

Report No.: FR642211-01AB



FCC RADIO TEST REPORT

FCC ID : U4P-CGNM2252

Equipment : Wireless Cable Gateway

Brand Name : hitron

: CGNM-2252 & CGNM-3552 Model Name

: Hitron TECHNOLOGIES Applicant

No.1-8, LISING 1ST RD., HSINCHU SCIENCE PARK,

HSINCHU 300, Taiwan

: Hitron TECHNOLOGIES Manufacturer

No.1-8, LISING 1ST RD., HSINCHU SCIENCE PARK,

HSINCHU 300, Taiwan

Standard : 47 CFR FCC Part 15.407

The product was received on Mar. 23, 2016, and testing was started from Dec. 20, 2017 and completed on May 02, 2018. We, SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

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

Approved by: Sam Chen

SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory

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TEL: 886-3-656-9065

FAX: 886-3-656-9085

Report Template No.: CB Ver1.0

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: May 17, 2018

Report Version : 01

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Appendix A. Test Results of AC Power-line Conducted Emissions

Appendix B. Test Results of Unwanted Emissions

Photographs of EUT v01

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History of this test report

Report No. : FR642211-01AB

Report No.	Version	Description	Issued Date
FR642211-01AB	01	Initial issue of report	May 17, 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	15.407(b)	Unwanted Emissions	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 Number
5150-5250	a, n (HT20), ac (VHT20)	5180-5240	36-48 [4]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40)	5190-5230	38-46 [2]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80)	5210	42 [1]
5725-5850		5775	155 [1]

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Band	Mode	BWch (MHz)	Nant
5150-5250	11a	20	3
5150-5250	802.11n HT20	20	3
5150-5250	802.11ac VHT20	20	3
5150-5250	802.11n HT40	40	3
5150-5250	802.11ac VHT40	40	3
5150-5250	802.11ac VHT80	80	3
5725-5850	11a	20	3
5725-5850	802.11n HT20	20	3
5725-5850	802.11ac VHT20	20	3
5725-5850	802.11n HT40	40	3
5725-5850	802.11ac VHT40	40	3
5725-5850	802.11ac VHT80	80	3

Note:

- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40, and VHT80 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- BWch is the nominal channel bandwidth.
- Nss-Min is the minimum number of spatial streams.
- Nant is the number of outputs. e.g., 2(2,3) means have 2 outputs for port 2 and port 3. 2 means have 2 outputs for port 1 and port 2.

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1.1.2 Antenna Information

								Gain (dBi)		
Ant.	Chain	n Port B	Port Brand	Model Name	Туре	Connector	2.4011-	5GHz		
							2.4GHz	Band 1	Band 4	
1	1	1	Airgain	N2420GS-T-PK1-G65U	PIFA	I-PEX	6.25	-	-	
2	2	2	Airgain	N2420GS-T-PK1-G100U	PIFA	I-PEX	3.45	-	-	
3	3	3	Airgain	N2420GS-T-PK1-G160UR2	PIFA	I-PEX	4.93	-	-	
4	4	1	Airgain	N5x20BS-T-PK1-G150U	PIFA	I-PEX	-	3.09	3.09	
5	5	2	Airgain	N5x20B-T-PK1-B85U	PIFA	I-PEX	-	4.21	4.21	
6	6	3	Airgain	N5x20BS-T-PK1-G40U	PIFA	I-PEX	-	3.80	3.80	

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Note: The EUT has six antennas.

For 2.4GHz function:

For IEEE 802.11b/g/n mode:

Chain 1, Chain 2 and Chain 3 can be used as transmitting/receiving antenna.

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

For 5GHz function:

For IEEE 802.11a/n/ac mode:

Chain 4, Chain 5 and Chain 6 can be used as transmitting/receiving antenna.

Chain 4, Chain 5 and Chain 6 could transmit/receive simultaneously.

1.1.3 Mode Test Duty Cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle (%)	Duty Factor (dB)	1/T Minimum VBW (kHz)
802.11a	2.020	2.100	96.19%	0.17	0.50
802.11ac MCS0/Nss1 VHT20	1.900	2.020	94.06%	0.27	0.53
802.11ac MCS0/Nss1 VHT40	0.910	1.000	91.00%	0.41	1.10
802.11ac MCS0/Nss1 VHT80	0.442	0.518	85.33%	0.69	2.26

1.1.4 EUT Operational Condition

EUT Power Type	From power adapter				
Beamforming Function ☐ With beamforming ☐ Without beamforming					
Function	☐ Outdoor P2M	\boxtimes	Indoor P2M		
Function	Fixed P2P		Client		
Test Software Version ART2-GUI					

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1.1.5 Table for Multiple Listing

1. The model names in the following table are all refer to the identical product.

Model Name	Description
CGNM-2252	
CGNM-3552	All the models are identical, the different model names served as marketing strategy.

From the above models, model: CGNM-2252 was selected as representative model for the test and its data was recorded in this report.

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2. The EUT has two sources of power amplifier for 5GHz only. Please refer to the following table for detail information.

Power Amplifier	Brand Name	Model Name
Main source	SKYWORKS	SE5003L1-R
Second source	Qorvo	RFPA5542B

1.1.6 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR642211AB Below is the table for the change of the product with respect to the original one.

	Modifications	Performance Checking
1.	Adding the second source of power amplifier	
	for 5GHz only (Brand Name: Qorvo, Model	Unwanted Emissions test.
	Name: RFPA5542B).	
2.	Adding the adapter 2 (Brand Name: MOSO,	AC Power-line Conducted Emissions test.
	Model Name: MSA-C2500IS12.0-30D-US).	Unwanted Emissions below 1GHz test.
3.	Updating test rule of 5GHz band 4 to	
	"15.407 (b)(4)(i) of New Rules (ET Docket No.	Band Edge Emission of Unwanted Emissions test.
	13-49; FCC 16-24)" from "Old Rules".	
4.	Changing applicant's company and	
	manufacturer's company to "Hitron	
	TECHNOLOGIES" from "Hitron Technologies	
	Inc.".	
5.	Changing applicant address and Manufacturer	It does not affect the test.
	Address to "No.1-8, LISING 1ST RD.,	
	HSINCHU SCIENCE PARK, HSINCHU 300,	
	Taiwan" from "No.1-8, Li-Hsin 1st Rd. Hsinchu	
	Science Park, Hsinchu 300, Taiwan".	

Note: Unwanted Emissions above 1GHz test will be based on original output power to re-test.

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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 789033 D02 v02r01
- FCC KDB 662911 D01 v02r01

1.3 Testing Location Information

	Testing Location							
	HWA YA	ADD	:	lo. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.				
		TEL	:	886-3-327-3456 FAX : 886-3-318-0055				
\boxtimes	JHUBEI	ADD	:	No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.				
		TEL	:	886-3-656-9065 FAX : 886-3-656-9085				

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
Radiated	03CH01-CB (below 1GHz)	Eddie Weng, Ekko Hsieh	22°C / 54%	Apr. 10, 2018~Apr. 30, 2018
Radiated	03CH01-CB (above1GHz)	Eddie Weng, Ekko Hsieh	22°C / 54%	Dec. 20, 2017~Apr. 10, 2018
AC Conduction	CO01-CB	Howard Liu	23°C / 58%	May 02, 2018

Test site Designation No. TW0006 with FCC

Test site registered number IC 4086D with Industry Canada.

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	3.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%

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2 Test Configuration of EUT

2.1 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	CTX	
1	2.4GHz WLAN function - Main source of Power Amplifier + Adapter 2	
2 5GHz WLAN function - Main source of Power Amplifier + Adapter 2		
3	3 2.4GHz WLAN function - Second source of Power Amplifier + Adapter 1	
4	5GHz WLAN function - Second source of Power Amplifier + Adapter 1	
5	2.4GHz WLAN function - Second source of Power Amplifier + Adapter 2	
6	5GHz WLAN function - Second source of Power Amplifier + Adapter 2	
For operating mode 3 is the worst case and it was record in this test report.		

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Th	The Worst Case Mode for Following Conformance Tests		
Tests Item	Unwanted Emissions		
Test Condition Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in regardless of spatial multiplexing MIMO configuration), the radiated test so be performed with highest antenna gain of each antenna type.			
Operating Mode < 1GHz	CTX		
1	2.4GHz WLAN function - Main source of Power Amplifier + Adapter 2		
2	5GHz WLAN function - Main source of Power Amplifier + Adapter 2		
3	2.4GHz WLAN function - Second source of Power Amplifier + Adapter 1		
4	5GHz WLAN function - Second source of Power Amplifier + Adapter 1		
5	2.4GHz WLAN function - Second source of Power Amplifier + Adapter 2		
6 5GHz WLAN function - Second source of Power Amplifier + Adapter 2			
For operating mode 4 is the worst case and it was record in this test report.			
Operating Mode > 1GHz CTX			

The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation		
Operating Mode	Operating Mode		
1 2.4GHz WLAN + 5GHz WLAN			
Refer to Sporton Test Report No.: FA642211-01 for Co-location RF Exposure Evaluation.			

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Note:

- The EUT can only use Y axis position.
- VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.

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2.2 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

2.3 Accessories

	Accessories				
No.	Equipment Name	Brand Name	Model Name	Rating	
1	Adapter 1	AtechOEM	ADS0306-W120250	Input: 100-240V ~ 50-60Hz 1.0A Output: 12V, 2.5A	
2	Adapter 2	MOSO	MSA-C2500IS12.0-30D-US	Input: 100-240V ~ 50/60Hz 1.0A max. Output: 12.0V, 2.5A	
No.	Equipment Name				
3	Pedestal*1				

2.4 Support Equipment

For Test Site No: CO01-CB

	Support Equipment			
No.	Equipment	Brand Name	Model Name	FCC ID
1	NB	DELL	E6430	DoC
2	Flash disk3.0	ADATA	C103	DoC
3	Flash disk3.0	ADATA	C103	DoC

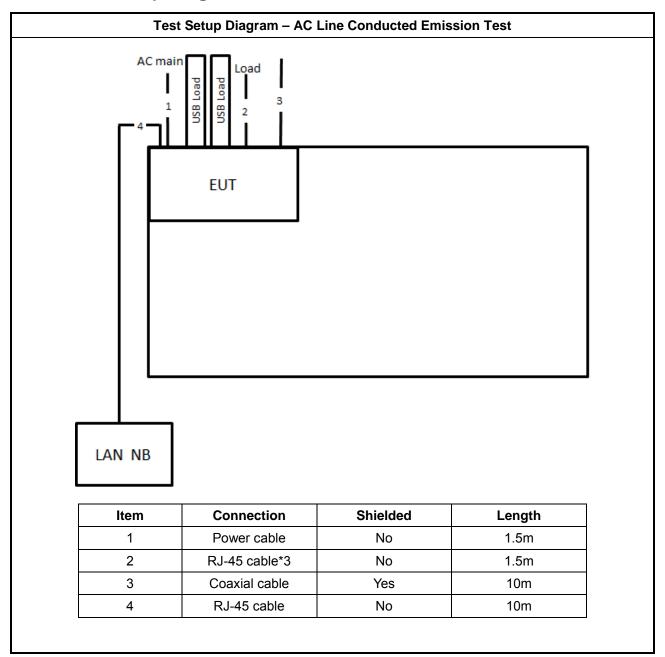
For Test Site No: 03CH01-CB

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

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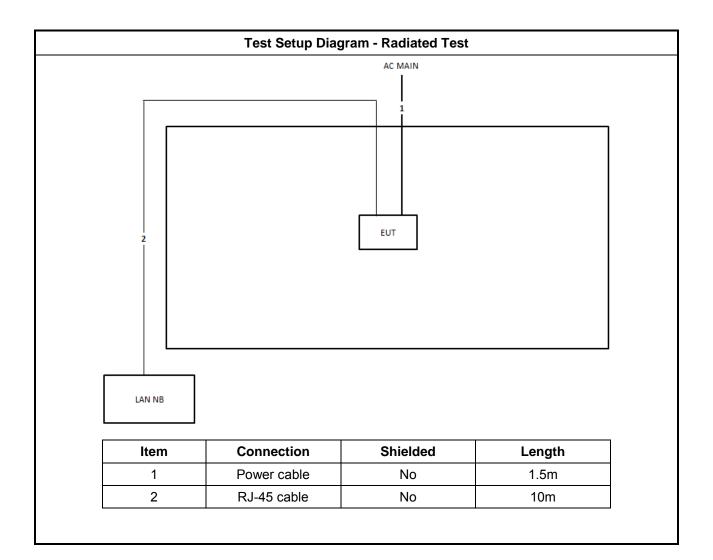
Test Setup Diagram 2.5



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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

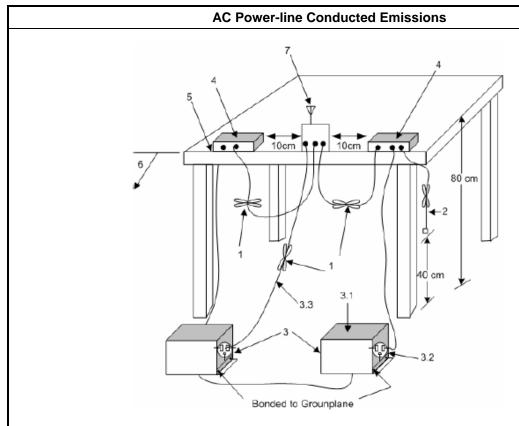
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

	Test Method
\boxtimes	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 Unwanted Emissions

3.2.1 Transmitter Radiated Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz 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.

	Un-restricted band emissions above 1GHz Limit		
Operating Band	Limit		
⊠ 5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
☐ 5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
☐ 5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
⊠ 5.725 - 5.85 GHz	all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		

Note 1: 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

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linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

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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

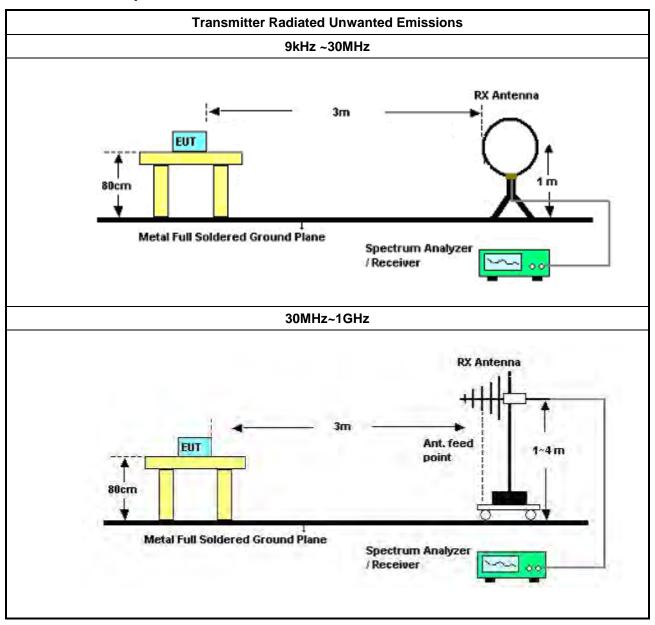
Test Method

- 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. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. 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).
- The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].
- For the transmitter unwanted emissions shall be measured using following options below:
 - Refer as FCC KDB 789033, clause H)2) for unwanted emissions into non-restricted bands.
 - Refer as FCC KDB 789033, clause H)1) for unwanted emissions into restricted bands.
 - Refer as FCC KDB 789033, H)6) Method AD (Trace Averaging).
 - Refer as FCC KDB 789033, H)6) Method VB (Reduced VBW).
 - 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 789033, clause H)5) measurement procedure peak limit.
 - Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit.
- For radiated measurement.
 - Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
 - Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
 - Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
- The any unwanted emissions level shall not exceed the fundamental emission level.
- All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

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3.2.4 Test Setup



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Above 1GHz

Spectrum Analyzer

Above 1GHz

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3.2.5 Transmitter Unwanted Emissions (Below 30MHz)

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

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

3.2.6 Test Result of Transmitter Unwanted Emissions

Refer as Appendix B

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4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.45GHz	Jan. 31, 2018	Jan. 30, 2019	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50- 16-2	04083	150kHz ~ 100MHz	Dec. 20, 2017	Dec. 19, 2018	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Dec. 29, 2017	Dec. 28, 2018	Conduction (CO01-CB)
COND Cable	Woken	Cable	01	150kHz ~ 30MHz	May 23, 2017	May 22, 2018	Conduction (CO01-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 16, 2018	Mar. 15, 2019	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Aug. 30, 2017	Aug. 29, 2018	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 20, 2017	Nov. 19, 2018	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 05, 2017	Jul. 04, 2018	Radiation (03CH01-CB)
Pre-Amplifier	EMCI	EMC330N	980332	20MHz ~ 3GHz	May 02, 2017	May 01, 2018	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 16, 2017	Jan. 15, 2018	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-H G	1864479	18GHz ~ 40GHz	Jul. 10, 2017	Jul. 09, 2018	Radiation (03CH01-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Nov. 23, 2017	Nov. 22, 2018	Radiation (03CH01-CB)
EMI Test	R&S	ESCS	100355	9kHz ~ 2.75GHz	May 06, 2017	May 05, 2018	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-16+17	N/A	30 MHz ~ 1 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#1	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-40G#2	N/A	18GHz ~ 40 GHz	Oct. 11, 2017	Oct. 10, 2018	Radiation (03CH01-CB)

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

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

TEL: 886-3-656-9065 FAX: 886-3-656-9085

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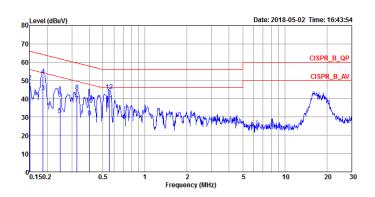
Issued Date : May 17, 2018

Report Version : 01

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AC Power-line Conducted Emissions Result

AC Power-line Conducted Emissions Result								
Operating Mode 3 Power Phase Neutral								
Operating Function	СТХ							



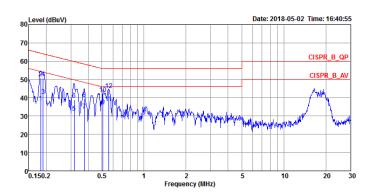
			Over	Limit	Read	LISN	Cable		
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1500	35.60	-20.40	56.00	25.34	10.10	0.16	Average	NEUTRAL
2	0.1500	49.35	-16.65	66.00	39.09	10.10	0.16	QP	NEUTRAL
3	0.1864	43.64	-10.56	54.20	33.49	10.01	0.14	Average	NEUTRAL
4	0.1864	52.74	-11.46	64.20	42.59	10.01	0.14	QP	NEUTRAL
5	0.2468	31.36	-20.50	51.86	21.19	10.08	0.09	Average	NEUTRAL
6	0.2468	40.24	-21.62	61.86	30.07	10.08	0.09	QP	NEUTRAL
7	0.3268	37.74	-11.79	49.53	27.51	10.19	0.04	Average	NEUTRAL
8	0.3268	44.13	-15.40	59.53	33.90	10.19	0.04	QP	NEUTRAL
9	0.3997	29.89	-17.97	47.86	19.62	10.26	0.01	Average	NEUTRAL
10	0.3997	36.79	-21.07	57.86	26.52	10.26	0.01	QP	NEUTRAL
11	0.5552	38.06	-7.94	46.00	27.78	10.21	0.07	Average	NEUTRAL
12	0.5552	44.26	-11.74	56.00	33.98	10.21	0.07	QP	NEUTRAL

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AC Power-line Conducted Emissions Result

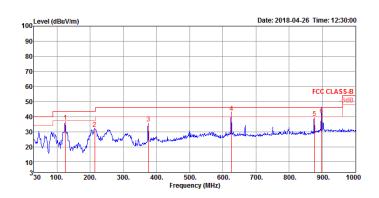
AC Power-line Conducted Emissions Result								
Operating Mode	3	Power Phase	Line					
Operating Function	СТХ							



			0ver	Limit	Read	LISN	Cable		
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1825	37.40	-16.97	54.37	27.35	9.91	0.14	Average	LINE
2	0.1825	50.88	-13.49	64.37	40.83	9.91	0.14	QP	LINE
3	0.1904	41.14	-12.88	54.02	31.10	9.91	0.13	Average	LINE
4	0.1904	50.85	-13.17	64.02	40.81	9.91	0.13	QP	LINE
5	0.3166	31.95	-17.85	49.80	21.97	9.93	0.05	Average	LINE
6	0.3166	39.06	-20.74	59.80	29.08	9.93	0.05	QP	LINE
7	0.3751	32.94	-15.45	48.39	22.98	9.94	0.02	Average	LINE
8	0.3751	39.64	-18.75	58.39	29.68	9.94	0.02	QP	LINE
9	0.5101	35.54	-10.46	46.00	25.53	9.95	0.06	Average	LINE
10	0.5101	42.09	-13.91	56.00	32.08	9.95	0.06	QP	LINE
11	0.5581	37.15	-8.85	46.00	27.13	9.95	0.07	Average	LINE
12	0.5581	44.30	-11.70	56.00	34.28	9.95	0.07	QP	LINE

