

Report No.: FR591601-02



FCC RADIO TEST REPORT

FCC ID : 2AGEFHCCGT9WL

Equipment : COGNITIVE & AGILITY TRAINER

Brand Name : ALDA

Model Name : HC-CGT-9WL

Applicant : Alexandave Industries Co., Ltd.

9F-1, No. 203, Gongyuan Road, Linkou District

24453, New Taipei City, Taiwan

Manufacturer : Alexandave Industries Co., Ltd.

9F-1, No. 203, Gongyuan Road, Linkou District

24453, New Taipei City, Taiwan

Standard: 47 CFR FCC Part 15,247

The product was received on Aug. 30, 2018, and testing was started from Sep. 05, 2018 and completed on Sep. 14, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

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

Approved by: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

TEL: 886-3-656-9065

FAX: 886-3-656-9085

Report Template No.: CB Ver1.0

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Report Version : 01

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Appendix G. Test Photos

Photographs of EUT v01

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History of this test report

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Report No.	Version	Description	Issued Date
FR591601-02	01	Initial issue of report	Sep. 26, 2018

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Summary of Test Result

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

Reviewed by: Sam Chen Report Producer: Cindy Peng

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1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz) Channel No	
2400-2483.5	b, g, n (HT20)	2412-2462	1-11 [11]

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

Note:

- ◆ 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g and HT20 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

1.1.2 Antenna Information

A	nt.	Brand Holder	Part Number	Antenna Type	Connector	Gain (dBi)
	1	Unictron Technologies Corp.	H2U34WGTQW0100	Chip Antenna	N/A	2.5

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.998	0.009	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11g	0.998	0.009	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11n HT20	0.984	0.070	n/a (DC>=0.98)	n/a (DC>=0.98)

Note:

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

1.1.4 EUT Operational Condition

EUT Power Type	From power adapter				
Beamforming Function	☐ With beamforming ☐ Without beamforming				
Function				Point-to-point	
Test Software Version	Yersion TeraTerm 4.75				

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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 v05

1.3 Testing Location Information

	Testing Location						
	HWA YA	ADD	:	No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)			
		TEL	:	886-3-327-3456 FAX : 886-3-327-0973			
\boxtimes	JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.			
		TEL	:	886-3-656-9065 FAX : 886-3-656-9085			

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH01-CB	Serway Li	23°C / 60%	Sep. 07, 2018
Radiated	03CH01-CB	KJ Chang	22°C / 54%	Sep. 05, 2018~ Sep. 07, 2018
AC Conduction	CO02-CB	Wei Li	24°C / 60%	Sep. 14, 2018

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

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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

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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 ⁻⁸	Confidence levels of 95%

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2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	PowerSetting
802.11b_Nss1,(1Mbps)_1TX	-
2412MHz	34
2417MHz	34
2422MHz	33
2437MHz	32
2462MHz	30
802.11g_Nss1,(6Mbps)_1TX	-
2412MHz	33
2417MHz	33
2422MHz	32
2437MHz	30
2462MHz	29
802.11n HT20_Nss1,(MCS0)_1TX	-
2412MHz	34
2417MHz	33
2422MHz	33
2437MHz	31
2462MHz	29

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2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral
Operating Mode	Normal Link

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

Th	The Worst Case Mode for Following Conformance Tests		
Tests Item Emissions in Restricted Frequency Bands			
Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used regardless of spatial multiplexing MIMO configuration), the radiated tes be performed with highest antenna gain of each antenna type.			
Operating Mode < 1GHz Normal Link			
1	EUT Y axis		
2	EUT Z axis		
For operating mode 1 is the worst case and it was record in this test report.			
Operating Mode > 1GHz	СТХ		
1	EUT Y axis		
2	EUT Z axis		
Mode 1 has been evaluated to be the worst case after evaluating. Consequently, measurement will follow this same test mode.			

2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

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2.4 Accessories

	Accessories				
No.	Equipment Name	Brand Name	Model Name	Rating	Remark
1	Adapter	apter LITEON PA-1900-05UM		INPUT: 100-240Vac, 50-60Hz, 1.5A OUTPUT: 19Vdc, 4.74A	With cable: Non-shielded, 2m
No.	Others				
2	Power cable*1: Non-shielded, 1.7m				
3	Wall-mounted rack*2				
4	Electroplating pipe*2				

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2.5 Support Equipment

For Test Site No: CO02-CB and 03CH01-CB (below 1GHz)

Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID			
1	Smart phone	Samsung	Galaxy J2	N/A

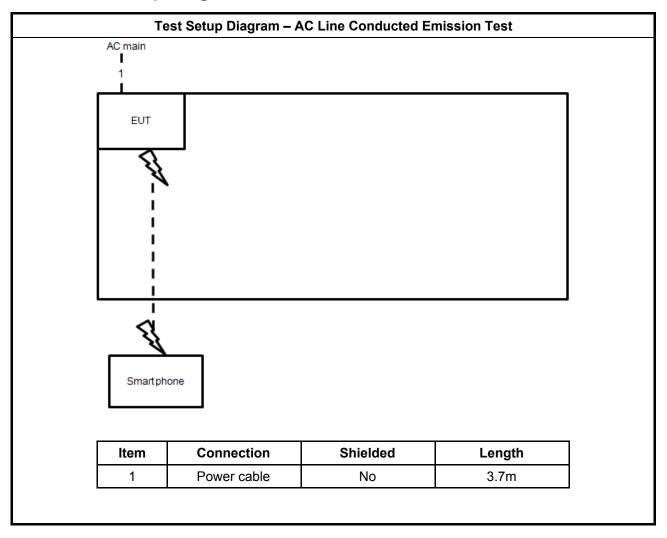
For Test Site No: 03CH01-CB (above 1GHz) and TH01-CB

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
1	Notebook	DELL	E4300	N/A
2	Test fixture	MXIC	1575- 1105	N/A

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2.6 Test Setup Diagram

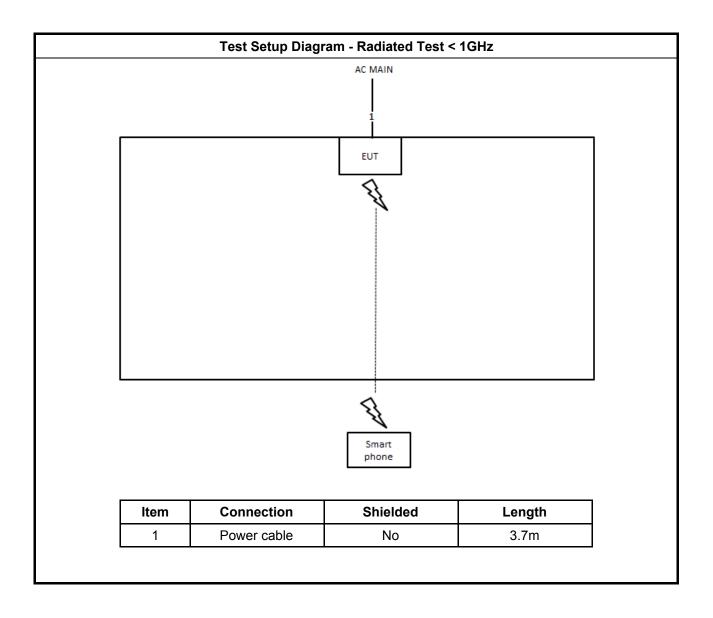


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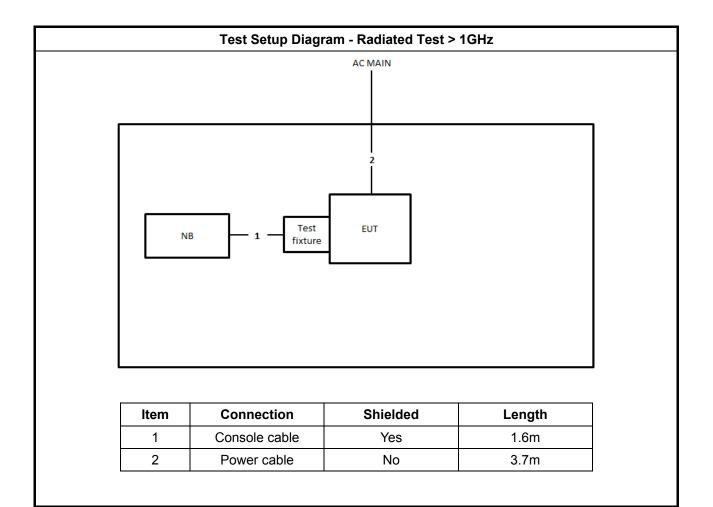
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3 Transmitter Test Result

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	
Note 1: * Decreases with the logarithm of the frequency.			

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3.1.2 Measuring Instruments

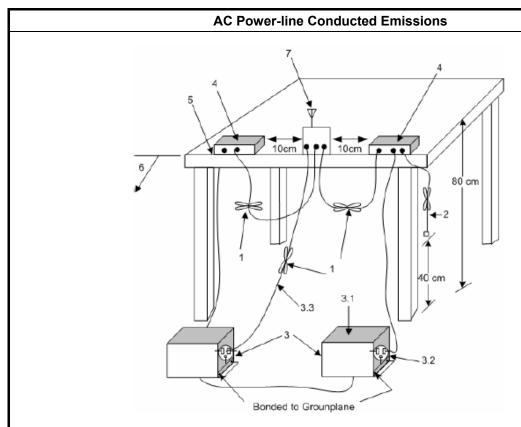
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

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3.1.4 Test Setup



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

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

3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

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

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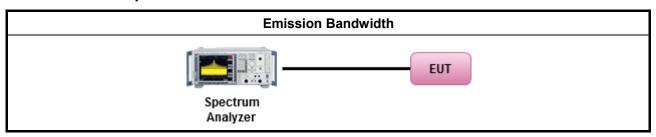
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

	Test Method				
•	For the emission bandwidth shall be measured using one of the options below:				
	\boxtimes	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.			
		Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.			
		Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.			

3.2.4 Test Setup



3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

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3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit ■ If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W) ■ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ 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 Pout = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.

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3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

		Test Method
•	Max	imum Peak Conducted Output Power
		Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
		Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter). 若
•	Max	imum Conducted Output Power
	[duty	r cycle ≥ 98% or external video / power trigger]
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
	duty	cycle < 98% and average over on/off periods with duty factor
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
	Mea	surement using a power meter (PM)
	\boxtimes	Refer as FCC KDB 558074, clause $8.3.2.3 \& C63.10$ clause $11.9.2.3.1$ Method AVGPM (using an RF average power meter).
		Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).

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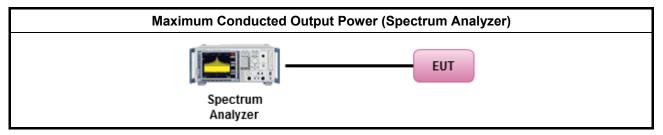
For conducted measurement.

If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.

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If multiple transmit chains, EIRP calculation could be following as methods: P_{total} = P₁ + P₂ +... + P_n (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP_{total} = P_{total} + DG

3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

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3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

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3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

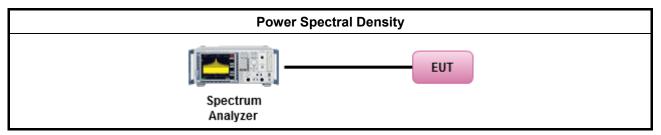
		Test Method
•	outp the c cond of th	k power spectral density procedures that the same method as used to determine the conducted out power. If maximum peak conducted output power was measured to demonstrate compliance to output power limit, then the peak PSD procedure below (Method PKPSD) shall be used.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

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

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3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

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3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit						
RF output power procedure	Limit (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.

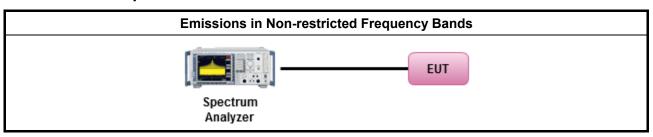
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

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

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

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3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

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

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

3.6.2 Measuring Instruments

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

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3.6.3 Test Procedures

		Test Method							
•	The average chilecter levels shall be insecured in [act, cycle 2 see all act, lactor].								
•	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:								
	Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.								
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for cycle ≥98%).								
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).							
		Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).							
		Refer as ANSI C63.10, clause 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 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.							
•	For	the transmitter band-edge emissions shall be measured using following options below:							
_	•	Refer as FCC KDB 558074 clause 8.7 & c63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.							
		Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.							
	•	Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).							
	•	For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB							
	•	For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.							

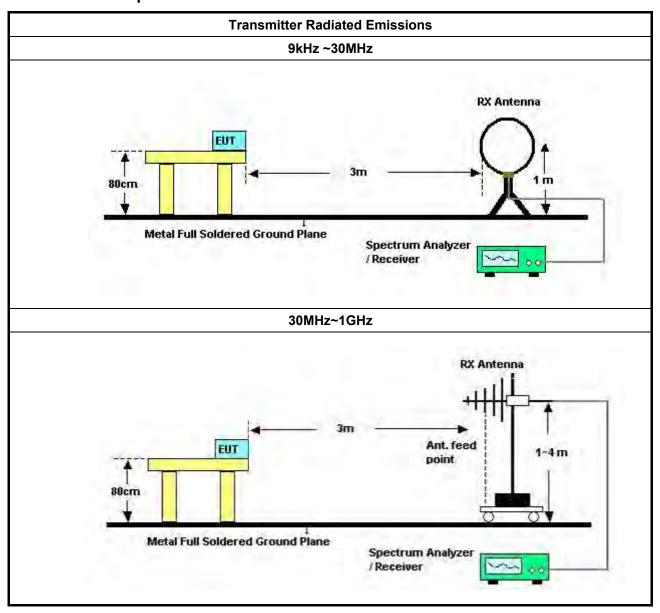
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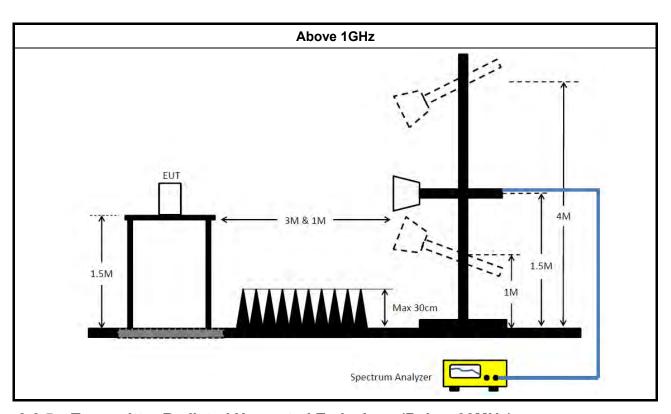
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3.6.4 Test Setup



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3.6.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.

3.6.6 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	Calibration Due Date	Remark
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 24, 2017	Nov. 23, 2018	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 13, 2017	Nov. 12, 2018	Conduction (CO02-CB)
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	Jan. 17, 2018	Jan. 16, 2019	Conduction (CO02-CB)
COND Cable	Woken	Cable	2	0.15MHz ~ 30MHz	Nov. 10, 2017	Nov. 09, 2018	Conduction (CO02-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO02-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 27, 2018	Aug. 26, 2019	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 20, 2017	Nov. 19, 2018	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jun. 28, 2018	Jun. 27, 2019	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz May 02, 201		May 01, 2019	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 09, 2018	Jan. 08, 2019	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35- HG	1864479	18GHz ~ 40GHz	Jul. 04, 2018	Jul. 03, 2019	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 23, 2017	Nov. 22, 2018	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100354	9kHz ~ 2.75GHz	Dec. 08, 2017	Dec. 07, 2018	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	Dec. 21, 2017	Dec. 20, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)

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Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 11, 2017	Oct. 10, 2018	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 20, 2017	Nov. 19, 2018	Conducted (TH01-CB)

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

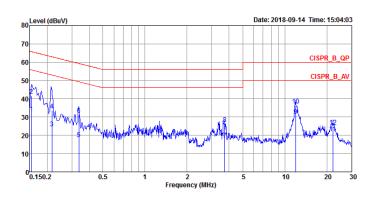
N.C.R. means Non-Calibration required.

