FCC RADIO TEST REPORT

Report No. : FR961308AB



# FCC RADIO TEST REPORT

:	TE7P9
	AC1200 + AV1000 Whole Home Powerline Mesh Wi-Fi System
	tp-link
•	Deco P9
:	TP-Link Technologies Co., Ltd.
	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Nanshan, Shenzhen,China,518057
:	TP-Link Technologies Co., Ltd.
	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Nanshan, Shenzhen,China,518057
:	47 CFR FCC Part 15.407

The product was received on Jun. 17, 2019, and testing was started from Jul. 19, 2019 and completed on Aug. 23, 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 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: Cliff Charge

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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# History of this test report

Report No.	Version	Description	Issued Date
FR961308AB	01	Initial issue of report	Sep. 09, 2019



# 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	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.407(a)	Emission Bandwidth	PASS	-
3.3	15.407(a)	Maximum Conducted Output Power	PASS	-
3.4	15.407(a)	Peak Power Spectral Density	PASS	-
3.5	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: Wendy Pan** 



# **1** General Description

# 1.1 Information

### 1.1.1 **RF General Information**

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20)	5180-5240	36-48 [4]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40)	5190-5230	38-46 [2]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80)	5210	42 [1]
5725-5850		5775	155 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	2TX
5.15-5.25GHz	802.11n HT20	20	2TX
5.15-5.25GHz	802.11n HT20-BF	20	2TX
5.15-5.25GHz	802.11ac VHT20	20	2TX
5.15-5.25GHz	802.11ac VHT20-BF	20	2TX
5.15-5.25GHz	802.11n HT40	40	2TX
5.15-5.25GHz	802.11n HT40-BF	40	2TX
5.15-5.25GHz	802.11ac VHT40	40	2TX
5.15-5.25GHz	802.11ac VHT40-BF	40	2TX
5.15-5.25GHz	802.11ac VHT80	80	2TX
5.15-5.25GHz	802.11ac VHT80-BF	80	2TX
5.725-5.85GHz	802.11a	20	2TX
5.725-5.85GHz	802.11n HT20	20	2TX
5.725-5.85GHz	802.11n HT20-BF	20	2TX
5.725-5.85GHz	802.11ac VHT20	20	2TX
5.725-5.85GHz	802.11ac VHT20-BF	20	2TX
5.725-5.85GHz	802.11n HT40	40	2TX
5.725-5.85GHz	802.11n HT40-BF	40	2TX
5.725-5.85GHz	802.11ac VHT40	40	2TX
5.725-5.85GHz	802.11ac VHT40-BF	40	2TX
5.725-5.85GHz	802.11ac VHT80	80	2TX
5.725-5.85GHz	802.11ac VHT80-BF	80	2TX

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Note:

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

## 1.1.2 Antenna Information

Ant.	Port		Brand	Model Name	Antonno Tuno	Connector	Gain	(dBi)
Ant.	2.4GHz	5GHz	Dranu		Antenna Type	Connector	2.4GHz	5GHz
1	2	1	tp-link	P9	Monopole	N/A	1.5	1
2	1	2	tp-link	P9	Monopole	N/A	1.5	1

Note: The above information was declared by manufacturer.

### For 2.4GHz function:

### For IEEE 802.11b/g/n mode (2TX/2RX):

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

Port 1 and Port 2 could transmit/receive simultaneously.

For 5GHz function:

### For IEEE 802.11a/n/ac mode (2TX/2RX):

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

Port 1 and Port 2 could transmit/receive simultaneously.



## 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.969	0.14	2.068m	1k
802.11ac VHT20	0.986	0.06	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ac VHT20-BF	0.969	0.14	1.975m	1k
802.11ac VHT40	0.975	0.11	2.44m	1k
802.11ac VHT40-BF	0.723	1.41	745u	3k
802.11ac VHT80	0.949	0.23	1.153m	1k
802.11ac VHT80-BF	0.523	2.81	342.5u	3k

Note:

- DC is Duty Cycle.
- ٠ DCF is Duty Cycle Factor. ٠

### 1.1.4 EUT Operational Condition

EUT Power Type	Inte	Internal Power Supply			
Beamforming Function 🛛 With beamforming for 802.11n/ac in 50				Without beamforming	
Function		Outdoor P2M	$\square$	Indoor P2M	
Function		Fixed P2P		Client	
Test Software Version		For Non-Beamforming Mode: QCRT Verson3.0.187.0 For Beamforming Mode: Telnet and Lan Test			

Note: The above information was declared by manufacturer.



# **1.2 Applicable 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
- FCC KDB 414788 D01 v01r01

# **1.3 Testing Location Information**

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

Test Condition	Test Site No.	Test Engineer	Test Environment	Test Date
RF Conducted	TH02-CB	Owen Hsu	24.4~26.9°C / 63~65%	Jul. 20, 2019 ~ Aug. 16, 2019
Radiated<1GHz	03CH05-CB	Stim Sung	25.4~27.3°C / 62~66%	Jul. 19, 2019 ~ Aug. 19, 2019
Radiated>1GHz	03CH06-CB	Stim Sung	24.7~26.5°C / 64~68%	Jul. 19, 2019 ~ Aug. 19, 2019
AC Conduction	CO02-CB	Peter Wu	23.5~24.7°C / 48~57%	Jul. 19, 2019 ~ Aug. 23, 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
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	5.1 dB	Confidence levels of 95%
Conducted Emission	2.4 dB	Confidence levels of 95%
Output Power Measurement	1.5 dB	Confidence levels of 95%
Power Density Measurement	2.4 dB	Confidence levels of 95%
Bandwidth Measurement	2%	Confidence levels of 95%



# 2 Test Configuration of EUT

# 2.1 Test Channel Mode

Mode	PowerSetting	
802.11a_Nss1,(6Mbps)_2TX	-	
5180MHz	22	
5200MHz	26	
5240MHz	26	
5745MHz	27.5	
5785MHz	27.5	
5825MHz	27.5	
802.11ac VHT20_Nss1,(MCS0)_2TX	-	
5180MHz	22.5	
5200MHz	26.5	
5240MHz	26.5	
5745MHz	27.5	
5785MHz	27.5	
5825MHz	27.5	
802.11ac VHT40_Nss1,(MCS0)_2TX	-	
5190MHz	20.5	
5230MHz	24	
5755MHz	27.5	
5795MHz	27.5	
802.11ac VHT80_Nss1,(MCS0)_2TX	-	
5210MHz	18.5	
5775MHz	22.5	
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-	
5180MHz	24	
5200MHz	26	
5240MHz	26	
5745MHz	26	
5785MHz	26	
5825MHz	26	
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-	
5190MHz	23	
5230MHz	26	
5755MHz	26	
5795MHz	26	
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-	
5210MHz	21	

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Mode	PowerSetting
5775MHz	26

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 for 802.11n/ac in 5GHz. One is beamforming mode, and the other is non-beamforming mode. Both modes have been tested and recorded in this test report.



# 2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item         AC power-line conducted emissions		
Condition AC power-line conducted measurement for line and neutral			
Operating Mode Normal Link			
1 EUT the PLC function with Idle mode (without data transmit)			

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		

Th	The Worst Case Mode for Following Conformance Tests			
Tests Item	Unwanted Emissions			
Test ConditionRadiated measurementIf EUT consist of multiple antenna assembly (multiple antenna are used in E regardless of spatial multiplexing MIMO configuration), the radiated test sho be performed with highest antenna gain of each antenna type.				
Operating Mode < 1GHz CTX				
1	EUT CTX – WLAN 2.4GHz			
2	EUT CTX – WLAN 5GHz			
For operating mode 2 is th	For operating mode 2 is the worst case and it was record in this test report.			
Operating Mode > 1GHz	CTX			

The Worst Case Mode for Following Conformance Tests			
Tests Item         Simultaneous Transmission Analysis - Radiated Emission Co-location			
Test Condition Radiated measurement			
Operating Mode Normal Link			
1 WLAN 2.4GHz + WLAN 5GHz			
Refer to Appendix F for Radiated Emission Co-location.			

The Worst Case Mode for Following Conformance Tests			
Tests Item         Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation			
Operating Mode			
1	1 WLAN 2.4GHz + WLAN 5GHz		
Refer to Sporton Test Report No.: FA961308 for Co-location RF Exposure Evaluation.			

Note: The EUT can only be used at Y axis.



# 2.3 EUT Operation during Test

For CTX Mode:

non-beamforming mode:

The EUT was programmed to be in continuously transmitting mode.

### beamforming mode:

During the test, the following programs under WIN 7 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 Telnet.
- 3. Executed "Lantest.exe" to link with the remote workstation to transmit and receive packet by RX Device and transmit duty cycle no less than 98%.

### For Normal Link:

During the test, the EUT operation to normal function.

# 2.4 Accessories

Accessories				
Equipment Name Brand Name Model Name Remark				
Power cable*1	I-SHENG	SP-12N+IS-033C	Non-shielded,1.5m	



# 2.5 Support Equipment

### For AC Conduction:

Support Equipment						
No.	No. Equipment Brand Name Model Name FCC ID					
А	LAN NB	DELL	E6430	N/A		
В	AP Router	ASUS	RP-N53	MSQ-RPN53		
С	2.4G NB	DELL	E6430	N/A		
D	5G NB	DELL	E6430	N/A		

### For Radiated (below 1GHz):

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

### For Radiated (above 1GHz): For Non-beamforming mode:

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

### For Beamforming mode:

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
А	Notebook	DELL	E4300	N/A	
В	WLAN AP	D-LINK	DIR860L	KA2IR860LA1	
С	RX Device	tp-link	Deco P9	TE7P9	
D	Notebook	DELL	E4300	N/A	



### For RF Conducted :

### For Non-beamforming mode:

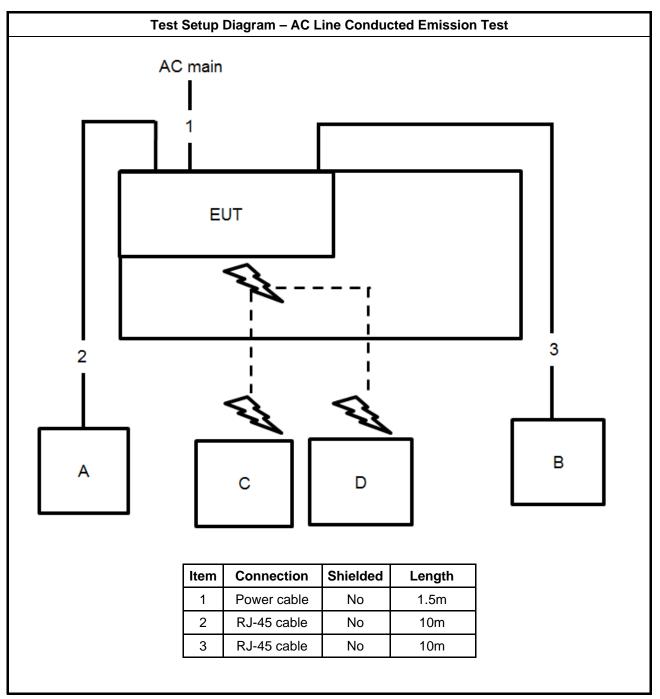
	Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID				
А	Notebook	DELL	E4300	N/A	

### For Beamforming mode:

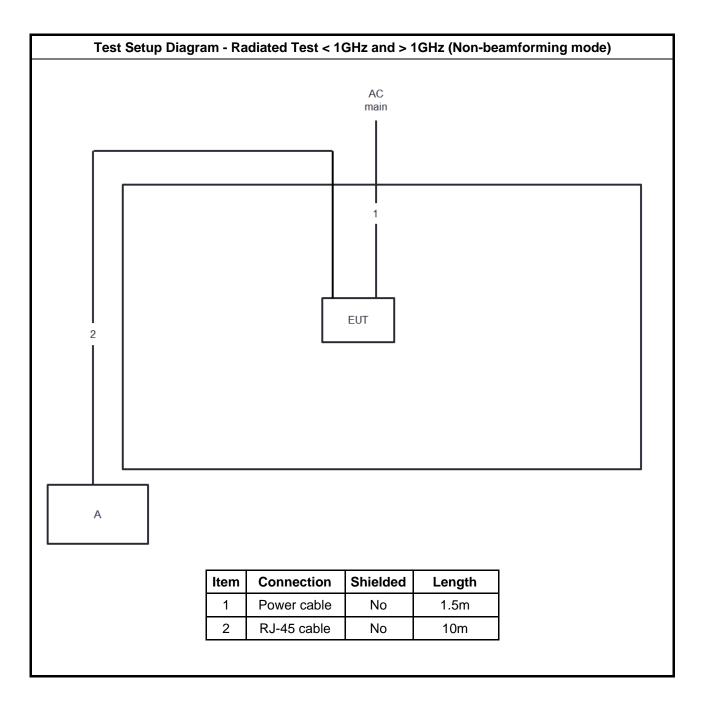
	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
А	Notebook	DELL	E4300	N/A	
В	Notebook	DELL	E4300	N/A	
С	RX Device	tp-link	Deco P9	TE7P9	
D	WLAN AP	D-LINK	DIR860L	KA2IR860LA1	



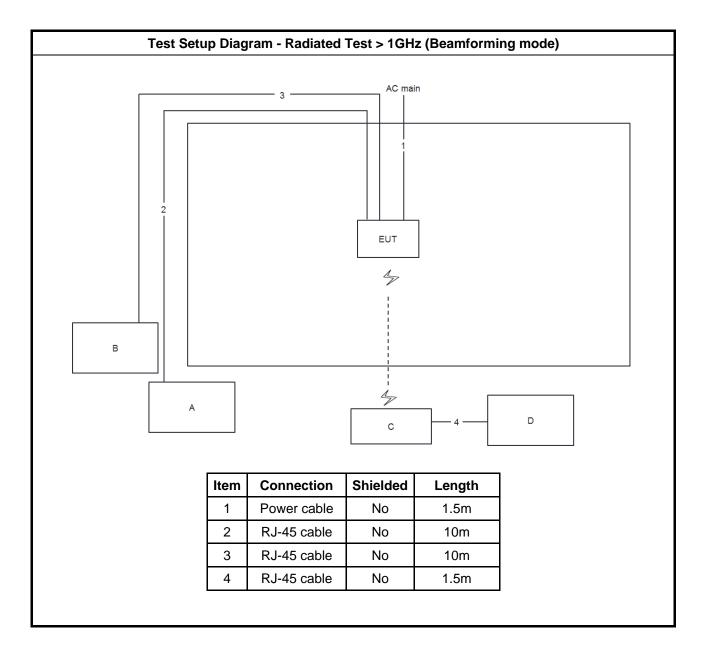
# 2.6 Test Setup Diagram













#### **Transmitter Test Result** 3

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

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

AC Power-line Conducted Emissions Limit				
Frequency Emission (MHz) Quasi-Peak Average				
0.15-0.5 66 - 56 * 56 - 46 *				
0.5-5	56	46		
5-30 60 50				
Note 1: * Decreases with the logarithm of the frequency.				

### 3.1.2 Measuring Instruments

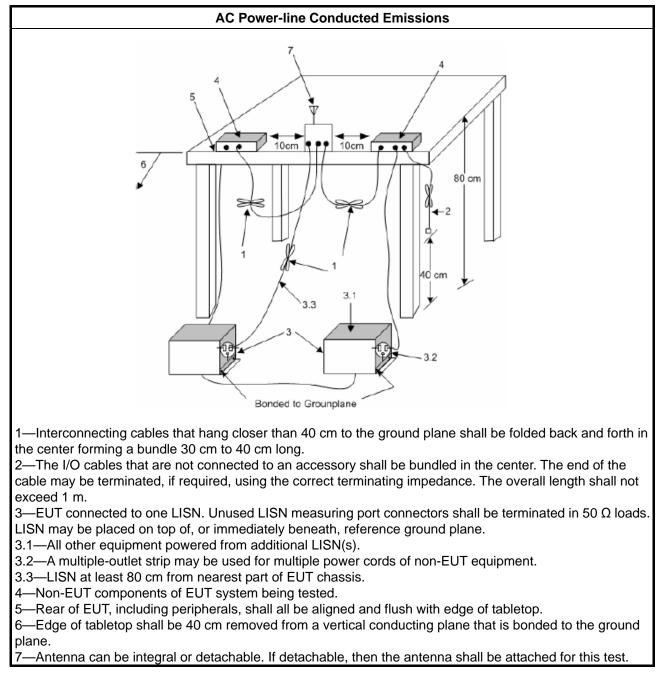
Refer a test equipment and calibration data table in this test report.

#### 3.1.3 **Test Procedures**

**Test Method** 

 $\boxtimes$ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

### 3.1.4 Test Setup



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

Refer as Appendix A



# 3.2 Emission Bandwidth

### 3.2.1 Emission Bandwidth Limit

	Emission Bandwidth Limit		
UNI	I Devices		
$\boxtimes$	For the 5.15-5.25 GHz band, N/A		
	For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.		
	For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz.		
$\boxtimes$	For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq$ 500kHz.		
LE-	LAN Devices		
	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.		
	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		
	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		
	For the 5.725-5.85 GHz band, 6 dB emission bandwidth $\geq$ 500kHz.		
	2.2.2. Measuring Instruments		

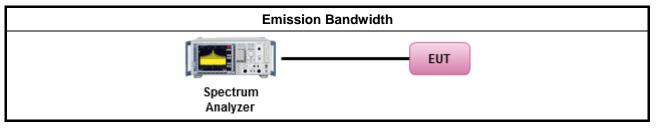
### 3.2.2 Measuring Instruments

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

### 3.2.3 Test Procedures

	Test Method		
-	For the emission bandwidth shall be measured using one of the options below:		
	$\boxtimes$	Refer as FCC KDB 789033, clause C for EBW and clause D for OBW measurement.	
	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.		
	Refer as IC RSS-Gen, clause 4.6 for bandwidth testing.		

### 3.2.4 Test Setup



### 3.2.5 Test Result of Emission Bandwidth

### Refer as Appendix B



# 3.3 Maximum Conducted Output Power

## 3.3.1 Maximum Conducted Output Power Limit

<ul> <li>&gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> <li>Indoor AP: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6)</li> <li>Point-to-point AP: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W If G<sub>TX</sub> &gt; 23 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 23).</li> <li>Mobile or Portable Client: the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.25-5.35 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.725-5.85 GHz band:</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> </ul>		Maximum Conducted Output Power Limit
<ul> <li>Outdoor AP: the maximum conducted output power (P<sub>oul</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> <li>Indoor AP: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point AP: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W If G<sub>TX</sub> &gt; 23 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 23).</li> <li>Mobile or Portable Client: the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.25-5.35 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.725 GHz band, the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 24 - (G<sub>TX</sub> - 6).</li> <li>For the 5.47-5.25 GHz band.</li> <li>Point-to-point systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): t</li></ul>	UNII	Devices
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<ul> <li>whichever power is less. B is the 99% emission bandwidth in MHz.</li> <li>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</li> <li>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</li> <li>For the 5.725-5.85 GHz band:</li> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W.</li> </ul>	LE-L	AN Devices
<ul> <li>whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>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</li> <li>For the 5.725-5.85 GHz band: <ul> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>out</sub>) shall not exceed the lesser of 1 W.</li> </ul> </li> </ul>		
<ul> <li>17 + 10 log B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz</li> <li>For the 5.725-5.85 GHz band:         <ul> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> </ul> </li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> </ul>		
<ul> <li>Point-to-multipoint systems (P2M): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> <li>Pout = maximum conducted output power in dBm,</li> </ul>		
<ul> <li>the lesser of 1 W. If G<sub>TX</sub> &gt; 6 dBi, then P<sub>Out</sub> = 30 - (G<sub>TX</sub> - 6).</li> <li>Point-to-point systems (P2P): the maximum conducted output power (P<sub>Out</sub>) shall not exceed the lesser of 1 W.</li> <li>P<sub>Out</sub> = maximum conducted output power in dBm,</li> </ul>		For the 5.725-5.85 GHz band:
lesser of 1 W.       Pout = maximum conducted output power in dBm,		
$P_{out}$ = maximum conducted output power in dBm, $G_{TX}$ = the maximum transmitting antenna directional gain in dBi.		
	P <sub>Out</sub> G <sub>TX</sub>	= maximum conducted output power in dBm, = 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		
•	Maximum Conducted Output Power		
	Average over on/off periods with duty factor		
	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).		
	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		
	Refer as FCC KDB 789033, clause E Method PM-G (using an RF average power meter).		
•	For conducted measurement.		
	<ul> <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> </ul>		
	<ul> <li>If multiple transmit chains, EIRP calculation could be following as methods: P<sub>total</sub> = P<sub>1</sub> + P<sub>2</sub> + + P<sub>n</sub> (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP<sub>total</sub> = P<sub>total</sub> + DG     </li> </ul>		

### 3.3.4 Test Setup

RF Output Power (Power Meter)		
Power Meter	EUT	

### 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



# 3.4 Peak Power Spectral Density

## 3.4.1 Peak Power Spectral Density Limit

	Peak Power Spectral Density Limit		
UNI	I Devices		
$\boxtimes$	For the 5.15-5.25 GHz band:		
	• Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .		
	• Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 6$ dBi, then $P_{Out} = 17 - (G_{TX} - 6)$ .		
	• Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX} > 23$ dBi, then $P_{Out} = 17 - (G_{TX} - 23)$ .		
	<ul> <li>Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G<sub>TX</sub> &gt; 6 dBi, then PPSD= 11 - (G<sub>TX</sub> - 6)</li> </ul>		
	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz. If G <sub>TX</sub> > 6 dBi, then PPSD= 11 – (G <sub>TX</sub> – 6).		
	For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz. If G <sub>TX</sub> > 6 dBi, then PPSD= 11 - (G <sub>TX</sub> - 6).		
$\boxtimes$	For the 5.725-5.85 GHz band:		
	• Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) $\leq$ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= 30 – ( $G_{TX} - 6$ ).		
	<ul> <li>Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.</li> </ul>		
LE-	LAN Devices		
	For the 5.15-5.25 GHz band, the e.i.r.p. peak power spectral density (PPSD) $\leq$ 10 dBm/MHz.		
	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) $\leq$ 11 dBm/MHz.		
	<ul> <li>e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:</li> <li>-13 dBW/MHz for 0° ≤ θ &lt; 8°; -13 - 0.716 (θ-8) dBW/MHz for 8° ≤ θ &lt; 40°</li> <li>-35.9 - 1.22 (θ-40) dBW/MHz for 40° ≤ θ ≤ 45°; -42 dBW/MHz for θ &gt; 45°</li> </ul>		
	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.		
	For the 5.725-5.85 GHz band:		
	• Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) $\leq$ 30 dBm/500kHz. If $G_{TX} > 6$ dBi, then PPSD= 30 - ( $G_{TX} - 6$ ).		
	<ul> <li>Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.</li> </ul>		
pow	<b>SD</b> = peak power spectral density that he same method as used to determine the conducted output rer shall be used to determine the power spectral density. And power spectral density in dBm/MHz = the maximum transmitting antenna directional gain in dBi.		



## 3.4.2 Measuring Instruments

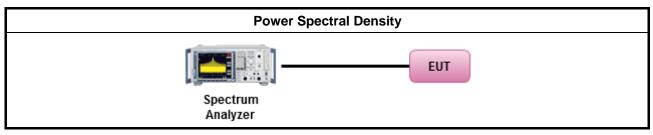
Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

	Test Method		
•	outp func	k power spectral density procedures that the same method as used to determine the conducted ut power shall be used to determine the peak power spectral density and use the peak search tion on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density I be measured using below options:	
	Refer as FCC KDB 789033, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth		
	[duty	/ cycle ≥ 98% or external video / power trigger]	
	$\square$	Refer as FCC KDB 789033, clause E Method SA-1 (spectral trace averaging).	
		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	
	$\square$	Refer as FCC KDB 789033, clause E Method SA-2 (spectral trace averaging).	
		Refer as FCC KDB 789033, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
•	For	conducted measurement.	
		If the EUT supports multiple transmit chains using options given below:	
		Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.	
		Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,	
		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.	
	•	If multiple transmit chains, EIRP PPSD calculation could be following as methods: $PPSD_{total} = PPSD_1 + PPSD_2 + + PPSD_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = PPSD_{total} + DG$	



## 3.4.4 Test Setup



### 3.4.5 Test Result of Peak Power Spectral Density

Refer as Appendix D



# 3.5 Unwanted Emissions

### 3.5.1 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		
🔀 5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
🔲 5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
🗌 5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]		
⊠ 5.725 - 5.85 GHz	all emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.		
Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of			



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

#### 3.5.2 **Measuring Instruments**

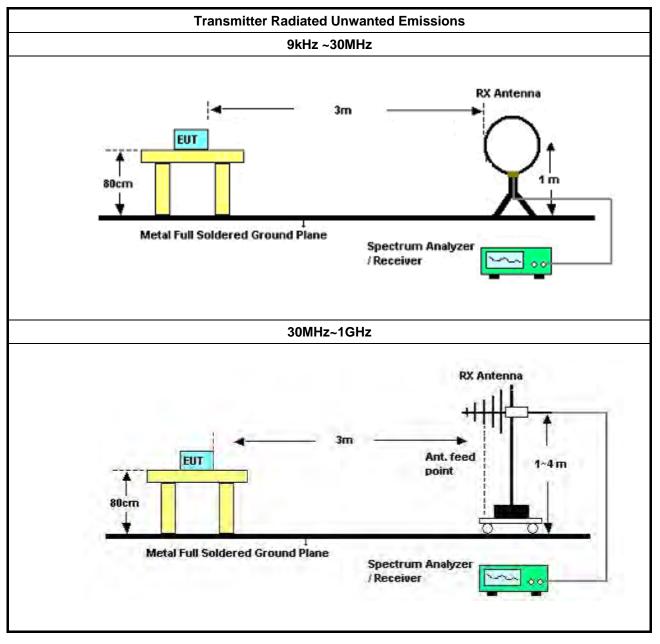
Refer a test equipment and calibration data table in this test report.

#### 3.5.3 **Test Procedures**

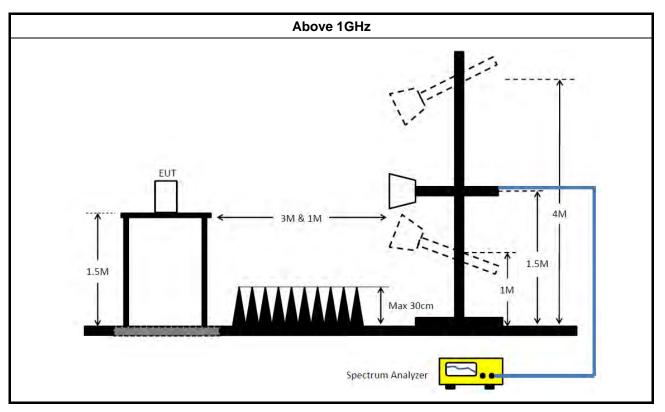
		Test Method										
•	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).											
•	The	average emission levels shall be measured in [duty cycle $\geq$ 98 or duty factor].										
•	For	the transmitter unwanted emissions shall be measured using following options below:										
	•	Refer as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.										
	•	Refer as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.										
		Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).										
		Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).										
		Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.										
		Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.										
		Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.										
		Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.										
•	For	radiated measurement.										
	•	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.										
	•	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.										
	•	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.										
•	The	any unwanted emissions level shall not exceed the fundamental emission level.										
•		amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value no need to be reported.										



## 3.5.4 Test Setup







### 3.5.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

### 3.5.6 Transmitter Unwanted Emissions (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

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

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

### 3.5.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E



#### **Test Equipment and Calibration Data** 4

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Nov. 21, 2018	Nov. 20, 2019	Conduction (CO02-CB
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 05, 2018	Nov. 04, 2019	Conduction (CO02-CB
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	Jan. 16, 2019	Jan. 15, 2020	Conduction (CO02-CB
COND Cable	Woken	Cable	2	0.15MHz ~ 30MHz	Nov. 06, 2018	Nov. 05, 2019	Conduction (CO02-CB)
Software	Audix	E3	6.120210n	-	N.C.R.	N.C.R.	Conduction (CO02-CB)
Bilog Antenna with 6dB Attenuator	TESE & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 28, 2019	Mar. 27, 2020	Radiation (03CH05-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Mar. 29, 2019	Mar. 28, 2020	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 02, 2019	May 01, 2020	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	Jan. 31, 2019	Jan. 30, 2020	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 15, 2019	May 14, 2020	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	LOW Cable-04+23	30MHz~1GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBE CK	BBHA9120D	9120D-1292	1GHz~18GHz	Jul. 17, 2019	Jul. 16, 2020	Radiation (03CH06-CB)
Horn Antenna	SCHWARZBE CK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 12, 2019	Jun. 11, 2020	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	83017A	MY53270064	0.5GHz ~ 26.5GHz	May 08, 2019	May 07, 2020	Radiation (03CH06-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 03, 2019	Jul. 02, 2020	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Oct. 03, 2018	Oct. 02, 2019	Radiation (03CH06-CB)
RF Cable-high	HUBER+SUH NER	RG402	High Cable-05	1GHz~18GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH06-CB)
RF Cable-high	HUBER+SUH NER	RG402	High Cable-05+24	1GHz~18GHz	Oct. 08, 2018	Oct. 07, 2019	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 27, 2018	Jul. 26, 2019	Radiation (03CH06-CB)

Report Version : 01

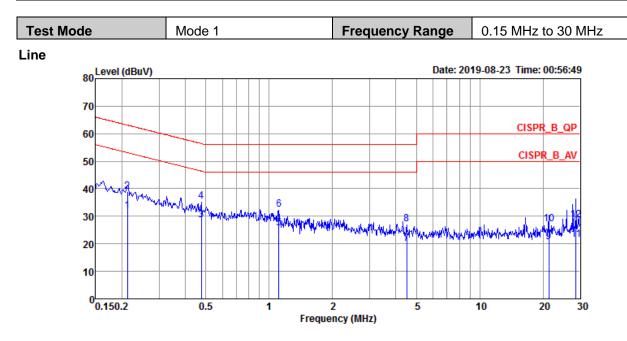


Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 24, 2019	Jul. 23, 2020	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSV40	101027	9kHz~40GHz	Jul. 02, 2019	Jul. 01, 2020	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Sep. 03, 2018	Sep. 02, 2019	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Sep. 03, 2018	Sep. 02, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-3	1 GHz – 26.5 GHz	Oct. 24, 2018	Oct. 23, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 26.5 GHz	Oct. 08, 2018	Oct. 07, 2019	Conducted (TH02-CB)

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

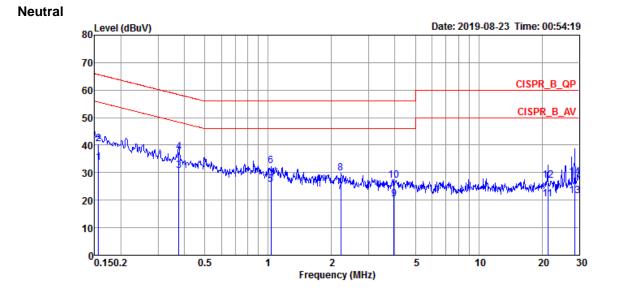
N.C.R. means Non-Calibration required.





