





FCC RADIO TEST REPORT

FCC ID

: 2AQ68W6RT2230

Equipment

: Outdoor Wireless Gateway

Brand Name

: Hon Lin

Model Name : W6R-T223-001,W6B-T223-001,W6S-T223-001

Applicant

: Hon Lin Technology Co., Ltd.

11F, No.32, Jihu Rd., Neihu Dist., Taipei City Taiwan

Manufacturer : Hon Lin Technology Co., Ltd.

11F, No.32, Jihu Rd., Neihu Dist., Taipei City Taiwan

Standard

: 47 CFR FCC Part 15.407

The product was received on Dec. 31, 2020, and testing was started from Jan. 11, 2021 and completed on Jan. 27, 2021. 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 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 Chang

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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

TEL: 886-3-656-9065

FAX: 886-3-656-9085

Report Template No.: CB-A12_1 Ver1.2

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Issued Date

: Feb. 09, 2021

Report Version : 01

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Report Version : 01

Report No.: FR0D3031AB

History of this test report

Report No.: FR0D3031AB

Report No.	Version	Description	Issued Date
FR0D3031AB	01	Initial issue of report	Feb. 09, 2021

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Summary of Test Result

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Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.407(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: Sandy Chuang

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1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
5150-5250	a, n (HT20), ac (VHT20),	5180-5240	36-48 [4]
5725-5850	ax (HEW20)	5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40),	5190-5230	38-46 [2]
5725-5850	ax (HEW40)	5755-5795	151-159 [2]
5150-5250	oo (\/UT90\ ov (UE\\/90\	5210	42 [1]
5725-5850	ac (VHT80), ax (HEW80)	5775	155 [1]

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For Band 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	802.11ac VHT20	20	2TX
5.15-5.25GHz	802.11ac VHT20-BF	20	2TX
5.15-5.25GHz	802.11ax HEW20	20	2TX
5.15-5.25GHz	802.11ax HEW20-BF	20	2TX
5.15-5.25GHz	802.11n HT40	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	802.11ax HEW40	40	2TX
5.15-5.25GHz	802.11ax HEW40-BF	40	2TX
5.15-5.25GHz	802.11ac VHT80	80	2TX
5.15-5.25GHz	802.11ac VHT80-BF	80	2TX
5.15-5.25GHz	802.11ax HEW80	80	2TX
5.15-5.25GHz	802.11ax HEW80-BF	80	2TX

For Band 4

Band	Mode	BWch (MHz)	Nant
5.725-5.85GHz	802.11a	20	3TX
5.725-5.85GHz	802.11n HT20	20	3TX
5.725-5.85GHz	802.11ac VHT20	20	3TX
5.725-5.85GHz	802.11ac VHT20-BF	20	3TX
5.725-5.85GHz	802.11ax HEW20	20	3TX
5.725-5.85GHz	802.11ax HEW20-BF	20	3TX
5.725-5.85GHz	802.11n HT40	40	3TX

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Band	Mode	BWch (MHz)	Nant
5.725-5.85GHz	802.11ac VHT40	40	3TX
5.725-5.85GHz	802.11ac VHT40-BF	40	3TX
5.725-5.85GHz	802.11ax HEW40	40	3TX
5.725-5.85GHz	802.11ax HEW40-BF	40	3TX
5.725-5.85GHz	802.11ac VHT80	80	3TX
5.725-5.85GHz	802.11ac VHT80-BF	80	3TX
5.725-5.85GHz	802.11ax HEW80	80	3TX
5.725-5.85GHz	802.11ax HEW80-BF	80	3TX

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.
- HEW20, HEW40, HEW80 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- BWch is the nominal channel bandwidth.

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1.1.2 Antenna Information

			Port						Gain
Set	Ant.	2.4GHz	5GHz (Band 1)	5GHz (Band 4)	Brand	Model Name	Antenna Type	Connector	(dBi)
1	1	1	1	-	Shenzhen AotianChuangke	AMXF-2458-5	Omnidirectional	N Type	
1	2	2	2	-	Shenzhen AotianChuangke	AMXF-2458-5	Omnidirectional	N Type	
	3	-	-	1	Shenzhen AotianChuangke	ATCK-5800-8	Omnidirectional	N Type	
2	4	-	-	2	Shenzhen AotianChuangke	ATCK-5800-8	Omnidirectional	N Type	Note 1
	5	-	-	3	Shenzhen AotianChuangke	ATCK-5800-8	Omnidirectional	N Type	
3	1	1	1	-	M.gear	C407-690902-A	Omnidirectional	N Type	
ა	2	2	2	-	M.gear	C407-690902-A	Omnidirectional	N Type	
	3	-	-	1	M.gear	C407-690851-A	Omnidirectional	N Type	
4	4	-	-	2	M.gear	C407-690851-A	Omnidirectional	N Type	
	5	-	-	3	M.gear	C407-690851-A	Omnidirectional		

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Note 1

			Gain (dB	i)			Gain (dBi)	
Set A	Ant.	2.4GHz	5GHz (Band 1)	5GHz (Band 4)	Cable Loss	2.4GHz	5GHz (Band 1)	5GHz (Band 4)
4	1	6	6	1	0.5	5.5	5.5	-
1	2	6	6	1	0.5	5.5	5.5	-
	3	-	-	8	0.5	-	-	7.5
2	4	-	-	8	0.5	-	-	7.5
	5	1	-	8	0.5	-	-	7.5
2	1	3.5	6	1	0.5	3	5.5	-
3	2	3.5	6	1	0.5	3	5.5	-
	3	1	-	7	0.5	-	-	6.5
4	4	1	-	7	0.5	-	-	6.5
	5	-	-	7	0.5	-	-	6.5

Note 1: The above information was declared by manufacturer.

Note 2: Antenna set 1 and set 3 are the same type of antennas, antenna set 1 has the higher gain than set 2, so antenna set 1 is chosen to test.

Antenna set 2 and set 4 are the same type of antennas, antenna set 2 has the higher gain than set 4, so antenna set 2 is chosen to test.

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For 2.4GHz function:

For IEEE 802.11b/g/n/VHT/ax (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:

Band 1

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

Band 4

For IEEE 802.11a/n/ac/ax (3TX/3RX):

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

Port 1, Port 2 and Pot 3 could transmit/receive simultaneously

1.1.3 Mode Test Duty Cycle

Band 1

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.958	0.19	2.066m	1k
802.11ax HEW20	0.979	0.09	1.489m	1k
802.11ax HEW40	0.964	0.16	781.25u	3k
802.11ax HEW80	0.928	0.32	415u	3k

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Band 4

Dulla T				
Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.958	0.19	2.065m	1k
802.11ax HEW20	0.978	0.10	1.489m	1k
802.11ax HEW40	0.964	0.16	781.25u	3k
802.11ax HEW80	0.928	0.32	413.75u	3k

Note:

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

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1.1.4 EUT Operational Condition

EUT Power Type	Fro	From PoE					
Poomforming Function	\boxtimes	With beamforming		Without beamforming			
Beamforming Function	The product has beamforming function for VHT/ax in 2.4GHz and ac/ax in 5GHz.						
Function	\boxtimes	Outdoor P2M		Indoor P2M			
runction		Fixed P2P		Client			
Test Software Version	Mtool V3.2.1.2						

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Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

The difference for each model name is shown as below:

Model Name	Support Function
W6R-T223-001	AP
W6B-T223-001	Mesh AP
W6S-T223-001	Mesh AP-satelite

Note 1: From the above models, model: W6R-T223-001 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

1.1.6 EUT Supports Type

The EUT supports AP, Mesh AP, Mesh AP-satelite functions, only the AP was performed for all the tests.

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1.2 Applicable Standards

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

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- 47 CFR FCC Part 15
- ANSI C63.10-2013
- FCC KDB 789033 D02 v02r01

The following reference test guidance is not within the scope of accreditation of TAF.

- 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, Ln. 724, Bo'ai St., Zhubei 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 (°C / %)	Test Date
RF Conducted	TH01-CB	Owen Hsu	13.6-14.5 / 59-62	Jan. 14, 2021~ Jan. 15, 2021
Radiated (Co-location)	03CH06-CB	JN Tu	22.7-23.2 / 56-58	Jan. 11, 2021~ Jan. 13, 2021
Radiated (Below 1GHz)	03CH06-CB	Stim Sung	22.7-23.2 / 56-58	Jan. 22, 2021
Radiated (Above 1GHz)	03CH06-CB	JN Tu	22.7-23.2 / 56-58	Jan. 11, 2021~ Jan. 13, 2021
AC Conduction	CO01-CB	Peter Wu	20~21 / 59~60	Jan. 27, 2021

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.

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1.4 Measurement Uncertainty

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

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level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.9 dB	Confidence levels of 95%
Conducted Emission	2.8 dB	Confidence levels of 95%
Output Power Measurement	1.4 dB	Confidence levels of 95%
Power Density Measurement	2.8 dB	Confidence levels of 95%
Bandwidth Measurement	0.4%	Confidence levels of 95%

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Test Configuration of EUT 2

2.1 **Test Channel Mode**

<Non-beamforming mode>

Mode	Power Setting
802.11a_Nss1,(6Mbps)_2TX	-
5180MHz	62
5200MHz	61
5240MHz	62
802.11ax HEW20_Nss1,(MCS0)_2TX	-
5180MHz	61
5200MHz	60
5240MHz	61
802.11ax HEW40_Nss1,(MCS0)_2TX	-
5190MHz	62
5230MHz	63
802.11ax HEW80_Nss1,(MCS0)_2TX	-
5210MHz	62

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Band 4

Mode	Power Setting
802.11a_Nss1,(6Mbps)_3TX	-
5745MHz	93
5785MHz	93
5825MHz	97
802.11ax HEW20_Nss1,(MCS0)_3TX	-
5745MHz	92
5785MHz	92
5825MHz	97
802.11ax HEW40_Nss1,(MCS0)_3TX	-
5755MHz	91
5795MHz	93
802.11ax HEW80_Nss1,(MCS0)_3TX	-
5775MHz	84

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<beamforming mode>

Band 1

Mode	Power Setting
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-
5180MHz	48
5200MHz	48
5240MHz	48
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-
5190MHz	49
5230MHz	50
802.11ax HEW80-BF_Nss1,(MCS0)_2TX	-
5210MHz	48

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Band 4

Mode	Power Setting
802.11ax HEW20-BF_Nss1,(MCS0)_3TX	-
5745MHz	74
5785MHz	74
5825MHz	79
802.11ax HEW40-BF_Nss1,(MCS0)_3TX	-
5755MHz	73
5795MHz	75
802.11ax HEW80-BF_Nss1,(MCS0)_3TX	-
5775MHz	75

Note:

- Evaluated HEW20/HEW40/HEW80 mode only, due to similar modulation. The power setting of HT20/HT40/VHT20/VHT40/VHT80 mode are the same or lower than HEW20/HEW40/HEW80.
- The EUT supports non-beamforming and beamforming modes, after evaluating, the non-beamforming mode has been evaluated to be the worst case, so it was selected to test. The beamforming mode evaluates the output power only.

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2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item AC power-line conducted emissions	
Condition	AC power-line conducted measurement for line and neutral
Operating Mode Normal Link	
1	EUT + AP with PoE 1

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The Worst Case Mode for Following Conformance Tests	
Tests Item	Emission Bandwidth Maximum Conducted Output Power Peak Power Spectral Density Unwanted Emissions
Test Condition	Conducted measurement at transmit chains
1	WLAN 5GHz Band 1 + Antenna Set 1
2	WLAN 5GHz Band 4 + Antenna Set 2

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	Normal Link
1	EUT + AP with PoE 2
Operating Mode > 1GHz	СТХ
1	WLAN 5GHz Band 1 + Antenna Set 1
2	WLAN 5GHz Band 4 + Antenna Set 2

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

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The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1 WLAN 2.4GHz (Antenna Set 1) + WLAN 5GHz Band 1 (Antenna S 5GHz Band 4 (Antenna Set 2)	
Refer to Sporton Test Report No.: FA0D3031 for Co-location RF Exposure Evaluation.	

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

Note 2: The PoE below is for measurement only, would not be marketed.

The PoE information as below:

Support Unit	Brand	Model Number
PoE 1	Cisco	MA-INJ4
PoE 2	T-STONE	TSD-PSE25

2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

2.4 Accessories

Sealing Collar*1

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2.5 Support Equipment

For AC Conduction:

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
А	PoE 1	Cisco	MA-INJ-4	N/A	
В	LAN NB	DELL	E6430	N/A	
С	2.4G NB	DELL	E6430	N/A	
D	5G-L NB	DELL	E6430	N/A	
Е	5G-H NB	DELL	E6430	N/A	

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For Radiated (below 1GHz):

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
Α	PoE 2	T-STONE	TSD-PSE25	N/A	
В	LAN NB	DELL	E4300	N/A	
С	2.4G NB	DELL	E4300	N/A	
D	5G-L NB	DELL	E4300	N/A	
Е	5G-H NB	DELL	E4300	N/A	

For Radiated (above 1GHz):

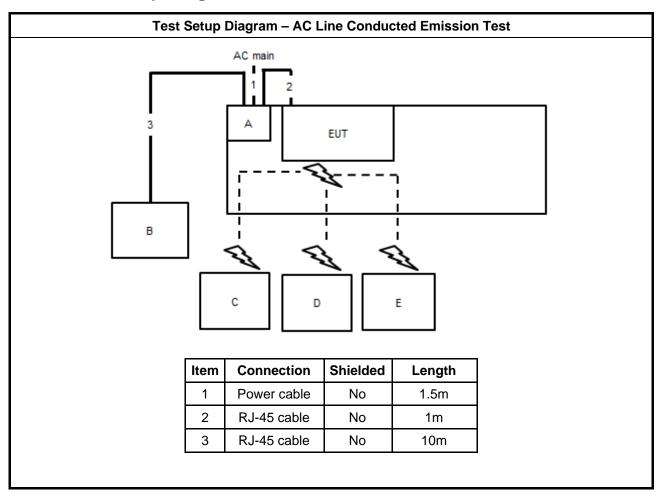
10111	1 of Radiated (above Fortz).			
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
Α	NB	DELL	E4300	N/A
В	PoE 2	T-STONE	TSD-PSE25	N/A

For RF Conducted:

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
Α	NB	DELL	E4300	N/A	
В	PoE 2	T-STONE	TSD-PSE25	N/A	

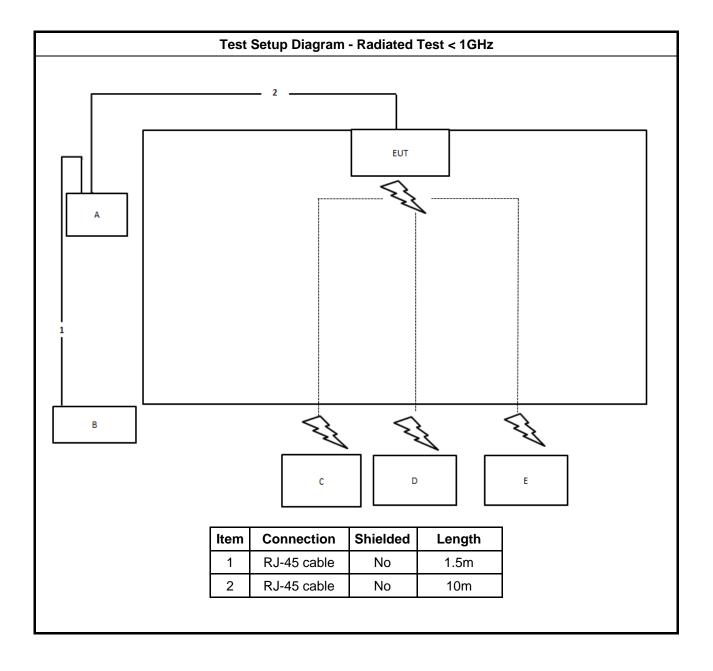
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2.6 Test Setup Diagram

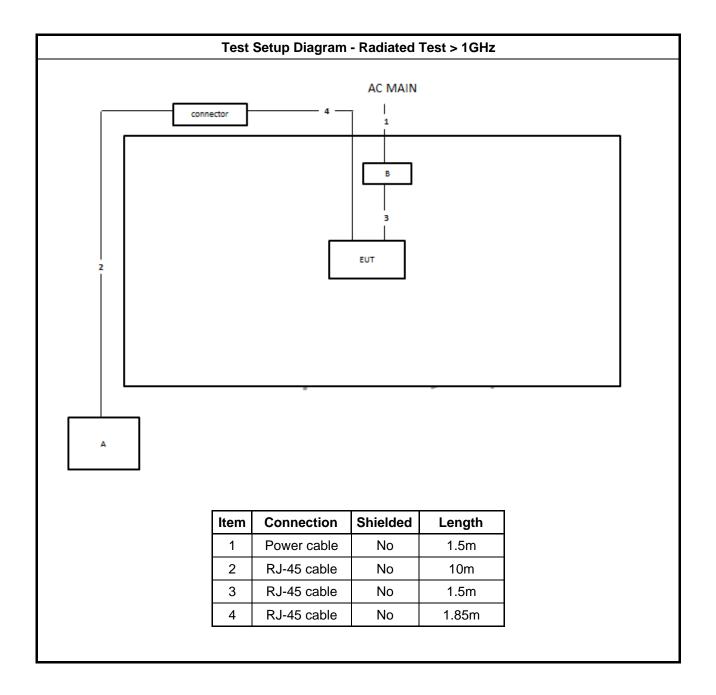


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3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

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

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3.1.2 Measuring Instruments

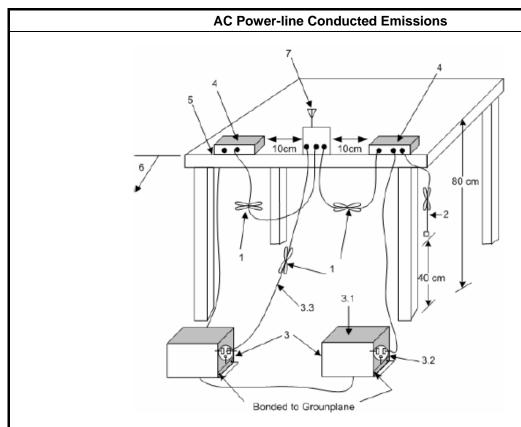
Refer a test equipment and calibration data table in this test report.

3.1.3 Test Procedures

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

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3.1.4 Test Setup



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

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

3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

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3.2 Emission Bandwidth

3.2.1 Emission Bandwidth Limit

	Emission Bandwidth Limit
UN	Il 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 ≥ 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 ≥ 500kHz.

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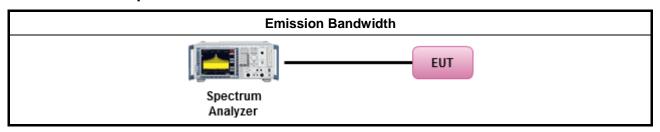
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

	Test Method		
•	For the emission bandwidth shall be measured using one of the options below:		
	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

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3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

	Maximum Conducted Output Power Limit
UNI	I Devices
\boxtimes	For the 5.15-5.25 GHz band:
	Outdoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If G_{TX} > 6 dBi, then $P_{Out} = 30 - (G_{TX} - 6)$. e.i.r.p. at any elevation angle above 30 degrees \leq 125mW [21dBm]
	Indoor AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$
	Point-to-point AP: the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W If $G_{TX} > 23$ dBi, then $P_{Out} = 30 - (G_{TX} - 23)$.
	Mobile or Portable Client: the maximum conducted output power (P _{Out}) shall not exceed the lesser of 250 mW. If G _{TX} > 6 dBi, then P _{Out} = 24 - (G _{TX} - 6).
	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 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
	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 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If G_{TX} > 6 dBi, then P_{Out} = 24 – (G_{TX} – 6).
\boxtimes	For the 5.725-5.85 GHz band:
	Point-to-multipoint systems (P2M): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W. If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$.
	 Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.
LE-	LAN Devices
	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.
	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:
	■ Point-to-multipoint systems (P2M): the maximum conducted output power (P _{Out}) shall not exceed the lesser of 1 W. If G _{TX} > 6 dBi, then P _{Out} = 30 – (G _{TX} – 6).
	 Point-to-point systems (P2P): the maximum conducted output power (P_{Out}) shall not exceed the lesser of 1 W.
	e = maximum conducted output power in dBm, = the maximum transmitting antenna directional gain in dBi.

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3.3.2 Measuring Instruments

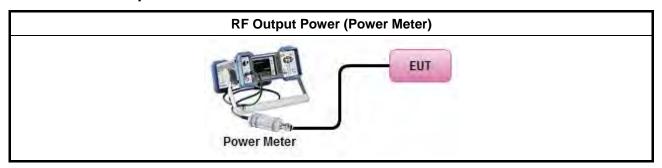
Refer a test equipment and calibration data table in this test report.

3.3.3 Test Procedures

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

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3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

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3.4 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 $P_{Out} = 17 - (G_{TX} - 23)$.
	• Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If G _{TX} > 6 dBi, then PPSD= 11 - (G _{TX} - 6)
	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).
	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 – $(G_{TX} - 6)$.
\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= $30 - (G_{TX} - 6)$.
	Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
LE-	LAN Devices
	For the 5.15-5.25 GHz band, the e.i.r.p. peak power spectral density (PPSD) ≤ 10 dBm/MHz.
	For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz.
	 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: -13 dBW/MHz for 0° ≤ θ < 8°; -13 − 0.716 (θ-8) dBW/MHz for 8° ≤ θ < 40° -35.9 − 1.22 (θ-40) dBW/MHz for 40° ≤ θ ≤ 45°; -42 dBW/MHz for θ > 45°
	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= $30 - (G_{TX} - 6)$.
	 Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.
pow	SD = peak power spectral density that he same method as used to determine the conducted output ver shall be used to determine the power spectral density. And power spectral density in dBm/MHz = the maximum transmitting antenna directional gain in dBi.

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3.4.2 Measuring Instruments

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

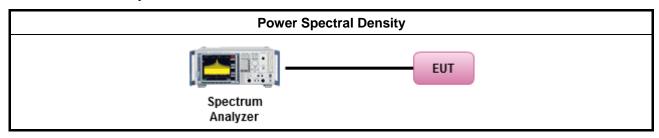
3.4.3 Test Procedures

		Test Method
•	outp funct	s 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 ion on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density 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]
	\boxtimes	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
		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 $

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3.4.4 Test Setup



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3.4.5 Test Result of Peak Power Spectral Density

Refer as Appendix D

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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					

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

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

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

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of

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

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3.5.2 Measuring Instruments

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

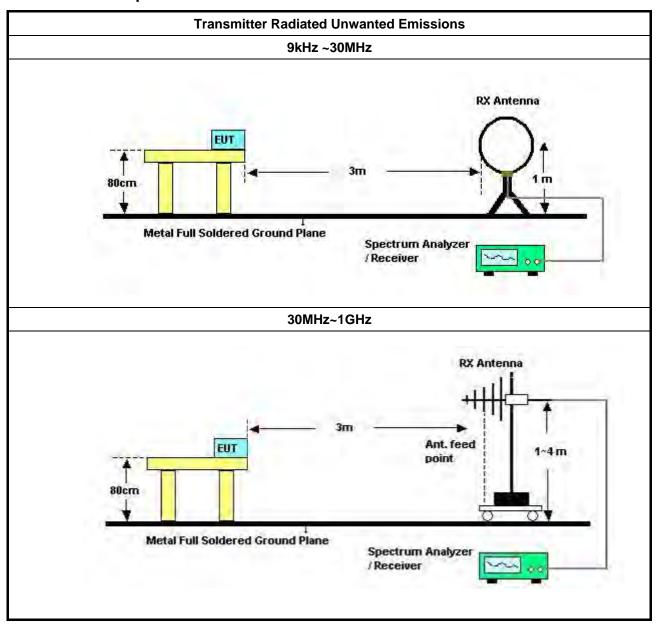
3.5.3 Test Procedures

Test Method

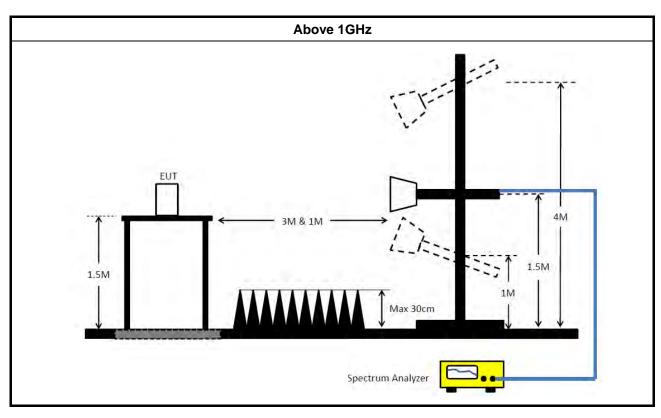
- Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, 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 ≥ 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.
- All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

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3.5.4 Test Setup



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3.5.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = 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 10th harmonic or 40 GHz, whichever is appropriate.

3.5.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix E

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4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Feb. 26, 2020	Feb. 25, 2021	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Nov. 20, 2020	Nov. 19, 2021	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Feb. 25, 2020	Feb. 24, 2021	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwa rz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 31, 2020	Jan. 30, 2021	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 20, 2020	May 19, 2021	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz		Apr. 12, 2021	Radiation (03CH06-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH06-CB	30 MHz ~ 1 GHz	Aug. 10, 2020	Aug. 09. 2021	Radiation (03CH06-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH06-CB	1GHz ~18GHz 3m	Oct. 02, 2020	Oct. 01, 2021	Radiation (03CH06-CB)
Bilog Antenna with 6 dB attenuator	TESEQ & EMCI	CBL6112D & N-6-06	37878 & AT-N0606	20MHz ~ 2GHz	Aug. 02, 2020	Aug. 01, 2021	Radiation (03CH06-CB)
Horn Antenna	SCHWARZBE CK	BBHA9120D	BBHA 9120D-1292	1GHz~18GHz	Jul. 22, 2020	Jul. 21, 2021	Radiation (03CH06-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	310N	187290	0.1MHz ~ 1GHz	Nov. 05, 2020	Nov. 04, 2021	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	83017A	MY53270064	0.5GHz ~ 26.5GHz	May 07, 2020	May 06, 2021	Radiation (03CH06-CB)
Pre-Amplifier	e-Amplifier MITEQ TTA1840-35-H 1864479 18GHz ~ 40GHz Jul. 08, 2020 Jul. 07, 2		Jul. 07, 2021	Radiation (03CH06-CB)			
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Dec. 15, 2020	Dec. 14, 2021	Radiation (03CH06-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	May 13, 2020	May 12, 2021	Radiation (03CH06-CB)
RF Cable-low	Woken	RG402	Low Cable-05+24	30MHz~1GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH06-CB)

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Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-05	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-05+24	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 05, 2020	May 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz –26.5 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 07, 2020	Feb. 06, 2021	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

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

NCR means Non-Calibration required.

