Report No. : FR122333-02AB





RADIO TEST REPORT

FCC ID		2AXJ4X60V3
Equipment	8 8	AX4300 Whole Home Mesh Wi-Fi 6 System
Brand Name		tp-link
Model Name	а 2	Deco X4300 Pro
Applicant		TP-Link Corporation Limited Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong
Manufacturer	в. 2	TP-Link Corporation Limited Room 901, 9/F. , New East Ocean Centre, 9 Science Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong
Standard	5	47 CFR FCC Part 15.407

The product was received on Apr. 21, 2022, and testing was started from Apr. 23, 2022 and completed on May 23, 2022. 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 variant 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.

N

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 Ver1.3 Page Number : 1 of 17 Issued Date : May 24, 2022 Report Version : 02



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Photographs of EUT v01



History of this test report

Report No.	Version	Description	Issued Date
FR122333-02AB	01	Initial issue of report	Apr. 29, 2022
FR122333-02AB	02	Adding description of Modifications and verification of Unwanted Emissions above 1GHz	May 24, 2022



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
2.1	15.407(b)	Unwanted Emissions	PASS	-

Declaration of Conformity:

 The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.

2. The measurement uncertainty please refer to report "Measurement Uncertainty".

Comments and Explanations:

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

Reviewed by: Sam Chen

Report Producer: Penny Kao



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		5210	42 [1]
5725-5850	ac (VHT80), ax (HEW80)	5775	155 [1]
5150-5350	ac (VHT160), ax (HEW160)	5250	50 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	4TX
5.15-5.25GHz	802.11n HT20	20	4TX
5.15-5.25GHz	802.11ac VHT20	20	4TX
5.15-5.25GHz	802.11ax HEW20	20	4TX
5.15-5.25GHz	802.11n HT40	40	4TX
5.15-5.25GHz	802.11ac VHT40	40	4TX
5.15-5.25GHz	802.11ax HEW40	40	4TX
5.15-5.25GHz	802.11ac VHT80	80	4TX
5.15-5.25GHz	802.11ax HEW80	80	4TX
5.15-5.35GHz	802.11ac VHT160	160	4TX
5.15-5.35GHz	802.11ax HEW160	160	4TX
5.725-5.85GHz	802.11a	20	4TX
5.725-5.85GHz	802.11n HT20	20	4TX
5.725-5.85GHz	802.11ac VHT20	20	4TX
5.725-5.85GHz	802.11ax HEW20	20	4TX
5.725-5.85GHz	802.11n HT40	40	4TX
5.725-5.85GHz	802.11ac VHT40	40	4TX
5.725-5.85GHz	802.11ax HEW40	40	4TX
5.725-5.85GHz	802.11ac VHT80	80	4TX
5.725-5.85GHz	802.11ax HEW80	80	4TX

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Note:

- 11a, HT20 and HT40 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
- VHT20, VHT40, VHT80 and VHT160 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- HEW20, HEW40, HEW80 and HEW160 use a combination of OFDMA-BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Ant.	Port		Brand	Model Name	Туре	Connector	Gain	(dBi)
	2.4GHz	5GHz					2.4GHz	5GHz
1	1	2	TP-Link	3101502756	PCB	I-PEX	1.93	0.90
2	2	1	TP-Link	3101502757	PCB	I-PEX	1.94	0.97
3	-	4	TP-Link	3101503632	PCB	I-PEX	-	0.97
4	-	3	TP-Link	3101503633	PCB	I-PEX	-	0.88

Note 1: The above information was declared by manufacturer.

For WLAN 2.4GHz, 11b/g/n/ax/VHT mode (2TX/2RX):

Port 1 and Port 2 could transmit/receive simultaneously.

For WLAN 5GHz, 11a/n/ac/ax mode (4TX/4RX):

Port 1, Port 2, Port 3 and Port 4 could transmit/receive simultaneously.

1.1.3 EUT Operational Condition

EUT Power Type	Fro	From power adapter				
Beamforming Function	With beamforming Without beamforming					
Function		Outdoor P2M	\boxtimes	Indoor P2M		
Function		Fixed P2P		Client		
TPC Function		With TPC				
Test Software Version	QPST[v2.7] \ QSPR (version 5.0-00196)					

Note: The above information was declared by manufacturer.

1.1.4 Table for EUT Supports Functions

Function
AP Router
Mesh

Note: After evaluating, there is only AP Router mode was selected to test and record in the report.

