



# FCC RADIO TEST REPORT

FCC ID	:	TX2-RTL8723DE
Equipment		802.11 b/g/n RTL8723DE Combo module
Brand Name	;	REALTEK
Model Name	1	RTL8723DE
Applicant		Realtek Semiconductor Corp.
		No. 2,Innovation Road II, Hsinchu Science Park, Hsinchu 300,Taiwan
Manufacturer		Realtek Semiconductor Corp.
		No. 2,Innovation Road II, Hsinchu Science Park, Hsinchu 300,Taiwan
Standard		47 CFR FCC Part 15.247

The product was received on Jan. 12, 2018, and testing was started from Jan. 22, 2018 and completed on Apr. 21, 2018. We, SPORTON INTERTIONAL 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 variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

SPORTON INTERTIONAL 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 Ver1.0 Page Number : 1 of 25 Issued Date : Jun. 26, 2018 Report Version : 01



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Photographs of EUT v01



# History of this test report

Report No.	Version	Description	Issued Date
FR5D1601-14AA	01	Initial issue of report	Jun. 26, 2018



# **Summary of Test Result**

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

Reviewed by: Sam Chen Report Producer: Vicky Huang



# **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)	2412-2472	1-13 [13]
2400-2483.5	n (HT40)	2422-2462	3-11 [9]

Band	Mode	BWch (MHz)	Nant
2.4G	11b	20	1
2.4G	11g	20	1
2.4G	n (HT20)	20	1
2.4G	n (HT40)	40	1

#### Note:

- 2.4G is the 2.4GHz Band (2.4-2.4835GHz).
- 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.

### 1.1.2 Antenna Information

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	LYNwave	ALA110-222050-300011	PIFA Antenna	I-PEX MHF4	3.5
2	PSA	RFDPA171320EMLB301	Dipole Antenna	I-PEX MHF4	3.14

Note: The detail antenna information please refer to Antenna List.

Chain 1(Port 1) and Chain 2(Port 2) can connect to Ant. 1 or Ant. 2.

### For EUT 1:

The EUT supports the antenna with TX/RX diversity function for WLAN and Bluetooth.

### For WLAN 802.11b/g/n (1TX, 1RX) mode:

Both of Chain 1(Port 1) and Chain 2(Port 2) can be used as transmitting/receiving antennas,

but only one antenna can be used as transmitting/receiving antenna at the one time.

### For Bluetooth mode:

Base on WLAN's operation mode to select the other antenna to work.

(Ex. Assume Main port was selected to conduct transmitting function in WLAN,

so AUX port was selected in Bluetooth Mode. Vice versa.)



### For EUT 3:

The EUT supports the antenna with TX/RX diversity function for WLAN and Bluetooth.

### For WLAN 802.11b/g/n (1TX, 1RX) mode:

Both of Chain 1(Port 1) and Chain 2(Port 2) can be used as transmitting/receiving antennas,

but only one antenna can be used as transmitting/receiving antenna at the one time.

Chain 1(Port 1) generated the worst case than Chain 2(Port 2), so it is tested and recorded in the report.

### For Bluetooth mode:

Base on WLAN's operation mode to select the other antenna to work.

(Ex. Assume Main port was selected to conduct transmitting function in WLAN,

so AUX port was selected in Bluetooth Mode. Vice versa.)

Chain 2(Port 2) generated the worst case than Chain 1(Port 1), so it is tested and recorded in the report.

#### For EUT 2、EUT 4 and EUT 5:

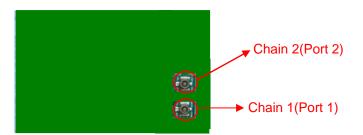
### For WLAN 802.11b/g/n (1TX, 1RX) mode:

Chain 1(Port 1) can be used as transmitting/receiving antenna.

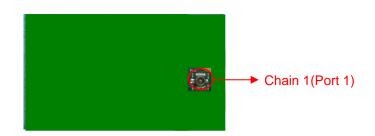
### For Bluetooth mode:

Chain 1(Port 1) can be used as transmitting/receiving antenna.

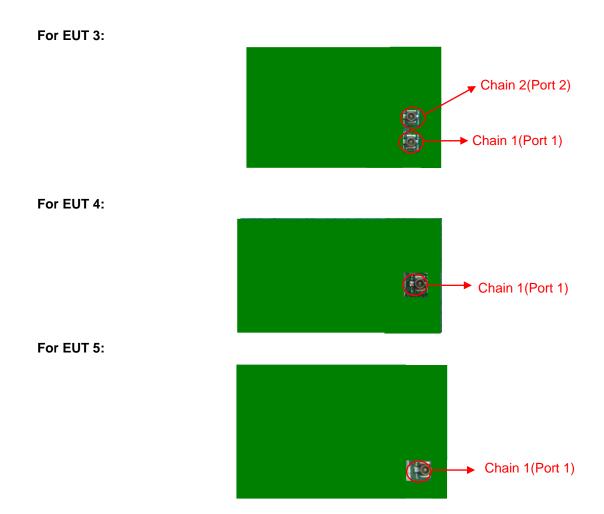
For EUT 1:



For EUT 2:









## 1.1.3 Mode Test Duty Cycle

#### For EUT 3 and EUT 4:

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
11b	1.000	1.000	100.00%	0.00	0.01
11g	1.000	1.000	100.00%	0.00	0.01
HT20	1.000	1.000	100.00%	0.00	0.01
HT40	1.000	1.000	100.00%	0.00	0.01

#### For EUT 5:

Mode	DC	T(s)	VBW(Hz) ≥ 1/T
11b	1	n/a (DC>=0.98)	n/a (DC>=0.98)
11g	0.981	n/a (DC>=0.98)	n/a (DC>=0.98)
HT20	0.981	n/a (DC>=0.98)	n/a (DC>=0.98)
HT40	0.997	n/a (DC>=0.98)	n/a (DC>=0.98)

## 1.1.4 EUT Operational Condition

EUT Power Type	From host system			
Beamforming Function		With beamforming	$\boxtimes$	Without beamforming
Function	$\boxtimes$	Point-to-multipoint		Point-to-point
Test Software Version	RE/	ALTEK		



### 1.1.5 Table for Multiple Listing

The EUT has five types which are identical to each other in all aspects except for the following table:

Model Name	EUT	Interface		Function	
		E key	A+E key	Diversity	Fixed
	1	V	-	V	-
	2	V	-	-	V
RTL8723DE	3	-	V	V	-
	4	-	V	-	V (fixed to CON2)
	5	-	V	-	V (fixed to CON1)

Interface	Description
E key	There are two interface for different platform connector, all the RF circuit and electric
A+E key	identity are the same.

Note: According to above, there are only EUT 3 ~ EUT 5 were selected to test and record in the report as a result.

### 1.1.6 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR5D1601-20AA Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Updated for A + E Key board (EUT 3~5) (Modify the	1. AC Power-line Conducted Emissions
matching on RF antenna trace and modify power	2. Emissions in Restricted Frequency Bands
Capacitor to Improve platform interference).	3. Radiated Emission Co-location

Note: The above test items will be based on original output power to re-test.



# **1.2 Testing Applied 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
- FCC KDB 558074 D01 v04

# **1.3 Testing Location Information**

	Testing Location					
	HWA YA ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.					
		TEL	:	886-3-327-3456 FAX : 886-3-318-0055		
$\boxtimes$	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
Radiated	03CH01-CB	Lucke Hsieh & Justin Lin	22°C / 57%	Jan. 22, 2018 ~ Apr. 21, 2018
AC Conduction	CO01-CB	Max Lin	18°C / 50%	Feb. 05, 2018

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)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%



# 2 Test Configuration of EUT

# 2.1 Test Channel Mode

Band	Mode	BWch (MHz)	Nss-Min	Nant	Ch. (MHz)	Range
2.4G	11b	20	1	1	2412	L
2.4G	11b	20	1	1	2437	М
2.4G	11b	20	1	1	2462	Н
2.4G	11b	20	1	1	2467	Н
2.4G	11b	20	1	1	2472	Н
2.4G	11g	20	1	1	2412	L
2.4G	11g	20	1	1	2437	М
2.4G	11g	20	1	1	2462	Н
2.4G	11g	20	1	1	2467	Н
2.4G	11g	20	1	1	2472	Н
2.4G	HT20	20	1,(M0)	1	2412	L
2.4G	HT20	20	1,(M0)	1	2437	М
2.4G	HT20	20	1,(M0)	1	2462	Н
2.4G	HT20	20	1,(M0)	1	2467	н
2.4G	HT20	20	1,(M0)	1	2472	Н
2.4G	HT40	40	1,(M0)	1	2422	L
2.4G	HT40	40	1,(M0)	1	2437	М
2.4G	HT40	40	1,(M0)	1	2452	Н
2.4G	HT40	40	1,(M0)	1	2457	Н
2.4G	HT40	40	1,(M0)	1	2462	Н



# 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
Tests Item	AC power-line conducted emissions		
Condition	AC power-line conducted measurement for line and neutral		
Operating Mode	Normal Link		
1 Place EUT 3-A+E key-Diversity in Z axis + Antenna 1			
2 Place EUT 5-A+E key-Fixed in Z axis + Antenna 1			
3 Place EUT 4-A+E key-Fixed in Z axis + Antenna 1			
4	Place EUT 3-A+E key-Diversity in Z axis + Antenna 2		
5	Place EUT 5-A+E key-Fixed in Z axis + Antenna 2		
6	Place EUT 4-A+E key-Fixed in Z axis + Antenna 2		
For operating mode 3 is t	For operating mode 3 is the worst case and it was record in this test report.		

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	Place EUT 3-A+E key-Diversity in Z axis + Antenna 1				
2	Place EUT 5-A+E key-Fixed in Z axis + Antenna 1				
3	Place EUT 4-A+E key-Fixed in Z axis + Antenna 1				
4	Place EUT 3-A+E key-Diversity in Z axis + Antenna 2				
5	Place EUT 5-A+E key-Fixed in Z axis + Antenna 2				
6	Place EUT 4-A+E key-Fixed in Z axis + Antenna 2				
For operating mode 1 is th	e worst case and it was record in this test report.				
Operating Mode > 1GHz	СТХ				
The EUT can be placed in recorded in this report.	n X axis, Y axis and Z axis. After evaluating, Z axis was the worst case, so it's				
1	Place EUT 3-A+E key-Diversity in Z axis + Antenna 1				
2	Place EUT 5-A+E key-Fixed in Z axis + Antenna 1				
3	Place EUT 4-A+E key-Fixed in Z axis + Antenna 1				
4	Place EUT 3-A+E key-Diversity in Z axis + Antenna 2				
5	Place EUT 5-A+E key-Fixed in Z axis + Antenna 2				
6	Place EUT 4-A+E key-Fixed in Z axis + Antenna 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			
The EUT can be placed in X axis, Y axis and Z axis. After evaluating, Z axis was the worst case, so it recorded in this report.				
1	Place EUT 3-A+E key-Diversity in Z axis + Antenna 1			
2	Place EUT 5-A+E key-Fixed in Z axis + Antenna 1			
3	Place EUT 4-A+E key-Fixed in Z axis + Antenna 1			
4	Place EUT 3-A+E key-Diversity in Z axis + Antenna 2			
5	Place EUT 5-A+E key-Fixed in Z axis + Antenna 2			
6	Place EUT 4-A+E key-Fixed in Z axis + Antenna 2			
Refer to Appendix C for Ra	Refer to Appendix C for Radiated Emission Co-location.			

The Worst Case Mode for Following Conformance Tests				
Tests Item         Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation				
Operating Mode				
1	1 Bluetooth+WLAN 2.4GHz			
Refer to Sporton Test Report No.: FA5D1601-14 for Co-location RF Exposure Evaluation.				

# 2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.



# 2.4 Accessories

N/A

# 2.5 Support Equipment

### For Test Site No: CO01-CB

	Support Equipment						
No.	Equipment	Brand Name	Model Name	FCC ID			
1	NB*2	DELL	E6430	DoC			
2	AP	ASUS	RP-N53	MSQ-RPN53			
3	Test fixture*2	REALTEK	Ameba adapter	N/A			
4	Device	REALTEK	RTL8723DE	TX2-RTL8723DE			
5	Earphone	SHYARO CHI	MIC-04	N/A			
6	Mouse	HP	FM100	N/A			

### For Test Site No: 03CH01-CB (below 1GHz)

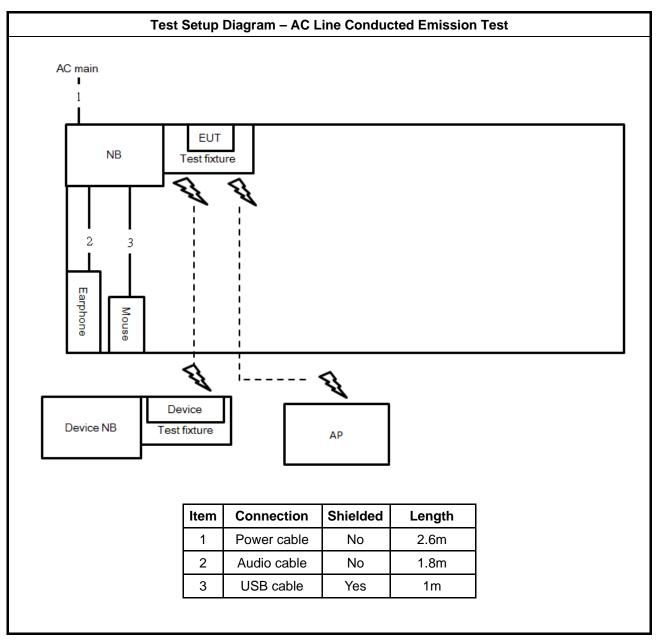
	Support Equipment						
No.	Equipment	FCC ID					
1	NB*2	DELL	E4300	DoC			
2	AP	Netgear	R6300V2	PY313200227			
3	Test fixture*2	REALTEK	Ameba adapter	N/A			
4	Device	REALTEK	RTL8723DE	TX2-RTL8723DE			
5	Earphone	SHYARO CHI	MIC-04	N/A			
6	Mouse	Logitech	M-U0026	N/A			

### For Test Site No: 03CH01-CB (above 1GHz)

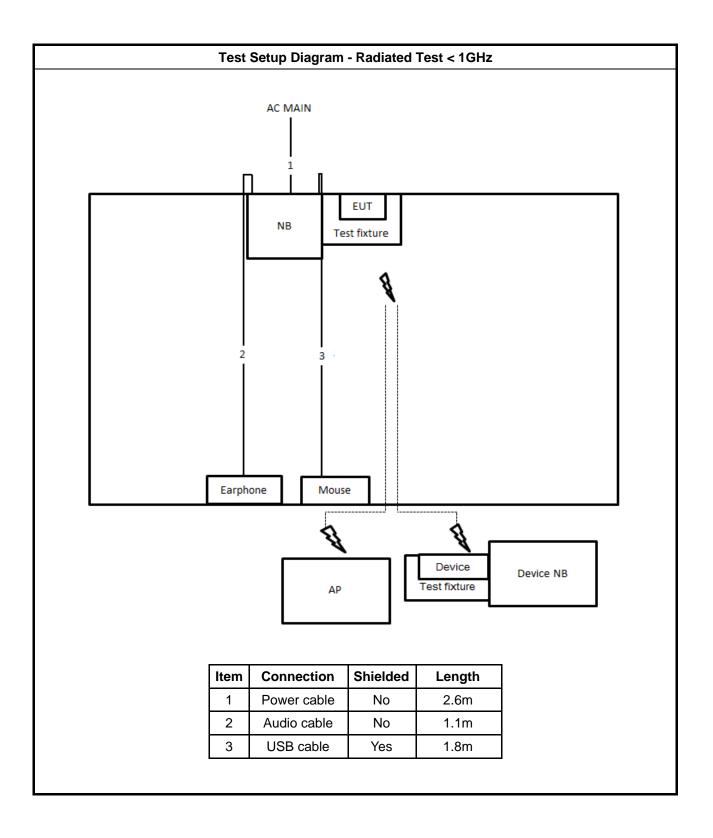
Support Equipment						
No. Equipment Brand Name Model Name FCC ID						
1	NB	DELL	E4300	DoC		
2 Test fixture REALTEK Ameba adapter N/A						



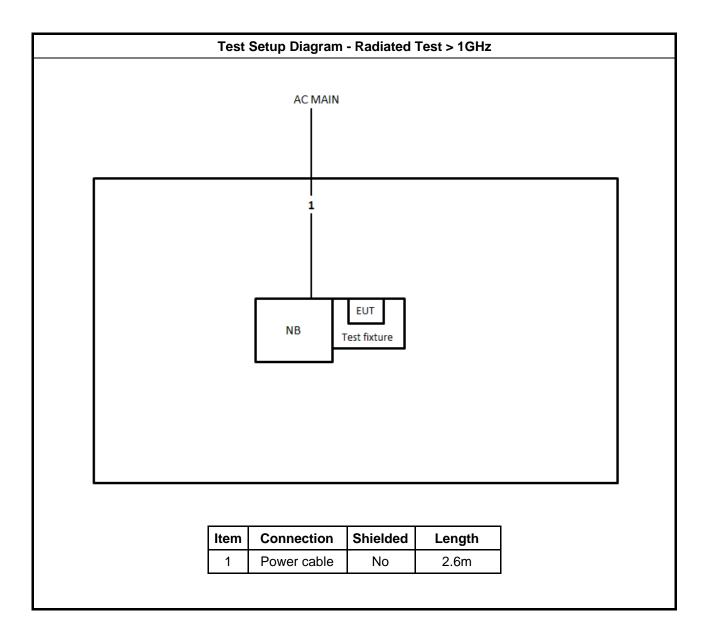
# 2.6 Test Setup Diagram













# 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.								

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### 3.1.2 Measuring Instruments

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

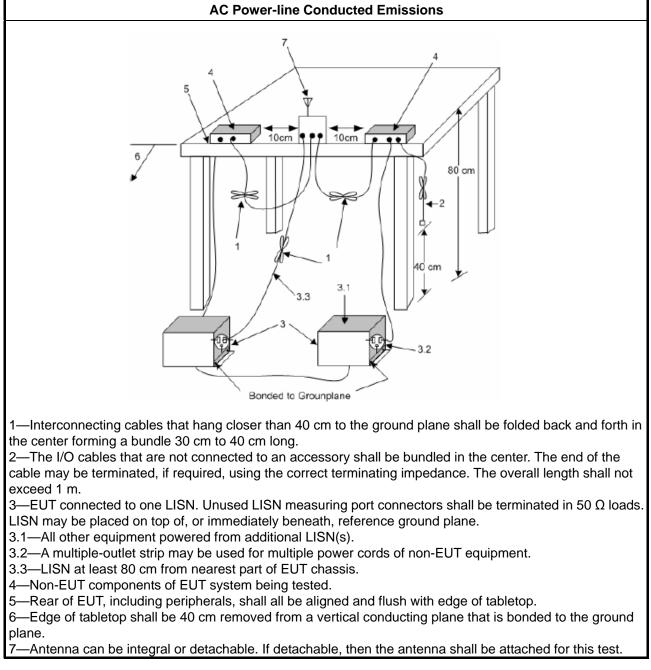
### 3.1.3 Test Procedures

**Test Method** 

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



### 3.1.4 Test Setup



### 3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A



## 3.2 Emissions in Restricted Frequency Bands

### 3.2.1 Emissions in Restricted Frequency Bands Limit

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

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

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

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

### 3.2.2 Measuring Instruments

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

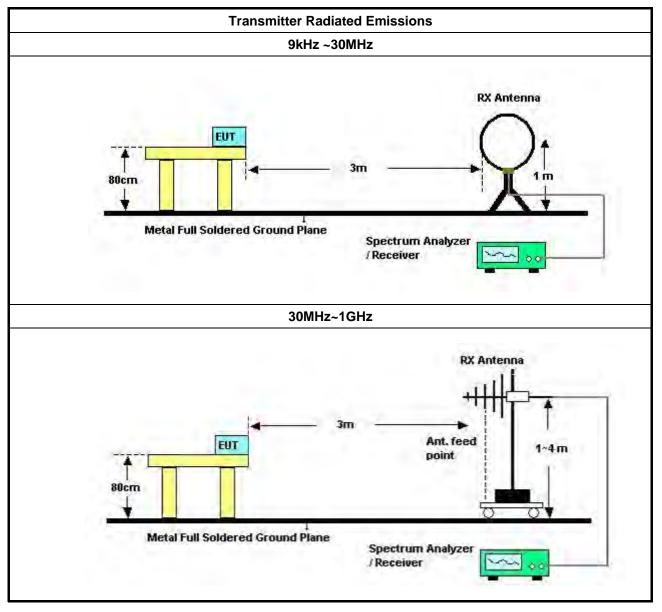


### 3.2.3 Test Procedures

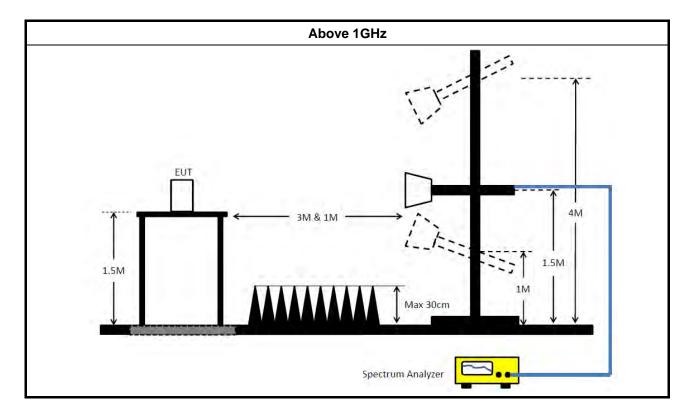
	Test Method
•	The average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].
•	Refer as ANSI C63.10, clause 6.9.2.2 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
•	For the transmitter unwanted emissions shall be measured using following options below:
	<ul> <li>Refer as FCC KDB 558074, clause 12 for unwanted emissions into restricted bands.</li> </ul>
	☐ Refer as FCC KDB 558074, clause 12.2.5.1 Option 1 (trace averaging for duty cycle ≥98%)
	Refer as FCC KDB 558074, clause 12.2.5.2 Option 2 (trace averaging + duty factor).
	Refer as FCC KDB 558074, clause 12.2.5.3 Option 3 (Reduced VBW≥1/T).
	□ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW $\ge$ 1/T, where T is pulse time.
	Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions.
	Refer as FCC KDB 558074, clause 12.2.4 measurement procedure peak limit.
•	For the transmitter band-edge emissions shall be measured using following options below:
	<ul> <li>Refer as FCC KDB 558074 clause 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.</li> </ul>
	<ul> <li>Refer as FCC KDB 558074, clause 13.2 (ANSI C63.10, clause 6.9.3) for marker-delta method for band-edge measurements.</li> </ul>
	<ul> <li>Refer as FCC KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).</li> </ul>
•	For conducted and cabinet radiation measurement, refer as FCC KDB 558074, clause 12.2.2.
	<ul> <li>For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below:         <ul> <li>(1) Measure and sum the spectra across the outputs or</li> <li>(2) Measure and add 10 log(N) dB</li> </ul> </li> </ul>
	<ul> <li>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.</li> </ul>



### 3.2.4 Test Setup







### 3.2.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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.

### 3.2.6 Test Result of Transmitter Radiated Unwanted Emissions

Refer as Appendix B



# 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. 31, 2018	Jan. 30, 2019	Conduction (CO01-CB)	
LISN	F.C.C.	FCC-LISN-50- 16-2	04083	150kHz ~ 100MHz	Dec. 20, 2017	Dec. 19, 2018	Conduction (CO01-CB)	
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 29, 2017	Dec. 28, 2018	Conduction (CO01-CB)	
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 23, 2017	May 22, 2018	Conduction (CO01-CB)	
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)	
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2017	Aug. 29, 2018	Radiation (03CH01-CB)	
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Mar. 15, 2018*	Radiation (03CH01-CB)	
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 20, 2017	Nov. 19, 2018	Radiation (03CH01-CB)	
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 05, 2017	Jul. 04, 2018	Radiation (03CH01-CB)	
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2017	May 01, 2018	Radiation (03CH01-CB)	
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 09, 2018 Jan. 08, 2019		Radiation (03CH01-CB)	
Pre-Amplifier	MITEQ	ТТА1840-35-Н G	1864479	18GHz ~ 40GHz	Jul. 10, 2017	Jul. 09, 2018	Radiation (03CH01-CB)	
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 23, 2017	Nov. 22, 2018	Radiation (03CH01-CB)	
EMI Test	R&S	ESCS	100354	9kHz ~ 2.75GHz	Dec. 08, 2017	Dec. 07, 2018	Radiation (03CH01-CB)	
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)	
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)	
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)	
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)	



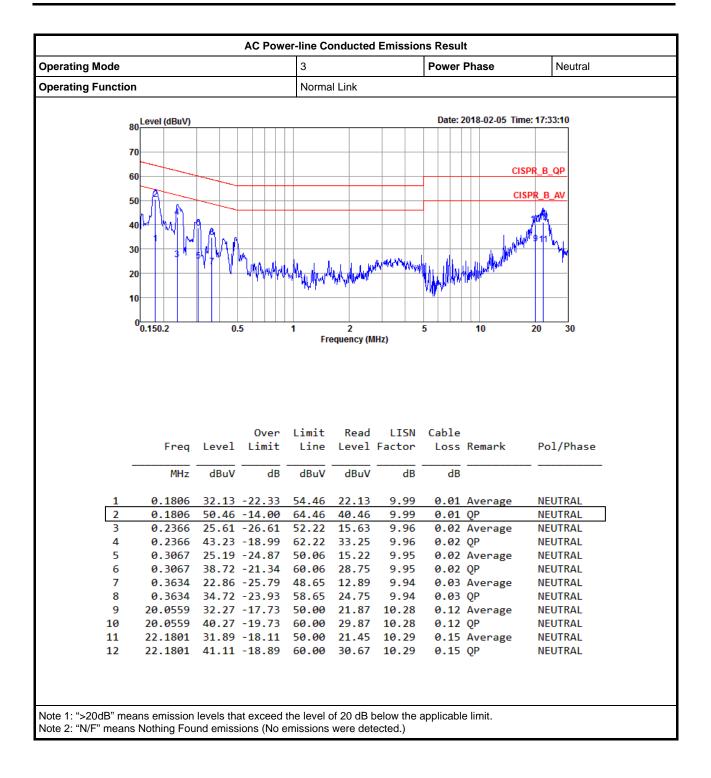
Instrument	Manufacturer	Model No.	Serial No.	Characteristics Calibratio		Calibration Due Date	Remark	
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)	

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

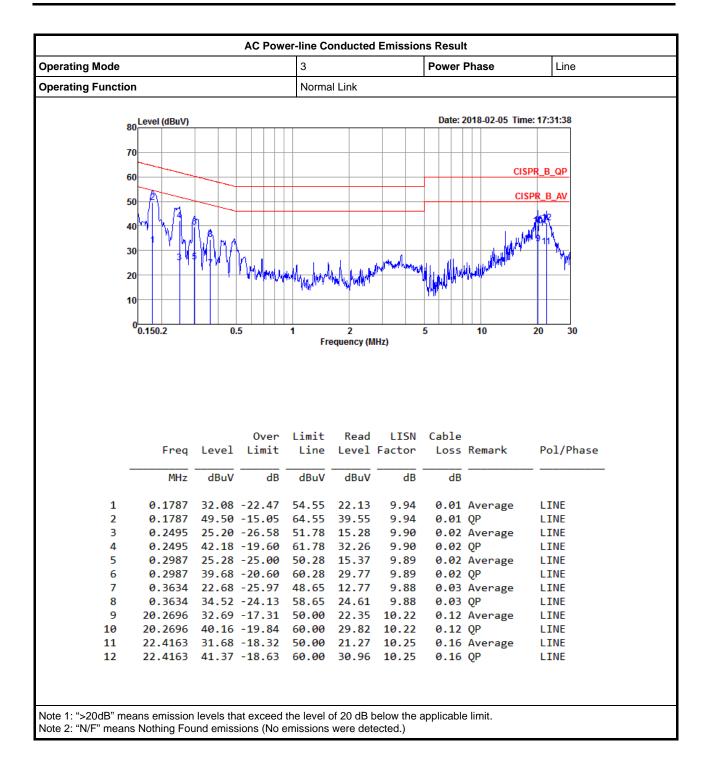
"\*" Calibration Interval of instruments listed above is two years.

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

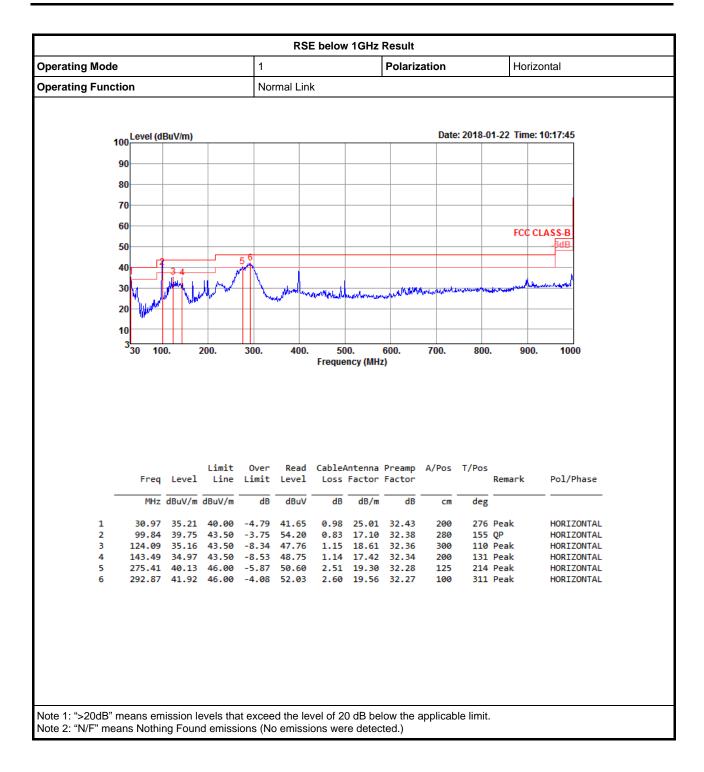




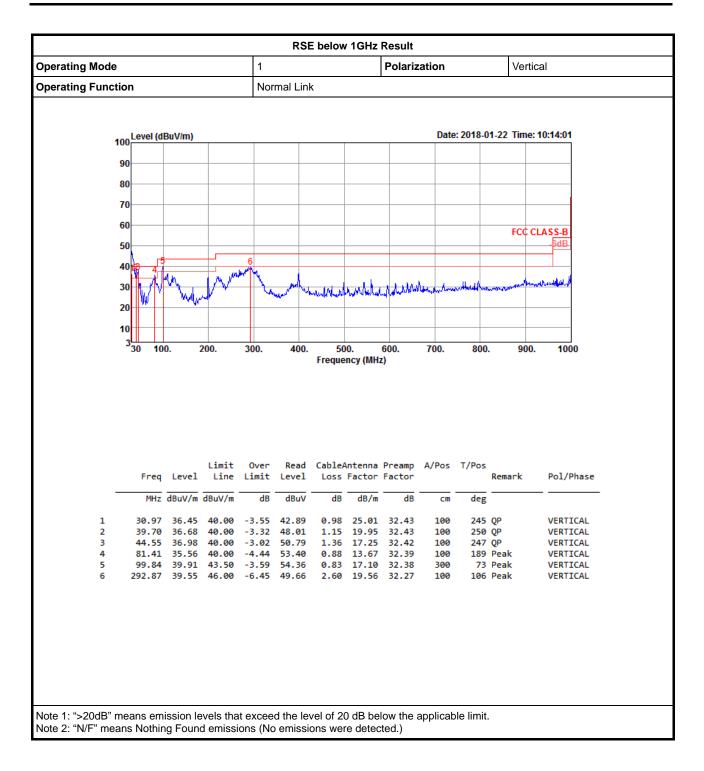














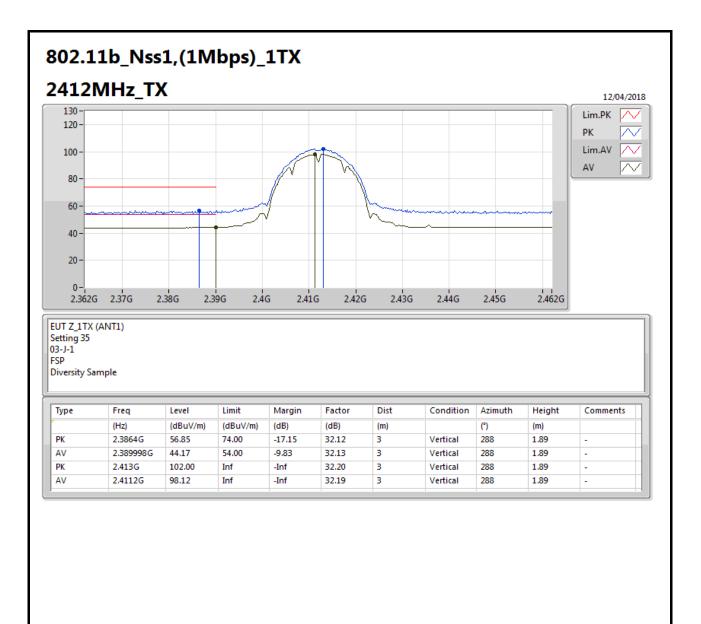
### RSE TX above 1GHz Result

# Appendix B.2

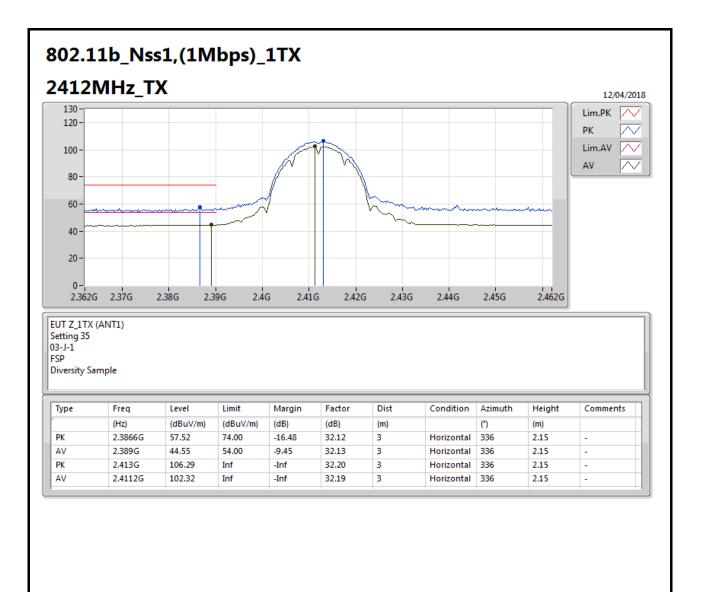
#### Test Mode: Mode 1 Summary

eannary												
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	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	AV	2.4842G	52.81	54.00	-1.19	32.42	3	Horizontal	343	1.66	-

