



FCC RADIO TEST REPORT

FCC ID

: 2AXPF03218

Equipment

: devolo Magic 2 WiFi next

Brand Name

: devolo AG

Model Name

: MT:3218

Applicant /

: devolo AG

Manufacturer

devolo AG

Charlottenburger Allee 67 52068 Aachen, Germany

Standard

: 47 CFR FCC Part 15.407

The product was received on Sep. 28, 2020, and testing was started from Oct. 06, 2020 and completed on Dec. 09, 2020. 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 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

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

TEL: 886-3-656-9065
*FAX: 886-3-656-9085

Report Template No.: CB-A12_1 Ver1.2

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: Feb. 18, 2021

Report Version : 02

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Report No. : FR091745-01

Report Version : 02

History of this test report

Report No.: FR091745-01

Report No.	Version	Description	Issued Date
FR091745-01	01	Initial issue of report	Feb. 08, 2021
FR091745-01	02	Change model name to "MT:3218" from "MT: 3218". Change photographs of EUT version to "v2" from "v1".	Feb. 18, 2021

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Summary of Test Result

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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:

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: Sam Chen
Report Producer: Wendy Pan

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1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5250-5350	a, n (HT20), ac (VHT20)	5260-5320	52-64 [4]
5470-5725	a, 11 (11120), ac (111120)	5500-5720	100-144 [9]
5250-5350	n (HT40), ac (VHT40)	5270-5310	54-62 [2]
5470-5725	11 (11140), ac (111140)	5510-5710	102-142 [4]
5250-5350	ac (VHT80)	5290	58 [1]
5470-5725	ac (viiio)	5530-5690	106-138 [2]

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Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	2
5.15-5.25GHz	802.11n HT20	20	2
5.15-5.25GHz	802.11ac VHT20	20	2
5.15-5.25GHz	802.11n HT40	40	2
5.15-5.25GHz	802.11ac VHT40	40	2
5.15-5.25GHz	802.11ac VHT80	80	2
5.25-5.35GHz	802.11a	20	2
5.25-5.35GHz	802.11n HT20	20	2
5.25-5.35GHz	802.11ac VHT20	20	2
5.25-5.35GHz	802.11n HT40	40	2
5.25-5.35GHz	802.11ac VHT40	40	2
5.25-5.35GHz	802.11ac VHT80	80	2
5.47-5.725GHz	802.11a	20	2
5.47-5.725GHz	802.11n HT20	20	2
5.47-5.725GHz	802.11ac VHT20	20	2
5.47-5.725GHz	802.11n HT40	40	2
5.47-5.725GHz	802.11ac VHT40	40	2
5.47-5.725GHz	802.11ac VHT80	80	2
5.725-5.85GHz	802.11a	20	2
5.725-5.85GHz	802.11n HT20	20	2
5.725-5.85GHz	802.11ac VHT20	20	2
5.725-5.85GHz	802.11n HT40	40	2

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Band	Band Mode		Nant
5.725-5.85GHz	802.11ac VHT40	40	2
5.725-5.85GHz	802.11ac VHT80	80	2

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.

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1.1.2 Antenna Information

A 4	Dont	Duesed	Model	Antenna	0		WLAN 2.4GI	lz Gain (d	dBi)	
Ant.	Port	Brand	Name	Туре	Connector	Low chann	el Middle	Middle channel		nest channel
1	1	devolo	N/A	Printed	N/A	1.5		.6		3.7
2	2	devolo	N/A	Printed	N/A	1.9 2.		.4	3.3	
						WLAN 5GHz Gain (dBi)				
Ant.	Port	Brand	Model Name	Antenna Type	Connector	Freq.: 5150-5250 MHz	Freq.: 5250-5350 MHz	Freq. 5500-56 MHz	600	Freq.: 5620-5825 MHz
3	1	devolo	N/A	Printed	N/A	1.2	-0.1	1.4		3.3
4	2	devolo	N/A	Printed	N/A	-0.4	0.0	2.0		3.9

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Note: The above information was declared by manufacturer.

For WLAN 2.4GHz function:

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

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

For WLAN 5GHz function:

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

Port 1 and Port 2 can be used as transmitting/receiving antenna.

Port 1 and Port 2 could transmit/receive simultaneously.

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1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.96	0.18	2.029m	1k
802.11ac VHT20	0.986	0.06	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ac VHT40	0.968	0.14	2.419m	1k
802.11ac VHT80	0.938	0.28	1.138m	1k

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

1.1.4 EUT Operational Condition

EUT Power Type	Internal power supply				
Beamforming Function		With beamforming	\boxtimes	Without beamforming	
Function		Outdoor P2M		Indoor P2M	
Tunction		Fixed P2P		Client	
TPC Function	\boxtimes	With TPC		Without TPC	
Weather Band		☐ With 5600~5650MHz ☐ Without 5600~5650MHz			
Test Software Version QSPR Version 5.0-00188					

Note: The above information was declared by manufacturer.

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1.2 Applicable Standards

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

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- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 789033 D02 v02r01

The following reference test guidance is not within the scope of accreditation of TAF.

- FCC KDB 662911 D01 v02r01
- FCC KDB 412172 D01 v01r01
- FCC KDB 414788 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				
\boxtimes	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 Condition Test Site No.		Test Environment	Test Date
RF Conducted	TH02-CB	Nyle Chang	22.5-23.9°C / 54-57%	Nov. 02, 2020~Nov. 12, 2020
Radiated below 1GHz	03CH01-CB	JN Du	24.2-25.7°C / 54-56%	Dec. 09, 2020
Radiated above 1GHz	03CH02-CB	KJ Chang	23.8-25.1°C / 55-58%	Oct. 30, 2020~Oct. 31, 2020
AC Conduction	CO01-CB	Max Lin	21~22°C / 58~59%	Oct. 06, 2020~Nov. 06, 2020

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 (9kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.9 dB	Confidence levels of 95%
Conducted Emission	2.8 dB	Confidence levels of 95%
Output Power Measurement	1.4 dB	Confidence levels of 95%
Power Density Measurement	2.8 dB	Confidence levels of 95%
Bandwidth Measurement	0.4%	Confidence levels of 95%

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2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
802.11a_Nss1,(6Mbps)_2TX	-
5260MHz	18.5
5300MHz	19.5
5320MHz	20
5500MHz	15.5
5580MHz	20
5700MHz	13
5720MHz Straddle 5.47-5.725GHz	18
5720MHz Straddle 5.725-5.85GHz	18
802.11ac VHT20_Nss1,(MCS0)_2TX	-
5260MHz	19
5300MHz	19.5
5320MHz	19.5
5500MHz	15.5
5580MHz	20
5700MHz	13
5720MHz Straddle 5.47-5.725GHz	18
5720MHz Straddle 5.725-5.85GHz	18
802.11ac VHT40_Nss1,(MCS0)_2TX	-
5270MHz	19
5310MHz	16.5
5510MHz	13
5550MHz	19
5670MHz	15.5
5710MHz Straddle 5.47-5.725GHz	18.5
5710MHz Straddle 5.725-5.85GHz	18.5
802.11ac VHT80_Nss1,(MCS0)_2TX	-
5290MHz	17
5530MHz	13.5
5690MHz Straddle 5.47-5.725GHz	18
5690MHz Straddle 5.725-5.85GHz	18

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Note:

• VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

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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 CTX		
1 EUT + WLAN 2.4GHz		
2 EUT + WLAN 5GHz		
For operating mode 2 is the worst case and it was record in this test report.		

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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	СТХ	
The EUT was performed at X axis, Y axis and Z axis position for Radiated Emission above 1GHz test, at the worst case was found at Z axis for WLAN 2.4GHz and found at X axis for WLAN 5GHz. So the measurement will follow this same test configuration.		
1 EUT in Z axis + WLAN 2.4GHz		
2	EUT in X axis + WLAN 5GHz	
For operating mode 1 is the worst case and it was record in this test report.		
Operating Mode > 1GHz CTX		
The EUT was performed at X axis, Y axis and Z axis position, and the worst case was found at X axis. So the measurement will follow this same test configuration.		
1	EUT in X axis	

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The Worst Case Mode for Following Conformance Tests		
Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation		
Operating Mode		
1 WLAN 2.4GHz + WLAN 5GHz		
Refer to Sporton Test Report No.: FA091745-01 for Co-location RF Exposure Evaluation.		

2.3 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.4 Accessories

	Accessories	
RJ-45 cable*1, non-shielded, 2m		

2.5 Support Equipment

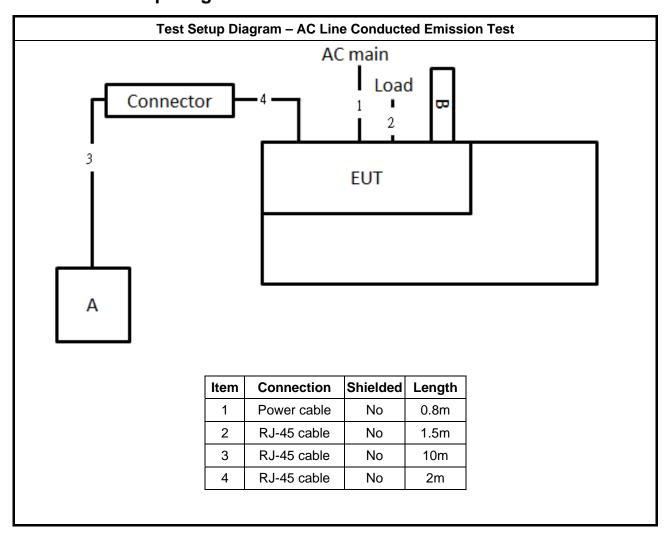
For AC Conduction:

	Support Equipment			
No.	No. Equipment Brand Name Model Name FCC ID			
Α	A LAN NB DELL E6430 N/A		N/A	
В	B Lighting Philips N/A N/A			

For Radiated and RF Conducted:

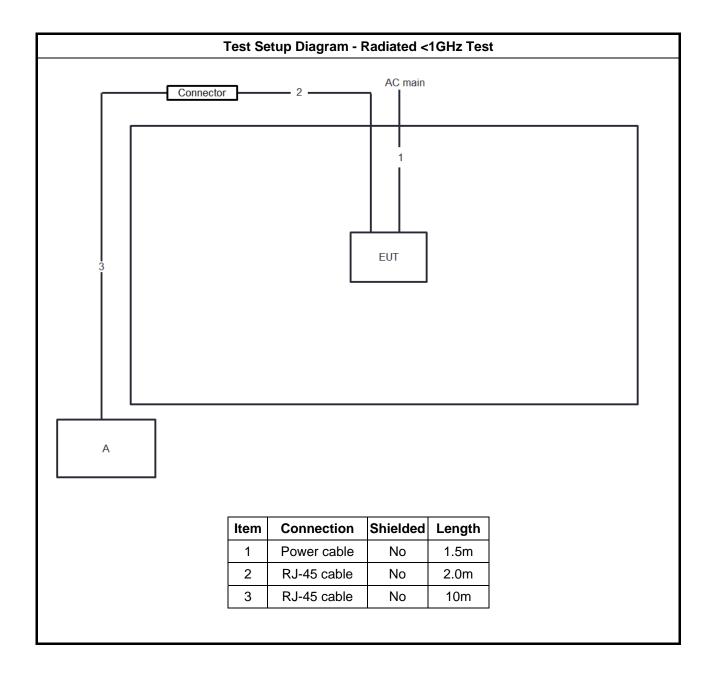
		Support Equ	ipment	
No.	No. Equipment Brand Name Model Name FCC ID			
A Notebook DELL E4300 N/A				

2.6 Test Setup Diagram

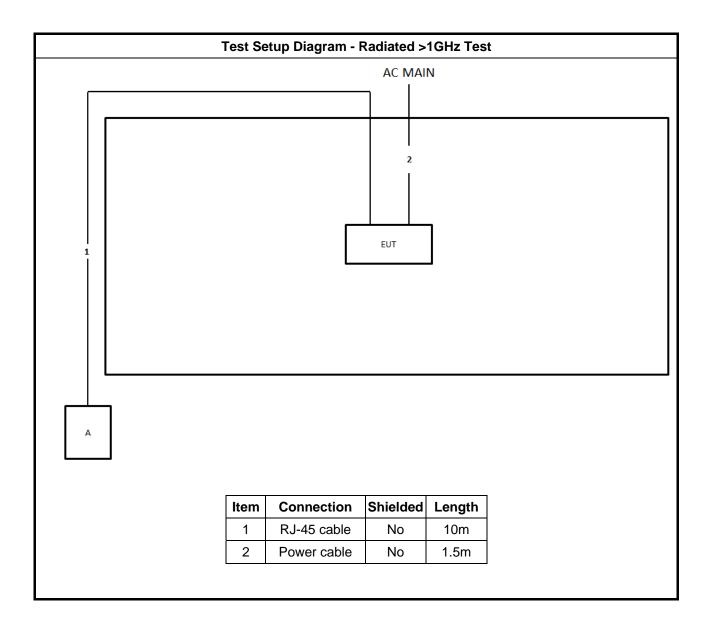


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3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Pow	er-line Conducted Emissions L	_imit
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.		

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3.1.2 Measuring Instruments

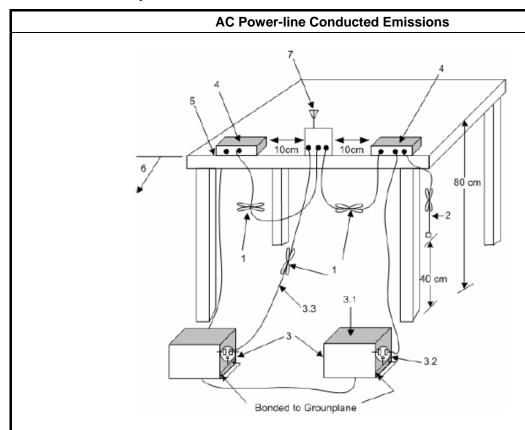
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

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3.1.4 Test Setup



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.

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- 2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
- 3.1—All other equipment powered from additional LISN(s).
- 3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
- 3.3—LISN at least 80 cm from nearest part of EUT chassis.
- 4—Non-EUT components of EUT system being tested.
- 5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
- 6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
- 7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

	Emission Bandwidth Limit
UN	II 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.
\boxtimes	For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 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 ≥ 500kHz.

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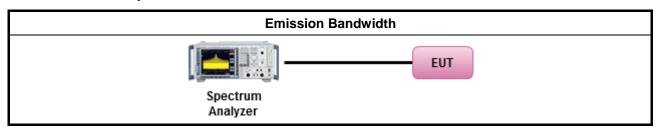
3.2.2 Measuring Instruments

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

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3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

	Maximum Conducted Output Power Limit							
UNI	I 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 \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).							
	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).							
\boxtimes	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. 							
	e = maximum conducted output power in dBm, = the maximum transmitting antenna directional gain in dBi.							

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3.3.2 Measuring Instruments

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

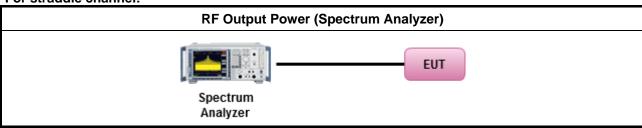
3.3.3 Test Procedures

		Test Method					
•	Max	kimum Conducted Output Power					
	Ave	rage over on/off periods with duty factor					
	\boxtimes	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 spee							
	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 + + P _n (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = P _{total} + DG							

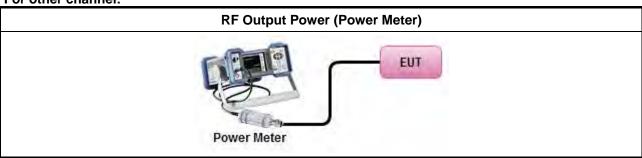
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3.3.4 Test Setup

For straddle channel:



For other channel:



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

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3.4 Peak Power Spectral Density

3.4.1 Peak Power Spectral Density Limit

	Peak Power Spectral Density Limit
UNI	Il 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) \leq 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) \leq 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) \leq 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° ≤ θ < 8°; -13 − 0.716 (θ-8) dBW/MHz for 8° ≤ θ < 40° -35.9 − 1.22 (θ-40) dBW/MHz for 40° ≤ θ ≤ 45°; -42 dBW/MHz for θ > 45°
	For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the peak power spectral density (PPSD) \leq 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.
pow	SD = peak power spectral density that he same method as used to determine the conducted output ver shall be used to determine the power spectral density. And power spectral density in dBm/MHz = the maximum transmitting antenna directional gain in dBi

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3.4.2 Measuring Instruments

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

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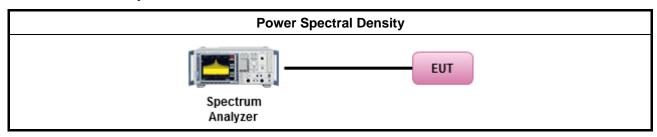
3.4.3 Test Procedures

		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]						
	\boxtimes	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							
	\boxtimes	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, speare measured at each output of the device at the required resolution bandwidth. maximum value (peak) of each spectrum is determined. These maximum values are summed mathematically in linear power units across the outputs. These operations shat performed separately over frequency spans that have different out-of-band or spur 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 + \ldots + PPSD_n \\ (calculated in linear unit [mW] and transfer to log unit [dBm]) \\ EIRP_{total} = PPSD_{total} + DG $						

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3.4.4 Test Setup



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3.4.5 Test Result of Peak Power Spectral Density

Refer as Appendix D

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3.5 Unwanted Emissions

3.5.1 Transmitter Unwanted Emissions Limit

Unwanted emiss	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						

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- 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.

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	Un-restricted band emissions above 1GHz Limit						
Operating Band	Limit						
☐ 5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
☑ 5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]						
⊠ 5.47 - 5.725 GHz	e.i.r.p27 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.

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3.5.3 Test Procedures

Test Method

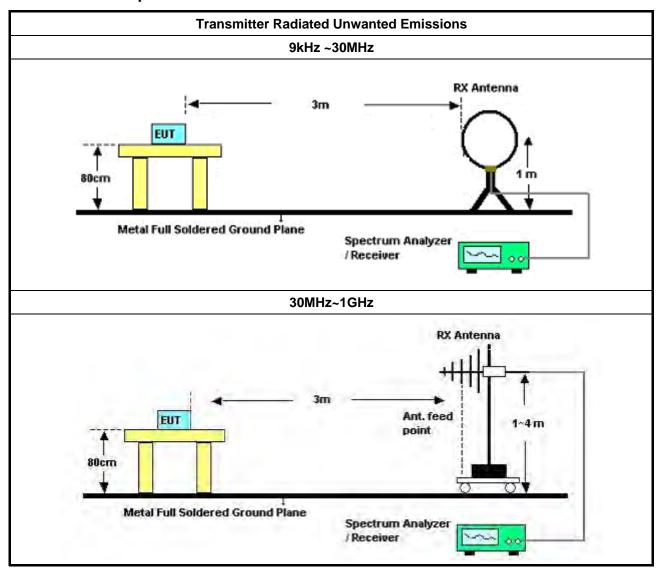
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- Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance 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 ≥ 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 ≥ 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.

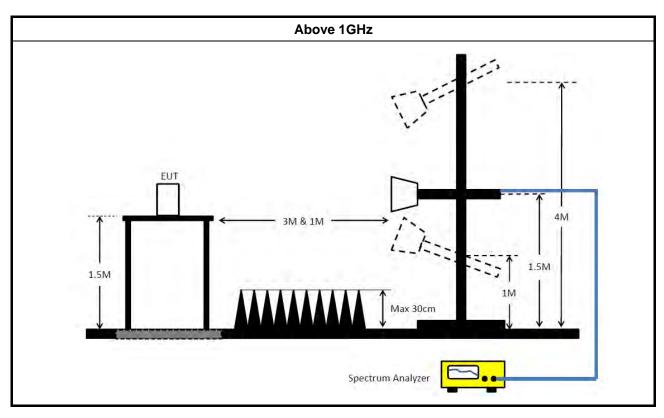
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3.5.4 Test Setup



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3.5.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.5.6 Transmitter Unwanted Emissions (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

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 10th harmonic or 40 GHz, whichever is appropriate.

3.5.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E

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Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50 -16-2	04083	150kHz ~ 100MHz	Dec. 25, 2019	Dec. 24, 2020	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 20, 2020	May 19, 2021	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 13, 2020	Apr. 12, 2021	Radiation (03CH01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH01-CB	30 MHz ~ 1 GHz	Jan. 28, 2020	Jan. 27, 2021	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Feb. 28, 2020	Feb. 27, 2021	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	Jul. 03, 2020	Jun. 02, 2021	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Apr. 16, 2020	Apr. 15, 2021	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH01-CB)
RF Cable-low	Woken	RG402	Low Cable-16+17	30 MHz ~ 1 GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH01-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz 3m	Mar. 28, 2020	Mar. 27, 2021	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 21, 2020	Apr. 20, 2021	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jul. 13, 2020	Jul. 12, 2021	Radiation (03CH02-CB)
Pre-Amplifier	MITEQ	TTA1840-35- HG	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSU	100015	9kHz~26GHz	Oct. 15, 2020	Oct. 14, 2021	Radiation (03CH02-CB)

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Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Jul. 27, 2020	Jul. 26, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-03	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Sep. 17, 2020	Sep. 16, 2021	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Sep. 17, 2020	Sep. 16, 2021	Conducted (TH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH02-CB)

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

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

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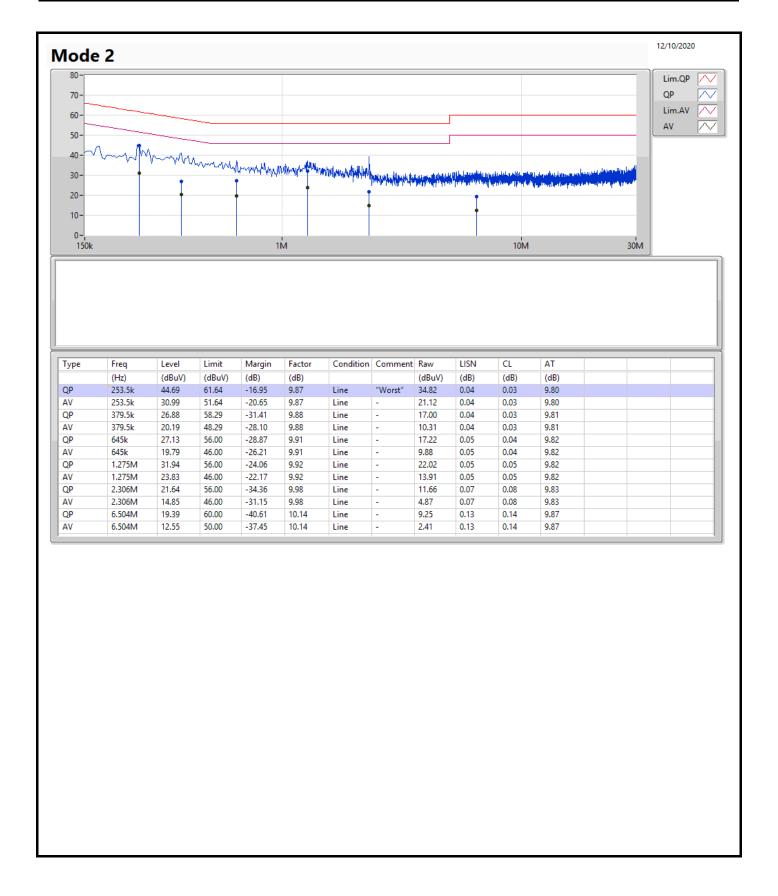
Conducted Emissions at Powerline