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AC Power-line Conducted Emissions Result

AC Power-line Conducted Emissions Result						
Operating Mode	1	Power Phase	Neutral			
Operating Function	Normal Link					



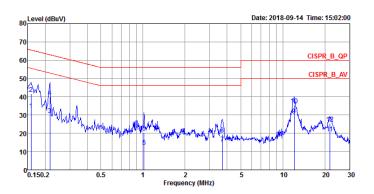
			0ver	Limit	Read	LISN	Cable		
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1540	32.24	-23.54	55.78	22.06	10.17	0.01	Average	NEUTRAL
2	0.1540	41.48	-24.30	65.78	31.30	10.17	0.01	QP	NEUTRAL
3	0.2162	23.90	-29.06	52.96	13.72	10.17	0.01	Average	NEUTRAL
4	0.2162	33.66	-29.30	62.96	23.48	10.17	0.01	QP	NEUTRAL
5	0.3374	18.07	-31.20	49.27	7.88	10.17	0.02	Average	NEUTRAL
6	0.3374	31.14	-28.13	59.27	20.95	10.17	0.02	QP	NEUTRAL
7	3.7198	17.84	-28.16	46.00	7.55	10.22	0.07	Average	NEUTRAL
8	3.7198	26.27	-29.73	56.00	15.98	10.22	0.07	QP	NEUTRAL
9	11.9328	30.84	-19.16	50.00	20.42	10.34	0.08	Average	NEUTRAL
10	11.9328	36.32	-23.68	60.00	25.90	10.34	0.08	QP	NEUTRAL
11	22.0629	21.28	-28.72	50.00	10.70	10.43	0.15	Average	NEUTRAL
12	22.0629	24.83	-35.17	60.00	14.25	10.43	0.15	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

AC Power-line Conducted Emissions Result						
Operating Mode	1	Power Phase	Line			
Operating Function	Normal Link					



	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1582	32.77	-22.79	55.56	22.60	10.16	0.01	Average	LINE
2	0.1582	41.74	-23.82	65.56	31.57	10.16	0.01	QP	LINE
3	0.2162	30.10	-22.86	52.96	19.93	10.16	0.01	Average	LINE
4	0.2162	39.73	-23.23	62.96	29.56	10.16	0.01	QP	LINE
5	1.0157	12.61	-33.39	46.00	2.42	10.17	0.02	Average	LINE
6	1.0157	20.42	-35.58	56.00	10.23	10.17	0.02	QP	LINE
7	3.7001	14.54	-31.46	46.00	4.25	10.22	0.07	Average	LINE
8	3.7001	19.62	-36.38	56.00	9.33	10.22	0.07	QP	LINE
9	12.0599	29.70	-20.30	50.00	19.28	10.34	0.08	Average	LINE
10	12.0599	35.38	-24.62	60.00	24.96	10.34	0.08	QP	LINE
11	21.7149	20.07	-29.93	50.00	9.49	10.43	0.15	Average	LINE
12	21.7149	25.28	-34.72	60.00	14.70	10.43	0.15	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)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	8.025M	12.719M	12M7G1D	M8	12.619M
802.11g_Nss1,(6Mbps)_1TX	15.425M	16.367M	16M4D1D	15M	16.317M
802.11n HT20_Nss1,(MCS0)_1TX	15.375M	17.491M	17M5D1D	15.025M	17.441M

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;

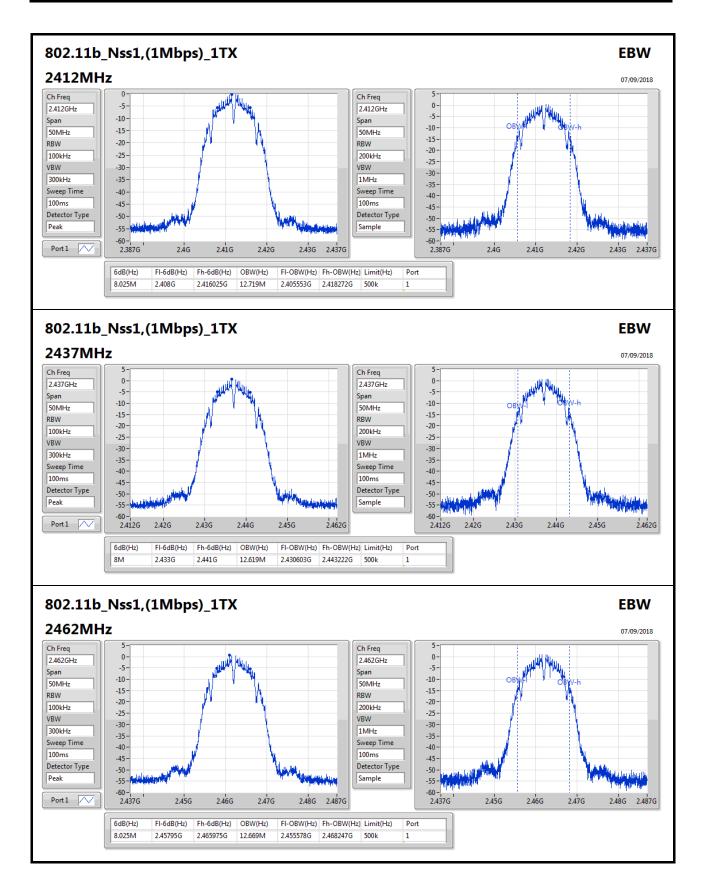
Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	8.025M	12.719M
2437MHz	Pass	500k	8M	12.619M
2462MHz	Pass	500k	8.025M	12.669M
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	15.425M	16.317M
2437MHz	Pass	500k	15M	16.367M
2462MHz	Pass	500k	15.05M	16.342M
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-
2412MHz	Pass	500k	15.025M	17.491M
2437MHz	Pass	500k	15.1M	17.441M
2462MHz	Pass	500k	15.375M	17.491M

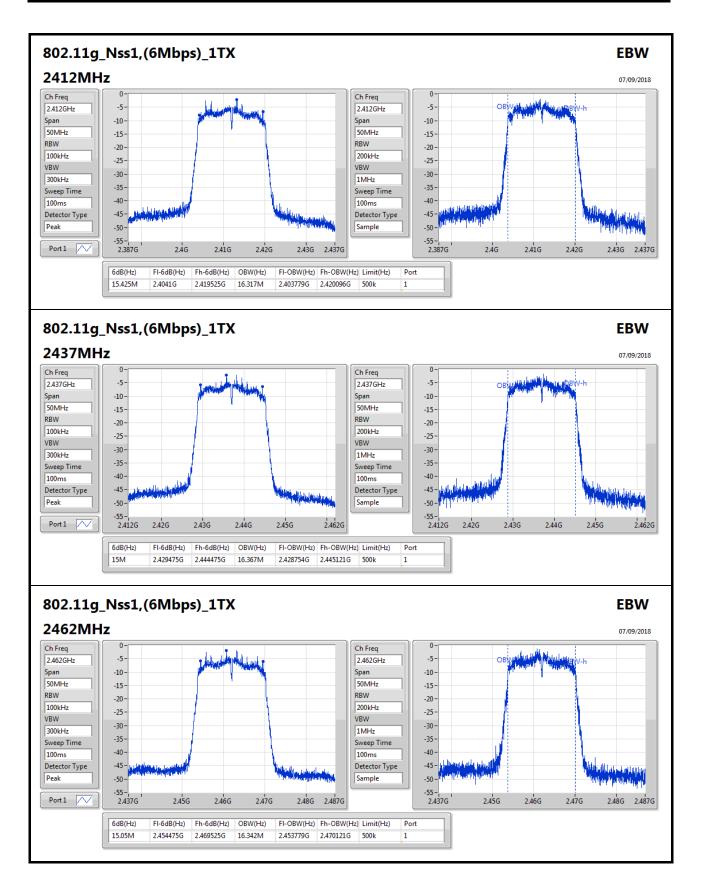
Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth;

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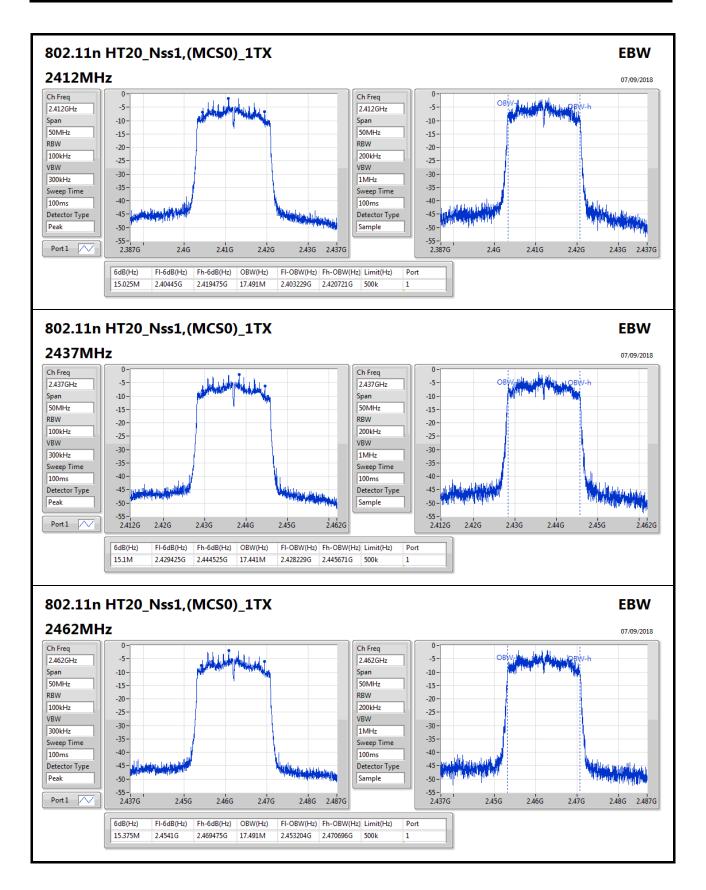














Appendix C **AV Power Result**

Summary

Mode	Total Power	Total Power	
	(dBm)	(W)	
2.4-2.4835GHz	-	-	
802.11b_Nss1,(1Mbps)_1TX	9.58	0.00908	
802.11g_Nss1,(6Mbps)_1TX	9.57	0.00906	
802.11n HT20_Nss1,(MCS0)_1TX	9.58	0.00908	

Result

Mode	Result	DG	Port 1	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.50	9.46	9.46	30.00
2417MHz	Pass	2.50	9.51	9.51	30.00
2422MHz	Pass	2.50	9.43	9.43	30.00
2437MHz	Pass	2.50	9.58	9.58	30.00
2462MHz	Pass	2.50	9.52	9.52	30.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.50	9.49	9.49	30.00
2417MHz	Pass	2.50	9.45	9.45	30.00
2422MHz	Pass	2.50	9.47	9.47	30.00
2437MHz	Pass	2.50	9.57	9.57	30.00
2462MHz	Pass	2.50	9.53	9.53	30.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	2.50	9.55	9.55	30.00
2417MHz	Pass	2.50	9.48	9.48	30.00
2422MHz	Pass	2.50	9.51	9.51	30.00
2437MHz	Pass	2.50	9.58	9.58	30.00
2462MHz	Pass	2.50	9.48	9.48	30.00

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

Note : Conducted average output power is for reference only



Appendix D **PSD Result**

Summary

Mode	PD		
	(dBm/RBW)		
2.4-2.4835GHz			
802.11b_Nss1,(1Mbps)_1TX	-12.86		
802.11g_Nss1,(6Mbps)_1TX	-15.43		
802.11n HT20_Nss1,(MCS0)_1TX	-14.73		

RBW=3kHz.

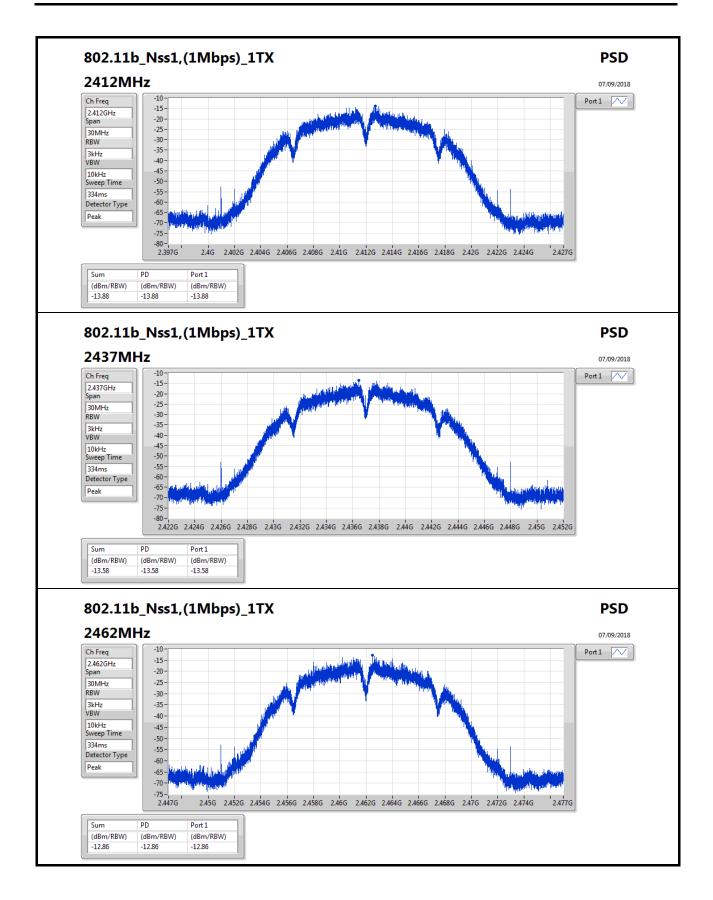
Result

Mode	Result	DG	Port 1	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.50	-13.88	-13.88	8.00
2437MHz	Pass	2.50	-13.58	-13.58	8.00
2462MHz	Pass	2.50	-12.86	-12.86	8.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.50	-15.43	-15.43	8.00
2437MHz	Pass	2.50	-16.40	-16.40	8.00
2462MHz	Pass	2.50	-16.48	-16.48	8.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	2.50	-14.73	-14.73	8.00
2437MHz	Pass	2.50	-15.06	-15.06	8.00
2462MHz	Pass	2.50	-16.45	-16.45	8.00

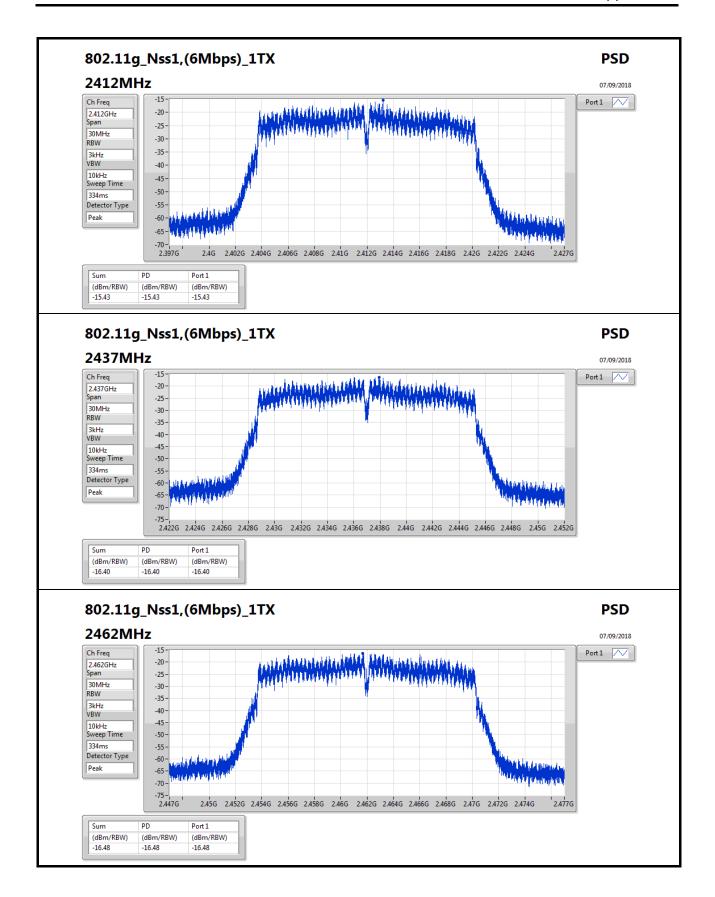
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DG = Directional Gain; RBW=3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port Xpower density;

