

Report No. : FR083105AA



FCC RADIO TEST REPORT

FCC ID		2ADZRBEACON1-1
Equipment	;	Nokia WiFi Beacon 1.1
Brand Name	:	Nokia
Model Name	:	Beacon 1.1
Applicant	:	Nokia Shanghai Bell Co., Ltd.
		No.388, Ningqiao Rd, Pilot Free Trade Zone Shanghai, 201206 P.R. China
Manufacturer	:	Nokia Shanghai Bell Co., Ltd.
		No.388, Ningqiao Rd, Pilot Free Trade Zone Shanghai, 201206 P.R. China
Standard	:	47 CFR FCC Part 15.247

The product was received on Aug. 31, 2020, and testing was started from Aug. 31, 2020 and completed on Sep. 16, 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

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History of this test report

Report No.	Version	Description	Issued Date
FR083105AA	01	Initial issue of report	Oct. 28, 2020
FR083105AA	02	Removing the EUT bridge mode.	Nov. 05, 2020



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
0	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)	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 Table for EUT information

The EUT has two set are identical to each other in all aspects except for the following table:

EUT	Description
EUT 1	Antenna set 1
EUT 2	Antenna set 2

1.1.3 Antenna Information

<Antenna set 1>

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Antenna	Gain (dBi)
	1 On	Brana	model Hame	Antenna Type	Connector	2.4GHz	5GHz
		INPAQ					
4	4	TECHNOLOGY	RFDPA072506I	Dinala Antonna	I-PEX	Noto1	Noto1
1	I	(SUZHOU)	MLB9C1	Dipole Antenna	I-PEA	Note1	Note1
		CO., LTD					
		INPAQ					
0	2	TECHNOLOGY	RFDPA0725111	Dipole Antenna	I-PEX	Note1	Note1
2	Z	(SUZHOU)	MLB9C2	Dipole Antenna	IFEX	Noter	NOLET
		CO., LTD					

Note1

				Antenna Pea	ak Gain (dBi)	
Ant.	Port		2.4GHz		5G	Hz
		2400MHz	2450MHz	2500MHz	5150 MHz	5850MHz
1	1	2.09	3.43	3.04	2.09	3.04
2	2	2.88	3.19	2.66	2.51	2.68

Correlated Ante	enna Gain (dBi)	
2.4GHz	5G	Hz
2.4002	Band 1	Band 4
5.67	4.78	5.16



<Antenna set 2>

Ant.	Port	Brand Holder	Model Name	Antenna Type	Connector	Ga	in (dBi)
						2.4GHz	5GHz
1	1	Signal Plus Technology Co.,Ltd.	6011F00204	Dipole Antenna	I-PEX	Note1	Note1
2	2	Signal Plus Technology Co.,Ltd.	6011F00205	Dipole Antenna	I-PEX	Note1	Note1

Note I

		Antenna Gain (dBi)					
Ant.	Port		2.4GHz		5GHz		
		2400MHz	2450MHz	2500MHz	5150 MHz	5850MHz	
1	1	3.92	4.11	3.82	3.77	3.91	
2	2	3.66	3.67	3.61	3.82	3.81	

Correlated Antenna Gain (dBi)				
	2.4GHz		5GHz	
2400MHz 2450MHz		2500MHz	5150 MHz	5850MHz
5.88	5.97	5.85	6.13	6.09

Note 1: The above information was declared by manufacturer.

Note 2: Because antenna set 1 and antenna set 2 are the same type antennas, only the higher gain antenna "antenna set 2" was tested.

For 2.4GHz function:

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.989	0.05	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.903	0.44	1.398m	1k
802.11n HT20	0.906	0.43	1.31m	1k
802.11n HT40	0.806	0.94	650u	3k

Note:

• DC is Duty Cycle.

DCF is Duty Cycle Factor.

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1.1.5 EUT Operational Condition

EUT Power Type	From Power Adapter		
Beamforming Function	With beamforming U Without beamforming		
Beamorning runetion	The product has beamforming function for 802.11n/ac in 5GHz.		
Function	Point-to-multipoint D Point-to-point		
Test Software Version	Telnet		

Note: The above information was declared by manufacturer.

1.1.6 Table for Multiple Listing

The EUT has two market sale set which are identical to each other in all aspects except for the following table:

Model Name	Unit	Part number	Adapter	RJ-45 cable
	KIT_Beacon 1.1	3FE 49234 XX,(XX (where,x, acharacters can be replaced by either alphanumeric character between A and Z) means that different customer markets have no difference in product hardware and have no impact on EMC	V	V
Beacon 1.1	EMA_Beacon 1.1	3FE 49236 XX,(XX (where,x, acharacters can be replaced by either alphanumeric character between A and Z) means that different customer markets have no difference in product hardware and have no impact on EMC	_	_

Note: 1.From the above table, model: Beacon 1.1 for unit: KIT_Beacon 1.1 was selected as representative model for the test and its data was recorded in this report.

2. The above information was declared by manufacturer.

1.1.7 EUT Supports Function

The EUT supports AP Router mode and mesh mode. Only the AP Router mode was 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	:	. 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	RJ Huang	24.1-24.8°C / 55-58%	Sep. 02, 2020 ~ Sep. 16, 2020
Radiated<1GHz and Radiated>1GHz Co-location	03CH05-CB	Owen Hsu	23.2-23.9°C / 51-53%	Sep. 09, 2020 ~ Sep. 10, 2020
Radiated>1GHz	03CH01-CB	JN Du	23.2-23.9°C / 51-53%	Aug. 31, 2020 ~ Sep. 14, 2020
AC Conduction	CO01-CB	Peter Wu	22~23°C / 61~62%	Sep. 15, 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	11
2417MHz	13
2437MHz	18
2457MHz	13
2462MHz	11
802.11g_Nss1,(6Mbps)_2TX	-
2412MHz	2
2417MHz	4
2437MHz	11
2457MHz	5
2462MHz	2
802.11n HT20_Nss1,(MCS0)_2TX	-
2412MHz	0
2417MHz	3
2437MHz	10
2457MHz	6
2462MHz	2
802.11n HT40_Nss1,(MCS0)_2TX	-
2422MHz	0
2427MHz	1
2437MHz	5
2447MHz	4
2452MHz	2



2.2 The Worst Case Measurement Configuration

Th	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 EUT 2 + adapter 1 (AP Router Mode)			
2 EUT 2 + adapter 2 (AP Router Mode)			
For operating mode 1 is th	e worst case and it was record in this test report.		

 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

 Test Mode
 EUT 2

Th	The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Bands			
Test ConditionRadiated measurementIf EUT consist of multiple antenna assembly (multiple antenna are used in El regardless of spatial multiplexing MIMO configuration), the radiated test show be performed with highest antenna gain of each antenna type.				
Operating Mode < 1GHz	Normal Link			
1	EUT 2 + adapter 1 (AP Router Mode)			
2	EUT 2 + adapter 2 (AP Router Mode)			
For operating mode 2 is th	For operating mode 2 is the worst case and it was record in this test report.			
Operating Mode > 1GHz CTX				
1	EUT 2			

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	1 EUT 2 + WLAN 2.4GHz+WLAN 5GHz	
Refer to Appendix G for Ra	adiated Emission Co-location.	



The Worst Case Mode for Following Conformance Tests			
Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation			
Operating Mode			
1 EUT 2 WLAN 2.4GHz+WLAN 5GHz			
Refer to Sporton Test Report No.: FA083105 for Co-location RF Exposure Evaluation.			

Note: The EUT can only be used in Y axis position.

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

Power	Brand	Model	Rating	
Adapter 1	RUIDE	RD1201000-C55-35MGD	Input:100-240V ~ 50/60Hz, 0.6A Max	
Adapter 1	KOIDE	KD1201000-C55-5510GD	Output:12V, 1.0A	
A denter O			Input:100-240V ~ 50/60Hz, 0.5A	
Adapter 2	UE	UES12LU-120100SPA	Output:12V, 1.0A	
Other				
RJ-45 cable*1: Non-shielded, 1m				



2.5 Support Equipment

For AC Conduction:

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

For Radiated (below 1GHz):

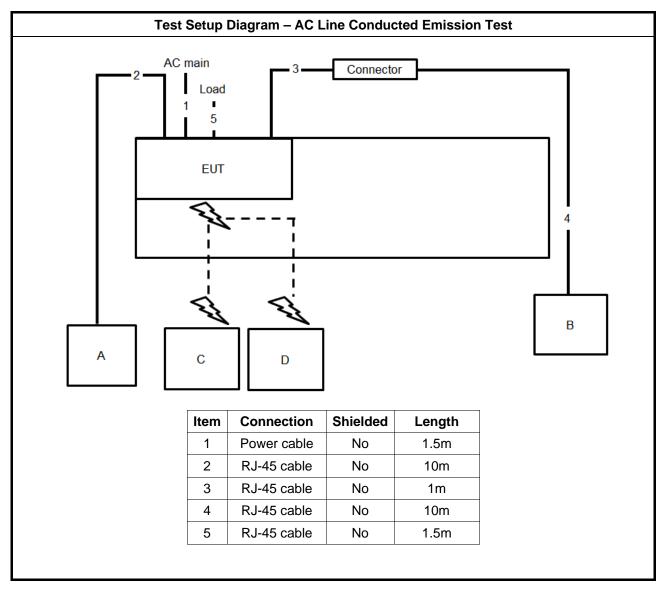
	Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID			FCC ID	
А	LAN NB	DELL	E4300	N/A	
В	WAN NB	DELL	E4300	N/A	
С	2.4G NB	DELL	E4300	N/A	
D	5G NB	DELL	E4300	N/A	

For Radiated (above 1GHz) and RF Conducted:

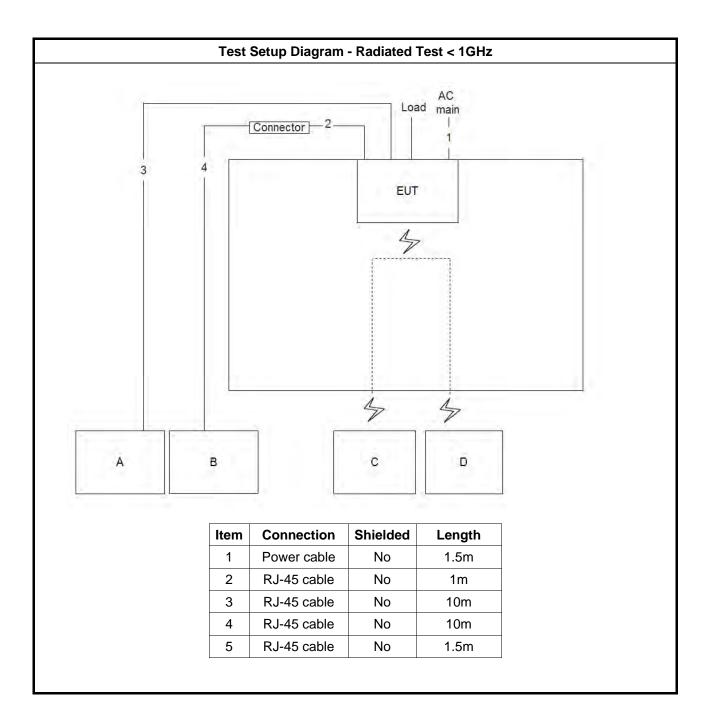
Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID			
А	NB	DELL	E4300	N/A



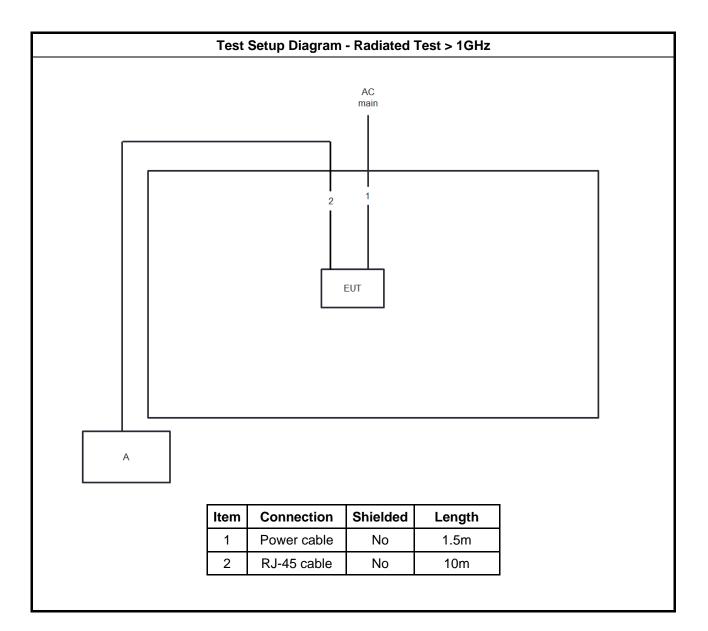
2.6 Test Setup Diagram













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.			

3.1.2 Measuring Instruments

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

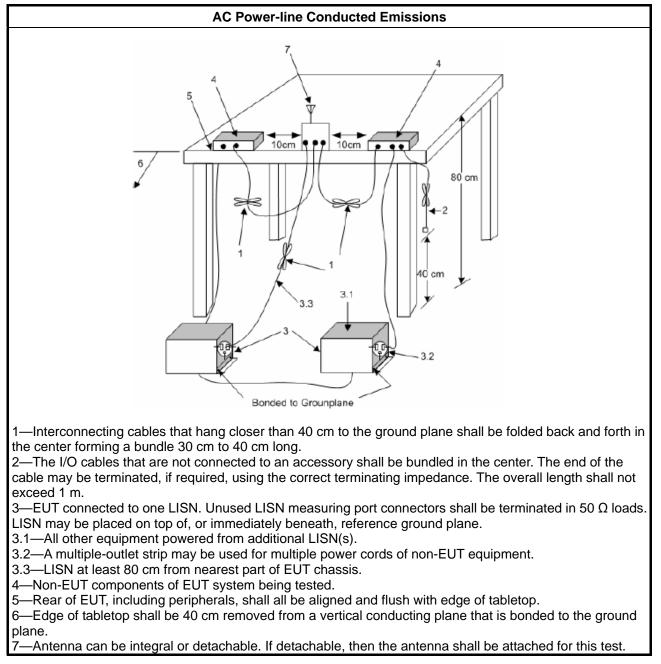
3.1.3 Test Procedures

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.

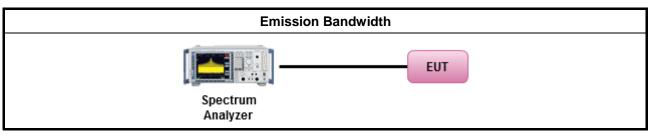
3.2.2 Measuring Instruments

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.

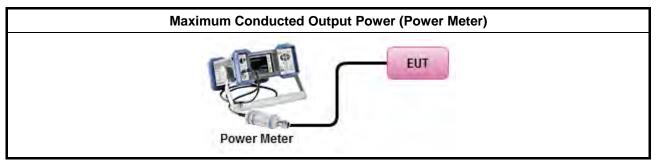


3.3.3 Test Procedures

		Test Method	
•	Мах	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	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

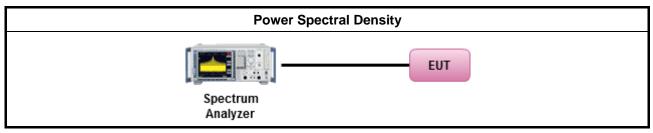
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

	Test Method										
•	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).										
	Refer 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:								
		\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

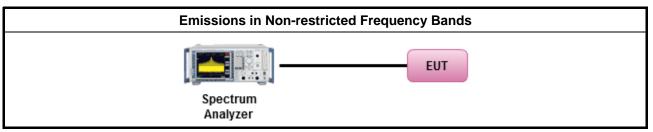
Refer a test equipment and calibration data table in this test report.

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									
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.

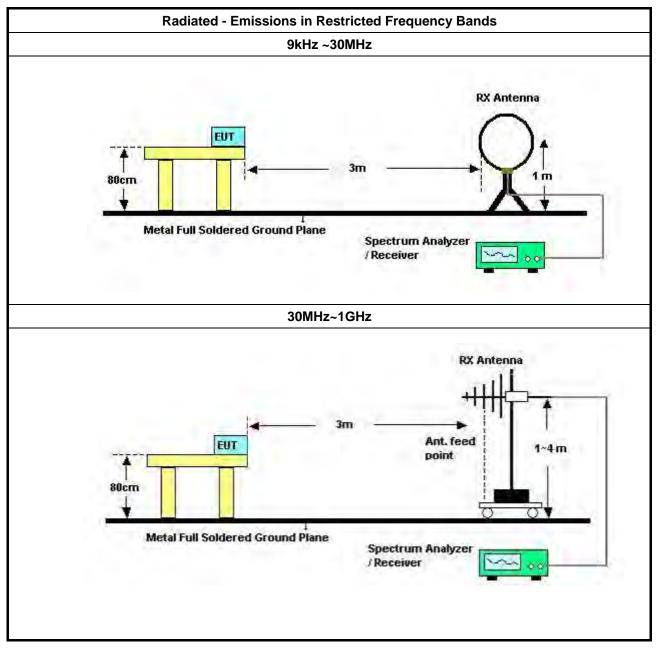


3.6.3 Test Procedures

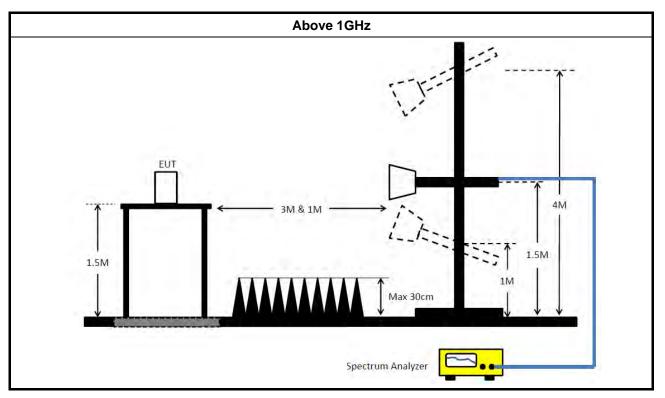
	Test Method
•	The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].
•	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
•	For the transmitter unwanted 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 (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 27, 2020	Mar. 26, 2021	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBE CK	BBHA9120D	BBHA 9120D-1291	1GHz~18GHz	Oct. 05, 2019	Oct. 04, 2020	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 28, 2020	Apr. 27, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Jul. 03, 2020	Jul. 02, 2021	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH05-CB)
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	May 12, 2020	May 11, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	LOW Cable-04+23	30MHz~1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Feb. 01, 2020	Jan. 31, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Horn Antenna	ETS-LINDGRE N	3115	00075790	750MHz ~ 18GHz	Nov. 04, 2019	Nov. 03, 2020	Radiation (03CH01-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 (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 08, 2020	Jan. 07, 2021	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Apr. 16, 2020	Apr. 15, 2021	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16	1 GHz ~ 18 GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16+17	1 GHz ~ 18 GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH01-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.

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

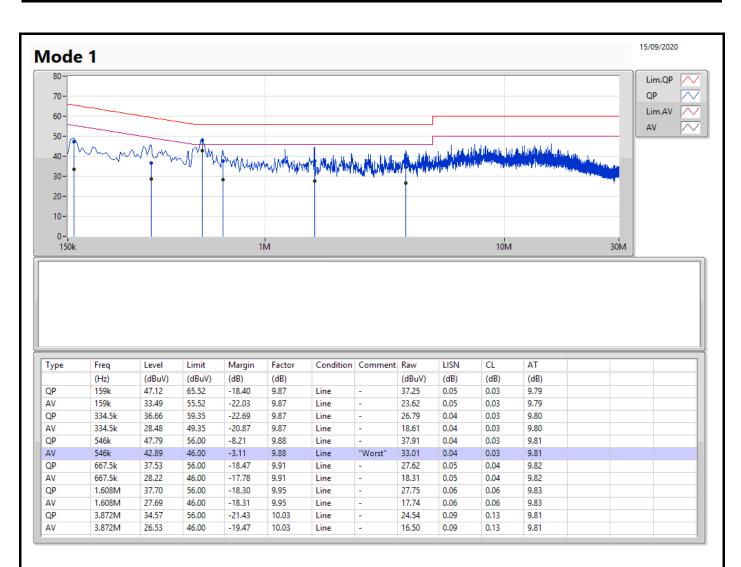


Conducted Emissions at Powerline

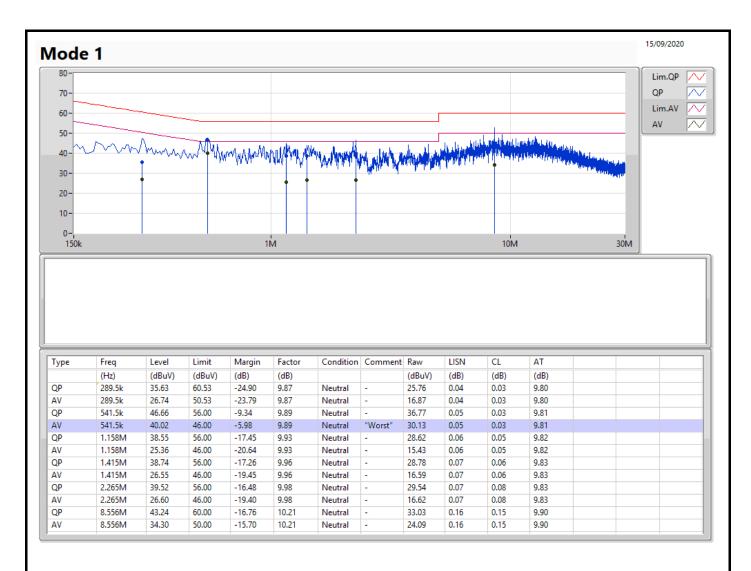
Appendix A

Summary									
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition		
			(Hz)	(dBuV)	(dBuV)	(dB)			
Mode 1	Pass	AV	546k	42.89	46.00	-3.11	Line		











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	10.025M	15.117M	15M1G1D	9.025M	14.018M
802.11g_Nss1,(6Mbps)_2TX	15.1M	16.592M	16M6D1D	15.025M	16.317M
802.11n HT20_Nss1,(MCS0)_2TX	15.675M	17.616M	17M6D1D	14.95M	17.441M
802.11n HT40_Nss1,(MCS0)_2TX	35.1M	35.982M	36M0D1D	34.95M	35.932M

