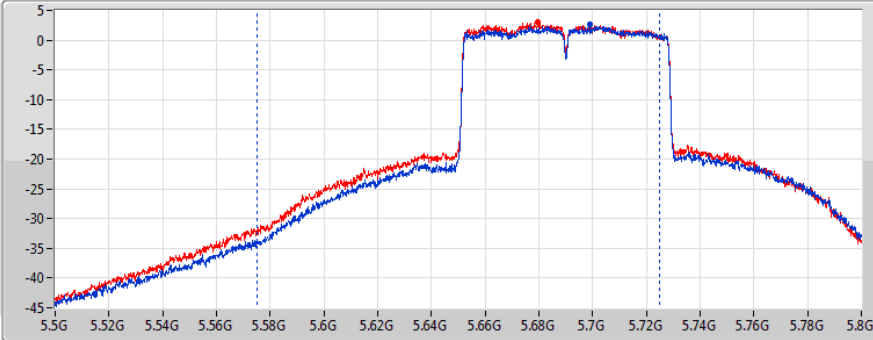
802.11ac VHT80_Nss1,(MCS0)_2TX

AV Power

5690MHz Straddle 5.47-5.725GHz

01/08/2018

Ch Freq
5.65GHz
Span
300MHz
RBW
1MHz
VBW
3MHz
Sweep Time
2.01ms
Detector Type
RMS
CP BW
150MHz



Port 1
Port 2

Sum=Total Power
PX=Port X

Sum(dBm)	P1(dBm)	P2(dBm)
22.80	19.59	19.99

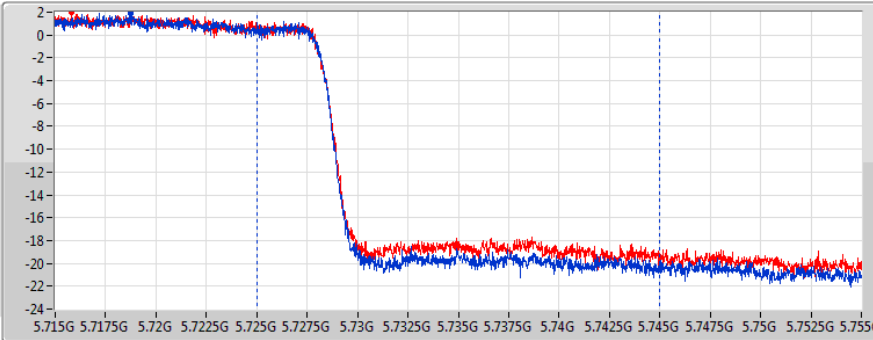
802.11ac VHT80_Nss1,(MCS0)_2TX

AV Power

5690MHz Straddle 5.725-5.85GHz

01/08/2018

Ch Freq
5.735GHz
Span
40MHz
RBW
1MHz
VBW
3MHz
Sweep Time
2.01ms
Detector Type
RMS
CP BW
20MHz



Port 1
Port 2

Sum=Total Power
PX=Port X

Sum(dBm)	P1(dBm)	P2(dBm)
8.57	5.50	5.61



Summary

Mode	PD (dBm/RBW)	EIRP PD (dBm/RBW)
5.15-5.25GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	10.24	16.92
802.11ac VHT20_Nss1,(MCS0)_2TX	10.31	16.99
802.11ac VHT40_Nss1,(MCS0)_2TX	7.04	13.72
802.11ac VHT80_Nss1,(MCS0)_2TX	-0.67	6.01
5.25-5.35GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	10.31	16.99
802.11ac VHT20_Nss1,(MCS0)_2TX	10.22	16.90
802.11ac VHT40_Nss1,(MCS0)_2TX	7.05	13.73
802.11ac VHT80_Nss1,(MCS0)_2TX	0.10	6.78
5.47-5.725GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	10.14	16.82
802.11ac VHT20_Nss1,(MCS0)_2TX	10.17	16.85
802.11ac VHT40_Nss1,(MCS0)_2TX	6.76	13.44
802.11ac VHT80_Nss1,(MCS0)_2TX	3.62	10.30
5.725-5.85GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	9.93	16.61
802.11ac VHT20_Nss1,(MCS0)_2TX	9.40	16.08
802.11ac VHT40_Nss1,(MCS0)_2TX	5.93	12.61
802.11ac VHT80_Nss1,(MCS0)_2TX	0.77	7.45

RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band;



Result

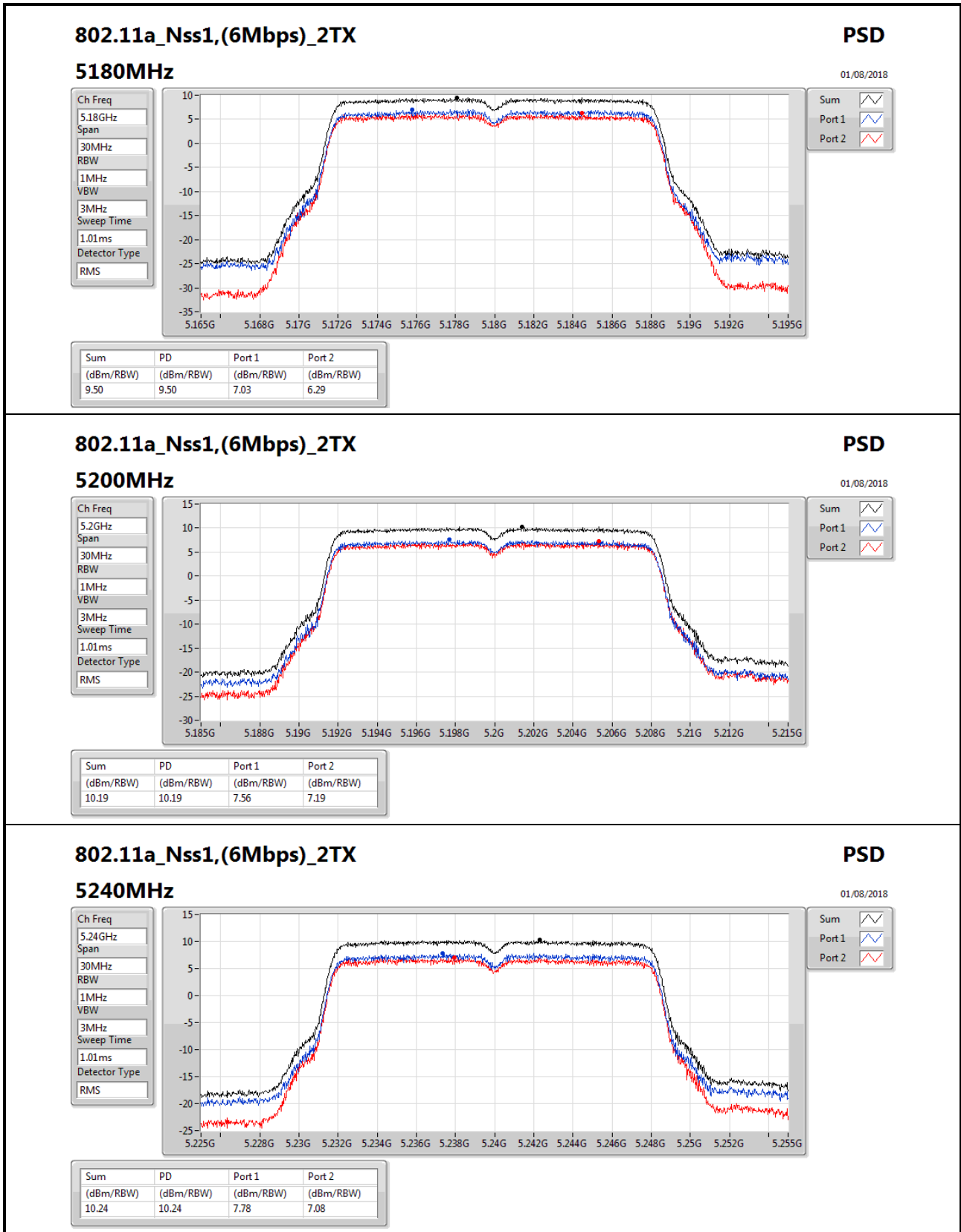
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)	EIRP PD (dBm/RBW)	EIRP PD Limit (dBm/RBW)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	6.68	7.03	6.29	9.50	10.32	16.18	17.00
5200MHz_TnomVnom	Pass	6.68	7.56	7.19	10.19	10.32	16.87	17.00
5240MHz_TnomVnom	Pass	6.68	7.78	7.08	10.24	10.32	16.92	17.00
5260MHz_TnomVnom	Pass	6.68	7.55	7.37	10.31	10.32	16.99	17.00
5300MHz_TnomVnom	Pass	6.68	7.85	7.10	10.26	10.32	16.94	17.00
5320MHz_TnomVnom	Pass	6.68	5.94	5.27	8.52	10.32	15.20	17.00
5500MHz_TnomVnom	Pass	6.68	5.03	5.29	8.09	10.32	14.77	17.00
5580MHz_TnomVnom	Pass	6.68	7.10	7.45	10.12	10.32	16.80	17.00
5700MHz_TnomVnom	Pass	6.68	3.44	4.47	6.78	10.32	13.46	17.00
5720MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	6.68	7.11	7.63	10.14	10.32	16.82	17.00
5720MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	6.68	5.44	5.95	8.48	29.32	15.16	36.00
5745MHz_TnomVnom	Pass	6.68	6.91	7.30	9.93	29.32	16.61	36.00
5785MHz_TnomVnom	Pass	6.68	6.94	6.80	9.55	29.32	16.23	36.00
5825MHz_TnomVnom	Pass	6.68	6.43	6.55	9.31	29.32	15.99	36.00
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5180MHz_TnomVnom	Pass	6.68	5.86	4.98	8.41	10.32	15.09	17.00
5200MHz_TnomVnom	Pass	6.68	7.33	7.12	10.19	10.32	16.87	17.00
5240MHz_TnomVnom	Pass	6.68	7.37	7.25	10.31	10.32	16.99	17.00
5260MHz_TnomVnom	Pass	6.68	7.36	7.13	10.22	10.32	16.90	17.00
5300MHz_TnomVnom	Pass	6.68	7.50	6.88	10.19	10.32	16.87	17.00
5320MHz_TnomVnom	Pass	6.68	4.63	3.93	7.29	10.32	13.97	17.00
5500MHz_TnomVnom	Pass	6.68	3.96	4.04	7.00	10.32	13.68	17.00
5580MHz_TnomVnom	Pass	6.68	7.12	7.24	10.17	10.32	16.85	17.00
5700MHz_TnomVnom	Pass	6.68	2.69	3.28	5.98	10.32	12.66	17.00
5720MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	6.68	6.60	7.02	9.79	10.32	16.47	17.00
5720MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	6.68	4.89	5.19	8.05	29.32	14.73	36.00
5745MHz_TnomVnom	Pass	6.68	6.31	6.50	9.40	29.32	16.08	36.00
5785MHz_TnomVnom	Pass	6.68	6.26	6.17	9.17	29.32	15.85	36.00
5825MHz_TnomVnom	Pass	6.68	5.78	5.98	8.88	29.32	15.56	36.00
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5190MHz_TnomVnom	Pass	6.68	0.15	-0.80	2.71	10.32	9.39	17.00
5230MHz_TnomVnom	Pass	6.68	3.58	4.43	7.04	10.32	13.72	17.00
5270MHz_TnomVnom	Pass	6.68	3.85	4.35	7.05	10.32	13.73	17.00
5310MHz_TnomVnom	Pass	6.68	-0.34	-0.89	2.34	10.32	9.02	17.00
5510MHz_TnomVnom	Pass	6.68	-1.29	-0.50	2.12	10.32	8.80	17.00
5550MHz_TnomVnom	Pass	6.68	3.57	3.95	6.76	10.32	13.44	17.00
5670MHz_TnomVnom	Pass	6.68	1.38	2.03	4.72	10.32	11.40	17.00
5710MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	6.68	3.20	3.76	6.49	10.32	13.17	17.00
5710MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	6.68	1.26	1.61	4.45	29.32	11.13	36.00
5755MHz_TnomVnom	Pass	6.68	2.84	3.03	5.93	29.32	12.61	36.00
5795MHz_TnomVnom	Pass	6.68	2.72	2.60	5.67	29.32	12.35	36.00
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5210MHz_TnomVnom	Pass	6.68	-3.19	-3.88	-0.67	10.32	6.01	17.00