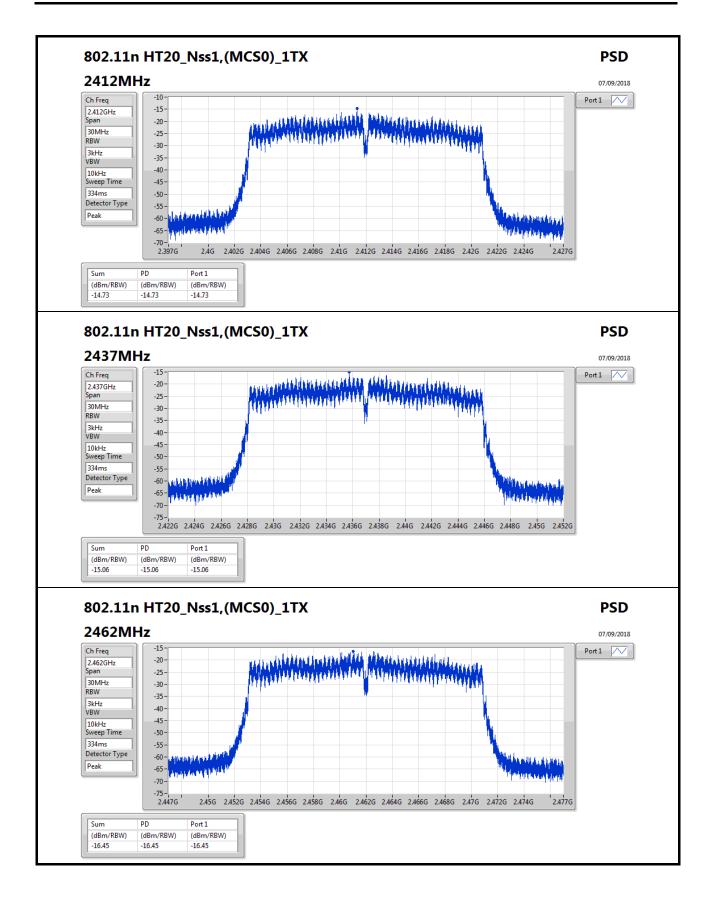














CSE Non-restricted Band Result

Appendix E

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Summary

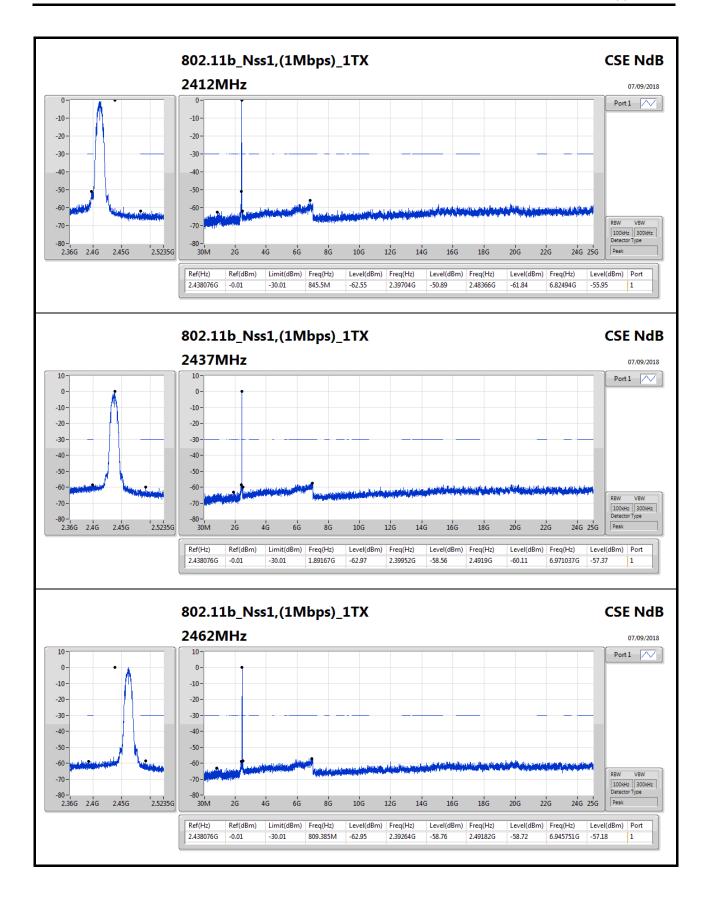
Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
2.4-2.4835GHz	-	-	-	-	•	-	-	-		-		-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	2.438076G	-0.01	-30.01	845.5M	-62.55	2.39704G	-50.89	2.48366G	-61.84	6.82494G	-55.95	1
802.11g_Nss1,(6Mbps)_1TX	Pass	2.430728G	-2.97	-32.97	2.30175G	-62.46	2.39928G	-41.24	2.51822G	-62.06	6.198408G	-57.41	1
802.11n HT20_Nss1,(MCS0)_1TX	Pass	2.434402G	-3.44	-33.44	1.650515G	-63.43	2.39856G	-41.47	2.48654G	-61.65	6.942942G	-57.42	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_Nss1,(1Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.438076G	-0.01	-30.01	845.5M	-62.55	2.39704G	-50.89	2.48366G	-61.84	6.82494G	-55.95	1
2437MHz	Pass	2.438076G	-0.01	-30.01	1.89167G	-62.97	2.39952G	-58.56	2.4919G	-60.11	6.971037G	-57.37	1
2462MHz	Pass	2.438076G	-0.01	-30.01	809.385M	-62.95	2.39264G	-58.76	2.49182G	-58.72	6.945751G	-57.18	1
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.430728G	-2.97	-32.97	2.30175G	-62.46	2.39928G	-41.24	2.51822G	-62.06	6.198408G	-57.41	1
2437MHz	Pass	2.430728G	-2.97	-32.97	2.13399G	-63.37	2.398G	-55.07	2.48622G	-60.56	6.926084G	-56.82	1
2462MHz	Pass	2.430728G	-2.97	-32.97	957.34M	-63.21	2.3928G	-58.02	2.48406G	-47.43	6.985085G	-57.24	1
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.434402G	-3.44	-33.44	1.650515G	-63.43	2.39856G	-41.47	2.48654G	-61.65	6.942942G	-57.42	1
2437MHz	Pass	2.434402G	-3.44	-33.44	809.385M	-63.55	2.39992G	-54.94	2.48854G	-60.58	6.976657G	-57.17	1
2462MHz	Pass	2.434402G	-3.44	-33.44	2.067585G	-62.47	2.3948G	-58.30	2.48382G	-46.62	6.948561G	-56.43	1

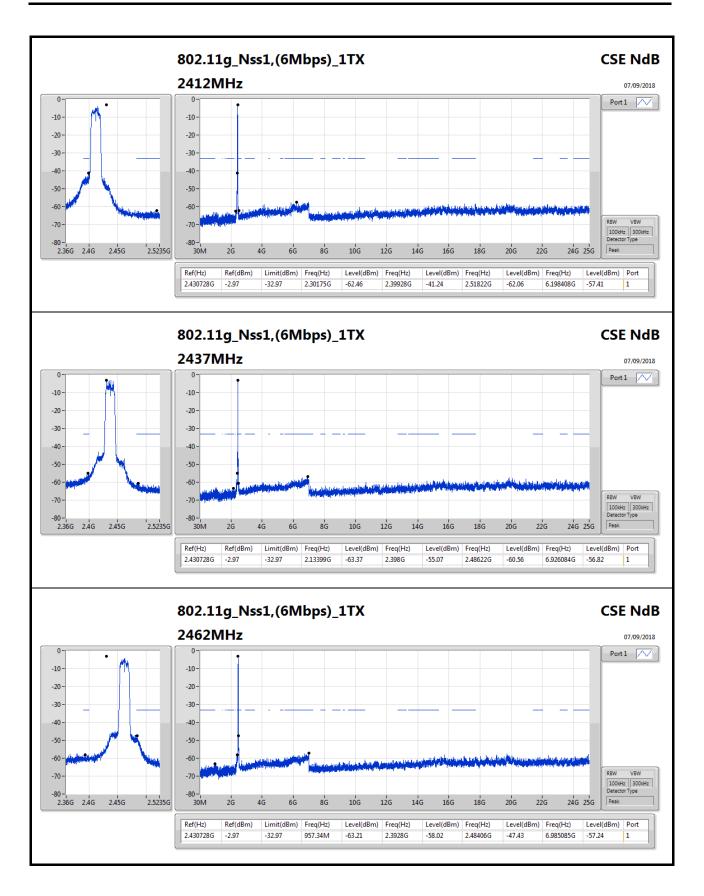
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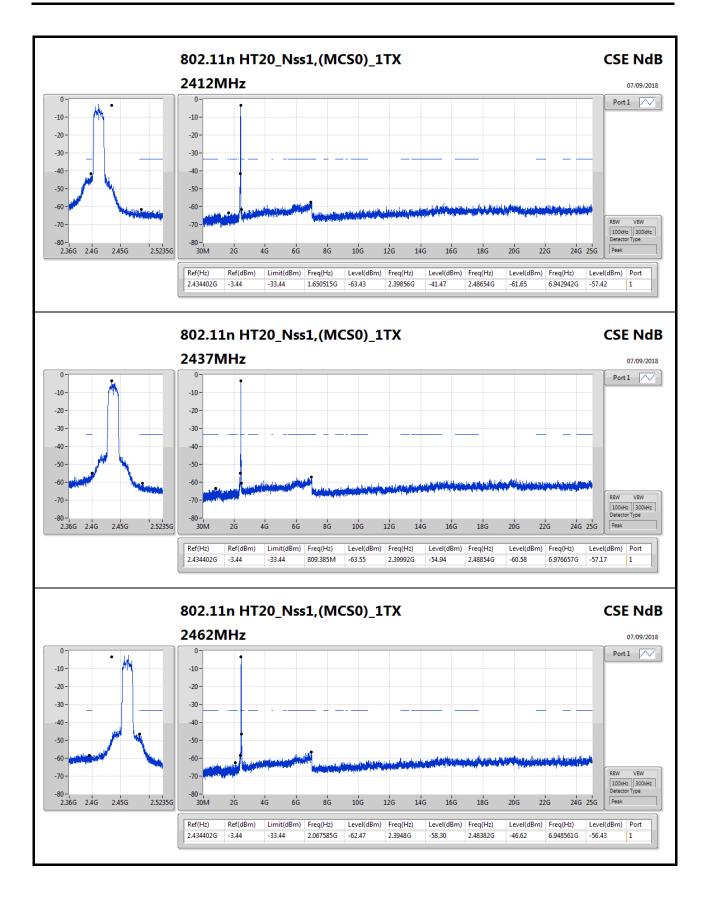
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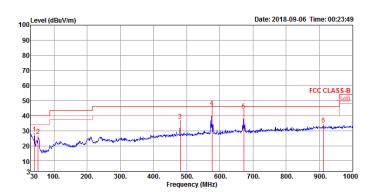
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RSE below 1GHz Result

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

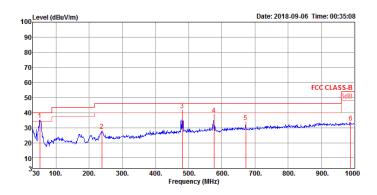


	Freq	Level		Over Limit					A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	40.67	28.07	40.00	-11.93	36.36	1.19	19.06	28.54	100	92	Peak	HORIZONTAL
2	52.31	26.64	40.00	-13.36	40.30	1.37	13.51	28.54	150	173	Peak	HORIZONTAL
3	480.08	36.81	46.00	-9.19	40.12	2.87	22.97	29.15	100	4	Peak	HORIZONTAL
4	576.11	45.51	46.00	-0.49	48.41	2.25	24.22	29.37	194	15	QP	HORIZONTAL
5	672.14	43.45	46.00	-2.55	44.50	3.45	24.85	29.35	176	0	QP	HORIZONTAL
6	912.70	34.29	46.00	-11.71	32.17	4.57	26.33	28.78	125	360	Peak	HORIZONTAL

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

RSE below 1GHz Result

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



	Freq	Level		Over Limit						T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	51.34	35.04	40.00	-4.96	48.34	1.40	13.84	28.54	100	17	Peak	VERTICAL
2	238.55	28.13	46.00	-17.87	37.12	2.29	16.69	27.97	100	340	Peak	VERTICAL
3	480.08	41.74	46.00	-4.26	45.05	2.87	22.97	29.15	200	33	Peak	VERTICAL
4	576.11	38.88	46.00	-7.12	41.78	2.25	24.22	29.37	200	325	Peak	VERTICAL
5	672.14	33.79	46.00	-12.21	34.84	3.45	24.85	29.35	100	356	Peak	VERTICAL
6	988.36	33.51	54.00	-20.49	31.42	3.74	26.95	28.60	125	358	Peak	VERTICAL

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



RSE TX above 1GHz Result

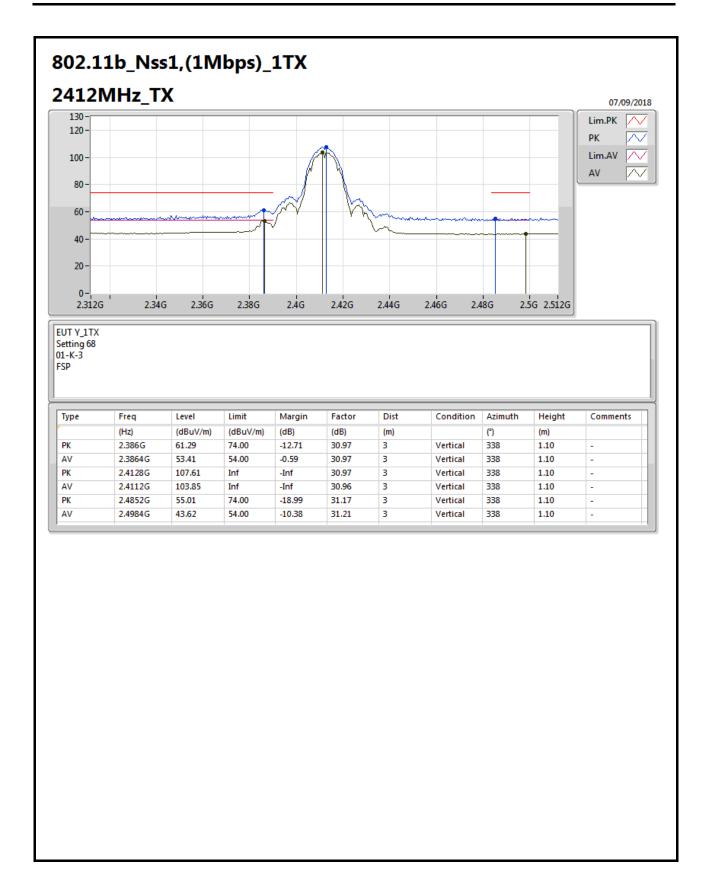
Appendix F.2

Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11g_Nss1,(6Mbps)_1TX	Pass	AV	2.3896G	53.99	54.00	-0.01	30.97	3	Vertical	334	1.17	-

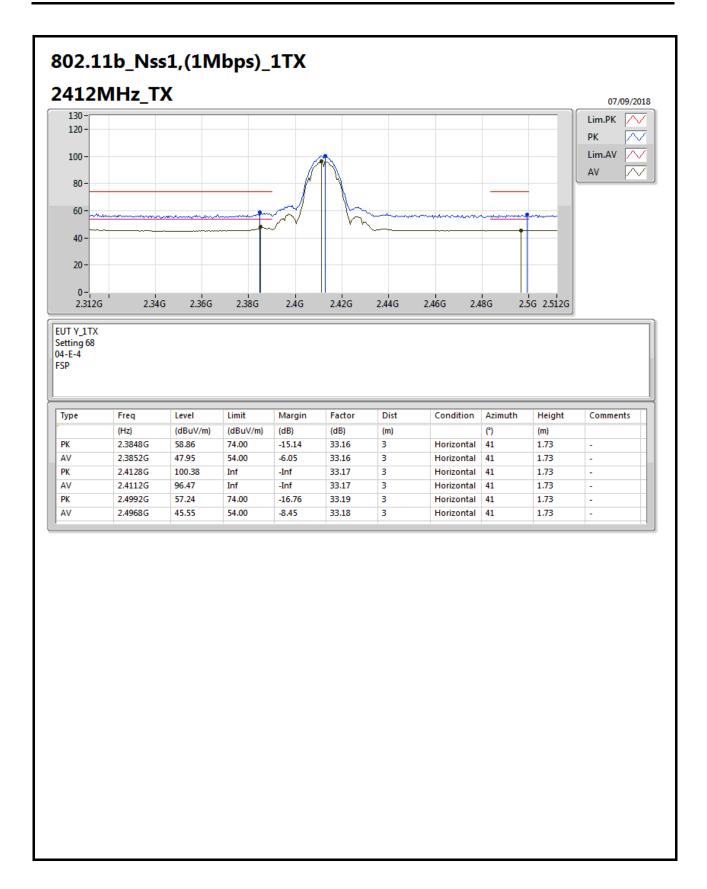
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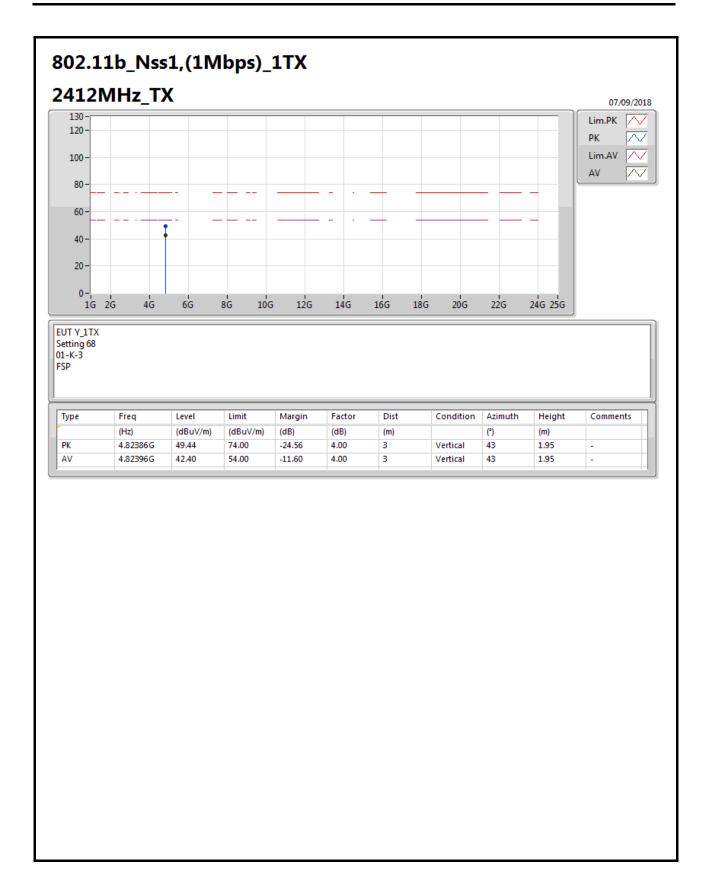


