

Report No.: FR050538-02AA



FCC RADIO TEST REPORT

FCC ID : 2AW26TR-WIFICMD-X

Equipment : Wi-Fi sensor

Brand Name : Origin Wireless Taiwan Corporation

Model Name : Hex Command

Applicant : Origin Wireless Taiwan Corp.

3F A1-1 No. 1, Lixing 1st. Rd., Easr Dist. Hsinchu

City 300, Taiwan

Manufacturer : Wistron NeWeb Corporation

20 Park Avenue II (or Yuanchiu 2nd Rd.), Hsinchu

Science Park, Hsinchu 308, Taiwan

Standard : 47 CFR FCC Part 15.247

The product was received on May 06, 2020, and testing was started from May 11, 2020 and completed on May 19, 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: Sam Chen

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

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History of this test report

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Report No.	Version	Description	Issued Date
FR050538-02AA	01	Initial issue of report	Nov. 02, 2020
FR050538-02AA	02	Changing the equipment name to "Wi-Fi sensor" from "Wi-Fi senser".	Nov. 06, 2020

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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	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-
Reference	to Sporton Pro	oject No.: 050538.		

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: Cindy Peng

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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
2400-2483.5	b, g, n (HT20), VHT20	2412-2462	1-11 [11]
2400-2483.5	n (HT40), VHT40	2422-2452	3-9 [7]

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Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	2TX
2.4-2.4835GHz	802.11g	20	2TX
2.4-2.4835GHz	802.11n HT20	20	2TX
2.4-2.4835GHz	VHT20	20	2TX
2.4-2.4835GHz	802.11n HT40	40	2TX
2.4-2.4835GHz	VHT40	40	2TX

Note:

- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 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

Ant.	Port	Brand	Model Name	Antenna	Connector	Gain	(dBi)
Aire.	1 011	Brand	Wodel Hame	Type	2.4GHz	5GHz	
1	1	WNC	OWS1200	PIFA	I-PEX	3.17	4.58
2	2	WNC	OWS1200	PIFA	I-PEX	3.06	5.07

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Note: The above information was declared by manufacturer.

For 2.4GHz function:

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

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

Pot 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

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

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

Pot 1 and Port 2 could transmit/receive simultaneously.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.992	0.03	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.96	0.18	2.068m	1k
VHT20	0.983	0.07	n/a (DC>=0.98)	n/a (DC>=0.98)
VHT40	0.967	0.15	2.433m	1k

N	ote	
IΝ	o_{ic}	

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

1.1.4 EUT Operational Condition

EUT Power Type	From Power Adapter				
Beamforming Function		☐ With beamforming ☐ Without beamforming			
Function	\boxtimes	Point-to-multipoint		Point-to-point	
Test Software Version	QRCT (Version:4.0.00123)				

Note: The above information was declared by manufacturer.

1.1.5 Table for EUT support function

Function
Master (AP)
Client without radar detection

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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

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

- FCC KDB 558074 D01 v05r02
- FCC KDB 662911 D01 v02r01
- 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 Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH02-CB	Benson Su	23.2-24°C / 59-62 %	May 13, 2020~ May 19, 2020
Radiated <below 1ghz=""></below>	03CH04-CB	Eason Chen	21.9-22.7°C / 56-58%	May 14, 2020
Radiated <above 1ghz=""></above>	03CH02-CB 03CH03-CB 03CH04-CB 03CH06-CB	Brian Sun	23.7-24.6°C / 58-62%	May 11, 2020~ May 18, 2020
AC Conduction	CO01-CB	GN Hou	23~25°C / 64~66%	May 11, 2020

Test site Designation No. TW0006 with FCC.

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	5.1 dB	Confidence levels of 95%
Conducted Emission	2.4 dB	Confidence levels of 95%
Output Power Measurement	1.5 dB	Confidence levels of 95%
Power Density Measurement	2.4 dB	Confidence levels of 95%
Bandwidth Measurement	2%	Confidence levels of 95%

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Test site registered number IC 4086D with Industry Canada.

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
802.11b_Nss1,(1Mbps)_2TX	-
2412MHz	22
2437MHz	20
2462MHz	18
802.11g_Nss1,(6Mbps)_2TX	-
2412MHz	17.5
2417MHz	20.5
2437MHz	27
2457MHz	22.5
2462MHz	19.5
VHT20_Nss1,(MCS0)_2TX	-
2412MHz	16
2417MHz	22.5
2437MHz	27
2457MHz	22.5
2462MHz	19
VHT40_Nss1,(MCS0)_2TX	-
2422MHz	16.5
2427MHz	17
2437MHz	20.5
2452MHz	19

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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 VHT20 and VHT40.

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2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item AC power-line conducted emissions		
Condition AC power-line conducted measurement for line and neutral			
Operating Mode Normal Link			
1 Normal Link <master>: EUT</master>			
2 Normal Link <client detection="" radar="" without="">: EUT</client>			
For operating mode 1 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	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands	
Test Condition Conducted measurement at transmit chains		

Th	The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item Emissions in Restricted Frequency Bands			
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.			
Operating Mode < 1GHz Normal Link				
1	Normal Link <master>: Place EUT in Z axis</master>			
2	Normal Link <master>: Place EUT in Y axis</master>			
Mode 2 has been evaluated to be the worst case among Mode 1~2, thus measurement for Mode 3 will follow this same test mode.				
3	Normal Link <client detection="" radar="" without="">: Place EUT in Y axis</client>			
For operating mode 2 is the worst case and it was record in this test report.				
Operating Mode > 1GHz CTX				
The EUT was performed at Y axis and Z axis position. The worst case was found at Z axis, thus the measurement will follow this same test configuration.				

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The Worst Case Mode for Following Conformance Tests			
Tests Item Simultaneous Transmission Analysis - Radiated Emission Co-location			
Test Condition Radiated measurement			
Operating Mode	Operating Mode Normal Link		
1 WLAN 2.4GHz + WLAN 5GHz			
Refer to Appendix G for Radiated Emission Co-location.			

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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 <master></master>			
2 WLAN 2.4GHz + WLAN 5GHz <client detection="" radar="" without=""></client>			
Refer to Sporton Test Report No.: FA050538-02 for Co-location RF Exposure Evaluation.			

2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

2.4 Accessories

Accessories				
Equipment Brand Model Rating			Rating	
Adapter	LEI	MU12B1120100-A1	0-A1 INPUT: 100-240V ~ 600mA, 50/60Hz OUTPUT: 48V, 380mA	

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2.5 Support Equipment

For AC Conduction:

Support Equipment					
No.	No. Equipment Brand Name Model Name FCC ID				
Α	Device	WNC	OWS1200	N/A	
В	2.4G NB	DELL	E6430	N/A	
С	Device NB	DELL	E6430	N/A	

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For Radiated (below 1GHz):

Support Equipment					
No.	No. Equipment Brand Name Model Name FCC ID				
Α	Device	WNC	OWS1200	N/A	
В	B NB DELL E4300 N/A				
С	NB	DELL	E4300	N/A	

For Radiated (above 1GHz) and RF Conducted:

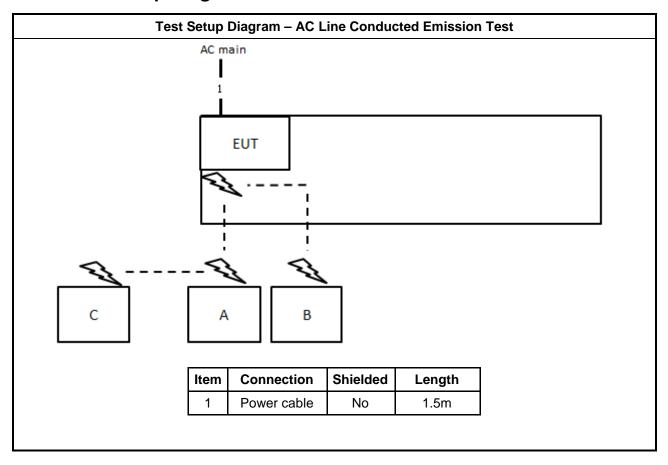
	Support Equipment					
No.	No. Equipment Brand Name Model Name FCC ID					
Α	NB	DELL	E4300	N/A		
В	B Fixture WNC 480IUART.SGA N/A					

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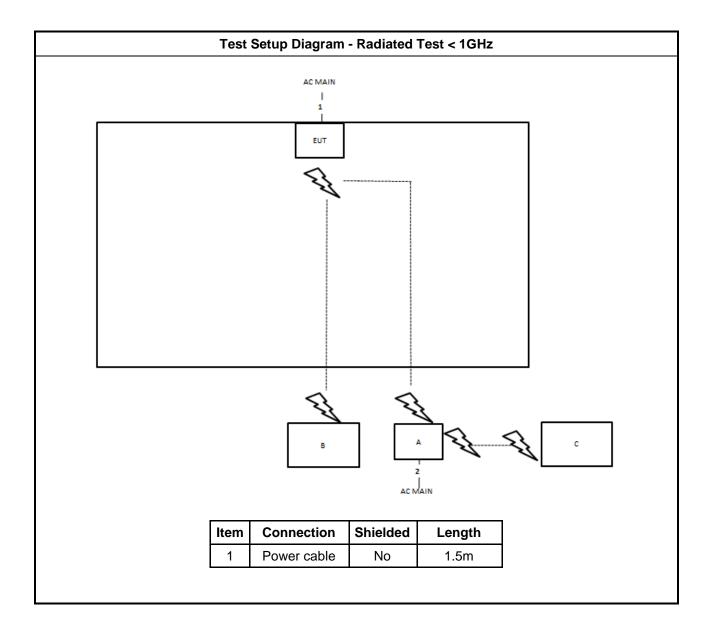
Test Setup Diagram 2.6



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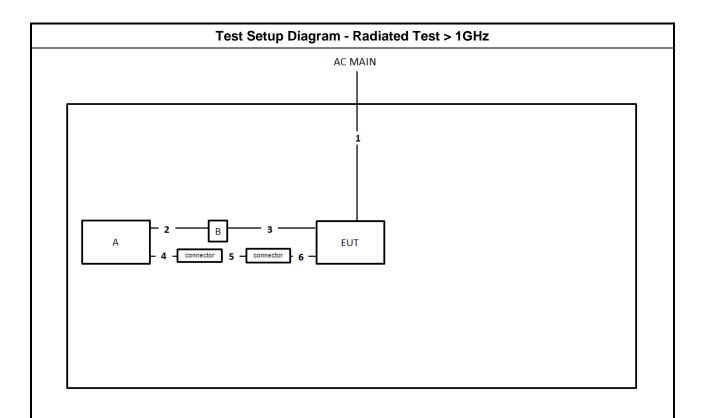
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Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	USB cable	Yes	1m
3	Console cable	No	0.3m
4	USB cable	Yes	0.6m
5	USB to RJ45 cable	Yes	0.1m
6	RJ-45 cable	No	1.5m

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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 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.						

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3.1.2 Measuring Instruments

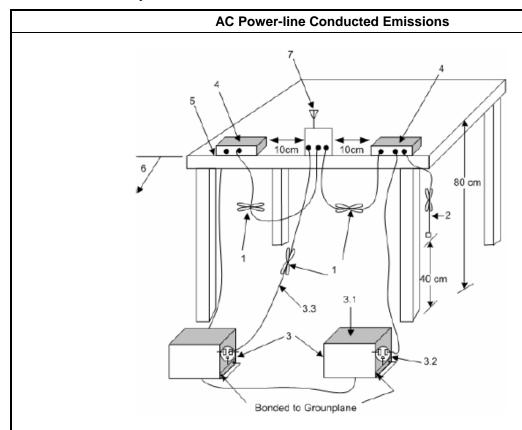
Refer a test equipment and calibration data table in this test report.

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 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit					
Systems using digital modulation techniques:					
■ 6 dB bandwidth ≥ 500 kHz.					

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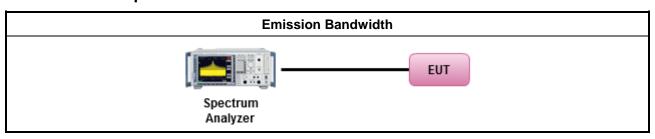
3.2.2 Measuring Instruments

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 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.							
		Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.							
		Refer as ANSI C63.10, clause 6.9.1 for occupied 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

- If G_{TX} ≤ 6 dBi, then P_{Out} ≤ 30 dBm (1 W)
- Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)$ dBm
- Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)/3$ dBm
- Smart antenna system (SAS):
 - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)/3$ dBm
 - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)/3$ dBm
 - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)/3 + 8$ dB dBm

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 P_{out} = maximum peak conducted output power or 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.

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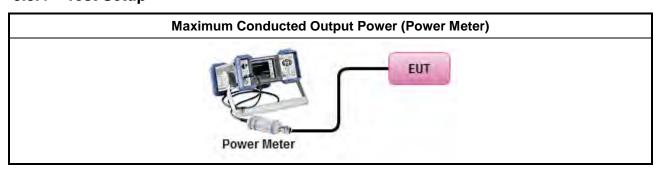
3.3.3 Test Procedures

		Test Method						
•	Max	mum Peak Conducted Output Power						
		Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).						
		Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).						
•	Max	mum Conducted Output Power						
	[duty cycle ≥ 98% or external video / power trigger]							
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.						
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)						
	duty	cycle < 98% and average over on/off periods with duty factor						
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.						
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)						
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3						
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)						
	Mea	surement using a power meter (PM)						
	Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (usin RF average power meter).							
		Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate 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: $P_{total} = P_1 + P_2 + \ldots + P_n \\ \text{(calculated in linear unit [mW] and transfer to log unit [dBm])} \\ \text{EIRP}_{total} = P_{total} + DG$						

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3.3.4 Test Setup



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3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

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3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit Power Spectral Density (PSD) ≤ 8 dBm/3kHz

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3.4.2 Measuring Instruments

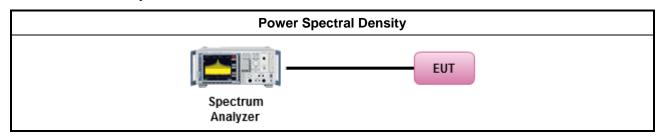
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

	Test Method									
•	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).									
	\boxtimes	Ref	er as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.							
•	For	cond	ucted measurement.							
	•	If Th	ne EUT supports multiple transmit chains using options given below:							
			Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.							
			Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,							
			Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.							

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3.4.4 Test Setup



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3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

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3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit				
RF output power procedure	Limit (dBc)			
Peak output power procedure	20			
Average output power procedure	30			

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- Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.
- Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

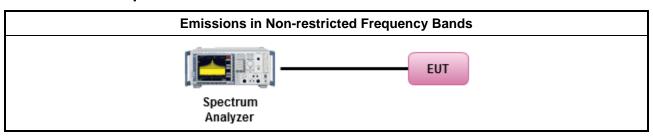
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method	
 Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands. 	

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

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3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

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

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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 ELIT
- 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.

3.6.2 Measuring Instruments

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

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3.6.3 Test Procedures

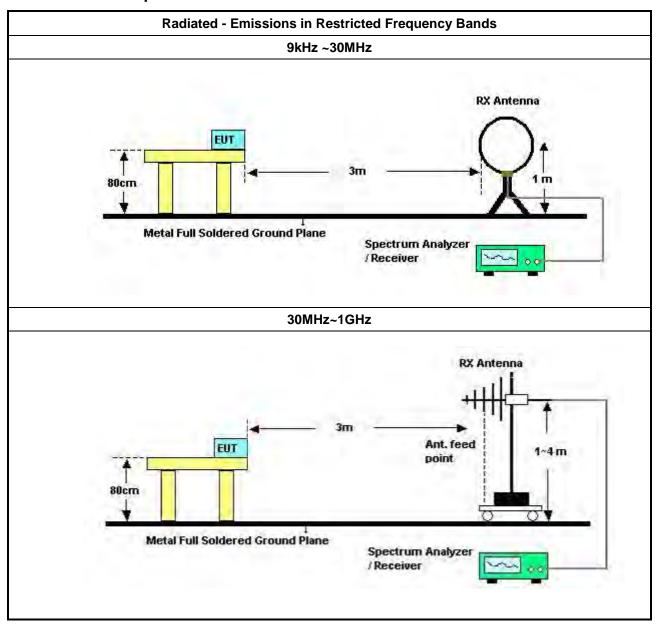
		Test Method							
•	The	average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].							
•	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.								
•	For the transmitter unwanted emissions shall be measured using following options below:								
	 Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands. Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%). 								
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).							
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).							
		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 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.							
•	For the transmitter band-edge emissions shall be measured using following options below:								
	•	Refer as FCC KDB 558074 clause 8.7 & C63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.							
	•	Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.							
		Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).							
	•	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB							
	 For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred. 								

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3.6.4 Test Setup



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3.6.5 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.

3.6.6 Emissions in Restricted Frequency Bands (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.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

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4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	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&Schwa rz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 21, 2019	May 20, 2020	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 (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI			30MHz ~ 1GHz	Oct. 12, 2019	Oct. 11, 2020	Radiation (03CH04-CB)
Pre-Amplifier	Agilent 310N		187291	0.1MHz ~ 1GHz	Mar. 19, 2020	Mar. 18, 2021	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Dec. 18, 2019	Dec. 17, 2020	Radiation (03CH04-CB
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 15, 2019	May 14, 2020	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+22	30MHz – 1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH04-CB)
Horn Antenna	ETS • Lindgren	3115	00143147	750MHz~18GHz	Oct. 22, 2019	Oct. 21, 2020	Radiation (03CH04-CB)
Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 12, 2019	Jun. 11, 2020	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz ~ 26.5GHz	Mar. 11, 2020	Mar. 10, 2021	Radiation (03CH04-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21	1GHz - 18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21+22	1GHz - 18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)

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Horn Antenna

Calibration Calibration Manufacturer Model No. Serial No. Characteristics Instrument Remark Date **Due Date** Radiation Horn Antenna **EMCO** 3115 9610-4976 1GHz ~ 18GHz Apr. 21, 2020 Apr. 20, 2021 (03CH02-CB) Radiation BBHA9170252 15GHz ~ 40GHz Horn Antenna Schwarzbeck **BBHA 9170** Jun. 27, 2019 Jun. 26, 2020 (03CH02-CB) Radiation Pre-Amplifier 83017A MY39501305 1GHz ~ 26.5GHz Aug. 21, 2019 Aug. 20, 2020 Agilent (03CH02-CB) TTA1840-35-H Radiation Pre-Amplifier **MITEQ** 1864479 18GHz ~ 40GHz Jul. 03, 2019 Jul. 02, 2020 (03CH02-CB) Spectrum Radiation FSP40 R&S 100304 9kHz ~ 40GHz Aug. 15, 2019 Aug. 14, 2020 (03CH02-CB) Analyzer Radiation High Cable Woken RG402 High Cable-18 1GHz ~ 18GHz Oct. 07, 2019 Oct. 06, 2020 (03CH02-CB) High Radiation 1GHz ~ 18GHz Oct. 07, 2019 Oct. 06, 2020 High Cable Woken RG402 Cable-18+19 (03CH02-CB) High Radiation RF Cable-high Woken RG402 18GHz ~ 40 GHz Jul. 24, 2019 Jul. 23, 2020 Cable-40G#1 (03CH02-CB) High Radiation RF Cable-high Woken RG402 18GHz ~ 40 GHz Jul. 24, 2019 Jul. 23, 2020 Cable-40G#2 (03CH02-CB) Radiation **Test Software SPORTON** SENSE V5.10 N.C.R. N.C.R. (03CH02-CB) Radiation Horn Antenna ETS · Lindgren 3115 6821 750MHz~18GHz Jan. 20, 2020 Jan. 19, 2021 (03CH03-CB) Radiation Horn Antenna Schwarzbeck **BBHA 9170** BBHA9170252 15GHz ~ 40GHz Jun. 27, 2019 Jun. 26, 2020 (03CH03-CB) Radiation 8449B 3008A02097 1GHz ~ 26.5GHz Pre-Amplifier Dec. 19, 2019 Dec.18, 2020 Agilent (03CH03-CB) TTA1840-35-H Radiation **MITEQ** Pre-Amplifier 1864479 18GHz ~ 40GHz Jul. 03, 2019 Jul. 02, 2020 (03CH03-CB) G Radiation Spectrum R&S FSP40 100019 9kHz ~ 40GHz Jun. 18, 2020 Jun. 19, 2019 Analyzer (03CH03-CB) High Radiation RF Cable-high Woken RG402 1GHz ~ 18GHz Oct. 07, 2019 Oct. 06, 2020 Cable-20+27 (03CH03-CB) Radiation RF Cable-high Woken RG402 High Cable-27 1GHz ~ 18GHz Oct. 07, 2019 Oct. 06, 2020 (03CH03-CB) Radiation High 18GHz ~ 40 GHz RF Cable-high Woken RG402 Jul. 24, 2019 Jul. 23, 2020 Cable-40G#1 (03CH03-CB) High Radiation RF Cable-high Woken RG402 18GHz ~ 40 GHz Jul. 24, 2019 Jul. 23, 2020 Cable-40G#2 (03CH03-CB) Radiation **Test Software SPORTON** SENSE V5.10 N.C.R. N.C.R. (03CH03-CB) **SCHWARZBE** Radiation Horn Antenna BBHA9120D 9120D-1292 1GHz~18GHz Jul. 17, 2019 Jul. 16, 2020 (03CH06-CB) **SCHWARZBE**

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Radiation

(03CH06-CB)

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15GHz ~ 40GHz

Jun. 12, 2019

Jun. 11, 2020

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BBHA9170507

BBHA 9170

CK

Calibration Calibration Instrument Manufacturer Model No. Serial No. Characteristics Remark **Due Date** Date 0.5GHz ~ Radiation Pre-Amplifier 83017A MY53270064 May 07, 2020 May 06, 2021 Agilent 26.5GHz (03CH06-CB) TTA1840-35-H Radiation Pre-Amplifier MITEQ 1864479 18GHz ~ 40GHz Jul. 03, 2019 Jul. 02, 2020 (03CH06-CB) Spectrum Radiation FSP40 Oct. 21, 2019 R&S 100080 9kHz~40GHz Oct. 20, 2020 (03CH06-CB) analyzer **HUBER+SUH** Radiation RF Cable-high RG402 High Cable-05 1GHz~18GHz Oct. 07, 2019 Oct. 06, 2020 NER (03CH06-CB) **HUBER+SUH** High Radiation RF Cable-high 1GHz~18GHz Oct. 07, 2019 RG402 Oct. 06, 2020 Cable-05+24 (03CH06-CB) **NER** High Radiation Woken RG402 18GHz ~ 40 GHz Jul. 24, 2019 Jul. 23, 2020 RF Cable-high Cable-40G#1 (03CH06-CB) High Radiation RF Cable-high Woken RG402 18GHz ~ 40 GHz Jul. 24, 2019 Jul. 23, 2020 Cable-40G#2 (03CH06-CB) Radiation Test Software **SPORTON** SENSE V5.10 N.C.R. N.C.R. (03CH06-CB) Spectrum Conducted Jul. 02, 2019 Jul. 01, 2020 R&S FSV40 101027 9kHz~40GHz (TH02-CB) analyzer Conducted Power Sensor Anritsu MA2411B 1126203 300MHz~40GHz Sep. 11, 2019 Sep. 10, 2020 (TH02-CB) Conducted ML2495A 1210004 300MHz~40GHz Power Meter Anritsu Sep. 11, 2019 Sep. 10, 2020 (TH02-CB) Conducted 1 GHz - 26.5 GHz Oct. 07, 2019 Oct. 06, 2020 RF Cable-high Woken RG402 High Cable-01 (TH02-CB) Conducted RF Cable-high Woken RG402 High Cable-02 1 GHz - 26.5 GHz Oct. 07, 2019 Oct. 06, 2020 (TH02-CB) Conducted RF Cable-high RG402 High Cable-3 1 GHz - 26.5 GHz Oct. 07, 2019 Oct. 06, 2020 Woken (TH02-CB) Conducted High Cable-04 1 GHz - 26.5 GHz Oct. 07, 2019 Oct. 06, 2020 RF Cable-high Woken RG402 (TH02-CB) Conducted RF Cable-high Woken RG402 High Cable-05 1 GHz - 26.5 GHz Oct. 07, 2019 Oct. 06, 2020 (TH02-CB)

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Conducted

(TH02-CB)

N.C.R.

