SPORTED LAS. RADIO TEST REPORT

Report No. : FR3D0613AB



# **RADIO TEST REPORT**

FCC ID	: 2ABLK-GPR1027E
Equipment	: Wi-Fi 6 indoor PoE Mesh
Brand Name	: Calix
Model Name	: p4 GPR1027E
Applicant	: Calix Inc. 1035 N. McDowell Blvd. Petaluma, CA94954 U.S.A.
Manufacturer	: NEWEB VIET NAM CO., LTD. Land Lot CN01, Dong Van III Industrial zone, Dong Van Ward, Duy Tien Town, Ha Nam Province, VietNam
Standard	: 47 CFR FCC Part 15.407

The product was received on Dec. 11, 2023, and testing was started from Dec. 14, 2023 and completed on Dec. 29, 2023. We, Sporton International Inc. Hsinchu 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. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

TEL : 886-3-656-9065 FAX : 886-3-656-9085 Report Template No.: CB-A12\_1 Ver1.4 Page Number: 1 of 31Issued Date: Jan. 29, 2024Report Version: 01



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Photographs of EUT v01



# History of this test report

Report No.	Version	Description	Issued Date
FR3D0613AB	01	Initial issue of report	Jan. 29, 2024



# 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 Output Power	PASS	-
3.4	15.407(a)	Power Spectral Density	PASS	-
3.5	15.407(b)	Unwanted Emissions	PASS	-

#### **Conformity Assessment Condition:**

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.

2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

#### Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen

Report Producer: Vicky Huang



# **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	ac (VHT80), ax (HEW80)	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	802.11ax 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	802.11n 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	802.11ax 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
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	802.11ax HEW20	20	2TX
5.725-5.85GHz	802.11ax HEW20-BF	20	2TX
5.725-5.85GHz	802.11n HT40	40	2TX

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Band	Mode	BWch (MHz)	Nant
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	802.11ax HEW40	40	2TX
5.725-5.85GHz	802.11ax HEW40-BF	40	2TX
5.725-5.85GHz	802.11ac VHT80	80	2TX
5.725-5.85GHz	802.11ac VHT80-BF	80	2TX
5.725-5.85GHz	802.11ax HEW80	80	2TX
5.725-5.85GHz	802.11ax HEW80-BF	80	2TX

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

### 1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	HB	290-50304	Dipole Antenna	I-PEX	
2	HB	290-50305	Dipole Antenna	I-PEX	Nata 4
3	HB	290-50302	PIFA Antenna	I-PEX	Note 1
4	HB	290-50303	PIFA Antenna	I-PEX	

Note 1:

	Po	ort	Gain (dBi)		
Ant.	WLAN 2.4GHz WLAN 5GHz			WLAN 5GHz	
		WLAN 2.4GHz	UNII 1	UNII 3	
1	1	-	1.7	-	-
2	2	-	2.9	-	-
3	-	1	-	2.5	3.6
4	-	2	-	3.3	4.9

Note 2: The above information was declared by manufacturer.



#### Note 3: Directional gain information

Туре	Maximum Output Power	Power Spectral Density
Non-BF	Directional gain = Max.gain + array gain. For power measurements on IEEE 802.11 devices Array Gain = 0 dB (i.e., no array gain) for N ANT $\leq$ 4	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{W}} \left( \sum_{k=1}^{N_{AWT}} g_{j,k} \right)^2}{N_{ANT}} \right]$
BF	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{abs}} \left[ \sum_{k=1}^{N_{abs}} S_{j,k} \right]^2}{N_{ANT}} \right]$	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{m}} \left\{ \sum_{k=1}^{N_{AW}} \boldsymbol{\mathcal{S}}_{j,k} \right\}^{2}}{N_{ANT}} \right]$

Ex.

Directional Gain (NSS1) formula :

$$Directional Gain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{gr}} \left\{ \sum_{k=1}^{N_{sNT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

NSS1(g1,1) =  $10^{G1/20}$ ; NSS1(g1,2)=  $10^{G2/20}$ ; NSS1(g1,2)=  $10^{G3/20}$ ; NSS1(g1,2)=  $10^{G4/20}$ gj,k =(Nss1(g1,1) + Nss1(g1,2) + Nss1(g1,3) + Nss1(g1,4))<sup>2</sup> DG =  $10 \log[(Nss1(g1,1) + Nss1(g1,2) + Nss1(g1,3) + Nss1(g1,4))^2 / N_{ANT}] => 10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / N_{ANT}]$ Where ;

2.4G G1= 1.7 dBi ;G2= 2.9 dBi ; 5G UNII-1 G1 = 2.5 dBi; G2 = 3.3 dBi; 5G UNII-3 G1 = 3.6 dBi; G2 = 4.9 dBi;

2.4G DG = 5.33 dBi

5G UNII-1 DG = 5.92 dBi

5G UNII-3 DG = 7.28 dBi

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: 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.



### 1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.988	0.05	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW20	0.997	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW20-BF	0.997	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW40	0.997	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW40-BF	0.997	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW80	0.997	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW80-BF	0.997	0.01	n/a (DC>=0.98)	n/a (DC>=0.98)

Note:

• DC is Duty Cycle.

• DCF is Duty Cycle Factor.

### 1.1.4 EUT Operational Condition

EUT Power Type From Power Adapter or PoE				
	$\boxtimes$	With beamforming		Without beamforming
Beamforming Function	The product has beamforming function for n/VHT/ax in 2.4GHz and n/ac/ax in 5GHz.			
		Outdoor P2M	$\boxtimes$	Indoor P2M
Function		Fixed P2P		Client
		Point-to-multipoint		Point-to-point
Channel Puncturing Function		Supported	$\boxtimes$	Unsupported
Support RU	$\boxtimes$	Full RU		Partial RU
Test Software Version	QSI	PR V5.0-00202		

Note: The above information was declared by manufacturer.

#### 1.1.5 Table for EUT Supports Function

Function
AP Router
Bridge
Repeater

Note 1: From the above, after evaluating, AP Router was selected to test and record in the report.

Note 2: 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

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 Information					
Test Lab. : Sporton International Inc. Hsinchu Laboratory					
Hsinchu	Hsinchu ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)				
(TAF: 3787)	TEL: 886-3-656-9065 FAX: 886-3-656-9085				
Test site Designation No. TW3787 with FCC.					
Conformity Assessment Body Identifier (CABID) TW3787 with ISED.					

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH03-CB	Owen Hsu	21.2-22.7 / 65-69	Dec. 19, 2023~ Dec. 26, 2023
Radiated (below 1GHz)	10CH01-CB	Peter Wu	23-24 / 56-57	Dec. 29, 2023
Radiated	03CH03-CB	Faces about	22.4-23.5 / 55-58	Dec. 19, 2023~
(above 1GHz)	03CH05-CB	Eason chen	21.2-22.3 / 56-59	Dec. 22, 2023
AC Conduction	CO01-CB	Ryan Huang	21-22 / 68-69	Dec. 14, 2023

### **1.4 Measurement Uncertainty**

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.0 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.1 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	3.1 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.1 dB	Confidence levels of 95%
Bandwidth Measurement	2.2%	Confidence levels of 95%

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# 2 Test Configuration of EUT

# 2.1 Test Channel Mode

Mode
802.11a_Nss1,(6Mbps)_2TX
5180MHz
5200MHz
5240MHz
5745MHz
5785MHz
5825MHz
802.11ax HEW20_Nss1,(MCS0)_2TX
5180MHz
5200MHz
5240MHz
5745MHz
5785MHz
5825MHz
802.11ax HEW40_Nss1,(MCS0)_2TX
5190MHz
5230MHz
5755MHz
5795MHz
802.11ax HEW80_Nss1,(MCS0)_2TX
5210MHz
5775MHz
802.11ax HEW20-BF_Nss1,(MCS0)_2TX
5180MHz
5200MHz
5240MHz
5745MHz
5785MHz
5825MHz
802.11ax HEW40-BF_Nss1,(MCS0)_2TX
5190MHz
5230MHz
5755MHz
5795MHz



#### 802.11ax HEW80-BF\_Nss1,(MCS0)\_2TX

5210MHz

5775MHz

#### Note:

- HEW20 / HEW40 / HEW80 covers HT20 / HT40 / VHT20 / VHT40 / VHT80 due to similar modulation. The power setting for HT20 / HT40 / VHT20 / VHT40 / VHT80 is the same or lower than HEW20 / HEW40 / HEW80.
- The EUT supports non-beamforming and beamforming modes, after evaluating, the non-beamforming mode has been selected to execute all tests. The beamforming mode evaluates the output power only



# 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 Test Voltage: 120Vac / 60Hz				
Operating Mode Normal Link				
1	1 Normal Link_EUT + Adapter			
2 Normal Link_EUT + PoE				
For operating mode 1 is the worst case and it was record in this test report.				

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

The Worst Case Mode for Following Conformance Tests			
Tests Item Unwanted Emissions			
Test ConditionRadiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in regardless of spatial multiplexing MIMO configuration), the radiated test of be performed with highest antenna gain of each antenna type.			
	Normal Link		
Operating Mode < 1GHz	After evaluating, and the worst case was found at Z axis, so it was selected perform test and its test result was written in the report.		
1	Normal Link_EUT in Z axis + Adapter		
2	Normal Link_EUT in Z axis + PoE		
For operating mode 2 is th	e worst case and it was record in this test report.		
	СТХ		
Operating Mode > 1GHz	After evaluating, and the worst case was found at Z axis, so it was selected to perform test and its test result was written in the report.		
1	EUT in Z axis		

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.: FA3D0613 for Co-location RF Exposure Evaluation.			



# 2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link Mode:

During the test, the EUT operation to normal function.

### 2.4 Accessories

Accessories				
Equipment Name	Brand Name	Model Name	Rating	
Adapter	AMIGO	AMS200-1201500FU	Input: 100-240V~50/60Hz, 0.8A Max Output: 12V, 1.5A	
other				
Wall-mounted rack*1				

### 2.5 Support Equipment

#### For AC Conduction:

Support Equipment					
No.	No. Equipment Brand Name Model Name FCC ID				
А	Ethernet port PC	ASUS	S300TA	TX2-RTL8821CE	
В	2.4G NB	DELL	E6430	N/A	
С	5G NB	DELL	E6430	N/A	

#### For Radiated (below 1GHz):

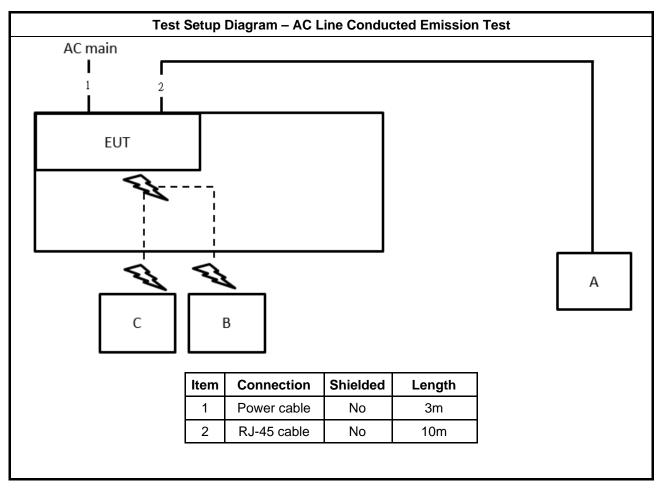
Support Equipment					
No.	No. Equipment Brand Name Model Name FCC ID				
А	PoE	DELTA	ADH-90AR B	N/A	
В	2.4G NB	DELL	E6430	N/A	
С	5G NB	DELL	E6430	N/A	
D	Ethernet port PC	ASUS	S300TA	TX2-RTL8821CE	

#### For Radiated (above 1GHz) and RF Conducted:

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

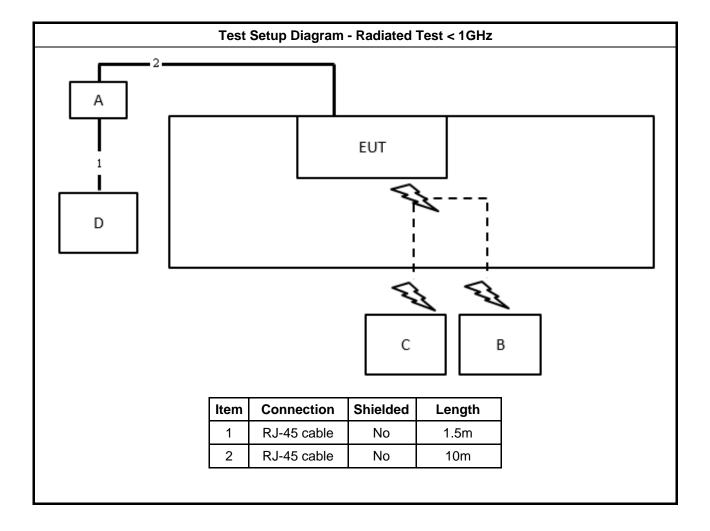


# 2.6 Test Setup Diagram

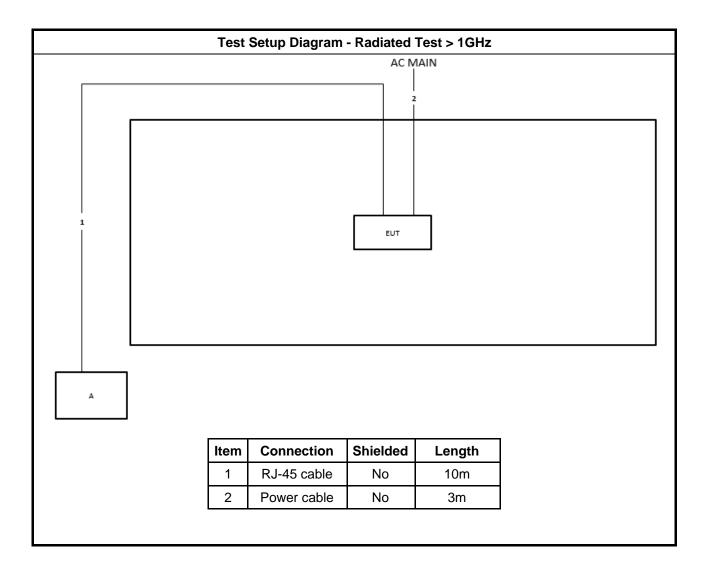














## 3 Transmitter Test Result

### 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.

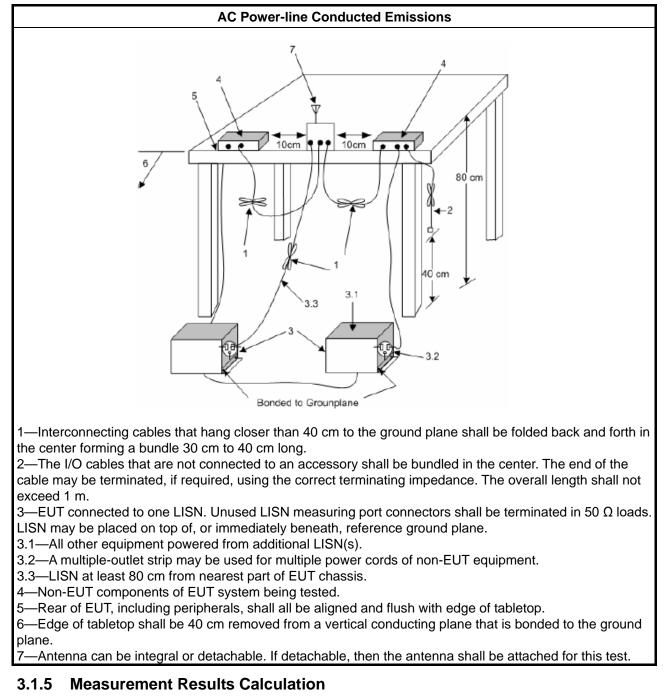
### 3.1.3 Test Procedures

**Test Method** 

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



### 3.1.4 Test Setup



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



### 3.2 Emission Bandwidth

#### 3.2.1 Emission Bandwidth Limit

	Emission Bandwidth Limit
UN	II 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.
$\square$	For the 5.725-5.85 GHz band, 26 dB emission bandwidth ,N/A. 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 $\geq$ 500kHz.

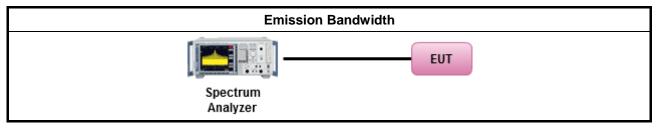
### 3.2.2 Measuring Instruments

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 D02, 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 Output Power

### 3.3.1 Limit

	Maximum Output Power Limit
UN	I Devices
$\boxtimes$	For the 5.15-5.25 GHz band:
	<ul> <li>Outdoor 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). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm]</li> </ul>
	<ul> <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> </ul>
	<ul> <li>Point-to-point AP: the maximum conducted output power (Pout) shall not exceed the lesser of 1 W If G<sub>TX</sub> &gt; 23 dBi, then Pout = 30 - (G<sub>TX</sub> - 23).</li> </ul>
	<ul> <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> </ul>
	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:
	<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> </ul>
	<ul> <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-	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:
	<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> </ul>
	<ul> <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>
	a = 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	
	Average over on/off periods with duty factor		
	Refer as FCC KDB 789033 D02, clause E Method SA-2 (spectral trace averaging).		
		Refer as FCC KDB 789033 D02, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
	Wid	eband RF power meter and average over on/off periods with duty factor	
	$\square$	Refer as FCC KDB 789033 D02, clause E Method PM-G (using an RF average power meter).	
$\boxtimes$	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: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP <sub>total</sub> = P <sub>total</sub> + DG	
	For radiated measurement.		
	•	Refer as FCC KDB 789033 D02 clause II A.1.F "Antenna-port Conducted versus Radiated Testing"	
		Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.	
	•	Refer as FCC KDB 412172 D01 clause 2.2 for EIRP calculation.	

### 3.3.4 Test Setup

 Conducted Measurement (Power Meter)	
EUT Power Meter	

### 3.3.5 Test Result of Maximum Output Power

Refer as Appendix C



# 3.4 Power Spectral Density

### 3.4.1 Limit

	Peak Power Spectral Density Limit		
UNI	UNII 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 $P_{Out} = 17 - (G_{TX} - 6)$ .		
	<ul> <li>Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If G<sub>TX</sub> &gt; 23 dBi, then P<sub>Out</sub> = 17 – (G<sub>TX</sub> – 23).</li> </ul>		
	<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:		
	<ul> <li>Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If G<sub>TX</sub> &gt; 6 dBi, then PPSD= 30 - (G<sub>TX</sub> - 6).</li> </ul>		
	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) $\leq$ 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:		
	<ul> <li>Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If G<sub>TX</sub> &gt; 6 dBi, then PPSD= 30 - (G<sub>TX</sub> - 6).</li> </ul>		
	■ Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz.		
pow	<b>SD</b> = 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.		

