

Report No.: FR671802-01AC

# FCC Test Report

**IP Wireless Camera Equipment** 

**Brand Name FLIR SECURE** 

Model No. FXCx3xxxxx ( x = 0-9, A-Z, or blank)

FCC ID UCZFXC23V

**Standard** 47 CFR FCC Part 15.247

**Operating Band** 2400 MHz - 2483.5 MHz **Function** Point-to-multipoint; Point-to-point

**Applicant** : Lorex Technology Inc

250 Royal Crest Court, Markham, Ontario,

L3R 3S1 Canada

Manufacturer Chicony Electronics (Dong Guan ) Co.,Ltd.

> San Zhong Guan Li Qu, Qingxi Town, Dongguan City Guangdong 523651 China

The product sample received on Feb. 06, 2017 and completely tested on Mar. 09, 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.

Phoenix Chen

SPORTON INTERNATIONAL INC.





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# **Summary of Test Result**

	Conformance Test Specifications					
Report Clause	Ref. Std. 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: > 20 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
FR671802-01AC	Rev. 01	Initial issue of report	May 03, 2017
FR671802-01AC	Rev. 02	Revise typo	May 08, 2017

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#### **General Description** 1

#### Information 1.1

#### 1.1.1 **RF General Information**

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g	2412-2462	1-11 [11]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	1TX
2.4-2.4835GHz	802.11g	20	1TX

#### Note:

- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- BWch is the nominal channel bandwidth.

#### 1.1.2 Antenna Information

Ant.	Port	Brand	Antenna Type	Connector	Gain (dBi)
1	1	-	PIFA	Fixed	1.38
2	2	-	PIFA	I-PEX	1.22

Note 1: EUT can match with above antennas for using. Higher gain in each type of antenna was used to perform the worst configuration and result of that was recorded as the final test result.

Note 2: IEEE 802.11b/g only includes 1TX and Port1 for emission.

# 1.1.3 EUT Information

	Identify EUT						
Pre	sentation	of Equipment	⊠ I	Production;	☐ Pre-Pro	oducti	on ; 🗌 Prototype
				Oper	rational Co	nditic	on
EU	Γ Power T	ype	Fror	n AC Adapte	r		
Bea	ımforming	g Function		With beamf	orming	$\boxtimes$	Without beamforming
					Type of El	JT	
$\boxtimes$	Stand-alo	ne					
	Combine	d (EUT where the	e rad	io part is full	y integrated	withi	n another device)
	Combined Equipment - Brand Name / Model No.:						
	Plug-in radio (EUT intended for a variety of host systems)						
	Host System - Brand Name / Model No.:						
	Other:						

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# 1.1.4 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.99	0.044	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.92	0.362	1.421m	1k

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# 1.1.5 Table for Existing Change

This product is an extension of original one reported under Sporton project number: FR671802AC Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking		
Antenna 1 was modified	All test items		
Antenna 2 was Added	NA		

# 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
- KDB 558074 D01 v03r05

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# 1.3 Testing Location Information

	Testing Location						
$\boxtimes$	HWA YA	ADD	:	No. 52, Hwa Ya 1st Rd	No. 52, Hwa Ya 1st Rd., Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.		
		TEL	:	886-3-327-3456	FAX : 886-3-327-0973		
	Test site Designation No. 553509 with FCC.						
	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 site Designation No. TW0006 with FCC.						

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Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-HY	Ryan	22.5°C / 64%	17/Feb/2017
Radiated	03CH02-HY	Lynus	23.5°C / 65%	09/Mar/2017
AC Conduction	CO04-HY	Bear	22.7°C / 56%	09/Mar/2017

# 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)	3.6 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	2.1 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	2.6 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	2.9 dB	Confidence levels of 95%
Conducted Emission	1.3 dB	Confidence levels of 95%

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2 Test Configuration of EUT

# 2.1 Test Condition

RF Conducted	Abbreviation	Remark
TnomVnom	Tnom	20°C
-	Vnom	120V

# 2.2 Test Channel Mode

Test Software	Putty
---------------	-------

Mode	Power Setting
802.11b_(1Mbps)_1TX	-
2412MHz	20
2437MHz	20
2462MHz	20
802.11g_(6Mbps)_1TX	-
2412MHz	18
2437MHz	20
2462MHz	18

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# 2.3 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	СТХ	
1	Adapter mode	

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

The Worst Case Mode for Following Conformance Tests			
Tests Item	Emissions in Restricted Frequency Band	ds	
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	СТХ		
1	Adapter mode		
Operating Mode > 1GHz	CTX		
	Y Plane	Z Plane	
Orthogonal Planes of EUT			
Worst Planes of EUT	V		

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# 2.4 Accessories

Accessories				
	<b>Brand Name</b>	Sunny	Model Name	SYS1561-1212
AC Adapter	Power Rating	I/P: 100 - 240 Vac, 1.0	0 A, O/P: 12 Vdc,	1 A
	Power Cord	2.99 meter, non-shield	led cable, with w/	o ferrite core

# 2.5 Support Equipment

	Support Equipment - RF Conducted				
No.	Equipment	Brand Name	Model Name	FCC ID	
1	Notebook	DELL	E5530	DOC	
2	Adapter for Notebook	DELL	HA65NM130	DOC	
3	Fixture	-	-	-	

Note: Support equipment No.3 was provided by customer.

	Support Equipment – Radiated Emission			
No.	b. Equipment Brand Name Model Name FCC ID			
1	-	-	-	-

	Support Equipment – AC Conduction			
No.	Io. Equipment Brand Name Model Name FCC ID			
1	-	-	-	-

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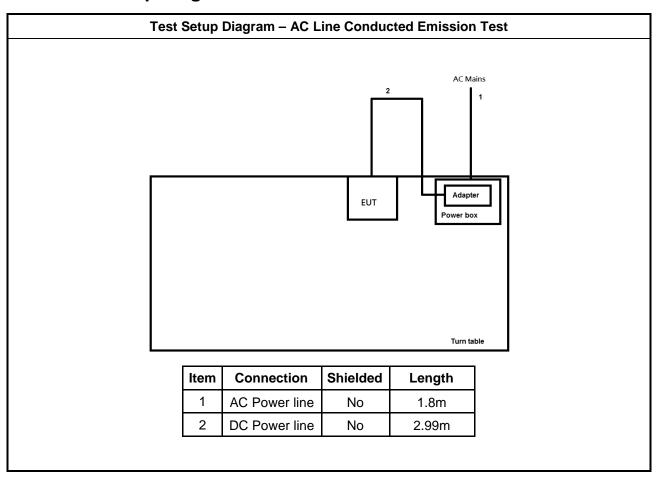
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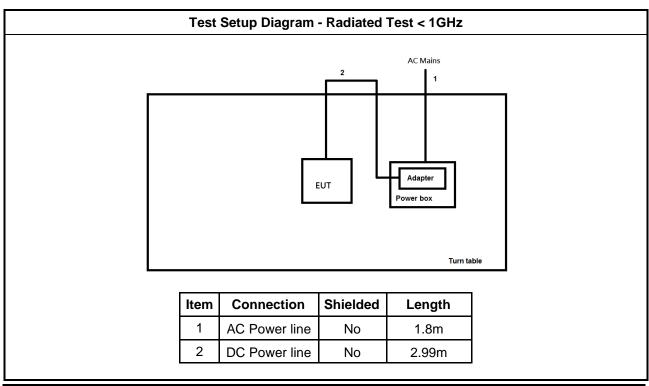
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#### **Test Setup Diagram** 2.6





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**Transmitter Test Result** 3

#### **AC Power-line Conducted Emissions** 3.1

#### 3.1.1 **AC Power-line Conducted Emissions Limit**

AOTOW	er-line Conducted Emissions L	
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50

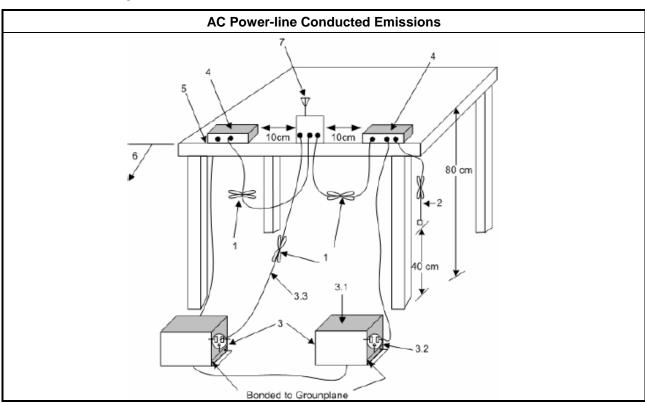
# 3.1.2 Measuring Instruments

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

#### 3.1.3 **Test Procedures**

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

# 3.1.4 Test Setup



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

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.						

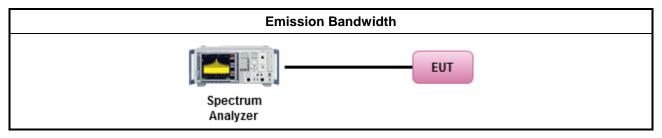
# 3.2.2 Measuring Instruments

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 KDB 558074, clause 8.1 Option 1 for 6 dB bandwidth measurement.							
	Refer as KDB 558074, clause 8.2 Option 2 for 6 dB bandwidth measurement.							
	Refer as ANSI C63.10, clause 6.9.3 for occupied bandwidth testing.							

# 3.2.4 Test Setup



#### 3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

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# 3.3 Maximum Conducted Output Power

# 3.3.1 Maximum Conducted Output Power Limit

ıxim	um 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							
i.r.p.	Power Limit:							
24	00-2483.5 MHz Band							
•	Point-to-multipoint systems (P2M): P <sub>eirp</sub> ≤ 36 dBm (4 W)							
•	Point-to-point systems (P2P): $P_{eirp} \le MAX(36, [P_{Out} + G_{TX}]) dBm$							
•	Smart antenna system (SAS)							
	- Single beam: P <sub>eirp</sub> ≤ MAX(36, P <sub>Out</sub> + G <sub>TX</sub> ) dBm							
	- Overlap beam: P <sub>eirp</sub> ≤ MAX(36, P <sub>Out</sub> + G <sub>TX</sub> ) dBm							
	- Aggregate power on all beams: P <sub>eirp</sub> ≤ MAX(36, [P <sub>Out</sub> + G <sub>TX</sub> + 8]) dBm							

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# 3.3.2 Measuring Instruments

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

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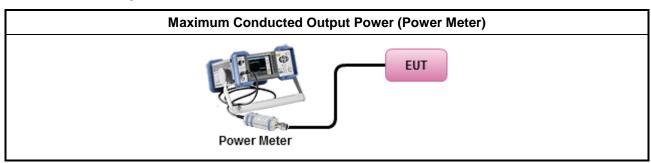
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# 3.3.3 Test Procedures

	Test Method
•	Maximum Peak Conducted Output Power
	Refer as KDB 558074, clause 9.1.1 Option 1 (RBW ≥ EBW method).
	Refer as KDB 558074, clause 9.1.2 Option 2 (peak power meter for VBW ≥ DTS BW)
•	Maximum Average Conducted Output Power
	Duty cycle ≥ 98%
	Refer as KDB 558074, clause 9.2.2.4 Method AVGSA-2 (spectral trace averaging).
	Duty cycle < 98%
	Refer as 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 KDB 558074, clause 9.2.3.1 Method AVGPM (using an RF average power meter).
•	For conducted measurement.
	■ If the EUT supports multiple transmit chains using options given below: Refer as 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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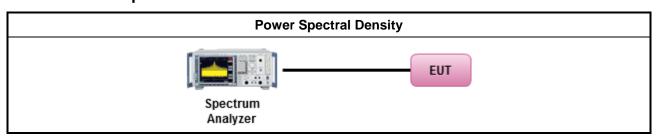
# 3.4.2 Measuring Instruments

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).								
	$\boxtimes$	Ref	er as KDB 558074, clause 10.2 Method PKPSD (RBW=3-100kHz; Detector=peak).						
•	For	cond	lucted measurement.						
	•	If T	he EUT supports multiple transmit chains using options given below:						
			Measure and sum the spectra across the outputs. Refer as 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.						