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;



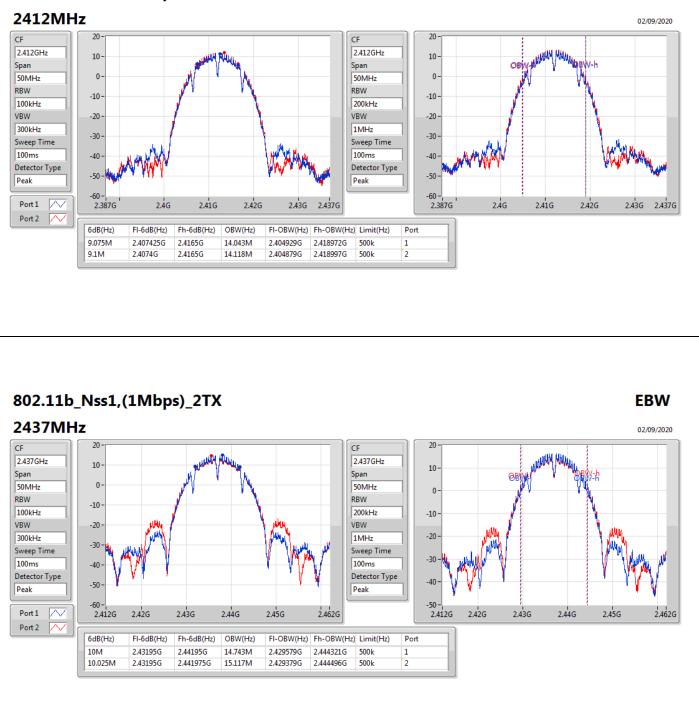
Result

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	9.075M	14.043M	9.1M	14.118M
2437MHz	Pass	500k	10M	14.743M	10.025M	15.117M
2462MHz	Pass	500k	9.05M	14.018M	9.025M	14.093M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	15.025M	16.492M	15.05M	16.342M
2437MHz	Pass	500k	15.075M	16.592M	15.1M	16.492M
2462MHz	Pass	500k	15.05M	16.467M	15.025M	16.317M
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	14.95M	17.491M	15.675M	17.441M
2437MHz	Pass	500k	14.975M	17.541M	15.075M	17.616M
2462MHz	Pass	500k	15.05M	17.491M	15.65M	17.466M
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	35.05M	35.932M	34.95M	35.932M
2437MHz	Pass	500k	35.1M	35.932M	35.05M	35.982M
2452MHz	Pass	500k	35.05M	35.932M	35M	35.932M

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

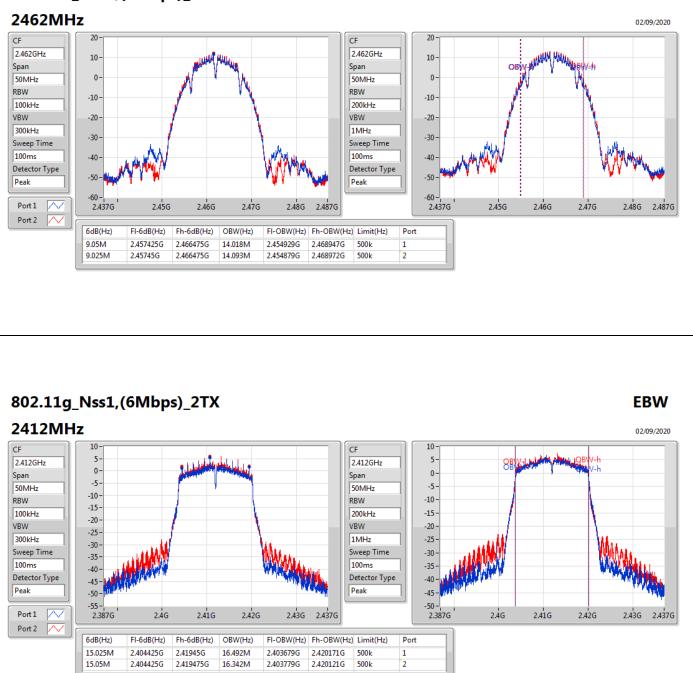


802.11b_Nss1,(1Mbps)_2TX



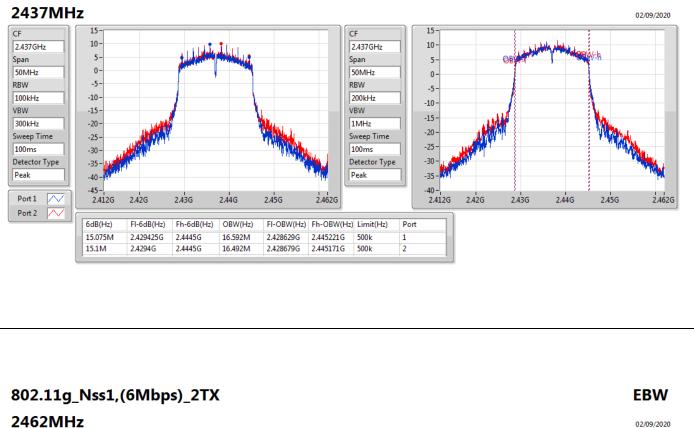


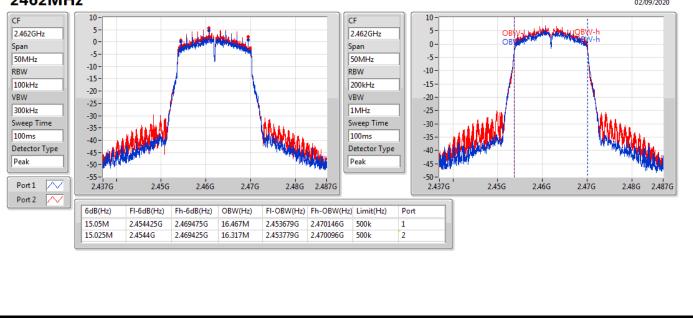
802.11b_Nss1,(1Mbps)_2TX





802.11g_Nss1,(6Mbps)_2TX

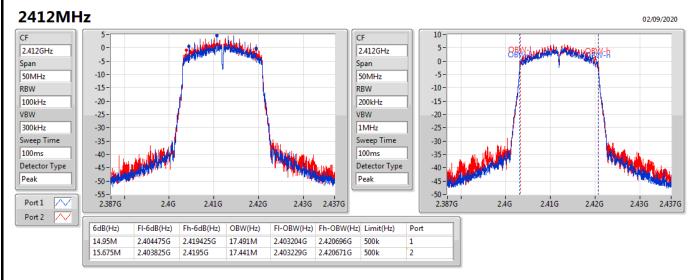






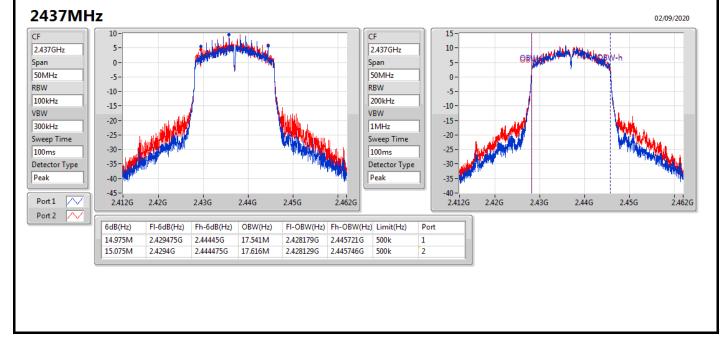
EBW

802.11n HT20_Nss1,(MCS0)_2TX



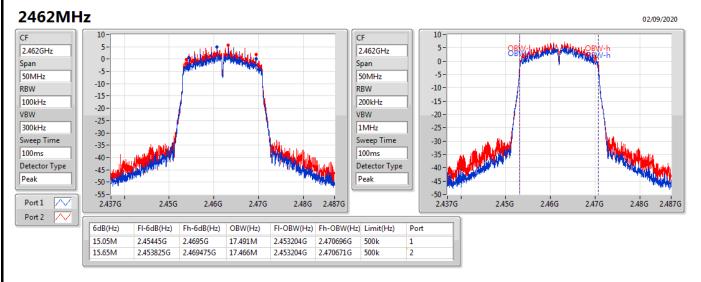
802.11n HT20_Nss1,(MCS0)_2TX

EBW



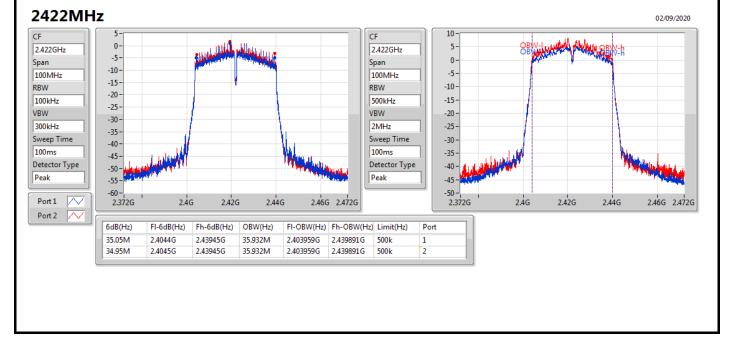


802.11n HT20_Nss1,(MCS0)_2TX



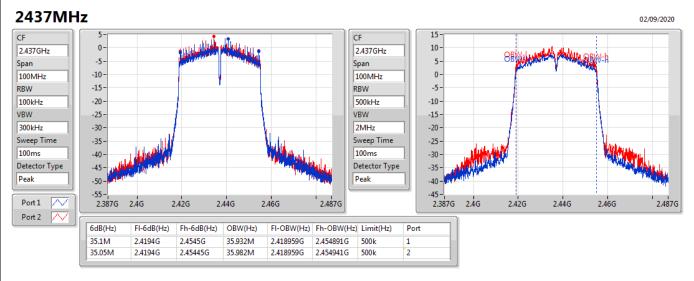
802.11n HT40_Nss1,(MCS0)_2TX

EBW



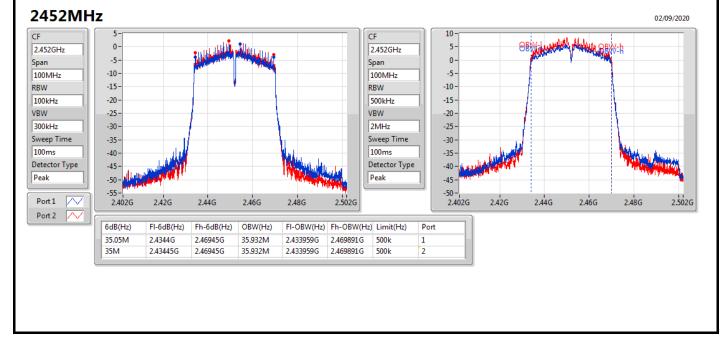


802.11n HT40_Nss1,(MCS0)_2TX



802.11n HT40_Nss1,(MCS0)_2TX

EBW





Summary

Mode	Total Power	Total Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	28.87	0.77090
802.11g_Nss1,(6Mbps)_2TX	24.40	0.27542
802.11n HT20_Nss1,(MCS0)_2TX	23.98	0.25003
802.11n HT40_Nss1,(MCS0)_2TX	20.81	0.12050



Average Power

Appendix C

Result

Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.92	22.42	22.76	25.60	30.00
2417MHz	Pass	3.92	23.31	23.64	26.49	30.00
2437MHz	Pass	4.11	26.07	25.64	28.87	30.00
2457MHz	Pass	3.82	22.82	22.66	25.75	30.00
2462MHz	Pass	3.82	21.75	22.53	25.17	30.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.92	17.05	17.65	20.37	30.00
2417MHz	Pass	3.92	18.06	18.50	21.30	30.00
2437MHz	Pass	4.11	21.30	21.48	24.40	30.00
2457MHz	Pass	3.82	17.97	18.13	21.06	30.00
2462MHz	Pass	3.82	17.04	17.26	20.16	30.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.92	16.01	16.77	19.42	30.00
2417MHz	Pass	3.92	17.50	18.37	20.97	30.00
2437MHz	Pass	4.11	20.77	21.17	23.98	30.00
2457MHz	Pass	3.82	18.35	18.75	21.56	30.00
2462MHz	Pass	3.82	16.35	17.10	19.75	30.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	3.92	15.07	15.22	18.16	30.00
2427MHz	Pass	3.92	15.64	15.98	18.82	30.00
2437MHz	Pass	4.11	17.63	17.96	20.81	30.00
2447MHz	Pass	3.82	17.30	17.11	20.22	30.00
2452MHz	Pass	3.82	15.72	15.95	18.85	30.00

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



Summary

Mode	PD
	(dBm/RBW)
2.4-2.4835GHz	
802.11b_Nss1,(1Mbps)_2TX	-3.11
802.11g_Nss1,(6Mbps)_2TX	-4.82
802.11n HT20_Nss1,(MCS0)_2TX	-4.47
802.11n HT40_Nss1,(MCS0)_2TX	-9.74

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

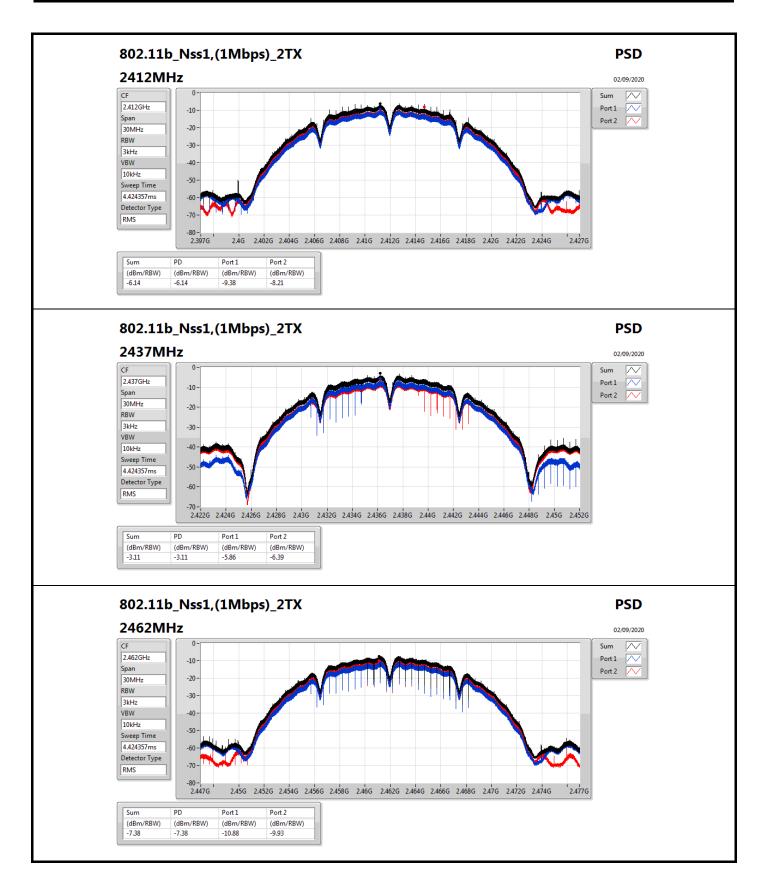


Result

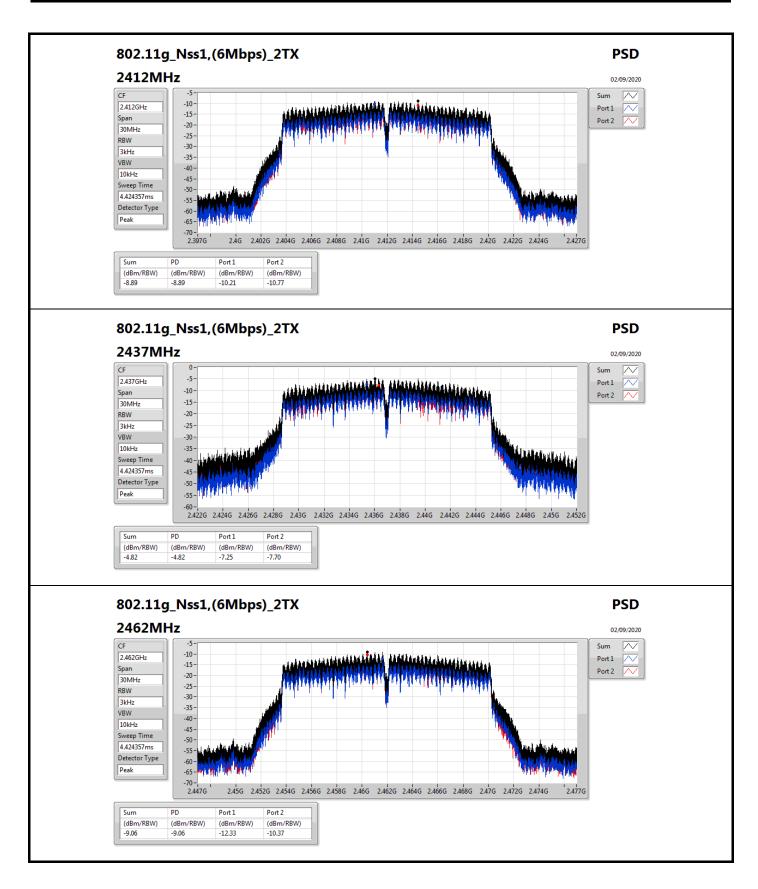
Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.88	-9.38	-8.21	-6.14	8.00
2437MHz	Pass	5.97	-5.86	-6.39	-3.11	8.00
2462MHz	Pass	5.85	-10.88	-9.93	-7.38	8.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.88	-10.21	-10.77	-8.89	8.00
2437MHz	Pass	5.97	-7.25	-7.70	-4.82	8.00
2462MHz	Pass	5.85	-12.33	-10.37	-9.06	8.00
802.11n HT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.88	-9.22	-10.00	-8.28	8.00
2437MHz	Pass	5.97	-7.98	-5.57	-4.47	8.00
2462MHz	Pass	5.85	-12.59	-9.84	-9.06	8.00
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	5.88	-15.75	-14.16	-12.59	8.00
2437MHz	Pass	5.97	-12.73	-12.29	-9.74	8.00
2452MHz	Pass	5.85	-14.65	-14.66	-12.29	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;

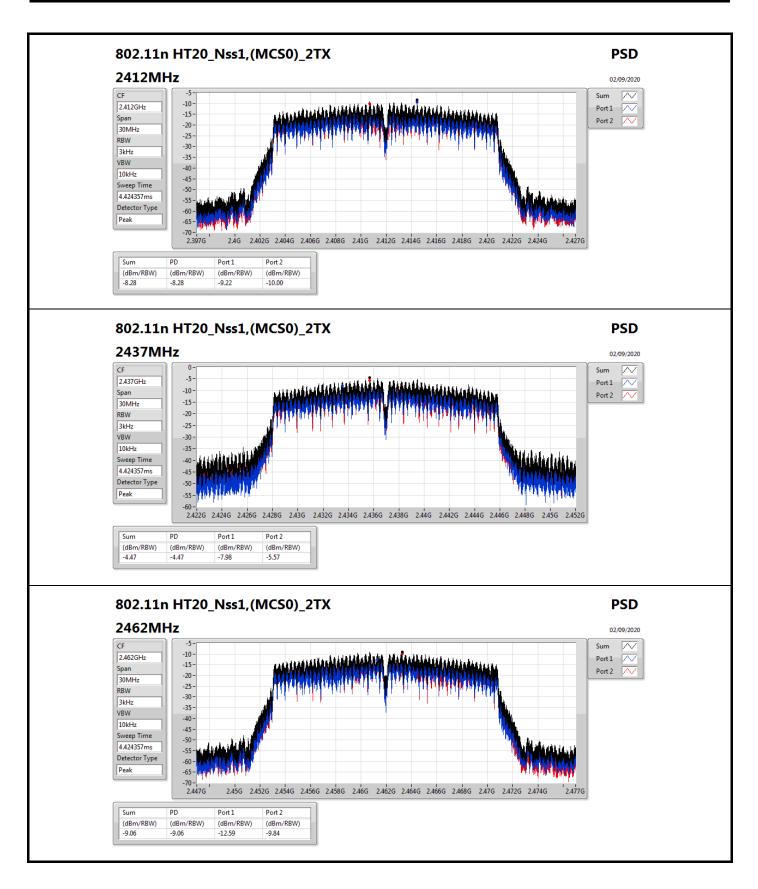




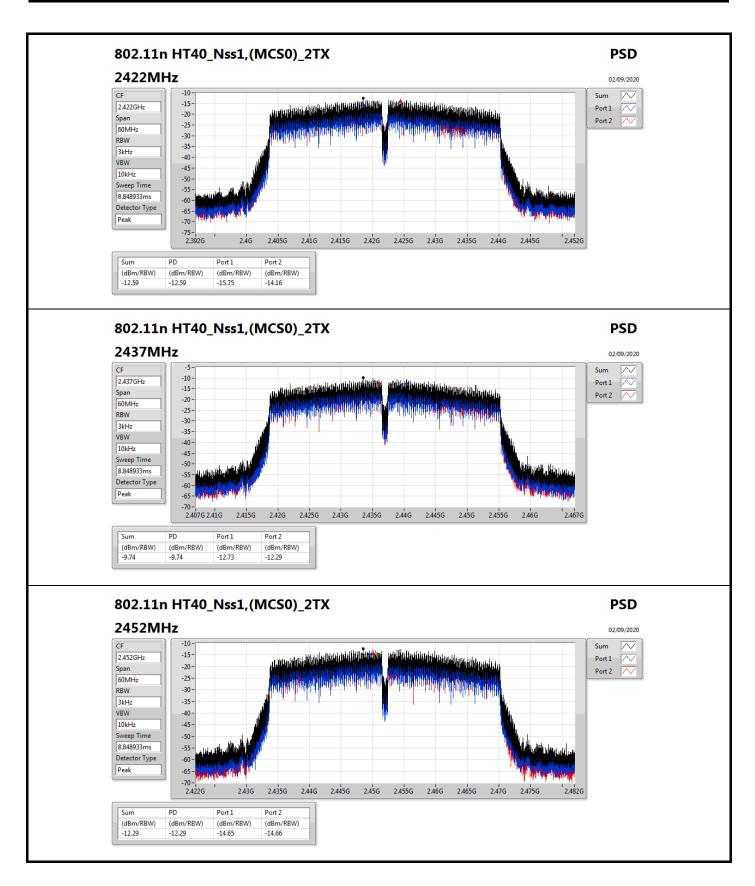














Appendix E

Summary

															1
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	14.20	-15.80	47.77M	-49.66	2.39742G	-33.08	2.4G	-39.43	2.49906G	-46.55	15.23396G	-45.61	1
802.11g_Nss1,(6Mbps)_2TX	Pass	2.4357G	10.10	-19.90	35.83M	-51.72	2.39986G	-28.14	2.4G	-34.01	2.48916G	-49.32	23.46317G	-45.53	2
802.11n HT20_Nss1,(MCS0)_2TX	Pass	2.4357G	9.71	-20.29	47.77M	-50.72	2.39586G	-36.87	2.4G	-40.10	2.49024G	-49.82	15.04853G	-46.13	2
802.11n HT40_Nss1,(MCS0)_2TX	Pass	2.43444G	4.45	-25.55	32.58M	-50.37	2.39944G	-37.26	2.4G	-43.42	2.48994G	-49.72	23.49956G	-45.98	2