Note 2:



1.1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR122333AB, FR122333-01. Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking					
1. Adding LAN 3 (2.5Gbps) port via changing RJ-45 interface						
and switching chip.						
(a.) Add PHY chip RTL8221B-CG(located U70)						
(b.) Move RJ-45 and signal transformer from	Unwanted Emissions					
motherboard to daughter board						
(c.) Motherboard and daughter board connected by row						
pins(JC1 and JC2)						
2. Changing Model Name to "Deco X4300 Pro" from "Deco						
X60, Deco W6000".	After evoluting it depends affect the test					
3. Changing Equipment Name to "AX4300 Whole Home	After evaluating, it doesn't affect the test					
Mesh Wi-Fi 6 System" from "AX3000 Whole Home Mesh						
Wi-Fi 6 System".						



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	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.						
	Test site registered number IC 4086D with Industry Canada.					

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated Below 1GHz	03CH05-CB	Eason Chen	23.8-24.9 / 55-58	Apr. 23, 2022
Radiated Above 1GHz	03CH02-CB	RJ Huang	24.2-26.1 / 55-58	May 23, 2022

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Radiated Emission (9kHz ~ 30MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.5 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%



1.5 The Worst Case Measurement Configuration

T	he Worst Case Mode for Following Conformance Tests
Tests Item	Unwanted Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Normal Link
1	AP Router mode_EUT + Adapter
Operating Mode > 1GHz	СТХ
1	EUT

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

1.6 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.

1.7 Accessories

			Accessories	
No.	Equipment Name	Brand Name	Model Name	Rating
1	Adapter	TP-Link	T120200-2B4	Input: 100-240V~ 50/60Hz, 0.8A Output: 12V, 2A



1.8 Support Equipment

For Radiated (below 1GHz):

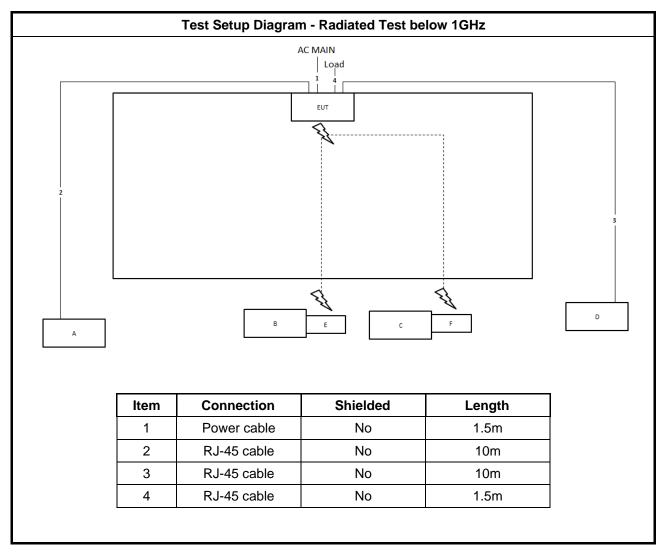
		Support Eq	uipment	
No.	Equipment	Brand Name	Model Name	FCC ID
А	LAN Notebook	DELL	E4300	N/A
В	WiFi 2.4G Notebook	DELL	E4300	N/A
С	WiFi 5G Notebook	DELL	E4300	N/A
D	WLAN AP	D-LINK	DIR860L	KA2IR860LA1
Е	WLAN module	Intel	AX210NGW	PD9AX210NG
F	WLAN module	Intel	AX210NGW	PD9AX210NG

For Radiated (above 1GHz):

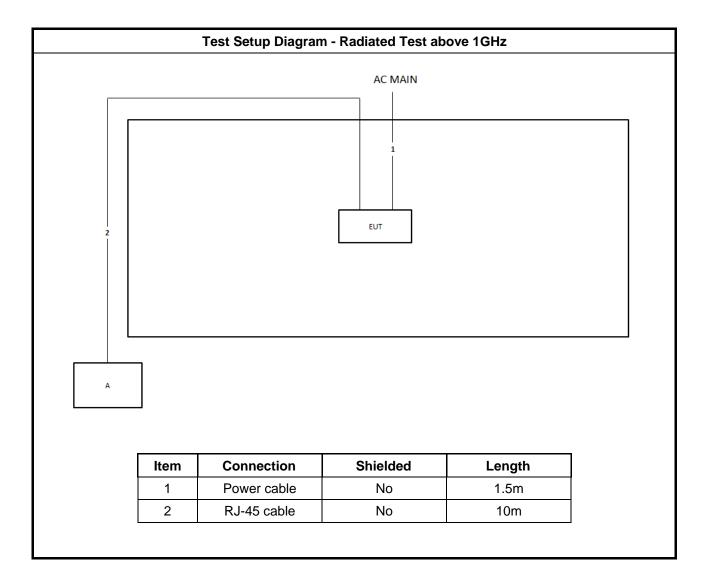
		Support Equ	ipment	
No.	Equipment	Brand Name	Model Name	FCC ID
А	Notebook	DELL	E4300	N/A



