

Report No.: FR901614AA



FCC RADIO TEST REPORT

FCC ID : 2AHKM-CGNV5

Equipment : 24X8 P6 DBCC WiFi eMTA

Brand Name : hitron
Model Name : CGNV5

Applicant : Hitron Technologies Inc.

No. 1-8, Li-Hsin 1st Rd. Hsinchu Science Park,

Hsinchu 30078, Taiwan

Manufacturer : Hitron Technologies Inc.

No. 1-8, Li-Hsin 1st Rd. Hsinchu Science Park,

Hsinchu 30078, Taiwan

Standard: 47 CFR FCC Part 15.247

The product was received on Oct. 18, 2019, and testing was started from Oct. 28, 2019 and completed on Nov. 01, 2019. 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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 Ver1.0

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Issued Date

: Nov. 13, 2019

Report Version : 01

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History of this test report

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Report No.	Version	Description	Issued Date
FR9O1614AA	01	Initial issue of report	Nov. 13, 2019

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Summary of Test Result

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Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen Report Producer: Cindy Peng

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1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g, n (HT20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40)	2422-2452	3-9 [7]

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Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	1TX
2.4-2.4835GHz	802.11g	20	3TX
2.4-2.4835GHz	802.11n HT20	20	3TX
2.4-2.4835GHz	802.11n HT40	40	3TX

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.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

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1.1.2 Antenna Information

A m4	Po	ort	Brand	Madal Nama	Tumo	Connector	Gain	(dBi)
Ant.	2.4GHz	5GHz	branu	Model Name	Type	Connector	2.4GHz	5GHz
1	1	2	LYNWAVE	ALX19P-221AA1-00	Dipole	I-PEX	2.5	3.4
2	2	3	LYNWAVE	ALX19P-221AA2-00	Dipole	I-PEX	2.5	3.4
3	3	-	LYNWAVE	ALX19P-221AA3-00	Dipole	I-PEX	2.5	-
4	-	1	LYNWAVE	ALX19P-221AA0-00	Dipole	I-PEX	-	3.4

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Note 1: The above information was declared by manufacturer.

Note 2: The EUT has four antennas.

<For 2.4GHz Band>

For IEEE 802.11b mode (1TX/1RX)

Only Port 1 can be used as transmitting/receiving.

For IEEE 802.11g/n mode (3TX/3RX)

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

<For 5GHz Band>

For IEEE 802.11a/n/ac mode (3TX/3RX)

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

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.998	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.983	0.07	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11n HT20	0.983	0.07	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11n HT40	1	0	n/a (DC>=0.98)	n/a (DC>=0.98)

Note:

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

1.1.4 EUT Operational Condition

EUT Power Type	From power adapter				
Beamforming Function	☐ With beamforming ☐ Without beamforming				
Function	☑ Point-to-multipoint ☐ Point-to-point				
Test Software Version	Lantiq DUT · Telnet				

Note: The above information was declared by manufacturer.

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1.2 Applicable Standards

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

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- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 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	Ekko Hsieh	24.2~24.6°C / 58~62%	Oct. 31, 2019~Nov. 01, 2019
Radiated below 1GHz	03CH05-CB	Bruce Yang	23.6~25.1°C / 60~64%	Oct. 28, 2019
Radiated above 1GHz	03CH06-CB	Stim Sung	23.7~25.9°C / 59~61%	Oct. 30, 2019~Oct. 31, 2019
AC Conduction	CO01-CB	Ryo Fan	24~26°C / 67~60%	Nov. 01, 2019

Test site Designation No. TW0006 with FCC.

1.4 Measurement Uncertainty

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

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

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Test site registered number IC 4086D with Industry Canada.

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
802.11b_Nss1,(1Mbps)_1TX	-
2412MHz	18.5
2437MHz	17
2462MHz	15.5
802.11g_Nss1,(6Mbps)_3TX	-
2412MHz	18.5
2417MHz	19.5
2437MHz	22
2457MHz	20
2462MHz	18.5
802.11n HT20_Nss1,(MCS0)_3TX	-
2412MHz	18.5
2417MHz	20.5
2437MHz	22.5
2457MHz	20.5
2462MHz	19
802.11n HT40_Nss1,(MCS0)_3TX	-
2422MHz	17.5
2427MHz	19
2437MHz	21
2447MHz	19.5
2452MHz	19

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2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests				
Tests Item	Tests Item AC power-line conducted emissions			
Condition	Condition AC power-line conducted measurement for line and neutral			
Operating Mode	Operating Mode Normal Link			
1	1 EUT + Adapter 1			
2 EUT + Adapter 2				
For operating mode 2 is the worst case and it was record in this test report.				

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The Worst Case Mode for Following Conformance Tests		
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands	
Test Condition Conducted measurement at transmit chains.		

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

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

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The Worst Case Mode for Following Conformance Tests				
Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation				
Operating Mode	Operating Mode			
1	1 WLAN 2.4GHz + WLAN 5GHz			
Refer to Sporton Test Report No.: FA9O1614 for Co-location RF Exposure Evaluation.				

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Note: The EUT can only be used at 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

	Accessories				
No.	Equipment Name	Brand Name	Model Name	Rating	
1	Adapter 1	APD	WA-30P12FU	Input: 100-240V~50-60Hz, 0.9A Max. Output: 12V, 2.5A	
2	Adapter 2	MOSO	MSS-V2500WR120-030E0-US	Input: 100-240V~50/60Hz, 1.0A max. Output: 12.0V, 2.5A	
No.	No. Other				
3	3 RJ-45 cable*1: Non-shielded, 1.5m				

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2.5 Support Equipment

For AC Conduction:

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
Α	LAN NB	DELL	E6430	N/A	
В	Phone	SAMPO	HT-B 907WL	N/A	
С	Terminal System	CASA-Systems	C2200	N/A	
D	Terminal System NB	HP	EliteBook 840	N/A	
Е	Phone	SAMPO	HT-B 907WL	N/A	
F	Flash disk3.0	Apacer	AH223	N/A	
G	2.4G NB	DELL	E6430	N/A	
Н	5G NB	DELL	E6430	N/A	

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For Radiated (below 1GHz):

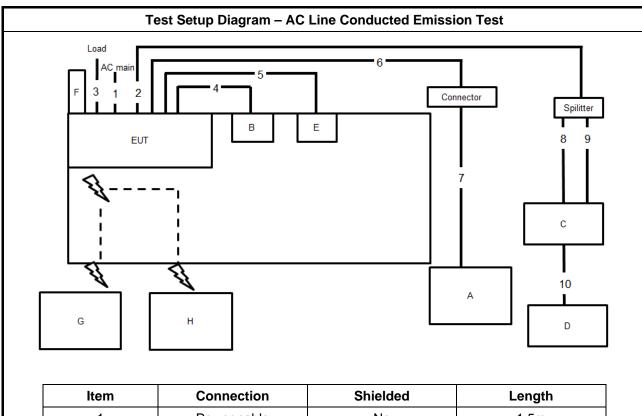
	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
Α	Notebook	DELL	E4300	N/A	
В	Notebook	DELL	E4300	N/A	
С	Notebook	DELL	E4300	N/A	
D	Notebook	Lenovo	TP00093A	N/A	
Е	Terminal System	CASA-Systems	C2200	N/A	
F	Phone	SAMPO	HT-B 907WL	N/A	
G	Phone	SAMPO	HT-B 907WL	N/A	
Н	USB dongle	Apacer	AH223	N/A	
I	Notebook	Lenovo	TP00075A	N/A	
J	Earphone	e-Power	S90W	N/A	
K	Mouse	Logitech	M-U0026	N/A	

For Radiated (above 1GHz) and RF Conducted:

<u> </u>	or radiated (above roriz) and rer conducted.				
	Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID				
Α	Notebook	DELL	E4300	N/A	

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2.6 Test Setup Diagram

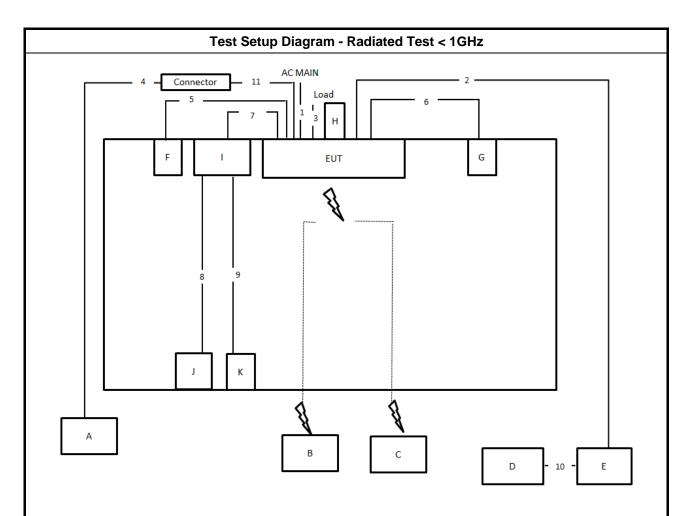


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Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	Coaxial cable	Yes	10m
3	RJ-45 cable*3	No	1.5m
4	RJ-11 cable	No	1.5m
5	RJ-11 cable	No	1.5m
6	RJ-45 cable	No	1.5m
7	RJ-45 cable	No	10m
8	Coaxial cable	Yes	1m
9	Coaxial cable	Yes	1m
10	RJ-45 cable	No	1.5m

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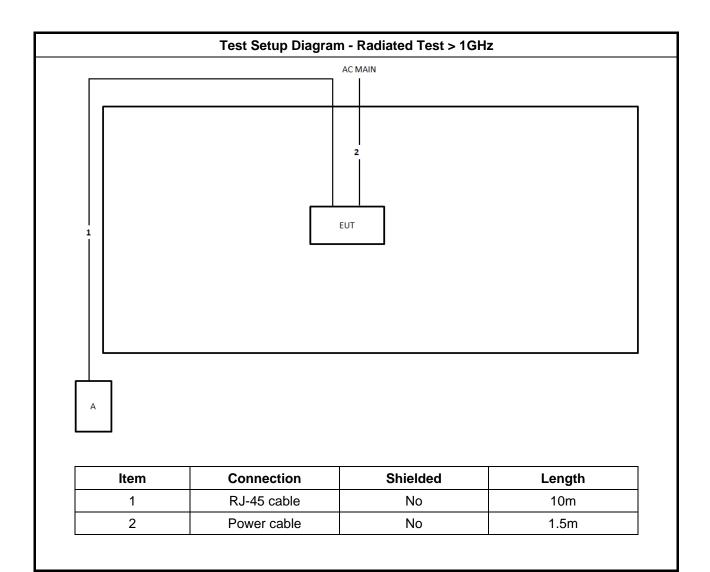
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Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	Coaxial cable	Yes	10m
3	RJ-45 cable*3	No	1.5m
4	RJ-45 cable	No	10m
5	RJ-11 cable	No	1.5m
6	RJ-11 cable	No	1.5m
7	Console cable	No	1.5m
8	USB cable	Yes	1.5m
9	Audio cable	No	1.5m
10	RJ-45 cable	No	1.5m
11	RJ-45 cable	No	1.5m

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3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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3.1.2 Measuring Instruments

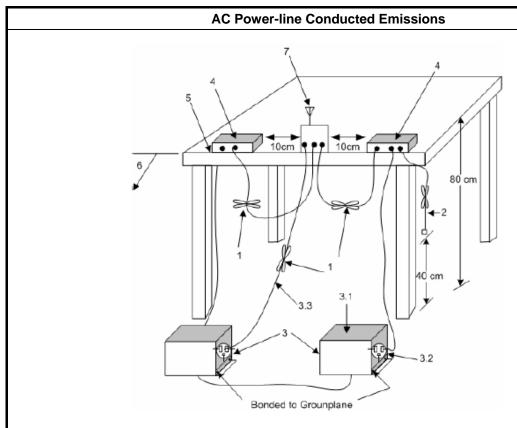
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

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3.1.4 Test Setup



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

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

3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

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

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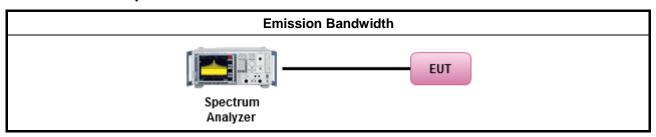
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

	Test Method								
•	For the emission bandwidth shall be measured using one of the options below:								
	\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

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3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit■ If $G_{TX} \le 6$ 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 $G_{TX} > 6$ 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.

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3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

		Test Method					
•	Maxi	mum Peak Conducted Output Power					
		Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).					
		Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).					
•	Maxi	mum Conducted Output Power					
	[duty	cycle ≥ 98% or external video / power trigger]					
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.					
		Refer as FCC KDB 558074, clause $8.3.2.2$ & C63.10 clause $11.9.2.2.3$ Method AVGSA-1A. (alternative)					
	duty cycle < 98% and average over on/off periods with duty factor						
Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.							
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)					
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3					
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)					
	Mea	surement using a power meter (PM)					
		Refer as FCC KDB 558074, clause 8.3.2.3 $\&$ C63.10 clause 11.9.2.3.1 Method AVGPM (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).					

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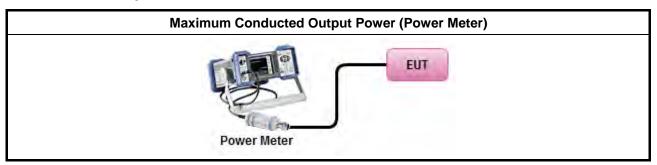
For conducted measurement.

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.

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■ If multiple transmit chains, EIRP calculation could be following as methods: P_{total} = P₁ + P₂ +... + 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

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3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

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3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

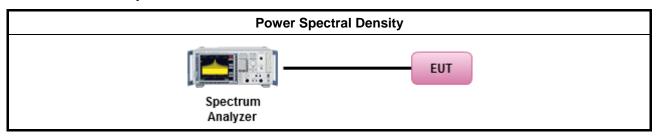
		Test Method							
•	outp the cond of th	k power spectral density procedures that the same method as used to determine the conducted out power. If maximum peak conducted output power was measured to demonstrate compliance to output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum ducted output power was measured to demonstrate compliance to the output power limit, then one he average PSD procedures shall be used, as applicable based on the following criteria (the peak D procedure is also an acceptable option).							
		Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.2 Method PKPSD.							
	[duty cycle ≥ 98% or external video / power trigger]								
	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.3 Method AVGPSD-1.								
		Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.5 Method AVGPSD-2.							
		Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.7 Method AVGPSD-3.							
	duty	cycle < 98% and average over on/off periods with duty factor							
	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.4 Method AVGPSD-1A. (alternative).								
		Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.6 Method AVGPSD-2A. (alternative)							
		Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10.8 Method AVGPSD-3A. (alternative)							
-	For	conducted measurement.							
	•	If The EUT supports multiple transmit chains using options given below:							
		Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.							
		Option 2: Measure and sum spectral maxima across the outputs. With this technique, 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,							

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Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.

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3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

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3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

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

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

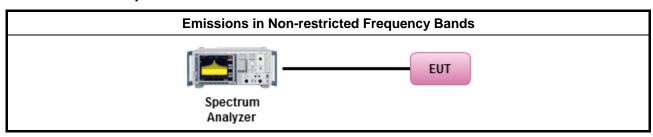
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

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

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

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3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

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

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- Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
- Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the ELIT
- Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

3.6.2 Measuring Instruments

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

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3.6.3 Test Procedures

	Test Method									
•	The	average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].								
•	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.									
•	For	For the transmitter unwanted emissions shall be measured using following options below:								
	•	Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.								
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%).								
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).								
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).								
		Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.								
		Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.								
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.								
•	For	the transmitter band-edge emissions shall be measured using following options below:								
	Refer as FCC KDB 558074 clause 8.7 & C63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.									
	•	Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.								
	•	Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).								
	•	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB								
	•	For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.								

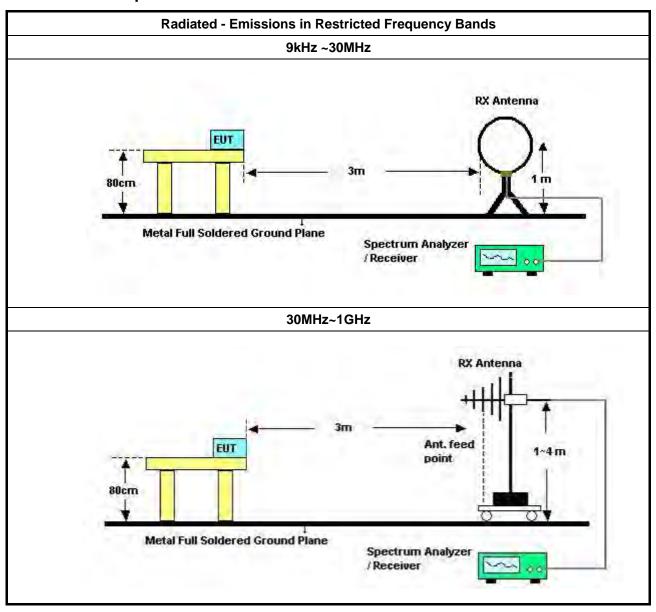
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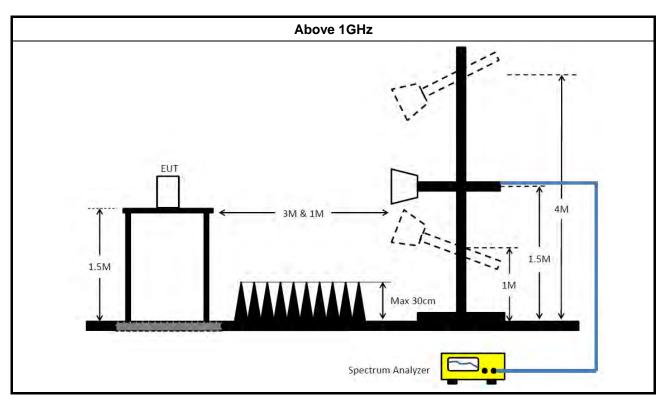
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3.6.4 Test Setup



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3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = 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 10 harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

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4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 28, 2019	Jan. 29, 2020	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50- 16-2	04083	150kHz ~ 100MHz	Dec. 24, 2018	Dec. 23, 2019	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Jan. 11, 2019	Jan. 10, 2020	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 21, 2019	May 20, 2020	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 29, 2019	Mar. 28, 2020	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESE & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 28, 2019	Mar. 27, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 02, 2019	May 01, 2020	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Aug, 15, 2019	Aug, 14, 2020	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 15, 2019	May 14, 2020	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	LOW Cable-04+23	30MHz~1GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBE CK	BBHA9120D	9120D-1292	1GHz~18GHz	Jul. 17, 2019	Jul. 16, 2020	Radiation (03CH06-CB)
Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 12, 2019	Jun. 11, 2020	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	83017A	MY53270064	0.5GHz ~ 26.5GHz	May 08, 2019	May 07, 2020	Radiation (03CH06-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Oct. 21, 2019	Oct. 20, 2020	Radiation (03CH06-CB)
RF Cable-high	HUBER+SUH NER	RG402	High Cable-05	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH06-CB)
RF Cable-high	HUBER+SUH NER	RG402	High Cable-05+24	1GHz~18GHz	Oct. 07, 2019	Oct. 06, 2020	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Jul. 02, 2019	Jul. 01, 2020	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Sep. 11, 2019	Sep. 10, 2020	Conducted (TH02-CB)

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Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Sep. 11, 2019	Sep. 10, 2020	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)

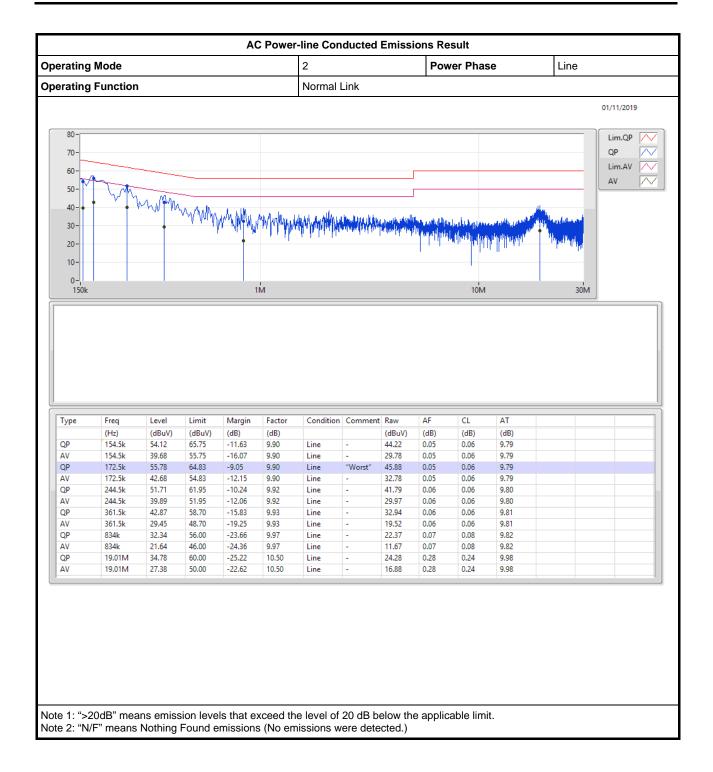
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Note: Calibration Interval of instruments listed above is one year.

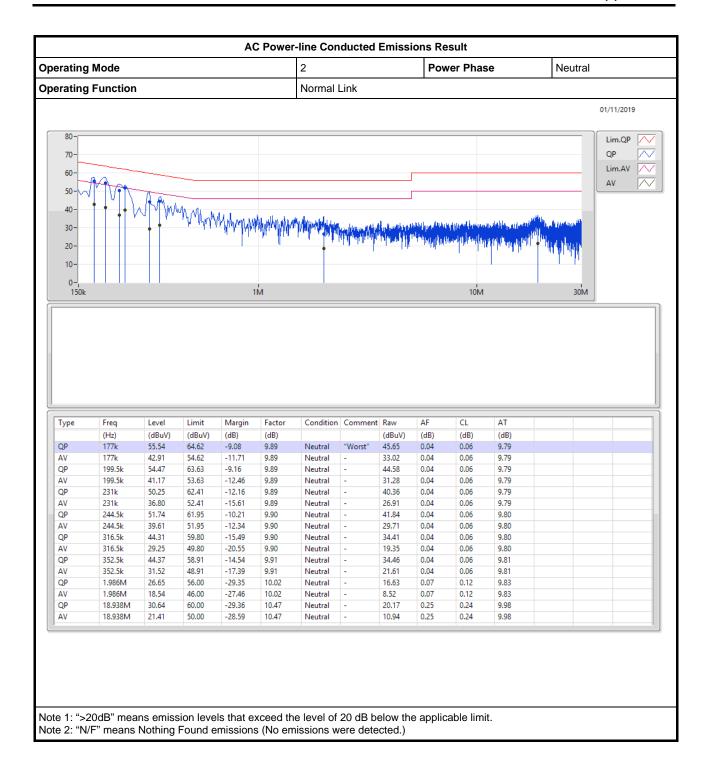
N.C.R. means Non-Calibration required.

