



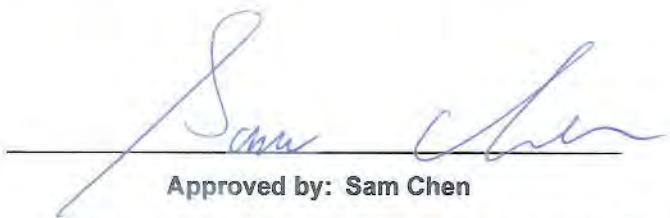
# FCC RADIO TEST REPORT

FCC ID : 2ADZRHA020WB  
Equipment : Nokia Wi-Fi Beacon  
Brand Name : Nokia  
Model Name : HA-020W-B  
Applicant : Nokia Shanghai Bell Co. Ltd.  
No. 388, Ningqiao Rd. Pilot Free Trade Zone  
Shanghai , China 201206  
Manufacturer : Nokia Shanghai Bell Co. Ltd.  
No. 388, Ningqiao Rd. Pilot Free Trade Zone  
Shanghai , China 201206  
Standard : 47 CFR FCC Part 15.407

The product was received on Jan. 31, 2019, and testing was started from Jan. 31, 2019 and completed on Mar. 06, 2019. 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 variant 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.)



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**Appendix A. Test Results of Emission Bandwidth**

**Appendix B. Test Results of Maximum Conducted Output Power**

**Appendix C. Test Results of Peak Power Spectral Density**

**Appendix D. Test Results of Unwanted Emissions**

**Appendix E. Test Photos**

**Photographs of EUT v01**



## History of this test report



## Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.407(a)	Emission Bandwidth	PASS	-
3.2	15.407(a)	Maximum Conducted Output Power	PASS	-
3.3	15.407(a)	Peak Power Spectral Density	PASS	-
3.4	15.407(b)	Unwanted Emissions	PASS	-

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Sandy Chuang



# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5250-5350	a, n (HT20), ac (VHT20)	5260-5320	52-64 [4]
5470-5725		5500-5720	100-144 [12]
5250-5350	n (HT40), ac (VHT40)	5270-5310	54-62 [2]
5470-5725		5510-5710	102-142 [6]
5250-5350	ac (VHT80)	5290	58 [1]
5470-5725		5530-5690	106-138 [3]

Band	Mode	BWch (MHz)	Nant
5.25-5.35GHz	802.11a	20	2TX
5.25-5.35GHz	802.11n HT20	20	2TX
5.25-5.35GHz	802.11n HT20-BF	20	2TX
5.25-5.35GHz	802.11ac VHT20	20	2TX
5.25-5.35GHz	802.11ac VHT20-BF	20	2TX
5.25-5.35GHz	802.11n HT40	40	2TX
5.25-5.35GHz	802.11n HT40-BF	40	2TX
5.25-5.35GHz	802.11ac VHT40	40	2TX
5.25-5.35GHz	802.11ac VHT40-BF	40	2TX
5.25-5.35GHz	802.11ac VHT80	80	2TX
5.25-5.35GHz	802.11ac VHT80-BF	80	2TX
5.47-5.725GHz	802.11a	20	2TX
5.47-5.725GHz	802.11n HT20	20	2TX
5.47-5.725GHz	802.11n HT20-BF	20	2TX
5.47-5.725GHz	802.11ac VHT20	20	2TX
5.47-5.725GHz	802.11ac VHT20-BF	20	2TX
5.47-5.725GHz	802.11n HT40	40	2TX
5.47-5.725GHz	802.11n HT40-BF	40	2TX
5.47-5.725GHz	802.11ac VHT40	40	2TX
5.47-5.725GHz	802.11ac VHT40-BF	40	2TX
5.47-5.725GHz	802.11ac VHT80	80	2TX
5.47-5.725GHz	802.11ac VHT80-BF	80	2TX



## Note:

- ◆ 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- ◆ VHT20, VHT40, 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.



### 1.1.2 Antenna Information

#### <Main Source Antenna>

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz
1	1	Airgain	M5X30CT-G45U	Copper tube Ant.	I-PEX	-	3
2	2	Airgain	M5X30CT-B80U	Copper tube Ant.	I-PEX	-	3
3	1	Airgain	N01NSAAA-T7-PK1-B130	PCB Ant.	N/A	3	-
4	2	Airgain	N01NSAAA-T7-PK1-G85	PCB Ant.	N/A	3	-

#### <Second Source Antenna>

Ant.	Port	Brand Holder	Model Name	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz
1	1	ShangHai Signal Plus Technology Co.,Ltd.	6011F000118	Copper tube Ant.	I-PEX	-	3
2	2	ShangHai Signal Plus Technology Co.,Ltd.	6011F000119	Copper tube Ant.	I-PEX	-	3
3	1	ShangHai Signal Plus Technology Co.,Ltd.	6011F000116	PCB Ant.	N/A	3	-
4	2	ShangHai Signal Plus Technology Co.,Ltd.	6011F000117	PCB Ant.	N/A	3	-

Note 1: The above information was declared by manufacturer.

Note 2: The EUT was only tested for Main Source Antenna.

Note 3:

#### <For 2.4GHz Band>

##### For IEEE 802.11b mode<1TX/1RX>:

Only Port 1 can be used as transmitting/receiving antenna.

##### For IEEE 802.11g/n mode<2TX/2RX>:

Port 1 and Port 2 will transmit/receive the same signal simultaneously.

Port 1 and Port 2 can be used as transmitting/receiving antennas.

#### <For 5GHz Band>

##### For IEEE 802.11a/n/ac mode <2TX/2RX>:

Port 1 and Port 2 will transmit/receive the same signal simultaneously.

Port 1 and Port 2 can be used as transmitting/receiving antennas.



### 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.958	0.186	2.065m	1k
802.11ac VHT20	0.987	0.057	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ac VHT20-BF	0.955	0.2	3.838m	300
802.11ac VHT40	0.973	0.119	953.75u	3k
802.11ac VHT40-BF	0.947	0.237	4.61m	300
802.11ac VHT80	0.944	0.25	461.25u	3k
802.11ac VHT80-BF	0.918	0.372	5.102m	300

### 1.1.4 EUT Operational Condition

EUT Power Type	From Power Adapter			
Beamforming Function	<input checked="" type="checkbox"/> With beamforming	<input type="checkbox"/> Without beamforming		
Note: The product has beamforming function for 802.11n/ac in 5GHz				
Weather Band	<input checked="" type="checkbox"/> With 5600~5650MHz	<input type="checkbox"/> Without 5600~5650MHz		
Function	<input type="checkbox"/> Outdoor P2M	<input checked="" type="checkbox"/> Indoor P2M		
	<input type="checkbox"/> Fixed P2P	<input type="checkbox"/> Client		
TPC Function	<input checked="" type="checkbox"/> With TPC	<input type="checkbox"/> Without TPC		
Test Software Version	MTool : 3.1.0.1			

Note: The above information was declared by manufacturer.

### 1.1.5 Table for Multiple Listing

The EUT has two market sale set which are identical to each other in all aspects except for the following table:

Brand Name	Model Name	Unit	Part Number	Adapter	RJ-45 cable
Nokia	HA-020W-B	KIT_HA-020W-B	3FE 47855 AA	V	V
		EMA_HA-020W-B	3FE 47856 AA	-	-

From the above table, model: HA-020W-B for unit: KIT\_HA-020W-B was selected as representative model for the test and its data was recorded in this report.

### 1.1.6 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FR921805AB.

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
Adding Band 2 and Band 3 (5250~5350 MHz, 5470~5725 MHz) for this device.	<ol style="list-style-type: none"> <li>1. Emission Bandwidth</li> <li>2. Maximum Conducted Output Power</li> <li>3. Peak Power Spectral Density</li> <li>4. Unwanted Emissions &lt;Above 1GHz&gt;</li> </ol>



## 1.2 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ◆ 47 CFR FCC Part 15
- ◆ ANSI C63.10-2013
- ◆ FCC KDB 789033 D02 v02r01
- ◆ FCC KDB 662911 D01 v02r01
- ◆ FCC KDB 412172 D01 v01r01

## 1.3 Testing Location Information

Testing Location				
<input type="checkbox"/>	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		
<input checked="" type="checkbox"/>	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	Owen Hsu	19~21 °C / 52~54%	Jan. 31, 2019 ~ Mar. 06, 2019
Radiated	03CH01-CB	Eason Chen	21~23°C / 53~55%	Mar. 02, 2019~Mar. 05, 2019

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086B 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
Radiated Emission (1GHz ~ 18GHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	3.5 dB	Confidence levels of 95%
Conducted Emission	1.7 dB	Confidence levels of 95%
Output Power Measurement	1.33 dB	Confidence levels of 95%
Power Density Measurement	1.27 dB	Confidence levels of 95%
Bandwidth Measurement	9.74 x10 <sup>-8</sup>	Confidence levels of 95%



## 2 Test Configuration of EUT

### 2.1 Test Channel Mode

Mode	PowerSetting
802.11a_Nss1,(6Mbps)_2TX	-
5260MHz	70
5300MHz	31
5320MHz	31
5500MHz	41
5580MHz	75
5700MHz	62
5720MHz Straddle 5.47-5.725GHz	77
5720MHz Straddle 5.725-5.85GHz	77
802.11ac VHT20_Nss1,(MCS0)_2TX	-
5260MHz	71
5300MHz	32
5320MHz	32
5500MHz	48
5580MHz	72
5700MHz	56
5720MHz Straddle 5.47-5.725GHz	77
5720MHz Straddle 5.725-5.85GHz	77
802.11ac VHT40_Nss1,(MCS0)_2TX	-
5270MHz	40
5310MHz	39
5510MHz	52
5550MHz	48
5670MHz	59
5710MHz Straddle 5.47-5.725GHz	80
5710MHz Straddle 5.725-5.85GHz	80
802.11ac VHT80_Nss1,(MCS0)_2TX	-
5290MHz	50
5530MHz	58
5610MHz	75
5690MHz Straddle 5.47-5.725GHz	78
5690MHz Straddle 5.725-5.85GHz	78
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-
5260MHz	79
5300MHz	30
5320MHz	27



Mode	PowerSetting
5500MHz	39
5580MHz	79
5700MHz	54
5720MHz Straddle 5.47-5.725GHz	77
5720MHz Straddle 5.725-5.85GHz	77
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-
5270MHz	50
5310MHz	44
5510MHz	50
5550MHz	62
5670MHz	65
5710MHz Straddle 5.47-5.725GHz	80
5710MHz Straddle 5.725-5.85GHz	80
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-
5290MHz	55
5530MHz	56
5610MHz	79
5690MHz Straddle 5.47-5.725GHz	78
5690MHz Straddle 5.725-5.85GHz	78

## Note:

- VHT20/VHT40 covers HT20/HT40, due to same modulation. The power setting for 802.11n HT20 and HT40 are the same or lower than 802.11ac VHT20 and VHT40.
- There are two modes of EUT, one is beamforming mode, and the other is non-beamforming mode for 802.11n/ac in 5GHz. All test results were recorded in the report.



## 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth Maximum Conducted Output Power Peak Power Spectral Density
Test Condition	Conducted measurement at transmit chains

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 EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode > 1GHz	CTX
1	EUT with Main Source Antenna

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	WLAN 2.4GHz + WLAN 5GHz

Refer to Sporton Test Report No.: FA921805-01 for Co-location RF Exposure Evaluation.

Note 1: The EUT can only be used in Y axis position.



## 2.3 EUT Operation during Test

For CTX Mode:

**<Non-beamforming mode>**

The EUT was programmed to be in continuously transmitting mode.

**<beamforming mode>**

For Conducted Mode:

The EUT was programmed to be in continuously transmitting mode.

For Radiated Mode:

During the test, the following programs under WIN XP were executed.

The program was executed as follows:

1. During the test, the EUT operation to normal function.
2. Executed command fixed test channel under DOS.
3. Executed "Lantest.exe" to link with the remote workstation to transmit and receive packet by Wireless AP and transmit duty cycle no less than 98%.

## 2.4 Accessories

Accessories			
Equipment Name	Brand Holder	Model Name	Rating
Adapter 1	SHENZHEN RUIDE ELECTRONICAL INDUSTRIAL CO., LTD	RD1201000-C55-26MG	Input: 100-240V~50/60Hz, 0.6A MAX Output: 12V, 1A
Adapter 2	DONGGUAN SHILONG FUHUA ELECTRONIC CO., LTD	UES12LU-120100SPA	Input: 100-240V~50/60Hz, 0.5A Output: 12.0V, 1.0A
Other			
RJ-45 Cable*1: Non-Shielded, 1m			



## 2.5 Support Equipment

For Test Site No: 03CH01-CB

<Non-beamforming mode>

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A

<beamforming mode>

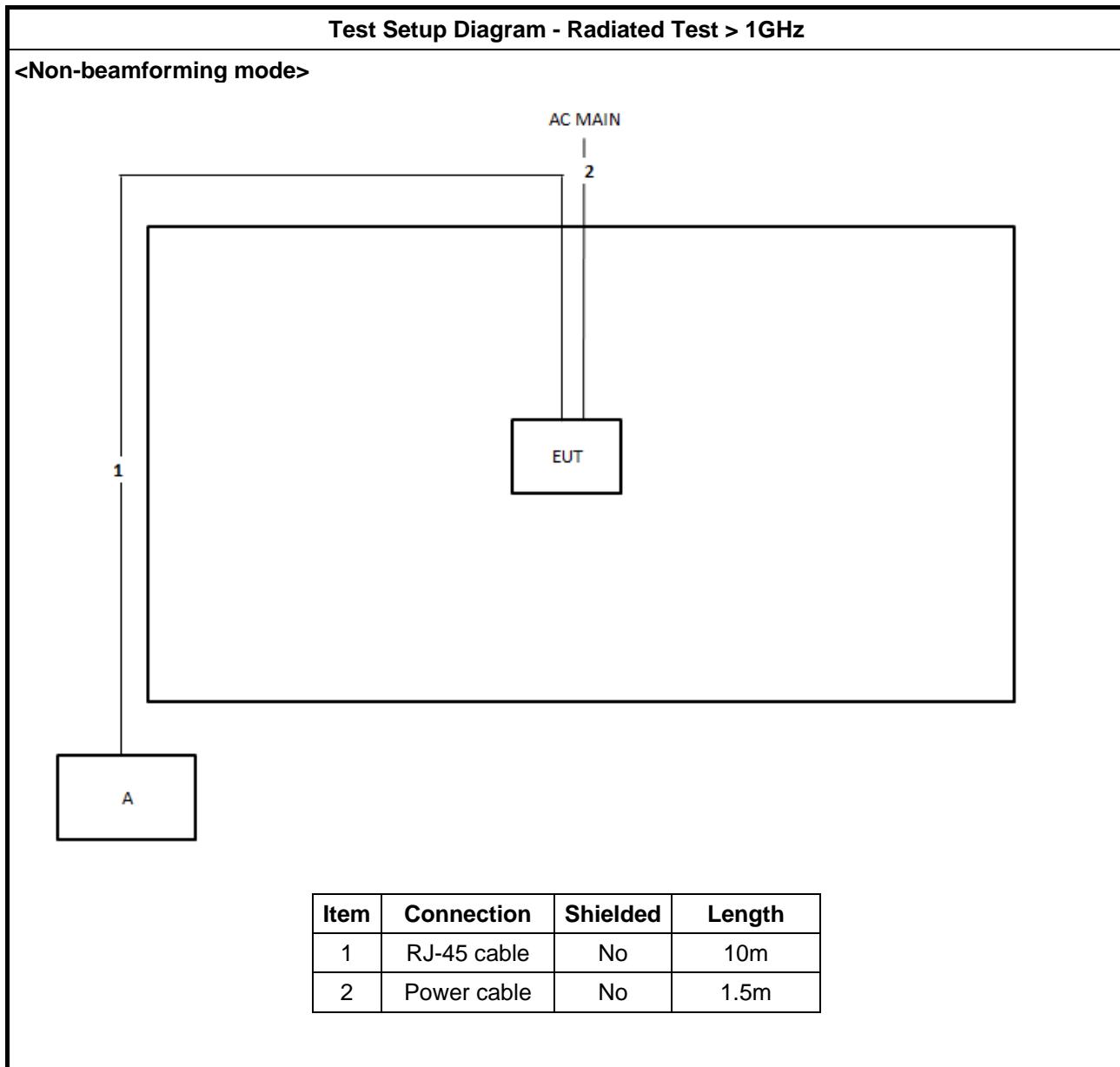
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A
B	NB	DELL	E4300	N/A
C	WLAN module	Boardcom	BCM943162ZP	QDS-BRCM1075

For Test Site No: TH01-CB

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A



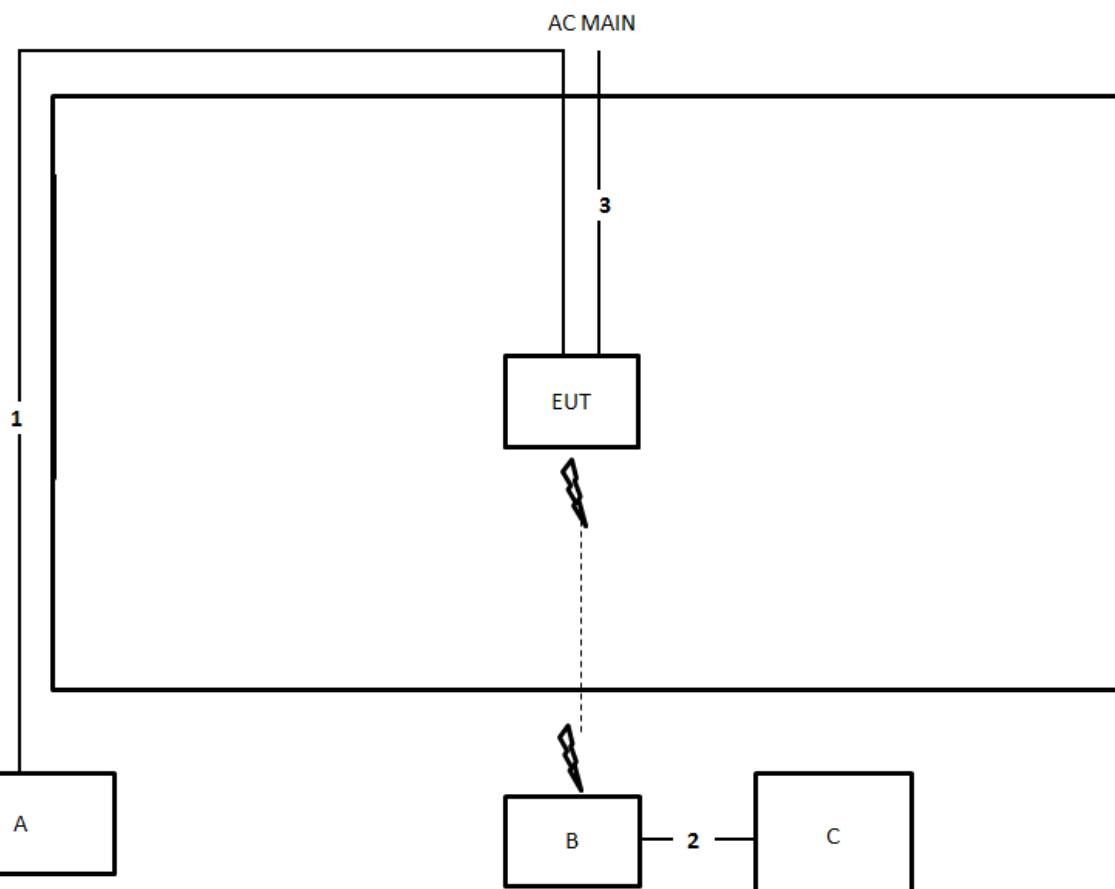
## 2.6 Test Setup Diagram





## Test Setup Diagram - Radiated Test &gt; 1GHz

&lt;beamforming mode&gt;



Item	Connection	Shielded	Length
1	RJ-45 cable	No	10m
2	RJ-45 cable	No	1.5m
3	Power cable	No	1.5m



### 3 Transmitter Test Result

#### 3.1 Emission Bandwidth

##### 3.1.1 Emission Bandwidth Limit

Emission Bandwidth Limit	
<b>UNII Devices</b>	
<input type="checkbox"/> For the 5.15-5.25 GHz band, N/A	
<input checked="" type="checkbox"/> For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in MHz.	
<input checked="" type="checkbox"/> For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in MHz.	
<input checked="" type="checkbox"/> For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq 500\text{kHz}$ .	
<b>LE-LAN Devices</b>	
<input type="checkbox"/> For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz.	
<input type="checkbox"/> For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz	
<input type="checkbox"/> For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz	
<input type="checkbox"/> For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq 500\text{kHz}$ .	

##### 3.1.2 Measuring Instruments

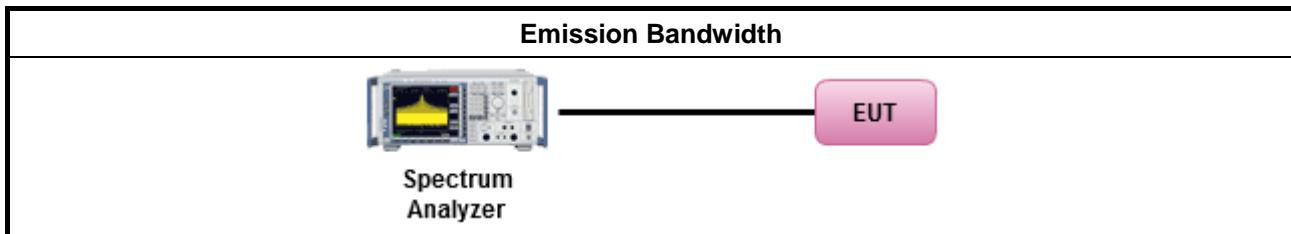
Refer a test equipment and calibration data table in this test report.

##### 3.1.3 Test Procedures

Test Method	
▪ For the emission bandwidth shall be measured using one of the options below:	
<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause C for EBW and clause D for OBW measurement.	
<input type="checkbox"/> Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.	
<input type="checkbox"/> Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.	



### 3.1.4 Test Setup



### 3.1.5 Test Result of Emission Bandwidth

Refer as Appendix A



## 3.2 Maximum Conducted Output Power

### 3.2.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit	
<b>UNII Devices</b>	
<input type="checkbox"/> For the 5.15-5.25 GHz band:	<ul style="list-style-type: none"><li>▪ Outdoor AP: the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6 \text{ dBi}</math>, then <math>P_{out} = 30 - (G_{TX} - 6)</math>. e.i.r.p. at any elevation angle above 30 degrees <math>\leq 125\text{mW}</math> [21dBm]</li><li>▪ Indoor AP: the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6 \text{ dBi}</math>, then <math>P_{out} = 30 - (G_{TX} - 6)</math></li><li>▪ Point-to-point AP: the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 23 \text{ dBi}</math>, then <math>P_{out} = 30 - (G_{TX} - 23)</math>.</li><li>▪ Mobile or Portable Client: the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 250 mW. If <math>G_{TX} &gt; 6 \text{ dBi}</math>, then <math>P_{out} = 24 - (G_{TX} - 6)</math>.</li></ul>
<input checked="" type="checkbox"/> For the 5.25-5.35 GHz band, the maximum conducted output power ( $P_{out}$ ) shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6 \text{ dBi}$ , then $P_{out} = 24 - (G_{TX} - 6)$ .	
<input checked="" type="checkbox"/> For the 5.47-5.725 GHz band, the maximum conducted output power ( $P_{out}$ ) shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$ , where B is the 26 dB emission bandwidth in MHz. If $G_{TX} > 6 \text{ dBi}$ , then $P_{out} = 24 - (G_{TX} - 6)$ .	
<input checked="" type="checkbox"/> For the 5.725-5.85 GHz band:	<ul style="list-style-type: none"><li>▪ Point-to-multipoint systems (P2M): the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6 \text{ dBi}</math>, then <math>P_{out} = 30 - (G_{TX} - 6)</math>.</li><li>▪ Point-to-point systems (P2P): the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 1 W.</li></ul>
<b>LE-LAN Devices</b>	
<input type="checkbox"/> For the 5.15-5.25 GHz band, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz.	
<input type="checkbox"/> For the 5.25-5.35 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz	
<input type="checkbox"/> For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz	
<input type="checkbox"/> For the 5.725-5.85 GHz band:	<ul style="list-style-type: none"><li>▪ Point-to-multipoint systems (P2M): the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 1 W. If <math>G_{TX} &gt; 6 \text{ dBi}</math>, then <math>P_{out} = 30 - (G_{TX} - 6)</math>.</li><li>▪ Point-to-point systems (P2P): the maximum conducted output power (<math>P_{out}</math>) shall not exceed the lesser of 1 W.</li></ul>
$P_{out}$ = maximum conducted output power in dBm, $G_{TX}$ = the maximum transmitting antenna directional gain in dBi.	



### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

Test Method	
▪ Maximum Conducted Output Power	
	Average over on/off periods with duty factor
	<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).
	<input type="checkbox"/> Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)
	Wideband RF power meter and average over on/off periods with duty factor
	<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause E Method PM-G (using an RF average power meter).
▪ For conducted measurement.	
	<ul style="list-style-type: none"><li>▪ 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.</li><li>▪ If multiple transmit chains, EIRP calculation could be following as methods: <math>P_{total} = P_1 + P_2 + \dots + P_n</math> (calculated in linear unit [mW] and transfer to log unit [dBm]) <math>EIRP_{total} = P_{total} + DG</math></li></ul>

### 3.2.4 Test Setup

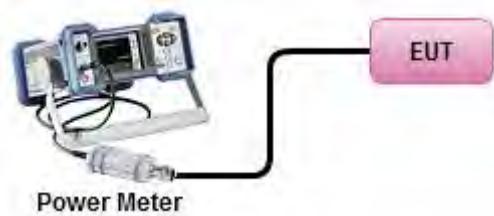
For Straddle Channel test:

RF Output Power (Spectrum Analyzer)



For Other test:

RF Output Power (Power Meter)



### 3.2.5 Test Result of Maximum Conducted Output Power

Refer as Appendix B



### 3.3 Peak Power Spectral Density

#### 3.3.1 Peak Power Spectral Density Limit

Peak Power Spectral Density Limit	
<b>UNII Devices</b>	
<input type="checkbox"/> For the 5.15-5.25 GHz band:	<ul style="list-style-type: none"><li>▪ Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 17 - (G_{TX} - 6)</math>.</li><li>▪ Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then <math>P_{Out} = 17 - (G_{TX} - 6)</math>.</li><li>▪ Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If <math>G_{TX} &gt; 23</math> dBi, then <math>P_{Out} = 17 - (G_{TX} - 23)</math>.</li><li>▪ Mobile or Portable Client: the peak power spectral density (PPSD) <math>\leq 11</math> dBm/MHz. If <math>G_{TX} &gt; 6</math> dBi, then PPSD= <math>11 - (G_{TX} - 6)</math>..</li></ul>
<input checked="" type="checkbox"/> For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq 11$ dBm/MHz. If $G_{TX} > 6$ dBi, then PPSD= $11 - (G_{TX} - 6)$ .	
<input checked="" type="checkbox"/> For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) $\leq 11$ dBm/MHz. If $G_{TX} > 6$ dBi, then PPSD= $11 - (G_{TX} - 6)$ .	
<input checked="" type="checkbox"/> For the 5.725-5.85 GHz band:	<ul style="list-style-type: none"><li>▪ Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) <math>\leq 30</math> dBm/500kHz. If <math>G_{TX} &gt; 6</math> dBi, then PPSD= <math>30 - (G_{TX} - 6)</math>.</li><li>▪ Point-to-point systems (P2P): the peak power spectral density (PPSD) <math>\leq 30</math> dBm/500kHz.</li></ul>
<b>LE-LAN Devices</b>	
<input type="checkbox"/> For the 5.15-5.25 GHz band, the e.i.r.p. peak power spectral density (PPSD) $\leq 10$ dBm/MHz.	
<input type="checkbox"/> For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq 11$ dBm/MHz.	
<input type="checkbox"/> For the 5.47-5.6 GHz band and 5.65-5.725 GHz band, the peak power spectral density (PPSD) $\leq 11$ dBm/MHz.	<ul style="list-style-type: none"><li>▪ e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where <math>\theta</math> is the angle above the local horizontal plane (of the Earth) as shown below: -13 dBW/MHz for <math>0^\circ \leq \theta &lt; 8^\circ</math> ; -13 – 0.716 (<math>\theta</math>-8) dBW/MHz for <math>8^\circ \leq \theta &lt; 40^\circ</math> -35.9 – 1.22 (<math>\theta</math>-40) dBW/MHz for <math>40^\circ \leq \theta \leq 45^\circ</math> ; -42 dBW/MHz for <math>\theta &gt; 45^\circ</math></li></ul>
<input type="checkbox"/> For the 5.725-5.85 GHz band:	<ul style="list-style-type: none"><li>▪ Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) <math>\leq 30</math> dBm/500kHz. If <math>G_{TX} &gt; 6</math> dBi, then PPSD= <math>30 - (G_{TX} - 6)</math>.</li><li>▪ Point-to-point systems (P2P): the peak power spectral density (PPSD) <math>\leq 30</math> dBm/500kHz.</li></ul>
<b>PPSD</b> = peak power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz <b>G<sub>TX</sub></b> = the maximum transmitting antenna directional gain in dBi.	



### 3.3.2 Measuring Instruments

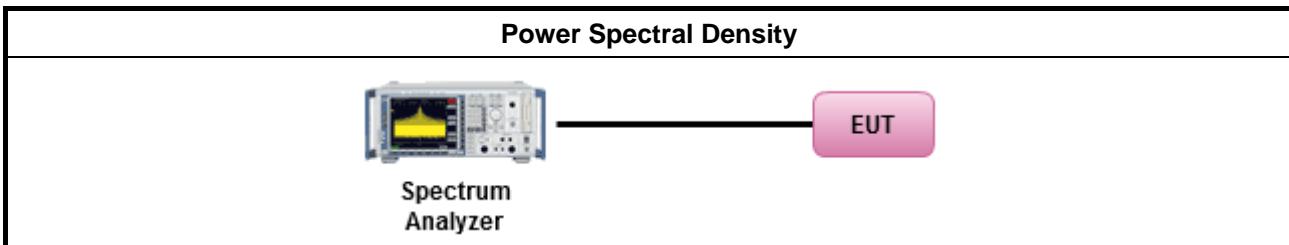
Refer a test equipment and calibration data table in this test report.

### 3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"><li>▪ Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options:</li></ul>	
<input type="checkbox"/> Refer as FCC KDB 789033, F5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth	[duty cycle $\geq$ 98% or external video / power trigger]
<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).	
<input type="checkbox"/> Refer as FCC KDB 789033, clause E Method SA-1 Alt. (RMS detection with slow sweep speed)	duty cycle < 98% and average over on/off periods with duty factor
<input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).	
<input type="checkbox"/> Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
<ul style="list-style-type: none"><li>▪ For conducted measurement.</li></ul>	
<ul style="list-style-type: none"><li>▪ If the EUT supports multiple transmit chains using options given below:</li></ul>	<input checked="" type="checkbox"/> 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.
	<input type="checkbox"/> 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,
	<input type="checkbox"/> 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.
	<ul style="list-style-type: none"><li>▪ If multiple transmit chains, EIRP PPSD calculation could be following as methods: <math>PPSD_{total} = PPSD_1 + PPSD_2 + \dots + PPSD_n</math> (calculated in linear unit [mW] and transfer to log unit [dBm]) <math>EIRP_{total} = PPSD_{total} + DG</math></li></ul>



### 3.3.4 Test Setup



### 3.3.5 Test Result of Peak Power Spectral Density

Refer as Appendix C



### 3.4 Unwanted Emissions

#### 3.4.1 Transmitter 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

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
<input type="checkbox"/> 5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
<input checked="" type="checkbox"/> 5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
<input checked="" type="checkbox"/> 5.47 - 5.725 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
<input checked="" type="checkbox"/> 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 linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).



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

### 3.4.2 Measuring Instruments

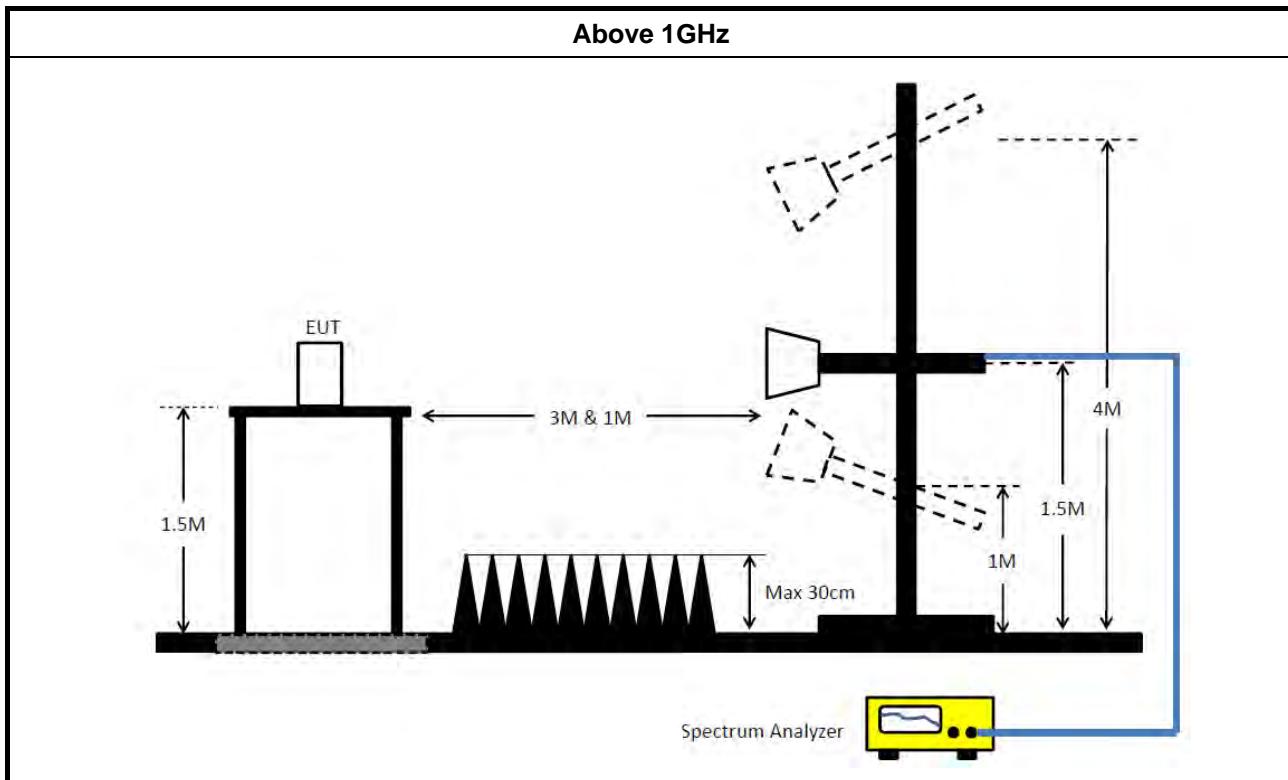
Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

Test Method
<ul style="list-style-type: none"><li>▪ 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).</li></ul>
<ul style="list-style-type: none"><li>▪ The average emission levels shall be measured in [duty cycle <math>\geq</math> 98 or duty factor].</li></ul>
<ul style="list-style-type: none"><li>▪ For the transmitter unwanted emissions shall be measured using following options below:</li></ul>
<ul style="list-style-type: none"><li>▪ Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.</li><li>▪ Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.<ul style="list-style-type: none"><li><input type="checkbox"/> Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).</li><li><input checked="" type="checkbox"/> Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).</li><li><input type="checkbox"/> Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW <math>\geq</math> 1/T, where T is pulse time.</li><li><input type="checkbox"/> Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.</li><li><input checked="" type="checkbox"/> Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.</li><li><input type="checkbox"/> Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.</li></ul></li></ul>
<ul style="list-style-type: none"><li>▪ For radiated measurement.</li></ul>
<ul style="list-style-type: none"><li>▪ Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.</li><li>▪ Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.</li><li>▪ Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.</li></ul>
<ul style="list-style-type: none"><li>▪ The any unwanted emissions level shall not exceed the fundamental emission level.</li></ul>
<ul style="list-style-type: none"><li>▪ All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.</li></ul>



### 3.4.4 Test Setup



### 3.4.5 Test Result of Transmitter Unwanted Emissions

Refer as Appendix D



## 4 Test Equipment and Calibration Data

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Horn Antenna	EMCO	3115	00075790	750MHz ~ 18GHz	Nov. 13, 2018	Nov. 12, 2019	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jun. 28, 2018	Jun. 27, 2019	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Jan. 08, 2019	Jan. 07, 2020	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	Jan. 31, 2019	Jan. 30, 2020	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS	100359	9kHz ~ 2.75GHz	Jul. 03, 2018	Jul. 02, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16	N/A	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-16+17	N/A	1 GHz ~ 18 GHz	Oct. 08, 2018	Oct. 07, 2019	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	101027	9kHz~40GHz	Jun. 22, 2018	Jun. 21, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-28	1 GHz –26.5 GHz	Nov. 19, 2018	Nov. 18, 2019	Conducted (TH01-CB)
Power Sensor	Agilent	U2021XA	MY53410001	50MHz~18GHz	Nov. 05, 2018	Nov. 04, 2019	Conducted (TH01-CB)

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



## Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
5.25-5.35GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	20.525M	16.75M	16M7D1D	20.225M	16.6M
802.11ac VHT20_Nss1,(MCS0)_2TX	20.9M	17.825M	17M8D1D	20.25M	17.775M
802.11ac VHT40_Nss1,(MCS0)_2TX	41.25M	36.6M	36M6D1D	40.7M	36.5M
802.11ac VHT80_Nss1,(MCS0)_2TX	83.1M	75.9M	75M9D1D	82.5M	75.7M
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	20.8M	17.85M	17M8D1D	20.425M	17.75M
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	41.45M	36.55M	36M5D1D	40.85M	36.5M
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	82.7M	75.8M	75M8D1D	82.4M	75.8M
5.47-5.725GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	20.45M	16.7M	16M7D1D	15.03M	13.223M
802.11ac VHT20_Nss1,(MCS0)_2TX	20.75M	17.8M	17M8D1D	15.27M	13.808M
802.11ac VHT40_Nss1,(MCS0)_2TX	41.55M	36.65M	36M6D1D	34.58M	32.954M
802.11ac VHT80_Nss1,(MCS0)_2TX	82.9M	75.8M	75M8D1D	75.975M	72.264M
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	20.8M	17.85M	17M8D1D	15.045M	13.793M
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	41.25M	36.65M	36M6D1D	34.685M	32.954M
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	83.2M	75.9M	75M9D1D	75.9M	72.339M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	3.26M	3.718M	3M72D1D	3.18M	3.658M
802.11ac VHT20_Nss1,(MCS0)_2TX	3.82M	4.098M	4M10D1D	3.8M	4.098M
802.11ac VHT40_Nss1,(MCS0)_2TX	3.2M	3.498M	3M50D1D	3.16M	3.458M
802.11ac VHT80_Nss1,(MCS0)_2TX	3.2M	3.798M	3M80D1D	3.18M	3.798M
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	3.82M	4.118M	4M12D1D	3.82M	4.098M
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	3.22M	3.558M	3M56D1D	3.2M	3.478M
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	3.2M	3.778M	3M78D1D	3.2M	3.758M

**Max-N dB** = Maximum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

**Max-OBW** = Maximum 99% occupied bandwidth;

**Min-N dB** = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

**Min-OBW** = Minimum 99% occupied bandwidth;



## Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5260MHz	Pass	Inf	20.4M	16.625M	20.225M	16.6M
5300MHz	Pass	Inf	20.525M	16.75M	20.425M	16.75M
5320MHz	Pass	Inf	20.5M	16.675M	20.35M	16.65M
5500MHz	Pass	Inf	20.45M	16.7M	20.275M	16.6M
5580MHz	Pass	Inf	20.4M	16.65M	20.45M	16.65M
5700MHz	Pass	Inf	20.425M	16.675M	20.2M	16.65M
5720MHz Straddle 5.47-5.725GHz	Pass	Inf	15.045M	13.223M	15.03M	13.238M
5720MHz Straddle 5.725-5.85GHz	Pass	500k	3.18M	3.658M	3.26M	3.718M
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5260MHz	Pass	Inf	20.775M	17.775M	20.425M	17.825M
5300MHz	Pass	Inf	20.9M	17.825M	20.25M	17.775M
5320MHz	Pass	Inf	20.775M	17.8M	20.45M	17.775M
5500MHz	Pass	Inf	20.725M	17.775M	20.45M	17.8M
5580MHz	Pass	Inf	20.75M	17.75M	20.45M	17.8M
5700MHz	Pass	Inf	20.7M	17.8M	20.35M	17.775M
5720MHz Straddle 5.47-5.725GHz	Pass	Inf	15.27M	13.808M	15.27M	13.808M
5720MHz Straddle 5.725-5.85GHz	Pass	500k	3.8M	4.098M	3.82M	4.098M
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5270MHz	Pass	Inf	41.25M	36.55M	40.7M	36.5M
5310MHz	Pass	Inf	41.15M	36.6M	40.75M	36.6M
5510MHz	Pass	Inf	41.5M	36.55M	40.8M	36.65M
5550MHz	Pass	Inf	41.55M	36.6M	40.65M	36.45M
5670MHz	Pass	Inf	41.25M	36.55M	40.7M	36.6M
5710MHz Straddle 5.47-5.725GHz	Pass	Inf	34.965M	32.954M	34.58M	32.954M
5710MHz Straddle 5.725-5.85GHz	Pass	500k	3.2M	3.498M	3.16M	3.458M
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5290MHz	Pass	Inf	83.1M	75.9M	82.5M	75.7M
5530MHz	Pass	Inf	82.1M	75.7M	82.1M	75.7M
5610MHz	Pass	Inf	82.9M	75.8M	81.8M	75.8M
5690MHz Straddle 5.47-5.725GHz	Pass	Inf	76.125M	72.264M	75.975M	72.414M
5690MHz Straddle 5.725-5.85GHz	Pass	500k	3.2M	3.798M	3.18M	3.798M
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5260MHz	Pass	Inf	20.65M	17.825M	20.45M	17.75M
5300MHz	Pass	Inf	20.775M	17.825M	20.425M	17.8M
5320MHz	Pass	Inf	20.8M	17.85M	20.45M	17.8M
5500MHz	Pass	Inf	20.725M	17.725M	20.35M	17.75M
5580MHz	Pass	Inf	20.8M	17.85M	20.475M	17.825M
5700MHz	Pass	Inf	20.75M	17.75M	20.425M	17.8M
5720MHz Straddle 5.47-5.725GHz	Pass	Inf	15.15M	13.793M	15.045M	13.793M
5720MHz Straddle 5.725-5.85GHz	Pass	500k	3.82M	4.118M	3.82M	4.098M
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5270MHz	Pass	Inf	41.3M	36.55M	41.1M	36.55M
5310MHz	Pass	Inf	41.45M	36.55M	40.85M	36.5M



## EBW Result

## Appendix A

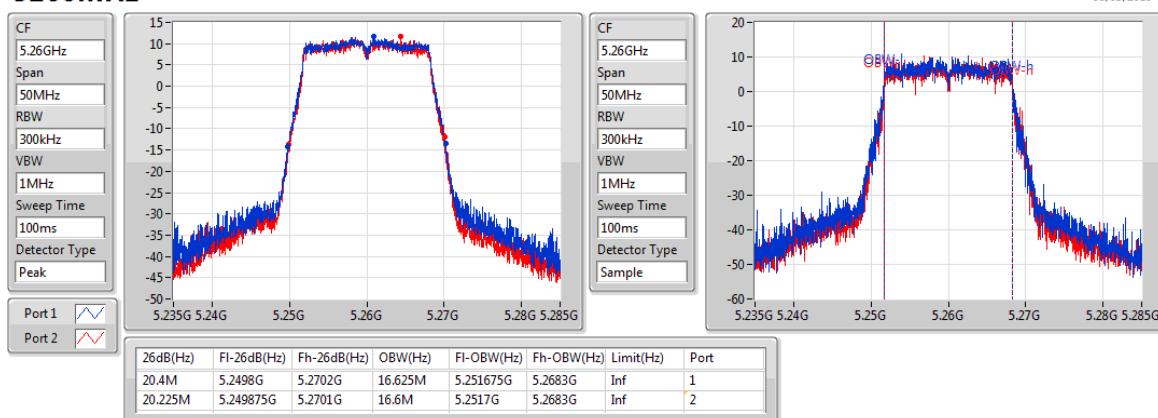
Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)	Port 2-N dB (Hz)	Port 2-OBW (Hz)
5510MHz	Pass	Inf	41.25M	36.65M	40.8M	36.5M
5550MHz	Pass	Inf	41.15M	36.55M	41.05M	36.6M
5670MHz	Pass	Inf	41.15M	36.5M	40.9M	36.6M
5710MHz Straddle 5.47-5.725GHz	Pass	Inf	34.965M	32.989M	34.685M	32.954M
5710MHz Straddle 5.725-5.85GHz	Pass	500k	3.22M	3.558M	3.2M	3.478M
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5290MHz	Pass	Inf	82.7M	75.8M	82.4M	75.8M
5530MHz	Pass	Inf	83M	75.8M	82.1M	75.6M
5610MHz	Pass	Inf	83.2M	75.9M	82.1M	75.6M
5690MHz Straddle 5.47-5.725GHz	Pass	Inf	76.35M	72.564M	75.9M	72.339M
5690MHz Straddle 5.725-5.85GHz	Pass	500k	3.2M	3.778M	3.2M	3.758M

**Port X-N dB** = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band

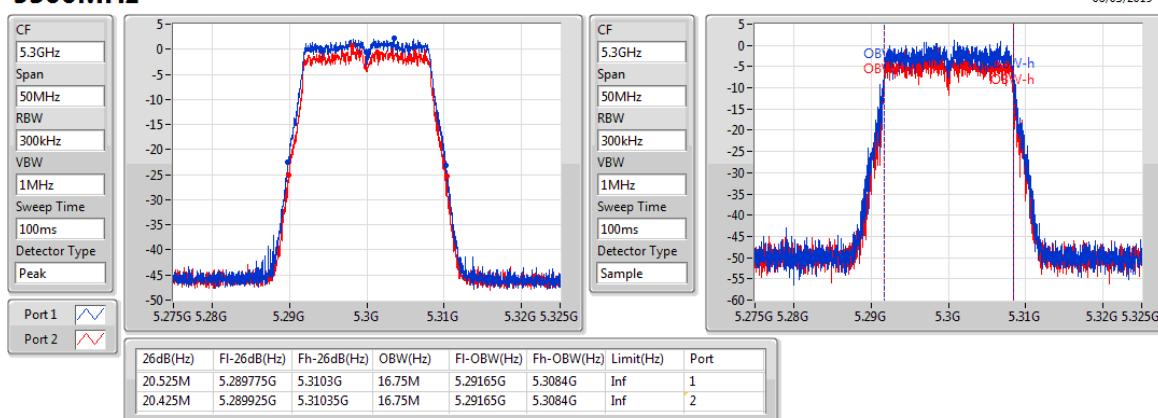
**Port X-OBW** = Port X 99% occupied bandwidth;

**802.11a\_Nss1,(6Mbps)\_2TX****EBW****5260MHz**

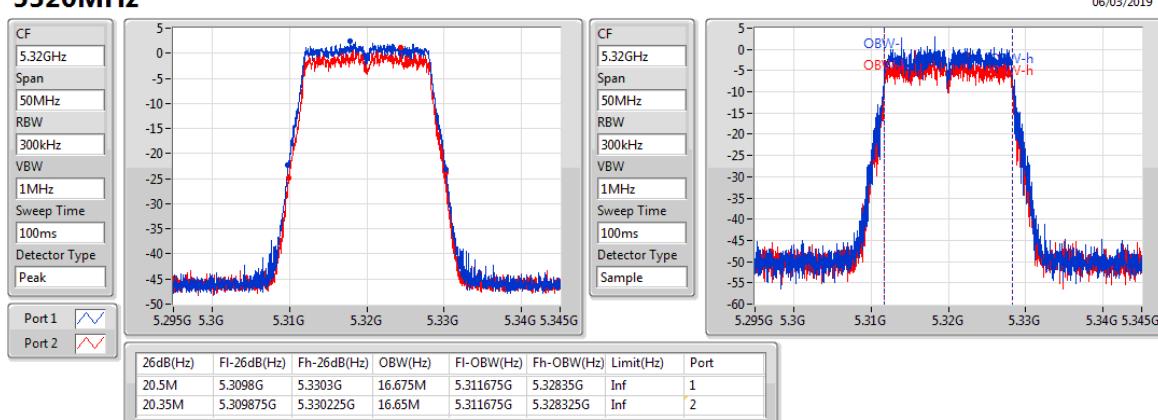
06/03/2019

**802.11a\_Nss1,(6Mbps)\_2TX****EBW****5300MHz**

06/03/2019

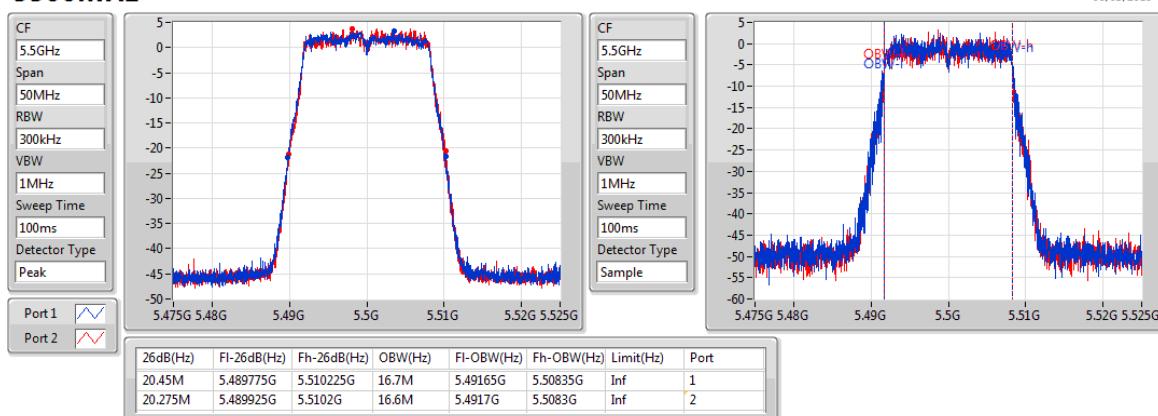
**802.11a\_Nss1,(6Mbps)\_2TX****EBW****5320MHz**

06/03/2019

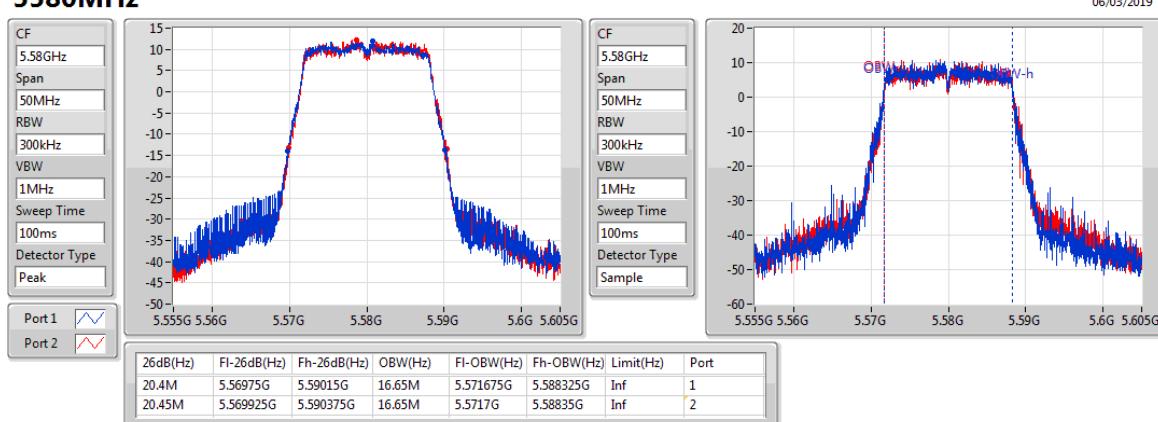


**802.11a\_Nss1,(6Mbps)\_2TX****EBW****5500MHz**

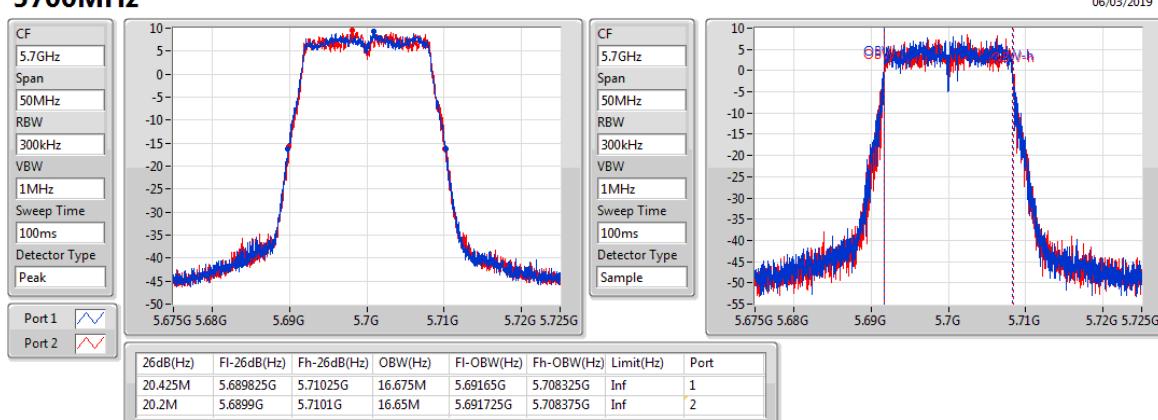
06/03/2019

**802.11a\_Nss1,(6Mbps)\_2TX****EBW****5580MHz**

06/03/2019

**802.11a\_Nss1,(6Mbps)\_2TX****EBW****5700MHz**

06/03/2019





## EBW Result

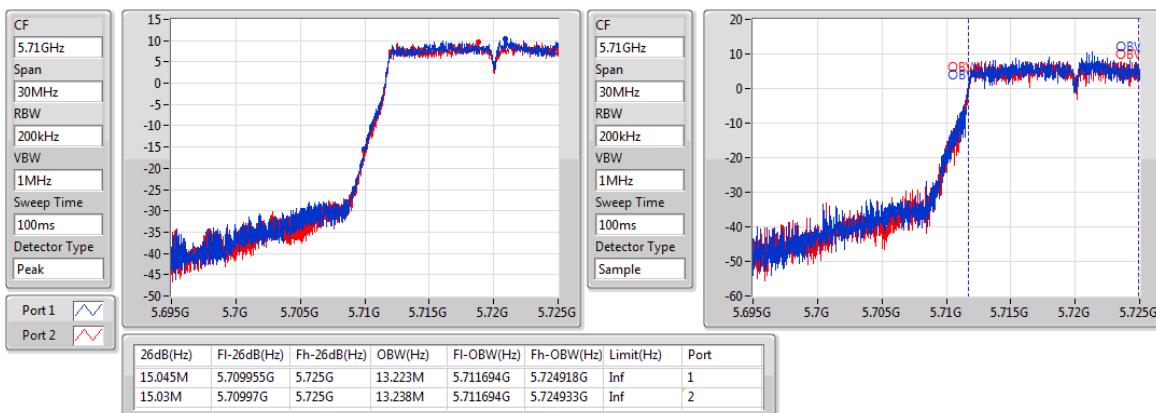
## Appendix A

### 802.11a\_Nss1,(6Mbps)\_2TX

EBW

5720MHz Straddle 5.47-5.725GHz

06/03/2019

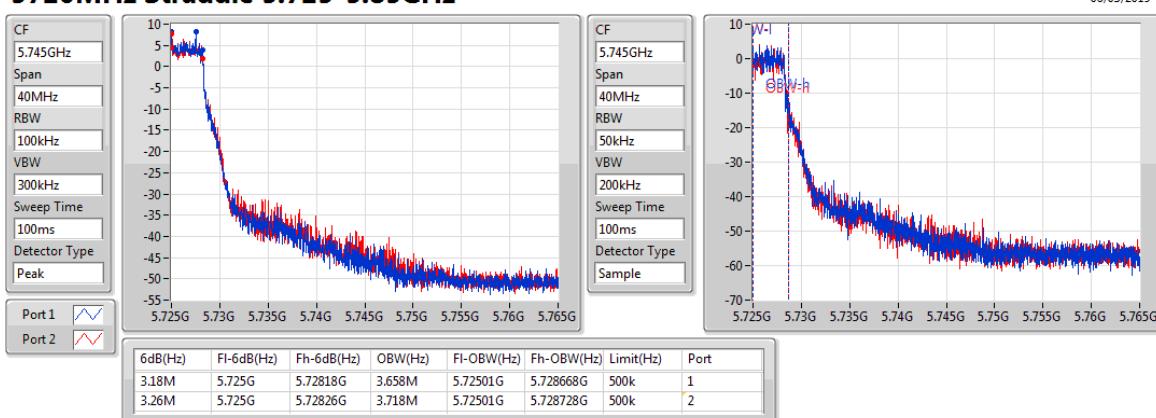


### 802.11a\_Nss1,(6Mbps)\_2TX

EBW

5720MHz Straddle 5.725-5.85GHz

06/03/2019

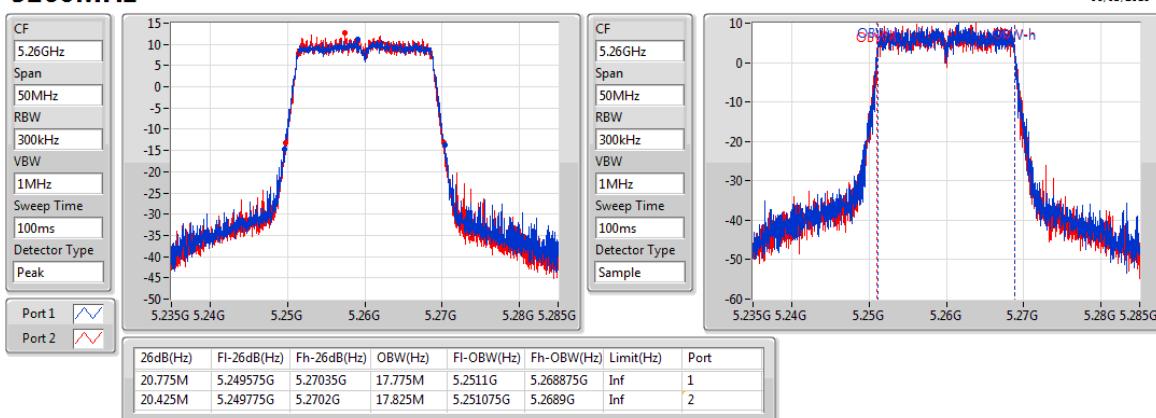


### 802.11ac VHT20\_Nss1,(MCS0)\_2TX

EBW

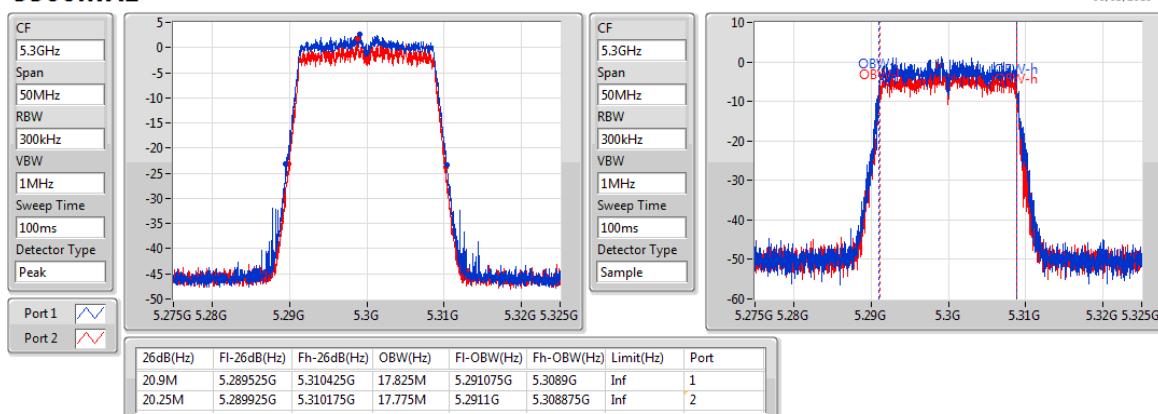
5260MHz

06/03/2019

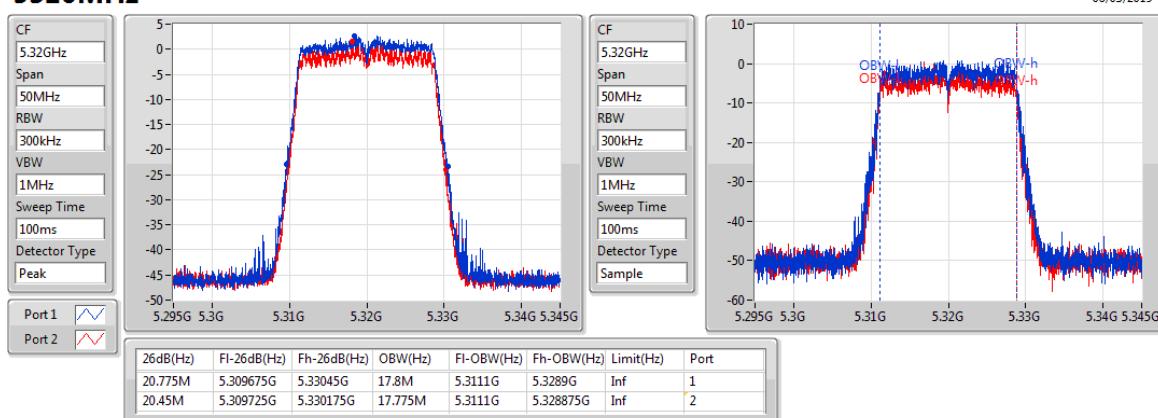


**802.11ac VHT20\_Nss1,(MCS0)\_2TX****EBW****5300MHz**

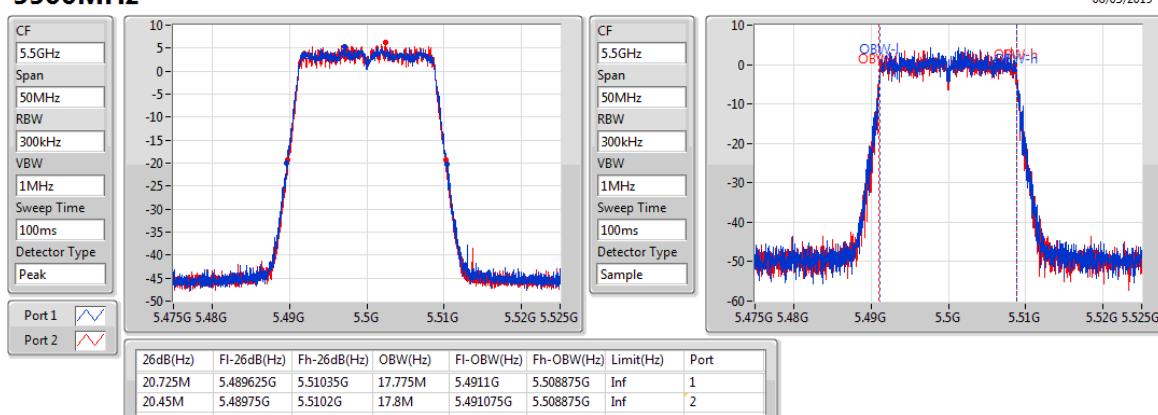
06/03/2019

**802.11ac VHT20\_Nss1,(MCS0)\_2TX****EBW****5320MHz**

06/03/2019

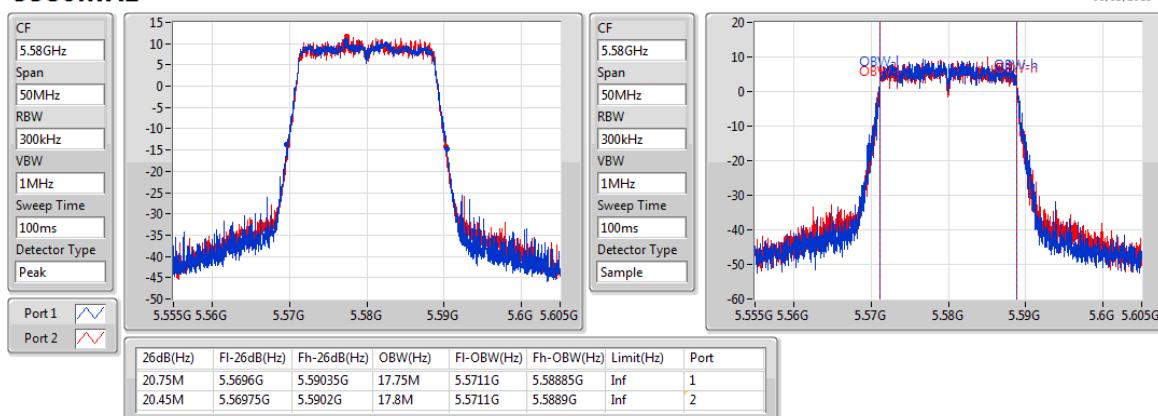
**802.11ac VHT20\_Nss1,(MCS0)\_2TX****EBW****5500MHz**

06/03/2019

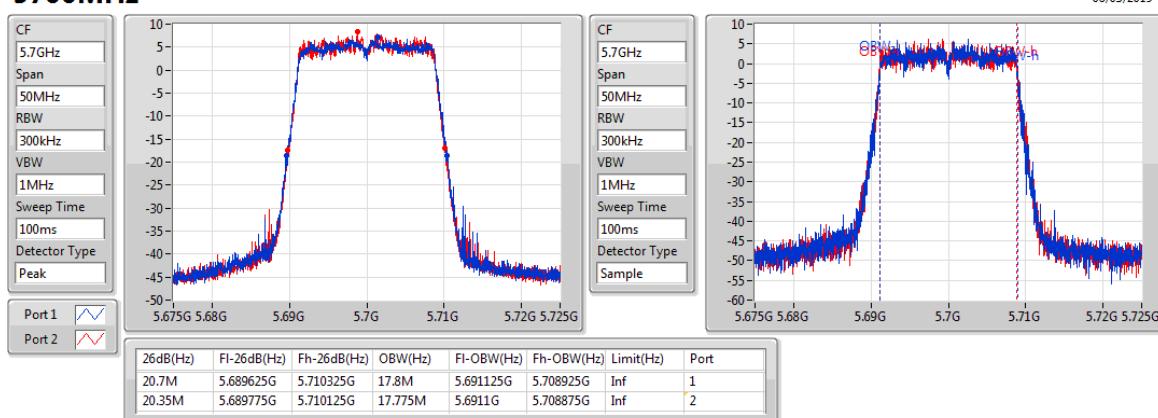


**802.11ac VHT20\_Nss1,(MCS0)\_2TX****EBW****5580MHz**

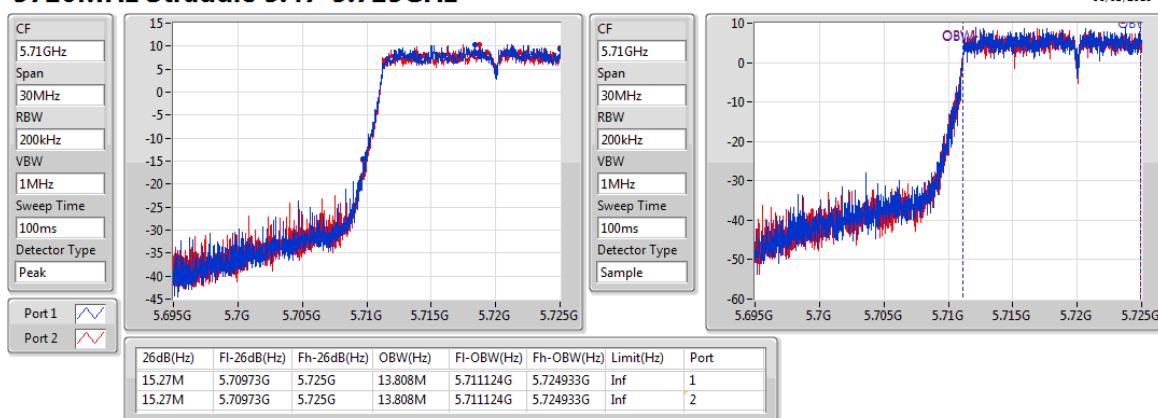
06/03/2019

**802.11ac VHT20\_Nss1,(MCS0)\_2TX****EBW****5700MHz**

06/03/2019

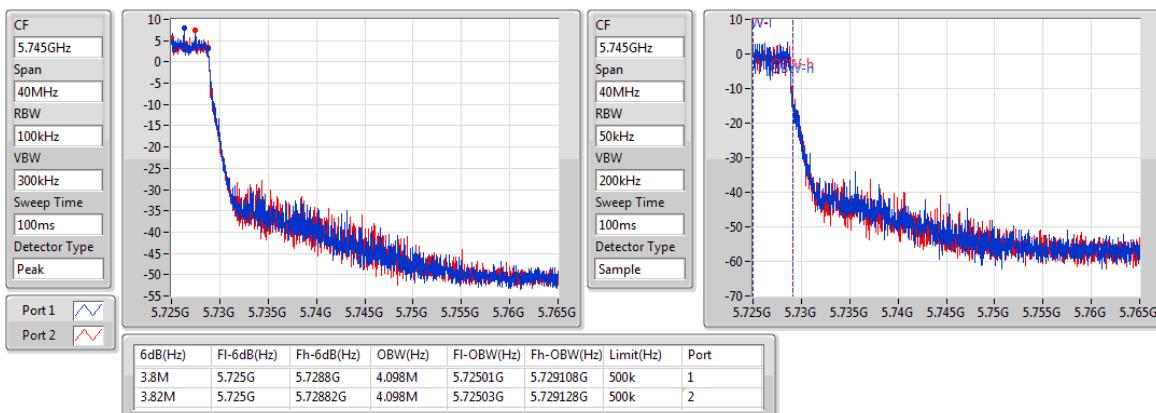
**802.11ac VHT20\_Nss1,(MCS0)\_2TX****EBW****5720MHz Straddle 5.47-5.725GHz**