#### 3.4.2 Measuring Instruments

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

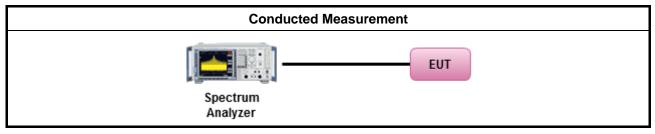


#### 3.4.3 Test Procedures

	Test Method		
•	outp funct	c 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 be measured using below options:	
	Refer as FCC KDB 789033 D02, 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 D02, clause E Method SA-1 (spectral trace averaging).	
		Refer as FCC KDB 789033 D02, 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 D02, clause E Method SA-2 (spectral trace averaging).	
		Refer as FCC KDB 789033 D02, clause E Method SA-2 Alt. (RMS detection with slow sweep speed)	
$\square$	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 <sub>total</sub> = PPSD <sub>1</sub> + PPSD <sub>2</sub> + + PPSD <sub>n</sub> (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP <sub>total</sub> = PPSD <sub>total</sub> + DG	
	For radiated measurement.		
	•	Refer as FCC KDB 789033 D02 clause II A.1.F "Antenna-port Conducted versus Radiated Testing"	
	•	Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.	
	•	Refer as FCC KDB 412172 D01 clause 2.2 for EIRP calculation.	



### 3.4.4 Test Setup



### 3.4.5 Test Result of 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 Dista					
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 linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).		



### 3.5.2 Measuring Instruments

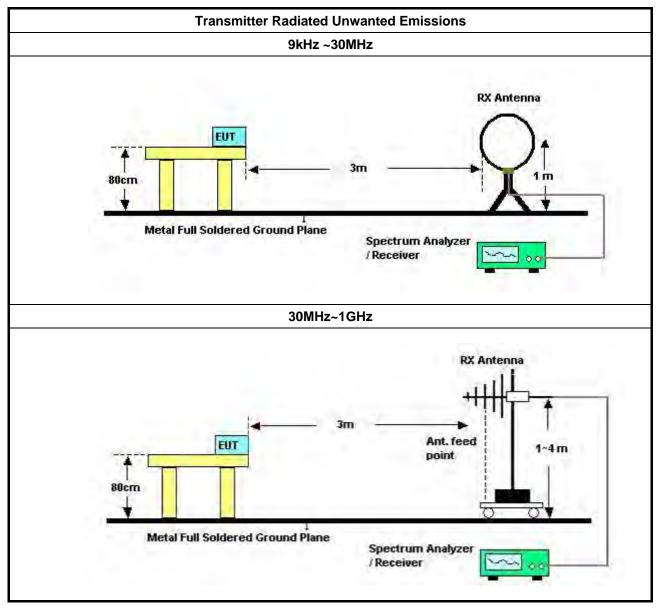
Refer a test equipment and calibration data table in this test report.

### 3.5.3 Test Procedures

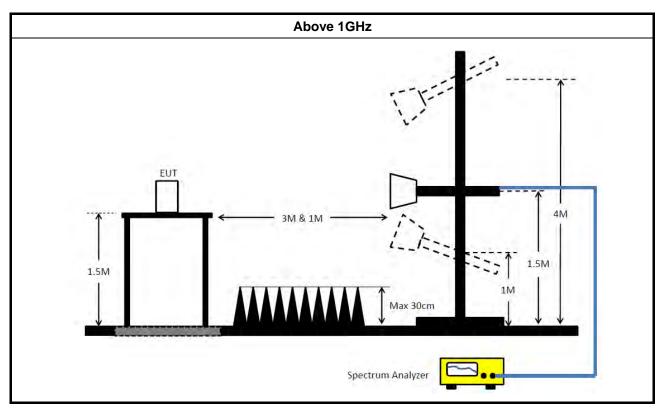
	Test Method
•	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies 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:
	<ul> <li>Refer as FCC KDB 789033 D02, clause G)2) for unwanted emissions into non-restricted bands.</li> </ul>
	<ul> <li>Refer as FCC KDB 789033 D02, clause G)1) for unwanted emissions into restricted bands.</li> </ul>
	Refer as FCC KDB 789033 D02, G)6) Method AD (Trace Averaging).
	Refer as FCC KDB 789033 D02, 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 D02, 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.
	<ul> <li>Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.</li> </ul>
-	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.



### 3.5.4 Test Setup







### 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



# 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. 20, 2023	Feb. 19, 2024	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz~ 100MHz	Feb. 16, 2023	Feb. 15, 2024	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 27, 2023	Apr. 26, 2024	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 09, 2023	Feb. 08, 2024	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 17, 2023	Oct. 16, 2024	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
10m Semi Anechoic Chamber NSA	TDK	SAC-10M	10CH01-CB	30MHz~1GHz 10m,3m	Jan. 18, 2023	Jan. 17, 2024	Radiation (10CH01-CB)
Amplifier	Agilent	8447D	2944A10783	9kHz ~ 1.3GHz	Mar. 10, 2023	Mar. 09, 2024	Radiation (10CH01-CB)
Amplifier	Agilent	8447D	2944A10784	9kHz ~ 1.3GHz	Mar. 10, 2023	Mar. 09, 2024	Radiation (10CH01-CB)
Low Cable	Woken	SUCOFLEX 104	low cable-01	25MHz ~ 1GHz	Oct. 17, 2023	Oct. 16, 2024	Radiation (10CH01-CB)
Low Cable	Woken	SUCOFLEX 104	low cable-02	25MHz ~ 1GHz	Oct. 17, 2023	Oct. 16, 2024	Radiation (10CH01-CB)
EMI Test Receiver	Rohde&Schwarz	ESCI	100186	9kHz ~ 3GHz	Jul. 11, 2023	Jul. 10, 2024	Radiation (10CH01-CB)
Spectrum Analyzer	Rohde&Schwarz	FSV30	101026	9kHz ~ 30GHz	Apr. 19, 2023	Apr. 18, 2024	Radiation (10CH01-CB)
Bilog Antenna with 6dB Attenator	Schaffner & EMCI	CBL6112B& N-6-06	2888&AT- N0605	30MHz ~ 1GHz	Jan. 19, 2023	Jan. 18, 2024	Radiation (10CH01-CB)
Amplifier	EM	EM101	060703	10MHz ~ 1GHz	Oct. 18, 2023	Oct. 17, 2024	Radiation (10CH01-CB)
Low Cable	TITAN	T318E	low cable-03	30MHz ~ 1GHz	Nov. 23, 2023	Nov. 22, 2024	Radiation (10CH01-CB)
Loop Antenna	Teseq	HLA 6121	65417	9kHz - 30 MHz	Oct. 13, 2023	Oct. 12, 2024	Radiation (10CH01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (10CH01-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH03-CB	1GHz ~18GHz 3m	May 04, 2023	May 03, 2024	Radiation (03CH03-CB)
Horn Antenna	ETS • Lindgren	3115	6821	750MHz~ 18GHz	Feb. 03, 2023	Feb. 02, 2024	Radiation (03CH03-CB)

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Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Sep. 04, 2023	Sep. 03, 2024	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8449B	3008A02097	1GHz~26.5GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH03-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 24, 2023	Nov. 23, 2024	Radiation (03CH03-CB)
Spectrum Analyzer	R&S	FSP40	100019	9kHz ~ 40GHz	Jun. 12, 2023	Jun. 11, 2024	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-20+29	1GHz ~ 18GHz	Nov. 07, 2023	Nov. 06, 2024	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-29	1GHz ~ 18GHz	Nov. 07, 2023	Nov. 06, 2024	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 06, 2023	Dec. 05, 2024	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#6	40G#6 1GHz ~ 40 GHz Oct. 02, 2023		Oct. 01, 2024	Radiation (03CH03-CB)
Test Software	SPORTON	SENSE	V5.10	V5.10 - N.C.R.		N.C.R.	Radiation (03CH03-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Sep. 29, 2023	Sep. 28, 2024	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120 D-1291	1GHz~18GHz	Jun. 08, 2023	Jun. 07, 2024	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Sep. 04, 2023	Sep. 03, 2024	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz–26.5GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH05-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 24, 2023	Nov. 23, 2024	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Apr. 18, 2023	Apr. 17, 2024	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 06, 2023	Dec. 05, 2024	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Oct. 02, 2023	Oct. 01, 2024	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Spectrum analyzer	R&S	FSV40	101028	9kHz~40GHz	Dec. 30, 2022	Dec. 29, 2023	Conducted (TH03-CB)

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Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Power Sensor	Anritsu	MA2411B	1726195	300MHz~ 40GHz	Sep. 04, 2023	Sep. 03, 2024	Conducted (TH03-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~ 40GHz	Sep. 04, 2023	Sep. 03, 2024	Conducted (TH03-CB)
RF Cable	Woken	RG402	High Cable-11	30MHz –18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH03-CB)
RF Cable	Woken	RG402	High Cable-12	30MHz –18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH03-CB)
RF Cable	Woken	RG402	High Cable-13	30MHz –18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-14	1 GHz –18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-15	1 GHz –18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH03-CB)
Switch	SPTCB	SP-SWI	SWI-03	1 ~26.5 GHz	Oct. 03, 2023	Oct. 02, 2024	Conducted (TH03-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH03-CB)

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

NCR means Non-Calibration required.



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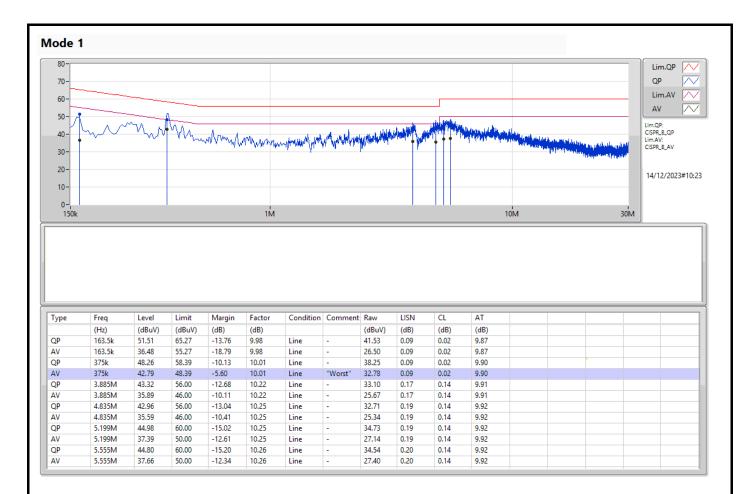
### Conducted Emissions at Powerline

### Appendix A

Summary									
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition		
			(Hz)	(dBuV)	(dBuV)	(dB)			
Mode 1	Pass	AV	375k	42.79	48.39	-5.60	Line		

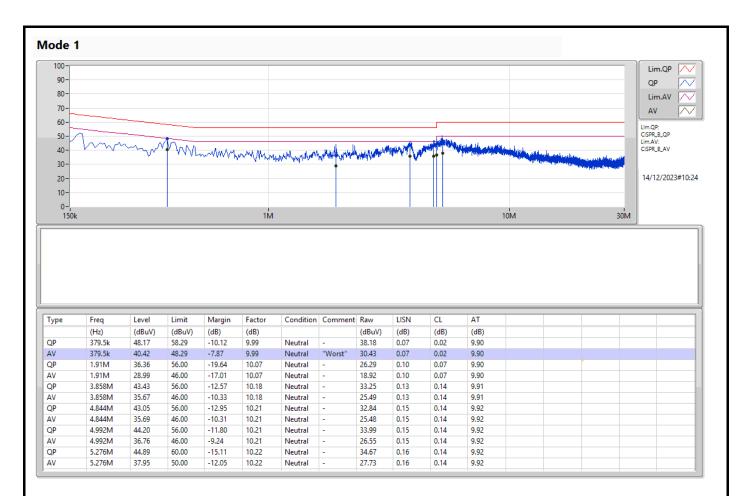














#### Summary

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	22.44M	16.372M	16M4D1D	18.095M	16.27M
802.11ax HEW20_Nss1,(MCS0)_2TX	28.93M	19.022M	19M0D1D	20.185M	18.765M
802.11ax HEW40_Nss1,(MCS0)_2TX	39.49M	37.409M	37M4D1D	38.94M	37.32M
802.11ax HEW80_Nss1,(MCS0)_2TX	80.08M	76.82M	76M8D1D	79.86M	76.51M
5.725-5.85GHz	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	16.335M	22.605M	22M6D1D	12.32M	16.448M
802.11ax HEW20_Nss1,(MCS0)_2TX	18.81M	22.414M	22M4D1D	17.6M	18.791M
802.11ax HEW40_Nss1,(MCS0)_2TX	38.06M	54.623M	54M6D1D	34.54M	37.681M
802.11ax HEW80_Nss1,(MCS0)_2TX	60.72M	76.462M	76M5D1D	54.78M	76.362M

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



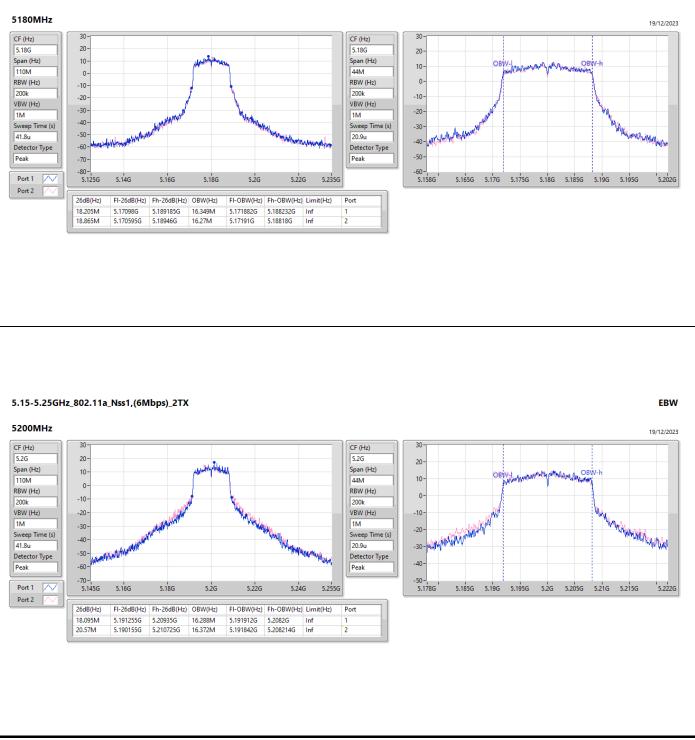
#### Result

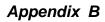
Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	18.205M	16.349M	18.865M	16.27M
5200MHz	Pass	Inf	18.095M	16.288M	20.57M	16.372M
5240MHz	Pass	Inf	19.36M	16.349M	22.44M	16.353M
5745MHz	Pass	500k	15.51M	16.492M	16.28M	16.448M
5785MHz	Pass	500k	16.28M	22.605M	16.335M	21.791M
5825MHz	Pass	500k	12.32M	19.614M	13.42M	22.407M
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	Inf	20.185M	18.777M	20.185M	18.765M
5200MHz	Pass	Inf	22.385M	18.871M	25.96M	19.008M
5240MHz	Pass	Inf	24.2M	18.931M	28.93M	19.022M
5745MHz	Pass	500k	18.205M	18.841M	18.81M	18.791M
5785MHz	Pass	500k	18.59M	22.414M	18.48M	21.164M
5825MHz	Pass	500k	17.6M	20.115M	17.765M	21.364M
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	Inf	39.49M	37.409M	38.94M	37.339M
5230MHz	Pass	Inf	38.94M	37.409M	39.38M	37.32M
5755MHz	Pass	500k	37.4M	37.931M	34.54M	37.681M
5795MHz	Pass	500k	35.97M	54.073M	38.06M	54.623M
802.11ax HEW80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	Inf	79.86M	76.82M	80.08M	76.51M
5775MHz	Pass	500k	54.78M	76.462M	60.72M	76.362M

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



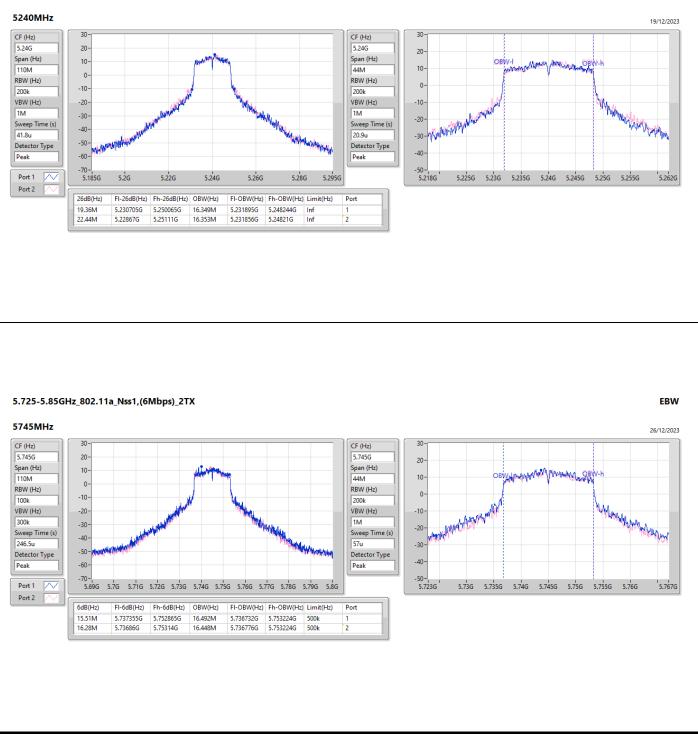
### 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX



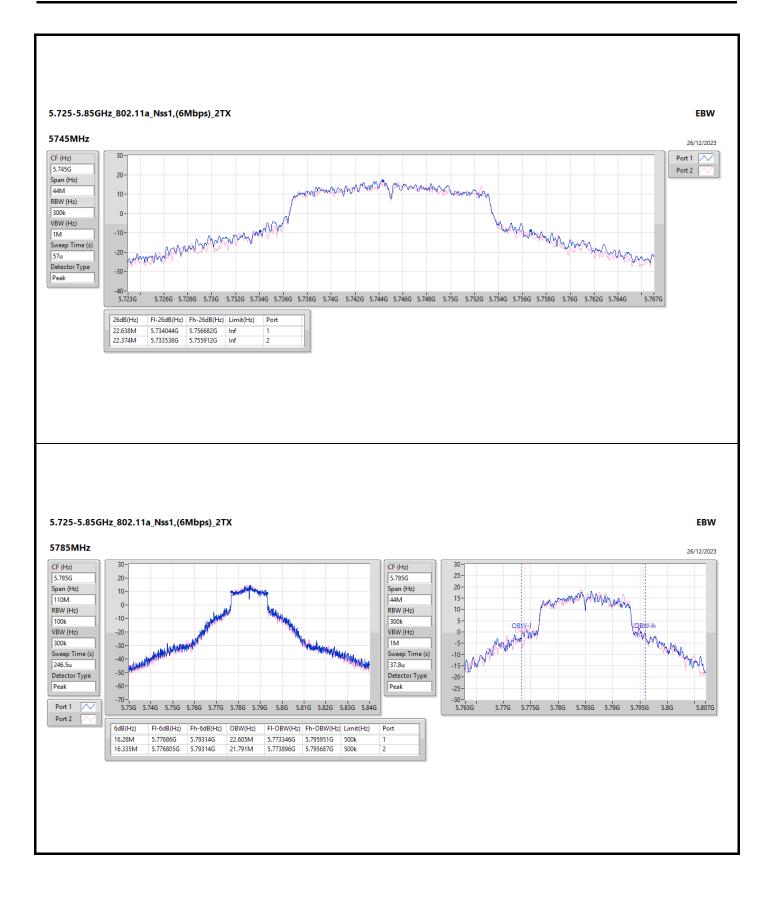




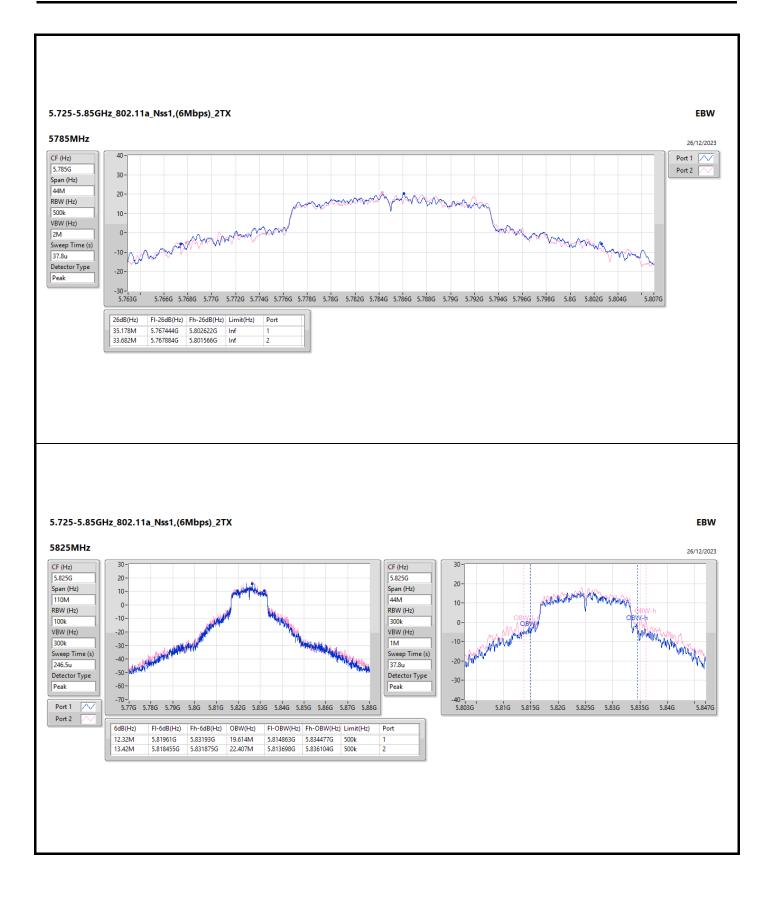
## 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX



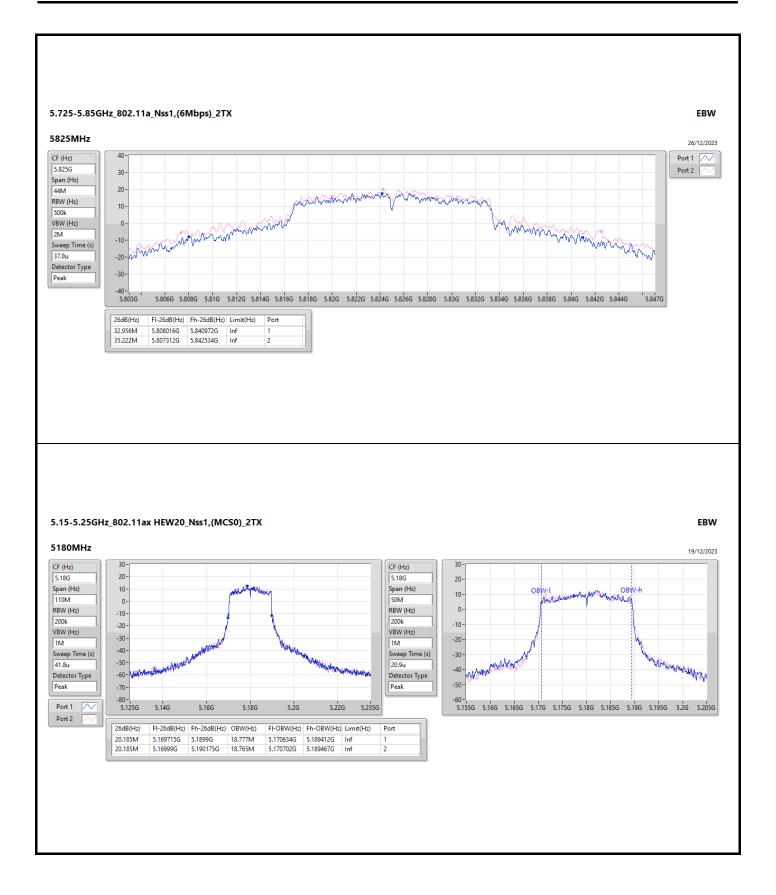






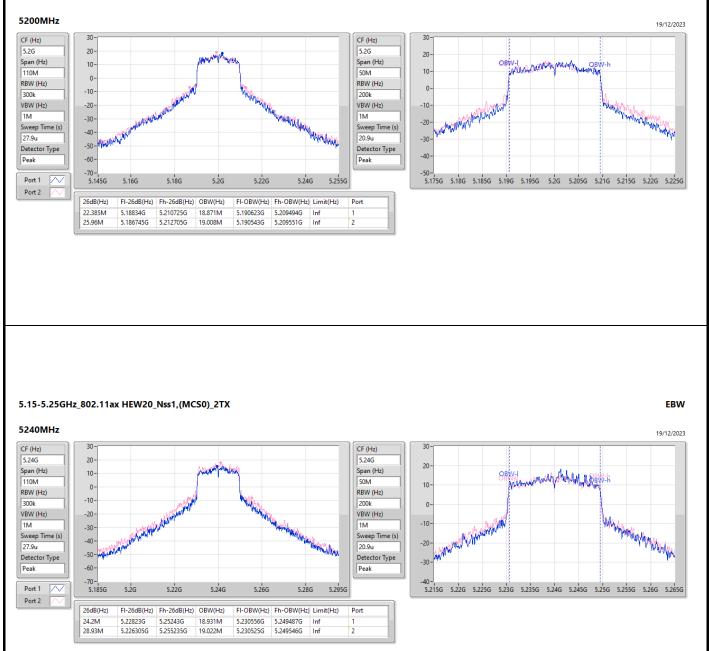






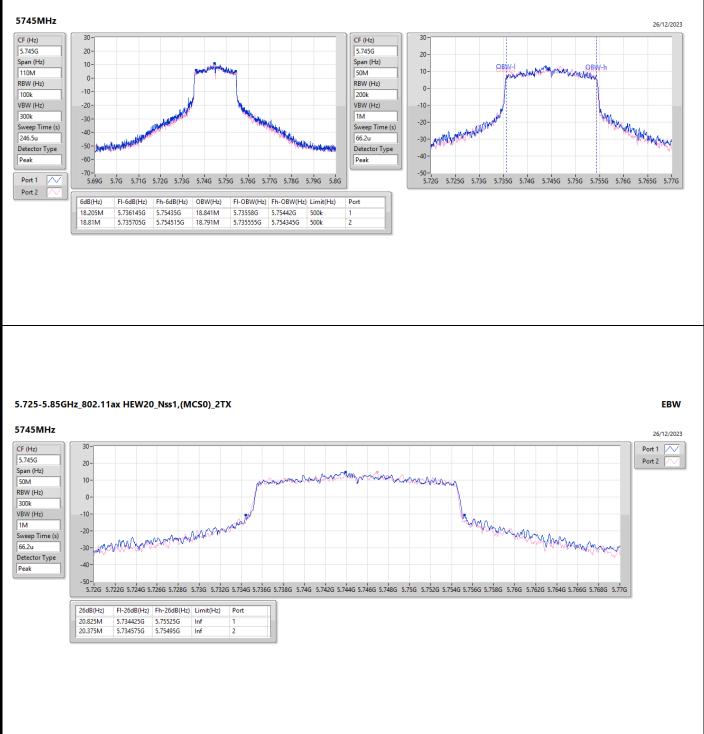


#### 5.15-5.25GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



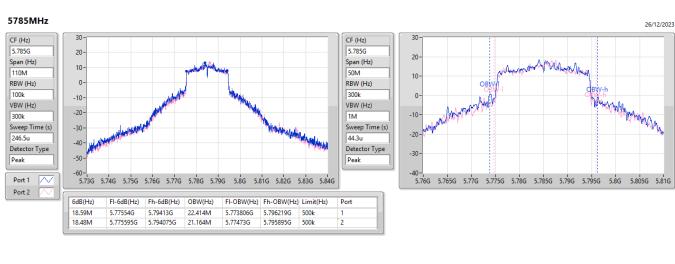


#### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX

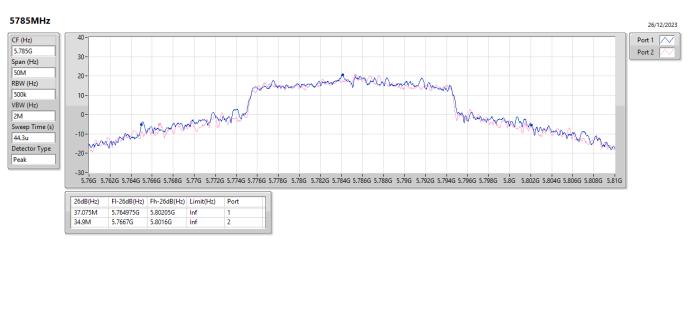




### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



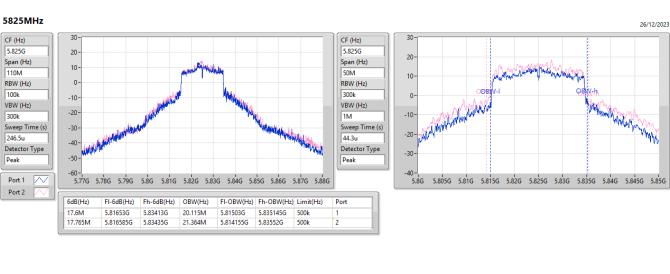
## 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



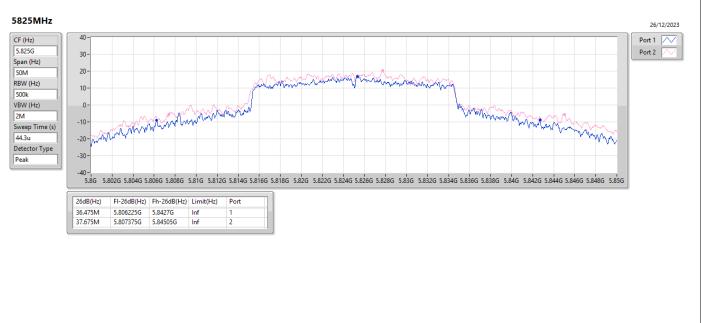
EBW



### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



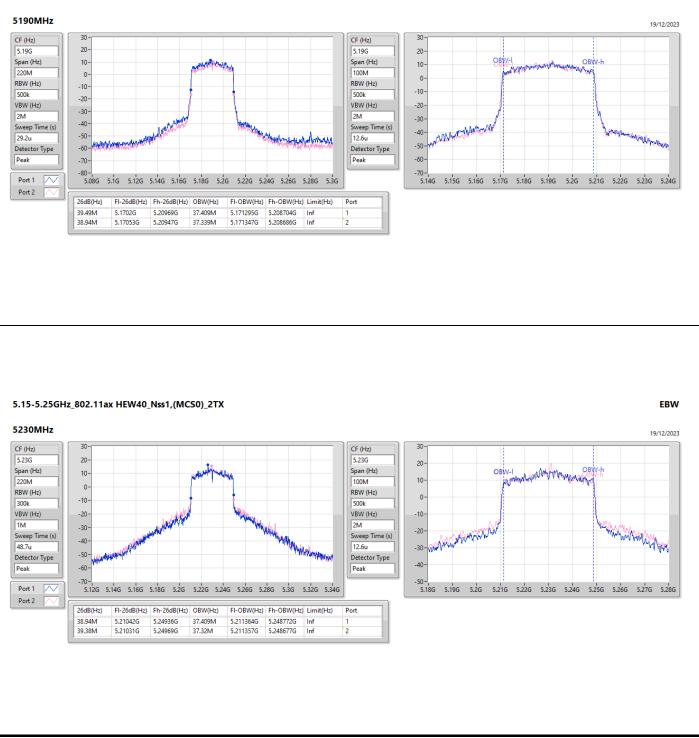
### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