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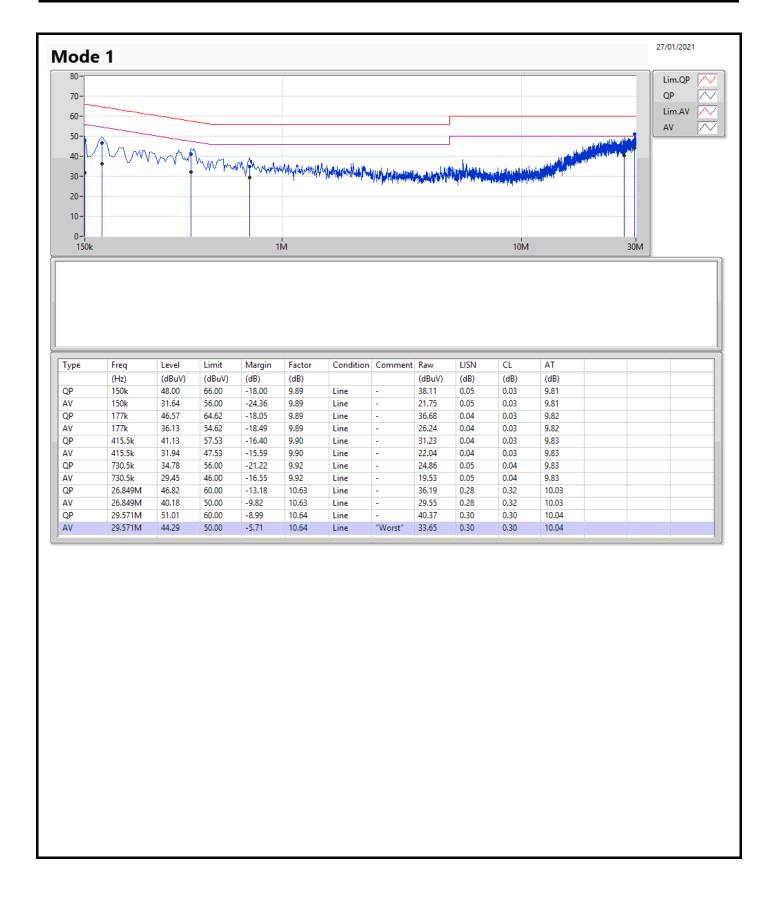
Conducted Emissions at Powerline

Appendix A

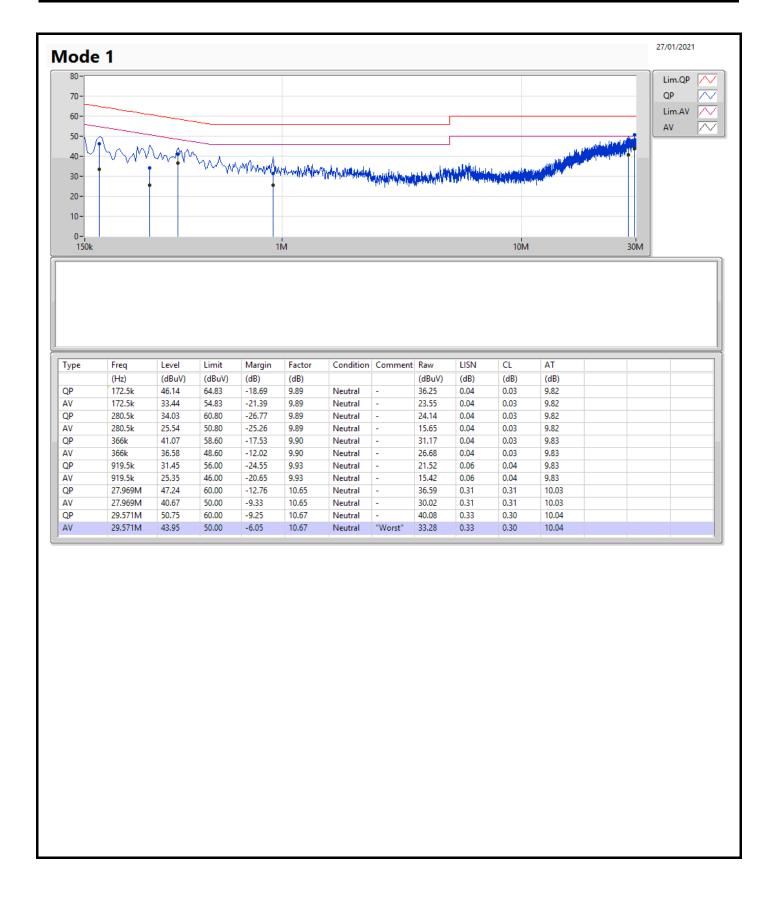
Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	29.571M	44.29	50.00	-5.71	Line











Appendix B.1 **EBW**

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	21.21M	16.732M	16M7D1D	21.06M	16.612M
802.11ax HEW20_Nss1,(MCS0)_2TX	21.48M	19.07M	19M1D1D	21.3M	18.981M
802.11ax HEW40_Nss1,(MCS0)_2TX	40.2M	37.541M	37M5D1D	39.78M	37.421M
802.11ax HEW80_Nss1,(MCS0)_2TX	81.6M	76.882M	76M9D1D	81.12M	76.762M

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;

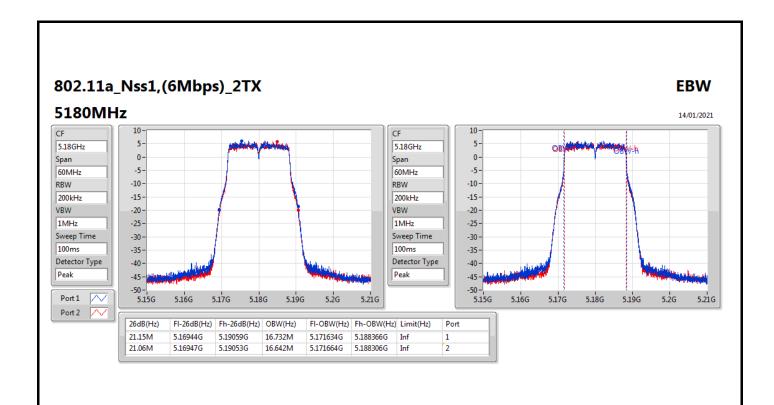
Min-OBW = Minimum 99% occupied bandwidth;

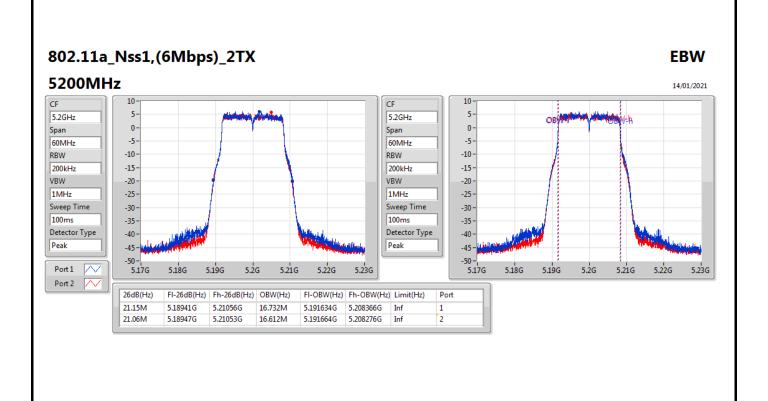


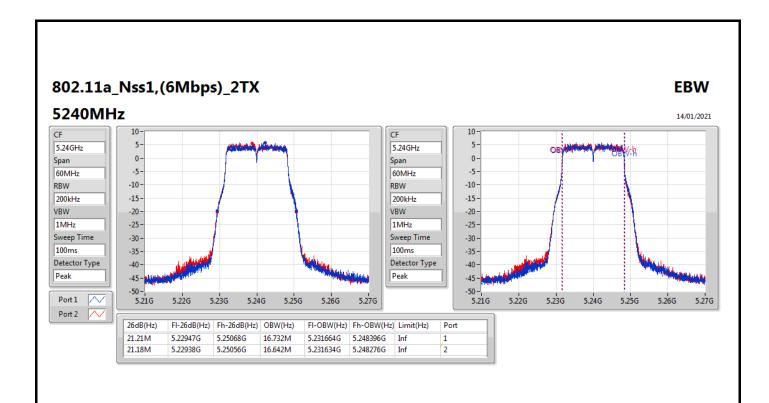
Result

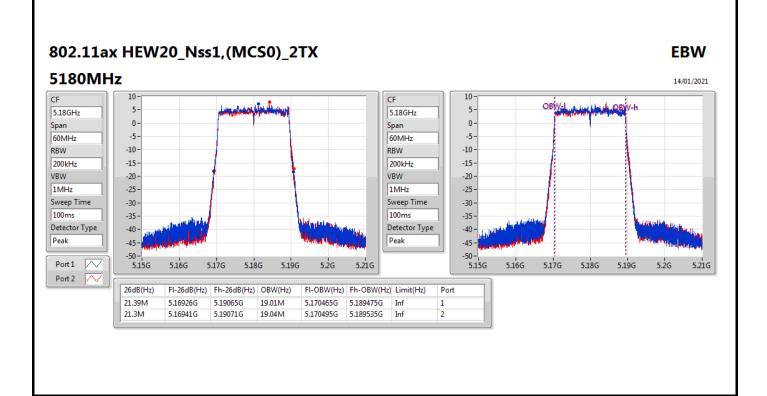
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	21.15M	16.732M	21.06M	16.642M
5200MHz	Pass	Inf	21.15M	16.732M	21.06M	16.612M
5240MHz	Pass	Inf	21.21M	16.732M	21.18M	16.642M
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	21.39M	19.01M	21.3M	19.04M
5200MHz	Pass	Inf	21.39M	18.981M	21.36M	19.07M
5240MHz	Pass	Inf	21.45M	19.01M	21.48M	19.04M
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	Inf	40.14M	37.481M	39.84M	37.421M
5230MHz	Pass	Inf	40.2M	37.481M	39.78M	37.541M
802.11ax HEW80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	Inf	81.6M	76.882M	81.12M	76.762M

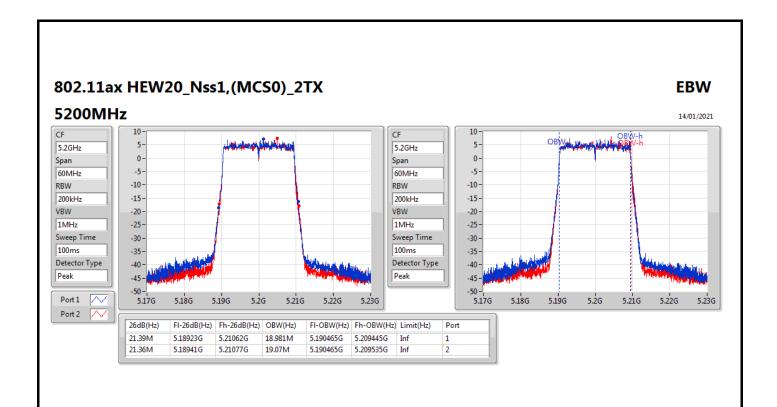
Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band Port X-OBW = Port X 99% occupied bandwidth;

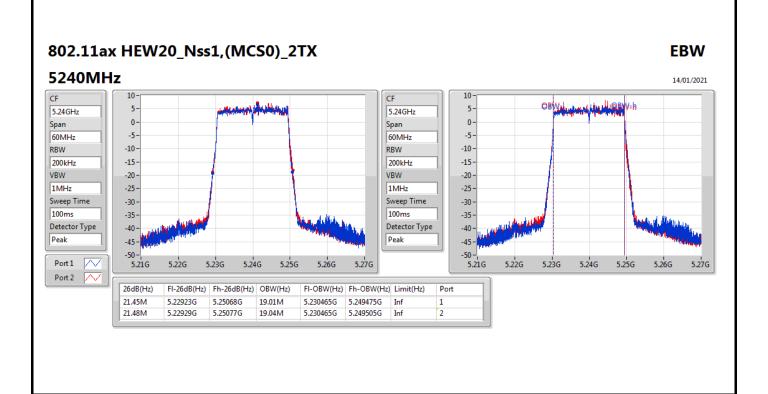


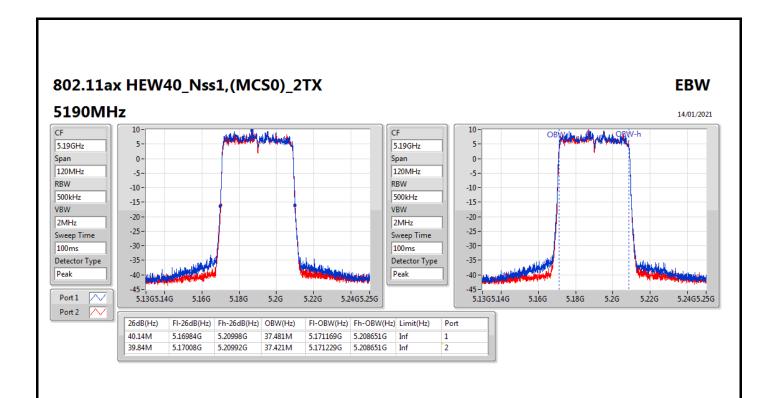


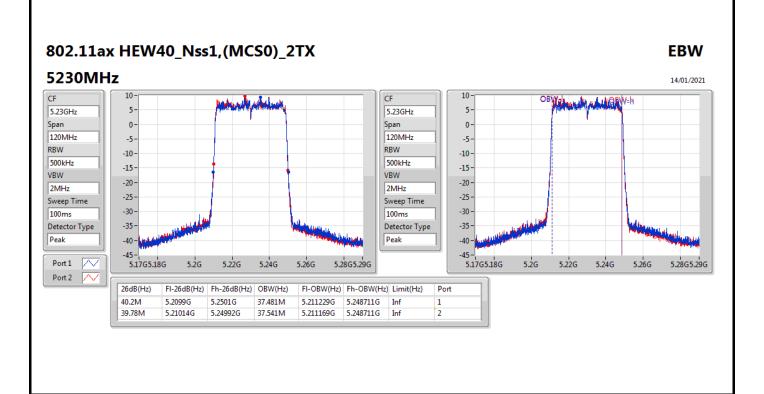


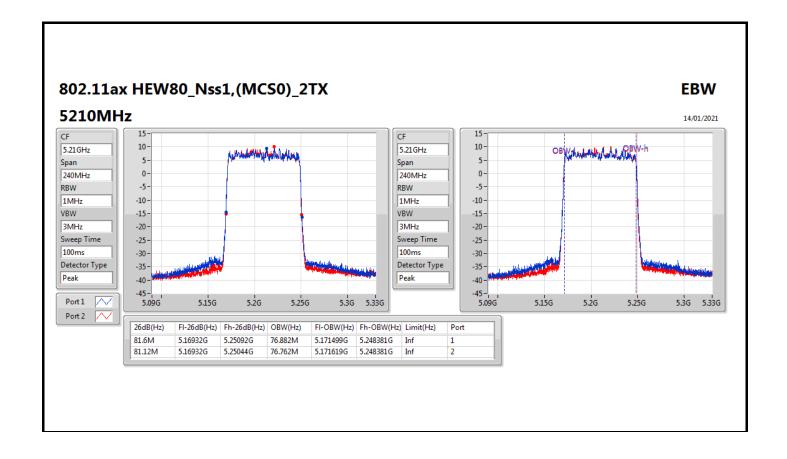














Appendix B.2 **EBW**

Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_3TX	16.56M	27.016M	27M0D1D	16.32M	16.942M
802.11ax HEW20_Nss1,(MCS0)_3TX	18.96M	28.546M	28M5D1D	18.75M	19.13M
802.11ax HEW40_Nss1,(MCS0)_3TX	37.62M	38.201M	38M2D1D	36.6M	37.721M
802.11ax HEW80_Nss1,(MCS0)_3TX	76.56M	77.001M	77M0D1D	75.84M	76.762M

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;

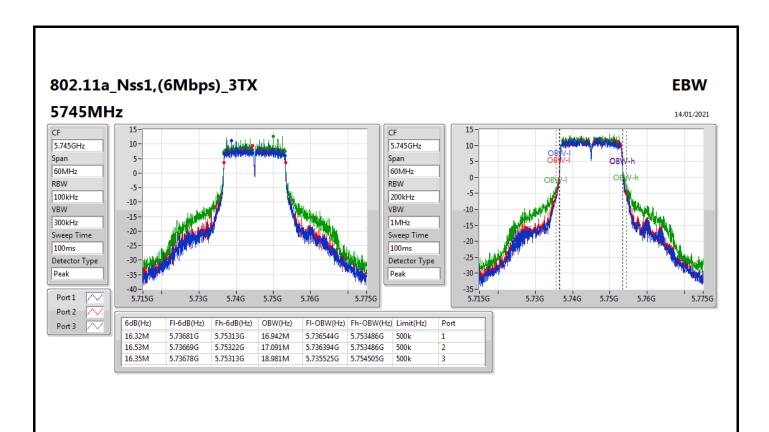
Min-OBW = Minimum 99% occupied bandwidth;

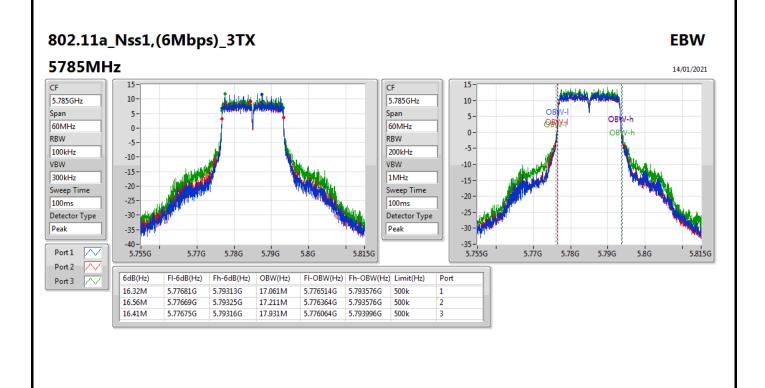


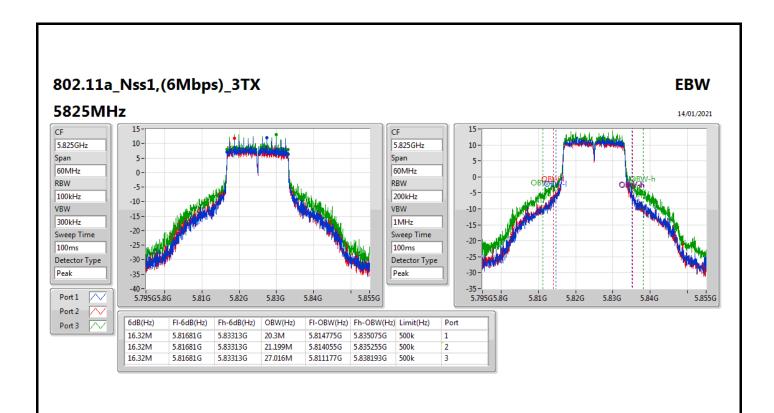
Result

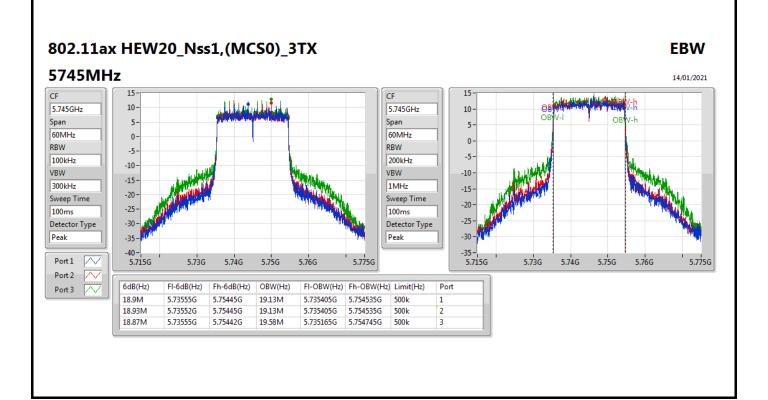
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW	Port 3-N dB	Port 3-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11a_Nss1,(6Mbps)_3TX	-	-	-	-	-	-	-	-
5745MHz	Pass	500k	16.32M	16.942M	16.53M	17.091M	16.35M	18.981M
5785MHz	Pass	500k	16.32M	17.061M	16.56M	17.211M	16.41M	17.931M
5825MHz	Pass	500k	16.32M	20.3M	16.32M	21.199M	16.32M	27.016M
802.11ax HEW20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-
5745MHz	Pass	500k	18.9M	19.13M	18.93M	19.13M	18.87M	19.58M
5785MHz	Pass	500k	18.96M	19.16M	18.96M	19.22M	18.9M	19.37M
5825MHz	Pass	500k	18.75M	21.379M	18.96M	23.028M	18.75M	28.546M
802.11ax HEW40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-
5755MHz	Pass	500k	37.08M	37.781M	36.6M	37.721M	37.02M	37.841M
5795MHz	Pass	500k	37.08M	38.201M	37.62M	37.841M	37.02M	37.961M
802.11ax HEW80_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	
5775MHz	Pass	500k	76.56M	77.001M	76.32M	76.762M	75.84M	76.882M

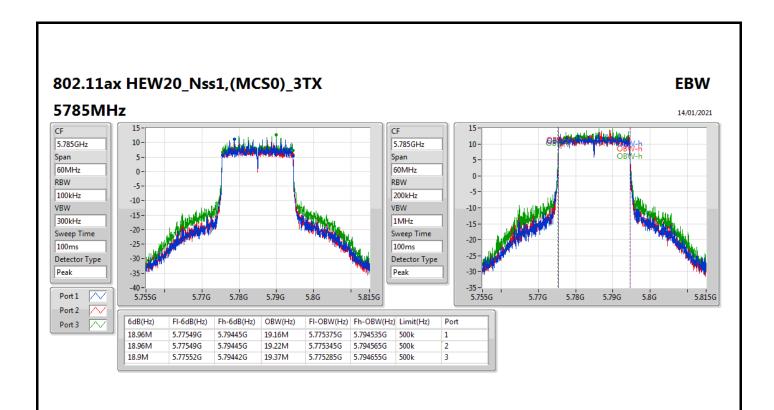
Port X-N dB = Port X 6dB down bandwidth for 5.725-5.85GHz band / 26dB down bandwidth for other band Port X-OBW = Port X 99% occupied bandwidth;

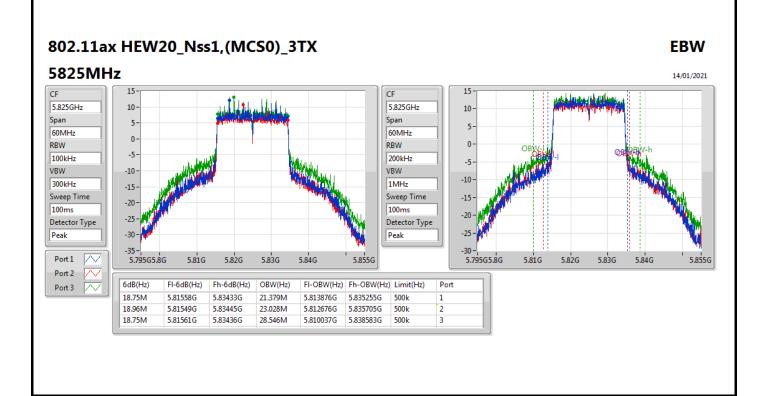


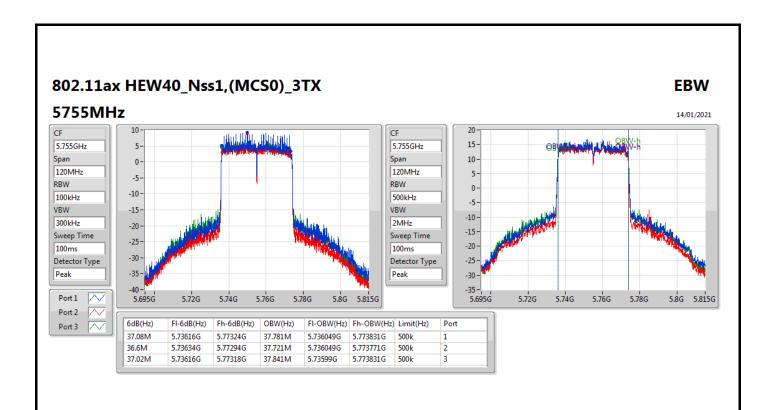


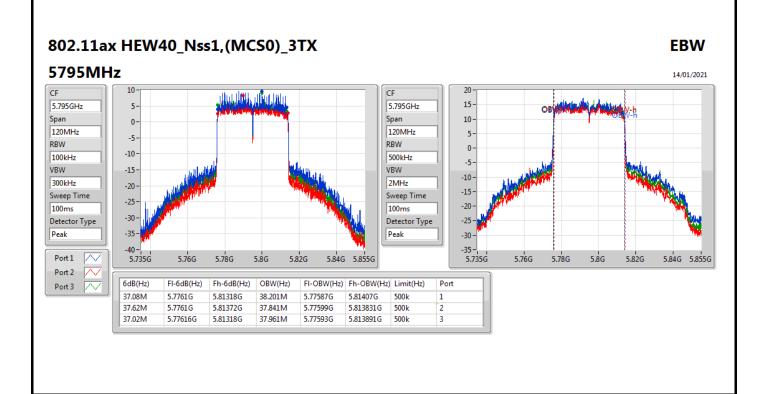


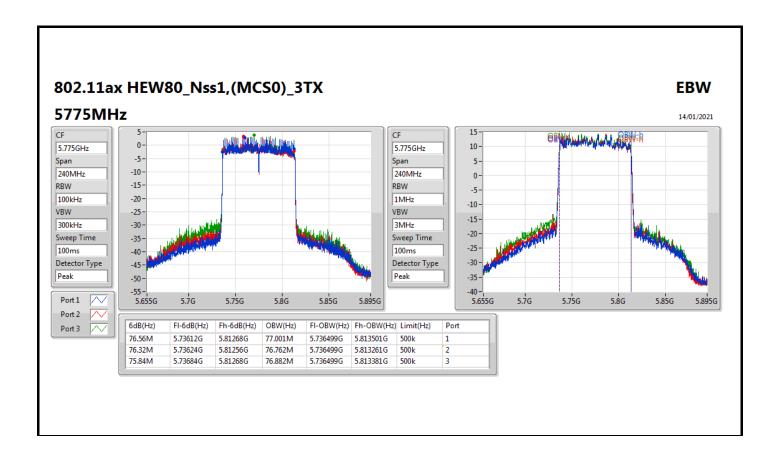














Average Power_Non-beamforming mode

Appendix C.1

Mode	Total Power	Total Power	EIRP / EIRP [Phi 30°]	EIRP / EIRP [Phi 30°]
	(dBm)	(W)	(dBm)	(W)
5.15-5.25GHz	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	19.72	0.09376	25.22/20.91	0.33266/0.12331
802.11ax HEW20_Nss1,(MCS0)_2TX	19.70	0.09333	25.20/20.89	0.33113/0.12274
802.11ax HEW40_Nss1,(MCS0)_2TX	19.67	0.09268	25.17/20.86	0.32885/0.12190
802.11ax HEW80_Nss1,(MCS0)_2TX	19.70	0.09333	25.20/20.89	0.33113/0.12274

Result

Mode	Result	Directional Gain [Power] / Gain [Phi 30°]	Port 1	Port 2	Total Power	Power Limit	EIRP / EIRP [Phi 30°]	EIRP Limit / EIRP Limit [Phi 30°]
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	5.50/1.19	16.71	16.71	19.72	30.00	25.22/20.91	Inf/21.00
5200MHz	Pass	5.50/1.19	16.65	16.65	19.66	30.00	25.16/20.85	Inf/21.00
5240MHz	Pass	5.50/1.19	16.46	16.79	19.64	30.00	25.14/20.83	Inf/21.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	5.50/1.19	16.85	16.40	19.64	30.00	25.14/20.83	Inf/21.00
5200MHz	Pass	5.50/1.19	16.71	16.67	19.70	30.00	25.20/20.89	Inf/21.00
5240MHz	Pass	5.50/1.19	16.44	16.70	19.58	30.00	25.08/20.77	Inf/21.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5190MHz	Pass	5.50/1.19	16.68	16.56	19.63	30.00	25.13/20.82	Inf/21.00
5230MHz	Pass	5.50/1.19	16.54	16.77	19.67	30.00	25.17/20.86	Inf/21.00
802.11ax HEW80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5210MHz	Pass	5.50/1.19	16.72	16.66	19.70	30.00	25.20/20.89	Inf/21.00

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



Mode	Total Power	Total Power
	(dBm)	(W)
5.725-5.85GHz	-	-
802.11a_Nss1,(6Mbps)_3TX	28.47	0.70307
802.11ax HEW20_Nss1,(MCS0)_3TX	28.44	0.69823
802.11ax HEW40_Nss1,(MCS0)_3TX	28.46	0.70146
802.11ax HEW80_Nss1,(MCS0)_3TX	25.68	0.36983