06/03/2019

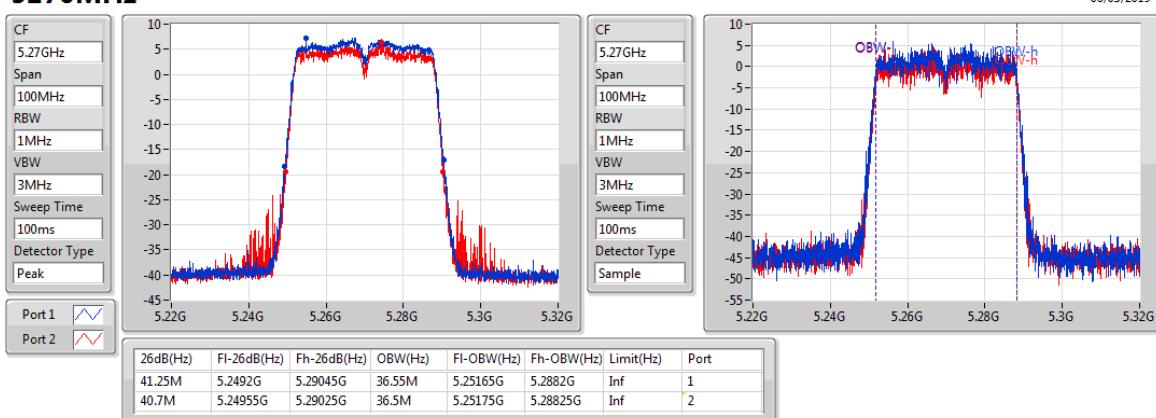


**802.11ac VHT20\_Nss1,(MCS0)\_2TX****EBW****5720MHz Straddle 5.725-5.85GHz**

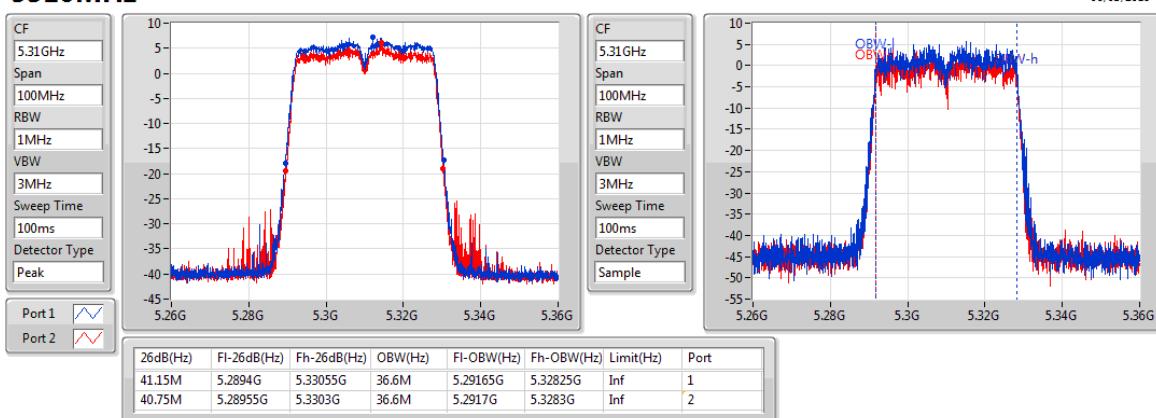
06/03/2019

**802.11ac VHT40\_Nss1,(MCS0)\_2TX****EBW****5270MHz**

06/03/2019

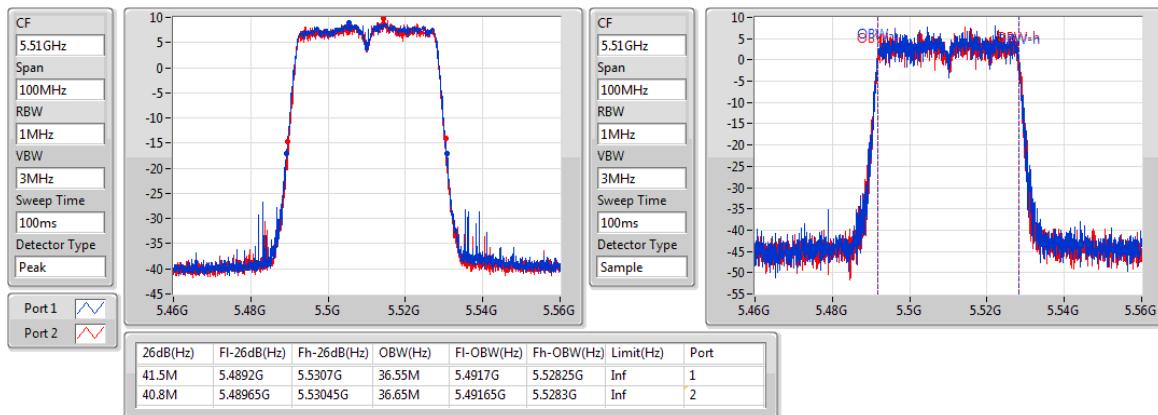
**802.11ac VHT40\_Nss1,(MCS0)\_2TX****EBW****5310MHz**

06/03/2019

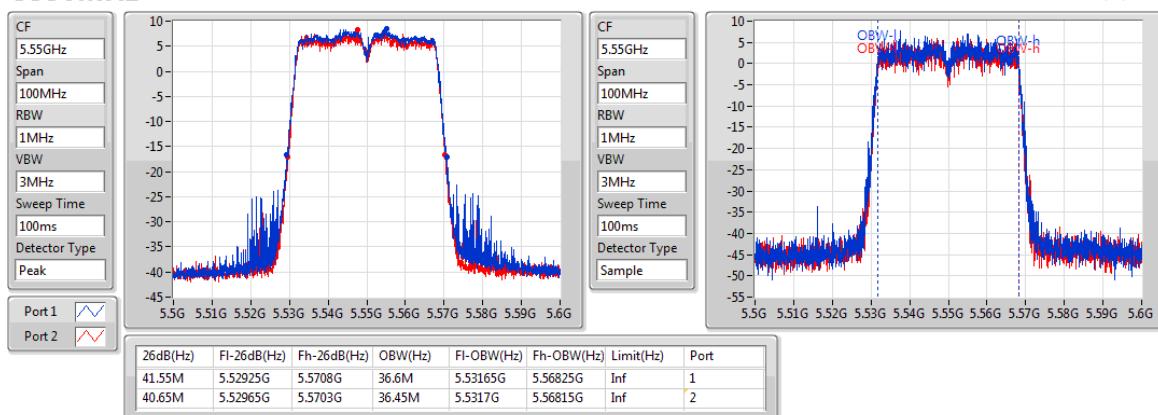


**802.11ac VHT40\_Nss1,(MCS0)\_2TX****EBW****5510MHz**

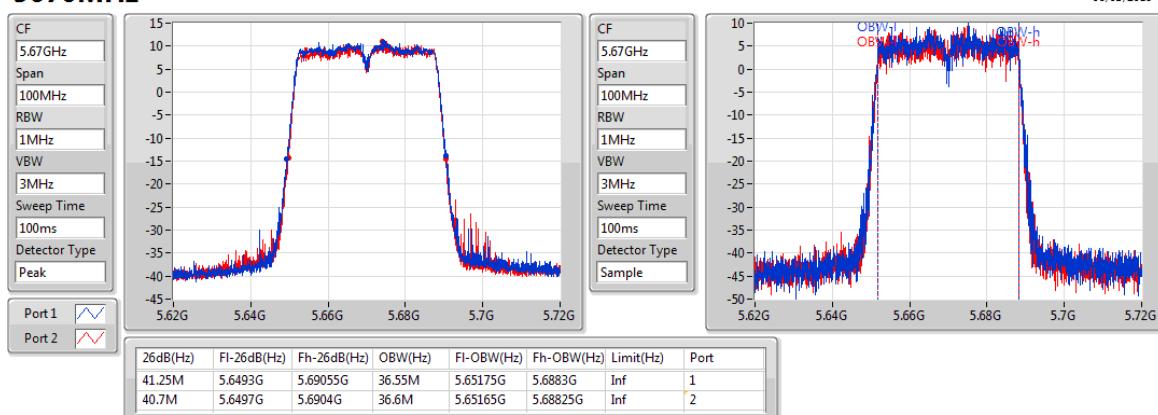
06/03/2019

**802.11ac VHT40\_Nss1,(MCS0)\_2TX****EBW****5550MHz**

06/03/2019

**802.11ac VHT40\_Nss1,(MCS0)\_2TX****EBW****5670MHz**

06/03/2019



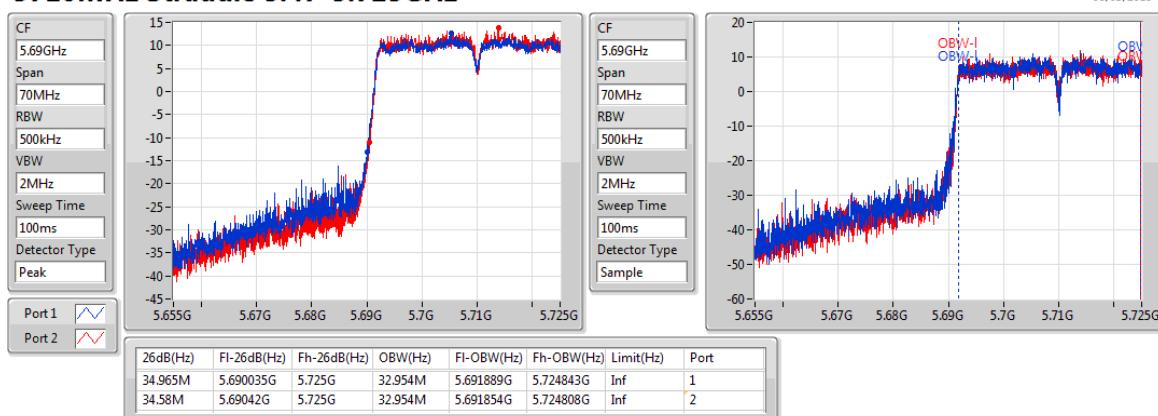


## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

EBW

5710MHz Straddle 5.47-5.725GHz

06/03/2019

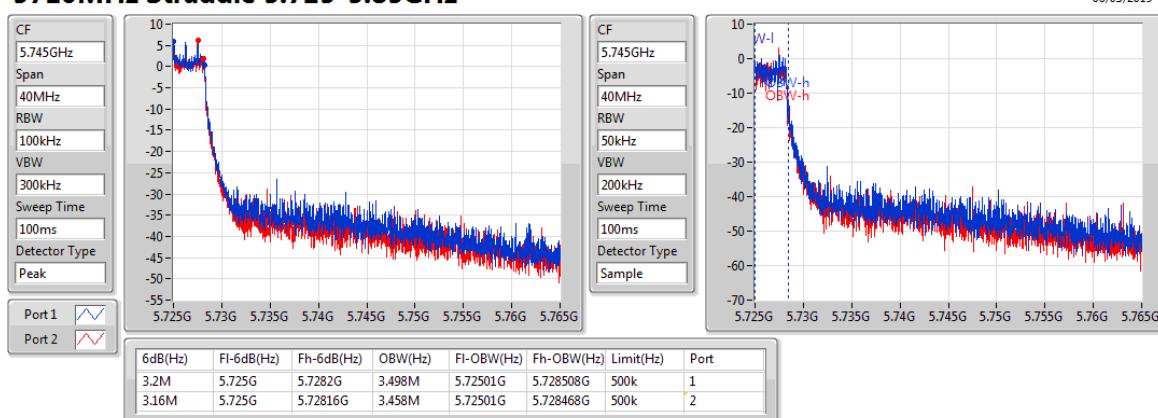


## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

EBW

5710MHz Straddle 5.725-5.85GHz

06/03/2019

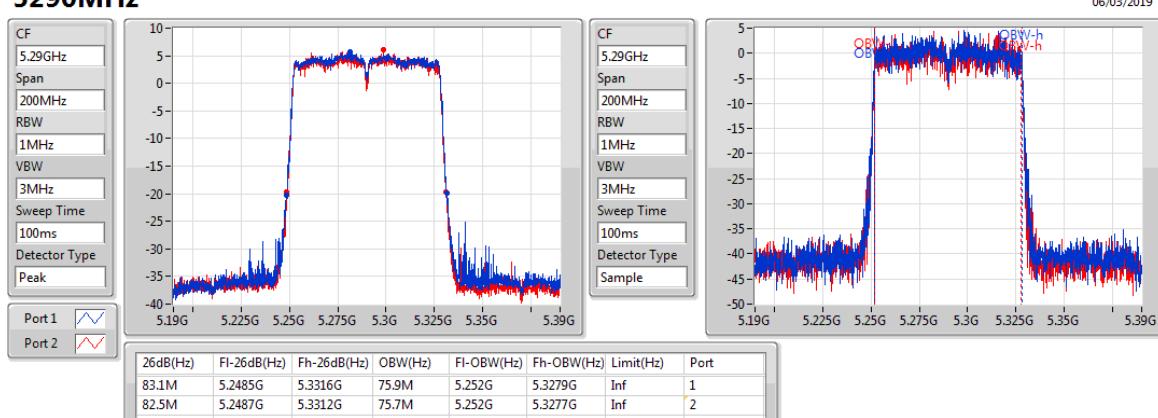


## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

EBW

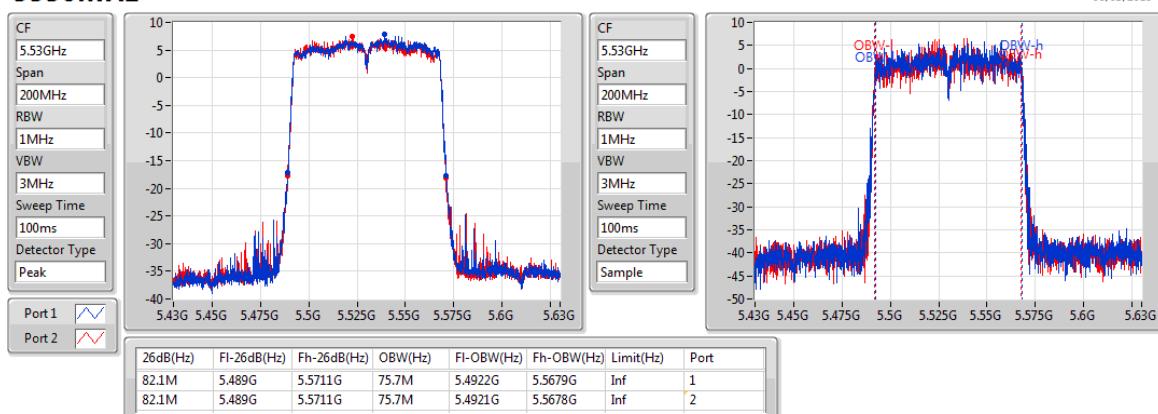
5290MHz

06/03/2019

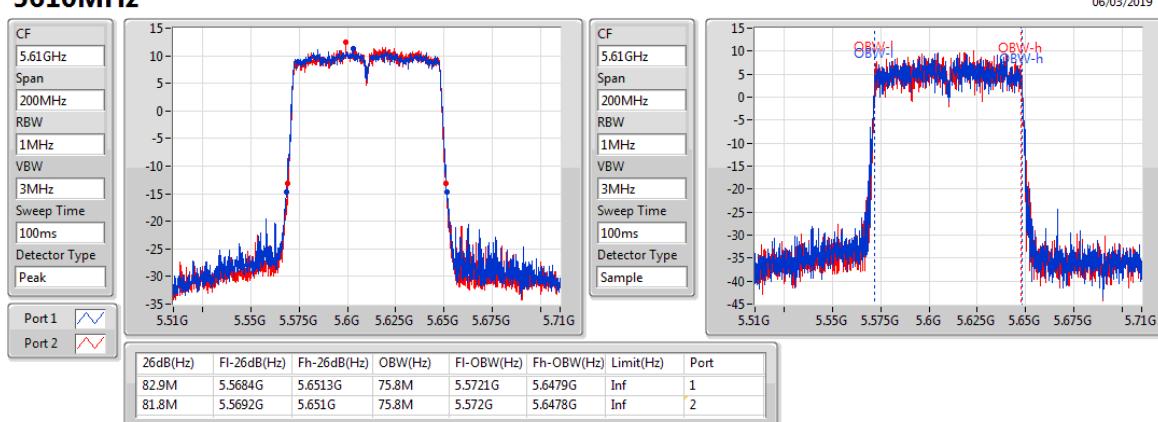


**802.11ac VHT80\_Nss1,(MCS0)\_2TX****EBW****5530MHz**

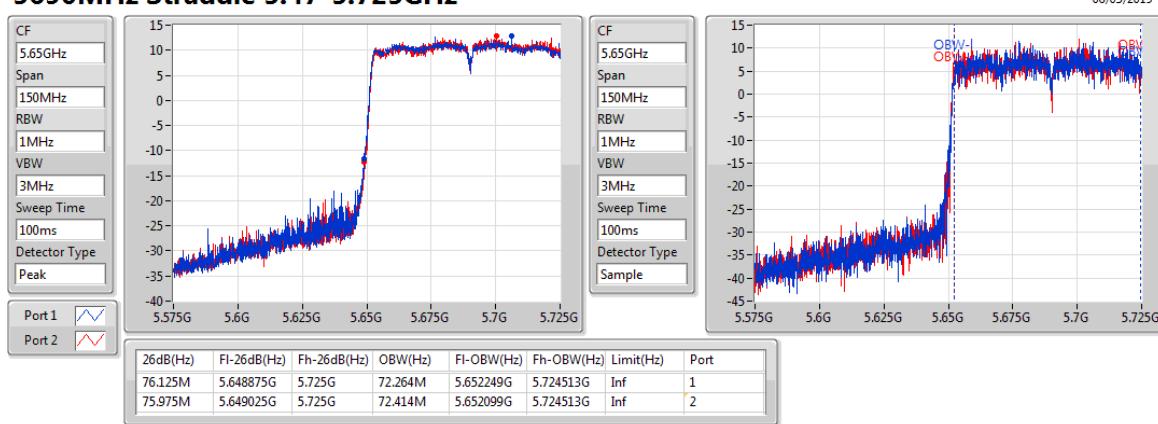
06/03/2019

**802.11ac VHT80\_Nss1,(MCS0)\_2TX****EBW****5610MHz**

06/03/2019

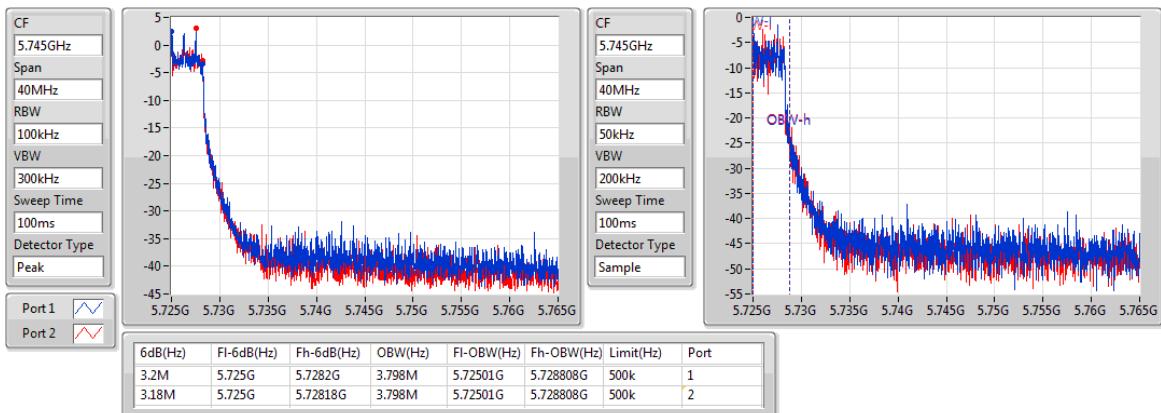
**802.11ac VHT80\_Nss1,(MCS0)\_2TX****EBW****5690MHz Straddle 5.47-5.725GHz**

06/03/2019

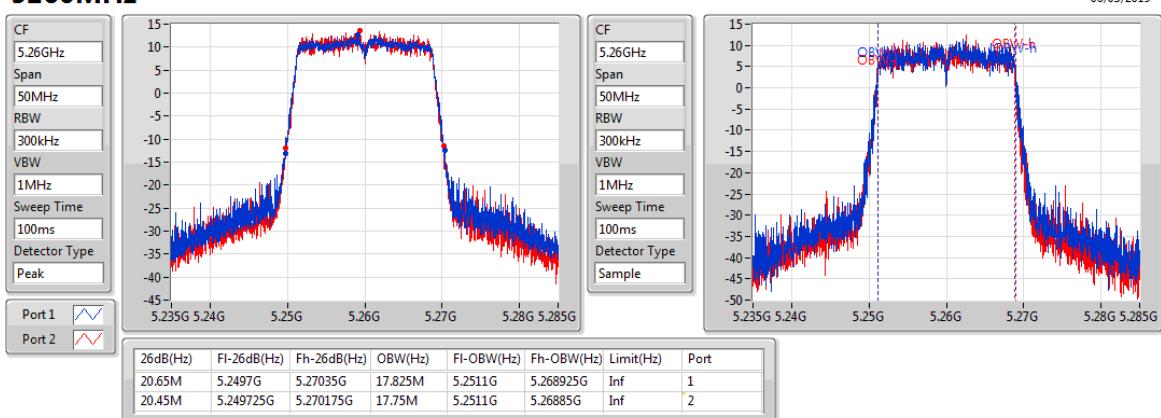


**802.11ac VHT80\_Nss1,(MCS0)\_2TX****EBW****5690MHz Straddle 5.725-5.85GHz**

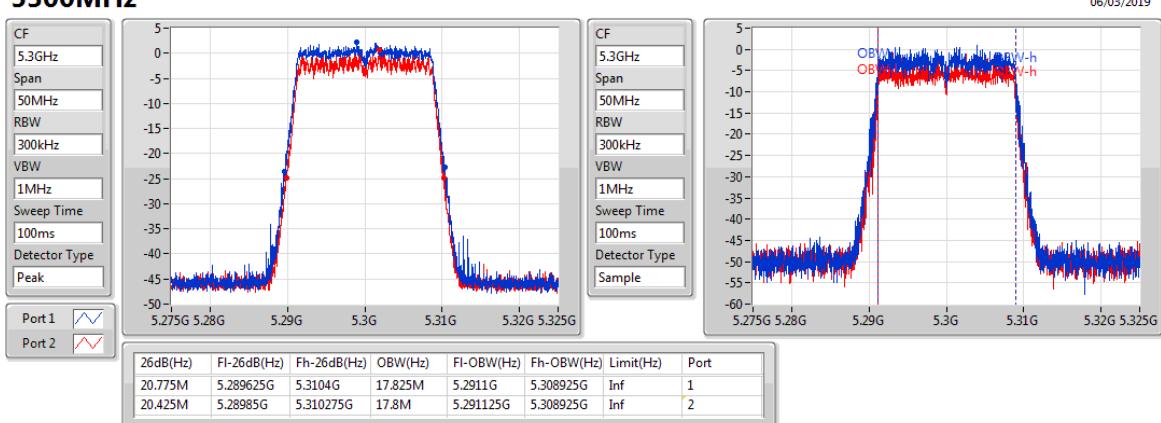
06/03/2019

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****EBW****5260MHz**

06/03/2019

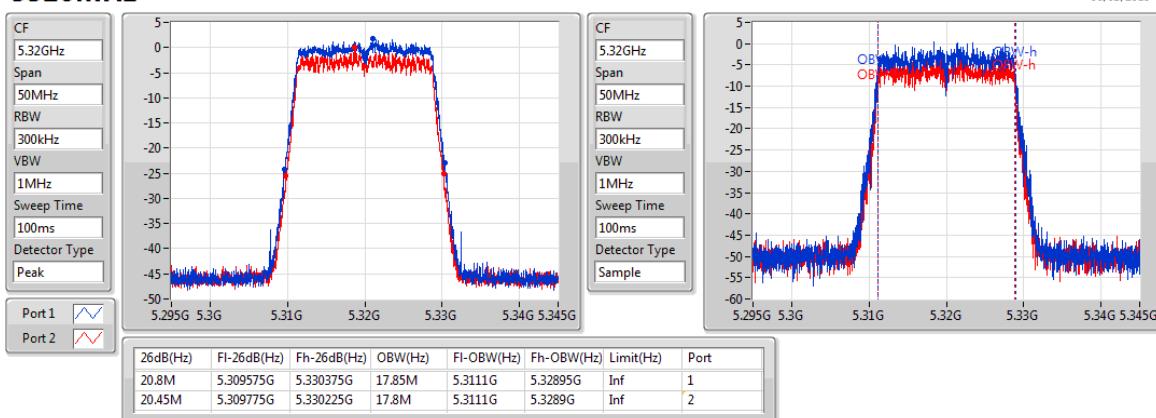
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****EBW****5300MHz**

06/03/2019

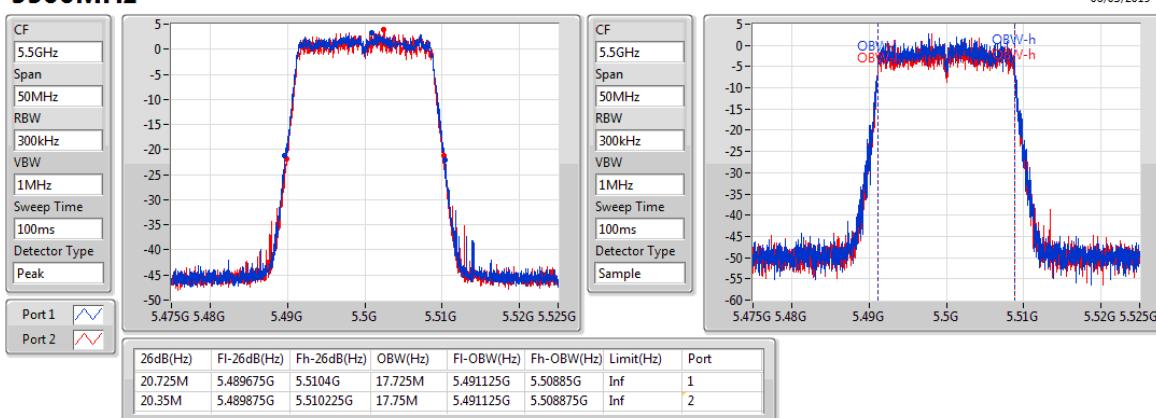


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**EBW**
**5320MHz**

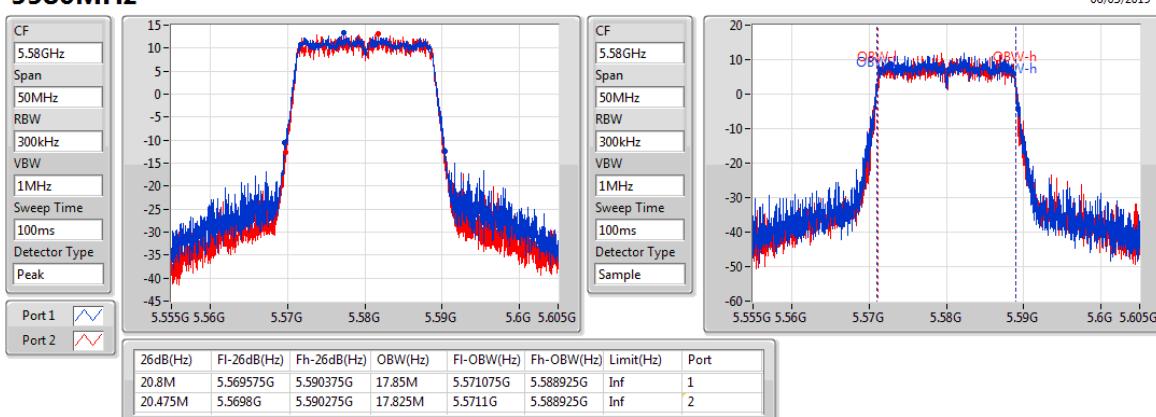
06/03/2019


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**EBW**
**5500MHz**

06/03/2019

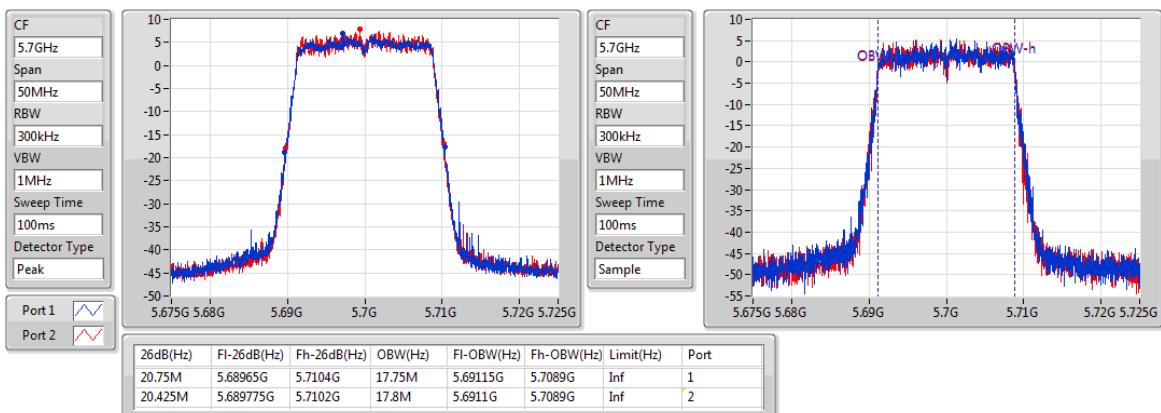

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**EBW**
**5580MHz**

06/03/2019

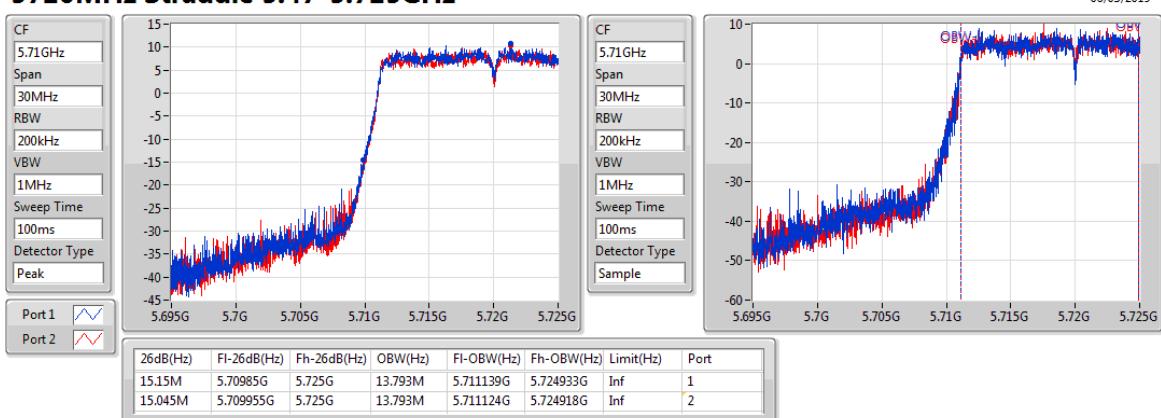


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****EBW****5700MHz**

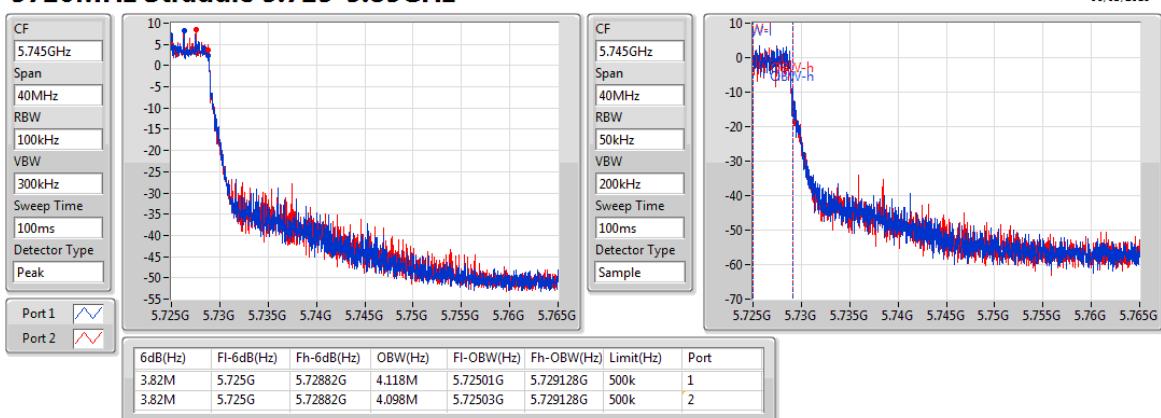
06/03/2019

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****EBW****5720MHz Straddle 5.47-5.725GHz**

06/03/2019

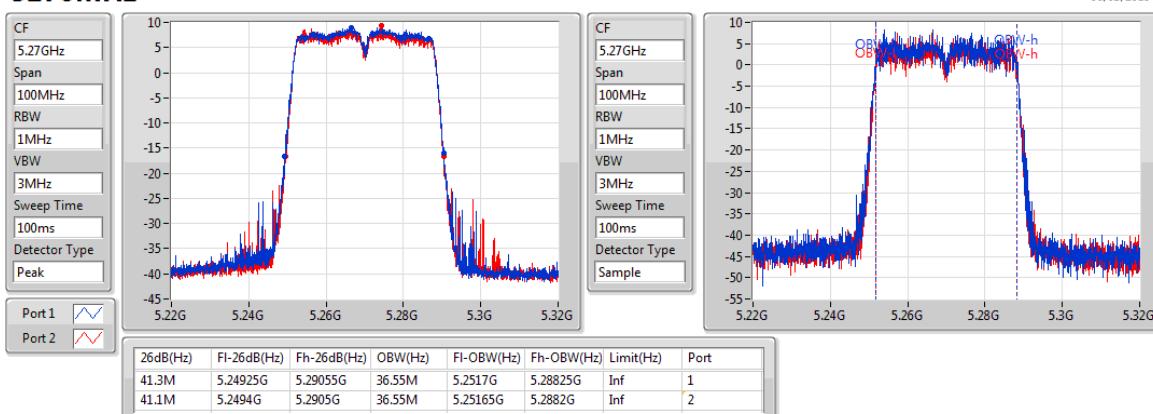
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****EBW****5720MHz Straddle 5.725-5.85GHz**

06/03/2019

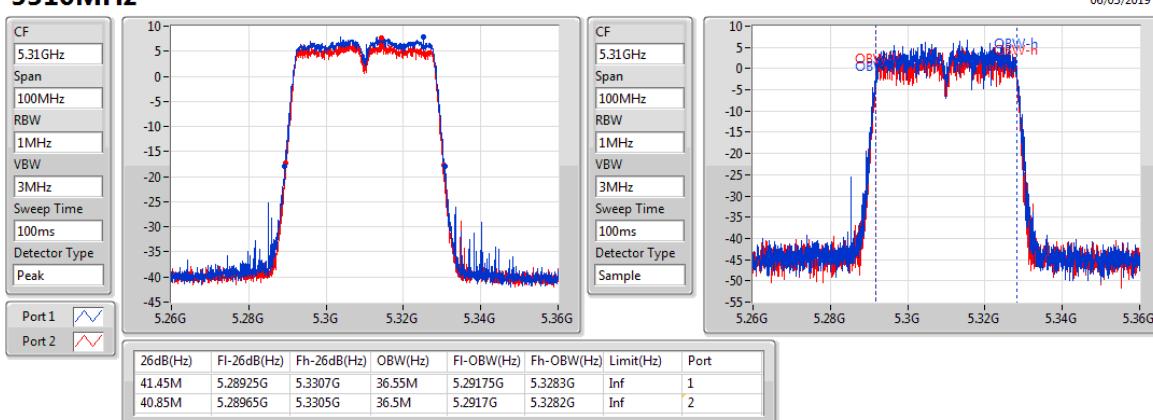


**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****EBW****5270MHz**

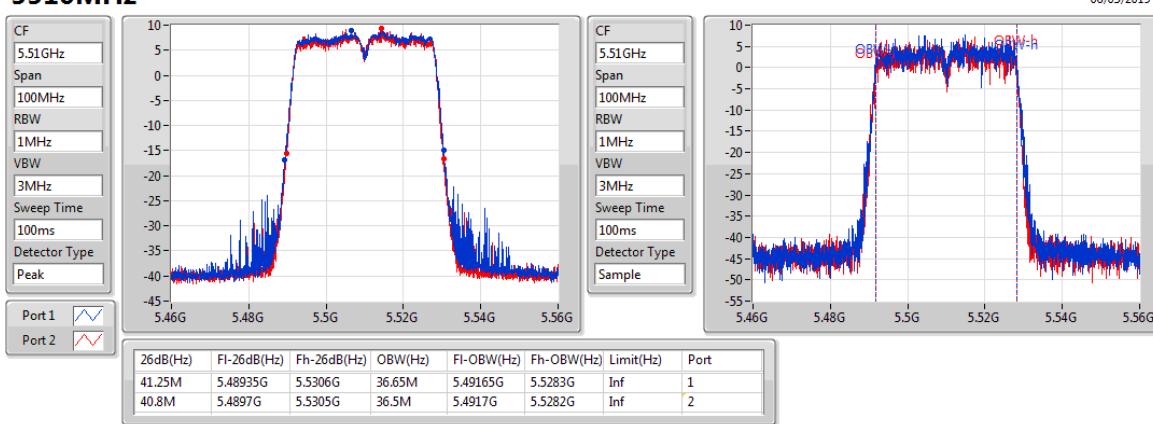
06/03/2019

**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****EBW****5310MHz**

06/03/2019

**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****EBW****5510MHz**

06/03/2019





## EBW Result

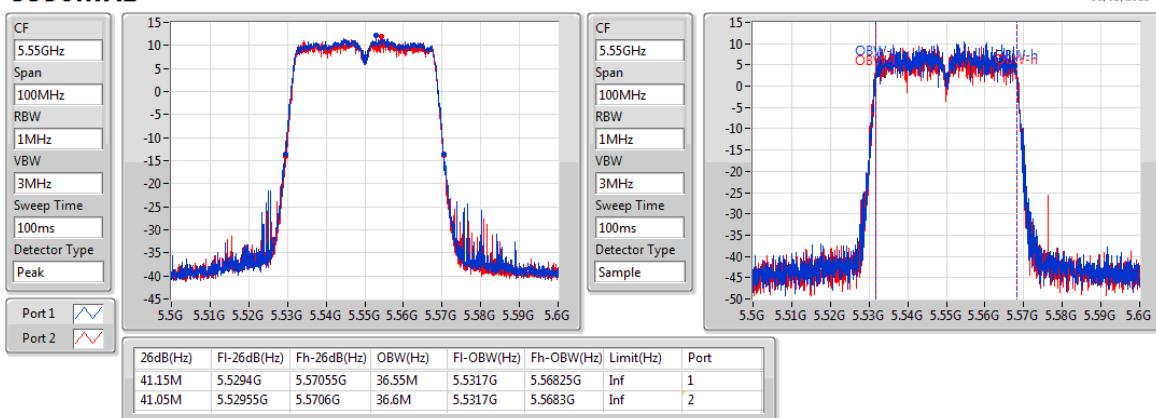
## Appendix A

### 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

**EBW**

**5550MHz**

06/03/2019

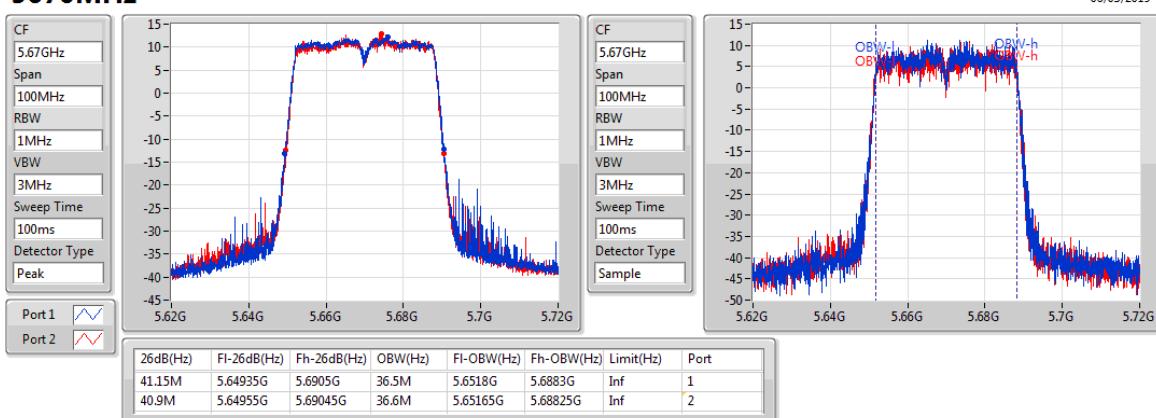


### 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

**EBW**

**5670MHz**

06/03/2019

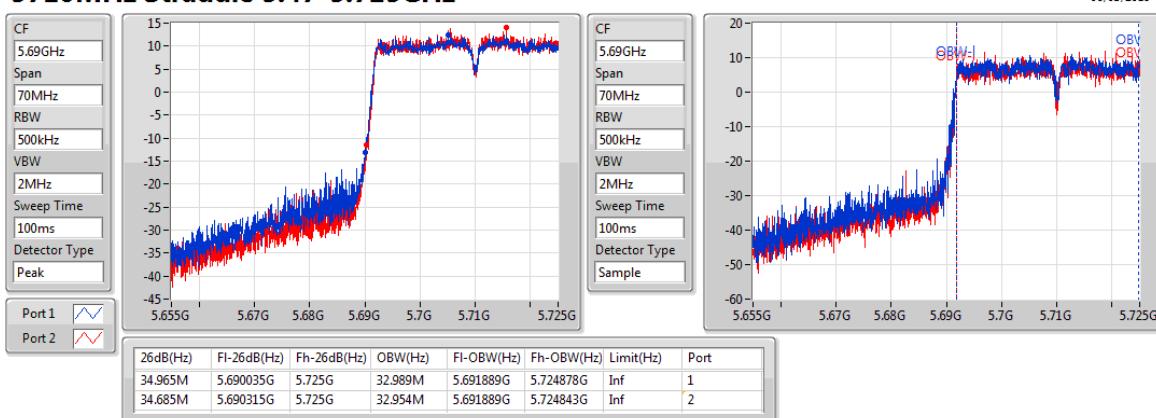


### 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

**EBW**

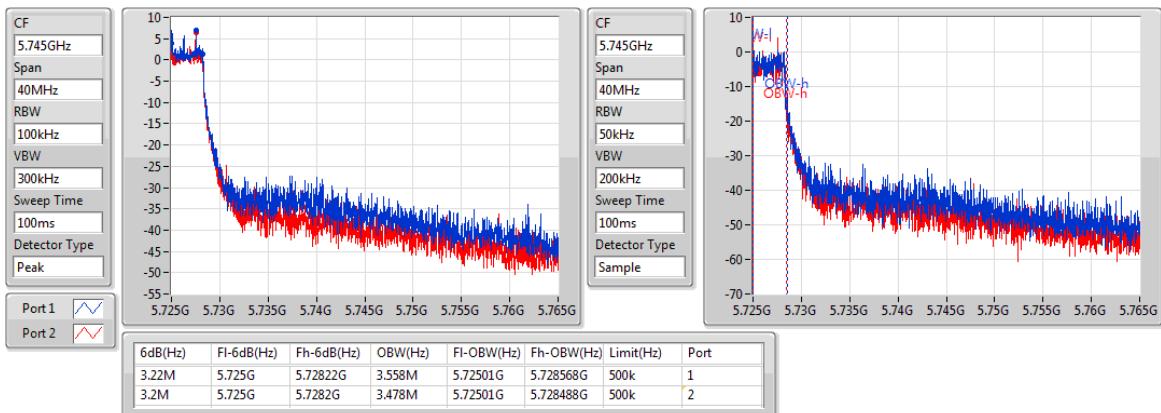
**5710MHz Straddle 5.47-5.725GHz**

06/03/2019

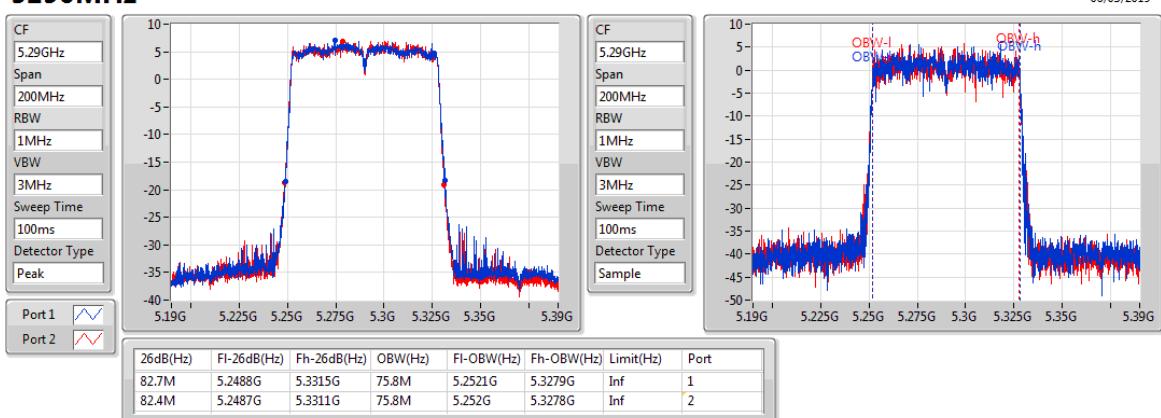


**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****EBW****5710MHz Straddle 5.725-5.85GHz**

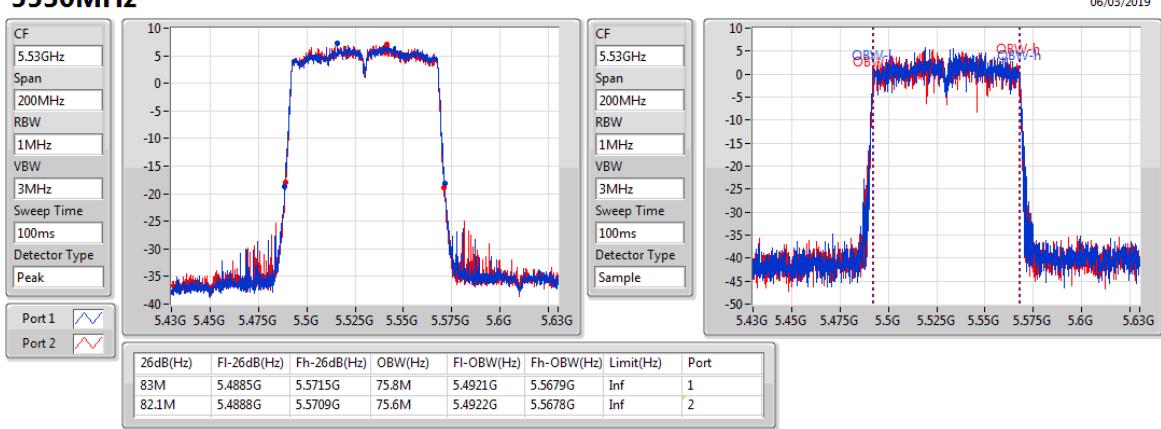
06/03/2019

**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****EBW****5290MHz**

06/03/2019

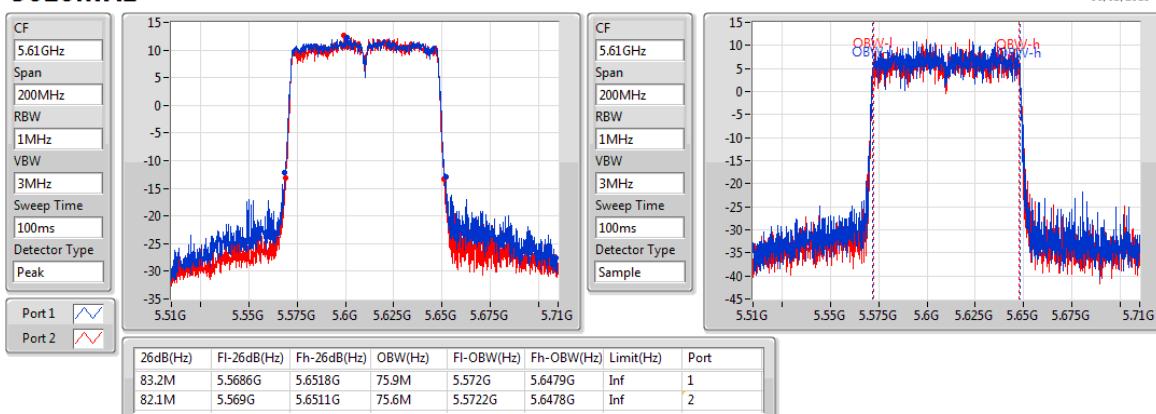
**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****EBW****5530MHz**

06/03/2019

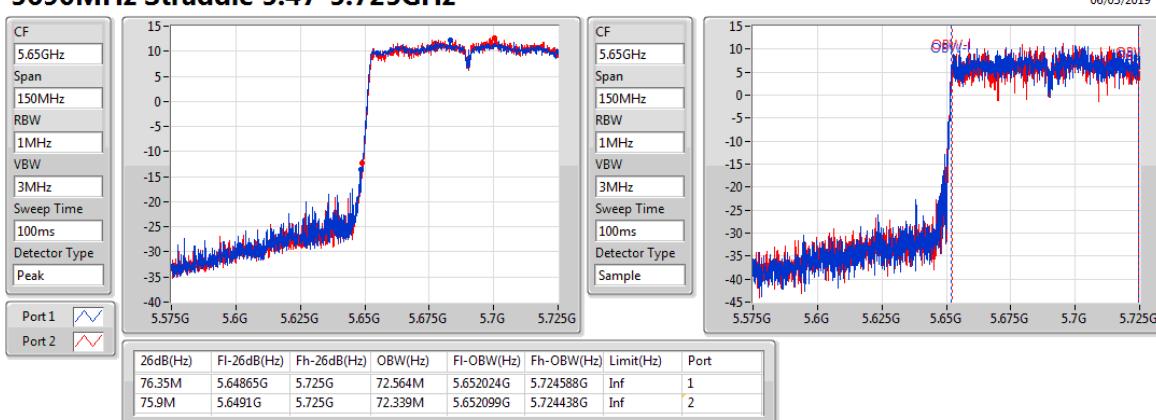


**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****EBW****5610MHz**

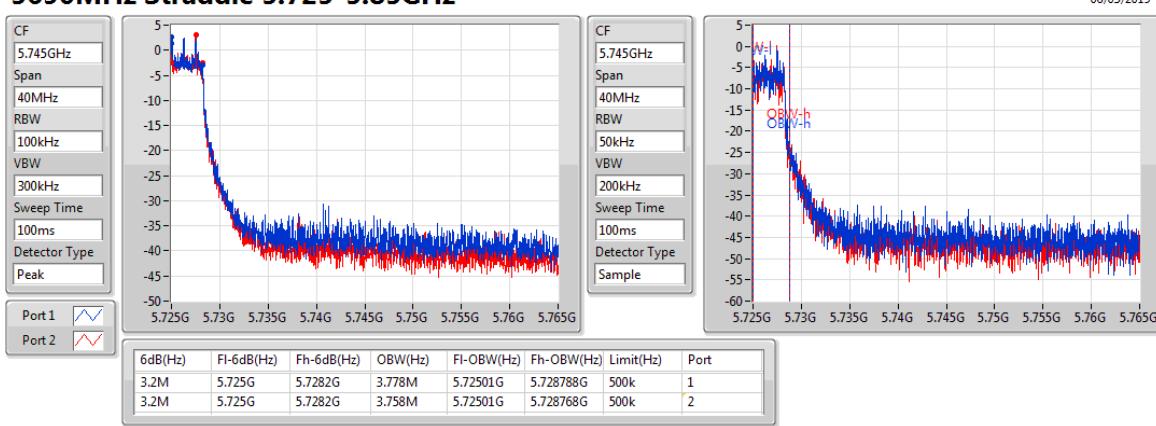
06/03/2019

**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****EBW****5690MHz Straddle 5.47-5.725GHz**

06/03/2019

**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****EBW****5690MHz Straddle 5.725-5.85GHz**

06/03/2019



**Summary**

Mode	Total Power (dBm)	Total Power (W)
5.25-5.35GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	22.09	0.16181
802.11ac VHT20_Nss1,(MCS0)_2TX	22.41	0.17418
802.11ac VHT40_Nss1,(MCS0)_2TX	14.93	0.03112
802.11ac VHT80_Nss1,(MCS0)_2TX	16.99	0.05000
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	23.47	0.22233
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	16.91	0.04909
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	18.30	0.06761
5.47-5.725GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	23.01	0.19999
802.11ac VHT20_Nss1,(MCS0)_2TX	22.75	0.18836
802.11ac VHT40_Nss1,(MCS0)_2TX	23.85	0.24266
802.11ac VHT80_Nss1,(MCS0)_2TX	23.77	0.23823
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	23.80	0.23988
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	23.87	0.24378
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	23.87	0.24378
5.725-5.85GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	16.31	0.04276
802.11ac VHT20_Nss1,(MCS0)_2TX	16.79	0.04775
802.11ac VHT40_Nss1,(MCS0)_2TX	13.24	0.02109
802.11ac VHT80_Nss1,(MCS0)_2TX	9.46	0.00883
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	16.79	0.04775
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	13.29	0.02133
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	9.43	0.00877

**Result**

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5260MHz	Pass	3.00	19.41	18.73	22.09	23.98
5300MHz	Pass	3.00	10.64	8.65	12.77	23.98
5320MHz	Pass	3.00	10.98	8.74	13.01	23.98
5500MHz	Pass	3.00	11.73	11.50	14.63	23.98
5580MHz	Pass	3.00	20.24	19.74	23.01	23.98
5700MHz	Pass	3.00	17.03	16.77	19.91	23.98
5720MHz Straddle 5.47-5.725GHz	Pass	3.00	19.78	19.66	22.73	22.76
5720MHz Straddle 5.725-5.85GHz	Pass	3.00	13.41	13.19	16.31	30.00
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5260MHz	Pass	3.00	19.54	19.25	22.41	23.98
5300MHz	Pass	3.00	10.92	8.81	13.00	23.98
5320MHz	Pass	3.00	11.11	8.89	13.15	23.98
5500MHz	Pass	3.00	13.63	13.33	16.49	23.98
5580MHz	Pass	3.00	19.51	19.08	22.31	23.98
5700MHz	Pass	3.00	15.45	15.07	18.27	23.98
5720MHz Straddle 5.47-5.725GHz	Pass	3.00	19.83	19.65	22.75	22.84
5720MHz Straddle 5.725-5.85GHz	Pass	3.00	13.91	13.65	16.79	30.00
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5270MHz	Pass	3.00	12.61	11.10	14.93	23.98
5310MHz	Pass	3.00	12.30	10.64	14.56	23.98
5510MHz	Pass	3.00	14.34	13.77	17.07	23.98
5550MHz	Pass	3.00	13.63	12.63	16.17	23.98
5670MHz	Pass	3.00	16.45	15.52	19.02	23.98
5710MHz Straddle 5.47-5.725GHz	Pass	3.00	21.13	20.53	23.85	23.98
5710MHz Straddle 5.725-5.85GHz	Pass	3.00	10.57	9.85	13.24	30.00
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5290MHz	Pass	3.00	14.22	13.72	16.99	23.98
5530MHz	Pass	3.00	15.45	15.05	18.26	23.98
5610MHz	Pass	3.00	19.92	19.60	22.77	23.98
5690MHz Straddle 5.47-5.725GHz	Pass	3.00	20.90	20.61	23.77	23.98
5690MHz Straddle 5.725-5.85GHz	Pass	3.00	6.52	6.38	9.46	30.00
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5260MHz	Pass	6.01	20.53	20.39	23.47	23.97
5300MHz	Pass	6.01	10.76	8.04	12.62	23.97
5320MHz	Pass	6.01	10.17	7.27	11.97	23.97
5500MHz	Pass	6.01	11.53	10.73	14.16	23.97
5580MHz	Pass	6.01	21.07	20.50	23.80	23.97
5700MHz	Pass	6.01	14.75	14.60	17.69	23.97
5720MHz Straddle 5.47-5.725GHz	Pass	6.01	19.73	19.67	22.71	22.76
5720MHz Straddle 5.725-5.85GHz	Pass	6.01	13.79	13.76	16.79	29.99
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5270MHz	Pass	6.01	14.30	13.45	16.91	23.97
5310MHz	Pass	6.01	13.59	11.82	15.80	23.97

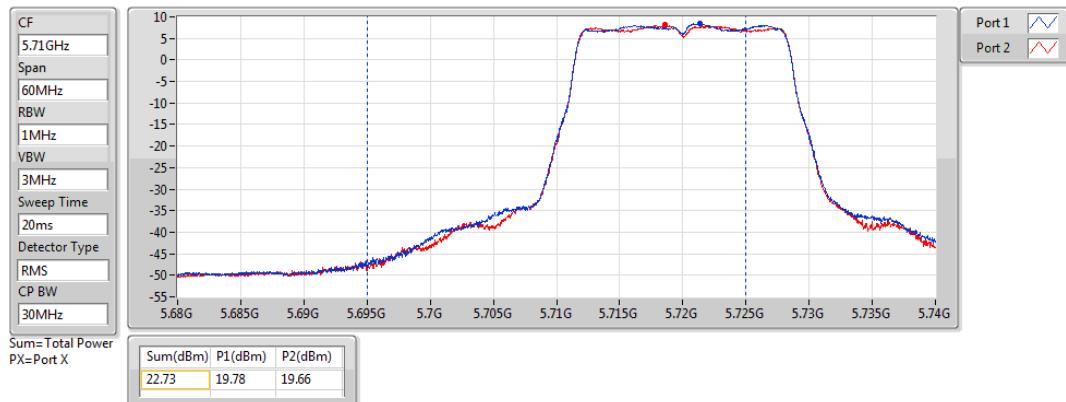


Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)
5510MHz	Pass	6.01	13.90	13.18	16.57	23.97
5550MHz	Pass	6.01	16.79	15.81	19.34	23.97
5670MHz	Pass	6.01	17.57	16.97	20.29	23.97
5710MHz Straddle 5.47-5.725GHz	Pass	6.01	21.16	20.54	23.87	23.97
5710MHz Straddle 5.725-5.85GHz	Pass	6.01	10.75	9.75	13.29	29.99
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5290MHz	Pass	6.01	15.46	15.11	18.30	23.97
5530MHz	Pass	6.01	15.23	14.83	18.04	23.97
5610MHz	Pass	6.01	20.97	20.47	23.74	23.97
5690MHz Straddle 5.47-5.725GHz	Pass	6.01	20.99	20.72	23.87	23.97
5690MHz Straddle 5.725-5.85GHz	Pass	6.01	6.49	6.34	9.43	29.99

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

**802.11a\_Nss1,(6Mbps)\_2TX****AV Power****5720MHz Straddle 5.47-5.725GHz**

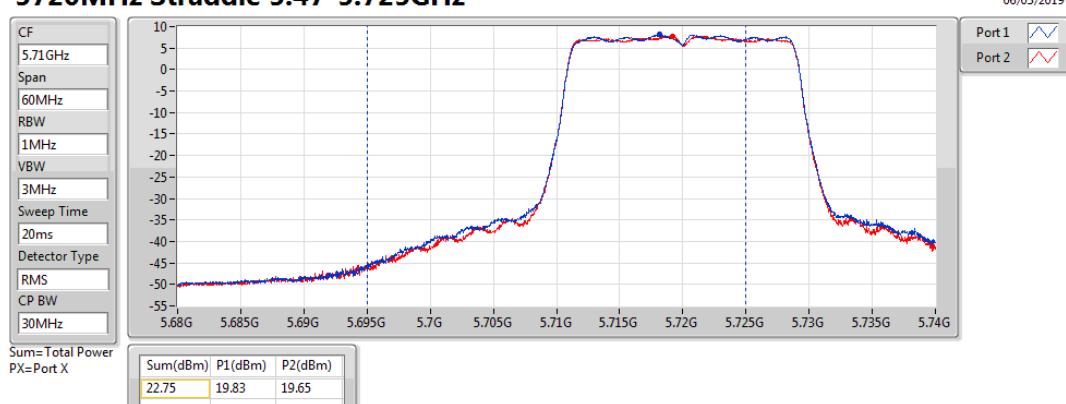
06/03/2019

**802.11a\_Nss1,(6Mbps)\_2TX****AV Power****5720MHz Straddle 5.725-5.85GHz**

06/03/2019

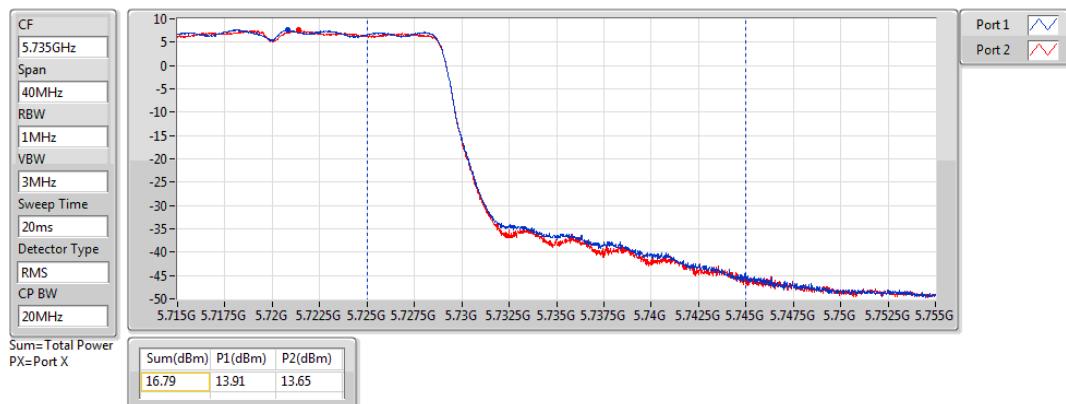
**802.11ac VHT20\_Nss1,(MCS0)\_2TX****AV Power****5720MHz Straddle 5.47-5.725GHz**

06/03/2019

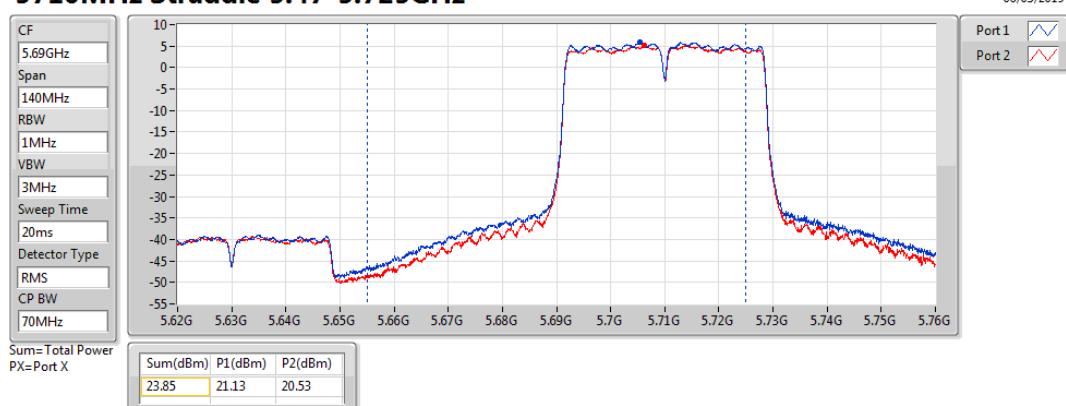


**802.11ac VHT20\_Nss1,(MCS0)\_2TX****AV Power****5720MHz Straddle 5.725-5.85GHz**

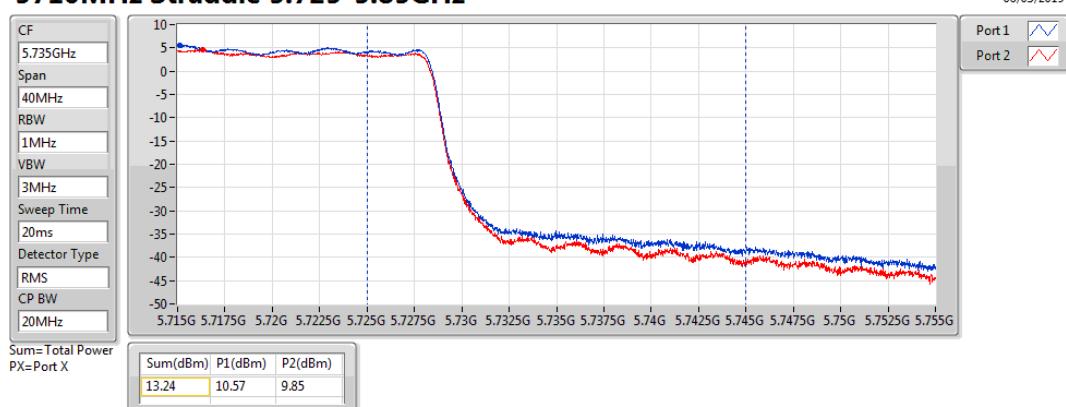
06/03/2019

**802.11ac VHT40\_Nss1,(MCS0)\_2TX****AV Power****5710MHz Straddle 5.47-5.725GHz**

06/03/2019

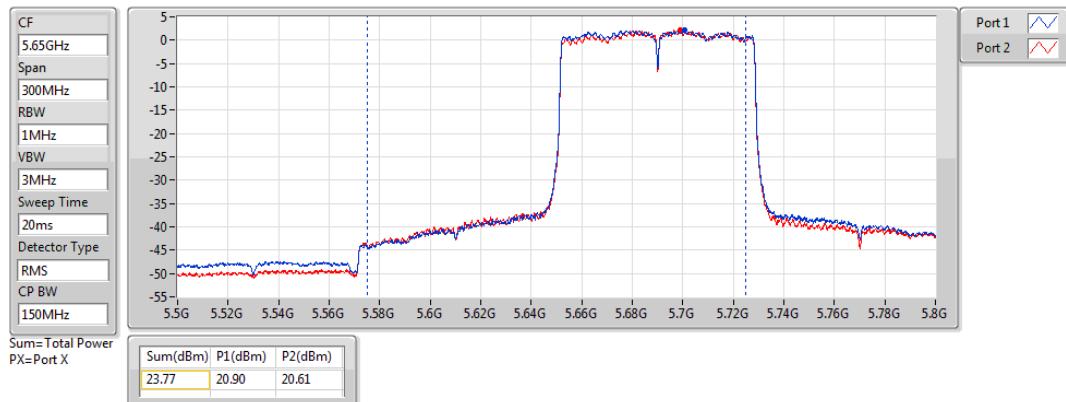
**802.11ac VHT40\_Nss1,(MCS0)\_2TX****AV Power****5710MHz Straddle 5.725-5.85GHz**

06/03/2019

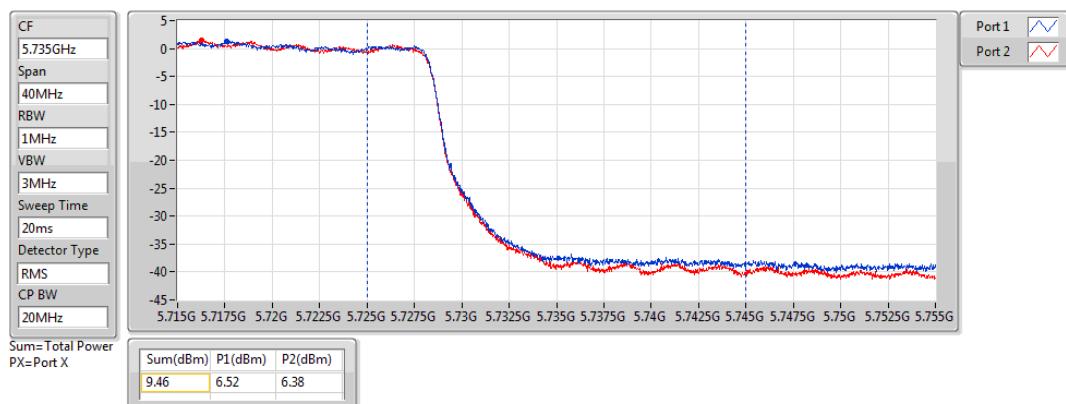


**802.11ac VHT80\_Nss1,(MCS0)\_2TX****AV Power****5690MHz Straddle 5.47-5.725GHz**

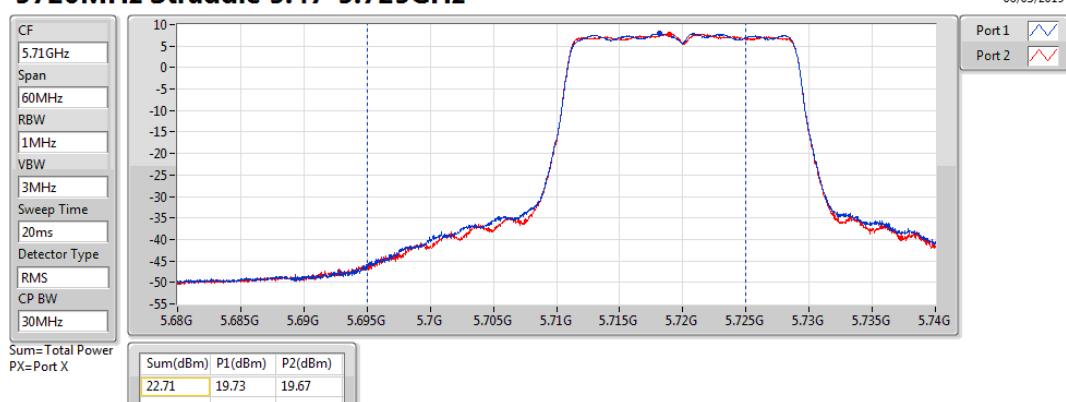
06/03/2019

**802.11ac VHT80\_Nss1,(MCS0)\_2TX****AV Power****5690MHz Straddle 5.725-5.85GHz**

06/03/2019

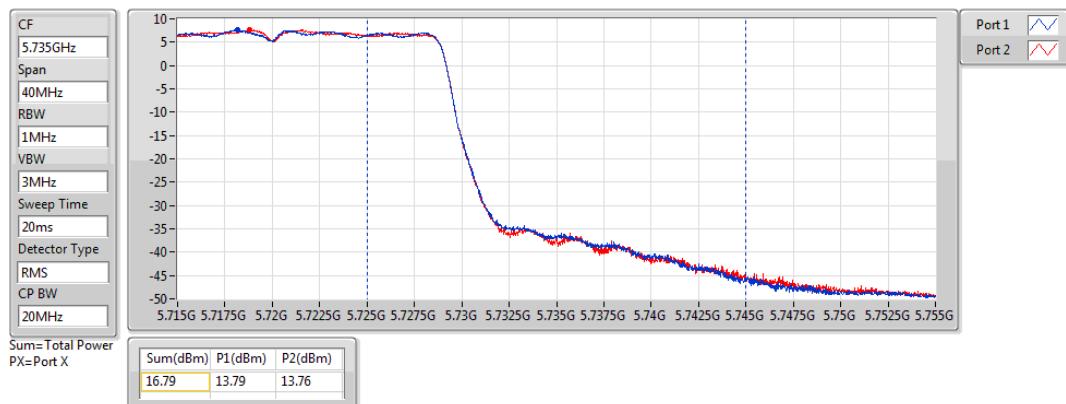
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****AV Power****5720MHz Straddle 5.47-5.725GHz**