Appendix A

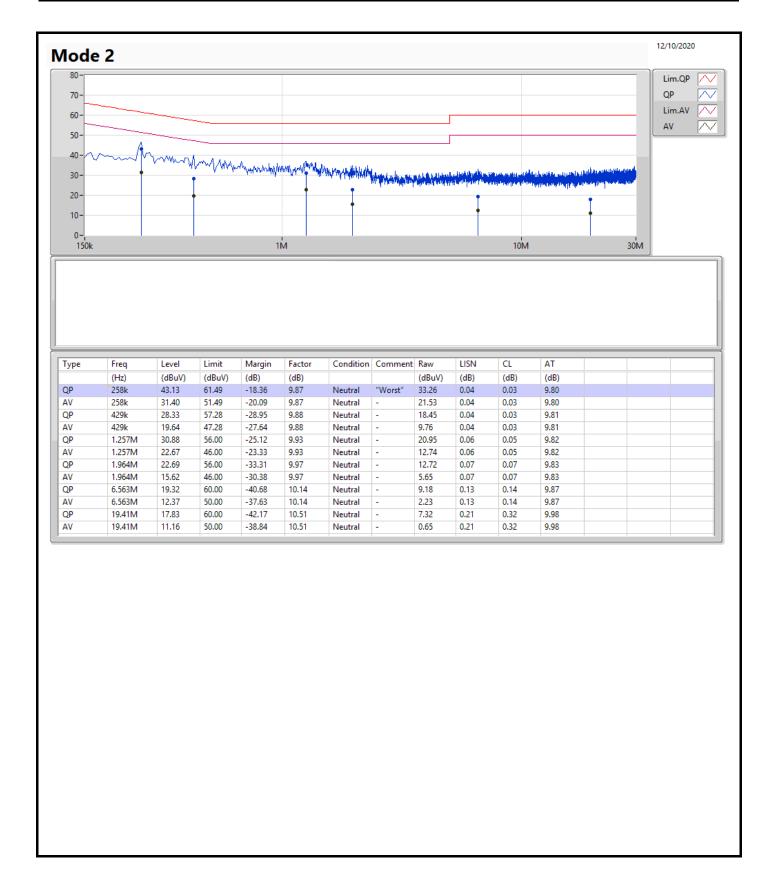
Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 2	Pass	QP	253.5k	44.69	61.64	-16.95	Line











Appendix B **EBW**

Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
5.25-5.35GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	36M	18.111M	18M1D1D	27.93M	17.031M
802.11ac VHT20_Nss1,(MCS0)_2TX	37.26M	18.951M	19M0D1D	31.44M	18.231M
802.11ac VHT40_Nss1,(MCS0)_2TX	84.6M	38.201M	38M2D1D	45.6M	36.822M
802.11ac VHT80_Nss1,(MCS0)_2TX	125.28M	76.642M	76M6D1D	98.04M	76.642M
5.47-5.725GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	31.11M	17.301M	17M3D1D	20.335M	13.643M
802.11ac VHT20_Nss1,(MCS0)_2TX	37.56M	18.381M	18M4D1D	22.62M	14.29M
802.11ac VHT40_Nss1,(MCS0)_2TX	61.98M	37.001M	37M0D1D	44.22M	33.471M
802.11ac VHT80_Nss1,(MCS0)_2TX	114.313M	76.522M	76M5D1D	88.8M	72.891M
5.725-5.85GHz	-	=	-	-	-
802.11a_Nss1,(6Mbps)_2TX	3.165M	8.111M	8M11D1D	3.165M	7.766M
802.11ac VHT20_Nss1,(MCS0)_2TX	3.78M	10.105M	10M1D1D	3.78M	8.261M
802.11ac VHT40_Nss1,(MCS0)_2TX	3.165M	21.934M	21M9D1D	3.165M	18.021M
802.11ac VHT80_Nss1,(MCS0)_2TX	3.165M	25.352M	25M4D1D	3.165M	19.265M

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

Max-OBW = Maximum99% 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;



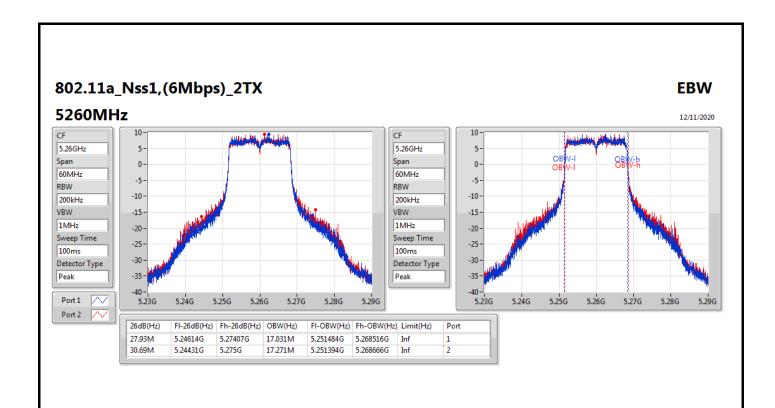
EBW Appendix B

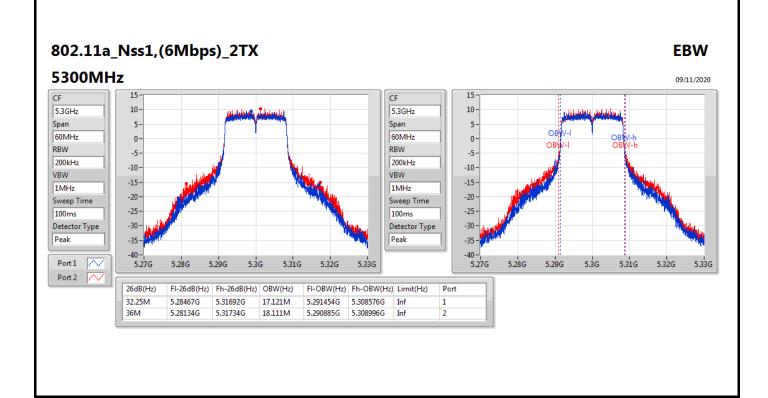
Result

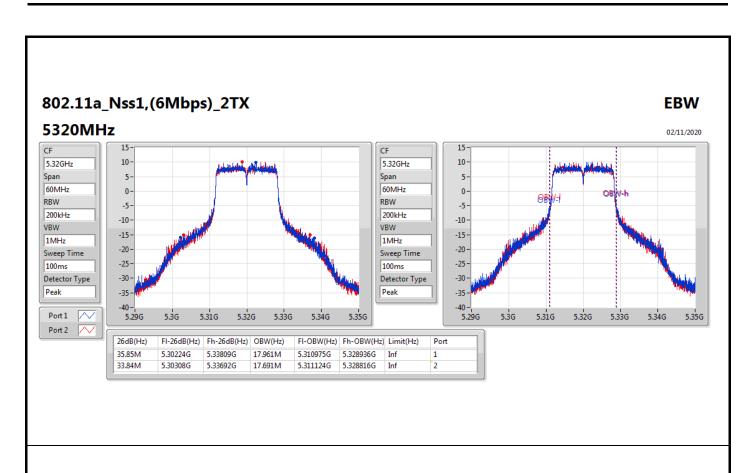
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5260MHz	Pass	Inf	27.93M	17.031M	30.69M	17.271M
5300MHz	Pass	Inf	32.25M	17.121M	36M	18.111M
5320MHz	Pass	Inf	35.85M	17.961M	33.84M	17.691M
5500MHz	Pass	Inf	22.26M	16.672M	21.69M	16.612M
5580MHz	Pass	Inf	31.11M	17.301M	30.33M	17.091M
5700MHz	Pass	Inf	22.08M	16.672M	21.93M	16.582M
5720MHz Straddle 5.47-5.725GHz	Pass	Inf	20.335M	13.643M	22.348M	13.748M
5720MHz Straddle 5.725-5.85GHz	Pass	500k	3.165M	7.766M	3.165M	8.111M
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5260MHz	Pass	Inf	37.26M	18.951M	35.01M	18.681M
5300MHz	Pass	Inf	35.52M	18.501M	35.91M	18.861M
5320MHz	Pass	Inf	31.44M	18.231M	35.88M	18.321M
5500MHz	Pass	Inf	23.52M	17.841M	22.62M	17.841M
5580MHz	Pass	Inf	37.56M	18.381M	33.18M	18.321M
5700MHz	Pass	Inf	22.71M	17.841M	23.22M	17.871M
5720MHz Straddle 5.47-5.725GHz	Pass	Inf	23.835M	14.588M	25.008M	14.29M
5720MHz Straddle 5.725-5.85GHz	Pass	500k	3.78M	10.105M	3.78M	8.261M
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5270MHz	Pass	Inf	84.6M	38.201M	77.94M	37.661M
5310MHz	Pass	Inf	49.32M	36.882M	45.6M	36.822M
5510MHz	Pass	Inf	44.58M	36.582M	44.58M	36.582M
5550MHz	Pass	Inf	61.98M	37.001M	55.26M	36.942M
5670MHz	Pass	Inf	46.44M	36.702M	44.22M	36.582M
5710MHz Straddle 5.47-5.725GHz	Pass	Inf	56.513M	34.37M	49.688M	33.471M
5710MHz Straddle 5.725-5.85GHz	Pass	500k	3.165M	21.934M	3.165M	18.021M
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5290MHz	Pass	Inf	125.28M	76.642M	98.04M	76.642M
5530MHz	Pass	Inf	88.8M	76.522M	89.76M	76.402M
5690MHz Straddle 5.47-5.725GHz	Pass	Inf	114.313M	73.278M	96.255M	72.891M
5690MHz Straddle 5.725-5.85GHz	Pass	500k	3.165M	25.352M	3.165M	19.265M

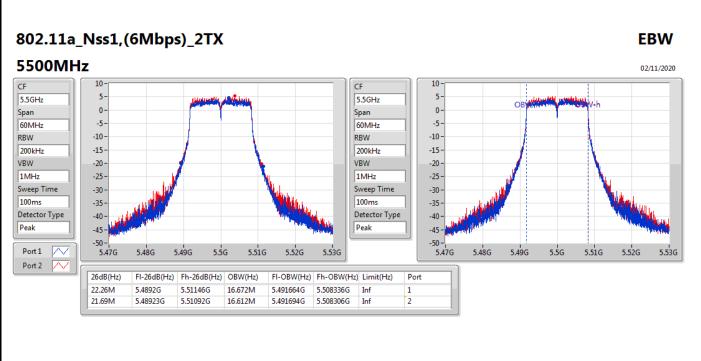
Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band Port X-OBW = Port X 99% occupied bandwidth;

