Testing Laboratory 3787

RADIO TEST REPORT

FCC ID	:	TLZ-XM9098
Equipment	:	IEEE 802.112X2 WiFi 6 SU and MU-MIMO DBC Wireless LAN + Bluetooth 5.1 Combo Module
Brand Name	:	AzureWave
Model Name	:	AW-XM458, AW-XM369, AW-XM458MA-XXX, AW-XM369MA-XXX
Applicant	:	AzureWave Technologies, Inc. 8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei City , Taiwan 231
Manufacturer	:	AzureWave Technologies (Shanghai) Inc. No. 1355, Jiaxin Road, Malu Twon, Jiading District Shanghai, P.R. China
Standard	:	47 CFR FCC Part 15.247

The product was received on Jun. 21, 2024, and testing was started from Jul. 11, 2024 and completed on Jul. 31, 2024. 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

Report No.	Version	Description	Issued Date
FR132339-09AD	01	Initial issue of report	Aug. 15, 2024

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(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: Vicky Huang

1 General Description

1.1 Information

1.1.1 RF General Information

Frequency Range (MHz)	Bluetooth Mode	Ch. Frequency (MHz)	Channel Number
2400-2483.5	LE	2402-2480	0-39 [40]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1	1
2.4-2.4835GHz	BT-LE(500Kb/s)	1	1
2.4-2.4835GHz	BT-LE(125Kb/s)	1	1
2.4-2.4835GHz	BT-LE(2Mbps)	2	1

Note:
- Bluetooth LE uses a GFSK modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Set	Ant.	Port			Brand	Model Name	Antenna Type	Connector	Gain (dBi)
		WLAN 2.4GHz	WLAN 5GHz	Bluetooth					
1	1	1	1	-	MAG. LAYERS	MSA-4008-25GC1-A2	PIFA	I-PEX	Note 1
	2	2	2	-	MAG. LAYERS	MSA-4008-25GC1-A2	PIFA	I-PEX	
	3	-	-	1	MAG. LAYERS	MSA-4008-25GC1-A2	PIFA	I-PEX	
2	4	1/2	1/2	1	Inpaq	WA-P-LB-02-587	PCB	I-PEX	
3	5	1/2	1/2	1	Inpaq	WA-P-LB-03-129	PCB	I-PEX	
4	6	-	-	-	Inpaq	WA-P-LB-03-130	PCB	I-PEX	
5	7	-	-	-	Inpaq	WA-F-LB-03-110	PCB	I-PEX	
6	8	-	-	-	Inpaq	WA-F-LB-02-187	PCB	I-PEX	
7	9	-	-	-	Inpaq	WA-F-LA-01-015	PCB	I-PEX	
8	10	-	-	-	TE Connectivity	2195501-2	PCB	I-PEX	
9	11	-	-	-	TE Connectivity	2195505-2	PCB	I-PEX	
10	12	-	-	-	LUXSHARE-ICT	SA37A47021	Dipole	I-PEX	Note 2
	13	-	-	-	LUXSHARE-ICT	SA37A47021	Dipole	I-PEX	
11	14	-	-	-	LUXSHARE-ICT	SA37A47025	PIFA	I-PEX	Note 1
12	15	1/2	1/2	1	TAOGLAS	WLA.10	Chip	N/A	Note 1

Note1:

Set	Ant.	Port			Antenna Gain (dBi)		
		WLAN 2.4GHz	WLAN 5GHz	Bluetooth	WLAN 2.4GHz	WLAN 5GHz	Bluetooth
1	1	1	1	-	2.98	5.16	-
	2	2	2	-	2.98	5.16	-
	3	-	-	1	-	-	2.98
2	4	1/2	1/2	1	4.43	7.52	4.43
3	5	1/2	1/2	1	6.51	3.2	6.51
4	6	-	-	-	4.91	5.84	4.91
5	7	-	-	-	-0.27	2.74	-0.27
6	8	-	-	-	0.07	2.39	0.07
7	9	-	-	-	5.66	-	5.66
8	10	-	-	-	0.47	1.88	0.47
9	11	-	-	-	0.77	0.96	0.77
11	14	-	-	-	-	-	-1.1
12	15	1/2	1/2	1	1.25	2.17	1.25

Note2:

Set	Ant.	Port		Cable Length	Antenna Gain (dBi)		Cable Loss (dB)		True Gain (dBi)	
		WLAN 2.4GHz	WLAN 5GHz		WLAN 2.4GHz	WLAN 5GHz	WLAN 2.4GHz	WLAN 5GHz	WLAN 2.4GHz	WLAN 5GHz
10	12	-	-	450mm	2.8	2.6	1.1	1.9	1.7	0.7
	13	-	-	470mm	2.8	2.6	1.2	2	1.6	0.6

Note3: The above information was declared by manufacturer.

Note4: There are 15 antenna sets listed on the antenna table. The antenna sets 1~9 and 12 have three antennas for each set. The antenna set 10 has two antennas. The antenna set 11 has one antenna. The EUT has four types of antenna.

Note5: Directional gain information.

For ant. 1~ant. 2

Type	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	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$
BF	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

Ex.

Directional Gain (NSS1) formula : $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

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

gj,k =(Nss1(g1,1) + Nss1(g1,2))^2

DG = 10 log[(Nss1(g1,1) + Nss1(g1,2)))^2 / N_{ANT}] => 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / N_{ANT}]

Where ;

2.4G G1 = 2.98 ; G2 = 2.98 ; DG=5.99

5G G1 = 5.16; G2 = 5.16 ; DG=8.17

For ant. 4~ant. 5

Type	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	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$
BF	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

Ex.