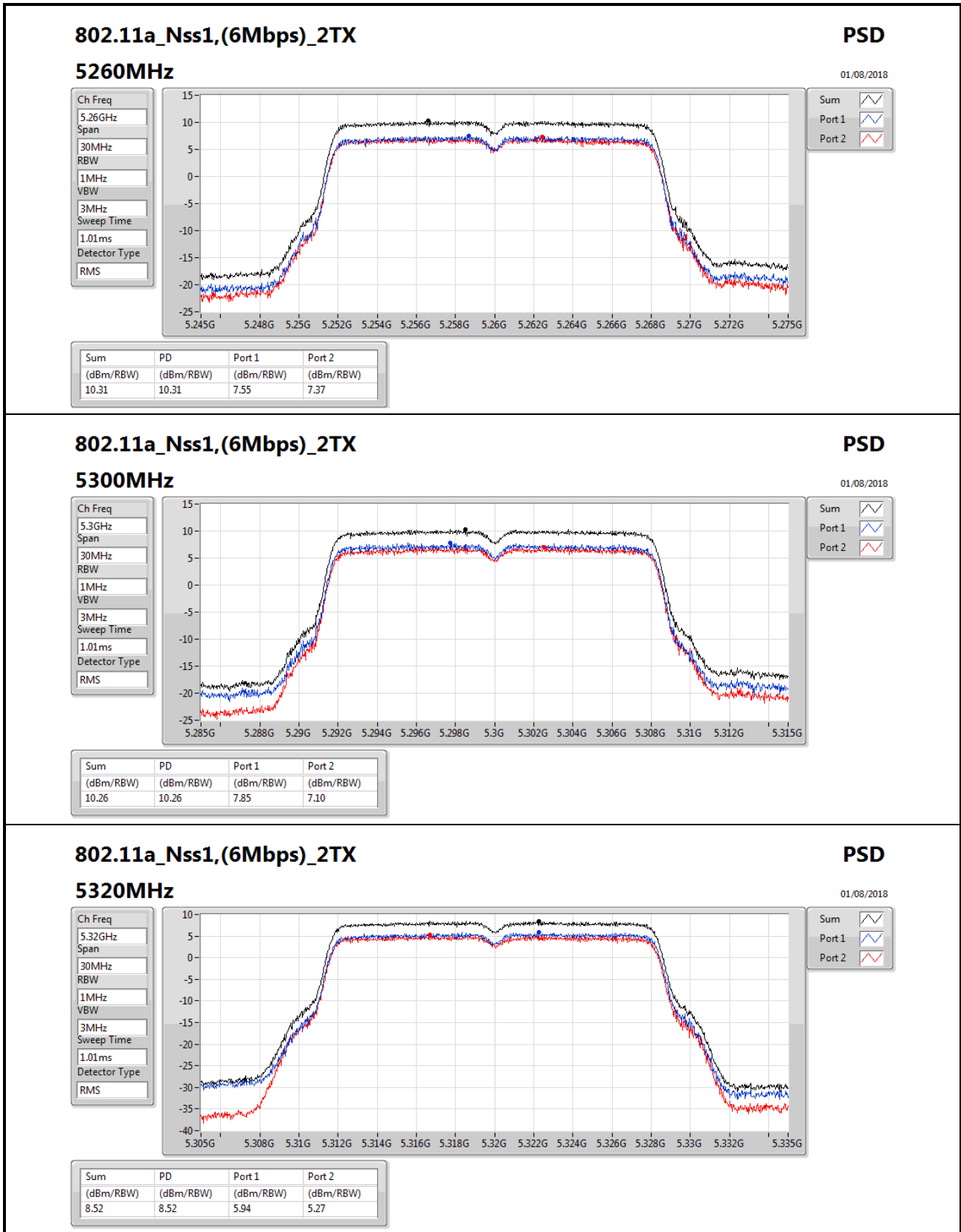


Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)	EIRP PD (dBm/RBW)	EIRP PD Limit (dBm/RBW)
5290MHz_TnomVnom	Pass	6.68	-2.51	-3.27	0.10	10.32	6.78	17.00
5530MHz_TnomVnom	Pass	6.68	-3.98	-3.66	-0.81	10.32	5.87	17.00
5610MHz_TnomVnom	Pass	6.68	-0.69	-0.26	2.53	10.32	9.21	17.00
5690MHz Straddle 5.47-5.725GHz_TnomVnom	Pass	6.68	0.46	0.90	3.62	10.32	10.30	17.00
5690MHz Straddle 5.725-5.85GHz_TnomVnom	Pass	6.68	-2.29	-2.18	0.77	29.32	7.45	36.00
5775MHz_TnomVnom	Pass	6.68	-3.64	-3.31	-0.49	29.32	6.19	36.00

DG = Directional Gain; **RBW** = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

