

Report No.: FR710613-01AA

Project No: CB10604003

# **FCC Test Report**

Equipment : Whole Home Smart Wi-Fi Range Extender

Brand Name : amped wireless

Model No. : AEX1900L/AEXT19B

FCC ID : ZTT-AEX1900L

Standard : 47 CFR FCC Part 15.247

Operating Band : 2400 MHz – 2483.5 MHz

Function : Point-to-multipoint; Point-to-point

Applicant : Amped Wireless

13089 Peyton Dr. #C307 Chino Hills, CA 91709 USA

Manufacturer : Amped Wireless

13089 Peyton Dr. #C307 Chino Hills, CA 91709 USA

The product sample received on Jan. 06, 2017 and completely tested on Apr. 11, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Cliff Chang

SPORTON INTERNATIONAL INC.







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# **Summary of Test Result**

Conformance Test Specifications							
Report Ref. Std. Clause Clause		Description	Limit	Result			
1.1.2	15.203	Antenna Requirement	FCC 15.203	Complied			
3.1	15.207	AC Power-line Conducted Emissions	FCC 15.207	Complied			
3.2	15.247(a)	DTS Bandwidth	≥500kHz	Complied			
3.3	15.247(b)	Maximum Conducted Output Power	Power [dBm]:30	Complied			
3.4	15.247(e)	Power Spectral Density	PSD [dBm/3kHz]:8	Complied			
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	Non-Restricted Bands: > 30 dBc	Complied			
3.6	15.247(d)	Emissions in Restricted Frequency Bands	Restricted Bands: FCC 15.209	Complied			

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# **Revision History**

Report No.	Version	Description	Issued Date
FR710613-01AA	Rev. 01	Initial issue of report	Apr. 13, 2017

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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), ac (VHT20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40), ac (VHT40)	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	3TX
2.4-2.4835GHz	802.11g	20	3TX
2.4-2.4835GHz	802.11n HT20	20	3TX
2.4-2.4835GHz	802.11ac VHT20	20	3TX
2.4-2.4835GHz	802.11n HT40	40	3TX
2.4-2.4835GHz	802.11ac VHT40	40	3TX

#### Note:

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- 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.
- VHT20, VHT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM 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

Ant.	Brand	P/N	Antenna Type	Connector		Gain (dBi)	
Ant.	Dianu	F/N	Antenna Type	Connector	2.4GHz	5GHz B1	5GHz B4
1	Airgain	N2420DG-G150U	PIFA Antenna	I-PEX	2.71	3.05	4.20
2	Airgain	N2425DR-G200U	PIFA Antenna	I-PEX	2.71	3.05	4.20
3	Airgain	N2420DG-G50U	PIFA Antenna	I-PEX	2.71	3.05	4.20

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Note: The EUT has three antennas.

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

Ant. 1 ~ Ant. 3 connect to port 1~port 3

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

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

Ant. 1 ~ Ant. 3 connect to port 1~port 3

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

#### 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)
802.11b	0.952	0.214
802.11g	0.802	0.958
802.11ac VHT20	0.603	2.197
802.11ac VHT40	0.427	3.696

#### 1.1.4 EUT Operational Condition

EUT Power Type From Power Adapter			
Beamforming Function	With beamforming for IEEE802.11n/ac in	5GHz 🗌	Without beamforming

#### 1.1.5 Table for Multiple Listing

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

Brand Name Model Name		Description	
ampad wiralaga	AEX1900L	All the models are identical, the difference model name for	
amped wireless	AEXT19B	difference marketing strategy.	

From the above models, model: AEX1900L was selected as representative model for the test and its data was recorded in this report.

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# 1.2 Testing Applied 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 v04
- FCC KDB 662911 D01 v02r01
- FCC KDB 644545 D01 v01r02
- FCC KDB 412172 D01 v01r01

### 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	:	386-3-656-9065 FAX : 886-3-656-9085			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Ron Huang &Gino Huang	23°C / 56%	Mar. 07, 2017 ~ Mar. 08, 2017
Radiated	03CH01-CB (below 1GHz)	Justin Lin	22°C / 54%	Apr. 07, 2017
Radiated	Radiated 03CH01-CB Paul Chen & Jeff Wu & Zero Chen & Justin Lin & Jay Luo		22°C / 54%	Jan. 06, 2017 ~ Mar. 09, 2017
AC Conduction CO01-CB		Hank Yang	23°C / 61%	Apr. 07, 2017 ~ Apr. 11, 2017

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%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74 x10 <sup>-8</sup>	Confidence levels of 95%

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2 Test Configuration of EUT

# 2.1 Test Channel Mode

Mode	Power Setting
802.11b_(1Mbps)_3TX	-
2412MHz	24
2437MHz	23
2462MHz	20
802.11g_(6Mbps)_3TX	-
2412MHz	1A
2437MHz	24
2462MHz	1B
802.11ac VHT20_Nss1,(MCS0)_3TX	-
2412MHz	1A
2437MHz	24
2462MHz	1A
802.11ac VHT40_Nss1,(MCS0)_3TX	-
2422MHz	12
2437MHz	19
2452MHz	15

#### Note:

 VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

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The Worst Case Measurement ConfigurationThe 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	CTX		
1	CTX_2.4GHz		
2	2 CTX_5GHz		
For operating mode 2 is t	ne worst case and it was record in this test report.		

The Worst Case Mode for Following Conformance Tests		
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands	
Test Condition	est 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.		
	CTX		
Operating Mode < 1GHz	The EUT was performed at Y axis and Z axis position, Z axis has been evaluated to be the worst case for Radiated emission above 1GHz test. Consequently, measurement for Radiated emission below 1GHz test will follow this same test mode.		
1	EUT in Z axis_2.4GHz		
2	EUT in Z axis_5GHz		
For operating mode 2 is th	e worst case and it was record in this test report.		
	CTX		
Operating Mode > 1GHz	The EUT was performed at Y axis and Z axis position for Radiated emission above 1GHz test, and the worst case was found at Z axis. So the measurement will follow this same test configuration.		
1	EUT in Z axis		

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The Worst Case Mode for Following Conformance Tests		
Tests Item Simultaneous Transmission Analysis - Radiated Emission Co-location		
Test Condition	Radiated measurement	
Operating Mode	Normal Link	
1	EUT in Y axis - WLAN 2.4GHz + WLAN 5GHz	
2	2 EUT in Z axis - WLAN 2.4GHz + WLAN 5GHz	
Refer to Appendix G for R	adiated 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 WLAN 2.4GHz + WLAN 5GHz			
Refer to Sporton Test Report No.: FA710613-01 for Co-location RF Exposure Evaluation.			

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# 2.2 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.

#### 2.3 Accessories

Accessories				
Equipment Name	Brand Name	Model Name	Rating	
Adapter	APD	WA-24Q12FU	INPUT: 100-240V ~ 50-60Hz, 0.7A Max OUTPUT: 12V, 2A	

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# 2.4 Support Equipment

For Test Site No: CO01-CB

		Support Equ	ipment	
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB*3	DELL	E6430	DoC

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

	ot one her toolier ob			
	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E4300	DoC

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

		Support Equ	ipment	
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E4300	DoC

For Test Site No: TH01-CB

	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E4300	DoC

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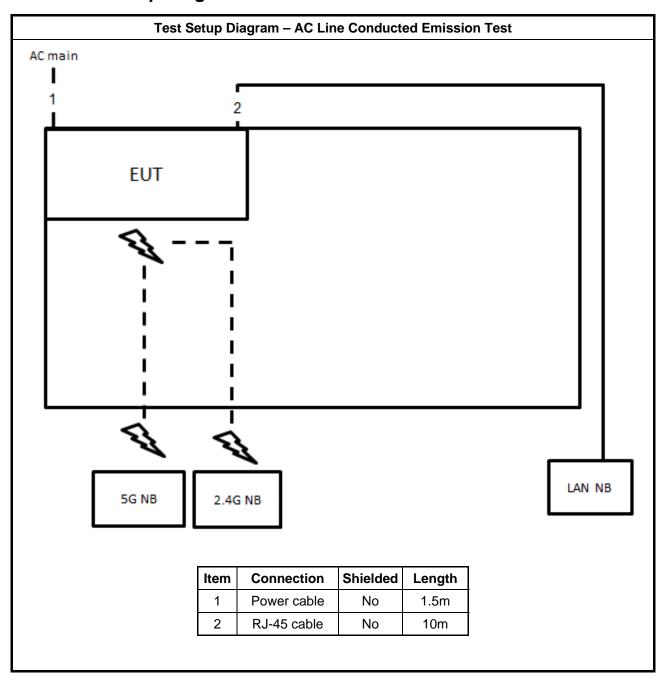
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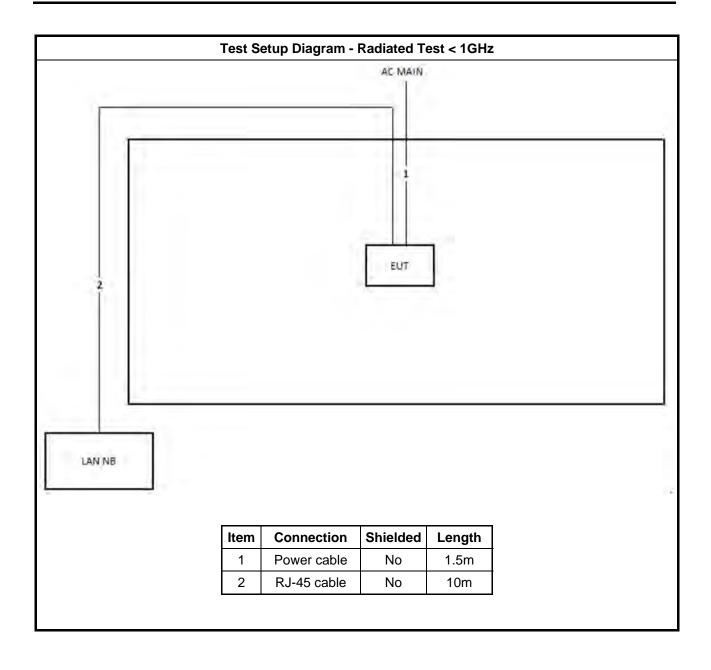
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# 2.5 Test Setup Diagram



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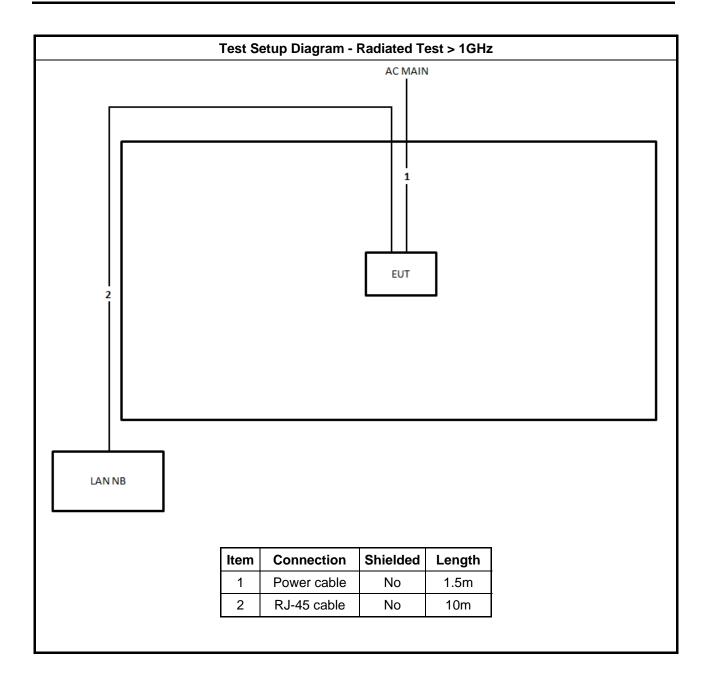
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3 Transmitter Test Result

#### 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	

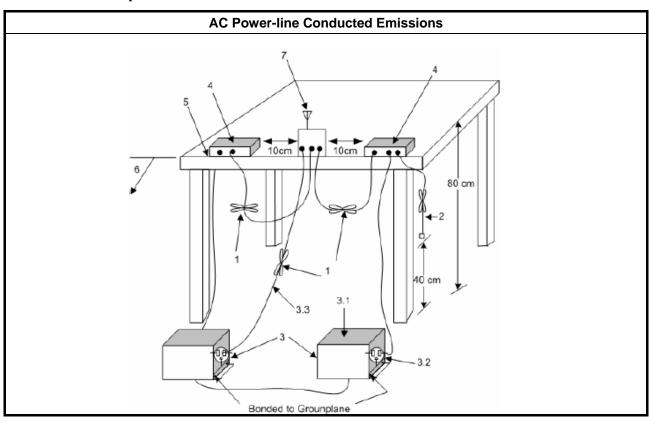
### 3.1.2 Measuring Instruments

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

#### 3.1.3 Test Procedures

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

#### 3.1.4 Test Setup



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## 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.				

## 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:				
	Refer as FCC KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.				
	Refer as FCC KDB 558074, clause 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

Emission Bandwidth				
Spectrum Analyzer				

#### 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

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 $\mathbf{P}_{\text{Out}}$  = maximum peak conducted output power or maximum conducted output power in dBm,  $\mathbf{G}_{\text{TX}}$  = the maximum transmitting antenna directional gain in dBi.

#### 3.3.2 Measuring Instruments

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

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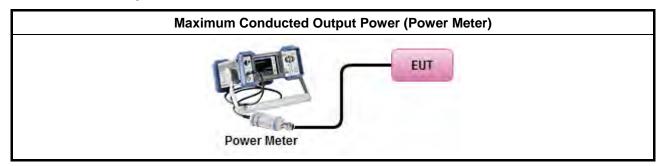
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#### 3.3.3 Test Procedures

	Test Method
•	Maximum Peak Conducted Output Power
	Refer as FCC KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
	Refer as FCC KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
•	Maximum Conducted Output Power
	duty cycle ≥ 98% or external video / power trigger]
	Refer as FCC KDB 558074, clause 9.2.2.2 Method AVGSA-1 (spectral trace averaging).
	Refer as FCC KDB 558074, clause 9.2.2.3 Method AVGSA-1 Alt. (slow sweep speed)
	duty cycle < 98% and average over on/off periods with duty factor
	Refer as FCC KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
	Refer as FCC KDB 558074, clause 9.2.2.5 Method AVGSA-2 Alt. (slow sweep speed)
	RF power meter and average over on/off periods with duty factor or gated trigger
	Refer as FCC KDB 558074, clause 9.2.3 Method AVGPM-G (using an RF average power meter).
	Refer as FCC KDB 558074, clause 9.1.2 PKPM1 Peak power meter method.
•	For conducted measurement.
	If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	■ If multiple transmit chains, EIRP calculation could be following as methods:  P <sub>total</sub> = P <sub>1</sub> + P <sub>2</sub> + + P <sub>n</sub> (calculated in linear unit [mW] and transfer to log unit [dBm])  EIRP <sub>total</sub> = P <sub>total</sub> + 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				
•	Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).					
	⊠ F	Refer as FCC KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).				
	[duty	cycle ≥ 98% or external video / power trigger]				
İ		Refer as FCC KDB 558074, clause 10.3 Method AVGPSD-1 (spectral trace averaging).				
		Refer as FCC KDB 558074, clause 10.4 Method AVGPSD-2 (slow sweep speed)				
	duty o	cycle < 98% and average over on/off periods with duty factor				
		Refer as FCC KDB 558074, clause 10.5 Method AVGPSD-1 Alt (spectral trace averaging).				
		Refer as FCC KDB 558074, clause 10.6 Method AVGPSD-2 Alt. (slow sweep speed)				
•	For co	onducted measurement.				
	•	f 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,				
		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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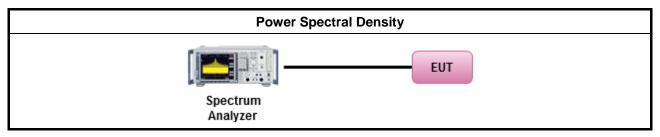
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## FCC Test Report

## 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 (dB)		
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.

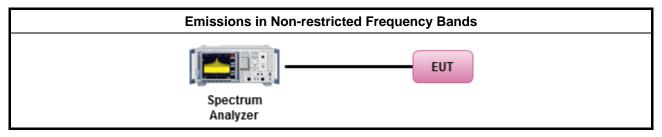
#### 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

Test Method	
<ul> <li>Refer as FCC KDB 558074, clause 11 for unwanted emissions into non-restricted bands.</li> </ul>	

#### 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			

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.

#### 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 6.9.2.2 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 ≥ 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).</li> <li>Devices with multiple transmit chains using options given below:</li> <li>(1) Measure and sum the spectra across the outputs or</li> <li>(2) Measure and add 10 log(N) dB</li> </ul>			
	• 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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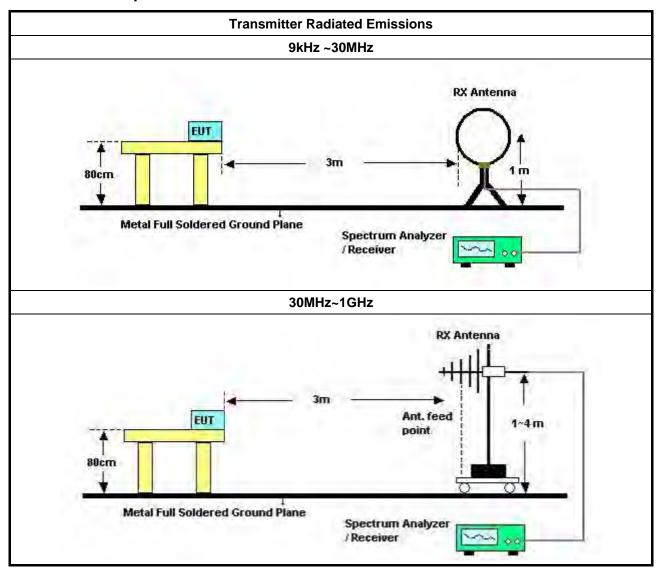
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## 3.6.4 Test Setup



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Above 1GHz

BUT

3M & 1M

1.5M

Max 30cm

Spectrum Analyzer

# 3.6.5 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.

### 3.6.6 Test Result of Transmitter Radiated Unwanted Emissions

Refer as Appendix F

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# 4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 23, 2017	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Dec. 14, 2016	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 21, 2016	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 24, 2016	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	1	N.C.R.	Conduction (CO01-CB)
BILOG ANTENNA with 6dB Attenator	TESEQ & EMCI	CBL6112D & -6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2016	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2016*	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 10, 2016	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 25, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Mar. 13, 2017	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 18, 2016	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jun. 28, 2016	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 21, 2016	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 16, 2016	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)

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# FCC Test Report

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 24, 2016	Radiation (03CH01-CB)
Test Software	Audix	E3	6.2009-10-7	N/A	N/A	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 26, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-6	1 GHz – 26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-7	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-8	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-9	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 24, 2016	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 22, 2016	Conducted (TH01-CB)

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

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

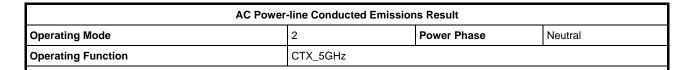
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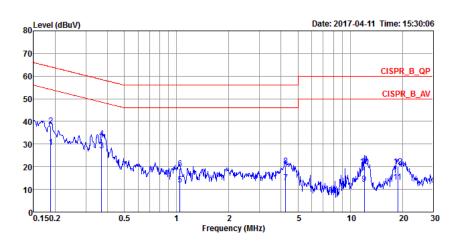
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<sup>&</sup>quot;\*" Calibration Interval of instruments listed above is two years.

