

Report No. : FR070131AA



FCC RADIO TEST REPORT

:	TE7X90
•••	AX6600 Whole Home Mesh Wi-Fi 6 System, AX5700 Whole Home Mesh Wi-Fi 6 System
:	tp-link
:	Deco X90, Deco X5700
:	TP-Link Technologies Co., Ltd.
	Building 24 (floors 1,3,4,5) and 28 (floors1-4), Central Science and Technology Park,Nanshan Shenzhen, 518057 China
	TP-Link Technologies Co., Ltd.
	Building 24 (floors 1,3,4,5) and 28 (floors1-4), Central Science and Technology Park,Nanshan Shenzhen, 518057 China
	47 CFR FCC Part 15.247

The product was received on Jul. 28, 2020, and testing was started from Jul. 31, 2020 and completed on Sep. 17, 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-A10_10 Ver1.2

Page Number: 1 of 32Issued Date: Nov. 04, 2020Report Version: 01



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History of this test report

Report No.	Version	Description	Issued Date
FR070131AA	01	Initial issue of report	Nov. 04, 2020



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(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	-

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



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, ax (HEW20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40), VHT40, ax (HEW40)	2422-2452	3-9 [7]

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	VHT20-BF	20	2TX
2.4-2.4835GHz	802.11ax HEW20	20	2TX
2.4-2.4835GHz	2.4-2.4835GHz 802.11ax HEW20-BF		2TX
2.4-2.4835GHz	2.4-2.4835GHz 802.11n HT40		2TX
2.4-2.4835GHz	2.4-2.4835GHz VHT40		2TX
2.4-2.4835GHz	VHT40-BF	40	2TX
2.4-2.4835GHz	2.4-2.4835GHz 802.11ax HEW40		2TX
2.4-2.4835GHz	802.11ax HEW40-BF	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.
- HEW20, HEW40 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
- modulation.
- BWch is the nominal channel bandwidth.



1.1.2 Antenna Information

		Port						Gain (dBi)			
Ant.	WLAN 2.4GHz	WLAN 5GHz B1~B 2	WLAN 5GHz	Brand	Model Name	Antenna Type	Connector	WLAN 2.4GHz	WLAN 5GHz B1 ~B2	WLAN 5GHz B4	
1	-	-	1	TP-LINK	3101503198	Dipole	I-PEX	-	-	0.97	
2	-	-	2	TP-LINK	3101503199	Dipole	I-PEX	-	-	0.97	
3	1	1	-	TP-LINK	3101503202	Dipole	I-PEX	1.97	0.98	-	
4	2	4	-	TP-LINK	3101503203	Dipole	I-PEX	1.99	0.96	-	
5	-	2	-	TP-LINK	3101503204	Dipole	I-PEX	-	0.96	-	
6	-	3	-	TP-LINK	3101503205	Dipole	I-PEX	-	0.97	-	

Note: The above information was declared by manufacturer.

For 2.4GHz WLAN function

IEEE 802.11b/g/n/VHT/ax 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 Band 1 ~ Band 2 5GHz WLAN function

IEEE 802.11a/n/ac/ax mode (4TX/4RX):

Port 1, port 2, port 3 and port 4 can be used as transmitting/receiving antenna.

Port 1, port 2, port 3 and port 4 could transmit/receive simultaneously.

For Band 4 5GHz WLAN function

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

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

Port 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	0.994	0.03	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.992	0.03	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW20	0.987	0.06	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW40	0.988	0.05	n/a (DC>=0.98)	n/a (DC>=0.98)

Note:

DC is Duty Cycle.

DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From Power Adapter			
Beamforming Function	\boxtimes	With beamforming		Without beamforming
	For IEEE 802.11n/ax/VHT in 2.4GHz and IEEE 802.11n/ac/ax in 5GHz.			
Function	Point-to-multipoint D Point-to-point			
Test Software Version	Broadcom MTool 3.1.0.3			

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

The EUT has two equipment and model names which are identical to each other in all aspects except for the following table:

Brand Name	Equipment Name	Model Name	Description
tp-link	AX6600 Whole Home Mesh Wi-Fi 6 System	Deco X90	All the equipment and model names are identical; the difference equipment name
	AX5700 Whole Home Mesh Wi-Fi 6 System	Deco X5700	and model name served as marketing strategy.

From the above models, model: Deco X90 was selected as representative model for the test and its data was recorded in this report.

1.1.6 Table for EUT support type

Function
AP
Router
Mesh

Note: After evaluating, there is only the Router selected to test and recorded in the report.



1.2 Applicable Standards

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

- 47 CFR FCC Part 15
- ANSI C63.10-2013
- 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	:	lo. 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	TH01-CB	Benson Su	21.8-24°C / 57-61%	Aug. 03, 2020 ~ Sep. 07, 2020
Radiated<1GHz and Radiated Co-location	03CH04-CB	Paul Chen	22.6-23.9°C / 51-53%	Sep. 16, 2020
Radiated>1GHz	03CH06-CB	Stim Sung	23-24.1°C / 54-57%	Jul. 31, 2020 ~ Aug. 01, 2020
AC Conduction	CO01-CB	GN Hou	23~24°C / 61~63%	Sep. 17, 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 (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.9 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.6 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	0.39%	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
802.11b_Nss1,(1Mbps)_2TX	-
2412MHz	105
2417MHz	104
2437MHz	103
2457MHz	111
2462MHz	110
802.11g_Nss1,(6Mbps)_2TX	-
2412MHz	97
2417MHz	107
2437MHz	106
2457MHz	109
2462MHz	107
802.11ax HEW20_Nss1,(MCS0)_2TX	-
2412MHz	96
2417MHz	106
2437MHz	105
2457MHz	109
2462MHz	109
802.11ax HEW40_Nss1,(MCS0)_2TX	-
2422MHz	91
2427MHz	98
2437MHz	95
2447MHz	98
2452MHz	95
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-
2412MHz	96
2417MHz	106
2437MHz	105
2457MHz	109
2462MHz	109
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-
2422MHz	91
2427MHz	98
2437MHz	95
2447MHz	98



Mode	Power Setting	
2452MHz	95	

Note: The EUT supports beamforming and CDD modes, and the CDD mode is the worst case. Therefore, all test items are evaluated in the report. The beamforming mode only evaluates the output power.



2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
Tests Item AC power-line conducted emissions			
Condition AC power-line conducted measurement for line and neutral			
Operating Mode Normal Link			
1 Router mode - EUT with Adapter			

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		

The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item Emissions in Restricted Frequency Bands		
Test ConditionRadiated measurementIf EUT consist of multiple antenna assembly (multiple antenna are used in EUregardless 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	Router mode - EUT with Adapter		
Operating Mode > 1GHz	CTX		

The Worst Case Mode for Following Conformance Tests			
Tests Item Simultaneous Transmission Analysis - Radiated Emission Co-location			
Test Condition Radiated measurement			
Operating Mode Normal Link			
1 WLAN 2.4GHz + WLAN 5GHz (Band 1, 2)			
Refer to Appendix G for Radiated Emission Co-location.			

The Worst Case Mode for Following Conformance Tests			
Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation			
Operating Mode			
1 WLAN 2.4GHz + WLAN 5GHz (Band 1,2) + WLAN 5GHz (Band 4)			
Refer to Sporton Test Report No.: FA070131 for Co-location RF Exposure Evaluation.			

Note: The EUT can only be used at Y axis.



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 Name Brand Name Model Name Rating				
Adapter	tp-link	T120250-2B4	Input: 100-240V ~ 50/60Hz, 0.8A Output: 12V, 2.5A	



2.5 Support Equipment

For AC Conduction:

Support Equipment						
No.	No. Equipment Brand Name Model Name FCC ID					
А	AP Router (2.5Gbps)	ASUS	GT-AX11000	MSQ-RTHR00		
В	Device	tp-link	Deco X90	TE7X90		
С	Device NB	DELL	E6430	N/A		
D	Eth1 NB	DELL	E6430	N/A		
Е	AP Router NB	DELL	E6430	N/A		

For Radiated (below 1GHz):

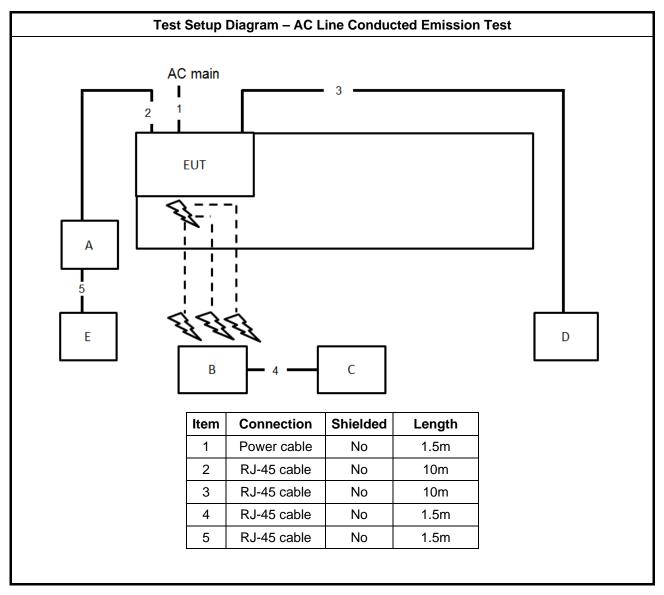
Support Equipment						
No.	No. Equipment Brand Name Model Name FCC ID					
А	Eth1 NB	DELL	E4300	N/A		
В	AP Router (2.5Gbps)	ASUS	GT-AX11000	MSQ-RTHR00		
С	Device	tp-link	Deco X90	TE7X90		
D	Device NB	DELL	E4300	N/A		
Е	AP Router NB	DELL	E4300	N/A		

For RF Conducted and Radiated (above 1GHz):

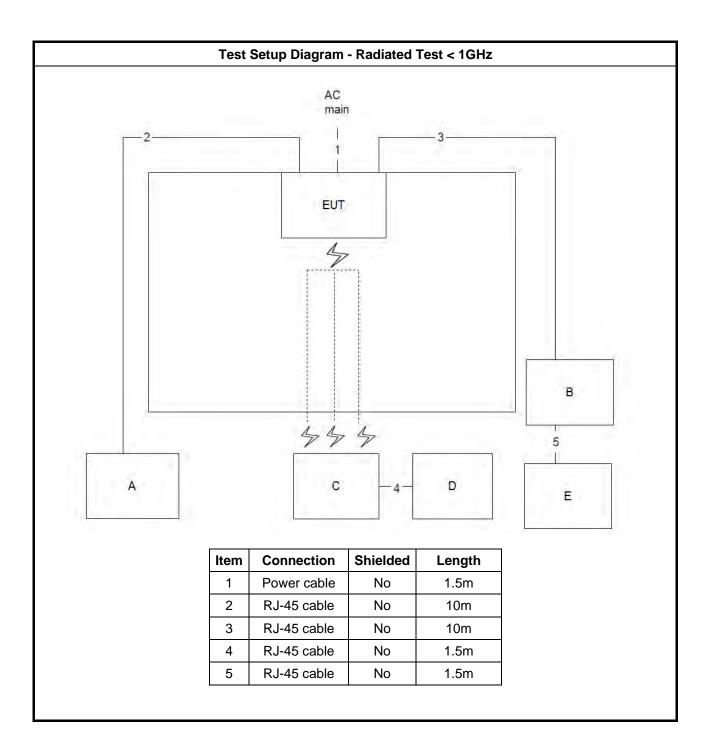
Support Equipment					
No.	No. Equipment Brand Name Model Name FCC ID				
А	Notebook	DELL	E4300	N/A	



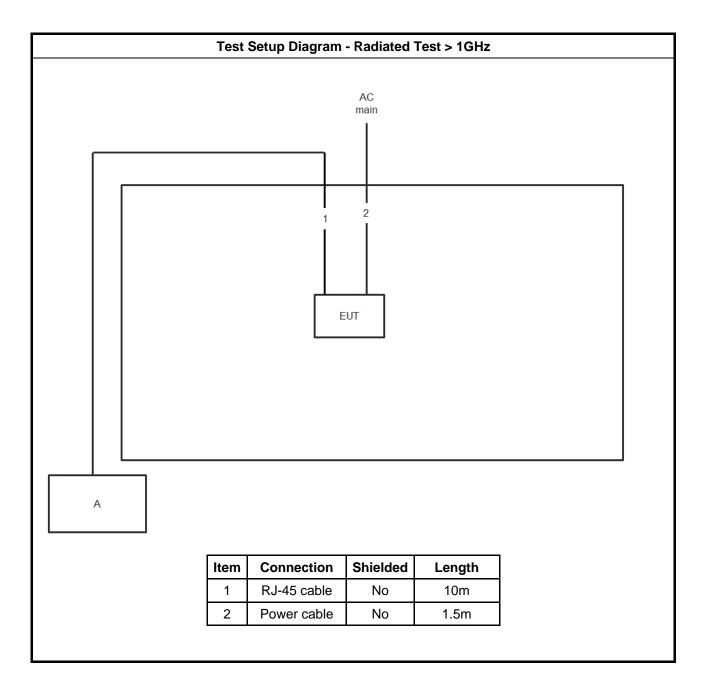
2.6 Test Setup Diagram













3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit				
Frequency Emission (MHz) Quasi-Peak Average				
0.15-0.5	66 - 56 *	56 - 46 *		
0.5-5	56	46		
5-30	60	50		
Note 1: * Decreases with the logarithm of the frequency.				

5

3.1.2 Measuring Instruments

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

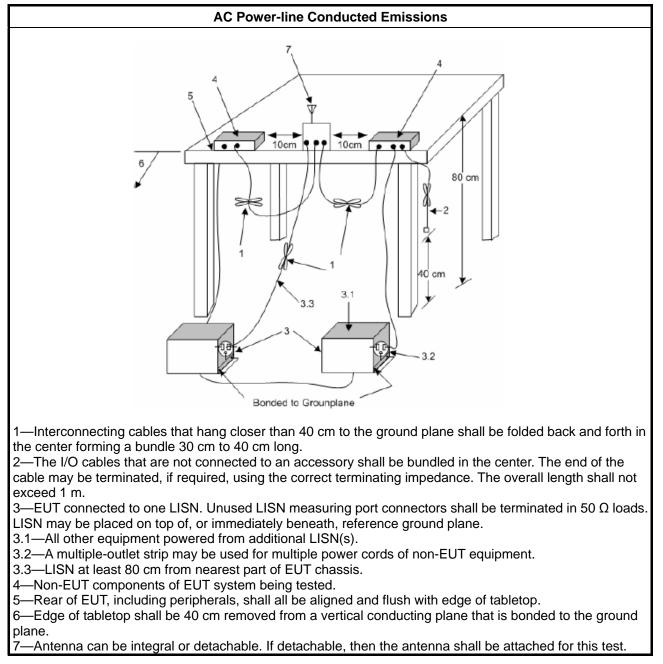
3.1.3 Test Procedures

Test Method

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



3.1.4 Test Setup



3.1.5 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



3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

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

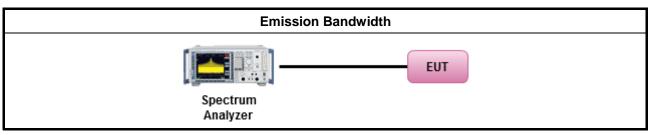
3.2.2 Measuring Instruments

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:				
	\boxtimes	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



3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
--------------------------------------	--

•	If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ 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 $G_{TX} > 6 \text{ dBi}$, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8 \text{dB dBm}$

 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.

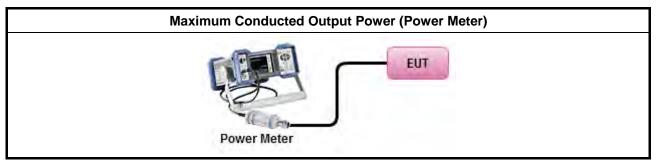


3.3.3 Test Procedures

		Test Method
•	Max	imum 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	imum Conducted Output Power
	[dut	/ 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 (using an 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: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = P _{total} + DG



3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit

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

3.4.2 Measuring Instruments

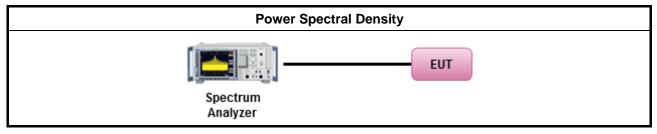
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

	Test Method				
•	outp the c conc of th	ut po butpu ducte le av	wer spectral density procedures that the same method as used to determine the conducted ower. If maximum peak conducted output power was measured to demonstrate compliance to at power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum ad output power was measured to demonstrate compliance to the output power limit, then one erage PSD procedures shall be used, as applicable based on the following criteria (the peak cedure 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.		
	•	lf Tł	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.		



3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D



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		

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

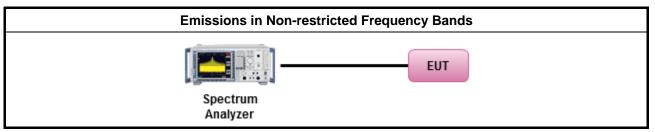
Refer a test equipment and calibration data table in this test report.

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



3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

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

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

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

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

3.6.2 Measuring Instruments

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

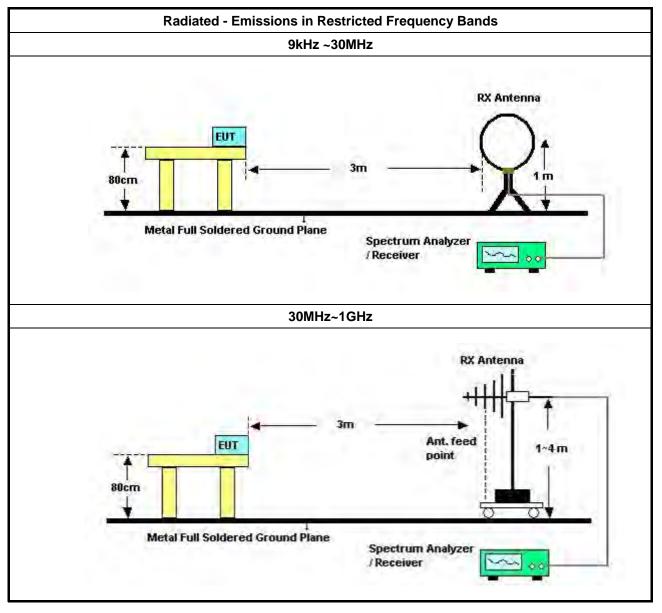


3.6.3 Test Procedures

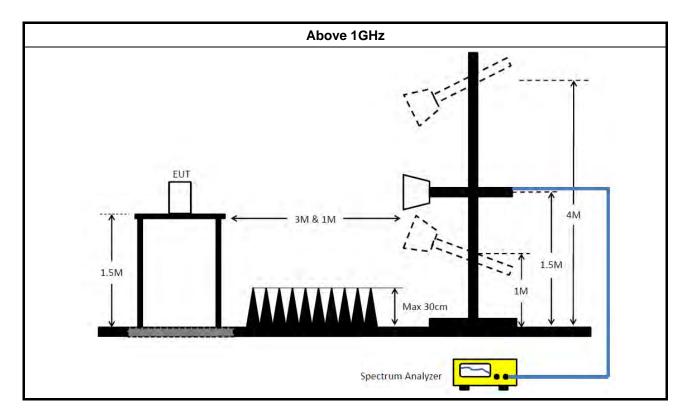
	Test Method			
•	 The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. 			
•	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.			
•	For the transmitter 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 \ge 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. 			



3.6.4 Test Setup







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



Test Equipment and Calibration Data 4

Instrument	Manufacturer	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&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 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	Conduction (CO01-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N06 07	30MHz ~ 1GHz	Oct. 12, 2019	Oct. 11, 2020	Radiation (03CH04-CB)
Horn Antenna	ETS · Lindgren	3115	00143147	750MHz~18GHz	Oct. 22, 2019	Oct. 21, 2020	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	310N	187290	0.1MHz ~ 1GHz	Apr. 28, 2020	Apr. 27, 2021	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz ~ 26.5GHz	Jul. 14, 2020	Jul. 13, 2021	Radiation (03CH04-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 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 13, 2020	May 12, 2021	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+22	30MHz – 1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21	1GHz - 18GHz	Jul. 07, 2020	Jul. 06, 2021	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21+22	1GHz - 18GHz	Feb. 01, 2020	Jan. 31, 2021	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)
Horn Antenna	COM-POWER	AH-118	071028	1GHz ~ 18GHz	Jun. 09, 2020	Jun. 08, 2021	Radiation (03CH06-CB)

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Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	83017A	MY53270064	0.5GHz ~ 26.5GHz	May 07, 2020	May 06, 2021	Radiation (03CH06-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Oct. 21, 2019	Oct. 20, 2020	Radiation (03CH06-CB)
RF Cable-high	HUBER+SUH NER	RG402	High Cable-05	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH06-CB)
RF Cable-high	HUBER+SUH NER	RG402	High Cable-05+24	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 05, 2020	May 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 18, 2019	Nov. 17, 2020	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

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

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

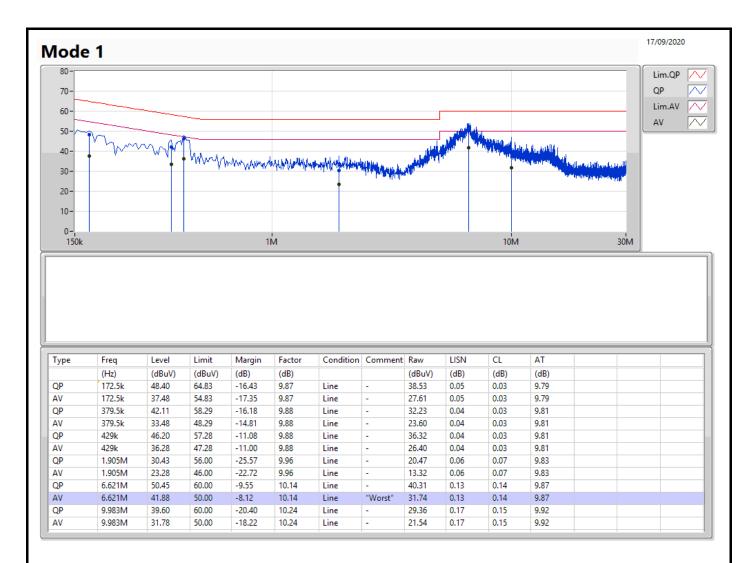


Conducted Emissions at Powerline

Appendix A

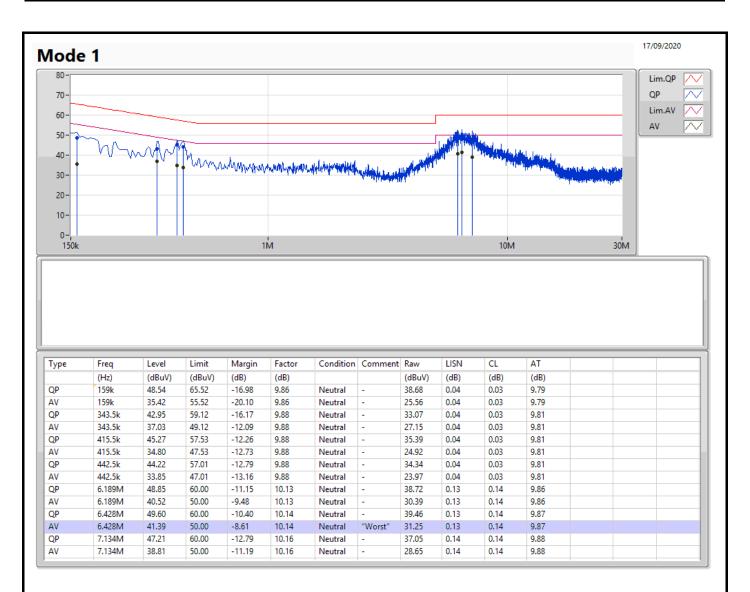
Summary									
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition		
			(Hz)	(dBuV)	(dBuV)	(dB)			
Mode 1	Pass	AV	6.621M	41.88	50.00	-8.12	Line		







Appendix A





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	8.525M	13.893M	13M9D2W	6.55M	11.044M
802.11g_Nss1,(6Mbps)_2TX	16.35M	22.564M	22M6D7W	16.275M	16.967M
802.11ax HEW20_Nss1,(MCS0)_2TX	18.925M	25.537M	25M5D7W	18M	19.115M
802.11ax HEW40_Nss1,(MCS0)_2TX	37.55M	37.681M	37M7D7W	36.55M	37.431M

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



Result

Mode	Result	Limit	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	7.05M	12.219M	6.55M	12.044M
2437MHz	Pass	500k	7M	11.394M	7.025M	11.044M
2462MHz	Pass	500k	8.5M	13.893M	8.525M	13.518M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	16.35M	17.091M	16.35M	16.967M
2437MHz	Pass	500k	16.325M	19.265M	16.325M	19.44M
2462MHz	Pass	500k	16.275M	22.564M	16.325M	21.189M
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	18.925M	19.165M	18.5M	19.115M
2437MHz	Pass	500k	18.775M	19.415M	18.3M	19.74M
2462MHz	Pass	500k	18M	25.537M	18.525M	24.488M
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	37.55M	37.581M	36.55M	37.431M
2437MHz	Pass	500k	36.7M	37.581M	37.35M	37.631M
2452MHz	Pass	500k	37.4M	37.581M	37.25M	37.681M

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



Detector Type

 \sim

Peak

Port 1

Port 2

40

-50

2.412G

6dB(Hz)

7.025M

7M

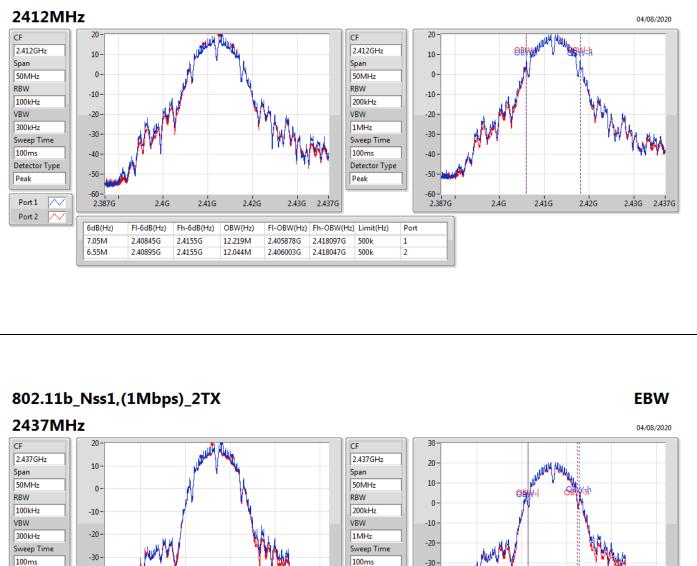
2.42G

FI-6dB(Hz)

2.433475G

2.433475G

802.11b_Nss1,(1Mbps)_2TX



Detector Type

Peak

500k

500k

2,4626

FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz)

2.442747G

2.442347G

-40

-50

Port

1

2

2.412G

2.42G

2.43G

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory.