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AC Power-line Conducted Emissions Result



AC Power-line Conducted Emissions Result





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)_1TX	7.55M	10.27M	10M3G1D	7.075M	10.22M
802.11g_Nss1,(6Mbps)_3TX	16.525M	16.542M	16M5D1D	16.4M	16.442M
802.11n HT20_Nss1,(MCS0)_3TX	17.775M	17.766M	17M8D1D	17.625M	17.666M
802.11n HT40_Nss1,(MCS0)_3TX	36.45M	36.332M	36M3D1D	36.35M	36.182M

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;

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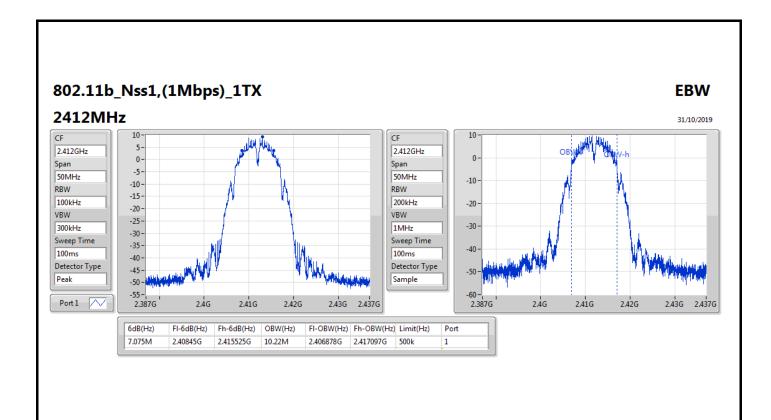
Result

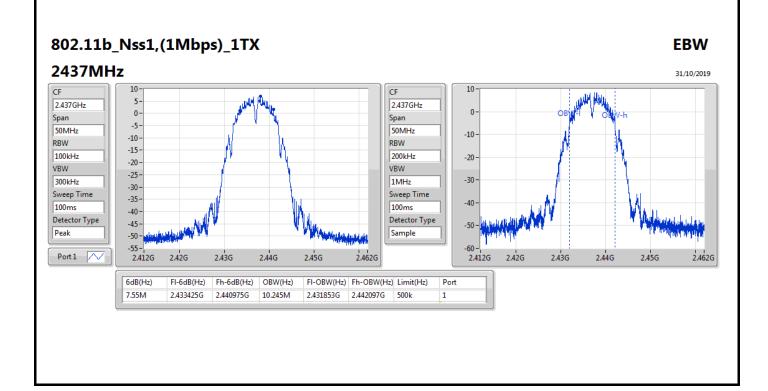
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW	Port 3-N dB	Port 3-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	7.075M	10.22M				
2437MHz	Pass	500k	7.55M	10.245M				
2462MHz	Pass	500k	7.075M	10.27M				
802.11g_Nss1,(6Mbps)_3TX	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	16.45M	16.442M	16.525M	16.542M	16.45M	16.467M
2417MHz								
2437MHz	Pass	500k	16.425M	16.492M	16.525M	16.492M	16.4M	16.517M
2457MHz								
2462MHz	Pass	500k	16.5M	16.517M	16.425M	16.492M	16.475M	16.517M
802.11n HT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	17.775M	17.716M	17.625M	17.691M	17.65M	17.691M
2417MHz								
2437MHz	Pass	500k	17.75M	17.766M	17.65M	17.691M	17.625M	17.666M
2457MHz								
2462MHz	Pass	500k	17.775M	17.716M	17.625M	17.666M	17.675M	17.666M
802.11n HT40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-
2422MHz	Pass	500k	36.4M	36.232M	36.4M	36.232M	36.35M	36.332M
2427MHz								
2437MHz	Pass	500k	36.45M	36.232M	36.4M	36.232M	36.35M	36.182M
2447MHz								
2452MHz	Pass	500k	36.45M	36.232M	36.35M	36.232M	36.4M	36.282M

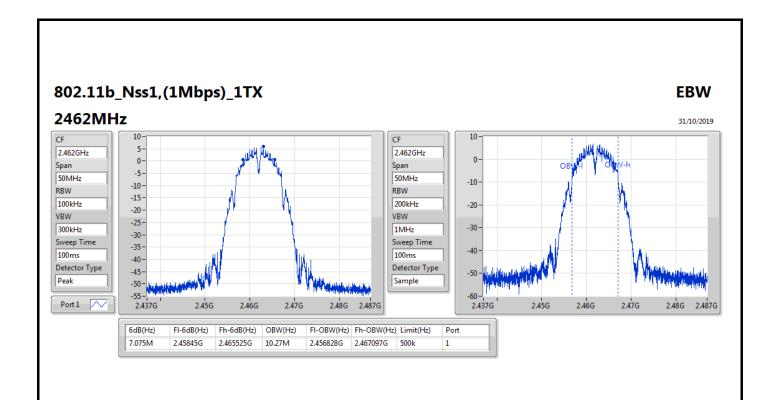
Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;

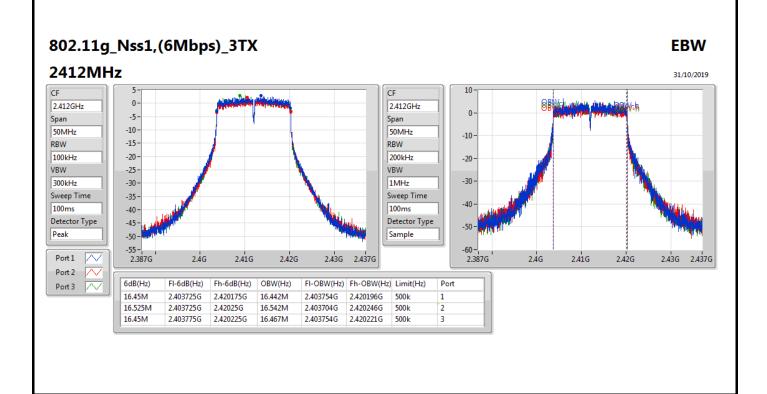
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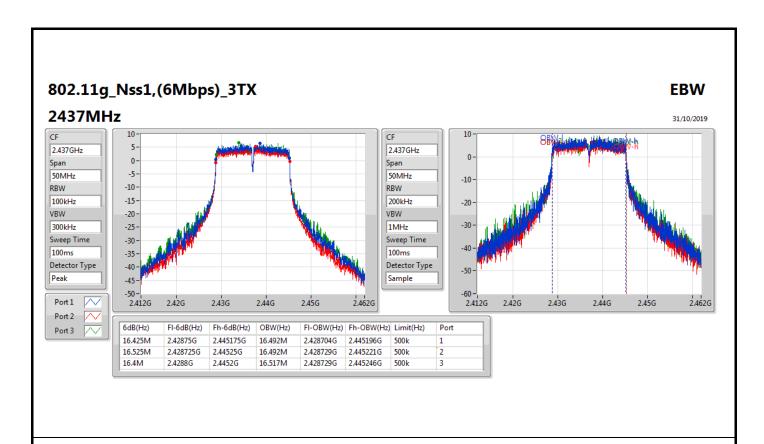


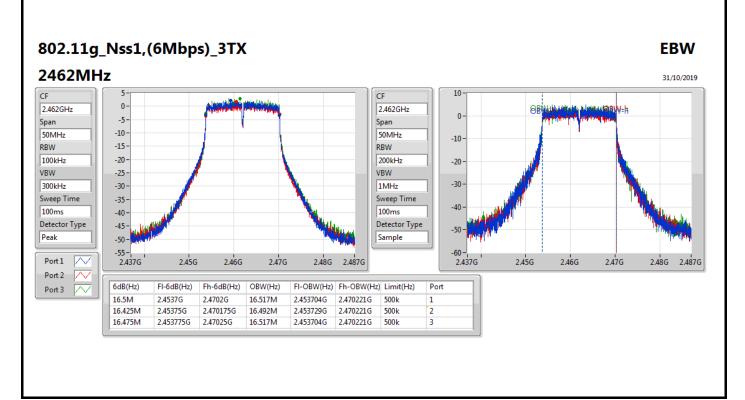


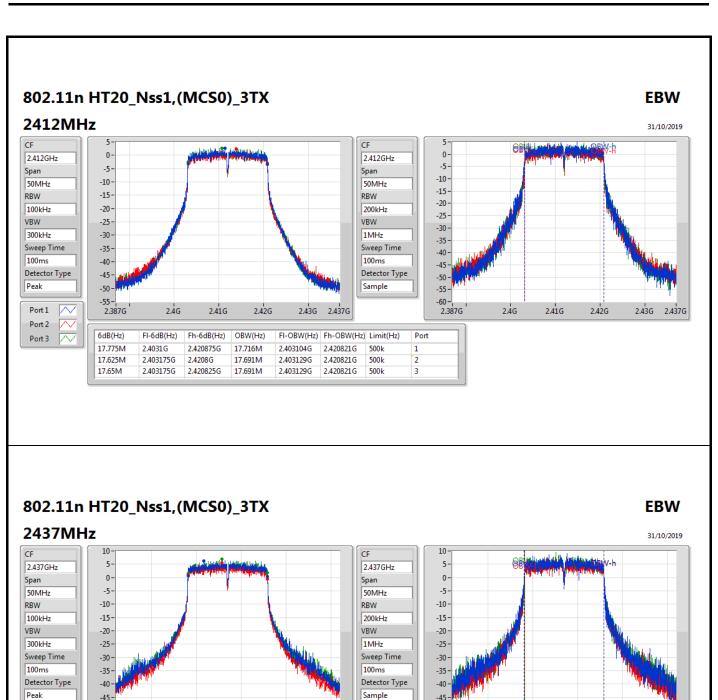




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-50

Port

2.412G

2.42G

-50

2.412G

6dB(Hz)

17.75M

17.65M

17.625M

2.42G

2.428125G

2.428175G

2.428175G

2.43G

FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz)

2.445875G

2.445825G

2.4458G

2.44G

17.766M

17.691M

17.666M

2.45G

2.428104G

2.428154G

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

2.445796G

2.445821G

500k

500k

500k

2.428054G 2.445821G

Port 1

Port 2

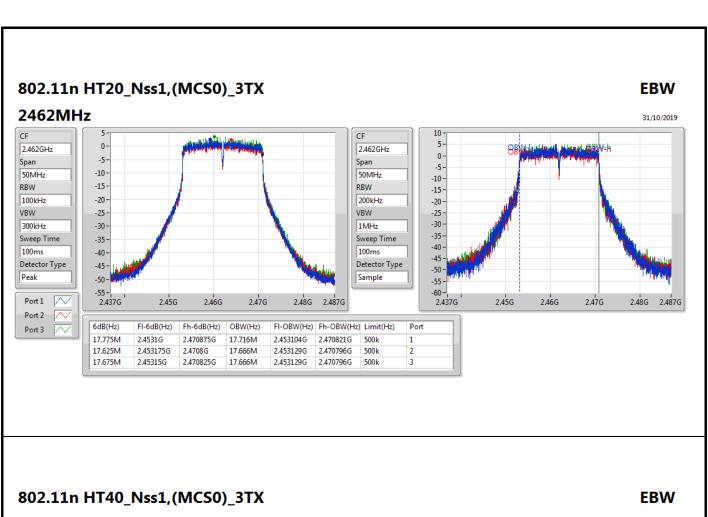
Port 3

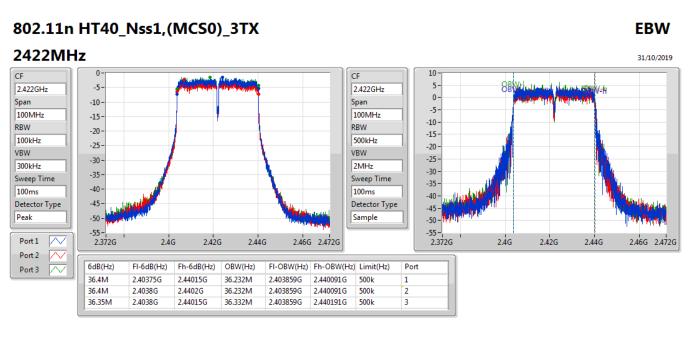
2.44G

2.45G

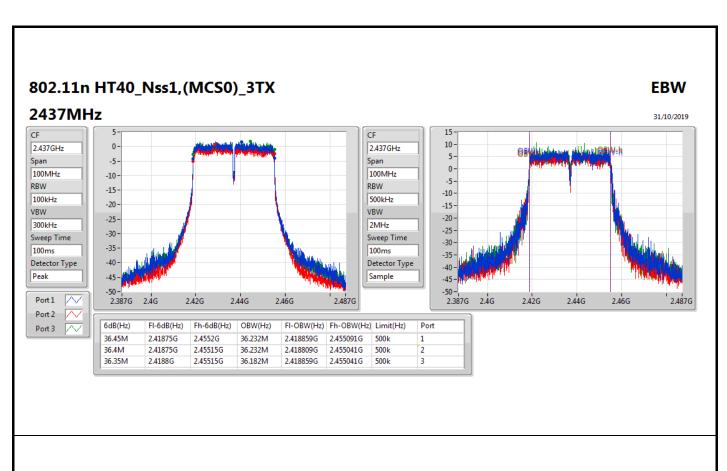
2.462G

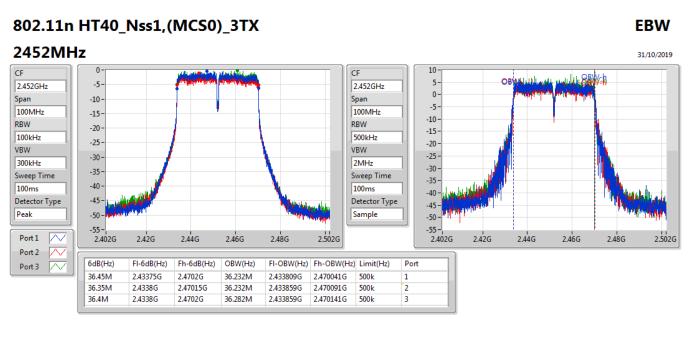
EBW Result Appendix B





EBW Result Appendix B







Average Power Result

Appendix C

Summary

ouninary .		
Mode	Total Power	Total Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	17.77	0.05984
802.11g_Nss1,(6Mbps)_3TX	24.73	0.29717
802.11n HT20_Nss1,(MCS0)_3TX	25.06	0.32063
802.11n HT40_Nss1,(MCS0)_3TX	23.57	0.22751



Result

Mode	Result	DG	Port 1	Port 2	Port 3	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.50	17.77			17.77	30.00
2437MHz	Pass	2.50	16.27			16.27	30.00
2462MHz	Pass	2.50	14.59			14.59	30.00
802.11g_Nss1,(6Mbps)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	2.50	16.97	16.28	16.68	21.42	30.00
2417MHz	Pass	2.50	17.91	17.01	17.61	22.30	30.00
2437MHz	Pass	2.50	20.33	19.33	20.15	24.73	30.00
2457MHz	Pass	2.50	17.98	17.09	18.17	22.54	30.00
2462MHz	Pass	2.50	16.44	15.82	16.70	21.11	30.00
802.11n HT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	2.50	16.80	16.17	16.69	21.33	30.00
2417MHz	Pass	2.50	18.73	17.91	18.61	23.20	30.00
2437MHz	Pass	2.50	20.55	19.76	20.50	25.06	30.00
2457MHz	Pass	2.50	18.32	17.56	18.67	22.98	30.00
2462MHz	Pass	2.50	16.74	16.22	17.15	21.49	30.00
802.11n HT40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
2422MHz	Pass	2.50	16.07	15.16	15.83	20.47	30.00
2427MHz	Pass	2.50	17.37	16.45	17.09	21.76	30.00
2437MHz	Pass	2.50	19.21	18.08	19.03	23.57	30.00
2447MHz	Pass	2.50	17.69	16.78	17.67	22.17	30.00
2452MHz	Pass	2.50	17.12	16.24	17.16	21.63	30.00

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



Summary

- Carrinary	
Mode	PD
	(dBm/RBW)
2.4-2.4835GHz	·
802.11b_Nss1,(1Mbps)_1TX	-6.04
802.11g_Nss1,(6Mbps)_3TX	-4.31
802.11n HT20_Nss1,(MCS0)_3TX	-3.41
802.11n HT40_Nss1,(MCS0)_3TX	-6.85

RBW=3 kHz.

Page No.



Result

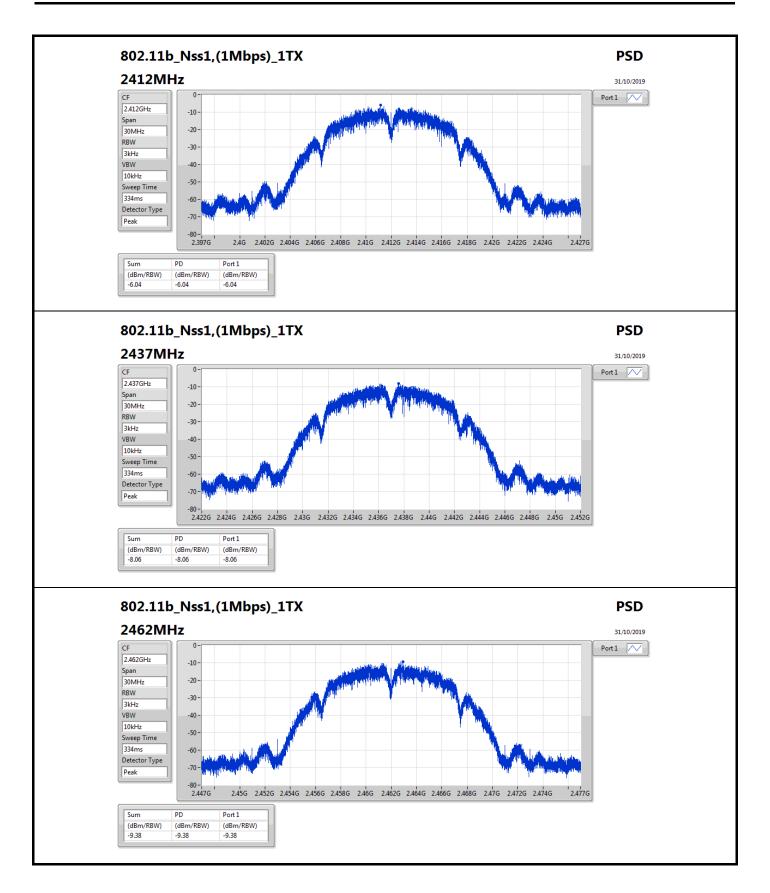
Mode	Result	DG	Port 1	Port 2	Port 3	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-
2412MHz	Pass	2.50	-6.04			-6.04	8.00
2437MHz	Pass	2.50	-8.06			-8.06	8.00
2462MHz	Pass	2.50	-9.38			-9.38	8.00
802.11g_Nss1,(6Mbps)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	7.27	-11.74	-11.71	-11.86	-7.23	6.73
2417MHz							
2437MHz	Pass	7.27	-8.49	-9.13	-7.88	-4.31	6.73
2457MHz							
2462MHz	Pass	7.27	-12.28	-12.19	-12.08	-7.45	6.73
802.11n HT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	7.27	-11.07	-11.19	-10.93	-6.60	6.73
2417MHz							
2437MHz	Pass	7.27	-7.16	-8.18	-7.44	-3.41	6.73
2457MHz							
2462MHz	Pass	7.27	-11.00	-11.93	-10.34	-6.81	6.73
802.11n HT40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
2422MHz	Pass	7.27	-14.28	-14.71	-14.34	-10.87	6.73
2427MHz							
2437MHz	Pass	7.27	-10.70	-11.79	-10.83	-6.85	6.73
2447MHz							
2452MHz	Pass	7.27	-12.86	-14.13	-12.39	-8.87	6.73

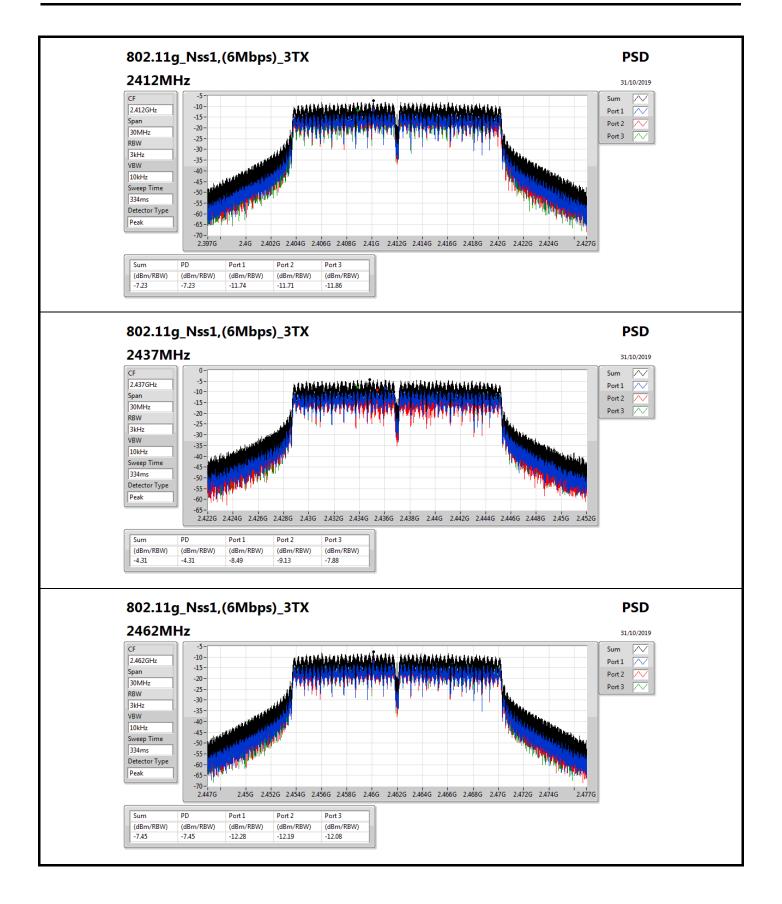
DG = Directional Gain; RBW=3 kHz;

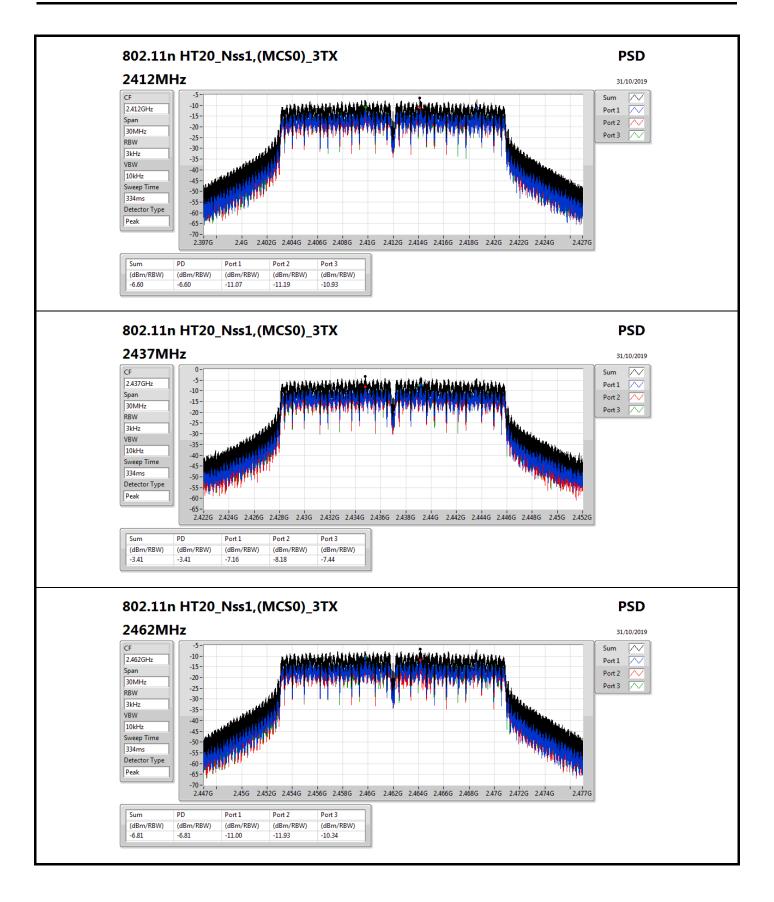
Page No.

