Report No. : FR342410AA





# **RADIO TEST REPORT**

÷.	RSL-TQ2402GEN2
8 9	IEEE802.11ax dual-radio 5G/2.4GHz 2x2+2x2 wireless AP
	Allied Telesis
	AT-TQ2402 GEN2,AT-TQm2402 GEN2
	Allied Telesis K.K.
	2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku Tokyo 141-0031 Japan
1	Allied Telesis K.K.
	2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku Tokyo 141-0031 Japan
u u	47 CFR FCC Part 15.247

The product was received on May 08, 2023, and testing was started from May 11, 2023 and completed on May 16, 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

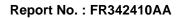
Sporton International Inc. Hsinchu Laboratory No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)

TEL : 886-3-656-9065 FAX : 886-3-656-9085 Report Template No.: CB-A10\_10 Ver1.3 Page Number : 1 of 30 Issued Date : Jul. 11, 2023 Report Version : 01



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# History of this test report

Report No.	Version	Description	Issued Date
FR342410AA	01	Initial issue of report	Jul. 11, 2023



# 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	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	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: Viola 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
2400-2483.5	b, g, n (HT20), VHT20, ax (HEW20)	2412-2462	1-11 [11]
2400-2483.5	n (HT40), VHT40, ax (HEW40)	2422-2452	3-9 [7]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	2TX
2.4-2.4835GHz	802.11g	20	2TX
2.4-2.4835GHz	802.11n HT20	20	2TX
2.4-2.4835GHz	802.11n HT20-BF	20	2TX
2.4-2.4835GHz	VHT20	20	2TX
2.4-2.4835GHz	VHT20-BF	20	2TX
2.4-2.4835GHz	802.11ax HEW20	20	2TX
2.4-2.4835GHz	802.11ax HEW20-BF	20	2TX
2.4-2.4835GHz	802.11n HT40	40	2TX
2.4-2.4835GHz	802.11n HT40-BF	40	2TX
2.4-2.4835GHz	VHT40	40	2TX
2.4-2.4835GHz	VHT40-BF	40	2TX
2.4-2.4835GHz	802.11ax HEW40	40	2TX
2.4-2.4835GHz	802.11ax HEW40-BF	40	2TX

Note:

- 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.
- 11g, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
- HEW20, HEW40 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- BWch is the nominal channel bandwidth.



### 1.1.2 Antenna Information

Ant.	2.4GHz	5GHz	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	2	-	WNC	95XEAK15.GAD	PIFA Antenna	I-PEX	
2	1	-	WNC	95XEAK15.GAE	PIFA Antenna	I-PEX	Note 1
3	-	1	WNC	95XEAK15.GAF	PIFA Antenna	I-PEX	Note 1
4	-	2	WNC	95XEAK15.GAG	PIFA Antenna	I-PEX	

Note 1:

Ant.	Gain (dBi)						
Ant.	2.4GHz	5GHz UNII 1	5GHz UNII 2A	5GHz UNII 2C	5GHz UNII 3		
1	1.93	-	-	-	-		
2	3.37	-	-	-	-		
3	-	4.55	5.10	5.14	5.38		
4	-	4.16	4.93	4.69	5.43		

Note 2: The above information was declared by manufacturer.

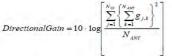
Note 3: The DFS band wasn't enabled for this application.

Note 4: 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 ≤ 4	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{MT}} \left\{ \sum_{k=1}^{N_{MT}} g_{j,k} \right\}^2}{N_{_{ANT}}} \right]$
BF	$DirectionalGain = 10 \cdot \log \left[ \frac{\sum_{j=1}^{N_{ST}} \left\{ \sum_{k=1}^{N_{ST}} g_{j,k} \right\}^2}{N_{ANT}} \right]$	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{AT}} \left\{\sum_{k=1}^{N_{AT}} g_{j,k}\right\}^{2}}{N_{ANT}}\right]$

Ex.

Directional Gain (NSS1) formula :



NSS1(g1,1) =  $10^{G1/20}$ ; NSS1(g1,2)=  $10^{G2/20}$ ;

gj,k =(Nss1(g1,1) + Nss1(g1,2))<sup>2</sup>

 $\label{eq:DG} DG = 10 \mbox{ log}[(Nss1(g1,1) \ + \ Nss1(g1,2) \ )^2 \ / \ N_{ANT}] => 10 \mbox{ log}[(10^{G1/20} \ + \ 10^{G2/20} \ )^2 \ / \ N_{ANT}]$  Where ;

2.4G G1= 1.93 dBi ; G2= 3.37 dBi ;DG= 5.69dBi 5G UNII-1 G1= 4.55 dBi ; G2= 4.16 dBi ;DG= 7.37dBi 5G UNII-2A G1= 5.1 dBi ; G2= 4.93 dBi ;DG= 8.03dBi 5G UNII-2C G1= 5.14 dBi ; G2= 4.69 dBi ;DG= 7.93dBi 5G UNII-3 G1= 5.38 dBi ; G2= 5.43 dBi ;DG= 8.42dBi



### 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
802.11b	0.878	0.57	690u	3k
802.11g	0.992	0.03	n/a (DC>=0.98)	n/a (DC>=0.98)
802.11ax HEW20	0.962	0.17	5.22m	300
802.11ax HEW40	0.979	0.09	5.363m	300

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 ir 5GHz.				
Function	$\boxtimes$	Point-to-multipoint		Point-to-point	
Support RU	$\boxtimes$	Full RU		Partial RU	
Test Software Version	QSPR Version 5.0-00201				

Note: The above information was declared by manufacturer.

# 1.1.5 Table for Multiple Listing

Model Name	Description
AT-TQ2402 GEN2	All the models are identical, the difference model for difference brand
AT-TQm2402 GEN2	served as marketing strategy.

Note 1: From the above models, model: AT-TQ2402 GEN2 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.



# **1.2** Applicable Standards

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

- 47 CFR FCC Part 15.247
- ANSI C63.10-2013

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

- FCC KDB 558074 D01 v05r02
- FCC KDB 662911 D01 v02r01
- FCC KDB 414788 D01 v01r01

# **1.3 Testing Location Information**

Test Lab. : Sporton International Inc. Hsinchu Laboratory HsinchuADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C (TAF: 3787)(TAF: 3787)TEL: 886-3-656-9065FAX: 886-3-656-9085 Test site Designation No. TW3787 with FCC.	Testing Location Information				
(TAF: 3787) TEL: 886-3-656-9065 FAX: 886-3-656-9085	Test Lab. : Sporton International Inc. Hsinchu Laboratory				
	Hsinchu ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)				
Test site Designation No. TW3787 with FCC.	(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	TH01-CB	Jeff Wu	24.3~25.1 / 66~69	May 15, 2023~May 16, 2023
Radiated below 1GHz	03CH04-CB	Gordon Hung	22~23 / 55~58	May 11, 2023
Radiated above 1GHz	03CH04-CB	Gordon Hung	21.7~22.9 / 58~62	May 11, 2023~May 15, 2023
AC Conduction	CO01-CB	Tim Chen	23~24 / 60~61	May 16, 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)	3.4 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.6 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	5.2 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.7 dB	Confidence levels of 95%
Conducted Emission	3.2 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.2 dB	Confidence levels of 95%
Bandwidth Measurement	2.0 %	Confidence levels of 95%



# 2 Test Configuration of EUT

# 2.1 Test Channel Mode

Mode	Power Setting
802.11b_Nss1,(1Mbps)_2TX	-
2412MHz	18
2437MHz	18
2462MHz	18
802.11g_Nss1,(6Mbps)_2TX	-
2412MHz	21
2437MHz	22.5
2462MHz	20.5
802.11ax HEW20_Nss1,(MCS0)_2TX	-
2412MHz	21
2437MHz	22.5
2462MHz	20
802.11ax HEW40_Nss1,(MCS0)_2TX	-
2422MHz	20.5
2437MHz	21
2452MHz	20.5
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-
2412MHz	21
2437MHz	22.5
2462MHz	20
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-
2422MHz	20.5
2437MHz	21
2452MHz	20.5

Note:

• Evaluated HEW20/HEW40 mode only due to the similar modulation. The power setting of HT20/HT40/VHT20/VHT40 mode are the same or lower than HEW20/HEW40.

 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			
ConditionAC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz			
Operating Mode Normal Link			
1 Normal Link - EUT + Adapter			
2 Normal Link - EUT + PoE 1			
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	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands	
Test Condition	Conducted measurement at transmit chains	

Th	The Worst Case Mode for Following Conformance Tests			
Tests Item         Emissions in Restricted Frequency Bands				
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 in Z axis + Adapter				
2 EUT in Y axis + Adapter				
3	EUT in X axis + Adapter			
Mode 1 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will this same test mode.				
4	EUT in Z axis + PoE 1			
For operating mode 4 is the worst case and it was record in this test report.				
	СТХ			
Operating Mode > 1GHz	The EUT was performed at X axis, Y axis and Z axis position, and the worst case was found at X axis. Thus, the measurement will follow this same test configuration.			
1	EUT in X axis			



The Worst Case Mode for Following Conformance Tests			
Tests Item         Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation			
Operating Mode			
1 WLAN 2.4GHz + WLAN 5GHz			
Refer to Sporton Test Report No.: FA342410 for Co-location RF Exposure Evaluation.			

Note : The adapter and PoE are for measurement only, would not be marketed. there are information as below:

Power	Brand	Model
Adapter	APD	DA-48Z12
PoE 1	PHIHONG	POE60U-1BT-X
PoE 2	Microsemi	PD-9001-10GC/AC

# 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	
Mounting Bracket*1	
Normal Screw*2 (For pre-fit the Mounting Bracket)*2	
Special Screw*4	



# 2.5 Support Equipment

### For AC Conduction:

Support Equipment					
No.	Equipment	Brand Name	Model Name	FCC ID	
А	LAN NB	DELL	E6430	N/A	
В	2.4G NB	DELL	E6430	N/A	
С	5G NB	DELL	E6430	N/A	
D	Adapter	APD	DA-48Z12	N/A	

# For Radiated (below 1GHz):

Support Equipment					
No.	Equipment	Brand Name	Model Name	FCC ID	
А	PoE 1	PHIHONG	POE60U-1BT-X	N/A	
В	2.5G Notebook	DELL	E4300	N/A	
С	2.4G Wifi Notebook	DELL	E4300	N/A	
D	5G Wifi Notebook	DELL	E4300	N/A	

### For Radiated (above 1GHz):

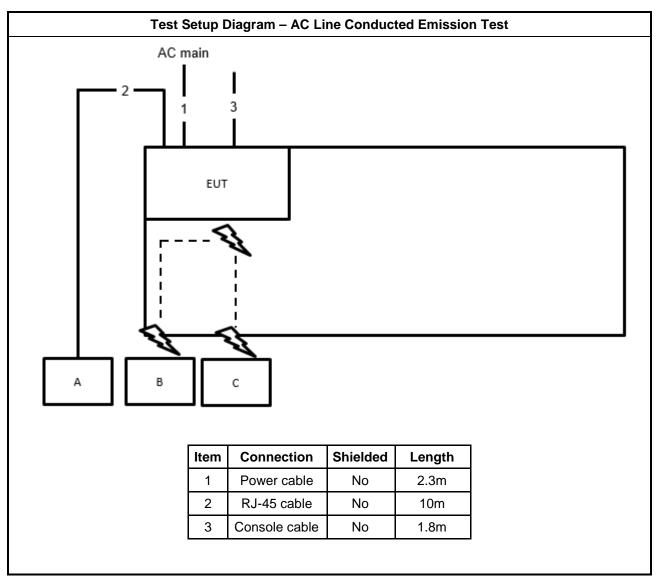
	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
А	PoE 1	PHIHONG	POE60U-1BT-X	N/A	
В	Notebook	DELL	E4300	N/A	

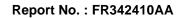
### For RF Conducted:

	Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID	
А	Notebook	DELL	E4300	N/A	
В	PoE 2	Microsemi	PD-9001-10GC/AC	N/A	