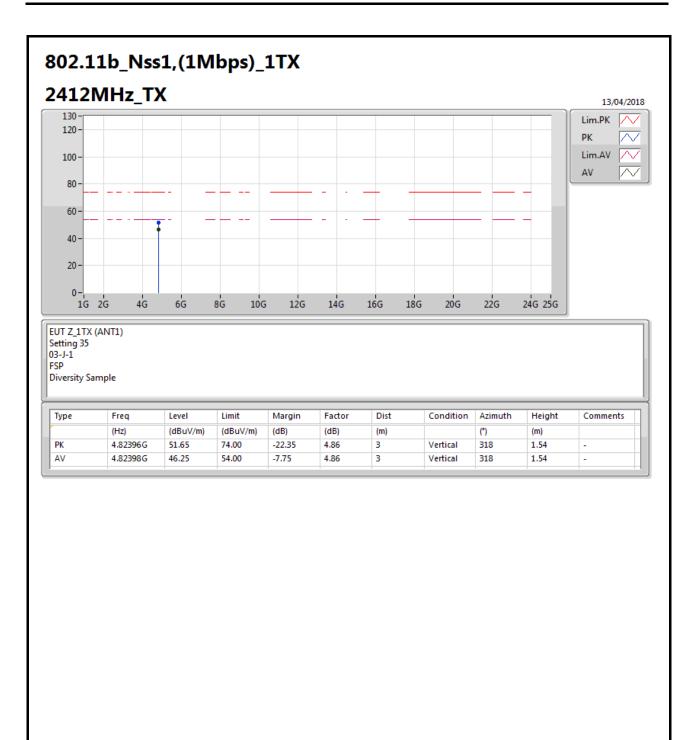




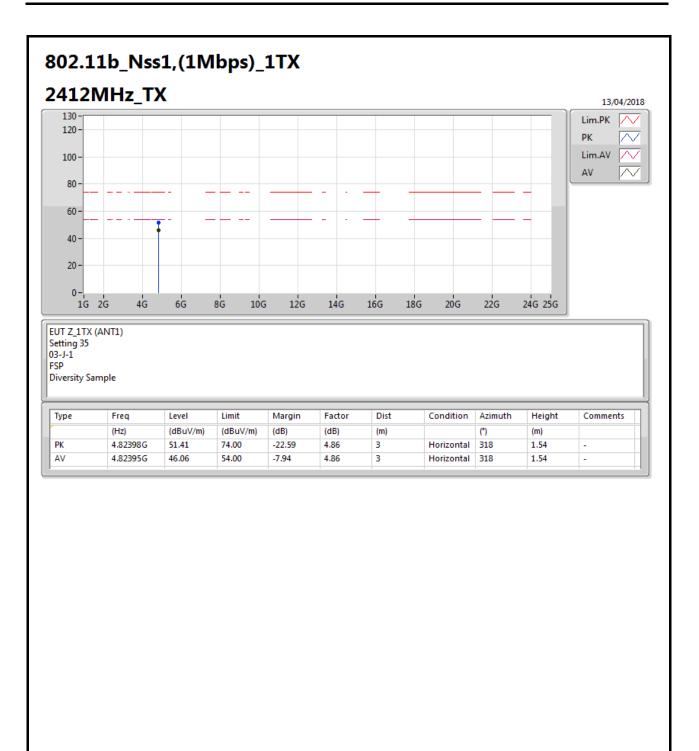




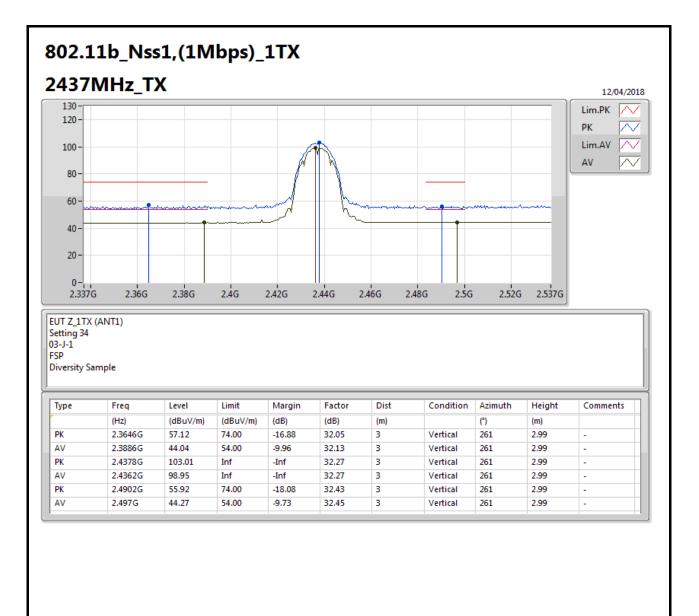




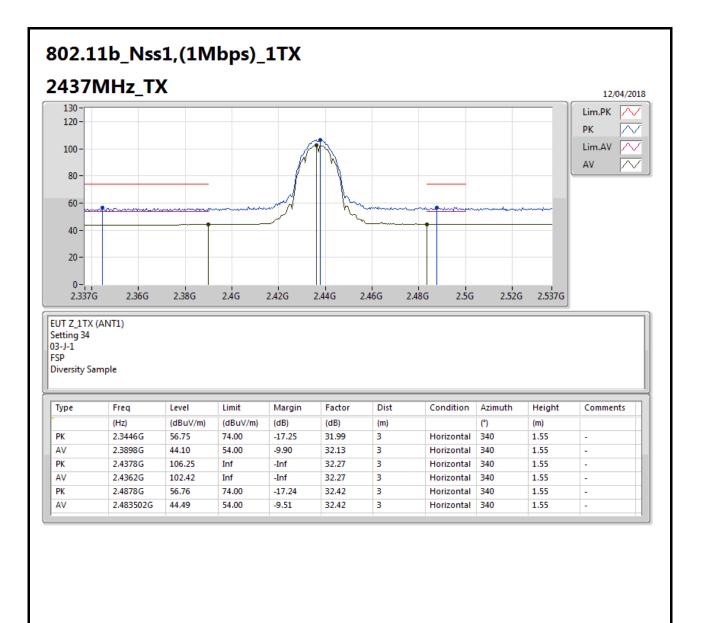




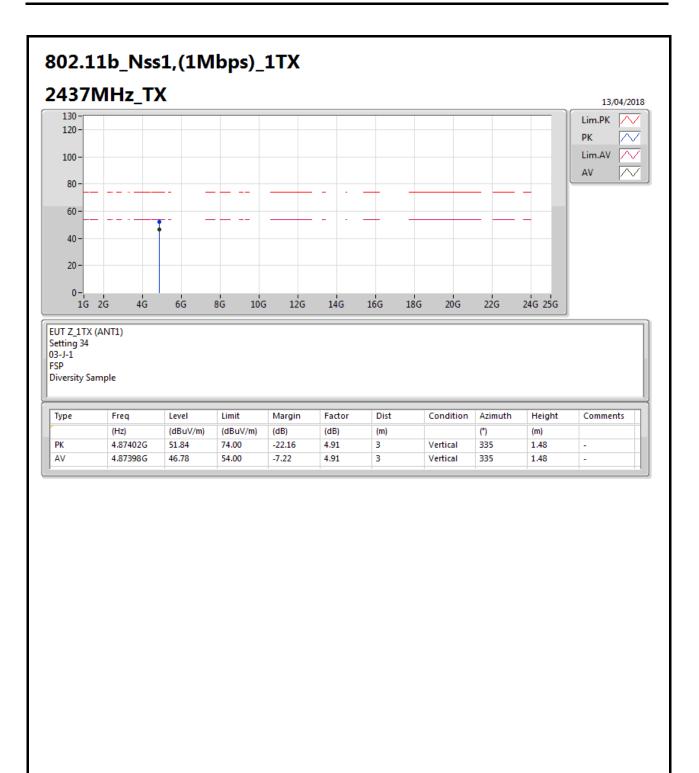




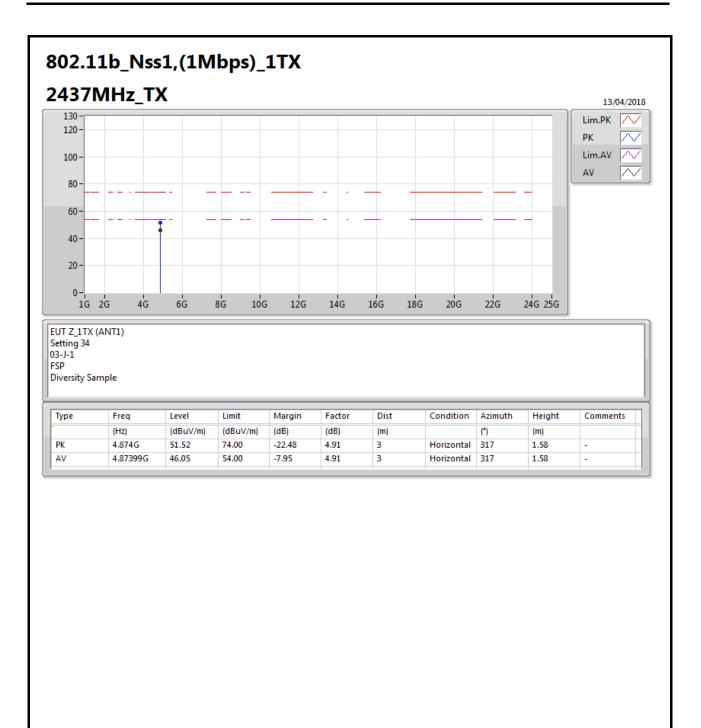




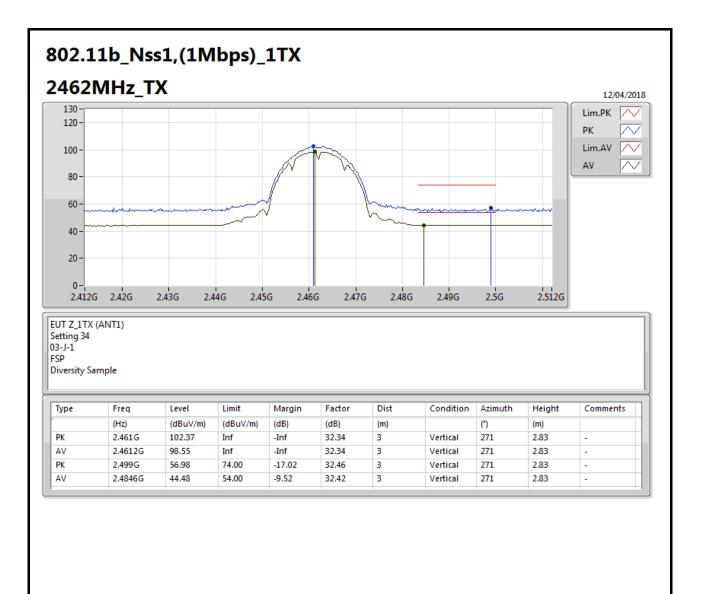




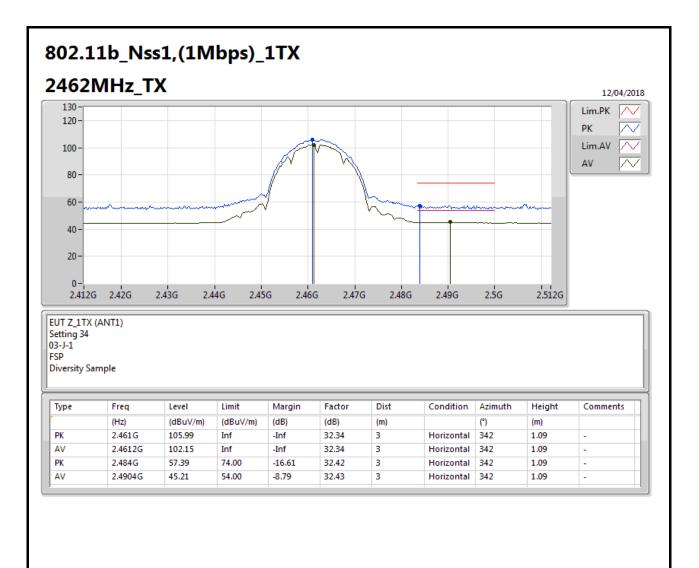




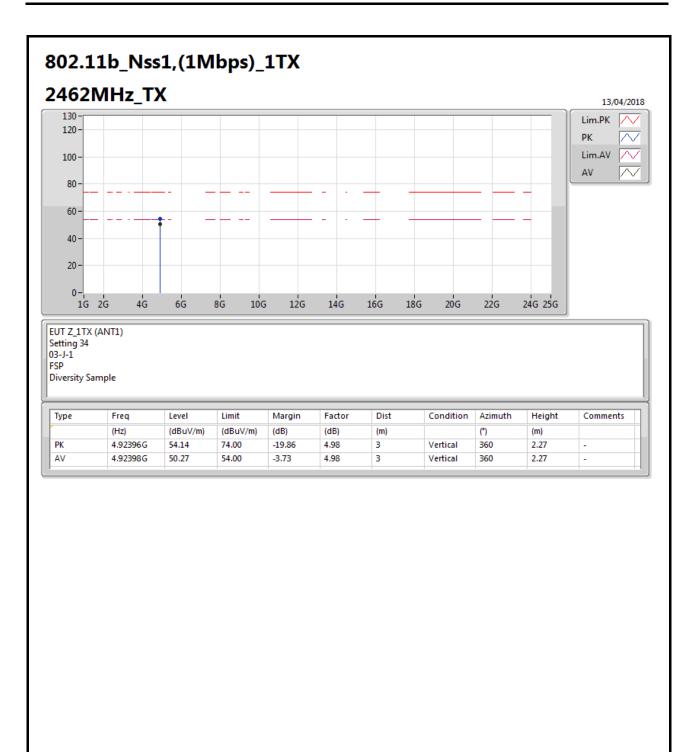




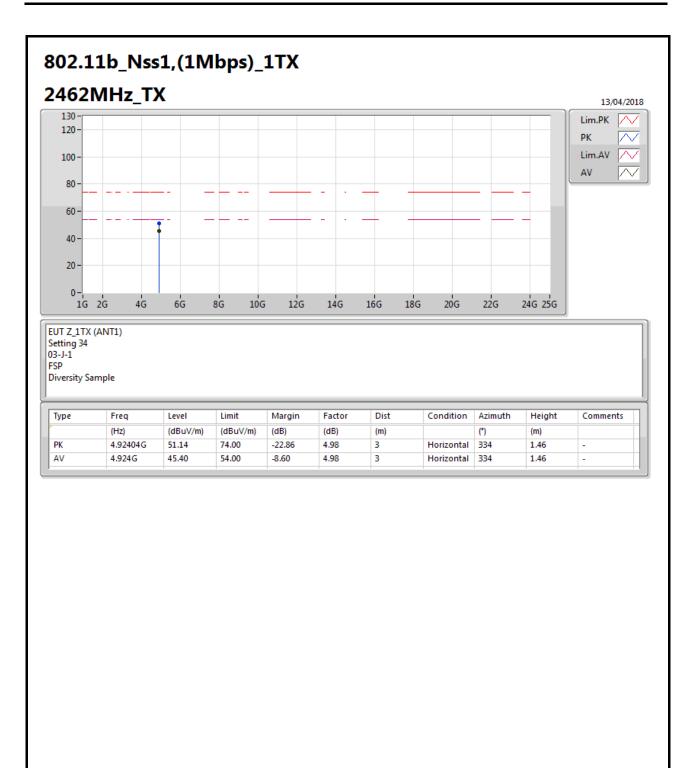




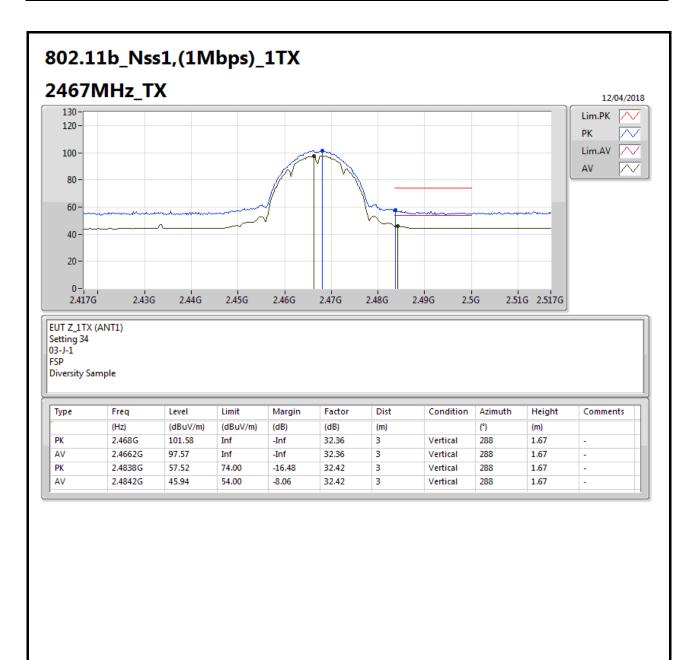




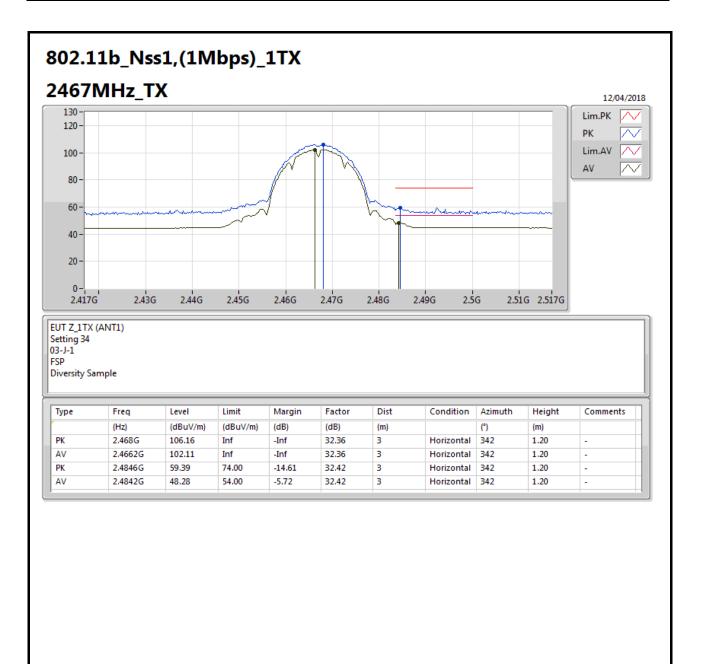




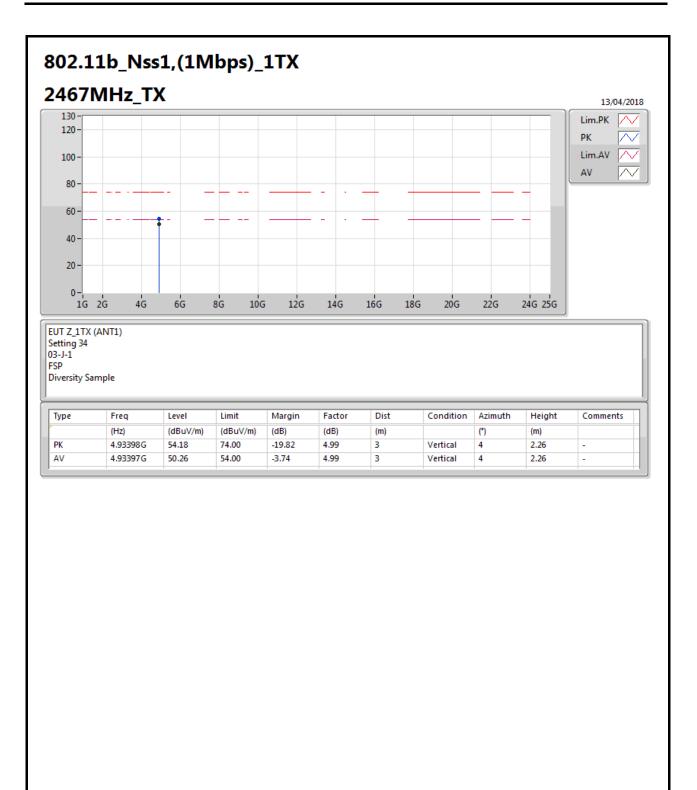




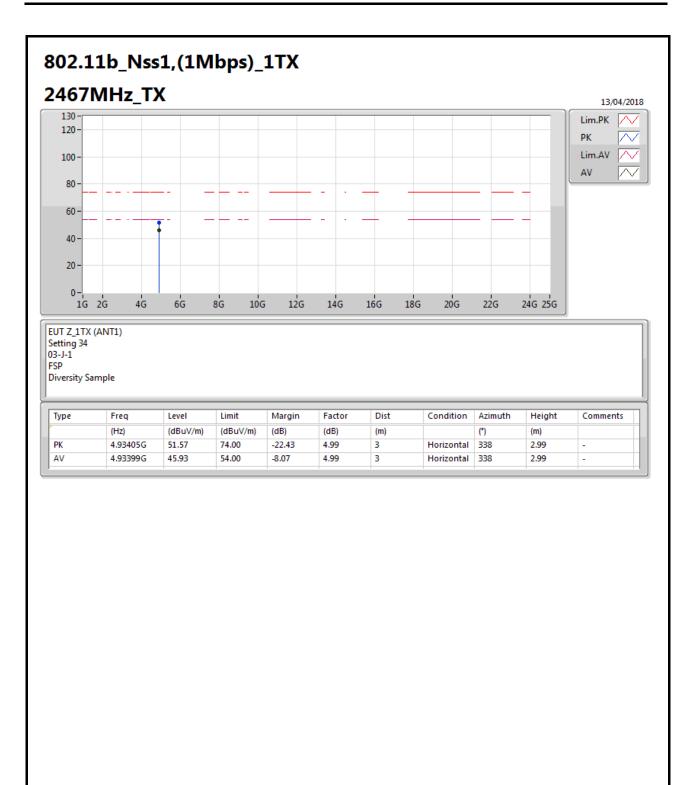




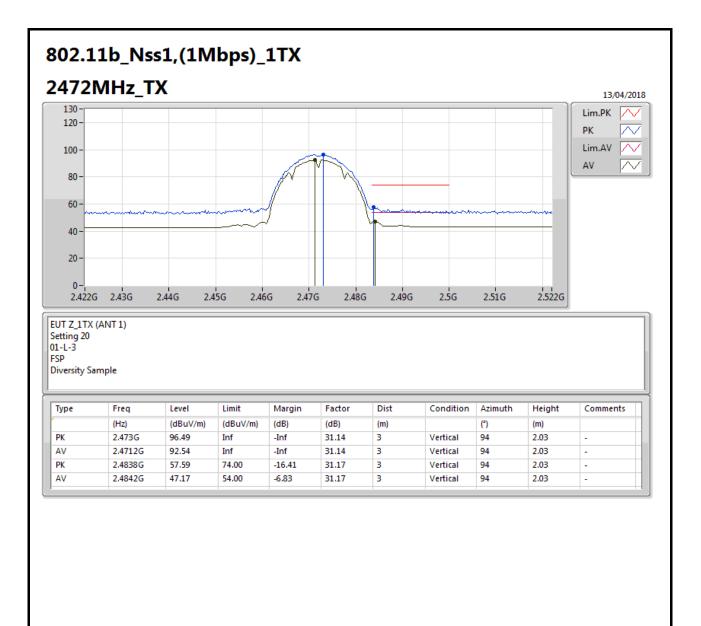




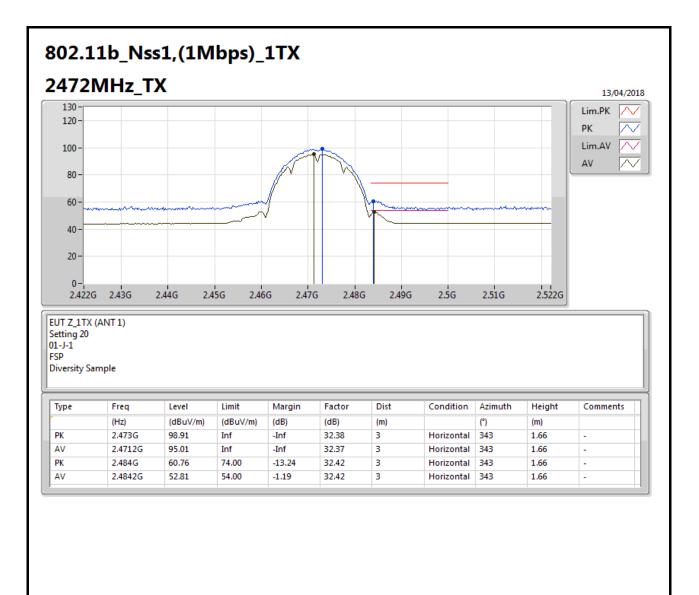




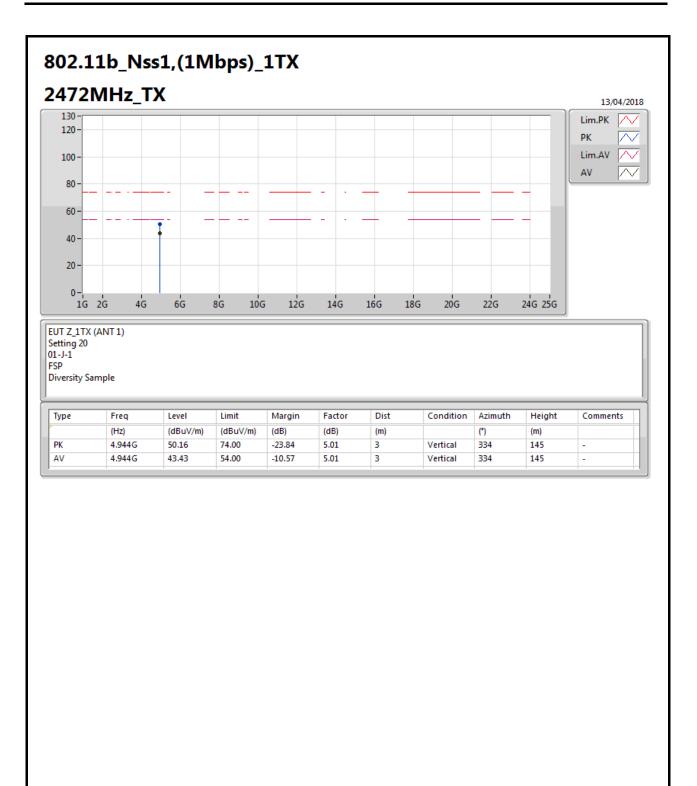




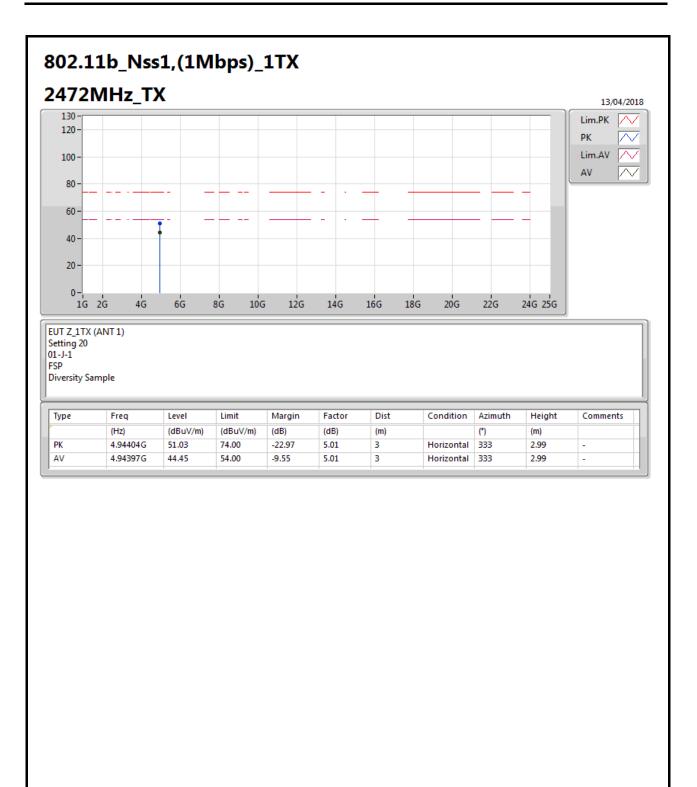




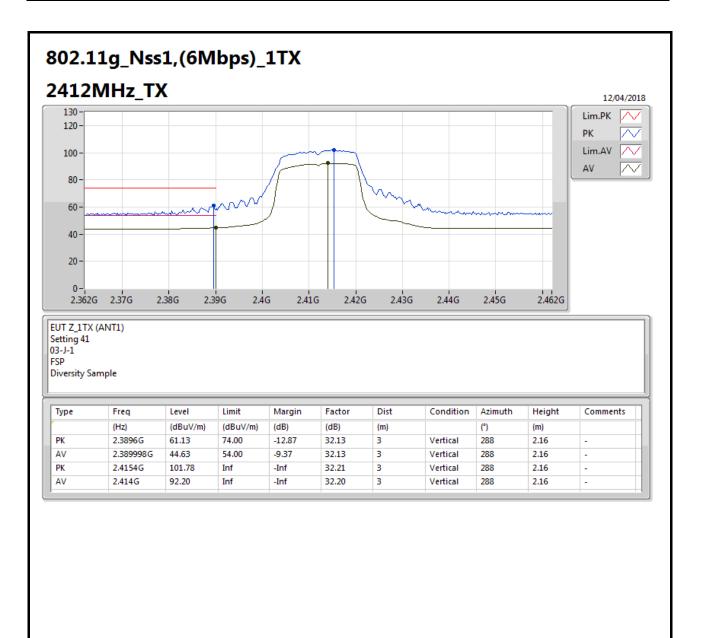




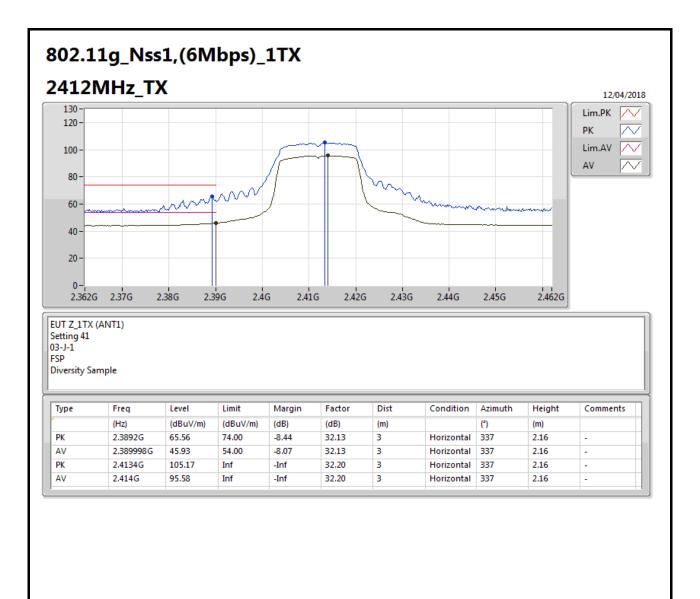




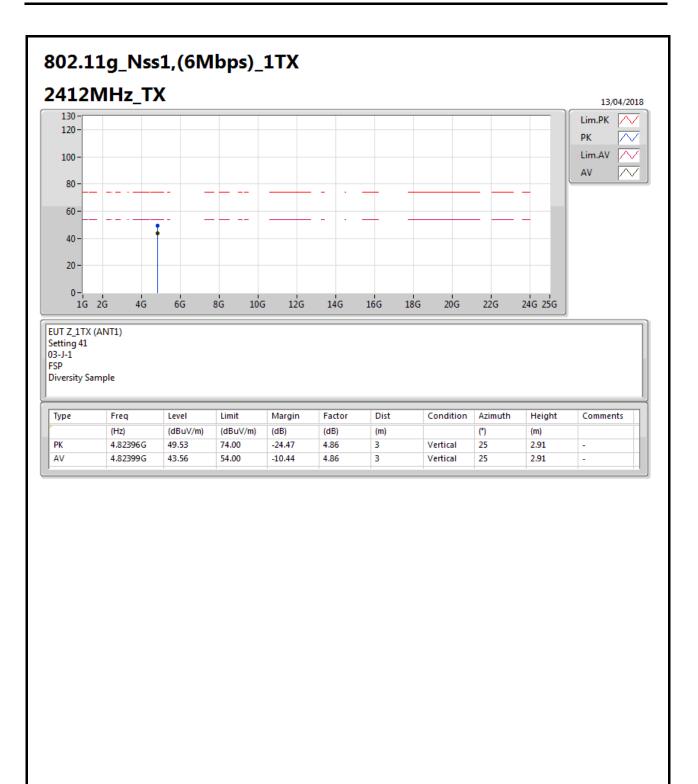




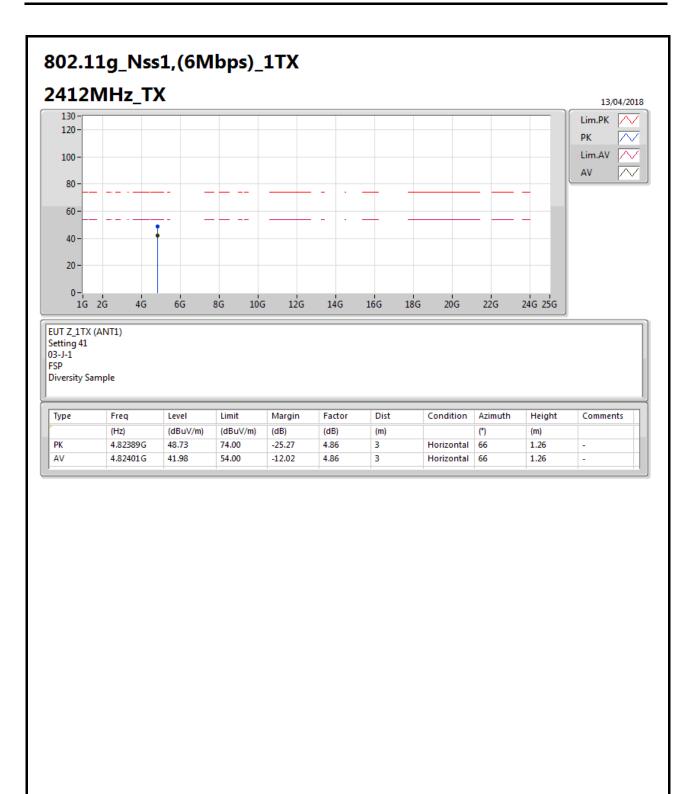




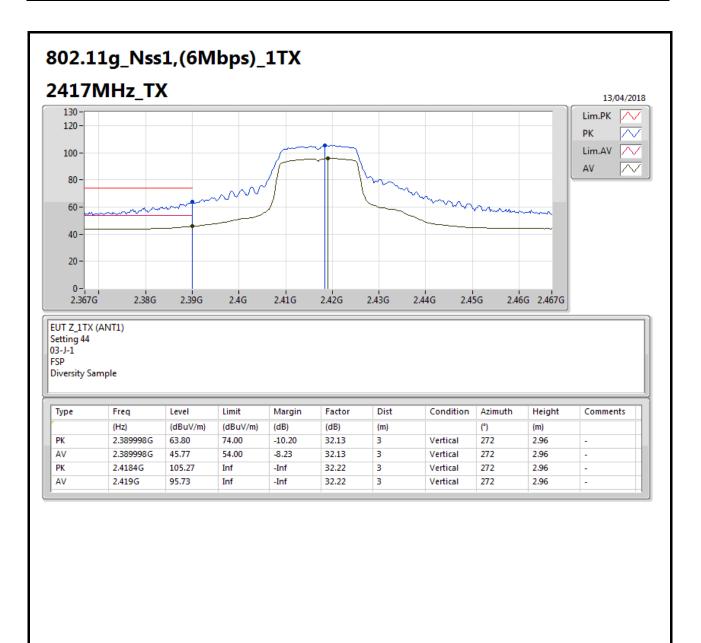




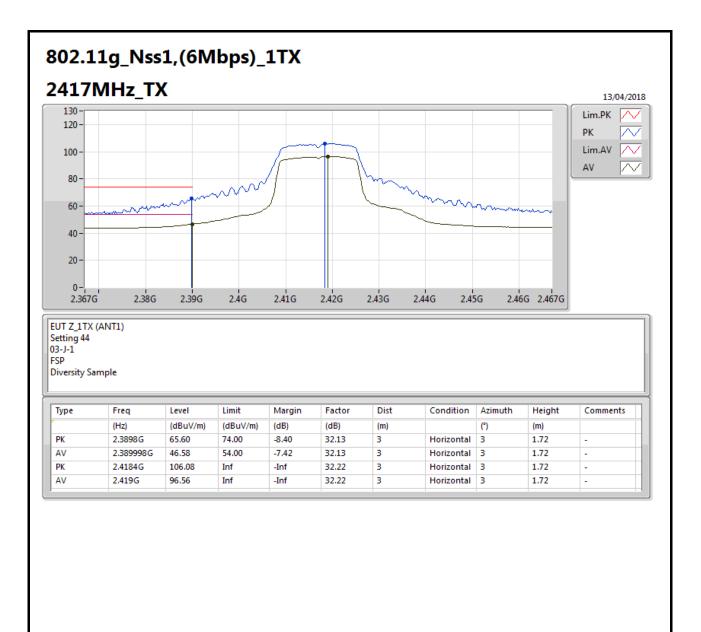




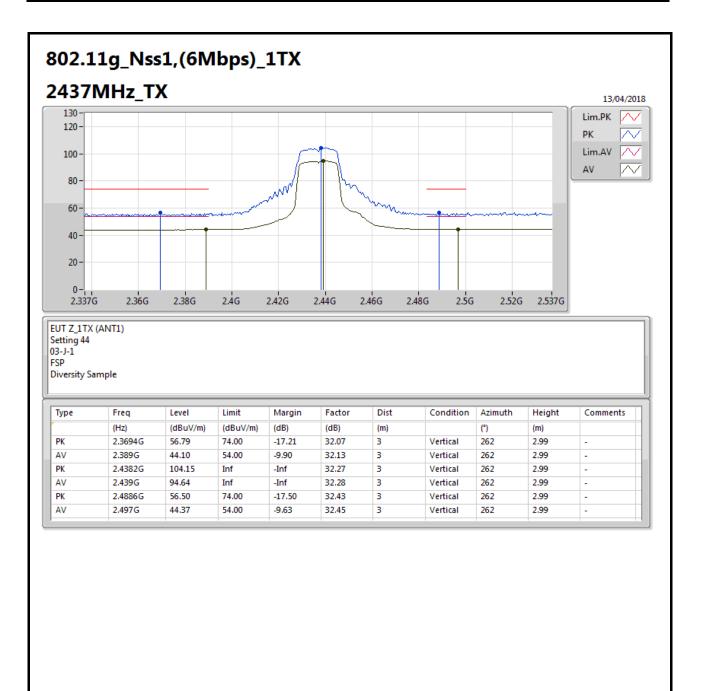




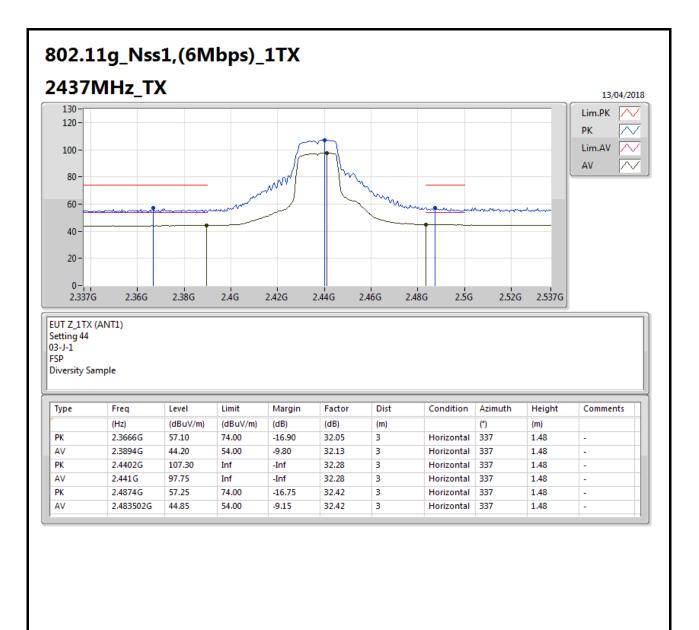




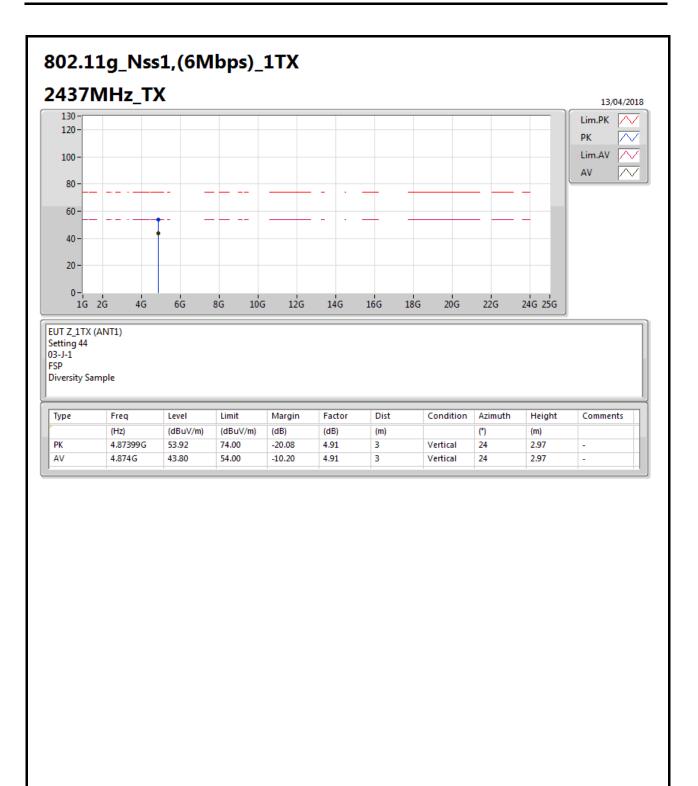




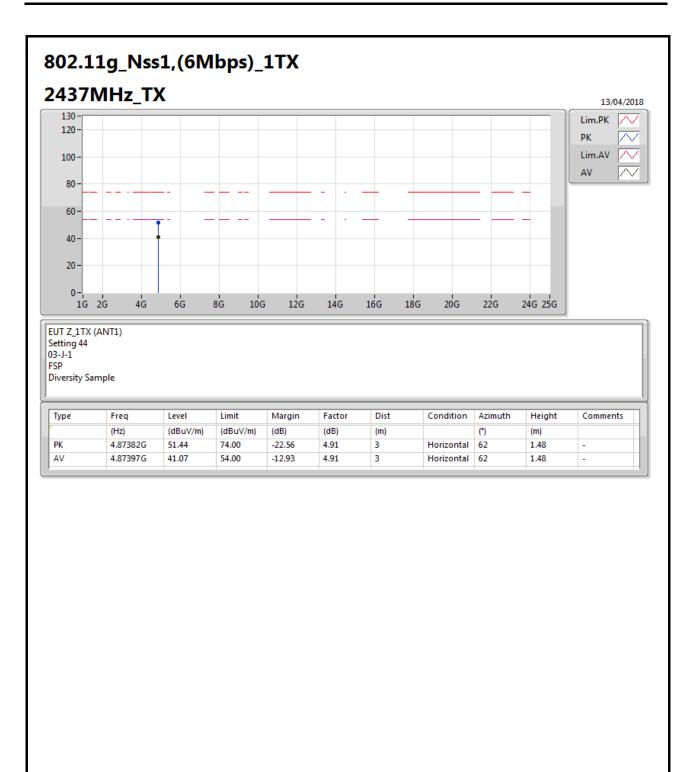




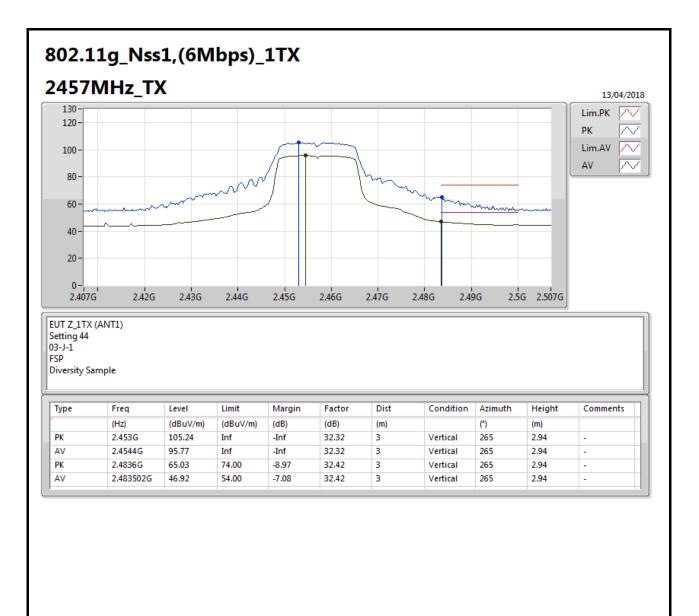




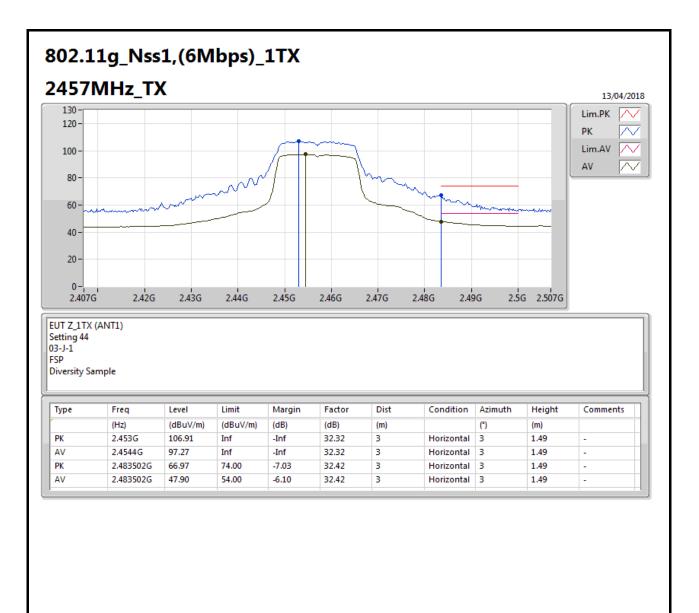




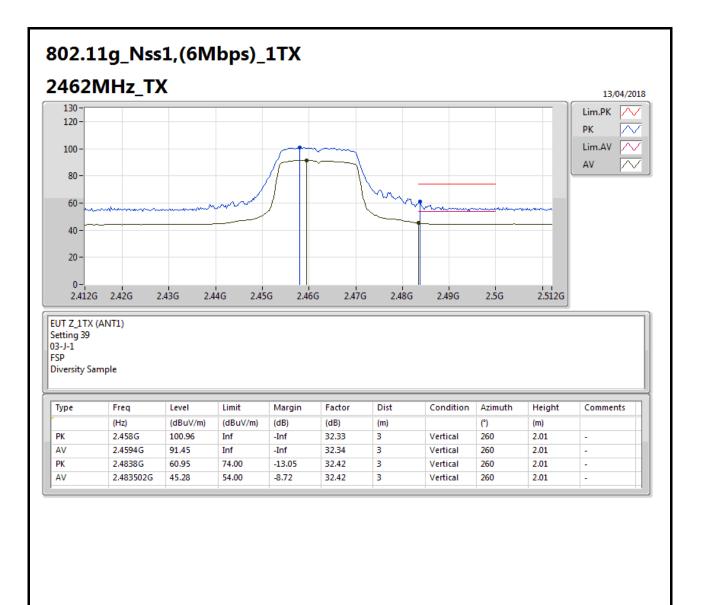