EBW

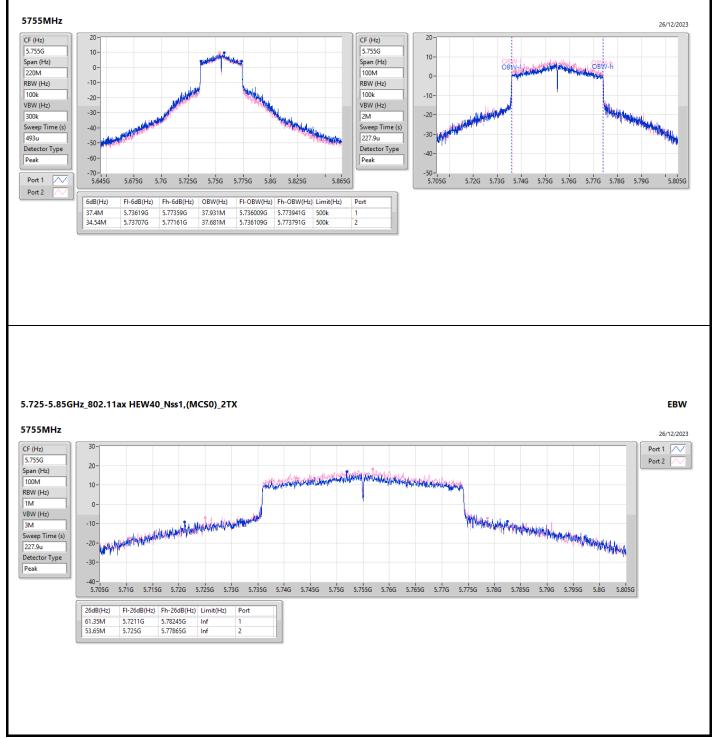


#### 5.15-5.25GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX



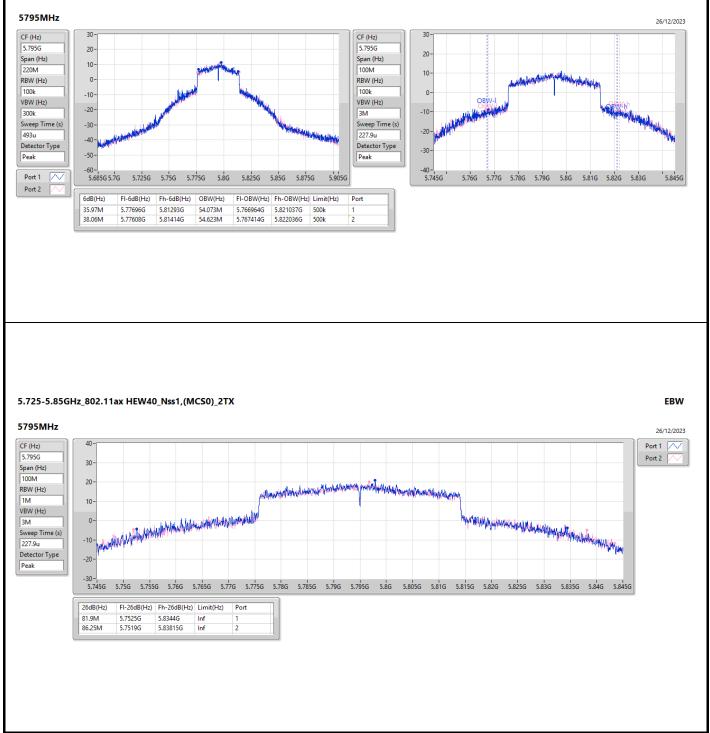


### 5.725-5.85GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX



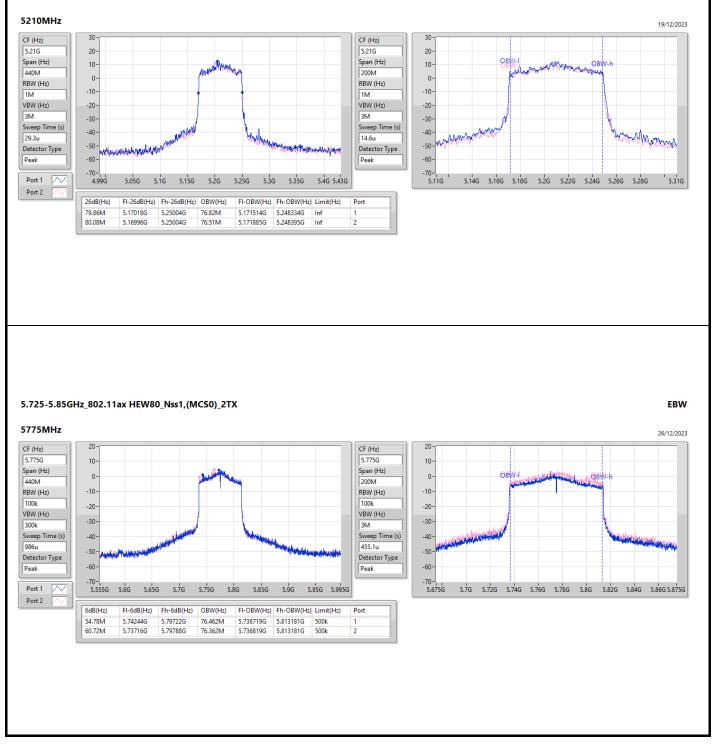


### 5.725-5.85GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX

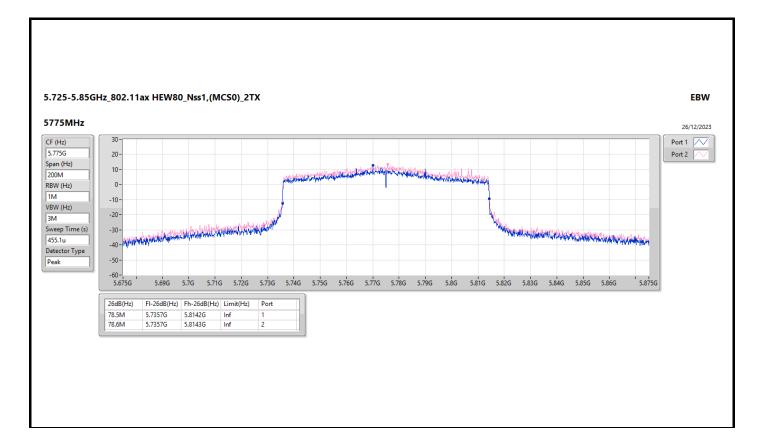




### 5.15-5.25GHz\_802.11ax HEW80\_Nss1,(MCS0)\_2TX









# Average Power

# Appendix C

## Summary

Mode	Total Power	Total Power		
	(dBm)	(W)		
5.15-5.25GHz	-	-		
802.11a_Nss1,(6Mbps)_2TX	28.04	0.63680		
802.11ax HEW20_Nss1,(MCS0)_2TX	28.97	0.78886		
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	28.97	0.78886		
802.11ax HEW40_Nss1,(MCS0)_2TX	27.60	0.57544		
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	27.60	0.57544		
802.11ax HEW80_Nss1,(MCS0)_2TX	22.16	0.16444		
802.11ax HEW80-BF_Nss1,(MCS0)_2TX	22.16	0.16444		
5.725-5.85GHz	-	-		
802.11a_Nss1,(6Mbps)_2TX	29.69	0.93111		
802.11ax HEW20_Nss1,(MCS0)_2TX	29.54	0.89950		
802.11ax HEW20-BF_Nss1,(MCS0_2TX	28.34	0.68234		
802.11ax HEW40_Nss1,(MCS0)_2TX	29.91	0.97949		
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	28.49	0.70632		
802.11ax HEW80_Nss1,(MCS0)_2TX	25.42	0.34834		
802.11ax HEW80-BF_Nss1,(MCS0)_2TX	25.42	0.34834		



# Average Power

## Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Port 2 (dBm)	Total Power (dBm)	Power Limit (dBm)
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
5180MHz	Pass	3.30	23.02	22.73	25.89	30.00
5200MHz	Pass	3.30	25.09	24.97	28.04	30.00
5240MHz	Pass	3.30	25.09	24.86	27.99	30.00
5745MHz	Pass	4.90	25.33	25.14	28.25	30.00
5785MHz	Pass	4.90	26.74	26.61	29.69	30.00
5825MHz	Pass	4.90	26.52	26.71	29.63	30.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	3.30	22.27	22.17	25.23	30.00
5200MHz	Pass	3.30	25.92	25.99	28.97	30.00
5240MHz	Pass	3.30	25.97	25.93	28.96	30.00
5745MHz	Pass	4.90	23.94	23.73	26.85	30.00
5785MHz	Pass	4.90	26.56	26.49	29.54	30.00
5825MHz	Pass	4.90	26.41	26.58	29.51	30.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5190MHz	Pass	3.30	20.48	20.45	23.48	30.00
5230MHz	Pass	3.30	24.6	24.58	27.60	30.00
5755MHz	Pass	4.90	25.68	25.26	28.49	30.00
5795MHz	Pass	4.90	26.97	26.83	29.91	30.00
802.11ax HEW80_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5210MHz	Pass	3.30	19.31	18.98	22.16	30.00
5775MHz	Pass	4.90	22.44	22.38	25.42	30.00
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
5180MHz	Pass	5.92	22.27	22.17	25.23	30.00
5200MHz	Pass	5.92	25.92	25.99	28.97	30.00
5240MHz	Pass	5.92	25.97	25.93	28.96	30.00
5745MHz	Pass	7.28	23.94	23.73	26.85	28.72
5785MHz	Pass	7.28	25.34	25.28	28.32	28.72
5825MHz	Pass	7.28	25.19	25.46	28.34	28.72
802.11ax HEW40-BF_Nss1,(MCS0)_2TX		-	-	-	-	-
5190MHz	Pass	5.92	20.48	20.45	23.48	30.00
5230MHz	Pass	5.92	24.6	24.58	27.60	30.00
5755MHz	Pass	7.28	25.68	25.26	28.49	28.72
5795MHz	Pass	7.28	25.40	25.21	28.31	28.72
802.11ax HEW80-BF_Nss1,(MCS0)_2TX	-	-		-		
5210MHz	Pass	5.92	19.31	18.98	22.16	30.00
5775MHz	Pass	7.28	22.44	22.38	25.42	28.72

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



## Summary

Mode	PD (dBm/RBW)			
5.15-5.25GHz	-			
802.11a_Nss1,(6Mbps)_2TX	16.74			
802.11ax HEW20_Nss1,(MCS0)_2TX	16.95			
802.11ax HEW40_Nss1,(MCS0)_2TX	13.23			
802.11ax HEW80_Nss1,(MCS0)_2TX	5.51			
5.725-5.85GHz	-			
802.11a_Nss1,(6Mbps)_2TX	16.84			
802.11ax HEW20_Nss1,(MCS0)_2TX	16.10			
802.11ax HEW40_Nss1,(MCS0)_2TX	13.81			
802.11ax HEW80_Nss1,(MCS0)_2TX	6.88			

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

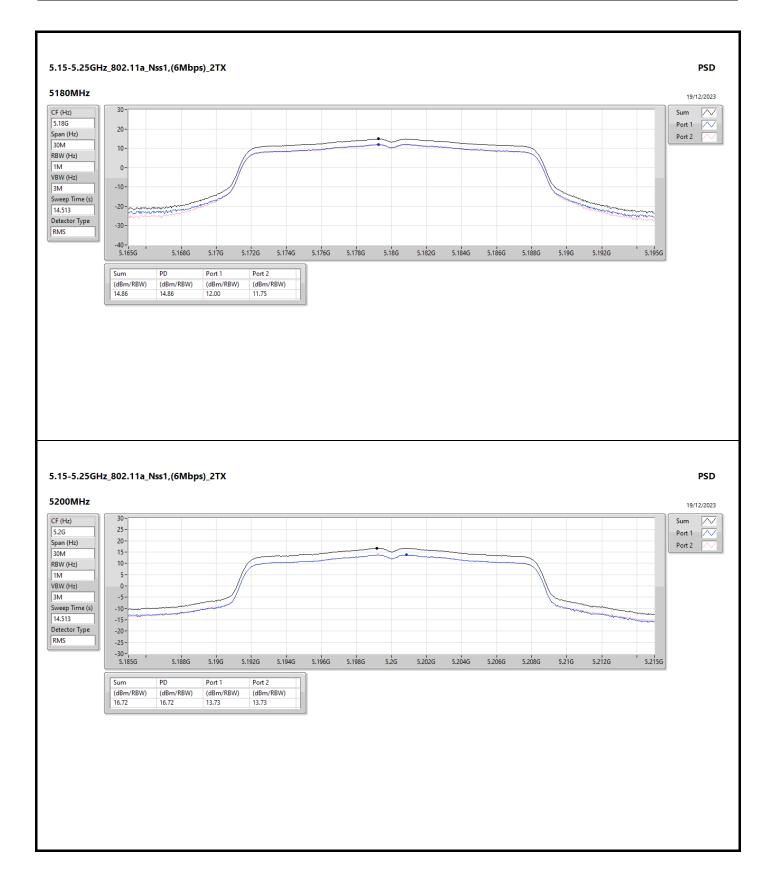


## Result

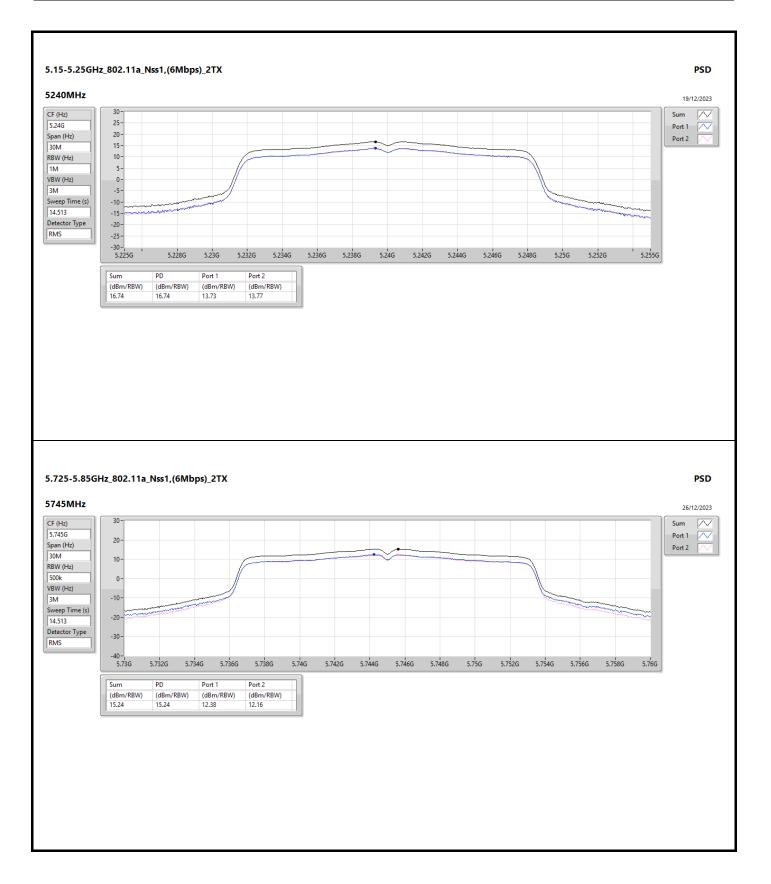
Mode	Result	DG	Port 1	Port 2	PD	PD Limit	
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	
802.11a_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	
5180MHz	Pass	5.92	12.00	11.75	14.86	17.00	
5200MHz	Pass	5.92	13.73	13.73	16.72	17.00	
5240MHz	Pass	5.92	13.73	13.77	16.74	17.00	
5745MHz	Pass	7.28	12.38	12.16	15.24	28.72	
5785MHz	Pass	7.28	13.93	13.77	16.84	28.72	
5825MHz	Pass	7.28	13.44	13.69	16.54	28.72	
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5180MHz	Pass	5.92	10.92	10.76	13.80	17.00	
5200MHz	Pass	5.92	13.93	14.01	16.95	17.00	
5240MHz	Pass	5.92	13.90	13.97	16.91	17.00	
5745MHz	Pass	7.28	10.66	10.28	13.43	28.72	
5785MHz	Pass	7.28	13.19	13.01	16.10	28.72	
5825MHz	Pass	7.28	12.70	12.94	15.78	28.72	
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5190MHz	Pass	5.92	6.32	6.31	9.32	17.00	
5230MHz	Pass	5.92	10.27	10.27	13.23	17.00	
5755MHz	Pass	7.28	9.66	9.08	12.37	28.72	
5795MHz	Pass	7.28	10.88	10.77	13.81	28.72	
802.11ax HEW80_Nss1,(MCS0)_2TX	-	-	-	-	-	-	
5210MHz	Pass	5.92	2.72	2.35	5.51	17.00	
5775MHz	Pass	7.28	4.02	3.78	6.88	28.72	

DG = Directional Gain; RBW = 500kHz for 5.725-5.85GHz band / 1MHz for other band; PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