# 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.

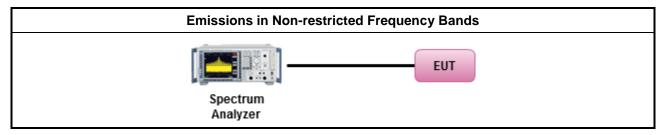
# 3.5.2 Measuring Instruments

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

#### 3.5.3 Test Procedures

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

# 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**

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- The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
- Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.
- For the transmitter unwanted emissions shall be measured using following options below:
  - Refer as KDB 558074, clause 12 for unwanted emissions into restricted bands.
    - Refer as KDB 558074, clause 12.2.5.3 (ANSI C63.10, clause 4.1.4.2.3), Reduced VBW≥1/T.
    - Refer as KDB 558074, clause 12.2.4 measurement procedure peak limit.
- For the transmitter band-edge emissions shall be measured using following options below:
  - Refer as 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.
  - Refer as KDB 558074, clause 13.2 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
  - Refer as KDB 558074, clause 13.3 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).
- For conducted and cabinet radiation measurement, refer as KDB 558074, clause 12.2.2.
  - For conducted unwanted emissions into restricted bands (absolute emission limits).
     Devices with multiple transmit chains using options given below:
    - (1) Measure and sum the spectra across the outputs or
    - (2) Measure and add 10 log(N) dB
  - For 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.

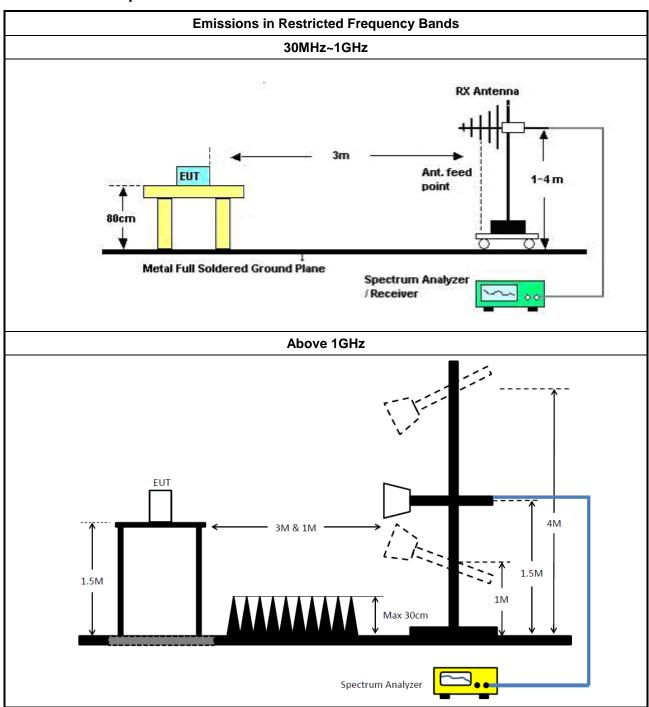
SPORTON INTERNATIONAL INC. Page No.
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UCZFXC23V: UCZFXC23V



Report No.: FR671802-01AC

#### 3.6.4 **Test Setup**



# Test Result of Emissions in Restricted Frequency Bands (Below 30MHz)

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported. All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

# Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

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4 Test Equipment and Calibration Data

# **Instrument for AC Conduction**

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
EMC Receiver	R&S	ESR3	102051	9KHz ~ 3.6GHz	15/Apr/2016	14/Apr/2017
LISN	R&S	ENV216	101295	9kHz ~ 30MHz	15/Nov/2016	14/Nov/2017
RF Cable-CON	HUBER+SUHNER	RG213/U	07611832020001	9kHz ~ 30MHz	24/Oct/2016	23/Oct/2017

#### **Instrument for Radiated Test**

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSP40	100593	9KHz~40GHz	26/Oct/2016	25/Oct/2017
3m Semi Anechoic	SIDT FRANKONIA	SAC-3M	03CH02-HY	30MHz~1GHz	03/Jun/2016	02/Jun/2017
3m Semi Anechoic	SIDT FRANKONIA	SAC-3M	03CH02-HY	1GHz~18GHz	12/Dec/2016	11/Dec/2017
Amplifier	Agilent	8447D	2944A11149	100KHz~1.3GHz	01/Jul/2016	30/Jun/2017
Amplifier	Agilent	8449B	3008A02373	1GHz~26.5GHz	02/Sep/2016	01/Sep/2017
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA9120D 01543	1GHz~18GHz	22/Apr/2016	21/Apr/2017
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170339	15GHz~40GHz	10/Mar/2016	09/Mar/2017
Bilog Antenna	SCHAFFNER	CBL6112B	2723	30MHz~1GHz	01/Oct/2016	30/Sep/2017
Loop Antenna	TESEQ	HLA 6120	24155	9KHz~30MHz	16/Mar/2016	15/Mar/2017
RF Cable-high	SUHNER	SUCOFLEX104	MY34918/4	1GHz~40GHz	26/Jan/2017	25/Jan/2018
RF Cable-R03m	Jye Bao	RG142	CB017	9kHz~1GHz	26/Jan/2017	25/Jan/2018

#### **Instrument for Conducted Test**

Instrument	Manufacturer	Model No.	Serial No.	Spec.	Calibration Date	Calibration Due Date
Spectrum Analyzer	R&S	FSV 40	101500	9kHz~40GHz	12/May/2016	11/May/ 2017
Power Sensor	Anritsu	MA2411B	1027452	300MHz ~ 40GHz	22/Feb/2016	21/Feb/2017
Power Meter	Anritsu	ML2495A	1124009	300MHz ~ 40GHz	22/Feb/2016	21/Feb/2017
Signal Generator	R&S	SMR40	100116	10MHz ~ 40GHz	21/Jul/2016	20/Jul/2017
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10709/4	30MHz ~ 26.5GHz	02/Oct/2016	01/Oct/2017
RF Cable-0.2m	HUBER+SUHNER	SUCOFLEX_104	MY10710/4	30MHz ~ 26.5GHz	02/Oct/2016	01/Oct/2017
RF Cable-0.5m	HUBER+SUHNER	SUCOFLEX_104	MY10713/4	30MHz ~ 26.5GHz	02/Oct/2016	01/Oct/2017

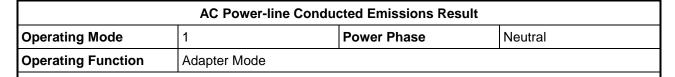
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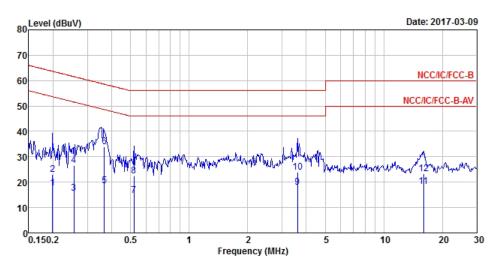
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			0ver	Limit	Read	LISN	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.20	17.76	-35.91	53.67	7.79	9.67	0.30	Average
2	0.20	23.09	-40.58	63.67	13.12	9.67	0.30	QP
3	0.26	15.73	-35.84	51.57	5.84	9.66	0.23	Average
4	0.26	26.61	-34.96	61.57	16.72	9.66	0.23	QP
5	0.37	18.65	-29.92	48.57	8.88	9.64	0.13	Average
6 MAX	0.37	34.00	-24.57	58.57	24.23	9.64	0.13	QP
7	0.52	14.87	-31.13	46.00	5.15	9.62	0.10	Average
8	0.52	22.31	-33.69	56.00	12.59	9.62	0.10	QP
9	3.60	18.14	-27.86	46.00	8.31	9.70	0.13	Average
10	3.60	23.81	-32.19	56.00	13.98	9.70	0.13	QP
11	16.05	18.36	-31.64	50.00	8.32	9.84	0.20	Average
12	16.05	23.35	-36.65	60.00	13.31	9.84	0.20	QP
								-

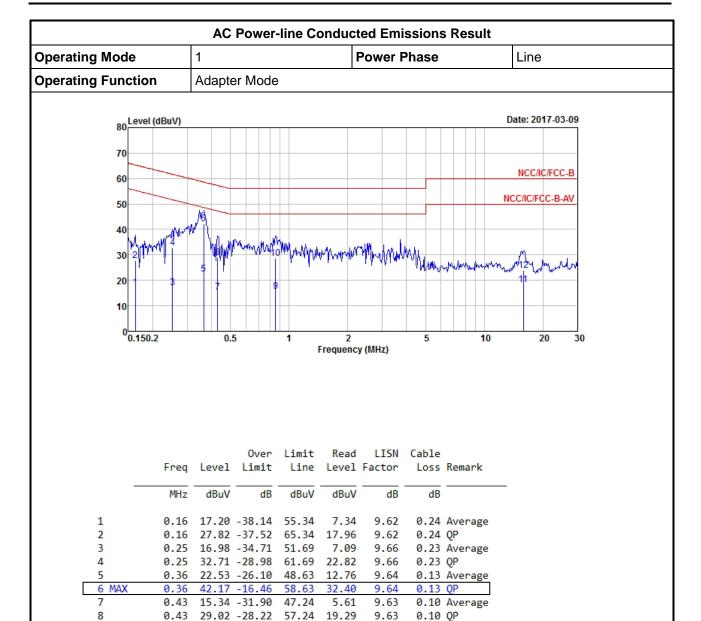
Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

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Note 1: ">20dB" means emission levels that exceed the level of 20 dB below the applicable limit.

5.88

8.28

9.60

9.60

9.84

9.84

0.10 Average

0.20 Average

0.10 QP

0.20 QP

Note 2: "N/F" means Nothing Found emissions (No emissions were detected.)

0.85 28.54 -27.46 56.00 18.84

18.32 -31.68 50.00

15.89 23.83 -36.17 60.00 13.79

0.85 15.58 -30.42 46.00

15.89

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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)_1TX	-	-	-	-	-
2.4-2.4835GHz	8.525M	14.268M	14M3G1D	8.5M	14.143M
802.11g_(6Mbps)_1TX	-	-	-	-	-
2.4-2.4835GHz	15.45M	16.442M	16M4D1D	15M	16.317M

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

#### Result

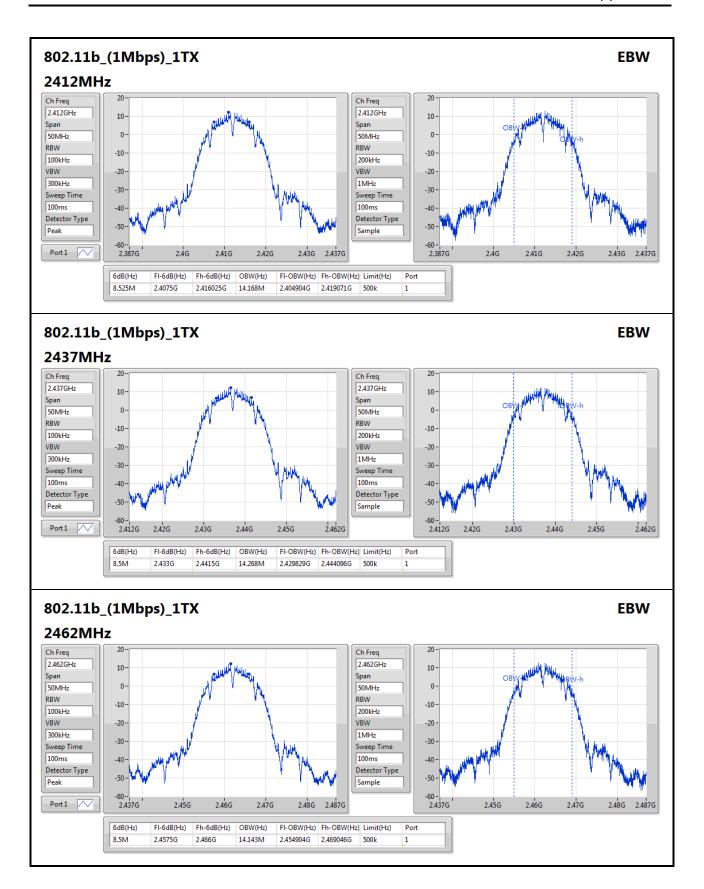
Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
802.11b_(1Mbps)_1TX	=	=	-	-
2412MHz	Pass	500k	8.525M	14.168M
2437MHz	Pass	500k	8.5M	14.268M
2462MHz	Pass	500k	8.5M	14.143M
802.11g_(6Mbps)_1TX	=	=	-	-
2412MHz	Pass	500k	15M	16.317M
2437MHz	Pass	500k	15.45M	16.442M
2462MHz	Pass	500k	15.25M	16.317M