Directional Gain (NSS1) formula : $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{SS}}\left\{\sum_{k=1}^{N_{ANT}} g_{j,k}\right\}^2}{N_{ANT}}\right]$

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

gj,k =(Nss1(g1,1) + Nss1(g1,2))^2

DG = 10 log[(Nss1(g1,1) + Nss1(g1,2)))^2 / N_{ANT}] => 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / N_{ANT}]

Where ;

For ant. 5

2.4G G1 = 6.51 ; G2 = 6.51 ; DG=9.52

For ant. 4

5G G1 = 7.52 ; G2 = 7.52 ; DG=10.53

For ant. 15

Type	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	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{sp}}\left[\sum_{k=1}^{N_{ant}} g_{j,k}\right]^2}{N_{ANT}}\right]$
BF	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{sp}}\left[\sum_{k=1}^{N_{ant}} g_{j,k}\right]^2}{N_{ANT}}\right]$	$DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{sp}}\left[\sum_{k=1}^{N_{ant}} g_{j,k}\right]^2}{N_{ANT}}\right]$

Ex.

Directional Gain (NSS1) formula : $DirectionalGain = 10 \cdot \log\left[\frac{\sum_{j=1}^{N_{sp}}\left[\sum_{k=1}^{N_{ant}} g_{j,k}\right]^2}{N_{ANT}}\right]$

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

$gj,k = (Nss1(g1,1) + Nss1(g1,2))^2$

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

Where ;

2.4G G1= 1.25 dBi ; G2= 1.25 dBi ;DG= 4.26 dBi

5G G1= 2.17 dBi ; G2= 2.17 dBi ;DG= 5.18dBi

<WLAN 2.4GHz Function>

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

<WLAN 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.

<Bluetooth Function> (1TX/1RX)

Only Port 1 can be used as transmitting/receiving.

1.1.3 EUT Operational Condition

EUT Power Type	From host system			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	DutApiMimoApApp (Version : 2.0.0.80)			
Support Mode	☒	LE 1M PHY: 1 Mb/s		
	☒	LE Coded PHY (S=2): 500 Kb/s		
	☒	LE Coded PHY (S=8): 125 Kb/s		
	☒	LE 2M PHY: 2 Mb/s		

Note: The above information was declared by manufacturer.

1.1.4 Table for Multiple Listing

EUT	Model No.	GPIO	Antenna	RF Connector Trace and Type	Description
1	AW-XM458, AW-XM369	Without GPIO	PIFA, PCB, Dipole	-	All the model names are identical, the difference model names served as marketing strategy.
2	AW-XM458MA-XXX, AW-XM369MA-XXX	With GPIO		Type 1	All the model names are identical, the difference model names served as marketing strategy.
3				Type 2	
4			Chip	Type 3	

Note 1: From the above models, model: AW-XM458MA-XXX (EUT 4) 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.

1.1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FR132339-07AD.

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

Modifications	Performance Checking
Add EUT 4 with a new antenna type (chip antenna Set 12)	1. AC Power-line Conducted Emissions 2. Emissions in Restricted Frequency Bands below 1GHz. 3. Emissions in Restricted Frequency Bands above 1GHz.(Based on original output power to test.)

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 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.
	Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated below 1GHz	03CH01-CB	Chris Li	21.9-22.4 / 55-58	Jul. 11, 2024~ Jul. 24, 2024
Radiated above 1GHz	03CH02-CB	Chris Li	21.8-22.9 / 55-58	Jul. 11, 2024~ Jul. 24, 2024
AC Conduction	CO01-CB	Ryan Huang	22~23 / 51~53	Jul. 31, 2024

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)	3.8 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	4.1 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.0 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	CTX
1	EUT 4 + WLAN 2.4GHz (Ant. Set 12)
2	EUT 4 + WLAN 5GHz (Ant. Set 12)
3	EUT 4 + Bluetooth (Ant. Set 12)
For operating mode 3 is the worst case and it was record in this test report.	

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
	After evaluating, and the worst case was found at X axis, so it was selected to perform test and its test result was written in the report.
1	EUT 4 in X axis + WLAN 2.4GHz (Ant. Set 12) + WLAN 5GHz (Ant. Set 12) + Bluetooth (Ant. Set 12)
Operating Mode > 1GHz	CTX
	After evaluating, and the worst case was found as below. So the measurement will follow this same test configuration.
1	EUT 4 in Z axis + Ant. Set 12

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 + Bluetooth
Refer to Sporton Test Report No.: FA132339-09 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 Mode:

During the test, the EUT operation to normal function.

2.3 Accessories

N/A

2.4 Support Equipment

For AC Conduction:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB2	DELL	E6430	N/A
B	Fixture	Azurewave	2304NF-i1	N/A
C	NB1	DELL	E6430	N/A
D	Earphone	SHYARO CHI	MIC-04	N/A
E	Mouse	HP	FM100	N/A
F	Fixture	Azurewave	2458-i6	N/A

For Radiated (below 1GHz):