1.9 Test Setup Diagram









2 Transmitter Test Result

2.1 Unwanted Emissions

2.1.1 Transmitter Unwanted Emissions Limit

ions below 1 GHz and re	stricted band emissions a	bove 1GHz limit
Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
2400/F(kHz)	48.5 - 13.8	300
24000/F(kHz)	33.8 - 23	30
30	29	30
100	40	3
150	43.5	3
200	46	3
500	54	3
	Field Strength (uV/m) 2400/F(kHz) 24000/F(kHz) 30 100 150 200	2400/F(kHz) 48.5 - 13.8 24000/F(kHz) 33.8 - 23 30 29 100 40 150 43.5 200 46

- 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.

2.1.2 Measuring Instruments

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



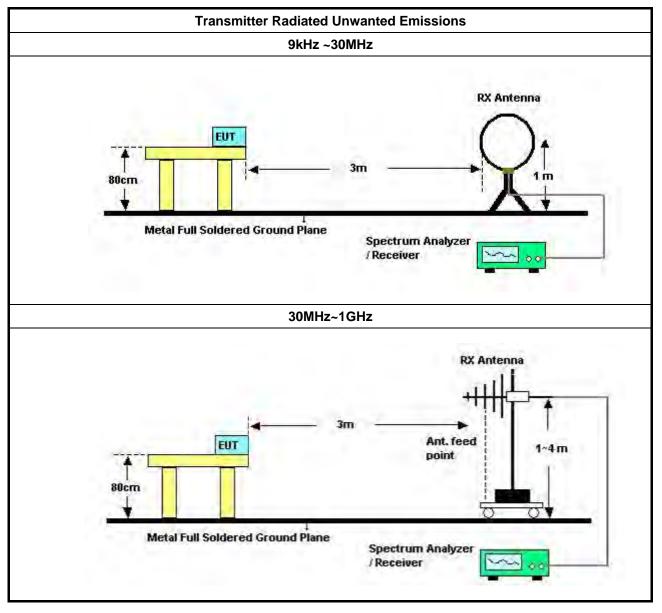
1

2.1.3 Test Procedures

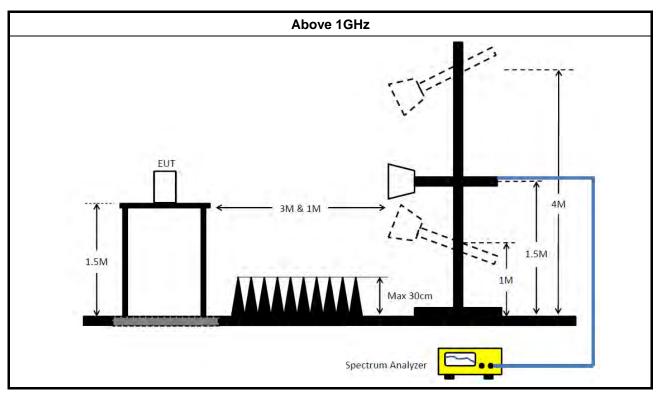
		Test Method
•	performe equipmen above 30 are impra be extrap	ments may be performed at a distance other than the limit distance provided they are not d in the near field and the emissions to be measured can be detected by the measurement nt. Measurements shall not be performed at a distance greater than 30 m for frequencies MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less actical. When performing measurements at a distance other than that specified, the results shall olated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear for field-strength measurements, inverse of linear distance-squared for power-density ments).
•	The aver	age emission levels shall be measured in [duty cycle \geq 98 or duty factor].
•	For the tr	ansmitter unwanted emissions shall be measured using following options below:
	 Refe 	er as FCC KDB 789033, clause G)2) for unwanted emissions into non-restricted bands.
	 Refe 	er as FCC KDB 789033, clause G)1) for unwanted emissions into restricted bands.
		Refer as FCC KDB 789033, G)6) Method AD (Trace Averaging).
	\square	Refer as FCC KDB 789033, G)6) Method VB (Reduced VBW).
		Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW \geq 1/T, where T is pulse time.
		Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	\boxtimes	Refer as FCC KDB 789033, clause G)5) measurement procedure peak limit.
		Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
•	For radia	ted measurement.
	 Refe 	er as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
	 Refe 	er as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
	Refe	er as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.
•	The any	unwanted emissions level shall not exceed the fundamental emission level.
•		ude of spurious emissions that are attenuated by more than 20 dB below the permissible value eed to be reported.