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

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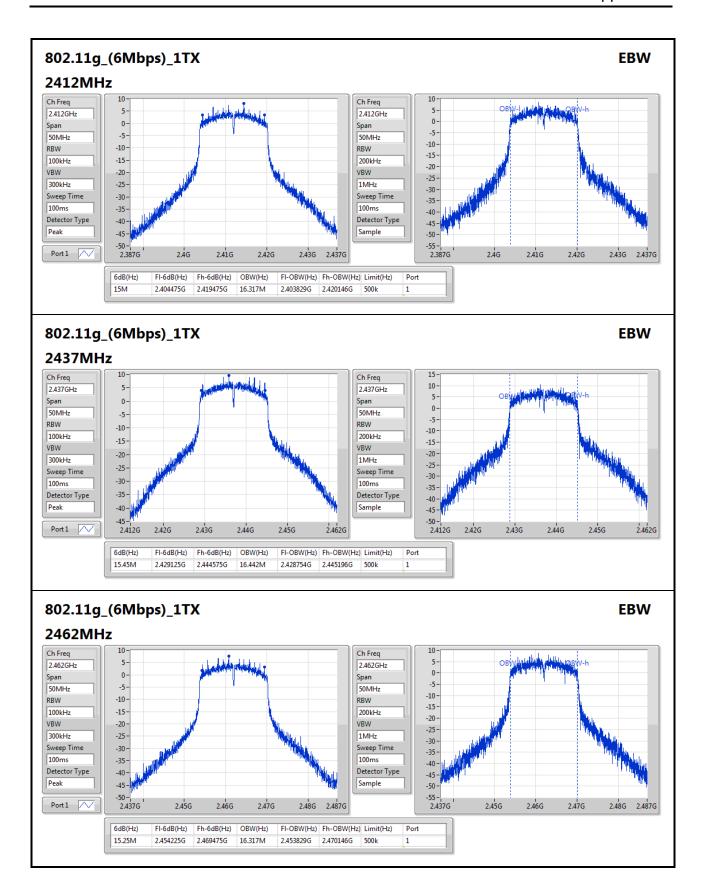
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Appendix B EBW Result



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PK Power Result Appendix C

Summary

Mode	Total Power	Total Power
	(dBm)	(W)
802.11b_(1Mbps)_1TX	-	-
2.4-2.4835GHz	21.78	0.15066
802.11g_(6Mbps)_1TX	-	-
2.4-2.4835GHz	24.67	0.29309

# Result

Mode	Result	DG	Port 1	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)
802.11b_(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.38	21.78	21.78	30.00
2437MHz	Pass	1.38	21.67	21.67	30.00
2462MHz	Pass	1.38	21.65	21.65	30.00
802.11g_(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.38	24.47	24.47	30.00
2437MHz	Pass	1.38	24.67	24.67	30.00
2462MHz	Pass	1.38	24.06	24.06	30.00

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

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AV Power Result Appendix C

Summary

Mode	Total Power	Total Power
	(dBm)	(W)
802.11b_(1Mbps)_1TX	-	-
2.4-2.4835GHz	19.48	0.08872
802.11g_(6Mbps)_1TX	-	-
2.4-2.4835GHz	19.25	0.08414

# Result

Mode	Result	DG	Port 1	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)
802.11b_(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.38	19.47	19.47	30.00
2437MHz	Pass	1.38	19.48	19.48	30.00
2462MHz	Pass	1.38	19.30	19.30	30.00
802.11g_(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.38	17.42	17.42	30.00
2437MHz	Pass	1.38	19.25	19.25	30.00
2462MHz	Pass	1.38	17.16	17.16	30.00

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

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Appendix D **PSD Result** 

**Summary** 

Mode	PD
	(dBm/RBW)
802.11b_(1Mbps)_1TX	
2.4-2.4835GHz	-0.85
802.11g_(6Mbps)_1TX	·
2.4-2.4835GHz	-5.33

RBW=3kHz.

#### Result

Roodit					
Mode	Result	DG	Port 1	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.38	-1.63	-1.63	8.00
2437MHz	Pass	1.38	-1.53	-1.53	8.00
2462MHz	Pass	1.38	-0.85	-0.85	8.00
802.11g_(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	1.38	-7.16	-7.16	8.00
2437MHz	Pass	1.38	-5.33	-5.33	8.00
2462MHz	Pass	1.38	-7.86	-7.86	8.00

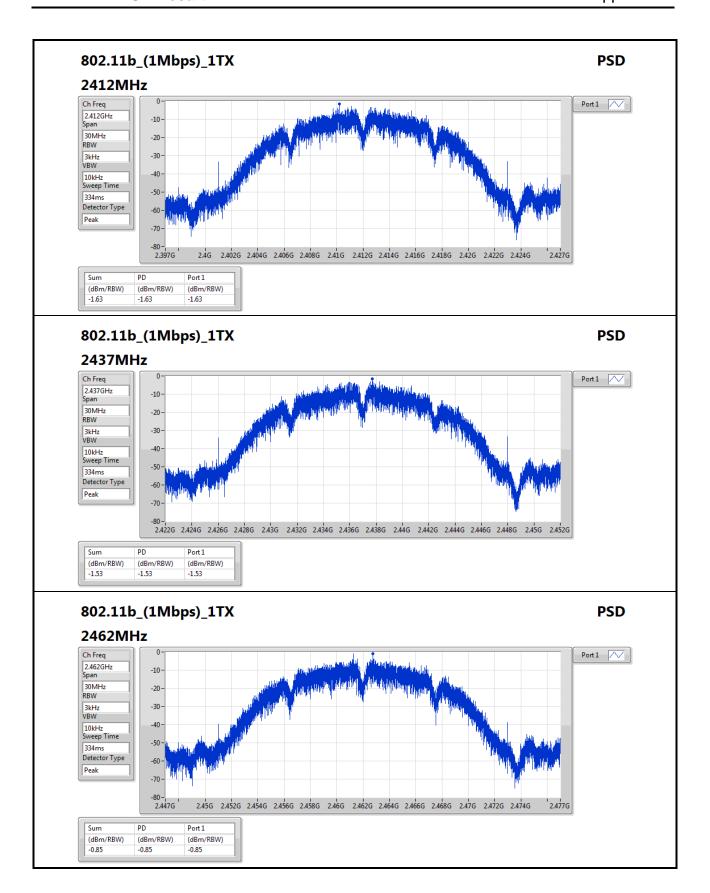
DG = Directional Gain; RBW=3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X power density;

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PSD Result Appendix D

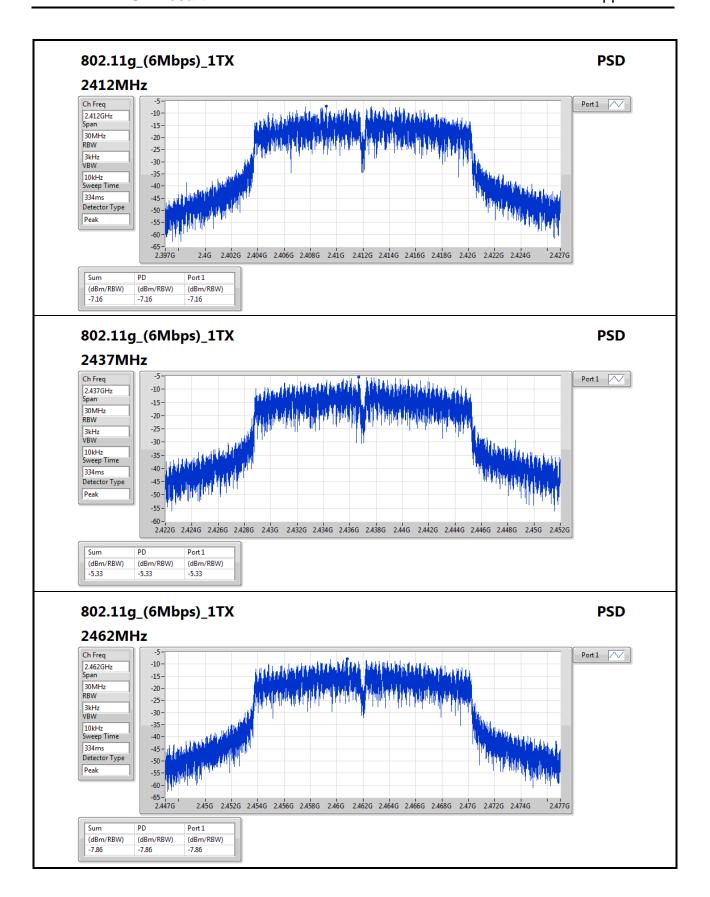


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PSD Result Appendix D



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# **CSE Non-restricted Band Result**

Appendix E

**Summary** 

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11g_(6Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	2.41002G	5.03	-14.97	2.18991G	-57.28	2.3996G	-24.05	2.48798G	-55.40	7.235136G	-44.54	1

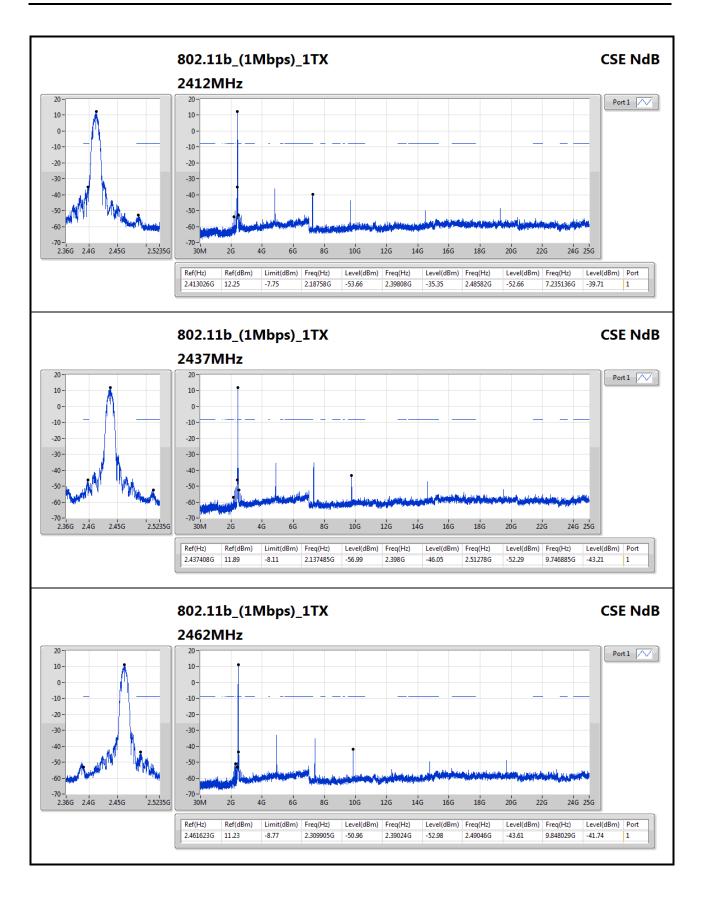
#### Result

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)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.413026G	12.25	-7.75	2.18758G	-53.66	2.39808G	-35.35	2.48582G	-52.66	7.235136G	-39.71	1
2437MHz	Pass	2.437408G	11.89	-8.11	2.137485G	-56.99	2.398G	-46.05	2.51278G	-52.29	9.746885G	-43.21	1
2462MHz	Pass	2.461623G	11.23	-8.77	2.309905G	-50.96	2.39024G	-52.98	2.49046G	-43.61	9.848029G	-41.74	1
802.11g_(6Mbps)_1TX	-	-	-	-	-	-	-	-	-		-	-	-
2412MHz	Pass	2.41002G	5.03	-14.97	2.18991G	-57.28	2.3996G	-24.05	2.48798G	-55.40	7.235136G	-44.54	1
2437MHz	Pass	2.440748G	9.08	-10.92	2.139815G	-58.64	2.39768G	-47.14	2.48478G	-50.07	6.816512G	-54.03	1
2462MHz	Pass	2.459619G	6.63	-13.37	2.309905G	-55.47	2.39392G	-50.29	2.48358G	-38.83	6.971037G	-52.63	1