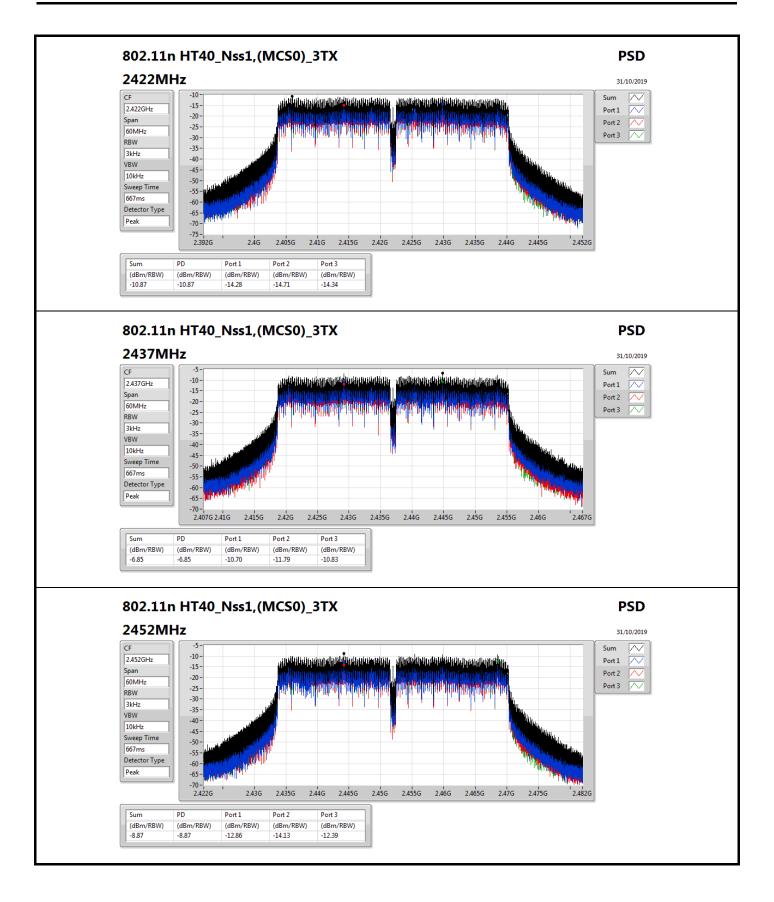
: 2 of 6

PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port X power density;











CSE(Non-restricted Band) Result

Appendix E

Summary

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-		•	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	2.41294G	9.58	-20.42	2.3035G	-48.78	2.3985G	-40.44	2.51138G	-46.08	16.49826G	-41.05	1
802.11g_Nss1,(6Mbps)_3TX	Pass	2.43386G	6.79	-23.21	2.30466G	-48.78	2.39962G	-27.17	2.48548G	-47.07	16.56007G	-42.21	1
802.11n HT20_Nss1,(MCS0)_3TX	Pass	2.43511G	6.92	-23.08	2.30554G	-51.43	2.39982G	-26.20	2.52338G	-46.58	17.62209G	-41.93	2
802.11n HT40_Nss1,(MCS0)_3TX	Pass	2.44572G	1.95	-28.05	2.30941G	-50.43	2.39984G	-29.69	2.51482G	-47.54	17.62681G	-42.20	3



CSE(Non-restricted Band) Result

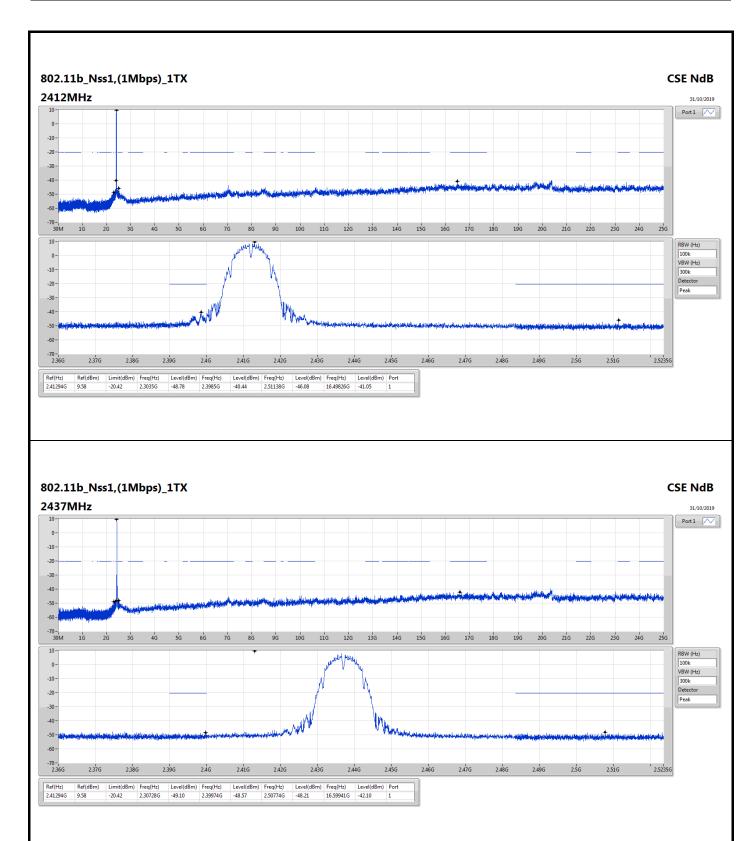
Appendix E

Page No.

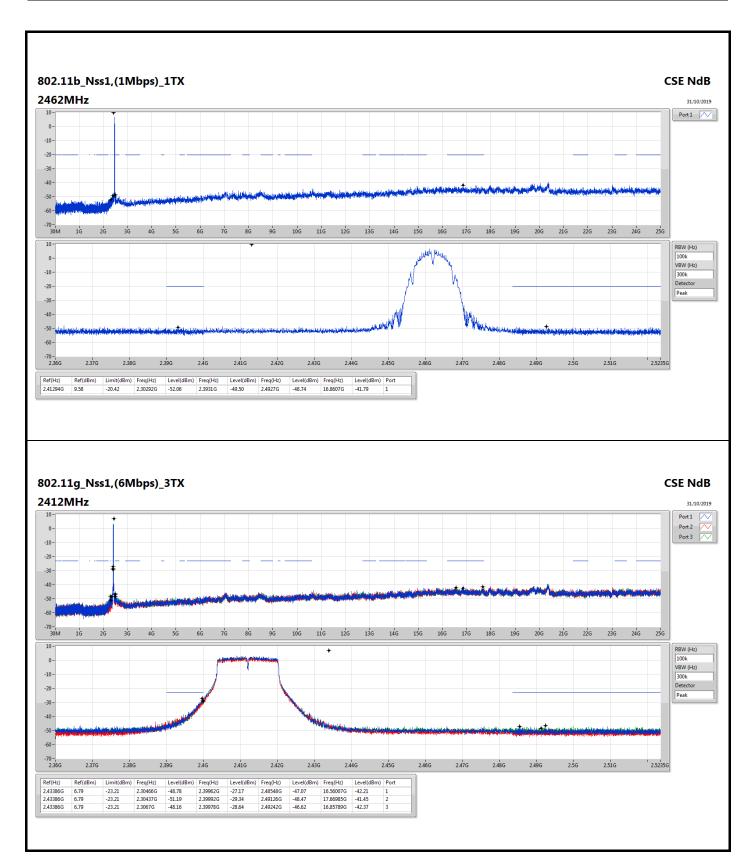
Result

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.41294G	9.58	-20.42	2.3035G	-48.78	2.3985G	-40.44	2.51138G	-46.08	16.49826G	-41.05	1
2437MHz	Pass	2.41294G	9.58	-20.42	2.30728G	-49.10	2.39974G	-48.57	2.50774G	-48.21	16.59941G	-42.10	1
2462MHz	Pass	2.41294G	9.58	-20.42	2.30292G	-52.06	2.3931G	-49.50	2.4927G	-48.74	16.8607G	-41.79	1
802.11g_Nss1,(6Mbps)_3TX	-	-	-	-	-	-	-	-	-	-	-	-	
2412MHz	Pass	2.43386G	6.79	-23.21	2.30466G	-48.78	2.39962G	-27.17	2.48548G	-47.07	16.56007G	-42.21	1
2412MHz	Pass	2.43386G	6.79	-23.21	2.30437G	-51.19	2.39992G	-29.34	2.49126G	-48.47	17.66985G	-41.45	2
2412MHz	Pass	2.43386G	6.79	-23.21	2.3067G	-48.16	2.39978G	-28.64	2.49242G	-46.62	16.85789G	-42.37	3
2437MHz	Pass	2.43386G	6.79	-23.21	2.30903G	-50.13	2.39312G	-46.36	2.48568G	-48.08	16.20888G	-41.56	1
2437MHz	Pass	2.43386G	6.79	-23.21	2.30991G	-50.15	2.39694G	-47.21	2.4944G	-46.07	16.95903G	-41.03	2
2437MHz	Pass	2.43386G	6.79	-23.21	2.30612G	-50.43	2.3995G	-40.31	2.49548G	-44.53	17.41699G	-41.37	3
2462MHz	Pass	2.43386G	6.79	-23.21	2.30321G	-48.84	2.39774G	-46.92	2.48828G	-46.44	16.23417G	-41.85	1
2462MHz	Pass	2.43386G	6.79	-23.21	2.11826G	-52.50	2.39634G	-48.13	2.48362G	-47.23	16.80732G	-42.39	2
2462MHz	Pass	2.43386G	6.79	-23.21	2.30029G	-48.80	2.39452G	-46.74	2.48358G	-45.28	17.67266G	-42.43	3
802.11n HT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43511G	6.92	-23.08	2.30845G	-49.06	2.39998G	-26.38	2.49732G	-47.17	16.55446G	-41.86	1
2412MHz	Pass	2.43511G	6.92	-23.08	2.30554G	-51.43	2.39982G	-26.20	2.52338G	-46.58	17.62209G	-41.93	2
2412MHz	Pass	2.43511G	6.92	-23.08	2.30758G	-49.80	2.39966G	-27.19	2.49818G	-47.39	16.85227G	-42.05	3
2437MHz	Pass	2.43511G	6.92	-23.08	2.30262G	-49.18	2.39662G	-46.76	2.49558G	-46.26	17.63895G	-41.68	1
2437MHz	Pass	2.43511G	6.92	-23.08	2.30146G	-50.26	2.39912G	-46.48	2.49142G	-47.06	17.63895G	-41.37	2
2437MHz	Pass	2.43511G	6.92	-23.08	2.30874G	-49.75	2.39948G	-44.96	2.50808G	-46.20	23.42103G	-41.40	3
2462MHz	Pass	2.43511G	6.92	-23.08	2.30583G	-49.80	2.39742G	-47.60	2.48492G	-46.77	23.46317G	-42.10	1
2462MHz	Pass	2.43511G	6.92	-23.08	2.30728G	-52.83	2.3923G	-47.72	2.48352G	-46.43	16.57131G	-41.76	2
2462MHz	Pass	2.43511G	6.92	-23.08	2.30903G	-49.68	2.3968G	-46.88	2.48486G	-44.65	23.35079G	-41.48	3
802.11n HT40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.44572G	1.95	-28.05	2.3097G	-49.51	2.39992G	-30.03	2.50078G	-47.81	16.84714G	-41.07	1
2422MHz	Pass	2.44572G	1.95	-28.05	2.30683G	-51.50	2.39964G	-31.41	2.50022G	-48.53	17.63802G	-41.58	2
2422MHz	Pass	2.44572G	1.95	-28.05	2.30941G	-50.43	2.39984G	-29.69	2.51482G	-47.54	17.62681G	-42.20	3
2437MHz	Pass	2.44572G	1.95	-28.05	2.30769G	-49.41	2.39824G	-37.49	2.48358G	-42.32	16.48254G	-41.35	1
2437MHz	Pass	2.44572G	1.95	-28.05	2.30855G	-48.56	2.39952G	-41.23	2.48938G	-43.95	17.64363G	-41.37	2
2437MHz	Pass	2.44572G	1.95	-28.05	2.30283G	-50.61	2.3982G	-37.95	2.48458G	-43.59	17.68009G	-41.83	3
2452MHz	Pass	2.44572G	1.95	-28.05	2.30884G	-50.56	2.395G	-45.73	2.48514G	-44.94	24.71113G	-41.70	1
2452MHz	Pass	2.44572G	1.95	-28.05	2.30941G	-51.82	2.3986G	-46.48	2.48414G	-45.97	16.49657G	-41.99	2
2452MHz	Pass	2.44572G	1.95	-28.05	2.30139G	-49.36	2.3988G	-45.98	2.48386G	-44.03	16.87799G	-40.34	3

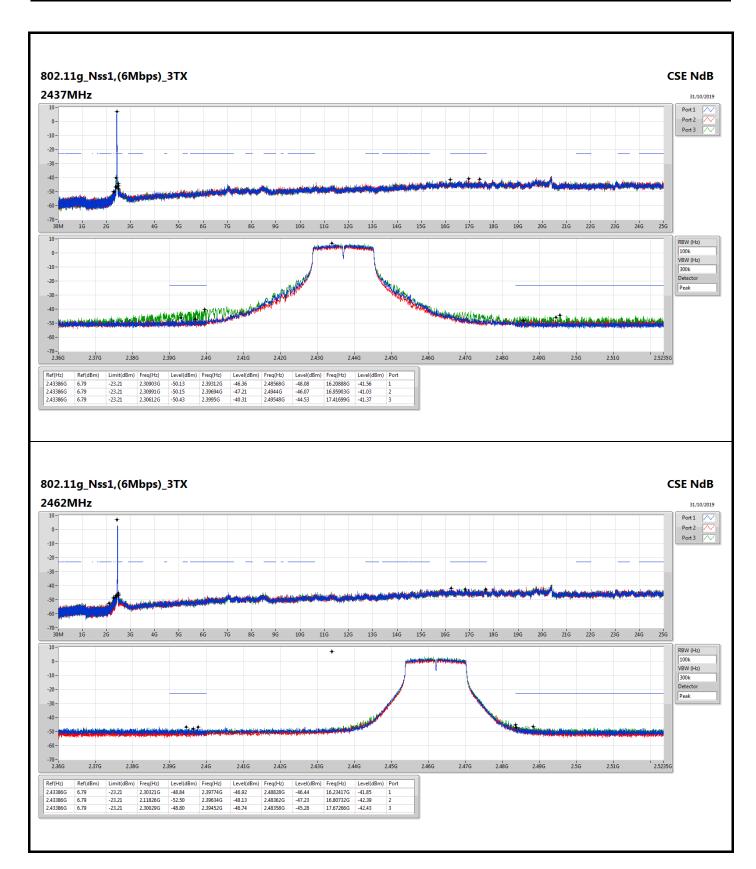




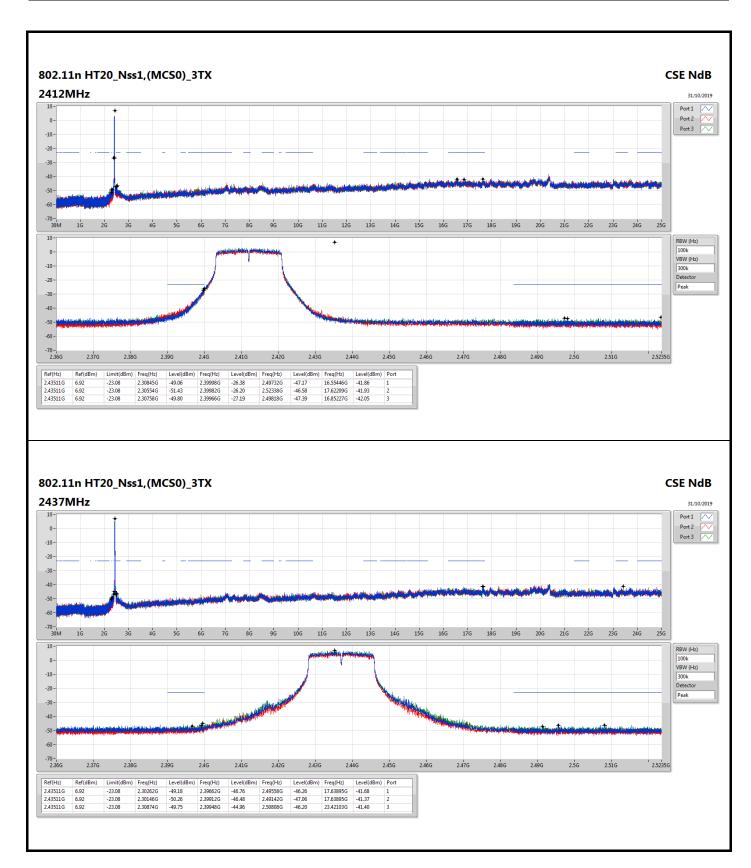




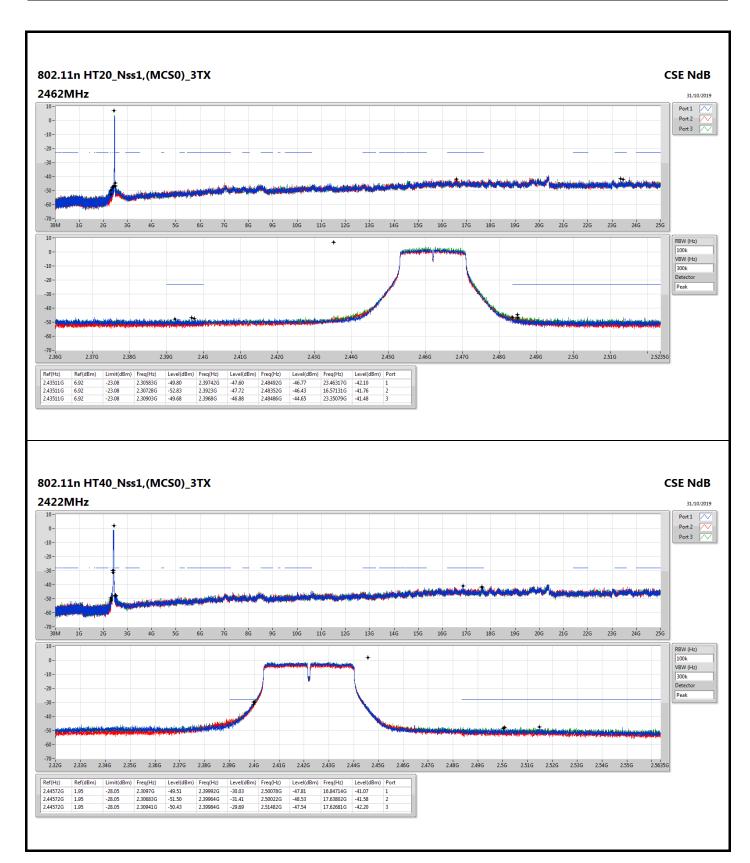




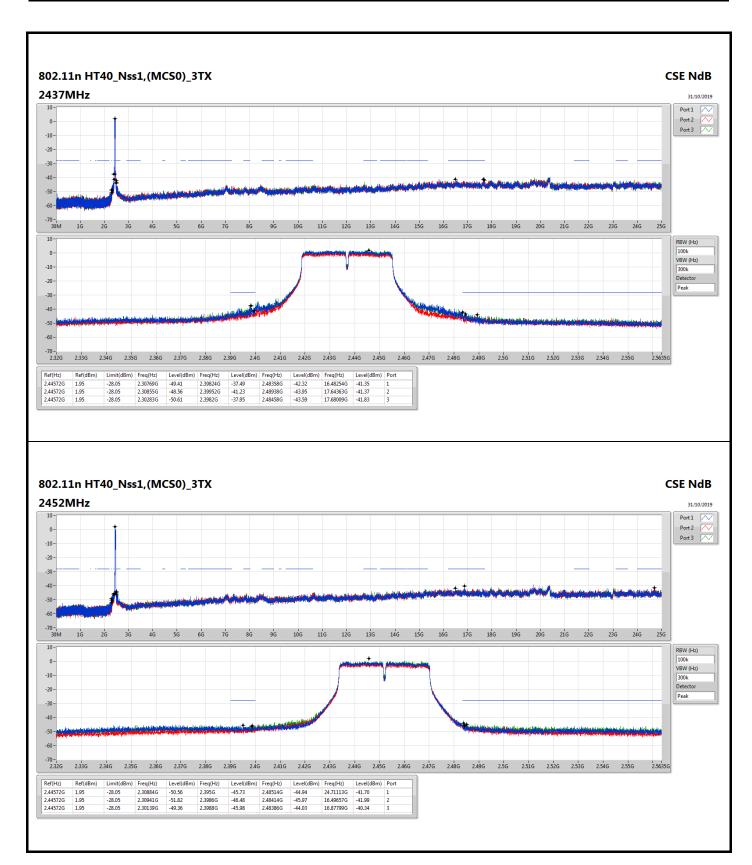






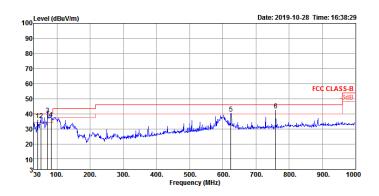








RSE below 1GHz Result												
Operating Mode	Operating Mode 1 Polarization Vertical											
Operating Function	Normal Link											

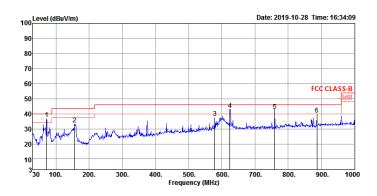


	Freq	Level	Limit					Factor	A/Pos	1/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	41.64	36.10	40.00	-3.90	50.28	0.63	17.41	32.22	100	336	Peak	VERTICAL
2	52.31	35.84	40.00	-4.16	54.20	0.74	13.08	32.18	100	359	QP	VERTICAL
3	71.71	39.38	40.00	-0.62	58.60	0.86	12.06	32.14	100	97	QP	VERTICAL
4	82.38	36.68	40.00	-3.32	54.80	0.92	13.07	32.11	125	252	QP	VERTICAL
5	624.61	40.28	46.00	-5.72	44.47	2.66	25.21	32.06	100	259	Peak	VERTICAL
6	759.44	42.48	46.00	-3.52	45.87	2.95	25.66	32.00	100	326	Peak	VERTICAL

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



RSE below 1GHz Result											
Operating Mode 1 Polarization Horizontal											
Operating Function Normal Link											



	Freq	Level	Line						A/FUS	1/103	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	71.71	36.74	40.00	-3.26	55.96	0.86	12.06	32.14	300	278	Peak	HORIZONTAL
2	156.10	32.95	43.50	-10.55	47.67	1.28	16.13	32.13	200	164	Peak	HORIZONTAL
3	579.02	37.23	46.00	-8.77	42.56	2.55	24.13	32.01	150	179	Peak	HORIZONTAL
4	624.61	42.89	46.00	-3.11	47.08	2.66	25.21	32.06	150	144	Peak	HORIZONTAL
5	759.44	42.06	46.00	-3.94	45.45	2.95	25.66	32.00	125	49	Peak	HORIZONTAL
6	886.51	39.68	46.00	-6.32	41.52	3.09	26.40	31.33	100	176	Peak	HORIZONTAL

Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit. Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)



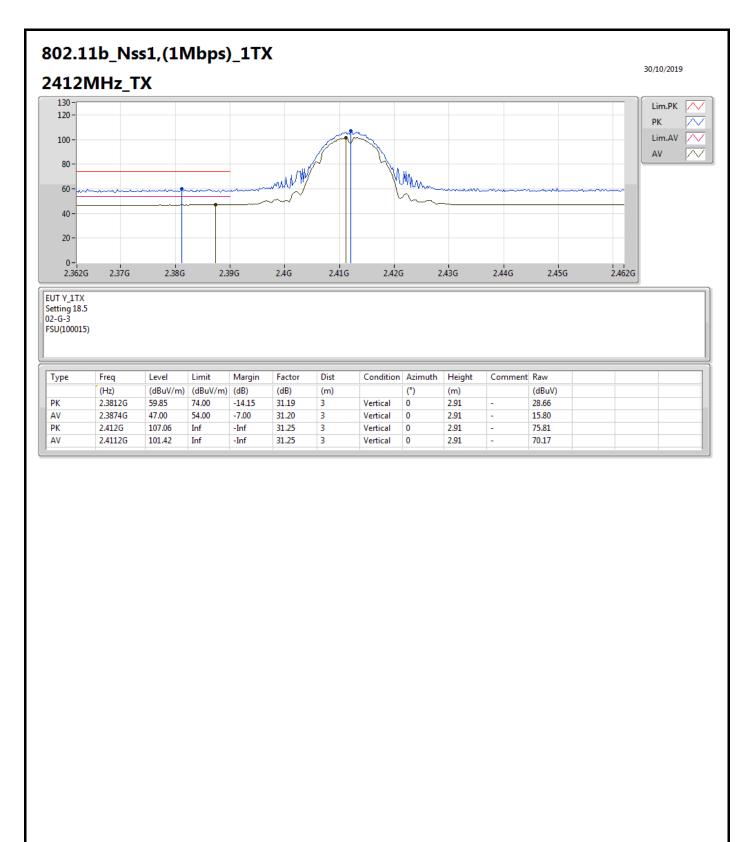
RSE TX above 1GHz Result

Appendix F.2

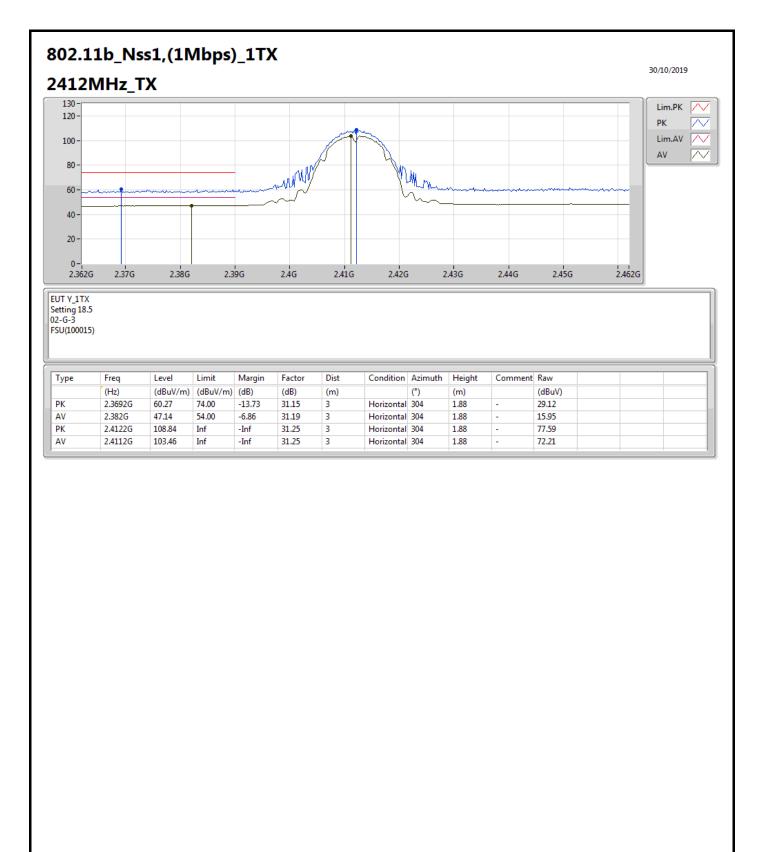
Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11n HT40_Nss1,(MCS0)_3TX	Pass	AV	2.3898G	53.97	54.00	-0.03	31.20	3	Vertical	8	2.31	-