Result

Mode	Result	DG	Port 1	Port 2	Port 3	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11a_Nss1,(6Mbps)_3TX	-	-	-	-	-	-	-
5745MHz	Pass	7.50	23.22	23.51	24.29	28.47	28.50
5785MHz	Pass	7.50	23.13	23.34	24.27	28.38	28.50
5825MHz	Pass	7.50	23.37	23.01	24.07	28.28	28.50
802.11ax HEW20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
5745MHz	Pass	7.50	23.18	23.49	24.22	28.42	28.50
5785MHz	Pass	7.50	23.14	23.22	24.28	28.35	28.50
5825MHz	Pass	7.50	23.49	23.25	24.21	28.44	28.50
802.11ax HEW40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
5755MHz	Pass	7.50	23.74	23.25	23.66	28.33	28.50
5795MHz	Pass	7.50	24.07	23.08	23.85	28.46	28.50
802.11ax HEW80_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
5775MHz	Pass	7.50	20.62	20.71	21.35	25.68	28.50

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



Average Power_beamforming mode

Appendix C.3

Mode	Total Power (dBm)	Total Power (W)	EIRP / EIRP [Phi 30°] (dBm)	EIRP / EIRP [Phi 30°] (W)
5.15-5.25GHz	-	-	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	16.76	0.04742	25.27/20.96	0.33651/0.12474
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	16.76	0.04742	25.27/20.96	0.33651/0.12474
802.11ax HEW80-BF_Nss1,(MCS0)_2TX	16.66	0.04634	25.17/20.86	0.32885/0.1219

Result

Mode	Result	Directional Gain [Power] / Gain [Phi 30°]	Port 1	Port 2	Total Power	Power Limit	EIRP / EIRP [Phi 30°]	EIRP Limit / EIRP Limit [Phi 30°]
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5180MHz	Pass	8.51/4.20	13.82	13.37	16.61	27.49	25.12/20.81	Inf/21.00
5200MHz	Pass	8.51/4.20	13.80	13.70	16.76	27.49	25.27/20.96	Inf/21.00
5240MHz	Pass	8.51/4.20	13.47	13.66	16.58	27.49	25.09/20.78	Inf/21.00
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-
5190MHz	Pass	8.51/4.20	13.90	13.50	16.71	27.49	25.22/20.91	Inf/21.00
5230MHz	Pass	8.51/4.20	13.79	13.71	16.76	27.49	25.27/20.96	Inf/21.00
802.11ax HEW80-BF_Nss1,(MCS0)_2TX	-	-	-	=	-	-	=	-
5210MHz	Pass	8.51/4.20	13.80	13.50	16.66	27.49	25.17/20.86	Inf/21.00

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



Mode	Total Power	Total Power
	(dBm)	(W)
5.725-5.85GHz	-	-
802.11ax HEW20-BF_Nss1,(MCS0)_3TX	23.66	0.23227
802.11ax HEW40-BF_Nss1,(MCS0)_3TX	23.68	0.23335
802.11ax HEW80-BF_Nss1,(MCS0)_3TX	23.55	0.22646



Result

Mode	Result	DG	Port 1	Port 2	Port 3	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dBm)
802.11ax HEW20-BF_Nss1,(MCS0)_3TX	-	-	-	-	=	-	-
5745MHz	Pass	12.27	18.52	18.79	19.32	23.66	23.73
5785MHz	Pass	12.27	18.53	18.56	19.45	23.64	23.73
5825MHz	Pass	12.27	18.75	18.61	19.26	23.65	23.73
802.11ax HEW40-BF_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
5755MHz	Pass	12.27	19.15	18.54	18.68	23.57	23.73
5795MHz	Pass	12.27	19.23	18.57	18.89	23.68	23.73
802.11ax HEW80-BF_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-
5775MHz	Pass	12.27	18.61	18.69	19.02	23.55	23.73

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



Summary

Mode	PD				
	(dBm/RBW)				
5.15-5.25GHz	-				
802.11a_Nss1,(6Mbps)_2TX	6.48				
802.11ax HEW20_Nss1,(MCS0)_2TX	5.88				
802.11ax HEW40_Nss1,(MCS0)_2TX	3.16				
802.11ax HEW80_Nss1,(MCS0)_2TX	0.62				

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

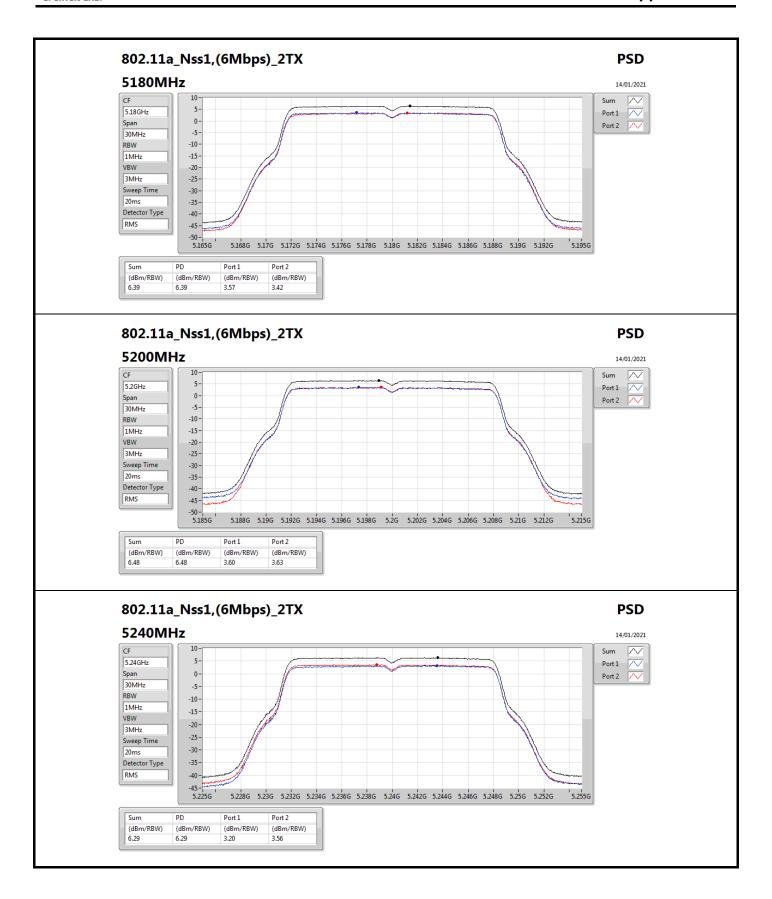


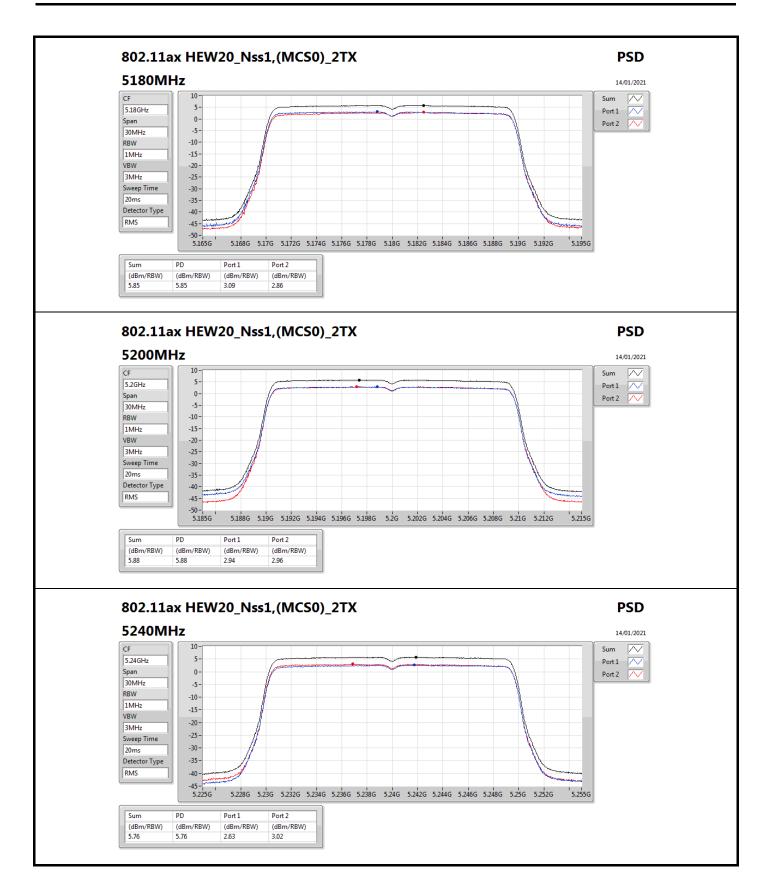
Appendix D.1 **PSD**

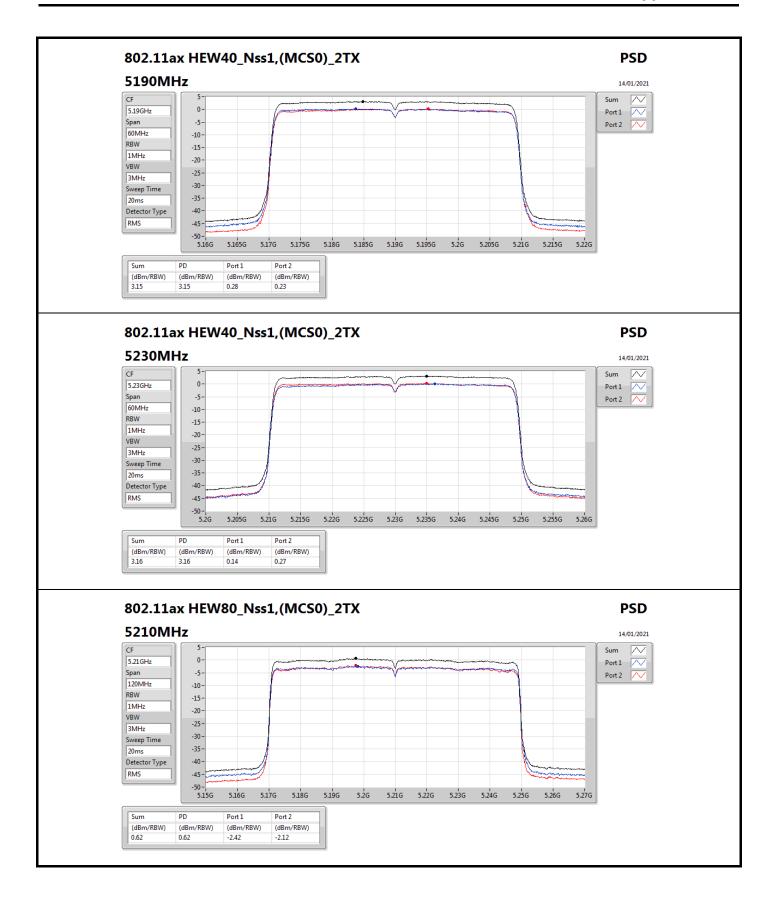
Result

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	8.51	3.57	3.42	6.39	14.49	
5200MHz	Pass	8.51	3.60	3.63	6.48	14.49	
5240MHz	Pass	8.51	3.20	3.56	6.29	14.49	
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5180MHz	Pass	8.51	3.09	2.86	5.85	14.49	
5200MHz	Pass	8.51	2.94	2.96	5.88	14.49	
5240MHz	Pass	8.51	2.63	3.02	5.76	14.49	
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5190MHz	Pass	8.51	0.28	0.23	3.15	14.49	
5230MHz	Pass	8.51	0.14	0.27	3.16	14.49	
802.11ax HEW80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5210MHz	Pass	8.51	-2.42	-2.12	0.62	14.49	

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;









Mode	PD
	(dBm/RBW)
5.725-5.85GHz	-
802.11a_Nss1,(6Mbps)_3TX	13.73
802.11ax HEW20_Nss1,(MCS0)_3TX	13.20
802.11ax HEW40_Nss1,(MCS0)_3TX	10.55
802.11ax HEW80_Nss1,(MCS0)_3TX	5.37

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

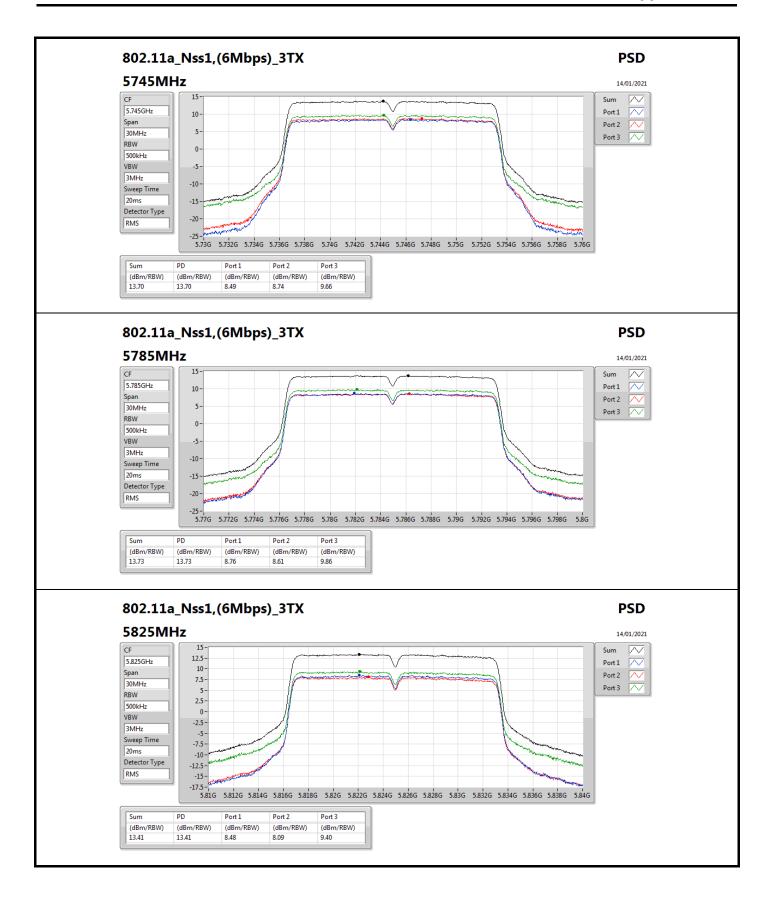


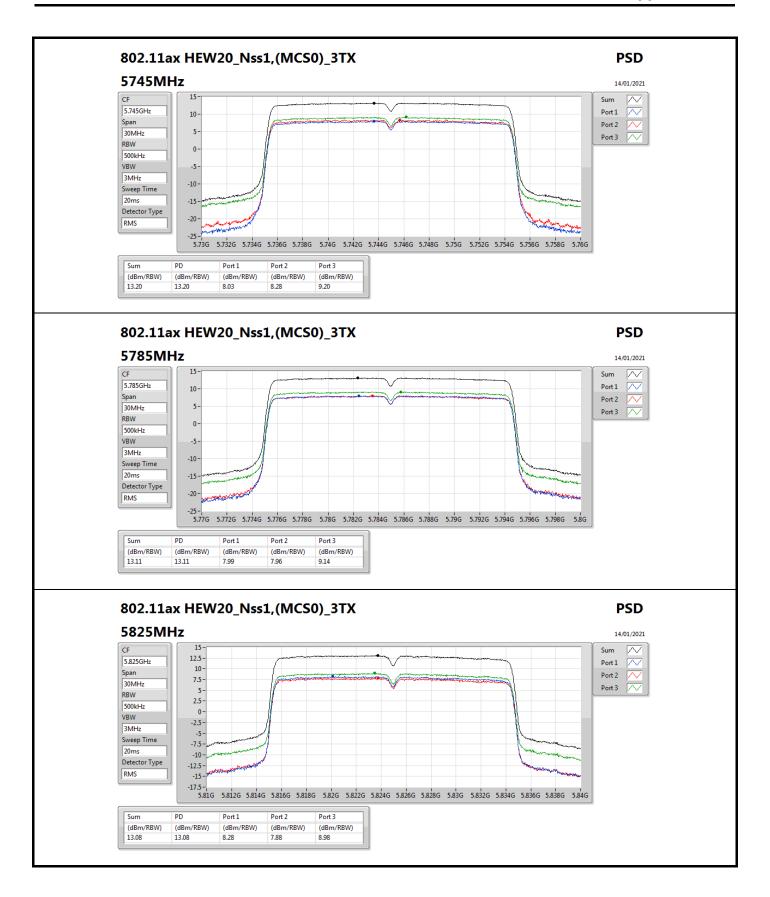
Appendix D.2 **PSD**

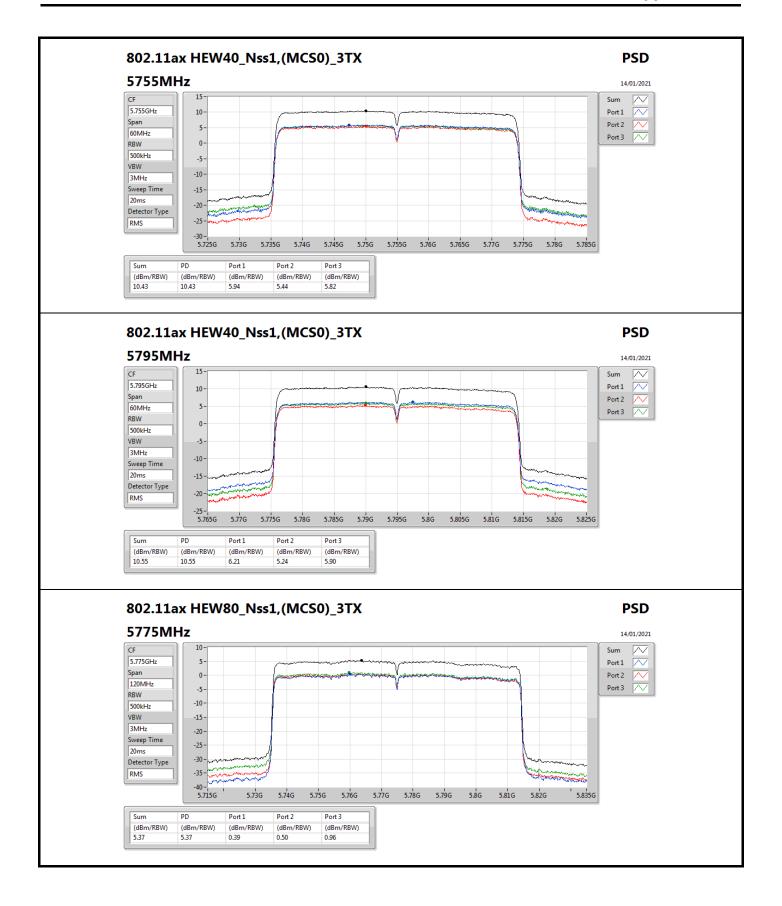
Result

Mode	Result	DG	Port 1	Port 2	Port 3	PD	PD Limit	EIRP PD	EIRP PD Limit
		(dBi)	(dBm/RBW)						
802.11a_Nss1,(6Mbps)_3TX	-	-	-	-	-	-	-	-	-
5745MHz	Pass	12.27	8.49	8.74	9.66	13.70	23.73	25.97	36.00
5785MHz	Pass	12.27	8.76	8.61	9.86	13.73	23.73	26.00	36.00
5825MHz	Pass	12.27	8.48	8.09	9.40	13.41	23.73	25.68	36.00
802.11ax HEW20_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-	-
5745MHz	Pass	12.27	8.03	8.28	9.20	13.20	23.73	25.47	36.00
5785MHz	Pass	12.27	7.99	7.96	9.14	13.11	23.73	25.38	36.00
5825MHz	Pass	12.27	8.28	7.88	8.98	13.08	23.73	25.35	36.00
802.11ax HEW40_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-	-
5755MHz	Pass	12.27	5.94	5.44	5.82	10.43	23.73	22.70	36.00
5795MHz	Pass	12.27	6.21	5.24	5.90	10.55	23.73	22.82	36.00
802.11ax HEW80_Nss1,(MCS0)_3TX	-	-	-	-	-	-	-	-	-
5775MHz	Pass	12.27	0.39	0.50	0.96	5.37	23.73	17.64	36.00

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;







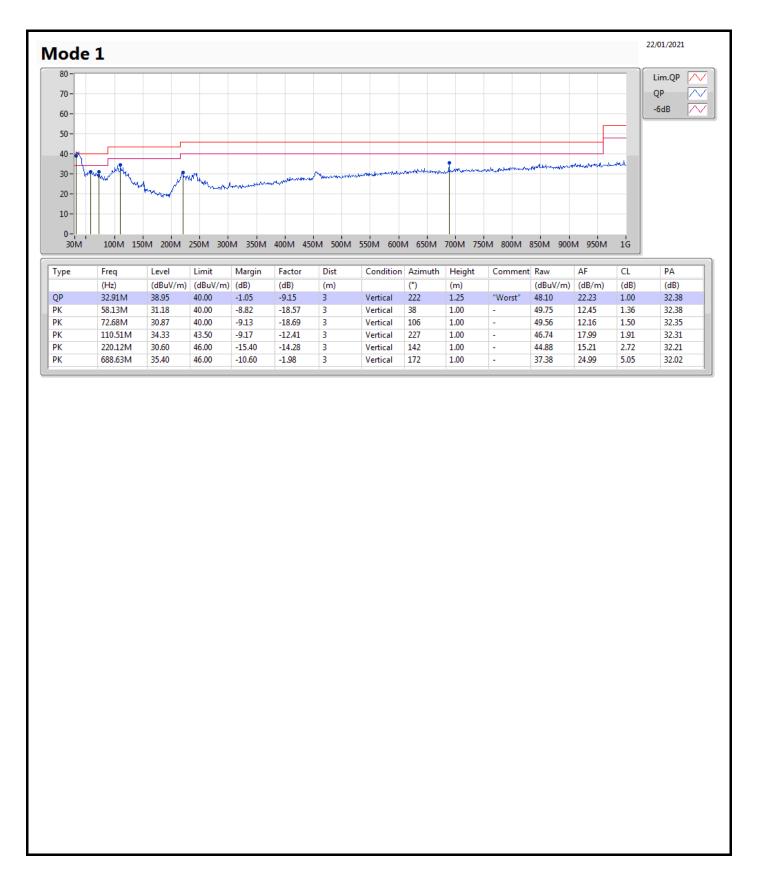


Radiated Emissions below 1GHz

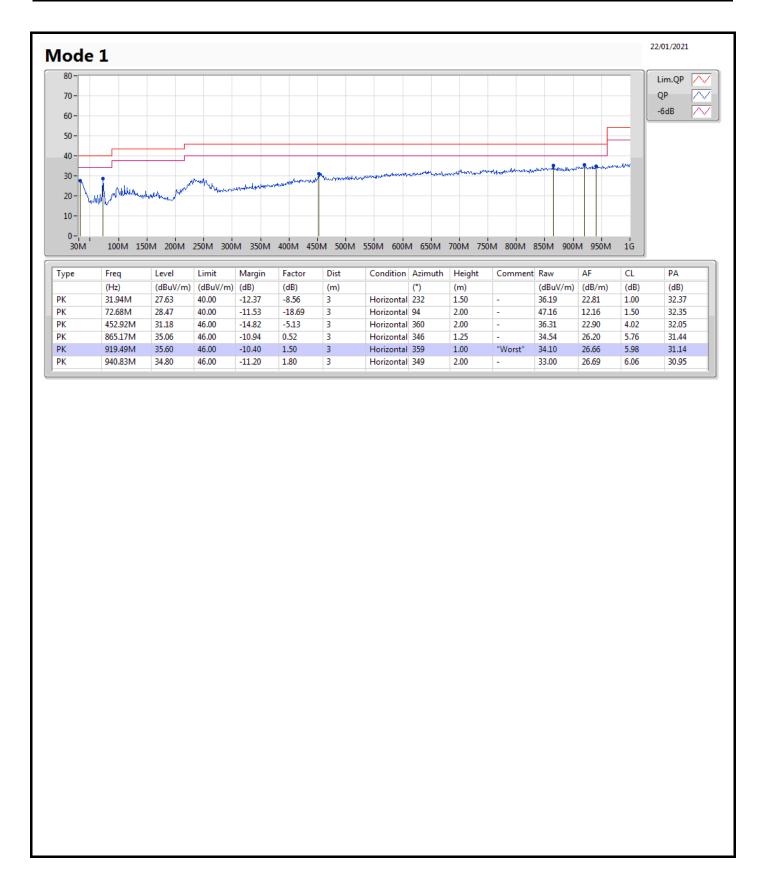
Appendix E.1

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	QP	32.91M	38.95	40.00	-1.05	Vertical











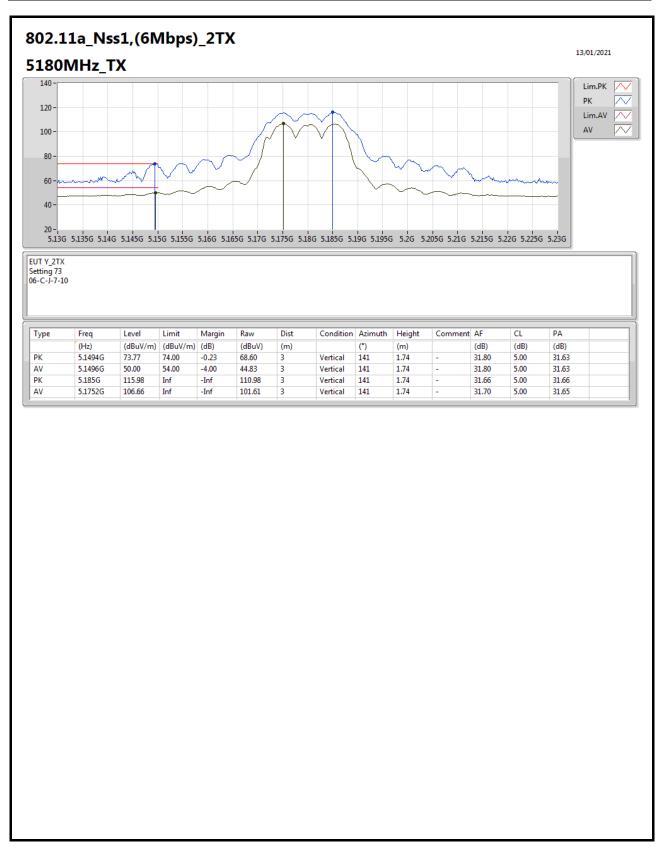
RSE TX above 1GHz

Appendix E.2

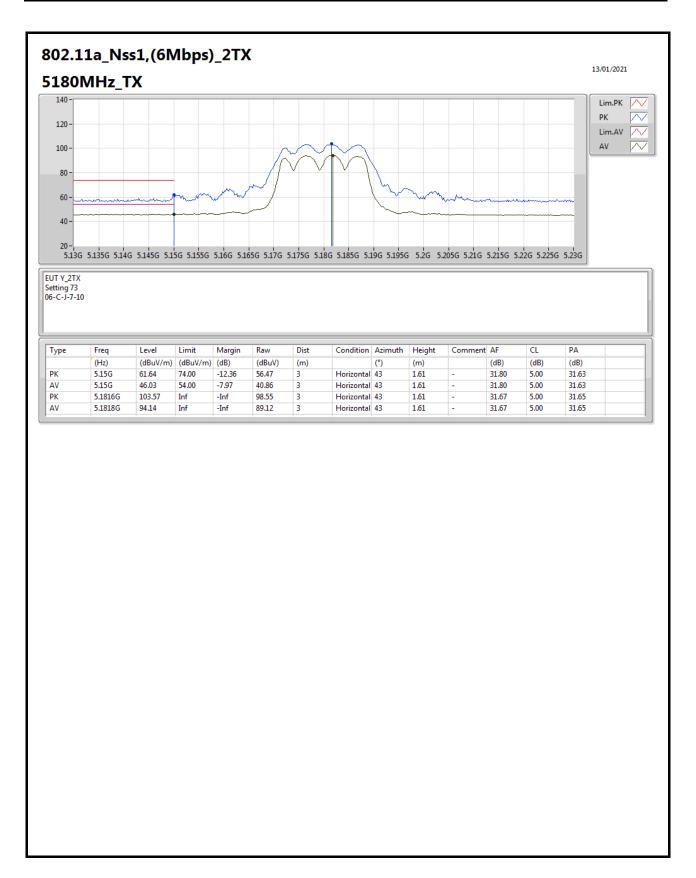
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Mode	Result	Туре	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
5.15-5.25GHz	-	-	-	-	-	-	-	-	-	-	-
802.11ax HEW20_Nss1,(MCS0)_2TX	Pass	AV	5.15G	53.81	54.00	-0.19	3	Vertical	142	1.71	-