2.43G

Fh-6dB(Hz)

2.440475G

2.4405G

2.44G

OBW(Hz)

11.394M

11.044M

2.45G

2.431353G

2.431303G

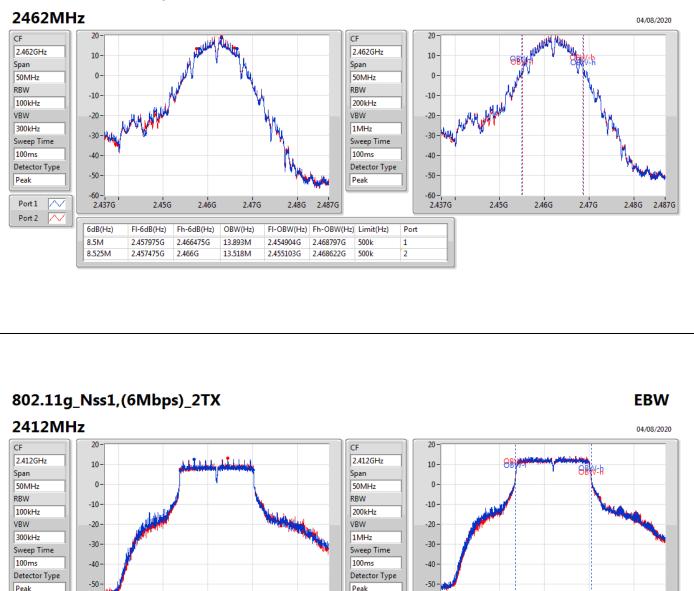
2.44G

2.45G

2.462G



802.11b_Nss1,(1Mbps)_2TX



-60

Port

1

2.387G

2.4G

2.41G

2.42G

2.43G 2.437G

2.4G

FI-6dB(Hz)

2.403825G

2.4038G

2.41G

Fh-6dB(Hz)

2.42015G

2.420175G

2.42G

OBW(Hz)

17.091M

16.967M

2.43G 2.437G

2.403529G

2.403629G

FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz)

2.420621G

2.420596G

500k

500k

-60 -

2.387G

6dB(Hz)

16.35M

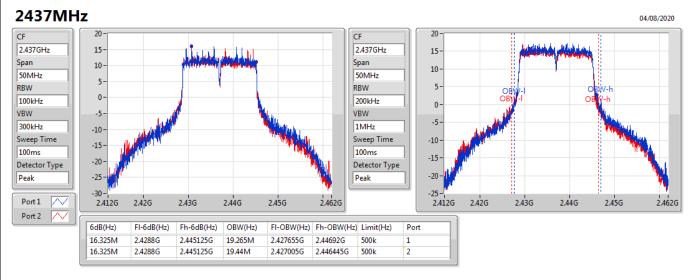
16.35M

Port 1

Port 2

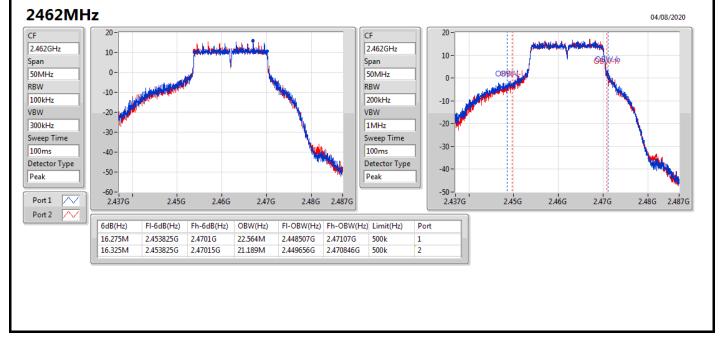


802.11g_Nss1,(6Mbps)_2TX



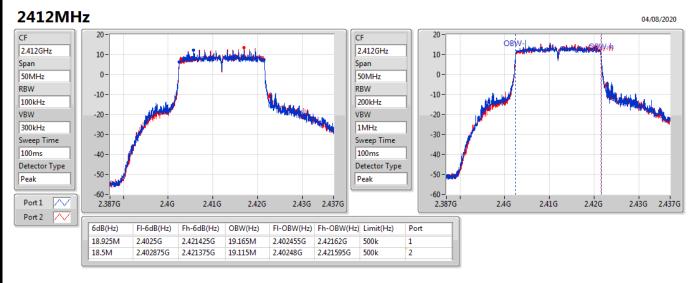
802.11g_Nss1,(6Mbps)_2TX

EBW



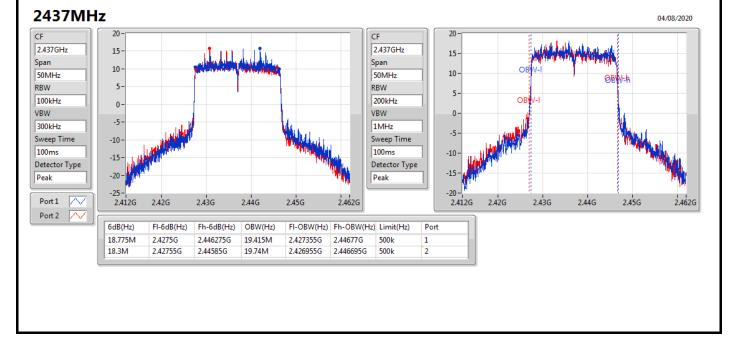


802.11ax HEW20_Nss1,(MCS0)_2TX



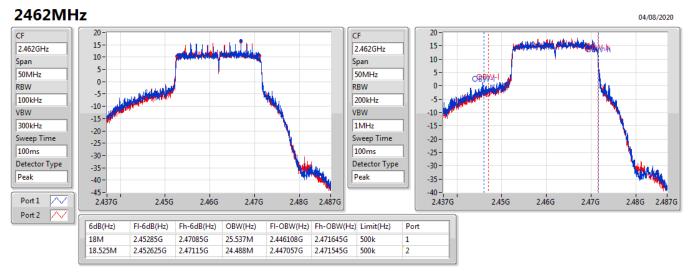
802.11ax HEW20_Nss1,(MCS0)_2TX

EBW



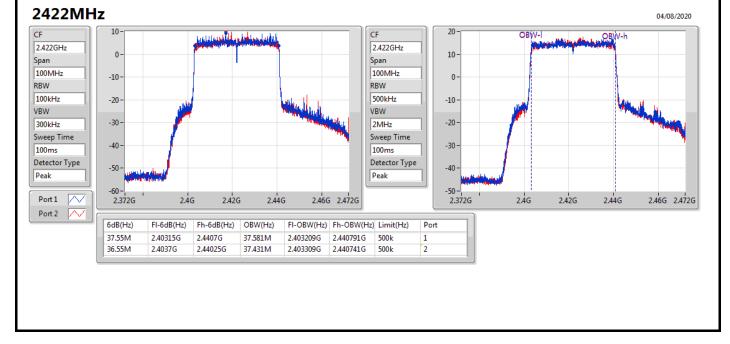


802.11ax HEW20_Nss1,(MCS0)_2TX



802.11ax HEW40_Nss1,(MCS0)_2TX

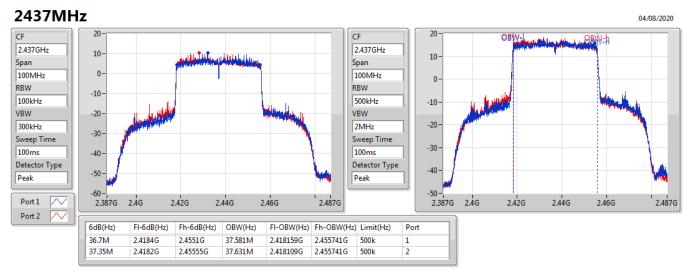
EBW





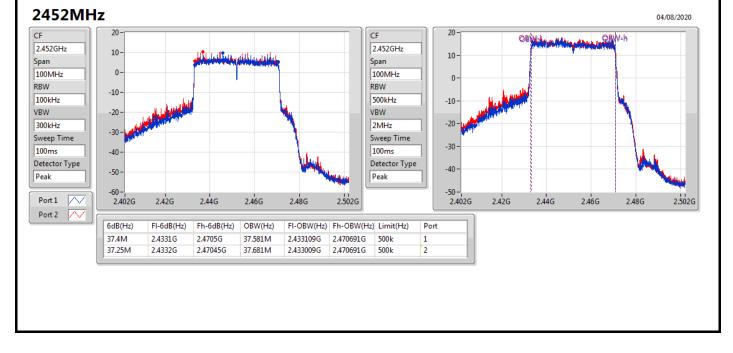
EBW

802.11ax HEW40_Nss1,(MCS0)_2TX



802.11ax HEW40_Nss1,(MCS0)_2TX







Summary

Mode	Total Power	Total Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	29.97	0.99312
802.11g_Nss1,(6Mbps)_2TX	29.99	0.99770
802.11ax HEW20_Nss1,(MCS0)_2TX	29.87	0.97051
802.11ax HEW40_Nss1,(MCS0)_2TX	28.34	0.68234



Average Power

Appendix C.1

Result

Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	1.99	26.84	27.08	29.97	30.00
2417MHz	Pass	1.99	26.84	27.01	29.94	30.00
2437MHz	Pass	1.99	26.92	26.58	29.76	30.00
2457MHz	Pass	1.99	26.48	27.18	29.85	30.00
2462MHz	Pass	1.99	26.61	27.18	29.91	30.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	1.99	24.01	24.14	27.09	30.00
2417MHz	Pass	1.99	26.91	27.04	29.99	30.00
2437MHz	Pass	1.99	26.72	26.67	29.71	30.00
2457MHz	Pass	1.99	25.99	26.71	29.38	30.00
2462MHz	Pass	1.99	25.77	26.16	28.98	30.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-		-		-
2412MHz	Pass	1.99	24.02	24.19	27.12	30.00
2417MHz	Pass	1.99	26.74	26.98	29.87	30.00
2437MHz	Pass	1.99	26.59	26.53	29.57	30.00
2457MHz	Pass	1.99	26.23	26.87	29.57	30.00
2462MHz	Pass	1.99	26.50	26.72	29.62	30.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	1.99	23.44	23.52	26.49	30.00
2427MHz	Pass	1.99	25.27	25.38	28.34	30.00
2437MHz	Pass	1.99	24.14	24.59	27.38	30.00
2447MHz	Pass	1.99	24.52	25.01	27.78	30.00
2452MHz	Pass	1.99	23.69	24.16	26.94	30.00

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



Appendix C.2

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	29.87	0.97051
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	28.34	0.68234



Result

Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	4.99	24.02	24.19	27.12	30.00
2417MHz	Pass	4.99	26.74	26.98	29.87	30.00
2437MHz	Pass	4.99	26.59	26.53	29.57	30.00
2457MHz	Pass	4.99	26.23	26.87	29.57	30.00
2462MHz	Pass	4.99	26.5	26.72	29.62	30.00
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	4.99	23.44	23.52	26.49	30.00
2427MHz	Pass	4.99	25.27	25.38	28.34	30.00
2437MHz	Pass	4.99	24.14	24.59	27.38	30.00
2447MHz	Pass	4.99	24.52	25.01	27.78	30.00
2452MHz	Pass	4.99	23.69	24.16	26.94	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	6.53
802.11g_Nss1,(6Mbps)_2TX	4.36
802.11ax HEW20_Nss1,(MCS0)_2TX	3.50
802.11ax HEW40_Nss1,(MCS0)_2TX	-2.02

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

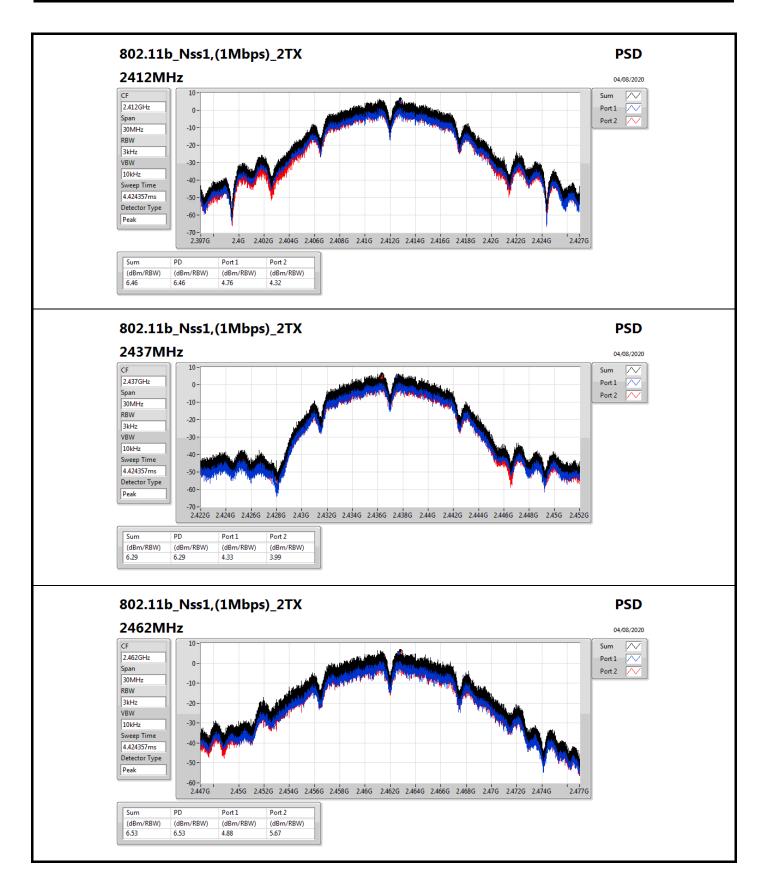


Result

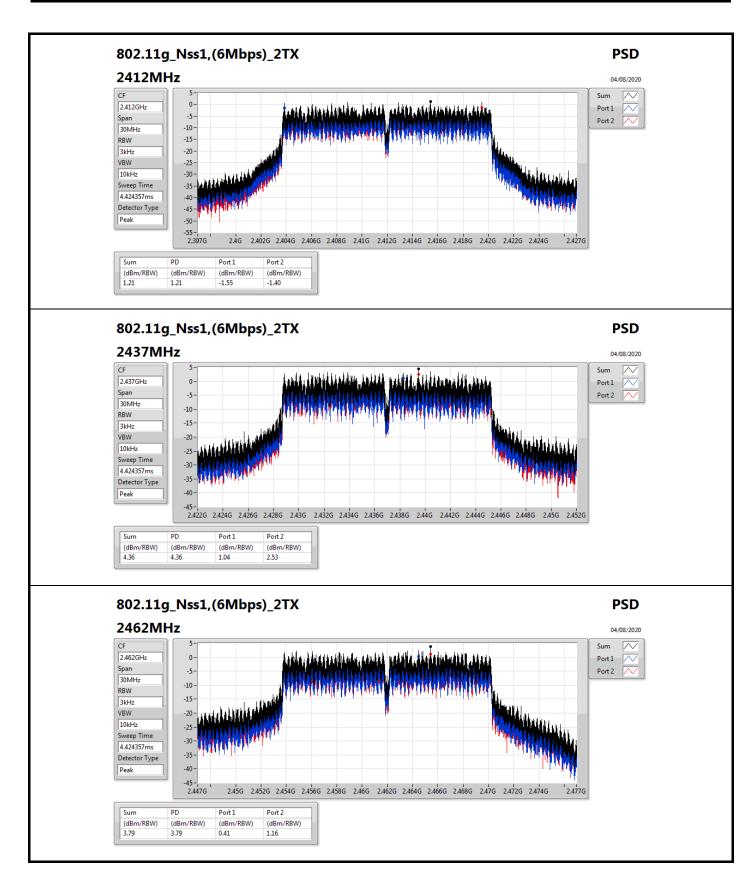
Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	4.99	4.76	4.32	6.46	8.00
2437MHz	Pass	4.99	4.33	3.99	6.29	8.00
2462MHz	Pass	4.99	4.88	5.67	6.53	8.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	4.99	-1.55	-1.40	1.21	8.00
2437MHz	Pass	4.99	1.04	2.53	4.36	8.00
2462MHz	Pass	4.99	0.41	1.16	3.79	8.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	4.99	-3.04	-1.82	0.05	8.00
2437MHz	Pass	4.99	-0.02	1.06	3.50	8.00
2462MHz	Pass	4.99	-0.11	1.24	3.29	8.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	4.99	-5.33	-5.17	-2.92	8.00
2437MHz	Pass	4.99	-4.62	-4.62	-2.02	8.00
2452MHz	Pass	4.99	-4.35	-4.81	-2.29	8.00

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;

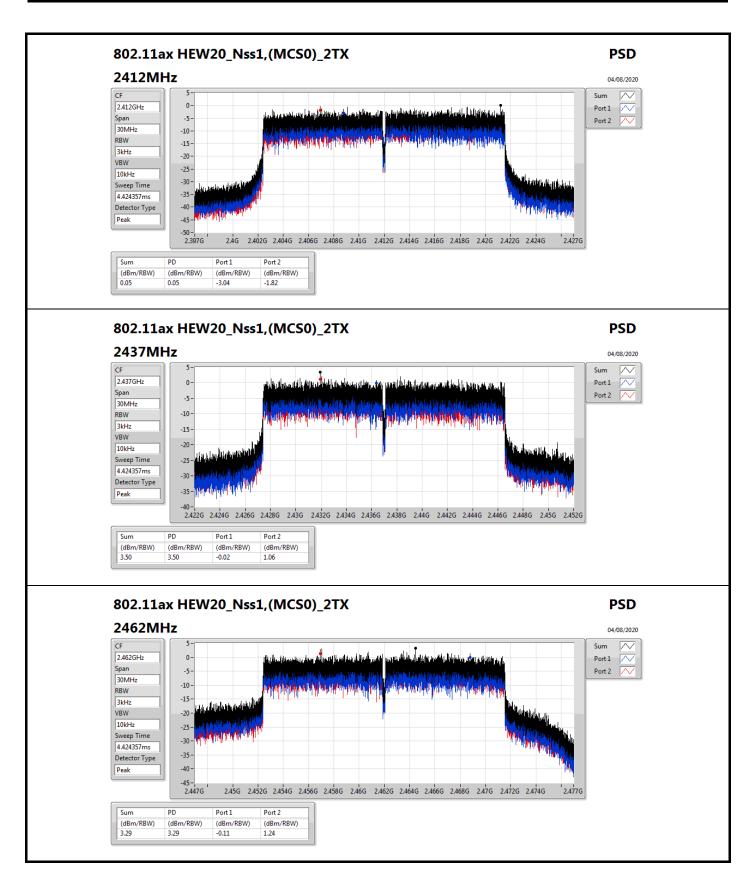




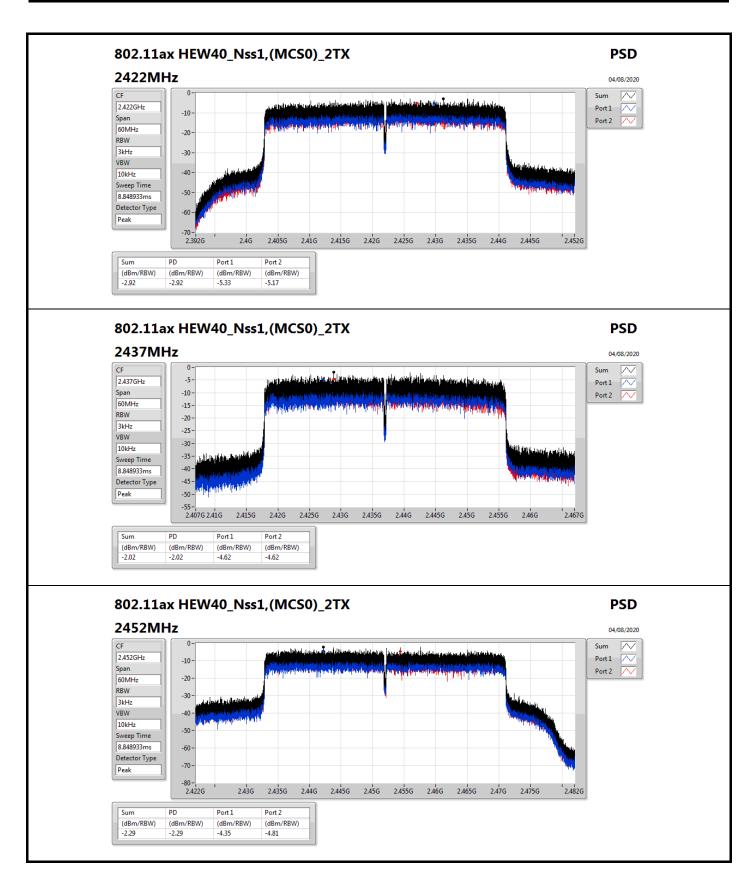














Appendix E

Summary

• anniai j															
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	2.41294G	19.12	-10.88	585.41M	-52.66	2.4G	-19.98	2.4G	-19.21	2.50214G	-51.66	7.23795G	-44.29	1
802.11g_Nss1,(6Mbps)_2TX	Pass	2.44196G	16.28	-13.72	2.18787G	-52.93	2.39822G	-14.55	2.4G	-16.09	2.48372G	-52.18	6.44846G	-47.17	1
802.11ax HEW20_Nss1,(MCS0)_2TX	Pass	2.46701G	16.88	-13.12	644.54M	-52.85	2.39954G	-13.93	2.4G	-18.91	2.51082G	-52.07	5.83878G	-48.18	1
802.11ax HEW40_Nss1,(MCS0)_2TX	Pass	2.43449G	10.86	-19.14	925.96M	-52.46	2.39976G	-19.45	2.4G	-25.86	2.48366G	-49.50	6.75632G	-47.48	2