	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.2128	32.03	-21.07	53.10	21.86	10.15	0.02	Average	LINE
2	0.2128	38.89	-24.21	63.10	28.72	10.15	0.02	QP	LINE
3	0.4761	28.61	-17.80	46.41	18.43	10.16	0.02	Average	LINE
4	0.4761	35.36	-21.05	56.41	25.18	10.16	0.02	QP	LINE
5	1.1114	25.63	-20.37	46.00	15.44	10.17	0.02	Average	LINE
6	1.1114	32.43	-23.57	56.00	22.24	10.17	0.02	QP	LINE
7	4.5015	20.20	-25.80	46.00	9.90	10.23	0.07	Average	LINE
8	4.5015	27.07	-28.93	56.00	16.77	10.23	0.07	QP	LINE
9	21.2596	20.53	-29.47	50.00	9.98	10.41	0.14	Average	LINE
10	21.2596	27.15	-32.85	60.00	16.60	10.41	0.14	QP	LINE
11	28.6030	21.65	-28.35	50.00	10.92	10.50	0.23	Average	LINE
12	28.6030	28.51	-31.49	60.00	17.78	10.50	0.23	QP	LINE





	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB	dB		
1	0.1565		-22.06	55.65	23.44	10.13		Average	NEUTRAL
2	0.1565		-25.33	65.65	30.17	10.13	0.02	-	NEUTRAL
3	0.3771	30.60	-17.74	48.34	20.44	10.14	0.02	Average	NEUTRAL
4	0.3771	37.44	-20.90	58.34	27.28	10.14	0.02	QP	NEUTRAL
5	1.0320	25.63	-20.37	46.00	15.47	10.14	0.02	Average	NEUTRAL
6	1.0320	32.41	-23.59	56.00	22.25	10.14	0.02	QP	NEUTRAL
7	2.2132	23.16	-22.84	46.00	12.95	10.16	0.05	Average	NEUTRAL
8	2.2132	29.78	-26.22	56.00	19.57	10.16	0.05	QP	NEUTRAL
9	3.9639	20.31	-25.69	46.00	10.06	10.18	0.07	Average	NEUTRAL
10	3.9639	27.10	-28.90	56.00	16.85	10.18	0.07	QP	NEUTRAL
11	21.2596	20.45	-29.55	50.00	9.95	10.36	0.14	Average	NEUTRAL
12	21.2596	27.21	-32.79	60.00	16.71	10.36	0.14	QP	NEUTRAL
13	28.6030	21.67	-28.33	50.00	11.00	10.44	0.23	Average	NEUTRAL
14	28.6030	28.30	-31.70	60.00	17.63	10.44	0.23		NEUTRAL



### Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
5.15-5.25GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	36.9M	17.891M	17M9D1D	18.925M	16.392M
802.11ac VHT20_Nss1,(MCS0)_2TX	39.025M	19.565M	19M6D1D	19.925M	17.616M
802.11ac VHT40_Nss1,(MCS0)_2TX	47.15M	36.082M	36M1D1D	39.85M	35.982M
802.11ac VHT80_Nss1,(MCS0)_2TX	83.5M	75.862M	75M9D1D	83.3M	75.862M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	16.35M	26.062M	26M1D1D	16.275M	22.464M
802.11ac VHT20_Nss1,(MCS0)_2TX	17.625M	24.638M	24M6D1D	15.675M	19.965M
802.11ac VHT40_Nss1,(MCS0)_2TX	34.95M	53.123M	53M1D1D	34.2M	42.029M
802.11ac VHT80_Nss1,(MCS0)_2TX	75.5M	76.062M	76M1D1D	75.4M	75.662M

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

Max-OBW = Maximum99% 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;

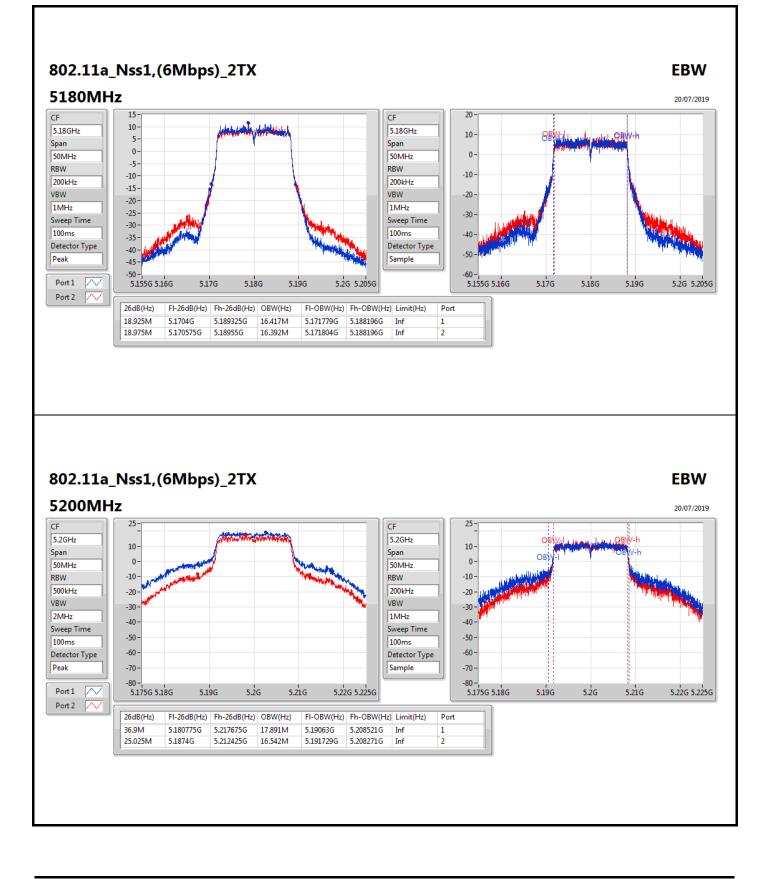


### Result

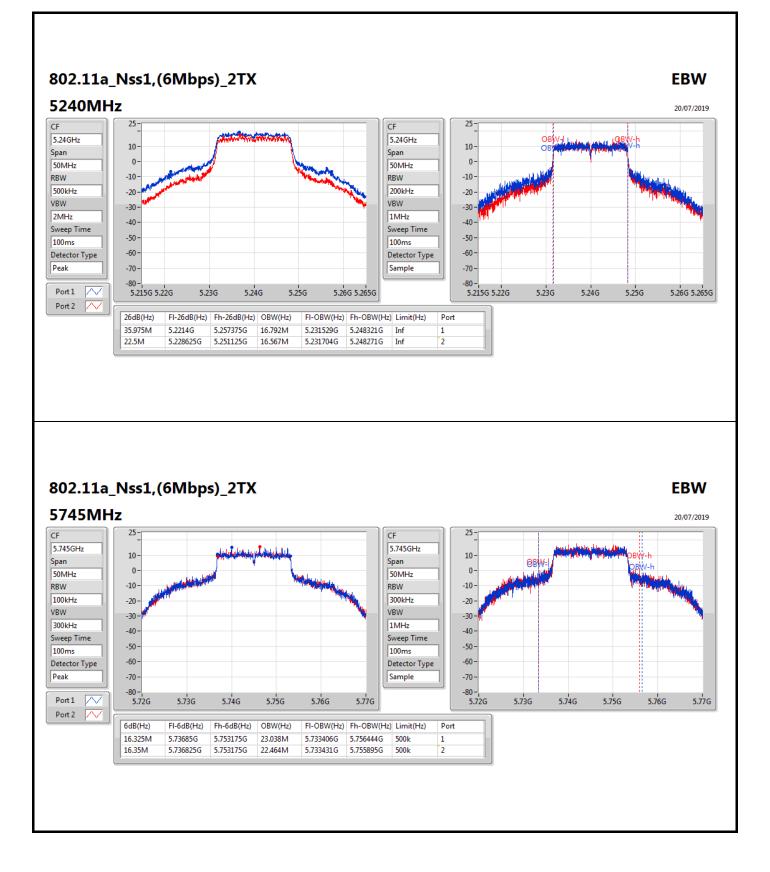
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	18.925M	16.417M	18.975M	16.392M
5200MHz	Pass	Inf	36.9M	17.891M	25.025M	16.542M
5240MHz	Pass	Inf	35.975M	16.792M	22.5M	16.567M
5745MHz	Pass	500k	16.325M	23.038M	16.35M	22.464M
5785MHz	Pass	500k	16.325M	26.062M	16.275M	25.712M
5825MHz	Pass	500k	16.3M	24.713M	16.3M	25.712M
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	19.925M	17.616M	20M	17.641M
5200MHz	Pass	Inf	39.025M	19.565M	30.5M	17.791M
5240MHz	Pass	Inf	37.4M	18.491M	31.425M	17.816M
5745MHz	Pass	500k	15.925M	19.965M	17.575M	21.014M
5785MHz	Pass	500k	17.55M	24.638M	17.55M	24.138M
5825MHz	Pass	500k	17.625M	23.513M	15.675M	24.238M
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	Inf	39.9M	35.982M	40.15M	35.982M
5230MHz	Pass	Inf	47.15M	35.982M	39.85M	36.082M
5755MHz	Pass	500k	34.85M	48.876M	34.95M	53.123M
5795MHz	Pass	500k	34.2M	42.029M	34.4M	48.076M
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	Inf	83.3M	75.862M	83.5M	75.862M
5775MHz	Pass	500k	75.5M	75.662M	75.4M	76.062M

**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;





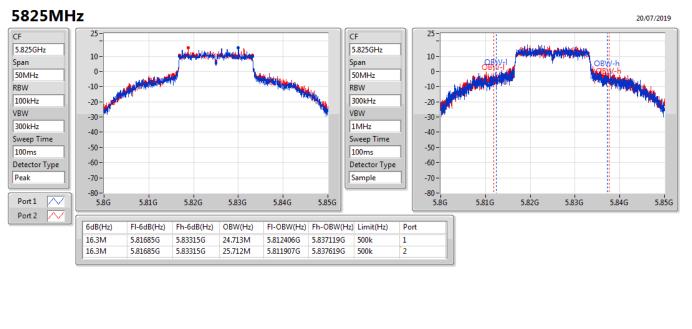






#### 802.11a\_Nss1,(6Mbps)\_2TX **EBW** 5785MHz 20/07/2019 25 25 CF CF 5.785GHz 5.785GHz 10-10 Span Span ØBŴ 2BVX-1 0-0. 50MHz 50MHz -10--10-RBW RBW 100kHz 300kHz -20 -20 VBW VBW -30 -30 300kHz 1MHz -40 --40-Sweep Time Sweep Time -50 --50 -100ms 100ms -60 -Detector Type -<mark>60</mark> -. Detector Type Peak -70 -Sample -70 --80 -5.76G -80 -5.76G $\sim$ Port 1 5.77G 5.78G 5.79G 5.8G 5.81G 5.77G 5.78G 5.79G 5.8G 5.81G Port 2 $\sim$ 6dB(Hz) FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 16.325M 5.77685G 5.797844G 5.793175G 26.062M 5.771782G 500k 1 16.275M 5.776875G 5.79315G 25.712M 5.797669G 500k 5.771957G 2

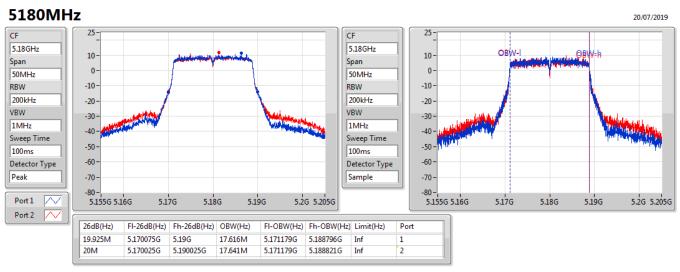
# 802.11a\_Nss1,(6Mbps)\_2TX



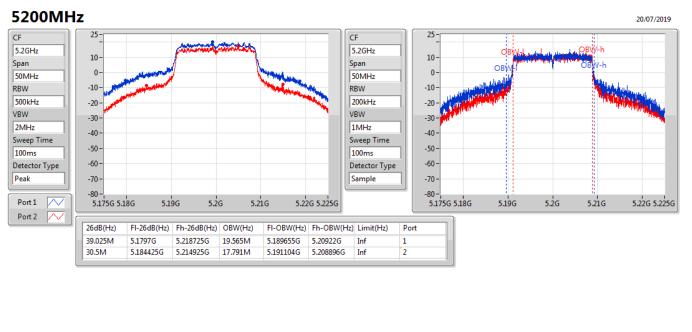
EBW



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



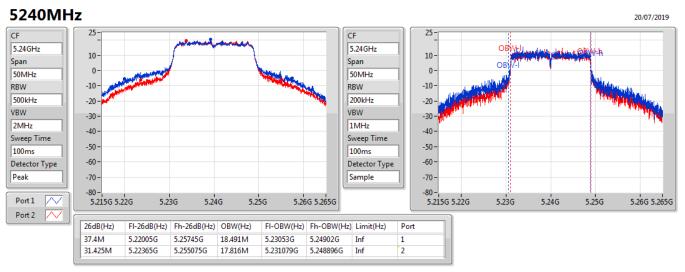
# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



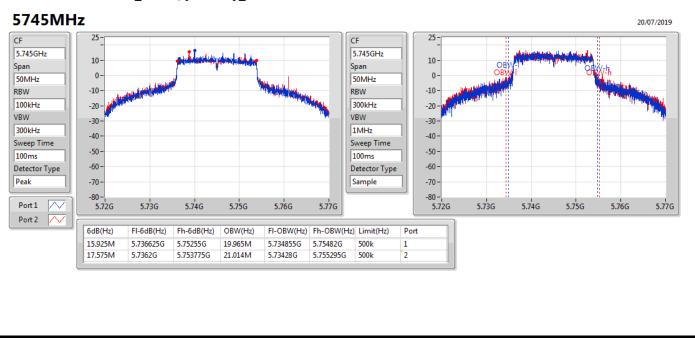
EBW



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



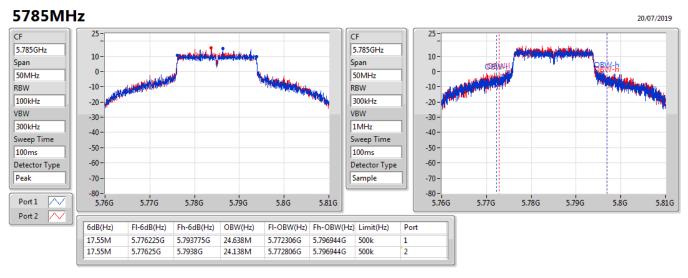
# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



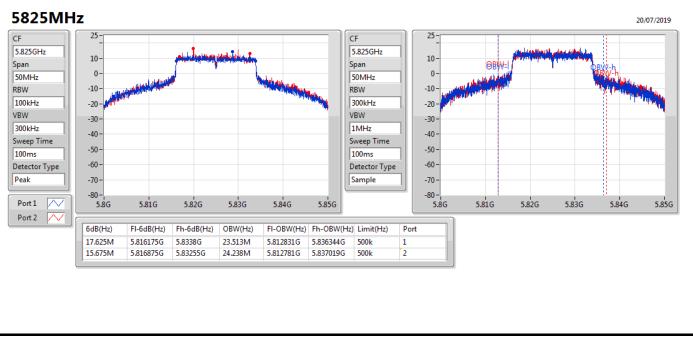
EBW



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



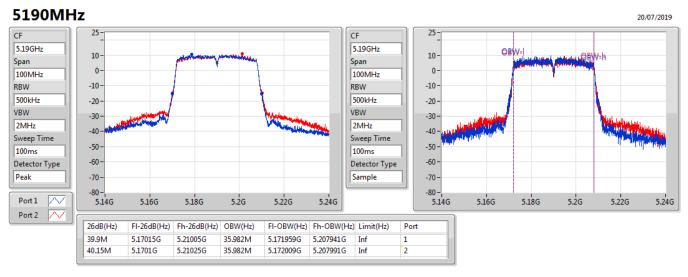
# 802.11ac VHT20\_Nss1,(MCS0)\_2TX



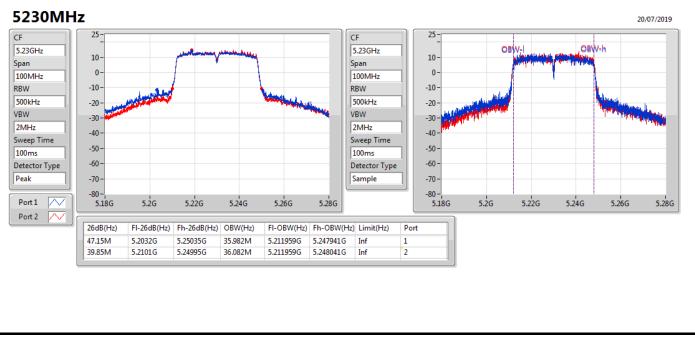
EBW



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



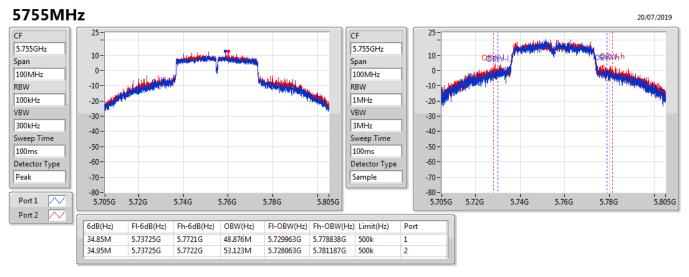
# 802.11ac VHT40\_Nss1,(MCS0)\_2TX



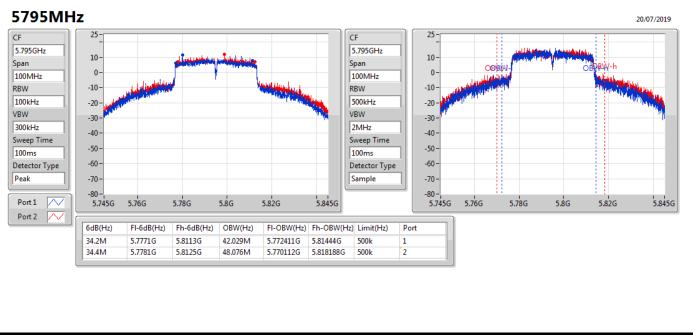
EBW



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



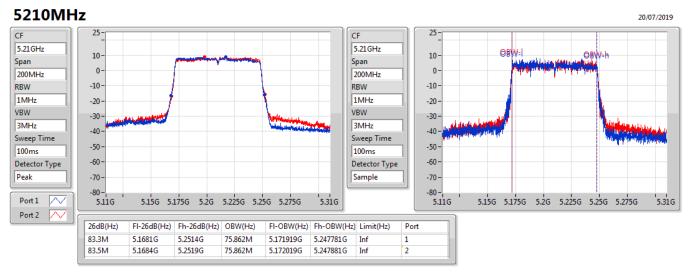
# 802.11ac VHT40\_Nss1,(MCS0)\_2TX



EBW



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



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

#### 5775MHz 20/07/2019 25 25 CF CF OBW-I 5.775GHz 5.775GHz OBW-h 10 10 Span Span 0 0. 200MHz 200MHz RBW -10-RBW -10 100kHz 1MHz -20 --20 · VBW VBW -30 -30 -300kHz 3MHz -40 --40 -Sweep Time Sweep Time -50 -50 -100ms 100ms -60 -60 · Detector Type Detector Type Peak -70 -Sample -70 --<mark>80</mark> · -80 · $\sim$ 5.675G 5.7G 5.725G 5.75G 5.775G 5.8G 5.825G 5.85G 5.875G 5.675G 5.7G 5.725G 5.75G 5.775G 5.8G 5.825G 5.85G 5.875G Port 1 Port 2 FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) 6dB(Hz) Port 5.737G 5.8125G 75.662M 5.736919G 5.812581G 75.5M 500k 1 5.7371G 75.4M 5.8125G 76.062M 5.736719G 5.812781G 500k 2

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#### Summarv

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
5.15-5.25GHz	-	-	-	-	-
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	34.92M	17.841M	17M8D1D	23.46M	17.721M
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	57M	36.582M	36M6D1D	38.34M	35.982M
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	83.64M	75.562M	75M6D1D	81.96M	75.322M
5.725-5.85GHz	-	-	-	-	-
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	17.73M	17.931M	17M9D1D	17.55M	17.691M
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	36.3M	36.582M	36M6D1D	35.04M	36.462M
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	62.64M	76.042M	76M0D1D	22.8M	75.922M

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

Max-OBW = Maximum99% occupied bandwidth; Min-N dB = Minimum 6dB down bandwidth for 5.725-5.85GHz band / Maximum 26dB down bandwidth for other band;

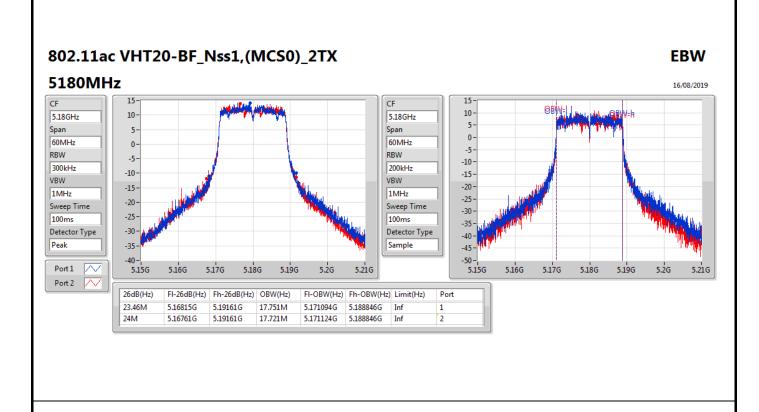
**Min-OBW** = Minimum 99% occupied bandwidth;



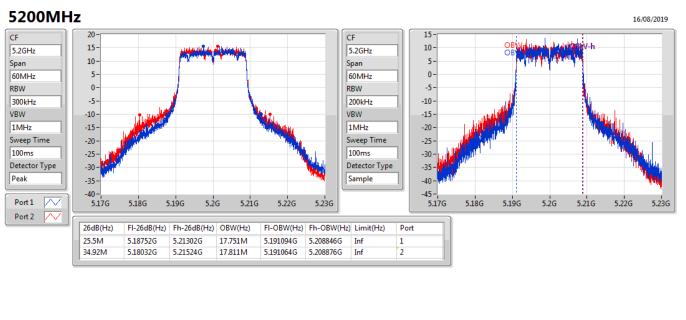
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	23.46M	17.751M	24M	17.721M
5200MHz	Pass	Inf	25.5M	17.751M	34.92M	17.811M
5240MHz	Pass	Inf	26.79M	17.781M	31.14M	17.841M
5745MHz	Pass	500k	17.64M	17.781M	17.55M	17.781M
5785MHz	Pass	500k	17.7M	17.691M	17.73M	17.811M
5825MHz	Pass	500k	17.67M	17.931M	17.64M	17.841M
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	Inf	38.34M	36.222M	39.18M	35.982M
5230MHz	Pass	Inf	43.98M	36.522M	57M	36.582M
5755MHz	Pass	500k	35.04M	36.522M	36.3M	36.462M
5795MHz	Pass	500k	36.3M	36.522M	35.4M	36.582M
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	Inf	81.96M	75.322M	83.64M	75.562M
5775MHz	Pass	500k	62.64M	75.922M	22.8M	76.042M

**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;



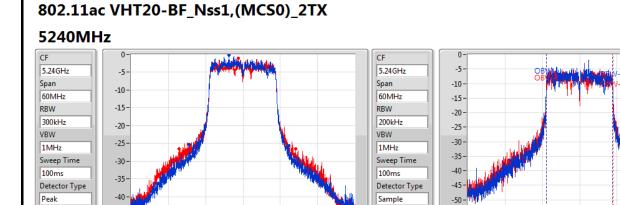


# 802.11ac VHT20-BF\_Nss1,(MCS0)\_2TX



16/08/2019





5.26G

5.231064G

5.231034G

5.27G

FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz)

5.248846G

5.248876G

Inf

Inf

5.25G

17.781M

17.841M

5.24G

Fh-26dB(Hz) OBW(Hz)

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

-45

5.21G

26dB(Hz)

26.79M

31.14M

5.22G

FI-26dB(Hz)

5.22548G

5.2229G

5.23G

5.25227G

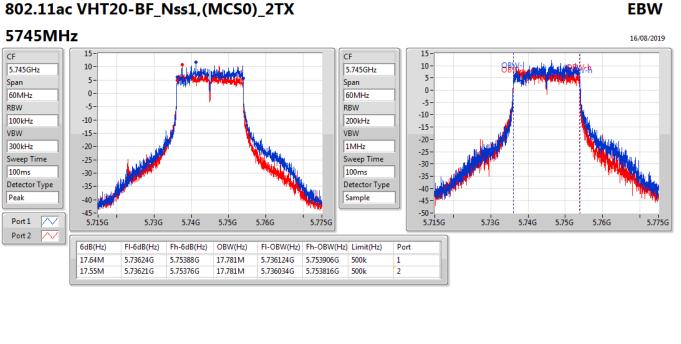
5.25404G

 $\sim$ 

 $\sim$ 

Port 1

Port 2



-55

Port

1

2

5.21G

5.22G

5.23G

5.24G

5.25G

5.26G

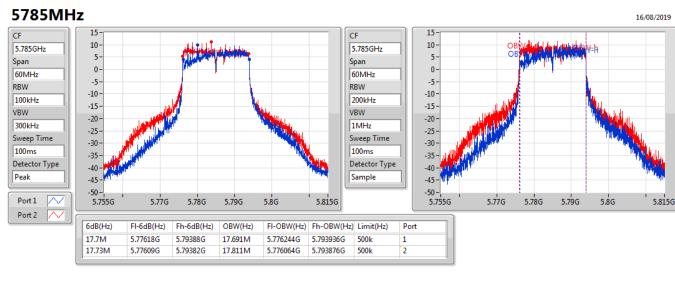
5.27G

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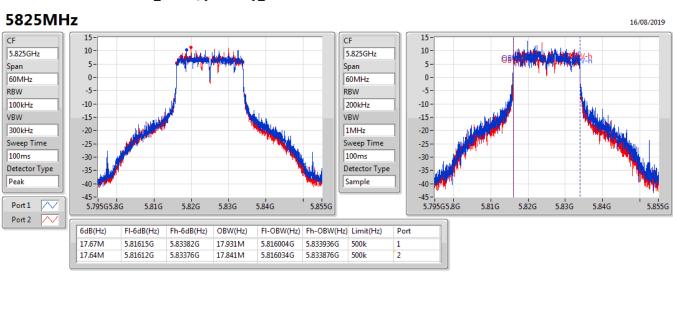
EBW



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



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



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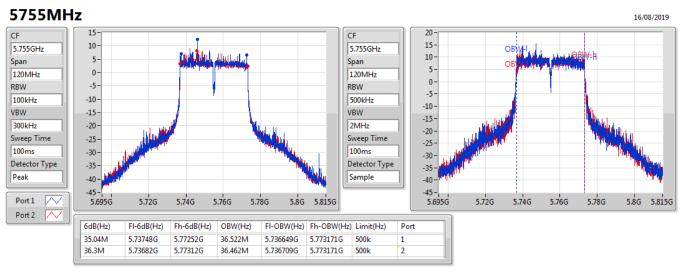


#### 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX EBW 5190MHz 16/08/2019 15 15 CF CF 10-10-5.19GHz 5.19GHz OBWA QBWV-h 5-5 Span Span 0-0-120MHz 120MHz -5--5-RBW RBW -10--10-500kHz 500kHz -15-VBW VBW -15--20 -2MHz -20 -2MHz -25-Sweep Time -25 -Sweep Time -30 -100ms 100ms -30 --35 -Detector Type Detector Type -35--40 Peak Sample -40 --45--45 -50 $\sim$ Port 1 5.16G 5.18G 5.2G 5.22G 5.24G5.25G 5.13G5.14G 5.16G 5.18G 5.2G 5.22G 5.24G5.25G 5.13G5.14G Port 2 $\sim$ 26dB(Hz) FI-26dB(Hz) Fh-26dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 38.34M 5.17086G 5.2092G 36.222M 5.171829G 5.208051G Inf 1 39.18M 5.17038G 5.20956G 35.982M 5.207991G 5.172009G Inf 2 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX EBW 5230MHz 16/08/2019 25 15 CF CF والاساليل والأر والافتر 8 20 -10-5.23GHz 5.23GHz 15-Span Span 5 10-120MHz 120MHz 0-RBW 5-RBW -5-0-1MHz 500kHz -10 -VBW -5-VBW -15-3MHz -10-2MHz -20 Sweep Time -15 Sweep Time -25 100ms 100ms -20 Detector Type -30 Detector Type -25-Peak Sample -35 -30--35 -40 $\sim$ 5.17G5.18G 5.2G 5.22G 5.24G Port 1 5.2G 5.22G 5.24G 5.26G 5.17G5.18G 5.26G 5.28G5.29G 5.28G5.29G Port 2 FI-26dB(Hz) Fh-26dB(Hz) OBW(Hz) 26dB(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 5.20756G 5.25154G 43.98M 36.522M 5.211709G 5.248231G Inf 1 57M 5.1958G 5.2528G 36.582M 5.211649G 5.248231G Inf 2