RSE below 1GHz Result

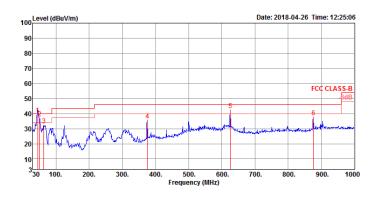
RSE below 1GHz Result									
Operating Mode	4	Polarization	Horizontal						
Operating Function	СТХ								



Freq	Level								1/Pos	Remark	Pol/Phase
MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
125.06	36.59	43.50	-6.91	49.19	1.15	18.60	32.35	300	247	Peak	HORIZONTAL
214.30	32.00	43.50	-11.50	45.81	2.08	16.40	32.29	125	265	Peak	HORIZONTAL
375.32	35.55	46.00	-10.45	43.73	2.22	21.88	32.28	100	206	Peak	HORIZONTAL
625.58	42.81	46.00	-3.19	47.22	2.76	25.21	32.38	125	282	QP	HORIZONTAL
875.84	39.31	46.00	-6.69	39.92	3.60	27.50	31.71	100	261	Peak	HORIZONTAL
897.18	40.98	46.00	-5.02	40.31	4.62	27.68	31.63	100	220	QP	HORIZONTAL
	MHz 125.06 214.30 375.32 625.58 875.84	MHz dBuV/m 125.06 36.59 214.30 32.00 375.32 35.55 625.58 42.81 875.84 39.31	Freq Level Line MHz dBuV/m dBuV/m 125.06 36.59 43.50 214.30 32.00 43.50 375.32 35.55 46.00 625.58 42.81 46.00 875.84 39.31 46.00	Freq Level Line Limit	Freq Level Line Limit Level	Freq Level Line Limit Level Loss MHz dBuV/m dB dBuV dB dBuV dB dBuV dB dBuV dB dBuV	Freq Level Line Limit Level Loss Factor	Freq Level Lime Limit Level Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB dB/m dB 125.06 36.59 43.50 -6.91 49.19 1.15 18.60 32.35 214.30 32.00 43.50 -11.50 45.81 2.08 16.40 32.29 375.32 35.55 46.00 -10.45 43.73 2.22 21.88 32.28	Freq Level Lime Limit Level Loss Factor Factor MHz dBuV/m dBuV/m dB dBuV dB dB/m dB cm 125.06 36.59 43.50 -6.91 49.19 1.15 18.60 32.35 300 214.30 32.00 43.50 -11.50 45.81 2.08 16.40 32.29 125 375.32 35.55 46.00 -10.45 43.73 2.22 21.88 32.28 100 625.58 42.81 46.00 -3.19 47.22 2.76 25.21 32.38 125 875.84 39.31 46.00 -6.69 39.92 3.60 27.50 31.71 100	MHz dBuV/m dB dBuV/m dB dBuV dB dB/m dB cm deg 125.06 36.59 43.50 -6.91 49.19 1.15 18.60 32.35 300 247 214.30 32.00 43.50 -11.50 45.81 2.08 16.40 32.29 125 265 375.32 35.55 46.00 -10.45 43.73 2.22 21.88 32.28 100 206 625.58 42.81 46.00 -3.19 47.22 2.76 25.21 32.38 125 288 675.84 39.31 46.00 -6.69 39.92 3.60 27.50 31.71 100 261	NHz Level Lime Limit Level Loss Factor Factor Remark

RSE below 1GHz Result

RSE below 1GHz Result								
Operating Mode	4	Polarization	Vertical					
Operating Function	CTX							



	Freq	Level	Limit					Factor	A/Pos	1/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	44.55	39.69	40.00	-0.31	53.50	1.36	17.25	32.42	100	290	QP	VERTICAL
2	50.37	36.93	40.00	-3.07	53.20	1.43	14.72	32.42	100	0	Peak	VERTICAL
3	63.95	32.41	40.00	-7.59	51.05	1.16	12.60	32.40	200	155	Peak	VERTICAL
4	375.32	35.61	46.00	-10.39	43.79	2.22	21.88	32.28	150	287	Peak	VERTICAL
5	625.58	42.52	46.00	-3.48	46.93	2.76	25.21	32.38	100	223	Peak	VERTICAL
6	875.84	37.81	46.00	-8.19	38.42	3.60	27.50	31.71	125	274	Peak	VERTICAL



RSE TX above 1GHz Result

Appendix B.2

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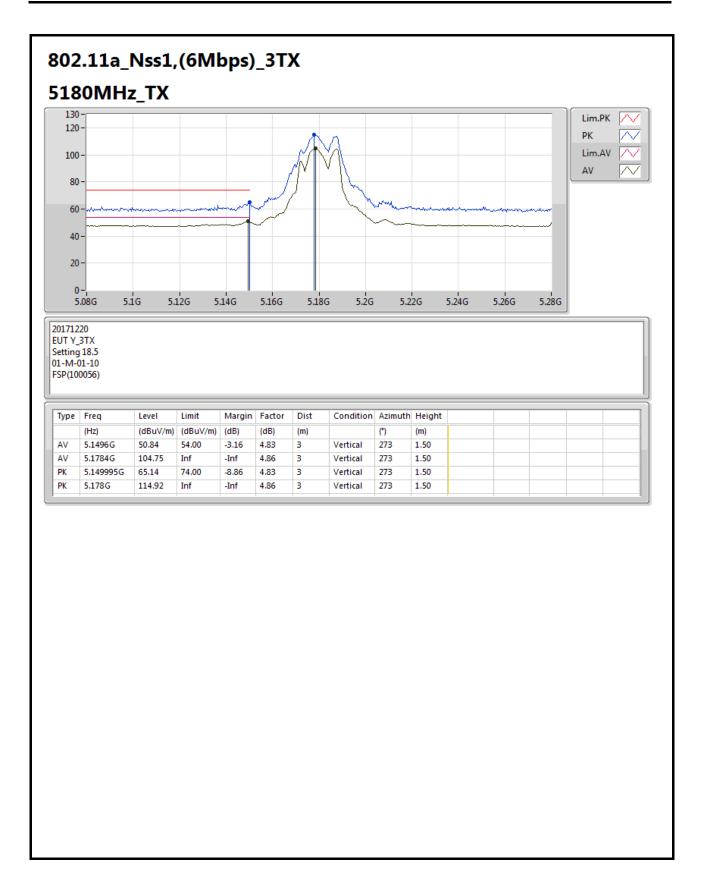
Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
5.15-5.25GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11ac VHT20_Nss1,(MCS0)_3TX	Pass	AV	5.149995G	53.81	54.00	-0.19	8.24	3	Horizontal	225	1.62	-