06/03/2019

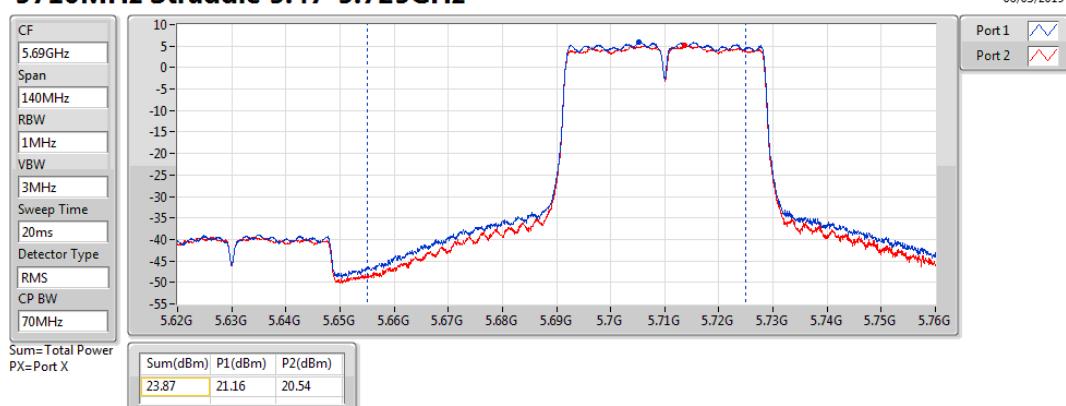


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****AV Power****5720MHz Straddle 5.725-5.85GHz**

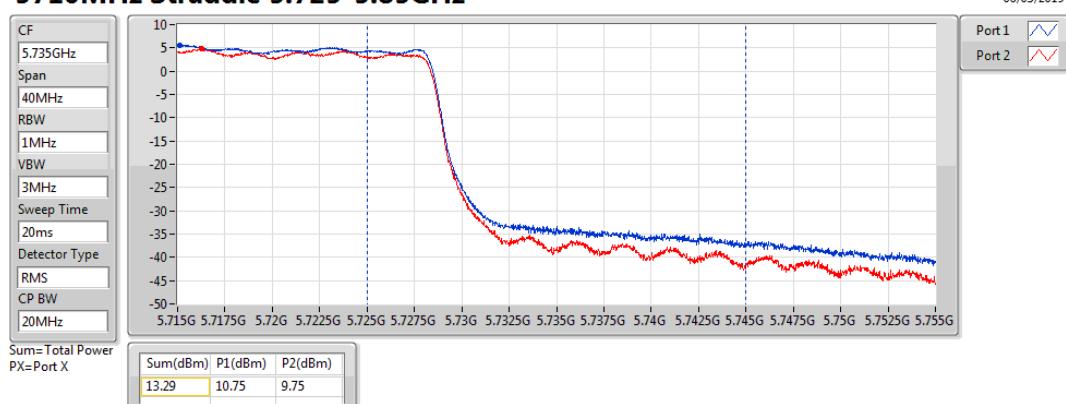
06/03/2019

**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****AV Power****5710MHz Straddle 5.47-5.725GHz**

06/03/2019

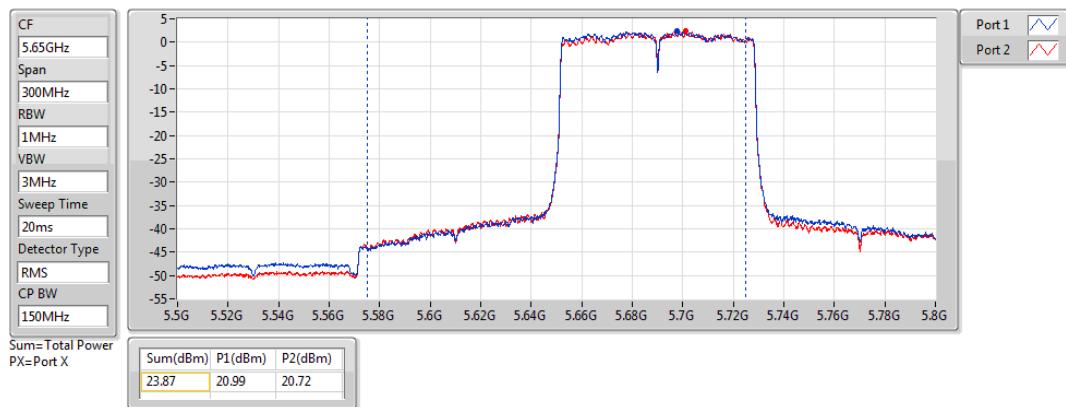
**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****AV Power****5710MHz Straddle 5.725-5.85GHz**

06/03/2019

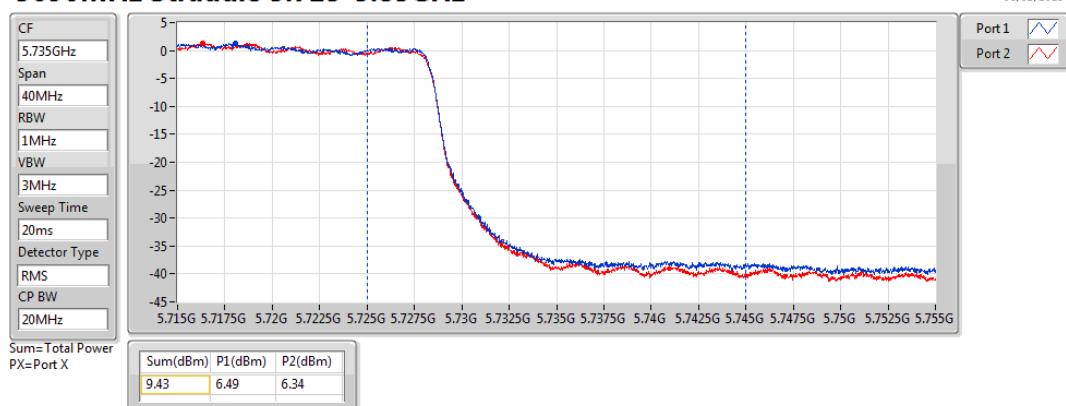


**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****AV Power****5690MHz Straddle 5.47-5.725GHz**

06/03/2019

**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****AV Power****5690MHz Straddle 5.725-5.85GHz**

06/03/2019



**Summary**

Mode	PD (dBm/RBW)
5.25-5.35GHz	-
802.11a_Nss1,(6Mbps)_2TX	9.48
802.11ac VHT20_Nss1,(MCS0)_2TX	9.08
802.11ac VHT40_Nss1,(MCS0)_2TX	-1.54
802.11ac VHT80_Nss1,(MCS0)_2TX	-2.26
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	10.69
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	0.96
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-0.95
5.47-5.725GHz	-
802.11a_Nss1,(6Mbps)_2TX	10.74
802.11ac VHT20_Nss1,(MCS0)_2TX	10.51
802.11ac VHT40_Nss1,(MCS0)_2TX	8.07
802.11ac VHT80_Nss1,(MCS0)_2TX	4.82
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	10.61
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	8.23
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	5.06
5.725-5.85GHz	-
802.11a_Nss1,(6Mbps)_2TX	8.39
802.11ac VHT20_Nss1,(MCS0)_2TX	8.03
802.11ac VHT40_Nss1,(MCS0)_2TX	5.56
802.11ac VHT80_Nss1,(MCS0)_2TX	1.79
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	8.09
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	5.48
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	1.76

**RBW** = 500kHz for 5.725-5.85GHz band / 1MHz for other band;



## Result

Mode	Result	DG (dB)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5260MHz	Pass	6.01	6.71	6.48	9.48	10.99
5300MHz	Pass	6.01	-2.43	-4.65	-0.40	10.99
5320MHz	Pass	6.01	-2.24	-4.45	-0.30	10.99
5500MHz	Pass	6.01	-1.05	-1.45	1.72	10.99
5580MHz	Pass	6.01	7.56	7.20	10.28	10.99
5700MHz	Pass	6.01	4.38	4.31	6.85	10.99
5720MHz Straddle 5.47-5.725GHz	Pass	6.01	8.19	7.86	10.74	10.99
5720MHz Straddle 5.725-5.85GHz	Pass	6.01	5.72	5.33	8.39	29.99
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5260MHz	Pass	6.01	6.28	5.92	9.08	10.99
5300MHz	Pass	6.01	-2.50	-4.61	-0.48	10.99
5320MHz	Pass	6.01	-2.27	-4.54	-0.31	10.99
5500MHz	Pass	6.01	0.19	-0.37	2.89	10.99
5580MHz	Pass	6.01	6.09	5.56	8.74	10.99
5700MHz	Pass	6.01	2.40	2.23	5.00	10.99
5720MHz Straddle 5.47-5.725GHz	Pass	6.01	7.84	7.49	10.51	10.99
5720MHz Straddle 5.725-5.85GHz	Pass	6.01	5.42	5.11	8.03	29.99
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5270MHz	Pass	6.01	-3.71	-5.46	-1.54	10.99
5310MHz	Pass	6.01	-4.22	-5.78	-1.98	10.99
5510MHz	Pass	6.01	-1.66	-2.37	0.99	10.99
5550MHz	Pass	6.01	-2.16	-3.49	0.18	10.99
5670MHz	Pass	6.01	0.22	-0.73	2.52	10.99
5710MHz Straddle 5.47-5.725GHz	Pass	6.01	5.55	4.79	8.07	10.99
5710MHz Straddle 5.725-5.85GHz	Pass	6.01	3.07	2.19	5.56	29.99
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5290MHz	Pass	6.01	-4.79	-5.53	-2.26	10.99
5530MHz	Pass	6.01	-3.58	-4.17	-0.97	10.99
5610MHz	Pass	6.01	0.33	0.21	3.14	10.99
5690MHz Straddle 5.47-5.725GHz	Pass	6.01	2.19	1.86	4.82	10.99
5690MHz Straddle 5.725-5.85GHz	Pass	6.01	-1.07	-1.08	1.79	29.99
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5260MHz	Pass	6.01	7.82	7.73	10.69	10.99
5300MHz	Pass	6.01	-2.88	-5.36	-1.02	10.99
5320MHz	Pass	6.01	-3.13	-6.21	-1.47	10.99
5500MHz	Pass	6.01	-1.62	-2.35	1.03	10.99
5580MHz	Pass	6.01	7.98	7.50	10.61	10.99
5700MHz	Pass	6.01	2.01	1.96	4.72	10.99
5720MHz Straddle 5.47-5.725GHz	Pass	6.01	7.72	7.52	10.54	10.99
5720MHz Straddle 5.725-5.85GHz	Pass	6.01	5.30	5.23	8.09	29.99
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5270MHz	Pass	6.01	-1.55	-2.35	0.96	10.99
5310MHz	Pass	6.01	-3.03	-4.29	-0.66	10.99



Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	Port 2 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
5510MHz	Pass	6.01	-1.94	-2.53	0.77	10.99
5550MHz	Pass	6.01	1.11	0.12	3.58	10.99
5670MHz	Pass	6.01	1.53	0.96	3.97	10.99
5710MHz Straddle 5.47-5.725GHz	Pass	6.01	5.84	4.87	8.23	10.99
5710MHz Straddle 5.725-5.85GHz	Pass	6.01	3.11	1.96	5.48	29.99
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5290MHz	Pass	6.01	-3.58	-4.24	-0.95	10.99
5530MHz	Pass	6.01	-3.75	-4.34	-1.10	10.99
5610MHz	Pass	6.01	1.49	1.38	4.17	10.99
5690MHz Straddle 5.47-5.725GHz	Pass	6.01	2.36	2.24	5.06	10.99
5690MHz Straddle 5.725-5.85GHz	Pass	6.01	-1.10	-1.18	1.76	29.99

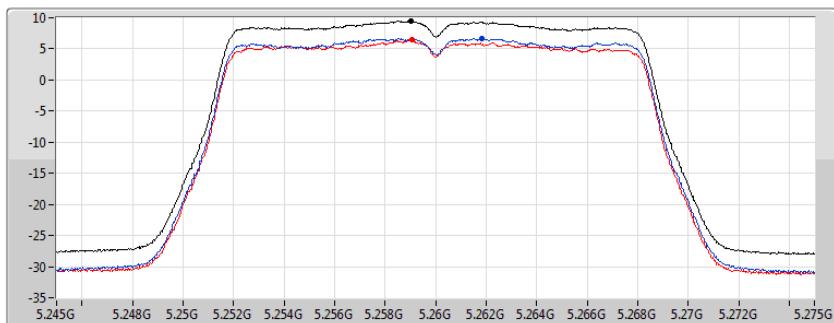
**DG** = Directional Gain; **RBW** = 500kHz for 5.725-5.85GHz band / 1MHz for other band;

**PD** = trace bin-by-bin of each transmits port summing can be performed maximum power density; **Port X** = Port Xpower density;

**802.11a\_Nss1,(6Mbps)\_2TX****PSD****5260MHz**

06/03/2019

CF  
5.26GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



Sum

Port 1

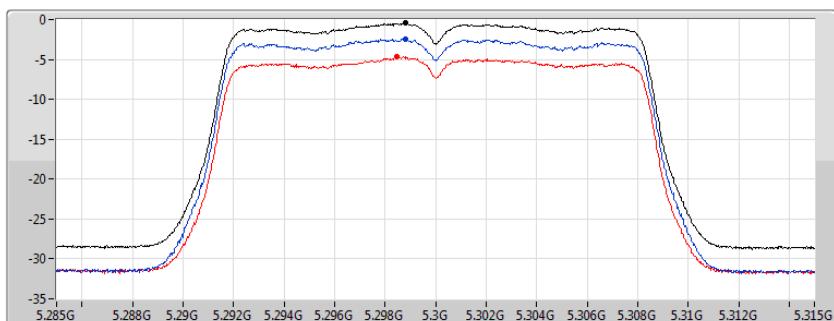
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
9.48	9.48	6.71	6.48

**802.11a\_Nss1,(6Mbps)\_2TX****PSD****5300MHz**

06/03/2019

CF  
5.3GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



Sum

Port 1

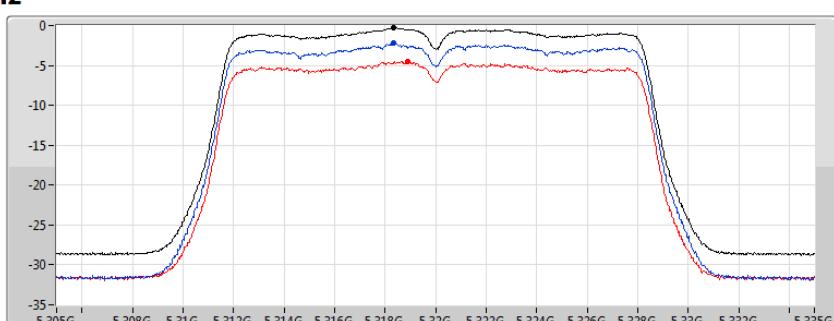
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.40	-0.40	-2.43	-4.65

**802.11a\_Nss1,(6Mbps)\_2TX****PSD****5320MHz**

06/03/2019

CF  
5.32GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



Sum

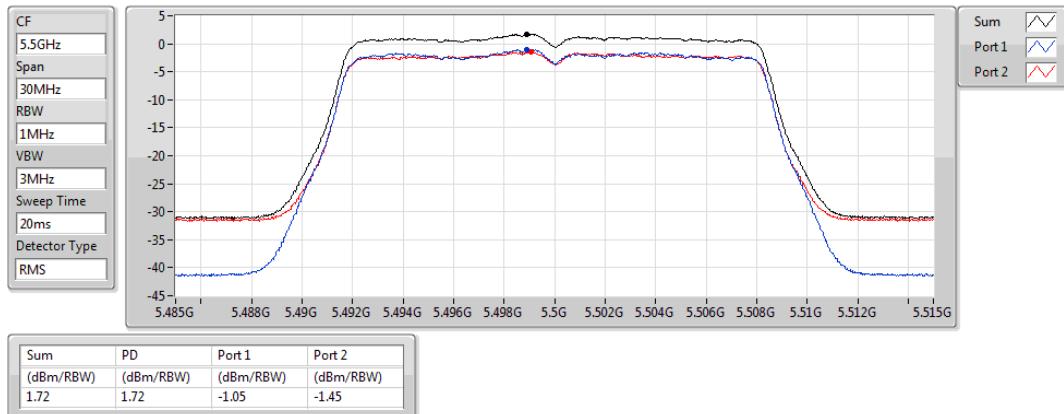
Port 1

Port 2

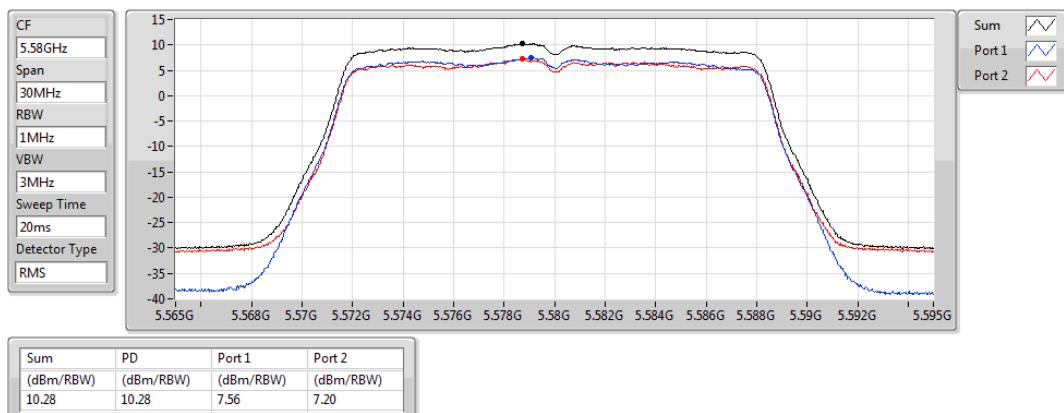
Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.30	-0.30	-2.24	-4.45

**802.11a\_Nss1,(6Mbps)\_2TX**
**PSD**

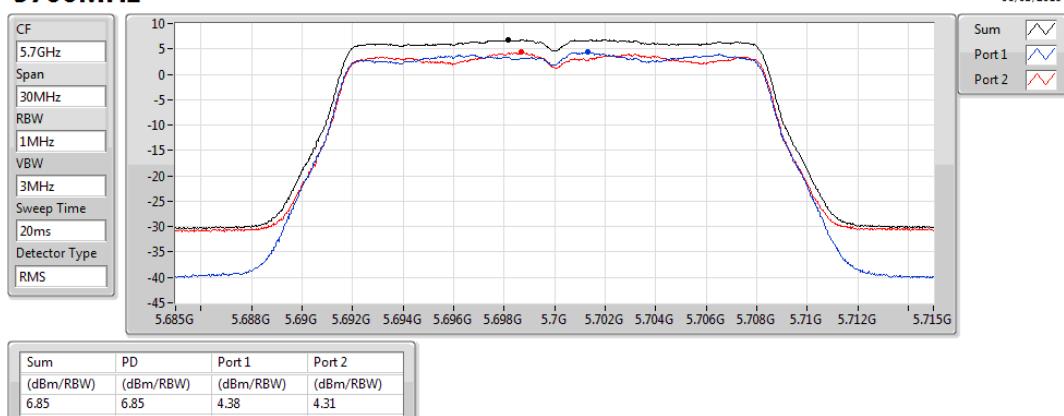
06/03/2019

**5500MHz**

**802.11a\_Nss1,(6Mbps)\_2TX**
**PSD**

06/03/2019

**5580MHz**

**802.11a\_Nss1,(6Mbps)\_2TX**
**PSD**

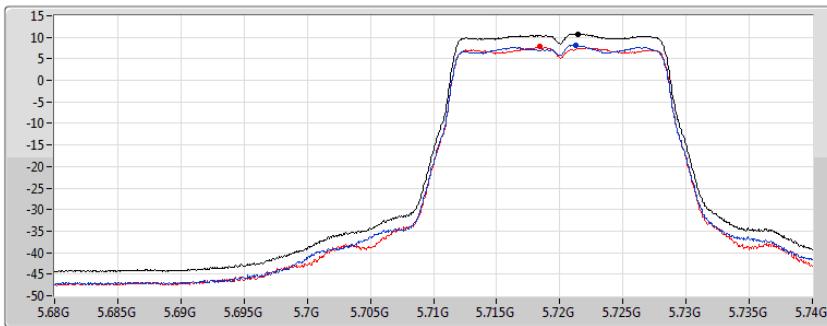
06/03/2019

**5700MHz**


**802.11a\_Nss1,(6Mbps)\_2TX****PSD****5720MHz Straddle 5.47-5.725GHz**

06/03/2019

CF  
5.71GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

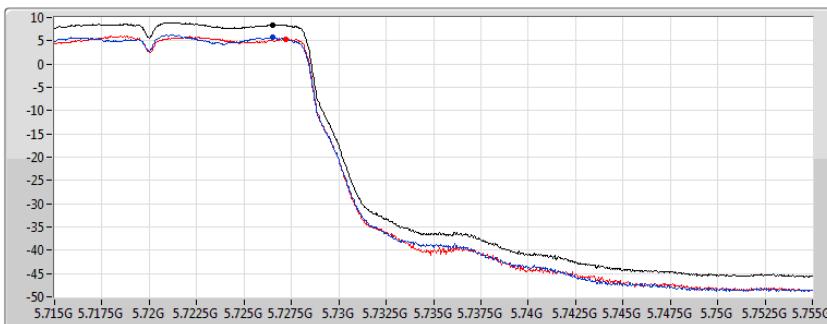


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
10.74	10.74	8.19	7.86

**802.11a\_Nss1,(6Mbps)\_2TX****PSD****5720MHz Straddle 5.725-5.85GHz**

06/03/2019

CF  
5.735GHz  
Span  
40MHz  
RBW  
500kHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

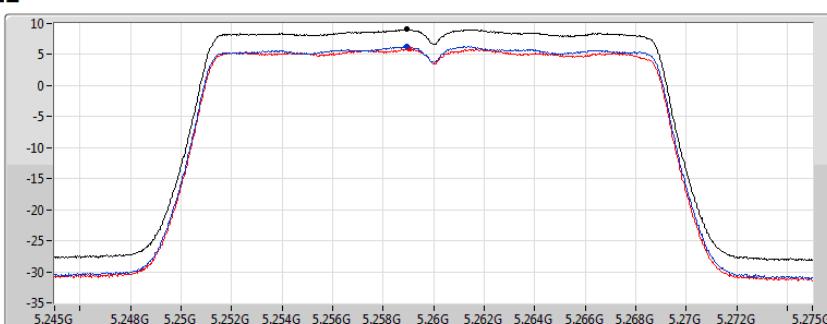


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
8.39	8.39	5.72	5.33

**802.11ac VHT20\_Nss1,(MCS0)\_2TX****PSD****5260MHz**

06/03/2019

CF  
5.26GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

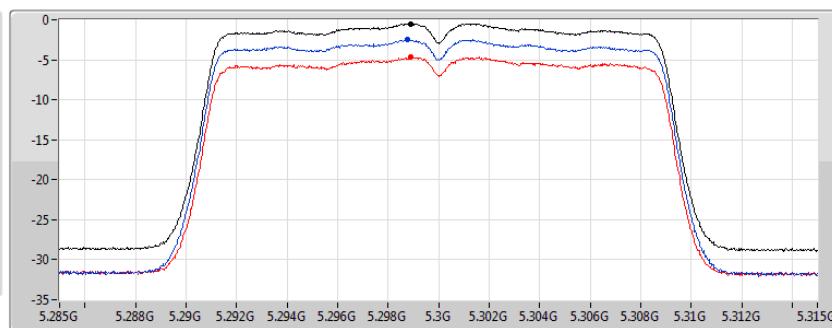


Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
9.08	9.08	6.28	5.92

**802.11ac VHT20\_Nss1,(MCS0)\_2TX****PSD****5300MHz**

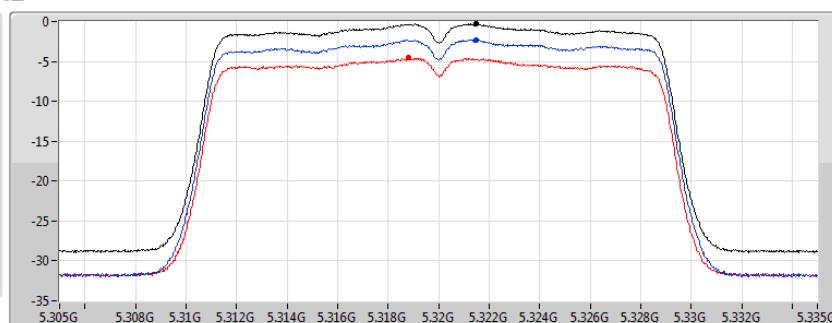
06/03/2019

CF  
5.3GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

Sum Port 1 Port 2 **802.11ac VHT20\_Nss1,(MCS0)\_2TX****PSD****5320MHz**

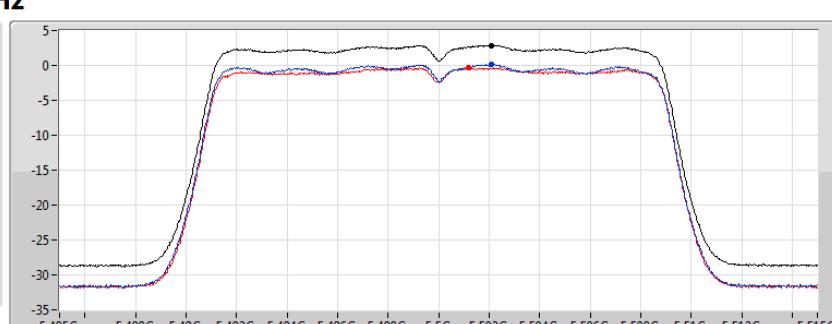
06/03/2019

CF  
5.32GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

Sum Port 1 Port 2 **802.11ac VHT20\_Nss1,(MCS0)\_2TX****PSD****5500MHz**

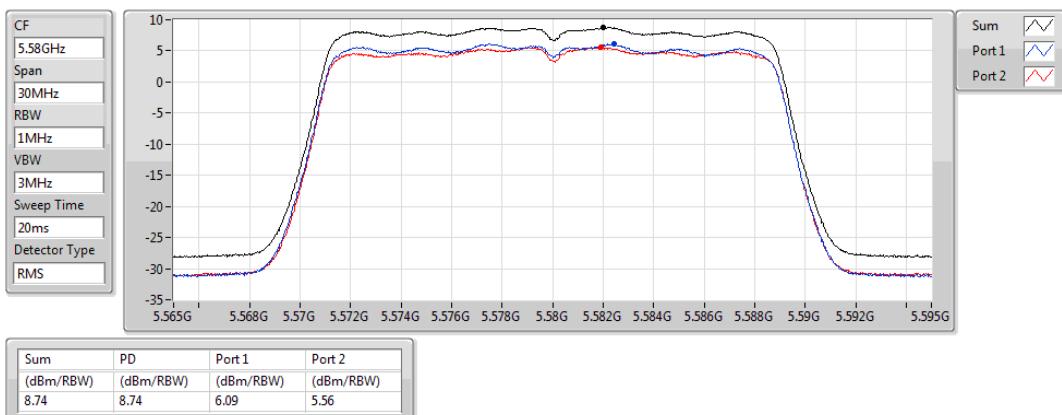
06/03/2019

CF  
5.5GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

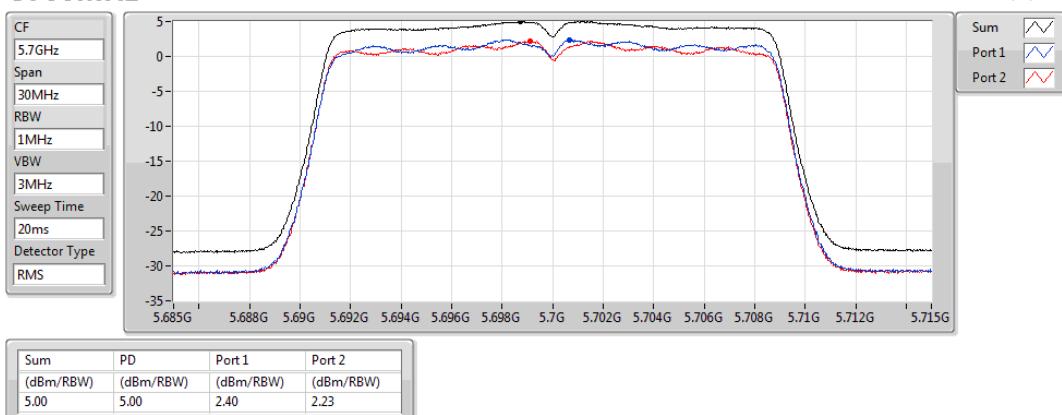
Sum Port 1 Port 2

**802.11ac VHT20\_Nss1,(MCS0)\_2TX****PSD**

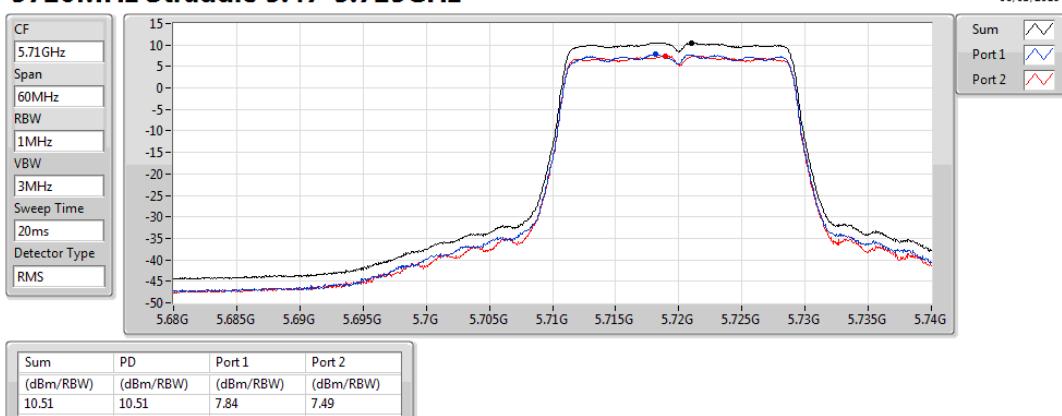
06/03/2019

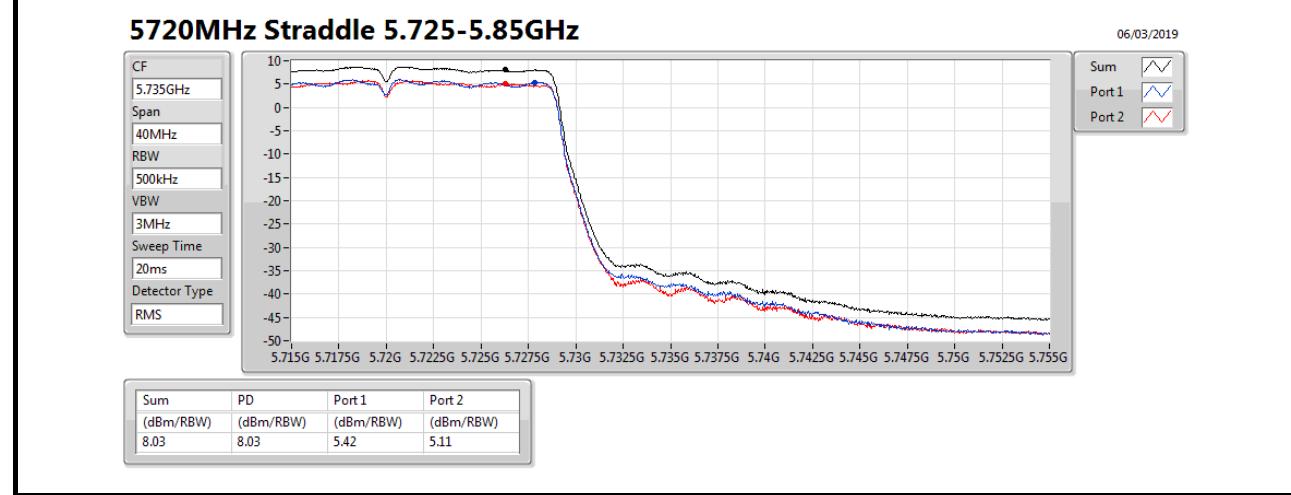
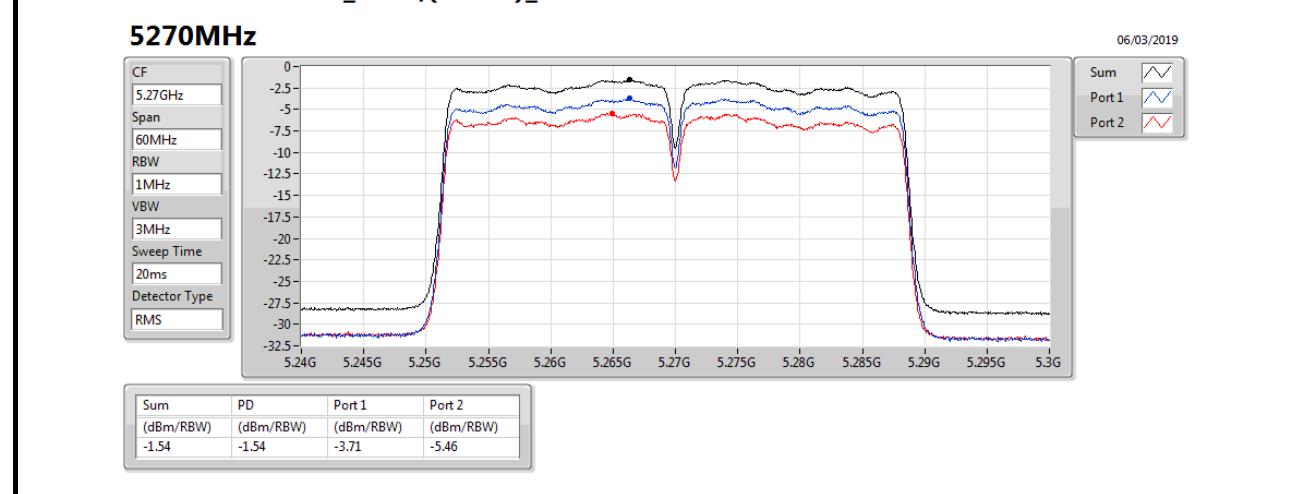
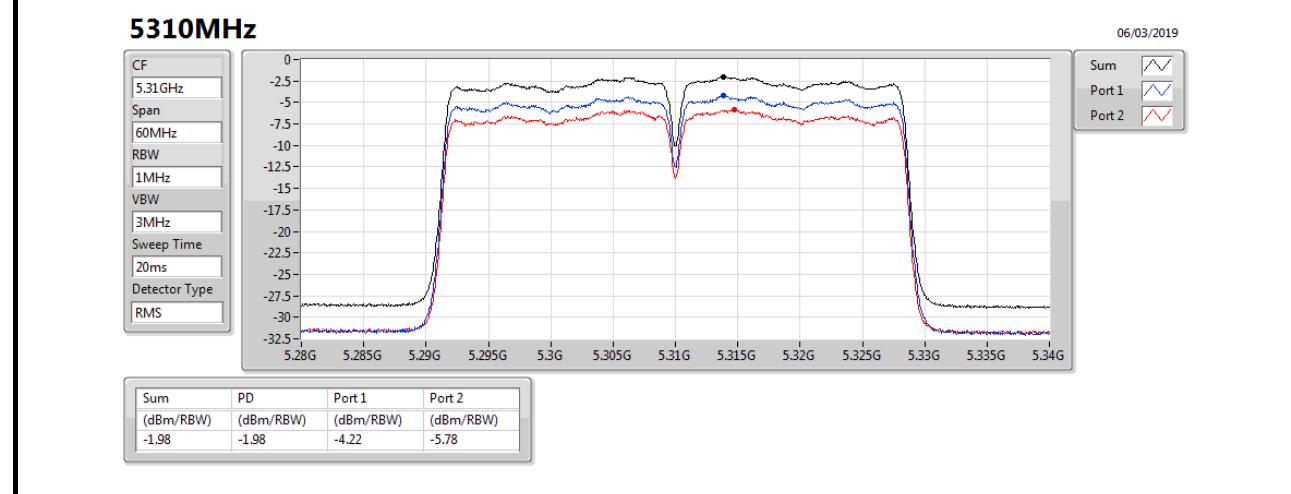
**5580MHz****802.11ac VHT20\_Nss1,(MCS0)\_2TX****PSD**

06/03/2019

**5700MHz****802.11ac VHT20\_Nss1,(MCS0)\_2TX****PSD**

06/03/2019

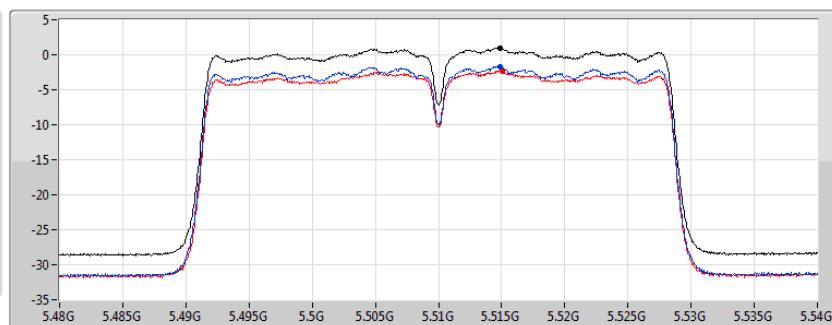
**5720MHz Straddle 5.47-5.725GHz**

**802.11ac VHT20\_Nss1,(MCS0)\_2TX**
**PSD**

**802.11ac VHT40\_Nss1,(MCS0)\_2TX**
**PSD**

**802.11ac VHT40\_Nss1,(MCS0)\_2TX**
**PSD**


**802.11ac VHT40\_Nss1,(MCS0)\_2TX**
**PSD**
**5510MHz**

06/03/2019

CF  
5.51GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

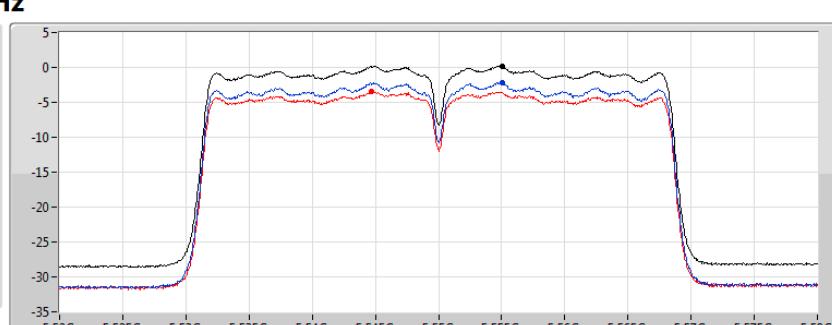

Sum 

Port 1 

Port 2 
**802.11ac VHT40\_Nss1,(MCS0)\_2TX**
**PSD**
**5550MHz**

06/03/2019

CF  
5.55GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

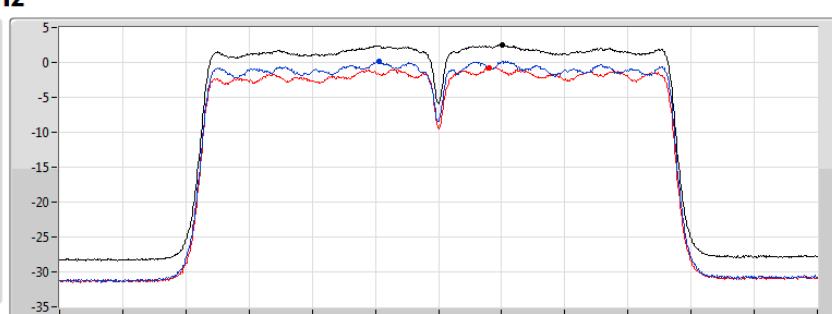

Sum 

Port 1 

Port 2 
**802.11ac VHT40\_Nss1,(MCS0)\_2TX**
**PSD**
**5670MHz**

06/03/2019

CF  
5.67GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

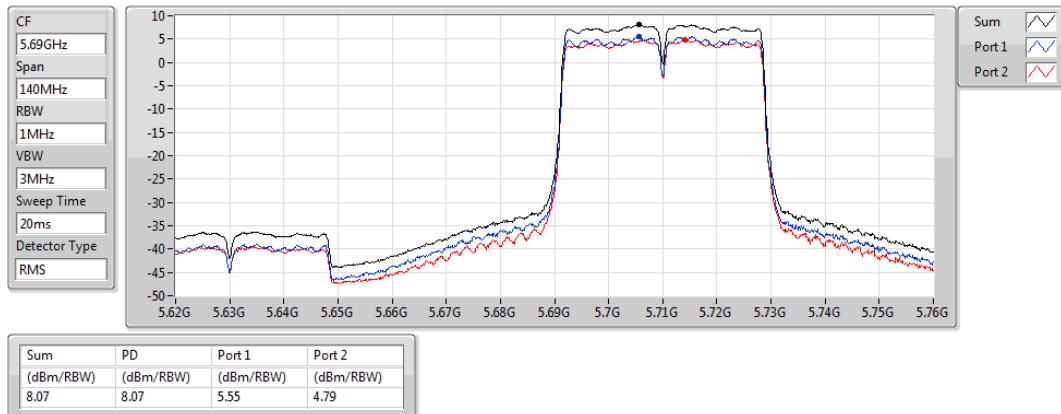

Sum 

Port 1 

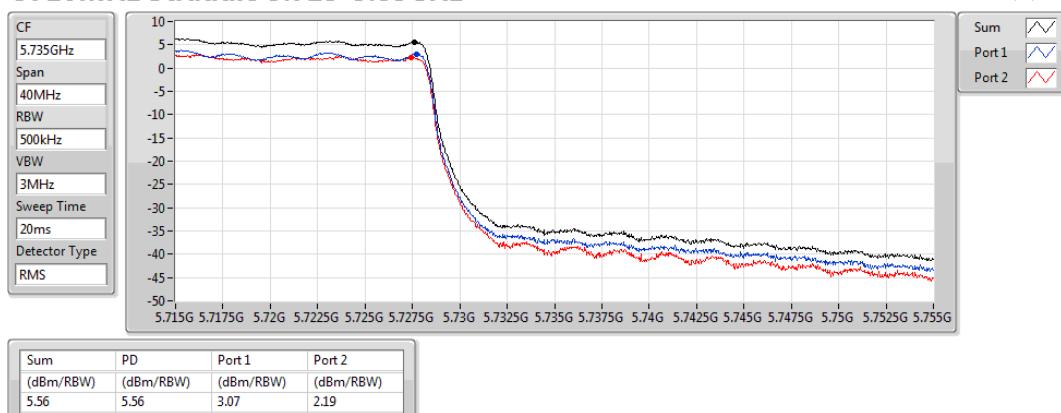
Port 2

**802.11ac VHT40\_Nss1,(MCS0)\_2TX**
**PSD**

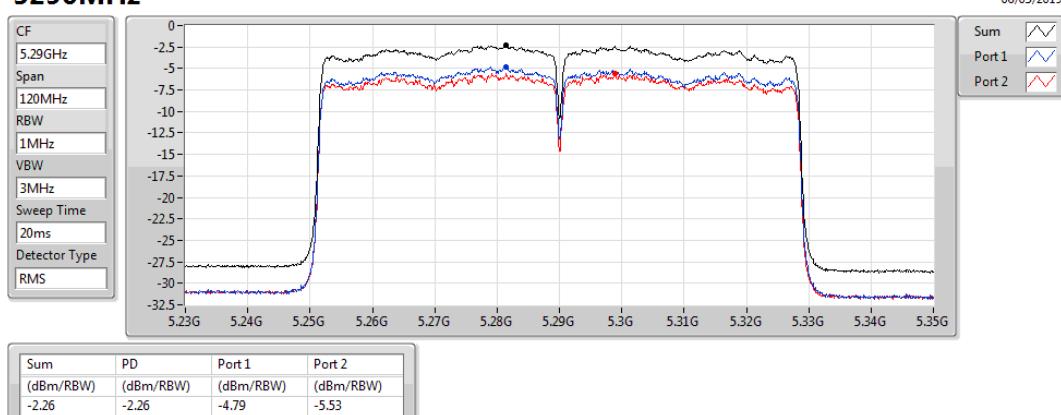
06/03/2019

**5710MHz Straddle 5.47-5.725GHz**

**802.11ac VHT40\_Nss1,(MCS0)\_2TX**
**PSD**

06/03/2019

**5710MHz Straddle 5.725-5.85GHz**

**802.11ac VHT80\_Nss1,(MCS0)\_2TX**
**PSD**

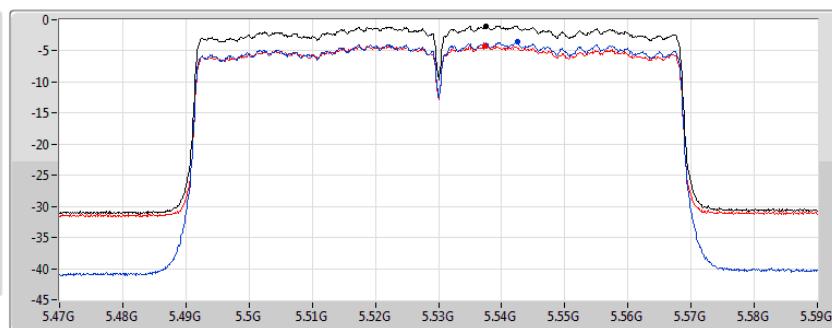
06/03/2019

**5290MHz**


**802.11ac VHT80\_Nss1,(MCS0)\_2TX****PSD****5530MHz**

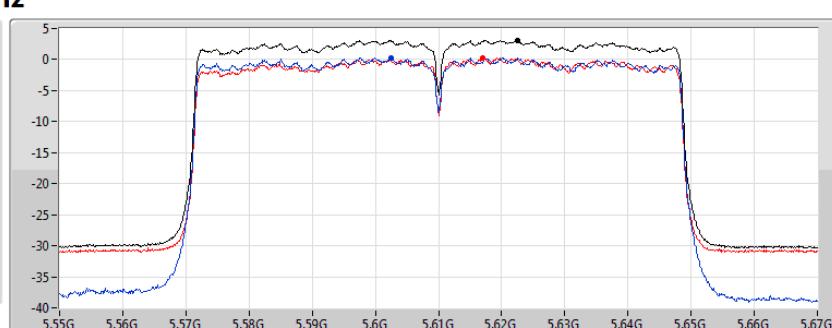
06/03/2019

CF  
5.53GHz  
Span  
120MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

**802.11ac VHT80\_Nss1,(MCS0)\_2TX****PSD****5610MHz**

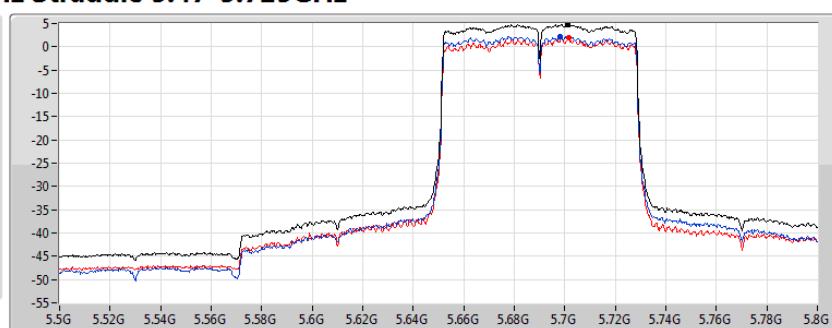
06/03/2019

CF  
5.61GHz  
Span  
120MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

**802.11ac VHT80\_Nss1,(MCS0)\_2TX****PSD****5690MHz Straddle 5.47-5.725GHz**

06/03/2019

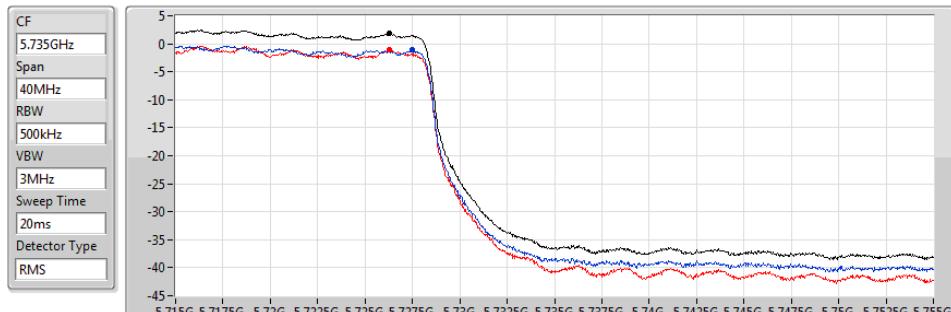
CF  
5.65GHz  
Span  
300MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



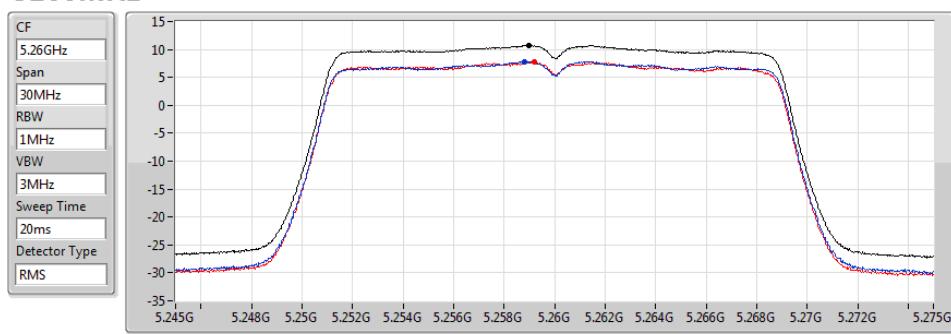
Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
4.82	4.82	2.19	1.86

**802.11ac VHT80\_Nss1,(MCS0)\_2TX**
**PSD**

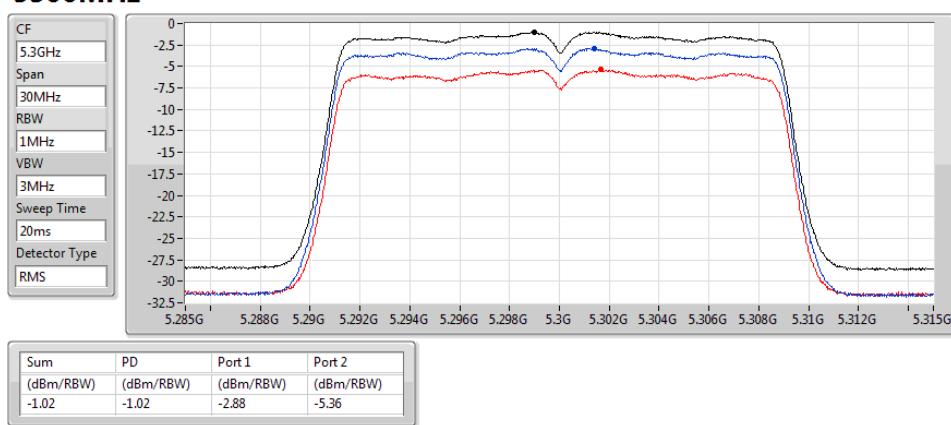
06/03/2019

**5690MHz Straddle 5.725-5.85GHz**

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**PSD**

06/03/2019

**5260MHz**

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**PSD**

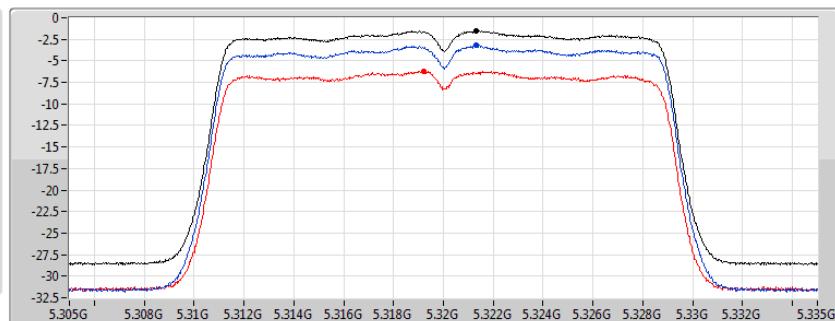
06/03/2019

**5300MHz**


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****PSD****5320MHz**

06/03/2019

CF  
5.32GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

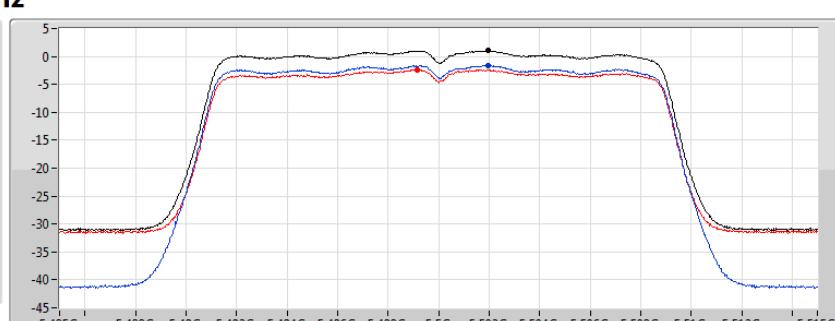


Sum   
Port 1   
Port 2

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****PSD****5500MHz**

06/03/2019

CF  
5.5GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

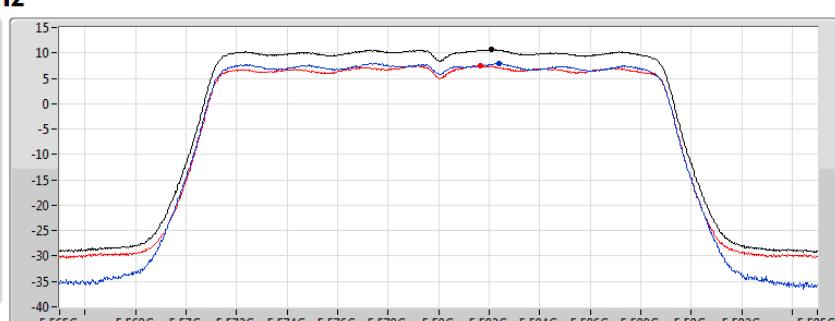


Sum   
Port 1   
Port 2

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX****PSD****5580MHz**

06/03/2019

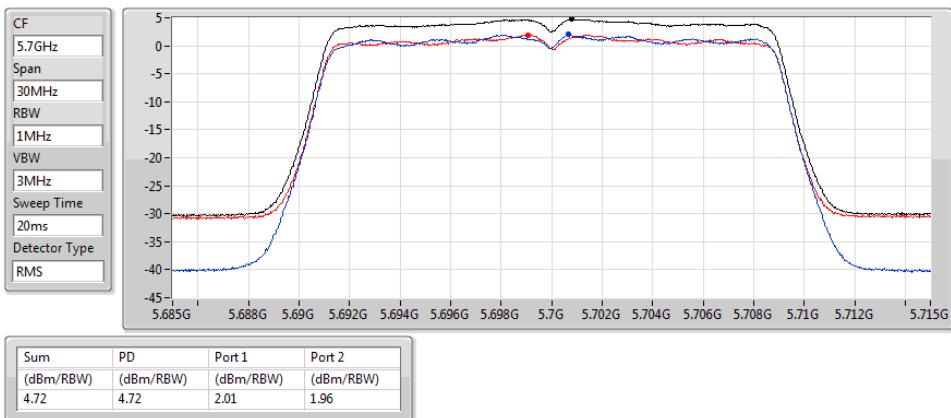
CF  
5.58GHz  
Span  
30MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



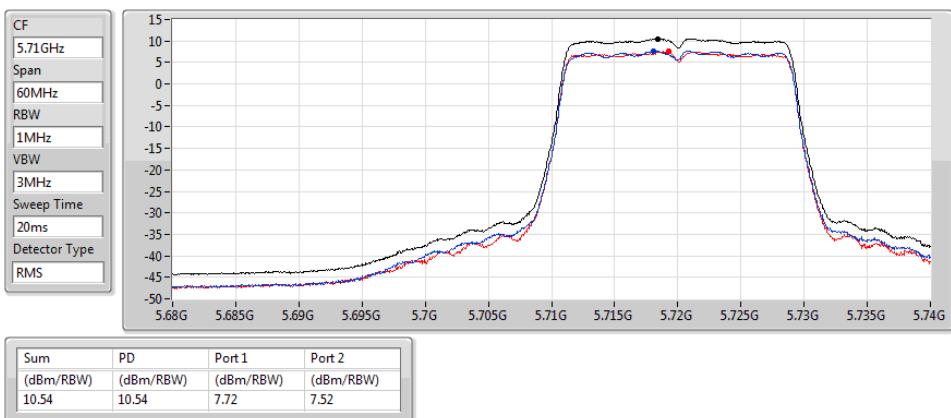
Sum   
Port 1   
Port 2

**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**PSD**
**5700MHz**

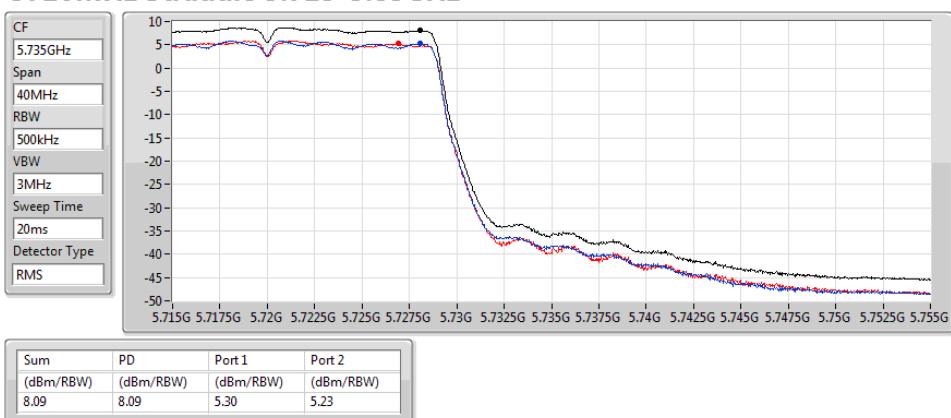
06/03/2019


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**PSD**
**5720MHz Straddle 5.47-5.725GHz**

06/03/2019


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**
**PSD**
**5720MHz Straddle 5.725-5.85GHz**

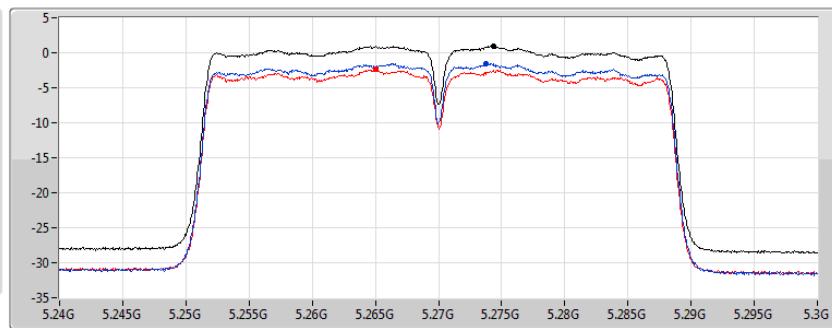
06/03/2019



**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****PSD****5270MHz**

06/03/2019

CF  
5.27GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



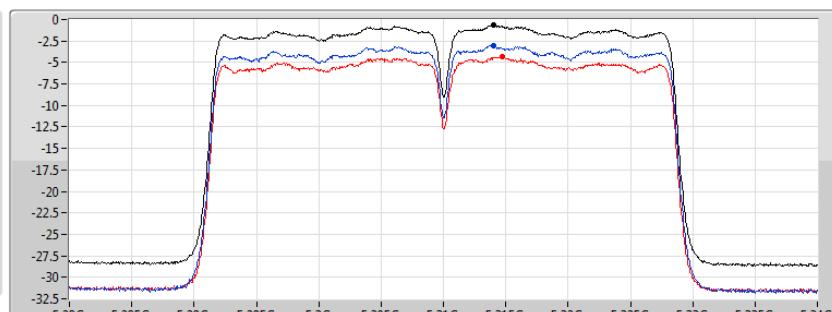
Sum  
Port 1  
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.96	0.96	-1.55	-2.35

**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****PSD****5310MHz**

06/03/2019

CF  
5.31GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



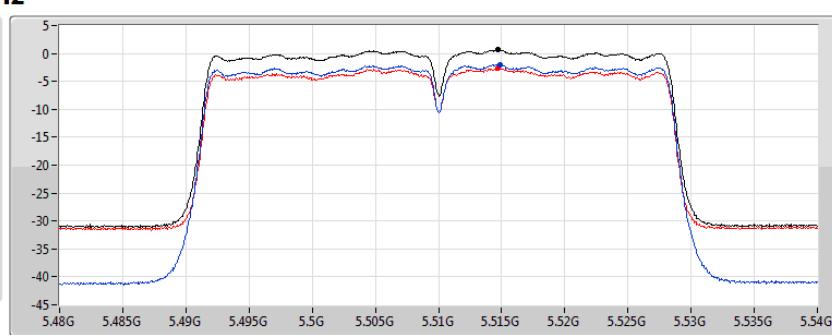
Sum  
Port 1  
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.66	-0.66	-3.03	-4.29

**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****PSD****5510MHz**

06/03/2019

CF  
5.51GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



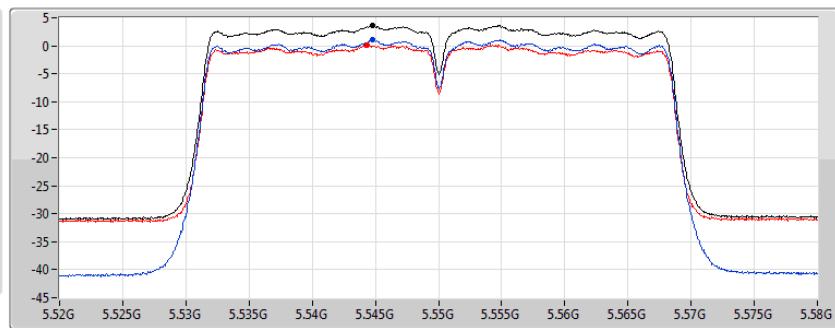
Sum  
Port 1  
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
0.77	0.77	-1.94	-2.53

**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**
**PSD**
**5550MHz**

06/03/2019

CF  
5.55GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

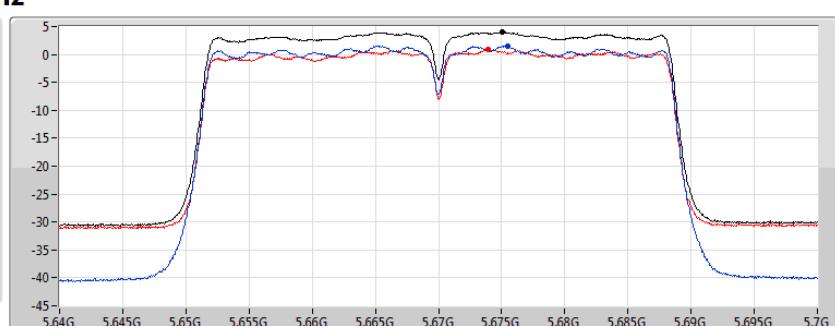

Sum 

Port 1 

Port 2 
**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**
**PSD**
**5670MHz**

06/03/2019

CF  
5.67GHz  
Span  
60MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS

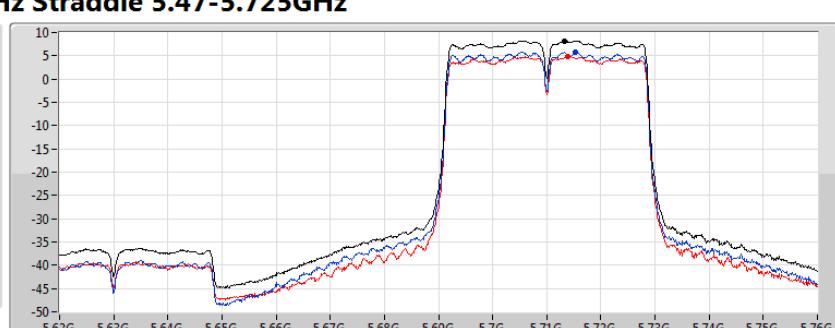

Sum 

Port 1 

Port 2 
**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**
**PSD**
**5710MHz Straddle 5.47-5.725GHz**

06/03/2019

CF  
5.69GHz  
Span  
140MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS


Sum 

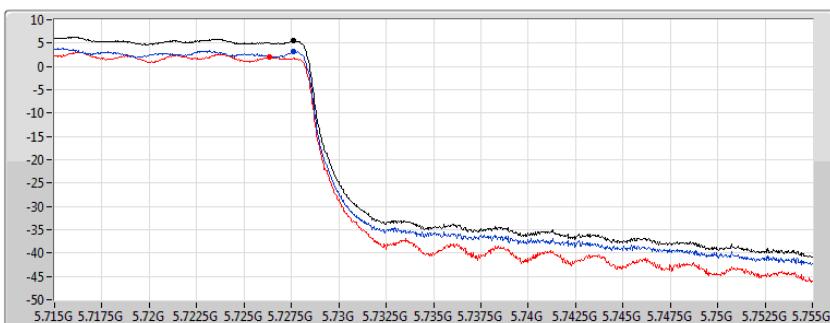
Port 1 

Port 2

**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX****PSD****5710MHz Straddle 5.725-5.85GHz**

06/03/2019

CF  
5.735GHz  
Span  
40MHz  
RBW  
500kHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



Sum

Port 1

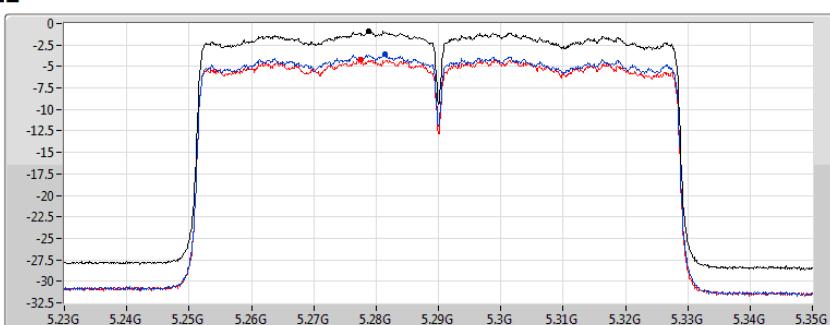
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
5.48	5.48	3.11	1.96

**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****PSD****5290MHz**

06/03/2019

CF  
5.29GHz  
Span  
120MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



Sum

Port 1

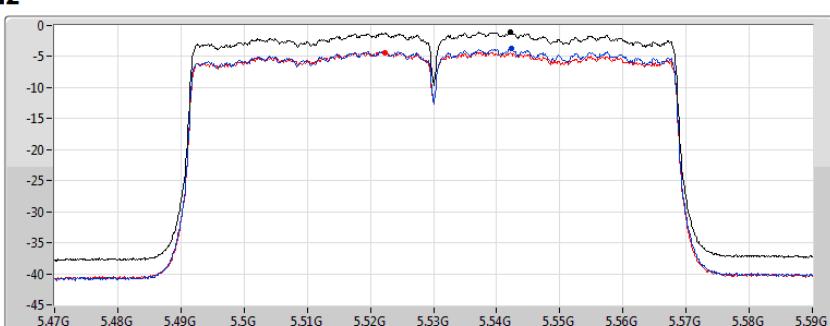
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.95	-0.95	-3.58	-4.24

**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****PSD****5530MHz**

06/03/2019

CF  
5.53GHz  
Span  
120MHz  
RBW  
1MHz  
VBW  
3MHz  
Sweep Time  
20ms  
Detector Type  
RMS



Sum

Port 1

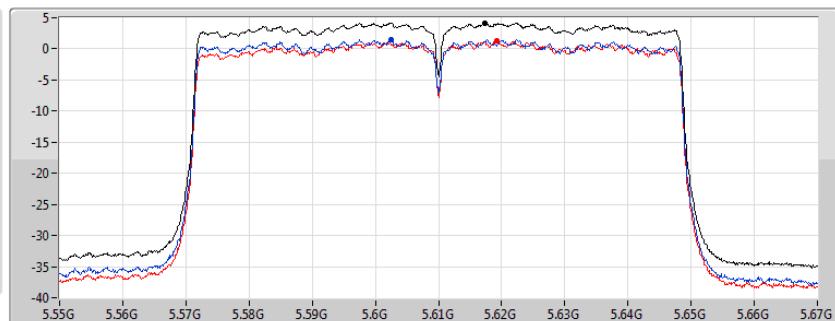
Port 2

Sum	PD	Port 1	Port 2
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.10	-1.10	-3.75	-4.34

**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****PSD****5610MHz**

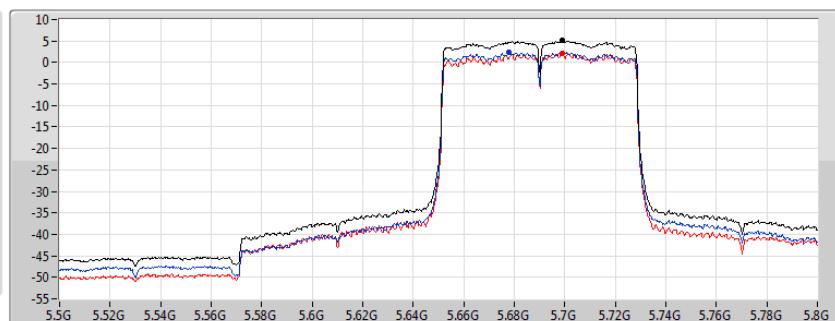
06/03/2019

CF	5.61GHz
Span	120MHz
RBW	1MHz
VBW	3MHz
Sweep Time	20ms
Detector Type	RMS

Sum  Port 1  Port 2 **802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****PSD****5690MHz Straddle 5.47-5.725GHz**