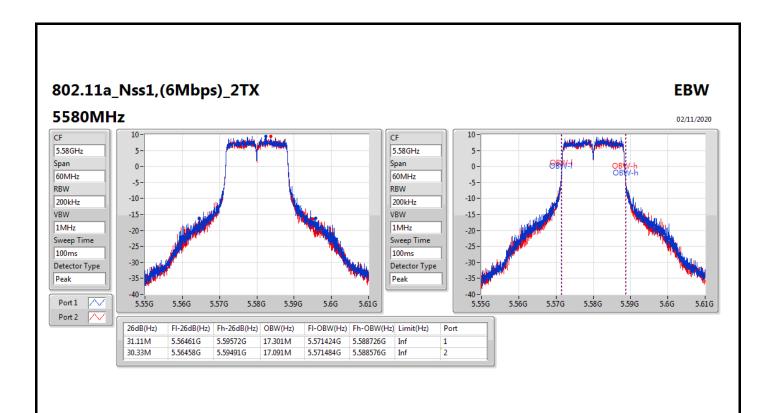
EBW Appendix B

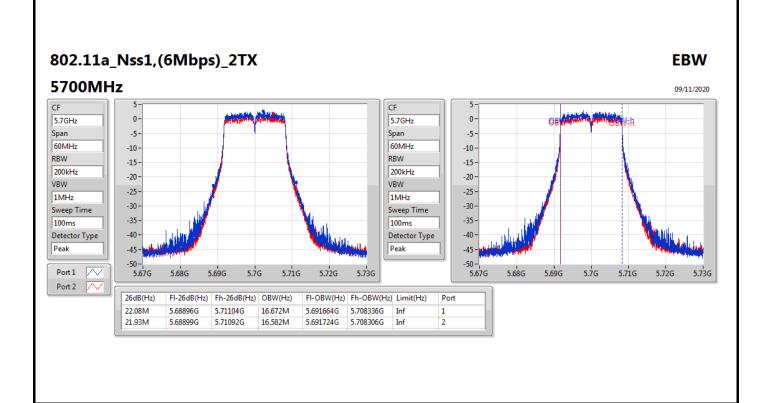




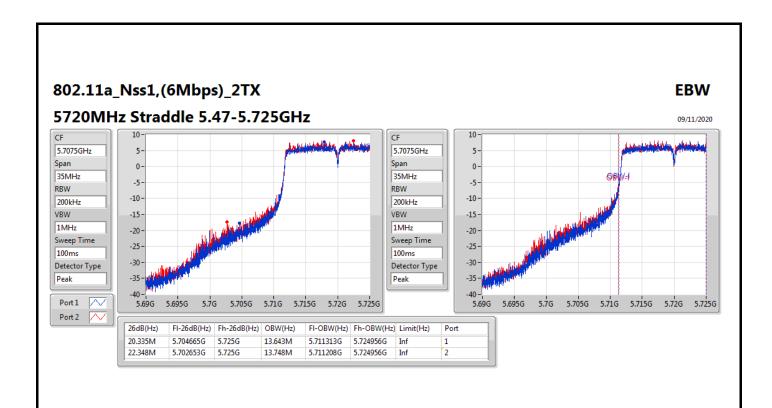


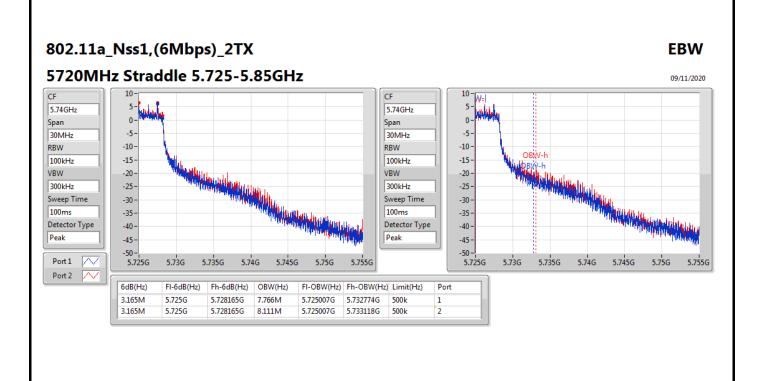




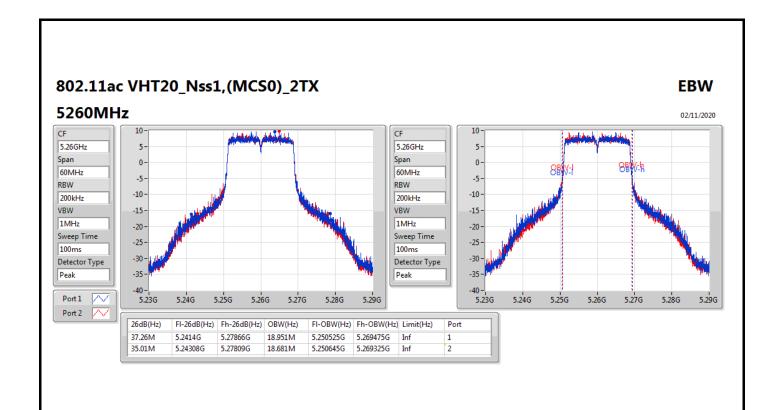


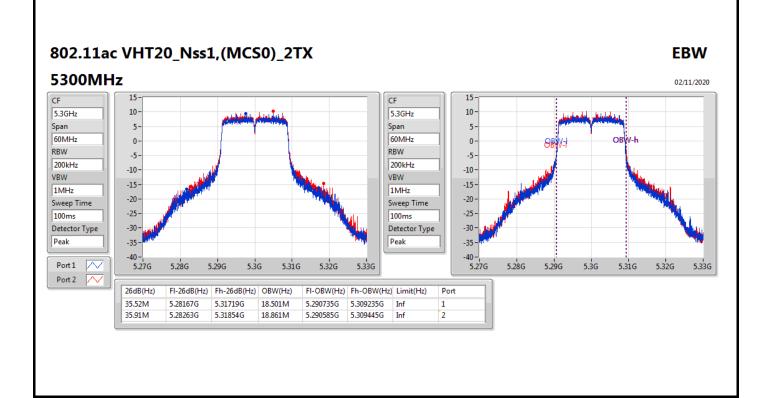
: 5 of 16



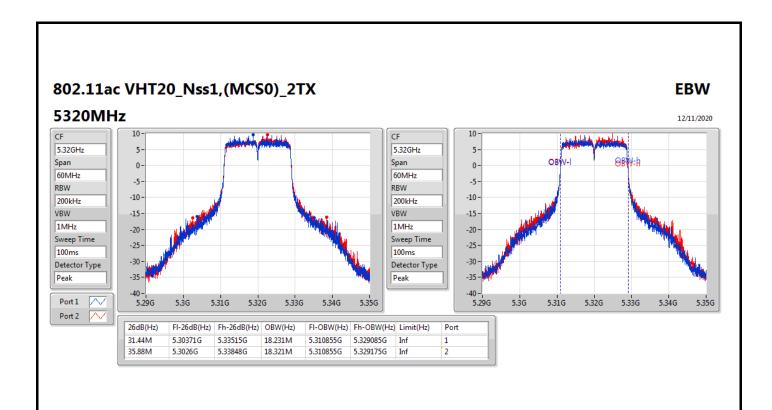


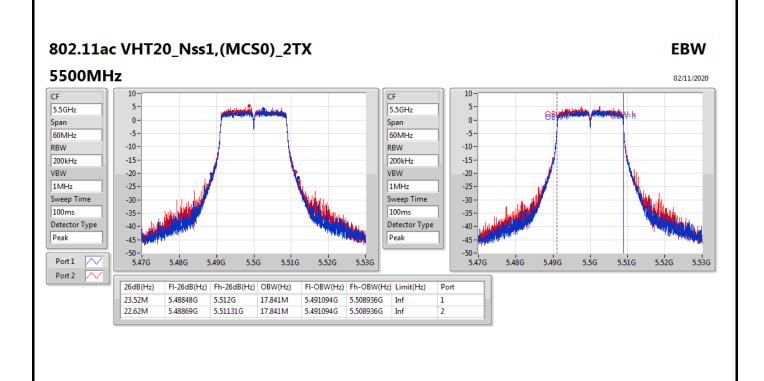
: 6 of 16

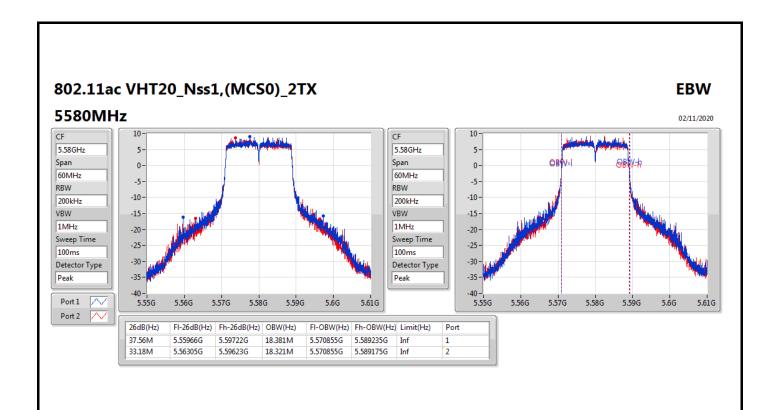


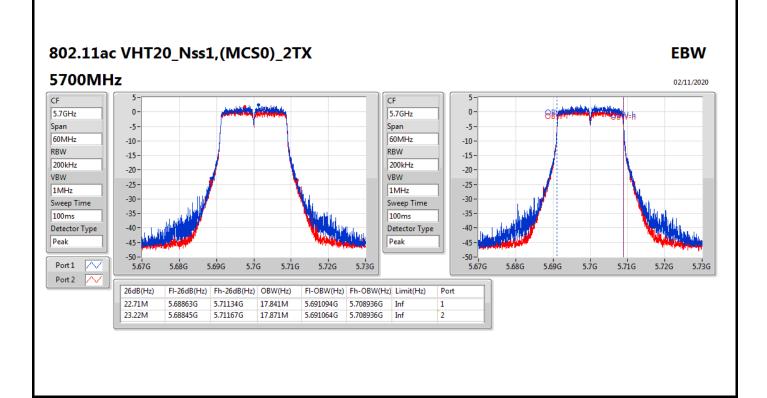


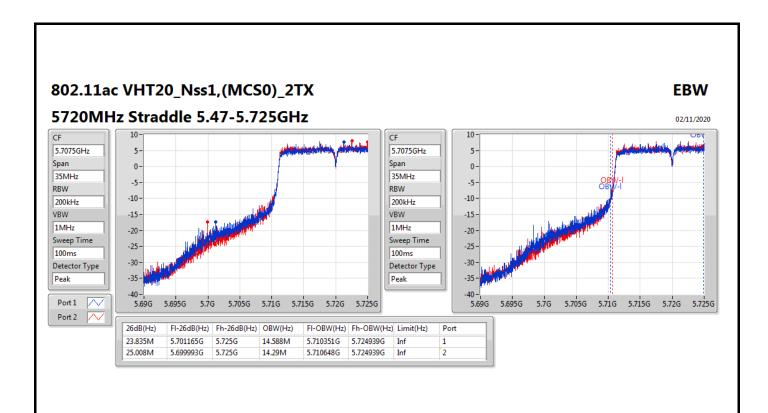
: 7 of 16

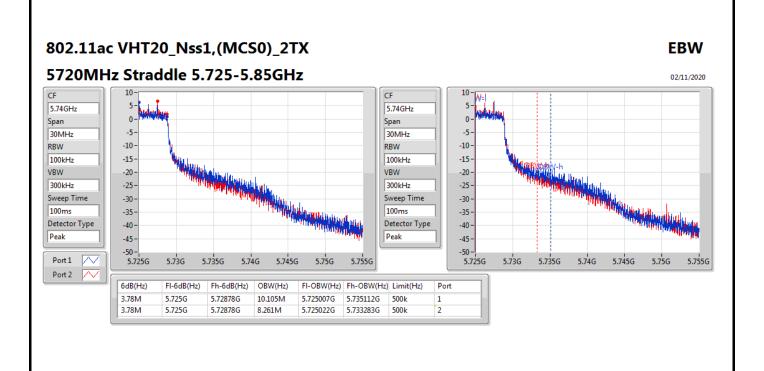


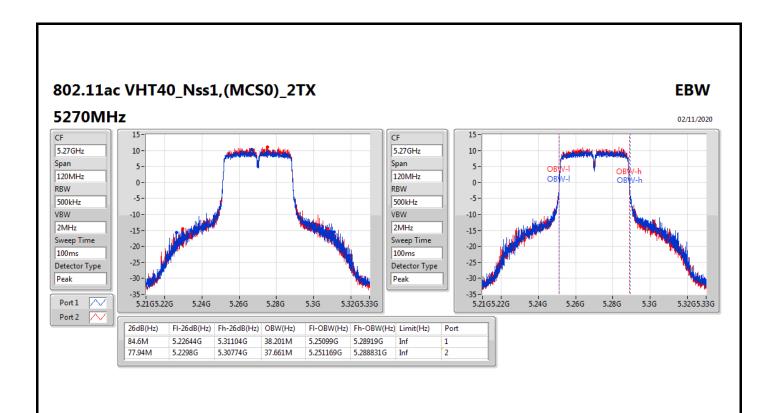


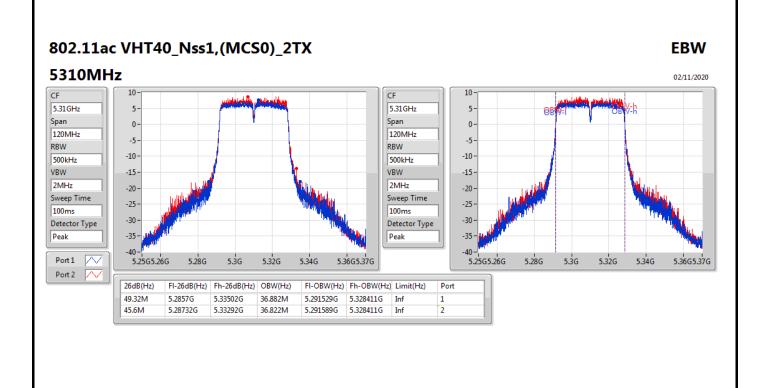


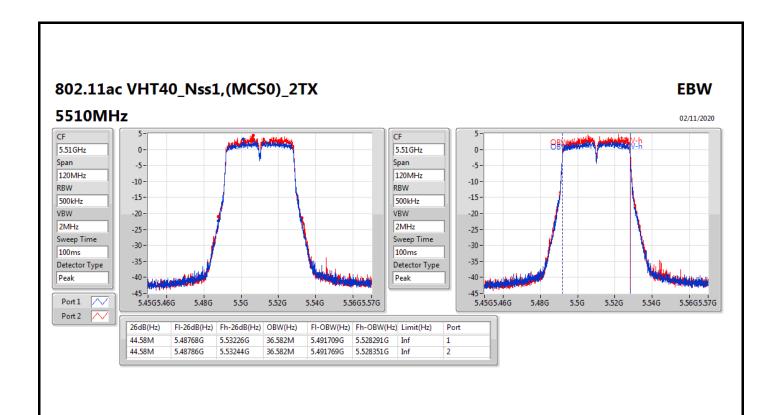


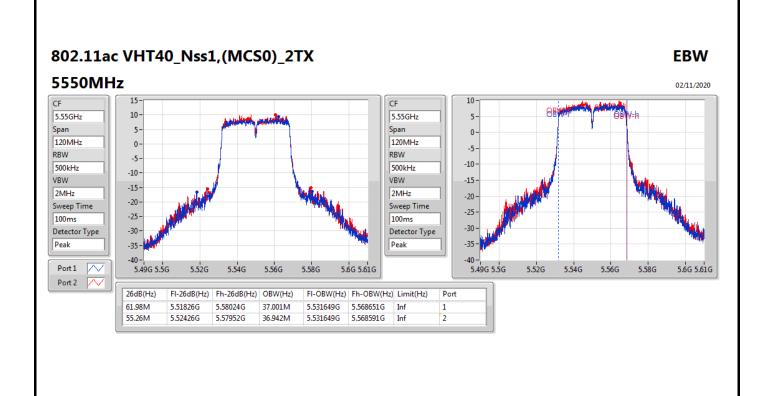




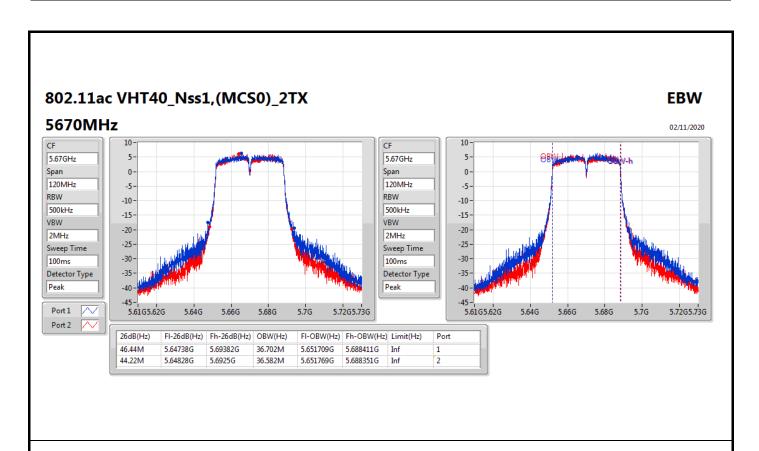


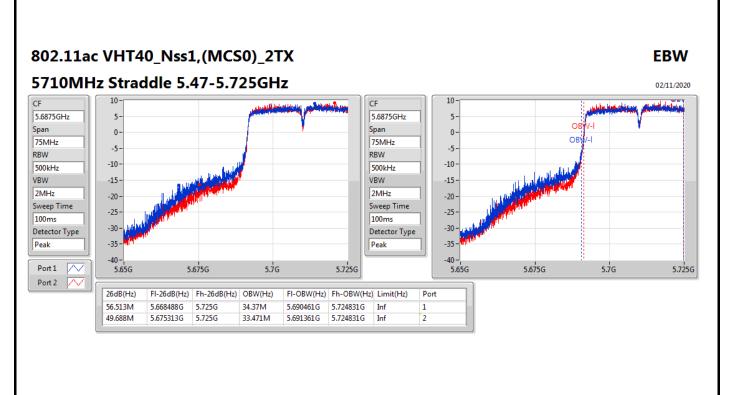


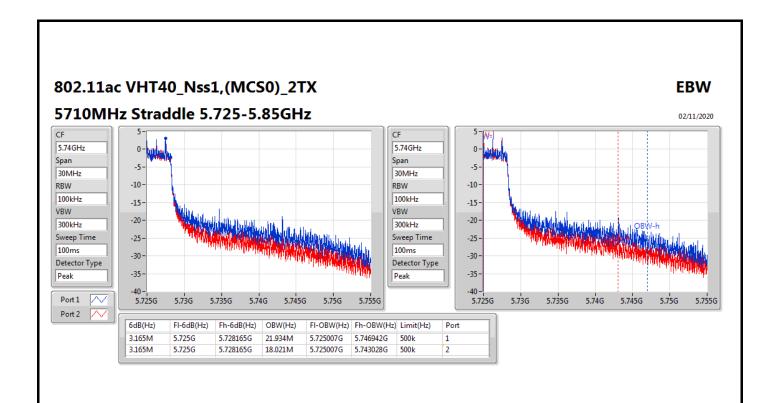


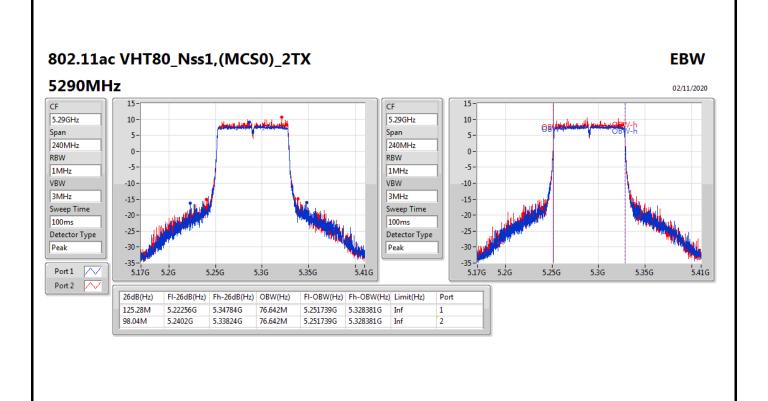


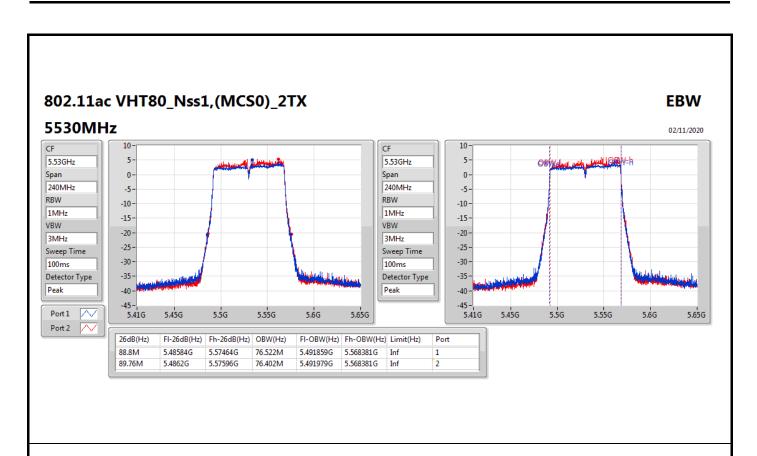
: 12 of 16

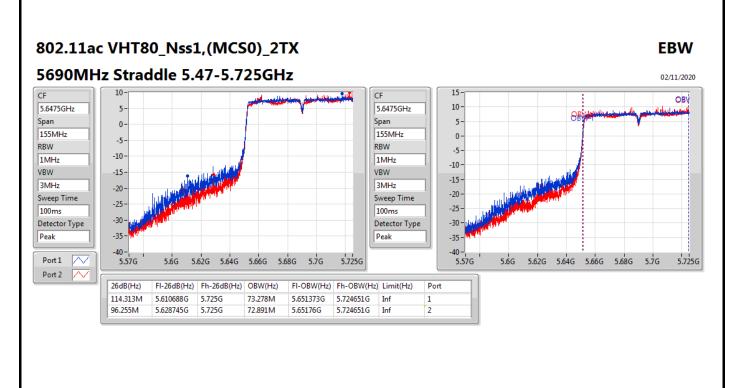


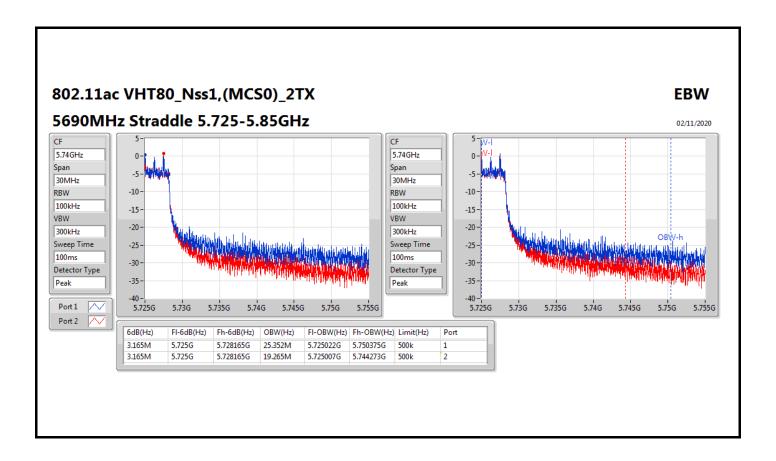














Average Power Appendix C

Summary

Mode	Total Power	Total Power		
	(dBm)	(W)		
5.25-5.35GHz	-	-		
802.11a_Nss1,(6Mbps)_2TX	22.99	0.19907		
802.11ac VHT20_Nss1,(MCS0)_2TX	22.98	0.19861		
802.11ac VHT40_Nss1,(MCS0)_2TX	22.96	0.19770		
802.11ac VHT80_Nss1,(MCS0)_2TX	20.94	0.12417		
5.47-5.725GHz	-	-		
802.11a_Nss1,(6Mbps)_2TX	22.42	0.17458		
802.11ac VHT20_Nss1,(MCS0)_2TX	22.24	0.16749		
802.11ac VHT40_Nss1,(MCS0)_2TX	21.67	0.14689		
802.11ac VHT80_Nss1,(MCS0)_2TX	20.45	0.11092		
5.725-5.85GHz	-	-		
802.11a_Nss1,(6Mbps)_2TX	13.95	0.02483		
802.11ac VHT20_Nss1,(MCS0)_2TX	14.33	0.02710		
802.11ac VHT40_Nss1,(MCS0)_2TX	10.43	0.01104		
802.11ac VHT80_Nss1,(MCS0)_2TX	7.36	0.00545		



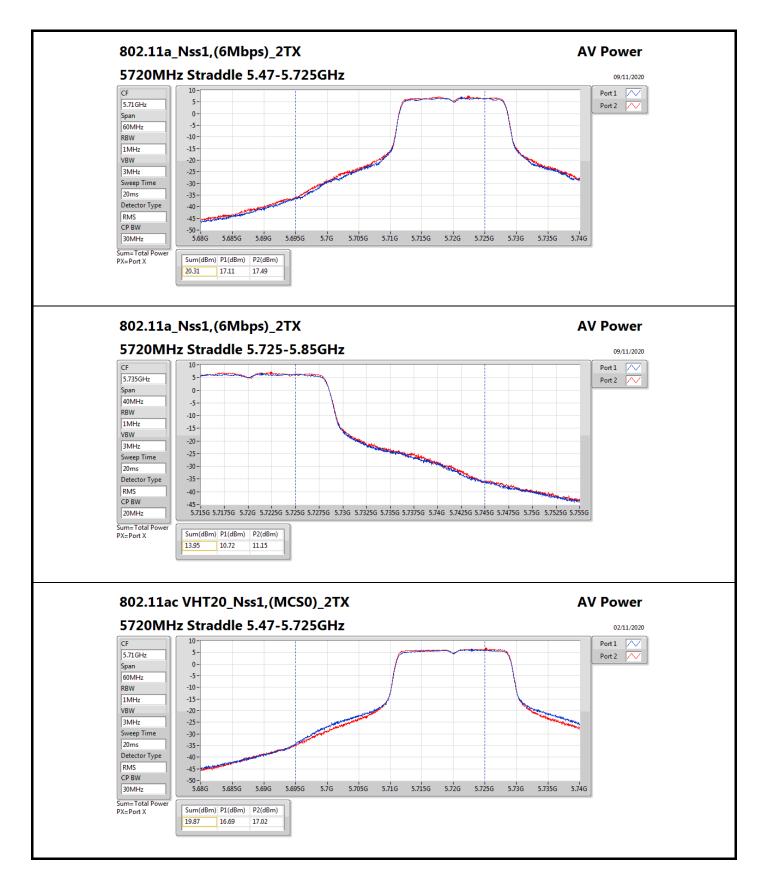
Average Power Appendix C

Result

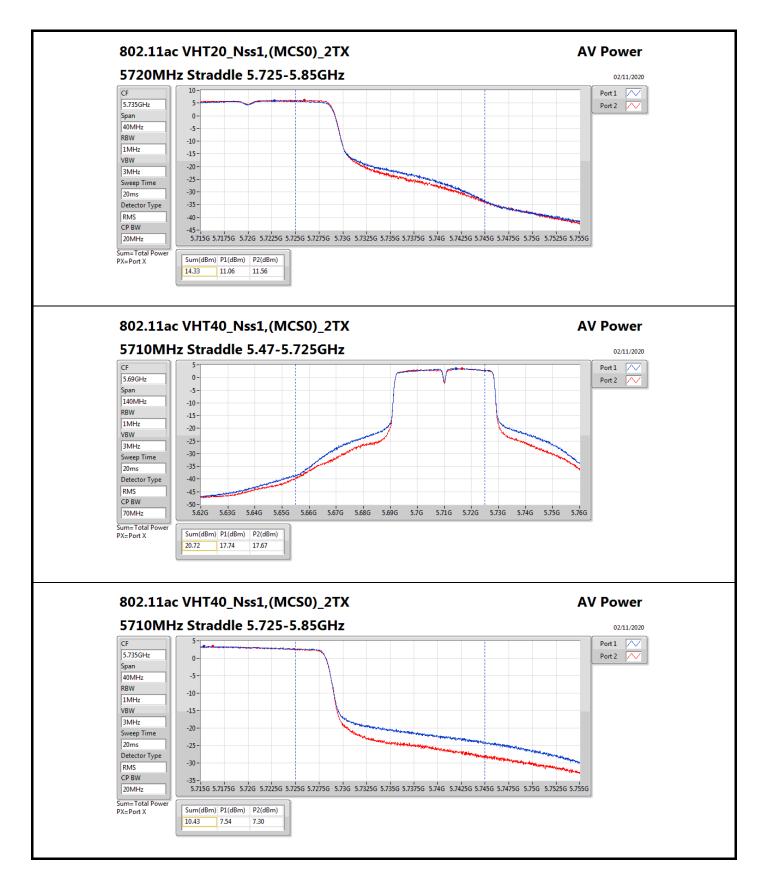
Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit	
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	
5260MHz	Pass	0.00	19.65	19.76	22.72	23.98	
5300MHz	Pass	0.00	19.67	20.22	22.96	23.98	
5320MHz	Pass	0.00	19.92	20.03	22.99	23.98	
5500MHz	Pass	2.00	15.14	15.76	18.47	23.98	
5580MHz	Pass	2.00	19.45	19.36	22.42	23.98	
5700MHz	Pass	3.90	13.32	12.58	15.98	23.98	
5720MHz Straddle 5.47-5.725GHz	Pass	3.90	17.11	17.49	20.31	23.98	
5720MHz Straddle 5.725-5.85GHz	Pass	3.90	10.72	11.15	13.95	30.00	
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5260MHz	Pass	0.00	19.84	19.99	22.93	23.98	
5300MHz	Pass	0.00	19.69	20.23	22.98	23.98	
5320MHz	Pass	0.00	19.61	19.88	22.76	23.98	
5500MHz	Pass	2.00	15.06	15.67	18.39	23.98	
5580MHz	Pass	2.00	19.24	19.22	22.24	23.98	
5700MHz	Pass	3.90	13.29	12.49	15.92	23.98	
5720MHz Straddle 5.47-5.725GHz	Pass	3.90	16.69	17.02	19.87	23.98	
5720MHz Straddle 5.725-5.85GHz	Pass	3.90	11.06	11.56	14.33	30.00	
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5270MHz	Pass	0.00	19.79	20.10	22.96	23.98	
5310MHz	Pass	0.00	16.93	17.71	20.35	23.98	
5510MHz	Pass	2.00	12.67	13.23	15.97	23.98	
5550MHz	Pass	2.00	18.71	18.61	21.67	23.98	
5670MHz	Pass	3.90	15.25	14.99	18.13	23.98	
5710MHz Straddle 5.47-5.725GHz	Pass	3.90	17.74	17.67	20.72	23.98	
5710MHz Straddle 5.725-5.85GHz	Pass	3.90	7.54	7.30	10.43	30.00	
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5290MHz	Pass	0.00	17.75	18.10	20.94	23.98	
5530MHz	Pass	2.00	13.05	13.57	16.33	23.98	
5690MHz Straddle 5.47-5.725GHz	Pass	3.90	17.57	17.30	20.45	23.98	
5690MHz Straddle 5.725-5.85GHz	Pass	3.90	4.41	4.29	7.36	30.00	

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

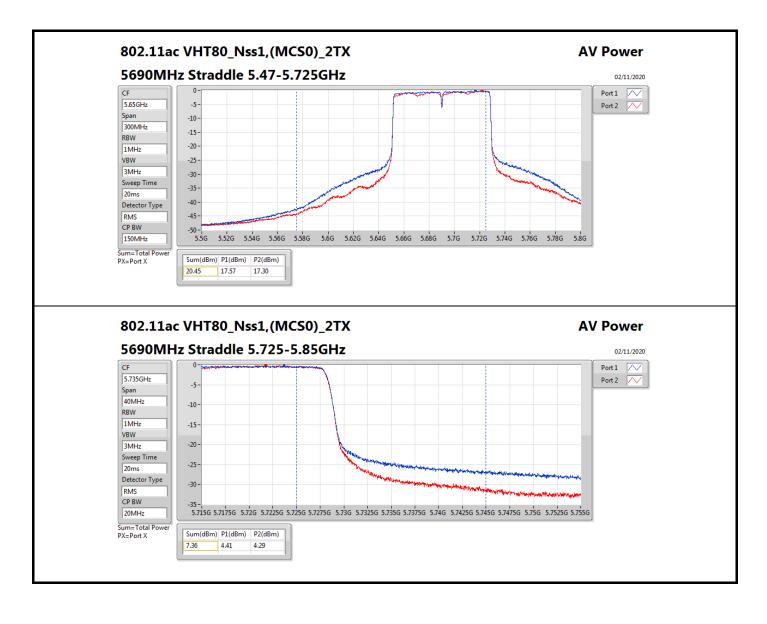














Summary

Mode	PD					
	(dBm/RBW)					
5.25-5.35GHz	-					
802.11a_Nss1,(6Mbps)_2TX	10.07					
802.11ac VHT20_Nss1,(MCS0)_2TX	9.58					
802.11ac VHT40_Nss1,(MCS0)_2TX	6.49					
802.11ac VHT80_Nss1,(MCS0)_2TX	1.30					
5.47-5.725GHz	-					
802.11a_Nss1,(6Mbps)_2TX	9.60					
802.11ac VHT20_Nss1,(MCS0)_2TX	9.04					
802.11ac VHT40_Nss1,(MCS0)_2TX	5.56					
802.11ac VHT80_Nss1,(MCS0)_2TX	1.43					
5.725-5.85GHz	-					
802.11a_Nss1,(6Mbps)_2TX	6.21					
802.11ac VHT20_Nss1,(MCS0)_2TX	5.94					
802.11ac VHT40_Nss1,(MCS0)_2TX	2.76					
802.11ac VHT80_Nss1,(MCS0)_2TX	-0.17					

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



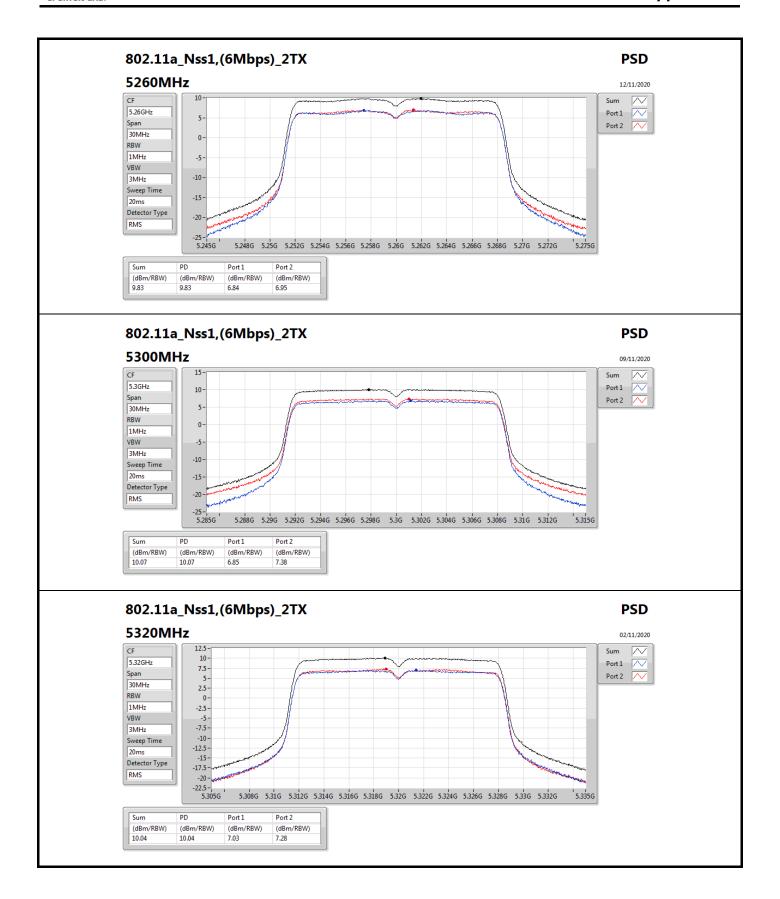
Appendix D **PSD**

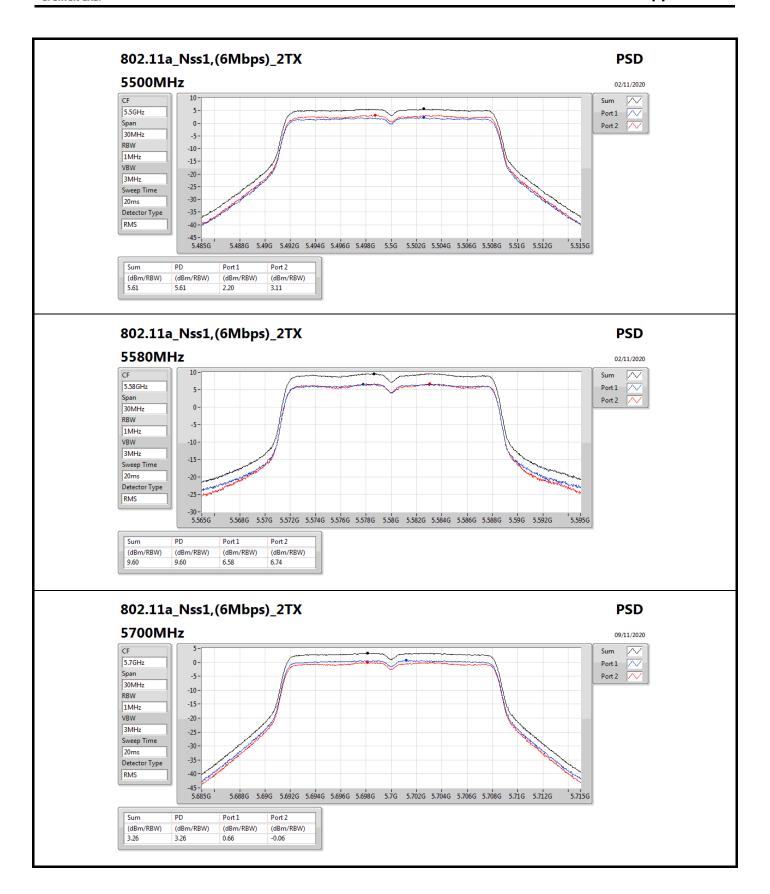
Result

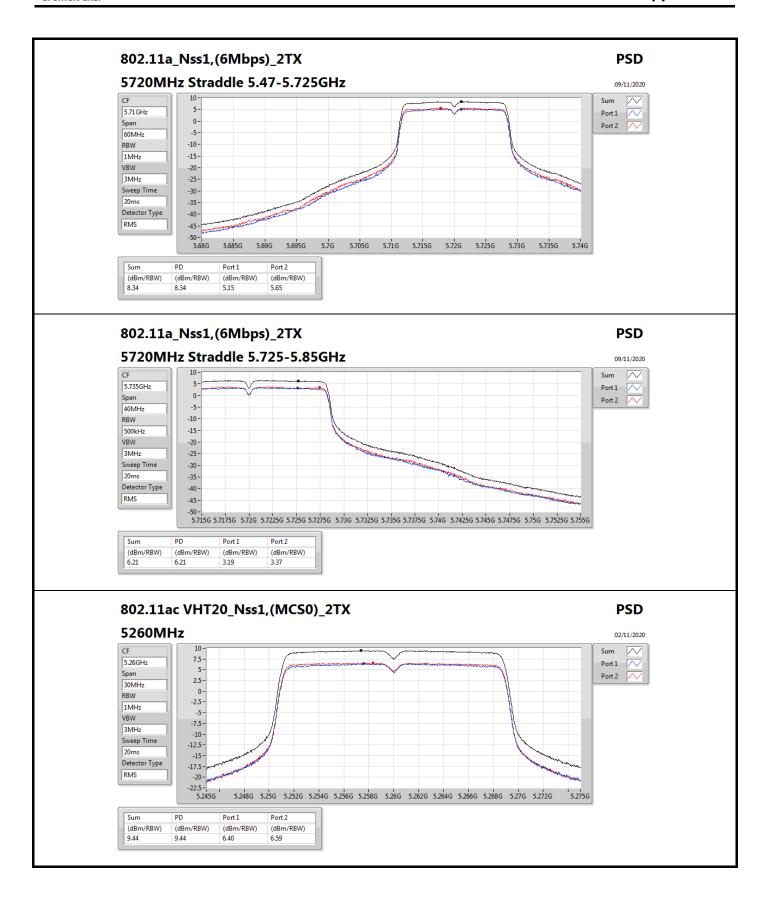
Mode	Result	DG	Port 1	Port 2	PD	PD Limit	
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	
5260MHz	Pass	2.96	6.84	6.95	9.83	11.00	
5300MHz	Pass	2.96	6.85	7.38	10.07	11.00	
5320MHz	Pass	2.96	7.03	7.28	10.04	11.00	
5500MHz	Pass	4.72	2.20	3.11	5.61	11.00	
5580MHz	Pass	4.72	6.58	6.74	9.60	11.00	
5700MHz	Pass	6.62	0.66	-0.06	3.26	10.38	
5720MHz Straddle 5.47-5.725GHz	Pass	6.62	5.15	5.65	8.34	10.38	
5720MHz Straddle 5.725-5.85GHz	Pass	6.62	3.19	3.37	6.21	29.38	
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5260MHz	Pass	2.96	6.40	6.59	9.44	11.00	
5300MHz	Pass	2.96	6.34	6.94	9.58	11.00	
5320MHz	Pass	2.96	6.28	6.78	9.41	11.00	
5500MHz	Pass	4.72	1.59	2.46	5.02	11.00	
5580MHz	Pass	4.72	5.99	6.13	9.04	11.00	
5700MHz	Pass	6.62	0.04	-0.88	2.46	10.38	
5720MHz Straddle 5.47-5.725GHz	Pass	6.62	4.64	4.82	7.71	10.38	
5720MHz Straddle 5.725-5.85GHz	Pass	6.62	2.70	3.18	5.94	29.38	
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	٠	٠	-	-	
5270MHz	Pass	2.96	3.38	3.68	6.49	11.00	
5310MHz	Pass	2.96	0.77	1.44	4.05	11.00	
5510MHz	Pass	4.72	-3.68	-2.66	-0.24	11.00	
5550MHz	Pass	4.72	2.39	2.75	5.56	11.00	
5670MHz	Pass	6.62	-0.66	-0.92	2.05	10.38	
5710MHz Straddle 5.47-5.725GHz	Pass	6.62	2.04	1.96	4.96	10.38	
5710MHz Straddle 5.725-5.85GHz	Pass	6.62	-0.11	-0.22	2.76	29.38	
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5290MHz	Pass	2.96	-1.74	-1.42	1.30	11.00	
5530MHz	Pass	4.72	-6.20	-5.25	-2.78	11.00	
5690MHz Straddle 5.47-5.725GHz	Pass	6.62	-1.58	-1.45	1.43	10.38	
5690MHz Straddle 5.725-5.85GHz	Pass	6.62	-3.15	-3.08	-0.17	29.38	