EBW



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



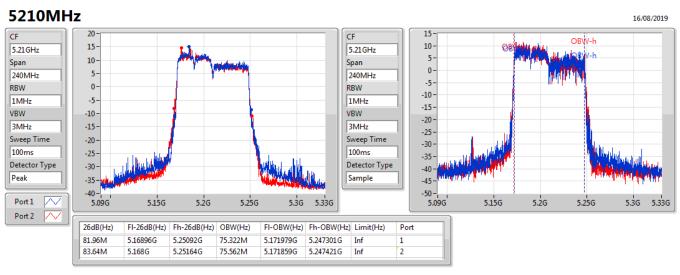
# 802.11ac VHT40-BF\_Nss1,(MCS0)\_2TX

#### 5795MHz 16/08/2019 15 20 CF CF 10-15-5.795GHz 5.795GHz 10-5-0 Span Span 5-0-120MHz 120MHz 0-RBW -5-RBW -5--10 -100kHz 500kHz -10 -VBW -15-VBW -15-300kHz -20 -2MHz -20 -Sweep Time -25-Sweep Time -25 -100ms 100ms -30 -30-Detector Type Detector Type -35 --35 Peak Sample -40--40 -45 -45 $\overline{}$ 5.76G Port 1 5.78G 5.78G 5.8G 5.82G 5.84G 5.855G 5.735G 5.76G 5.8G 5.82G 5.84G 5.855G 5.7356 Port 2 6dB(Hz) FI-6dB(Hz) Fh-6dB(Hz) OBW(Hz) FI-OBW(Hz) Fh-OBW(Hz) Limit(Hz) Port 5.813171G 5.77676G 5.81306G 36.522M 36.3M 5.776649G 500k 1 35.4M 5.77712G 5.81252G 36.582M 5.776649G 5.813231G 500k 2

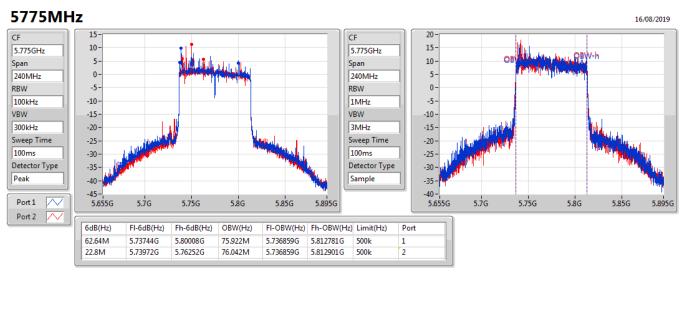
EBW



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



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





# Appendix C.1

### Summary

Mode	Total Power	Total Power
	(dBm)	(W)
5.15-5.25GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	28.65	0.73282
802.11ac VHT20_Nss1,(MCS0)_2TX	29.06	0.80538
802.11ac VHT40_Nss1,(MCS0)_2TX	26.71	0.46881
802.11ac VHT80_Nss1,(MCS0)_2TX	21.03	0.12677
5.725-5.85GHz	-	-
802.11a_Nss1,(6Mbps)_2TX	29.67	0.92683
802.11ac VHT20_Nss1,(MCS0)_2TX	29.49	0.88920
802.11ac VHT40_Nss1,(MCS0)_2TX	29.94	0.98628
802.11ac VHT80_Nss1,(MCS0)_2TX	25.34	0.34198



Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	- 30.00
5180MHz	Pass	1.00	21.13	20.94	24.05	
5200MHz	Pass	1.00	25.64	25.52	28.59	30.00
5240MHz	Pass	1.00	25.61	25.66 26.50	28.65	30.00
5745MHz	Pass	1.00	26.23		29.38	30.00
5785MHz	Pass	1.00	26.43	26.78	29.62	30.00
5825MHz	Pass	1.00	26.59	26.73	29.67	30.00
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass Pass	1.00 1.00	21.44 25.90	21.10 25.82	24.28 28.87	30.00 30.00
5200MHz						
5240MHz	Pass	1.00	26.05	26.04	29.06	30.00
5745MHz	Pass	1.00	26.10	26.35	29.24	30.00
5785MHz	Pass	1.00	26.13	26.61	29.39	30.00
5825MHz	Pass	1.00	26.34	26.61	29.49	30.00
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	1.00	20.32	20.04	23.19	30.00
5230MHz	Pass	1.00	23.60	23.79	26.71	30.00
5755MHz	Pass	1.00	26.86	26.99	29.94	30.00
5795MHz	Pass	1.00	26.13	26.59	29.38	30.00
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	1.00	18.08	17.95	21.03	30.00
5775MHz	Pass	1.00	22.49	22.17	25.34	30.00

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



# Appendix C.2

### Summary

Mode	Total Power (dBm)	Total Power (W)
5.15-5.25GHz	-	-
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	26.27	0.42364
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	26.36	0.43251
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	20.95	0.12445
5.725-5.85GHz	-	-
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	25.69	0.37068
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	25.83	0.38282
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	25.50	0.35481



Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	4.01	21.47	21.05	24.28	30.00
5200MHz	Pass	4.01	22.88	23.13	26.02	30.00
5240MHz	Pass	4.01	23.44	23.07	26.27	30.00
5745MHz	Pass	4.01	22.93 22.42 22.51	22.42 22.39 22.33	25.69 25.42 25.43	30.00 30.00 30.00
5785MHz	Pass	4.01				
5825MHz	Pass	4.01				
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	4.01	19.27	19.53	22.41	30.00
5230MHz	Pass	4.01	23.40	23.30	26.36	30.00
5755MHz	Pass	4.01	22.97	22.66	25.83	30.00
5795MHz	Pass	4.01	22.29	22.60	25.46	30.00
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	4.01	17.84	18.04	20.95	30.00
5775MHz	Pass	4.01	22.55	22.43	25.50	30.00

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



## Summary

Mode	PD
	(dBm/RBW)
5.15-5.25GHz	
802.11a_Nss1,(6Mbps)_2TX	15.48
802.11ac VHT20_Nss1,(MCS0)_2TX	15.45
802.11ac VHT40_Nss1,(MCS0)_2TX	10.55
802.11ac VHT80_Nss1,(MCS0)_2TX	1.56
5.725-5.85GHz	-
802.11a_Nss1,(6Mbps)_2TX	14.71
802.11ac VHT20_Nss1,(MCS0)_2TX	14.24
802.11ac VHT40_Nss1,(MCS0)_2TX	12.07
802.11ac VHT80_Nss1,(MCS0)_2TX	4.56

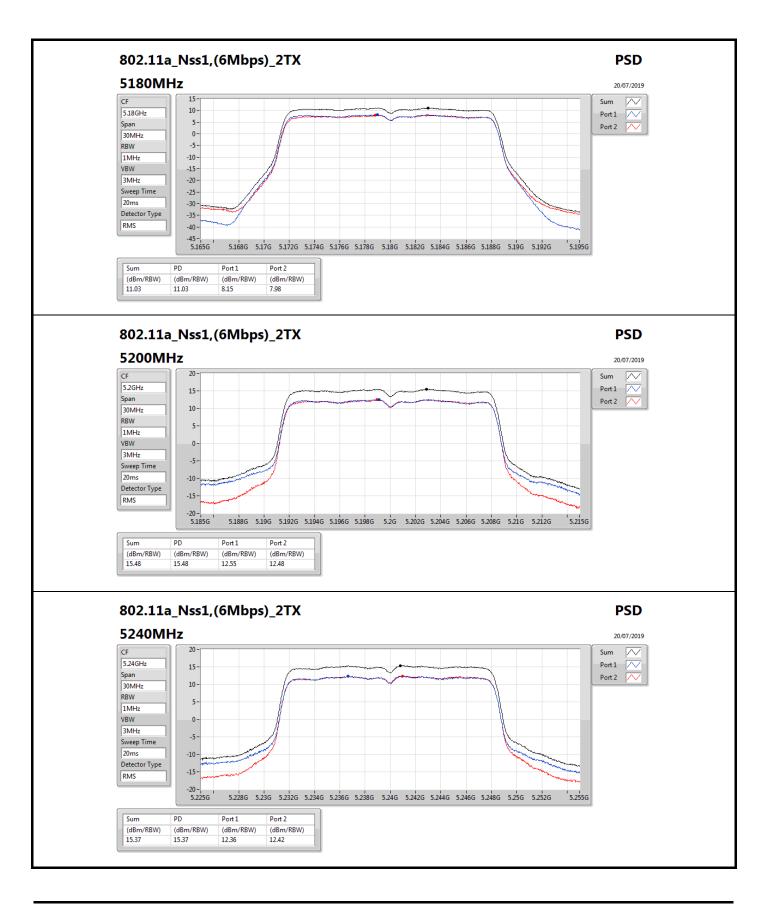
**RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;



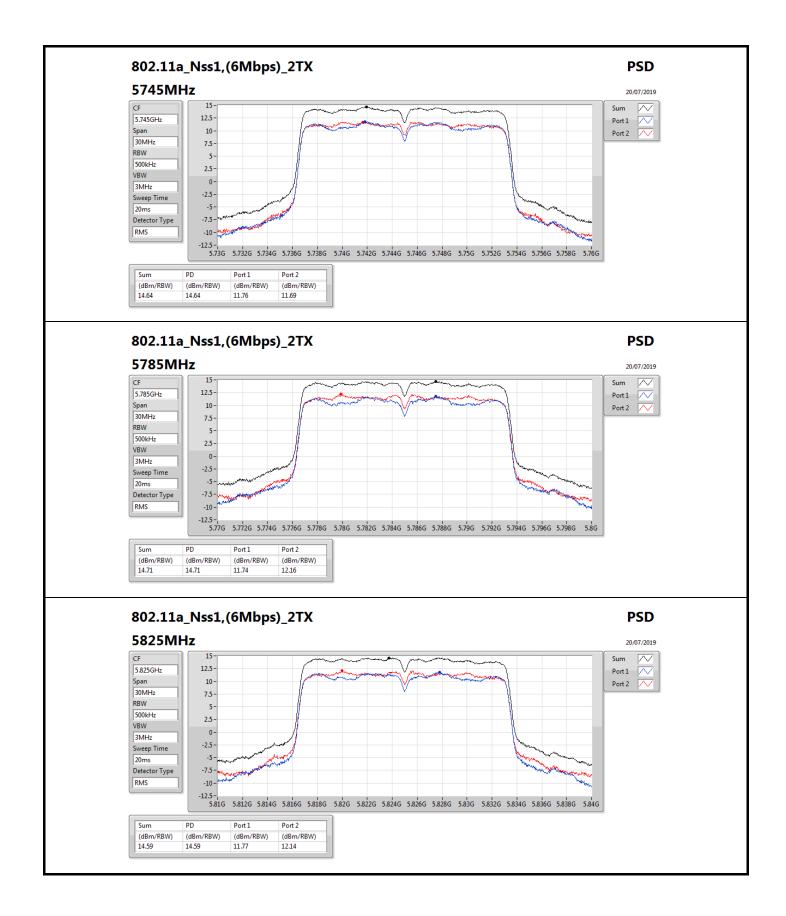
Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5180MHz	Pass	4.01	8.15 12.55	7.98	11.03	17.00 17.00
5200MHz	Pass			12.48	15.48	
5240MHz	Pass	4.01	12.36	12.42	15.37	17.00
5745MHz	Pass	4.01	11.76	11.69	14.64	30.00
5785MHz	Pass	4.01	11.74	12.16	14.71	30.00
5825MHz	Pass	4.01	11.77	12.14	14.59	30.00
802.11ac VHT20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	4.01	8.09	7.89	10.94	17.00
5200MHz	Pass	4.01	12.58	12.49	15.45	17.00
5240MHz	Pass	4.01	12.40	12.40	15.35	17.00
5745MHz	Pass	4.01	11.28	11.40	14.24	30.00
5785MHz	Pass	4.01	10.83	11.47	14.04	30.00
5825MHz	Pass	4.01	11.10	11.52	14.11	30.00
802.11ac VHT40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	4.01	4.23	4.04	7.11	17.00
5230MHz	Pass	4.01	7.35	7.81	10.55	17.00
5755MHz	Pass	4.01	9.09	9.46	12.07	30.00
5795MHz	Pass	4.01	8.49	8.87	11.44	30.00
802.11ac VHT80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	4.01	-1.29	-1.43	1.56	17.00
5775MHz	Pass	4.01	2.14	1.54	4.56	30.00

**DG** = Directional Gain; **RBW** = 500 kHz 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 X power density;

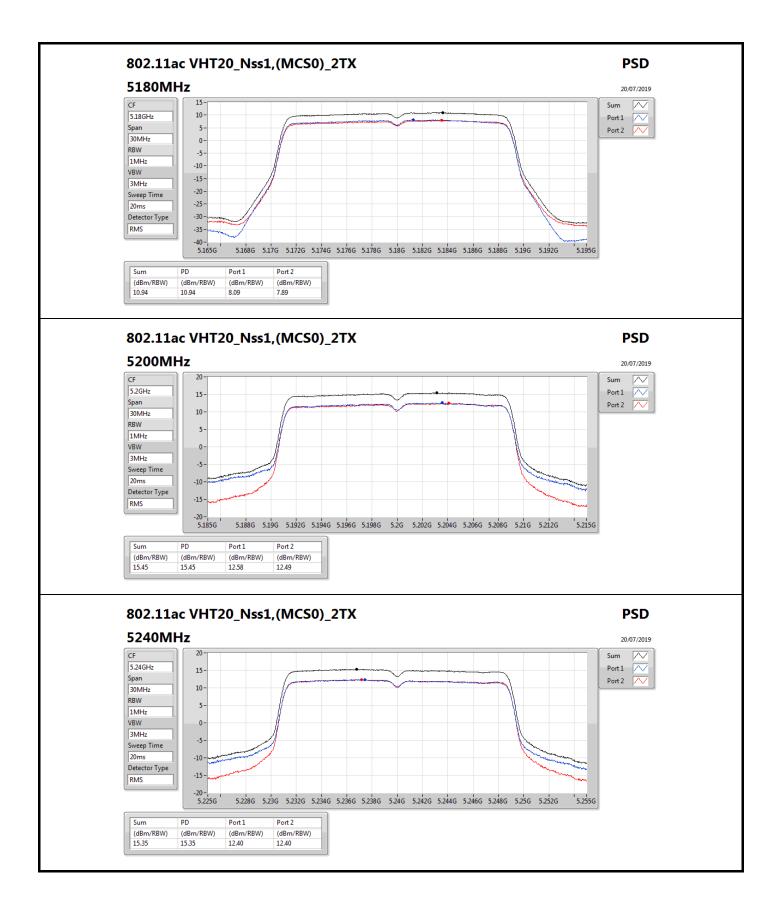




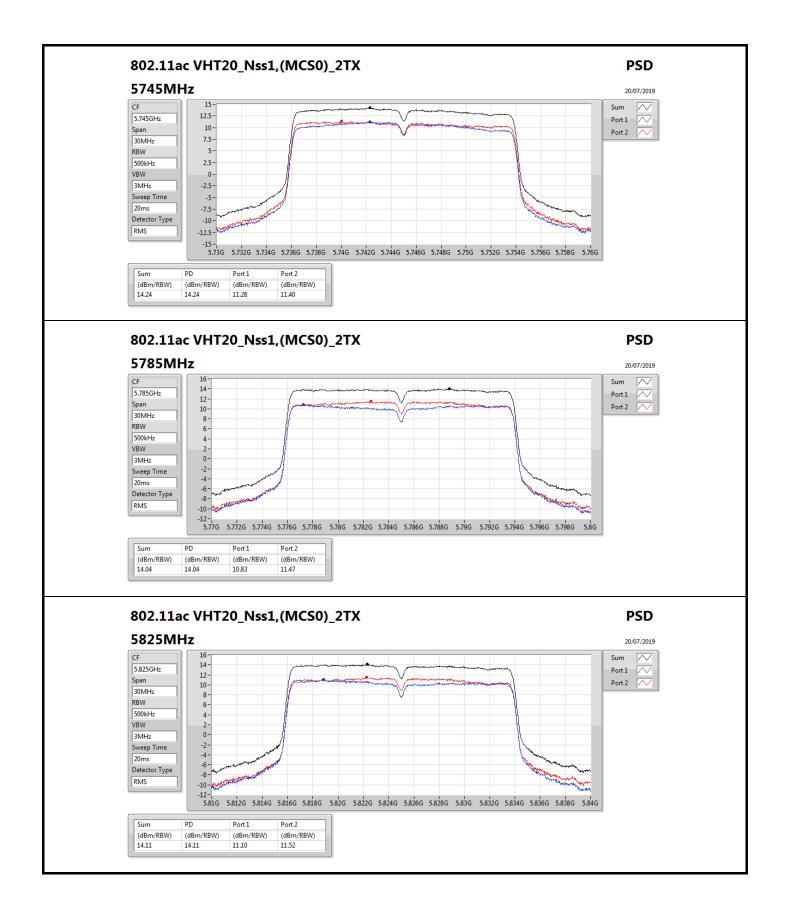




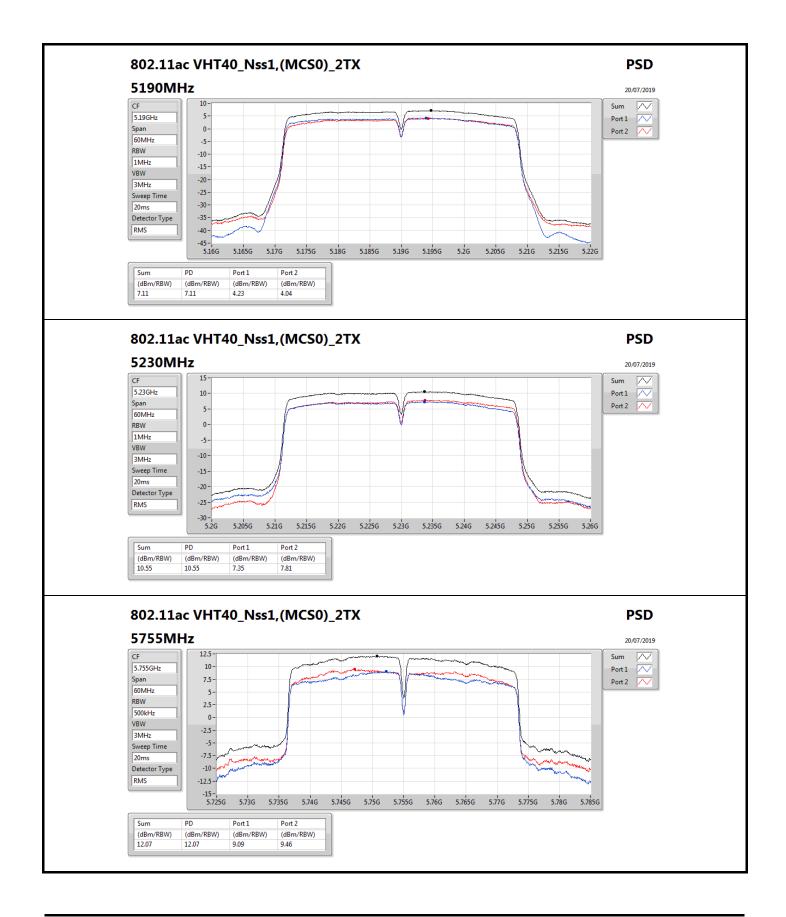




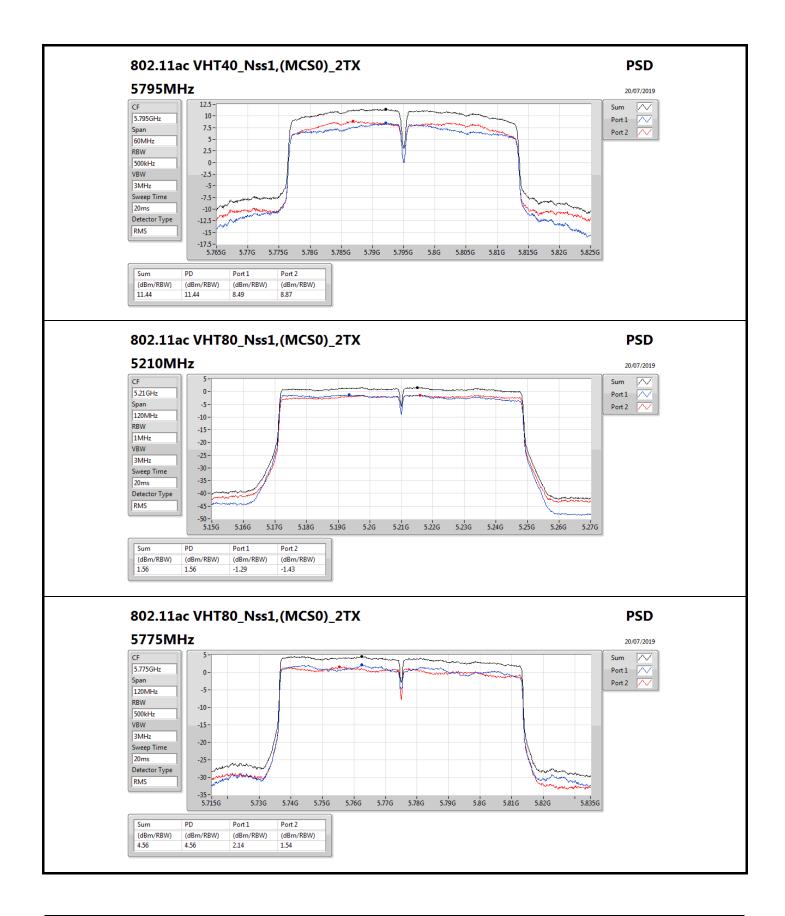














### Summary

Mode	PD
	(dBm/RBW)
5.15-5.25GHz	
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	12.78
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	11.07
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	5.25
5.725-5.85GHz	-
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	10.30
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	8.42
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	7.25

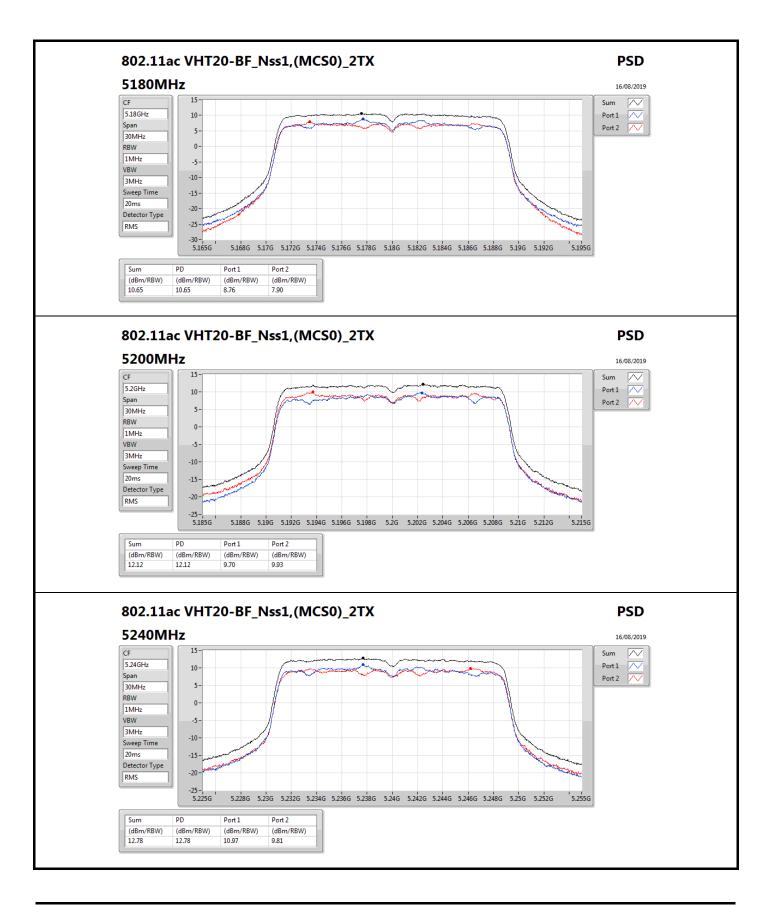
**RBW** = 500 kHz for 5.725-5.85GHz band / 1MHz for other band;



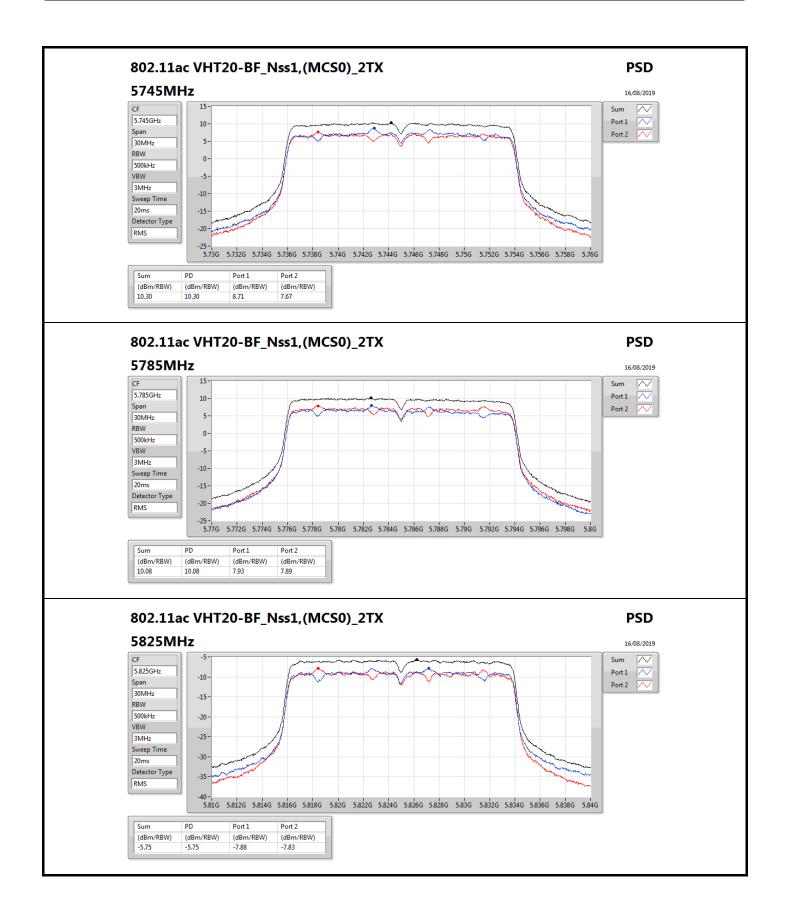
Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11ac VHT20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	4.01	8.76	7.90	10.65	17.00
5200MHz	Pass	4.01	9.70	9.93	12.12	17.00
5240MHz	Pass	4.01	10.97	9.81	12.78	17.00
5745MHz	Pass	4.01	8.71	7.67	10.30	30.00
5785MHz	Pass	4.01	7.93	7.89	10.08	30.00
5825MHz	Pass	4.01	-7.88	-7.83	-5.75	30.00
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	4.01	4.43	4.48	6.60	17.00
5230MHz	Pass	4.01	9.05	8.76	11.07	17.00
5755MHz	Pass	4.01	5.08	5.02	7.77	30.00
5795MHz	Pass	4.01	6.01	6.69	8.42	30.00
802.11ac VHT80-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	4.01	3.35	2.64	5.25	17.00
5775MHz	Pass	4.01	4.94	4.72	7.25	30.00

**DG** = Directional Gain; **RBW** = 500 kHz 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 X power density;

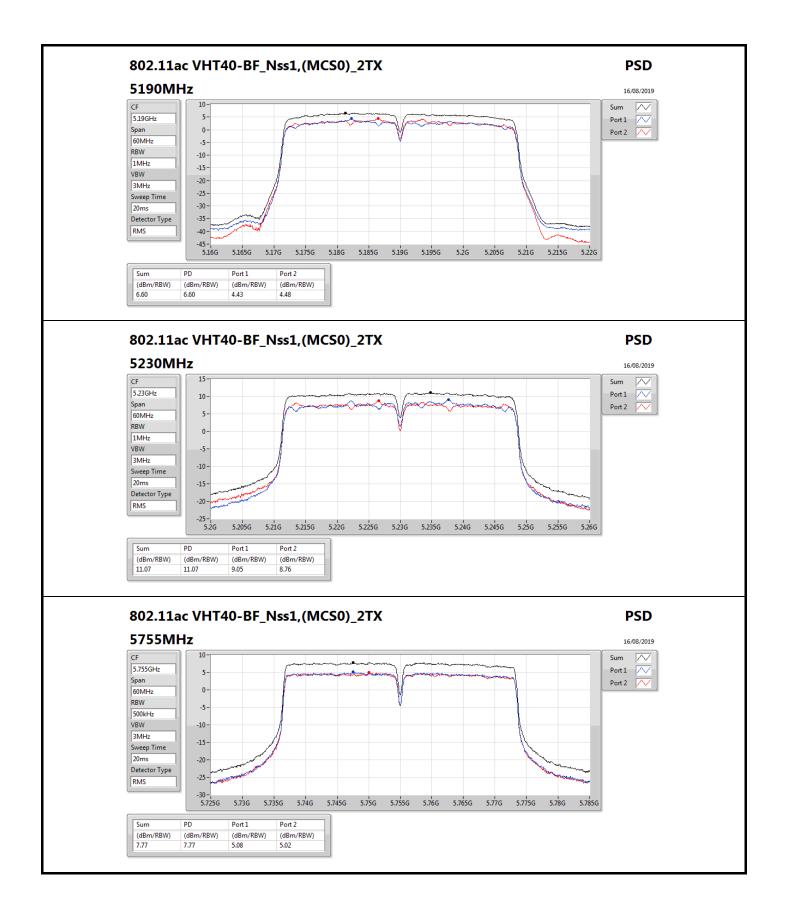




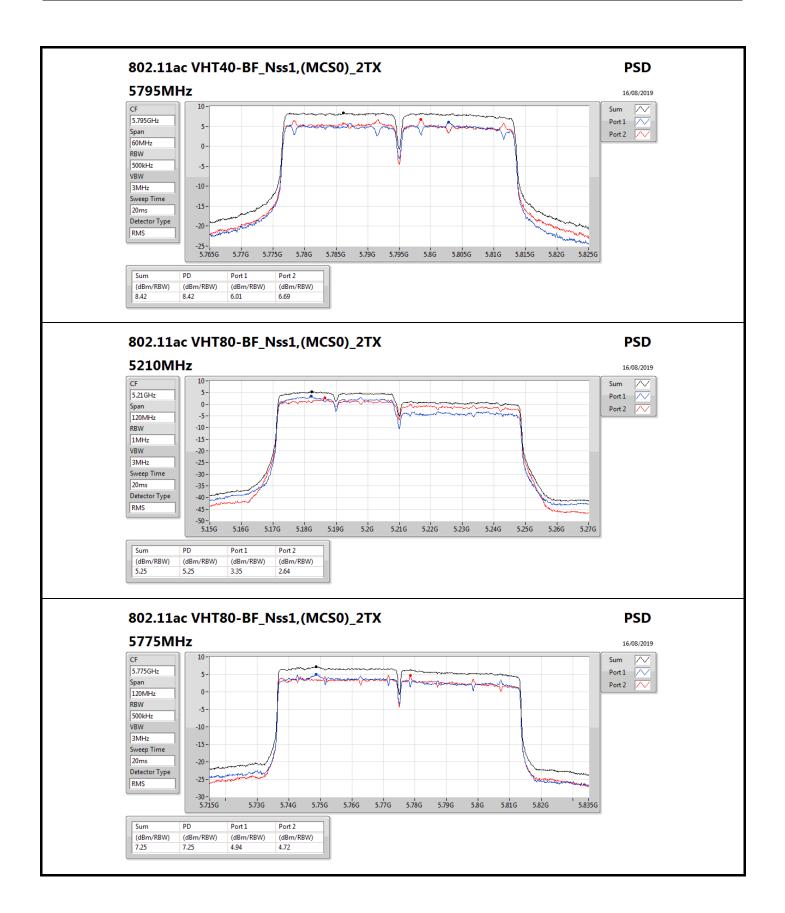




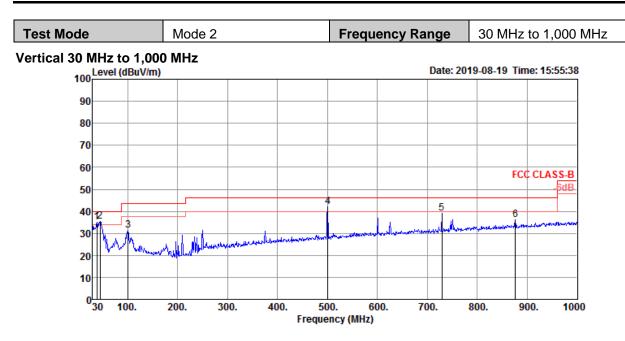








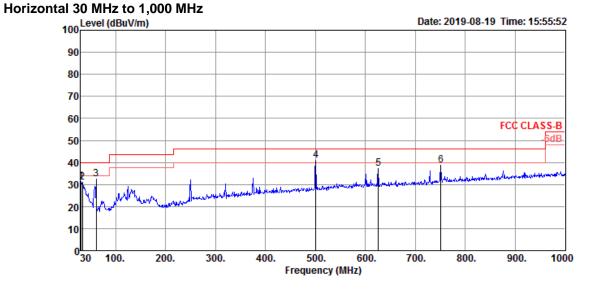




	Freq	Level		Over Limit					A/Pos	T/Pos	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
1	38.73	35.19	40.00	-4.81	45.37	0.81	20.51	31.50	100	243	Peak	VERTICAL
2	44.55	35.33	40.00	-4.67	48.78	0.89	17.25	31.59	100	123	Peak	VERTICAL
3	100.81	31.22	43.50	-12.28	44.68	1.31	17.22	31.99	125	329	Peak	VERTICAL
4	500.45	42.04	46.00	-3.96	47.75	2.94	23.83	32.48	100	253	Peak	VERTICAL
5	729.37	39.03	46.00	-6.97	41.89	3.57	25.96	32.39	100	120	Peak	VERTICAL
6	875.84	36.12	46.00	-9.88	37.10	3.92	27.50	32.40	100	197	Peak	VERTICAL