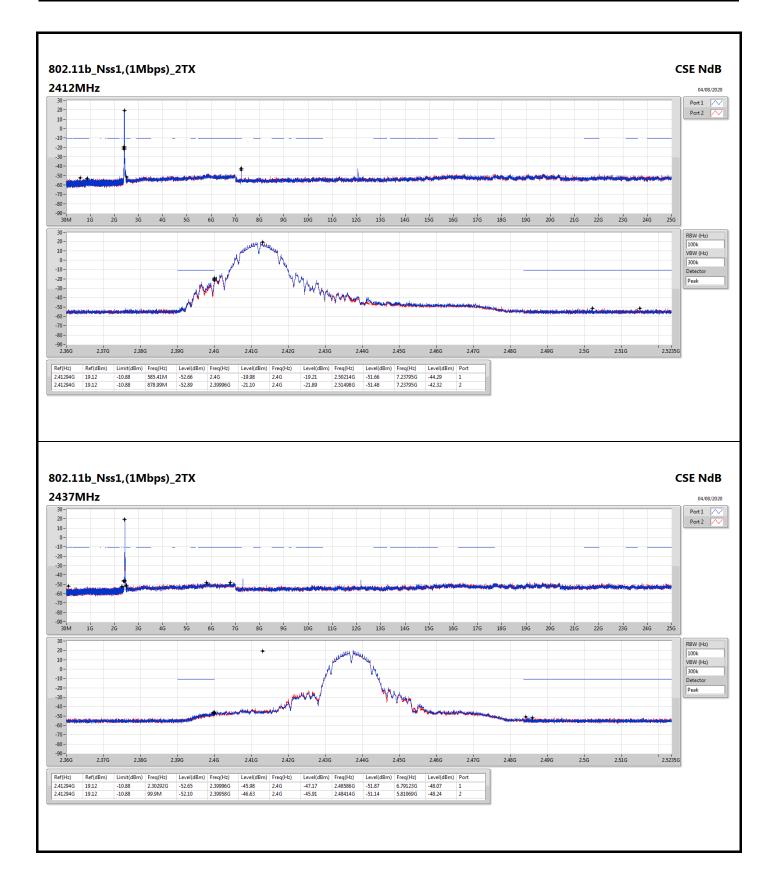
CSE(Non-restricted Band)

Appendix E

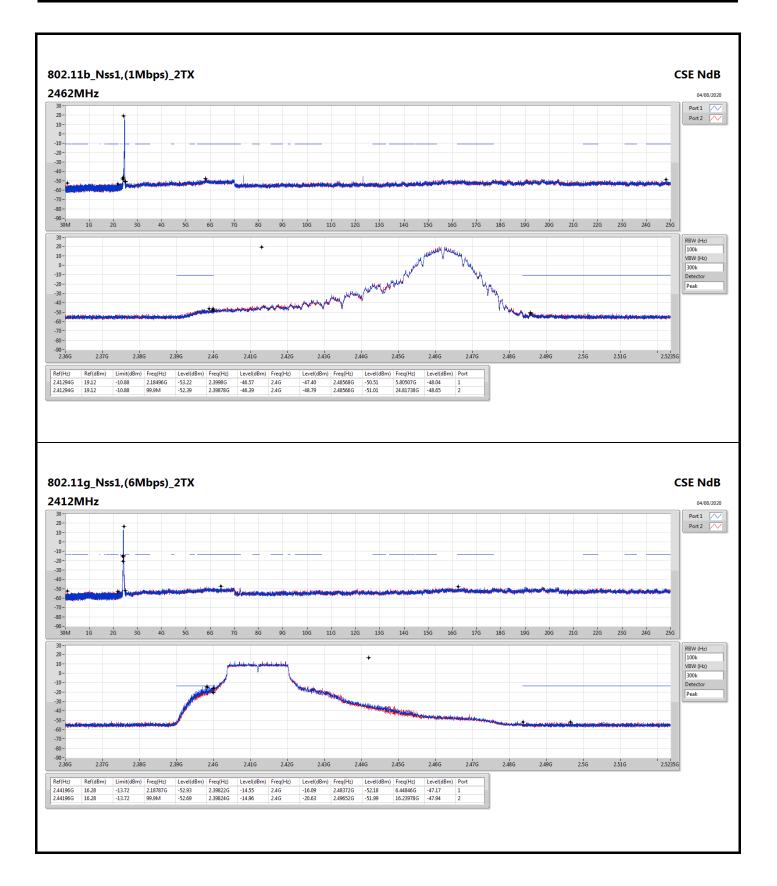
Result

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	2.41294G	19.12	-10.88	585.41M	-52.66	2.4G	-19.98	2.4G	-19.21	2.50214G	-51.66	7.23795G	-44.29	1
2412MHz	Pass	2.41294G	19.12	-10.88	878.99M	-52.89	2.39996G	-21.10	2.4G	-21.89	2.51498G	-51.48	7.23795G	-42.32	2
2437MHz	Pass	2.41294G	19.12	-10.88	2.30292G	-52.65	2.39996G	-45.98	2.4G	-47.17	2.48586G	-51.87	6.79123G	-48.07	1
2437MHz	Pass	2.41294G	19.12	-10.88	99.9M	-52.10	2.39958G	-46.63	2.4G	-45.91	2.48414G	-51.14	5.81069G	-48.24	2
2462MHz	Pass	2.41294G	19.12	-10.88	2.18496G	-53.22	2.3998G	-46.57	2.4G	-47.40	2.48568G	-50.51	5.80507G	-48.04	1
2462MHz	Pass	2.41294G	19.12	-10.88	99.9M	-52.39	2.39878G	-46.39	2.4G	-48.79	2.48566G	-51.01	24.81738G	-48.65	2
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-		-	-	-
2412MHz	Pass	2.44196G	16.28	-13.72	2.18787G	-52.93	2.39822G	-14.55	2.4G	-16.09	2.48372G	-52.18	6.44846G	-47.17	1
2412MHz	Pass	2.44196G	16.28	-13.72	99.9M	-52.69	2.39824G	-14.96	2.4G	-20.63	2.49652G	-51.99	16.23978G	-47.94	2
2437MHz	Pass	2.44196G	16.28	-13.72	1.99769G	-52.85	2.39824G	-32.73	2.4G	-33.43	2.5084G	-51.96	5.99612G	-47.95	1
2437MHz	Pass	2.44196G	16.28	-13.72	938.41M	-52.81	2.39946G	-32.69	2.4G	-35.57	2.49968G	-51.30	16.43083G	-48.19	2
2462MHz	Pass	2.44196G	16.28	-13.72	2.19195G	-52.44	2.39984G	-41.29	2.4835G	-41.38	2.4836G	-40.42	5.78821G	-48.45	1
2462MHz	Pass	2.44196G	16.28	-13.72	2.16545G	-53.07	2.3989G	-42.41	2.4835G	-42.94	2.48354G	-41.21	5.84721G	-46.80	2
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-		-	-		-	-	-	-	-		-	-	-
2412MHz	Pass	2.46701G	16.88	-13.12	644.54M	-52.85	2.39954G	-13.93	2.4G	-18.91	2.51082G	-52.07	5.83878G	-48.18	1
2412MHz	Pass	2.46701G	16.88	-13.12	903.75M	-52.36	2.39948G	-14.15	2.4G	-17.06	2.48816G	-51.65	6.63951G	-48.22	2
2437MHz	Pass	2.46701G	16.88	-13.12	1.98196G	-52.59	2.39946G	-31.79	2.4G	-31.98	2.49378G	-51.63	5.75169G	-47.32	1
2437MHz	Pass	2.46701G	16.88	-13.12	1.82206G	-53.01	2.3999G	-29.76	2.4G	-32.76	2.49942G	-51.81	6.81651G	-47.83	2
2462MHz	Pass	2.46701G	16.88	-13.12	1.71168G	-52.74	2.39942G	-36.61	2.4835G	-36.18	2.48382G	-33.25	5.91745G	-47.89	1
2462MHz	Pass	2.46701G	16.88	-13.12	911.03M	-52.53	2.39926G	-38.27	2.4835G	-38.05	2.48372G	-35.59	5.78821G	-48.41	2
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.43449G	10.86	-19.14	2.11476G	-52.78	2.39772G	-21.74	2.4G	-24.56	2.5003G	-52.11	5.90093G	-48.03	1
2422MHz	Pass	2.43449G	10.86	-19.14	1.97822G	-52.78	2.39952G	-19.67	2.4G	-25.71	2.5345G	-51.49	5.85045G	-47.92	2
2437MHz	Pass	2.43449G	10.86	-19.14	891.9M	-52.17	2.39972G	-22.62	2.4G	-23.15	2.48466G	-48.11	6.71986G	-48.44	1
2437MHz	Pass	2.43449G	10.86	-19.14	925.96M	-52.46	2.39976G	-19.45	2.4G	-25.86	2.48366G	-49.50	6.75632G	-47.48	2
2452MHz	Pass	2.43449G	10.86	-19.14	880.74M	-52.37	2.39976G	-30.51	2.4G	-35.36	2.4849G	-43.09	5.89252G	-47.55	1
2452MHz	Pass	2.43449G	10.86	-19.14	99.85M	-53.10	2.39976G	-29.73	2.4G	-33.15	2.48822G	-41.47	6.02994G	-47.60	2

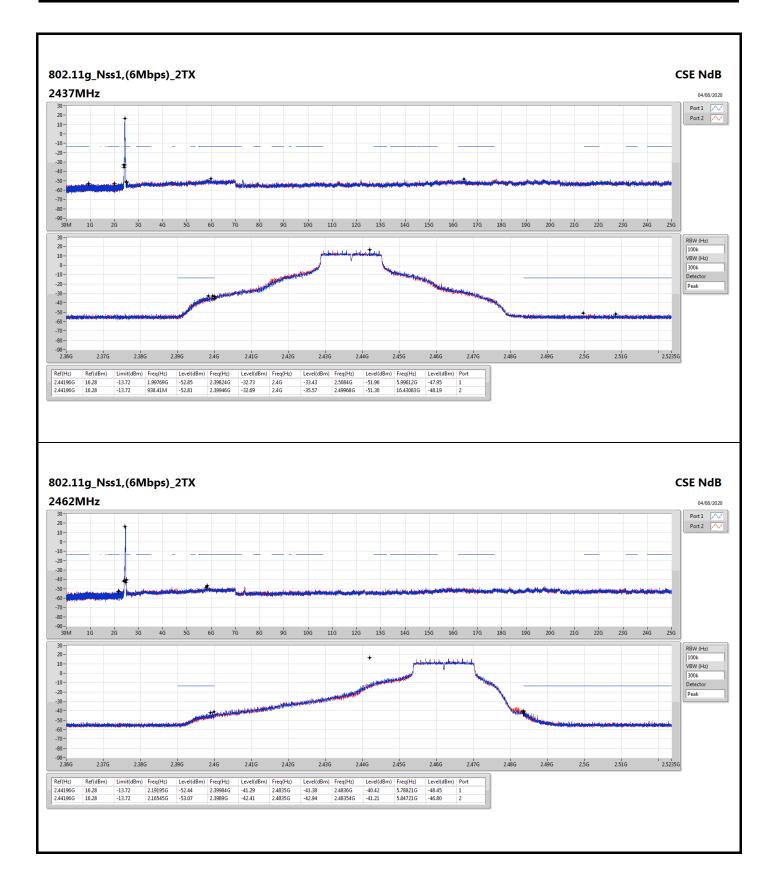




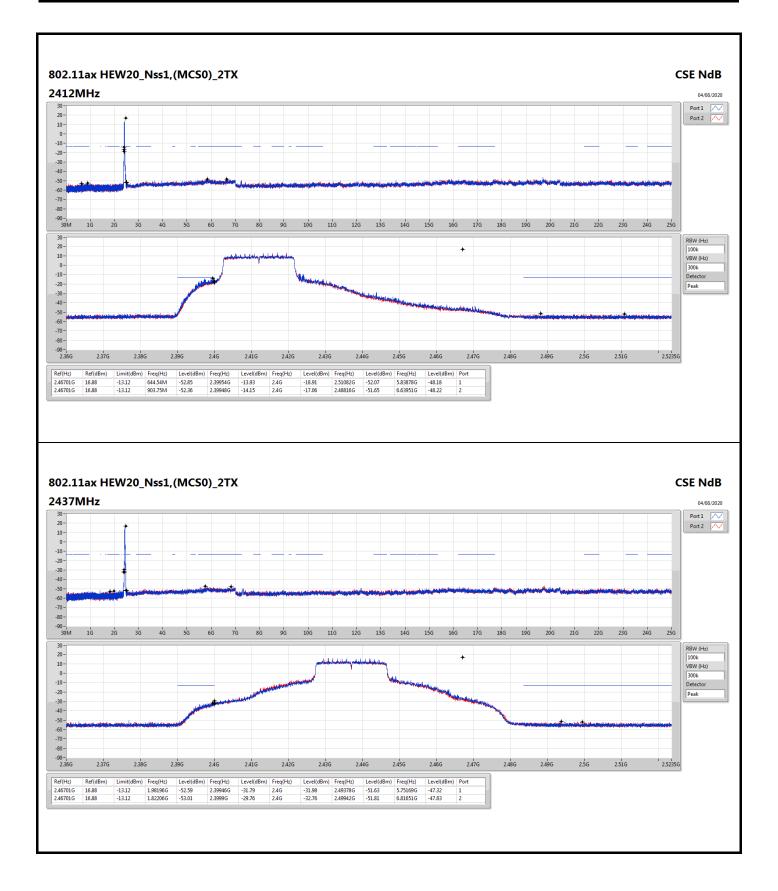




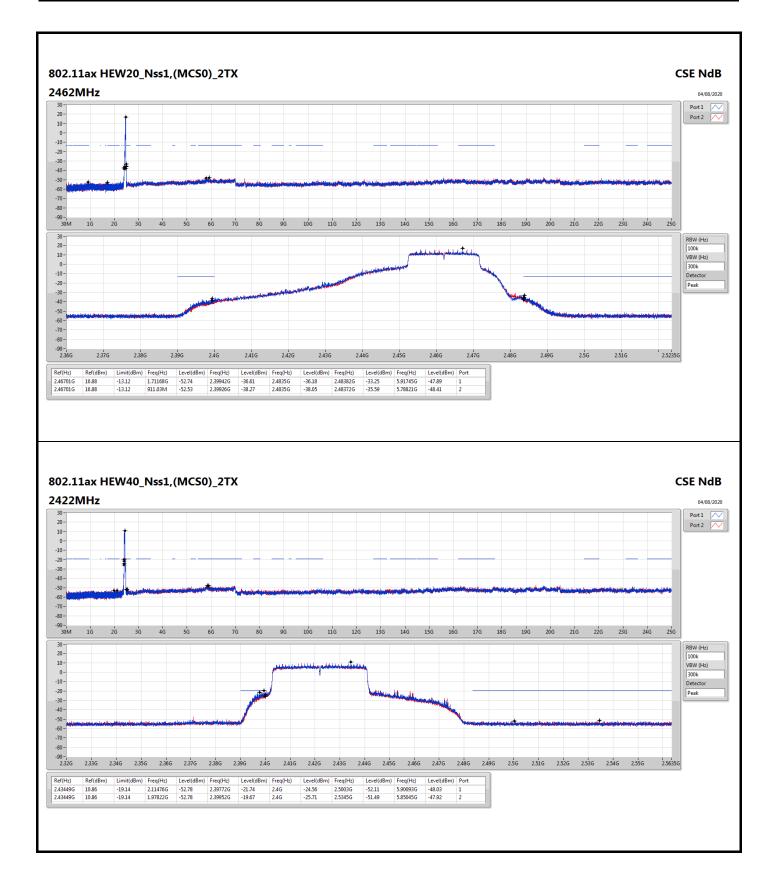




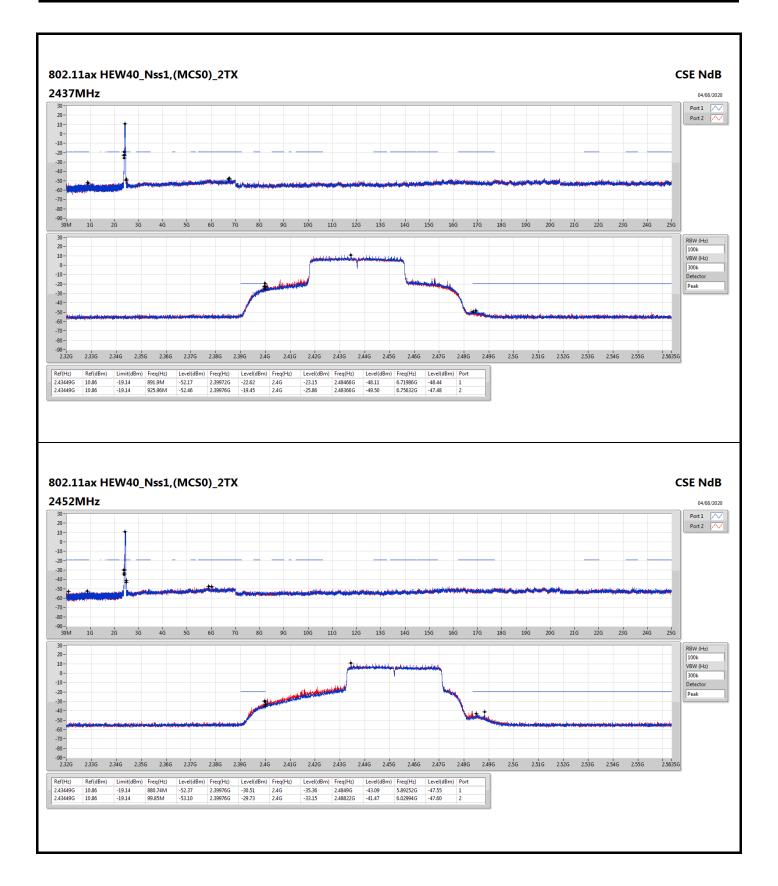












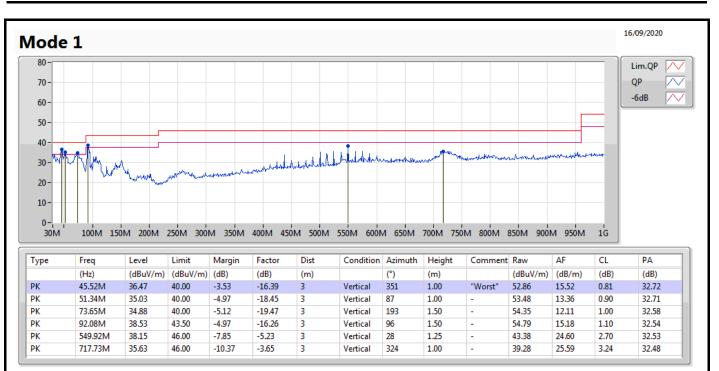


Radiated Emissions below 1GHz

Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 1	Pass	PK	45.52M	36.47	40.00	-3.53	Vertical

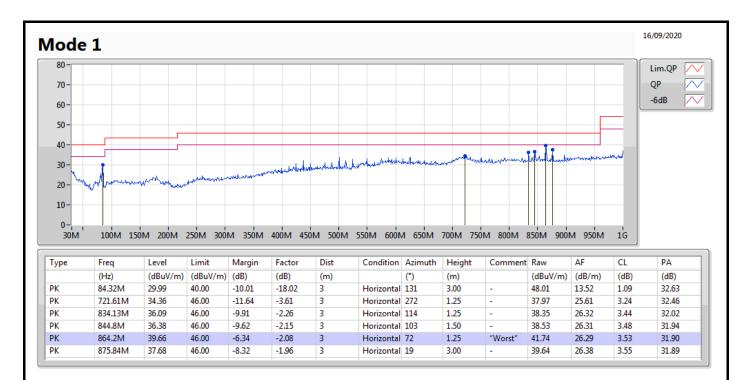


Radiated Emissions below 1GHz





Radiated Emissions below 1GHz



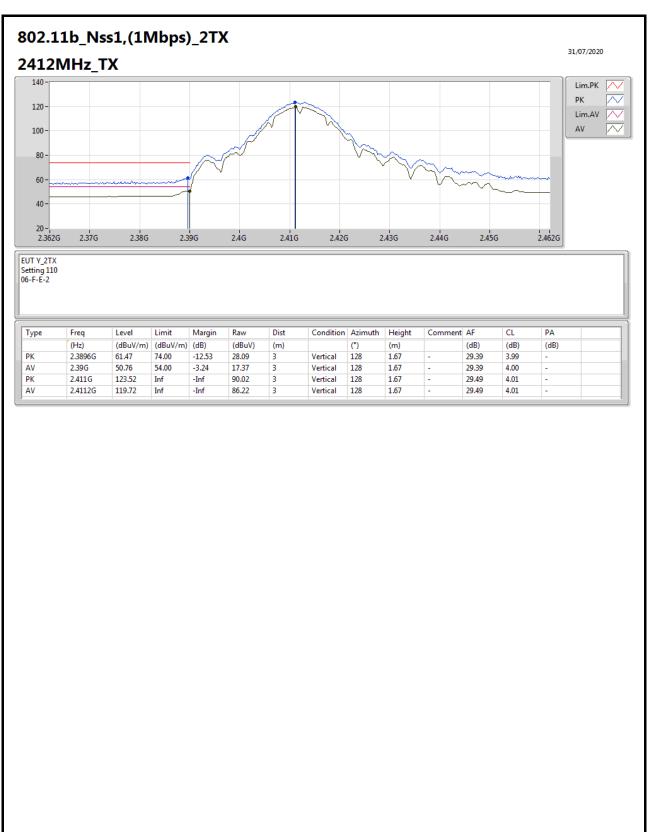


Appendix F.2

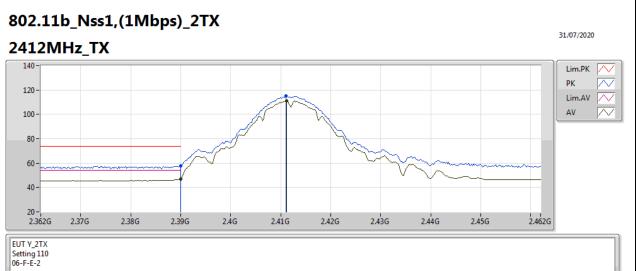
Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-		-	-	-	-	-	-	-	-
802.11g_Nss1,(6Mbps)_2TX	Pass	AV	2.4835G	53.96	54.00	-0.04	3	Vertical	187	1.00	-