N.C.R.

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

SENSE

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

SPORTON

Test Software

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V5.10



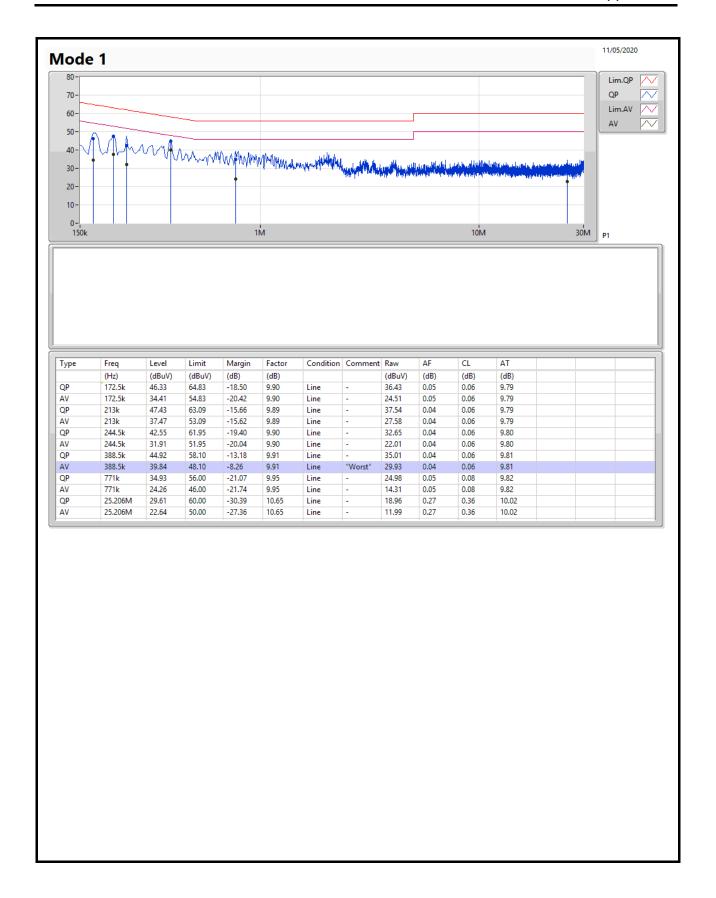
AC Power Port Conducted Emission Result

Appendix A

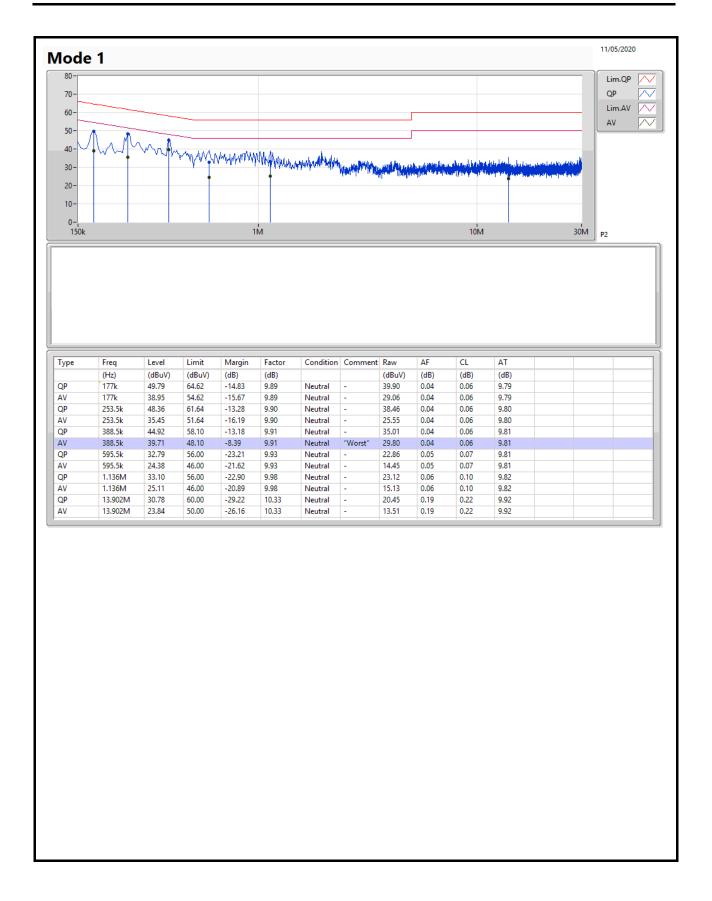
Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition
Mode 1	Pass	AV	388.5k	39.84	48.10	-8.26	9.91	Line











EBW Appendix B

Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW	
	(Hz)	(Hz)		(Hz)	(Hz)	
2.4-2.4835GHz	-	-	-	-	-	
802.11b_Nss1,(1Mbps)_2TX	8.05M	12.819M	12M8G1D	7.525M	12.669M	
802.11g_Nss1,(6Mbps)_2TX	16.35M	24.513M	24M5D1D	16.275M	16.367M	
VHT20_Nss1,(MCS0)_2TX	16.35M	24.388M	24M4D1D	16.275M	16.367M	
VHT40_Nss1,(MCS0)_2TX	33.8M	35.482M	35M5D1D	31.25M	35.282M	

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



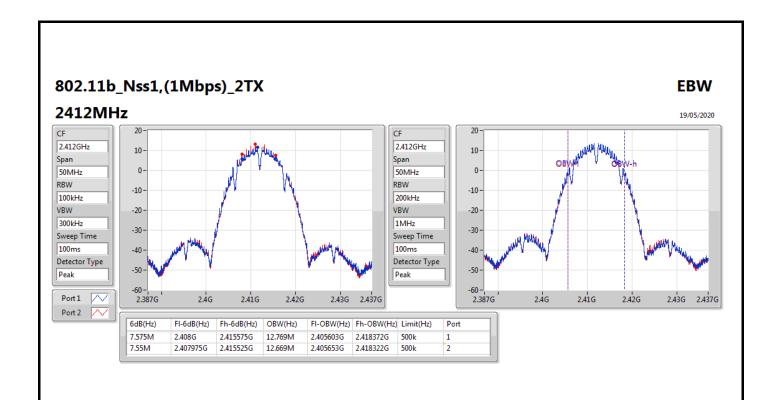
EBW Appendix B

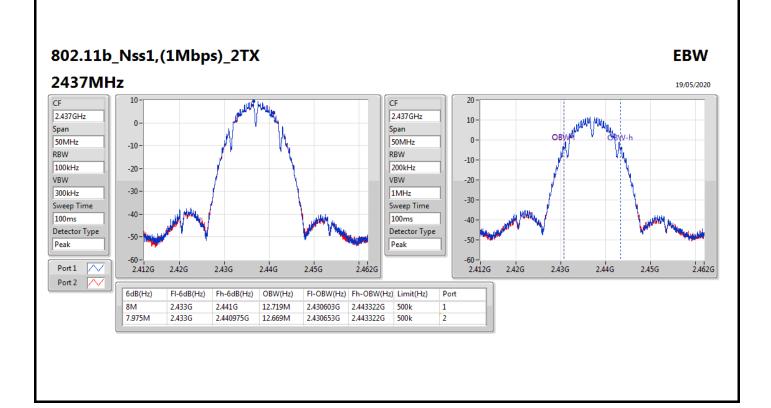
Result

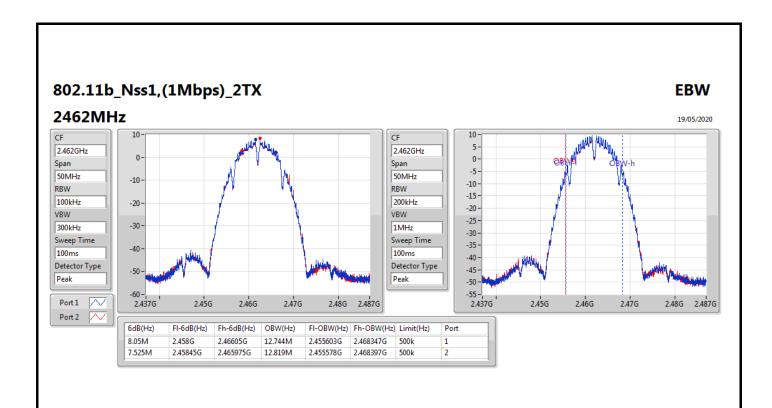
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	7.575M	12.769M	7.55M	12.669M
2437MHz	Pass	500k	8M	12.719M	7.975M	12.669M
2462MHz	Pass	500k	8.05M	12.744M	7.525M	12.819M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.35M	16.417M	16.325M	16.367M
2437MHz	Pass	500k	16.275M	24.513M	16.3M	23.738M
2462MHz	Pass	500k	16.325M	16.417M	16.325M	16.367M
VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.35M	16.417M	16.325M	16.367M
2437MHz	Pass	500k	16.275M	24.388M	16.3M	23.413M
2462MHz	Pass	500k	16.325M	16.417M	16.325M	16.367M
VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	31.25M	35.382M	33.8M	35.332M
2437MHz	Pass	500k	31.4M	35.482M	33.8M	35.382M
2452MHz	Pass	500k	32.55M	35.432M	31.25M	35.282M

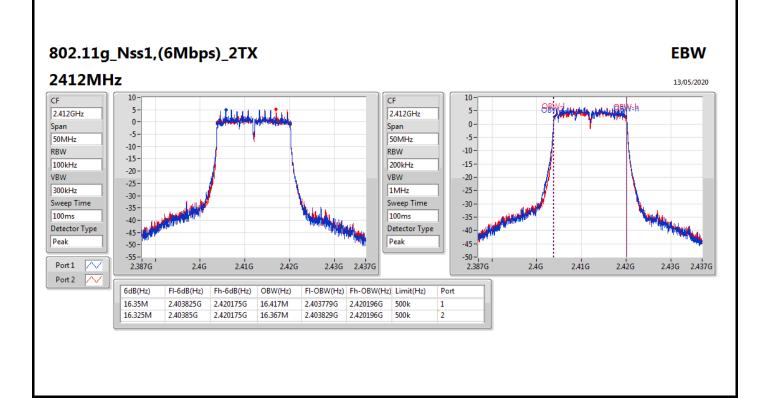
Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;

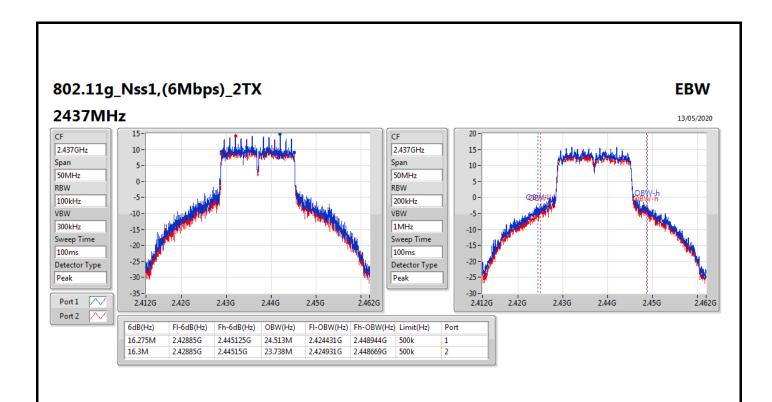
EBW Appendix B

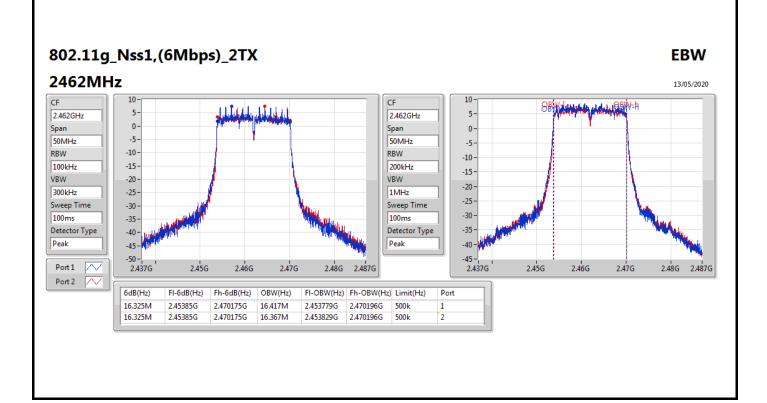


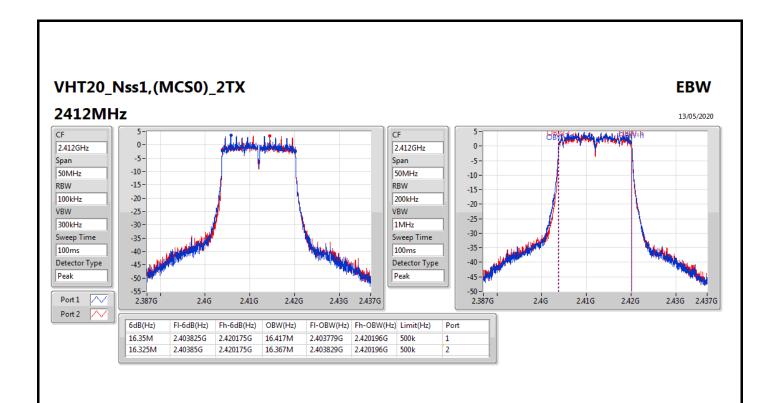


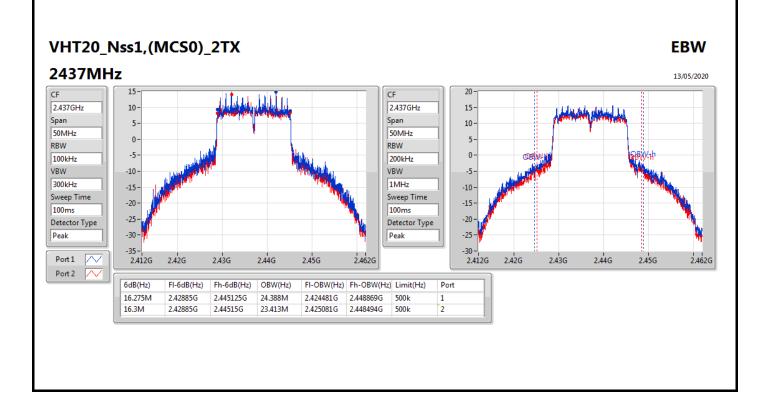


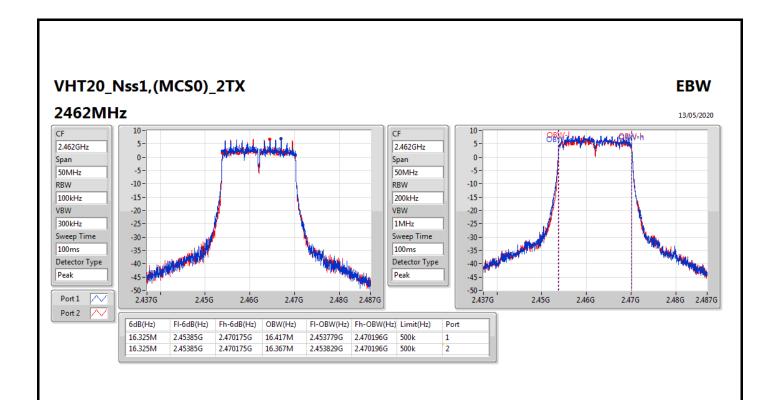


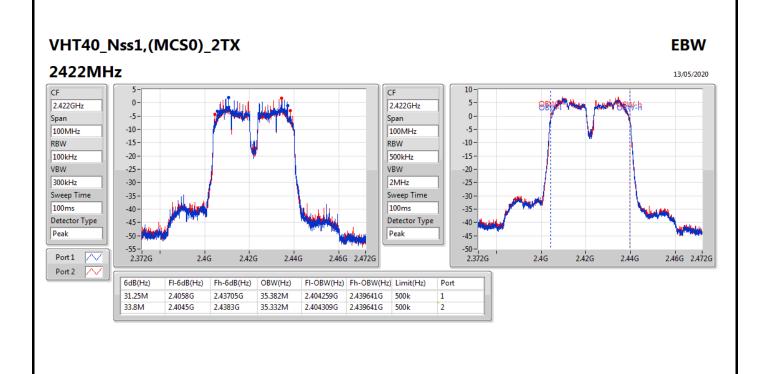


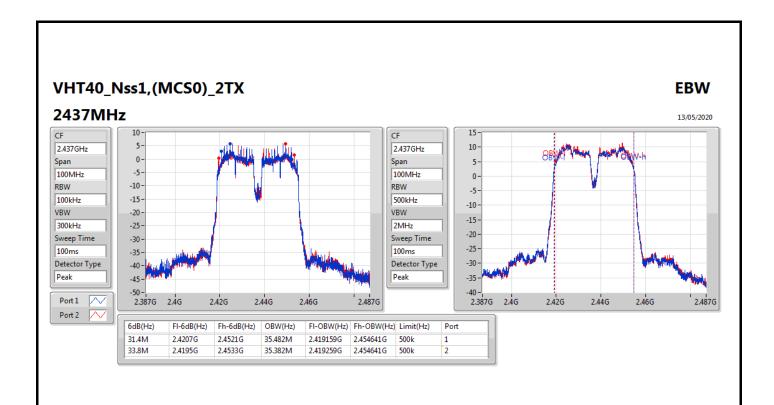


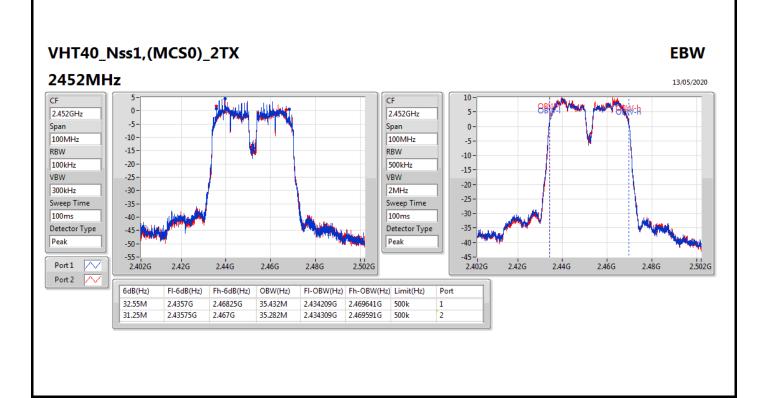














Average Power Appendix C

Mode	Total Power	Total Power		
	(dBm)	(W)		
2.4-2.4835GHz	-	-		
802.11b_Nss1,(1Mbps)_2TX	24.03	0.25293		
802.11g_Nss1,(6Mbps)_2TX	27.77	0.59841		
VHT20_Nss1,(MCS0)_2TX	27.54	0.56754		
VHT40_Nss1,(MCS0)_2TX	21.28	0.13428		

Average Power Appendix C

Result

Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.17	21.13	20.90	24.03	30.00
2437MHz	Pass	3.17	18.85	18.81	21.84	30.00
2462MHz	Pass	3.17	17.31	17.16	20.25	30.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	•	-	-
2412MHz	Pass	3.17	16.47	16.55	19.52	30.00
2417MHz	Pass	3.17	19.43	19.38	22.42	30.00
2437MHz	Pass	3.17	25.00	24.50	27.77	30.00
2457MHz	Pass	3.17	21.20	21.39	24.31	30.00
2462MHz	Pass	3.17	18.63	18.55	21.60	30.00
VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.17	15.10	14.84	17.98	30.00
2417MHz	Pass	3.17	21.29	21.30	24.31	30.00
2437MHz	Pass	3.17	24.76	24.29	27.54	30.00
2457MHz	Pass	3.17	21.26	21.41	24.35	30.00
2462MHz	Pass	3.17	18.16	18.01	21.10	30.00
VHT40_Nss1,(MCS0)_2TX	-	=	•	•	=	-
2422MHz	Pass	3.17	14.57	14.27	17.43	30.00
2427MHz	Pass	3.17	15.03	14.71	17.88	30.00
2437MHz	Pass	3.17	18.43	18.11	21.28	30.00
2452MHz	Pass	3.17	17.03	16.86	19.96	30.00

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



Summary

Mode	PD
	(dBm/RBW)
2.4-2.4835GHz	·
802.11b_Nss1,(1Mbps)_2TX	-3.81
802.11g_Nss1,(6Mbps)_2TX	-0.14
VHT20_Nss1,(MCS0)_2TX	-1.09
VHT40_Nss1,(MCS0)_2TX	-8.54

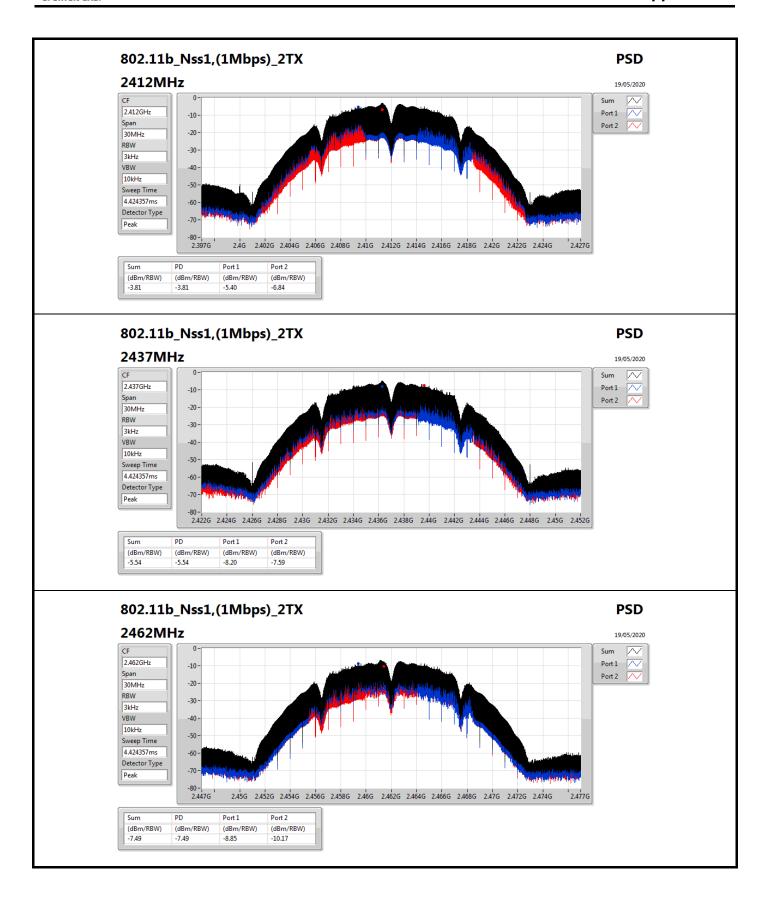
RBW = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;

