



RADIO TEST REPORT

FCC ID : 2AXJ4X50
Equipment : AX3000 Whole Home Mesh Wi-Fi 6 System
AX1800 Whole Home Mesh Wi-Fi 6 System
Brand Name : tp-link
Model Name : Deco W6000 、 Deco X60 、 Deco X25 、 Deco X20
Applicant : TP-Link Corporation Limited
Room 901, 9/F. , New East Ocean Centre, 9 Science
Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong
Manufacturer : TP-Link Corporation Limited
Room 901, 9/F. , New East Ocean Centre, 9 Science
Museum Road, Tsim Sha Tsui, Kowloon, Hong Kong
Standard : 47 CFR FCC Part 15.407

The product was received on Dec. 23, 2021, and testing was started from Jan. 05, 2022 and completed on Jan. 11, 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.

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.)



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History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A12_1 Ver1.4

Page Number : 3 of 22
Issued Date : Feb. 22, 2022
Report Version : 01



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(b)	Unwanted Emissions	PASS	-

Declaration of Conformity:

1. 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: 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
5150-5250	a, n (HT20), ac (VHT20), ax (HEW20)	5180-5240	36-48 [4]
5725-5850		5745-5825	149-165 [5]
5150-5250	n (HT40), ac (VHT40), ax (HEW40)	5190-5230	38-46 [2]
5725-5850		5755-5795	151-159 [2]
5150-5250	ac (VHT80), ax (HEW80)	5210	42 [1]
5725-5850		5775	155 [1]
5150-5350	ac (VHT160), ax (HEW160)	5250	50 [1]

Band	Mode	BWch (MHz)	Nant
5.15-5.25GHz	802.11a	20	2TX
5.15-5.25GHz	802.11n HT20	20	2TX
5.15-5.25GHz	802.11ac VHT20	20	2TX
5.15-5.25GHz	802.11ax HEW20	20	2TX
5.15-5.25GHz	802.11n HT40	40	2TX
5.15-5.25GHz	802.11ac VHT40	40	2TX
5.15-5.25GHz	802.11ax HEW40	40	2TX
5.15-5.25GHz	802.11ac VHT80	80	2TX
5.15-5.25GHz	802.11ax HEW80	80	2TX
5.15-5.35GHz	802.11ac VHT160	160	2TX
5.15-5.35GHz	802.11ax HEW160	160	2TX
5.725-5.85GHz	802.11a	20	2TX
5.725-5.85GHz	802.11n HT20	20	2TX
5.725-5.85GHz	802.11ac VHT20	20	2TX
5.725-5.85GHz	802.11ax HEW20	20	2TX
5.725-5.85GHz	802.11n HT40	40	2TX
5.725-5.85GHz	802.11ac VHT40	40	2TX
5.725-5.85GHz	802.11ax HEW40	40	2TX
5.725-5.85GHz	802.11ac VHT80	80	2TX
5.725-5.85GHz	802.11ax HEW80	80	2TX

**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 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	Antenna Type	Connector	Gain (dBi)	
						2.4GHz	5GHz
1	2	tp-link	3101502756	Dipole Antenna	I-PEX	1.93	0.9
2	1	tp-link	3101502757	Dipole Antenna	I-PEX	1.94	0.97

Note: The above information was declared by manufacturer.

<For 2.4GHz Function>

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

<For 5GHz Function>

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11a	0.948	0.23	2m	1k
802.11ax HEW20	0.934	0.3	5.52m	300
802.11ax HEW40	0.932	0.31	5.52m	300
802.11ax HEW80	0.93	0.32	5.52m	300
802.11ax HEW160	0.928	0.32	5.52m	300

Note:

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

1.1.4 EUT Operational Condition

EUT Power Type	From Power Adapter			
Beamforming Function	☐	With beamforming	☒	Without beamforming
Function	☐	Outdoor P2M	☒	Indoor P2M
	☐	Fixed P2P	☐	Client
	☐	Point-to-multipoint	☐	Point-to-point
TPC Function	☒	With TPC	☐	Without TPC
Test Software Version	QSPR Version 5.0-00196			

Note: The above information was declared by manufacturer.

1.1.5 Table for Multiple Listing

EUT	Equipment Name	Model Name	LAN Port	WLAN Function	The color of the top cover on the EUT
1	AX3000 Whole Home Mesh Wi-Fi 6 System	Deco W6000	2	2.4GHz + 5GHz UNII 1 /	White
-		Deco X60	2	UNII 2A (160M) / UNII 3	White
2	AX1800 Whole Home Mesh Wi-Fi 6 System	Deco X25	2	2.4GHz + 5GHz	Black
-		Deco X20	2	UNII 1 / UNII 3	White

Note 1: From the above models, model: Deco W6000 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

1.1.6 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR171316AB.

Below is the table for the change of the product with respect to the original one.

Modifications					Performance Checking
1. Add 4 models "Deco W6000、Deco X60、Deco X25、Deco X20". The difference with the original model Deco X50 is below:					1. AC Conducted Emissions. 2. Radiated Emissions below 1GHz. 3. Radiated Emissions above 1GHz. (For items 3 after evaluating, the worst case is found at 802.11a CH48 (5240MHz) / CH165 (5825MHz) / 11ax 160 CH 50 (5250MHz) and retest these channels only and for above 1GHz will be based on original output power to retest)
Equipment Name	Model Name	LAN Port	WLAN Function	The color of the top cover on the EUT	
AX3000 Whole Home Mesh Wi-Fi 6 System	Deco X50	3	2.4GHz + 5GHz UNII 1 / UNII 2A (160M) / UNII 3	White	
	Deco W6000	2		White	
	Deco X60	2		White	
AX1800 Whole Home Mesh Wi-Fi 6 System	Deco X25	2	2.4GHz + 5GHz UNII 1 / UNII 3	Black	
	Deco X20	2		White	

1.1.7 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.



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 (TAF: 3787)	ADD: 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 Test site Designation No. TW3787 with FCC. Conformity Assessment Body Identifier (CABID) TW3787 with ISCED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated below 1GHz	03CH05-CB	Eason Chen	23.5~24.6 / 55~59	Jan. 05, 2022
Radiated above 1GHz	03CH02-CB	Simmon Cheng	24.4~25.5 / 55~58	Jan. 05, 2022~Jan. 06, 2022
AC Conduction	CO01-CB	Peter Wu	22~23 / 60~62	Jan. 11, 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
Conducted Emission (150kHz ~ 30MHz)	2.0 dB	Confidence levels of 95%
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%

2 Test Configuration of EUT

2.1 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	AP Router mode-EUT 1 + Adapter

The Worst Case Mode for Following Conformance Tests	
Tests Item	Unwanted Emissions
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Normal Link
1	AP Router mode-EUT 1 in X axis + Adapter
2	AP Router mode-EUT 1 in Y axis + Adapter
3	AP Router mode-EUT 1 in Z axis + Adapter
For operating mode 2 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
	The EUT was performed at X axis, Y axis and Z axis position for Unwanted Emissions above 1GHz test, and the worst case was found at Y axis. So the measurement will follow this same test configuration.
1	EUT in Y axis

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	EUT 1-WLAN 2.4GHz + WLAN 5GHz (UNII 1 / UNII 2A (160M) / UNII 3)
2	EUT 2-WLAN 2.4GHz + WLAN 5GHz (5GHz UNII 1 / UNII 3)
Refer to Sporton Test Report No.: FA171316-01 for Co-location RF Exposure Evaluation.	



2.2 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link:

During the test, the EUT operation to normal function.

2.3 Accessories

Accessories			
Equipment Name	Brand Name	Model Name	Rating
Adapter	tp-link	T120150-2B4	Input: 100-240V~50/60Hz, 0.6A Output: 12V, 1.5A

2.4 Support Equipment

For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	LAN NB	DELL	E6430	N/A
B	2G NB	DELL	E6430	N/A
C	5G NB	DELL	E6430	N/A
D	Router	ASUS	RP-N53	MSQ-RPN53