SPORTON INTERTIONAL INC. EMC & Wireless Communications Laboratory

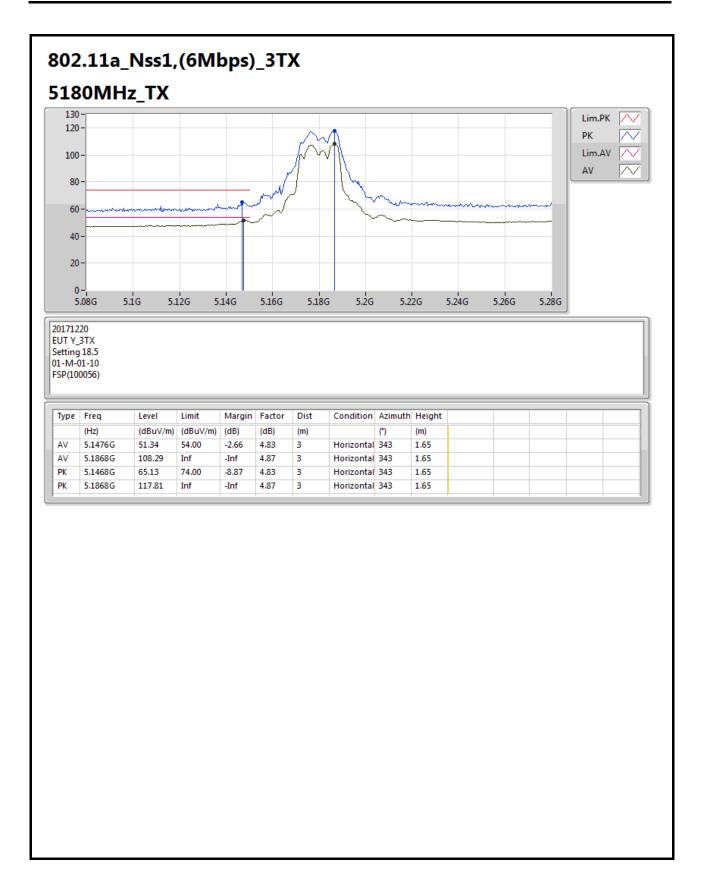
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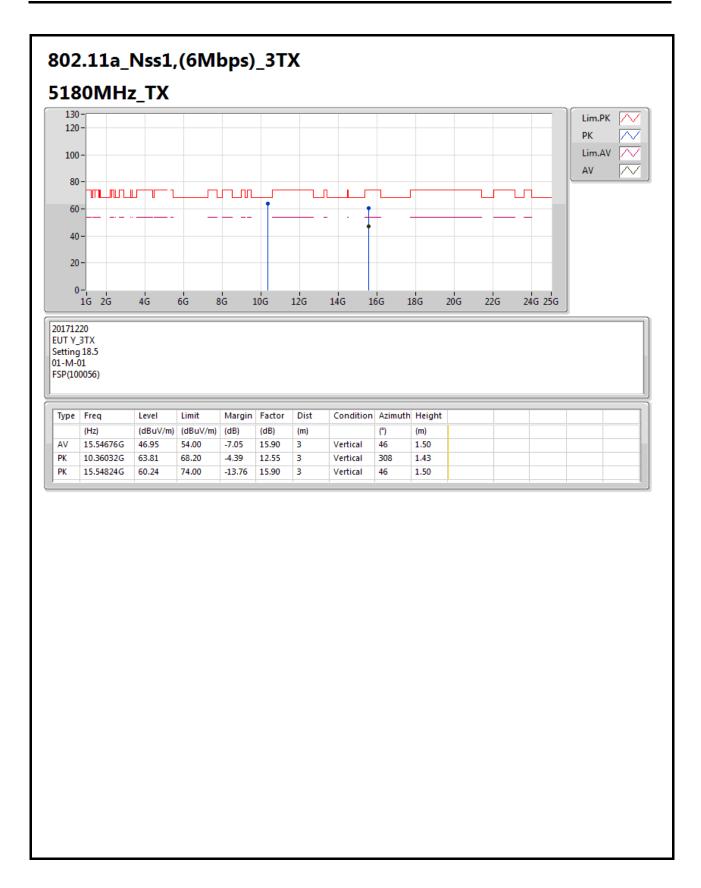
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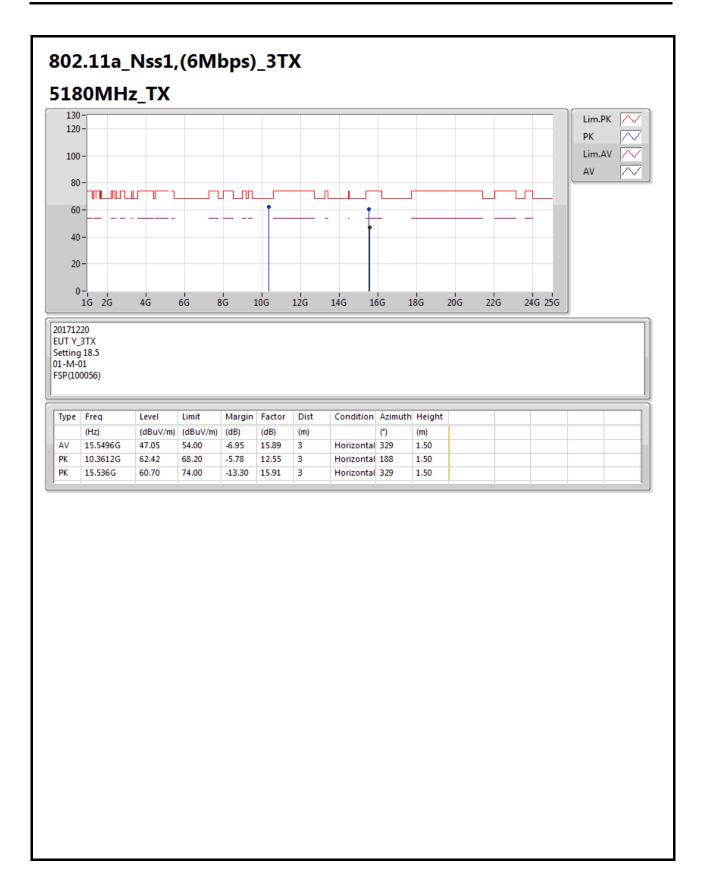
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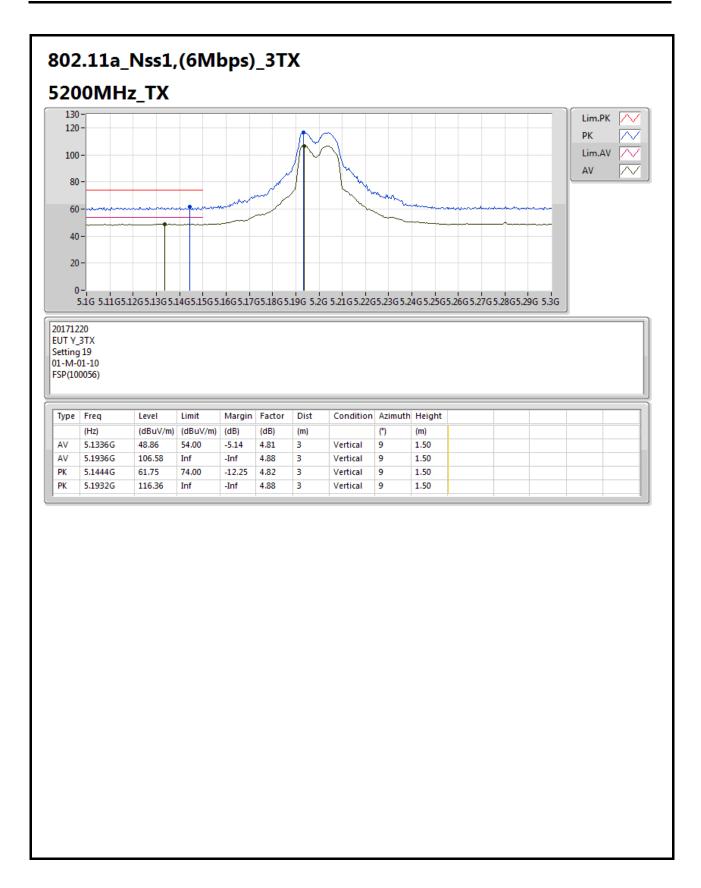
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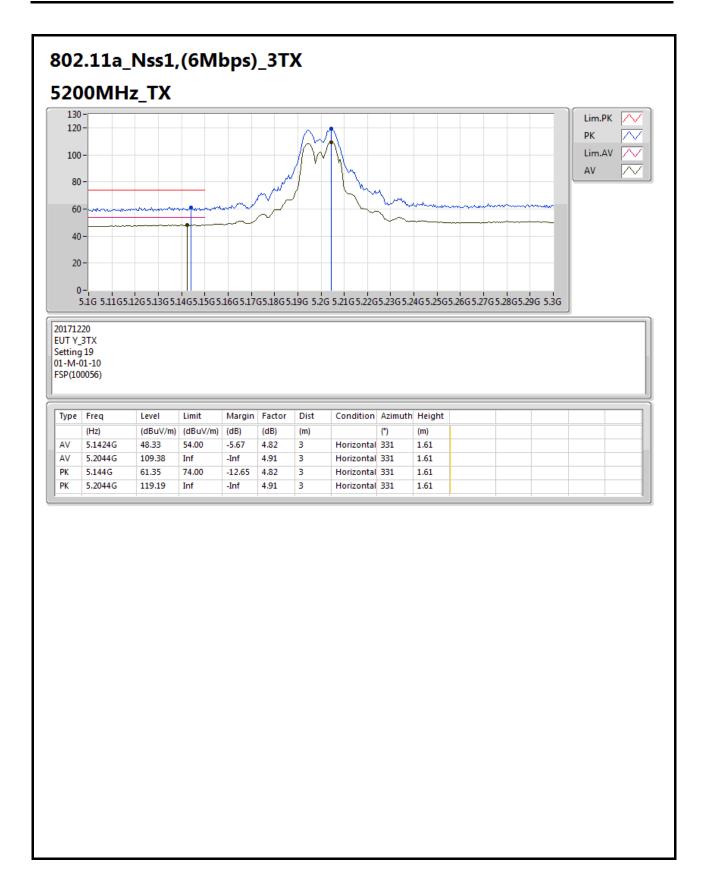
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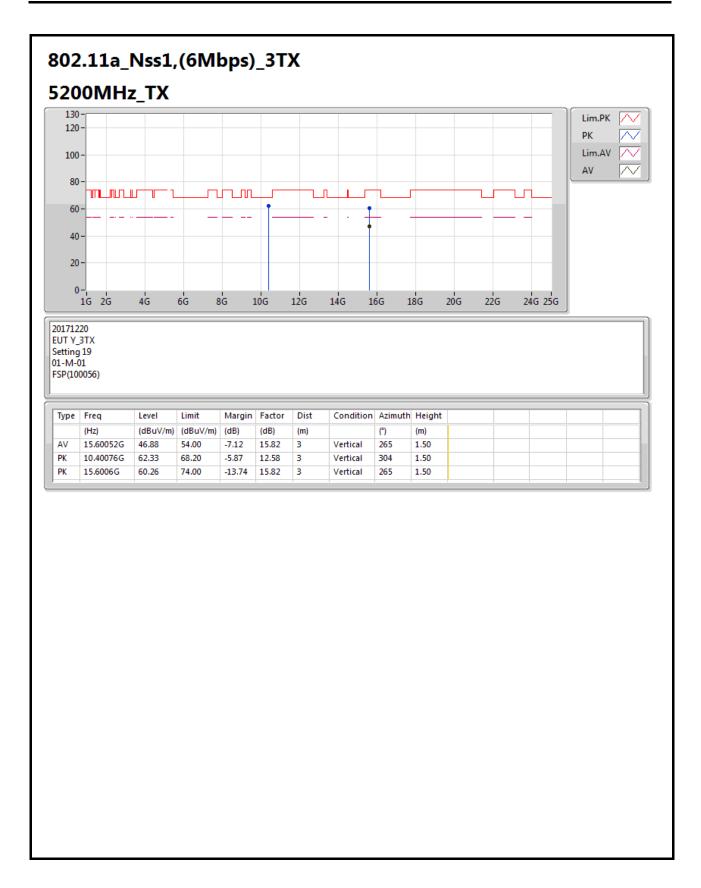
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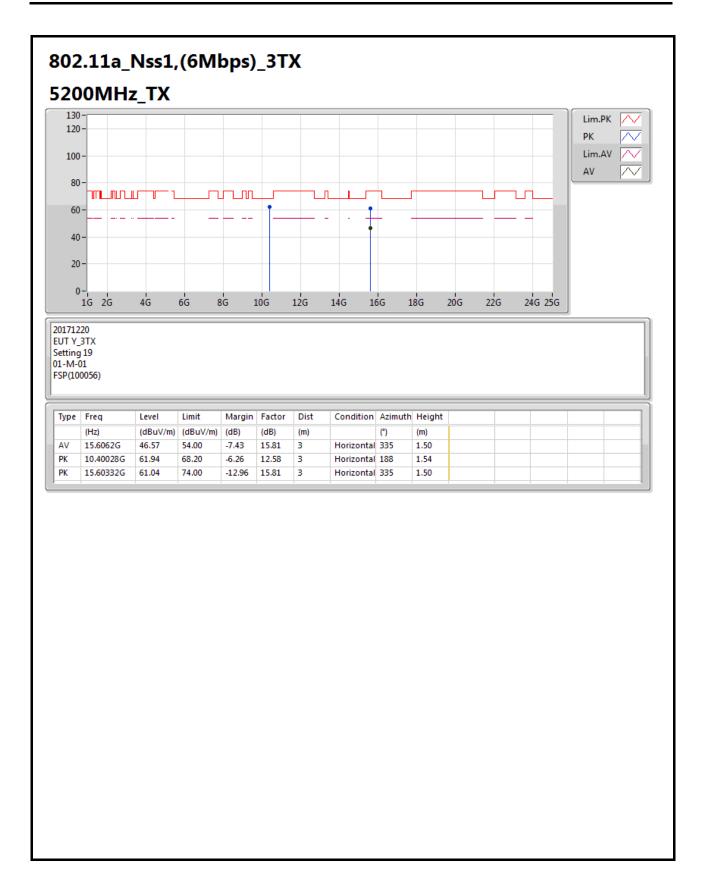
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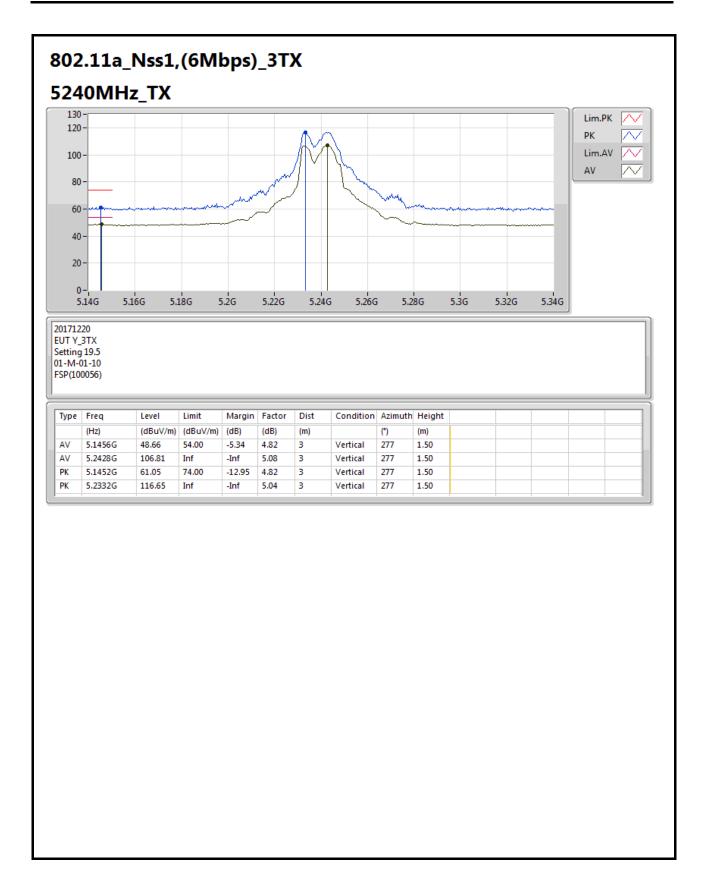
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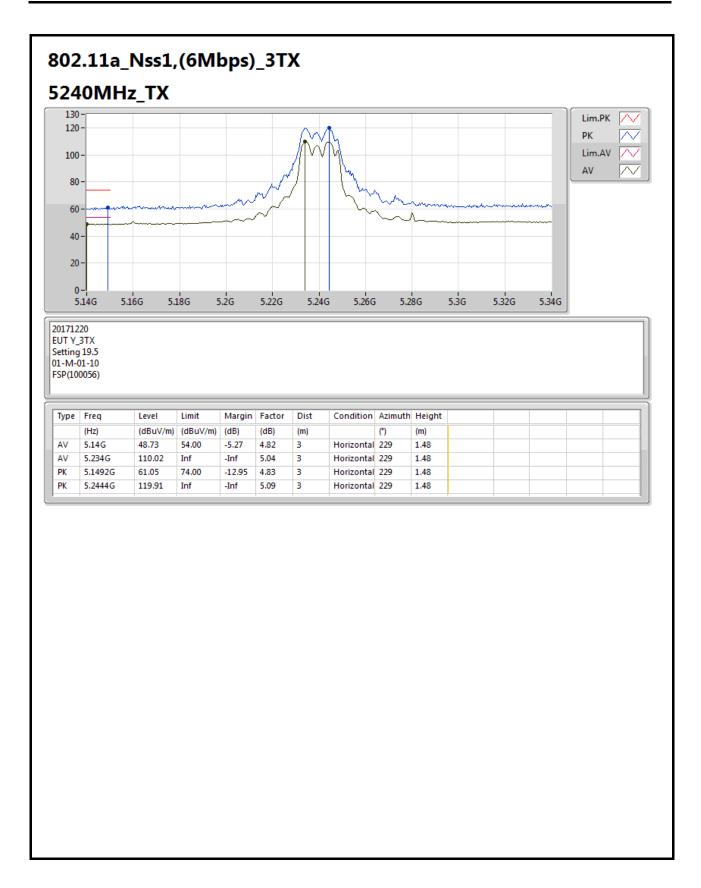
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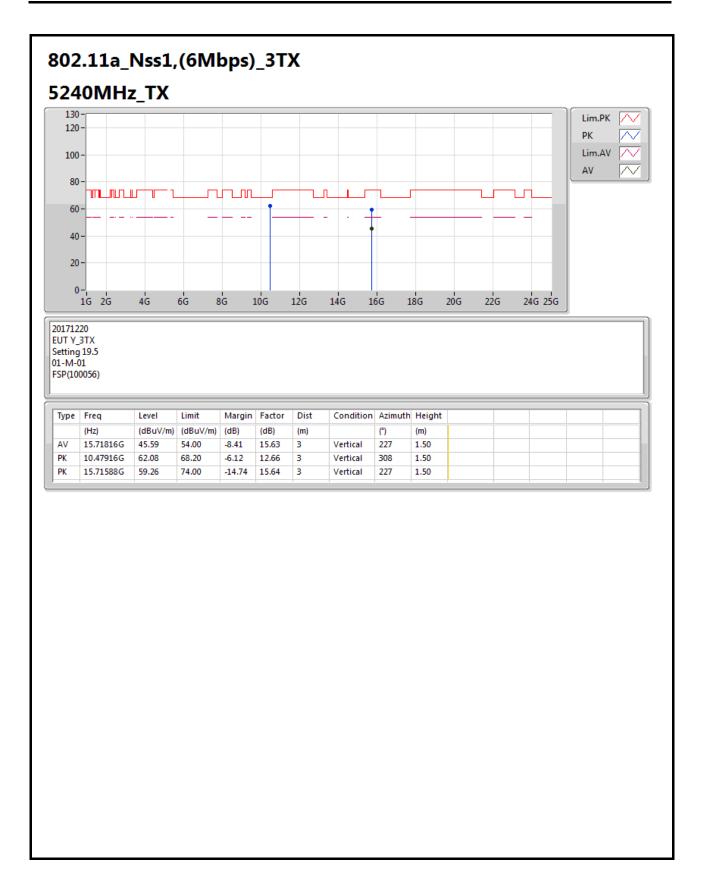
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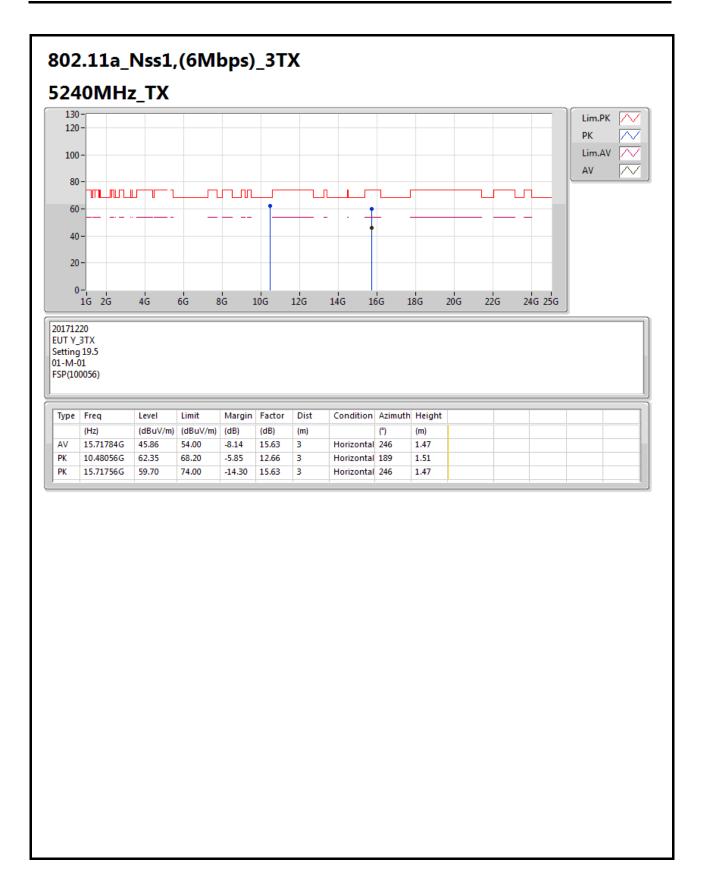