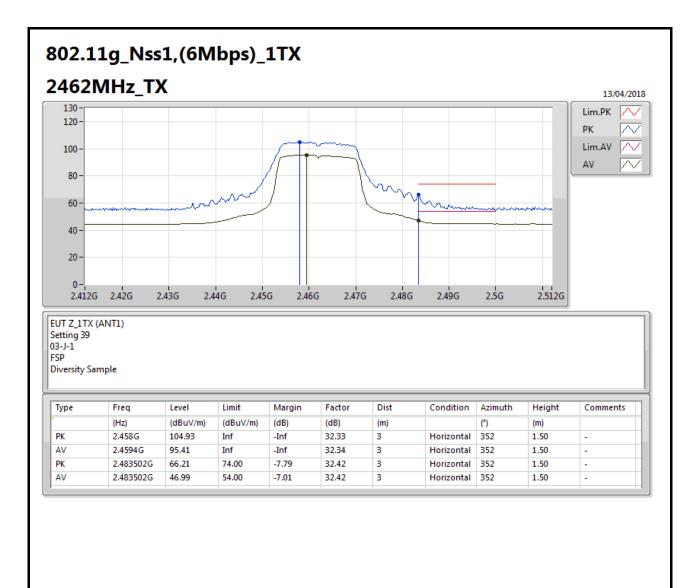




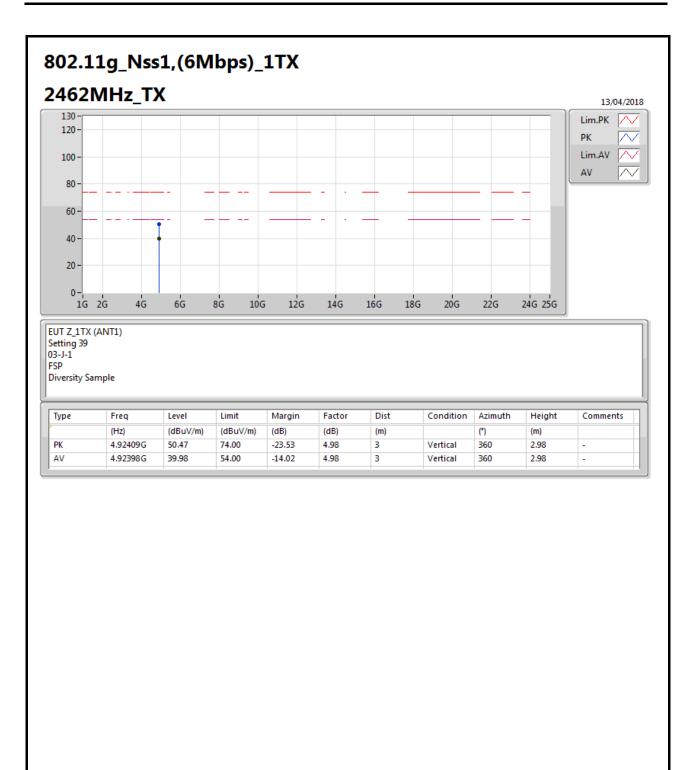




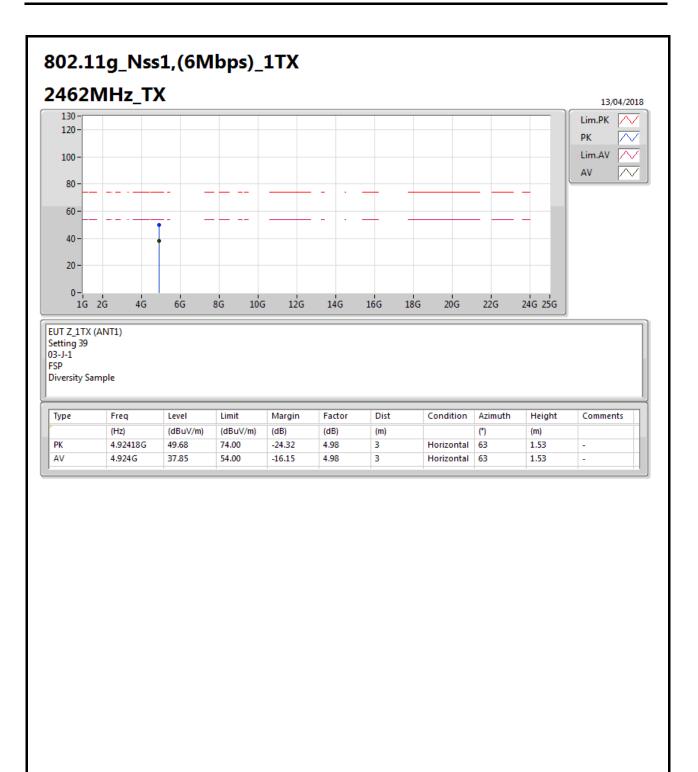




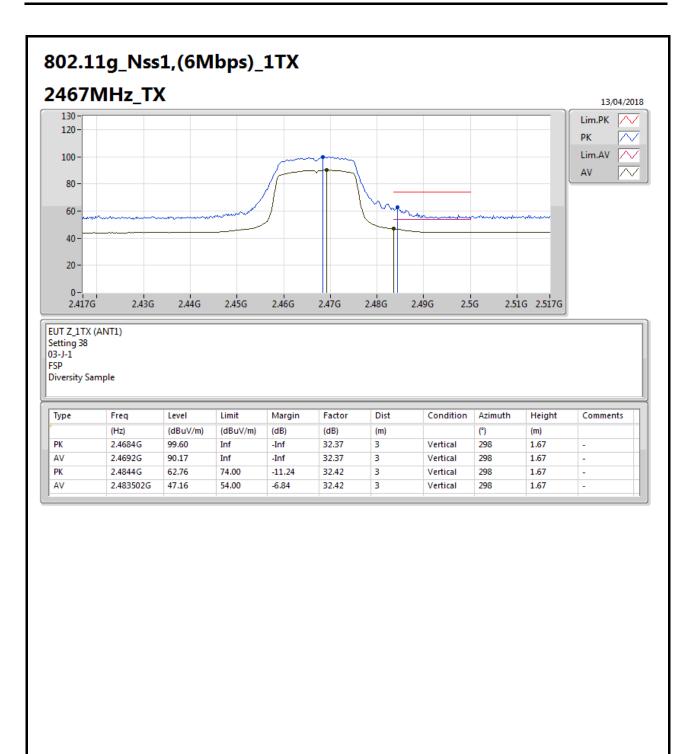




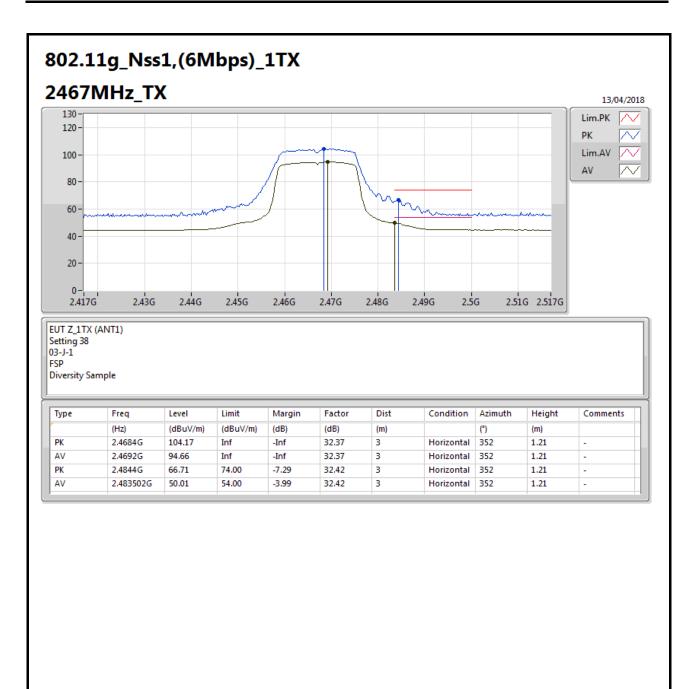




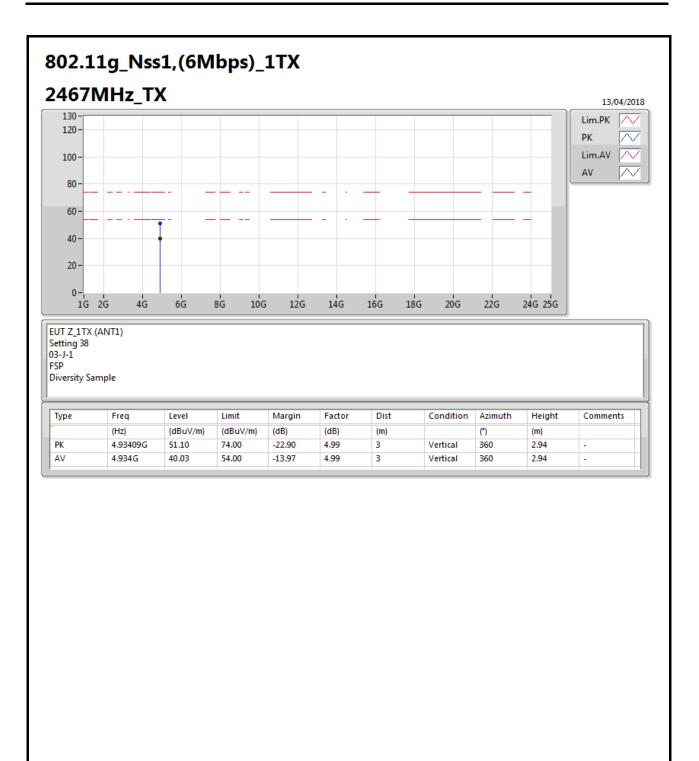




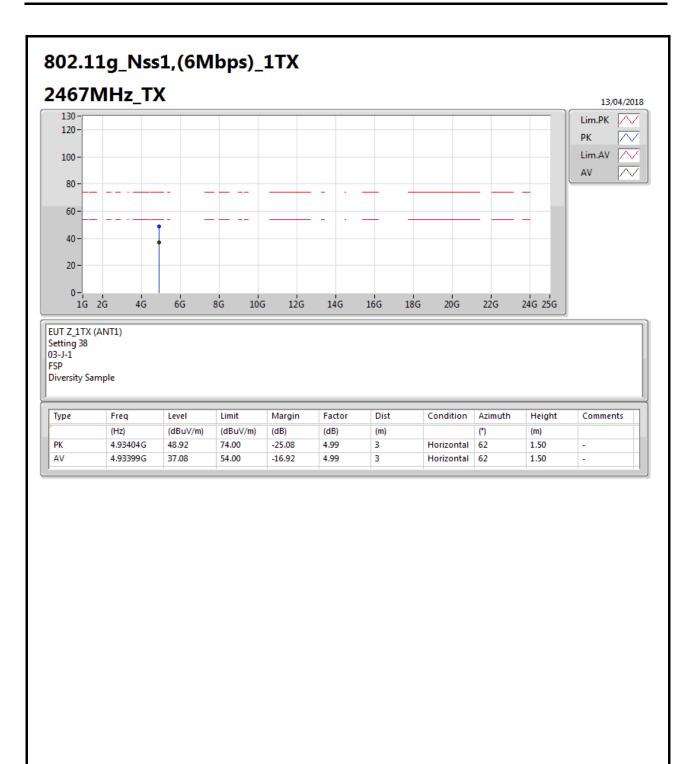




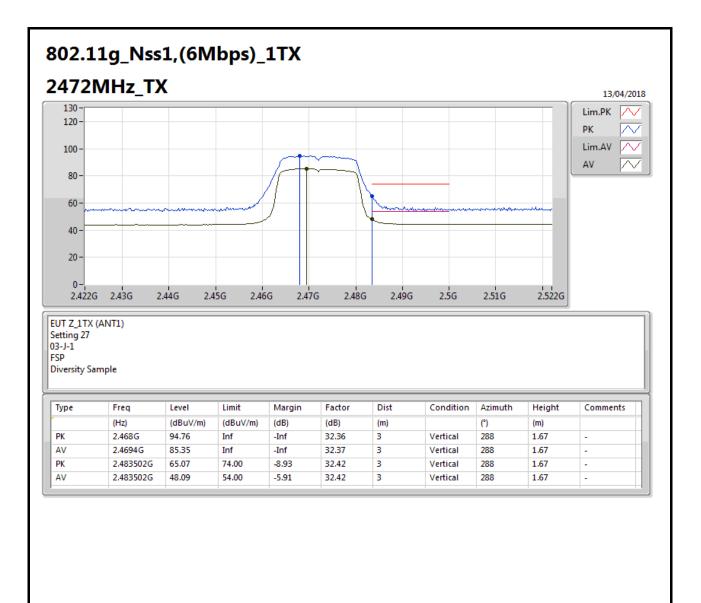




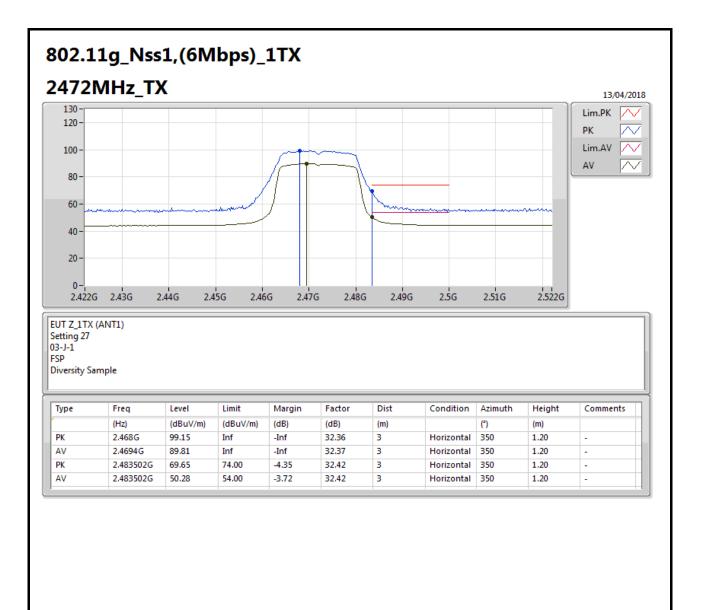




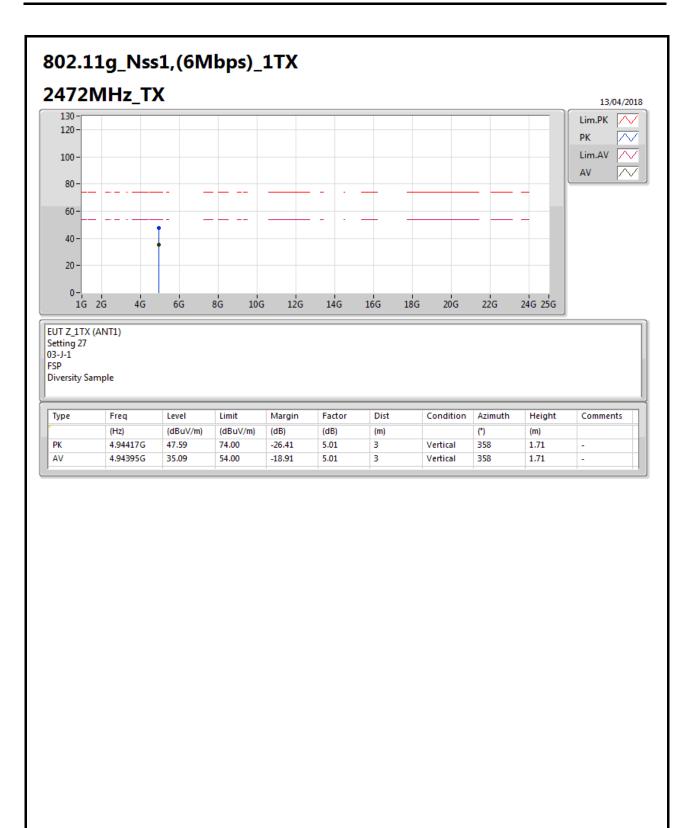




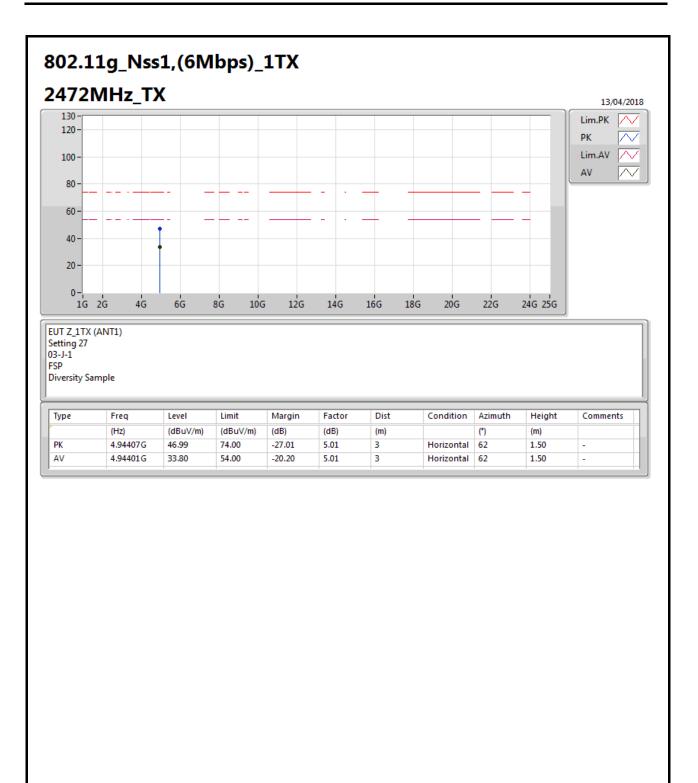




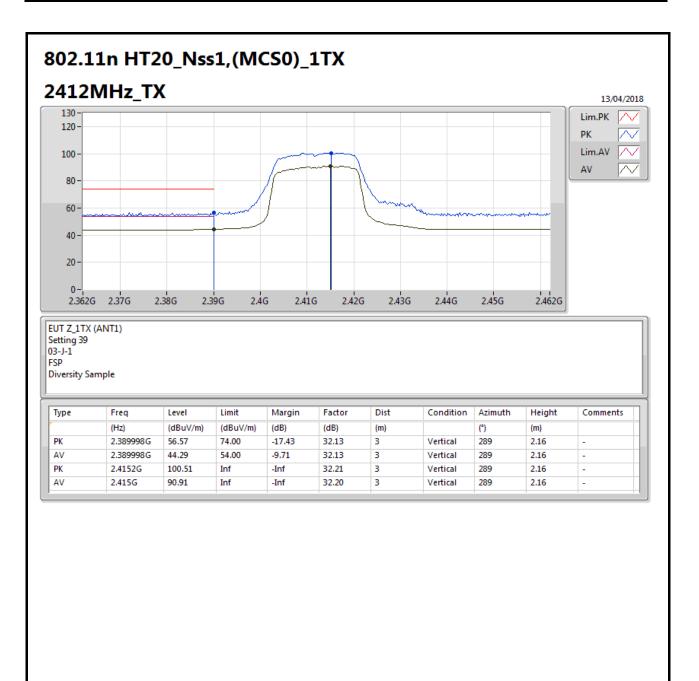




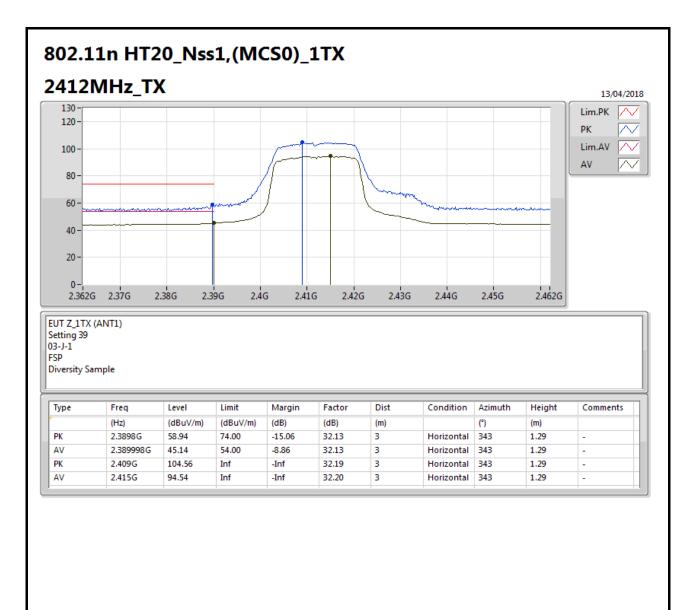




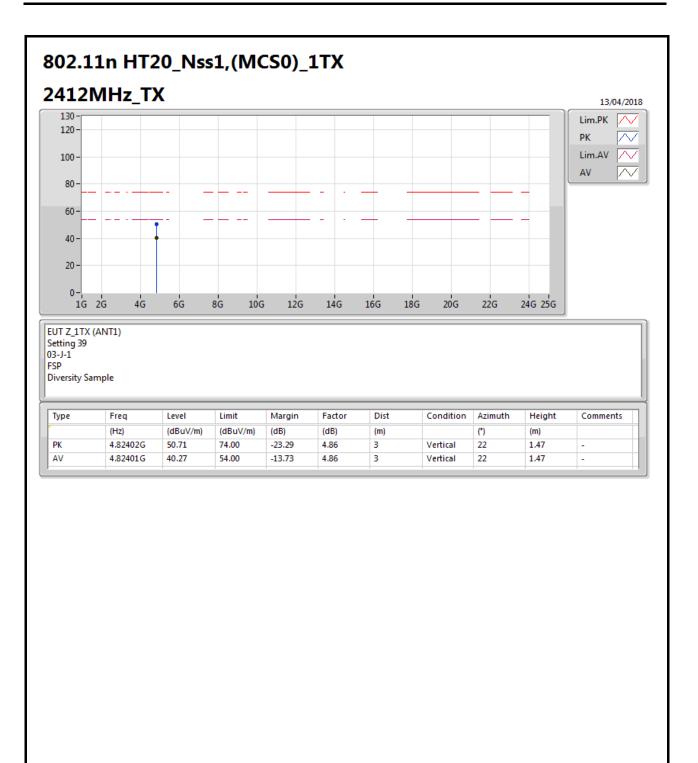




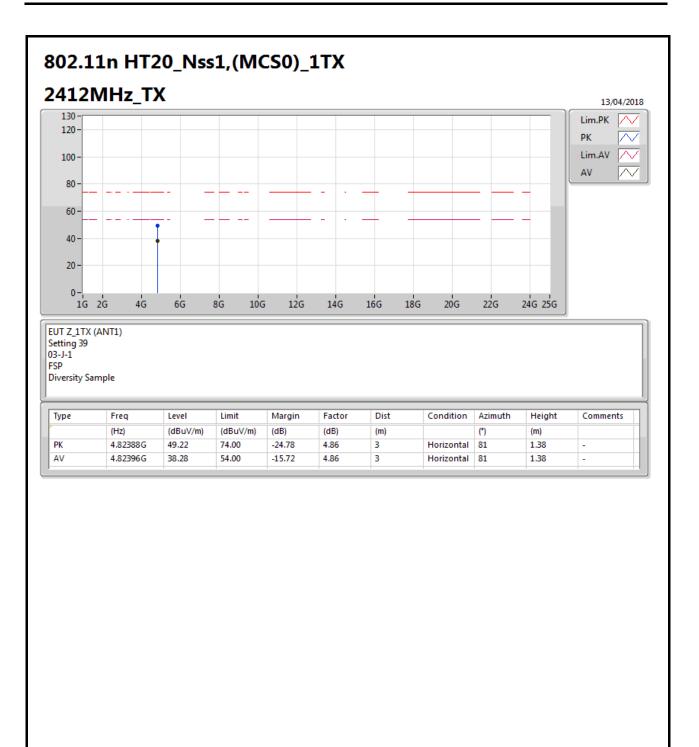




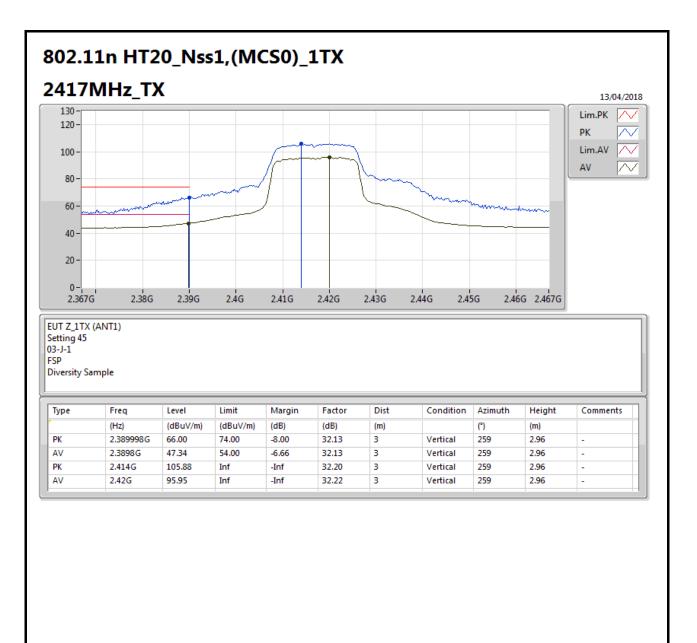




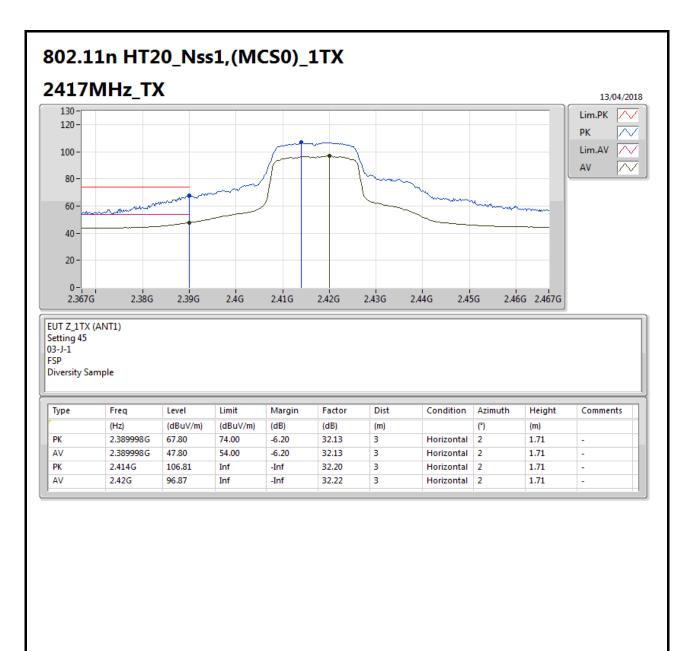




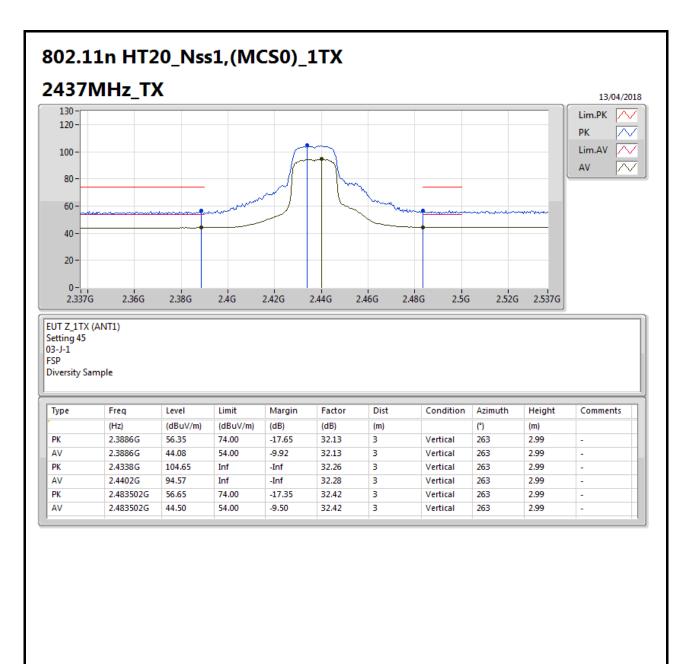




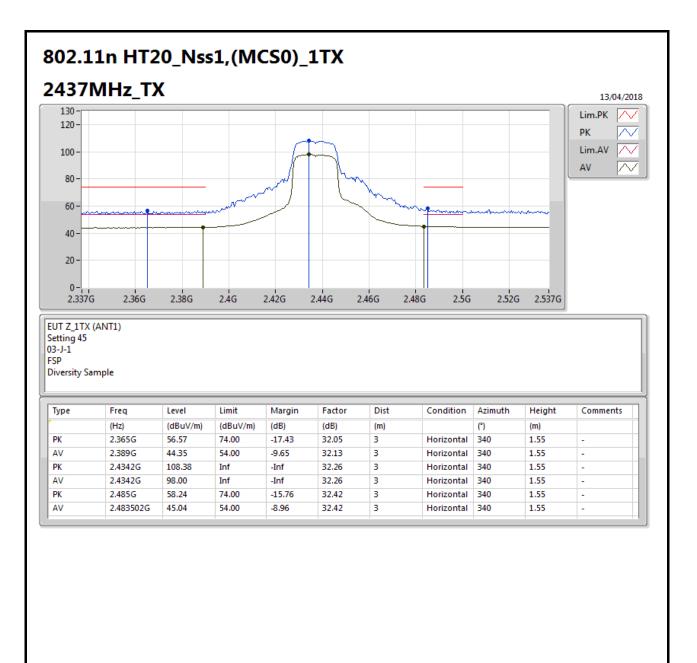




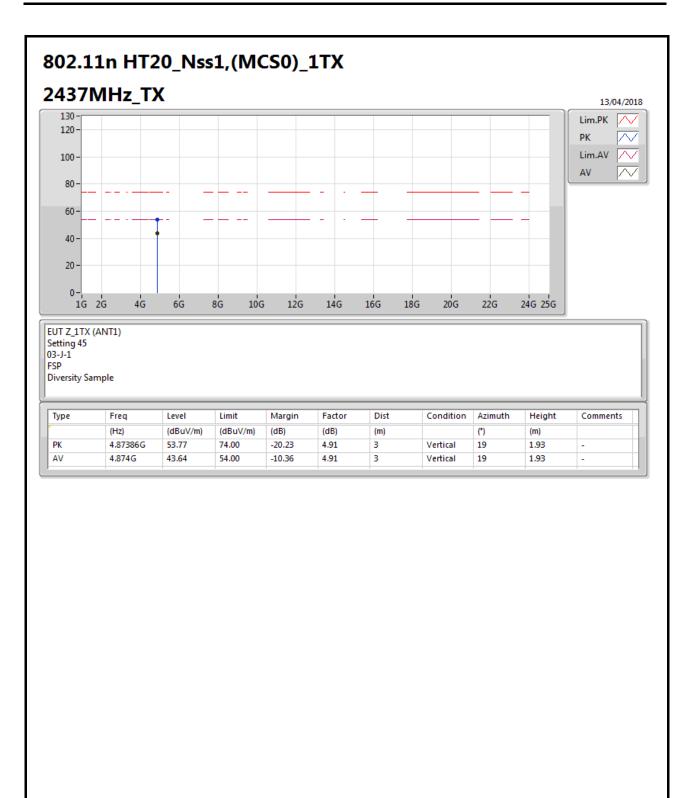




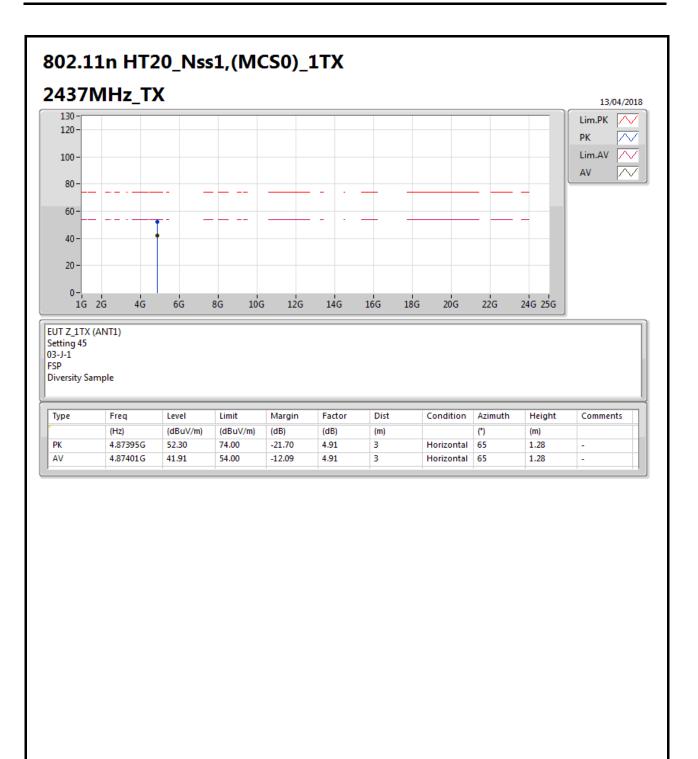




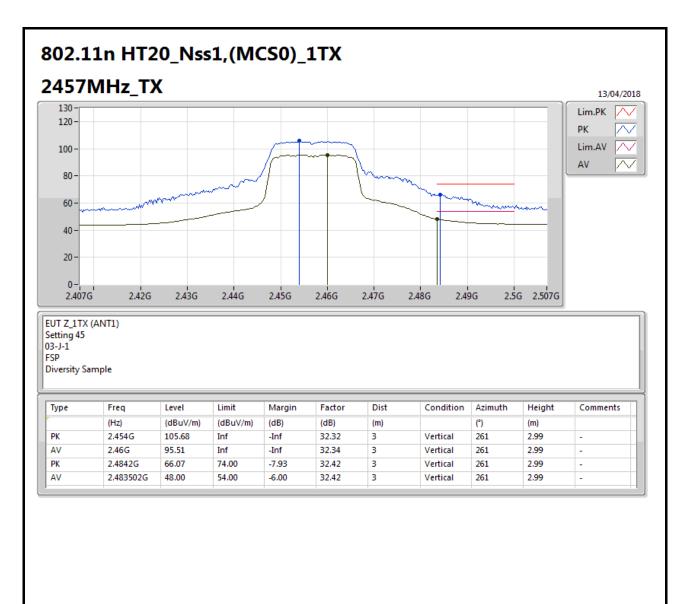




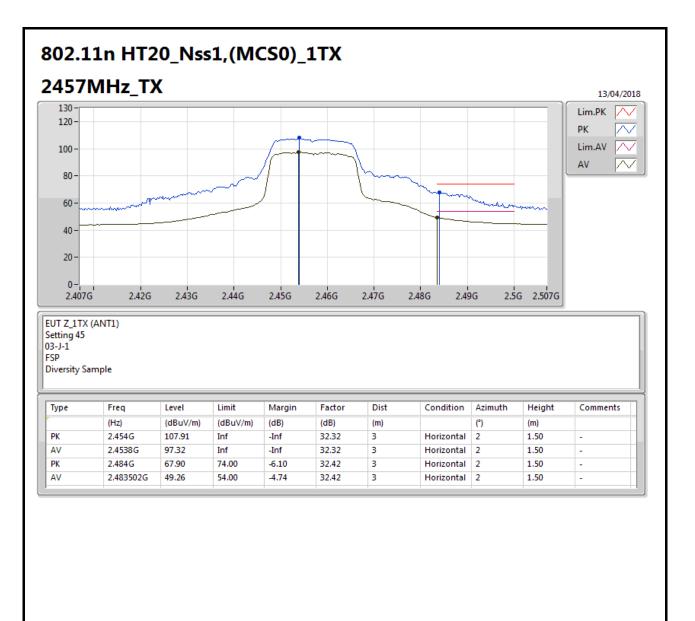




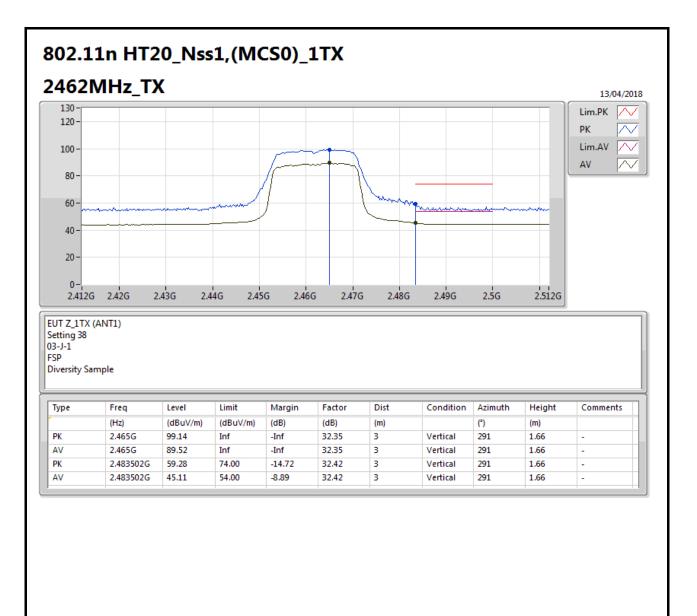




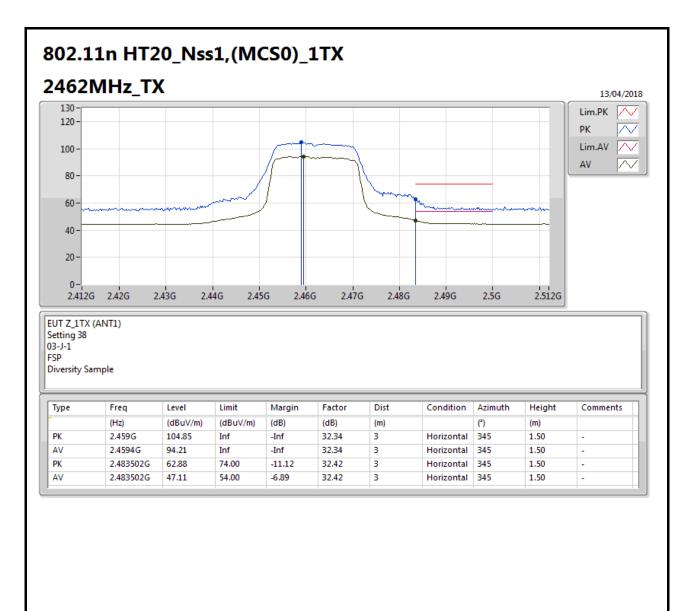




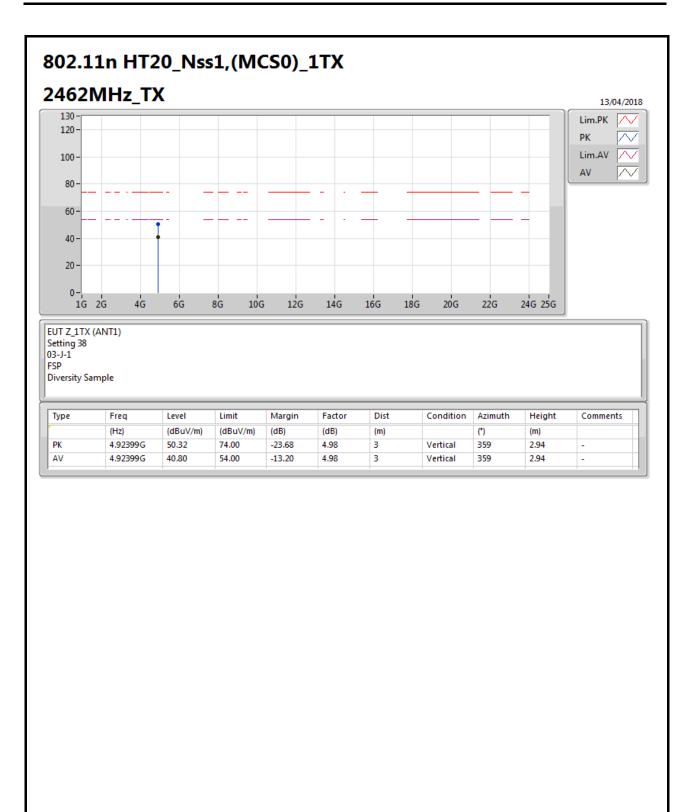




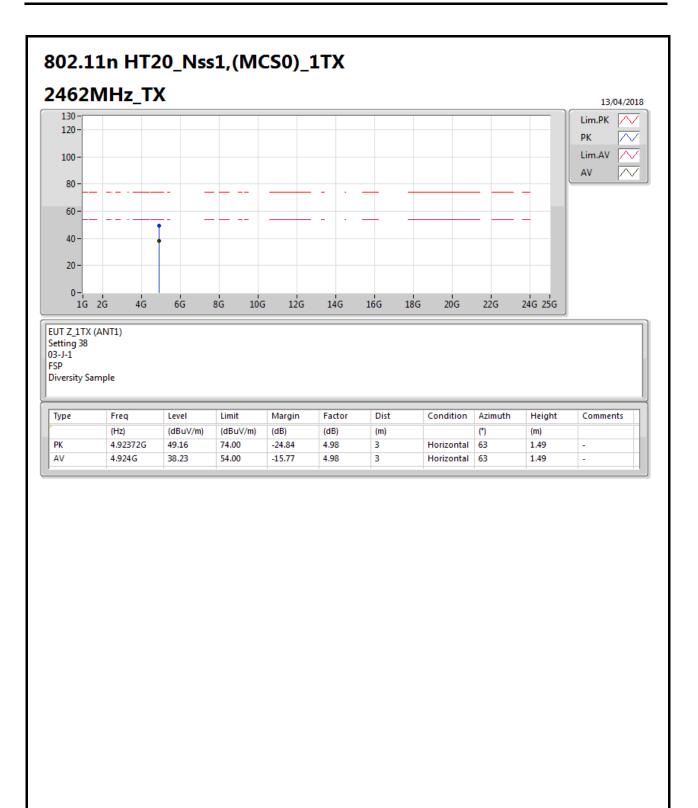




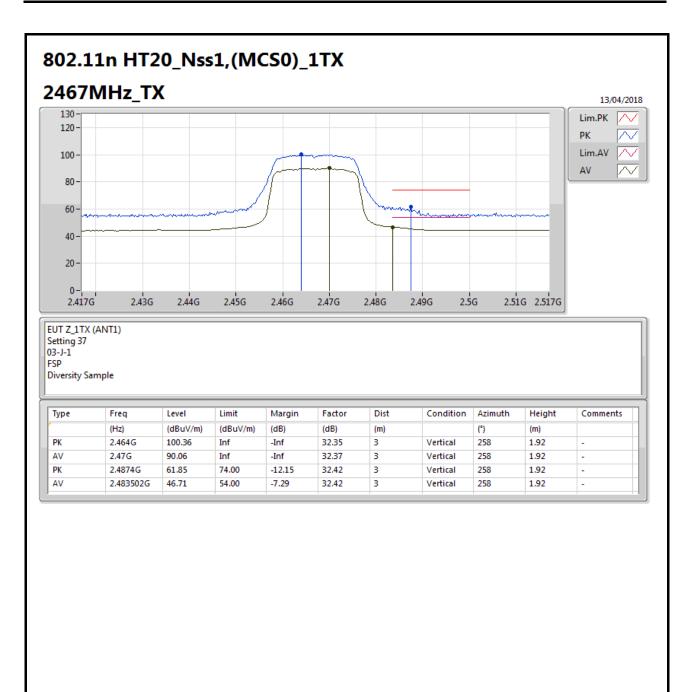




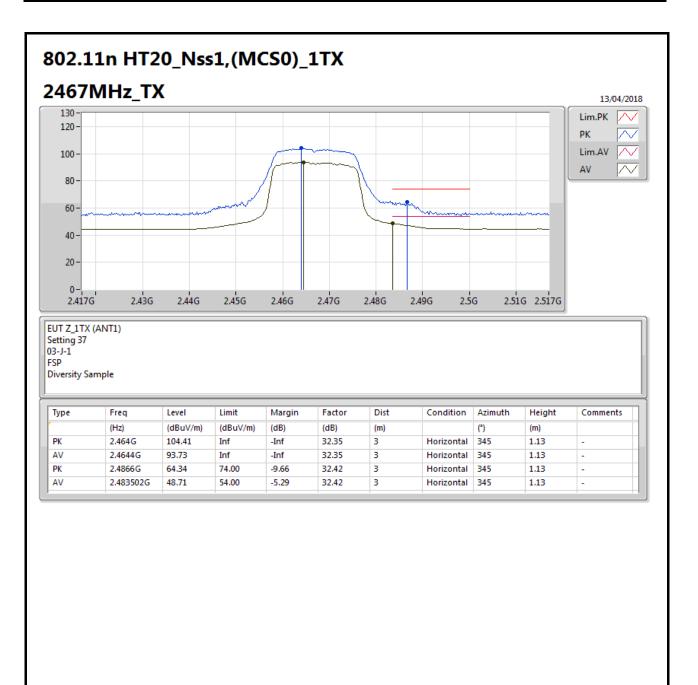




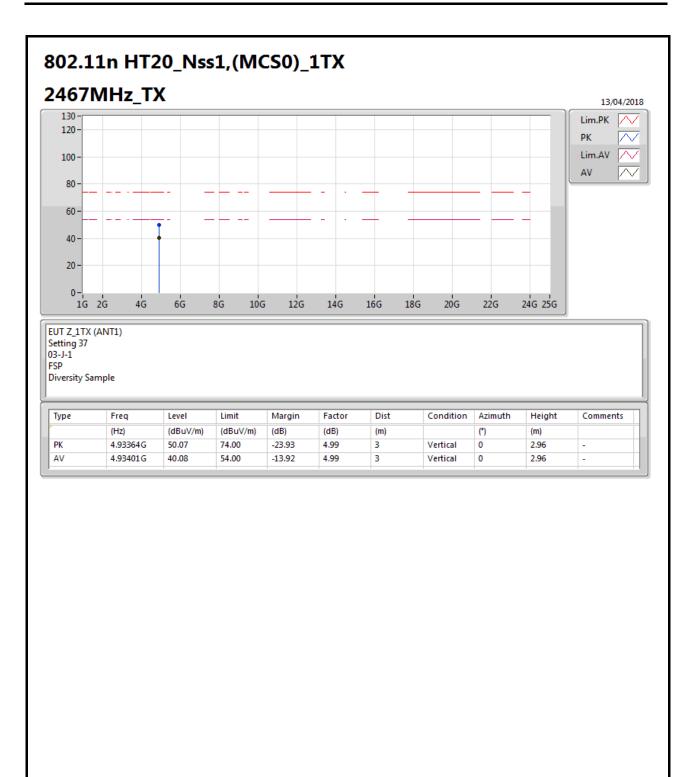




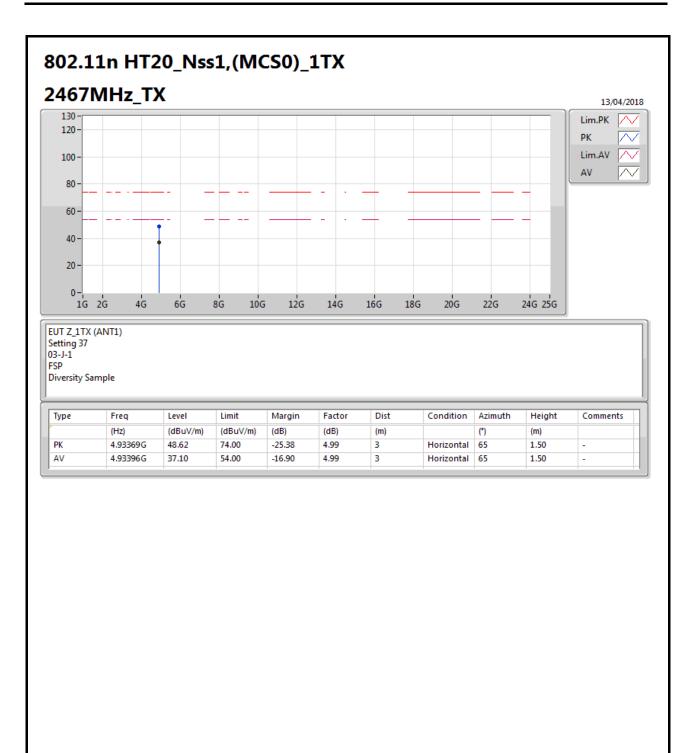




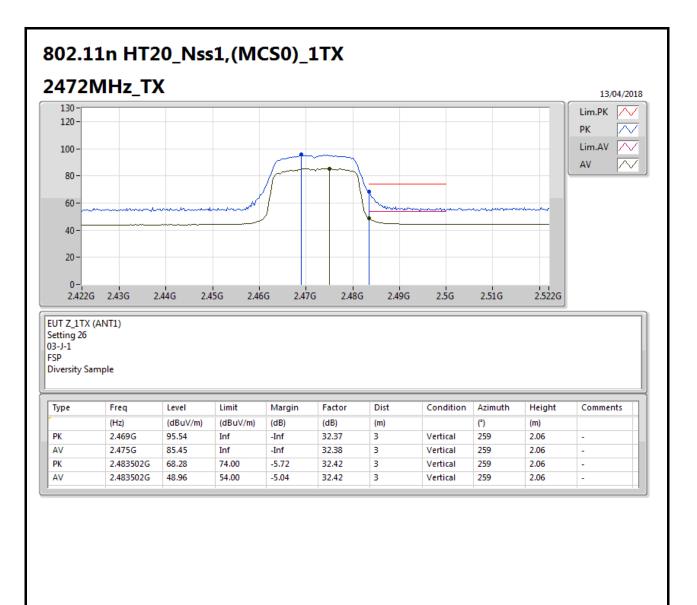