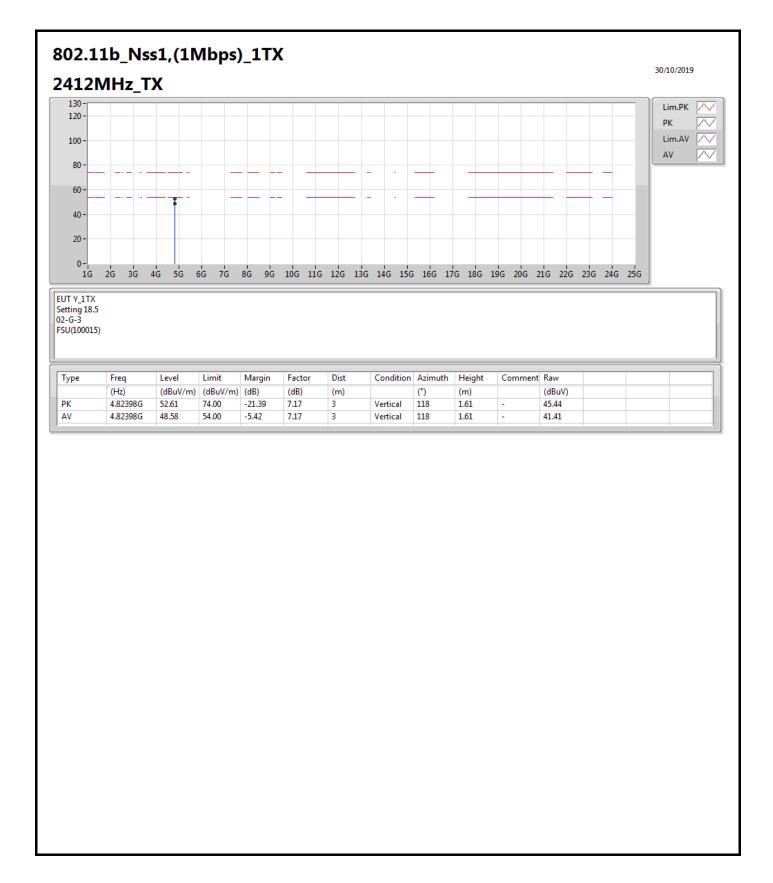




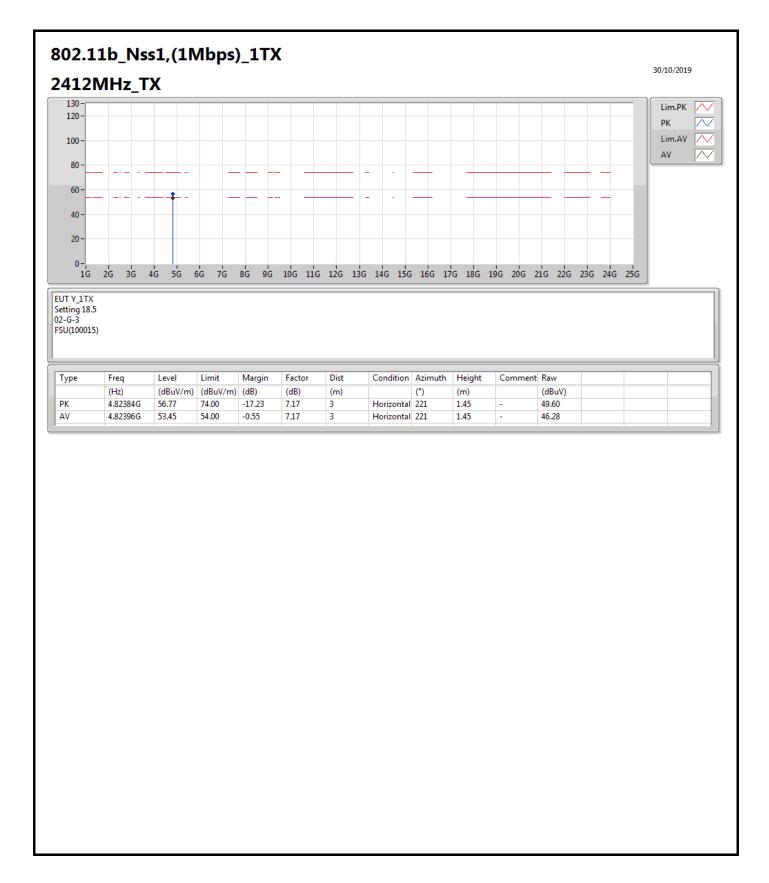




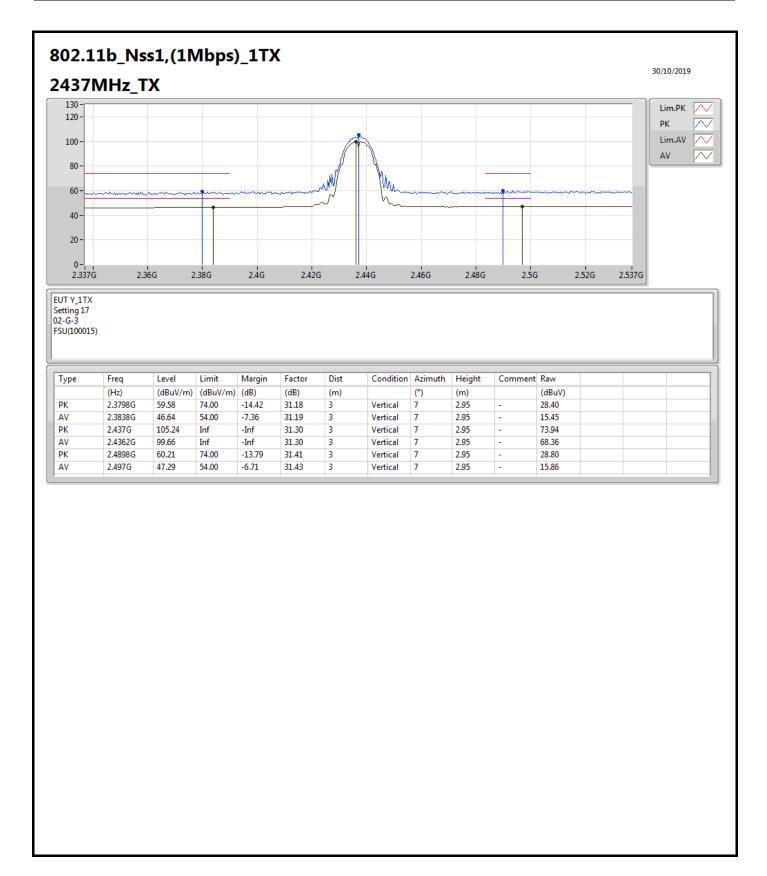




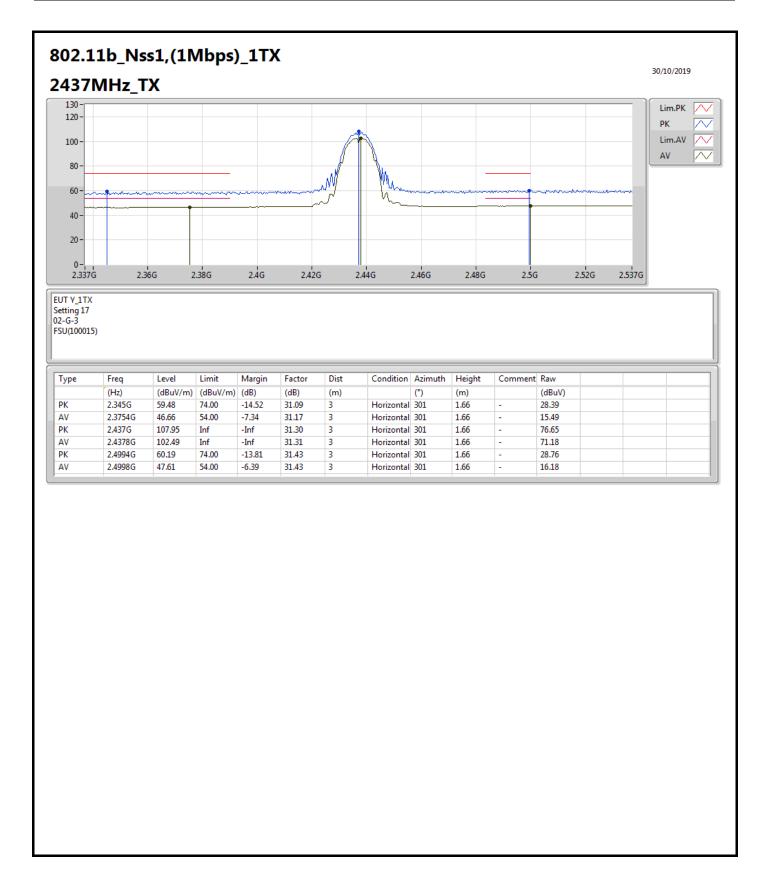




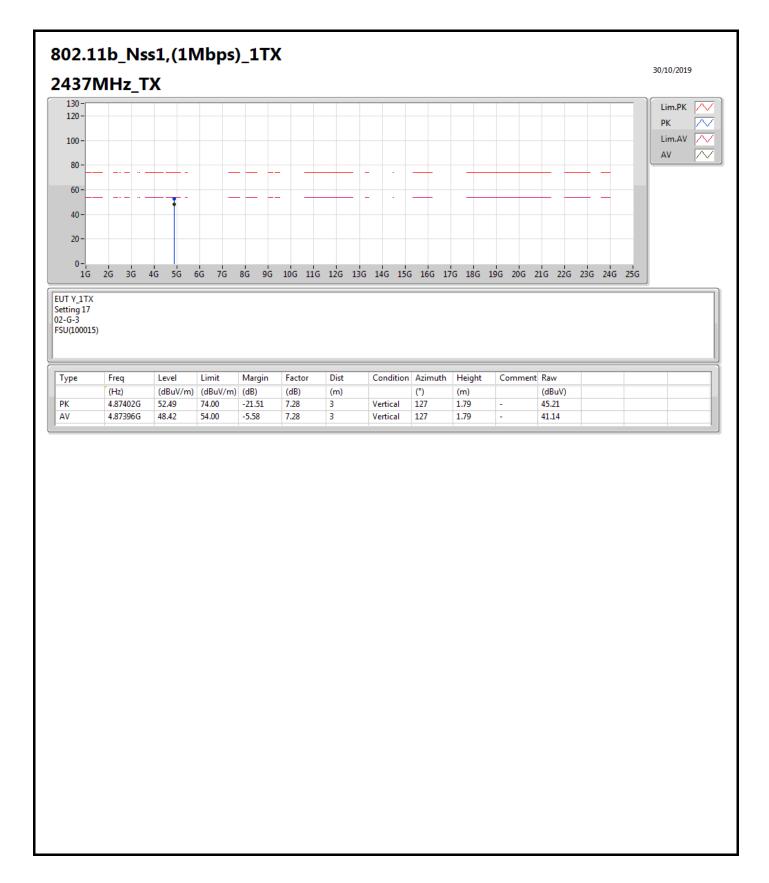




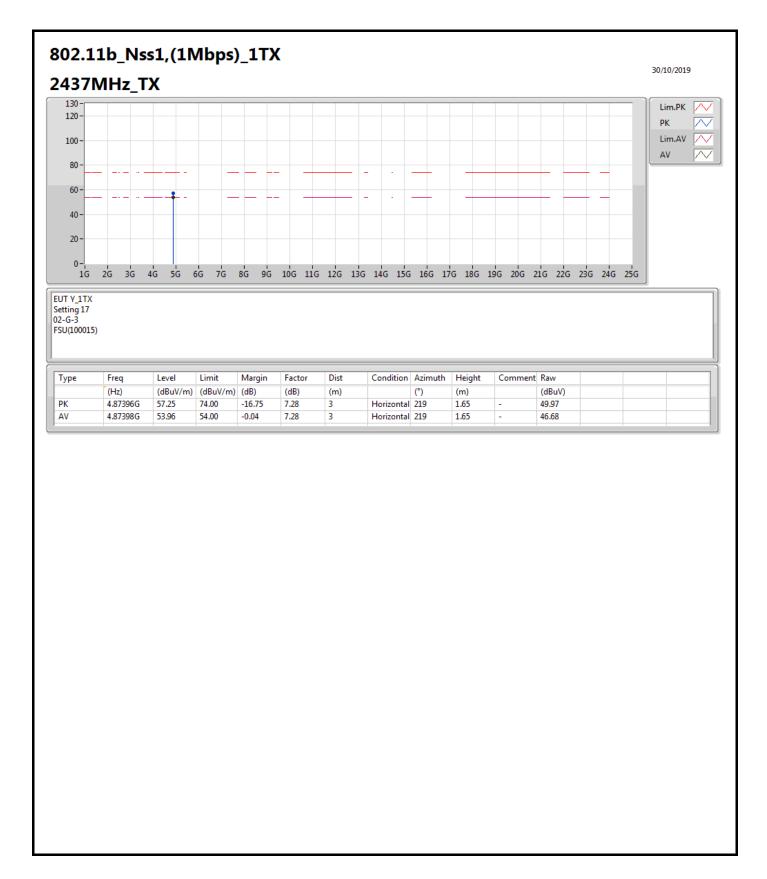




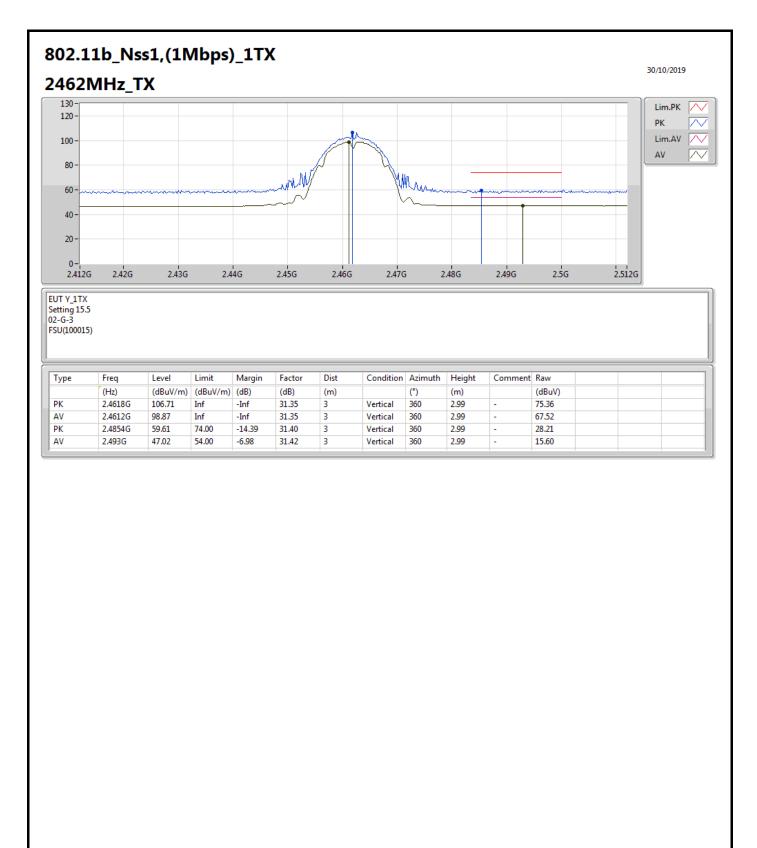




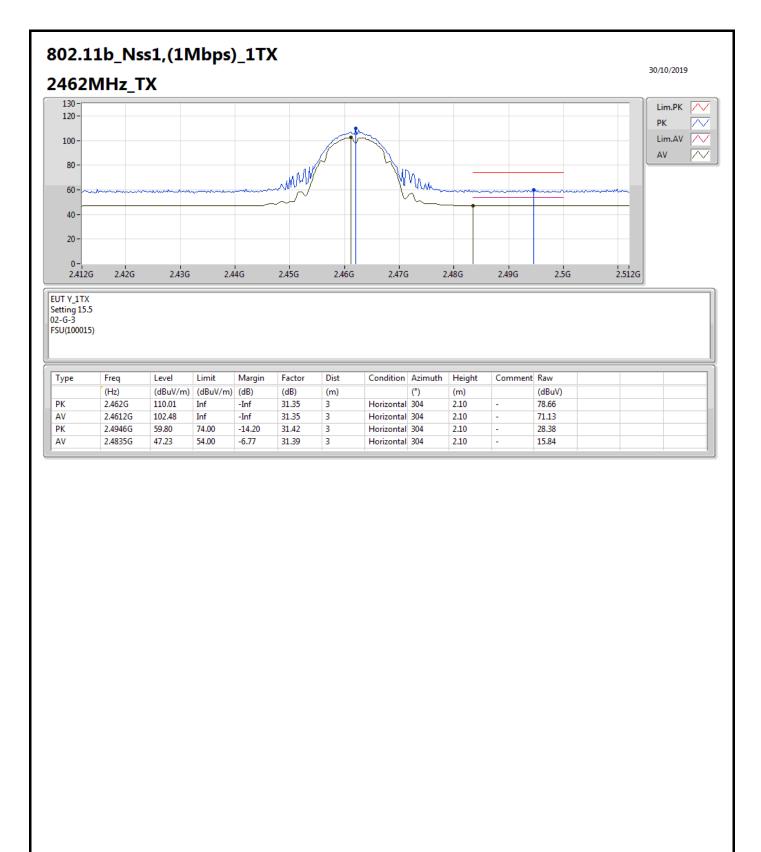




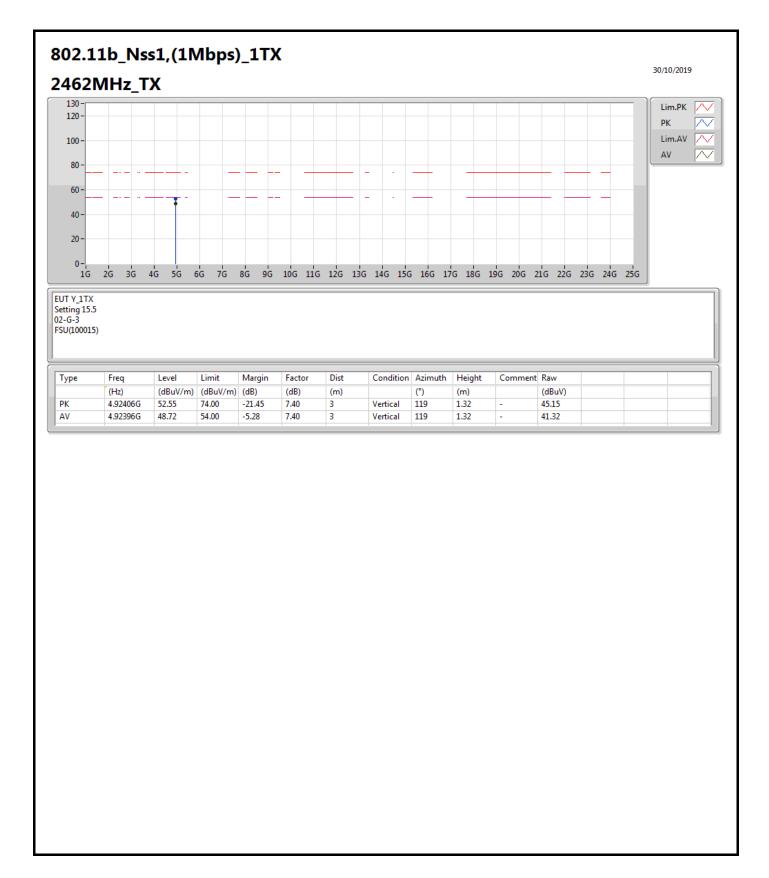




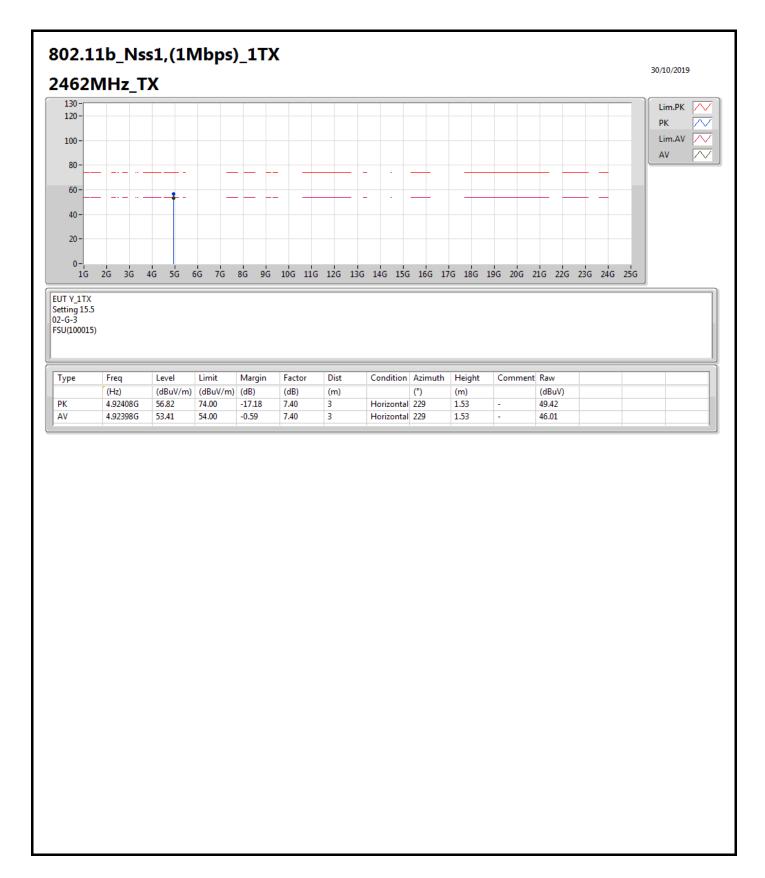




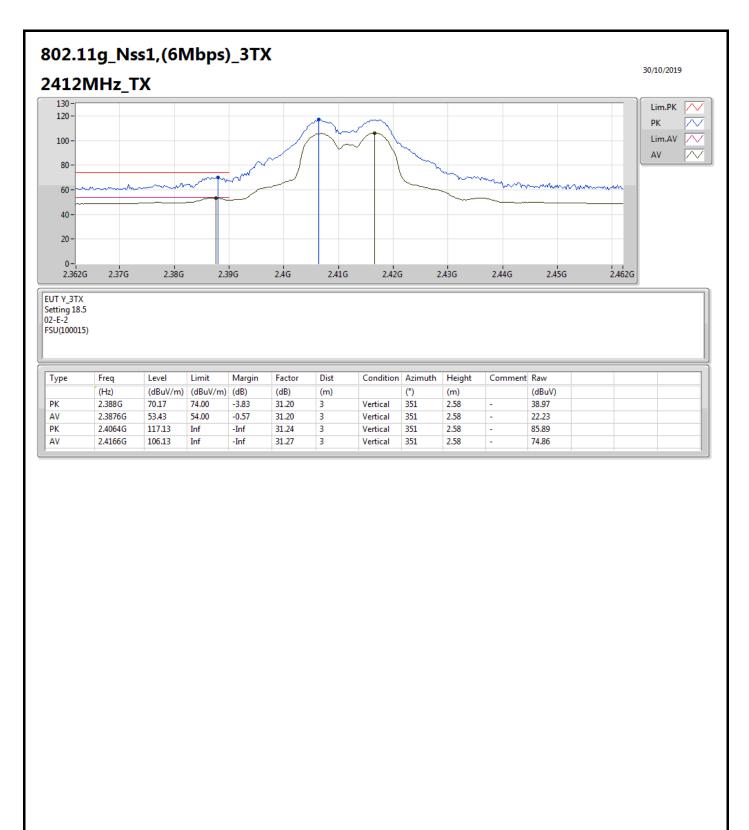




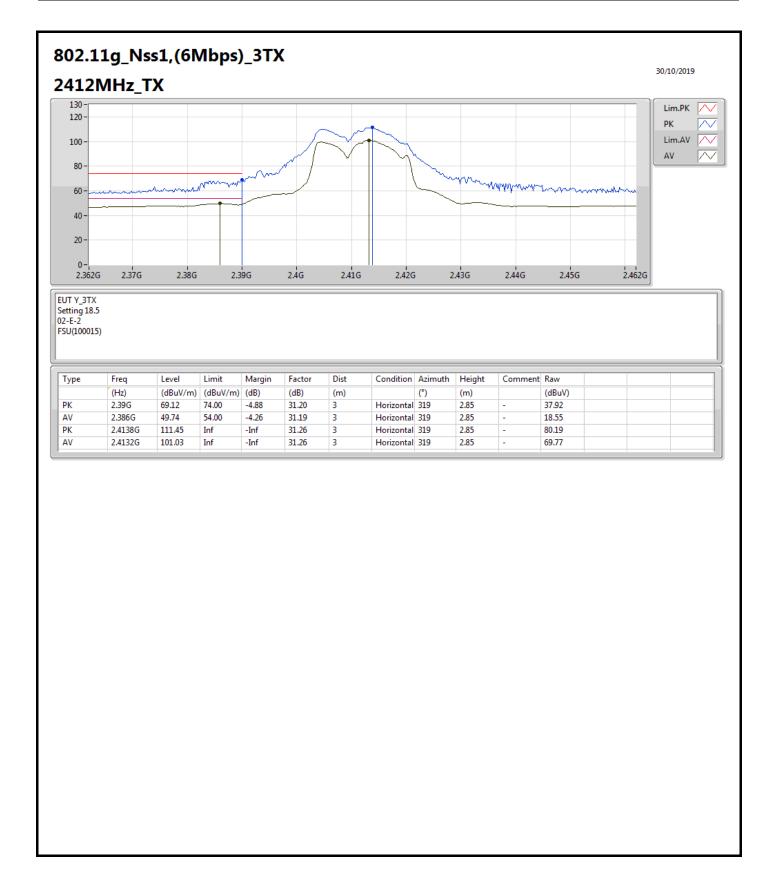




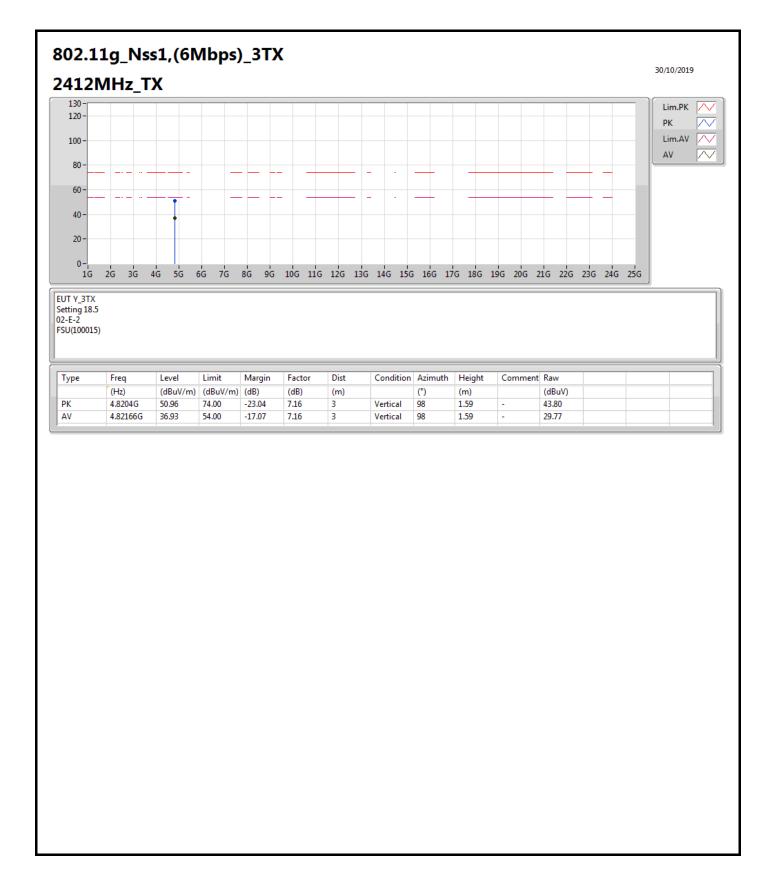




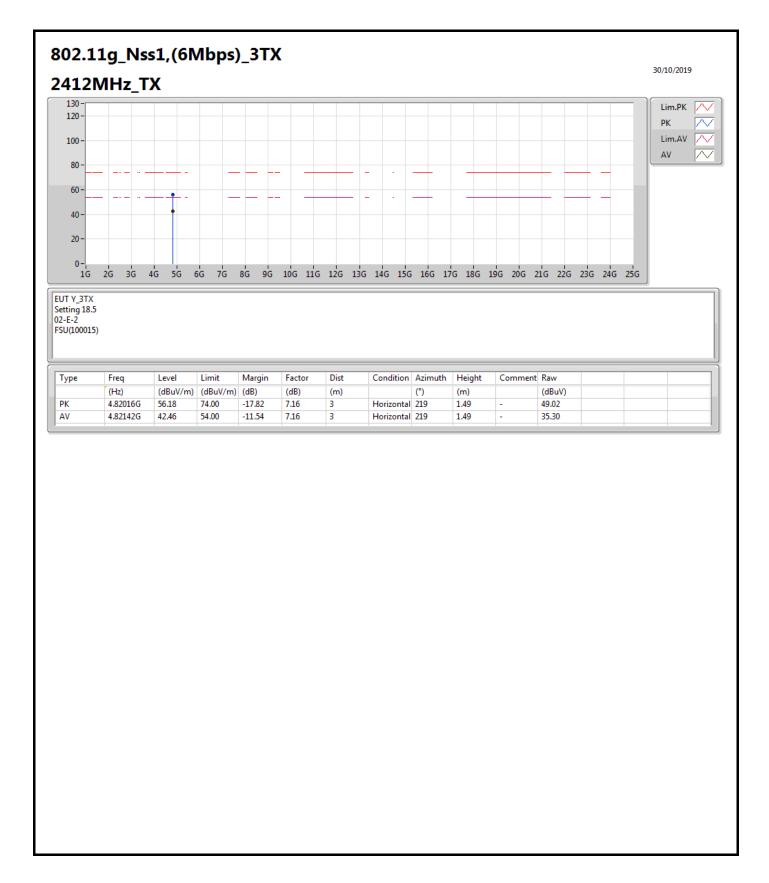




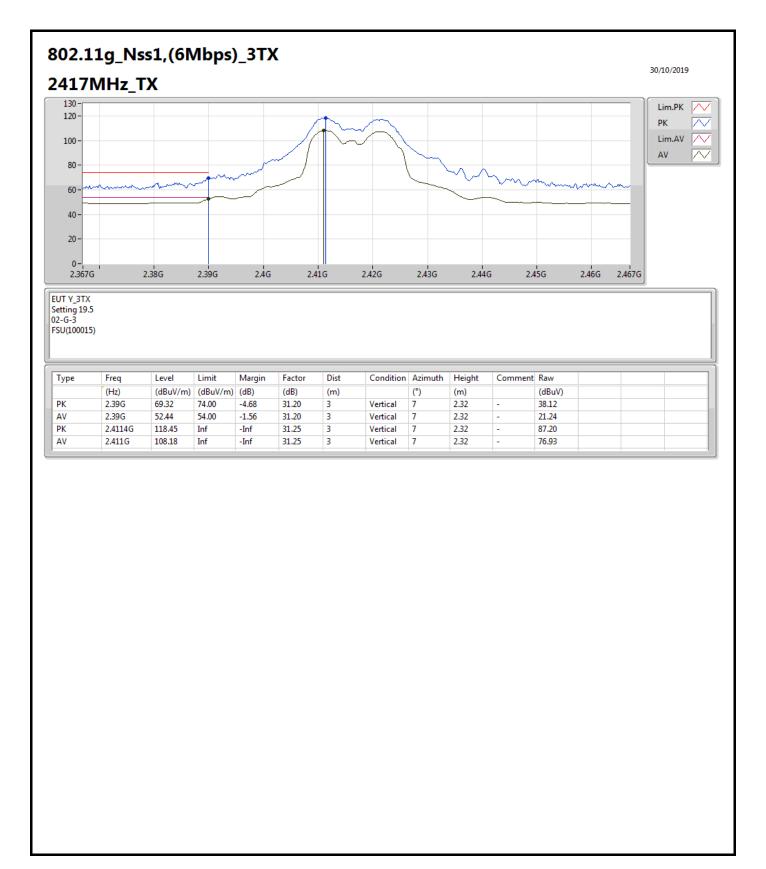