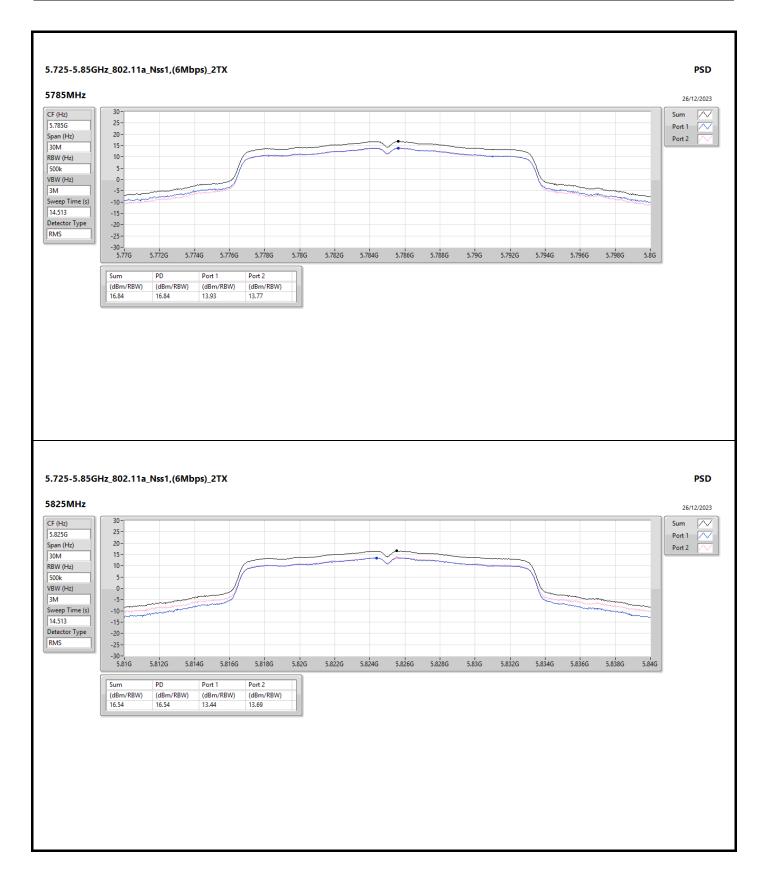




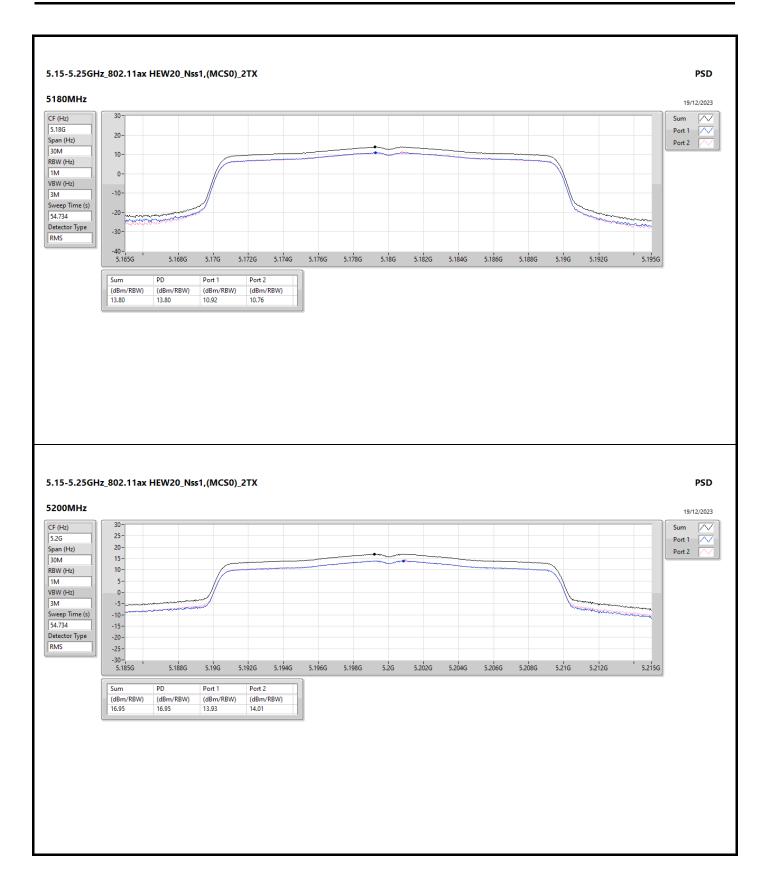








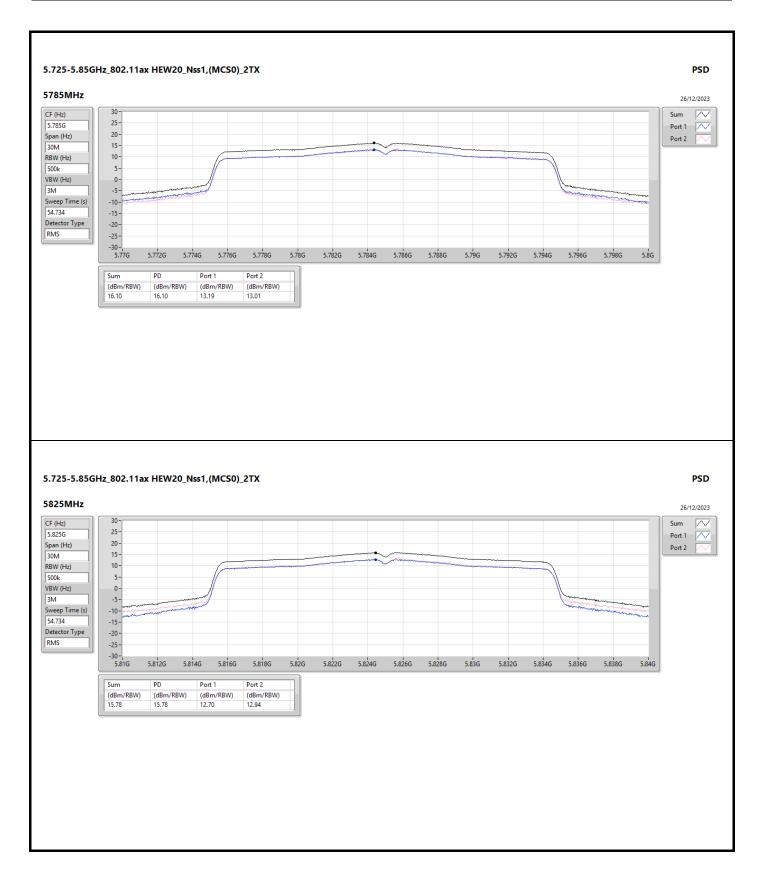




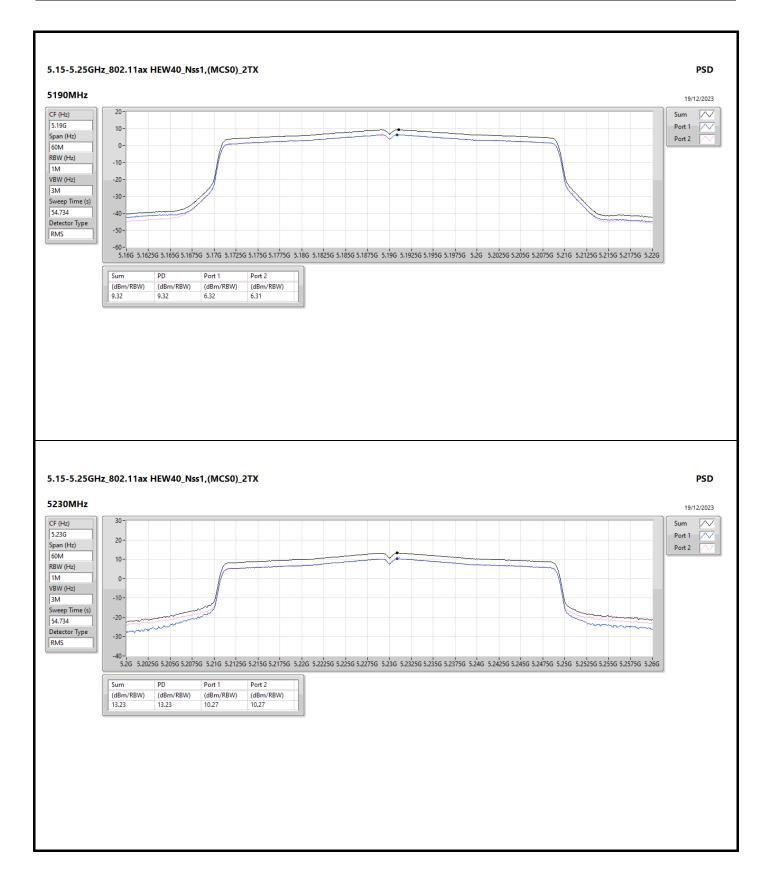




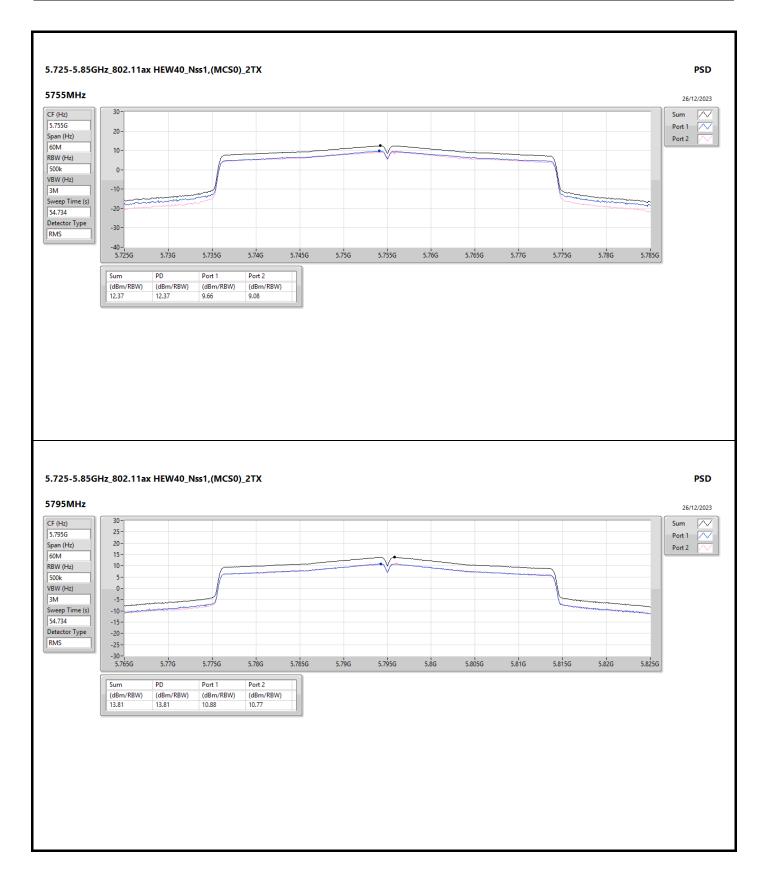




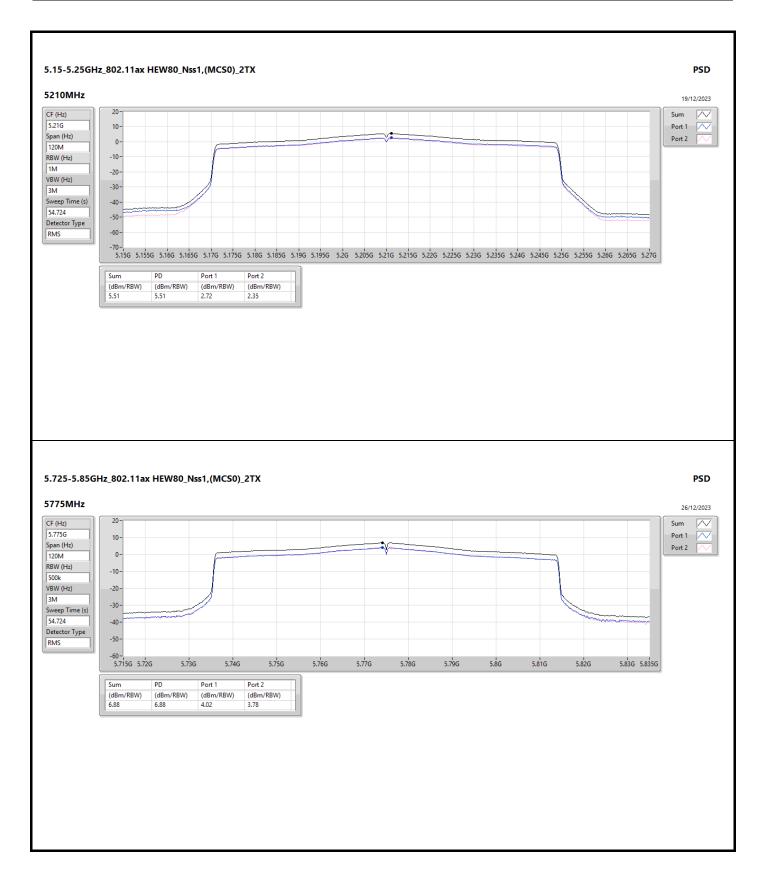












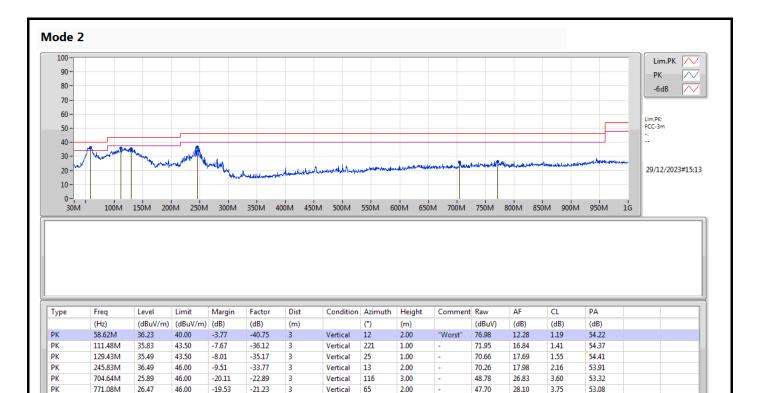


# Radiated Emissions below 1GHz

Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 2	Pass	PK	58.62M	36.23	40.00	-3.77	Vertical

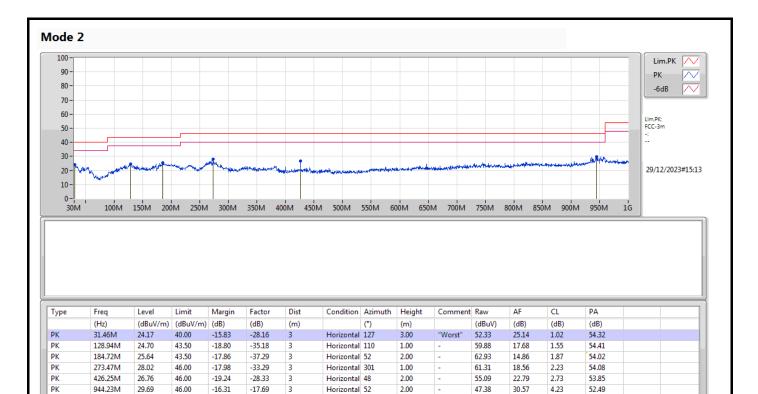


## Radiated Emissions below 1GHz





## Radiated Emissions below 1GHz





# RSE TX above 1GHz

# Appendix E.2

## Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.725-5.85GHz	-	-	-			-	-	-	-	-	
802.11ax HEW20_Nss1,(MCS0)_2TX	Pass	PK	17.23806G	68.10	68.20	-0.10	3	Vertical	52	1.90	-



PK

AV

5.1792G

5.1788G

121.82

113.46

Inf

Inf

-Inf

-Inf

116.84

108.48

3

3

Vertical

Vertical

19

19

2.52

2.52

33.06

33.06

7.43

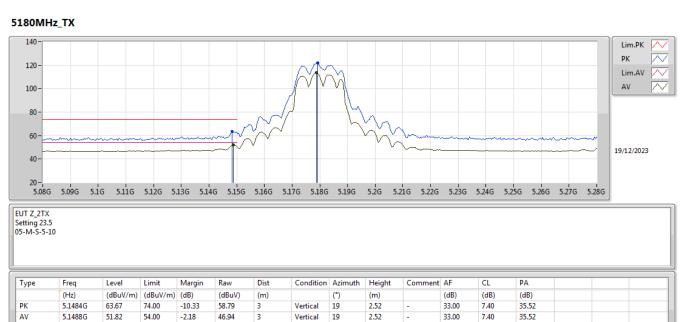
7.43

35.51

35.51

# Appendix E.2

## 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX





PK

AV

5.182G

5.1816G

117.96

109.46

Inf

Inf

-Inf

-Inf

112.98

104.48

3

3

Horizontal 209

Horizontal 209

1.00

1.00

33.06

33.06

7.43

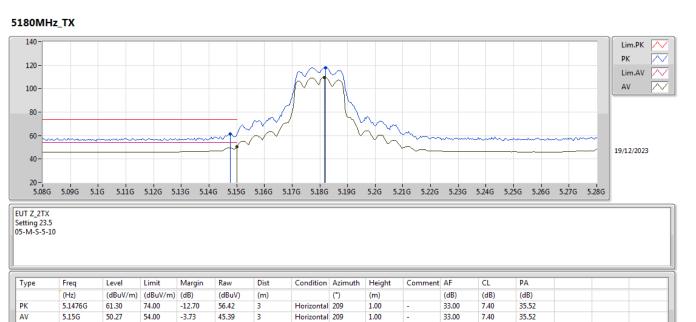
7.43

35.51

35.51

# Appendix E.2

## 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX





AV

15.53074G

43.80

54.00

-10.20

26.75

3

Vertical

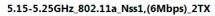
290

2.48

38.32

12.27

33.54







AV

15.52G

45.90

54.00

-8.10

28.81

3

Horizontal 55

2.36

38.38

12.27

33.56

# Appendix E.2

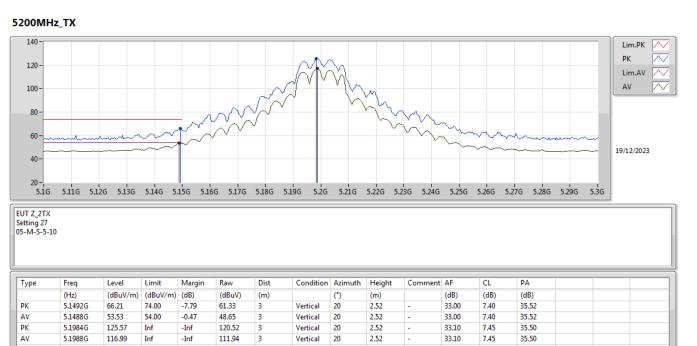
## 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX



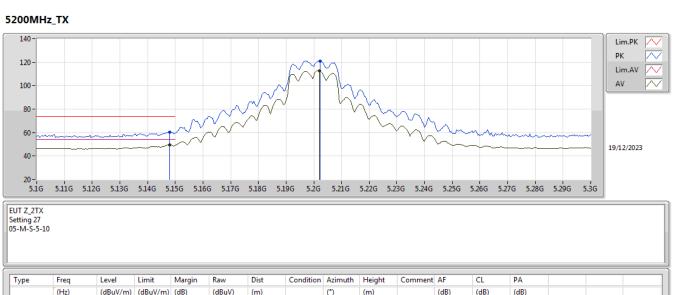


# Appendix E.2

## 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX

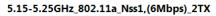






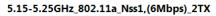
Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
5.148G	60.52	74.00	-13.48	55.64	3	Horizontal	209	1.00	-	33.00	7.40	35.52
5.148G	49.38	54.00	-4.62	44.50	3	Horizontal	209	1.00	-	33.00	7.40	35.52
5.2024G	121.12	Inf	-Inf	116.07	3	Horizontal	209	1.00	-	33.10	7.45	35.50
5.202G	112.55	Inf	-Inf	107.50	3	Horizontal	209	1.00	-	33.10	7.45	35.50
	(Hz) 5.148G 5.148G 5.2024G	(Hz)         (dBuV/m)           5.148G         60.52           5.148G         49.38           5.2024G         121.12	(Hz)         (dBuV/m)         (dBuV/m)           5.148G         60.52         74.00           5.148G         49.38         54.00           5.2024G         121.12         Inf	(Hz)         (dBuV/m)         (dB)           5.148G         60.52         74.00         -13.48           5.148G         49.38         54.00         -4.62           5.2024G         121.12         Inf         -Inf	(Hz)         (dBuV/m)         (dBuV/m)         (dB         (dBuV/m)           5.148G         60.52         74.00         -13.48         55.64           5.148G         49.38         54.00         -4.62         44.50           5.2024G         121.12         Inf         -Inf         116.07	(Hz)         (dBuV/m)         (dBuV/m)         (dBuV         (m)           5.148G         60.52         74.00         -13.48         55.64         3           5.148G         49.38         54.00         -4.62         44.50         3           5.2024G         121.12         Inf         -Inf         116.07         3	(Hz)         (dBuV/m)         (dBu/)         (dB         (dBuV)         (m)           5.148G         60.52         74.00         -13.48         55.64         3         Horizontal           5.148G         49.38         54.00         -4.62         44.50         3         Horizontal           5.2024G         121.12         Inf         -Inf         116.07         3         Horizontal	(Hz)         (dBuV/m)         (dB)         (dBuV)         (m)         (*)           5.148G         60.52         74.00         -13.48         55.64         3         Horizontal         209           5.148G         49.38         54.00         -4.62         44.50         3         Horizontal         209           5.2024G         121.12         Inf         -Inf         116.07         3         Horizontal         209	(Hz)         (dBuV/m)         (dB)         (dBuV)         (m)         (*)         (m)           5.148G         60.52         74.00         -13.48         55.64         3         Horizontal         209         1.00           5.148G         49.38         54.00         -4.62         44.50         3         Horizontal         209         1.00           5.2024G         121.12         Inf         -Inf         116.07         3         Horizontal         209         1.00	(Hz)         (dBuV/m)         (dBu/m)         (dBu/m)         (dBu/m)         (m)         (°)         (m)           5.148G         60.52         74.00         -13.48         55.64         3         Horizontal         209         1.00         -           5.148G         49.38         54.00         -4.62         44.50         3         Horizontal         209         1.00         -           5.2024G         121.12         Inf         -Inf         116.07         3         Horizontal         209         1.00         -	(Hz)         (dBuV/m)         (dB)         (dBuV)         (m)         (°)         (m)         (dB)           5.148G         60.52         74.00         -13.48         55.64         3         Horizontal         209         1.00         -         33.00           5.148G         49.38         54.00         -4.62         44.50         3         Horizontal         209         1.00         -         33.00           5.2024G         121.12         Inf         -Inf         116.07         3         Horizontal         209         1.00         -         33.10	(Hz)         (dBuV/m)         (dB)         (dBuV)         (m)         (*)         (m)         (dB)         (dB)           5.148G         60.52         74.00         -13.48         55.64         3         Horizontal         209         1.00         -         33.00         7.40           5.148G         49.38         54.00         -4.62         44.50         3         Horizontal         209         1.00         -         33.00         7.40           5.2024G         121.12         Inf         -Inf         116.07         3         Horizontal         209         1.00         -         33.10         7.45