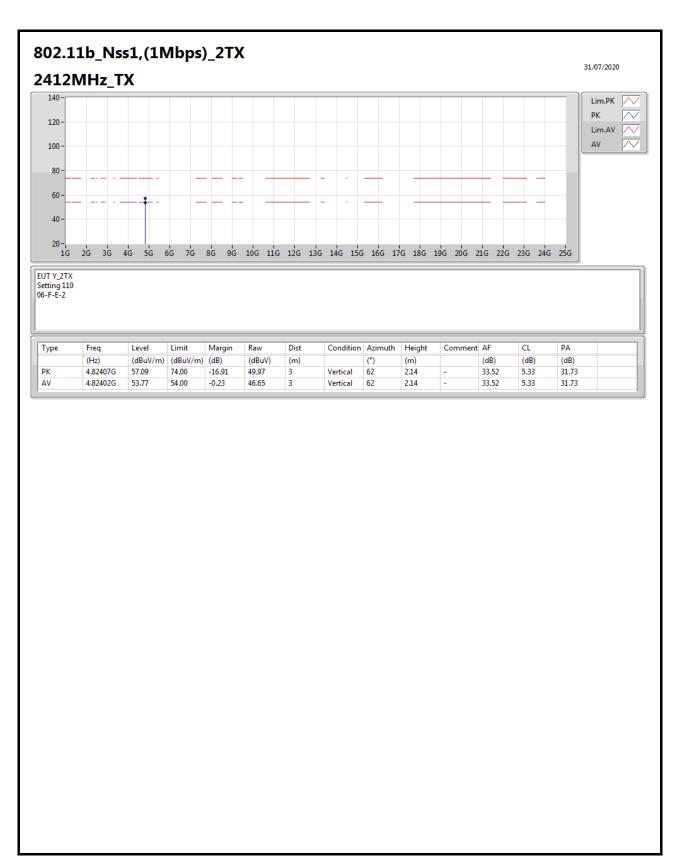




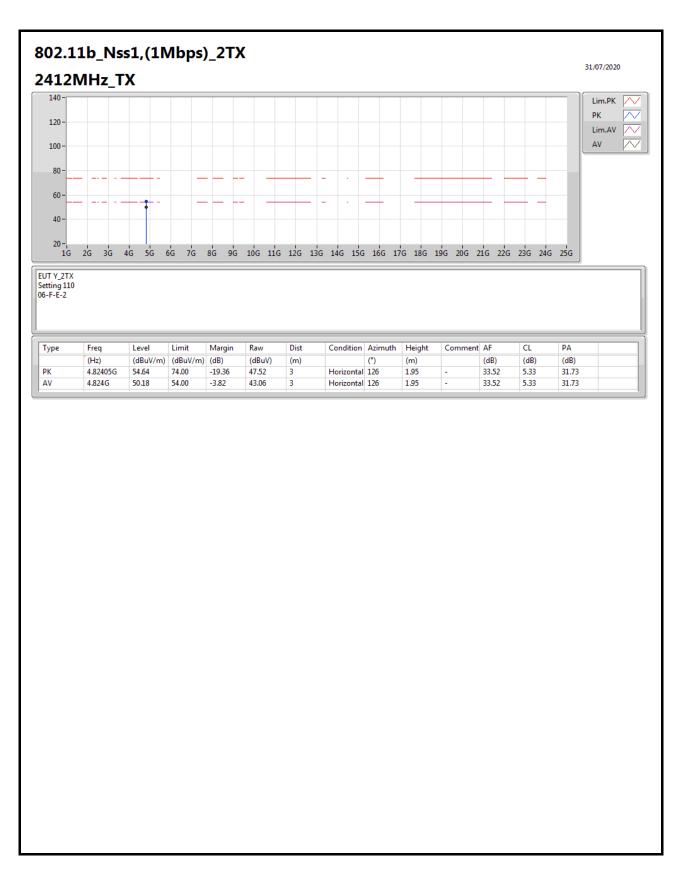


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
PK	2.39G	57.79	74.00	-16.21	24.40	3	Horizontal	101	1.42	-	29.39	4.00	-	
AV	2.39G	46.93	54.00	-7.07	13.54	3	Horizontal	101	1.42	-	29.39	4.00	-	
PK	2.411G	115.10	Inf	-Inf	81.60	3	Horizontal	101	1.42	-	29.49	4.01	-	
AV	2.4112G	111.25	Inf	-Inf	77.75	3	Horizontal	101	1.42	-	29.49	4.01	-	

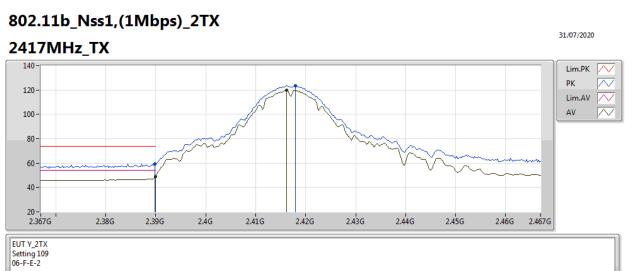






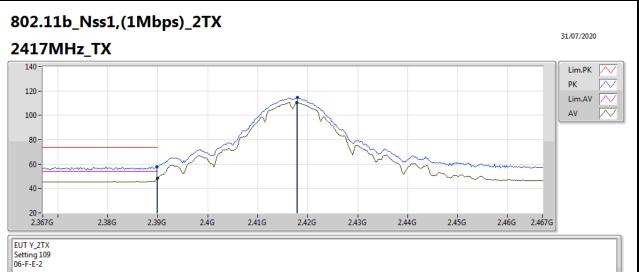






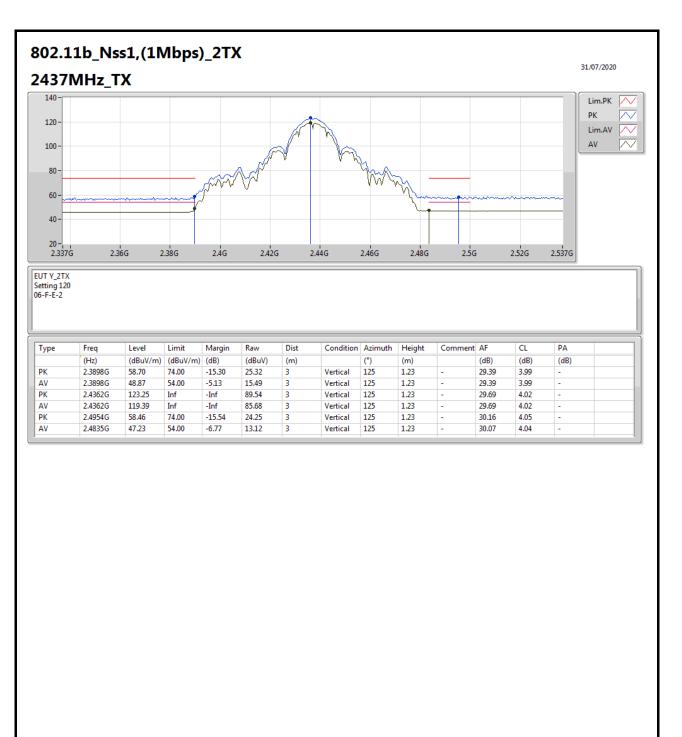
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.3898G	59.19	74.00	-14.81	25.81	3	Vertical	185	1.67	-	29.39	3.99	-	
AV	2.39G	49.22	54.00	-4.78	15.83	3	Vertical	185	1.67	-	29.39	4.00	-	
PK	2.418G	123.68	Inf	-Inf	90.13	3	Vertical	185	1.67	-	29.54	4.01	-	
AV	2.4162G	119.74	Inf	-Inf	86.20	3	Vertical	185	1.67	-	29.53	4.01	-	



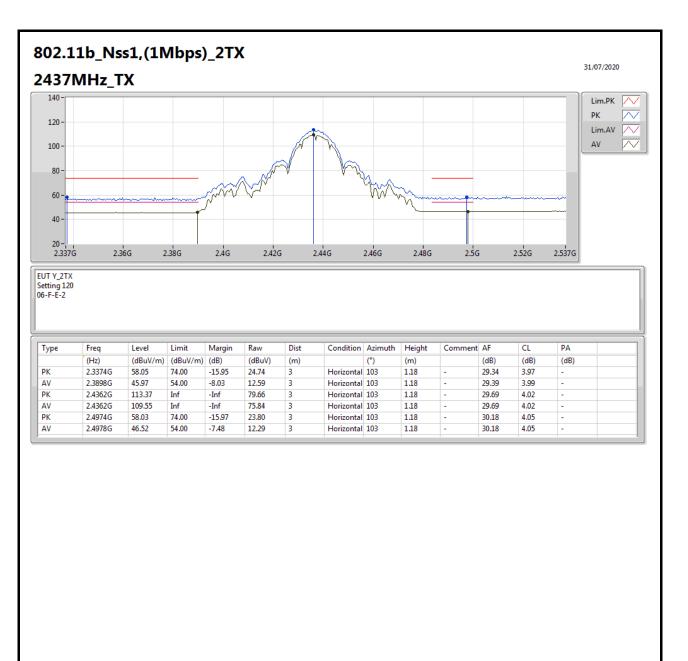


Туре Freq Level Limit Margin Raw Dist Condition Azimuth Height Comment AF CL PA (Hz) (dBuV/m) (dBuV/m) (dB) (dBuV) (dB) (dB) (dB) (m) (m) (°) 2.3898G РК 58.01 74.00 Horizontal 140 2.01 29.39 3.99 -15.99 24.63 3 AV PK 2.39G Horizontal 140 48.62 54.00 -5.38 15.23 3 2.01 29.39 4.00 2.418G 114.48 Inf -Inf 80.93 Horizontal 140 2.01 29.54 4.01 3 AV 110.48 Inf 3 Horizontal 140 2.4178G -Inf 76.93 29.54 4.01 2.01

