

Report No. : FR672231-01AA



FCC RADIO TEST REPORT

FCC ID	: TE7WPA8631PV3
Equipment	: AV1300 Gigabit Passthrough Powerline ac Wi-Fi Extender
Brand Name	: tp-link
Model Name	: TL-WPA8631P
Applicant	: 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
Manufacturer	: 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
Standard	: 47 CFR FCC Part 15.247

The product was received on Sep. 07, 2020, and testing was started from Sep. 16, 2020 and completed on Sep. 28, 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 Report Template No.: CB-A10_10 Ver1.2 Page Number : 1 of 28 Issued Date : Oct. 22, 2020 Report Version : 01



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Appendix H. Test Photos

Photographs of EUT v01



History of this test report

Report No.	Version	Description	Issued Date
FR672231-01AA	01	Initial issue of report	Oct. 22, 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: Sandy Chuang



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)	2412-2462	1-11 [11]
2400-2483.5	n (HT40)	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	802.11n HT40	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.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port	Brand	P/N	Antonno Tuno	Connector	Gain	(dBi)
Ant.	FOIL	Dranu	F/N	Antenna Type	Connector	2.4GHz	5GHz
1	1	TP-Link	3101503165	Dipole Antenna	I-PEX	1.5	1.5
2	2	TP-Link	3101503166	Dipole Antenna	I-PEX	1.5	1.5

Note: The above information was declared by manufacturer.

For 2.4GHz function:

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

For IEEE 802.11a/n/ac (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	0.987	0.06	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.914	0.39	1.398m	1k
802.11n HT20	0.954	0.2	2.57m	1k
802.11n HT40	0.918	0.37	1.258m	1k

Note:

• DC is Duty Cycle.

DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From Internal power supply					
Beamforming Function		U With beamforming Without beamforming				
Function	Point-to-multipoint					
Test Software Version	QA	QATool (Version 0.0.2.6)				

Note: The above information was declared by manufacturer.

1.1.5 EUT support function

The EUT supports AP/Master mode, only AP mode mode has been tested and recorded in this test 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	:	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	Caster Chang	22.5-23.8℃ / 52-57%	Sep. 18, 2020~ Sep. 28, 2020
Radiated <below 1ghz="" and="" co-location=""></below>	03CH03-CB	Paul Chen	22.6-23.9 °C / 51-53%	Sep. 16, 2020~ Sep. 18, 2020
Radiated <above 1ghz=""></above>	03CH04-CB	Paul Chen	25.8-26.7 °C / 51-54%	Sep. 16, 2020~ Sep. 18, 2020
AC Conduction	CO01-CB	Wei Li	24~25°C / 56~59%	Sep. 16, 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	23
2417MHz	24
2437MHz	27
2457MHz	27
2462MHz	25
802.11g_Nss1,(6Mbps)_2TX	-
2412MHz	20
2417MHz	27
2437MHz	2A
2457MHz	24
2462MHz	1F
802.11n HT20_Nss1,(MCS0)_2TX	-
2412MHz	1D
2417MHz	25
2437MHz	2A
2457MHz	24
2462MHz	1F
802.11n HT40_Nss1,(MCS0)_2TX	-
2422MHz	17
2427MHz	1B
2437MHz	22
2447MHz	1E
2452MHz	1C



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	The PLC function of EUT with Idle mode	

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 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 CTX			
Y-axis generated the worst result for Emissions in Restricted Frequency Bands <above 1ghz="">, thus measurement will follow this same test configuration.</above>			
1	2.4GHz: Place EUT in Y axis		
2 5GHz: Place EUT in Y axis			
For operating mode 2 is the worst case and it was record in this test report.			
Operating Mode > 1GHz CTX			
The EUT can be placed in follow this same test config	Y-axis and Z-axis. After evaluating, Y-axis was the worst case, so the test will guration.		
1	Place EUT in Y axis		

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		
	st result for Emissions in Restricted Frequency Bands <above 1ghz="">, thus the his same test configuration.</above>	
1	WLAN 2.4GHz + WLAN 5GHz in Y axis	
Refer to Appendix G for Radiated Emission Co-location		

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 in Y axis	
Refer to Sporton Test Report No.: FA672231-01 for Co-location RF Exposure Evaluation.		

EUT Operation during Test 2.3

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link Mode:

During the test, the EUT operation to normal function.

2.4 **Accessories**

N/A

Support Equipment 2.5

For AC Conduction:

	Support Equipment			
No. Equipment Brand Name Model Name FCC ID				
А	LAN NB	DELL	E6430	N/A
В	5G NB	DELL	E6430	N/A
С	2.4G NB	DELL	E6430	N/A
D	Lighting	Philips	N/A	N/A

For Radiated and RF Conducted:

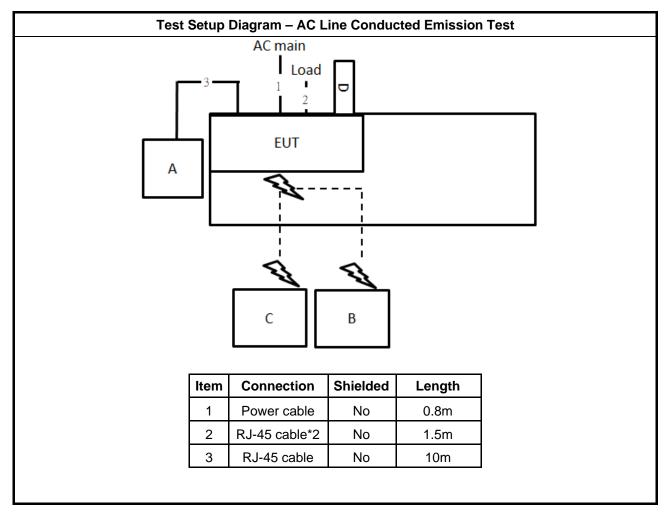
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
А	NB	DELL	E4300	N/A

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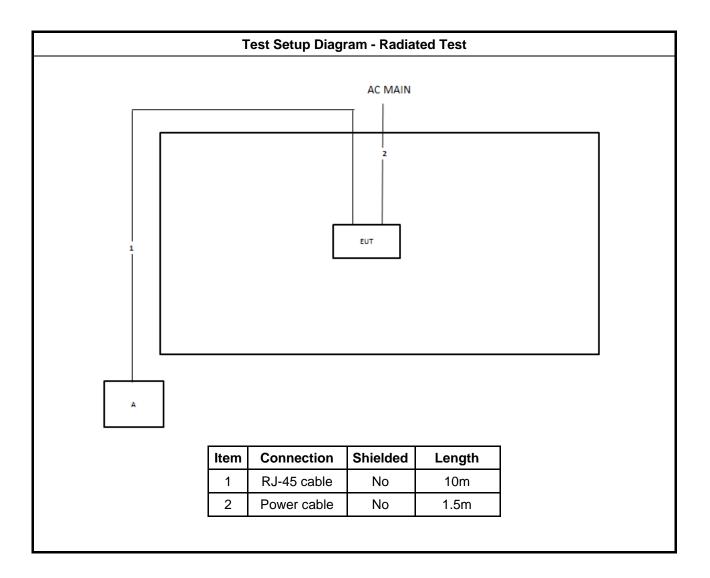
Report Version : 01



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	of the frequency.	

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3.1.2 Measuring Instruments

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

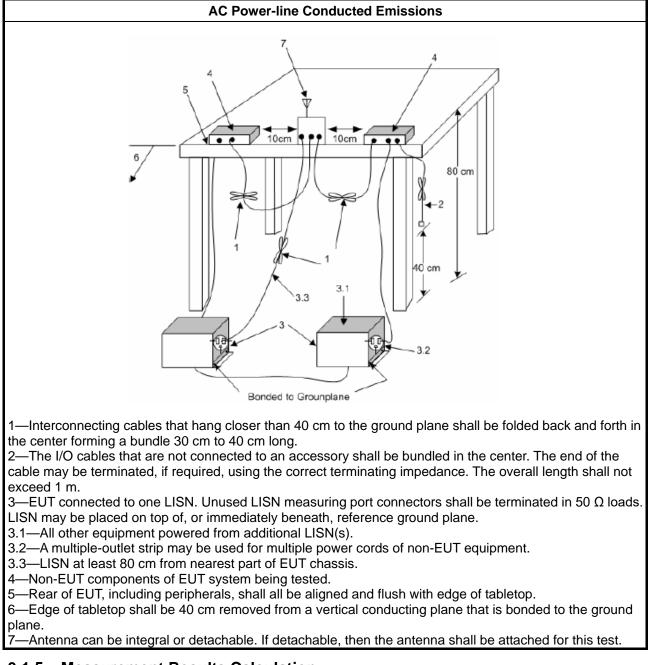
3.1.3 Test Procedures

Test Method

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



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.

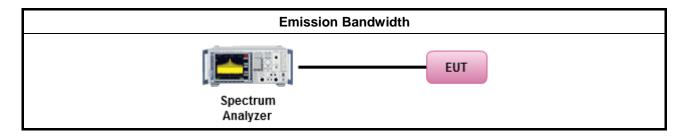
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

 For the emission bandwidth shall be measured using one of the Refer as FCC KDB 558074, clause 8.2 & C63.10 claus measurement. Refer as FCC KDB 558074, clause 8.2 & C63.10 claus measurement. 	Test Method			
measurement. Refer as FCC KDB 558074, clause 8.2 & C63.10 clause	 For the emission bandwidth shall be measured using one of the options below: 			
	e 11.8.1 Option 1 for 6 dB bandwidth			
	e 11.8.2 Option 2 for 6 dB bandwidth			
Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidt	h 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

aximum Conducted Output Power Limit

•	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

 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.

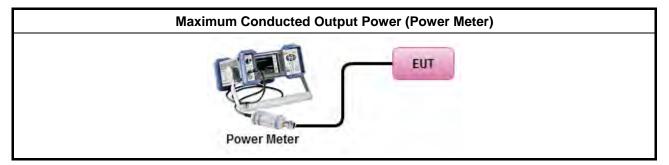


3.3.3 Test Procedures

		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).
•	Мах	imum Conducted Output Power
	[dut	y 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	asurement 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).
	\boxtimes	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

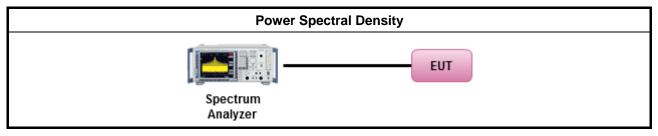
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

	Test Method								
-	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	Refe	er as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.						
•	For	cond	ucted measurement.						
	•	lf Th	ne EUT supports multiple transmit chains using options given below:						
		\boxtimes	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

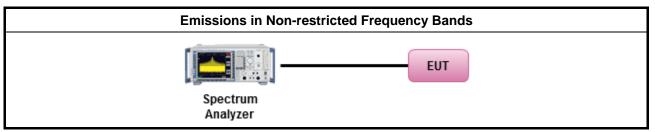
Refer a test equipment and calibration data table in this test report.

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

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

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

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

3.6.2 Measuring Instruments

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

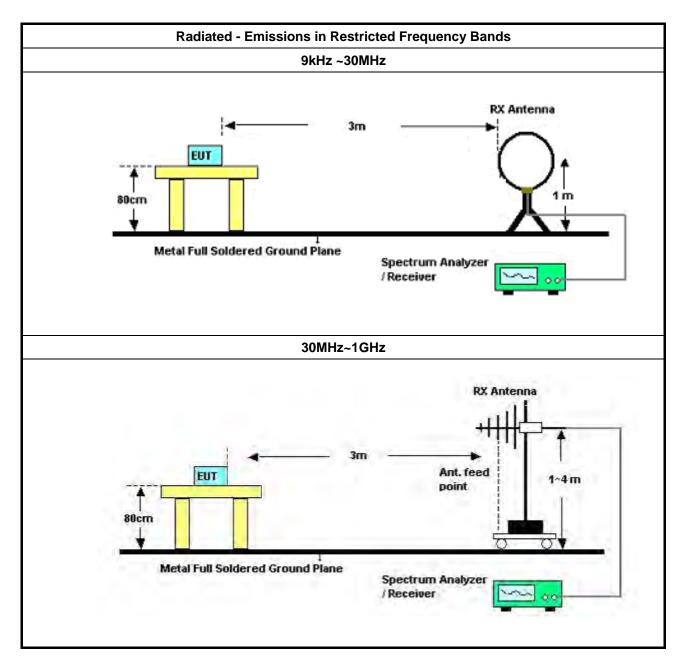


3.6.3 Test Procedures

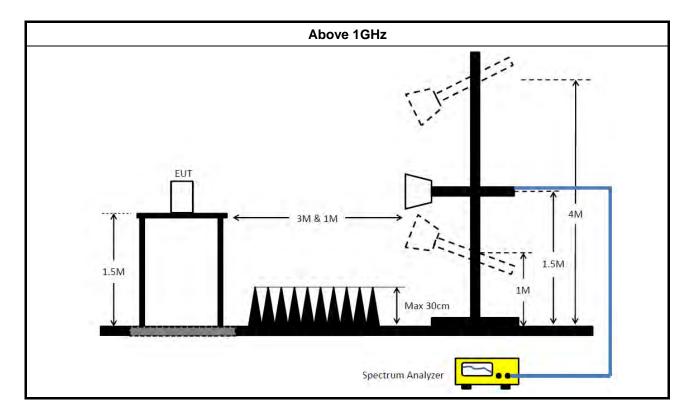
	Test Method									
•	The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].									
•	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.									
•	 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	Radiation (03CH03-CB)
Bilog Antenna with 6 dB attenuator	Schaffner	CBL6112B & N-6-06	2928 & AT-N0607	20MHz ~ 2GHz	Feb. 28, 2020	Feb. 27, 2021	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8447D	2944A10259	9kHz ~ 1.3GHz	Jan. 15, 2020	Jan. 14, 2021	Radiation (03CH03-CB)
Spectrum Analyzer	R&S	FSP40	100019	9kHz ~ 40GHz	Jun. 09, 2020	Jun. 08, 2021	Radiation (03CH03-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH03-CB)
RF Cable-low	Woken	RG402	Low Cable-02+29	25MHz ~ 1GHz	Jul. 28, 2020	Jul. 27, 2021	Radiation (03CH03-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8449B	3008A02097	1GHz ~ 26.5GHz	Jul. 03, 2020	Jun. 02, 2021	Radiation (03CH03-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-20+29	1GHz ~ 18GHz	Jul. 28, 2020	Jul. 27, 2021	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-29	1GHz ~ 18GHz	Jul. 28, 2020	Jul. 27, 2021	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH03-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH03-CB)
Horn Antenna	ETS • Lindgren	3115	00143147	750MHz~18GHz	Oct. 22, 2019	Oct. 21, 2020	Radiation (03CH04-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 (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz ~ Jul. 14, 2020 26.5GHz		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	9kHz~40GHz Dec. 18, 2019		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)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Jul. 27, 2020	Jul. 26, 2021	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1531343	300MHz~40GHz	Aug. 04, 2020	Aug. 03, 2021	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1728001	300MHz~40GHz	Aug. 04, 2020	Aug. 03, 2021	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-3	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 26.5 GHz	Oct. 07, 2019	Oct. 06, 2020	Conducted (TH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH02-CB)

Note: Calibration Interval of instruments listed above is one year. NCR means Non-Calibration required.



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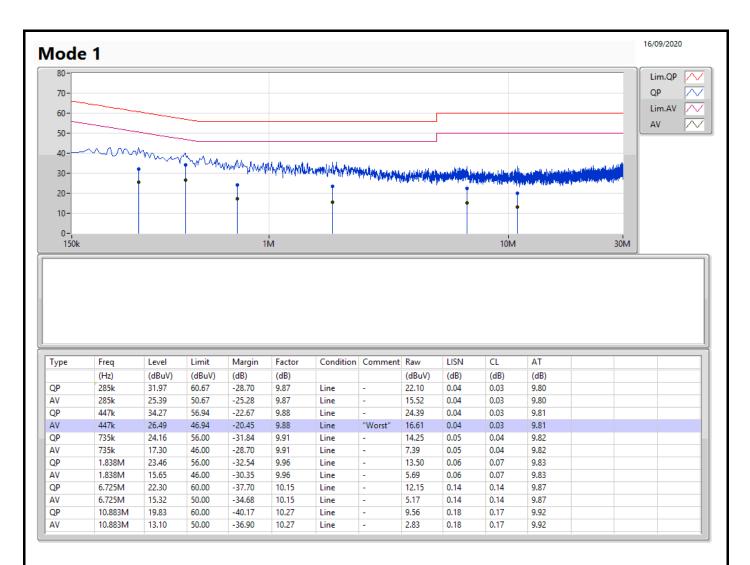
Conducted Emissions at Powerline

Appendix A

Summary										
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition			
			(Hz)	(dBuV)	(dBuV)	(dB)				
Mode 1	Pass	AV	447k	26.49	46.94	-20.45	Line			

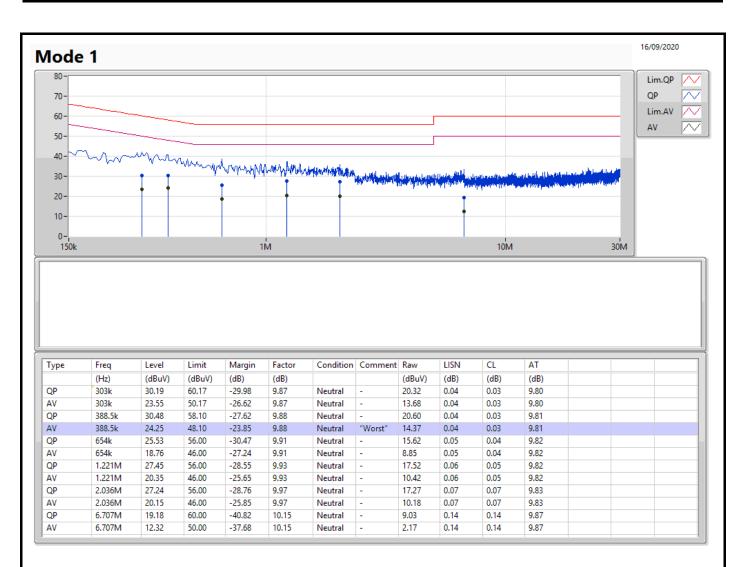


Appendix A











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	10.075M	15.067M	15M1D2W	10.025M	14.493M
802.11g_Nss1,(6Mbps)_2TX	15.075M	23.038M	23M0D7W	14.425M	16.392M
802.11n HT20_Nss1,(MCS0)_2TX	15.075M	23.863M	23M9D7W	12.775M	17.516M
802.11n HT40_Nss1,(MCS0)_2TX	35.05M	36.182M	36M2D7W	28.2M	35.882M

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	10.025M	14.693M	10.025M	14.493M
2437MHz	Pass	500k	10.05M	15.067M	10.075M	14.868M
2462MHz	Pass	500k	10.05M	14.968M	10.025M	14.518M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	15.075M	16.592M	14.975M	16.392M
2437MHz	Pass	500k	15.025M	23.038M	14.425M	19.015M
2462MHz	Pass	500k	15M	16.617M	15.075M	16.392M
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	15.025M	17.541M	12.775M	17.516M
2437MHz	Pass	500k	13.75M	23.863M	15.075M	21.064M
2462MHz	Pass	500k	14.975M	17.591M	14.975M	17.516M
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	35.05M	35.982M	28.2M	35.882M
2437MHz	Pass	500k	31.25M	36.182M	35.05M	36.082M
2452MHz	Pass	500k	35.05M	35.982M	33.85M	35.932M

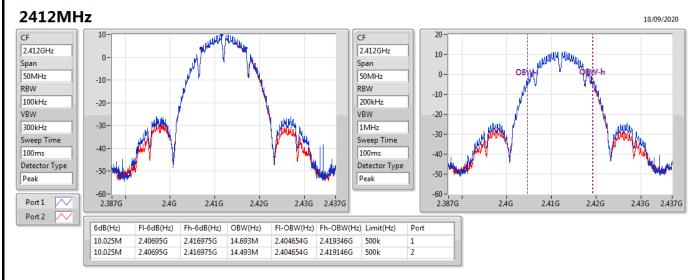
Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;

EBW



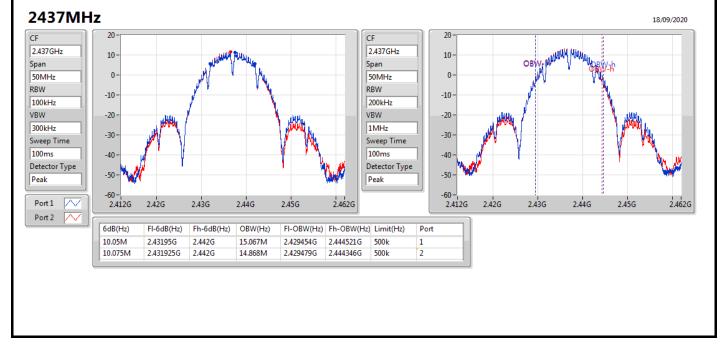
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802.11b_Nss1,(1Mbps)_2TX