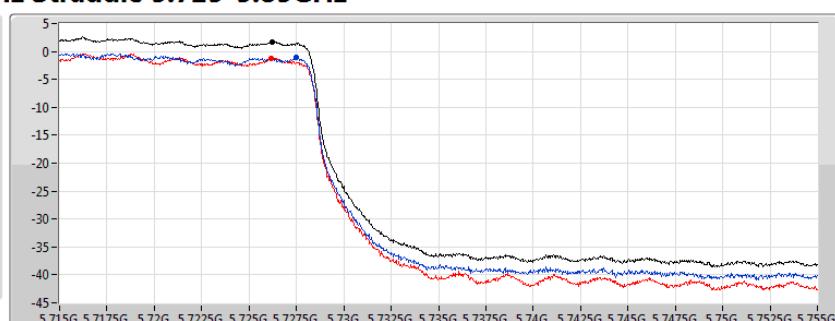
06/03/2019

CF	5.65GHz
Span	300MHz
RBW	1MHz
VBW	3MHz
Sweep Time	20ms
Detector Type	RMS

Sum  Port 1  Port 2 **802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX****PSD****5690MHz Straddle 5.725-5.85GHz**

06/03/2019

CF	5.735GHz
Span	40MHz
RBW	500kHz
VBW	3MHz
Sweep Time	20ms
Detector Type	RMS

Sum  Port 1  Port 2

**Summary**

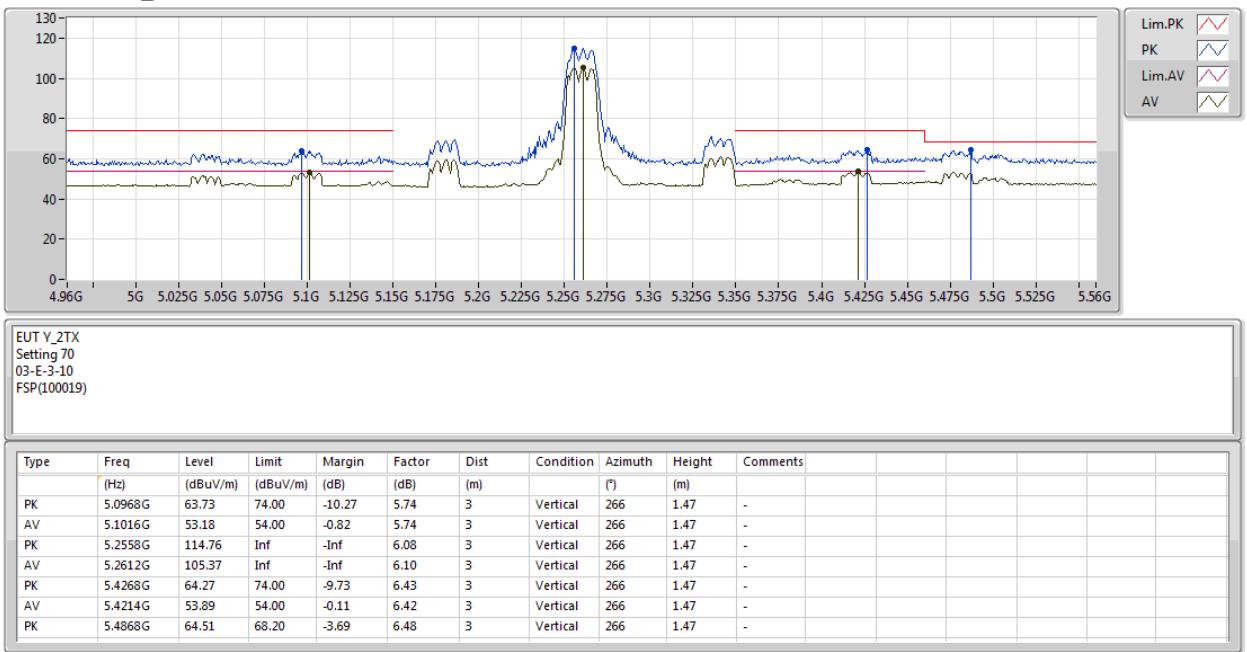
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.47-5.725GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	Pass	AV	5.4214G	53.94	54.00	-0.06	0.92	3	Vertical	189	1.60	-



## 802.11a\_Nss1,(6Mbps)\_2TX

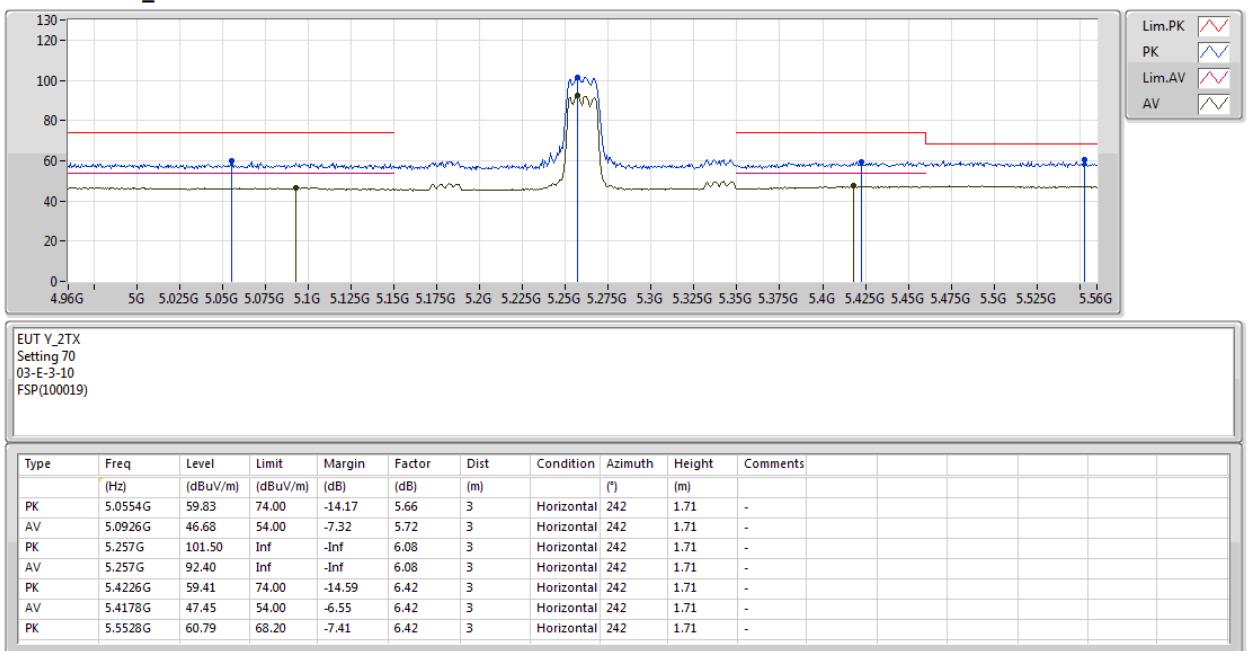
02/03/2019

## 5260MHz\_TX



**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

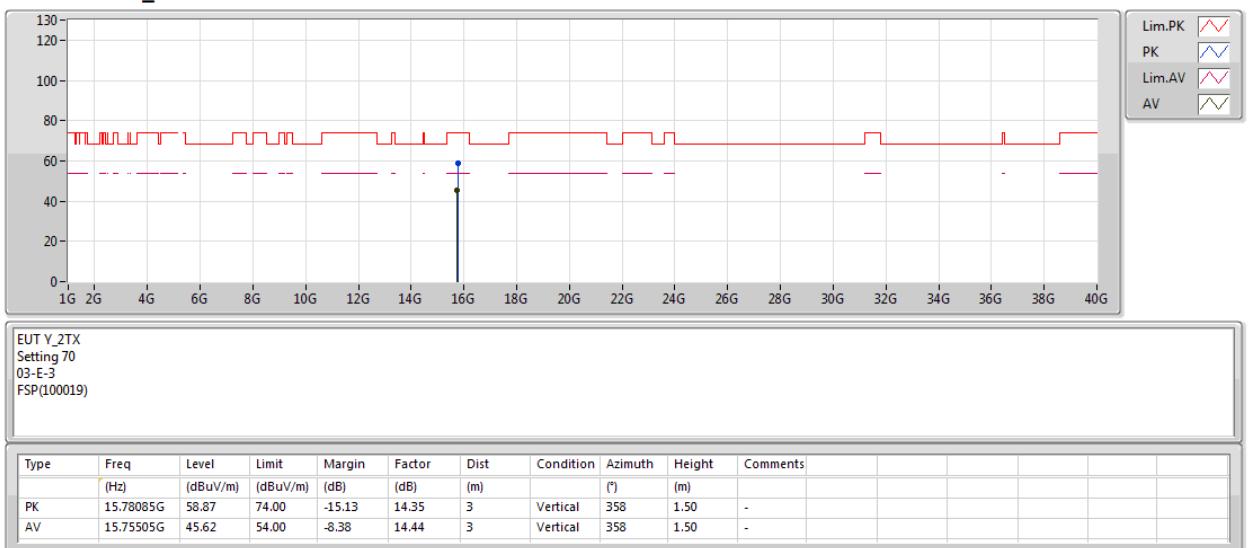
**5260MHz\_TX**




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5260MHz\_TX

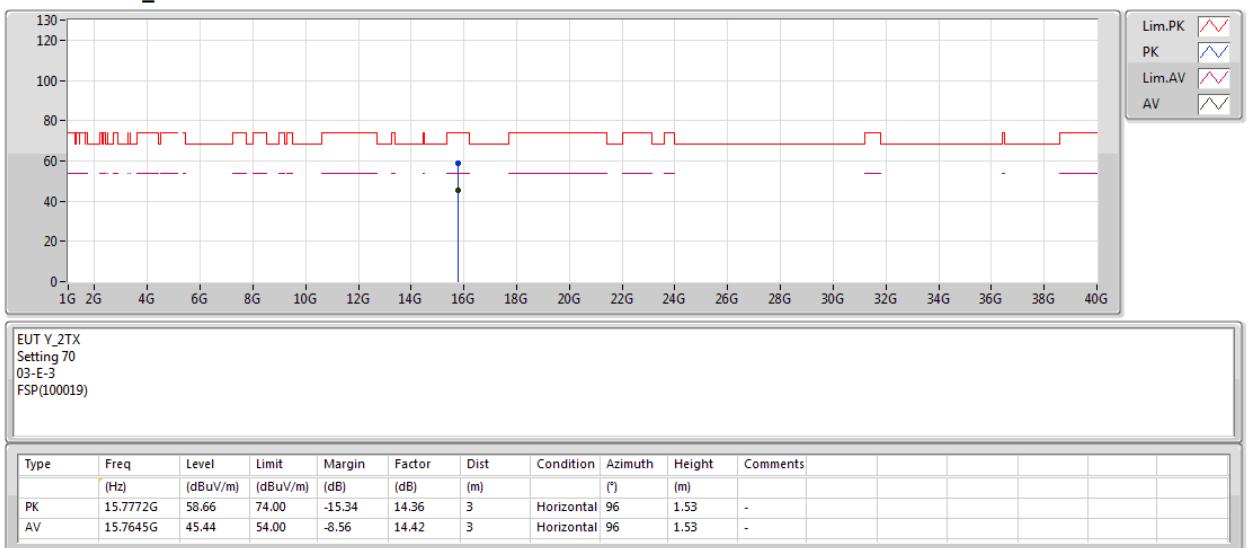




## 802.11a\_Nss1,(6Mbps)\_2TX

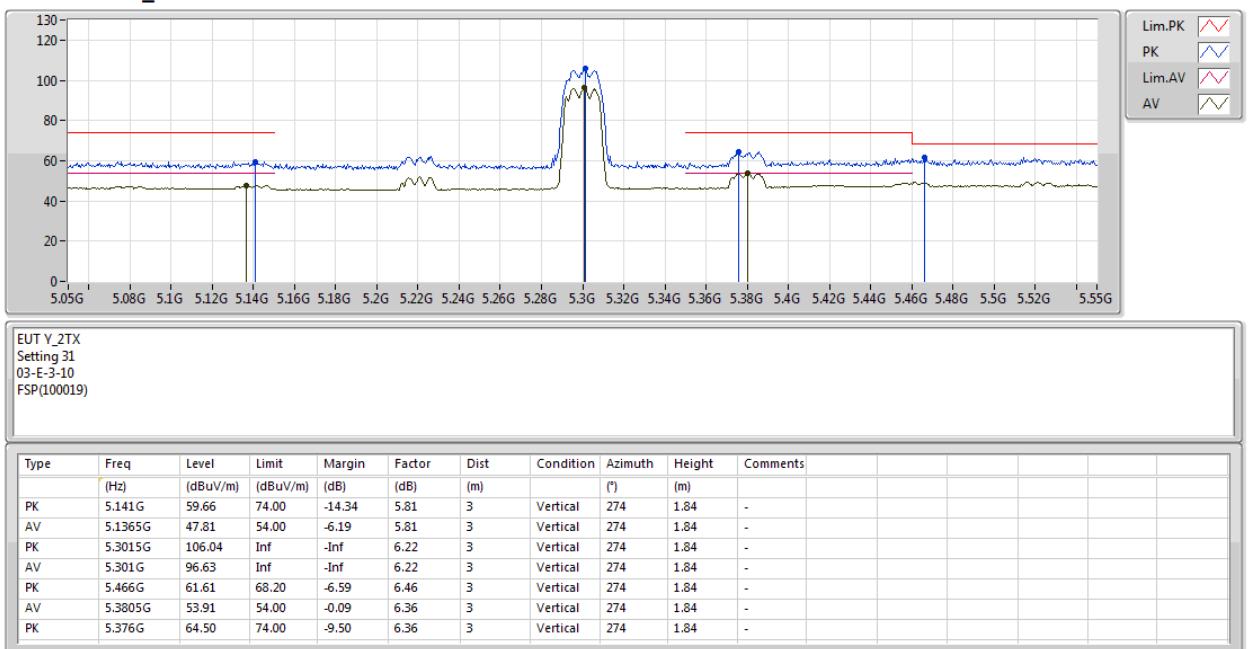
02/03/2019

## 5260MHz\_TX



**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

**5300MHz\_TX**




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5300MHz\_TX

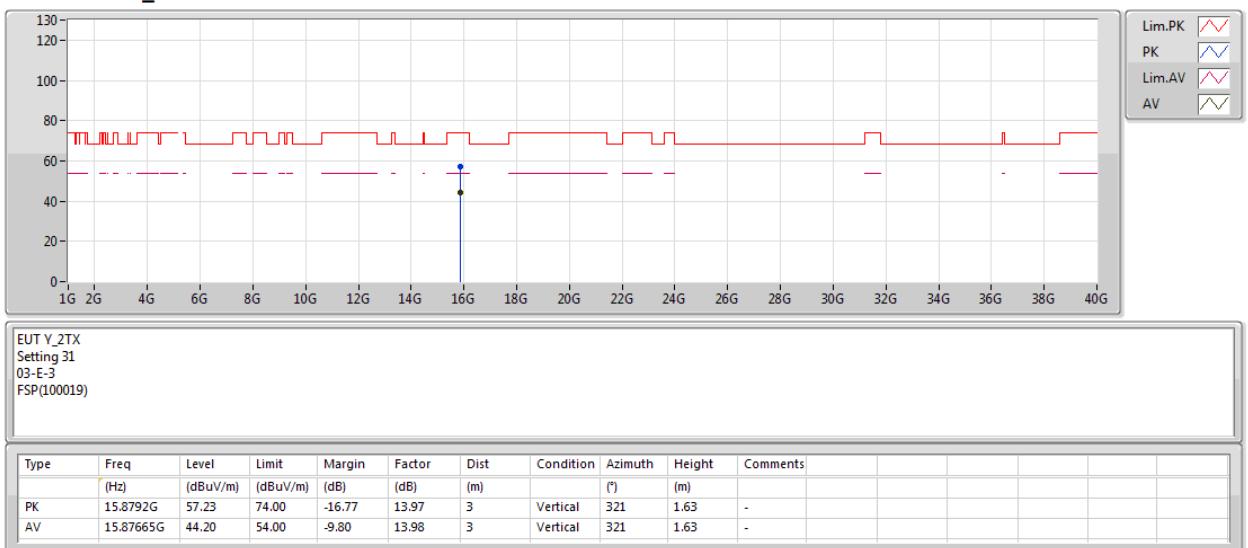




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5300MHz\_TX

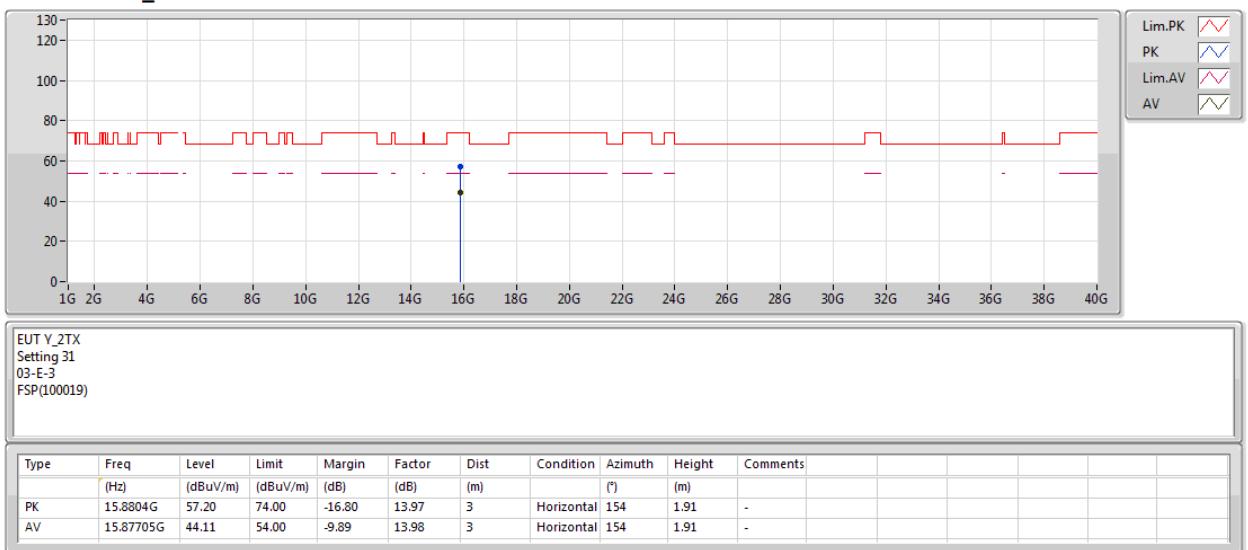




## 802.11a\_Nss1,(6Mbps)\_2TX

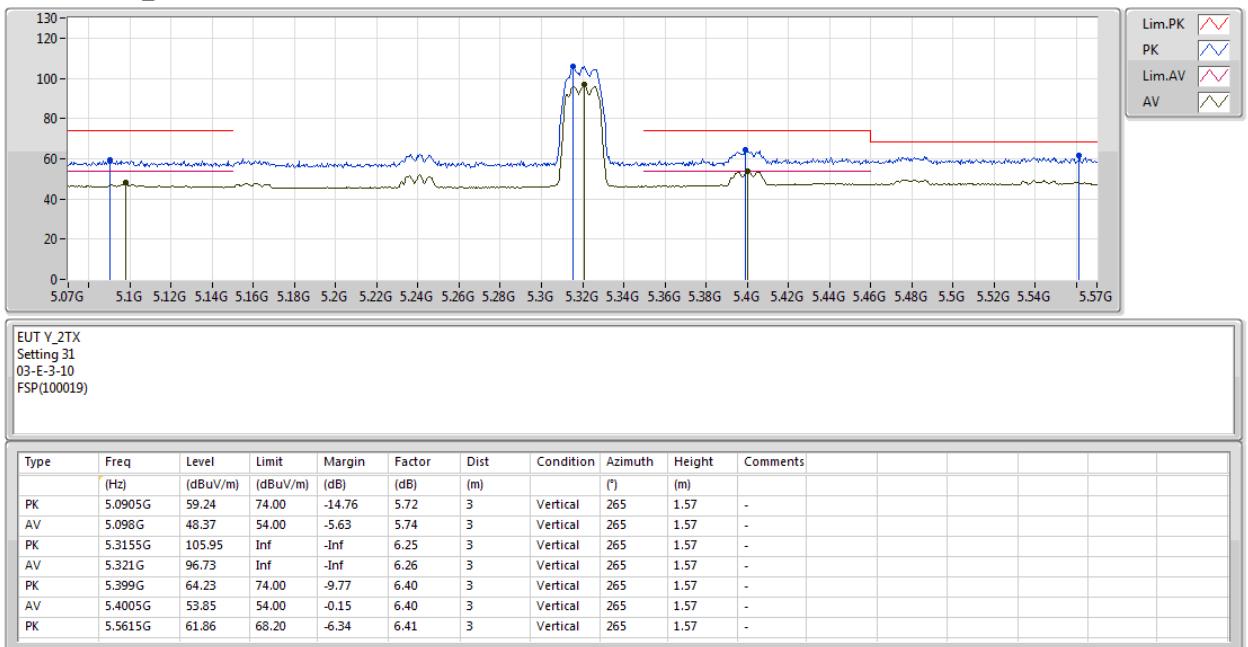
02/03/2019

## 5300MHz\_TX



**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

**5320MHz\_TX**


**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

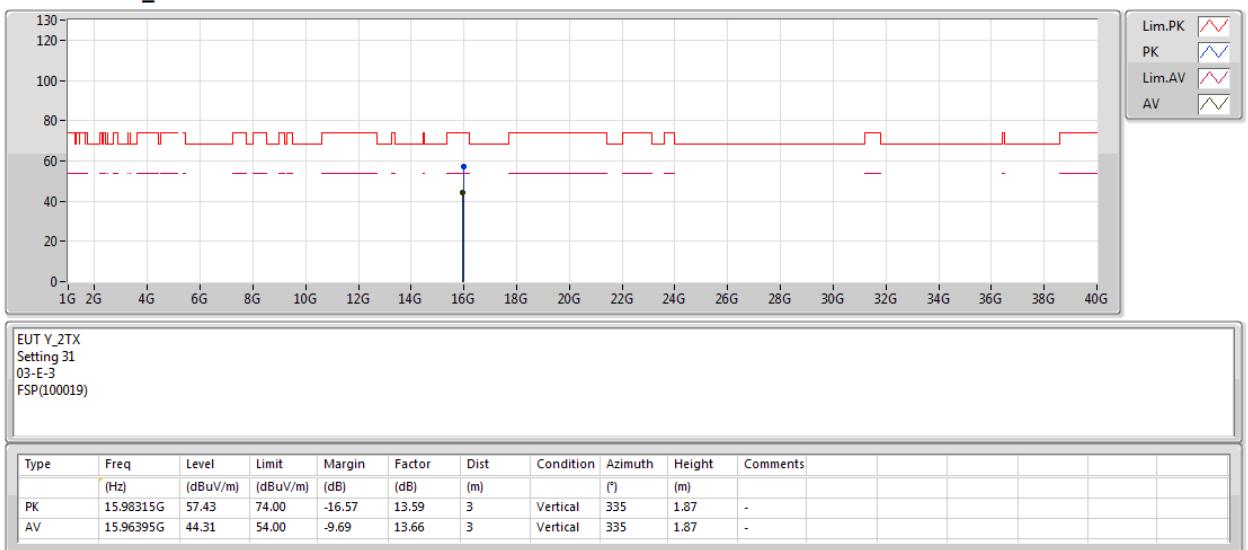
**5320MHz\_TX**




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5320MHz\_TX

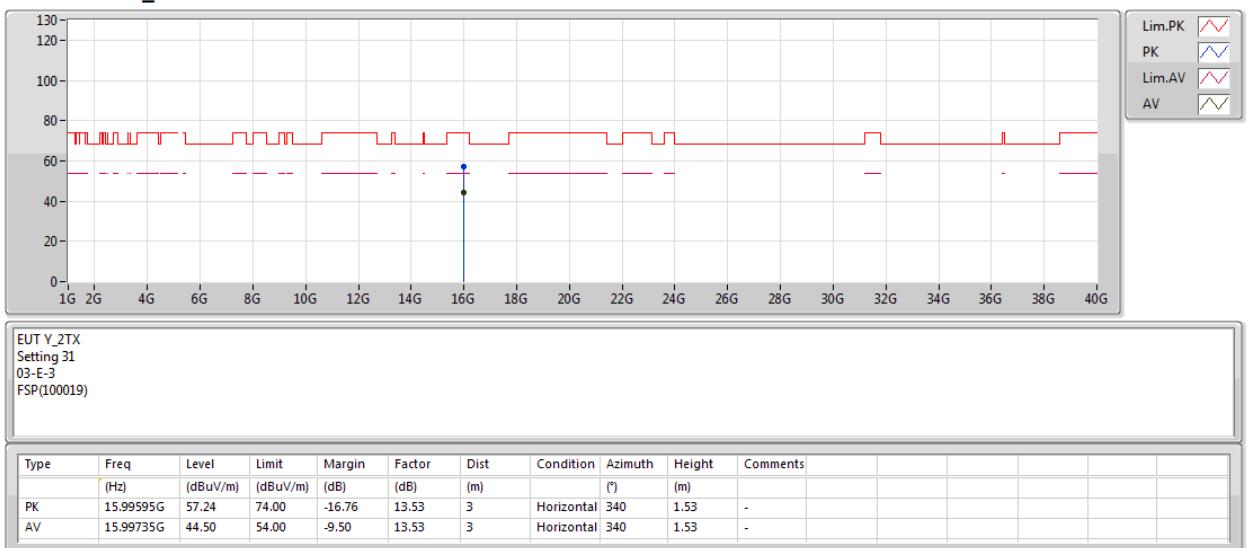




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5320MHz\_TX



**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

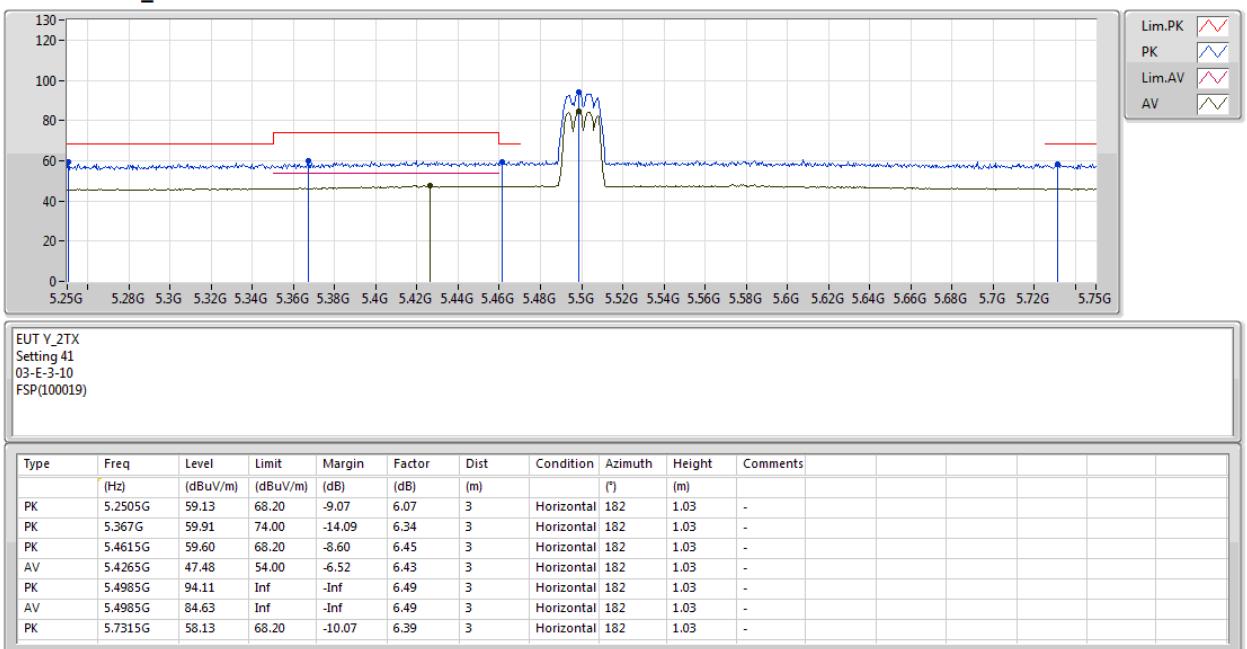
**5500MHz\_TX**




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5500MHz\_TX

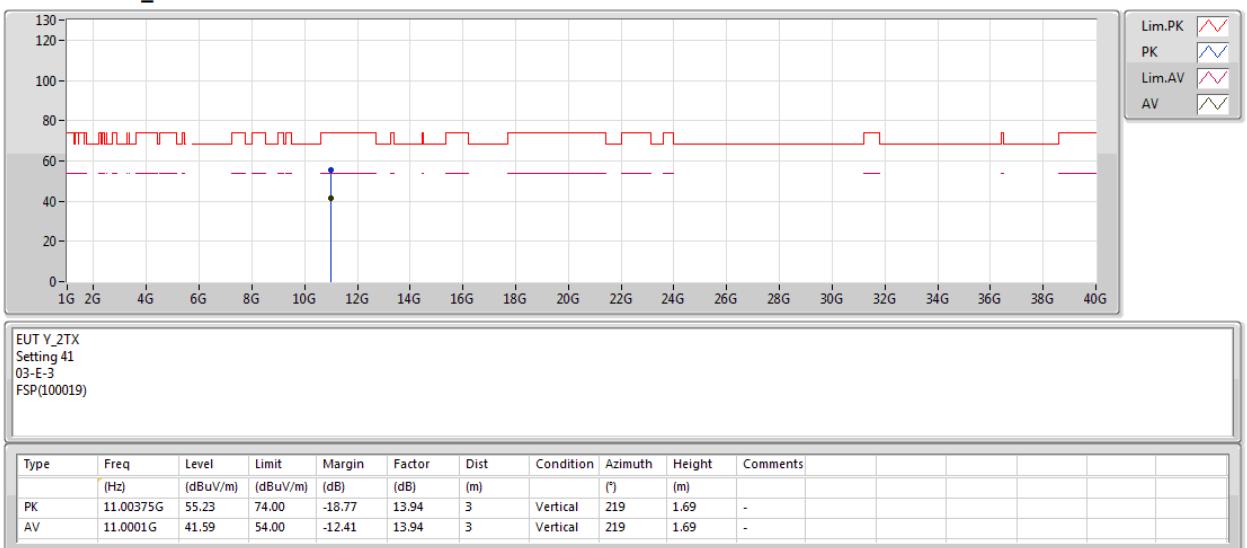




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5500MHz\_TX

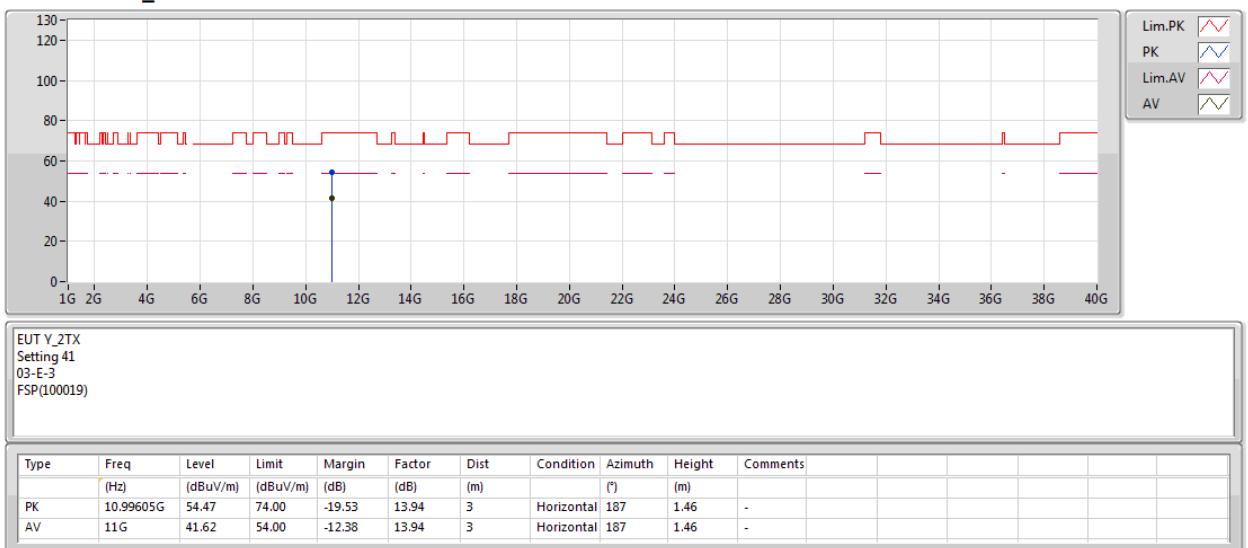




## 802.11a\_Nss1,(6Mbps)\_2TX

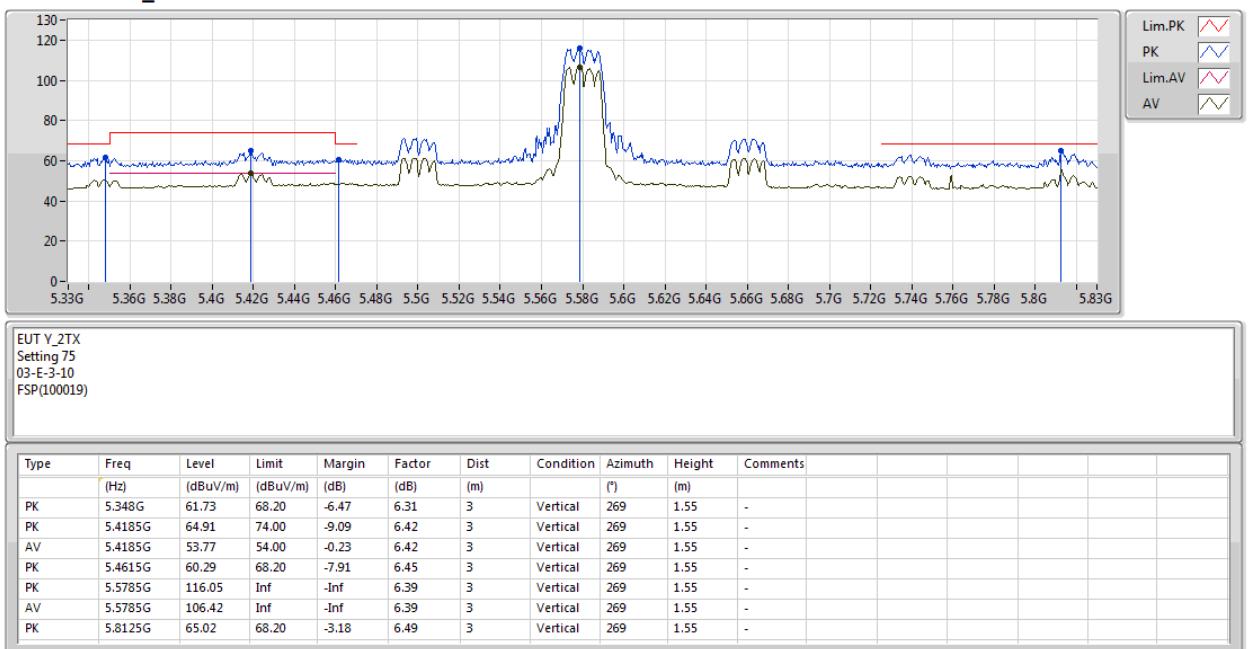
02/03/2019

## 5500MHz\_TX



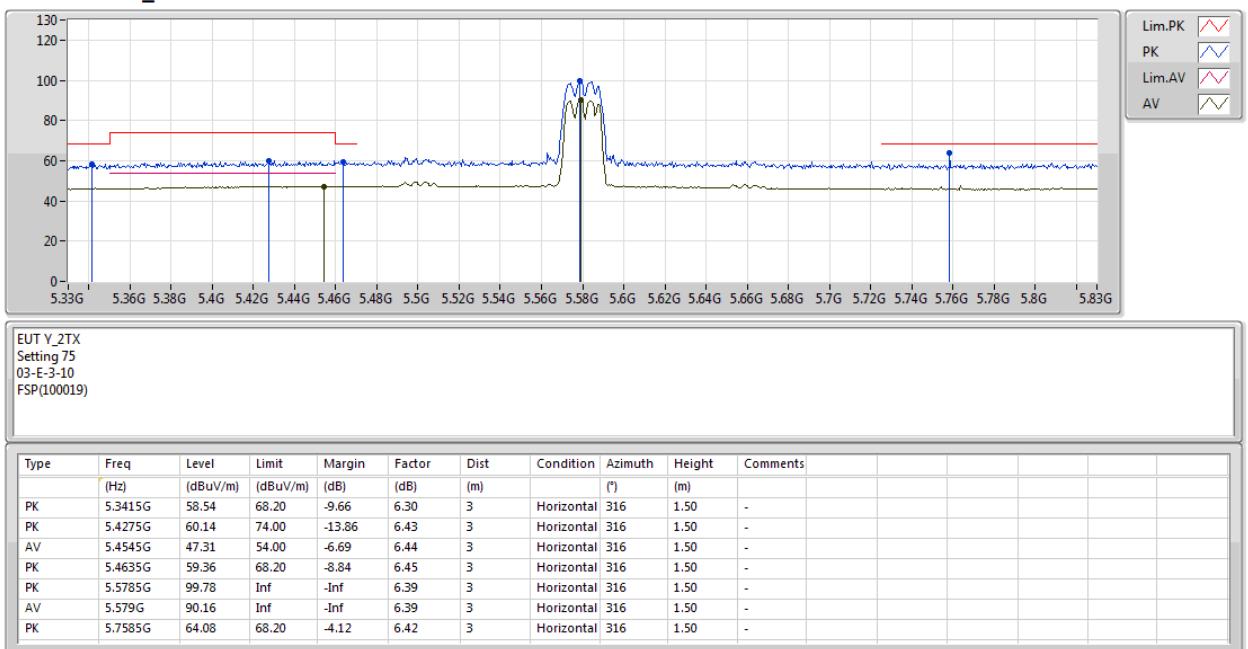
**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

**5580MHz\_TX**


**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

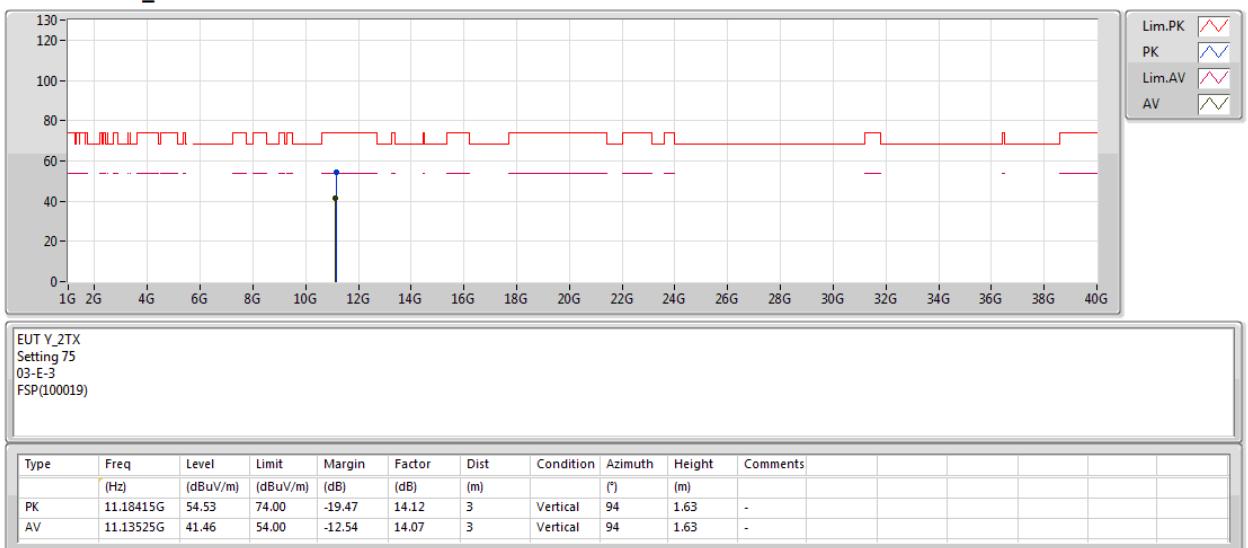
**5580MHz\_TX**




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5580MHz\_TX

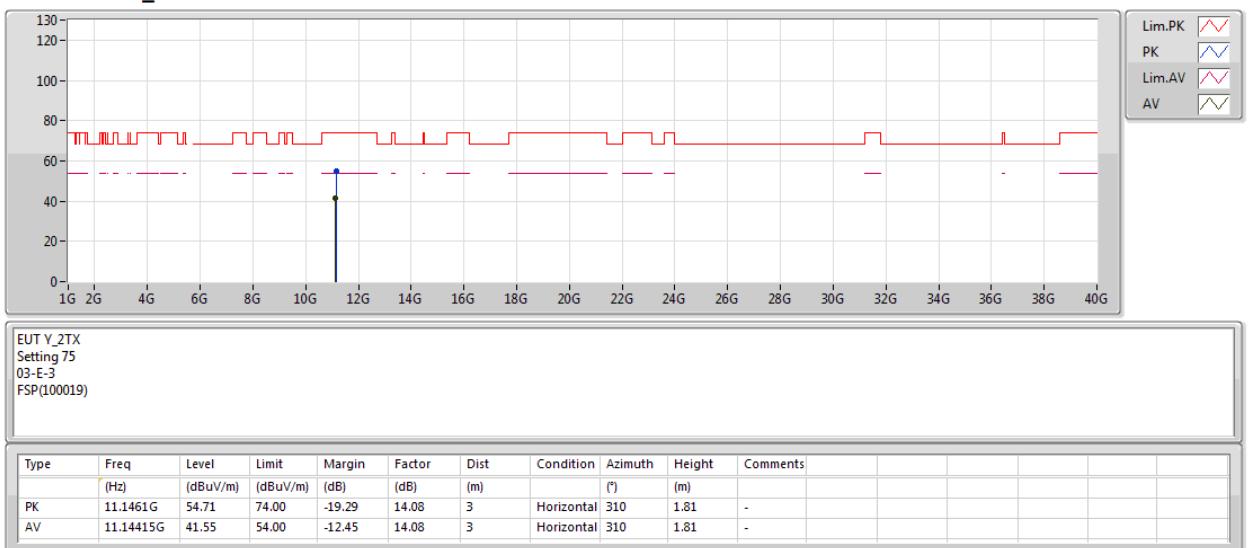




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5580MHz\_TX





## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5700MHz\_TX

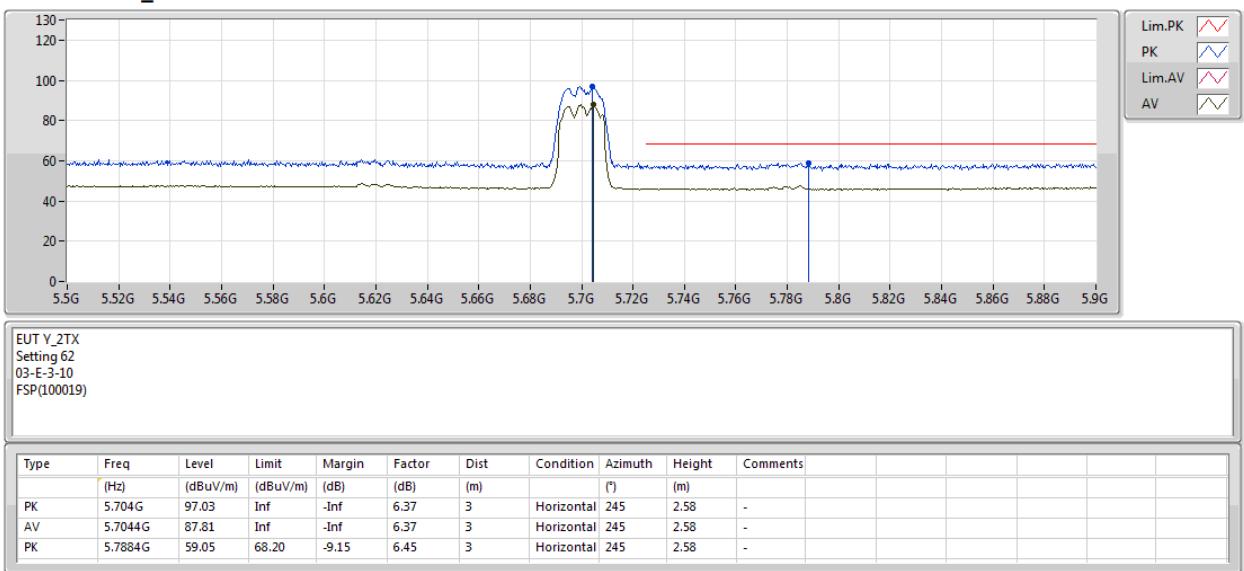




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5700MHz\_TX

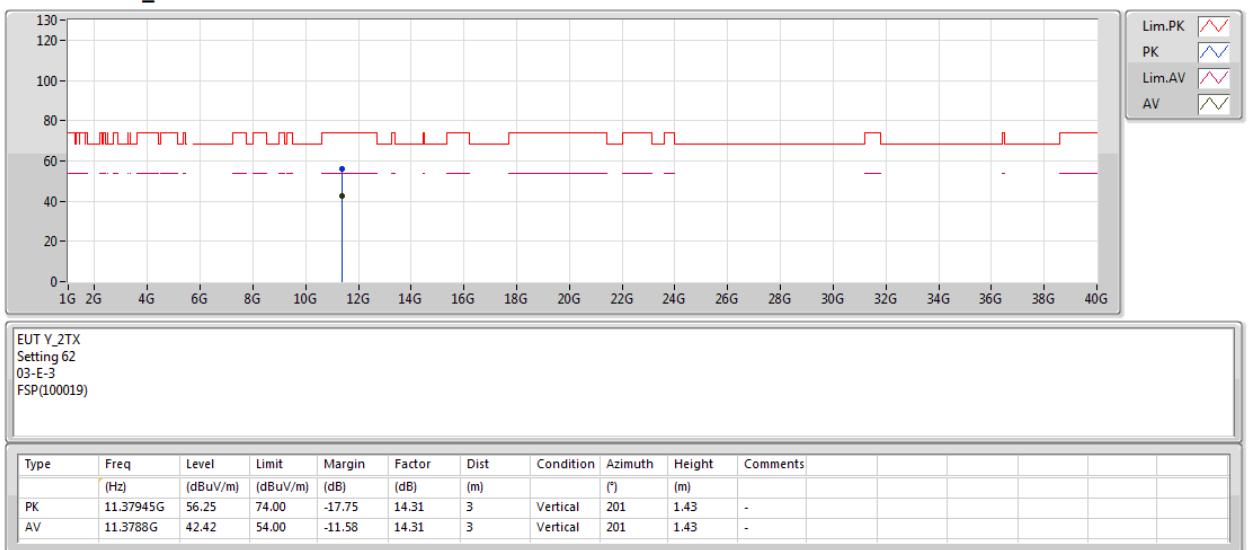




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5700MHz\_TX

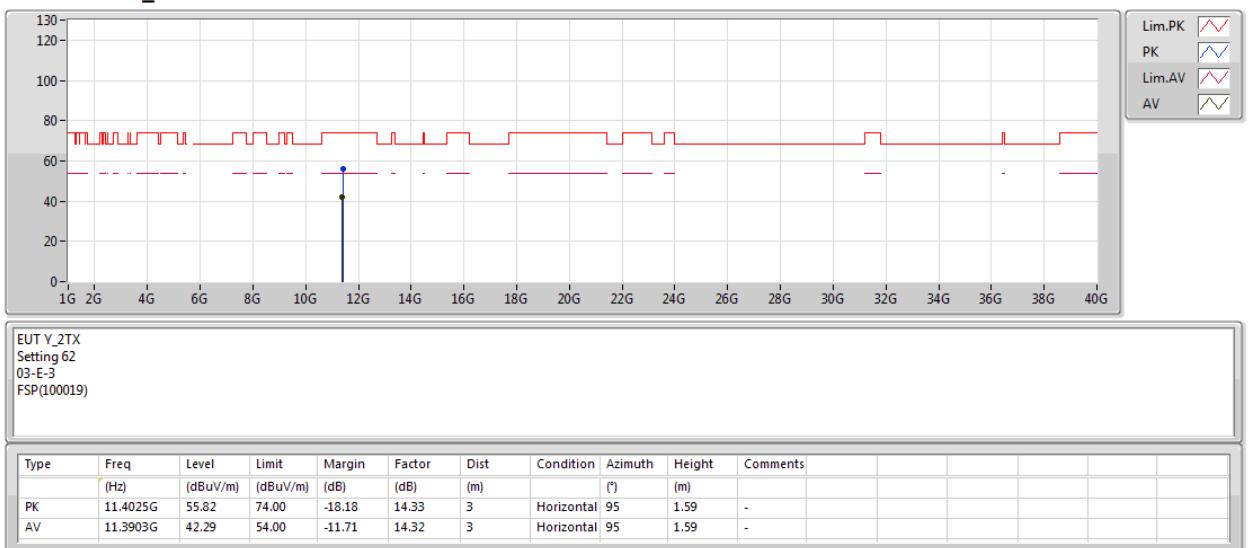




## 802.11a\_Nss1,(6Mbps)\_2TX

02/03/2019

## 5700MHz\_TX

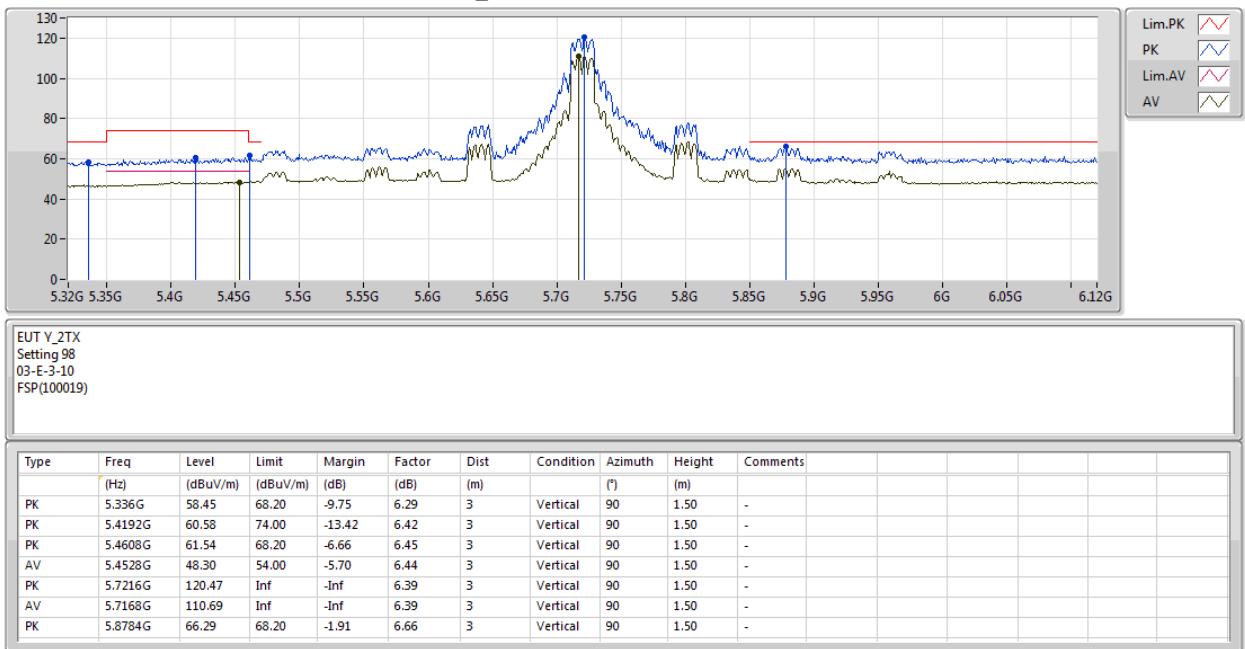




## 802.11a\_Nss1,(6Mbps)\_2TX

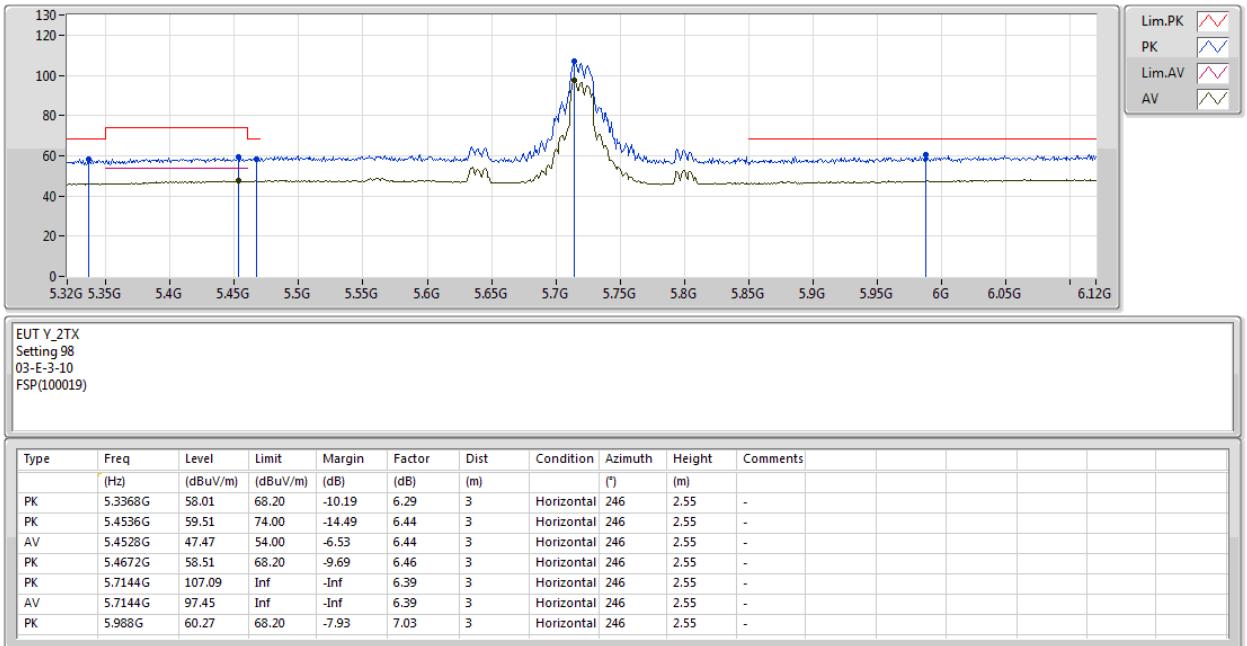
02/03/2019

## 5720MHz Straddle 5.47-5.725GHz\_TX



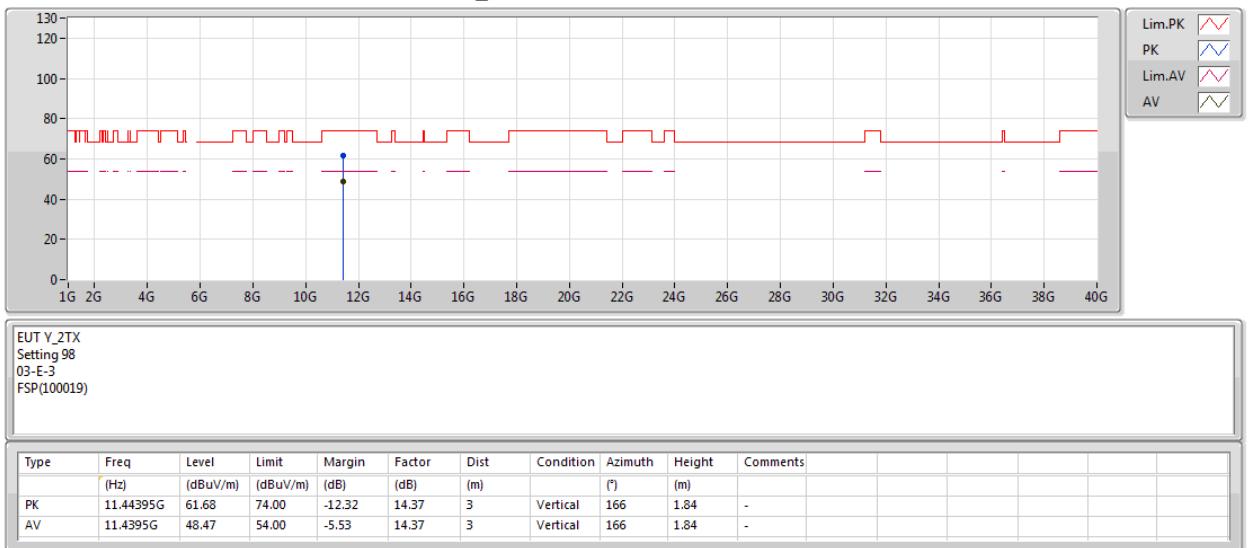
**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

**5720MHz Straddle 5.47-5.725GHz\_TX**


**802.11a\_Nss1,(6Mbps)\_2TX**

02/03/2019

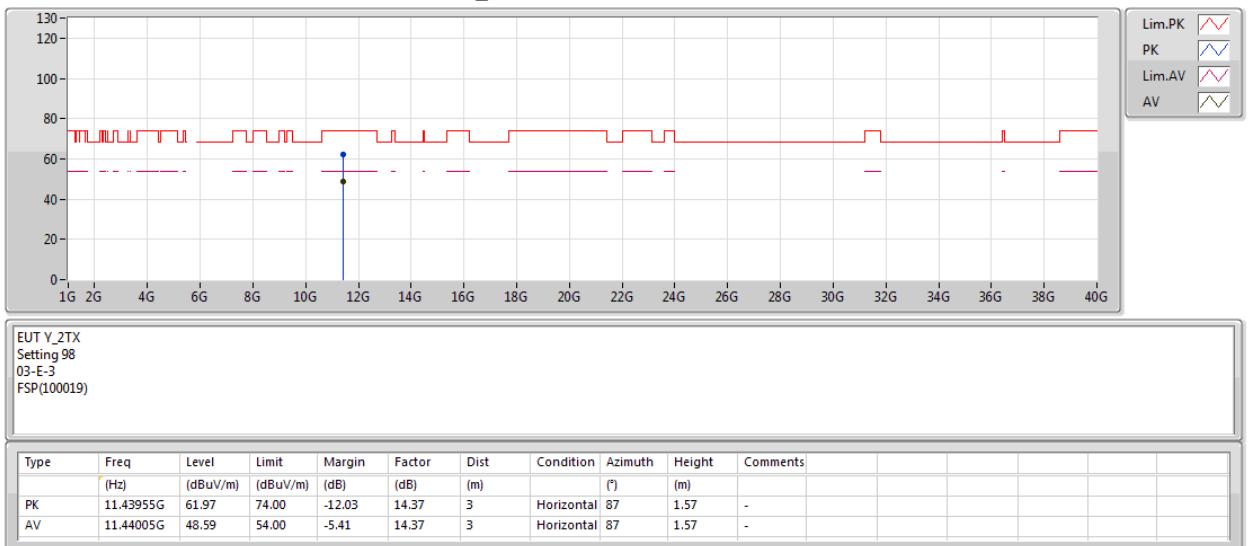
**5720MHz Straddle 5.47-5.725GHz\_TX**



## 802.11a\_Nss1,(6Mbps)\_2TX

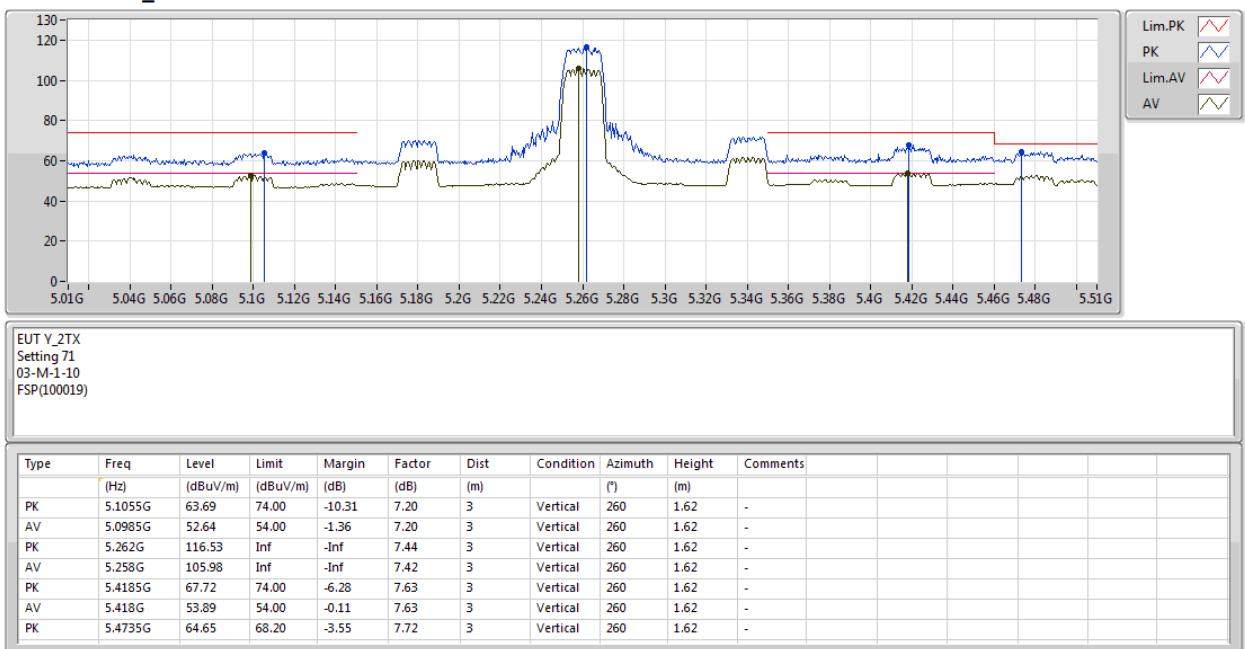
02/03/2019

## 5720MHz Straddle 5.47-5.725GHz\_TX



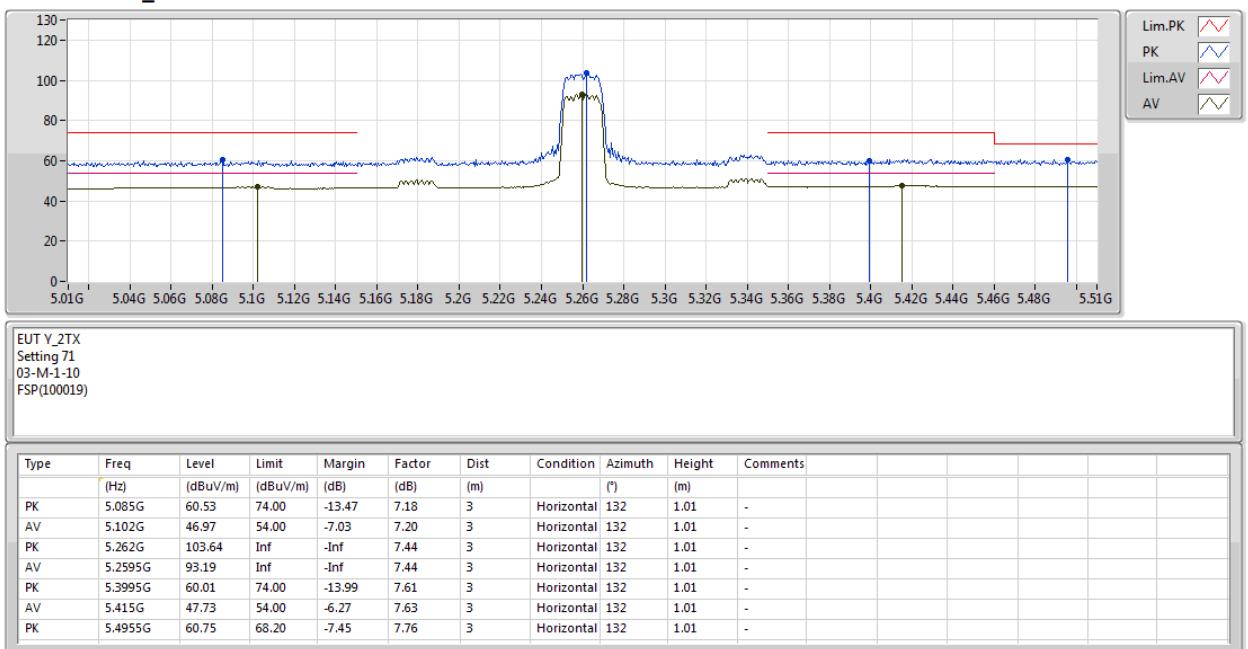
**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