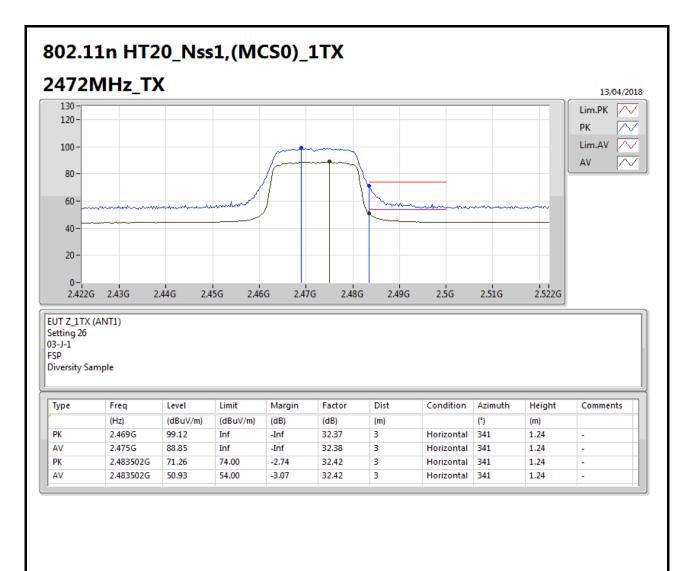




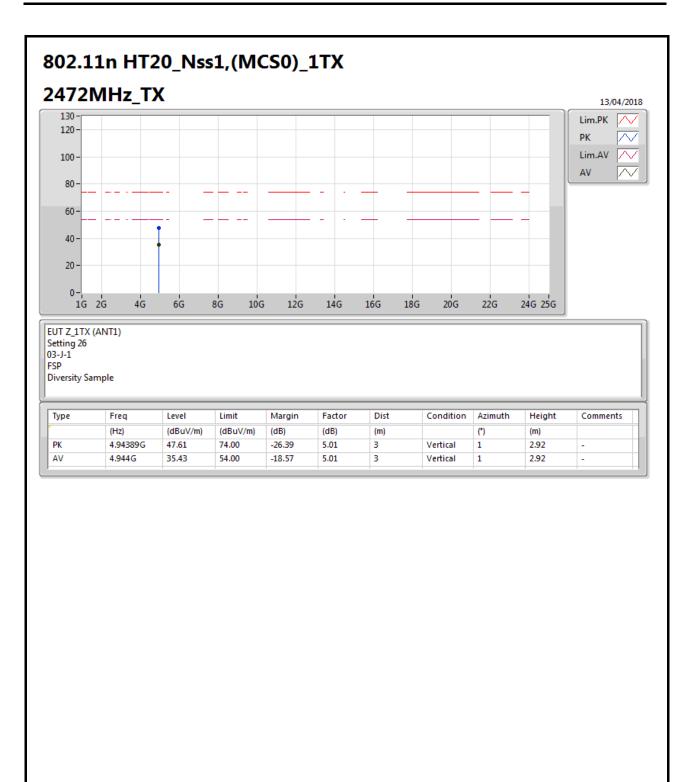




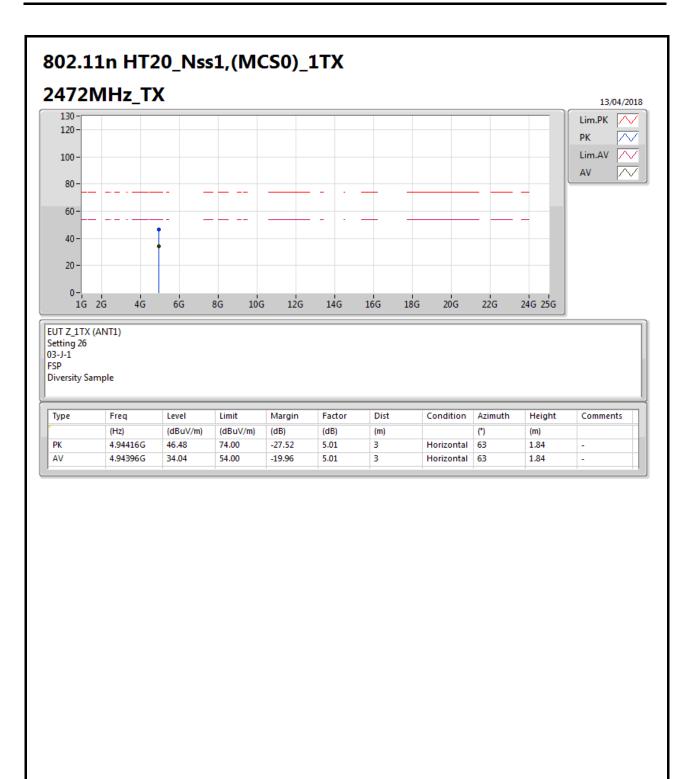




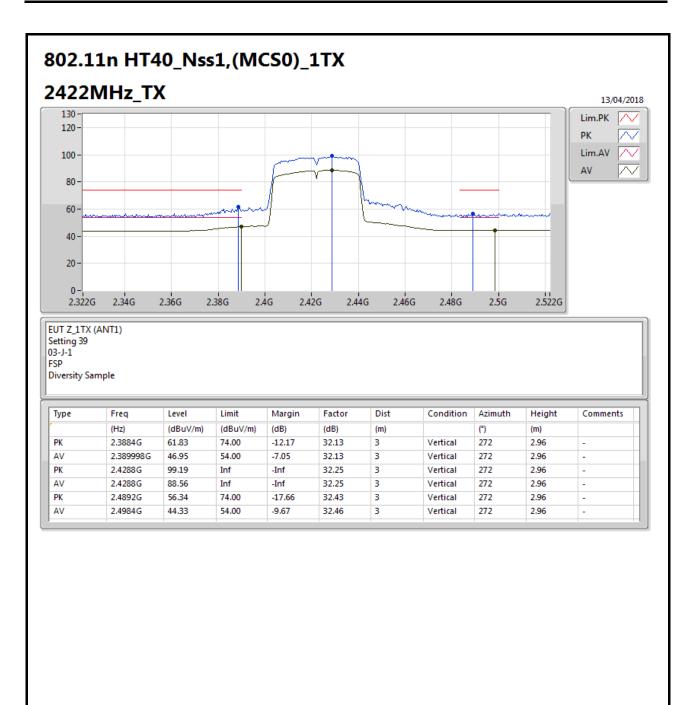




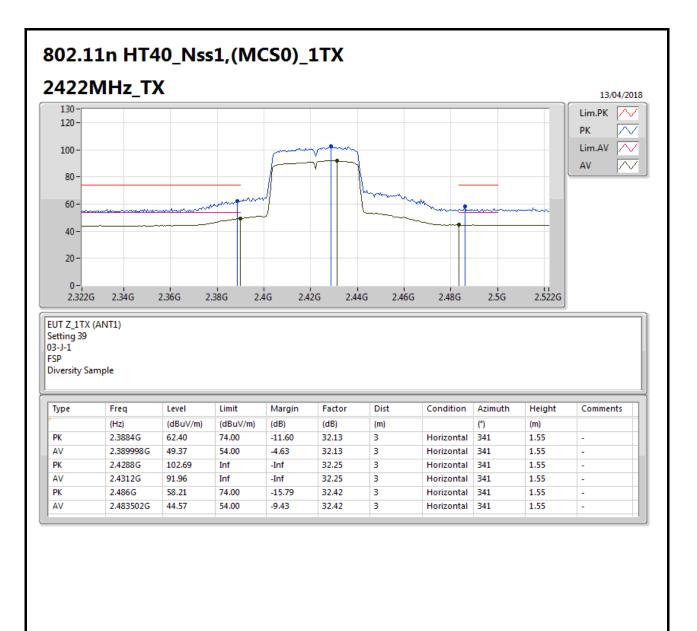




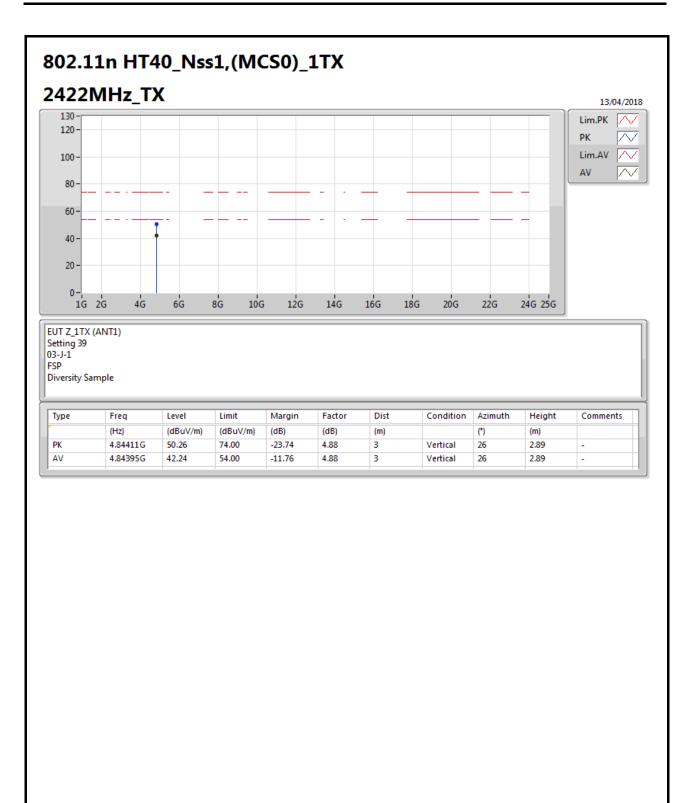




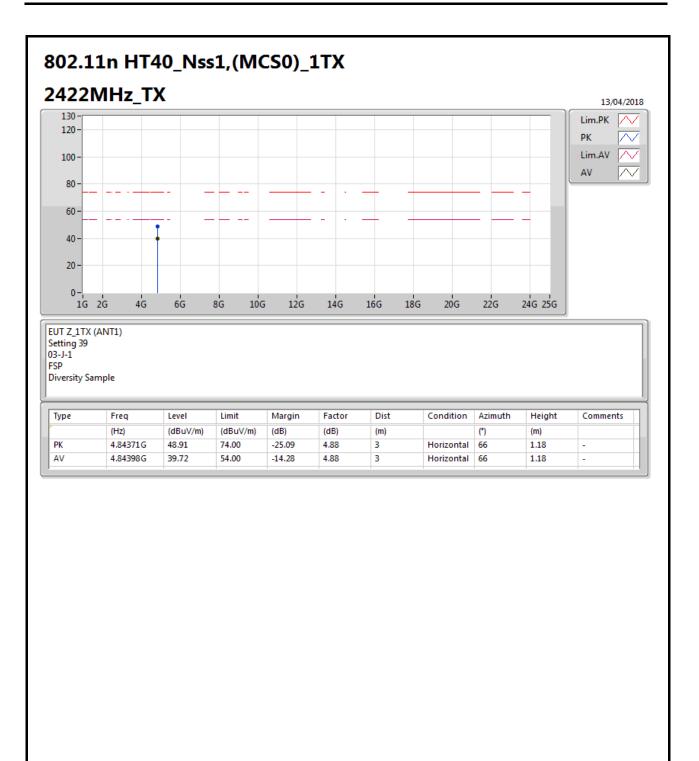




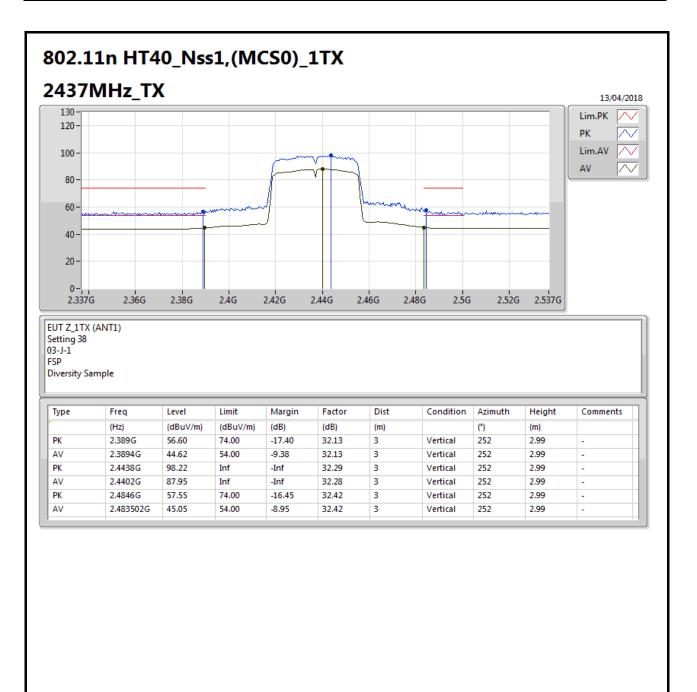




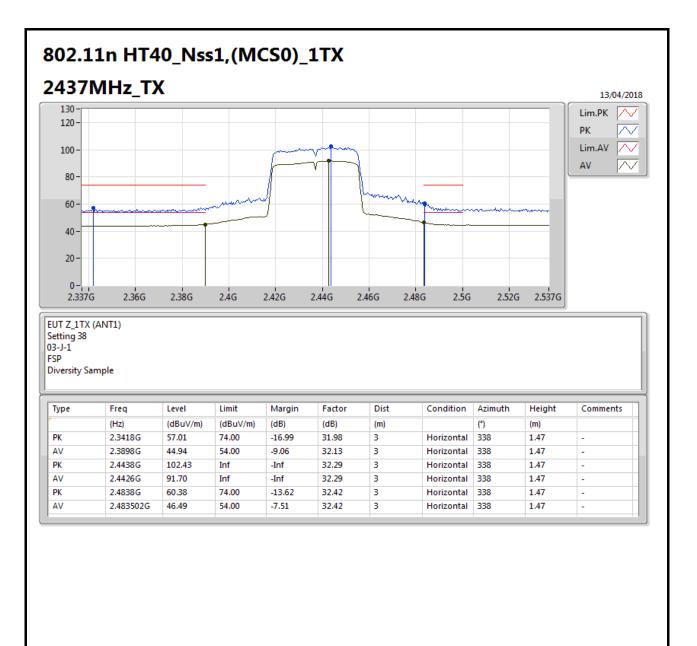




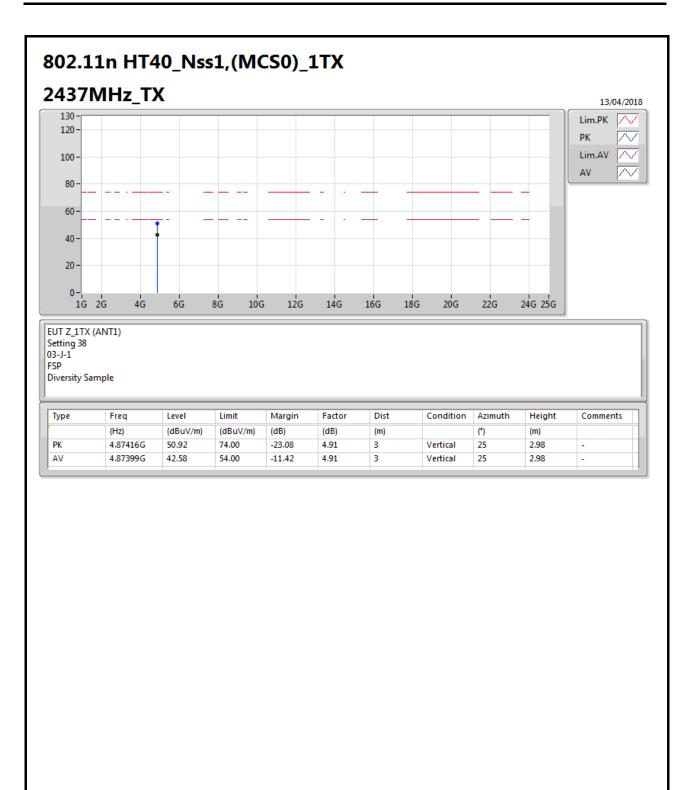




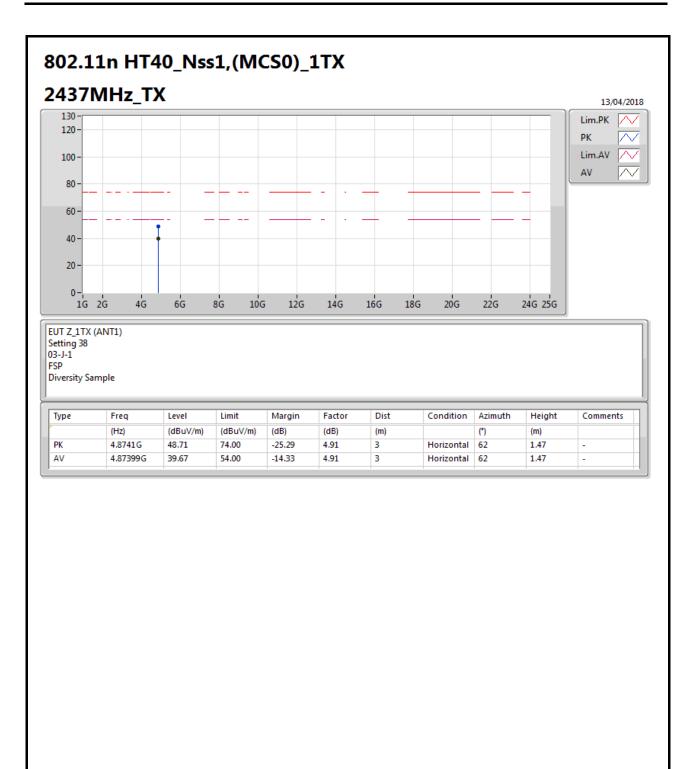




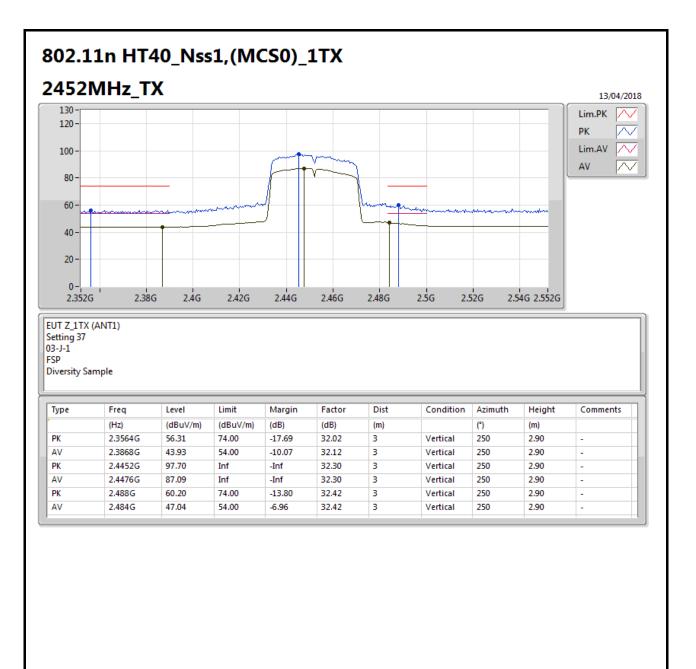




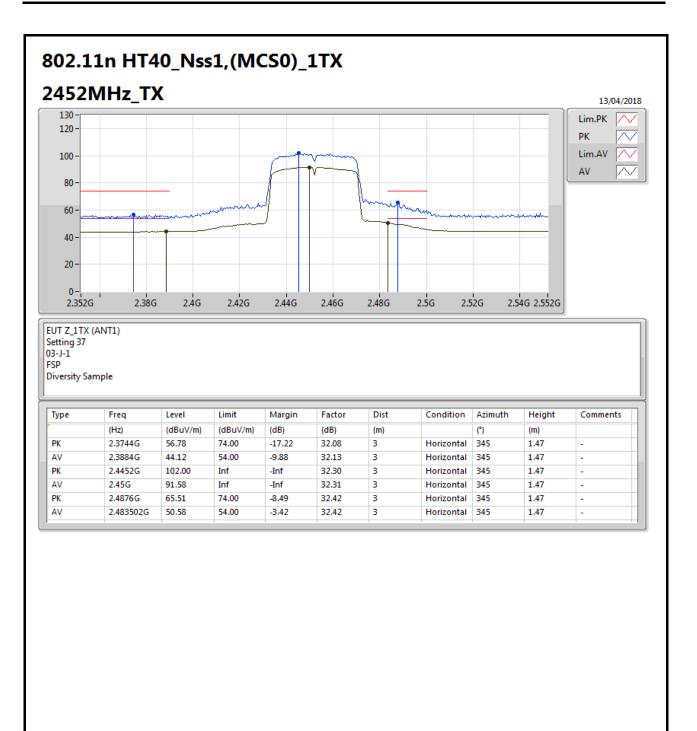




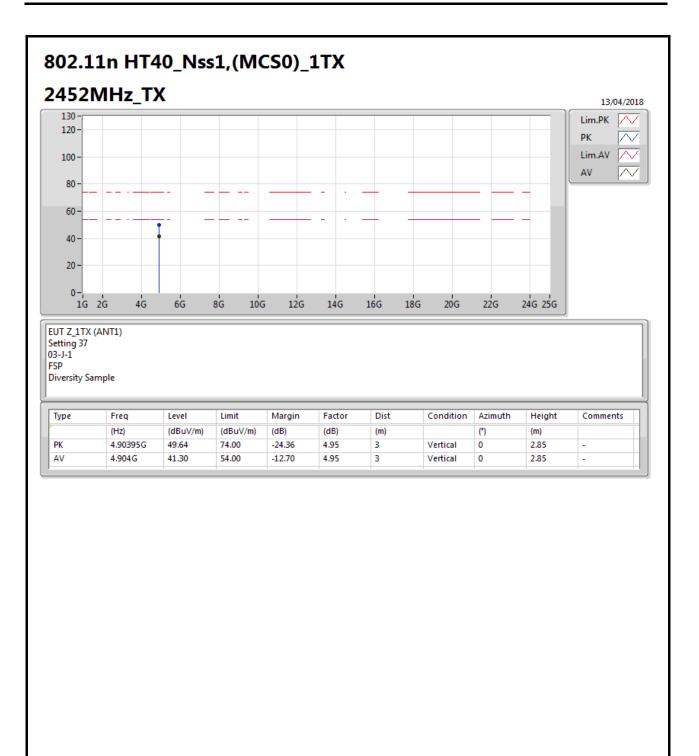




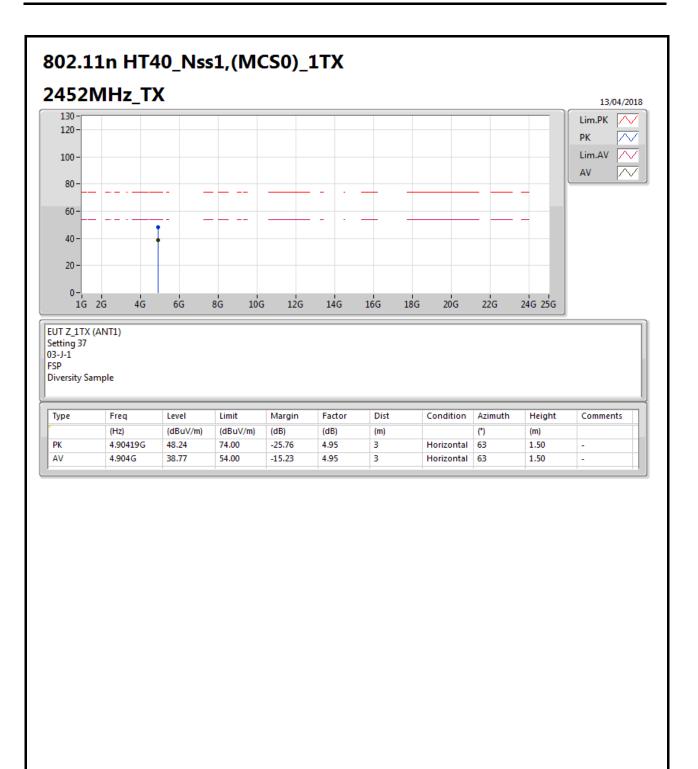




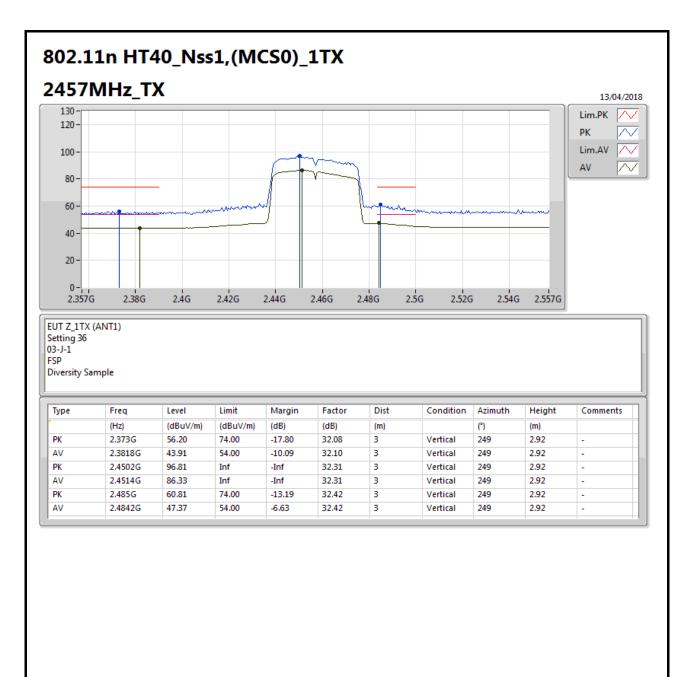




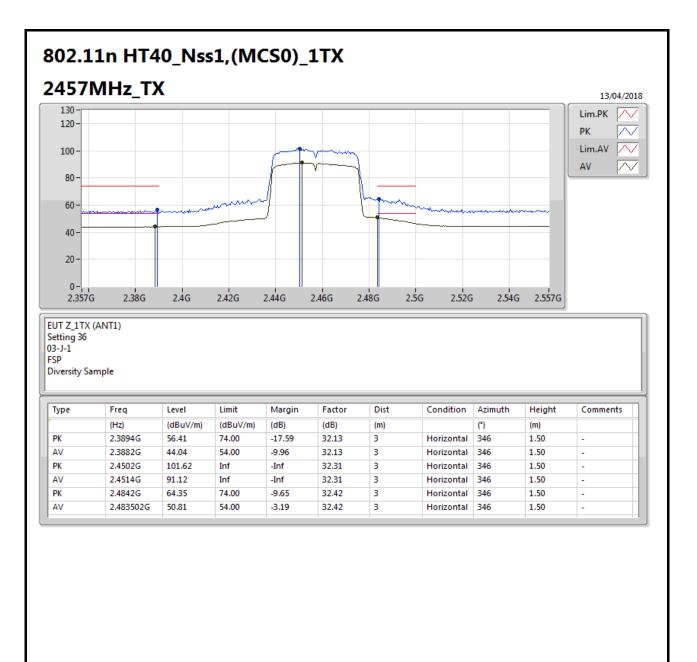




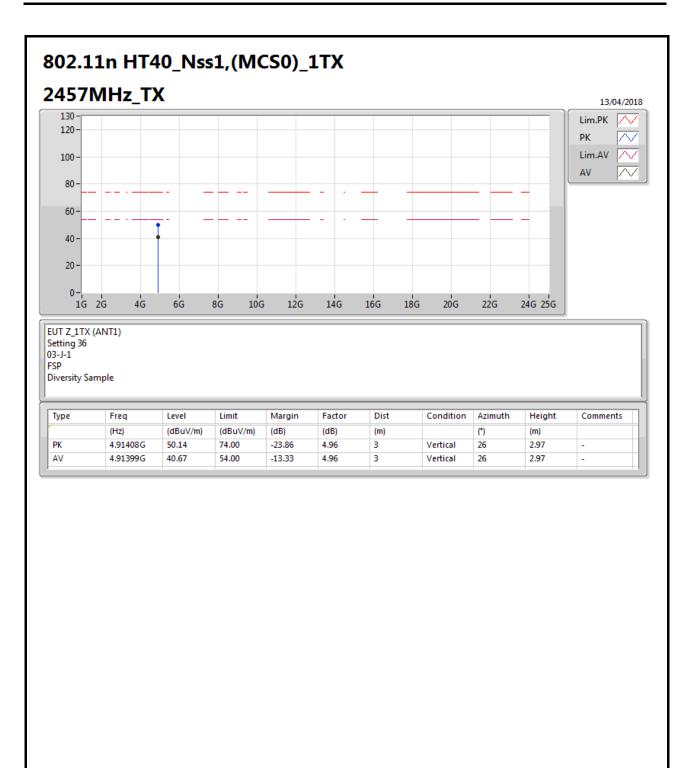




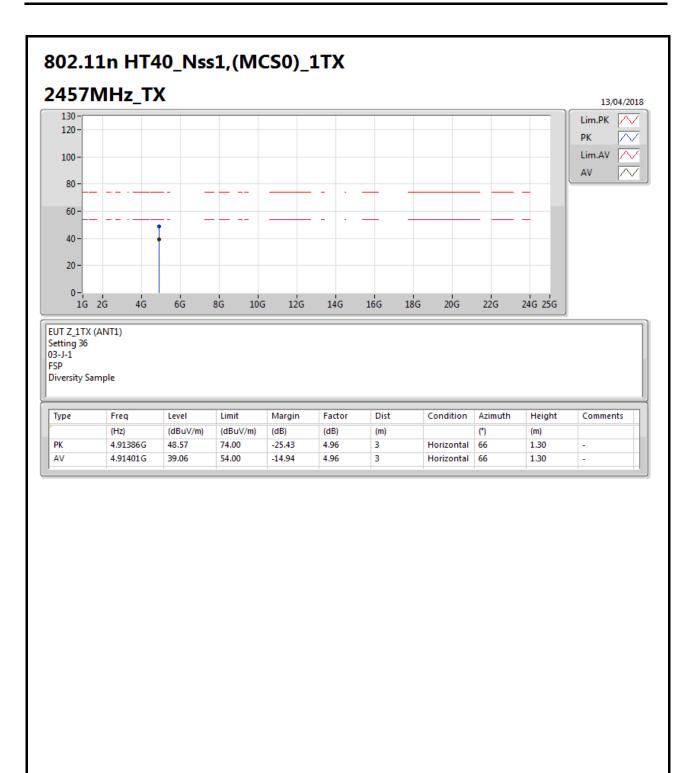




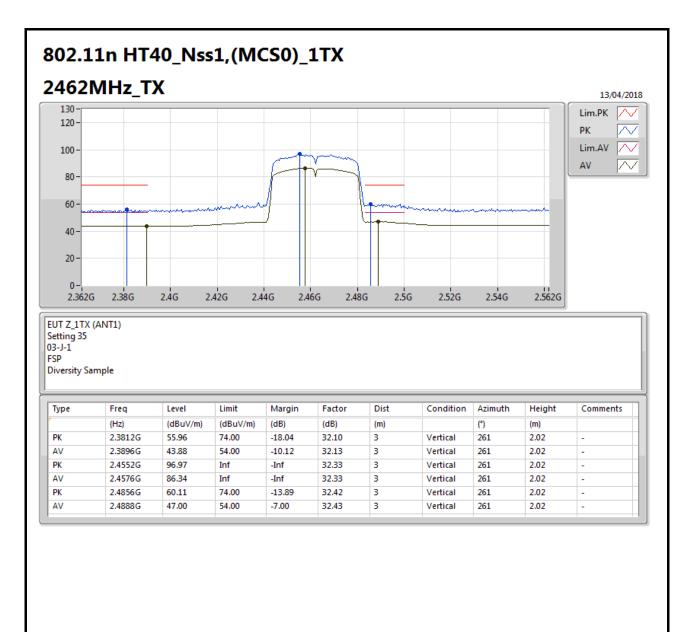




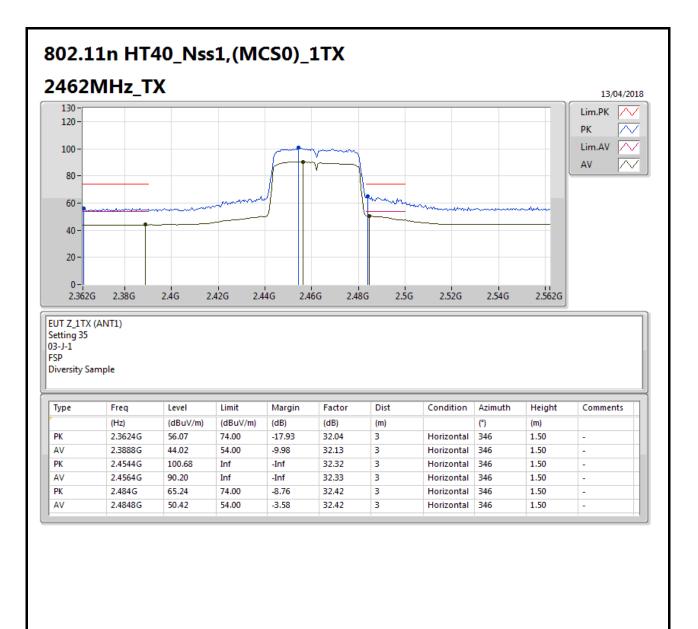




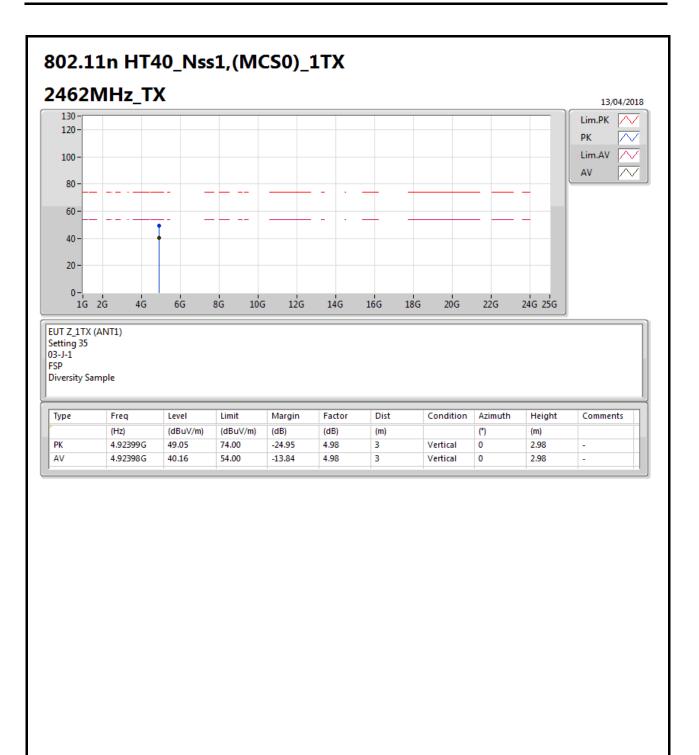




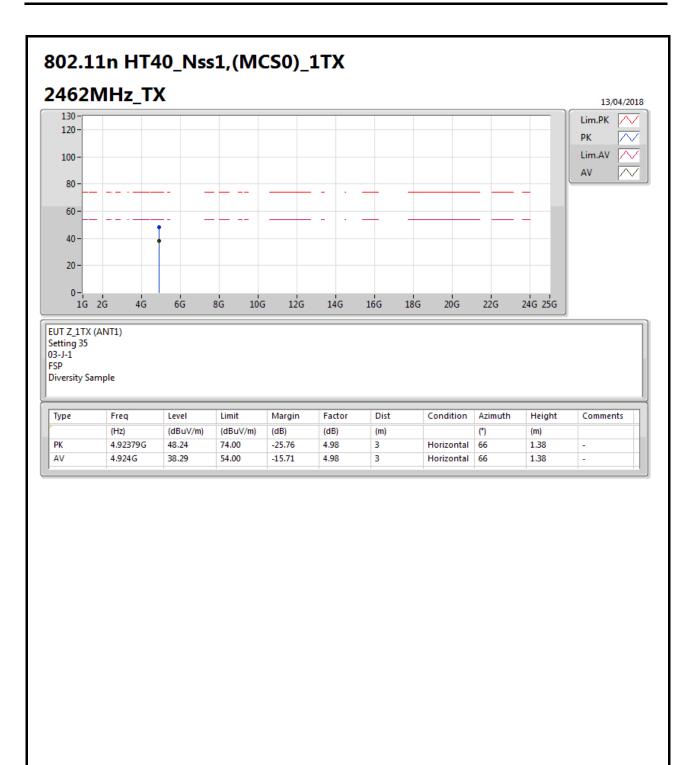














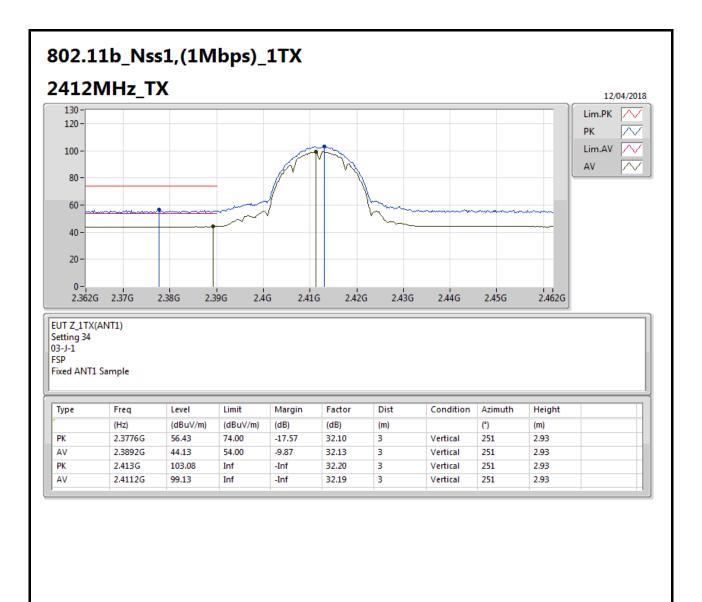
## RSE TX above 1GHz Result

## Appendix B.2

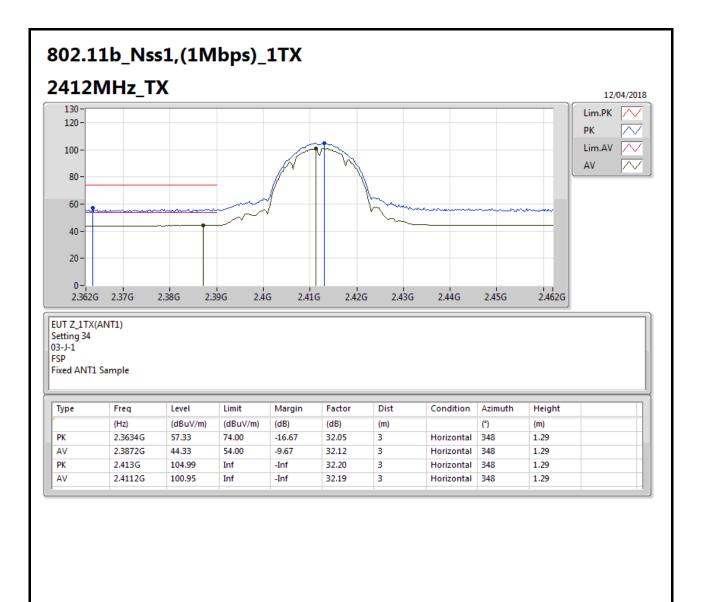
## Test Mode: Mode 2 Summary

<u></u>												
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	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	AV	2.4838G	53.19	54.00	-0.81	31.17	3	Horizontal	177	1.77	-