802.11b_Nss1,(1Mbps)_2TX

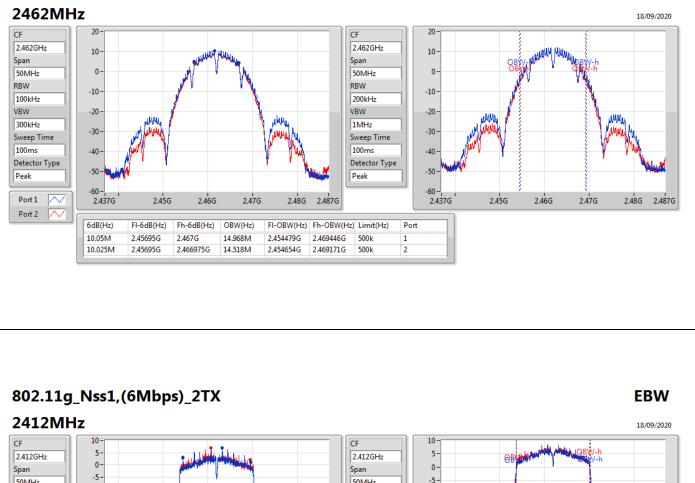
EBW

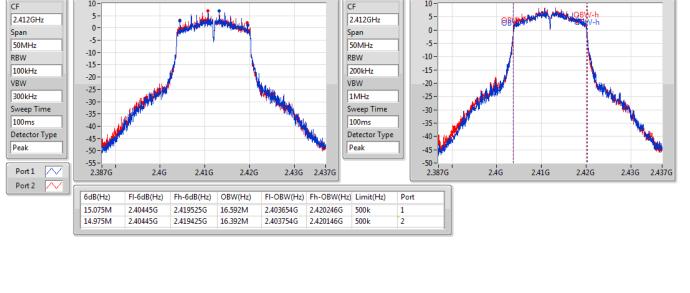


EBW



802.11b_Nss1,(1Mbps)_2TX

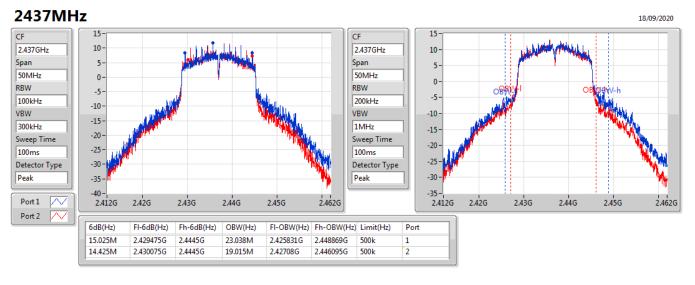




EBW

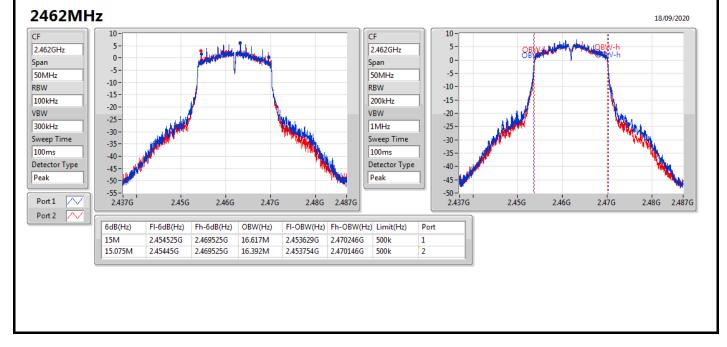


802.11g_Nss1,(6Mbps)_2TX



802.11g_Nss1,(6Mbps)_2TX

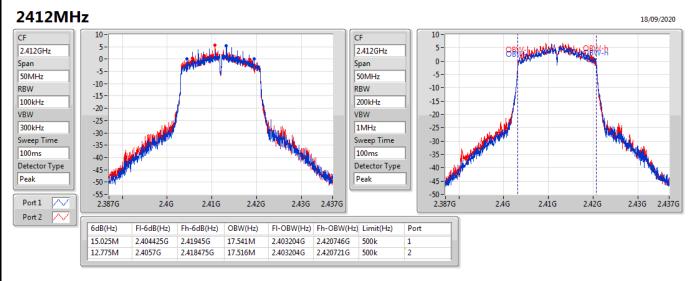
EBW



EBW

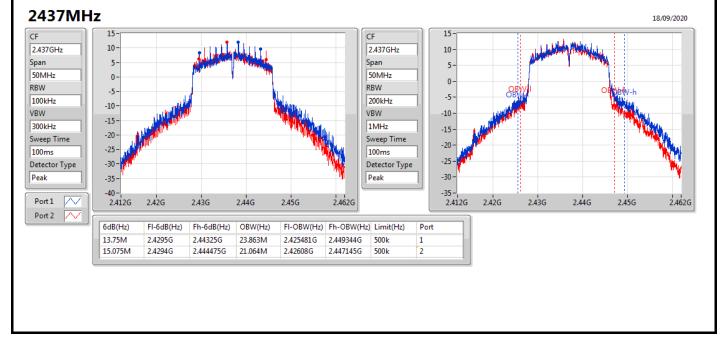


802.11n HT20_Nss1,(MCS0)_2TX



802.11n HT20_Nss1,(MCS0)_2TX

EBW

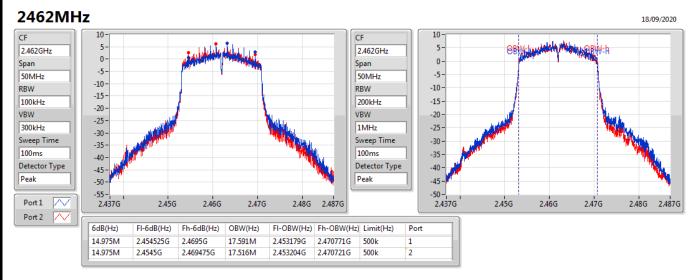


EBW



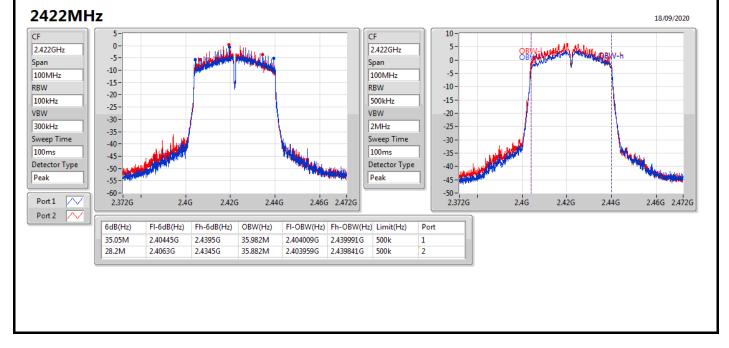
EBW

802.11n HT20_Nss1,(MCS0)_2TX



802.11n HT40_Nss1,(MCS0)_2TX

EBW

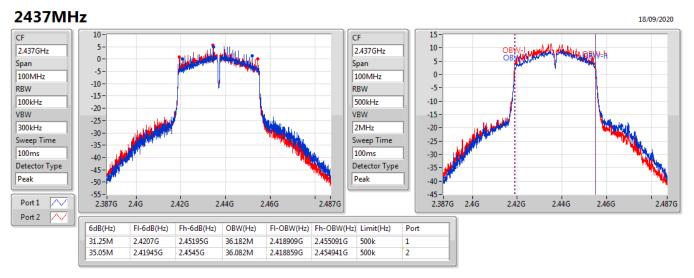


EBW



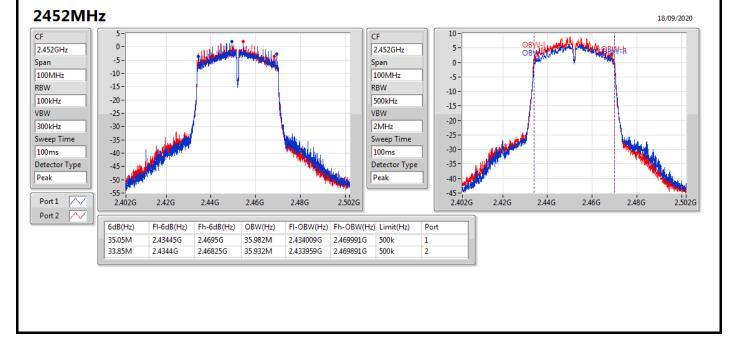
EBW

802.11n HT40_Nss1,(MCS0)_2TX



802.11n HT40_Nss1,(MCS0)_2TX

EBW





Summary

Mode	Total Power	Total Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	24.58	0.28708
802.11g_Nss1,(6Mbps)_2TX	24.63	0.29040
802.11n HT20_Nss1,(MCS0)_2TX	24.63	0.29040
802.11n HT40_Nss1,(MCS0)_2TX	20.69	0.11722



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	1.50	19.75	19.64	22.71	30.00
2417MHz	Pass	1.50	20.09	19.93	23.02	30.00
2437MHz	Pass	1.50	21.40	21.72	24.57	30.00
2457MHz	Pass	1.50	21.52	21.61	24.58	30.00
2462MHz	Pass	1.50	20.34	20.09	23.23	30.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	1.50	17.14	17.37	20.27	30.00
2417MHz	Pass	1.50	20.21	20.51	23.37	30.00
2437MHz	Pass	1.50	21.69	21.54	24.63	30.00
2457MHz	Pass	1.50	18.68	18.78	21.74	30.00
2462MHz	Pass	1.50	16.28	16.24	19.27	30.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	1.50	15.53	15.95	18.76	30.00
2417MHz	Pass	1.50	19.09	19.30	22.21	30.00
2437MHz	Pass	1.50	21.59	21.65	24.63	30.00
2457MHz	Pass	1.50	18.51	19.04	21.79	30.00
2462MHz	Pass	1.50	16.16	16.31	19.25	30.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	1.50	12.38	12.56	15.48	30.00
2427MHz	Pass	1.50	14.44	14.37	17.42	30.00
2437MHz	Pass	1.50	17.59	17.76	20.69	30.00
2447MHz	Pass	1.50	15.68	15.76	18.73	30.00
2452MHz	Pass	1.50	14.69	14.87	17.79	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	-2.95
802.11g_Nss1,(6Mbps)_2TX	-2.41
802.11n HT20_Nss1,(MCS0)_2TX	-1.32
802.11n HT40_Nss1,(MCS0)_2TX	-8.46

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

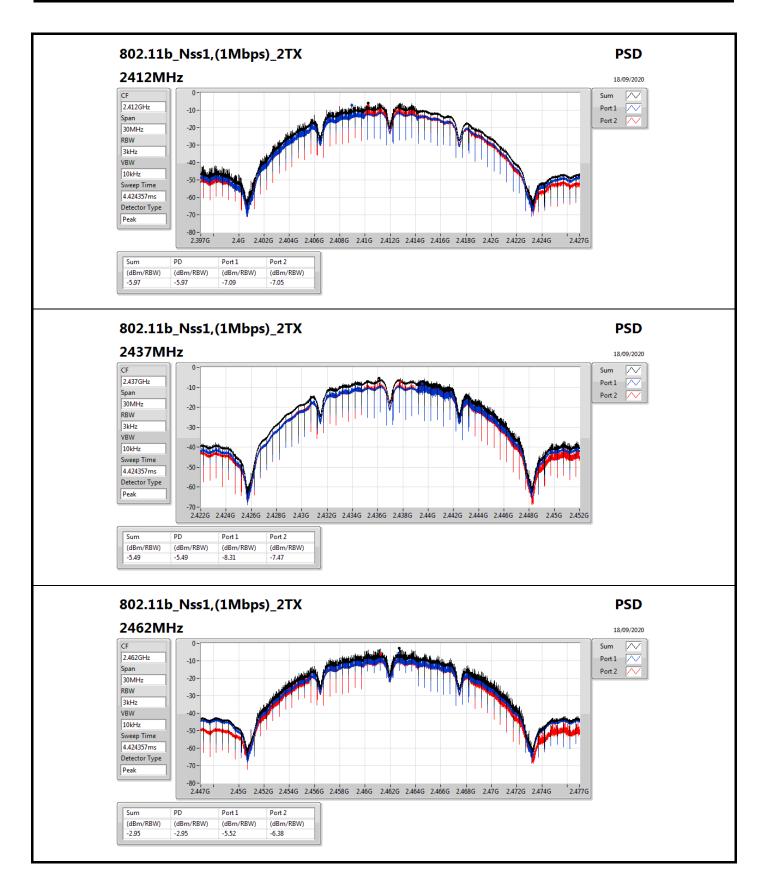


Result

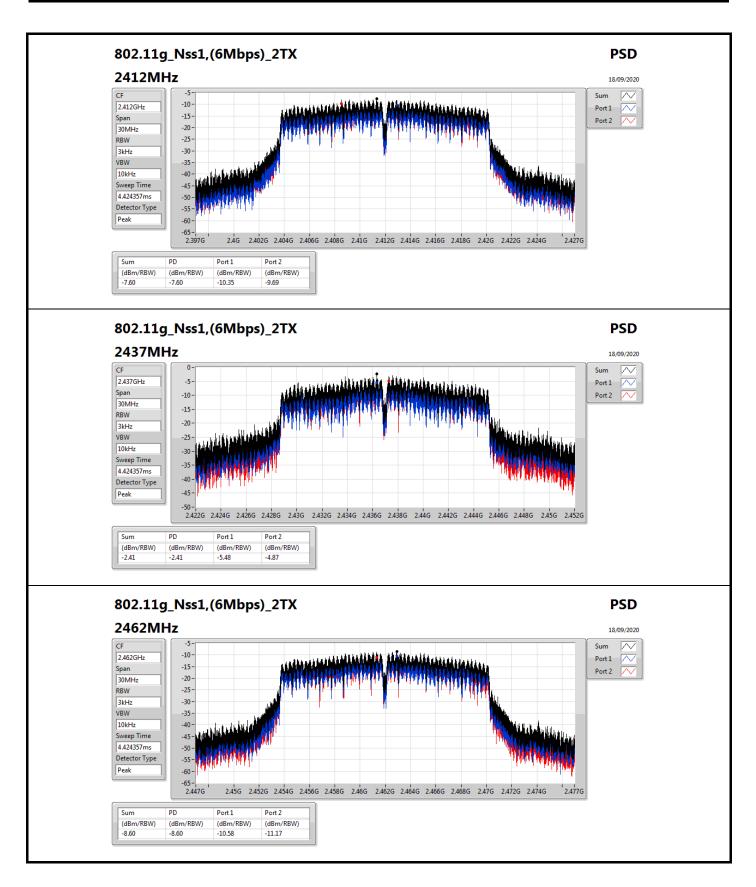
Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	4.51	-7.09	-7.05	-5.97	8.00
2437MHz	Pass	4.51	-8.31	-7.47	-5.49	8.00
2462MHz	Pass	4.51	-5.52	-6.38	-2.95	8.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	4.51	-10.35	-9.69	-7.60	8.00
2437MHz	Pass	4.51	-5.48	-4.87	-2.41	8.00
2462MHz	Pass	4.51	-10.58	-11.17	-8.60	8.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	4.51	-11.38	-11.20	-8.69	8.00
2437MHz	Pass	4.51	-3.59	-3.69	-1.32	8.00
2462MHz	Pass	4.51	-8.42	-9.17	-6.04	8.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	4.51	-15.73	-16.40	-13.51	8.00
2437MHz	Pass	4.51	-11.73	-10.85	-8.46	8.00
2452MHz	Pass	4.51	-13.58	-13.62	-11.37	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;

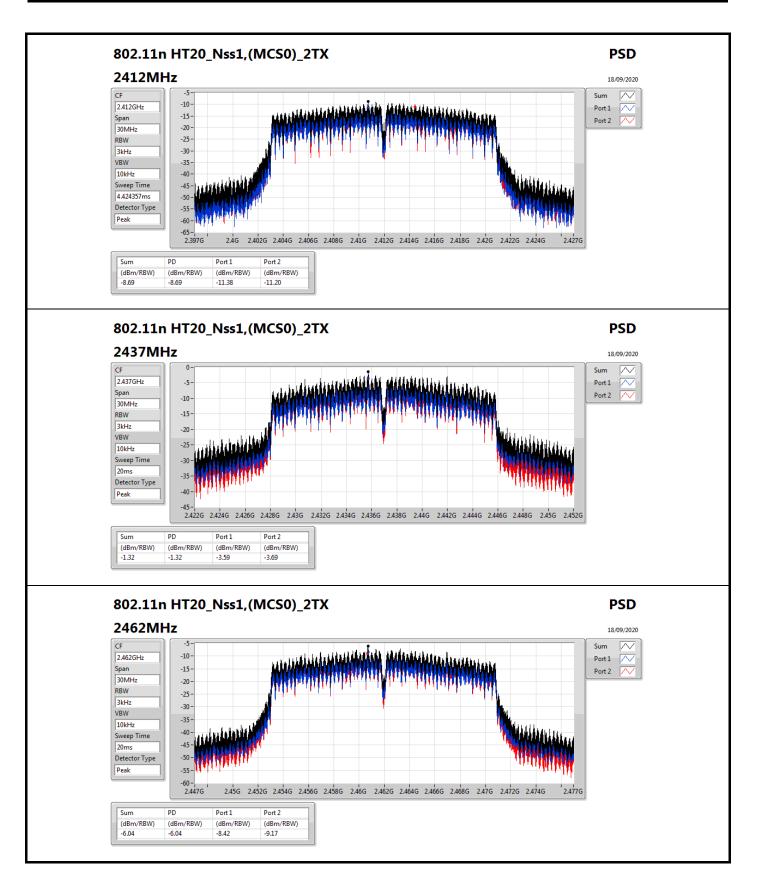




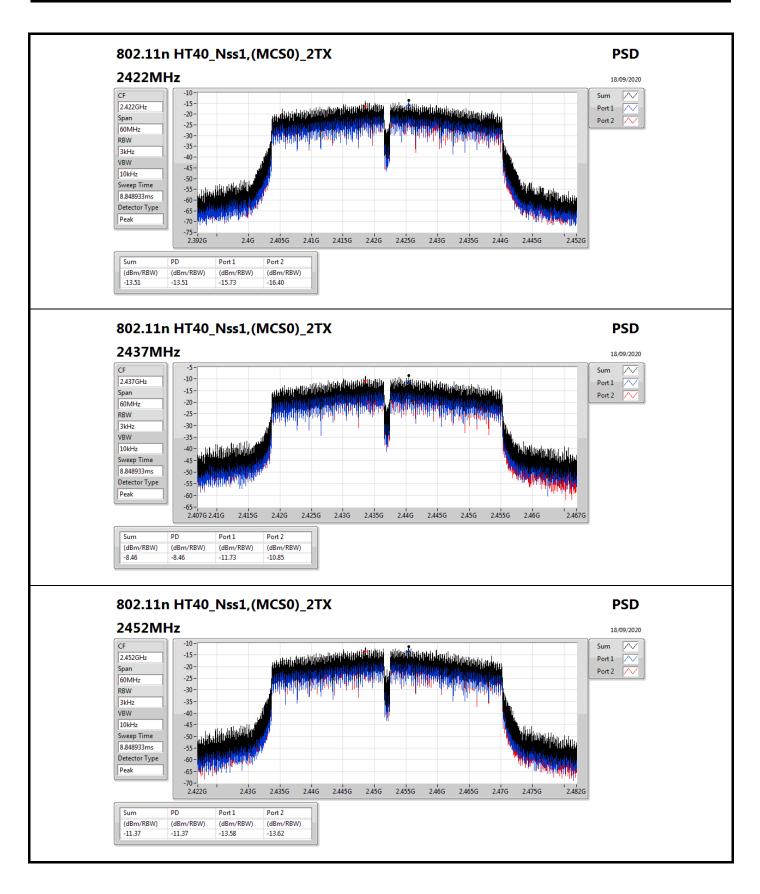














Appendix E

Summary

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	2.43645G	11.70	-18.30	2.11885G	-53.10	2.39696G	-25.88	2.4G	-33.71	2.49474G	-50.57	17.20346G	-43.34	1
802.11g_Nss1,(6Mbps)_2TX	Pass	2.4357G	11.74	-18.26	159.9M	-53.21	2.39982G	-22.59	2.4G	-25.02	2.49058G	-49.76	16.54603G	-43.57	2
802.11n HT20_Nss1,(MCS0)_2TX	Pass	2.4382G	12.07	-17.93	2.19807G	-52.87	2.39946G	-27.34	2.4G	-30.55	2.50604G	-50.69	24.58138G	-43.25	2
802.11n HT40_Nss1,(MCS0)_2TX	Pass	2.43444G	5.19	-24.81	2.30139G	-52.20	2.39948G	-30.16	2.4G	-33.70	2.48354G	-44.81	24.61017G	-43.30	2



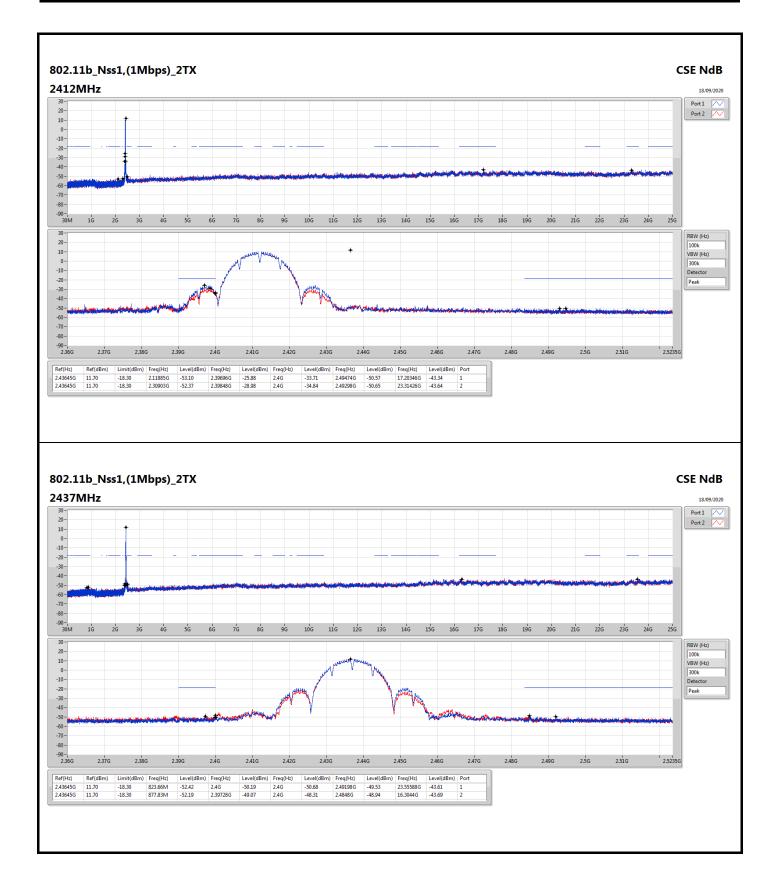
CSE(Non-restricted Band)