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





802.11a_Nss1,(6Mbps)_2TX

5320MHz

PSD

01/08/2018

Ch Freq
5.32GHz

Span
30MHz

RBW
1MHz

VBW
3MHz

Sweep Time
1.01ms

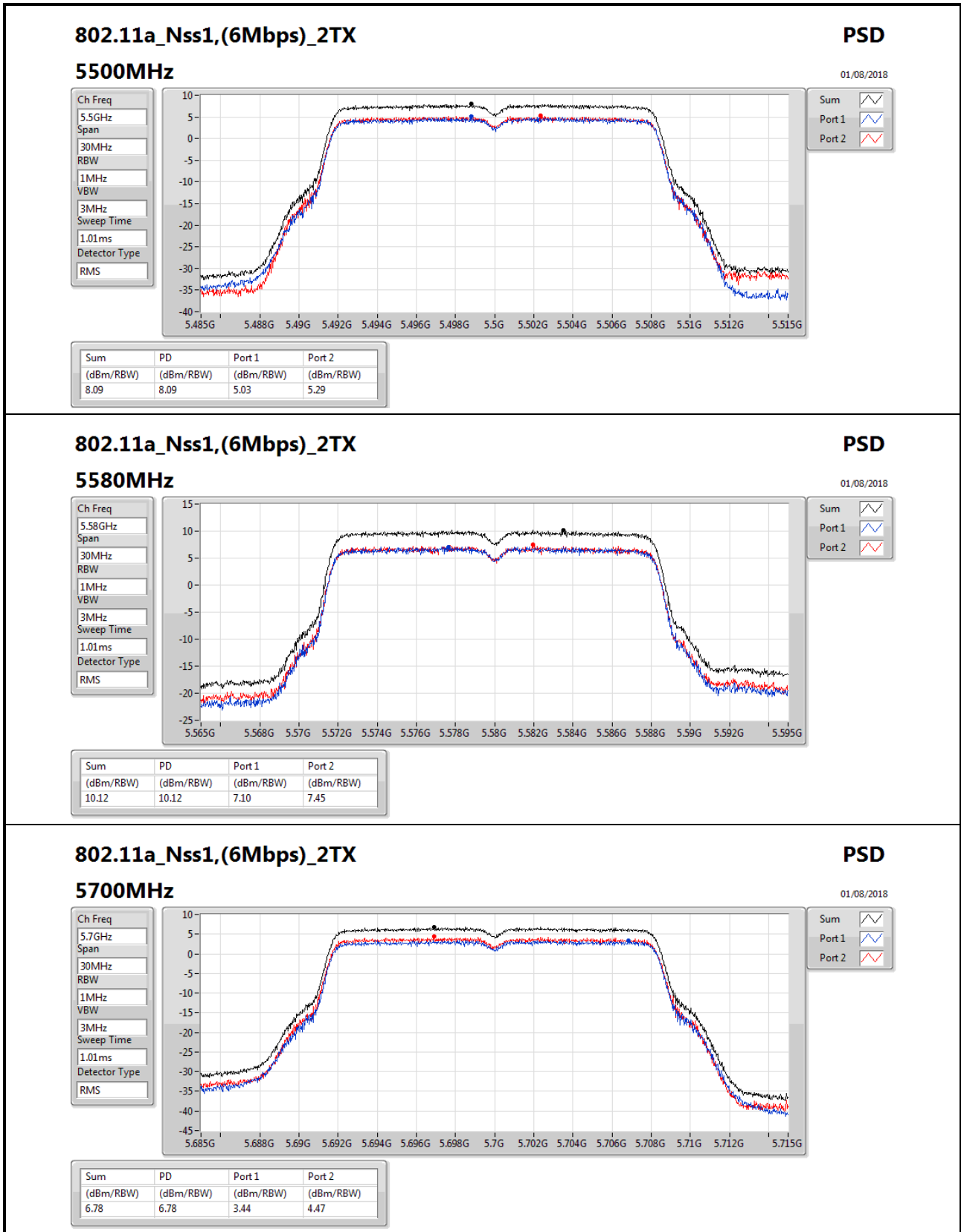
Detector Type
RMS

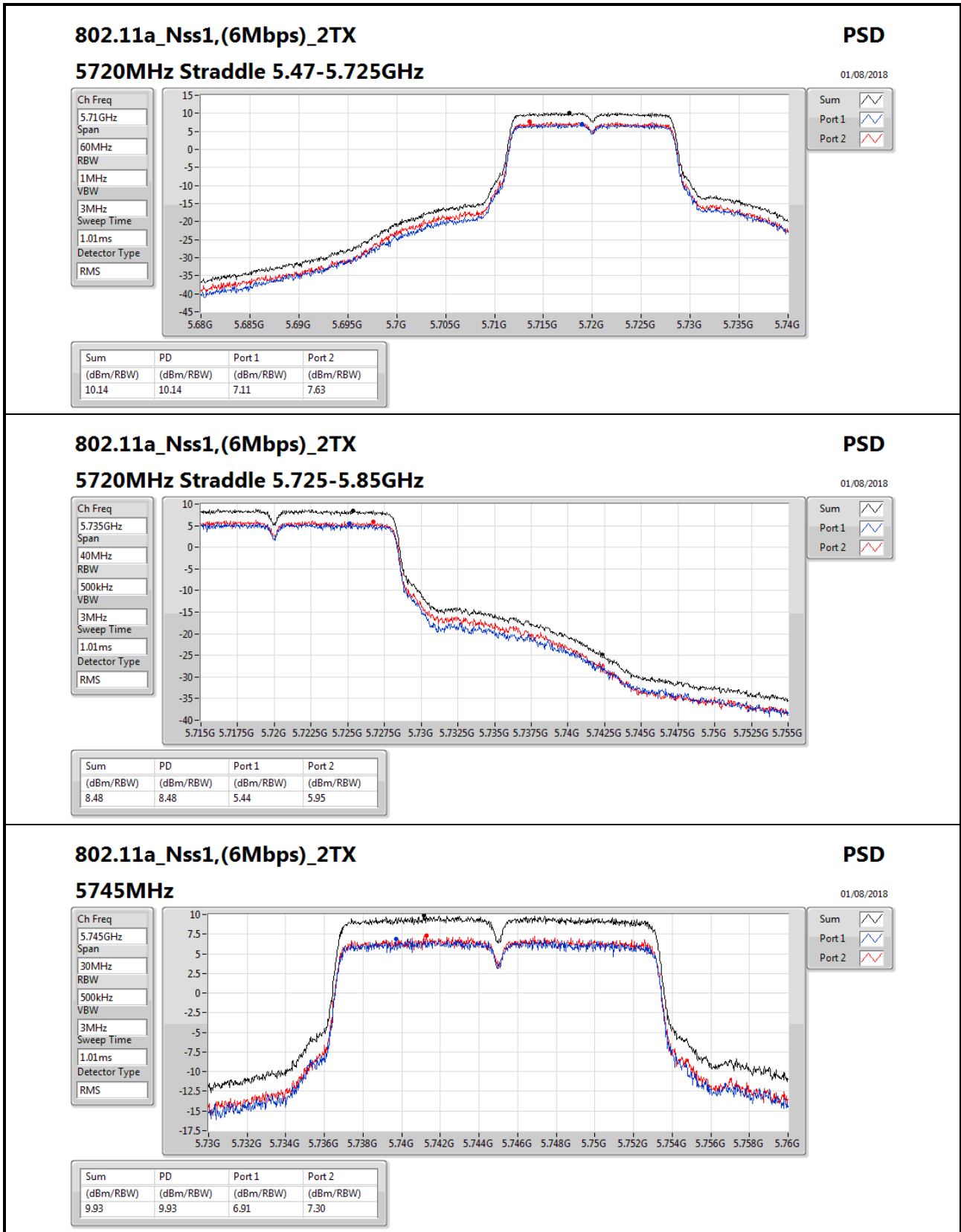