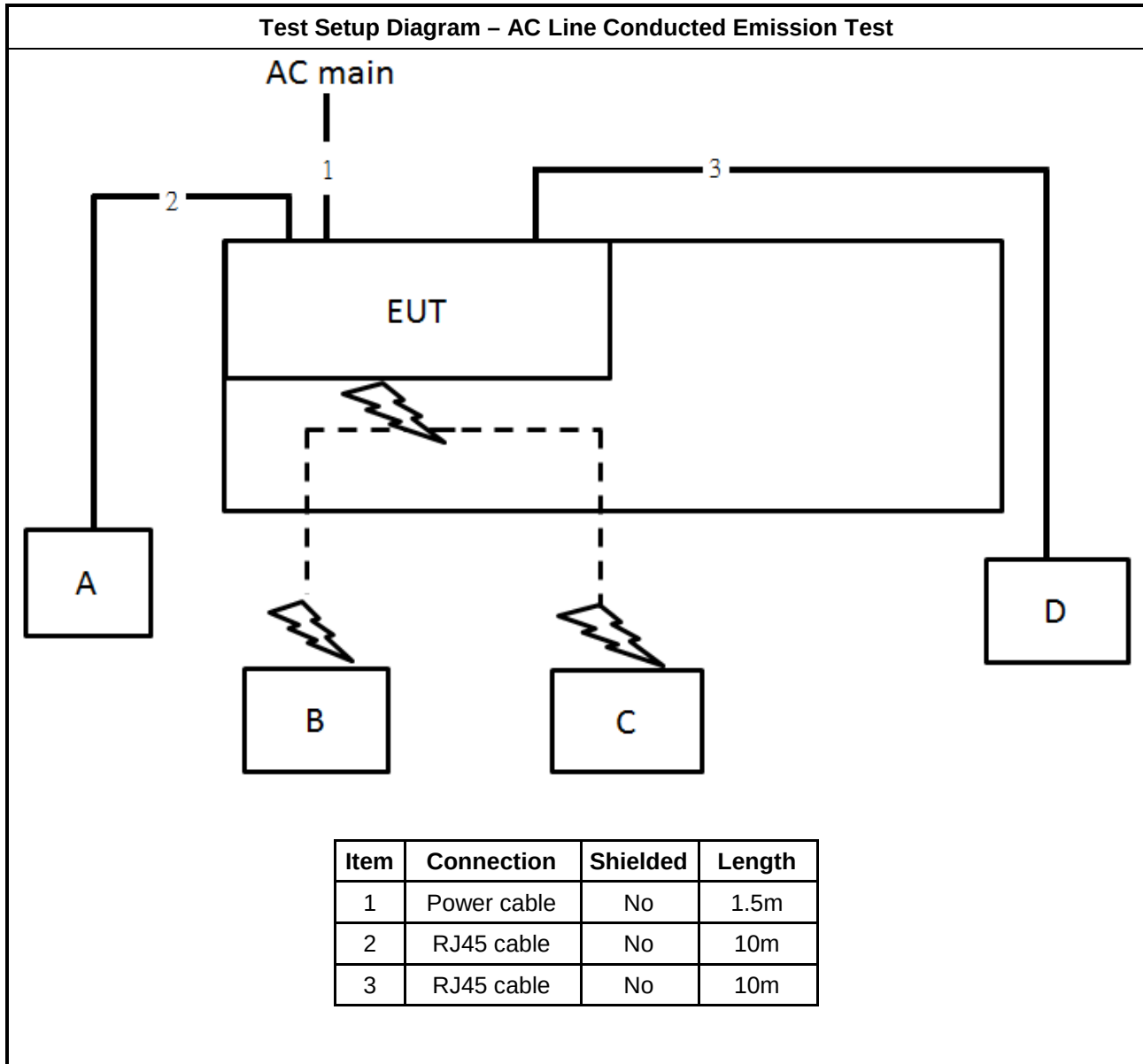
For Radiated (below 1GHz):

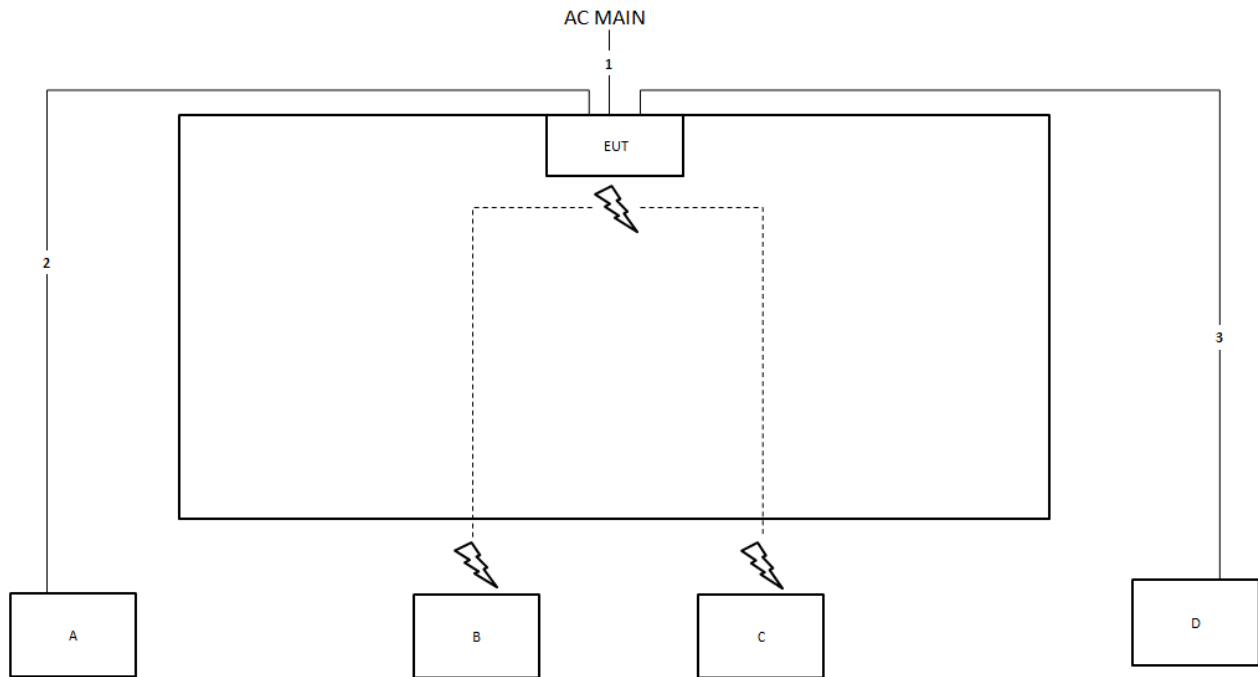
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	(Lan) Notebook	DELL	E4300	N/A
B	(2.4G WiFi) Notebook	DELL	E4300	N/A
C	(5G WiFi) Notebook	DELL	E4300	N/A
D	WLAN AP	Netgear	R8000	N/A

For Radiated (above 1GHz):

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

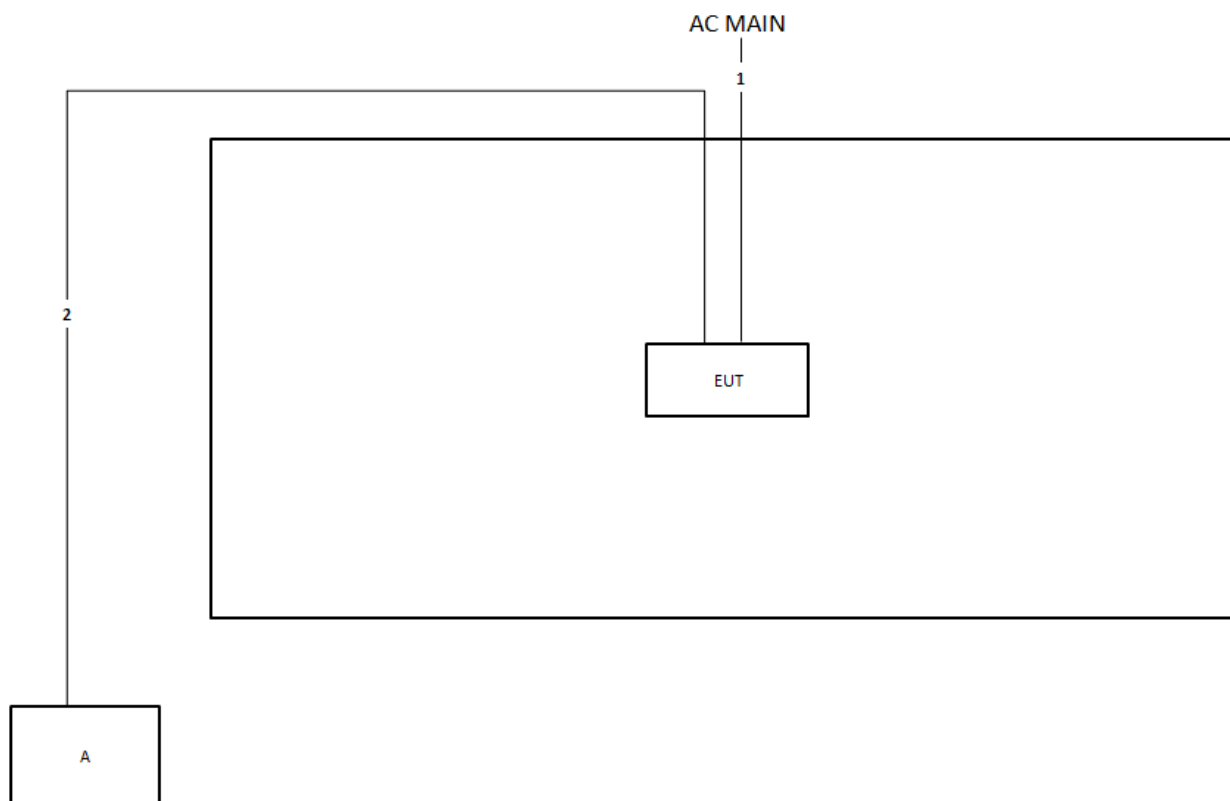
2.5 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	10m

Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	RJ-45 cable	No	10m



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.