Appendix E

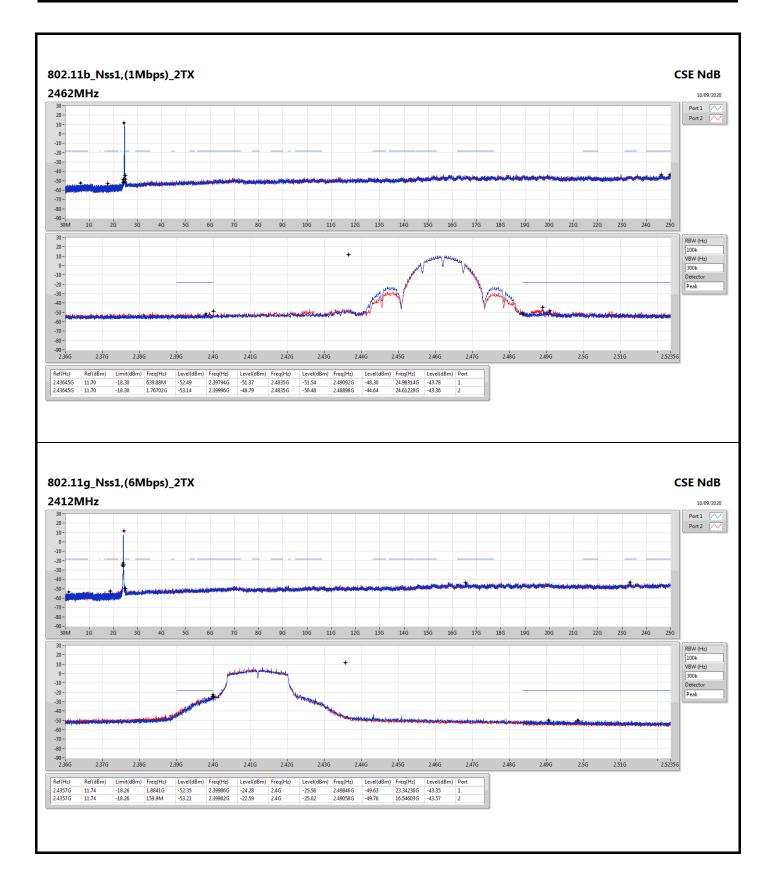
Result

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	2.43645G	11.70	-18.30	2.11885G	-53.10	2.39696G	-25.88	2.4G	-33.71	2.49474G	-50.57	17.20346G	-43.34	1
2412MHz	Pass	2.43645G	11.70	-18.30	2.30903G	-52.37	2.39848G	-28.98	2.4G	-34.84	2.49298G	-50.65	23.31426G	-43.64	2
2437MHz	Pass	2.43645G	11.70	-18.30	823.66M	-52.42	2.4G	-50.19	2.4G	-50.68	2.49198G	-49.53	23.55588G	-43.61	1
2437MHz	Pass	2.43645G	11.70	-18.30	877.83M	-52.19	2.39728G	-49.07	2.4G	-48.31	2.4848G	-48.94	16.3044G	-43.69	2
2462MHz	Pass	2.43645G	11.70	-18.30	639.88M	-52.49	2.39794G	-51.37	2.4835G	-51.54	2.49092G	-48.30	24.98314G	-43.78	1
2462MHz	Pass	2.43645G	11.70	-18.30	1.76702G	-53.14	2.39996G	-48.79	2.4835G	-50.48	2.48898G	-44.64	24.61228G	-43.36	2
802.11g_Nss1,(6Mbps)_2TX	-	-		-	-		-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.4357G	11.74	-18.26	1.8841G	-52.35	2.39986G	-24.28	2.4G	-25.56	2.49846G	-49.63	23.34236G	-43.35	1
2412MHz	Pass	2.4357G	11.74	-18.26	159.9M	-53.21	2.39982G	-22.59	2.4G	-25.02	2.49058G	-49.76	16.54603G	-43.57	2
2437MHz	Pass	2.4357G	11.74	-18.26	2.30728G	-52.84	2.39984G	-43.78	2.4835G	-43.69	2.48508G	-42.16	16.2454G	-43.47	1
2437MHz	Pass	2.4357G	11.74	-18.26	943.36M	-52.75	2.39886G	-43.80	2.4G	-47.40	2.48578G	-47.35	23.23279G	-43.70	2
2462MHz	Pass	2.4357G	11.74	-18.26	855.4M	-52.54	2.39452G	-48.79	2.4835G	-44.69	2.48384G	-42.07	24.55328G	-43.45	1
2462MHz	Pass	2.4357G	11.74	-18.26	950.64M	-52.35	2.39086G	-48.10	2.4835G	-45.77	2.48356G	-44.97	16.58255G	-43.37	2
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.4382G	12.07	-17.93	1.94759G	-52.99	2.39982G	-28.52	2.4G	-31.15	2.48798G	-49.11	16.61346G	-42.61	1
2412MHz	Pass	2.4382G	12.07	-17.93	2.19807G	-52.87	2.39946G	-27.34	2.4G	-30.55	2.50604G	-50.69	24.58138G	-43.25	2
2437MHz	Pass	2.4382G	12.07	-17.93	907.54M	-52.91	2.39944G	-42.37	2.4835G	-42.63	2.48352G	-40.07	16.69774G	-42.45	1
2437MHz	Pass	2.4382G	12.07	-17.93	870.55M	-52.76	2.39854G	-44.21	2.4G	-46.73	2.48574G	-44.55	23.30302G	-43.56	2
2462MHz	Pass	2.4382G	12.07	-17.93	891.23M	-53.11	2.39644G	-49.85	2.4835G	-39.67	2.48406G	-39.45	15.18058G	-43.31	1
2462MHz	Pass	2.4382G	12.07	-17.93	802.69M	-52.73	2.39762G	-49.05	2.4835G	-42.82	2.48364G	-42.73	21.70719G	-42.88	2
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-		-	-	-	-	-	-
2422MHz	Pass	2.43444G	5.19	-24.81	734.18M	-52.55	2.39792G	-38.91	2.4G	-41.78	2.49982G	-49.55	17.59876G	-43.57	1
2422MHz	Pass	2.43444G	5.19	-24.81	479.99M	-52.71	2.39448G	-37.19	2.4G	-39.51	2.52518G	-50.14	24.80088G	-43.57	2
2437MHz	Pass	2.43444G	5.19	-24.81	793.14M	-53.23	2.39948G	-31.57	2.4G	-36.68	2.48446G	-41.35	16.2105G	-42.35	1
2437MHz	Pass	2.43444G	5.19	-24.81	2.30139G	-52.20	2.39948G	-30.16	2.4G	-33.70	2.48354G	-44.81	24.61017G	-43.30	2
2452MHz	Pass	2.43444G	5.19	-24.81	2.07211G	-53.17	2.39856G	-49.36	2.4835G	-41.39	2.48442G	-37.57	23.33689G	-44.09	1
2452MHz	Pass	2.43444G	5.19	-24.81	767.95M	-52.76	2.39196G	-48.20	2.4835G	-43.39	2.48446G	-39.62	23.33409G	-43.24	2

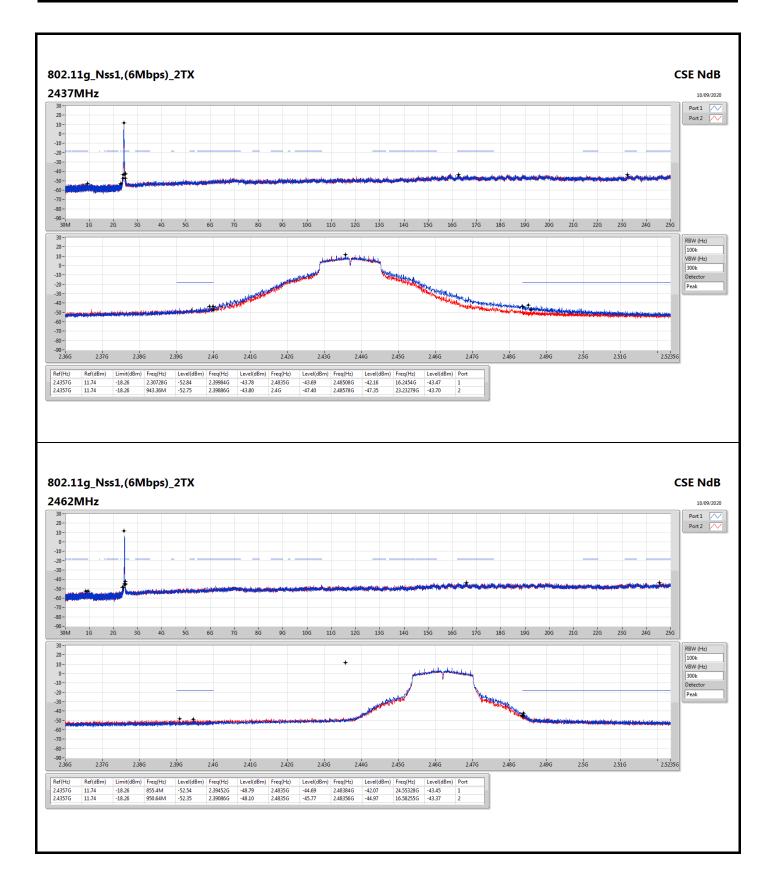




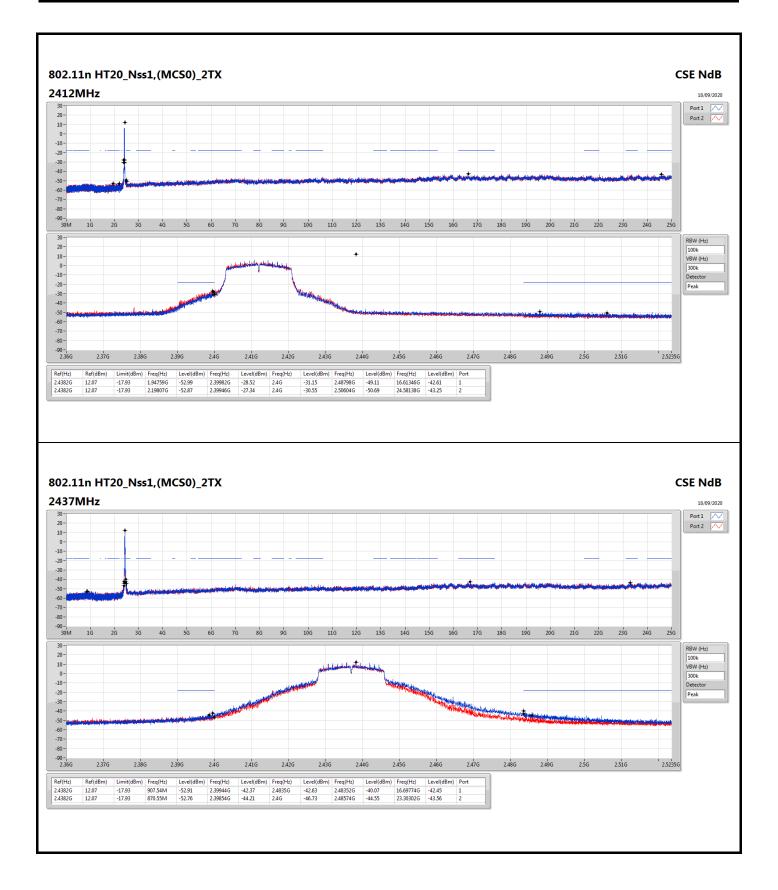




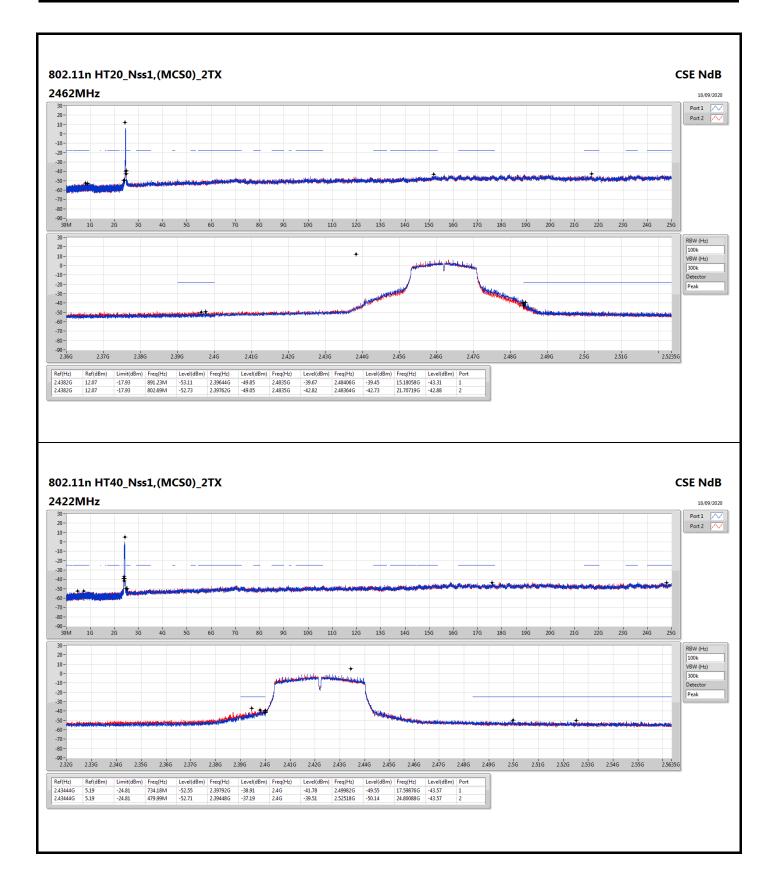




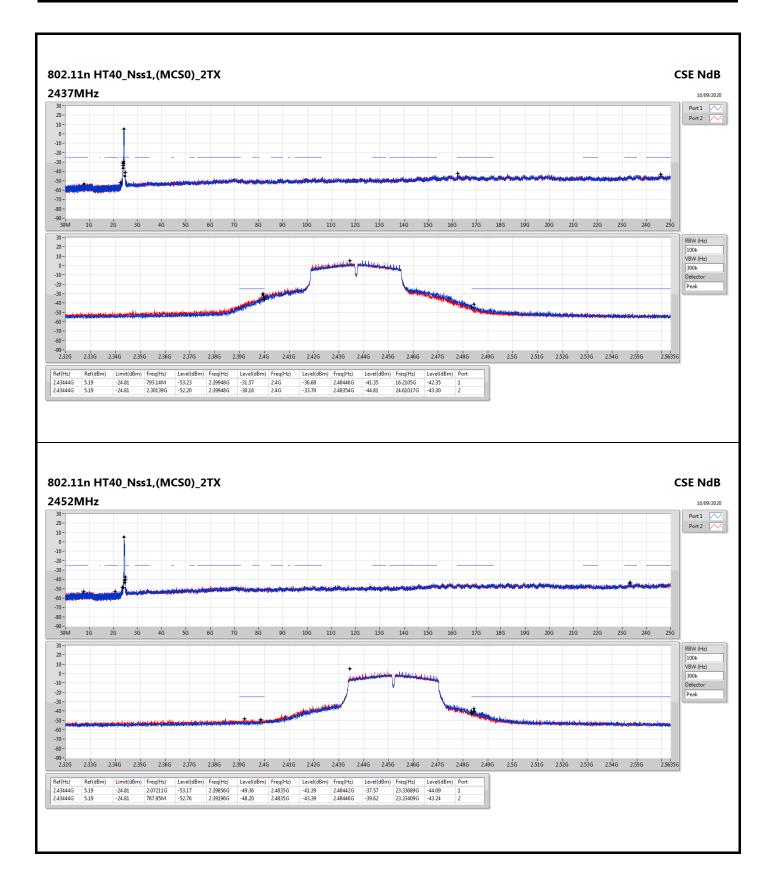














Radiated Emissions below 1GHz

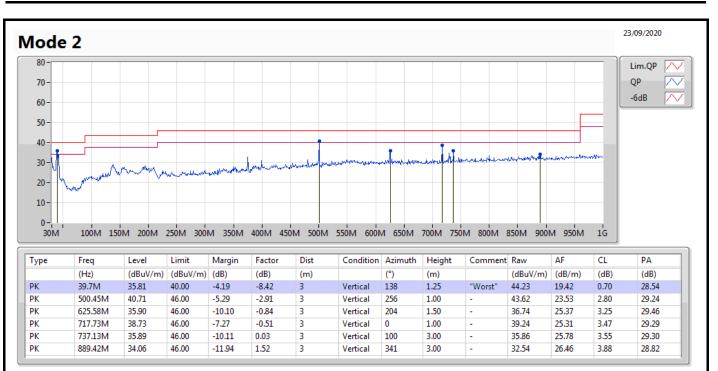
Appendix F.1

Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 2	Pass	PK	39.7M	35.81	40.00	-4.19	Vertical



Radiated Emissions below 1GHz

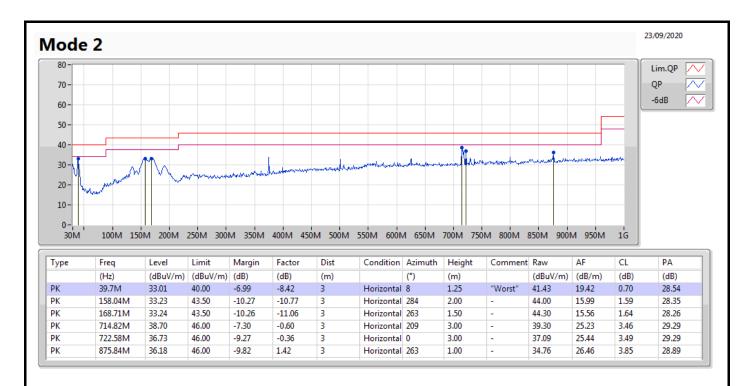
Appendix F.1





Radiated Emissions below 1GHz

Appendix F.1



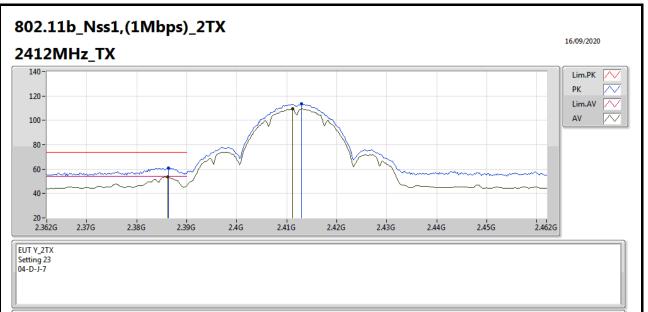


Appendix F.2

Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth	Height (m)	Comments
2.4-2.4835GHz	-		-	-	-	-	-	-	-	-	-
802.11n HT40_Nss1,(MCS0)_2TX	Pass	AV	2.4848G	53.96	54.00	-0.04	3	Vertical	268	1.91	-





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	2.3864G	60.81	74.00	-13.19	30.01	3	Vertical	271	1.80	-	27.51	3.29	-	
AV	2.3862G	53.57	54.00	-0.43	22.77	3	Vertical	271	1.80	-	27.51	3.29	-	
PK	2.413G	113.50	Inf	-Inf	82.64	3	Vertical	271	1.80	-	27.55	3.31	-	
AV	2.4112G	109.49	Inf	-Inf	78.64	3	Vertical	271	1.80	-	27.54	3.31	-	