#### AC Power-line Conducted Emissions Result



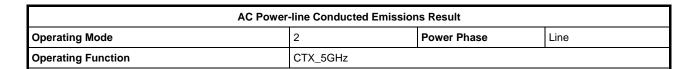


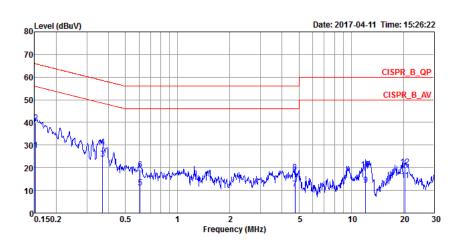
	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1884	28.70	-25.41	54.11	28.37	0.15		Average	NEUTRAL
2	0.1884	38.06	-26.05	64.11	37.73	0.15	0.18	QP	NEUTRAL
3	0.3692	27.11	-21.41	48.52	26.94	0.14	0.03	Average	NEUTRAL
4	0.3692	32.46	-26.06	58.52	32.29	0.14	0.03	QP	NEUTRAL
5	1.0430	12.03	-33.97	46.00	11.15	0.18	0.70	Average	NEUTRAL
6	1.0430	19.11	-36.89	56.00	18.23	0.18	0.70	QP	NEUTRAL
7	4.2466	13.11	-32.89	46.00	12.92	0.10	0.09	Average	NEUTRAL
8	4.2466	20.38	-35.62	56.00	20.19	0.10	0.09	QP	NEUTRAL
9	12.0599	12.35	-37.65	50.00	11.85	0.32	0.18	Average	NEUTRAL
10	12.0599	20.16	-39.84	60.00	19.66	0.32	0.18	QP	NEUTRAL
11	18.8205	13.28	-36.72	50.00	12.66	0.38	0.24	Average	NEUTRAL
12	18.8205	20.14	-39.86	60.00	19.52	0.38	0.24	QP	NEUTRAL

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.)



#### AC Power-line Conducted Emissions Result





	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
-	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1524	27.74	-28.13	55.87	27.57	0.01	0.16	Average	LINE
2	0.1524	39.71	-26.16	65.87	39.54	0.01	0.16	QP	LINE
3	0.3692	23.77	-24.75	48.52	23.66	0.08	0.03	Average	LINE
4	0.3692	29.35	-29.17	58.52	29.24	0.08	0.03	QP	LINE
5	0.6075	11.36	-34.64	46.00	10.93	0.09	0.34	Average	LINE
6	0.6075	19.23	-36.77	56.00	18.80	0.09	0.34	QP	LINE
7	4.7464	10.75	-35.25	46.00	10.53	0.12	0.10	Average	LINE
8	4.7464	17.88	-38.12	56.00	17.66	0.12	0.10	QP	LINE
9	12.1240	12.44	-37.56	50.00	12.00	0.26	0.18	Average	LINE
10	12.1240	19.18	-40.82	60.00	18.74	0.26	0.18	QP	LINE
11	20.4855	14.40	-35.60	50.00	13.76	0.40	0.24	Average	LINE
12	20.4855	20.26	-39.74	60.00	19.62	0.40	0.24	QP	LINE

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.)



EBW Result Appendix B

**Summary** 

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
802.11b_(1Mbps)_3TX	-	-	-	-	-
2.4-2.4835GHz	9.075M	13.643M	13M6G1D	8.575M	13.218M
802.11g_(6Mbps)_3TX	-	-	-	-	-
2.4-2.4835GHz	15.75M	16.467M	16M5D1D	12.15M	16.342M
802.11ac VHT20_Nss1,(MCS0)_3TX	-	-	-	-	-
2.4-2.4835GHz	15.125M	17.566M	17M6D1D	15M	17.491M
802.11ac VHT40_Nss1,(MCS0)_3TX	-	-	-	-	-
2.4-2.4835GHz	35.1M	35.982M	36M0D1D	32.6M	35.732M

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

#### Result

Result	1		1					
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_(1Mbps)_3TX	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	9M	13.218M	9.075M	13.568M	9.075M	13.368M
2437MHz	Pass	500k	9.025M	13.368M	9.05M	13.643M	9.025M	13.393M
2462MHz	Pass	500k	8.575M	13.218M	9.075M	13.293M	9.05M	13.368M
802.11g_(6Mbps)_3TX	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	14.975M	16.342M	14.175M	16.342M	15.025M	16.367M
2437MHz	Pass	500k	15.05M	16.417M	15.1M	16.467M	15.45M	16.417M
2462MHz	Pass	500k	14.425M	16.342M	12.15M	16.417M	15.75M	16.342M
802.11ac VHT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-
2412MHz	Pass	500k	15.1M	17.566M	15.025M	17.541M	15.05M	17.541M
2437MHz	Pass	500k	15.125M	17.541M	15.025M	17.566M	15.075M	17.541M
2462MHz	Pass	500k	15M	17.541M	15.05M	17.566M	15M	17.491M
802.11ac VHT40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-
2422MHz	Pass	500k	35.05M	35.782M	35.1M	35.882M	35.1M	35.882M
2437MHz	Pass	500k	35M	35.982M	35.05M	35.832M	33.8M	35.832M
2452MHz	Pass	500k	35.05M	35.732M	32.6M	35.932M	35.05M	35.932M

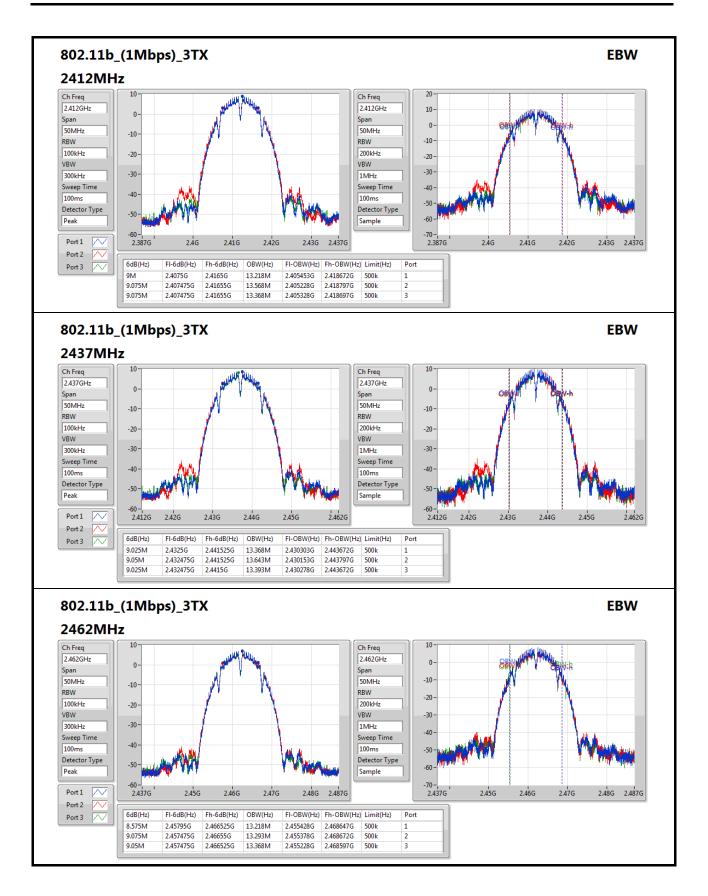
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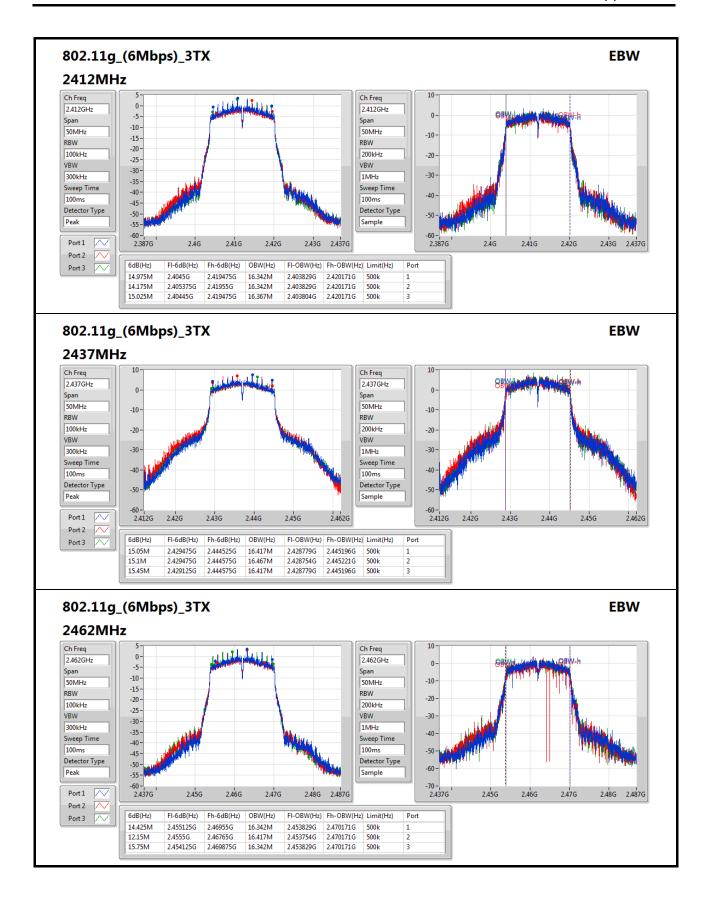
Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;

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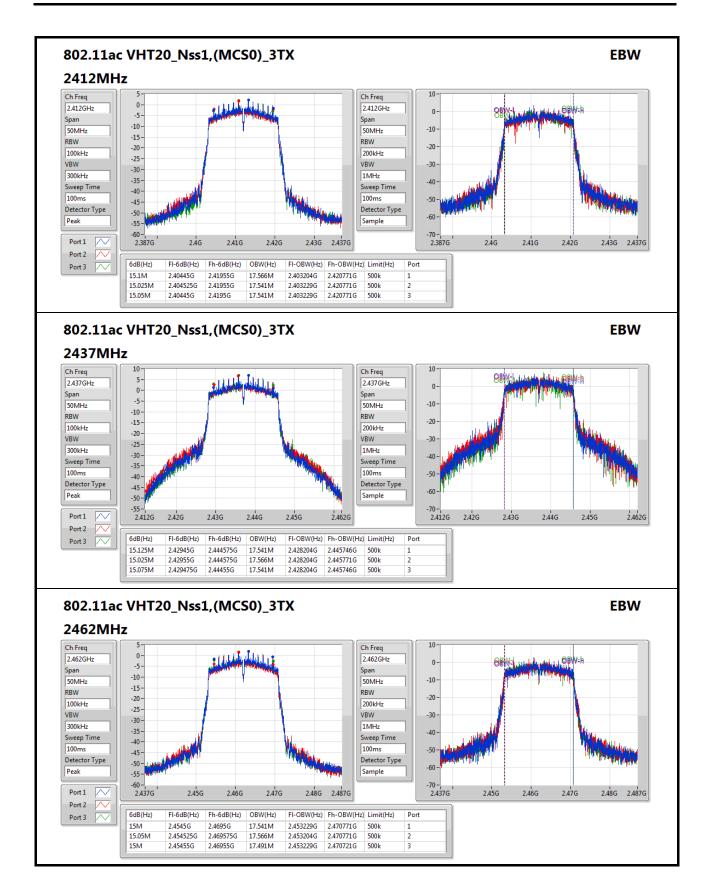




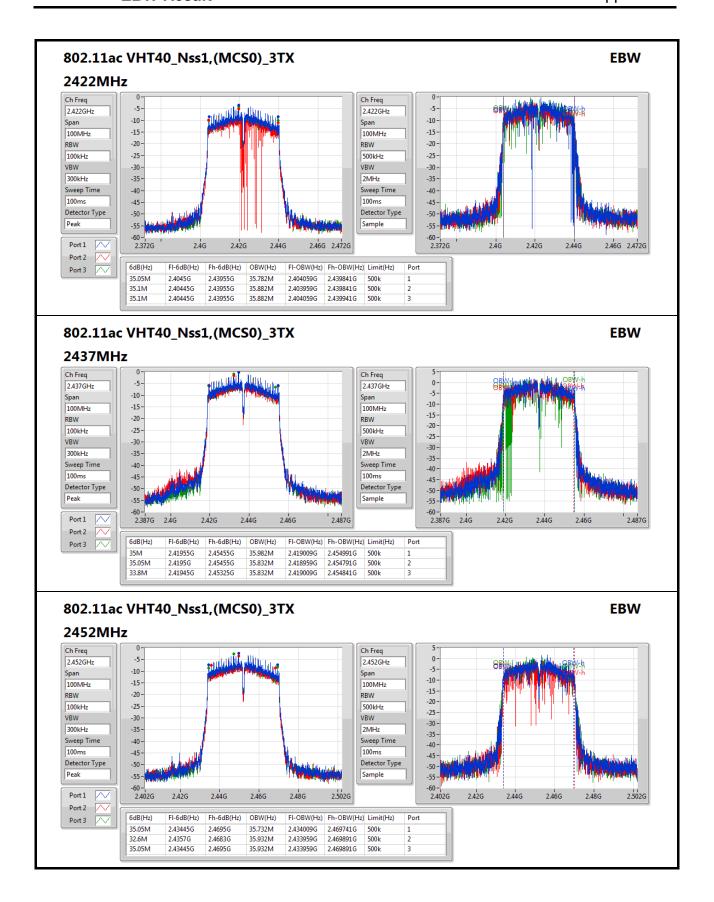














AV Power Result Appendix C

Summary

Mode	Total Power	Total Power
	(dBm)	(W)
802.11b_(1Mbps)_3TX	-	-
2.4-2.4835GHz	27.19	0.52360
802.11g_(6Mbps)_3TX	-	-
2.4-2.4835GHz	26.69	0.46666
802.11ac VHT20_Nss1,(MCS0)_3TX	-	-
2.4-2.4835GHz	25.80	0.38019
802.11ac VHT40_Nss1,(MCS0)_3TX	-	-
2.4-2.4835GHz	20.87	0.12218

#### Result

Mode	Result	DG	Port 1	Port 2	Port 3	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11b_(1Mbps)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	2.71	22.45	22.41	22.40	27.19	30.00
2437MHz	Pass	2.71	22.07	21.93	21.97	26.76	30.00
2462MHz	Pass	2.71	20.60	20.52	20.60	25.34	30.00
802.11g_(6Mbps)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	2.71	17.15	17.64	17.52	22.21	30.00
2437MHz	Pass	2.71	21.77	22.03	21.96	26.69	30.00
2462MHz	Pass	2.71	17.83	18.04	18.05	22.75	30.00
802.11ac VHT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	2.71	16.04	16.66	16.29	21.11	30.00
2437MHz	Pass	2.71	20.92	21.14	21.03	25.80	30.00
2462MHz	Pass	2.71	16.29	16.67	16.52	21.27	30.00
802.11ac VHT40_Nss1,(MCS0)_3TX	-	-	-	_	-	-	-
2422MHz	Pass	2.71	12.25	13.07	12.79	17.49	30.00
2437MHz	Pass	2.71	15.93	16.25	16.10	20.87	30.00
2452MHz	Pass	2.71	13.86	14.37	14.22	18.93	30.00

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

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**PSD** Result Appendix D

**Summary** 

Mode	PD
	(dBm/RBW)
802.11b_(1Mbps)_3TX	
2.4-2.4835GHz	-3.21
802.11g_(6Mbps)_3TX	
2.4-2.4835GHz	-4.90
802.11ac VHT20_Nss1,(MCS0)_3TX	
2.4-2.4835GHz	-5.29
802.11ac VHT40_Nss1,(MCS0)_3TX	·
2.4-2.4835GHz	-11.48

RBW=3kHz.

## 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_(1Mbps)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	7.48	-3.22	-5.67	-7.55	-3.21	6.52
2437MHz	Pass	7.48	-3.75	-6.99	-7.91	-3.74	6.52
2462MHz	Pass	7.48	-8.70	-5.28	-8.13	-5.28	6.52
802.11g_(6Mbps)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	7.48	-12.56	-13.14	-13.24	-9.79	6.52
2437MHz	Pass	7.48	-8.67	-8.84	-8.35	-4.90	6.52
2462MHz	Pass	7.48	-13.56	-13.43	-12.90	-9.44	6.52
802.11ac VHT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
2412MHz	Pass	7.48	-12.59	-13.33	-12.42	-9.99	6.52
2437MHz	Pass	7.48	-7.69	-8.70	-8.67	-5.29	6.52
2462MHz	Pass	7.48	-13.09	-13.41	-12.58	-9.69	6.52
802.11ac VHT40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
2422MHz	Pass	7.48	-16.79	-18.29	-16.61	-14.10	6.52
2437MHz	Pass	7.48	-14.68	-14.18	-12.79	-11.48	6.52
2452MHz	Pass	7.48	-15.50	-16.19	-14.92	-12.39	6.52

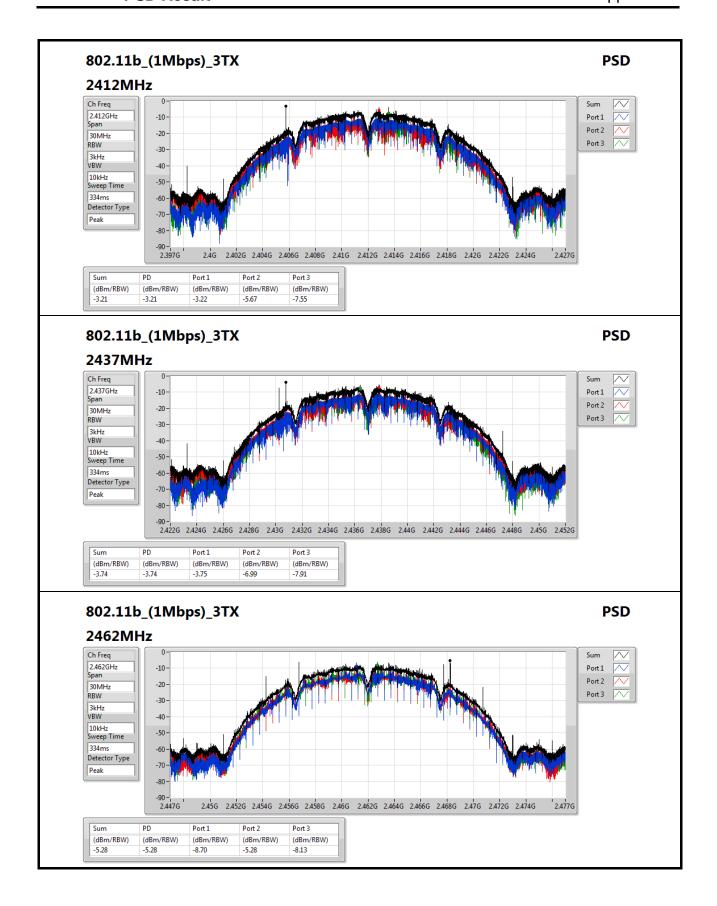
DG = Directional Gain; RBW=3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;