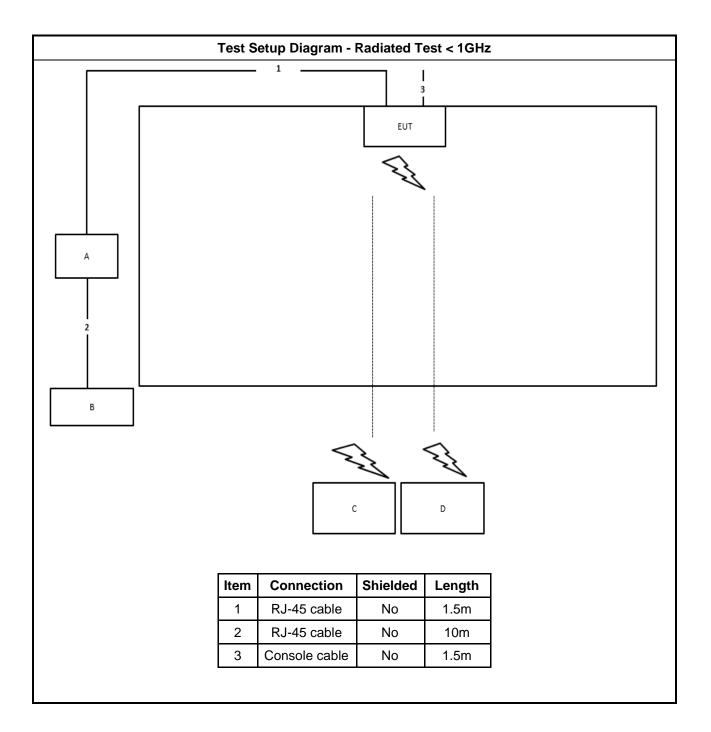


# 2.6 Test Setup Diagram

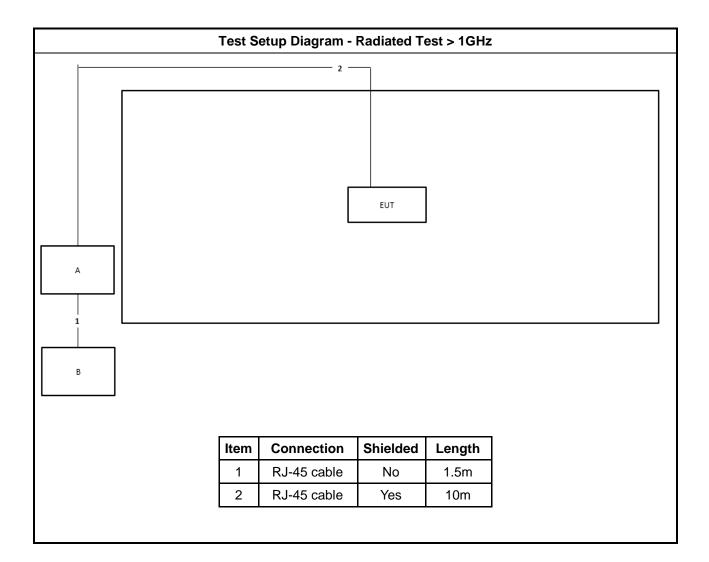














# 3 Transmitter Test Result

# 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.				

# 3.1.2 Measuring Instruments

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

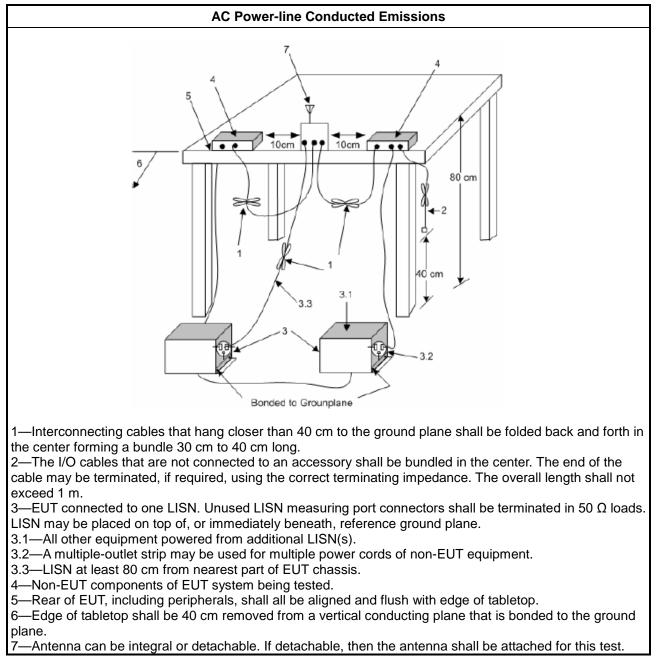
## 3.1.3 Test Procedures

**Test Method** 

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



### 3.1.4 Test Setup



### 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



#### 3.2 **DTS Bandwidth**

#### 3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
<ul> <li>6 dB bandwidth ≥ 500 kHz.</li> </ul>

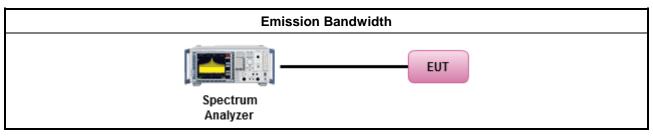
#### 3.2.2 **Measuring Instruments**

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

#### 3.2.3 **Test Procedures**

For	
	the emission bandwidth shall be measured using one of the options below:
	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.

#### Test Setup 3.2.4



#### 3.2.5 **Test Result of Emission Bandwidth**

Refer as Appendix B



# 3.3 Maximum Conducted Output Power

## 3.3.1 Maximum Conducted Output Power Limit

### **Maximum Conducted Output Power Limit**

	If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W)
-	If $G_{TX} \leq 6$ dBI, then $P_{Out} \leq 30$ dBm (1 VV)

•	Point-to-multipoint systems	(P2M): If (	G⊤x > 6 dBi,	then $P_{\text{Out}} = 30$	– (G⊤x – 6) dBm
---	-----------------------------	-------------	--------------	----------------------------	-----------------

- Point-to-point systems (P2P): If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
- Smart antenna system (SAS):
  - Single beam: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3$  dBm
  - Overlap beam: If  $G_{TX} > 6 \text{ dBi}$ , then  $P_{Out} = 30 (G_{TX} 6)/3 \text{ dBm}$
  - Aggregate power on all beams: If  $G_{TX} > 6$  dBi, then  $P_{Out} = 30 (G_{TX} 6)/3 + 8$ dB dBm

 $P_{Out}$  = maximum peak conducted output power or maximum conducted output power in dBm,  $G_{TX}$  = 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.

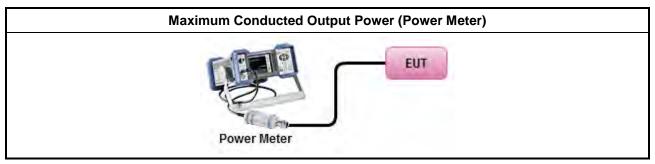


# 3.3.3 Test Procedures

		Test Method
•	Max	imum Peak Conducted Output Power
		Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
		Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
•	Max	imum Conducted Output Power
	[dut	/ cycle ≥ 98% or external video / power trigger]
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
	duty	cycle < 98% and average over on/off periods with duty factor
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
	Mea	surement using a power meter (PM)
		Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
		Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate 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: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP <sub>total</sub> = P <sub>total</sub> + DG



# 3.3.4 Test Setup



# 3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



# 3.4 Power Spectral Density

## 3.4.1 Power Spectral Density Limit

Power Spectral Density Limit

■ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

### 3.4.2 Measuring Instruments

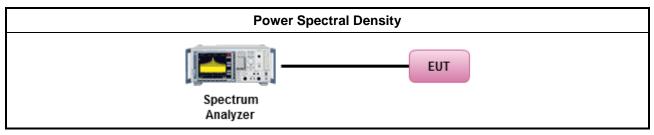
Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

	Test Method			
	<ul> <li>Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).</li> </ul>			
	$\square$	Refer	as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.	
•	For	conduc	sted measurement.	
	•	lf The	EUT supports multiple transmit chains using options given below:	
		lr s fi N tł	Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, n-band power spectral density (PSD). Sample all transmit ports simultaneously using a pectrum 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 irst spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the JTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up he amplitude (power) values for the different transmit chains and use this as the new data race.	
		a n s p	Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra ire measured at each output of the device at the required resolution bandwidth. The naximum value (peak) of each spectrum is determined. These maximum values are then nummed 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,	
		F a	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.	



# 3.4.4 Test Setup



# 3.4.5 Test Result of Power Spectral Density

Refer as Appendix D



# 3.5 Emissions in Non-restricted Frequency Bands

### 3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit		
Limit (dBc)		
20		
30		

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

### 3.5.2 Measuring Instruments

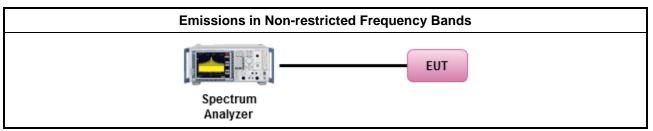
Refer a test equipment and calibration data table in this test report.

### 3.5.3 Test Procedures

Test Method

Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

# 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 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E



# 3.6 Emissions in Restricted Frequency Bands

## 3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit						
Frequency Range (MHz)	Frequency Range (MHz) Field Strength (uV/m) Field Strength (dBuV/m) Measure Distance (m					
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300			
0.490~1.705	24000/F(kHz)	33.8 - 23	30			
1.705~30.0	30	29	30			
30~88	100	40	3			
88~216	150	43.5	3			
216~960	200	46	3			
Above 960	500	54	3			

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

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

### 3.6.2 Measuring Instruments

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

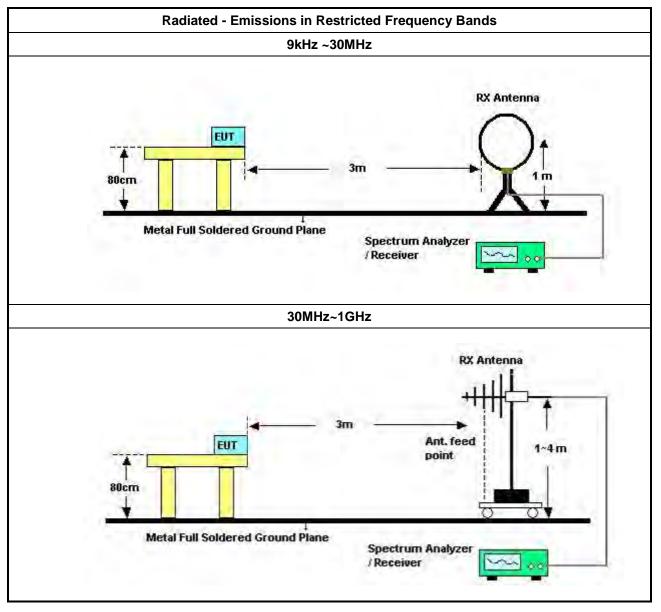


# 3.6.3 Test Procedures

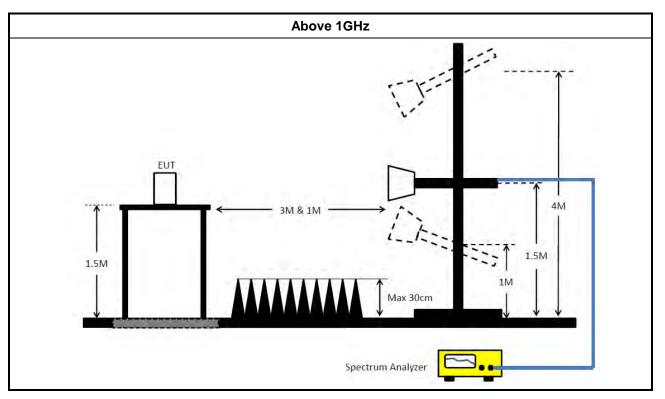
	Test Method		
•	<ul> <li>The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].</li> </ul>		
•	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.		
•	For the transmitter unwanted emissions shall be measured using following options below:		
	<ul> <li>Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.</li> </ul>		
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%).		
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).		
	☑ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).		
	□ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\ge$ 1/T, where T is pulse time.		
	Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.		
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.		
•	For the transmitter band-edge emissions shall be measured using following options below:		
	<ul> <li>Refer as FCC KDB 558074 clause 8.7 &amp; C63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below.</li> </ul>		
	<ul> <li>Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.</li> </ul>		
	<ul> <li>Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz).</li> </ul>		
	<ul> <li>For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below:         <ul> <li>(1) Measure and sum the spectra across the outputs or</li> <li>(2) Measure and add 10 log(N) dB</li> </ul> </li> </ul>		
	<ul> <li>For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred.</li> </ul>		



# 3.6.4 Test Setup







### 3.6.5 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.

# 3.6.6 Emissions in Restricted Frequency Bands (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.

# 3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



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

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	52260123 9kHz ~ 8.4GHz		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. 18, 2022	Oct. 17, 2023	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 23, 2023	Mar. 22, 2024	Radiation (03CH04-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Aug. 02, 2022	Aug. 01, 2023	Radiation (03CH04-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH04-CB	1GHz ~18GHz 3m	Feb. 23, 2023	Feb. 22, 2024	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMCI	CBL6112B & N-6-06	22021&AT-N06 07	30MHz ~ 1GHz		Oct. 07, 2023	Radiation (03CH04-CB)
Horn Antenna	ETS·Lindgren	3115	00143147	00143147 750MHz~18GHz		Oct. 11, 2023	Radiation (03CH04-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2022	Aug. 21, 2023	Radiation (03CH04-CB)
Pre-Amplifier	EMCI	EMC330N	980391	20MHz ~ 3GHz	May 19, 2022	May 18, 2023	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz~26.5GHz	Jul. 01, 2022	Jun. 30, 2023	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	100142 9kHz~40GHz		Mar. 20, 2024	Radiation (03CH04-CB
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 17, 2022	Jun. 16, 2023	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67			Oct. 02, 2023	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21	High Cable-21 1GHz - 18GHz		Oct. 02, 2023	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21+67	1GHz - 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH04-CB)

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Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 27, 2022	May 26, 2023	Conducted (TH01-CB)
Switch	SPTCB	SP-SWI	SWI-01	1 GHz –26.5 GHz	Oct. 04, 2022	Oct. 03, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	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.

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



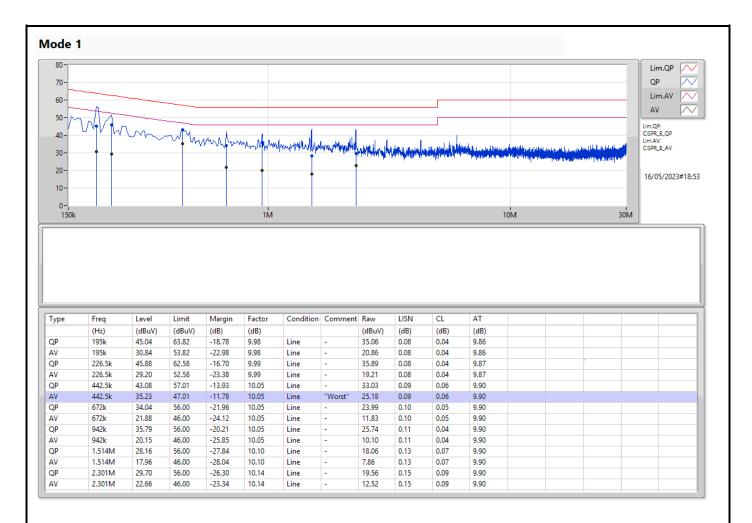
# Conducted Emissions at Powerline

# Appendix A

Summary								
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition	
			(Hz)	(dBuV)	(dBuV)	(dB)		
Mode 1	Pass	AV	442.5k	35.23	47.01	-11.78	Line	

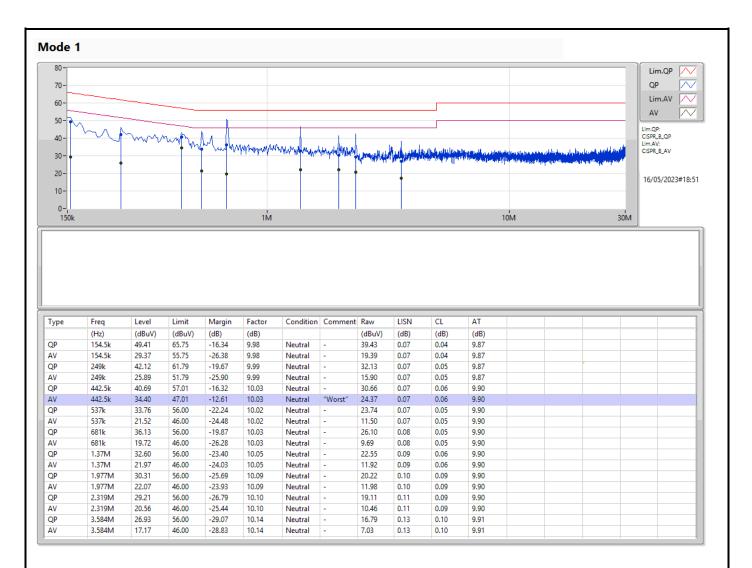














### Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	8.575M	13.215M	13M2G1D	7.075M	13.005M
802.11g_Nss1,(6Mbps)_2TX	15.1M	16.346M	16M3D1D	15.05M	16.28M
802.11ax HEW20_Nss1,(MCS0)_2TX	15.075M	18.85M	18M9D1D	15.025M	18.725M
802.11ax HEW40_Nss1,(MCS0)_2TX	35.3M	37.7M	37M7D1D	33.45M	37.5M