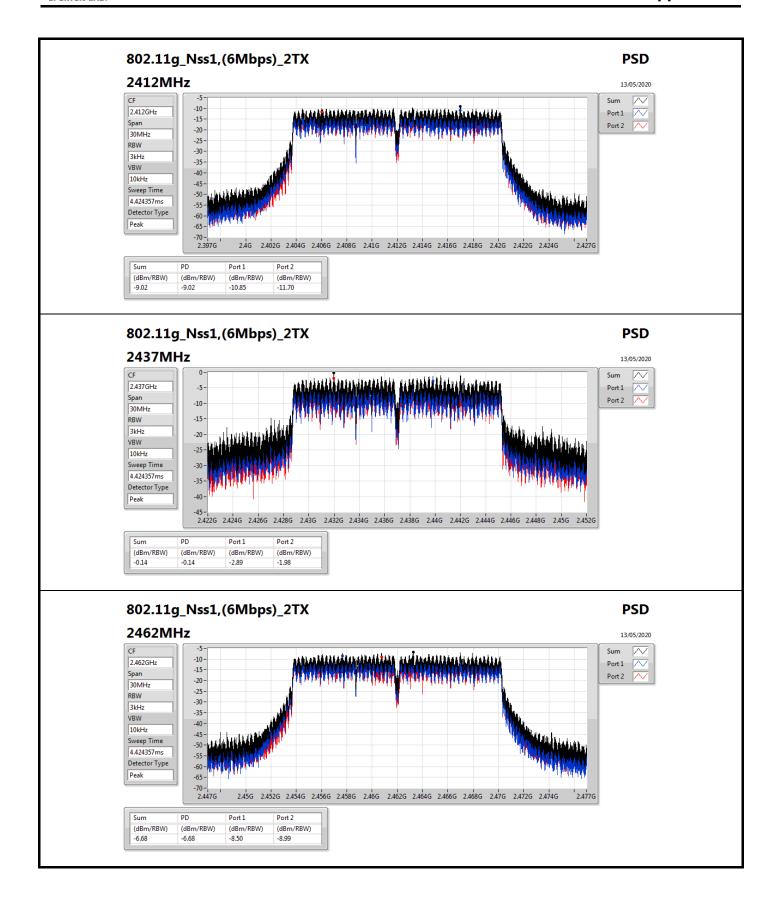


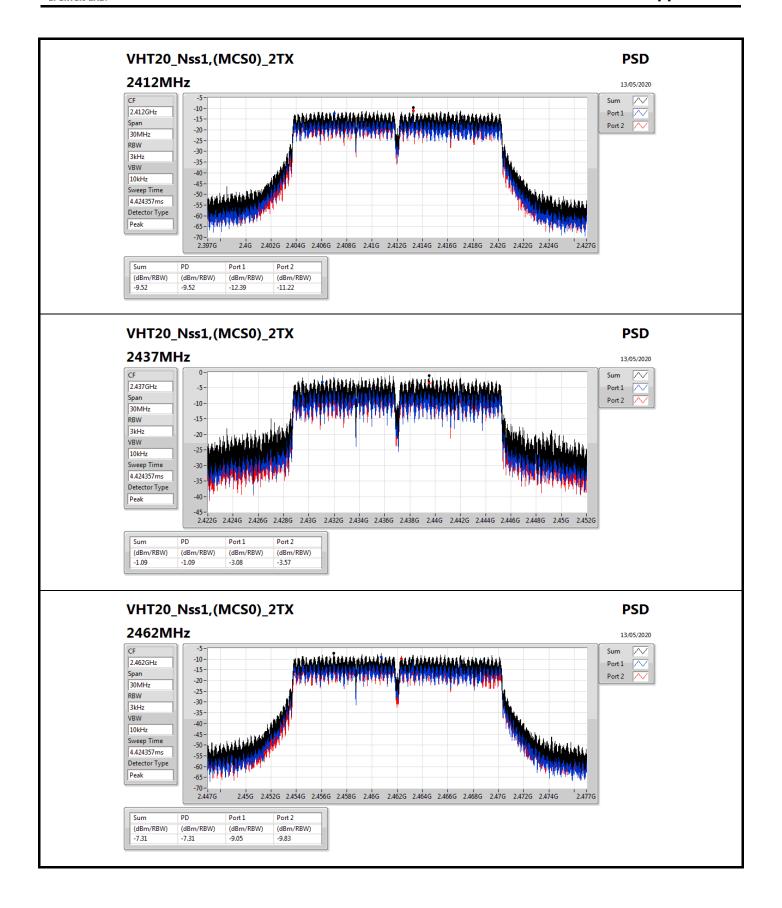
Result

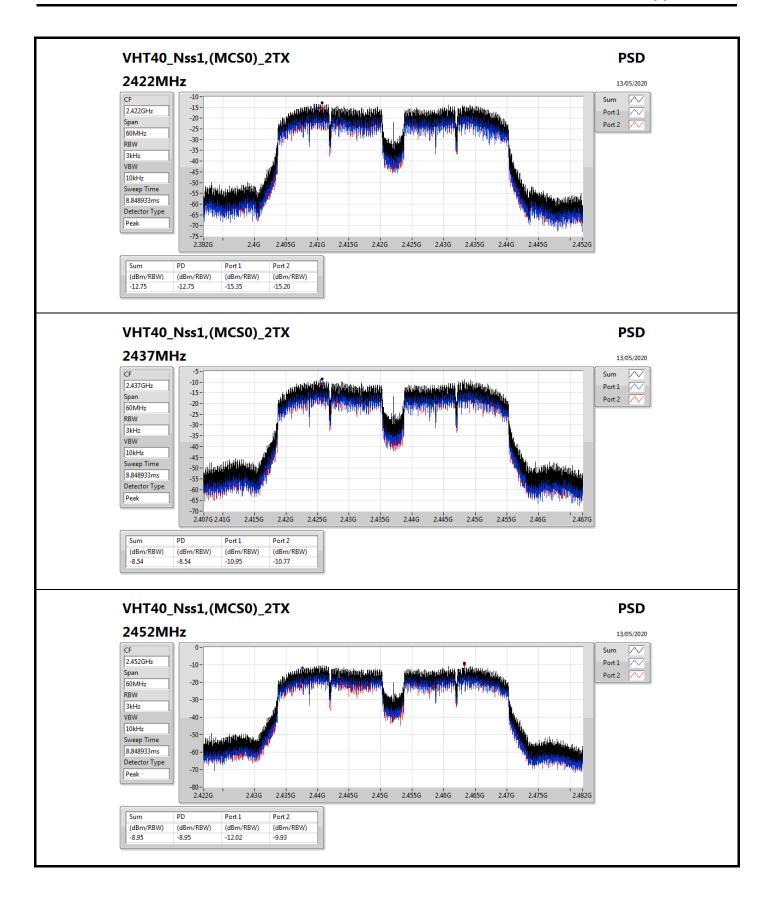
Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	6.13	-5.40	-6.84	-3.81	7.87
2437MHz	Pass	6.13	-8.20	-7.59	-5.54	7.87
2462MHz	Pass	6.13	-8.85	-10.17	-7.49	7.87
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	6.13	-10.85	-11.70	-9.02	7.87
2437MHz	Pass	6.13	-2.89	-1.98	-0.14	7.87
2462MHz	Pass	6.13	-8.50	-8.99	-6.68	7.87
VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	6.13	-12.39	-11.22	-9.52	7.87
2437MHz	Pass	6.13	-3.08	-3.57	-1.09	7.87
2462MHz	Pass	6.13	-9.05	-9.83	-7.31	7.87
VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	6.13	-15.35	-15.20	-12.75	7.87
2437MHz	Pass	6.13	-10.95	-10.77	-8.54	7.87
2452MHz	Pass	6.13	-12.02	-9.93	-8.95	7.87

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;











CSE(Non-restricted Band)

Appendix E

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
2.4-2.4835GHz	-	-	-	-	-		-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	2.41148G	11.43	-18.57	2.1069G	-53.41	2.39702G	-32.97	2.4G	-39.89	2.50352G	-51.05	3.21465G	-42.08	1
802.11g_Nss1,(6Mbps)_2TX	Pass	2.43198G	14.89	-15.11	49.81M	-50.62	2.397G	-32.16	2.4G	-34.02	2.49612G	-50.94	16.97027G	-42.59	2
VHT20_Nss1,(MCS0)_2TX	Pass	2.43073G	14.76	-15.24	2.30554G	-50.99	2.3989G	-33.74	2.4G	-35.95	2.5025G	-51.43	16.35217G	-42.50	2
VHT40_Nss1,(MCS0)_2TX	Pass	2.42576G	6.39	-23.61	49.75M	-46.66	2.3908G	-35.10	2.4G	-41.34	2.48374G	-50.18	24.41665G	-42.32	2



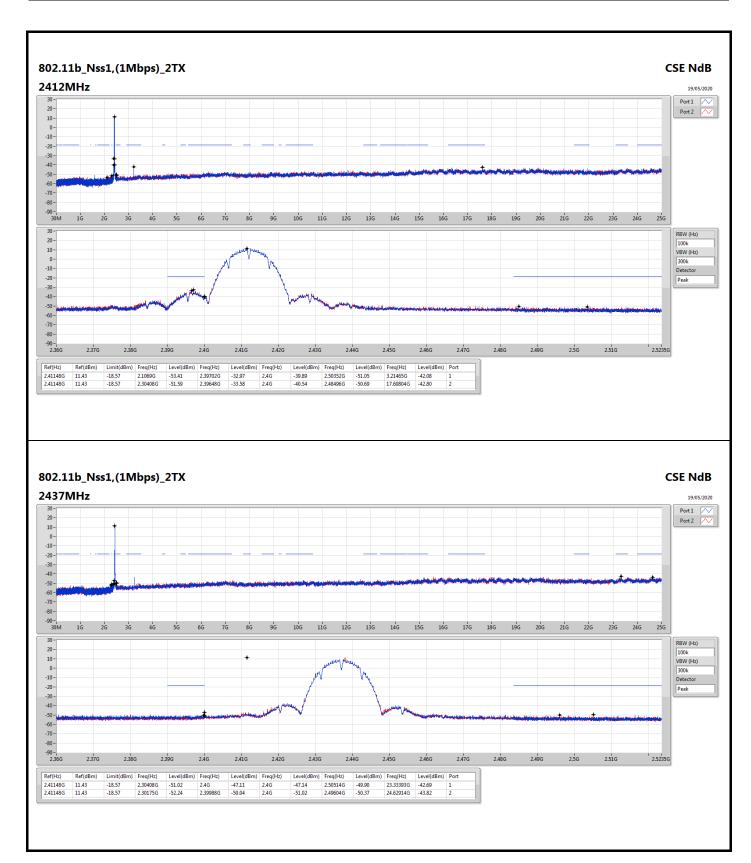
CSE(Non-restricted Band)

Appendix E

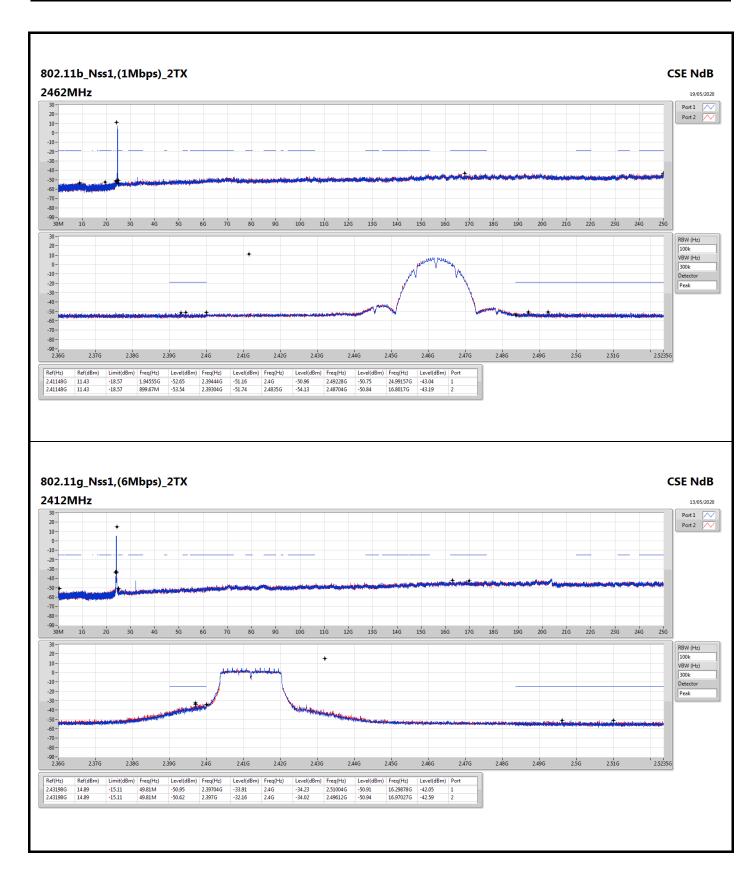
Result

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.41148G	11.43	-18.57	2.1069G	-53.41	2.39702G	-32.97	2.4G	-39.89	2.50352G	-51.05	3.21465G	-42.08	1
2412MHz	Pass	2.41148G	11.43	-18.57	2.30408G	-51.59	2.39648G	-33.58	2.4G	-40.54	2.48496G	-50.69	17.60804G	-42.80	2
2437MHz	Pass	2.41148G	11.43	-18.57	2.30408G	-51.02	2.4G	-47.11	2.4G	-47.14	2.50514G	-49.90	23.33393G	-42.69	1
2437MHz	Pass	2.41148G	11.43	-18.57	2.30175G	-52.24	2.39988G	-50.04	2.4G	-51.02	2.49604G	-50.37	24.62914G	-43.82	2
2462MHz	Pass	2.41148G	11.43	-18.57	1.94555G	-52.65	2.39444G	-51.16	2.4G	-50.96	2.49228G	-50.75	24.99157G	-43.04	1
2462MHz	Pass	2.41148G	11.43	-18.57	899.67M	-53.54	2.39304G	-51.74	2.4835G	-54.13	2.48704G	-50.84	16.8017G	-43.19	2
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43198G	14.89	-15.11	49.81M	-50.95	2.39704G	-33.91	2.4G	-34.23	2.51004G	-50.91	16.29878G	-42.05	1
2412MHz	Pass	2.43198G	14.89	-15.11	49.81M	-50.62	2.397G	-32.16	2.4G	-34.02	2.49612G	-50.94	16.97027G	-42.59	2
2437MHz	Pass	2.43198G	14.89	-15.11	49.81M	-51.79	2.39924G	-33.74	2.4G	-36.64	2.48362G	-37.99	16.54322G	-42.29	1
2437MHz	Pass	2.43198G	14.89	-15.11	49.81M	-53.17	2.39952G	-34.90	2.4G	-37.61	2.48636G	-39.28	16.52074G	-42.16	2
2462MHz	Pass	2.43198G	14.89	-15.11	49.81M	-47.91	2.4G	-48.01	2.4835G	-41.06	2.48362G	-41.70	16.54884G	-42.27	1
2462MHz	Pass	2.43198G	14.89	-15.11	49.81M	-47.22	2.39822G	-51.21	2.4835G	-42.26	2.48356G	-40.55	16.82136G	-42.22	2
VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43073G	14.76	-15.24	49.81M	-52.18	2.39702G	-34.54	2.4G	-36.18	2.49178G	-51.97	3.21465G	-41.86	1
2412MHz	Pass	2.43073G	14.76	-15.24	2.30554G	-50.99	2.3989G	-33.74	2.4G	-35.95	2.5025G	-51.43	16.35217G	-42.50	2
2437MHz	Pass	2.43073G	14.76	-15.24	49.81M	-52.00	2.39946G	-34.64	2.4G	-35.95	2.4839G	-36.70	17.40294G	-41.93	1
2437MHz	Pass	2.43073G	14.76	-15.24	49.81M	-53.28	2.39828G	-34.31	2.4G	-37.45	2.48636G	-38.88	24.941G	-42.48	2
2462MHz	Pass	2.43073G	14.76	-15.24	49.81M	-50.72	2.4G	-49.71	2.4835G	-43.41	2.48356G	-42.88	16.54884G	-41.90	1
2462MHz	Pass	2.43073G	14.76	-15.24	49.81M	-49.26	2.39332G	-51.34	2.4835G	-43.28	2.4845G	-41.95	16.8326G	-42.24	2
VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-		-	-	-	-	-	-
2422MHz	Pass	2.42576G	6.39	-23.61	49.75M	-47.47	2.39072G	-35.60	2.4G	-40.34	2.48738G	-51.24	17.61839G	-42.67	1
2422MHz	Pass	2.42576G	6.39	-23.61	49.75M	-46.66	2.3908G	-35.10	2.4G	-41.34	2.48374G	-50.18	24.41665G	-42.32	2
2437MHz	Pass	2.42576G	6.39	-23.61	49.75M	-46.86	2.3964G	-37.36	2.4G	-39.54	2.48386G	-41.76	21.5588G	-41.88	1
2437MHz	Pass	2.42576G	6.39	-23.61	49.75M	-46.28	2.39892G	-36.35	2.4G	-39.87	2.48886G	-42.23	14.61471G	-41.89	2
2452MHz	Pass	2.42576G	6.39	-23.61	49.75M	-45.70	2.39916G	-43.22	2.4G	-44.64	2.48422G	-42.46	17.6212G	-42.91	1
2452MHz	Pass	2.42576G	6.39	-23.61	49.75M	-46.71	2.39832G	-43.08	2.4835G	-42.12	2.48418G	-41.75	17.14442G	-42.01	2