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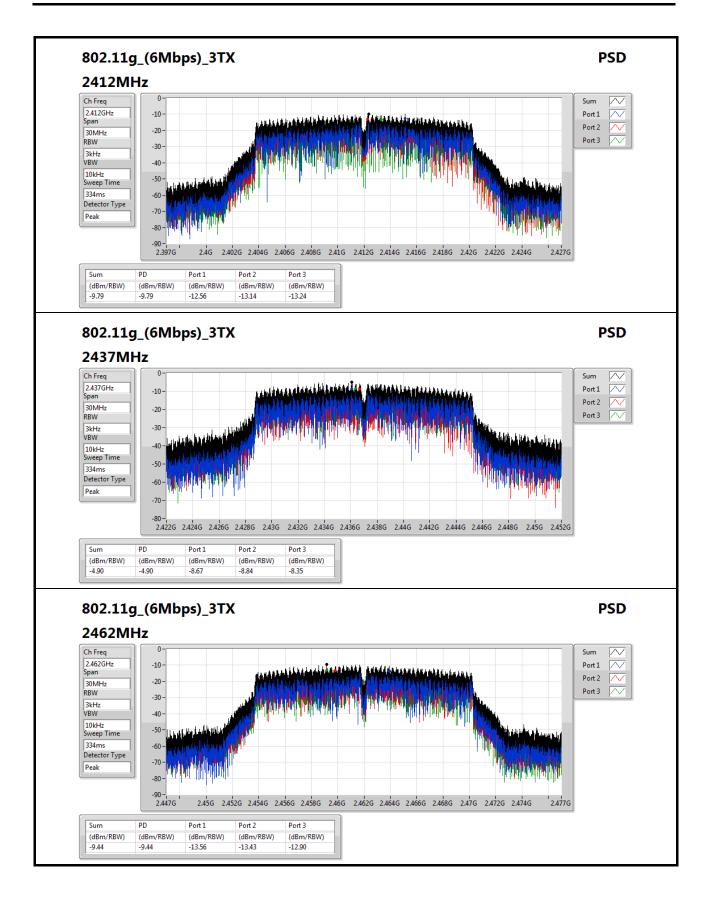
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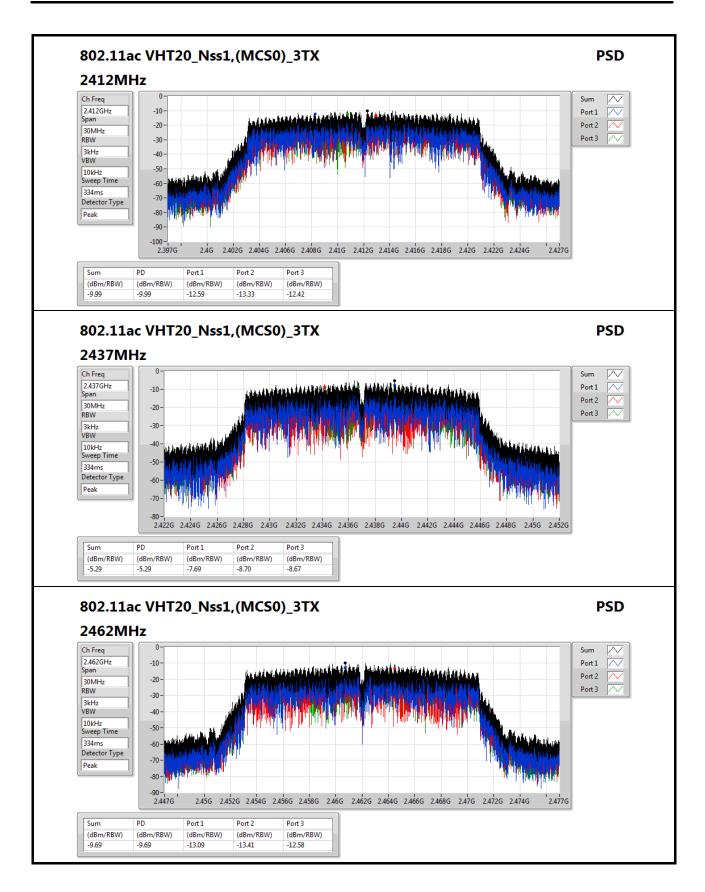
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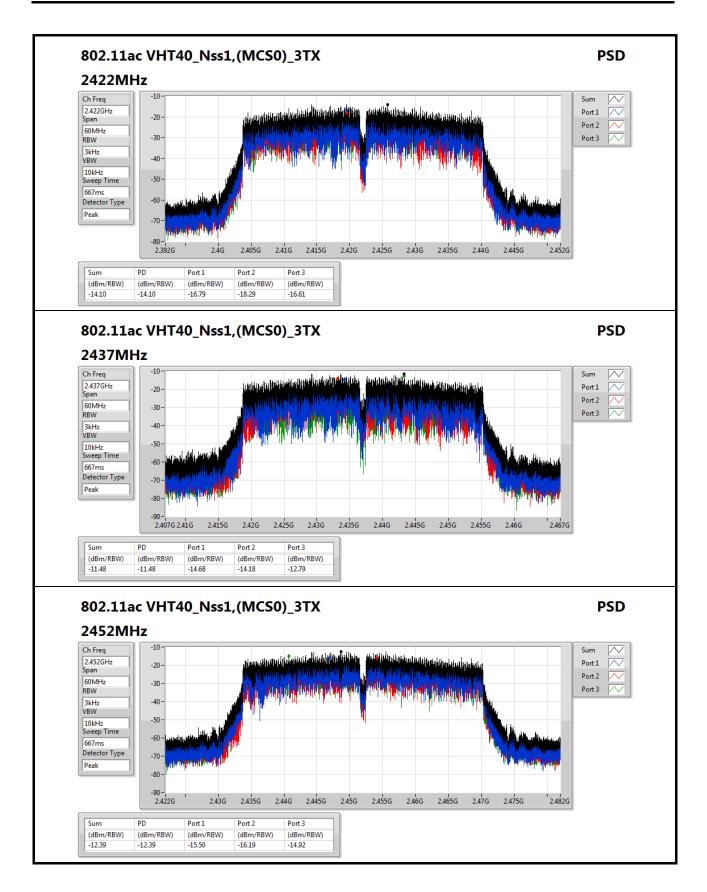


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Appendix D

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## **CSE Non-restricted Band Result**

Appendix E

Summary

Mode	Result Ref Ref		Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11g_(6Mbps)_3TX	-	=	-	-	-	-	-	-	-	-	=	-	-
2.4-2.4835GHz	Pass	2.438243G	8.00	-22.00	2.30874G	-61.02	2.39768G	-37.18	2.48478G	-55.82	17.622089G	-54.86	2

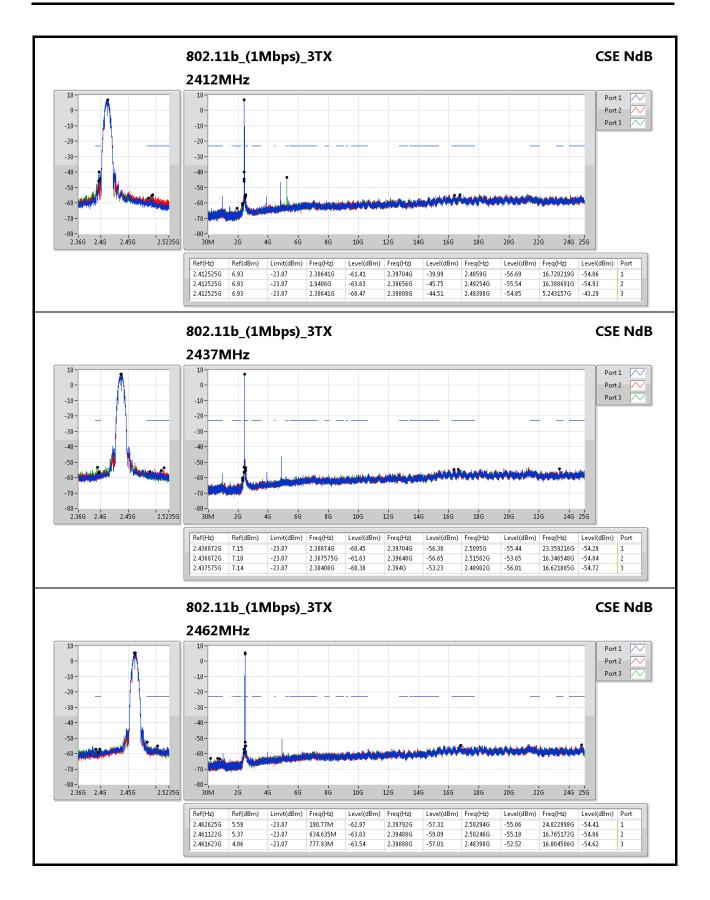
## Result

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_(1Mbps)_3TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.412525G	6.93	-23.07	2.30641G	-61.41	2.39704G	-39.99	2.4859G	-56.69	16.720219G	-54.86	1
2412MHz	Pass	2.412525G	6.93	-23.07	1.9406G	-63.63	2.39656G	-45.75	2.49254G	-55.54	16.388691G	-54.93	2
2412MHz	Pass	2.412525G	6.93	-23.07	2.30641G	-60.47	2.39808G	-44.51	2.49398G	-54.85	5.243157G	-43.29	3
2437MHz	Pass	2.436072G	6.93	-23.07	2.30874G	-60.45	2.39704G	-56.38	2.5095G	-55.44	23.359216G	-54.29	1
2437MHz	Pass	2.436072G	6.93	-23.07	2.307575G	-61.63	2.39648G	-56.65	2.51502G	-53.65	16.346548G	-54.84	2
2437MHz	Pass	2.437575G	6.93	-23.07	2.30408G	-60.38	2.394G	-53.23	2.48902G	-56.01	16.621885G	-54.72	3
2462MHz	Pass	2.462625G	6.93	-23.07	190.77M	-62.97	2.39792G	-57.31	2.50294G	-55.06	24.822998G	-54.41	1
2462MHz	Pass	2.461122G	6.93	-23.07	634.635M	-63.03	2.39488G	-59.09	2.50246G	-55.18	16.765172G	-54.86	2
2462MHz	Pass	2.461623G	6.93	-23.07	777.93M	-63.54	2.39088G	-57.01	2.48398G	-52.52	16.804506G	-54.62	3
802.11g_(6Mbps)_3TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.438243G	8.00	-22.00	942.195M	-63.53	2.39776G	-38.80	2.49358G	-53.71	16.253832G	-54.78	1
2412MHz	Pass	2.438243G	8.00	-22.00	2.30874G	-61.02	2.39768G	-37.18	2.48478G	-55.82	17.622089G	-54.86	2
2412MHz	Pass	2.438243G	8.00	-22.00	2.30641G	-59.53	2.3968G	-39.70	2.48446G	-55.25	16.217308G	-55.18	3
2437MHz	Pass	2.438243G	8.00	-22.00	2.10836G	-62.69	2.39128G	-52.25	2.4939G	-51.07	16.228546G	-54.89	1
2437MHz	Pass	2.438243G	8.00	-22.00	2.30874G	-58.18	2.39448G	-53.29	2.49446G	-51.77	16.425215G	-54.08	2
2437MHz	Pass	2.438243G	8.00	-22.00	2.30408G	-57.91	2.39792G	-51.49	2.52078G	-51.49	16.39431G	-55.42	3
2462MHz	Pass	2.438243G	8.00	-22.00	2.309905G	-61.05	2.39528G	-55.31	2.48382G	-47.76	16.225736G	-54.90	1
2462MHz	Pass	2.438243G	8.00	-22.00	2.300585G	-61.56	2.3976G	-55.94	2.4851G	-53.56	16.371834G	-54.65	2
2462MHz	Pass	2.438243G	8.00	-22.00	2.302915G	-60.49	2.39768G	-55.72	2.48494G	-52.76	24.353801G	-54.50	3
802.11ac VHT20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.439579G	6.42	-23.58	2.30874G	-59.91	2.39792G	-42.69	2.49694G	-52.48	17.683899G	-53.77	1
2412MHz	Pass	2.439579G	6.42	-23.58	2.307575G	-59.19	2.39704G	-41.96	2.4895G	-50.92	16.307214G	-54.44	2
2412MHz	Pass	2.439579G	6.42	-23.58	949.185M	-62.78	2.39784G	-44.06	2.48982G	-53.70	17.16413G	-54.90	3
2437MHz	Pass	2.439579G	6.42	-23.58	2.30641G	-60.08	2.39416G	-52.80	2.51454G	-51.35	17.397324G	-55.01	1
2437MHz	Pass	2.439579G	6.42	-23.58	2.30874G	-58.03	2.39448G	-52.42	2.49318G	-51.50	17.664232G	-54.11	2
2437MHz	Pass	2.439579G	6.42	-23.58	2.11768G	-63.00	2.39384G	-52.60	2.51758G	-53.08	2.52631G	-53.33	3
2462MHz	Pass	2.439579G	6.42	-23.58	2.30874G	-60.67	2.39072G	-52.99	2.50574G	-49.71	2.537548G	-52.98	1
2462MHz	Pass	2.439579G	6.42	-23.58	2.302915G	-61.10	2.3908G	-51.19	2.48358G	-50.62	2.534738G	-52.98	2
2462MHz	Pass	2.439579G	6.42	-23.58	2.004675G	-63.51	2.39616G	-54.05	2.5155G	-53.85	17.636137G	-54.81	3
802.11ac VHT40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.434569G	-0.44	-30.44	916.23M	-63.54	2.39584G	-50.76	2.48542G	-58.72	17.351958G	-53.78	1
2422MHz	Pass	2.434569G	-0.44	-30.44	935.695M	-63.69	2.39456G	-49.19	2.48942G	-59.83	16.482544G	-54.96	2
2422MHz	Pass	2.434569G	-0.44	-30.44	888.75M	-64.15	2.39392G	-53.63	2.48382G	-59.43	16.266592G	-54.78	3
2437MHz	Pass	2.434569G	-0.44	-30.44	857.835M	-62.45	2.392G	-52.87	2.48638G	-52.34	17.666069G	-54.19	1
2437MHz	Pass	2.434569G	-0.44	-30.44	2.12993G	-63.69	2.39312G	-51.03	2.48814G	-54.33	16.260983G	-55.13	2
2437MHz	Pass	2.434569G	-0.44	-30.44	929.97M	-63.54	2.3944G	-53.94	2.51134G	-54.92	16.249765G	-54.16	3
2452MHz	Pass	2.434569G	-0.44	-30.44	946M	-62.72	2.39312G	-54.45	2.48414G	-52.26	16.25257G	-54.65	1
2452MHz	Pass	2.434569G	-0.44	-30.44	893.33M	-62.99	2.392G	-56.35	2.49806G	-54.45	17.657655G	-54.55	2
2452MHz	Pass	2.434569G	-0.44	-30.44	161.675M	-63.57	2.39648G	-56.02	2.48398G	-54.14	16.258179G	-54.34	3

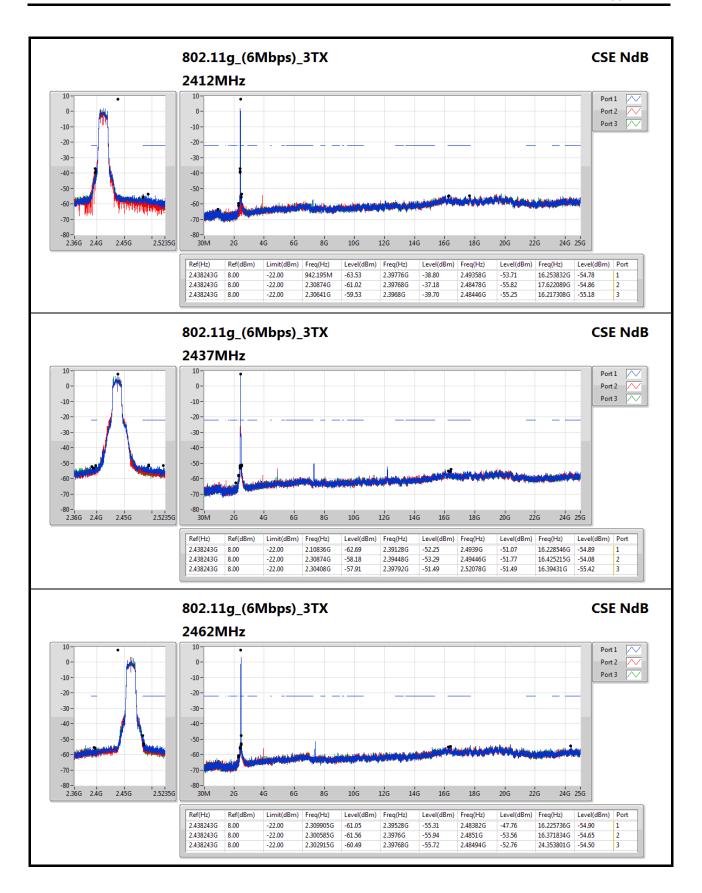
SPORTON INTERNATIONAL INC.

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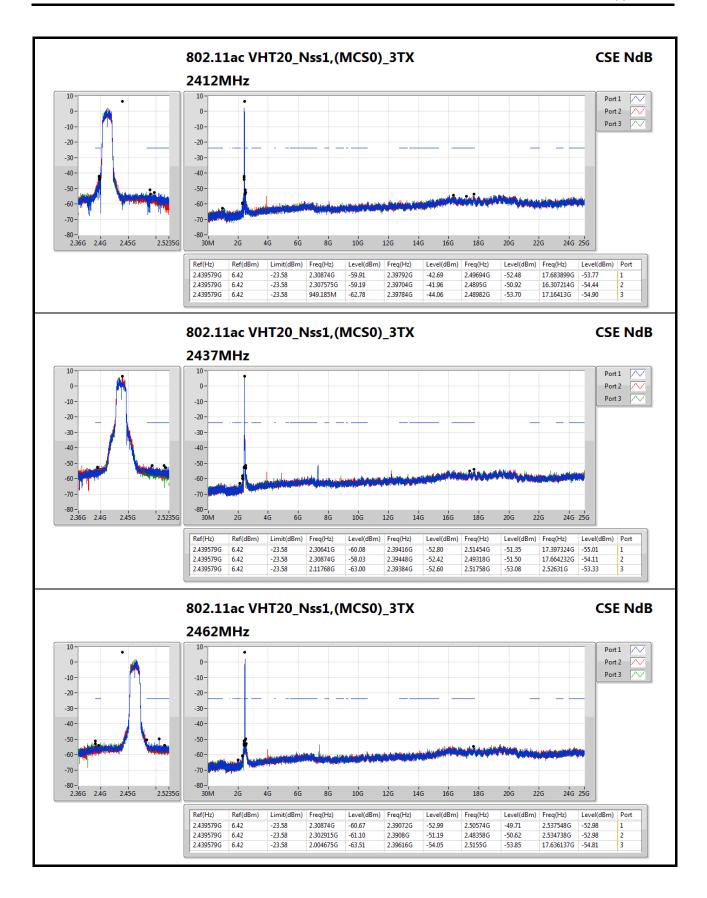




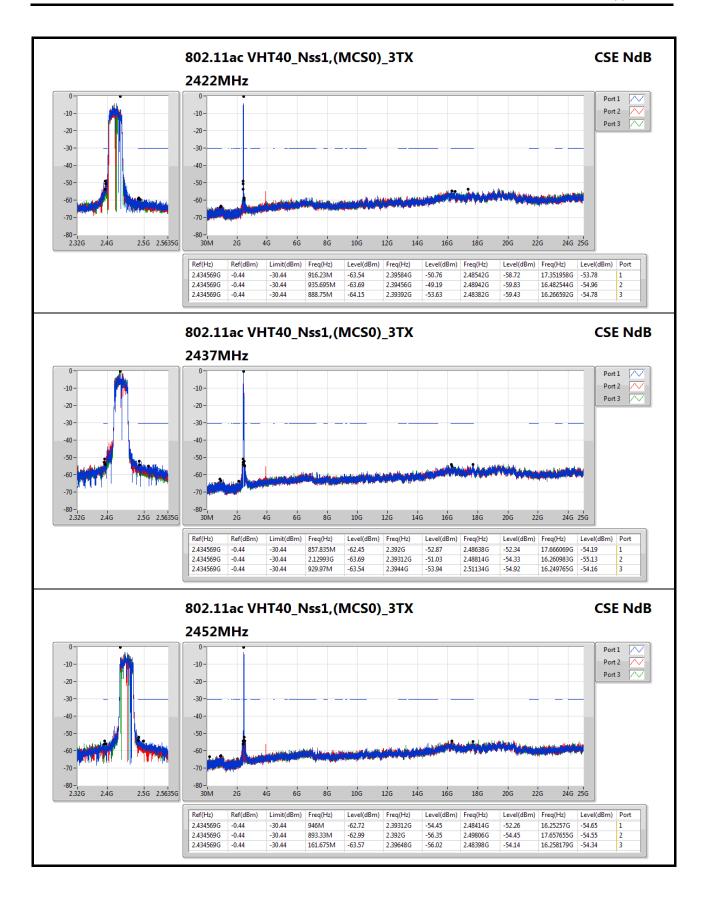






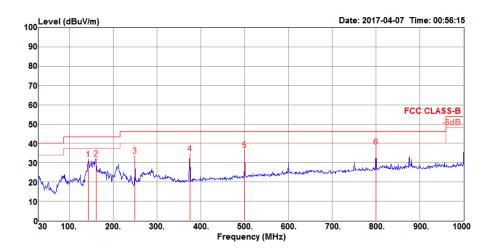








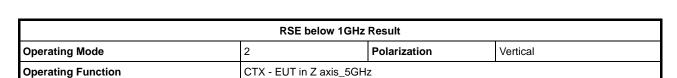
RSE below 1GHz Result										
Operating Mode	2 <b>Polarization</b> Horizontal									
Operating Function	CTX - EUT in Z axis_5GHz									

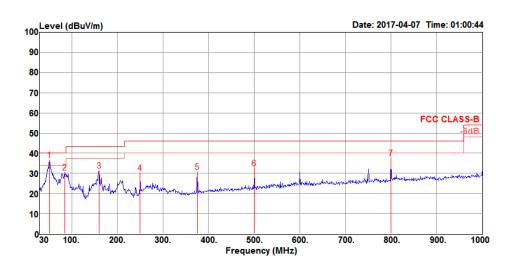


	Freq	Level	Limit Line	Over Limit				Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	143.49	32.02	43.50	-11.48	45.38	1.14	17.89	32.39	200	0	Peak	HORIZONTAL
2	160.95	32.07	43.50	-11.43	46.36	1.21	16.87	32.37	200	0	Peak	HORIZONTAL
3	250.19	33.58	46.00	-12.42	45.31	1.50	19.10	32.33	200	0	Peak	HORIZONTAL
4	375.32	34.71	46.00	-11.29	43.05	1.89	22.08	32.31	200	0	Peak	HORIZONTAL
5	500.45	36.60	46.00	-9.40	42.69	2.18	24.03	32.30	200	0	Peak	HORIZONTAL
6	800.18	38.35	46.00	-7.65	40.71	3.02	26.80	32.18	200	0	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.)