 $\label{eq:max-NdB} Max\cdot N\, dB = Maximum 6dB \ down \ bandwidth; \ Max-OBW = Maximum 99\% \ occupied \ bandwidth; \ Min-OBW = Minimum 99\% \ occupied \ bandwidth; \ Minimum 99\% \ occupied \ bandwidth;$ 



### Result

Mode	Result	Limit	Port 1-N dB	Port 1-OBW	Port 2-N dB	Port 2-OBW
		(Hz)	(Hz)	(Hz)	(Hz)	(Hz)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	8.575M	13.005M	7.575M	13.155M
2437MHz	Pass	500k	8.55M	13.02M	7.575M	13.185M
2462MHz	Pass	500k	7.075M	13.215M	8.075M	13.02M
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	15.1M	16.324M	15.075M	16.302M
2437MHz	Pass	500k	15.075M	16.346M	15.05M	16.28M
2462MHz	Pass	500k	15.05M	16.28M	15.05M	16.346M
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	500k	15.075M	18.725M	15.025M	18.8M
2437MHz	Pass	500k	15.05M	18.85M	15.025M	18.825M
2462MHz	Pass	500k	15.05M	18.825M	15.05M	18.775M
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	500k	33.75M	37.7M	35.05M	37.6M
2437MHz	Pass	500k	35M	37.7M	35M	37.65M
2452MHz	Pass	500k	33.45M	37.5M	35.3M	37.65M

Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth



### Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_2TX	21.16	0.13062
802.11g_Nss1,(6Mbps)_2TX	25.64	0.36644
802.11ax HEW20_Nss1,(MCS0)_2TX	25.50	0.35481
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	25.50	0.35481
802.11ax HEW40_Nss1,(MCS0)_2TX	23.80	0.23988
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	23.80	0.23988



# Average Power

# Appendix C

#### Result

Mode	Result	DG	Port 1	Port 2	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.37	17.59	17.31	20.46	30.00
2437MHz	Pass	3.37	17.90	17.68	20.80	30.00
2462MHz	Pass	3.37	18.01	18.28	21.16	30.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.37	20.79	20.53	23.67	30.00
2437MHz	Pass	3.37	22.59	22.66	25.64	30.00
2462MHz	Pass	3.37	20.85	20.95	23.91	30.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	3.37	20.59	20.37	23.49	30.00
2437MHz	Pass	3.37	22.53	22.44	25.50	30.00
2462MHz	Pass	3.37	20.14	20.27	23.22	30.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	3.37	20.35	19.46	22.94	30.00
2437MHz	Pass	3.37	20.85	20.73	23.80	30.00
2452MHz	Pass	3.37	19.90	20.28	23.10	30.00
802.11ax HEW20-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.69	20.59	20.37	23.49	30.00
2437MHz	Pass	5.69	22.53	22.44	25.50	30.00
2462MHz	Pass	5.69	20.14	20.27	23.22	30.00
802.11ax HEW40-BF_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	5.69	20.35	19.46	22.94	30.00
2437MHz	Pass	5.69	20.85	20.73	23.80	30.00
2452MHz	Pass	5.69	19.90	20.28	23.10	30.00

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



#### Summary

Mode	PD
	(dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_2TX	-2.07
802.11g_Nss1,(6Mbps)_2TX	-0.04
802.11ax HEW20_Nss1,(MCS0)_2TX	0.01
802.11ax HEW40_Nss1,(MCS0)_2TX	-3.83

RBW = 3kHz;

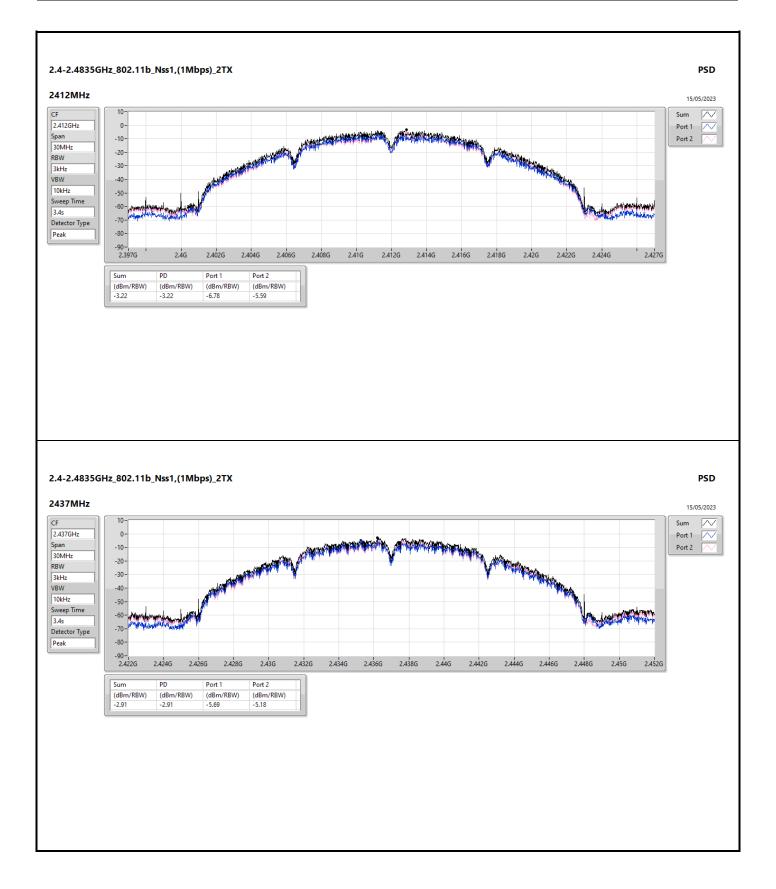


#### Result

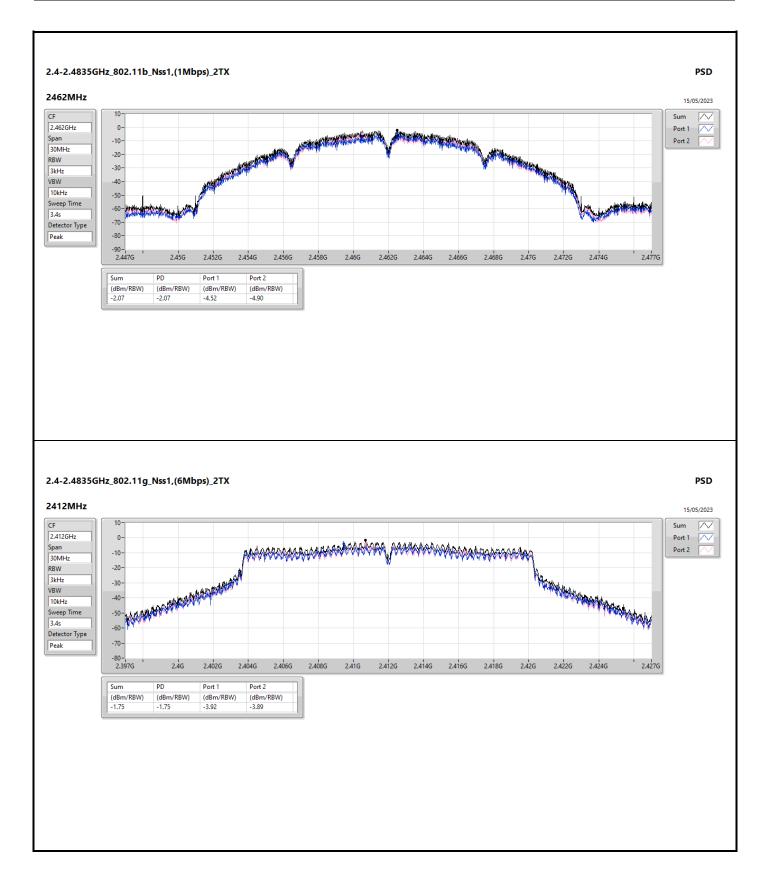
Mode	Result	DG	Port 1	Port 2	PD	PD Limit
		(dBi)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
802.11b_Nss1,(1Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.69	-6.78	-5.59	-3.22	8.00
2437MHz	Pass	5.69	-5.69	-5.18	-2.91	8.00
2462MHz	Pass	5.69	-4.52	-4.90	-2.07	8.00
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.69	-3.92	-3.89	-1.75	8.00
2437MHz	Pass	5.69	-1.82	-2.51	-0.04	8.00
2462MHz	Pass	5.69	-2.62	-3.56	-0.31	8.00
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2412MHz	Pass	5.69	-5.25	-4.84	-2.84	8.00
2437MHz	Pass	5.69	-1.49	-3.05	0.01	8.00
2462MHz	Pass	5.69	-4.77	-4.72	-2.75	8.00
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-
2422MHz	Pass	5.69	-7.17	-7.38	-4.69	8.00
2437MHz	Pass	5.69	-5.83	-5.97	-3.83	8.00
2452MHz	Pass	5.69	-6.66	-7.25	-5.03	8.00

DG = Directional Gain; RBW = 3kHz; PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