Inf

104.82

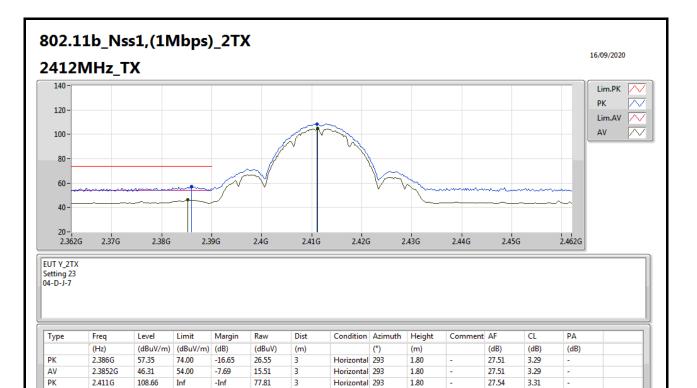
-Inf

73.97

3

AV

2.4112G



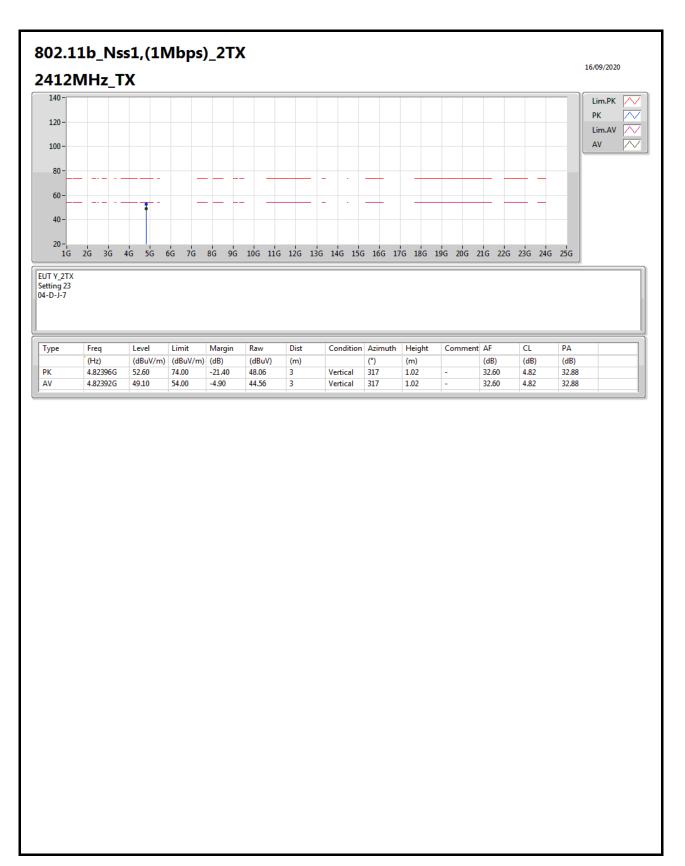
Horizontal 293

1.80

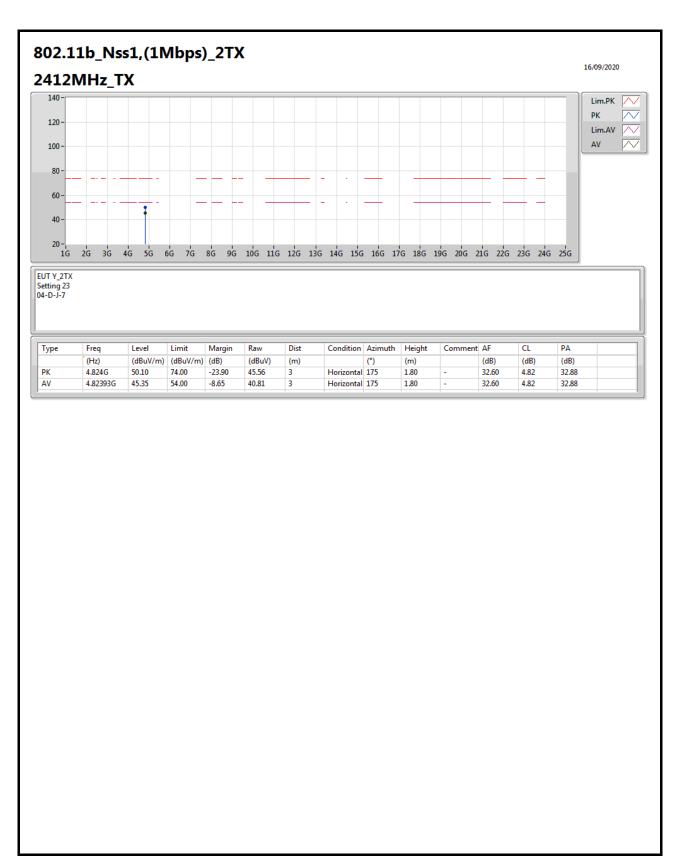
27.54

3.31

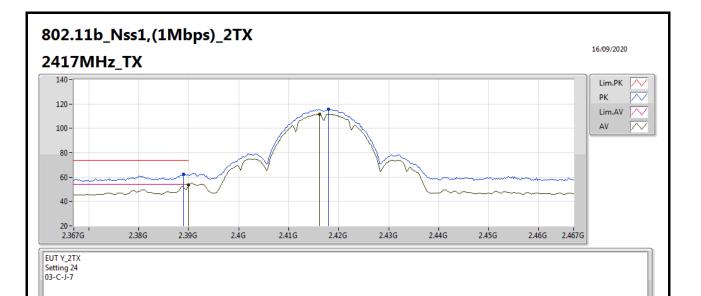






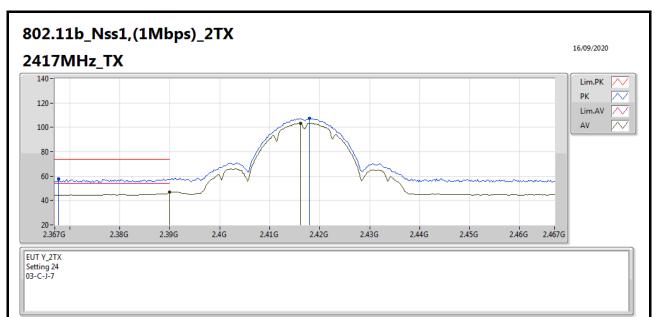






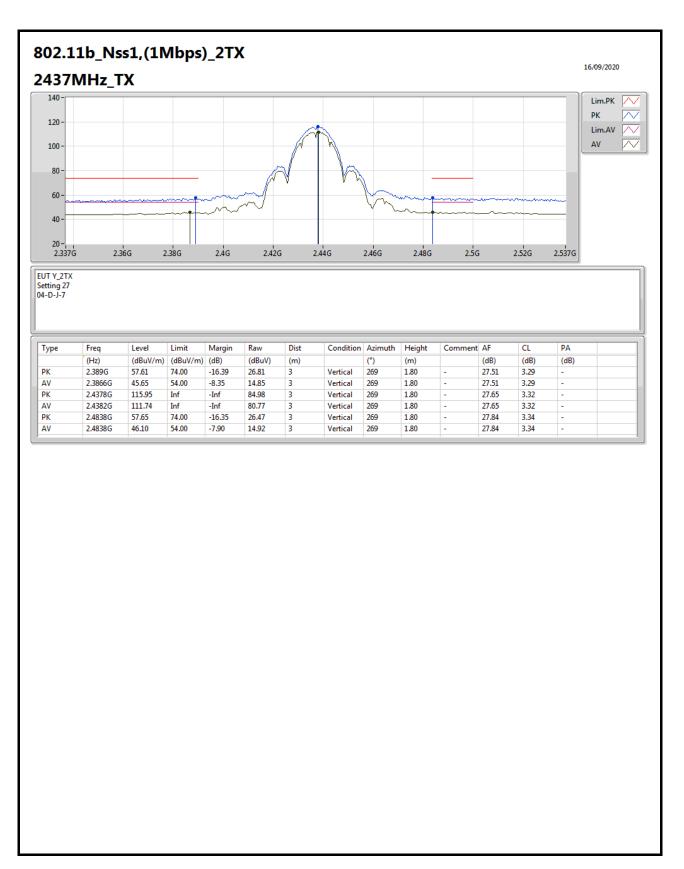
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
PK	2.389G	62.47	74.00	-11.53	30.38	3	Vertical	229	2.25	-	28.10	3.99	-	
AV	2.39G	53.53	54.00	-0.47	21.43	3	Vertical	229	2.25	-	28.10	4.00	-	
PK	2.418G	115.78	Inf	-Inf	83.61	3	Vertical	229	2.25	-	28.14	4.03	-	
AV	2.4162G	111.63	Inf	-Inf	79.48	3	Vertical	229	2.25	-	28.13	4.02	-	



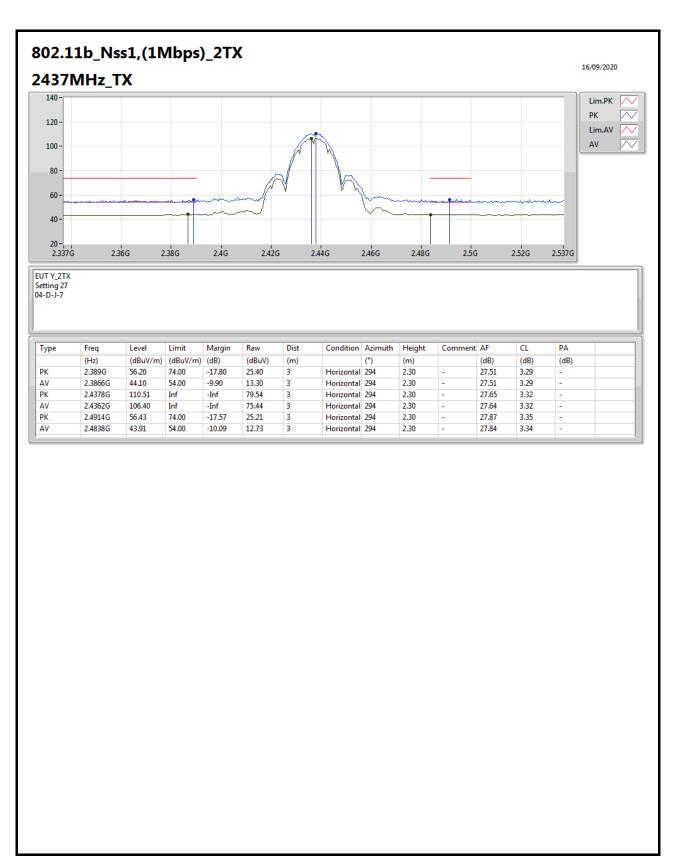


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.3678G	57.54	74.00	-16.46	25.46	3	Horizontal	301	1.06	-	28.10	3.98	-	
AV	2.39G	46.90	54.00	-7.10	14.80	3	Horizontal	301	1.06	-	28.10	4.00	-	
PK	2.418G	107.49	Inf	-Inf	75.32	3	Horizontal	301	1.06	-	28.14	4.03	-	
AV	2.4162G	103.41	Inf	-Inf	71.26	3	Horizontal	301	1.06	-	28.13	4.02	-	

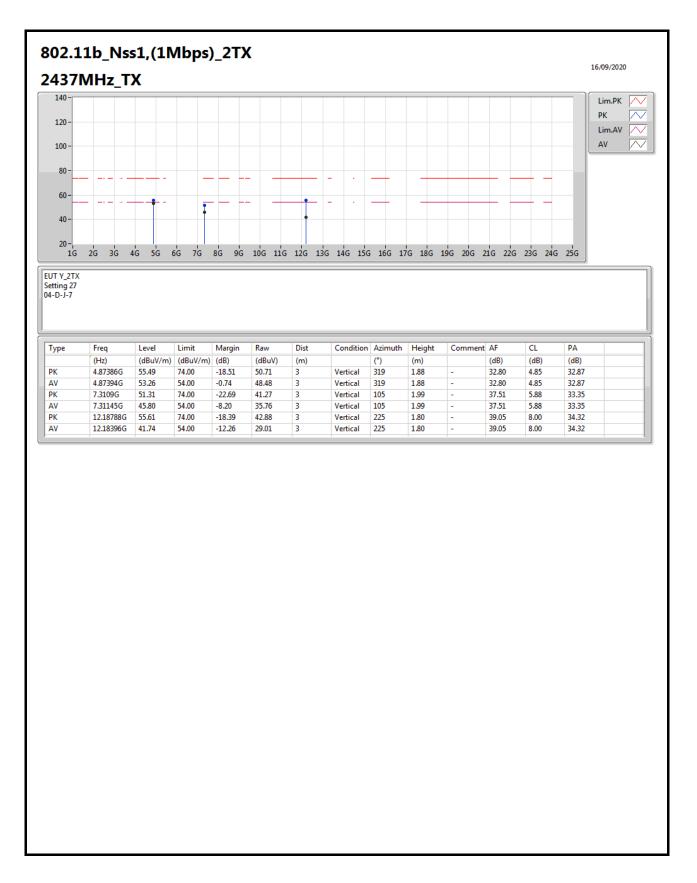




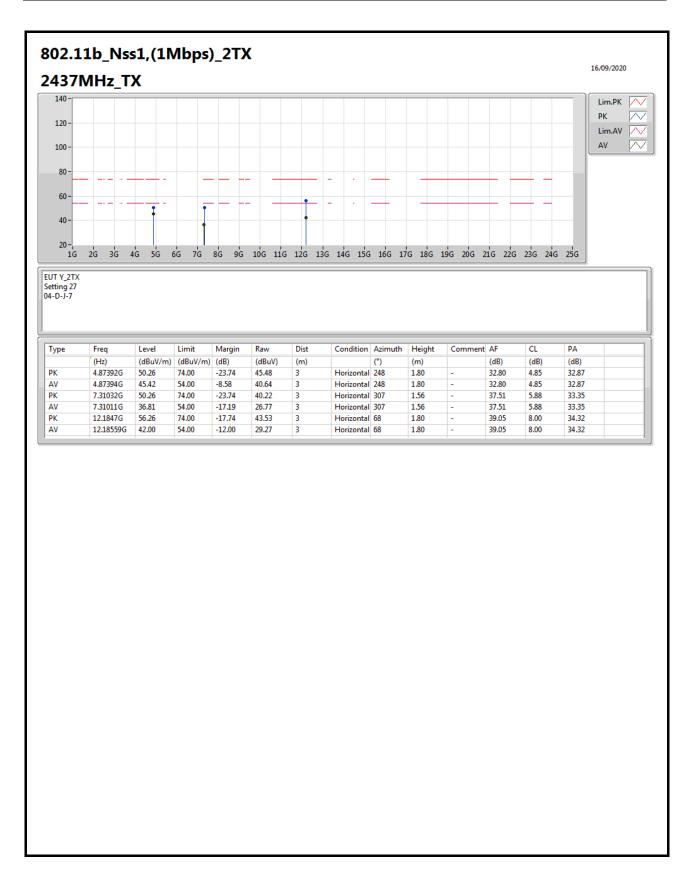




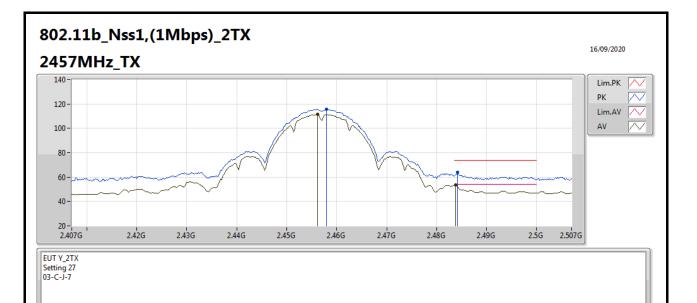






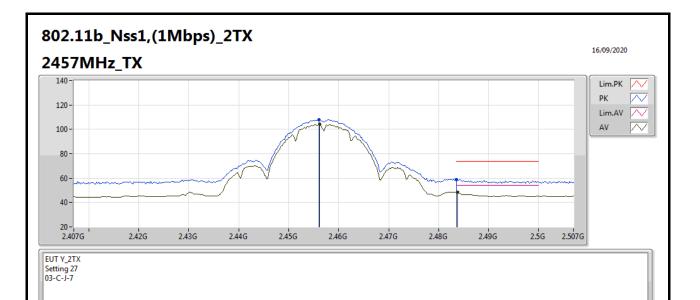






Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.458G	115.74	Inf	-Inf	83.40	3	Vertical	228	2.23	-	28.25	4.09	-	
AV	2.4562G	111.38	Inf	-Inf	79.06	3	Vertical	228	2.23	-	28.24	4.08	-	
PK	2.4842G	63.89	74.00	-10.11	31.35	3	Vertical	228	2.23	-	28.41	4.13	-	
AV	2.4838G	53.71	54.00	-0.29	21.18	3	Vertical	228	2.23	-	28.40	4.13	-	





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	2.456G	108.01	Inf	-Inf	75.69	3	Horizontal	283	1.07	-	28.24	4.08	-	
AV	2.4562G	104.09	Inf	-Inf	71.77	3	Horizontal	283	1.07	-	28.24	4.08	-	
РК	2.4836G	58.73	74.00	-15.27	26.20	3	Horizontal	283	1.07	-	28.40	4.13	-	
AV	2.4838G	48.61	54.00	-5.39	16.08	3	Horizontal	283	1.07	-	28.40	4.13	-	



2.4836G

2.4892G

AV

59,95

48.61

74.00

54.00

-14.05

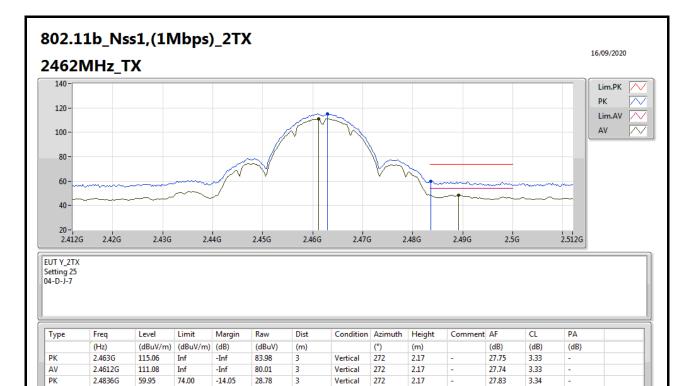
-5.39

28.78

17.41

3

3



Vertical

Vertical

272

272

2.17

2.17

.

27.83

27.86

3.34

3.34



2.4884G

2.4878G

AV

56.94

45.10

74.00

54.00

-17.06

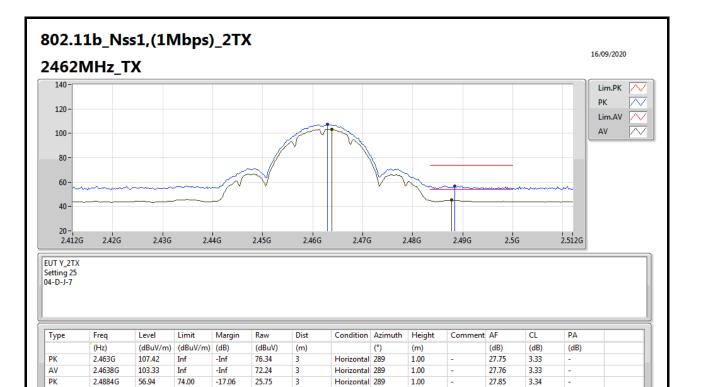
-8.90

25.75

13.91

3

3



Horizontal 289

Horizontal 289

1.00

1.00

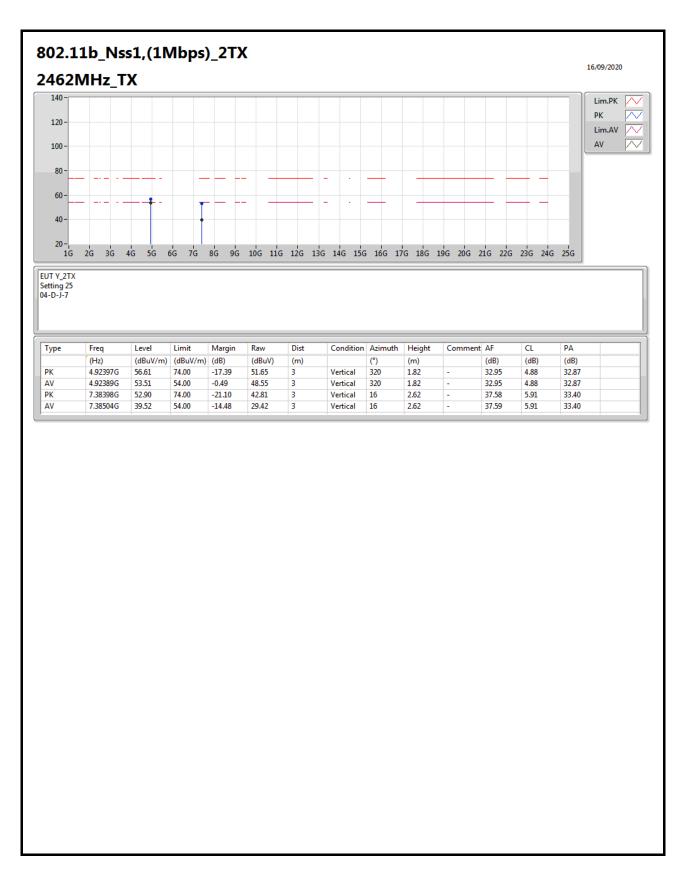
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27.85

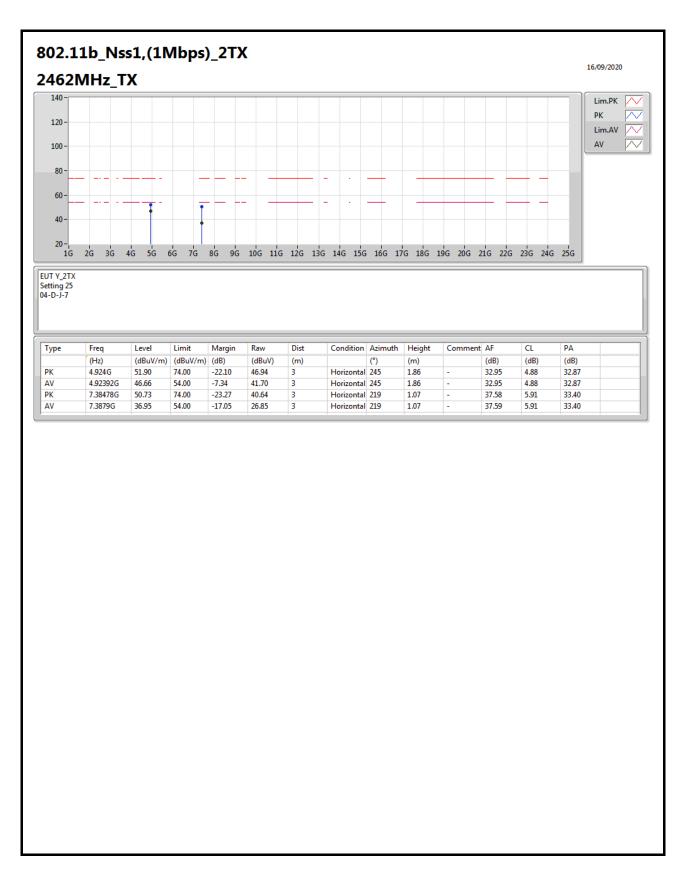
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3.34