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	Freq	Level	Limit Line	Over Limit	Read Level			Preamp Factor	A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		deg		
1	51.34	36.60	40.00	-3.40	53.55	0.69	14.74	32.38	100	0	Peak	VERTICAL
2	84.32	30.54	40.00	-9.46	47.60	0.91	14.46	32.43	100	0	Peak	VERTICAL
3	159.98	31.15	43.50	-12.35	45.42	1.20	16.90	32.37	100	0	Peak	VERTICAL
4	250.19	30.07	46.00	-15.93	41.80	1.50	19.10	32.33	100	0	Peak	VERTICAL
5	375.32	30.68	46.00	-15.32	39.02	1.89	22.08	32.31	100	0	Peak	VERTICAL
6	500.45	32.58	46.00	-13.42	38.67	2.18	24.03	32.30	100	0	Peak	VERTICAL
7	799.21	37.38	46.00	-8.62	39.75	3.02	26.80	32.19	100	0	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.)

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## RSE TX above 1GHz Result

Appendix F.2

Page No.

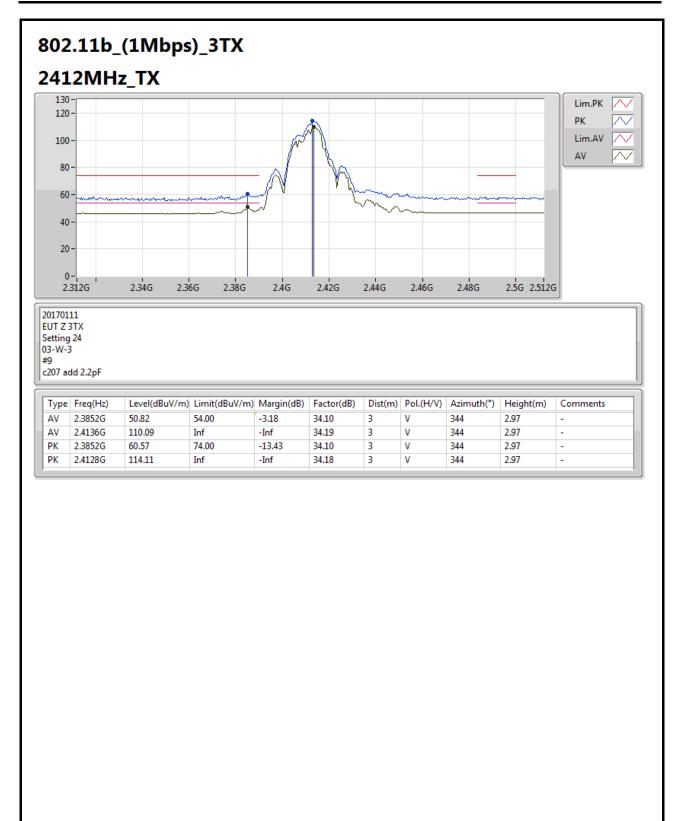
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Summary

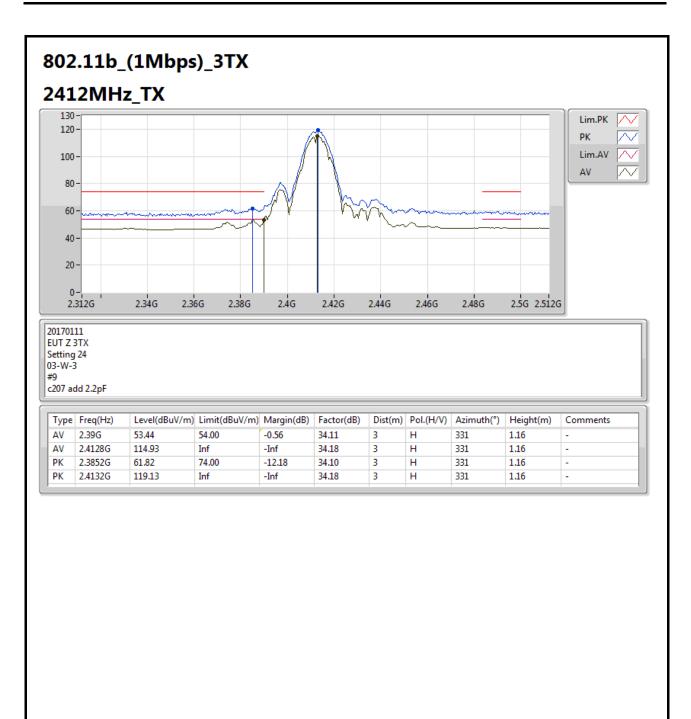
Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Pol. (H/V)	Azimuth	Height (m)	Comments
802.11g_(6Mbps)_3TX	-	-	-	-	-		-	-	-	-	-	-
2.4-2.4835GHz	Pass	AV	2.39G	53.96	54.00	-0.04	31.87	3	Н	323	1.09	-

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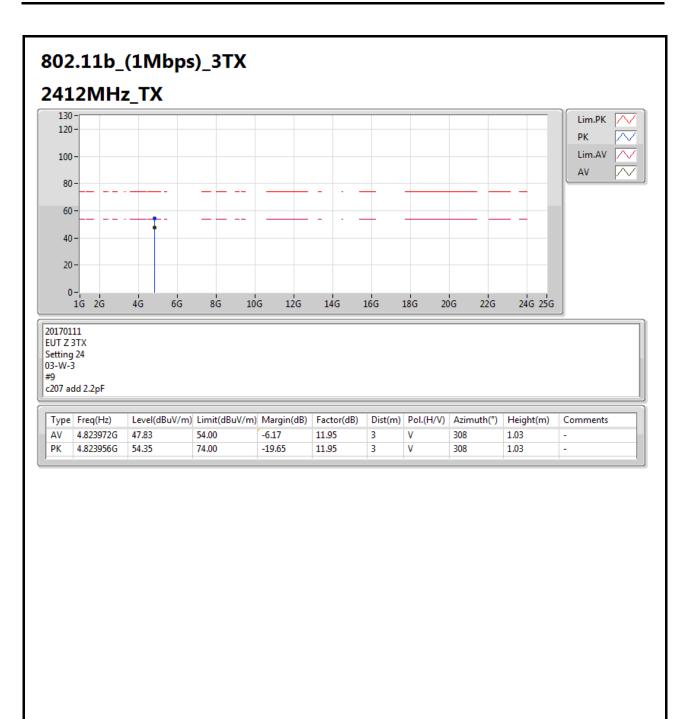