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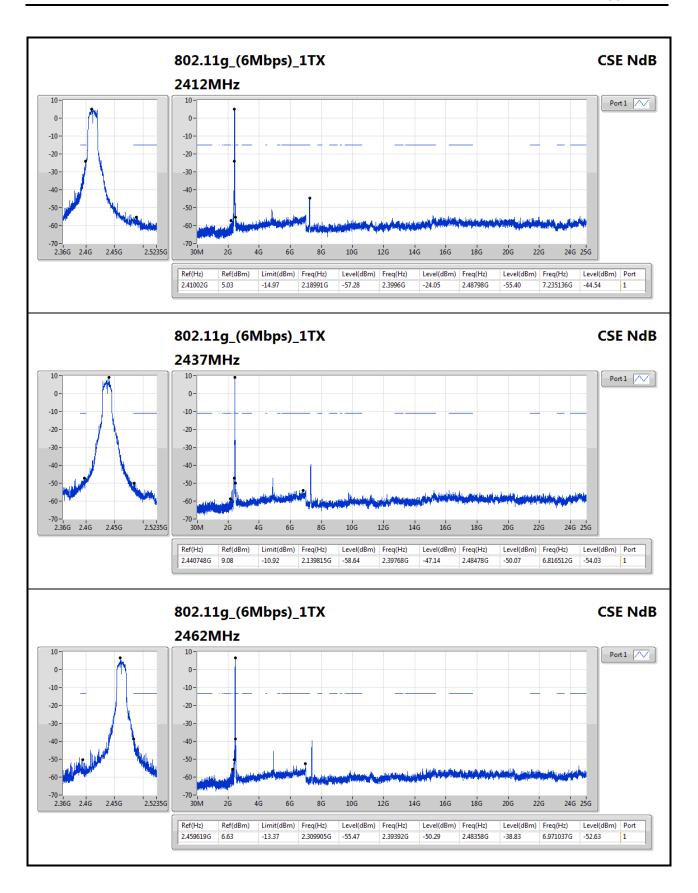


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# RSE TX below 1GHz Result

Appendix F

671802-01

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)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	QP	328.76M	42.88	46.00	-3.12	-6.03	3	Н	94	1.00	-

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# RSE TX below 1GHz Result

Appendix F

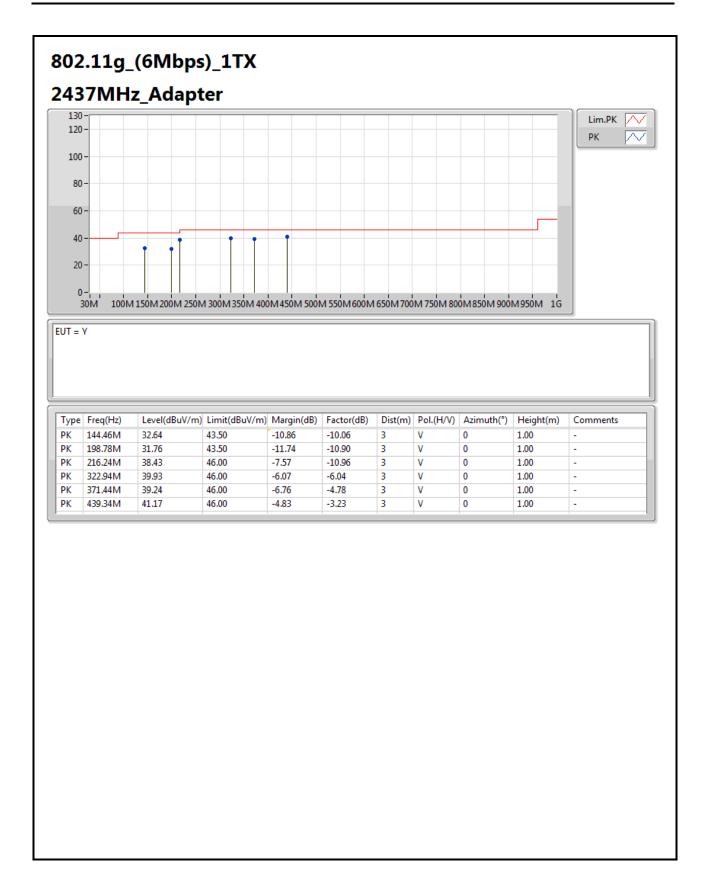
#### Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Pol.	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)	(H/V)	(°)	(m)	
802.11g_(6Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2437MHz	Pass	PK	198.78M	33.00	43.50	-10.50	-10.90	3	Н	360	1.00	-
2437MHz	Pass	PK	216.24M	33.38	46.00	-12.62	-10.96	3	Н	360	1.00	-
2437MHz	Pass	PK	249.22M	39.29	46.00	-6.71	-7.56	3	Н	360	1.00	-
2437MHz	Pass	PK	383.08M	41.86	46.00	-4.14	-4.45	3	Н	360	1.00	-
2437MHz	Pass	PK	419.94M	42.07	46.00	-3.93	-3.60	3	Н	360	1.00	-
2437MHz	Pass	QP	328.76M	42.88	46.00	-3.12	-6.03	3	Н	94	1.00	-
2437MHz	Pass	PK	144.46M	32.64	43.50	-10.86	-10.06	3	V	0	1.00	-
2437MHz	Pass	PK	198.78M	31.76	43.50	-11.74	-10.90	3	V	0	1.00	-
2437MHz	Pass	PK	216.24M	38.43	46.00	-7.57	-10.96	3	V	0	1.00	-
2437MHz	Pass	PK	322.94M	39.93	46.00	-6.07	-6.04	3	V	0	1.00	-
2437MHz	Pass	PK	371.44M	39.24	46.00	-6.76	-4.78	3	V	0	1.00	-
2437MHz	Pass	PK	439.34M	41.17	46.00	-4.83	-3.23	3	V	0	1.00	-

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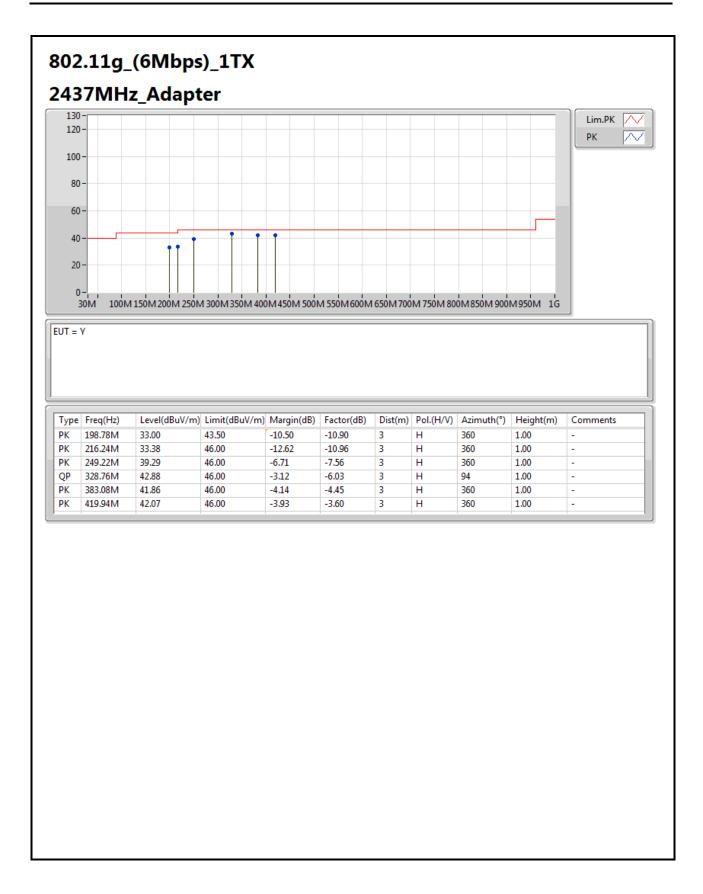
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# RSE TX above 1GHz Result

Appendix F

671802-01

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)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2.4-2.4835GHz	Pass	PK	2.483502G	73.38	74.00	-0.62	30.53	3	Н	120	1.32	-

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# RSE TX above 1GHz Result

# Appendix F

### Result

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Pol.	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)	(H/V)	(°)	(m)	
802.11b_(1Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	AV	2.3852G	51.65	54.00	-2.35	30.21	3	Н	132	3.45	-
2412MHz	Pass	AV	2.4112G	104.77	Inf	-Inf	30.30	3	Н	132	3.45	-
2412MHz	Pass	PK	2.3846G	59.54	74.00	-14.46	30.21	3	Н	132	3.45	-
2412MHz	Pass	PK	2.413G	109.65	Inf	-Inf	30.30	3	Н	132	3.45	-
2412MHz	Pass	AV	2.3852G	52.19	54.00	-1.81	30.21	3	V	54	2.51	-
2412MHz	Pass	AV	2.4112G	104.86	Inf	-Inf	30.30	3	V	54	2.51	-
2412MHz	Pass	PK	2.3858G	60.41	74.00	-13.59	30.22	3	V	54	2.51	-
2412MHz	Pass	PK	2.4108G	109.56	Inf	-Inf	30.29	3	V	54	2.51	-
2412MHz	Pass	AV	4.824G	34.17	54.00	-19.83	0.95	3	Н	207	1.47	-
2412MHz	Pass	PK	4.824G	48.69	74.00	-39.83	0.95	3	Н	207	1.47	-
2412MHz	Pass	AV	4.824G	34.61	54.00	-19.39	0.95	3	V	184	1.37	-
2412MHz	Pass	PK	4.824G	44.28	74.00	-29.72	0.95	3	V	184	1.37	-
2437MHz	Pass	AV	2.3886G	43.20	54.00	-10.80	30.22	3	Н	106	1.54	-
2437MHz	Pass	AV	2.4362G	104.08	Inf	-Inf	30.38	3	Н	106	1.54	-
2437MHz	Pass	AV	2.4874G	44.01	54.00	-9.99	30.54	3	Н	106	1.54	_
2437MHz	Pass	PK	2.373G	54.74	74.00	-19.26	30.18	3	Н	106	1.54	
2437MHz	Pass	PK	2.4382G	108.89	Inf	-Inf	30.38	3	Н	106	1.54	-
2437MHz	Pass	PK	2.4894G	55.37	74.00	-18.63	30.55	3	Н	106	1.54	
2437MHz	Pass	AV	2.3882G	43.25	54.00	-10.75	30.22	3	V	45	1.80	
2437MHz	Pass	AV	2.4362G	103.94	Inf	-10.75	30.38	3	V	45	1.80	
2437MHz	1	AV	2.499998G	43.85	54.00			3	V	45	1.80	-
2437MHz	Pass	PK		54.83		-10.15 -19.17	30.58	3	V		1.80	-
	Pass		2.3614G 2.4382G		74.00		30.14		V	45		
2437MHz	Pass	PK		108.76	Inf	-Inf	30.38	3		45	1.80	-
2437MHz	Pass	PK	2.4958G	55.94	74.00	-18.06	30.57	3	V	45	1.80	-
2437MHz	Pass	AV	4.874G	34.09	54.00	-19.91	1.06	3	H	166	1.47	-
2437MHz	Pass	PK	4.874G	44.97	74.00	-29.03	1.06	3	Н	166	1.47	-
2437MHz	Pass	AV	4.874G	32.61	54.00	-21.39	1.06	3	V	197	1.29	-
2437MHz	Pass	PK	4.874G	44.96	74.00	-29.04	1.06	3	V	197	1.29	-
2462MHz	Pass	AV	2.4612G	105.77	Inf	-Inf	30.46	3	Н	120	1.44	-
2462MHz	Pass	AV	2.4906G	48.14	54.00	-5.86	30.55	3	Н	120	1.44	-
2462MHz	Pass	PK	2.461G	109.81	Inf	-Inf	30.46	3	Н	120	1.44	-
2462MHz	Pass	PK	2.4894G	59.00	74.00	-15.00	30.55	3	Н	120	1.44	-
2462MHz	Pass	AV	2.4612G	103.14	Inf	-Inf	30.46	3	V	187	1.15	-
2462MHz	Pass	AV	2.4876G	46.50	54.00	-7.50	30.54	3	V	187	1.15	-
2462MHz	Pass	PK	2.463G	107.30	Inf	-Inf	30.46	3	V	187	1.15	-
2462MHz	Pass	PK	2.4864G	57.71	74.00	-16.29	30.54	3	V	187	1.15	-
2462MHz	Pass	AV	4.924G	33.37	54.00	-20.63	1.17	3	Н	348	2.61	-
2462MHz	Pass	PK	4.924G	43.77	74.00	-30.23	1.17	3	Н	348	2.61	-
2462MHz	Pass	AV	4.924G	34.72	54.00	-19.28	1.12	3	V	198	1.52	-
2462MHz	Pass	PK	4.924G	44.83	74.00	-29.17	1.17	3	V	198	1.52	-
802.11g_(6Mbps)_1TX	-	-	-	-	-	-	-	-	-		-	-
2412MHz	Pass	AV	2.39G	52.06	54.00	-1.94	30.23	3	Н	115	1.55	-
2412MHz	Pass	AV	2.4134G	98.50	Inf	-Inf	30.30	3	Н	115	1.55	-
2412MHz	Pass	PK	2.3884G	73.23	74.00	-0.77	30.22	3	Н	115	1.55	-
2412MHz	Pass	PK	2.4118G	109.95	Inf	-Inf	30.30	3	Н	115	1.55	-
2412MHz	Pass	AV	2.39G	48.93	54.00	-5.07	30.23	3	V	52	3.34	-
2412MHz	Pass	AV	2.4136G	98.06	Inf	-Inf	30.30	3	V	52	3.34	-