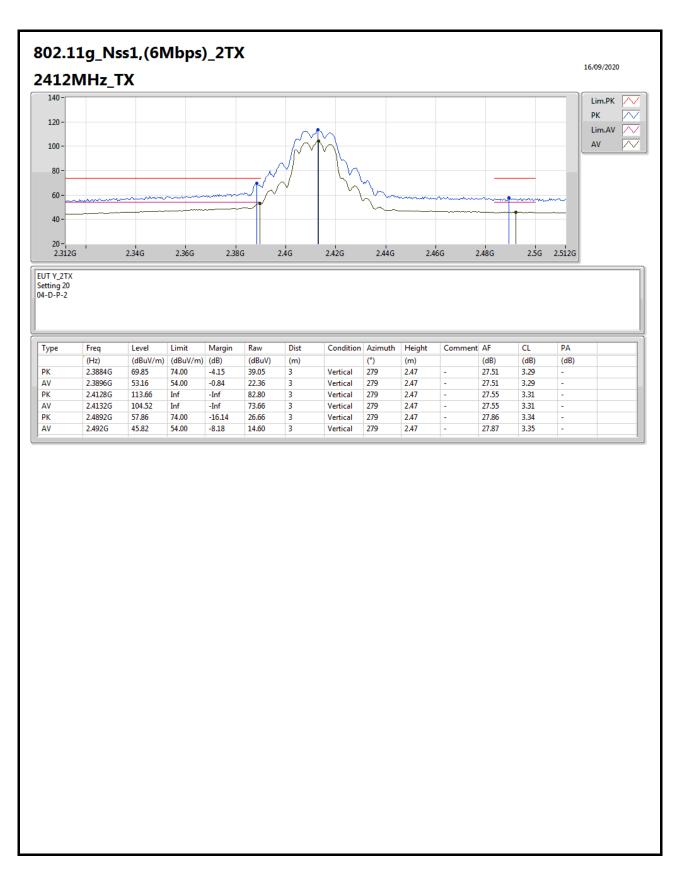




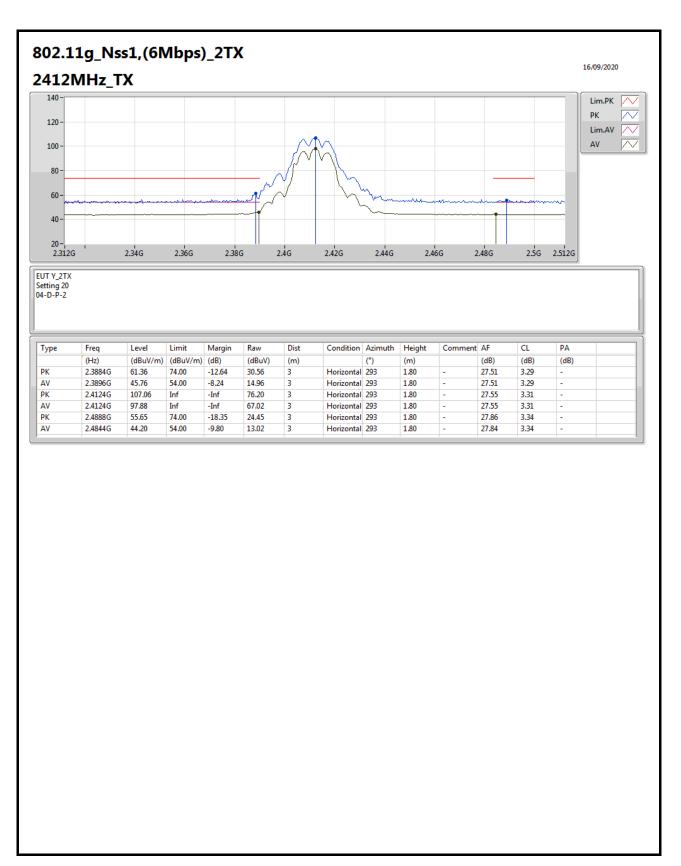




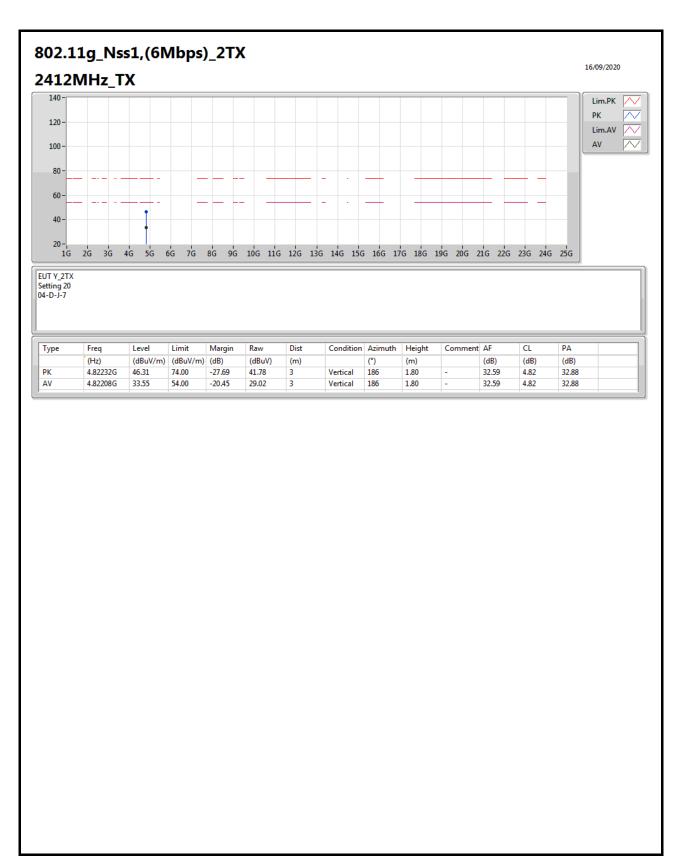




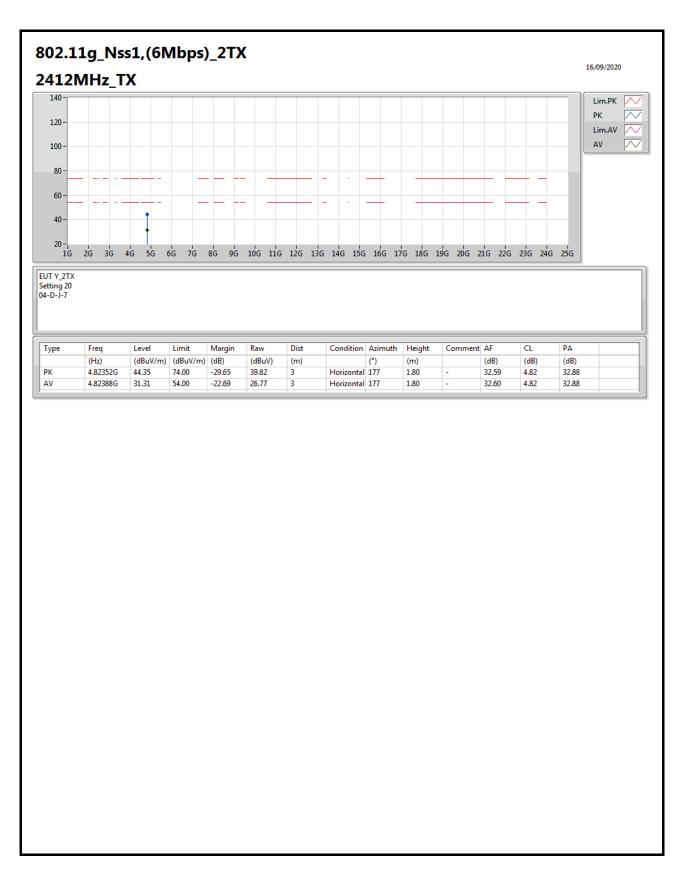




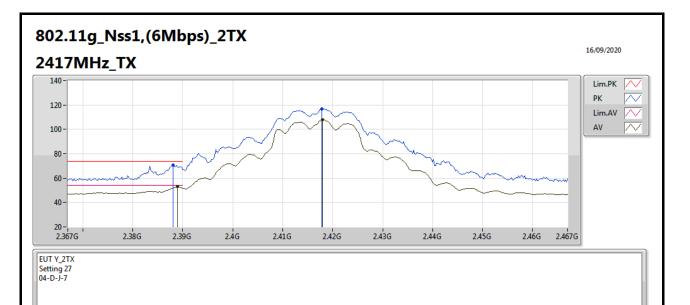






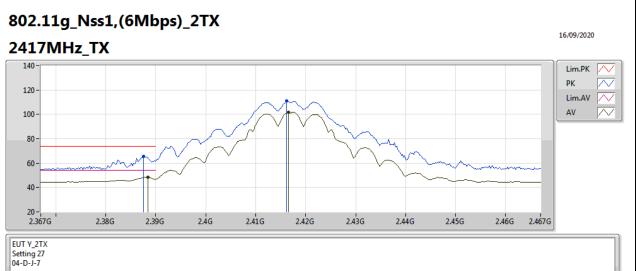






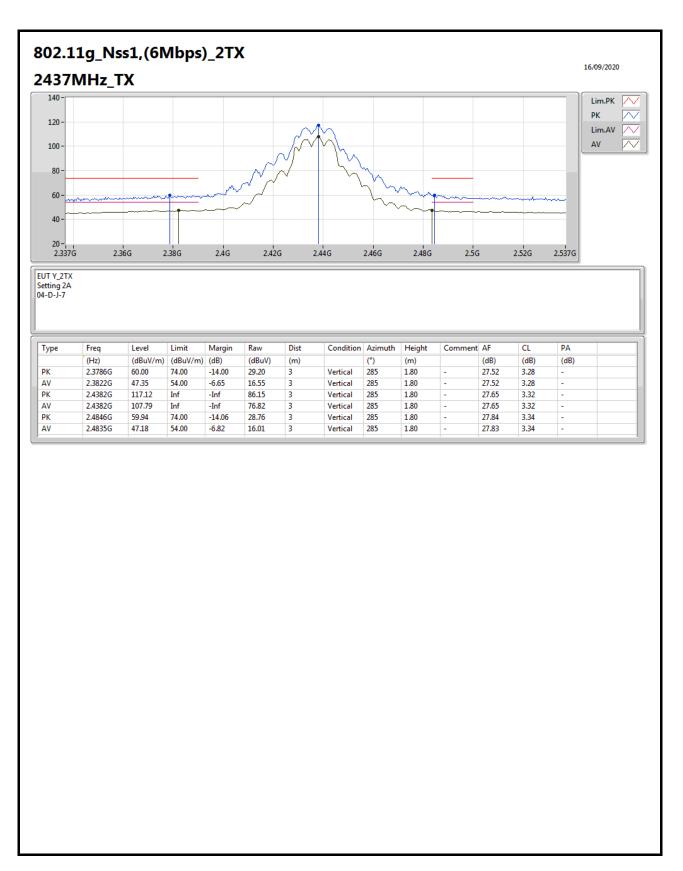
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РК	2.388G	70.59	74.00	-3.41	39.79	3	Vertical	282	2.65	-	27.51	3.29	-	
AV	2.389G	52.94	54.00	-1.06	22.14	3	Vertical	282	2.65	-	27.51	3.29	-	
PK	2.4178G	116.78	Inf	-Inf	85.90	3	Vertical	282	2.65	-	27.57	3.31	-	
AV	2.418G	107.73	Inf	-Inf	76.85	3	Vertical	282	2.65	-	27.57	3.31	-	



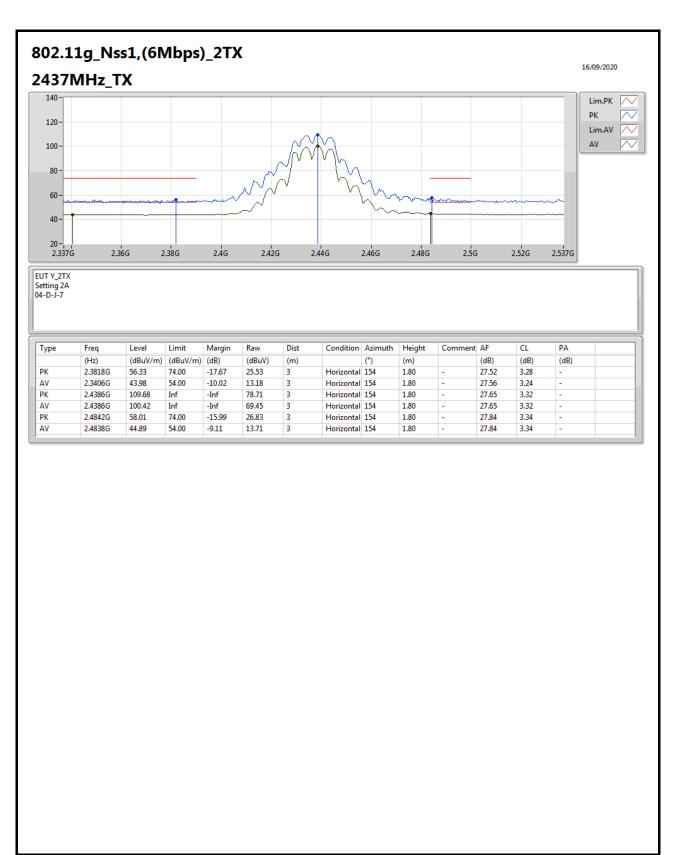


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
РК	2.3876G	65.56	74.00	-8.44	34.76	3	Horizontal	289	1.00	-	27.51	3.29	-
AV	2.3884G	48.32	54.00	-5.68	17.52	3	Horizontal	289	1.00	-	27.51	3.29	-
РК	2.4162G	110.90	Inf	-Inf	80.03	3	Horizontal	289	1.00	-	27.56	3.31	-
AV	2.4166G	101.73	Inf	-Inf	70.85	3	Horizontal	289	1.00	-	27.57	3.31	-

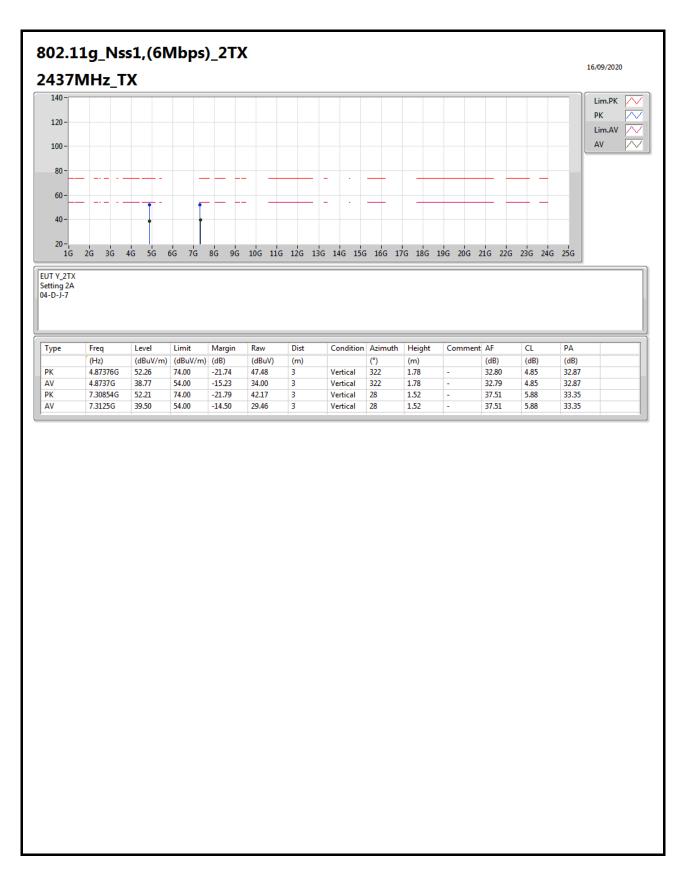




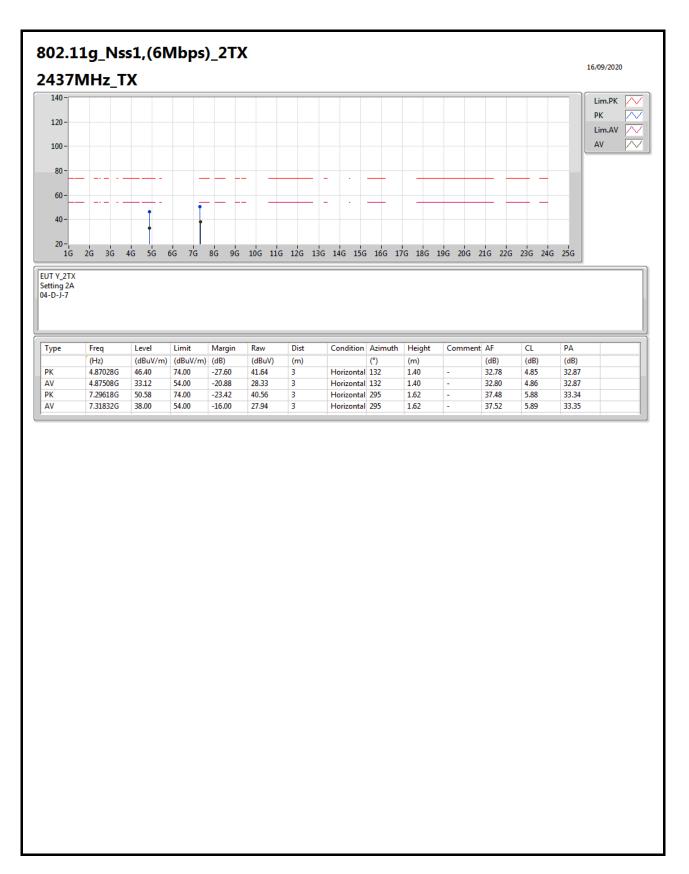




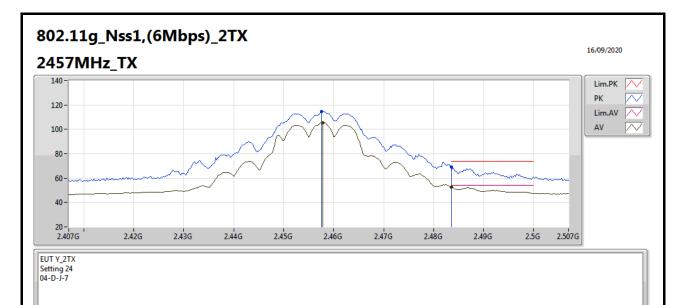






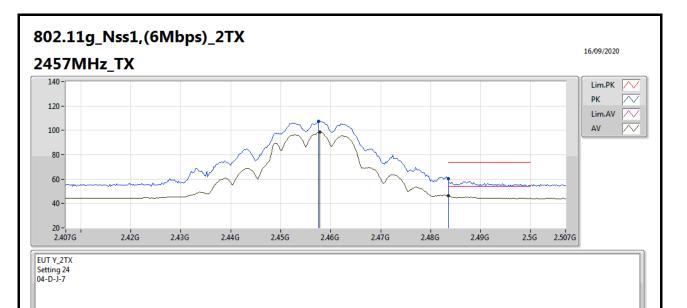






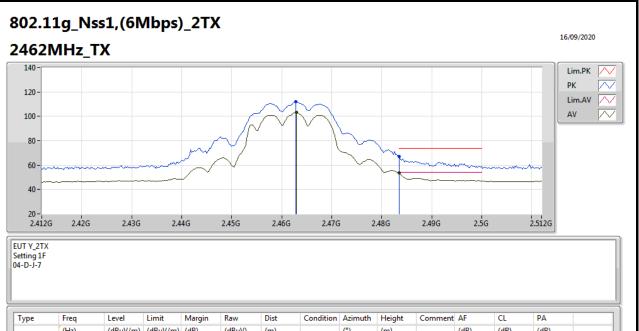
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.4576G	114.64	Inf	-Inf	83.58	3	Vertical	268	2.53	-	27.73	3.33	-	
AV	2.4578G	105.53	Inf	-Inf	74.47	3	Vertical	268	2.53	-	27.73	3.33	-	
РК	2.4835G	69.13	74.00	-4.87	37.96	3	Vertical	268	2.53	-	27.83	3.34	-	
AV	2.4835G	52.84	54.00	-1.16	21.67	3	Vertical	268	2.53	-	27.83	3.34	-	





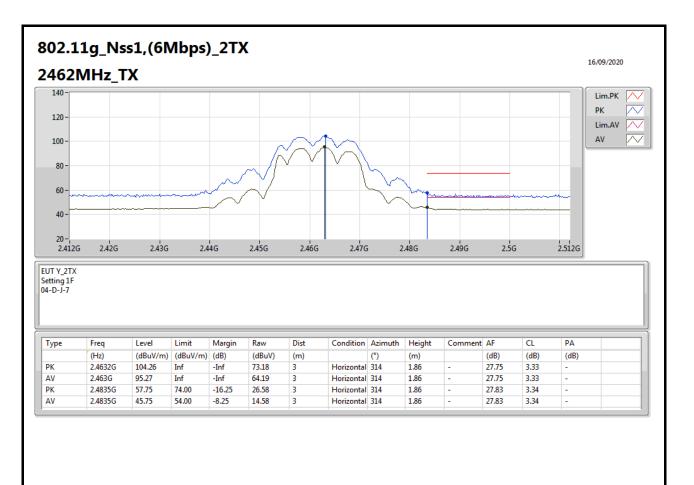
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.4576G	107.56	Inf	-Inf	76.50	3	Horizontal	312	1.45	-	27.73	3.33	-	
AV	2.4578G	98.37	Inf	-Inf	67.31	3	Horizontal	312	1.45	-	27.73	3.33	-	
PK	2.4835G	60.30	74.00	-13.70	29.13	3	Horizontal	312	1.45	-	27.83	3.34	-	
AV	2.4835G	46.17	54.00	-7.83	15.00	3	Horizontal	312	1.45	-	27.83	3.34	-	