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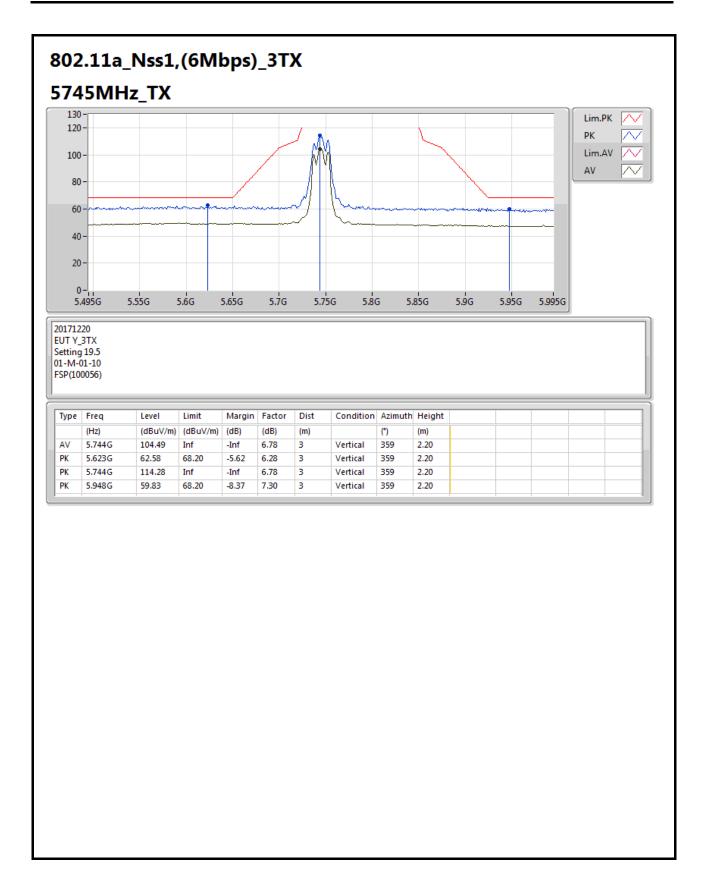
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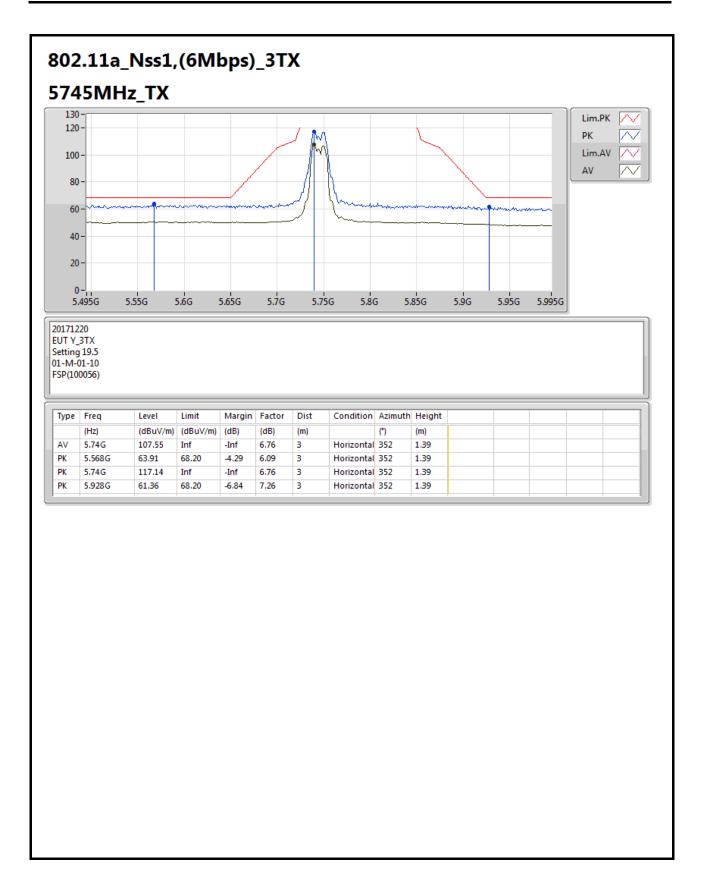
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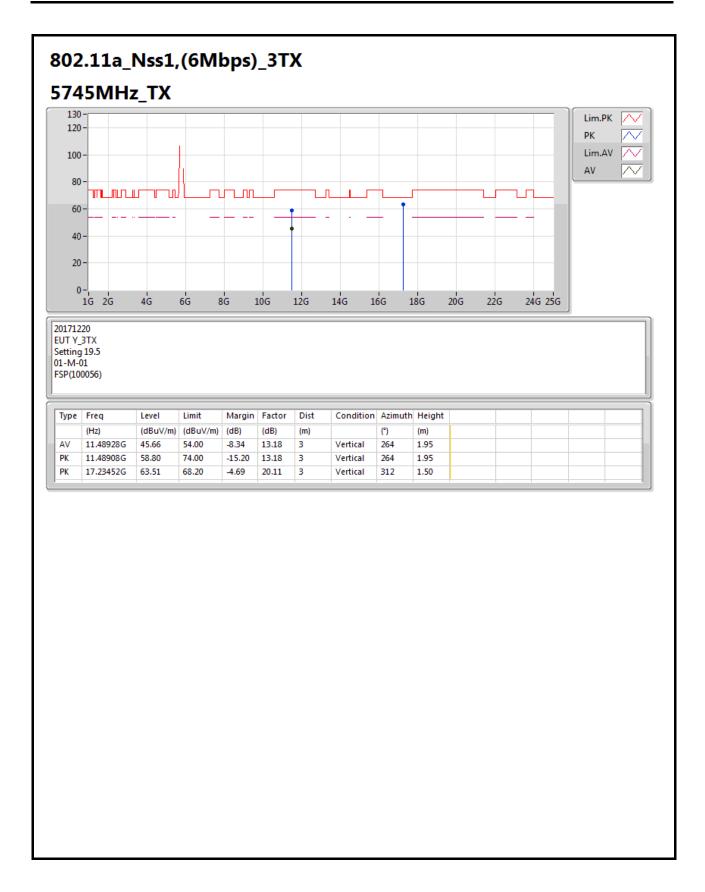
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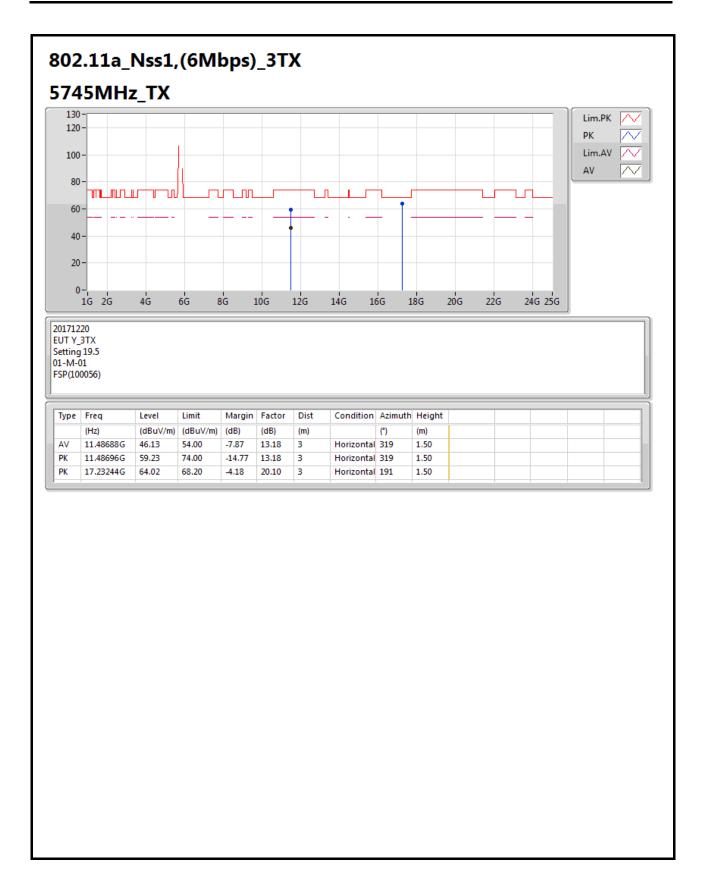
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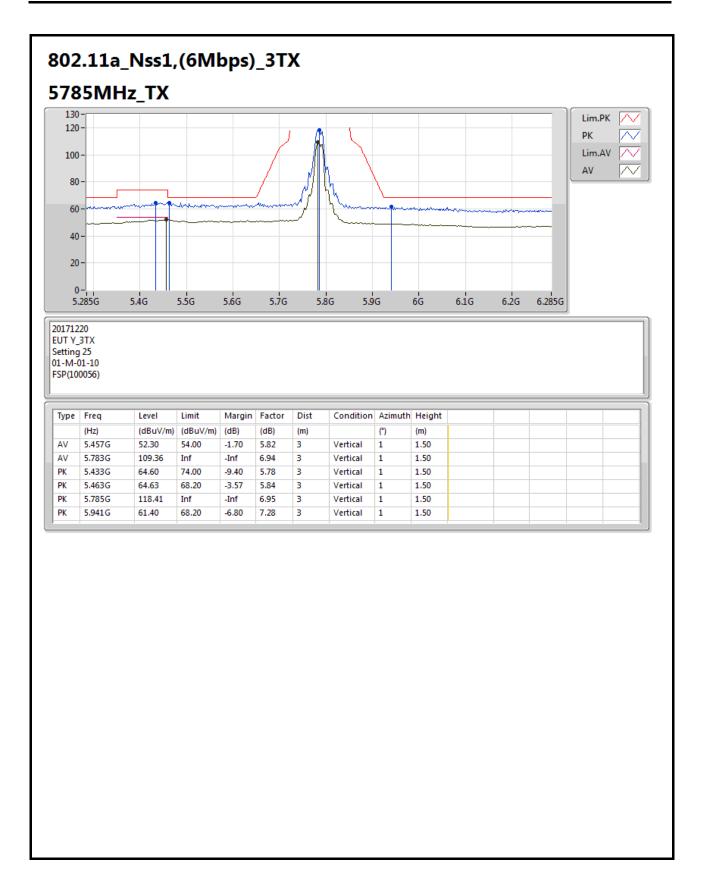
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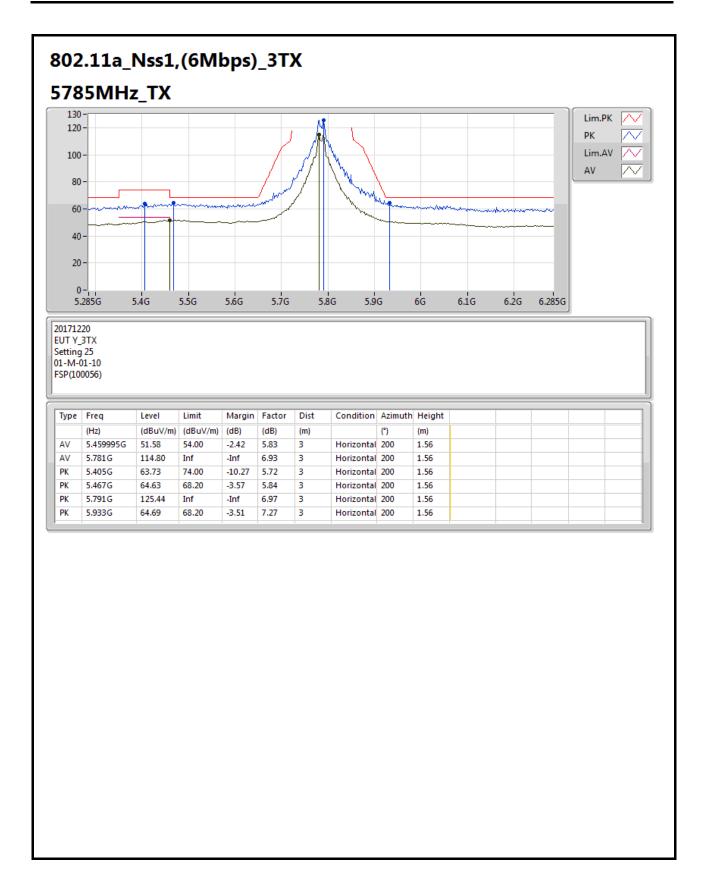
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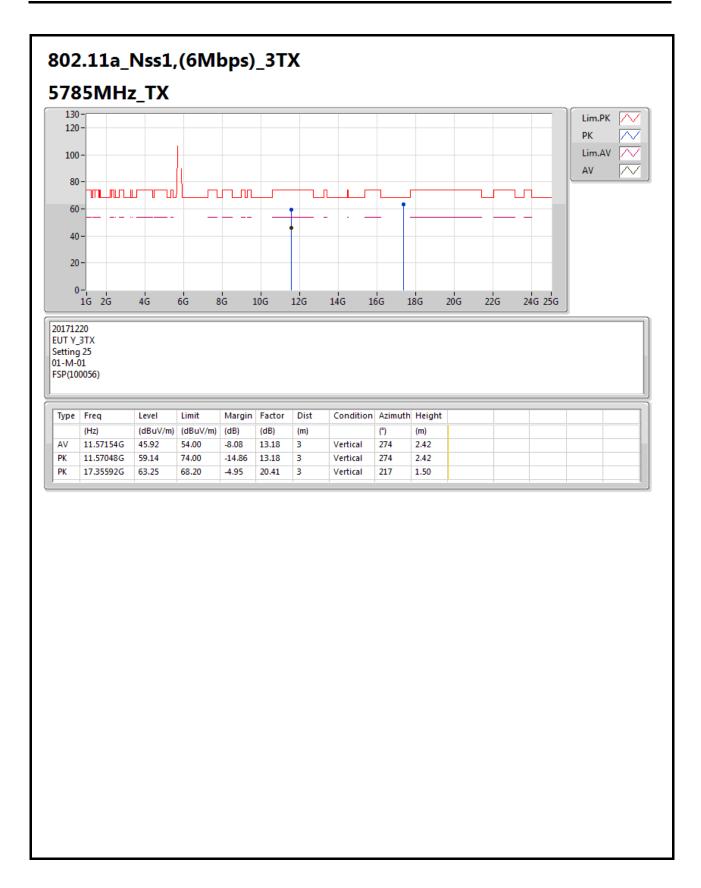
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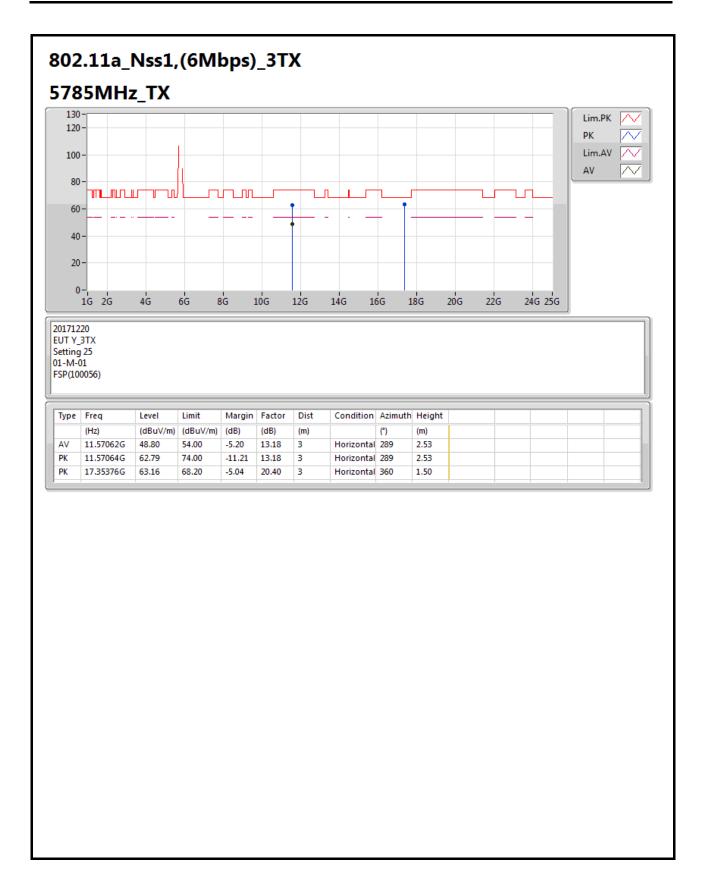
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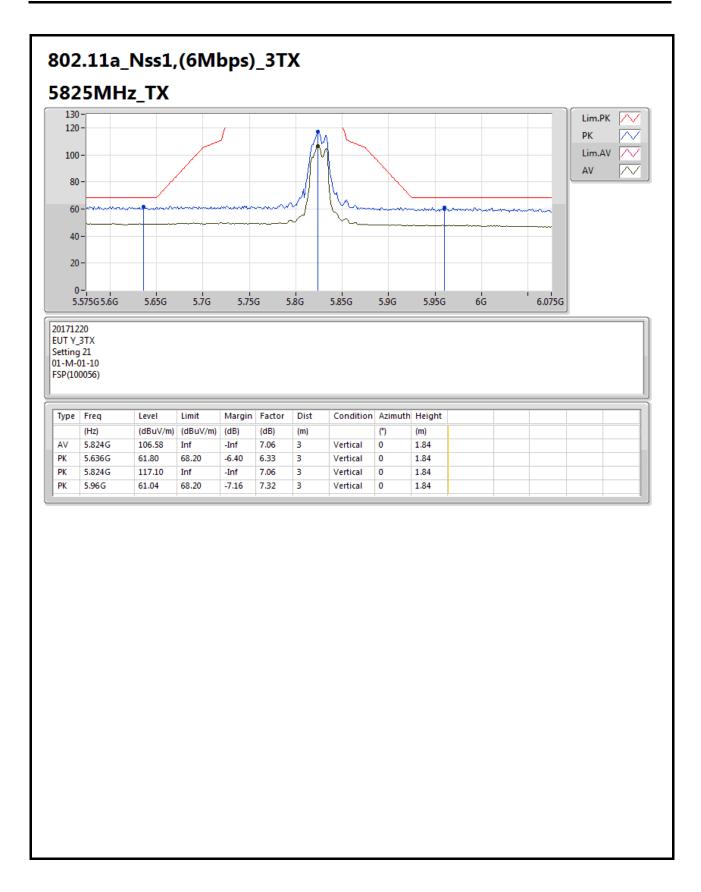
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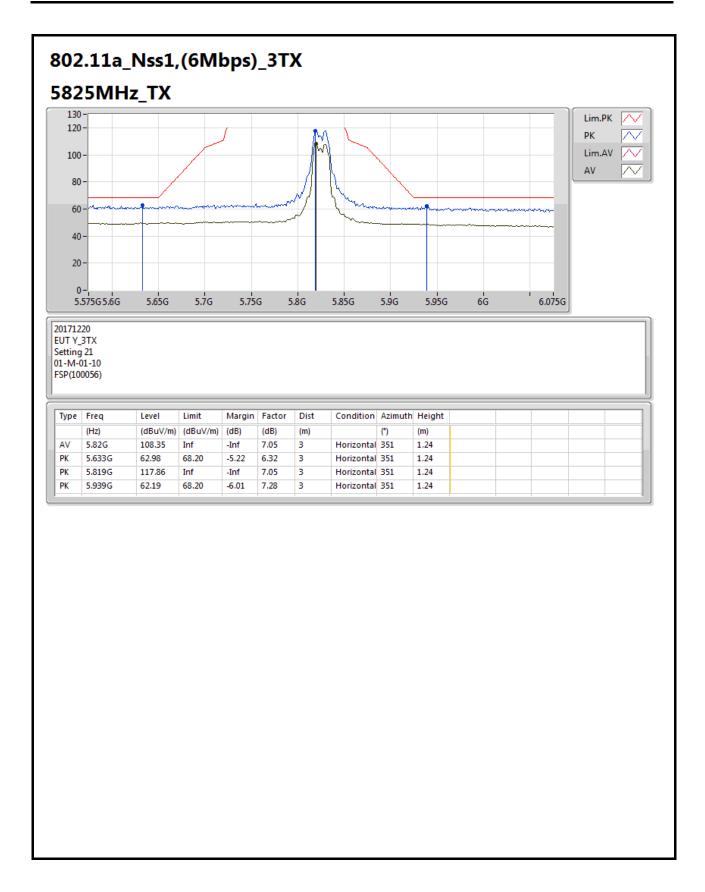
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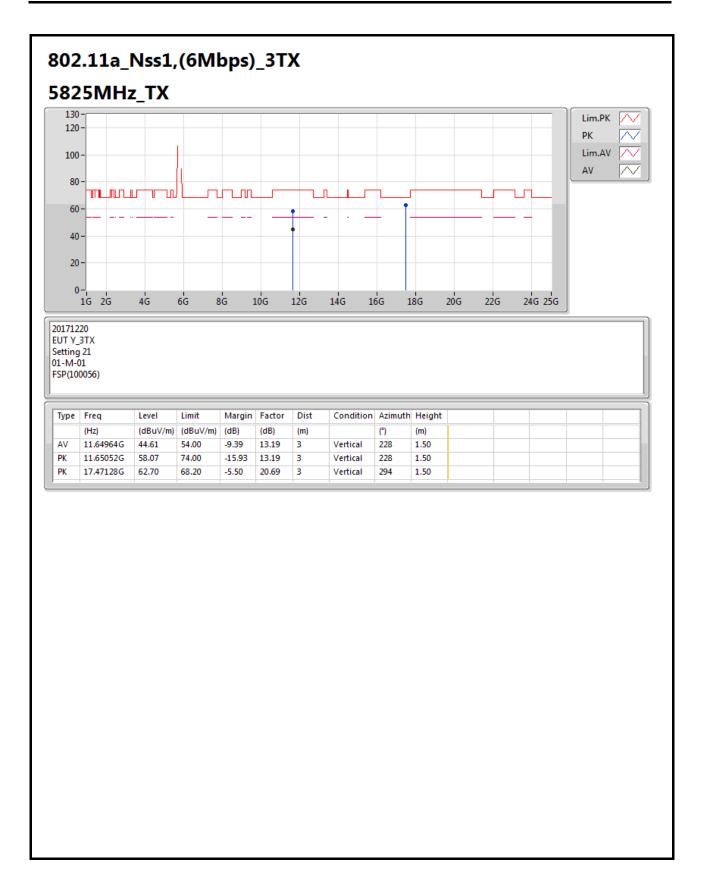
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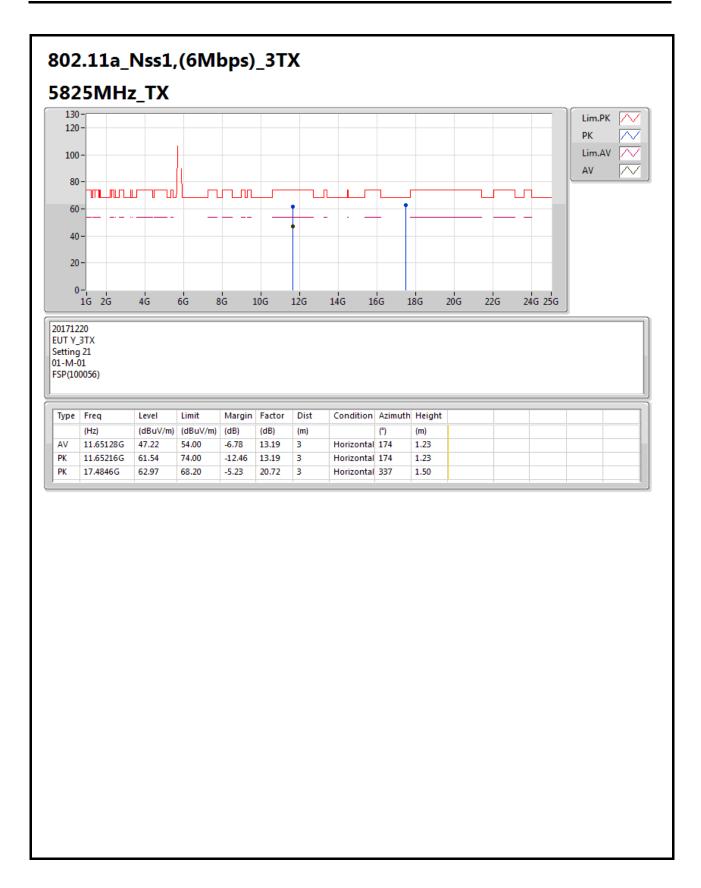