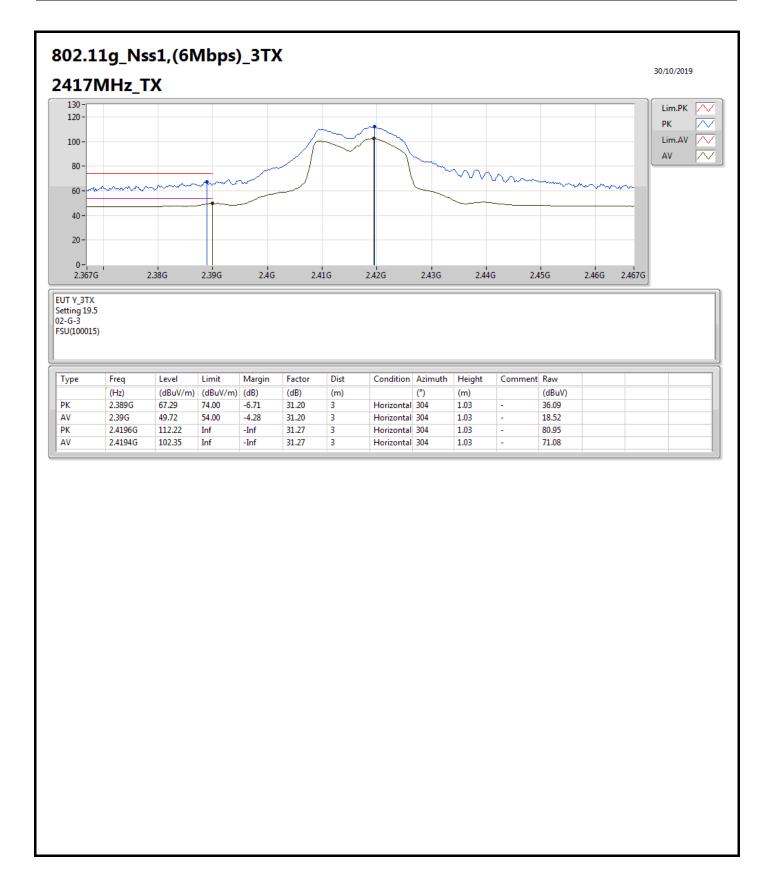




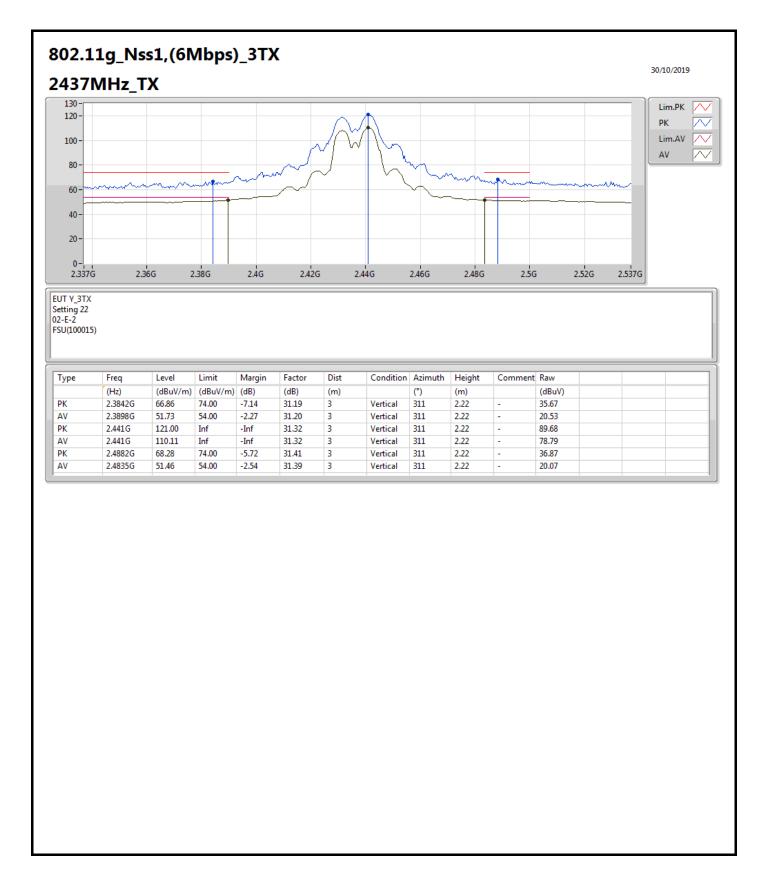




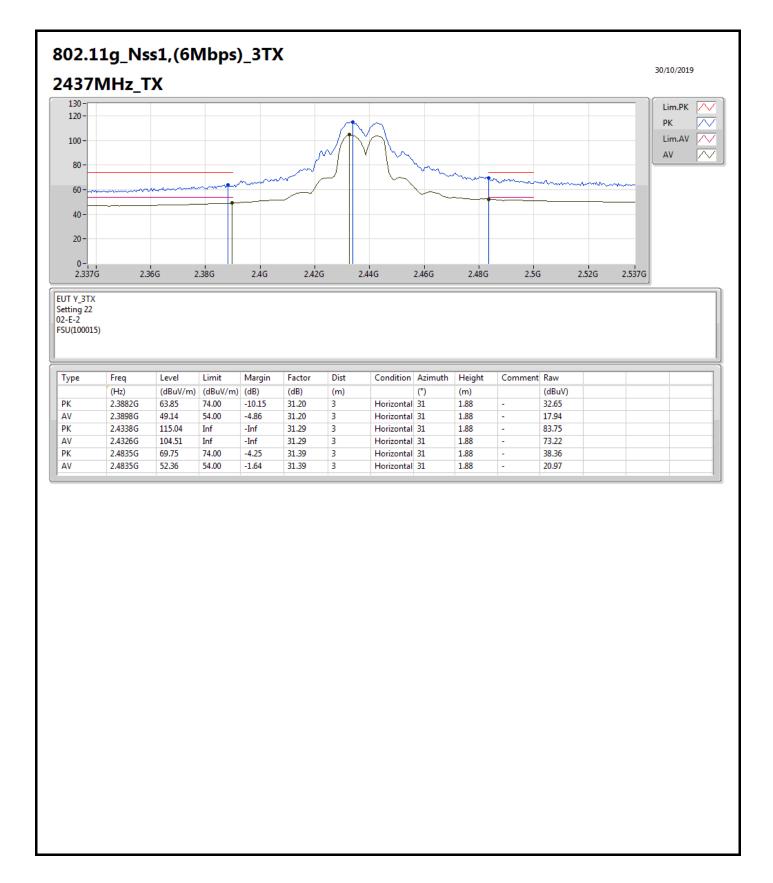




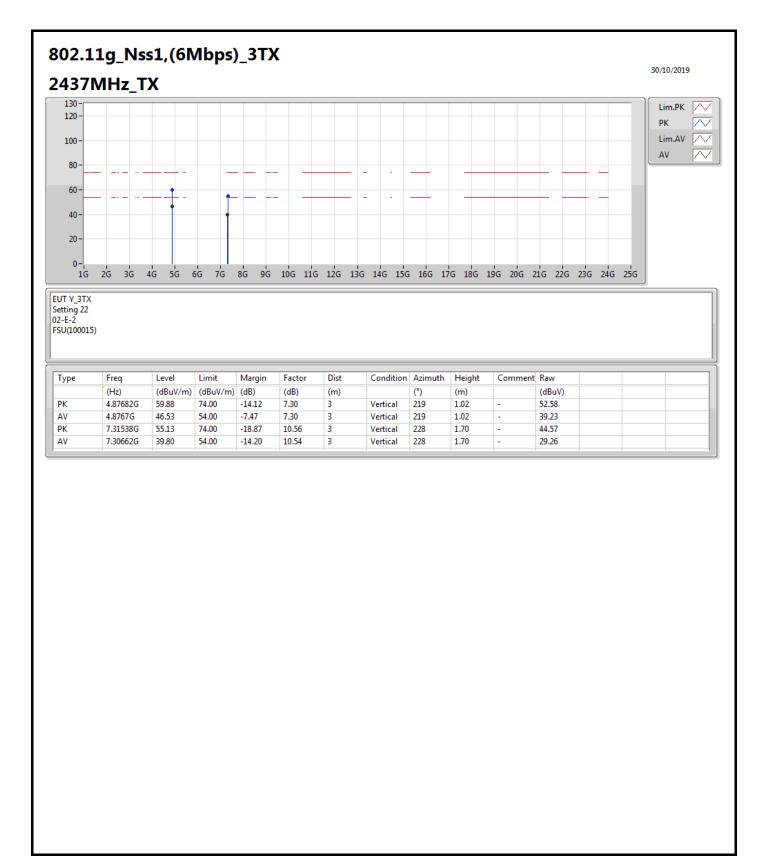




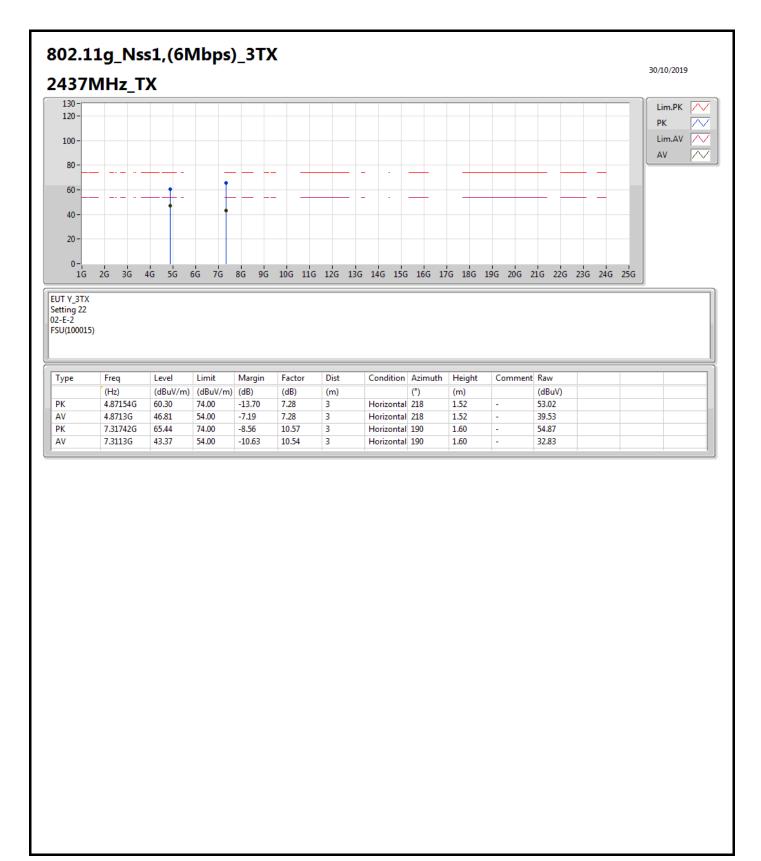




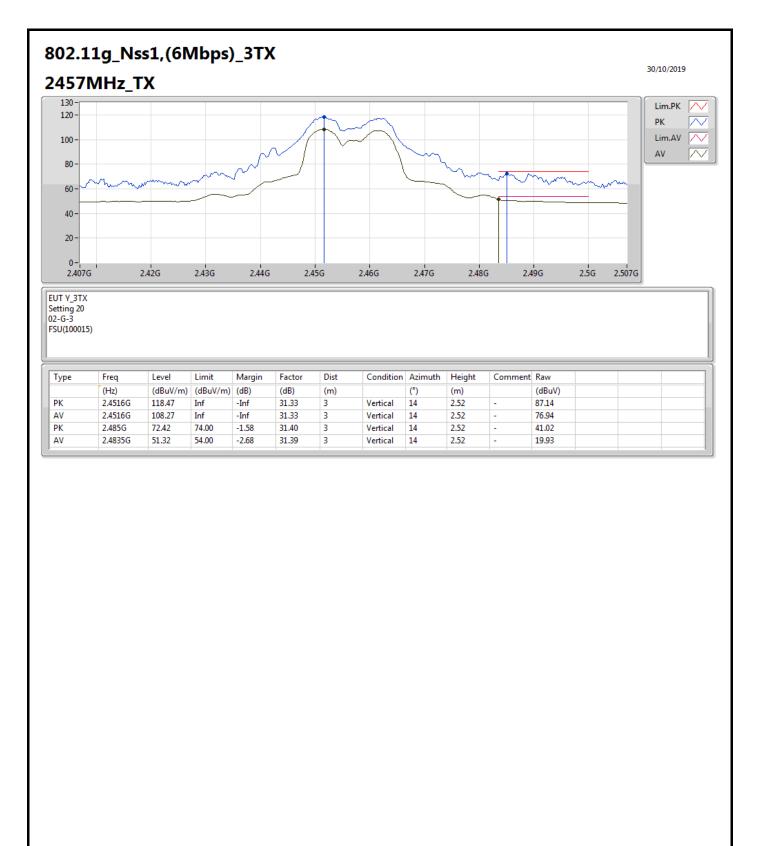




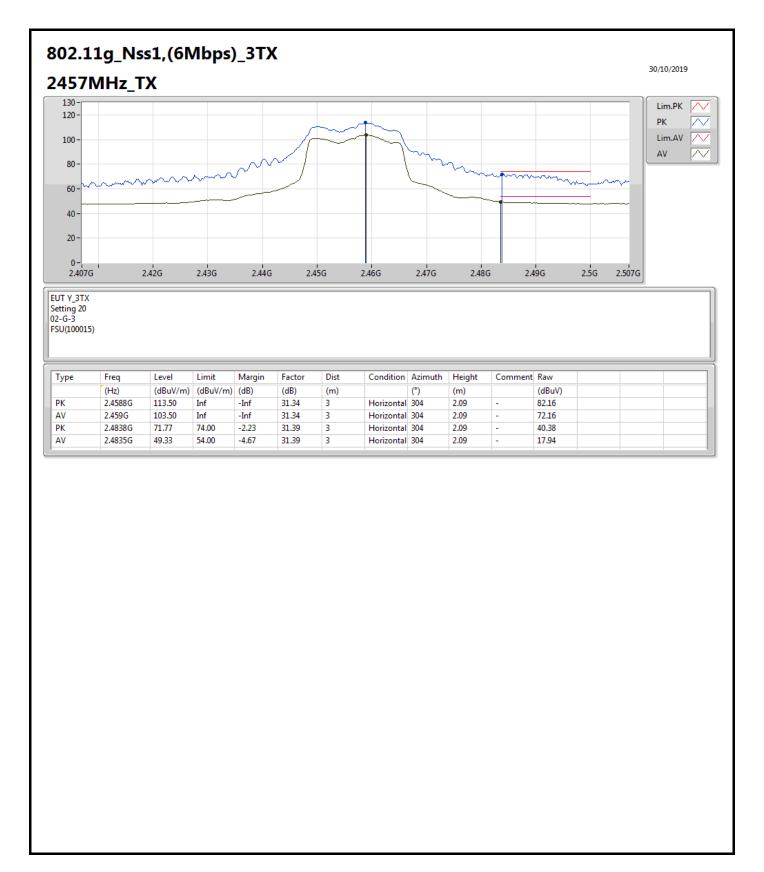




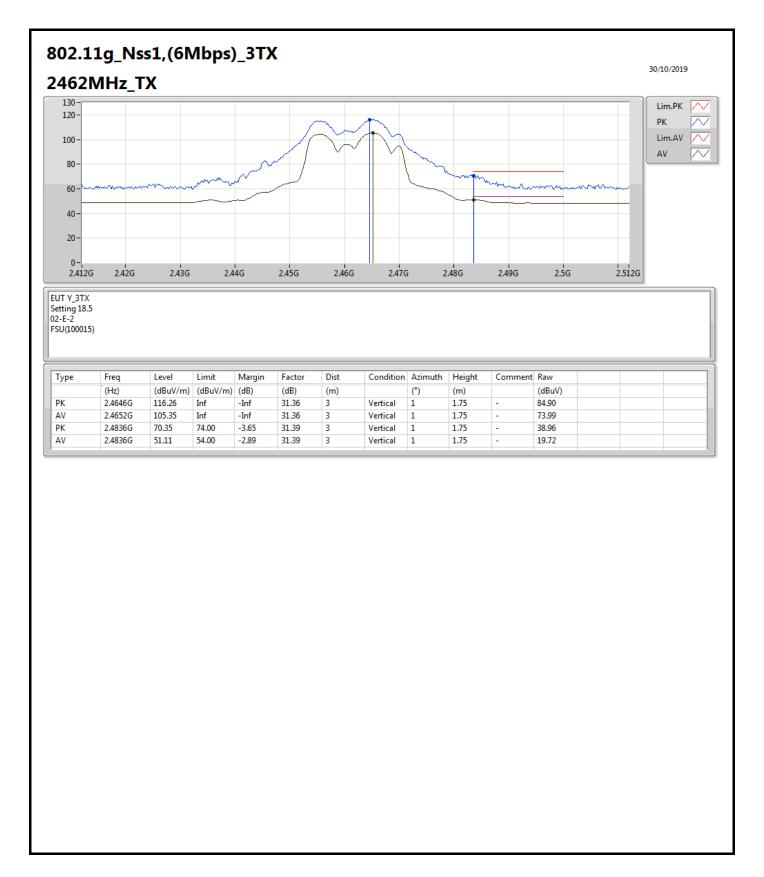




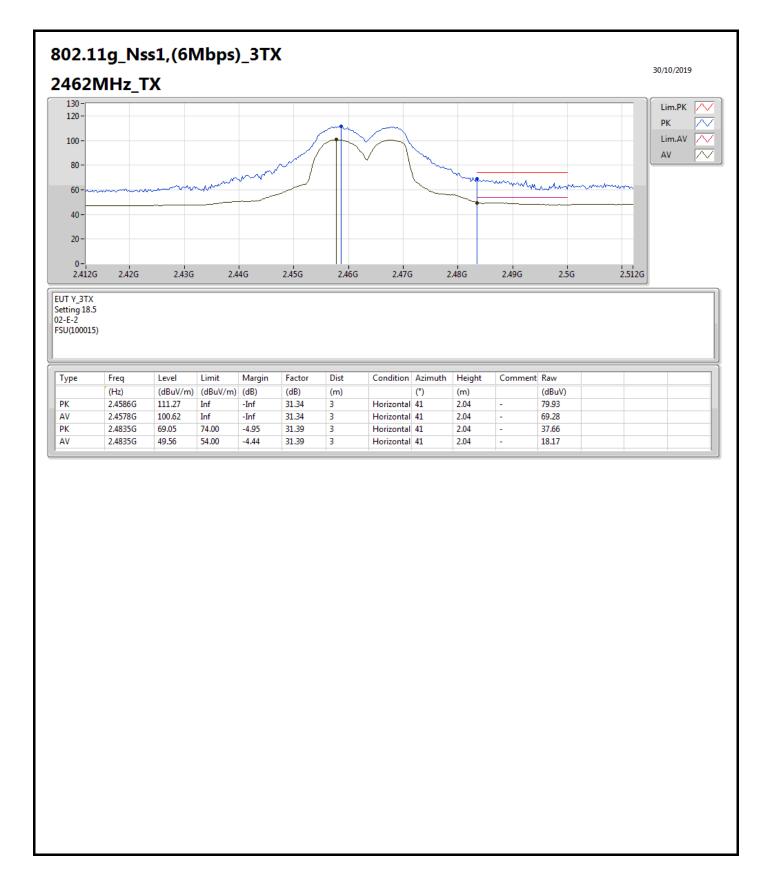




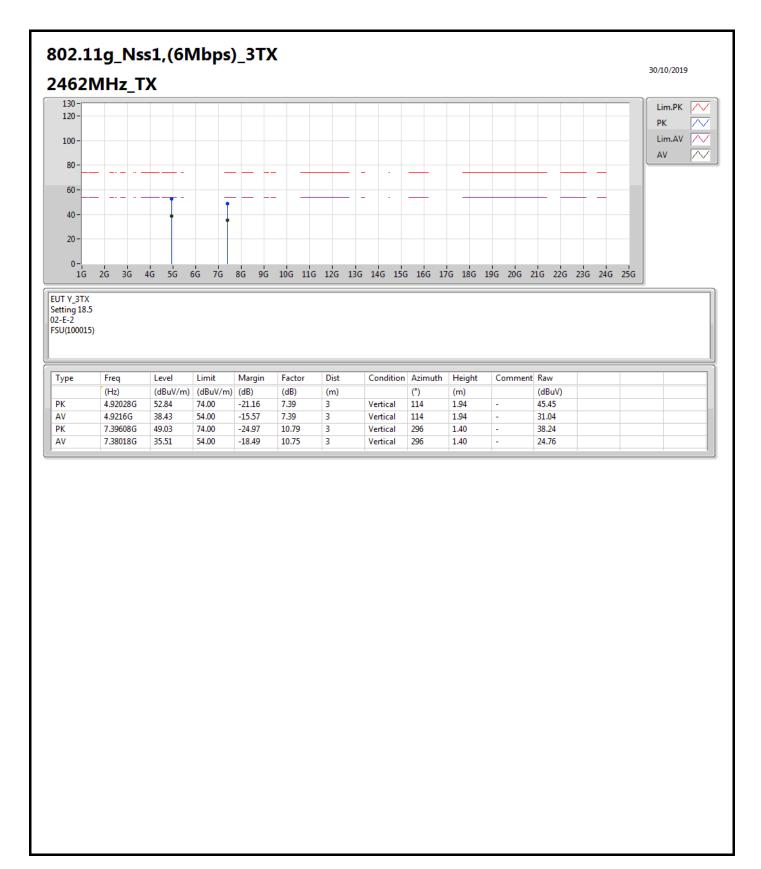




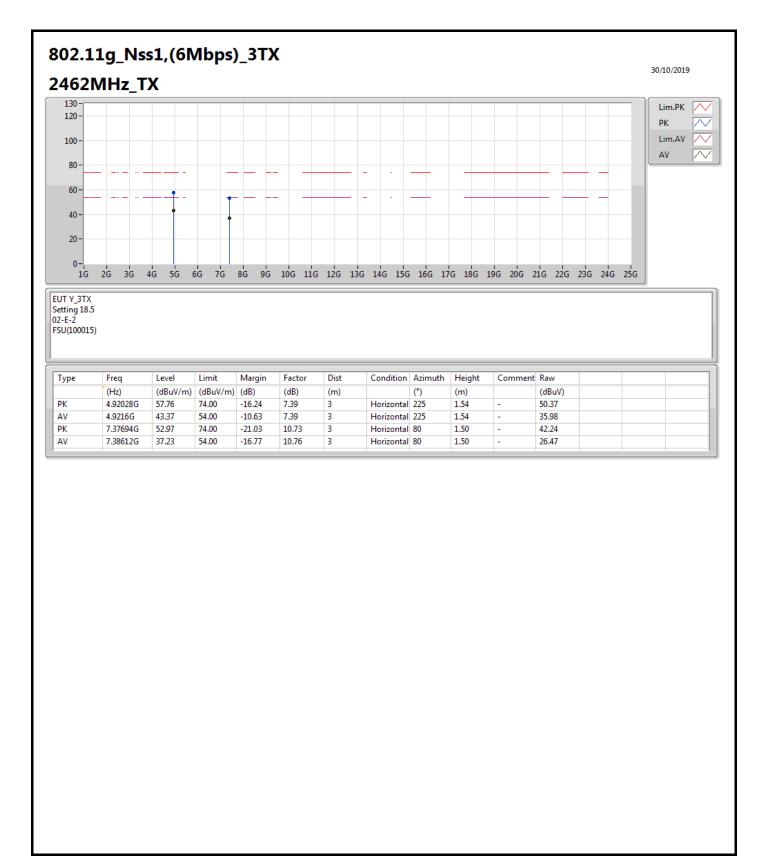




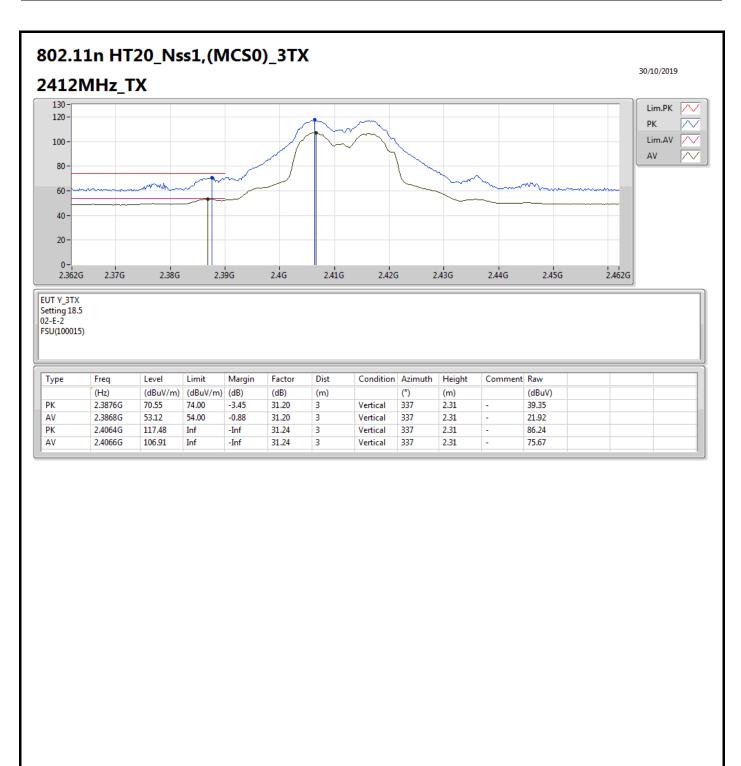




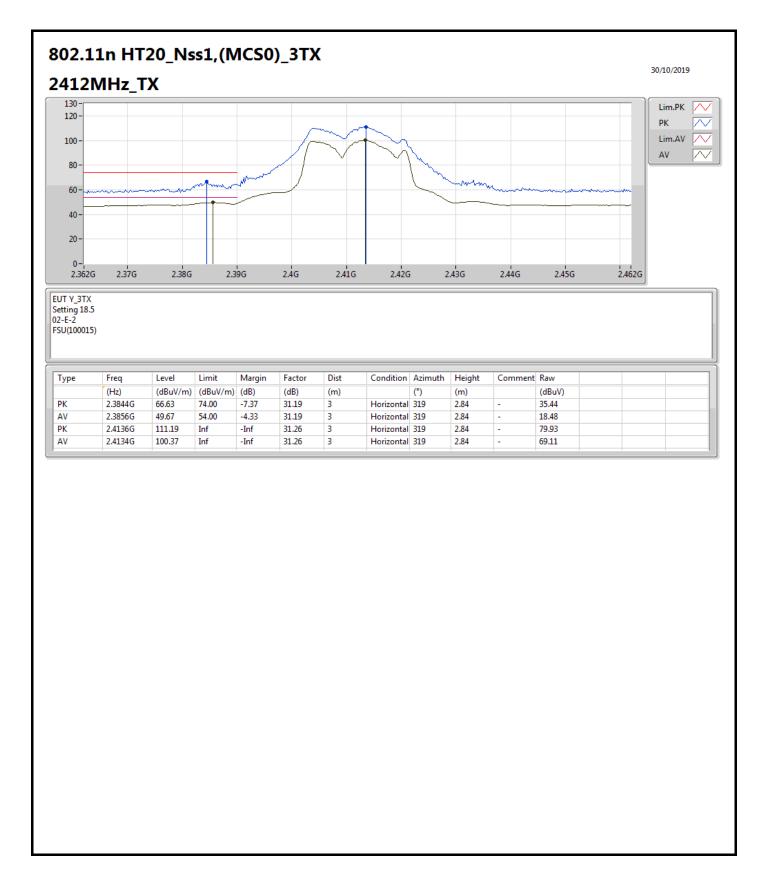




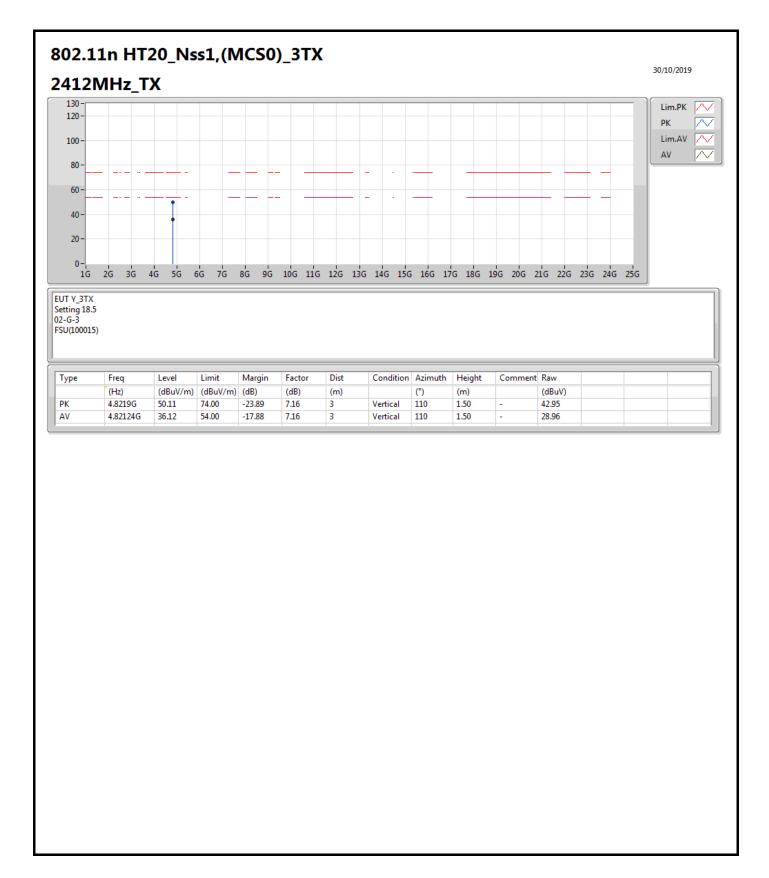




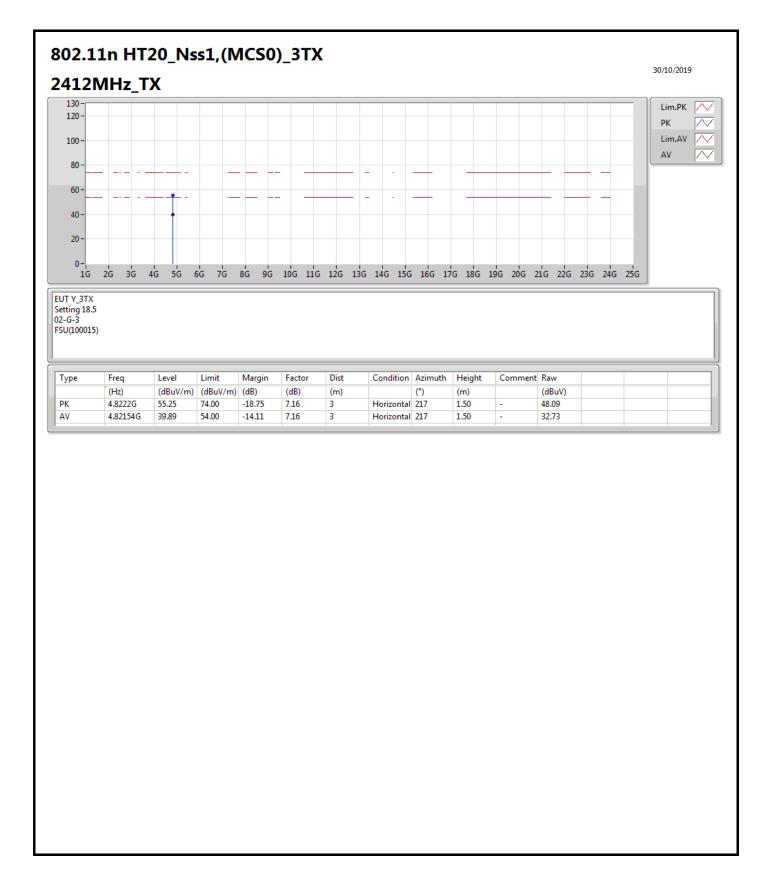