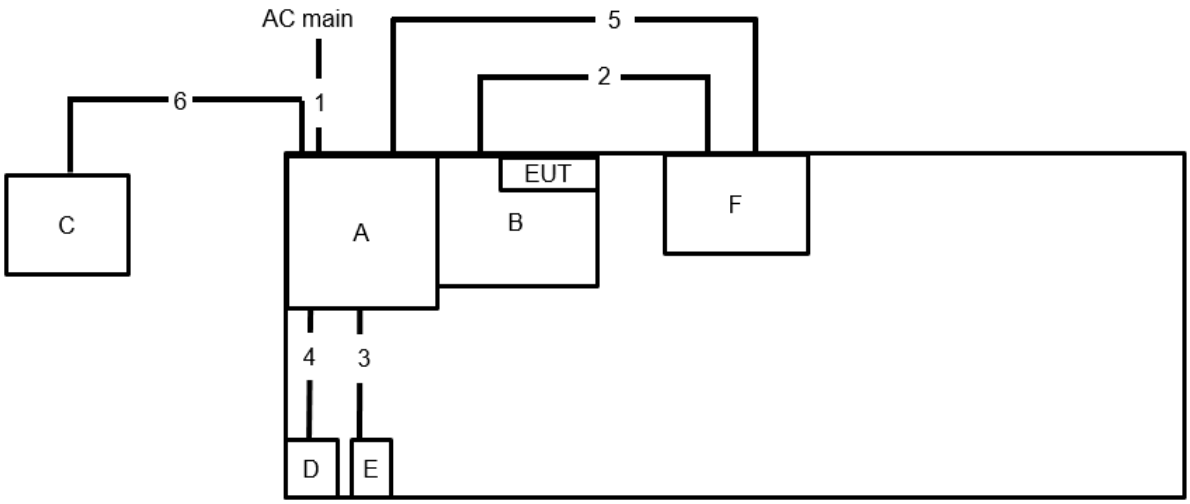
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB	DELL	E4300	N/A
B	Test Fixture	Azurewave	2304NF-i1	N/A
C	Test Fixture	Azurewave	2458-i6	N/A
D	AP Router(2.4G)	ASUS	AX88U	N/A
E	AP Router(5G)	ASUS	AX88U	N/A
F	Phone(BT)	PHILIPS	M20	N/A

For Radiated (above 1GHz):

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	NB	DELL	E4300	N/A
B	Test Fixture	Azurewave	2304NF-i1	N/A
C	Test Fixture	Azurewave	2458-i6	N/A

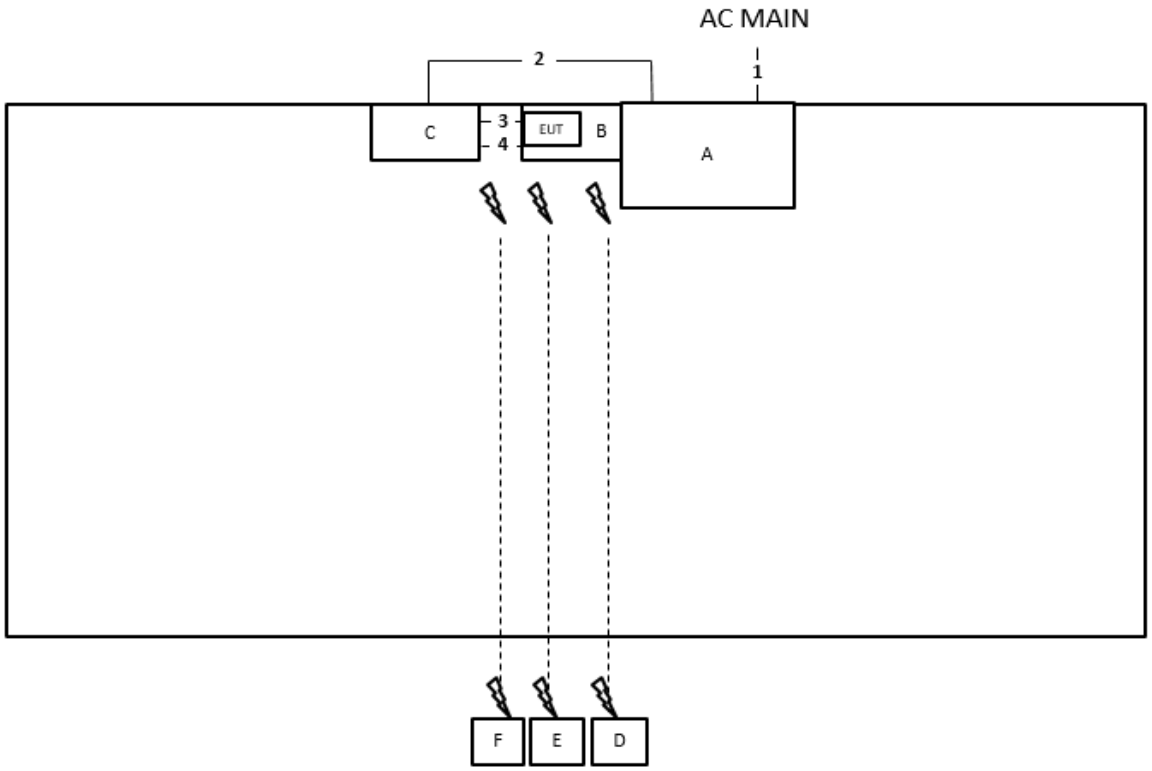
2.5 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