5.351G

5.3834G

AV

74.00

54.00

58.30

46.70

-15.70

-7.30

53.43

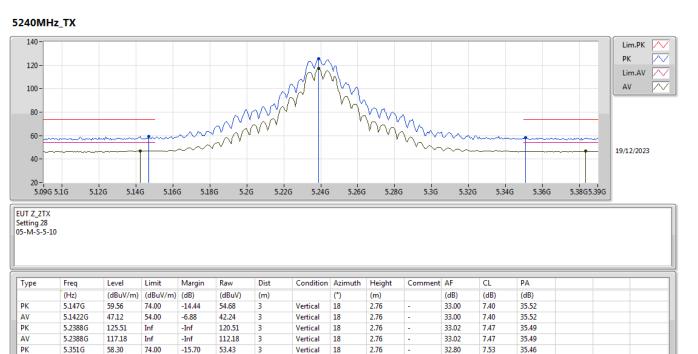
41.74

3

3

# Appendix E.2

#### 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX



7.53

7.54

35.46

35.45

32.80

32.87

Vertical

Vertical

18

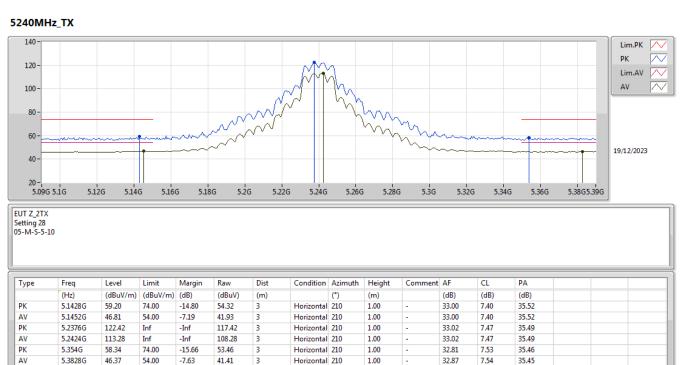
18

2.76

2.76



### 5.15-5.25GHz\_802.11a\_Nss1,(6Mbps)\_2TX



3



AV

15.7204G

48.30

54.00

-5.70

31.47

3

Vertical

117.4

1.80

37.74

12.34

33.25

# Appendix E.2





PK

AV

15.71476G

15.72008G

59.61

46.69

74.00

54.00

-14.39

-7.31

42.81

29.87

3

3

Horizontal 308

Horizontal 308

2.92

2.92

37.73

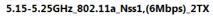
37.74

12.33

12.34

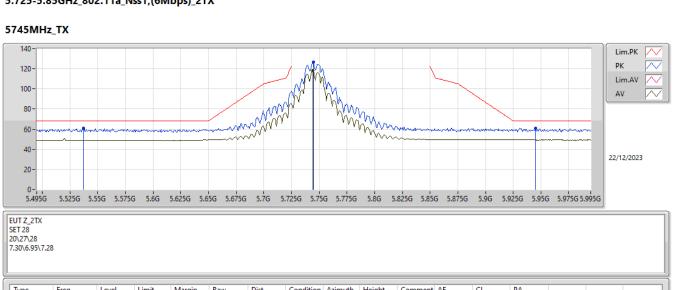
33.26

33.26



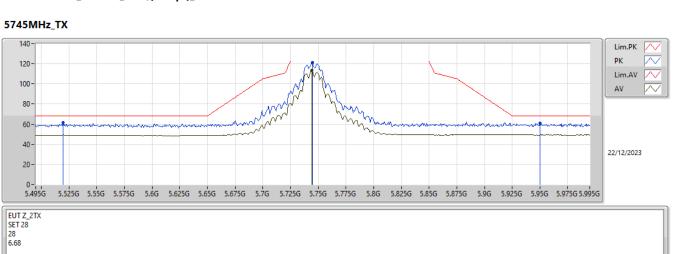






Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	5.537G	60.66	68.20	-7.54	54.09	3	Vertical	84	2.21	28	34.60	6.89	34.92	
РК	5.7445G	126.91	Inf	-Inf	120.80	3	Vertical	84	2.21	28	34.20	6.93	35.02	
AV	5.744G	118.01	Inf	-Inf	111.90	3	Vertical	84	2.21	28	34.20	6.93	35.02	
PK	5.945G	60.92	68.20	-7.28	54.47	3	Vertical	84	2.21	28	34.59	6.97	35.11	





Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.5195G	61.52	68.20	-6.68	54.95	3	Horizontal	214	1.00	28	34.60	6.88	34.91		
PK	5.7445G	121.01	Inf	-Inf	114.90	3	Horizontal	214	1.00	28	34.20	6.93	35.02		
AV	5.744G	113.15	Inf	-Inf	107.04	3	Horizontal	214	1.00	28	34.20	6.93	35.02		
PK	5.95G	61.14	68.20	-7.06	54.69	3	Horizontal	214	1.00	28	34.60	6.97	35.12		







PK

17.2298G

67.92

68.20

-0.28

75.08

3

Horizontal 298

2.70

40.62

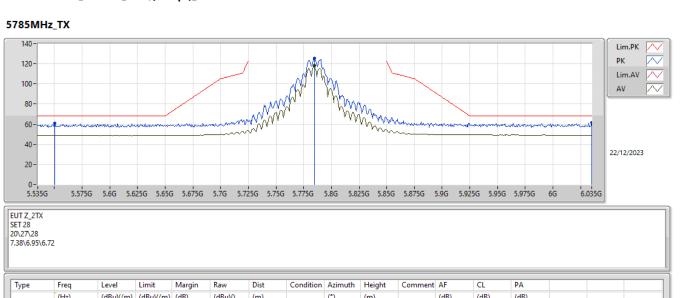
14.54

62.32

# Appendix E.2







Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA			
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)			
PK	5.5505G	60.73	68.20	-7.47	54.16	3	Vertical	80	2.28	28	34.60	6.89	34.92			
PK	5.7845G	125.55	Inf	-Inf	119.38	3	Vertical	80	2.28	28	34.27	6.94	35.04			
AV	5.7845G	117.99	Inf	-Inf	111.82	3	Vertical	80	2.28	28	34.27	6.94	35.04			
PK	6.035G	61.48	68.20	-6.72	54.83	3	Vertical	80	2.28	28	34.77	7.01	35.13			
1	1	1											-	1	1	_



PK

PK

AV PK

5.58G

5.7845G

5.784G

6.035G

60.55

120.00

112.08

60.32

68.20

Inf

Inf

68.20

-7.65

-Inf

-Inf

-7.88

54.11

113.83

105.91

53.67

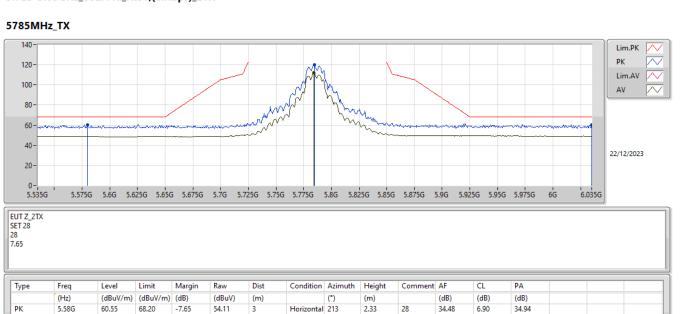
3

3

3

3

## 5.725-5.85GHz\_802.11a\_Nss1,(6Mbps)\_2TX



2.33

2.33

2.33

2.33

Horizontal 213

Horizontal 213

Horizontal 213

28

28

28

28

34.48

34.27

34.27

34.77

6.90

6.94

6.94

7.01

34.94

35.04

35.04

35.13







PK

17.341G

66.00

68.20

-2.20

72.43

3

Horizontal 299

2.65

41.33

14.60

62.36

# Appendix E.2





5.9375G

68.20

-6.91

54.85

3

Vertical

81

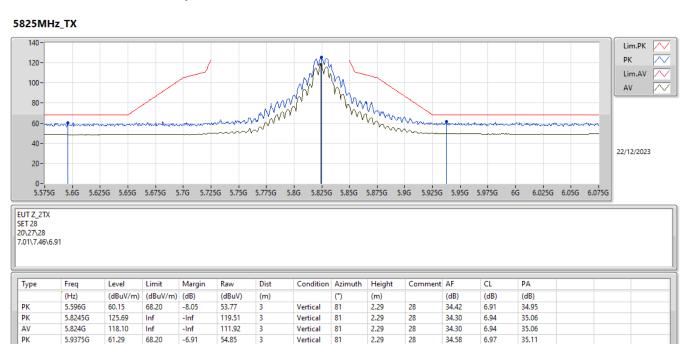
2.29

28

61.29

# Appendix E.2

#### 5.725-5.85GHz\_802.11a\_Nss1,(6Mbps)\_2TX

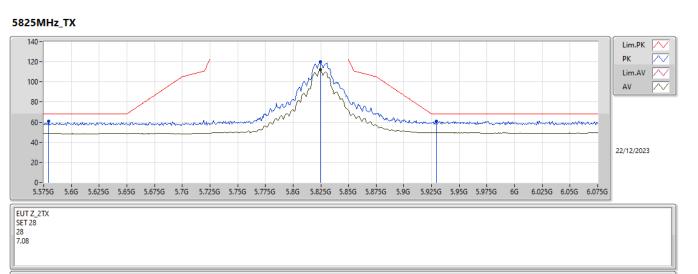


6.97

35.11

34.58





Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.5795G	60.65	68.20	-7.55	54.21	3	Horizontal	215	1.00	28	34.48	6.90	34.94		
РК	5.8245G	120.12	Inf	-Inf	113.94	3	Horizontal	215	1.00	28	34.30	6.94	35.06		
AV	5.8245G	112.10	Inf	-Inf	105.92	3	Horizontal	215	1.00	28	34.30	6.94	35.06		
PK	5.9295G	61.12	68.20	-7.08	54.70	3	Horizontal	215	1.00	28	34.56	6.97	35.11		

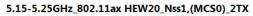














Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	5.1492G	67.09	74.00	-6.91	62.21	3	Vertical	18	2.55	-	33.00	7.40	35.52		
AV	5.1496G	53.53	54.00	-0.47	48.65	3	Vertical	18	2.55	-	33.00	7.40	35.52		
PK	5.1776G	123.71	Inf	-Inf	118.73	3	Vertical	18	2.55	-	33.06	7.43	35.51		
AV	5.178G	112.13	Inf	-Inf	107.15	3	Vertical	18	2.55	-	33.06	7.43	35.51		



AV

5.1828G

107.32

Inf

-Inf

102.33

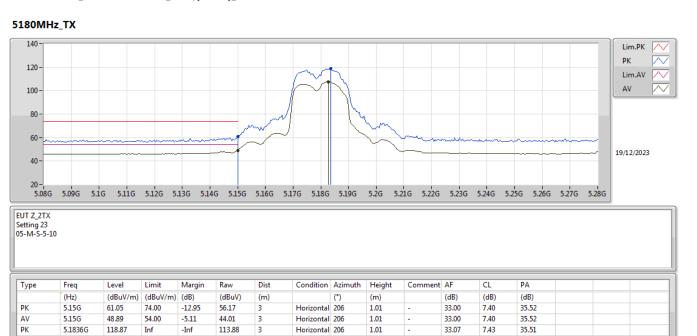
3

Horizontal 206

1.01

# Appendix E.2

## 5.15-5.25GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX

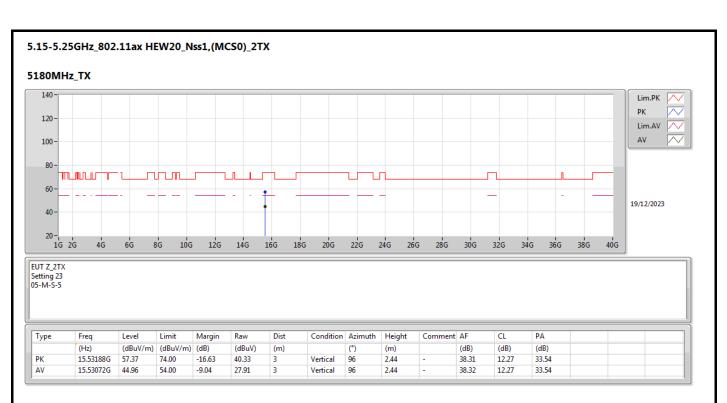


7.43

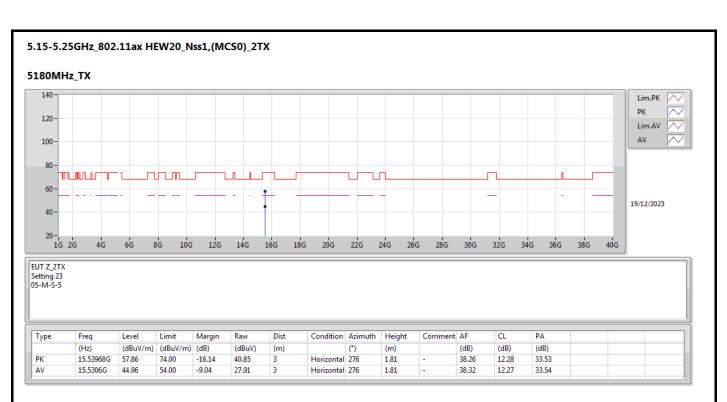
35.51

33.07











AV

5.1984G

115.89

Inf

-Inf

110.84

3

Vertical 17

# Appendix E.2

#### 5.15-5.25GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



2.65

7.45

35.50

33.10



#### 5.15-5.25GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX

110.73

Inf

-Inf

3

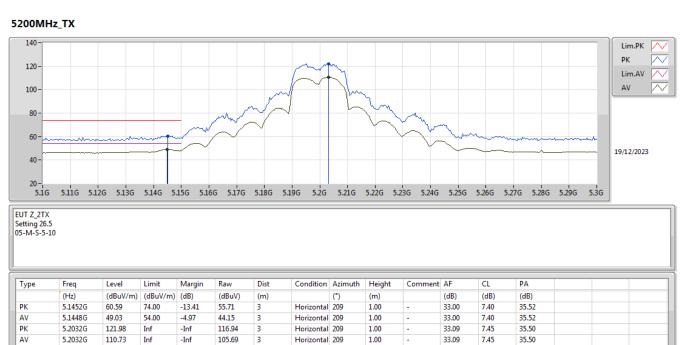
Horizontal 209

1.00

33.09

7.45

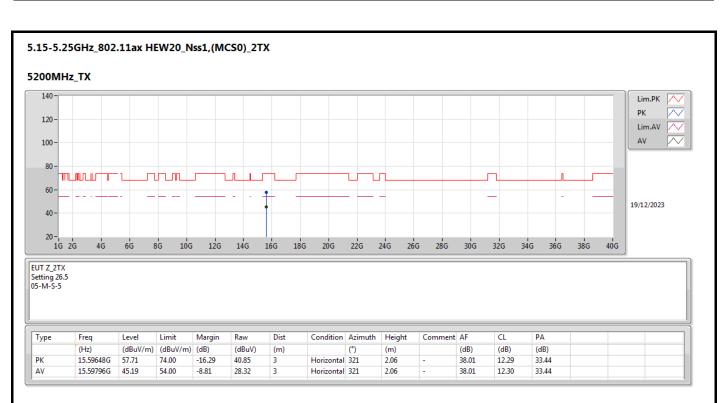
35.50





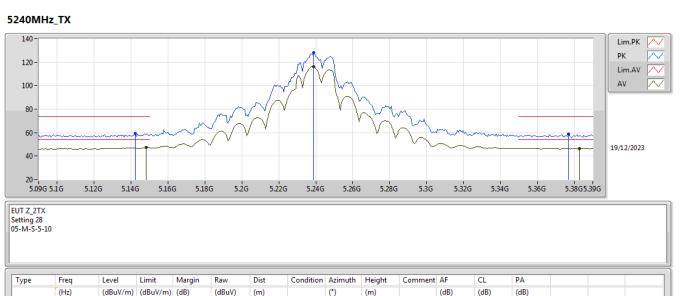












PK         5.1422G         59.32         74.00         -14.68         54.44         3         Vertical         18         2.37         -         33.00         74.00         35.52         (1)           AV         5.1482G         47.26         54.00         -6.74         42.38         3         Vertical         18         2.37         -         33.00         74.00         35.52         (1)           PK         5.2386         126.00         Inf         213.00         74.00         35.20         (1)         (1)           AV         5.2386         18.62         Inf         23.00         74.00         35.49         (1)           AV         5.2386         16.63         Inf         11.32         3         Vertical         18         2.37         -         3.02         74.7         35.49           AV         5.3768G         58.77         74.00         -15.23         5.32         3         Vertical         18         2.37         -         3.02         74.7         35.49           AV         5.3786G         58.77         74.00         -15.23         5.23         3         Vertical         18         2.37         -         32.87         7.5	(H:	Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK         5.2386         128.06         Inf         -Inf         123.06         3         Vertical         18         2.37         -         33.02         7.47         35.49         -           AV         5.2386         16.32         Inf         -Inf         111.32         3         Vertical         18         2.37         -         33.02         7.47         35.49         -           PK         5.3768         8.77         7.40         -Inf         111.32         3         Vertical         18         2.37         -         33.02         7.47         35.49         -           PK         5.37686         58.77         74.00         -15.23         53.83         3         Vertical         18         2.37         -         3         32.45         7.54         35.45	5.1	.1422G	59.32	74.00	-14.68	54.44	3	Vertical	18	2.37	-	33.00	7.40	35.52		
AV         5.2386         116.32         Inf         -Inf         111.32         3         Vertical         18         2.37         -         33.02         7.47         35.49           PK         5.3766         58.77         74.00         -15.23         53.83         3         Vertical         18         2.37         -         32.85         7.54         35.49	5.1	.1482G	47.26	54.00	-6.74	42.38	3	Vertical	18	2.37	-	33.00	7.40	35.52		
PK 5.3768G 58.77 74.00 -15.23 53.83 3 Vertical 18 2.37 - 32.85 7.54 35.45	5.2	.2388G	128.06	Inf	-Inf	123.06	3	Vertical	18	2.37	-	33.02	7.47	35.49		
	5.2	.2388G	116.32	Inf	-Inf	111.32	3	Vertical	18	2.37	-	33.02	7.47	35.49		
AV 5.3828G 46.54 54.00 -7.46 41.58 3 Vertical 18 2.37 - 32.87 7.54 35.45	5.3	.3768G	58.77	74.00	-15.23	53.83	3	Vertical	18	2.37	-	32.85	7.54	35.45		
	5.3	.3828G	46.54	54.00	-7.46	41.58	3	Vertical	18	2.37	-	32.87	7.54	35.45		