CSE(Non-restricted Band)

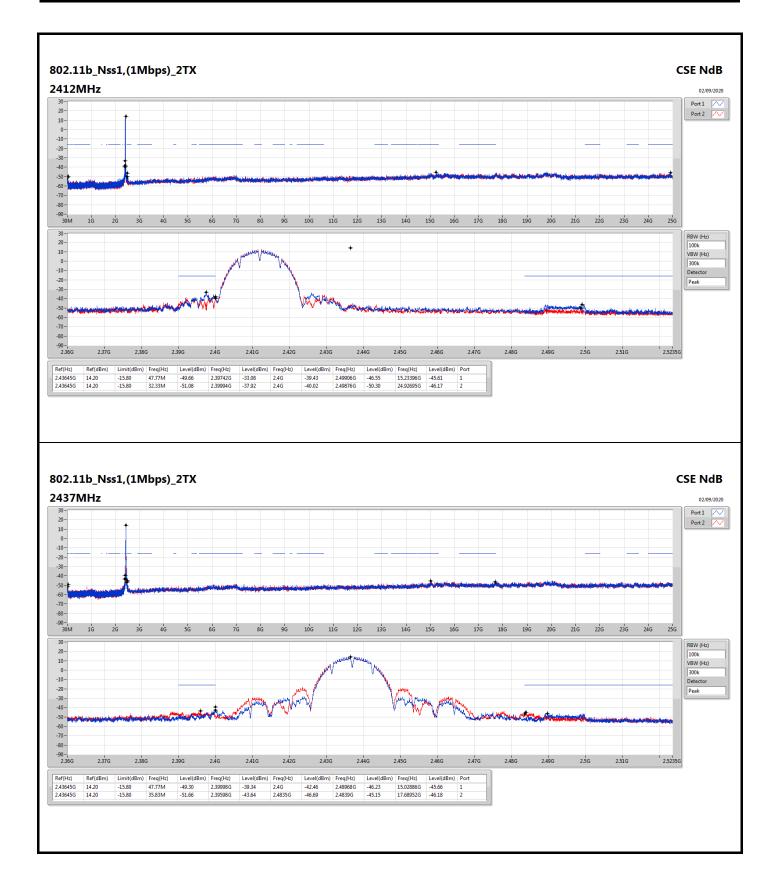
Appendix E

Result

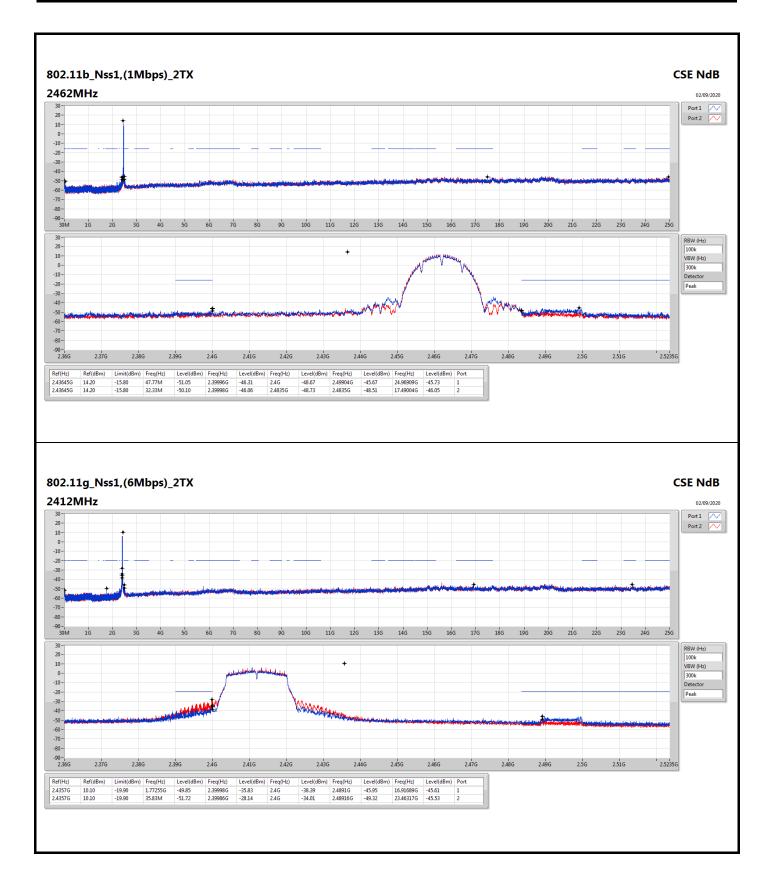
Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43645G	14.20	-15.80	47.77M	-49.66	2.39742G	-33.08	2.4G	-39.43	2.49906G	-46.55	15.23396G	-45.61	1
2412MHz	Pass	2.43645G	14.20	-15.80	32.33M	-51.08	2.39994G	-37.92	2.4G	-40.02	2.49876G	-50.30	24.92695G	-46.17	2
2437MHz	Pass	2.43645G	14.20	-15.80	47.77M	-49.30	2.39998G	-39.34	2.4G	-42.46	2.48968G	-46.23	15.02886G	-45.66	1
2437MHz	Pass	2.43645G	14.20	-15.80	35.83M	-51.66	2.39598G	-43.64	2.4835G	-46.69	2.4839G	-45.15	17.68952G	-46.18	2
2462MHz	Pass	2.43645G	14.20	-15.80	47.77M	-51.05	2.39996G	-46.31	2.4G	-48.67	2.49904G	-45.67	24.96909G	-45.73	1
2462MHz	Pass	2.43645G	14.20	-15.80	32.33M	-50.10	2.39998G	-46.06	2.4835G	-48.73	2.4835G	-48.51	17.49004G	-46.05	2
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-		-	-	-	-	-	-	-
2412MHz	Pass	2.4357G	10.10	-19.90	1.77255G	-49.85	2.39998G	-35.83	2.4G	-38.39	2.4891G	-45.95	16.91689G	-45.61	1
2412MHz	Pass	2.4357G	10.10	-19.90	35.83M	-51.72	2.39986G	-28.14	2.4G	-34.01	2.48916G	-49.32	23.46317G	-45.53	2
2437MHz	Pass	2.4357G	10.10	-19.90	33.5M	-51.62	2.39938G	-44.05	2.4G	-44.67	2.49896G	-44.08	24.49709G	-45.94	1
2437MHz	Pass	2.4357G	10.10	-19.90	2.30787G	-50.49	2.39666G	-41.62	2.4G	-43.29	2.4919G	-45.94	15.04291G	-44.85	2
2462MHz	Pass	2.4357G	10.10	-19.90	47.77M	-49.54	2.39906G	-46.53	2.4835G	-48.94	2.48384G	-43.70	17.69233G	-46.04	1
2462MHz	Pass	2.4357G	10.10	-19.90	47.77M	-50.61	2.39998G	-49.09	2.4835G	-48.82	2.48378G	-41.28	23.44069G	-46.17	2
802.11n HT20_Nss1,(MCS0)_2TX	-	-		-	-		-		-	-	-	-	-	-	-
2412MHz	Pass	2.4357G	9.71	-20.29	47.77M	-50.30	2.39972G	-37.29	2.4G	-41.40	2.4892G	-46.47	23.52217G	-46.25	1
2412MHz	Pass	2.4357G	9.71	-20.29	47.77M	-50.72	2.39586G	-36.87	2.4G	-40.10	2.49024G	-49.82	15.04853G	-46.13	2
2437MHz	Pass	2.4357G	9.71	-20.29	47.77M	-49.39	2.3932G	-41.93	2.4G	-45.31	2.48968G	-44.22	17.69233G	-46.03	1
2437MHz	Pass	2.4357G	9.71	-20.29	2.3067G	-48.37	2.3972G	-41.24	2.4G	-42.79	2.48952G	-45.17	17.68952G	-46.38	2
2462MHz	Pass	2.4357G	9.71	-20.29	48.06M	-48.67	2.39132G	-47.21	2.4835G	-49.40	2.48914G	-45.28	15.01481G	-45.83	1
2462MHz	Pass	2.4357G	9.71	-20.29	35.83M	-51.16	2.39948G	-49.68	2.4835G	-46.05	2.48634G	-41.37	23.49688G	-45.91	2
802.11n HT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.43444G	4.45	-25.55	32.29M	-49.64	2.39952G	-37.58	2.4G	-43.12	2.49958G	-47.30	24.94952G	-46.61	1
2422MHz	Pass	2.43444G	4.45	-25.55	32.58M	-50.37	2.39944G	-37.26	2.4G	-43.42	2.48994G	-49.72	23.49956G	-45.98	2
2437MHz	Pass	2.43444G	4.45	-25.55	47.75M	-47.81	2.39952G	-37.96	2.4G	-44.79	2.4905G	-43.35	15.03258G	-46.41	1
2437MHz	Pass	2.43444G	4.45	-25.55	33.15M	-49.85	2.397G	-39.18	2.4G	-43.05	2.48414G	-43.28	15.06344G	-46.19	2
2452MHz	Pass	2.43444G	4.45	-25.55	47.75M	-48.05	2.39828G	-46.29	2.4835G	-45.66	2.48946G	-42.38	24.97756G	-46.21	1
2452MHz	Pass	2.43444G	4.45	-25.55	36.01M	-51.24	2.39076G	-48.10	2.4835G	-48.55	2.48942G	-43.49	24.85416G	-45.88	2



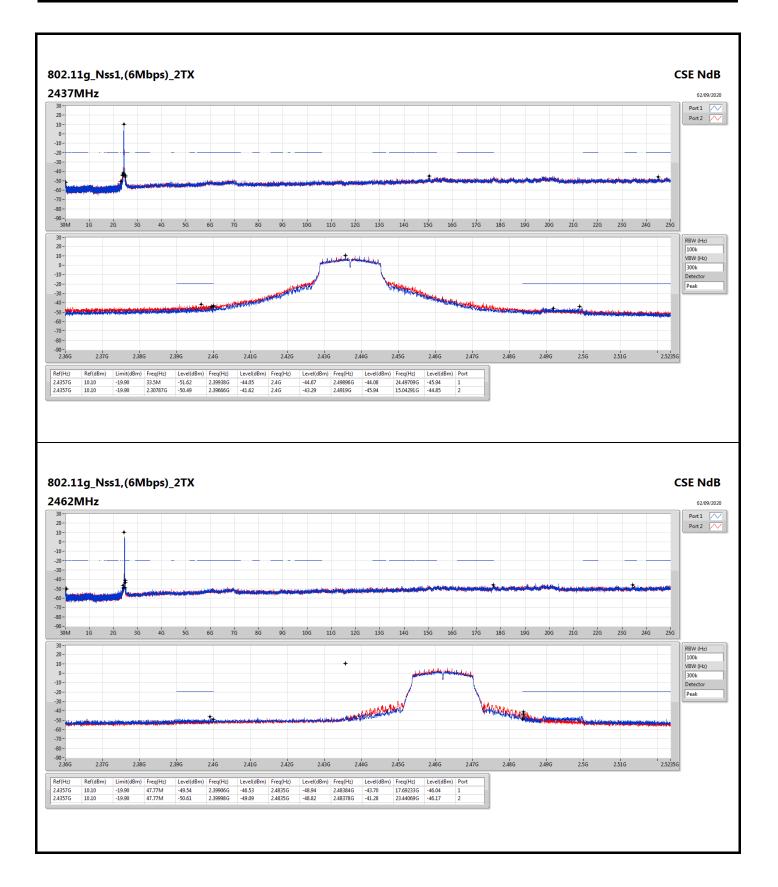
Appendix E



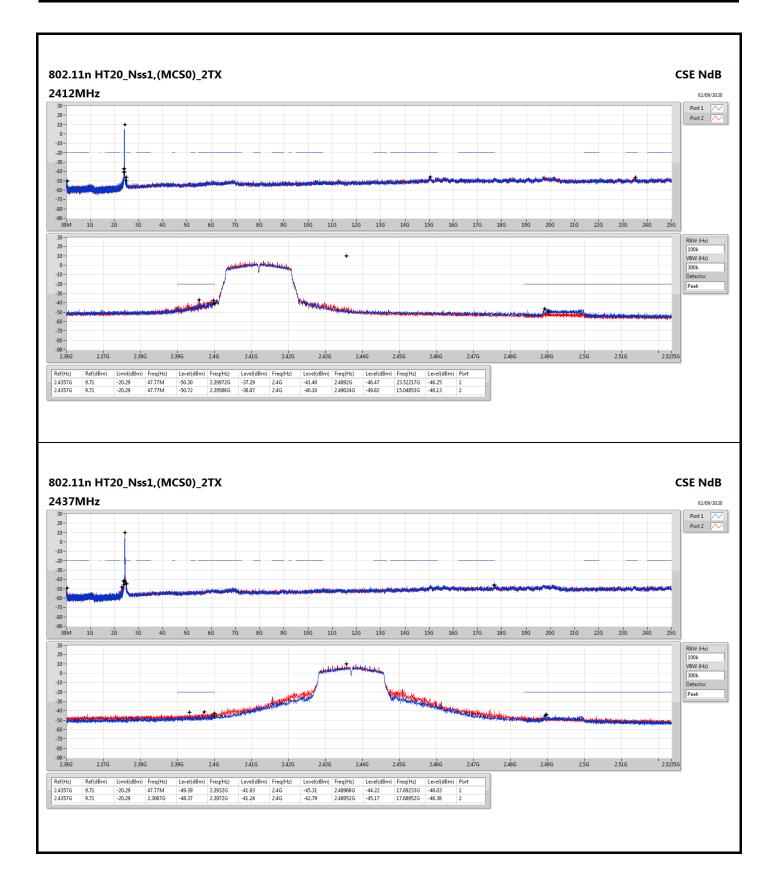




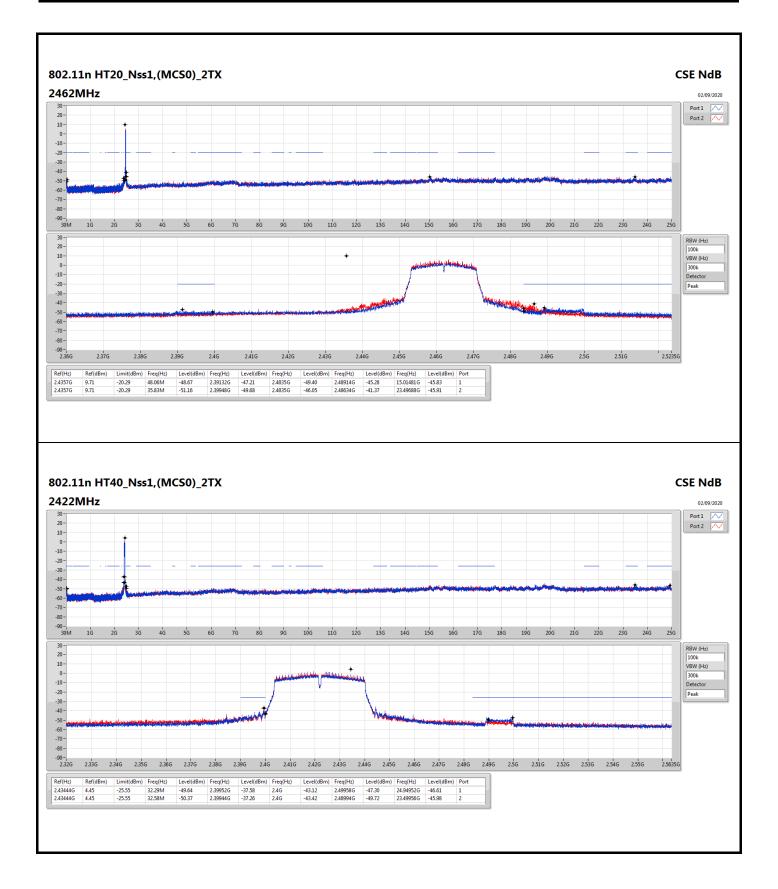




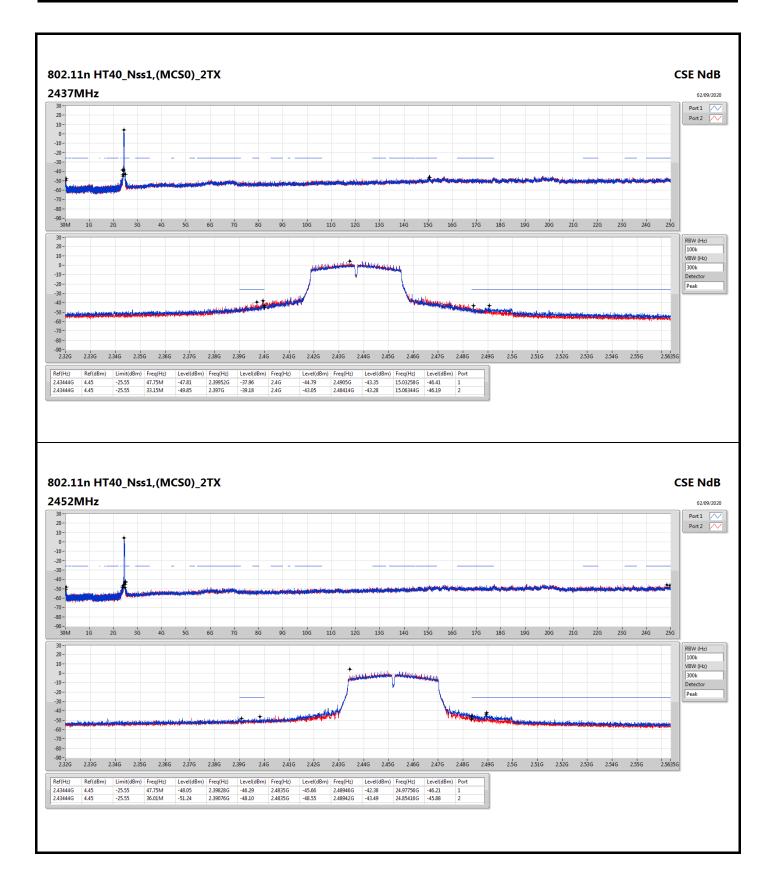














Radiated Emissions below 1GHz

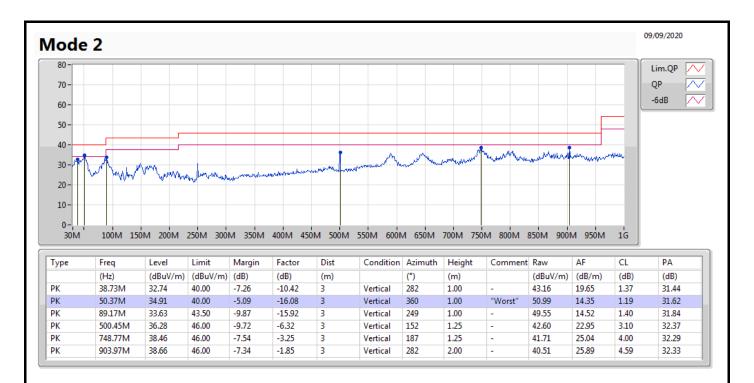
Appendix F.1

Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 2	Pass	PK	50.37M	34.91	40.00	-5.09	Vertical