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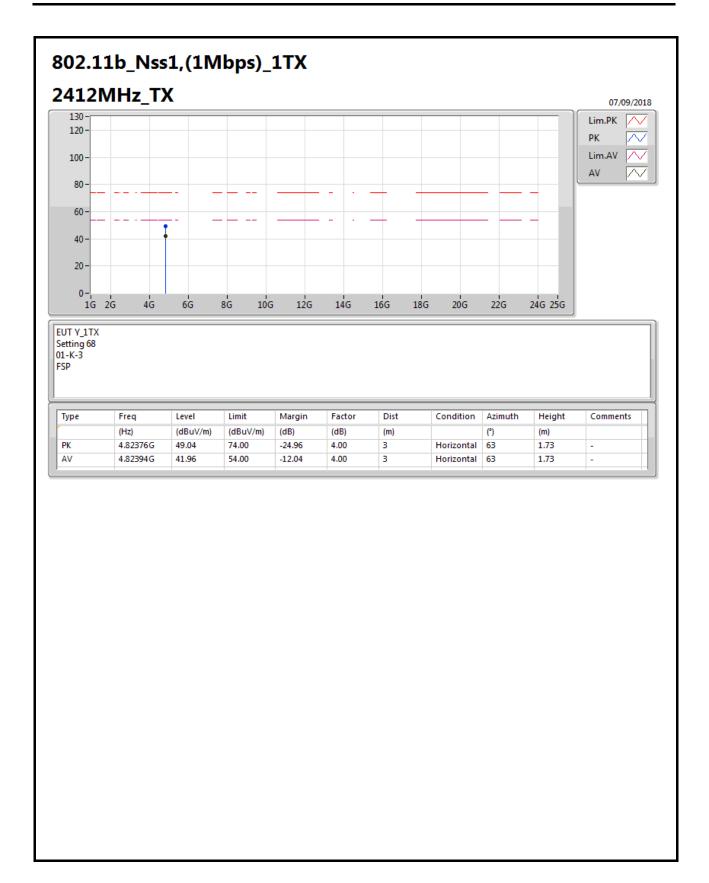




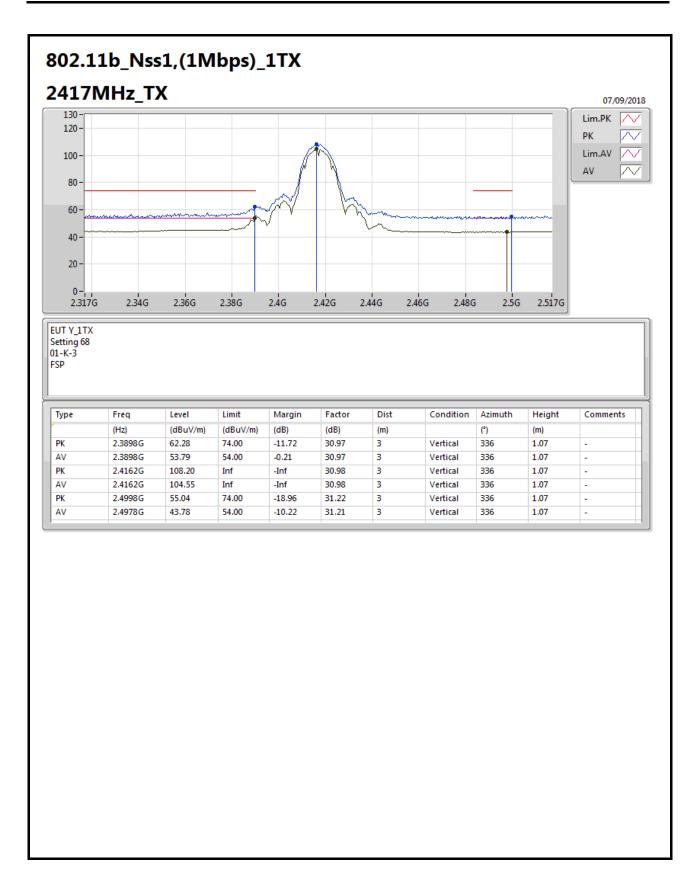


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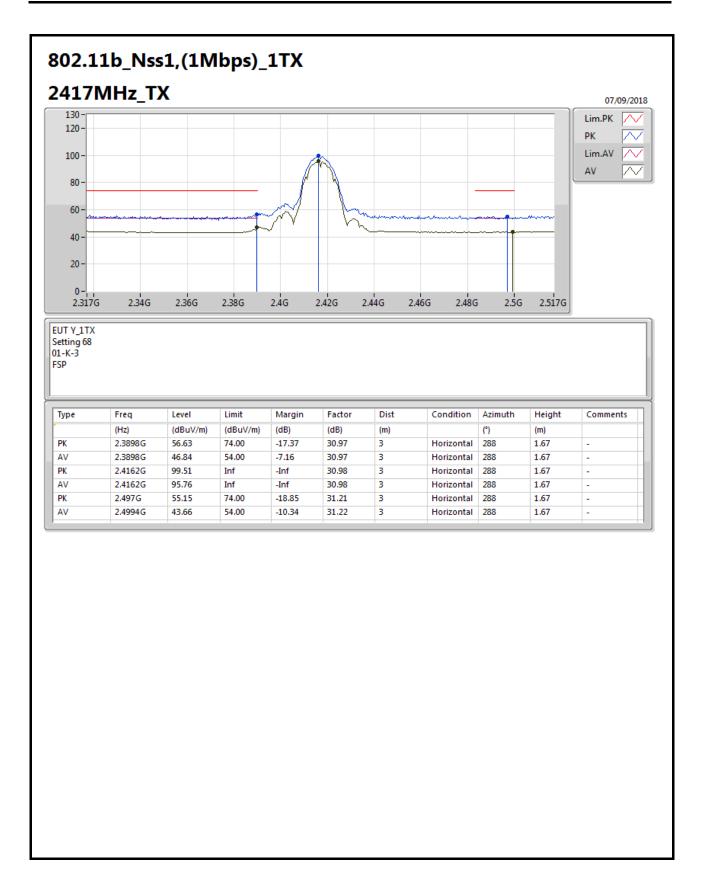






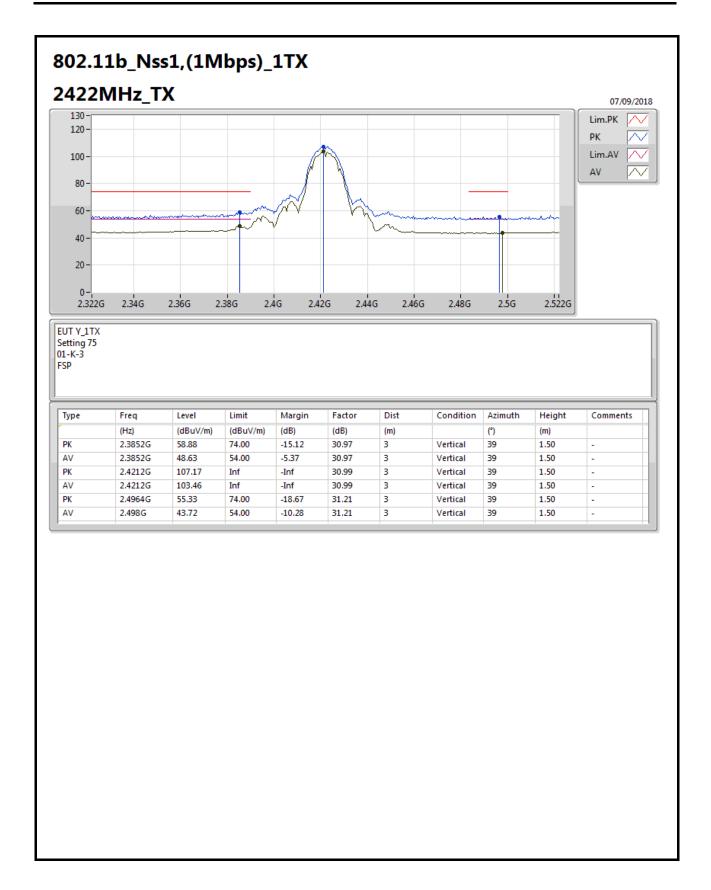




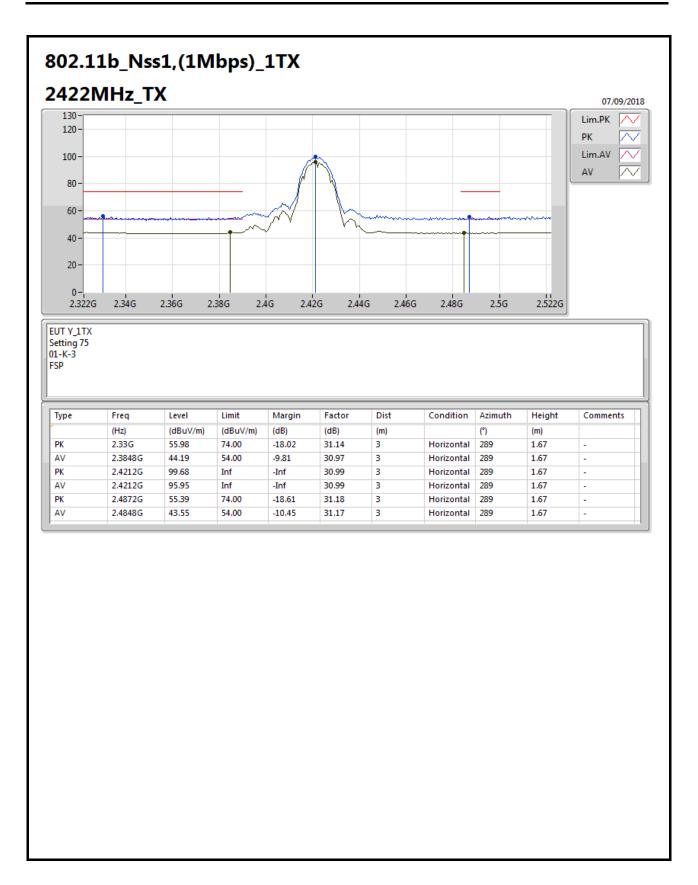


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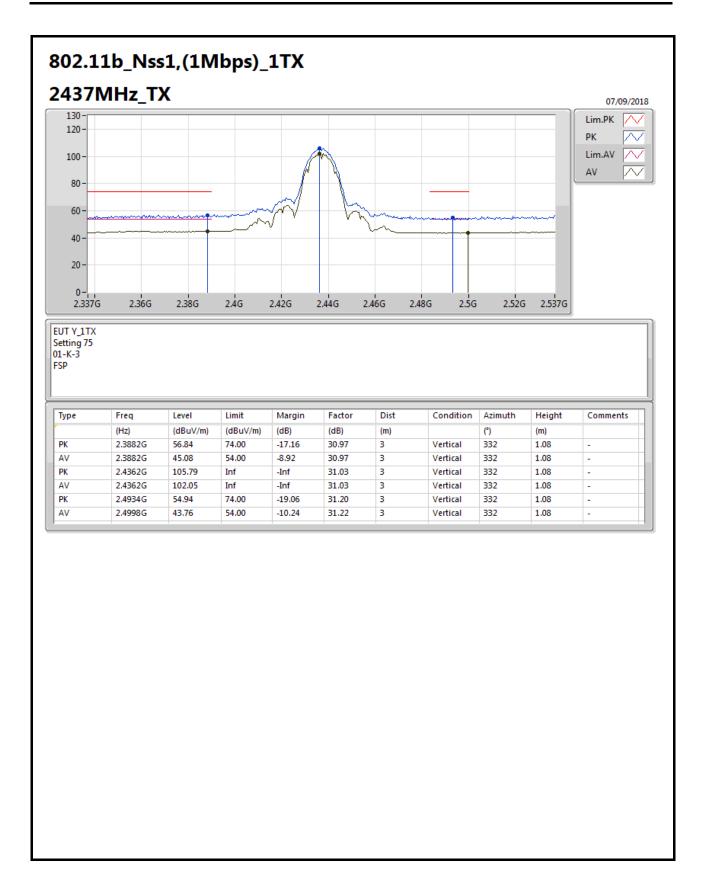