Limit Over



Freq	Level	Line	Limit	Level	Loss	Factor	Factor			Remark	Pol/Phase
 MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB	cm	deg		
30.97	31.45	40.00	-8.55	37.21	0.69	25.11	31.56	300	357	Peak	HORIZONTAL
33.88	30.82	40.00	-9.18	38.19	0.74	23.39	31.50	100	86	Peak	HORIZONTAL
61.04	32.30	40.00	-7.70	50.55	1.00	12.60	31.85	200	267	Peak	HORIZONTAL
500.45	41.11	46.00	-4.89	46.82	2.94	23.83	32.48	150	102	Peak	HORIZONTAL
625.58	37.18	46.00	-8.82	41.12	3.28	25.21	32.43	125	125	Peak	HORIZONTAL
750.71	38.77	46.00	-7.23	41.26	3.64	26.20	32.33	100	196	Peak	HORIZONTAL

Read CableAntenna Preamp A/Pos T/Pos

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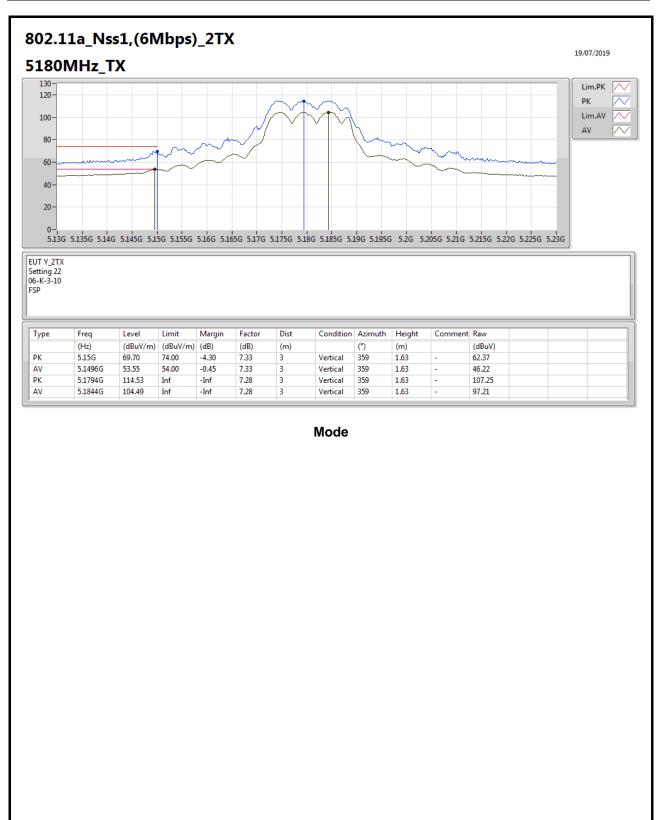
## RSE TX above 1GHz Result

## Summary

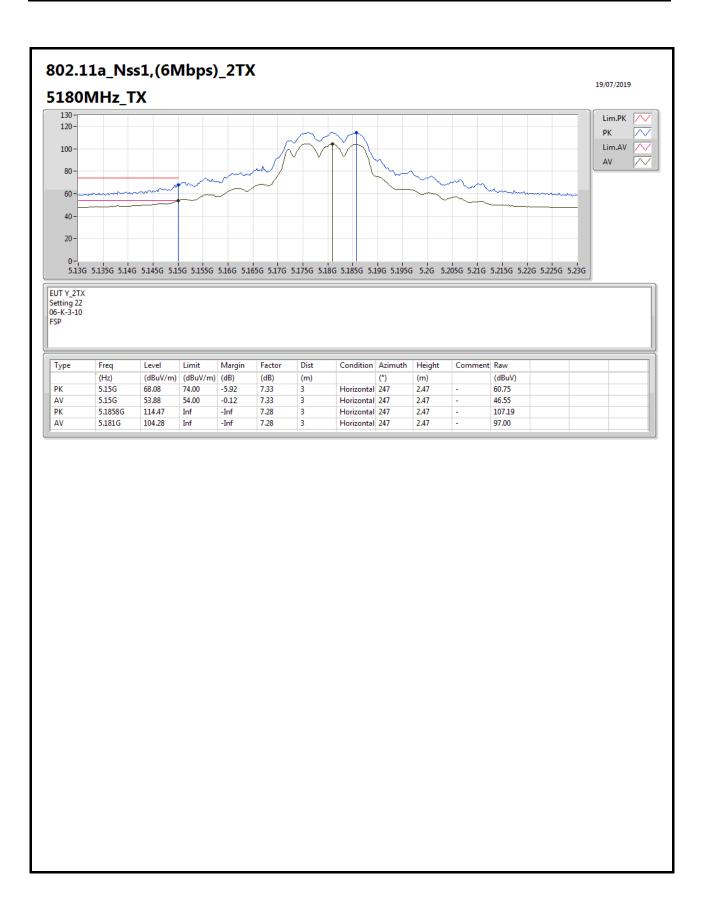
Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(°)	(m)	
5.15-5.25GHz	-	-	-	-	-	-	-	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	Pass	AV	5.1492G	53.99	54.00	-0.01	7.33	3	Horizontal	260	1.70	-