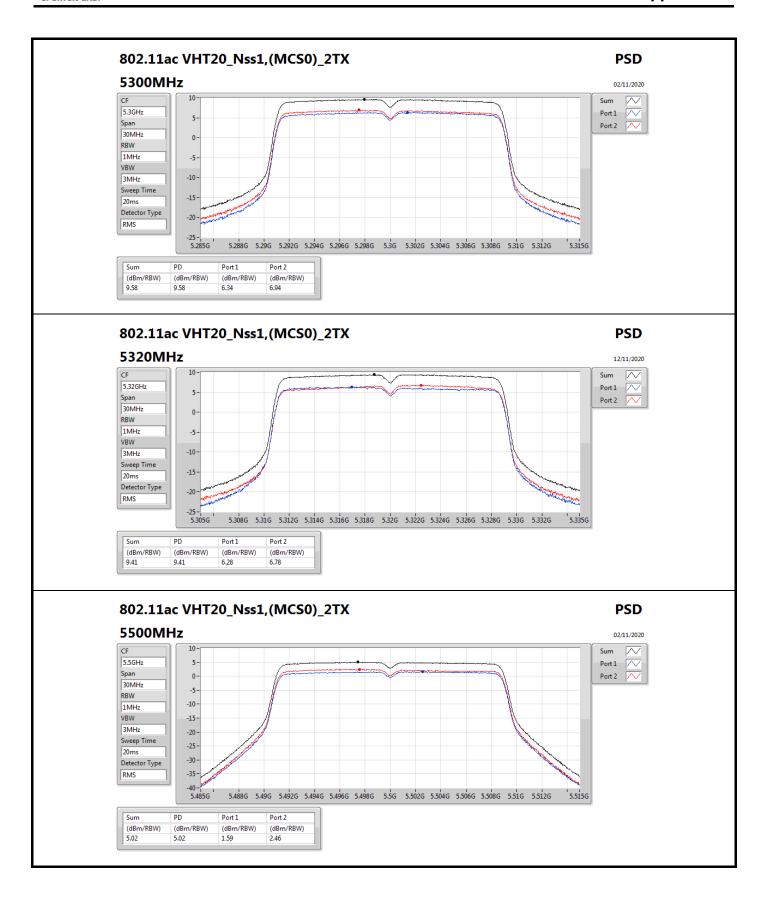
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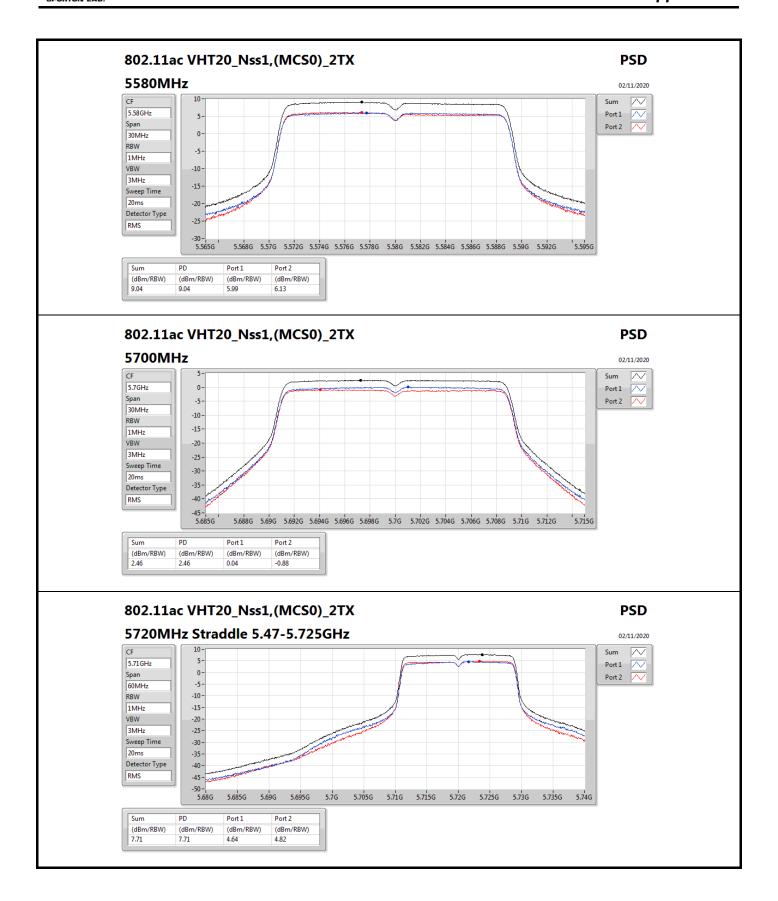
DG = Directional Gain; RBW = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;

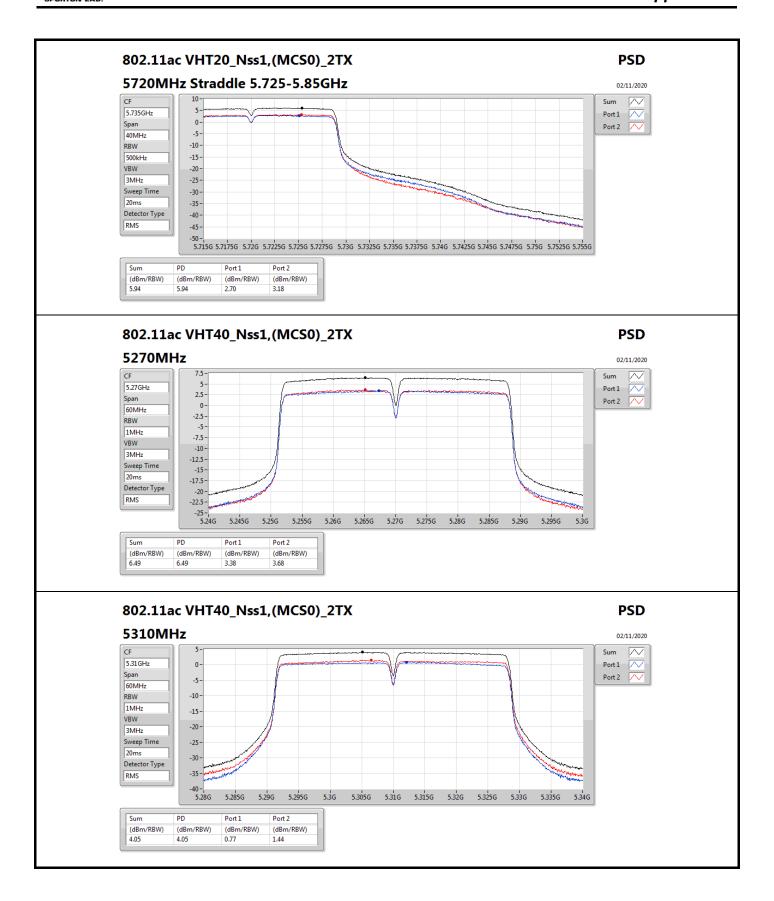


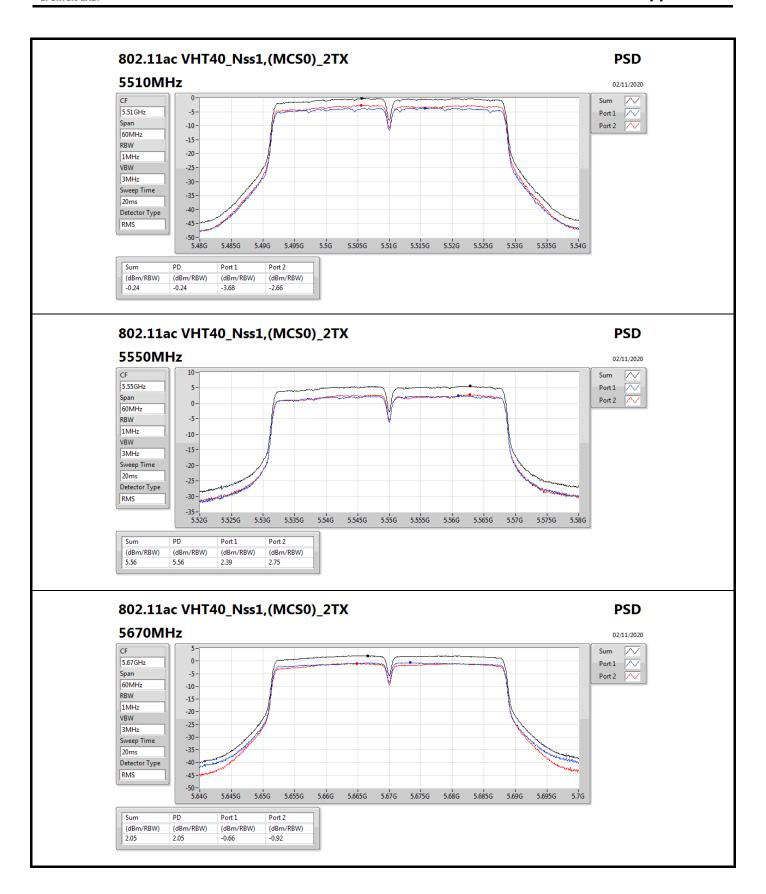


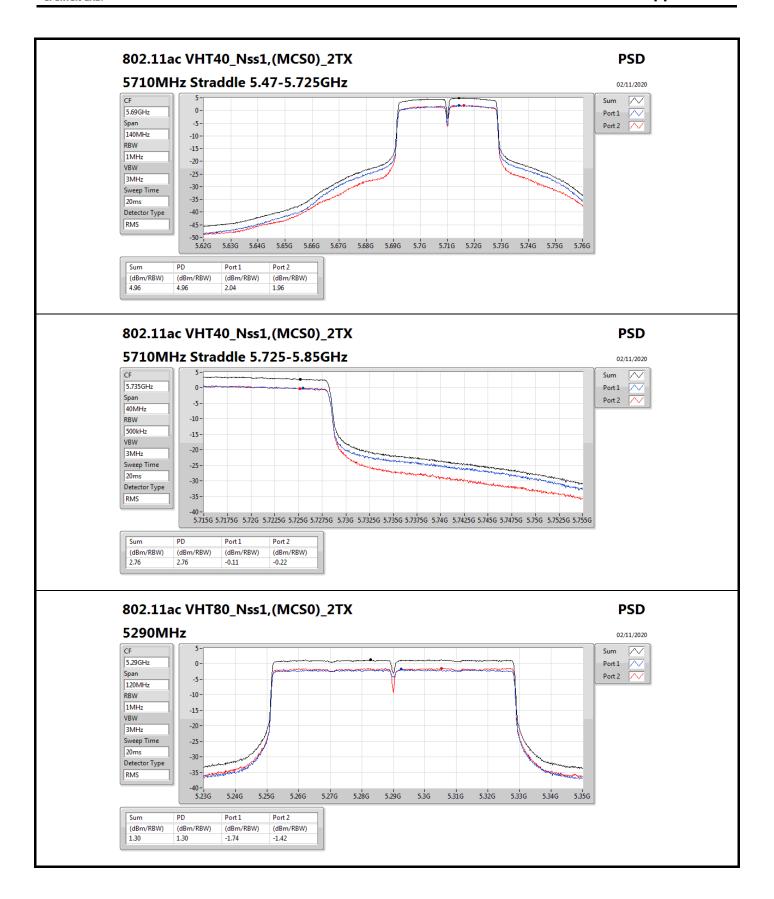


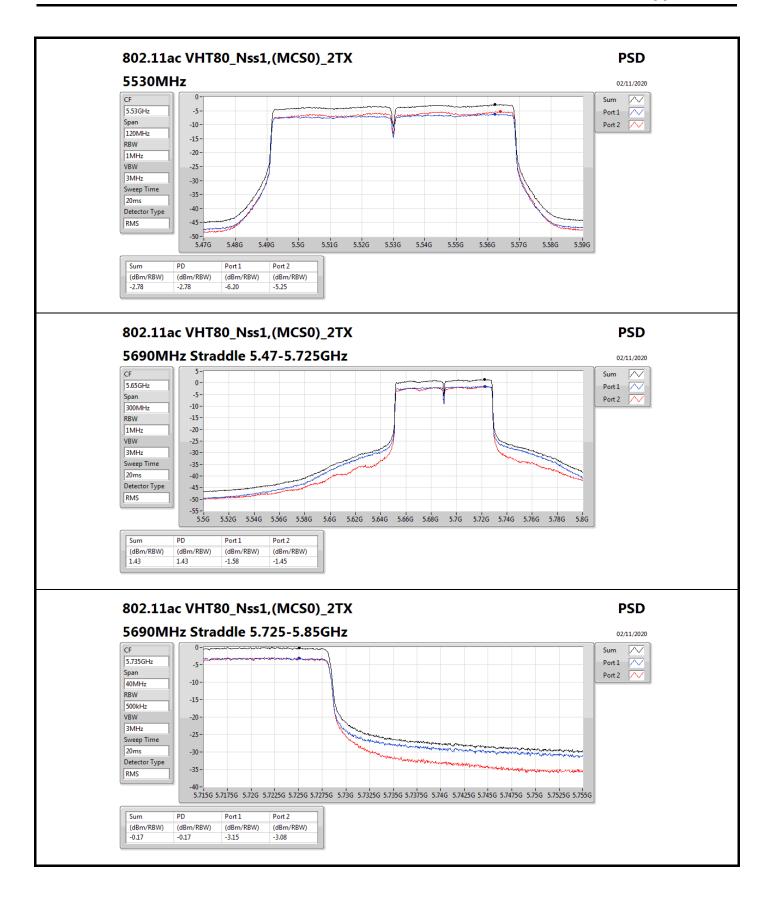














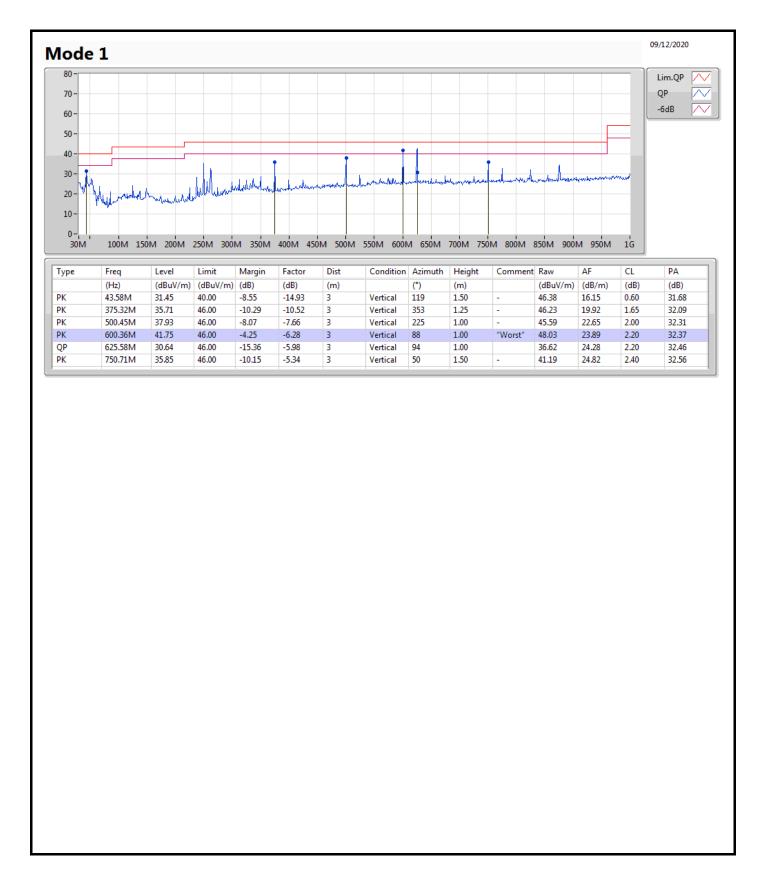
Radiated Emissions below 1GHz

Appendix E.1

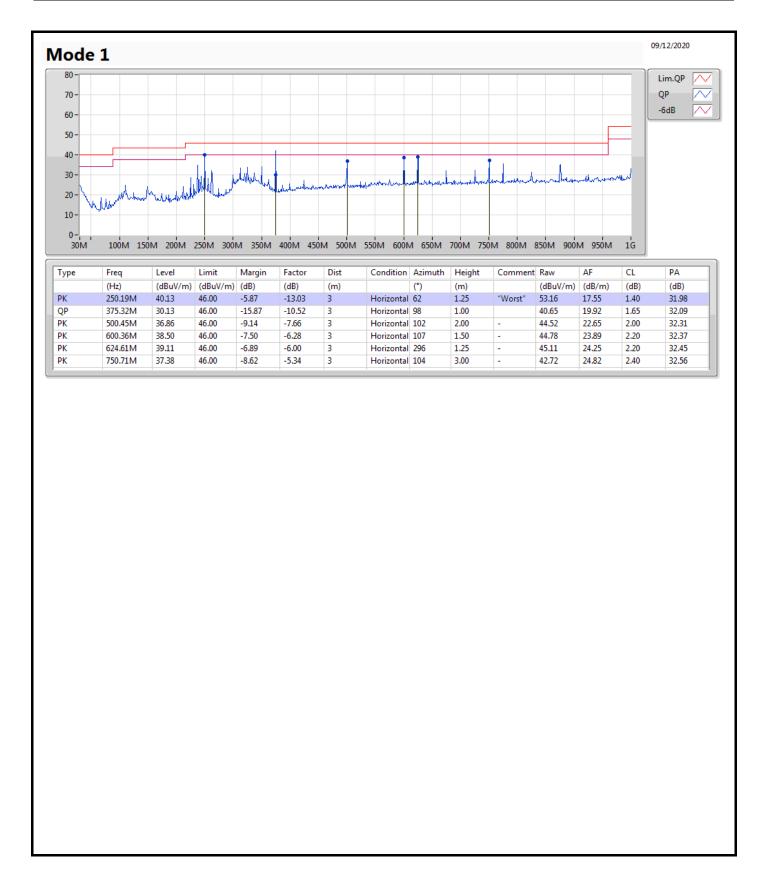
Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	PK	600.36	41.75	46.00	-4.25	Vertical











RSE TX above 1GHz

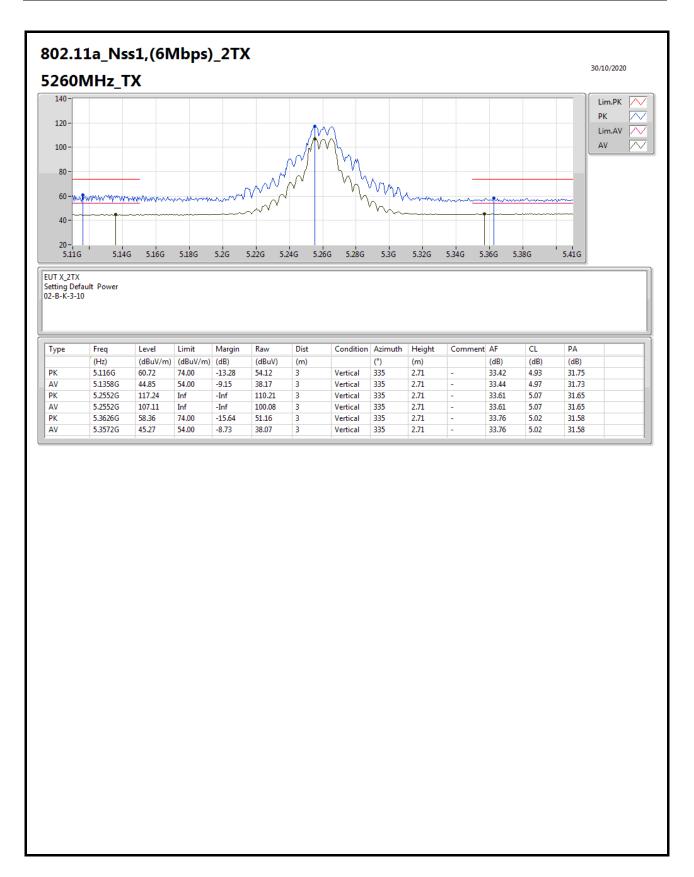
Appendix E.2

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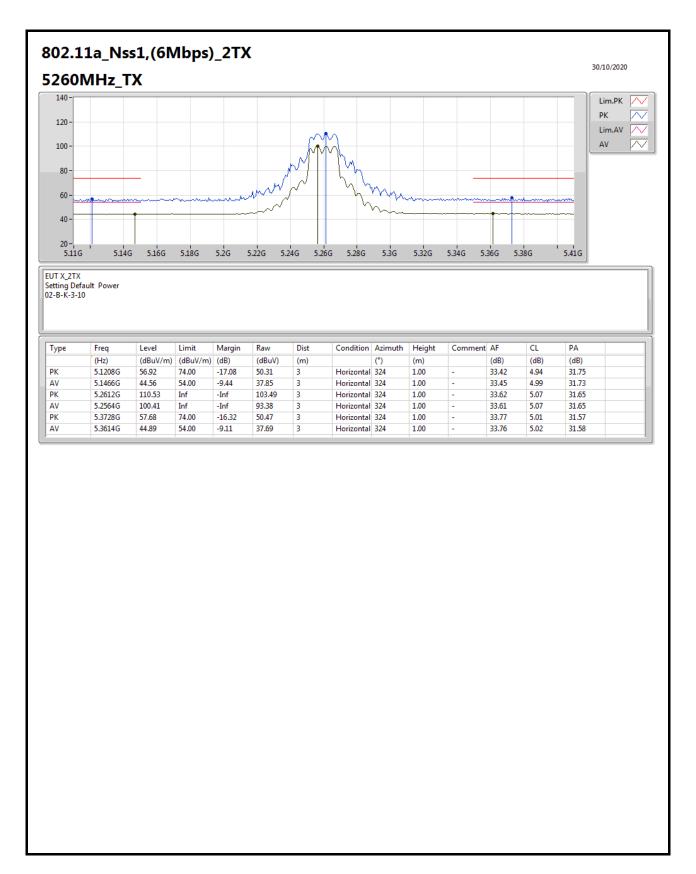
Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
5.47-5.725GHz	-	-	-	-	-	-	-	-	-	-	-
802.11ac VHT80_Nss1,(MCS0)_2TX	Pass	PK	5.85G	67.90	68.20	-0.30	3	Vertical	327	2.36	-