Sum

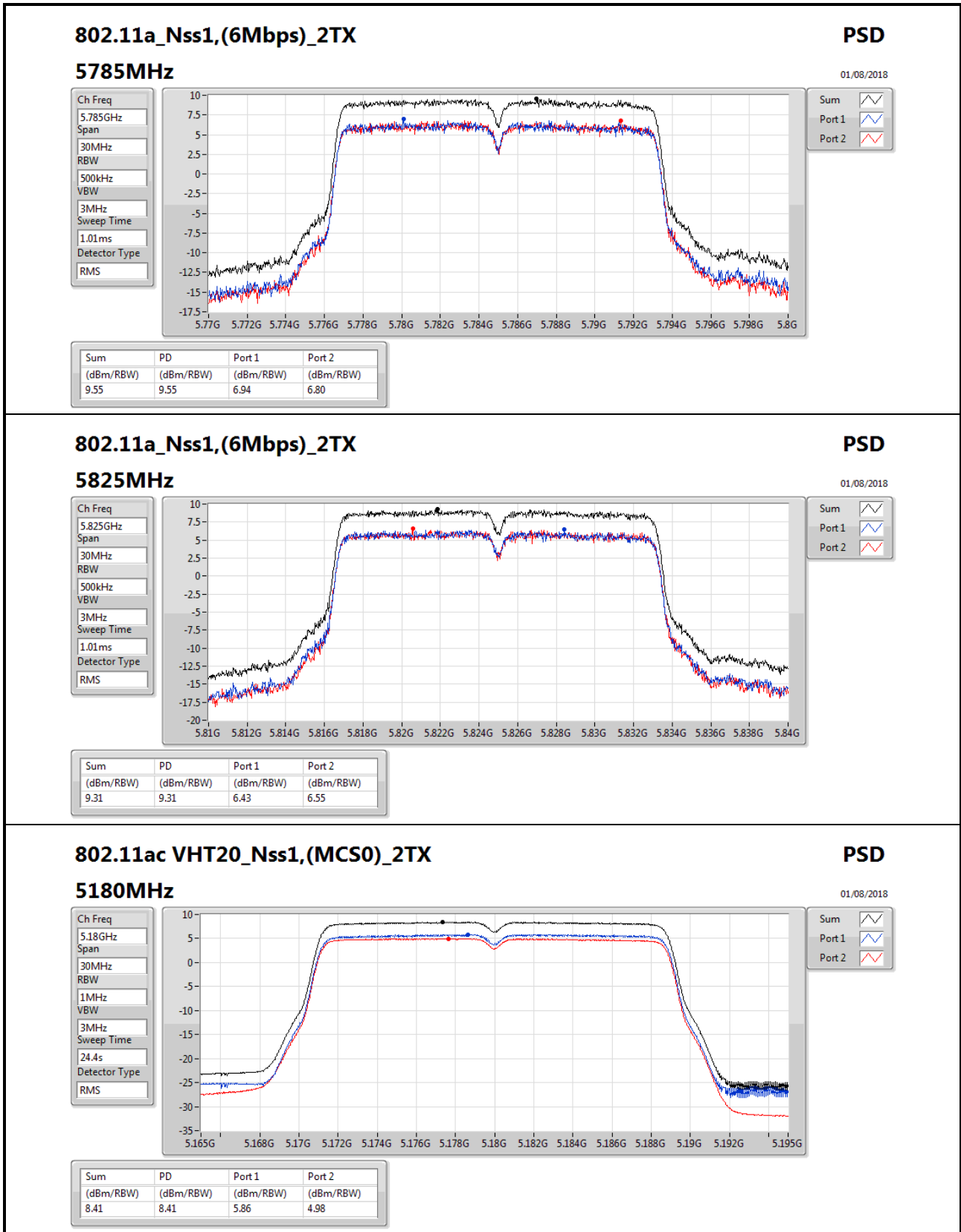
Port 1

Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
8.52	8.52	5.94	5.27







802.11ac VHT20_Nss1,(MCS0)_2TX

5180MHz

PSD

01/08/2018

Ch Freq
5.18GHz

Span
30MHz

RBW
1MHz

VBW
3MHz

Sweep Time
24.4s