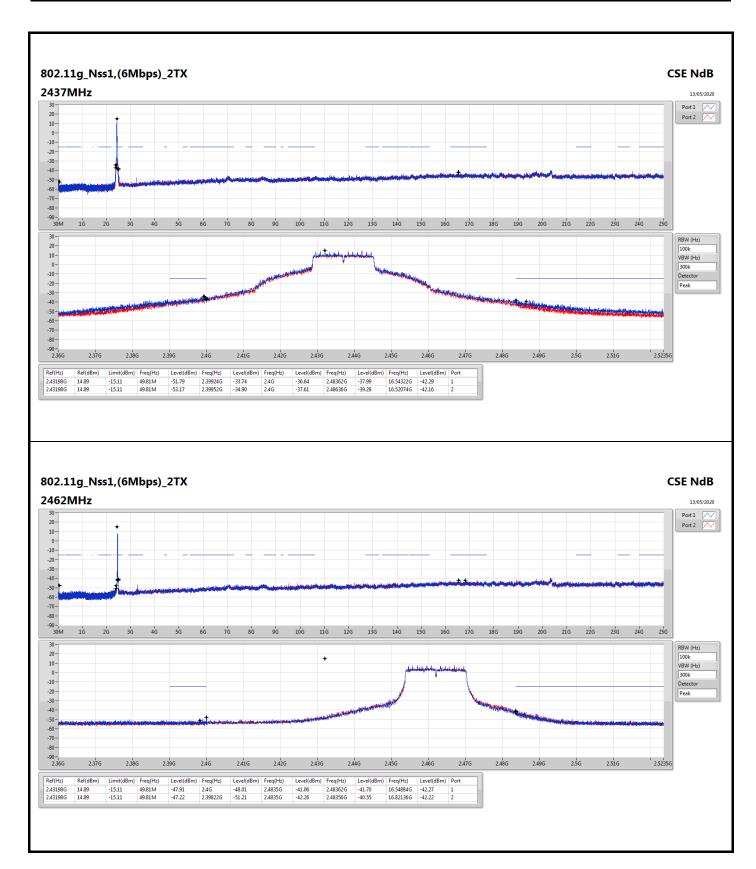




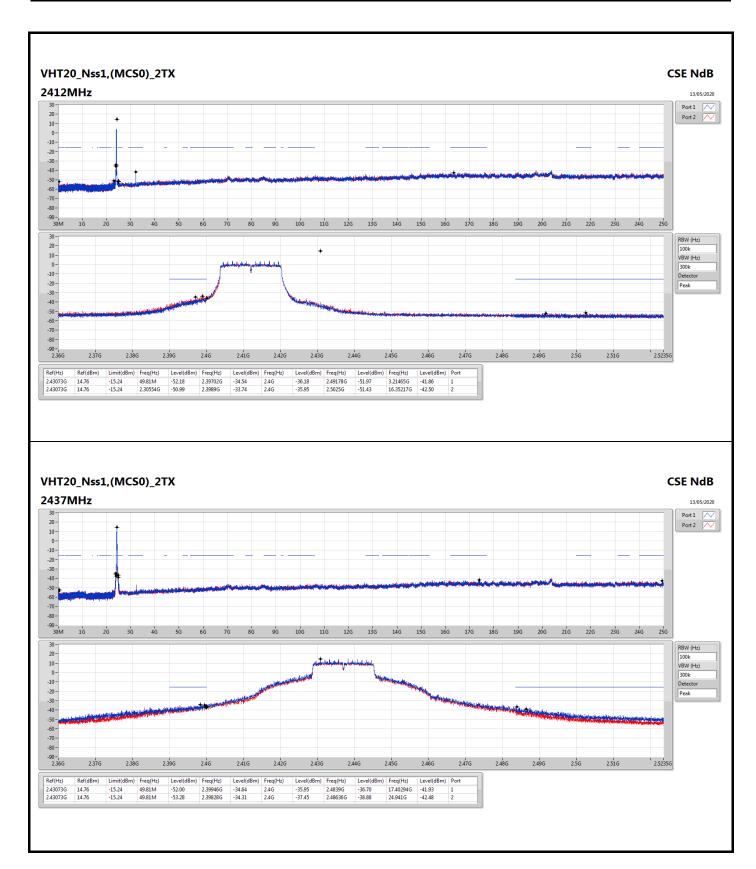




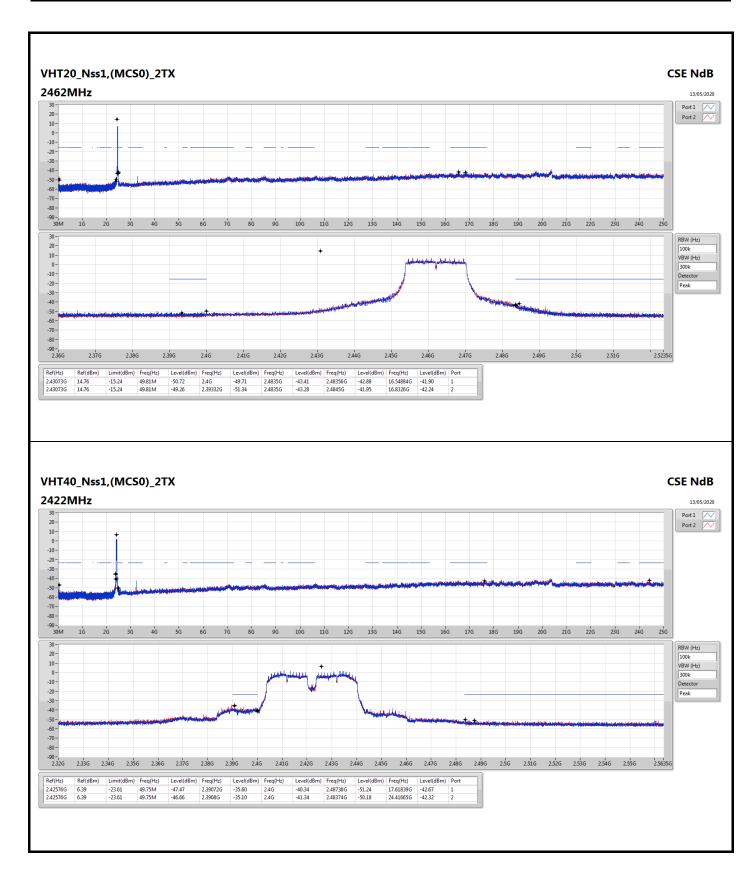




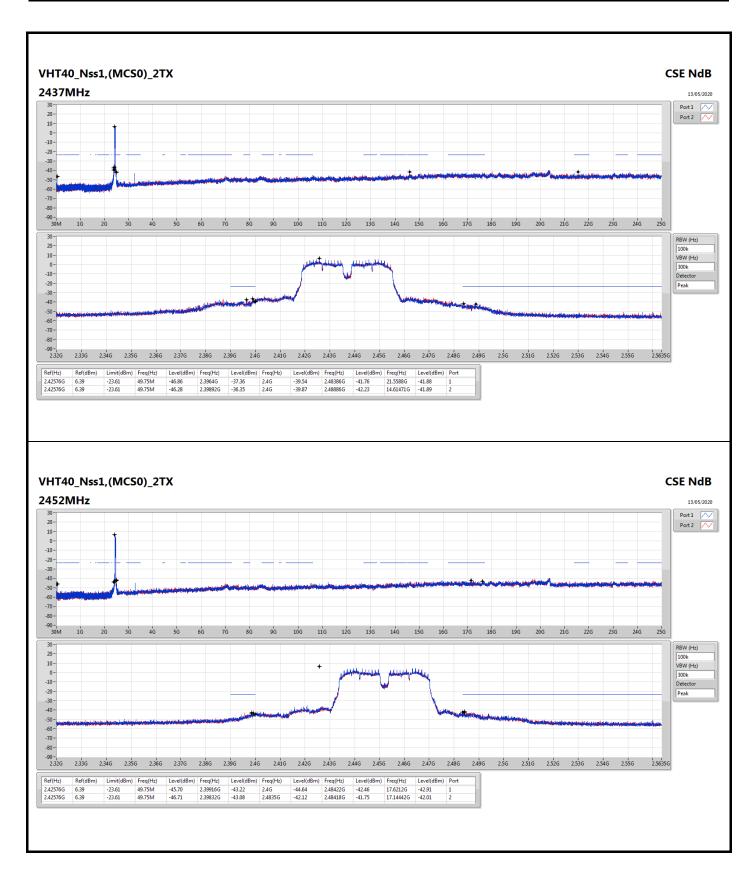












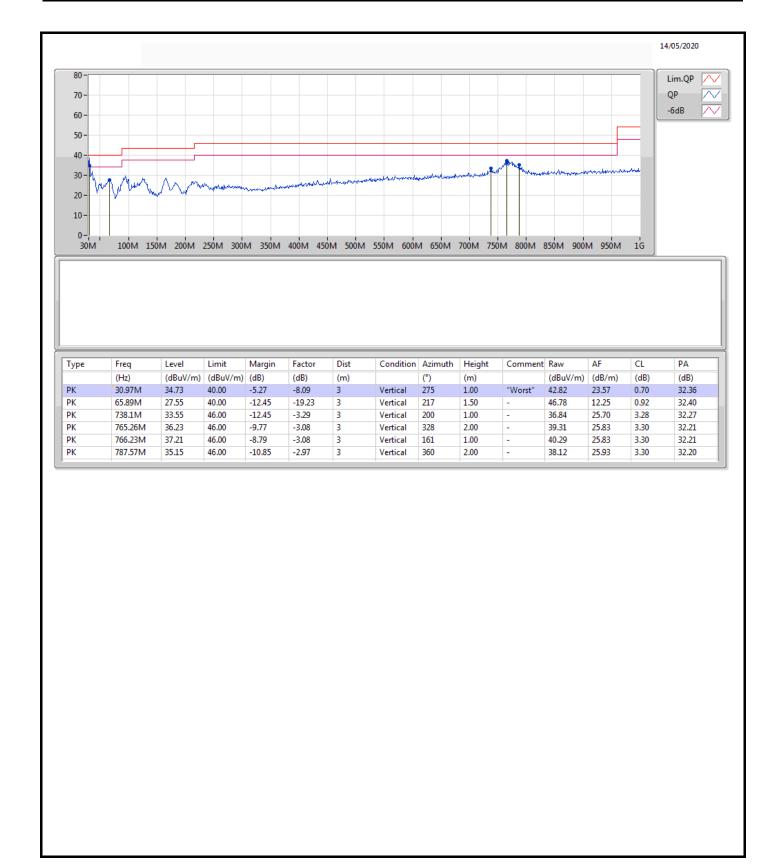


Radiated Emissions below 1GHz

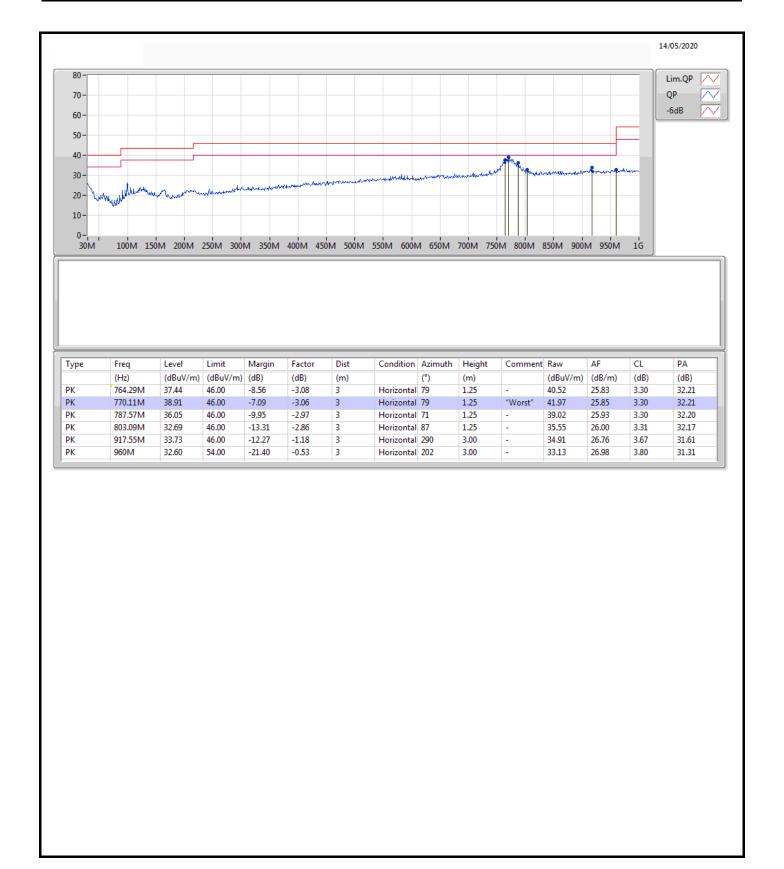
Appendix F.1

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	PK	30.97M	34.73	40.00	-5.27	Vertical











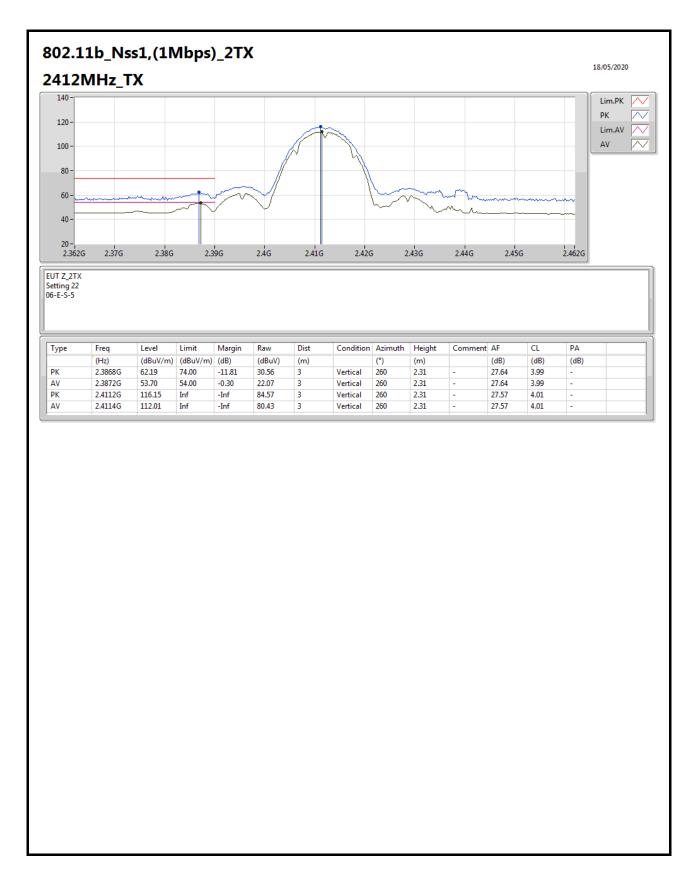
RSE TX above 1GHz

Appendix F.2

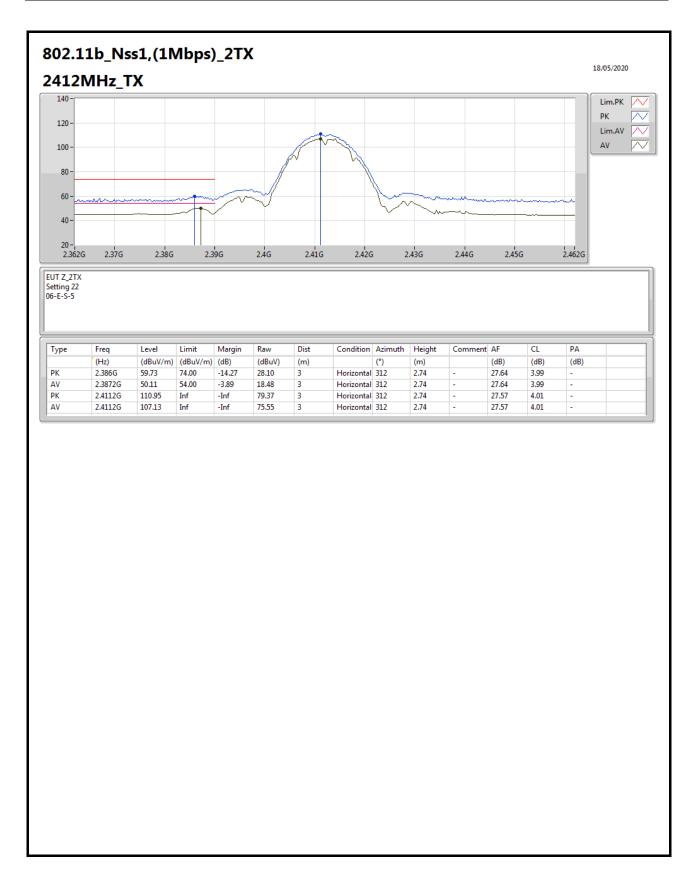
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Mode	Result	Туре	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
VHT40_Nss1,(MCS0)_2TX	Pass	AV	2.3898G	53.94	54.00	-0.06	3	Vertical	356	2.12	-