2.1.4 Test Setup







2.1.5 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.

2.1.6 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.

2.1.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix A



3 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 16, 2021	Mar. 15, 2022	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 09, 2021	Aug. 08, 2022	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 25, 2022	Mar. 24, 2023	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 27, 2021	Apr. 26, 2022	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Mar. 14, 2022	Mar. 13, 2023	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 21, 2021	Jun. 20, 2022	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 13, 2021	Oct. 12, 2022	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz	Mar. 26, 2022	Mar. 25, 2023	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 19, 2022	Apr. 18, 2023	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 05, 2021	Aug. 04, 2022	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jul. 12, 2021	Jul. 11, 2022	Radiation (03CH02-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 13, 2021	Jul. 12, 2022	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSU	100015	9kHz~26GHz	Oct. 25, 2021	Oct. 24, 2022	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5+7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 08, 2021	Dec. 07, 2022	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH02-CB)

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

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

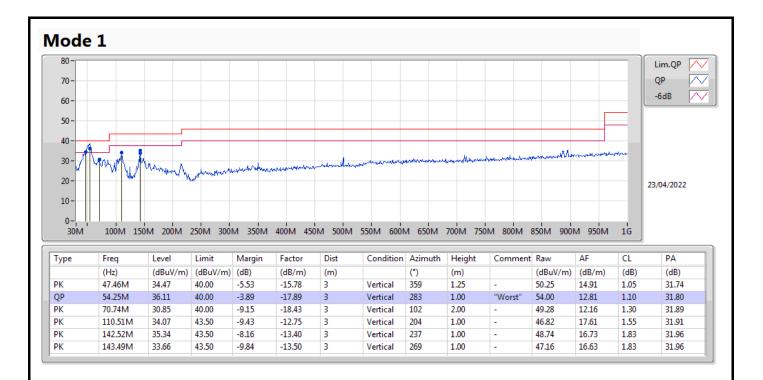


Radiated Emissions below 1GHz

Summary							
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 1	Pass	QP	54.25M	36.11	40.00	-3.89	Vertical