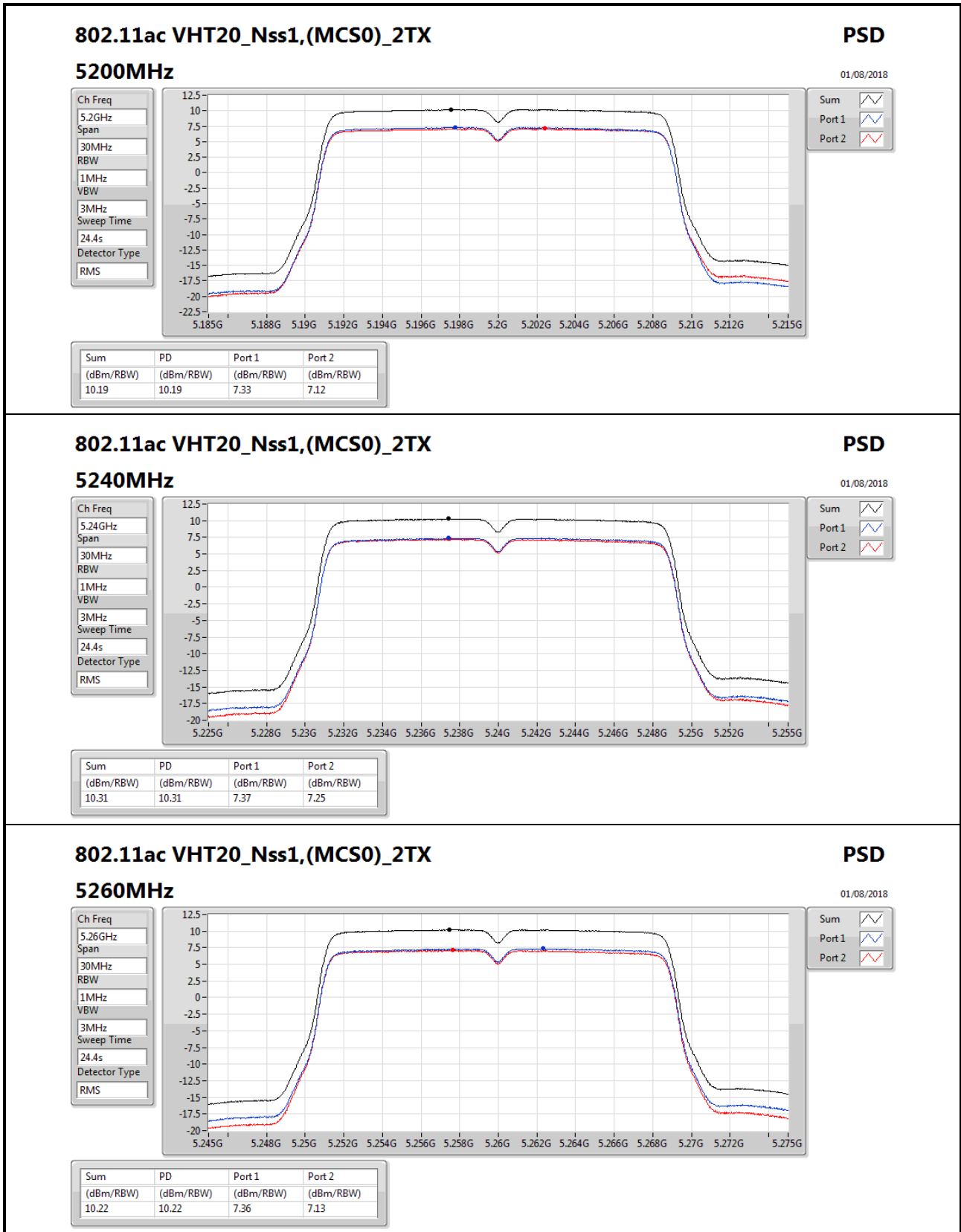
Detector Type
RMS

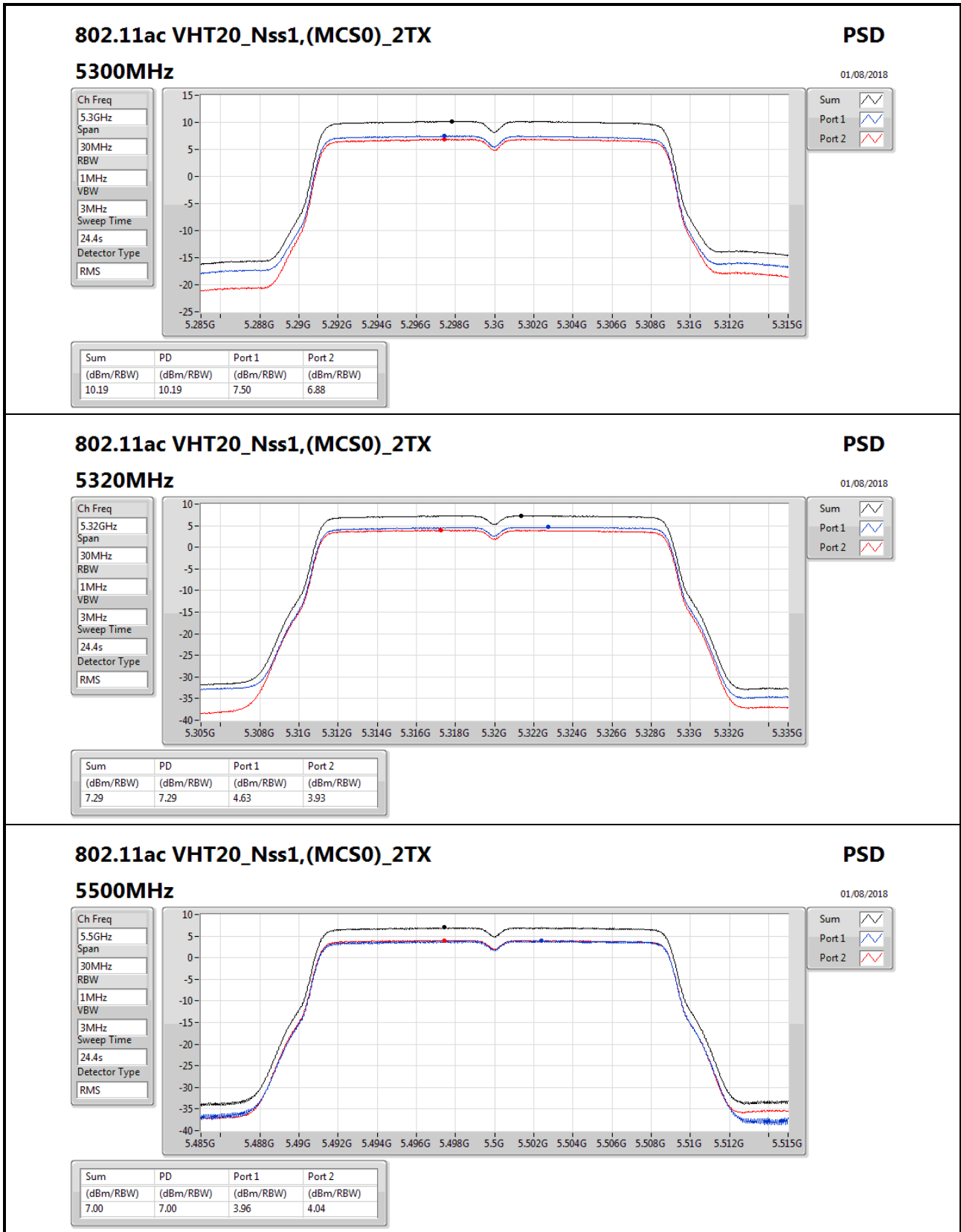
Sum

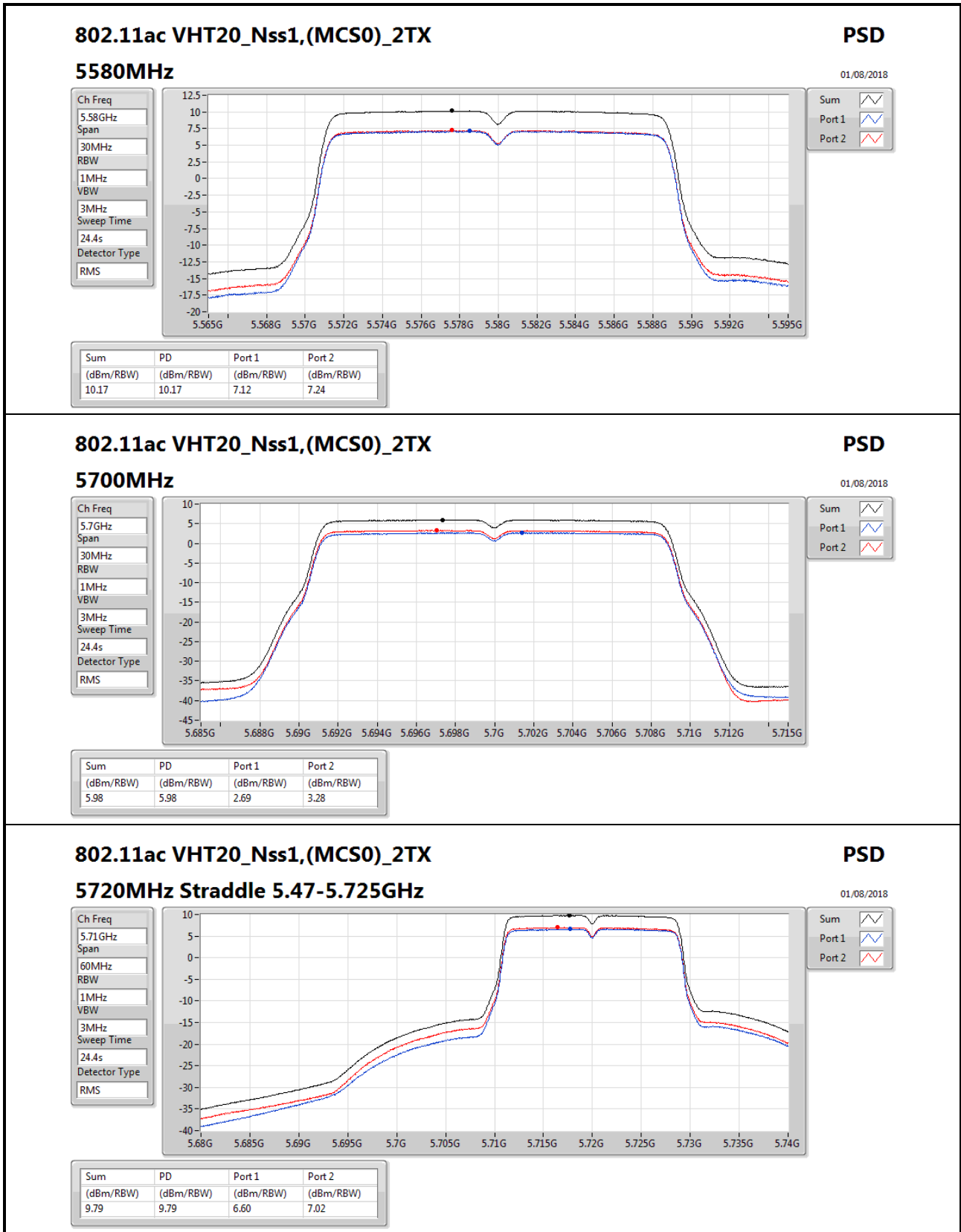
Port 1

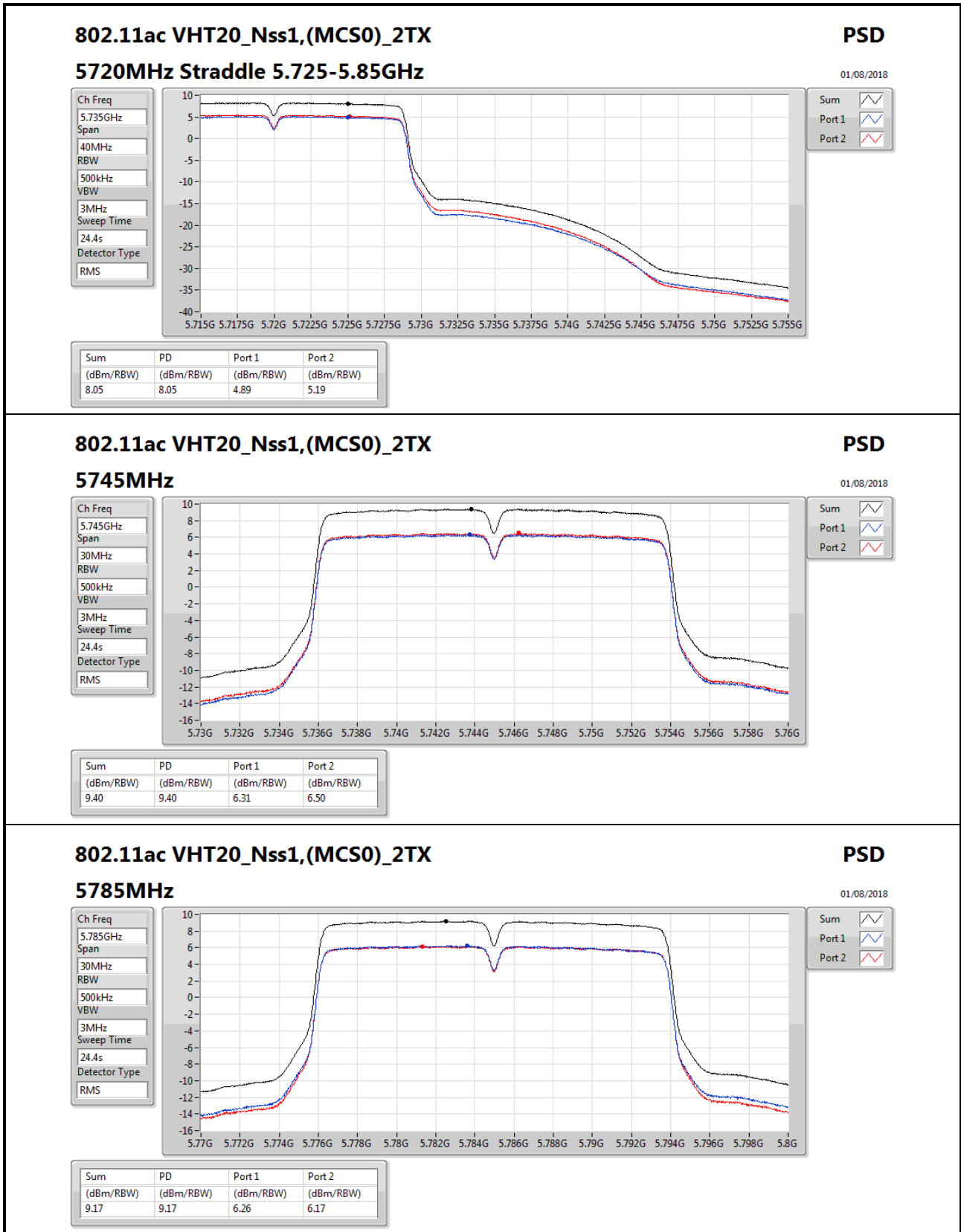
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
8.41	8.41	5.86	4.98