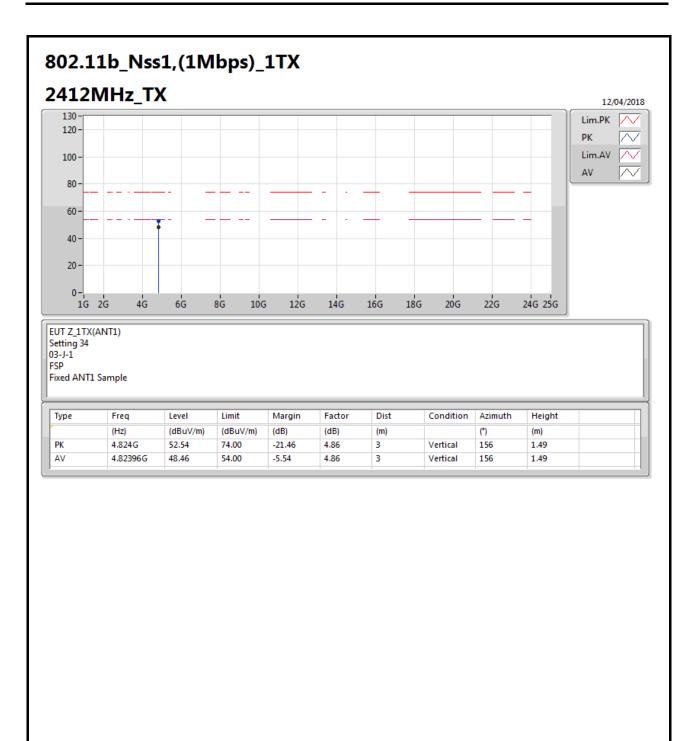




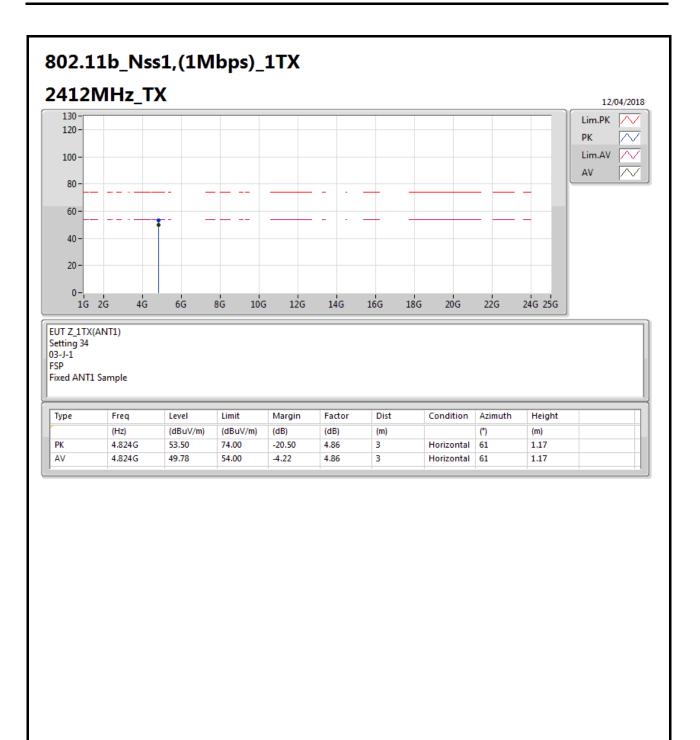




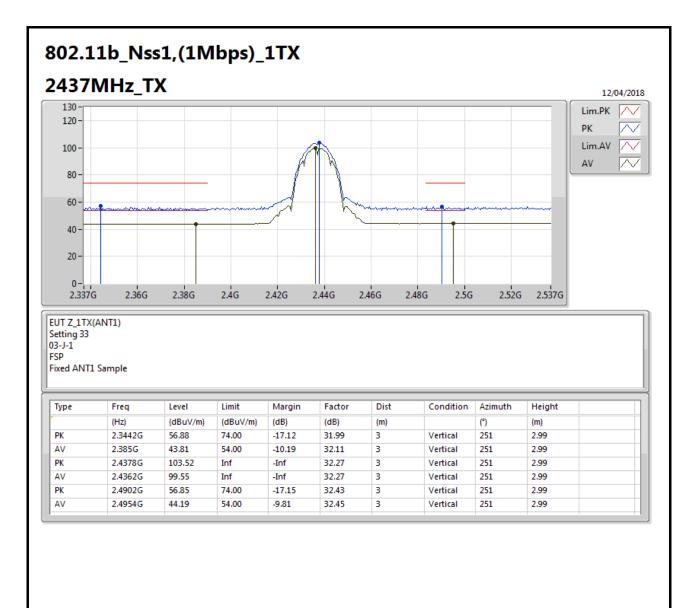




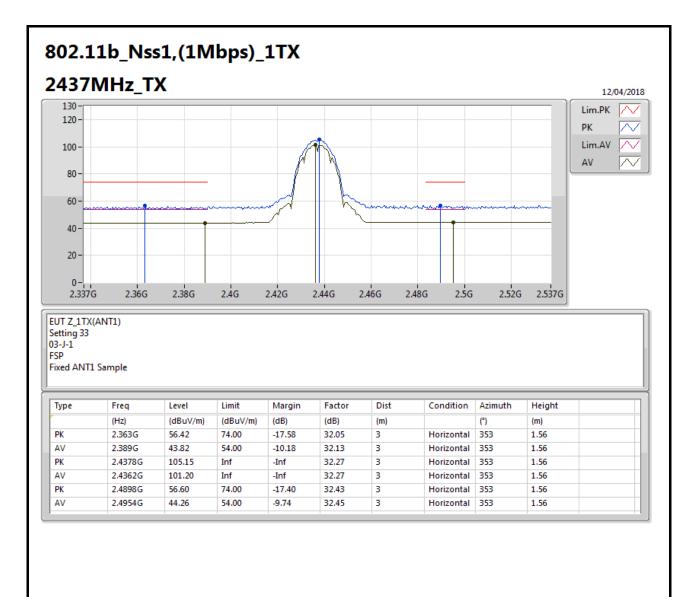




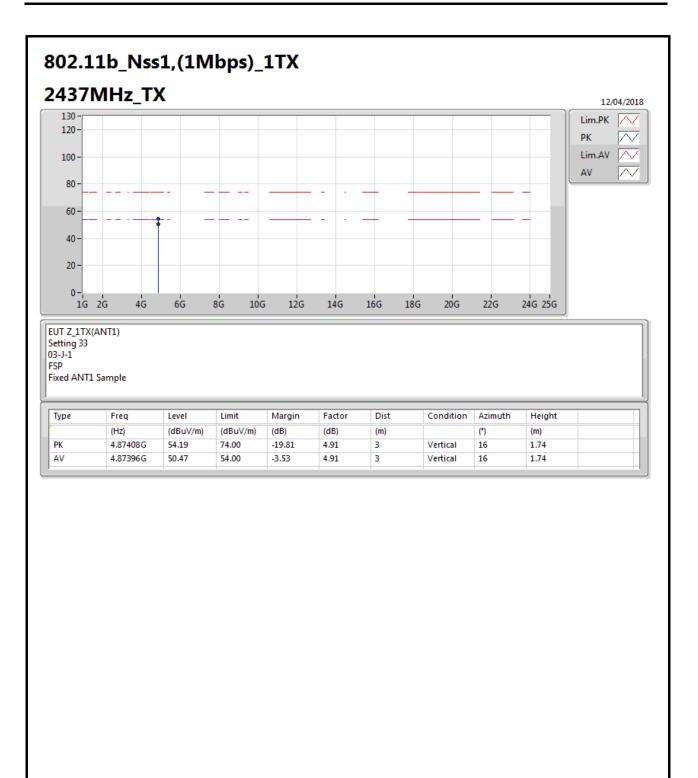




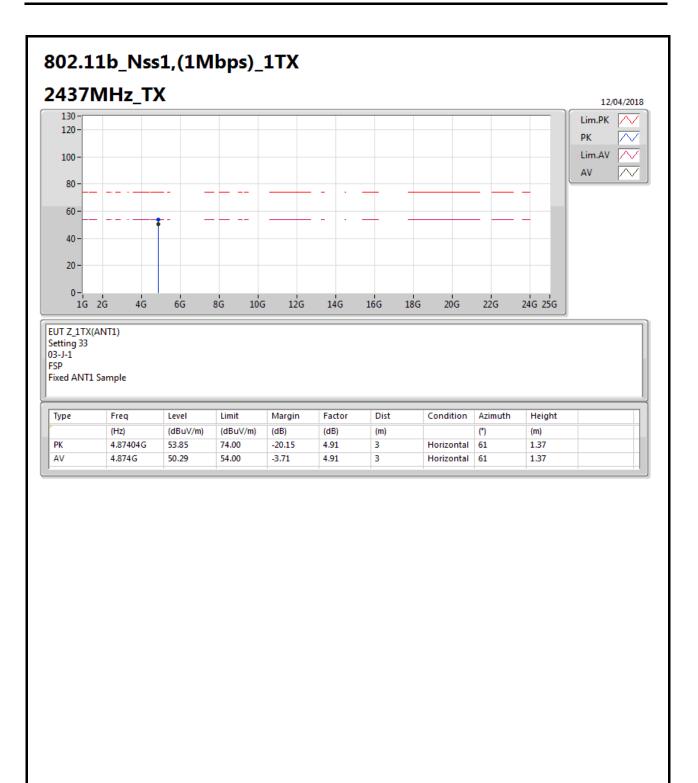




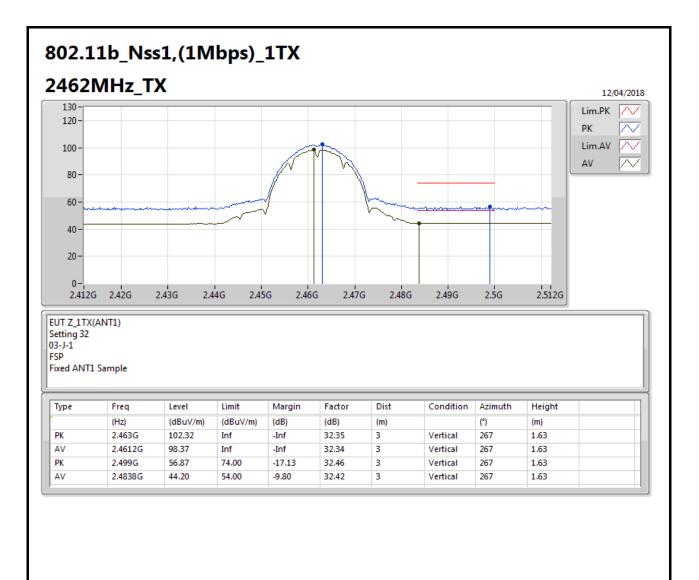




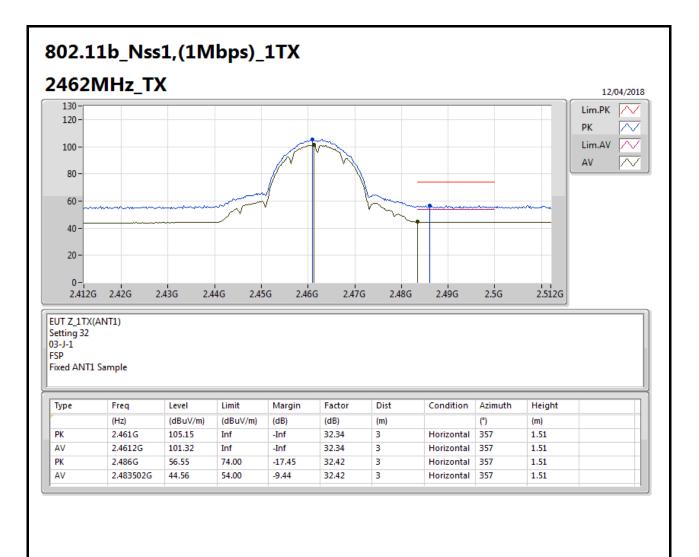




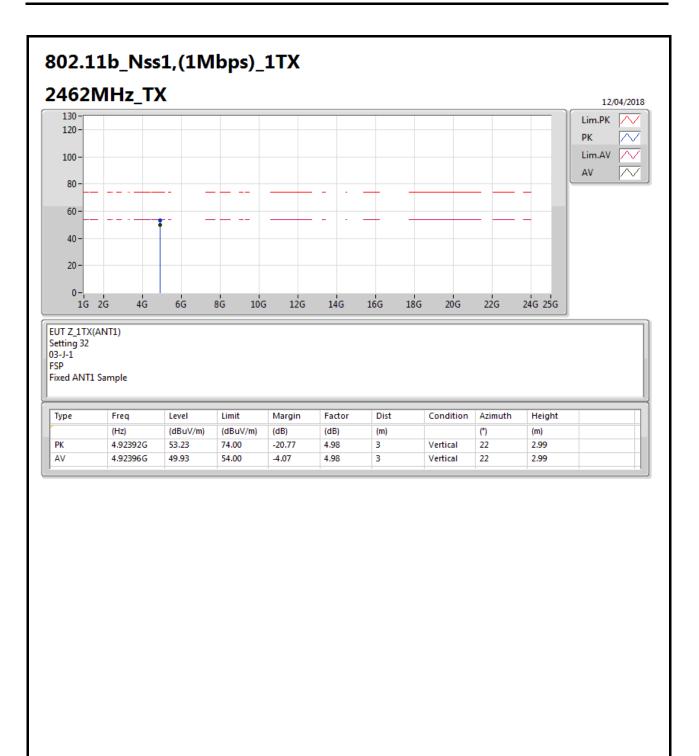




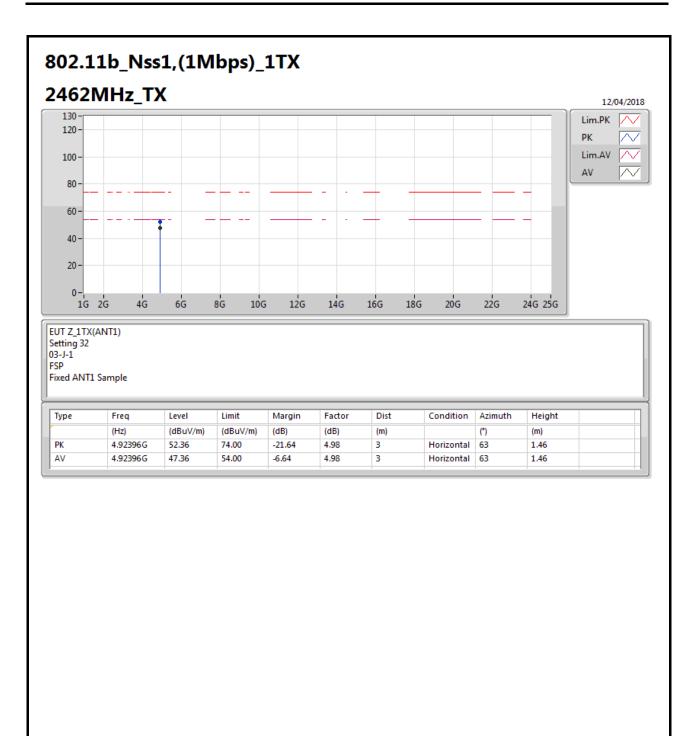




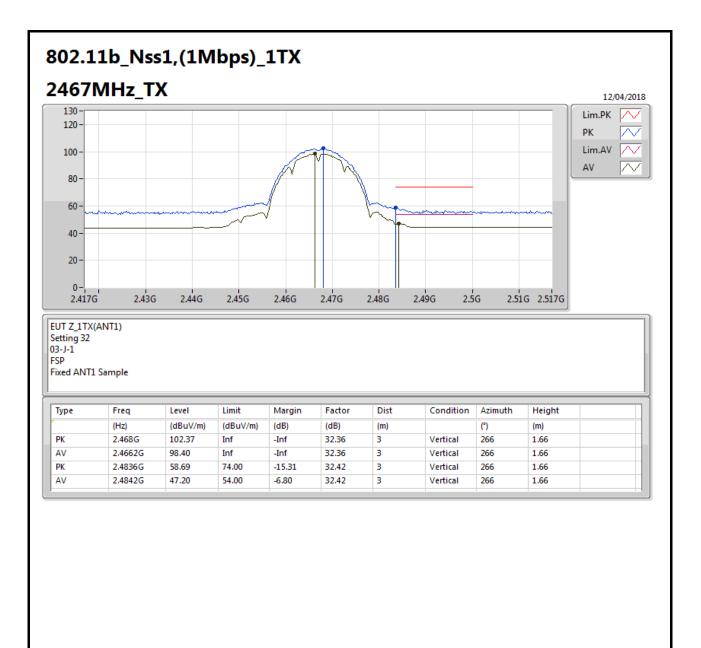




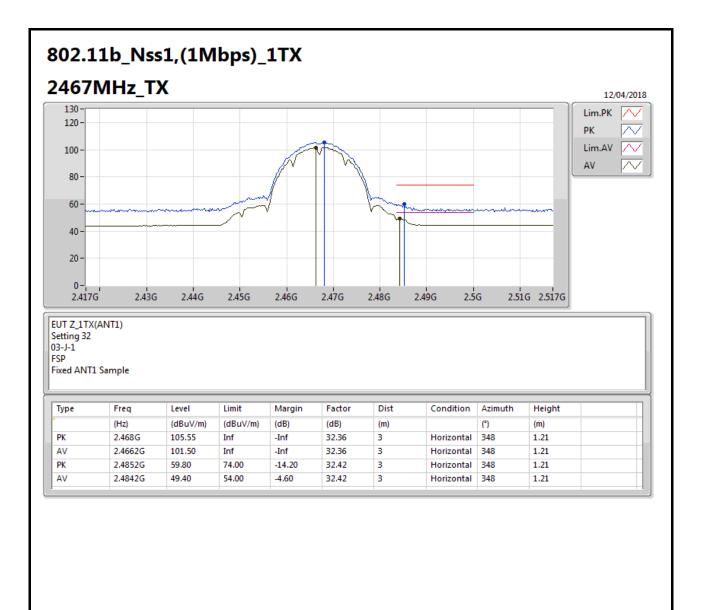




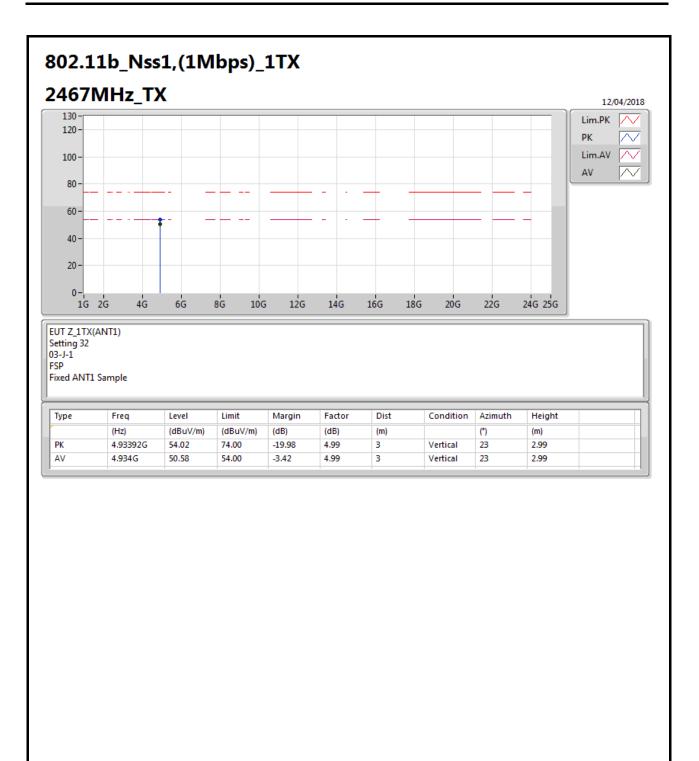




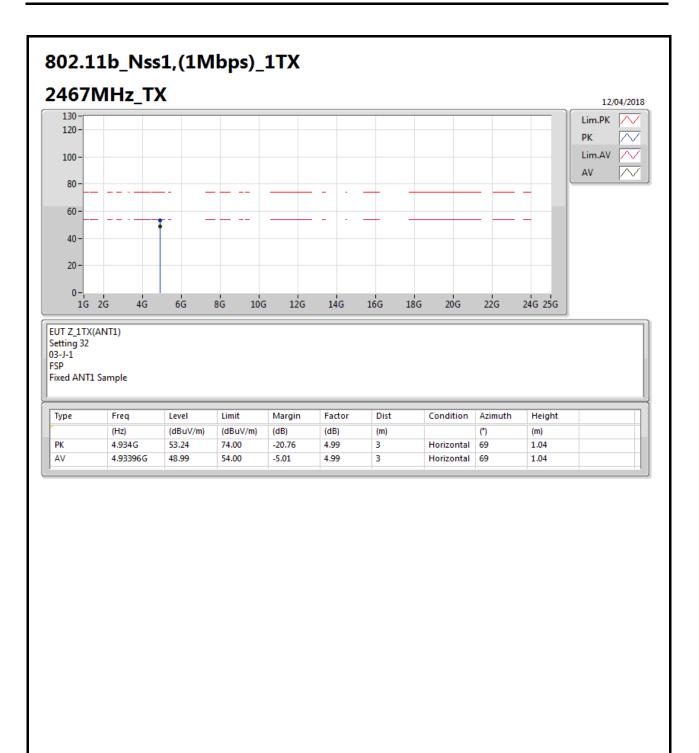




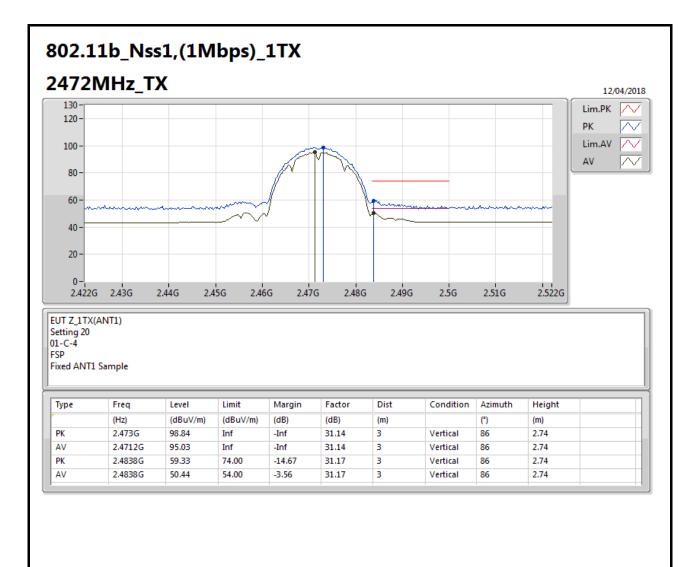




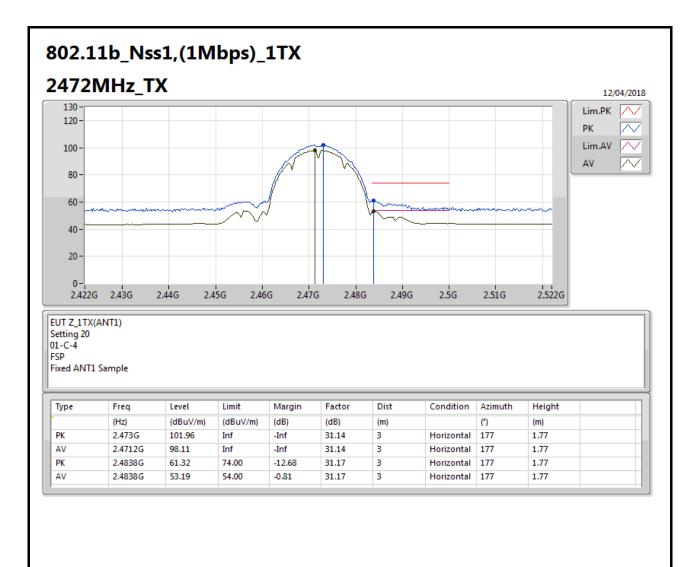




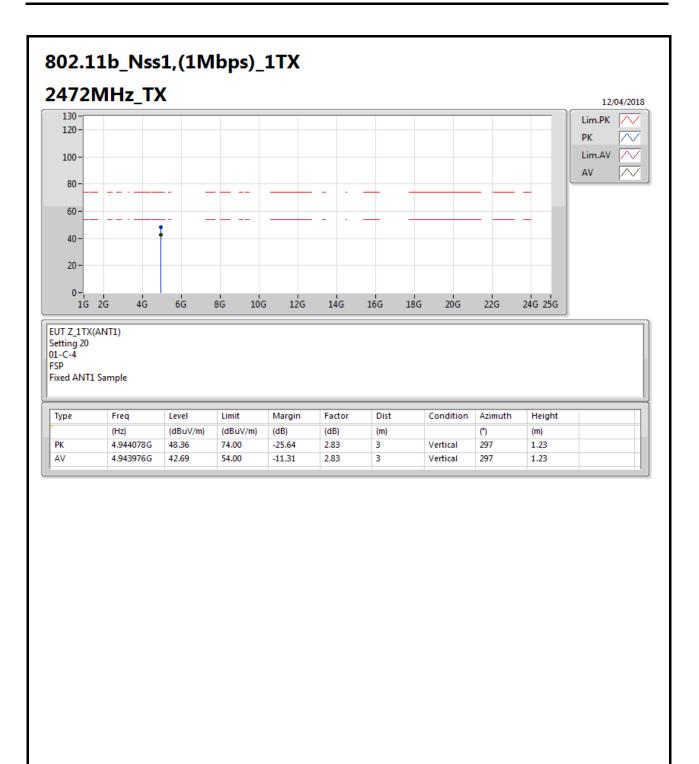




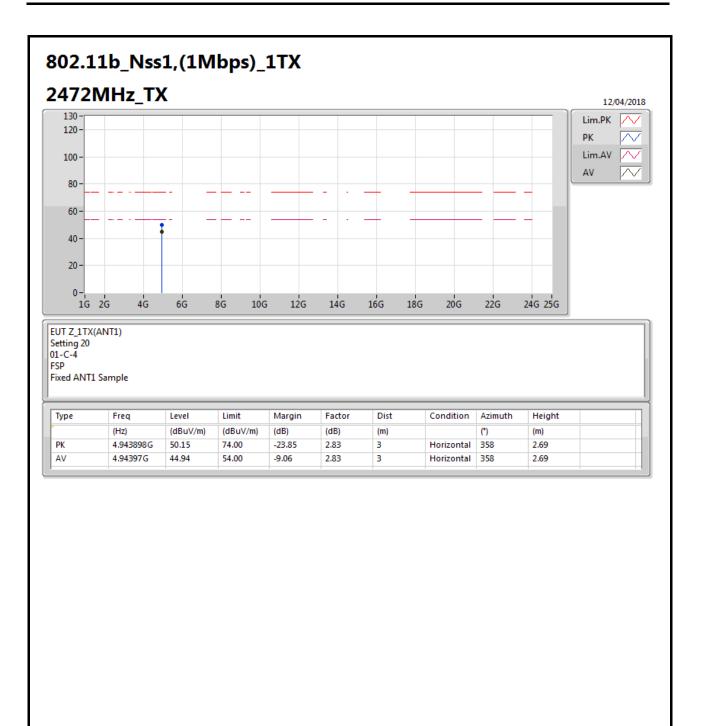




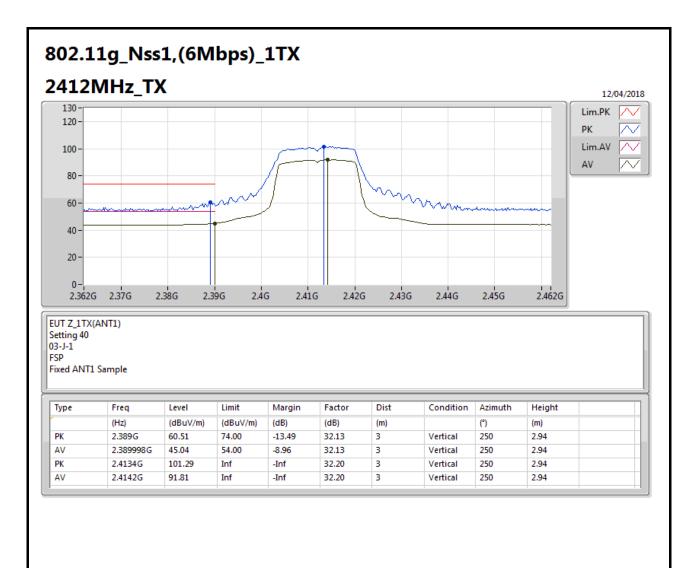




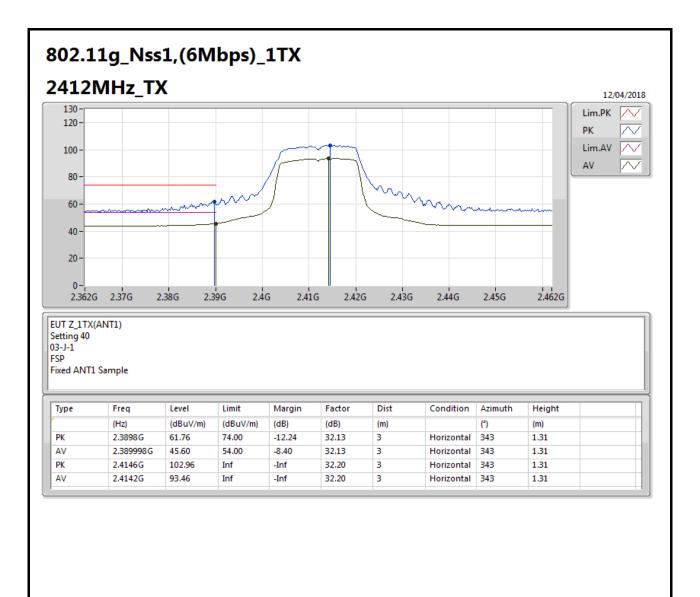




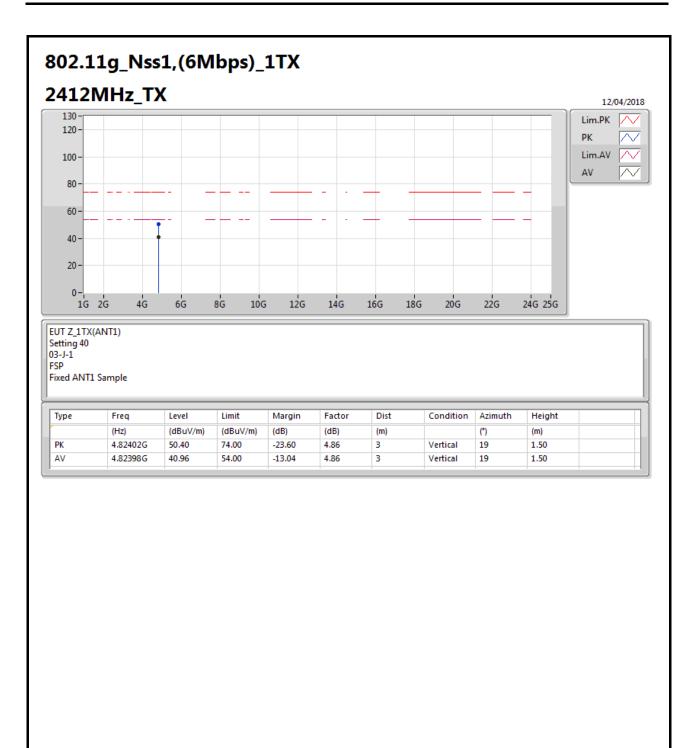




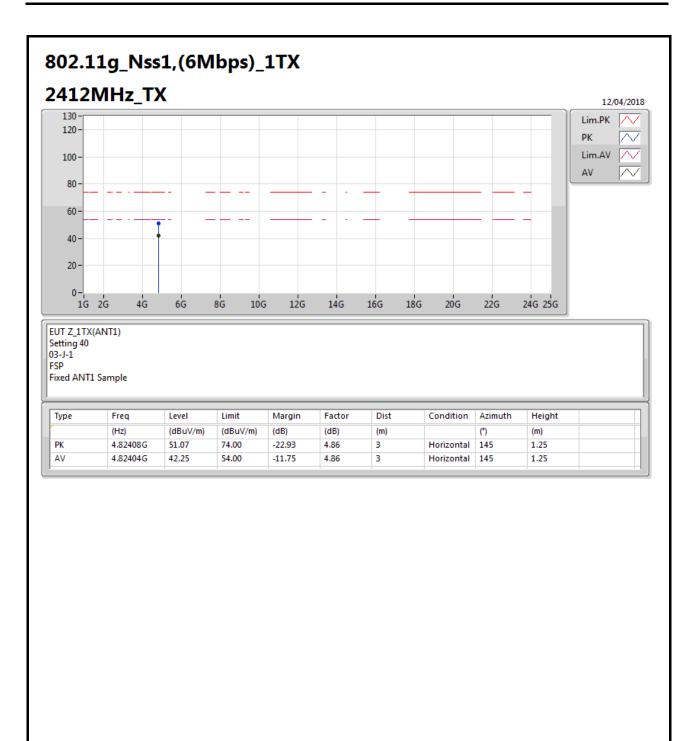




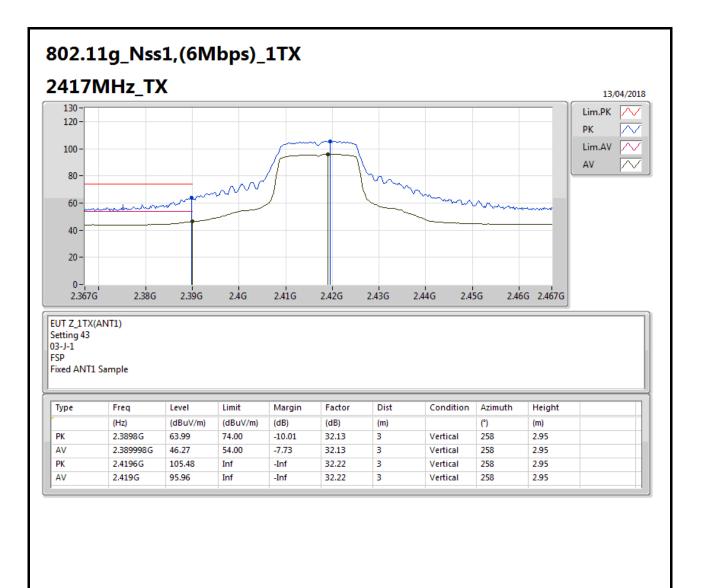




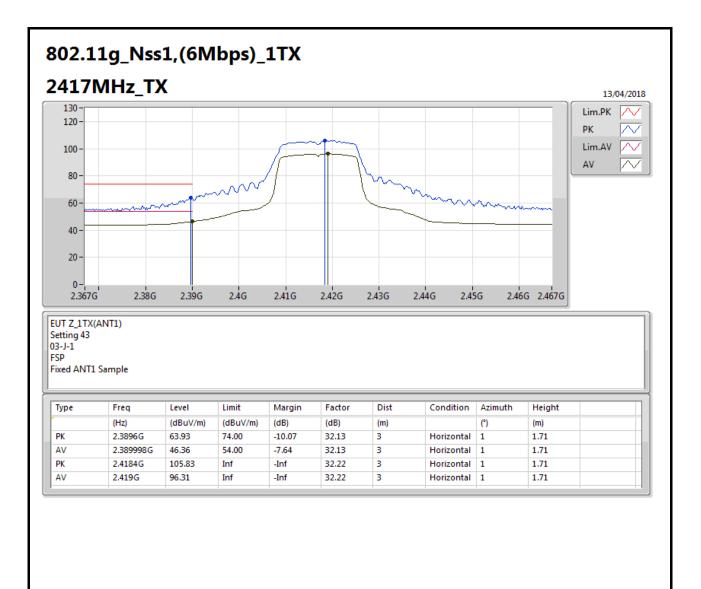




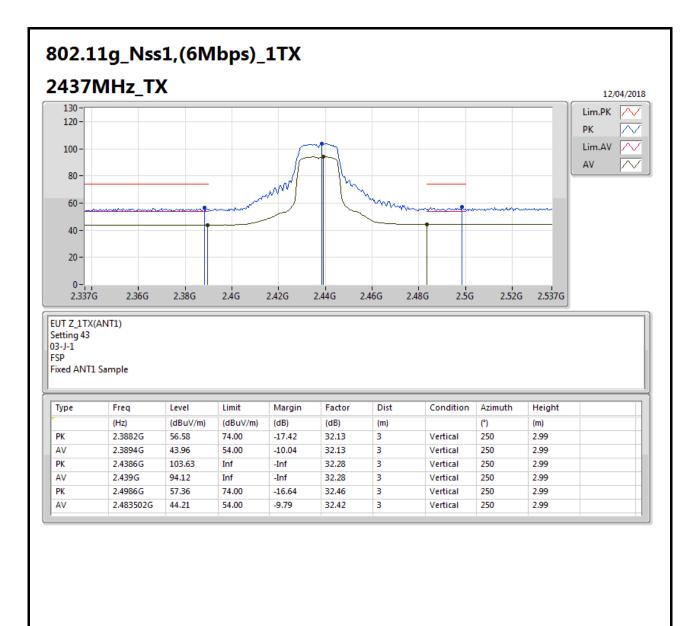




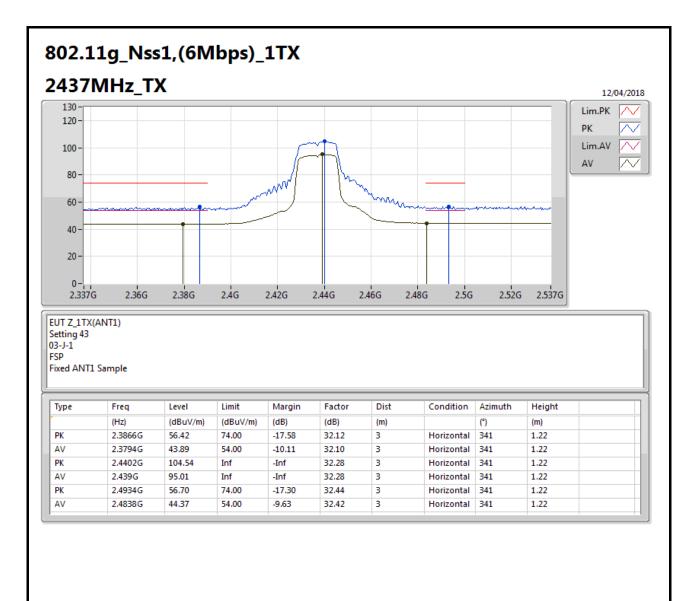




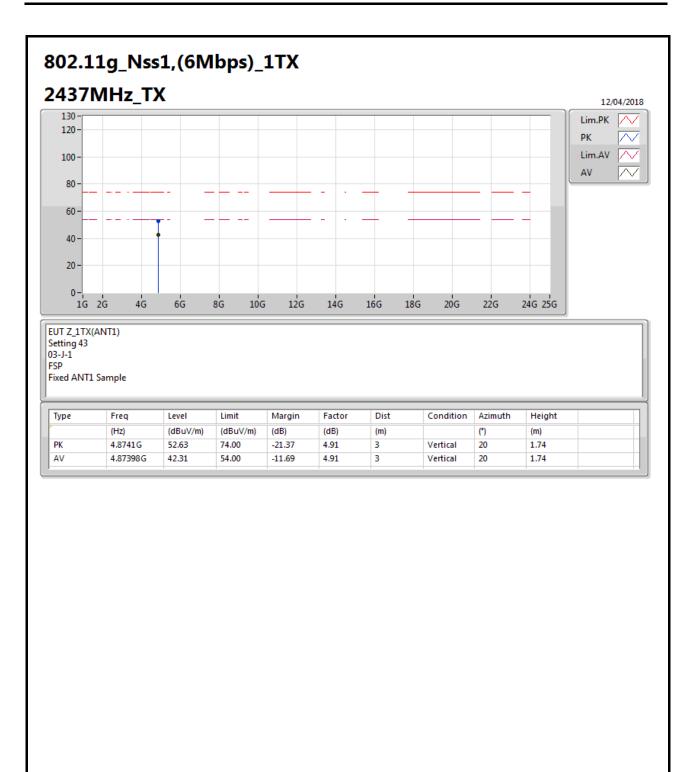




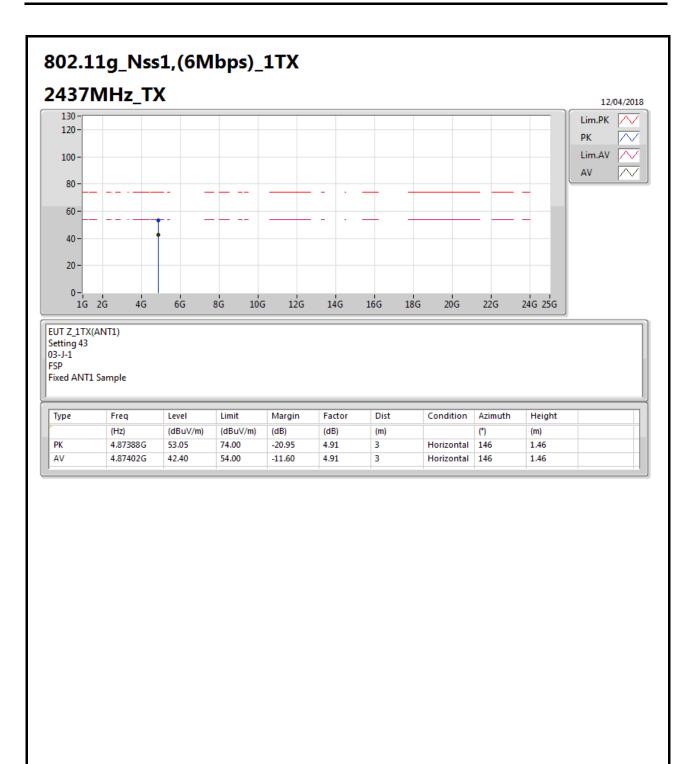




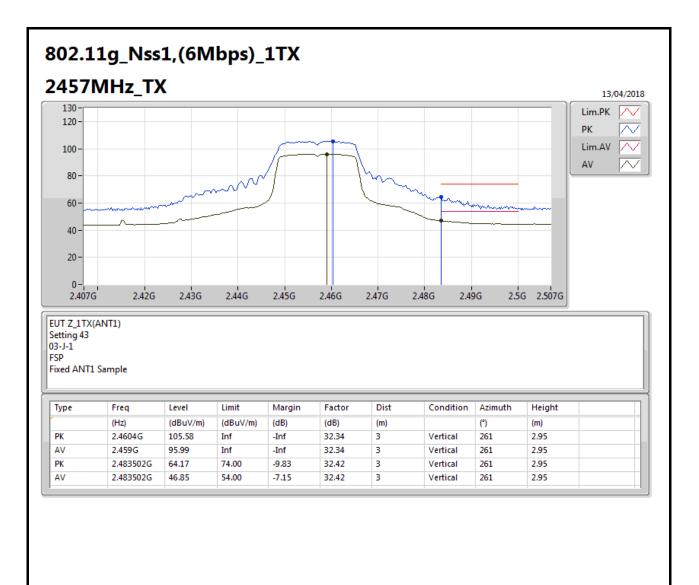




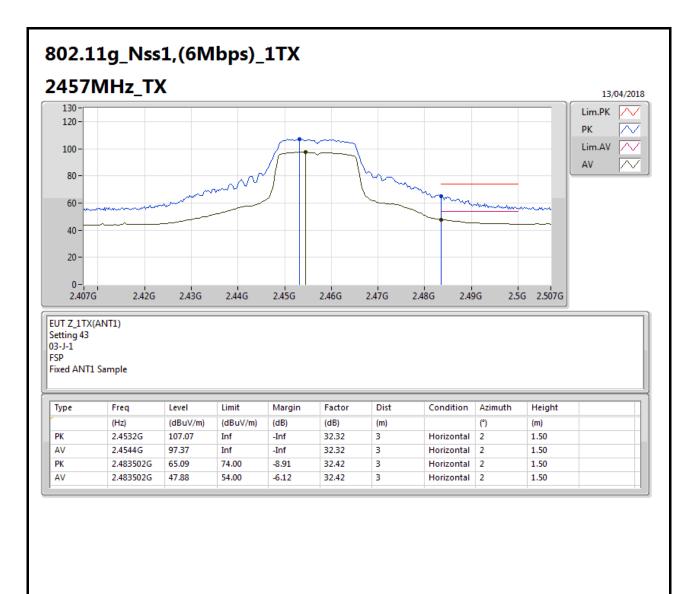




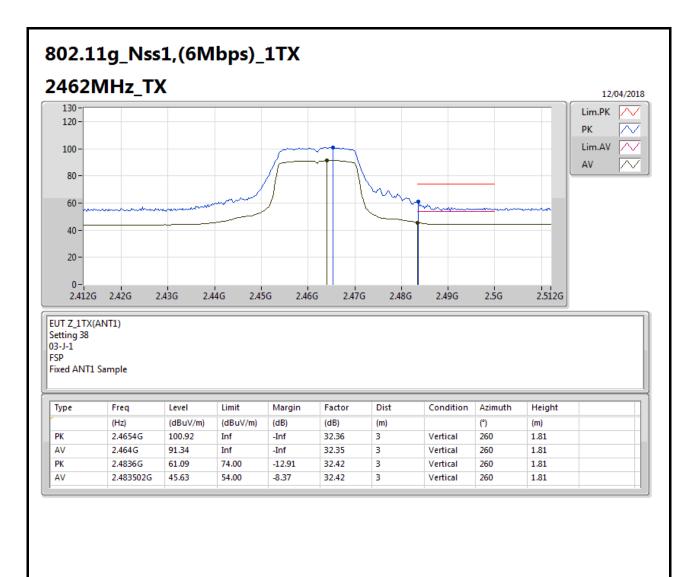




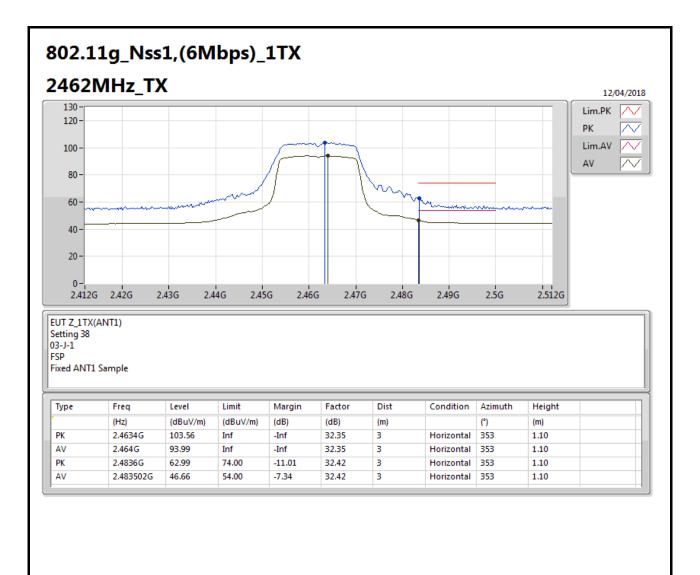




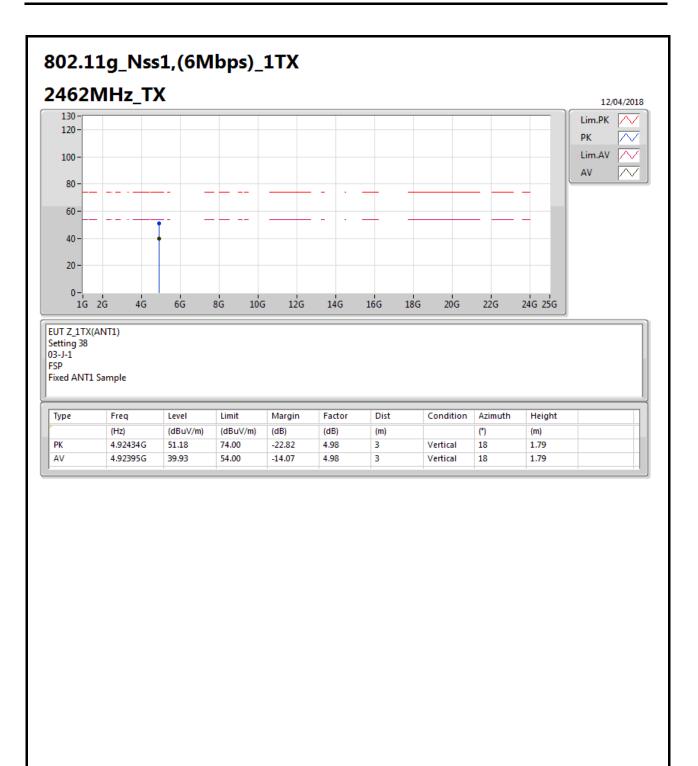




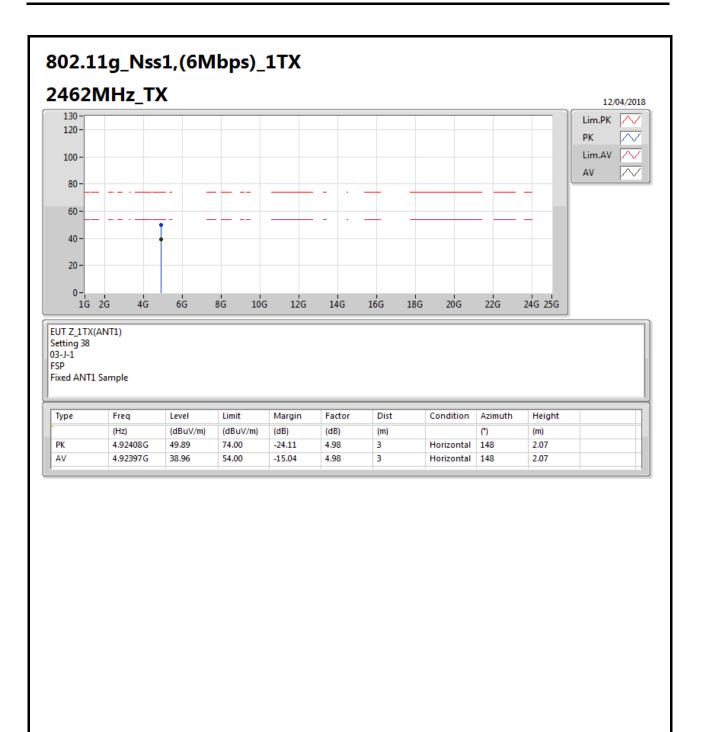




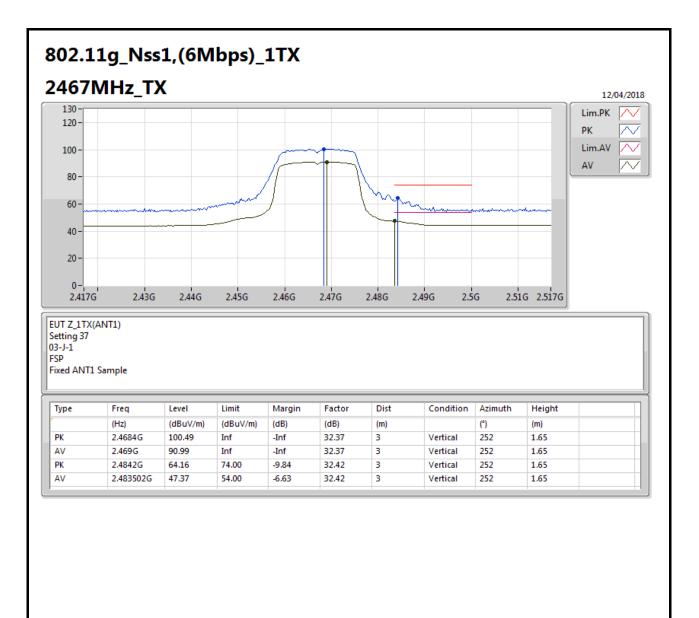




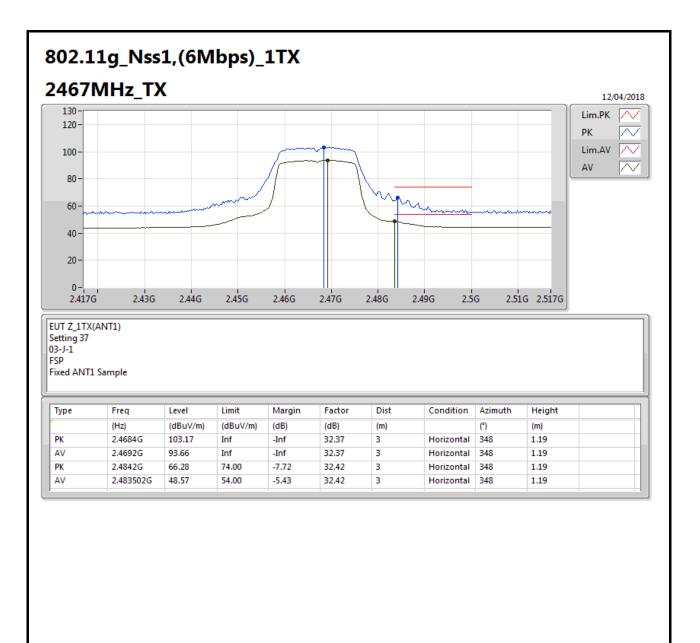




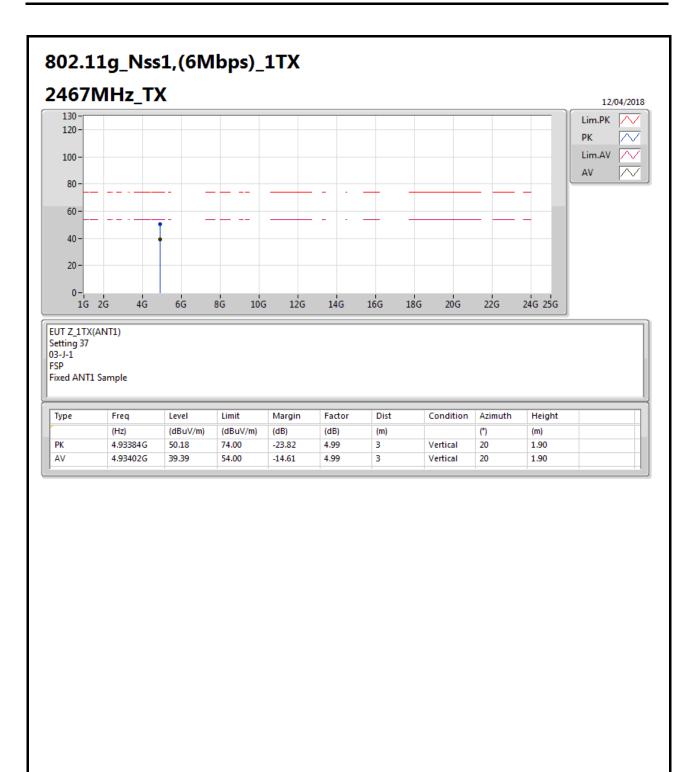




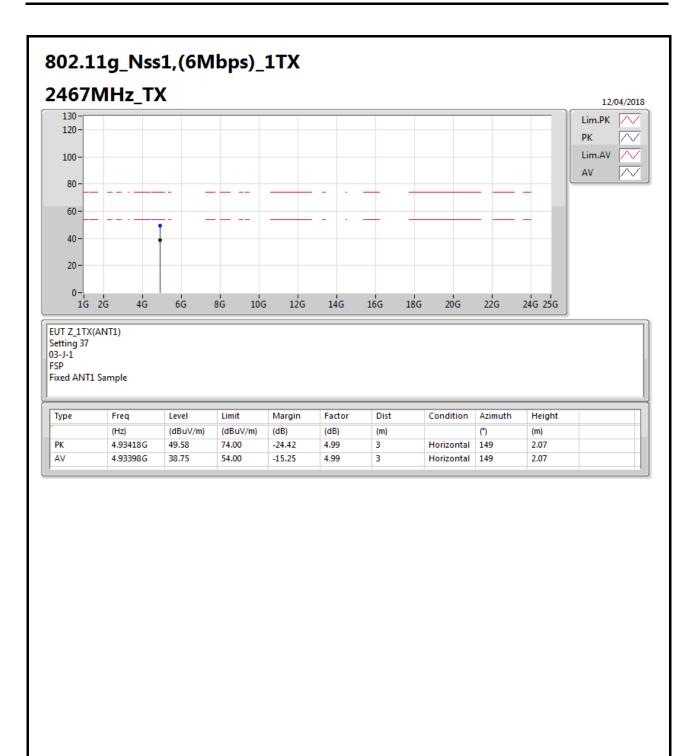




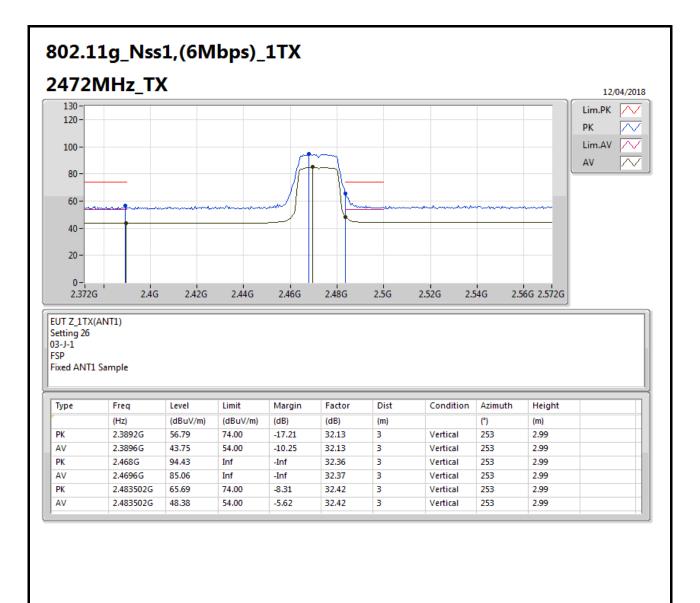




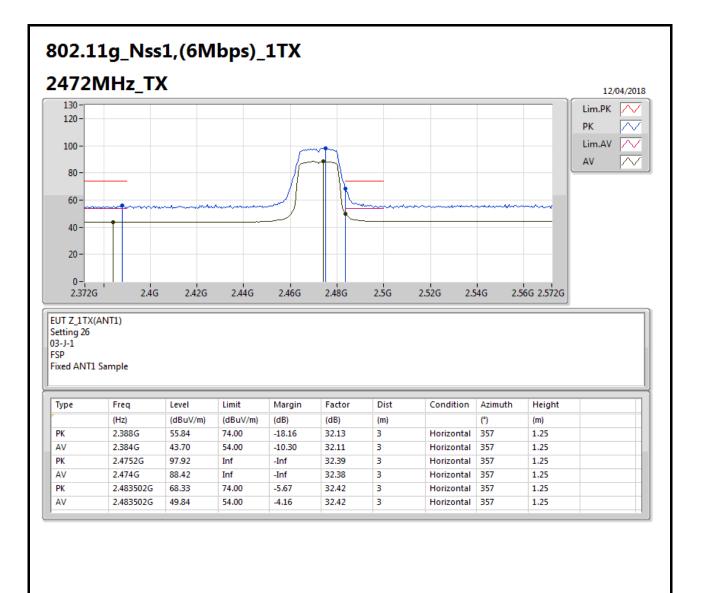




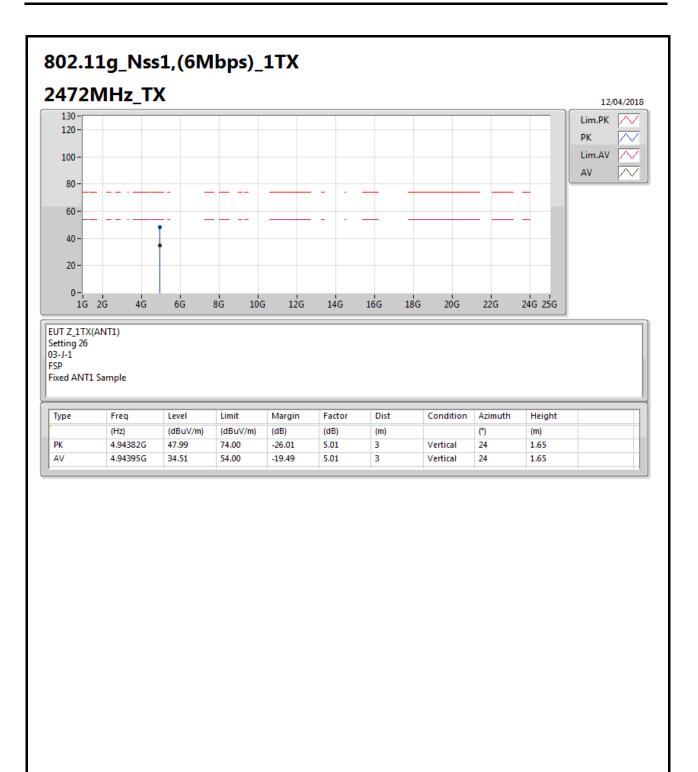




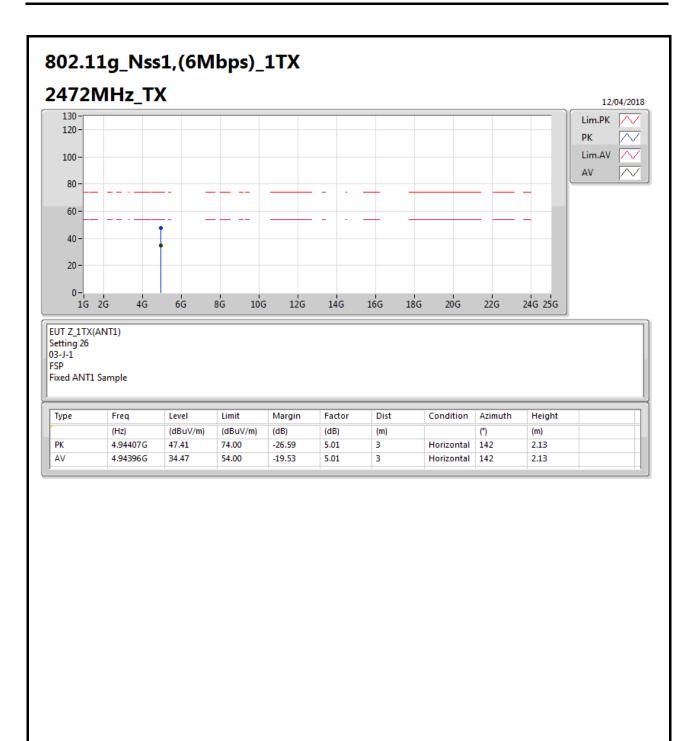




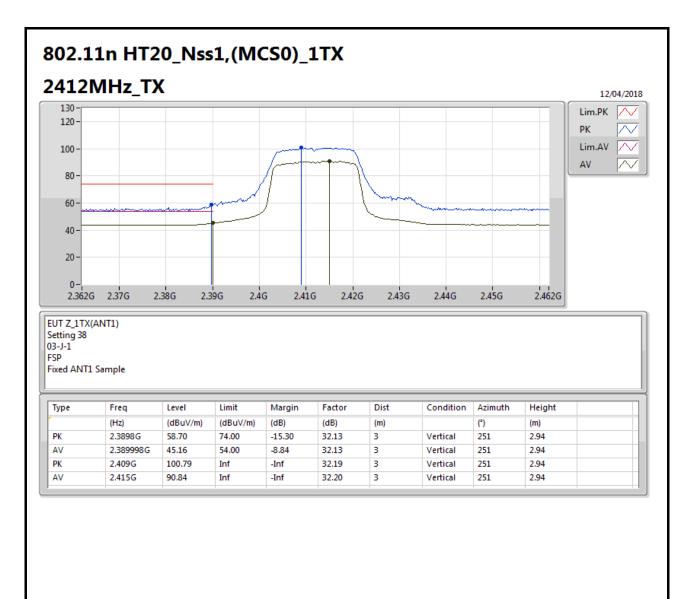




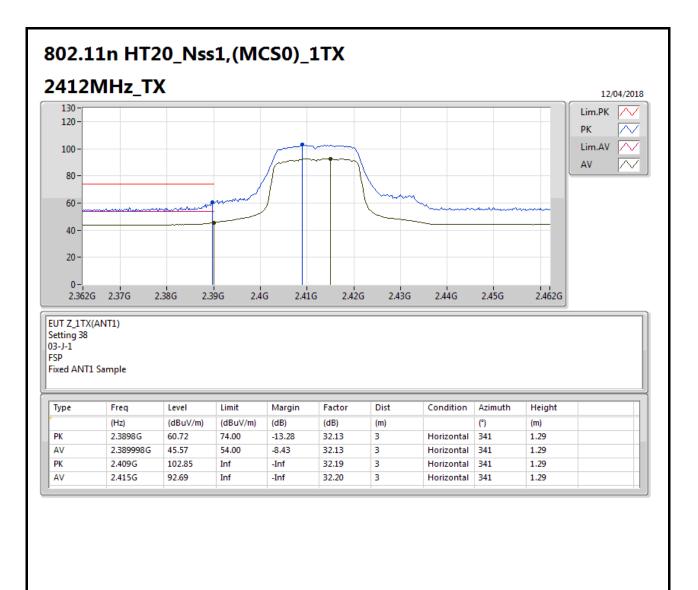




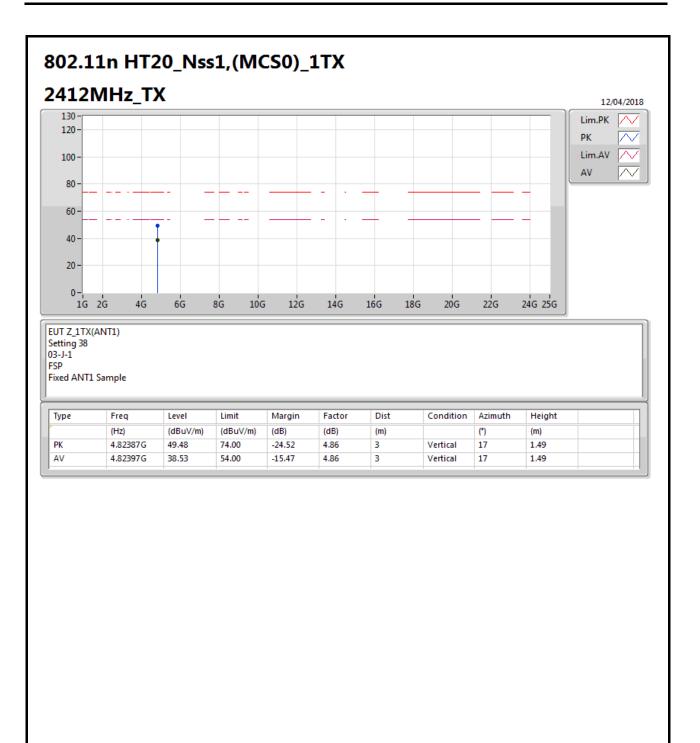




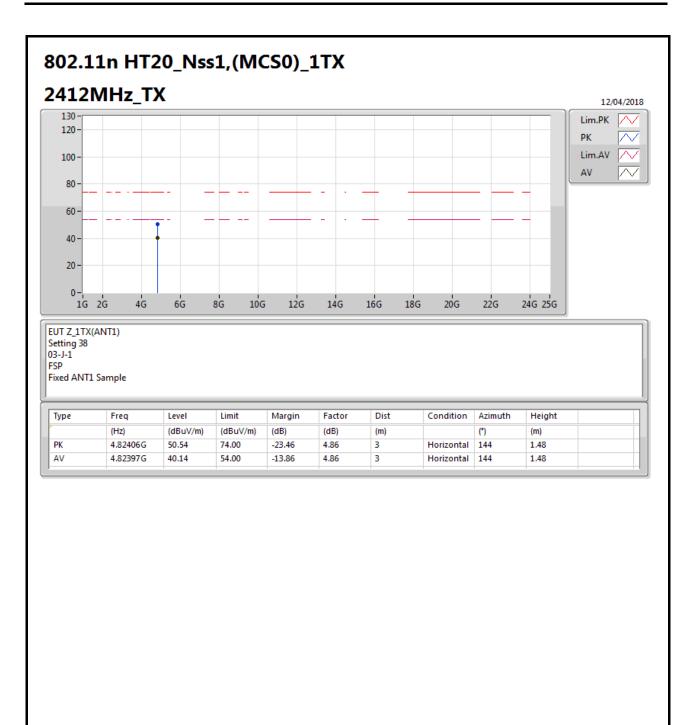




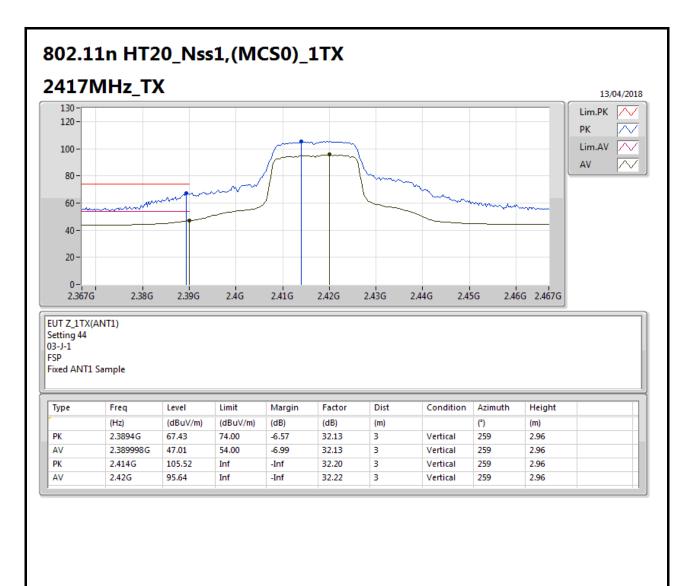