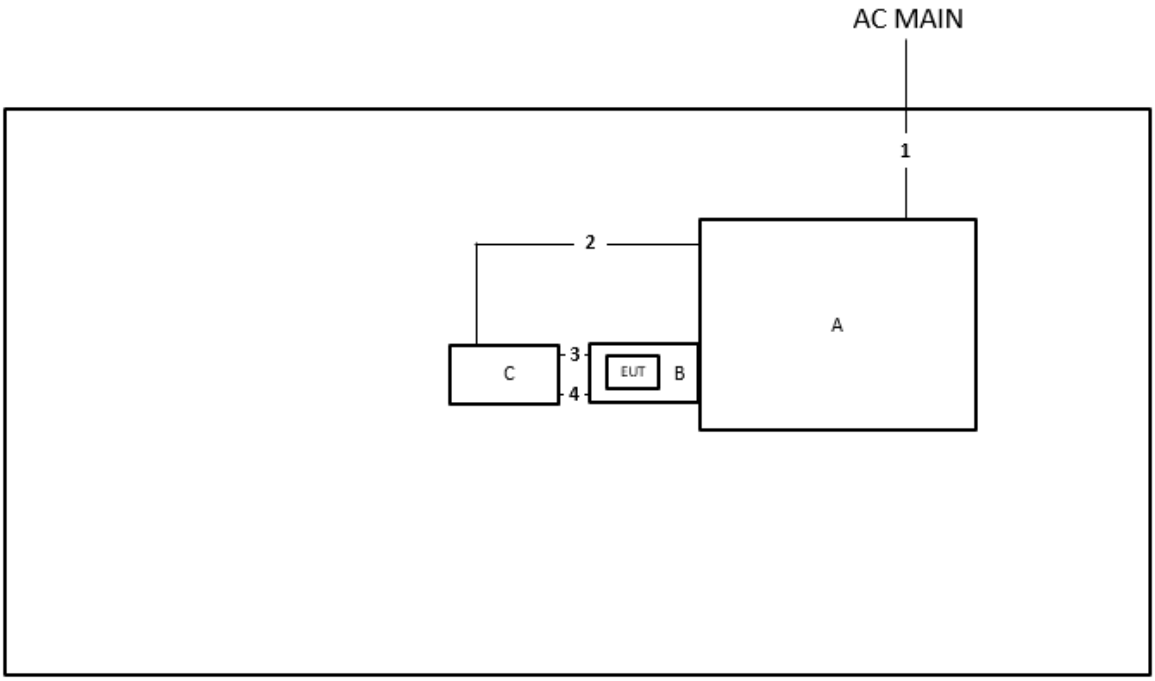
Item	Connection	Shielded	Length
1	Power cable	No	1.8m
2	Digital I/O cable	No	0.1m
3	USB cable	Yes	1.8m
4	Audio cable	No	1.5m
5	USB cable	Yes	0.5m
6	RJ-45 cable	No	10m

Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	USB cable	Yes	1m
3	Console cable	No	0.15m
4	Console cable	No	0.15m

Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	USB cable	Yes	1.5m
3	Console cable	No	0.15m
4	Console cable	No	0.15m

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

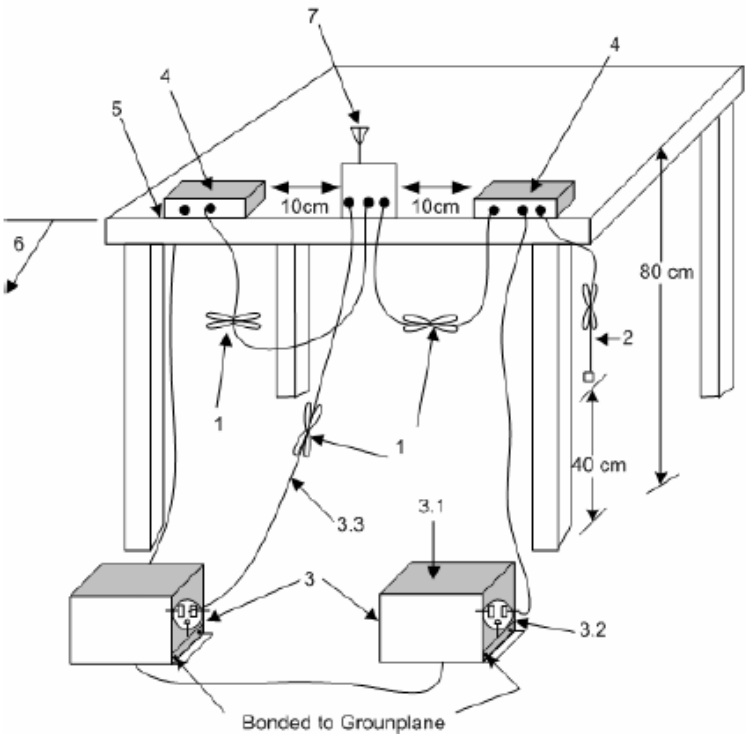
Refer a test equipment and calibration data table in this test report.

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

AC Power-line Conducted Emissions



1—Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
3.1—All other equipment powered from additional LISN(s).
3.2—A multiple-outlet strip may be used for multiple power cords of non-EUT equipment.
3.3—LISN at least 80 cm from nearest part of EUT chassis.
4—Non-EUT components of EUT system being tested.
5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

1.1.1. 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

3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 Emissions in Restricted Frequency Bands

3.2.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions 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 below30 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.