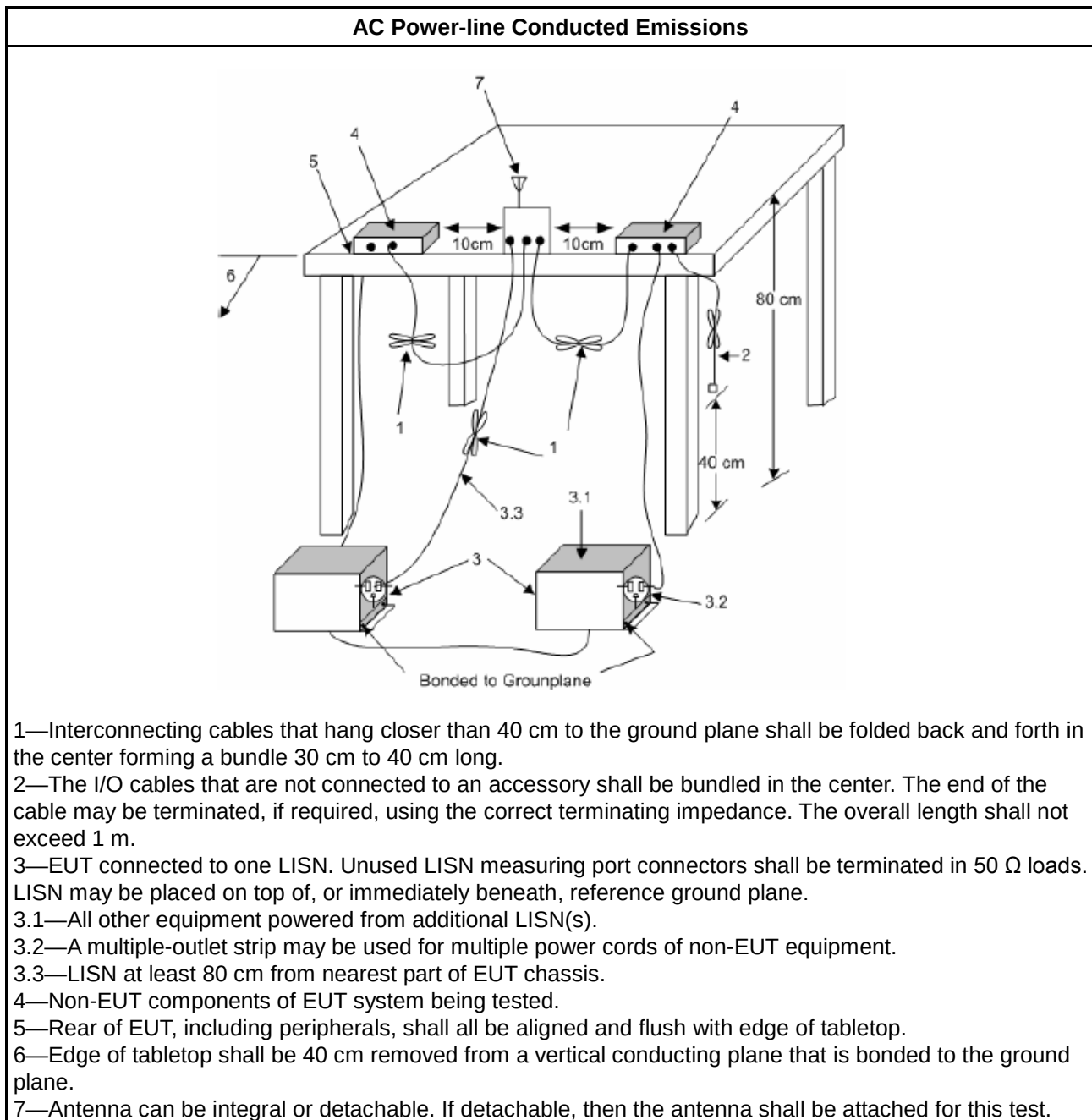
3.1.2 Measuring Instruments

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 Unwanted Emissions

3.2.1 Transmitter Unwanted Emissions Limit

Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

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

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

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

Un-restricted band emissions above 1GHz Limit	
Operating Band	Limit
☒ 5.15 - 5.25 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
☒ 5.25 - 5.35 GHz	e.i.r.p. -27 dBm [68.2 dBuV/m@3m]
☐ 5.47 - 5.725 GHz	e.i.r.p. -27 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.
☐ 5.85 - 5.895 GHz	(i) For an indoor access point or subordinate device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of 15 dBm/MHz and shall decrease linearly to an e.i.r.p. of -7 dBm/MHz at or above 5.925 GHz. (ii) For a client device, all emissions at or above 5.895 GHz shall not exceed an e.i.r.p. of -5 dBm/MHz and shall decrease linearly to an e.i.r.p. of -27 dBm/MHz at



	or above 5.925 GHz. (iii) For a client device or indoor access point or subordinate device, all emissions below 5.725 GHz shall not exceed an e.i.r.p. of -27 dBm/MHz at 5.65 GHz increasing linearly to 10 dBm/ MHz at 5.7 GHz, and from 5.7 GHz increasing linearly to a level of 15.6 dBm/MHz at 5.72 GHz, and from 5.72 GHz increasing linearly to a level of 27 dBm/MHz at 5.725 GHz.
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).	

3.2.2 Measuring Instruments

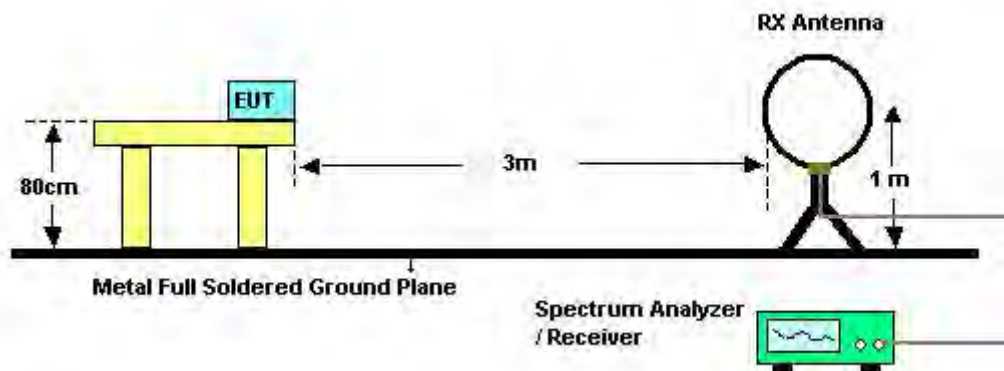
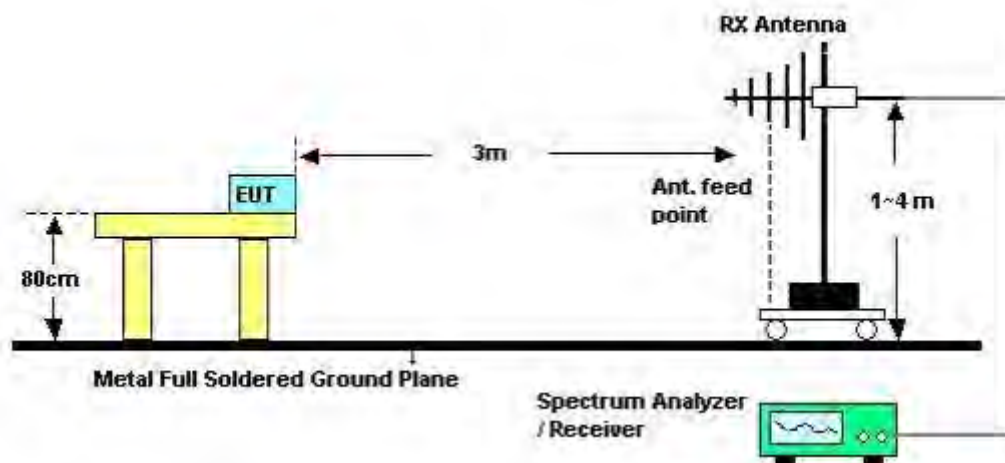
Refer a test equipment and calibration data table in this test report.