Lim.PK РК

Lim.AV AV

19/12/2023

5.36G

5.38G5.39G

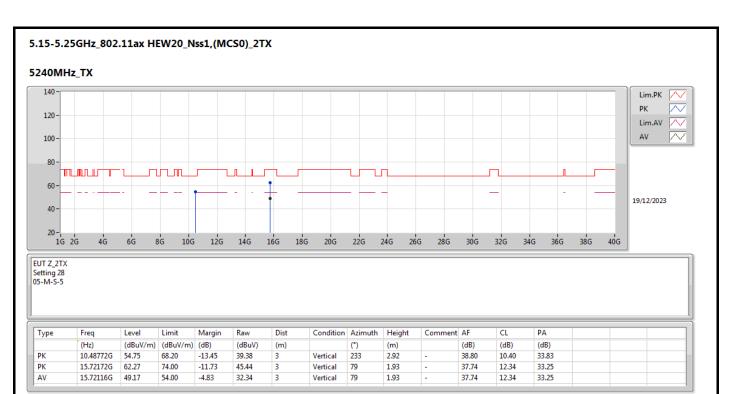


60 -40 -20-5.09G 5.1G 5.12G 5.14G 5.16G 5.18G 5.2G 5.22G 5.24G 5.26G 5.28G 5.3G 5.32G 5.34G

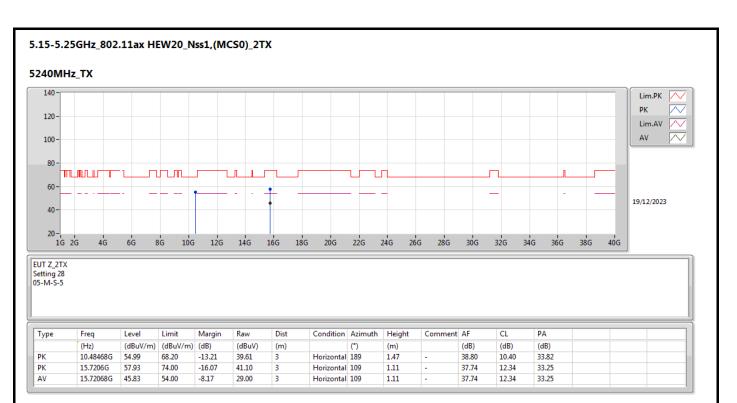
EUT Z\_2TX Setting 28 05-M-S-5-10

Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.0954G	58.41	74.00	-15.59	53.58	3	Horizontal	207	1.01	-	33.01	7.35	35.53		
AV	5.141G	46.65	54.00	-7.35	41.78	3	Horizontal	207	1.01	-	33.00	7.39	35.52		
РК	5.2424G	123.64	Inf	-Inf	118.64	3	Horizontal	207	1.01	-	33.02	7.47	35.49		
AV	5.243G	112.05	Inf	-Inf	107.06	3	Horizontal	207	1.01	-	33.01	7.47	35.49		
РК	5.3702G	58.29	74.00	-15.71	53.37	3	Horizontal	207	1.01	-	32.84	7.54	35.46		
AV	5.3534G	46.37	54.00	-7.63	41.49	3	Horizontal	207	1.01	-	32.81	7.53	35.46		



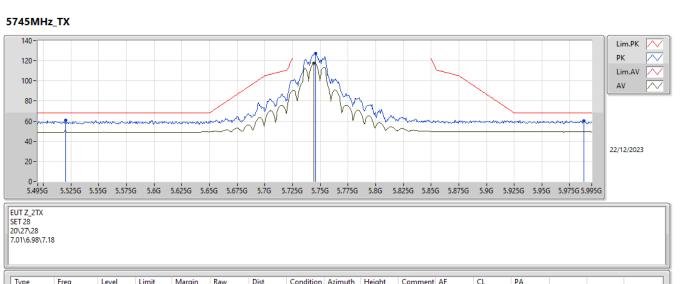








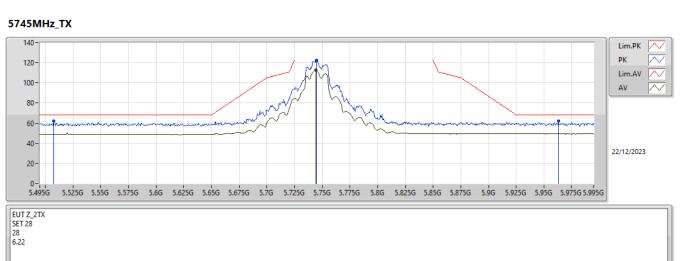
### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.52G	61.02	68.20	-7.18	54.45	3	Vertical	78	2.26	28	34.60	6.88	34.91		
РК	5.746G	127.20	Inf	-Inf	121.09	3	Vertical	78	2.26	28	34.20	6.93	35.02		
AV	5.744G	117.59	Inf	-Inf	111.48	3	Vertical	78	2.26	28	34.20	6.93	35.02		
PK	5.988G	60.53	68.20	-7.67	54.00	3	Vertical	78	2.26	28	34.68	6.98	35.13		

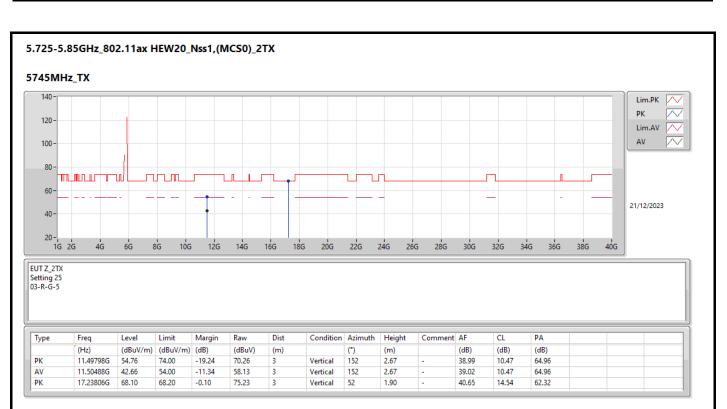


## 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX

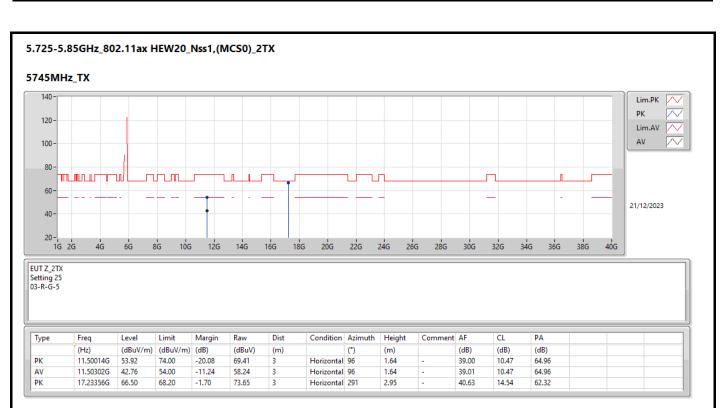


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.5075G	61.90	68.20	-6.30	55.32	3	Horizontal	216	1.00	28	34.60	6.88	34.90		
РК	5.7445G	122.61	Inf	-Inf	116.50	3	Horizontal	216	1.00	28	34.20	6.93	35.02		
AV	5.744G	112.84	Inf	-Inf	106.73	3	Horizontal	216	1.00	28	34.20	6.93	35.02		
PK	5.963G	61.98	68.20	-6.22	55.50	3	Horizontal	216	1.00	28	34.63	6.97	35.12		











#### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX

68.20

60.96

5.972G

-7.24

54.48

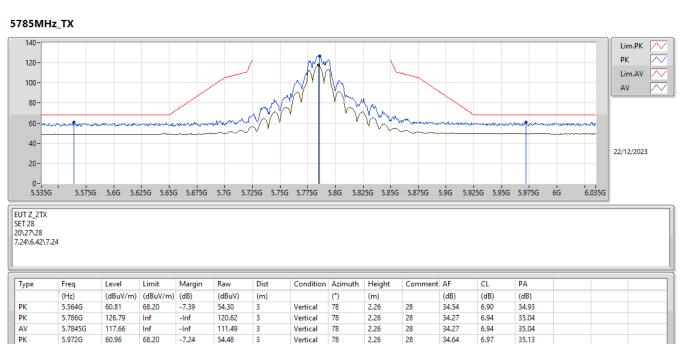
3

Vertical

78

2.26

28



6.97

35.13

34.64



PK

AV PK 5.7845G

5.784G

5.949G

122.05

112.12

60.78

Inf

Inf

68.20

-Inf

-Inf

-7.42

115.88

105.95

54.33

3

3

3

Horizontal 216

Horizontal 216

Horizontal 216

1.00

1.00

1.00

28

28

28

34.27

34.27

34.60

6.94

6.94

6.97

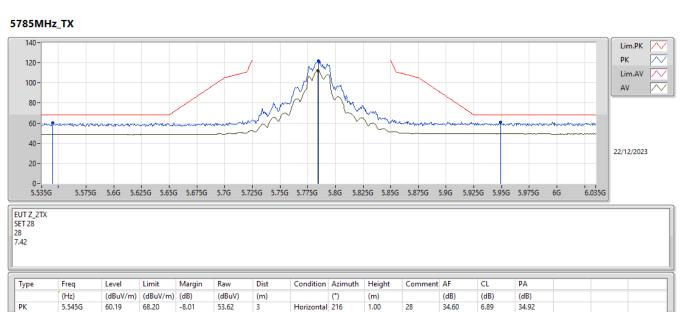
35.04

35.04

35.12

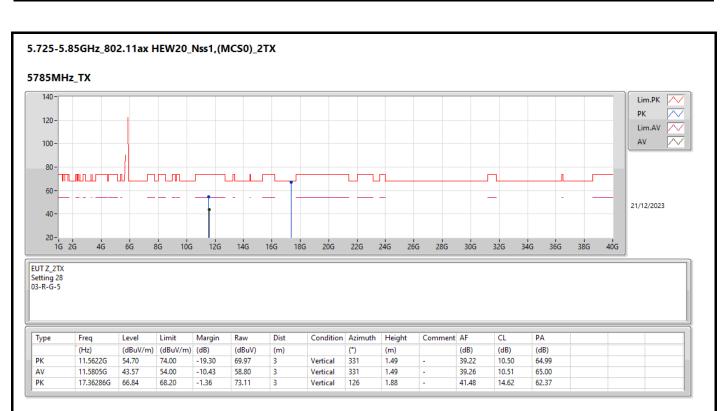
### Appendix E.2

#### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX

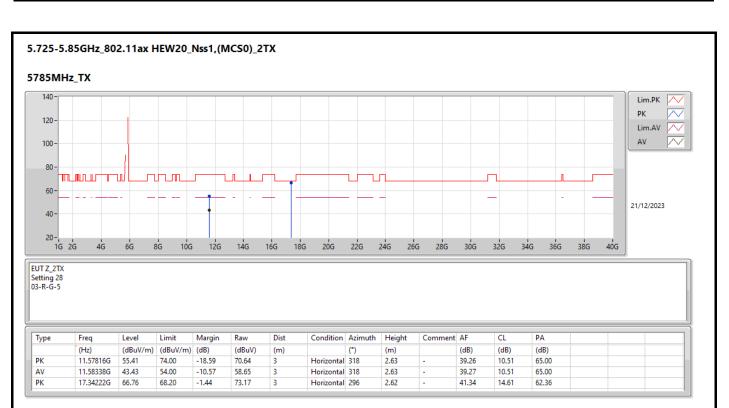


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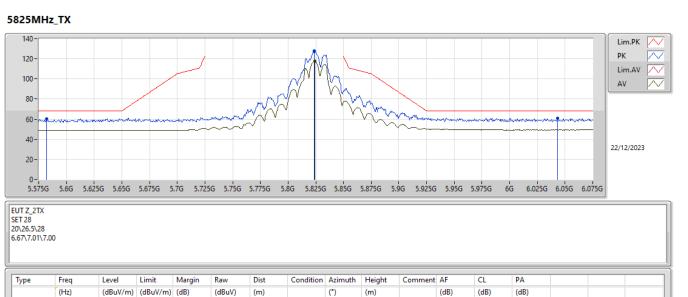






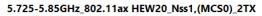


#### 5.725-5.85GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	5.582G	60.39	68.20	-7.81	53.96	3	Vertical	81	2.28	28	34.47	6.90	34.94		
PK	5.8235G	127.84	Inf	-Inf	121.66	3	Vertical	81	2.28	28	34.30	6.94	35.06		
AV	5.824G	117.74	Inf	-Inf	111.56	3	Vertical	81	2.28	28	34.30	6.94	35.06		
PK	6.0435G	61.20	68.20	-7.00	54.51	3	Vertical	81	2.28	28	34.79	7.02	35.12		

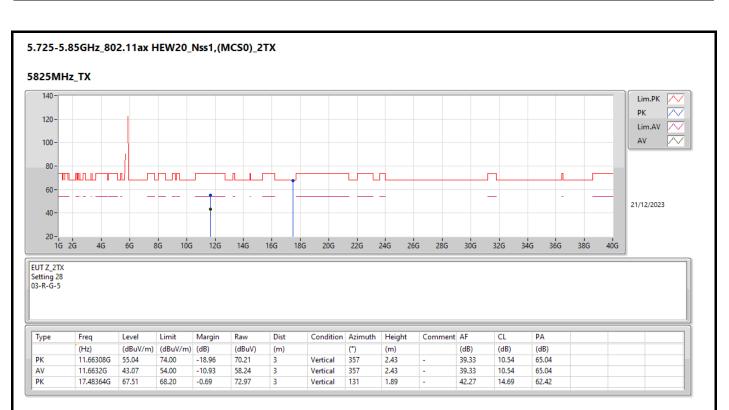




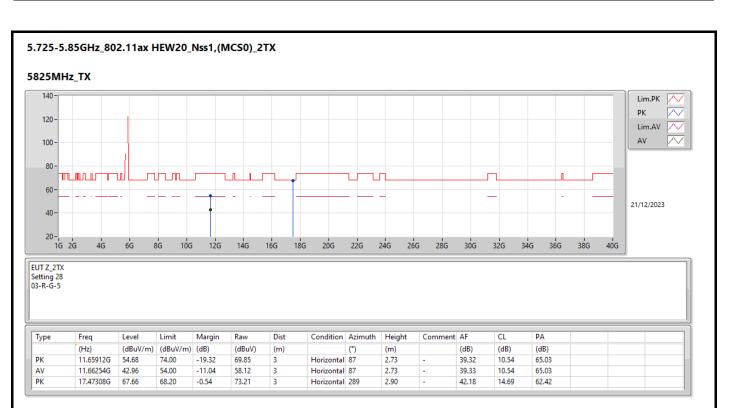


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	5.6455G	60.74	68.20	-7.46	54.39	3	Horizontal	215	1.00	28	34.40	6.92	34.97		
PK	5.8245G	121.68	Inf	-Inf	115.50	3	Horizontal	215	1.00	28	34.30	6.94	35.06		
AV	5.824G	111.74	Inf	-Inf	105.56	3	Horizontal	215	1.00	28	34.30	6.94	35.06		
PK	6.0265G	61.16	68.20	-7.04	54.54	3	Horizontal	215	1.00	28	34.75	7.00	35.13		











РК

AV PK

AV

5.1468G

5.1462G

5.1876G

5.1876G

65.42

53.54

119.97

108.31

74.00

54.00

Inf

Inf

-8.58

-0.46

-Inf

-Inf

60.54

48.66

114.96

103.30

3

3

3

3

Vertical

Vertical

Vertical

Vertical

19

19

19

19

2.53

2.53

2.53

2.53

\_

33.00

33.00

33.08

33.08

7.40

7.40

7.44

7.44

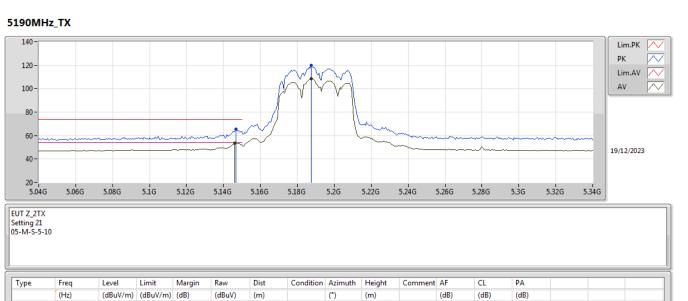
35.52

35.52

35.51

35.51

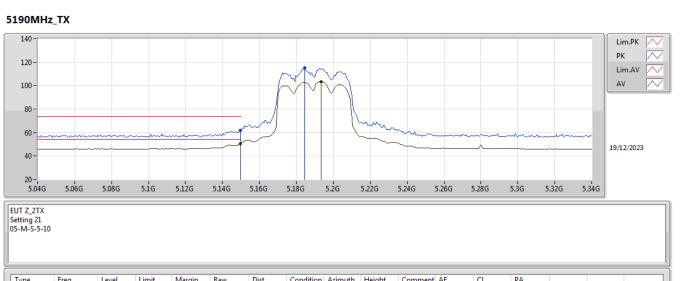




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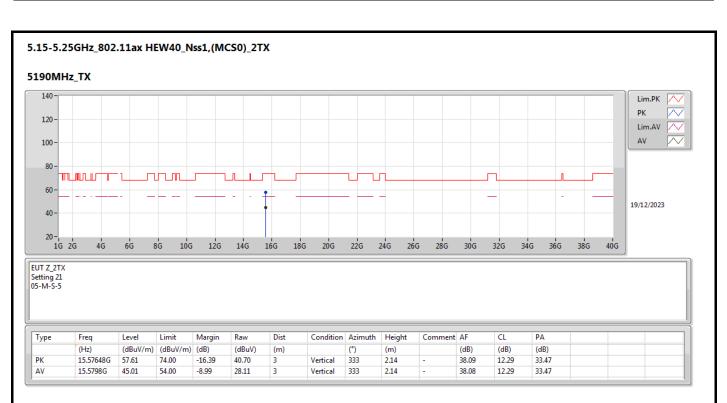




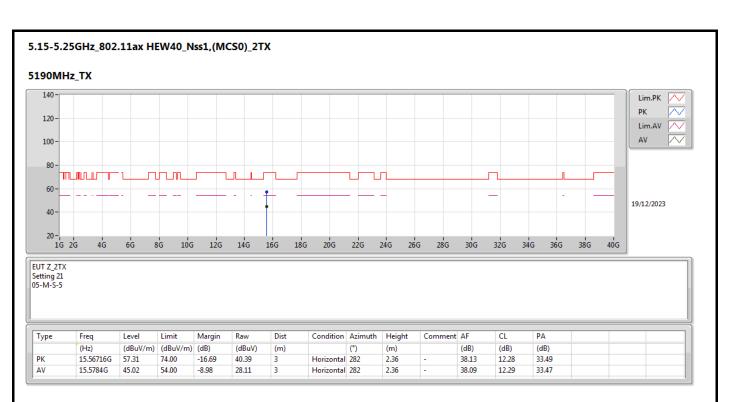


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.1498G	62.00	74.00	-12.00	57.12	3	Horizontal	207	1.02	-	33.00	7.40	35.52		
AV	5.1498G	50.58	54.00	-3.42	45.70	3	Horizontal	207	1.02	-	33.00	7.40	35.52		
РК	5.1846G	115.02	Inf	-Inf	110.02	3	Horizontal	207	1.02	-	33.07	7.44	35.51		
AV	5.1936G	103.52	Inf	-Inf	98.50	3	Horizontal	207	1.02	-	33.09	7.44	35.51		