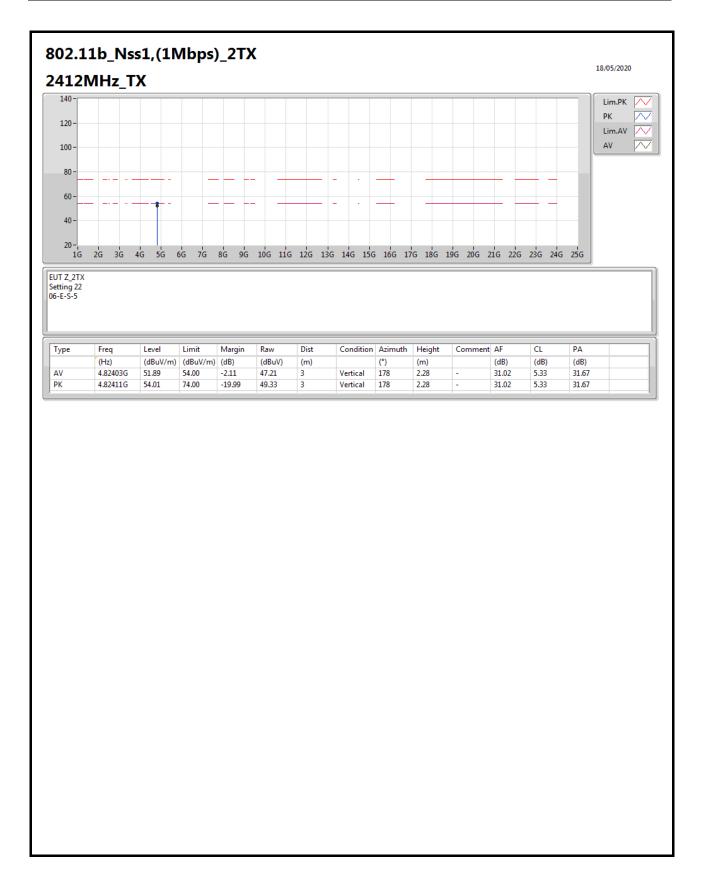




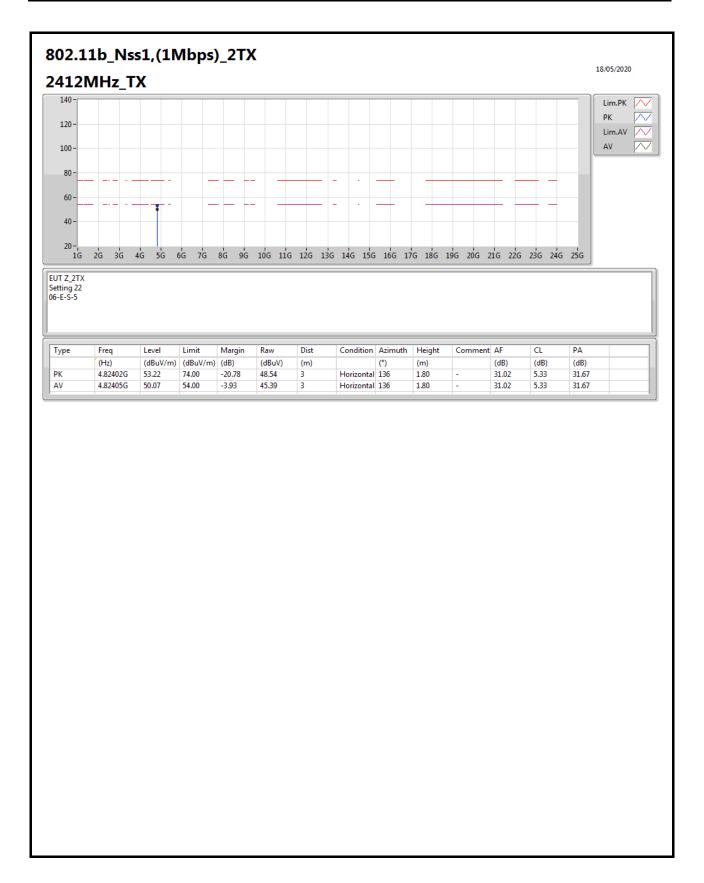




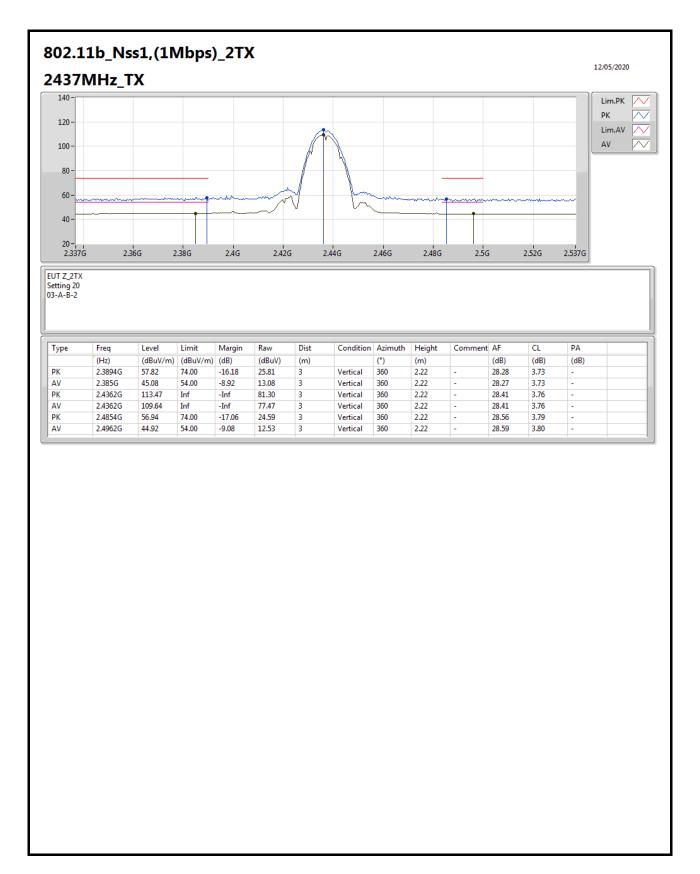




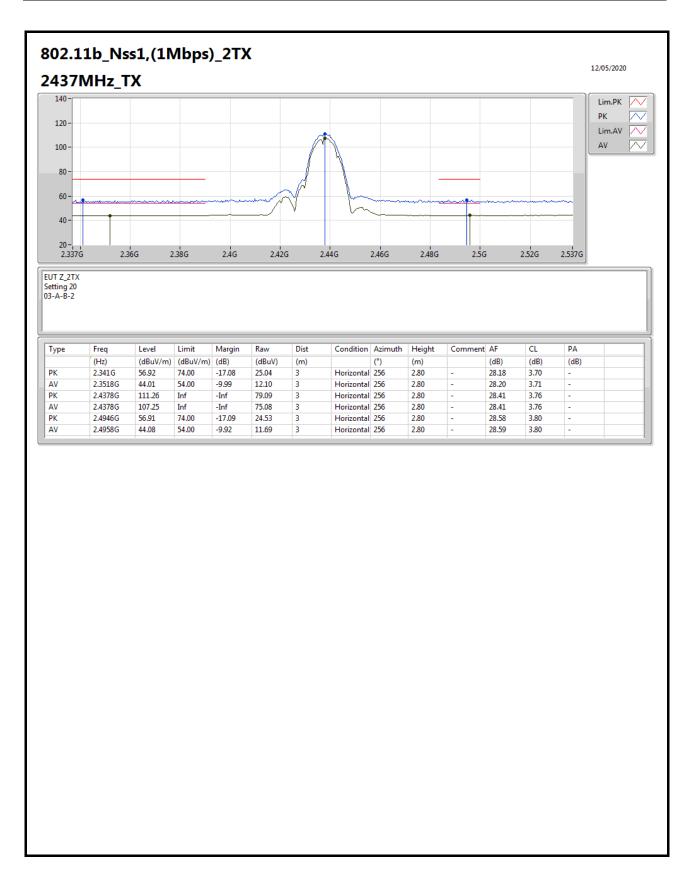




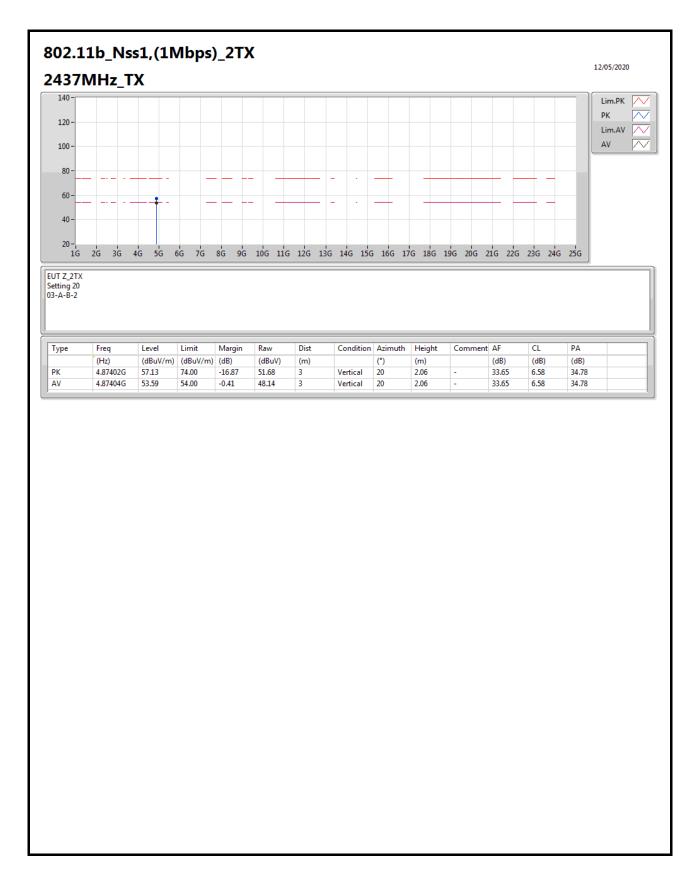




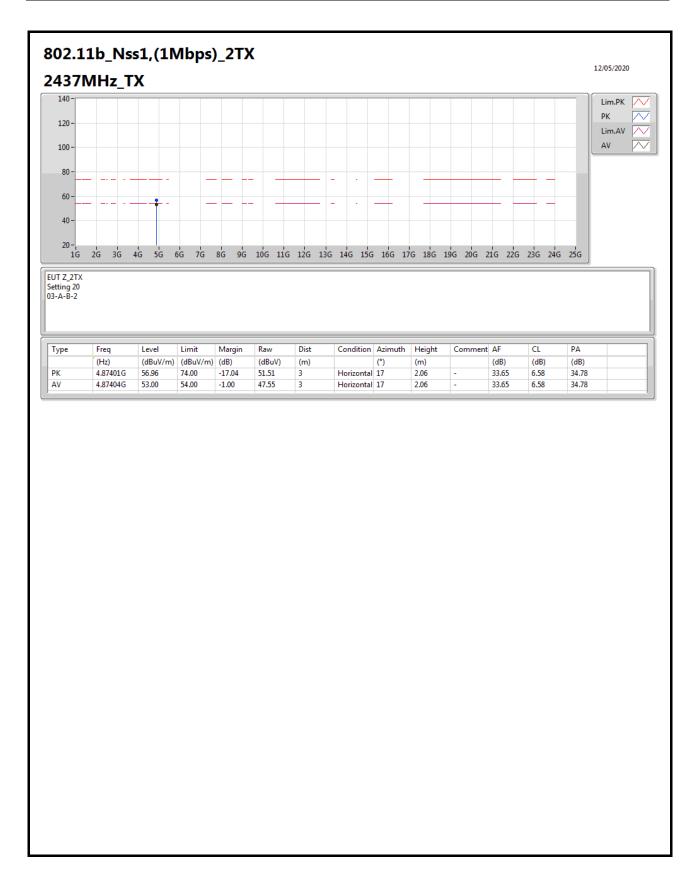




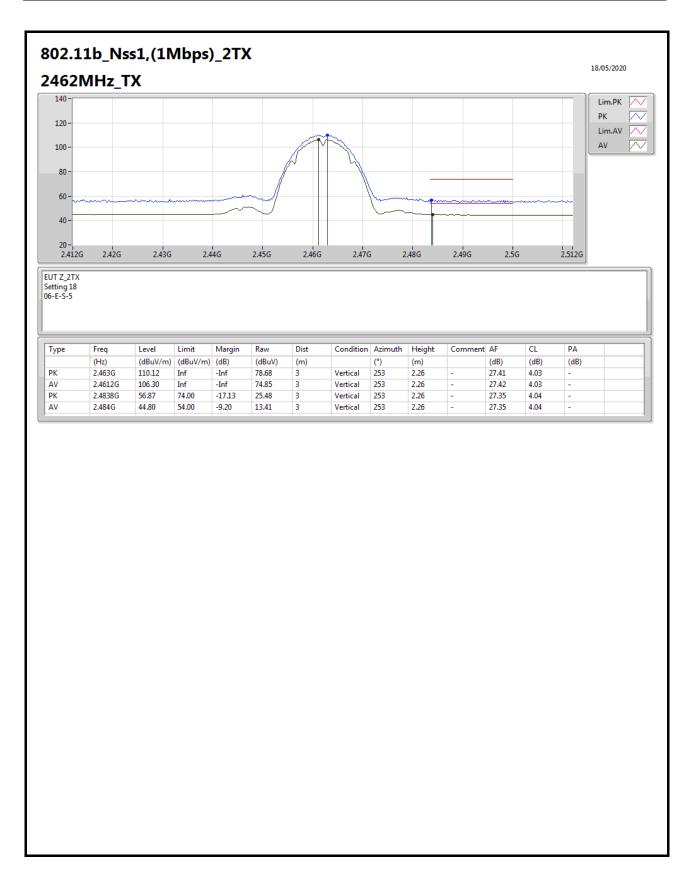




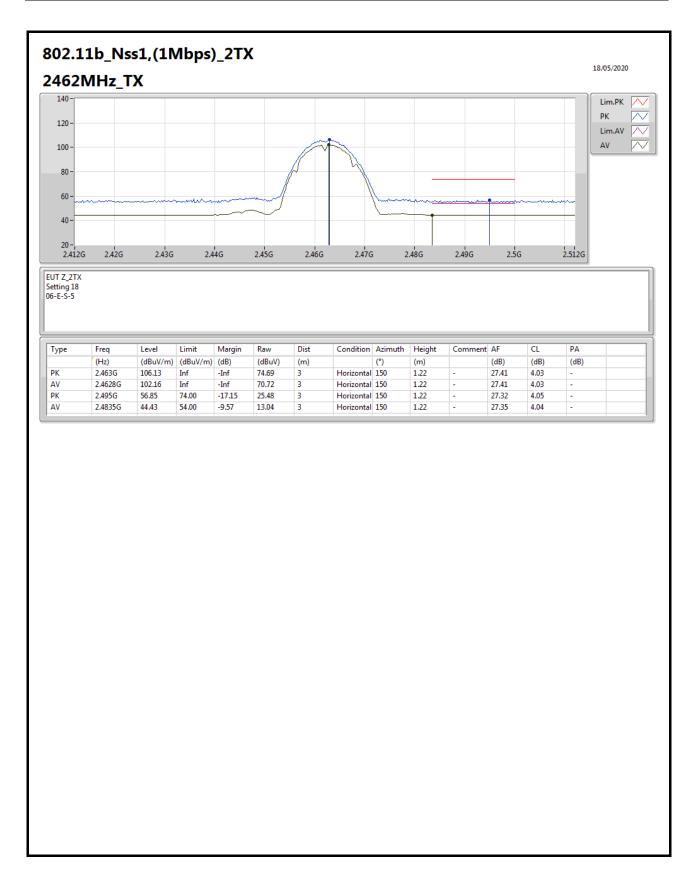




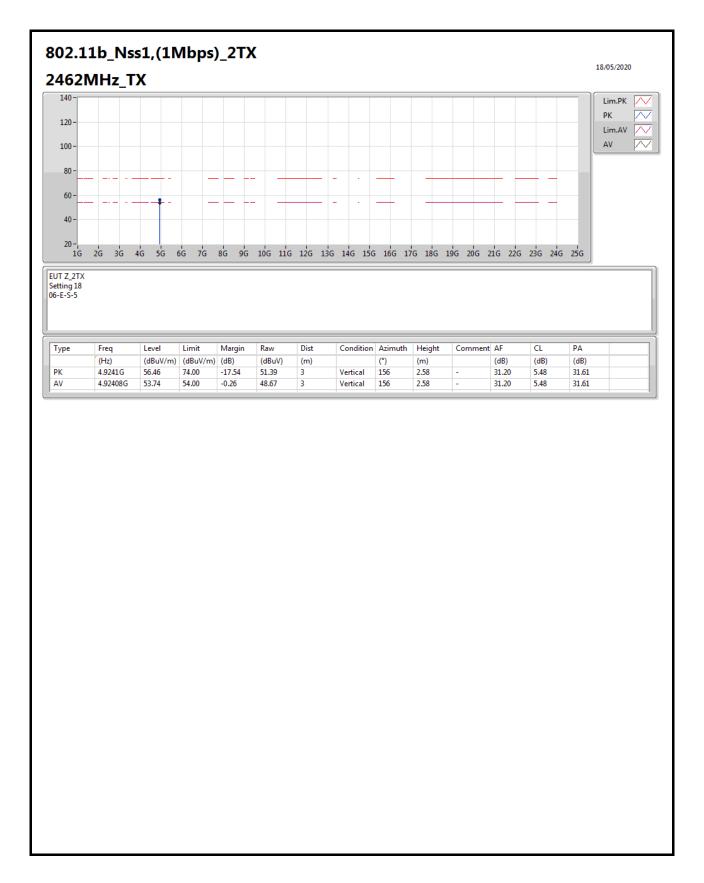




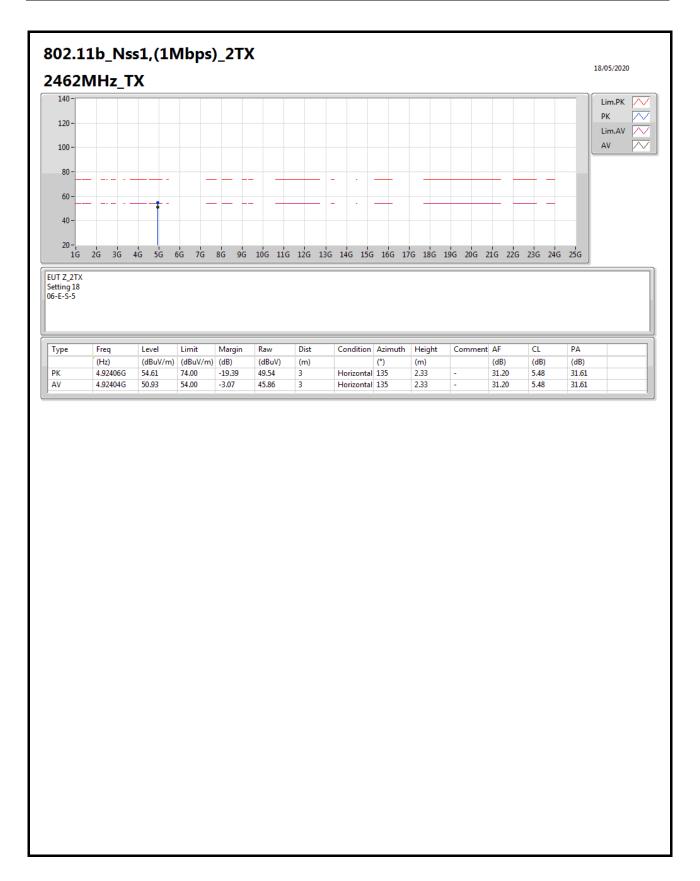




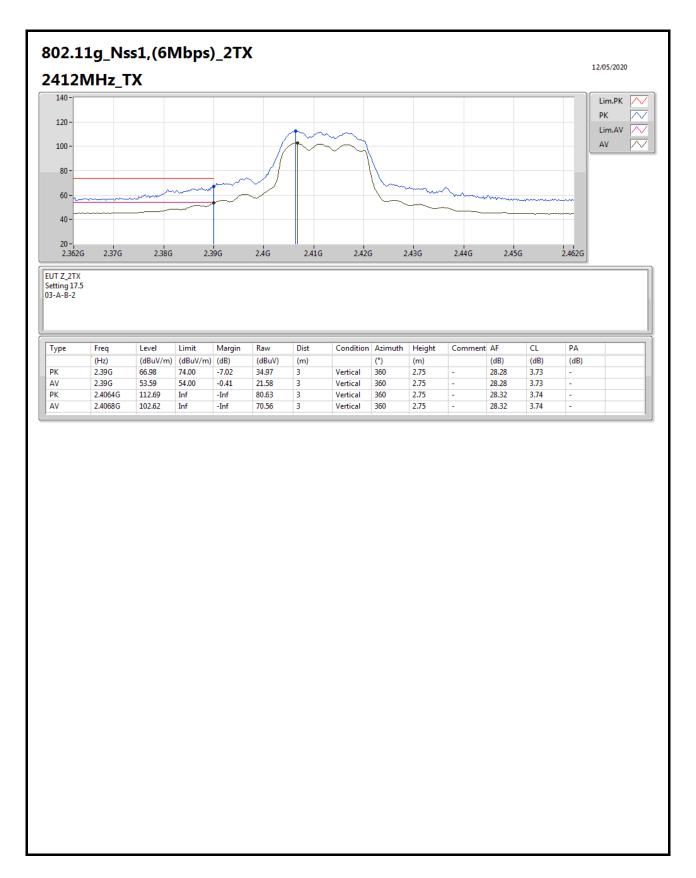




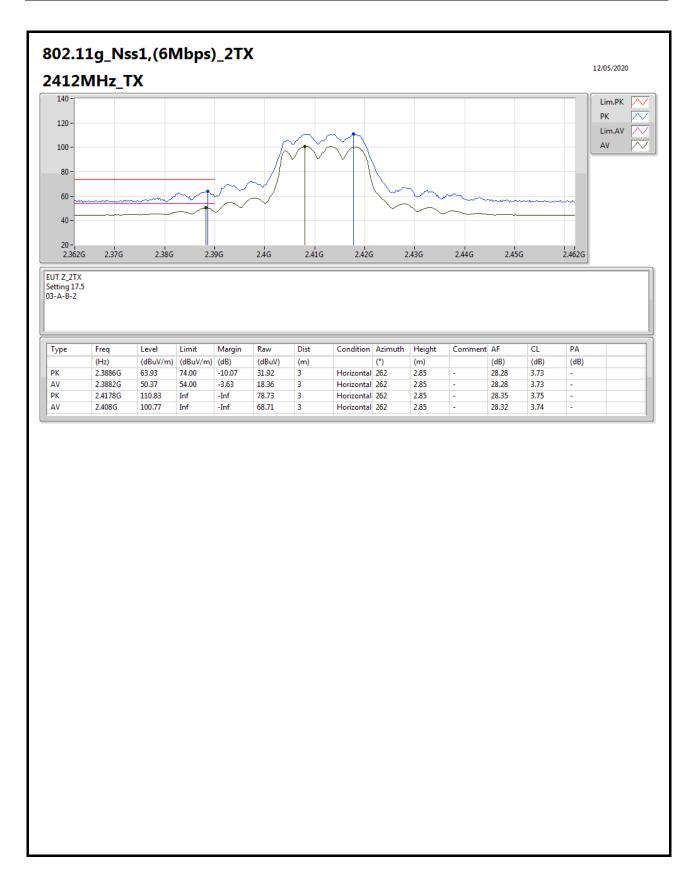




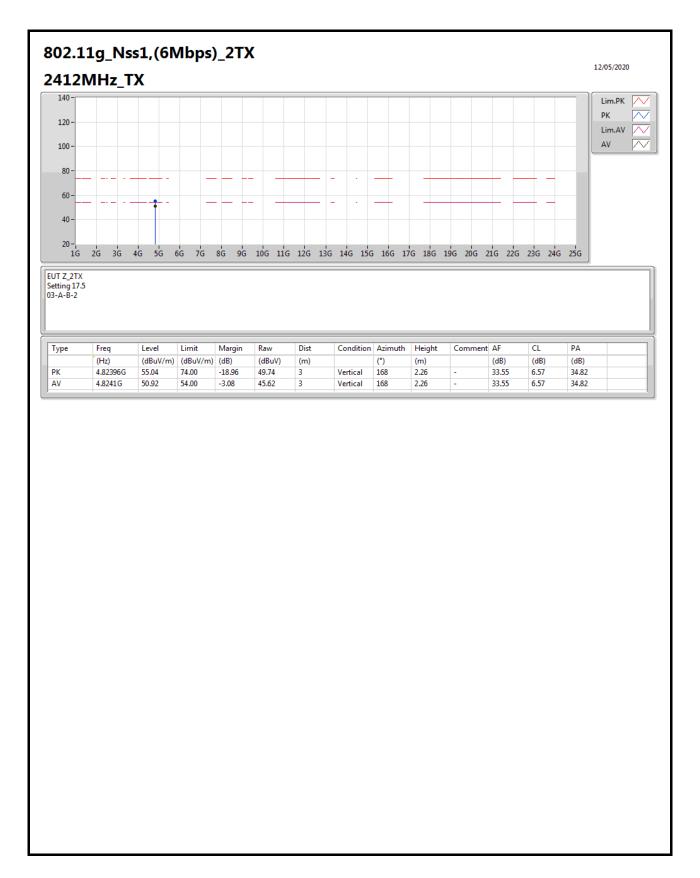




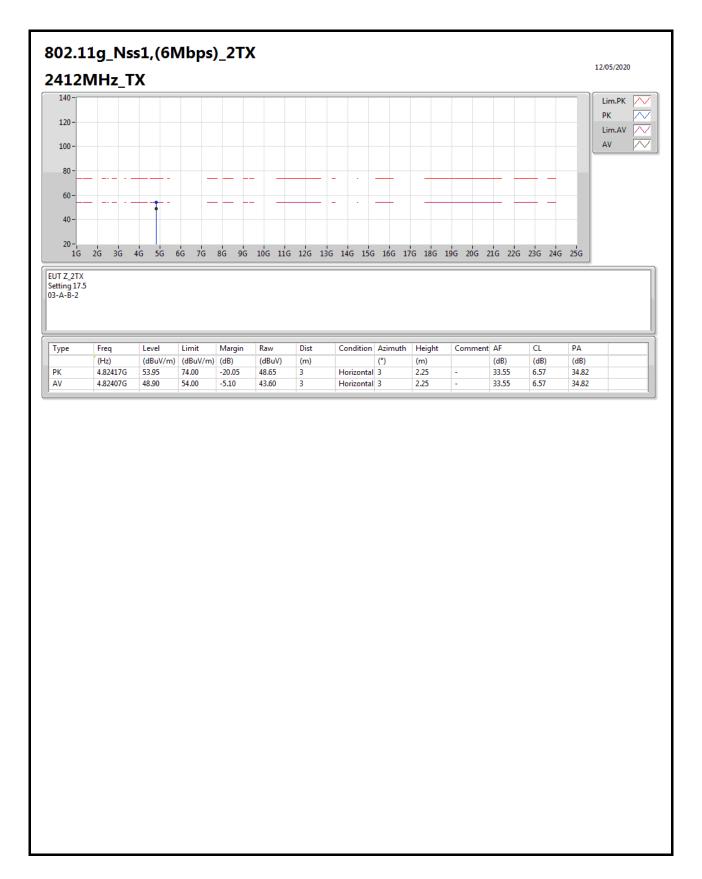