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# RSE TX above 1GHz Result

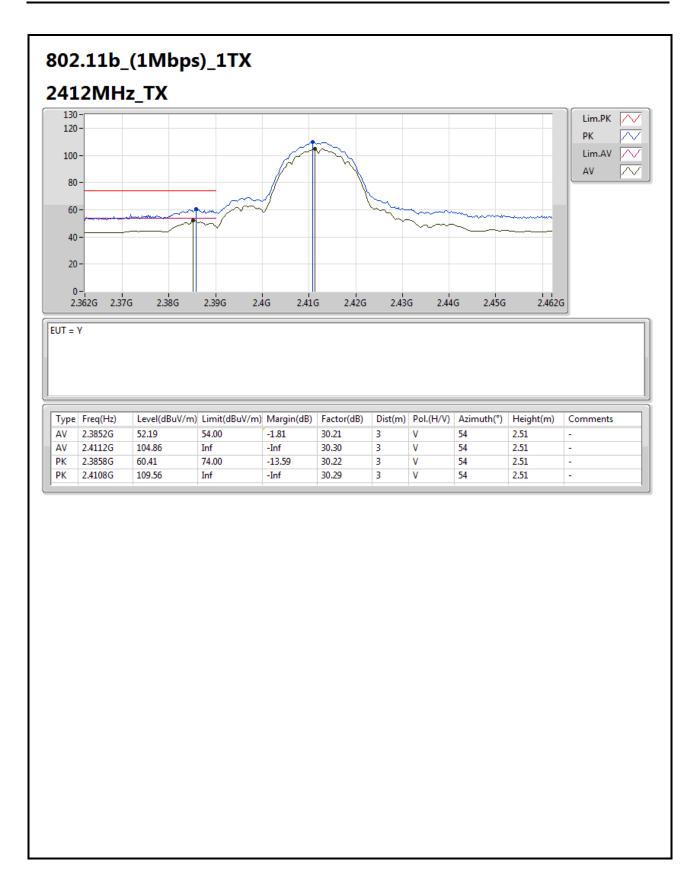
Appendix F

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Pol.	Azimuth	Height	Comment
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)	(H/V)	(°)	(m)	
2412MHz	Pass	PK	2.39G	68.40	74.00	-5.60	30.23	3	V	52	3.34	-
2412MHz	Pass	PK	2.4166G	109.72	Inf	-Inf	30.31	3	V	52	3.34	-
2412MHz	Pass	AV	4.824G	28.46	54.00	-25.54	0.95	3	Н	0	1.50	-
2412MHz	Pass	PK	4.824G	42.96	74.00	-31.04	0.95	3	Н	0	1.50	-
2412MHz	Pass	AV	4.824G	28.45	54.00	-25.55	0.95	3	V	360	1.50	-
2412MHz	Pass	PK	4.824G	42.11	74.00	-31.89	0.95	3	V	360	1.50	-
2437MHz	Pass	AV	2.389998G	42.96	54.00	-11.04	30.23	3	Н	NaN	NaN	-
2437MHz	Pass	AV	2.4382G	99.32	Inf	-Inf	30.38	3	Н	NaN	NaN	-
2437MHz	Pass	AV	2.4846G	44.10	54.00	-9.90	30.53	3	Н	NaN	NaN	-
2437MHz	Pass	PK	2.3878G	62.36	74.00	-11.64	30.22	3	Н	NaN	NaN	-
2437MHz	Pass	PK	2.437G	110.47	Inf	-Inf	30.38	3	Н	NaN	NaN	-
2437MHz	Pass	PK	2.4858G	63.93	74.00	-10.07	30.53	3	Н	NaN	NaN	-
2437MHz	Pass	AV	2.389998G	42.28	54.00	-11.72	30.23	3	V	190	1.15	-
2437MHz	Pass	AV	2.4402G	95.55	Inf	-Inf	30.39	3	V	190	1.15	-
2437MHz	Pass	AV	2.4846G	43.10	54.00	-10.90	30.53	3	V	190	1.15	-
2437MHz	Pass	PK	2.3858G	58.71	74.00	-15.29	30.22	3	V	190	1.15	-
2437MHz	Pass	PK	2.4402G	107.32	Inf	-Inf	30.39	3	V	190	1.15	-
2437MHz	Pass	PK	2.485G	59.63	74.00	-14.37	30.53	3	V	190	1.15	-
2437MHz	Pass	AV	4.874G	28.52	54.00	-25.48	1.06	3	Н	0	1.50	-
2437MHz	Pass	PK	4.874G	42.63	74.00	-31.37	1.06	3	Н	0	1.50	-
2437MHz	Pass	AV	4.874G	28.70	54.00	-25.30	1.06	3	V	360	1.50	-
2437MHz	Pass	PK	4.874G	42.68	74.00	-31.32	1.06	3	V	360	1.50	-
2462MHz	Pass	AV	2.4608G	97.86	Inf	-Inf	30.45	3	Н	120	1.32	-
2462MHz	Pass	AV	2.483502G	51.67	54.00	-2.33	30.53	3	Н	120	1.32	-
2462MHz	Pass	PK	2.462G	110.06	Inf	-Inf	30.46	3	Н	120	1.32	-
2462MHz	Pass	PK	2.483502G	73.38	74.00	-0.62	30.53	3	Н	120	1.32	-
2462MHz	Pass	AV	2.463G	94.39	Inf	-Inf	30.46	3	V	187	1.39	-
2462MHz	Pass	AV	2.483502G	49.04	54.00	-4.96	30.53	3	٧	187	1.39	-
2462MHz	Pass	PK	2.4622G	105.75	Inf	-Inf	30.46	3	٧	187	1.39	-
2462MHz	Pass	PK	2.4836G	68.30	74.00	-5.70	30.53	3	٧	187	1.39	-
2462MHz	Pass	AV	4.924G	28.84	54.00	-25.16	1.17	3	Н	360	1.50	-
2462MHz	Pass	PK	4.924G	42.80	74.00	-31.20	1.17	3	Н	360	1.50	-
2462MHz	Pass	AV	4.924G	28.82	54.00	-25.18	1.17	3	٧	0	1.50	-
2462MHz	Pass	PK	4.924G	43.20	74.00	-30.80	1.17	3	V	0	1.50	-