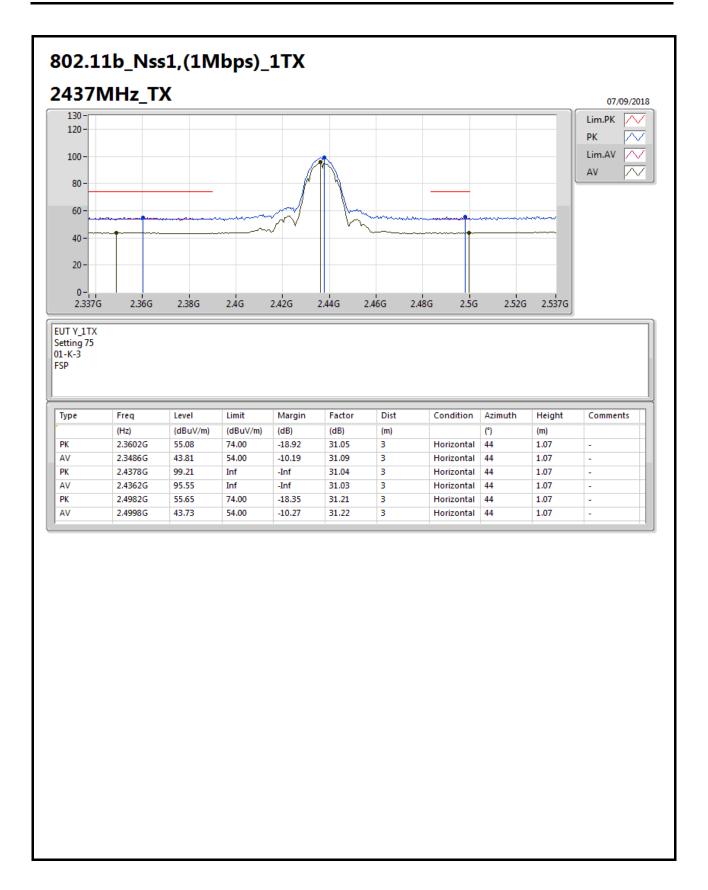






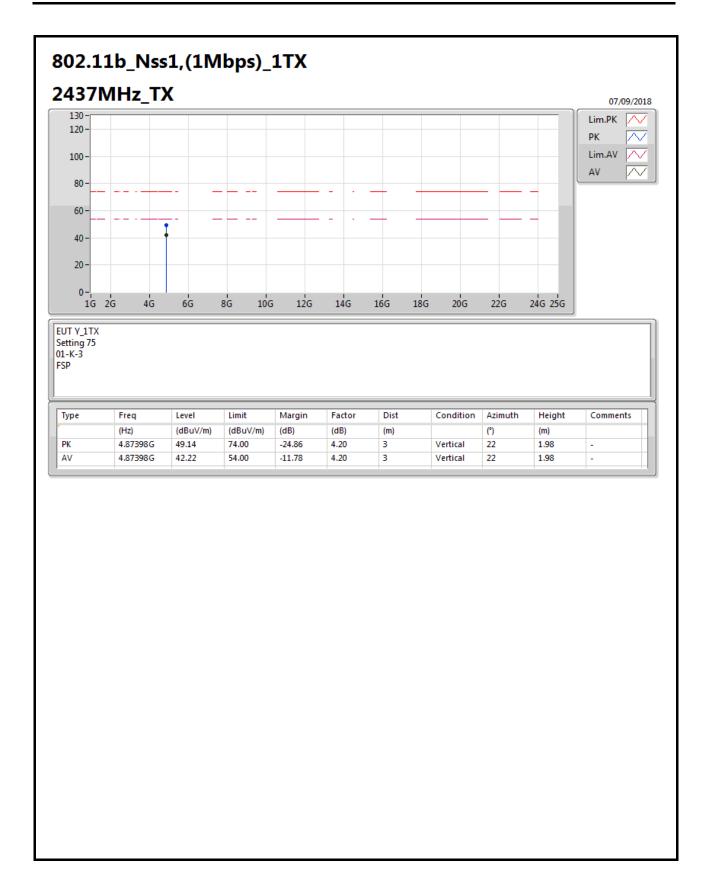
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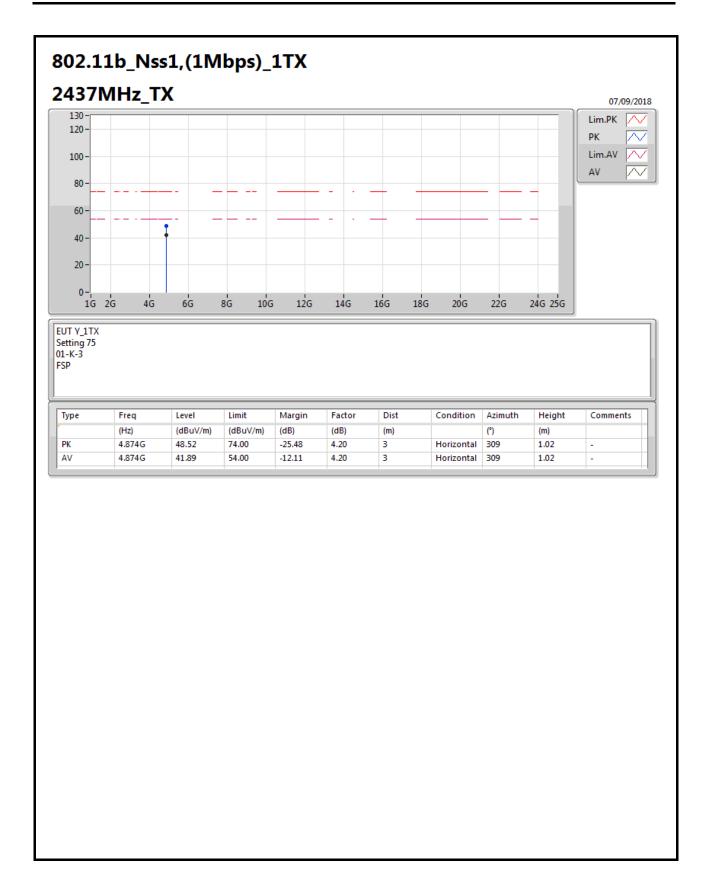
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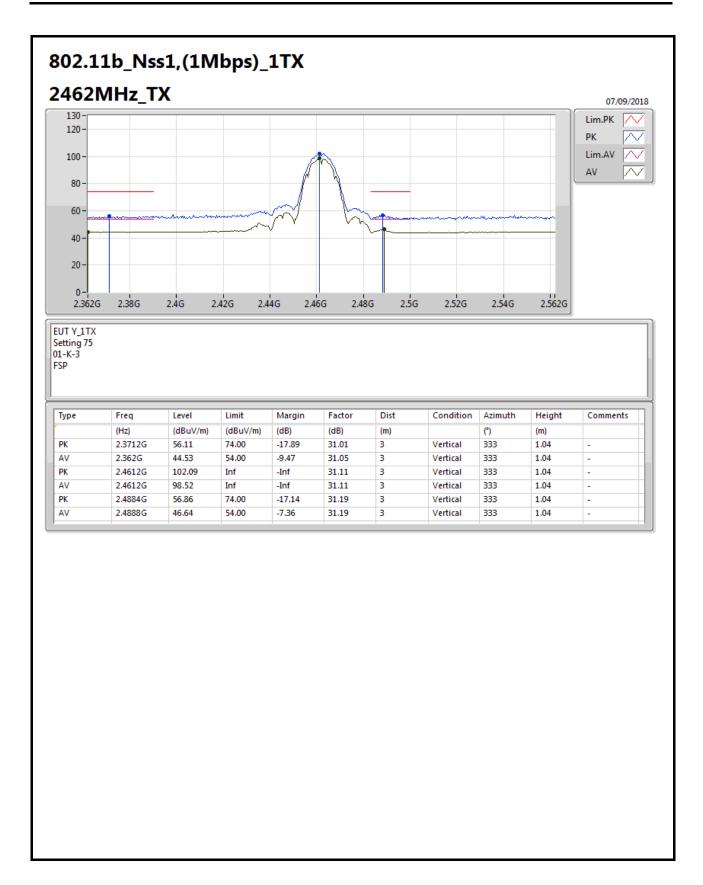
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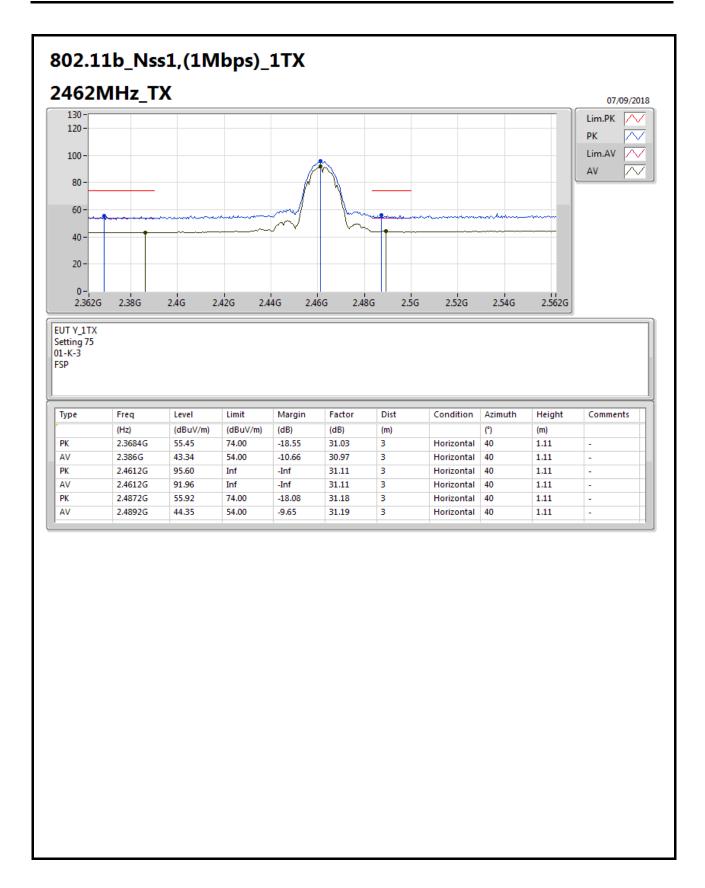
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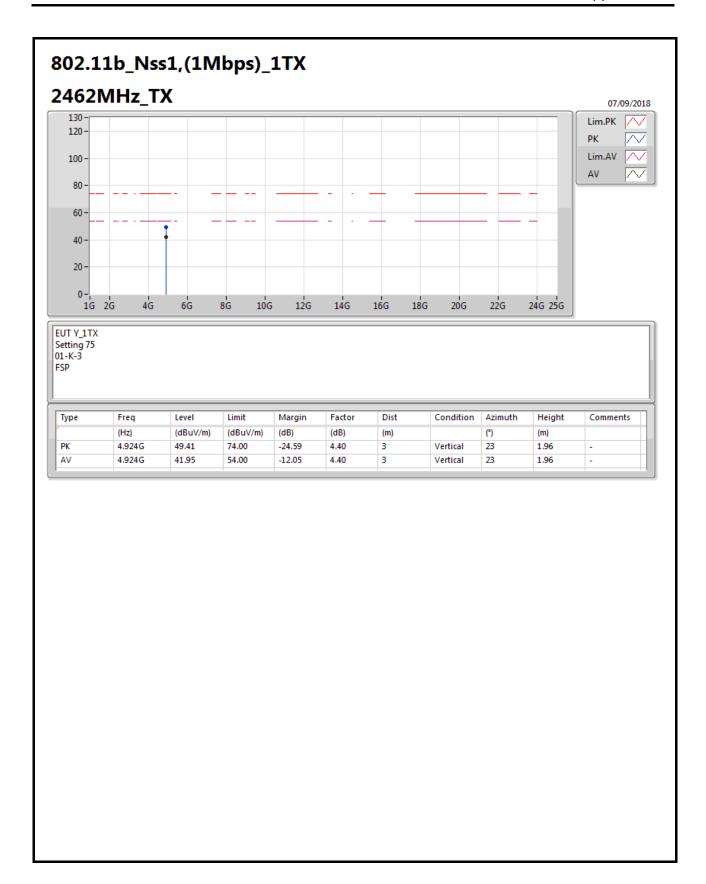


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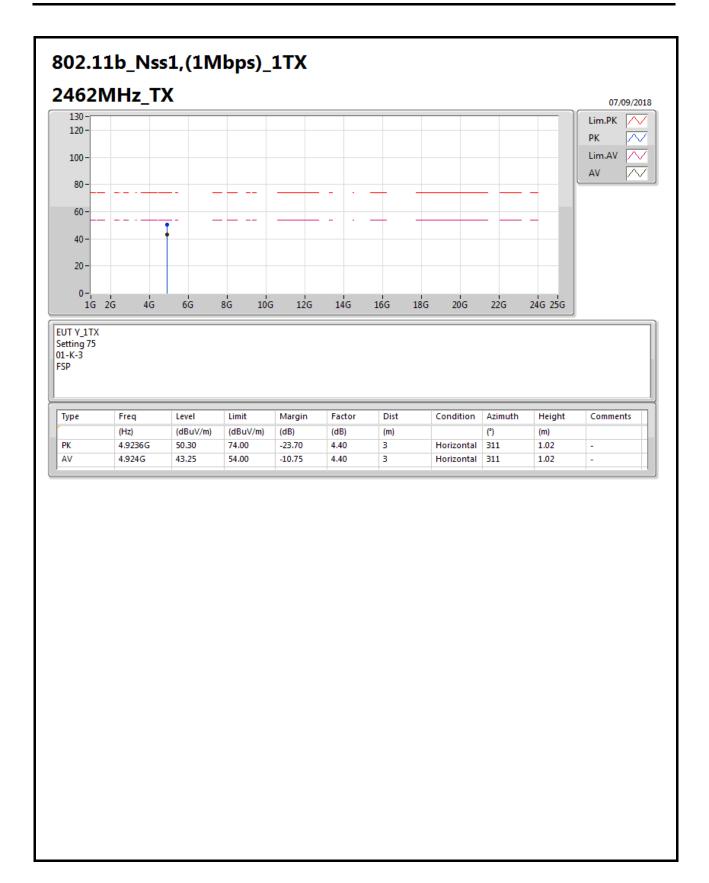