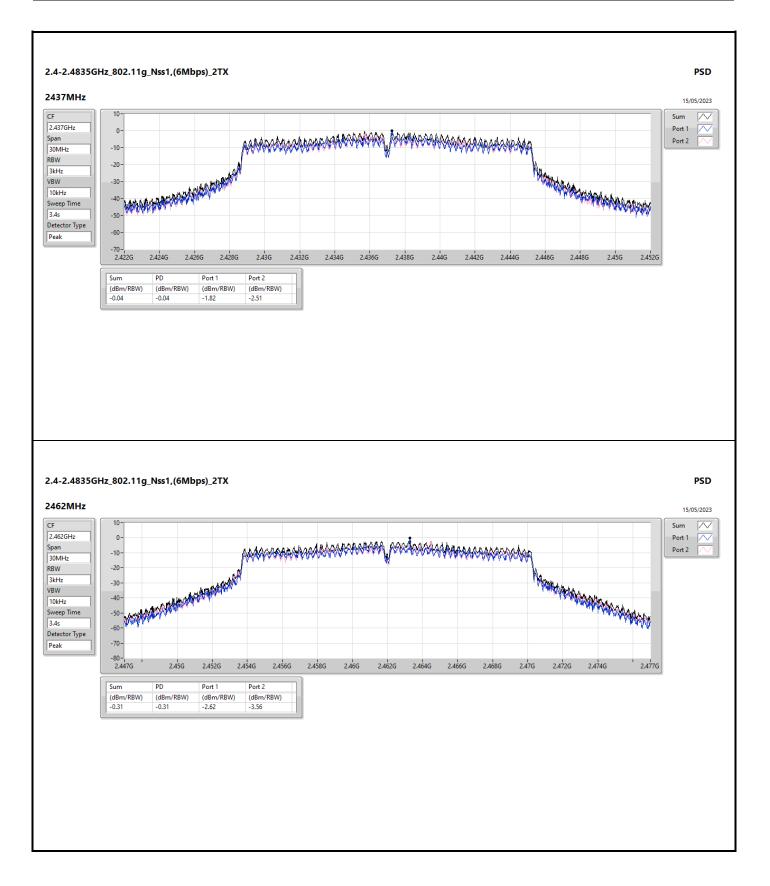




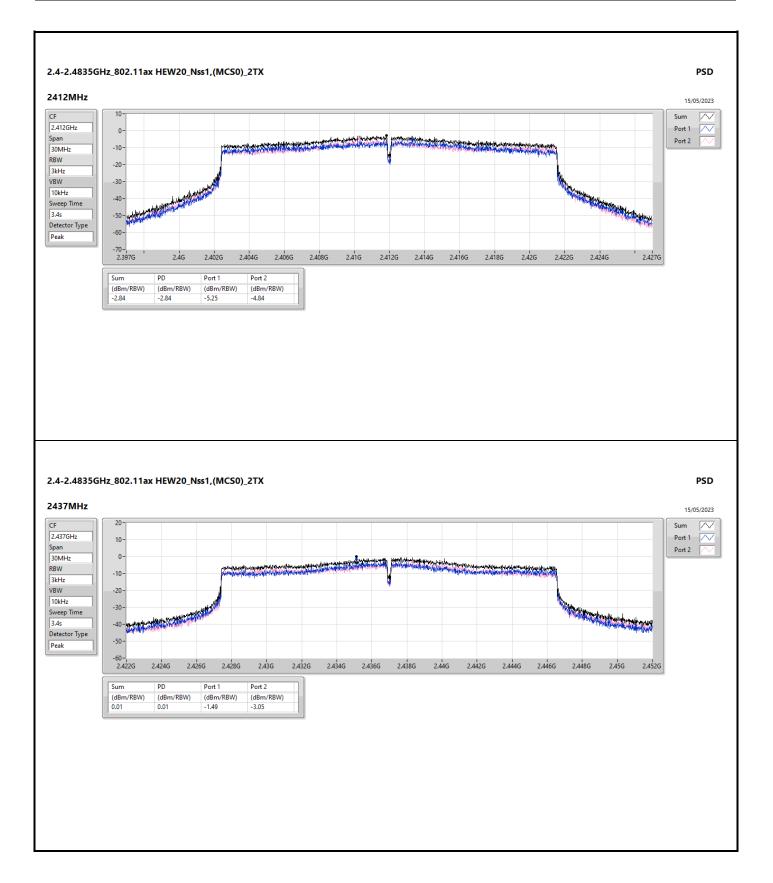




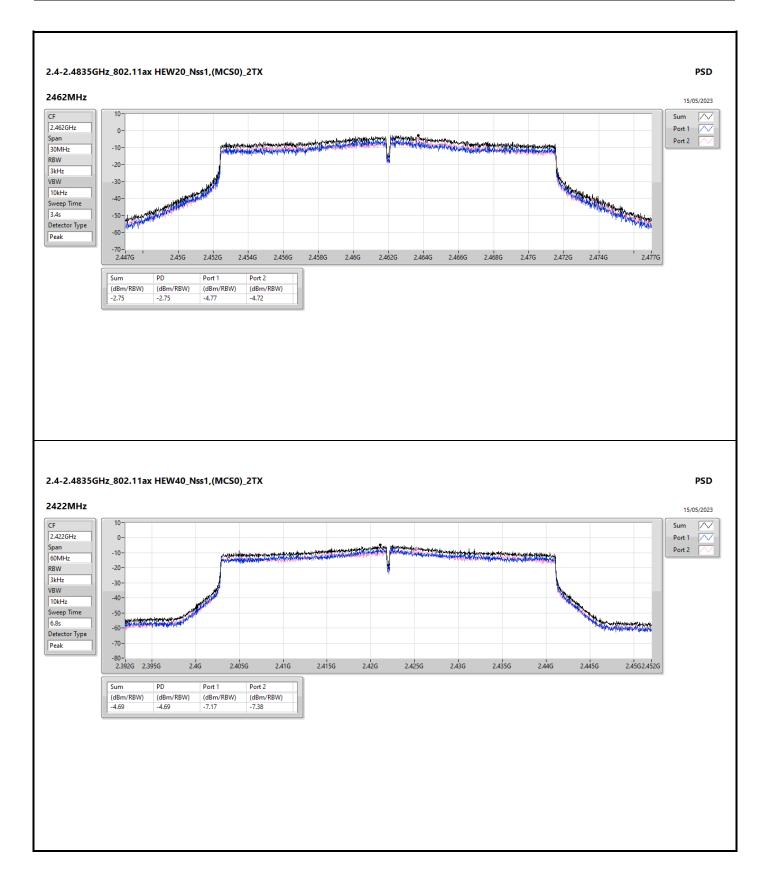




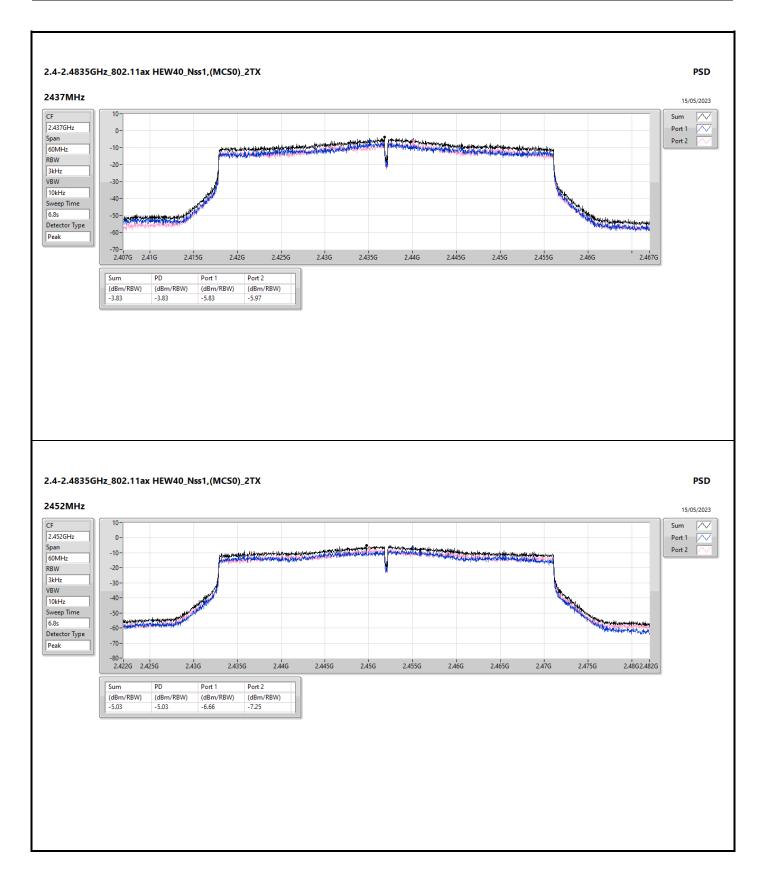














# CSE (NdB Down)

# Appendix E

#### Summary

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-		-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_2TX	Pass	2.46263G	9.95	-20.05	97.57M	-44.75	2.39976G	-42.17	2.4G	-39.87	2.50342G	-45.67	24.98033G	-44.93	1
802.11g_Nss1,(6Mbps)_2TX	Pass	2.43574G	14.24	-15.76	95.24M	-47.27	2.4G	-29.45	2.4G	-28.76	2.50998G	-44.64	24.85671G	-45.43	1
802.11ax HEW20_Nss1,(MCS0)_2TX	Pass	2.43824G	14.23	-15.77	95.24M	-46.77	2.39984G	-26.46	2.4G	-26.57	2.50958G	-45.39	24.88762G	-45.23	1
802.11ax HEW40_Nss1,(MCS0)_2TX	Pass	2.44192G	8.22	-21.78	956.31M	-47.09	2.4G	-33.16	2.4G	-32.87	2.5235G	-45.50	24.15583G	-44.97	1



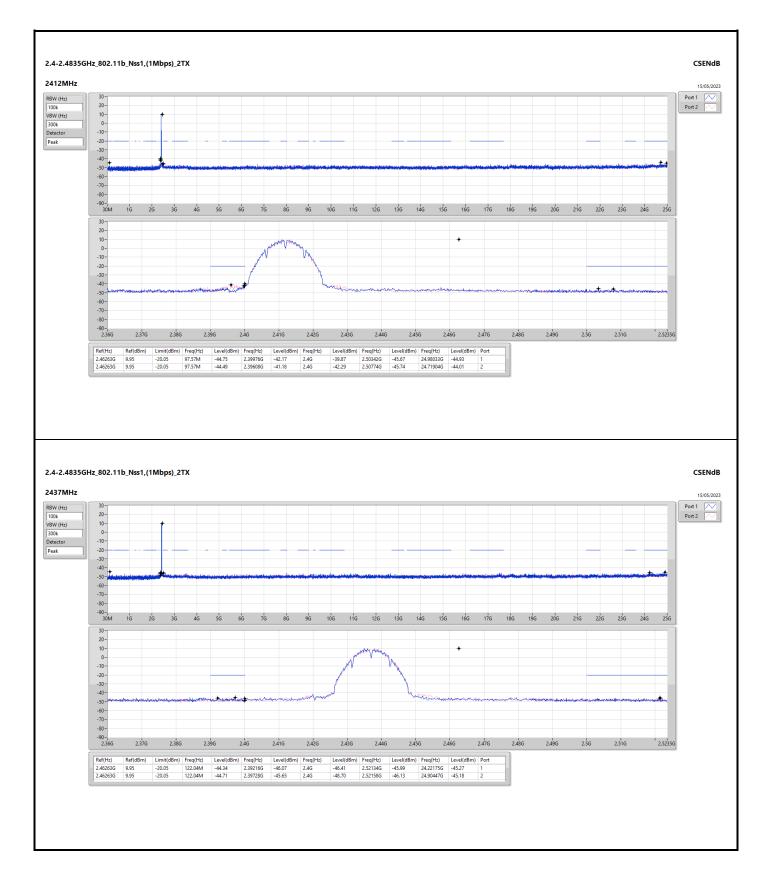
# CSE (NdB Down)

# Appendix E

#### Result

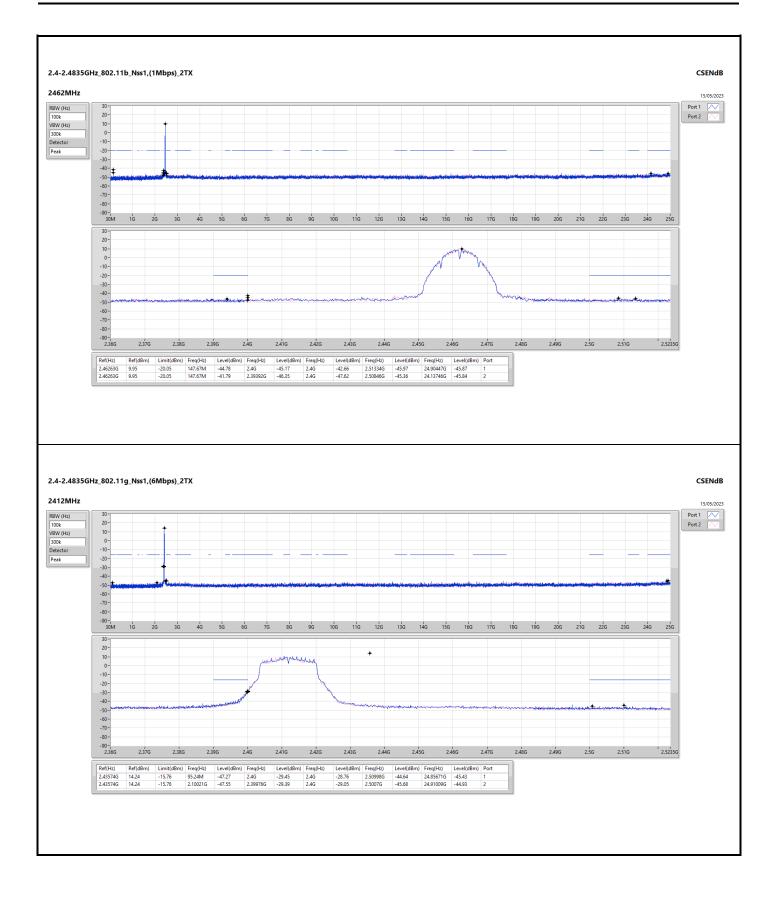
Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
802.11b_Nss1,(1Mbps)_2TX	-		-	-		-	-	-	-	-	-	-		-	-
2412MHz	Pass	2.46263G	9.95	-20.05	97.57M	-44.75	2.39976G	-42.17	2.4G	-39.87	2.50342G	-45.67	24.98033G	-44.93	1
2412MHz	Pass	2.46263G	9.95	-20.05	97.57M	-44.49	2.39608G	-41.18	2.4G	-42.29	2.50774G	-45.74	24.71904G	-44.01	2
2437MHz	Pass	2.46263G	9.95	-20.05	122.04M	-44.34	2.39216G	-46.07	2.4G	-46.41	2.52134G	-45.99	24.22175G	-45.27	1
2437MHz	Pass	2.46263G	9.95	-20.05	122.04M	-44.71	2.39728G	-45.65	2.4G	-48.70	2.52158G	-46.13	24.90447G	-45.18	2
2462MHz	Pass	2.46263G	9.95	-20.05	147.67M	-44.78	2.4G	-45.17	2.4G	-42.66	2.51334G	-45.97	24.90447G	-45.87	1
2462MHz	Pass	2.46263G	9.95	-20.05	147.67M	-41.79	2.39392G	-46.35	2.4G	-47.62	2.50846G	-45.36	24.13746G	-45.84	2
802.11g_Nss1,(6Mbps)_2TX	-	-	-	-	-	-	-	-	-	-		-	-	-	-
2412MHz	Pass	2.43574G	14.24	-15.76	95.24M	-47.27	2.4G	-29.45	2.4G	-28.76	2.50998G	-44.64	24.85671G	-45.43	1
2412MHz	Pass	2.43574G	14.24	-15.76	2.10021G	-47.55	2.39976G	-29.39	2.4G	-29.05	2.5007G	-45.68	24.91009G	-44.93	2
2437MHz	Pass	2.43574G	14.24	-15.76	122.04M	-45.73	2.39952G	-39.82	2.4G	-43.04	2.50142G	-44.93	24.76962G	-45.62	1
2437MHz	Pass	2.43574G	14.24	-15.76	122.04M	-45.75	2.39984G	-39.14	2.4G	-41.60	2.50646G	-45.68	24.32571G	-45.38	2
2462MHz	Pass	2.43574G	14.24	-15.76	1.74838G	-47.06	2.4G	-44.46	2.4G	-44.89	2.51822G	-44.31	24.9129G	-45.15	1
2462MHz	Pass	2.43574G	14.24	-15.76	1.72275G	-47.48	2.3924G	-46.07	2.4G	-48.21	2.50654G	-44.73	23.44912G	-45.32	2
802.11ax HEW20_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-		-	-	-	-
2412MHz	Pass	2.43824G	14.23	-15.77	95.24M	-46.77	2.39984G	-26.46	2.4G	-26.57	2.50958G	-45.39	24.88762G	-45.23	1
2412MHz	Pass	2.43824G	14.23	-15.77	2.30874G	-46.17	2.39984G	-28.24	2.4G	-27.21	2.50286G	-45.87	24.92133G	-45.44	2
2437MHz	Pass	2.43824G	14.23	-15.77	122.04M	-45.47	2.4G	-38.56	2.4G	-39.84	2.5119G	-44.25	24.2077G	-45.30	1
2437MHz	Pass	2.43824G	14.23	-15.77	1.86022G	-46.38	2.3956G	-35.85	2.4G	-37.81	2.50174G	-42.82	24.98314G	-45.42	2
2462MHz	Pass	2.43824G	14.23	-15.77	1.77051G	-47.67	2.4G	-44.66	2.4G	-45.95	2.50662G	-45.18	24.87076G	-45.47	1
2462MHz	Pass	2.43824G	14.23	-15.77	1.64469G	-46.46	2.39264G	-45.73	2.4G	-47.27	2.50102G	-44.27	24.92976G	-44.87	2
802.11ax HEW40_Nss1,(MCS0)_2TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2422MHz	Pass	2.44192G	8.22	-21.78	956.31M	-47.09	2.4G	-33.16	2.4G	-32.87	2.5235G	-45.50	24.15583G	-44.97	1
2422MHz	Pass	2.44192G	8.22	-21.78	2.05894G	-47.62	2.39984G	-34.48	2.4G	-34.46	2.55406G	-45.42	24.72235G	-45.26	2
2437MHz	Pass	2.44192G	8.22	-21.78	1.94101G	-47.56	2.39952G	-36.80	2.4G	-38.31	2.50254G	-44.91	24.62699G	-45.39	1
2437MHz	Pass	2.44192G	8.22	-21.78	2.03948G	-47.55	2.39936G	-41.12	2.4G	-42.24	2.51198G	-44.39	24.27642G	-45.92	2
2452MHz	Pass	2.44192G	8.22	-21.78	1.81391G	-47.32	2.4G	-44.15	2.4G	-45.10	2.5043G	-44.45	23.59211G	-45.38	1
2452MHz	Pass	2.44192G	8.22	-21.78	1.76582G	-47.78	2.39424G	-44.08	2.4G	-46.00	2.5035G	-44.46	24.98598G	-45.82	2