Radiated Emissions below 1GHz

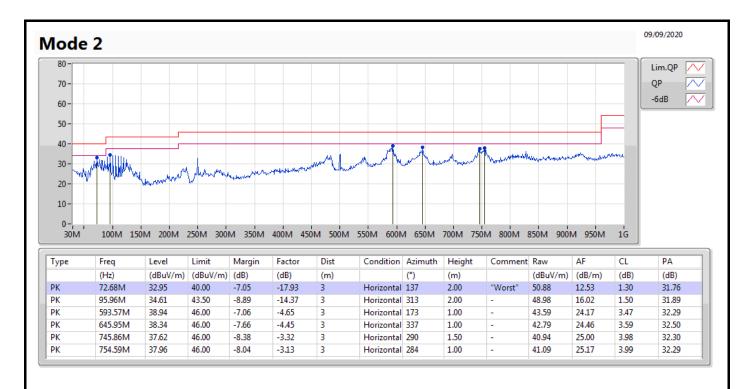
Appendix F.1





Radiated Emissions below 1GHz

Appendix F.1



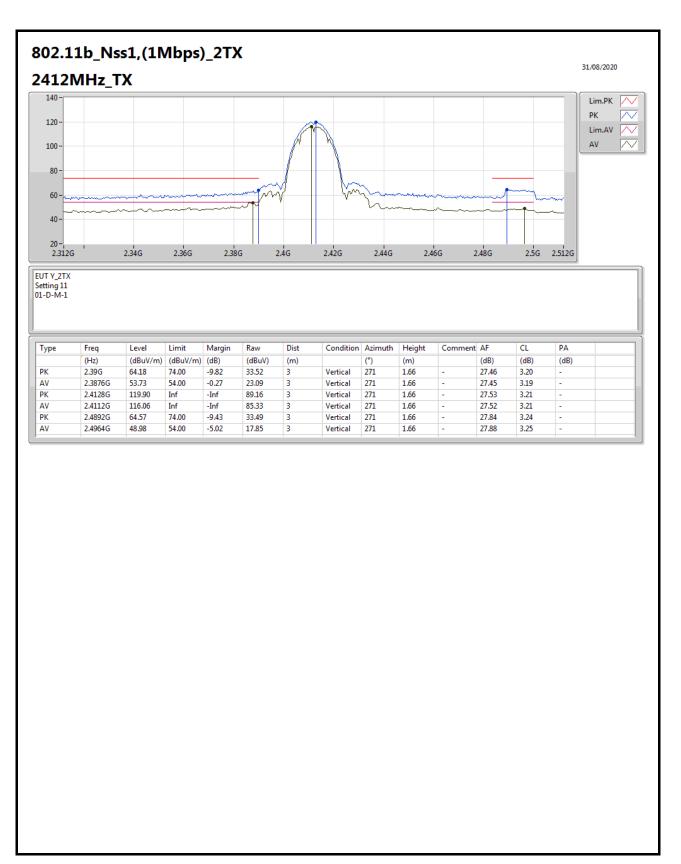


Appendix F.2

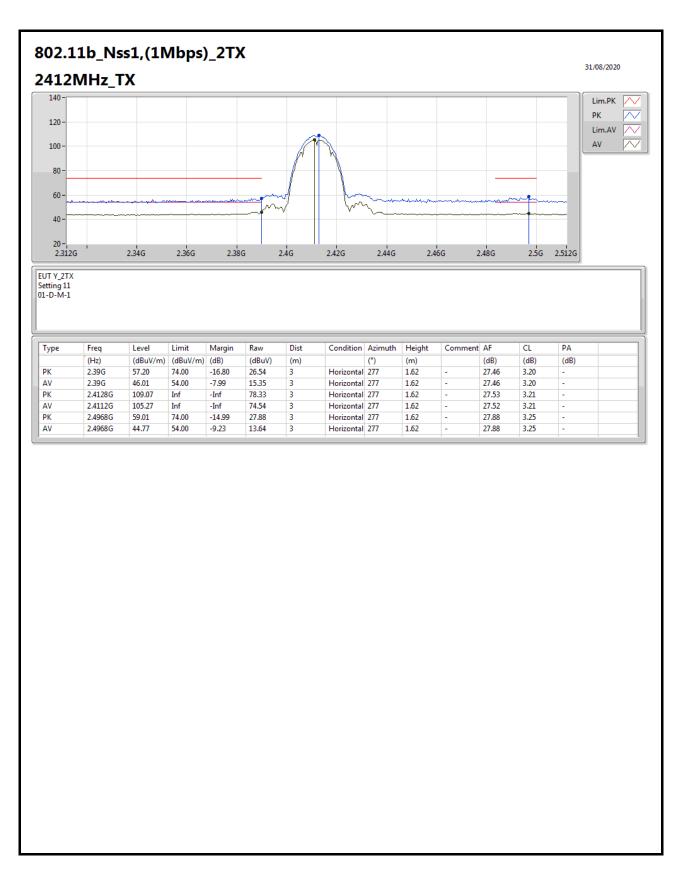
Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	AV	2.3898G	53.76	54.00	-0.24	3	Vertical	265	2.19	-
802.11g_Nss1,(6Mbps)_2TX	Pass	AV	2.3888G	53.82	54.00	-0.18	3	Vertical	92	1.80	-
802.11n HT20_Nss1,(MCS0)_2TX	Pass	PK	2.39G	73.96	74.00	-0.04	3	Vertical	95	1.80	-
802.11n HT40_Nss1,(MCS0)_2TX	Pass	AV	2.3894G	53.81	54.00	-0.19	3	Vertical	263	2.23	-

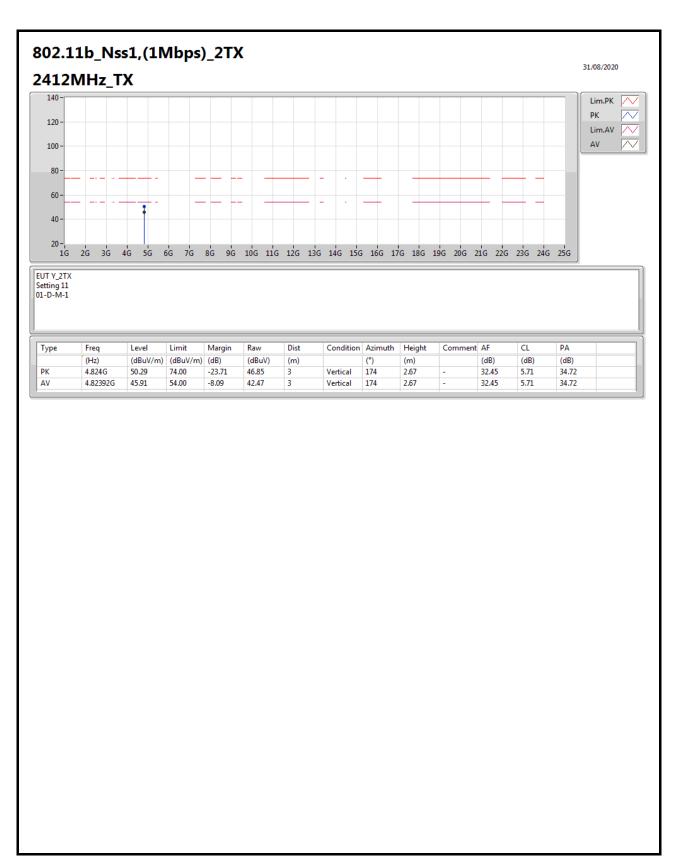




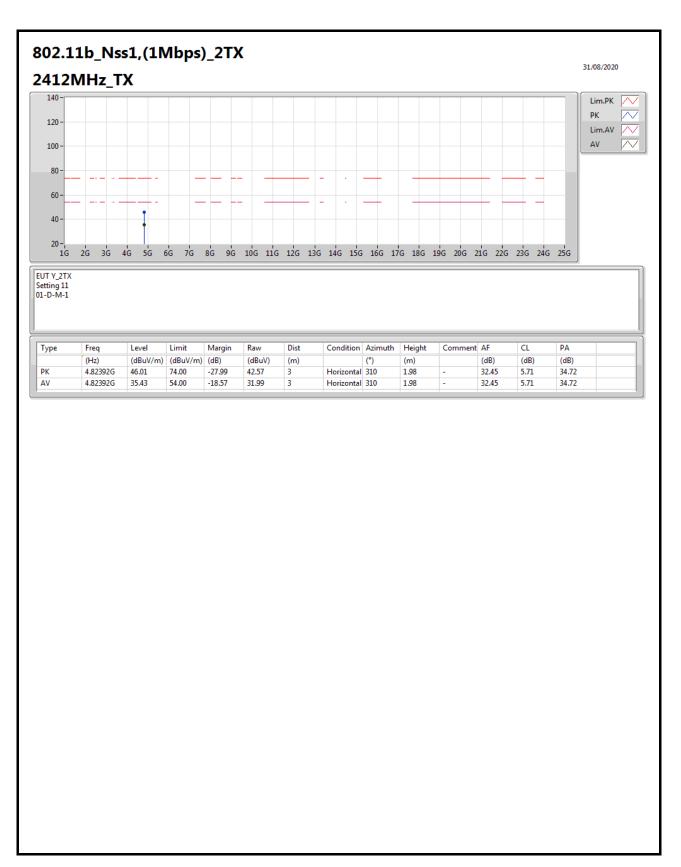




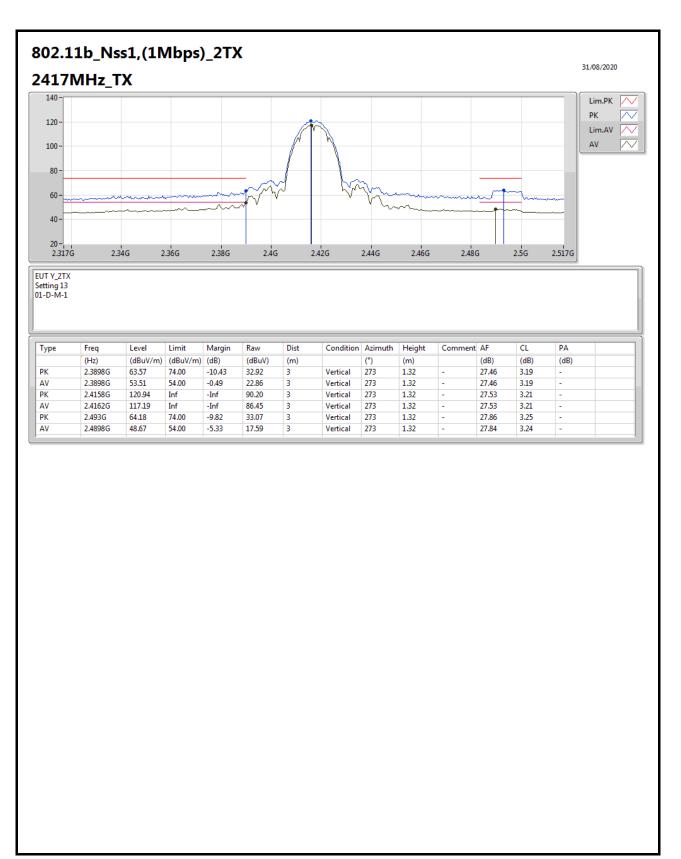




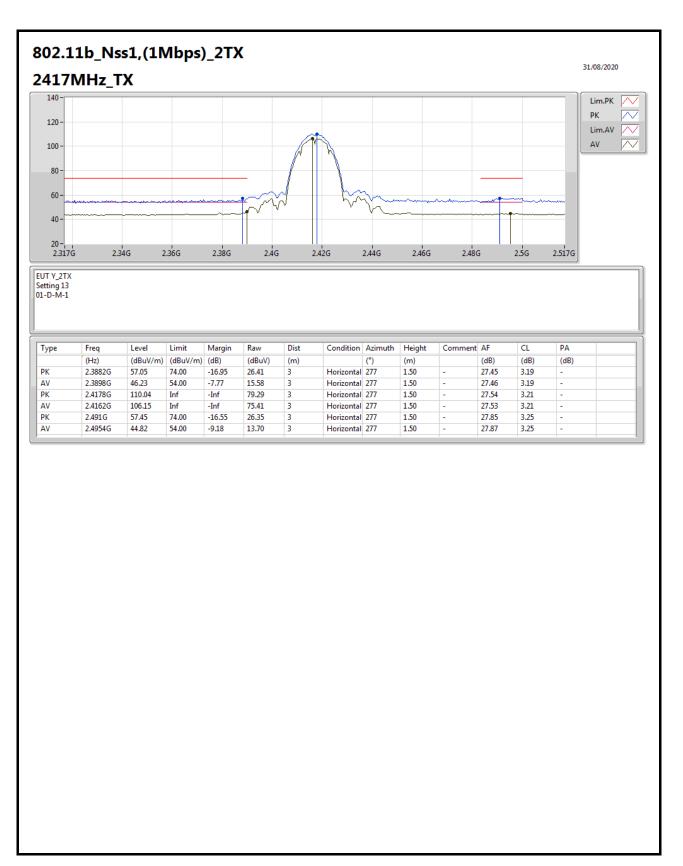




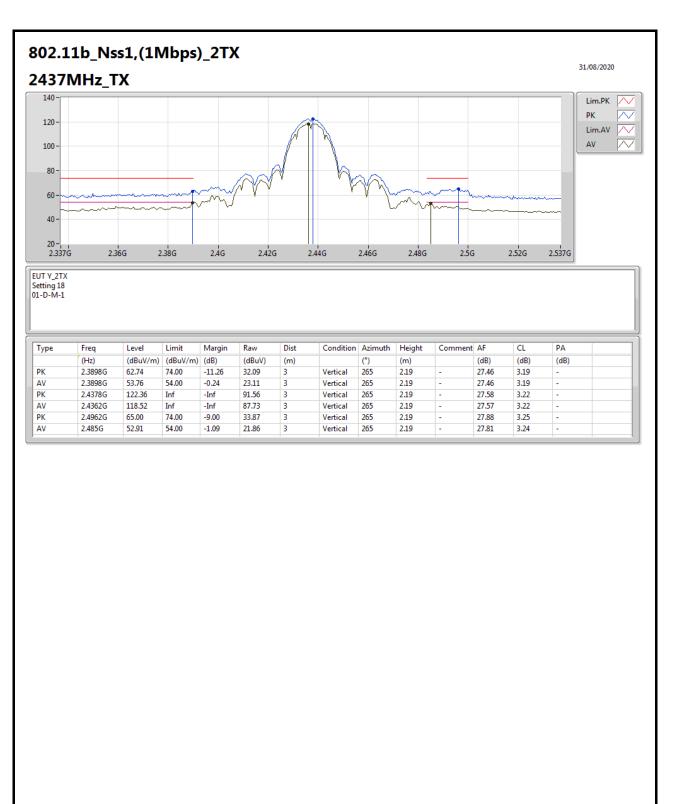




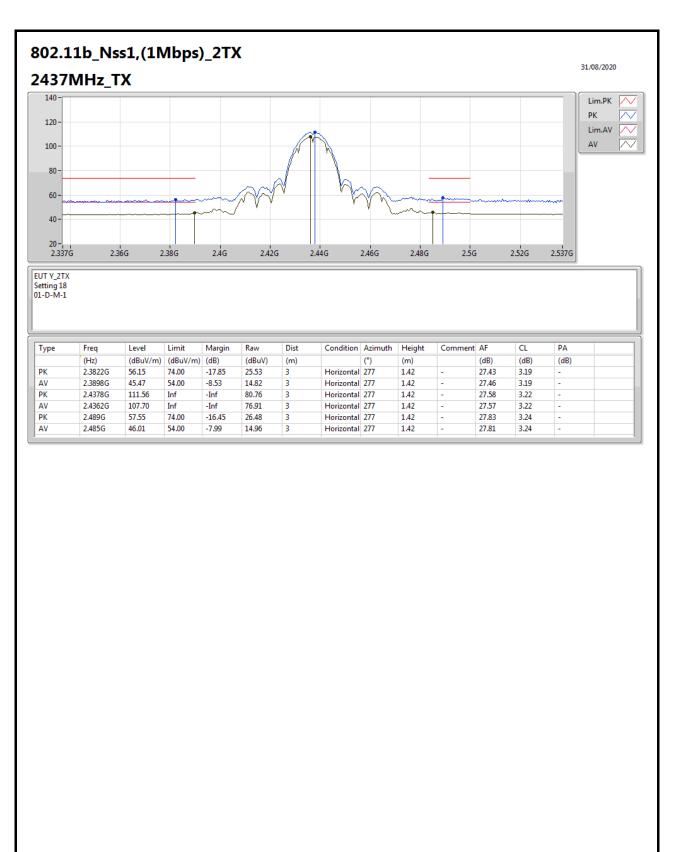




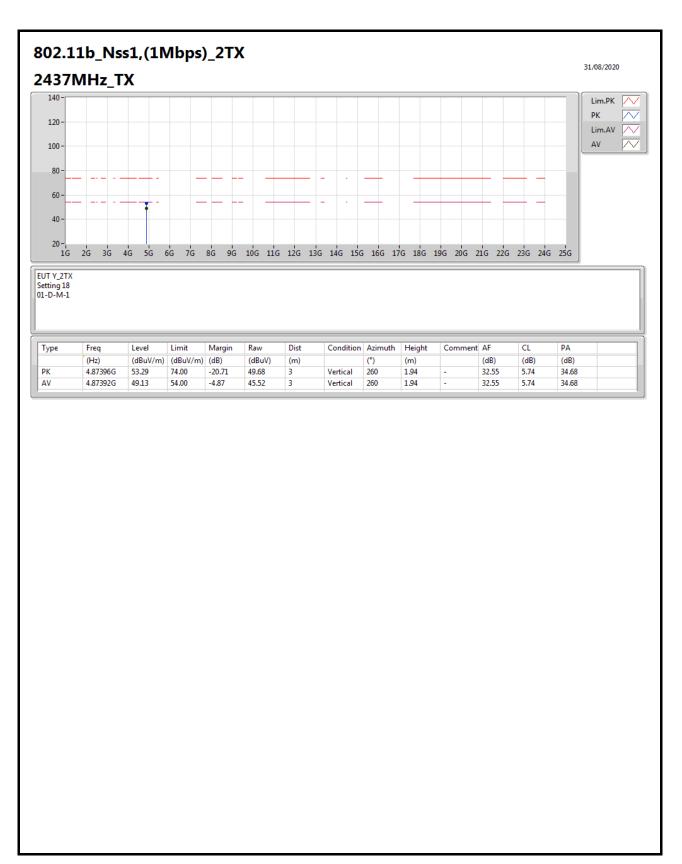




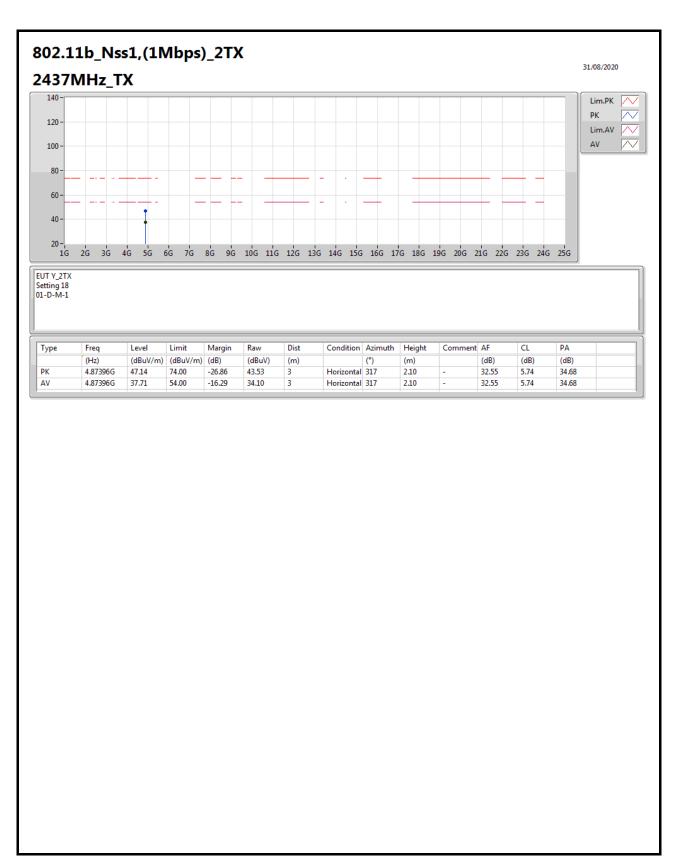




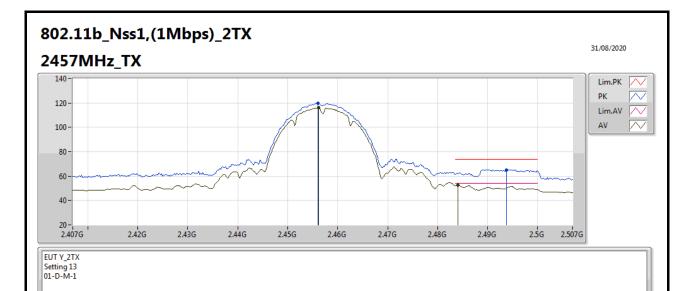






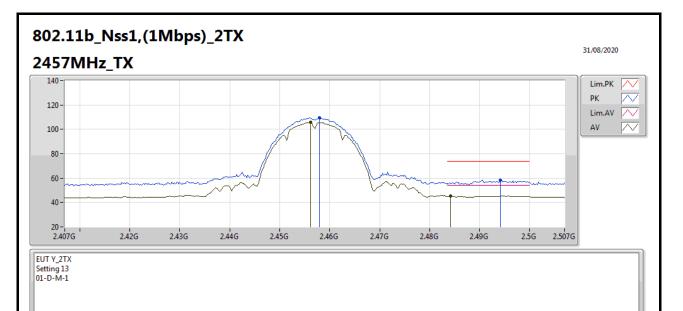






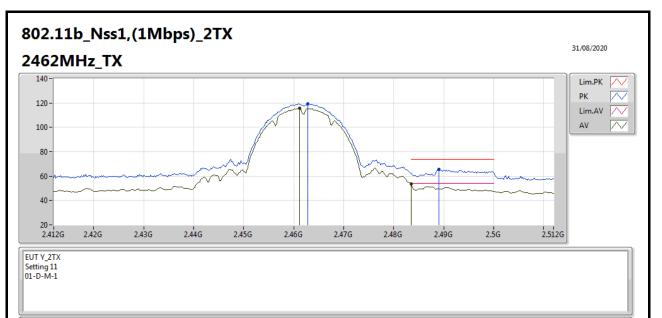
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.456G	119.58	Inf	-Inf	88.71	3	Vertical	271	1.67	-	27.64	3.23	-	
AV	2.4562G	115.97	Inf	-Inf	85.10	3	Vertical	271	1.67	-	27.64	3.23	-	
PK	2.4938G	65.24	74.00	-8.76	34.13	3	Vertical	271	1.67	-	27.86	3.25	-	
AV	2.484G	52.73	54.00	-1.27	21.69	3	Vertical	271	1.67	-	27.80	3.24	-	





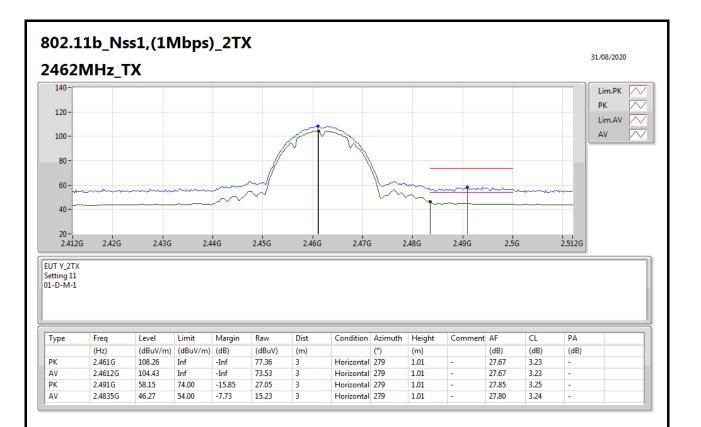
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.458G	109.42	Inf	-Inf	78.54	3	Horizontal	274	1.92	-	27.65	3.23	-	
AV	2.4562G	105.62	Inf	-Inf	74.75	3	Horizontal	274	1.92	-	27.64	3.23	-	
РК	2.4942G	58.36	74.00	-15.64	27.24	3	Horizontal	274	1.92	-	27.87	3.25	-	
AV	2.4842G	45.29	54.00	-8.71	14.24	3	Horizontal	274	1.92	-	27.81	3.24	-	