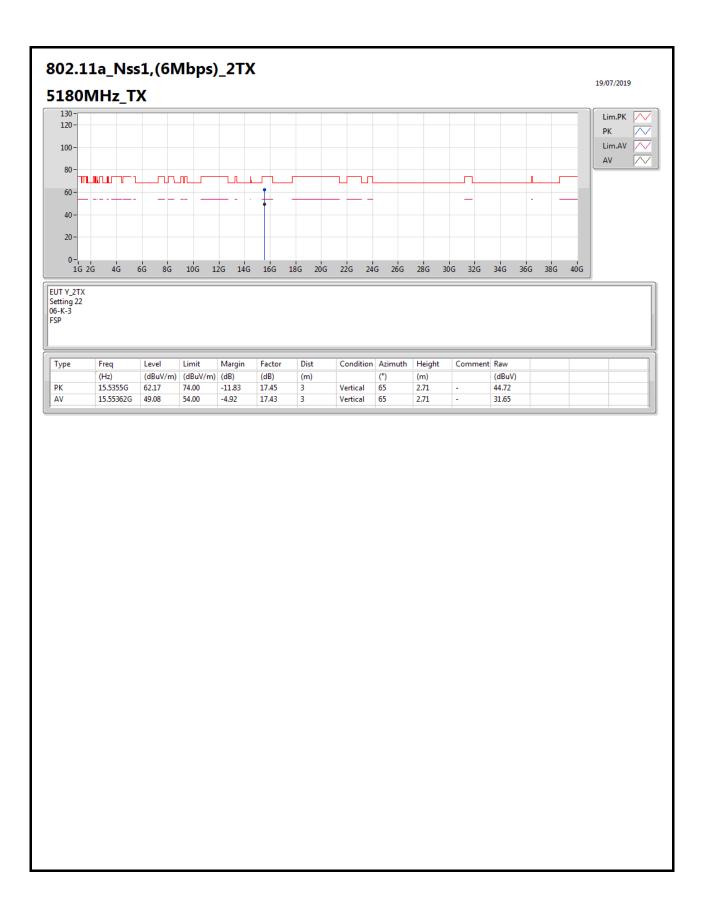
## Appendix E.2



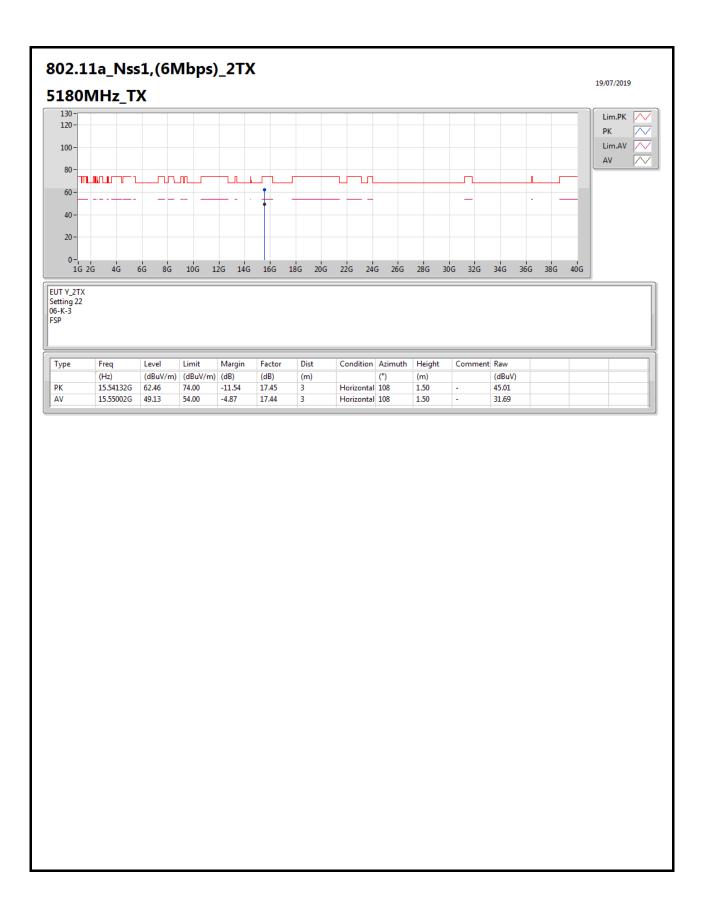




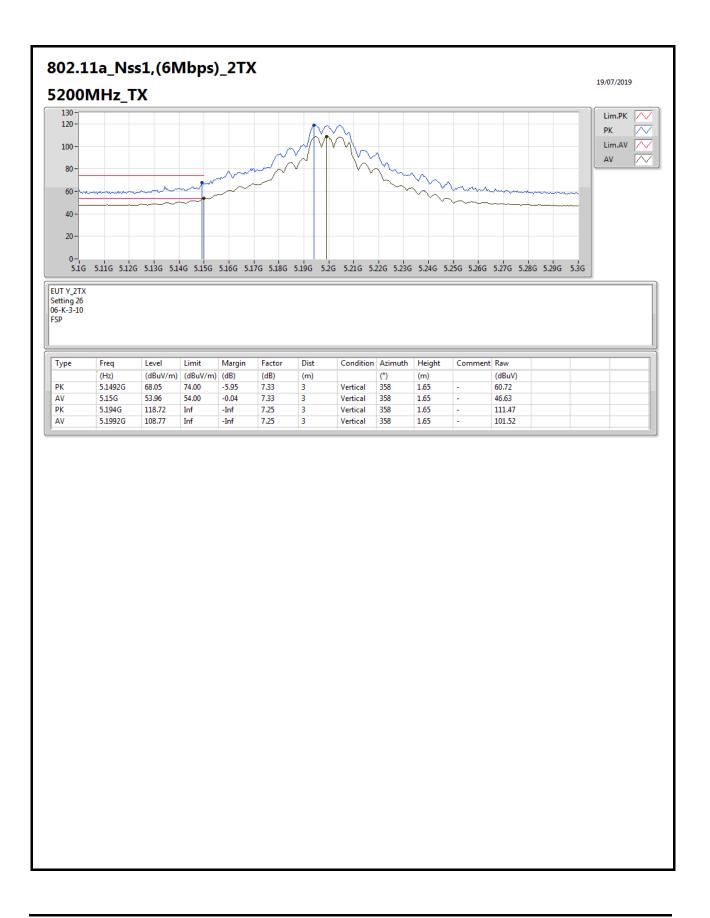




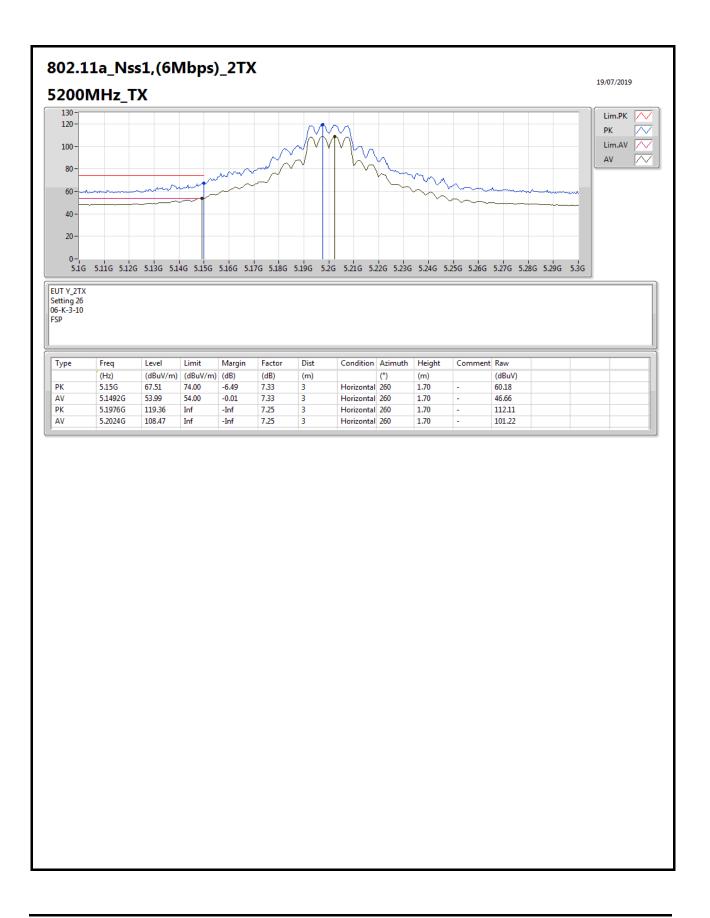




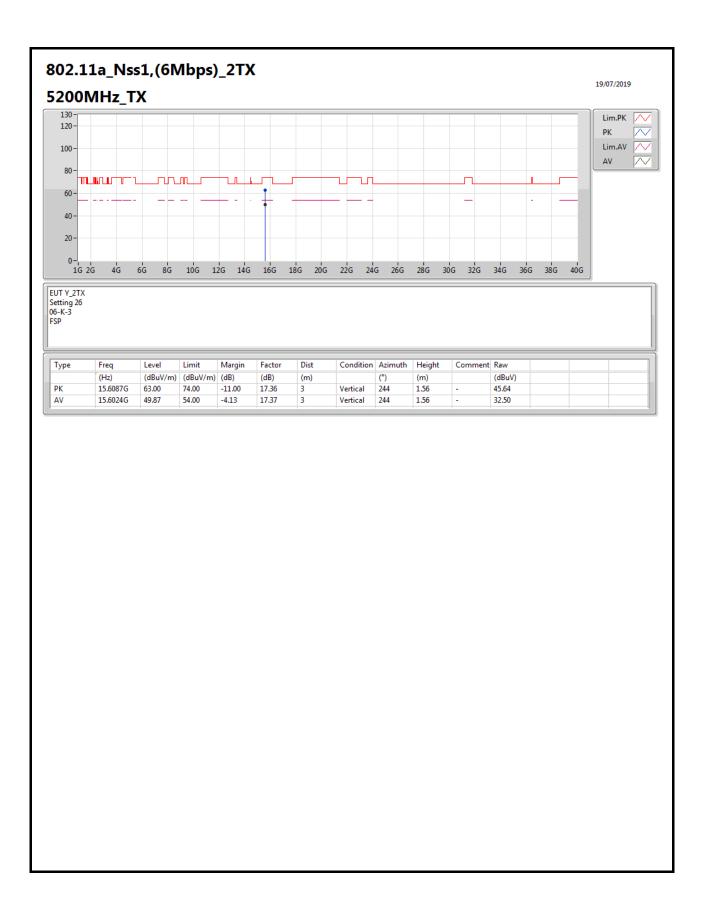




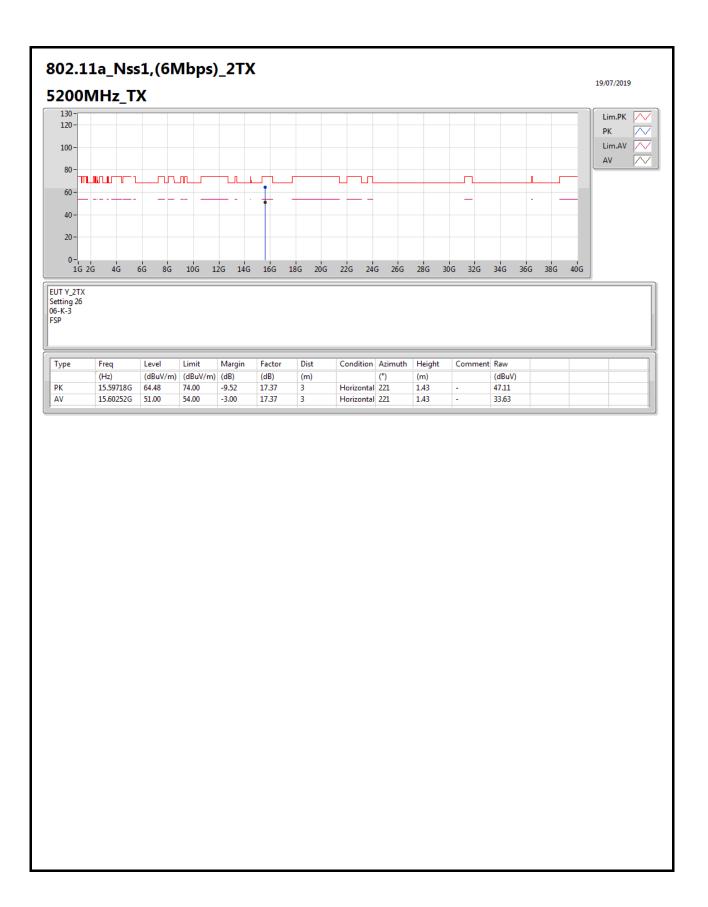




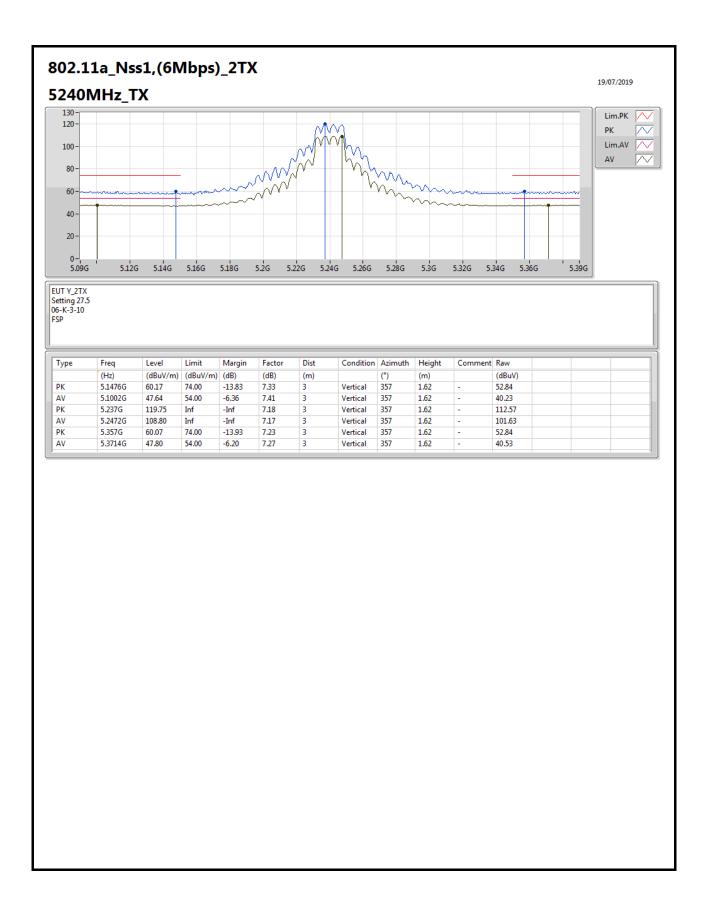




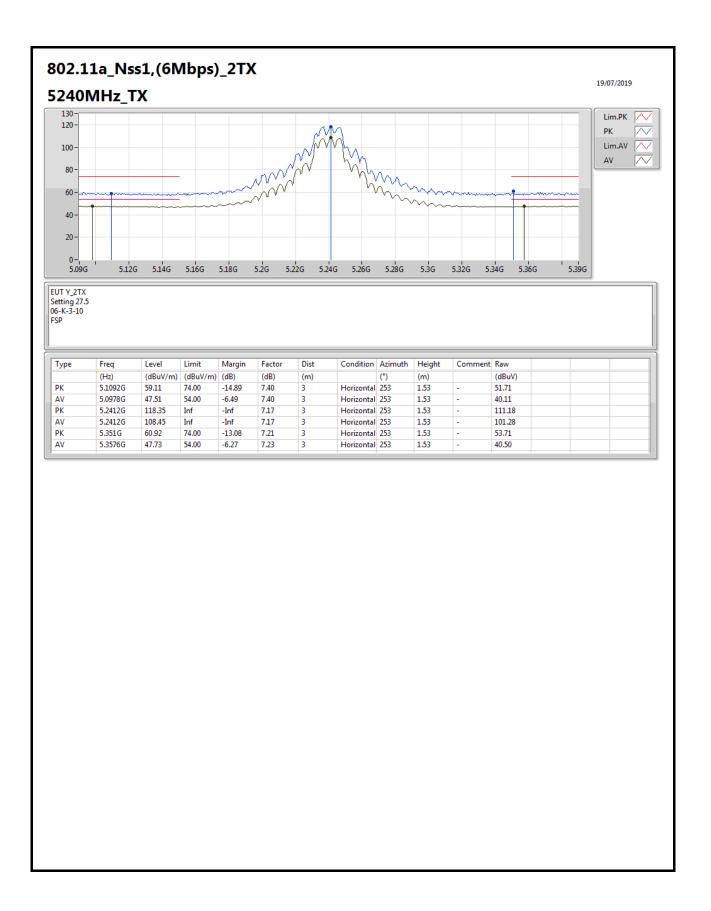




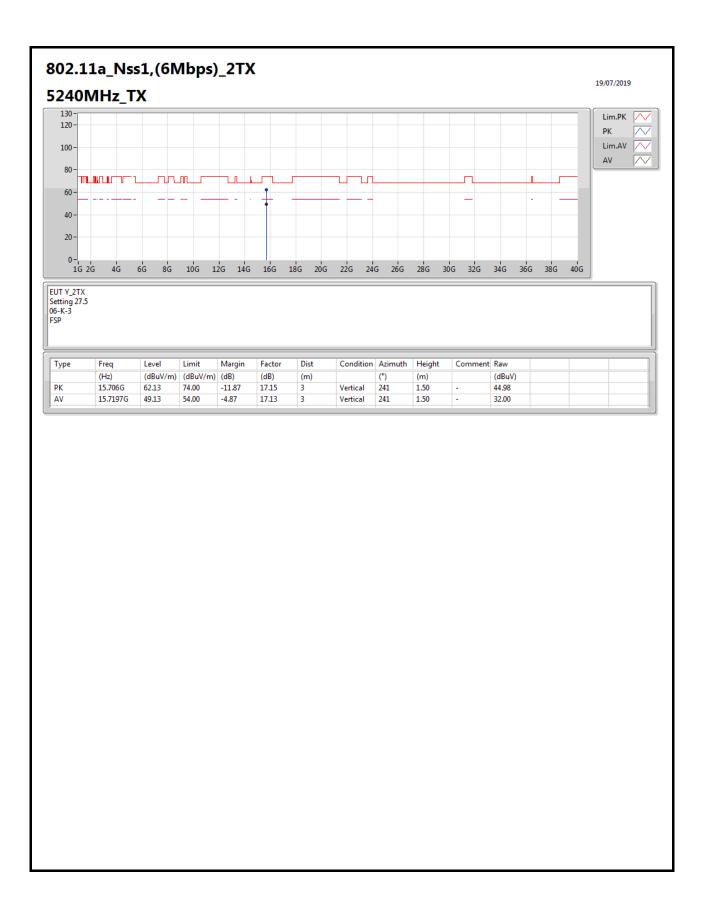




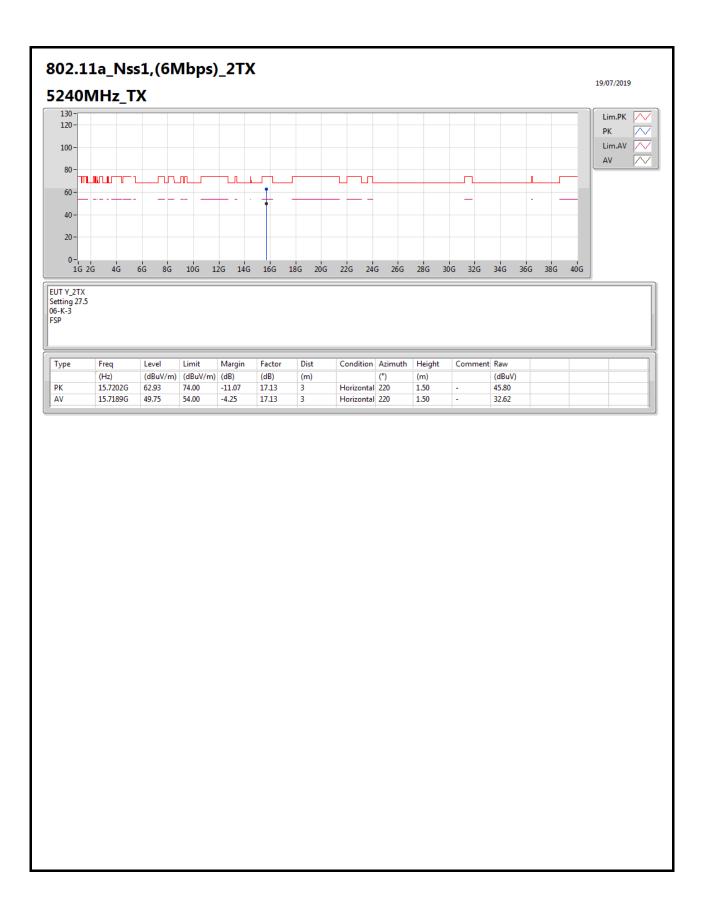




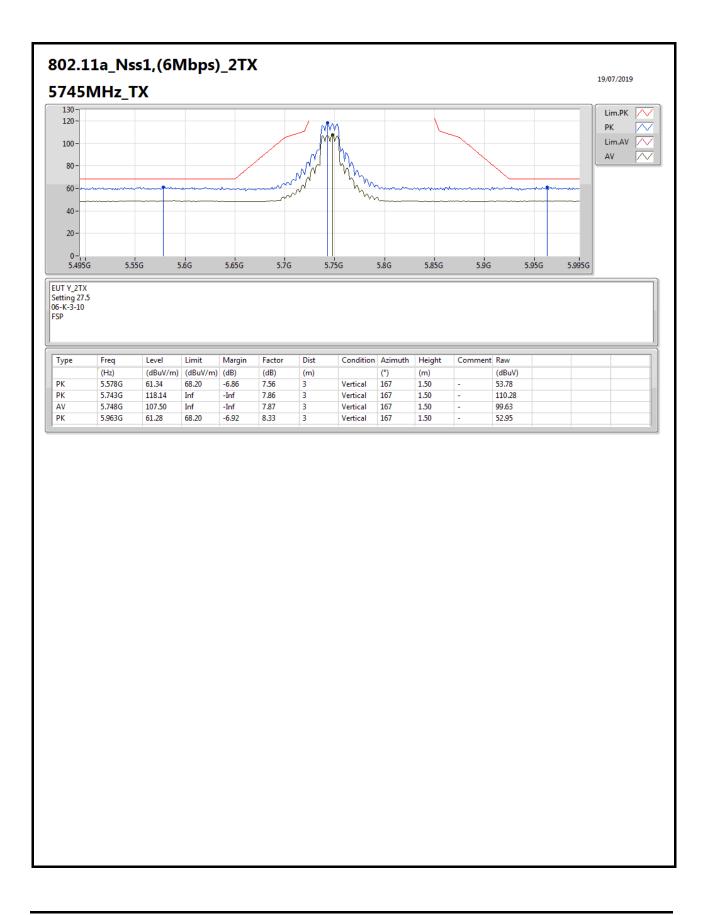




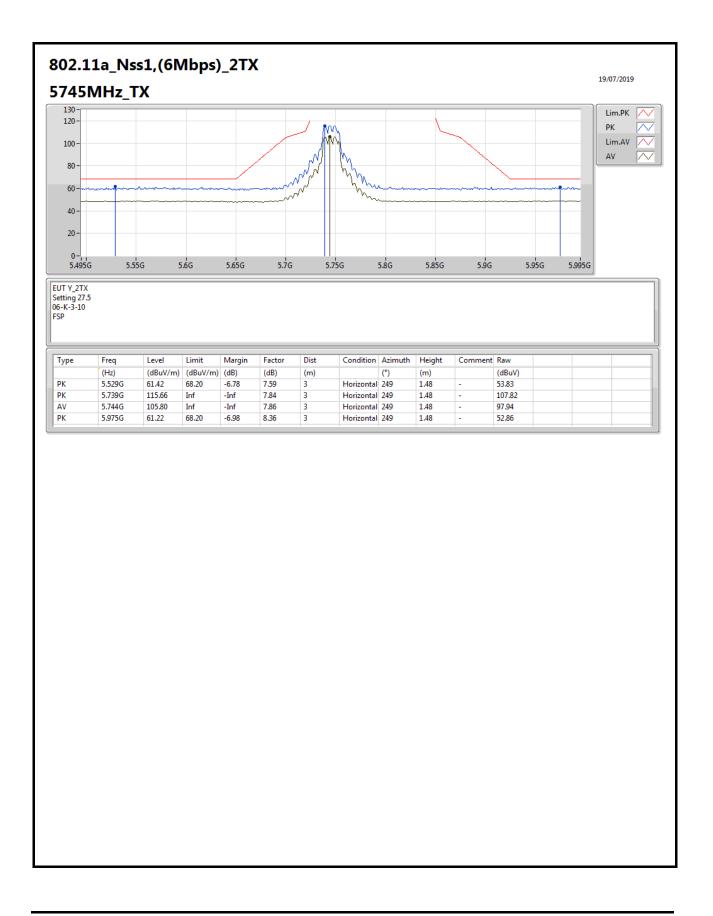




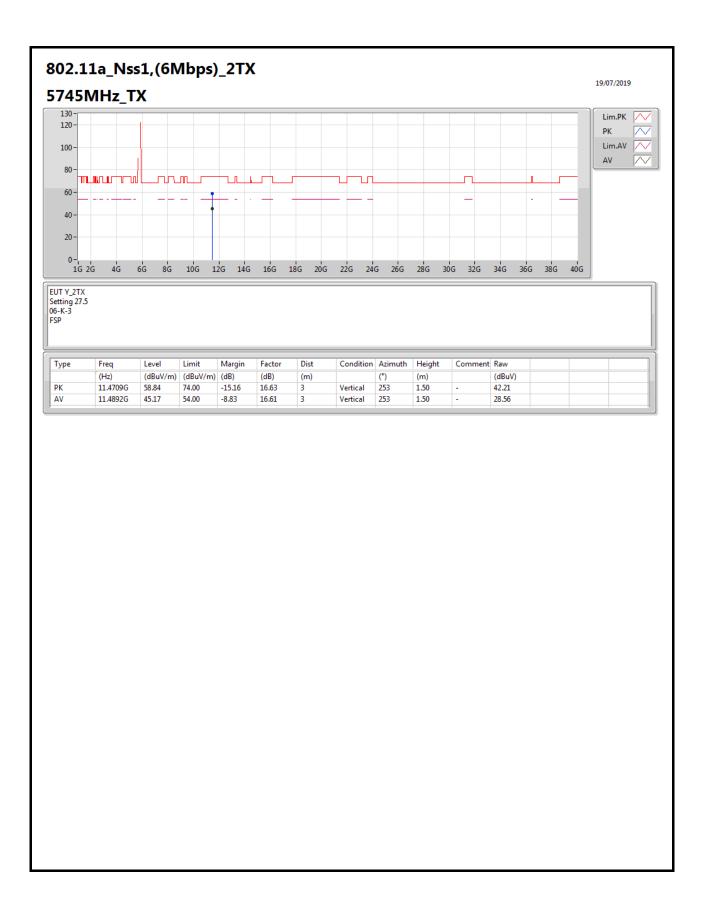




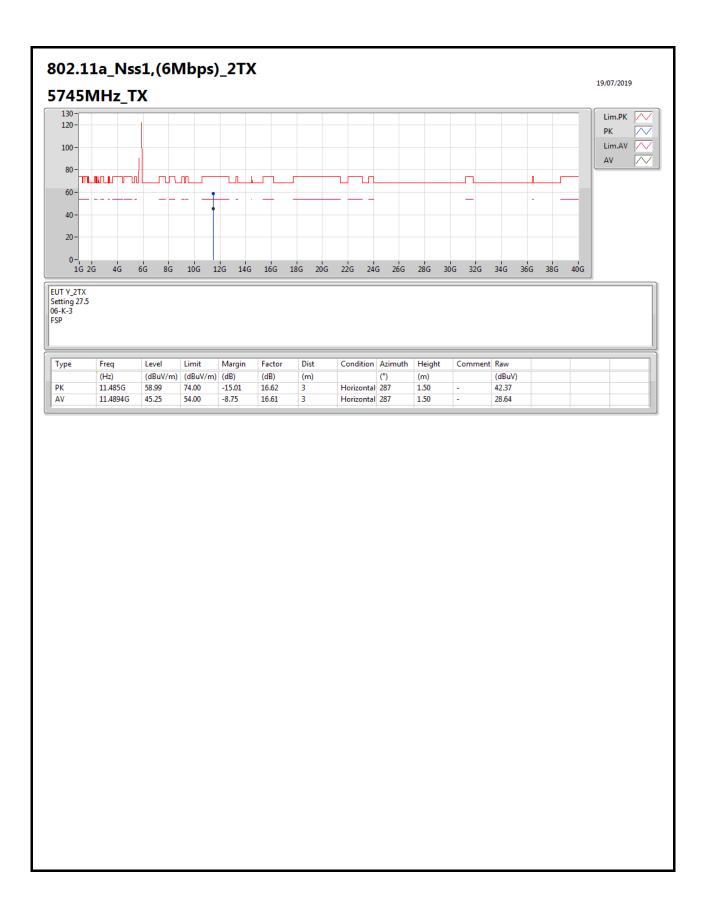




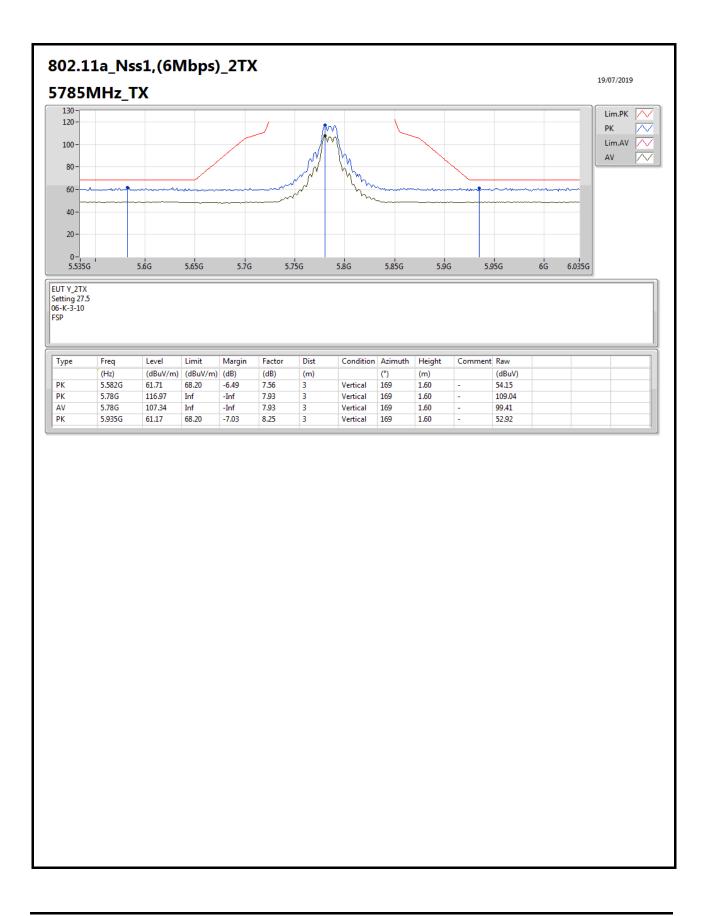




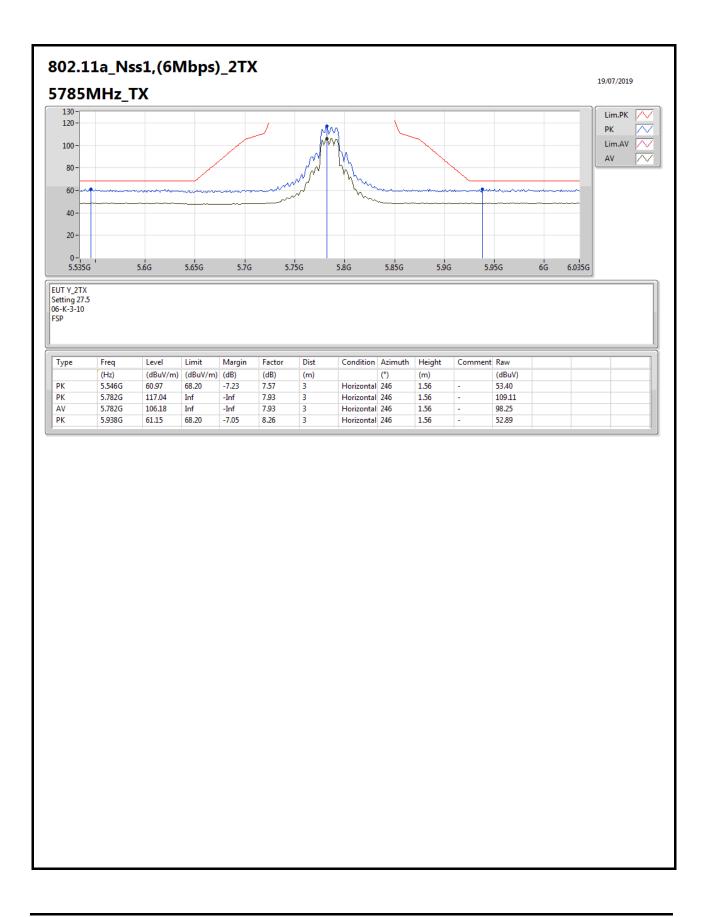




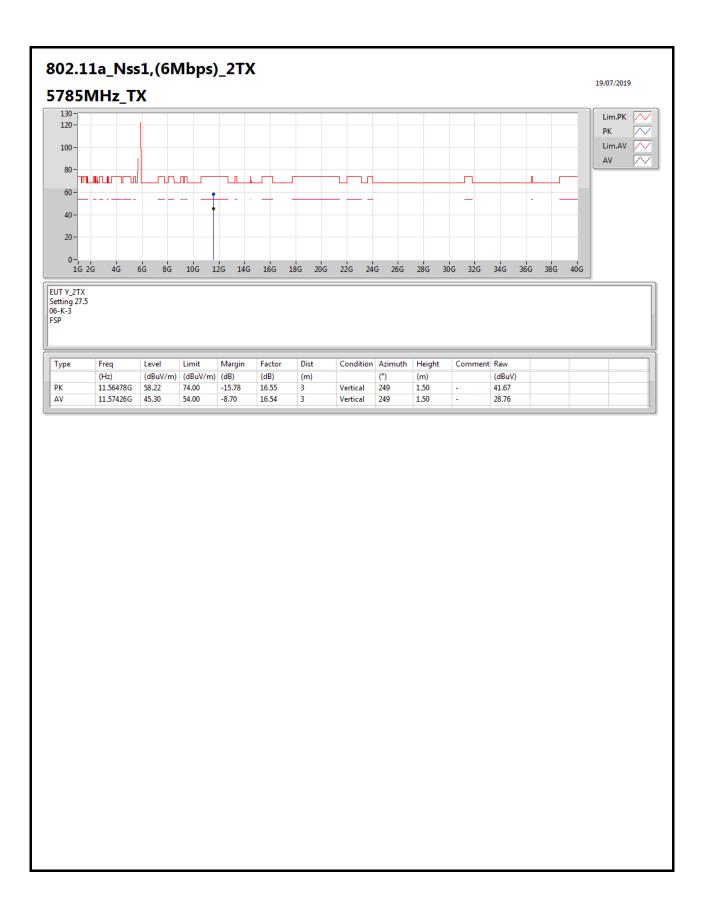




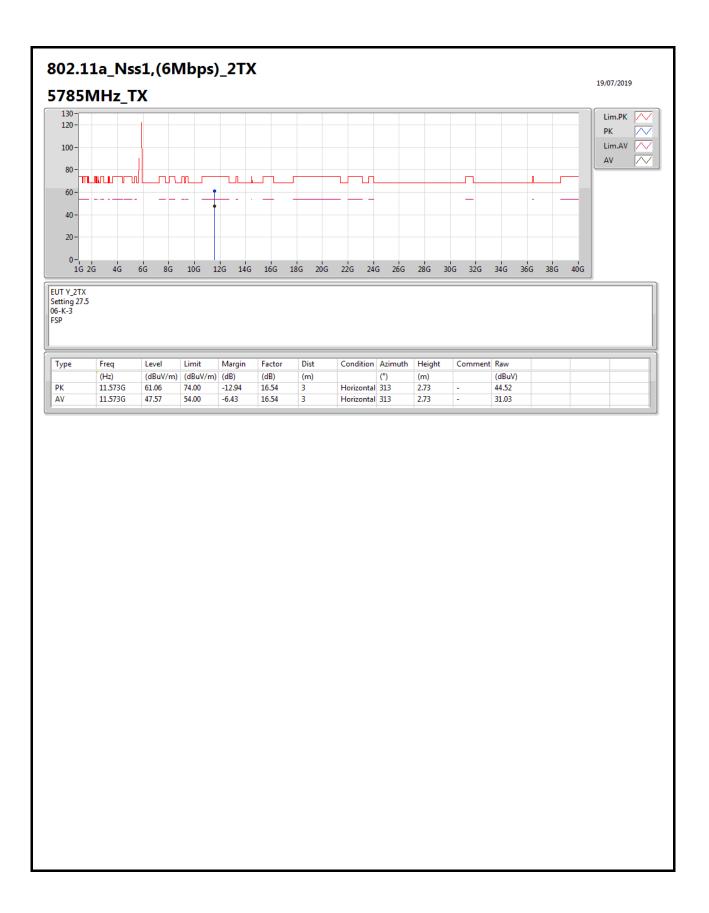




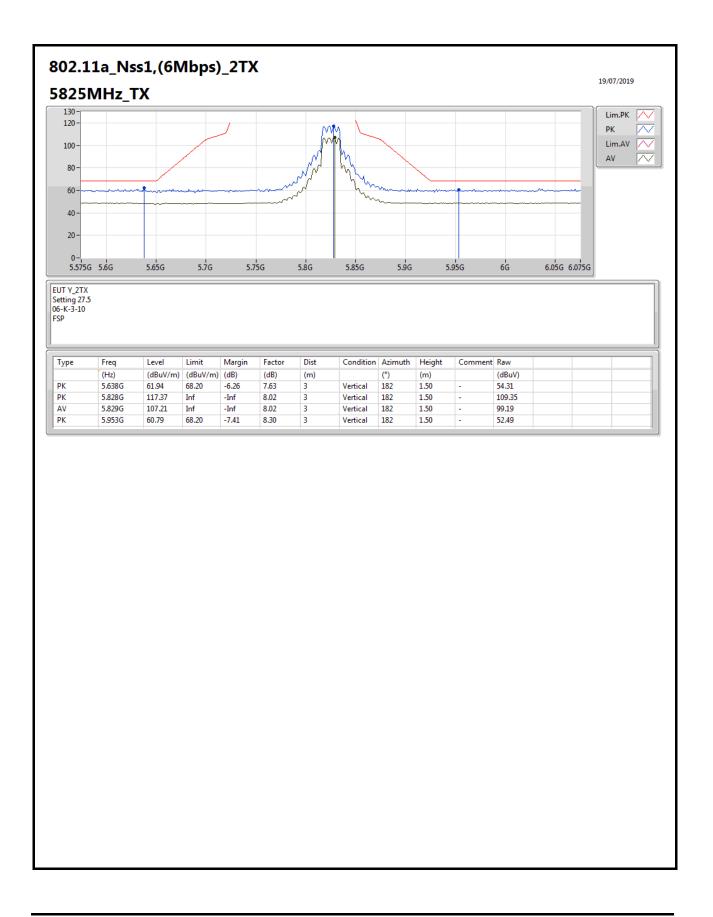