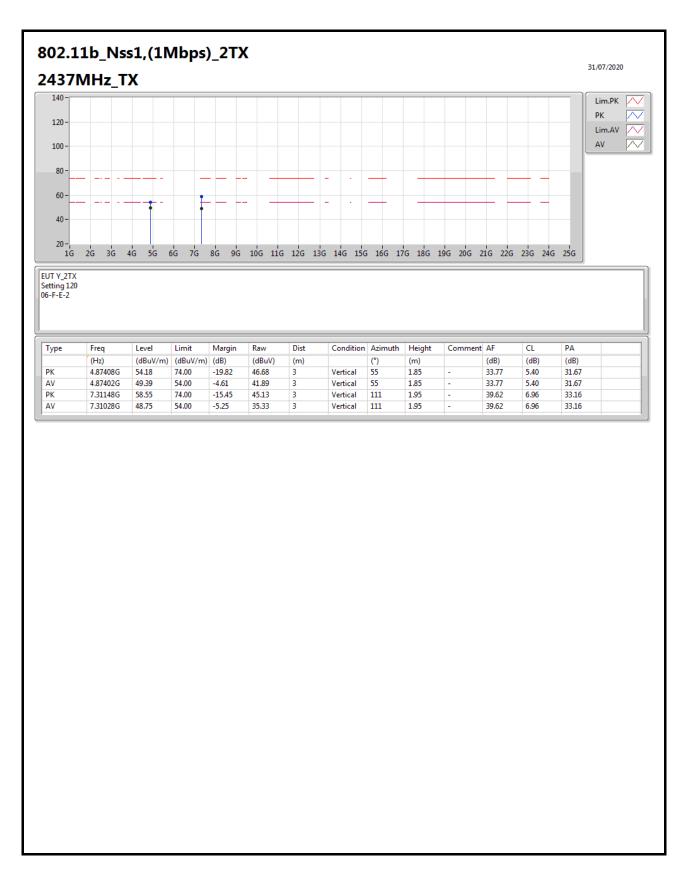




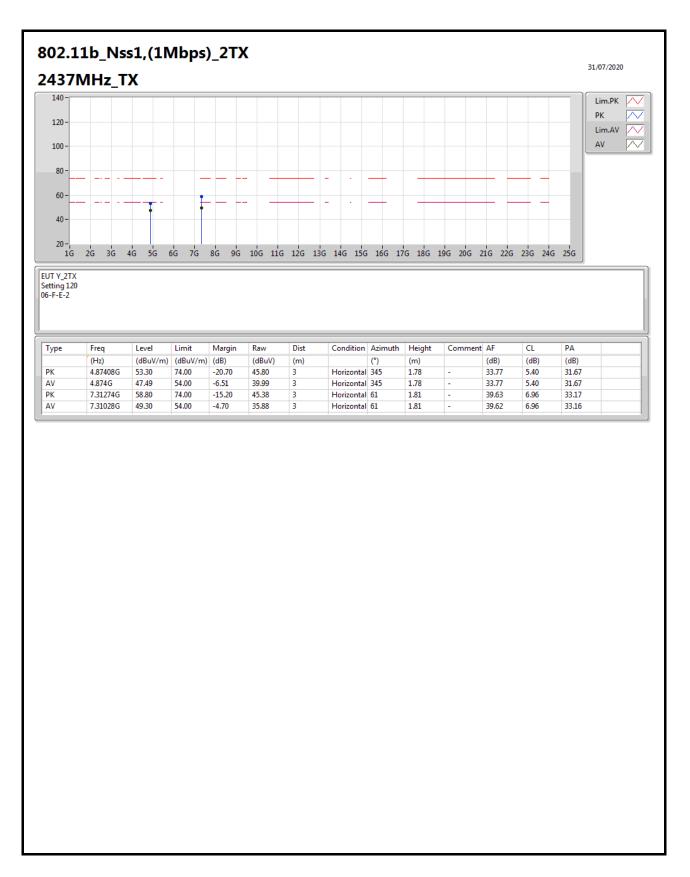




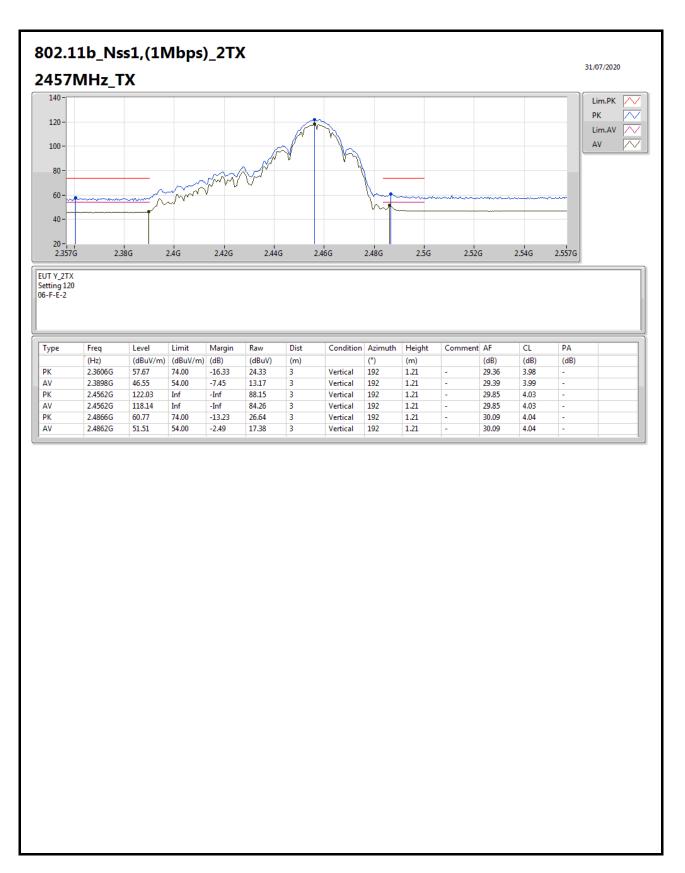




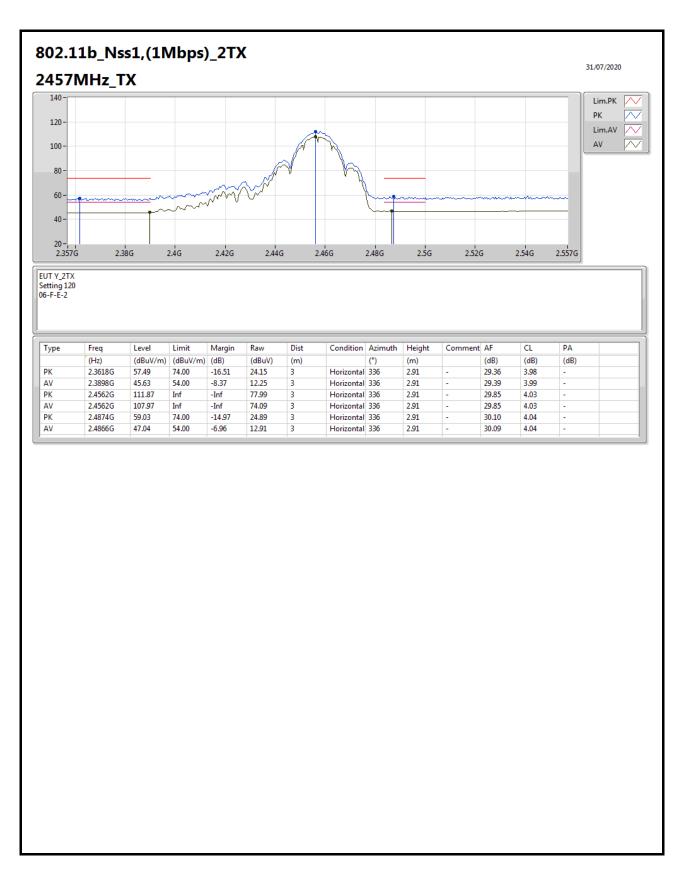




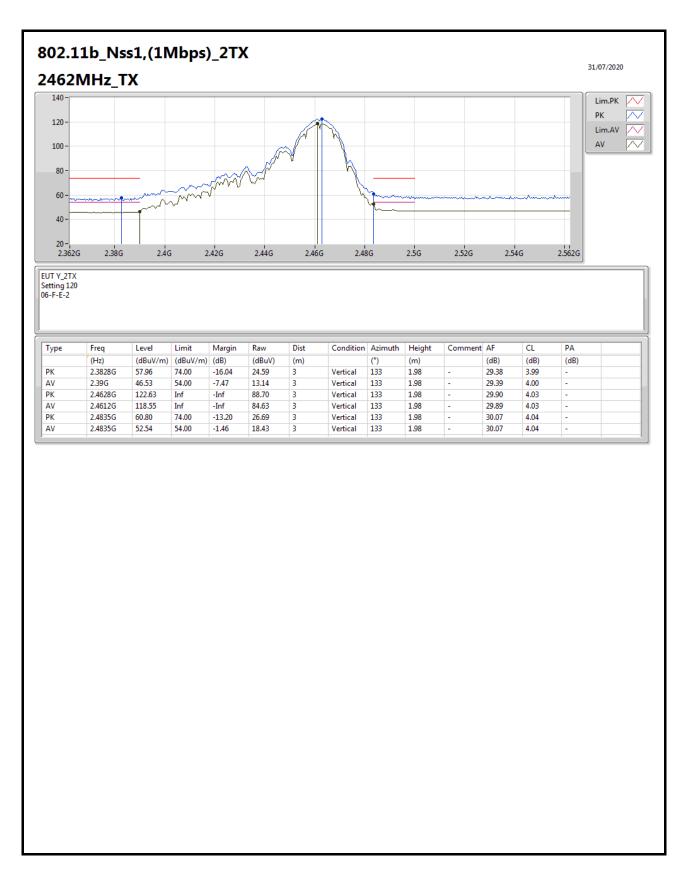




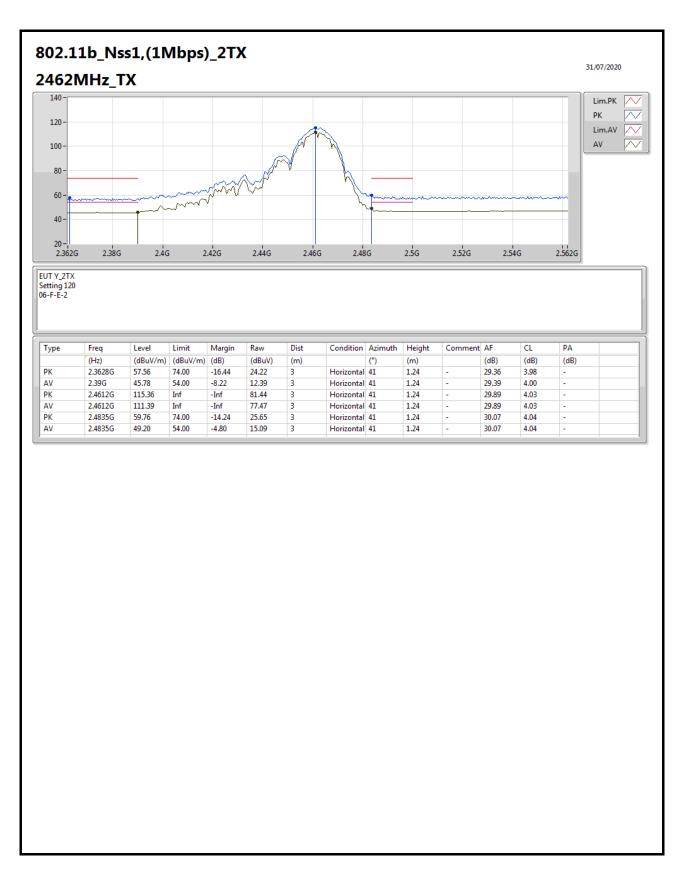




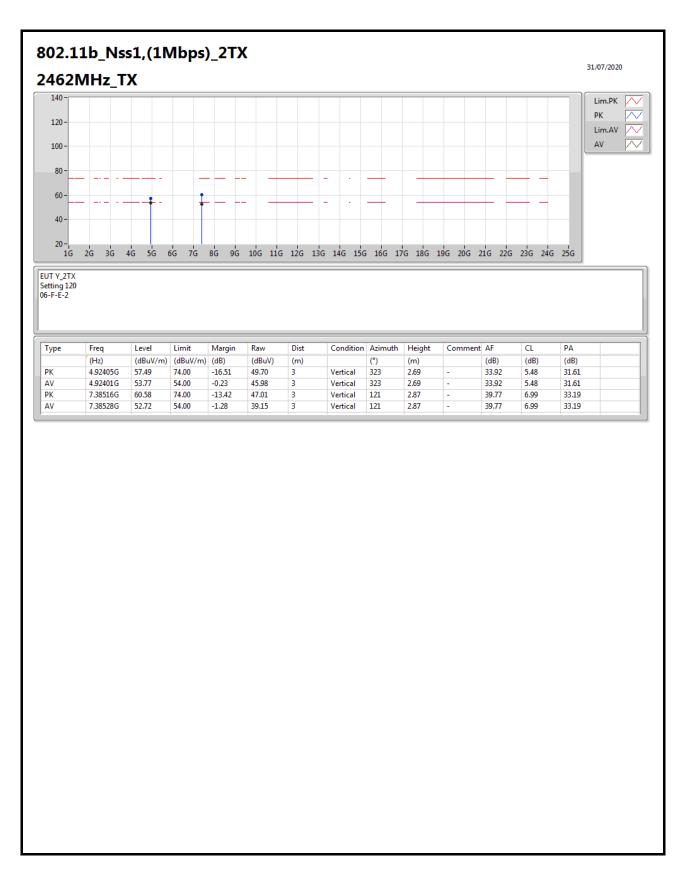




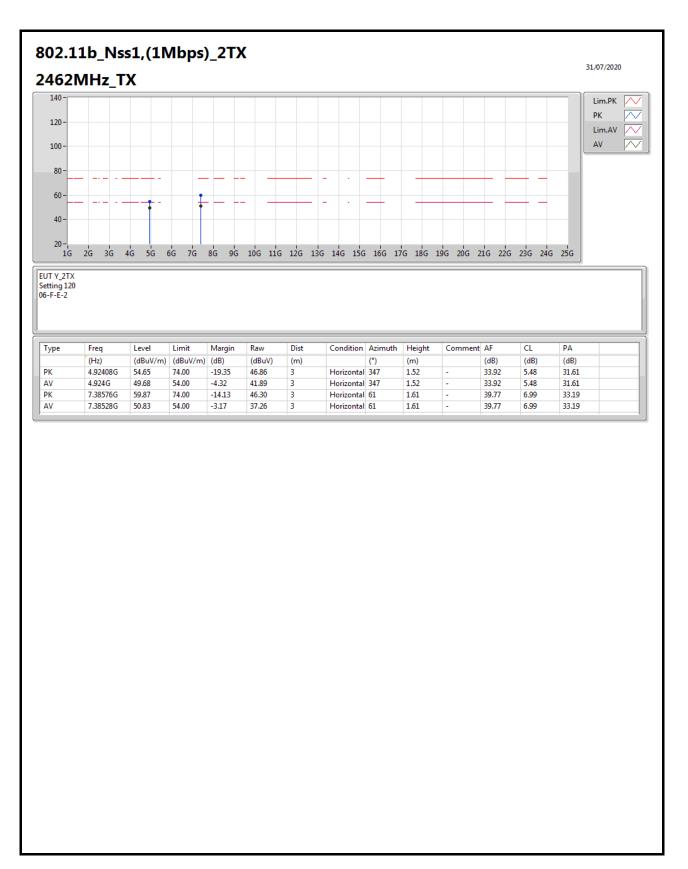




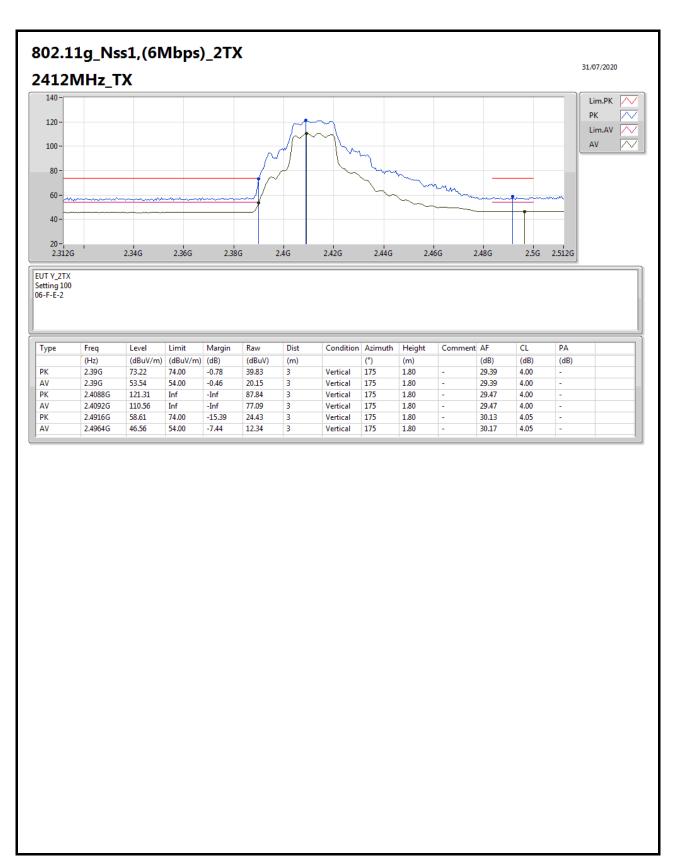




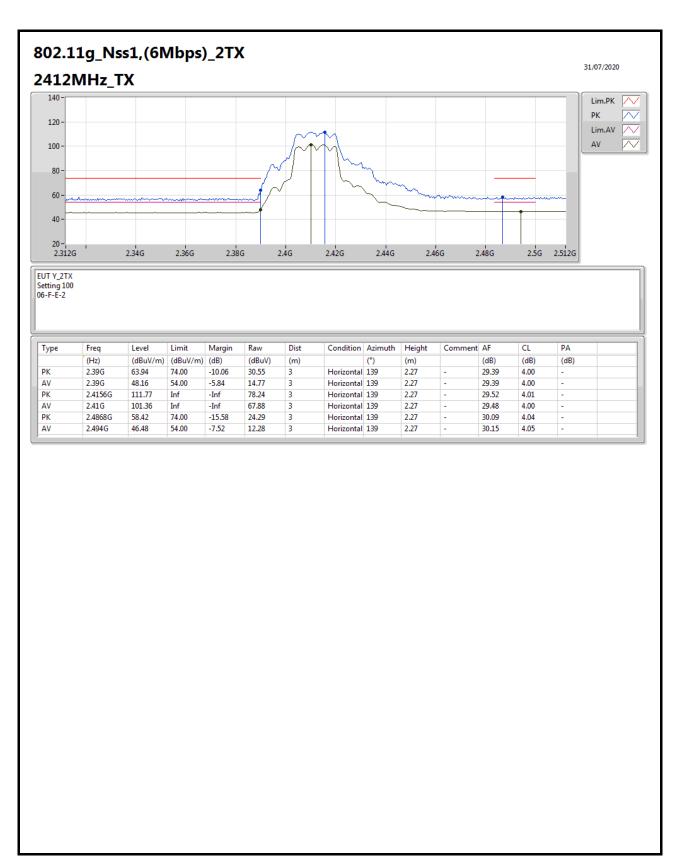




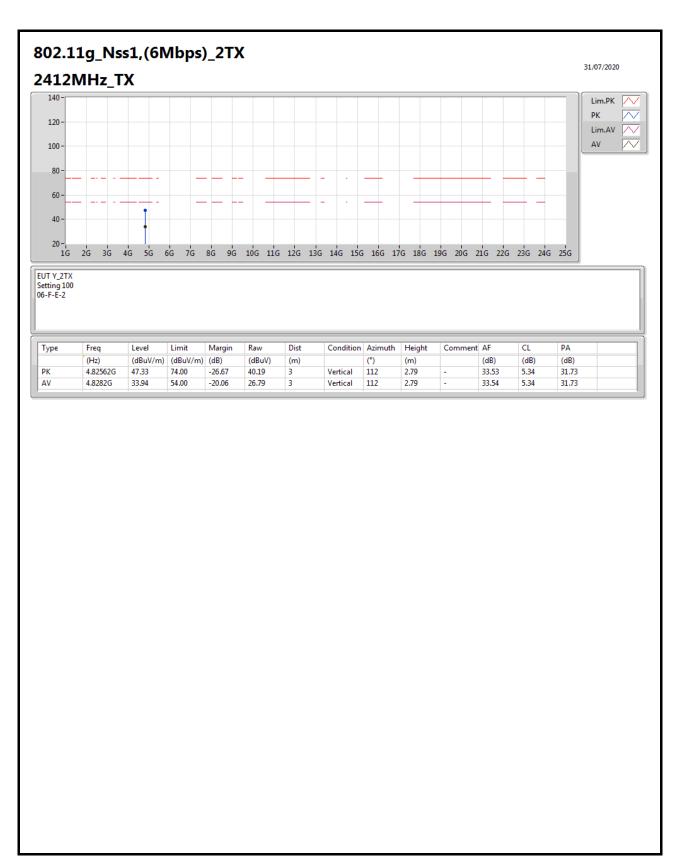




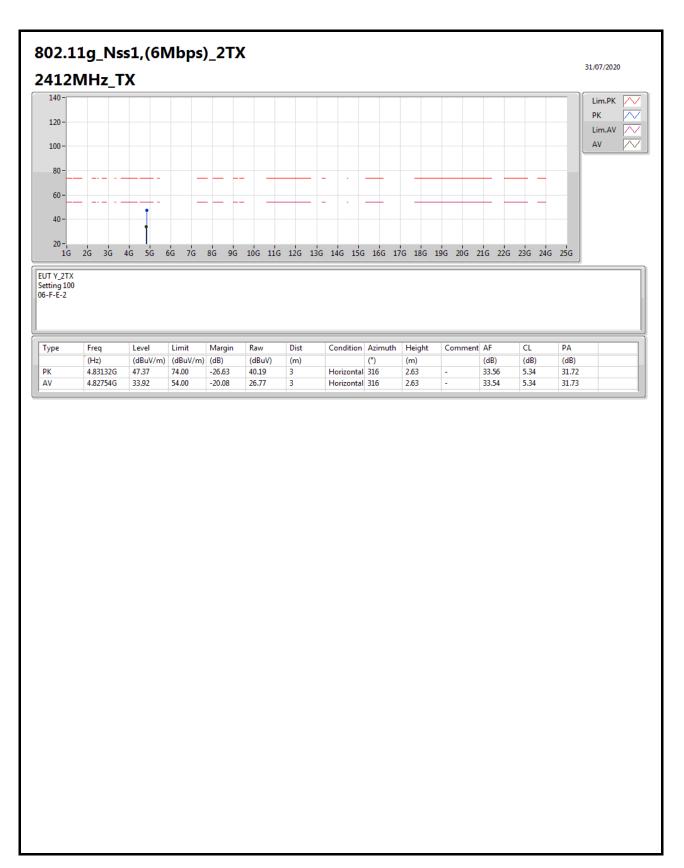




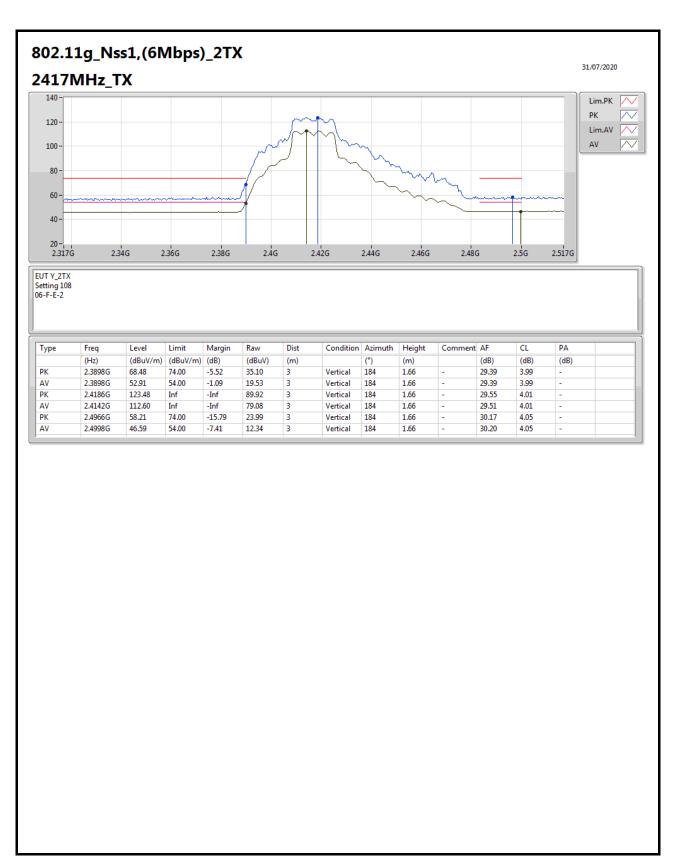




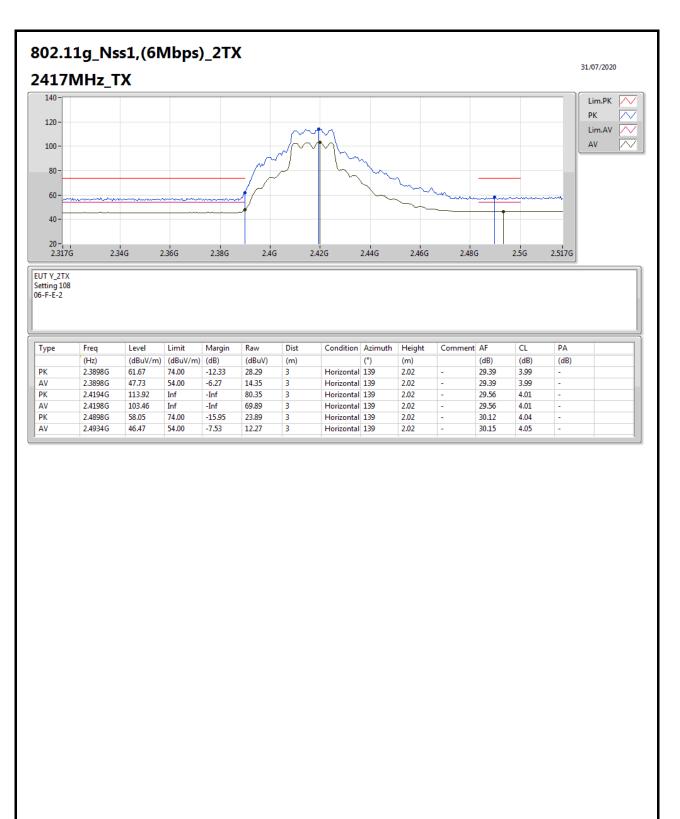




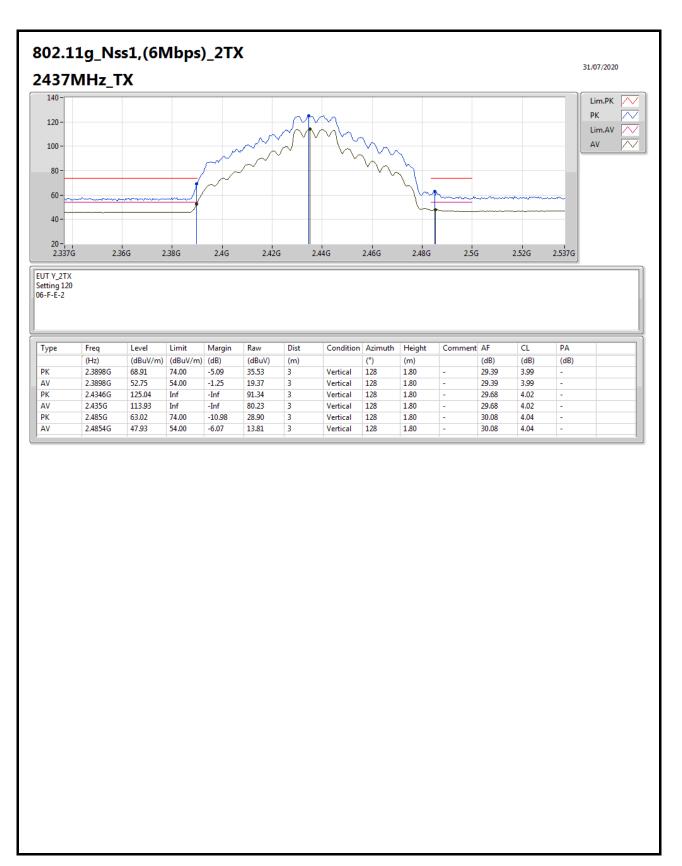