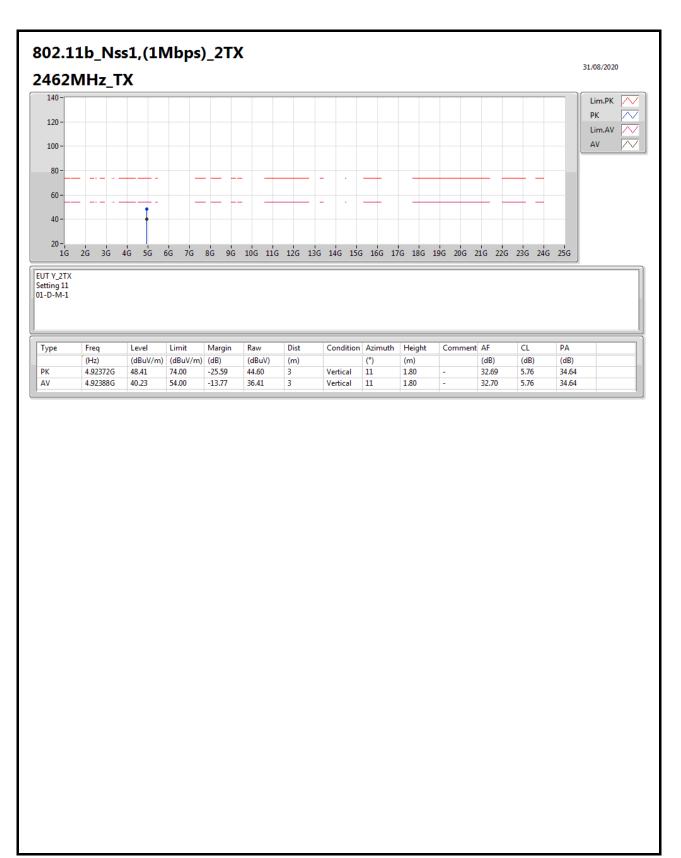


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
PK	2.4628G	119.42	Inf	-Inf	88.51	3	Vertical	178	2.68	-	27.68	3.23	-	
AV	2.4612G	115.45	Inf	-Inf	84.55	3	Vertical	178	2.68	-	27.67	3.23	-	
PK	2.489G	65.41	74.00	-8.59	34.34	3	Vertical	178	2.68	-	27.83	3.24	-	
AV	2.4835G	53.49	54.00	-0.51	22.45	3	Vertical	178	2.68	-	27.80	3.24	-	