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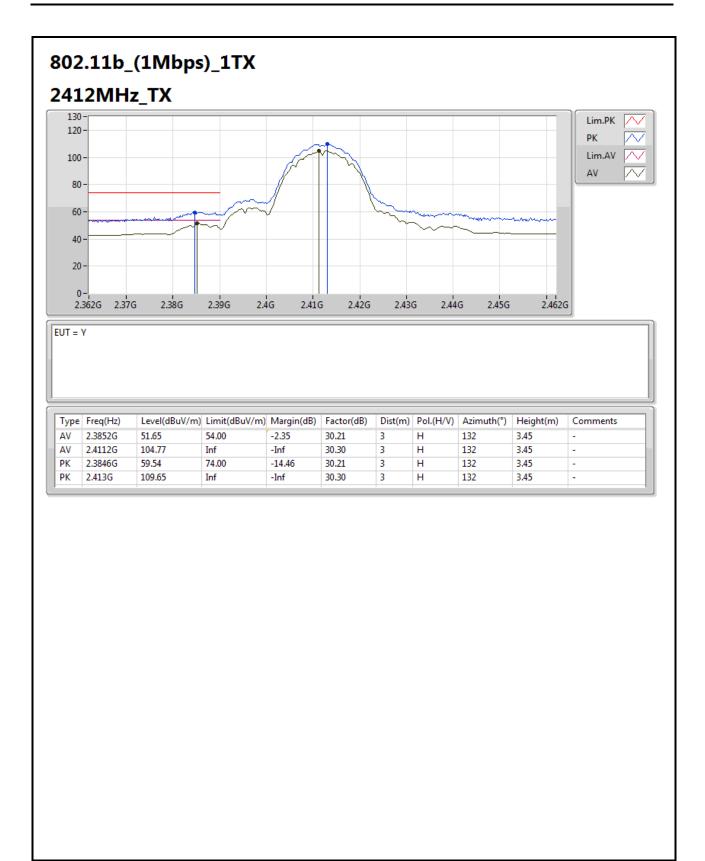
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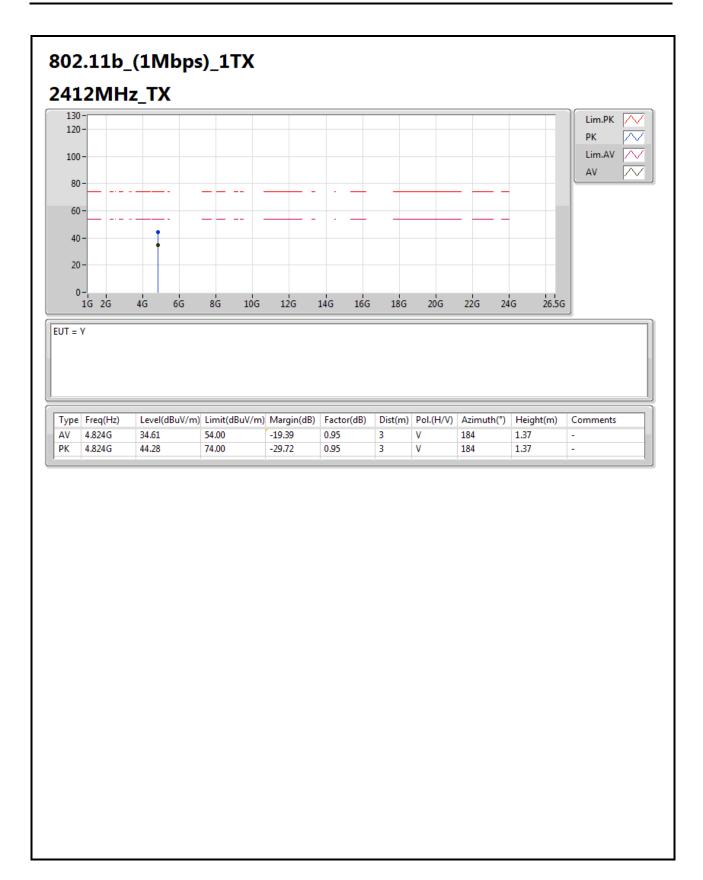
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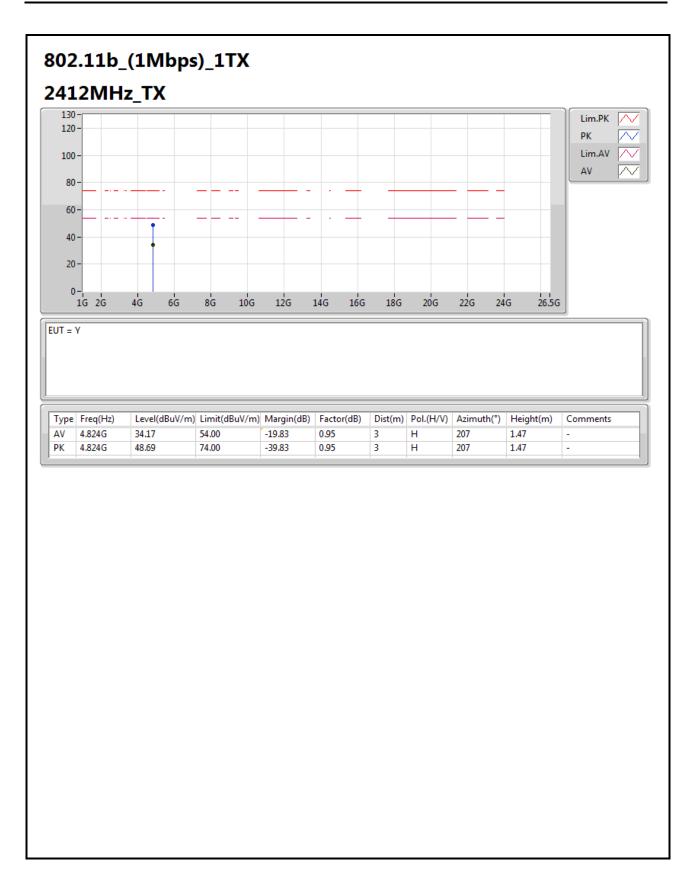
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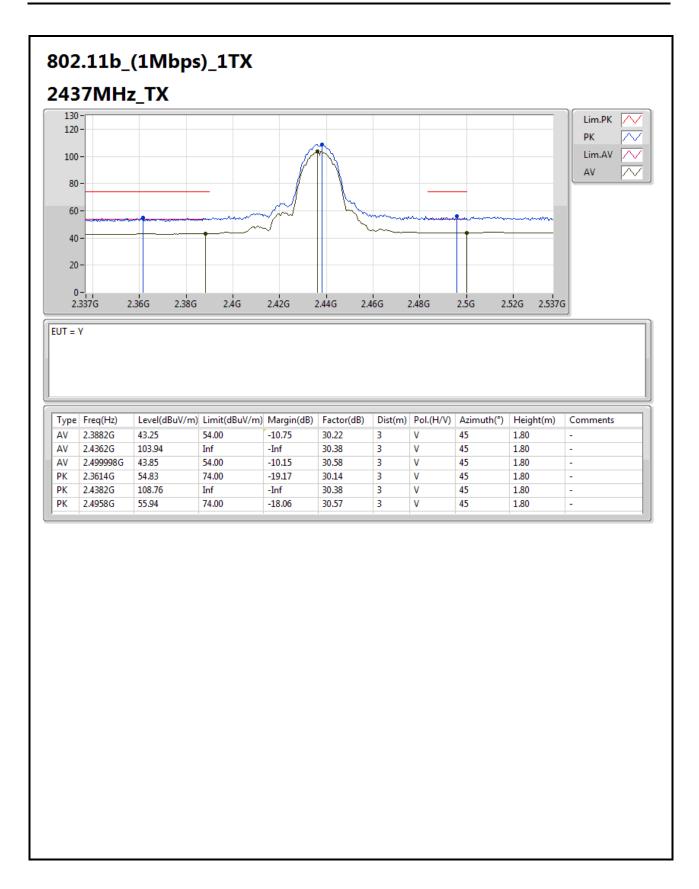
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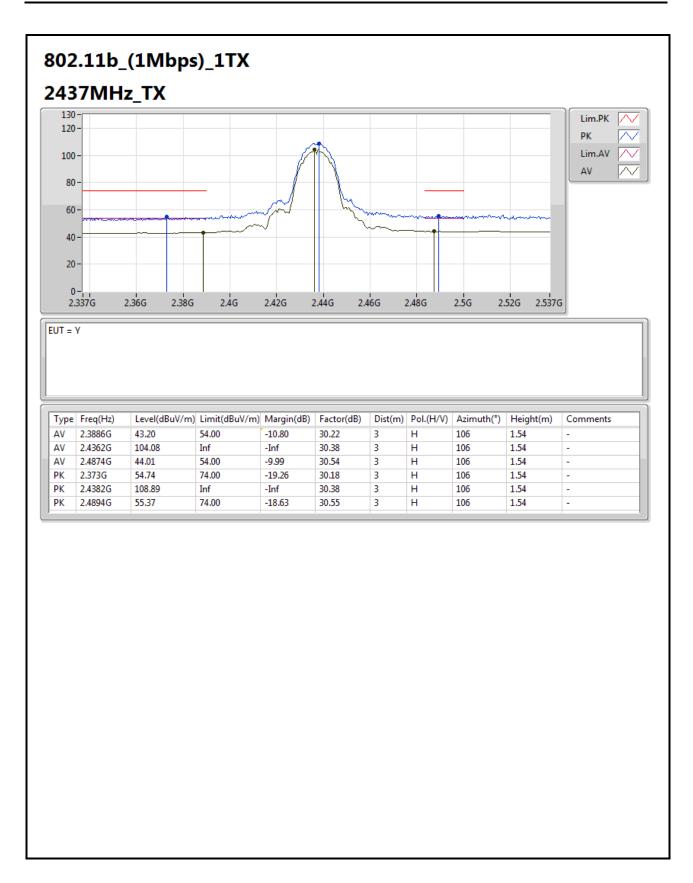
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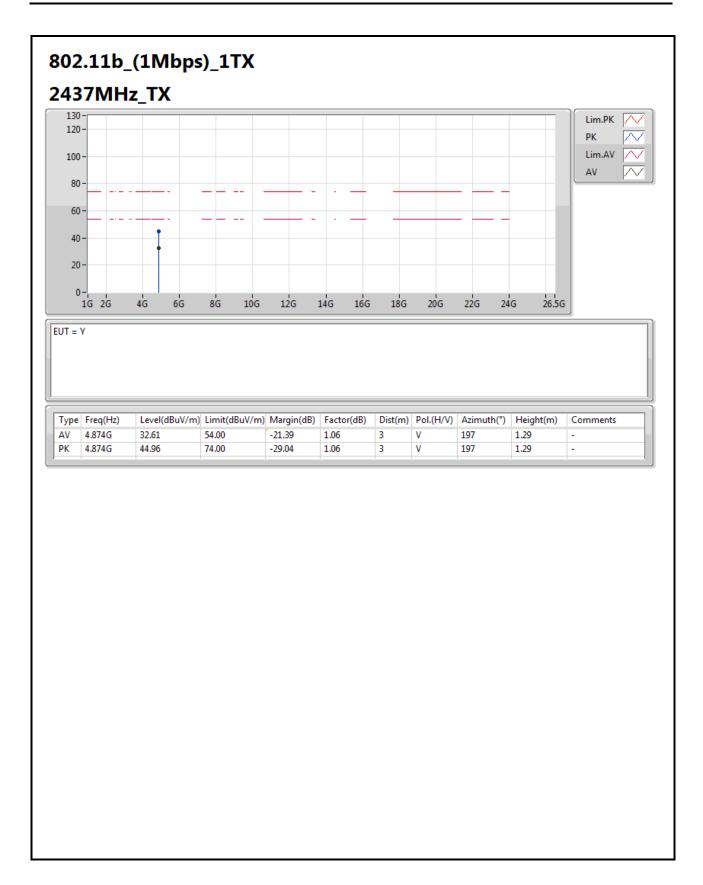
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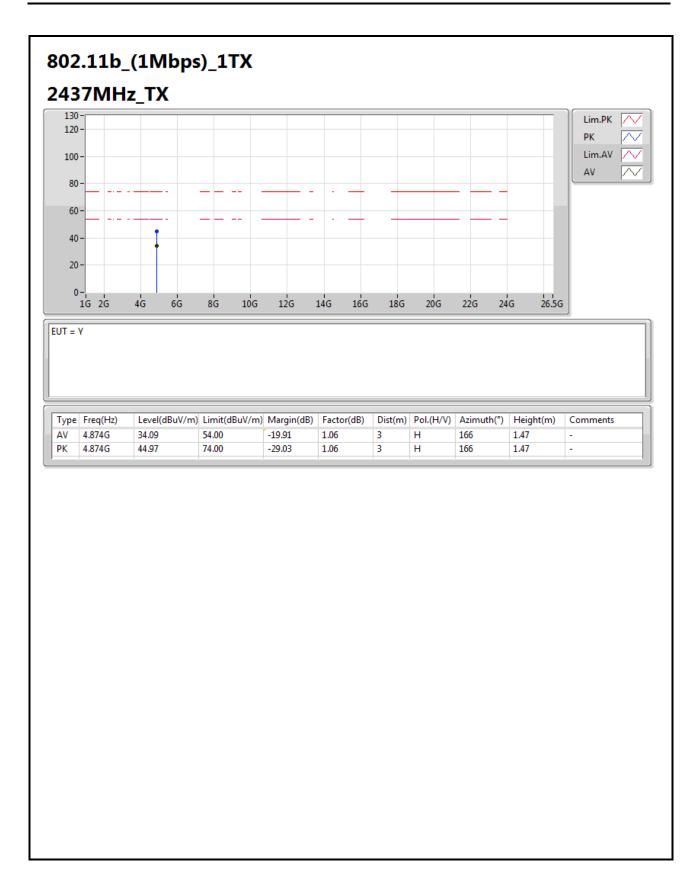
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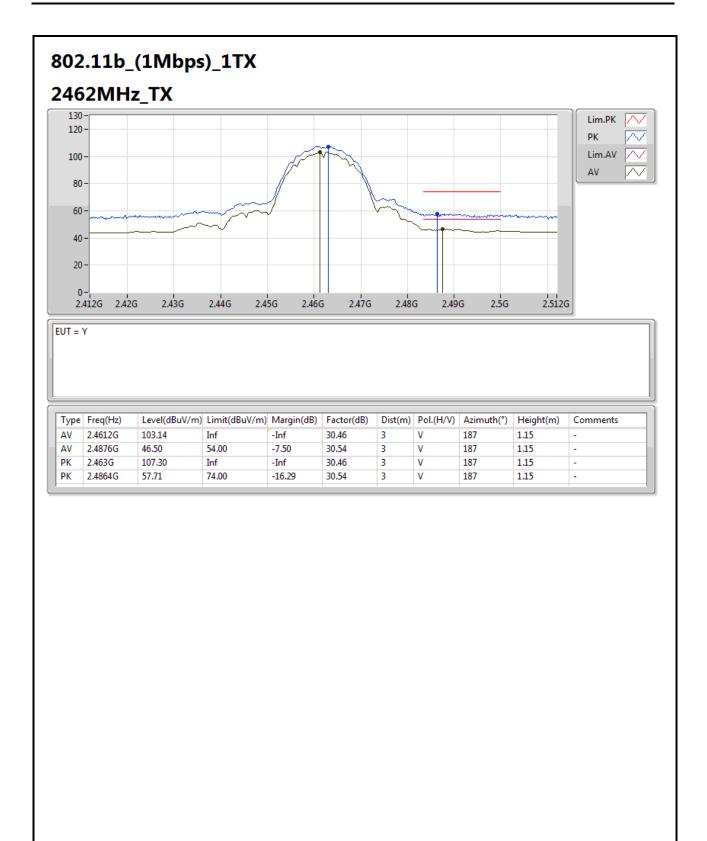