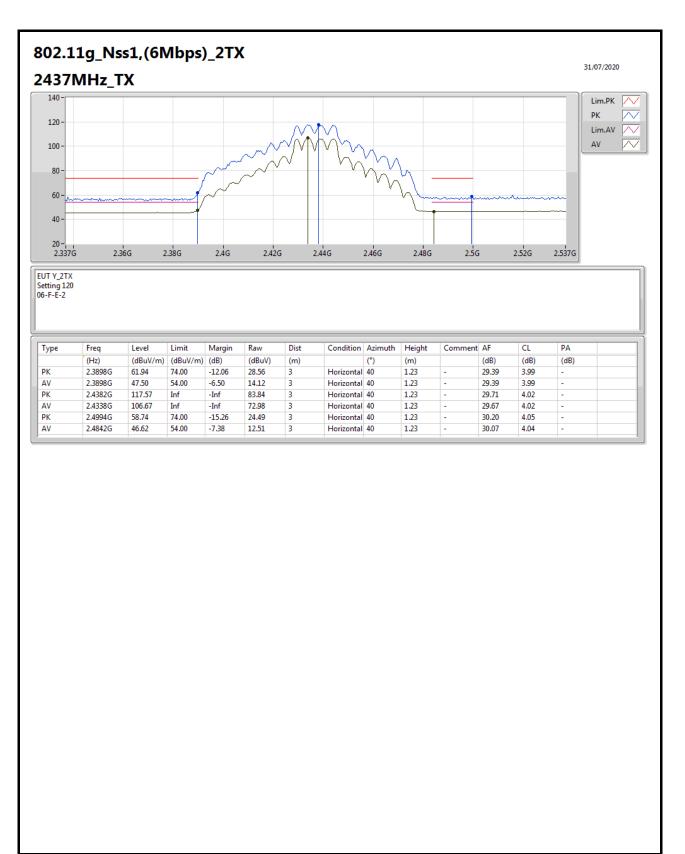




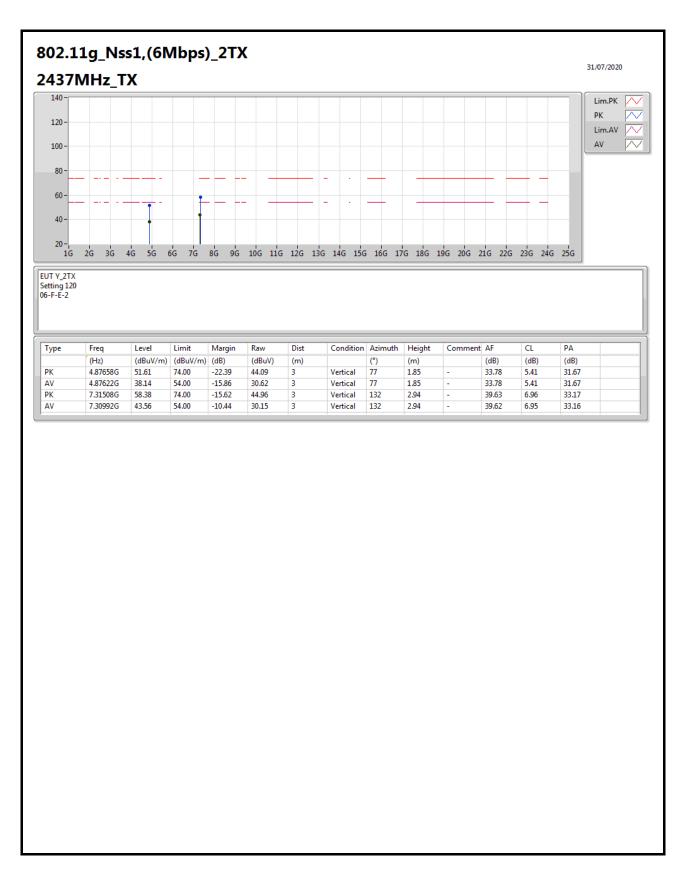




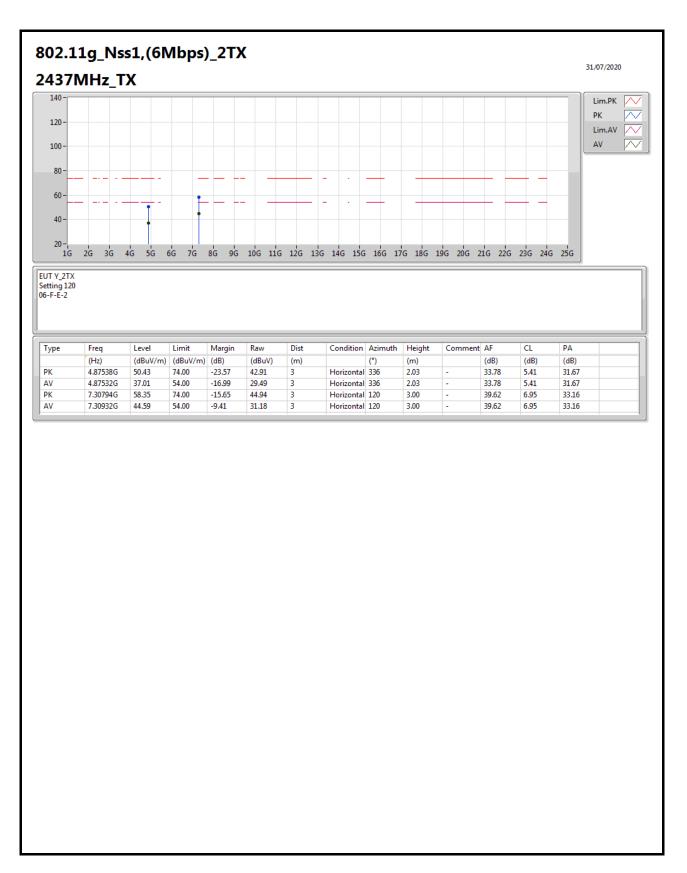




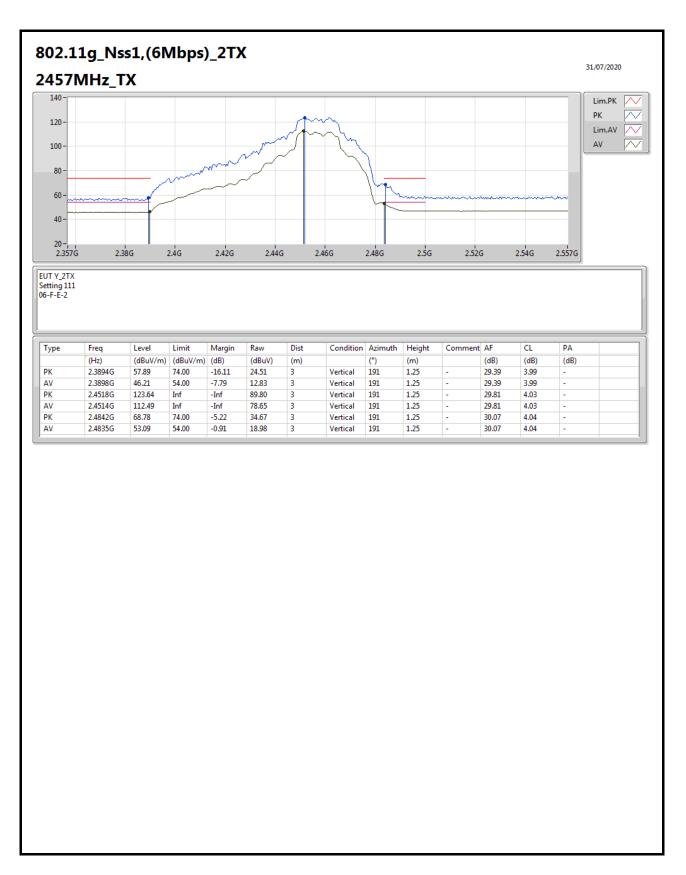




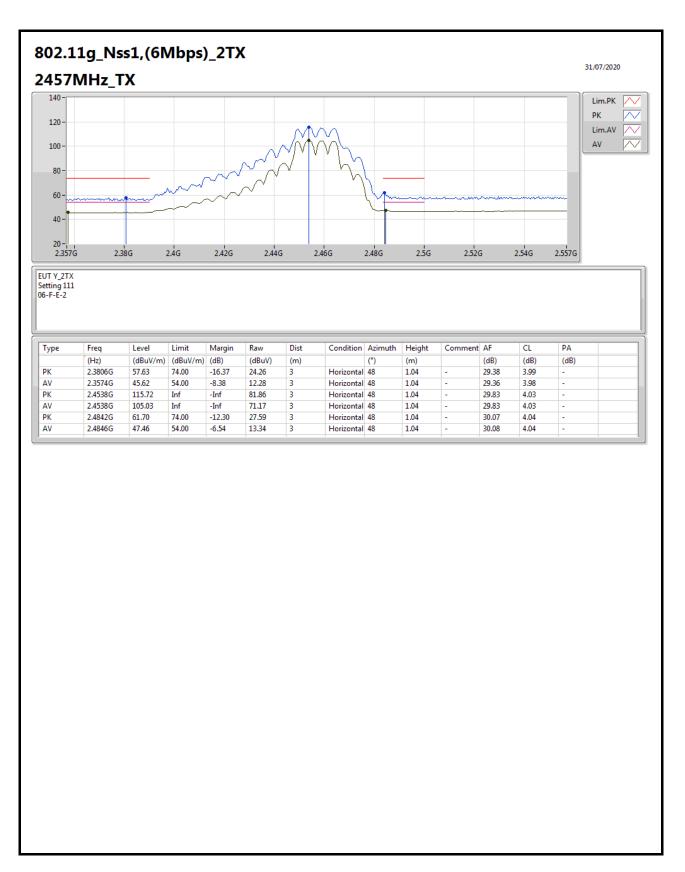




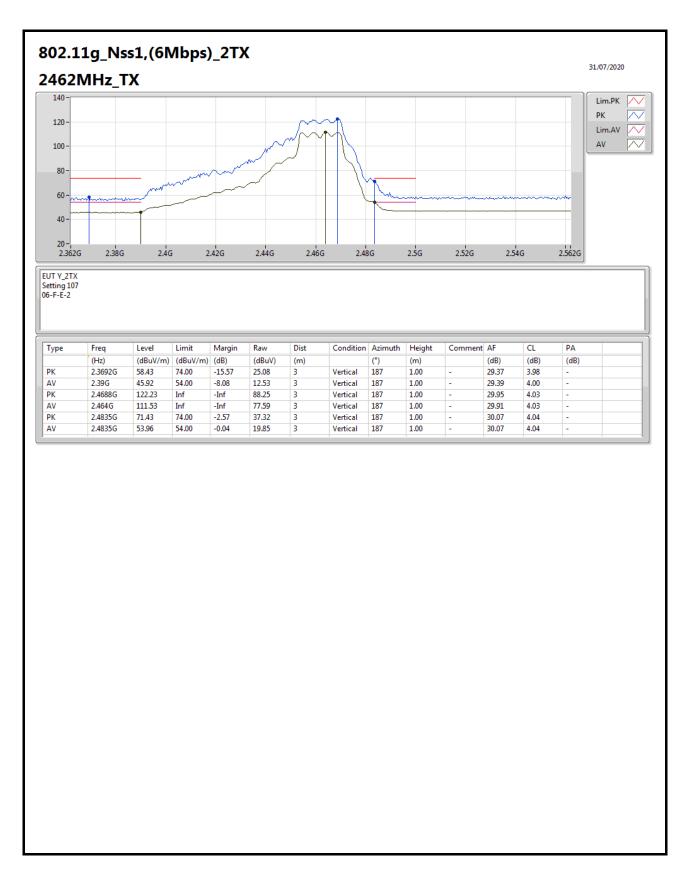




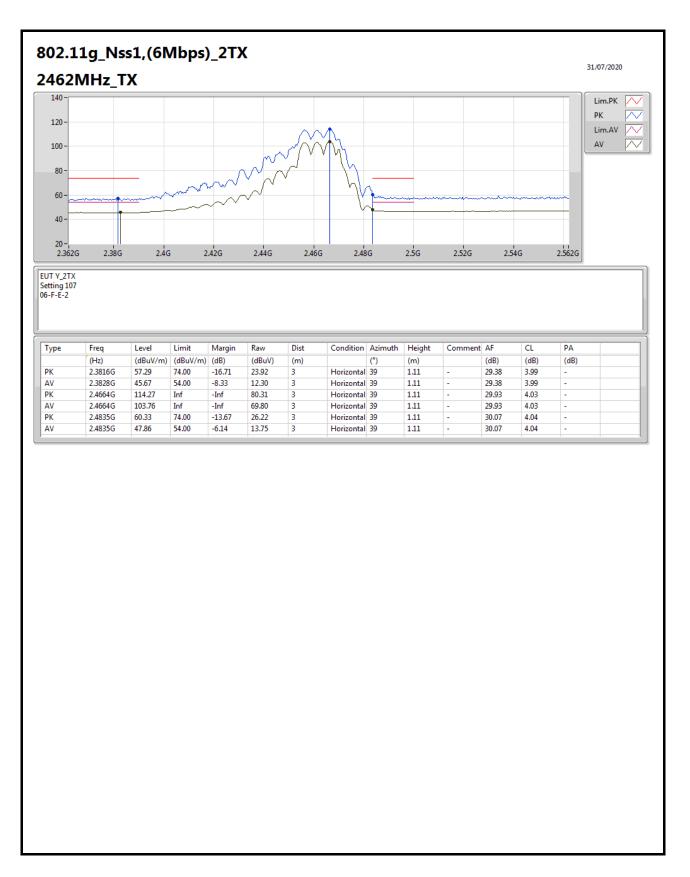




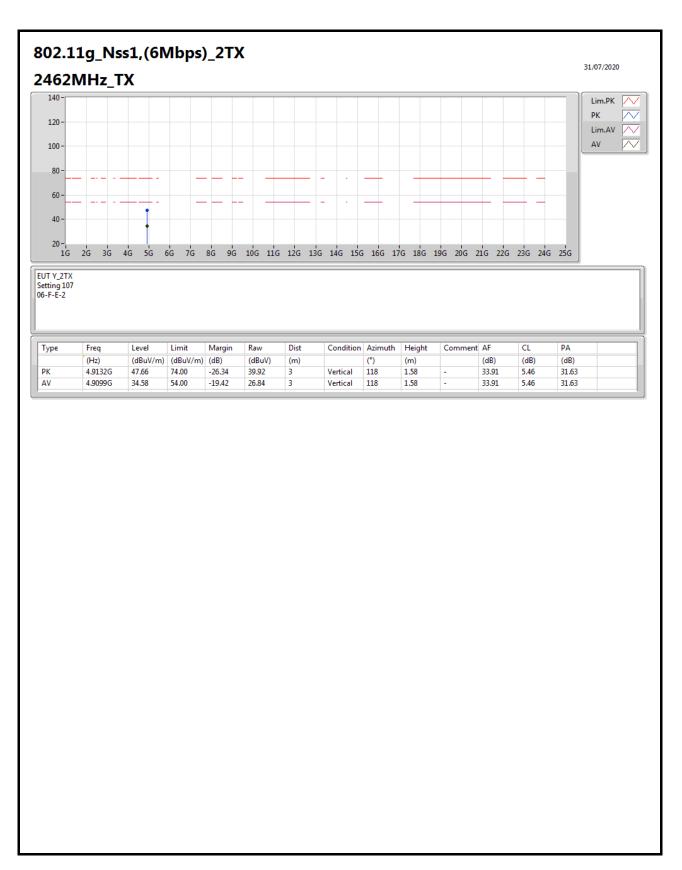




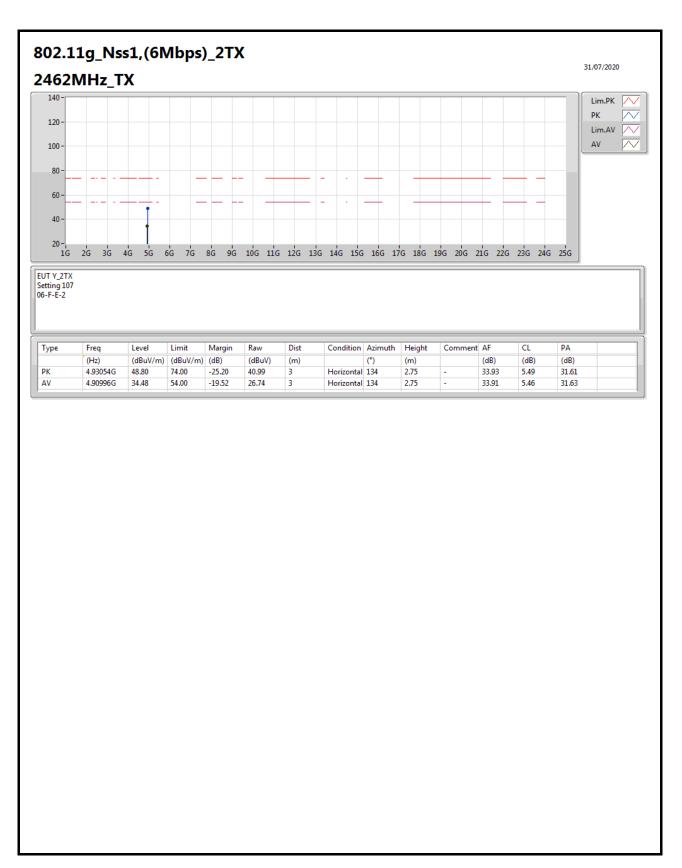




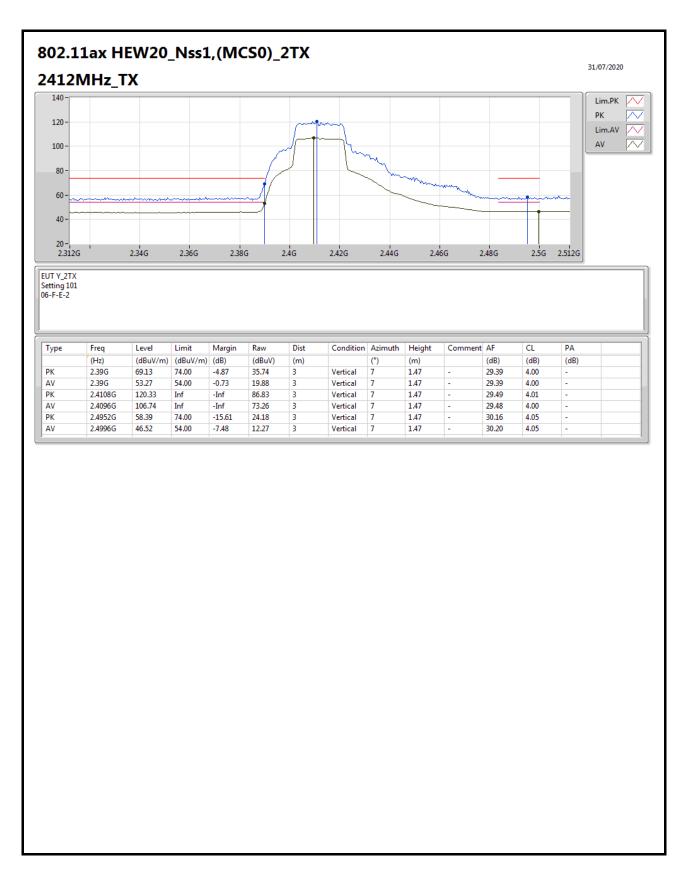




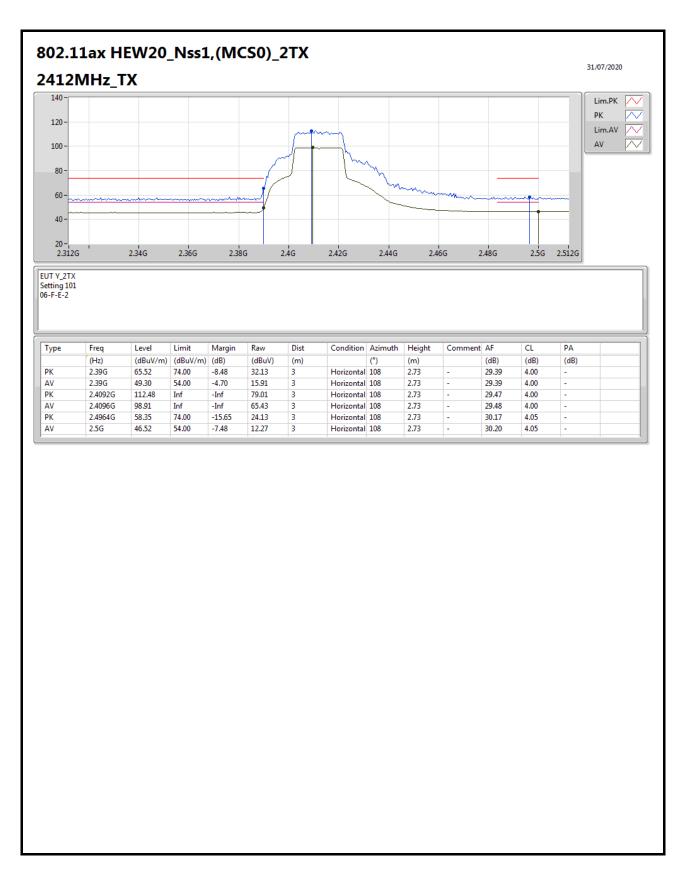




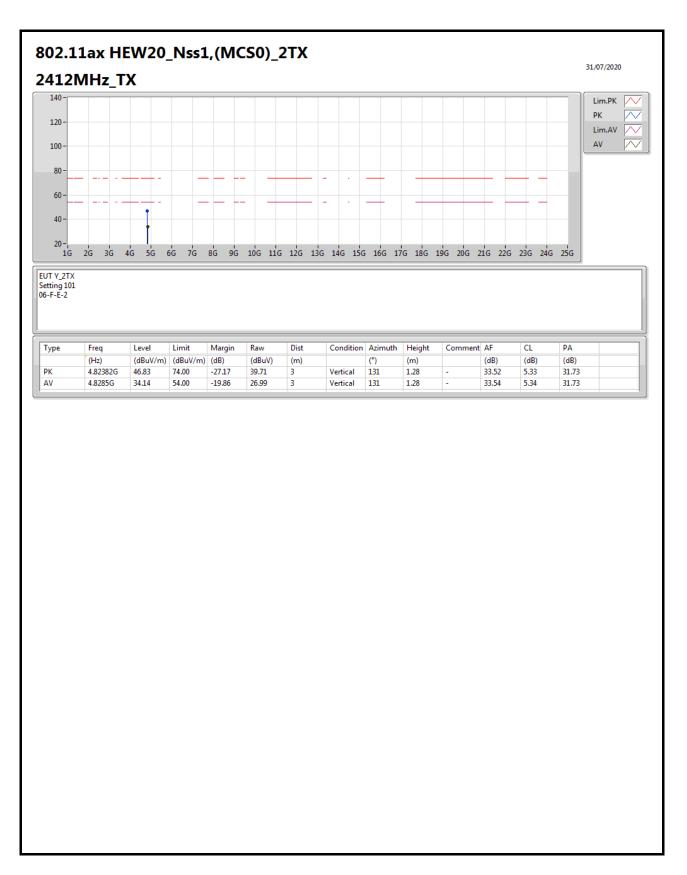




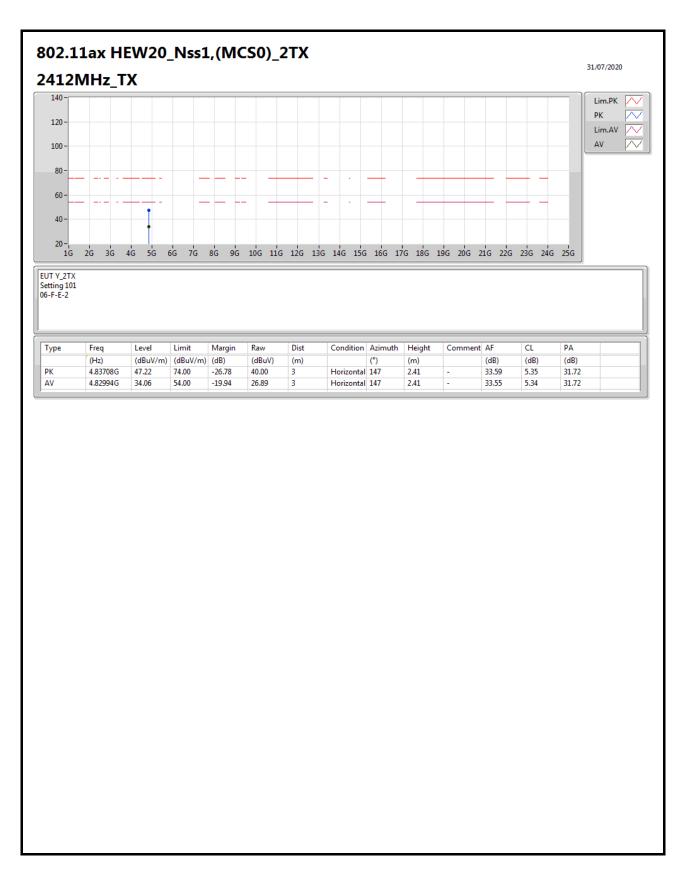




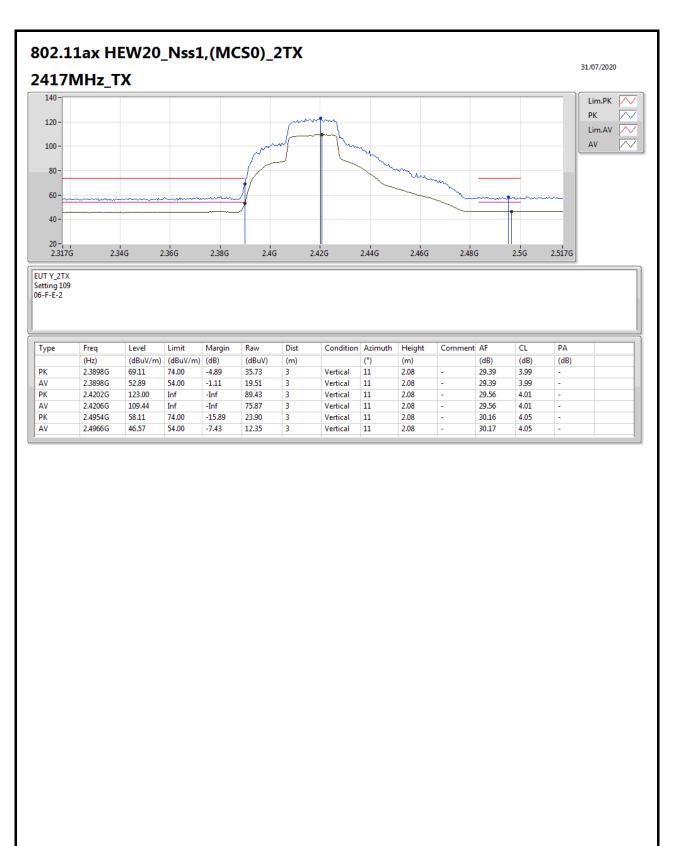




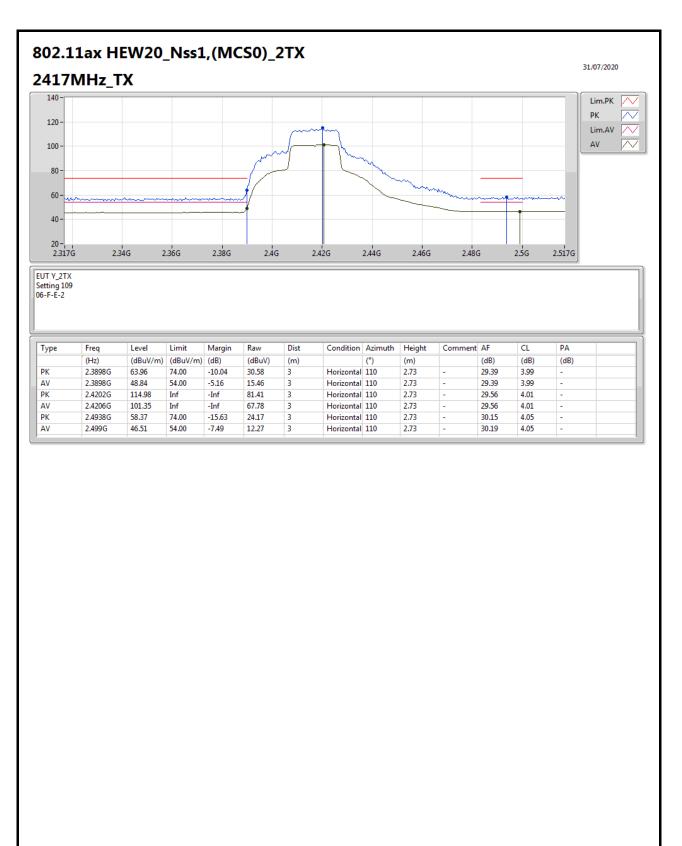