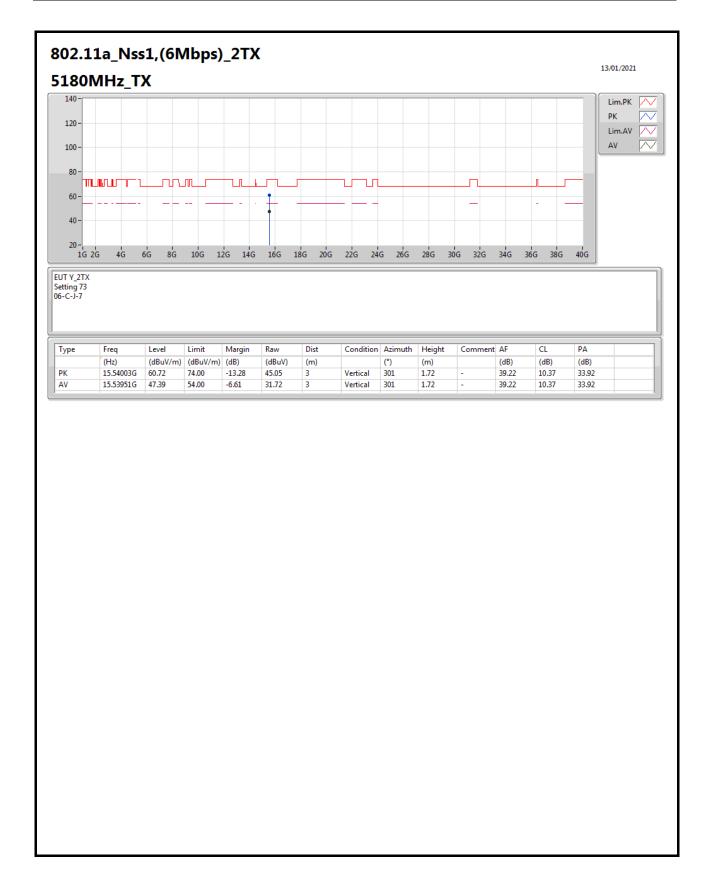






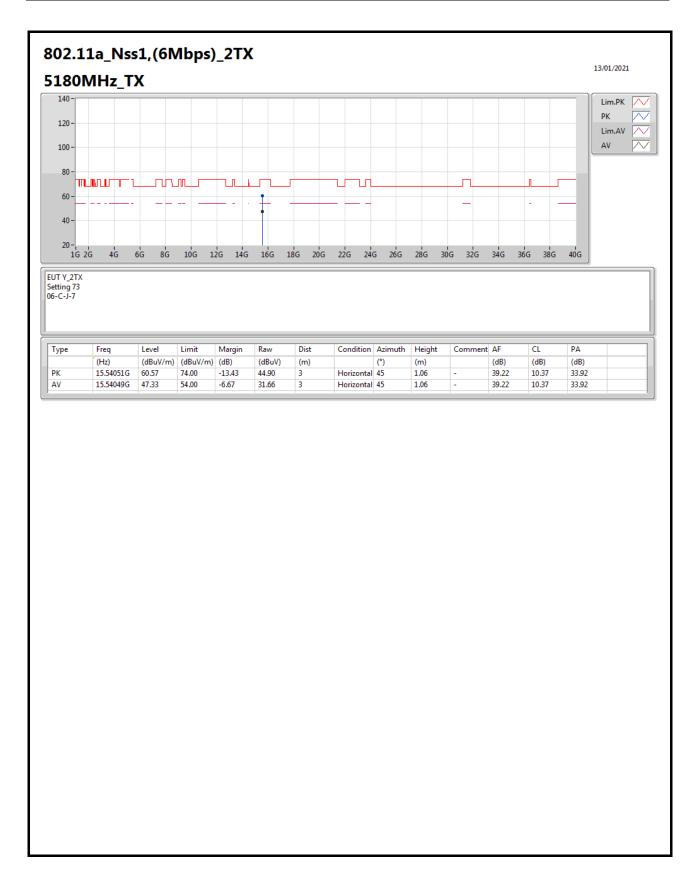




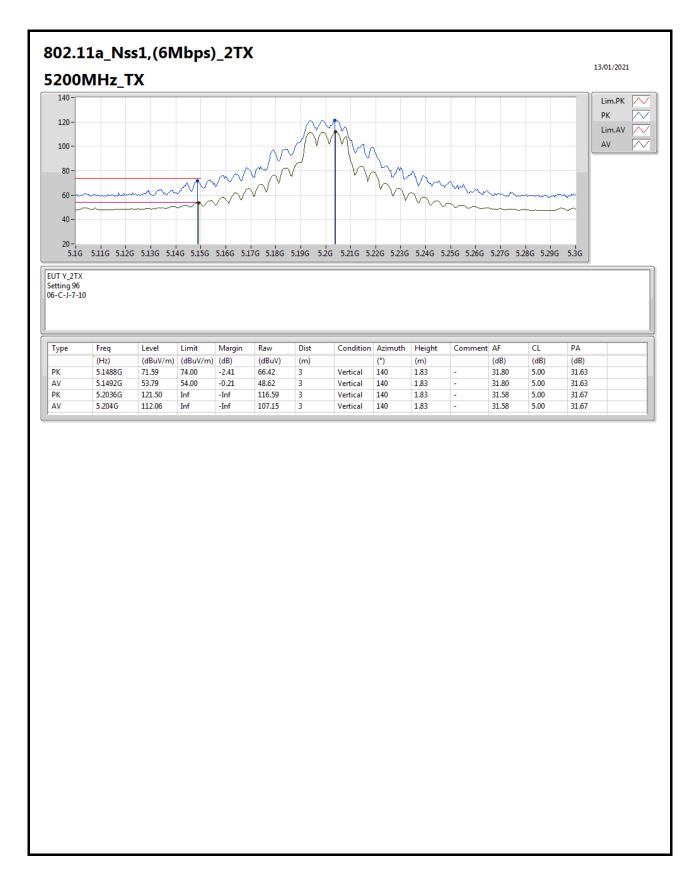


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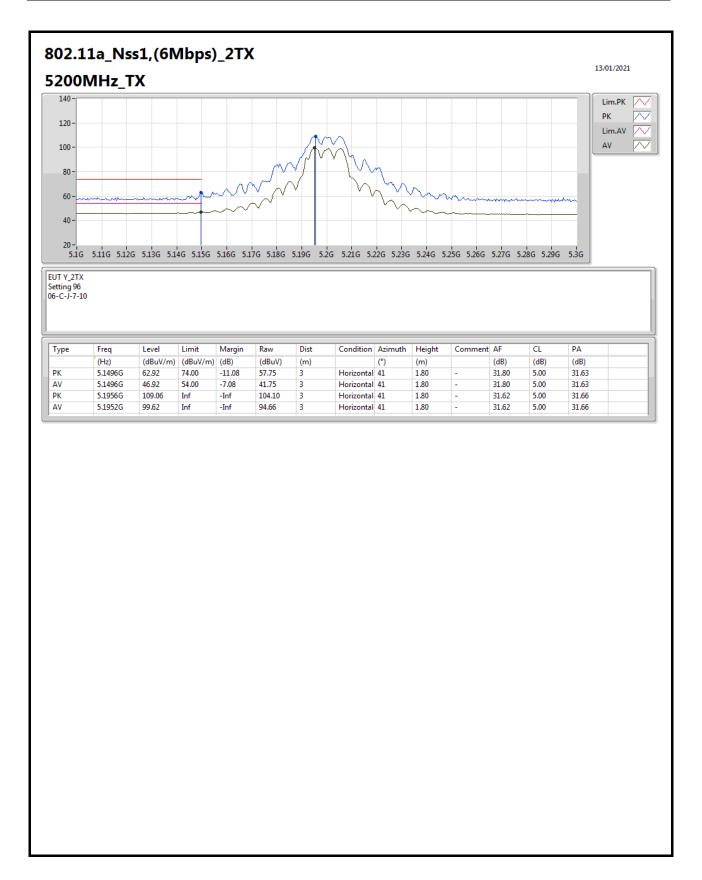




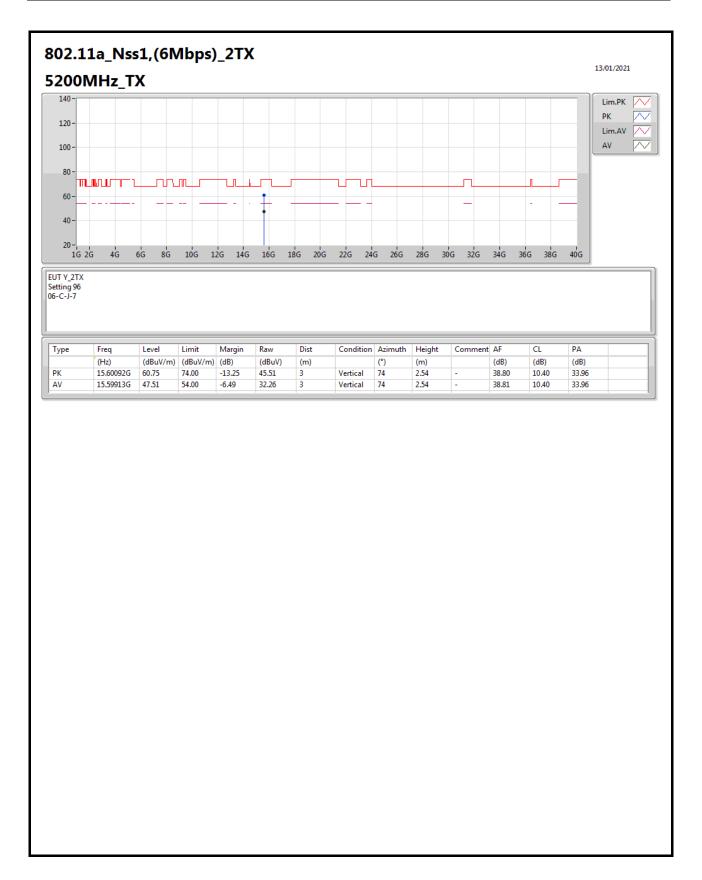






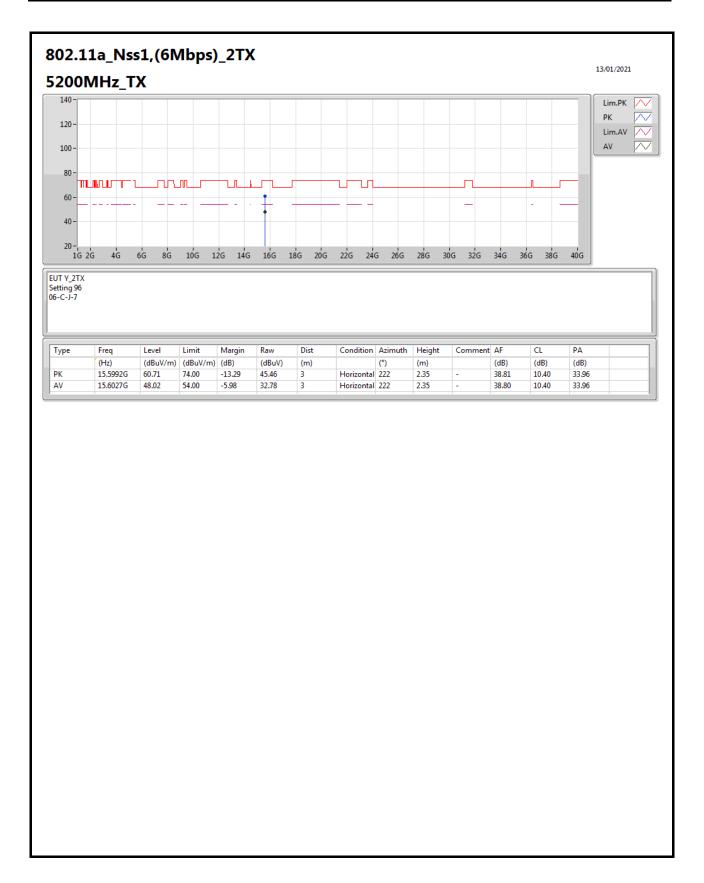




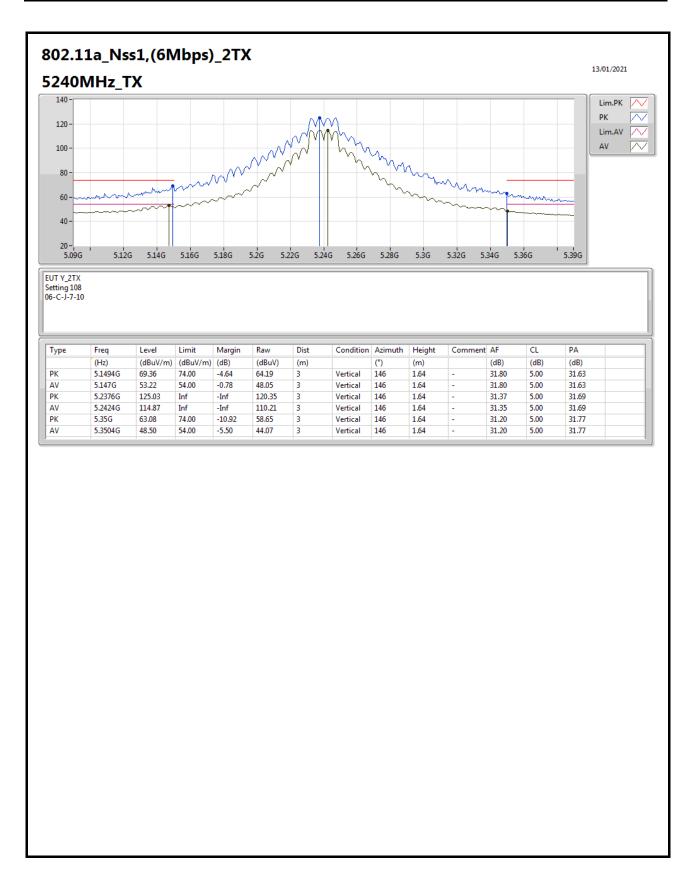


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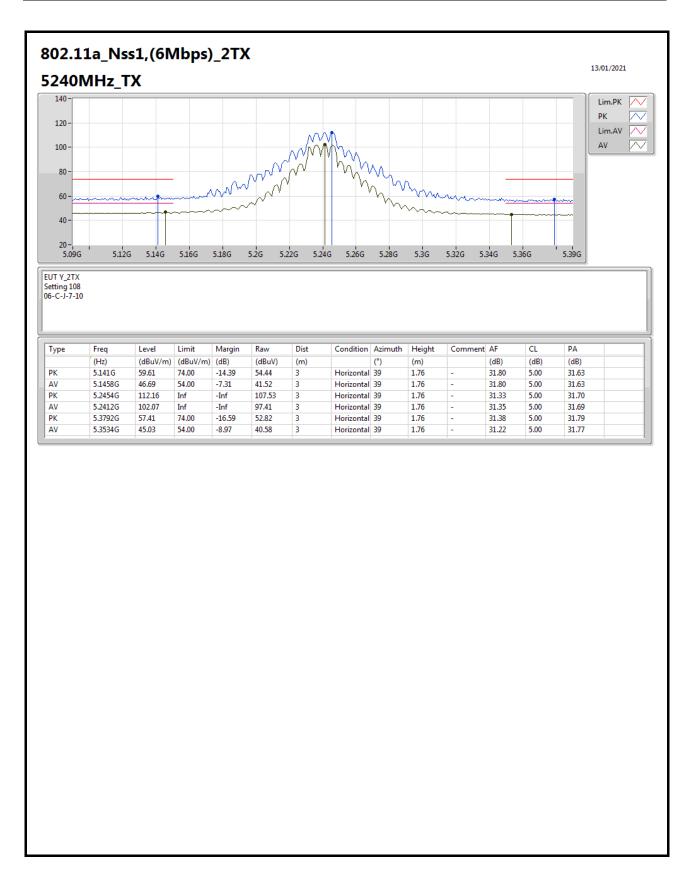






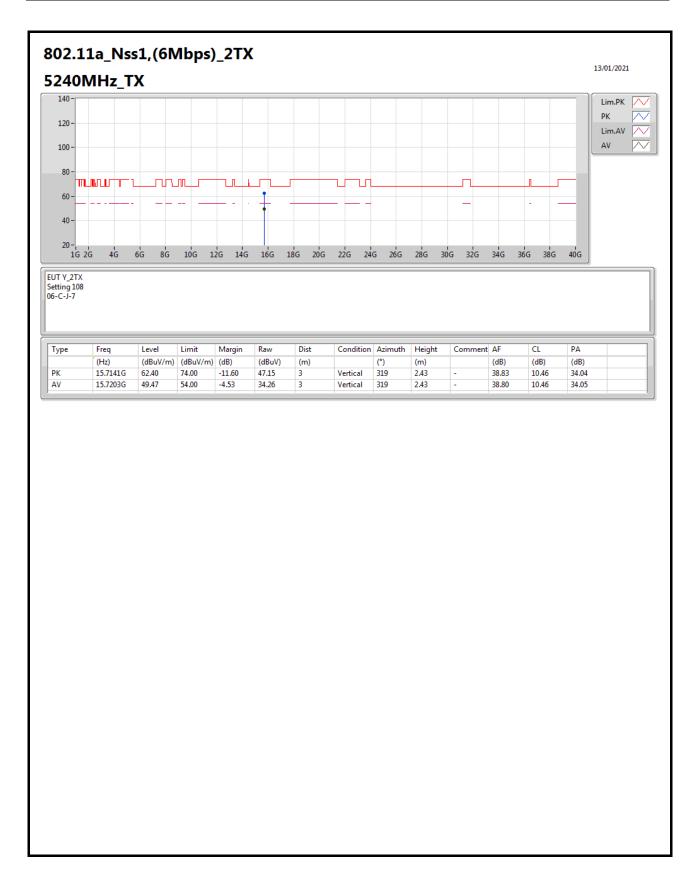




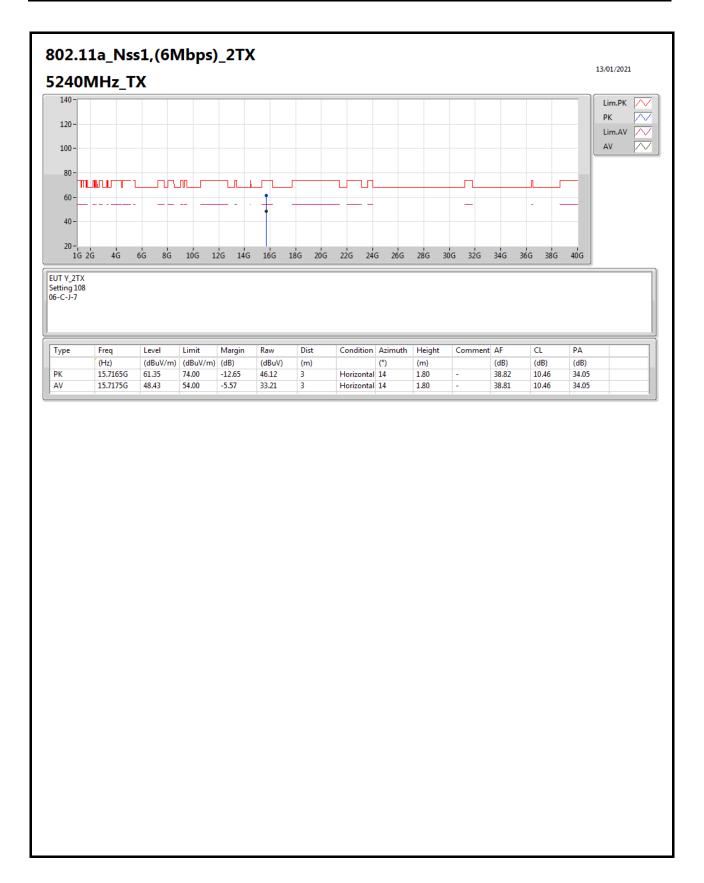


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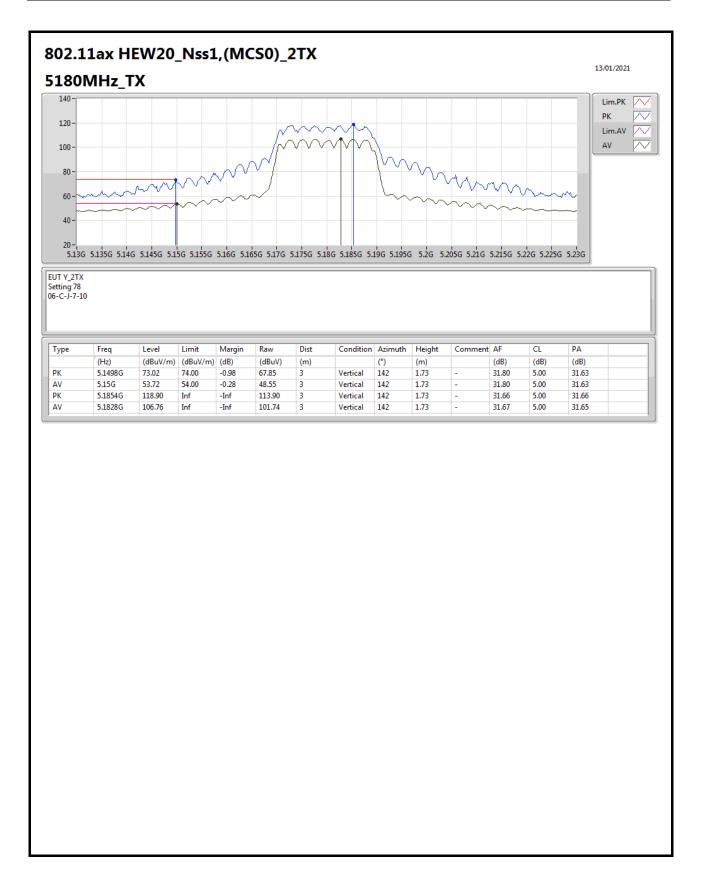




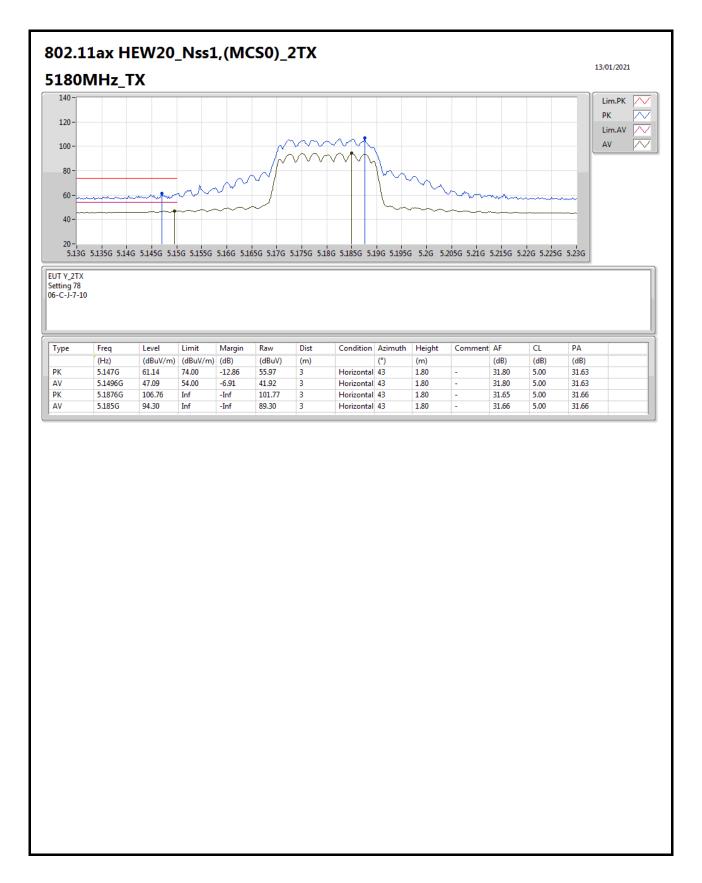


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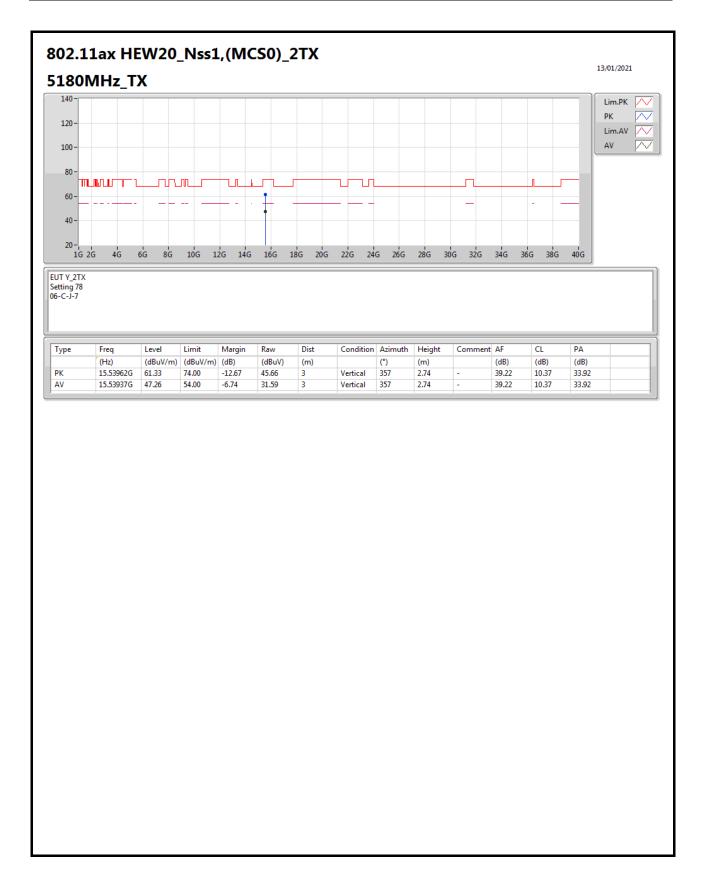