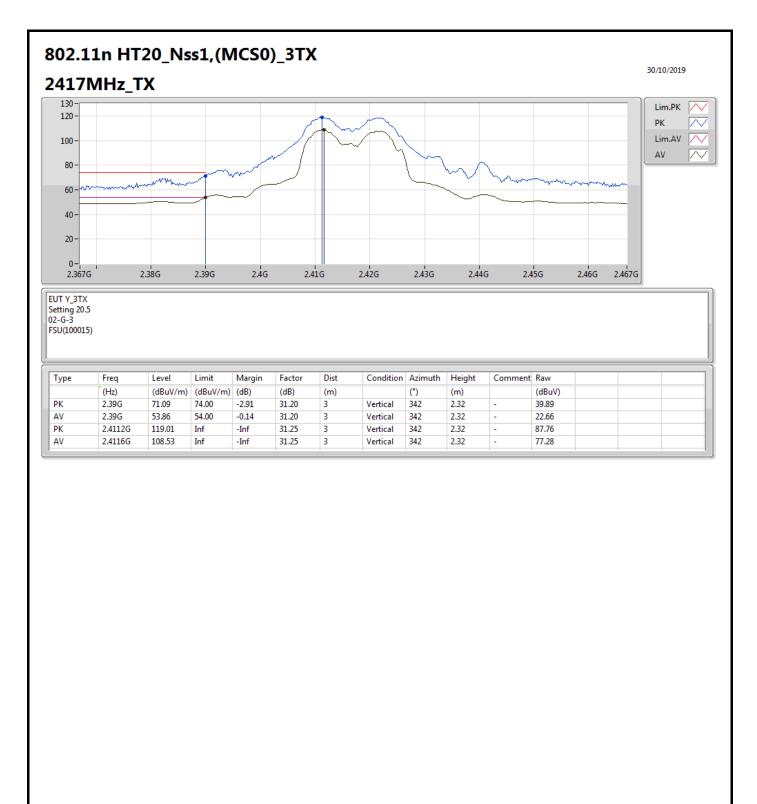




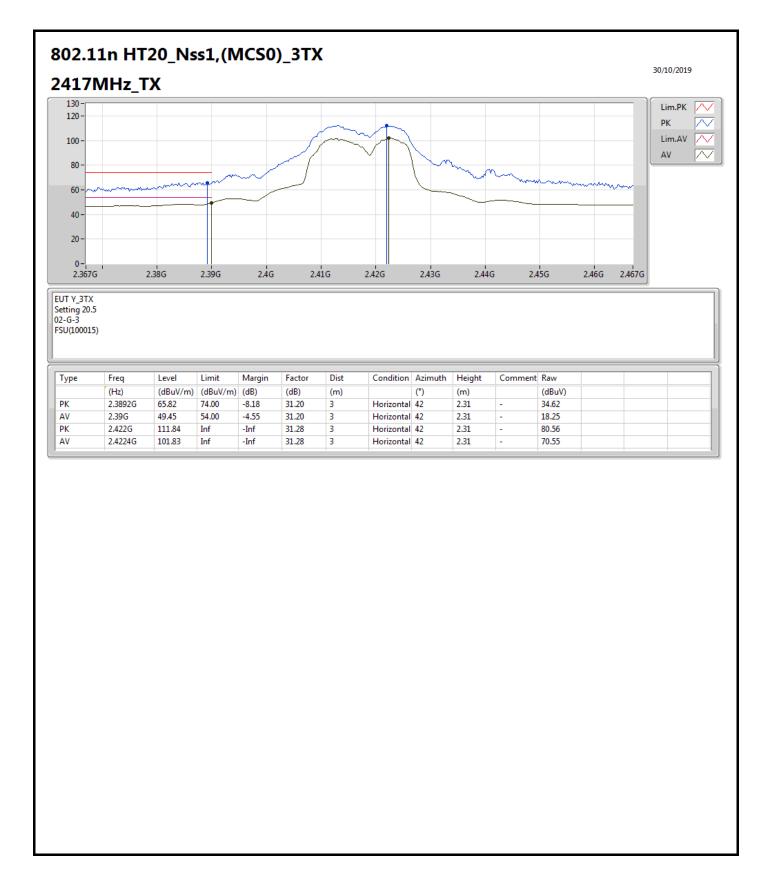




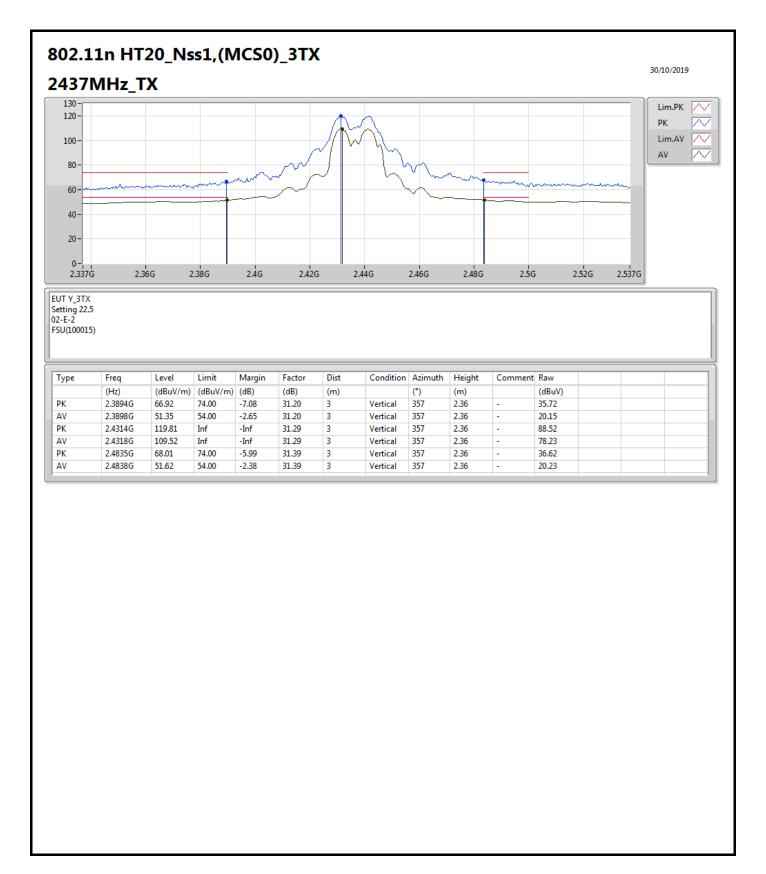




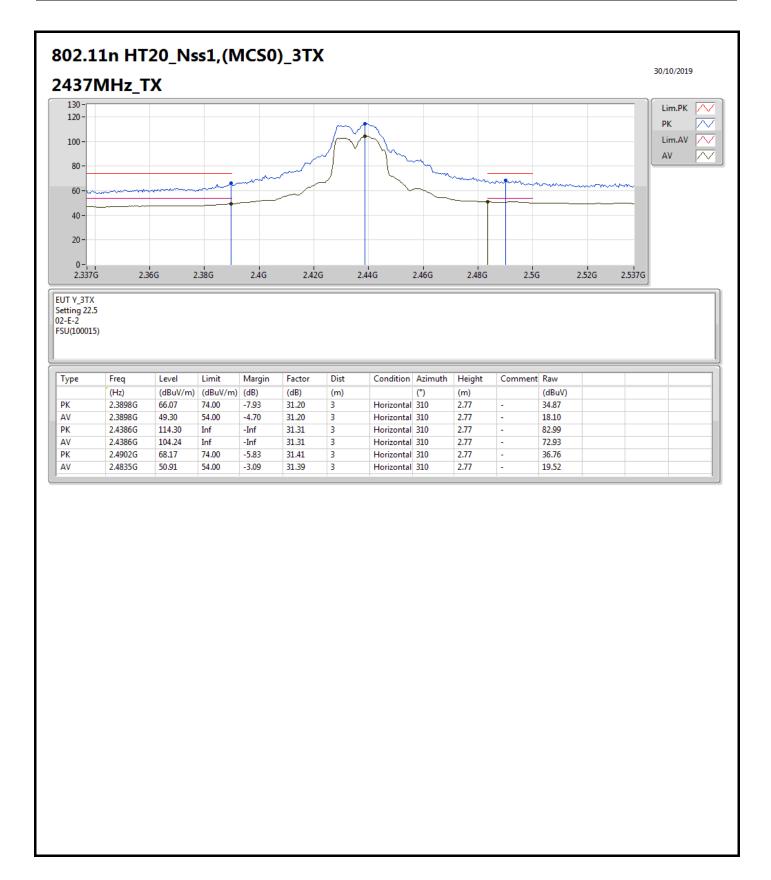




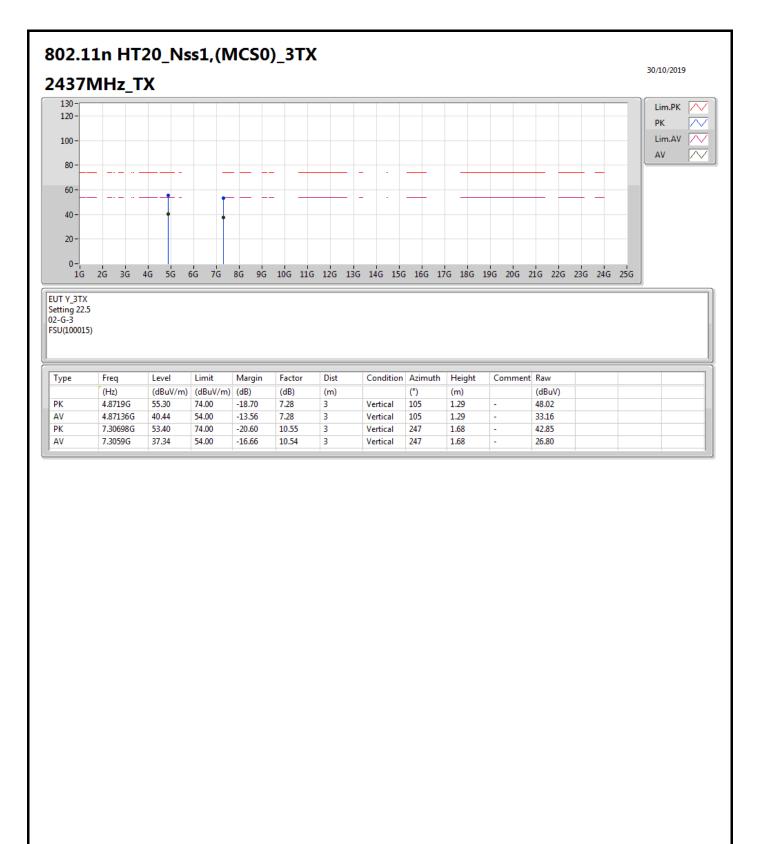




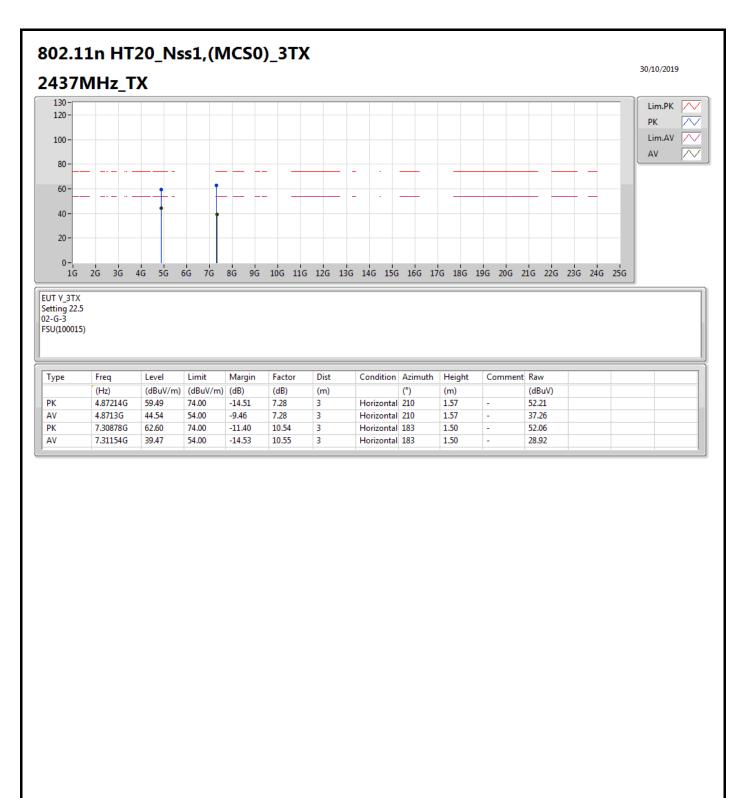




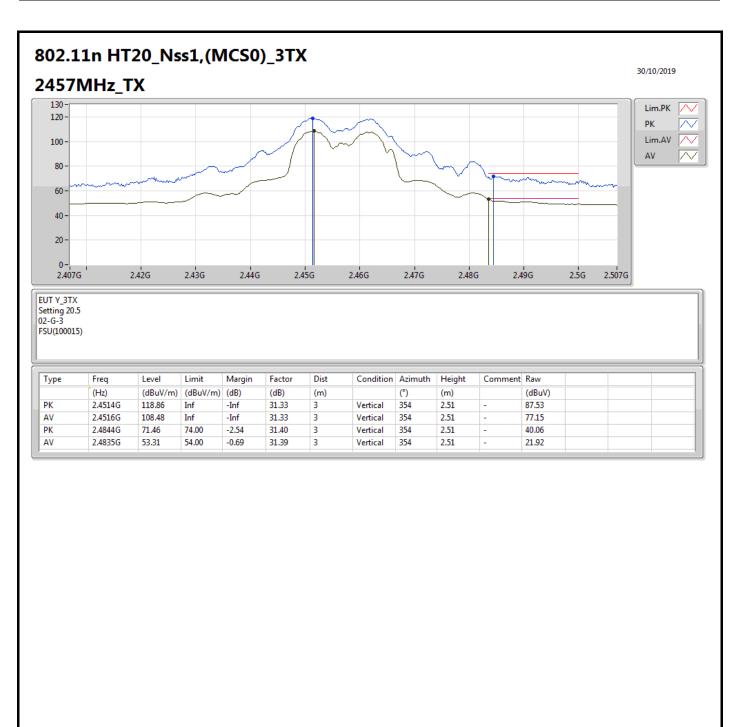




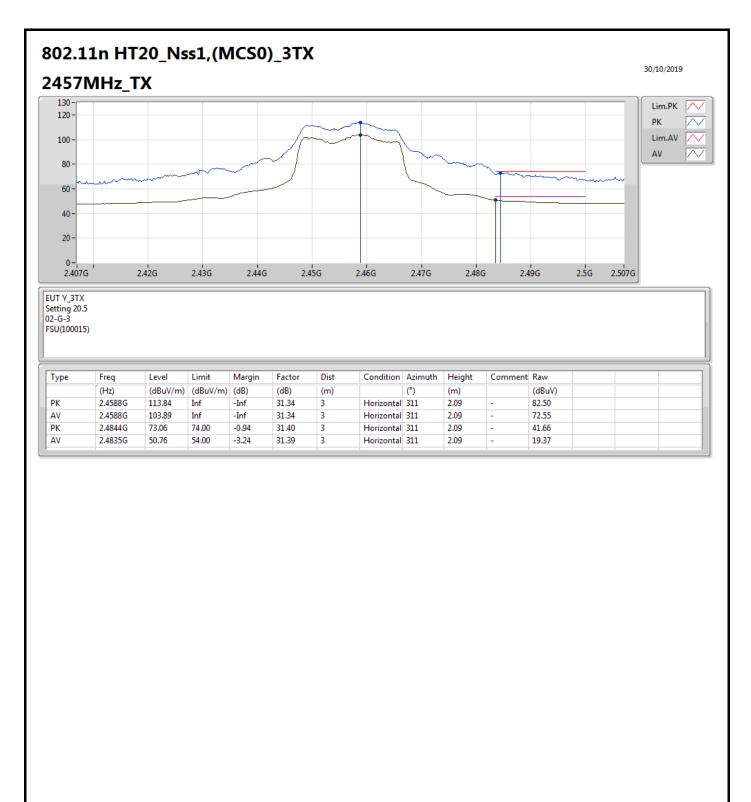




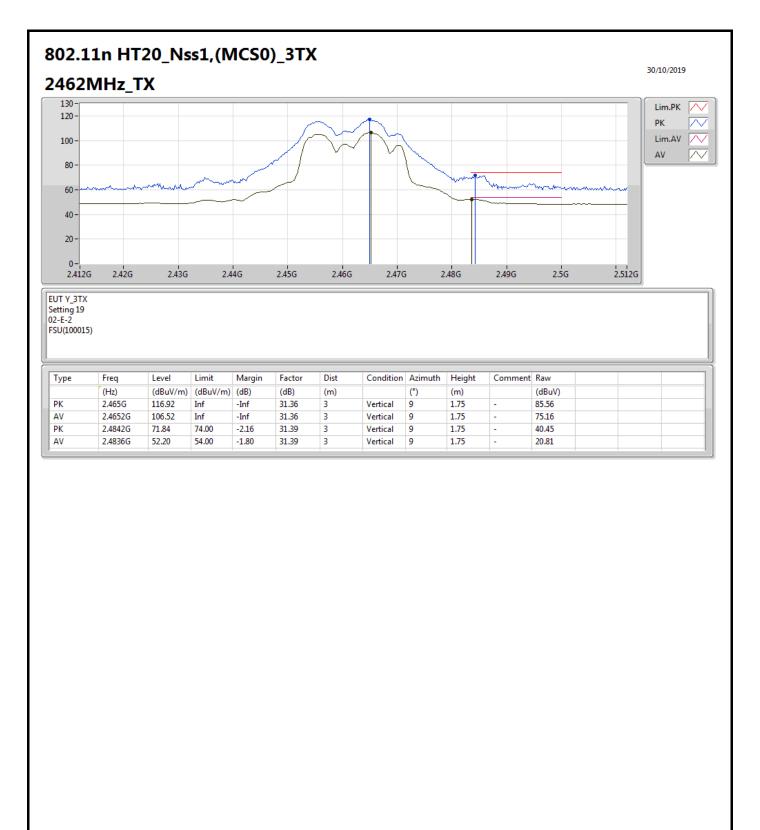




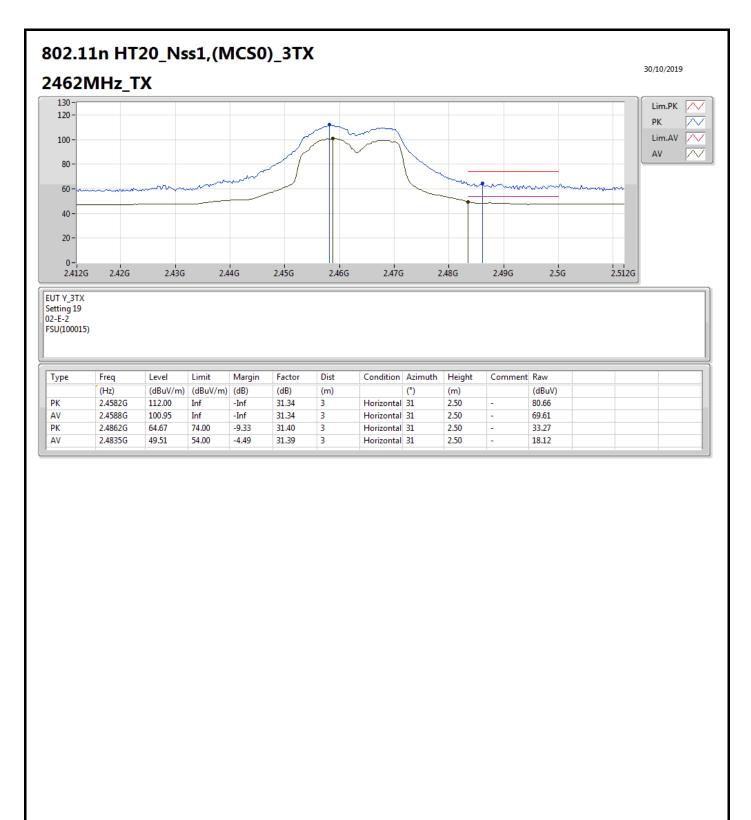




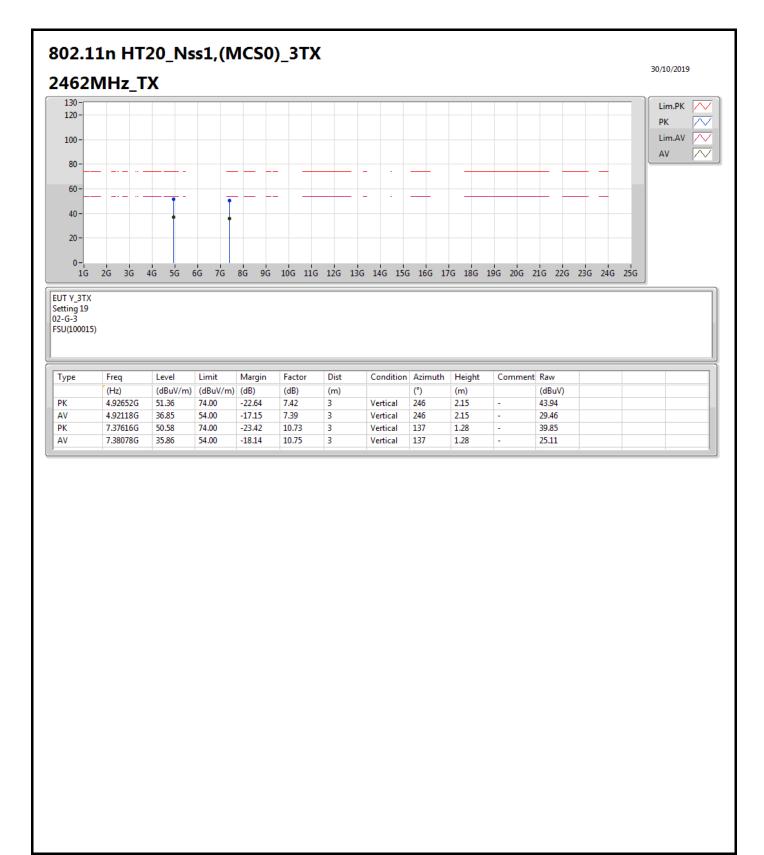




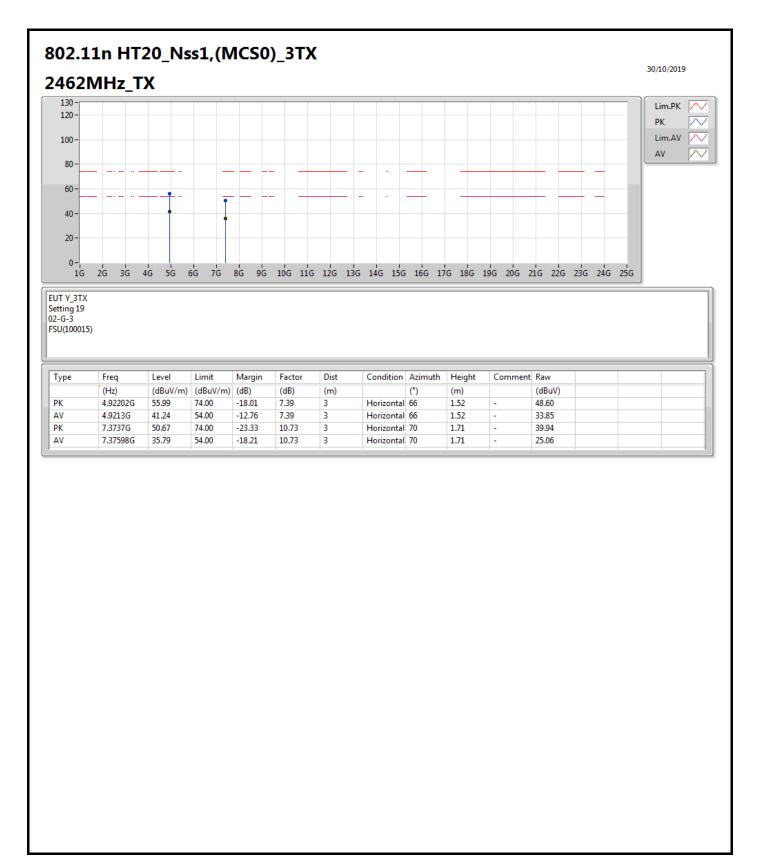




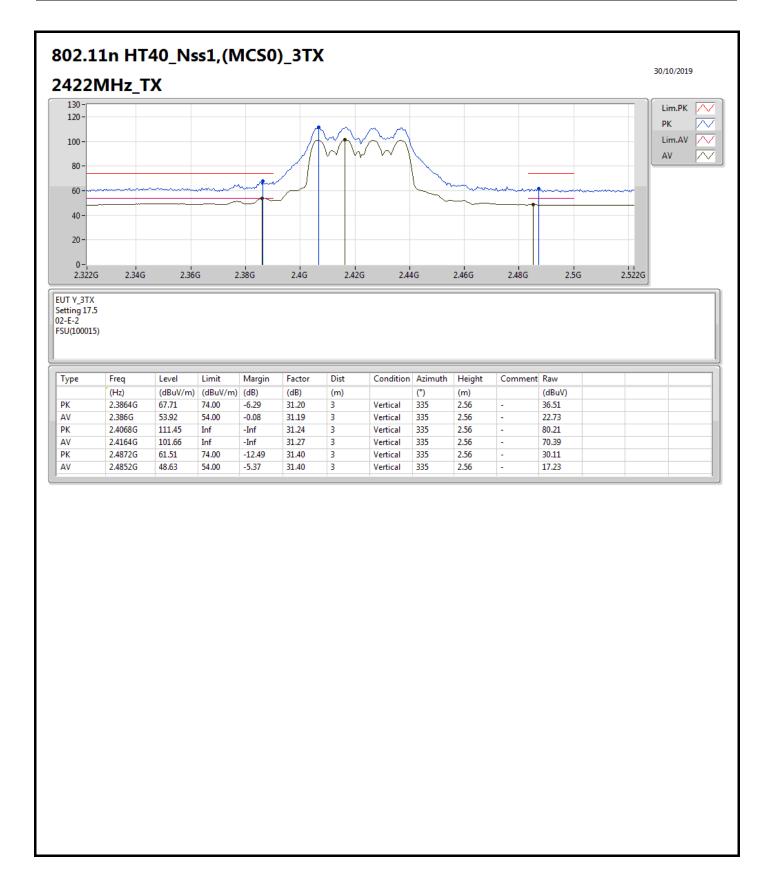




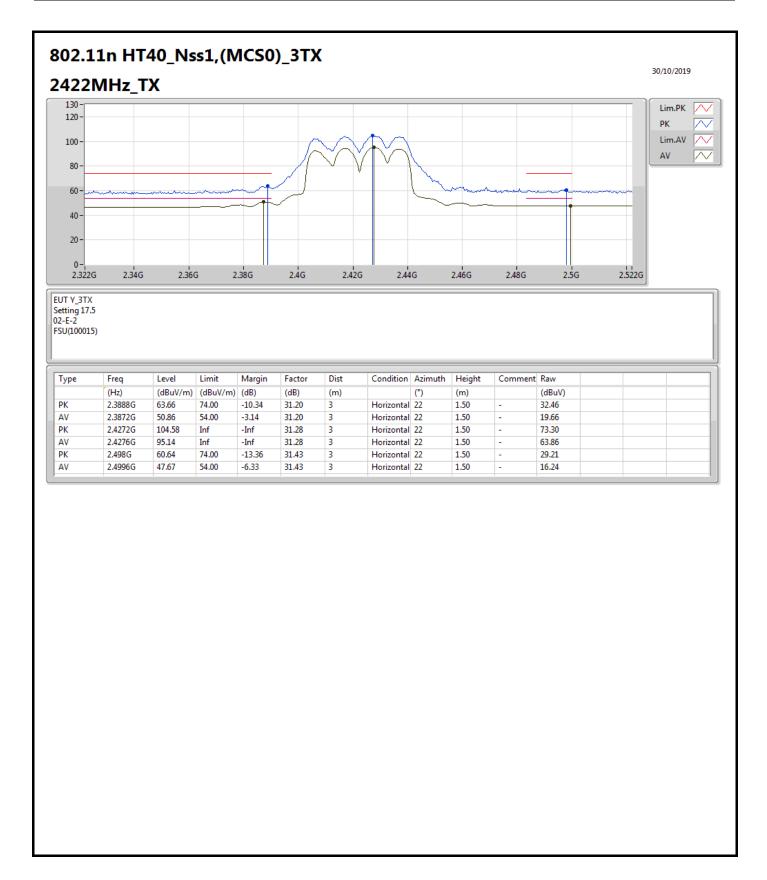