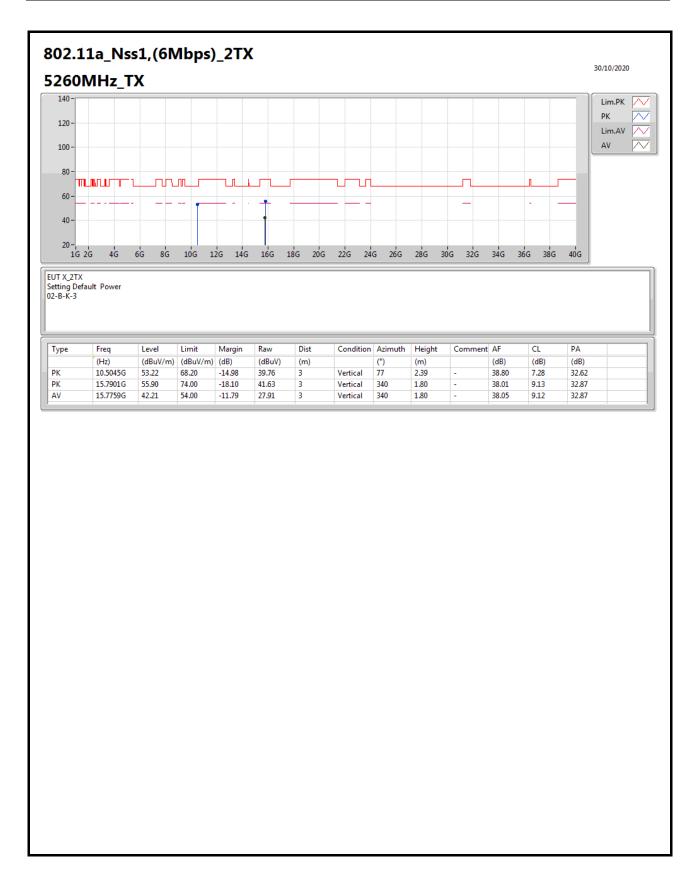




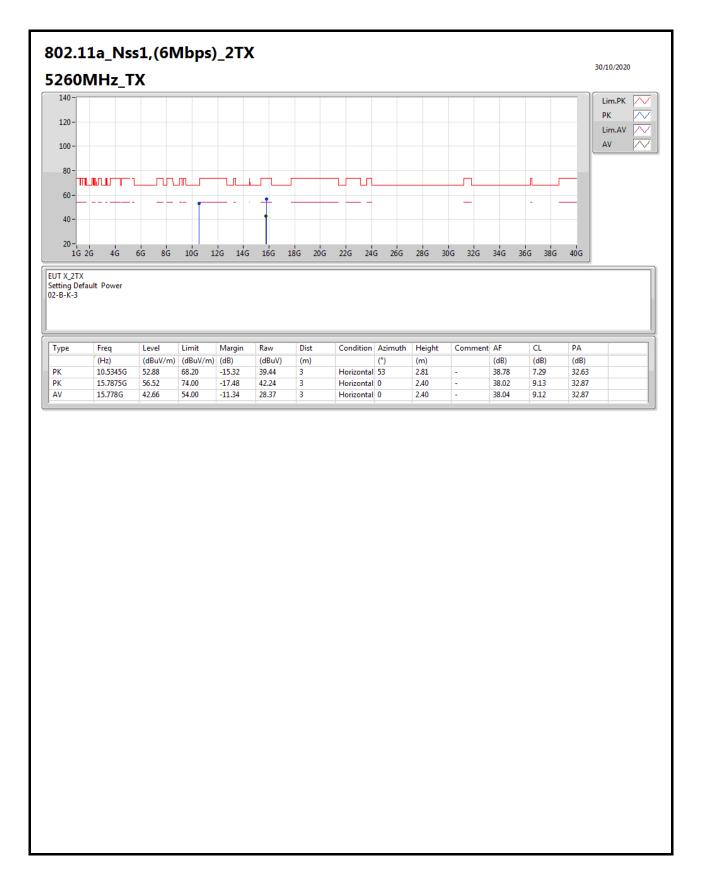




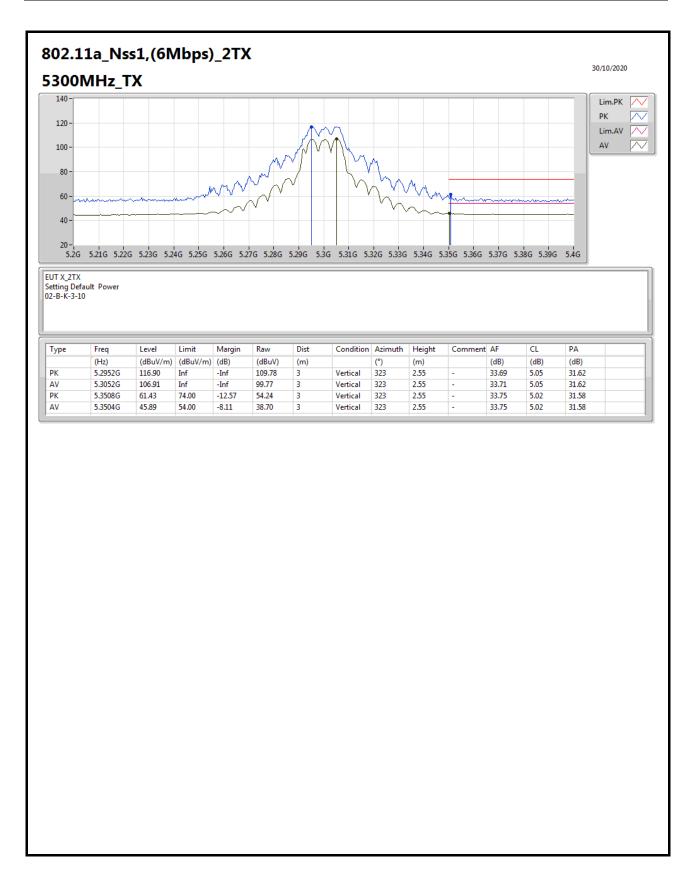




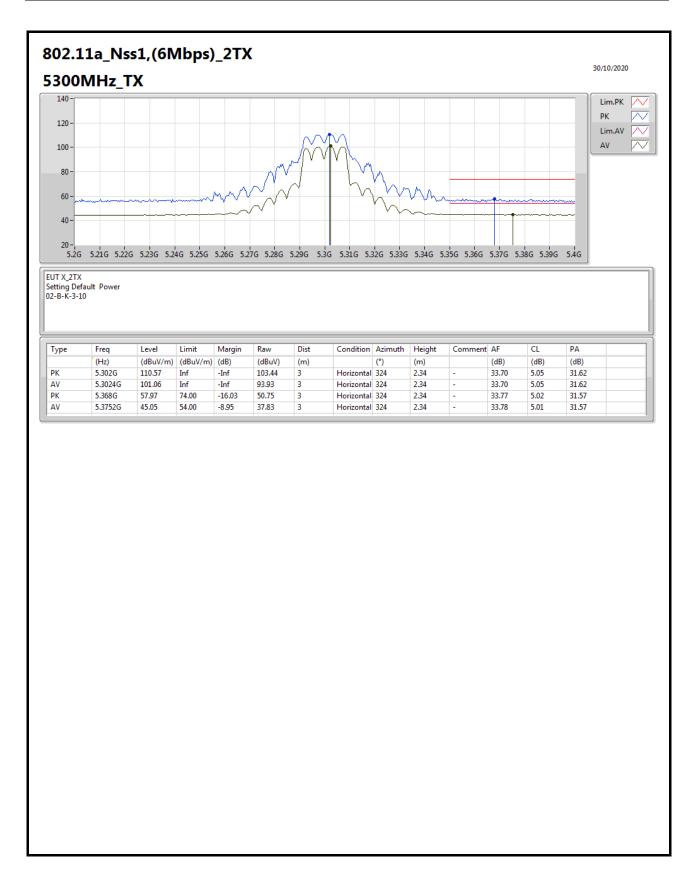




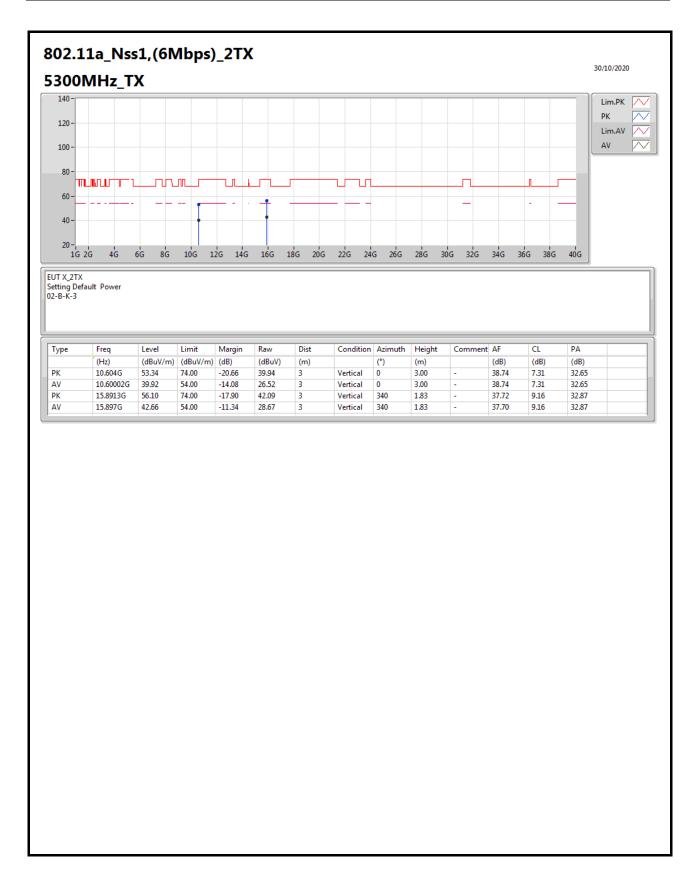




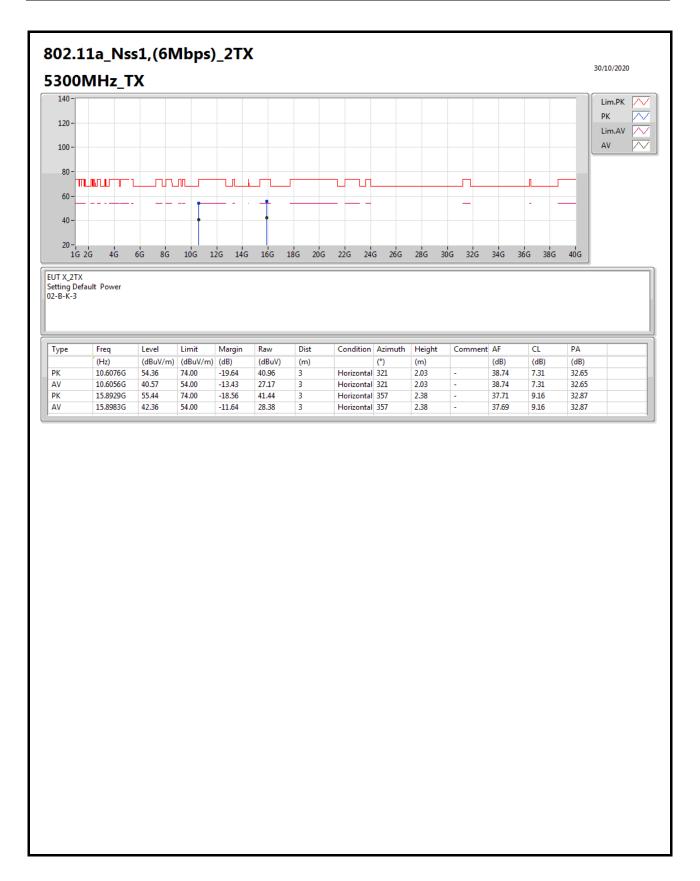




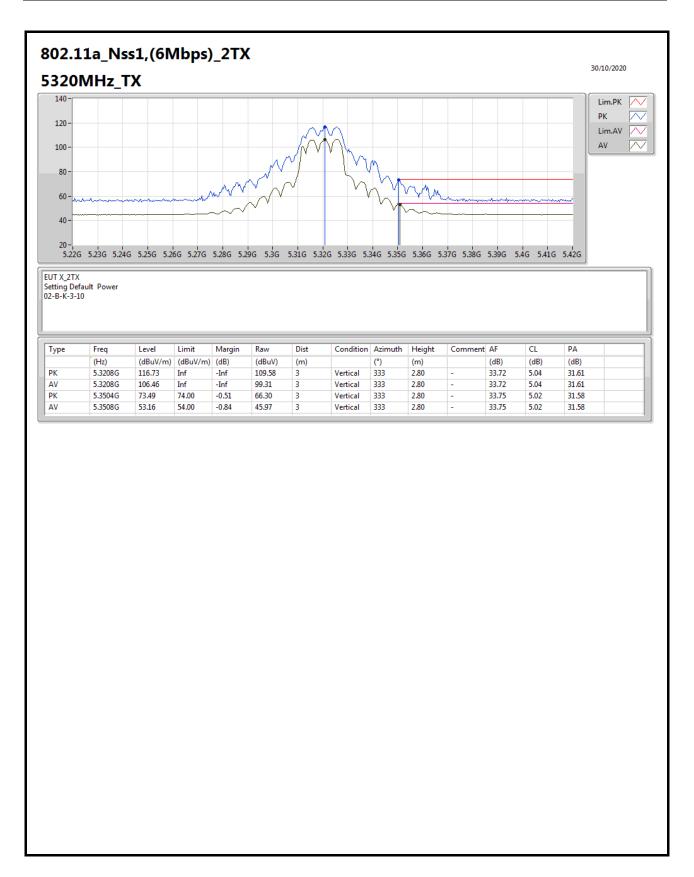




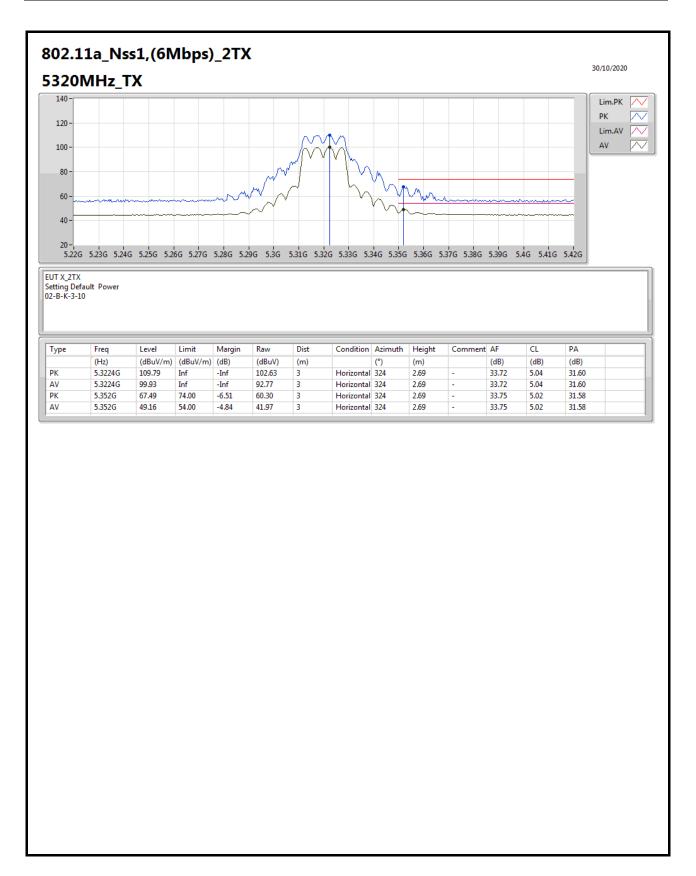




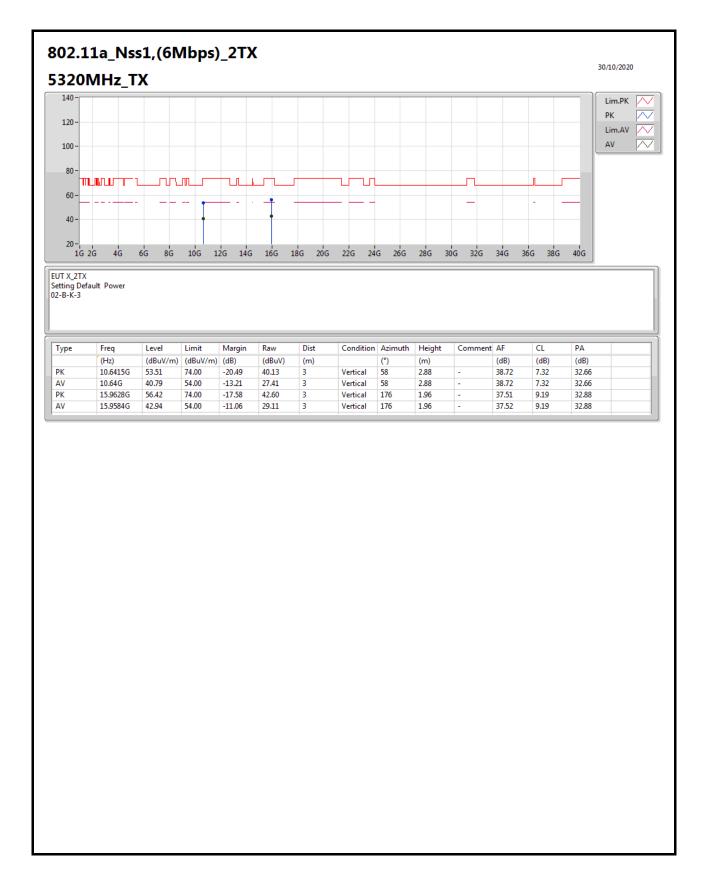




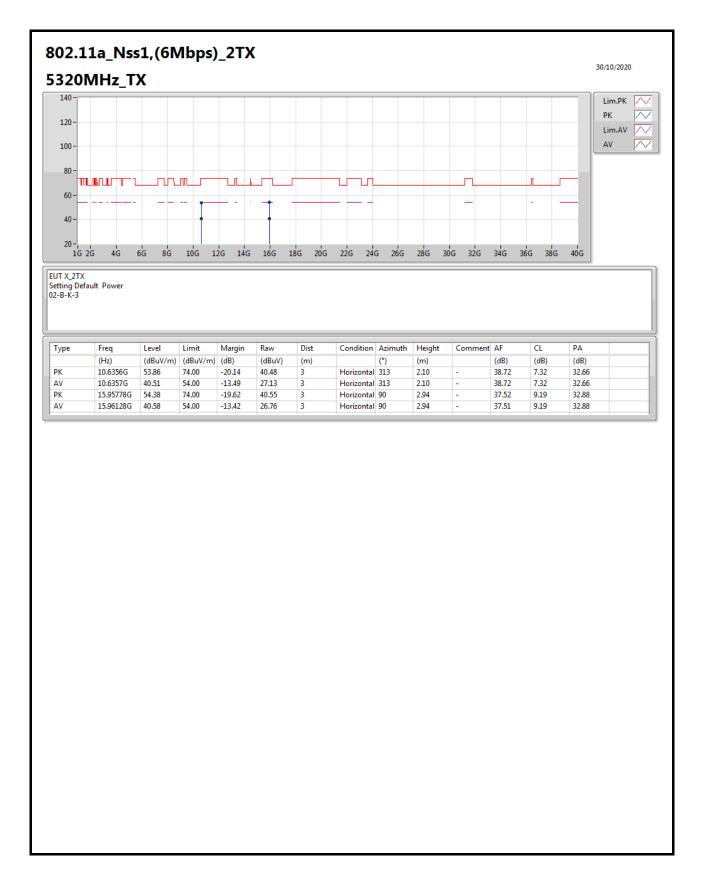






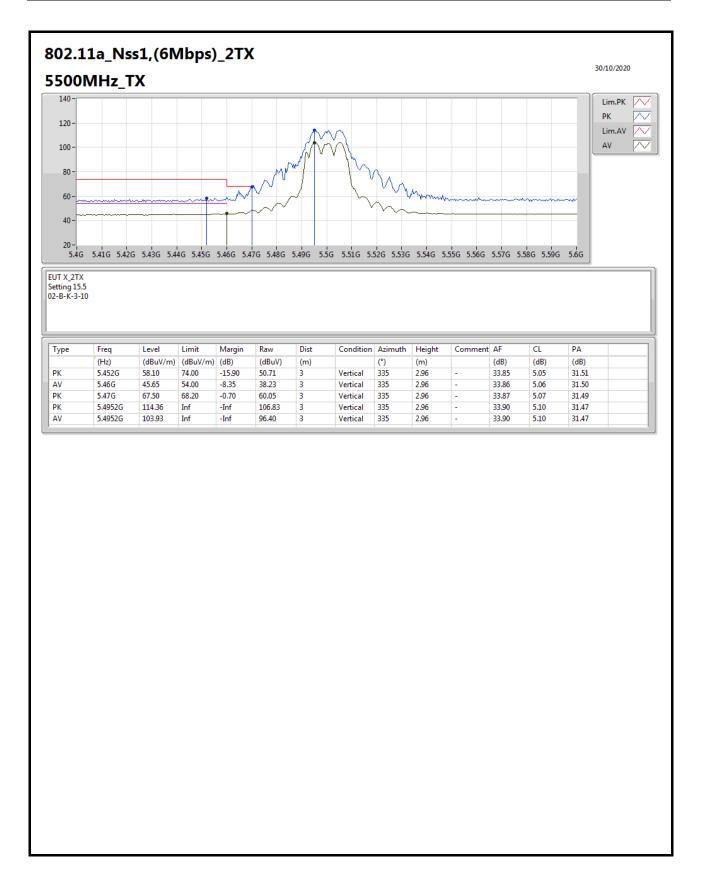




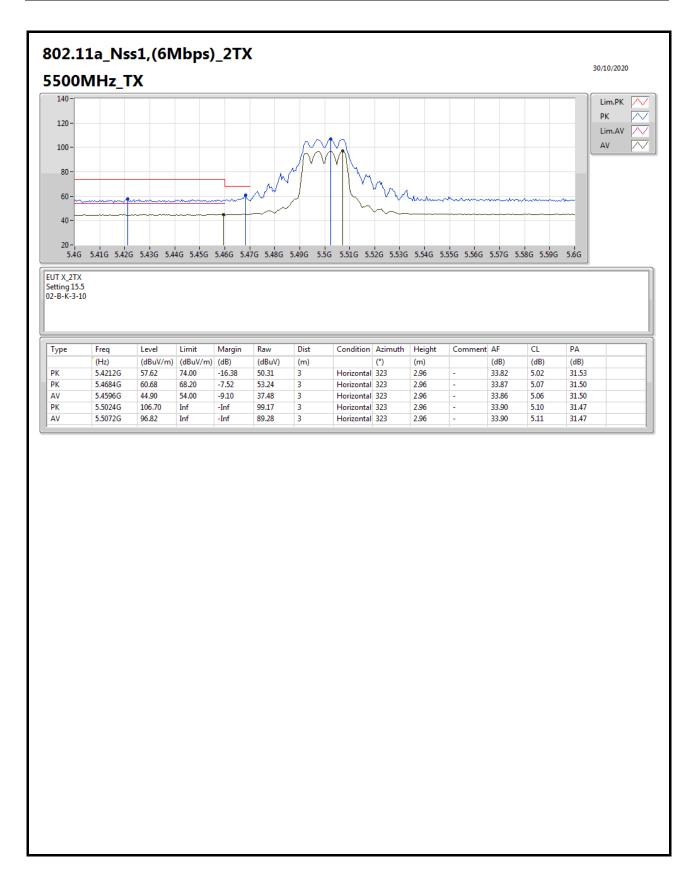


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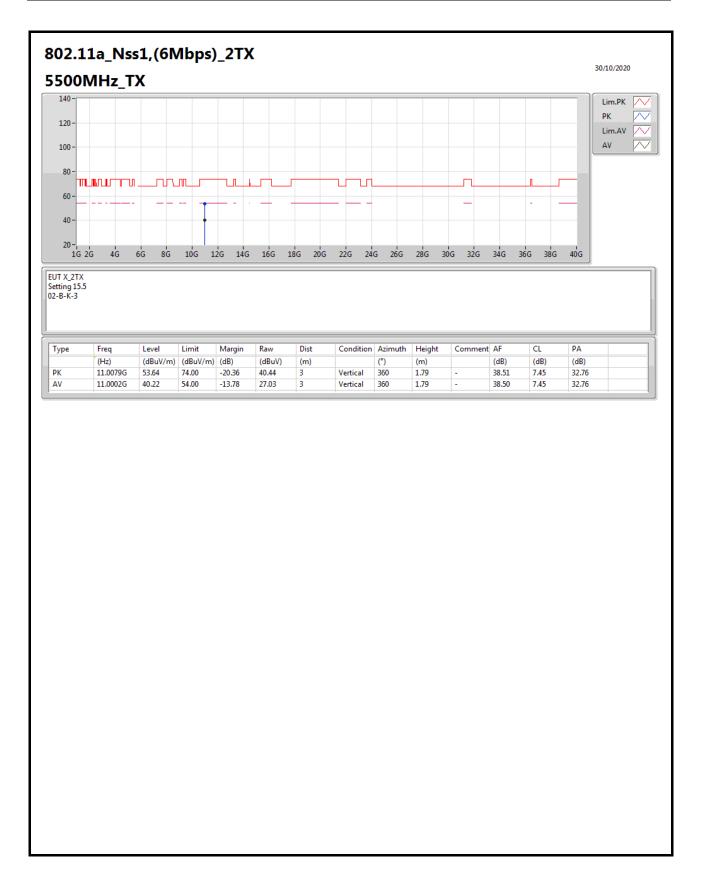