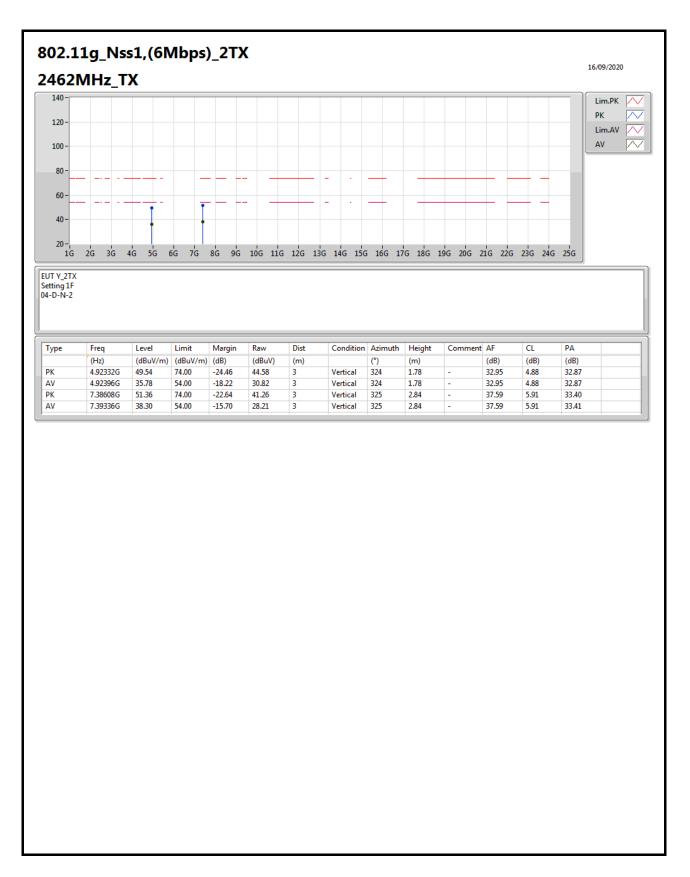


Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
2.4628G	112.12	Inf	-Inf	81.04	3	Vertical	265	2.60	-	27.75	3.33	-	
2.463G	103.20	Inf	-Inf	72.12	3	Vertical	265	2.60	-	27.75	3.33	-	
2.4835G	67.11	74.00	-6.89	35.94	3	Vertical	265	2.60	-	27.83	3.34	-	
2.4835G	53.55	54.00	-0.45	22.38	3	Vertical	265	2.60	-	27.83	3.34	-	
	(Hz) 2.4628G 2.463G 2.4835G	(Hz) (dBuV/m) 2.4628G 112.12 2.463G 103.20 2.4835G 67.11	(Hz) (dBuV/m) (dBuV/m) 2.4628G 112.12 Inf 2.463G 103.20 Inf 2.4835G 67.11 74.00	(Hz) (dBuV/m) (dBuV/m) (dB) 2.4628G 112.12 Inf -Inf 2.463G 103.20 Inf -Inf 2.4835G 67.11 74.00 -6.89	(Hz) (dBuV/m) (dBuV/m) (dB) (dBuV) 2.4628G 112.12 Inf -Inf 81.04 2.463G 103.20 Inf -Inf 72.12 2.4835G 67.11 74.00 -6.89 35.94	(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) 2.4628G 112.12 Inf -Inf 81.04 3 2.463G 103.20 Inf -Inf 72.12 3 2.4835G 67.11 74.00 -6.89 35.94 3	(Hz) (dBuV/m) (dBuV/m) <th< td=""><td>(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (°) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265</td><td>(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (") (m) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60</td><td>(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (m) (m) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 -</td><td>(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (m) (m) (dB) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 27.75 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 27.75 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 - 27.83</td><td>(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (°) (m) (dB) (dB) (dB) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 27.75 3.33 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 27.75 3.33 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 - 27.83 3.34</td><td>(Hz) (dBuV/m) (dB, (dBuV) (m) (m) (m) (dB) (dB) (dB) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 27.75 3.33 - - 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 27.75 3.33 - - 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 - 27.83 3.34 -</td></th<>	(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (°) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265	(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (") (m) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60	(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (m) (m) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 -	(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (m) (m) (dB) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 27.75 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 27.75 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 - 27.83	(Hz) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (dBuV/m) (m) (°) (m) (dB) (dB) (dB) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 27.75 3.33 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 27.75 3.33 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 - 27.83 3.34	(Hz) (dBuV/m) (dB, (dBuV) (m) (m) (m) (dB) (dB) (dB) 2.4628G 112.12 Inf -Inf 81.04 3 Vertical 265 2.60 - 27.75 3.33 - - 2.463G 103.20 Inf -Inf 72.12 3 Vertical 265 2.60 - 27.75 3.33 - - 2.4835G 67.11 74.00 -6.89 35.94 3 Vertical 265 2.60 - 27.83 3.34 -

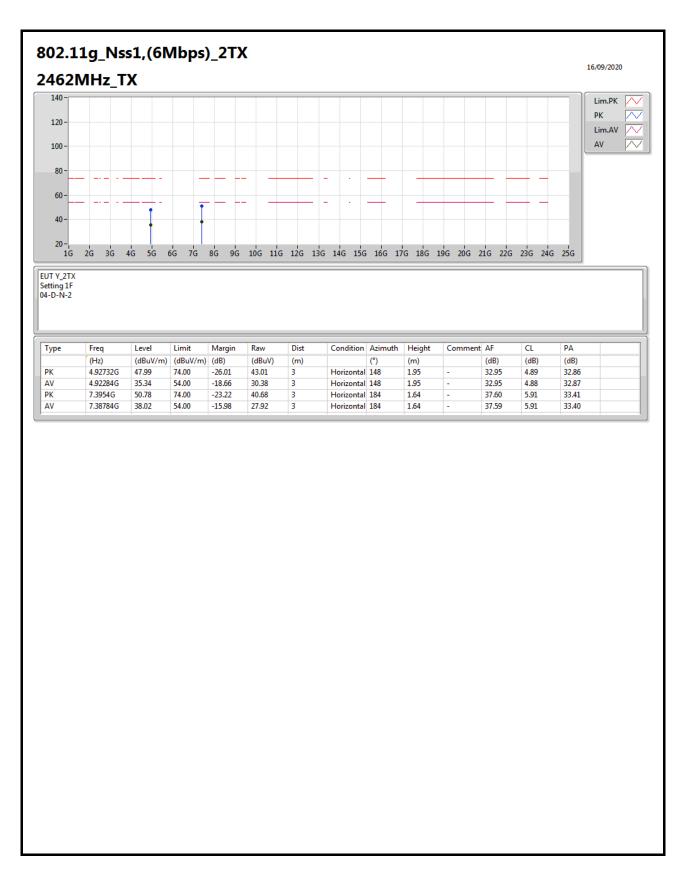




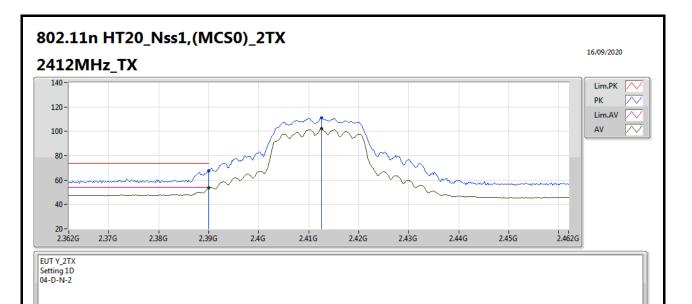






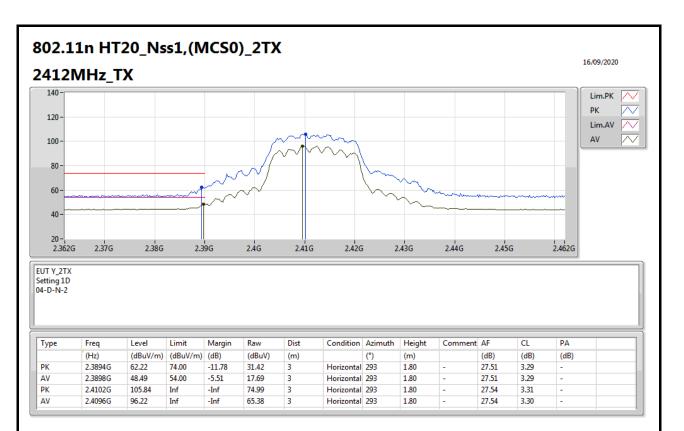




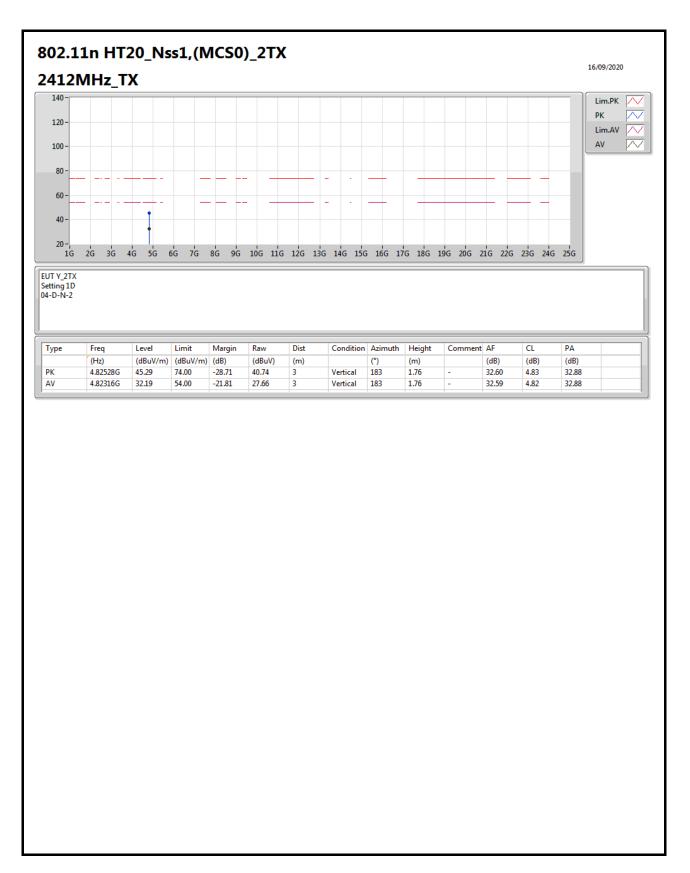


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.39G	67.63	74.00	-6.37	36.83	3	Vertical	287	2.55	-	27.51	3.29	-	
AV	2.39G	53.76	54.00	-0.51	22.69	3	Vertical	287	2.55	-	27.51	3.29	-	
РК	2.4126G	110.91	Inf	-Inf	80.05	3	Vertical	287	2.55	-	27.55	3.31	-	
AV	2.4126G	102.04	Inf	-Inf	71.18	3	Vertical	287	2.55	-	27.55	3.31	-	