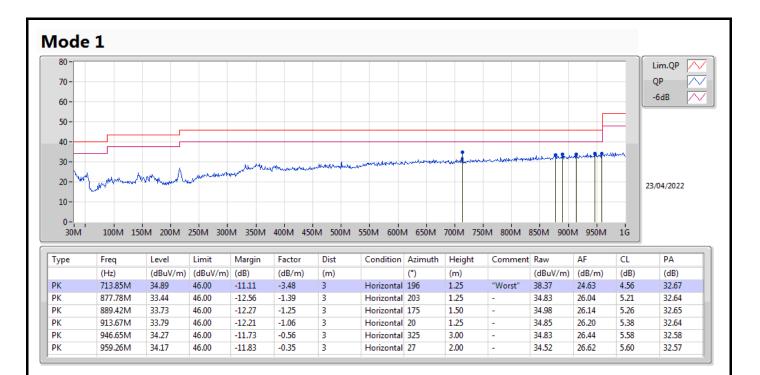


Radiated Emissions below 1GHz





Radiated Emissions below 1GHz





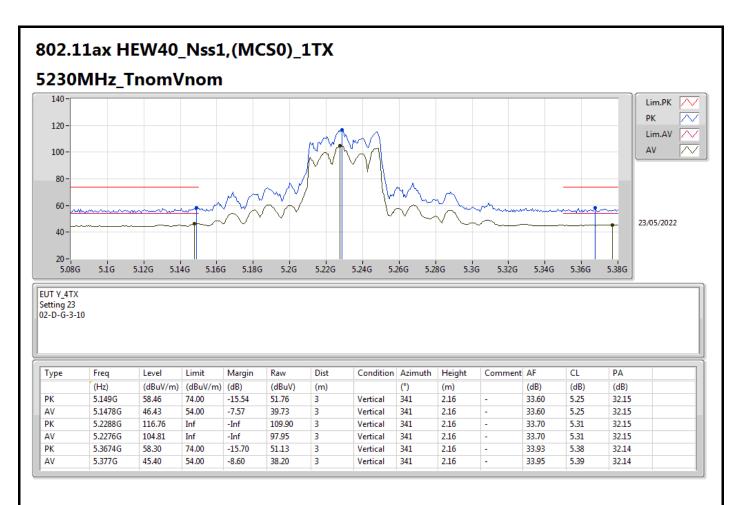
RSE TX above 1GHz

Appendix A.2

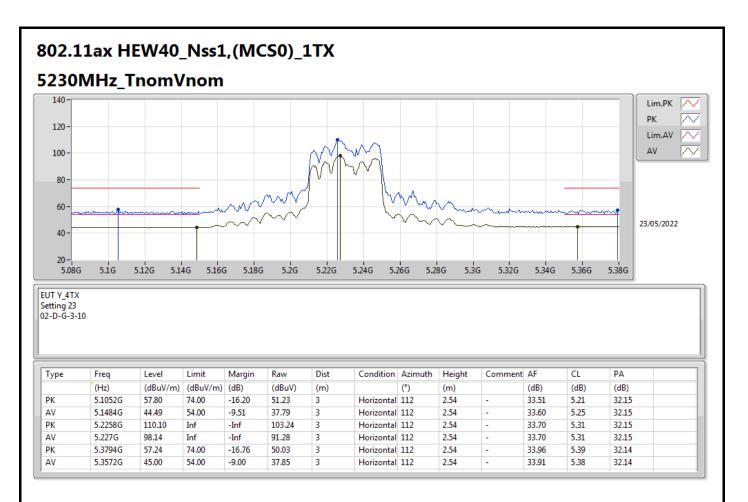
Summary

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 HEW40_Nss1,(MCS0)_1TX	Pass	PK	17.26164G	61.91	68.20	-6.29	3	Vertical	167	1.80	-

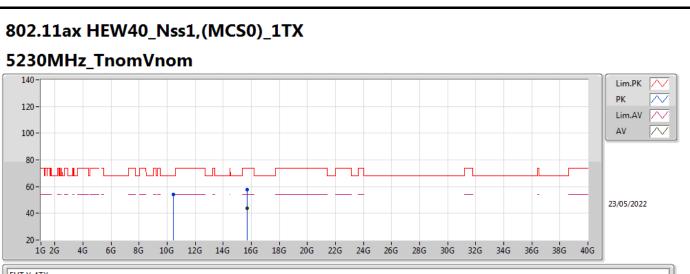










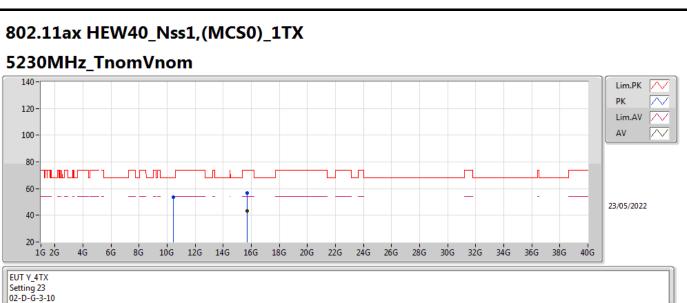


EUT Y_4TX

Setting 23 02-D-G-3-10

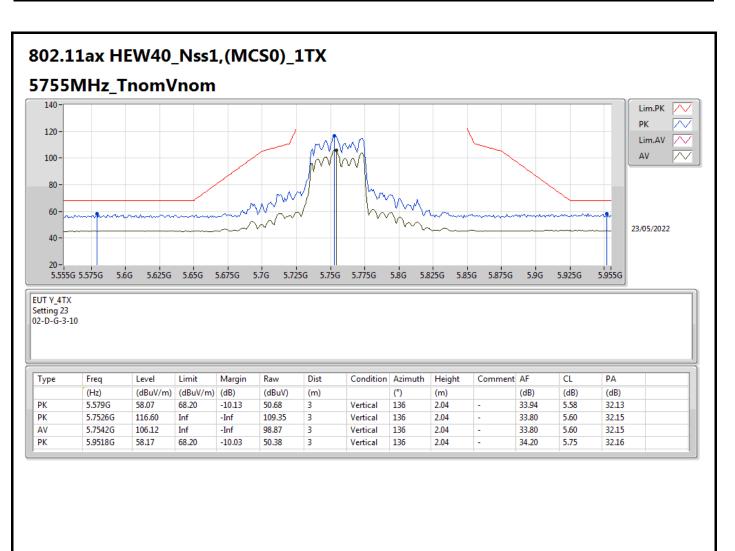
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
РК	10.46008G	54.04	68.20	-14.16	40.98	3	Vertical	180	2.05	-	38.60	7.48	33.02
РК	15.68224G	57.95	74.00	-16.05	43.96	3	Vertical	9	2.97	-	37.50	9.86	33.37
AV	15.70192G	43.56	54.00	-10.44	29.58	3	Vertical	9	2.97	-	37.50	9.87	33.39