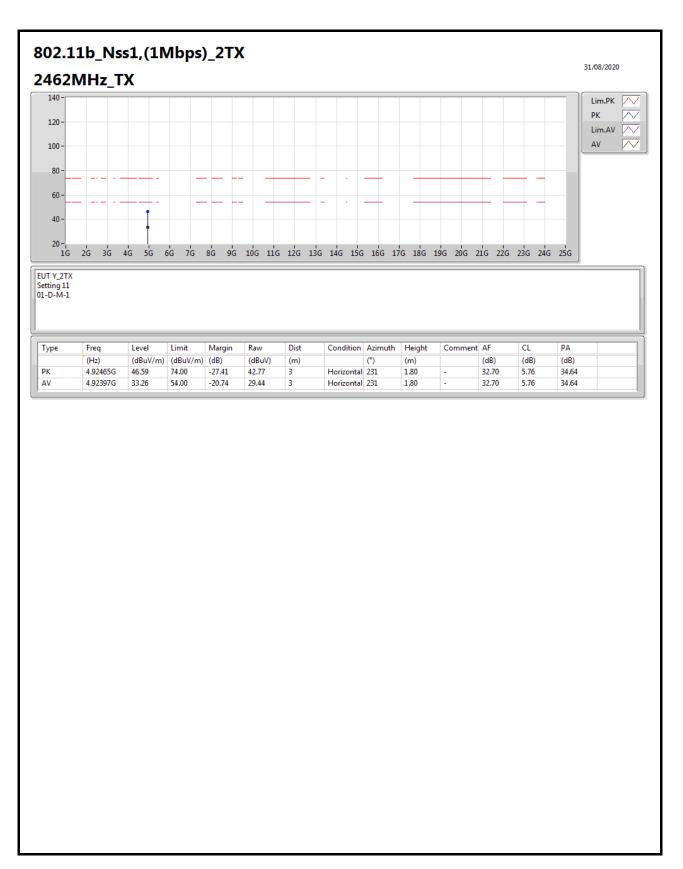




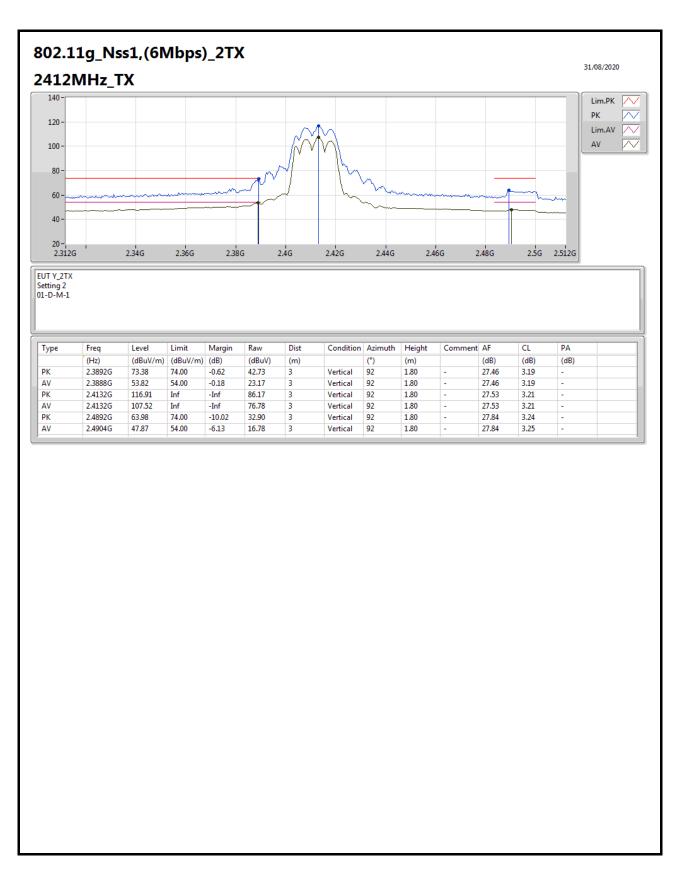




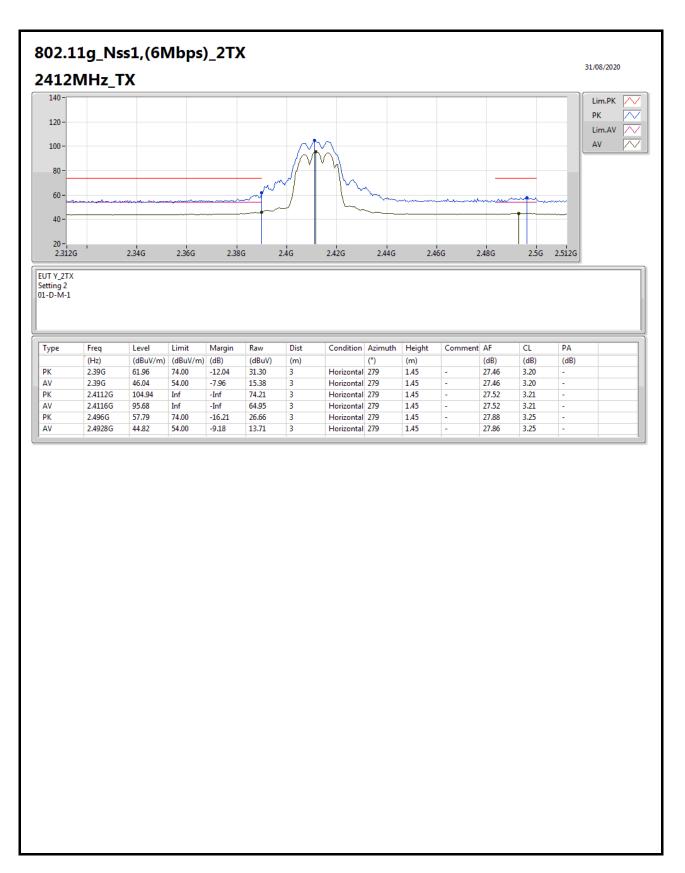




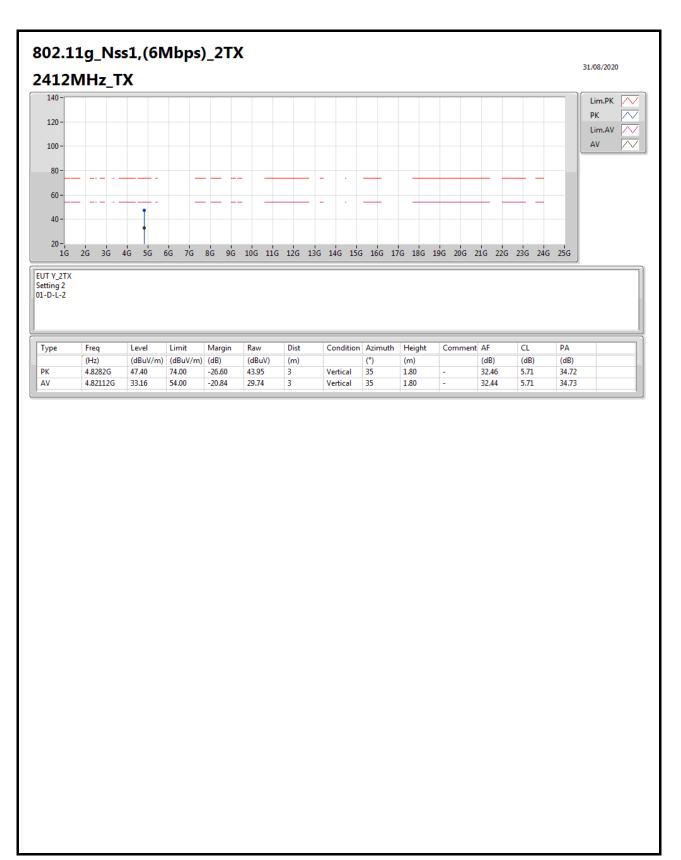




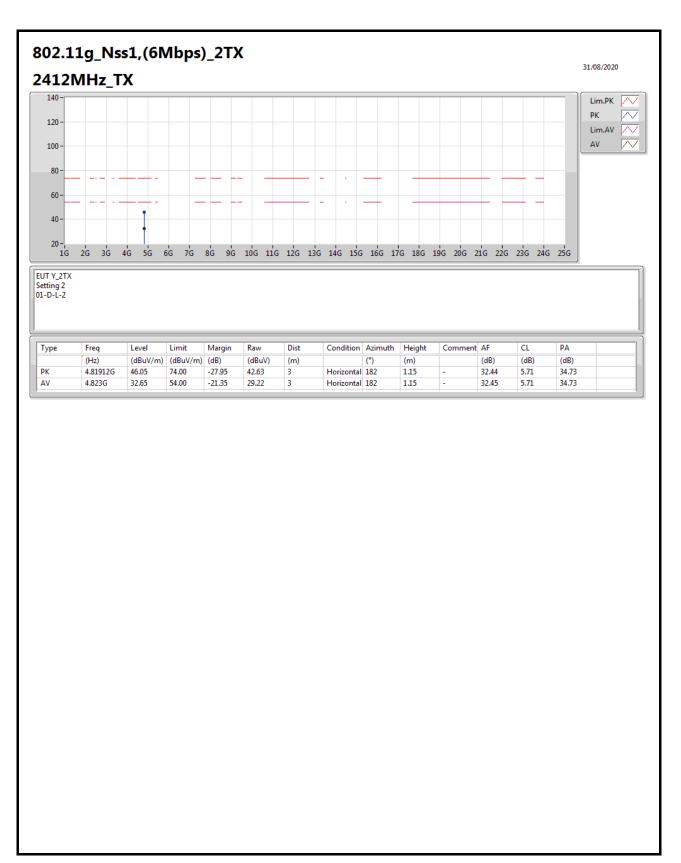




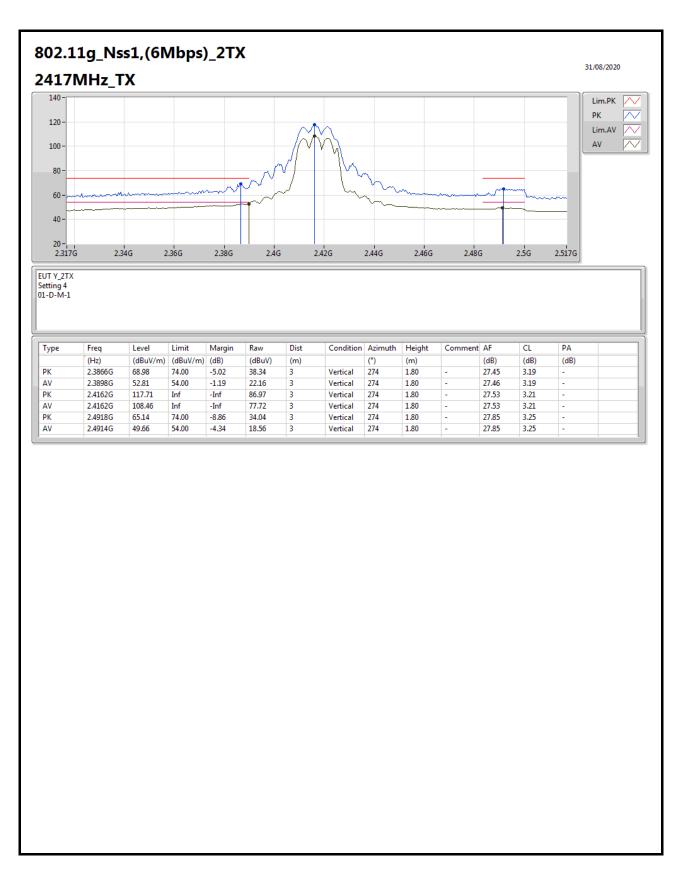




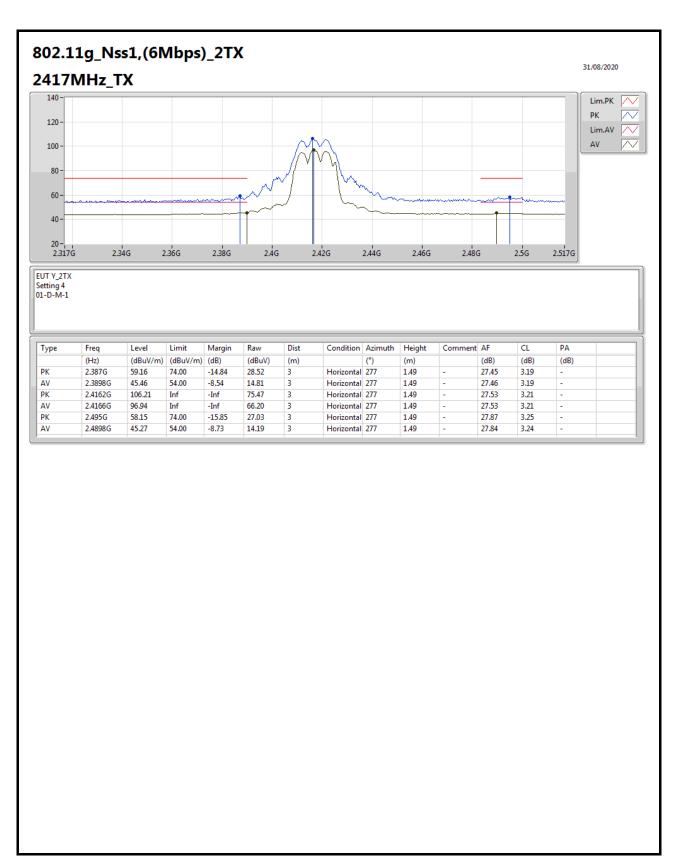




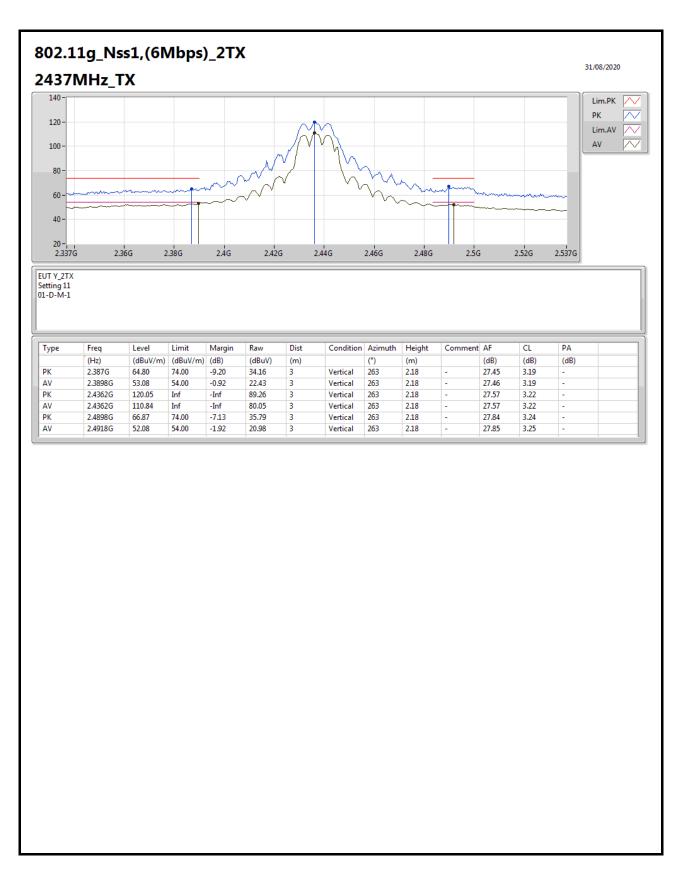




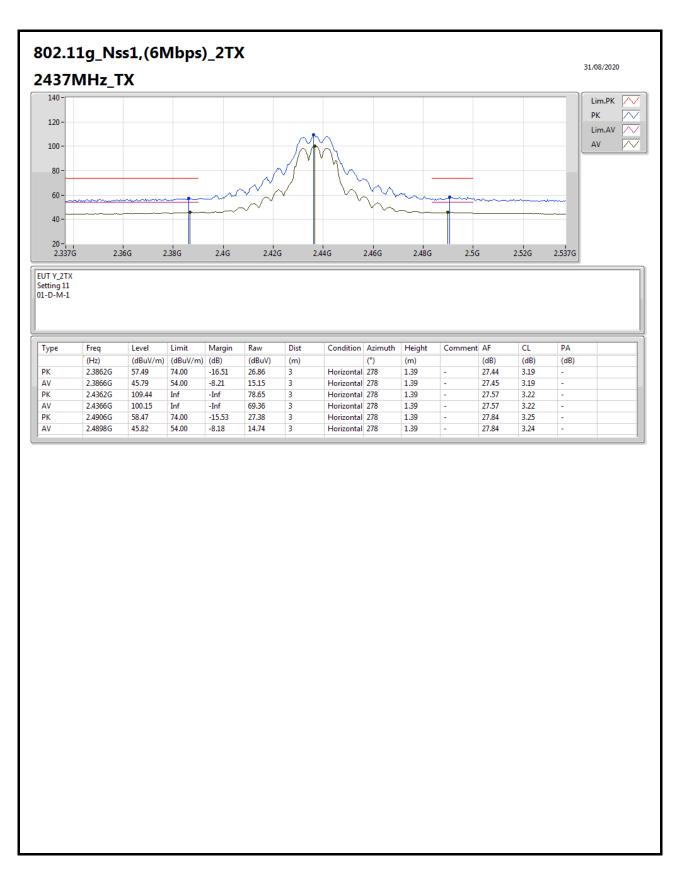




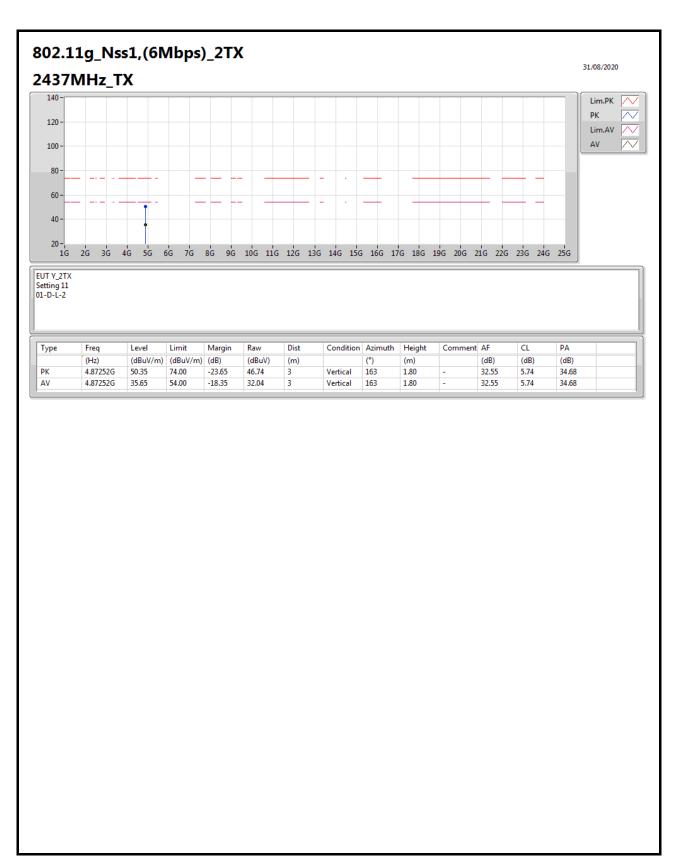




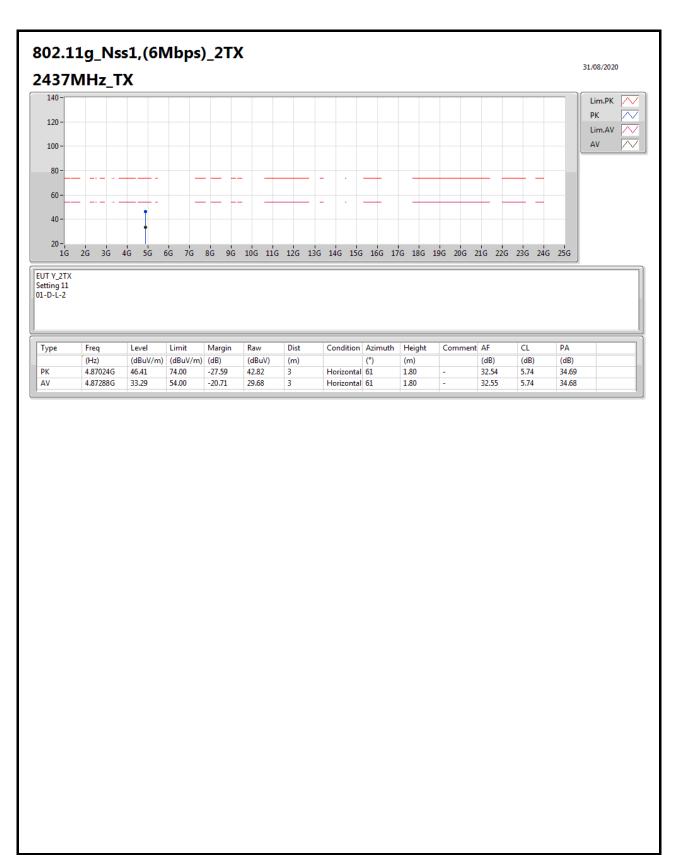




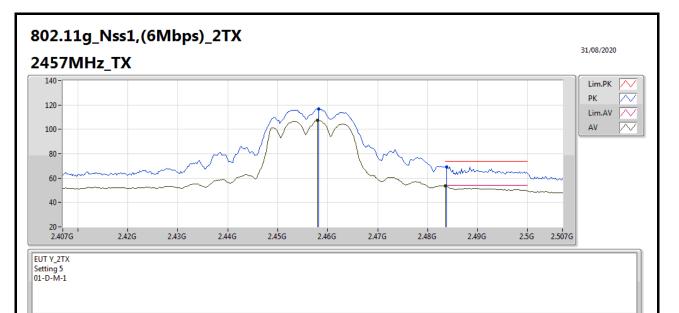






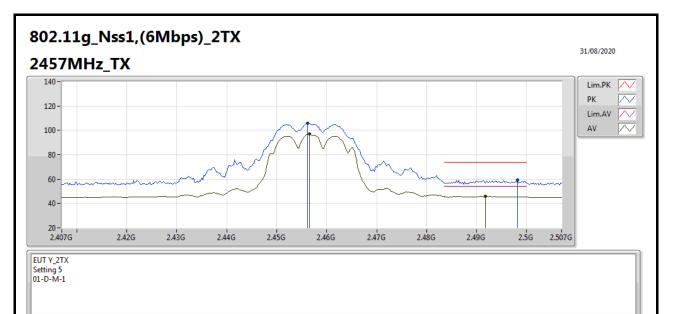






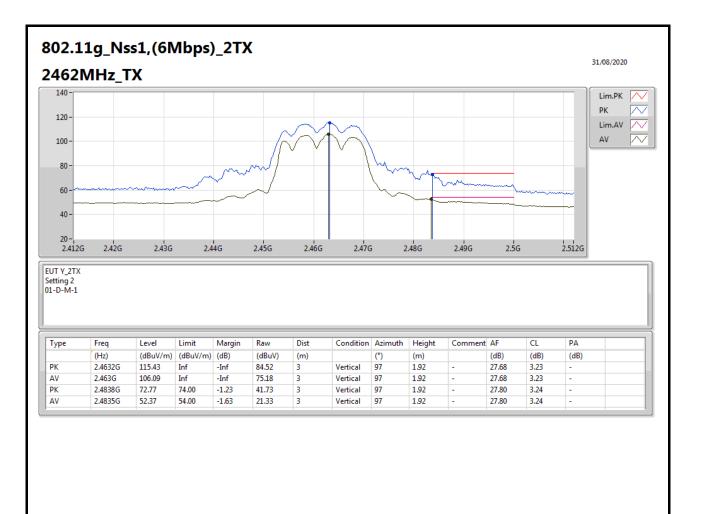
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
PK	2.4582G	116.92	Inf	-Inf	86.04	3	Vertical	96	1.68	-	27.65	3.23	-	
AV	2.458G	107.52	Inf	-Inf	76.64	3	Vertical	96	1.68	-	27.65	3.23	-	
PK	2.4838G	69.29	74.00	-4.71	38.25	3	Vertical	96	1.68	-	27.80	3.24	-	
AV	2.4835G	53.46	54.00	-0.54	22.42	3	Vertical	96	1.68	-	27.80	3.24	-	



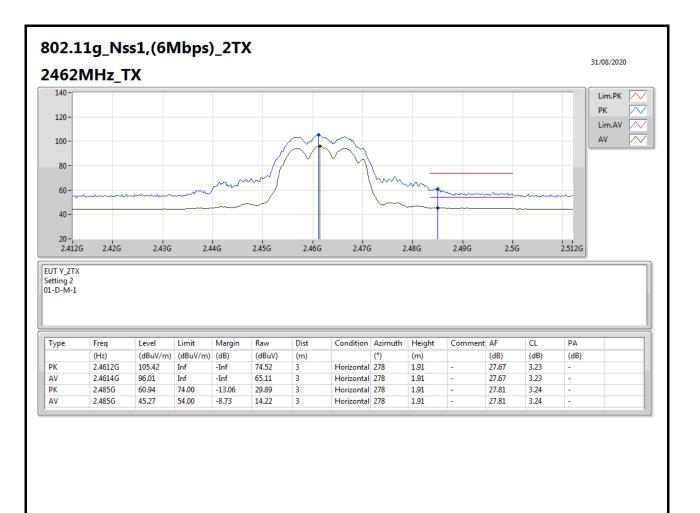


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.4562G	105.98	Inf	-Inf	75.11	3	Horizontal	278	1.30	-	27.64	3.23	-	
AV	2.4566G	96.95	Inf	-Inf	66.08	3	Horizontal	278	1.30	-	27.64	3.23	-	
PK	2.4982G	59.36	74.00	-14.64	28.22	3	Horizontal	278	1.30	-	27.89	3.25	-	
AV	2.4918G	45.90	54.00	-8.10	14.80	3	Horizontal	278	1.30	-	27.85	3.25	-	

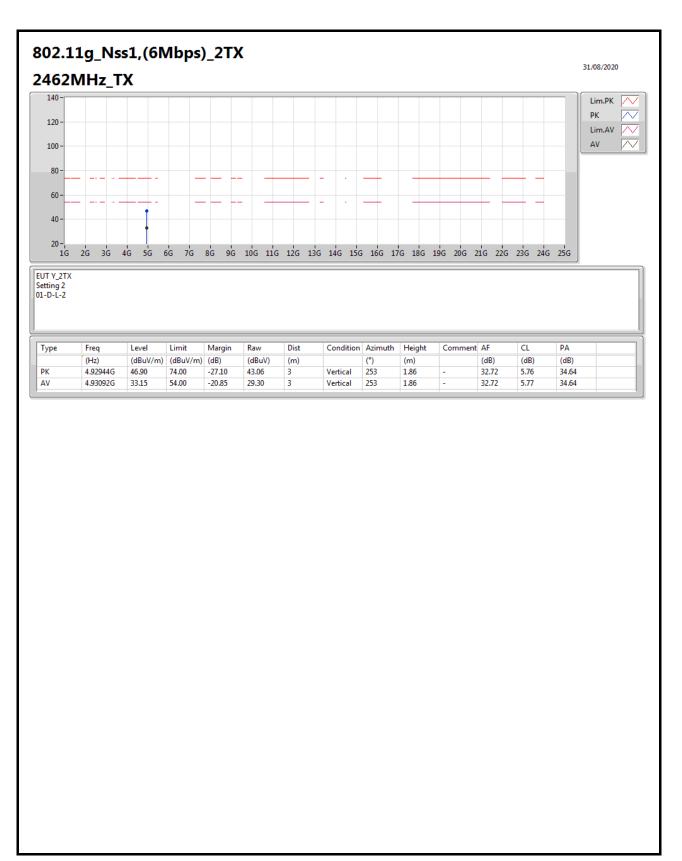




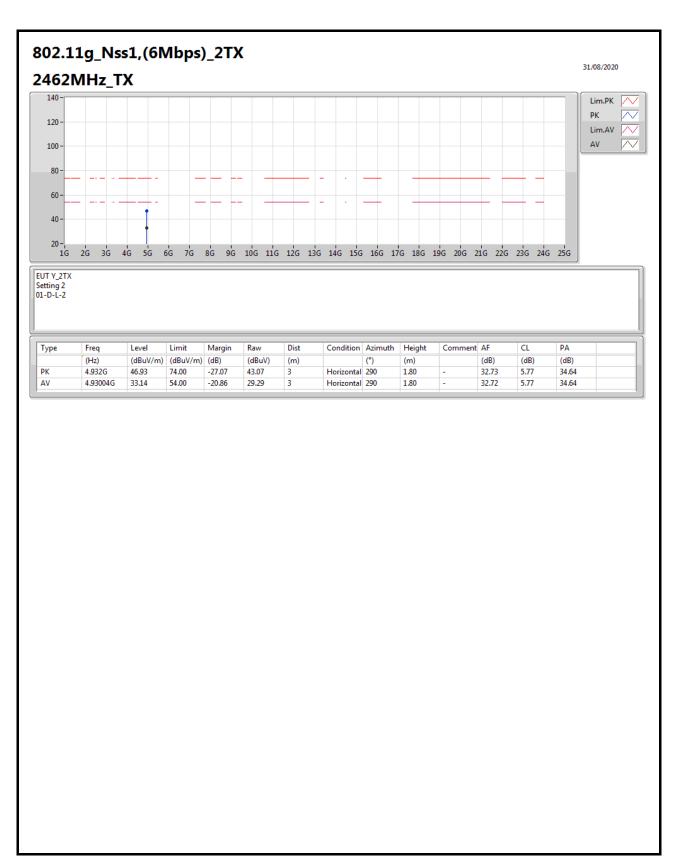




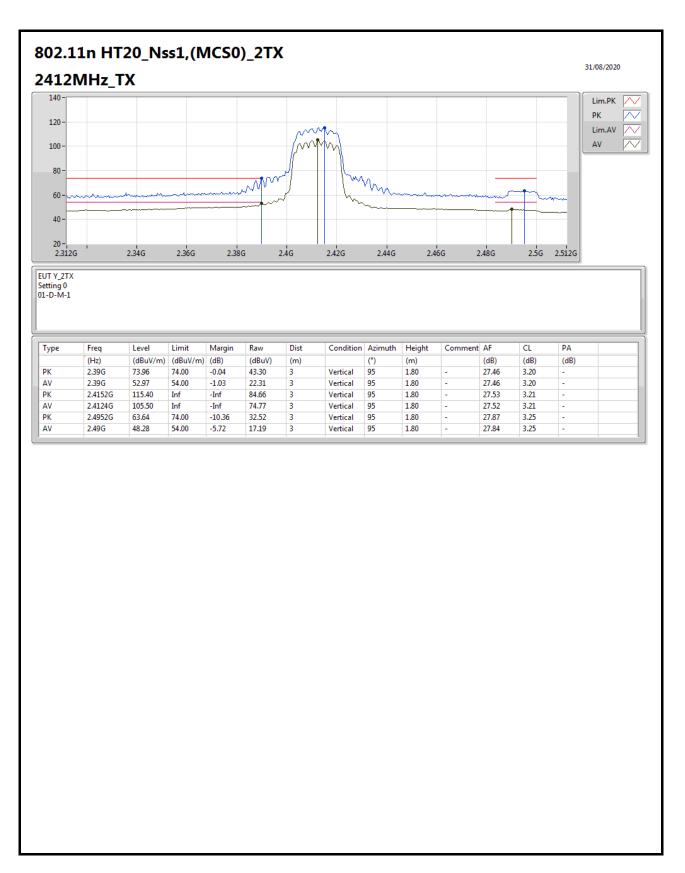




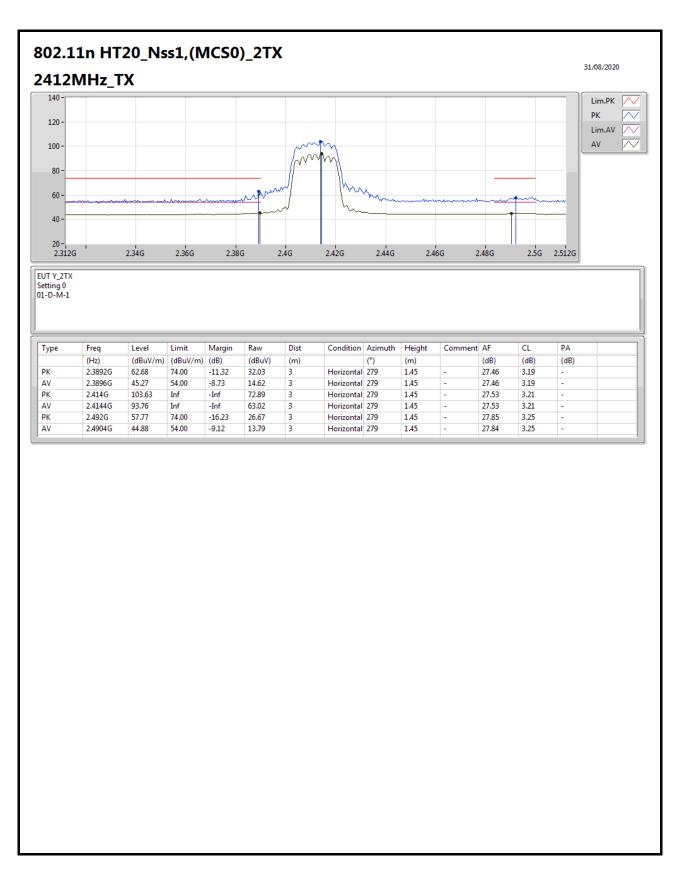




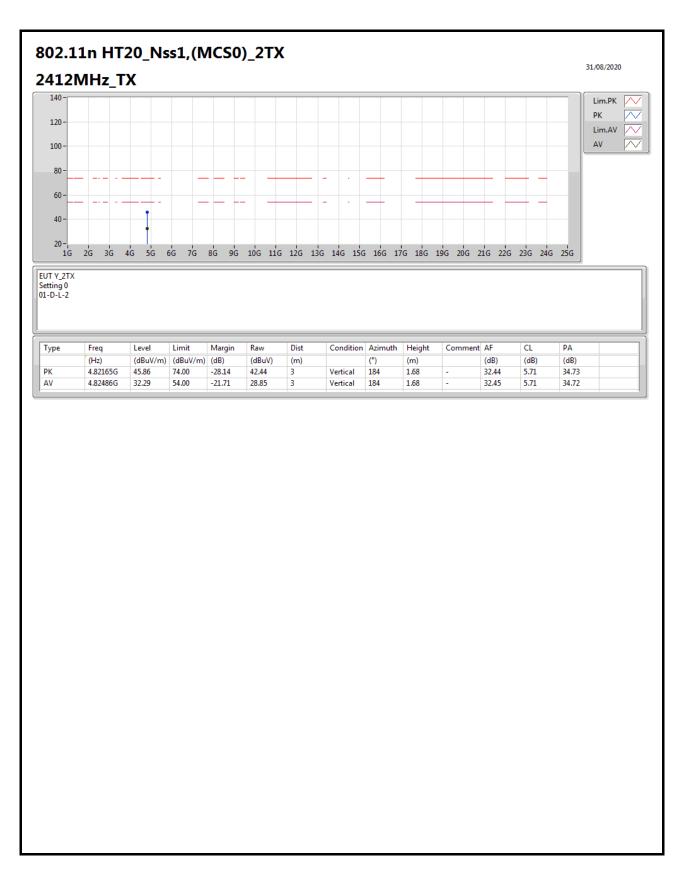




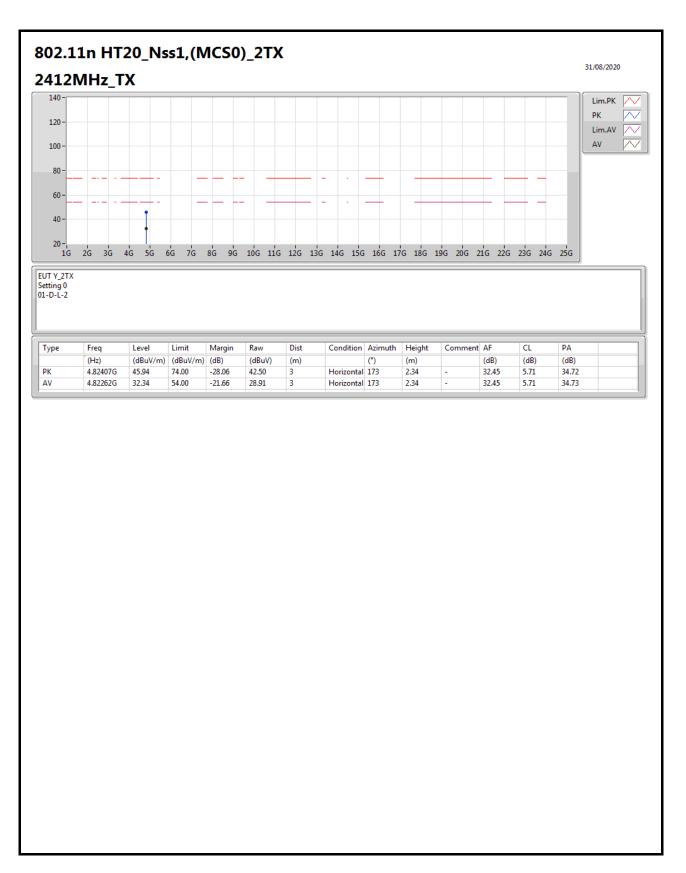




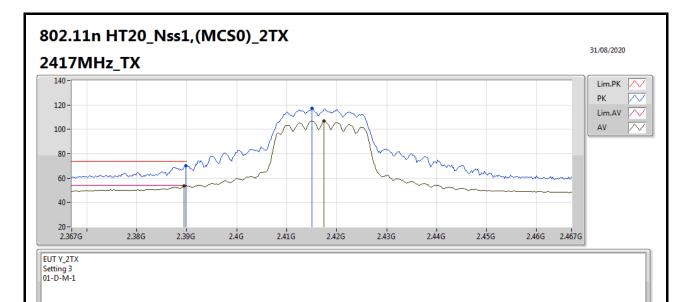












Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.3898G	70.08	74.00	-3.92	39.43	3	Vertical	95	1.78	-	27.46	3.19	-	
AV	2.3894G	53.48	54.00	-0.52	22.83	3	Vertical	95	1.78	-	27.46	3.19	-	
РК	2.415G	116.99	Inf	-Inf	86.25	3	Vertical	95	1.78	-	27.53	3.21	-	
AV	2.4174G	107.01	Inf	-Inf	76.27	3	Vertical	95	1.78	-	27.53	3.21	-	



2.4194G

2.4192G

AV

105.84

95.65

Inf

Inf

-Inf

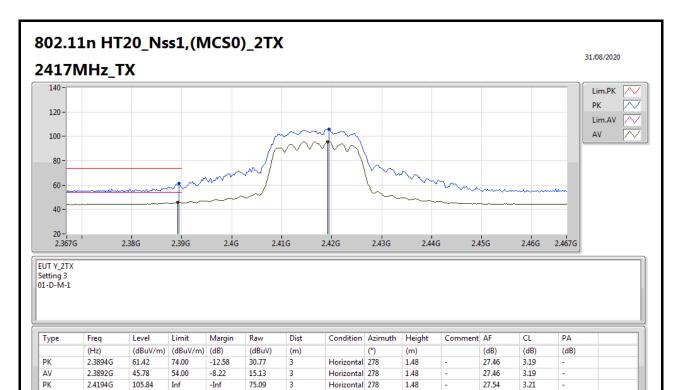
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64.90

3

3



Horizontal 278

Horizontal 278

1.48

1.48

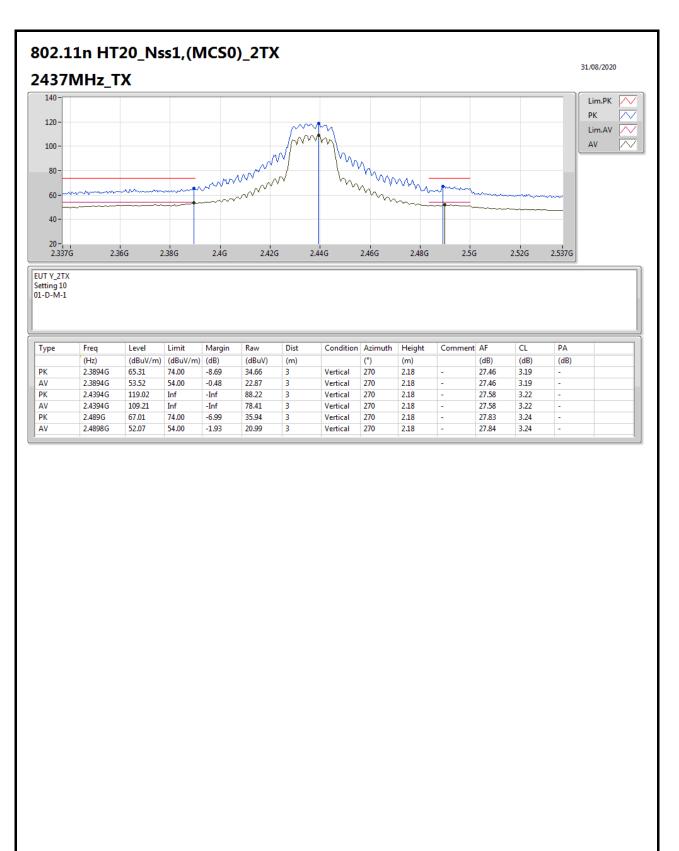
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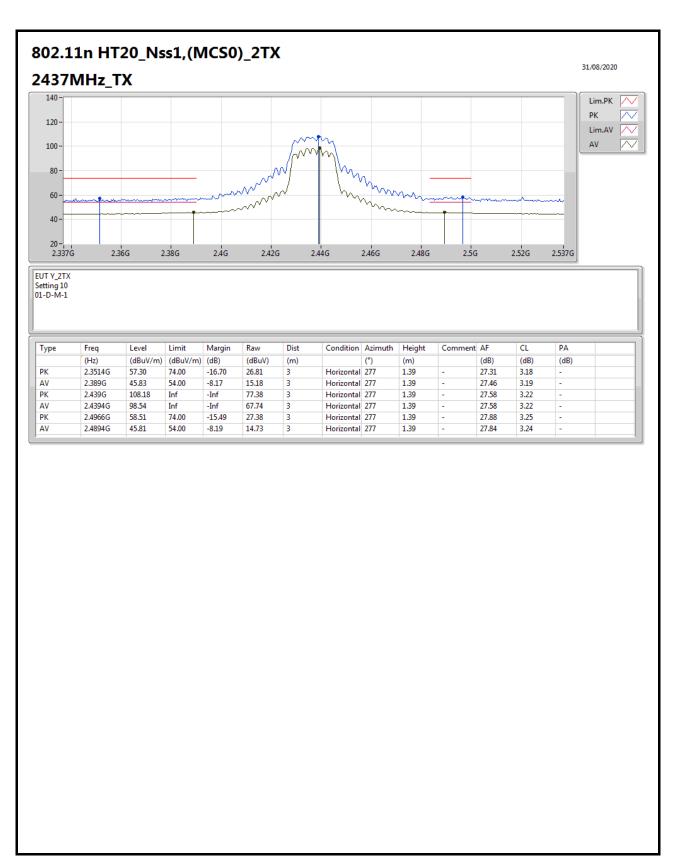
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3.21