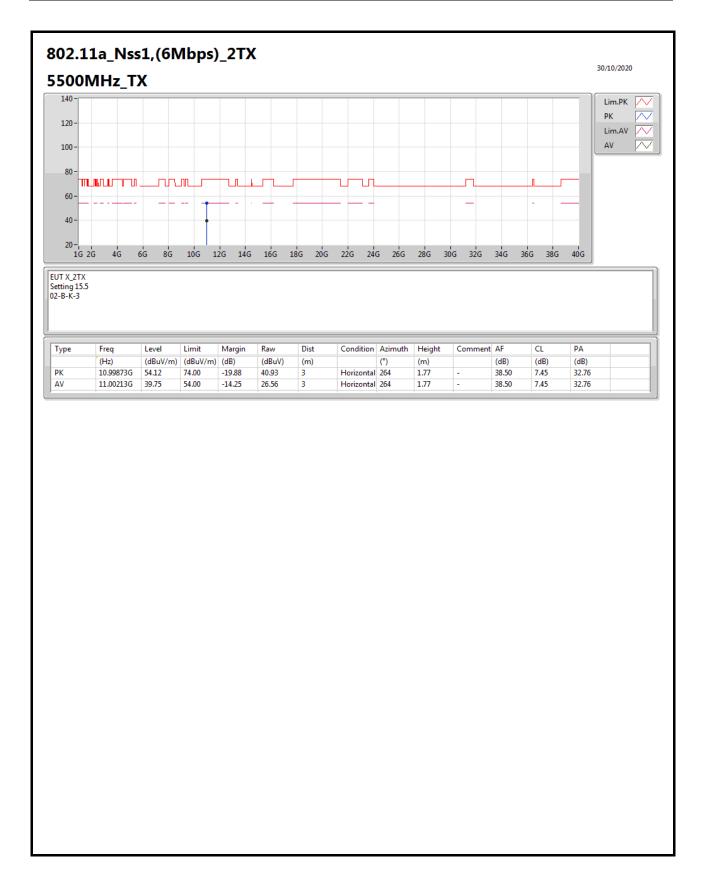




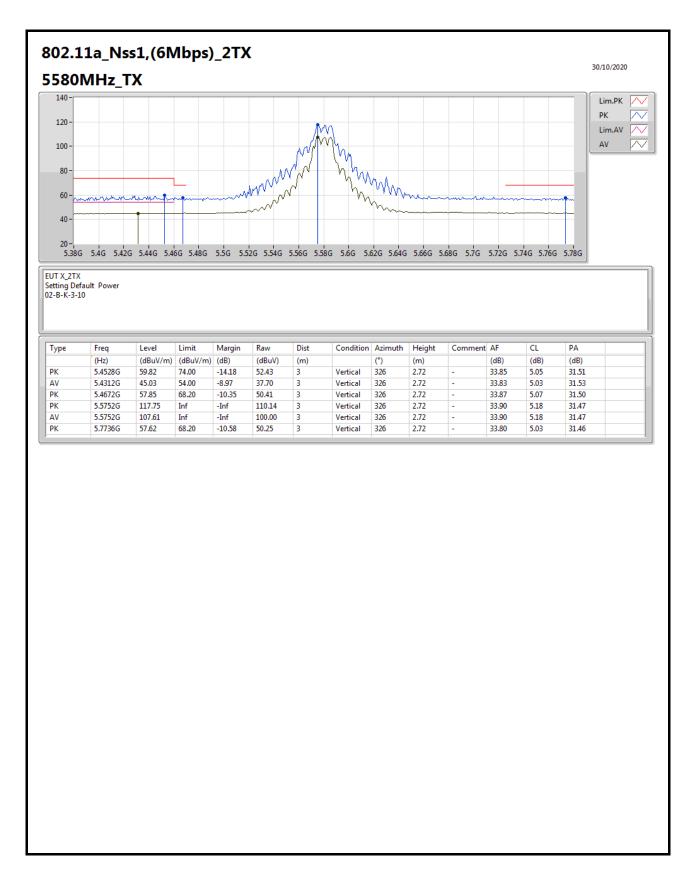




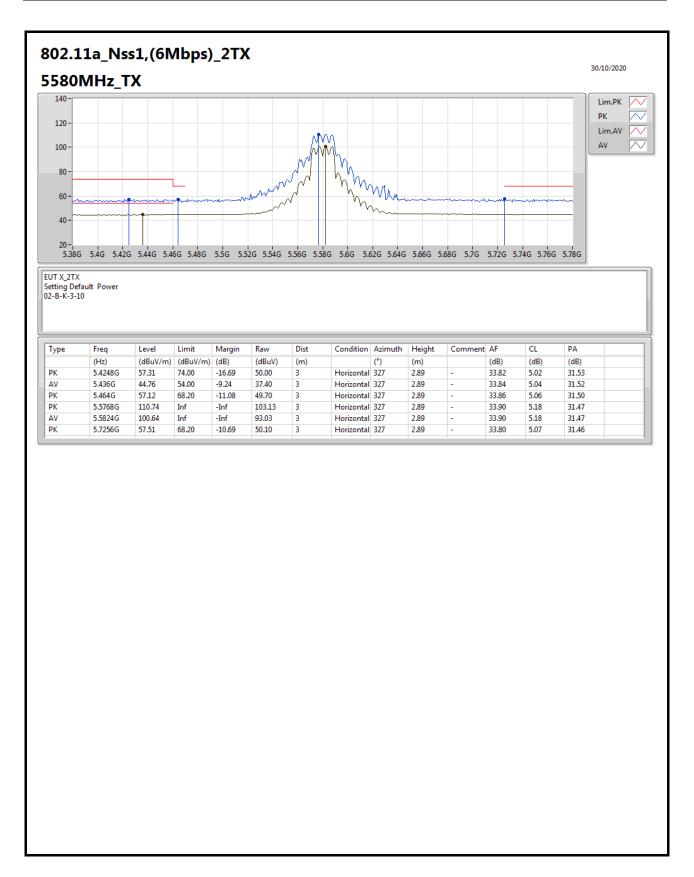




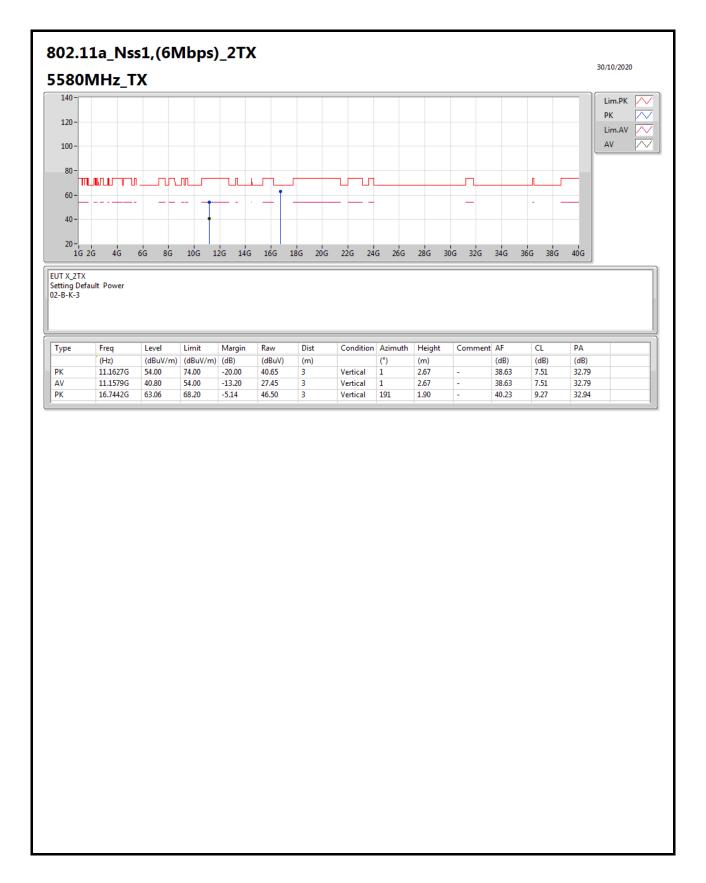




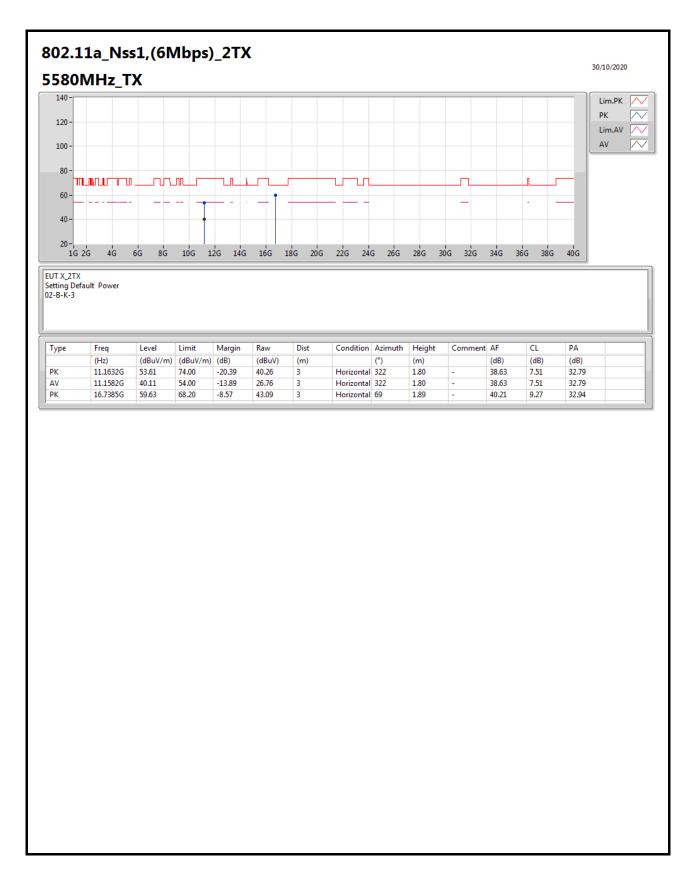




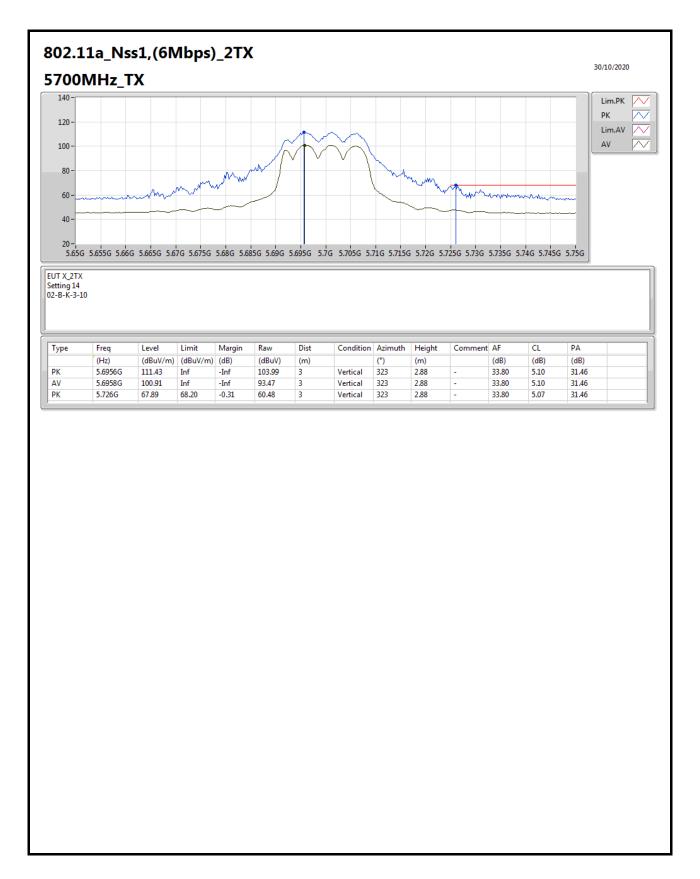




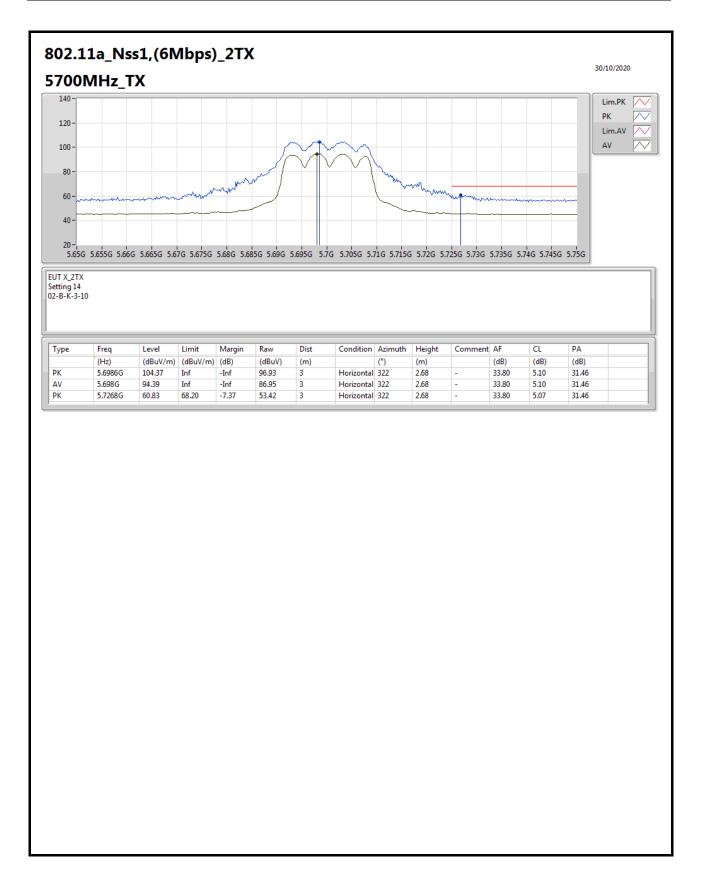




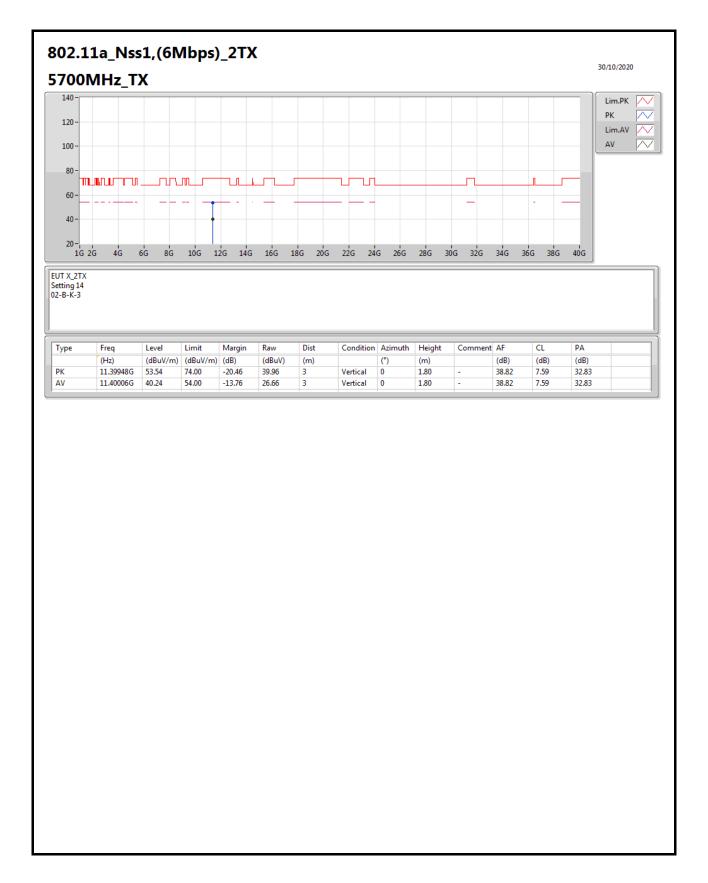




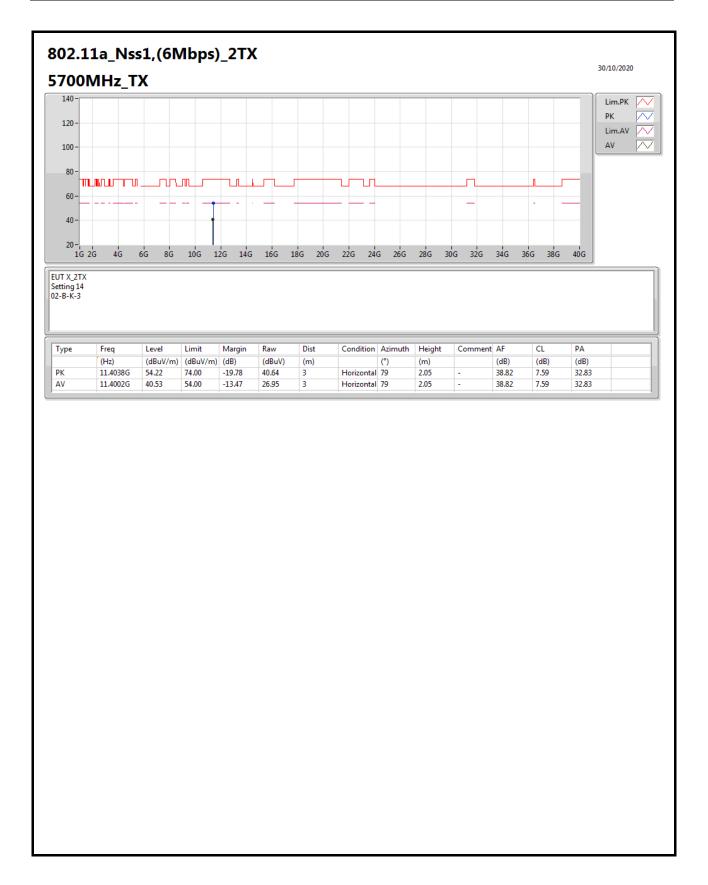




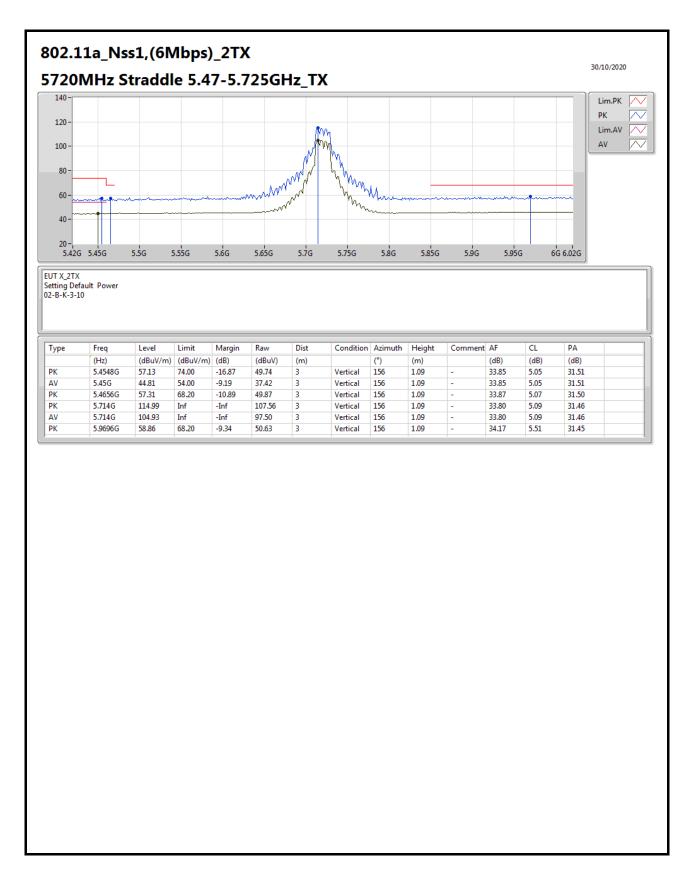




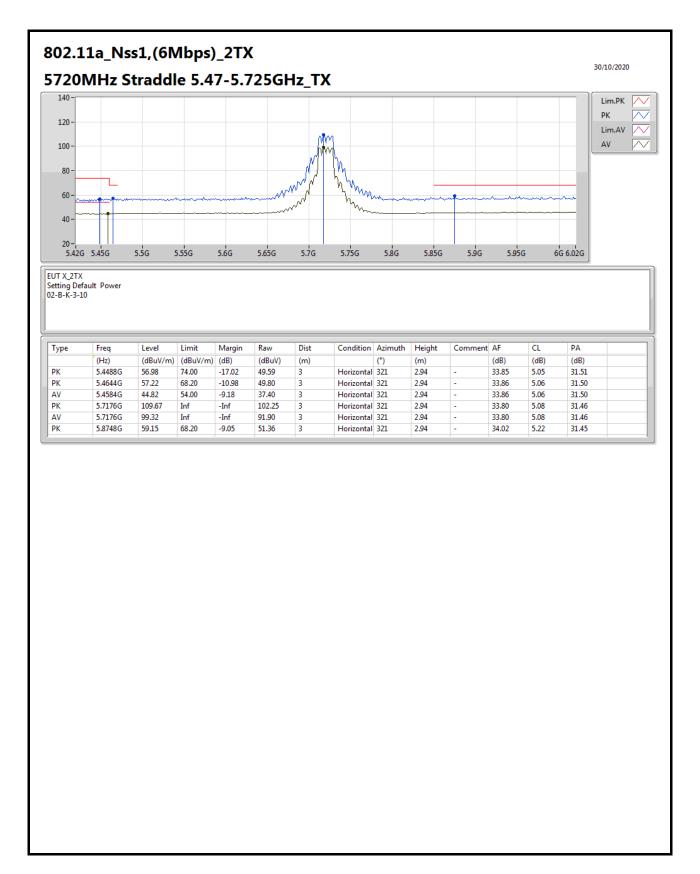




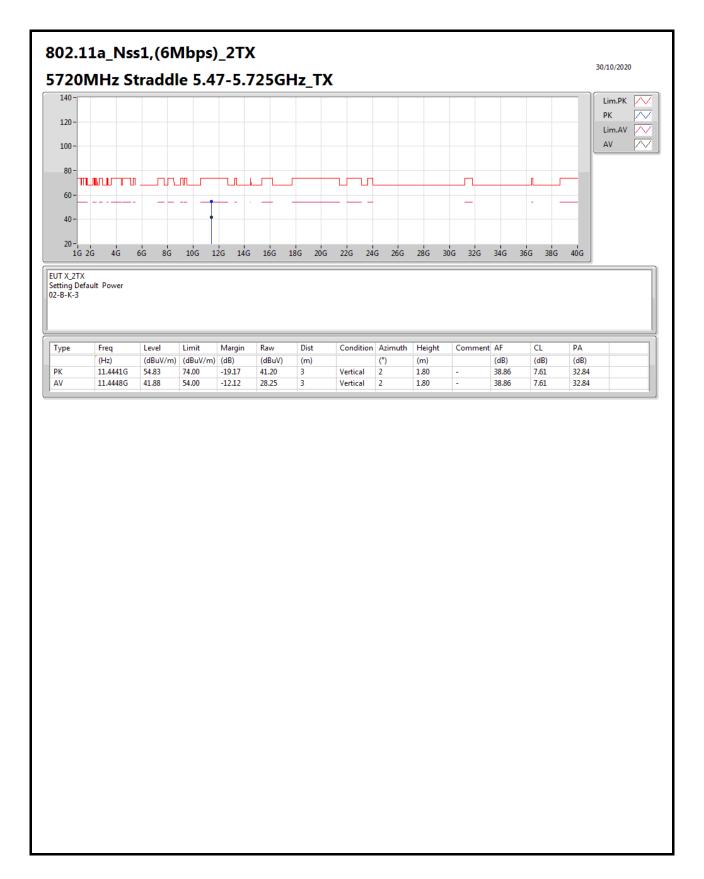




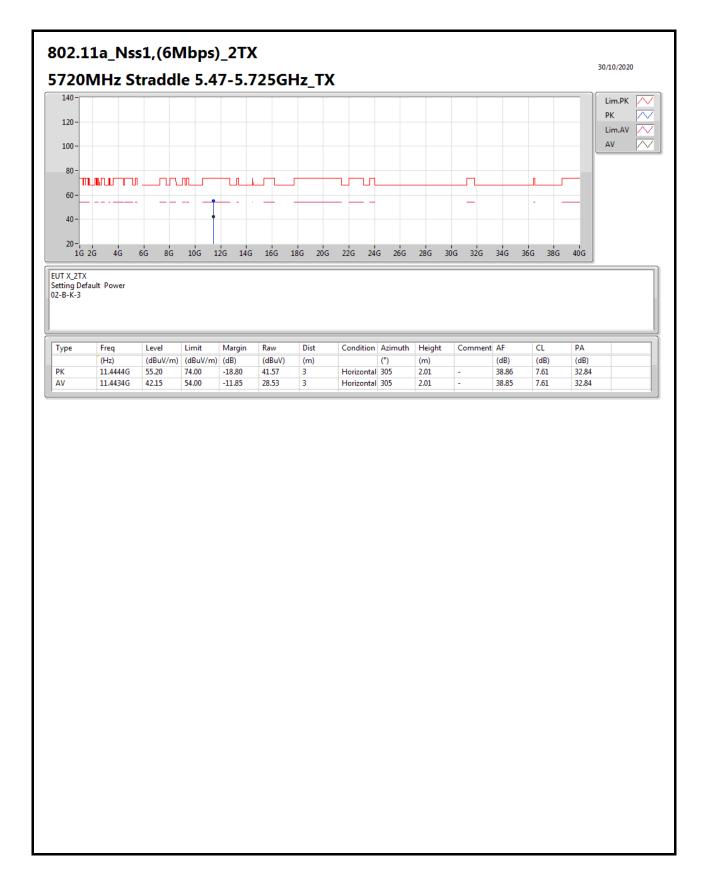