**5260MHz\_TX**


**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

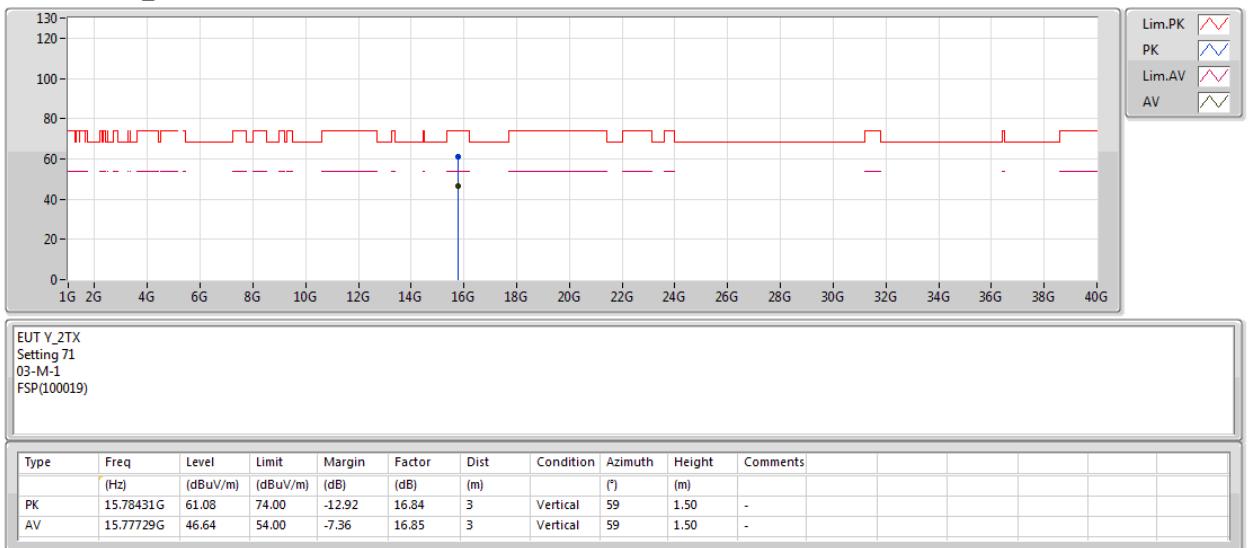
**5260MHz\_TX**




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5260MHz\_TX

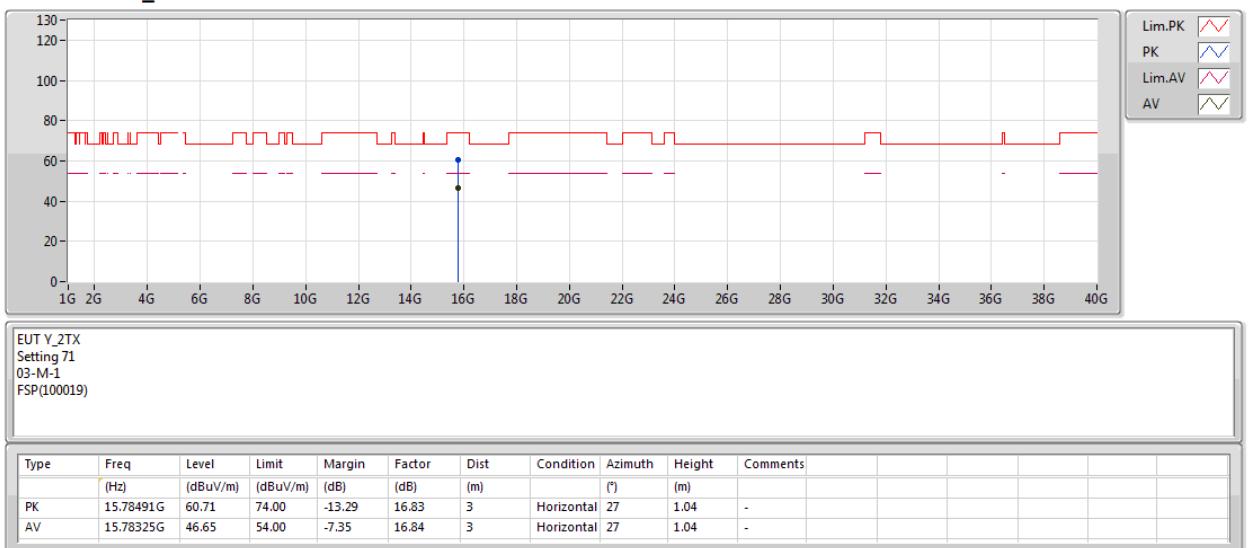




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

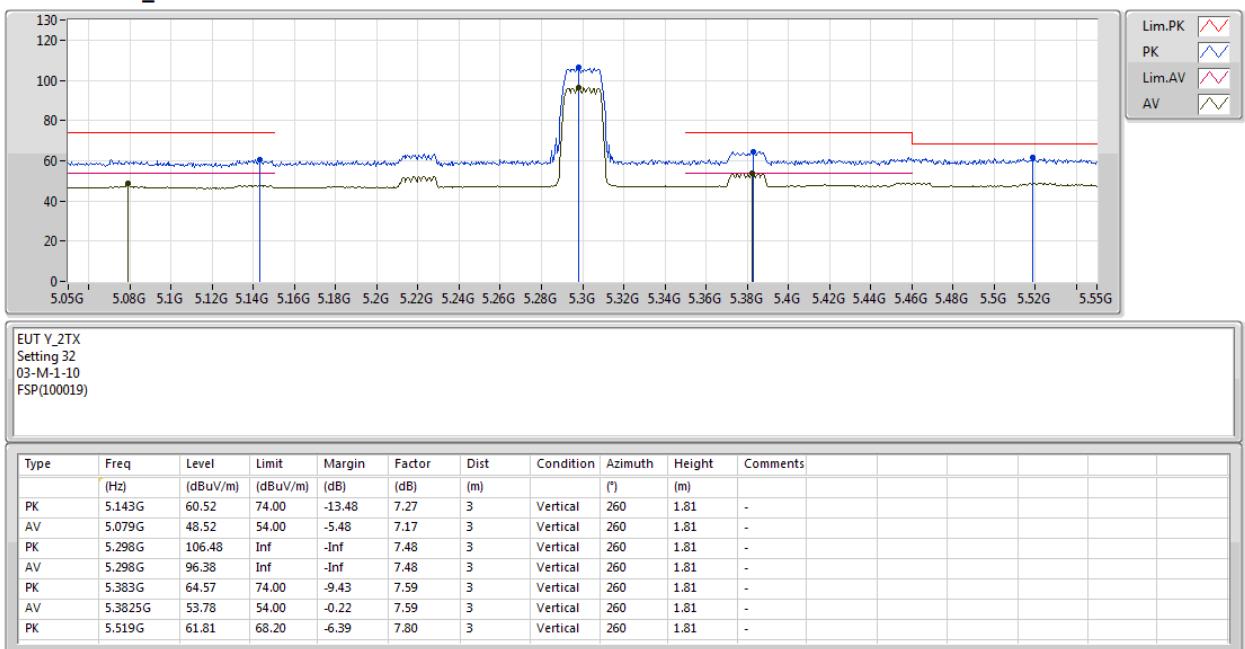
05/03/2019

## 5260MHz\_TX



**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

**5300MHz\_TX**


**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

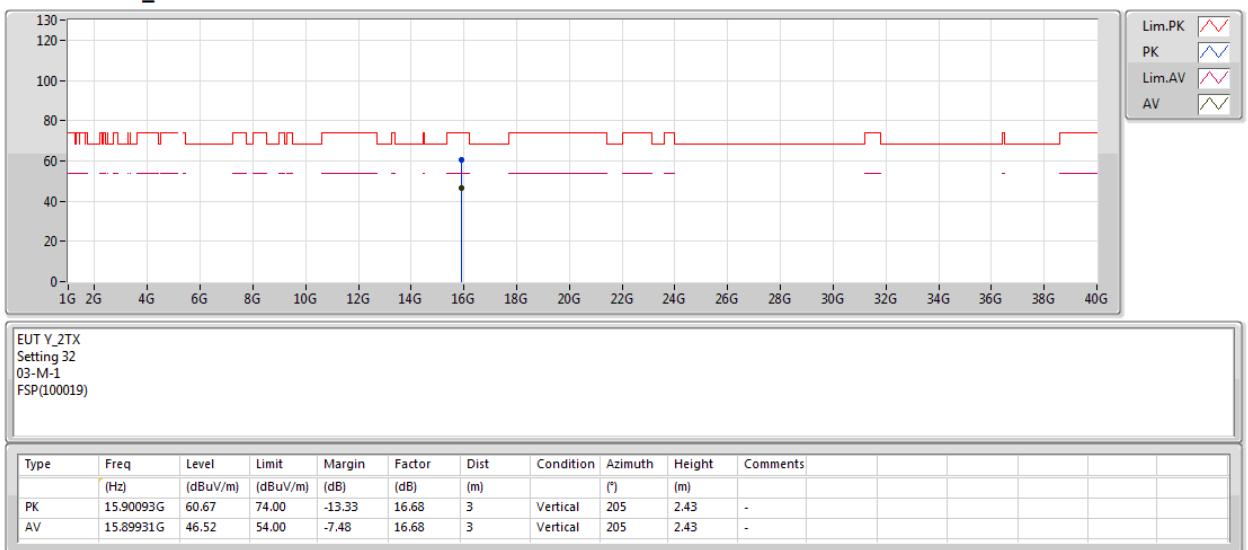
**5300MHz\_TX**




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5300MHz\_TX

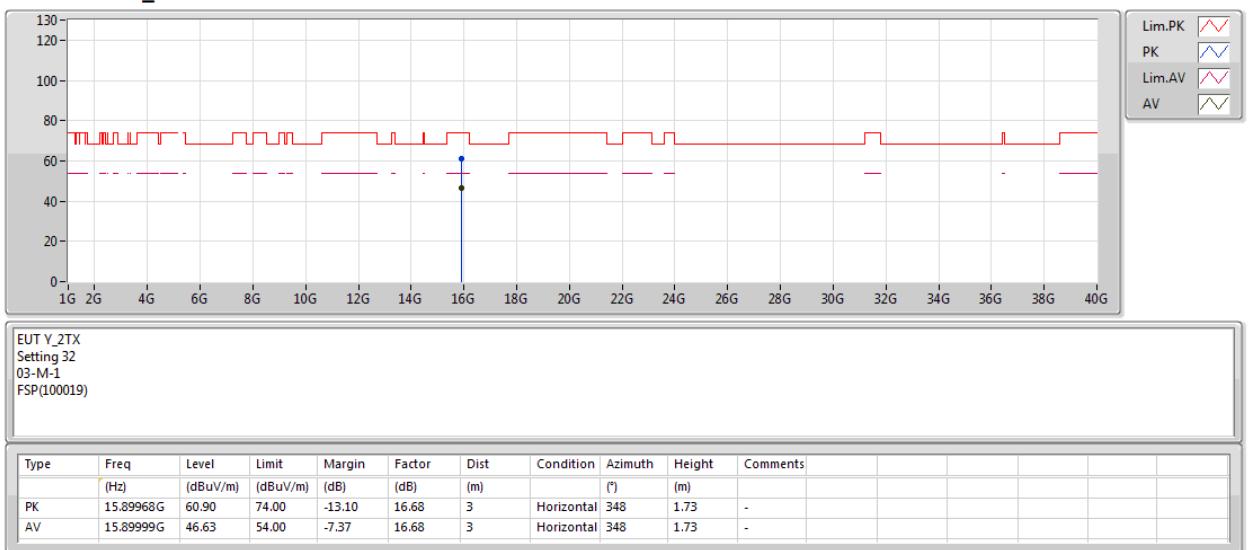




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5300MHz\_TX



**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

**5320MHz\_TX**




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5320MHz\_TX

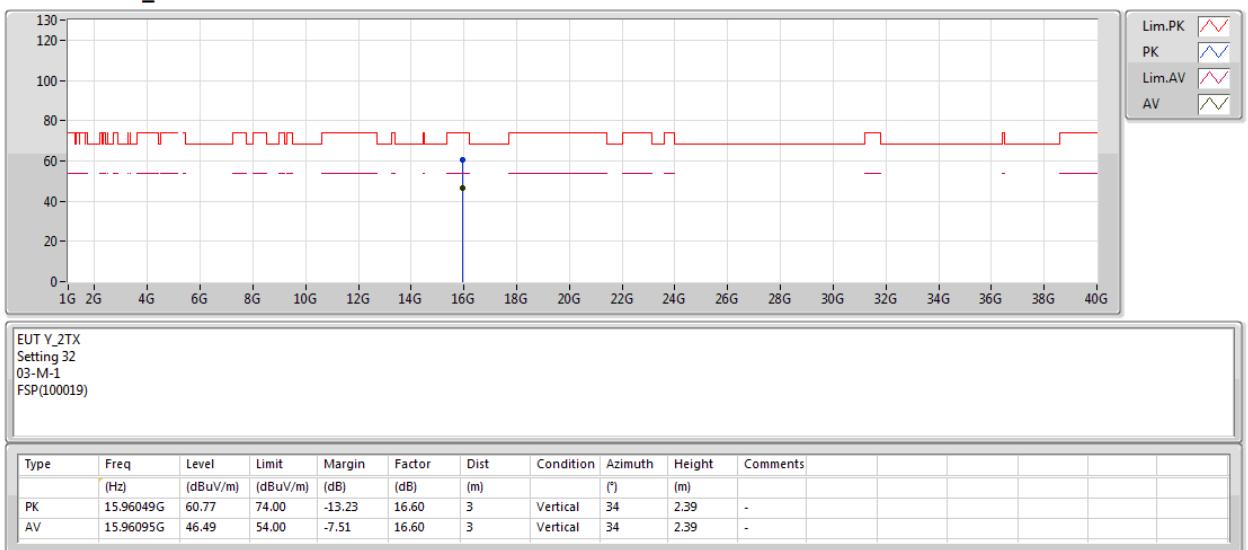




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5320MHz\_TX

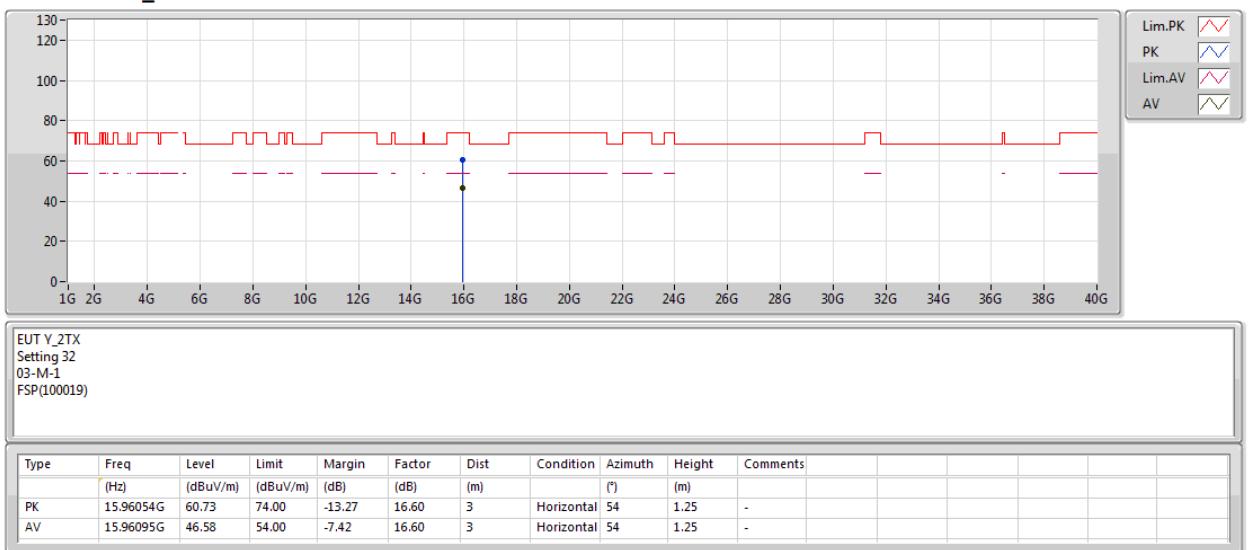




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5320MHz\_TX



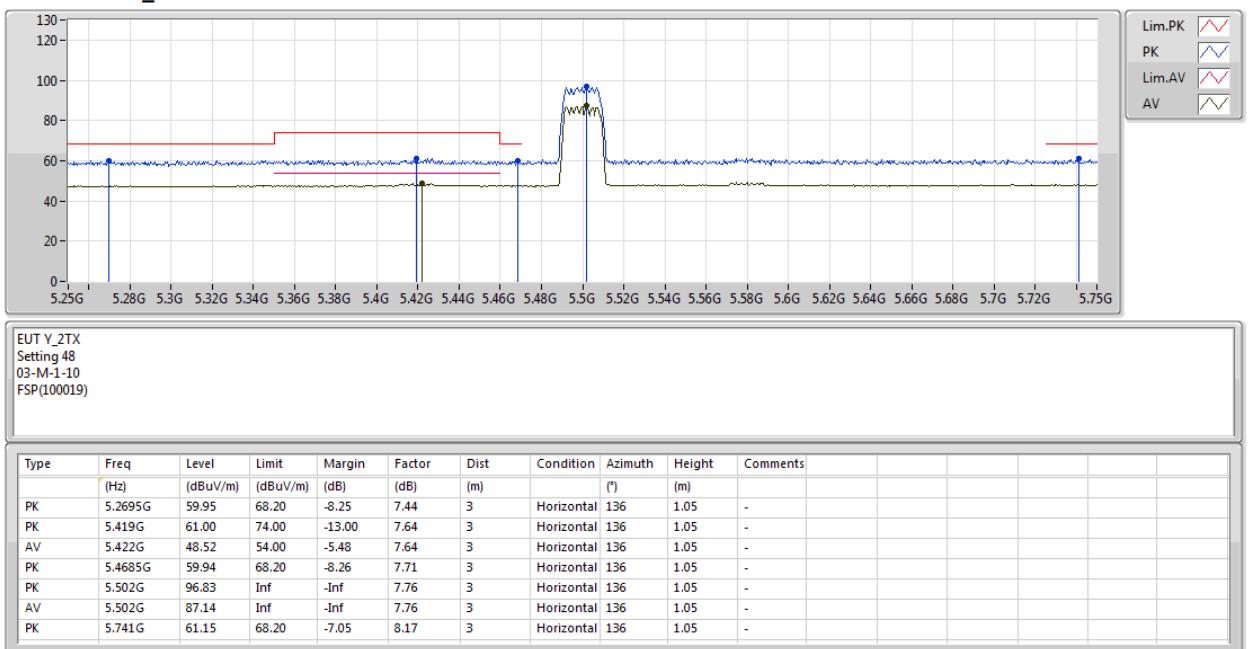
**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

**5500MHz\_TX**


**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

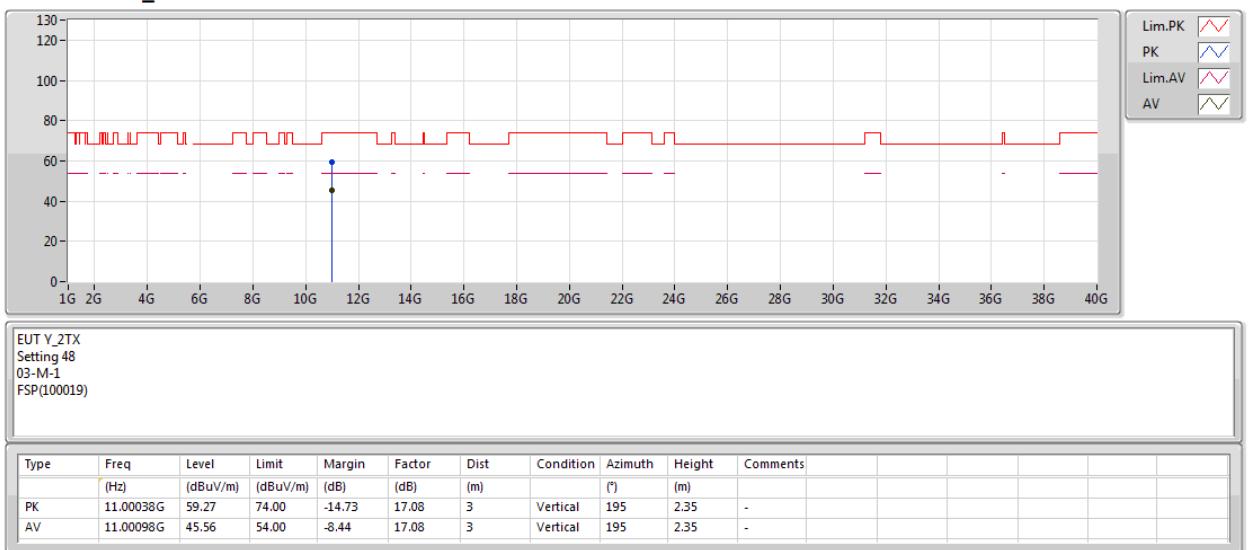
**5500MHz\_TX**




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5500MHz\_TX

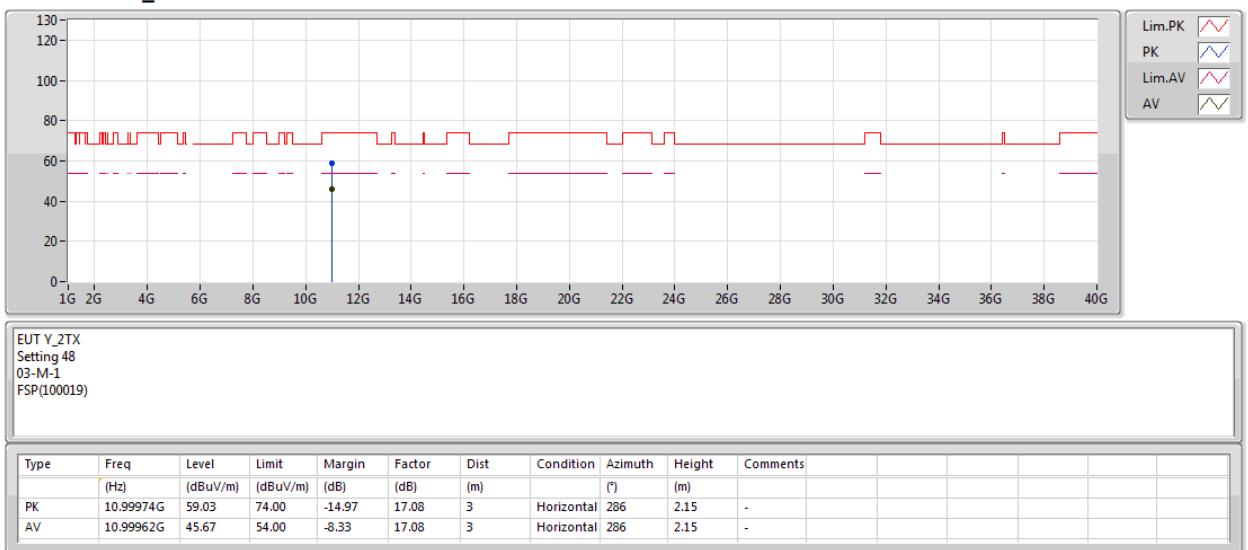




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

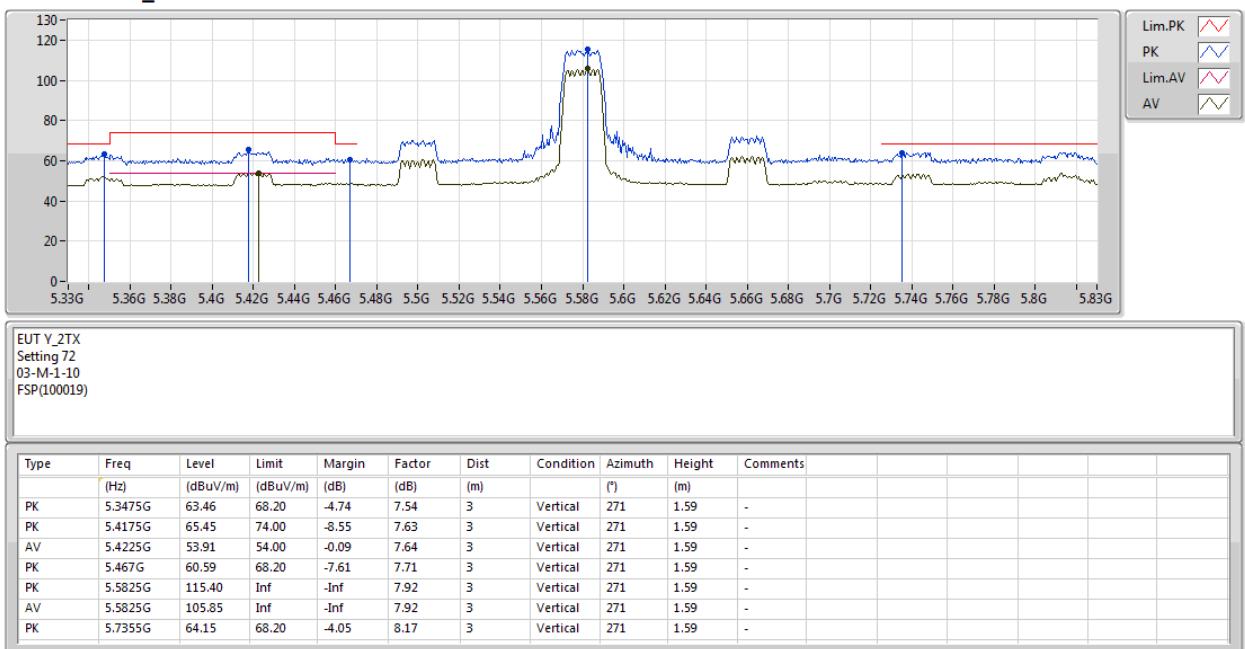
05/03/2019

## 5500MHz\_TX



**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

04/03/2019

**5580MHz\_TX**


**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

04/03/2019

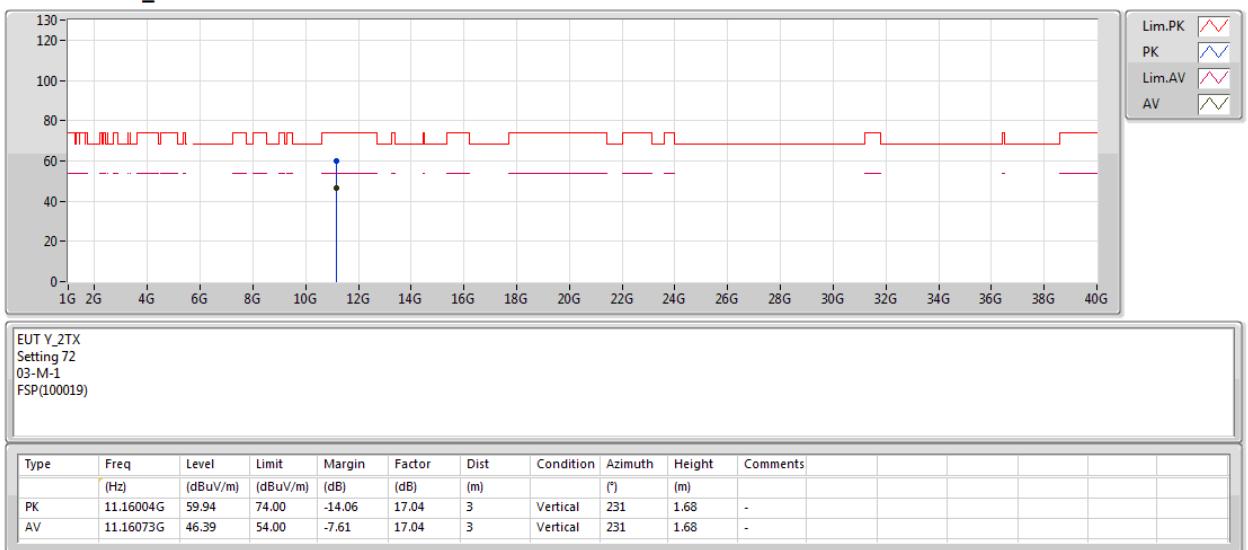
**5580MHz\_TX**




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5580MHz\_TX

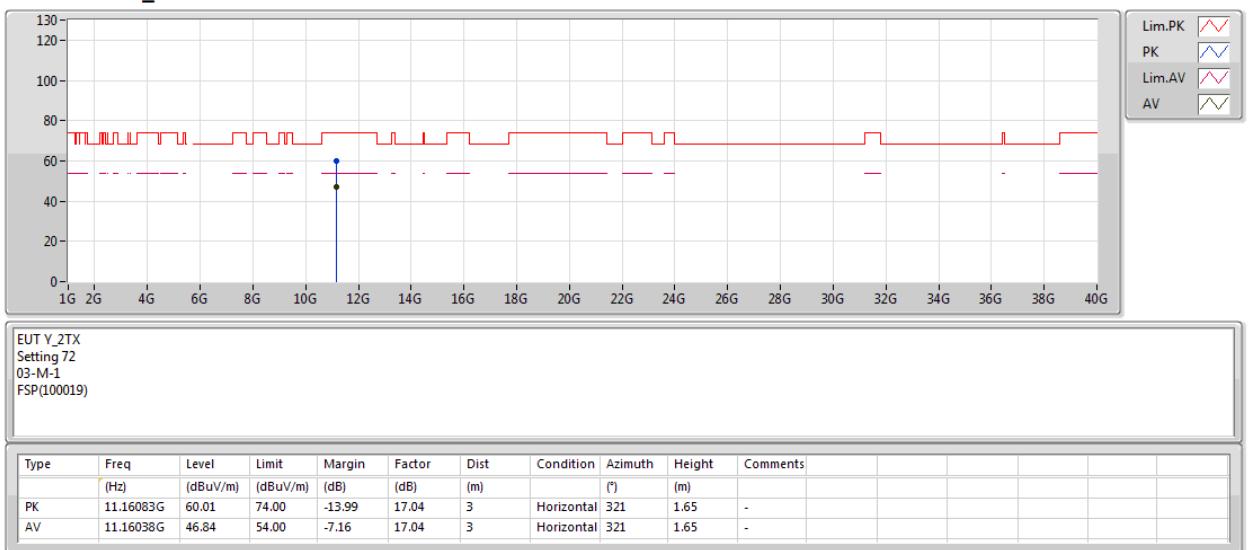




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5580MHz\_TX



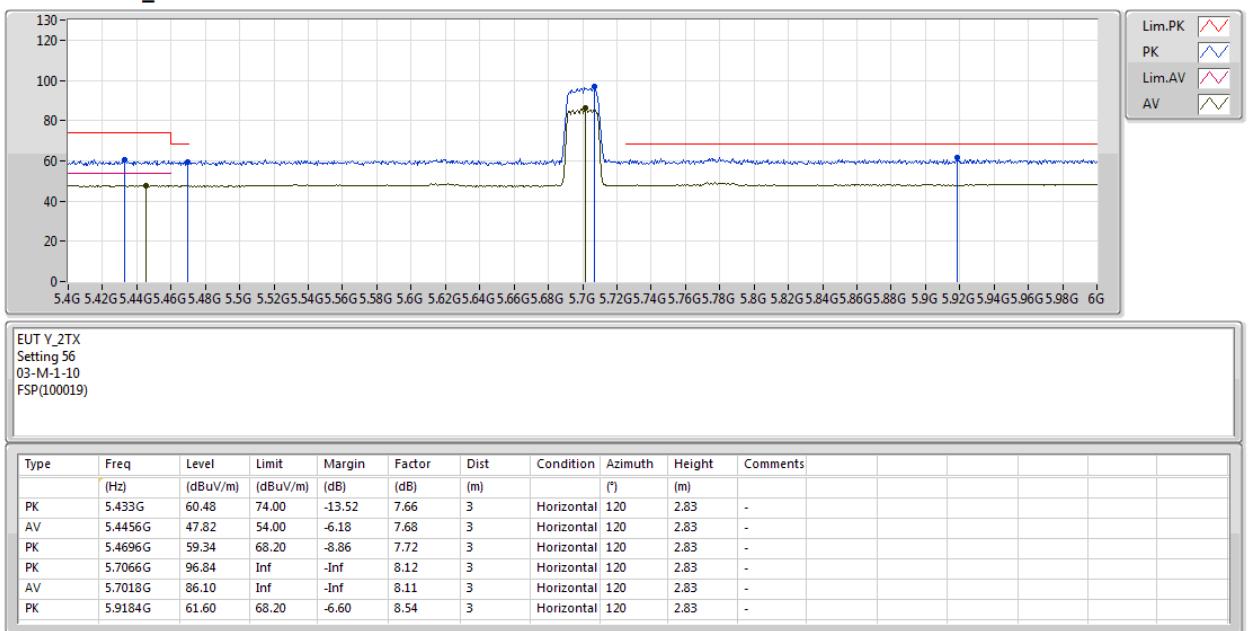
**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

**5700MHz\_TX**


**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

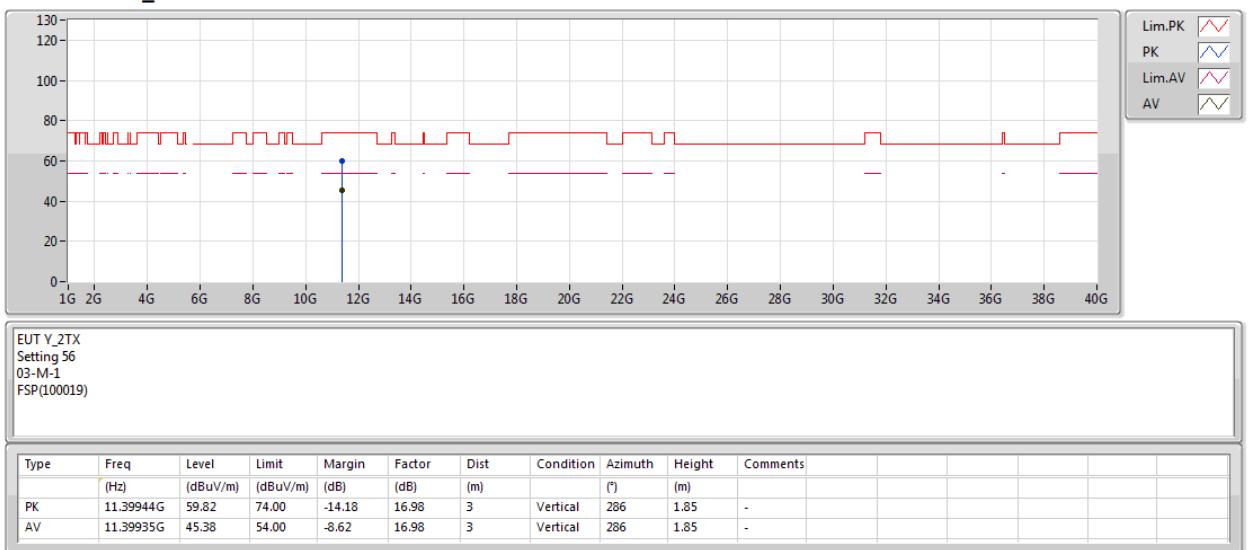
**5700MHz\_TX**




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5700MHz\_TX

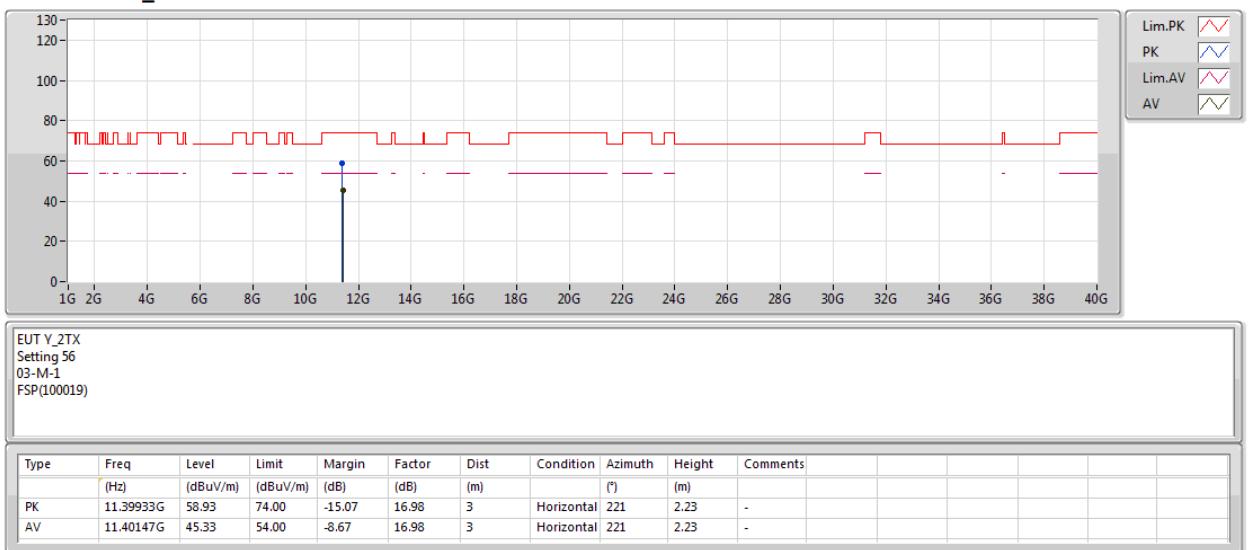




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5700MHz\_TX

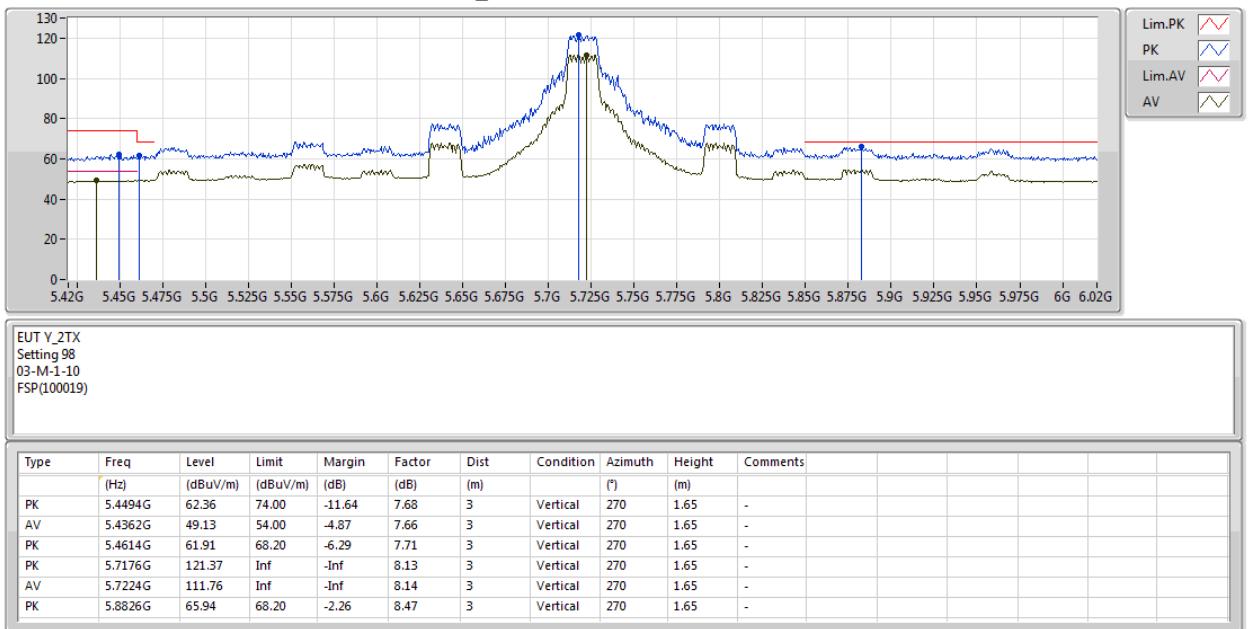




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

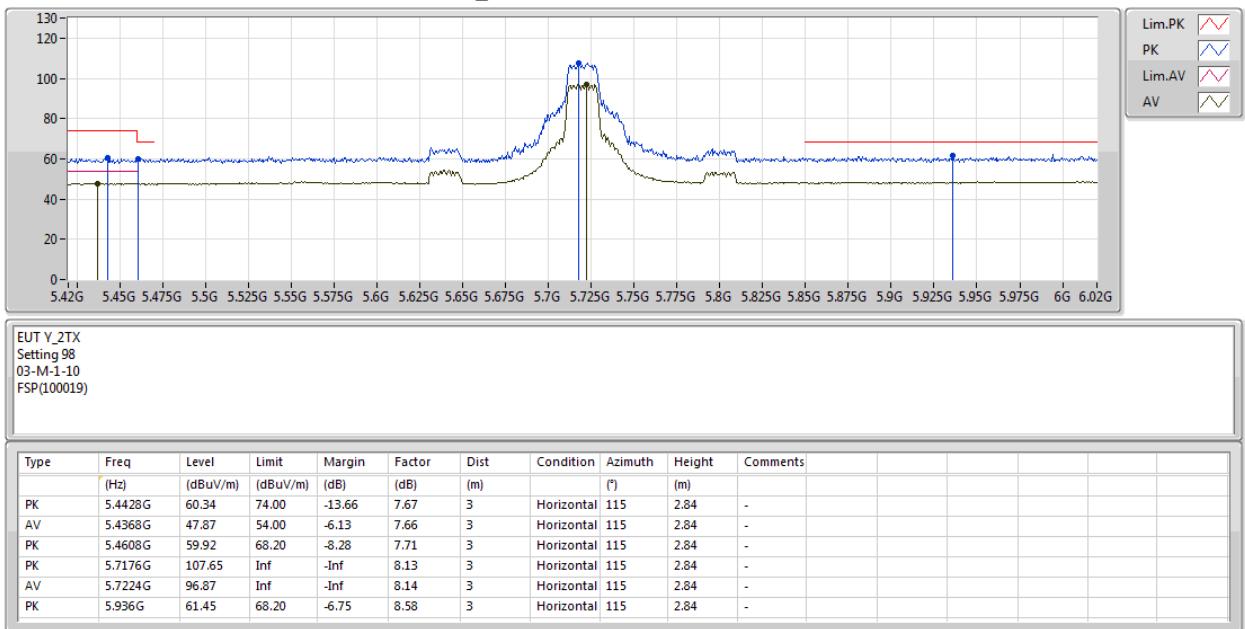
05/03/2019

## 5720MHz Straddle 5.47-5.725GHz\_TX



**802.11ac VHT20\_Nss1,(MCS0)\_2TX**

05/03/2019

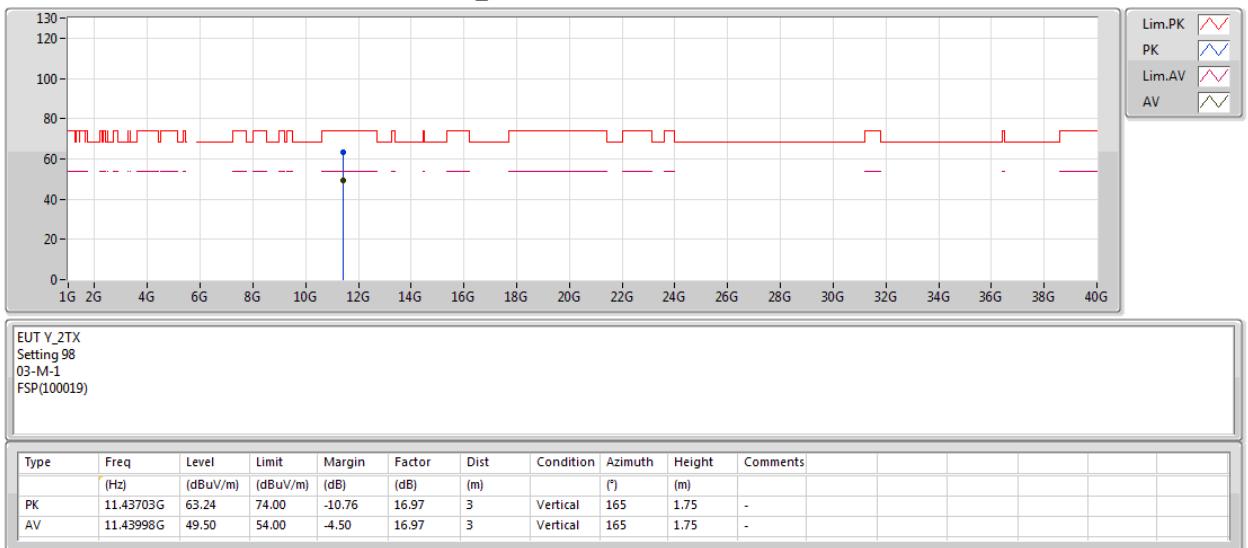
**5720MHz Straddle 5.47-5.725GHz\_TX**




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5720MHz Straddle 5.47-5.725GHz\_TX

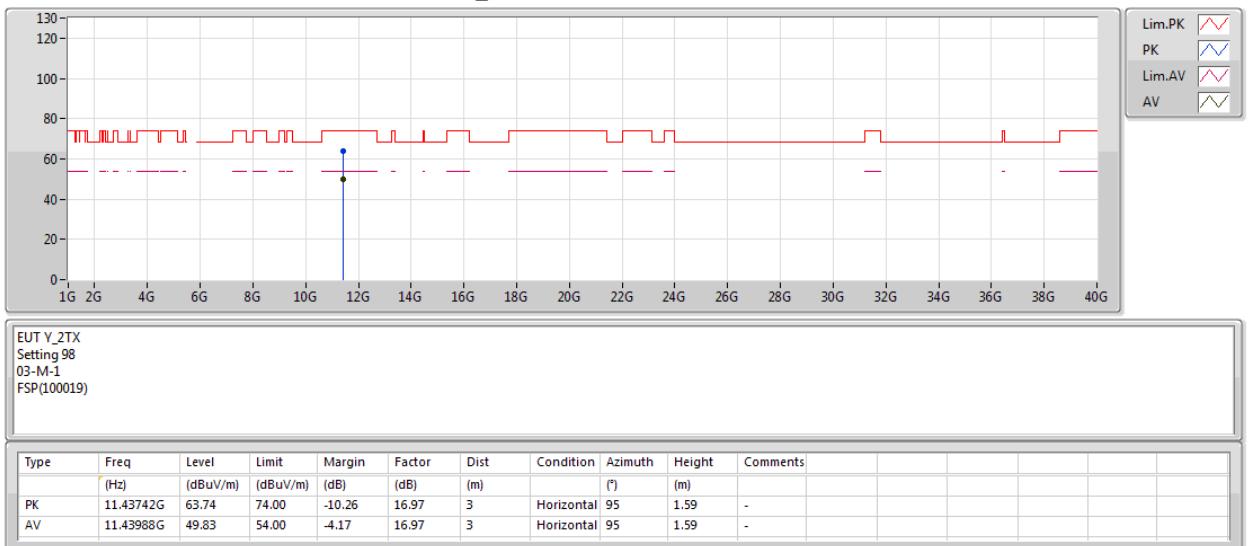




## 802.11ac VHT20\_Nss1,(MCS0)\_2TX

05/03/2019

## 5720MHz Straddle 5.47-5.725GHz\_TX

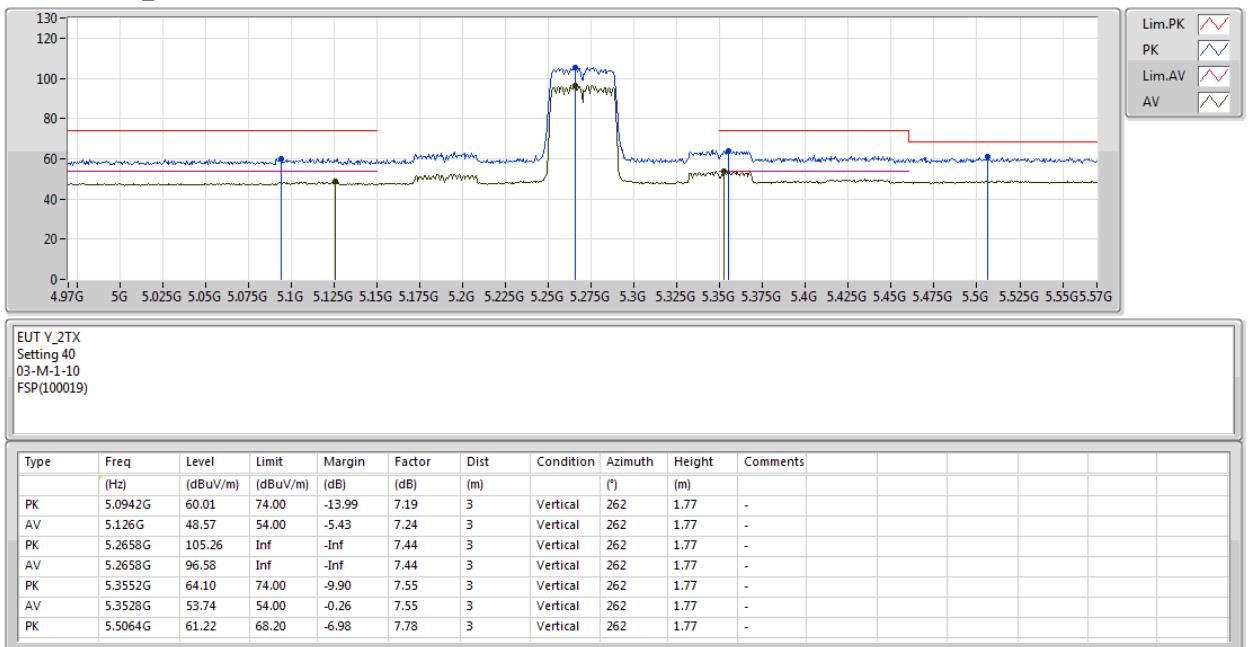




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

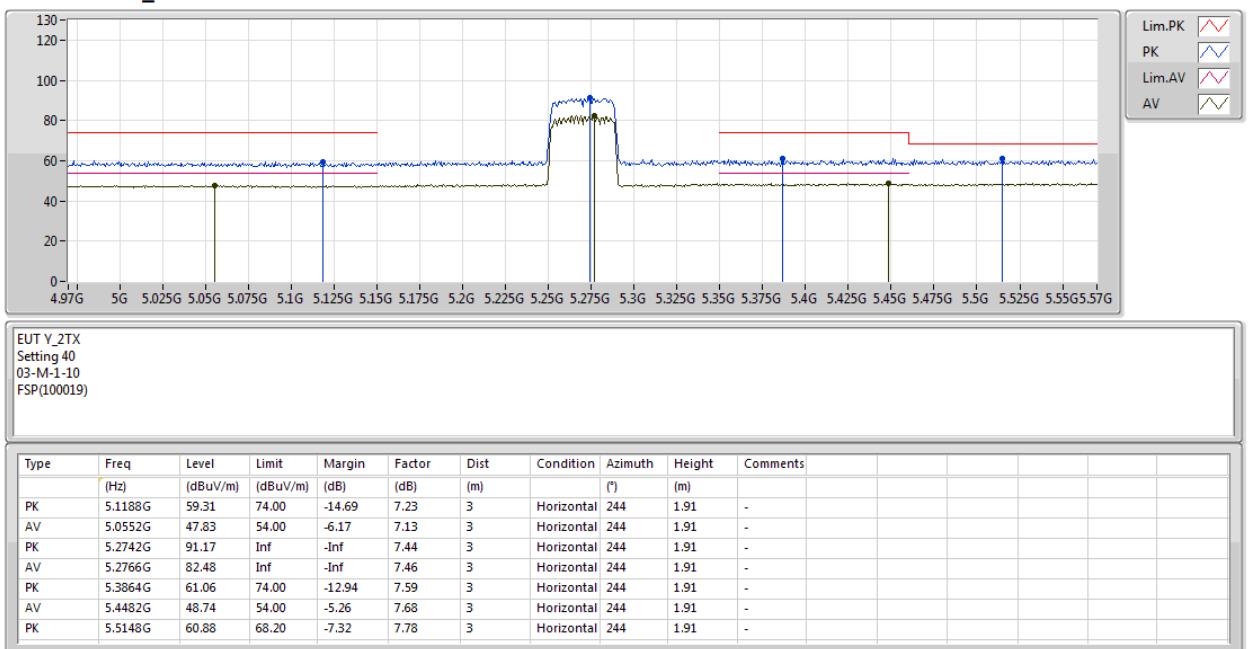
05/03/2019

## 5270MHz\_TX



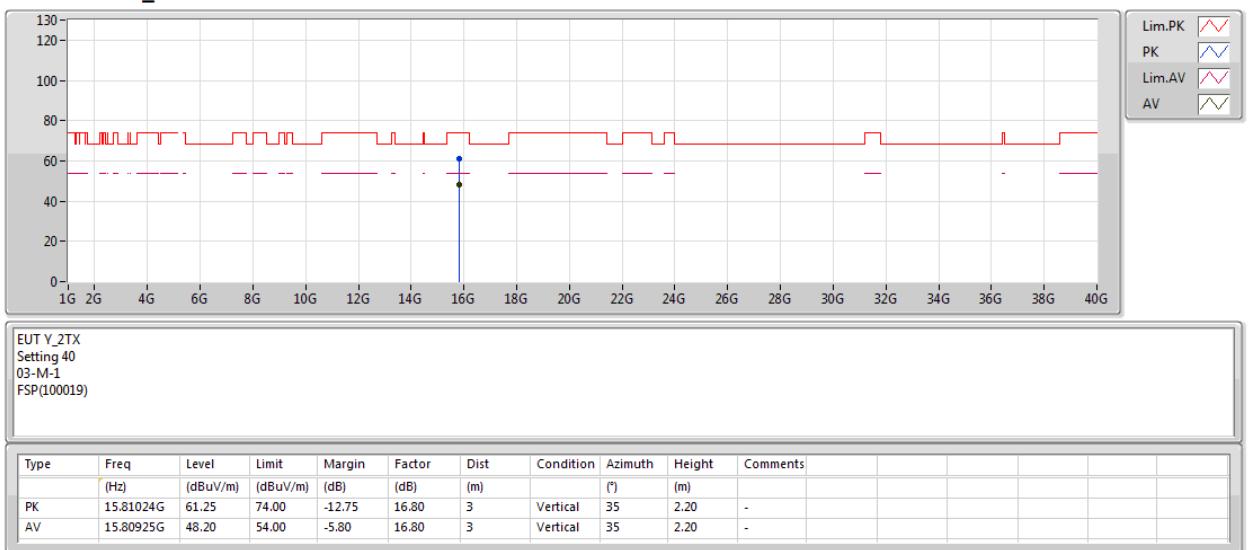
**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

**5270MHz\_TX**


**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

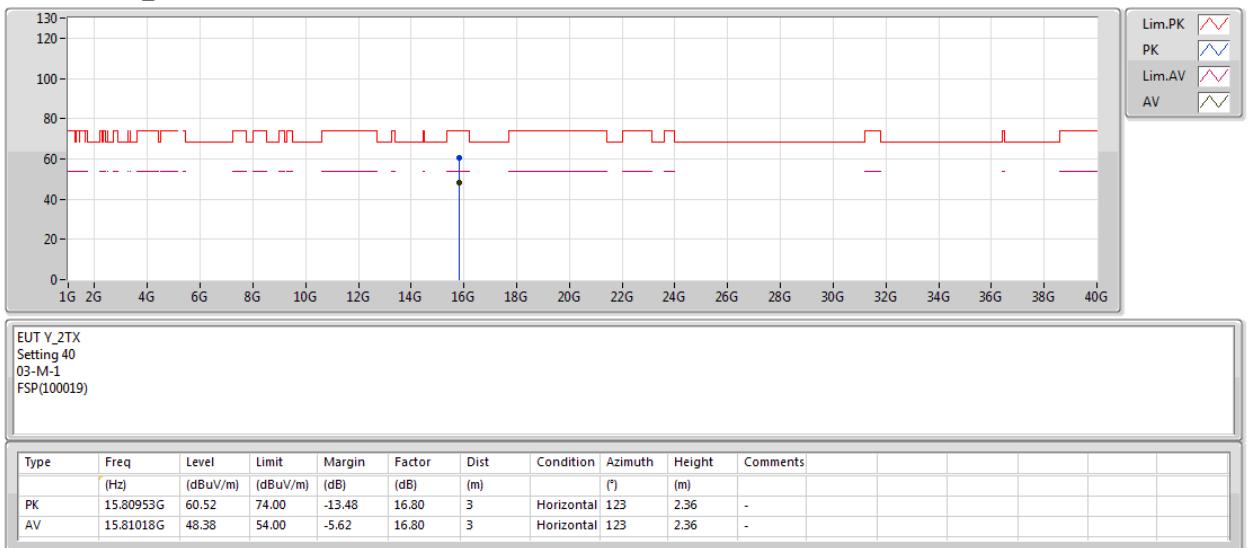
**5270MHz\_TX**



## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

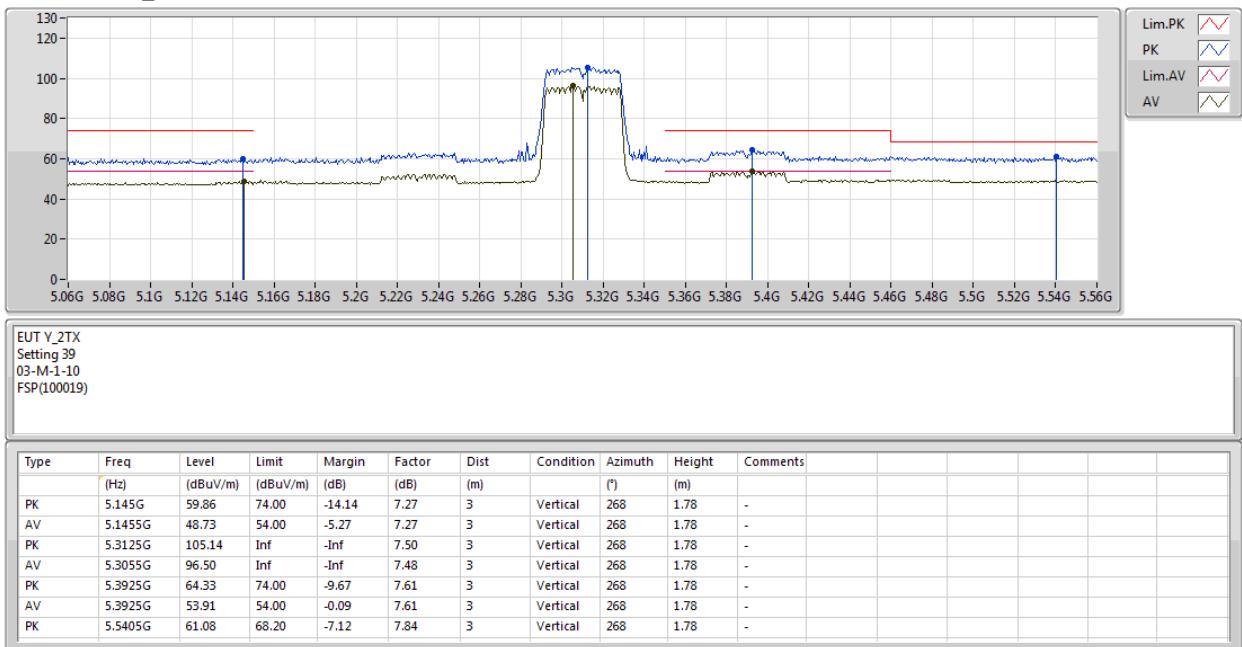
05/03/2019

## 5270MHz\_TX



**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

**5310MHz\_TX**


**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

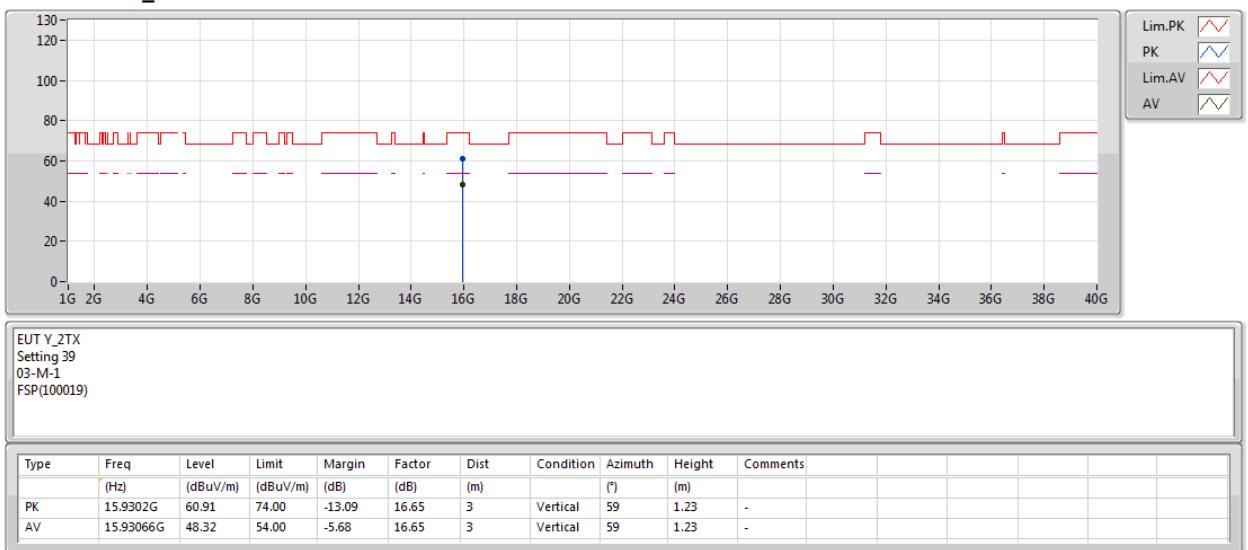
**5310MHz\_TX**




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

05/03/2019

## 5310MHz\_TX

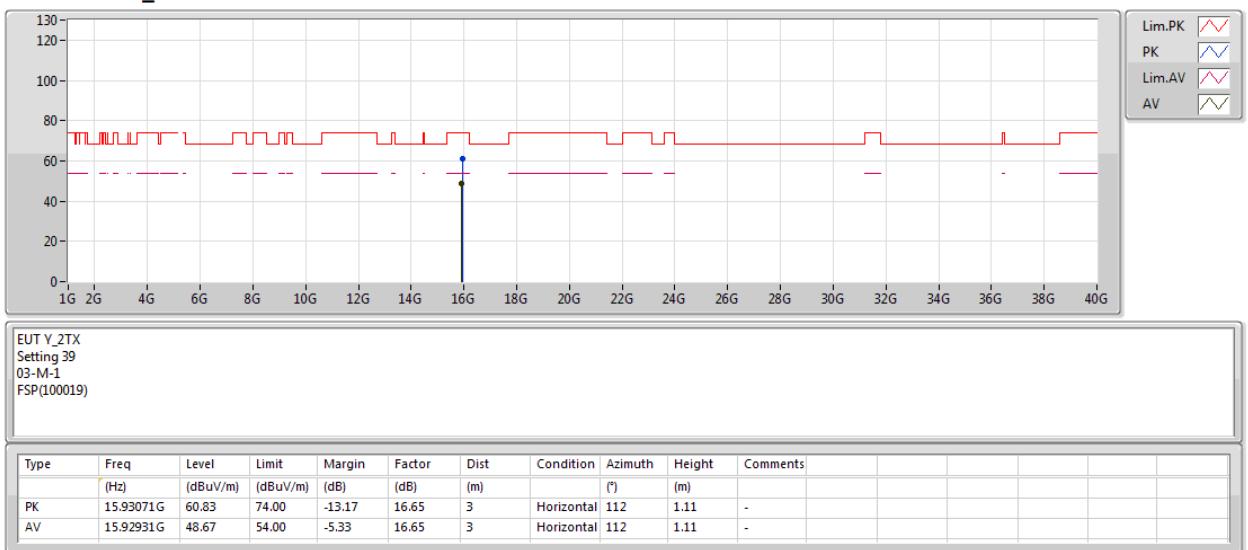




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

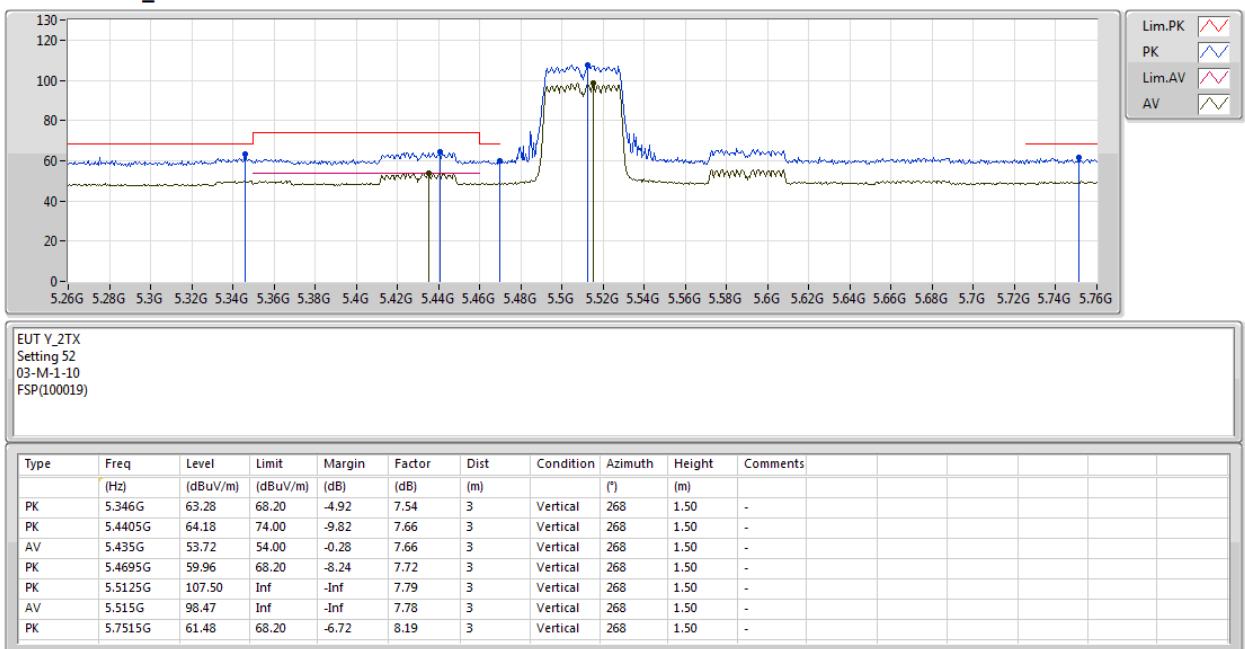
05/03/2019

## 5310MHz\_TX



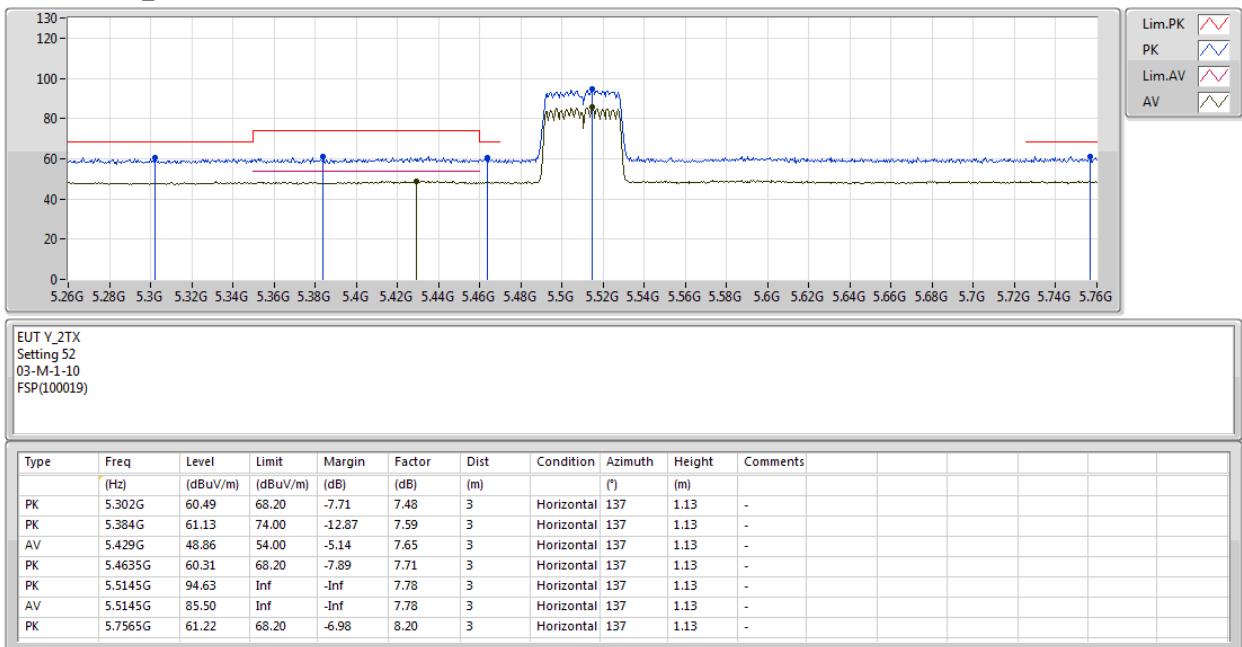
**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