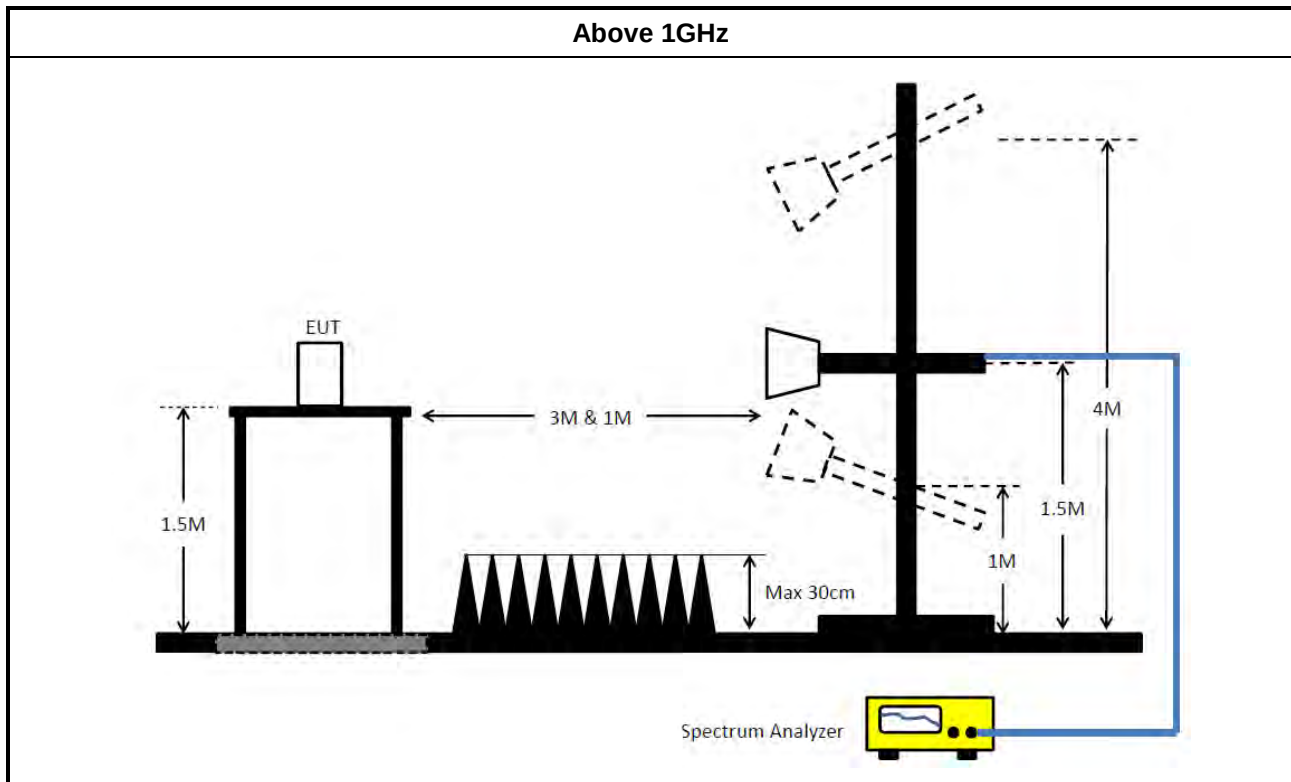
3.2.3 Test Procedures

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:	
For radiated measurement.	Refer as FCC KDB 789033 D02, clause G)2) for unwanted emissions into non-restricted bands.
	Refer as FCC KDB 789033 D02, clause G)1) for unwanted emissions into restricted bands.
	☐ 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 $\geq$ 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.
For conducted measurement.	☐ Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.
	For radiated measurement.
	Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m.
	Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m.
Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.	
The any unwanted emissions level shall not exceed the fundamental emission level.	
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value	

Test Method

has no need to be reported.

3.2.4 Test Setup
Transmitter Radiated Unwanted Emissions
9kHz ~30MHz

30MHz~1GHz




3.2.5 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.

3.2.6 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.

3.2.7 Test Result of Transmitter Unwanted Emissions

Refer as Appendix B



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	Mar. 03, 2021	Mar. 02, 2022	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Dec. 22, 2021	Dec. 21, 2022	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Mar. 07, 2021	Mar. 06, 2022	Conduction (CO01-CB)
Pulse Limiter	Rohde& Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Jan. 30, 2021	Jan. 29, 2022	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 19, 2021	May 18, 2022	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 14, 2021	Apr. 13, 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. 26, 2021	Mar. 25, 2022	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 27, 2021	Apr. 26, 2022	Radiation (03CH05-CB)
Signal Analyzer	R&S	FSV40	101903	9kHz ~ 40GHz	Mar. 22, 2021	Mar. 21, 2022	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 3m	Mar. 27, 2021	Mar. 26, 2022	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	May 04, 2021	May 03, 2022	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)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
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.



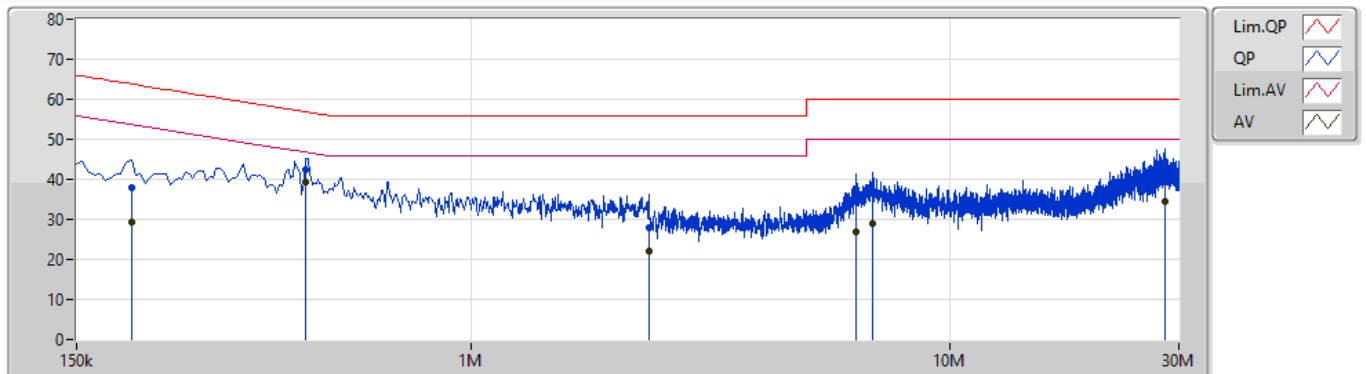
Conducted Emissions at Powerline

Appendix A

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	451.5k	39.24	46.84	-7.60	Line

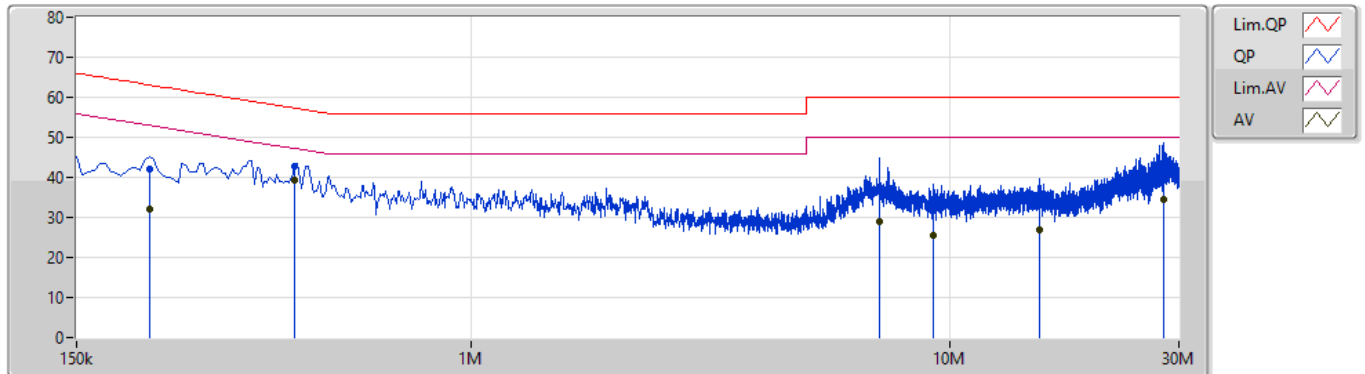
Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	195k	38.00	63.82	-25.82	9.89	Line	-	28.11	0.04	0.04	9.81			
AV	195k	29.38	53.82	-24.44	9.89	Line	-	19.49	0.04	0.04	9.81			
QP	451.5k	42.52	56.84	-14.32	9.90	Line	-	32.62	0.04	0.04	9.82			
AV	451.5k	39.24	46.84	-7.60	9.90	Line	"Worst"	29.34	0.04	0.04	9.82			
QP	2.346M	28.09	56.00	-27.91	10.01	Line	-	18.08	0.10	0.08	9.83			
AV	2.346M	22.24	46.00	-23.76	10.01	Line	-	12.23	0.10	0.08	9.83			
QP	6.347M	35.70	60.00	-24.30	10.21	Line	-	25.49	0.18	0.14	9.89			
AV	6.347M	27.03	50.00	-22.97	10.21	Line	-	16.82	0.18	0.14	9.89			
QP	6.878M	37.30	60.00	-22.70	10.21	Line	-	27.09	0.18	0.14	9.89			
AV	6.878M	29.08	50.00	-20.92	10.21	Line	-	18.87	0.18	0.14	9.89			
QP	28.041M	42.84	60.00	-17.16	10.68	Line	-	32.16	0.37	0.29	10.02			
AV	28.041M	34.55	50.00	-15.45	10.68	Line	-	23.87	0.37	0.29	10.02			