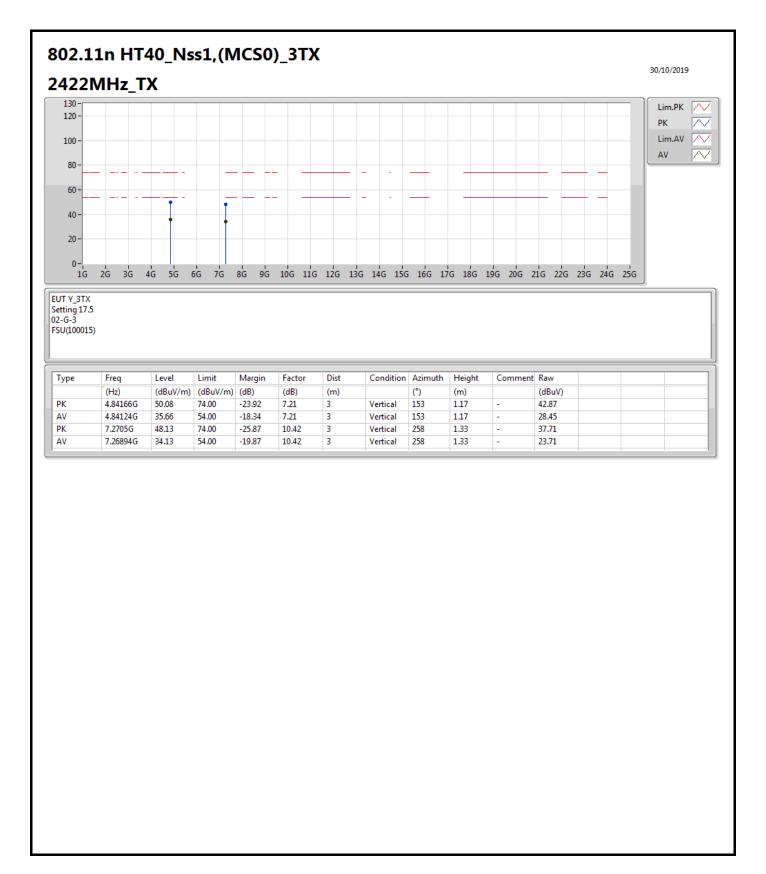




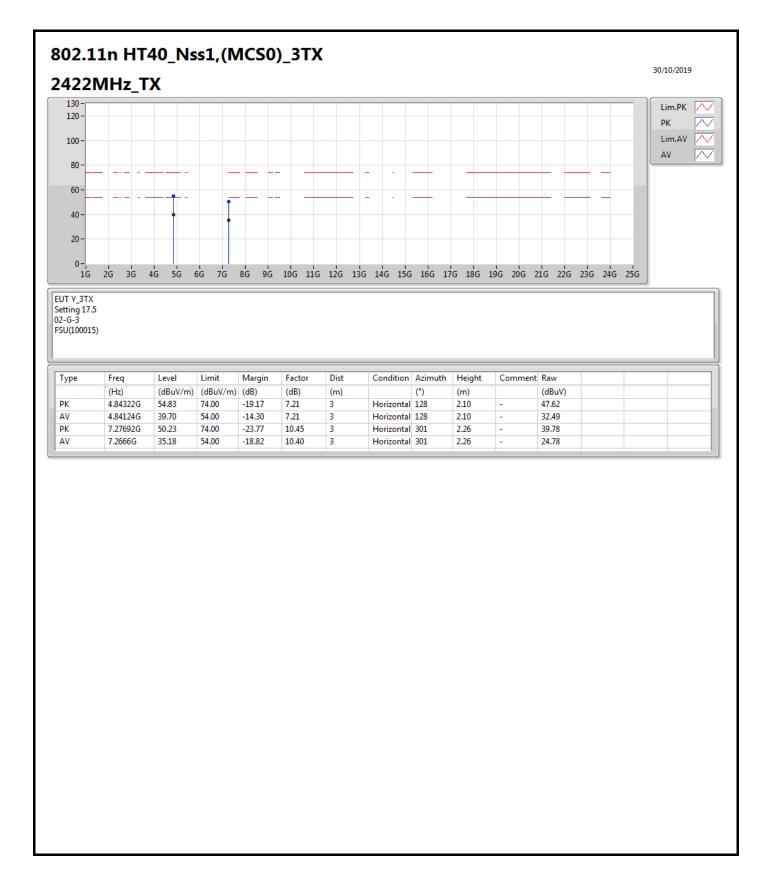




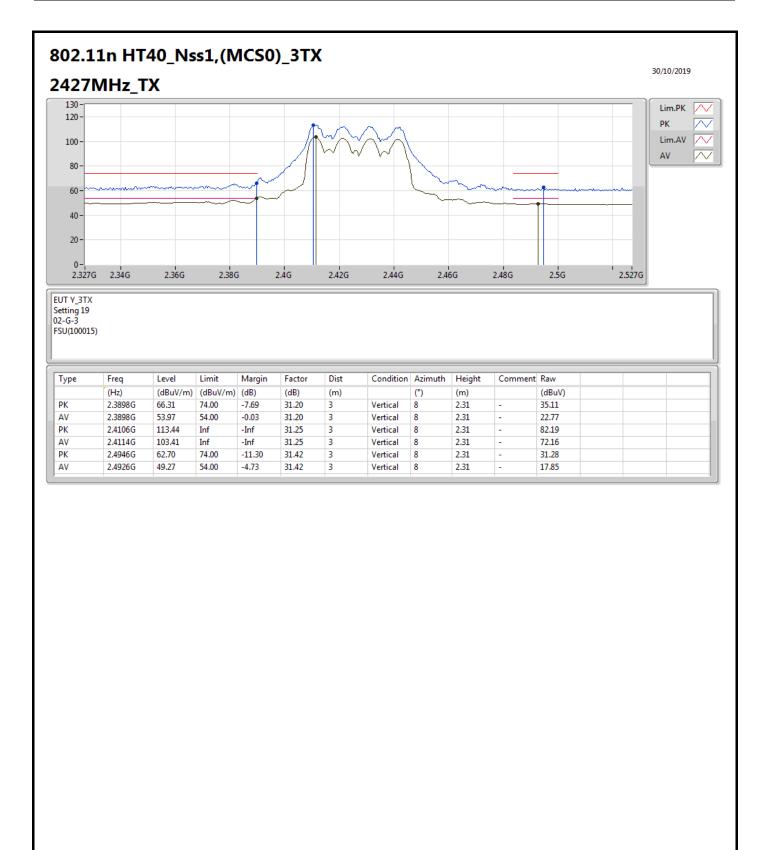




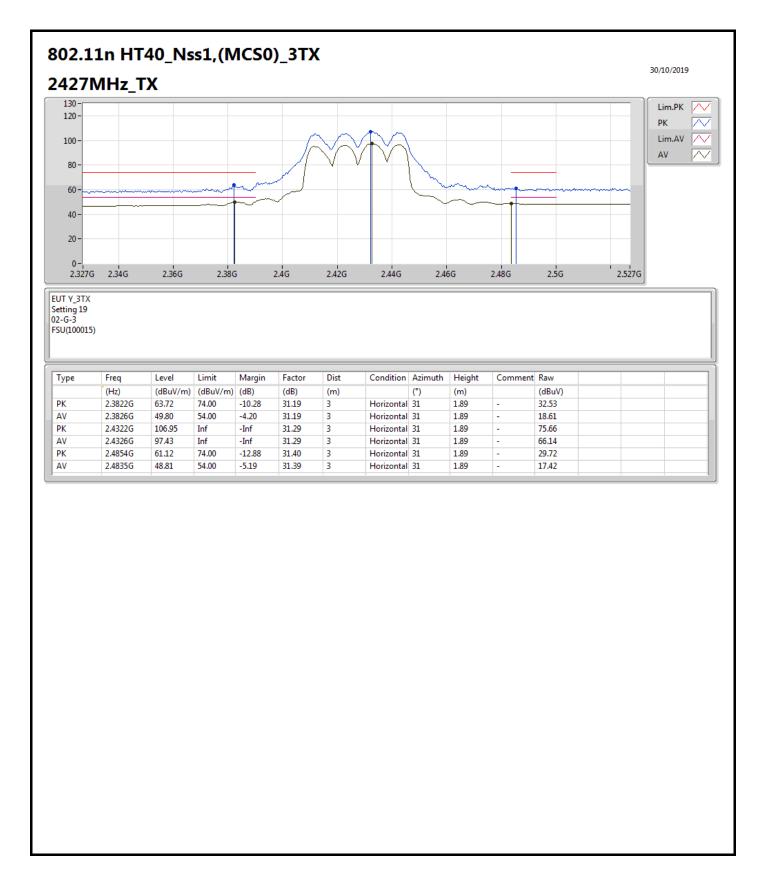




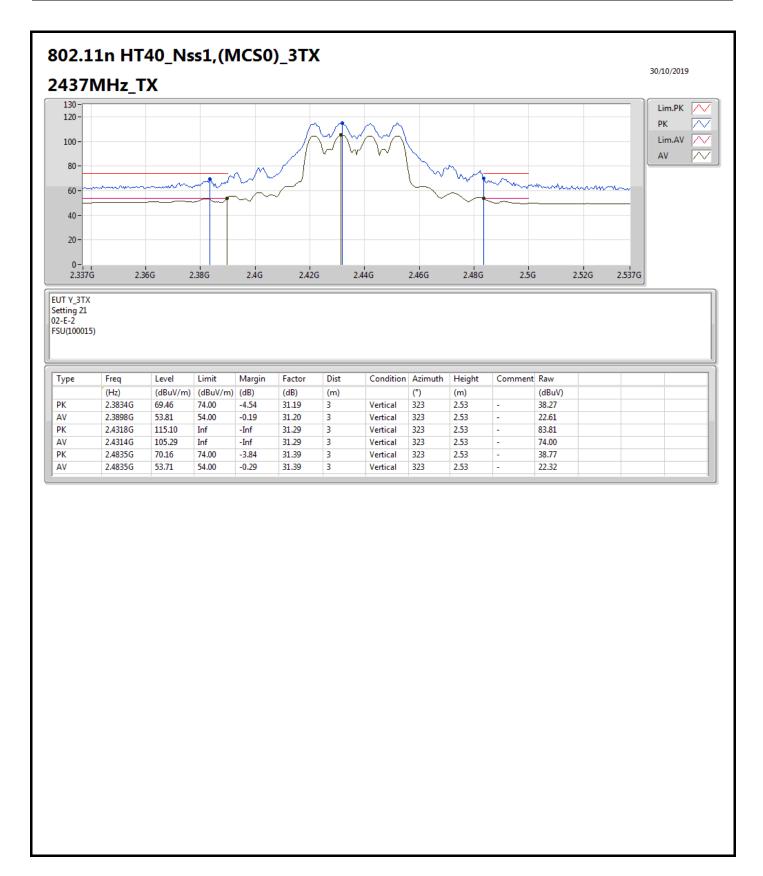




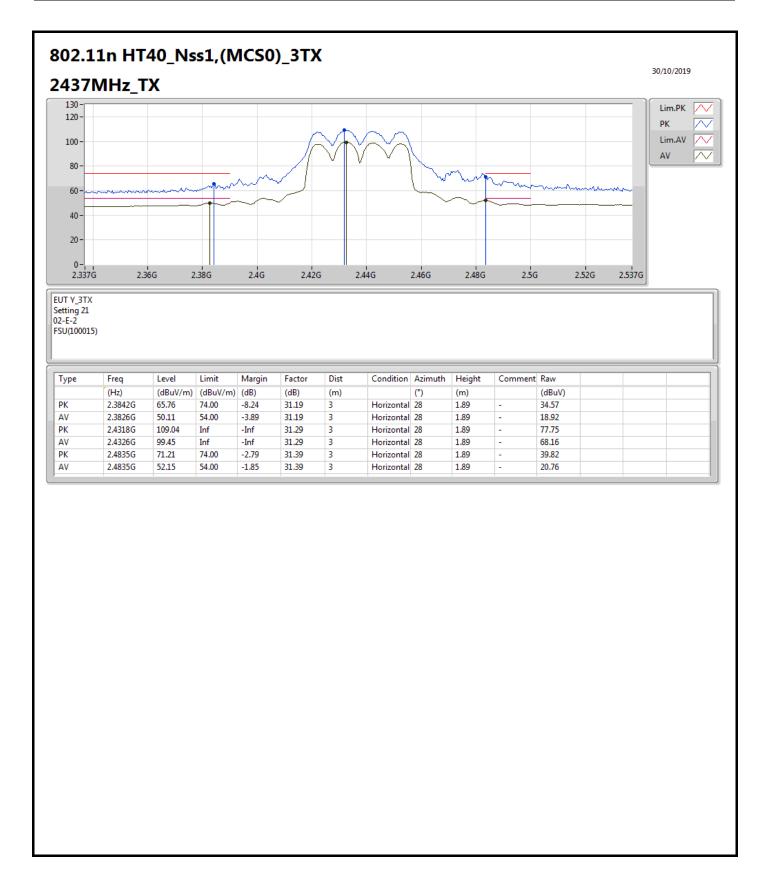




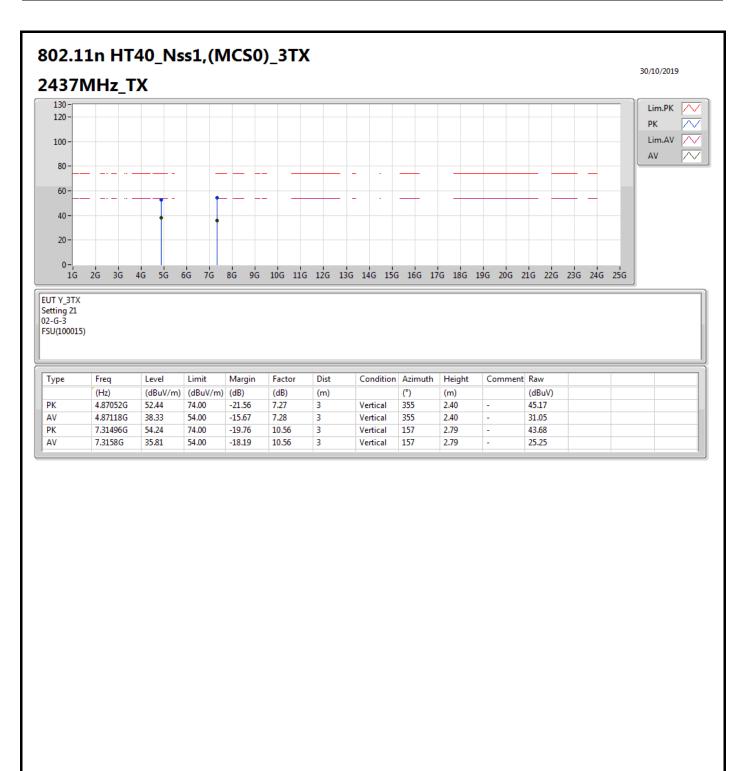




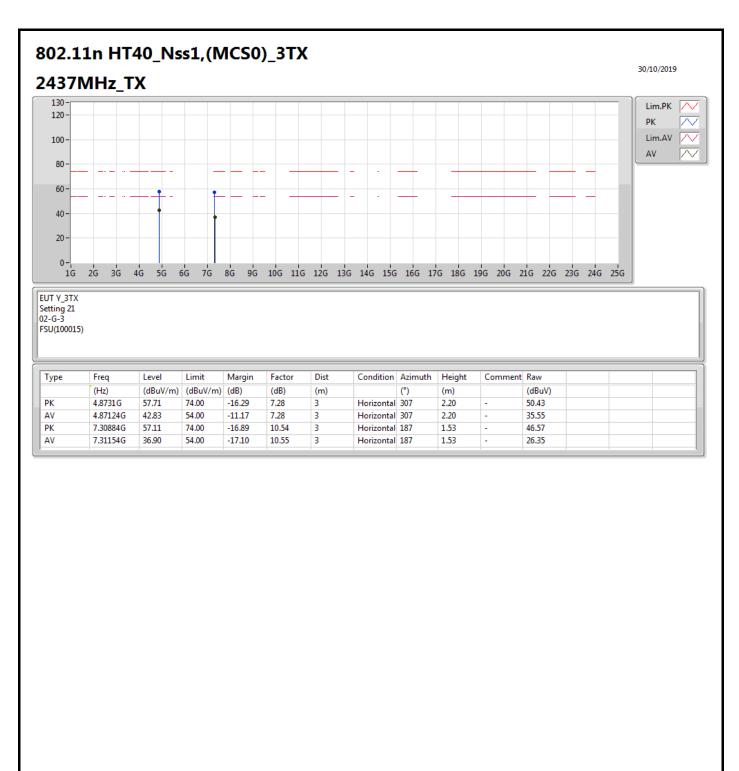




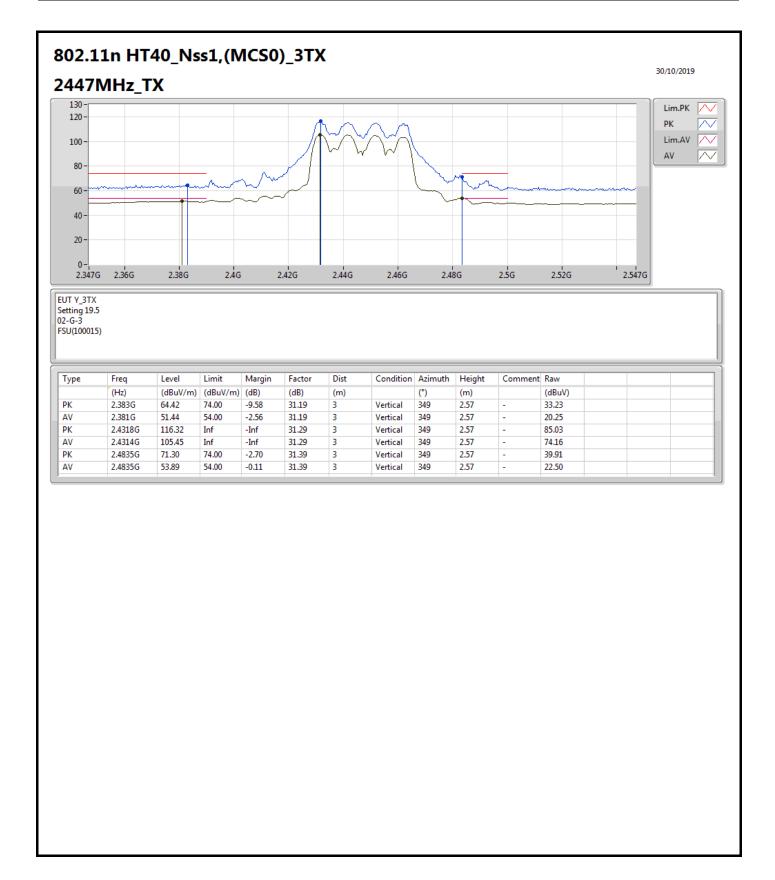




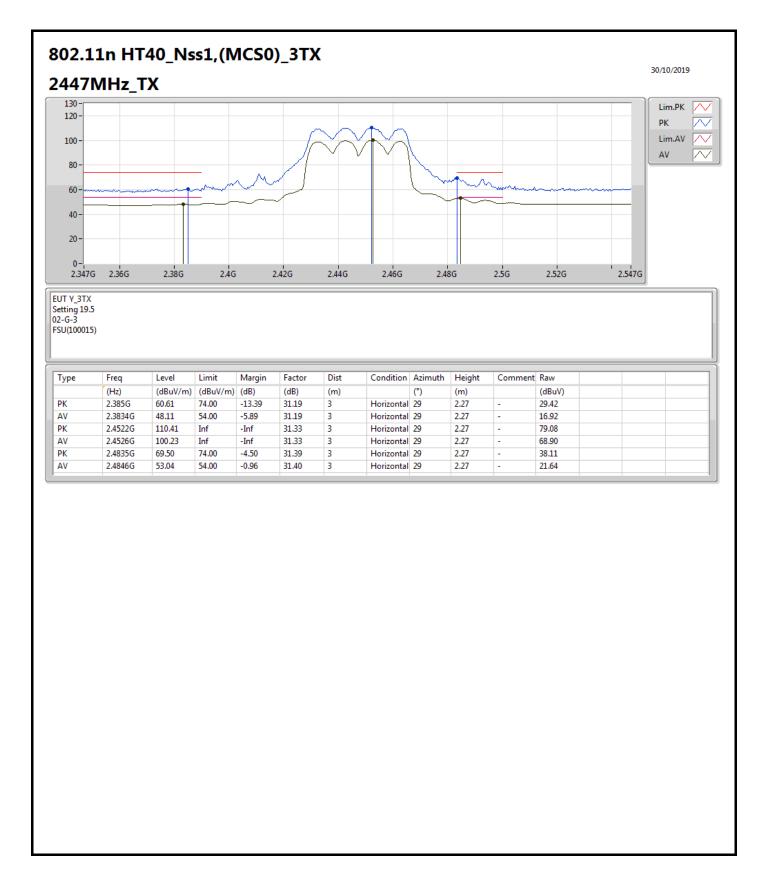




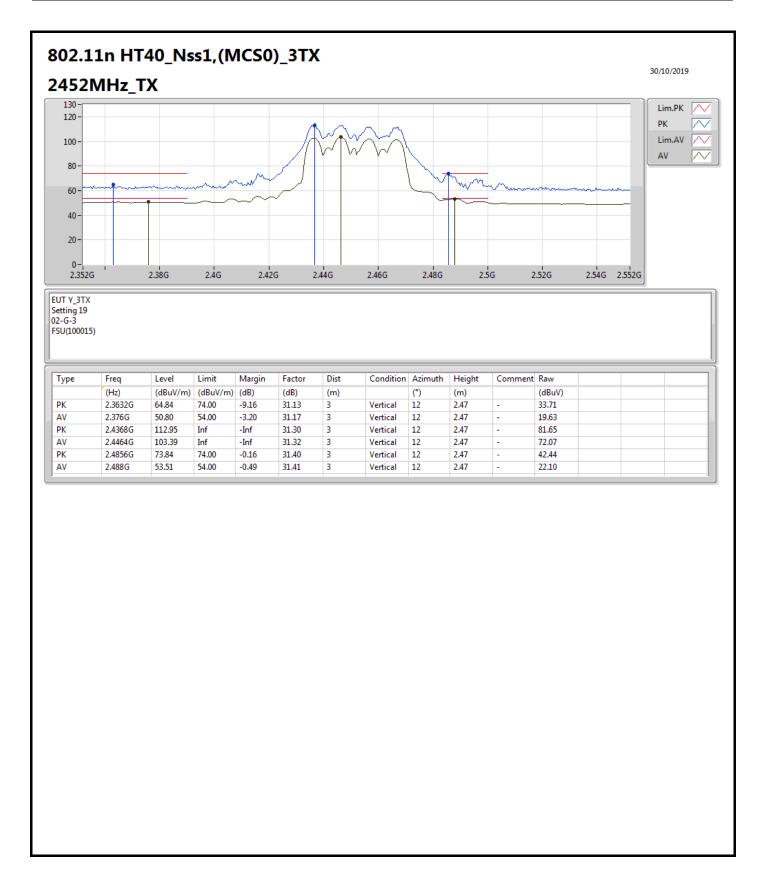




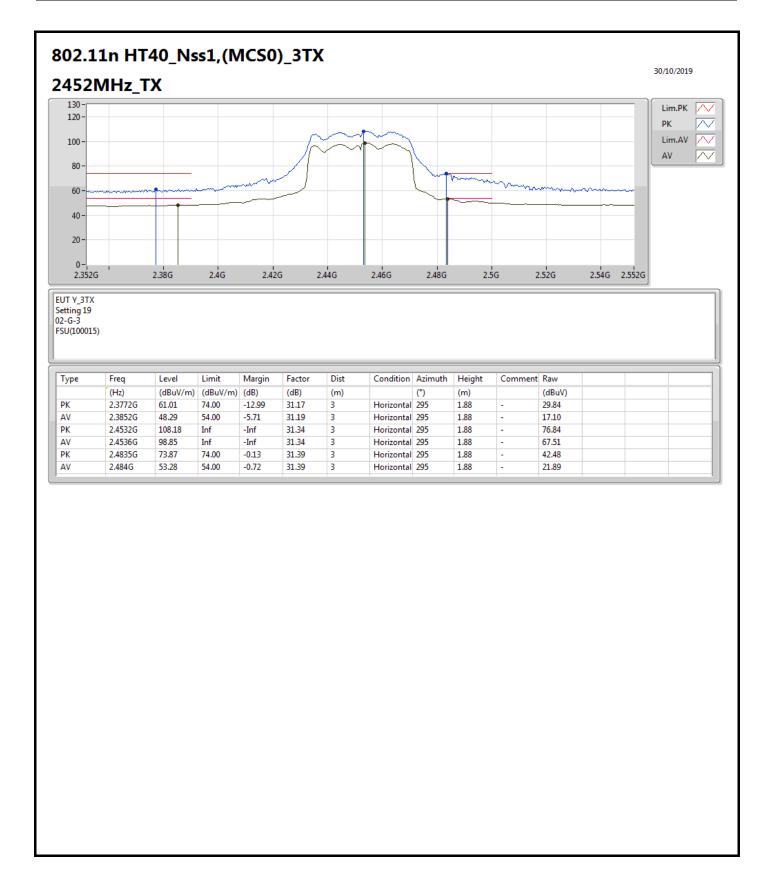




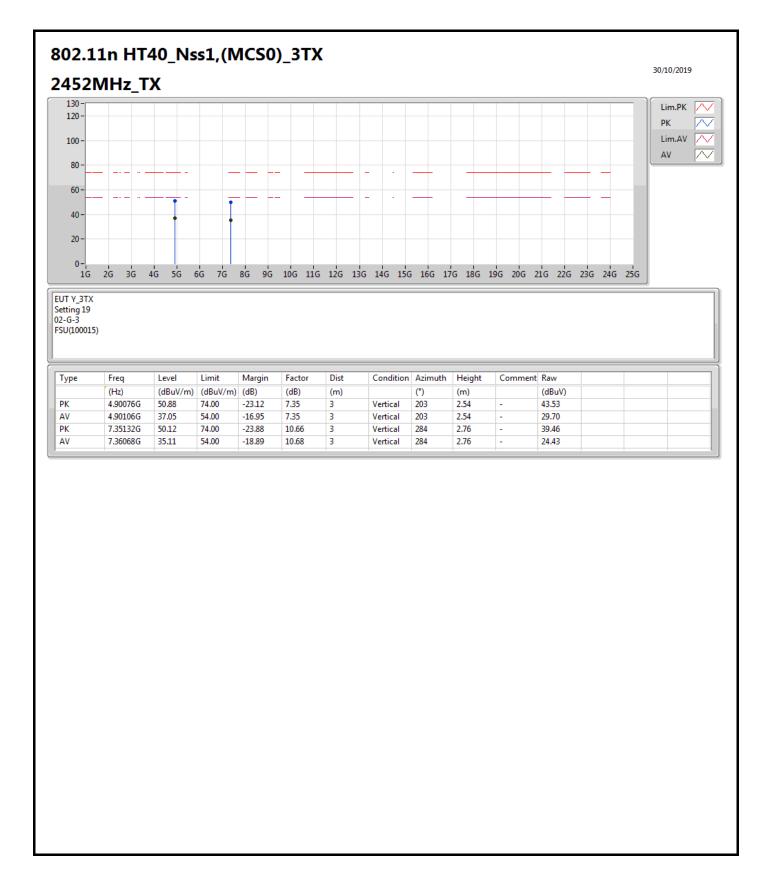




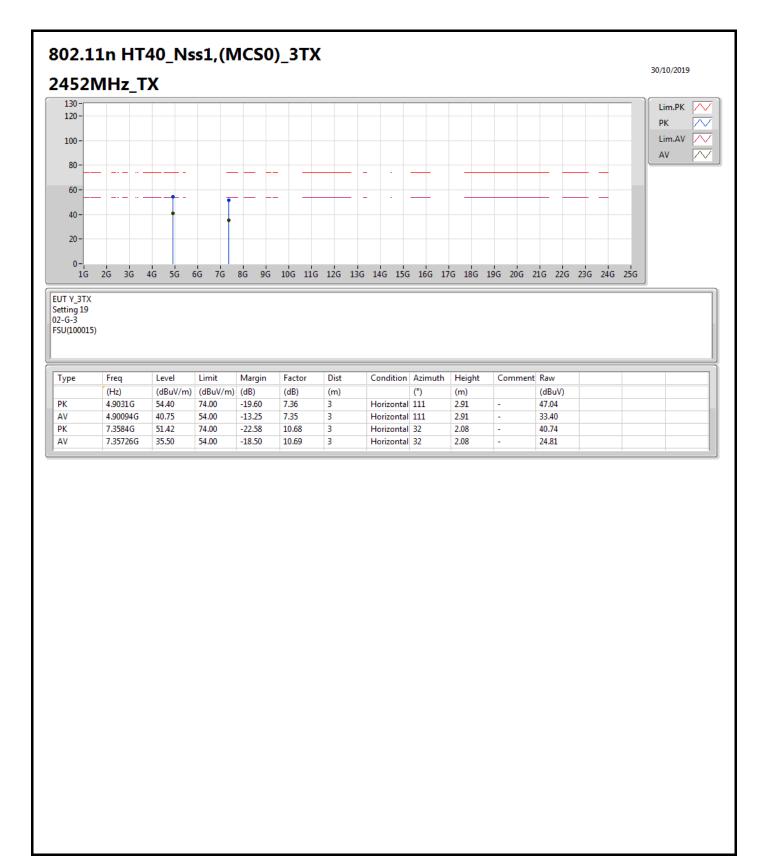






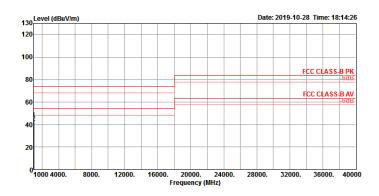








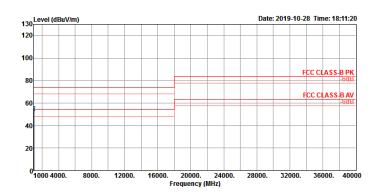
RSE Co-location Result						
Operating Mode	1	Polarization	Horizontal			
Operating Function	Normal Link					



	Frea						Read CableAntenna Level Loss Factor				T/Pos Remark		Pol/Phase
							dB/m			deg			
1	1012.43	45.13	74.00	-28.87	56.57	1.84	24.49	37.77	100	54	Peak	HORIZONTAL	
2	1012.58	41.65	54.00	-12.35	53.09	1.84	24.49	37.77	100	54	Average	HORIZONTAL	



RSE Co-location Result						
Operating Mode	1	Polarization	Vertical			
Operating Function	Normal Link					



Limit Over Read CableAntenna Preamp A/Pos T/Pos
Freq Level Line Limit Level Loss Factor Factor Remark Pol/Phase MHz dBuV/m dB dBuV dB dB/m dB cm deg