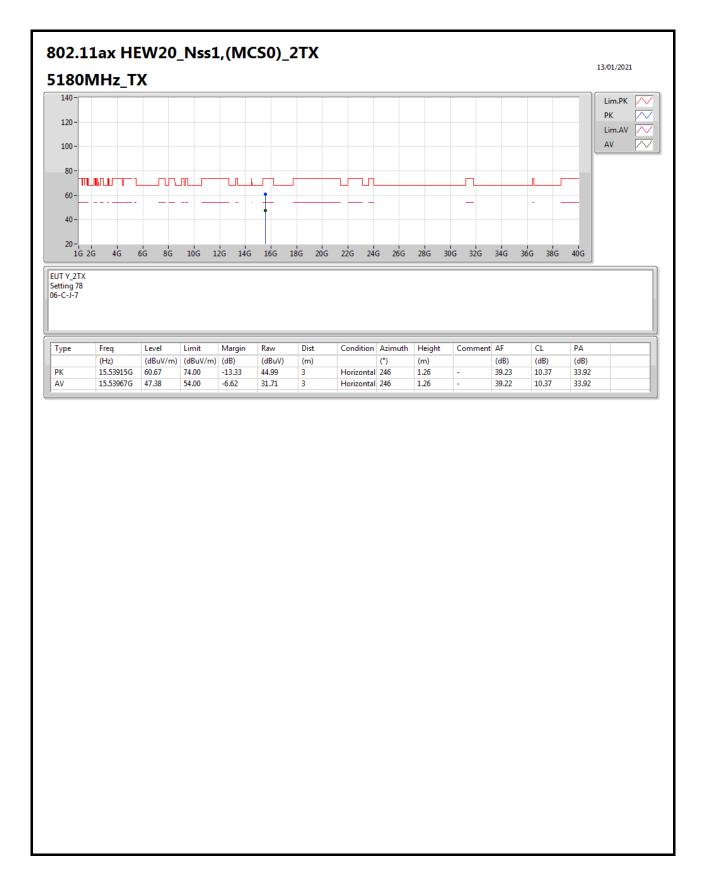




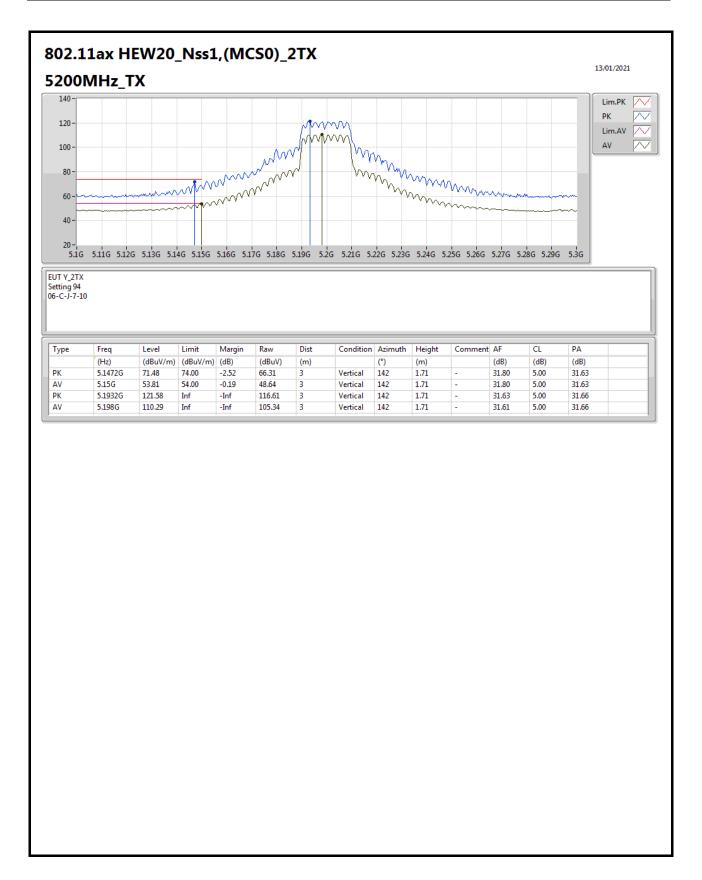


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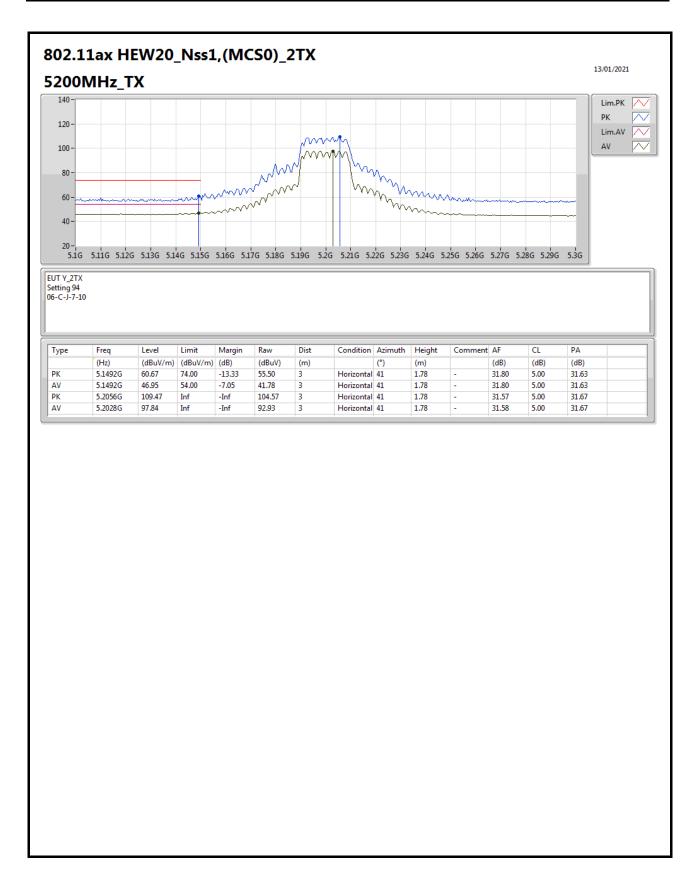






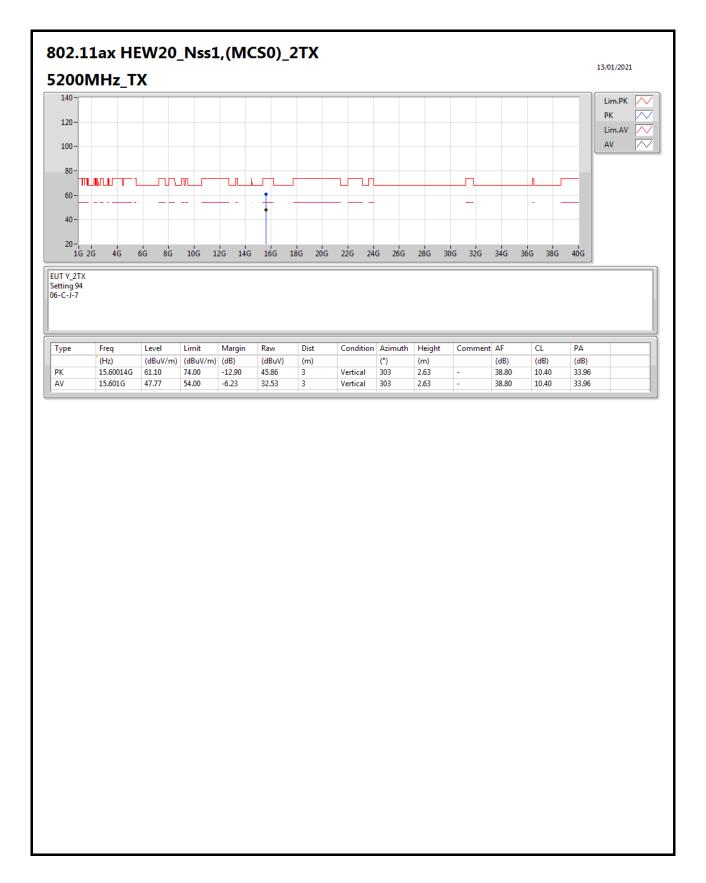
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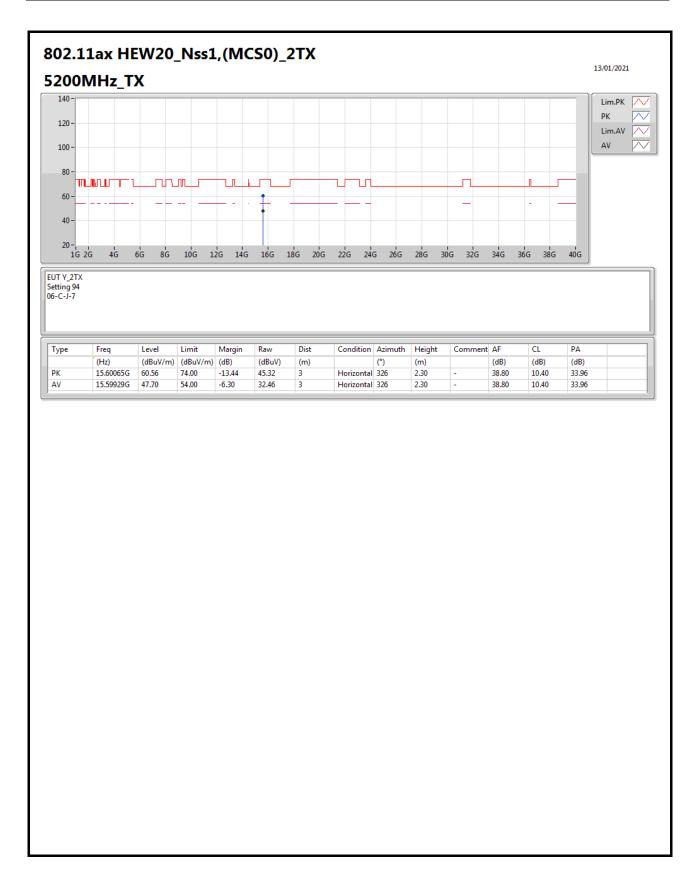
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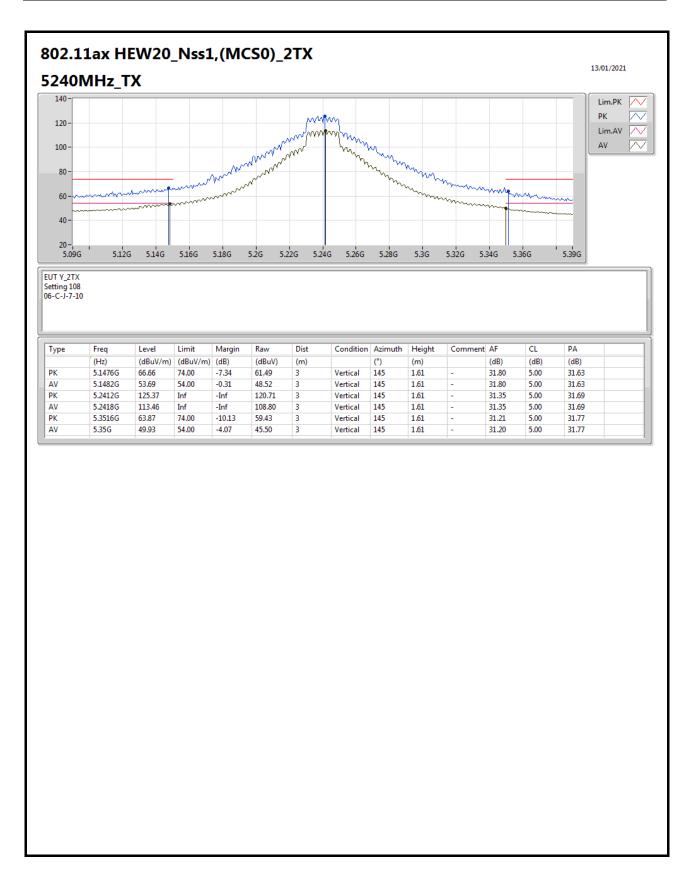


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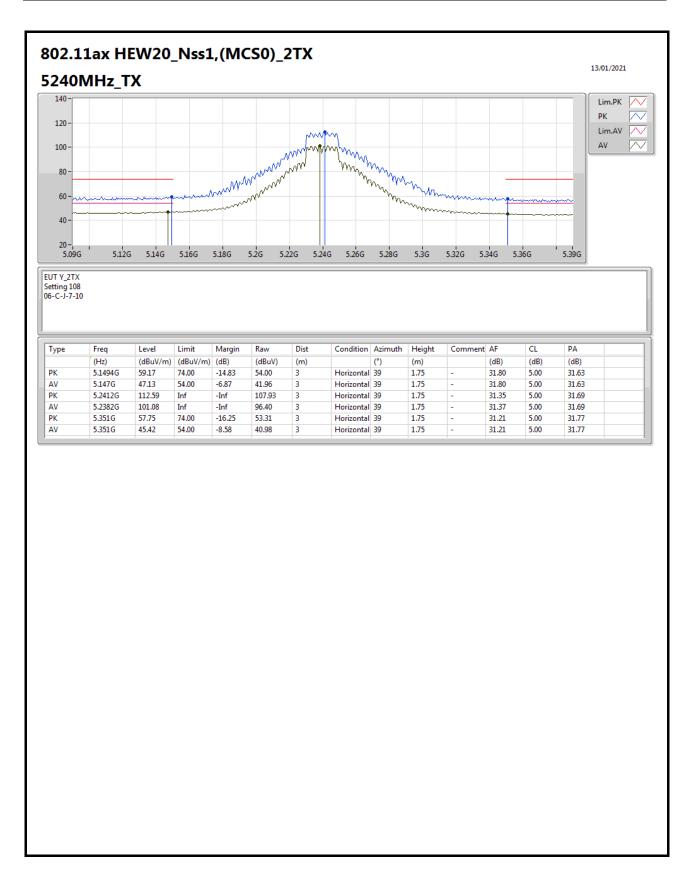




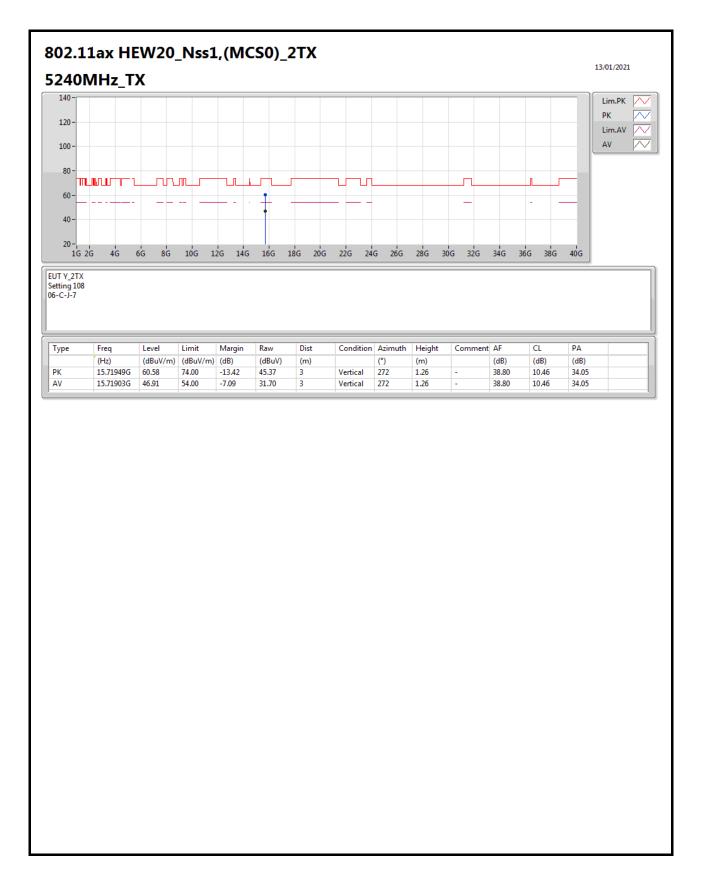




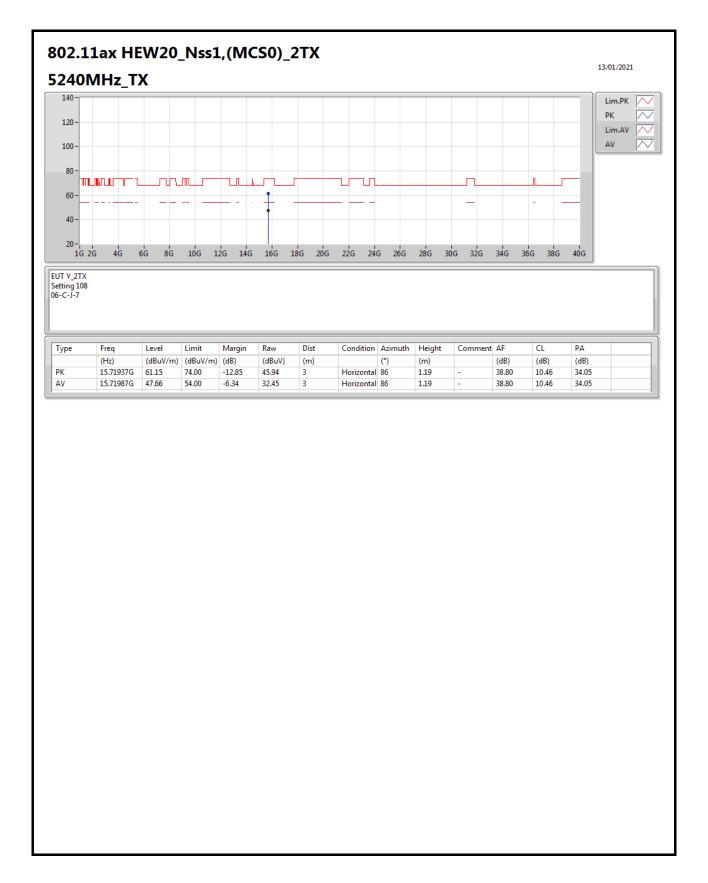




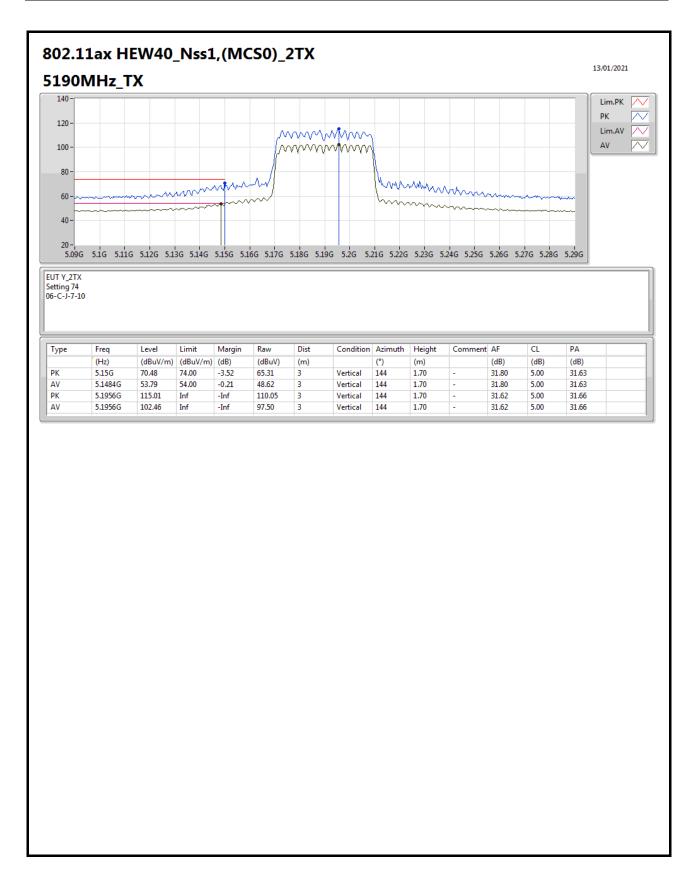




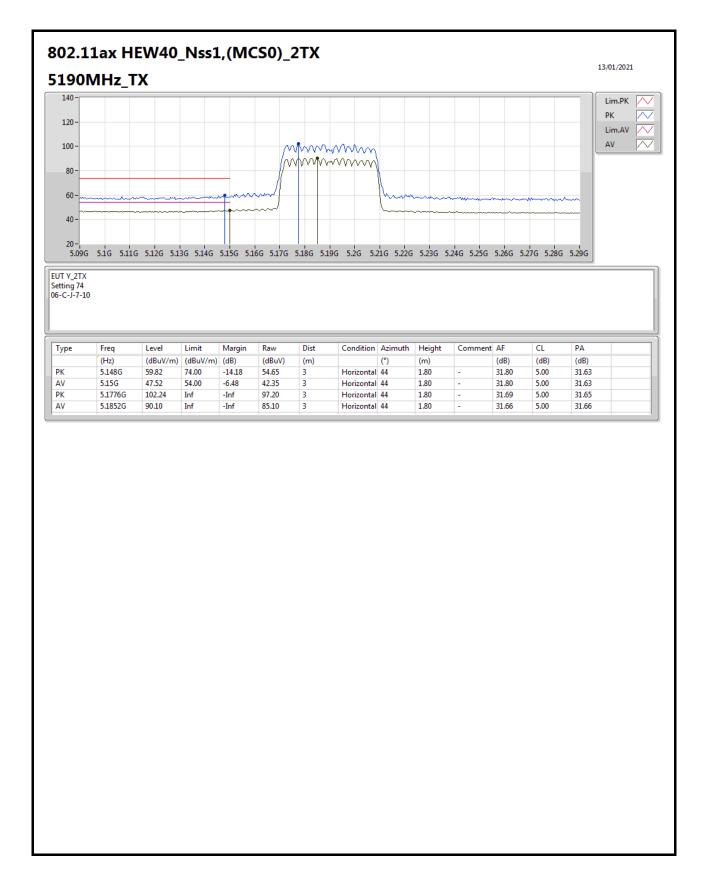




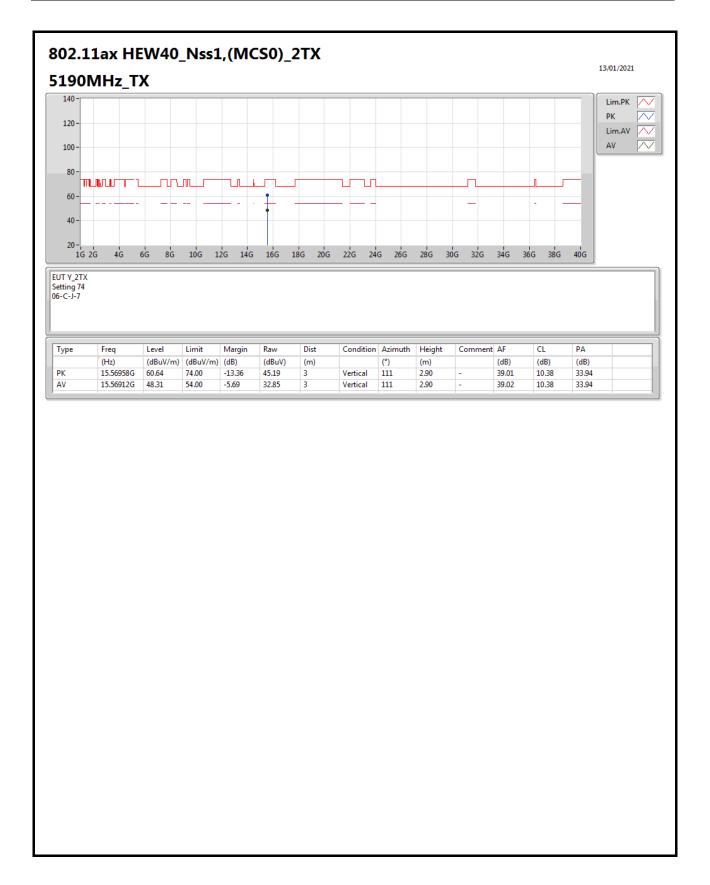






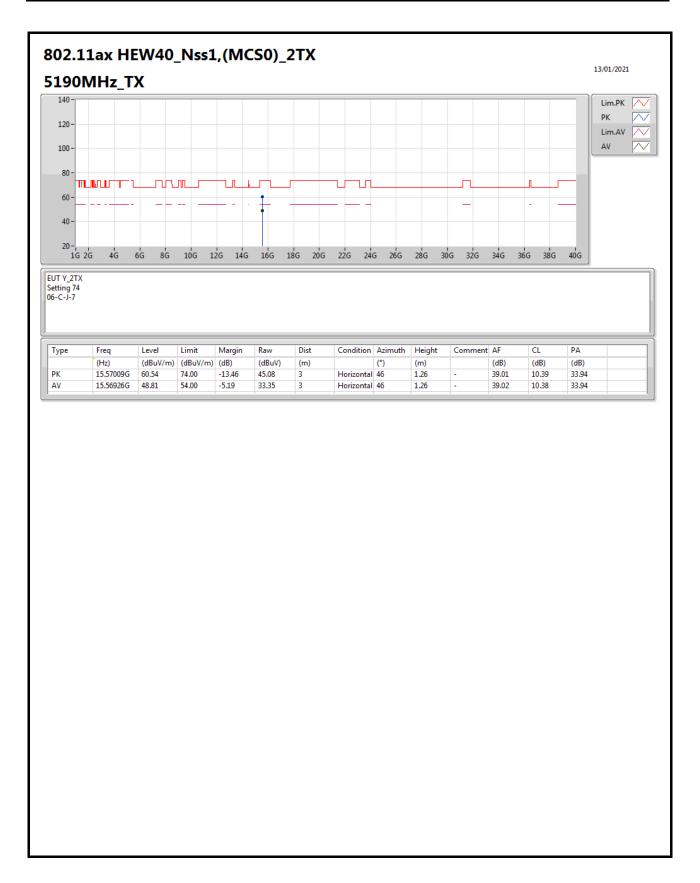




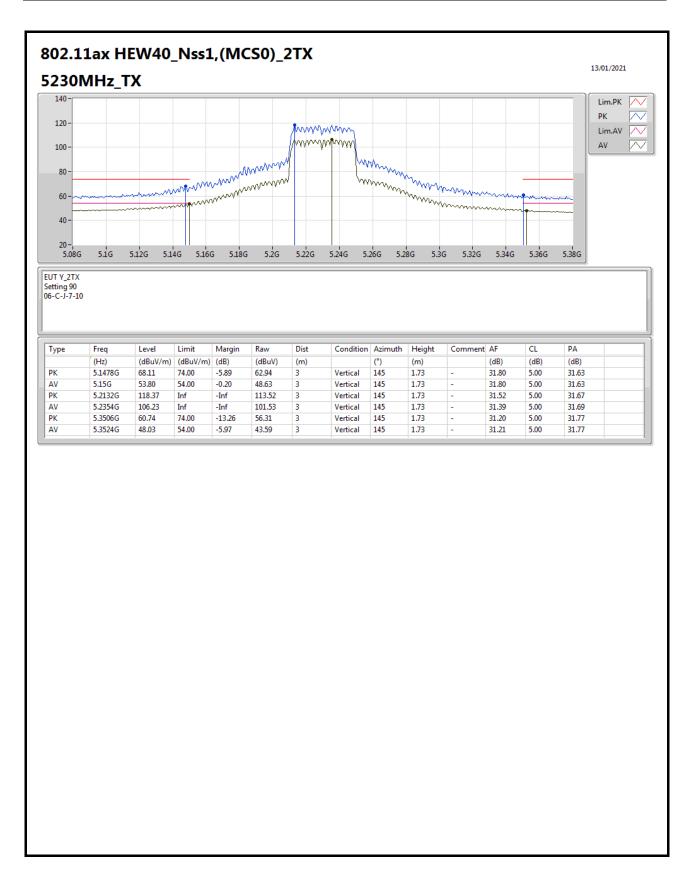


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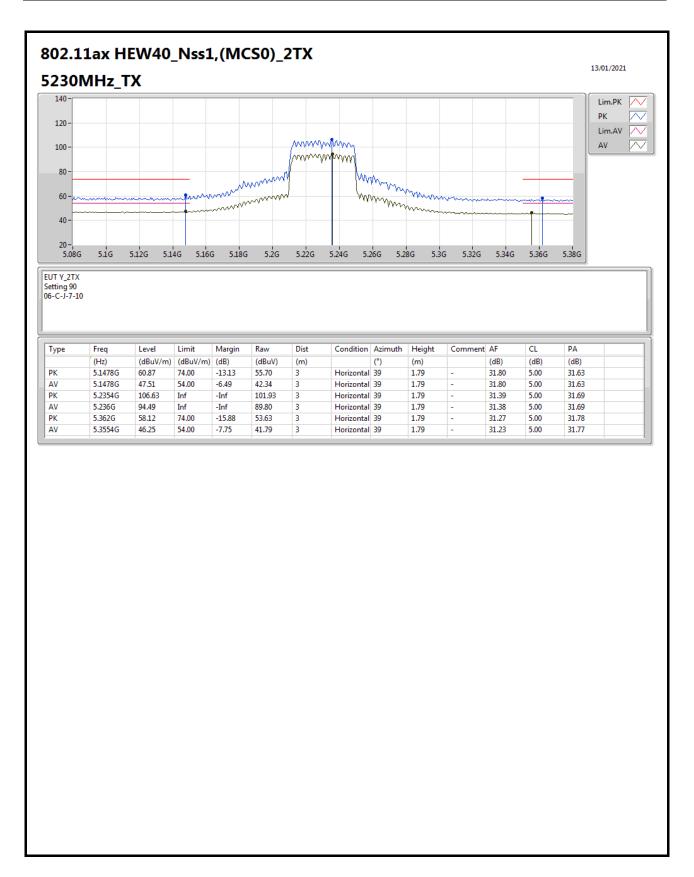