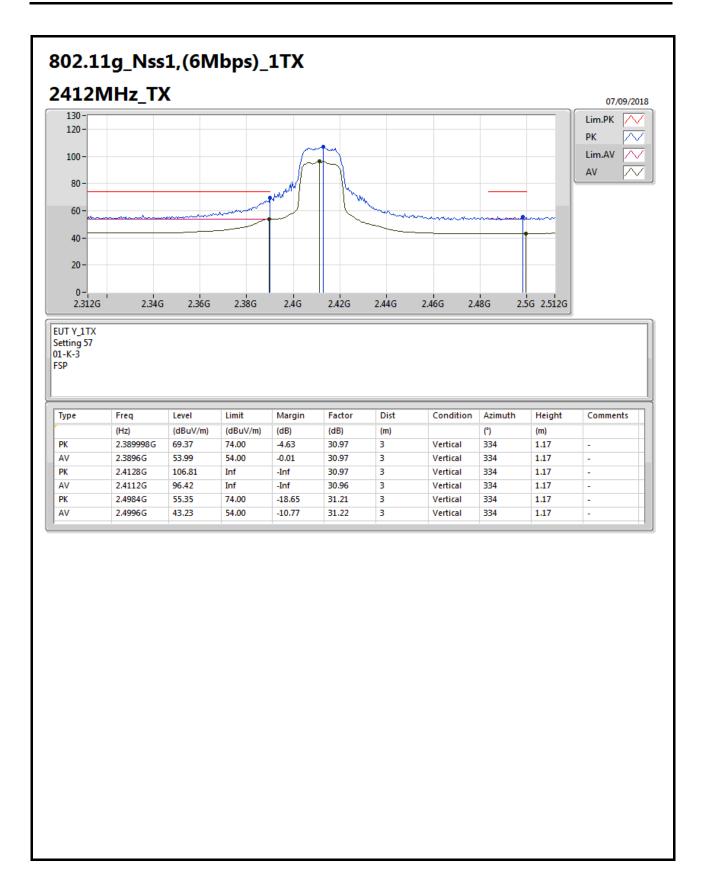




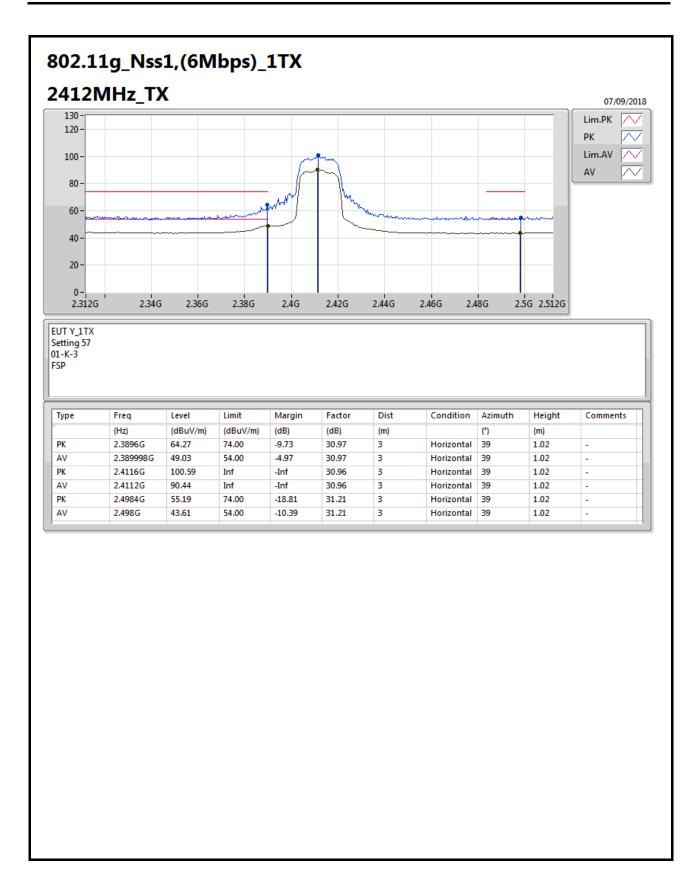






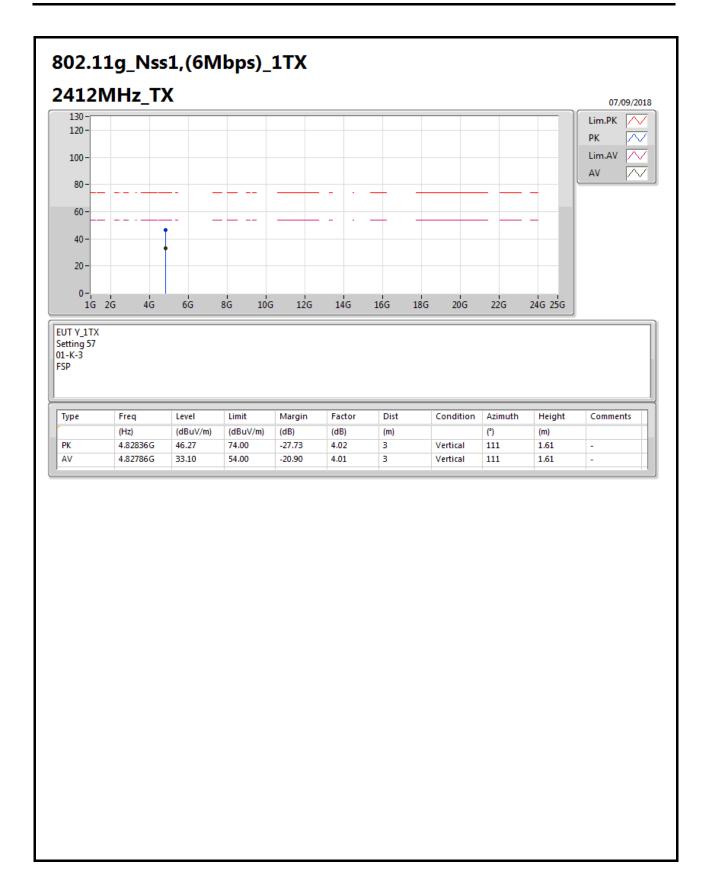




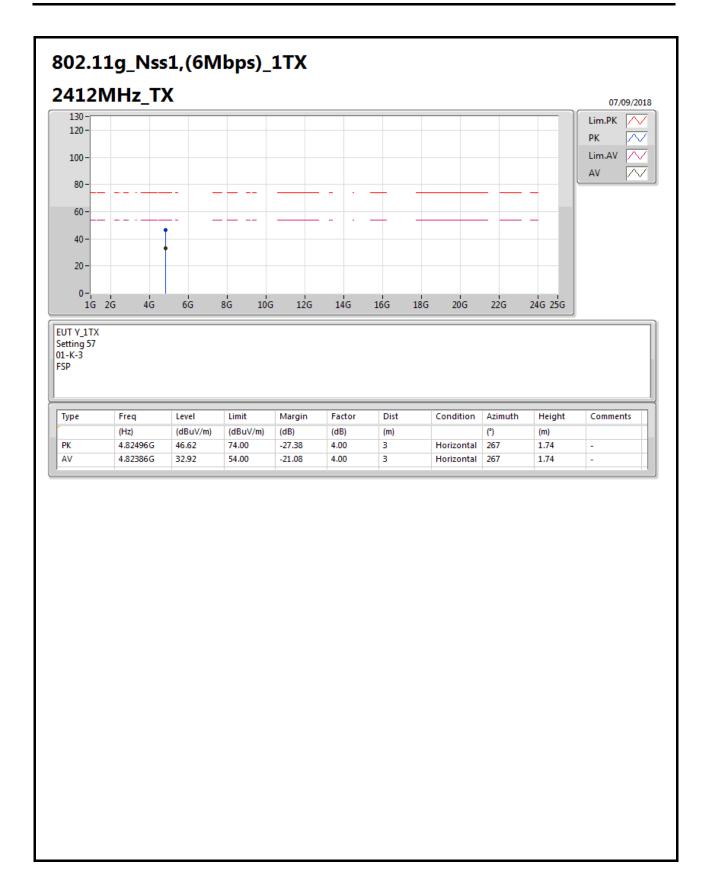


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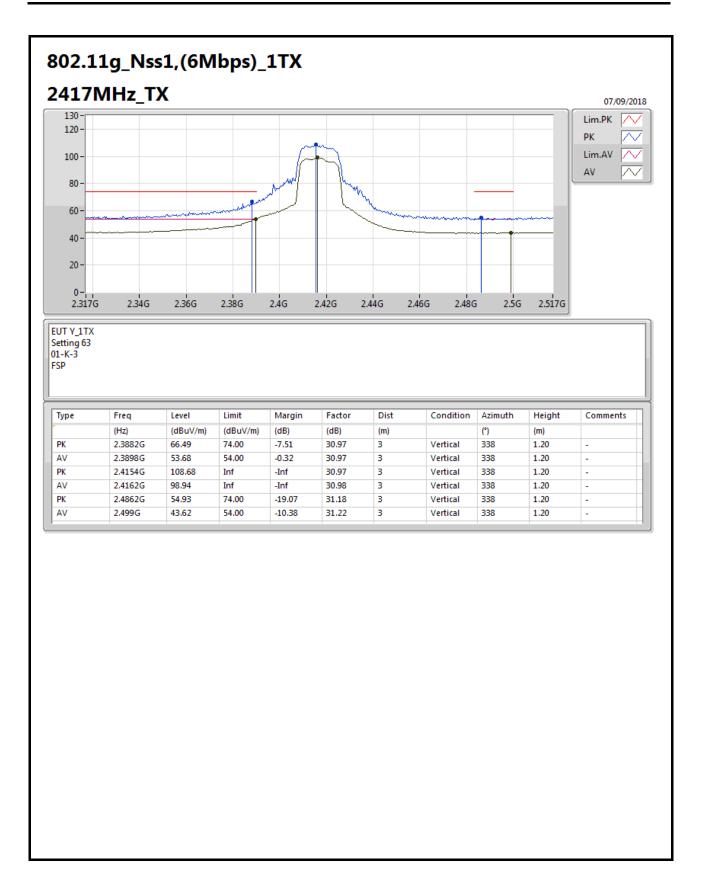




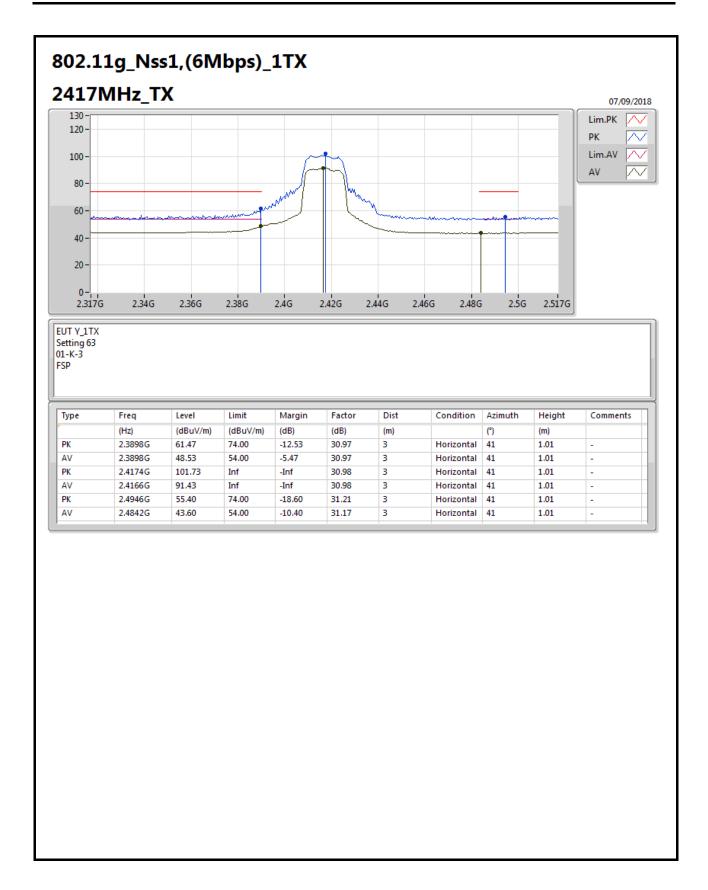






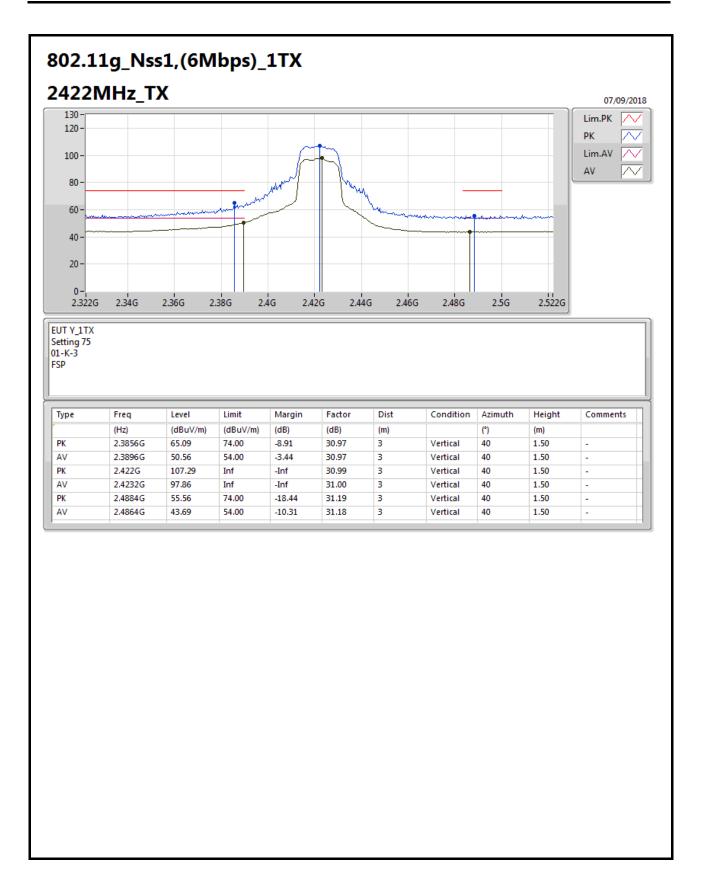




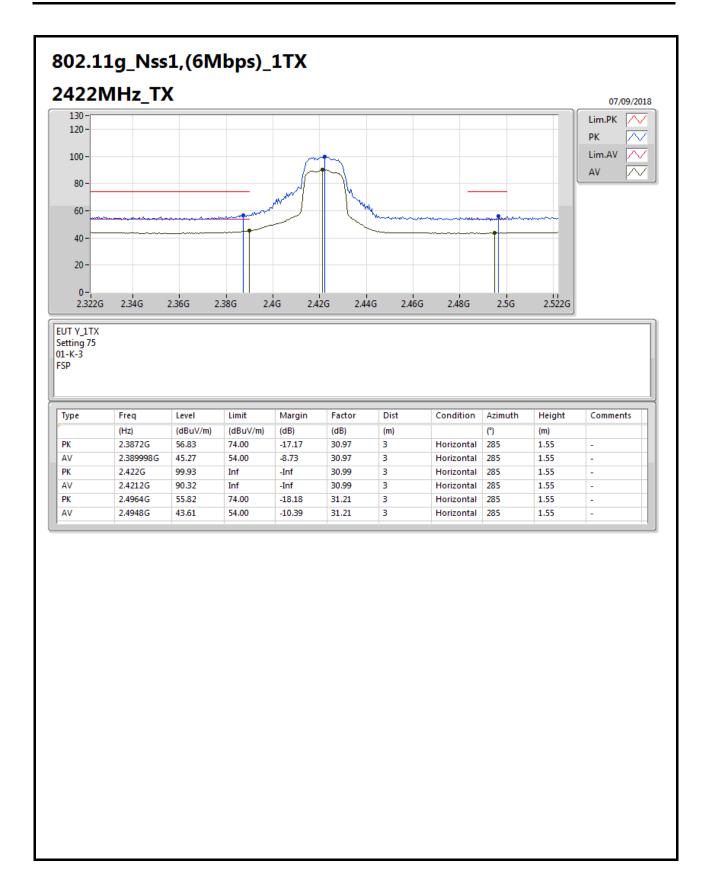


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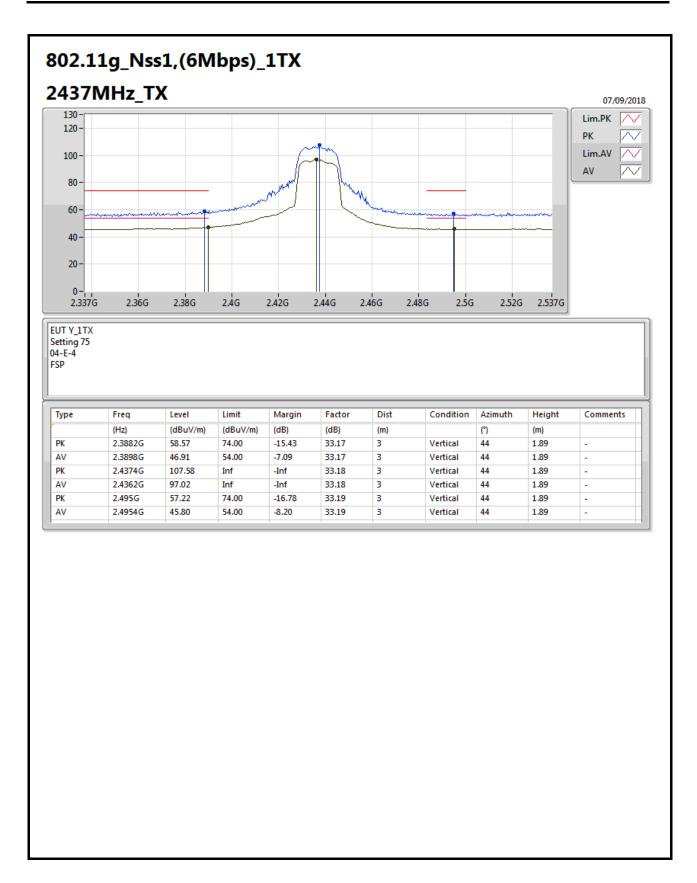






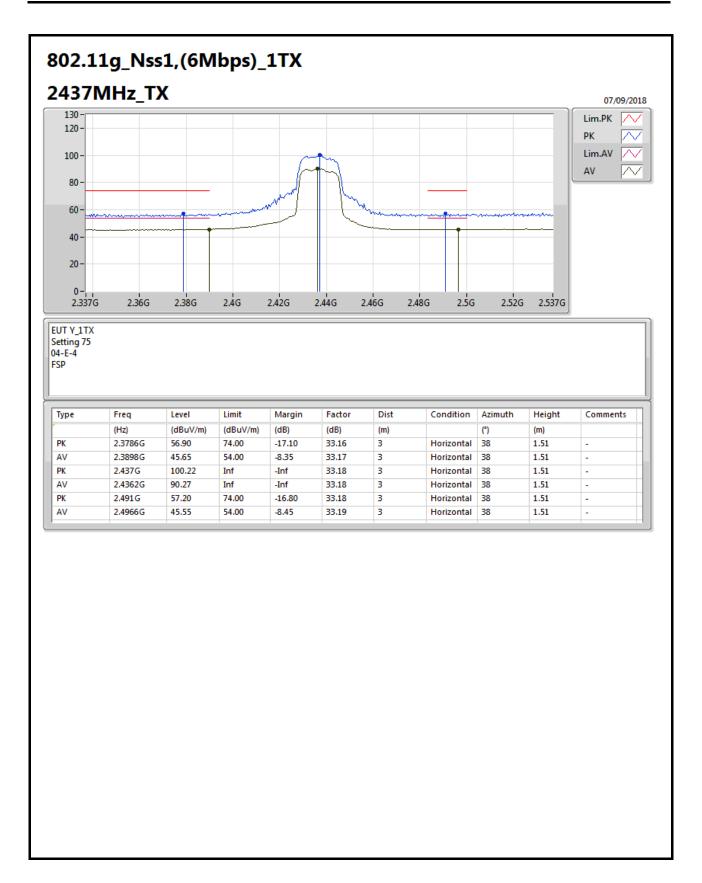
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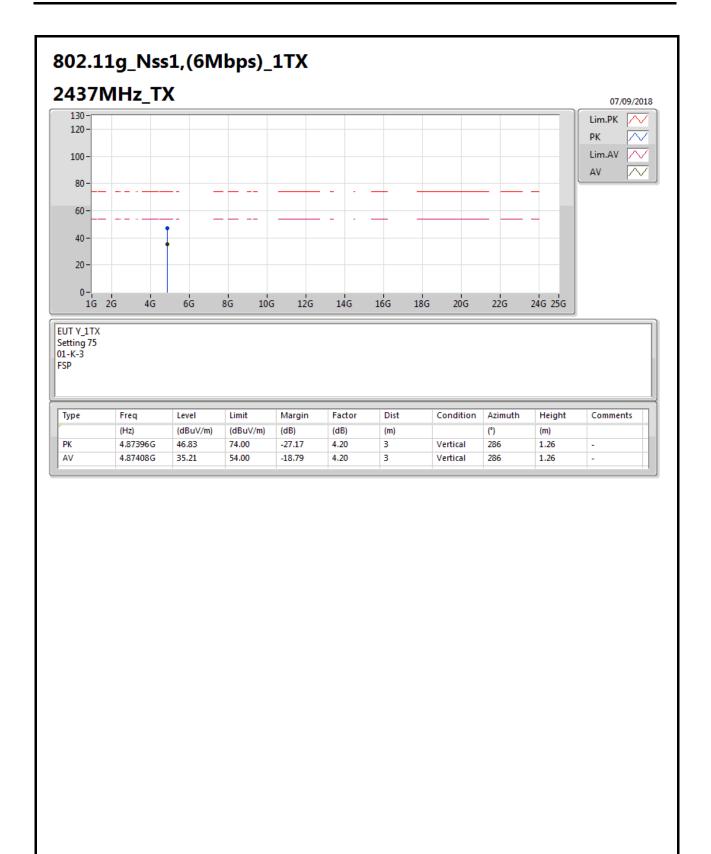