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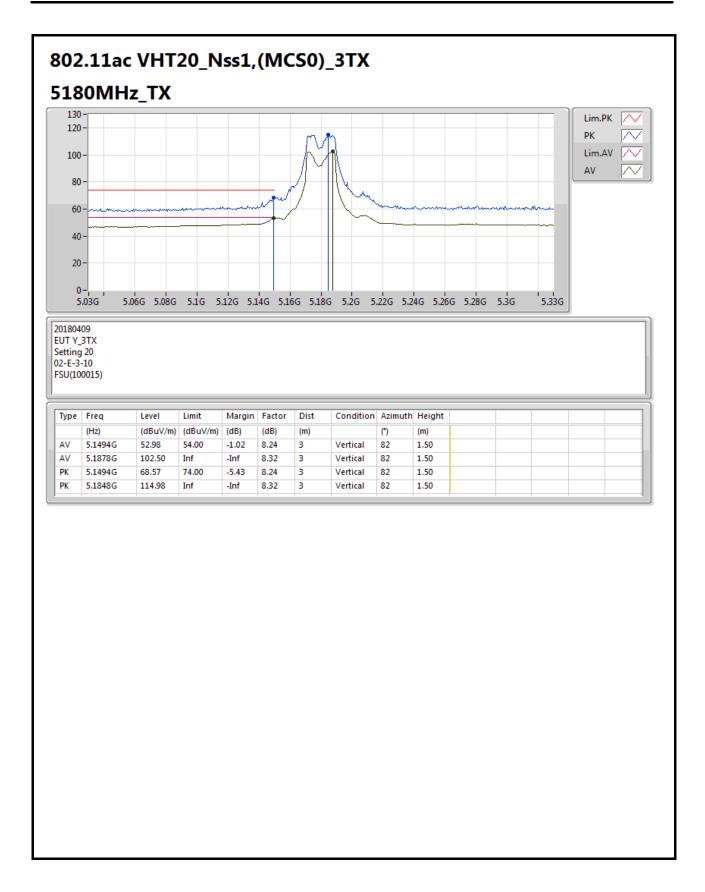
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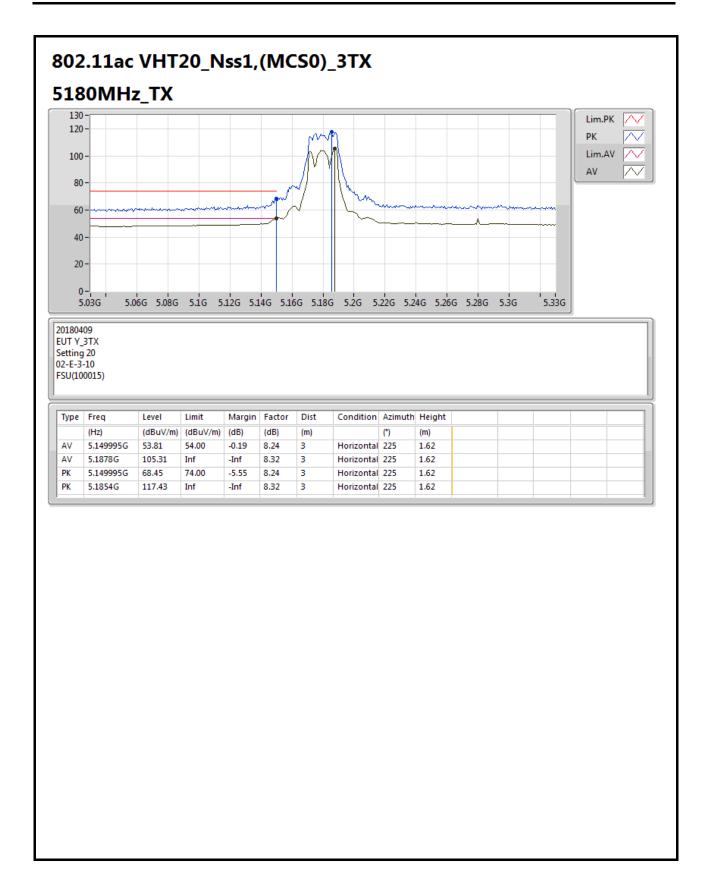
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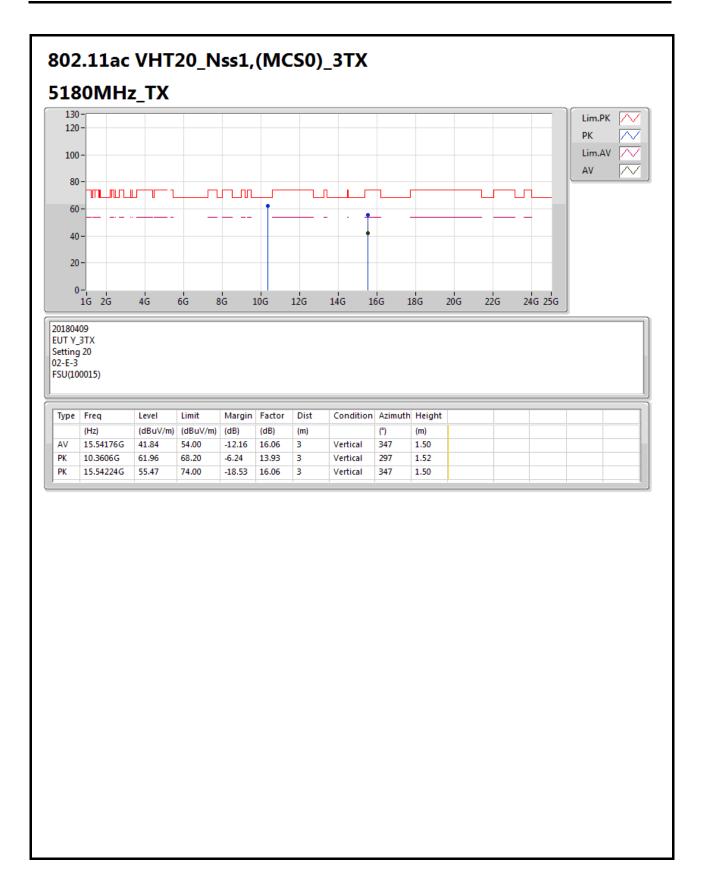
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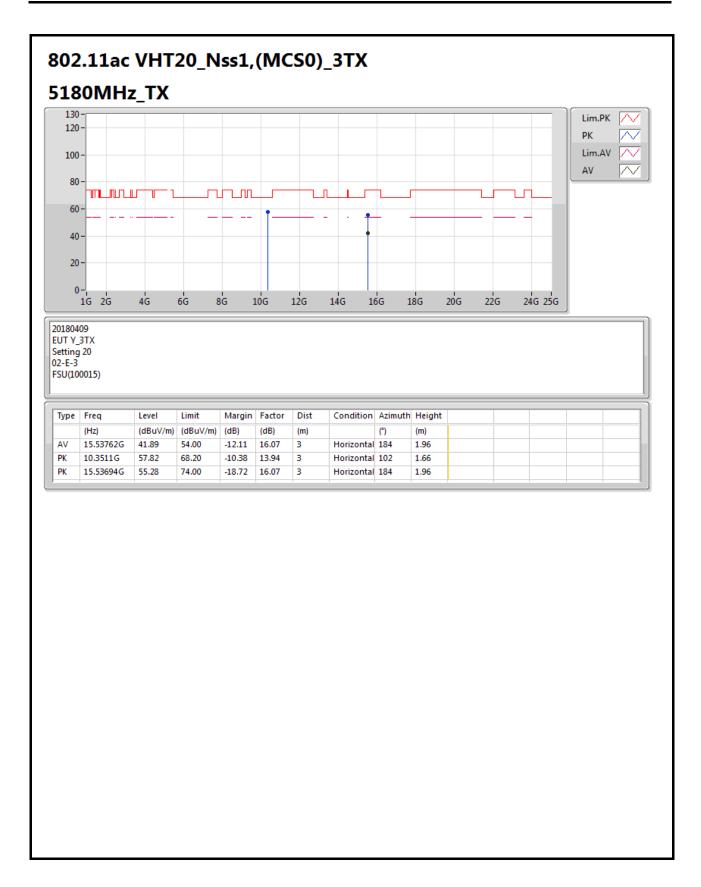
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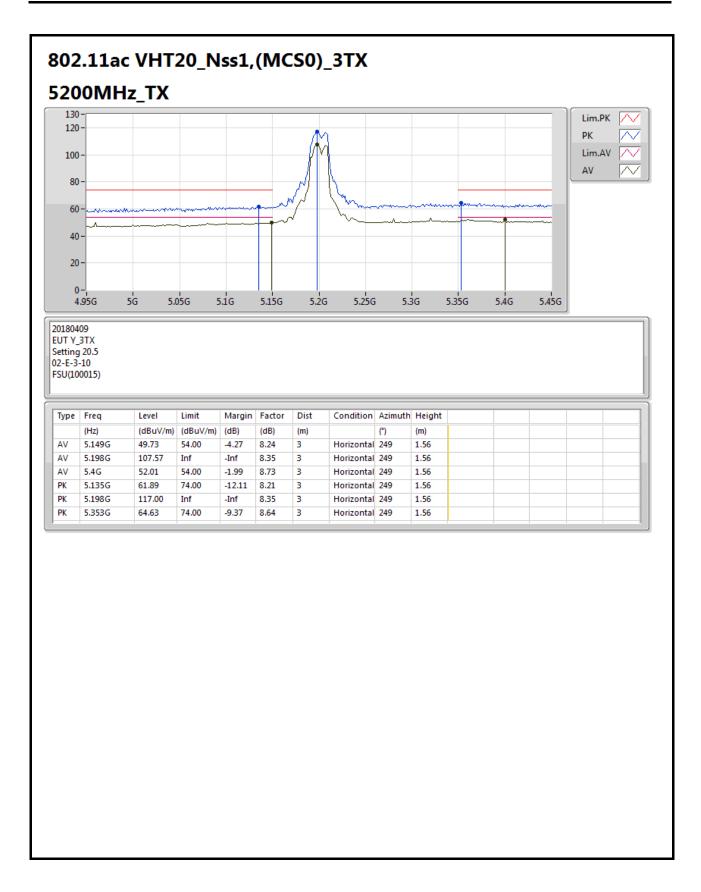
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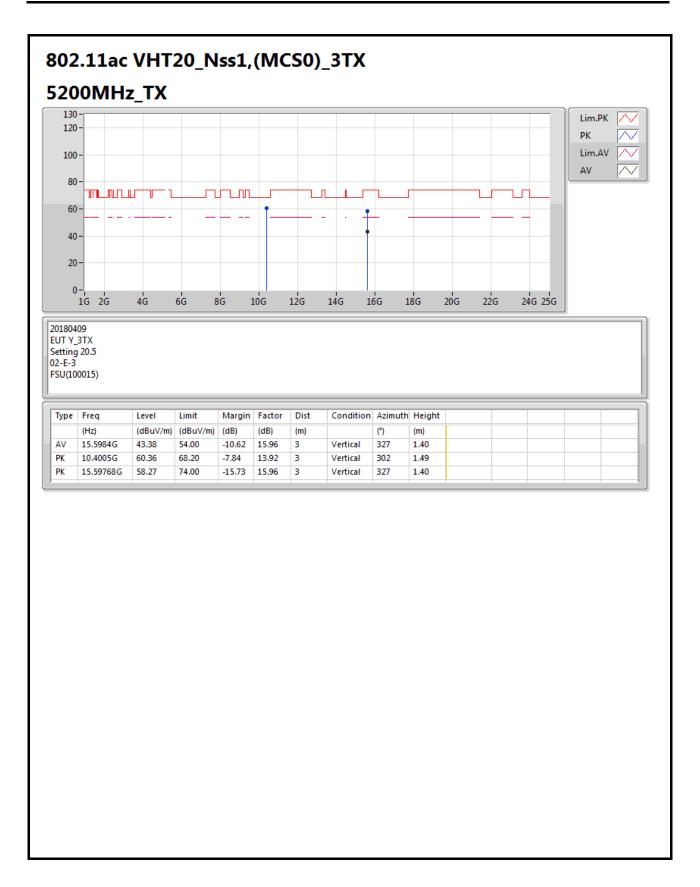
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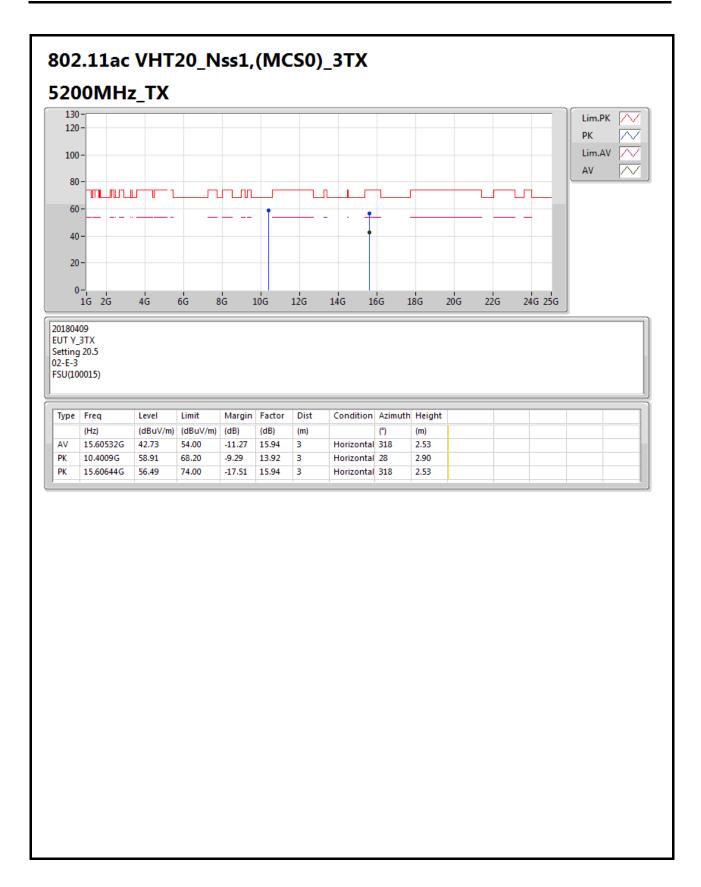
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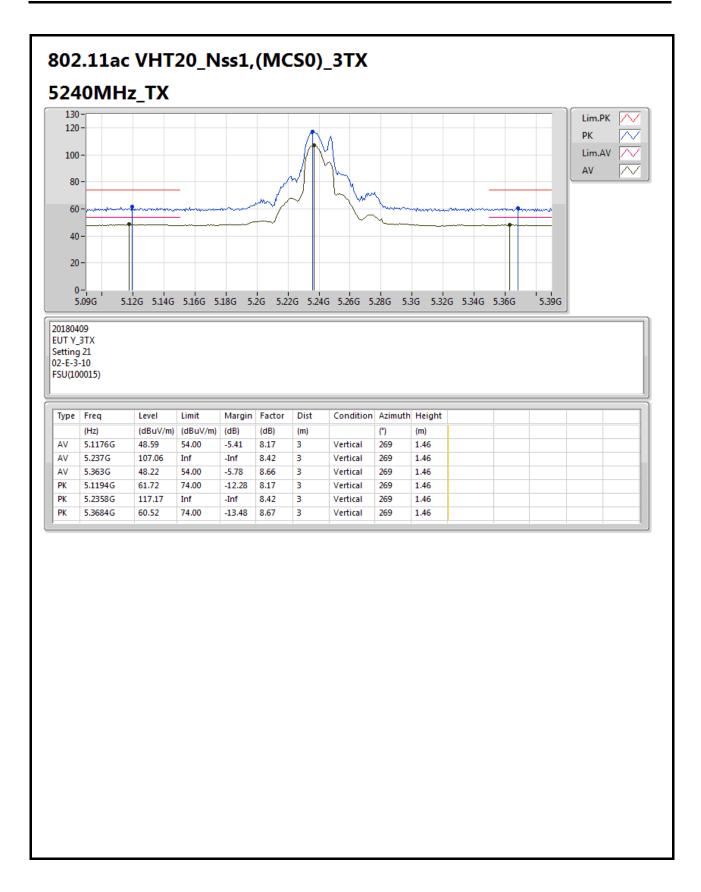
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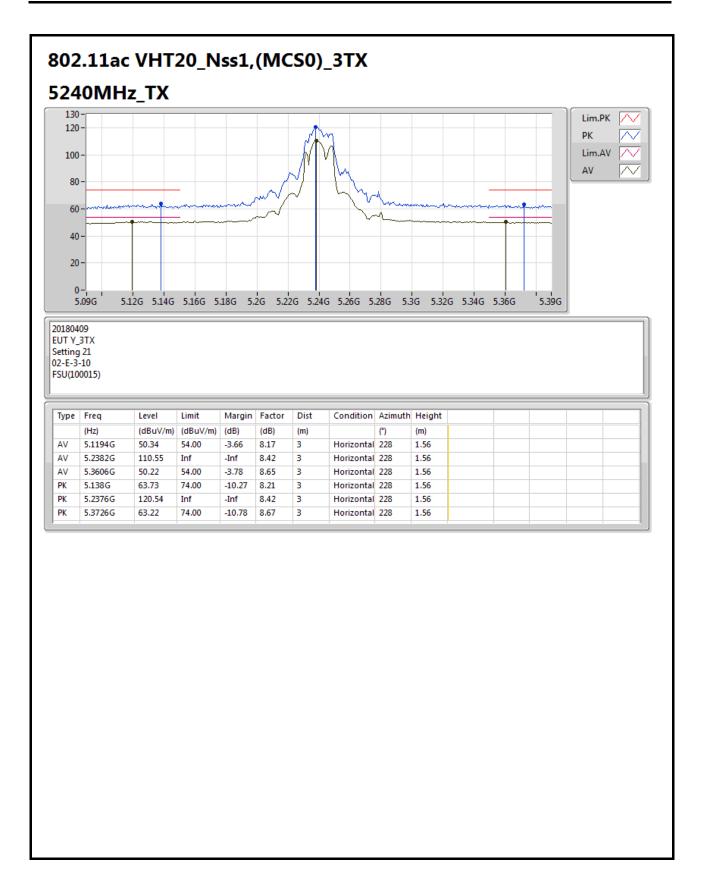
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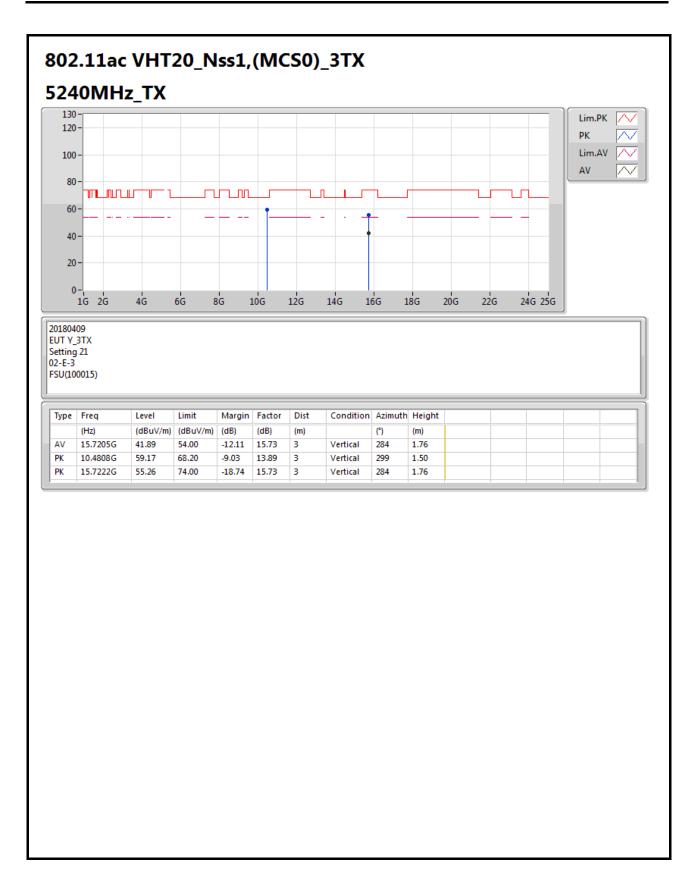
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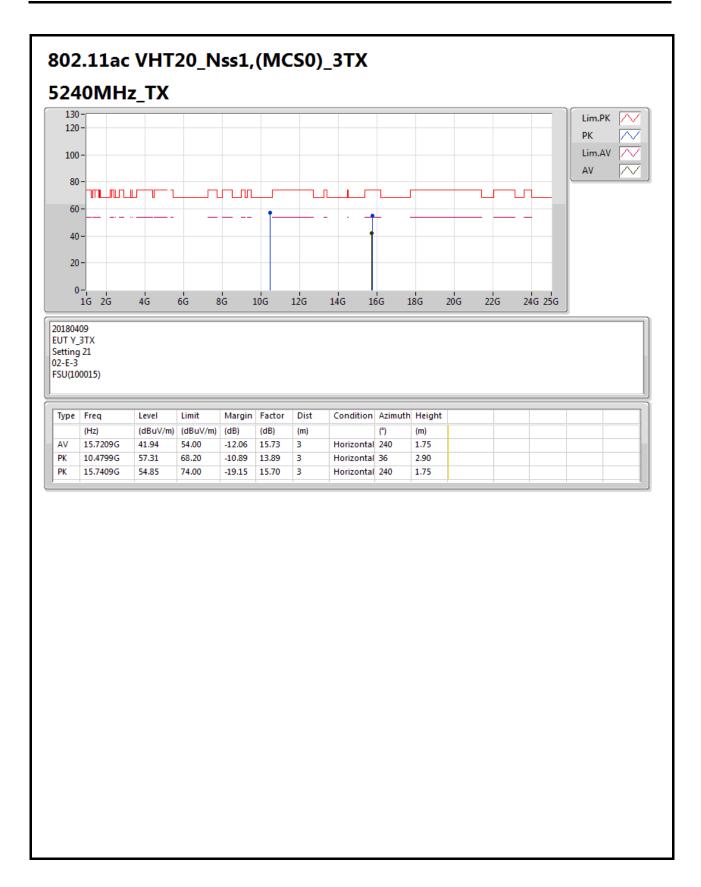
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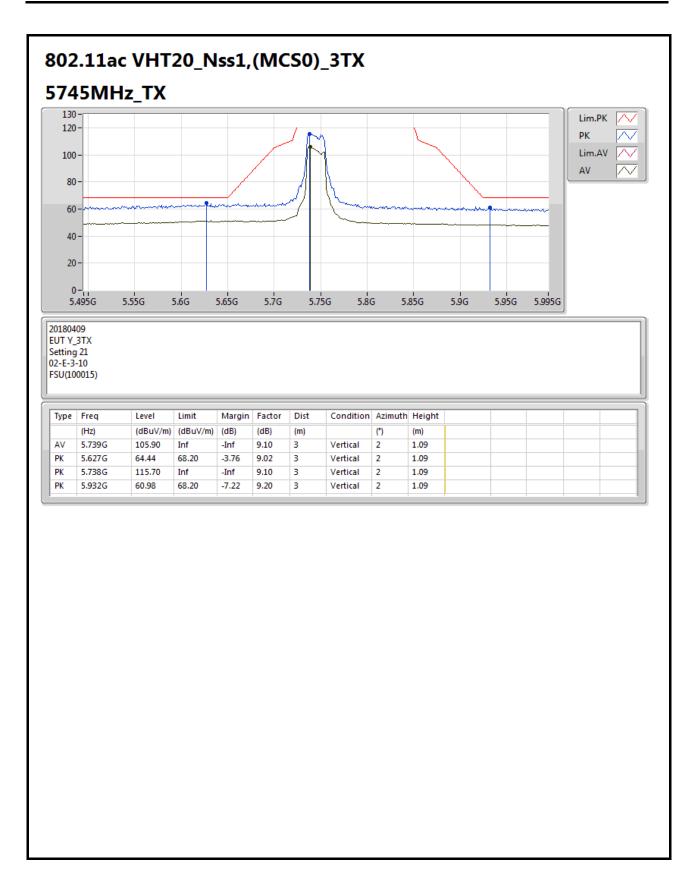