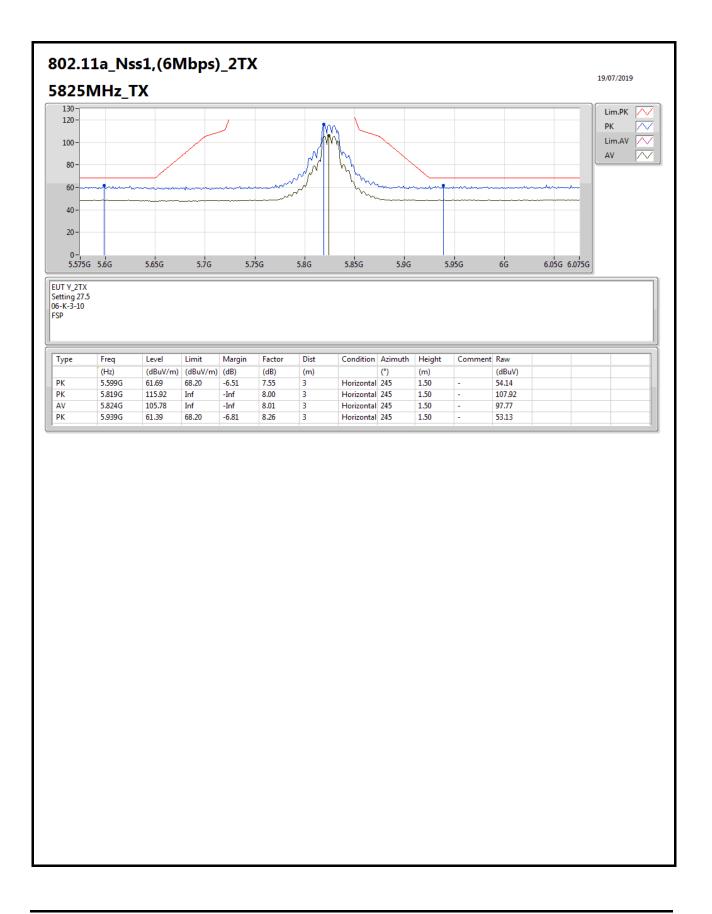




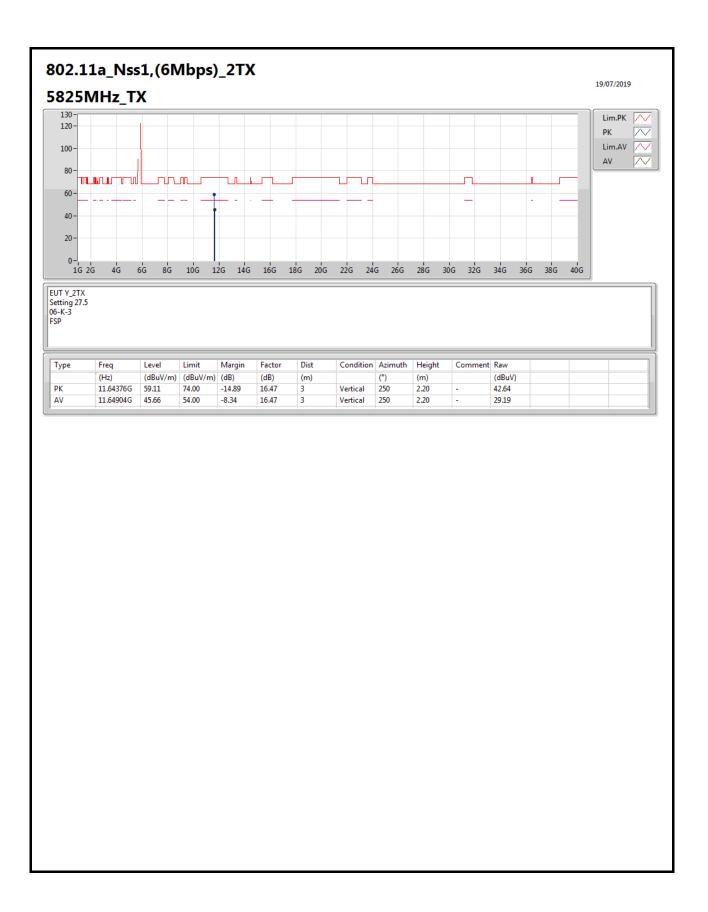




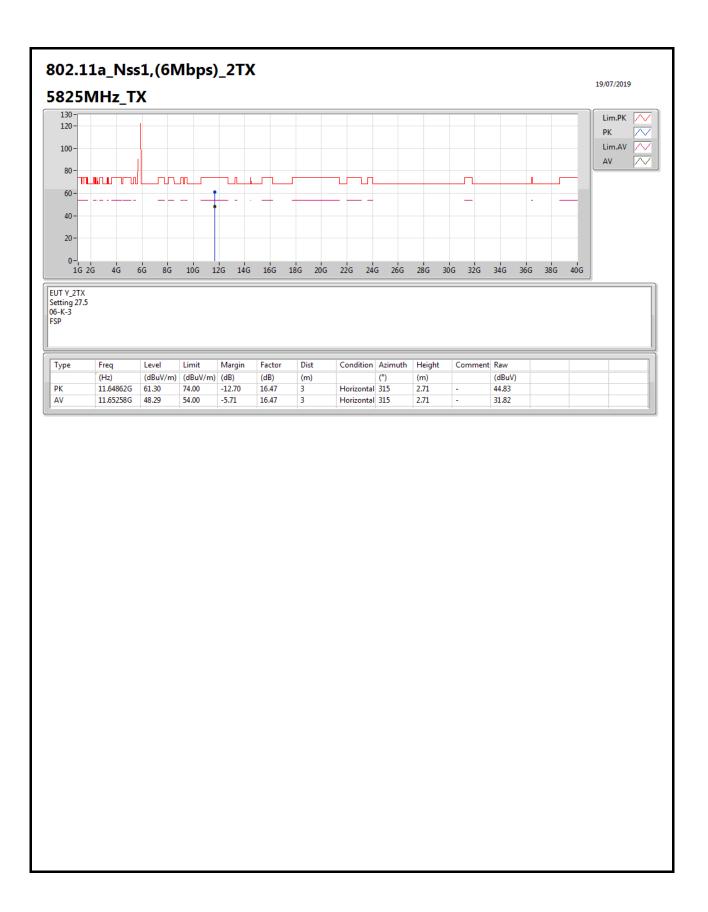




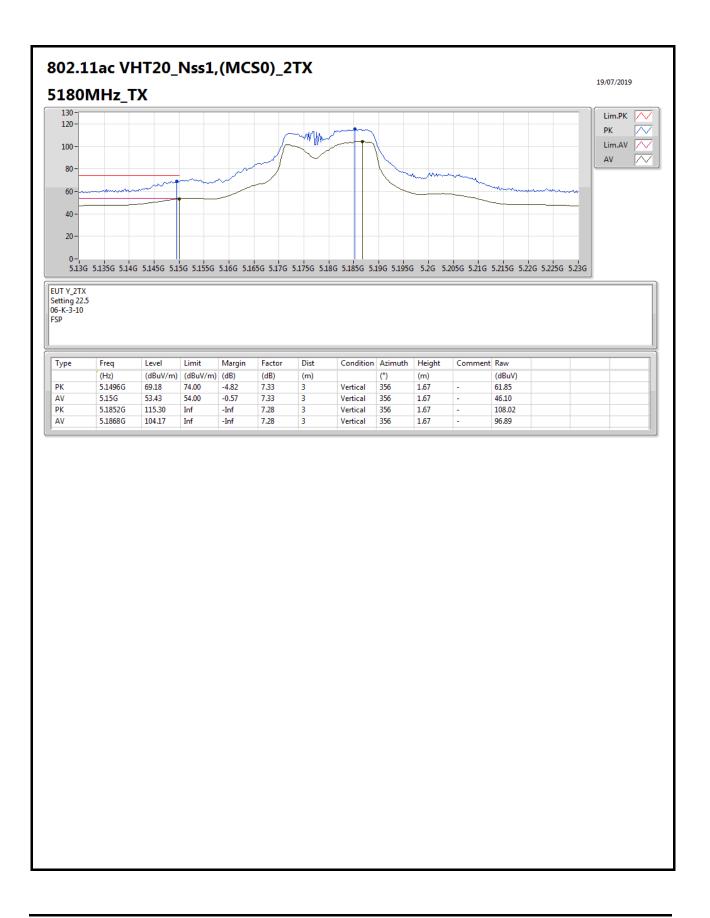




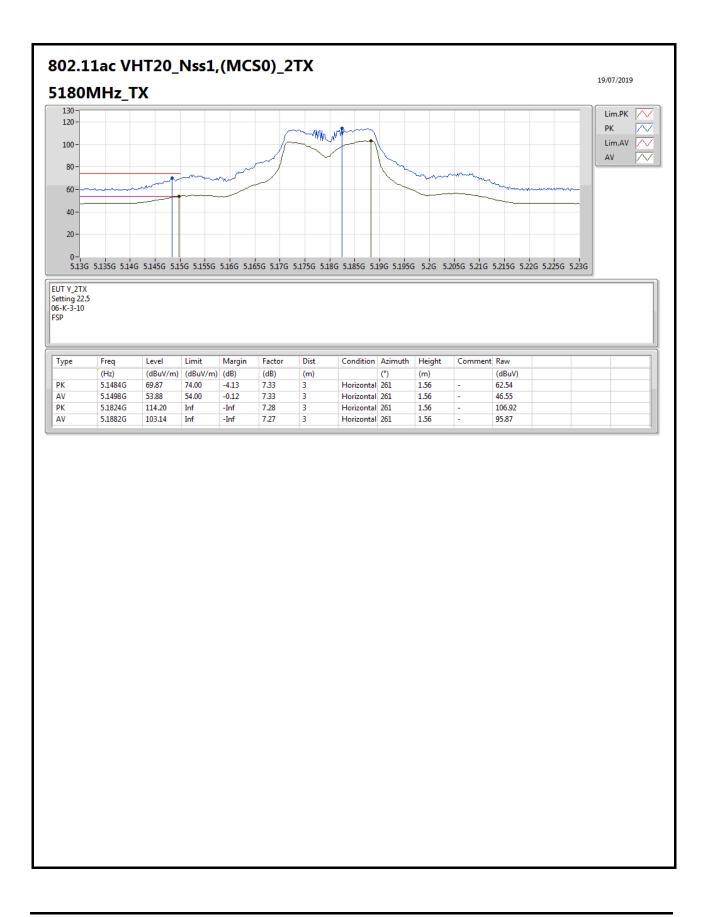




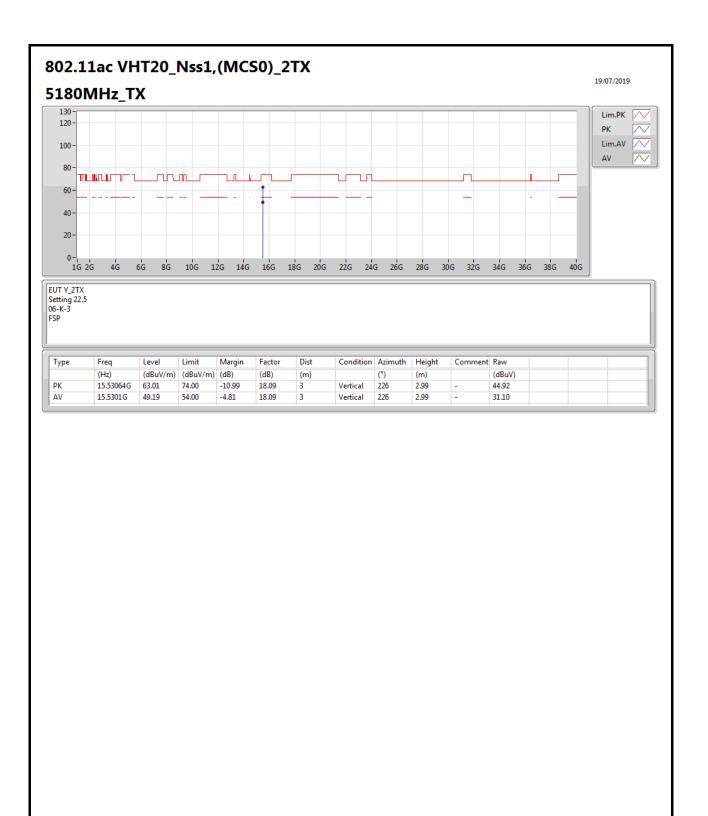




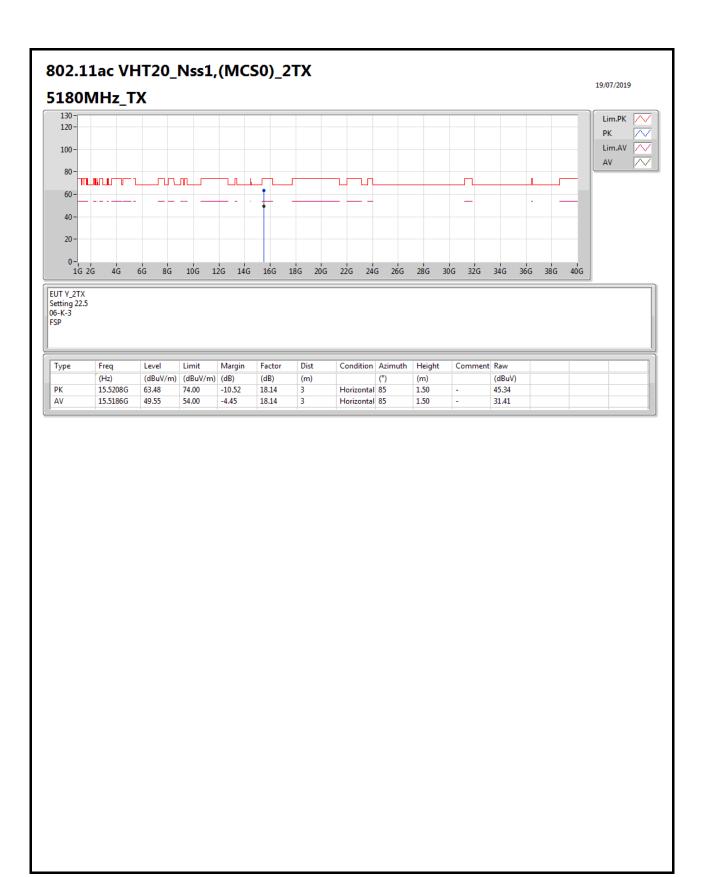




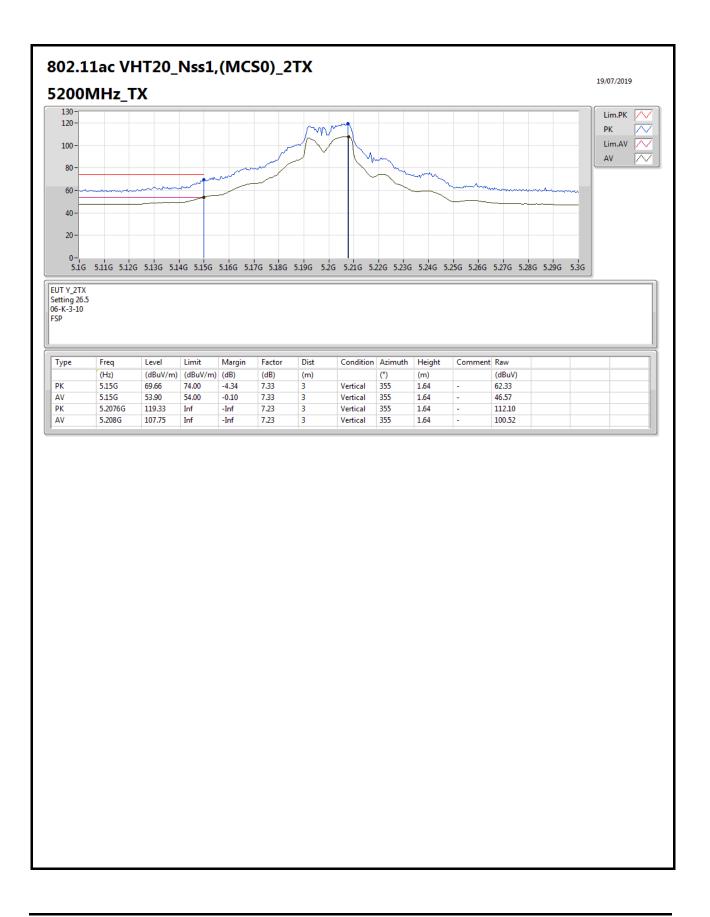




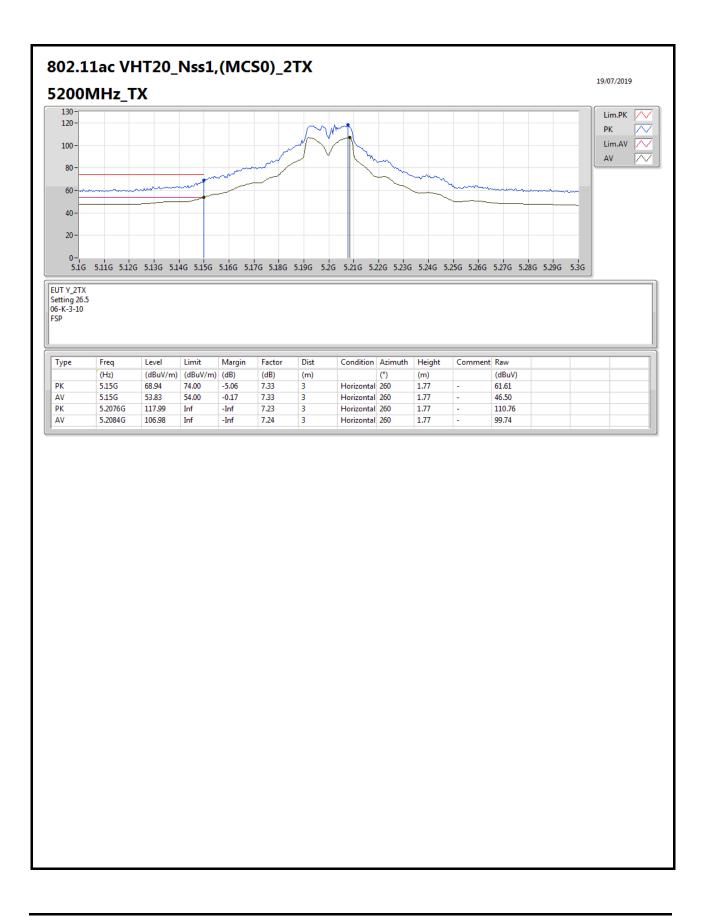




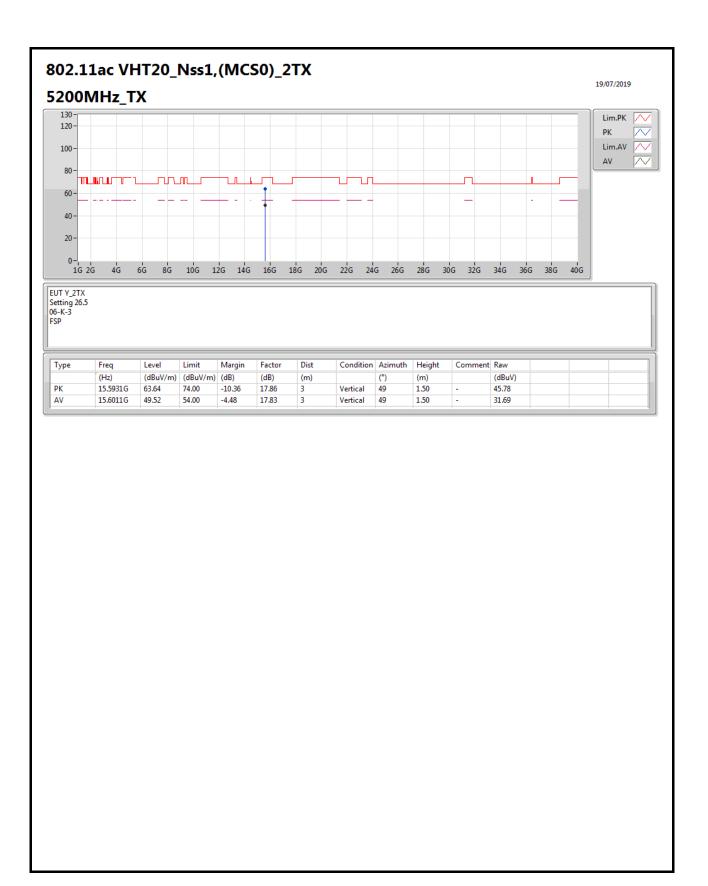




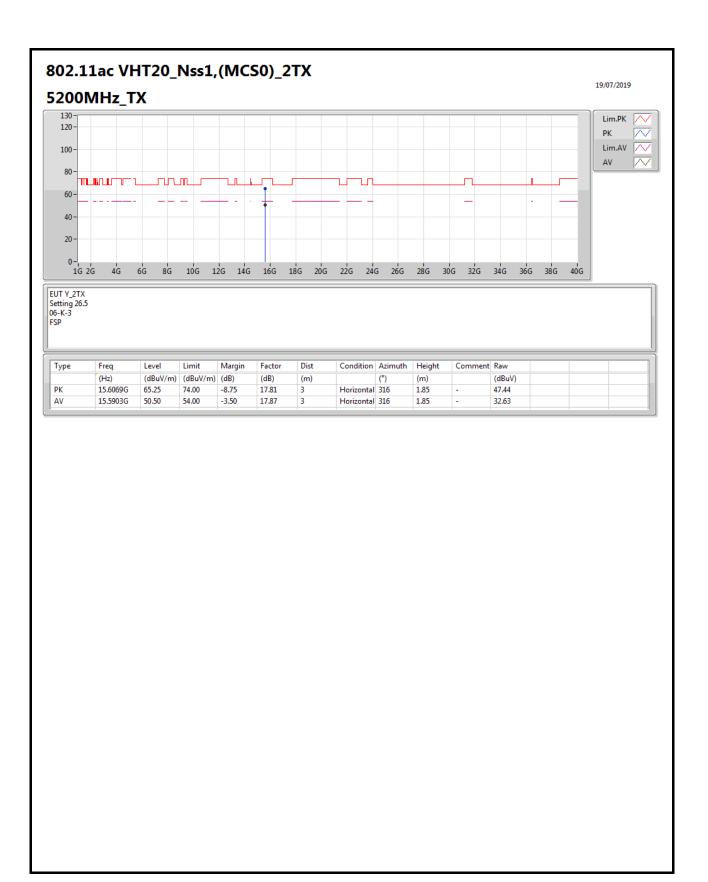




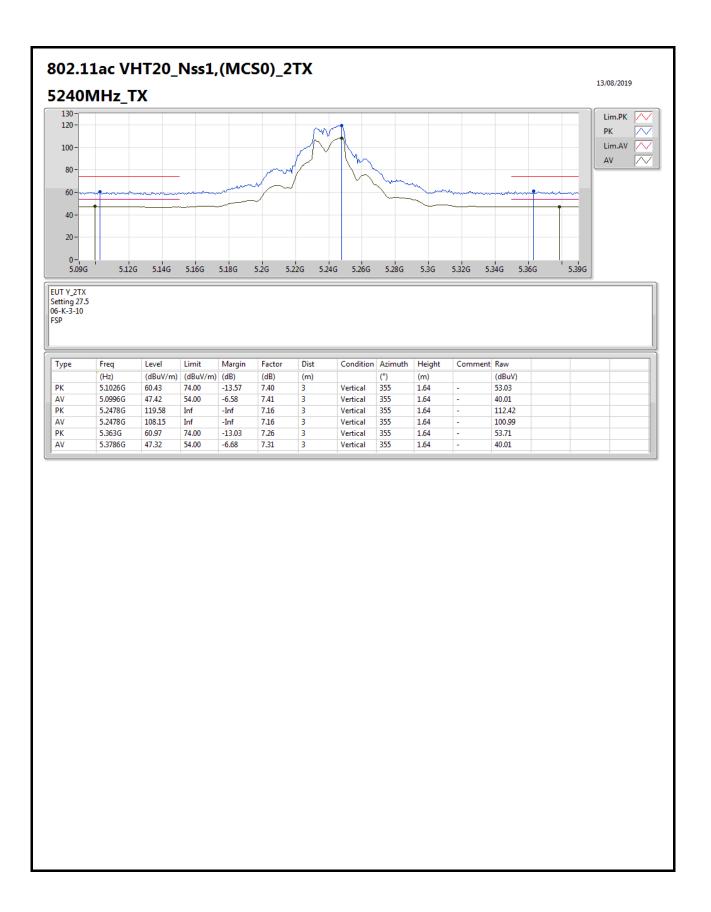




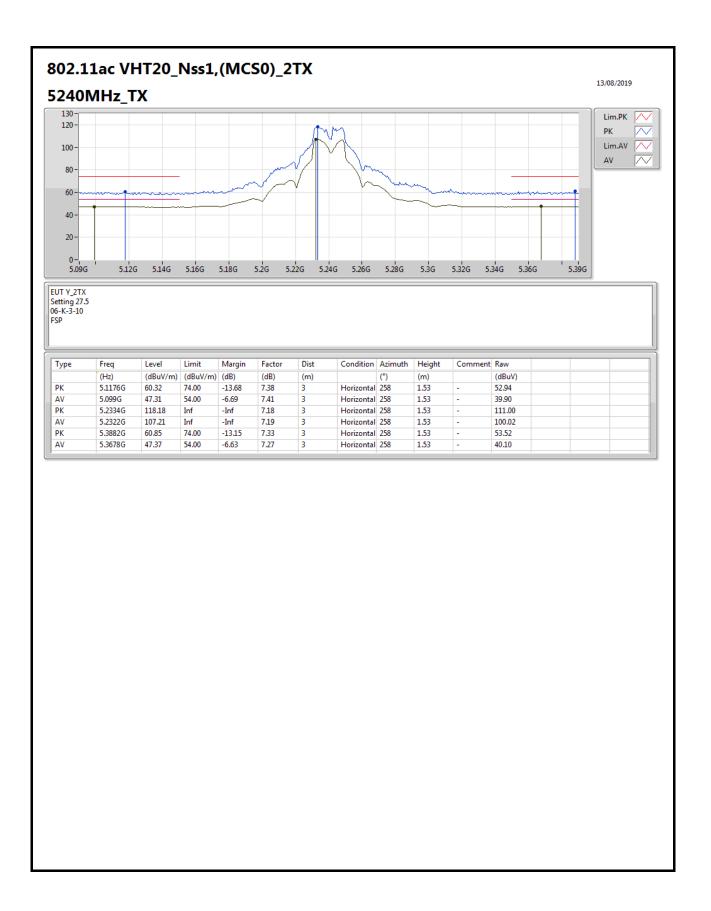




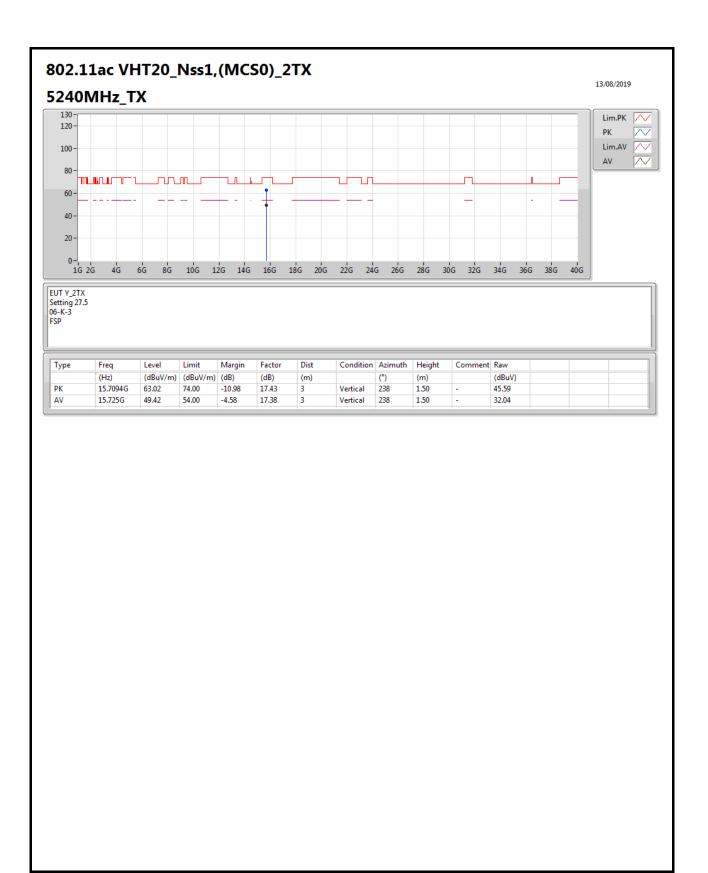




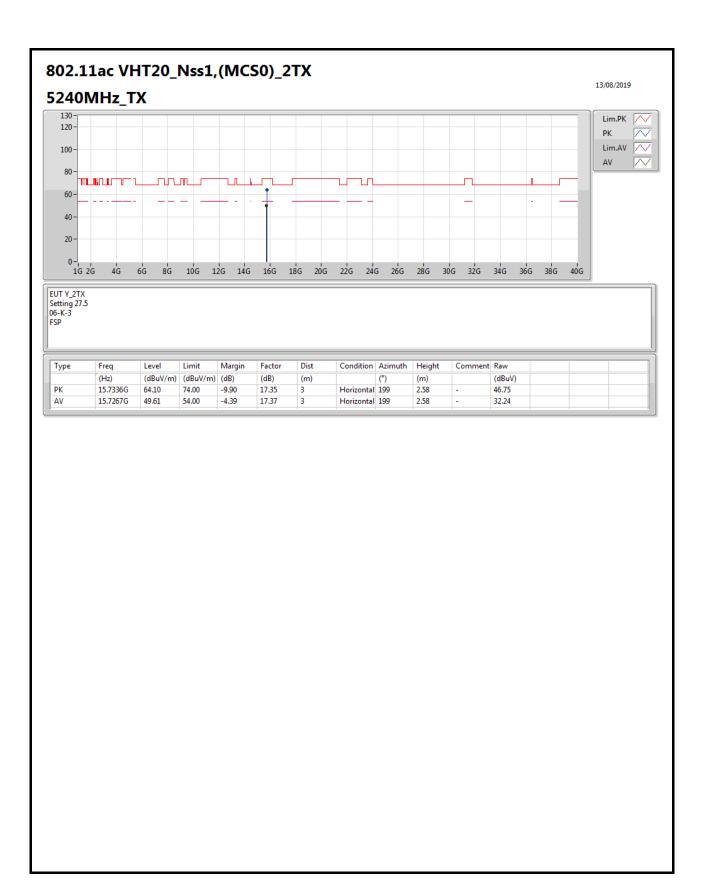




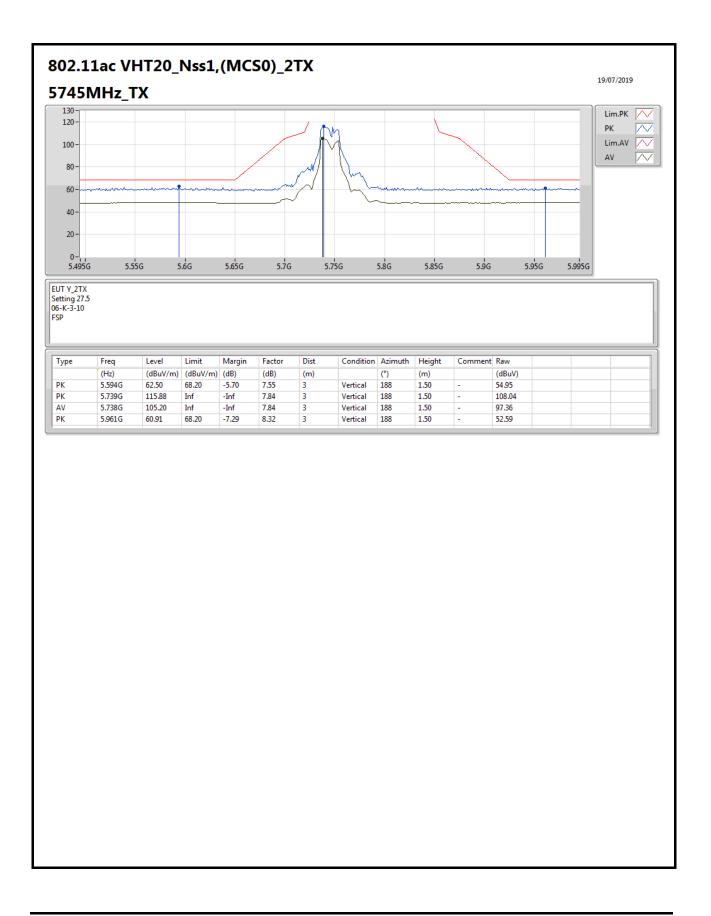




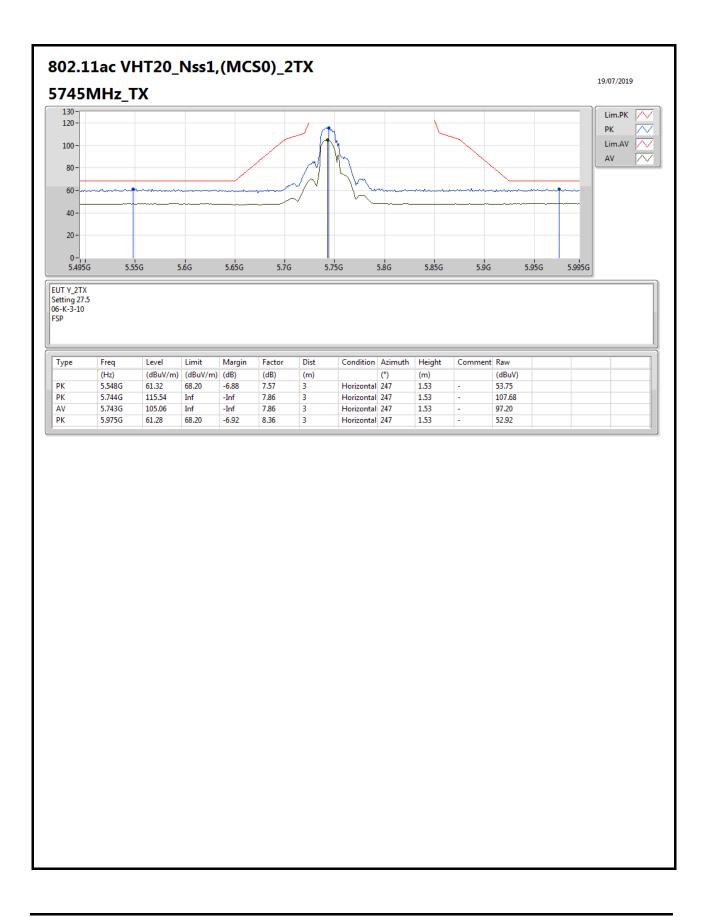




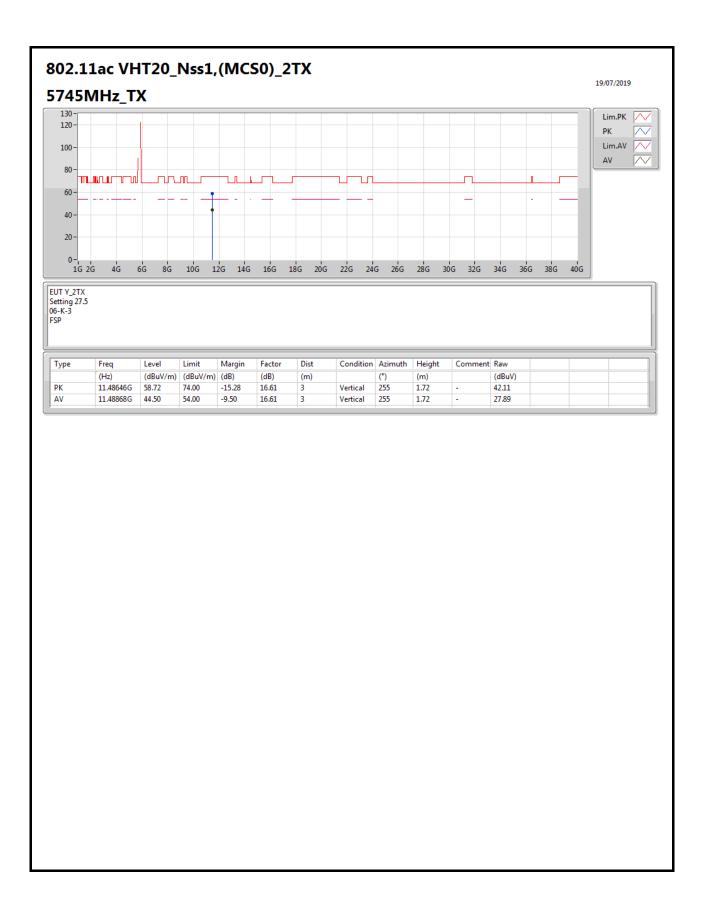




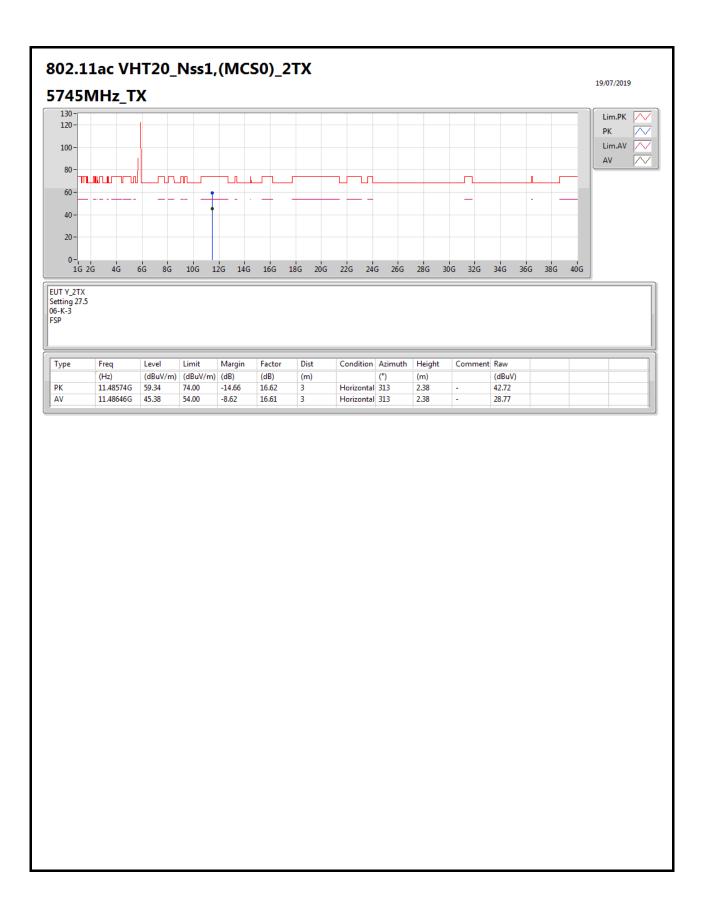