Mode 1

11/01/2022



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	213k	42.18	63.09	-20.91	9.88	Neutral	-	32.30	0.03	0.04	9.81			
AV	213k	32.24	53.09	-20.85	9.88	Neutral	-	22.36	0.03	0.04	9.81			
QP	429k	42.59	57.28	-14.69	9.89	Neutral	-	32.70	0.03	0.04	9.82			
AV	429k	39.31	47.28	-7.97	9.89	Neutral	"Worst"	29.42	0.03	0.04	9.82			
QP	7.103M	36.63	60.00	-23.37	10.20	Neutral	-	26.43	0.16	0.15	9.89			
AV	7.103M	29.13	50.00	-20.87	10.20	Neutral	-	18.93	0.16	0.15	9.89			
QP	9.245M	33.55	60.00	-26.45	10.25	Neutral	-	23.30	0.19	0.16	9.90			
AV	9.245M	25.55	50.00	-24.45	10.25	Neutral	-	15.30	0.19	0.16	9.90			
QP	15.342M	33.70	60.00	-26.30	10.35	Neutral	-	23.35	0.26	0.17	9.92			
AV	15.342M	26.83	50.00	-23.17	10.35	Neutral	-	16.48	0.26	0.17	9.92			
QP	27.798M	42.95	60.00	-17.05	10.72	Neutral	-	32.23	0.41	0.29	10.02			
AV	27.798M	34.32	50.00	-15.68	10.72	Neutral	-	23.60	0.41	0.29	10.02			



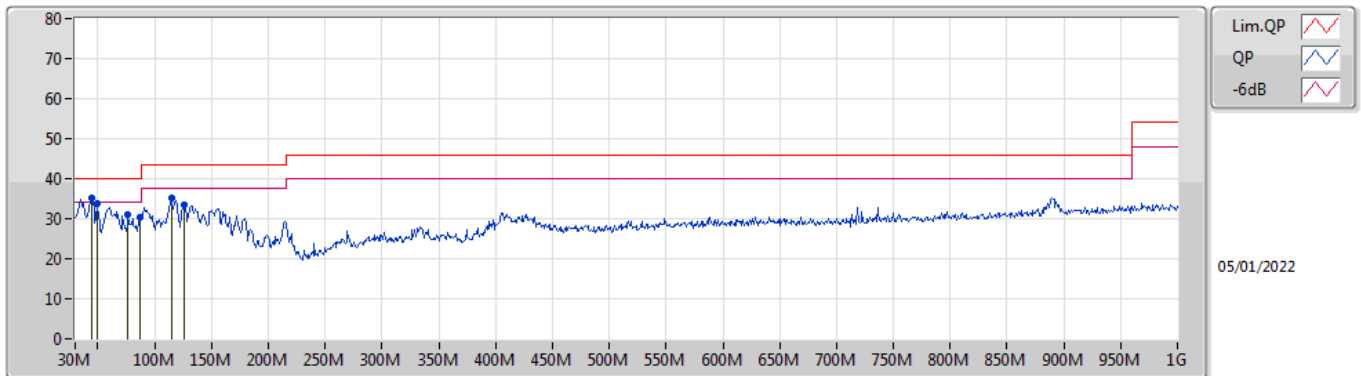
Radiated Emissions below 1GHz

Appendix B.1

Summary

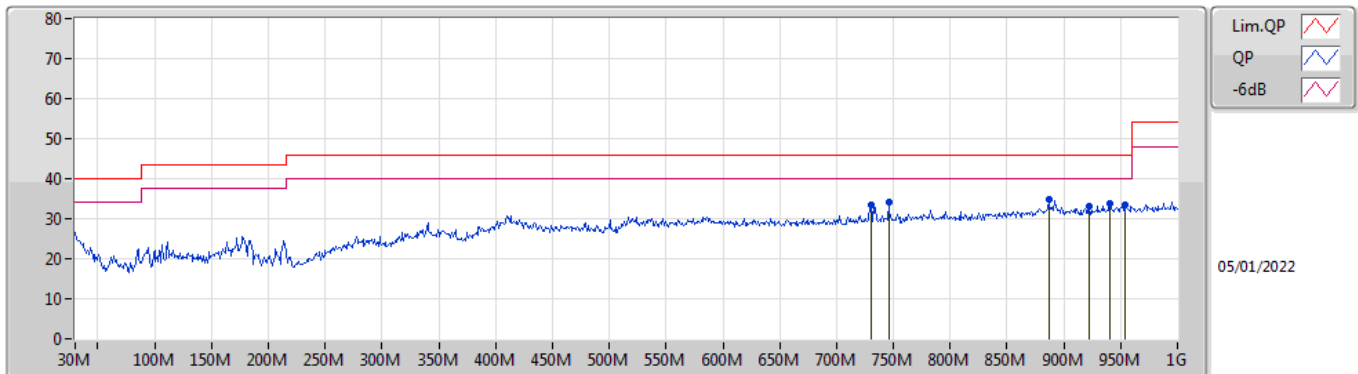
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 2	Pass	PK	44.55M	35.27	40.00	-4.73	Vertical

Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	44.55M	35.27	40.00	-4.73	-14.34	3	Vertical	358	1.00	"Worst"	49.61	16.38	0.99	31.71
PK	49.4M	33.72	40.00	-6.28	-16.53	3	Vertical	37	1.50	-	50.25	14.14	1.09	31.76
PK	76.56M	31.00	40.00	-9.00	-18.17	3	Vertical	211	1.25	-	49.17	12.41	1.33	31.91
PK	87.23M	30.33	40.00	-9.67	-16.42	3	Vertical	109	1.00	-	46.75	14.05	1.44	31.91
PK	114.39M	35.11	43.50	-8.39	-12.41	3	Vertical	214	1.00	-	47.52	17.94	1.57	31.92
PK	126.03M	33.42	43.50	-10.08	-12.38	3	Vertical	142	1.00	-	45.80	17.91	1.66	31.95

Mode 2



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	730.34M	33.43	46.00	-12.57	-3.11	3	Horizontal	301	1.00	-	36.54	24.96	4.62	32.69
PK	745.86M	34.20	46.00	-11.80	-2.86	3	Horizontal	321	1.25	-	37.06	25.17	4.68	32.71
PK	886.51M	34.74	46.00	-11.26	-1.21	3	Horizontal	163	1.00	"Worst"	35.95	26.19	5.25	32.65
PK	922.4M	33.09	46.00	-12.91	-1.02	3	Horizontal	308	1.50	-	34.11	26.17	5.43	32.62
PK	940.83M	33.86	46.00	-12.14	-0.70	3	Horizontal	136	1.25	-	34.56	26.35	5.54	32.59
PK	954.41M	33.33	46.00	-12.67	-0.43	3	Horizontal	302	3.00	-	33.76	26.54	5.60	32.57

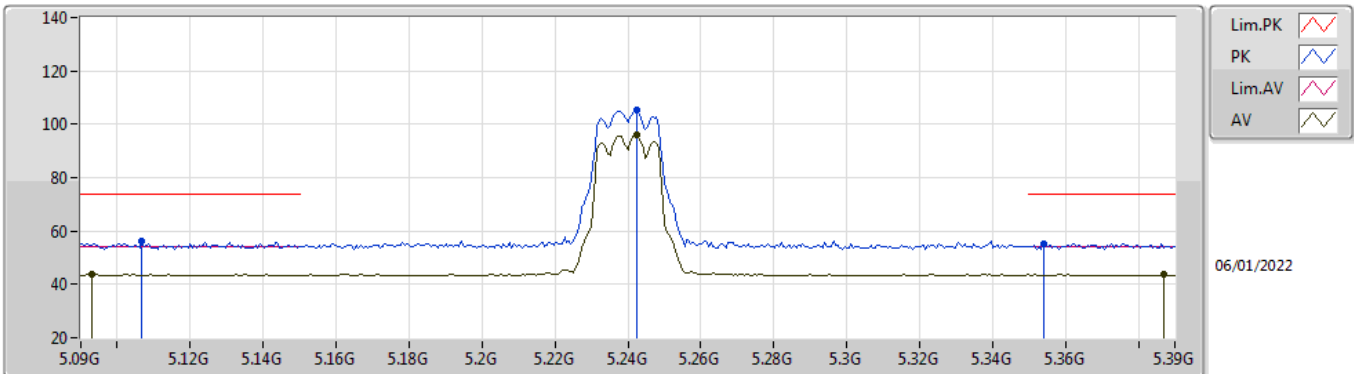


Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
5.725-5.85GHz	-	-	-	-	-	-	-	-	-	-	-
802.11a_Nss1,(6Mbps)_2TX	Pass	AV	11.65012G	46.67	54.00	-7.33	3	Vertical	131	1.80	-