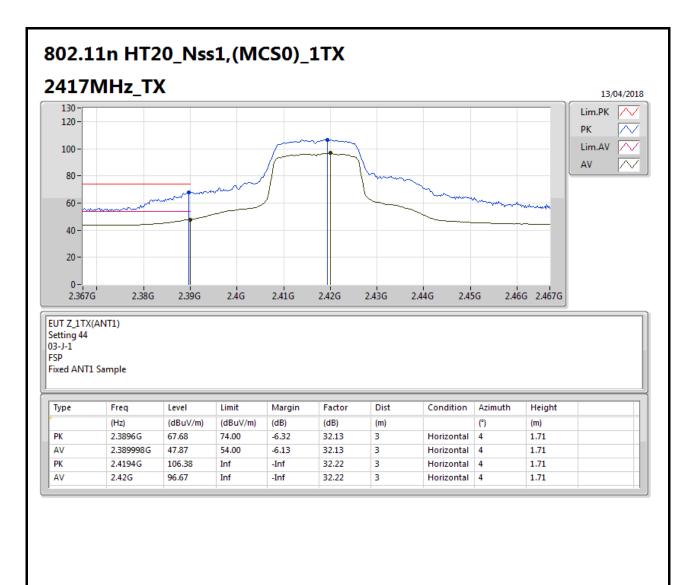




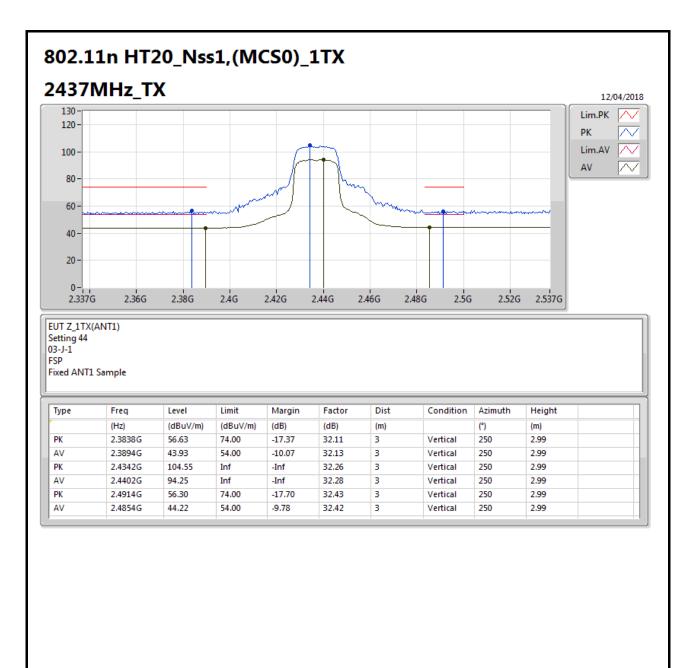




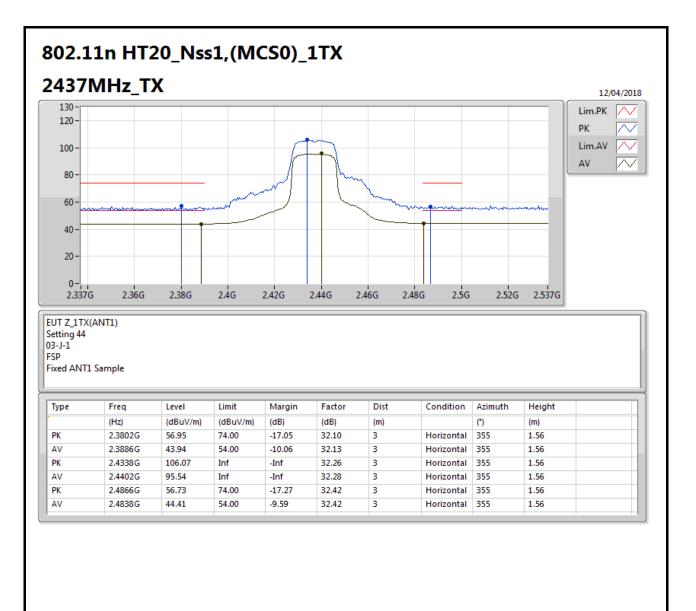




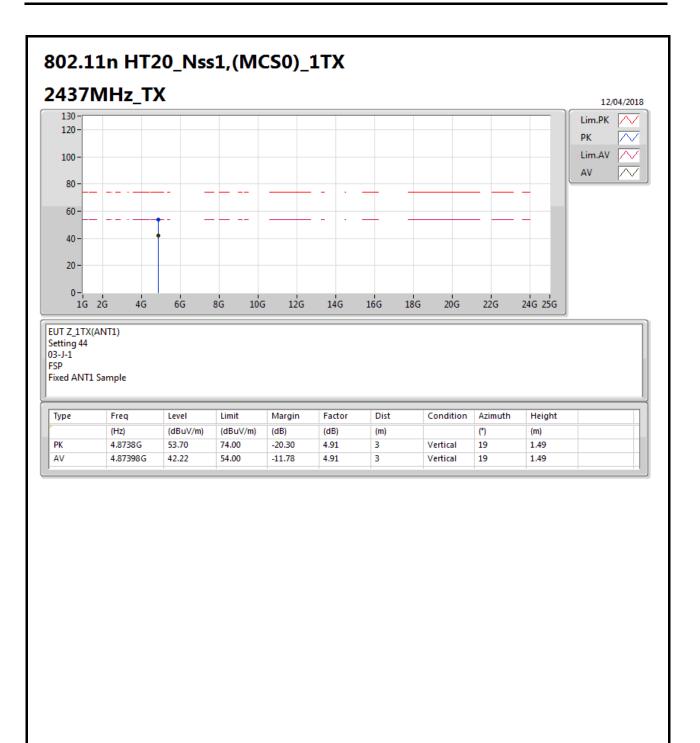




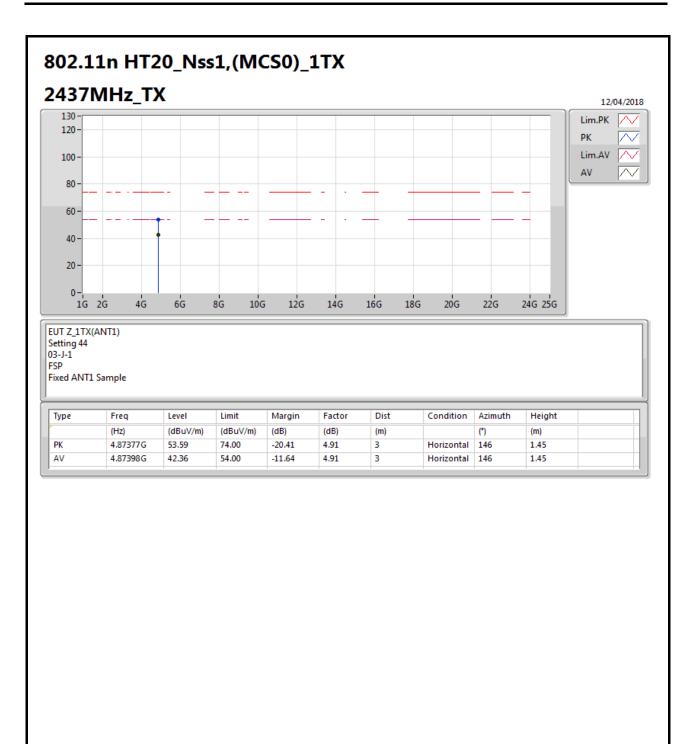




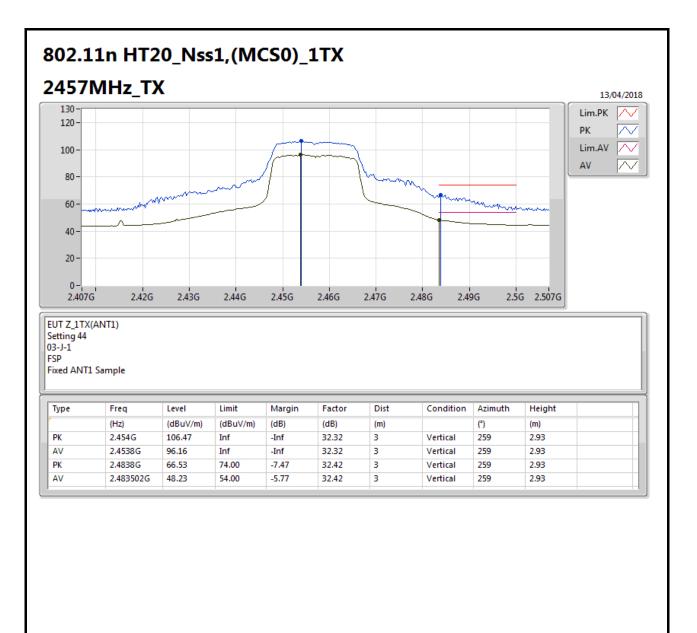




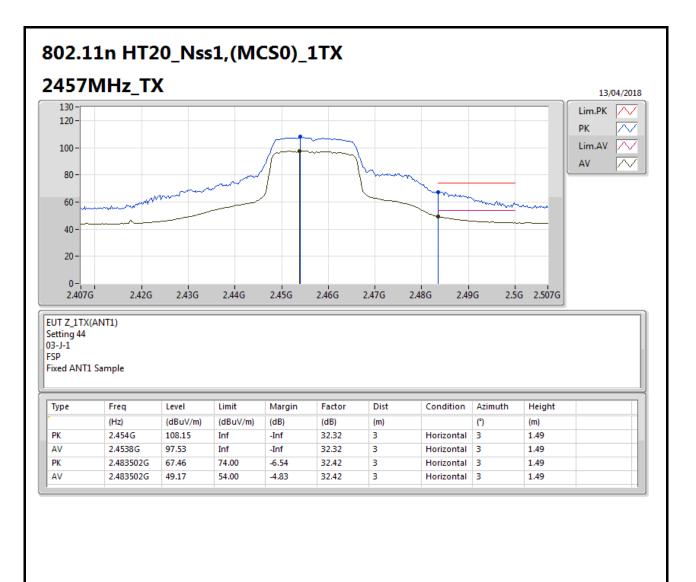




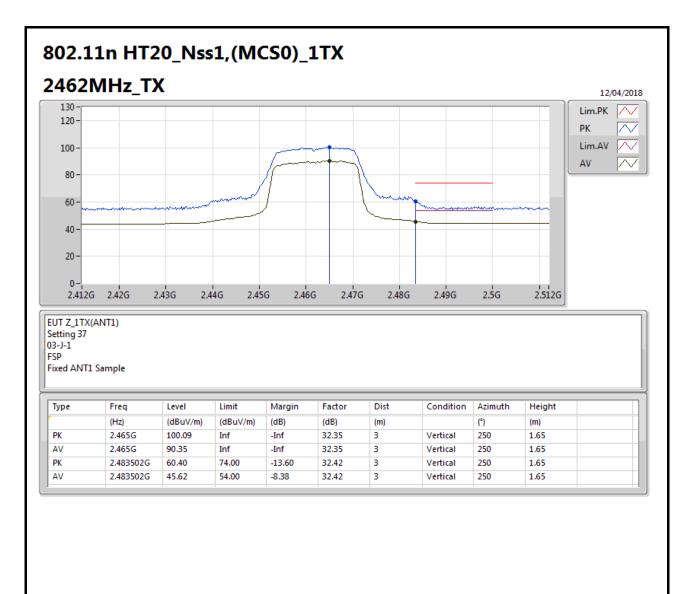




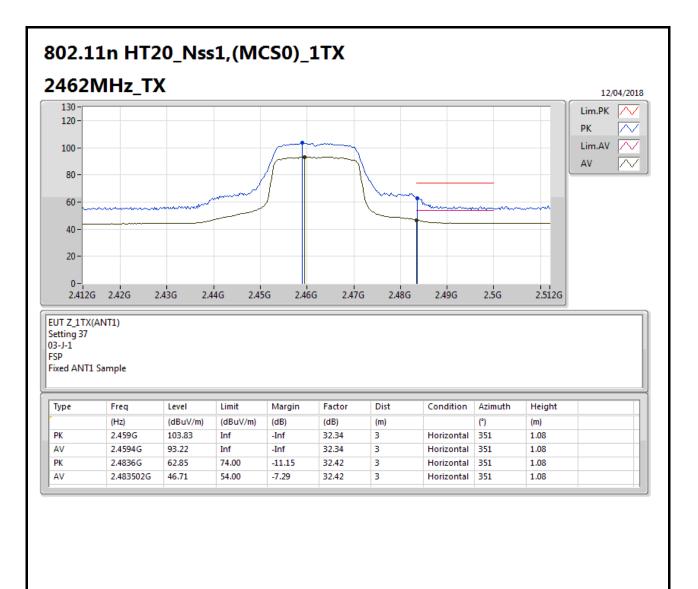




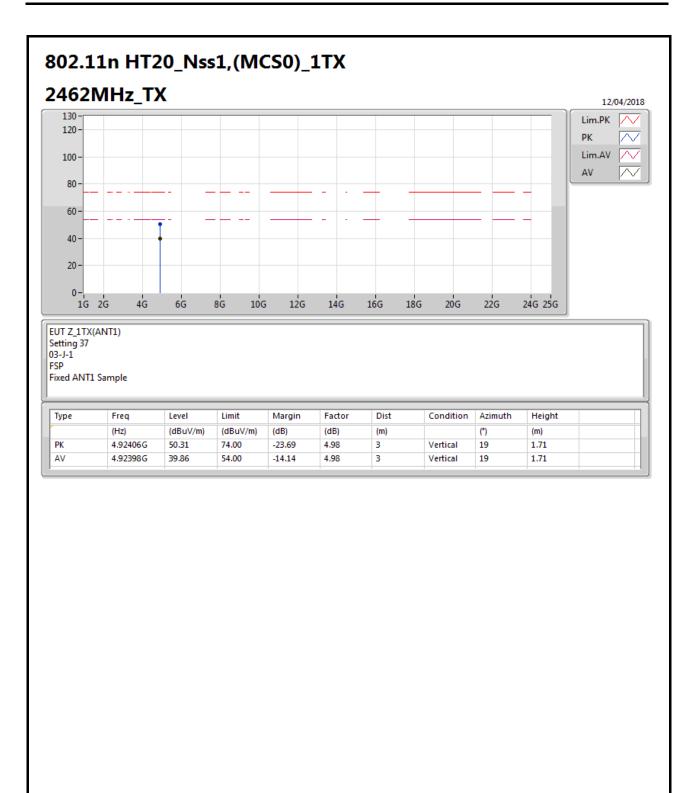




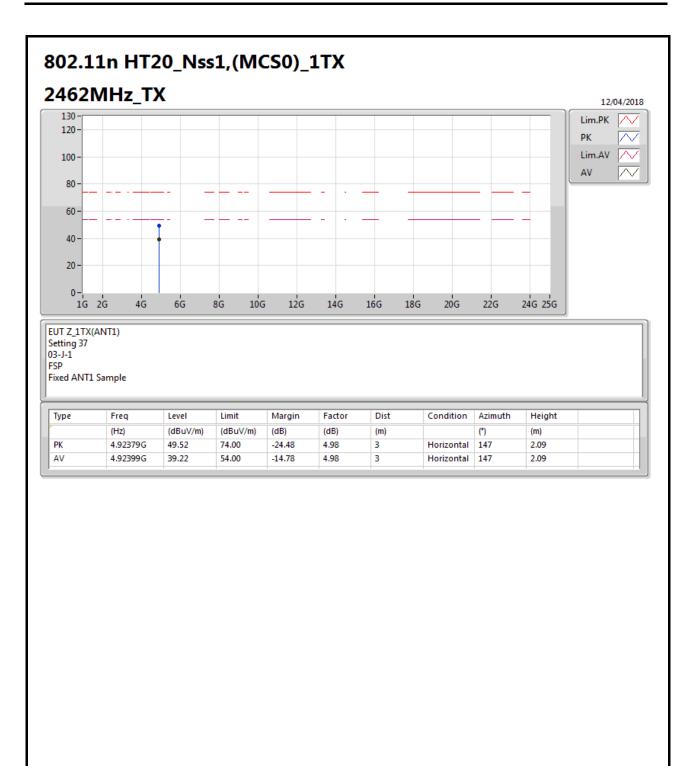




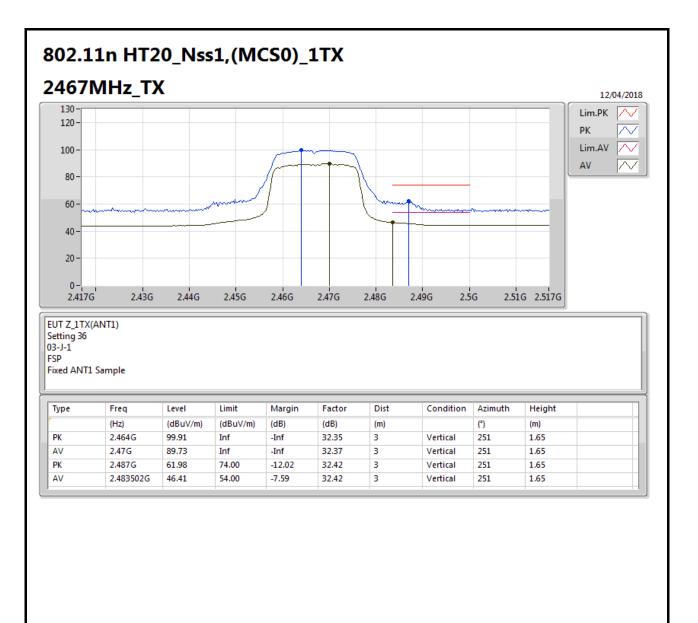




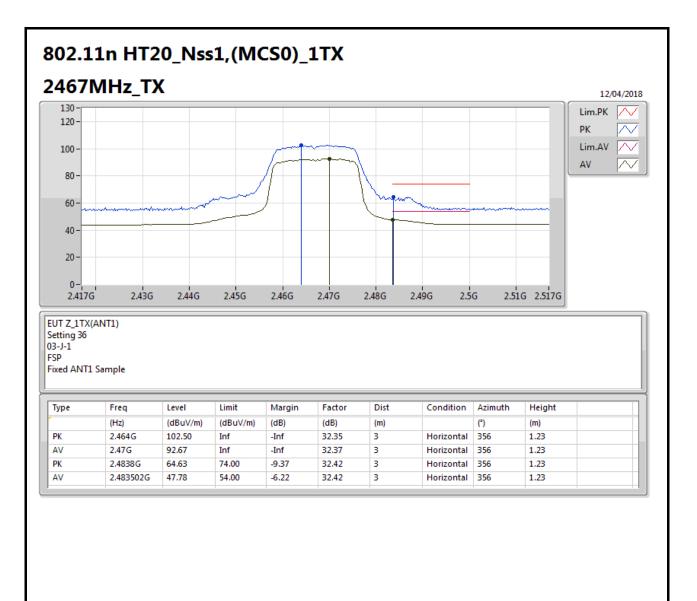




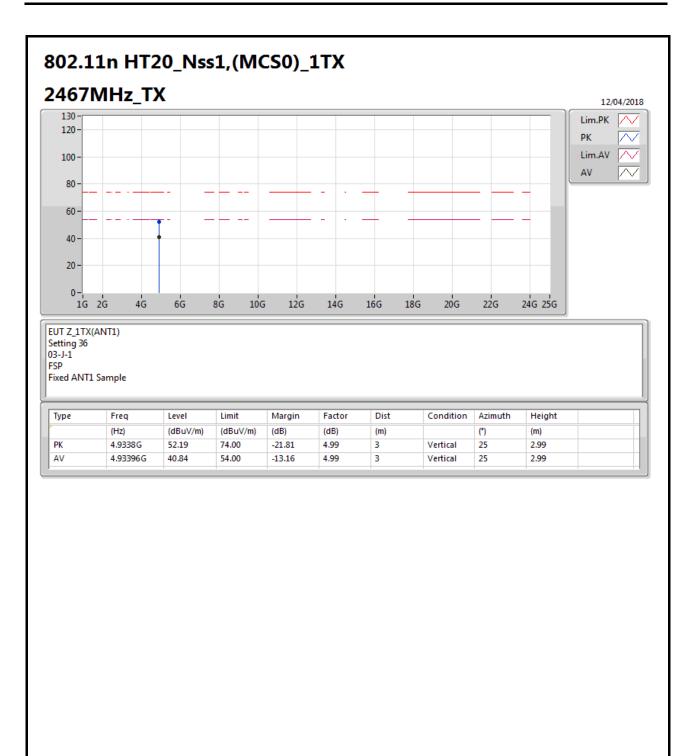




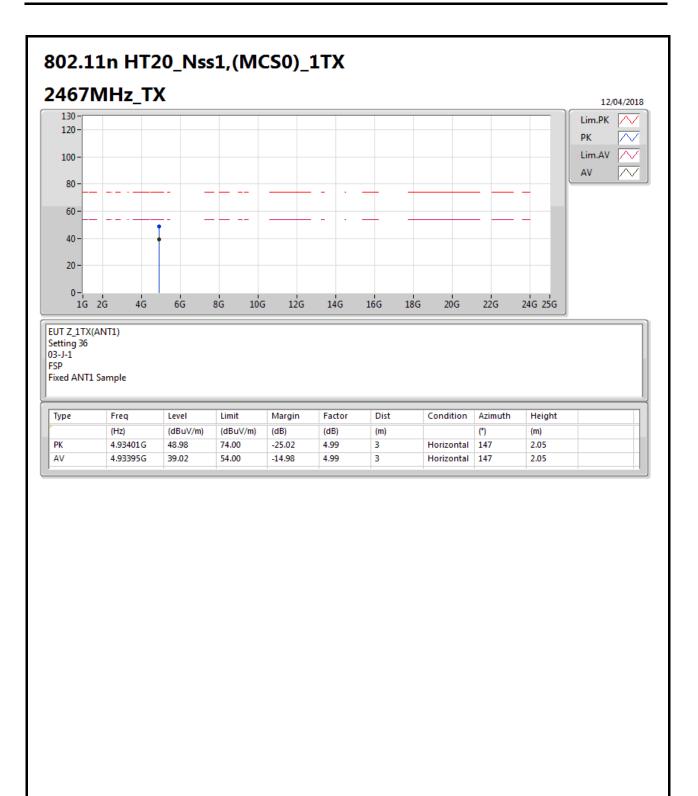




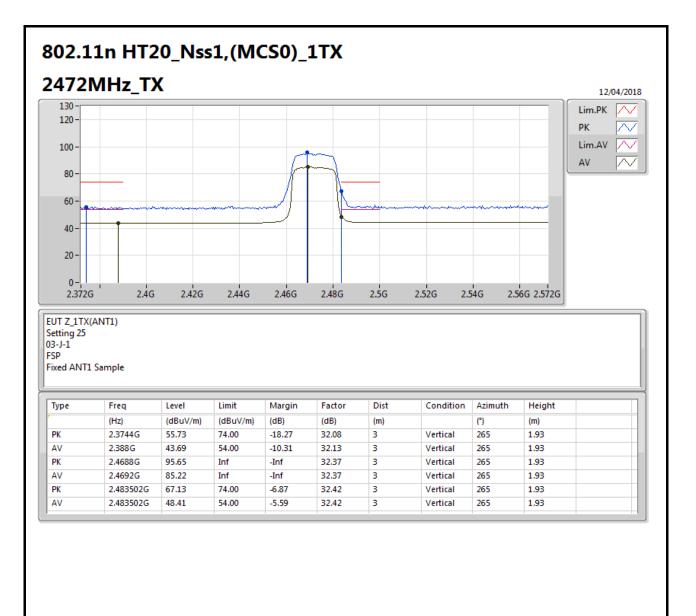




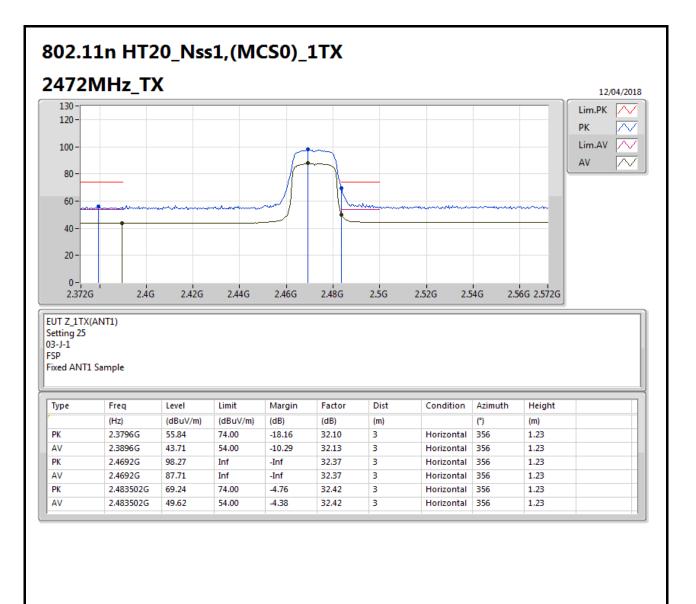




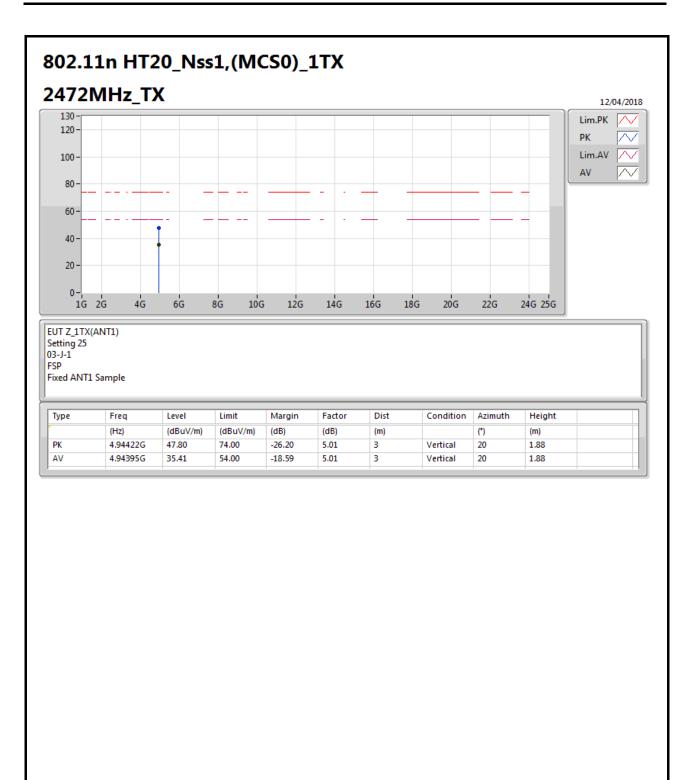




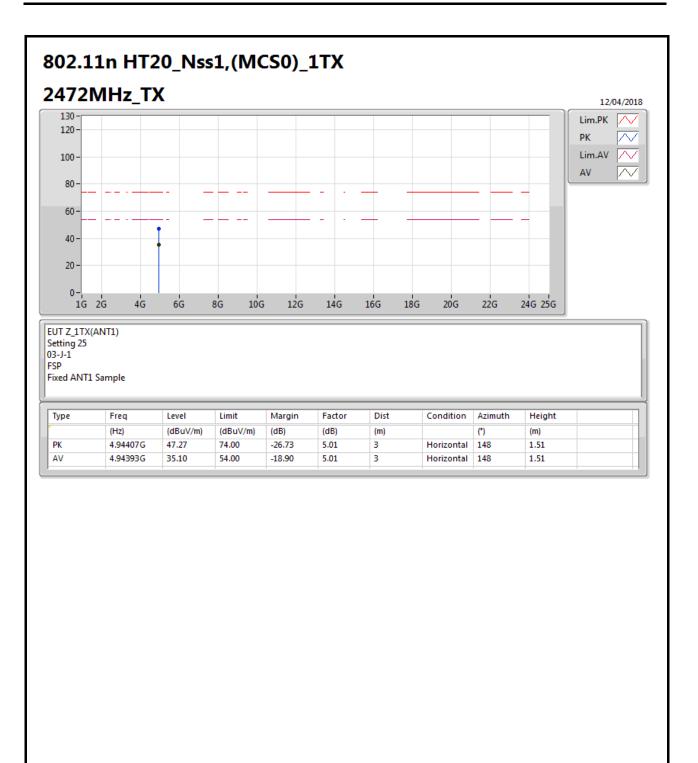




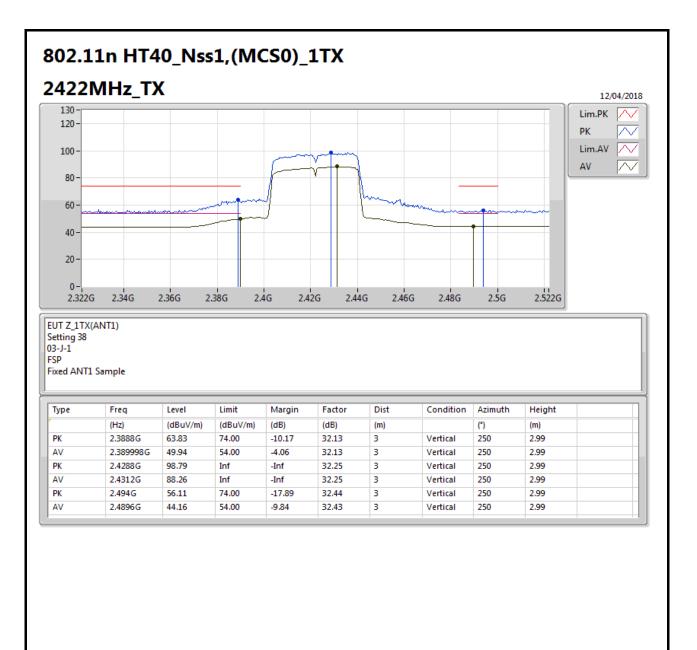




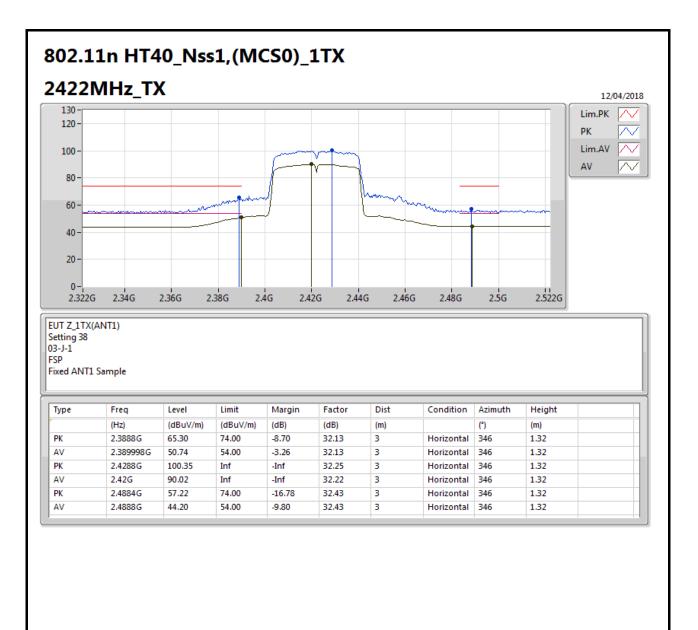




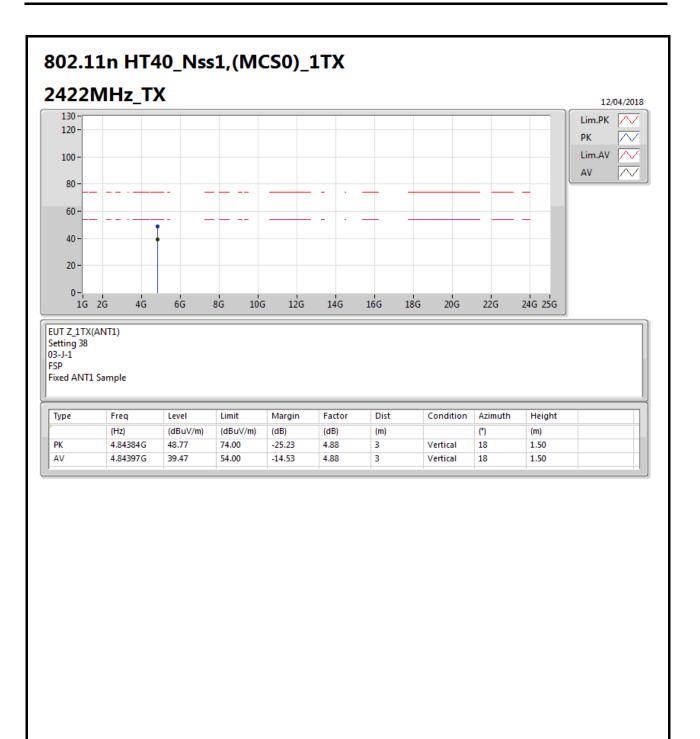




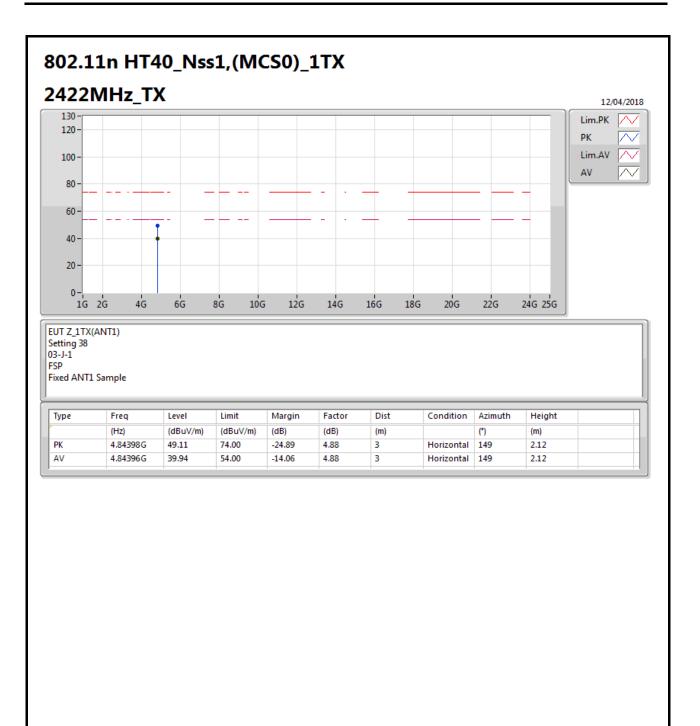




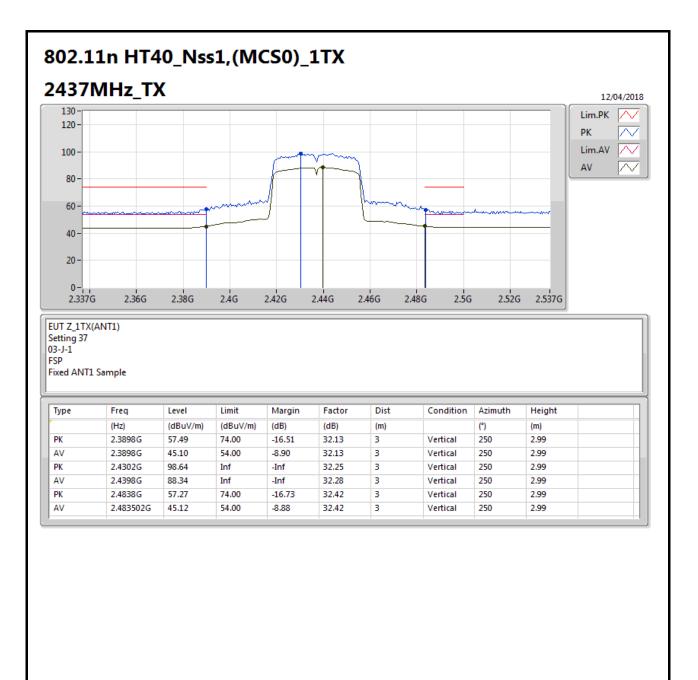




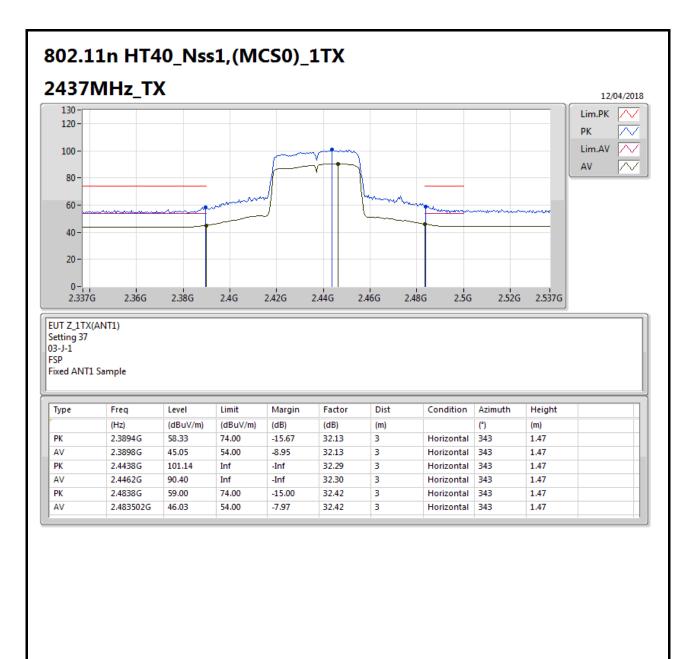




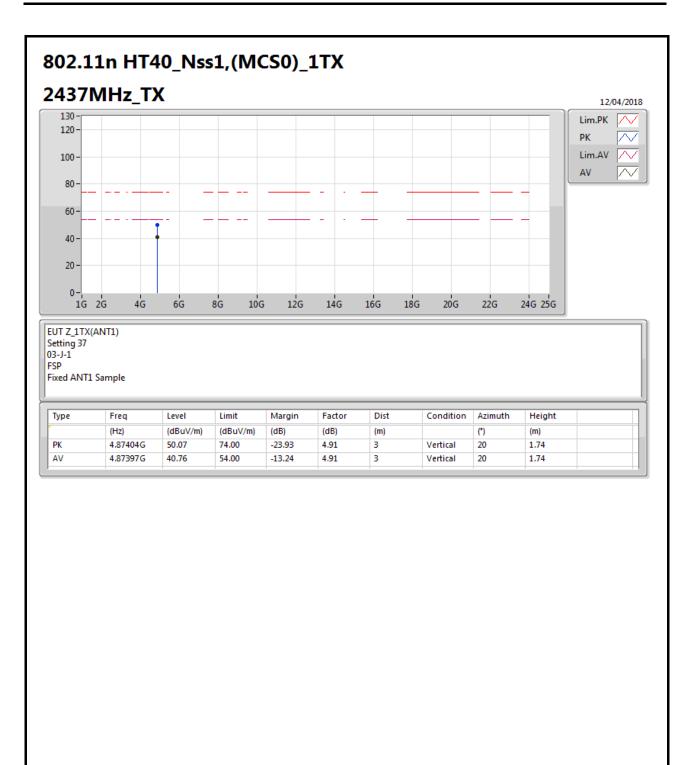




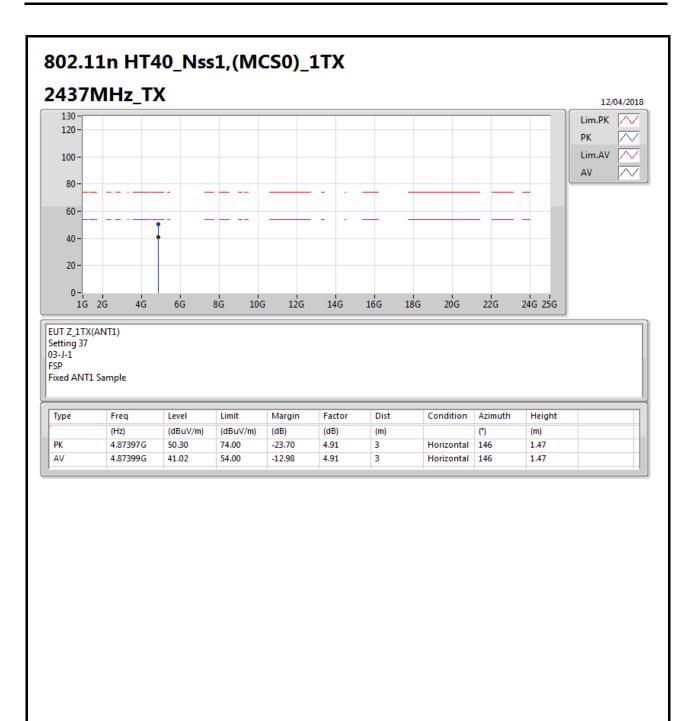




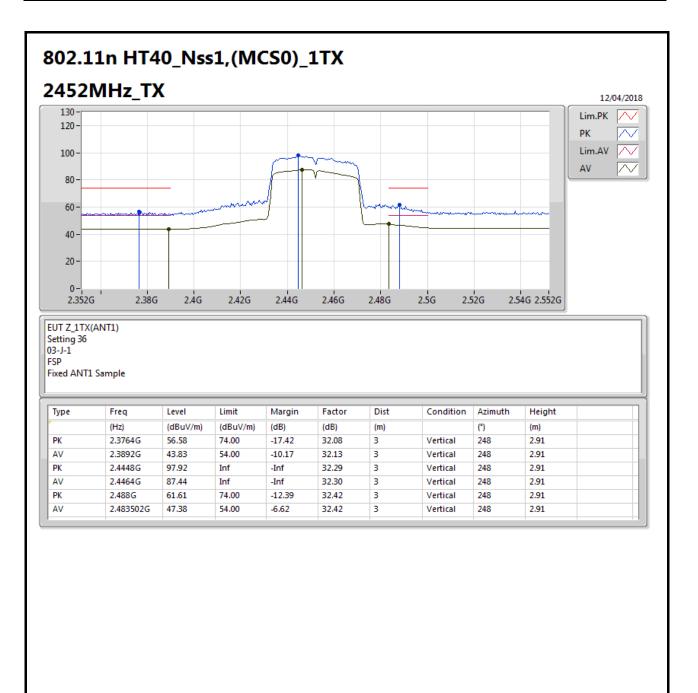




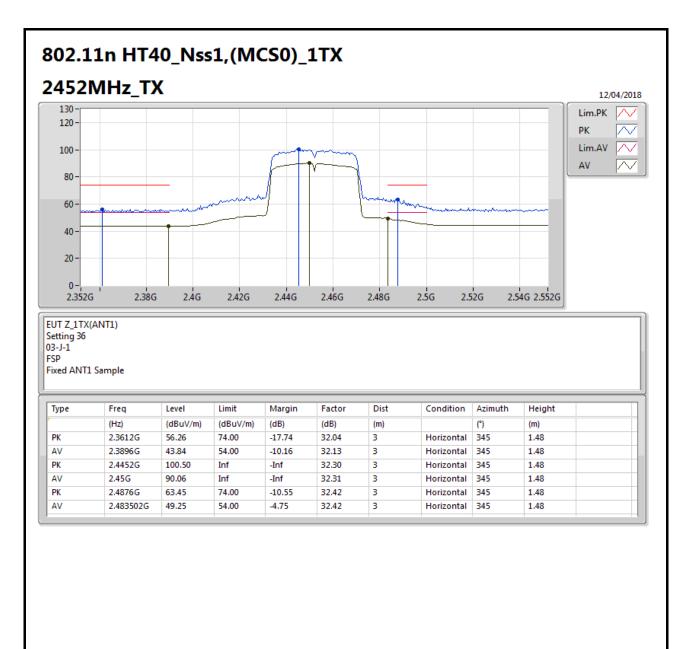




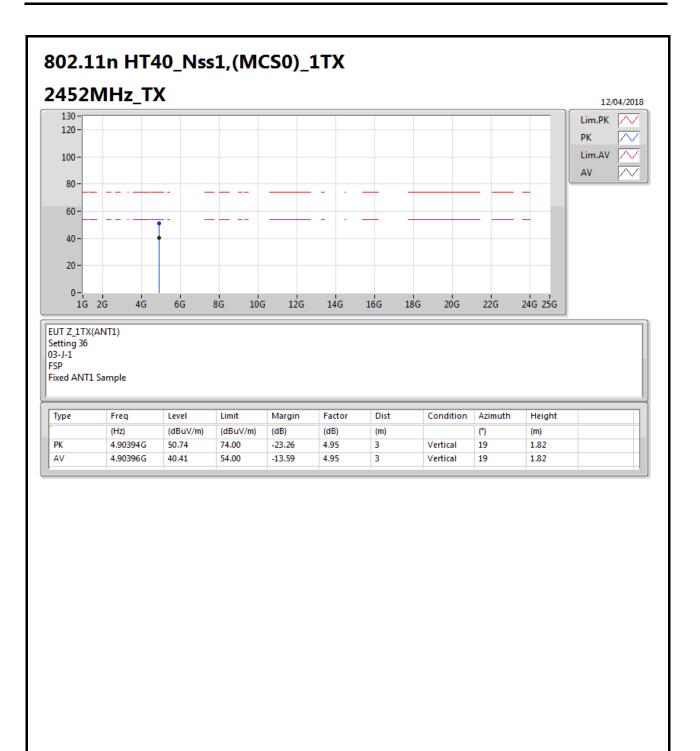




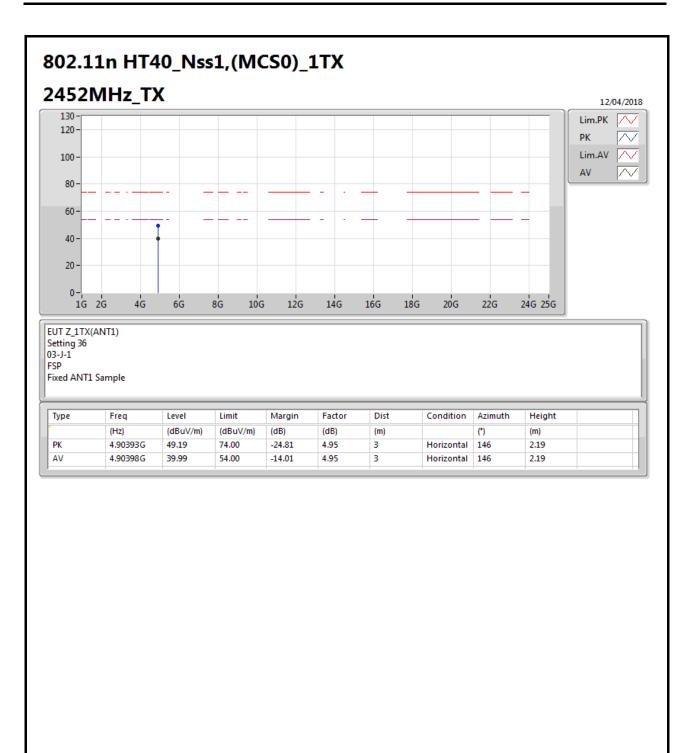




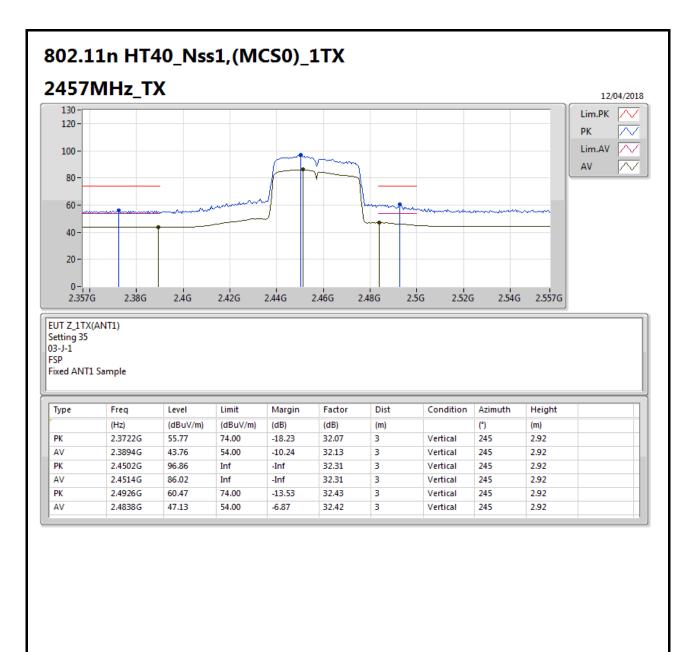




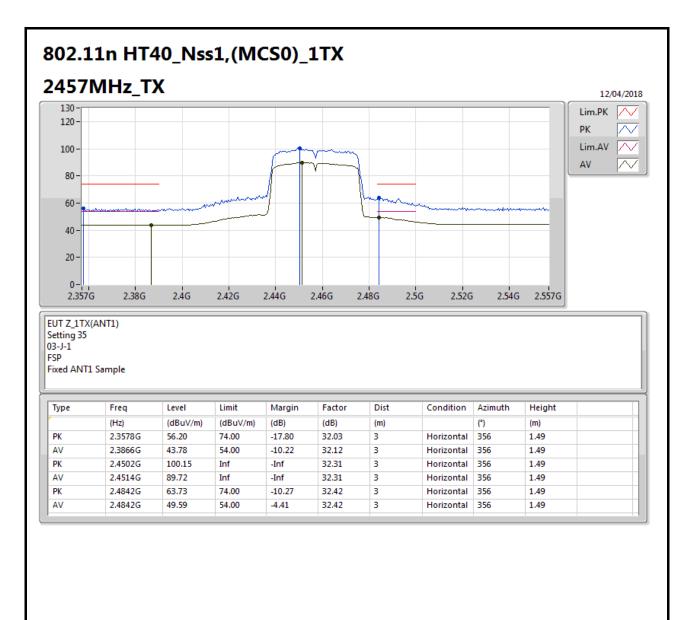




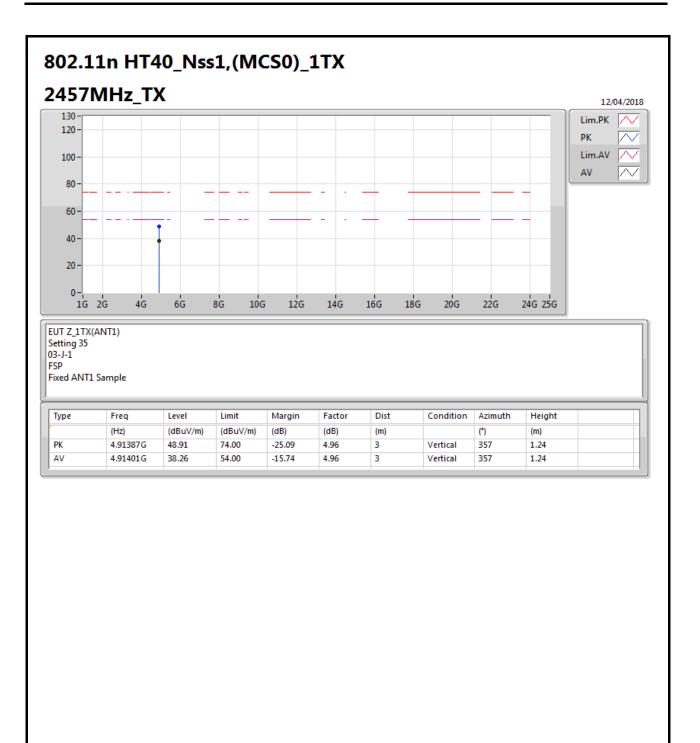




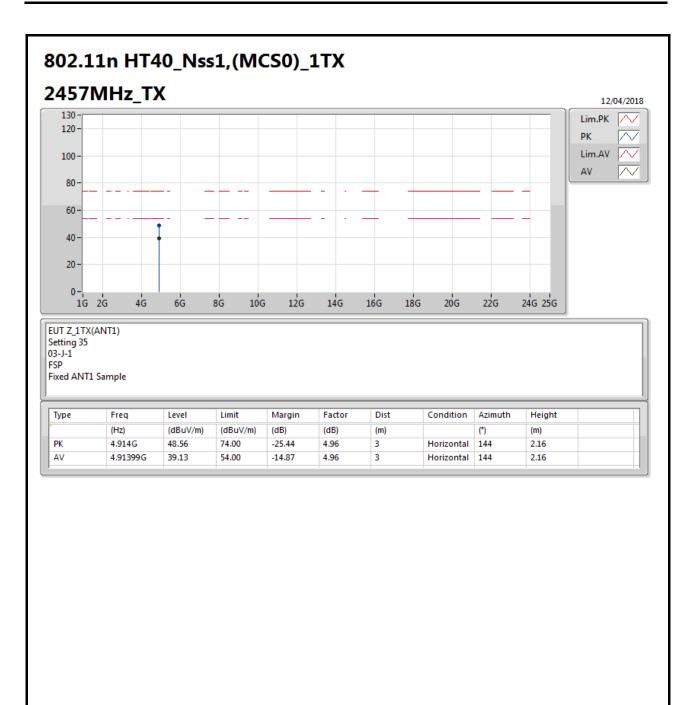




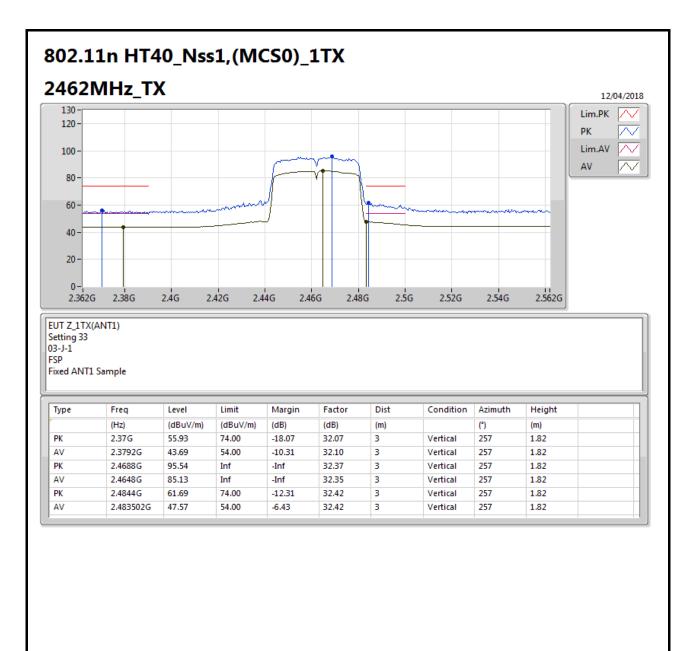




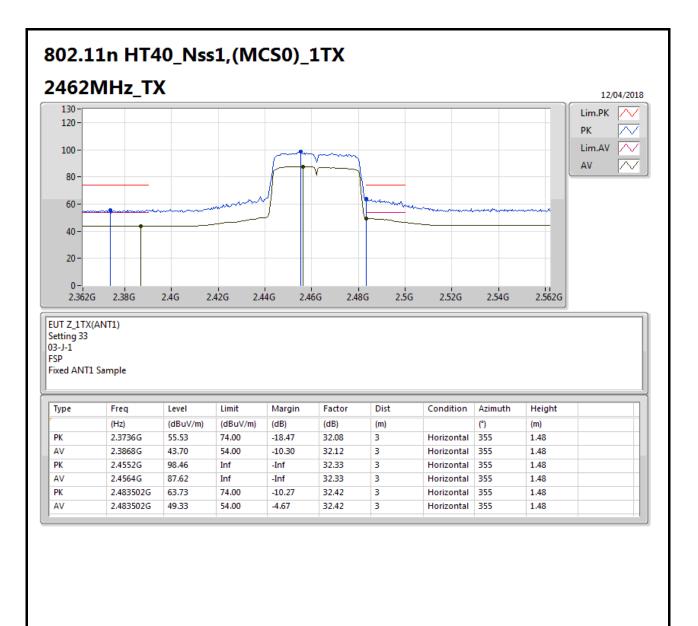




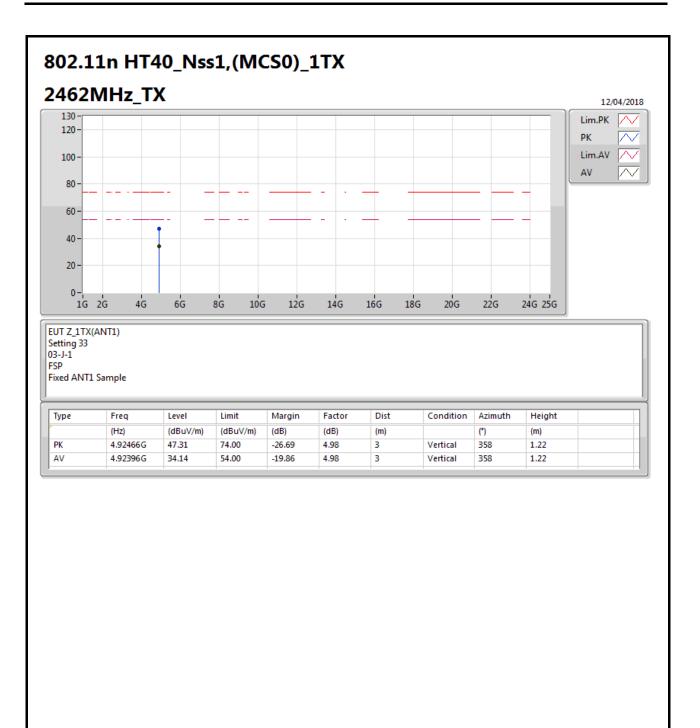




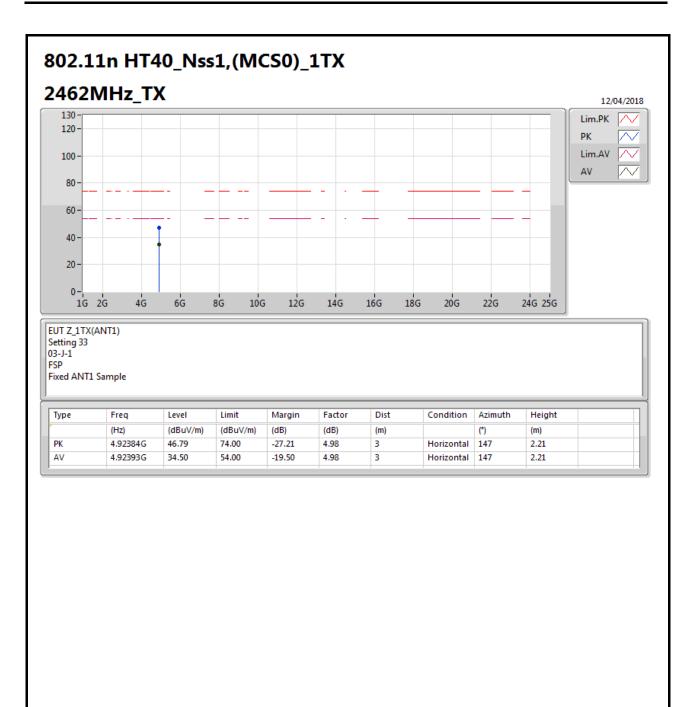














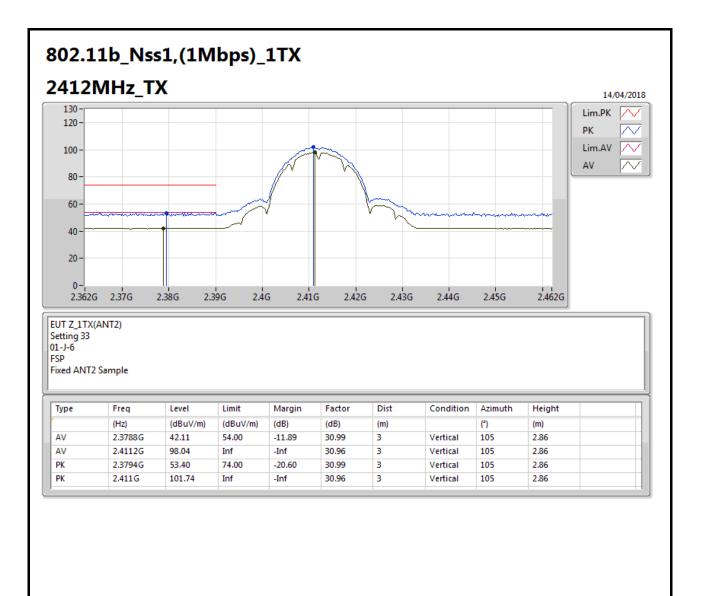
## RSE TX above 1GHz Result

## Appendix B.2

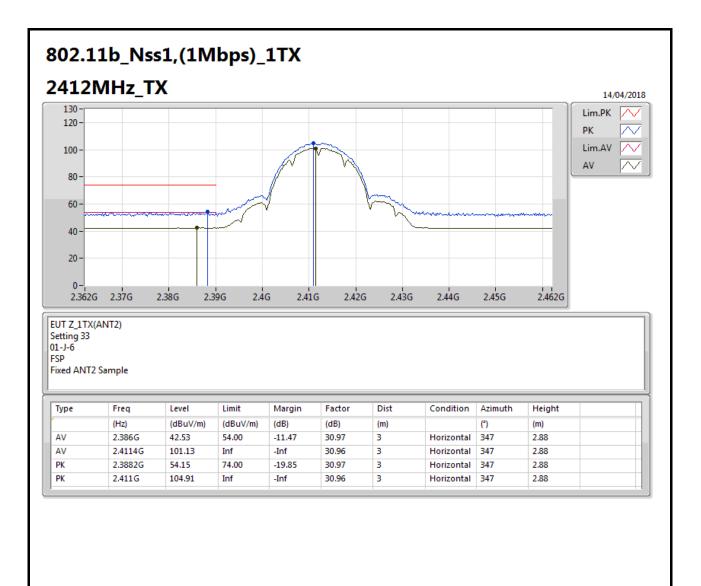
## Test Mode: Mode 3 Summary

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	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	AV	2.4844G	53.14	54.00	-0.86	31.17	3	Horizontal	349	2.76	-