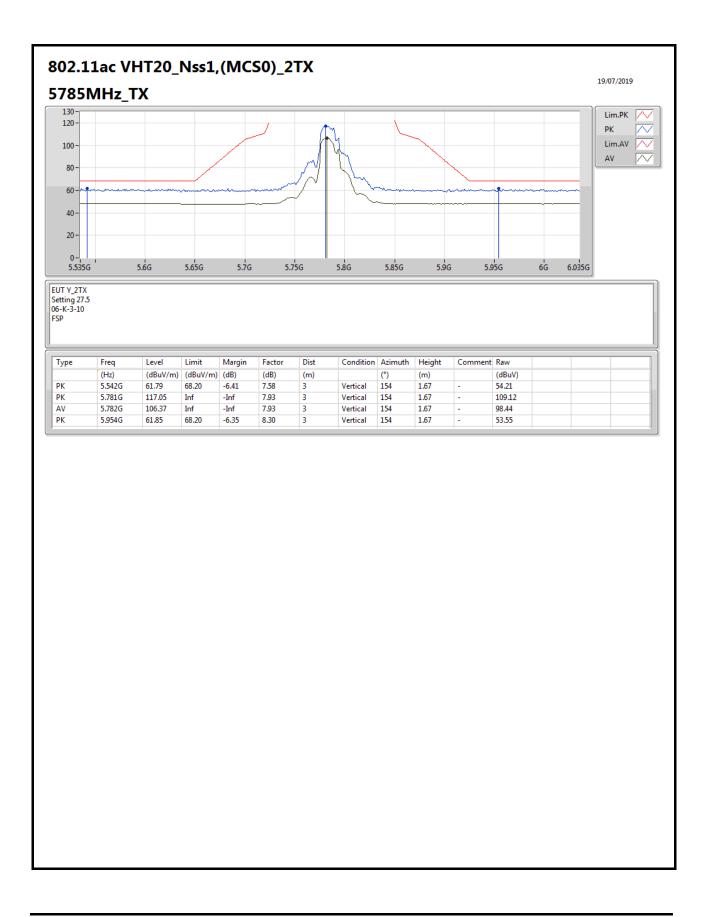




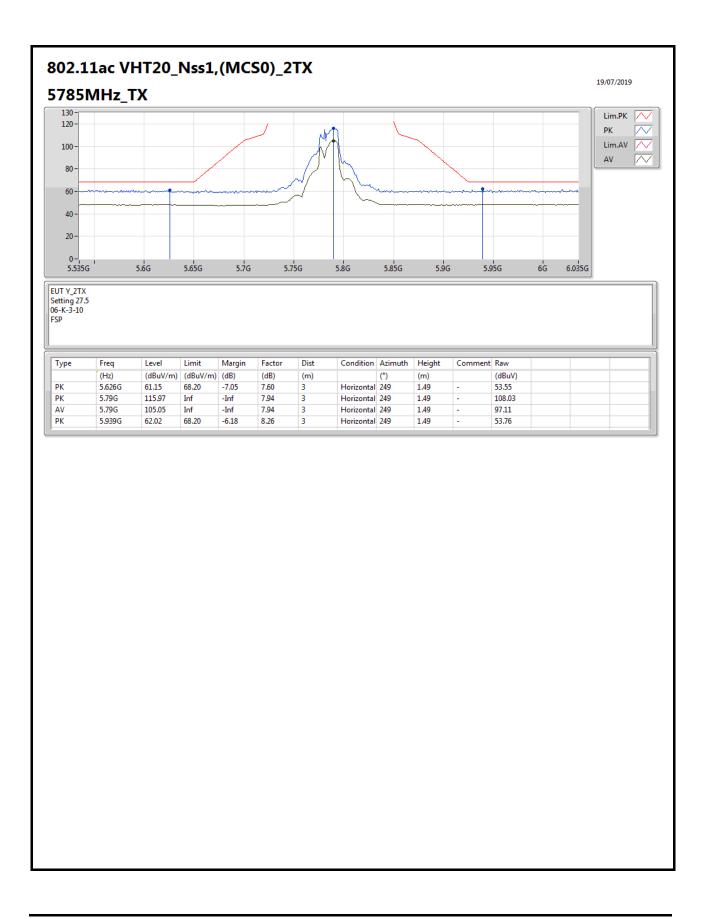




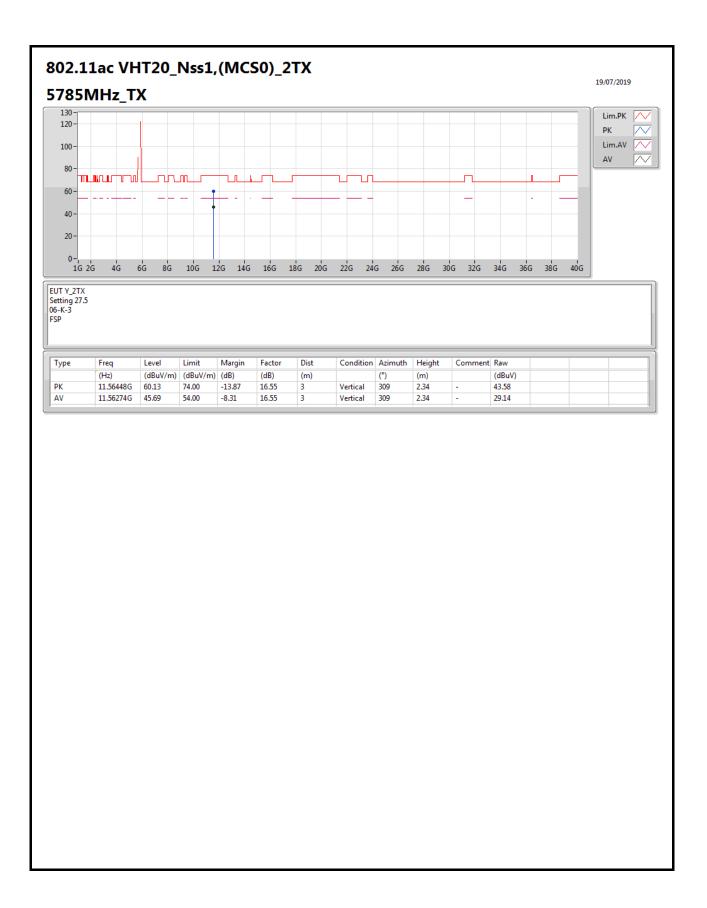




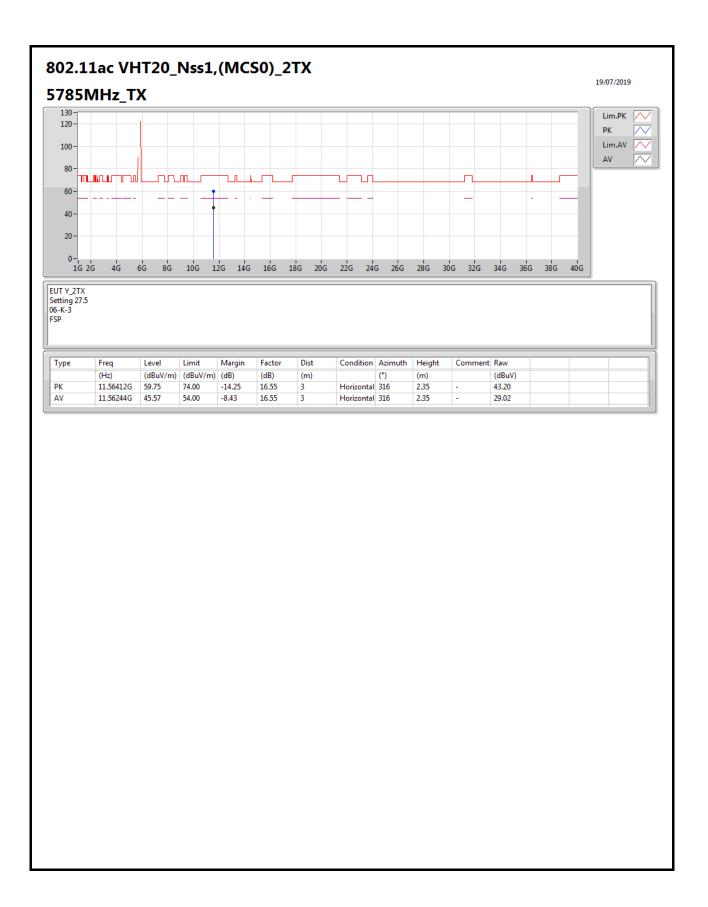




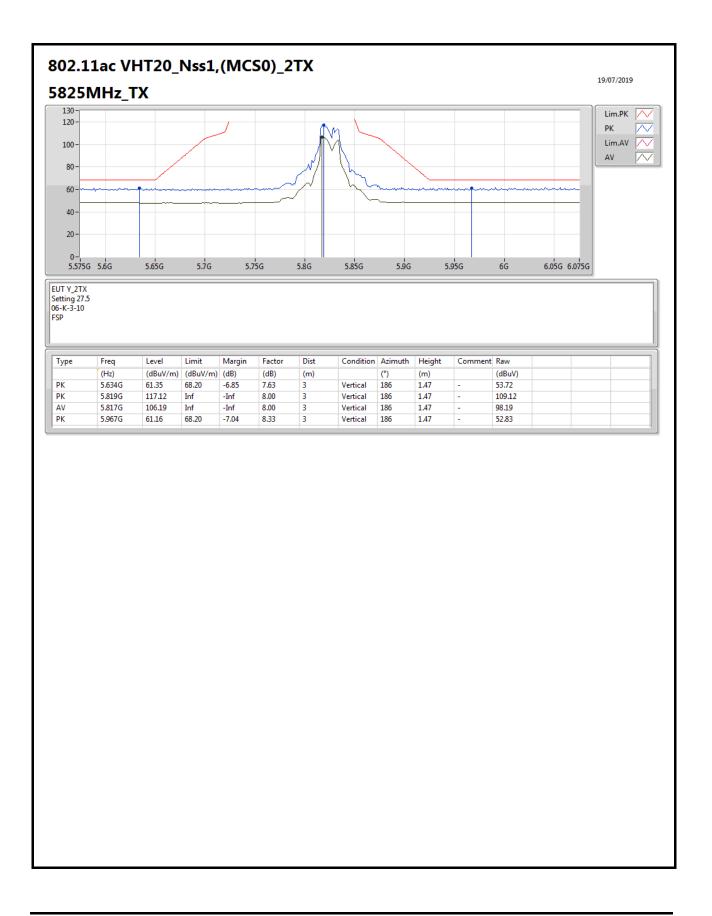




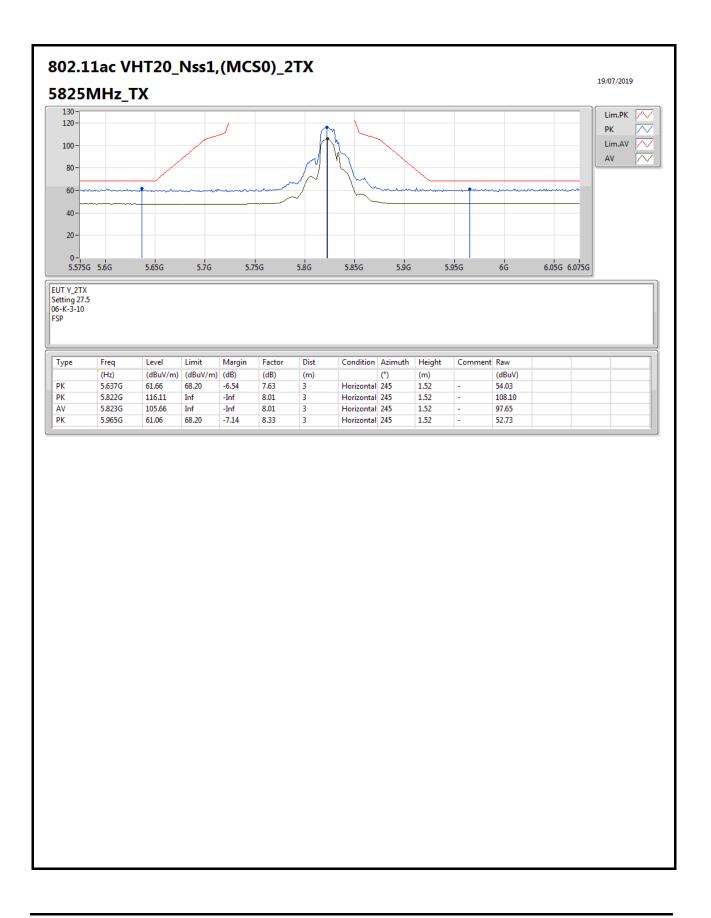




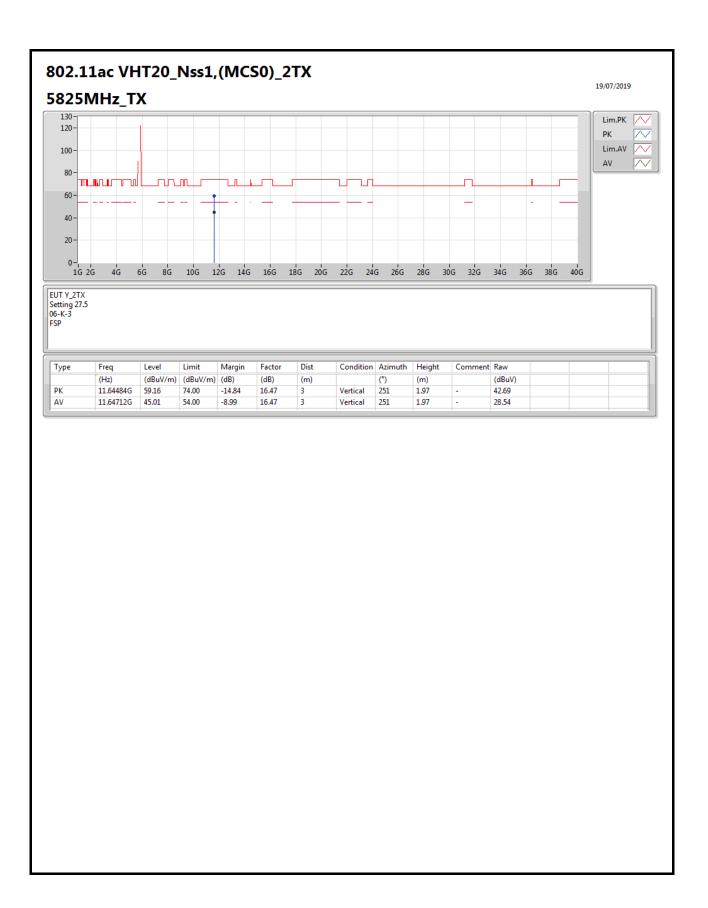




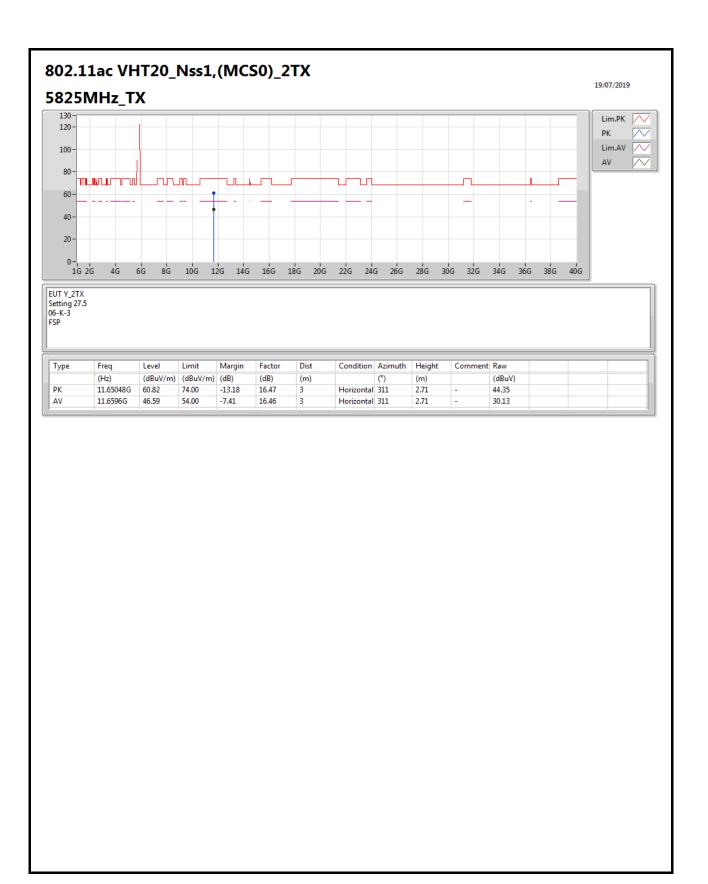




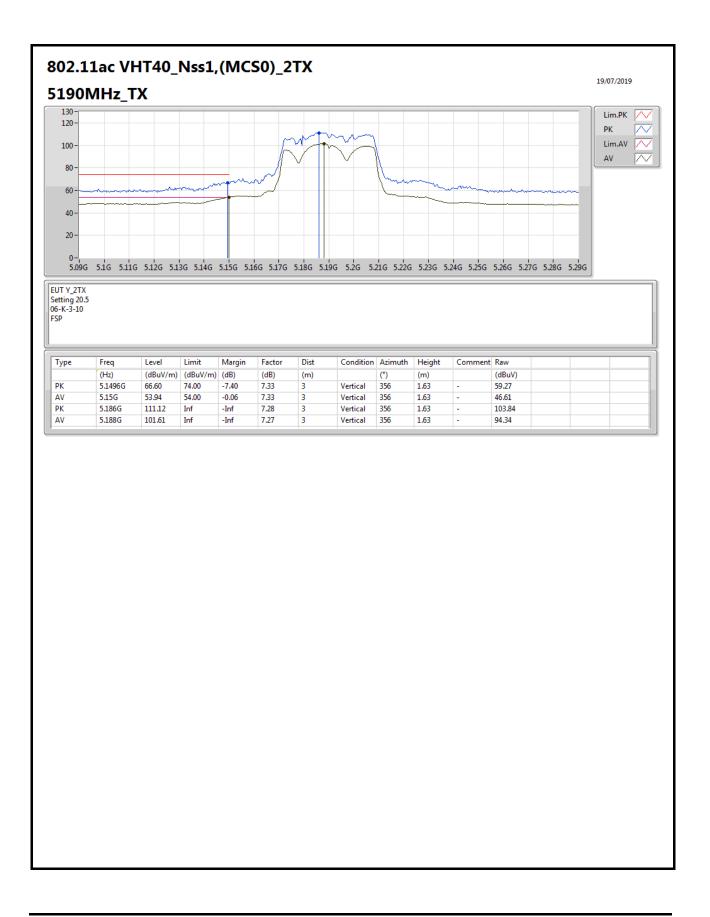




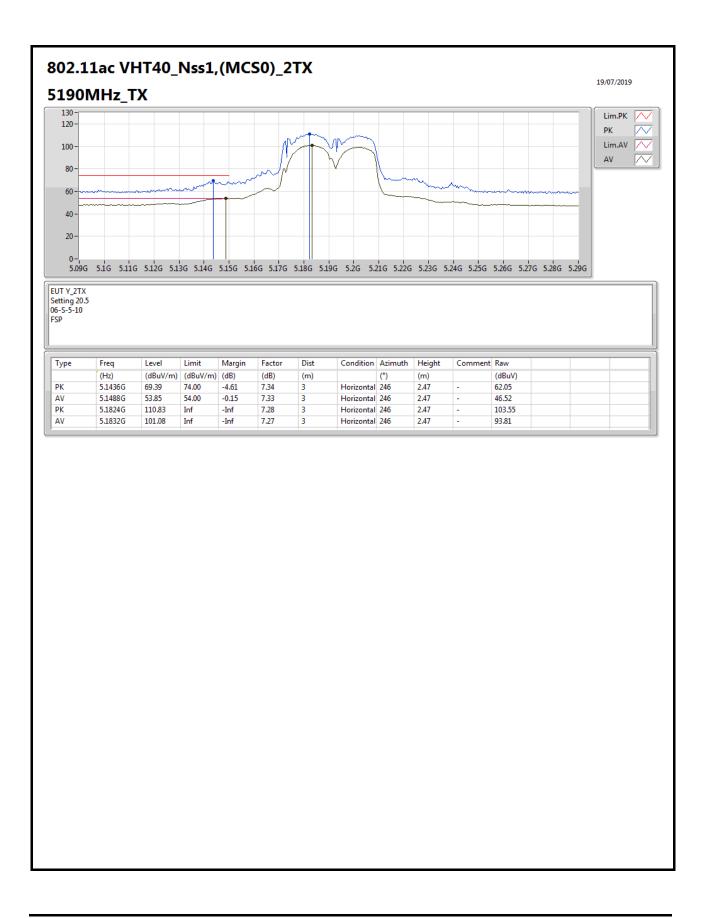




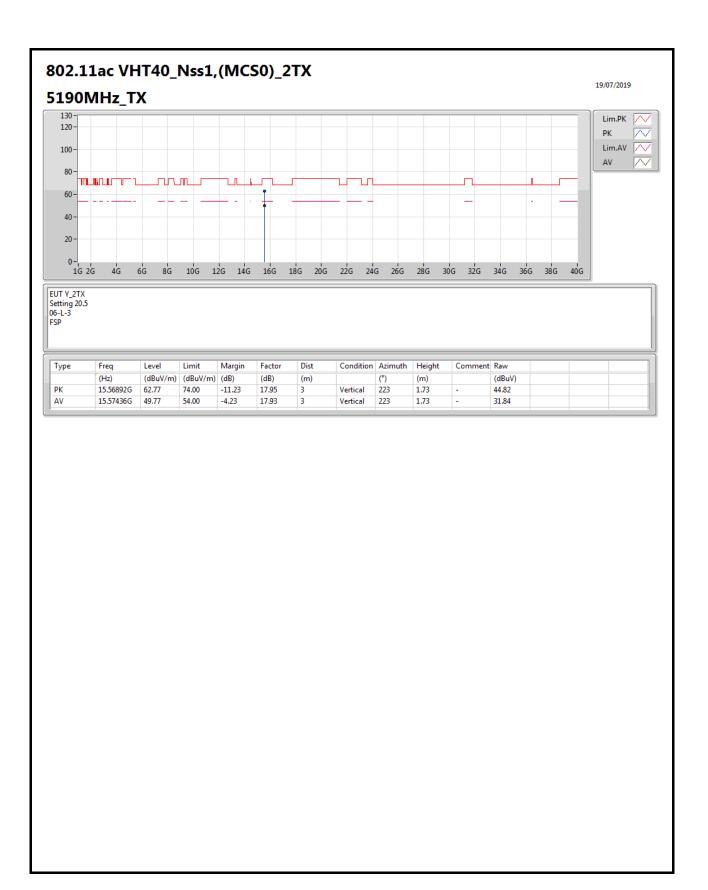




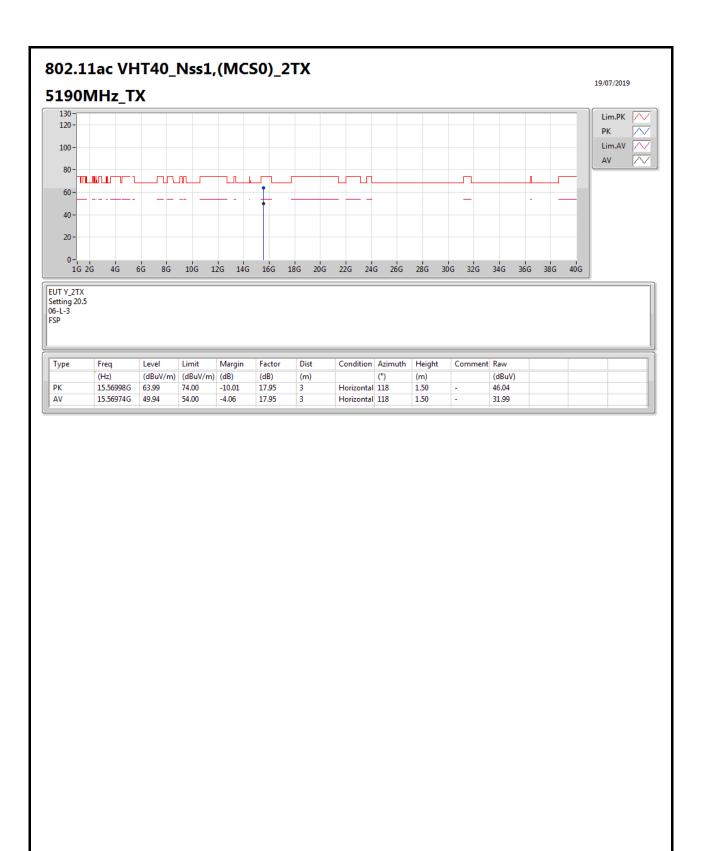




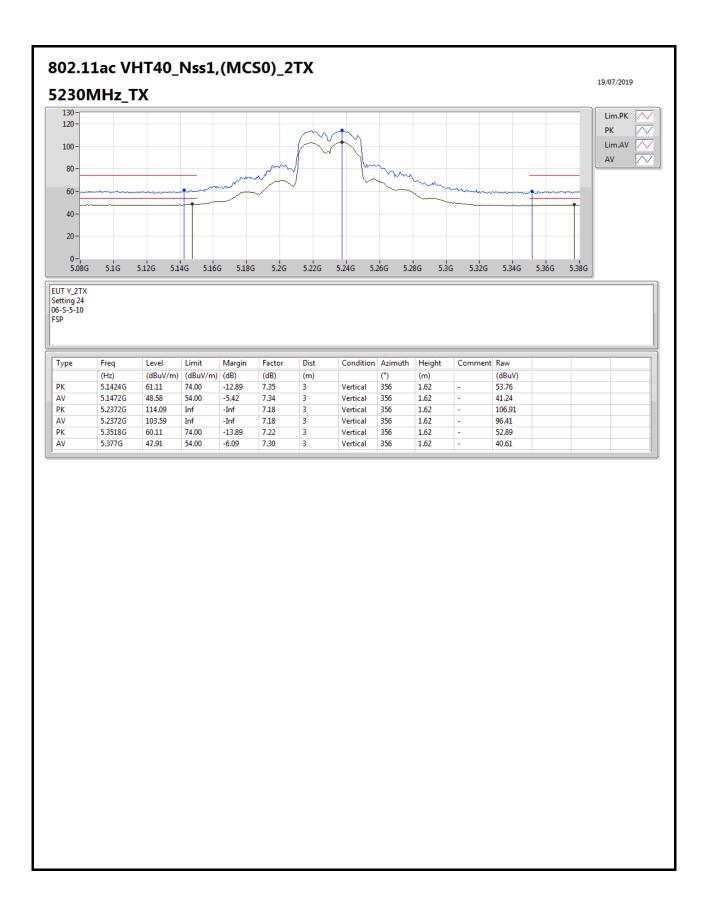




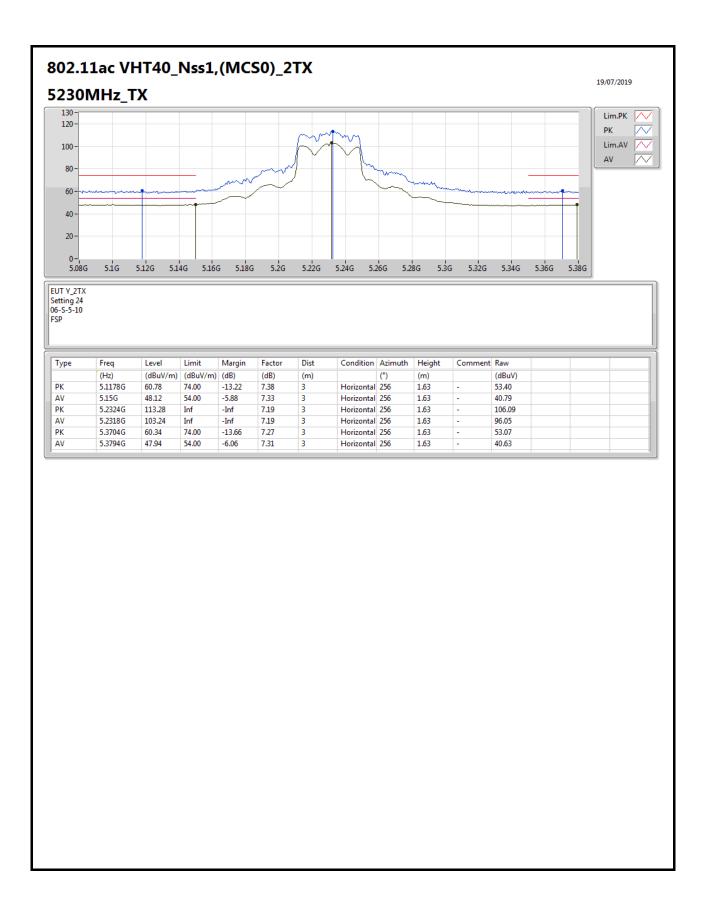




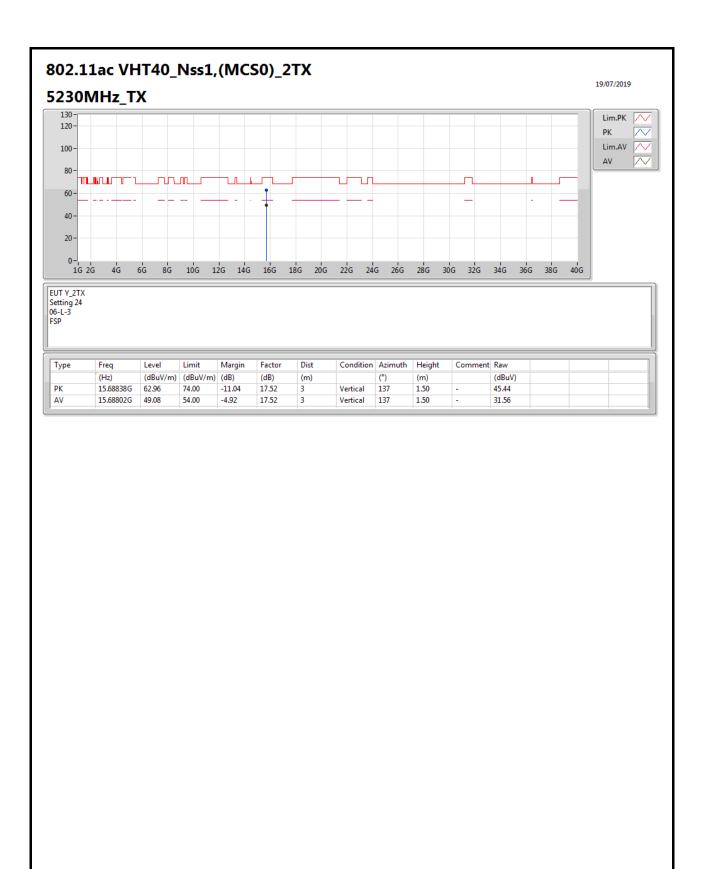




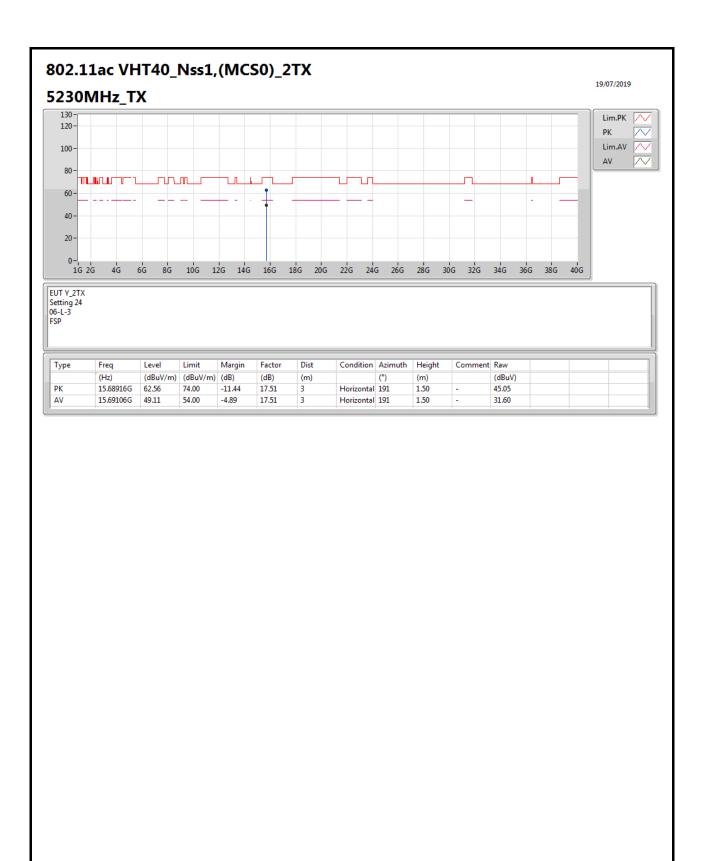




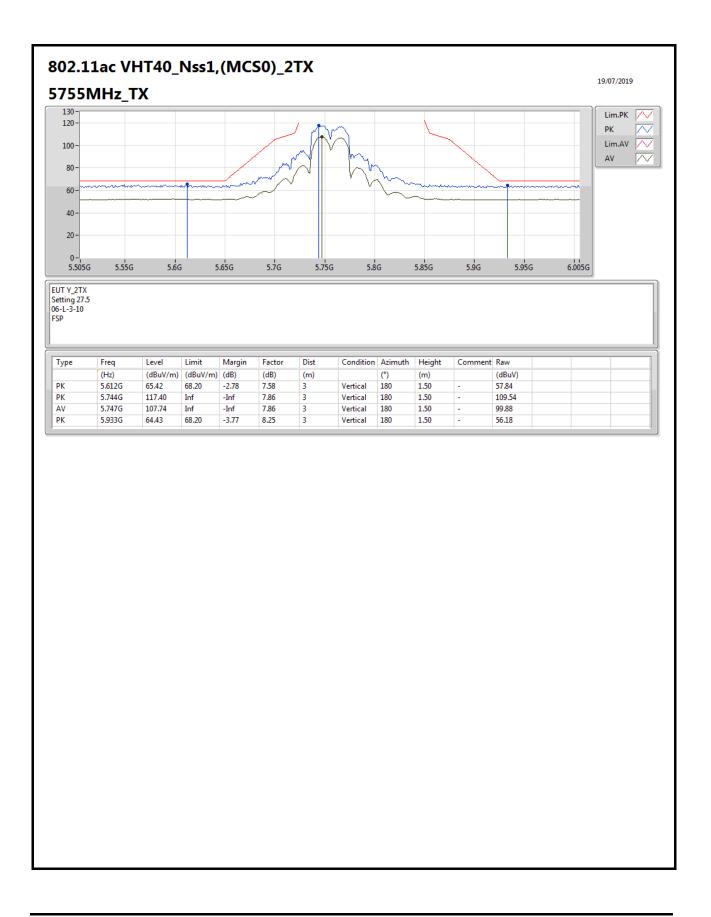




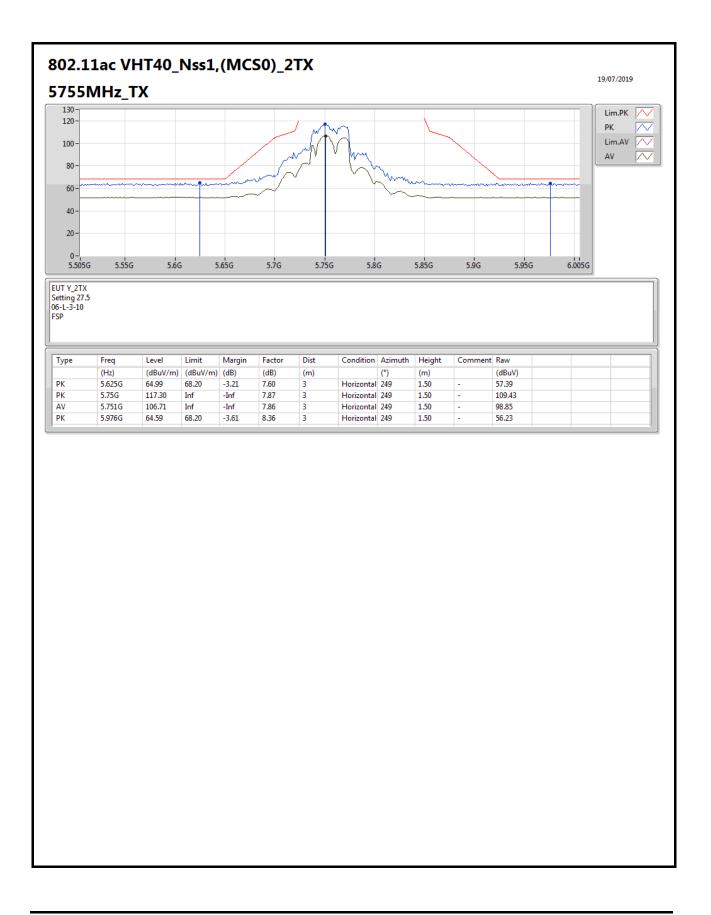




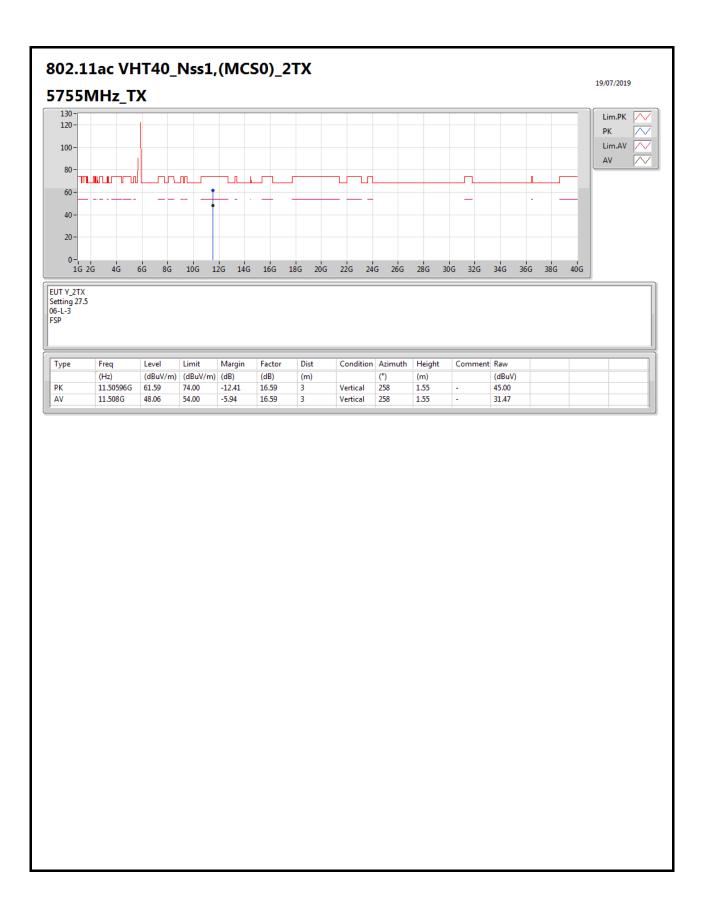