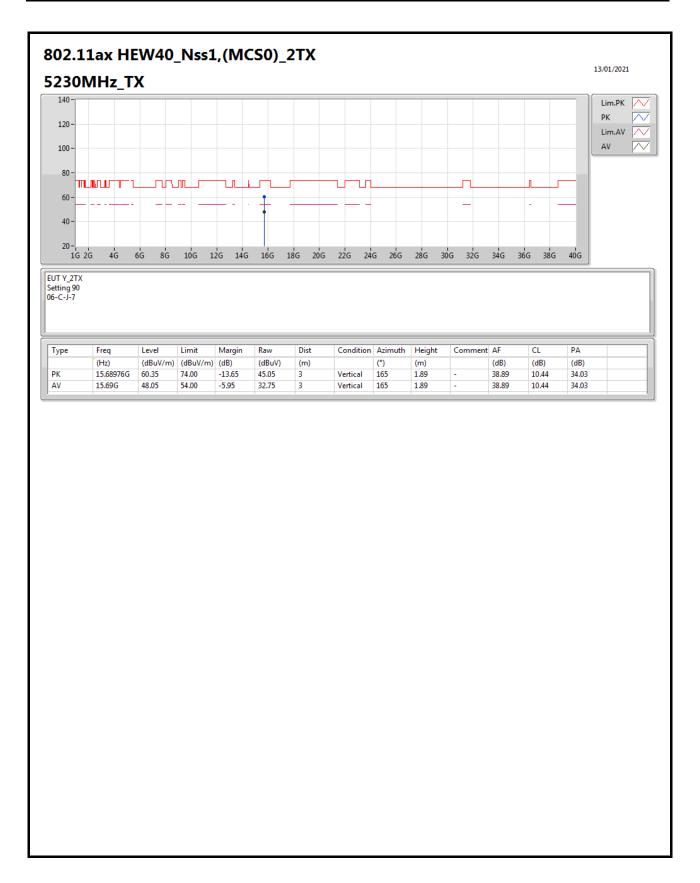




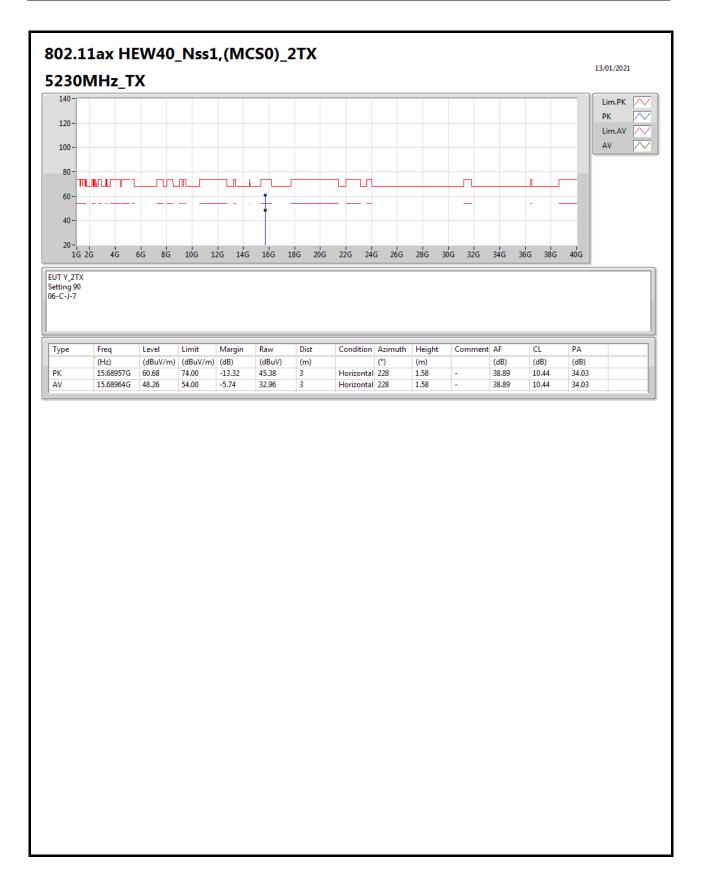




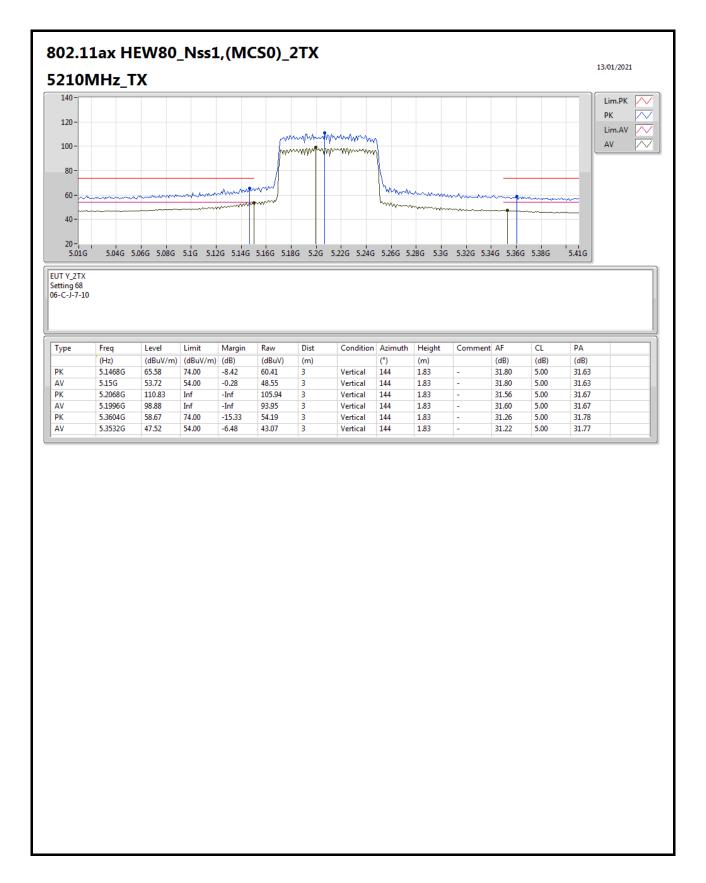




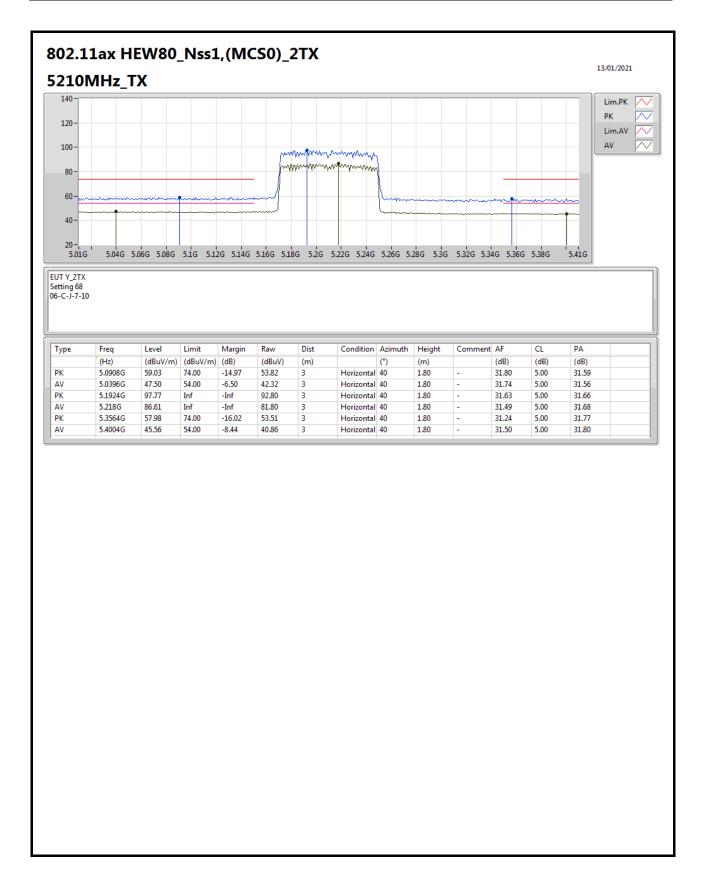




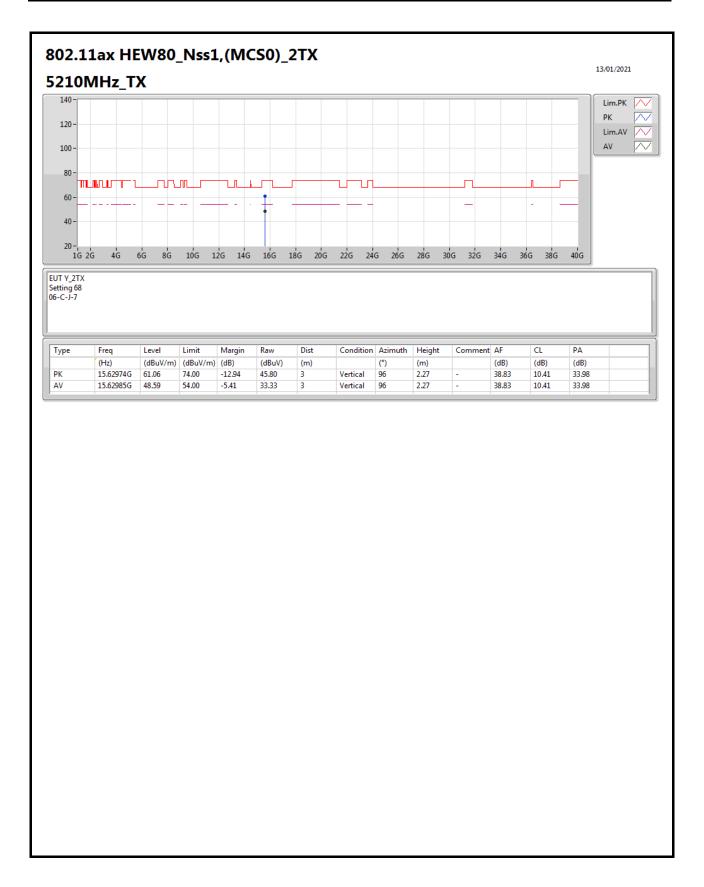




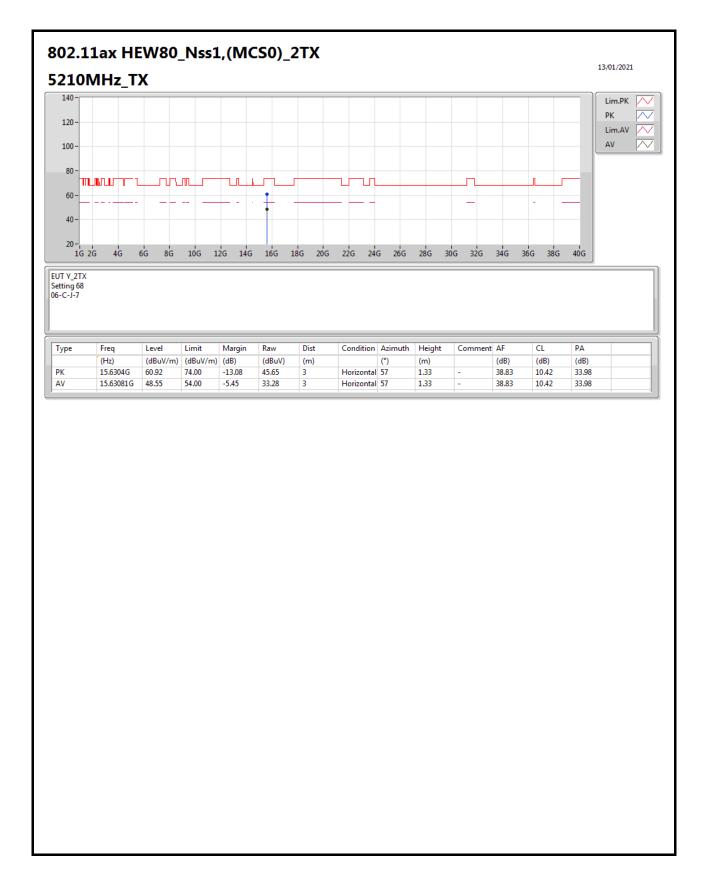














RSE TX above 1GHz

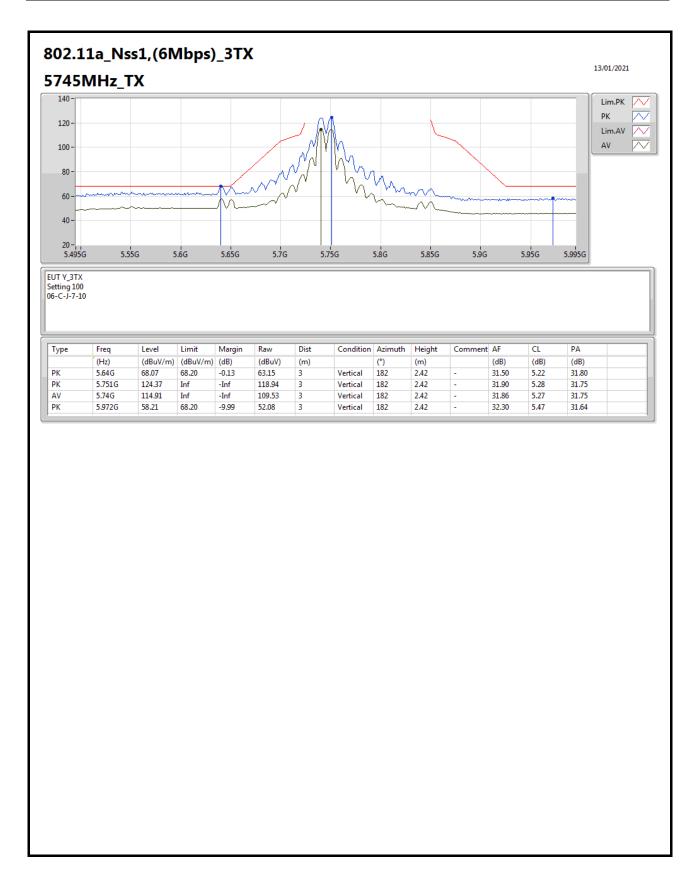
Appendix E.3

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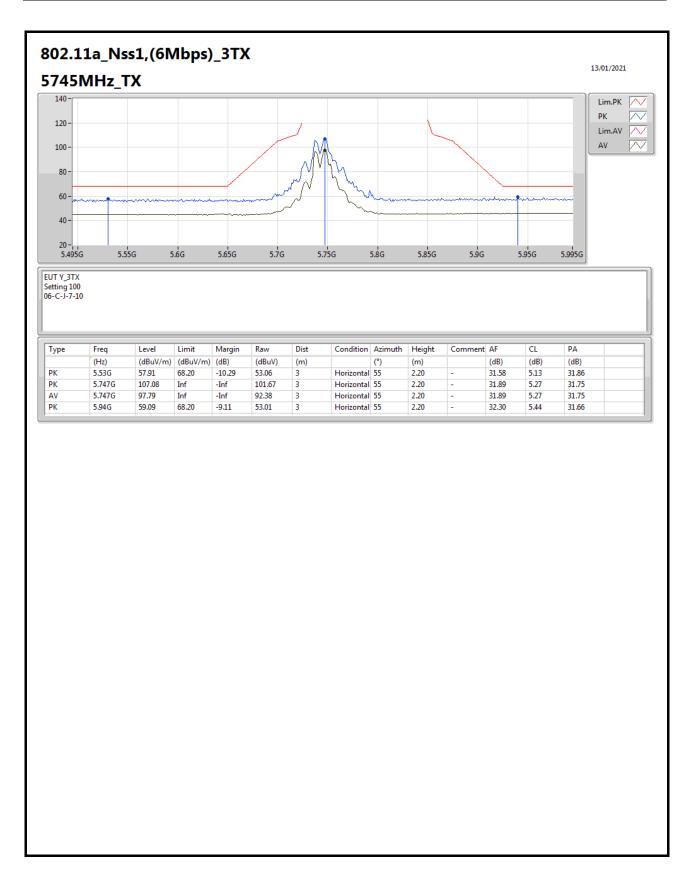
Summary

M	lode	Result	Туре	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
				(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
5.725-	-5.85GHz	-	-	•	-	-	-	-	-	-	-	-
802.11a_Nss1,(6Mbps)_3TX		Pass	PK	5.64G	68.07	68.20	-0.13	3	Vertical	182	2.42	-

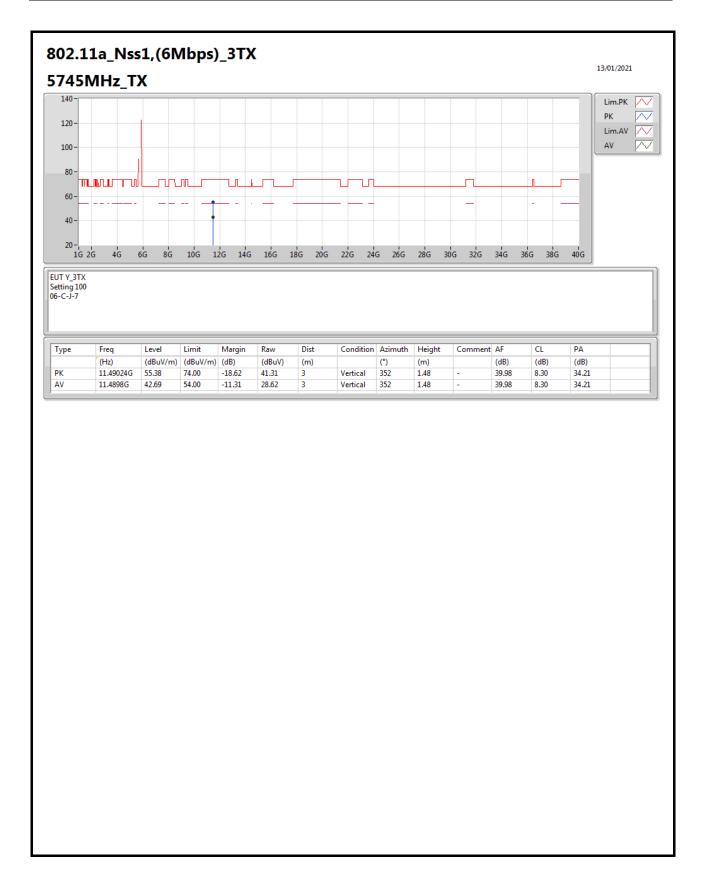






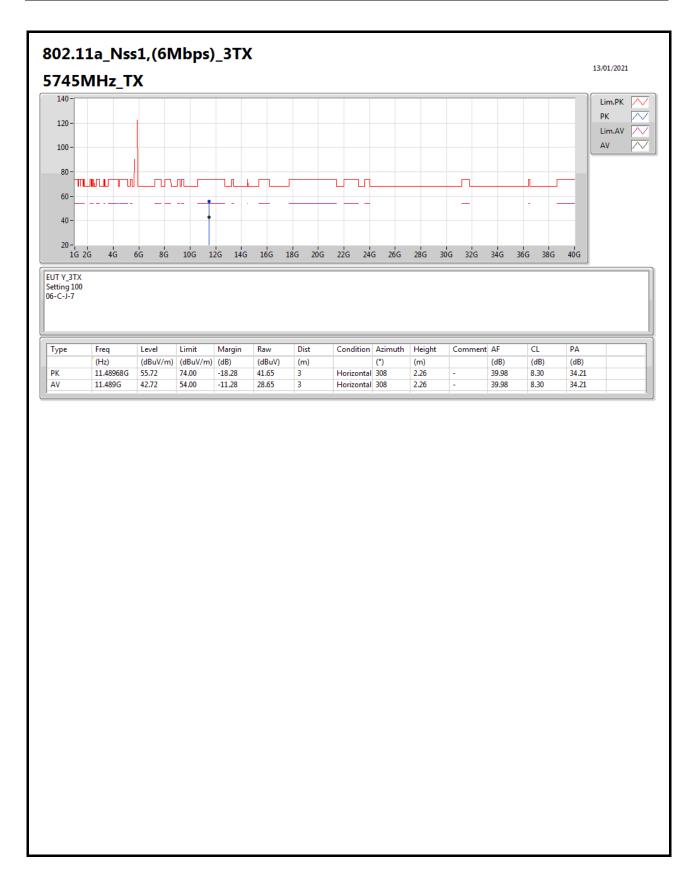




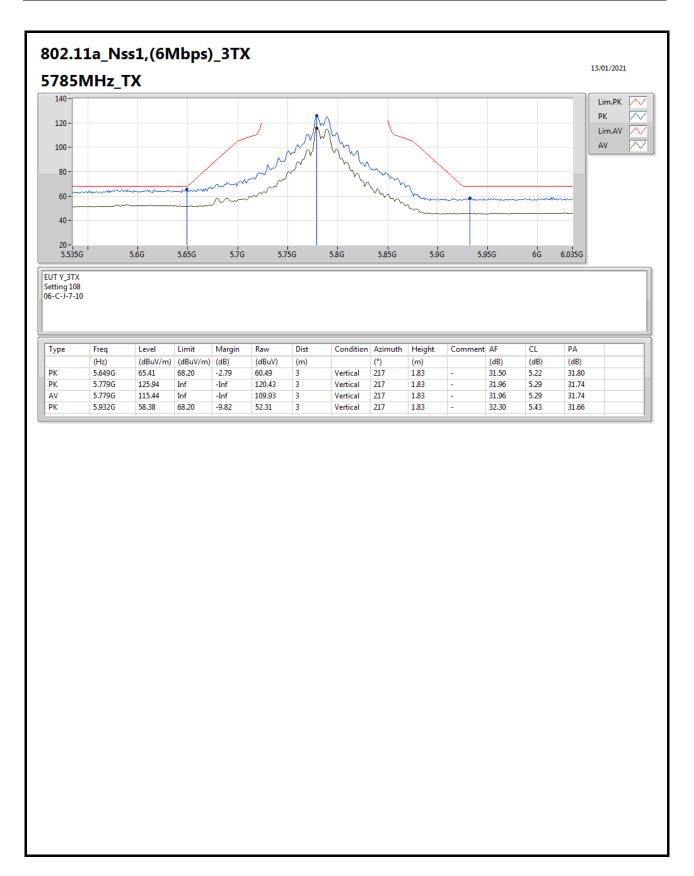


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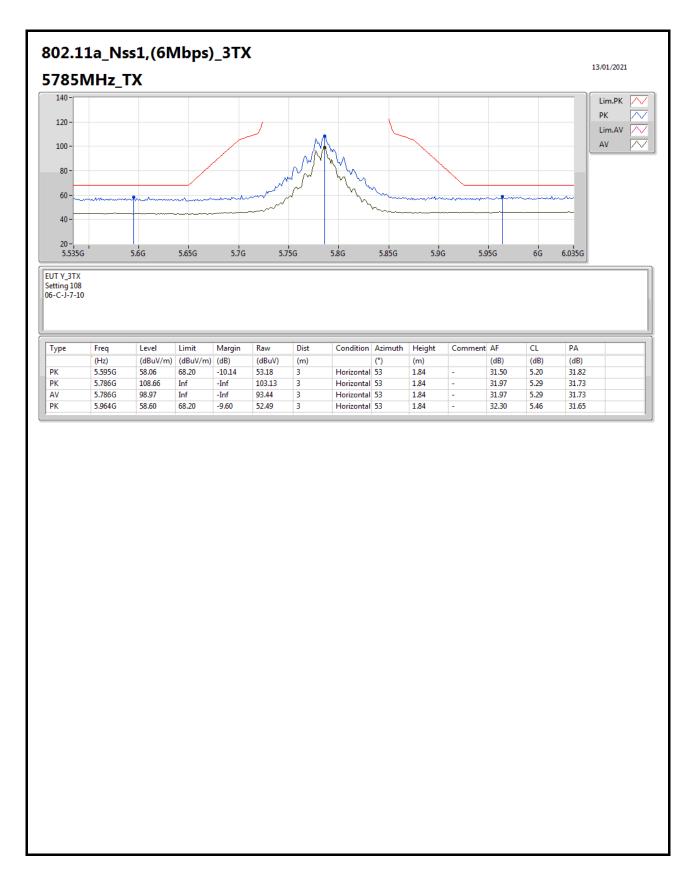