802.11a_Nss1,(6Mbps)_2TX

5240MHz_TnomVnom

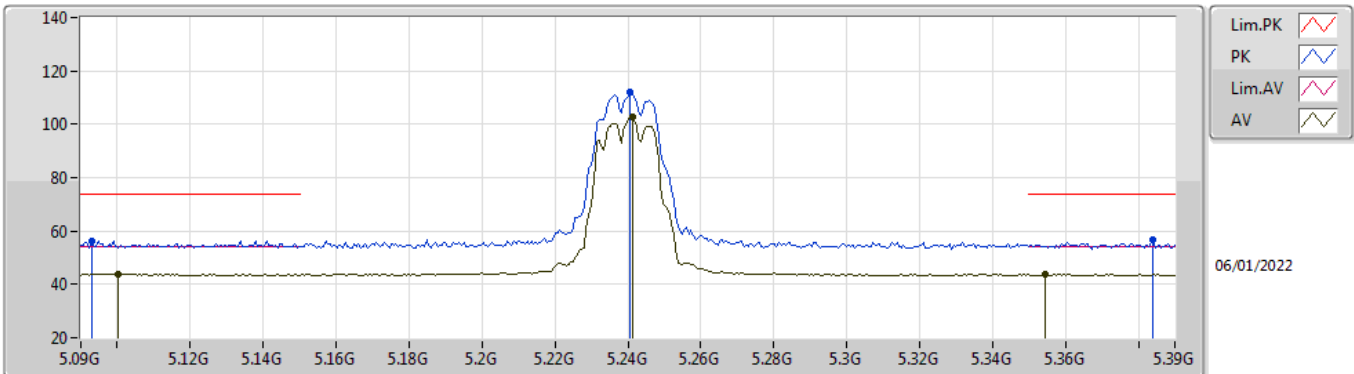


EUT V_2TX
Setting 22
02-B-S-5-10

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	5.1068G	56.21	74.00	-17.79	49.95	3	Vertical	307.2	1.18	-	33.50	4.91	32.15
AV	5.093G	43.80	54.00	-10.20	37.59	3	Vertical	307.2	1.18	-	33.47	4.89	32.15
PK	5.2424G	105.11	Inf	-Inf	98.60	3	Vertical	307.2	1.18	-	33.58	5.08	32.15
AV	5.2424G	96.06	Inf	-Inf	89.55	3	Vertical	307.2	1.18	-	33.58	5.08	32.15
PK	5.354G	55.28	74.00	-18.72	48.69	3	Vertical	307.2	1.18	-	33.71	5.02	32.14
AV	5.387G	43.70	54.00	-10.30	37.06	3	Vertical	307.2	1.18	-	33.77	5.01	32.14

802.11a_Nss1,(6Mbps)_2TX

5240MHz_TnomVnom

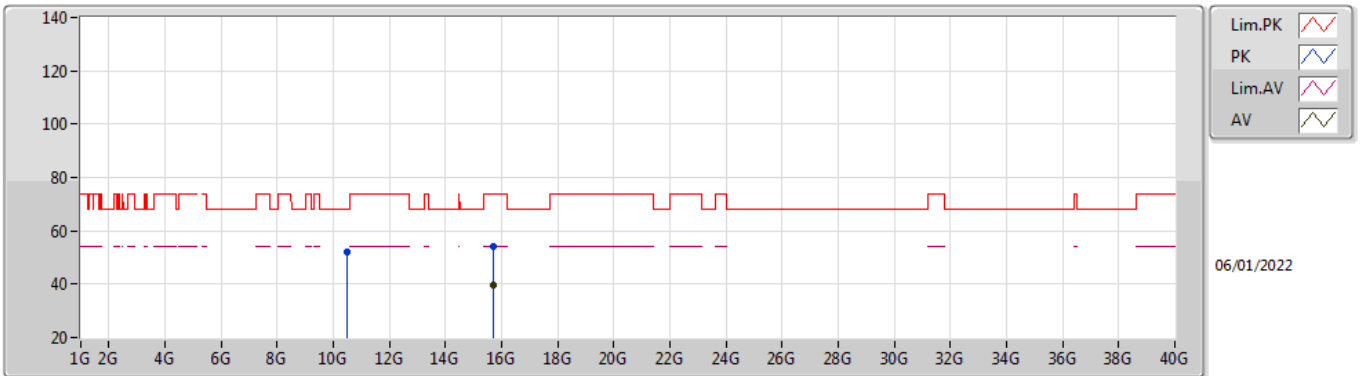


EUT V_2TX
Setting 22
02-B-S-5-10

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	5.093G	56.38	74.00	-17.62	50.17	3	Horizontal	175.9	2.78	-	33.47	4.89	32.15
AV	5.1002G	44.01	54.00	-9.99	37.76	3	Horizontal	175.9	2.78	-	33.50	4.90	32.15
PK	5.2406G	112.30	Inf	-Inf	105.79	3	Horizontal	175.9	2.78	-	33.58	5.08	32.15
AV	5.2412G	102.81	Inf	-Inf	96.30	3	Horizontal	175.9	2.78	-	33.58	5.08	32.15
PK	5.384G	56.51	74.00	-17.49	49.87	3	Horizontal	175.9	2.78	-	33.77	5.01	32.14
AV	5.3546G	43.64	54.00	-10.36	37.05	3	Horizontal	175.9	2.78	-	33.71	5.02	32.14

802.11a_Nss1,(6Mbps)_2TX

5240MHz_TnomVnom

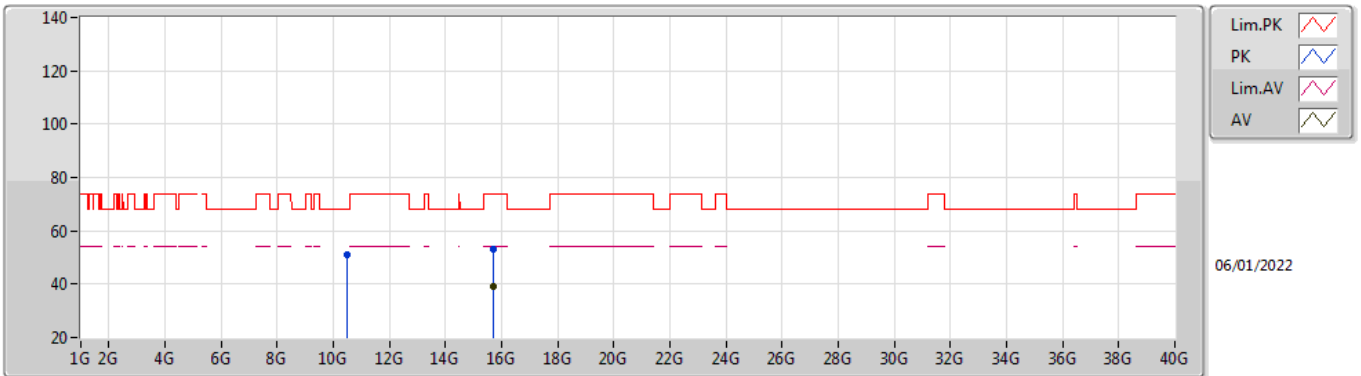


EUT_V_2TX
Setting 22
02-B-S-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	10.48004G	52.03	68.20	-16.17	39.40	3	Vertical	140	1.74	-	38.40	7.27	33.04
PK	15.72022G	54.14	74.00	-19.86	41.05	3	Vertical	126.4	1.94	-	37.40	9.10	33.41
AV	15.72028G	39.91	54.00	-14.09	26.82	3	Vertical	126.4	1.94	-	37.40	9.10	33.41

802.11a_Nss1,(6Mbps)_2TX

5240MHz_TnomVnom

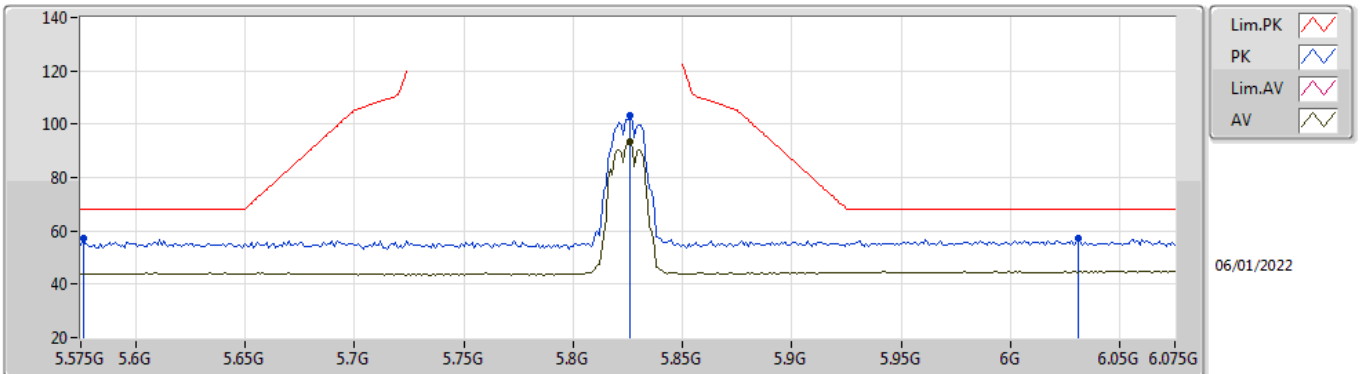


EUT V_2TX
Setting 22
02-B-S-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	10.47956G	51.06	68.20	-16.14	39.43	3	Horizontal	130	1.80	-	38.40	7.27	33.04	
PK	15.7197G	53.36	74.00	-20.64	40.27	3	Horizontal	91.5	1.89	-	37.40	9.10	33.41	
AV	15.7189G	39.23	54.00	-14.77	26.14	3	Horizontal	91.5	1.89	-	37.40	9.10	33.41	