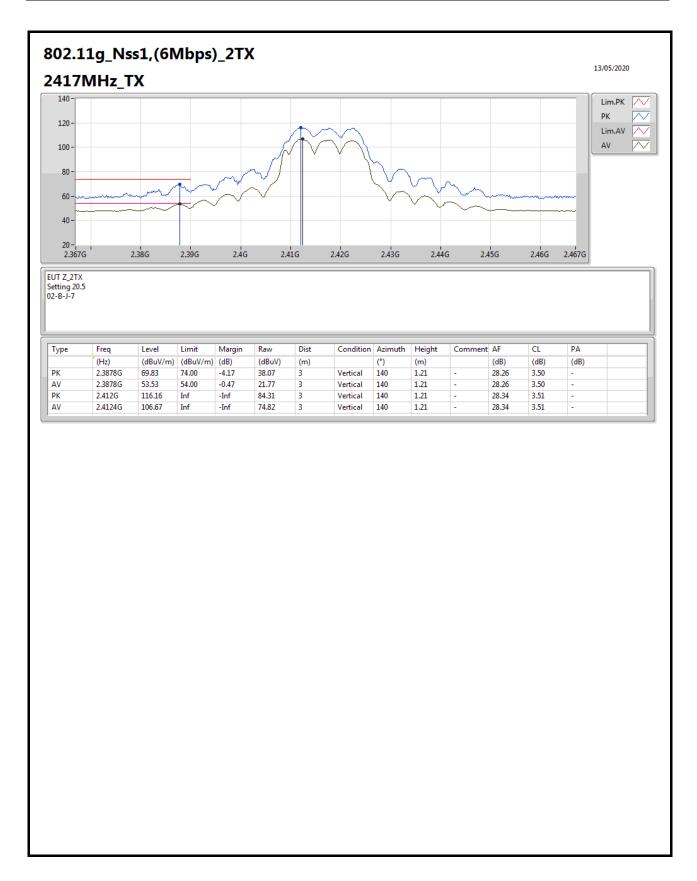


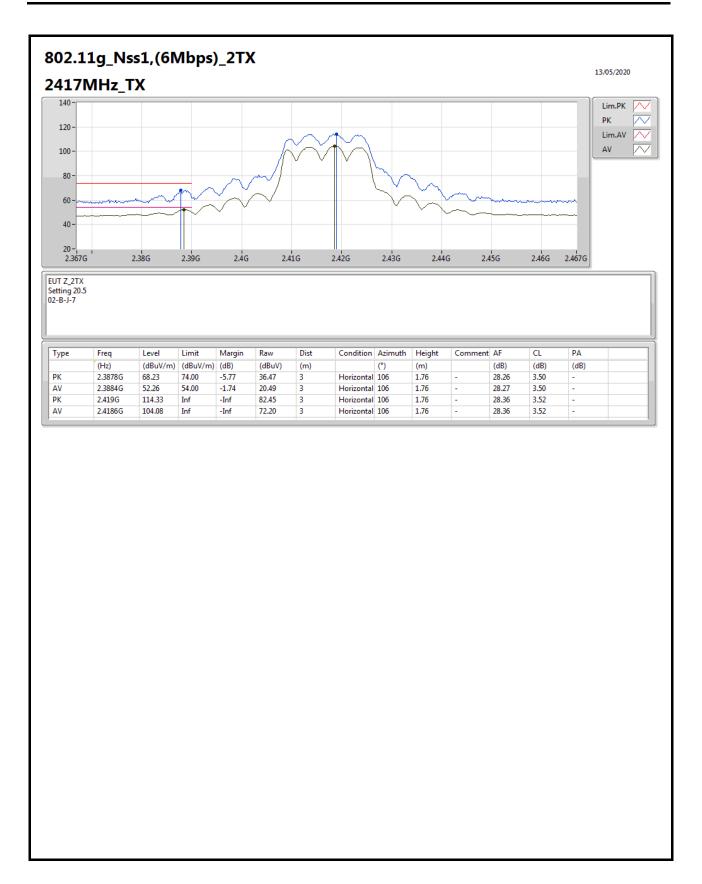




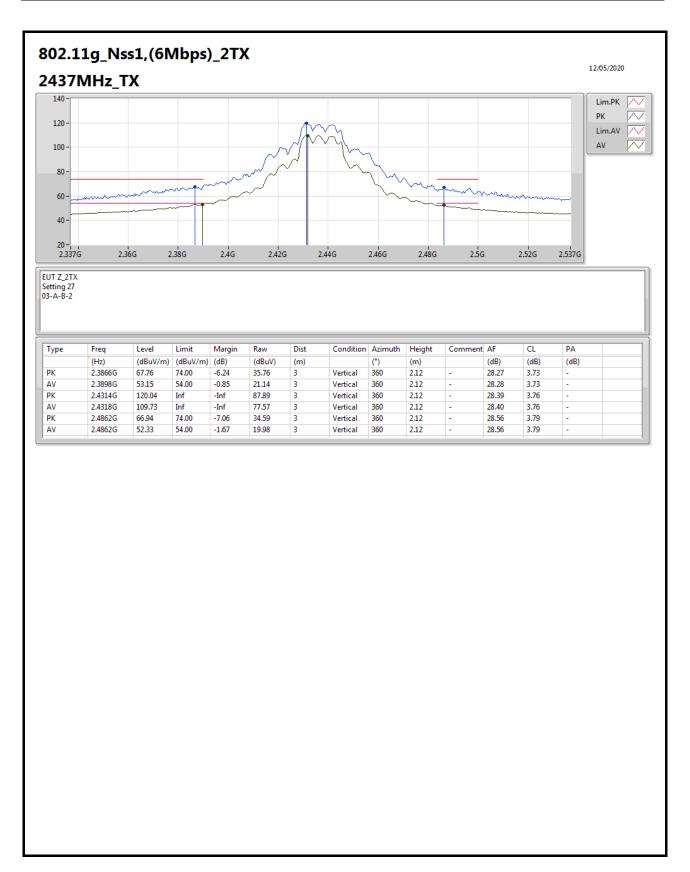




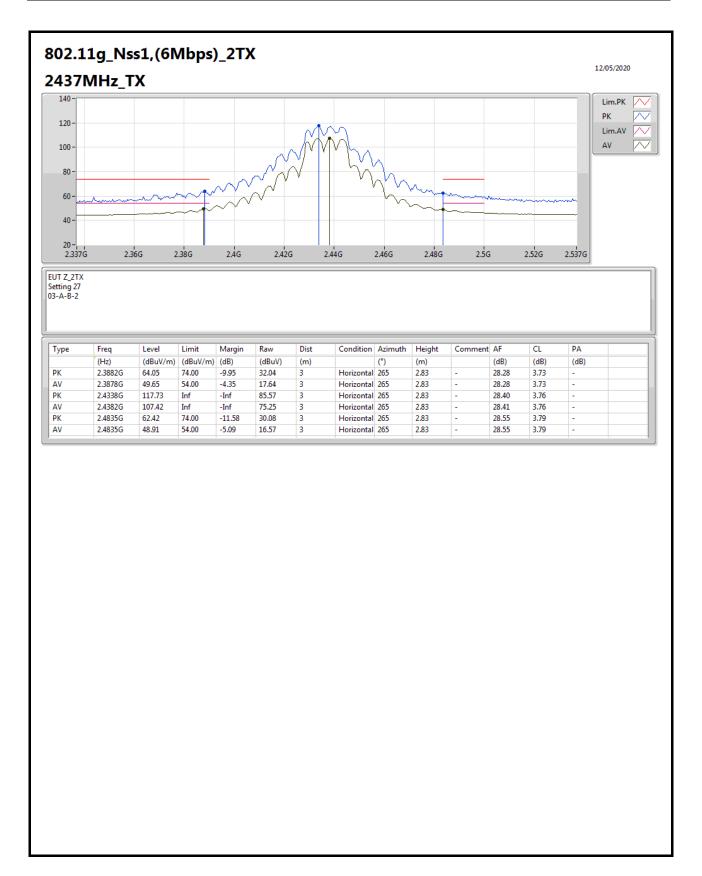




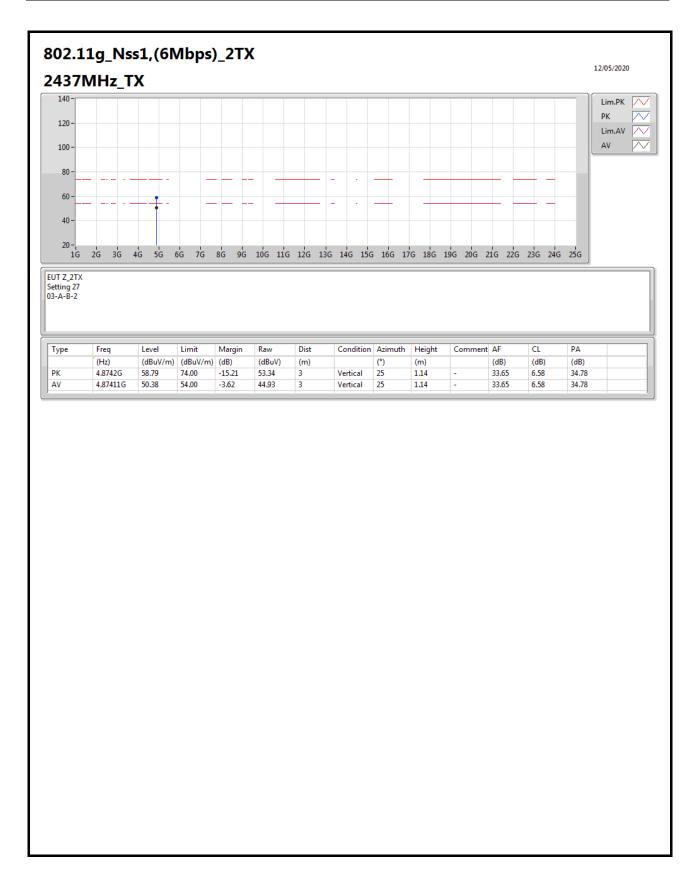




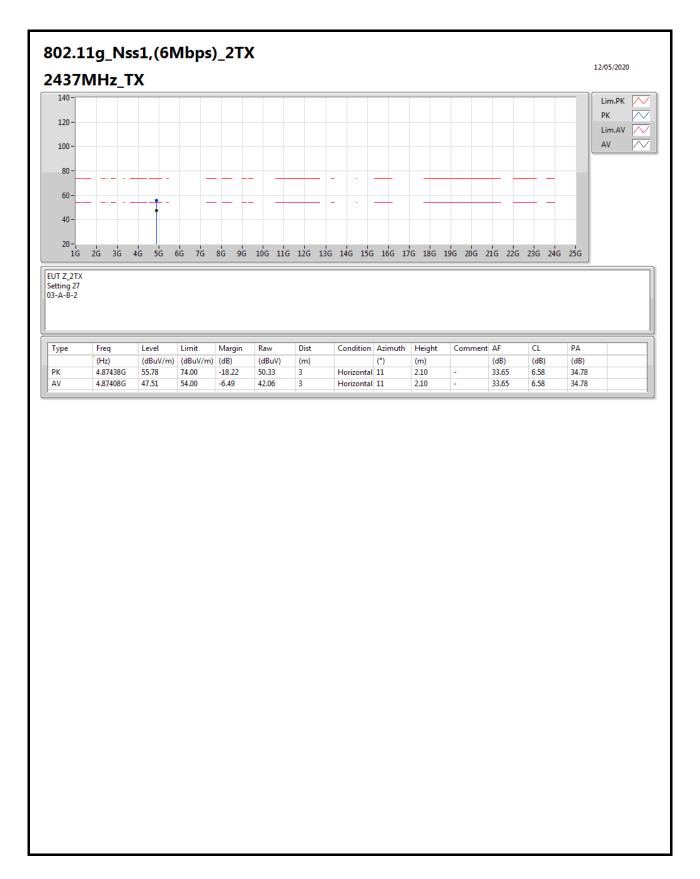


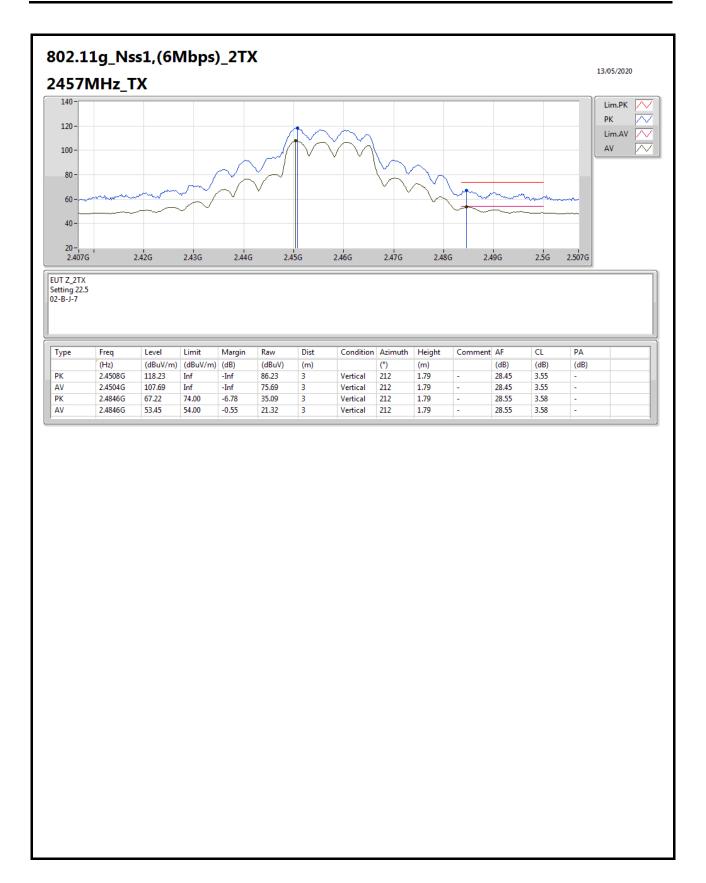




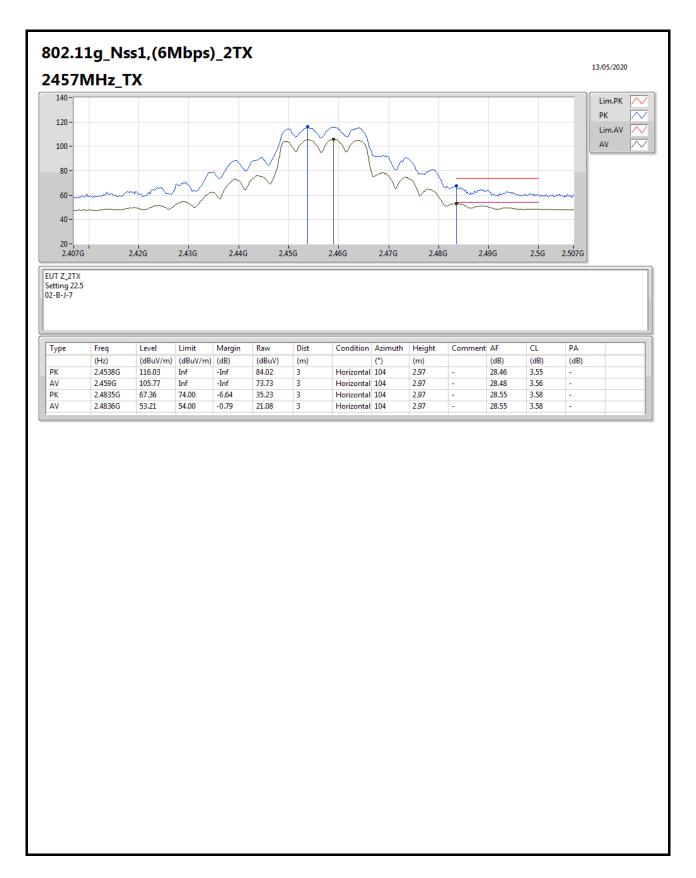




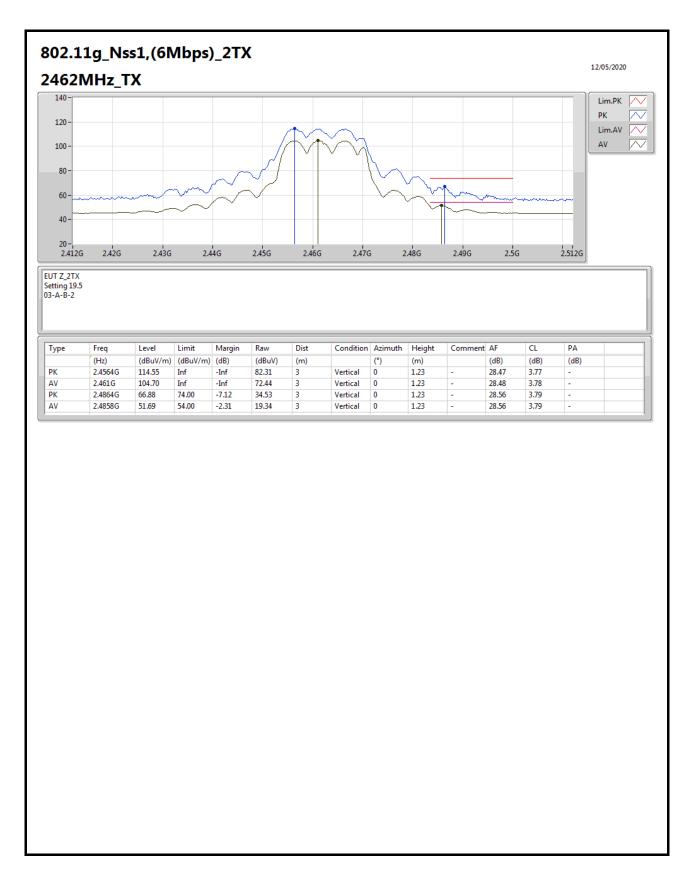






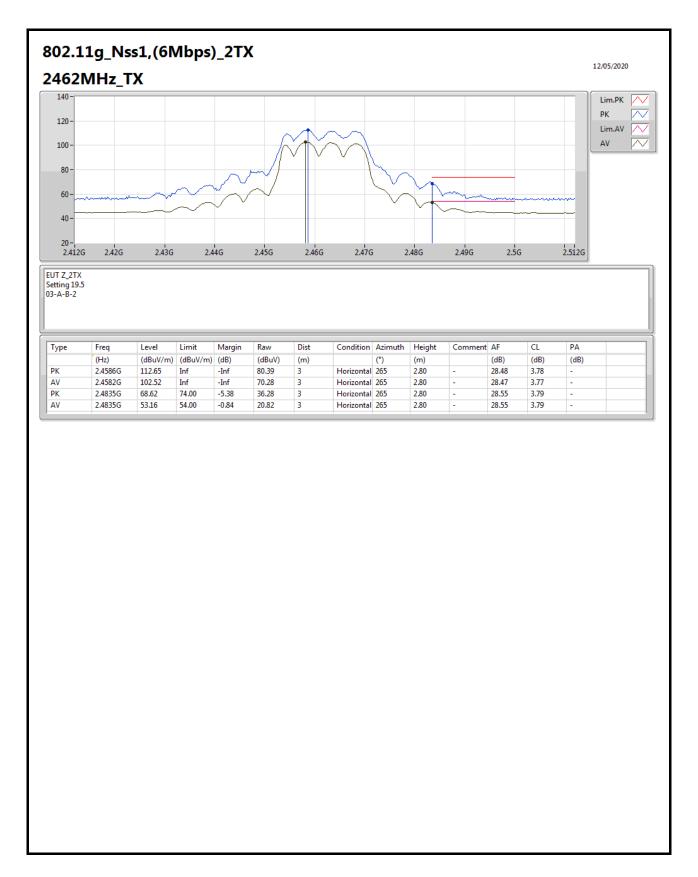




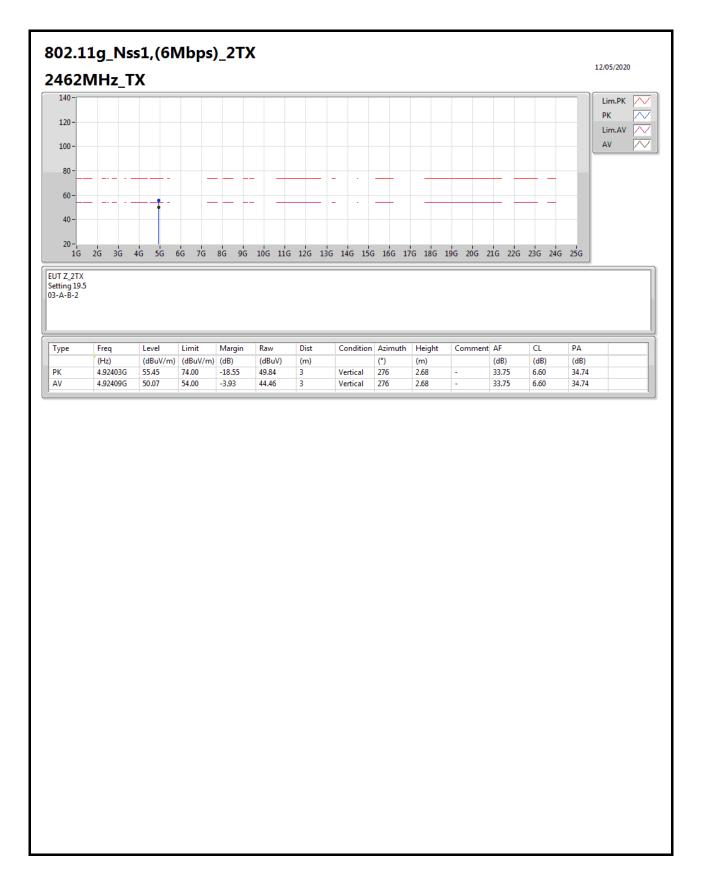


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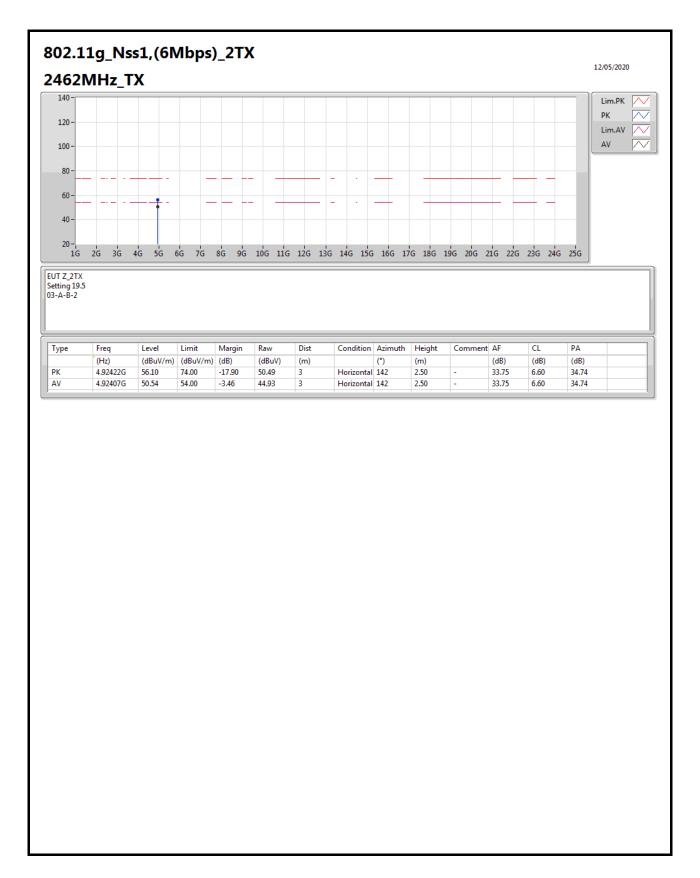