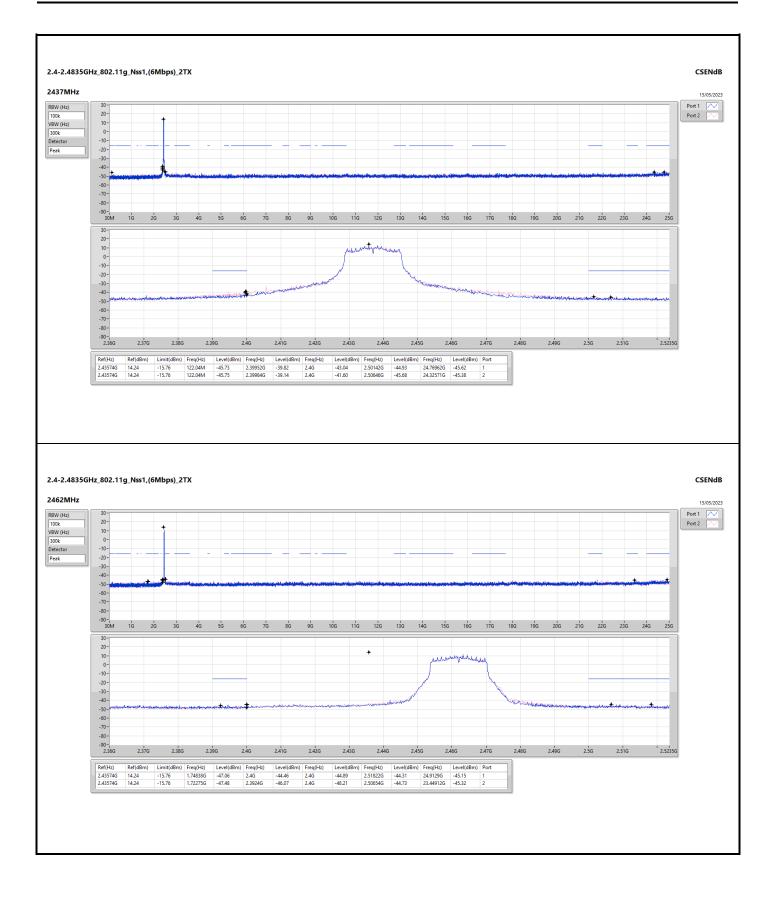


CSE (NdB Down)

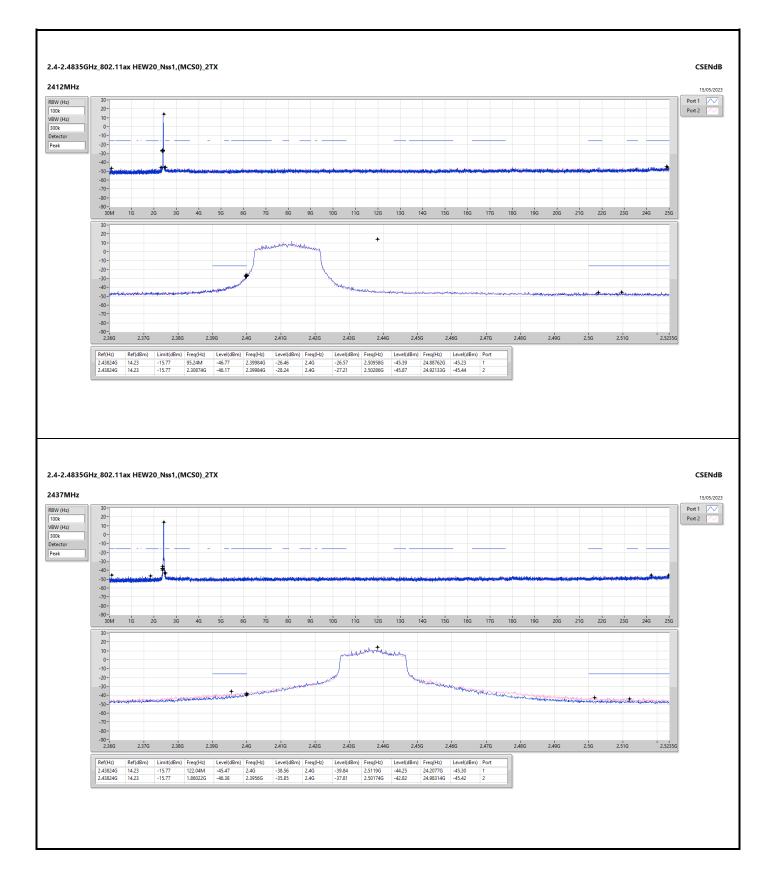




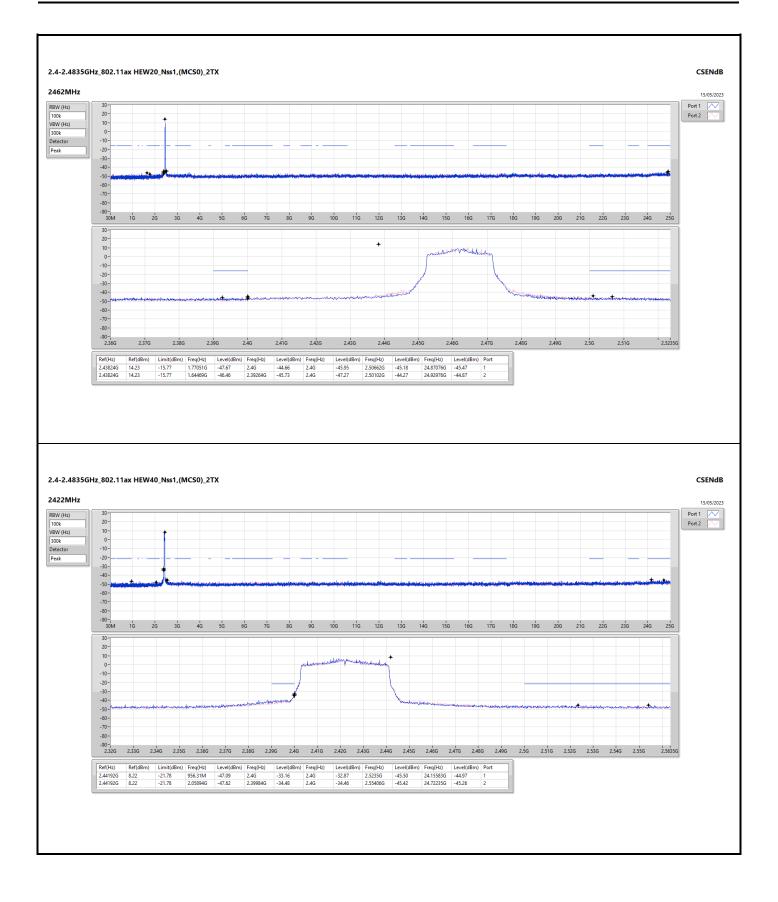
CSE (NdB Down)



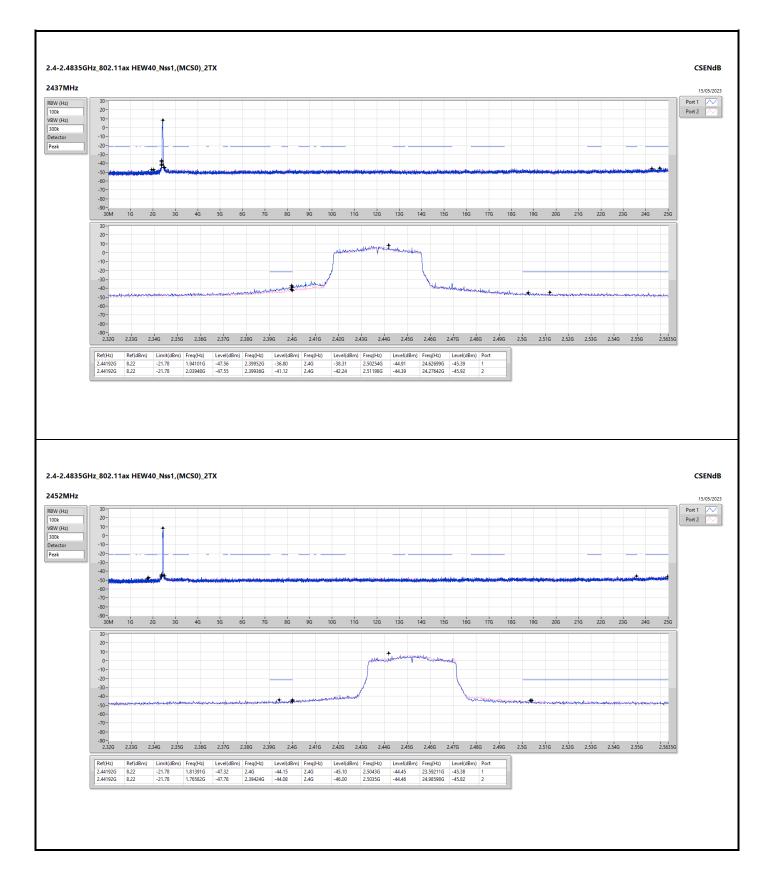














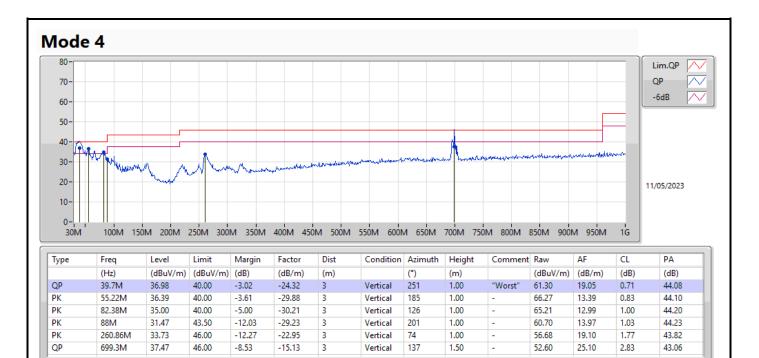
# Radiated Emissions below 1GHz

Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 4	Pass	QP	39.7M	36.98	40.00	-3.02	Vertical



### Radiated Emissions below 1GHz

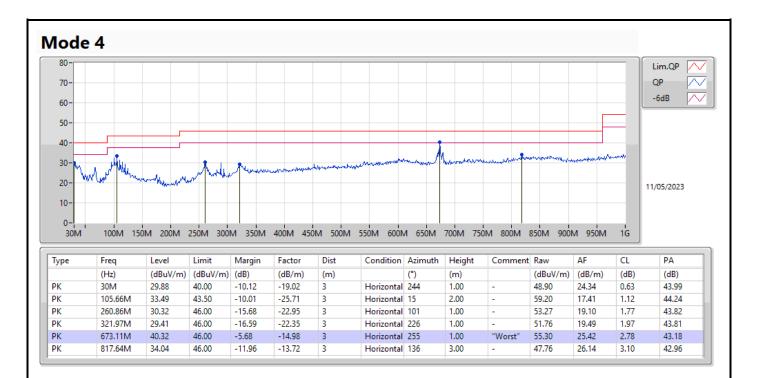
# Appendix F.1





### Radiated Emissions below 1GHz

# Appendix F.1





# RSE TX above 1GHz

# Appendix F.2

Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
802.11ax HEW40_Nss1,(MCS0)_2TX	Pass	AV	2.4835G	53.85	54.00	-0.15	3	Horizontal	48	1.05	



2.4108G

109.16

Inf

-Inf

78.25

3

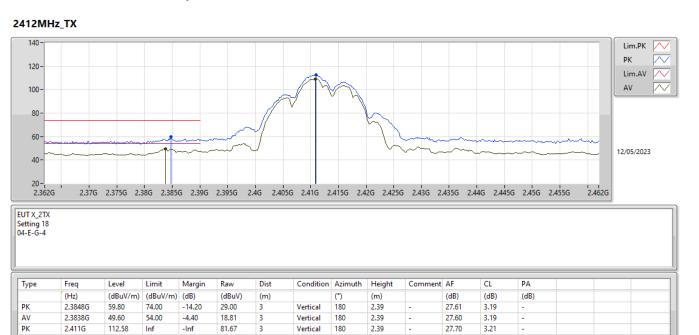
Vertical

180

2.39

### Appendix F.2

#### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_2TX



27.70

3.21



#### 2.4-2.4835GHz\_802.11b\_Nss1,(1Mbps)\_2TX

2.411G

110.05

Inf

-Inf

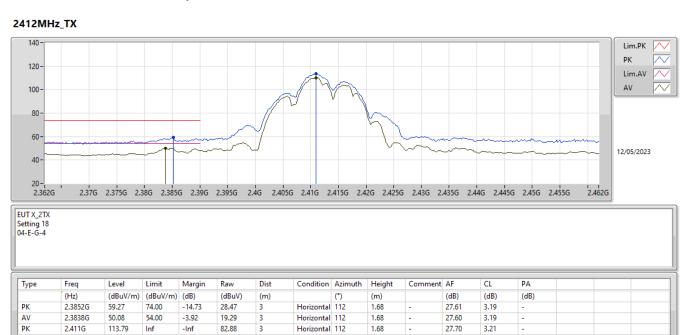
79.14

3

Horizontal 112

1.68

AV



27.70

3.21











2.4838G

46.29

54.00

-7.71

15.17

3

Vertical

179

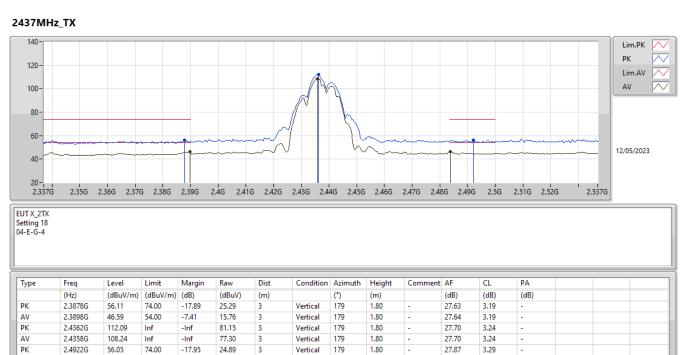
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27.84