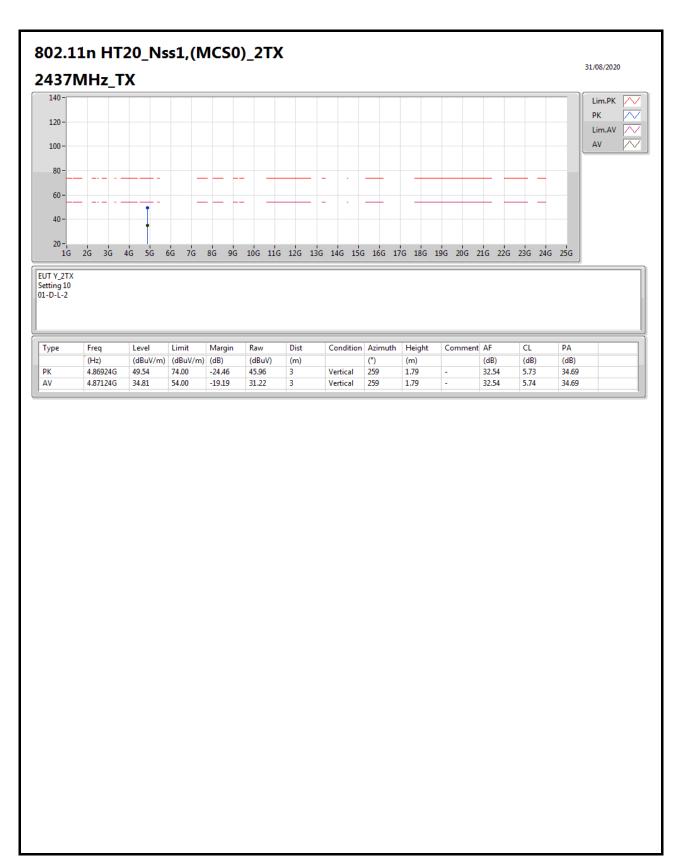




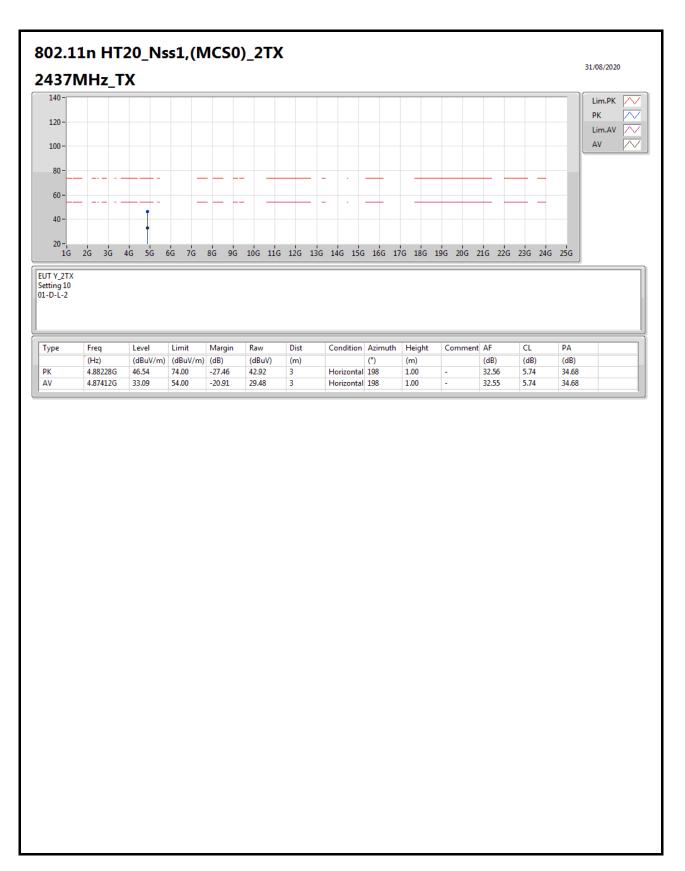




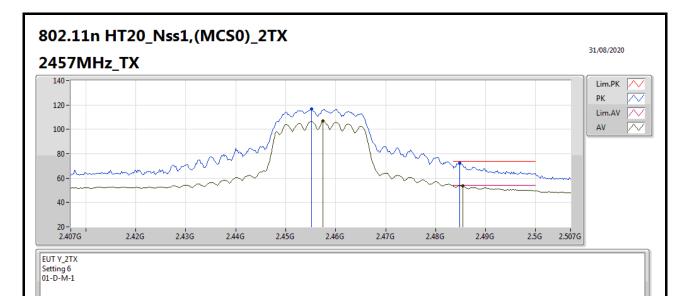






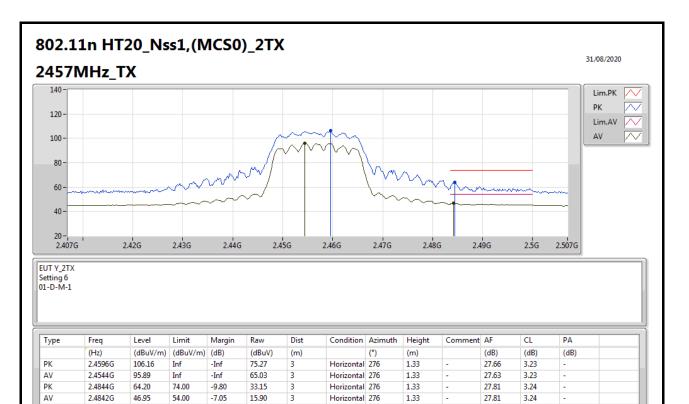




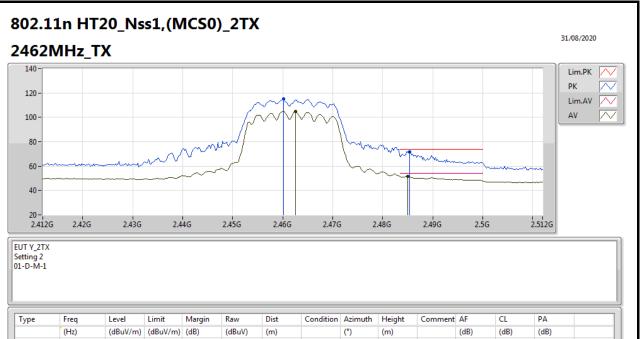


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
PK	2.4552G	116.66	Inf	-Inf	85.80	3	Vertical	85	1.79	-	27.63	3.23	-	
AV	2.4574G	106.82	Inf	-Inf	75.95	3	Vertical	85	1.79	-	27.64	3.23	-	
РК	2.4848G	72.12	74.00	-1.88	41.07	3	Vertical	85	1.79	-	27.81	3.24	-	
AV	2.4854G	53.75	54.00	-0.25	22.70	3	Vertical	85	1.79	-	27.81	3.24	-	



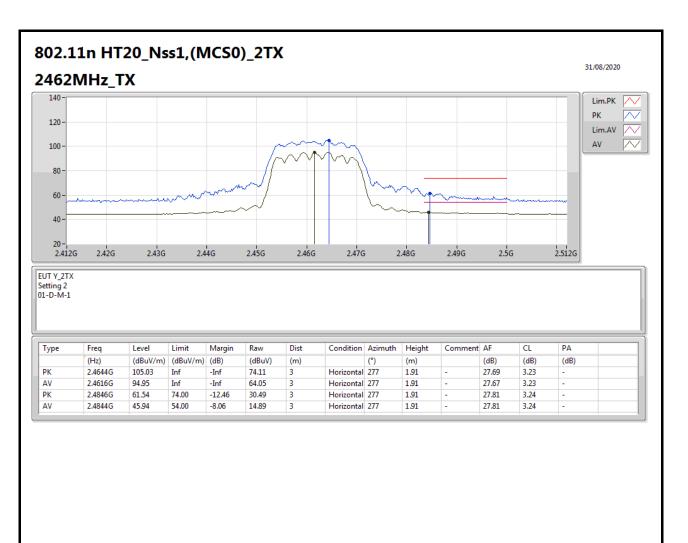




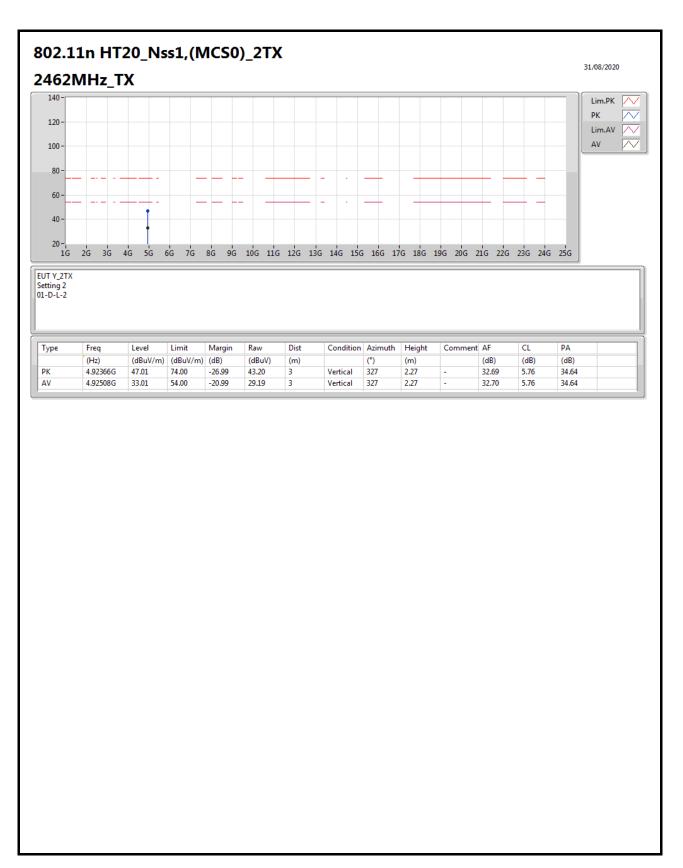


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
PK	2.4602G	114.92	Inf	-Inf	84.03	3	Vertical	83	1.80	-	27.66	3.23	-	
AV	2.4626G	104.88	Inf	-Inf	73.97	3	Vertical	83	1.80	-	27.68	3.23	-	
PK	2.4854G	71.71	74.00	-2.29	40.66	3	Vertical	83	1.80	-	27.81	3.24	-	
AV	2.485G	51.50	54.00	-2.50	20.45	3	Vertical	83	1.80	-	27.81	3.24	-	
1			i	1	i	i	i	i	i	i	i	i	i	