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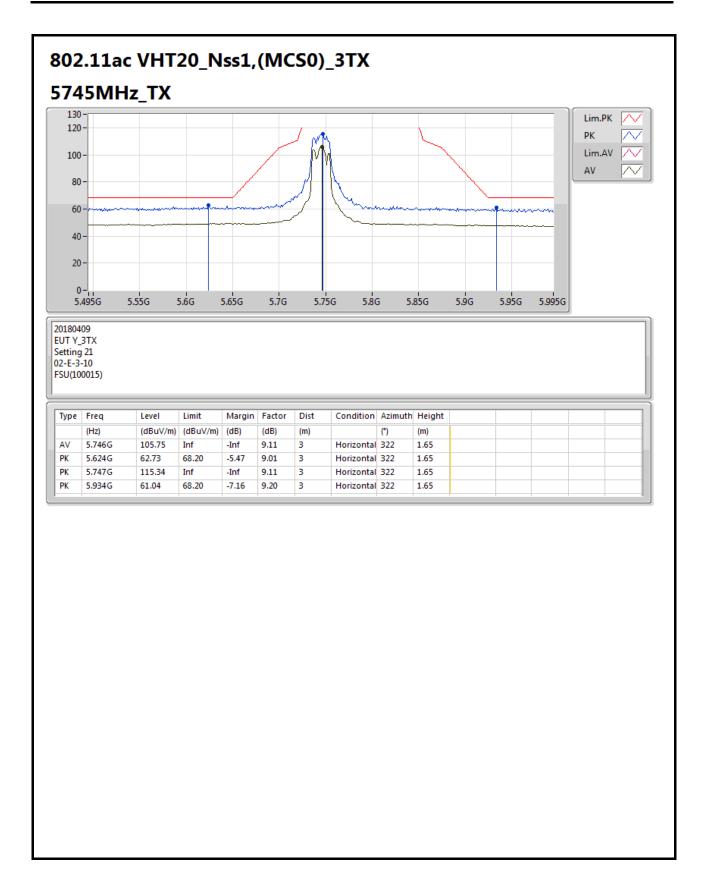
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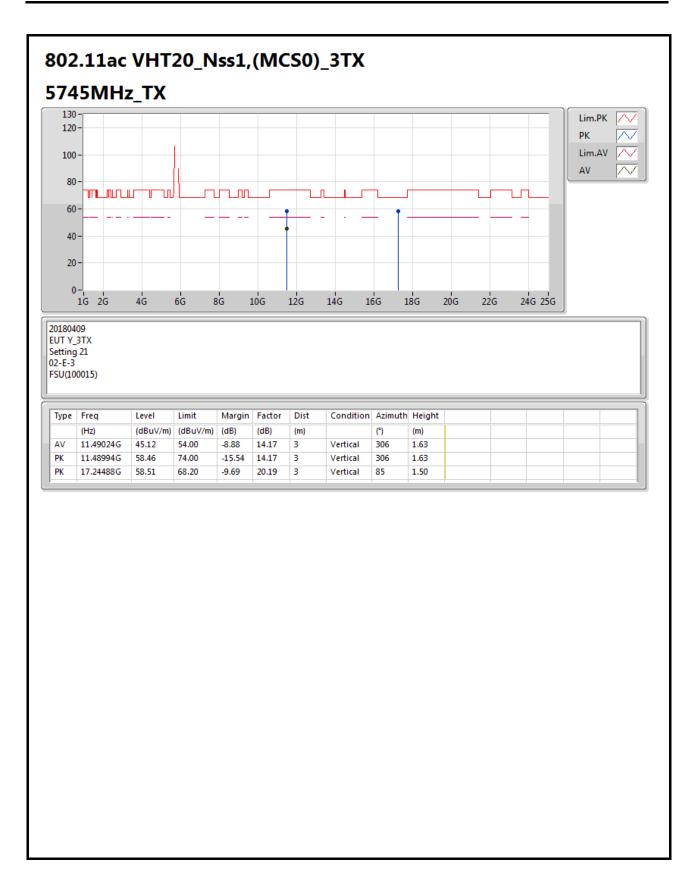
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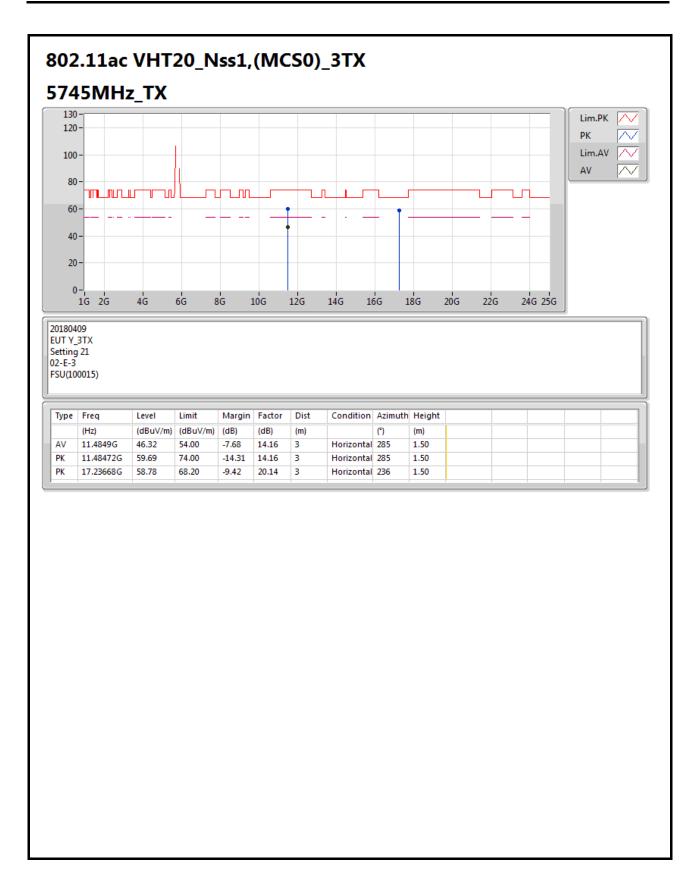
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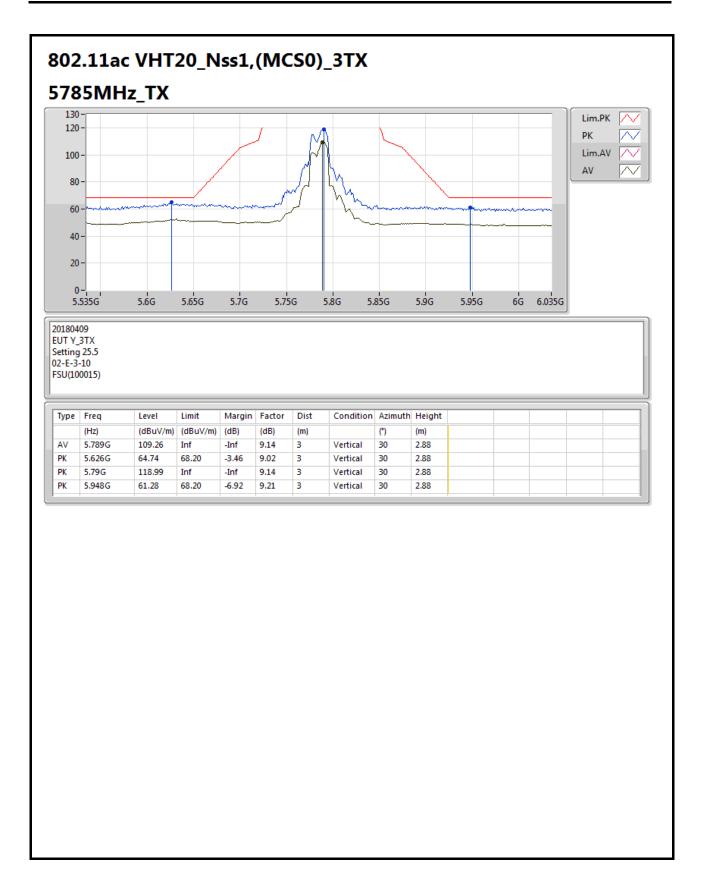
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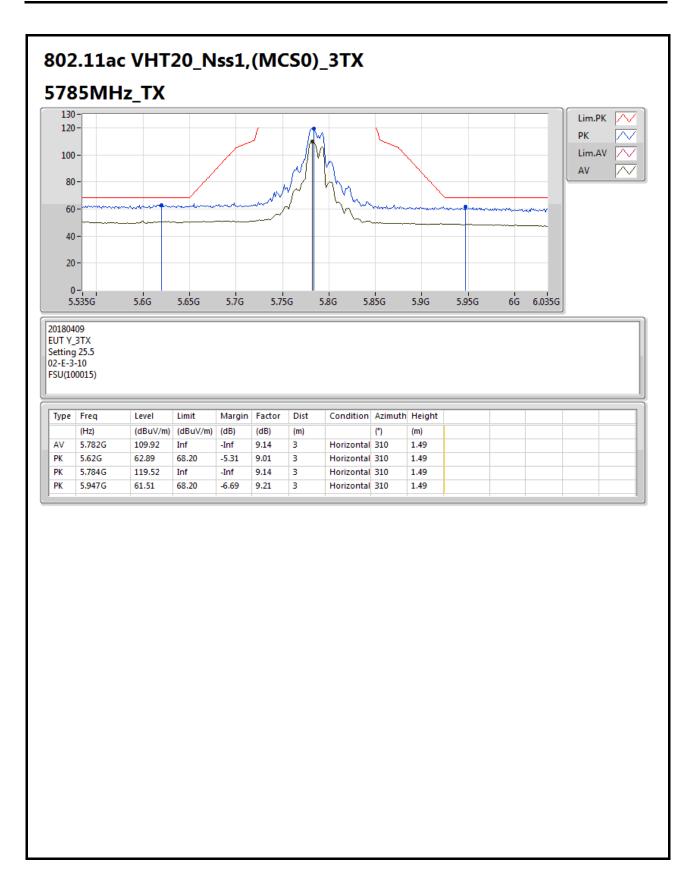
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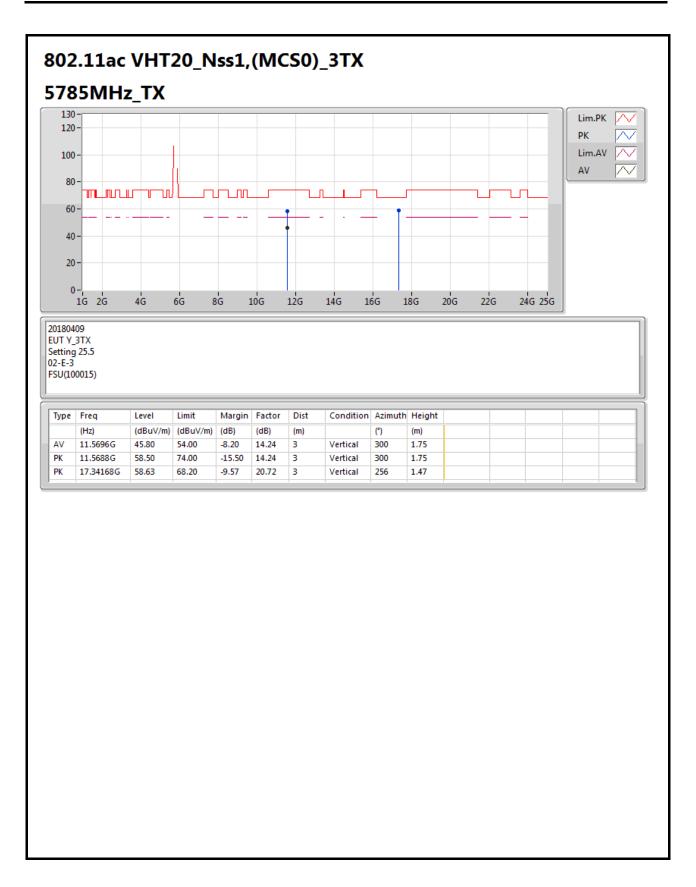
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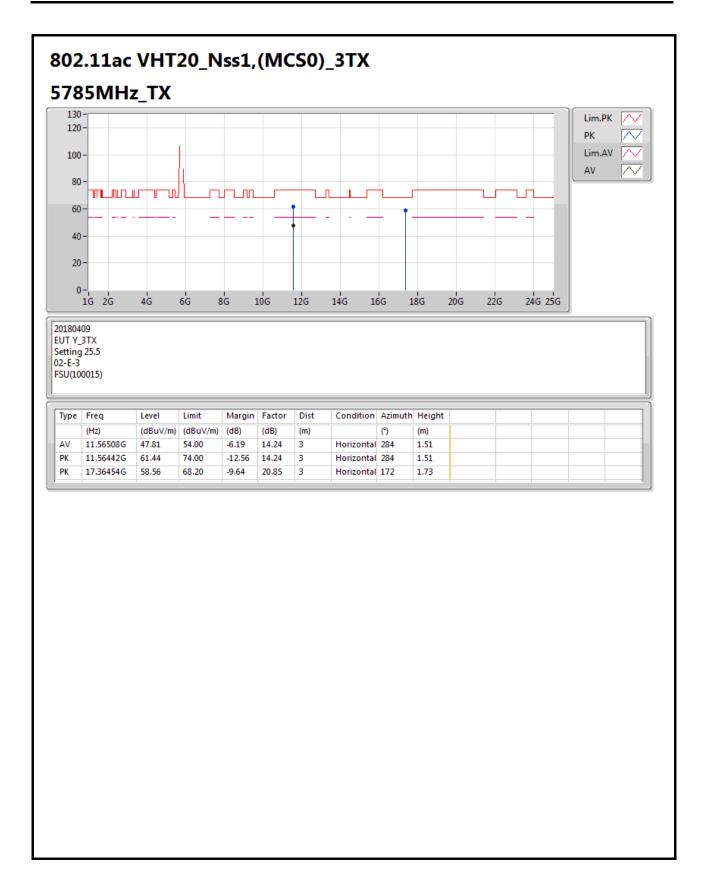
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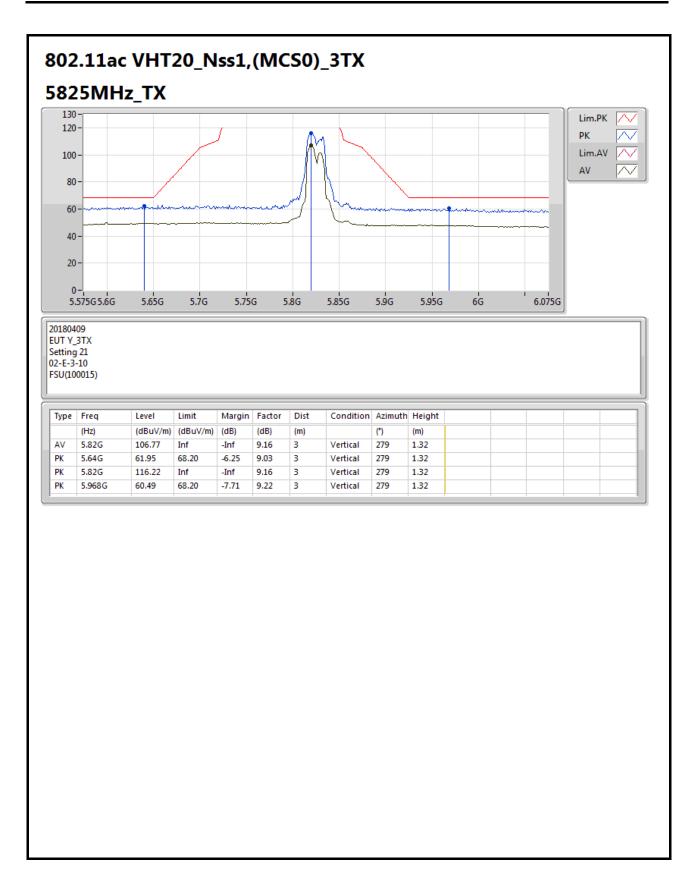
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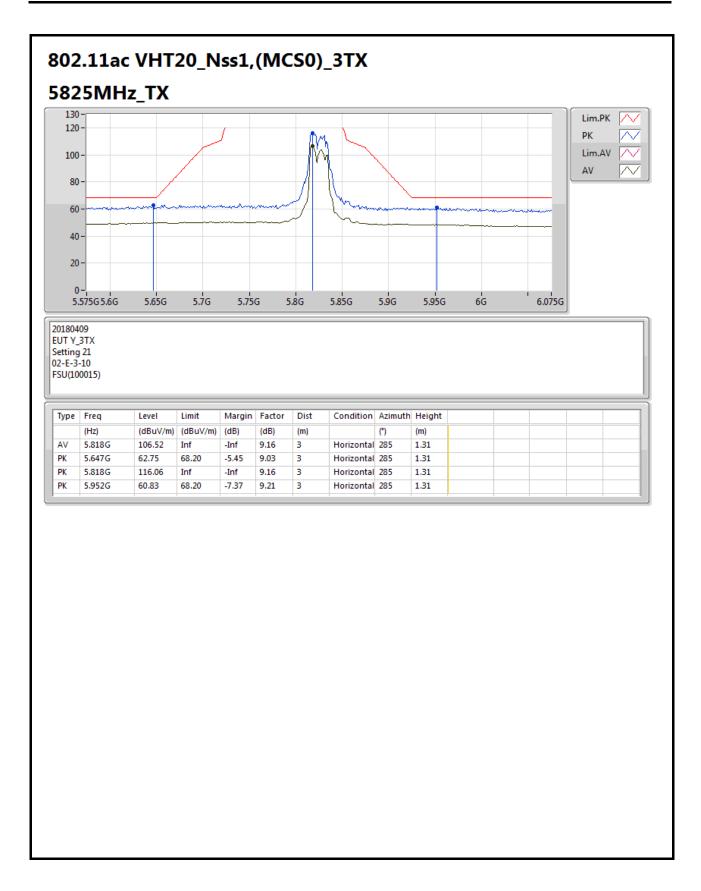
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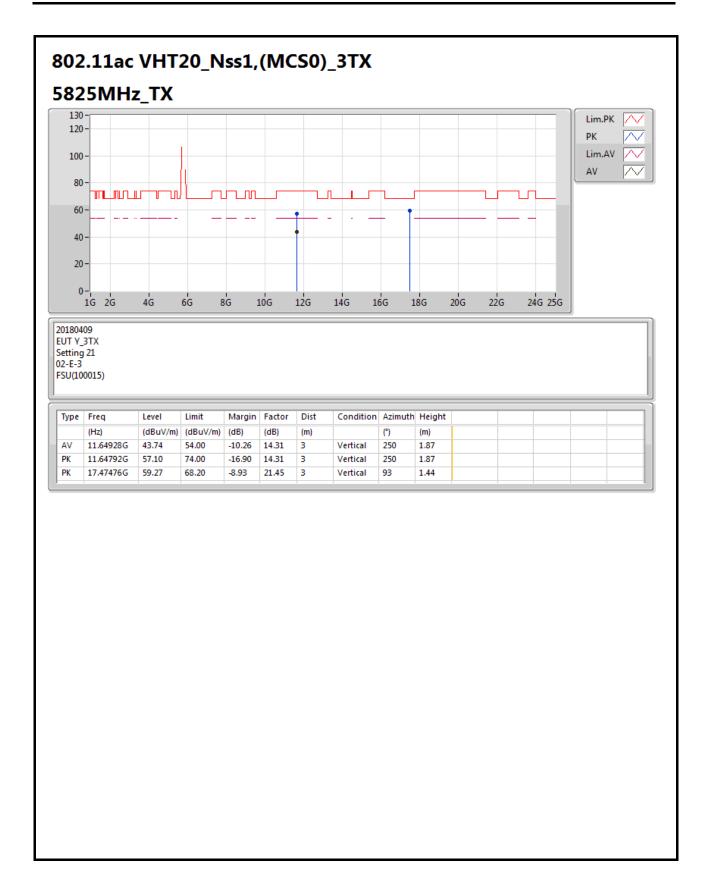
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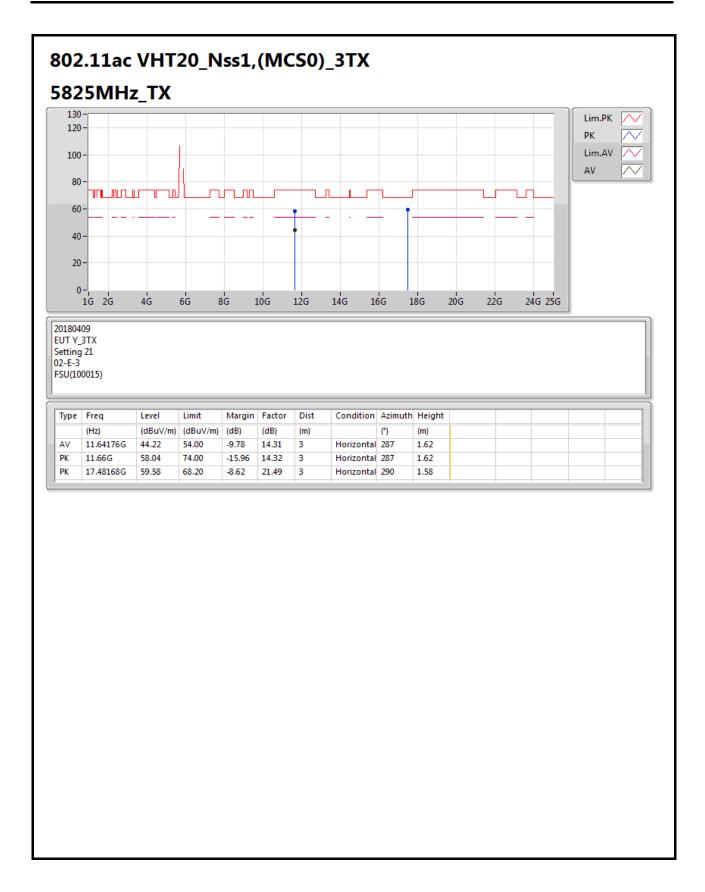