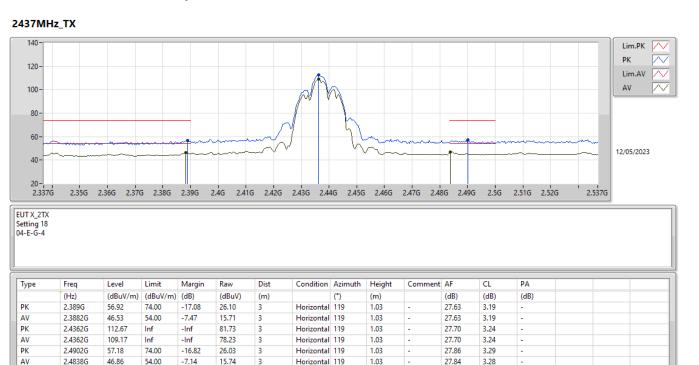
3.28

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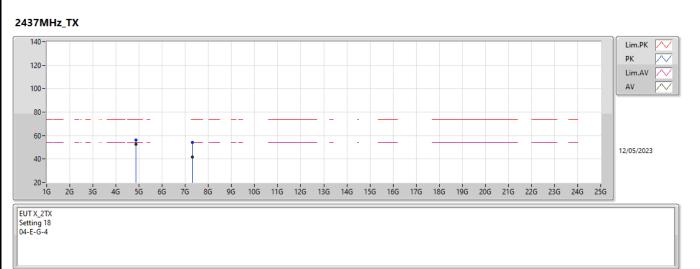
## Appendix F.2





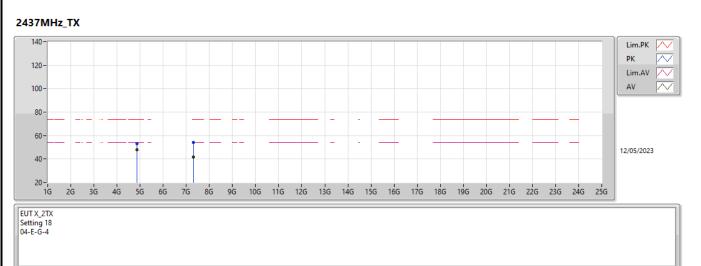






Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	4.874G	56.20	74.00	-17.80	50.78	3	Vertical	167	2.26	-	32.75	5.30	32.63		
AV	4.87396G	52.83	54.00	-1.17	47.41	3	Vertical	167	2.26	-	32.75	5.30	32.63		
PK	7.31324G	54.19	74.00	-19.81	42.80	3	Vertical	214	1.56	-	37.70	6.91	33.22		
AV	7.31912G	41.74	54.00	-12.26	30.34	3	Vertical	214	1.56	-	37.70	6.92	33.22		





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	4.87392G	53.25	74.00	-20.75	47.83	3	Horizontal	125	2.10	-	32.75	5.30	32.63		
AV	4.87396G	48.18	54.00	-5.82	42.76	3	Horizontal	125	2.10	-	32.75	5.30	32.63		
PK	7.31536G	54.06	74.00	-19.94	42.66	3	Horizontal	197	2.29	-	37.70	6.92	33.22		
AV	7.31896G	41.72	54.00	-12.28	30.32	3	Horizontal	197	2.29	-	37.70	6.92	33.22		



PK

AV

2.4608G

2.4902G

2.4902G

109.12

57.79

48.01

Inf

74.00

54.00

-Inf

-16.21

-5.99

78.12

26.64

16.86

3

3

3

Vertical

Vertical

Vertical

177

177

177

2.53

2.53

2.53

27.74

27.86

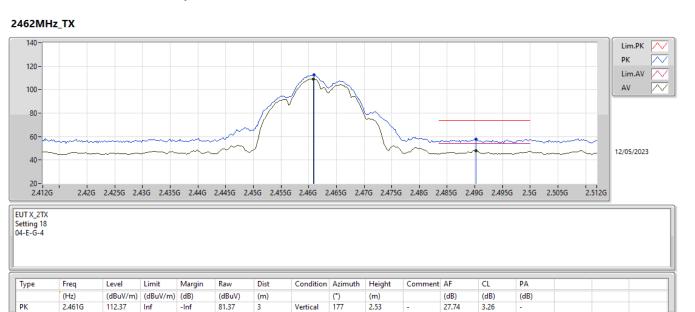
27.86

3.26

3.29

3.29

### Appendix F.2





PK

AV

2.4612G

2.4864G

2.4902G

109.88

57.75

47.89

Inf

74.00

54.00

-Inf

-16.25

-**6**.11

78.88

26.61

16.74

3

3

3

Horizontal 110

Horizontal 110

Horizontal 110

1.24

1.24

1.24

27.74

27.85

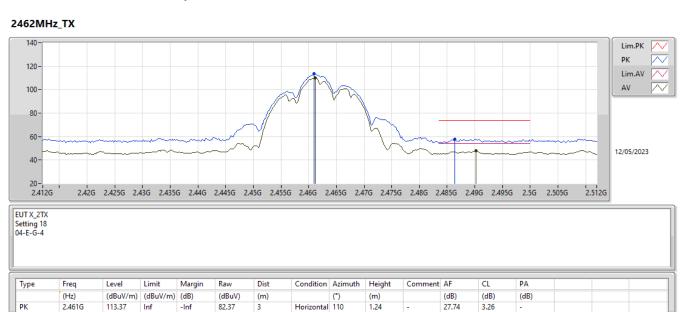
27.86

3.26

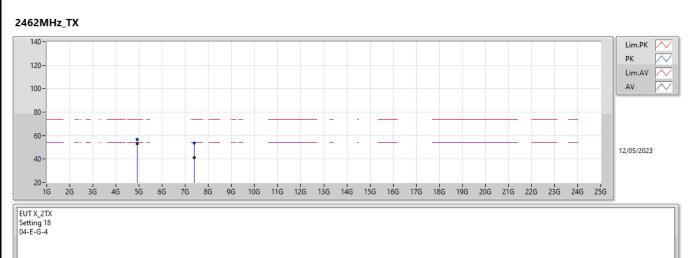
3.29

3.29

## Appendix F.2

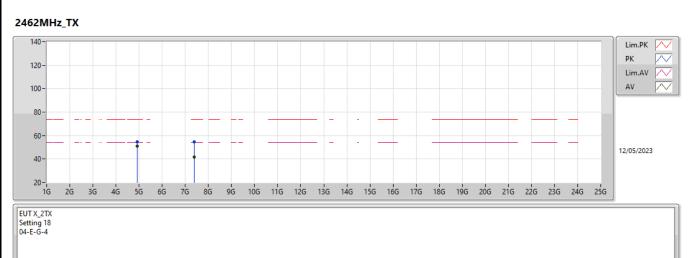






Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	4.92404G	56.47	74.00	-17.53	50.92	3	Vertical	171	1.86	-	32.85	5.30	32.60		
AV	4.92392G	53.28	54.00	-0.72	47.73	3	Vertical	171	1.86	-	32.85	5.30	32.60		
РК	7.3844G	53.62	74.00	-20.38	42.32	3	Vertical	10	2.32	-	37.56	6.98	33.24		
AV	7.38176G	41.37	54.00	-12.63	30.06	3	Vertical	10	2.32	-	37.57	6.98	33.24		





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	4.92384G	54.49	74.00	-19.51	48.94	3	Horizontal	135	1.88	-	32.85	5.30	32.60		
AV	4.92396G	50.92	54.00	-3.08	45.37	3	Horizontal	135	1.88	-	32.85	5.30	32.60		
PK	7.38304G	54.85	74.00	-19.15	43.54	3	Horizontal	230	2.18	-	37.57	6.98	33.24		
AV	7.39416G	41.51	54.00	-12.49	30.24	3	Horizontal	230	2.18	-	37.52	6.99	33.24		



2.411G

107.92

Inf

-Inf

77.01

3

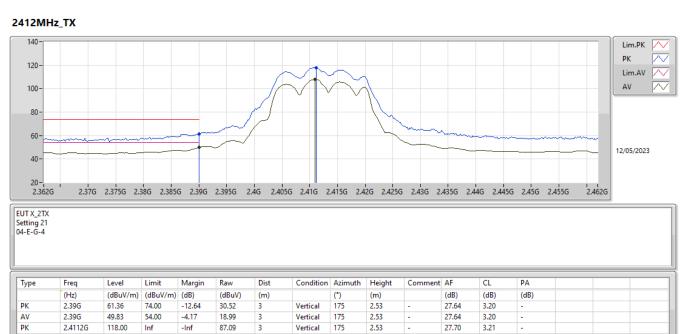
Vertical

175

2.53

## Appendix F.2

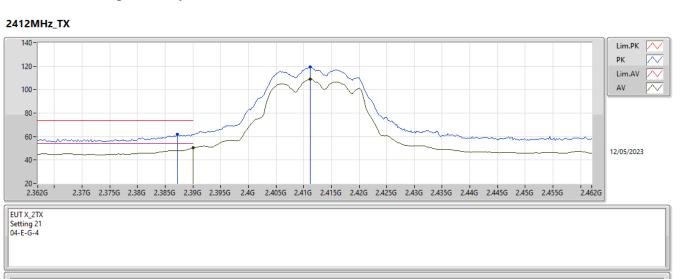
#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_2TX



27.70

3.21





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	2.3872G	62.04	74.00	-11.96	31.23	3	Horizontal	118	2.14	-	27.62	3.19	-		
AV	2.39G	50.34	54.00	-3.66	19.50	3	Horizontal	118	2.14	-	27.64	3.20	-		
PK	2.4112G	119.07	Inf	-Inf	88.16	3	Horizontal	118	2.14	-	27.70	3.21	-		
AV	2.4112G	108.93	Inf	-Inf	78.02	3	Horizontal	118	2.14	-	27.70	3.21	-		





4.82574G

36.91

54.00

-17.09

31.61

3

Vertical

0

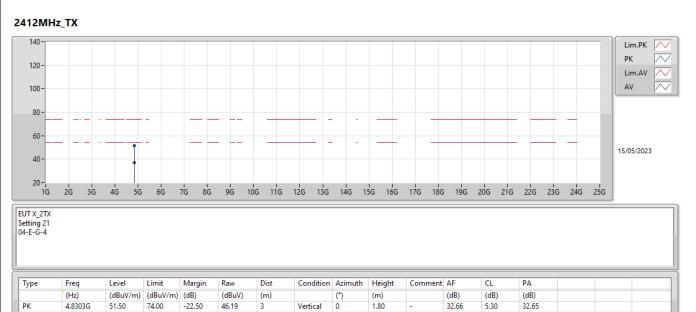
1.80

32.65

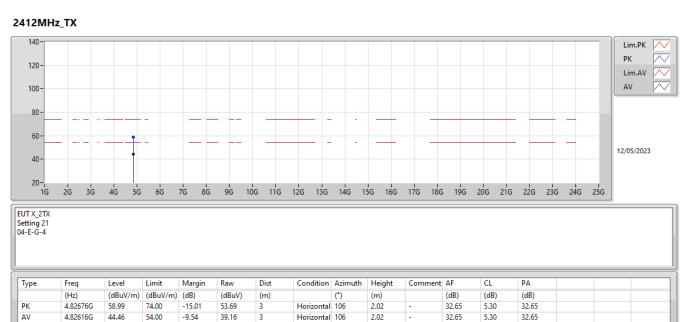
5.30

32.65

## Appendix F.2









AV

#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_2TX

49.71

54.00

-4.29

18.58

3

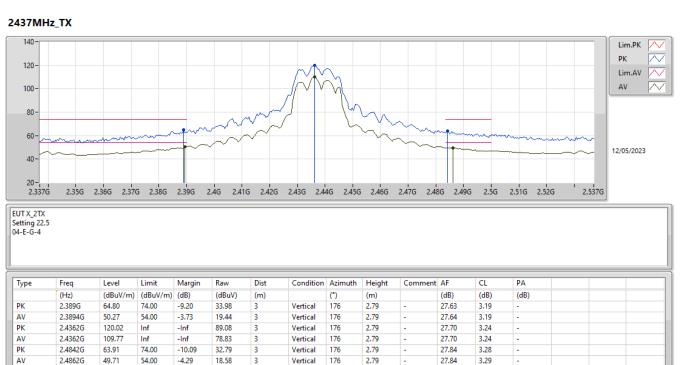
Vertical

176

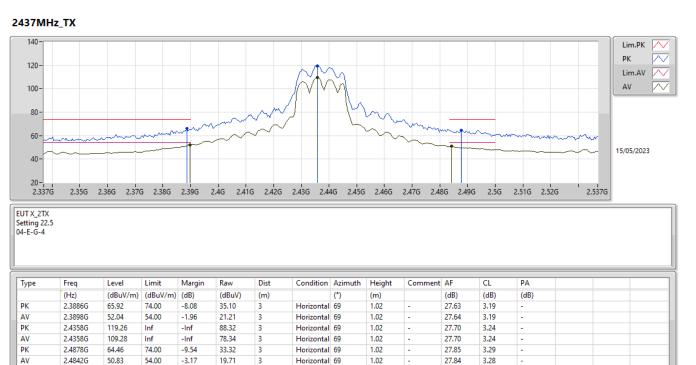
2.79

27.84

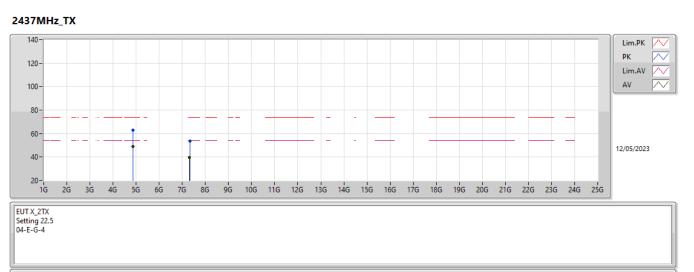
3.29





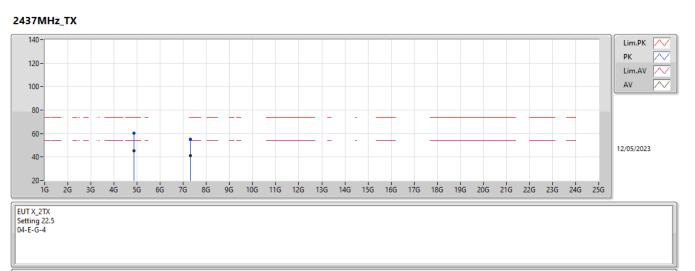






Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	4.87688G	62.86	74.00	-11.14	57.43	3	Vertical	166	1.90	-	32.75	5.30	32.62		
AV	4.8761G	48.84	54.00	-5.16	43.41	3	Vertical	166	1.90	-	32.75	5.30	32.62		
РК	7.32246G	53.58	74.00	-20.42	42.18	3	Vertical	232	2.70	-	37.70	6.92	33.22		
AV	7.31724G	39.79	54.00	-14.21	28.39	3	Vertical	232	2.70	-	37.70	6.92	33.22		