802.11ac VHT20_Nss1,(MCS0)_2TX

5785MHz

PSD

01/08/2018

Ch Freq
5.785GHz

Span
30MHz

RBW
500kHz

VBW
3MHz

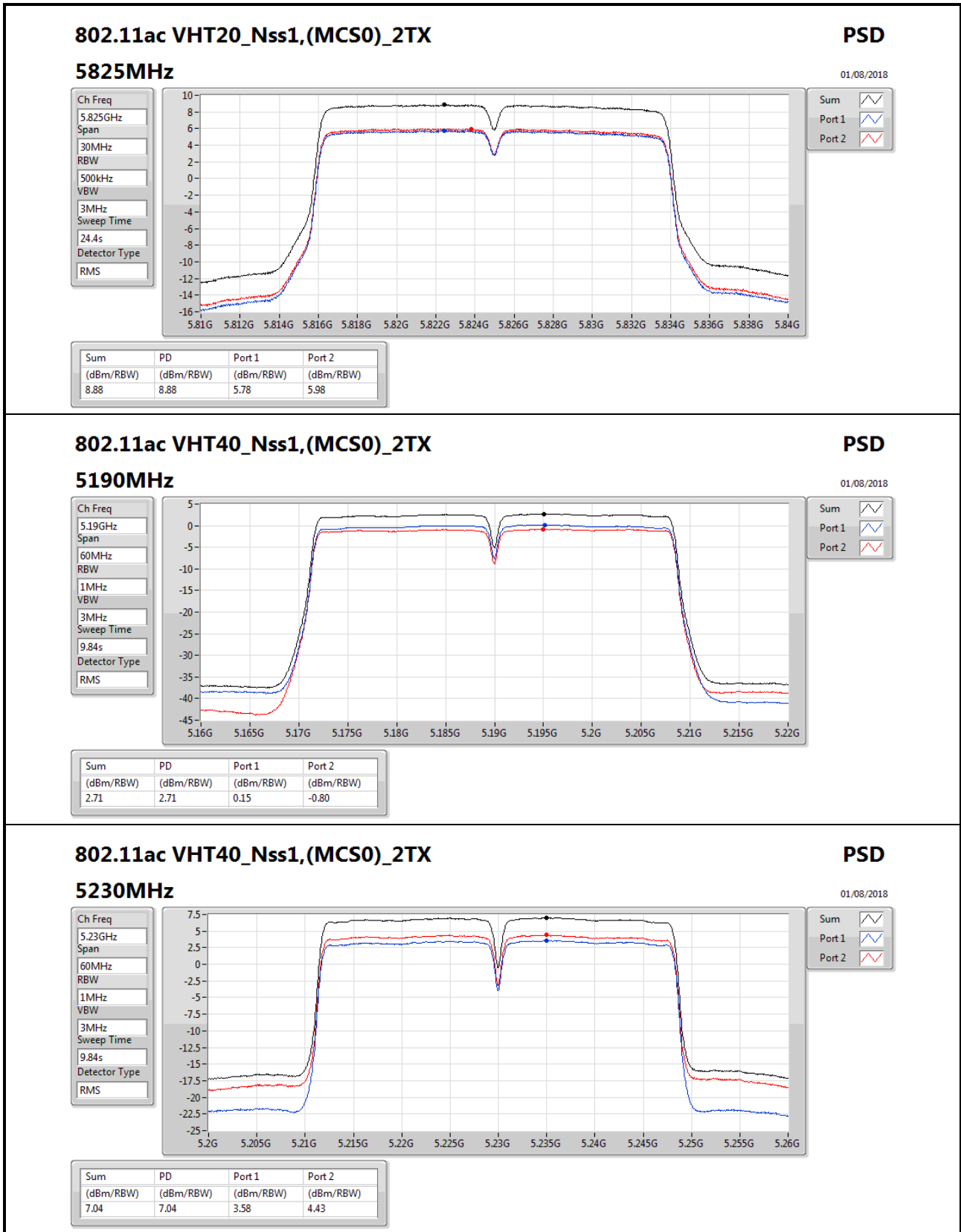
Sweep Time
24.4s

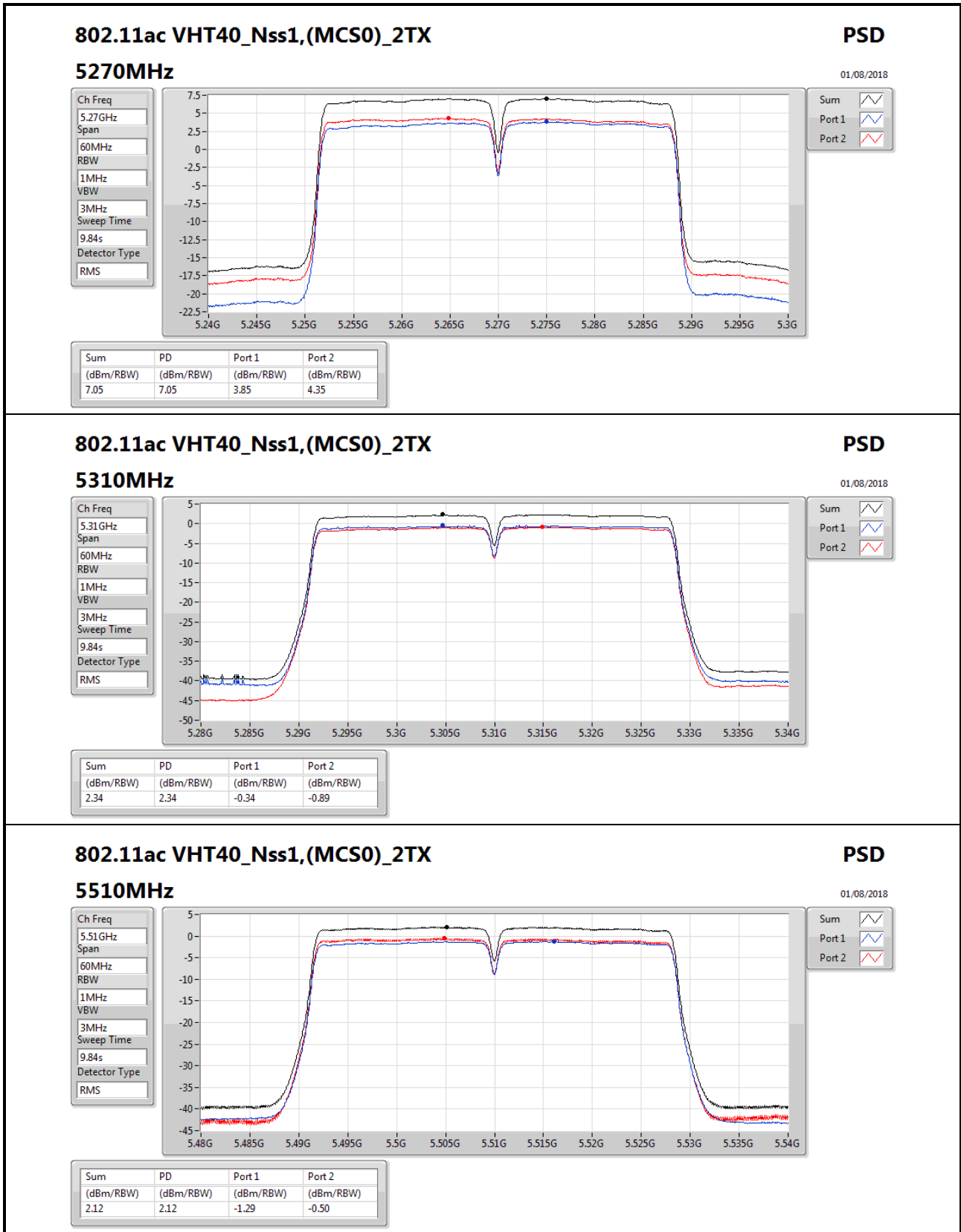
Detector Type
RMS

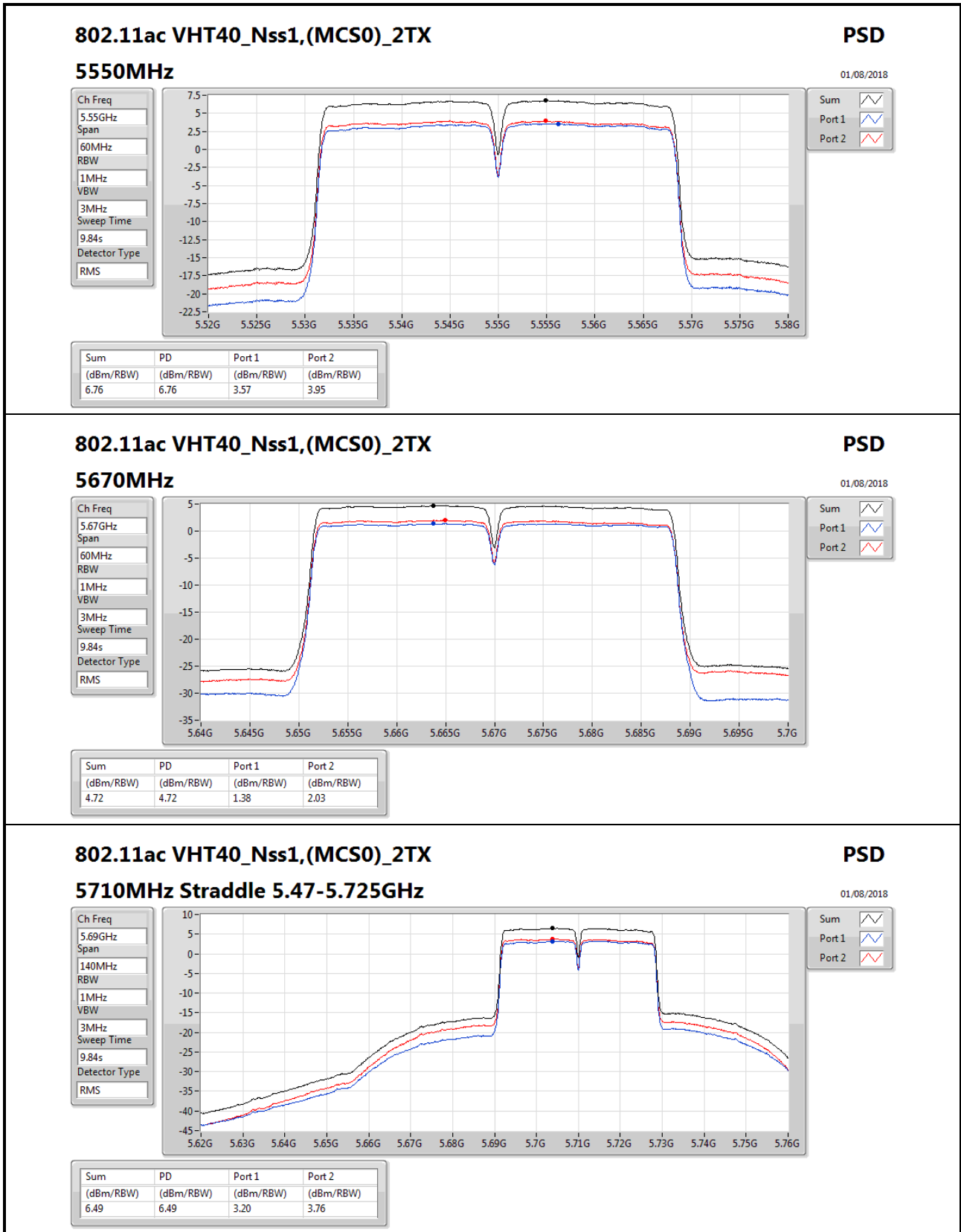
Sum

Port 1

Port 2







802.11ac VHT40_Nss1,(MCS0)_2TX

5710MHz Straddle 5.47-5.725GHz

PSD

01/08/2018

Ch Freq
5.69GHz

Span
140MHz

RBW
1MHz

VBW
3MHz

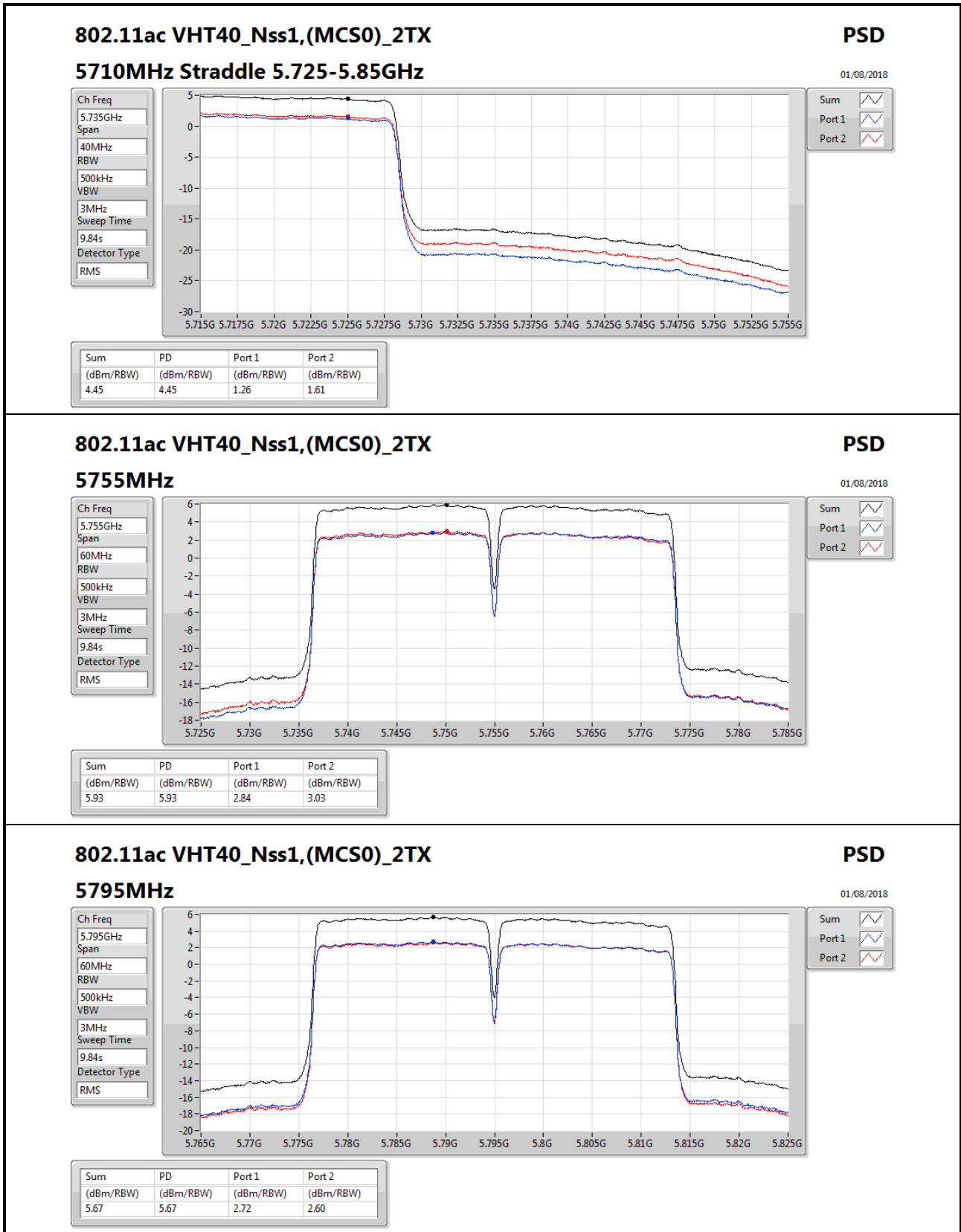
Sweep Time
9.84s

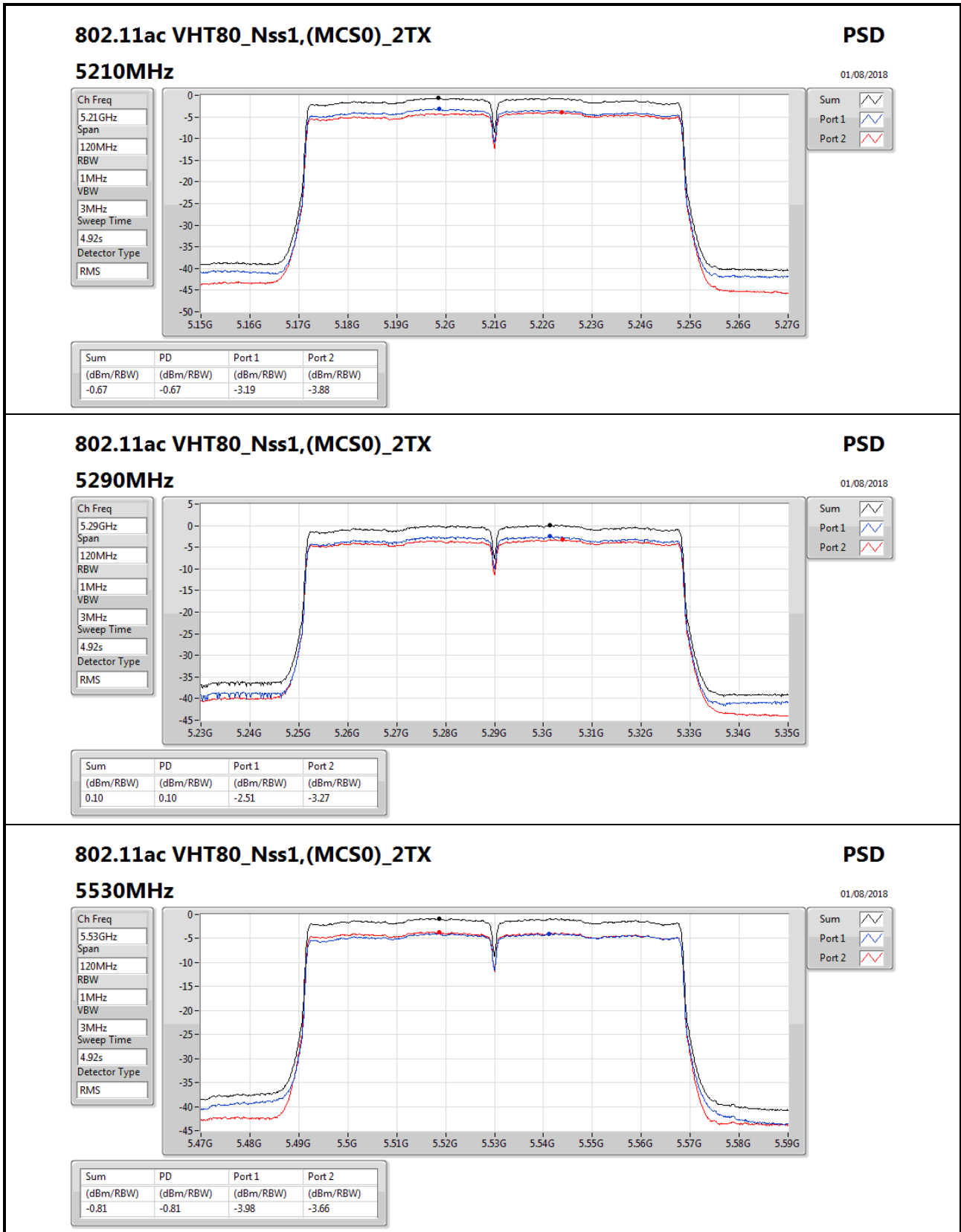
Detector Type
RMS

Sum

Port 1

Port 2





802.11ac VHT80_Nss1,(MCS0)_2TX

5530MHz

PSD

01/08/2018

Ch Freq
5.53GHz

Span
120MHz

RBW
1MHz

VBW
3MHz

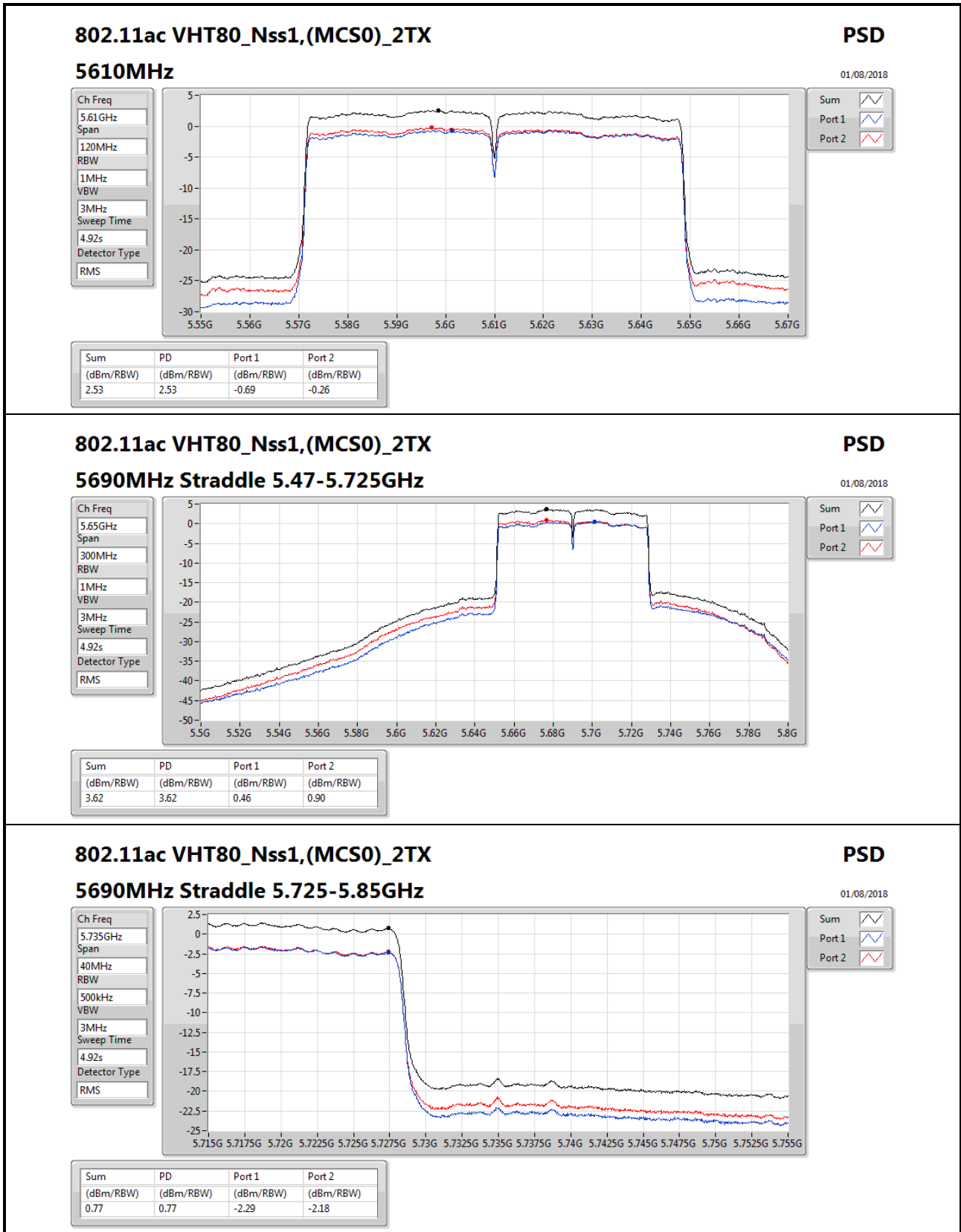
Sweep Time
4.92s

Detector Type
RMS

Sum

Port 1

Port 2



802.11ac VHT80_Nss1,(MCS0)_2TX

5690MHz Straddle 5.725-5.85GHz

PSD

01/08/2018

Ch Freq
5.735GHz

Span
40MHz

RBW
500kHz

VBW
3MHz

Sweep Time
4.92s

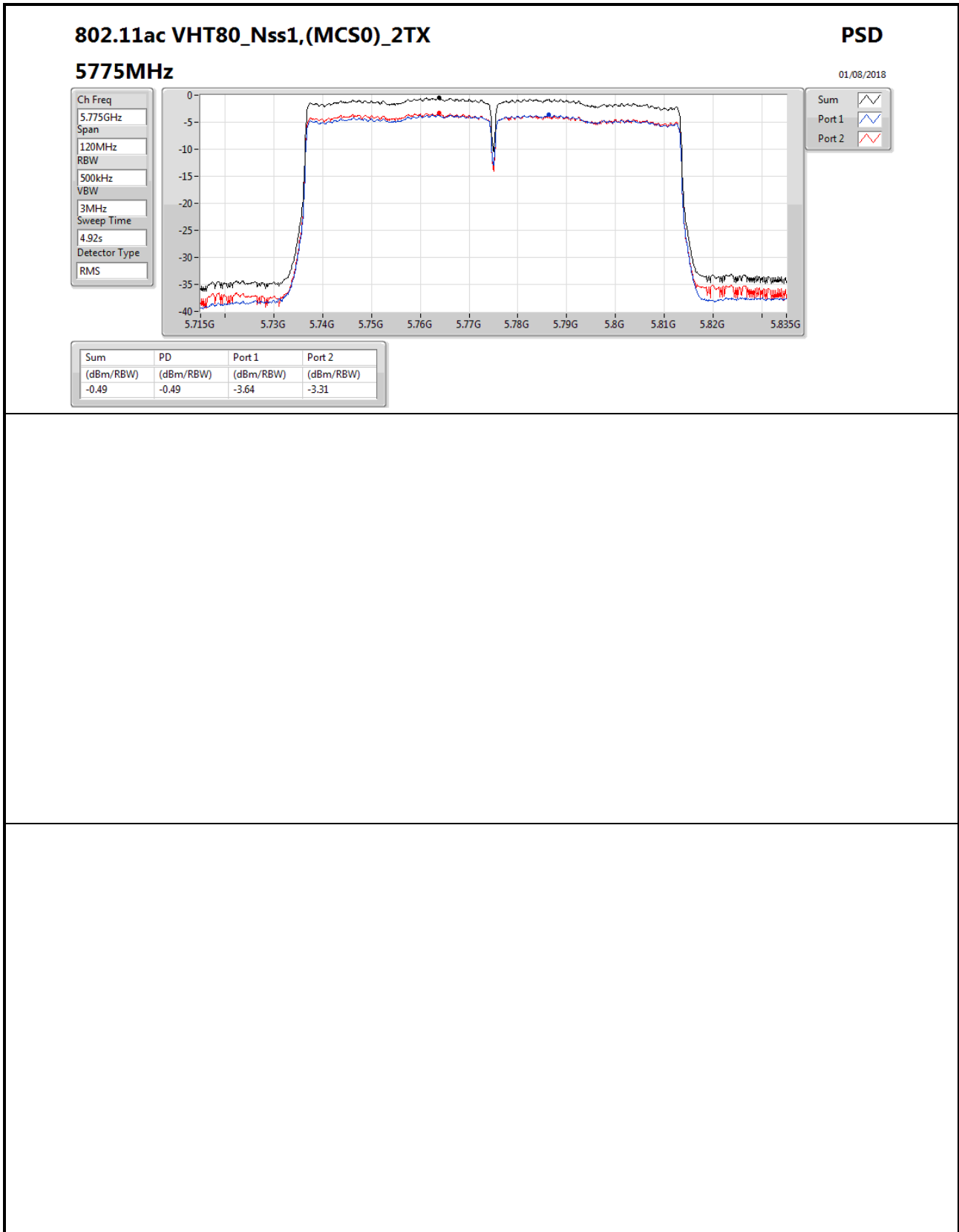
Detector Type
RMS

Sum

Port 1

Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.77	0.77	-2.29	-2.18





Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11ac VHT80_Nss1,(MCS0)_2TX	Pass	PK	37.76M	31.94	40.00	-8.06	-6.82	3	Vertical	0	1.00	-



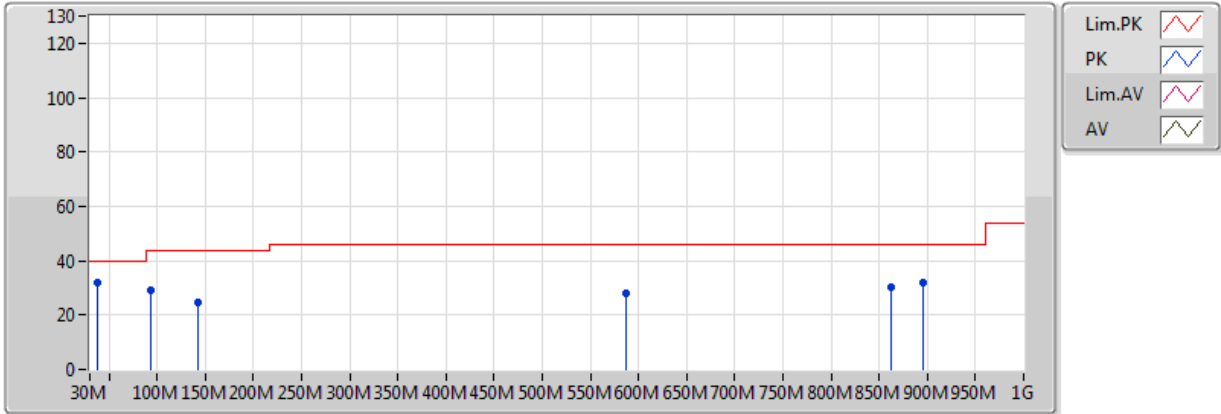
Result

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-
5775MHz	Pass	PK	37.76M	31.94	40.00	-8.06	-6.82	3	Vertical	0	1.00	-
5775MHz	Pass	PK	94.02M	28.91	43.50	-14.59	-10.52	3	Vertical	0	1.00	-
5775MHz	Pass	PK	142.52M	24.62	43.50	-18.88	-8.96	3	Vertical	0	1.00	-
5775MHz	Pass	PK	586.78M	28.00	46.00	-18.00	-0.65	3	Vertical	0	1.00	-
5775MHz	Pass	PK	862.26M	30.28	46.00	-15.72	2.56	3	Vertical	0	1.00	-
5775MHz	Pass	PK	895.24M	31.94	46.00	-14.06	2.81	3	Vertical	0	1.00	-
5775MHz	Pass	PK	97.9M	26.15	43.50	-17.35	-9.71	3	Horizontal	360	1.00	-
5775MHz	Pass	PK	142.52M	20.69	43.50	-22.81	-8.96	3	Horizontal	360	1.00	-
5775MHz	Pass	PK	262.8M	20.24	46.00	-25.76	-5.73	3	Horizontal	360	1.00	-
5775MHz	Pass	PK	577.08M	27.70	46.00	-18.30	-0.72	3	Horizontal	360	1.00	-
5775MHz	Pass	PK	846.74M	30.48	46.00	-15.52	2.37	3	Horizontal	360	1.00	-