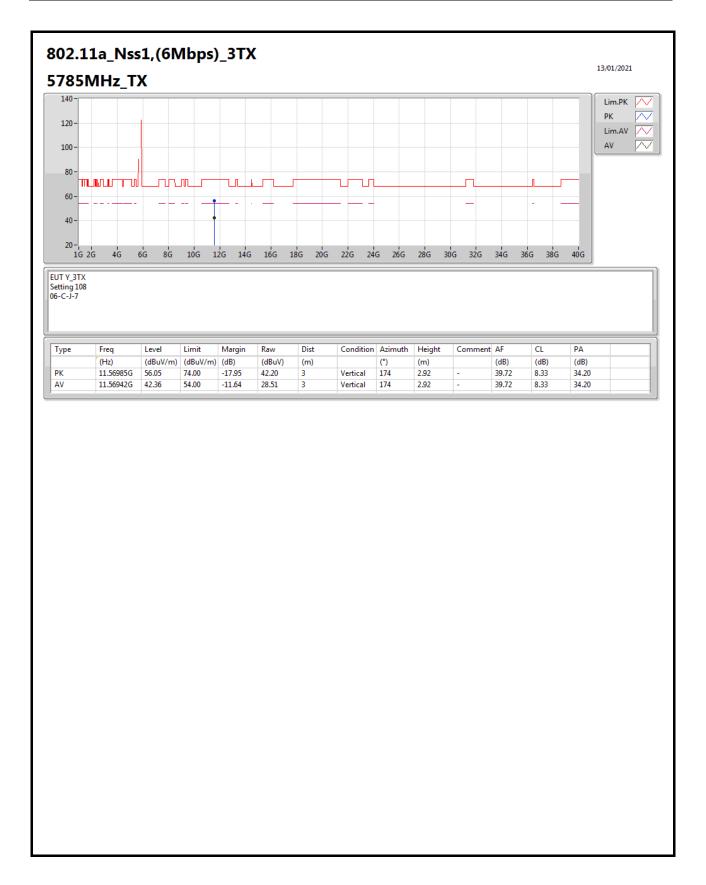




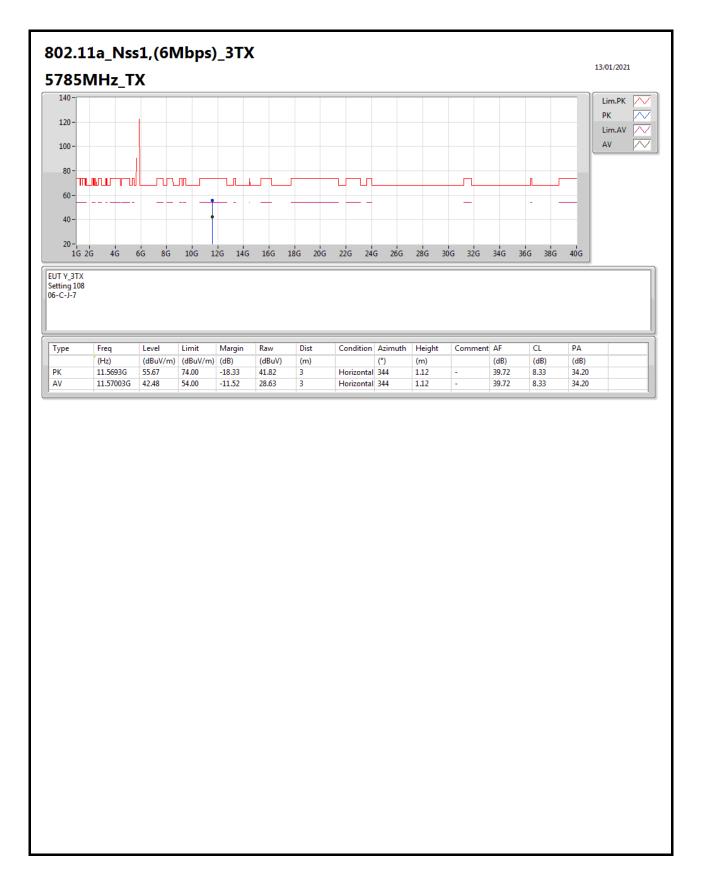






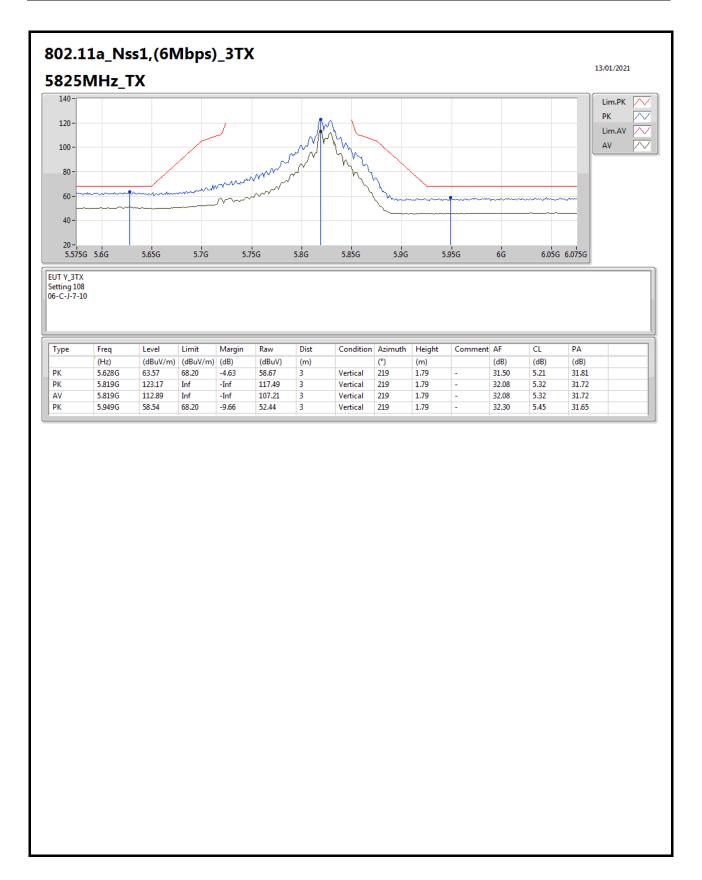




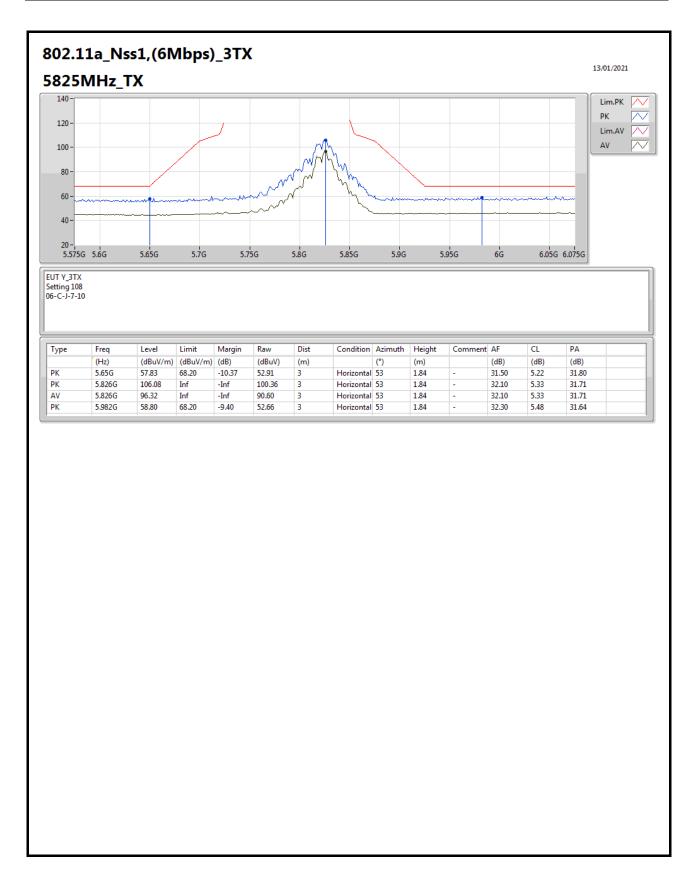


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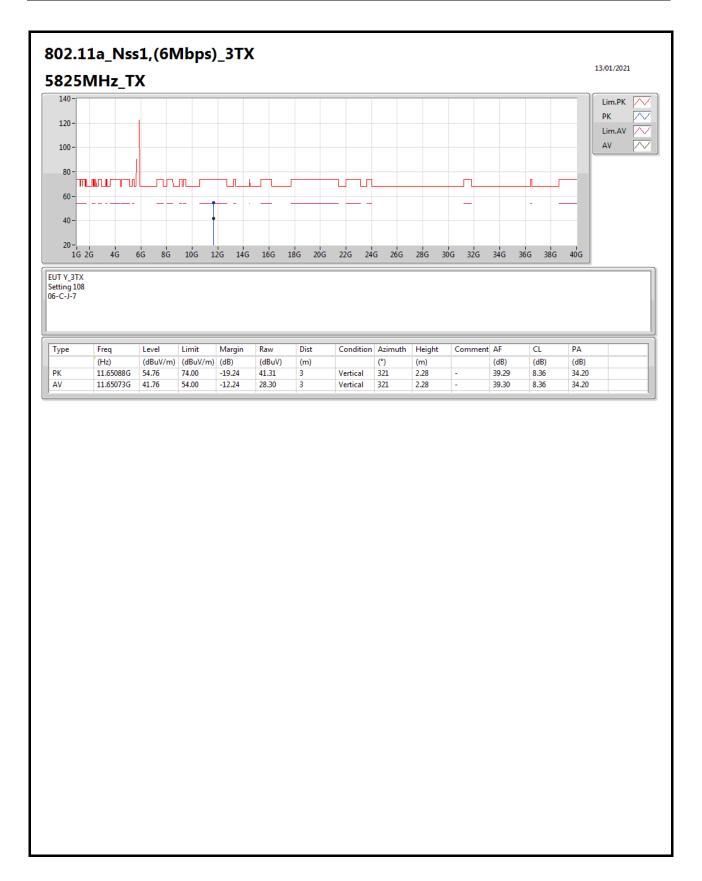






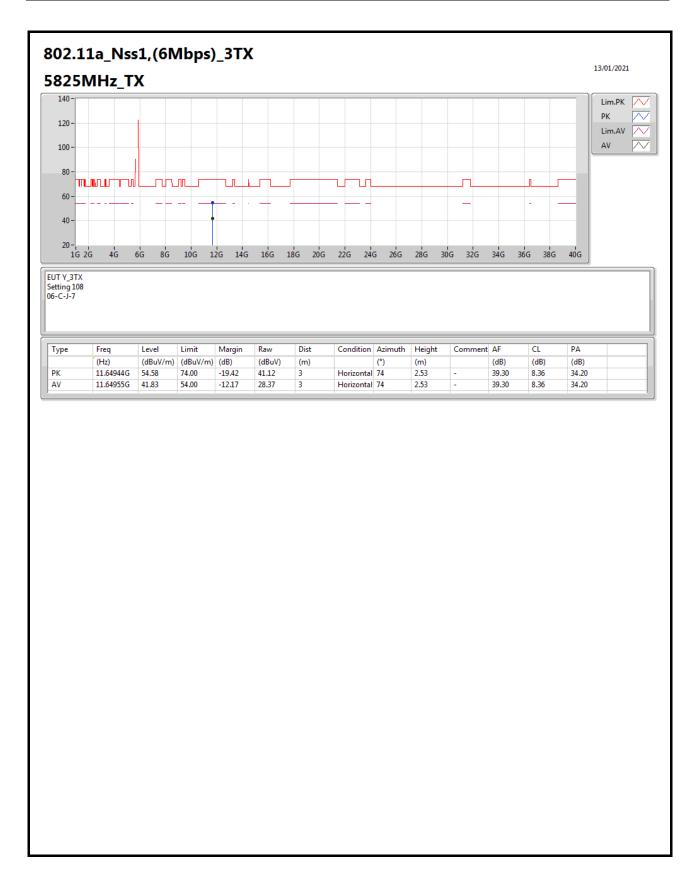
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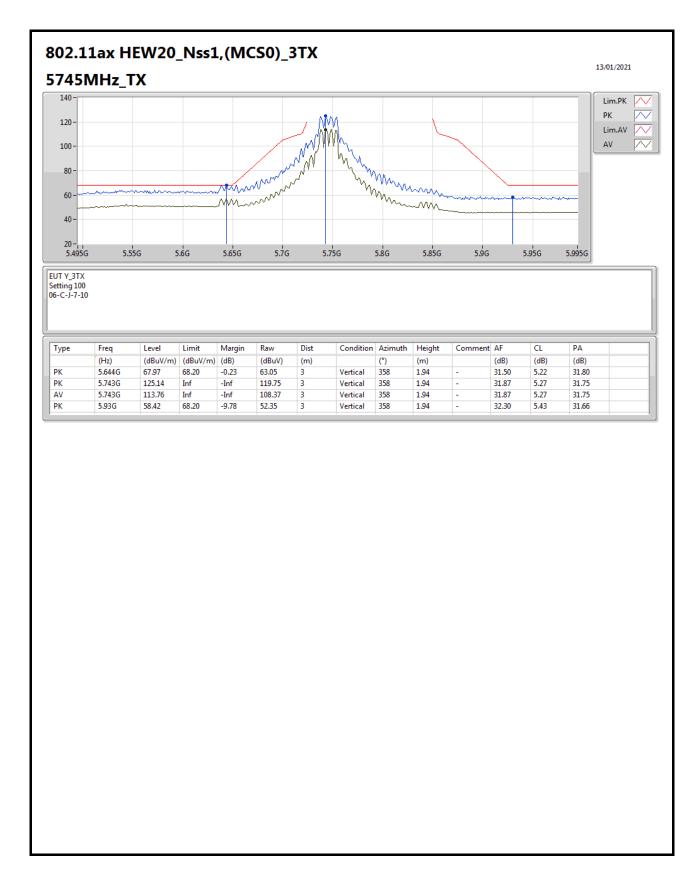


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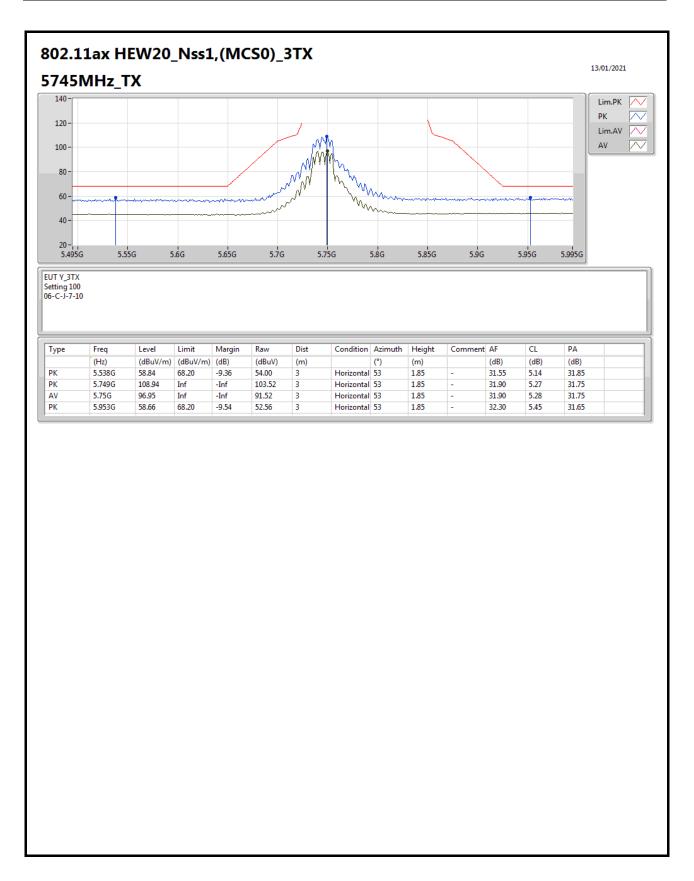






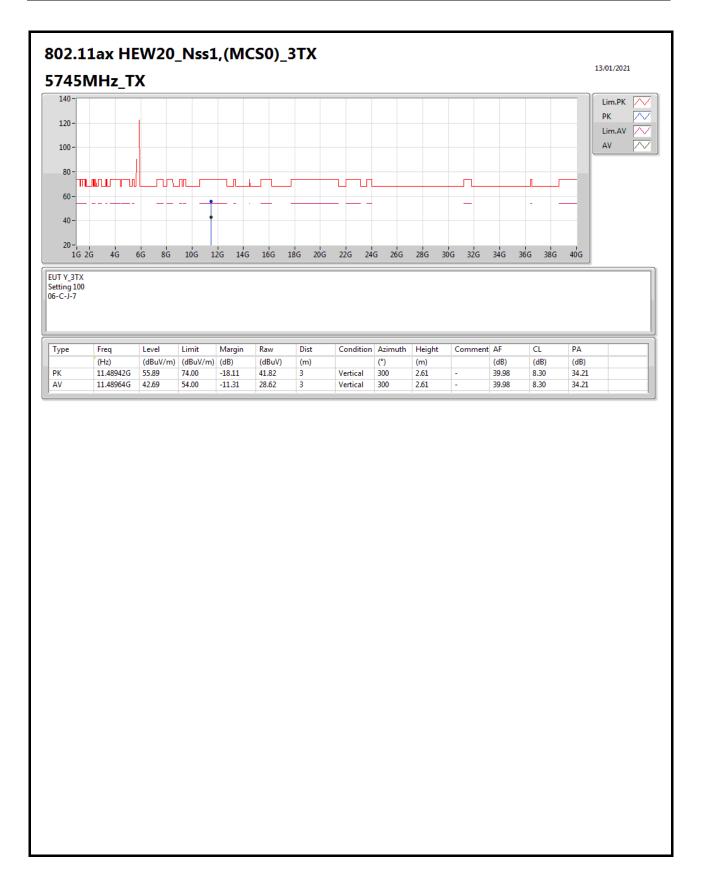
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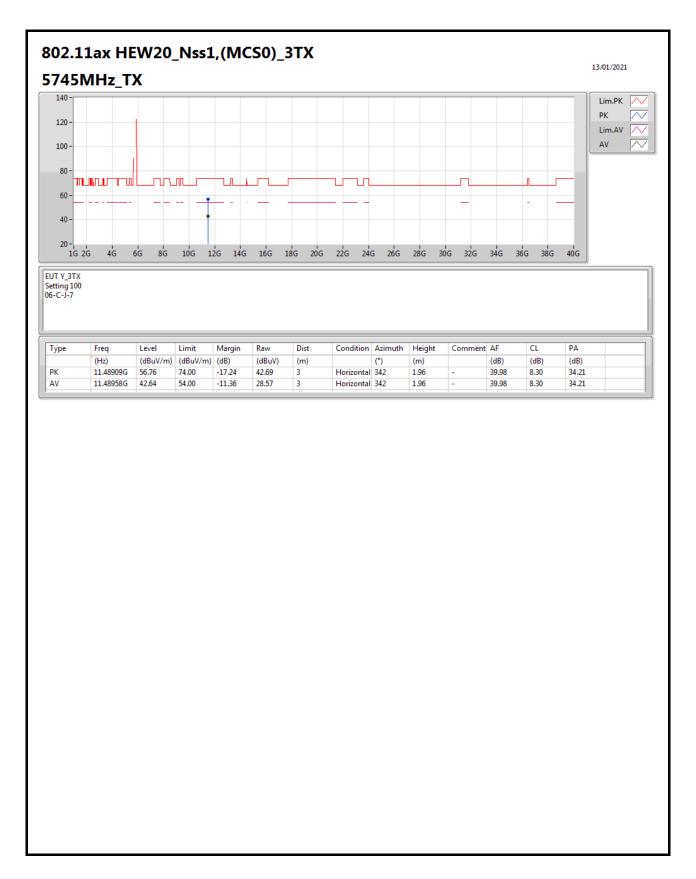
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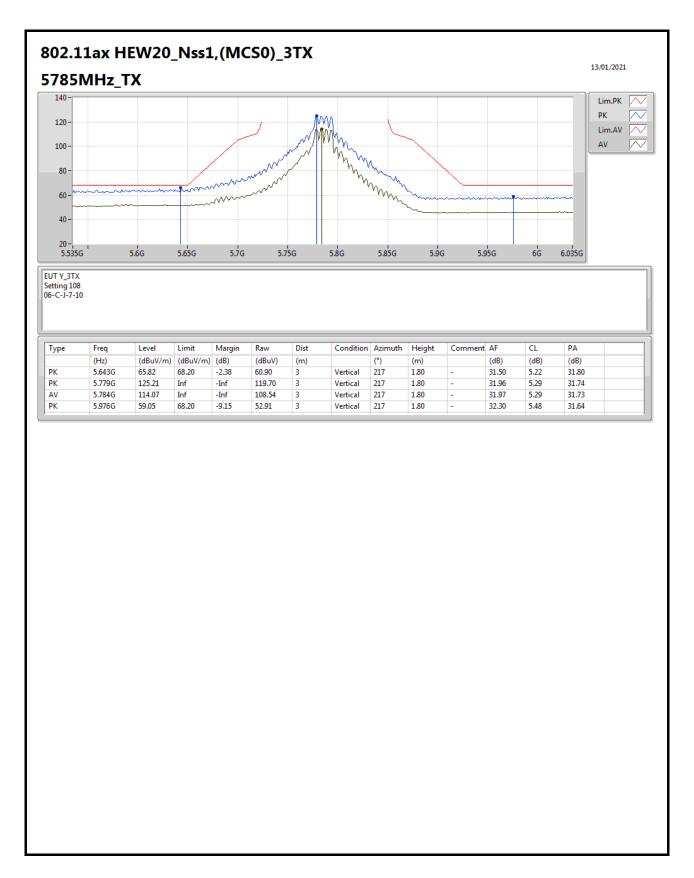
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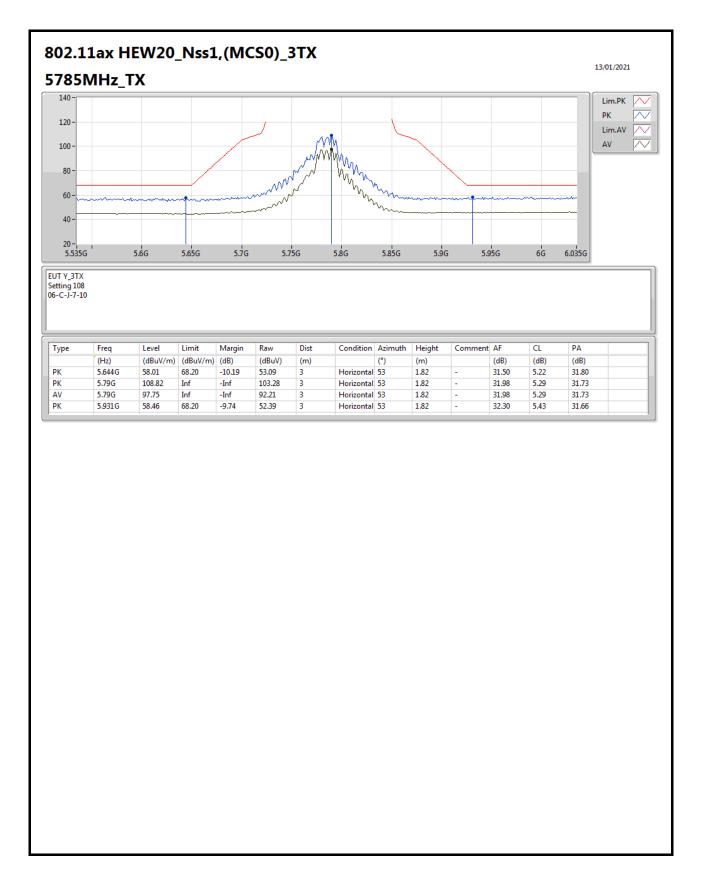
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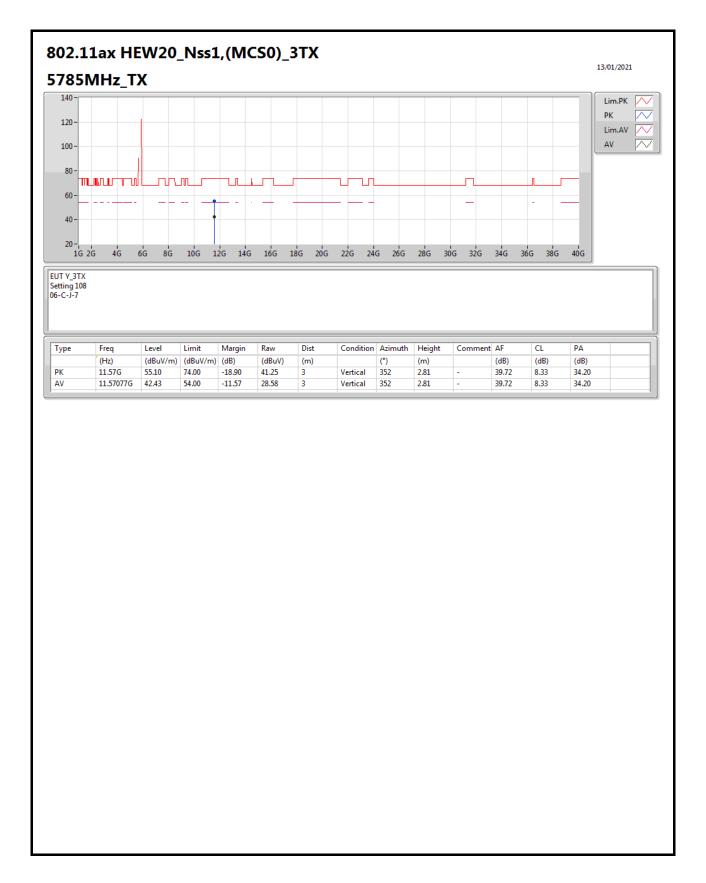


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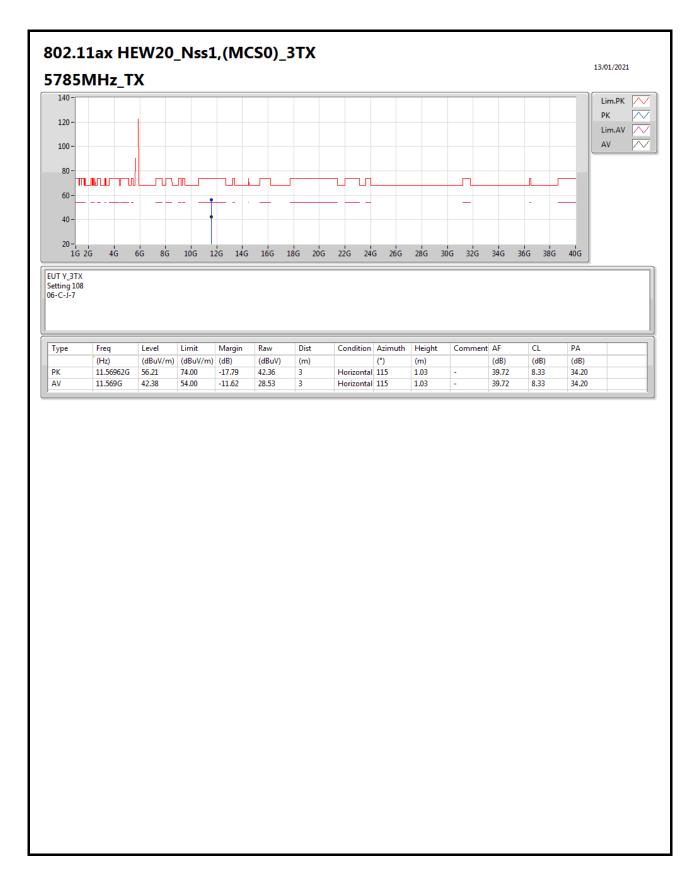




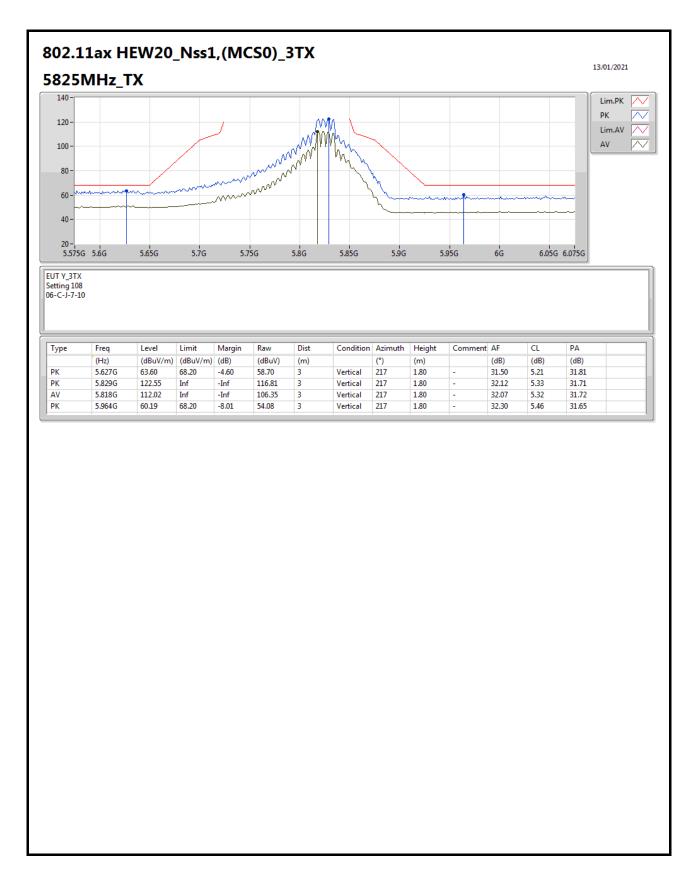


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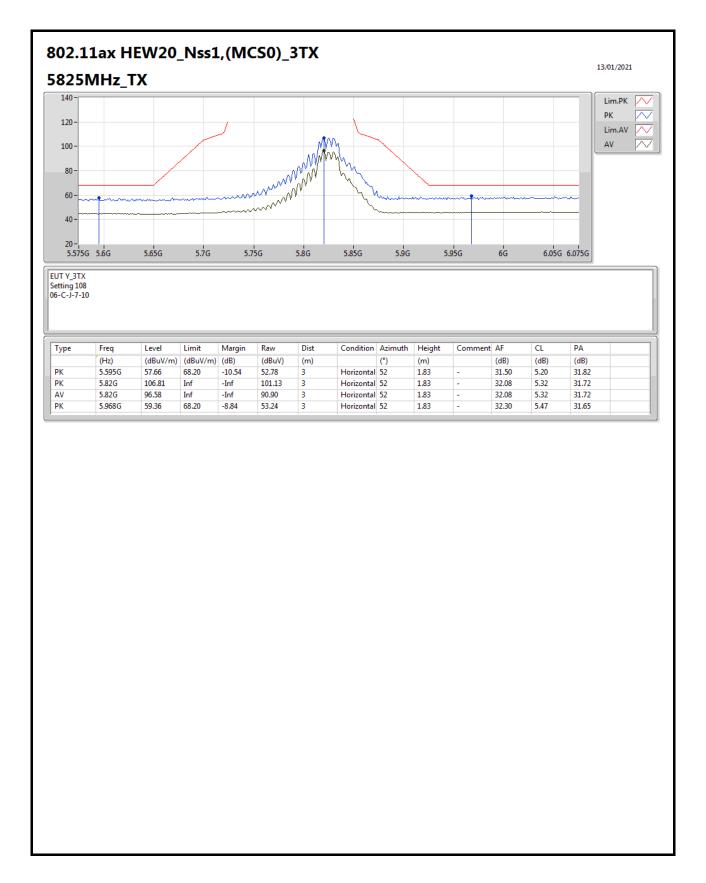