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	4.87574G	60.27	74.00	-13.73	54.84	3	Horizontal	118	2.00	-	32.75	5.30	32.62		
AV	4.8761G	45.41	54.00	-8.59	39.98	3	Horizontal	118	2.00	-	32.75	5.30	32.62		
PK	7.30554G	55.41	74.00	-18.59	44.01	3	Horizontal	114	2.19	-	37.70	6.91	33.21		
AV	7.31094G	41.15	54.00	-12.85	29.76	3	Horizontal	114	2.19	-	37.70	6.91	33.22		



PK

AV

2.4846G

2.4835G

67.05

52.95

74.00

54.00

-6.95

-1.05

35.93

21.84

3

3

Vertical

Vertical

24

24

2.51

2.51

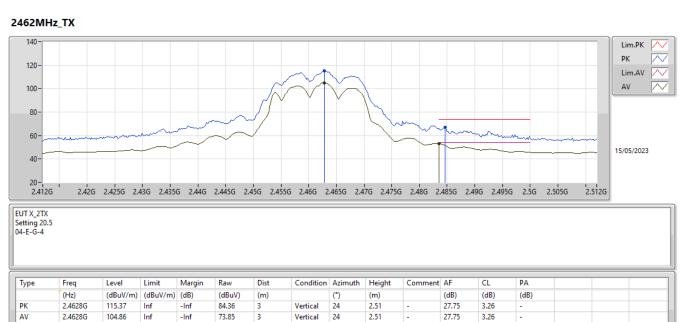
27.84

27.83

3.28

3.28

## Appendix F.2





AV

2.4835G

53.83

54.00

-0.17

22.72

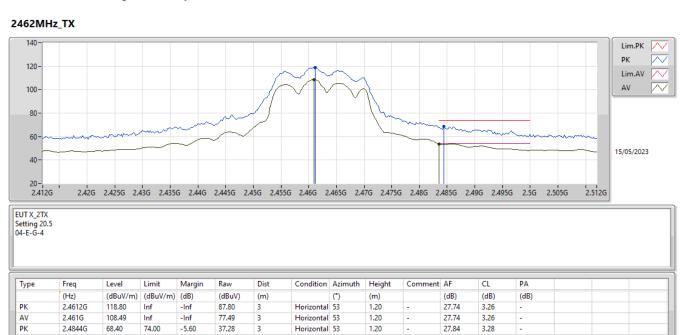
3

Horizontal 53

1.20

## Appendix F.2

#### 2.4-2.4835GHz\_802.11g\_Nss1,(6Mbps)\_2TX



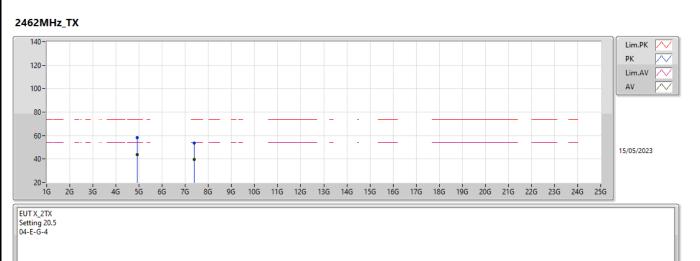
27.83





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	4.92262G	56.55	74.00	-17.45	51.00	3	Vertical	52	1.25	-	32.85	5.30	32.60		
AV	4.92508G	42.88	54.00	-11.12	37.33	3	Vertical	52	1.25	-	32.85	5.30	32.60		
PK	7.38306G	54.05	74.00	-19.95	42.74	3	Vertical	339	1.80	-	37.57	6.98	33.24		
AV	7.38372G	39.70	54.00	-14.30	28.39	3	Vertical	339	1.80	-	37.57	6.98	33.24		





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	4.92352G	58.44	74.00	-15.56	52.89	3	Horizontal	69	2.11	-	32.85	5.30	32.60		
AV	4.92598G	43.90	54.00	-10.10	38.35	3	Horizontal	69	2.11	-	32.85	5.30	32.60		
PK	7.38828G	53.74	74.00	-20.26	42.44	3	Horizontal	133	1.48	-	37.55	6.99	33.24		
AV	7.38384G	39.45	54.00	-14.55	28.15	3	Horizontal	133	1.48	-	37.56	6.98	33.24		



2.4116G

105.57

Inf

-Inf

AV

74.66

3

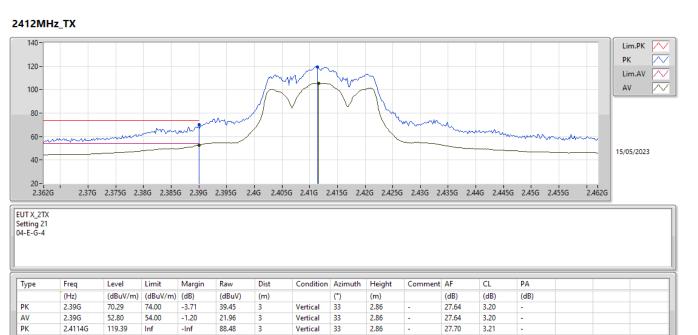
Vertical

33

2.86

## Appendix F.2

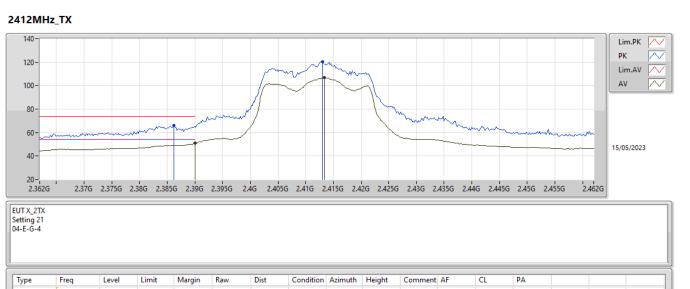
#### 2.4-2.4835GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



27.70

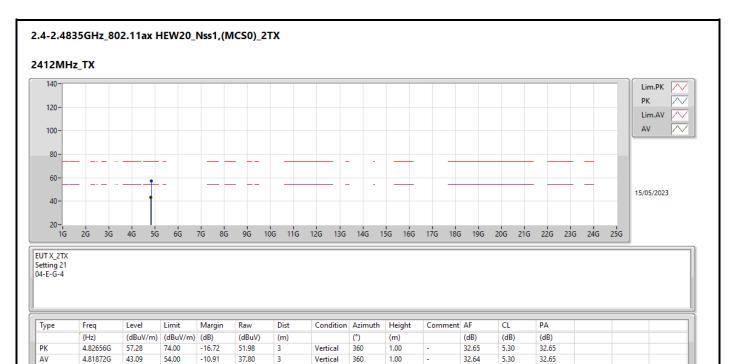


#### 2.4-2.4835GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX

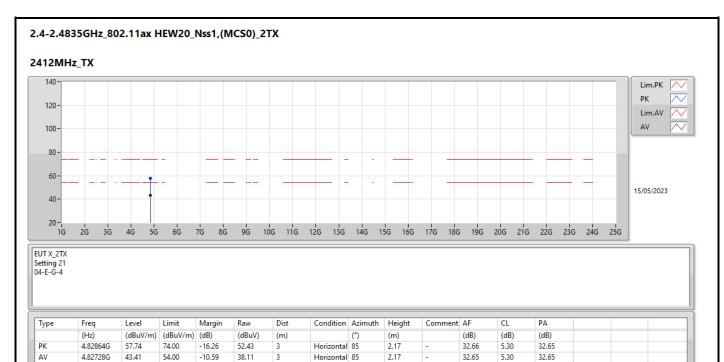


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	2.3862G	65.80	74.00	-8.20	34.99	3	Horizontal	312	2.17	-	27.62	3.19	-		
AV	2.39G	50.91	54.00	-3.09	20.07	3	Horizontal	312	2.17	-	27.64	3.20	-		
РК	2.413G	120.45	Inf	-Inf	89.54	3	Horizontal	312	2.17	-	27.70	3.21	-		
AV	2.4134G	106.71	Inf	-Inf	75.80	3	Horizontal	312	2.17	-	27.70	3.21	-		



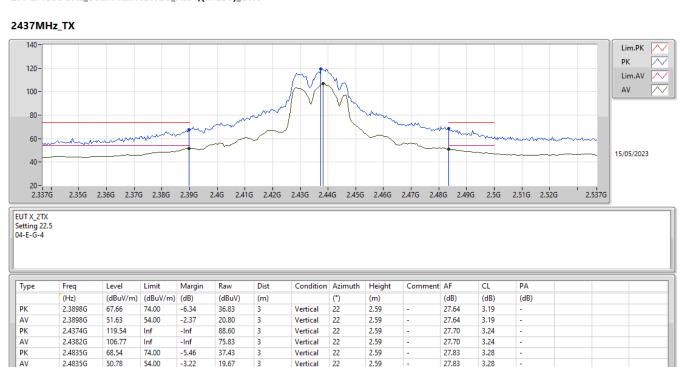








#### 2.4-2.4835GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX





PK

AV PK

AV

2.4378G

2.4386G

2.4838G

2.487G

120.77

108.03

65.36

49.02

Inf

Inf

74.00

54.00

-Inf

-Inf

-8.64

-4.98

89.83

77.09

34.24

17.88

3

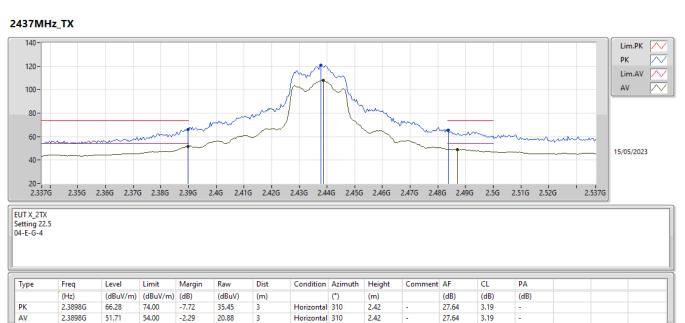
3

3

3

# Appendix F.2

#### 2.4-2.4835GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



Horizontal 310

Horizontal 310

Horizontal 310

Horizontal 310

2.42

2.42

2.42

2.42

27.70

27.70

27.84

27.85

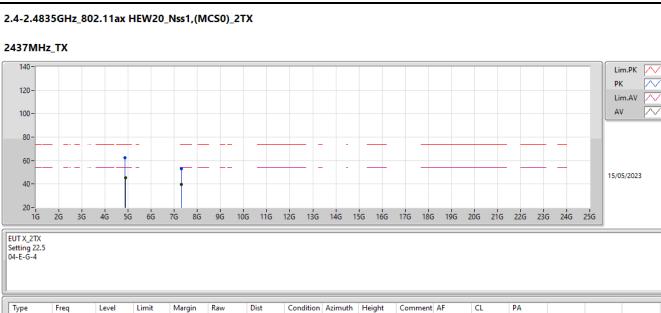
3.24

3.24

3.28

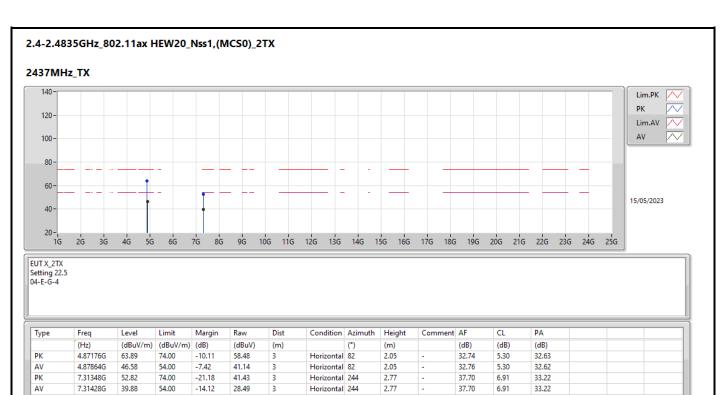
3.29





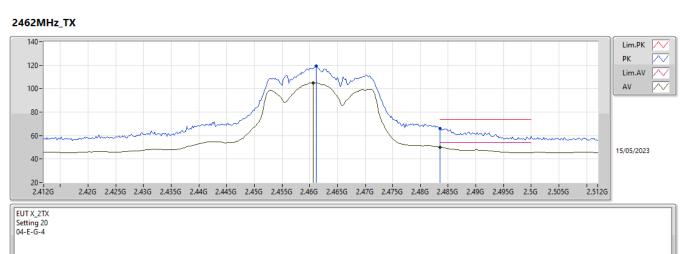
Туре	2	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
		(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK		4.87168G	62.57	74.00	-11.43	57.16	3	Vertical	59	1.19	-	32.74	5.30	32.63		
AV		4.87896G	45.40	54.00	-8.60	39.96	3	Vertical	59	1.19	-	32.76	5.30	32.62		
PK		7.31148G	52.97	74.00	-21.03	41.58	3	Vertical	324	2.00	-	37.70	6.91	33.22		
AV		7.31132G	39.73	54.00	-14.27	28.34	3	Vertical	324	2.00	-	37.70	6.91	33.22		







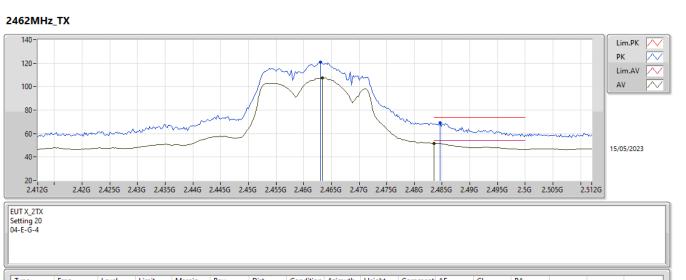
#### 2.4-2.4835GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



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	2.4612G	119.09	Inf	-Inf	88.09	3	Vertical	0	2.83	-	27.74	3.26	-		
AV	2.4606G	105.04	Inf	-Inf	74.04	3	Vertical	0	2.83	-	27.74	3.26	-		
PK	2.4835G	65.94	74.00	-8.06	34.83	3	Vertical	0	2.83	-	27.83	3.28	-		
AV	2.4835G	50.08	54.00	-3.92	18.97	3	Vertical	0	2.83	-	27.83	3.28	-		