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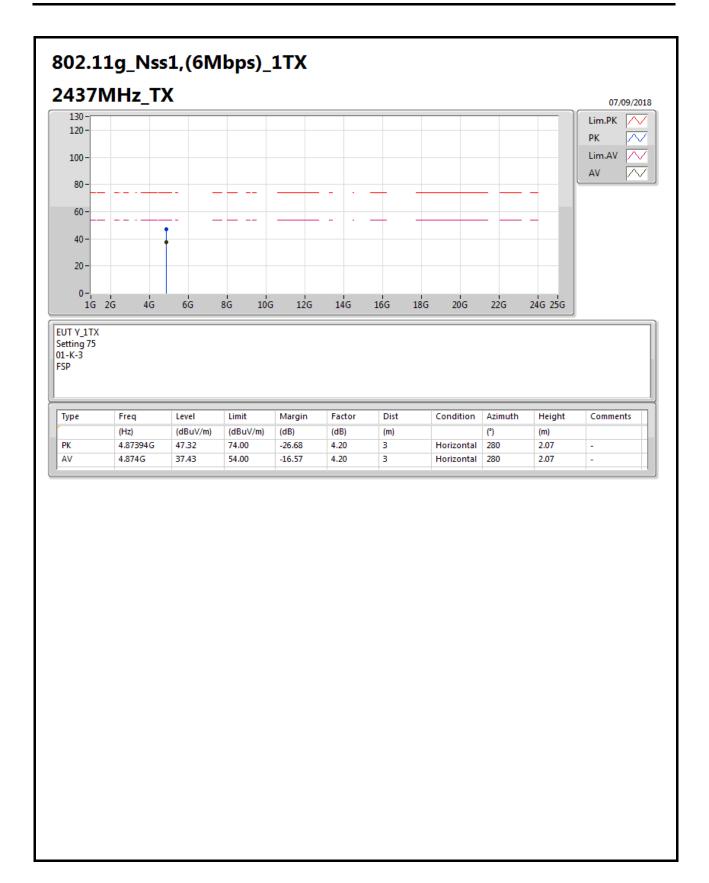






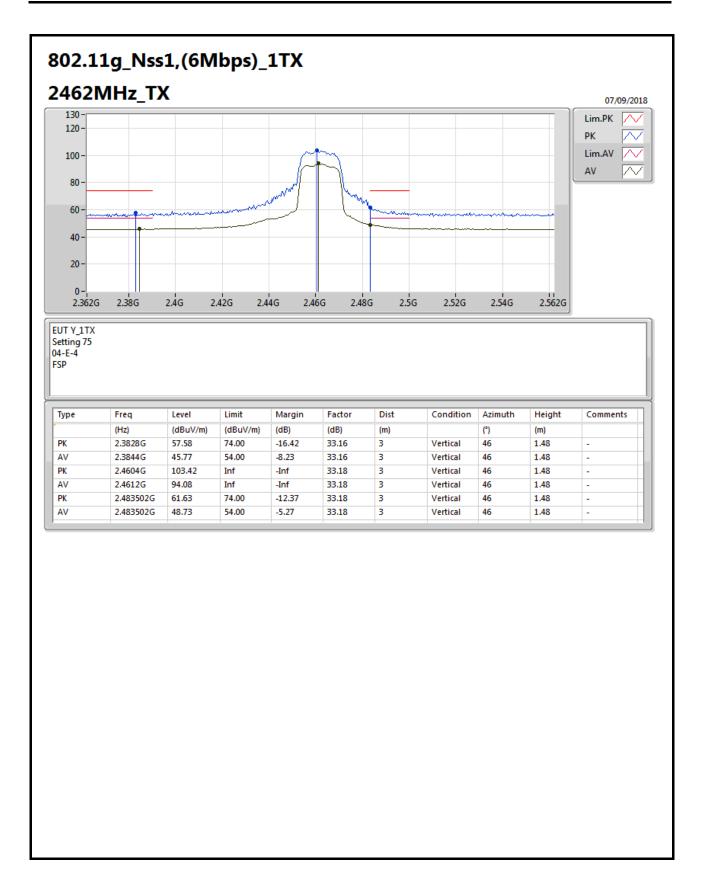
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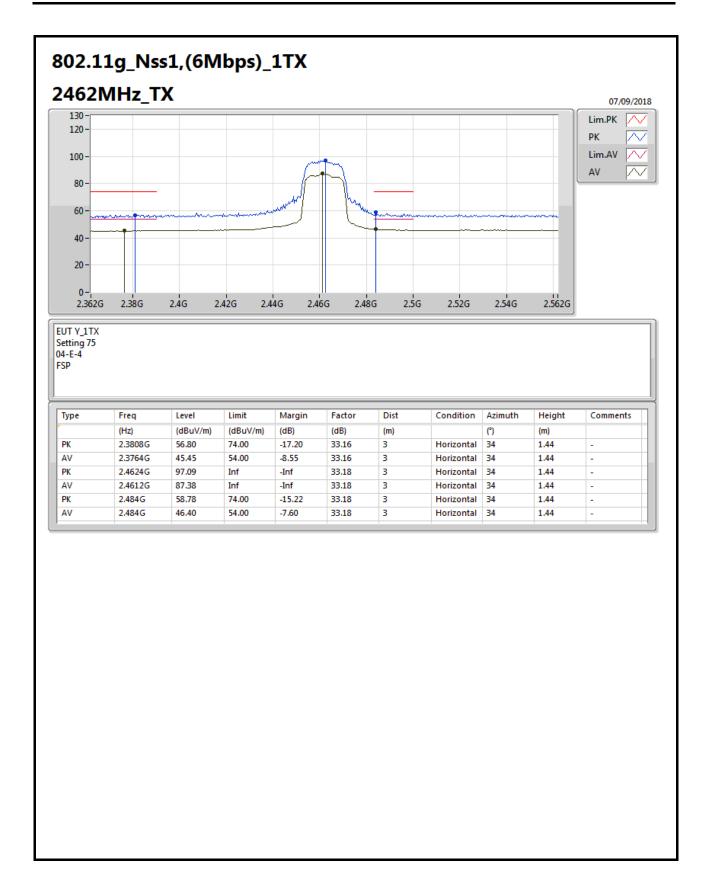
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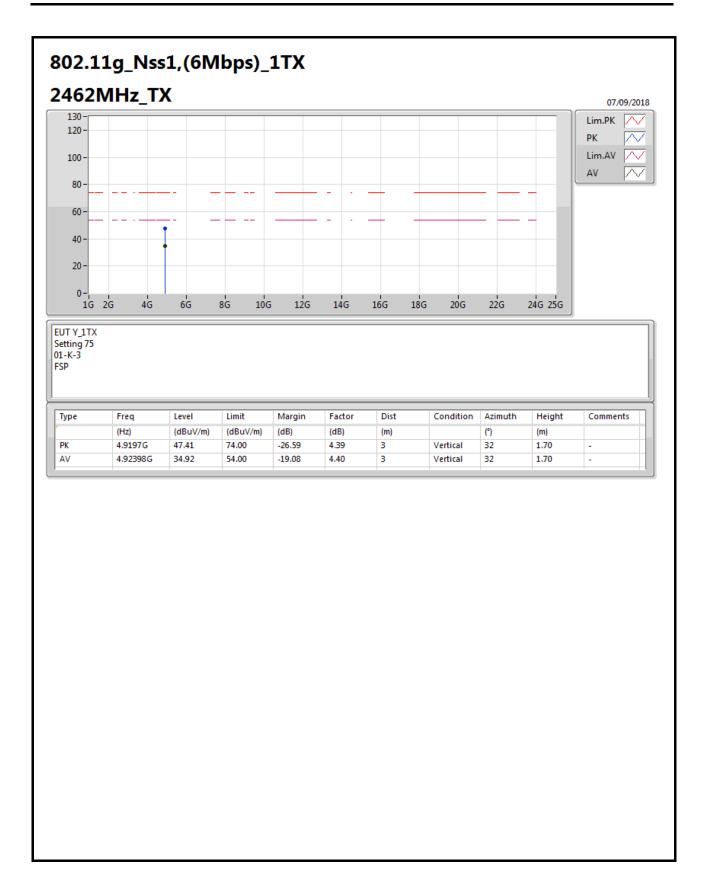


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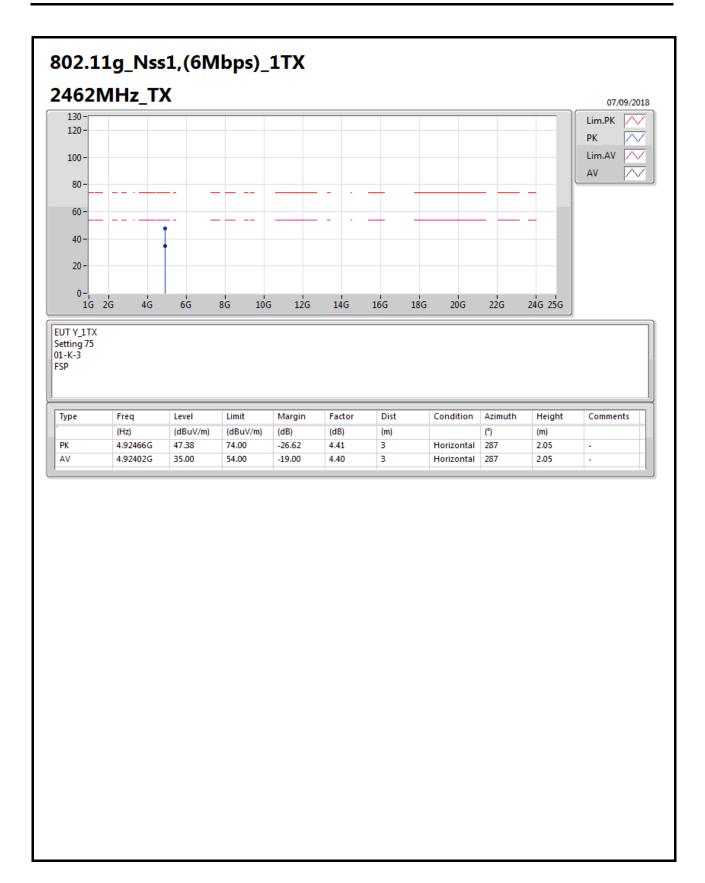






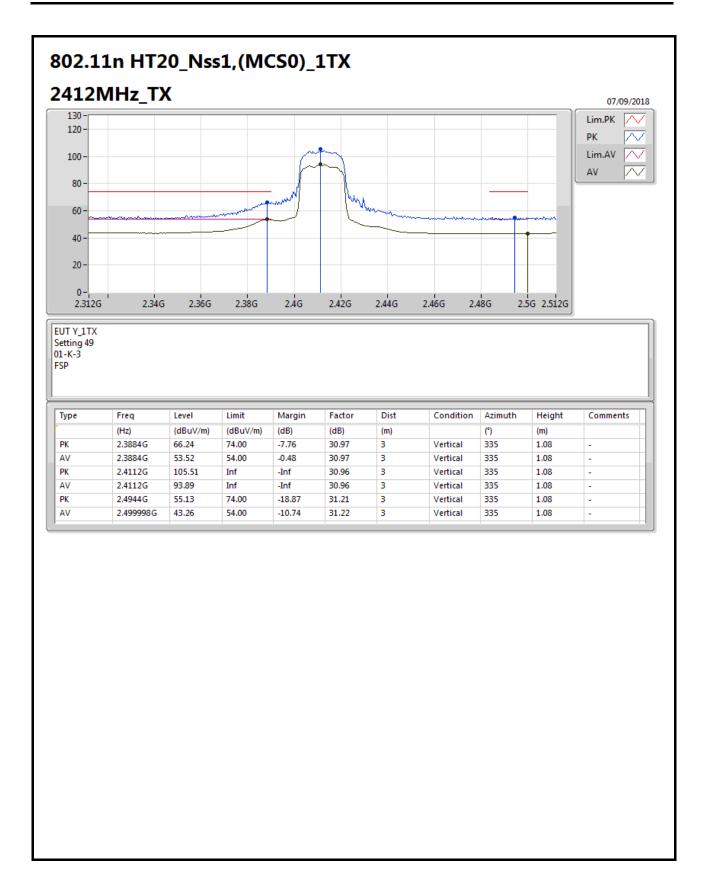






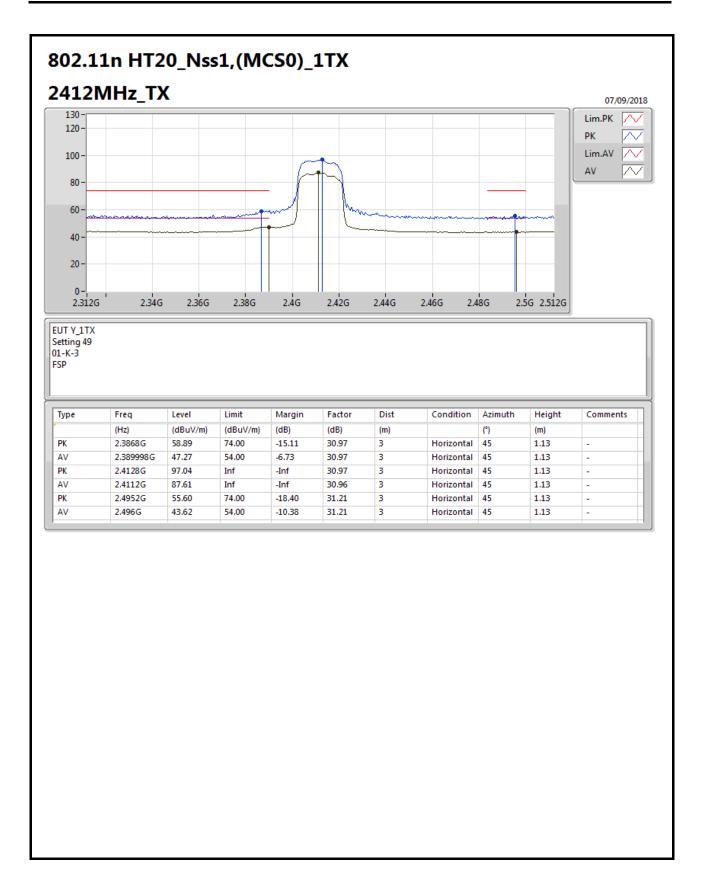
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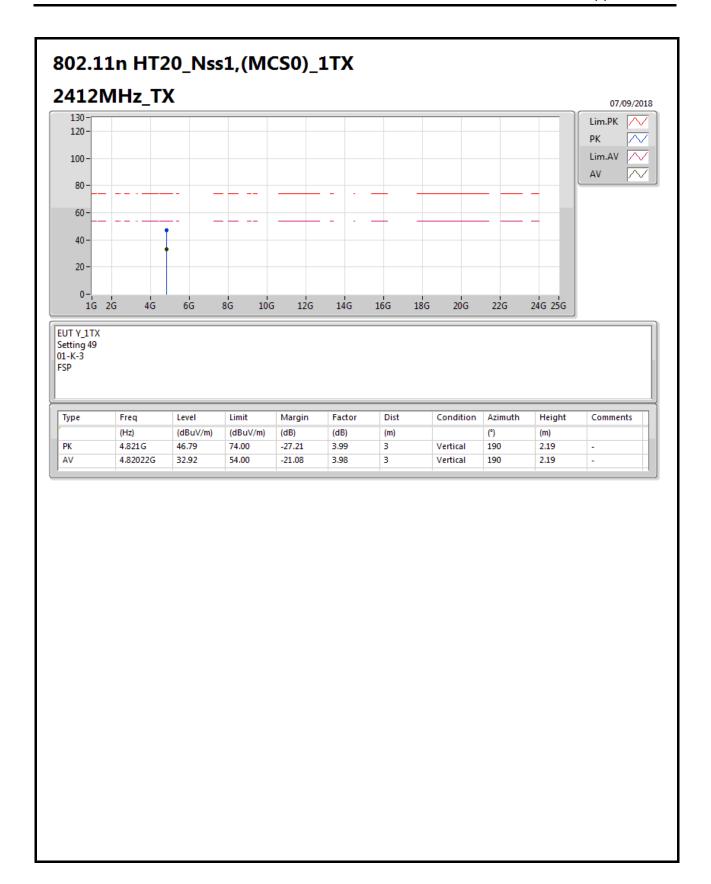


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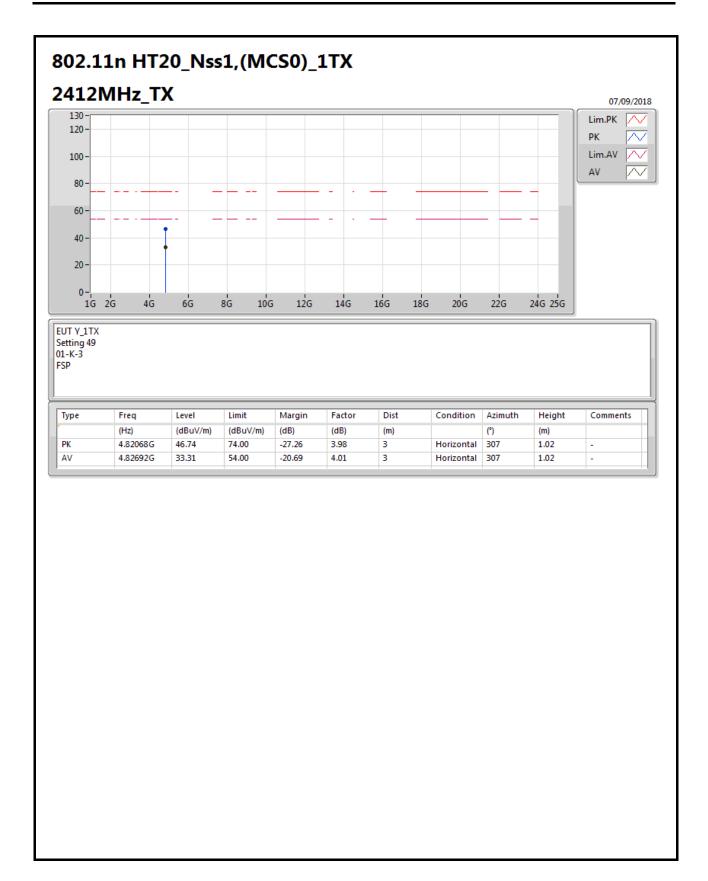