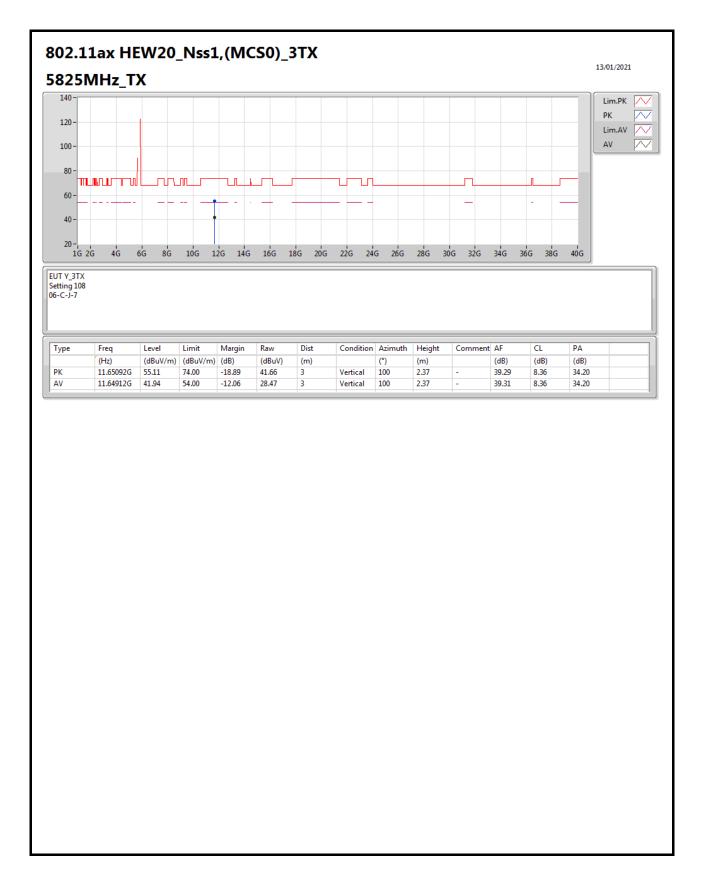






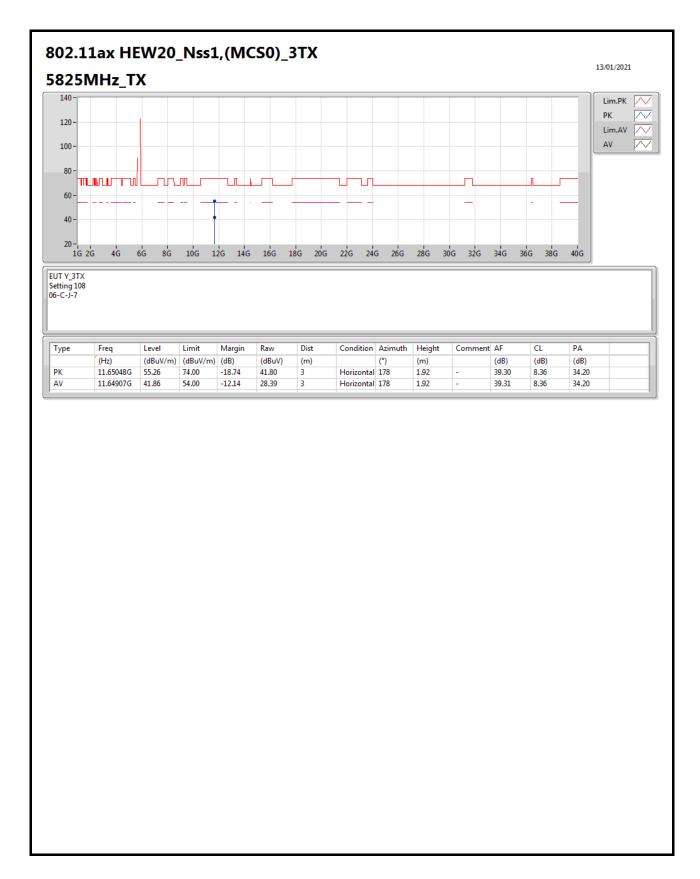
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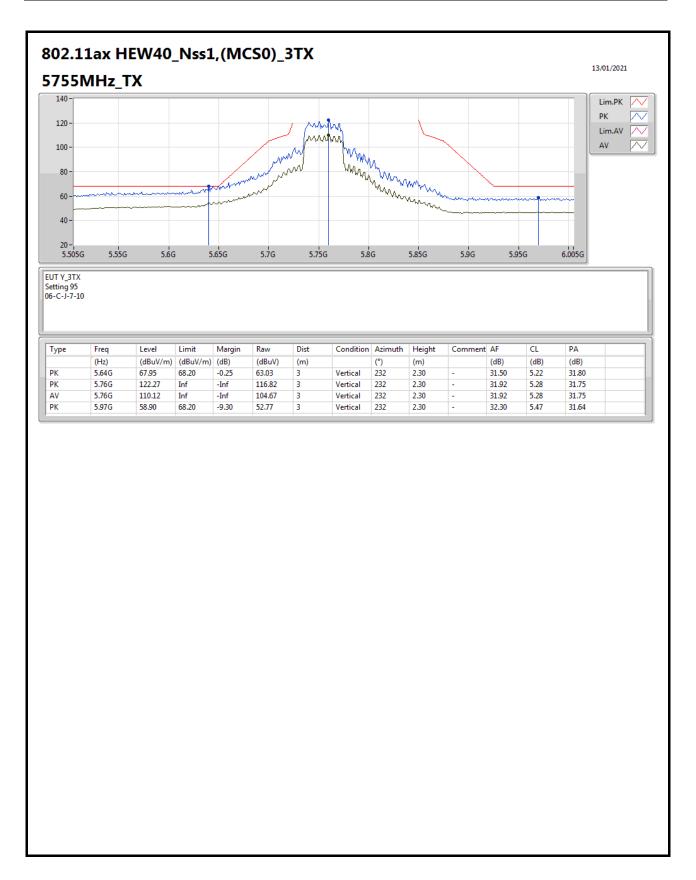


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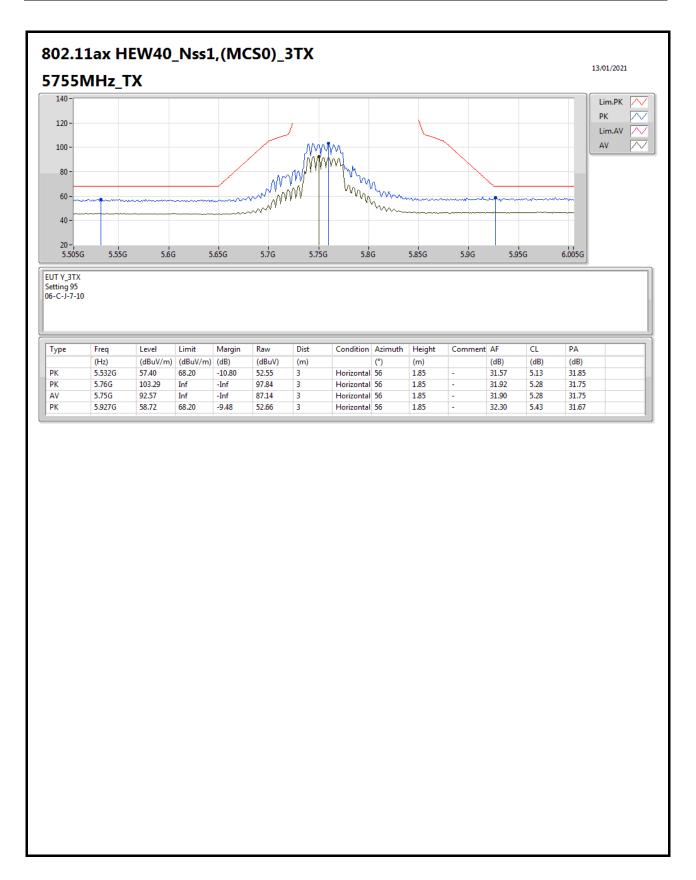






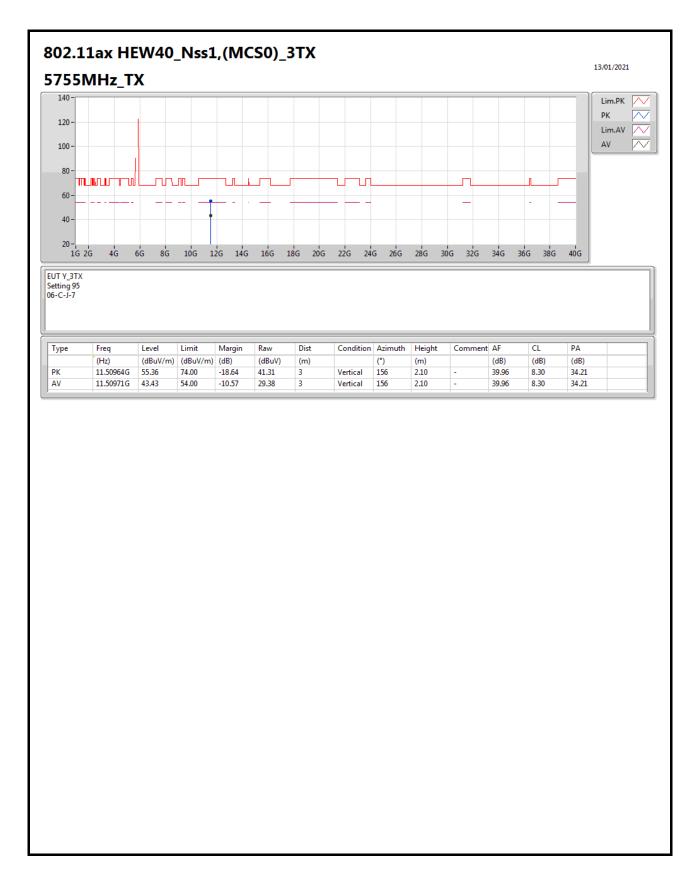




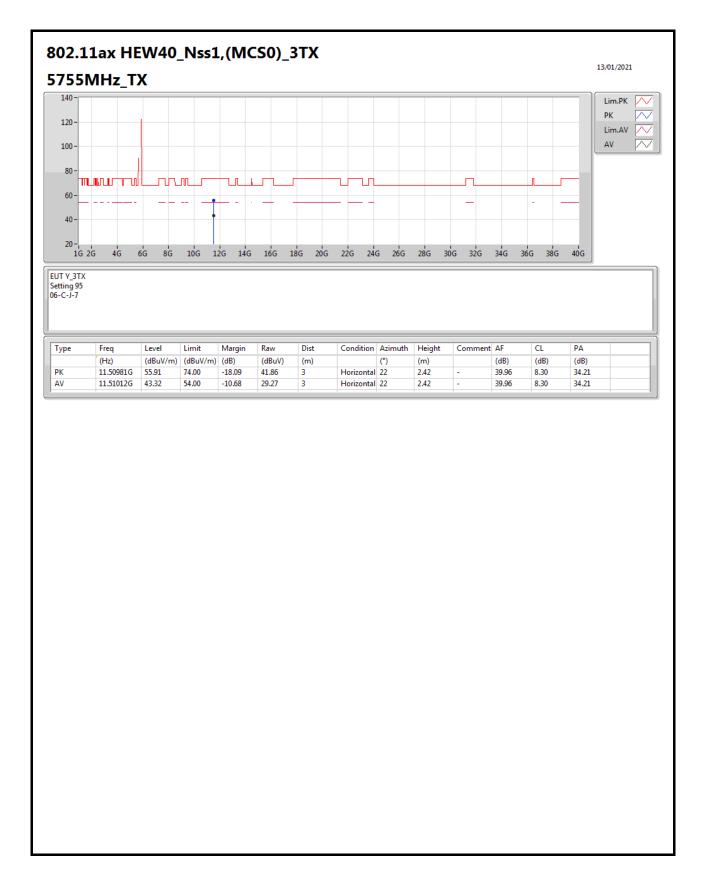


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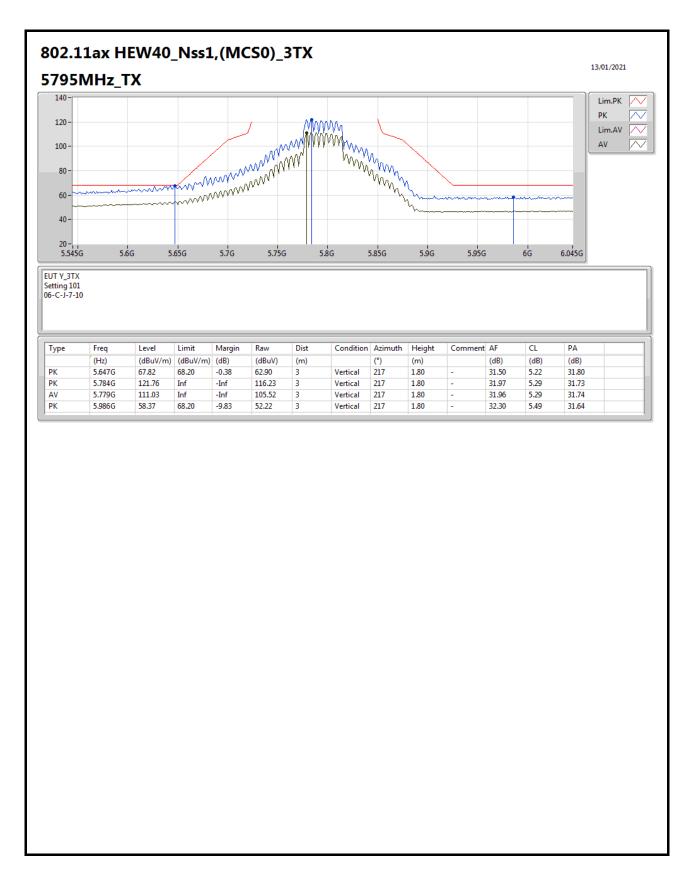




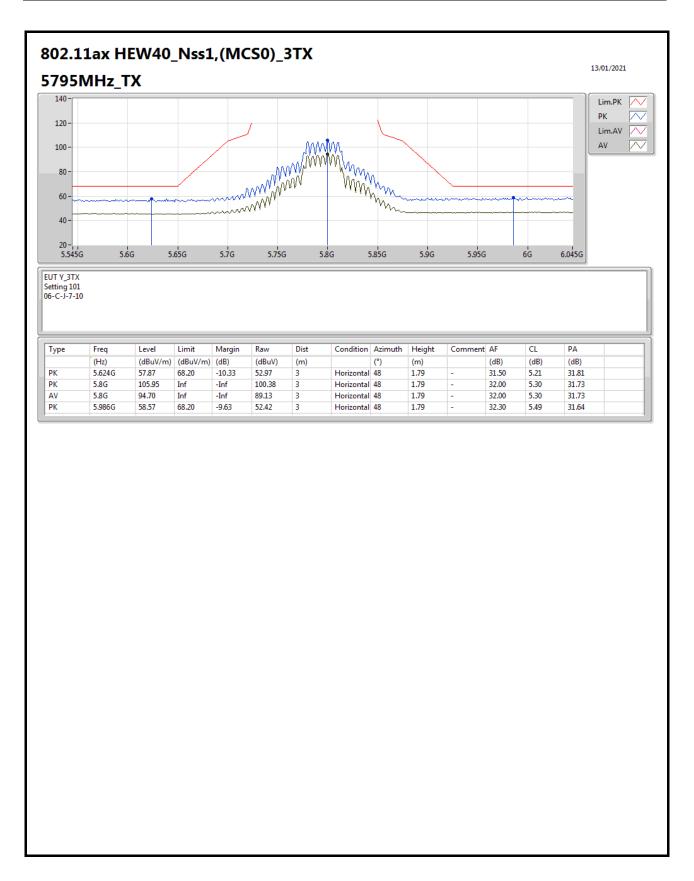




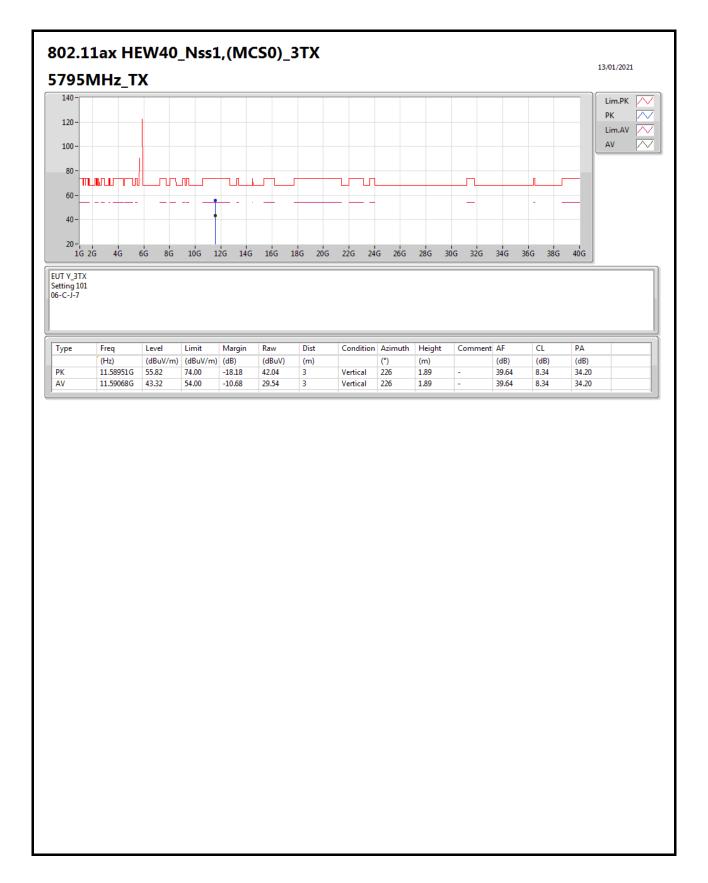




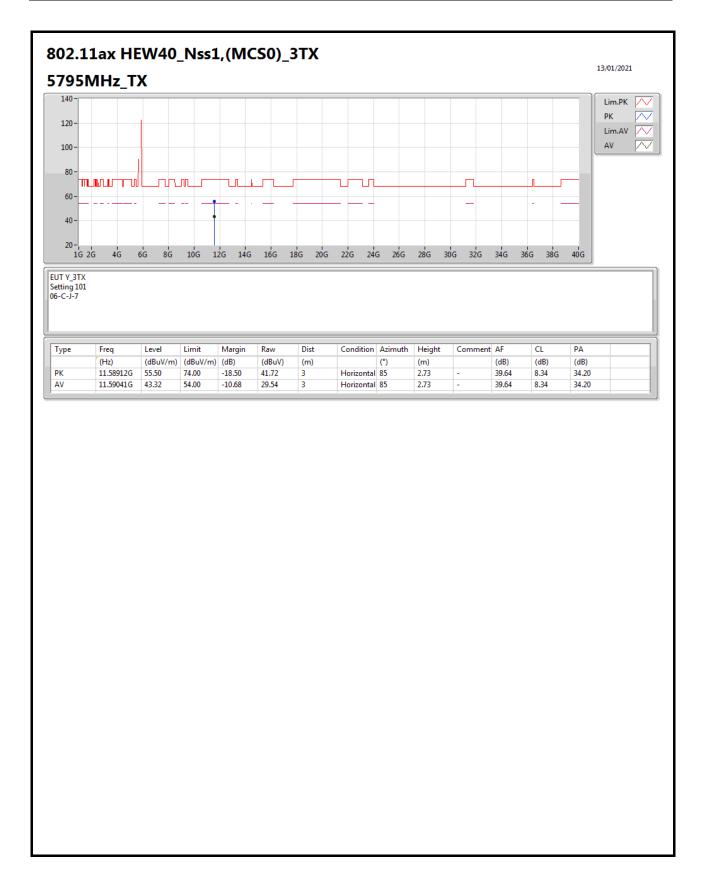




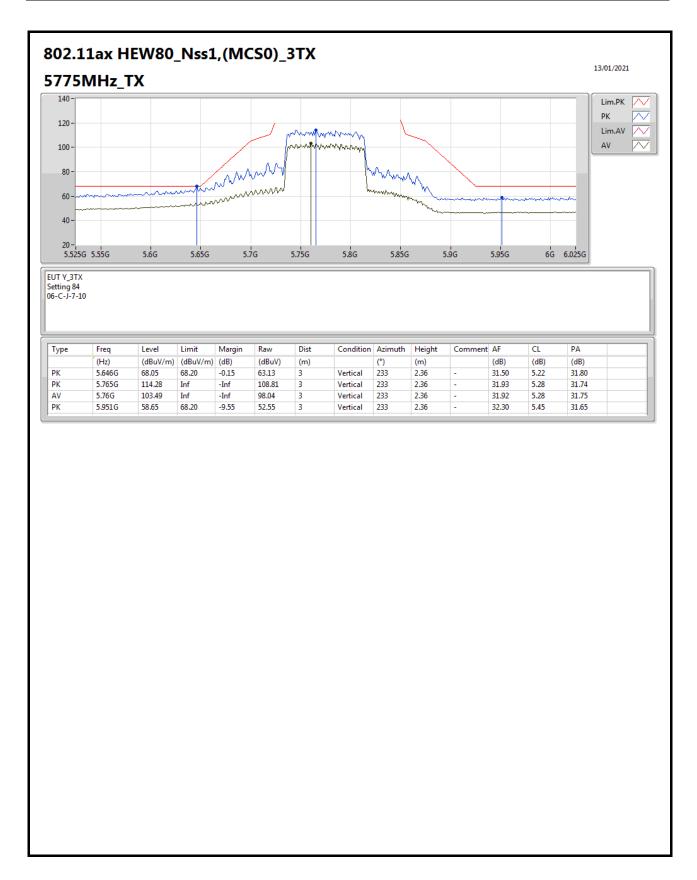




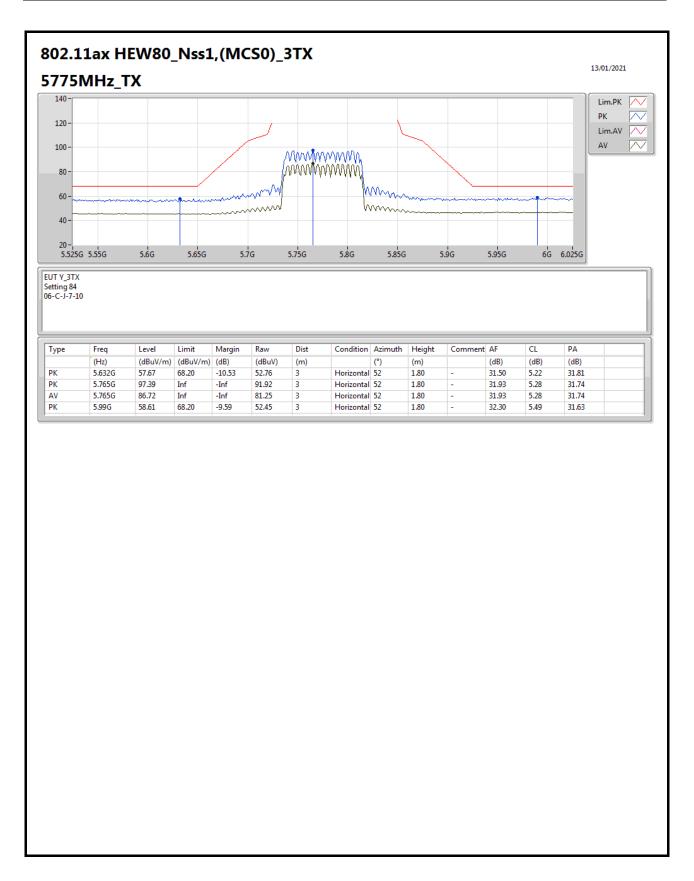




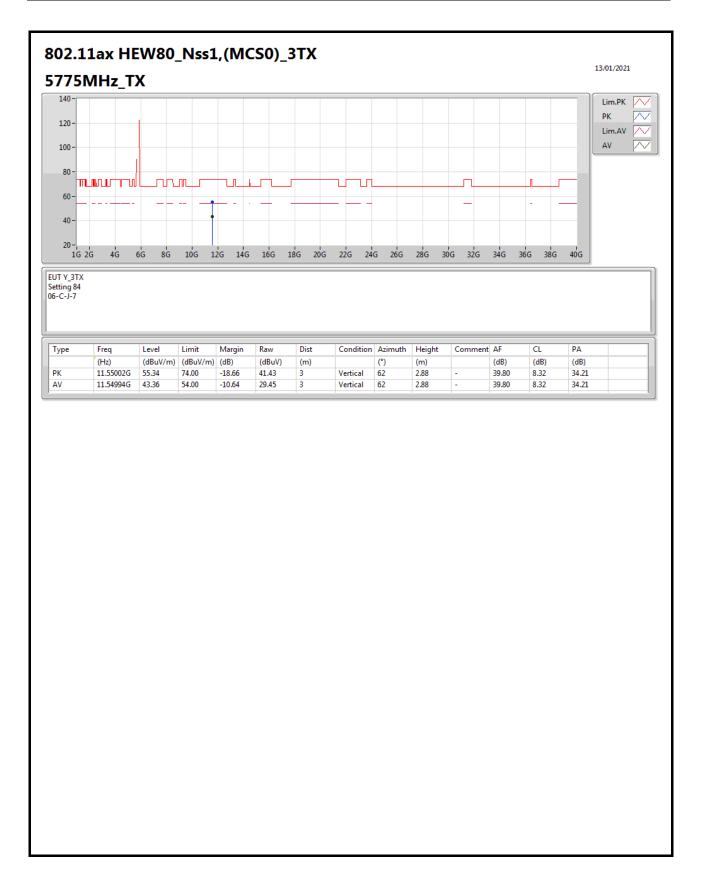






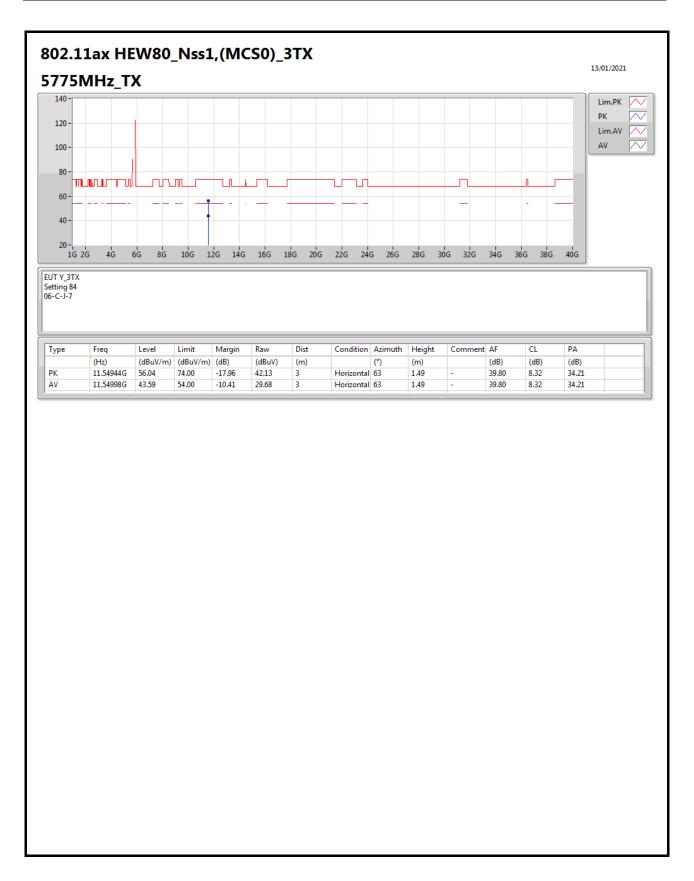






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Radiated Emissions above 1GHz

Appendix F

Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	AV	1.38075G	29.10	54.00	-24.90	Horizontal