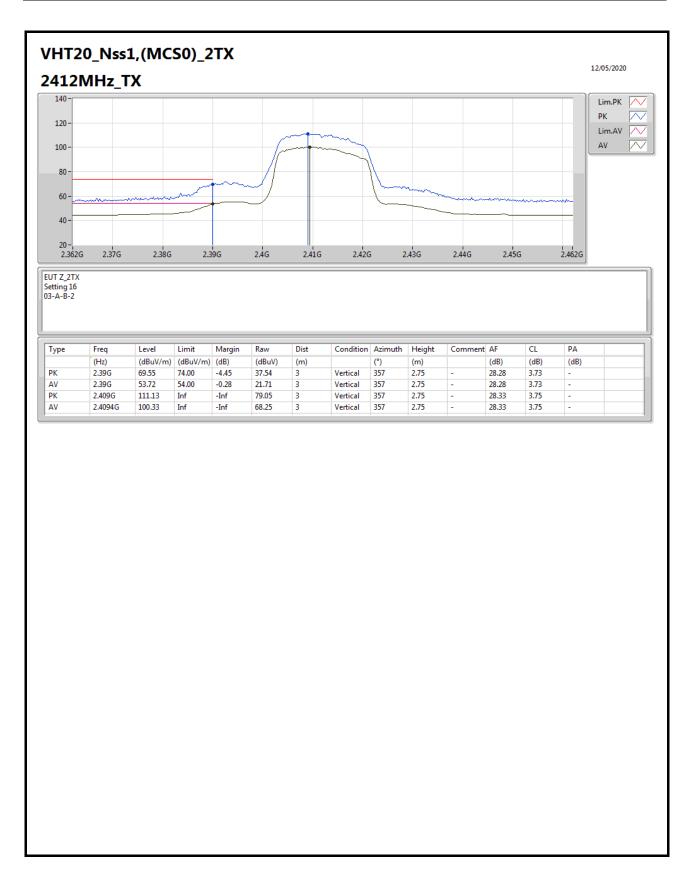




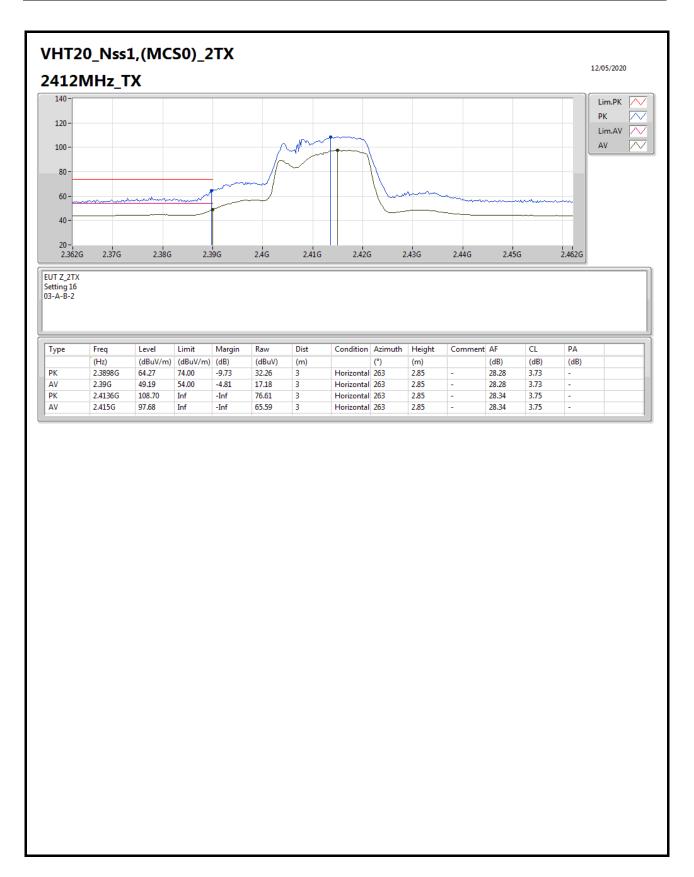




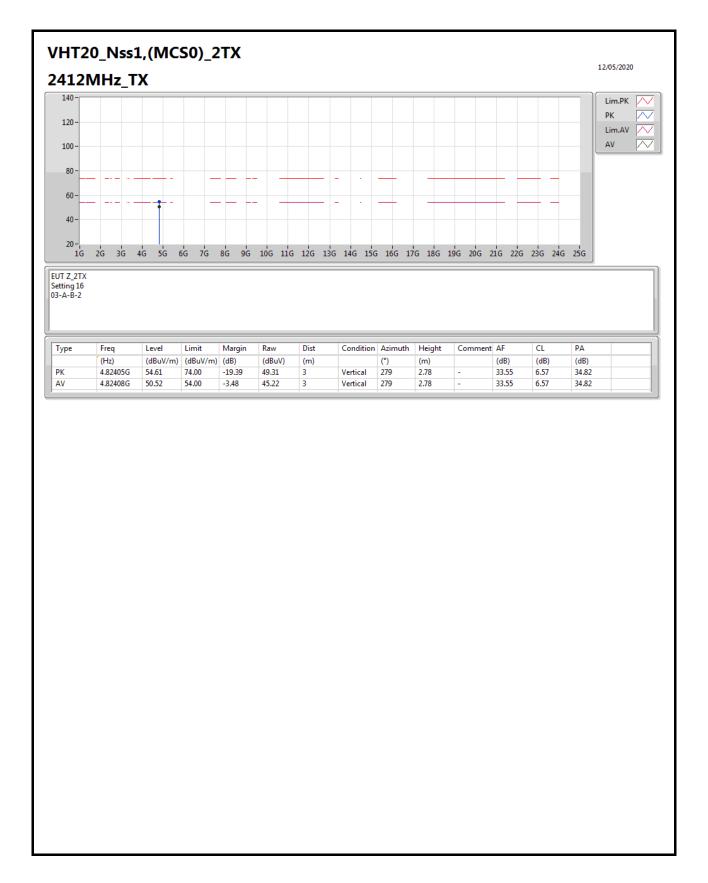




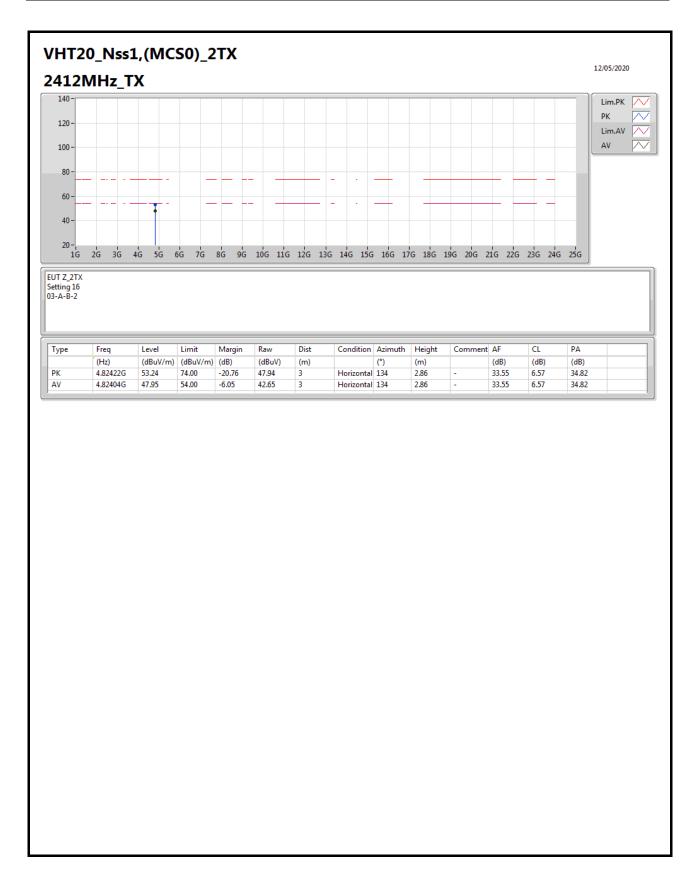




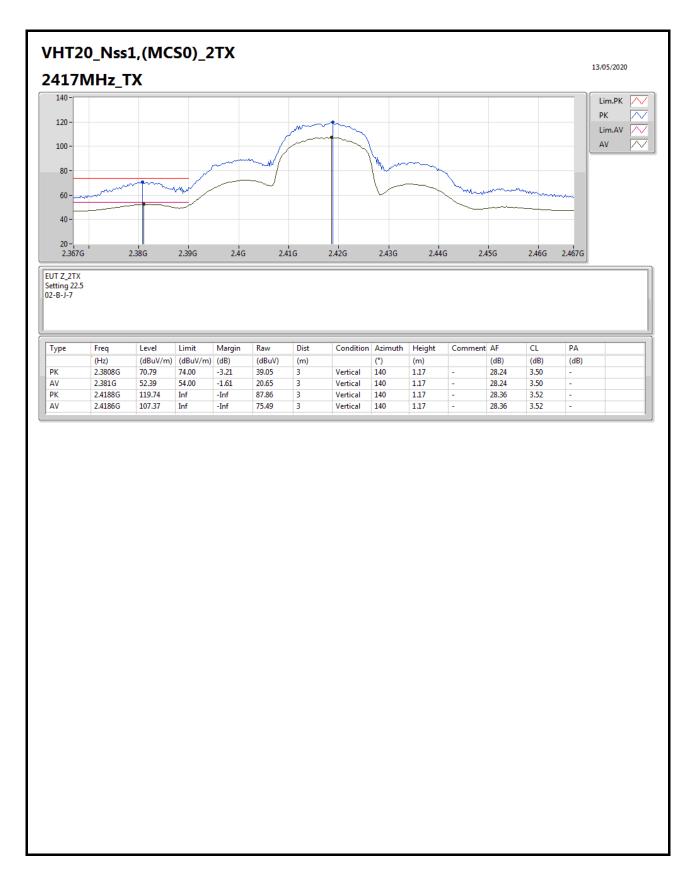




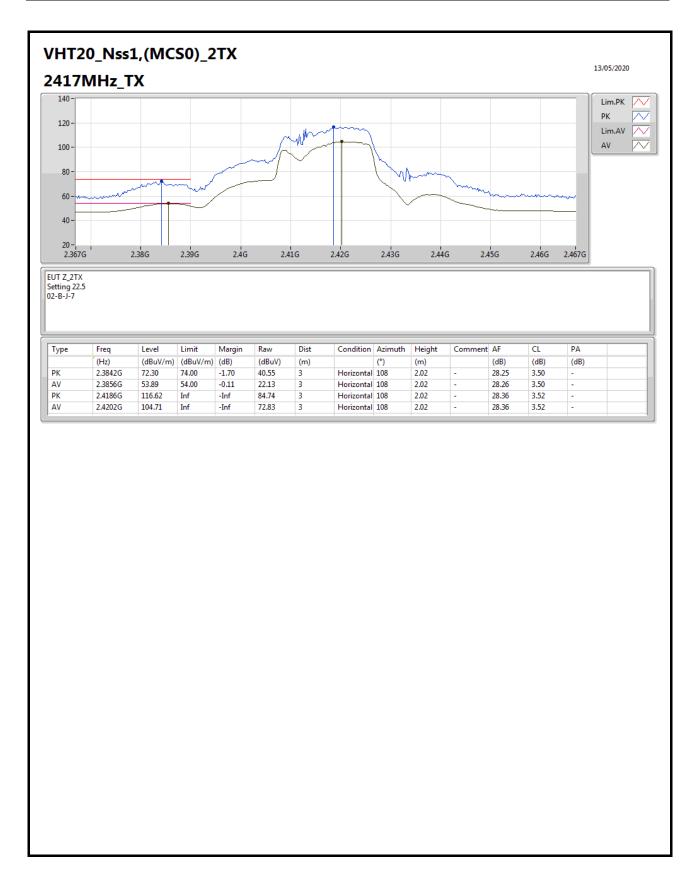




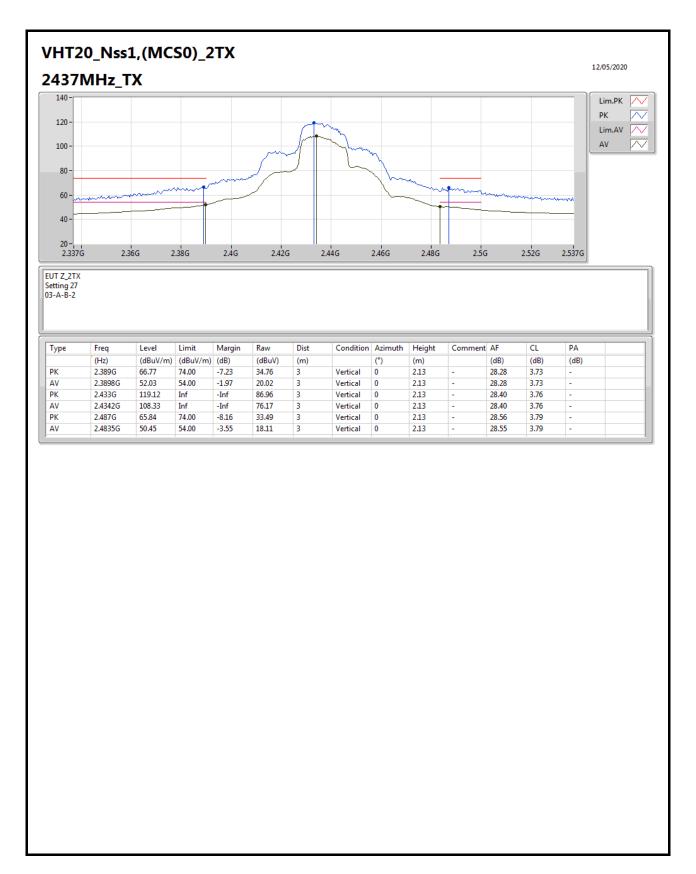




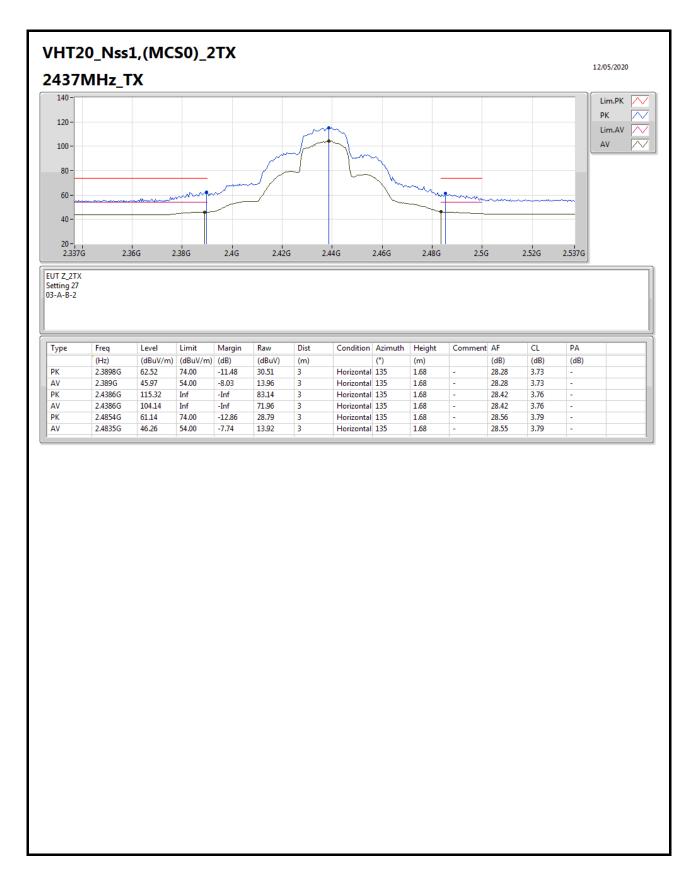




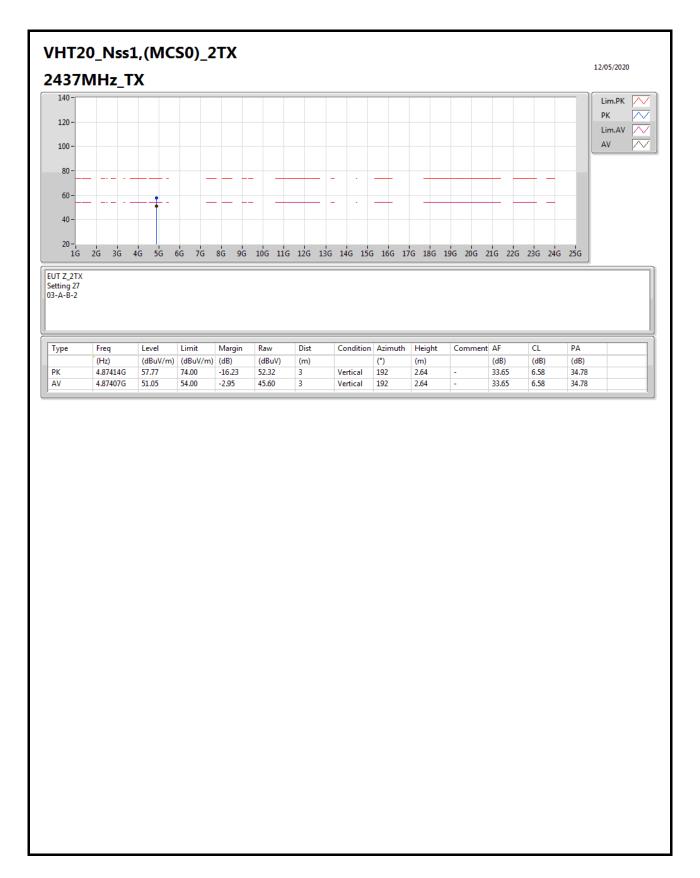




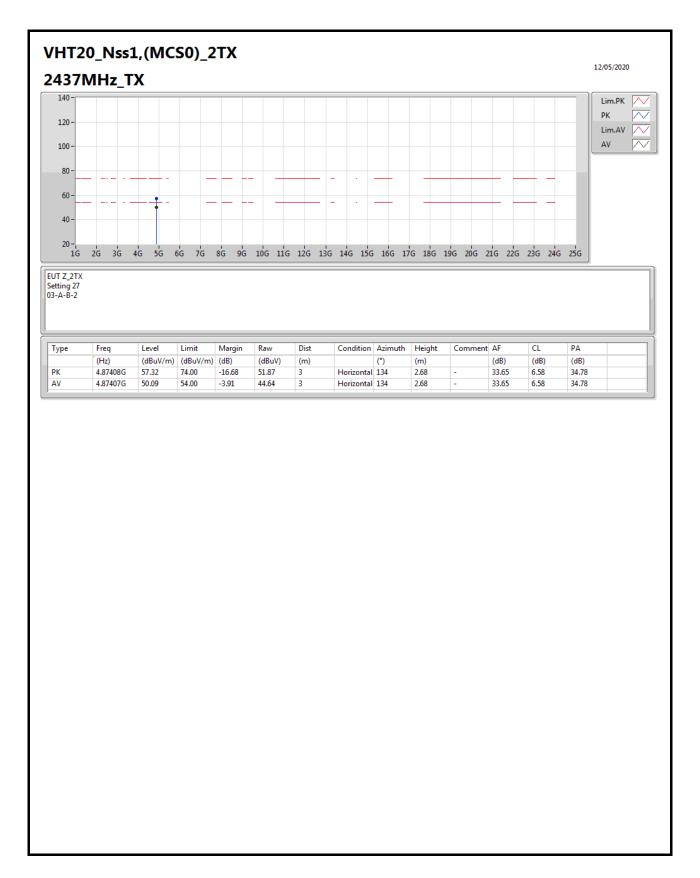




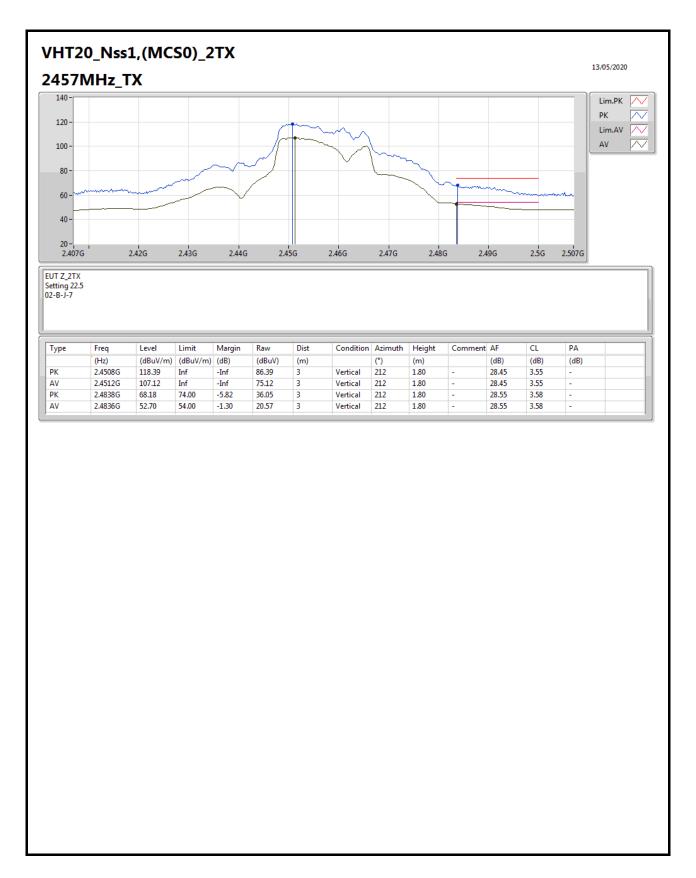




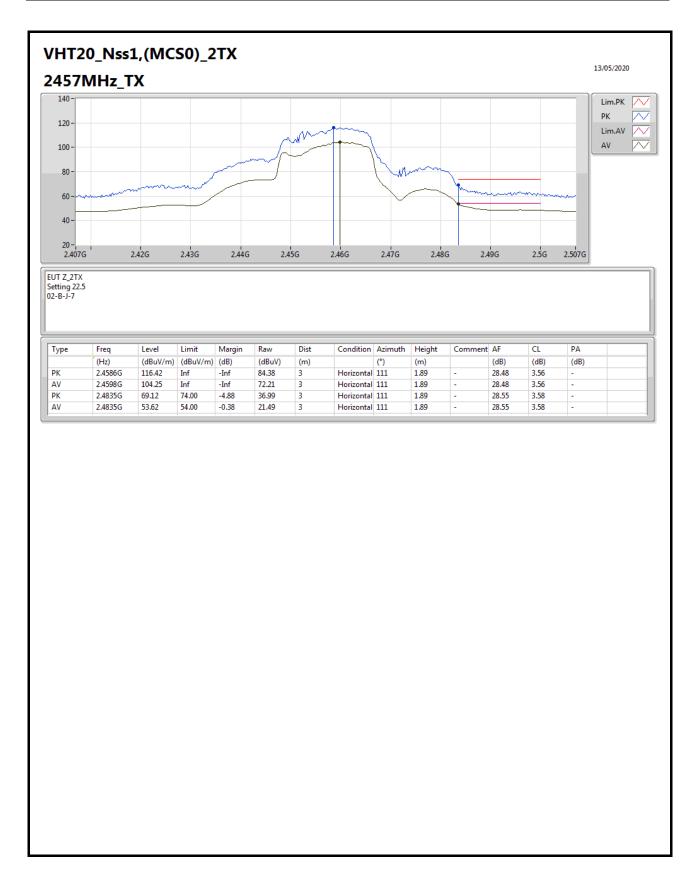




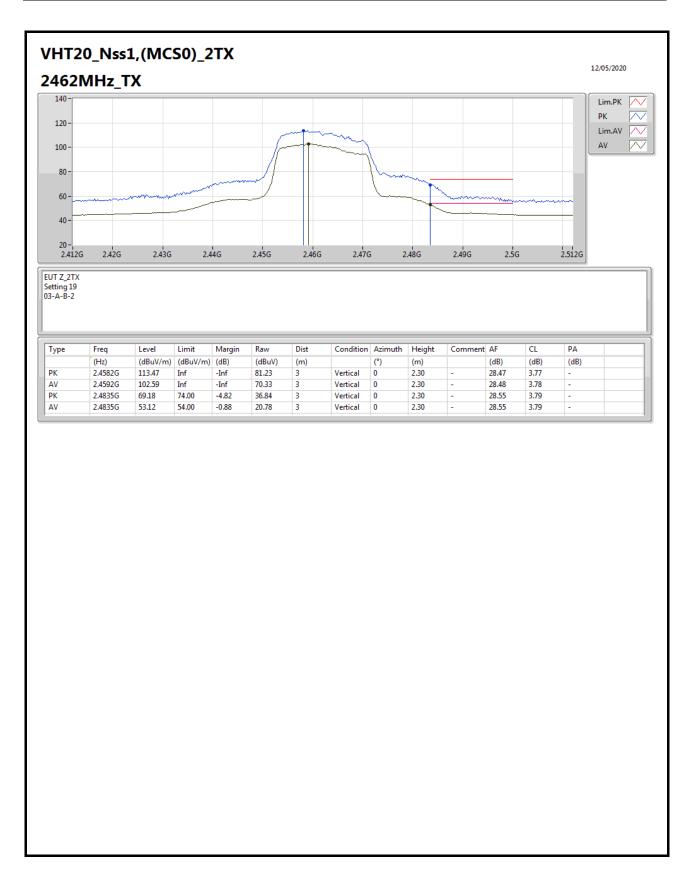




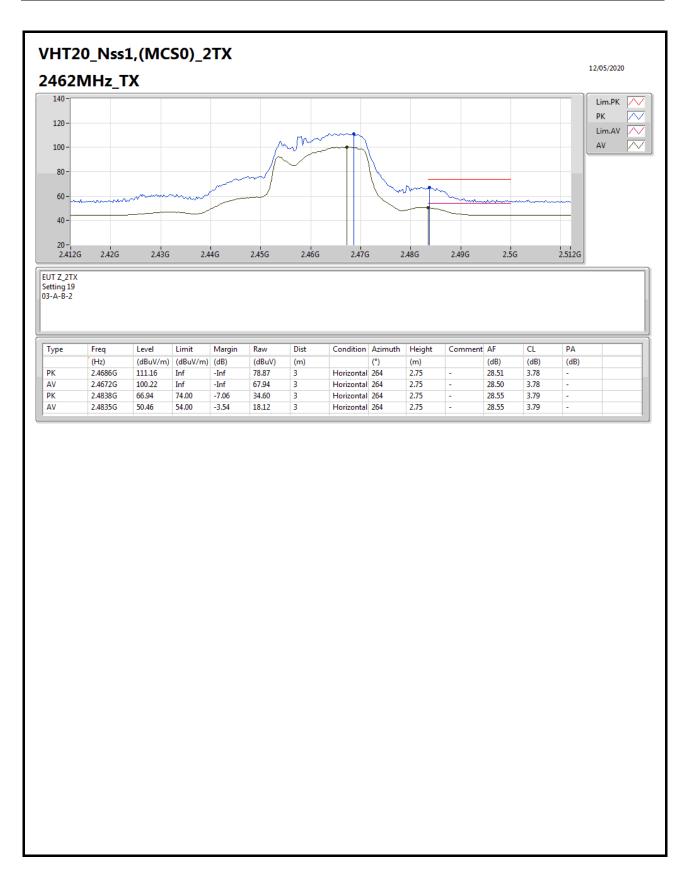




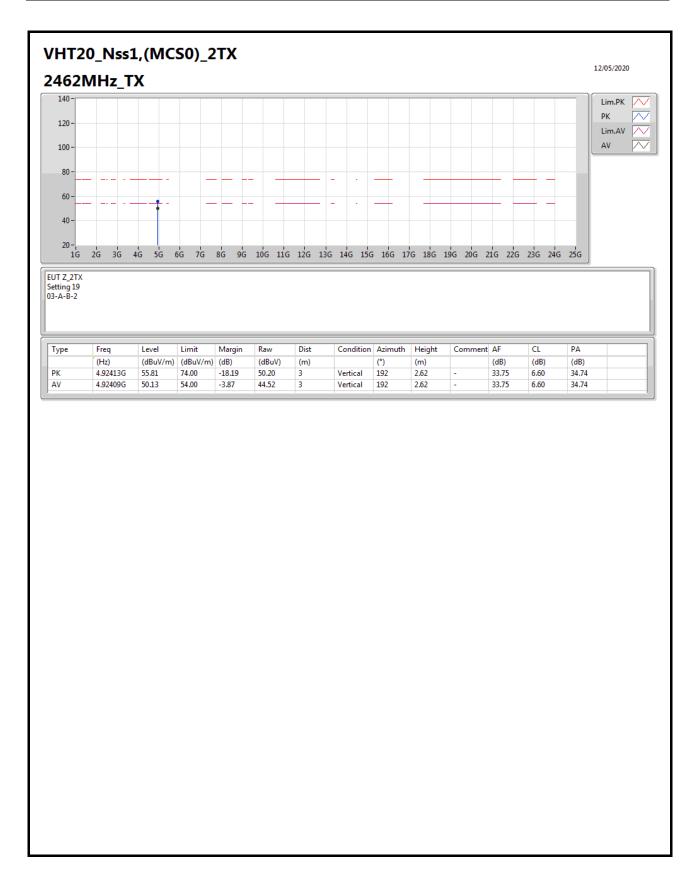




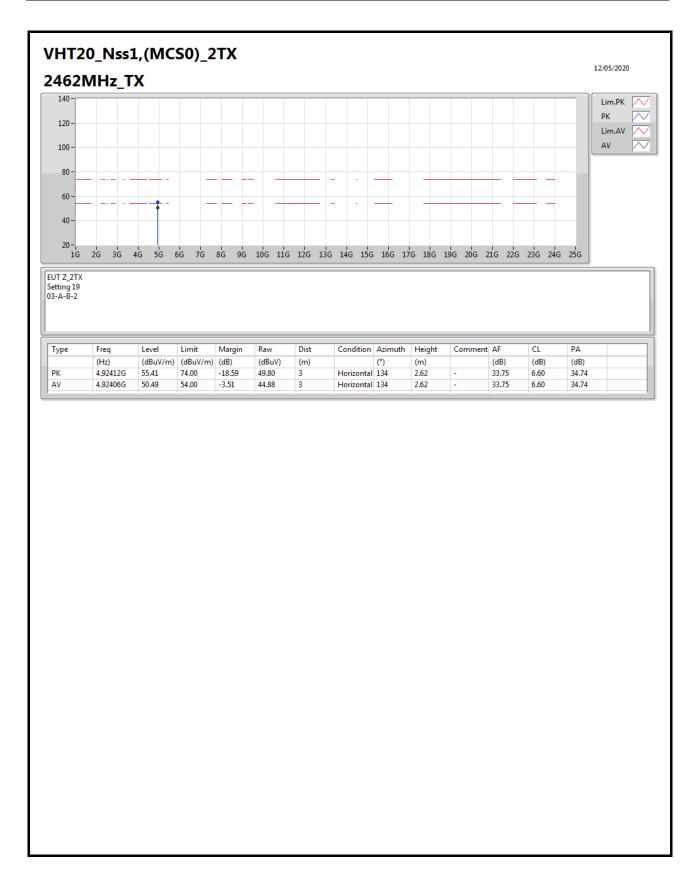


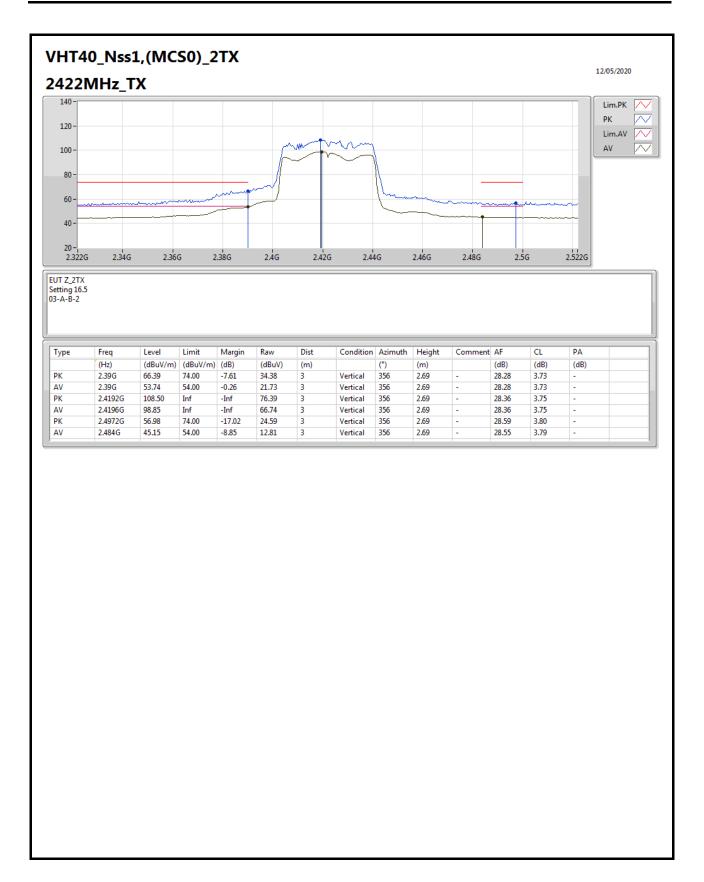


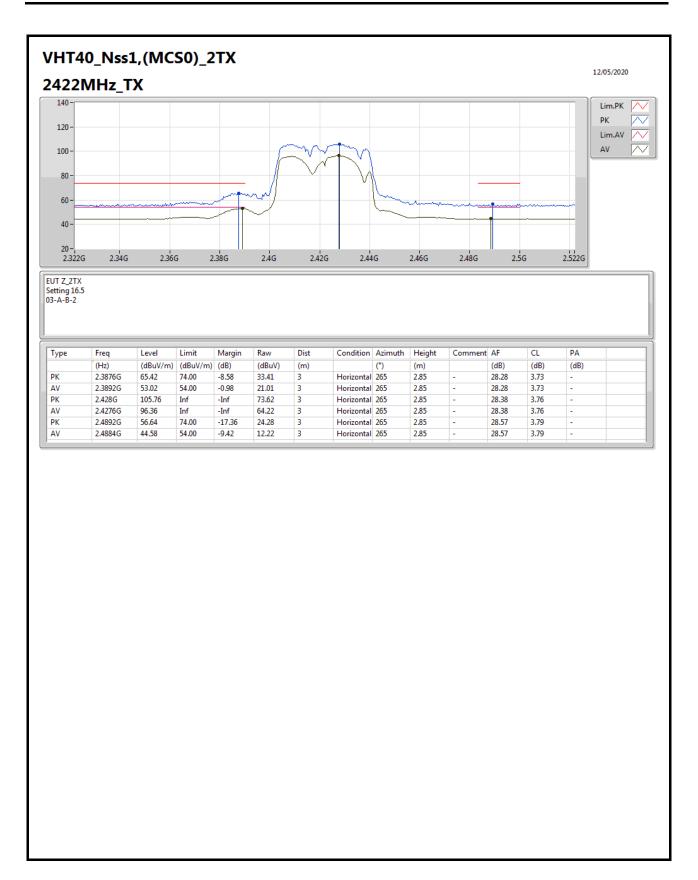




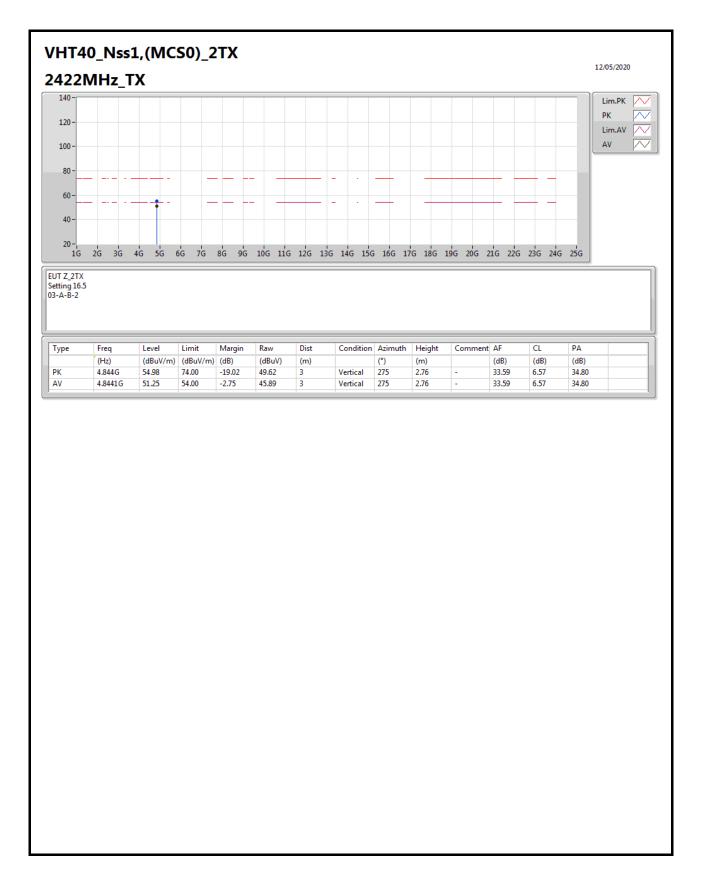