3.2.2 Measuring Instruments

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

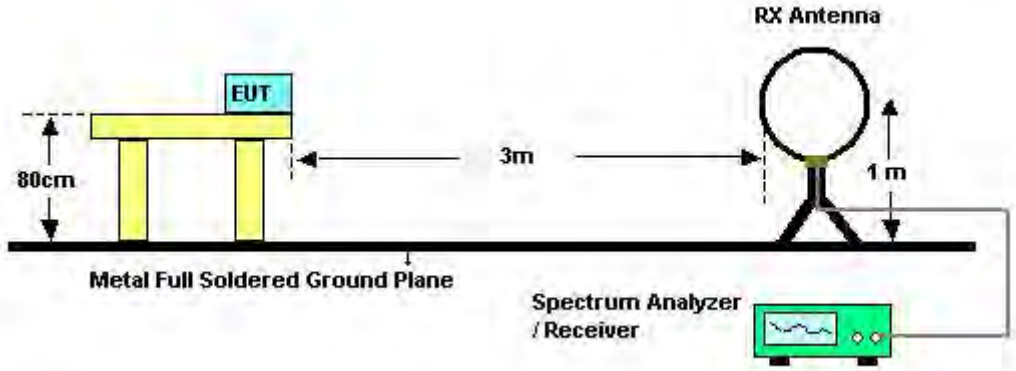
3.2.3 Test Procedures

Test Method			
▪ The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor].			
▪ 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:			
	▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.		
		☐	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 ≥ 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:			
	▪ Refer as FCC KDB 558074 clause 8.7 & 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.		
	▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.		
	▪ 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).		
	▪ For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB		
	▪ 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.		

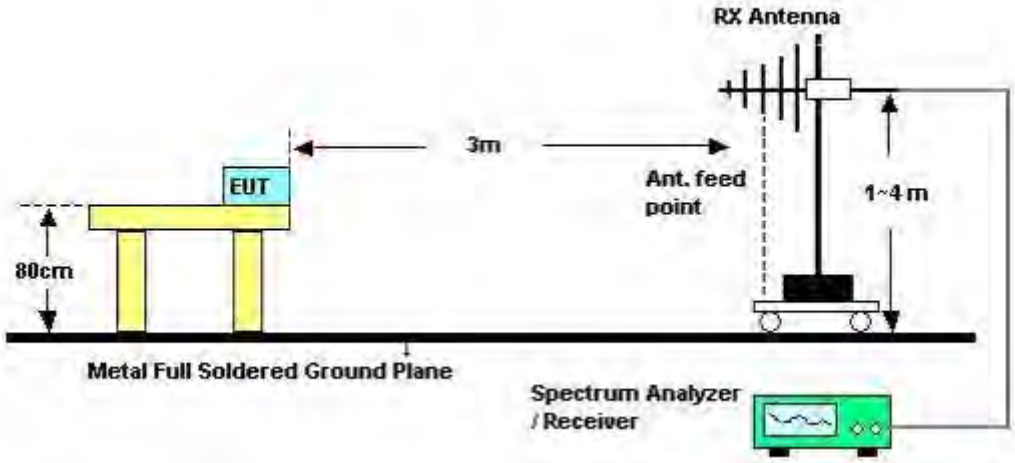
3.2.4 Test Setup

Radiated - Emissions in Restricted Frequency Bands

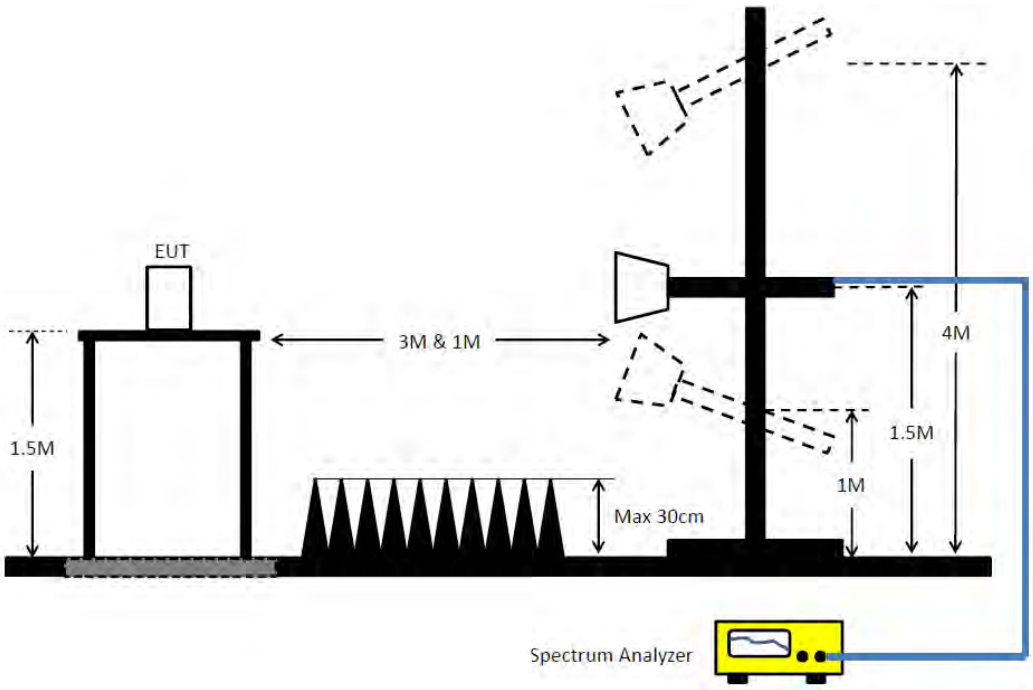
9kHz ~30MHz



30MHz~1GHz



Above 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 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.