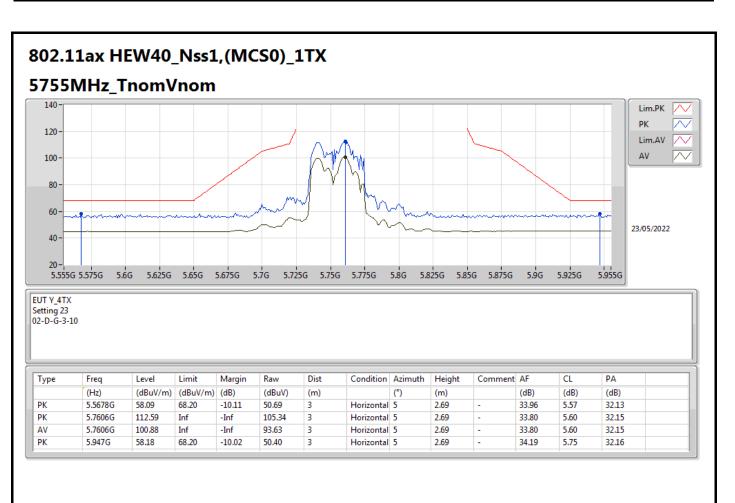


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)
РК	10.46G	53.56	68.20	-14.64	40.50	3	Horizontal	117	1.91	-	38.60	7.48	33.02
РК	15.70104G	56.56	74.00	-17.44	42.58	3	Horizontal	108	2.94	-	37.50	9.87	33.39
AV	15.69672G	43.42	54.00	-10.58	29.44	3	Horizontal	108	2.94	-	37.50	9.86	33.38

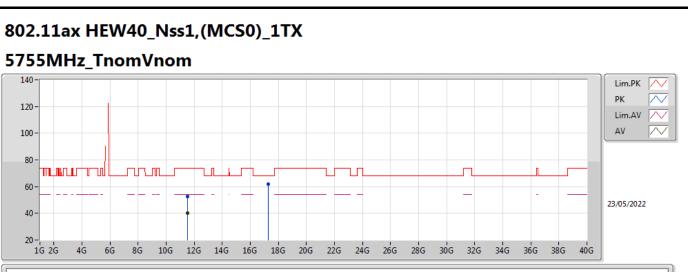








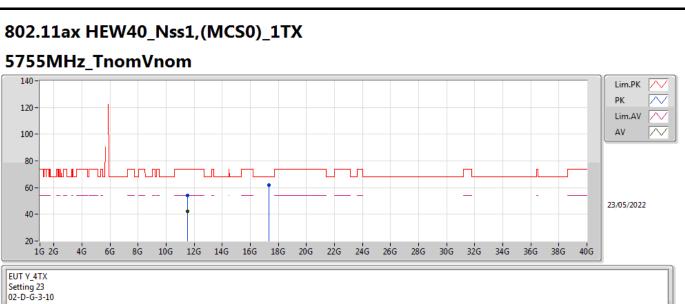




EUT Y_4TX Setting 23 02-D-G-3-10

Гуре	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	11.51384G	52.59	74.00	-21.41	38.86	3	Vertical	214	1.02	-	39.04	7.91	33.22	
AV	11.51496G	40.31	54.00	-13.69	26.58	3	Vertical	214	1.02	-	39.04	7.91	33.22	
PK	17.26164G	61.91	68.20	-6.29	42.21	3	Vertical	167	1.80	-	42.31	10.63	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	11.51752G	54.34	74.00	-19.66	40.60	3	Horizontal	59	1.77	-	39.05	7.91	33.22	
AV	11.51608G	42.10	54.00	-11.90	28.36	3	Horizontal	59	1.77	-	39.05	7.91	33.22	
РК	17.30484G	61.91	68.20	-6.29	41.92	3	Horizontal	360	1.80	-	42.53	10.65	33.19	