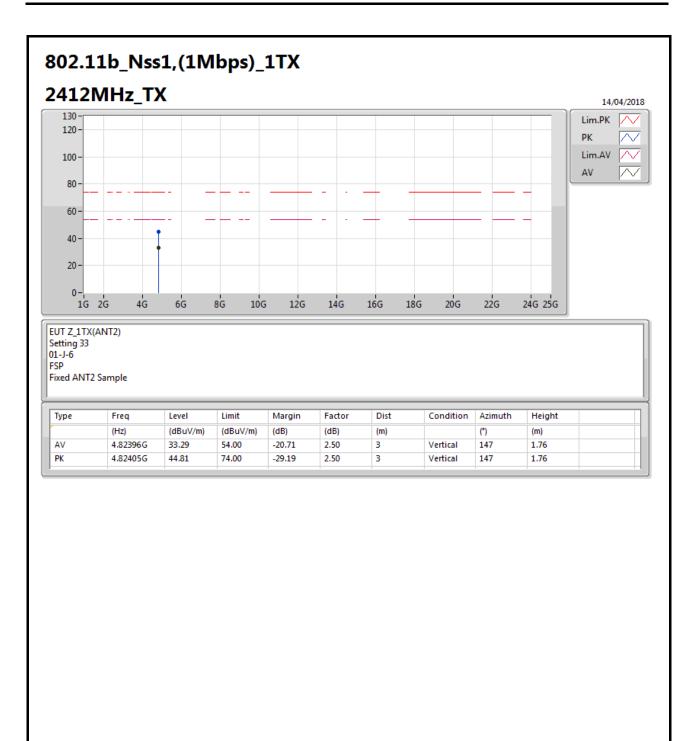




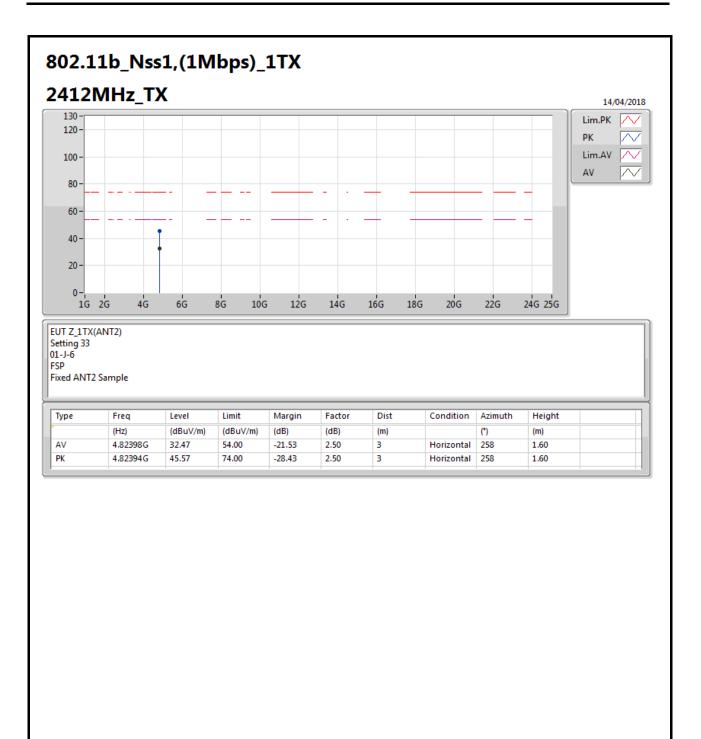




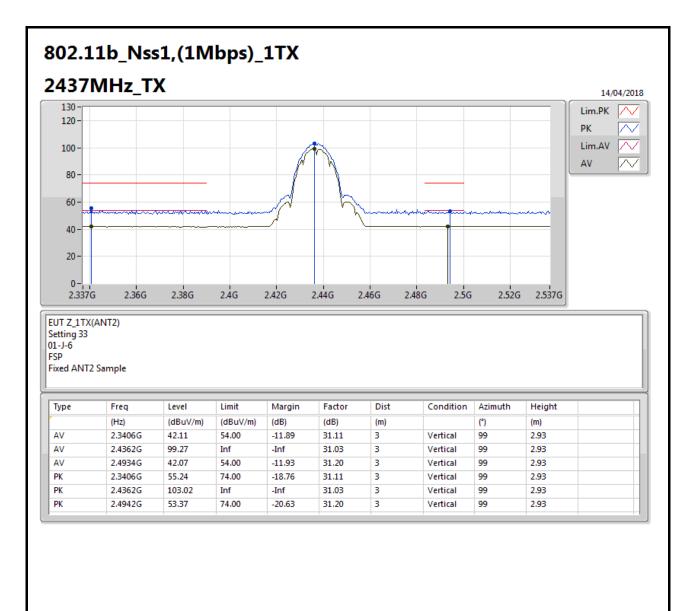




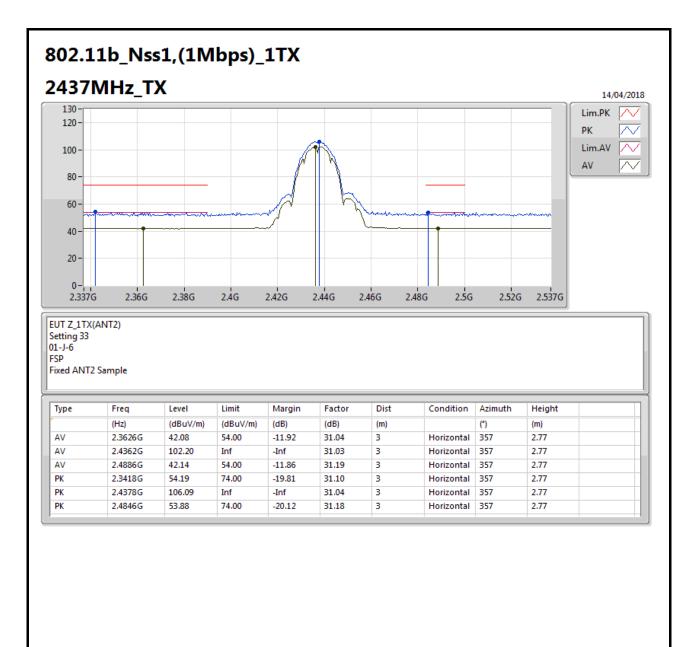




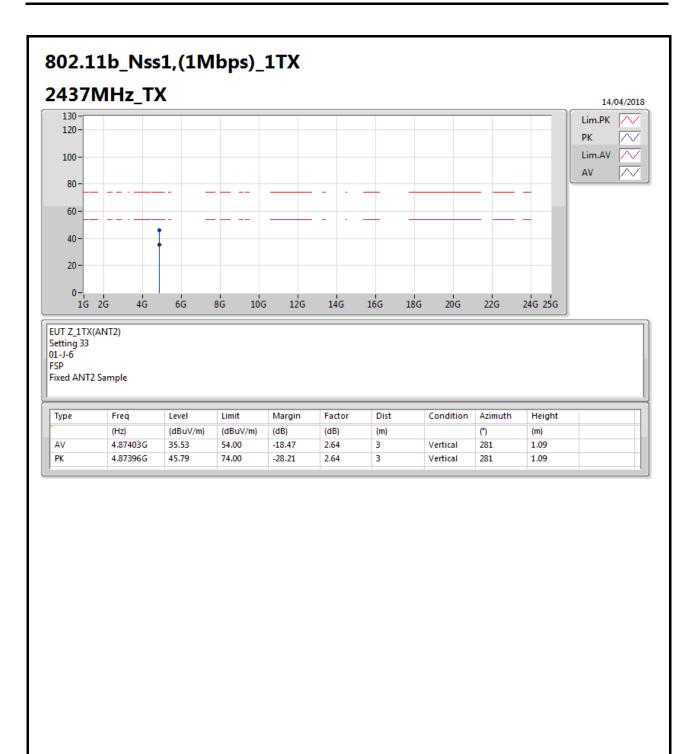




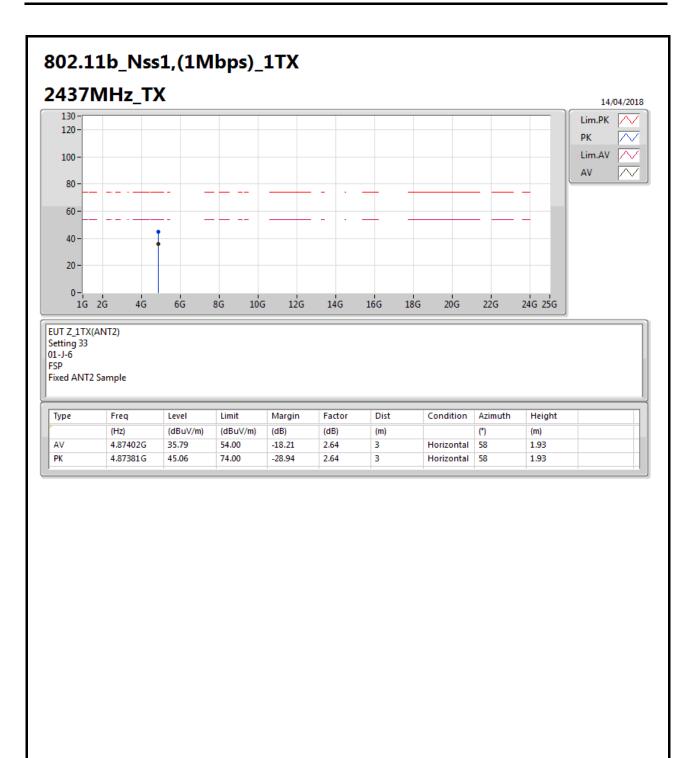




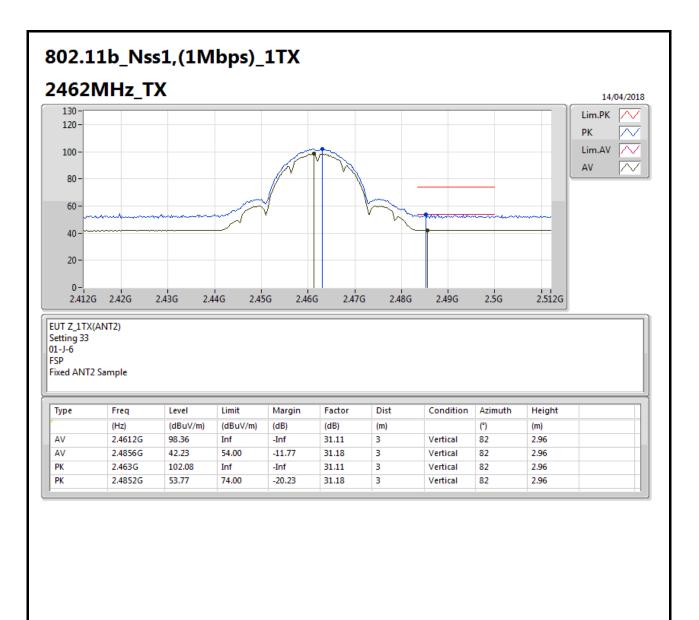




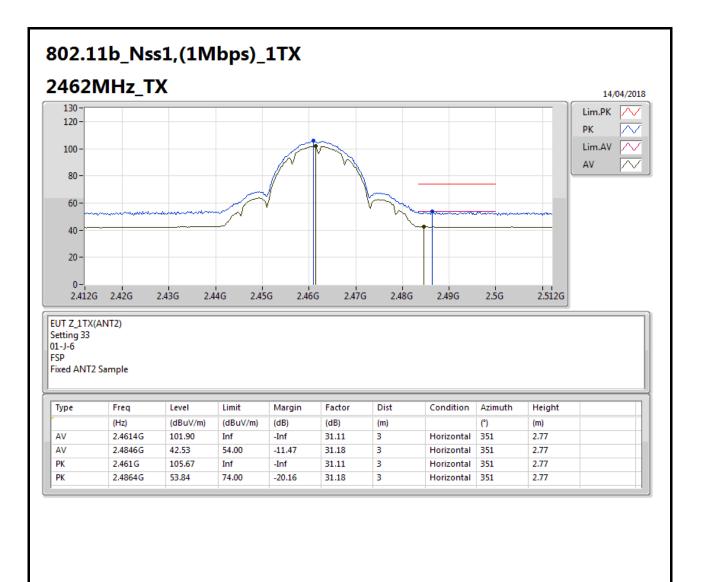




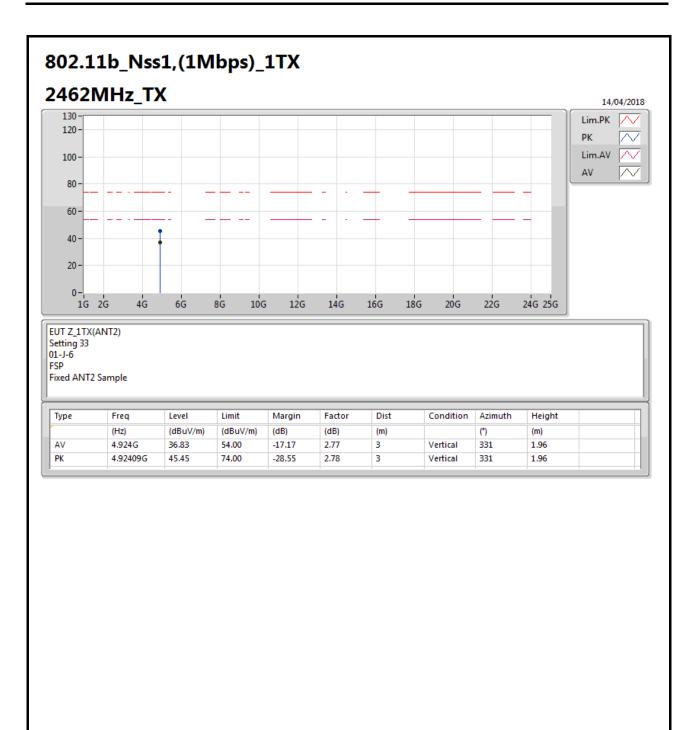




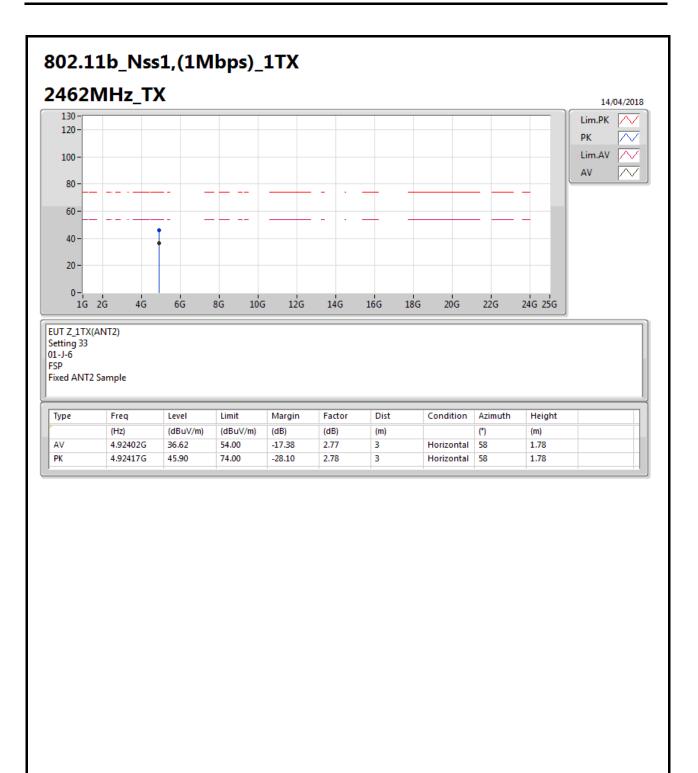




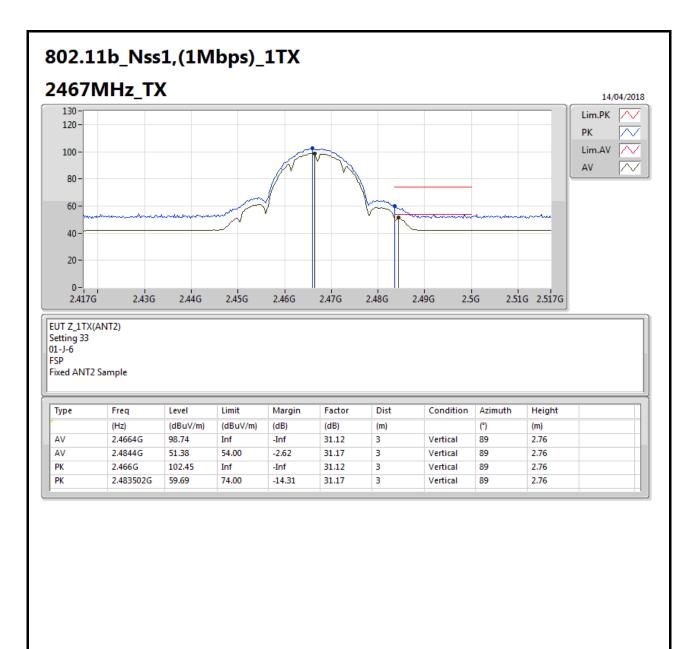




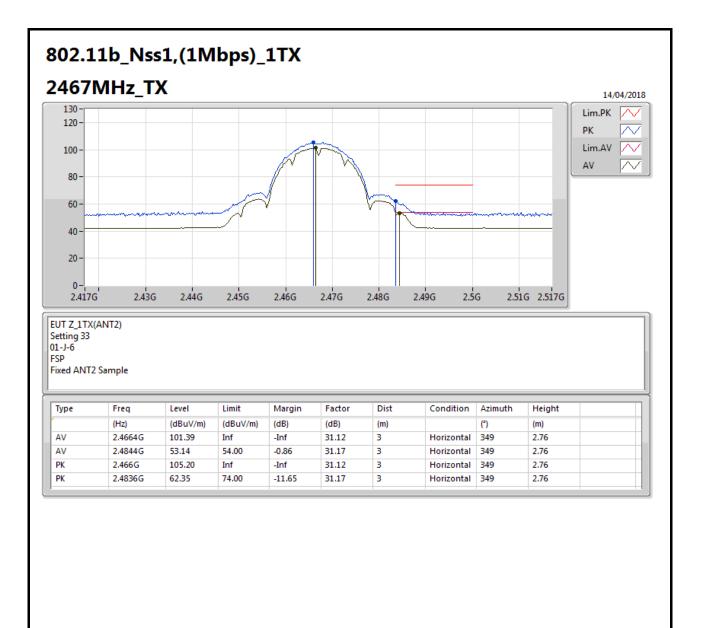




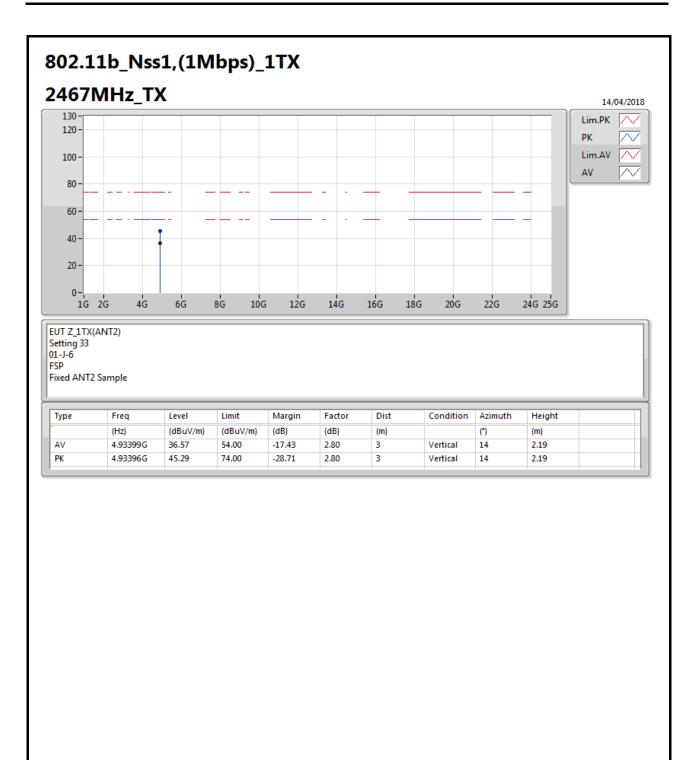




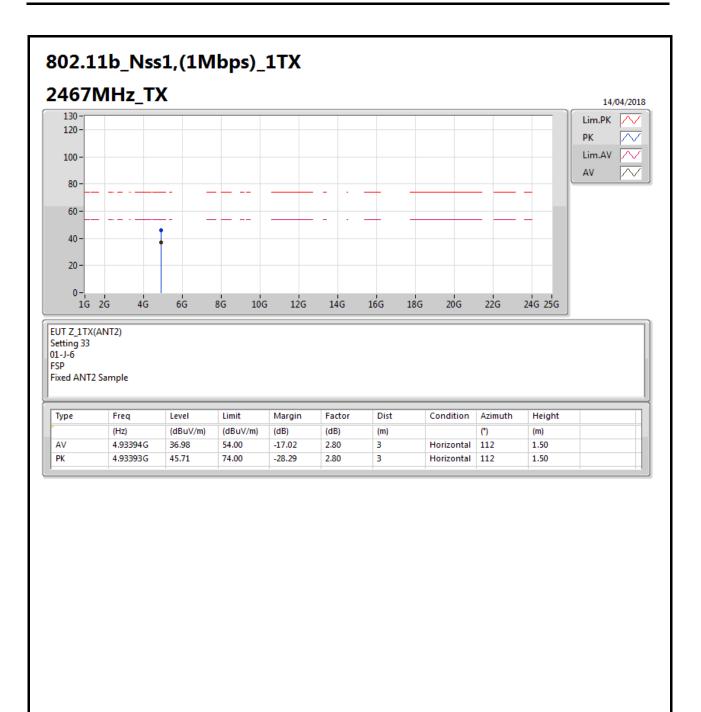




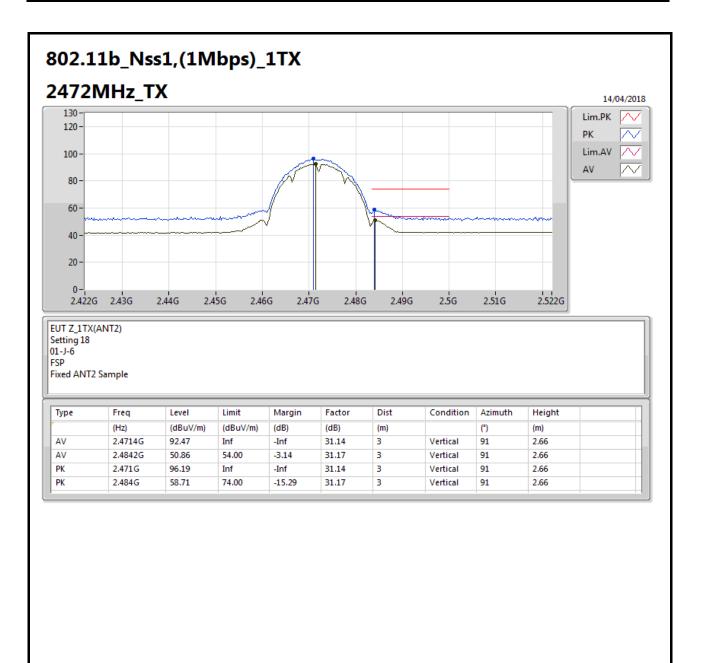




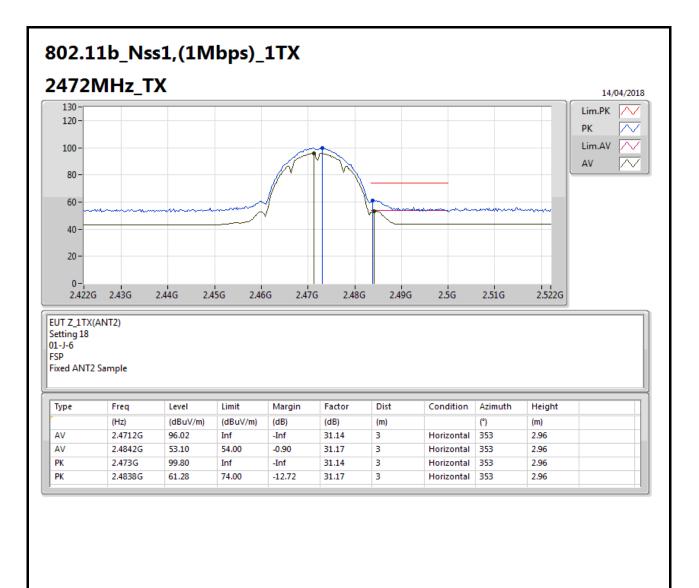




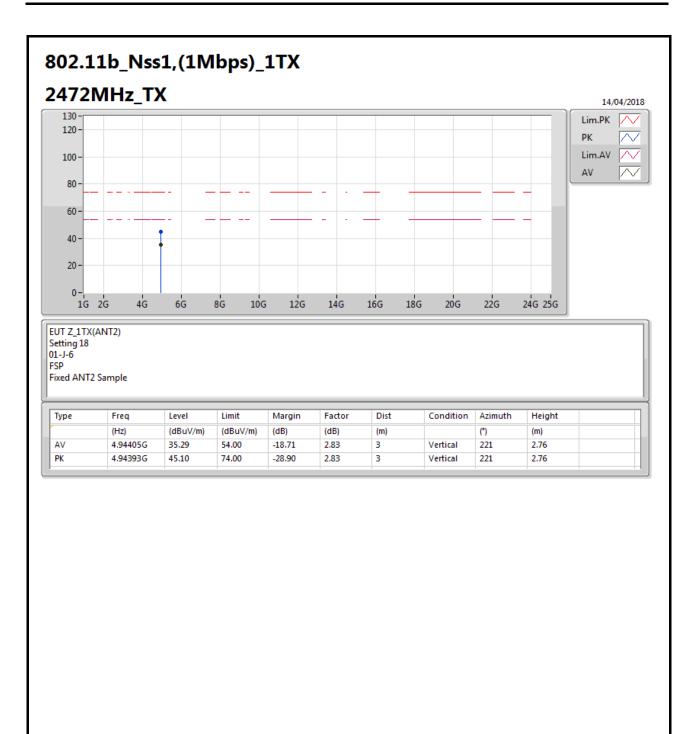




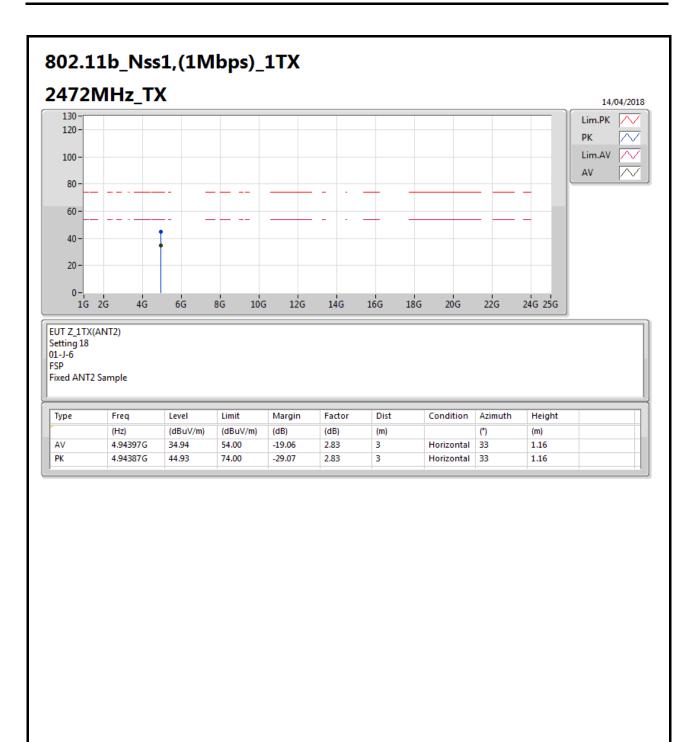




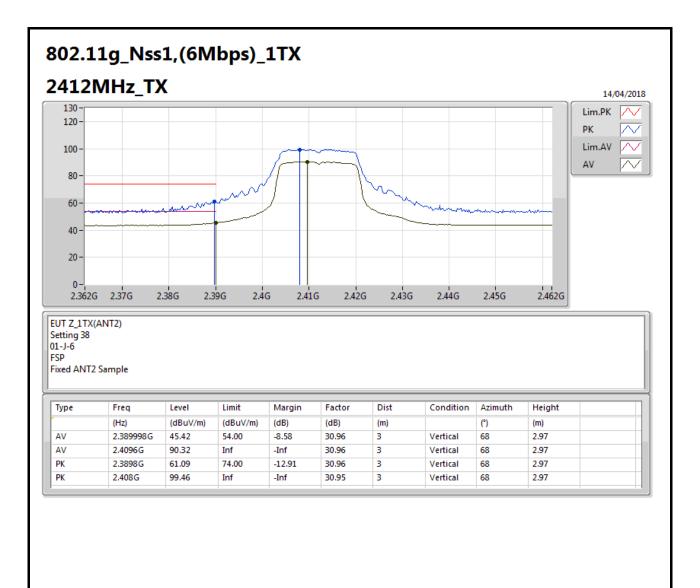




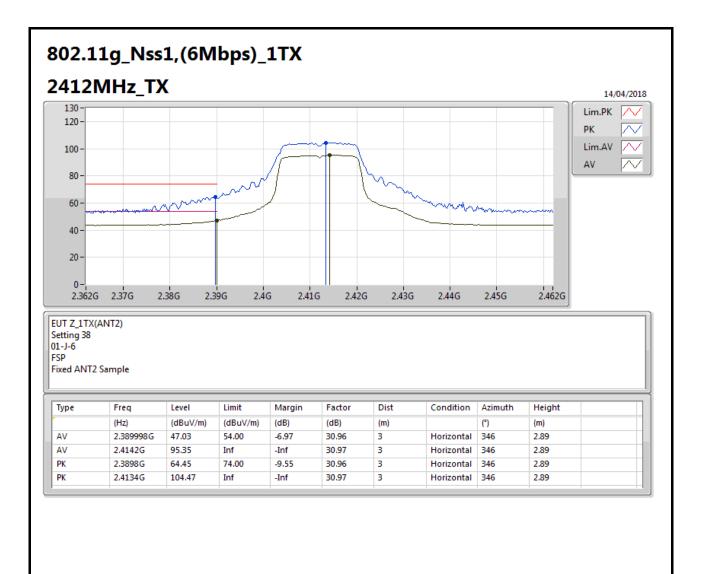




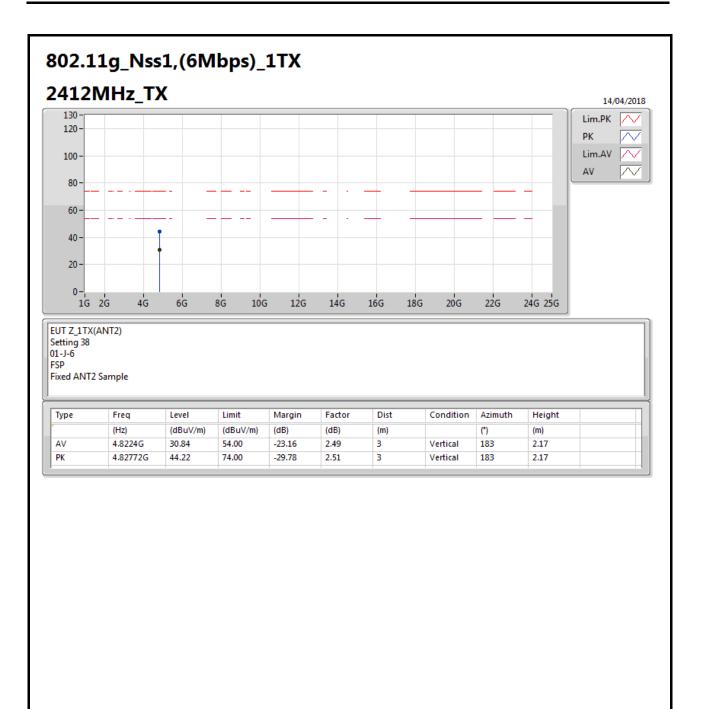




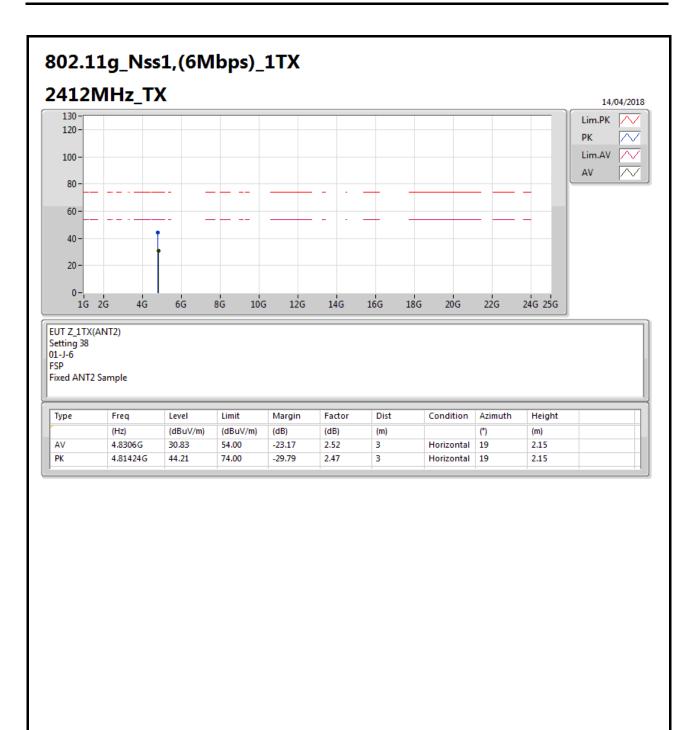




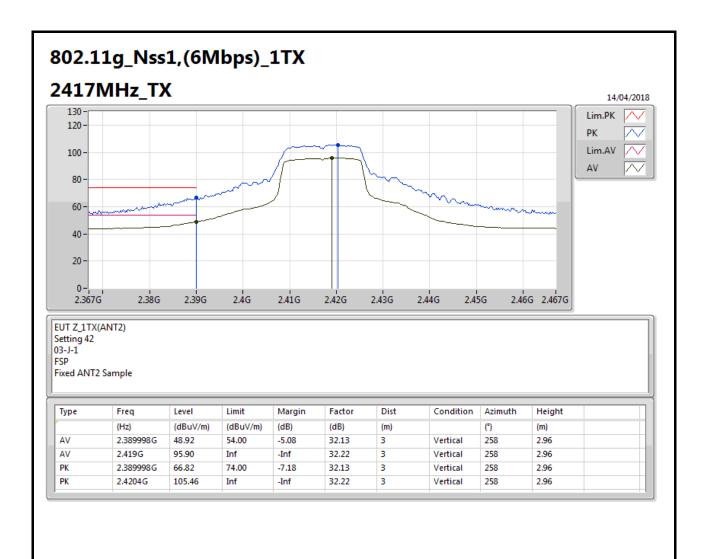




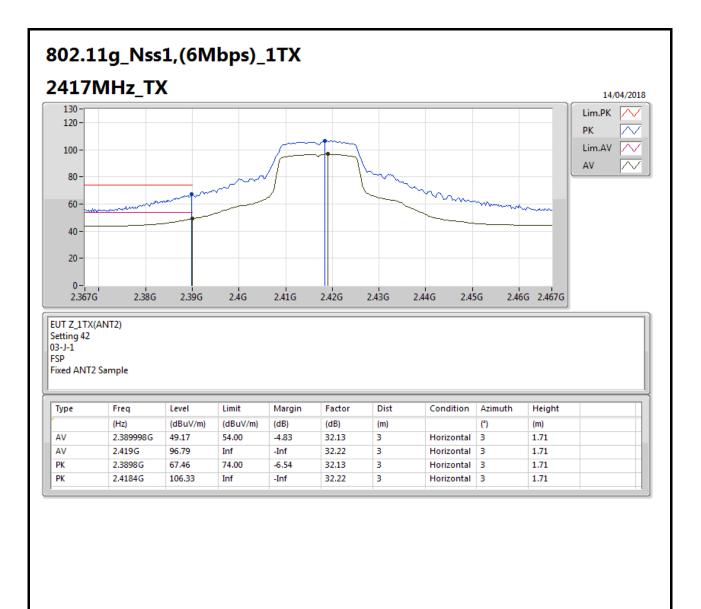




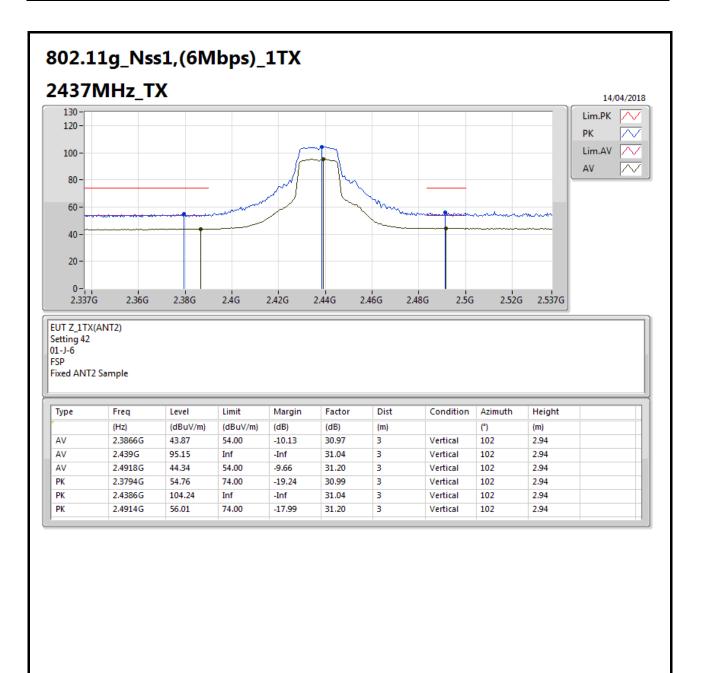




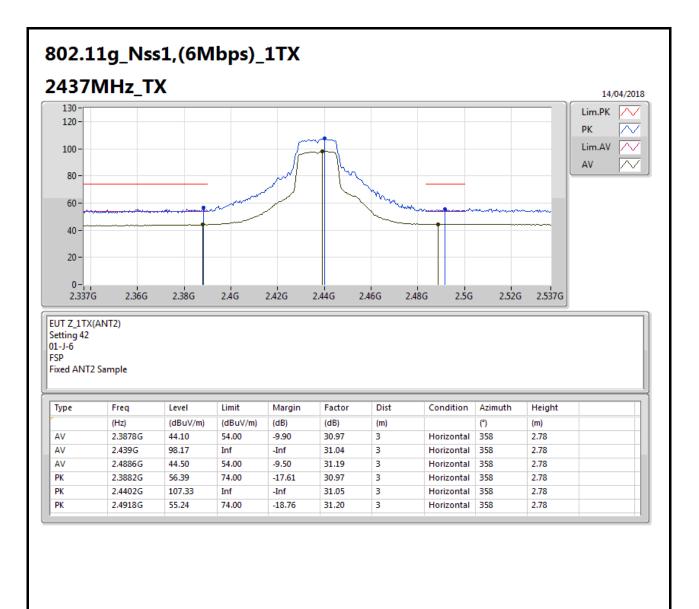




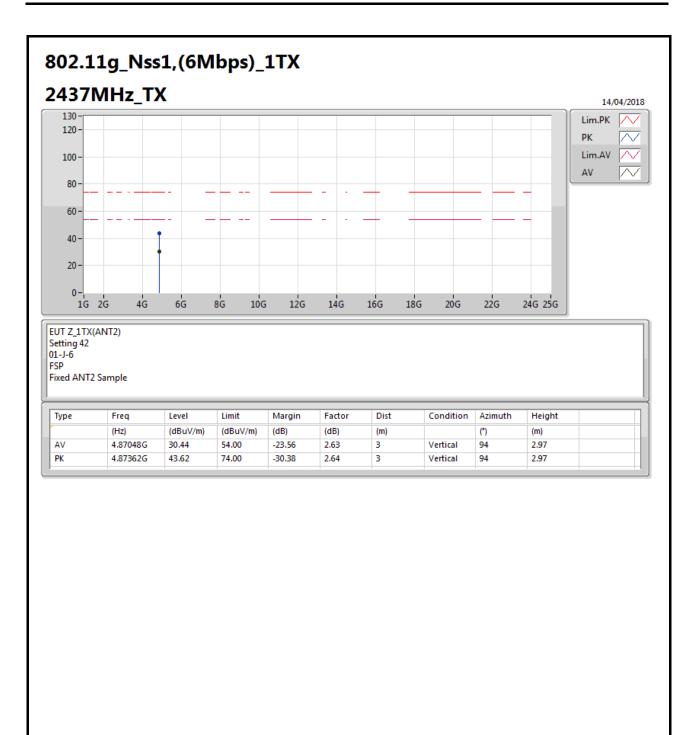




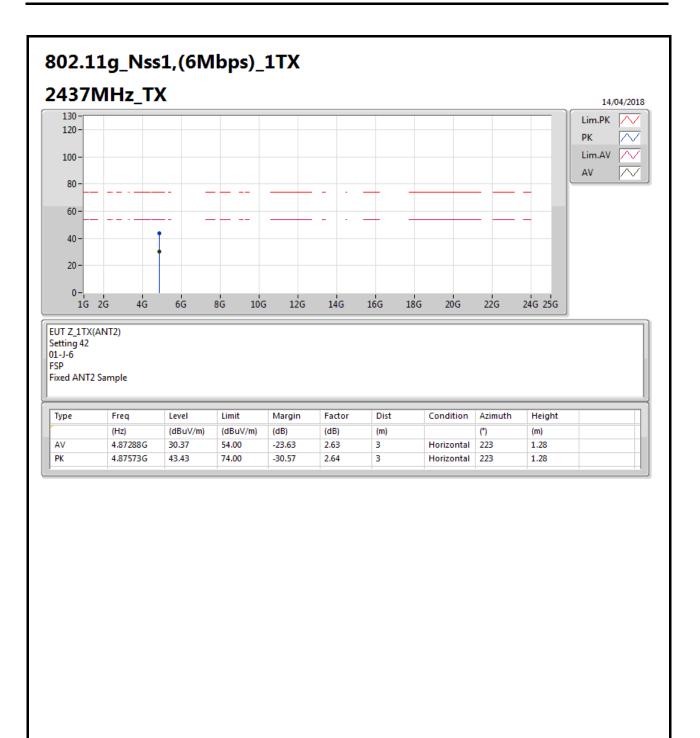




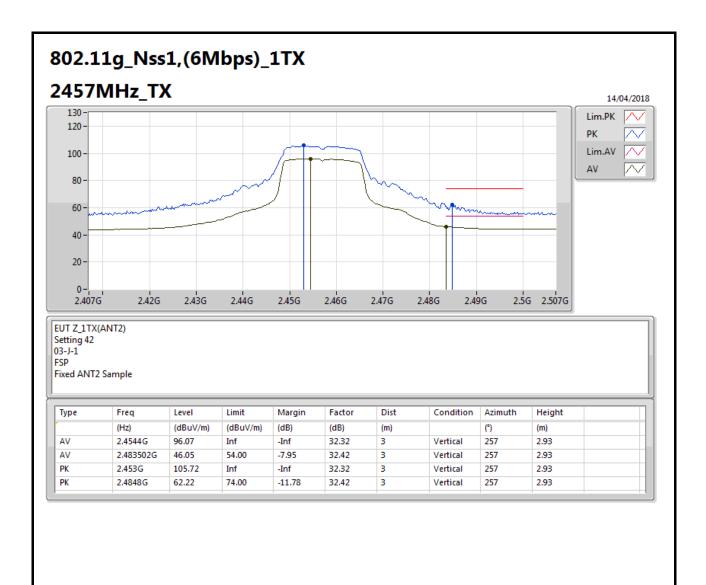




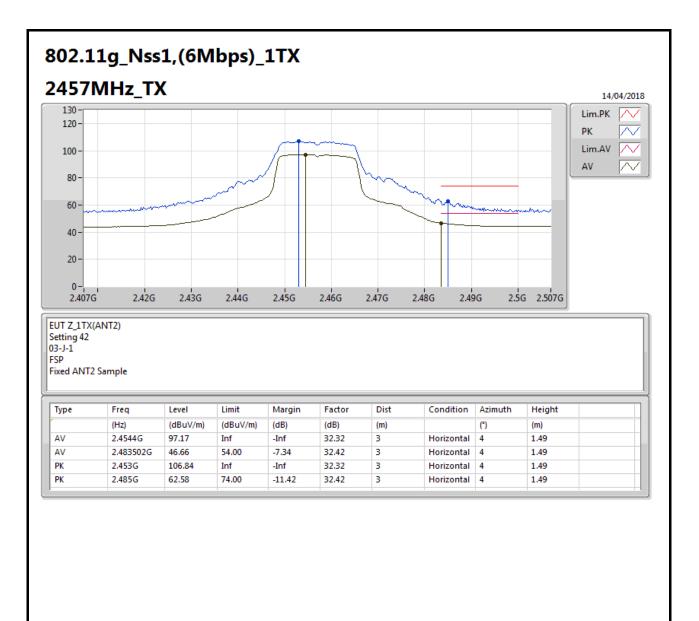




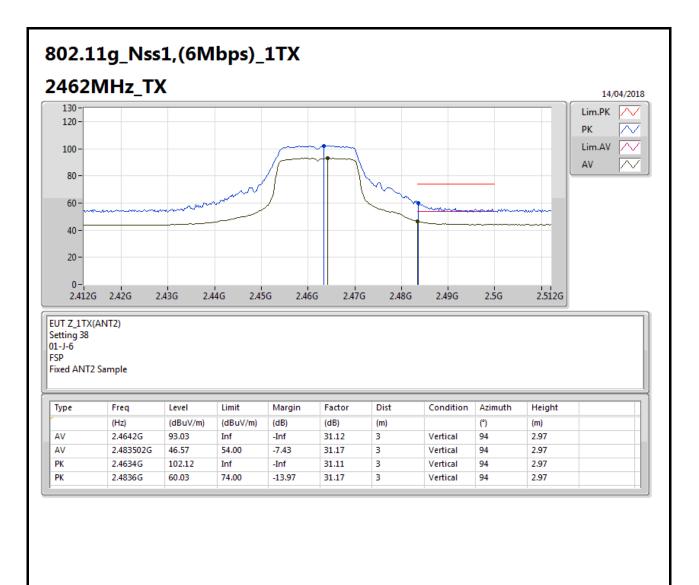




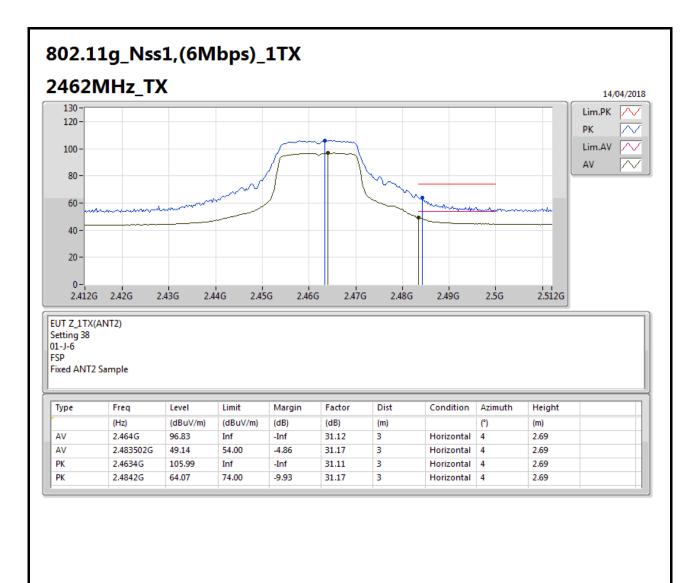




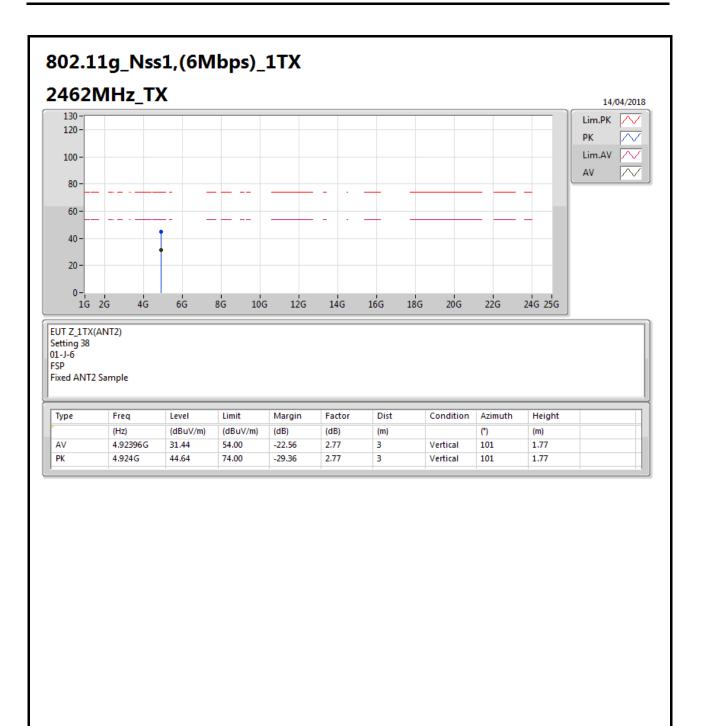




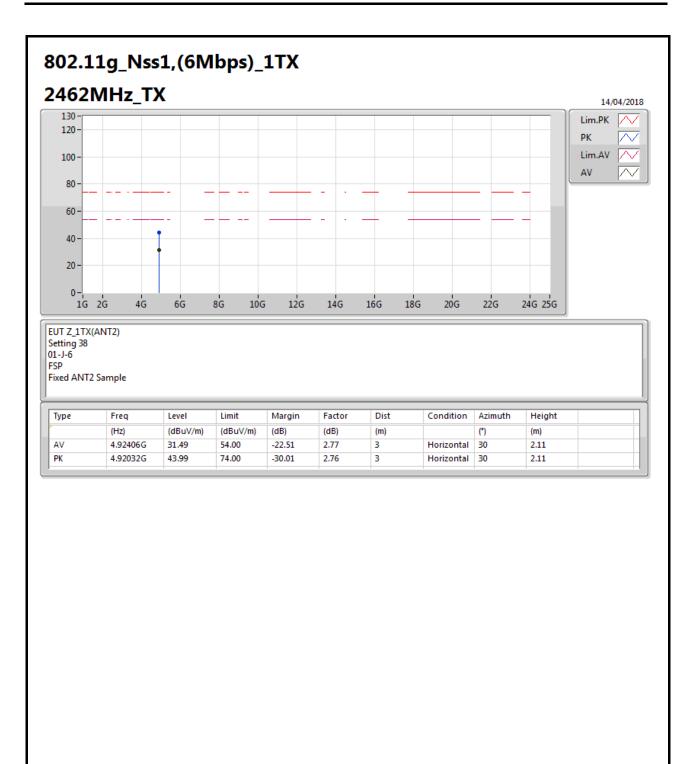




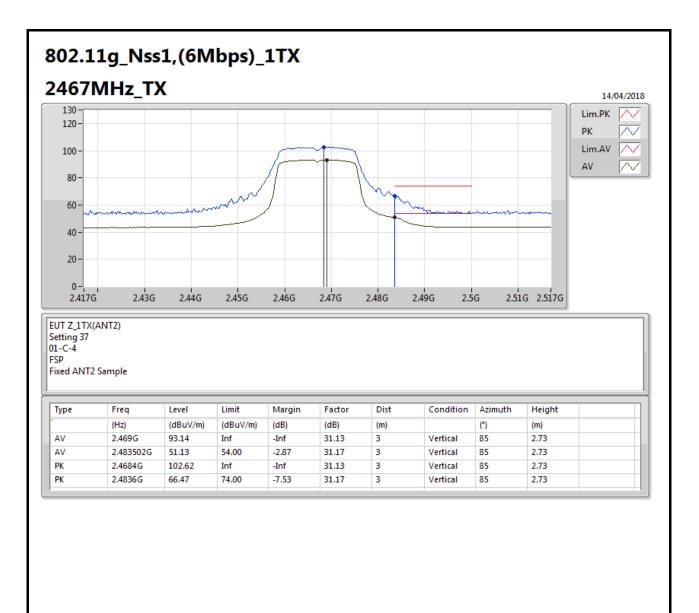




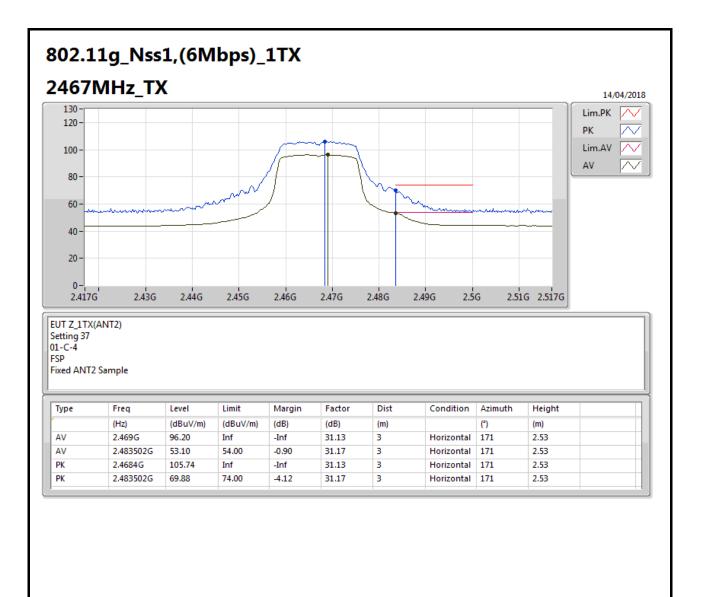




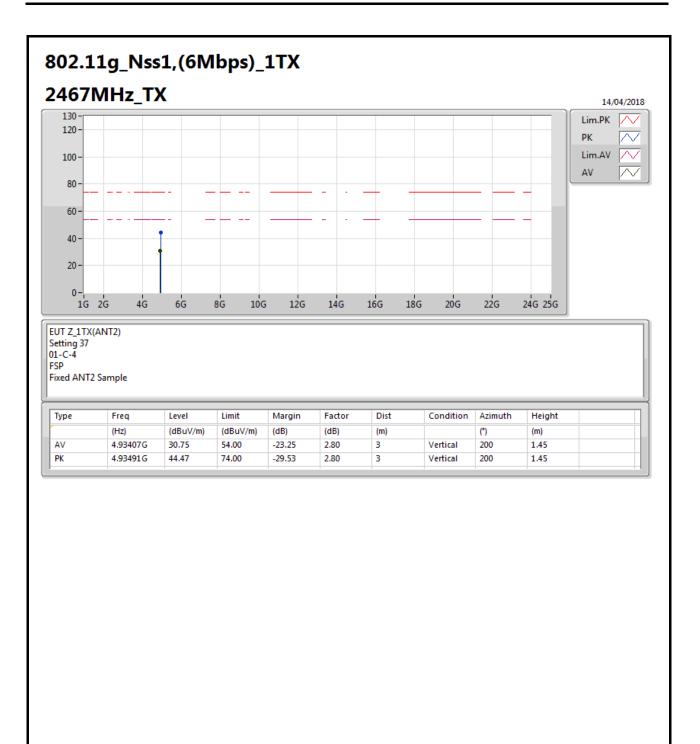




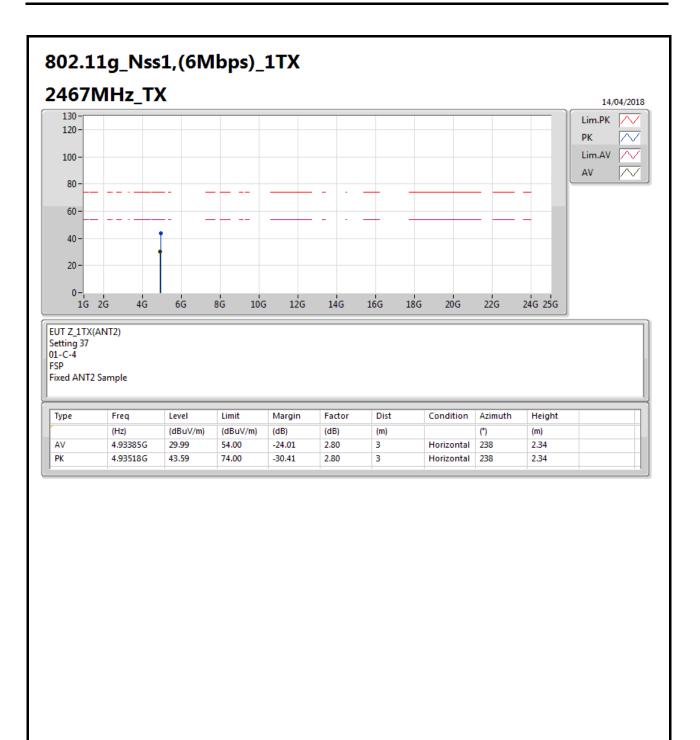




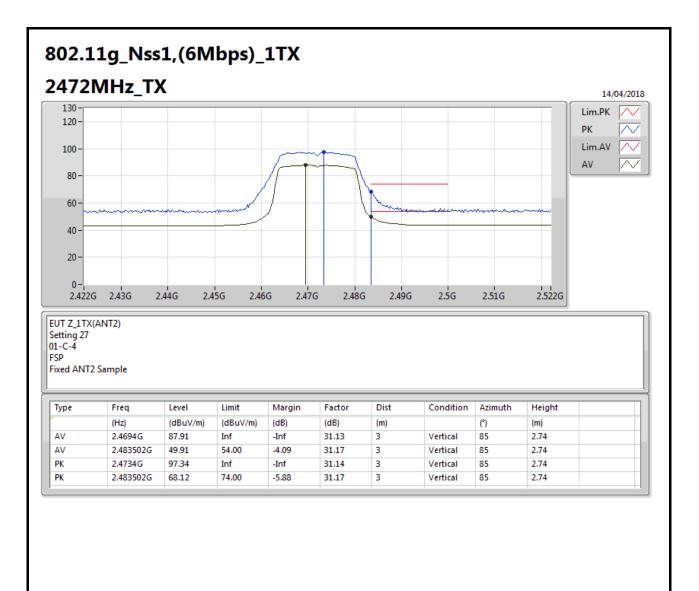




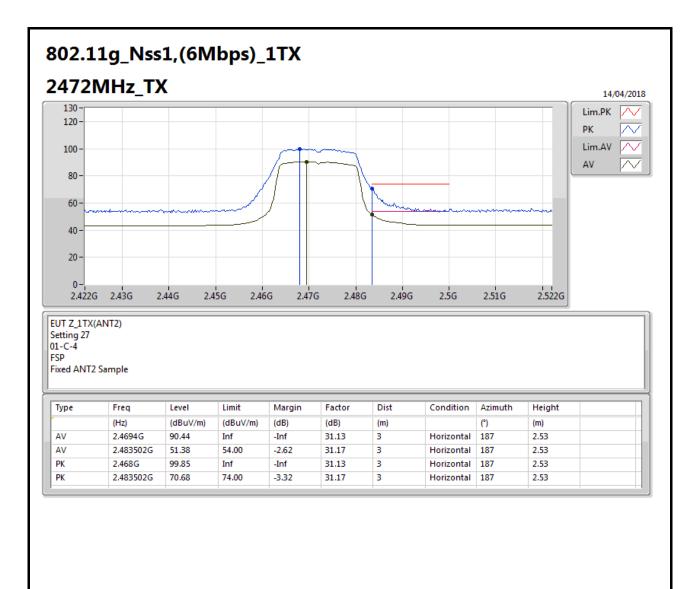




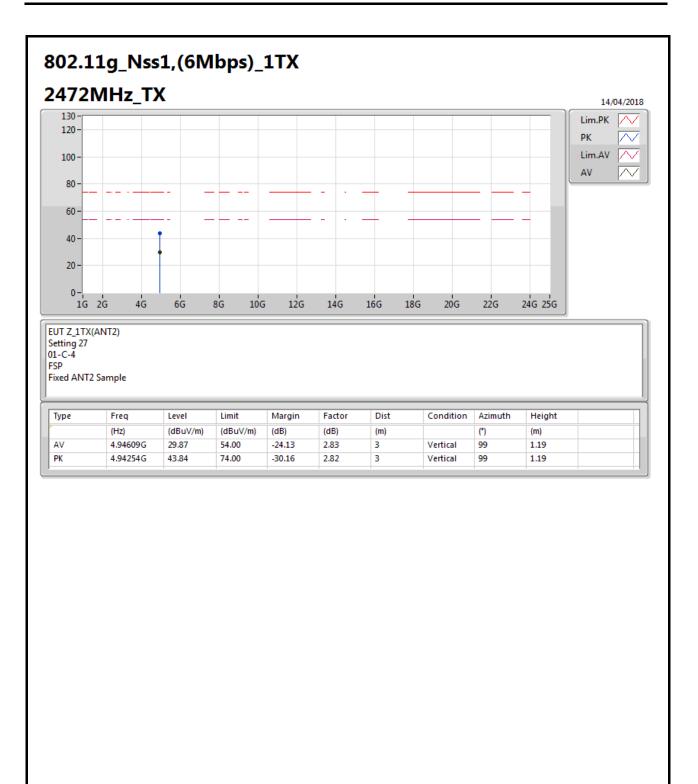




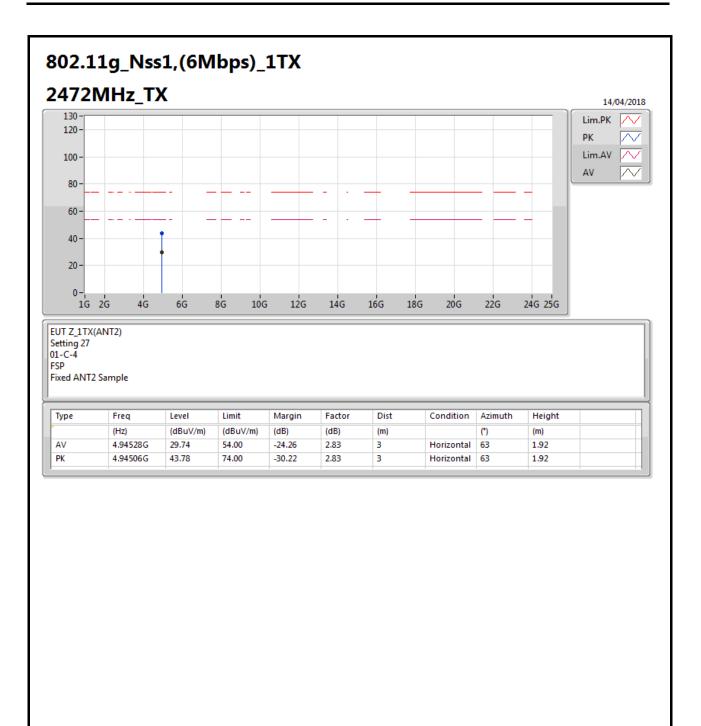




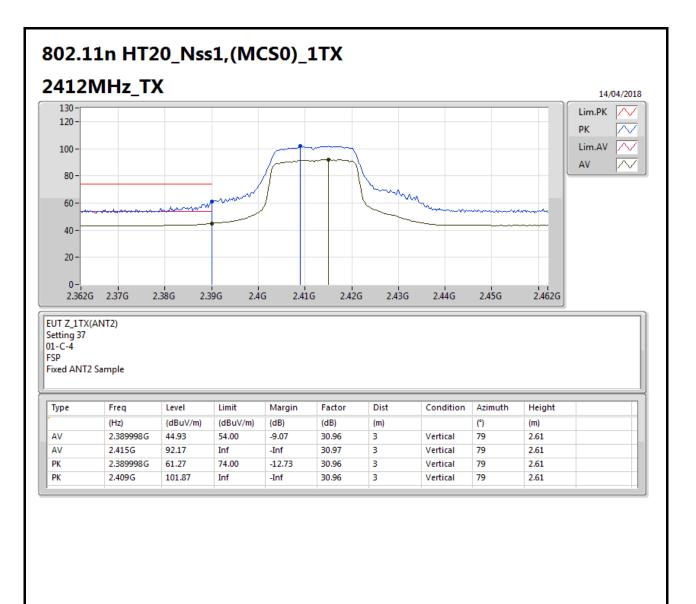




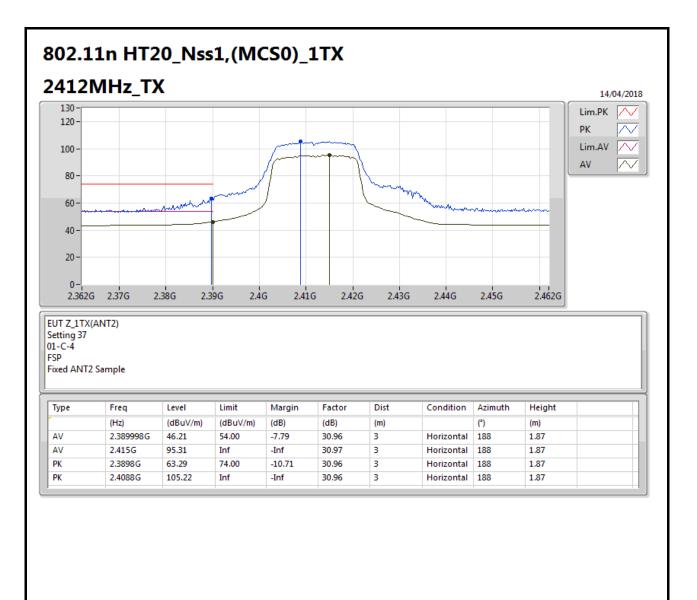




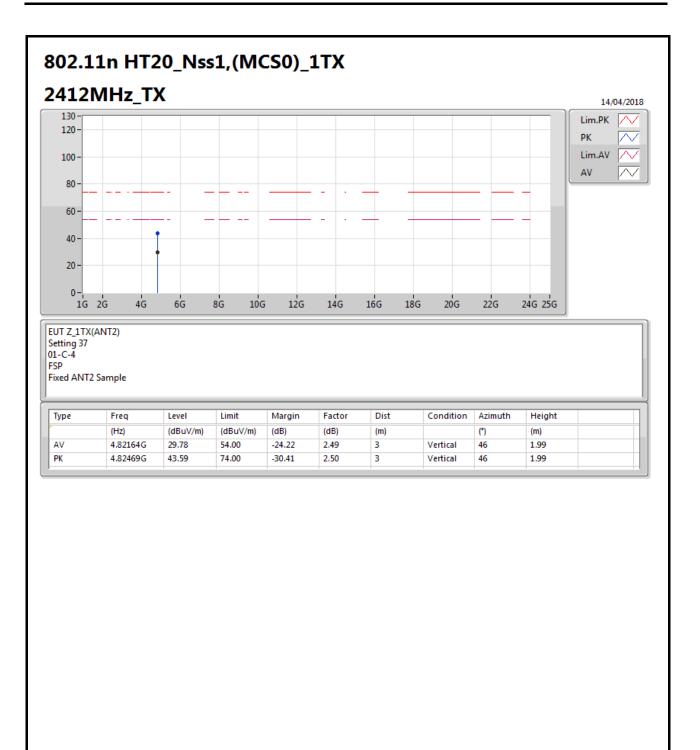




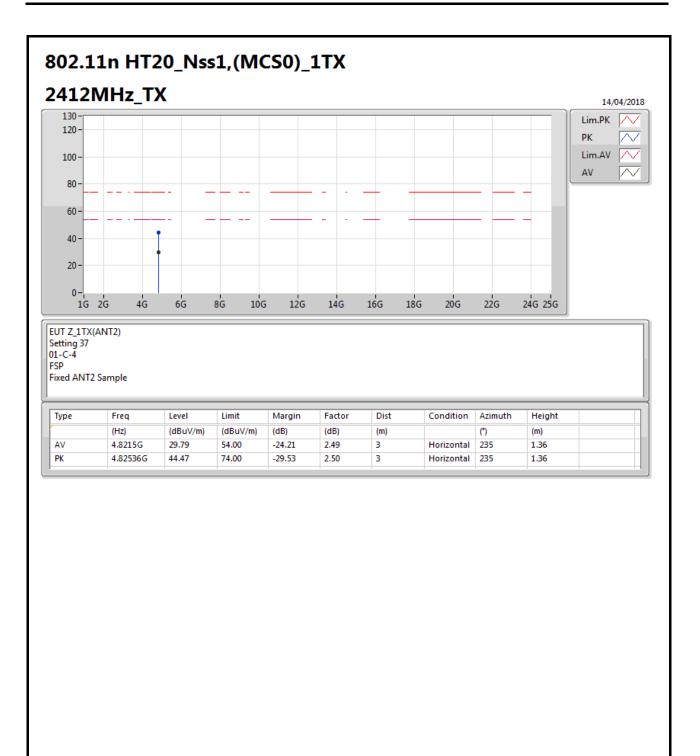