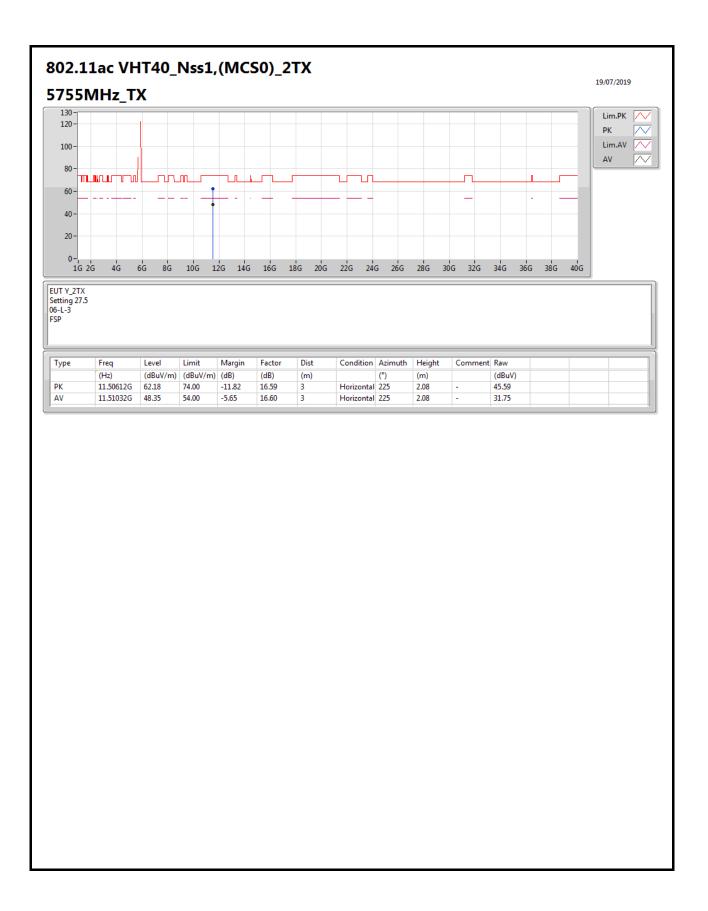




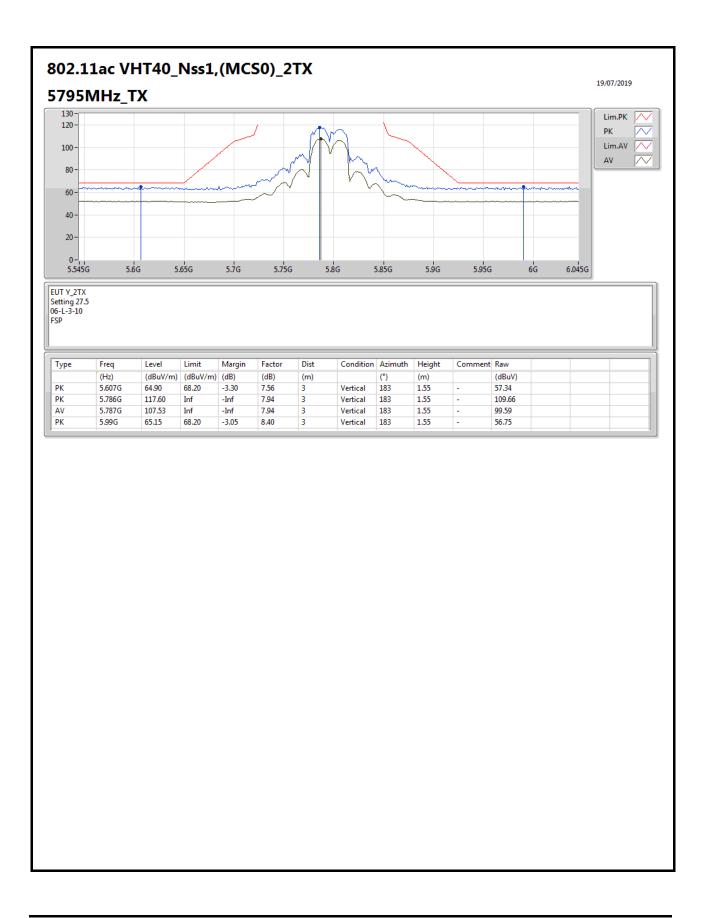




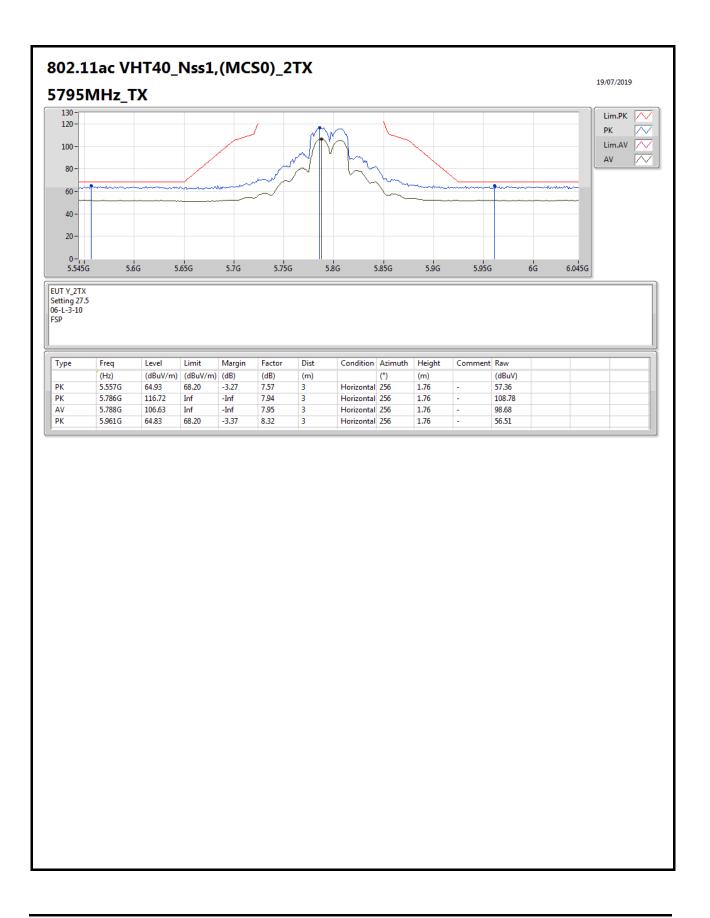




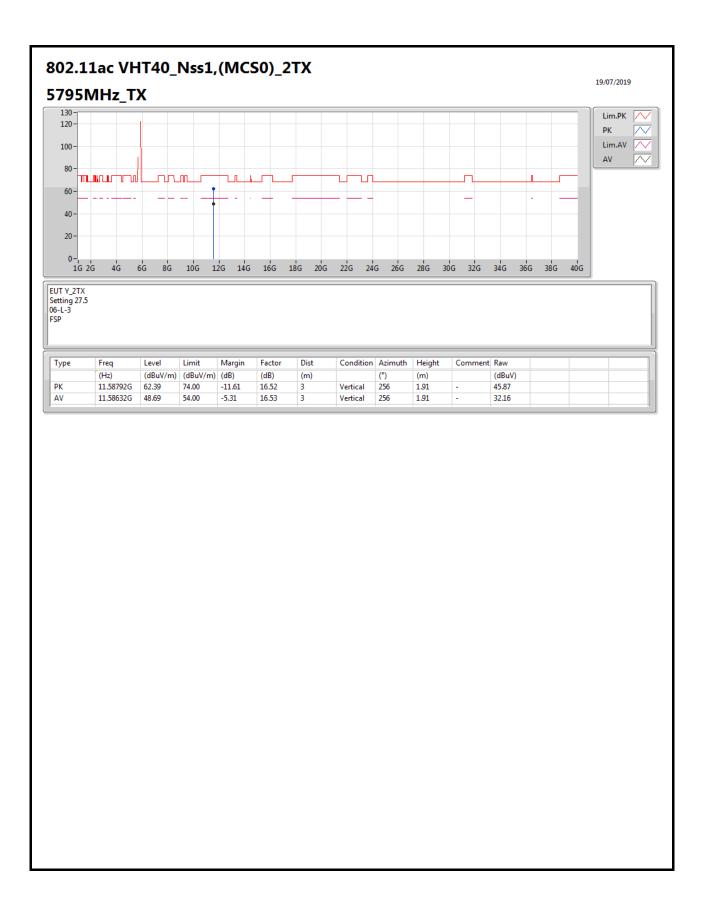




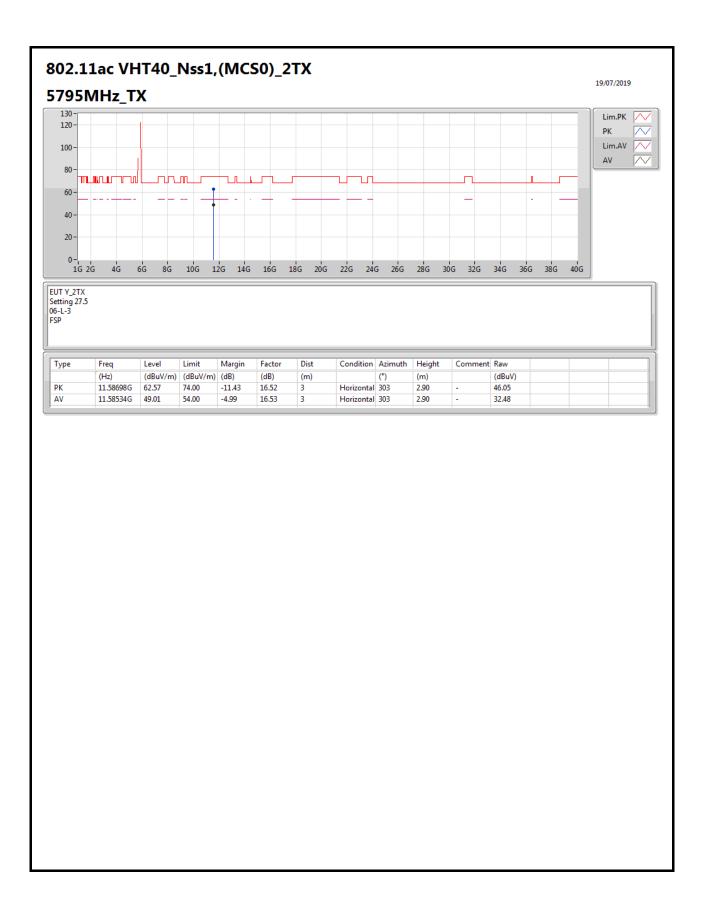




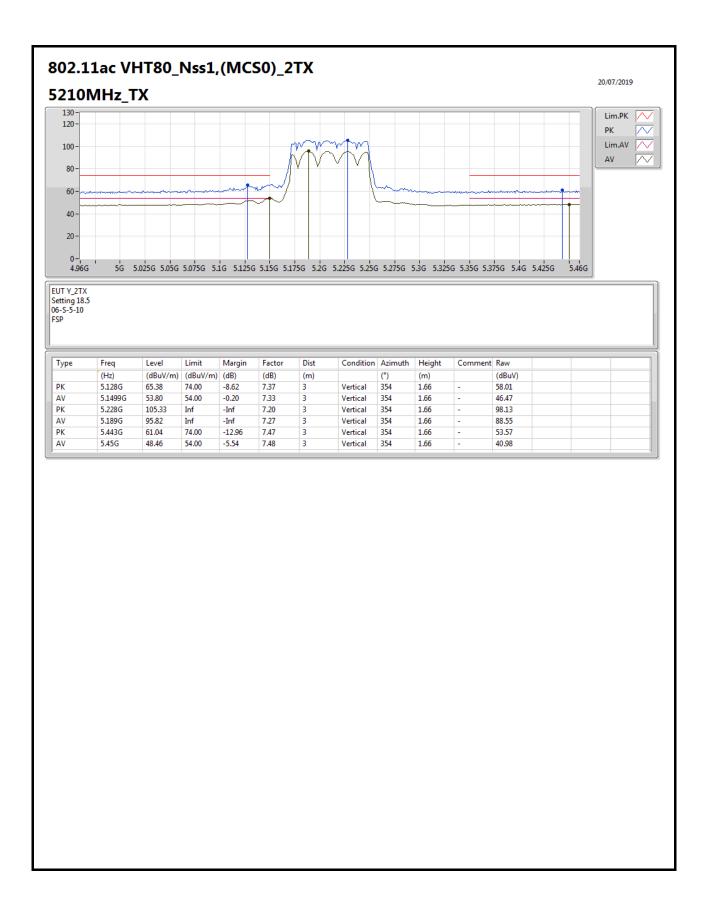




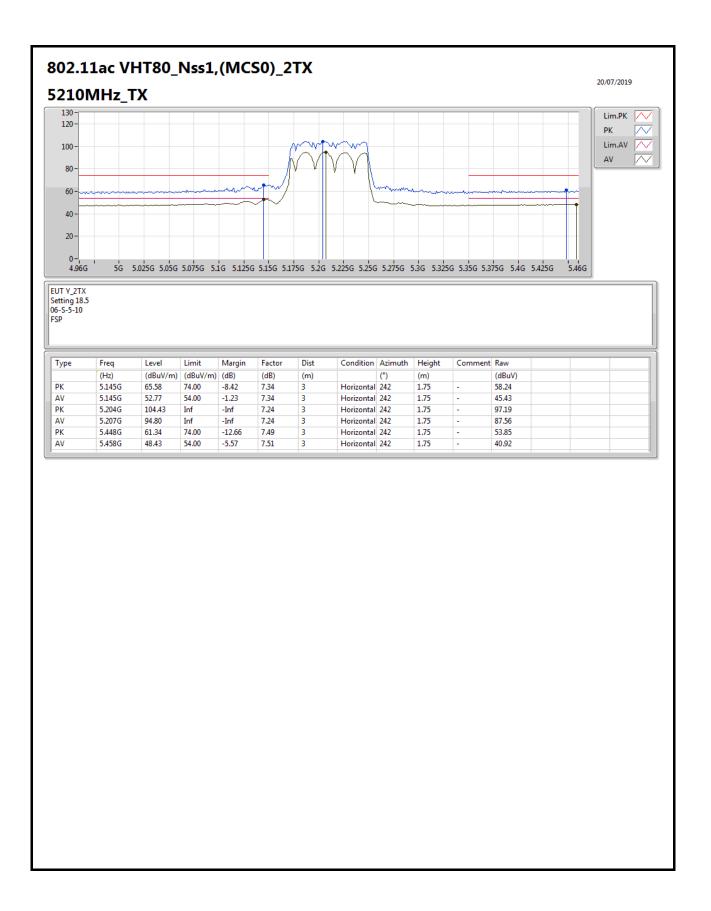




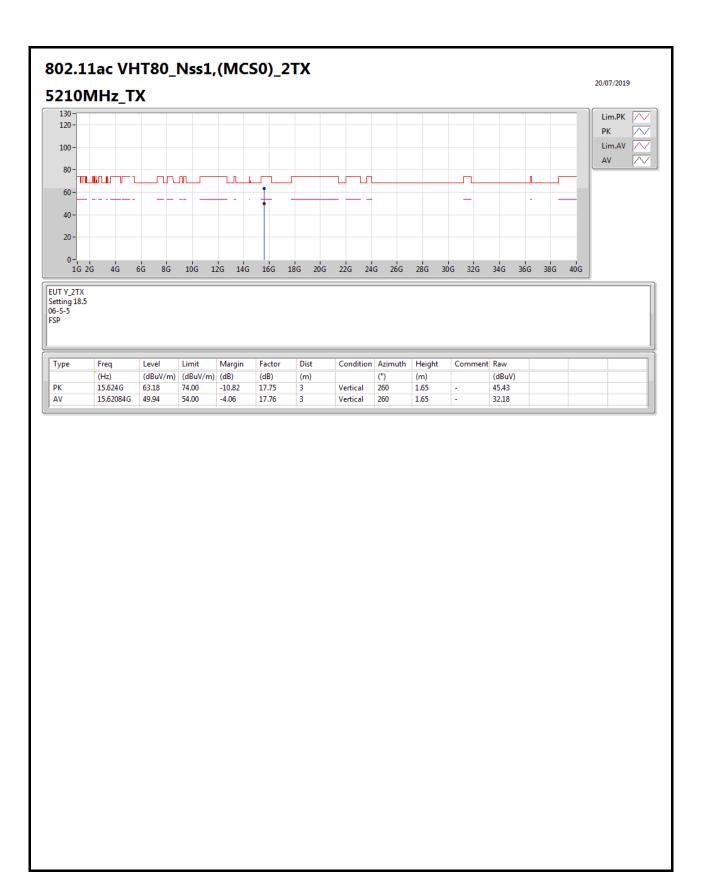




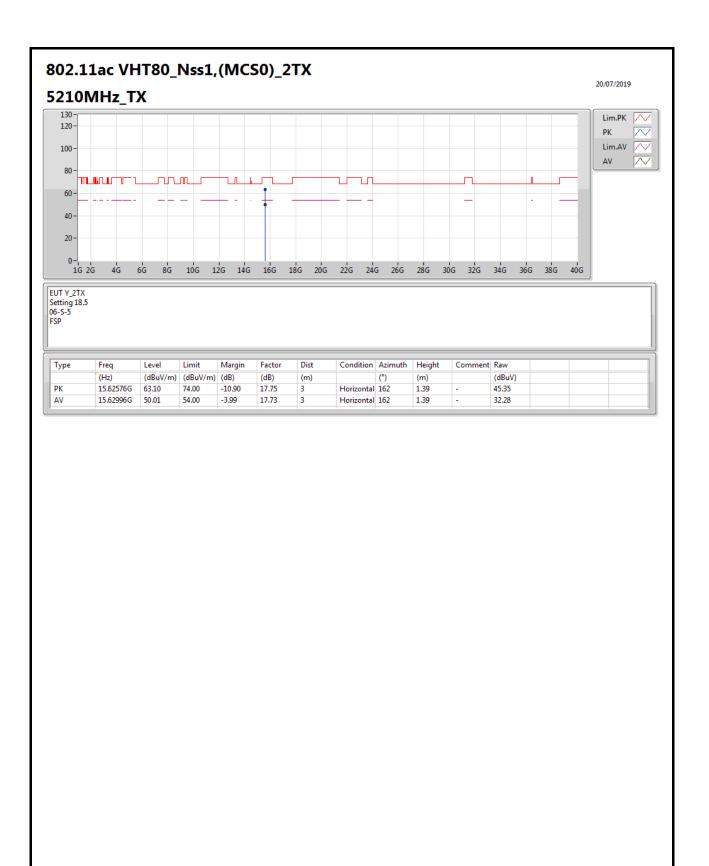




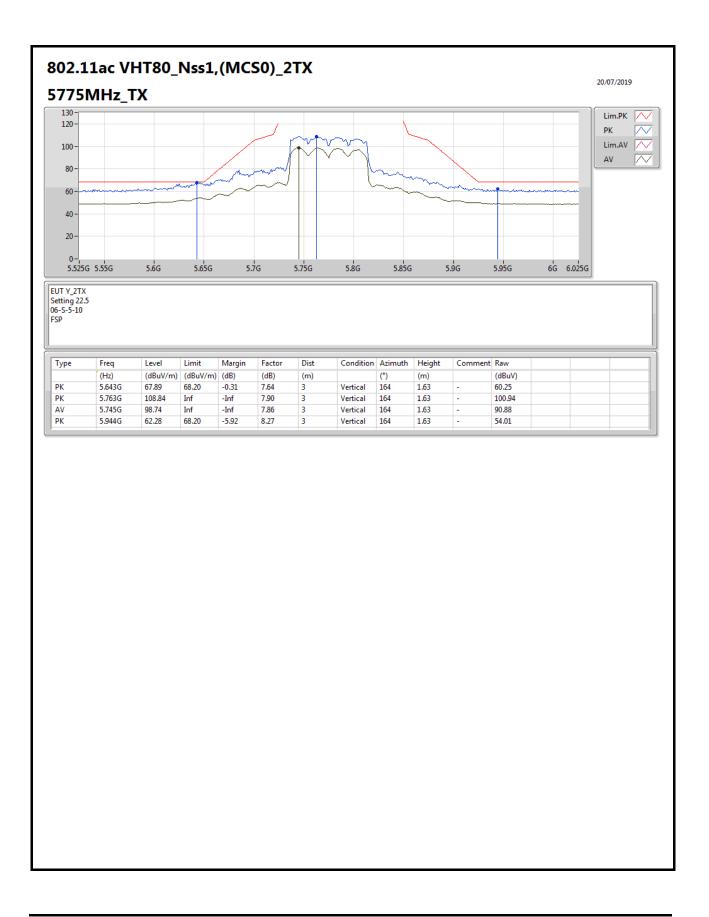




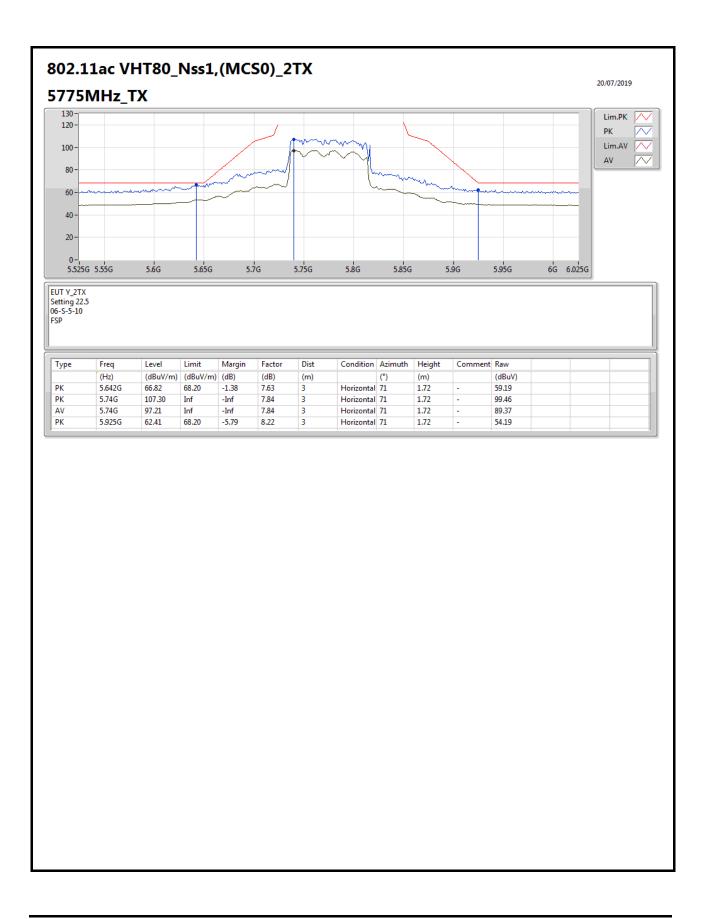




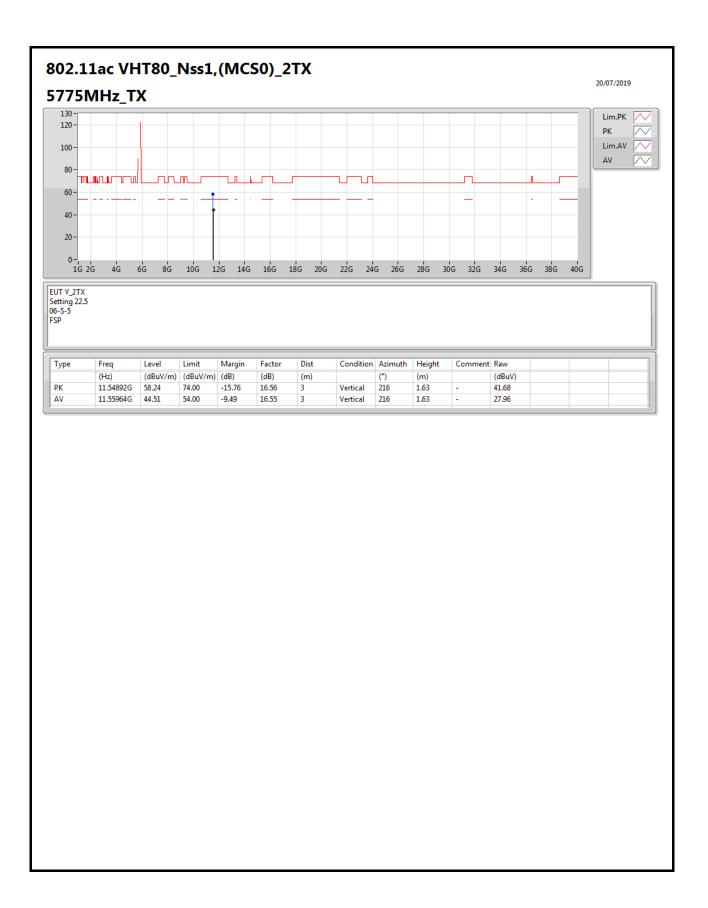




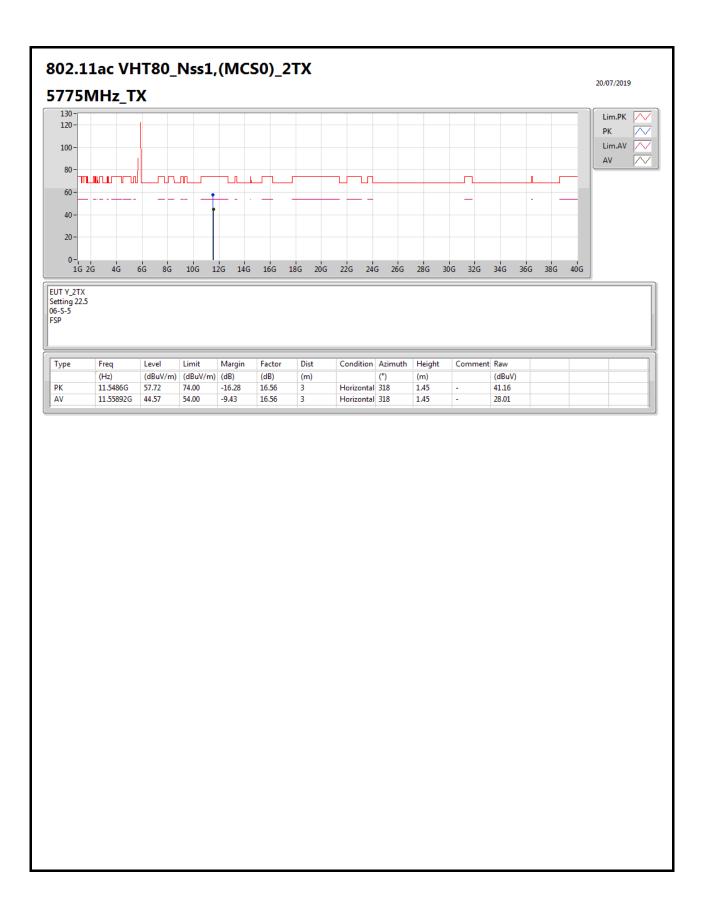














## RSE TX above 1GHz TX BF Result

## Summary

Mode	Result	Туре	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB)	(m)		(*)	(m)	
5.15-5.25GHz	-		-	-	-	-	-	-	-	-	-	-
802.11ac VHT40-BF_Nss1,(MCS0)_2TX	Pass	AV	5.15G	53.91	54.00	-0.09	5.09	3	Horizontal	242	1.56	-