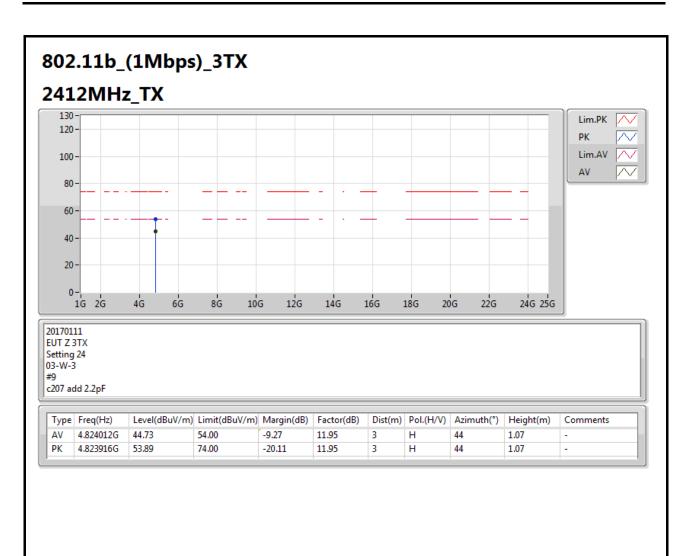




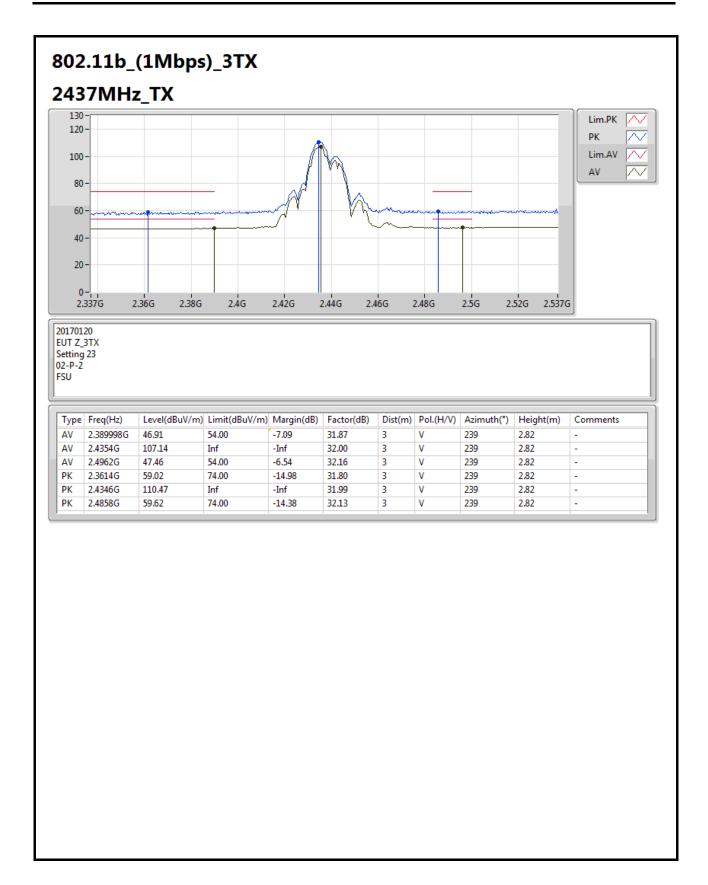




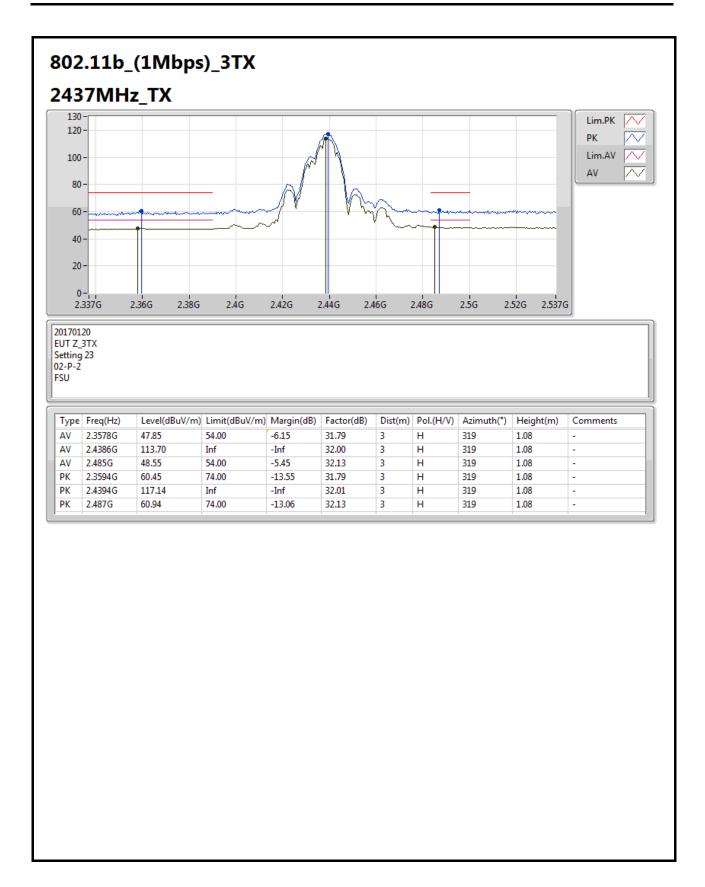




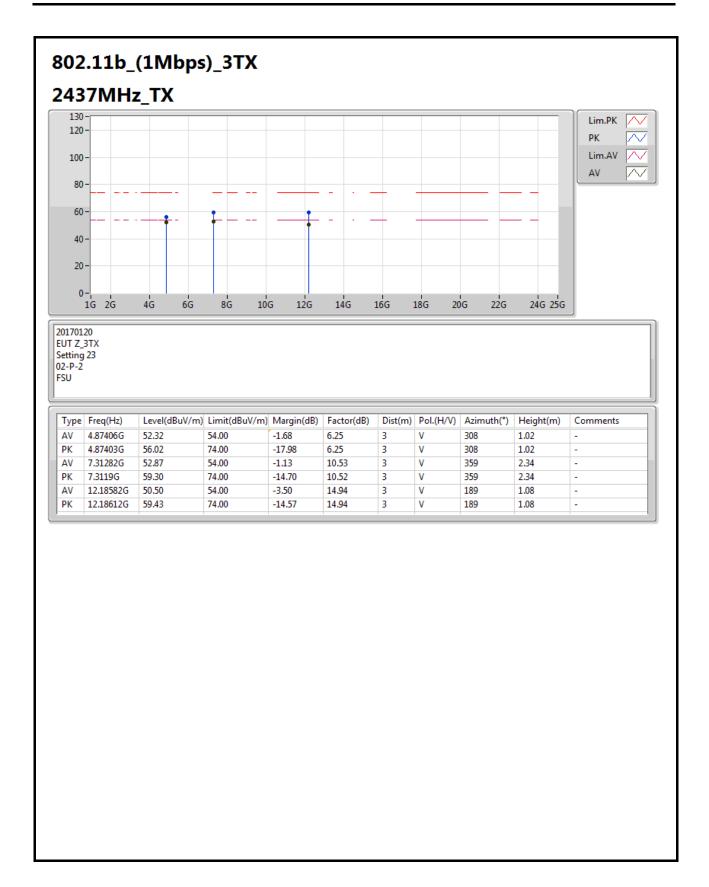




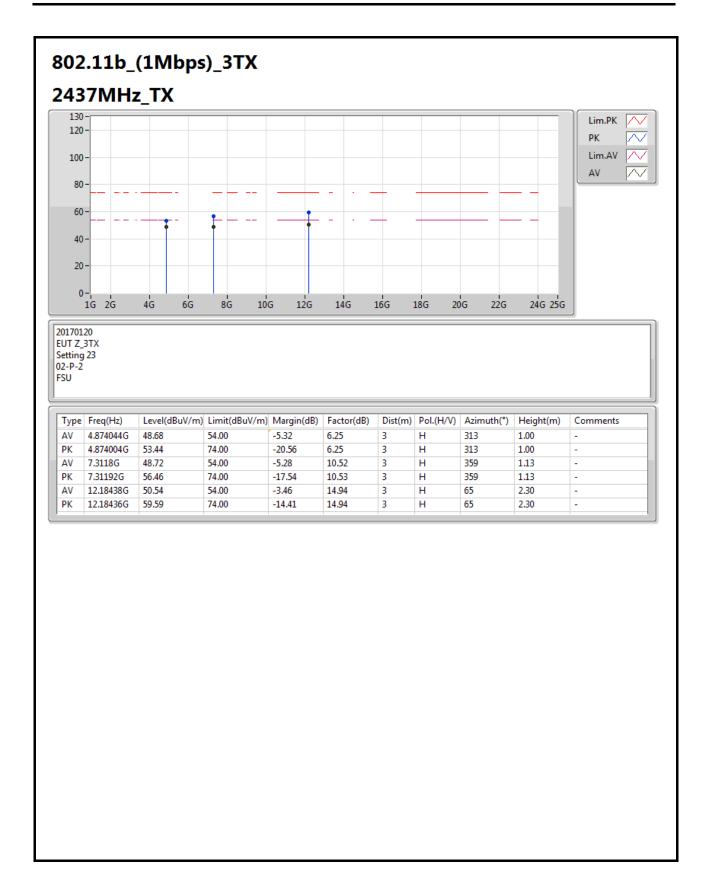




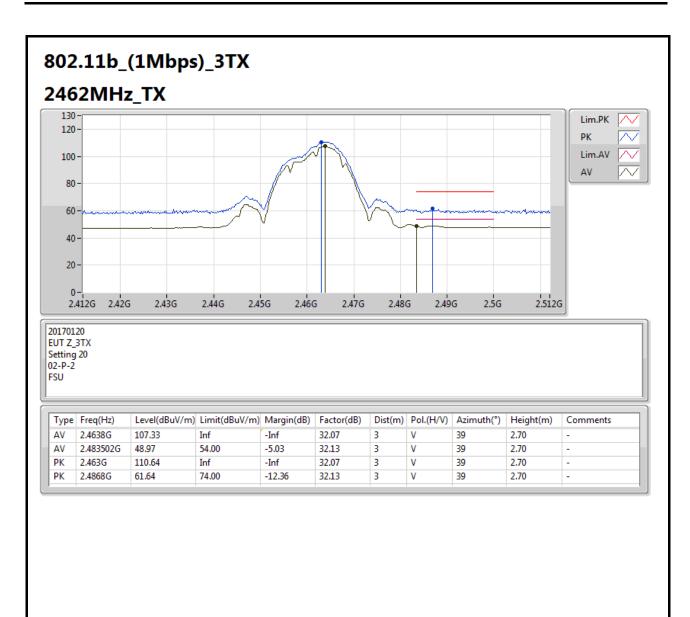




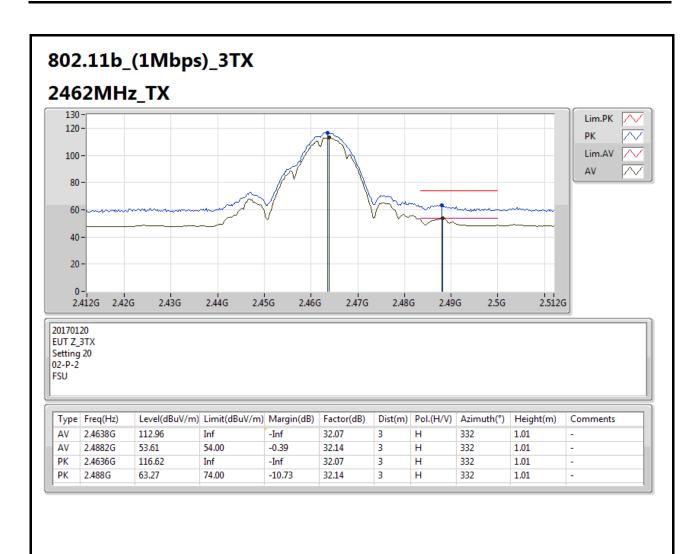




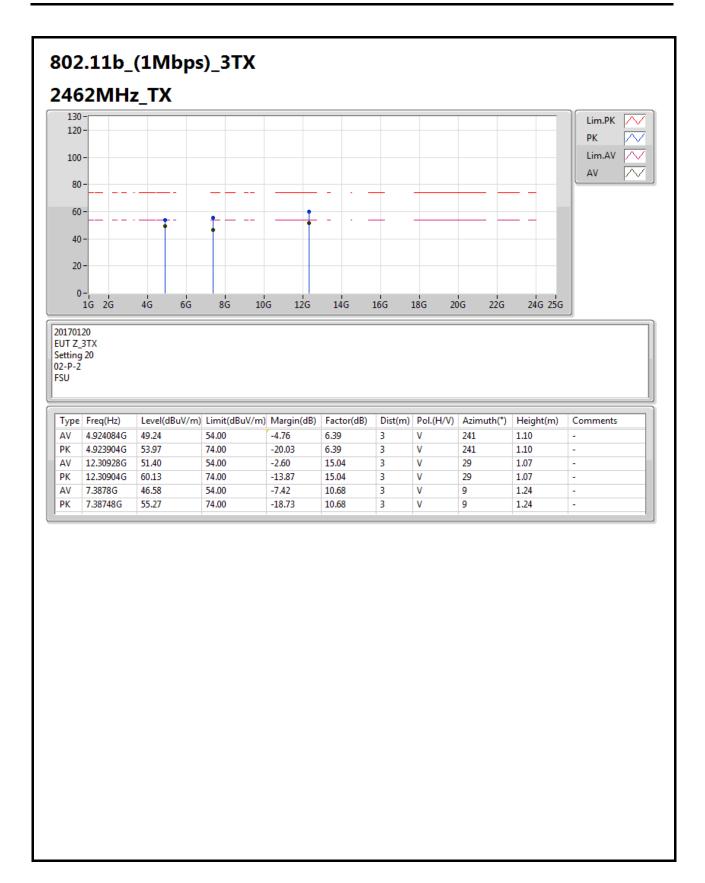




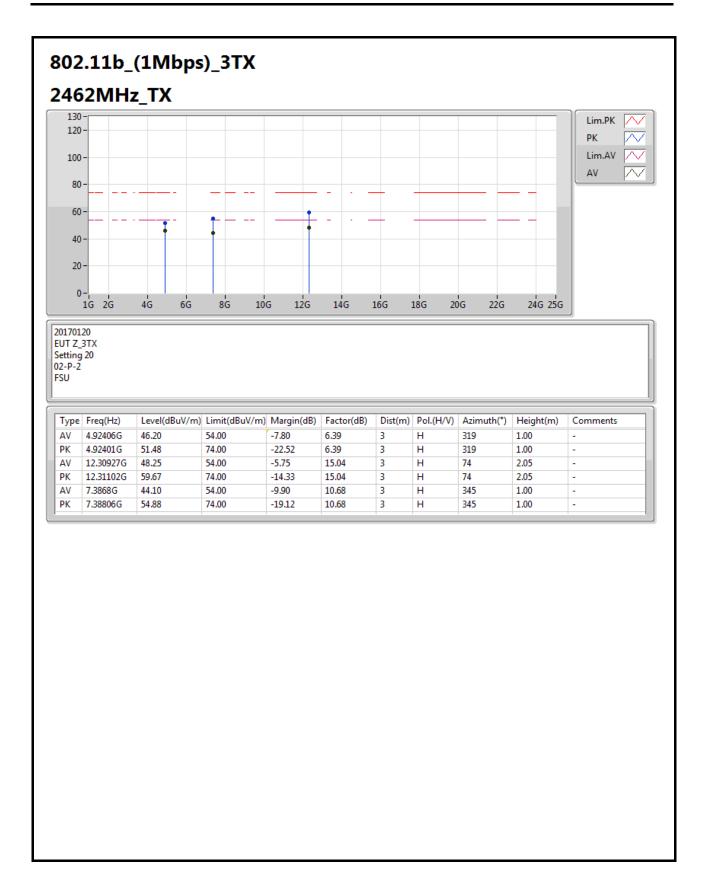




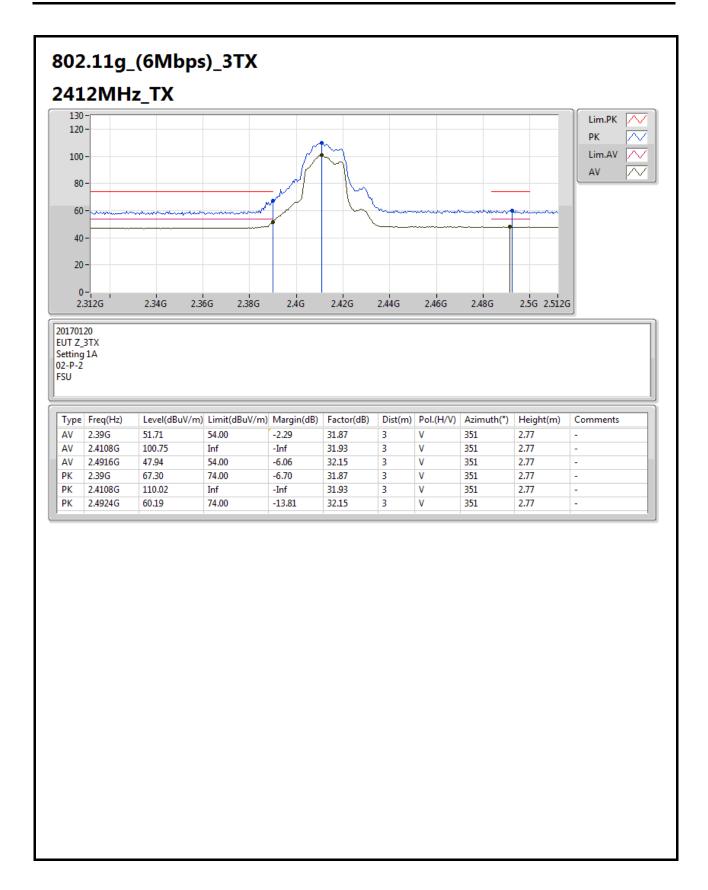




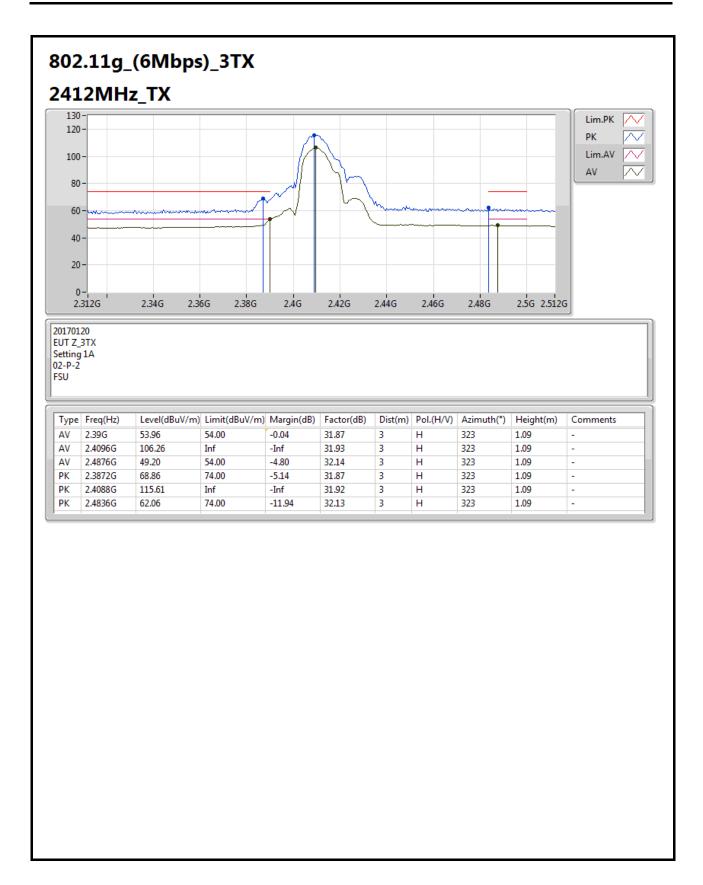




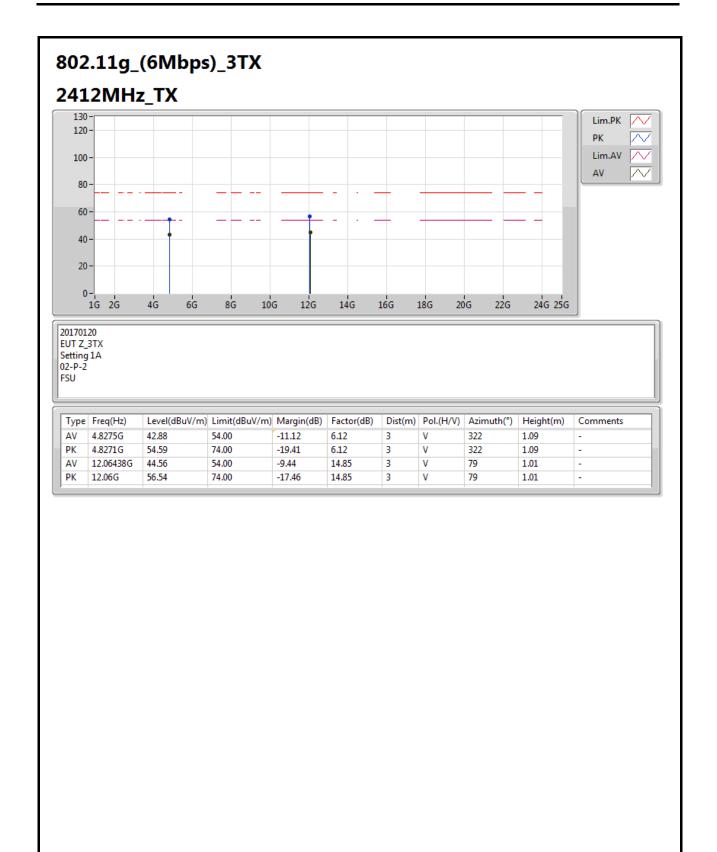






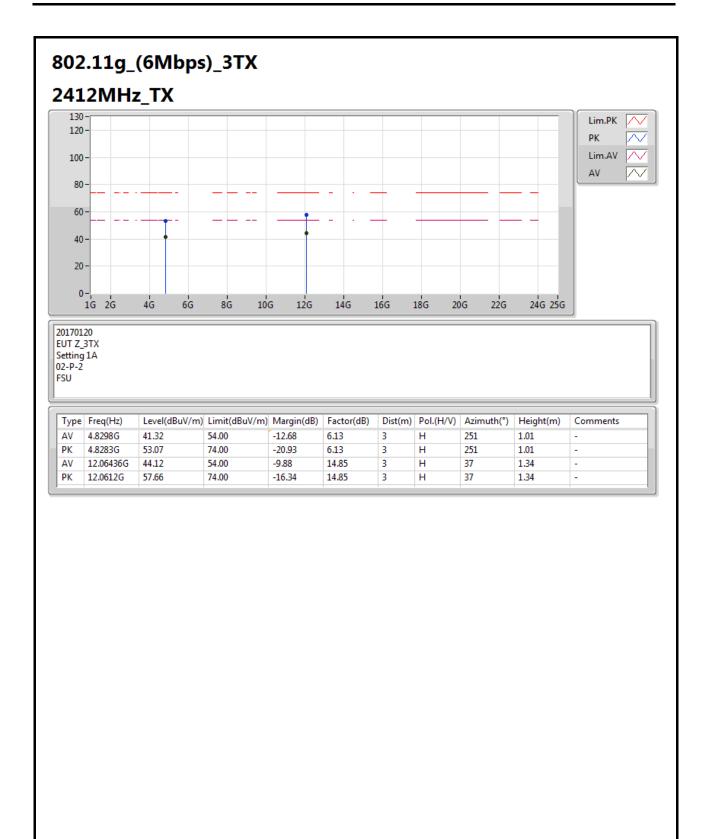




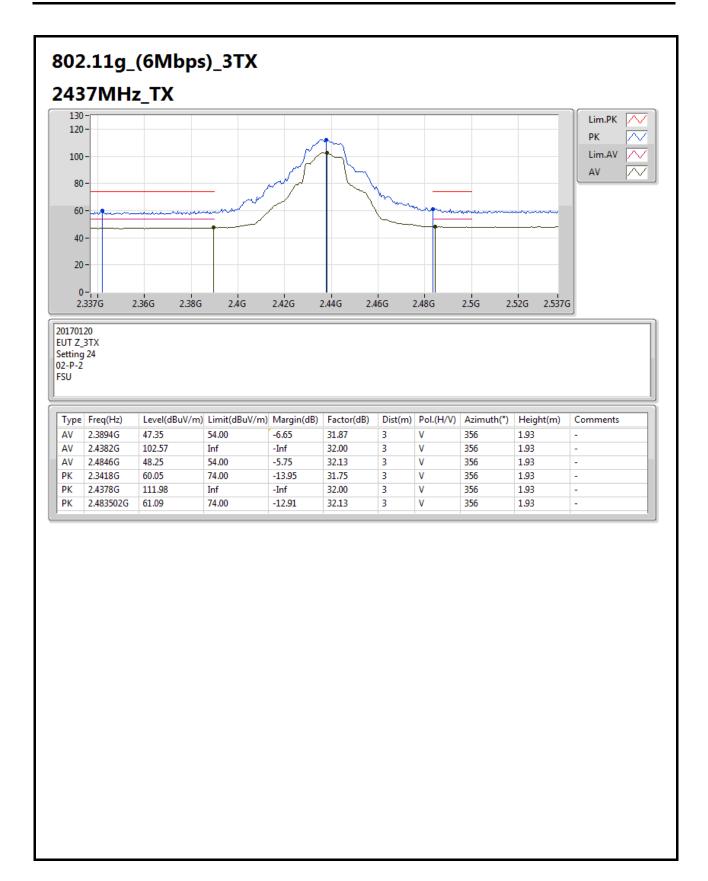


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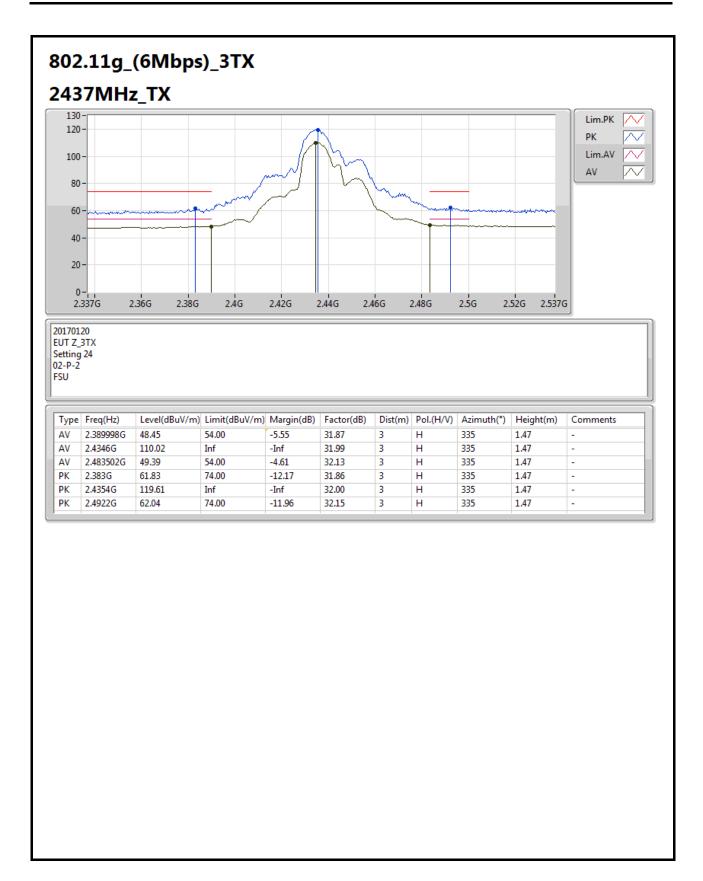