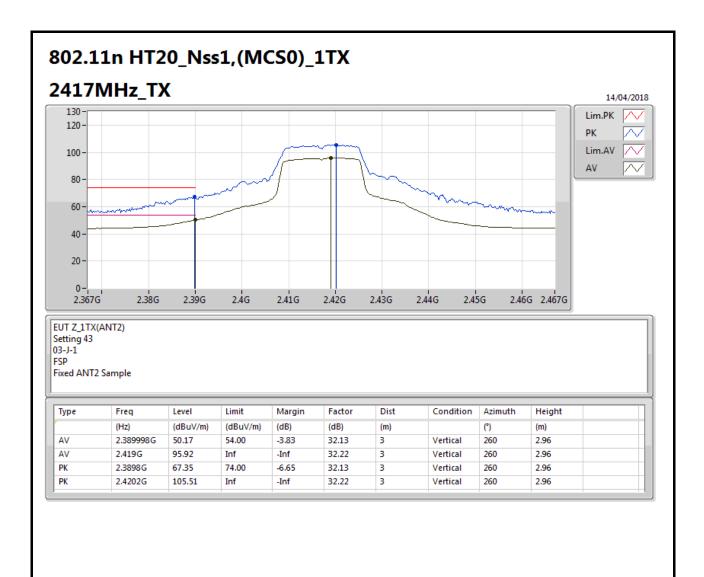




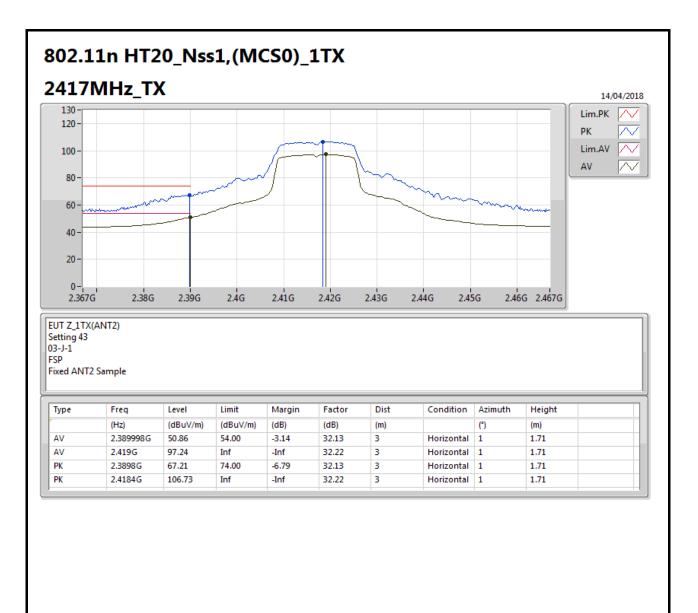




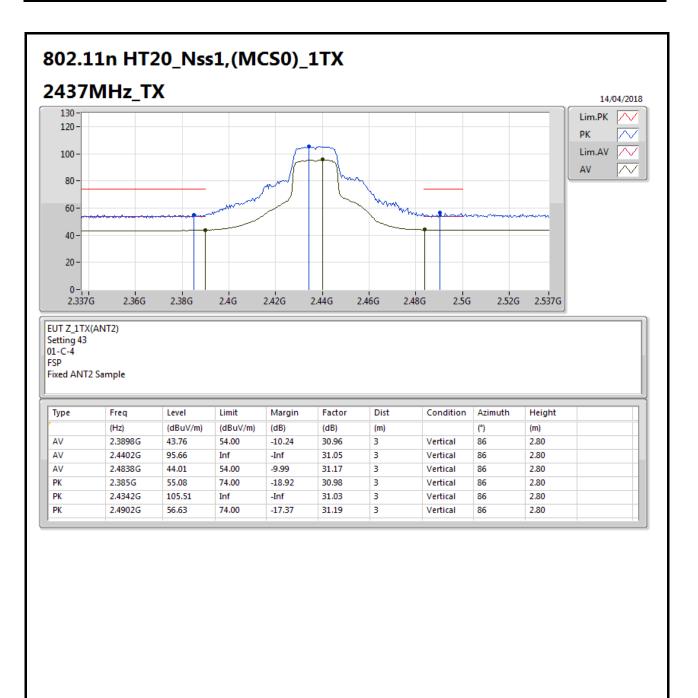




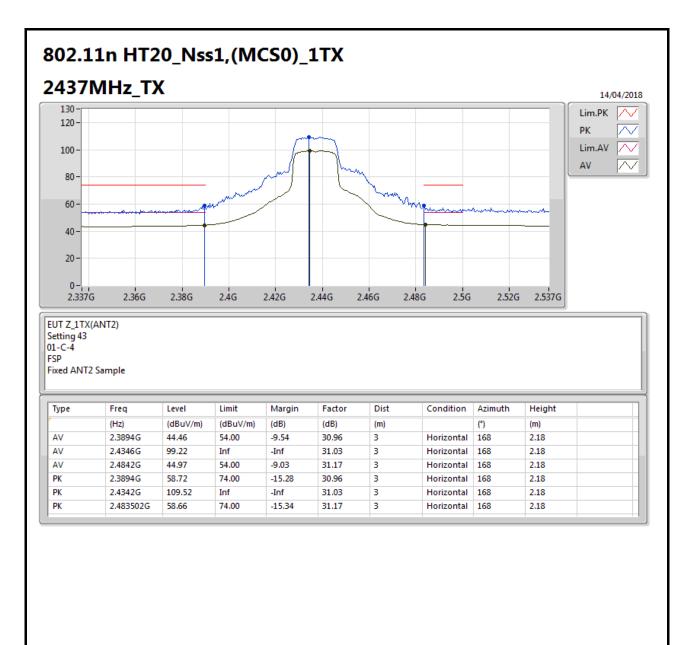




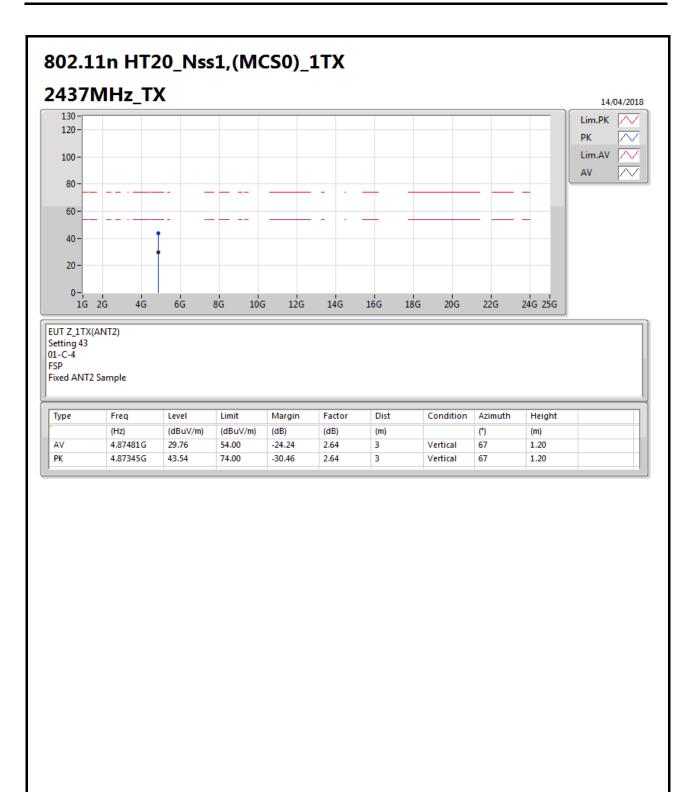




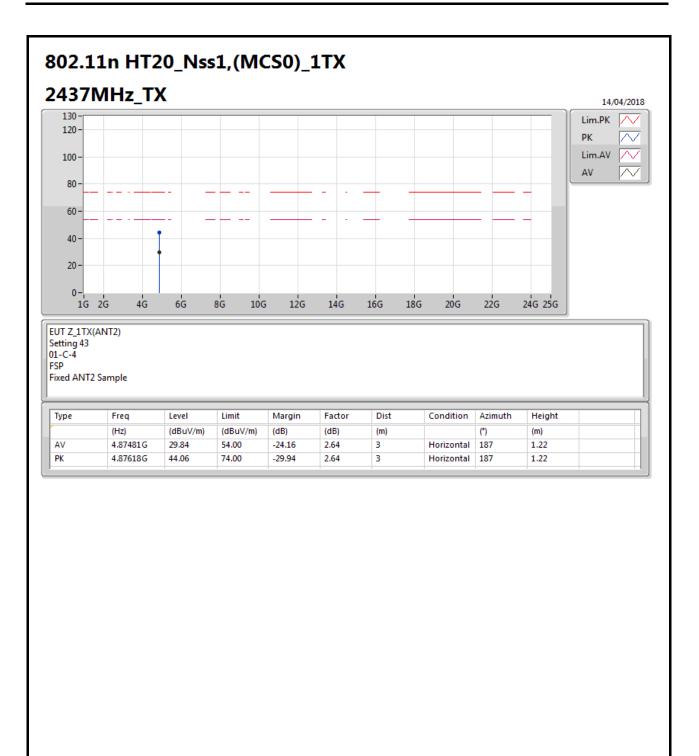




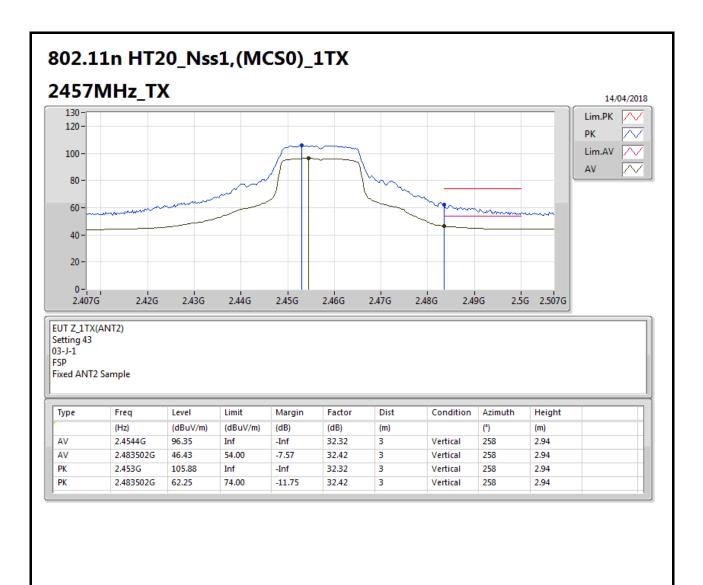




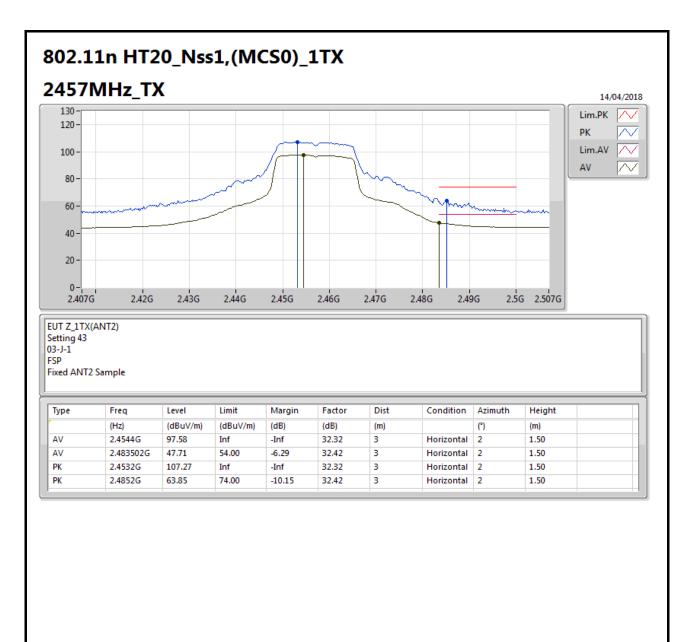




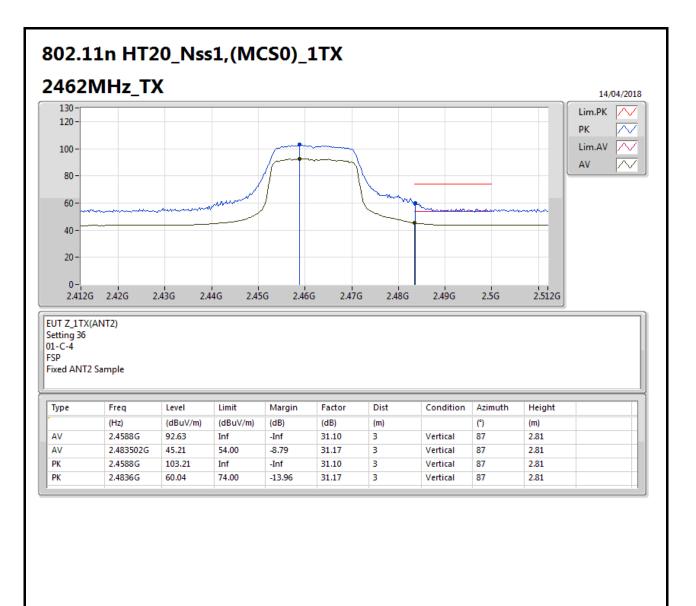




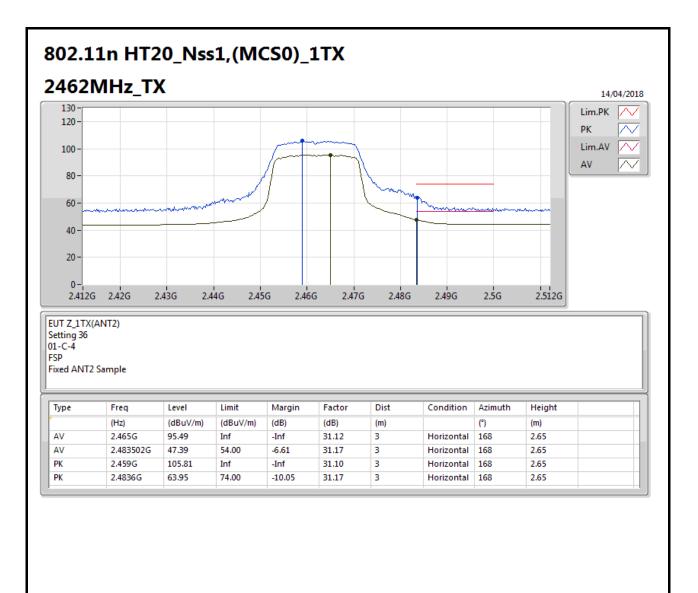




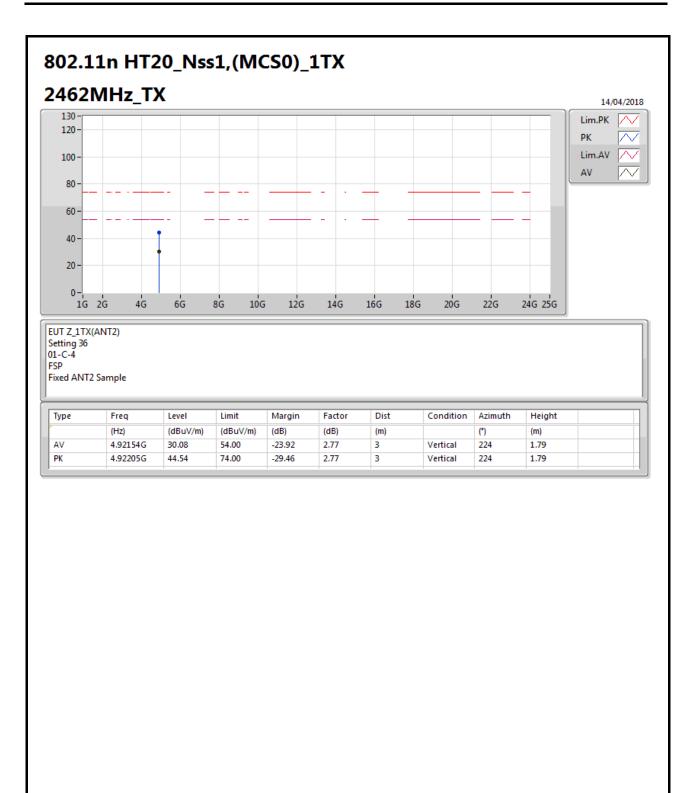




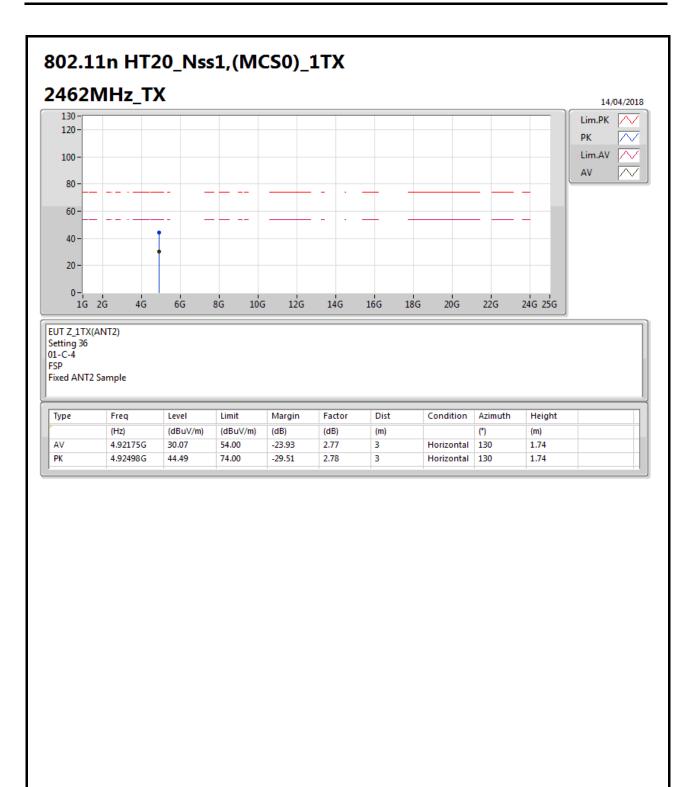




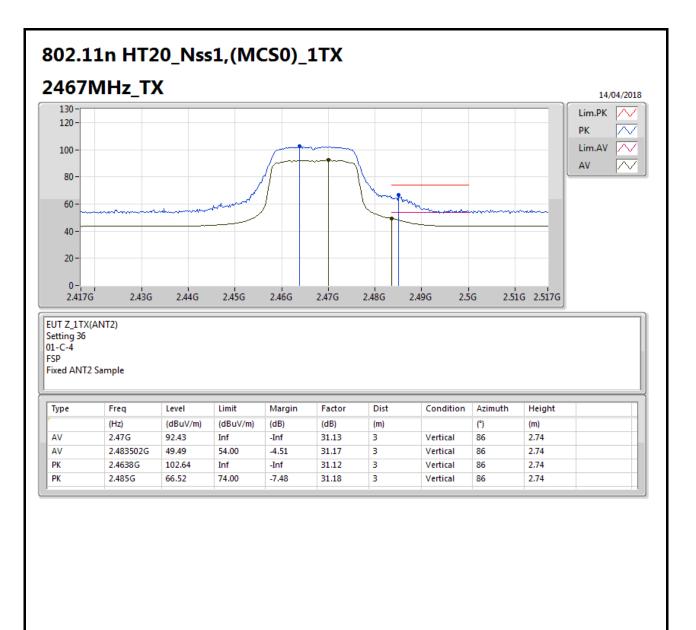




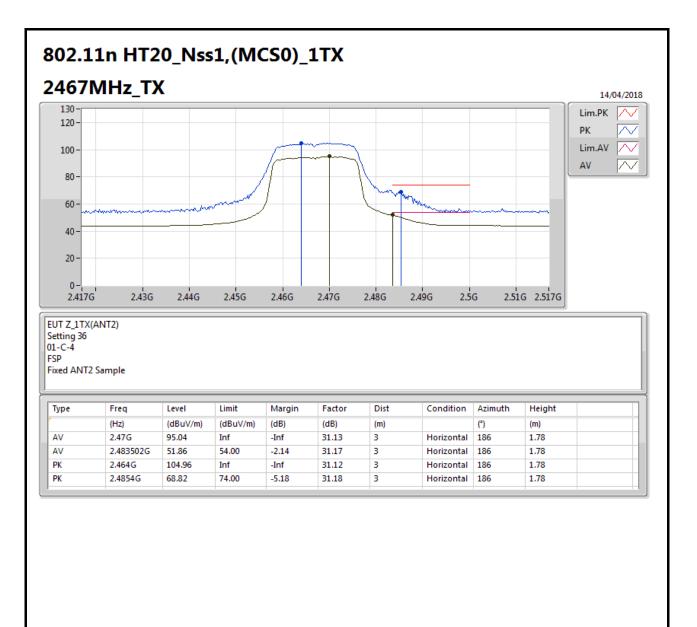




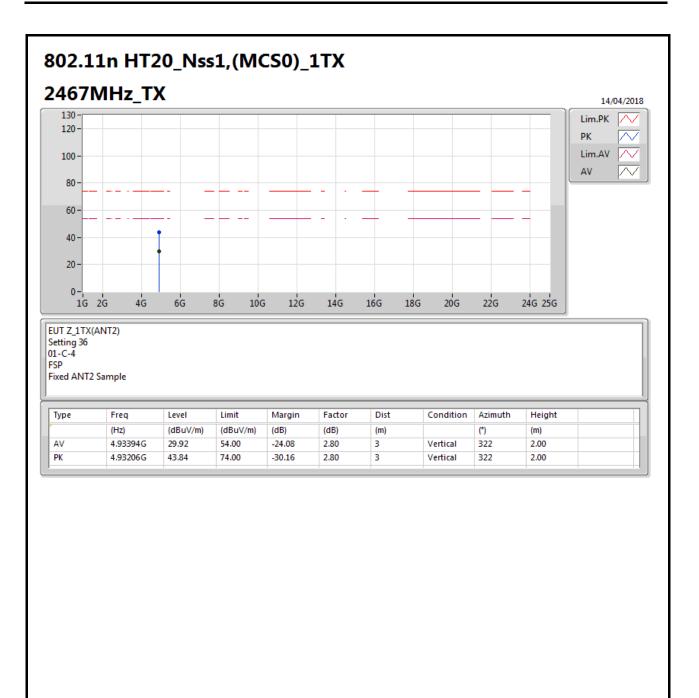




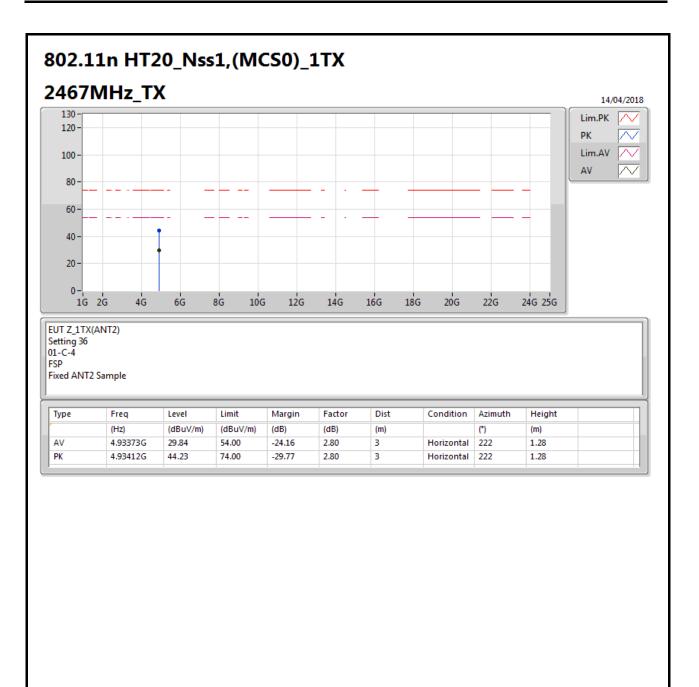




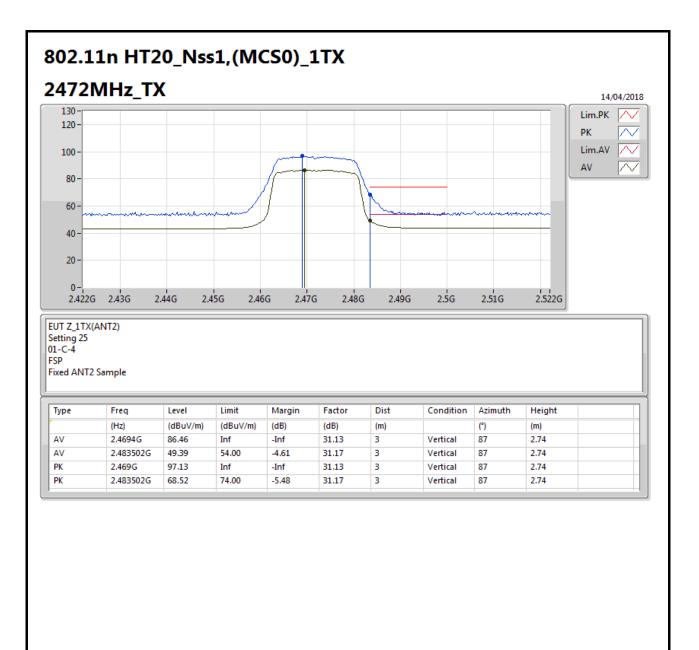




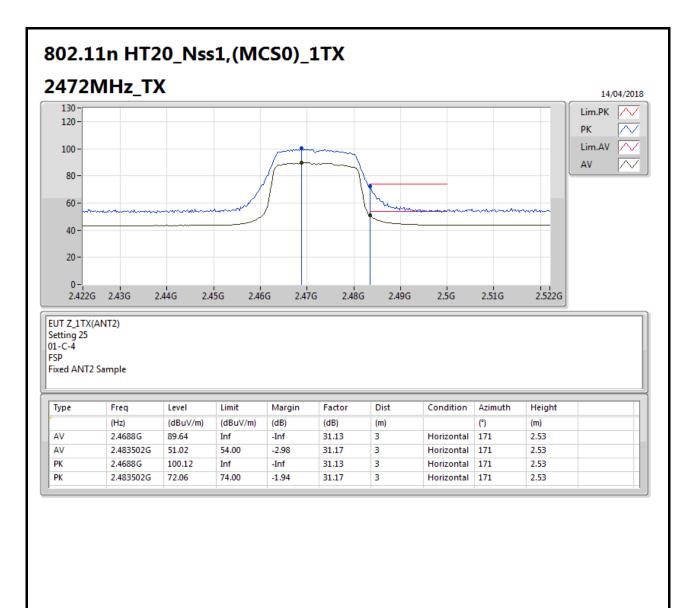




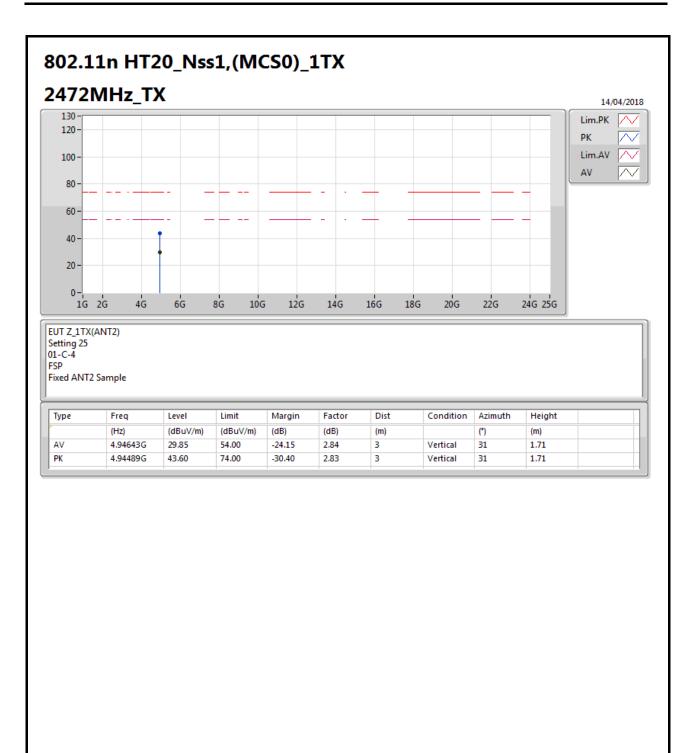




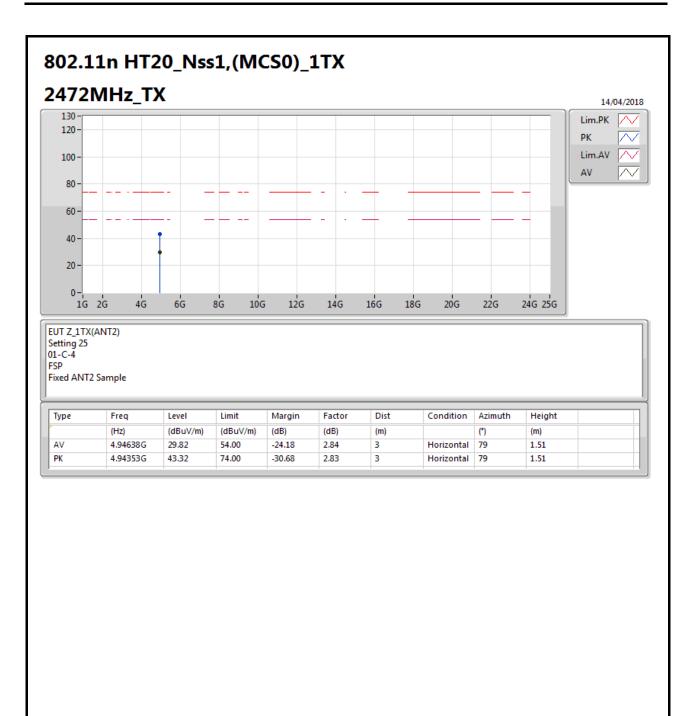




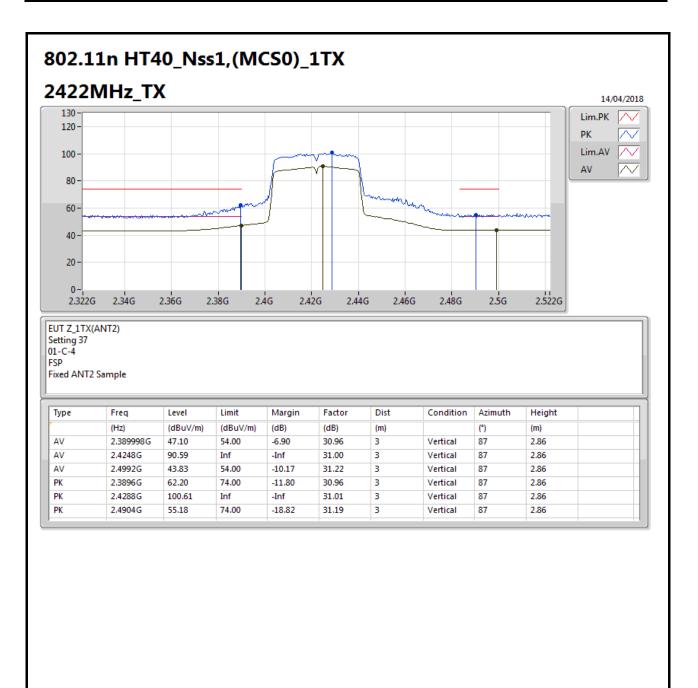




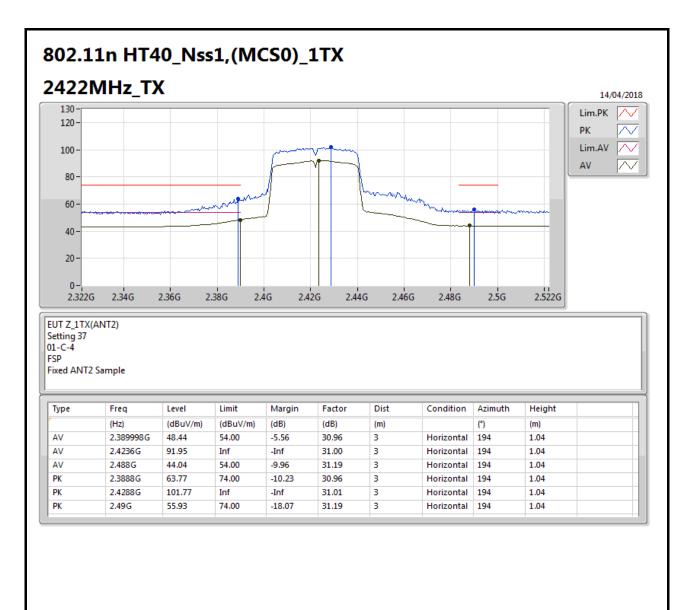




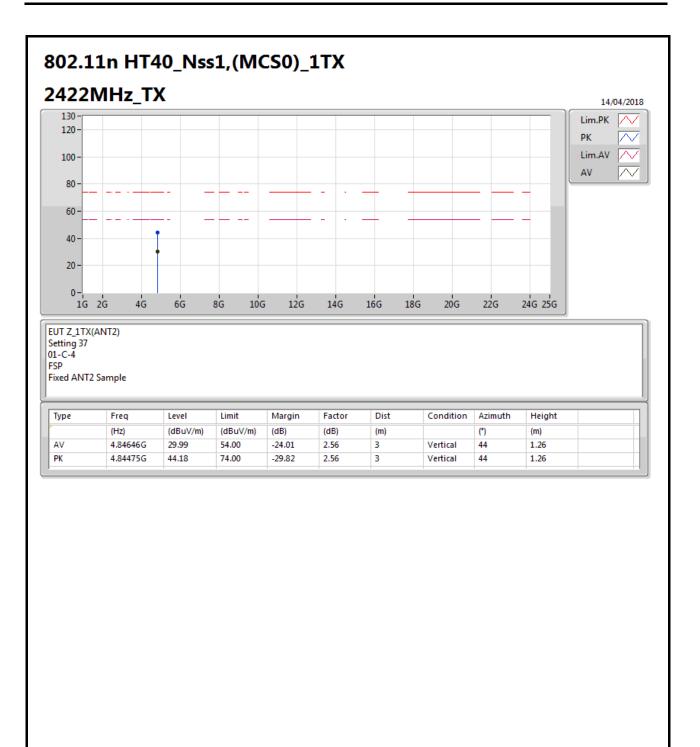




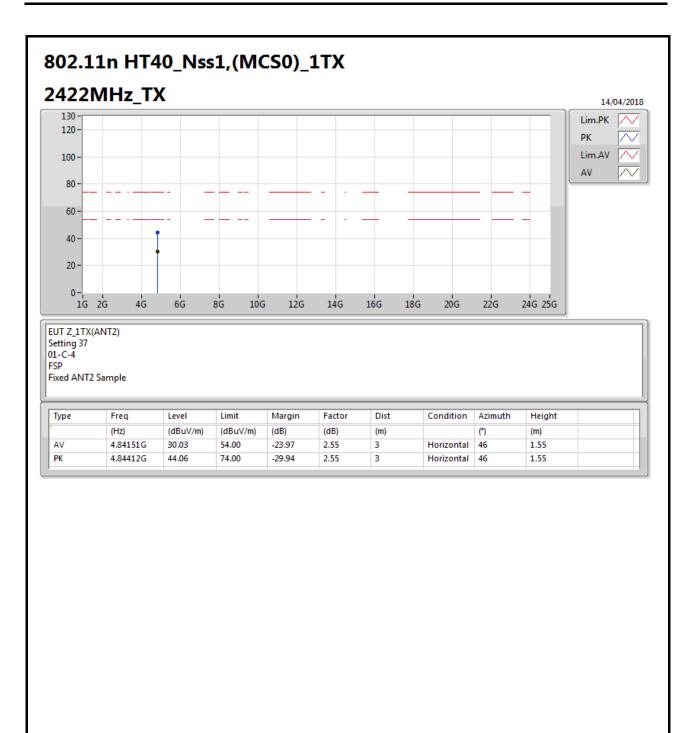




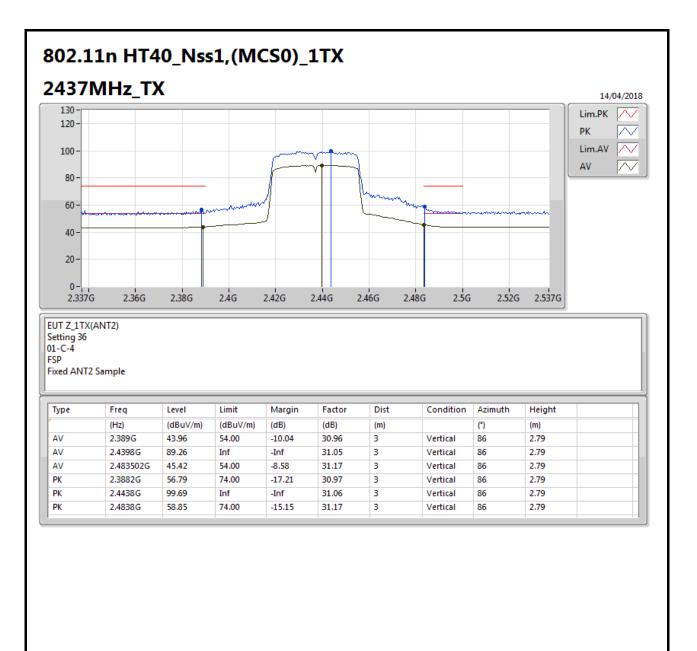




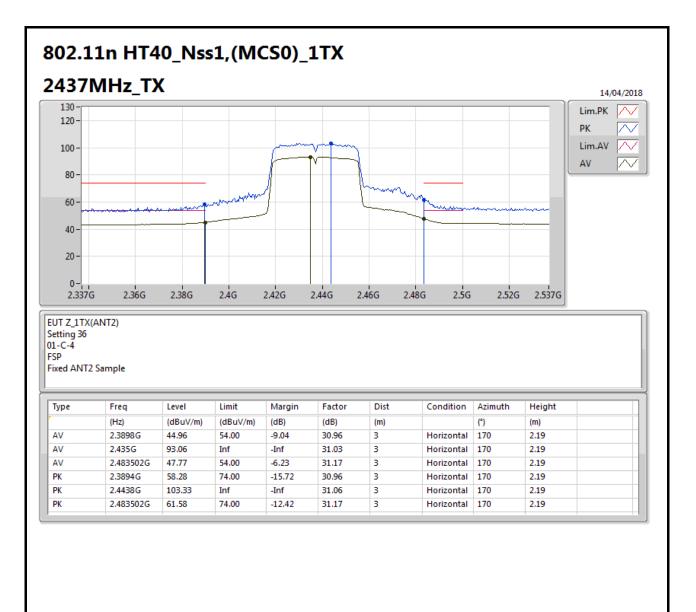




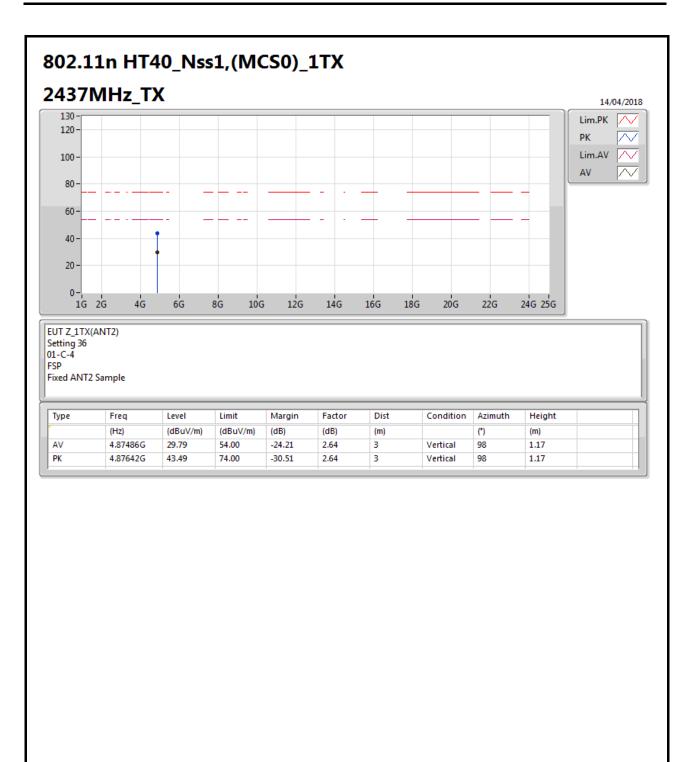




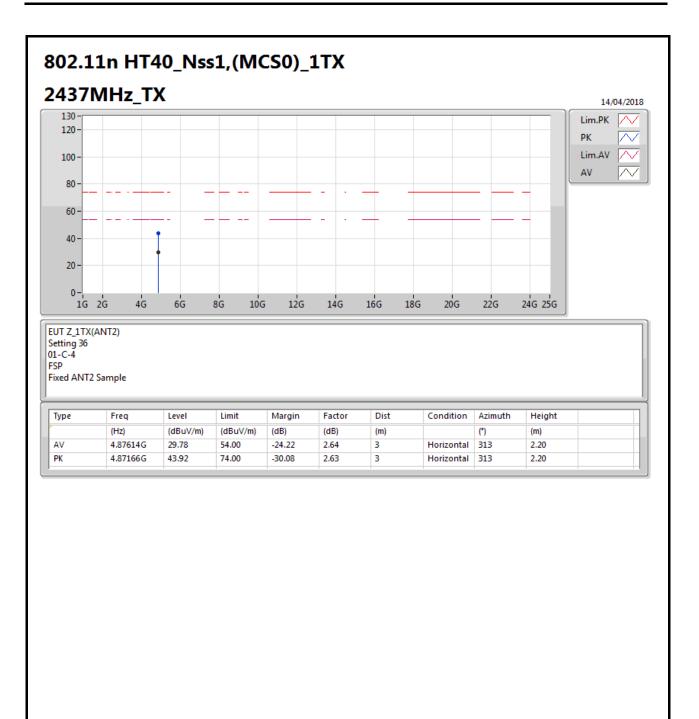




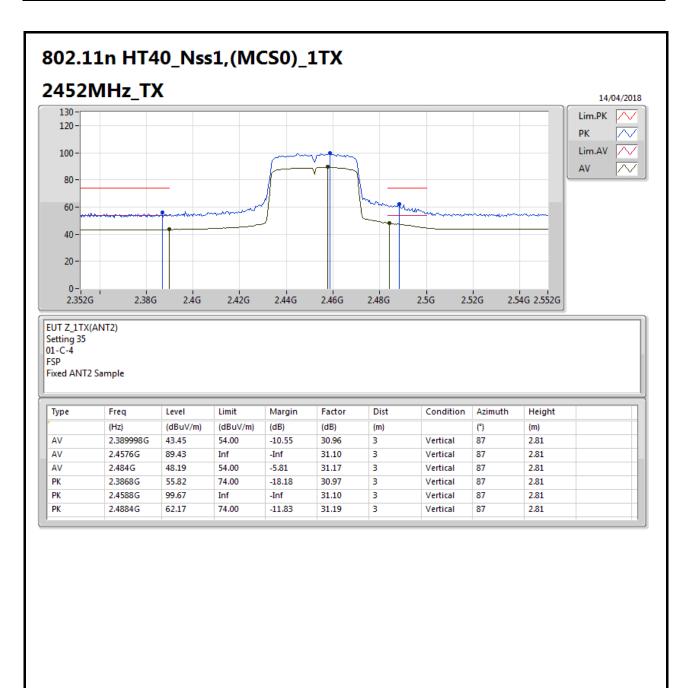




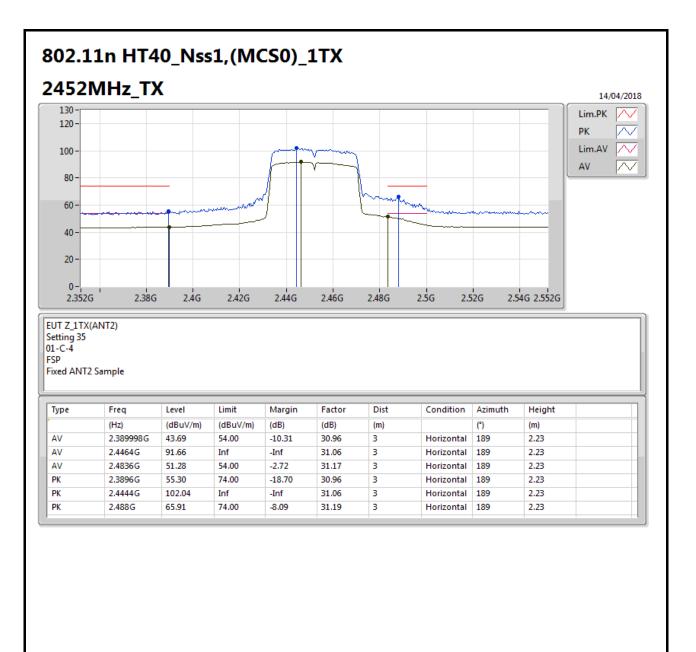




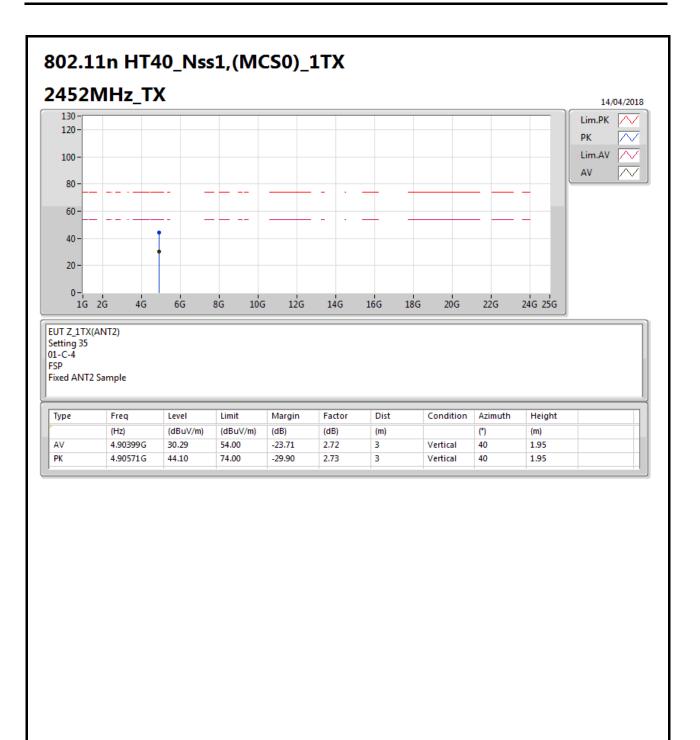




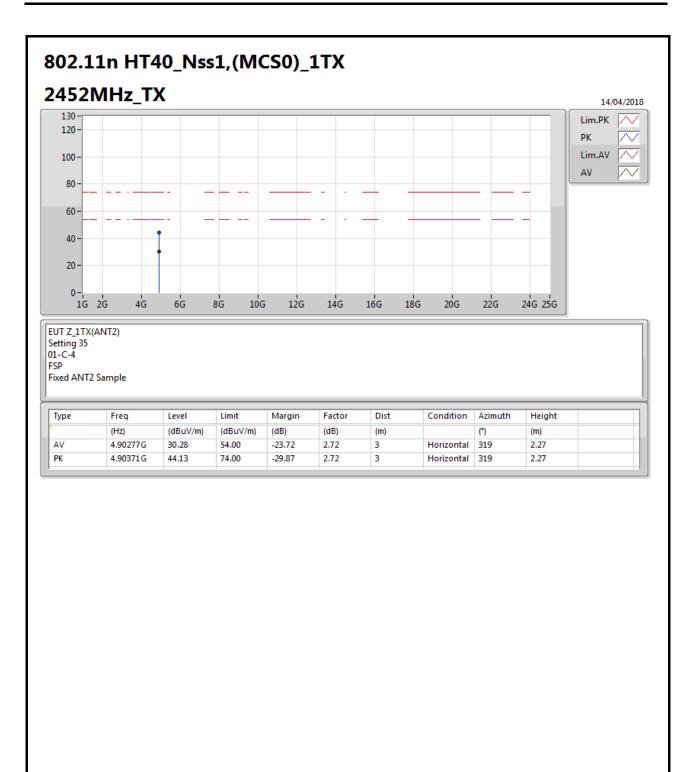




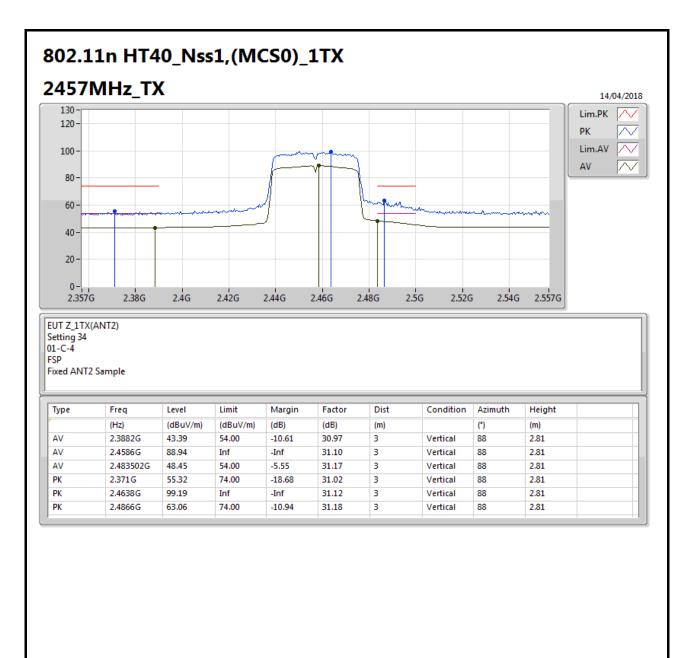




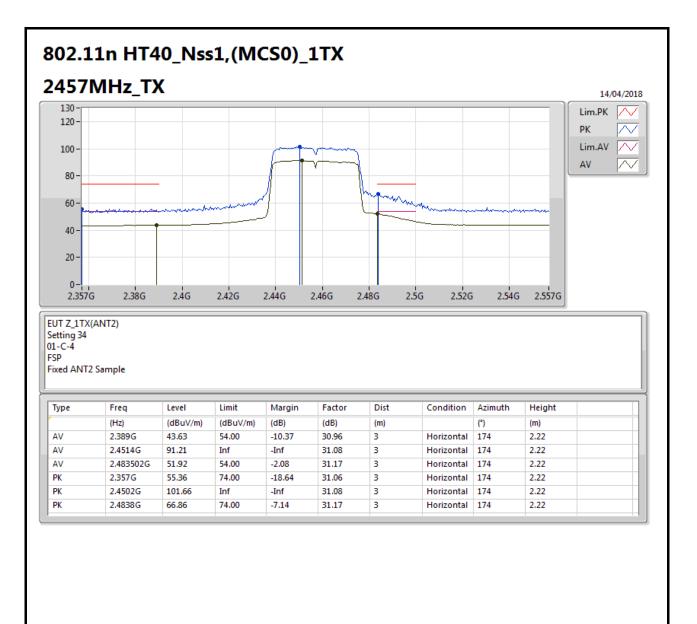




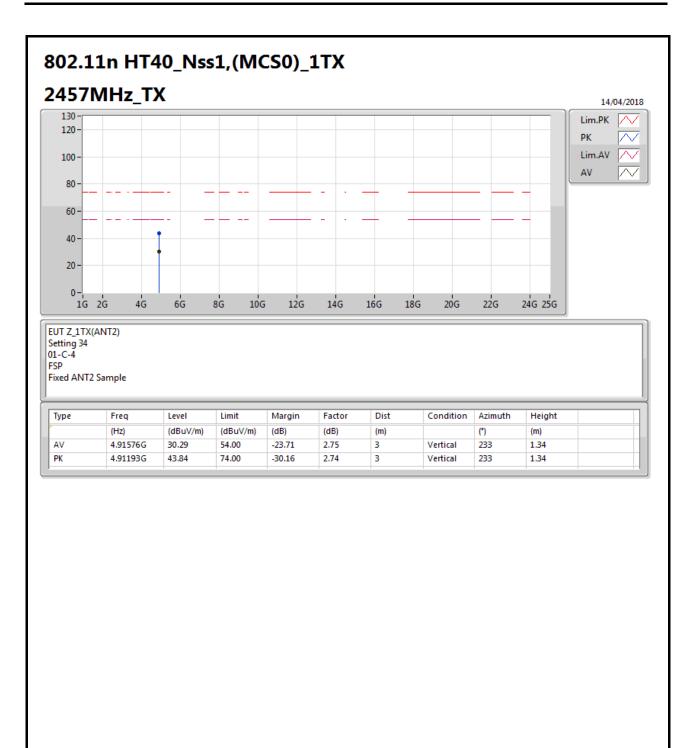




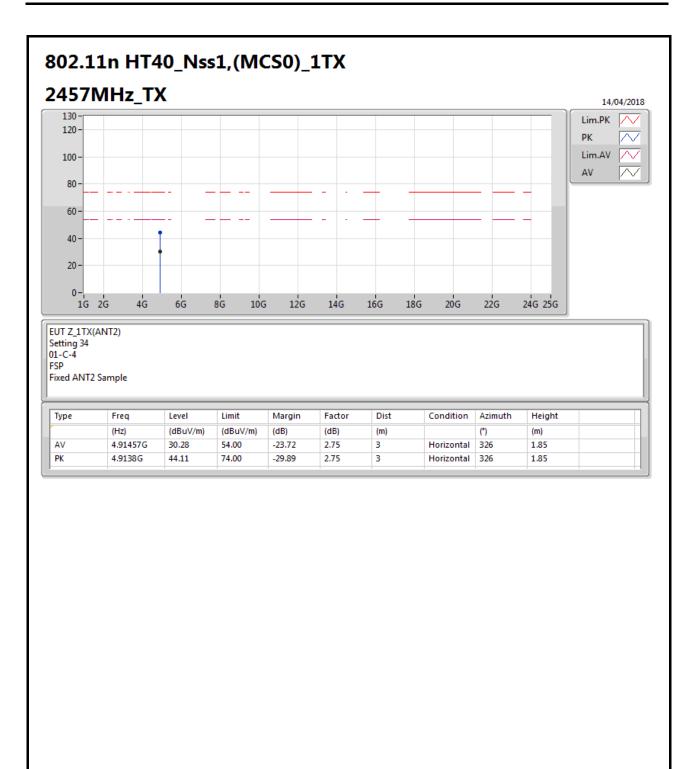




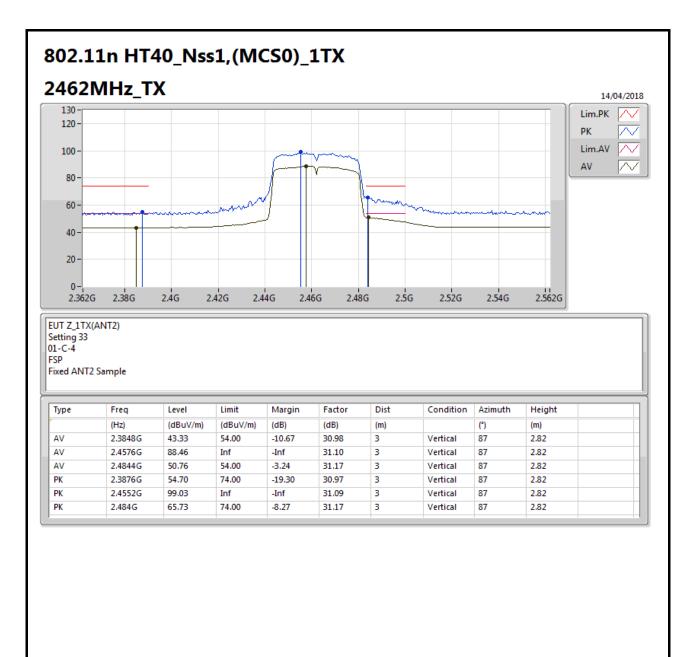




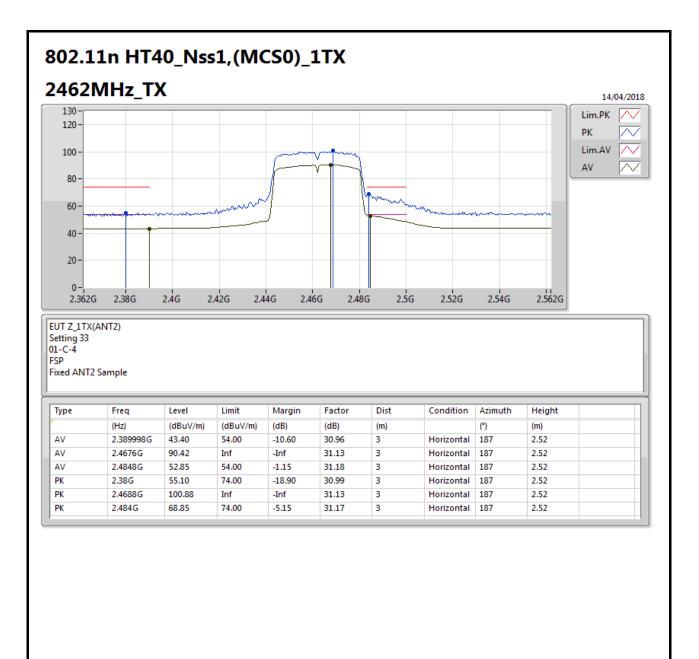




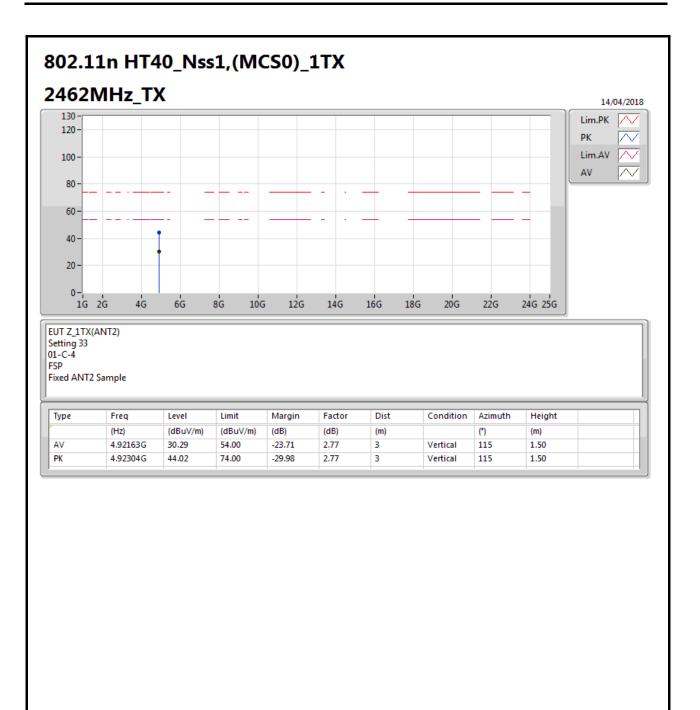




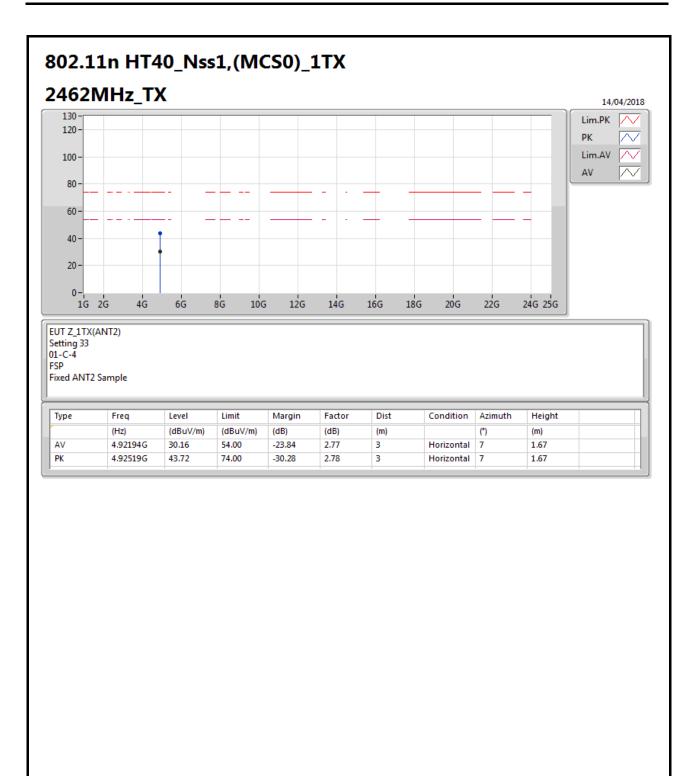














## RSE TX above 1GHz Result

## Appendix B.2

## Test Mode: Mode 4 Summary

<u>ourinnary</u>												
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	-	-	-	-	-	-	-	-	-	-	-	-
802.11g_Nss1,(6Mbps)_1TX	Pass	AV	2.483502G	53.00	54.00	-1.00	31.17	3	Vertical	278	1.40	-