**5510MHz\_TX**


**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

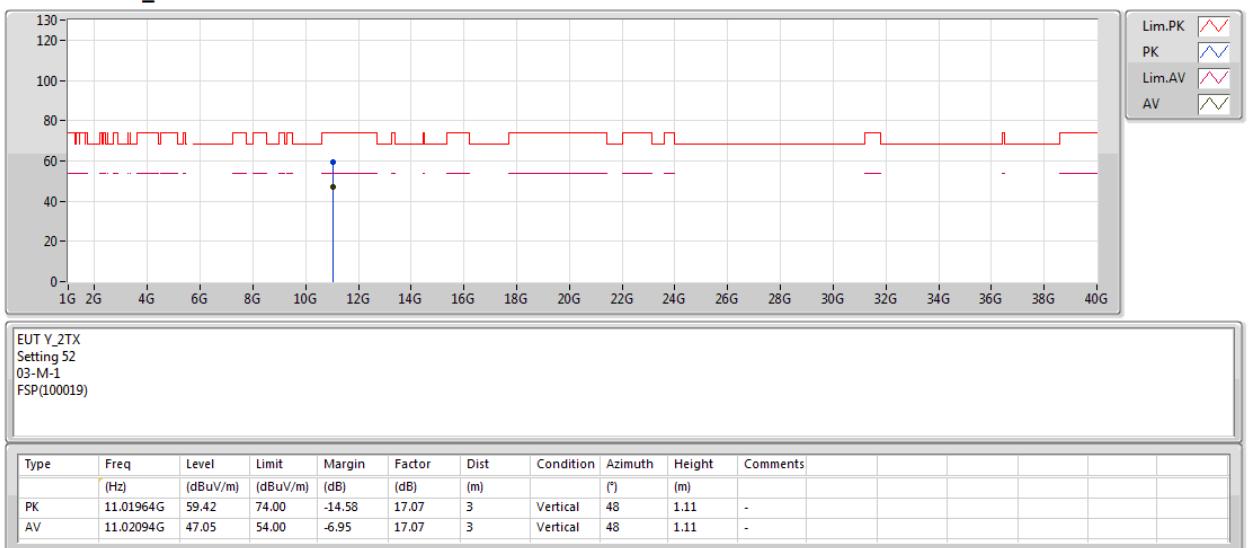
**5510MHz\_TX**




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

05/03/2019

## 5510MHz\_TX

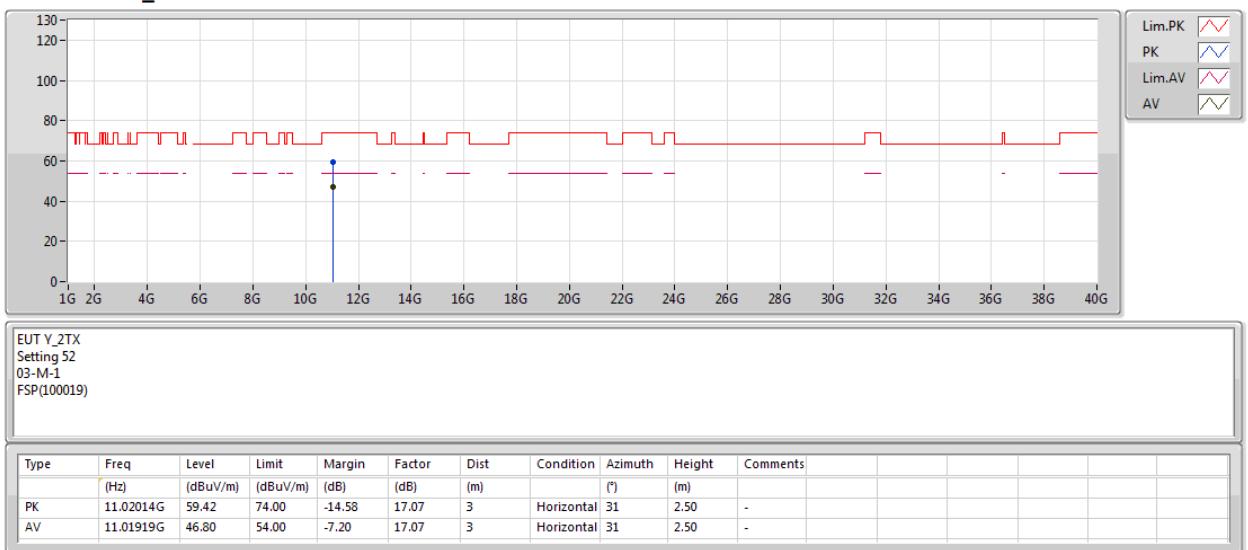




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

05/03/2019

## 5510MHz\_TX

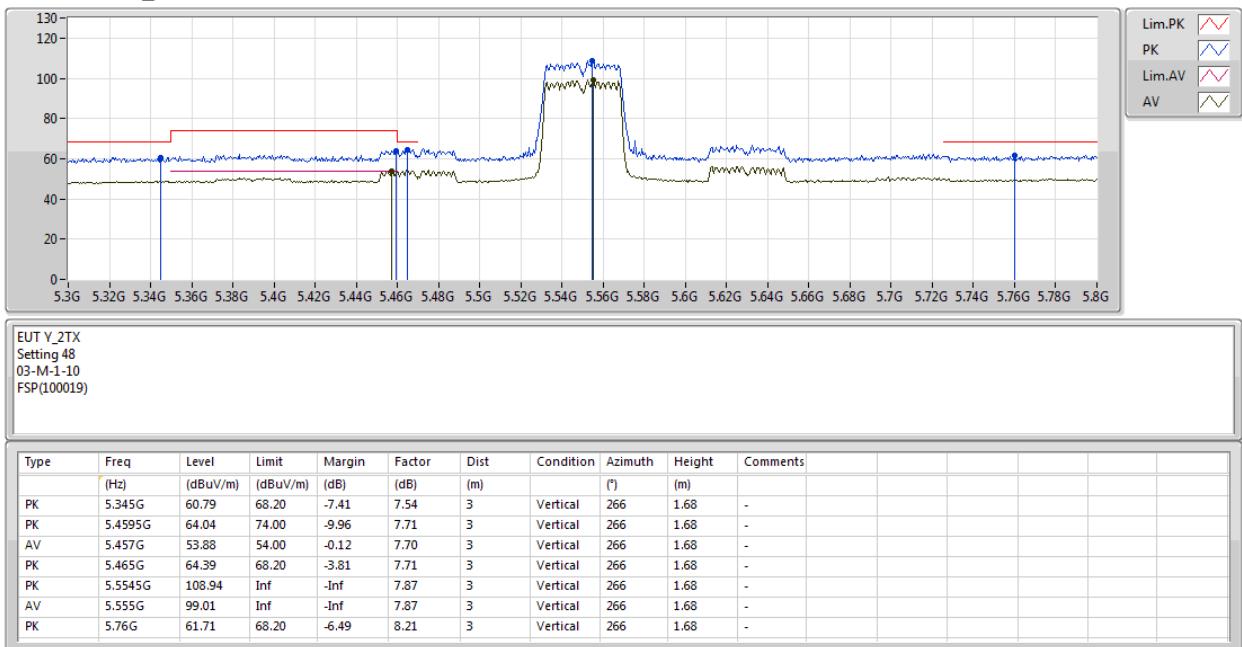




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

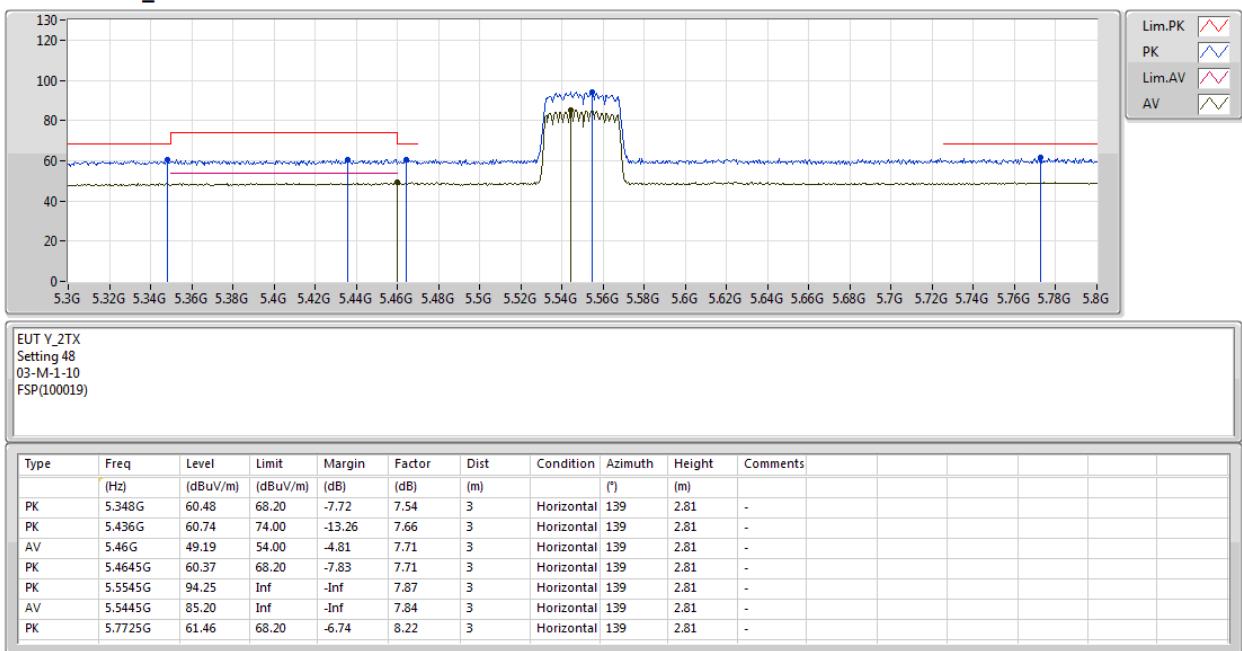
05/03/2019

## 5550MHz\_TX



**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

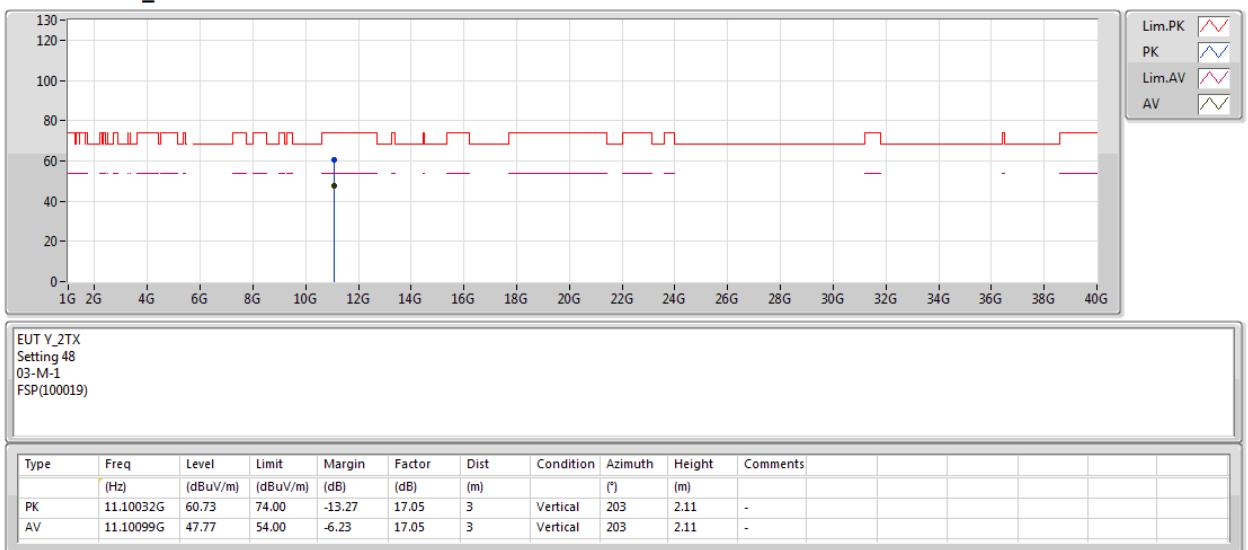
**5550MHz\_TX**




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

05/03/2019

## 5550MHz\_TX

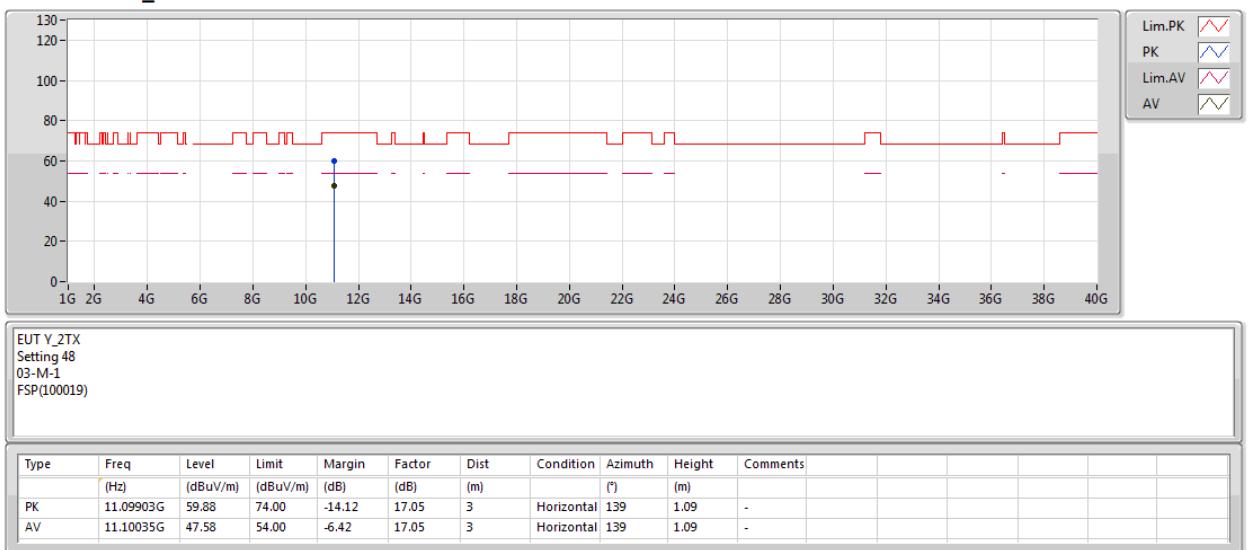




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

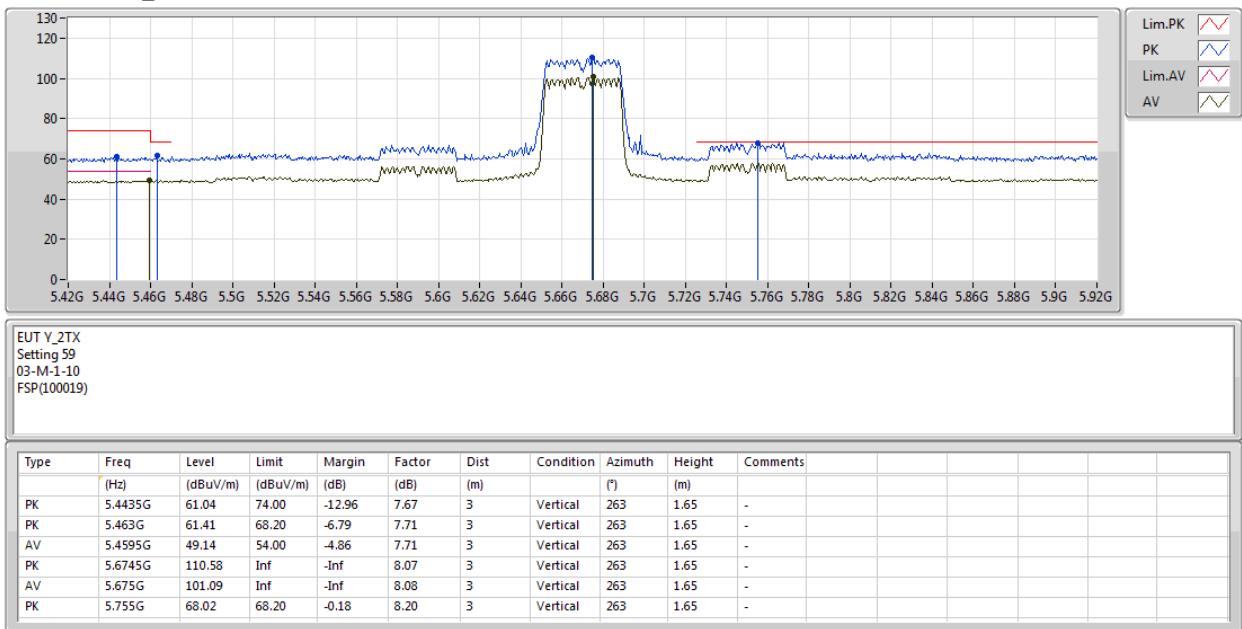
05/03/2019

## 5550MHz\_TX



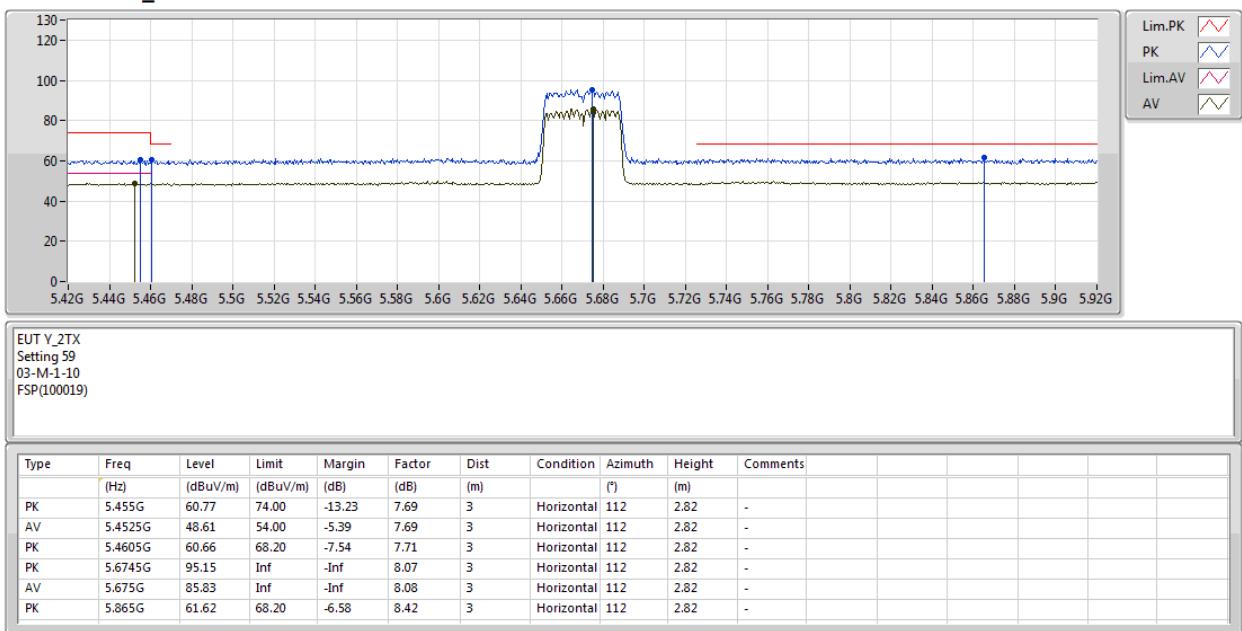
**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

**5670MHz\_TX**


**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

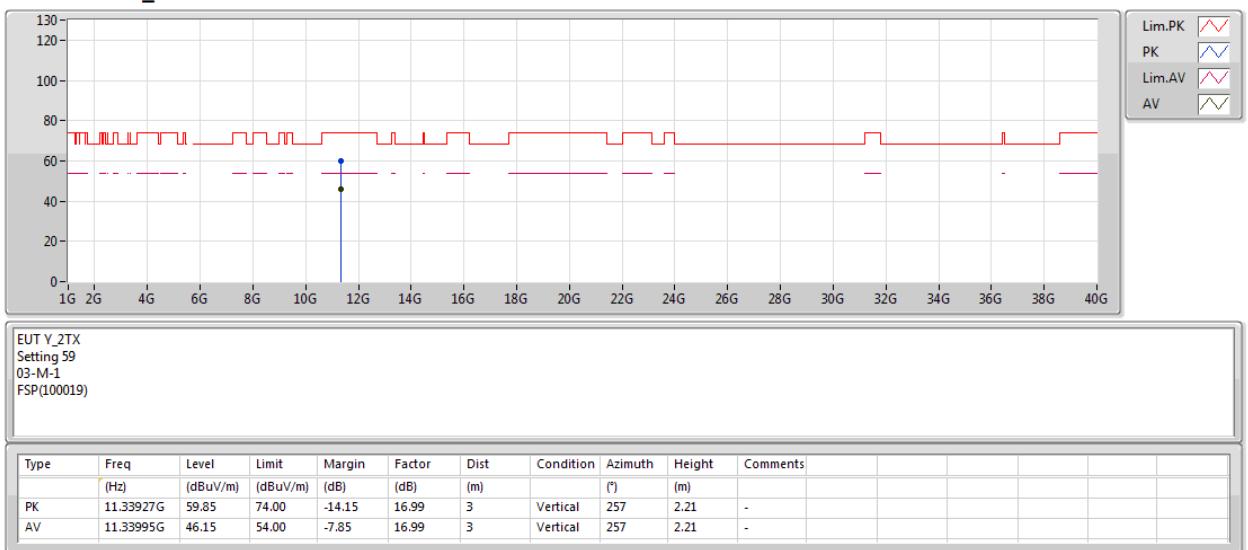
**5670MHz\_TX**




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

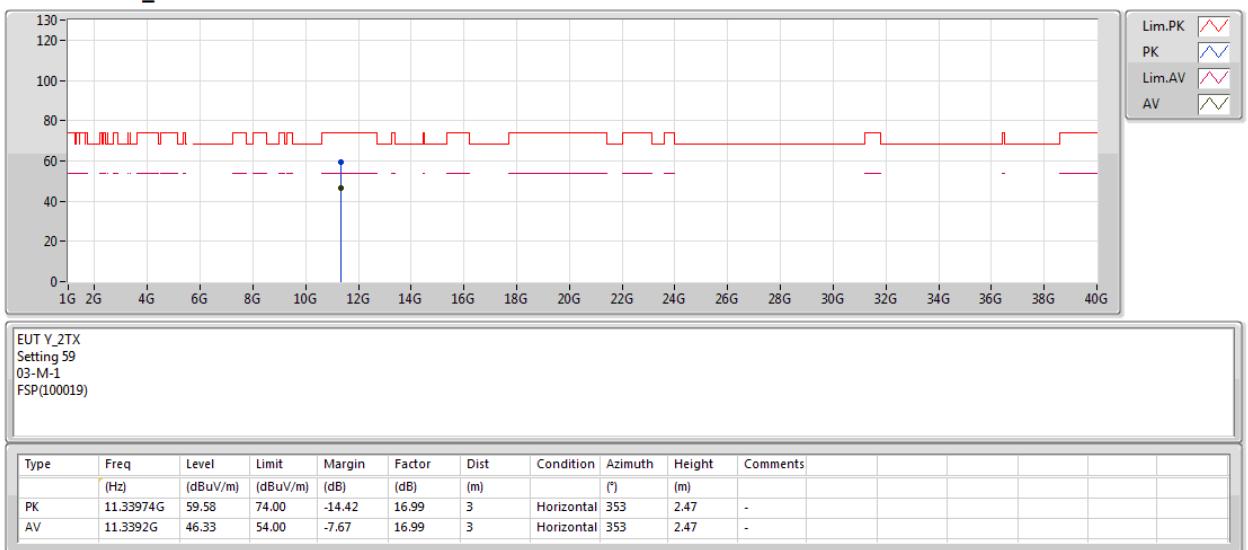
05/03/2019

## 5670MHz\_TX



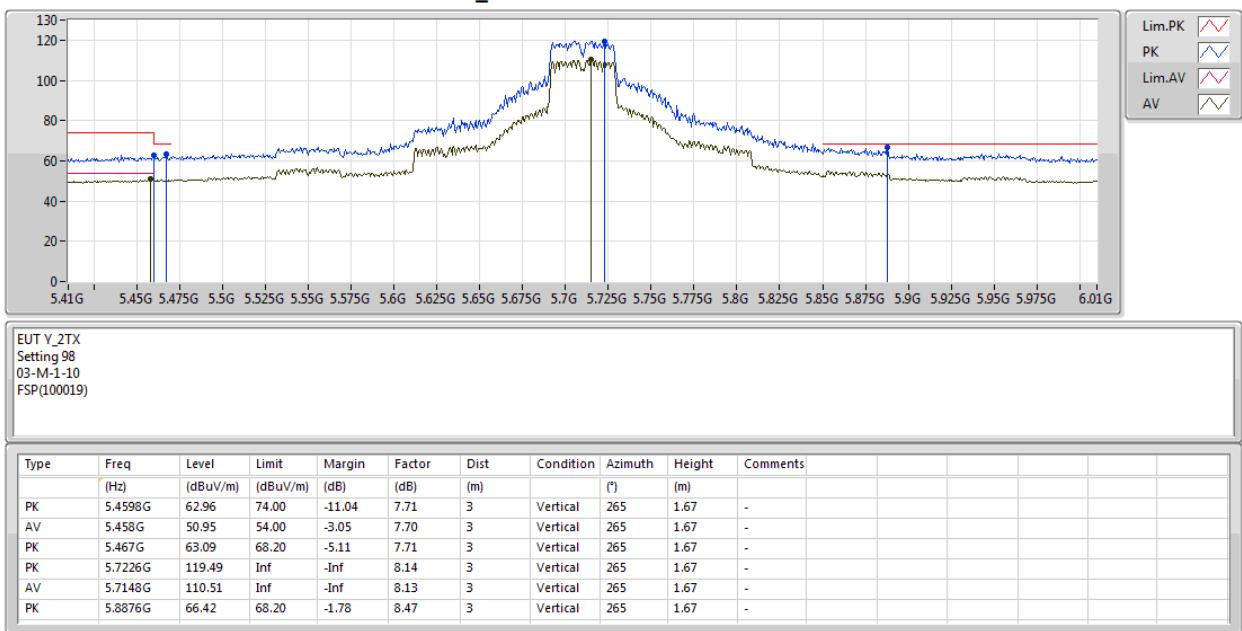
**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

**5670MHz\_TX**

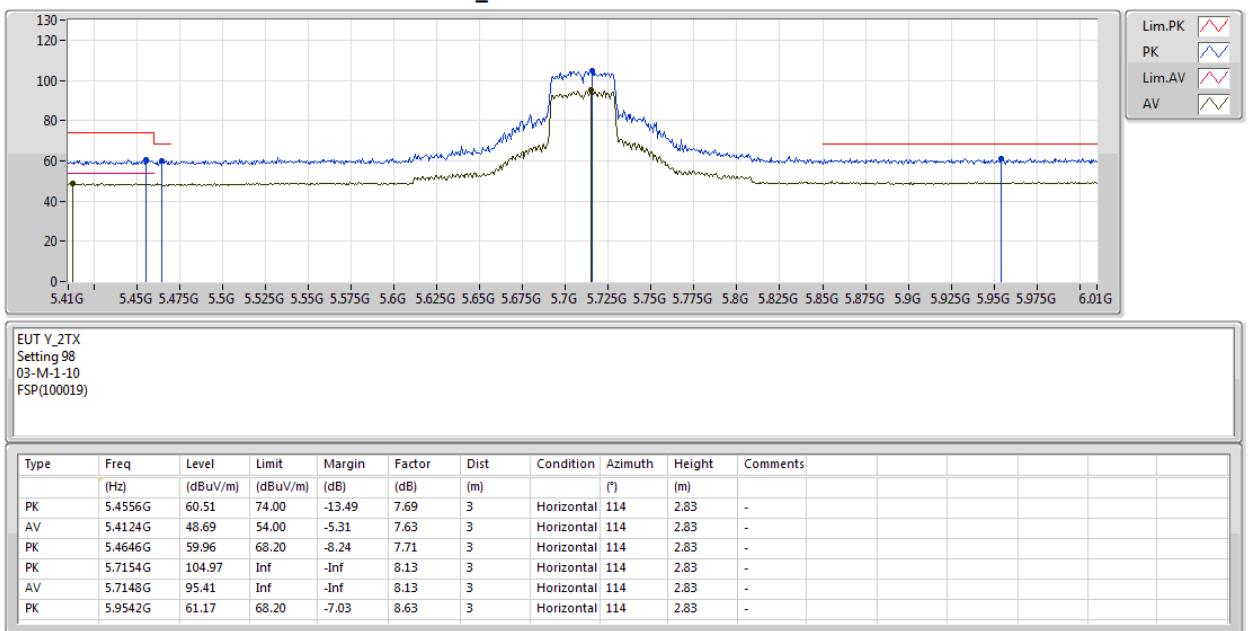
**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

**5710MHz Straddle 5.47-5.725GHz\_TX**


**802.11ac VHT40\_Nss1,(MCS0)\_2TX**

05/03/2019

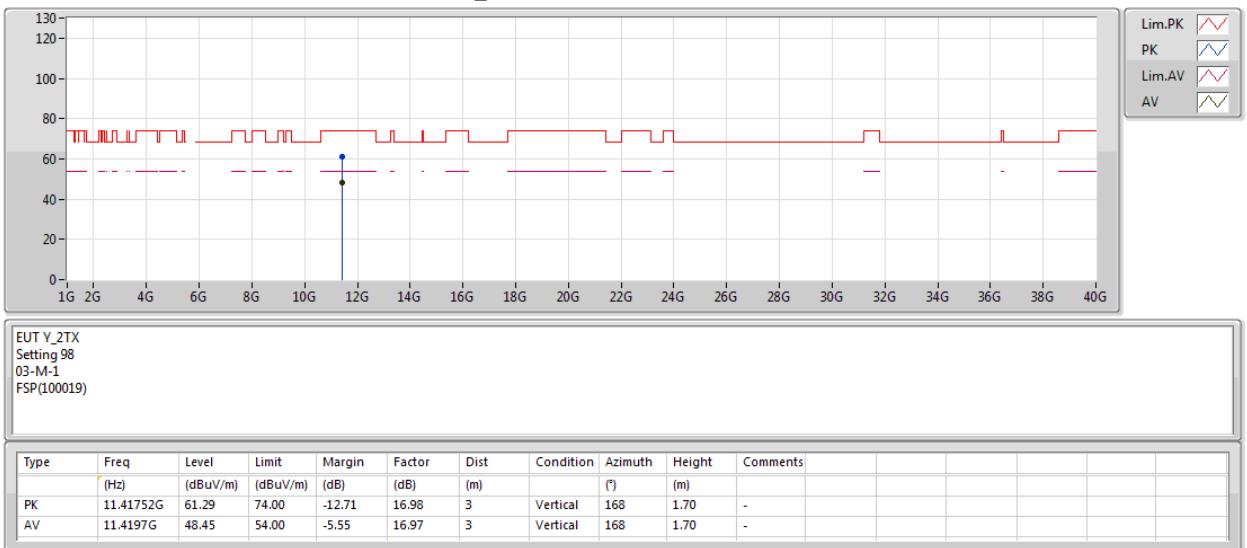
**5710MHz Straddle 5.47-5.725GHz\_TX**




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

05/03/2019

## 5710MHz Straddle 5.47-5.725GHz\_TX

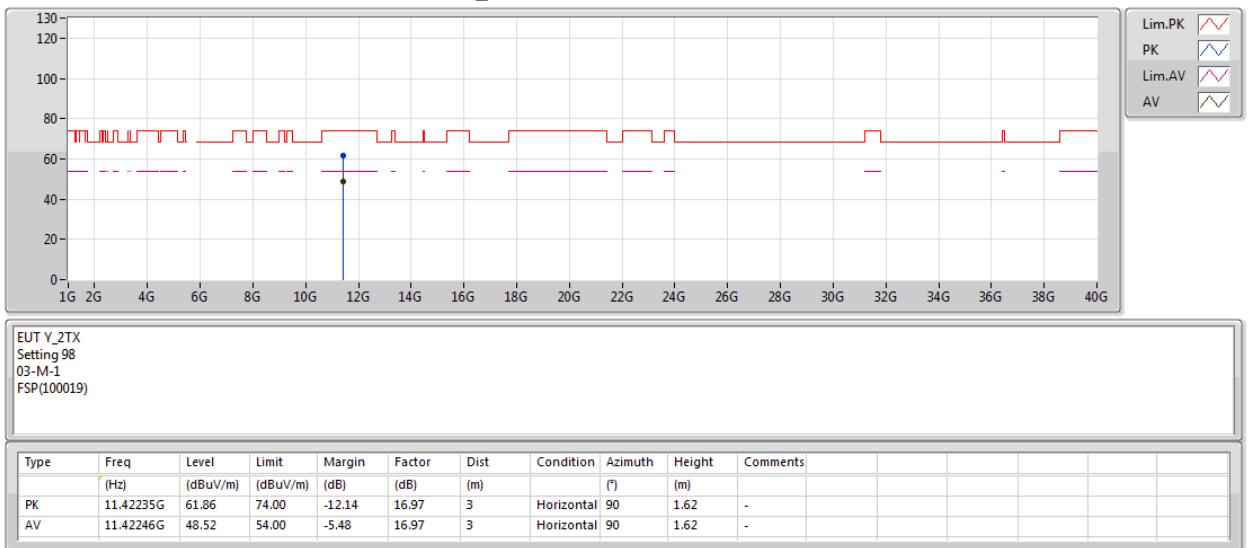




## 802.11ac VHT40\_Nss1,(MCS0)\_2TX

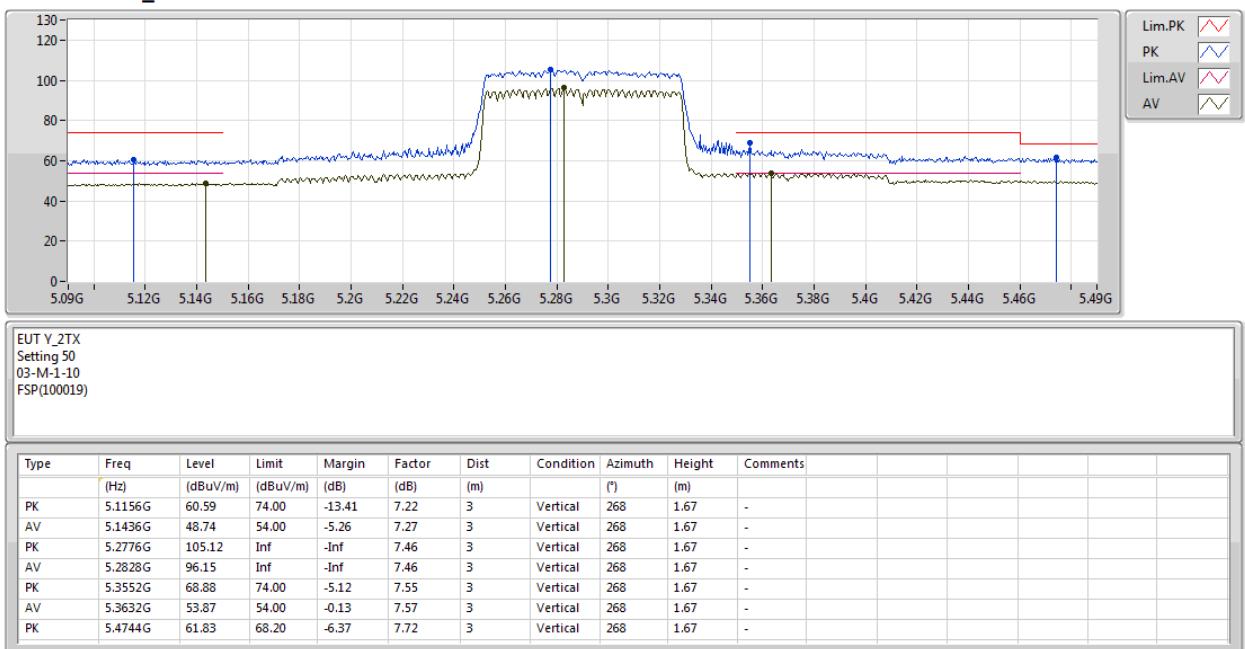
05/03/2019

## 5710MHz Straddle 5.47-5.725GHz\_TX



**802.11ac VHT80\_Nss1,(MCS0)\_2TX**

05/03/2019

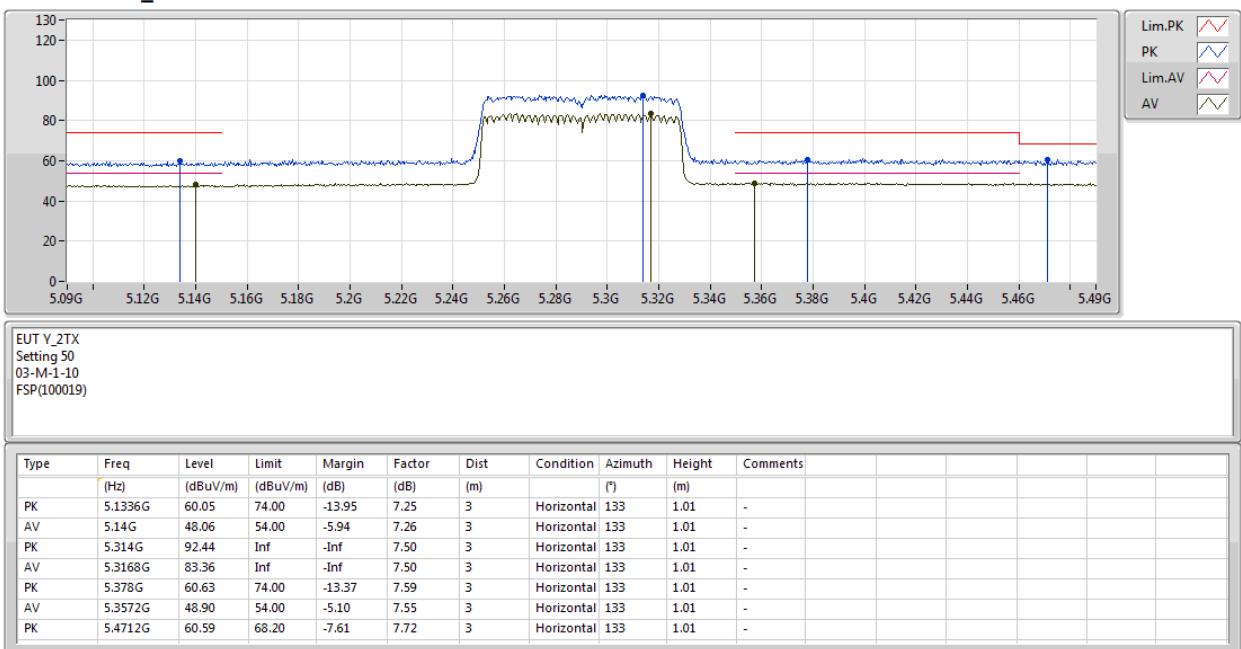
**5290MHz\_TX**




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5290MHz\_TX

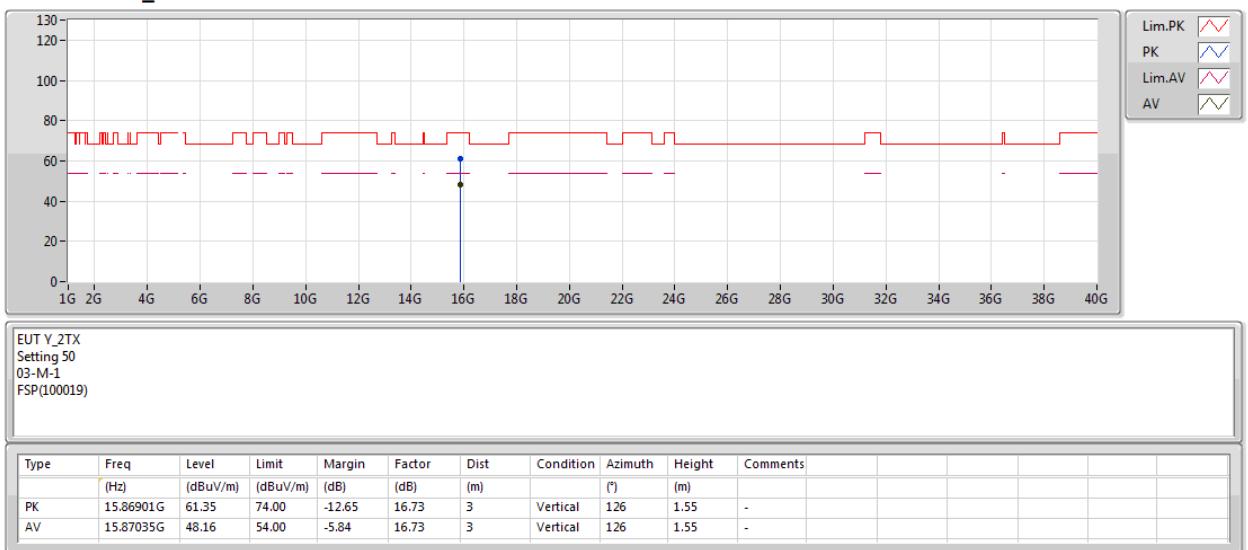




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5290MHz\_TX

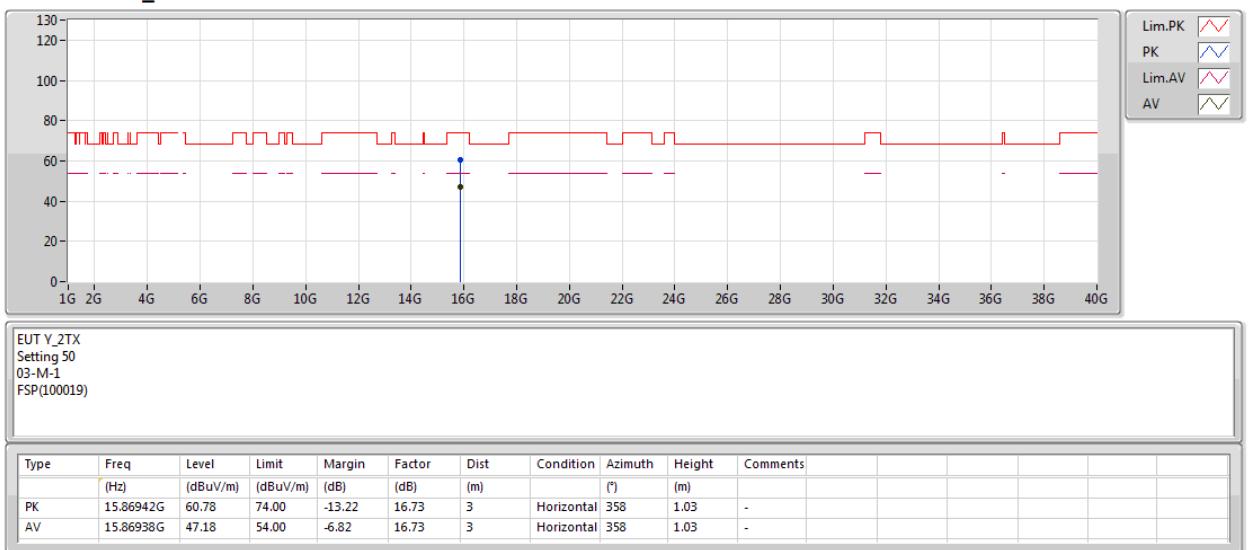




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

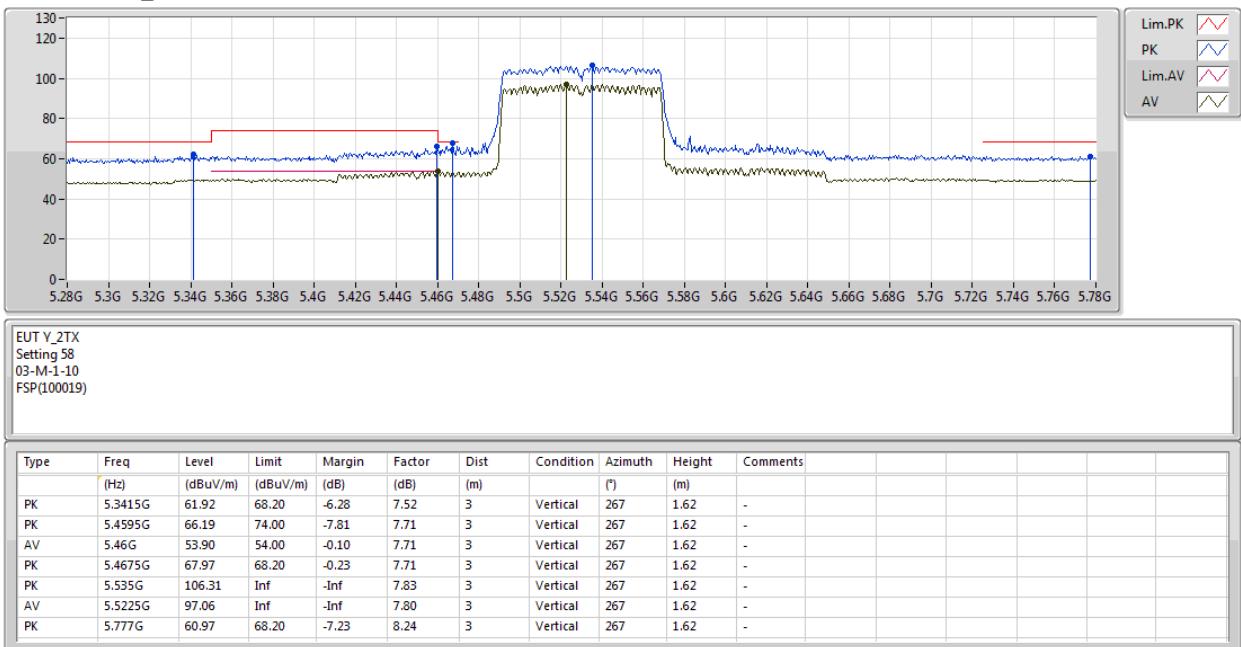
05/03/2019

## 5290MHz\_TX



**802.11ac VHT80\_Nss1,(MCS0)\_2TX**

05/03/2019

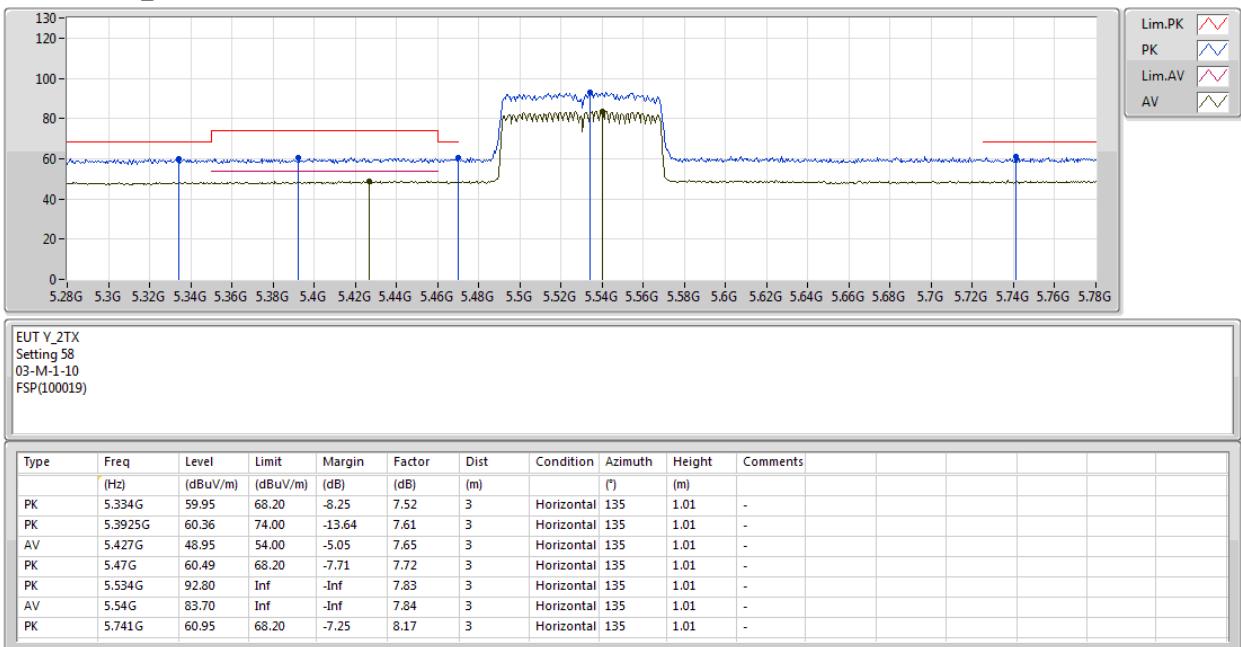
**5530MHz\_TX**




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5530MHz\_TX

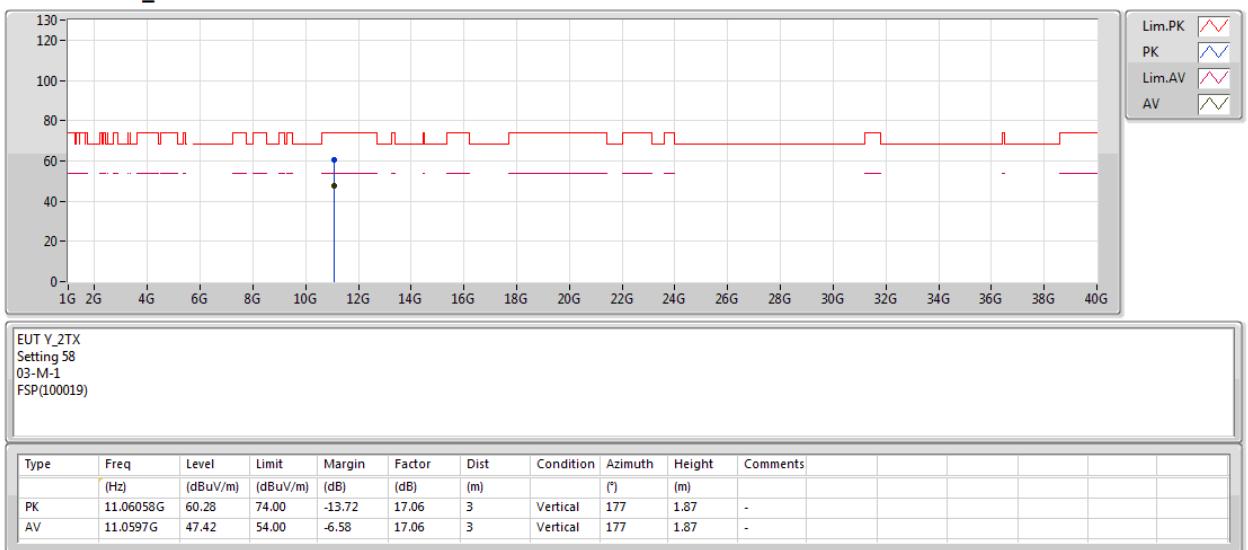




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5530MHz\_TX

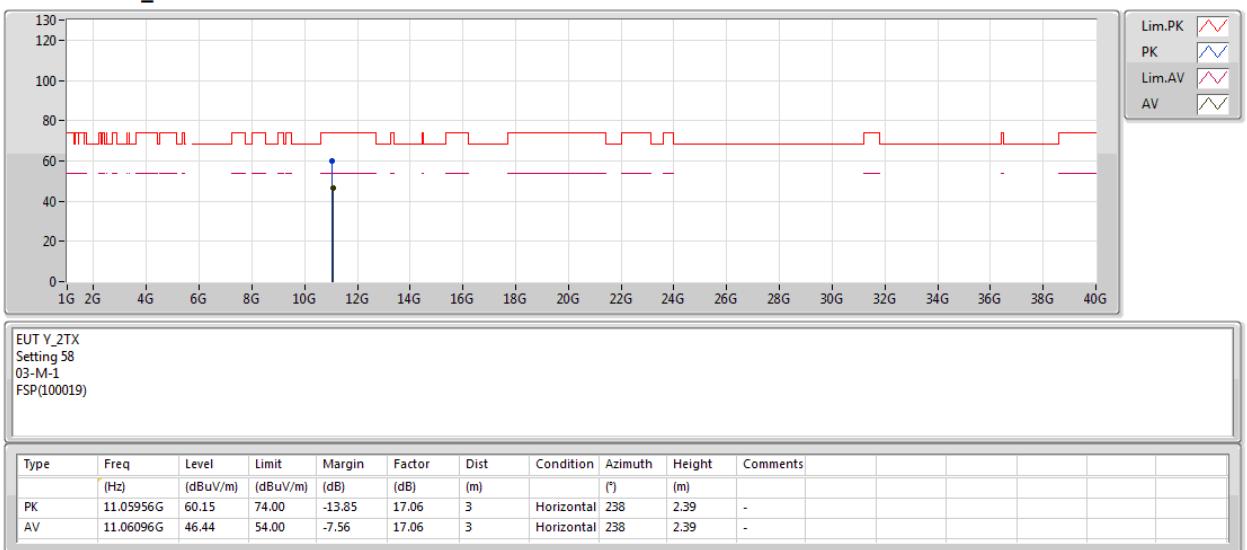




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5530MHz\_TX

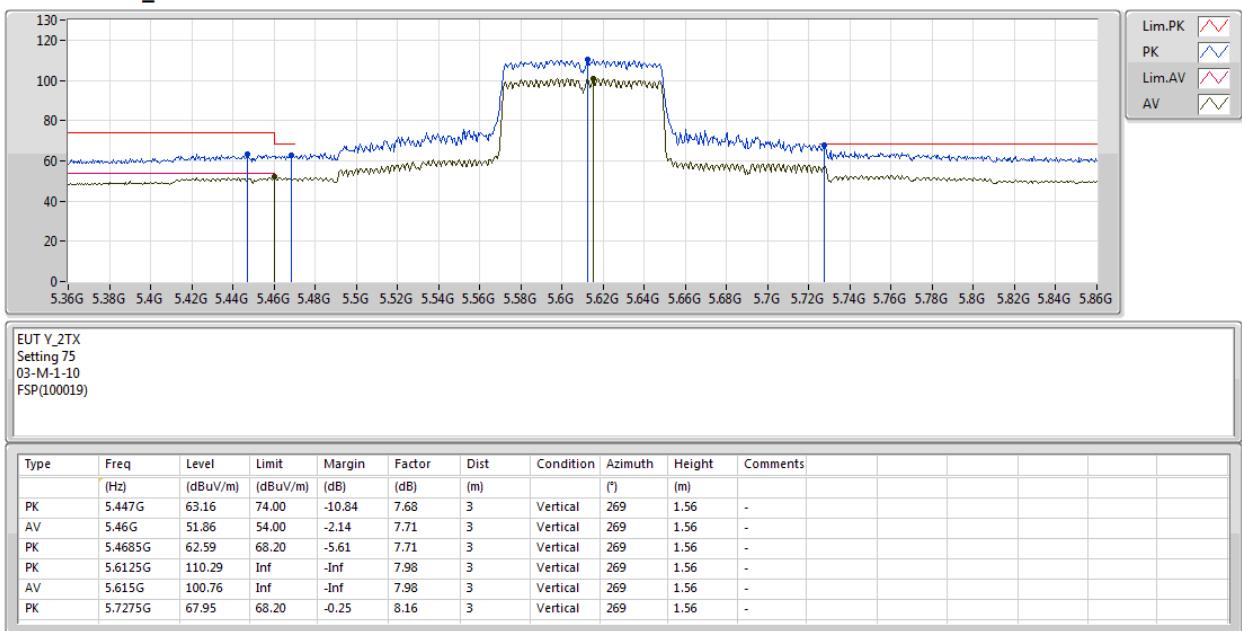




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

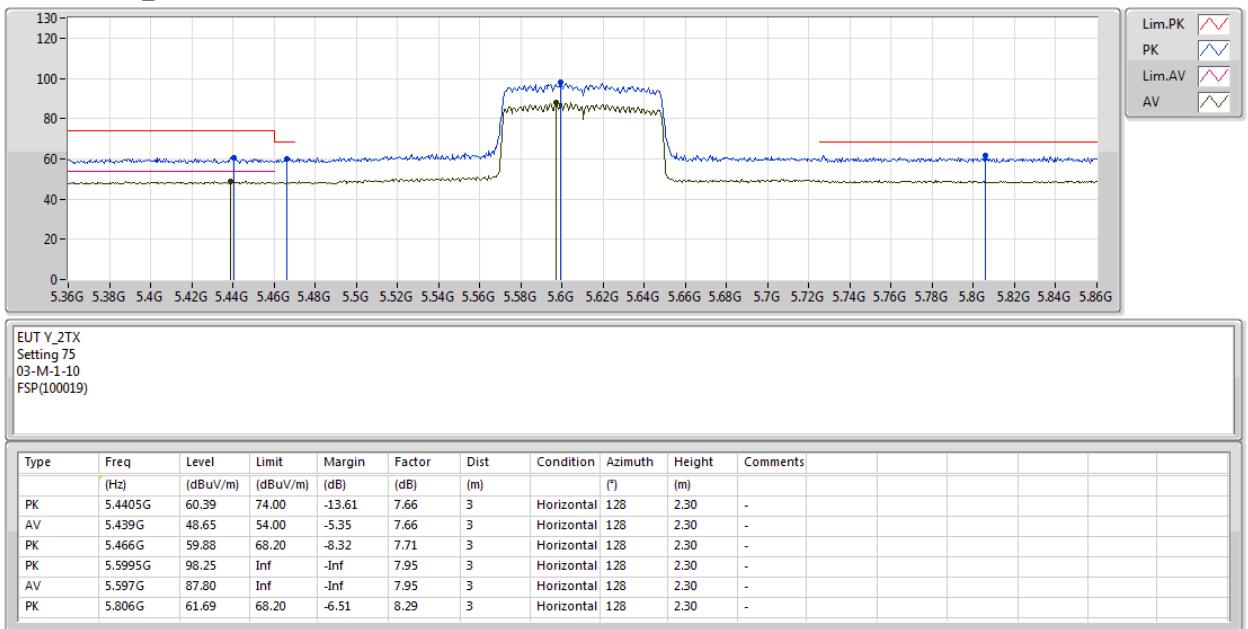
05/03/2019

## 5610MHz\_TX



**802.11ac VHT80\_Nss1,(MCS0)\_2TX**

05/03/2019

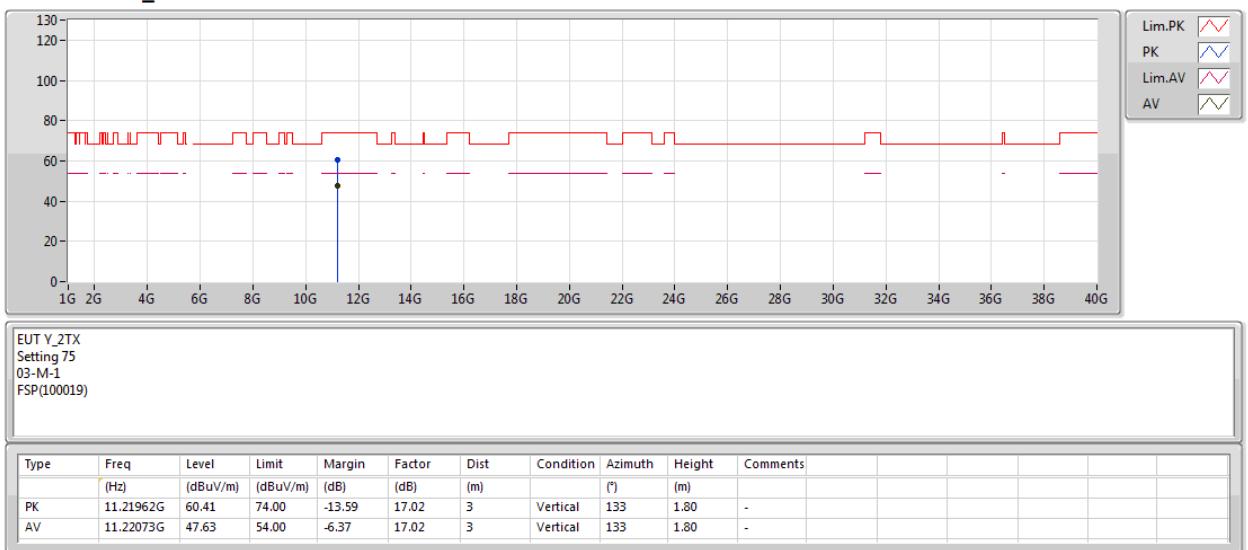
**5610MHz\_TX**




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5610MHz\_TX

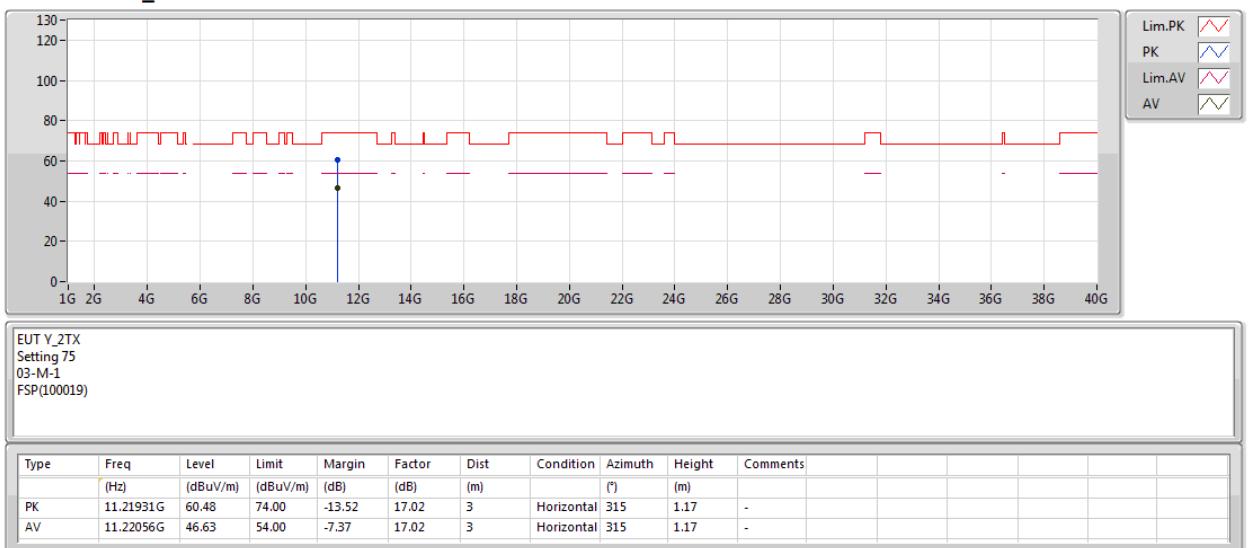




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5610MHz\_TX

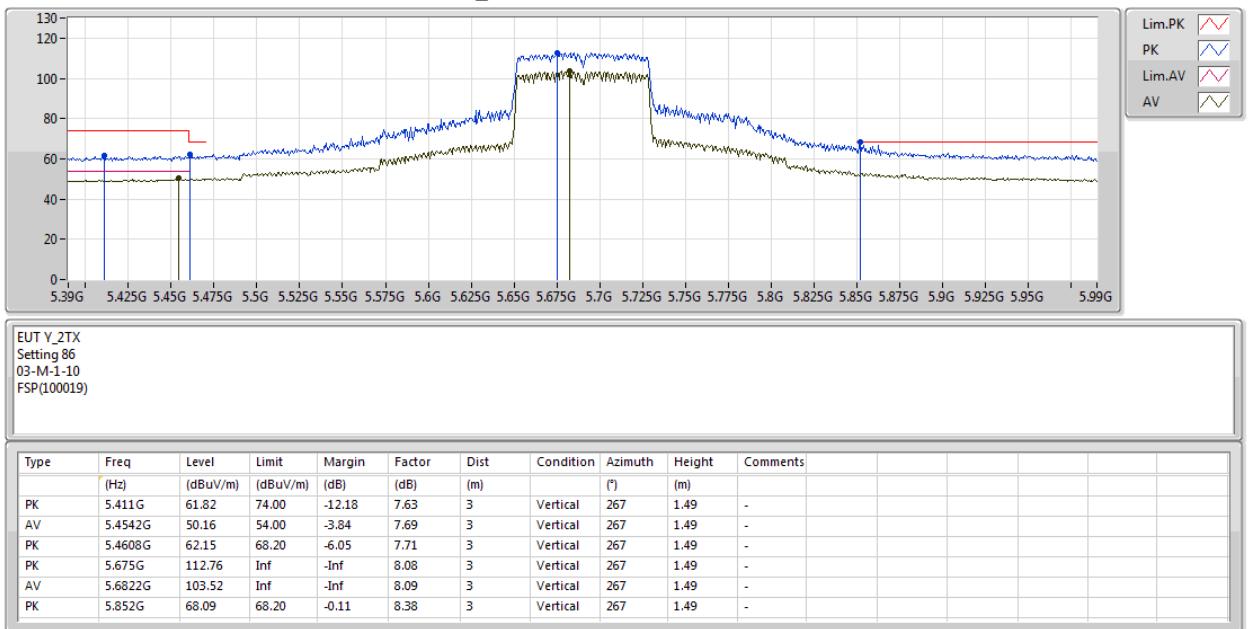




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

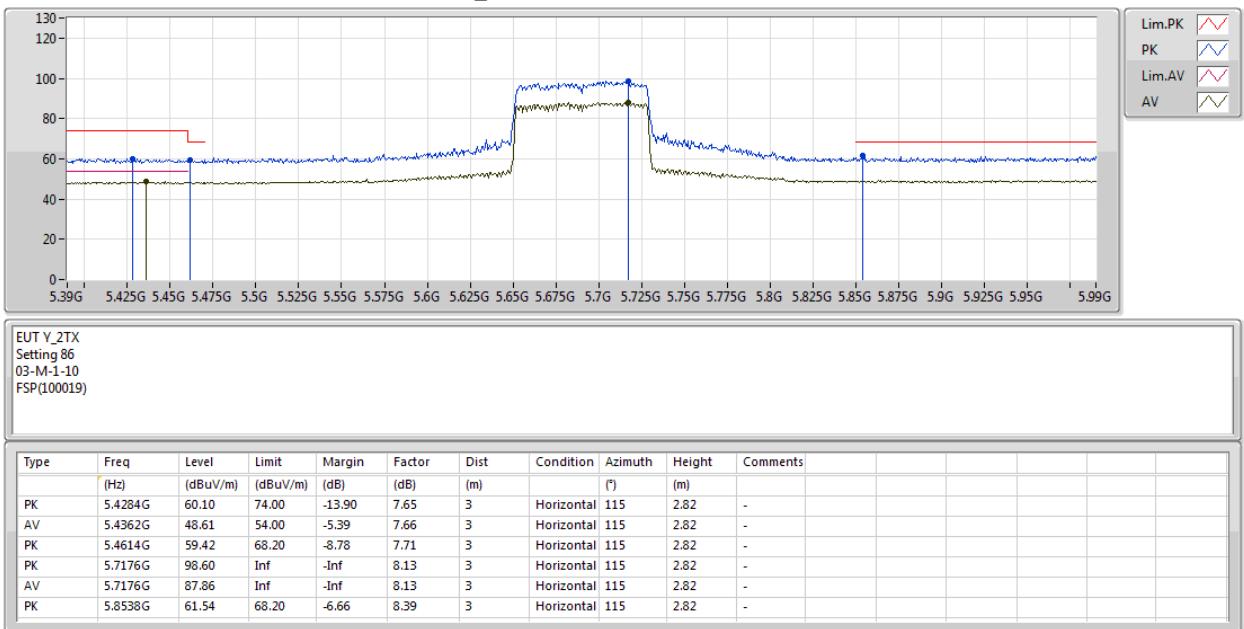
05/03/2019

## 5690MHz Straddle 5.47-5.725GHz\_TX



**802.11ac VHT80\_Nss1,(MCS0)\_2TX**

05/03/2019

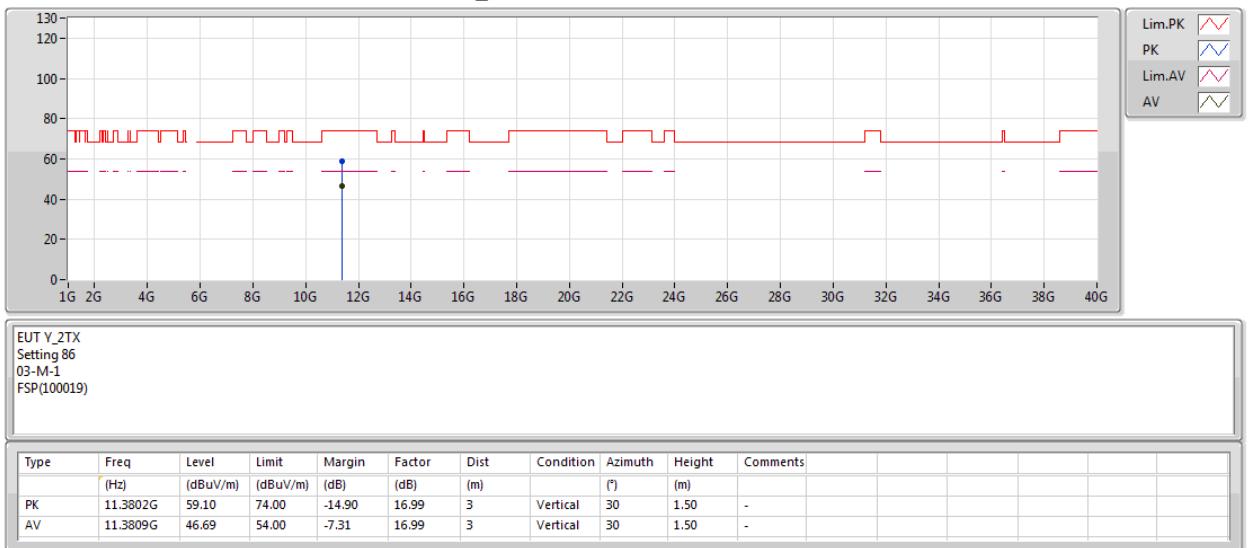
**5690MHz Straddle 5.47-5.725GHz\_TX**




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5690MHz Straddle 5.47-5.725GHz\_TX