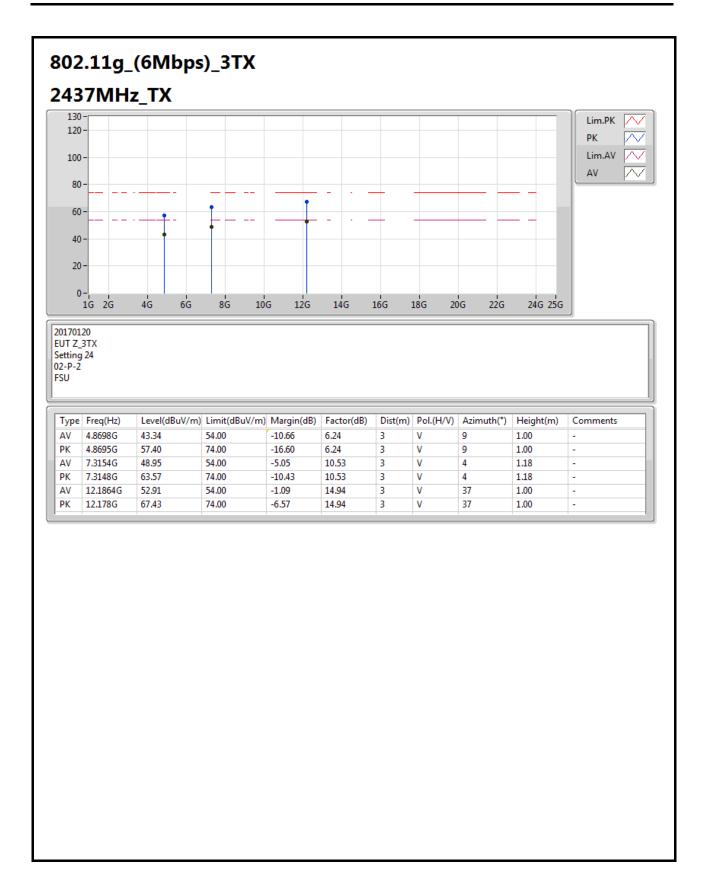




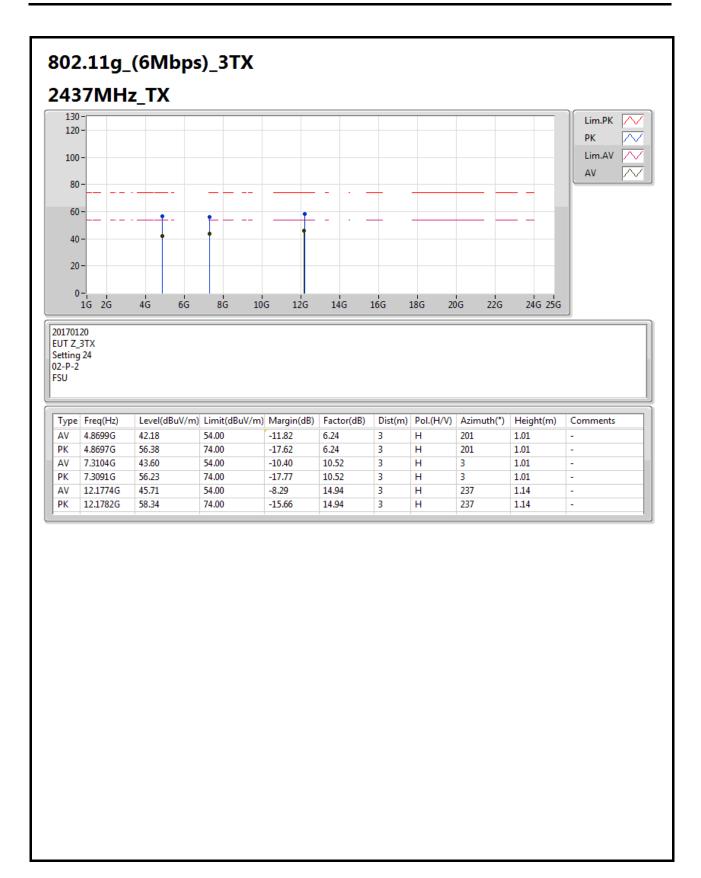
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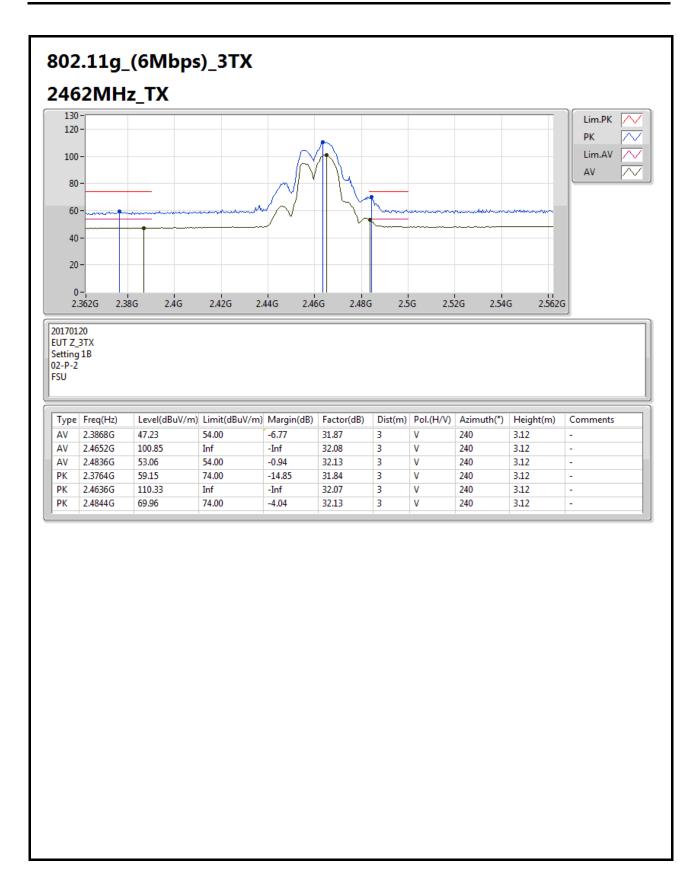




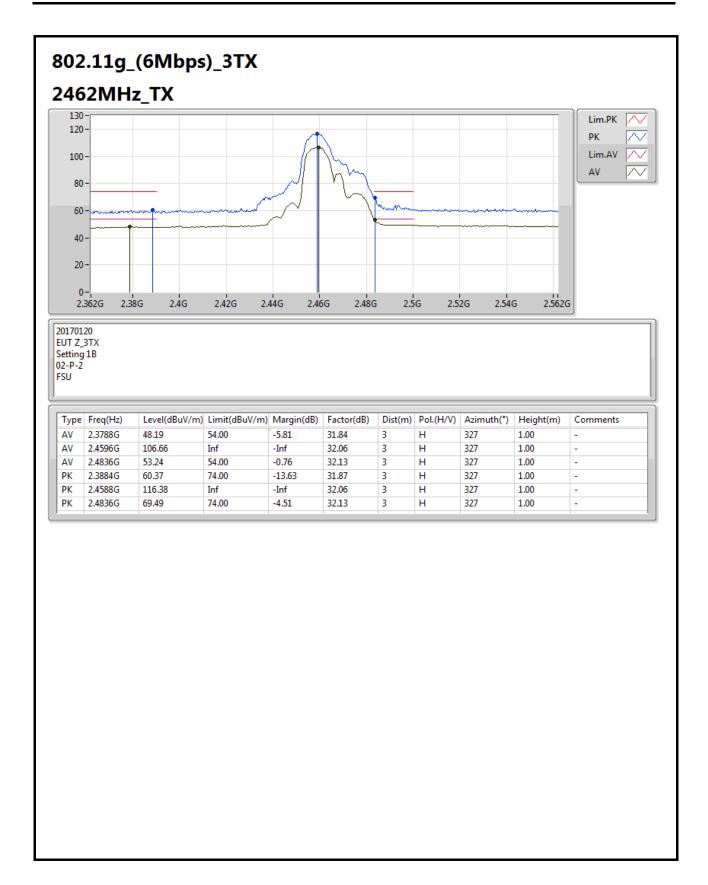
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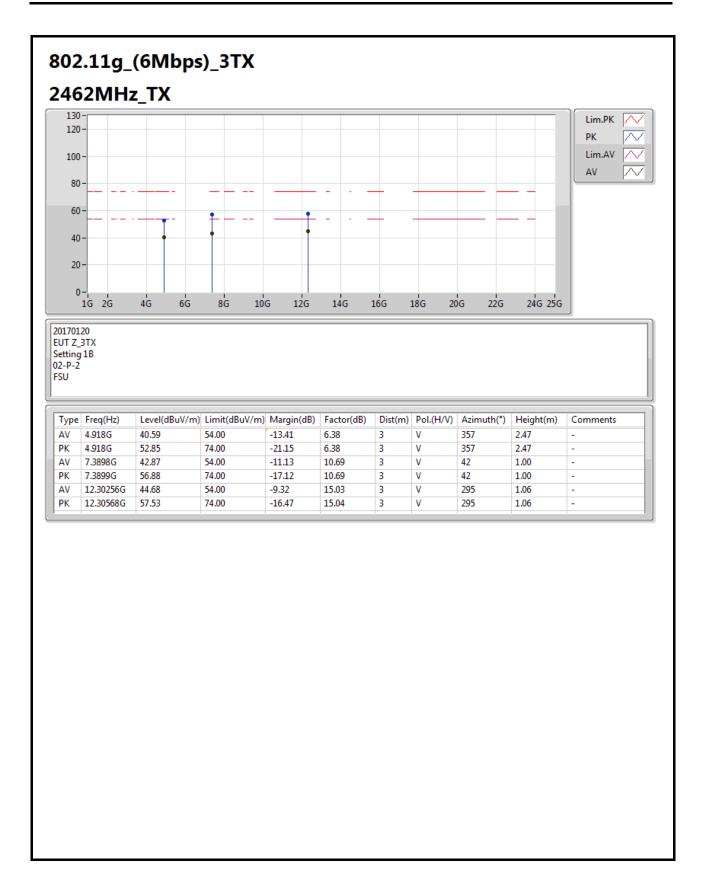