802.11a_Nss1,(6Mbps)_2TX

5825MHz_TnomVnom

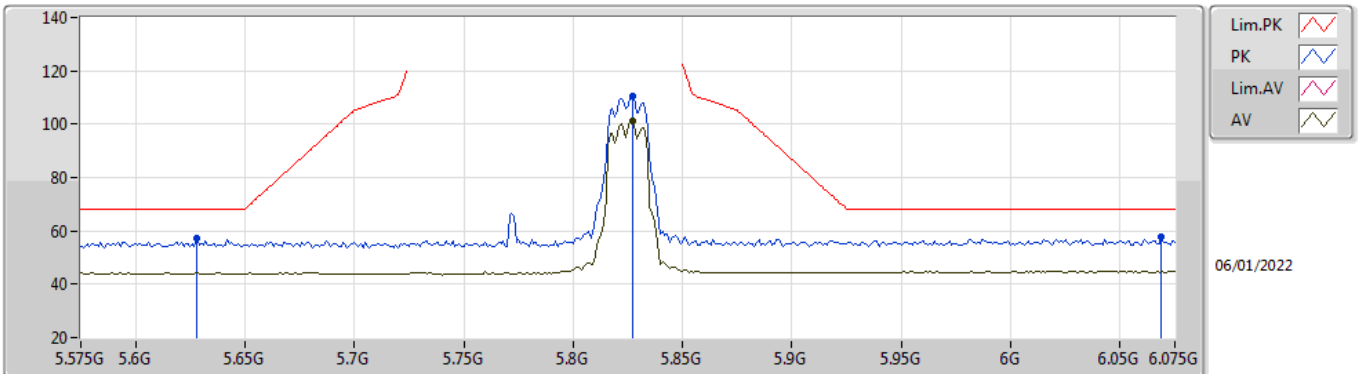


EUT V_2TX
Setting 22.5
02-B-S-5-10

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	5.576G	57.17	68.20	-11.03	50.22	3	Vertical	309	1.98	-	33.90	5.18	32.13	
PK	5.826G	103.26	Inf	-Inf	96.58	3	Vertical	309	1.98	-	33.75	5.08	32.15	
AV	5.826G	93.64	Inf	-Inf	86.96	3	Vertical	309	1.98	-	33.75	5.08	32.15	
PK	6.031G	57.04	68.20	-11.16	49.43	3	Vertical	309	1.98	-	34.22	5.55	32.16	

802.11a_Nss1,(6Mbps)_2TX

5825MHz_TnomVnom

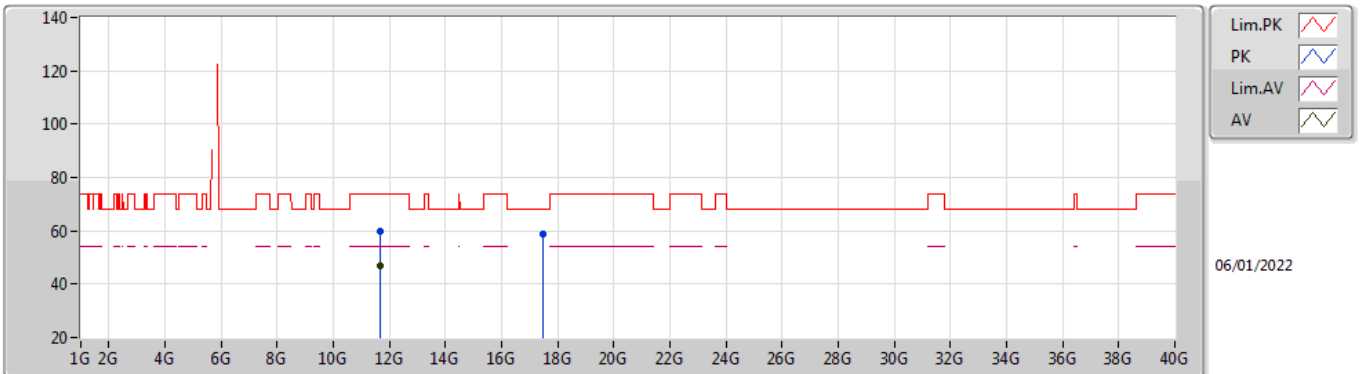


EUT V_2TX
Setting 22.5
02-B-S-5-10

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	5.628G	57.31	68.20	-10.89	50.44	3	Horizontal	8	1.17	-	33.84	5.17	32.14	
PK	5.827G	110.64	Inf	-Inf	103.96	3	Horizontal	8	1.17	-	33.75	5.08	32.15	
AV	5.827G	101.33	Inf	-Inf	94.65	3	Horizontal	8	1.17	-	33.75	5.08	32.15	
PK	6.069G	57.93	68.20	-10.27	50.25	3	Horizontal	8	1.17	-	34.34	5.50	32.16	

802.11a_Nss1,(6Mbps)_2TX

5825MHz_TnomVnom

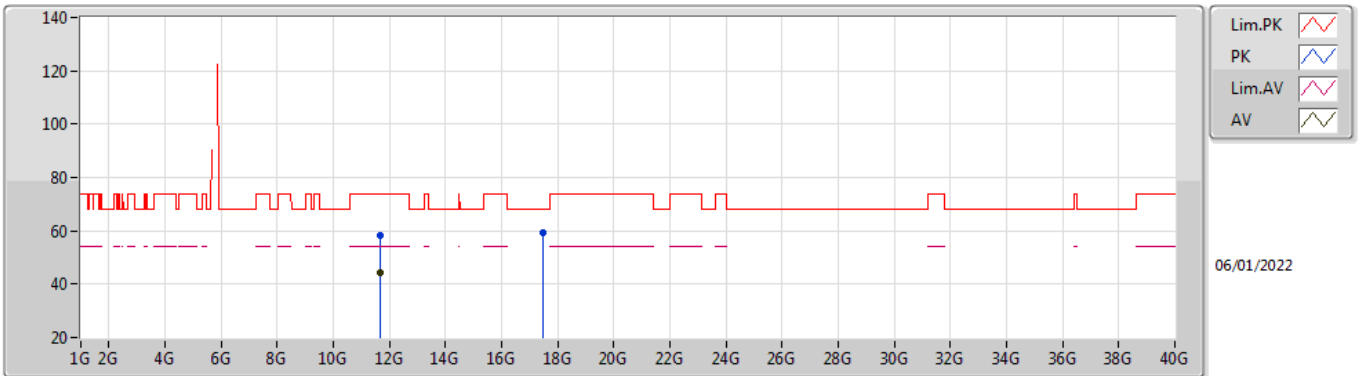


EUT_V_2TX
Setting 22.5
02-B-S-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	11.6549G	60.05	74.00	-13.95	46.28	3	Vertical	131	1.80	-	39.35	7.68	33.26
AV	11.65012G	46.67	54.00	-7.33	32.90	3	Vertical	131	1.80	-	39.35	7.68	33.26
PK	17.47644G	58.90	68.20	-9.30	38.91	3	Vertical	317	1.36	-	43.64	9.35	33.00

802.11a_Nss1,(6Mbps)_2TX

5825MHz_TnomVnom

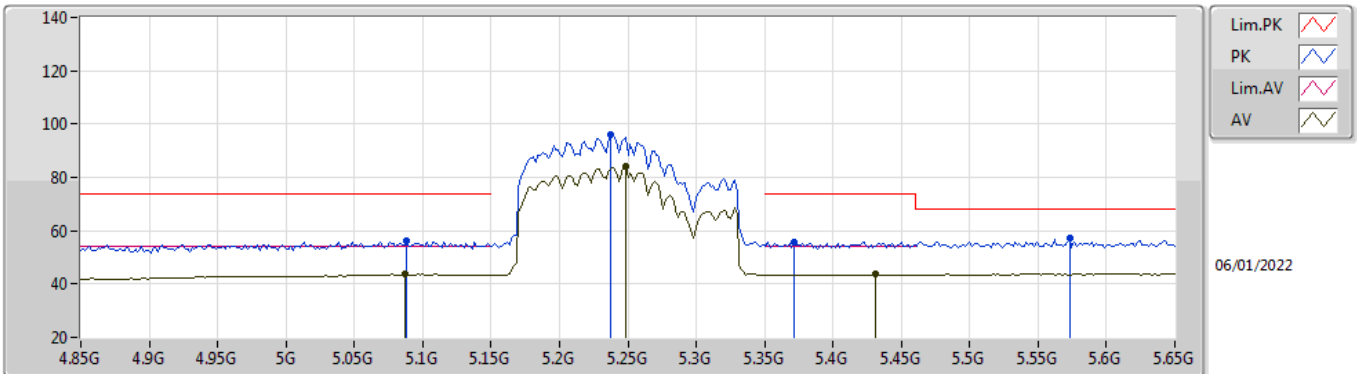


EUT_V_2TX
Setting 22.5
02-B-S-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	11.65346G	58.25	74.00	-15.75	44.48	3	Horizontal	135	1.59	-	39.35	7.68	33.26	
AV	11.64896G	44.12	54.00	-9.88	30.35	3	Horizontal	135	1.59	-	39.35	7.68	33.26	
PK	17.47432G	59.27	68.20	-8.93	39.30	3	Horizontal	92	2.46	-	43.62	9.35	33.00	