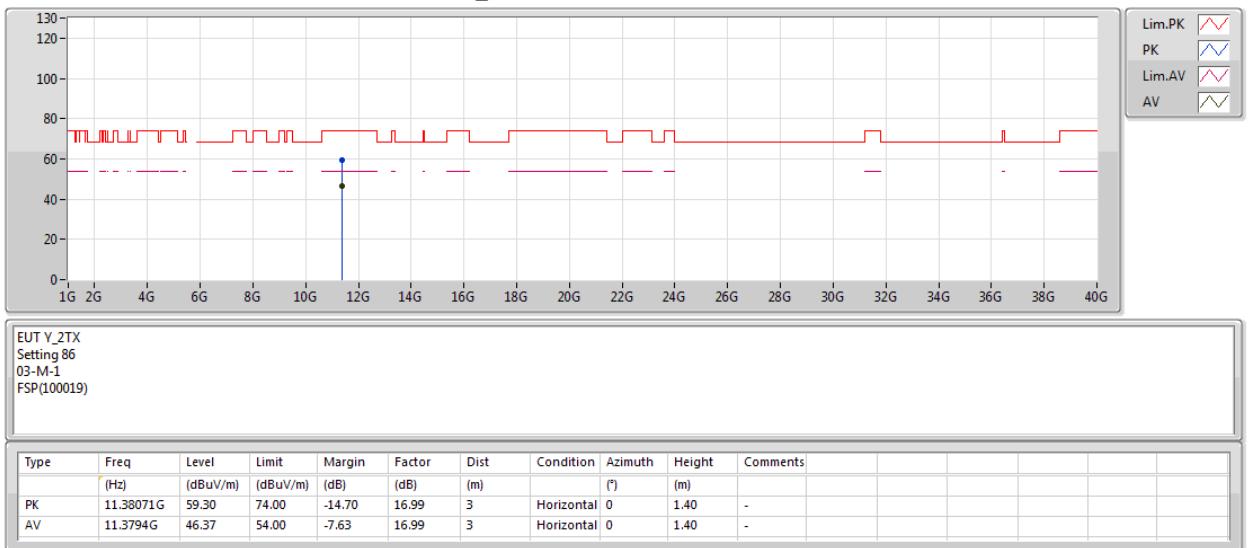




## 802.11ac VHT80\_Nss1,(MCS0)\_2TX

05/03/2019

## 5690MHz Straddle 5.47-5.725GHz\_TX

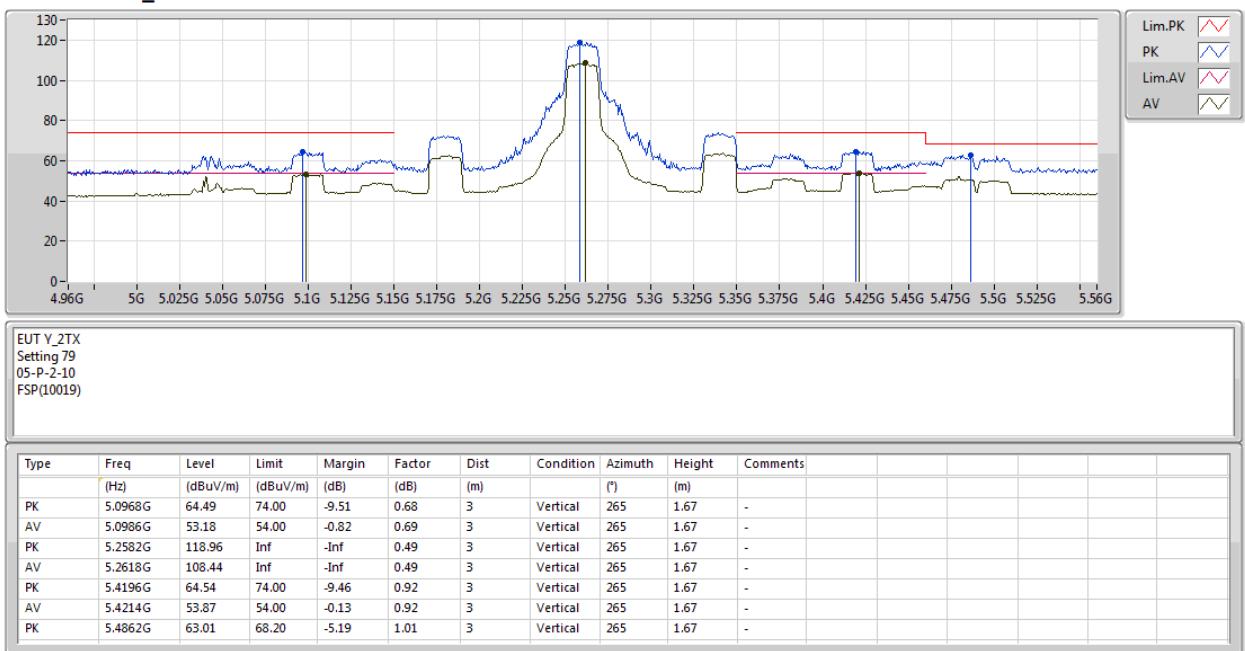




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

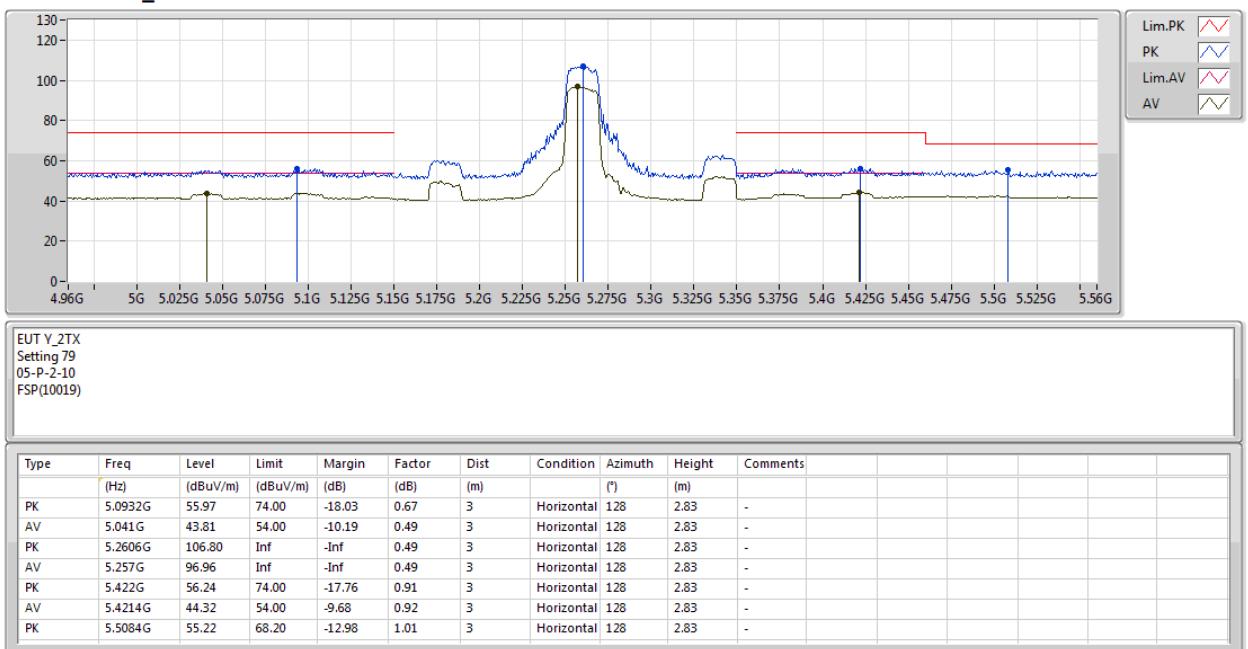
05/03/2019

## 5260MHz\_TX



**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

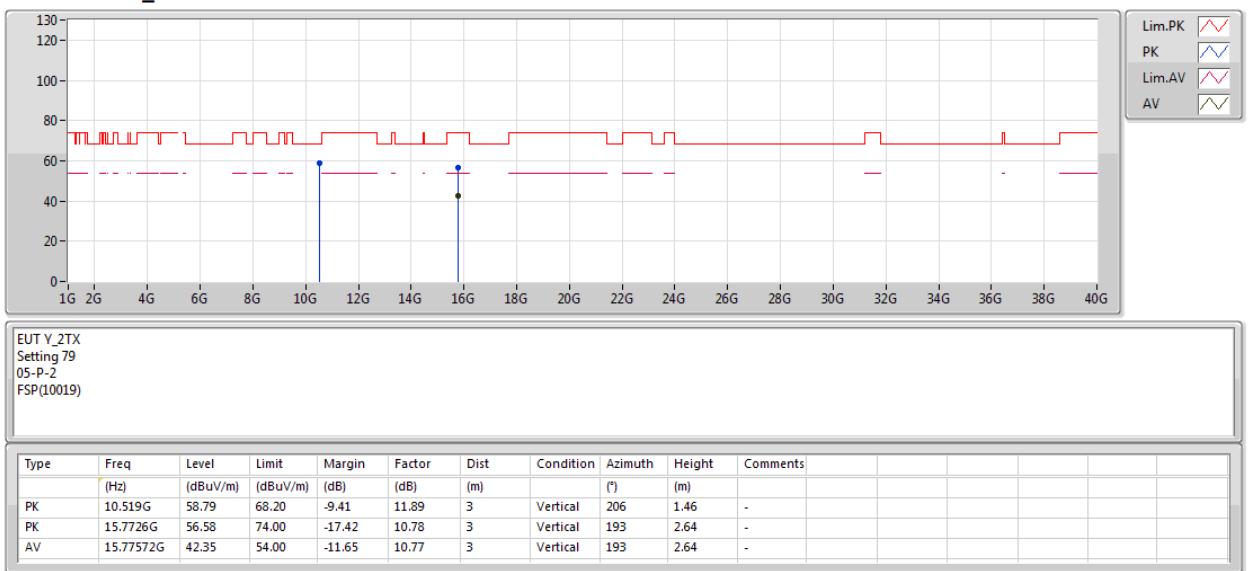
**5260MHz\_TX**




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5260MHz\_TX

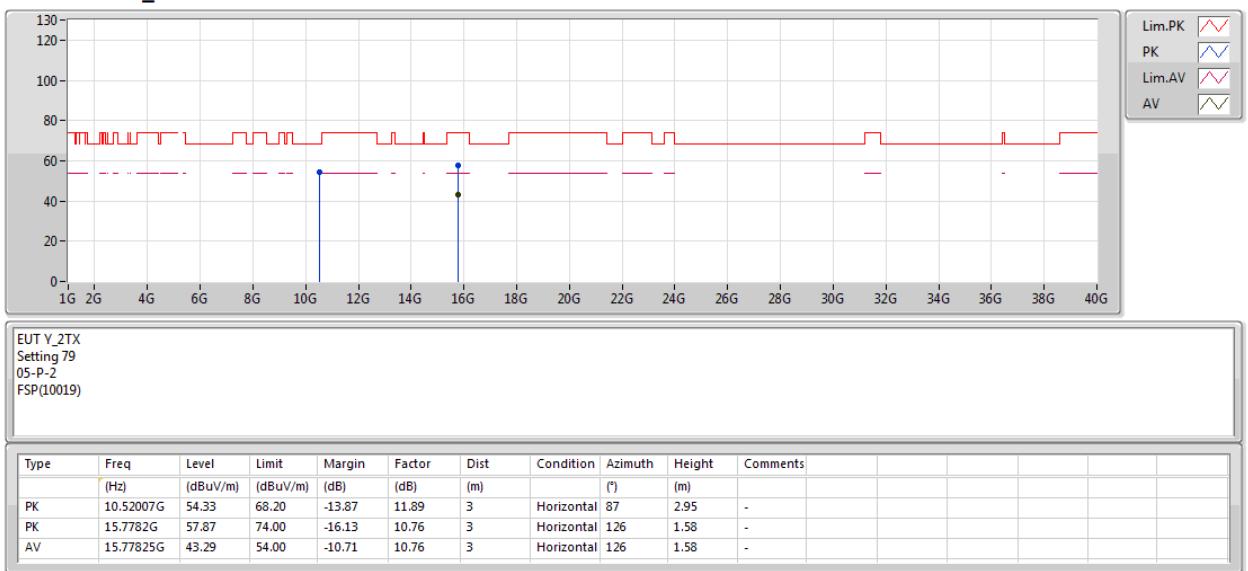




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

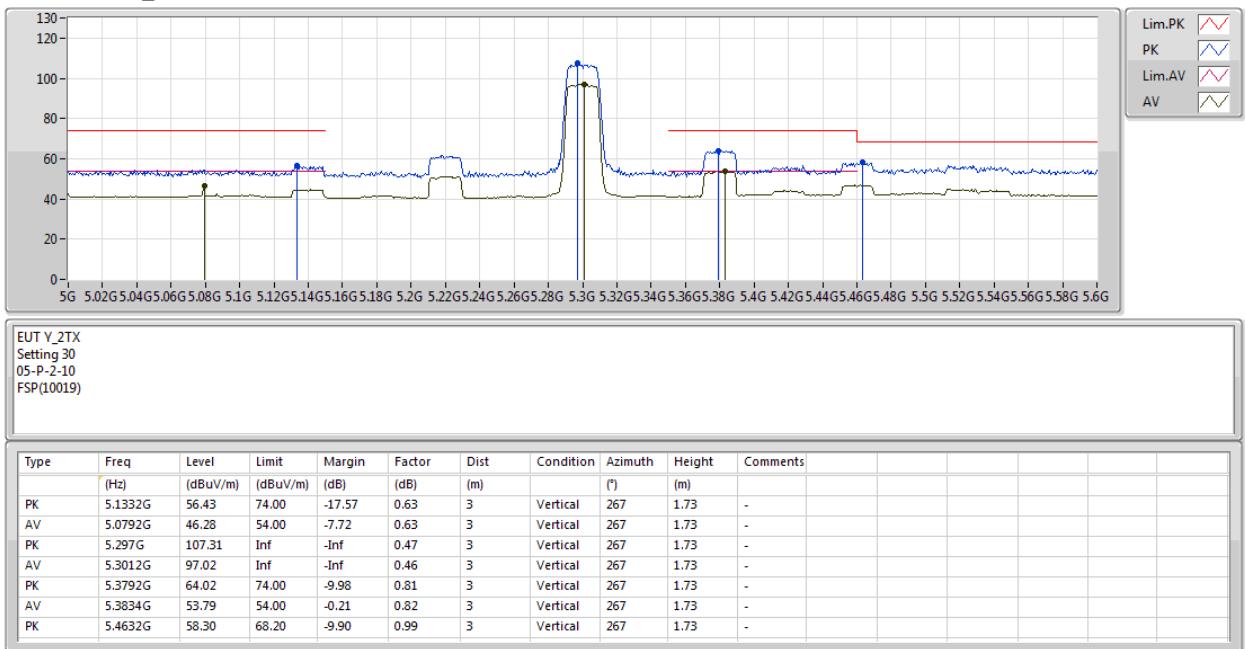
05/03/2019

## 5260MHz\_TX



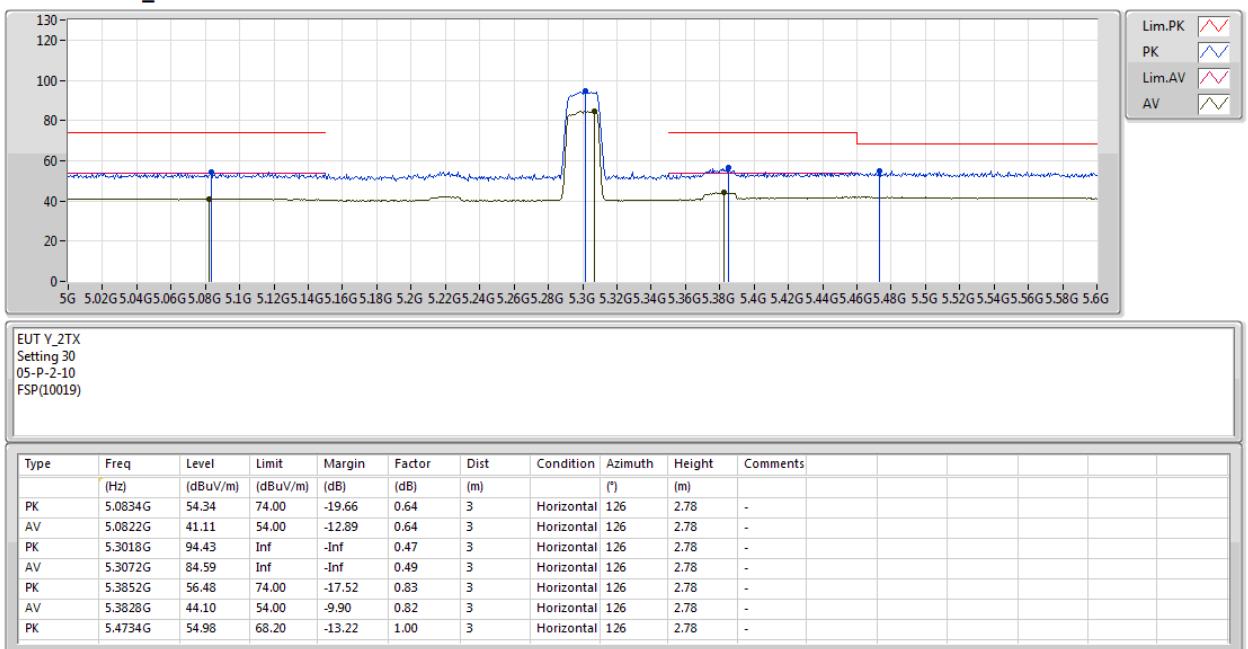
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5300MHz\_TX**


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

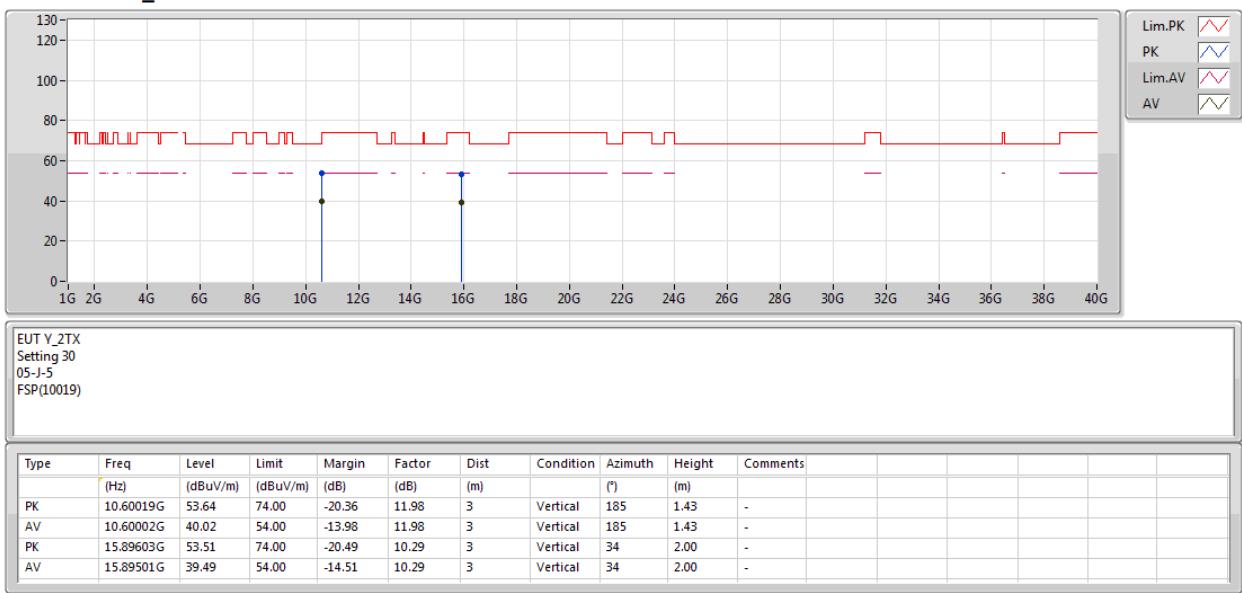
**5300MHz\_TX**




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5300MHz\_TX

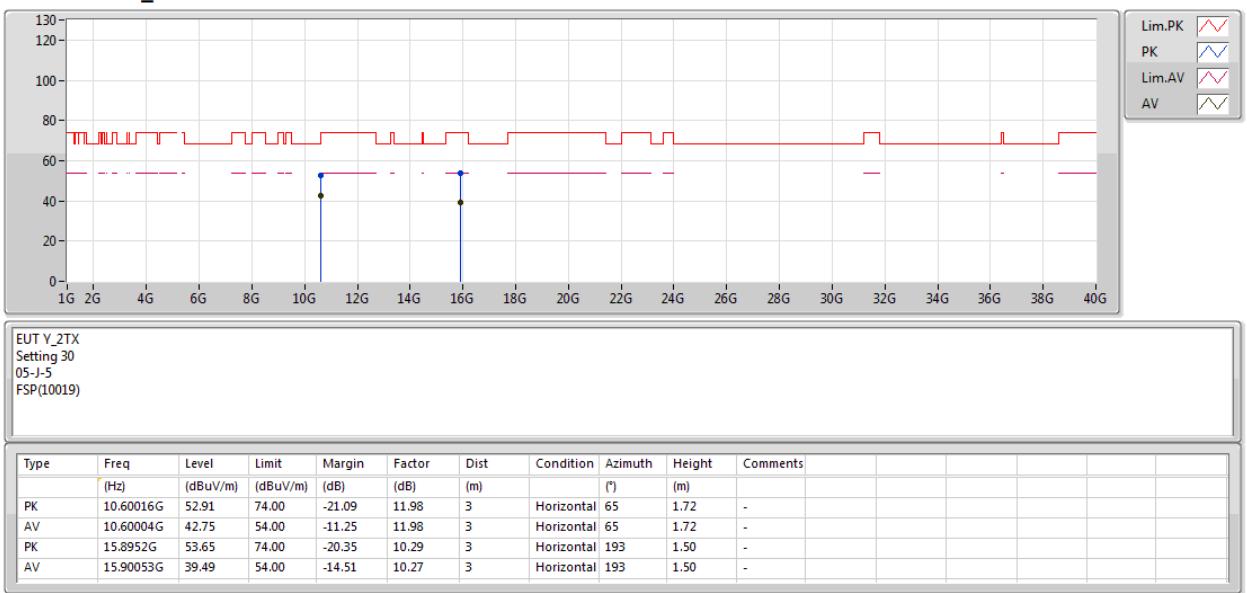




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

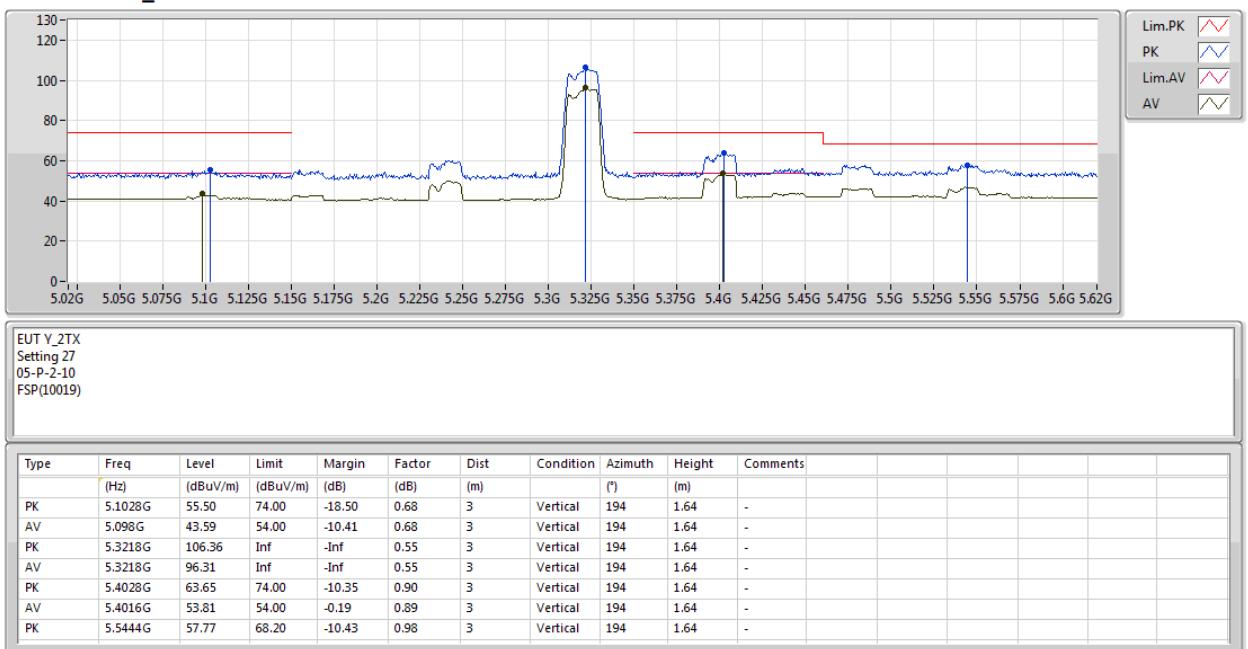
05/03/2019

## 5300MHz\_TX



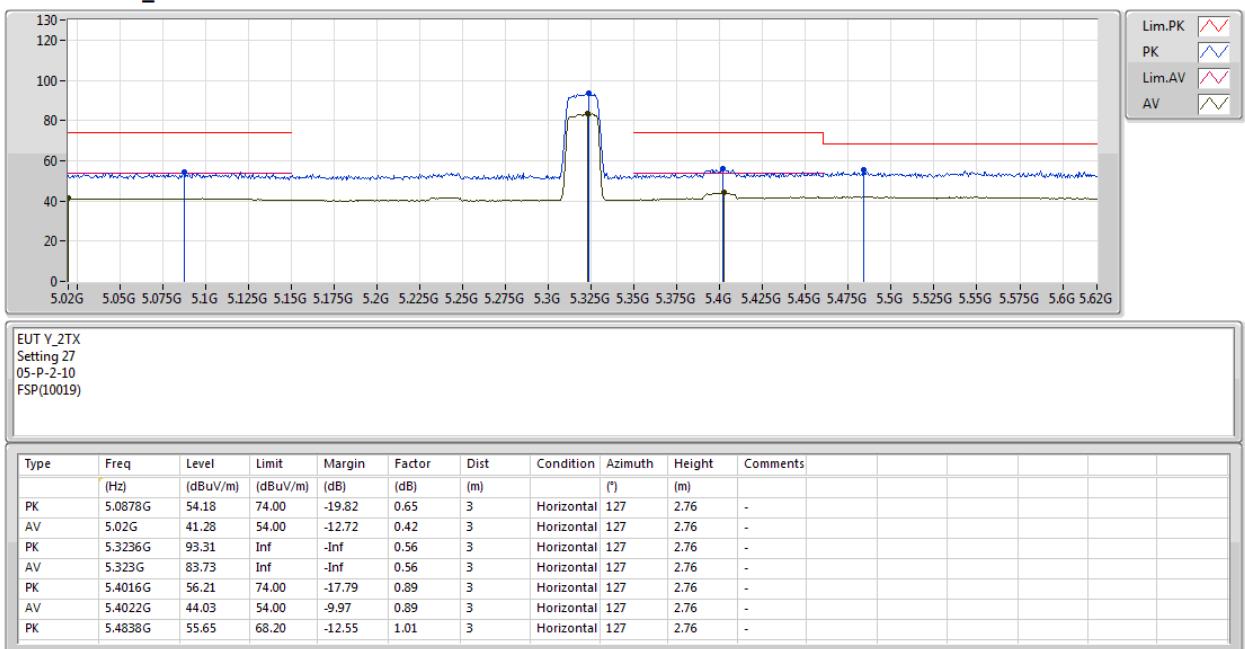
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5320MHz\_TX**


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

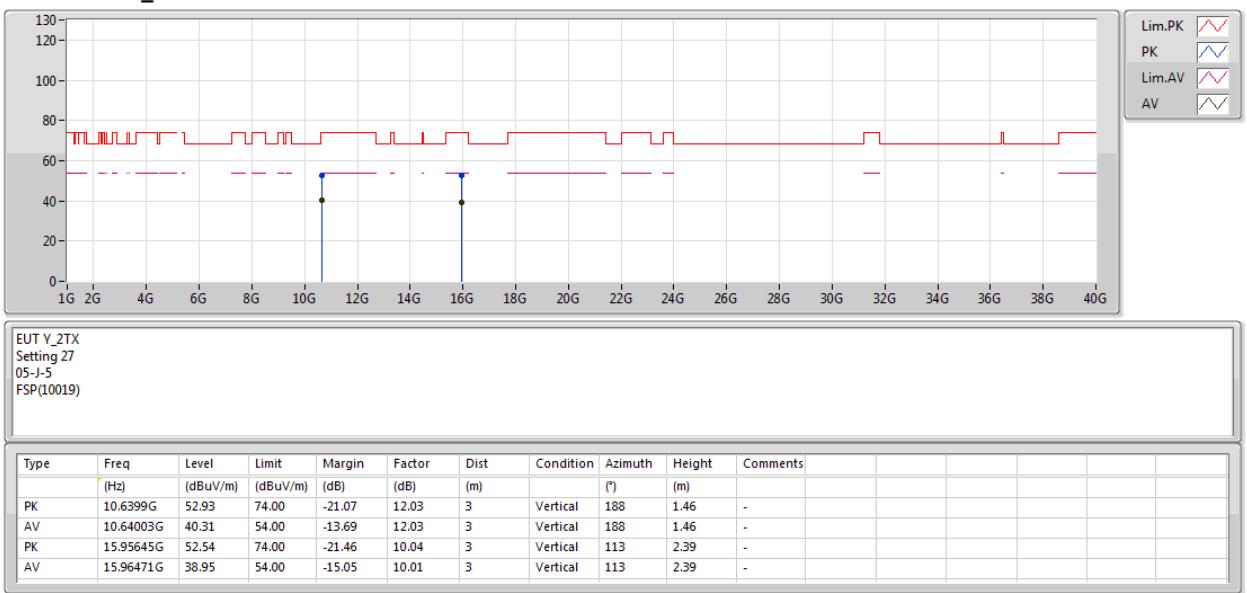
**5320MHz\_TX**




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5320MHz\_TX

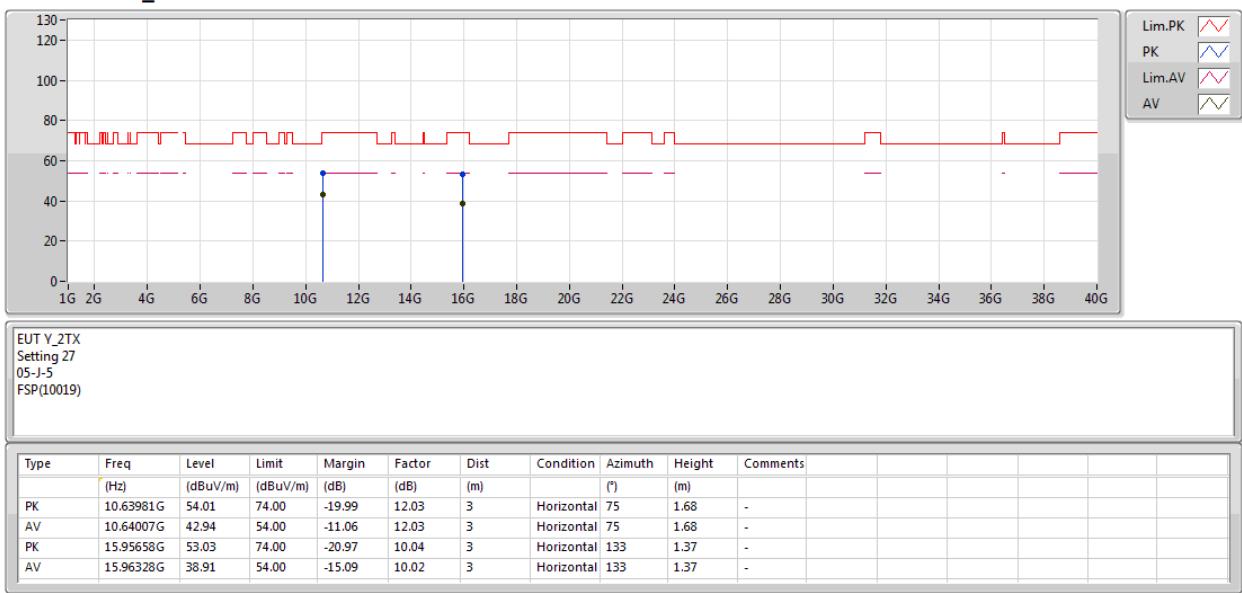




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5320MHz\_TX



**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

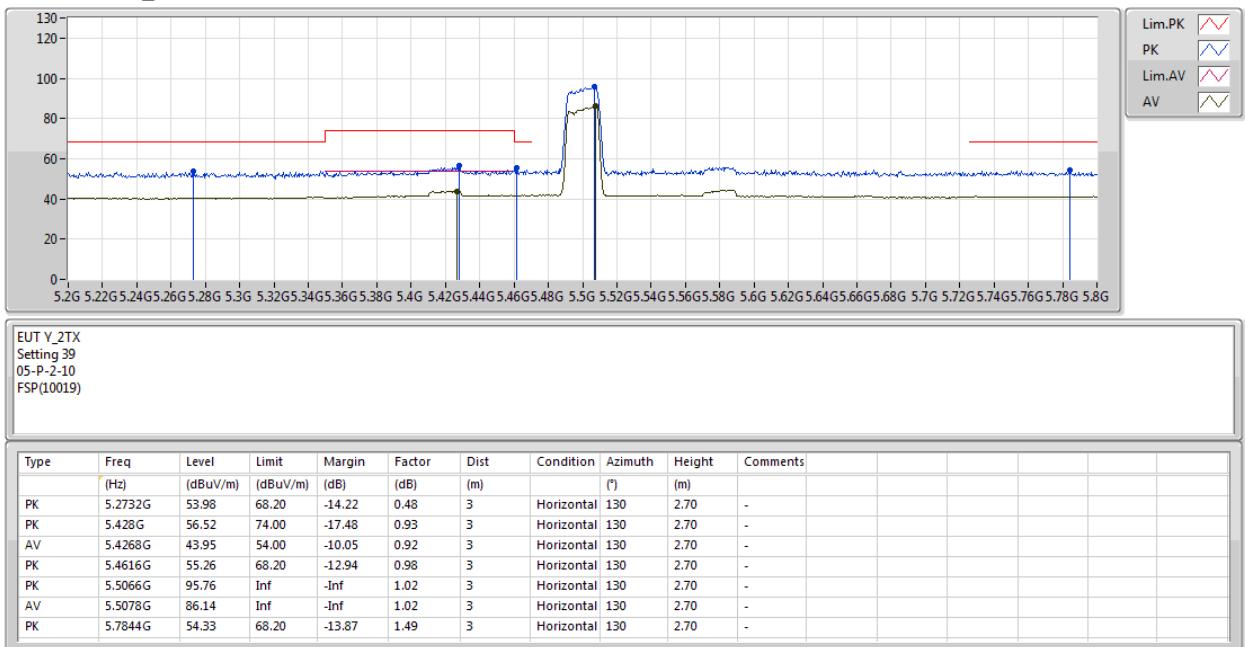
**5500MHz\_TX**




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5500MHz\_TX

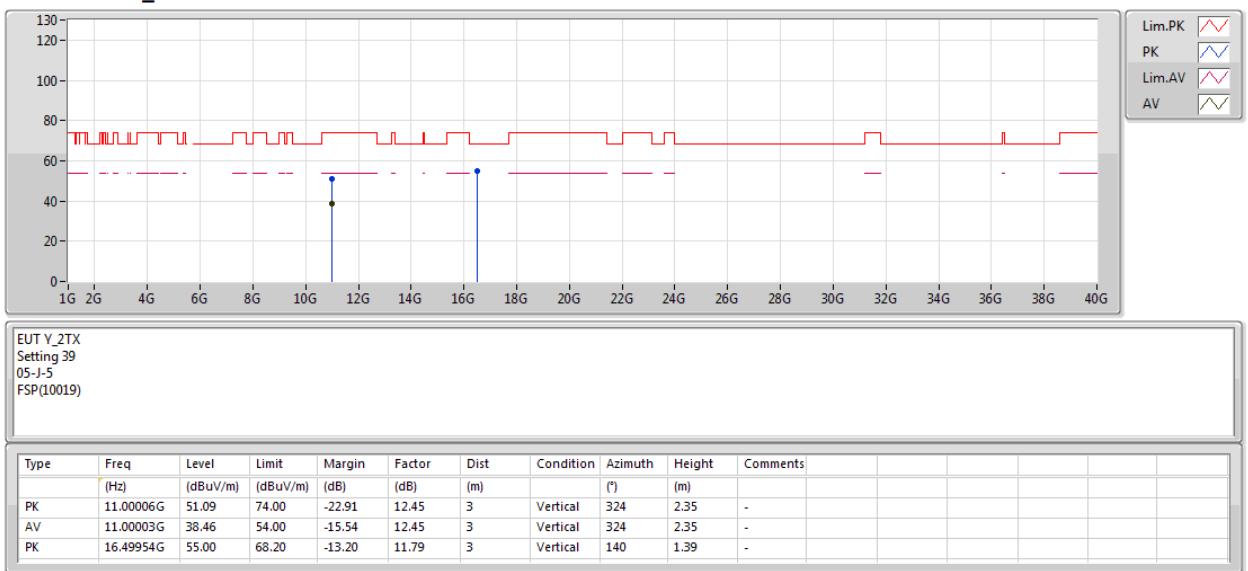




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5500MHz\_TX

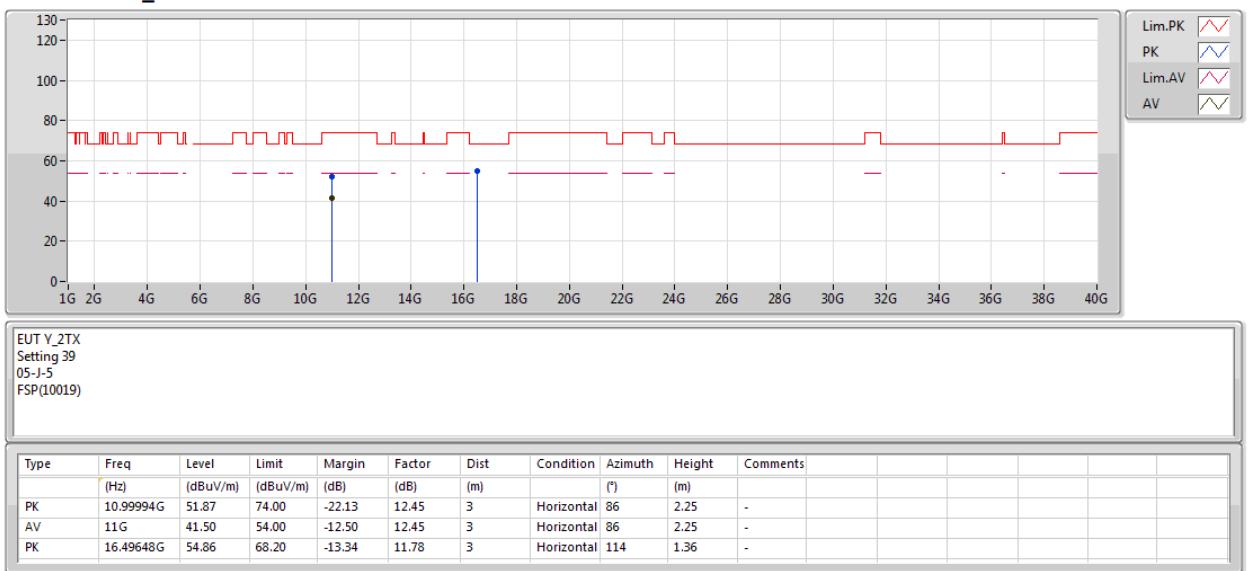




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

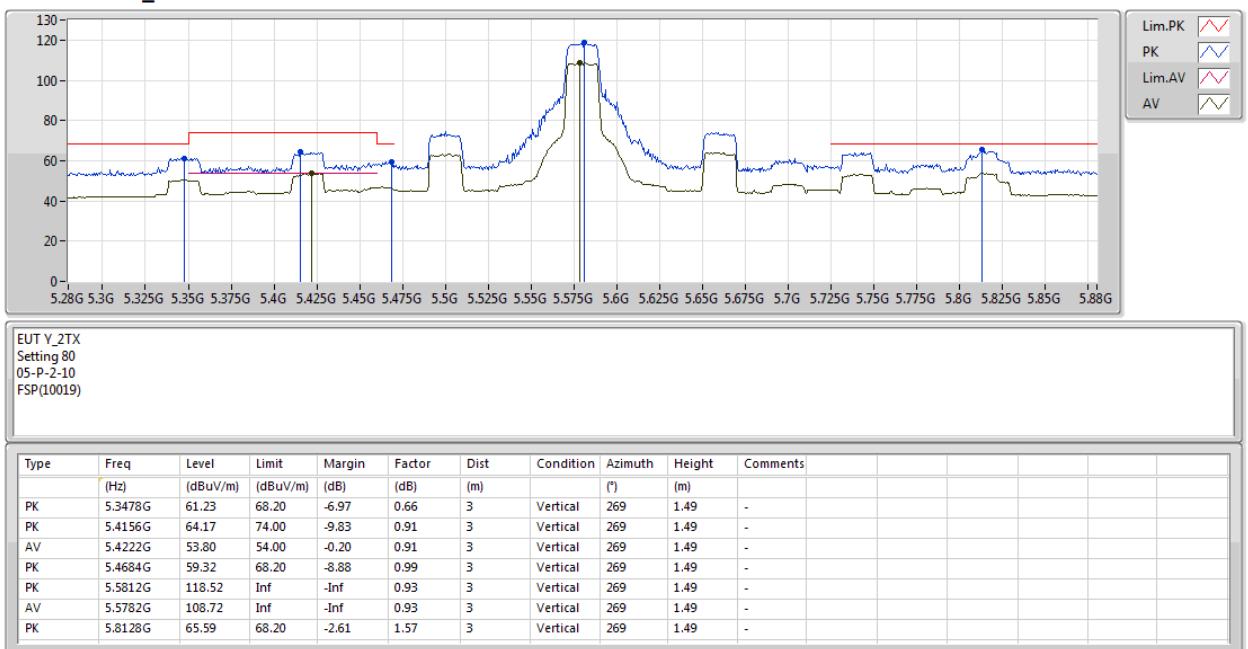
05/03/2019

## 5500MHz\_TX



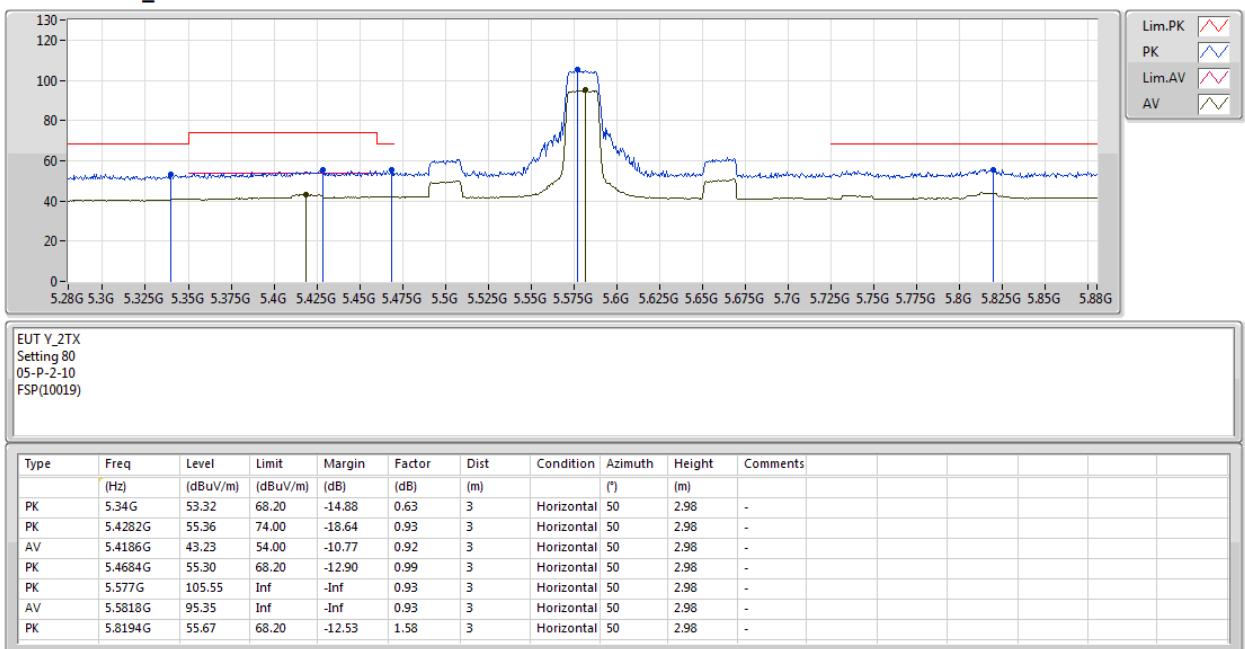
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5580MHz\_TX**


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

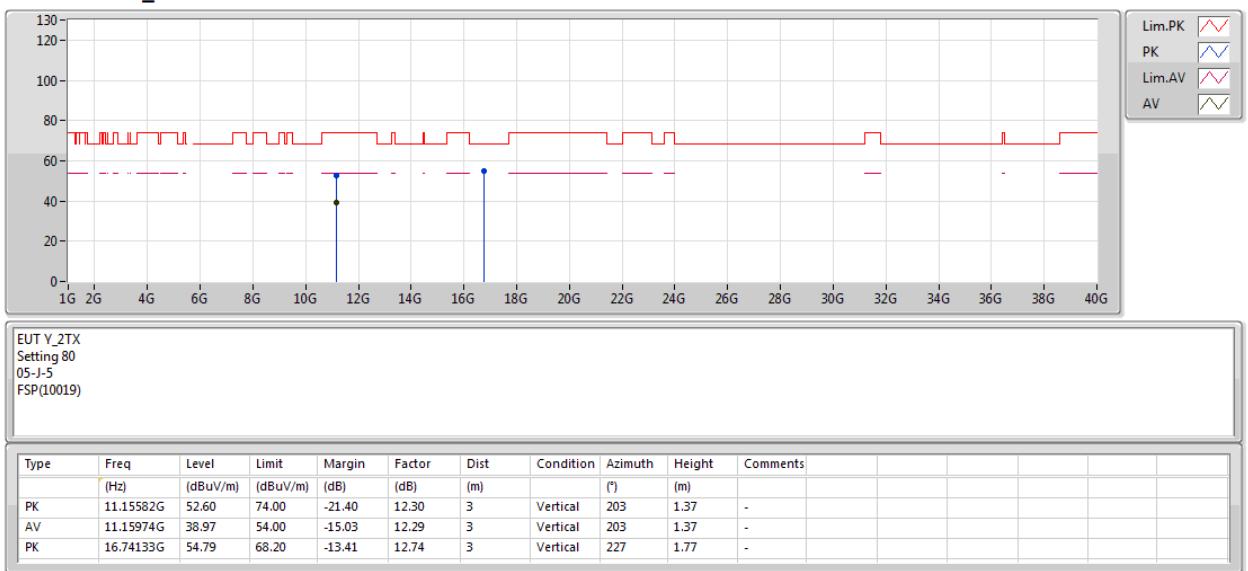
**5580MHz\_TX**




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5580MHz\_TX

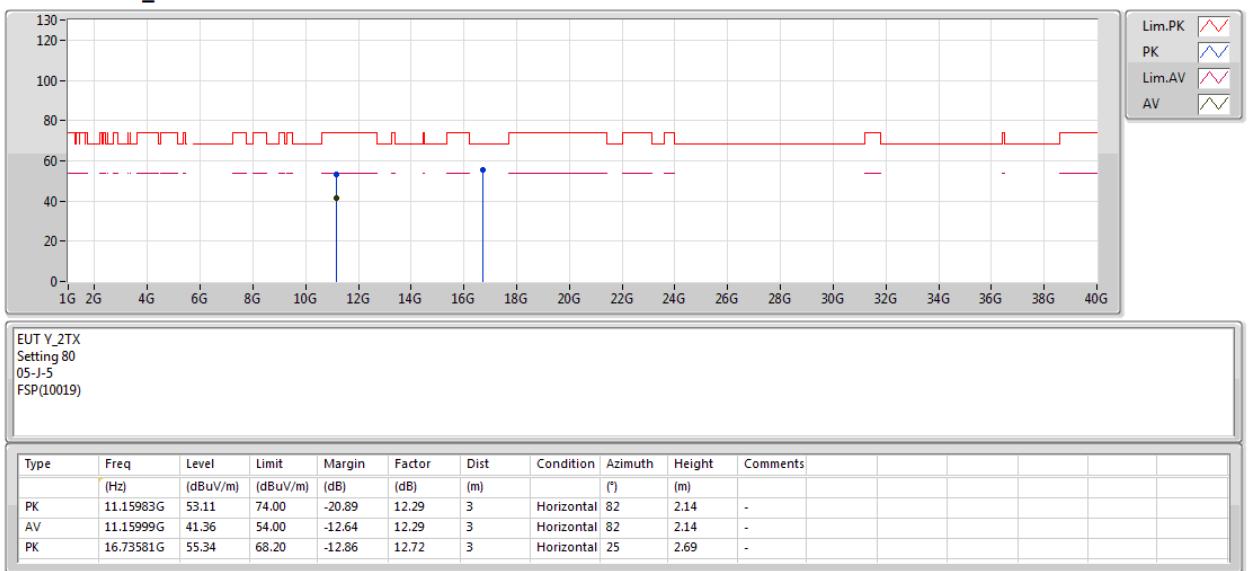




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5580MHz\_TX



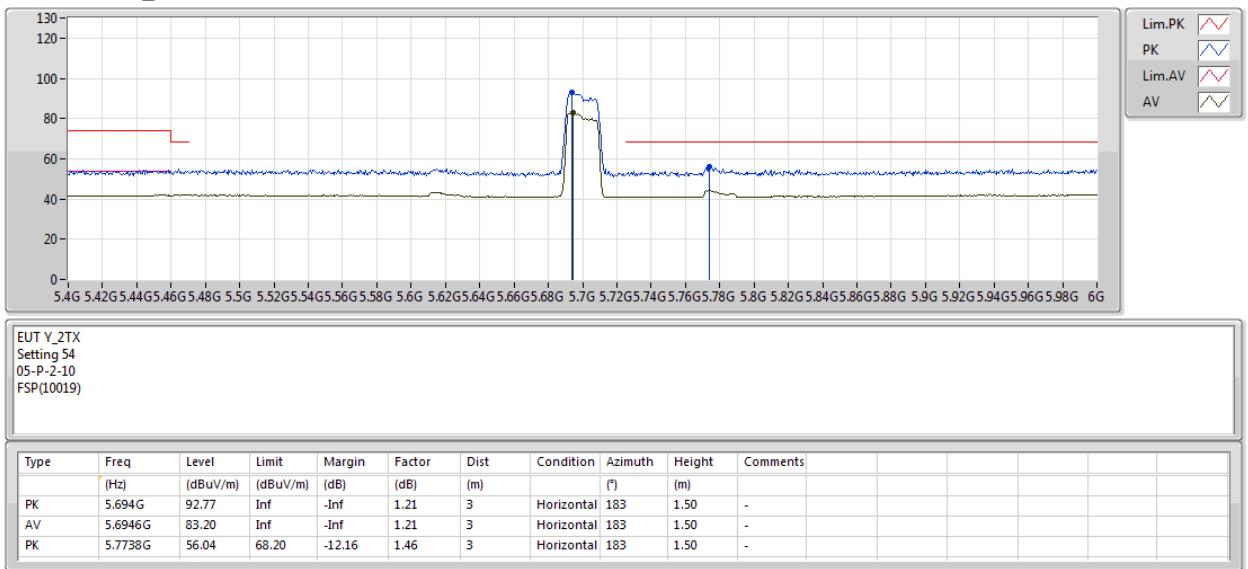
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5700MHz\_TX**


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

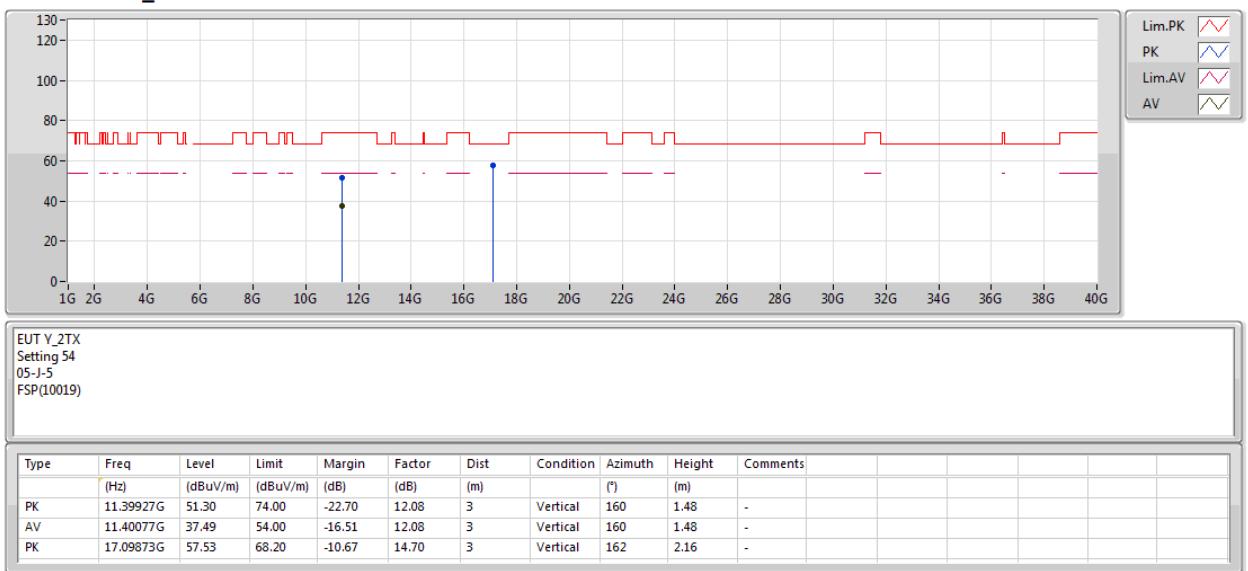
**5700MHz\_TX**




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5700MHz\_TX

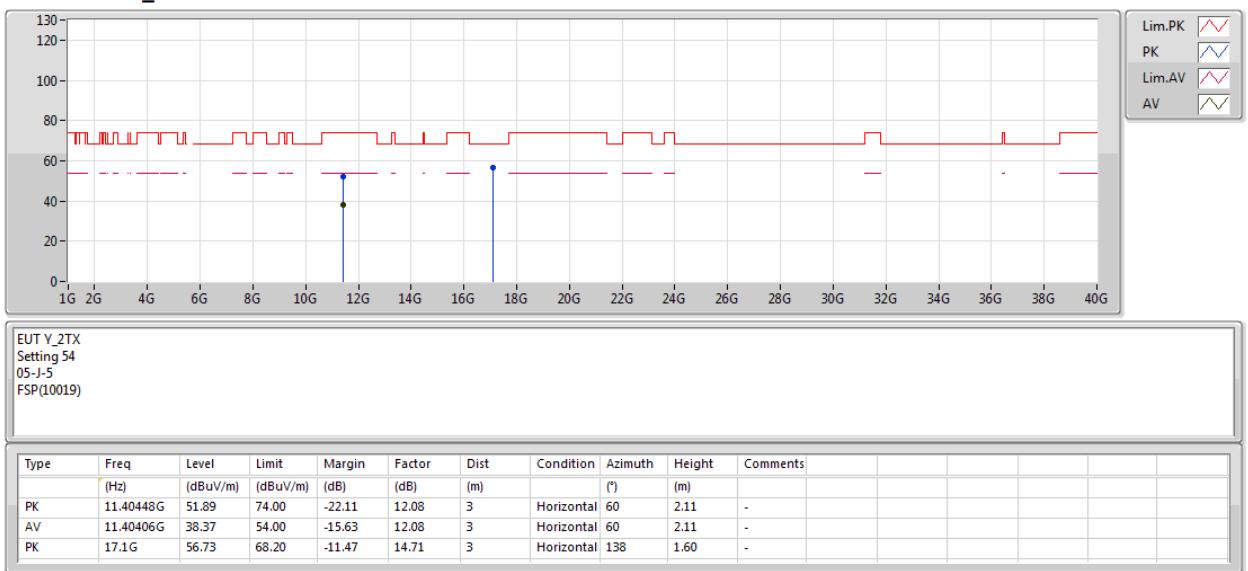




## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

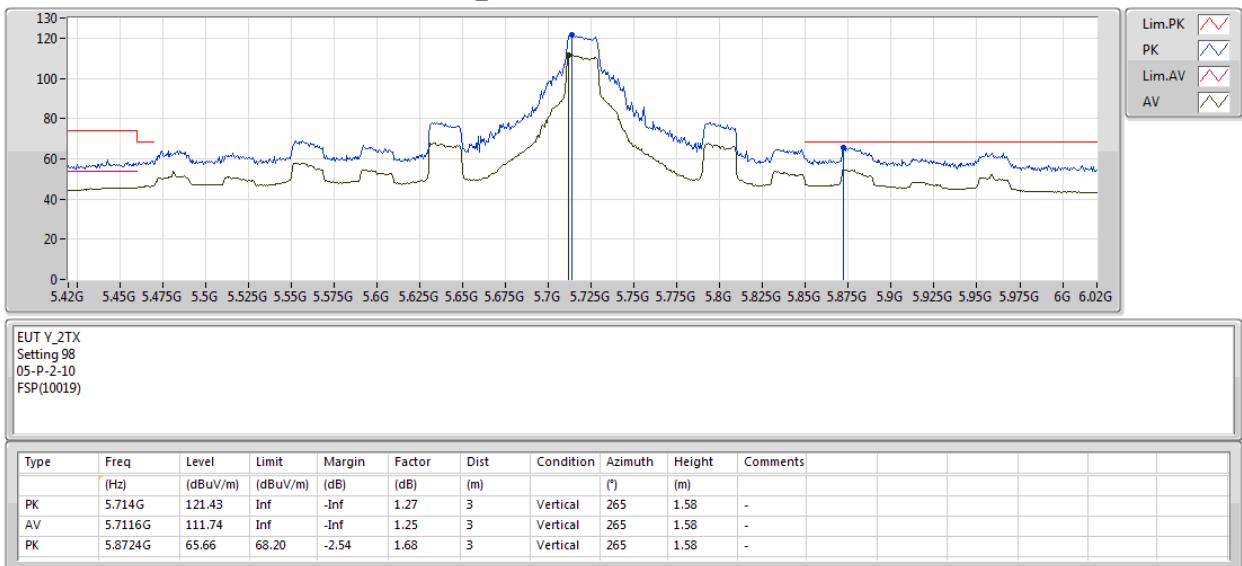
05/03/2019

## 5700MHz\_TX



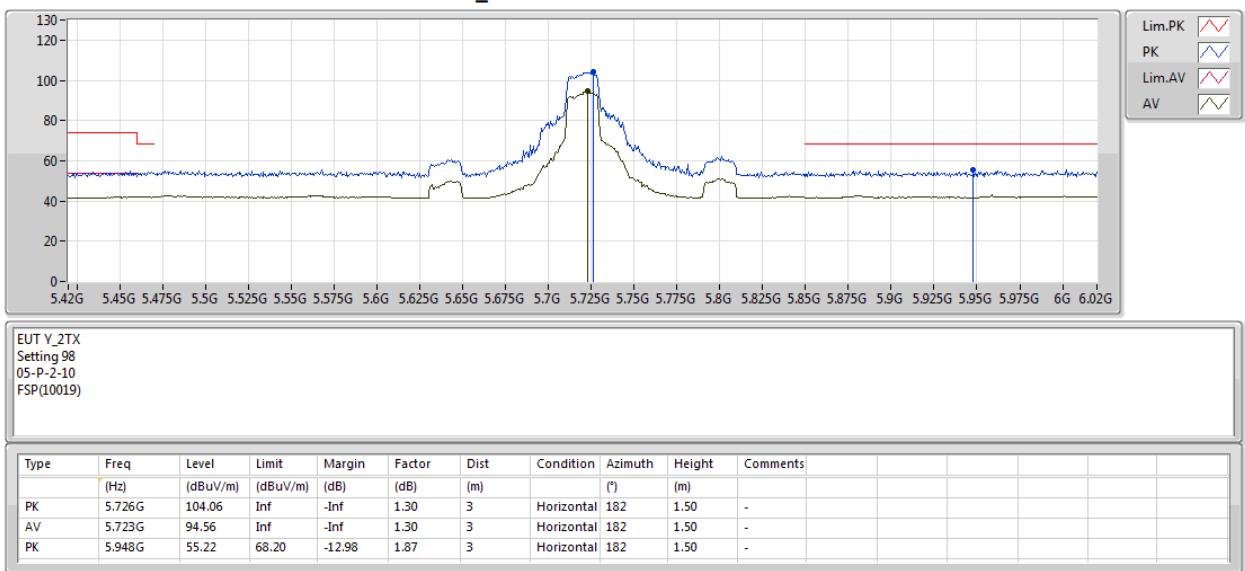
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5720MHz Straddle 5.47-5.725GHz\_TX**


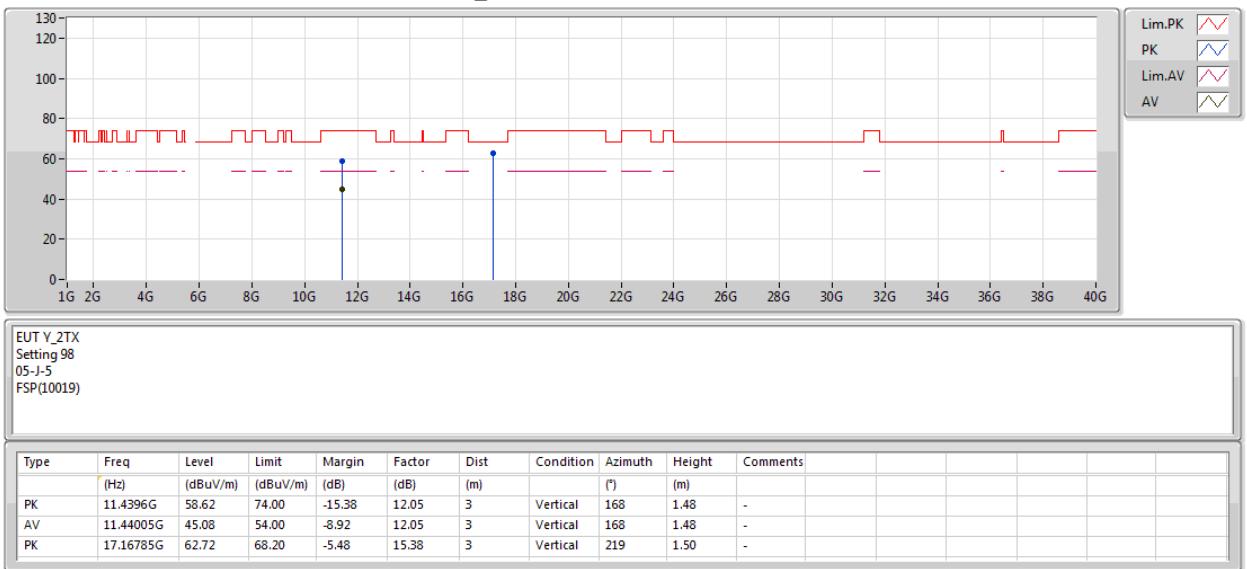
**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5720MHz Straddle 5.47-5.725GHz\_TX**


**802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

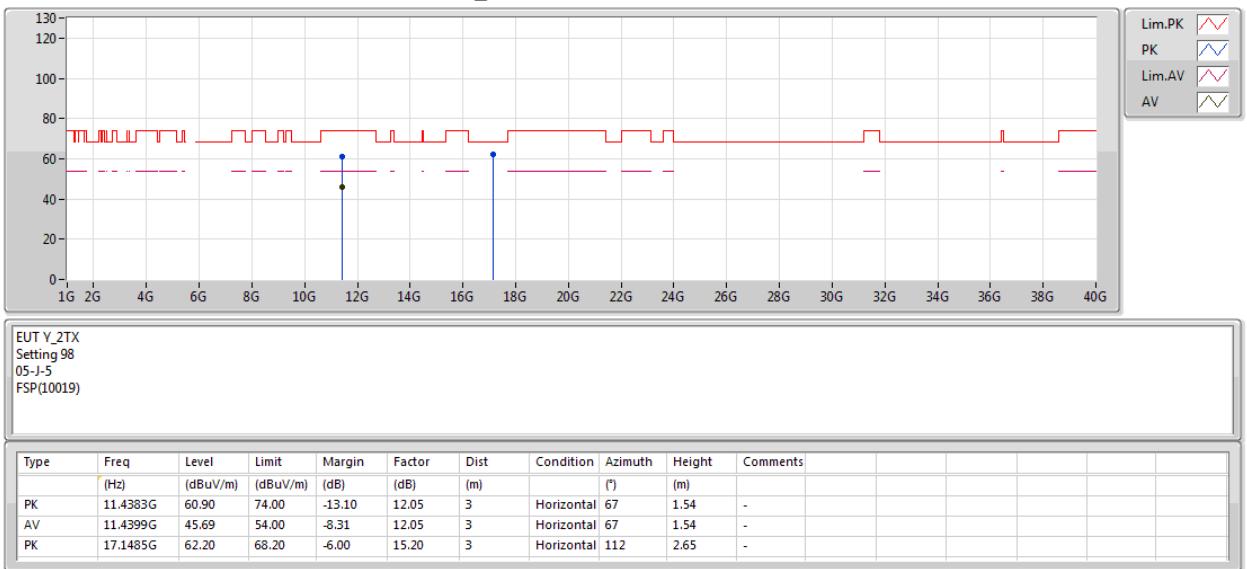
**5720MHz Straddle 5.47-5.725GHz\_TX**



## 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX

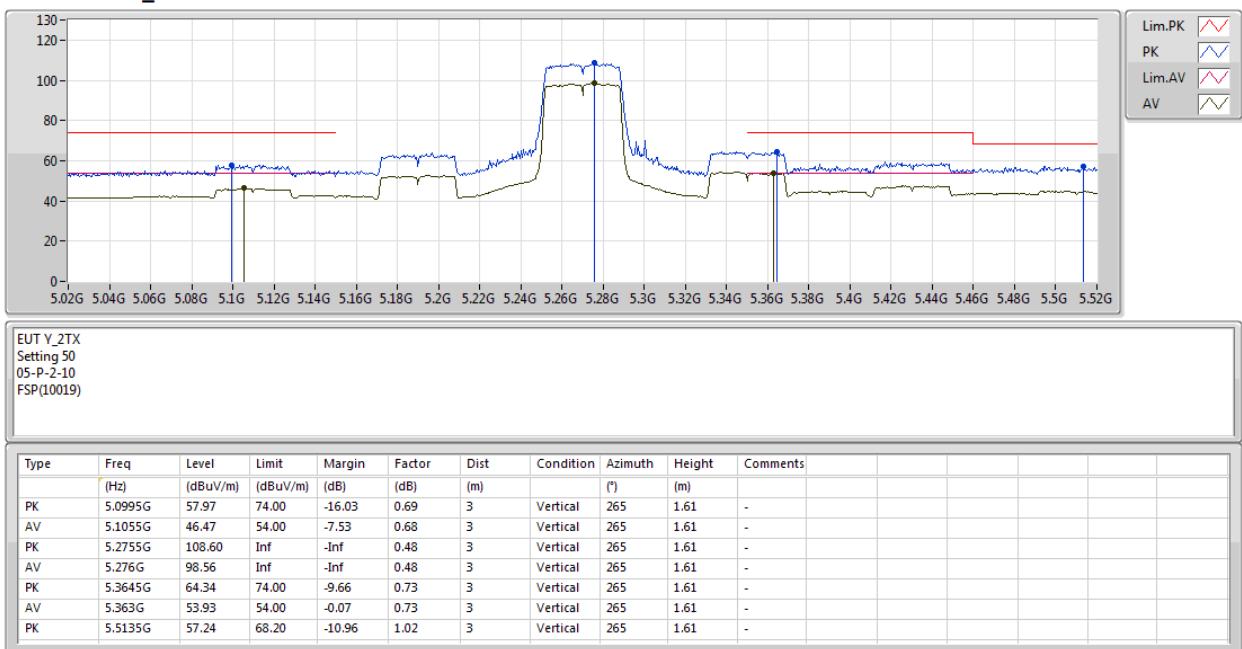
05/03/2019

## 5720MHz Straddle 5.47-5.725GHz\_TX



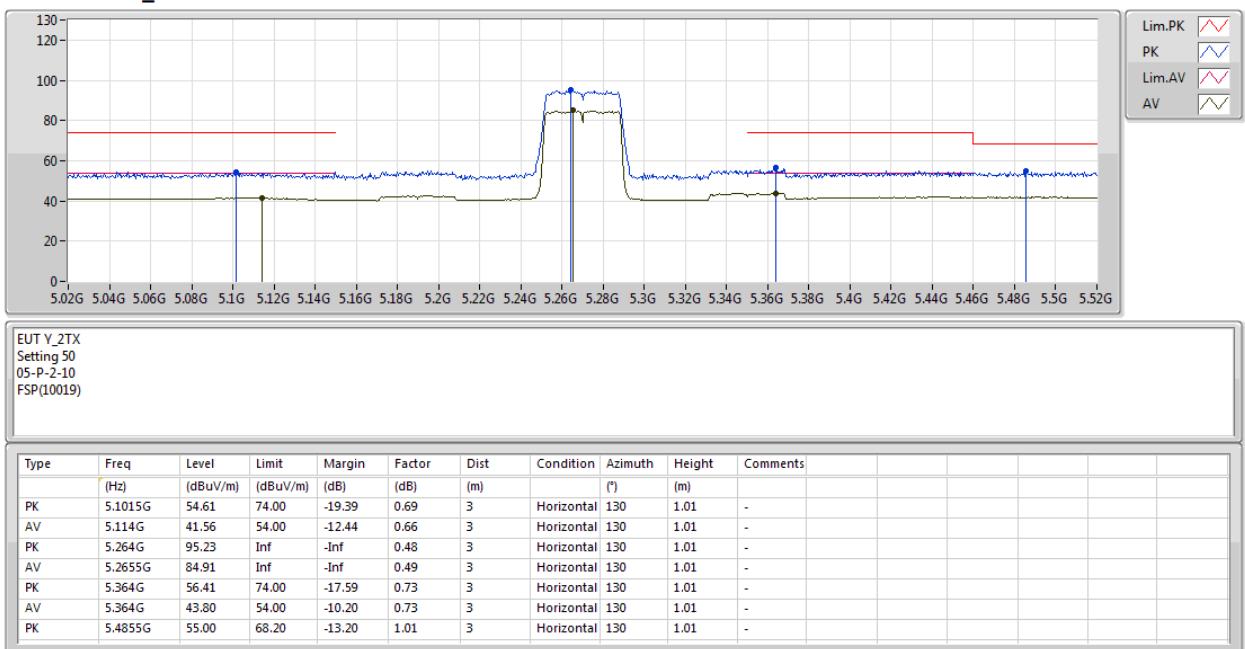
**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5270MHz\_TX**