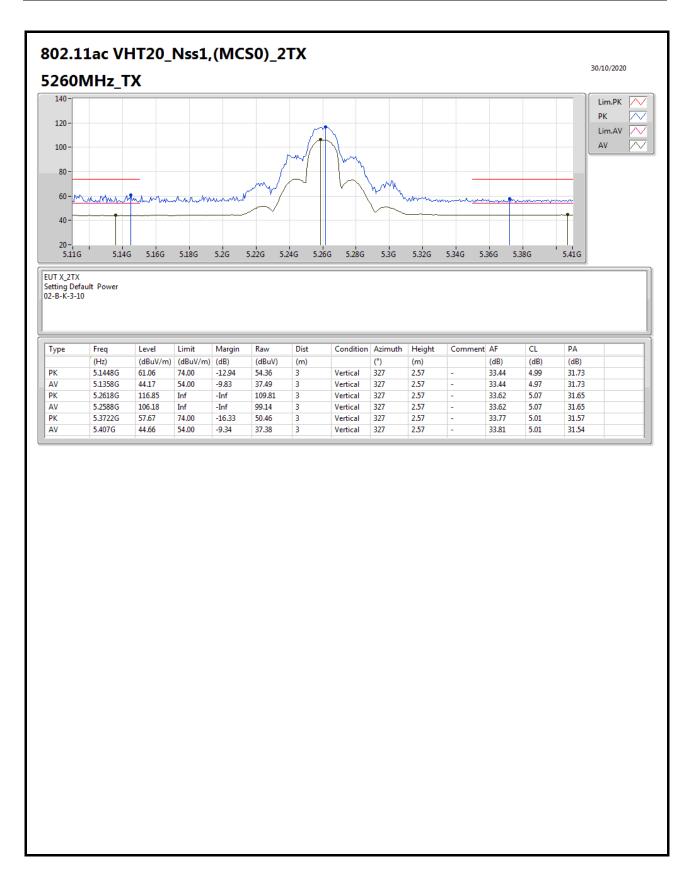




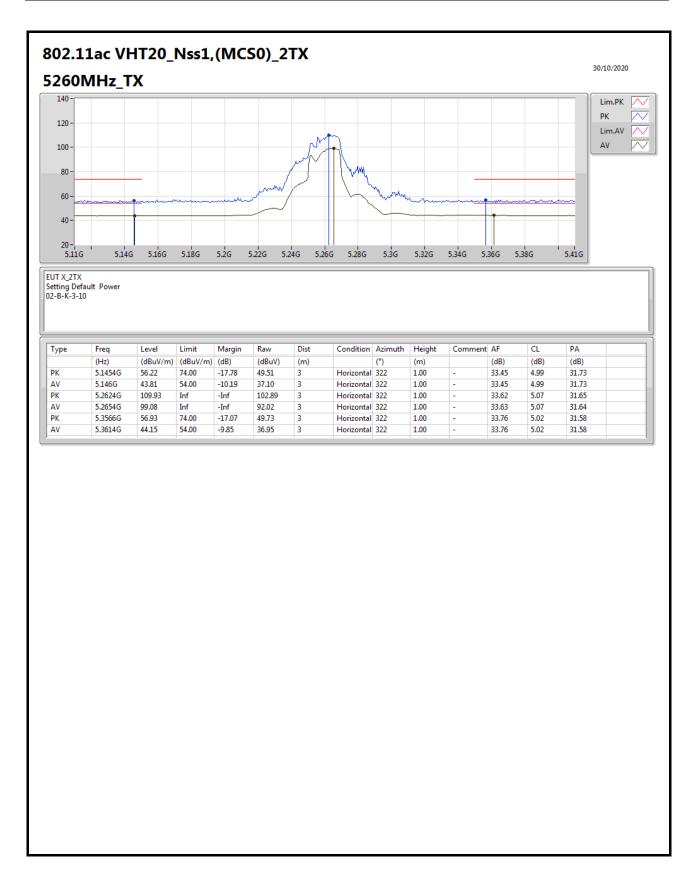




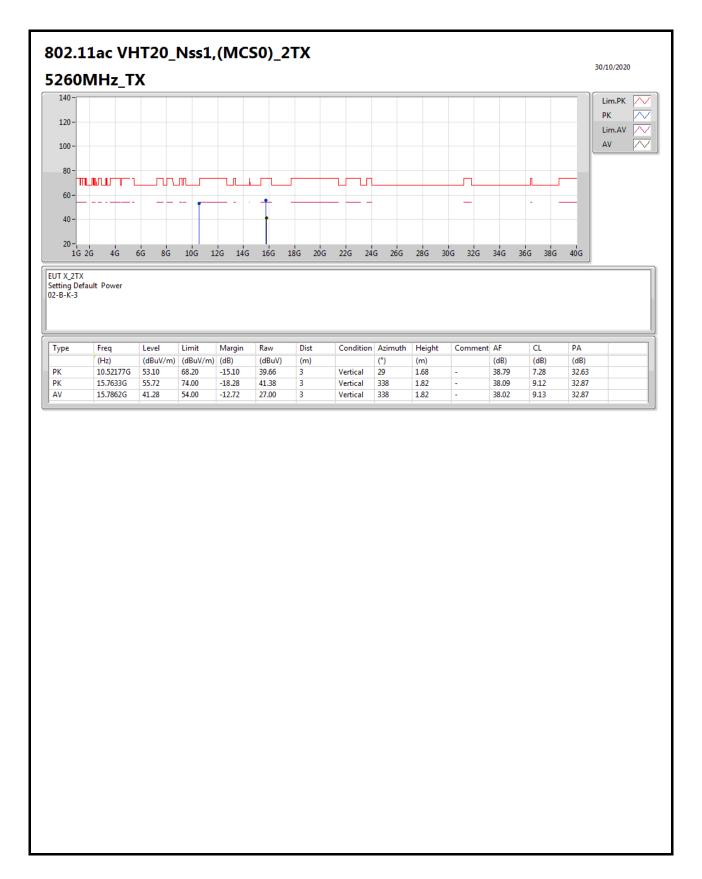




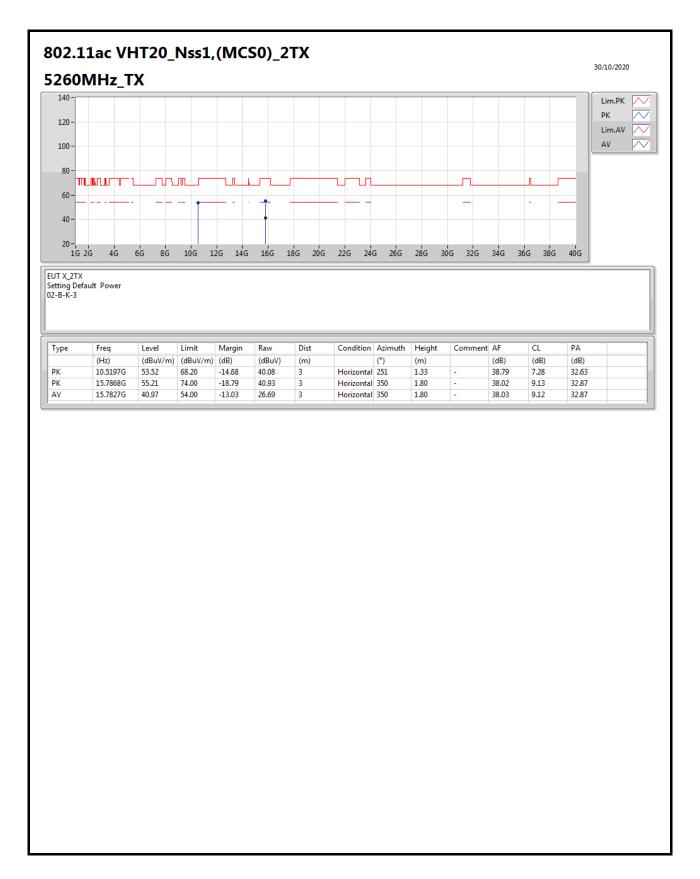




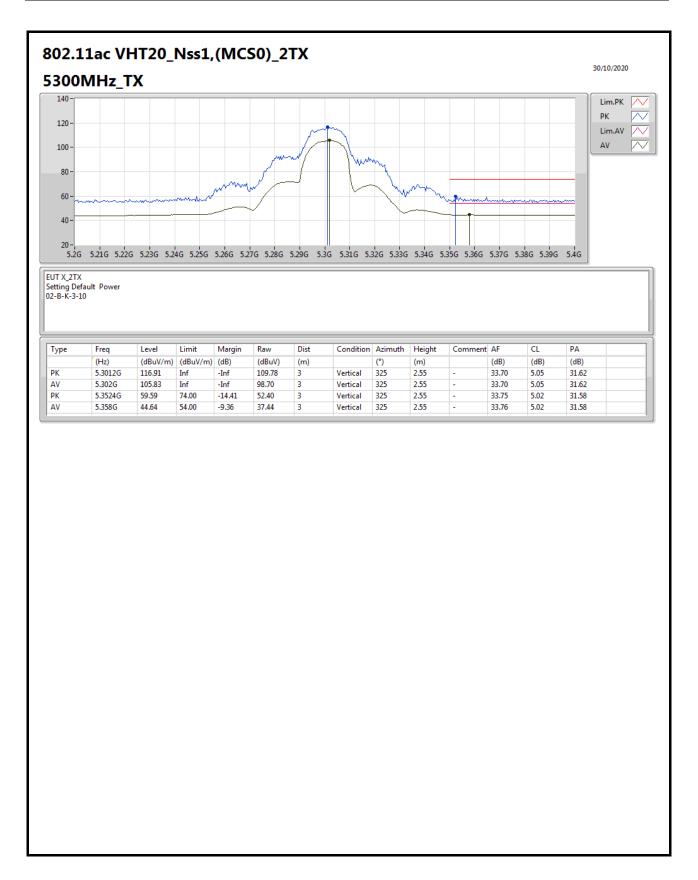




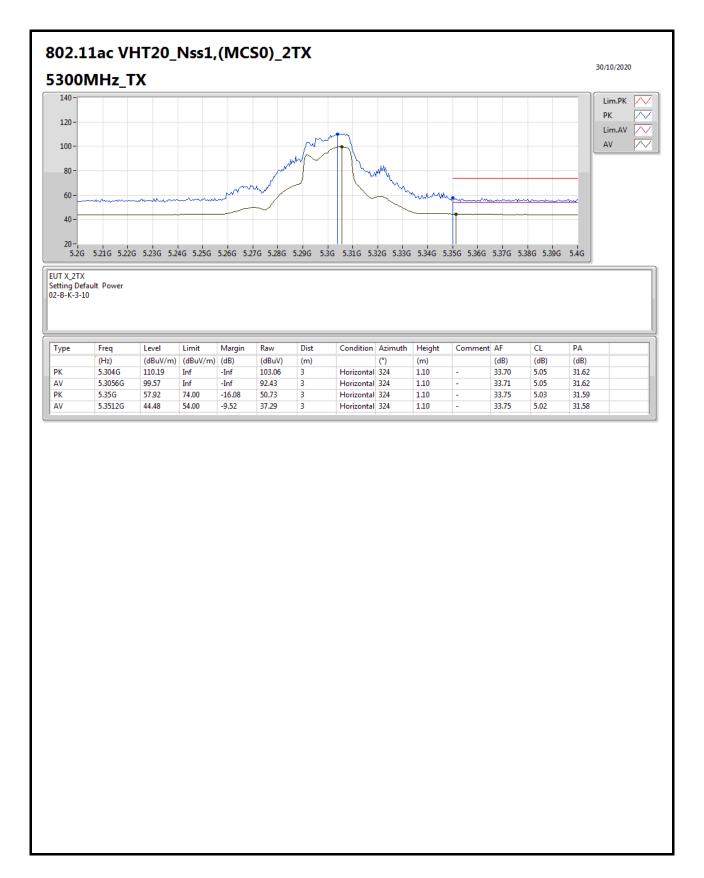




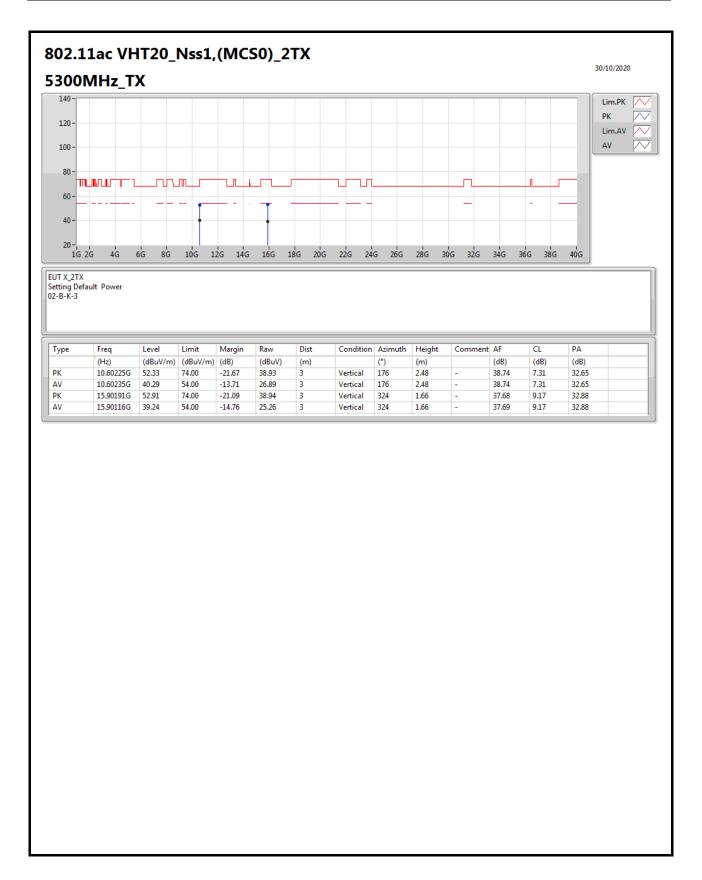




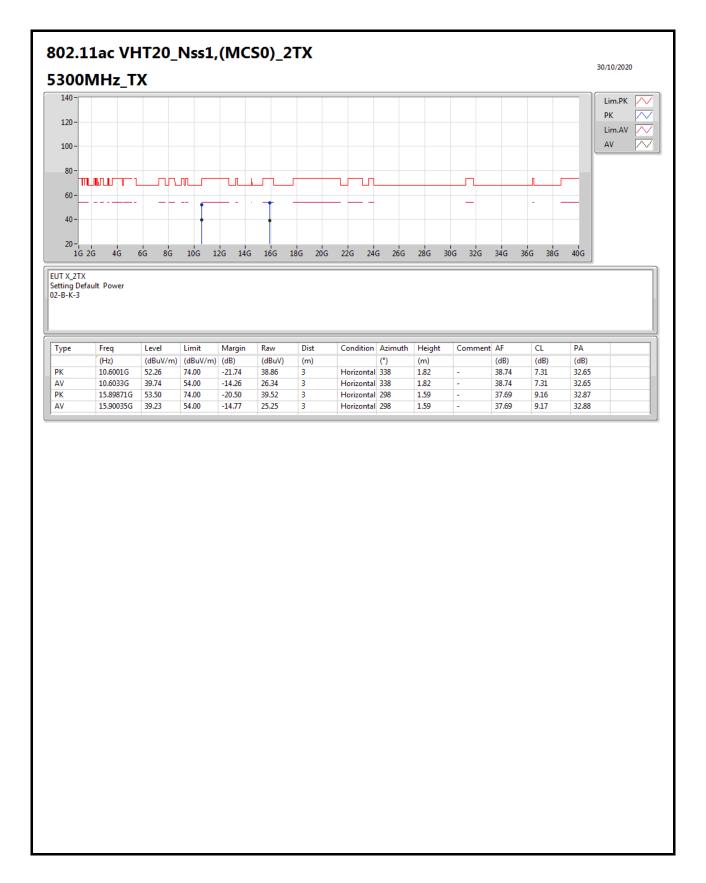




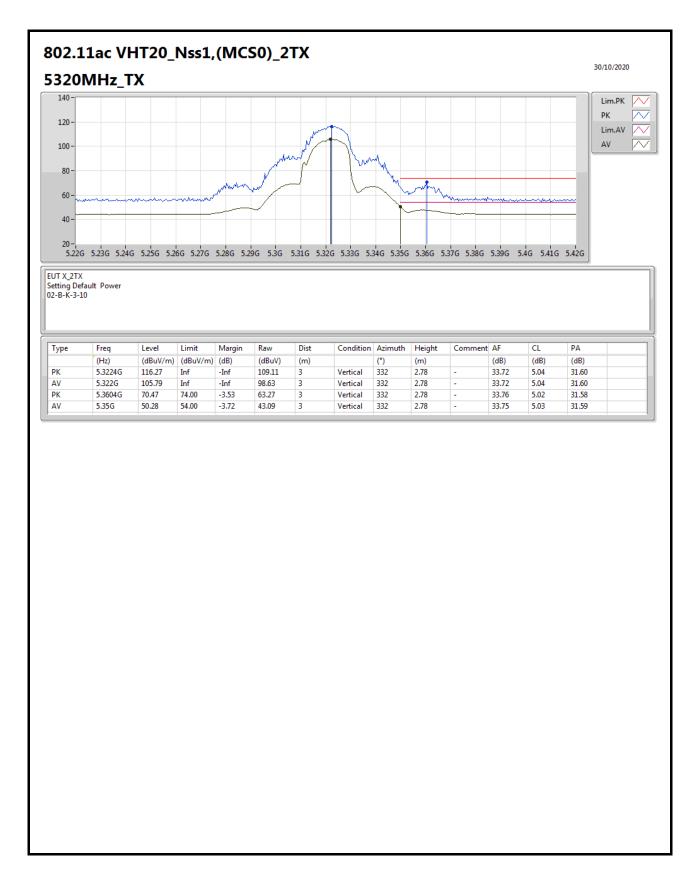




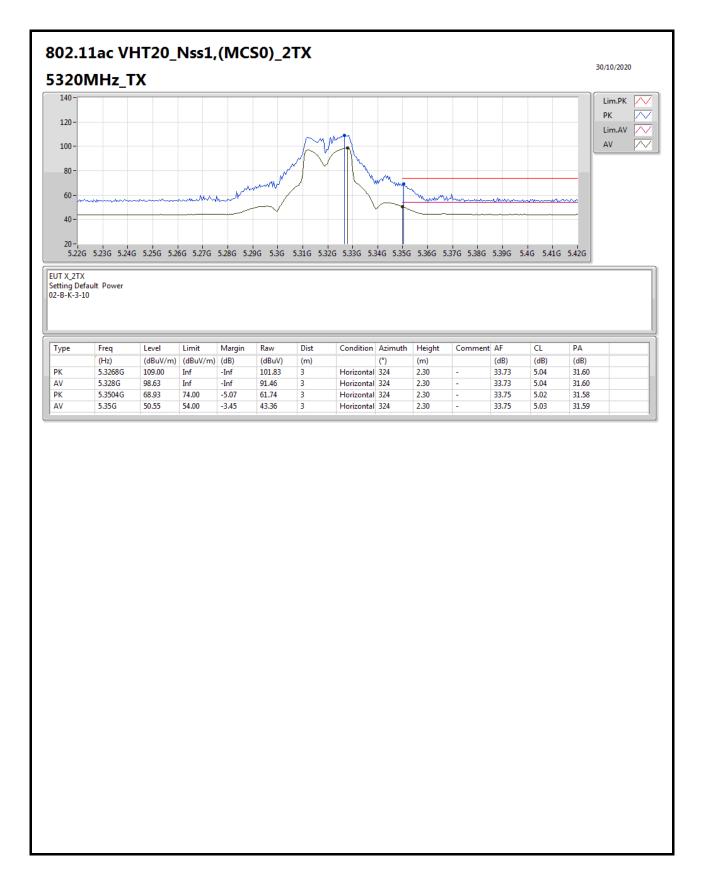




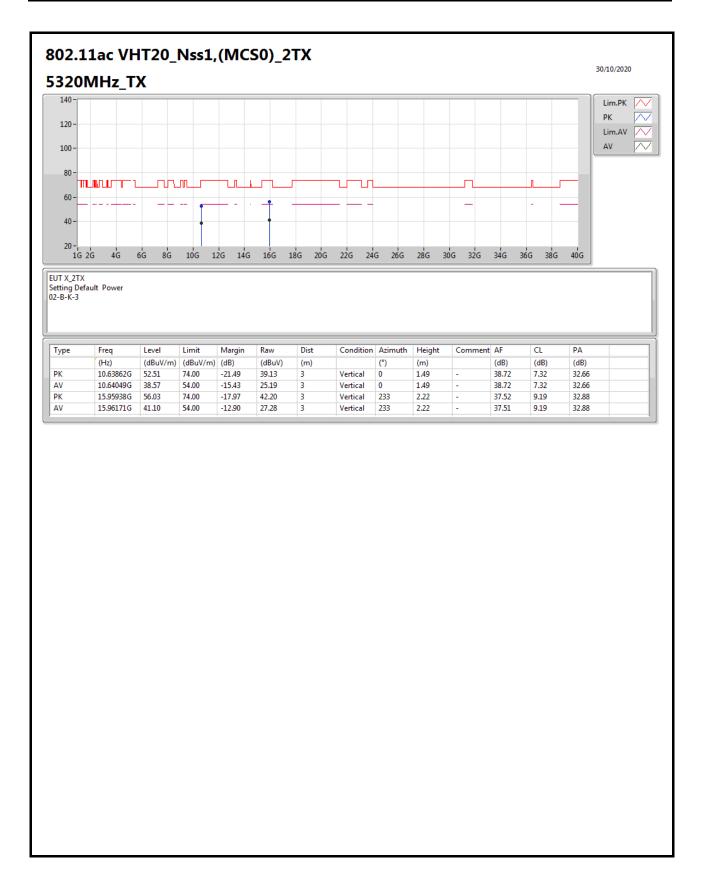




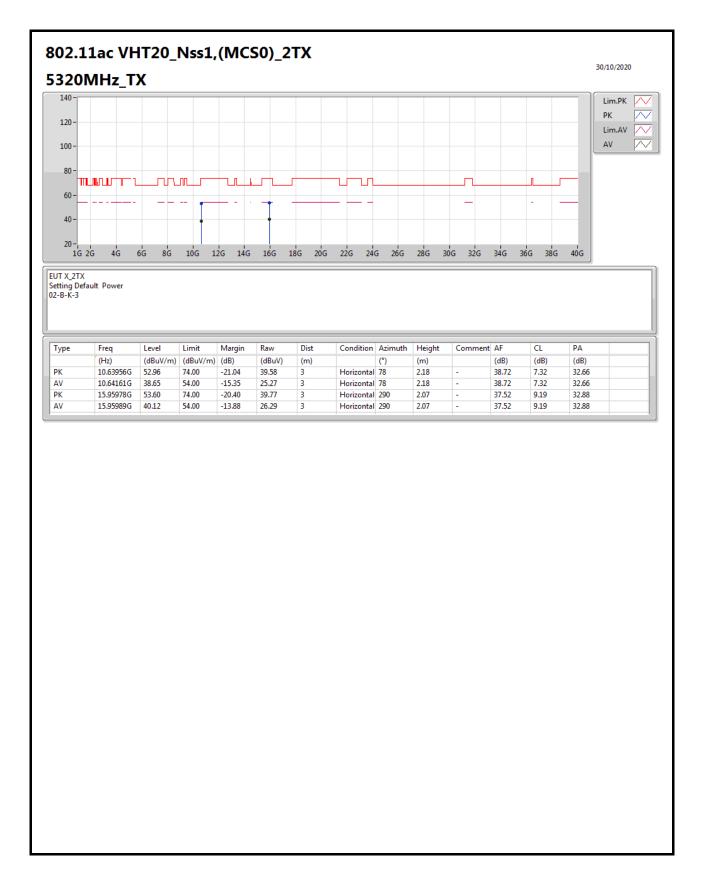




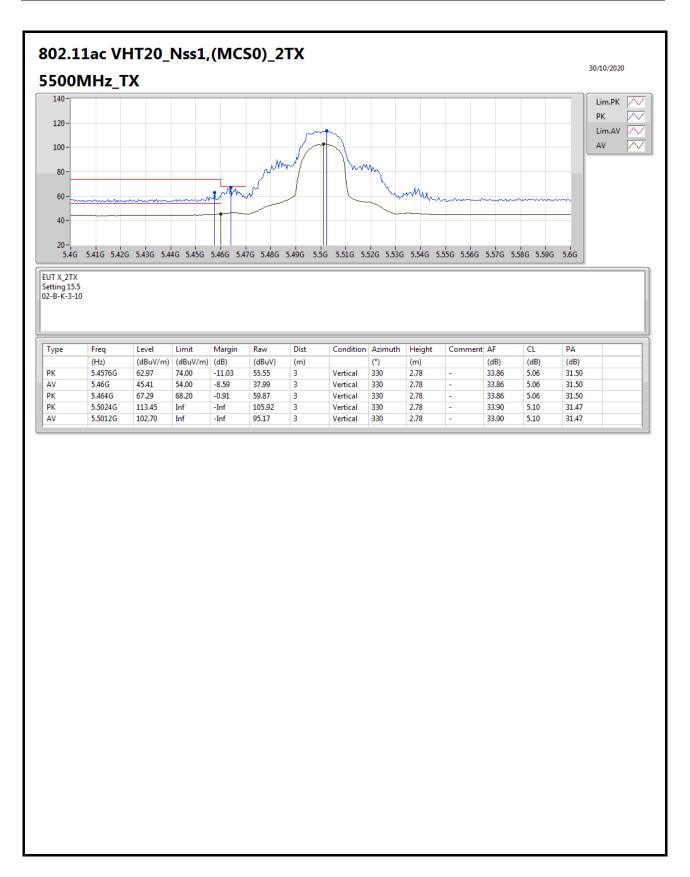