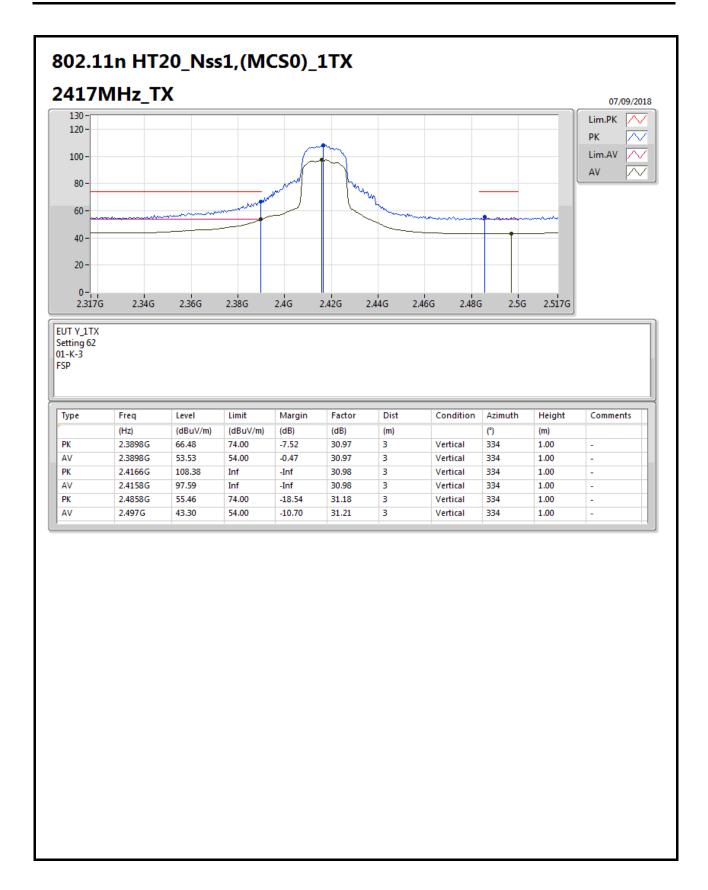


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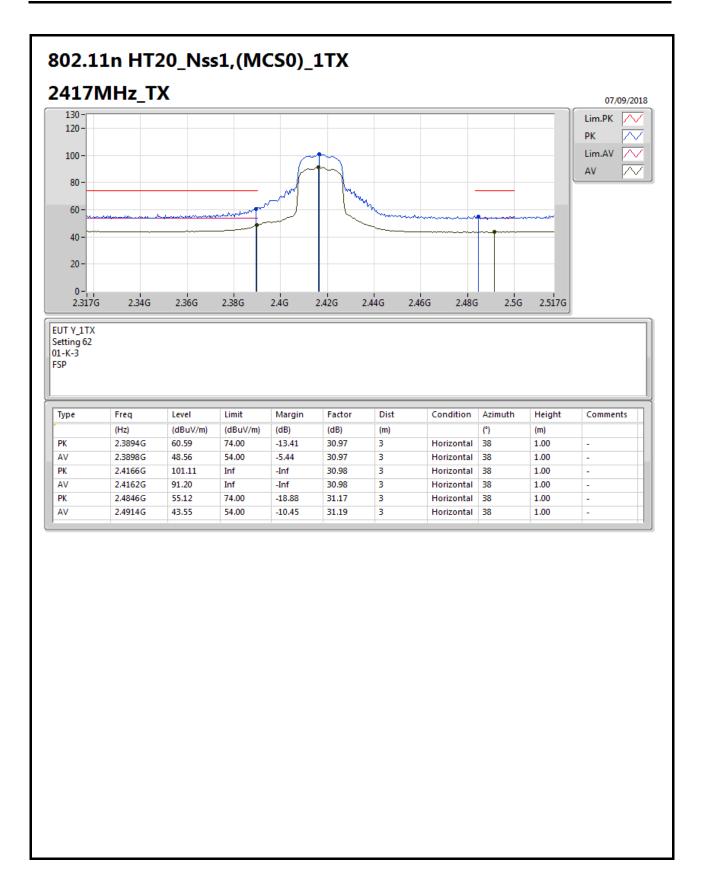




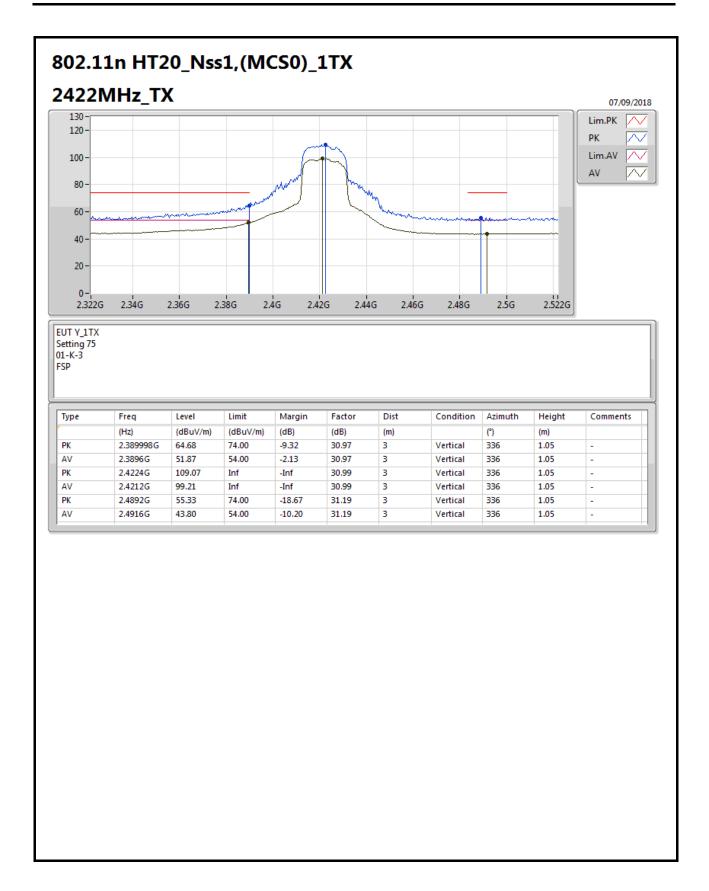


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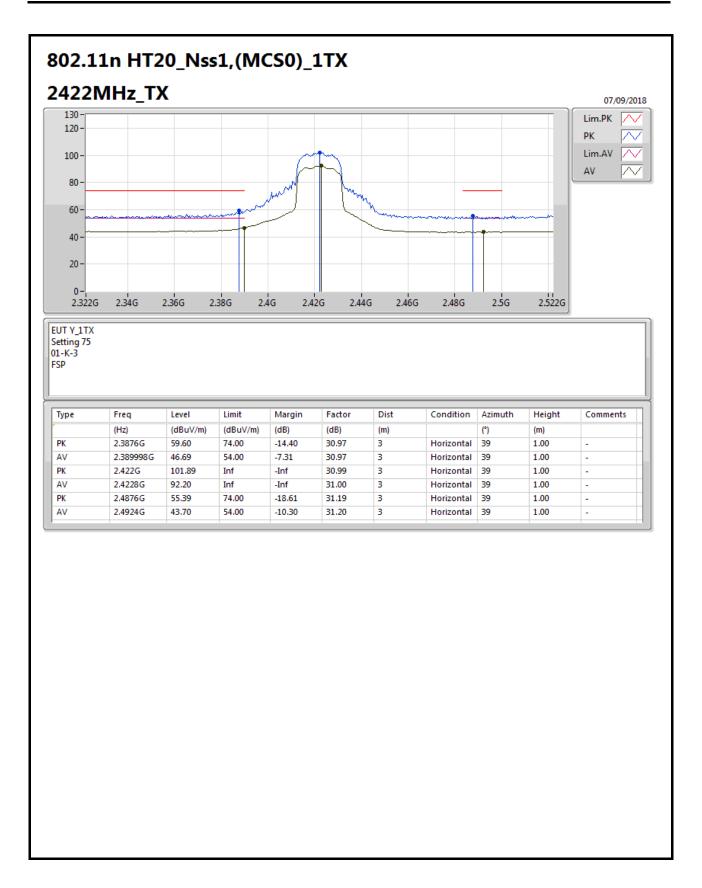






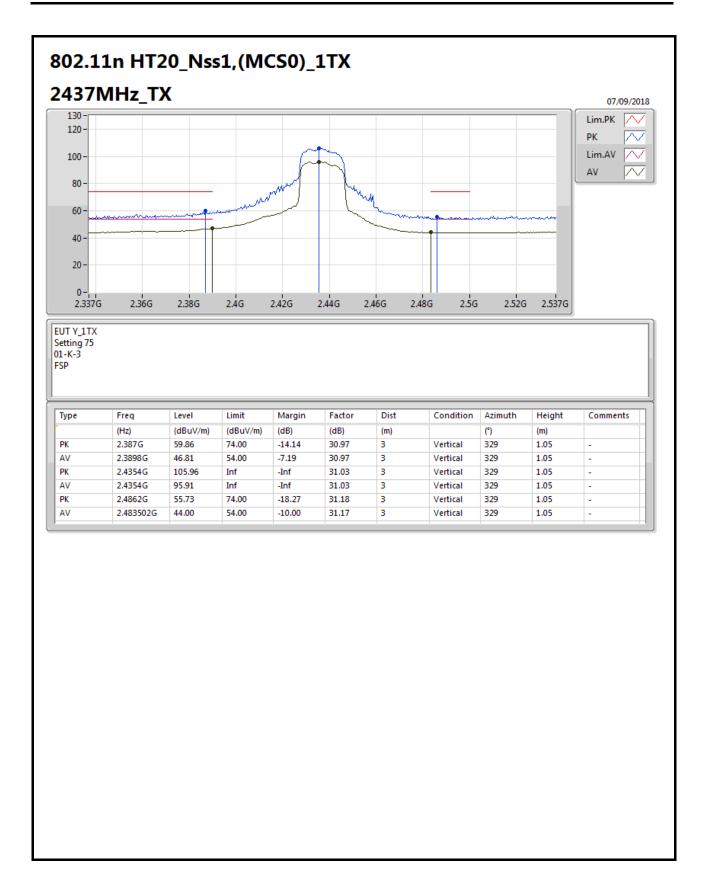




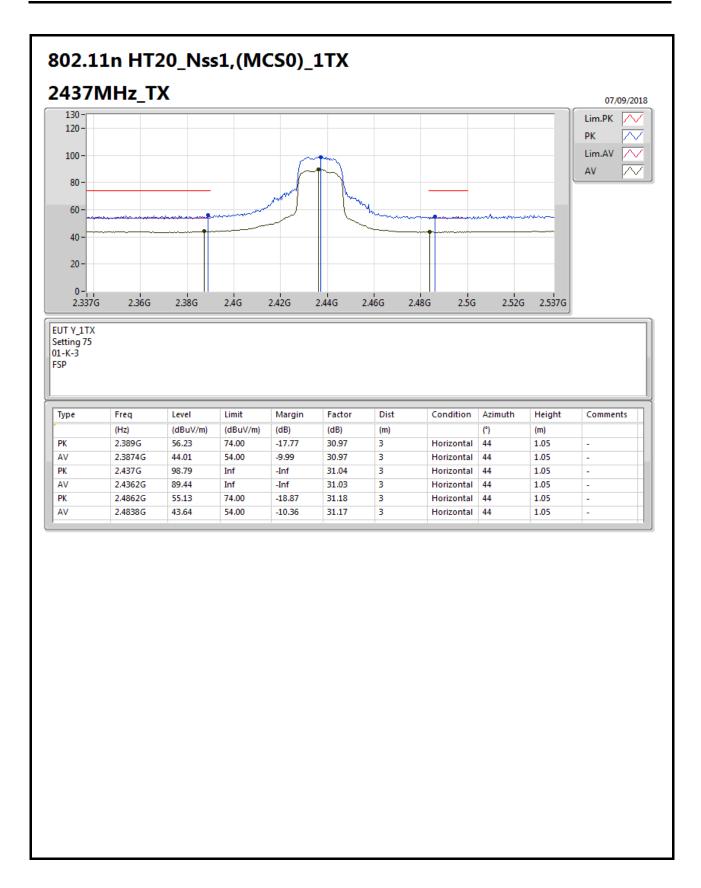


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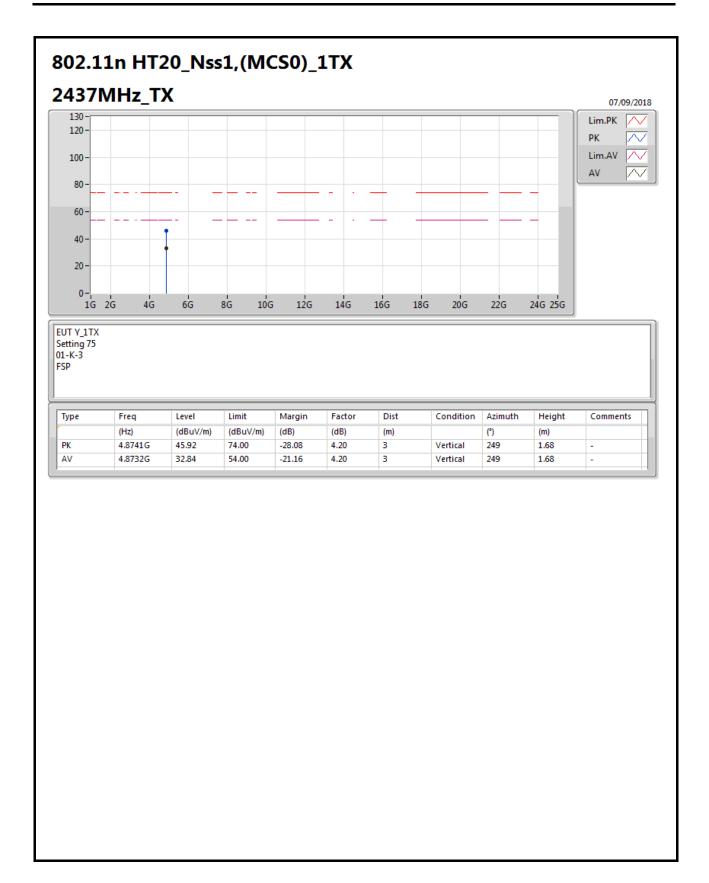




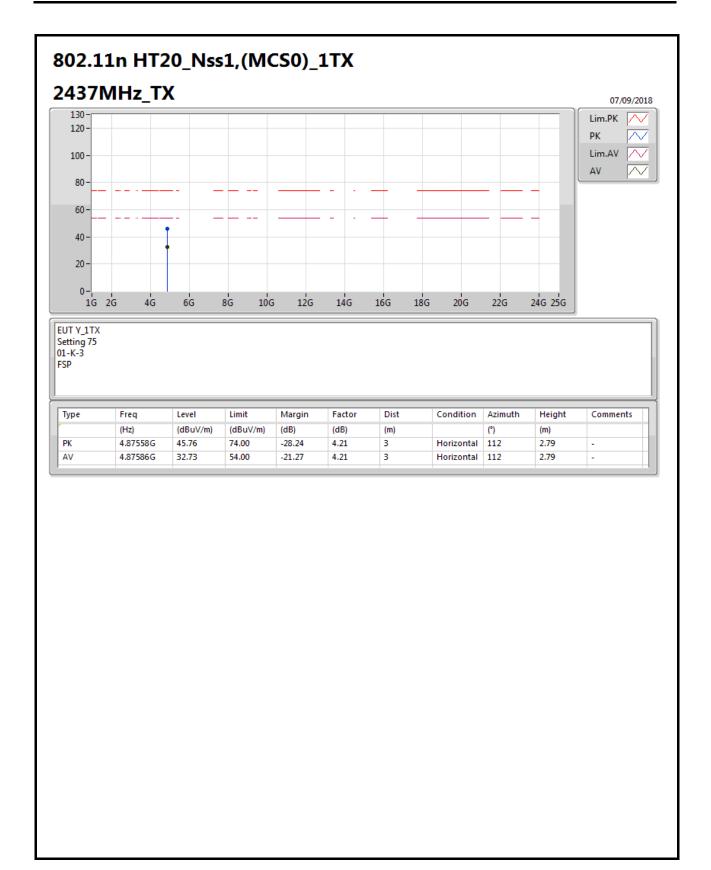












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