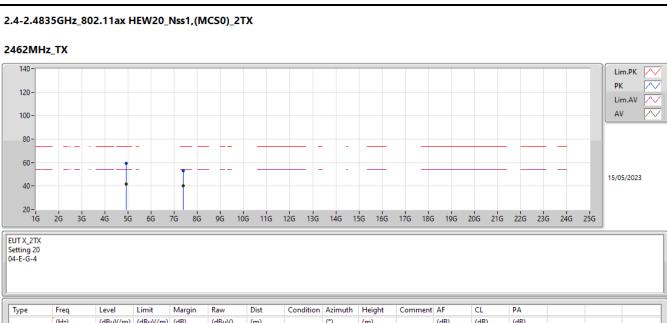


#### 2.4-2.4835GHz\_802.11ax HEW20\_Nss1,(MCS0)\_2TX



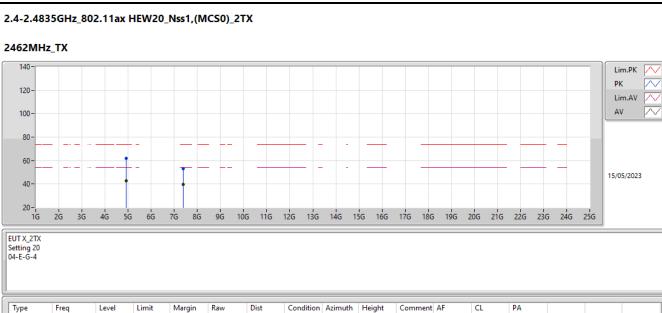
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA	
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)	
РК	2.463G	120.70	Inf	-Inf	89.69	3	Horizontal	69	1.22	-	27.75	3.26	-	
AV	2.4634G	107.50	Inf	-Inf	76.49	3	Horizontal	69	1.22	-	27.75	3.26	-	
РК	2.4846G	69.13	74.00	-4.87	38.01	3	Horizontal	69	1.22	-	27.84	3.28	-	
AV	2.4835G	51.75	54.00	-2.25	20.64	3	Horizontal	69	1.22	-	27.83	3.28	-	





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	4.92168G	59.46	74.00	-14.54	53.92	3	Vertical	52	1.14	-	32.84	5.30	32.60		
AV	4.92672G	41.98	54.00	-12.02	36.43	3	Vertical	52	1.14	-	32.85	5.30	32.60		
РК	7.38432G	53.14	74.00	-20.86	41.84	3	Vertical	207	1.50	-	37.56	6.98	33.24		
AV	7.38584G	40.10	54.00	-13.90	28.79	3	Vertical	207	1.50	-	37.56	6.99	33.24		

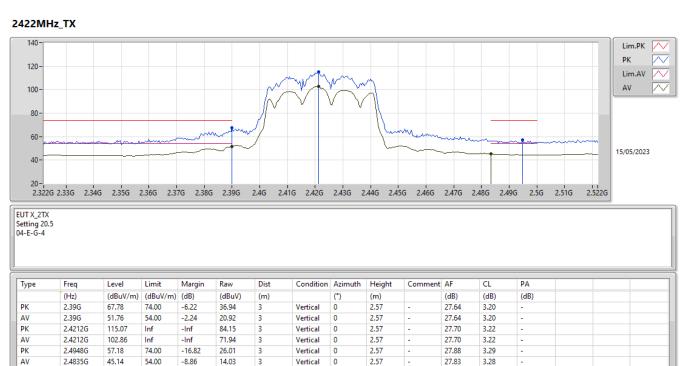




Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	4.922G	62.01	74.00	-11.99	56.47	3	Horizontal	73	1.80	-	32.84	5.30	32.60		
AV	4.92712G	42.90	54.00	-11.10	37.35	3	Horizontal	73	1.80	-	32.85	5.30	32.60		
PK	7.38416G	53.34	74.00	-20.66	42.04	3	Horizontal	354	2.41	-	37.56	6.98	33.24		
AV	7.38104G	39.87	54.00	-14.13	28.55	3	Horizontal	354	2.41	-	37.58	6.98	33.24		



#### 2.4-2.4835GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX





2.484G

45.69

54.00

-8.31

14.57

3

Horizontal 69

1.27

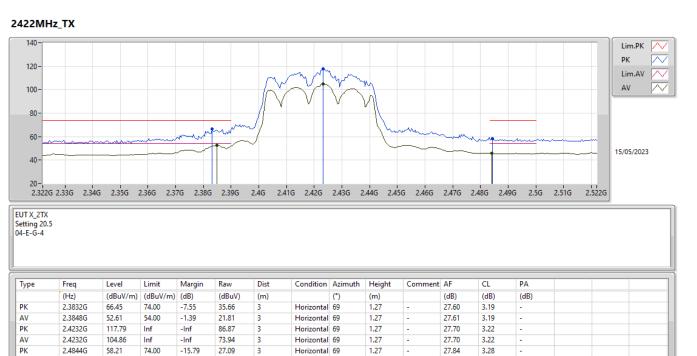
27.84

3.28

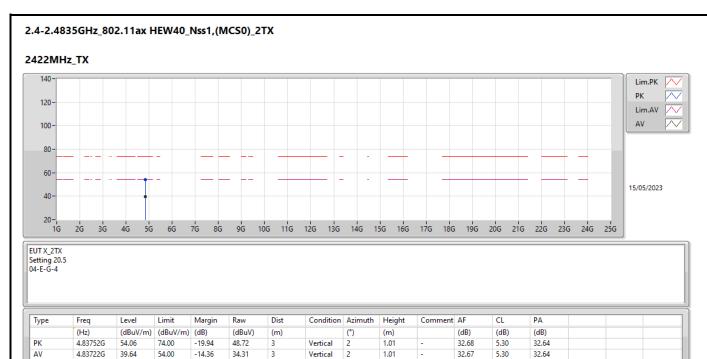
AV

## Appendix F.2

#### 2.4-2.4835GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX









AV

4.83836G

41.40

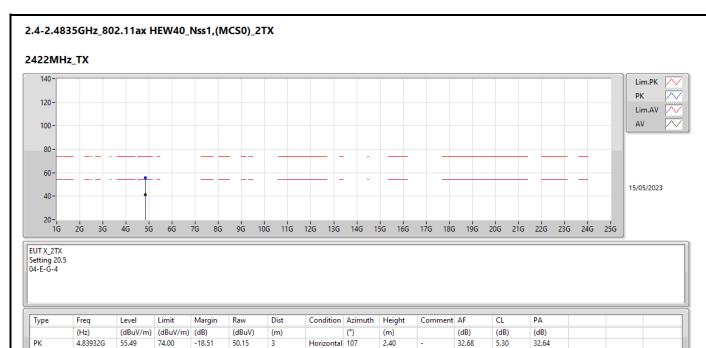
54.00

-12.60

36.06

3

# Appendix F.2



Horizontal 107

2.40

32.68

5.30



AV PK

AV

2.4378G

2.489G

2.489G

102.37

65.53

48.96

Inf

74.00

54.00

-Inf

-8.47

-5.04

71.43

34.38

17.81

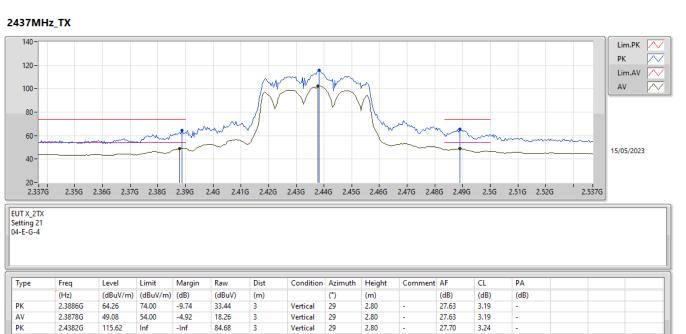
3

3

3

# Appendix F.2

#### 2.4-2.4835GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX



Vertical

Vertical

Vertical

29

29

29

2.80

2.80

2.80

27.70

27.86

27.86

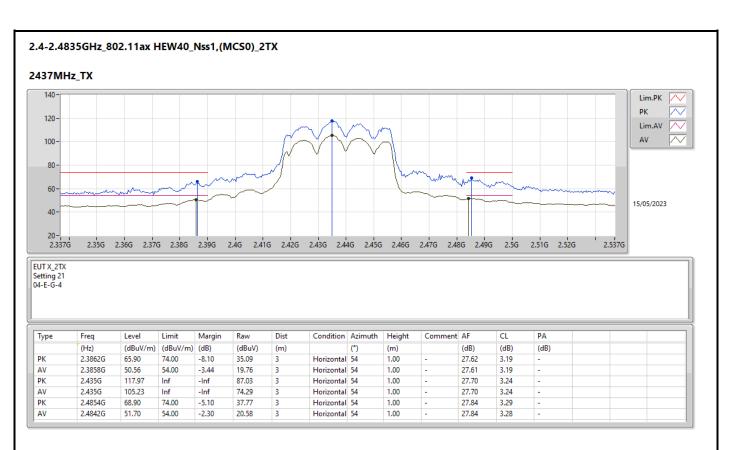
3.24

3.29

3.29

-







7.3188G

39.46

54.00

-14.54

28.06

3

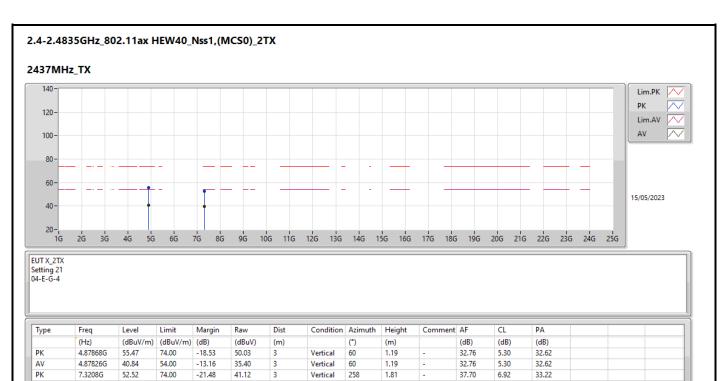
Vertical

258

1.81

AV

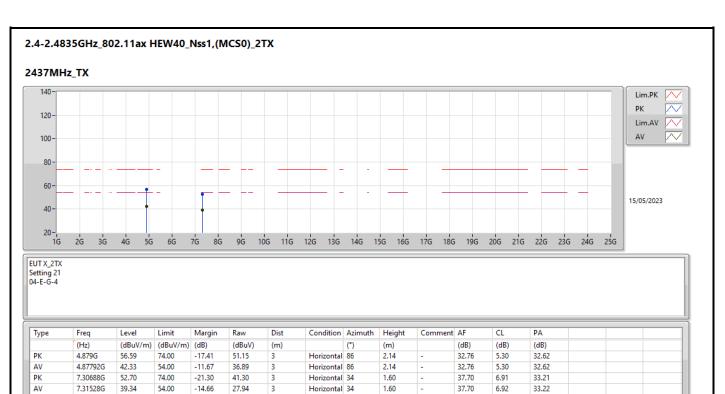
## Appendix F.2



37.70

6.92





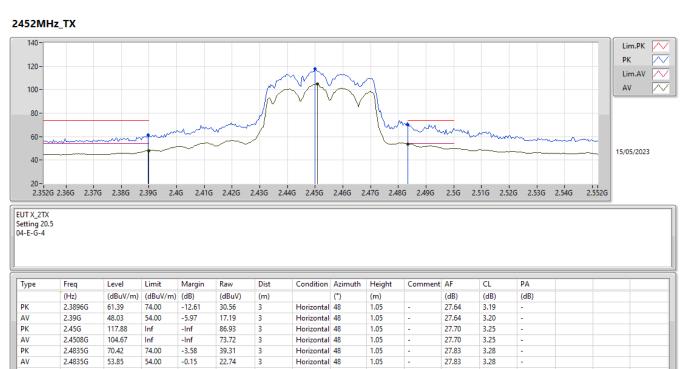


#### 2.4-2.4835GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX





#### 2.4-2.4835GHz\_802.11ax HEW40\_Nss1,(MCS0)\_2TX





PK

AV

7.3555G

7.35776G

52.38

39.05

74.00

54.00

-21.62

-14.95

40.97

27.65

3

3

Vertical

Vertical

105

105

1.39

1.39

37.68

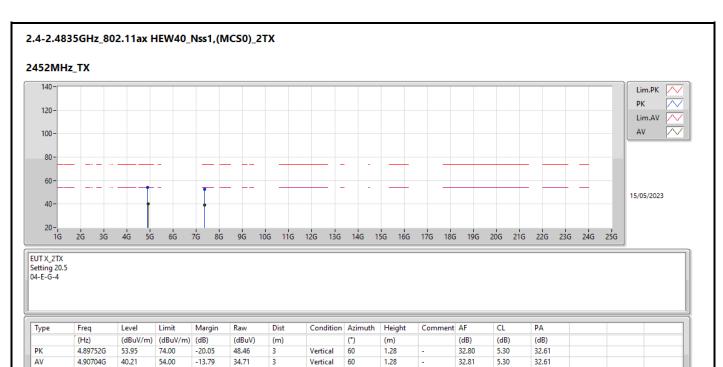
37.67

6.96

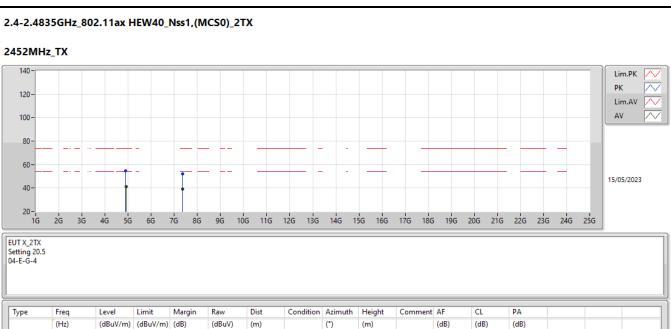
6.96

33.23

33.23







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	4.89784G	54.57	74.00	-19.43	49.08	3	Horizontal	73	2.10	-	32.80	5.30	32.61		
AV	4.9068G	41.25	54.00	-12.75	35.75	3	Horizontal	73	2.10	-	32.81	5.30	32.61		
РК	7.35662G	52.31	74.00	-21.69	40.91	3	Horizontal	201	2.85	-	37.67	6.96	33.23		
AV	7.35892G	38.94	54.00	-15.06	27.55	3	Horizontal	201	2.85	-	37.66	6.96	33.23		
1															