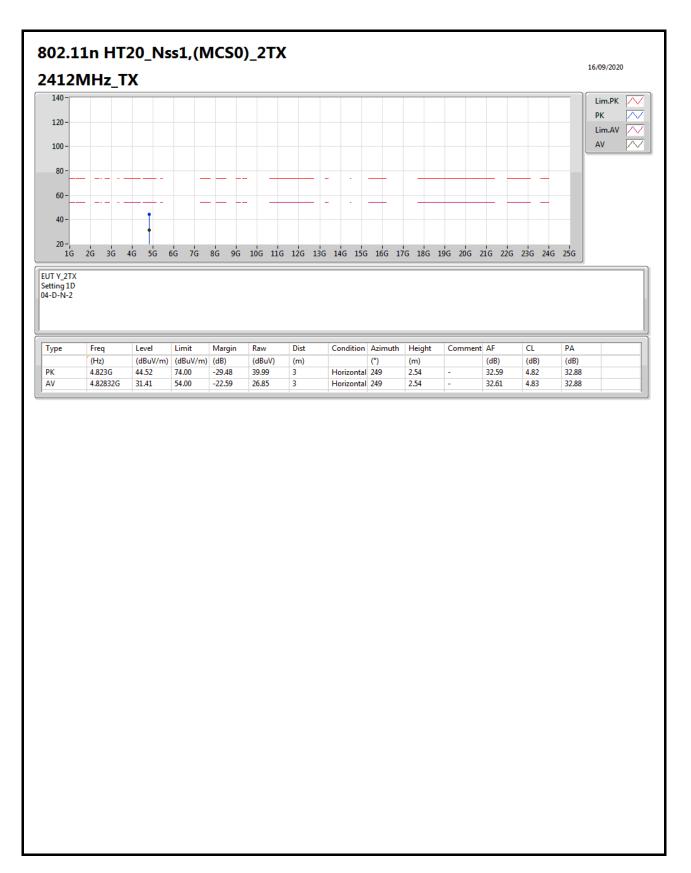




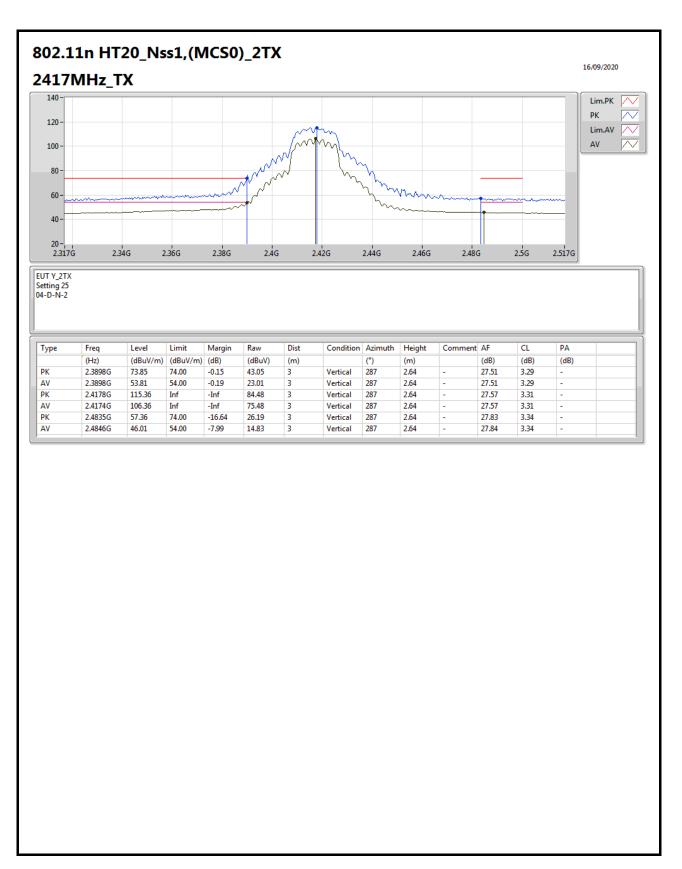




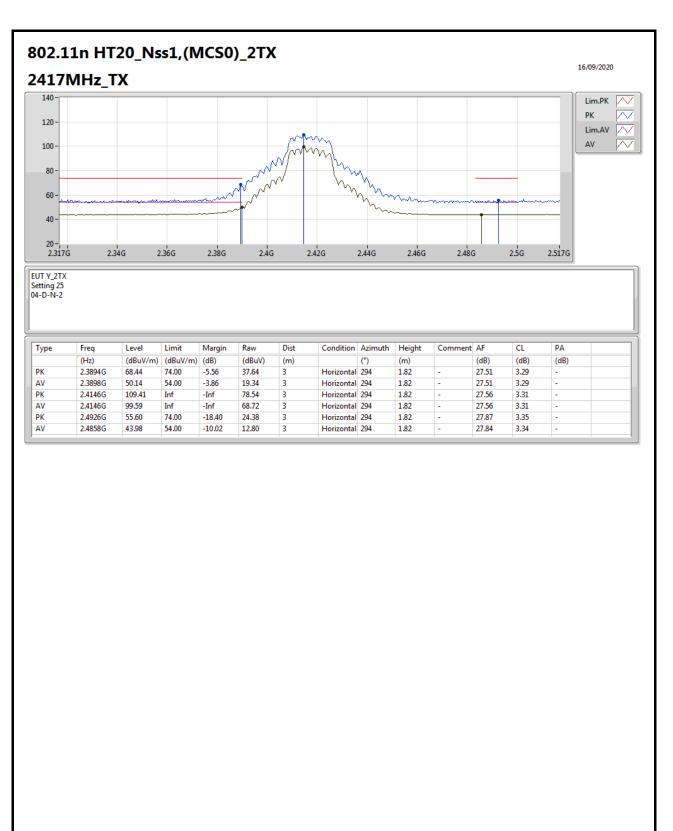




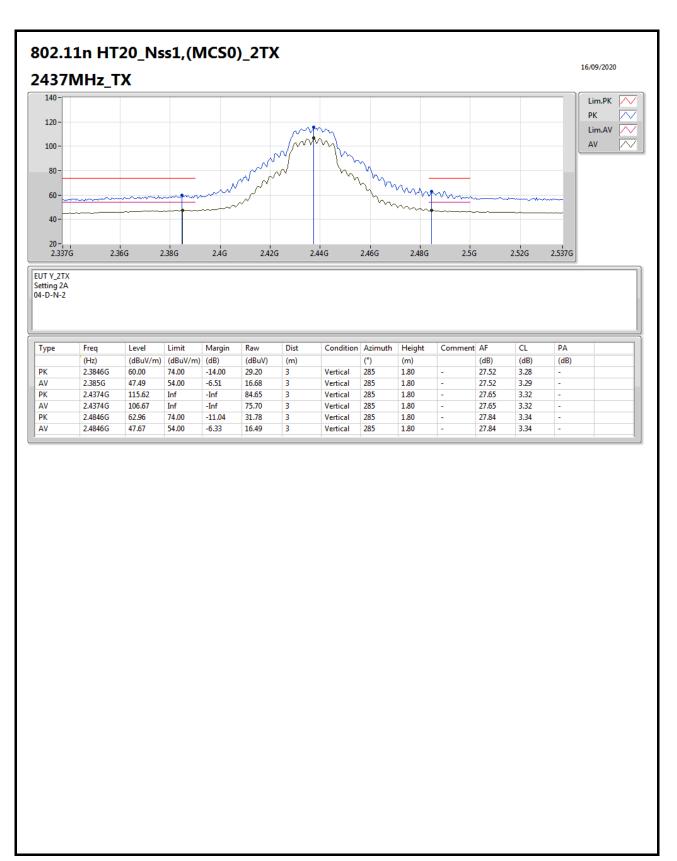




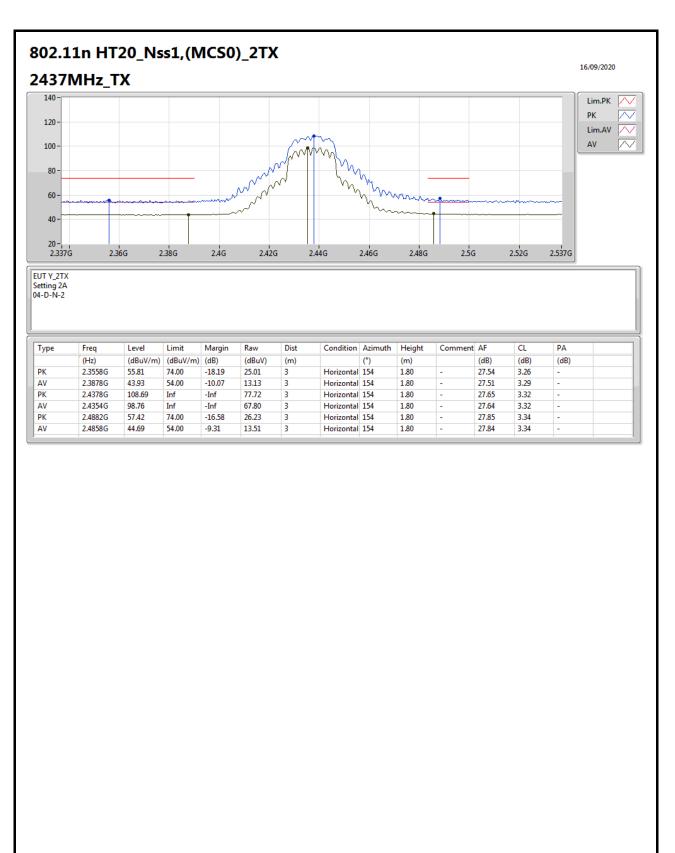




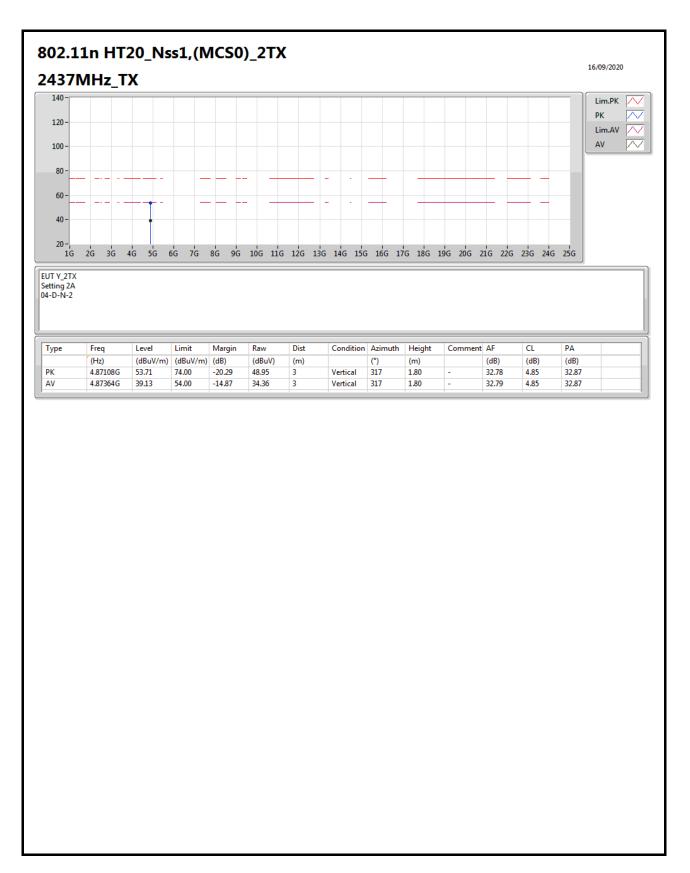




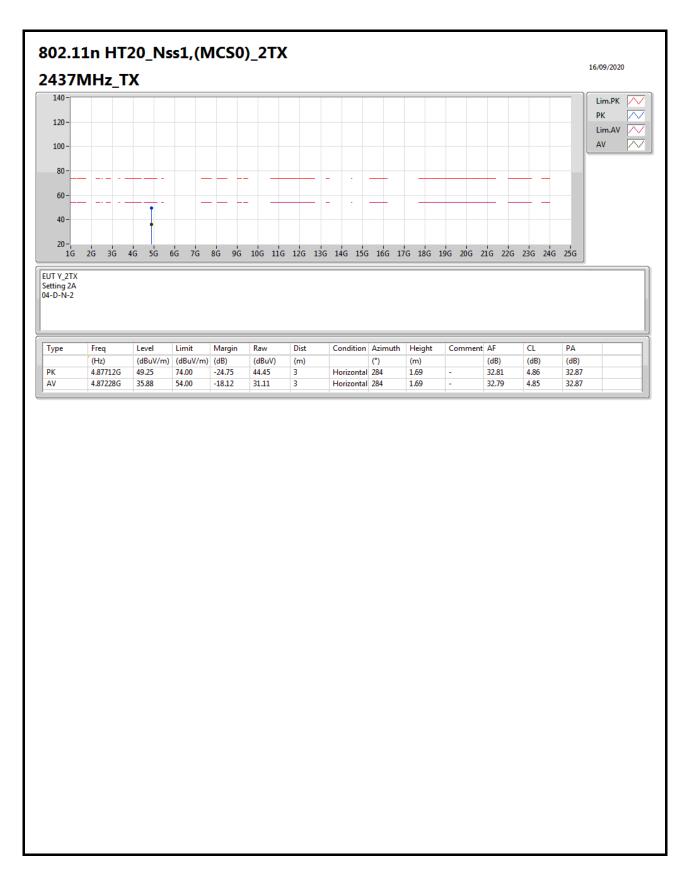




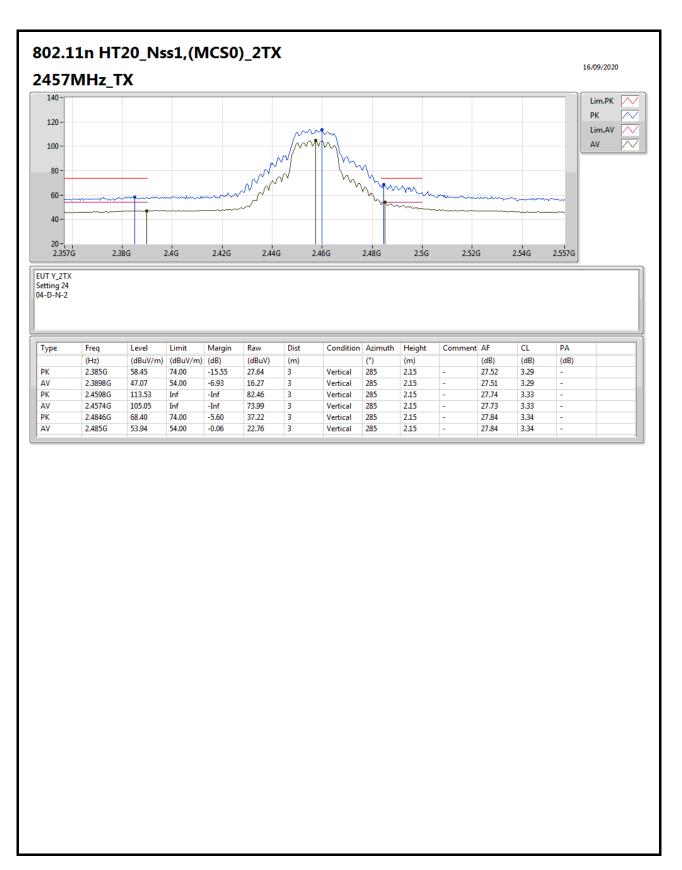




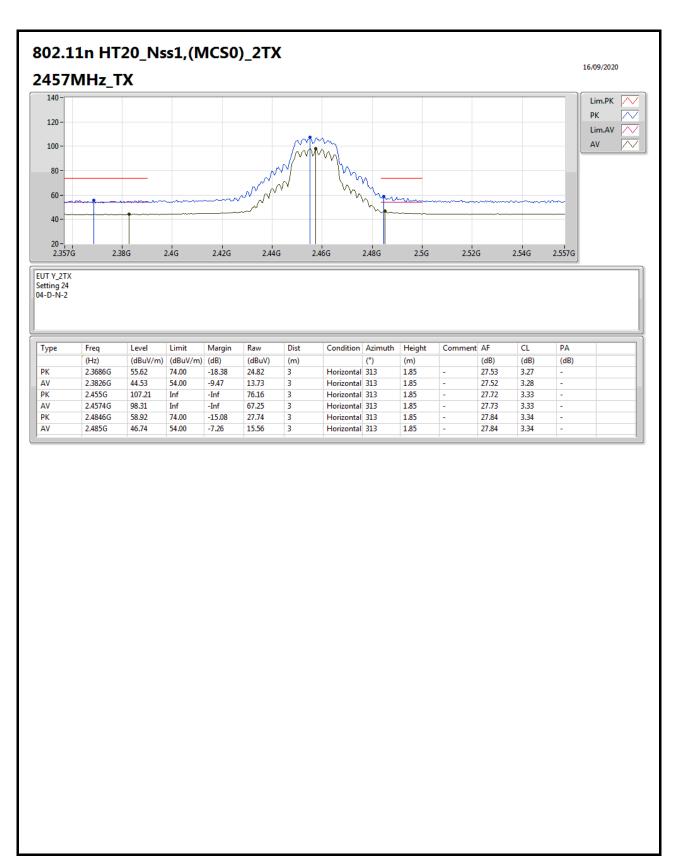




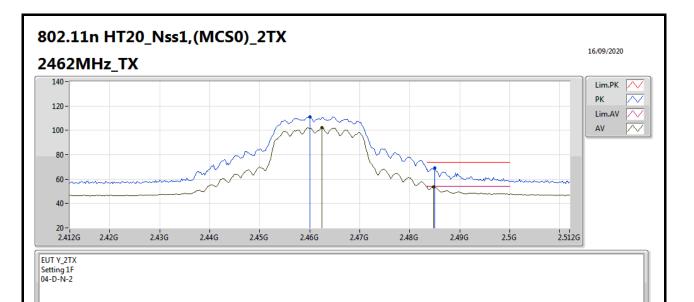






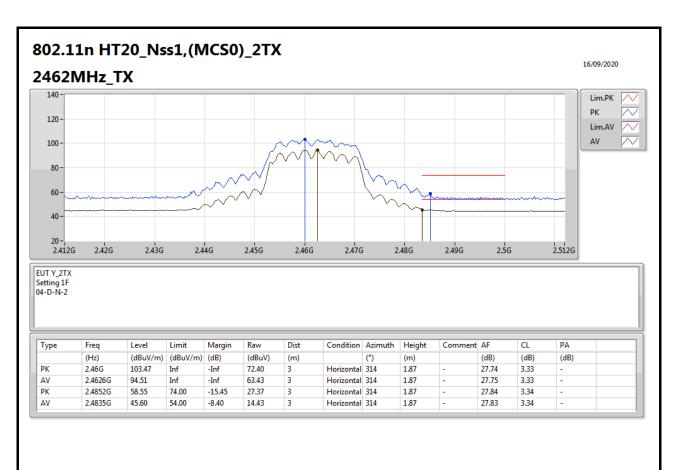




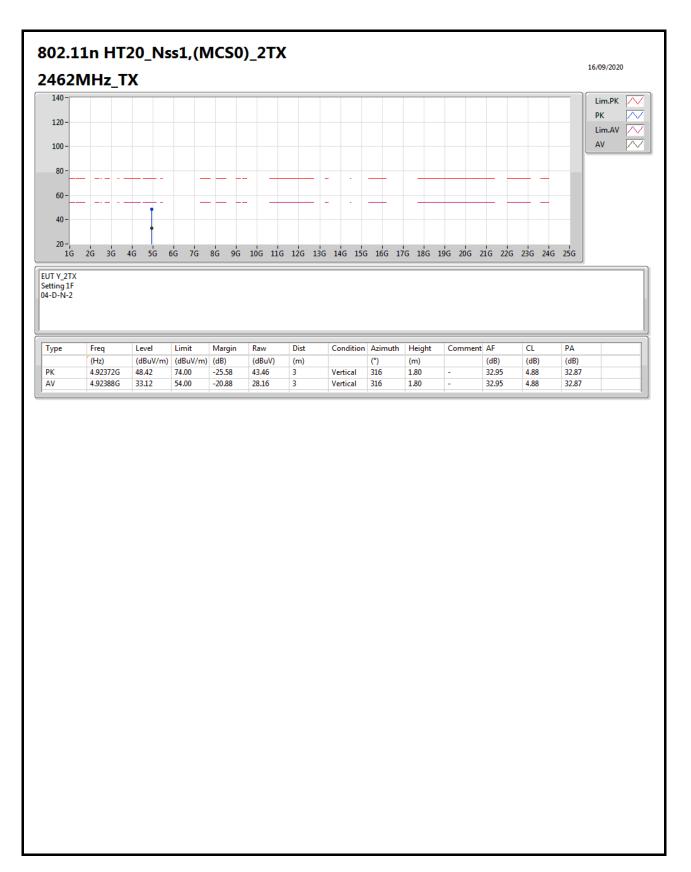


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.46G	111.04	Inf	-Inf	79.97	3	Vertical	285	2.16	-	27.74	3.33	-	
AV	2.4624G	102.38	Inf	-Inf	71.30	3	Vertical	285	2.16	-	27.75	3.33	-	
РК	2.485G	69.00	74.00	-5.00	37.82	3	Vertical	285	2.16	-	27.84	3.34	-	
AV	2.4848G	53.77	54.00	-0.23	22.59	3	Vertical	285	2.16	-	27.84	3.34	-	