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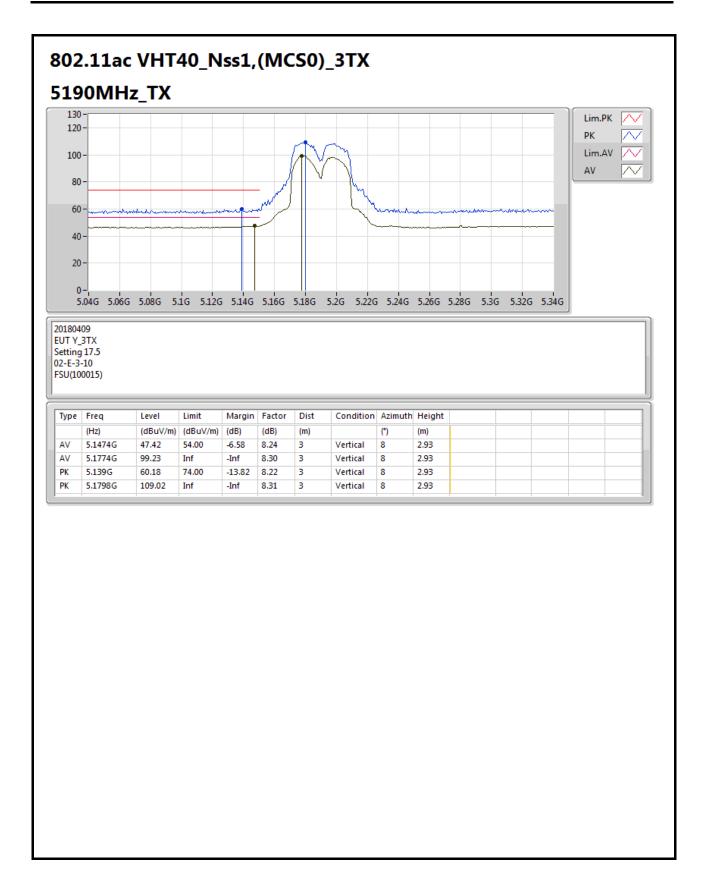
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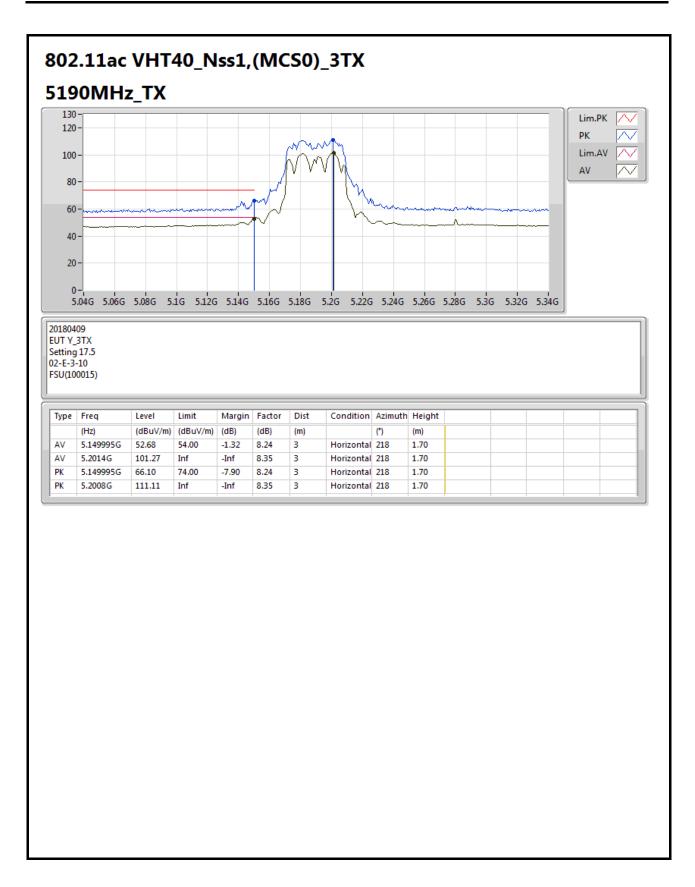
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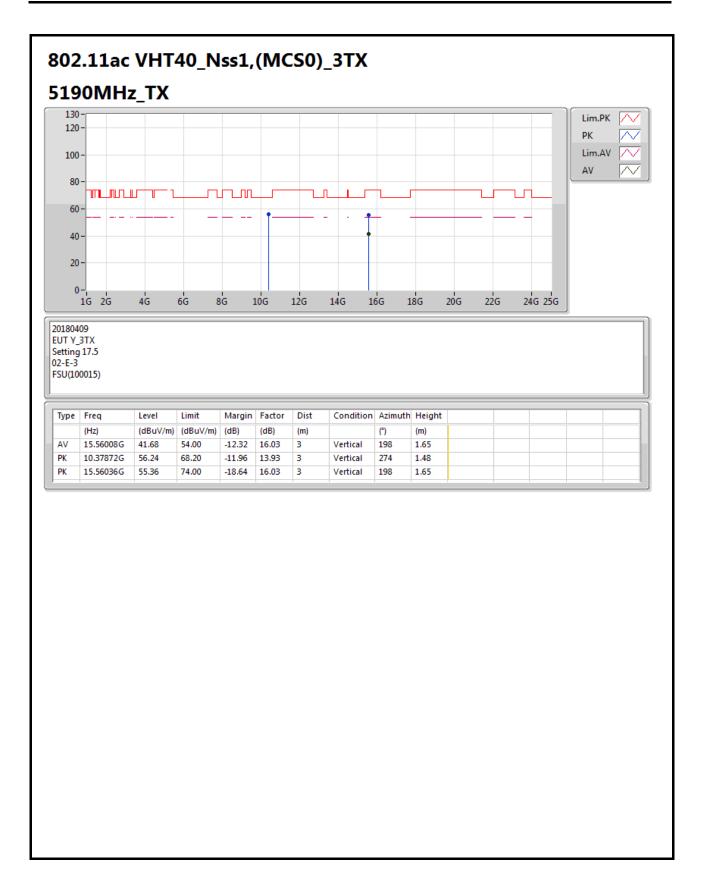
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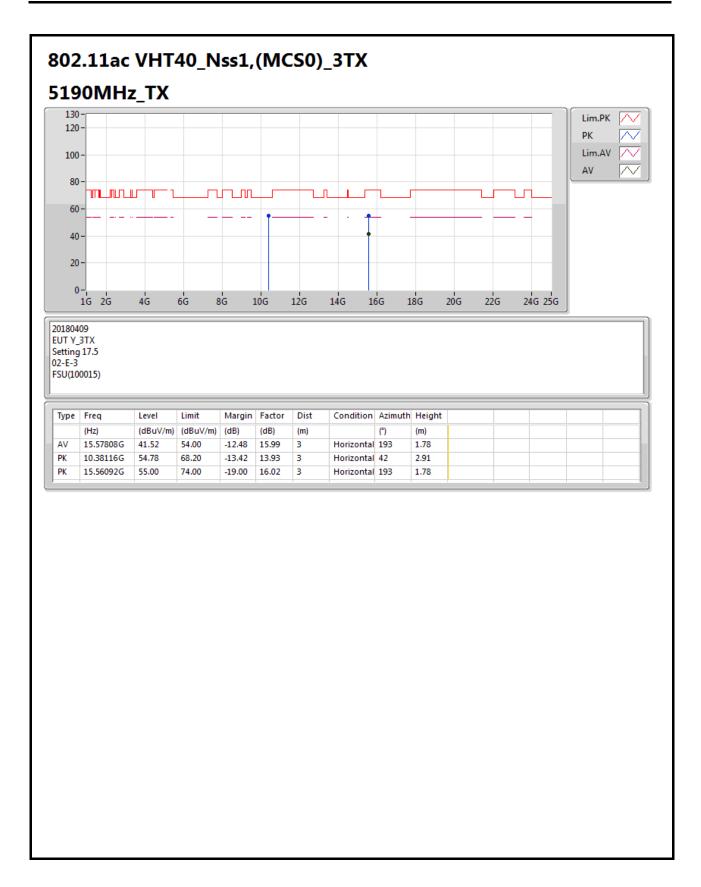
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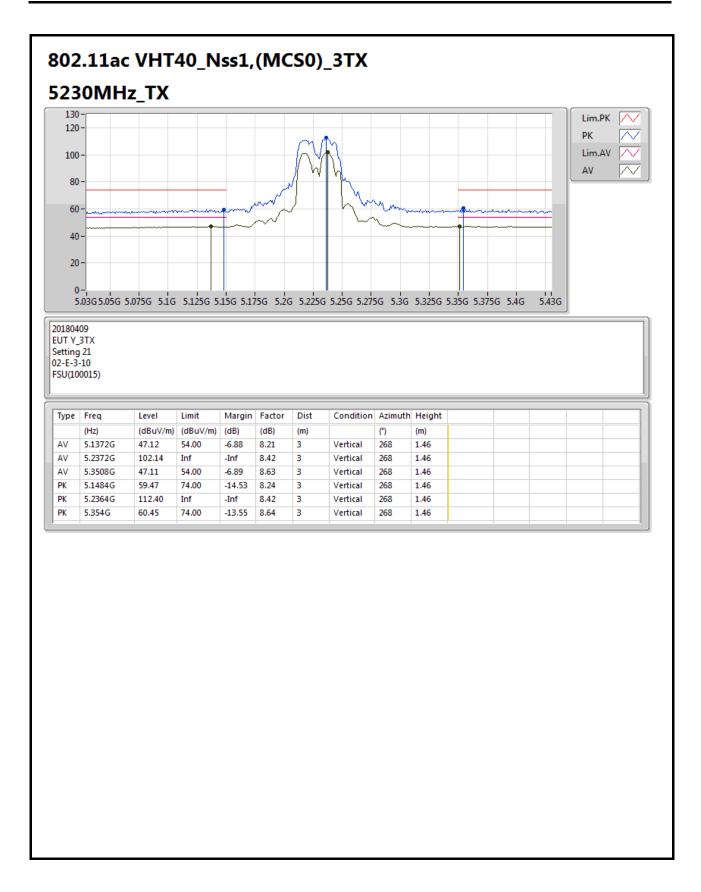
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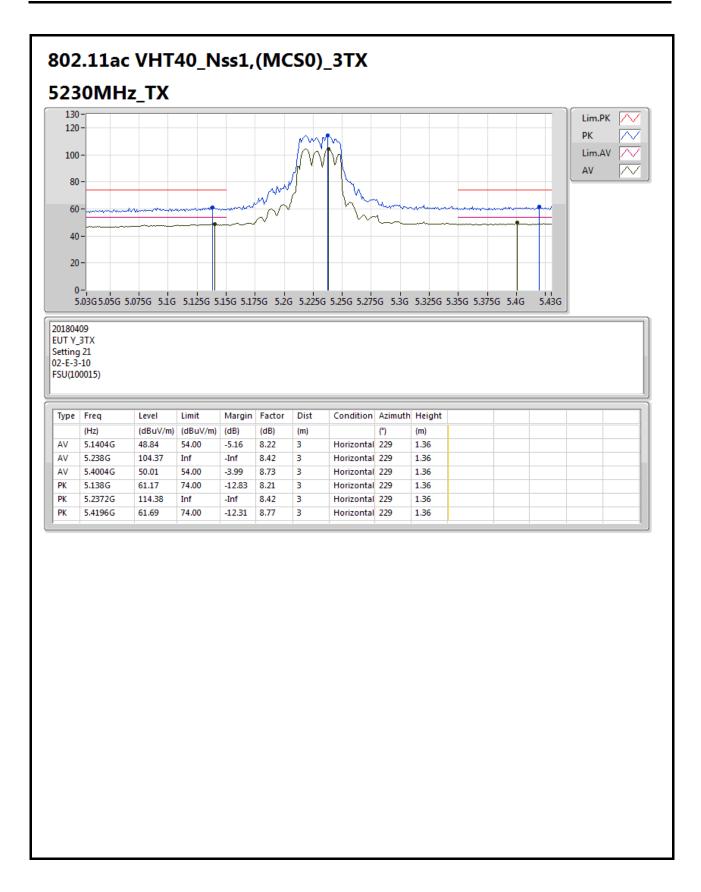
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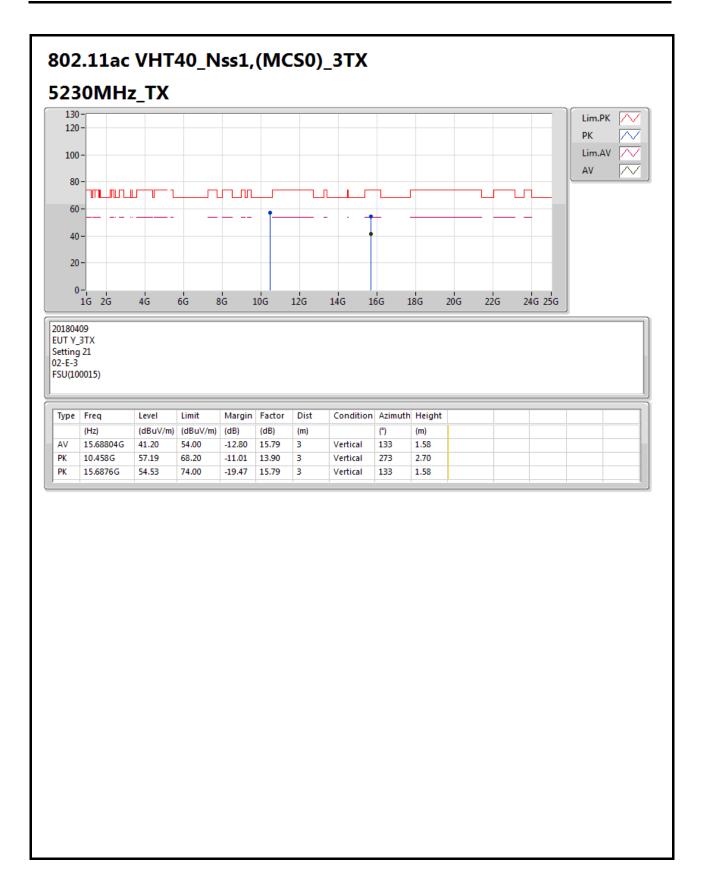
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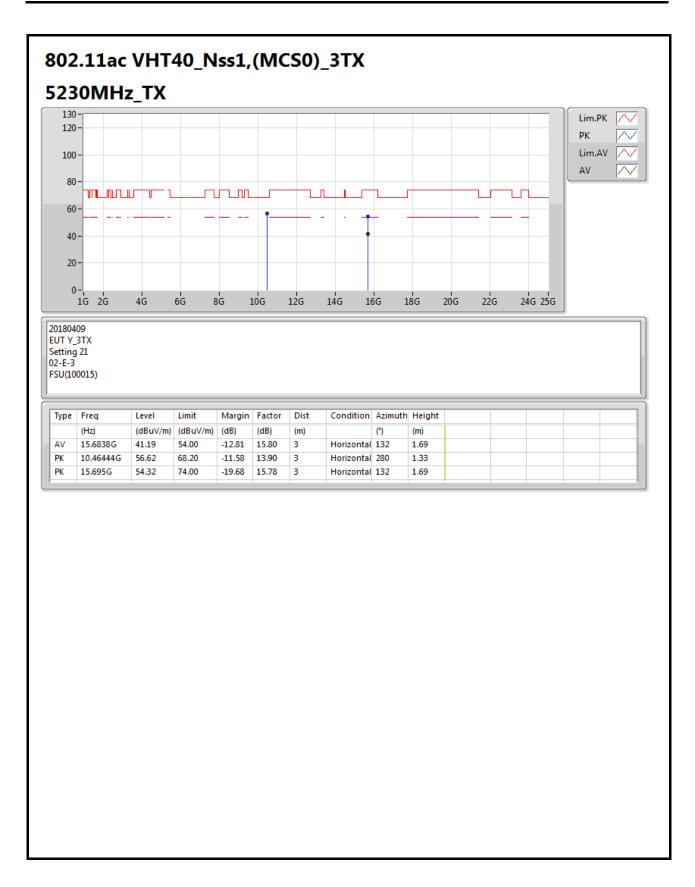
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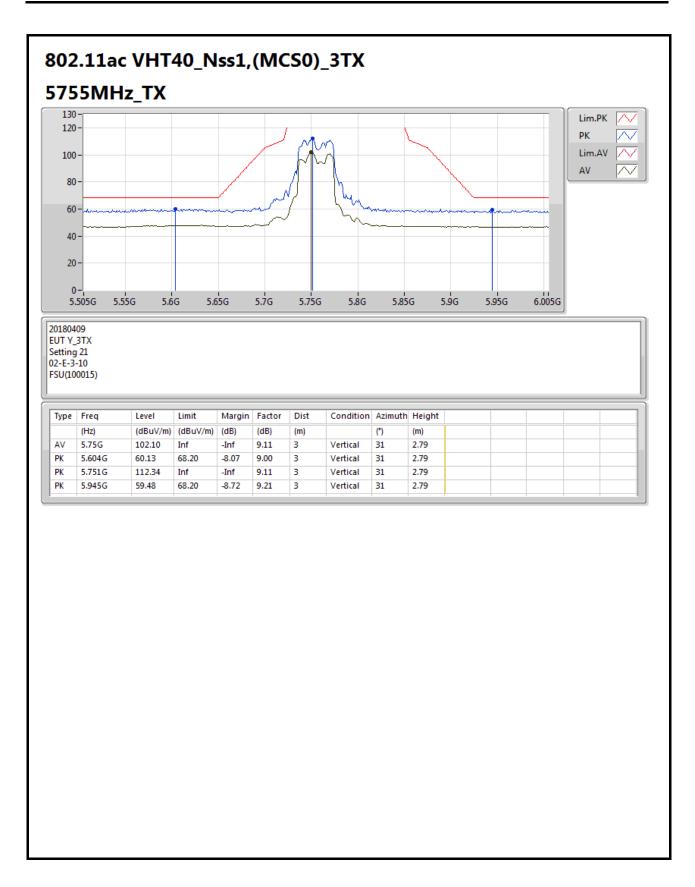
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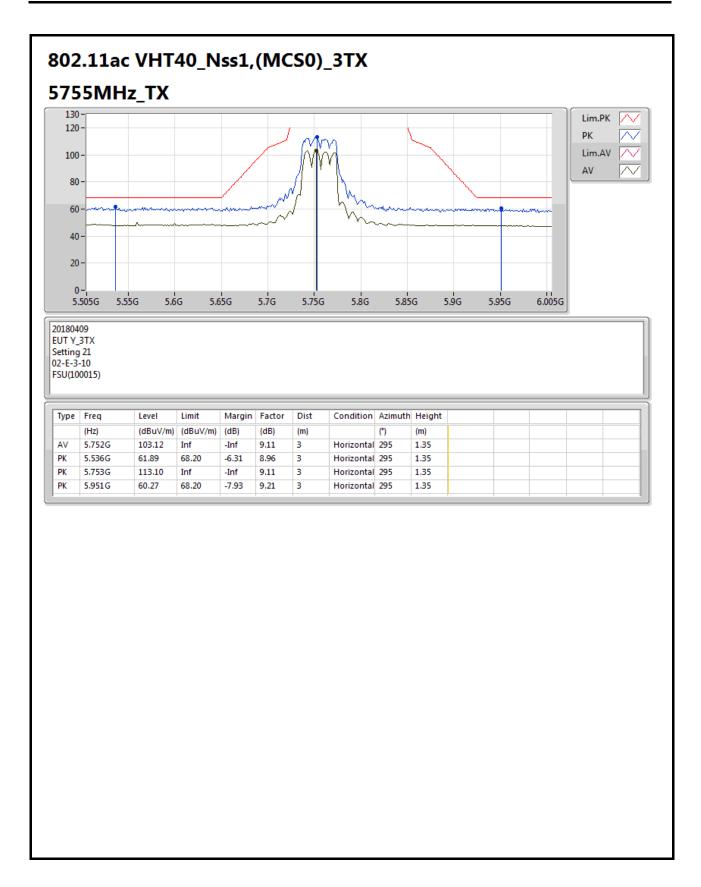
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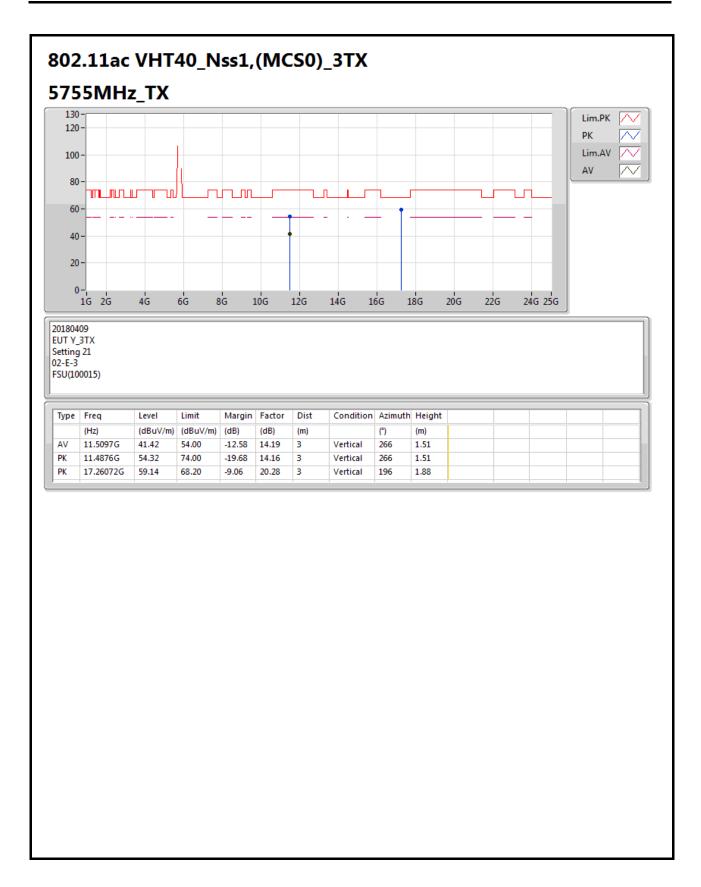
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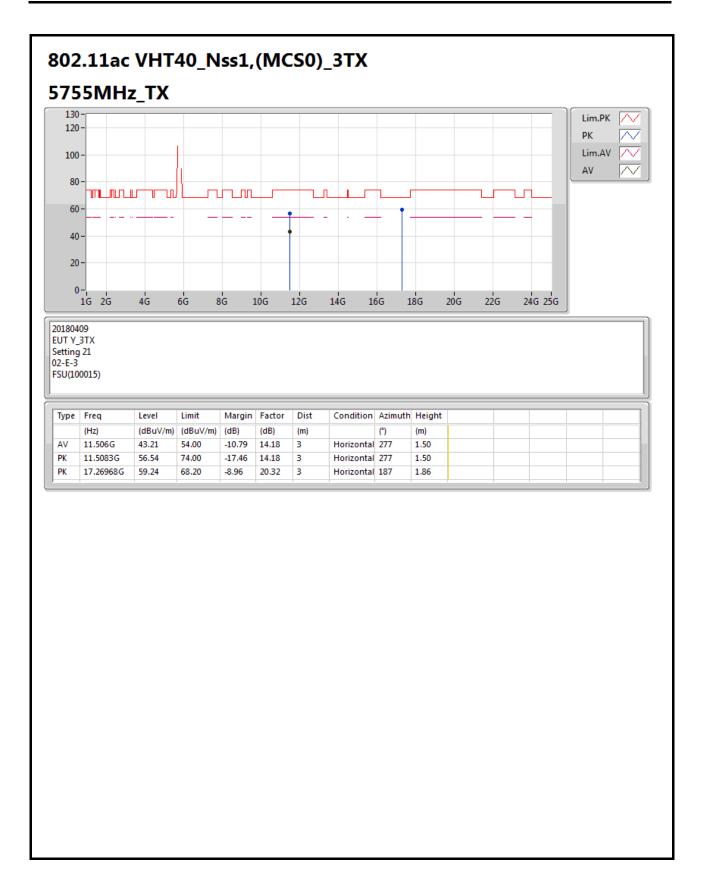