5775MHz	Pass	PK	895.24M	31.38	46.00	-14.62	2.81	3	Horizontal	360	1.00	-

802.11ac VHT80_Nss1,(MCS0)_2TX

5775MHz_Adapter

31/07/2018

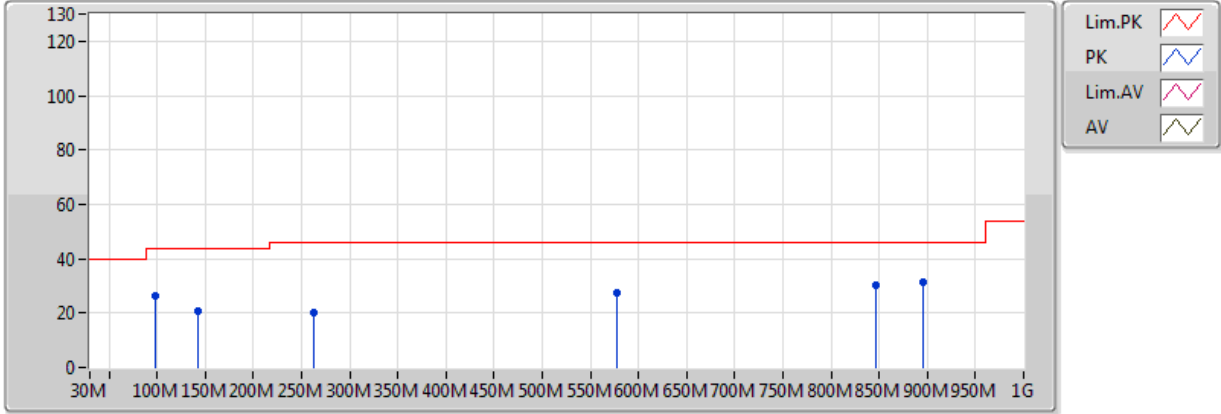


Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	37.76M	31.94	40.00	-8.06	-6.82	3	Vertical	0	1.00	-
PK	94.02M	28.91	43.50	-14.59	-10.52	3	Vertical	0	1.00	-
PK	142.52M	24.62	43.50	-18.88	-8.96	3	Vertical	0	1.00	-
PK	586.78M	28.00	46.00	-18.00	-0.65	3	Vertical	0	1.00	-
PK	862.26M	30.28	46.00	-15.72	2.56	3	Vertical	0	1.00	-
PK	895.24M	31.94	46.00	-14.06	2.81	3	Vertical	0	1.00	-

802.11ac VHT80_Nss1,(MCS0)_2TX

5775MHz_Adapter

31/07/2018



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
PK	97.9M	26.15	43.50	-17.35	-9.71	3	Horizontal	360	1.00	-
PK	142.52M	20.69	43.50	-22.81	-8.96	3	Horizontal	360	1.00	-
PK	262.8M	20.24	46.00	-25.76	-5.73	3	Horizontal	360	1.00	-
PK	577.08M	27.70	46.00	-18.30	-0.72	3	Horizontal	360	1.00	-
PK	846.74M	30.48	46.00	-15.52	2.37	3	Horizontal	360	1.00	-
PK	895.24M	31.38	46.00	-14.62	2.81	3	Horizontal	360	1.00	-