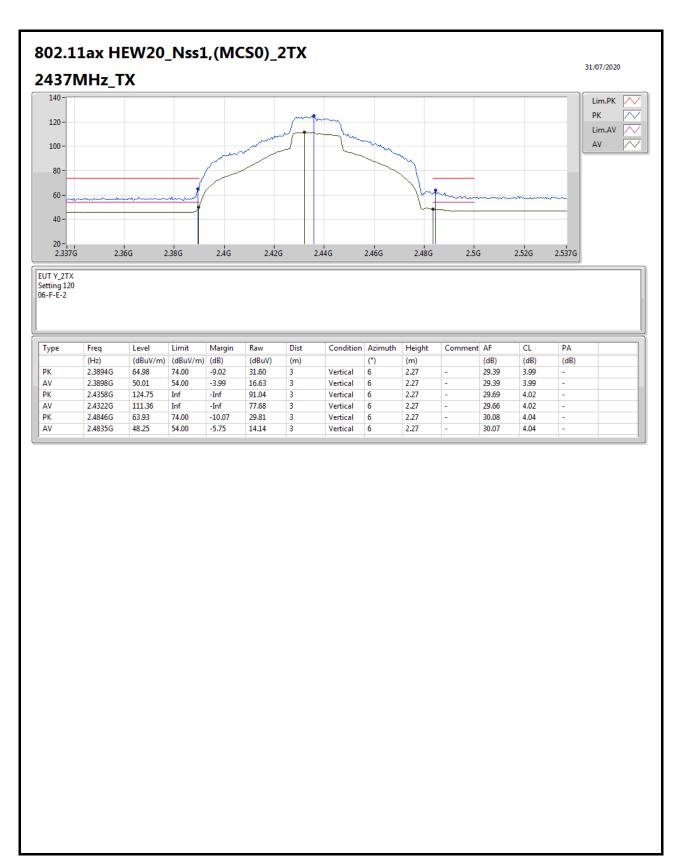






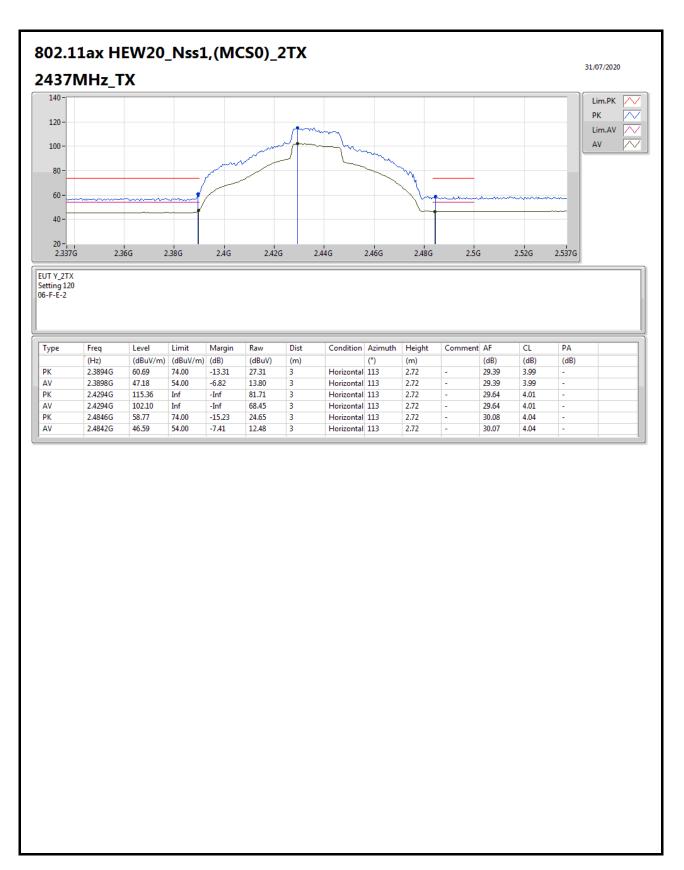




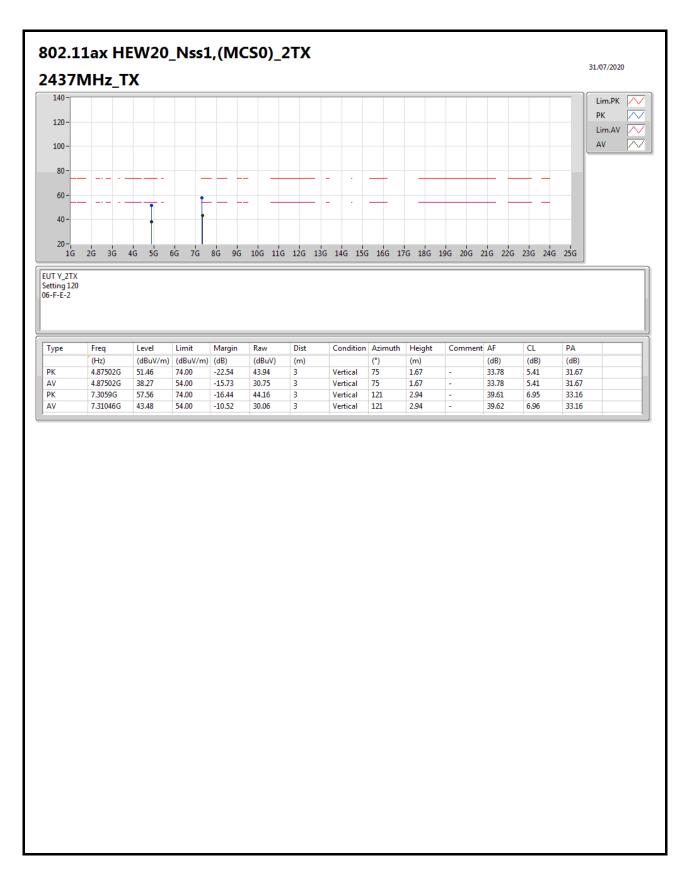




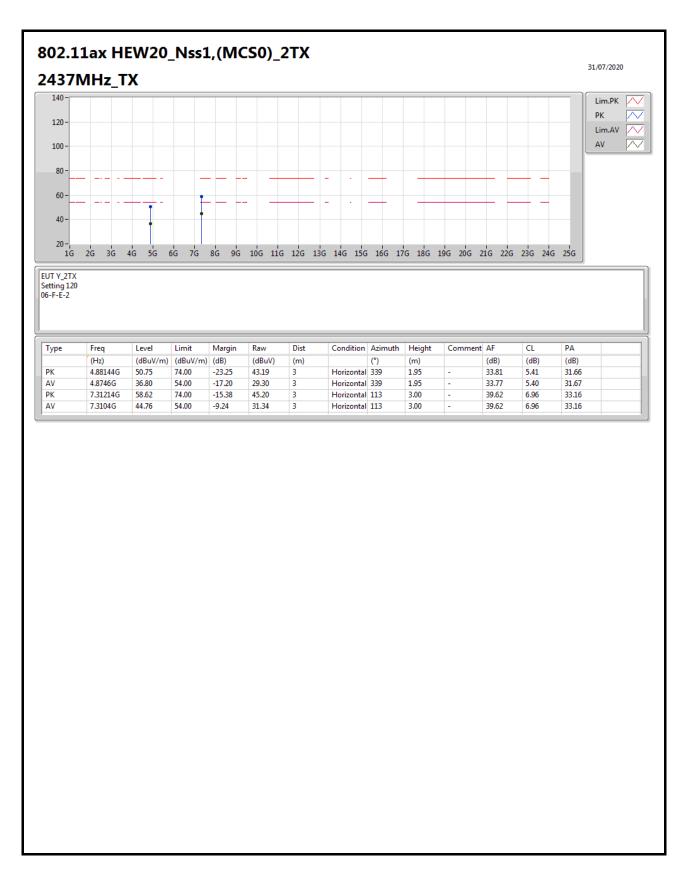
Appendix F.2



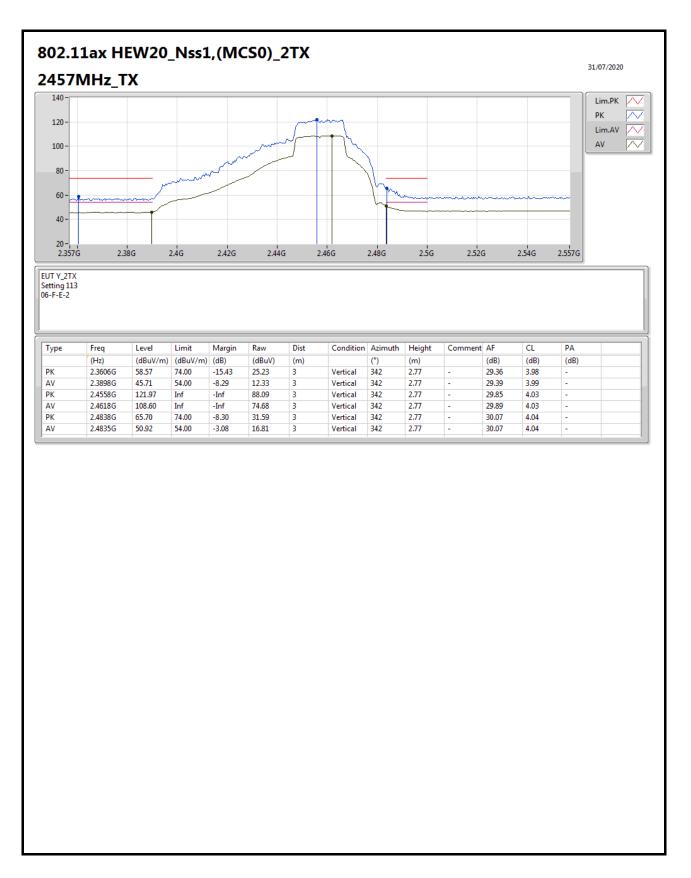




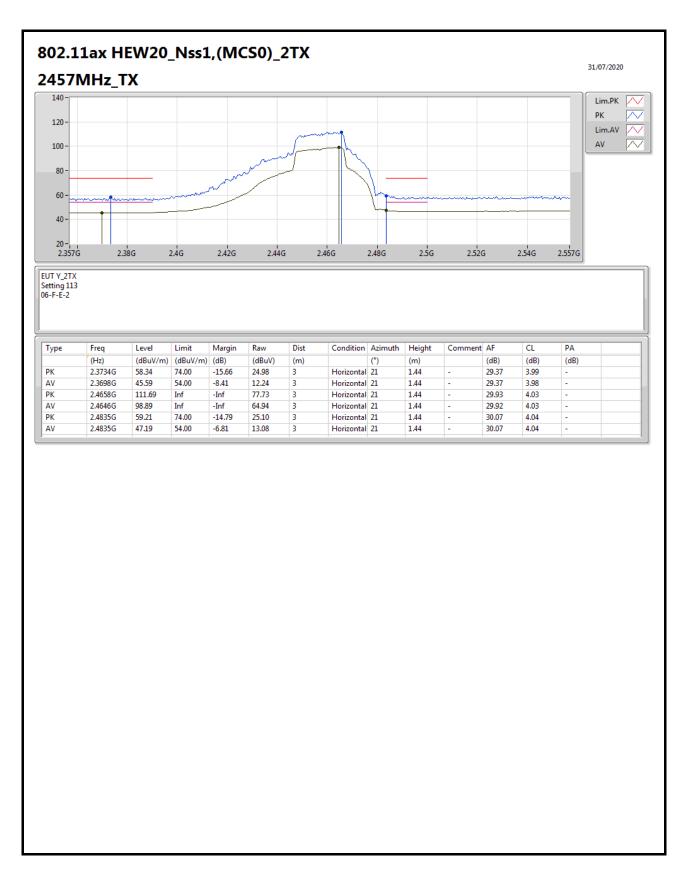




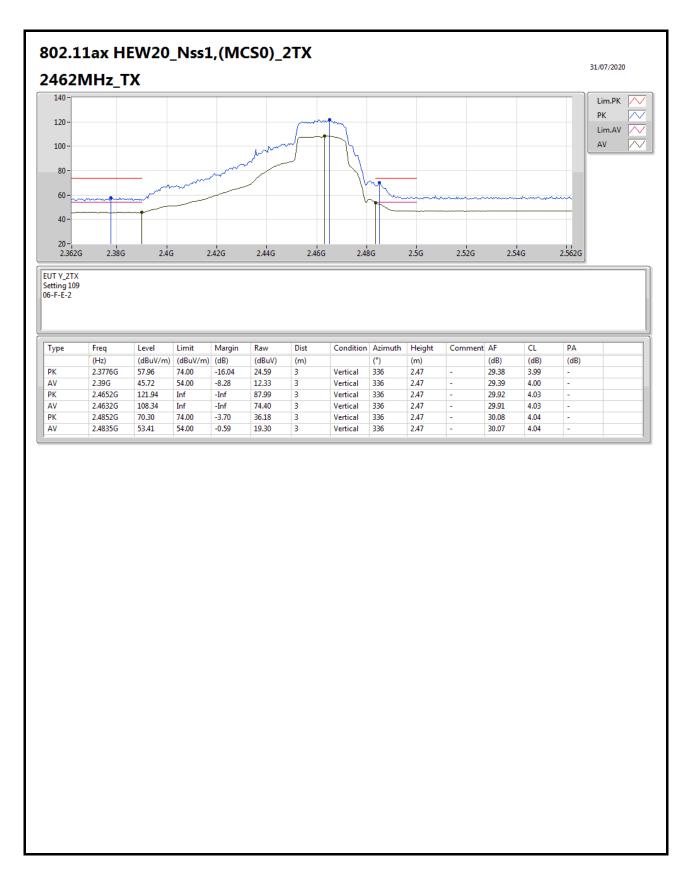




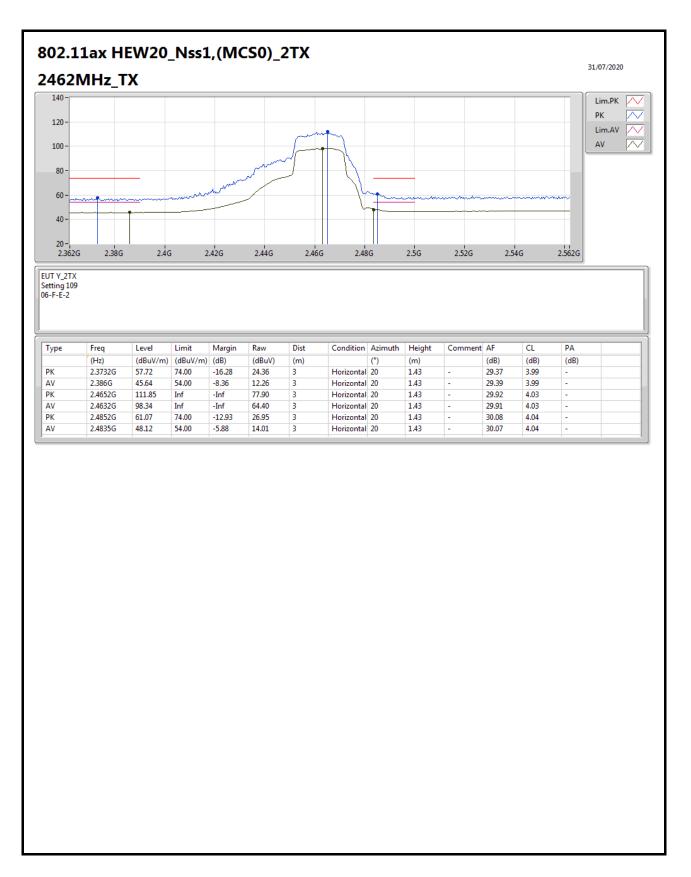




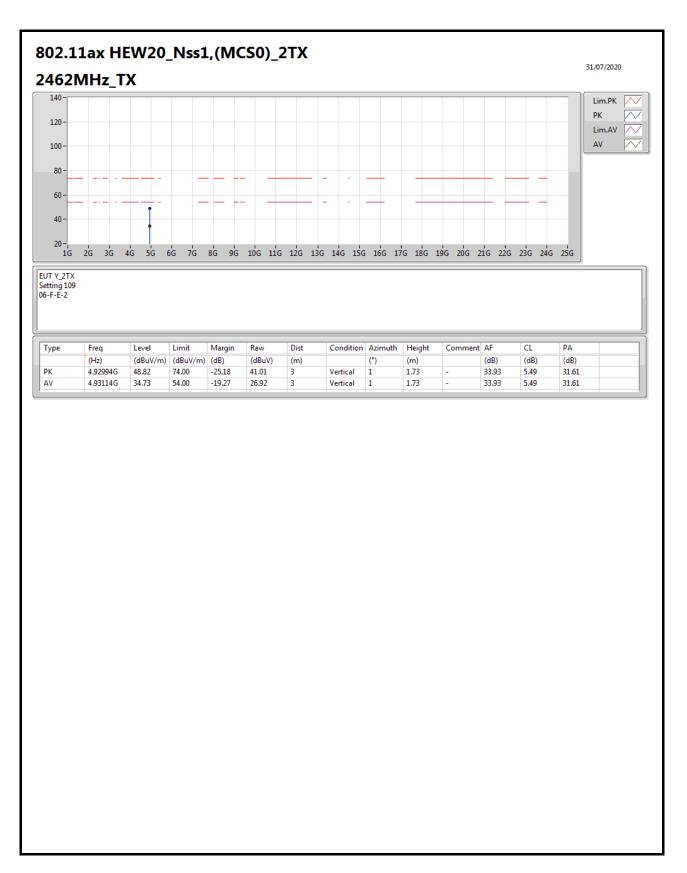




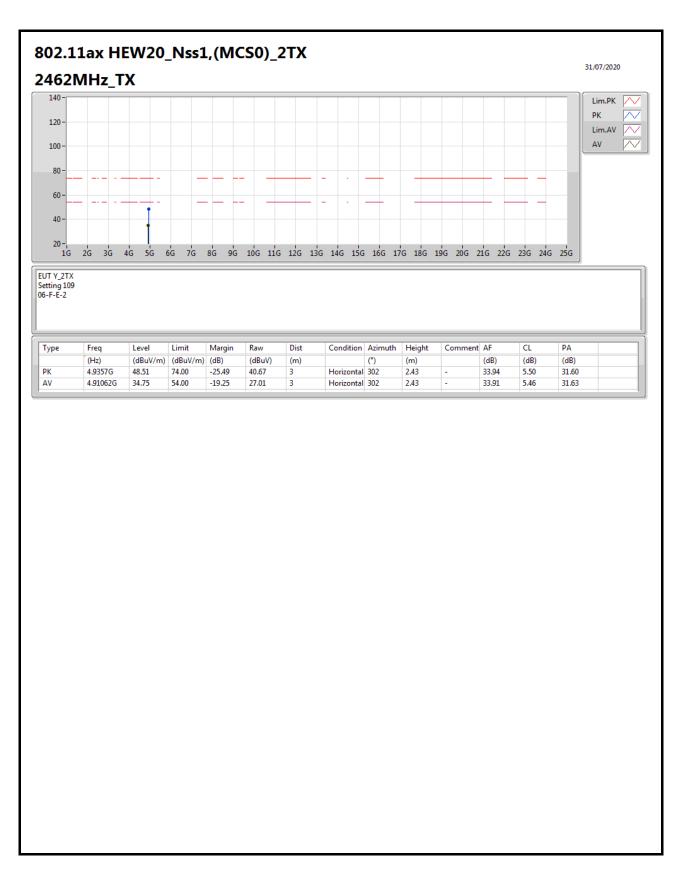




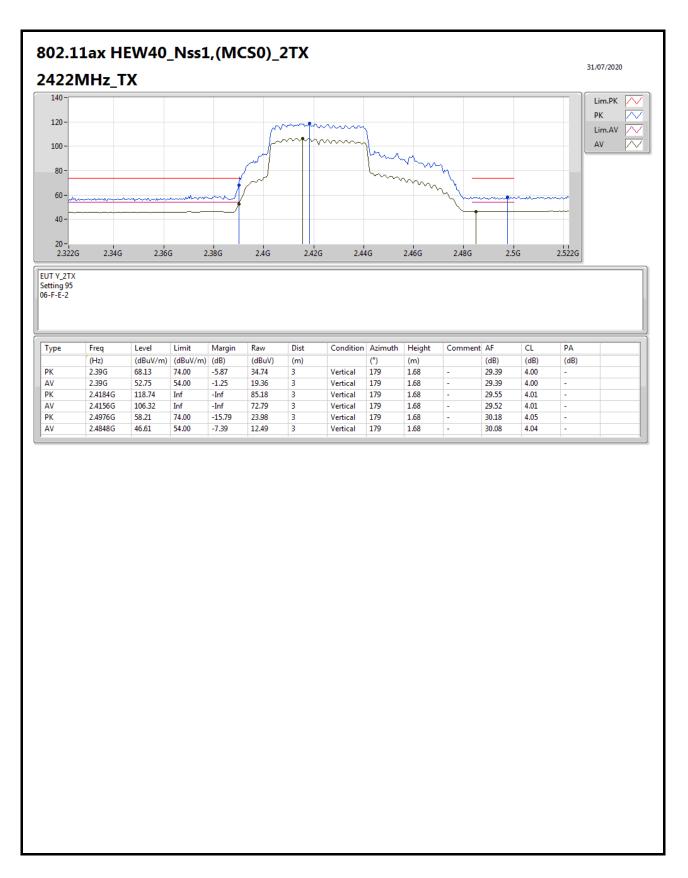




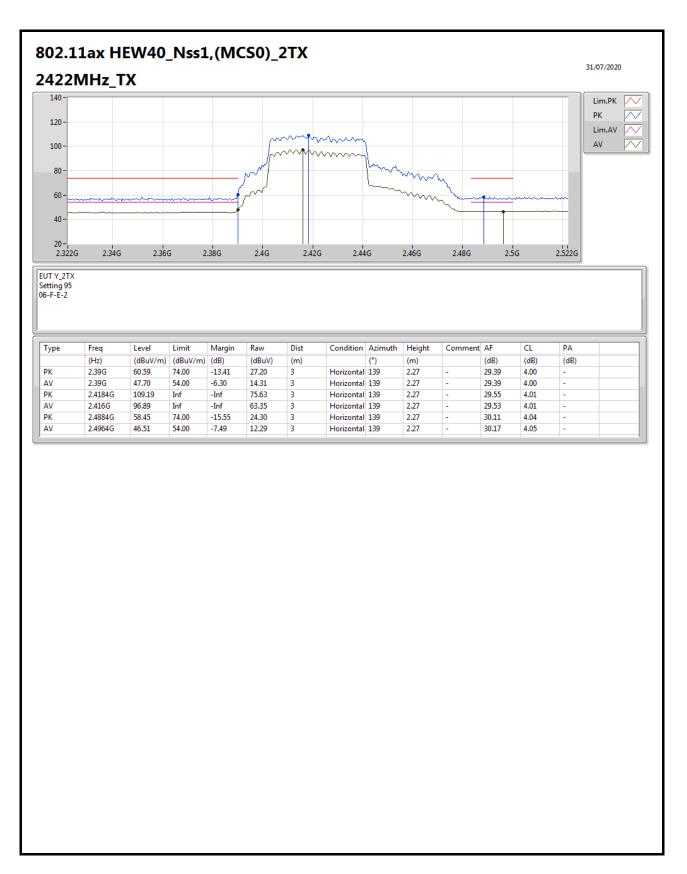




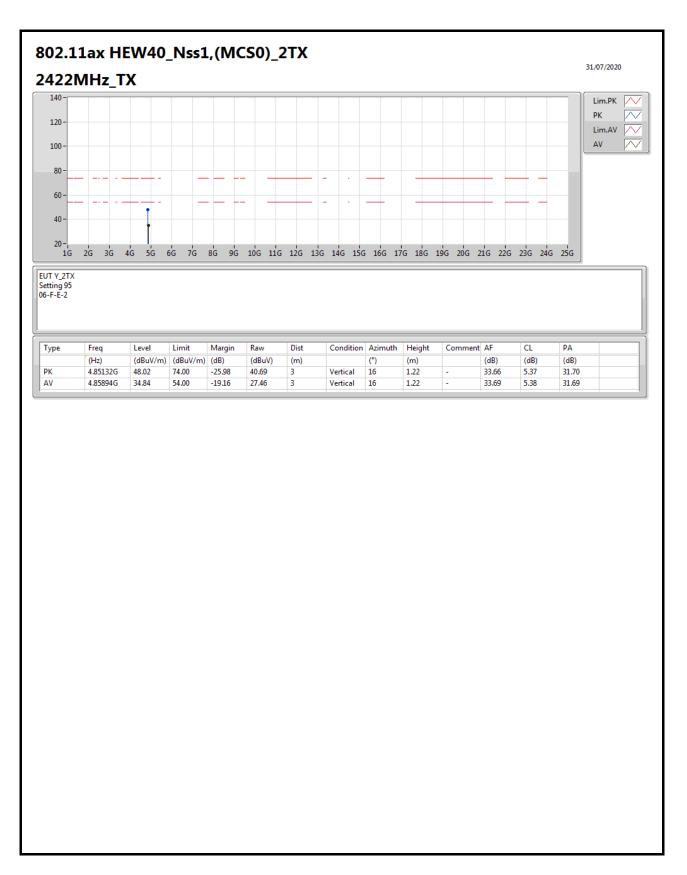




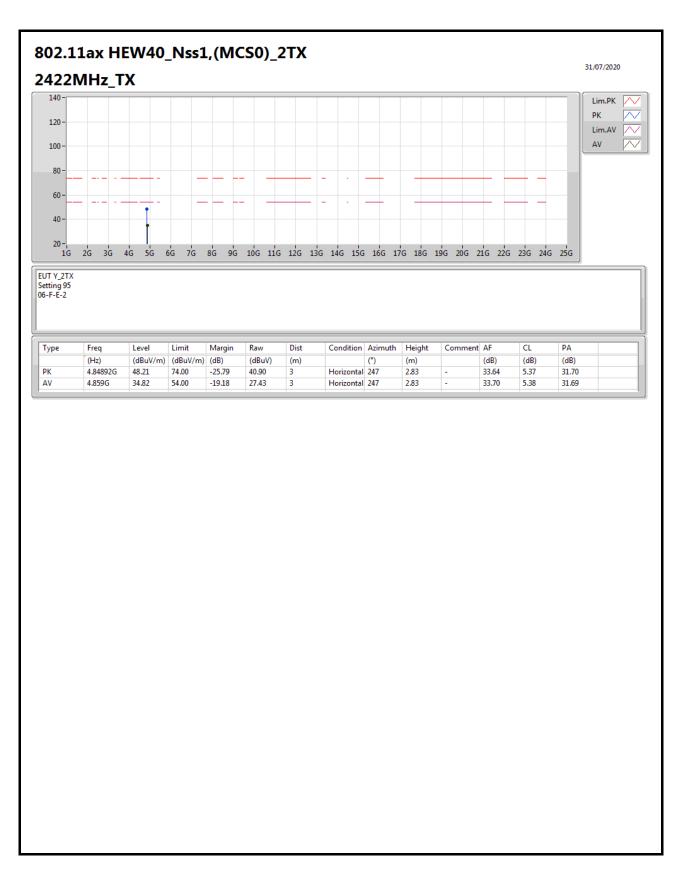