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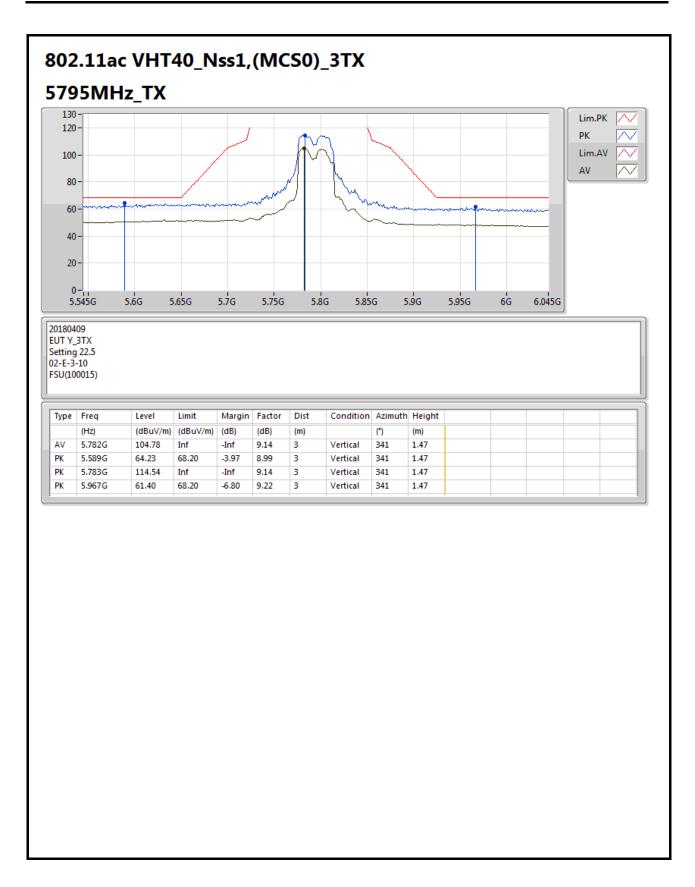
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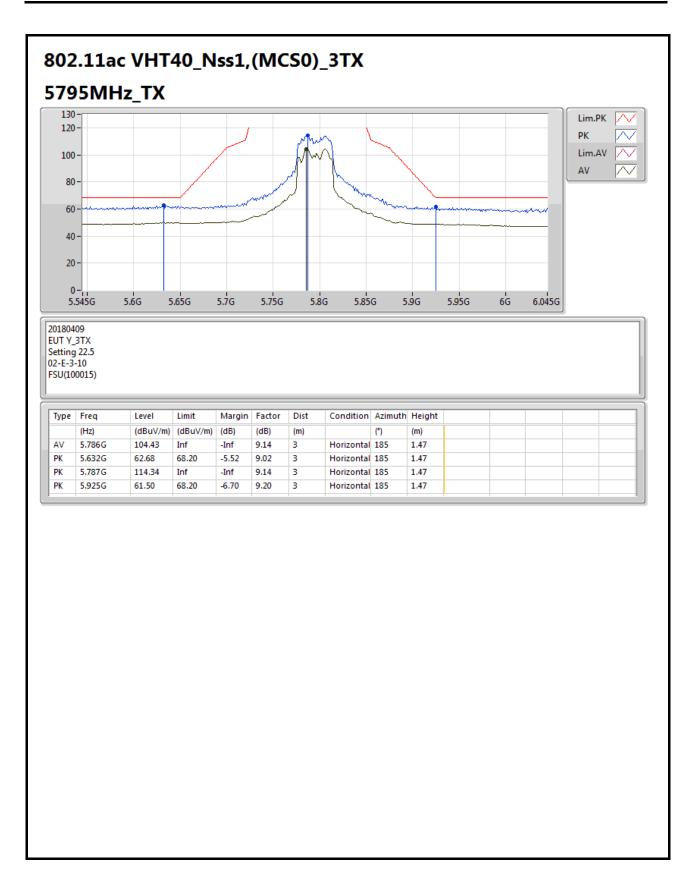
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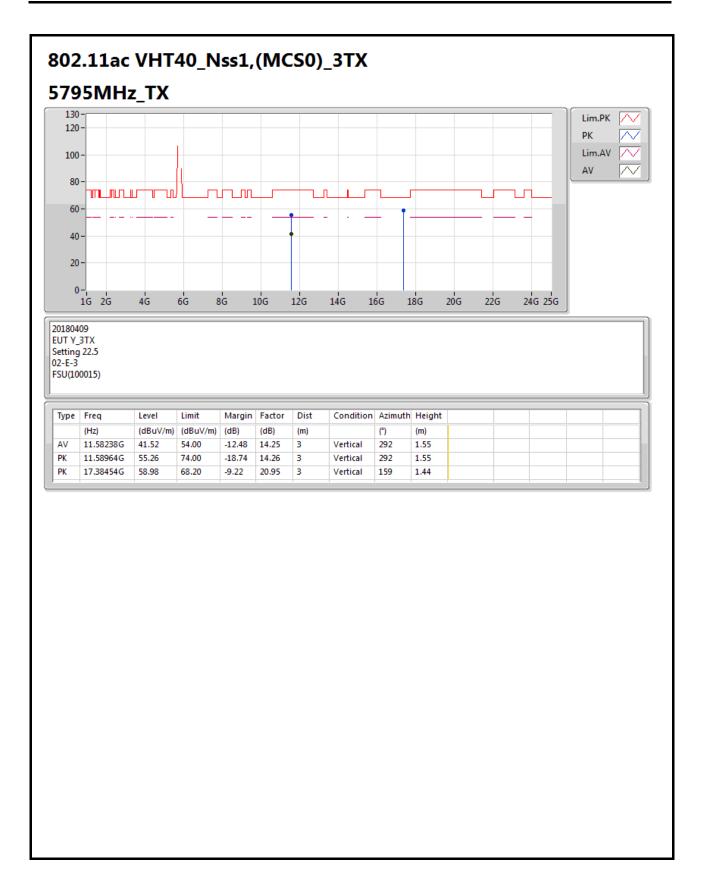
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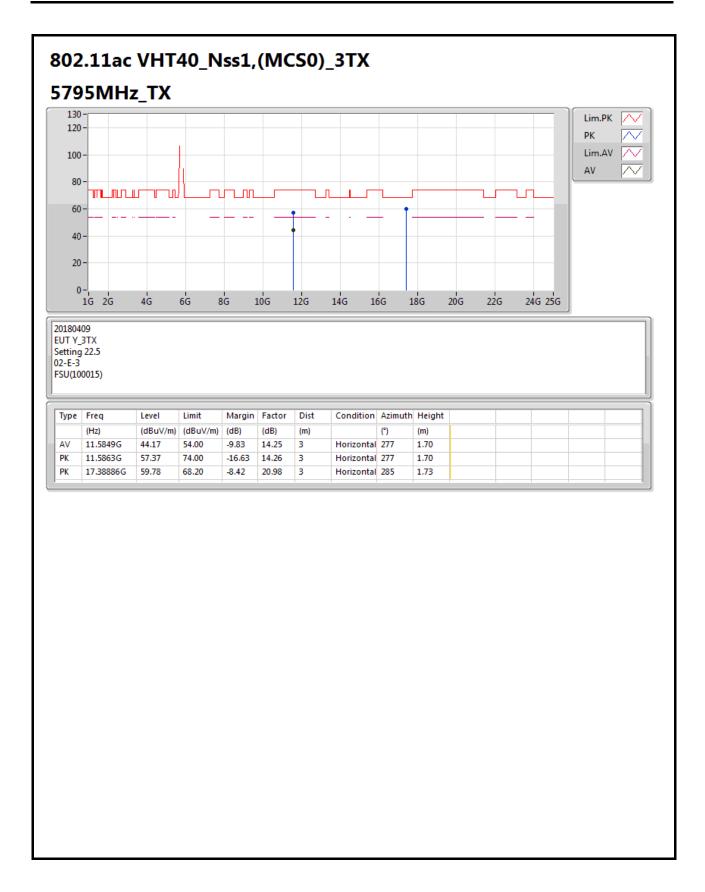
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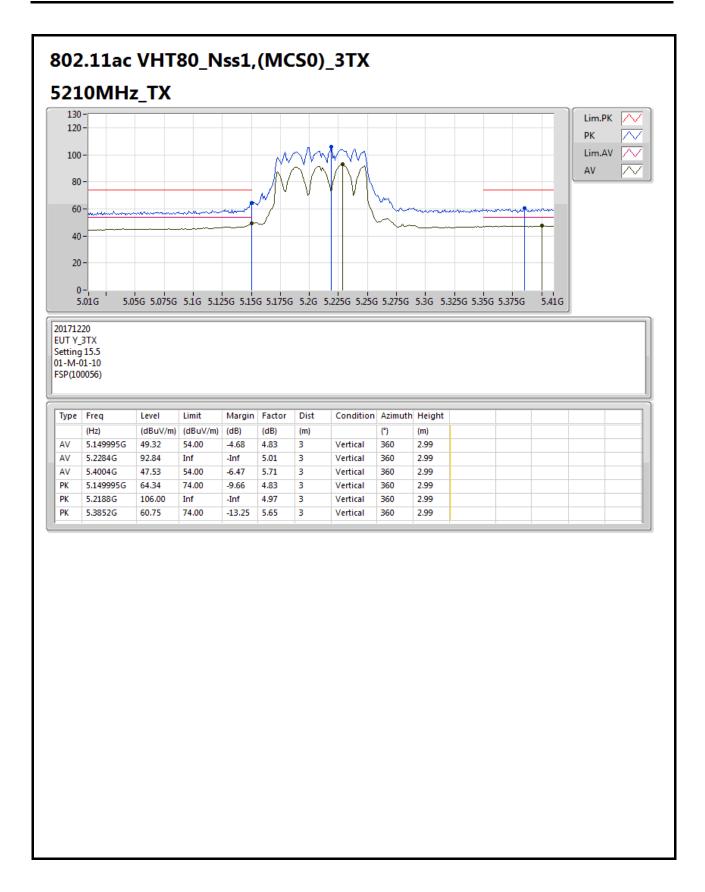
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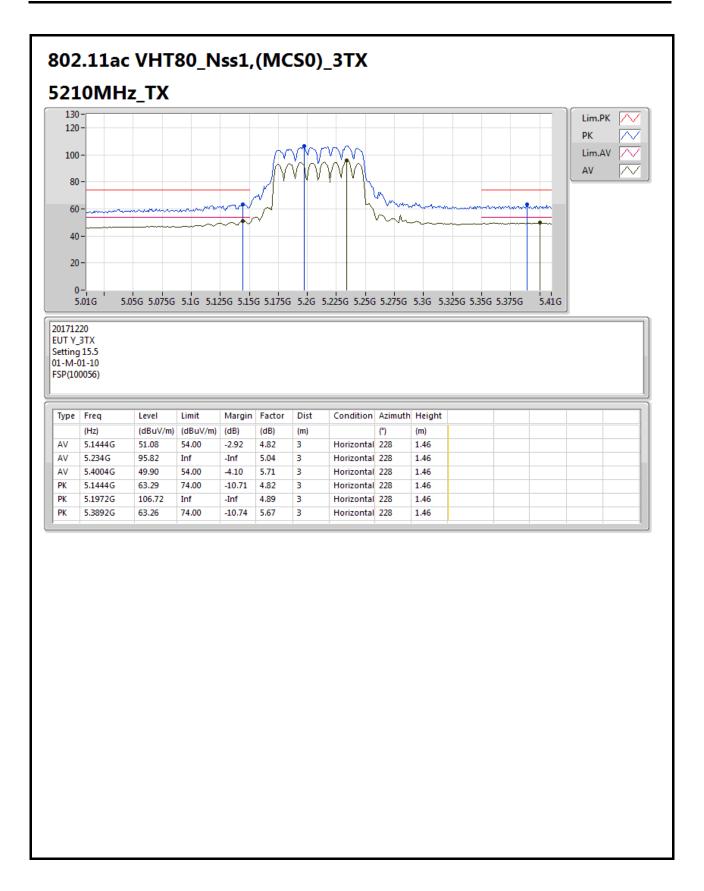
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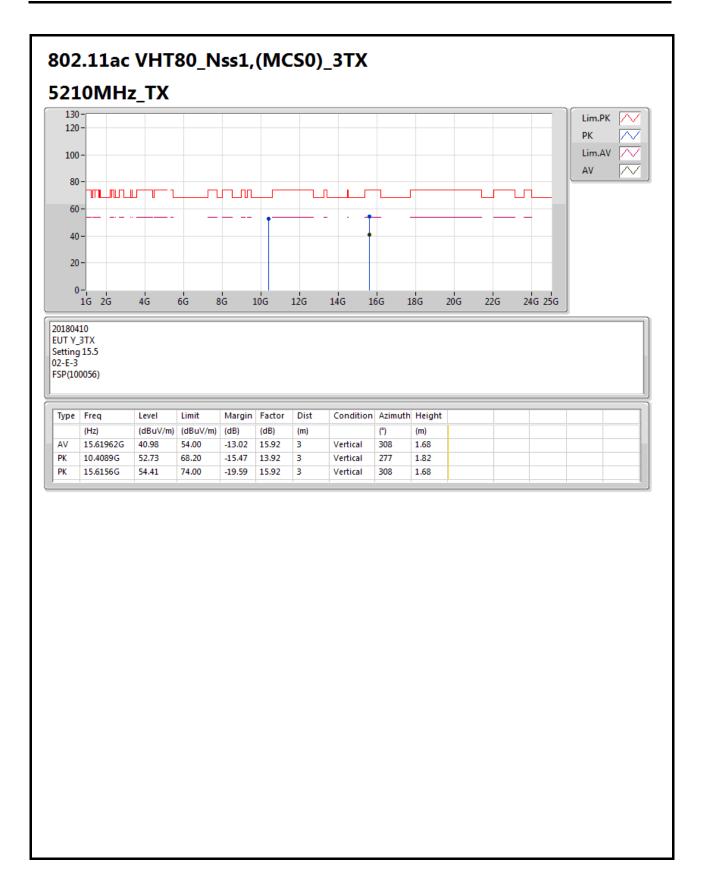
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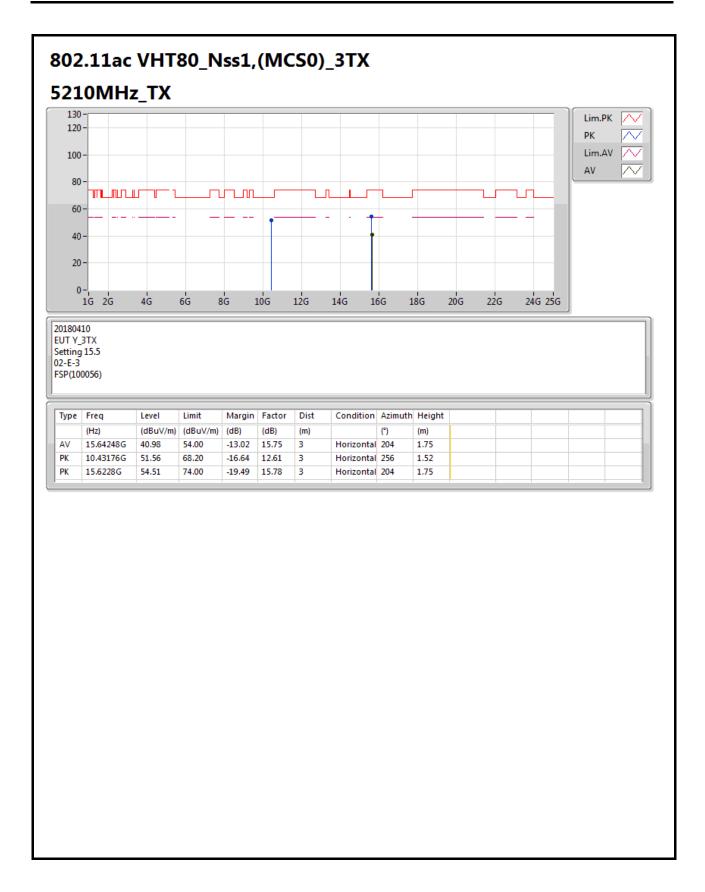
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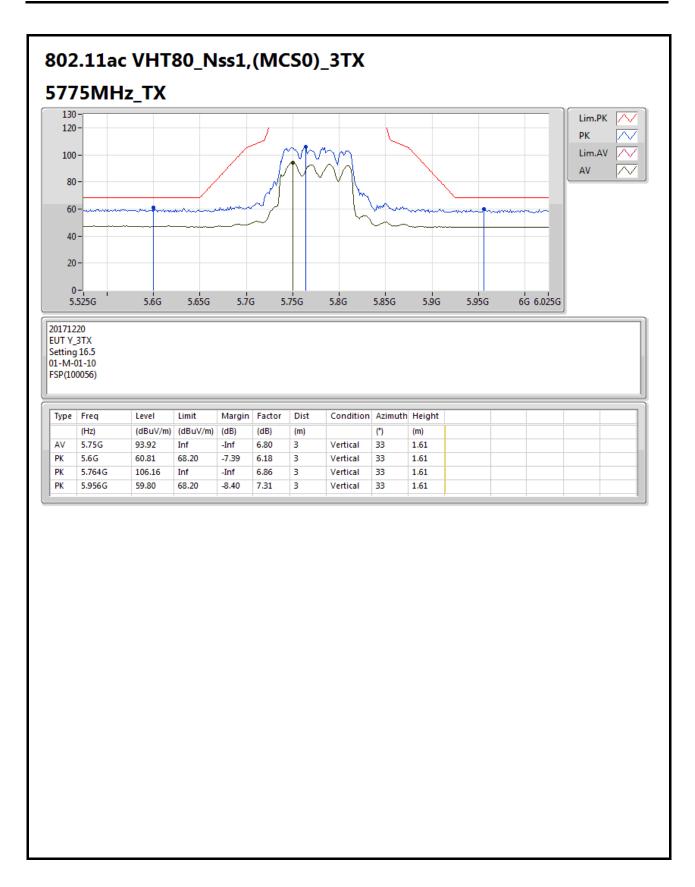
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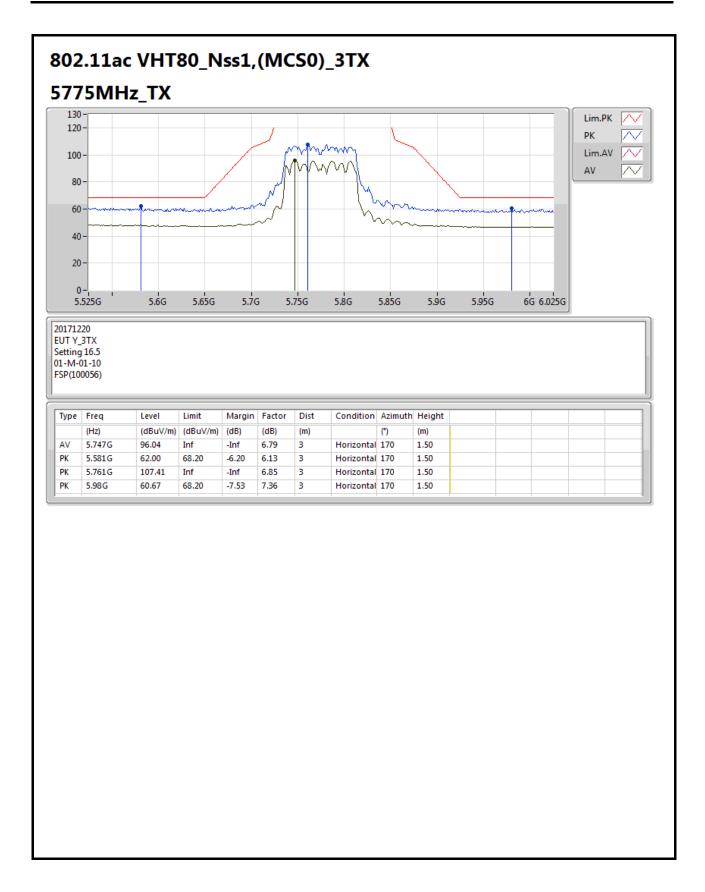
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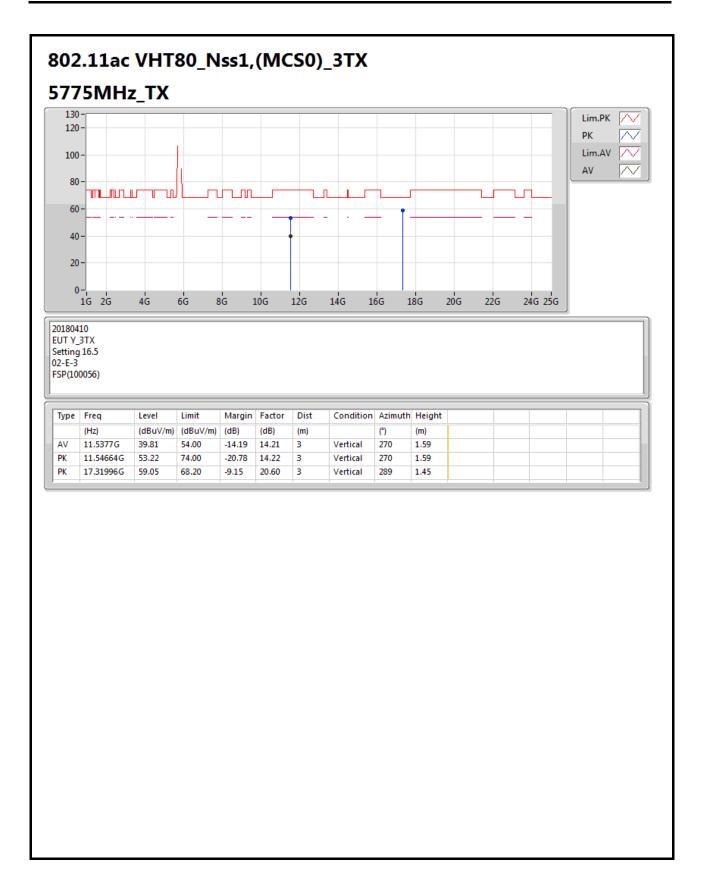
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