**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

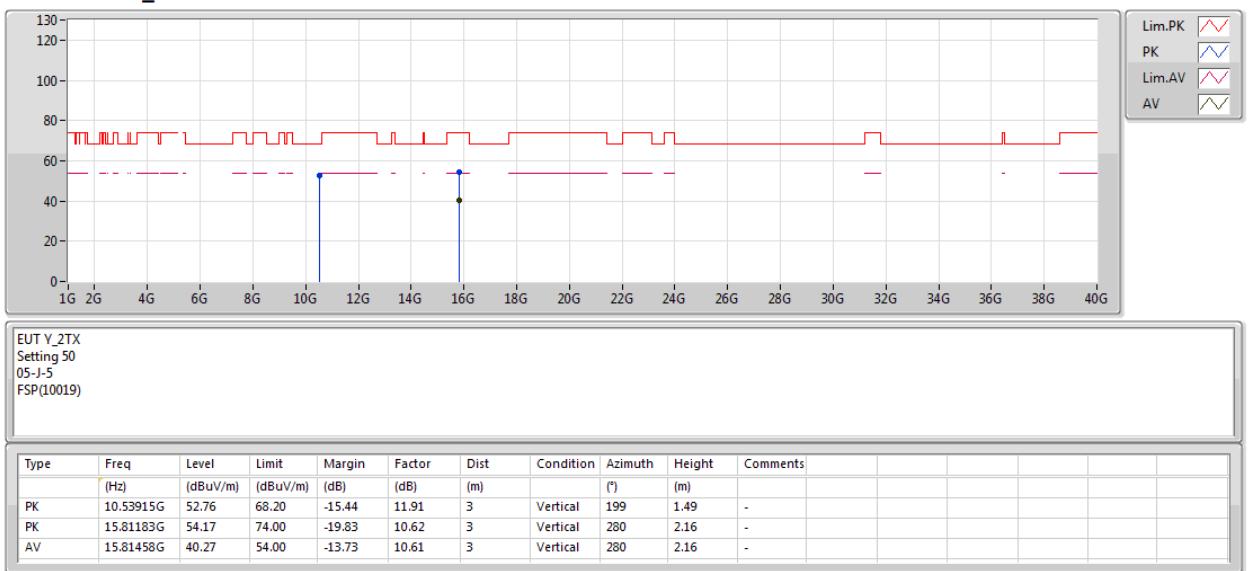
**5270MHz\_TX**




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5270MHz\_TX

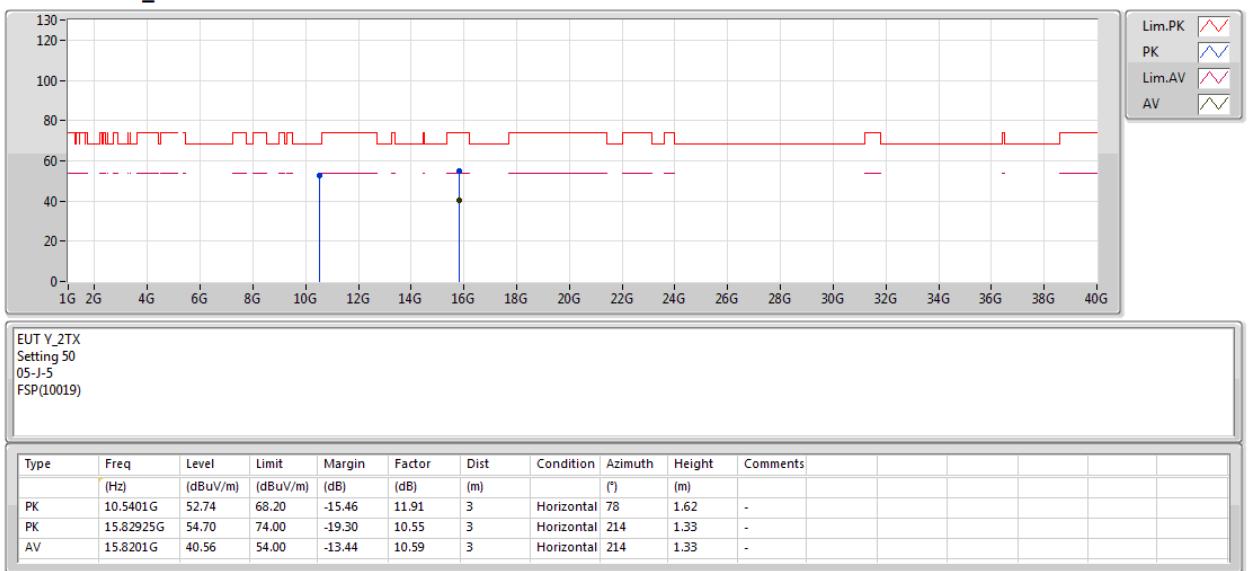




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

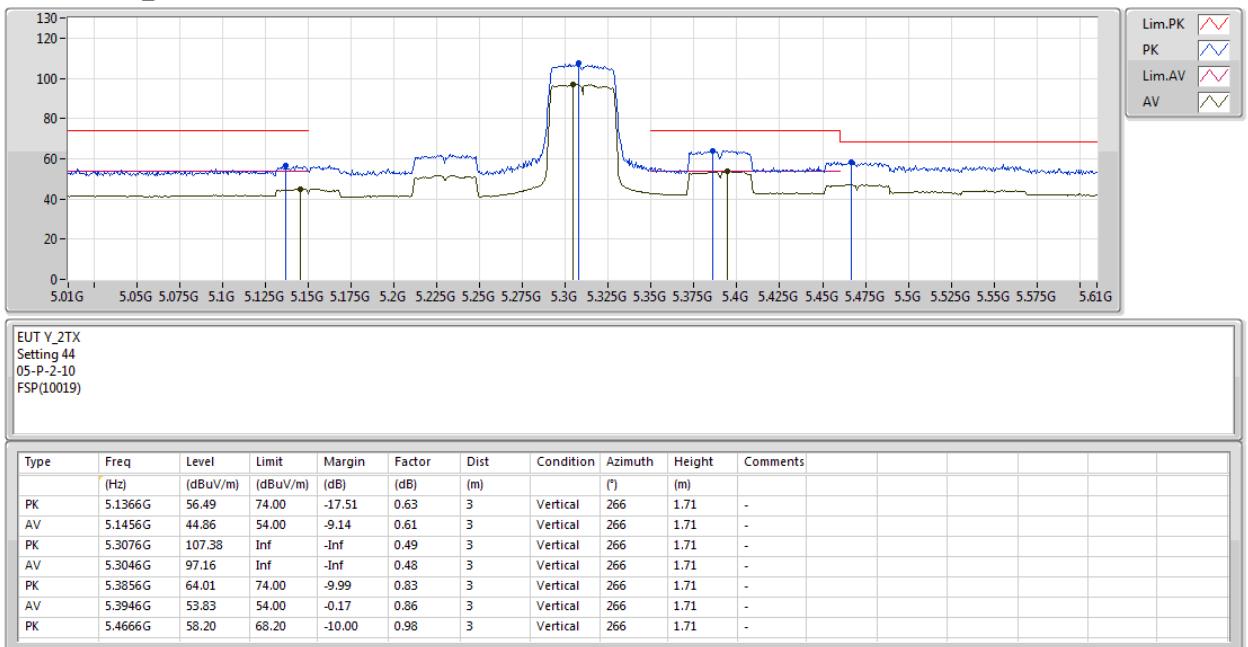
05/03/2019

## 5270MHz\_TX



**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

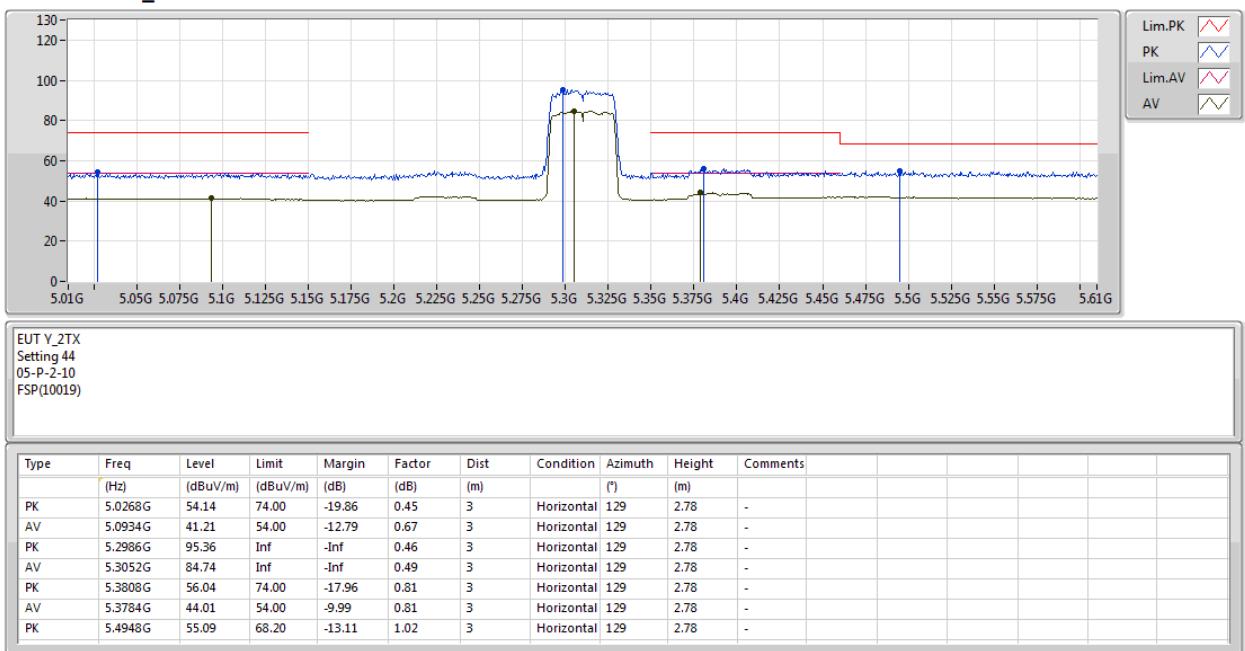
**5310MHz\_TX**




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5310MHz\_TX

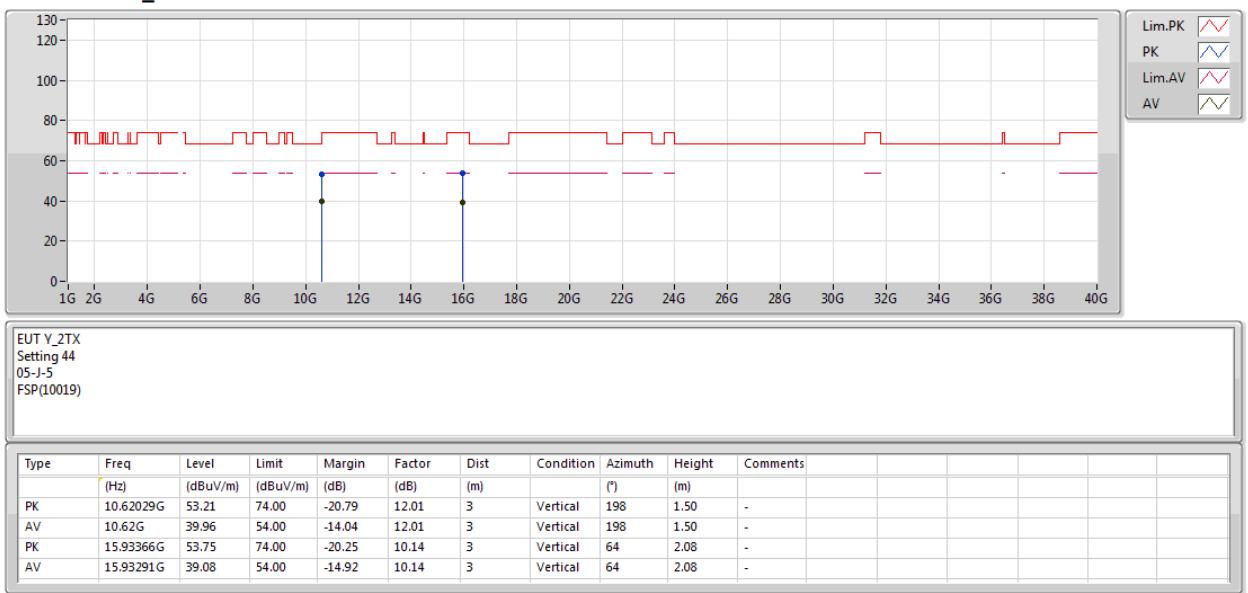




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5310MHz\_TX

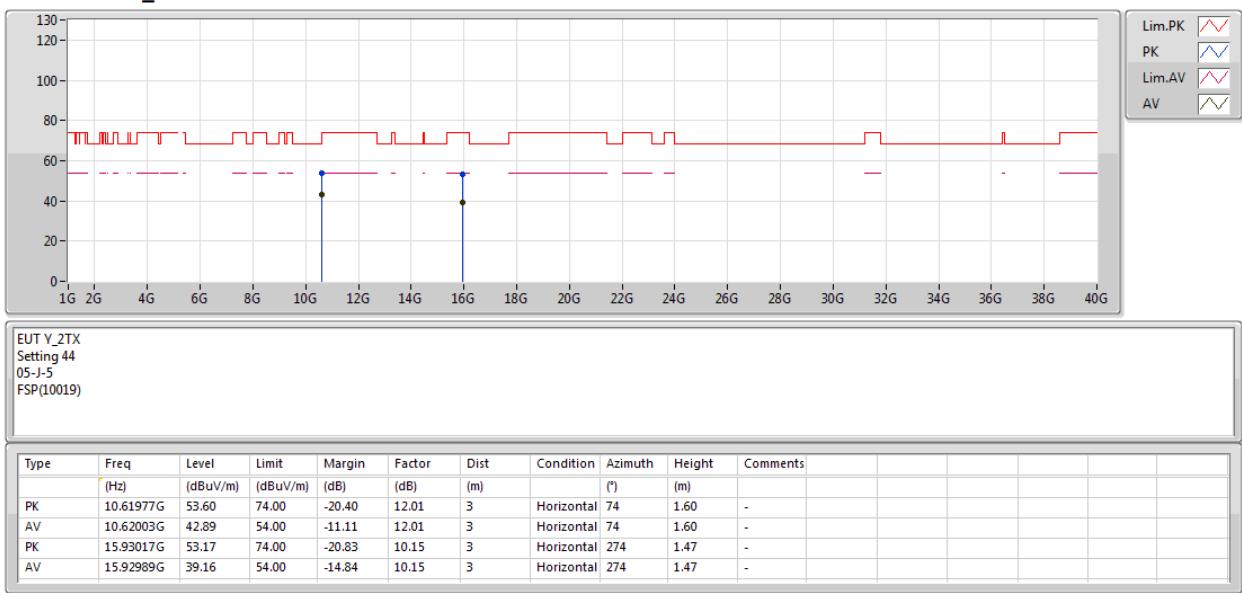




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

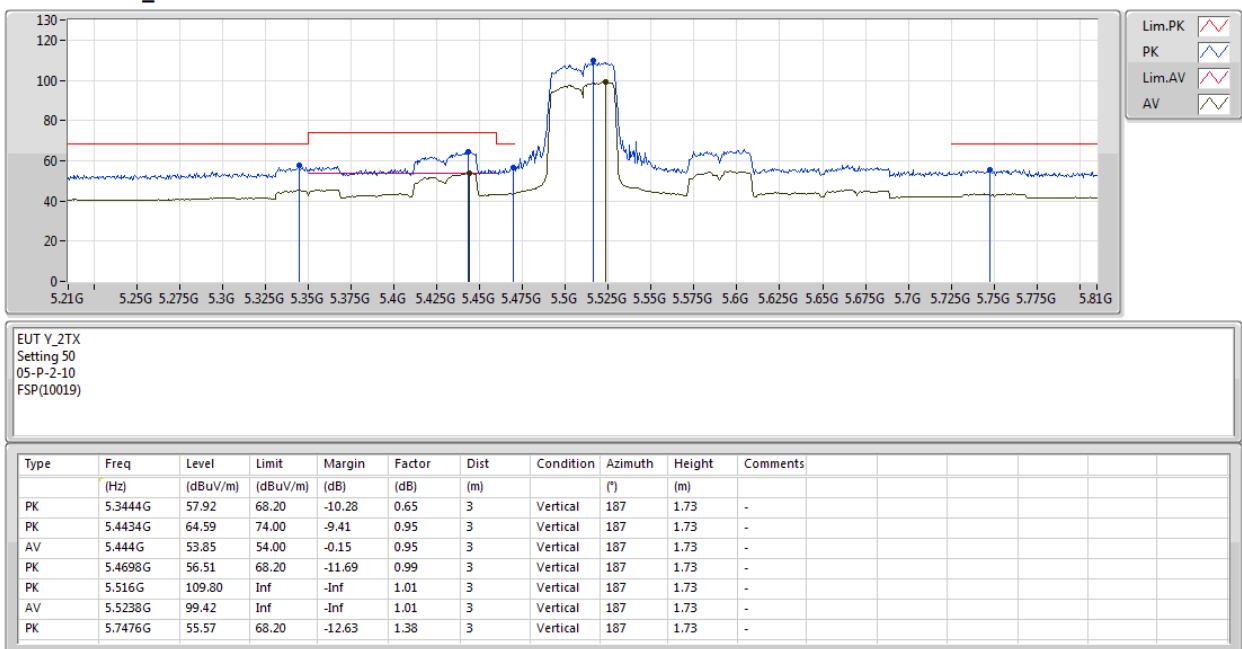
05/03/2019

## 5310MHz\_TX



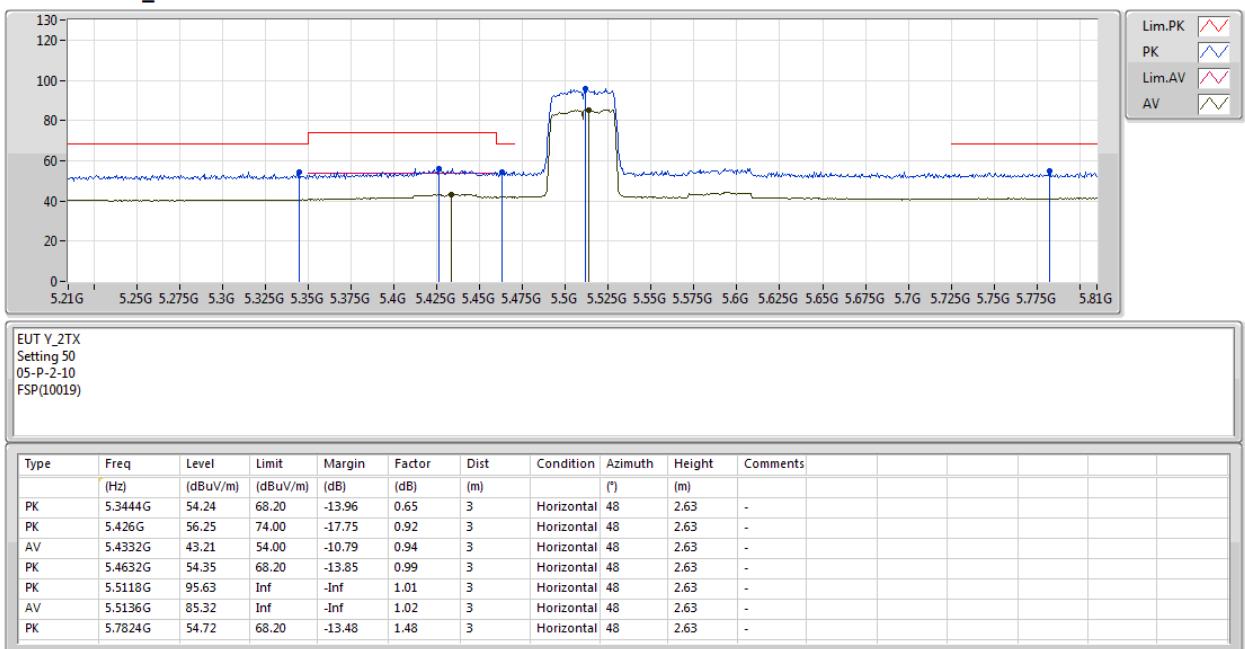
**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5510MHz\_TX**


**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

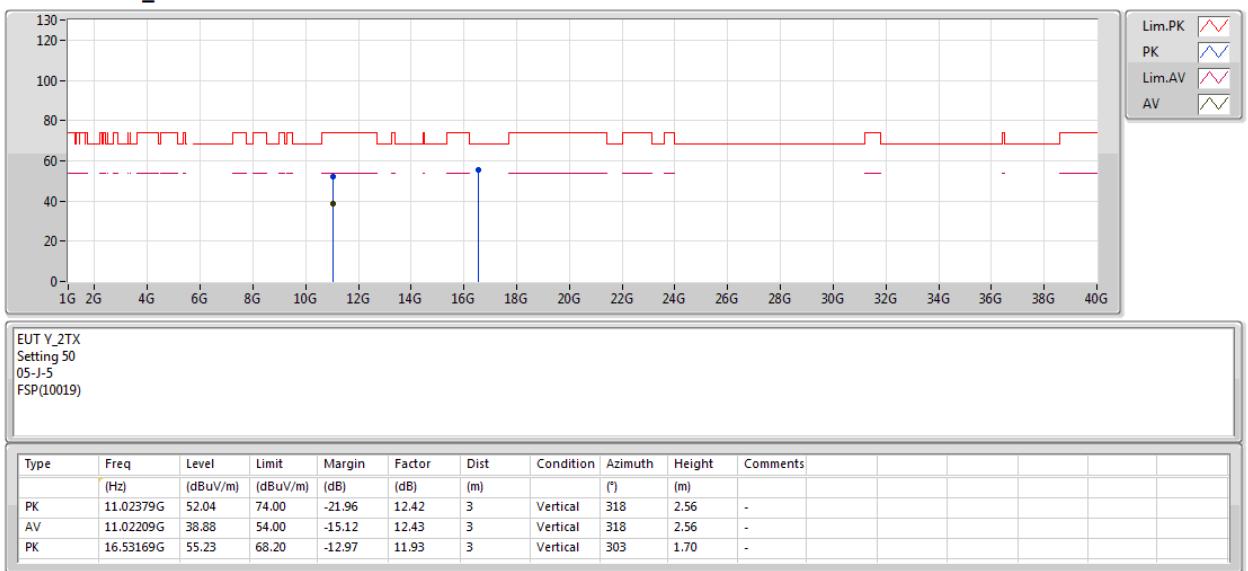
**5510MHz\_TX**




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5510MHz\_TX

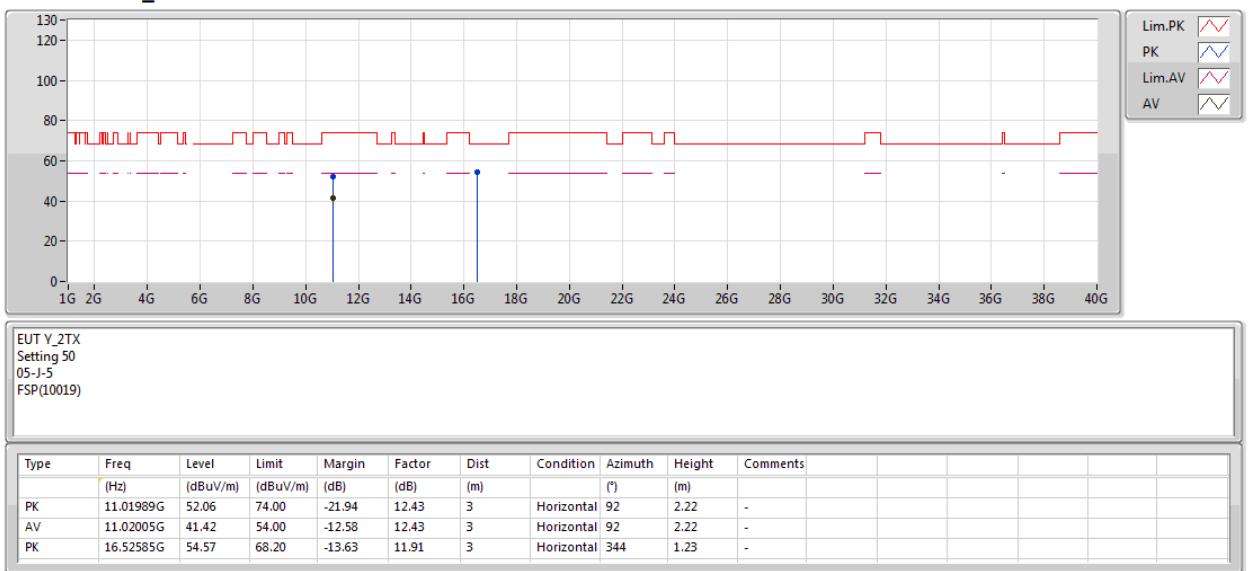




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

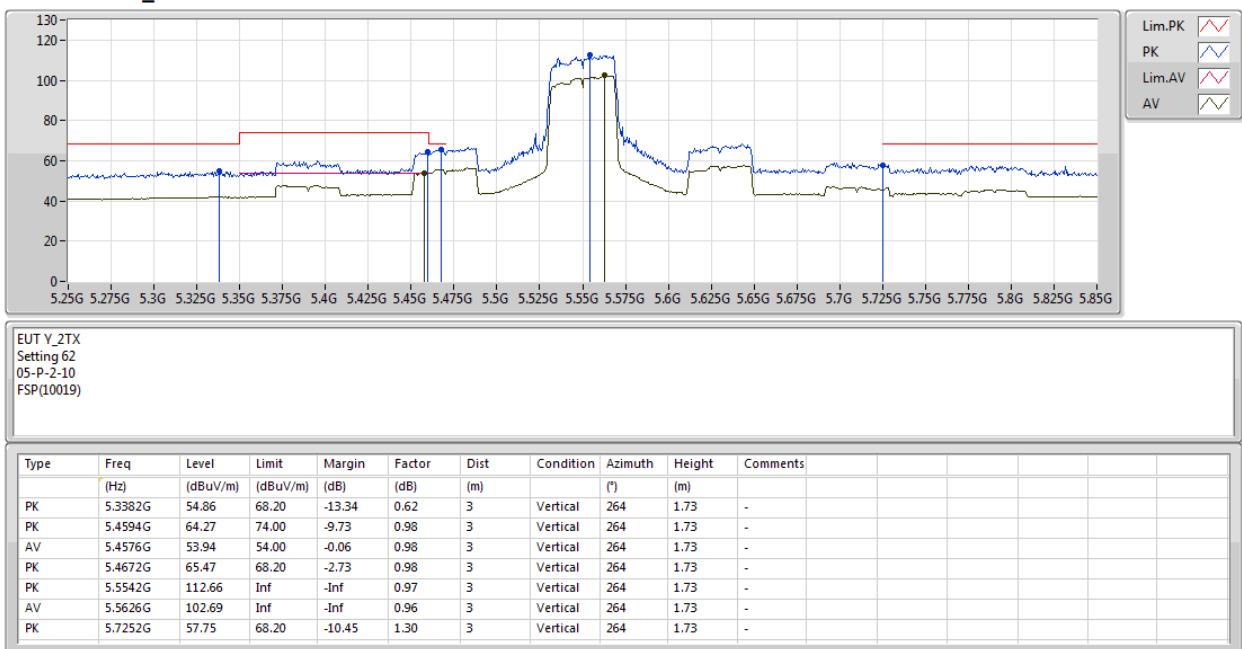
05/03/2019

## 5510MHz\_TX



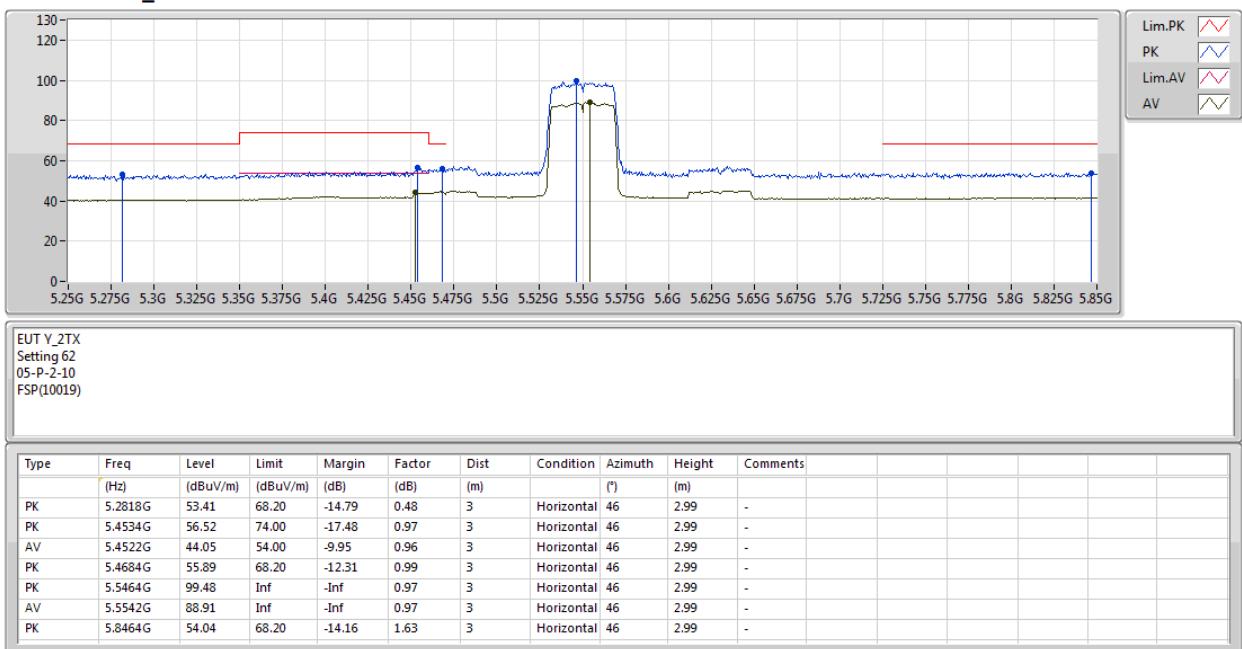
**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5550MHz\_TX**


**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

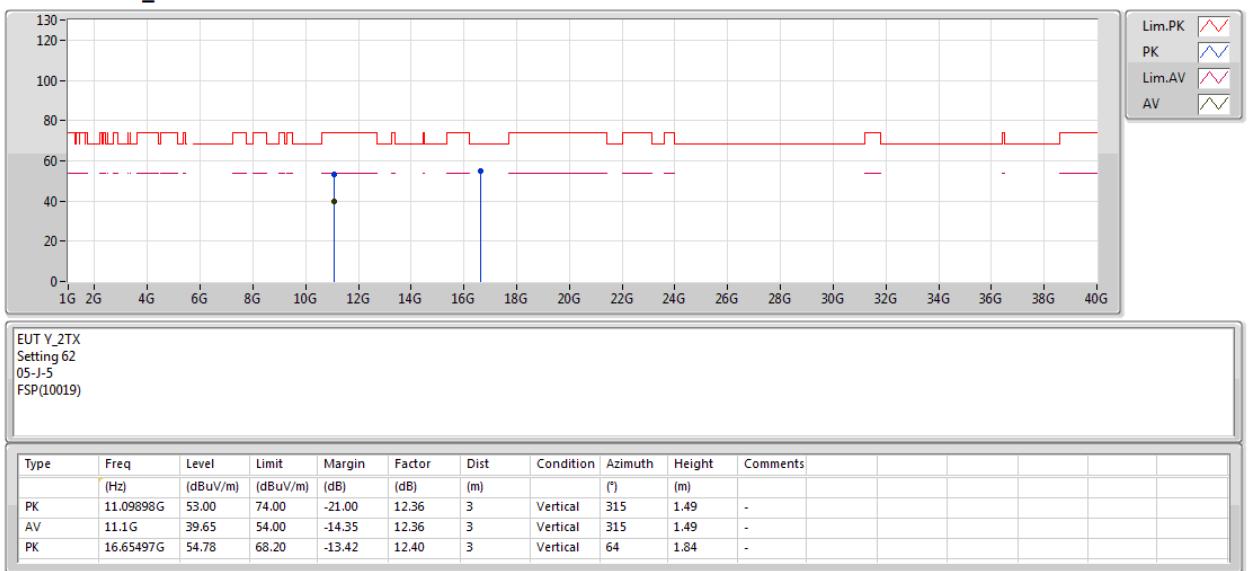
**5550MHz\_TX**




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5550MHz\_TX

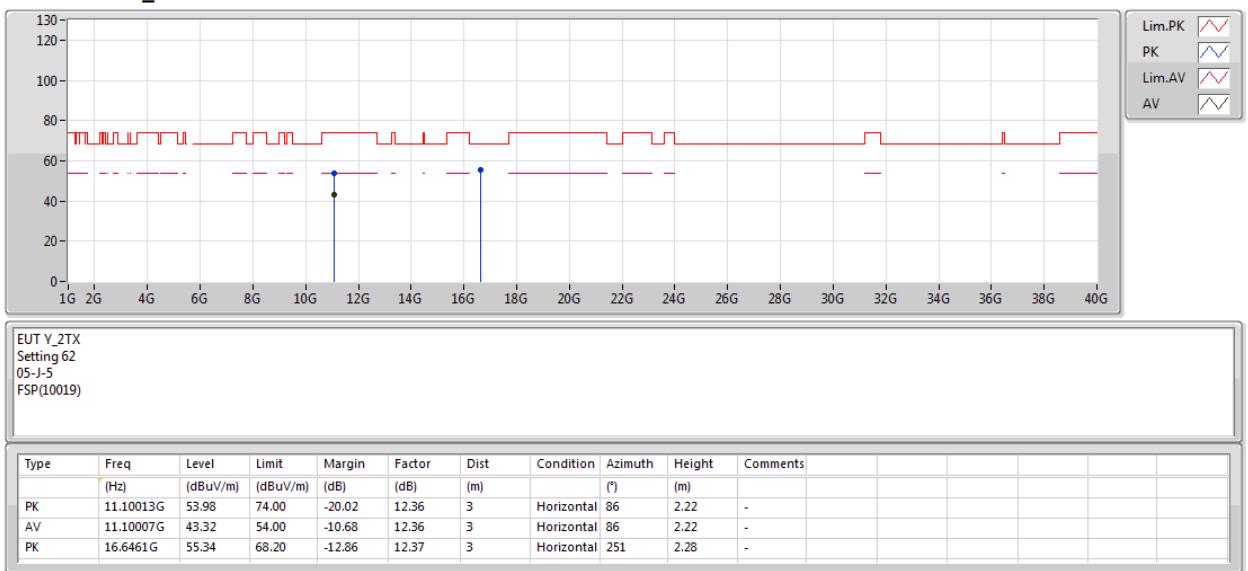




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

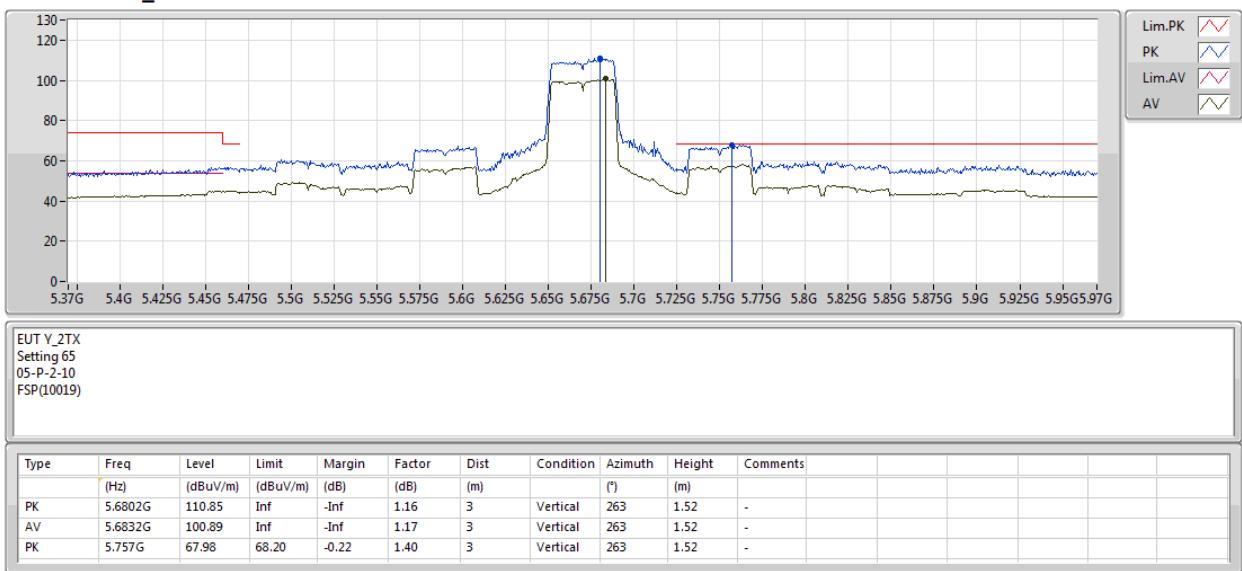
05/03/2019

## 5550MHz\_TX



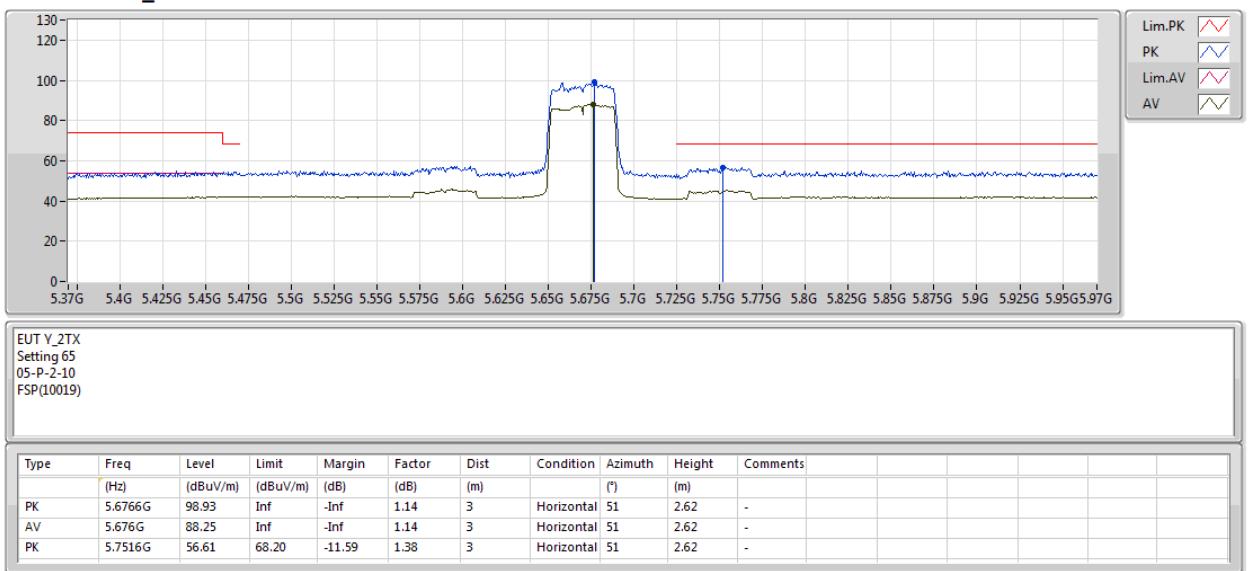
**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5670MHz\_TX**


**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

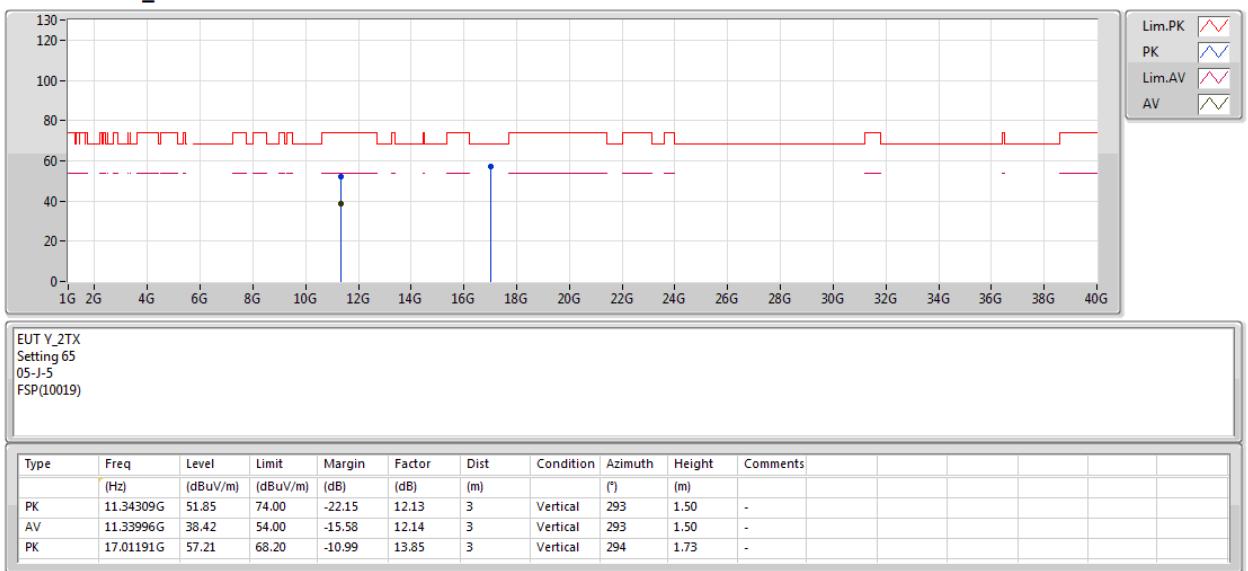
**5670MHz\_TX**




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5670MHz\_TX





## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

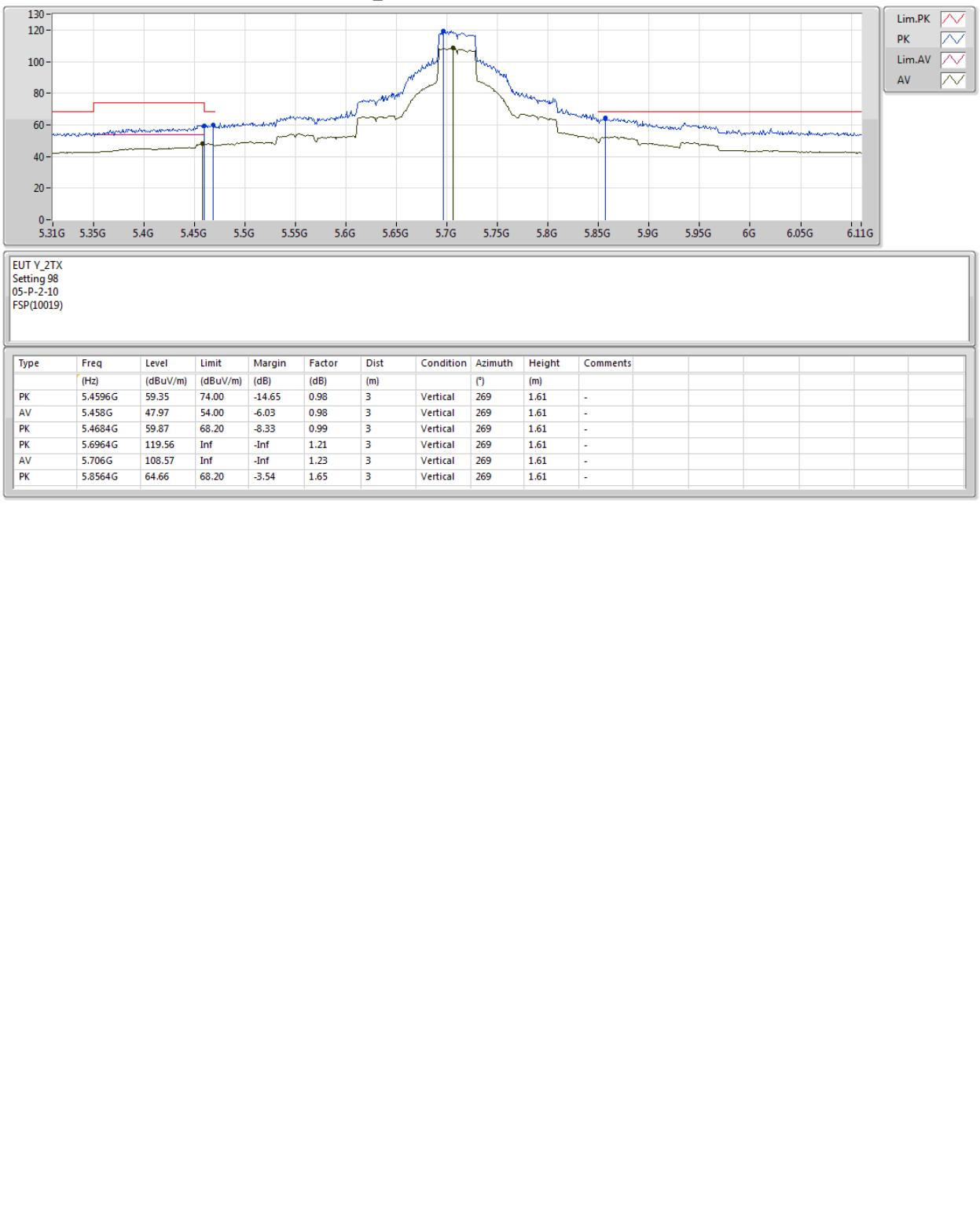
05/03/2019

## 5670MHz\_TX



**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

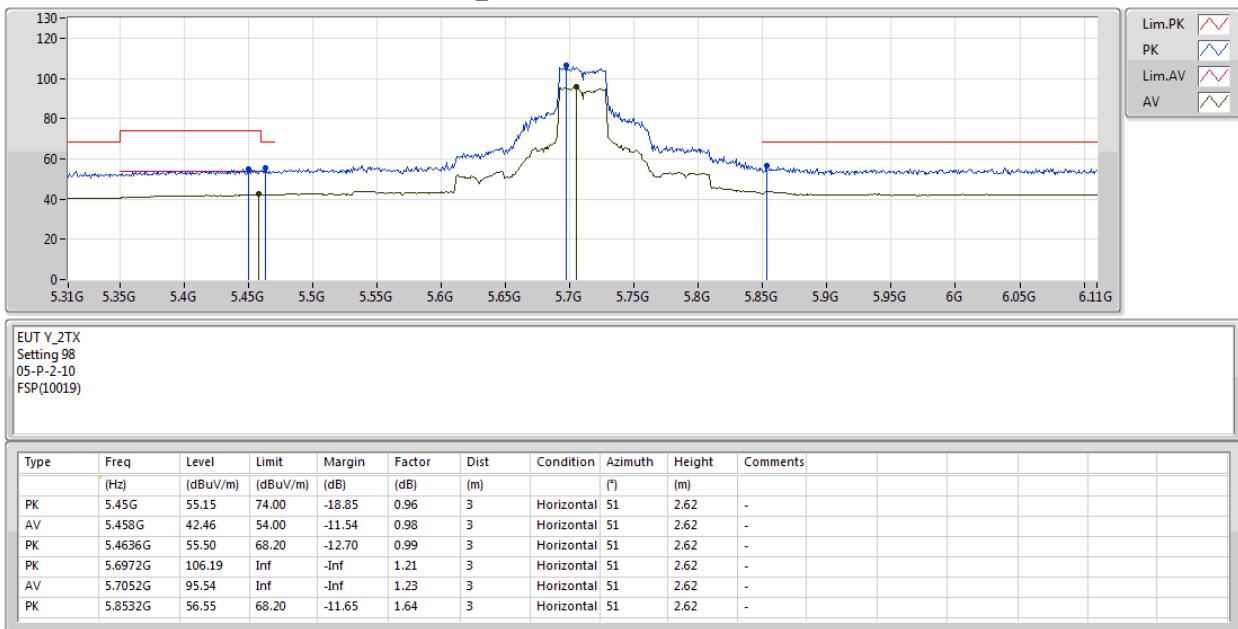
**5710MHz Straddle 5.47-5.725GHz\_TX**




## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

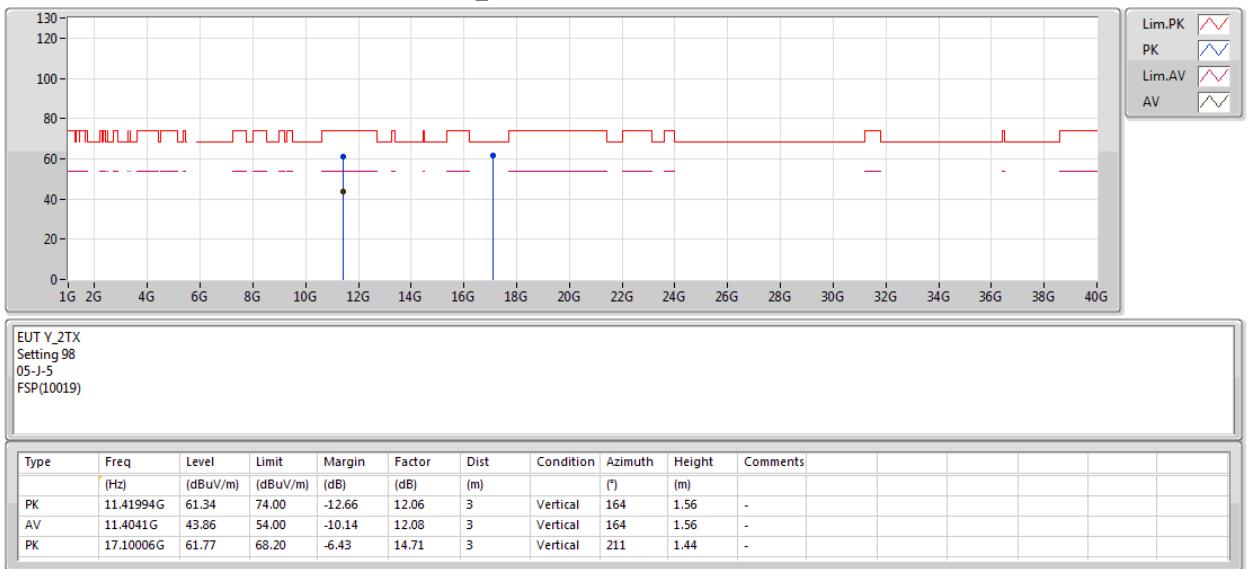
05/03/2019

## 5710MHz Straddle 5.47-5.725GHz\_TX



**802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

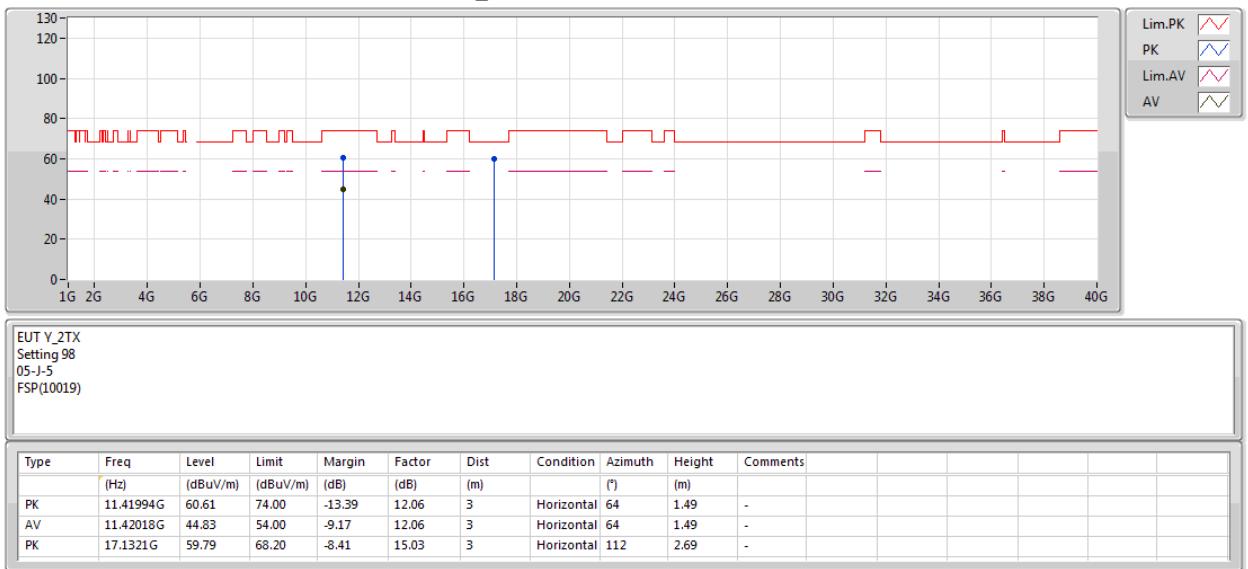
**5710MHz Straddle 5.47-5.725GHz\_TX**



## 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5710MHz Straddle 5.47-5.725GHz\_TX



**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5290MHz\_TX**




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5290MHz\_TX

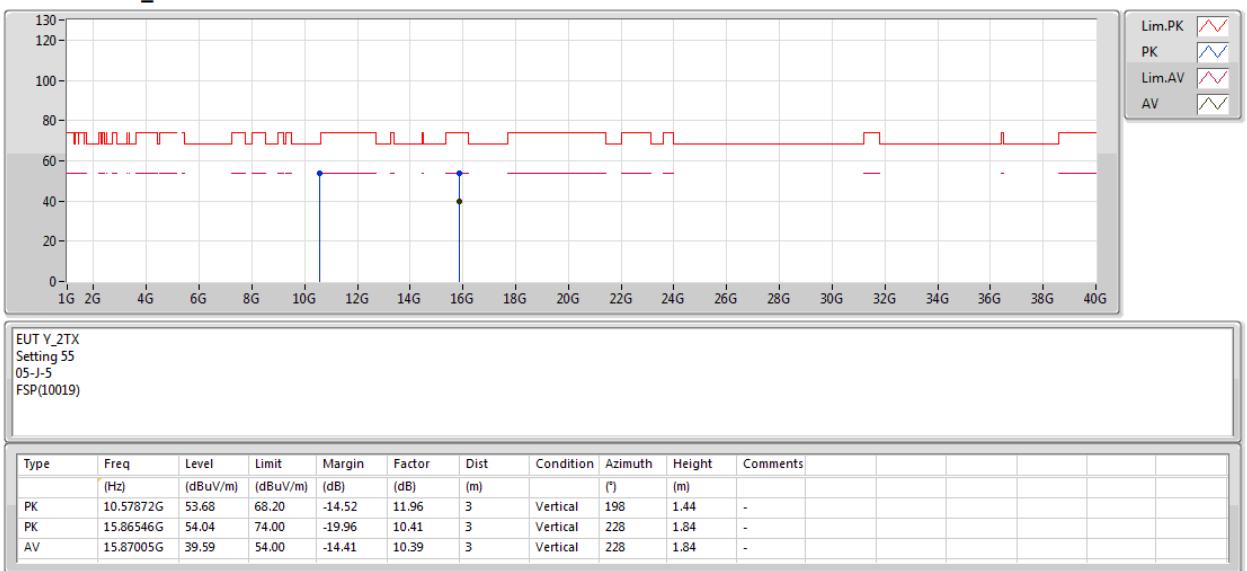




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5290MHz\_TX

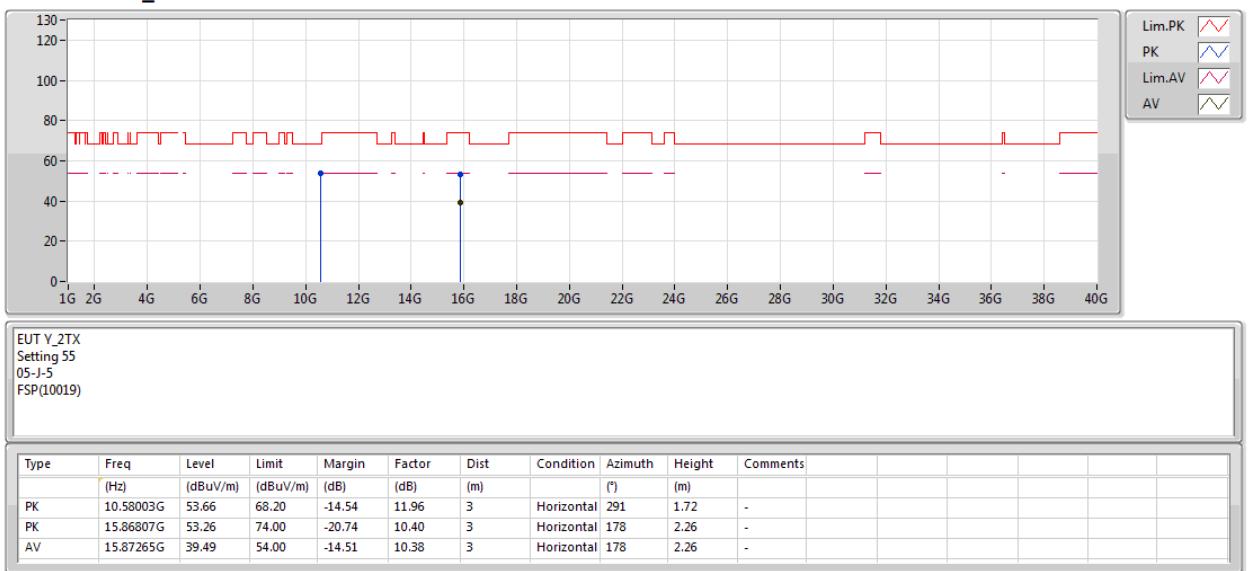




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5290MHz\_TX



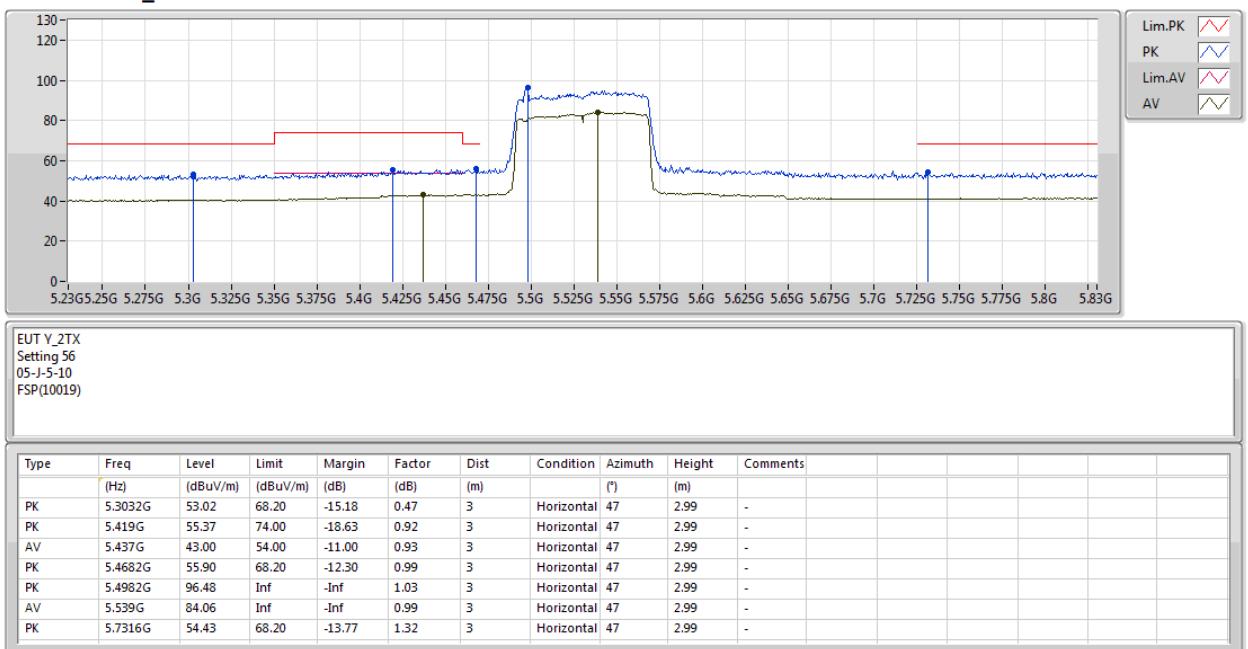
**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5530MHz\_TX**


**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

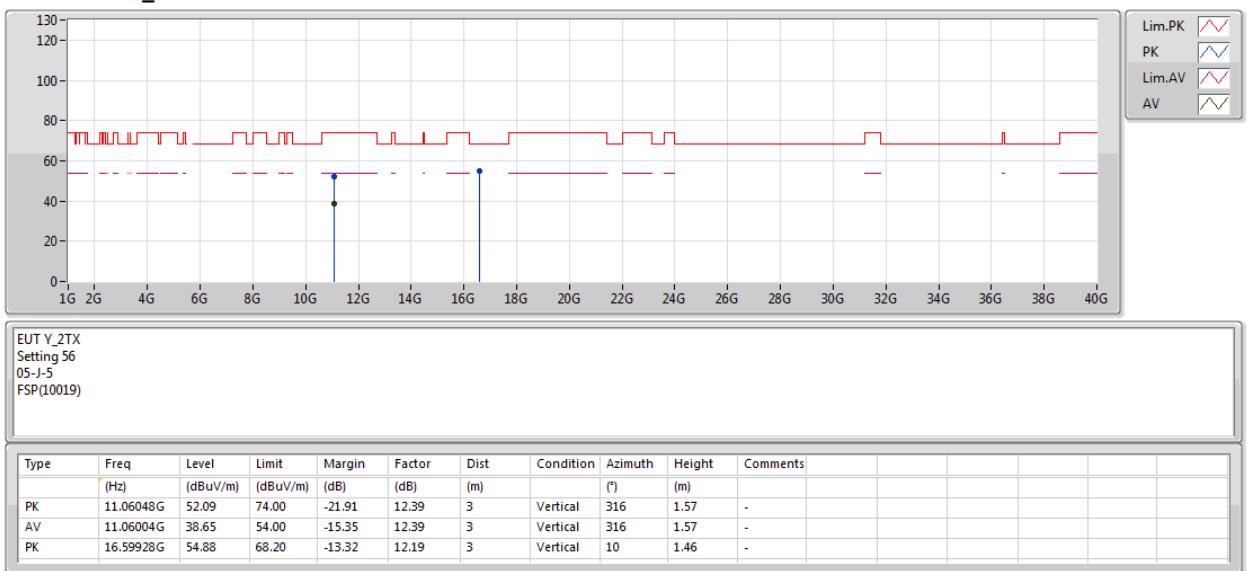
**5530MHz\_TX**




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5530MHz\_TX

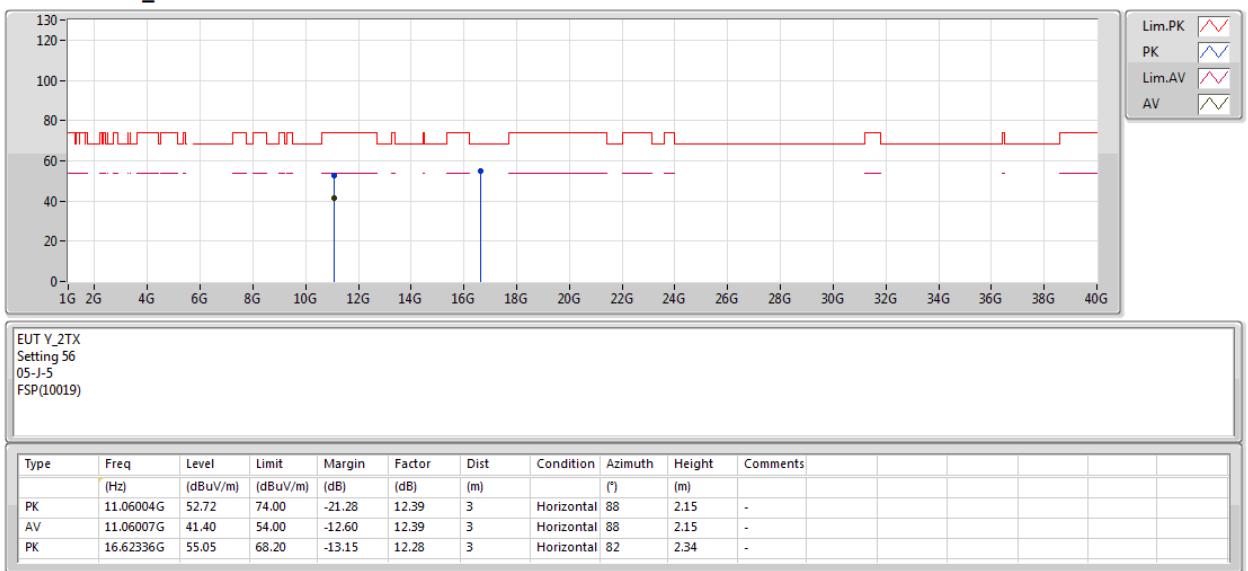




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

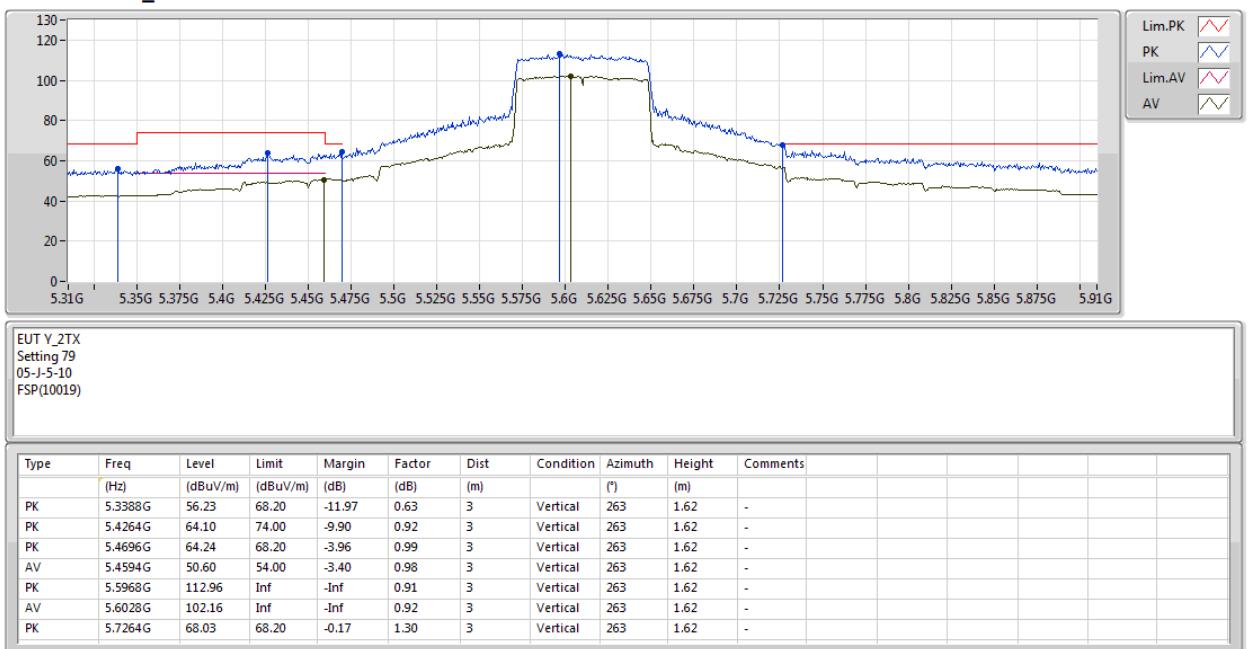
05/03/2019

## 5530MHz\_TX



**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

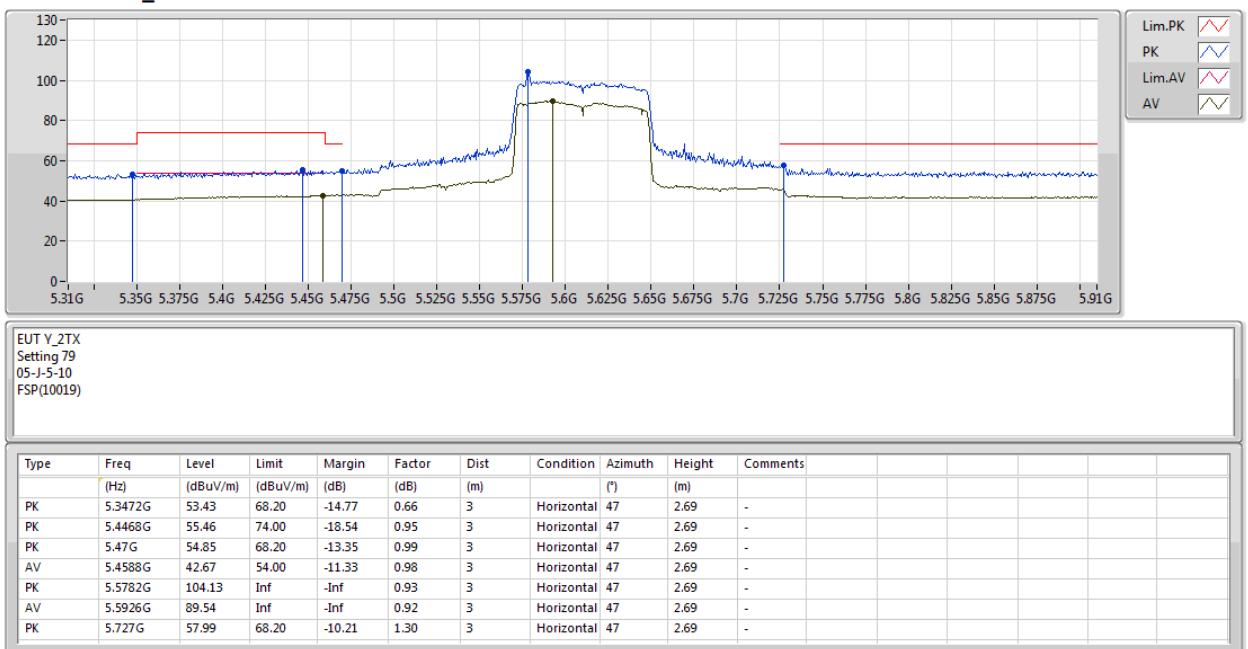
**5610MHz\_TX**




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5610MHz\_TX





## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5610MHz\_TX





## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5610MHz\_TX

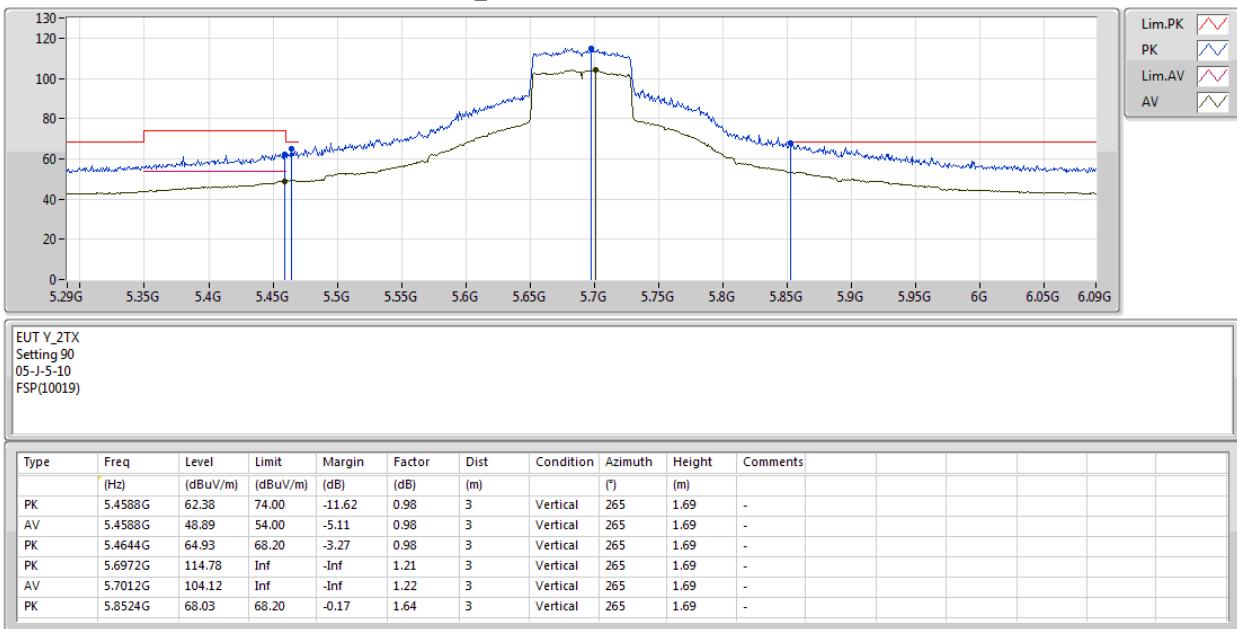




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5690MHz Straddle 5.47-5.725GHz\_TX

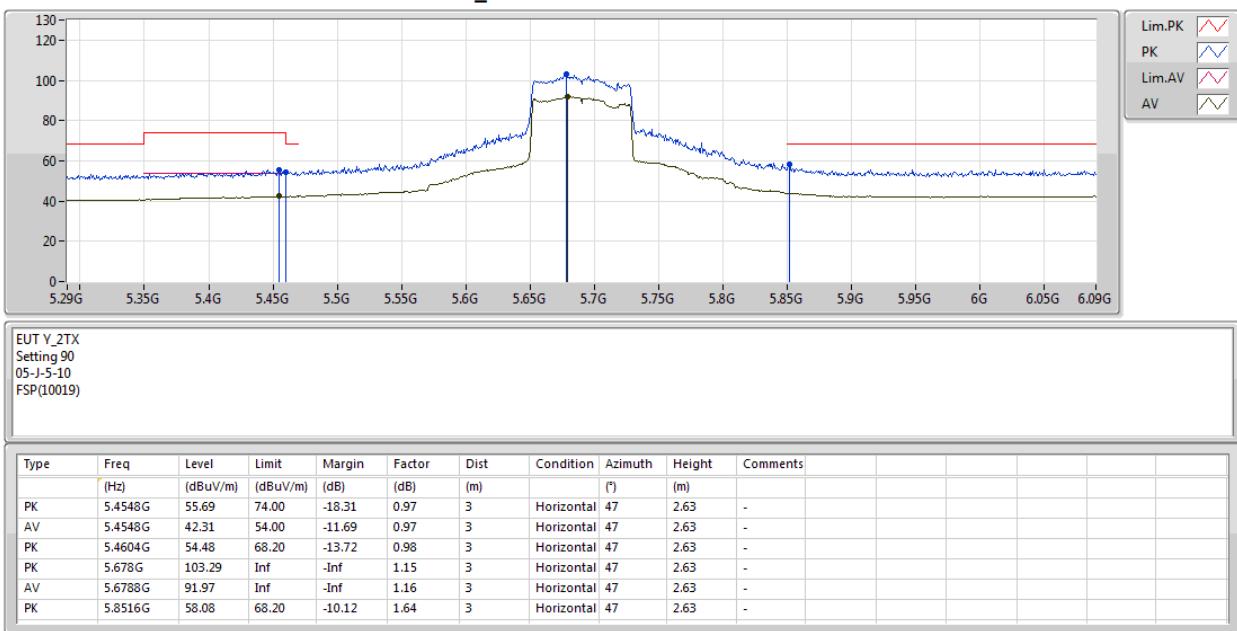




## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

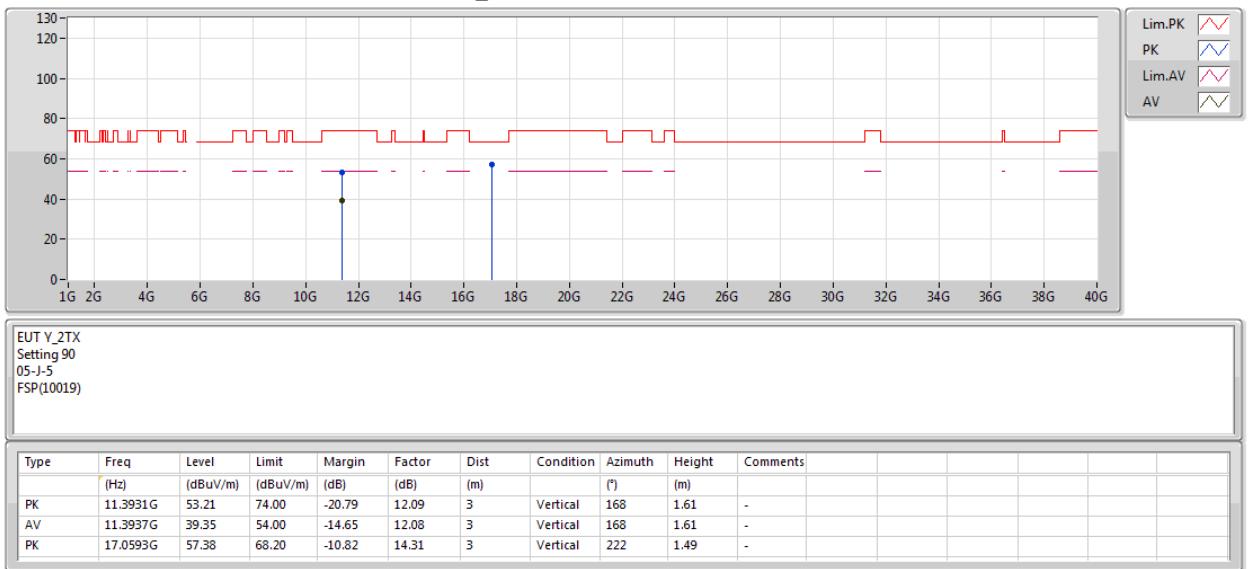
05/03/2019

## 5690MHz Straddle 5.47-5.725GHz\_TX



**802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX**

05/03/2019

**5690MHz Straddle 5.47-5.725GHz\_TX**



## 802.11ac VHT80-BF\_Nss1,(MCS0)\_2TX

05/03/2019

## 5690MHz Straddle 5.47-5.725GHz\_TX