802.11ax HEW160_Nss1,(MCS0)_2TX

5250MHz Straddle 5.25-5.35GHz_TnomVnom

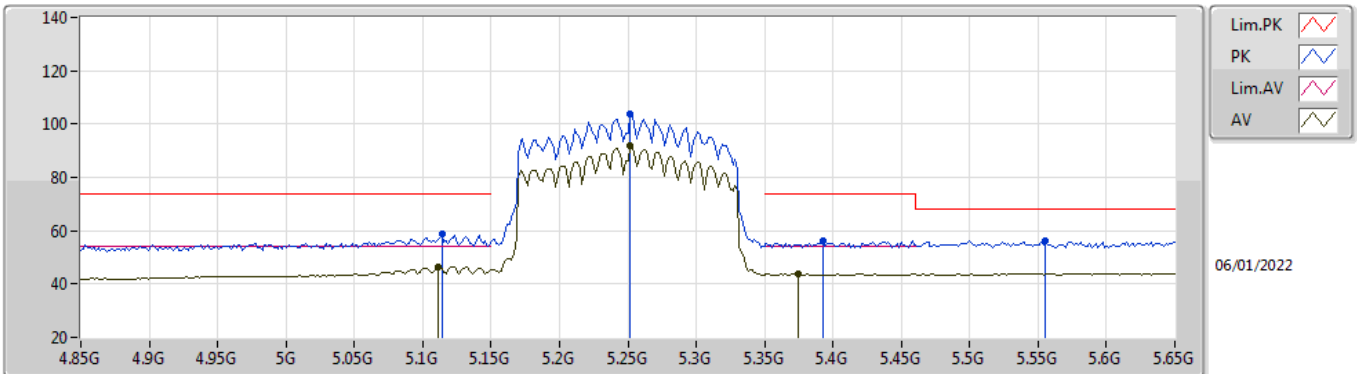


EUT V_2TX
Setting 19.5
02-B-S-5-10

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	5.0884G	56.46	74.00	-17.54	50.28	3	Vertical	257	2.55	-	33.45	4.88	32.15
AV	5.0868G	43.60	54.00	-10.40	37.43	3	Vertical	257	2.55	-	33.45	4.87	32.15
PK	5.2372G	96.19	Inf	-Inf	89.69	3	Vertical	257	2.55	-	33.57	5.08	32.15
AV	5.2484G	84.06	Inf	-Inf	77.53	3	Vertical	257	2.55	-	33.60	5.08	32.15
PK	5.3716G	55.84	74.00	-18.16	49.23	3	Vertical	257	2.55	-	33.74	5.01	32.14
AV	5.4308G	43.58	54.00	-10.42	36.82	3	Vertical	257	2.55	-	33.86	5.03	32.13
PK	5.5732G	57.35	68.20	-10.85	50.41	3	Vertical	257	2.55	-	33.90	5.17	32.13

802.11ax HEW160_Nss1,(MCS0)_2TX

5250MHz Straddle 5.25-5.35GHz_TnomVnom

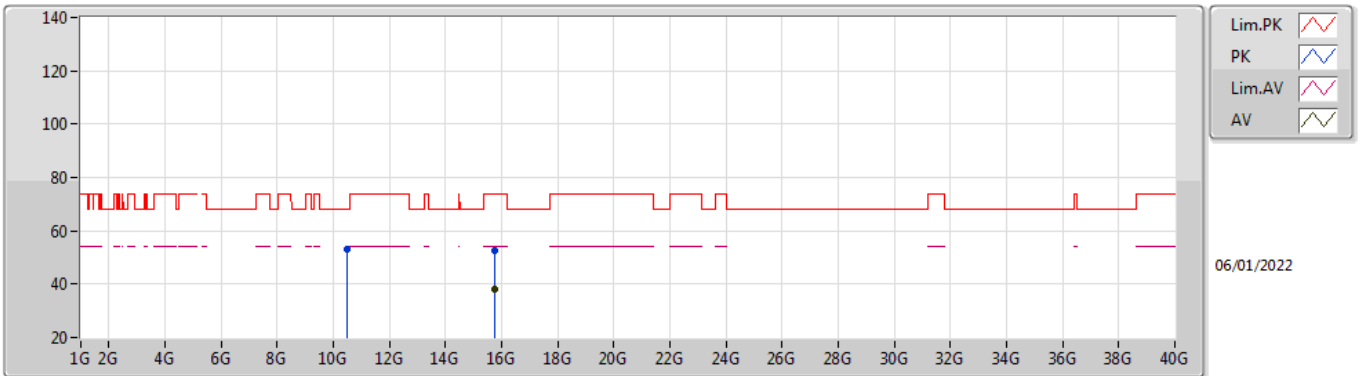


EUT_V_2TX
Setting 19.5
02-B-S-5-10

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	5.114G	58.76	74.00	-15.24	52.48	3	Horizontal	178	2.76	-	33.50	4.93	32.15
AV	5.1108G	46.35	54.00	-7.65	40.08	3	Horizontal	178	2.76	-	33.50	4.92	32.15
PK	5.2516G	103.92	Inf	-Inf	97.39	3	Horizontal	178	2.76	-	33.60	5.07	32.14
AV	5.2516G	91.64	Inf	-Inf	85.11	3	Horizontal	178	2.76	-	33.60	5.07	32.14
PK	5.3924G	56.23	74.00	-17.77	49.59	3	Horizontal	178	2.76	-	33.78	5.00	32.14
AV	5.3748G	43.77	54.00	-10.23	37.15	3	Horizontal	178	2.76	-	33.75	5.01	32.14
PK	5.5556G	56.26	68.20	-11.94	49.33	3	Horizontal	178	2.76	-	33.90	5.16	32.13

802.11ax HEW160_Nss1,(MCS0)_2TX

5250MHz Straddle 5.25-5.35GHz_TnomVnom

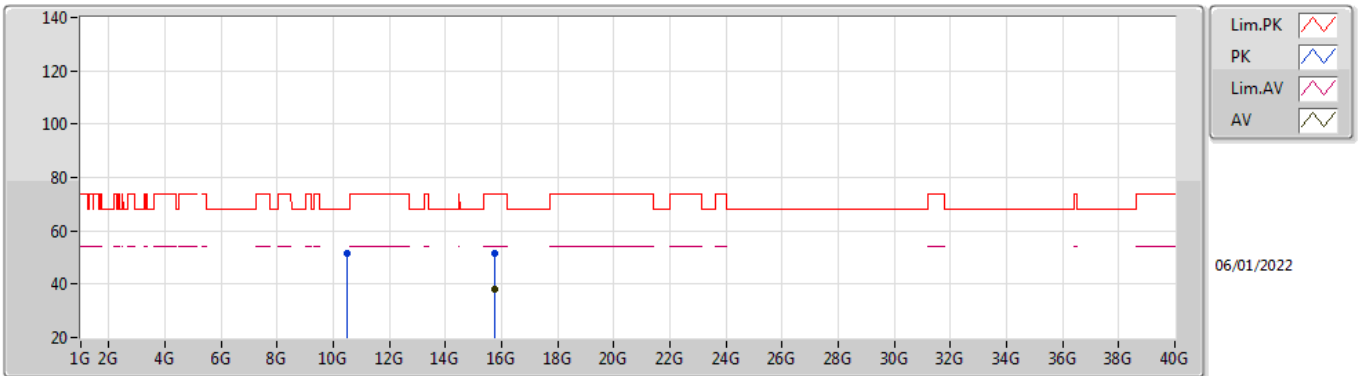


EUT Y_2TX
Setting 19.5
02-B-S-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	10.49984G	53.02	68.20	-15.18	40.40	3	Vertical	140	1.58	-	38.40	7.27	33.05	
PK	15.74312G	52.36	74.00	-21.64	39.29	3	Vertical	115	2.60	-	37.40	9.11	33.44	
AV	15.75476G	38.30	54.00	-15.70	25.24	3	Vertical	115	2.60	-	37.40	9.11	33.45	

802.11ax HEW160_Nss1,(MCS0)_2TX

5250MHz Straddle 5.25-5.35GHz_TnomVnom



EUT V_2TX
Setting 19.5
02-B-S-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)
PK	10.49796G	51.76	68.20	-16.44	39.14	3	Horizontal	134	2.99	-	38.40	7.27	33.05
PK	15.741G	51.46	74.00	-22.54	38.38	3	Horizontal	73	1.94	-	37.40	9.11	33.43
AV	15.75892G	38.30	54.00	-15.70	25.24	3	Horizontal	73	1.94	-	37.40	9.12	33.46