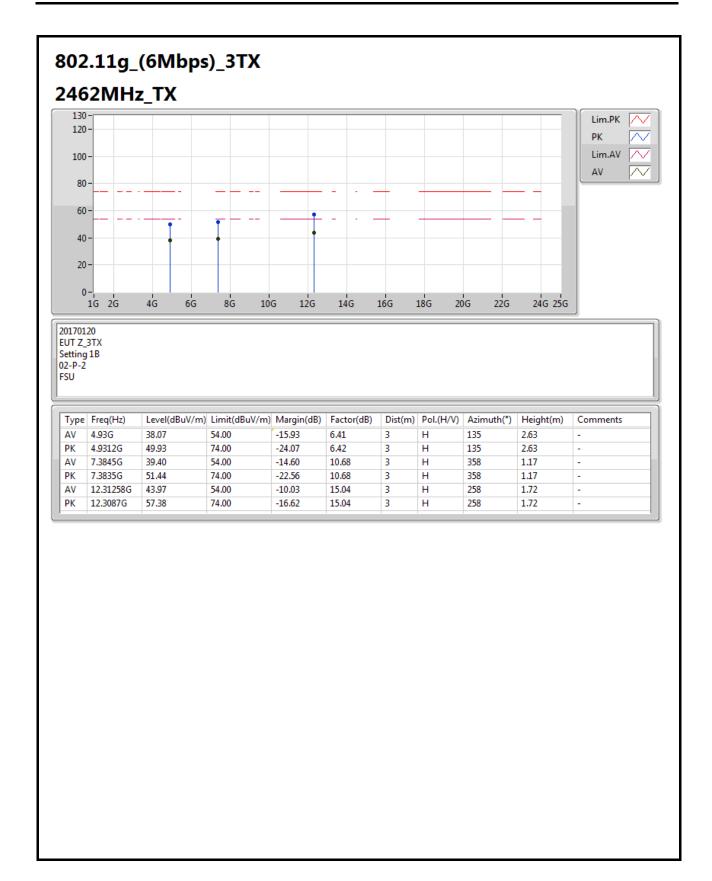




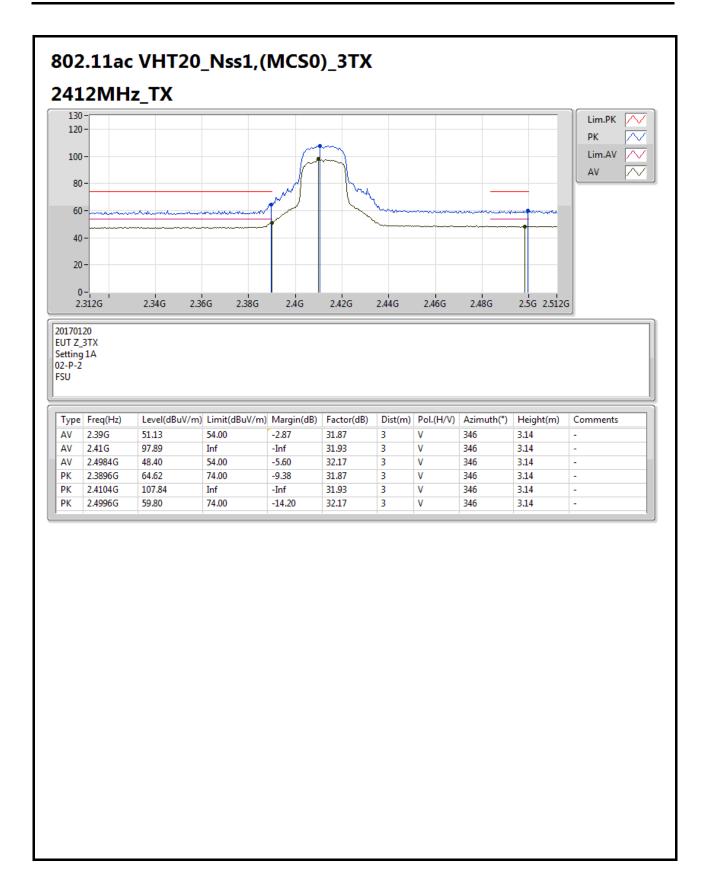




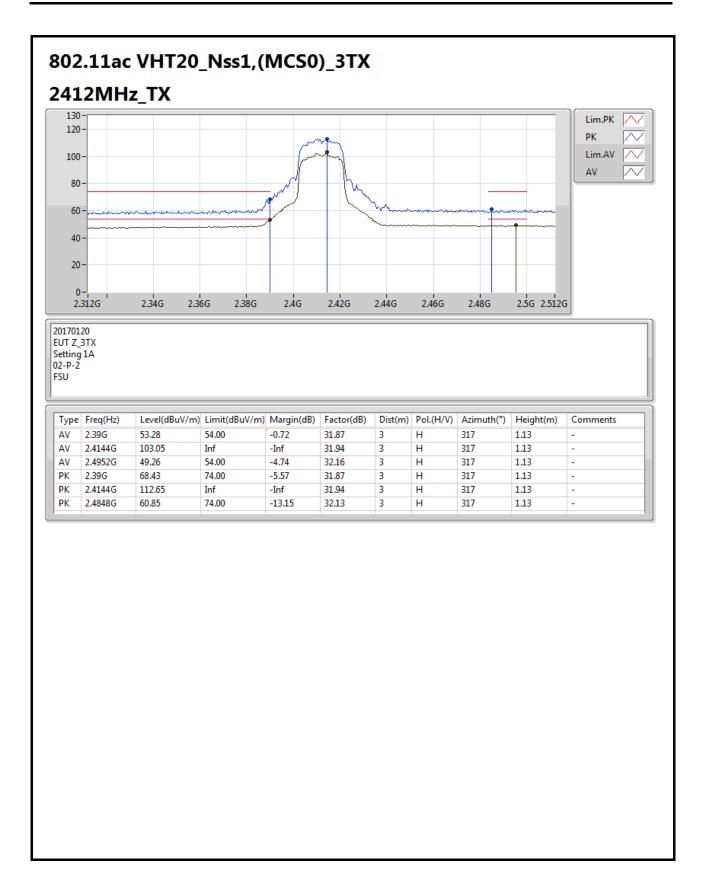




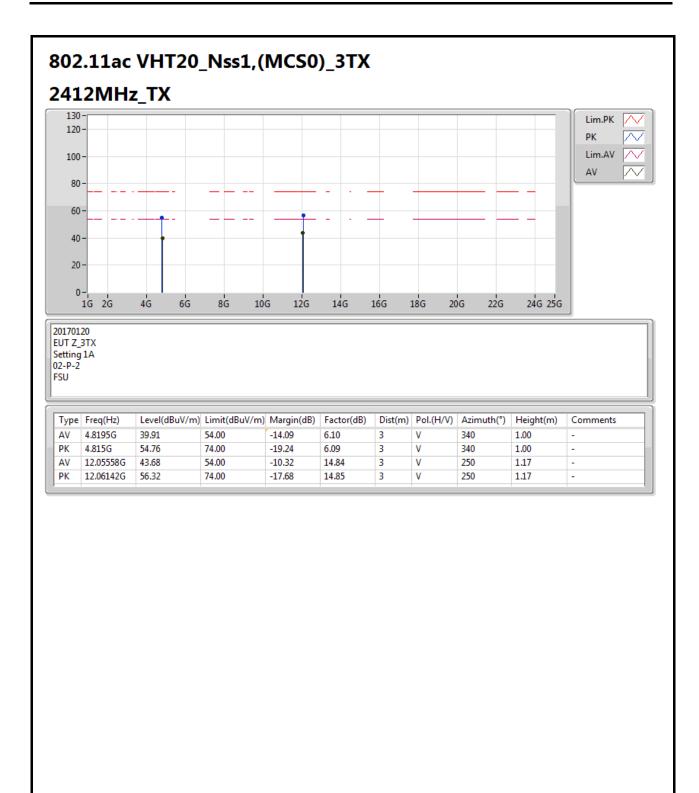




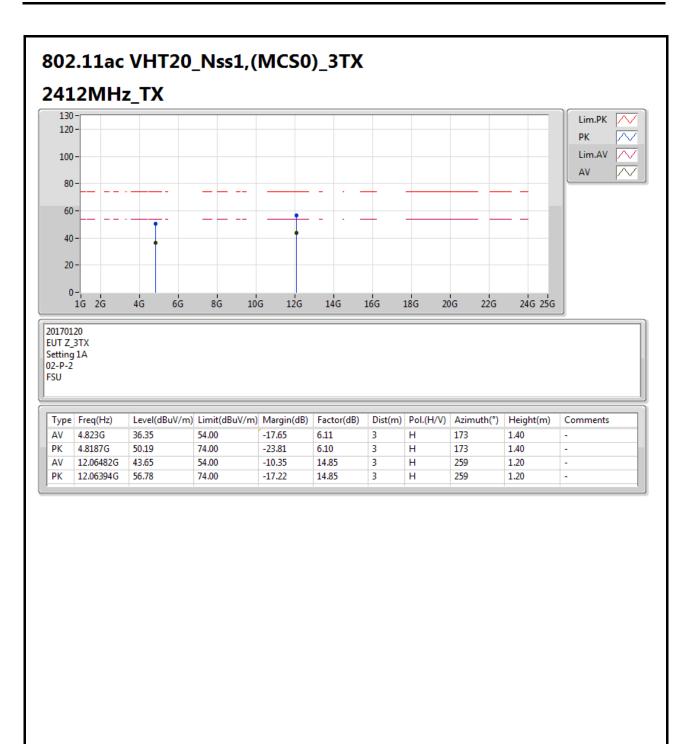




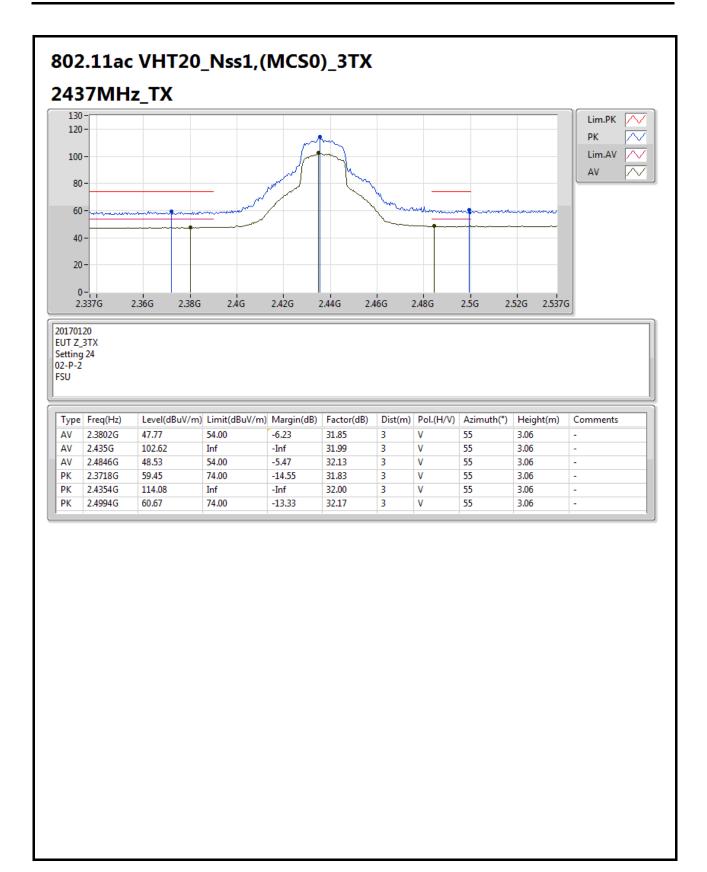




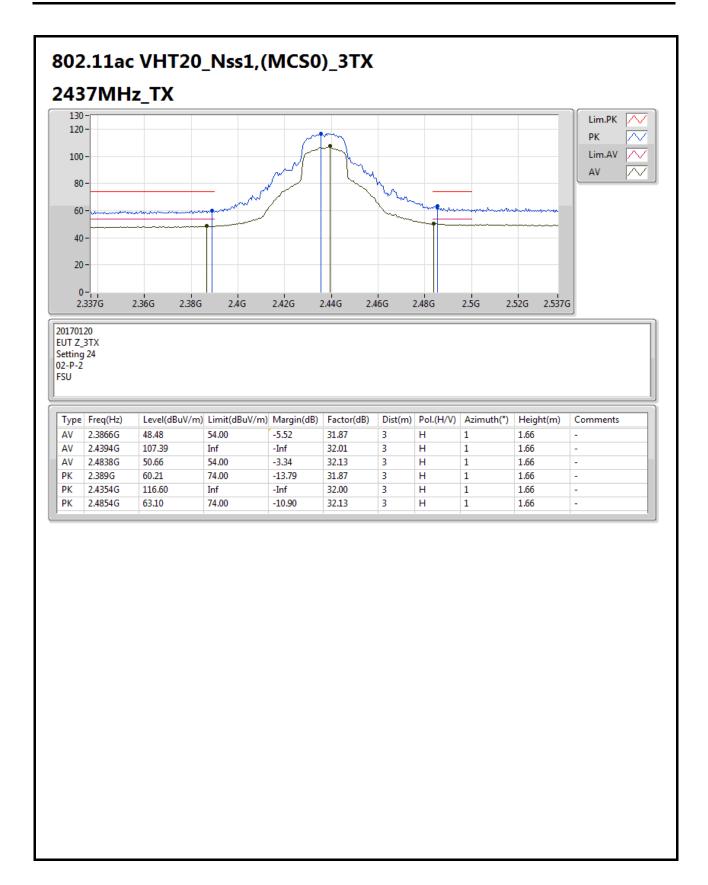




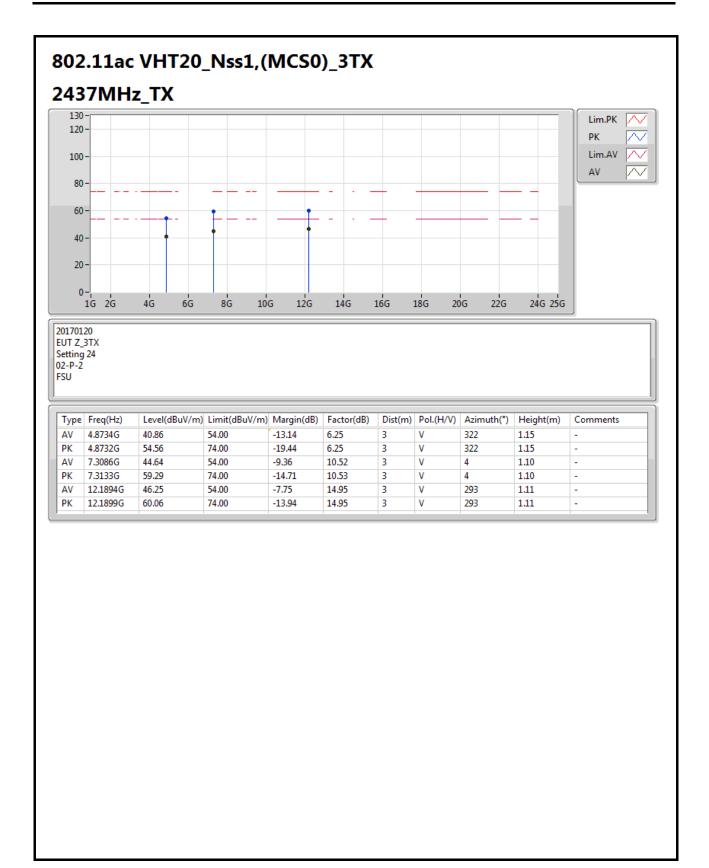












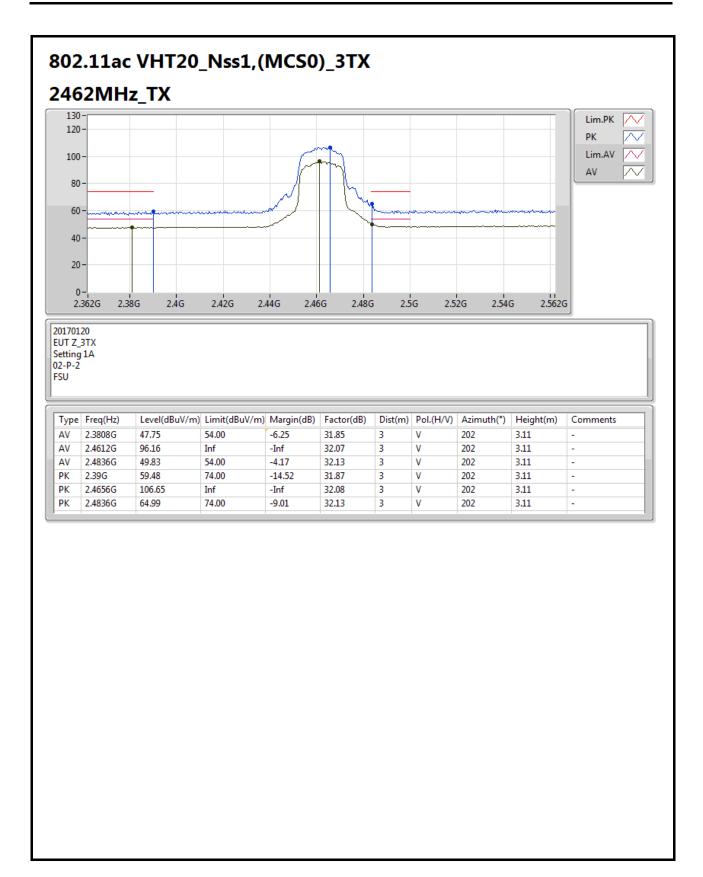




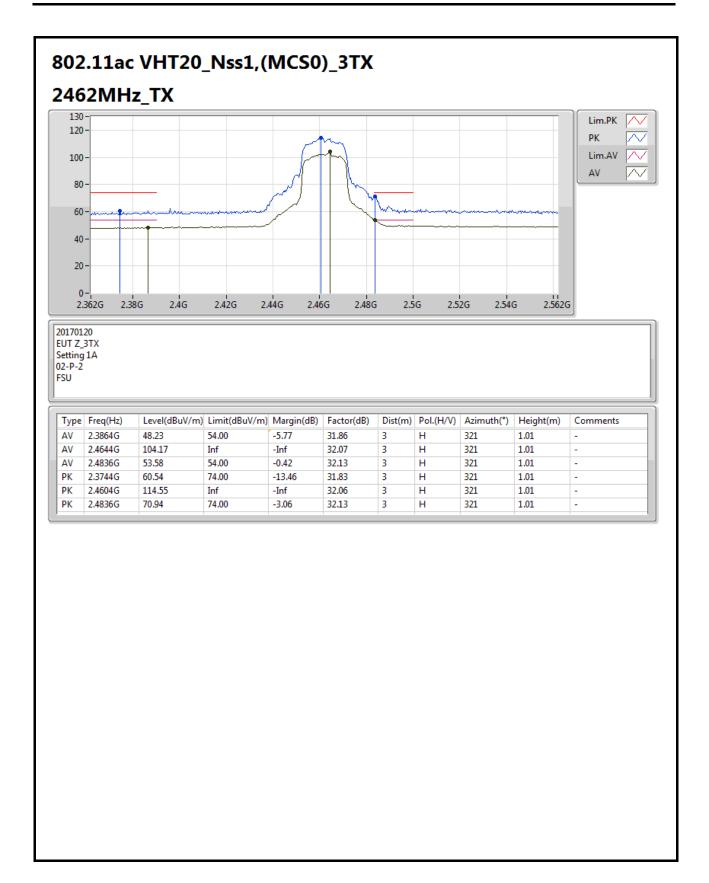
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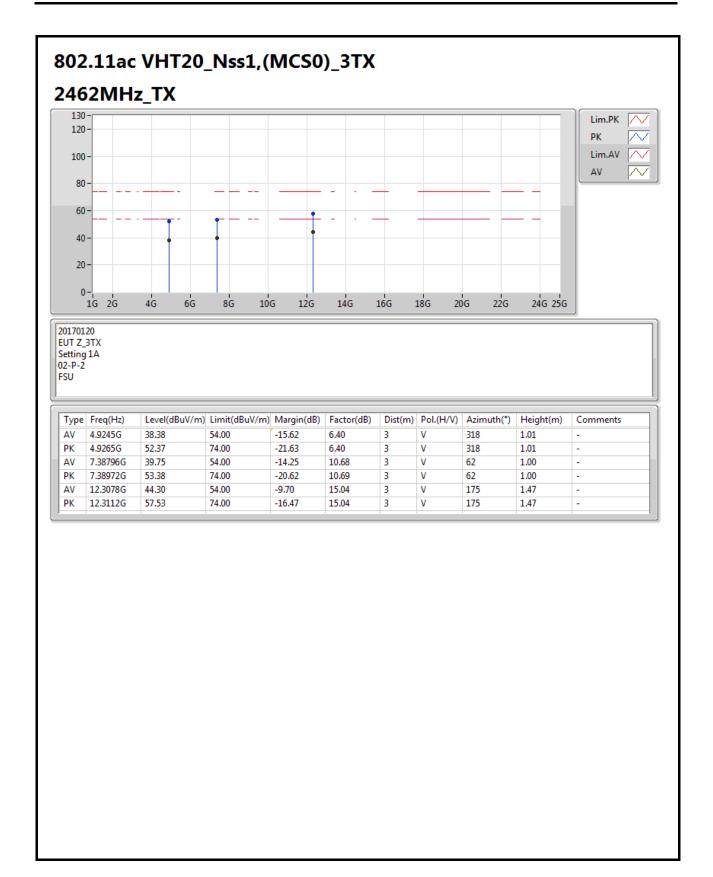








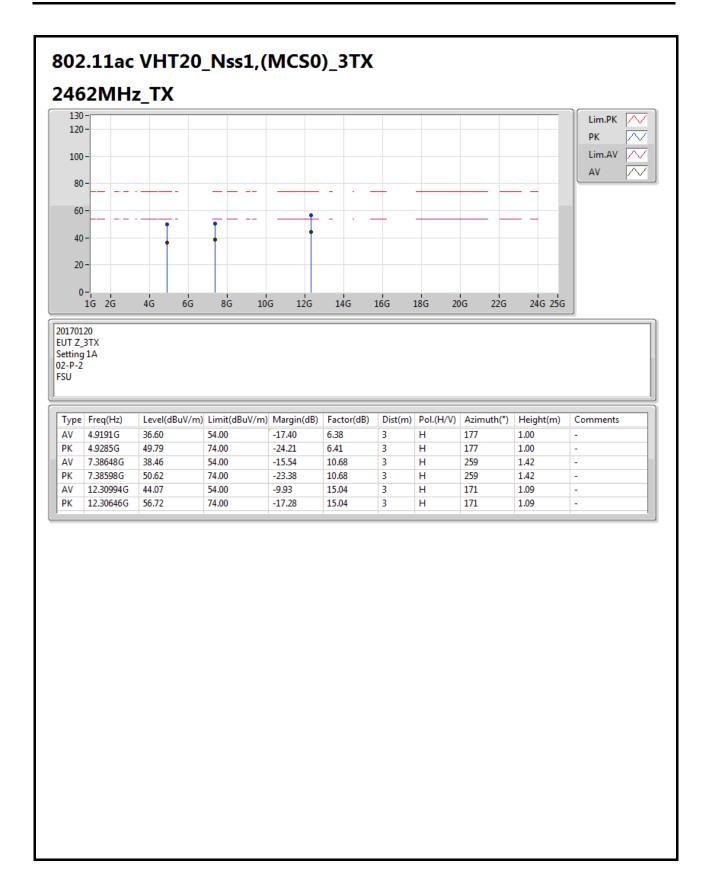




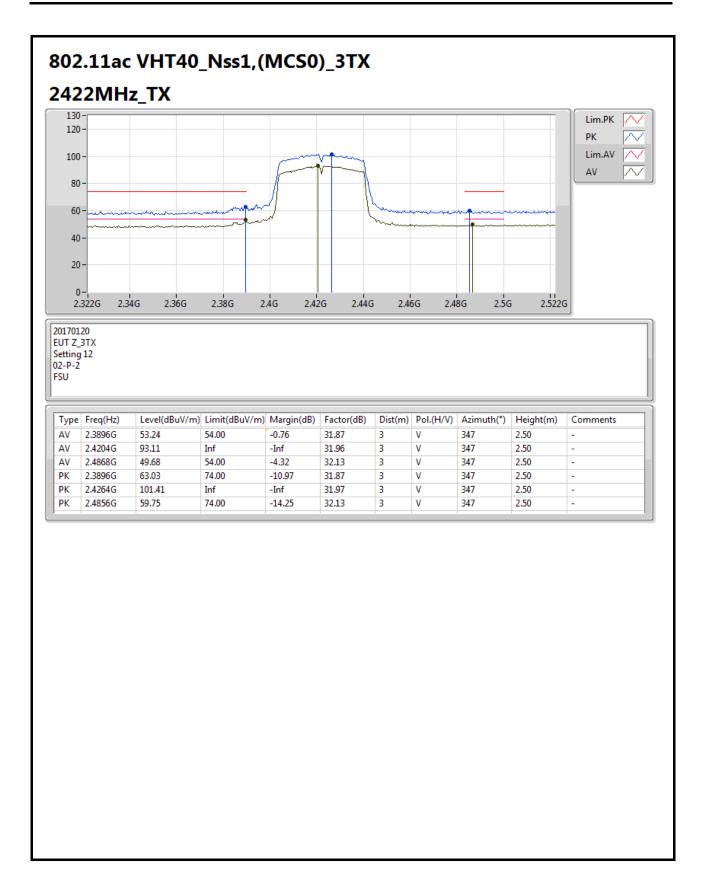
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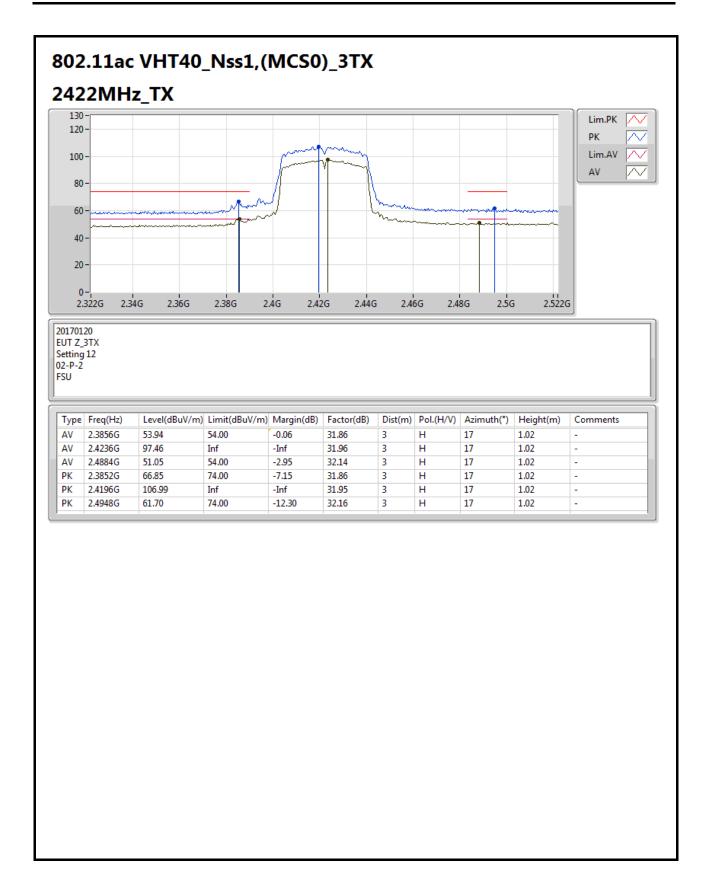