#### 5.15-5.25GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX

47.85

54.00

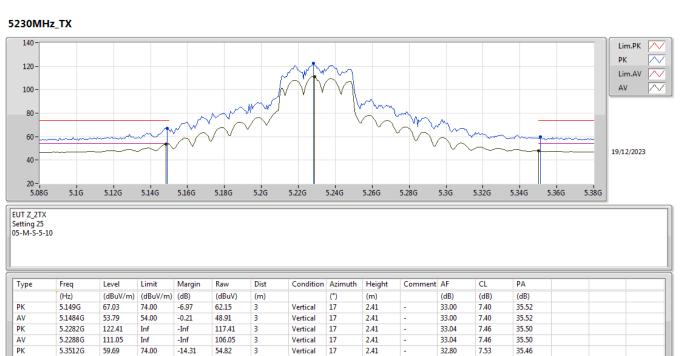
-6.15

5.35G

AV

42.98

3



Vertical

17

2.41

32.80

7.53

35.46



AV PK

AV

5.2342G

5.3746G

5.3578G

107.64

58.72

47.08

Inf

74.00

54.00

-Inf

-15.28

-6.92

102.63

53,79

42.19

3

3

3

Horizontal 208

Horizontal 208

Horizontal 208

1.00

1.00

1.00

33.03

32.85

32.82

7.47

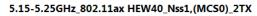
7.54

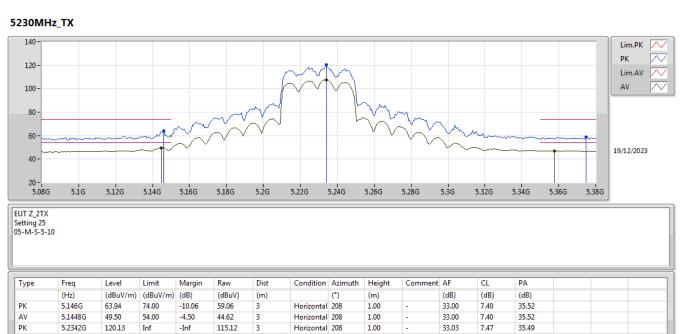
7.53

35.49

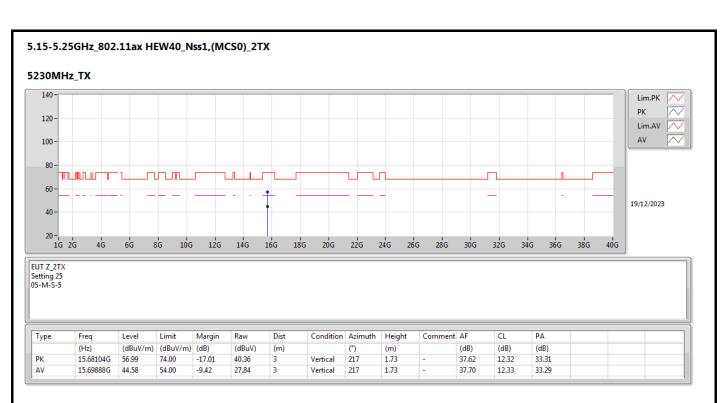
35.46

35.46

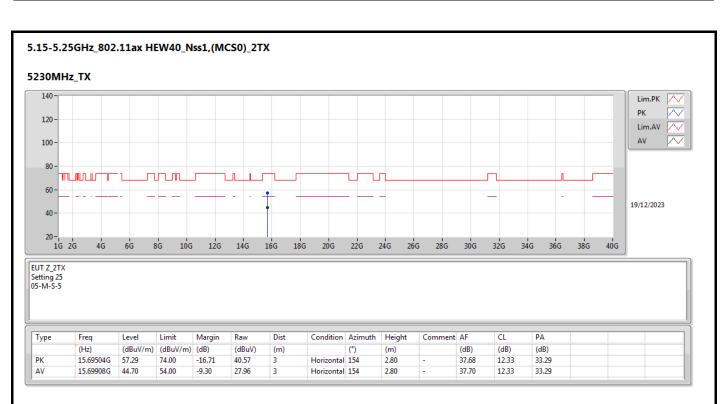






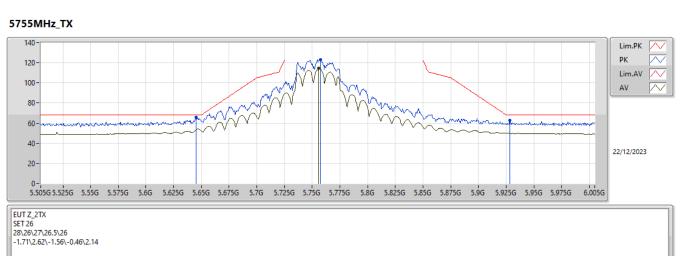








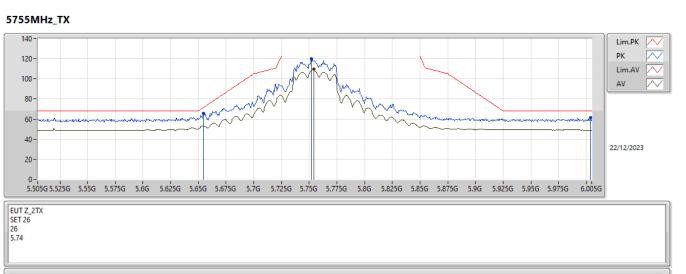
#### 5.725-5.85GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX



Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.645G	66.06	68.20	-2.14	59.71	3	Vertical	72	2.26	26	34.40	6.92	34.97		
РК	5.7575G	122.98	Inf	-Inf	116.86	3	Vertical	72	2.26	26	34.21	6.93	35.02		
AV	5.756G	114.78	Inf	-Inf	108.66	3	Vertical	72	2.26	26	34.21	6.93	35.02		
РК	5.9285G	62.67	68.20	-5.53	56.25	3	Vertical	72	2.26	26	34.56	6.97	35.11		

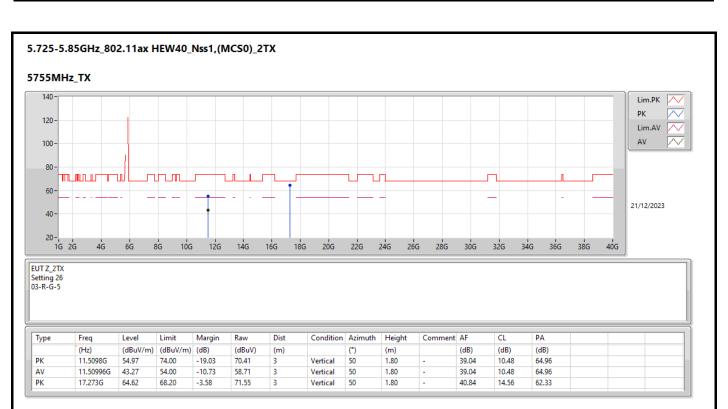


#### 5.725-5.85GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX

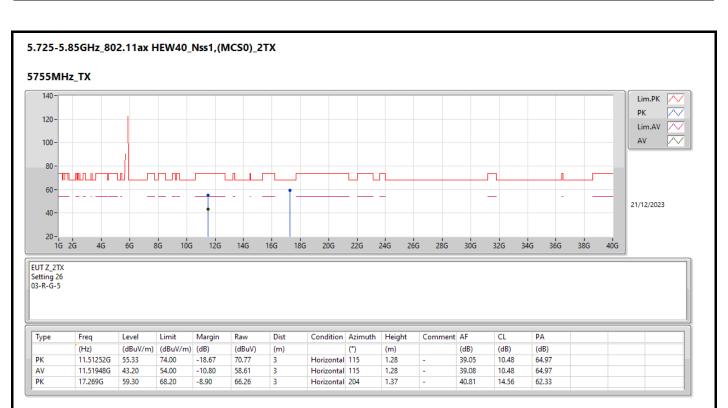


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.6545G	65.79	71.53	-5.74	59.46	3	Horizontal	216	1.00	26	34.38	6.92	34.97		
РК	5.752G	119.89	Inf	-Inf	113.78	3	Horizontal	216	1.00	26	34.20	6.93	35.02		
AV	5.754G	109.57	Inf	-Inf	103.45	3	Horizontal	216	1.00	26	34.21	6.93	35.02		
PK	6.004G	61.28	68.20	-6.92	54.73	3	Horizontal	216	1.00	26	34.71	6.98	35.14		



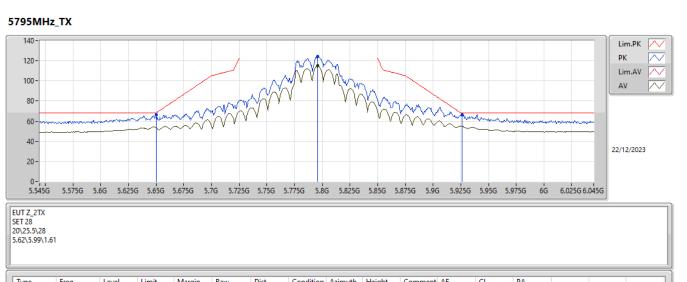








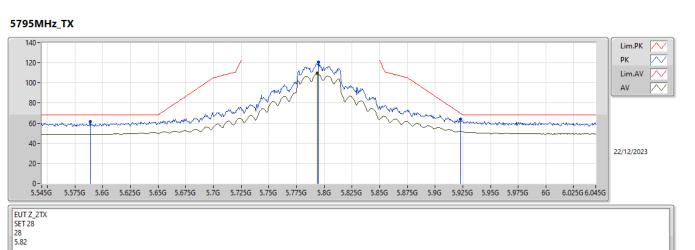
#### 5.725-5.85GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX



Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	5.65G	66.59	68.20	-1.61	60.24	3	Vertical	73	2.26	28	34.40	6.92	34.97		
PK	5.796G	124.45	Inf	-Inf	118.26	3	Vertical	73	2.26	28	34.29	6.94	35.04		
AV	5.796G	115.12	Inf	-Inf	108.93	3	Vertical	73	2.26	28	34.29	6.94	35.04		
PK	5.926G	66.17	68.20	-2.03	59.75	3	Vertical	73	2.26	28	34.55	6.97	35.10		

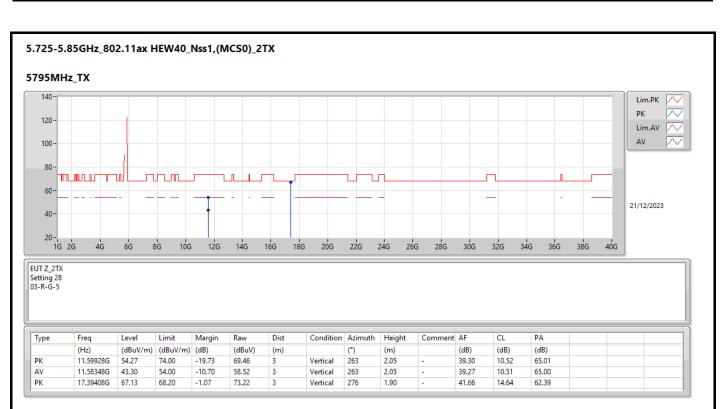


#### 5.725-5.85GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX

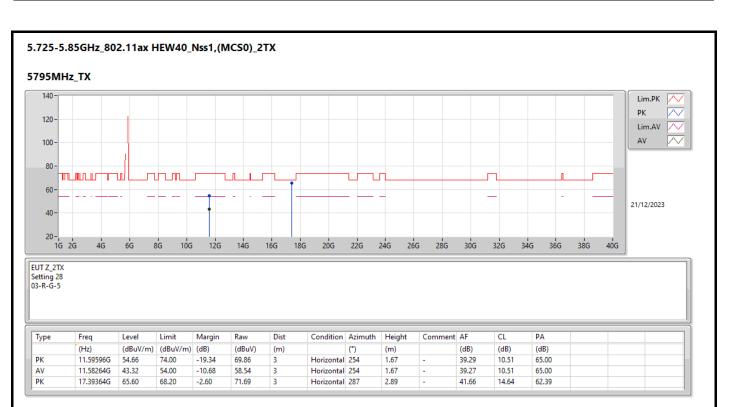


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.589G	61.27	68.20	-6.93	54.86	3	Horizontal	215	1.00	28	34.44	6.91	34.94		
PK	5.7945G	120.59	Inf	-Inf	114.40	3	Horizontal	215	1.00	28	34.29	6.94	35.04		
AV	5.7935G	109.56	Inf	-Inf	103.37	3	Horizontal	215	1.00	28	34.29	6.94	35.04		
РК	5.923G	63.86	69.68	-5.82	57.45	3	Horizontal	215	1.00	28	34.55	6.96	35.10		











AV PK

AV

5.208G

5.449G

5.457G

104.32

58.21

46.93

Inf

74.00

54.00

-Inf

-15.79

-7.07

99.29

53.25

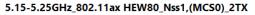
41.95

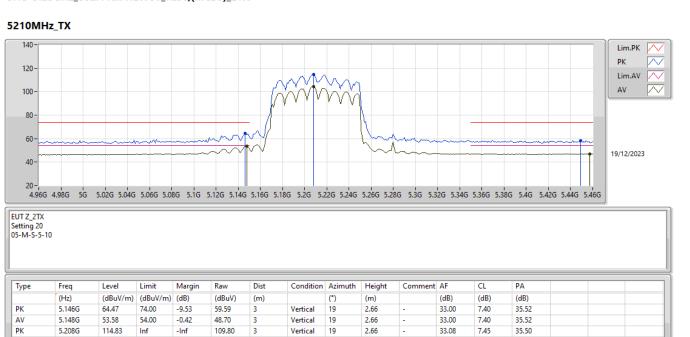
3

3

3

## Appendix E.2





Vertical

Vertical

Vertical

19

19

19

2.66

2.66

2.66

33.08

32.80

32.81

7.45

7.59

7.60

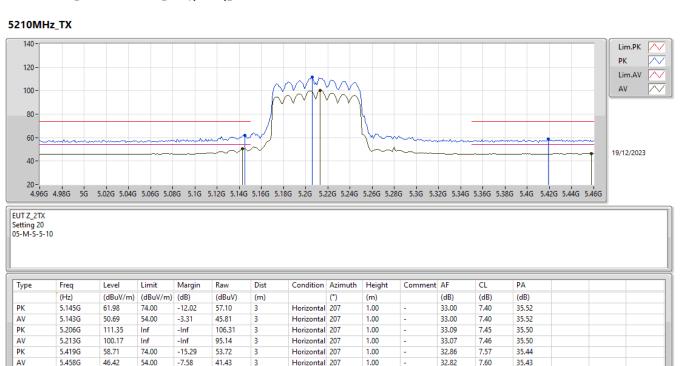
35.50

35.43

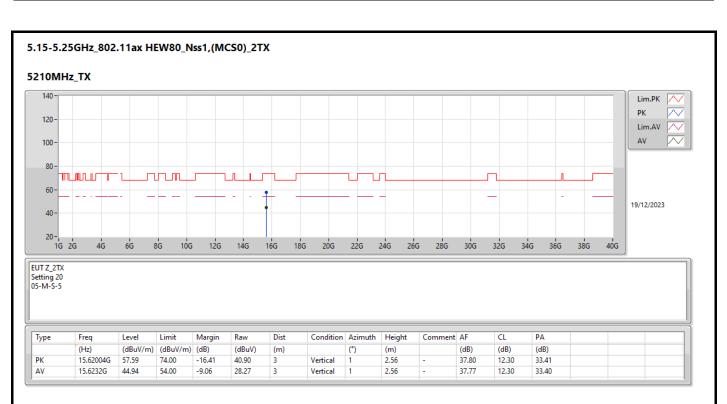
35.43



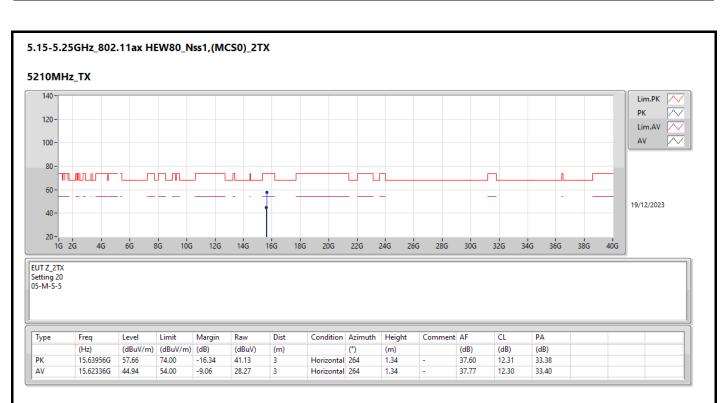






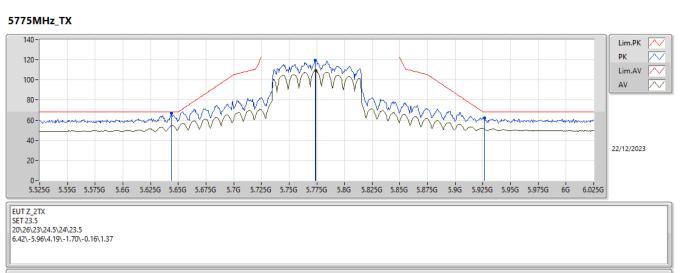








### 5.725-5.85GHz\_802.11ax HEW80\_Nss1,(MCS0)\_2TX



Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	5.644G	66.83	68.20	-1.37	60.48	3	Vertical	79	2.24	23.5	34.40	6.92	34.97		
РК	5.7735G	119.41	Inf	-Inf	113.25	3	Vertical	79	2.24	23.5	34.25	6.94	35.03		
AV	5.774G	109.33	Inf	-Inf	103.17	3	Vertical	79	2.24	23.5	34.25	6.94	35.03		
PK	5.9265G	62.19	68.20	-6.01	55.77	3	Vertical	79	2.24	23.5	34.55	6.97	35.10		



#### 5.725-5.85GHz\_802.11ax HEW80\_Nss1,(MCS0)\_2TX