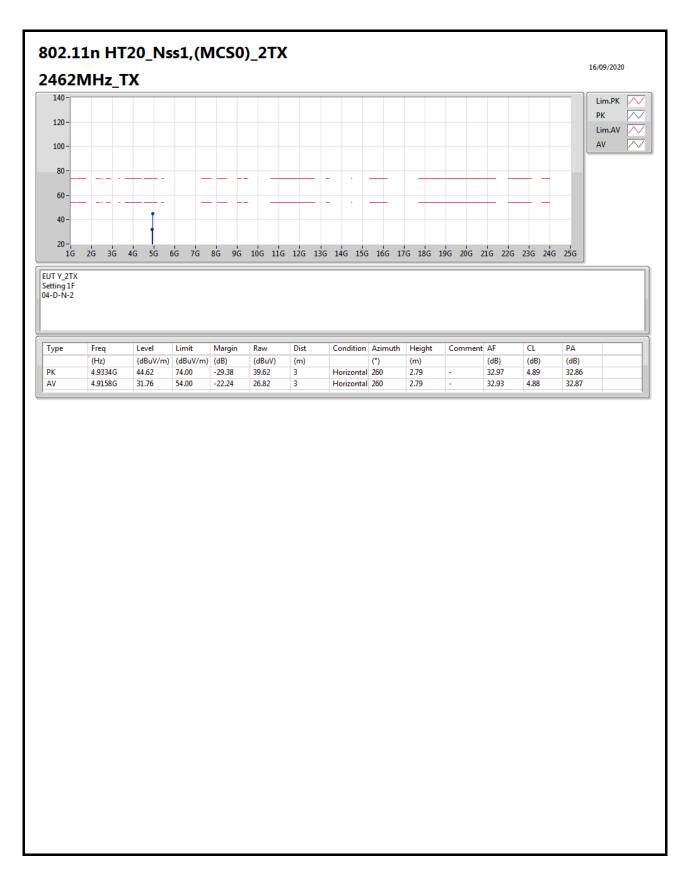




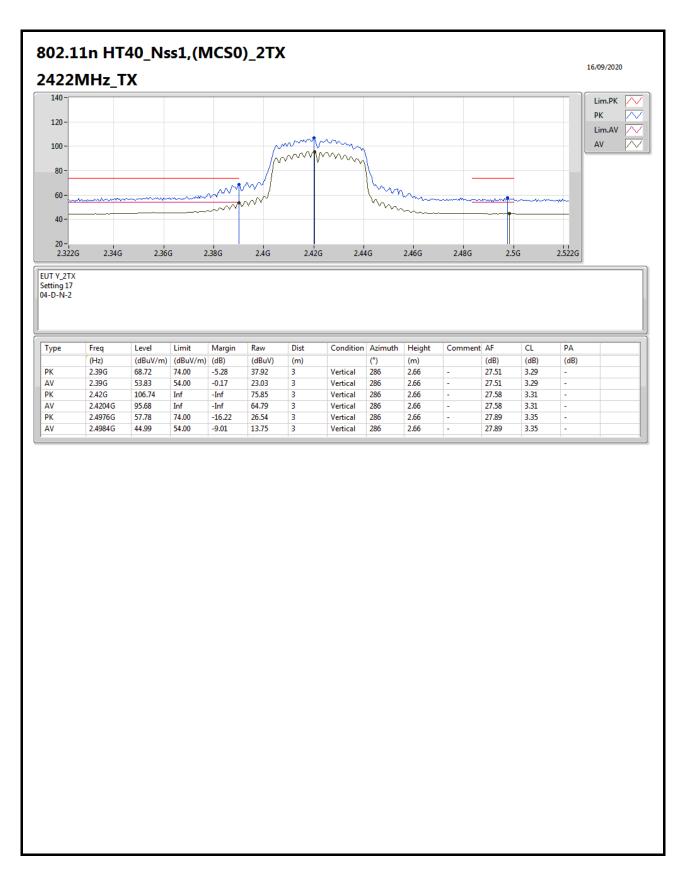




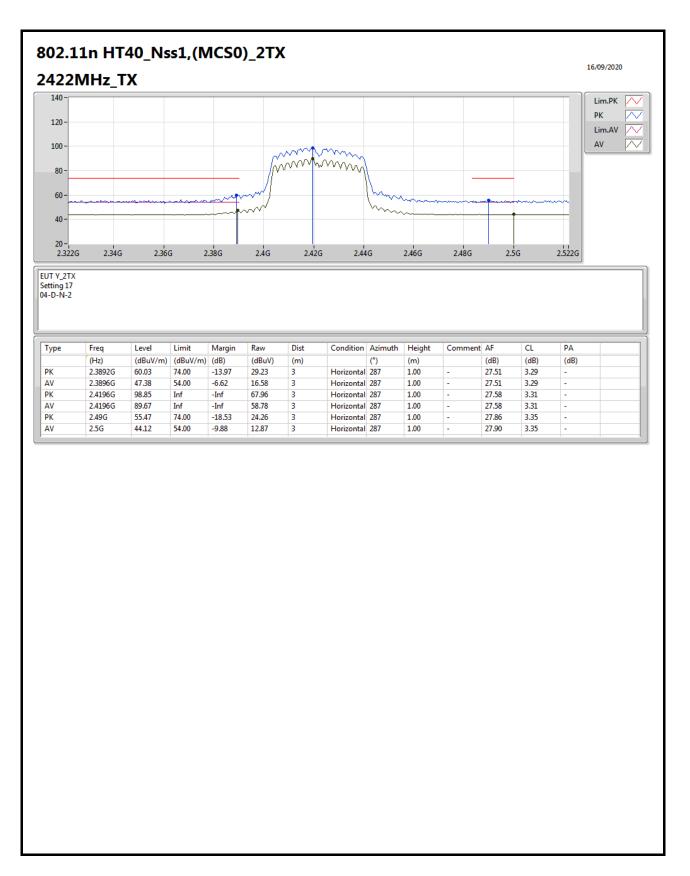




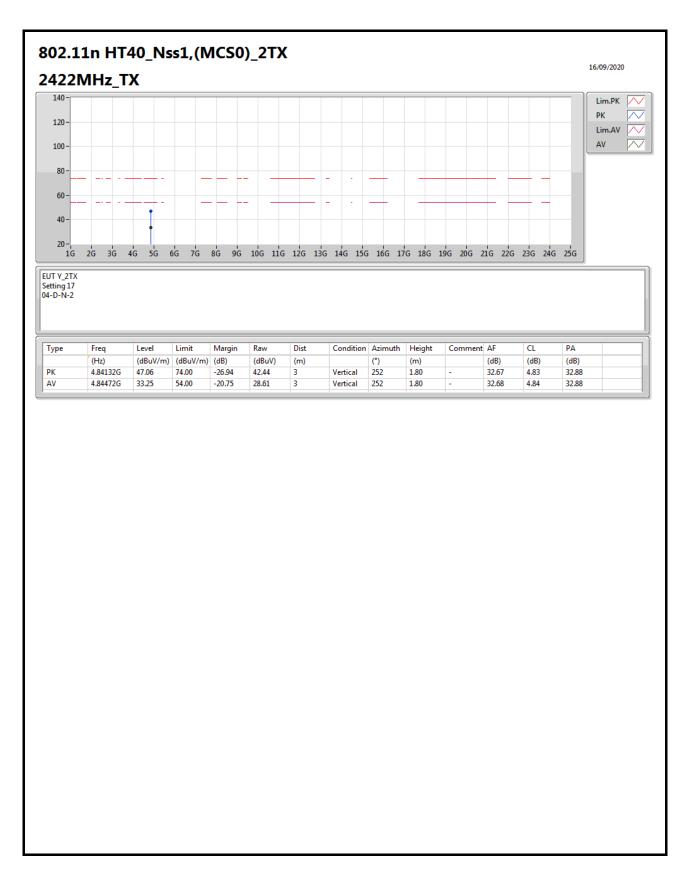




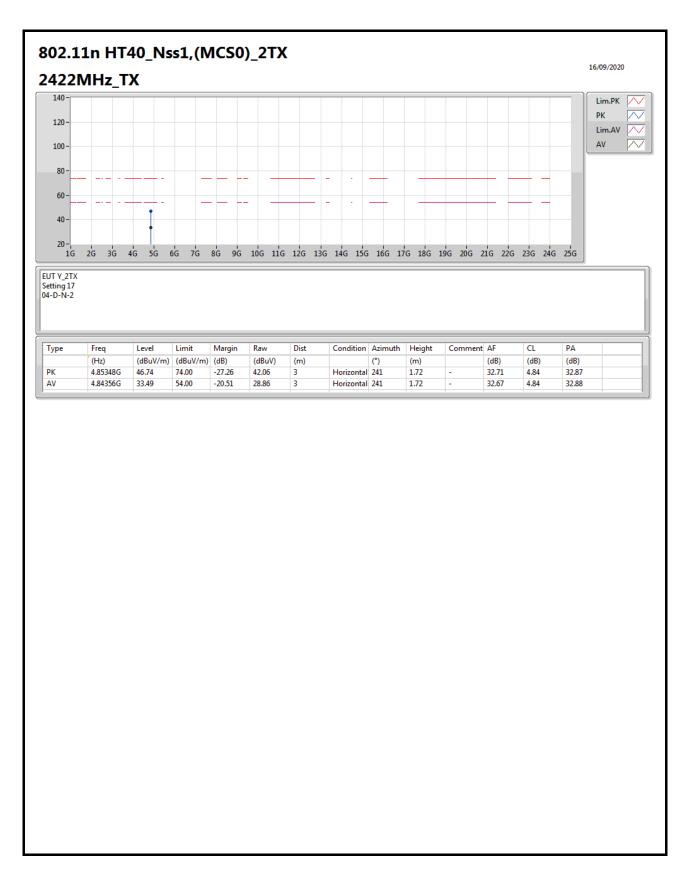




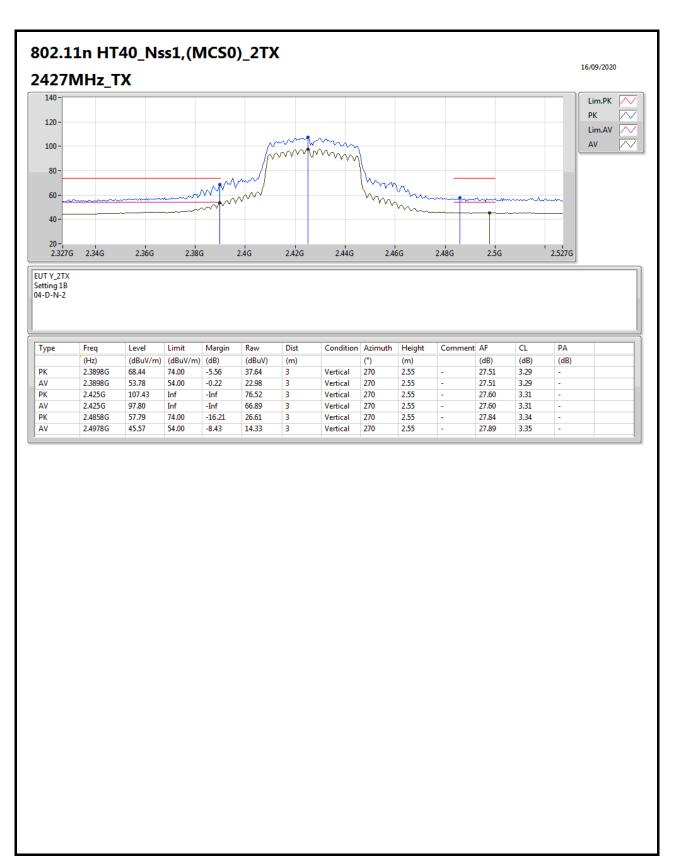




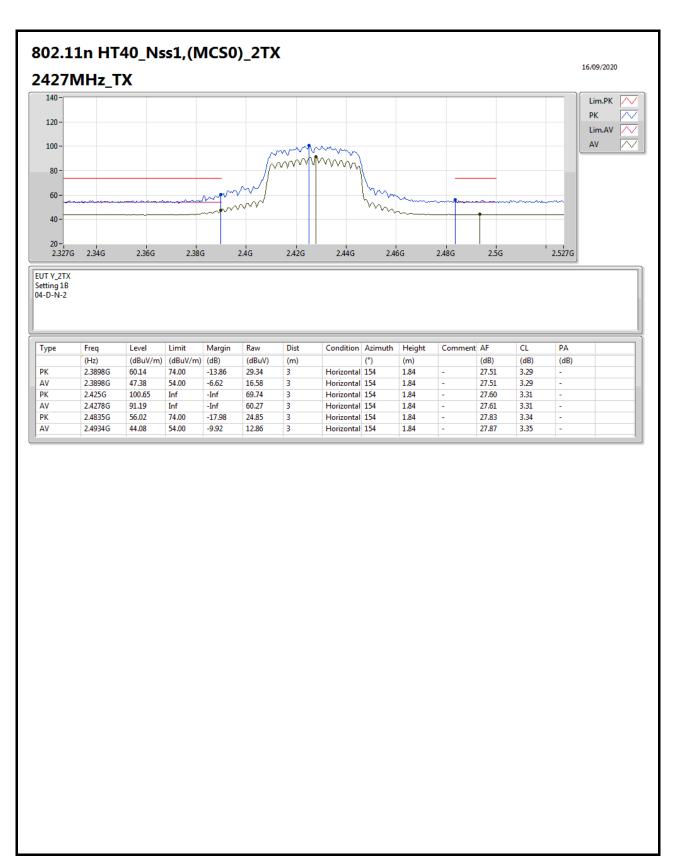




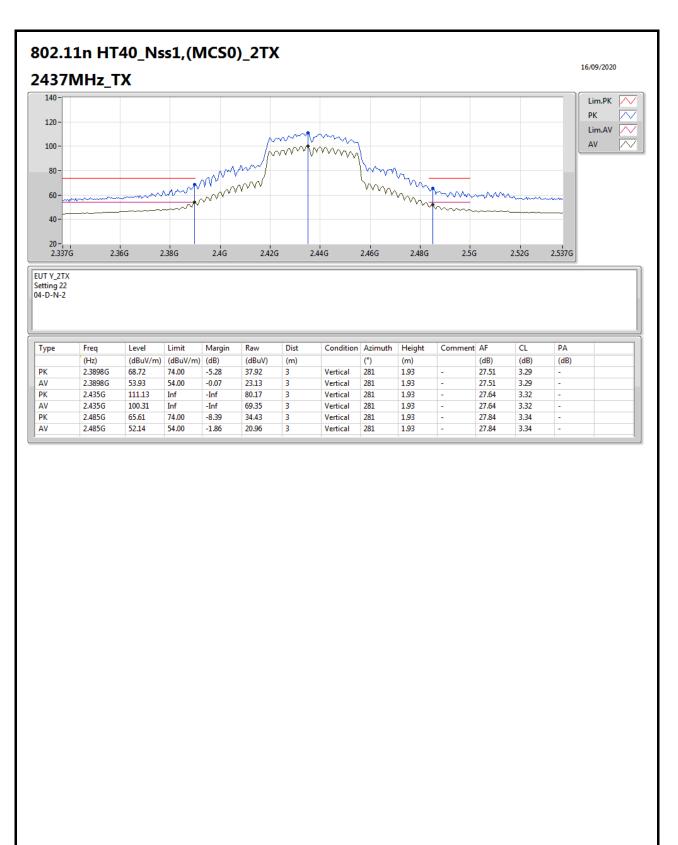




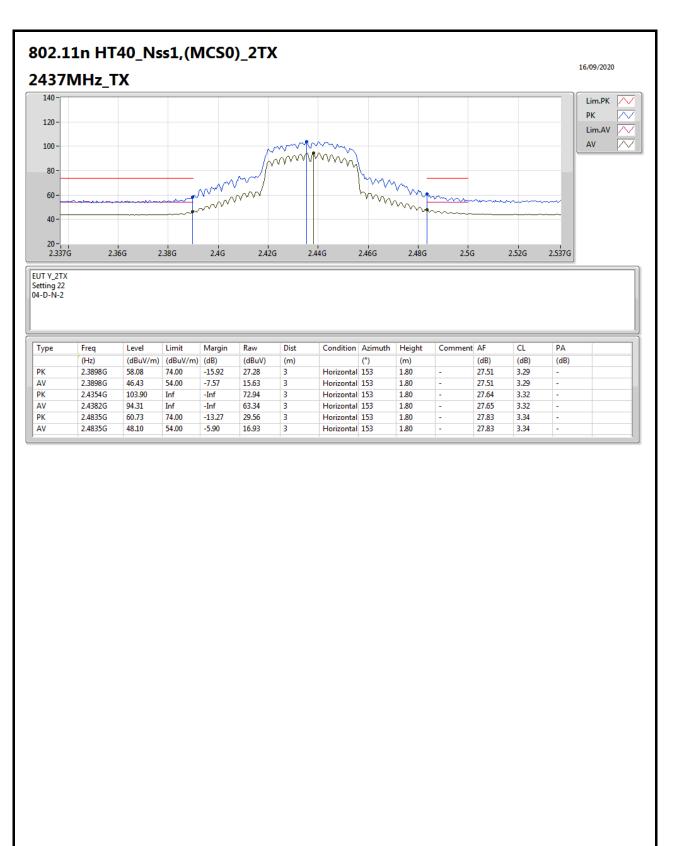




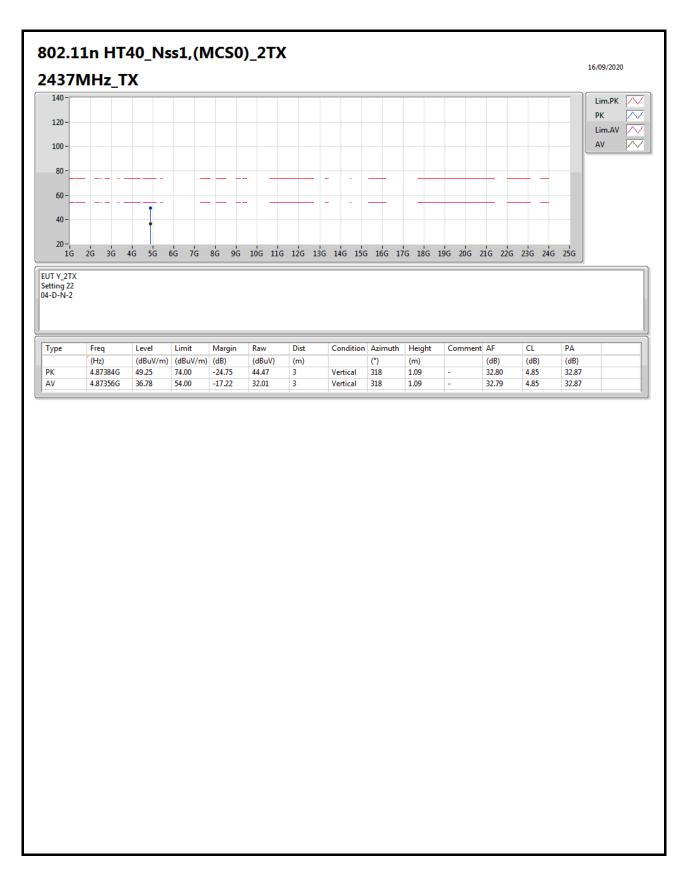




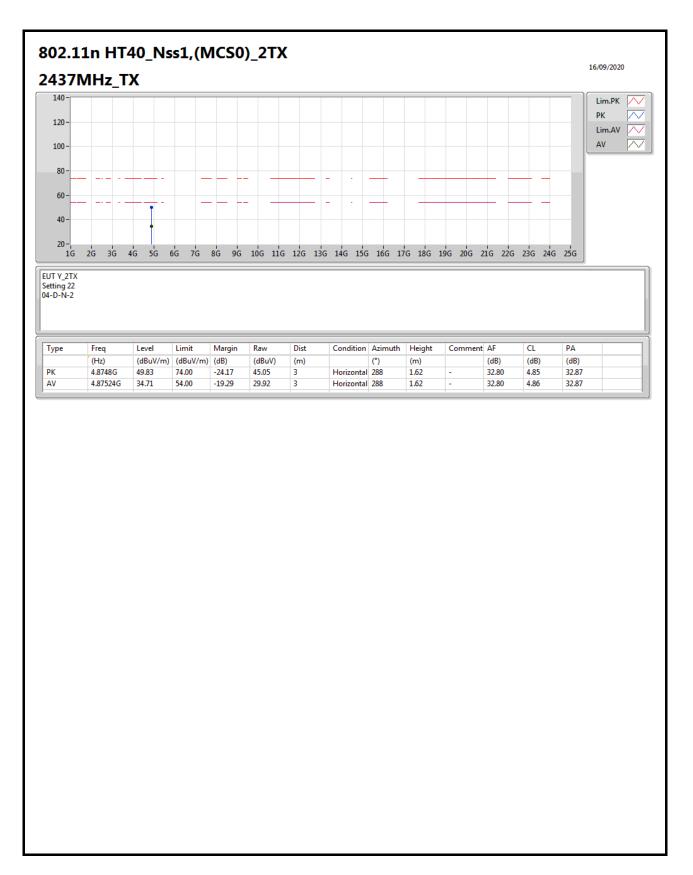




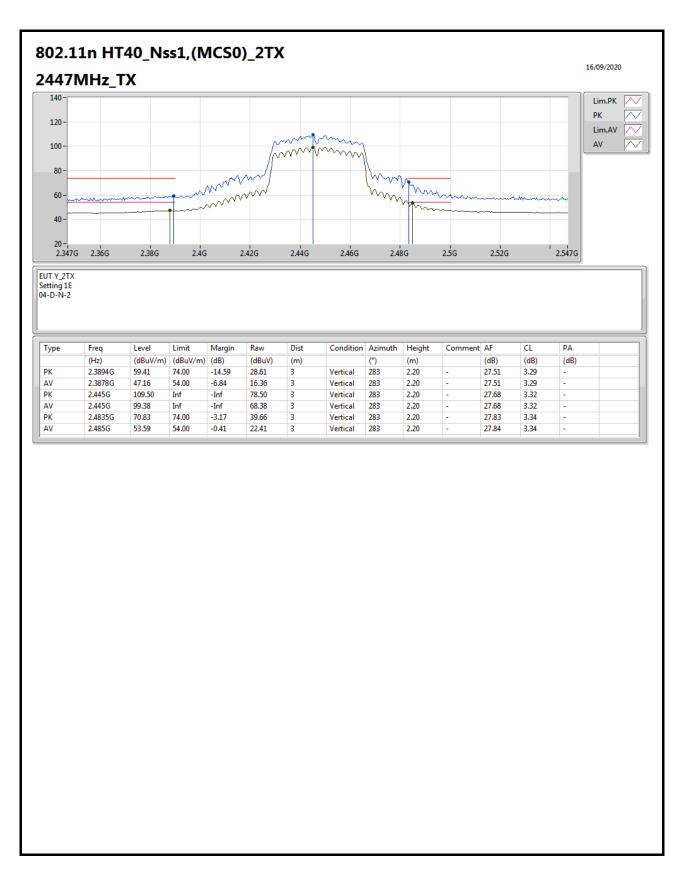




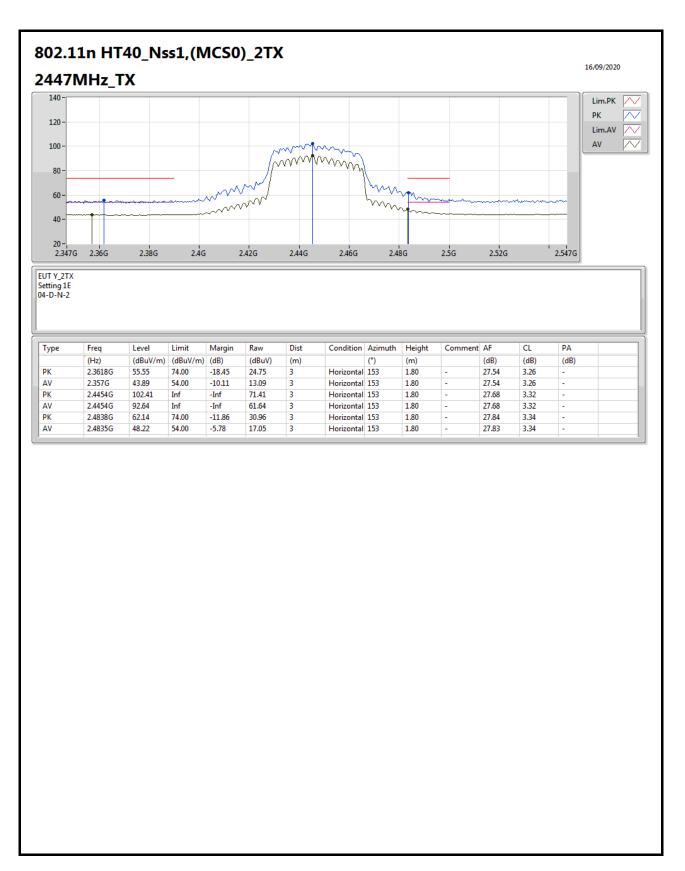




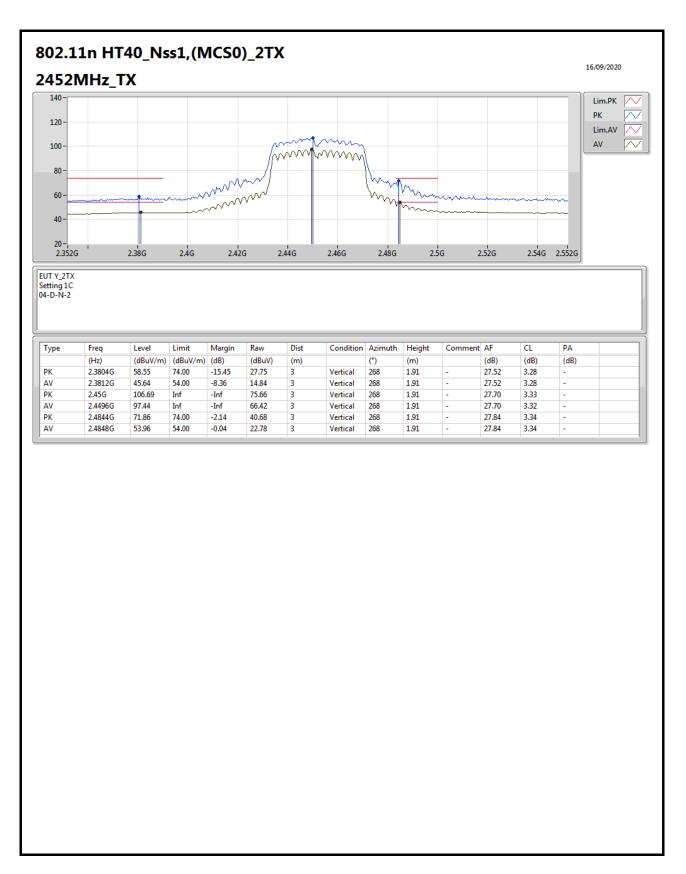




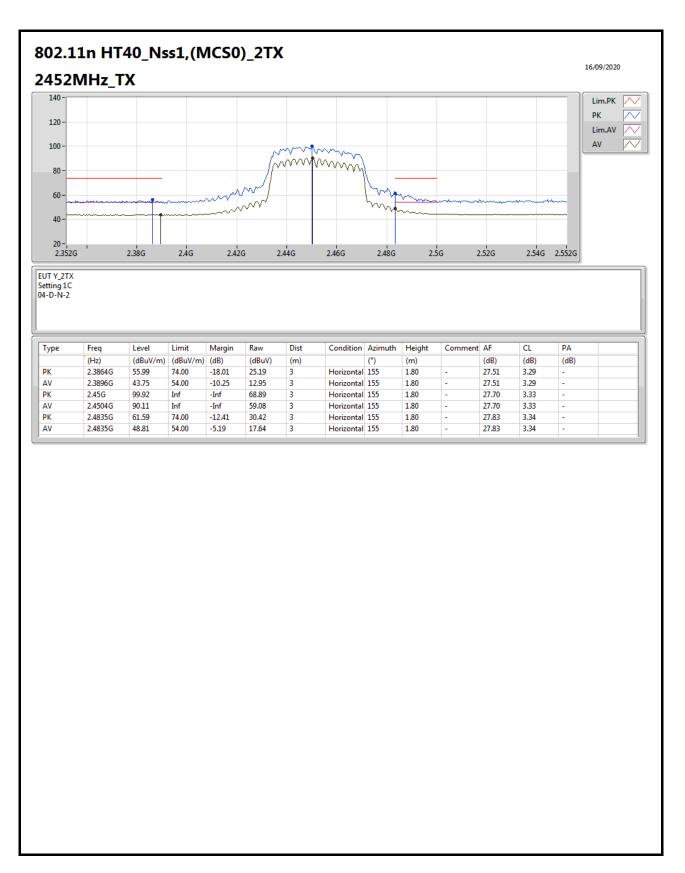




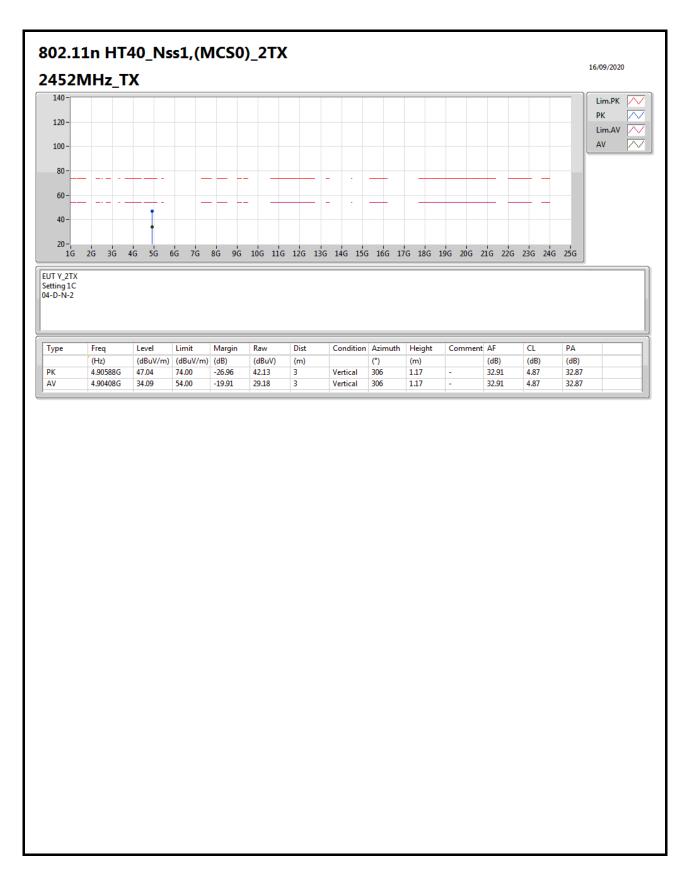




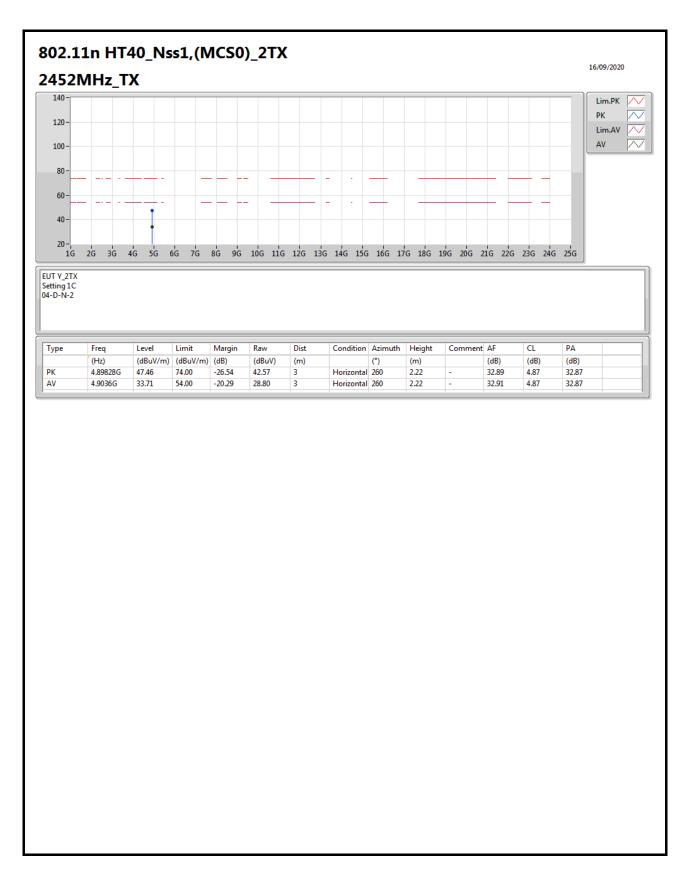














Radiated Emissions above 1GHz

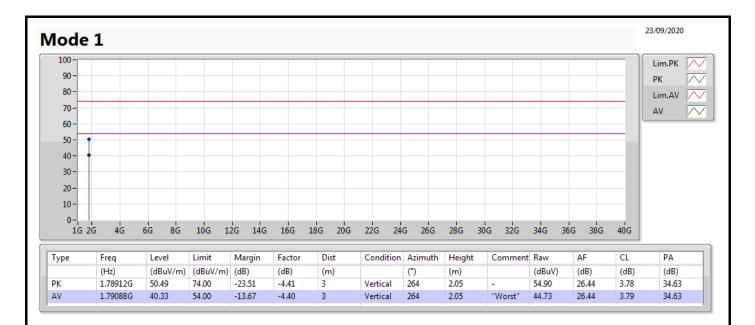
Appendix G

Summary								
	Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
				(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
	Mode 1	Pass	AV	1.79088G	40.33	54.00	-13.67	Vertical



Radiated Emissions above 1GHz

Appendix G





Radiated Emissions above 1GHz

Appendix G