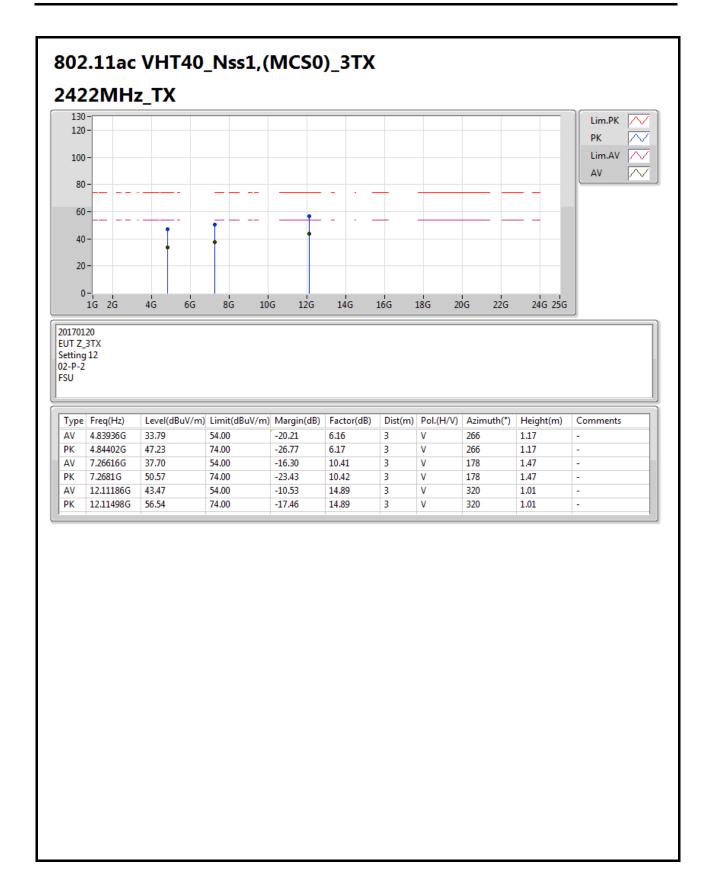






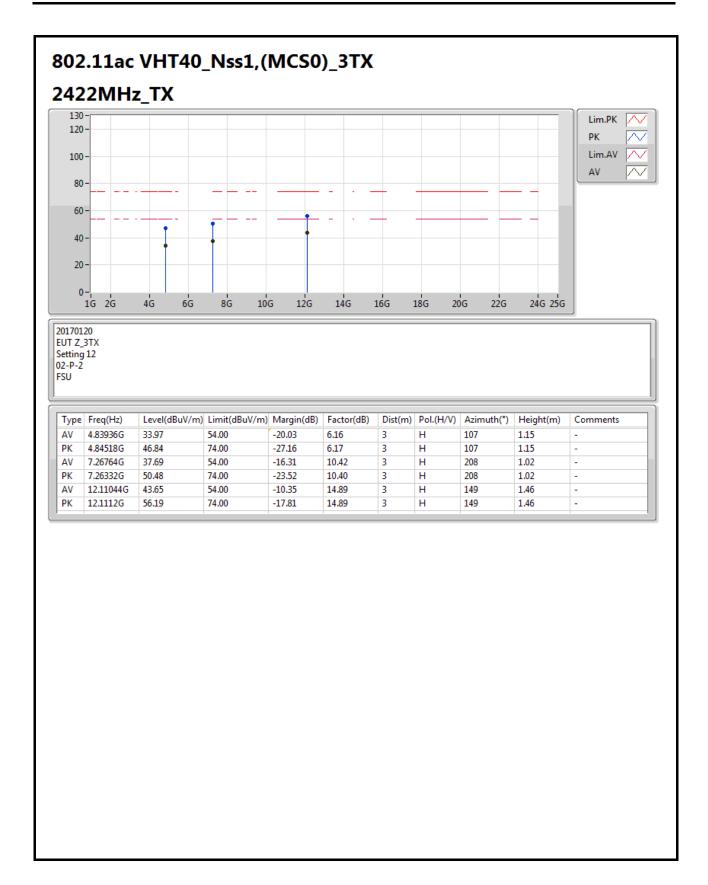




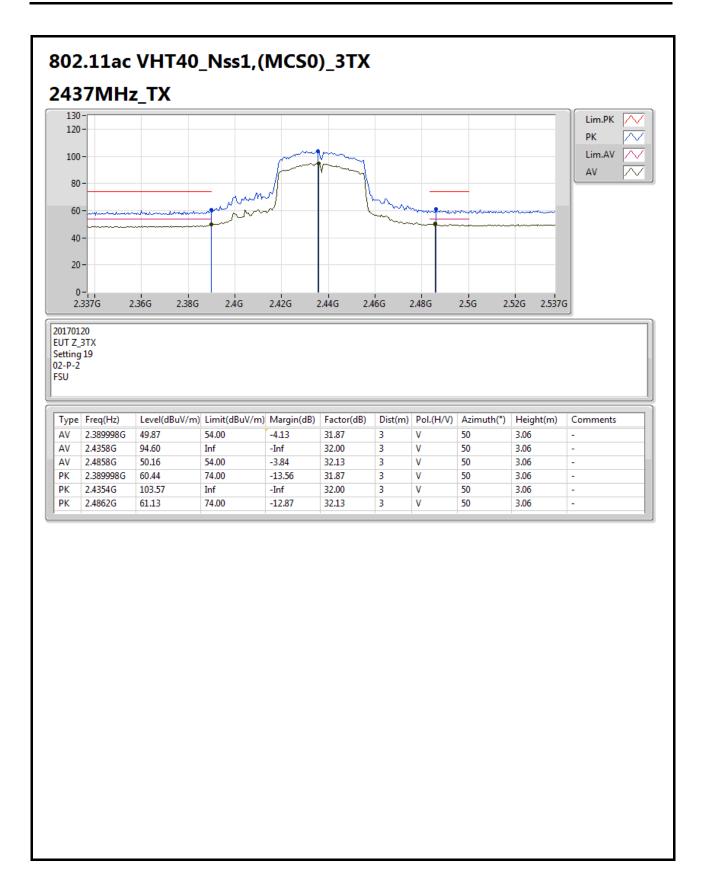


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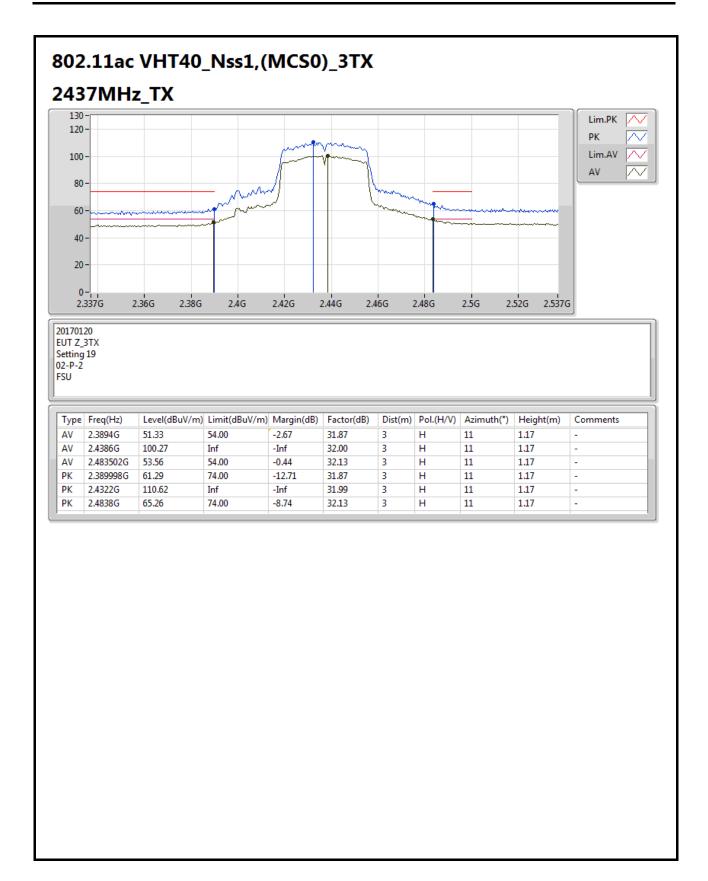




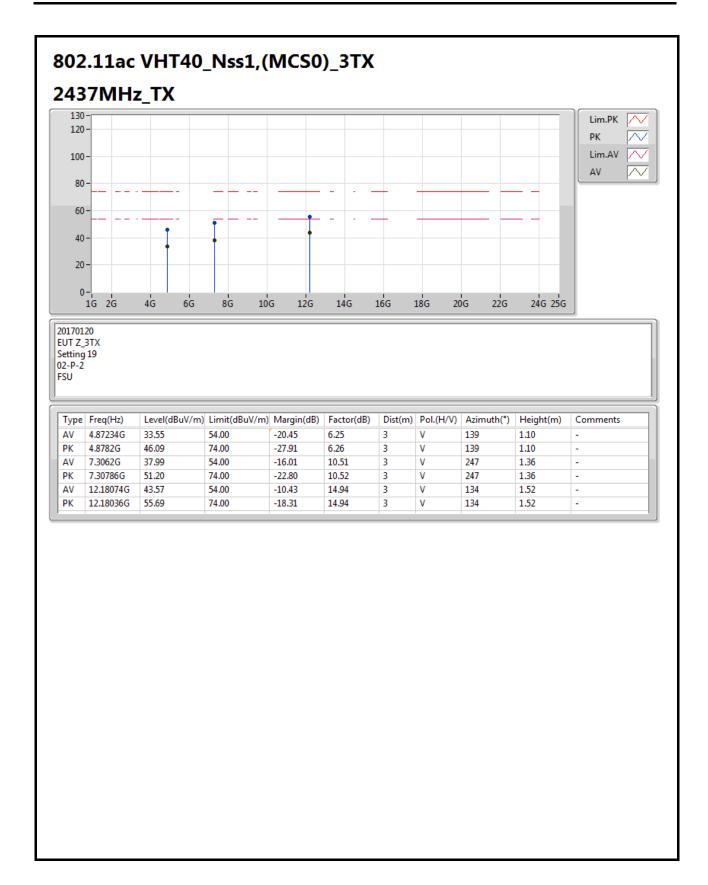




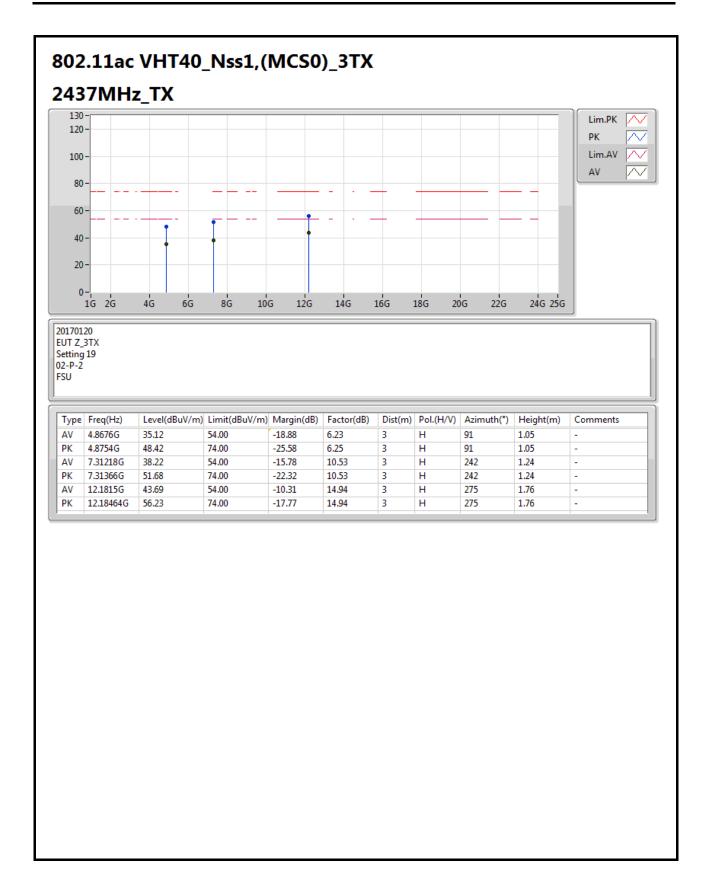




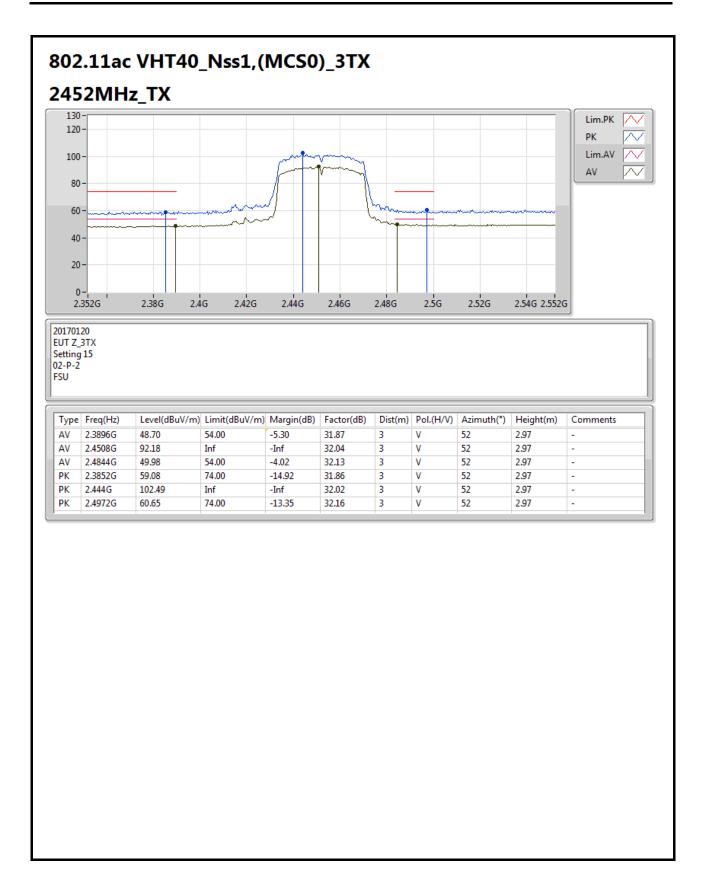




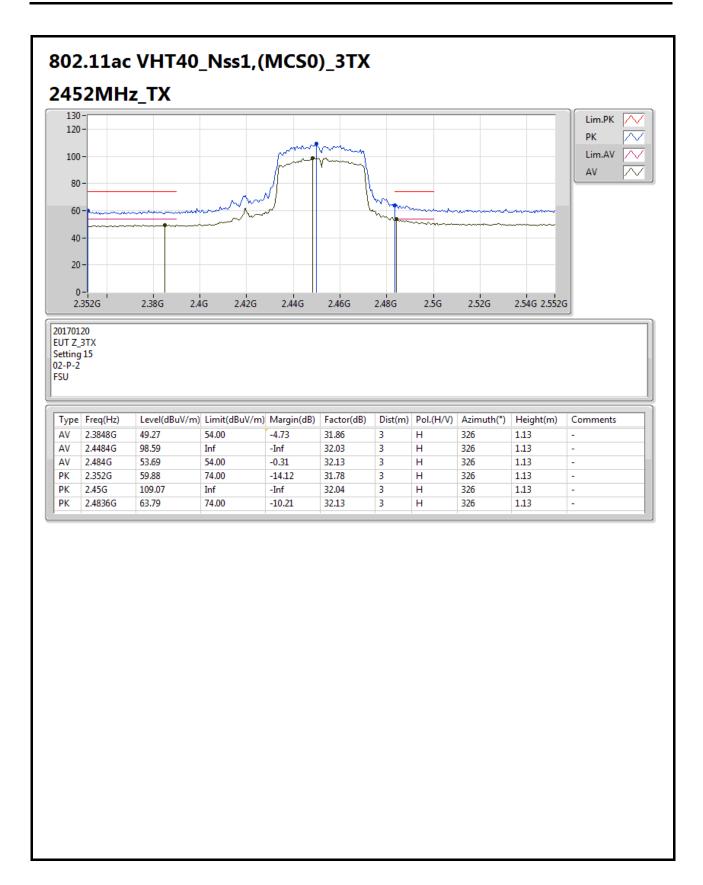




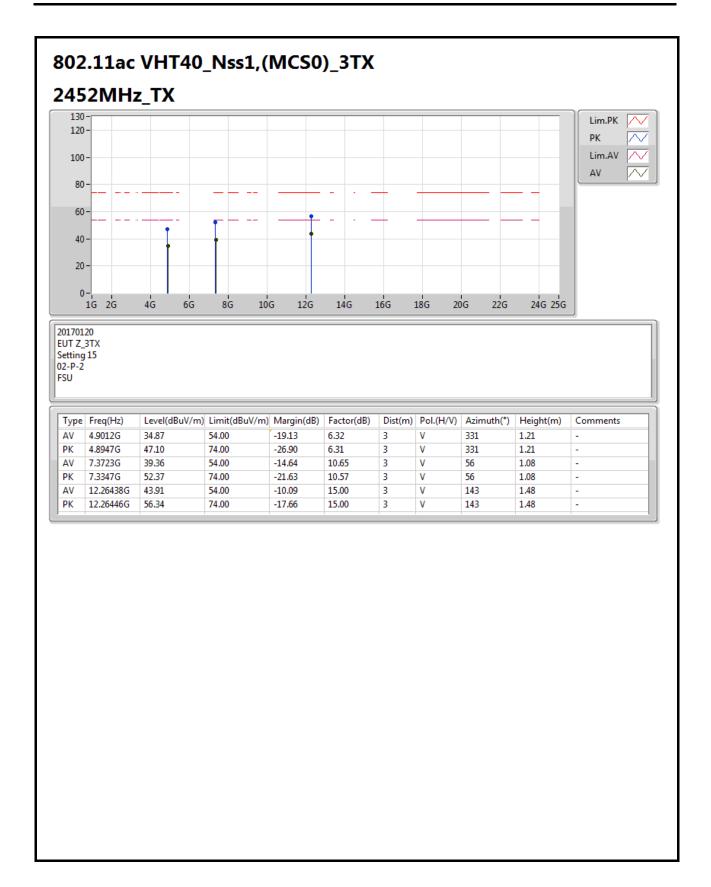




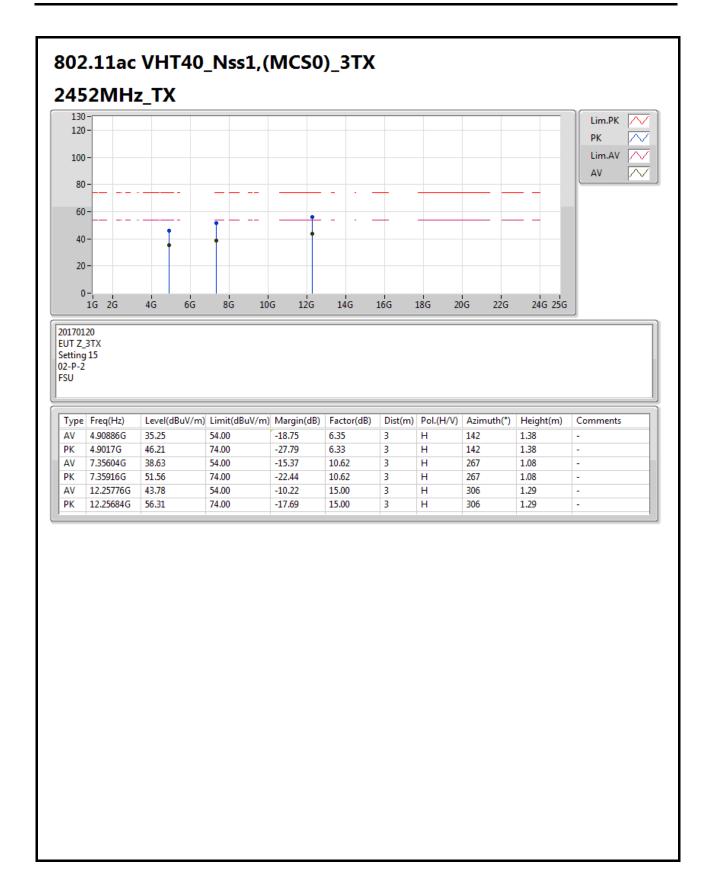






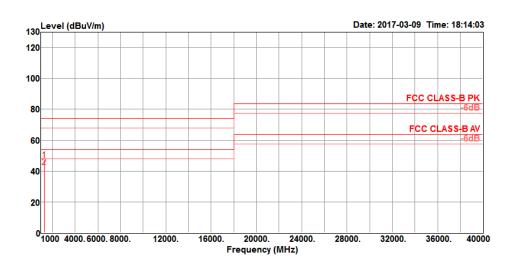








RSE Co-location Result									
Operating Mode	1	Polarization	Horizontal						
Operating Function	CTX - EUT in Y axis - WLAN 2.4GHz + WLAN 5GHz								

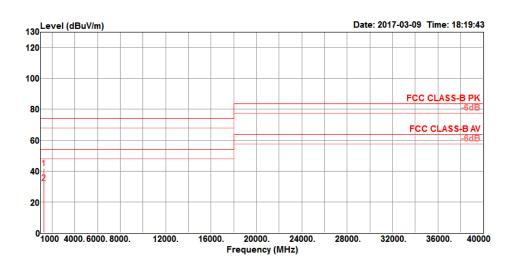


	Freq	Level		Over Limit					A/Pos	•	Remark	Pol/Phase
-	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	CM	deg		
1	1249.96	47.38	74.00	-26.62	54.09	4.30	24.99	36.00	112	189	Peak	HORIZONTAL
2	1250.10	42.48	54.00	-11.52	49.19	4.30	24.99	36.00	112	189	Average	HORIZONTAL

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RSE Co-location Result									
Operating Mode	1	Polarization	Vertical						
Operating Function	EUT in Y axis - WLAN 2.4GHz + WLAN 5GHz								

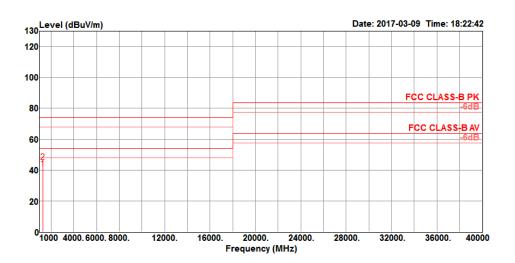


	Freq	Level		Limit					•	1/Pos	Remark	Pol/Phase
	MHz	dBuV/m	$\overline{\text{dBuV/m}}$	dB	dBuV	dB	dB/m	dB	cm	deg		
1 2	1249.80 1249.98								103 103		Peak Average	VERTICAL VERTICAL

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RSE Co-location Result									
Operating Mode	2	Polarization	Horizontal						
Operating Function	CTX - EUT in Z axis - WLAN 2.4GHz + WLAN 5GHz								

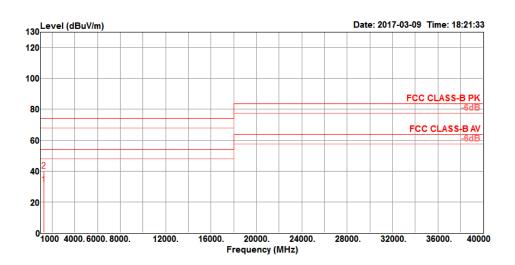


	Freq	Level						Factor	A/Pos	1/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 2	1251.10 1251.11										Average Peak	HORIZONTAL HORIZONTAL

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RSE Co-location Result									
Operating Mode	2	Polarization	Vertical						
Operating Function	EUT in Z axis - WLAN 2.4GHz + WLAN 5GHz								



	Freq	Level		Over Limit					-	1/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1 2	1250.01 1250.01									221 221	Average Peak	VERTICAL VERTICAL

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