3.2.7 Test Result of Emissions in Restricted Frequency Bands

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. 01, 2024	Feb. 28, 2025	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 19, 2024	Feb. 18, 2025	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 24, 2024	Apr. 23, 2025	Conduction (CO01-CB)
Pulse Limiter	Rohde& Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 08, 2024	Feb. 07, 2025	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 17, 2023	Oct. 16, 2024	Conduction (CO01-CB)
Test Software	SPORTON	SENSE-EMI	V5.11	150kHz-30MHz	N.C.R.	N.C.R.	Conduction (CO01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH01-CB	30 MHz ~ 1 GHz	Jan. 18, 2024	Jan. 17, 2025	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Feb. 18, 2024	Feb. 17, 2025	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6121	65417	9kHz - 30 MHz	Oct. 13, 2023	Oct. 12, 2024	Radiation (03CH01-CB)
Pre-Amplifier	SGH	SGH0301	20230109-2	10M~1GHz	Jun. 22, 2024	Jun. 21, 2025	Radiation (03CH01-CB)
Signal Analyzer	R&S	FSV3044	101437	10kHz ~ 44GHz	Nov. 28, 2023	Nov. 27, 2024	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 20, 2023	Oct. 19, 2024	Radiation (03CH01-CB)
RF Cable-low	Woken	RG402	Low Cable-31+32	30 MHz ~ 1 GHz	Nov. 06, 2023	Nov. 05, 2024	Radiation (03CH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH01-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz	Mar. 24, 2024	Mar. 23, 2025	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 12, 2024	Apr. 11, 2025	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Sep. 04, 2023	Sep. 03, 2024	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jun. 29, 2024	Jun. 28, 2025	Radiation (03CH02-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 24, 2023	Nov. 23, 2024	Radiation (03CH02-CB)
Signal Analyzer	R&S	FSV3044	101536	10kHz ~ 44GHz	Jul. 24, 2023	Jul. 23, 2024	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Jun. 20, 2024	Jun. 19, 2025	Radiation (03CH02-CB)

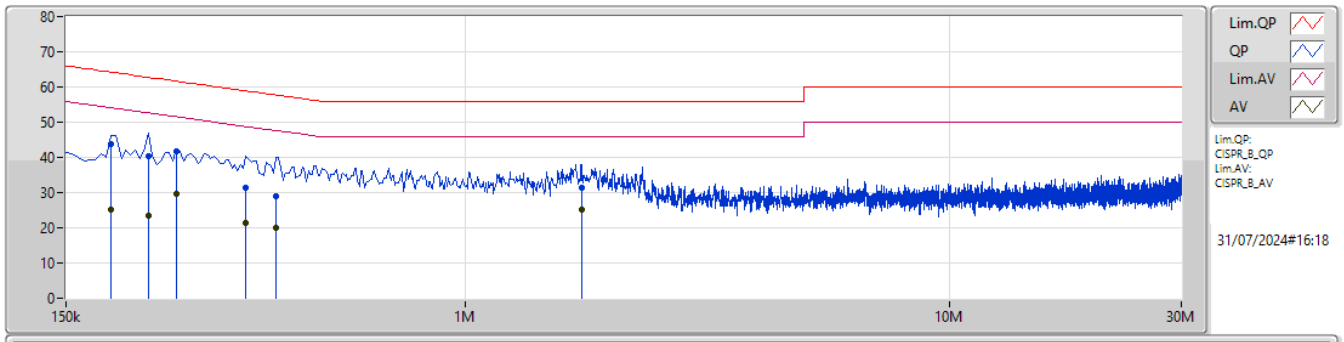
Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Jun. 20, 2024	Jun. 19, 2025	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Jan. 11, 2024	Jan. 10, 2025	Radiation (03CH02-CB)
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.

Summary

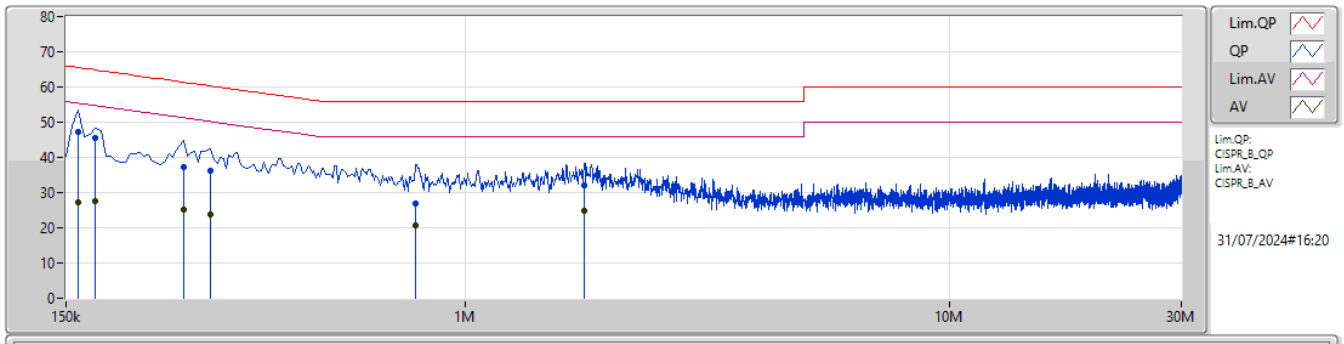
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 3	Pass	QP	159k	47.31	65.52	-18.21	Neutral