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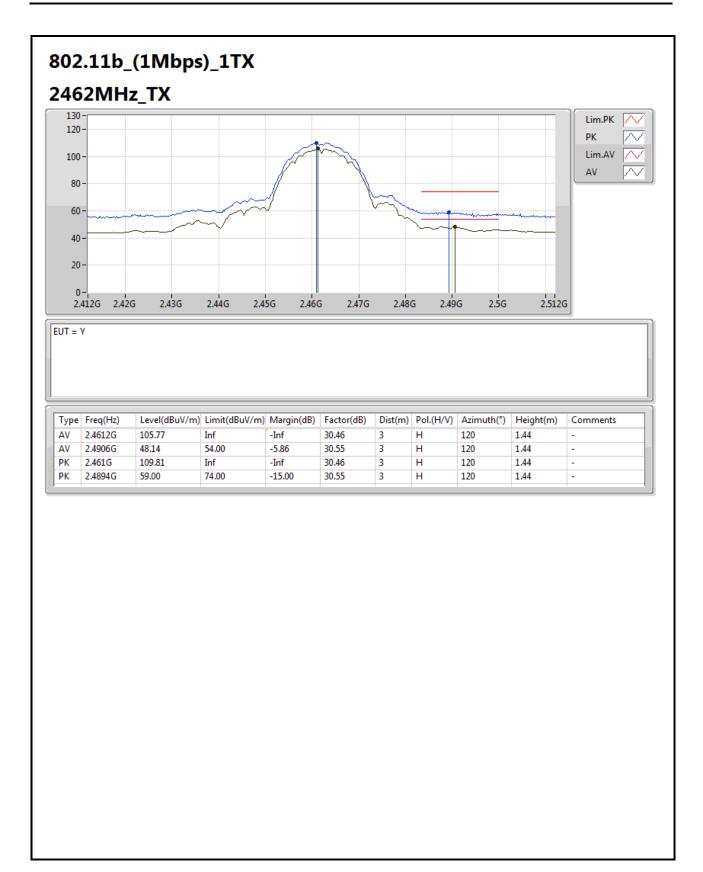
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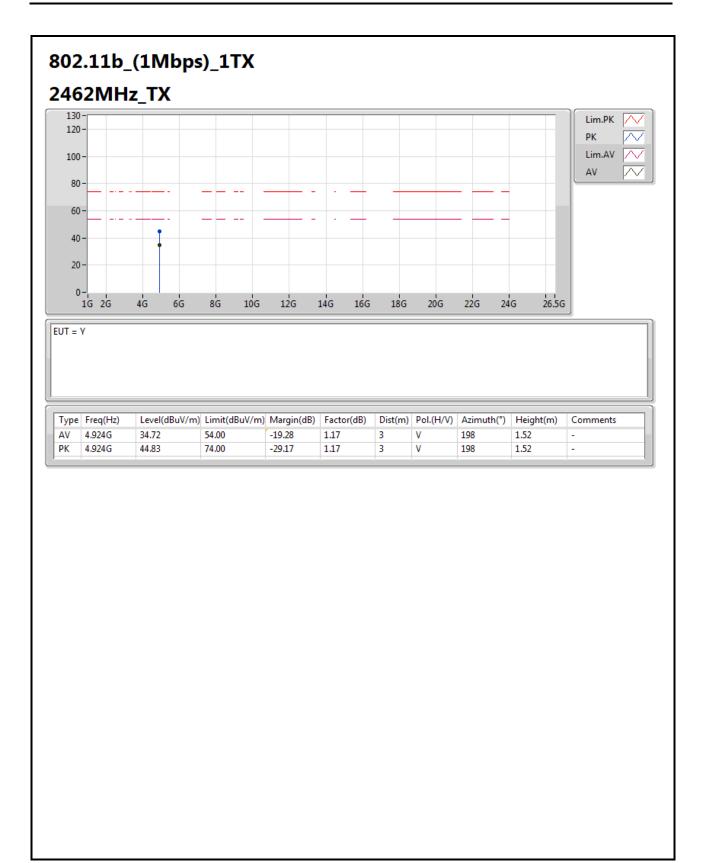
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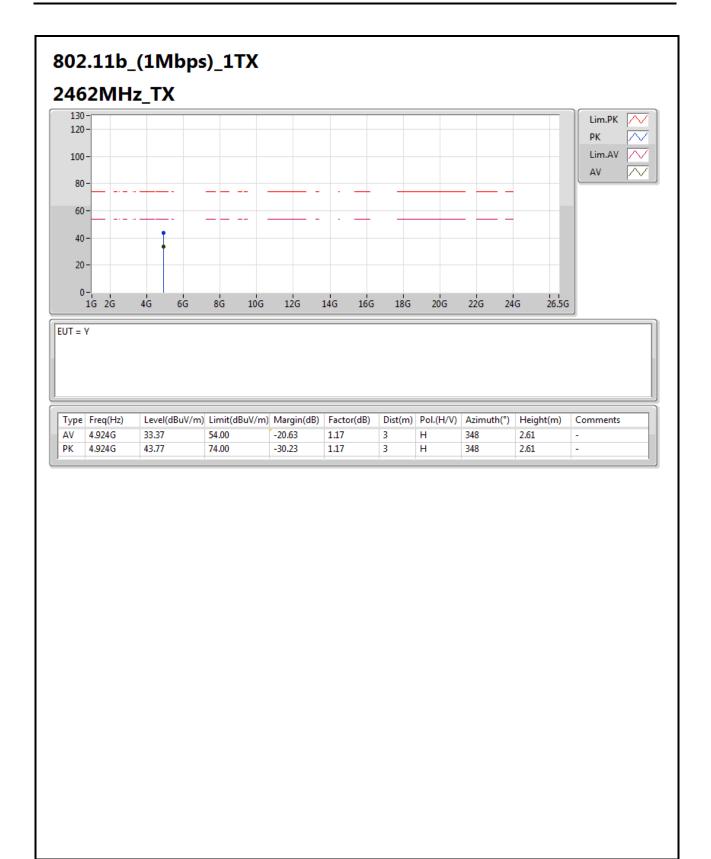
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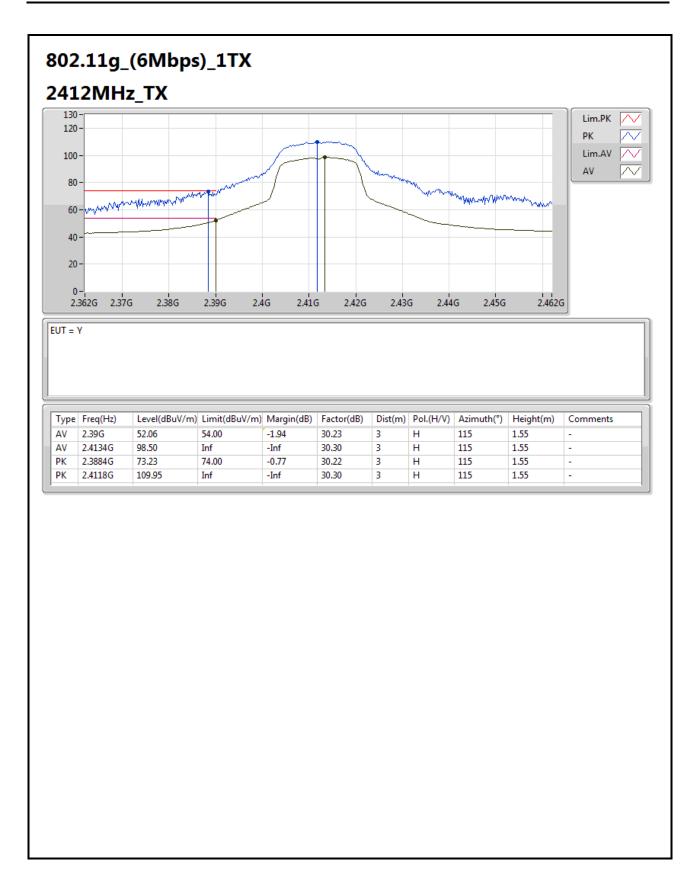
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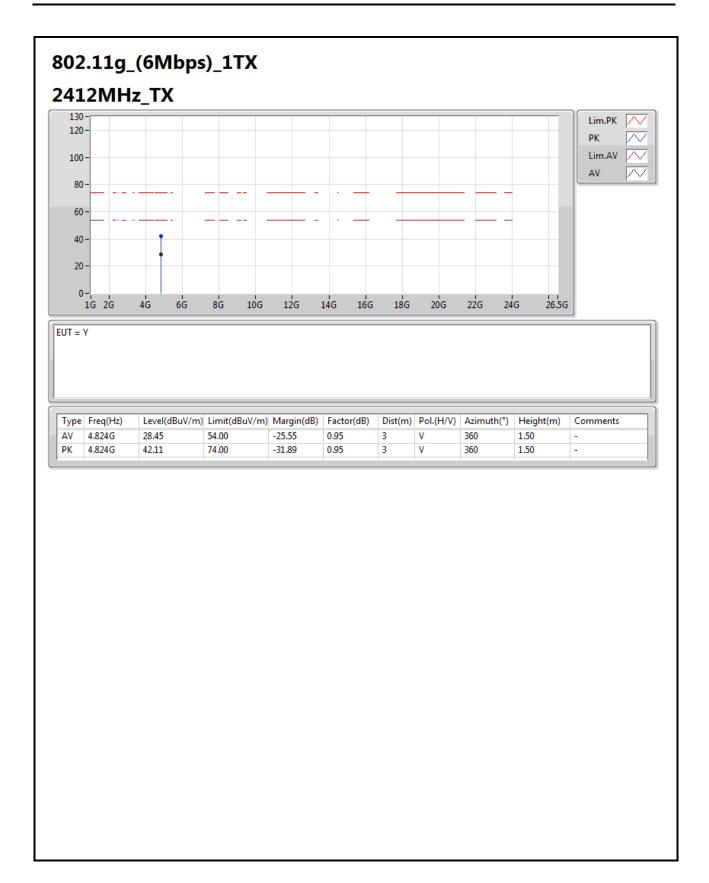
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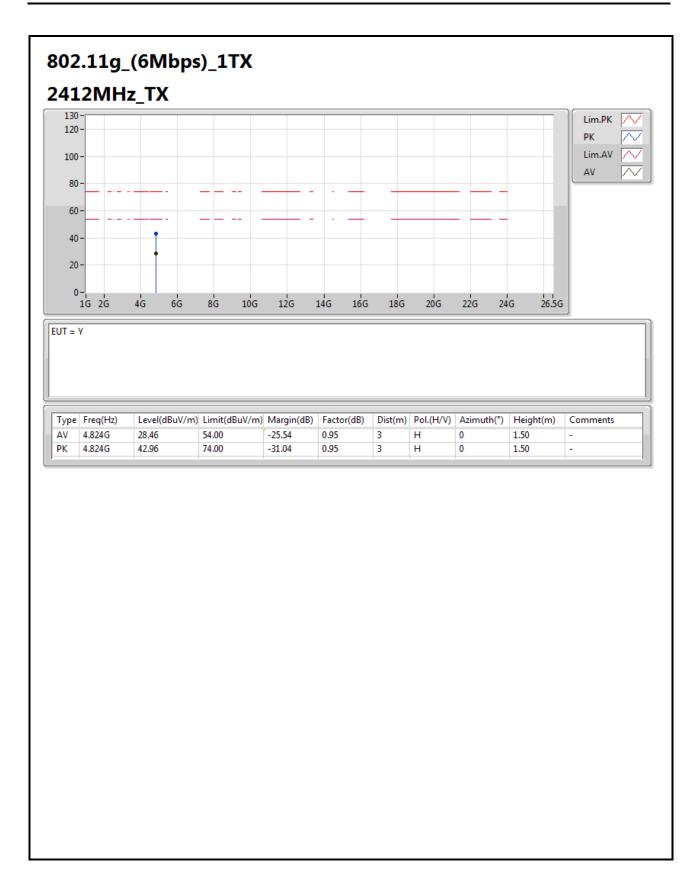
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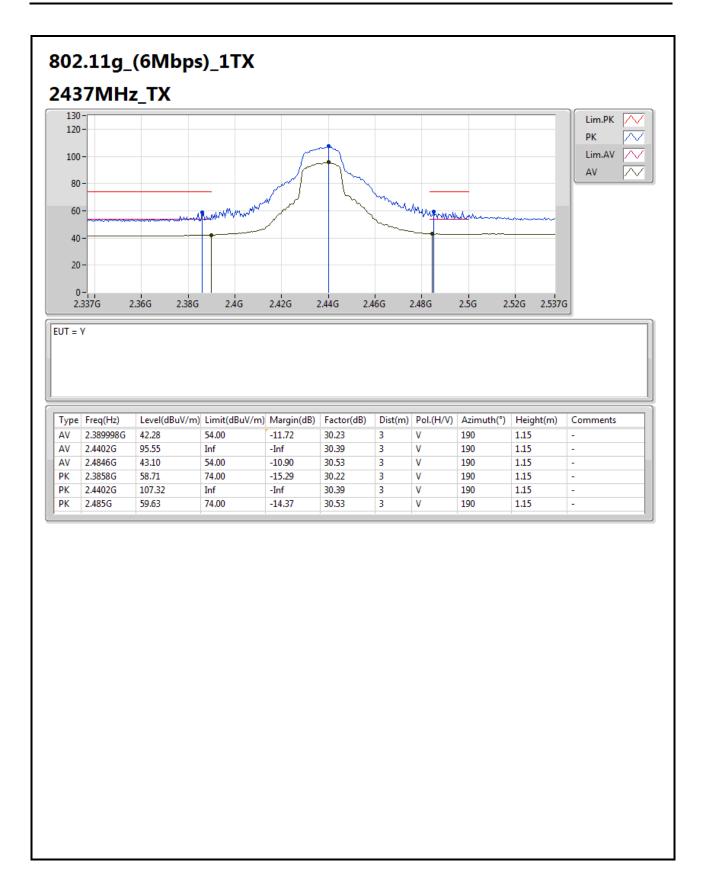