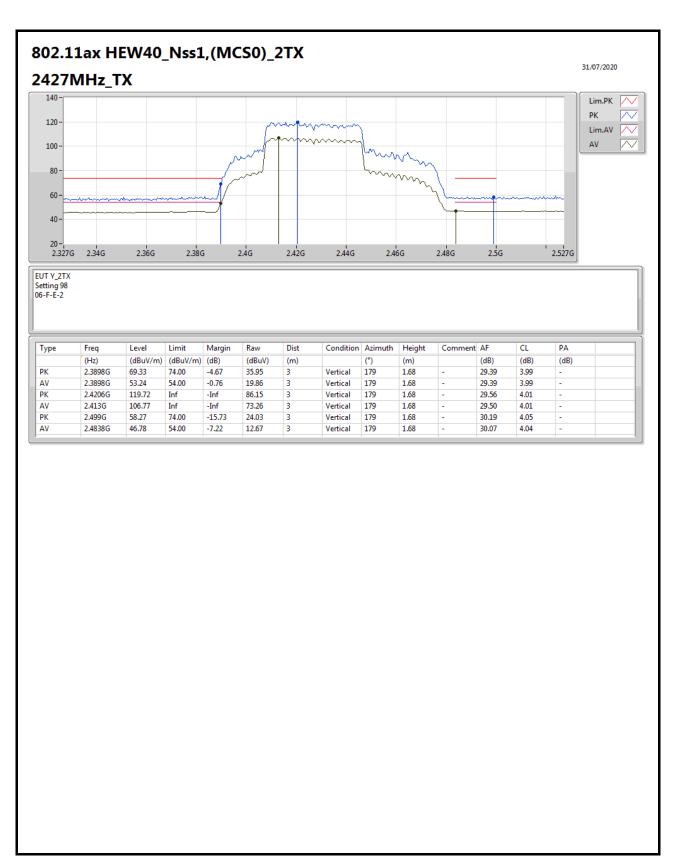






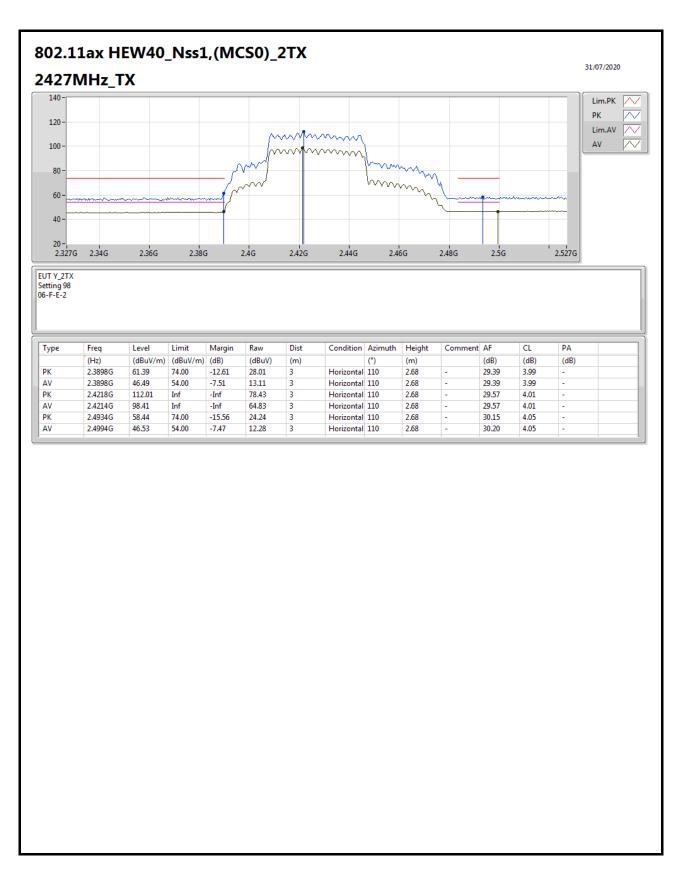




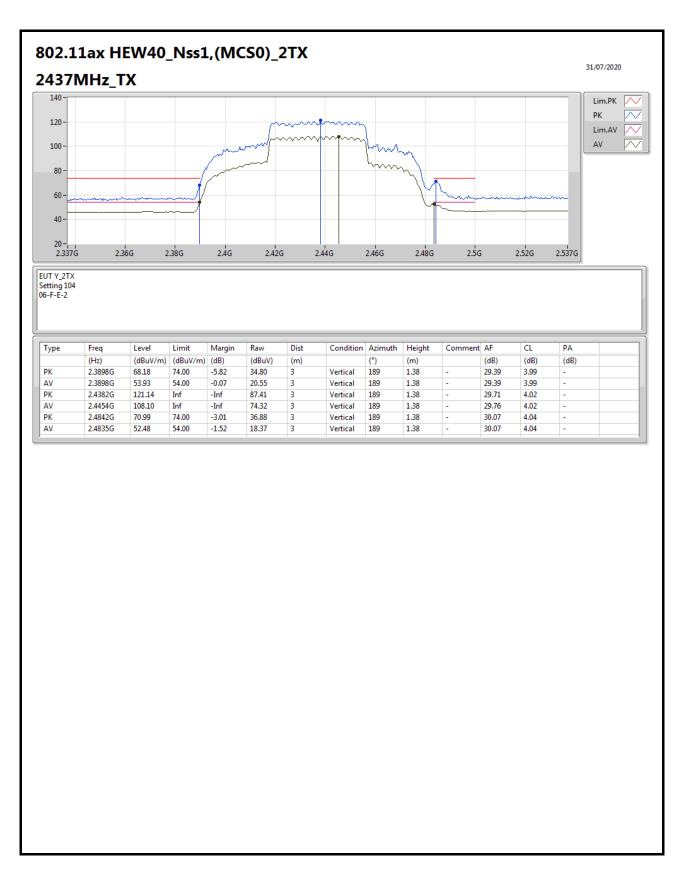




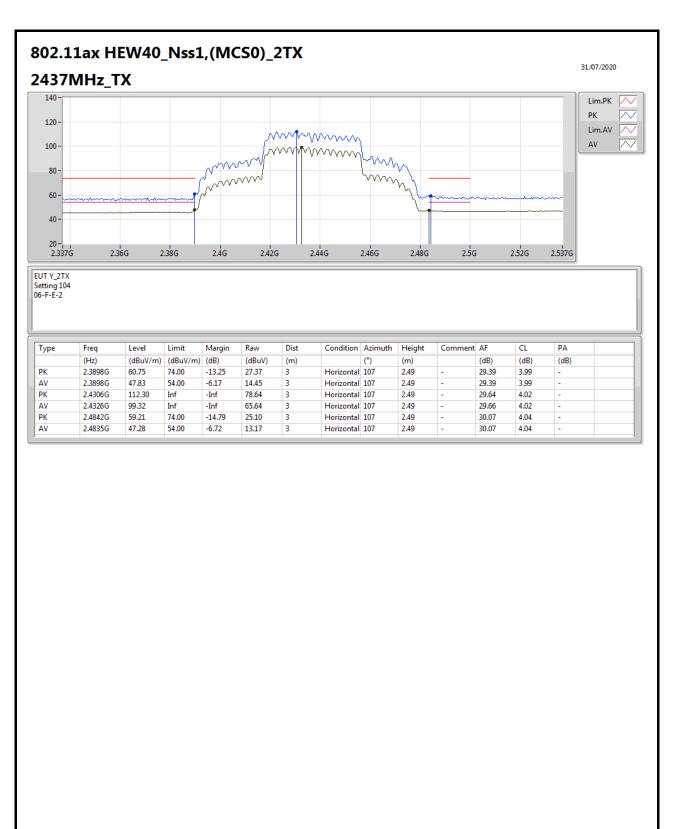
Appendix F.2



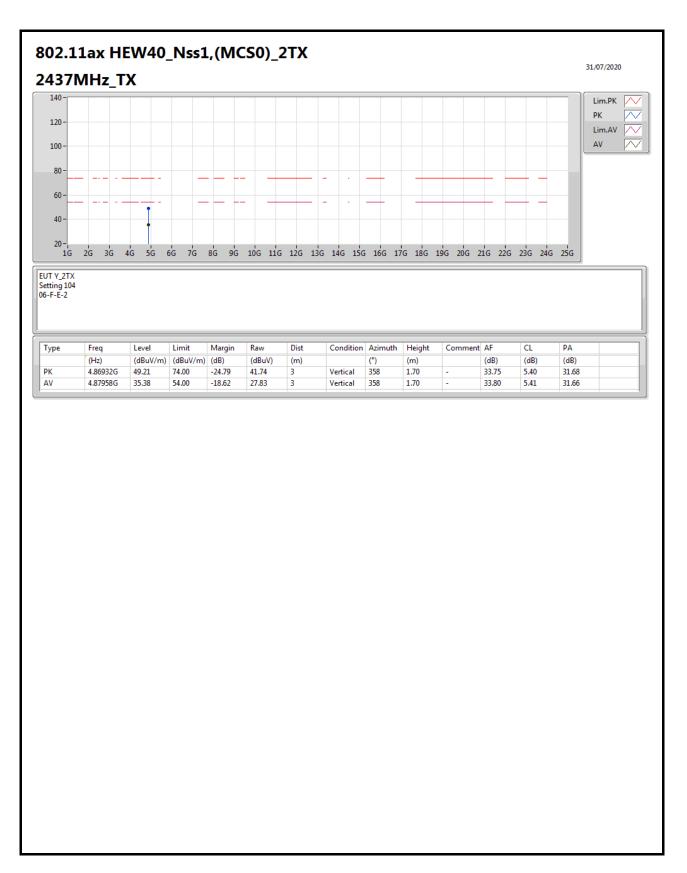




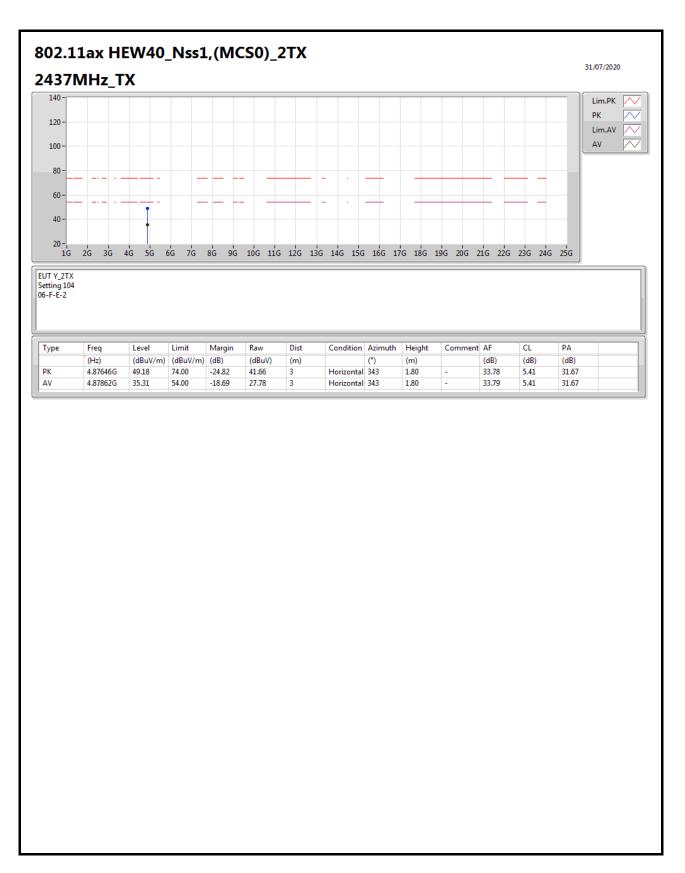




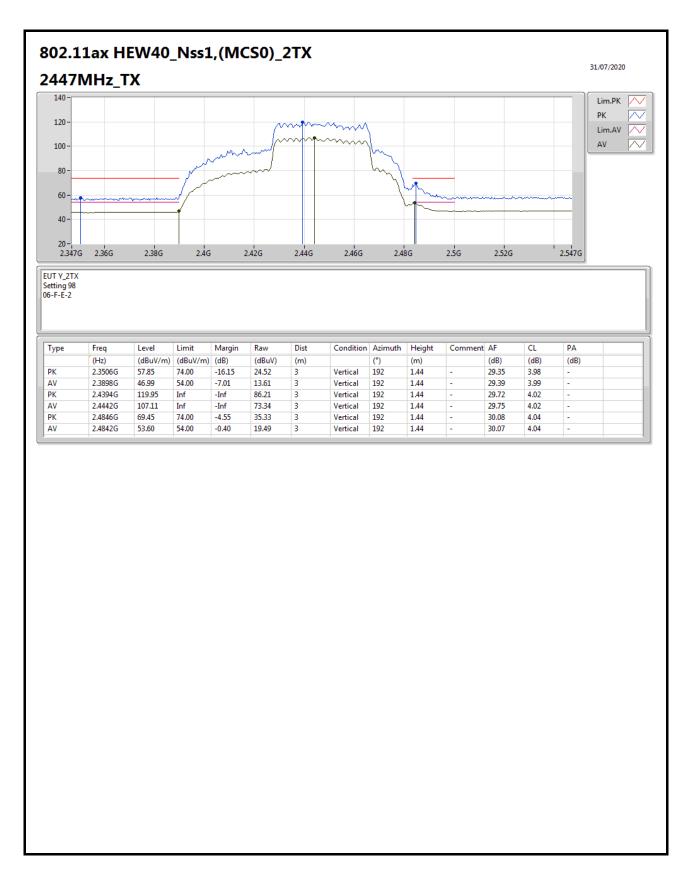




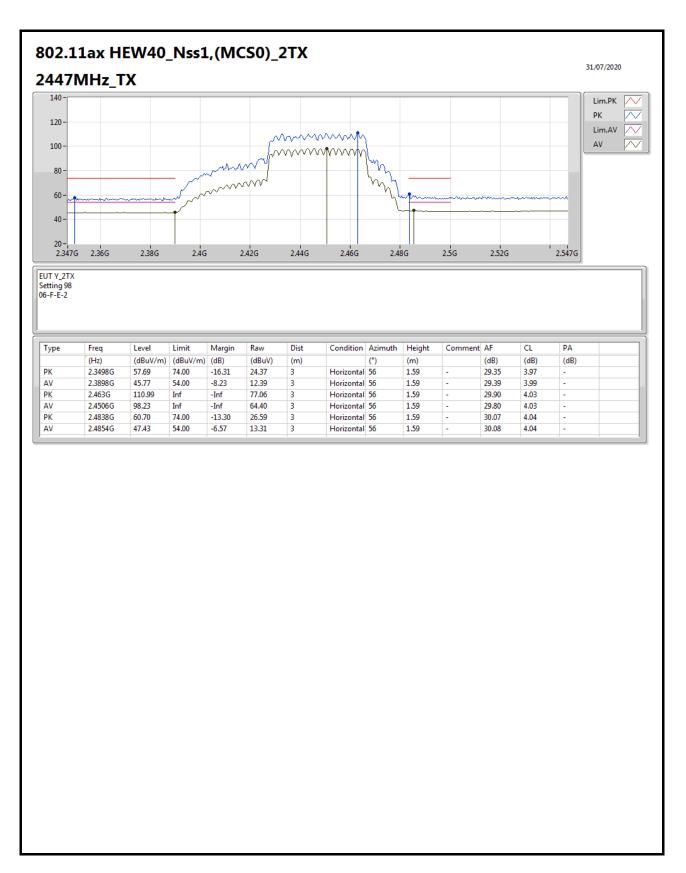




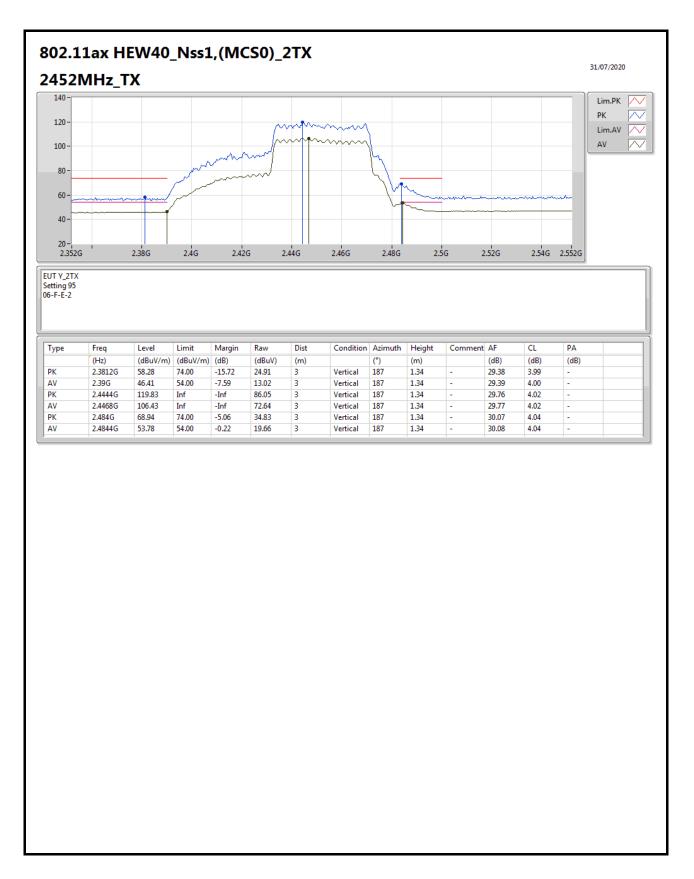




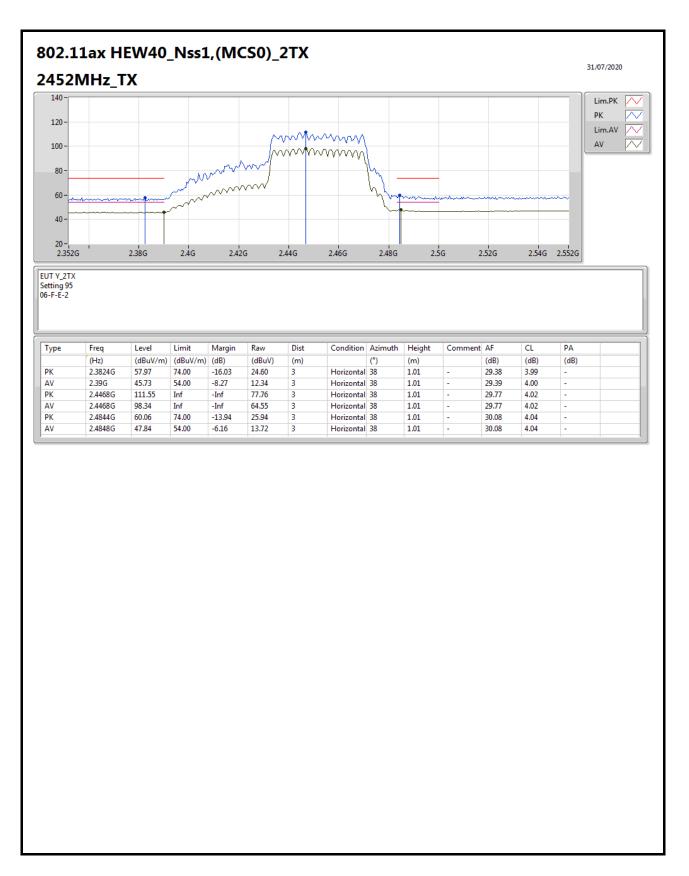




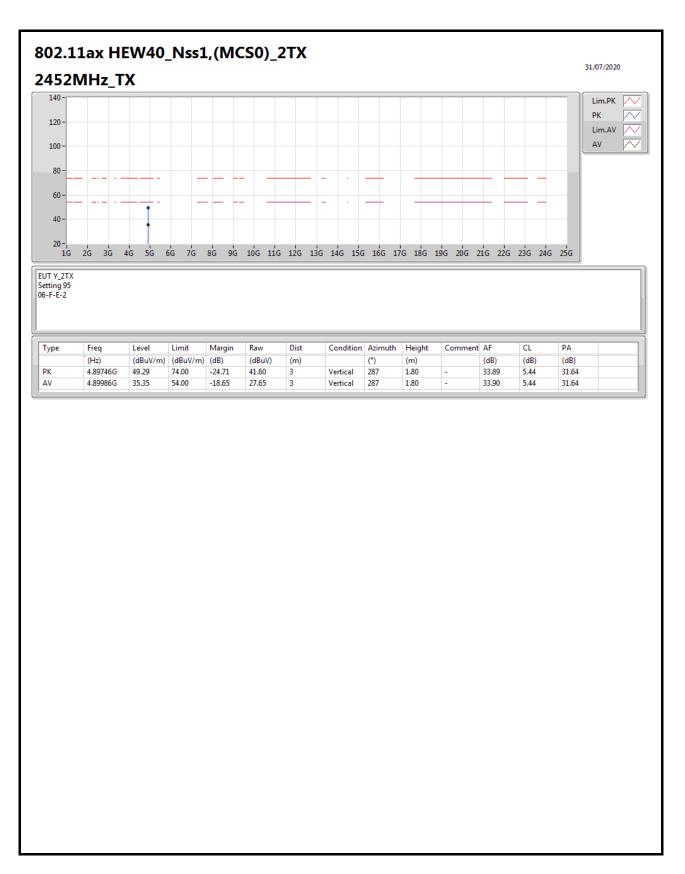




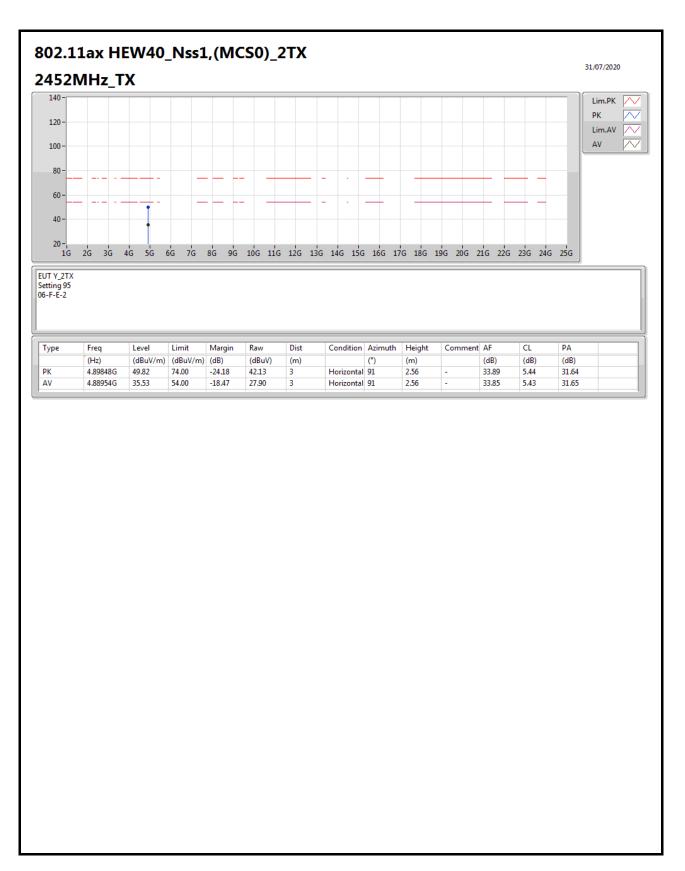














Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 1	Pass	AV	3.663G	48.92	54.00	-5.08	Horizontal