Mode 3



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	186k	43.95	64.20	-20.25	9.92	Line	-	34.03	0.05	0.02	9.85
AV	186k	25.23	54.20	-28.97	9.92	Line	-	15.31	0.05	0.02	9.85
QP	222k	40.26	62.75	-22.49	9.93	Line	-	30.33	0.05	0.02	9.86
AV	222k	23.36	52.75	-29.39	9.93	Line	-	13.43	0.05	0.02	9.86
QP	253.5k	41.82	61.64	-19.82	9.93	Line	"Worst"	31.89	0.05	0.02	9.86
AV	253.5k	29.55	51.64	-22.09	9.93	Line	-	19.62	0.05	0.02	9.86
QP	352.5k	31.38	58.91	-27.53	9.95	Line	-	21.43	0.05	0.02	9.88
AV	352.5k	21.28	48.91	-27.63	9.95	Line	-	11.33	0.05	0.02	9.88
QP	406.5k	29.06	57.72	-28.66	9.96	Line	-	19.10	0.05	0.02	9.89
AV	406.5k	20.02	47.72	-27.70	9.96	Line	-	10.06	0.05	0.02	9.89
QP	1.734M	31.26	56.00	-24.74	10.04	Line	-	21.22	0.09	0.06	9.89
AV	1.734M	25.09	46.00	-20.91	10.04	Line	-	15.05	0.09	0.06	9.89

Mode 3

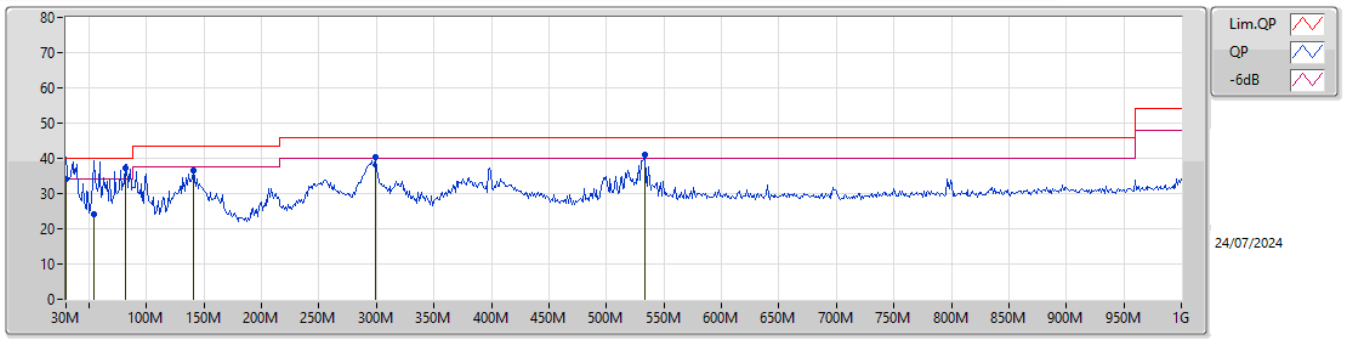


Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	159k	47.31	65.52	-18.21	9.93	Neutral	"Worst"	37.38	0.05	0.02	9.86
AV	159k	27.11	55.52	-28.41	9.93	Neutral	-	17.18	0.05	0.02	9.86
QP	172.5k	45.56	64.83	-19.27	9.93	Neutral	-	35.63	0.05	0.02	9.86
AV	172.5k	27.67	54.83	-27.16	9.93	Neutral	-	17.74	0.05	0.02	9.86
QP	262.5k	37.26	61.35	-24.09	9.94	Neutral	-	27.32	0.05	0.02	9.87
AV	262.5k	25.11	51.35	-26.24	9.94	Neutral	-	15.17	0.05	0.02	9.87
QP	298.5k	36.10	60.28	-24.18	9.94	Neutral	-	26.16	0.05	0.02	9.87
AV	298.5k	23.73	50.28	-26.55	9.94	Neutral	-	13.79	0.05	0.02	9.87
QP	789k	26.95	56.00	-29.05	9.97	Neutral	-	16.98	0.06	0.01	9.90
AV	789k	20.77	46.00	-25.23	9.97	Neutral	-	10.80	0.06	0.01	9.90
QP	1.761M	32.20	56.00	-23.80	10.03	Neutral	-	22.17	0.08	0.06	9.89
AV	1.761M	24.94	46.00	-21.06	10.03	Neutral	-	14.91	0.08	0.06	9.89

Summary

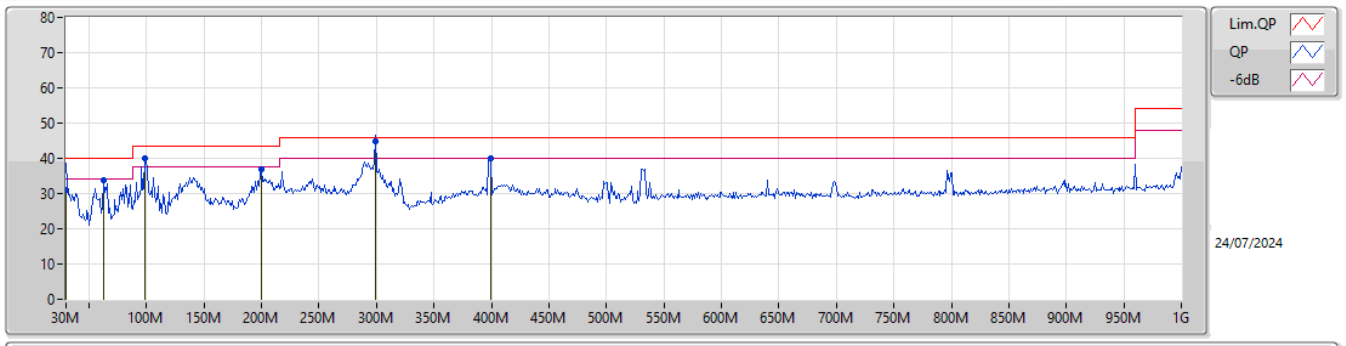
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	QP	299.66M	44.99	46.00	-1.01	Horizontal