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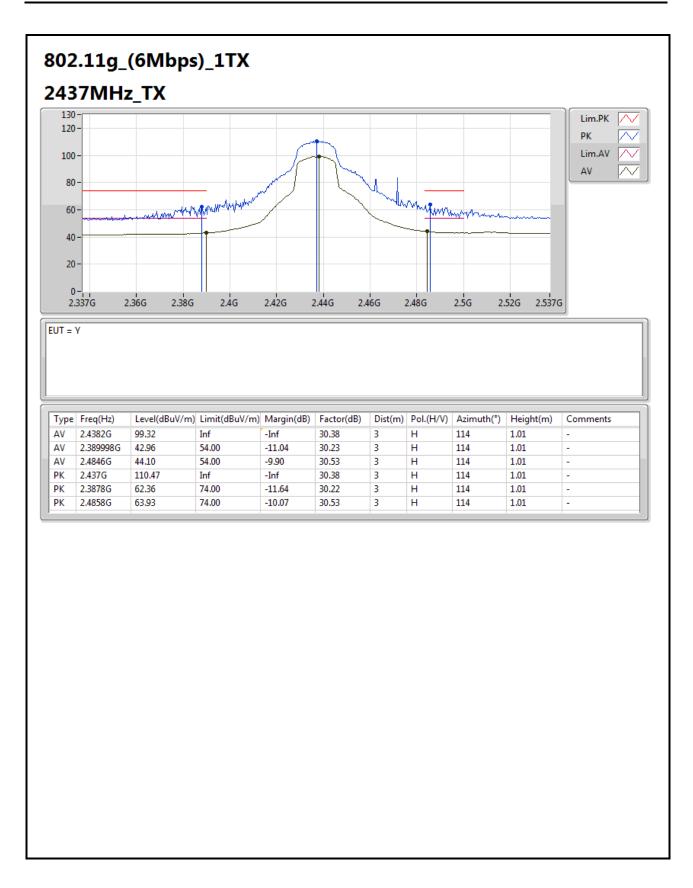
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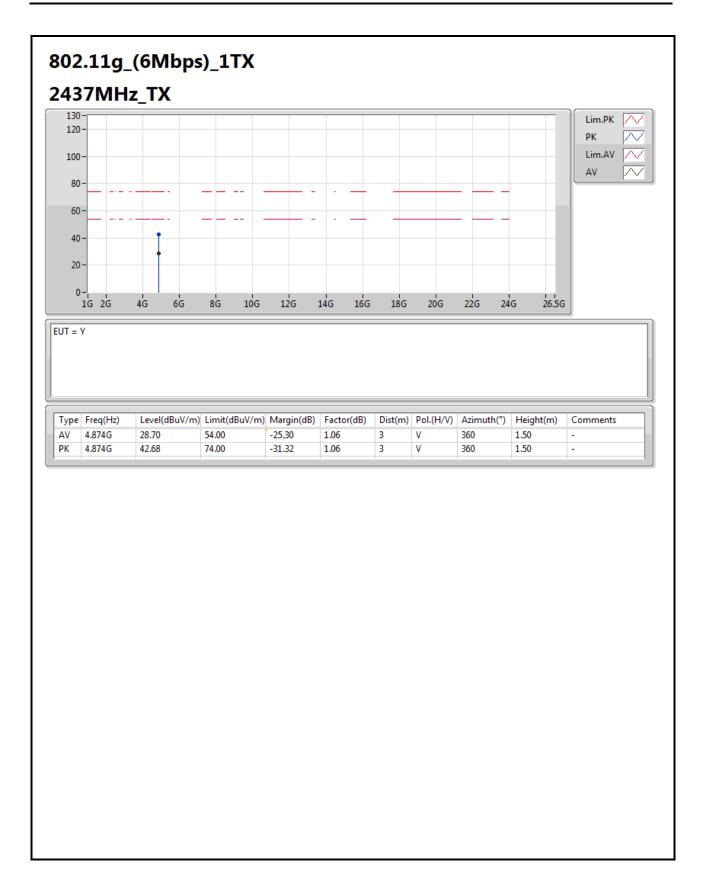
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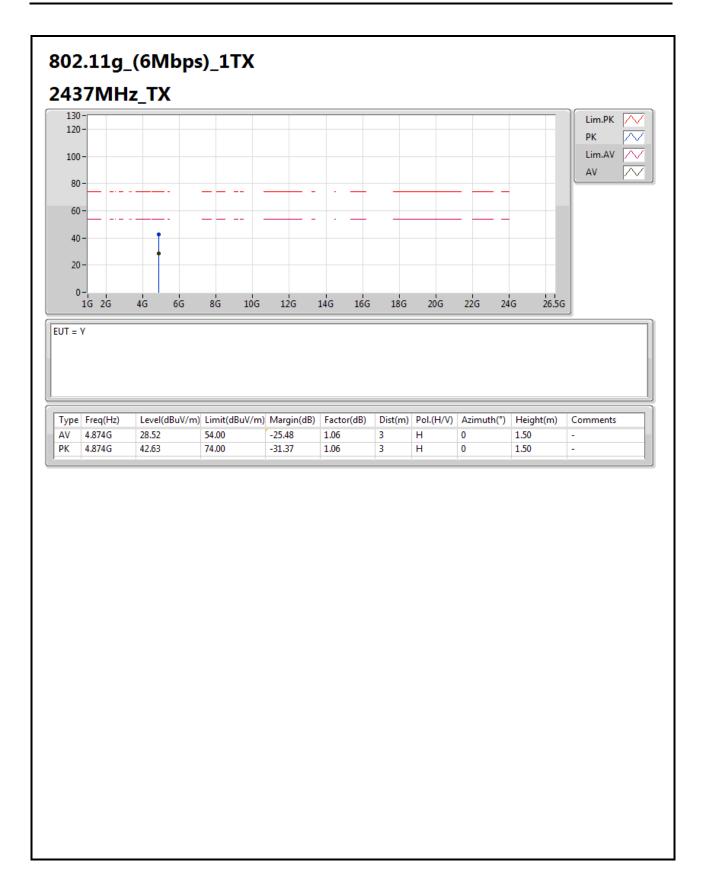
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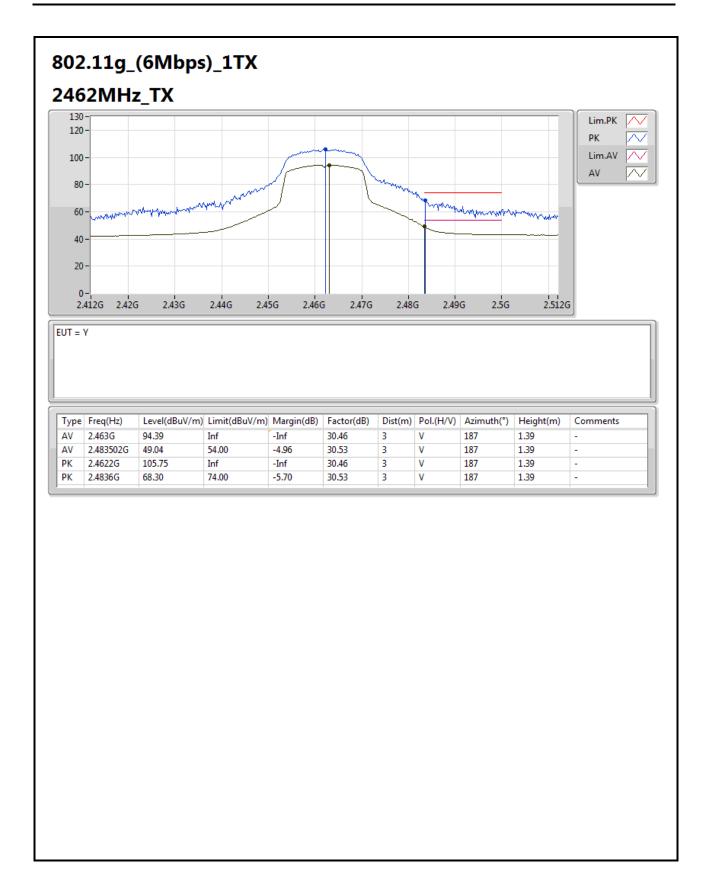
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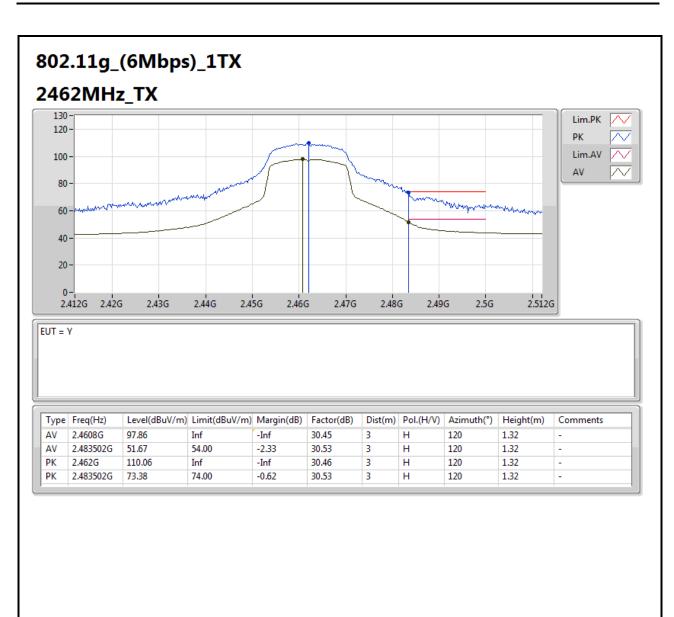
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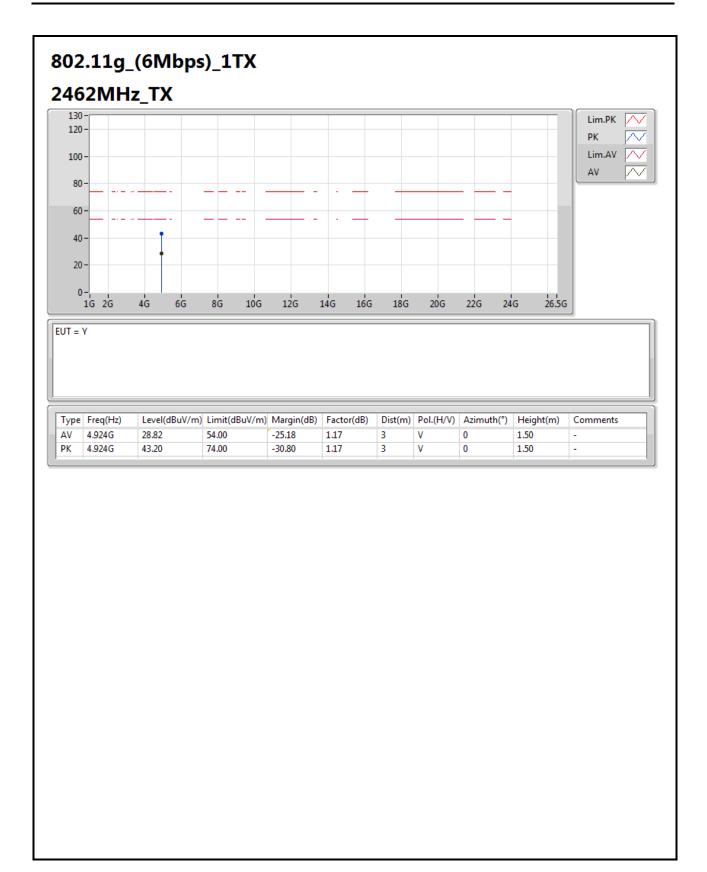
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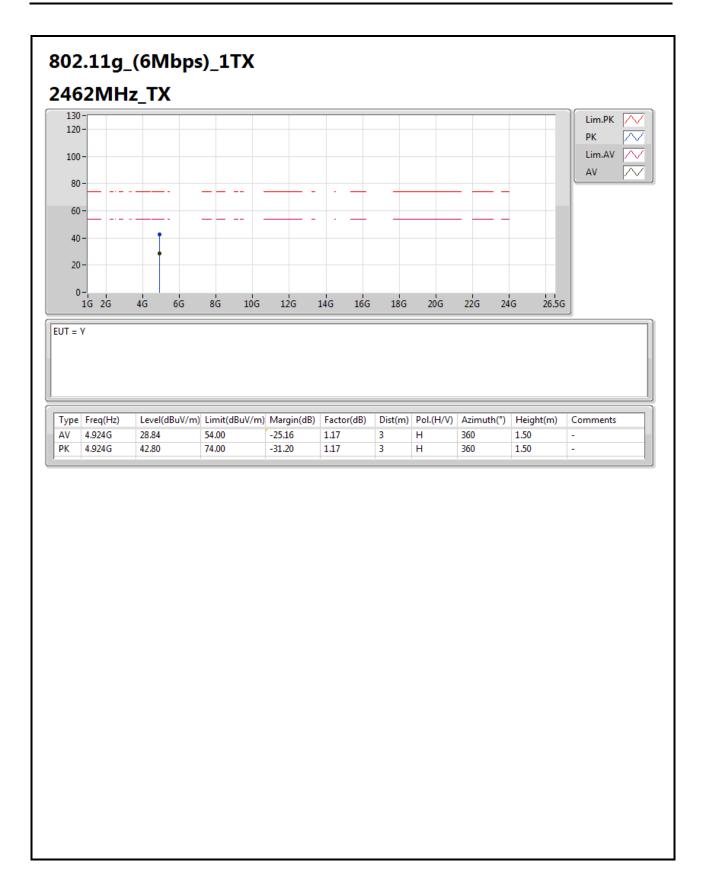
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