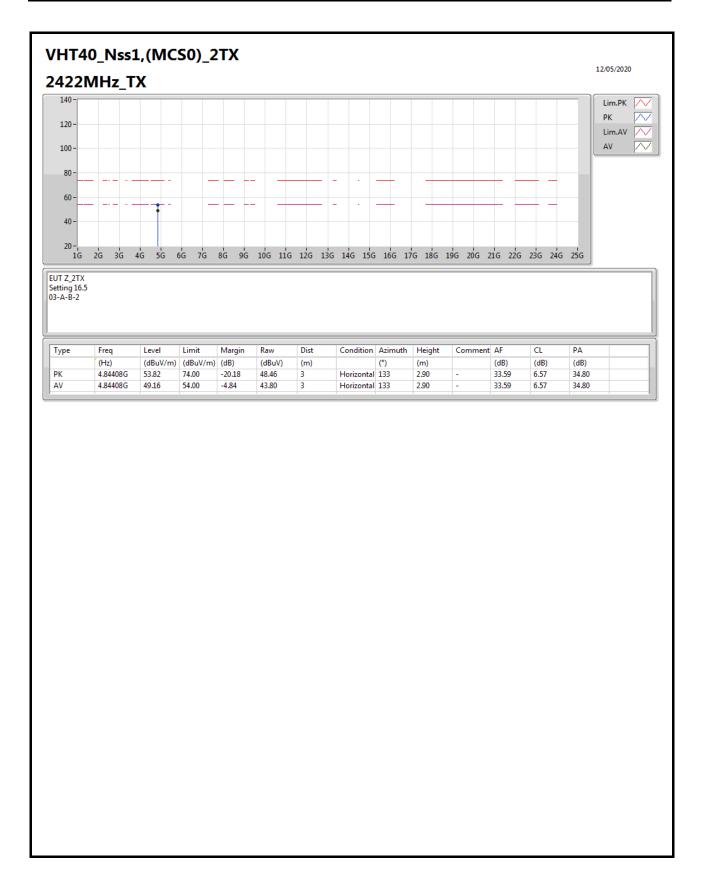




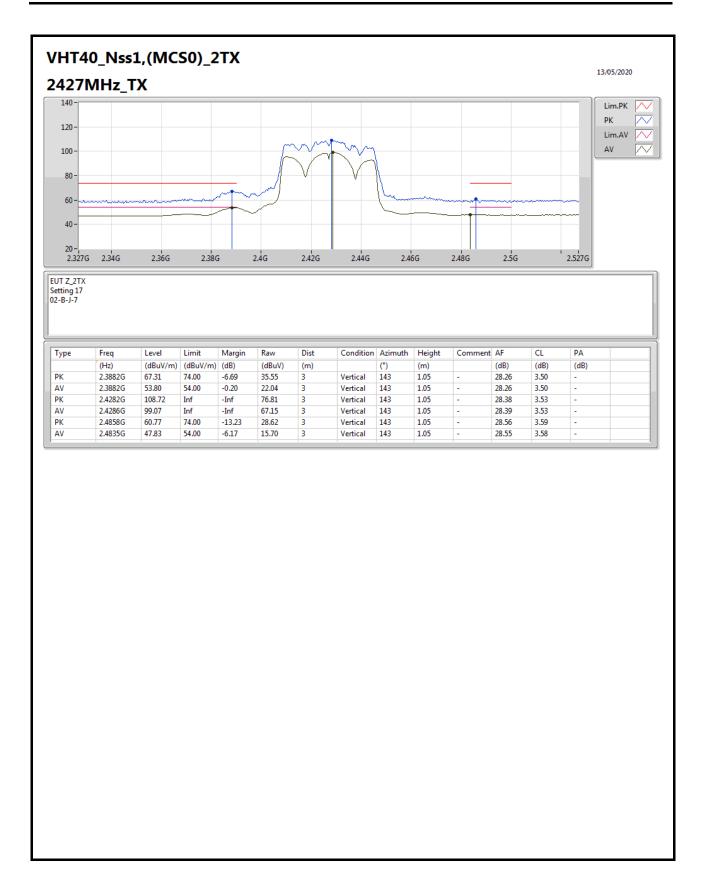


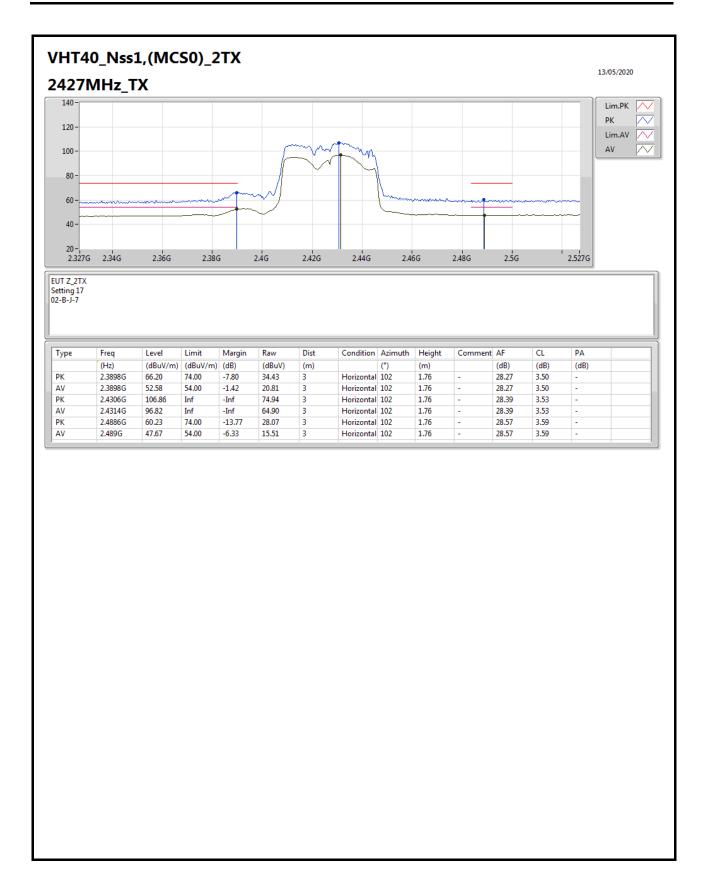
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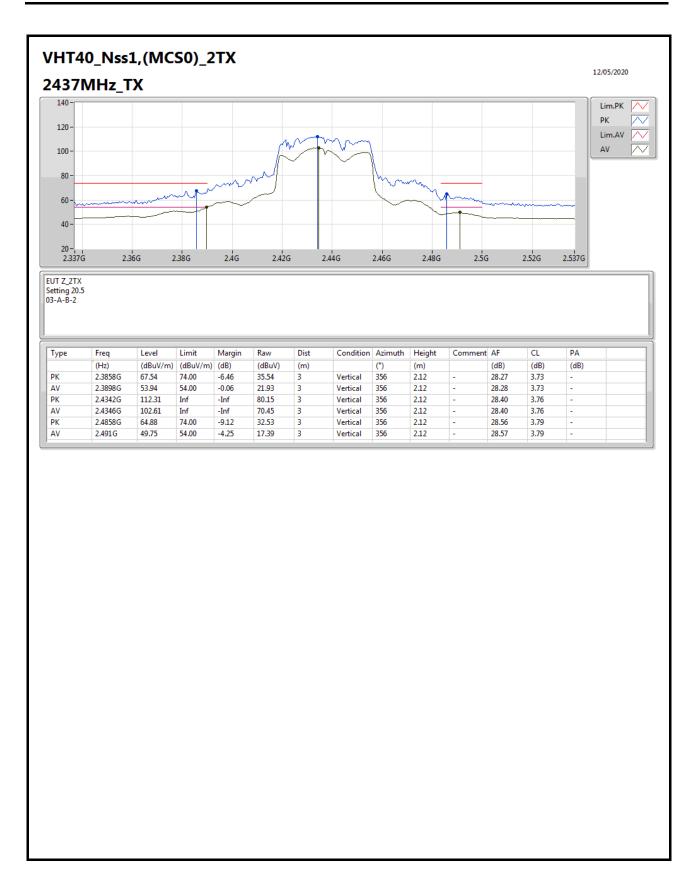


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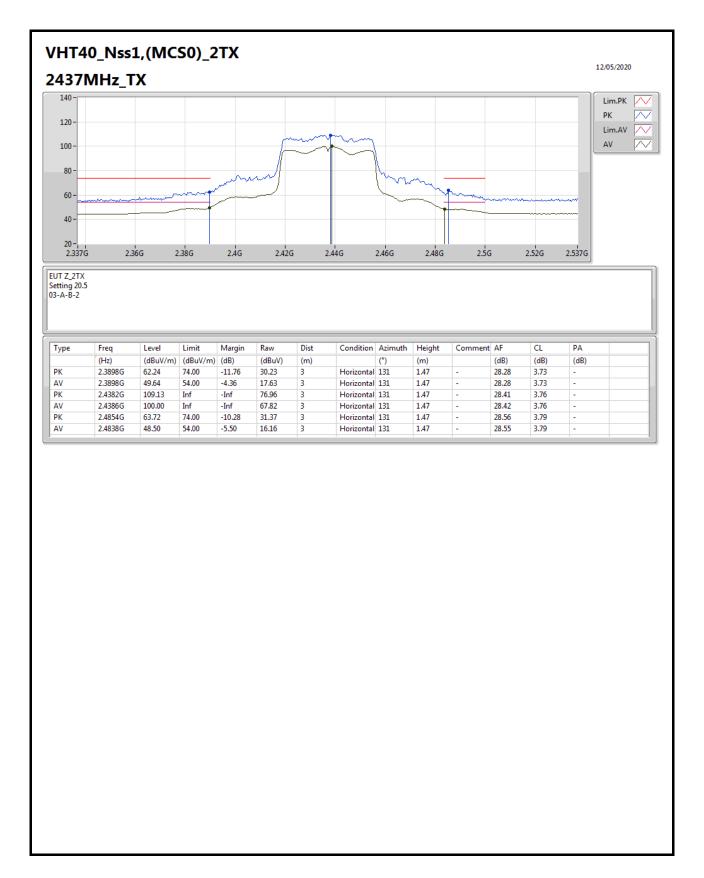




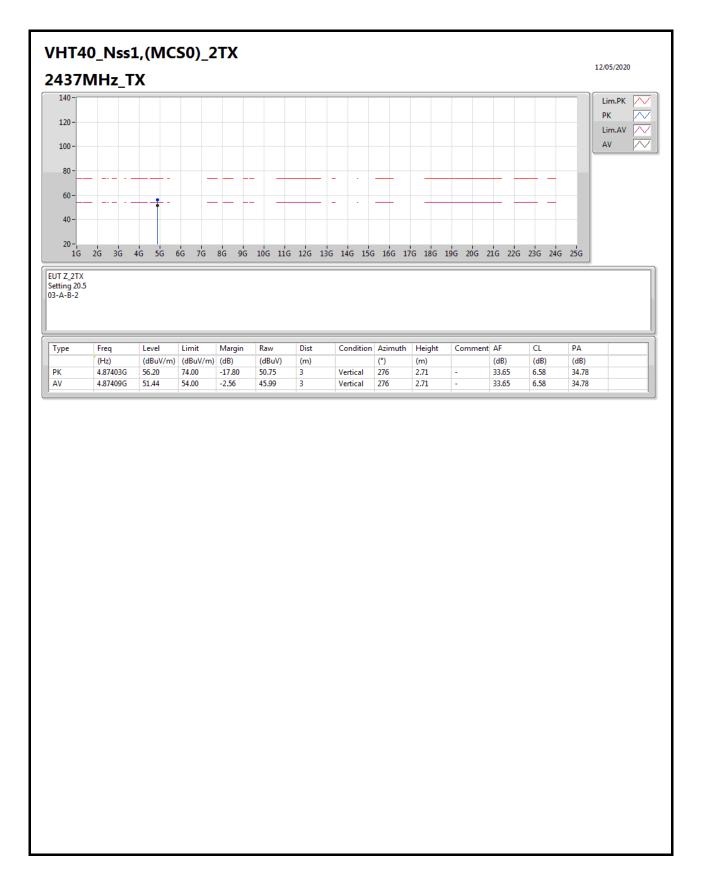
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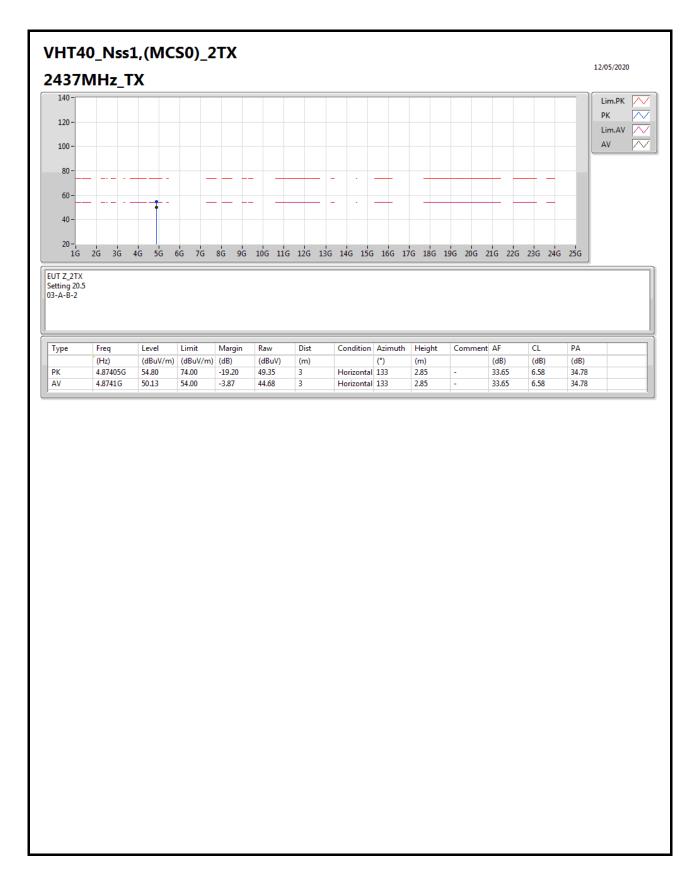




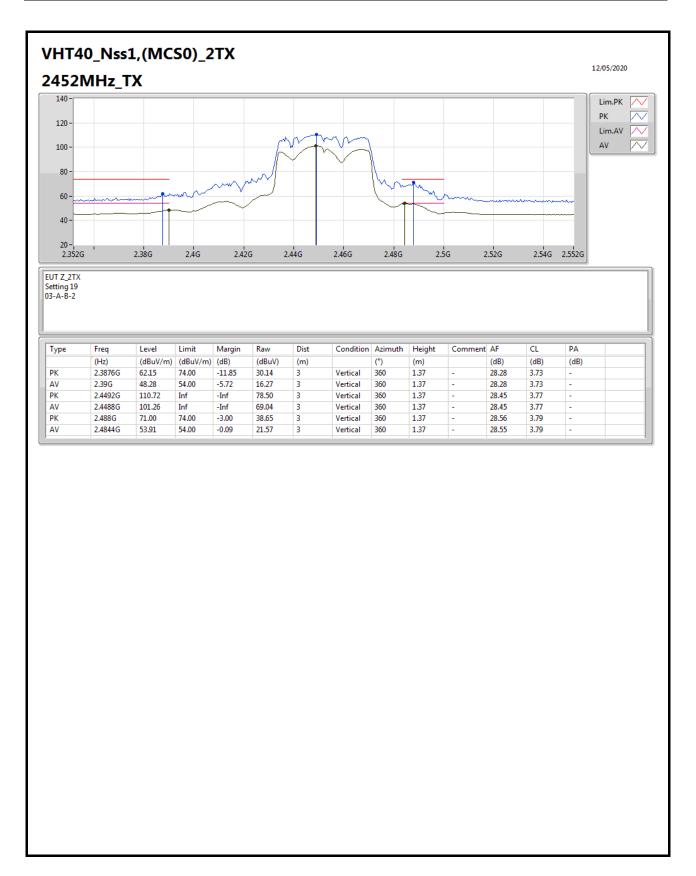




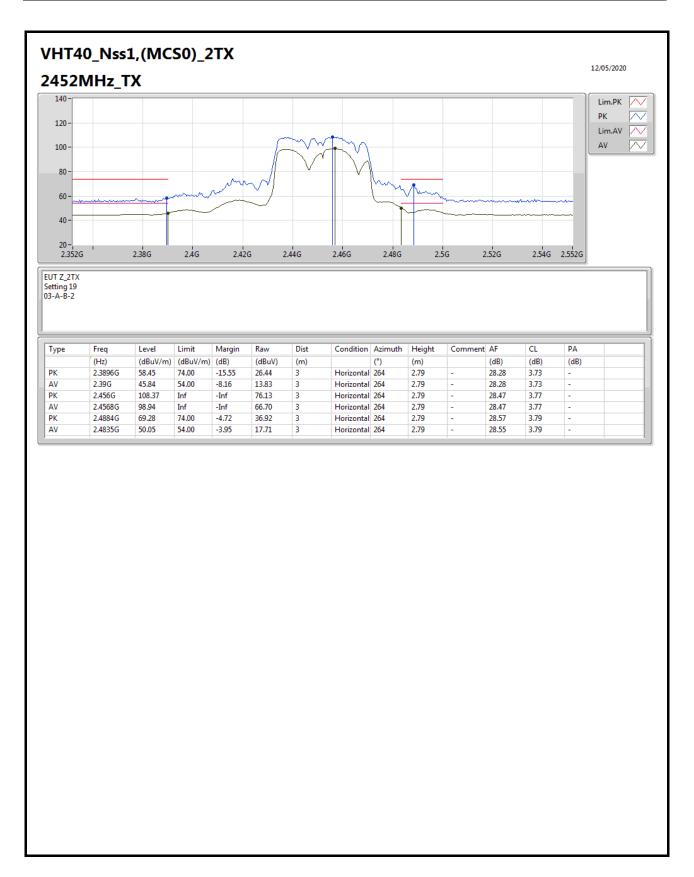






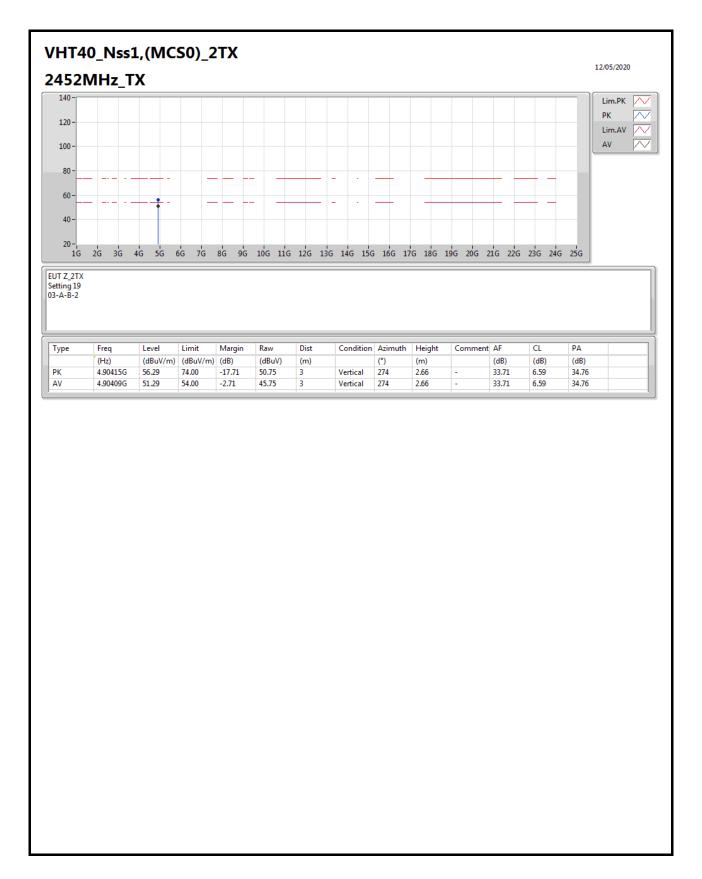






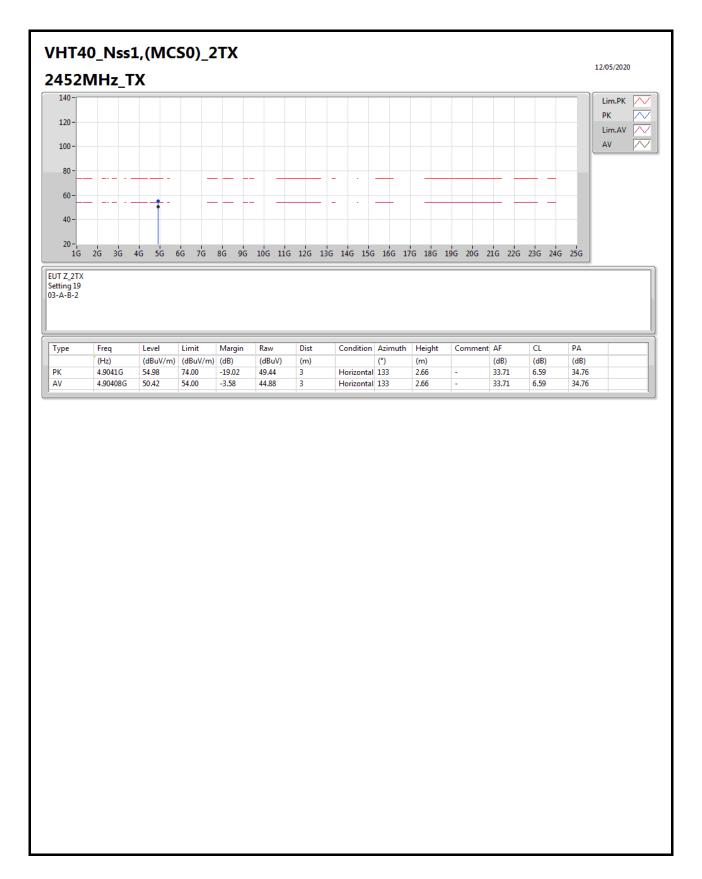
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Radiated Emissions above 1GHz

Appendix G

Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	AV	3.47333G	39.24	54.00	-14.76	Horizontal