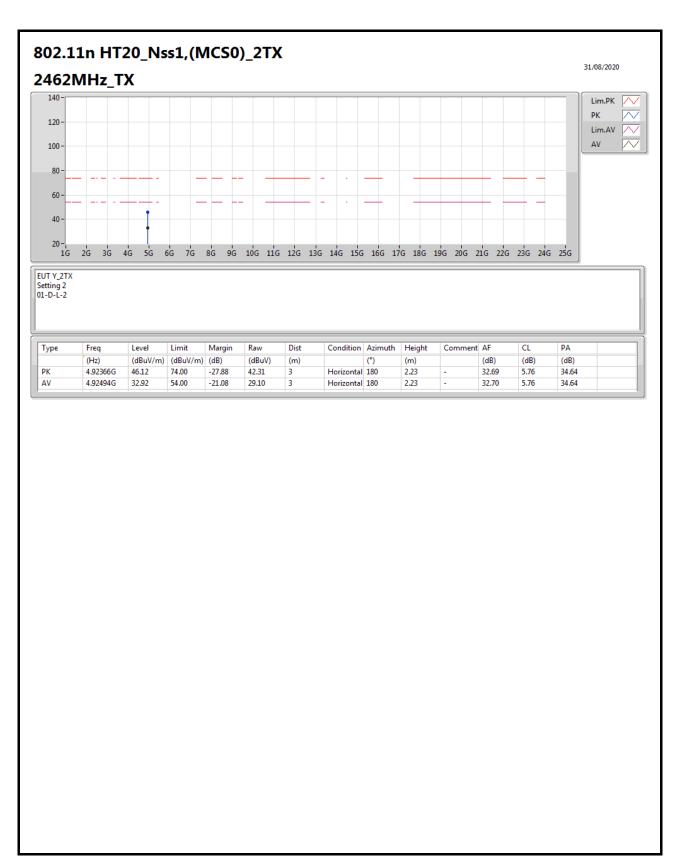




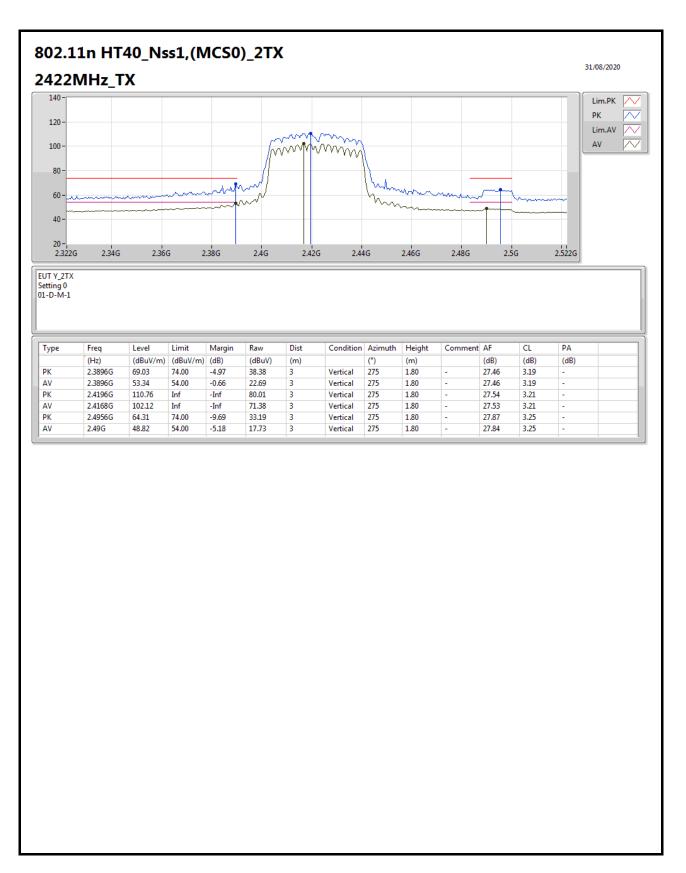




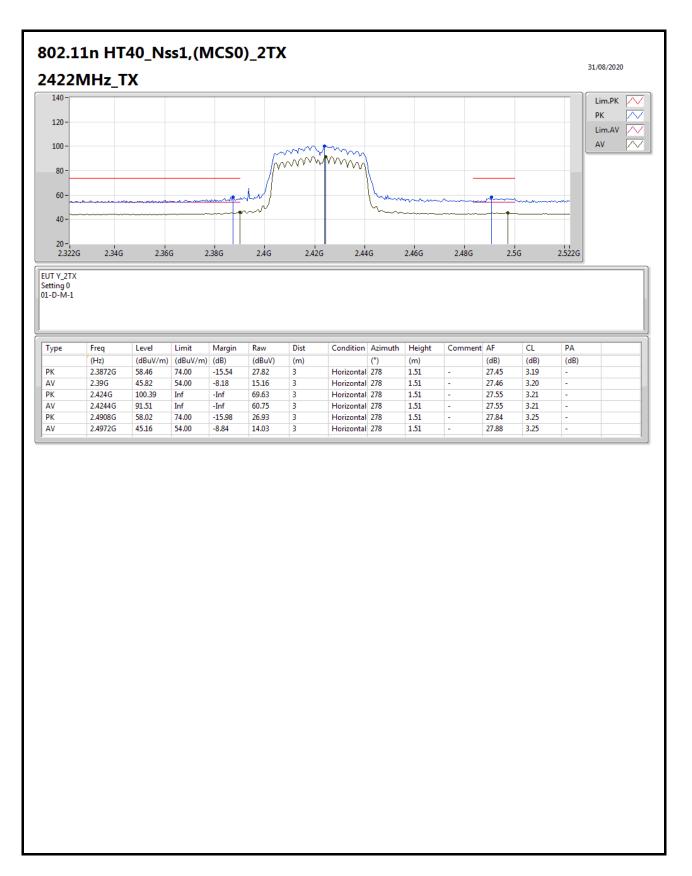




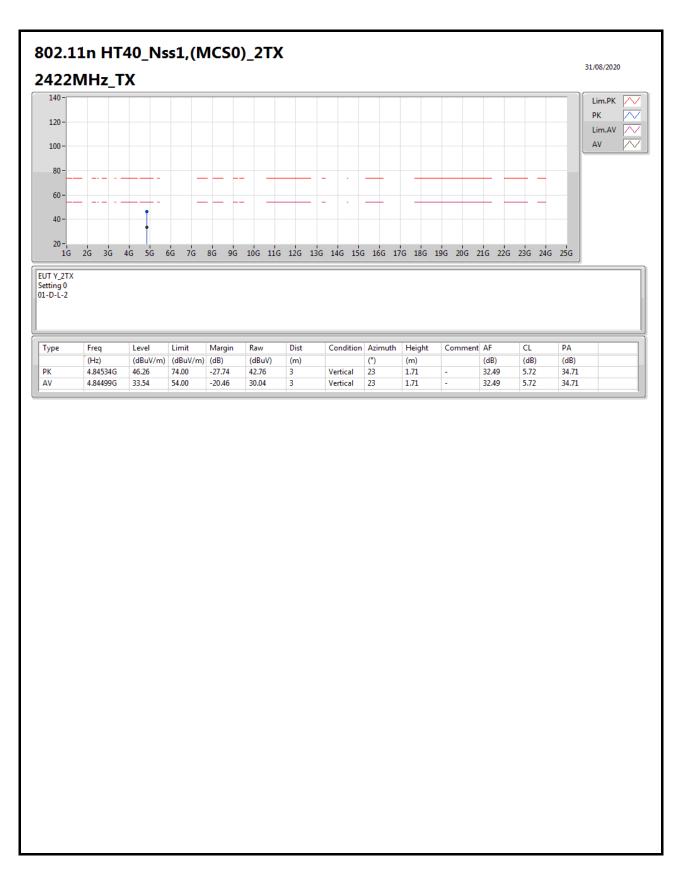




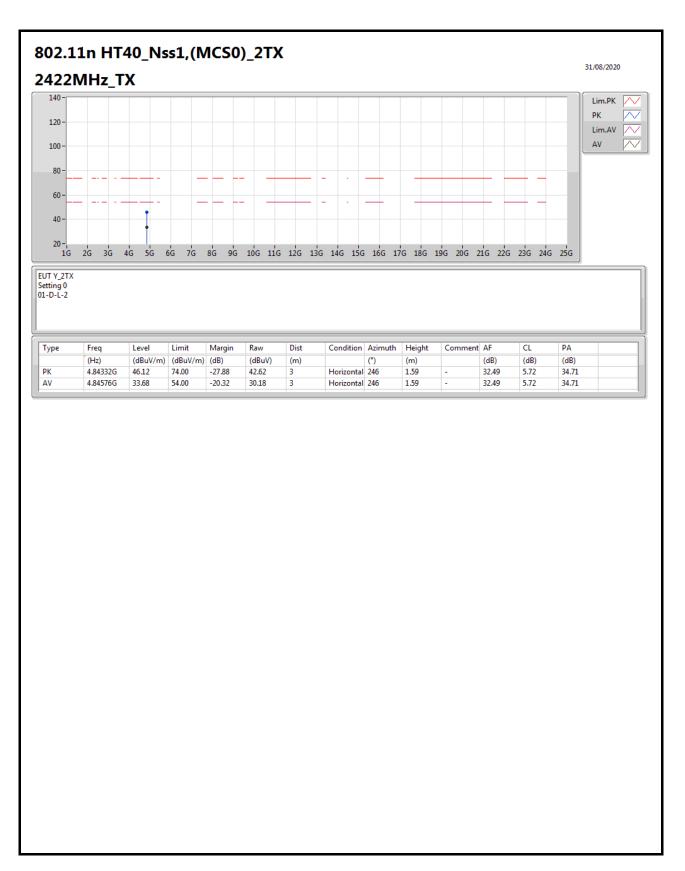




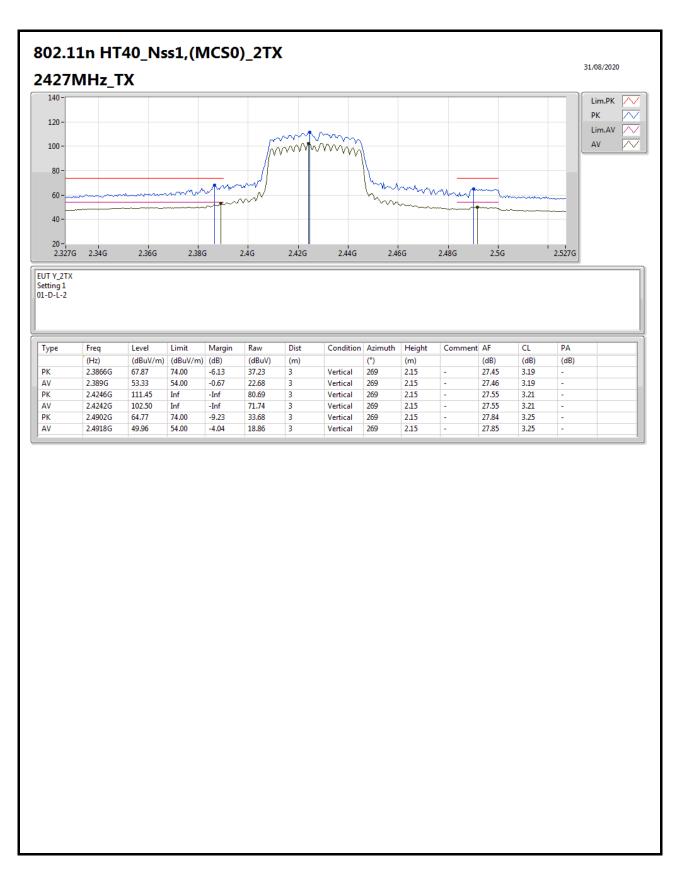




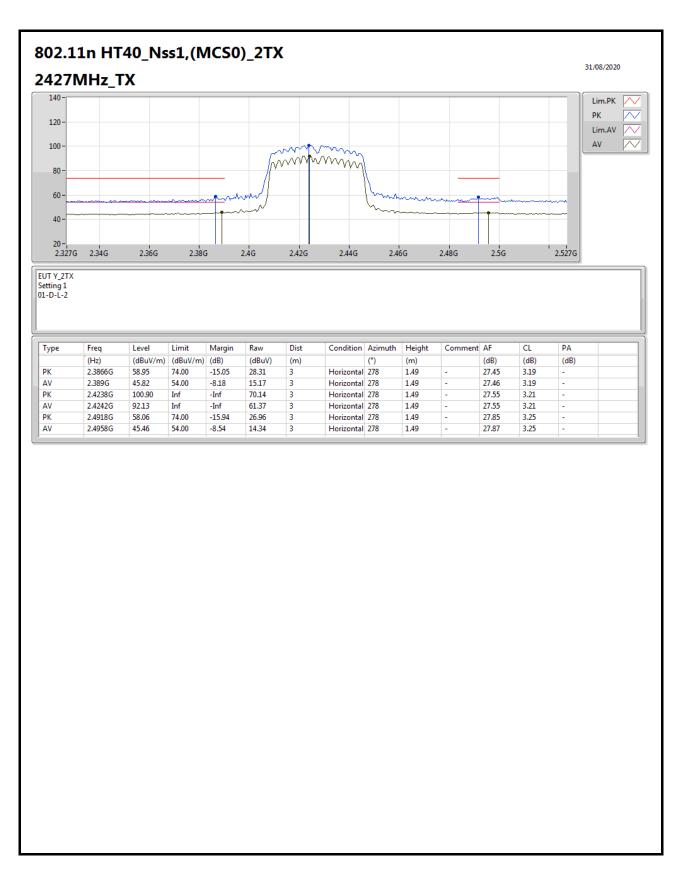




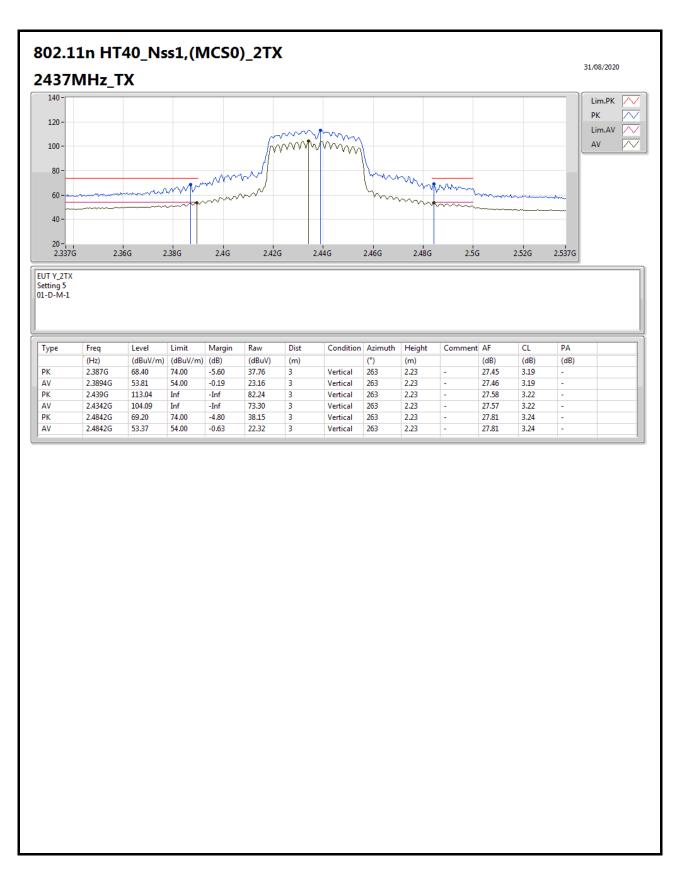




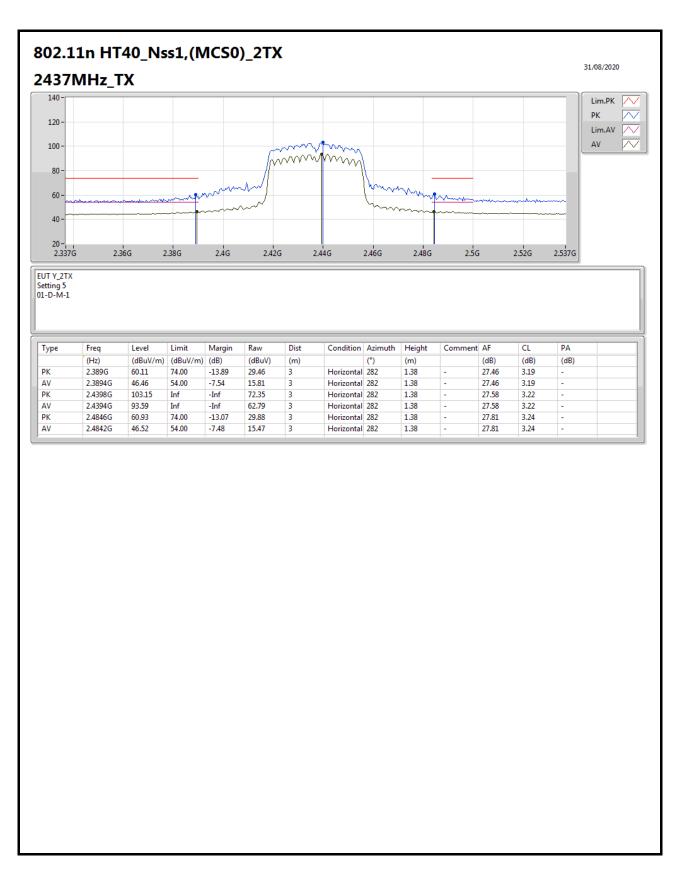




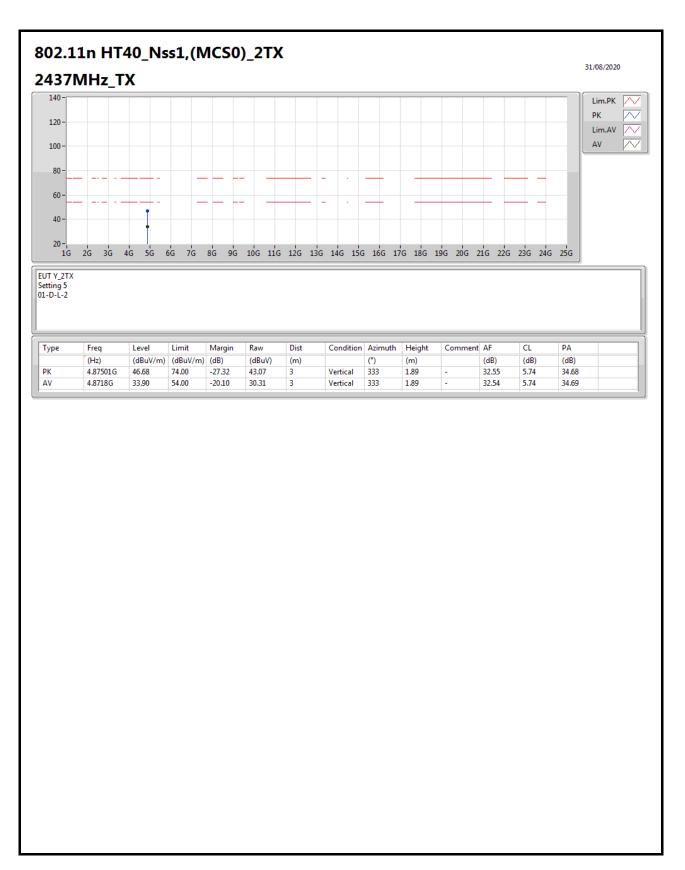




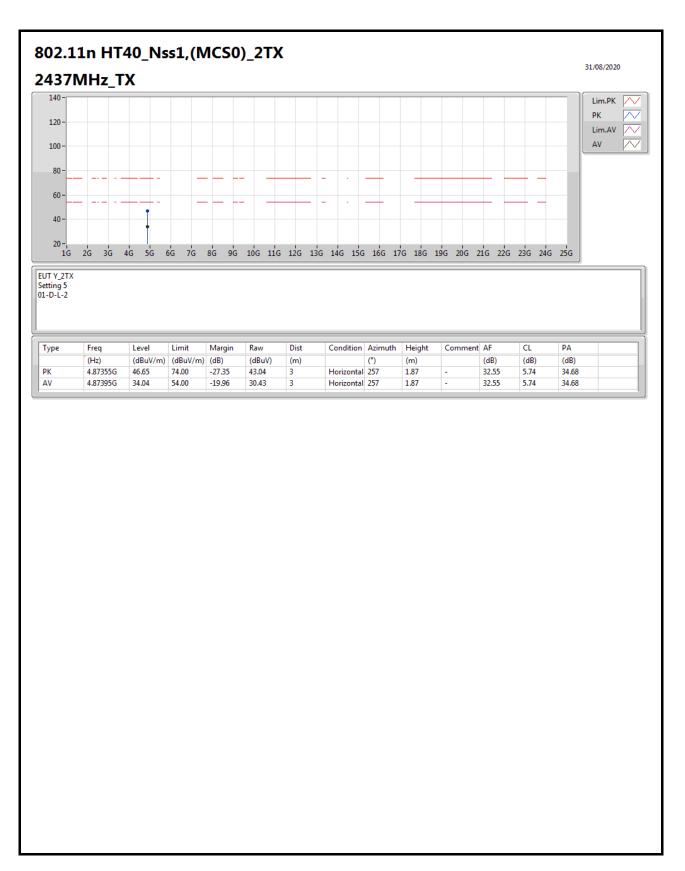




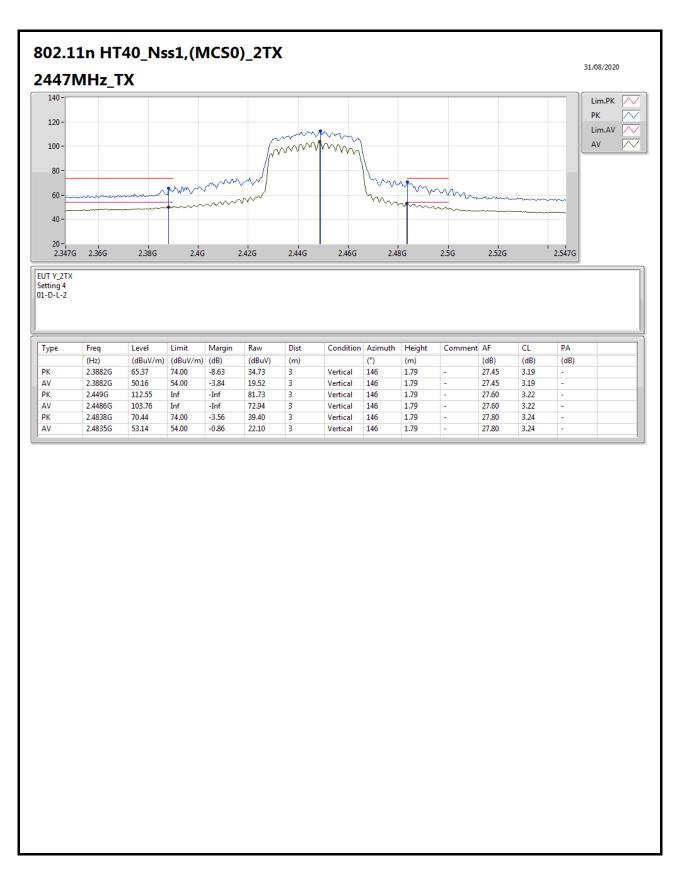




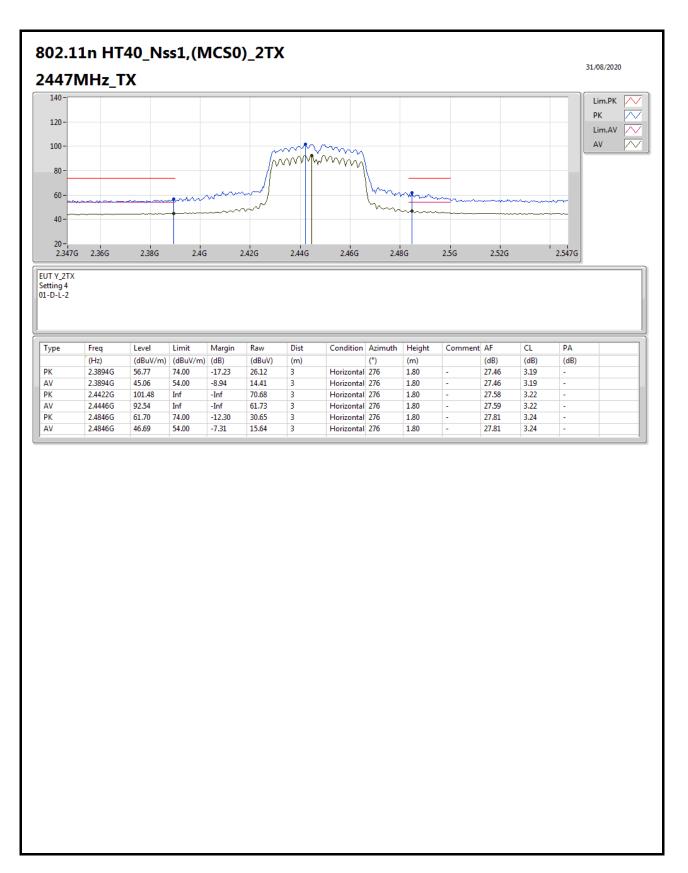




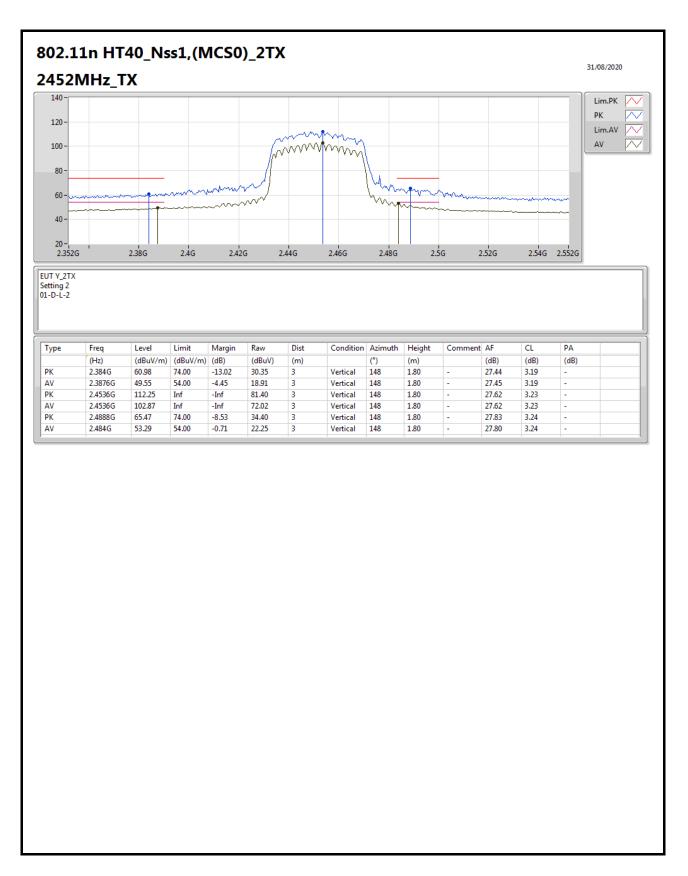




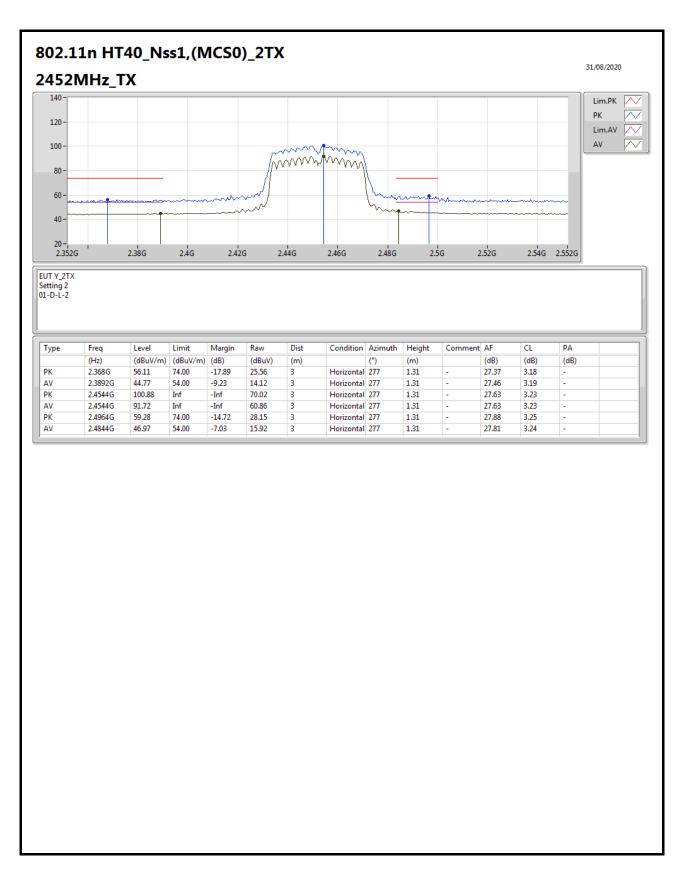




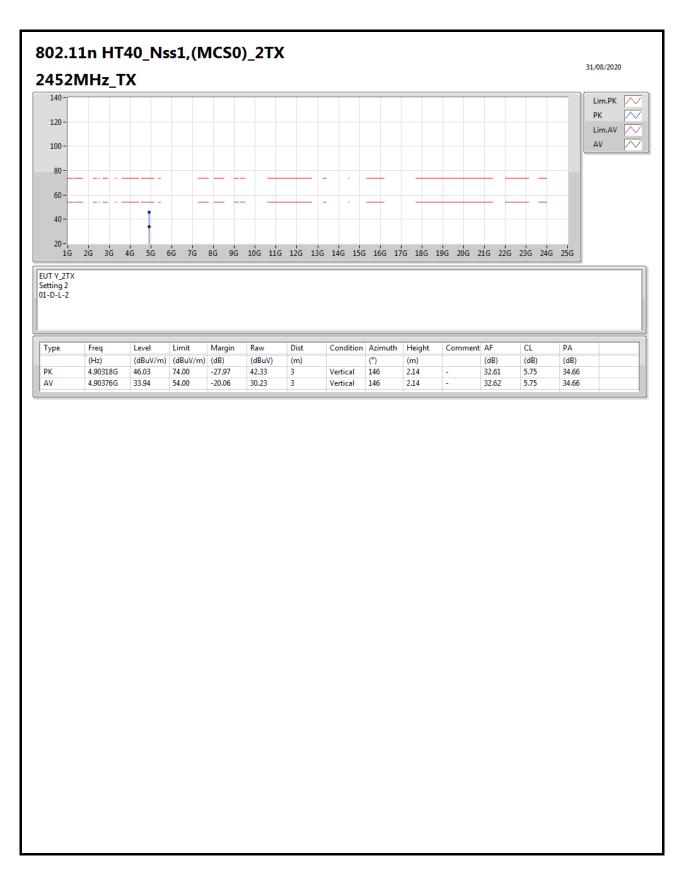




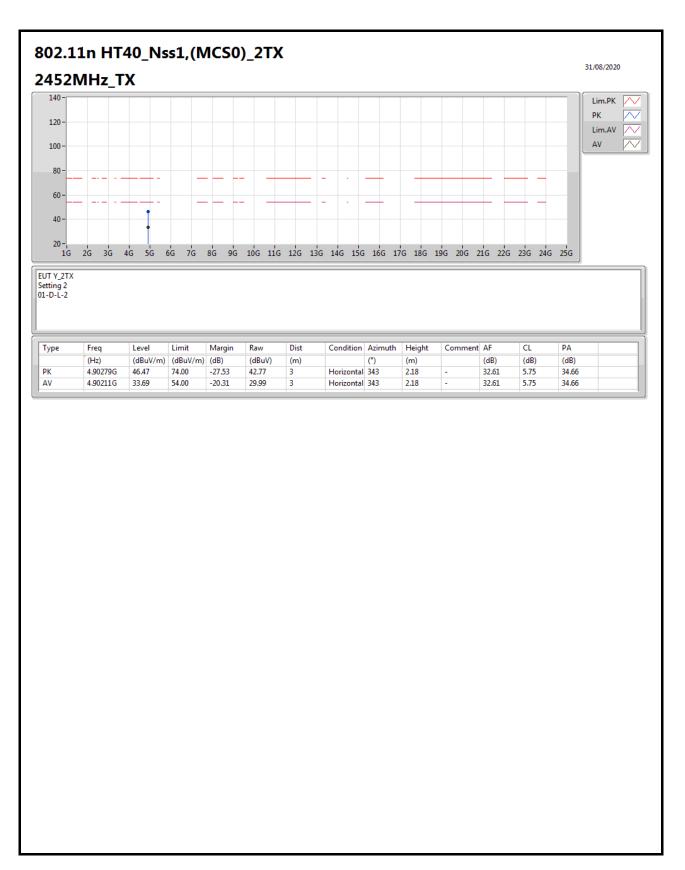














Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 1	Pass	AV	2.89116G	39.65	54.00	-14.35	Vertical



Radiated Emissions above 1GHz_Co-location

Appendix G