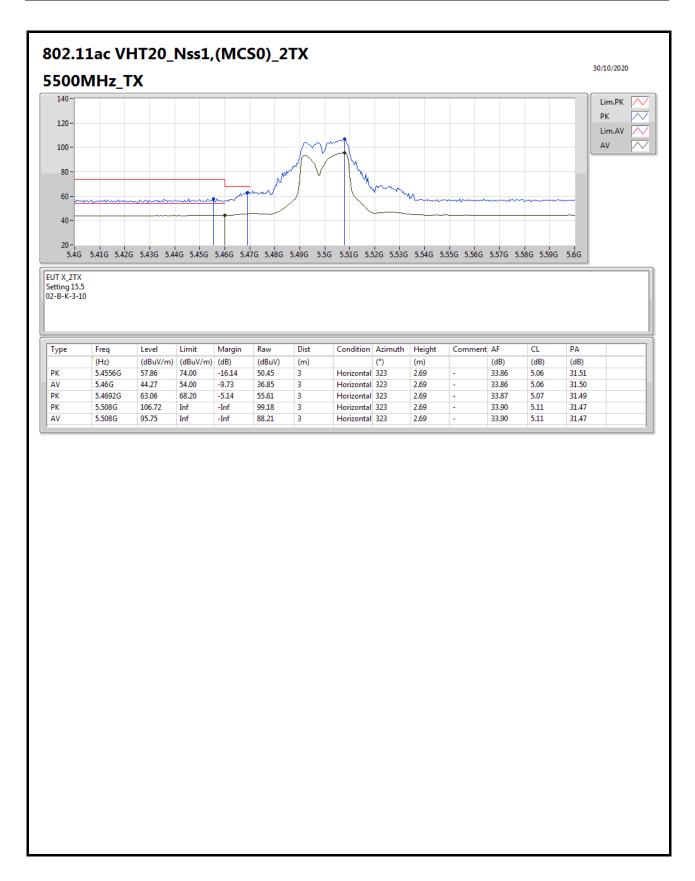




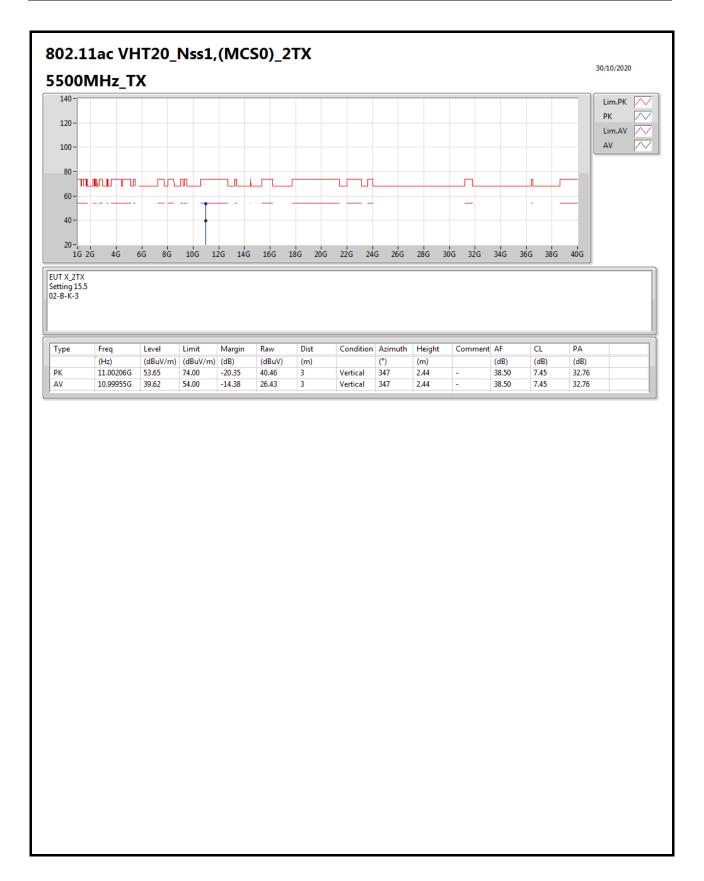






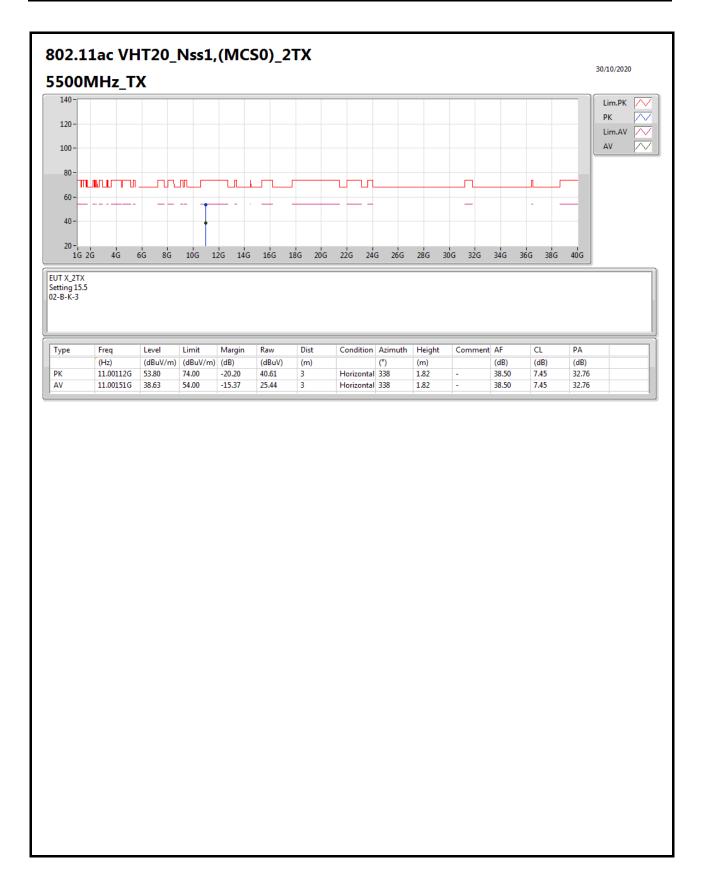




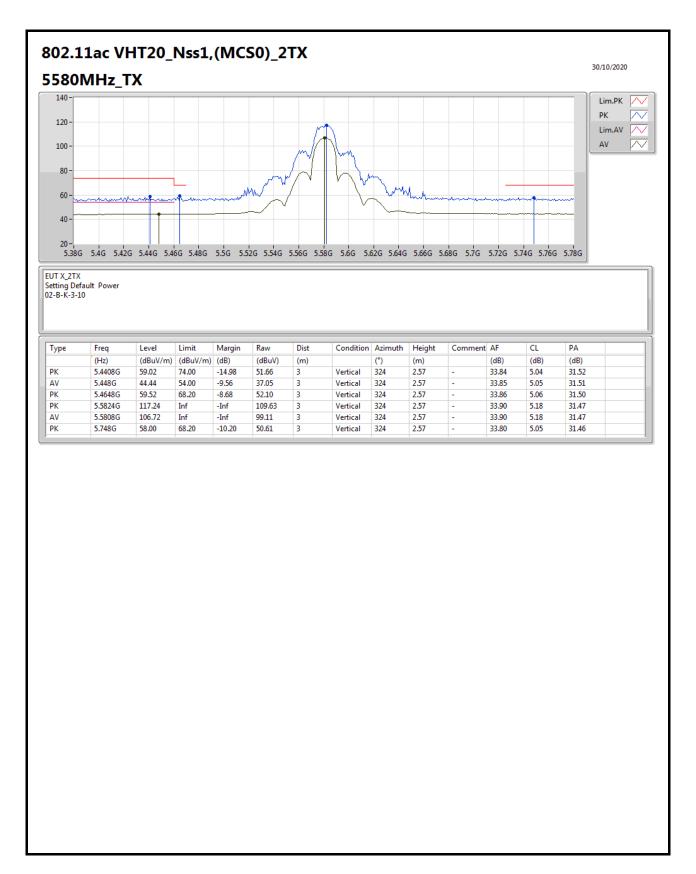


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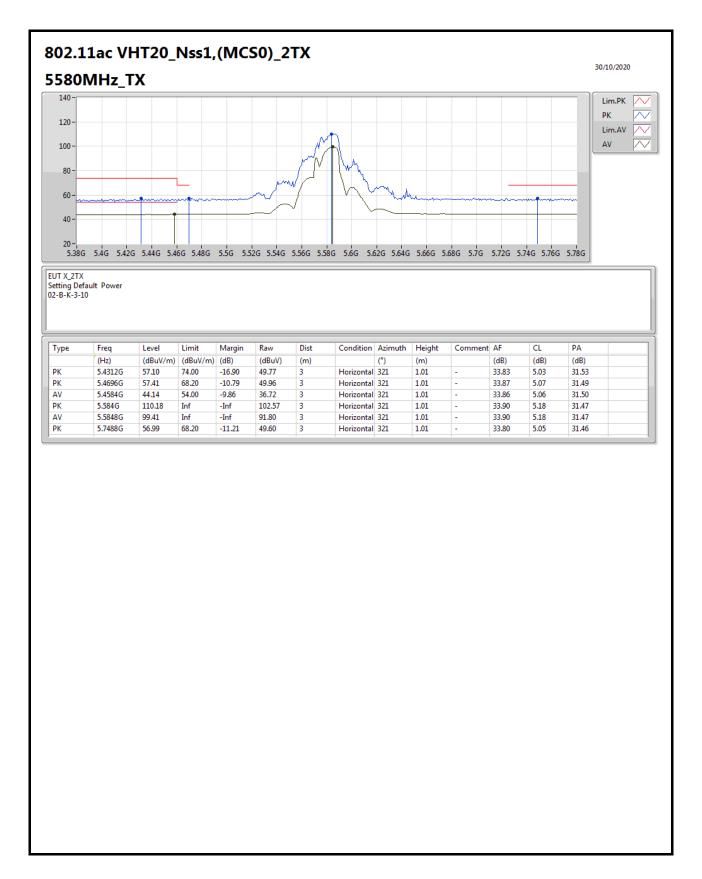




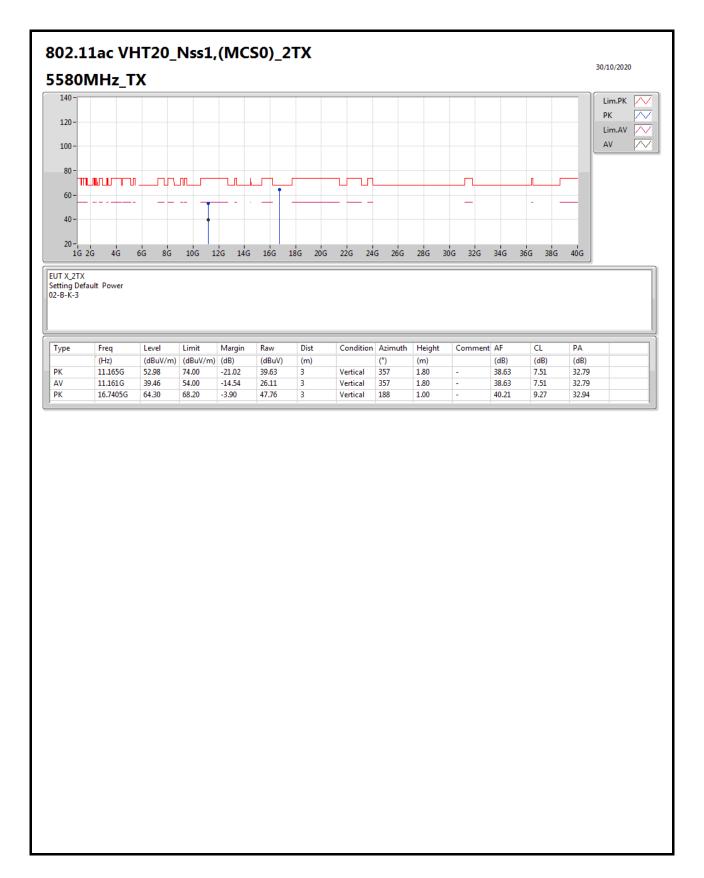




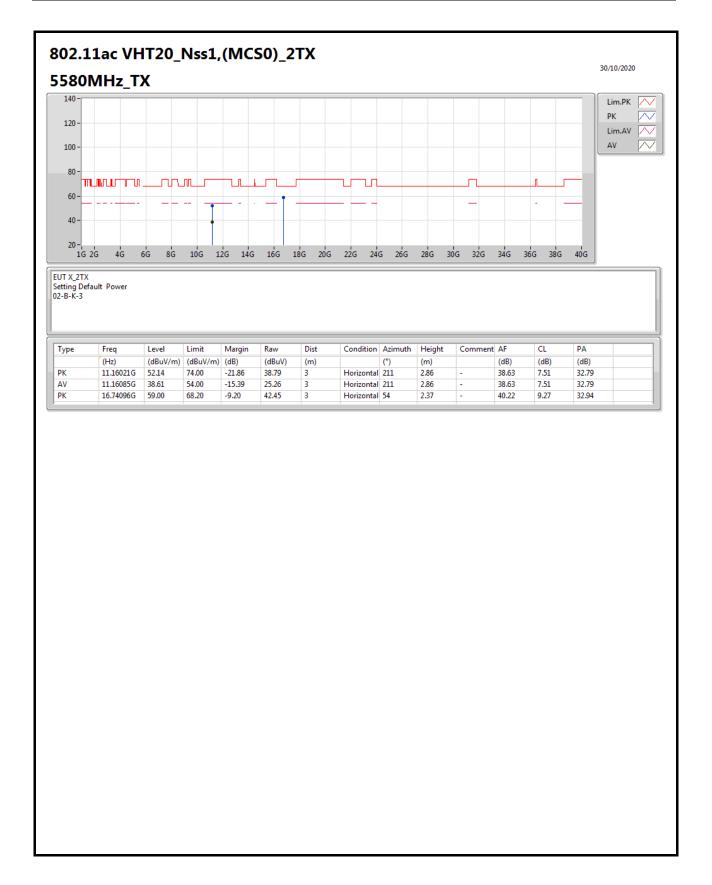






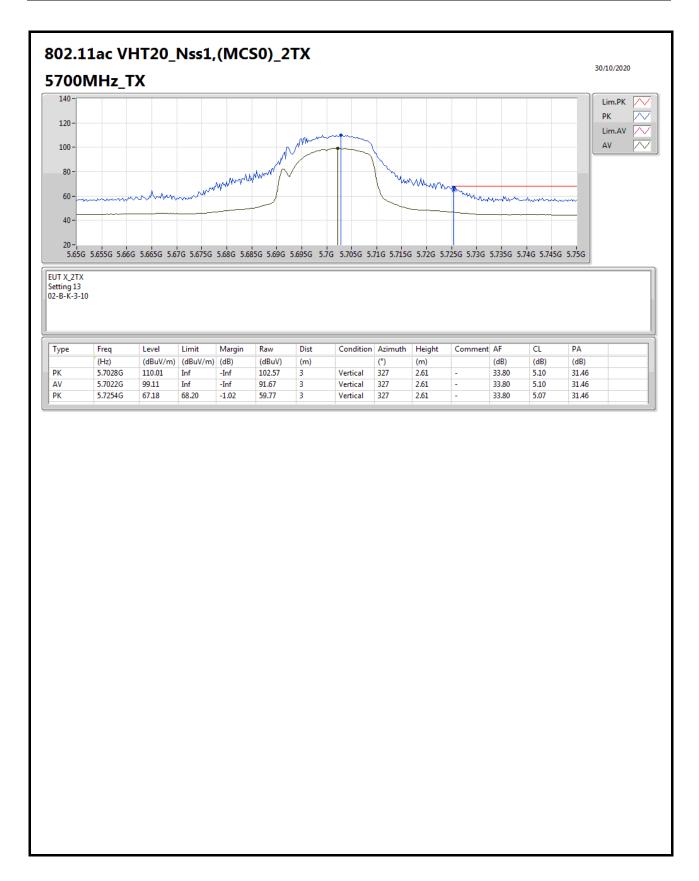






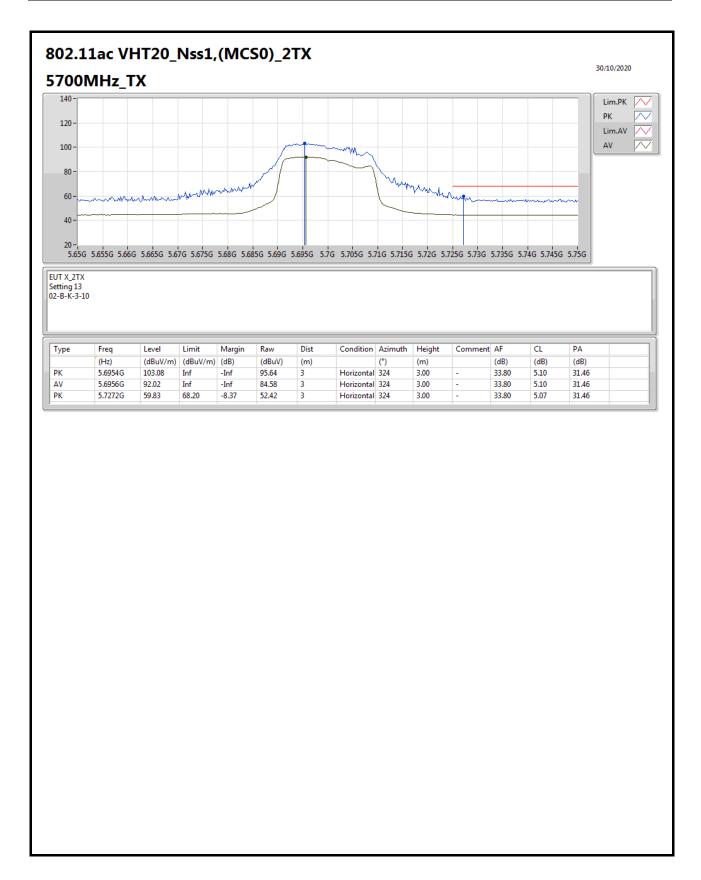
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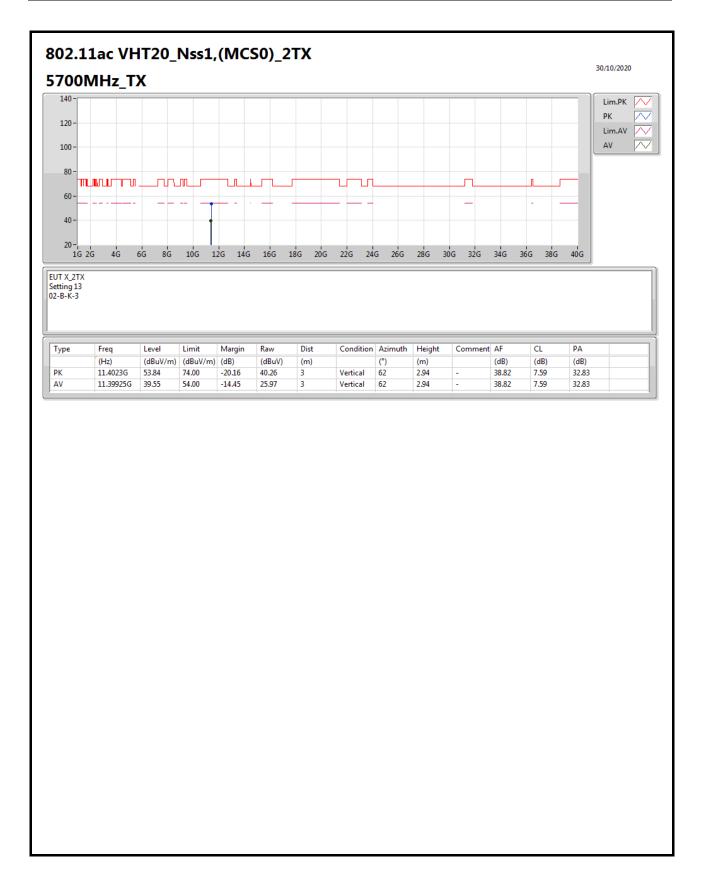
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