Mode 1



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV)	(dB/m)	(dB)	(dB)
QP	30M	34.24	40.00	-5.76	-19.71	3	Vertical	360	1.00	-	53.95	24.06	0.68	44.45
QP	54.25M	24.18	40.00	-15.82	-31.23	3	Vertical	242	3.00	-	55.41	12.80	0.86	44.89
QP	81.41M	37.28	40.00	-2.72	-30.86	3	Vertical	324	1.00	"Worst"	68.14	12.56	1.01	44.43
PK	140.58M	36.38	43.50	-7.12	-27.01	3	Vertical	189	1.00	-	63.39	16.39	1.32	44.72
PK	298.69M	40.37	46.00	-5.63	-24.33	3	Vertical	298	2.00	-	64.70	18.19	1.98	44.50
PK	533.43M	41.12	46.00	-4.88	-18.58	3	Vertical	2	1.25	-	59.70	22.98	2.50	44.06

Mode 1



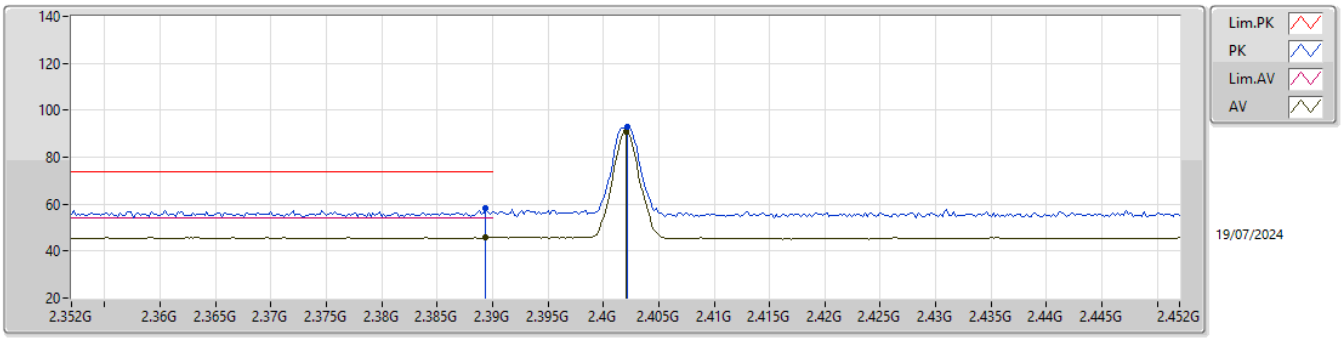
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV)	(dB/m)	(dB)	(dB)
QP	30M	30.92	40.00	-9.08	-19.71	3	Horizontal	95	1.00	-	50.63	24.06	0.68	44.45
PK	62.98M	33.83	40.00	-6.17	-31.80	3	Horizontal	189	1.00	-	65.63	12.05	0.93	44.78
QP	98.87M	39.96	43.50	-3.54	-27.69	3	Horizontal	189	2.00	-	67.65	15.82	1.13	44.64
PK	199.75M	36.79	43.50	-6.71	-28.77	3	Horizontal	182	1.25	-	65.56	14.34	1.58	44.69
QP	299.66M	44.99	46.00	-1.01	-24.32	3	Horizontal	163	1.00	"Worst"	69.31	18.20	1.99	44.51
PK	399.57M	39.83	46.00	-6.17	-21.10	3	Horizontal	298	1.00	-	60.93	20.74	2.22	44.06

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(2Mbps)	Pass	AV	2.389G	47.24	54.00	-6.76	3	Horizontal	142	2.78	-

2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX

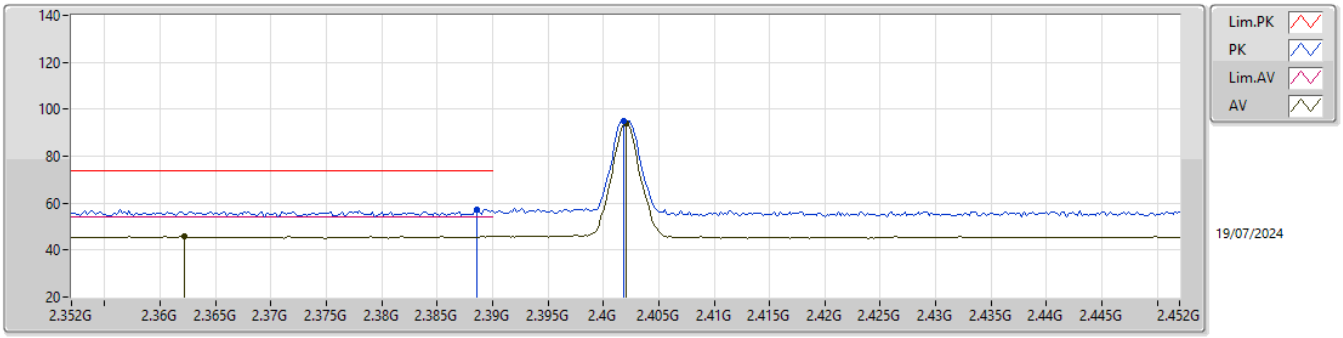


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.3894G	58.05	74.00	-15.95	25.50	3	Vertical	152	3.00	-	28.49	4.06	-
AV	2.3894G	45.93	54.00	-8.07	13.38	3	Vertical	152	3.00	-	28.49	4.06	-
PK	2.4022G	92.69	Inf	-Inf	60.14	3	Vertical	152	3.00	-	28.48	4.07	-
AV	2.402G	90.78	Inf	-Inf	58.23	3	Vertical	152	3.00	-	28.48	4.07	-

2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX

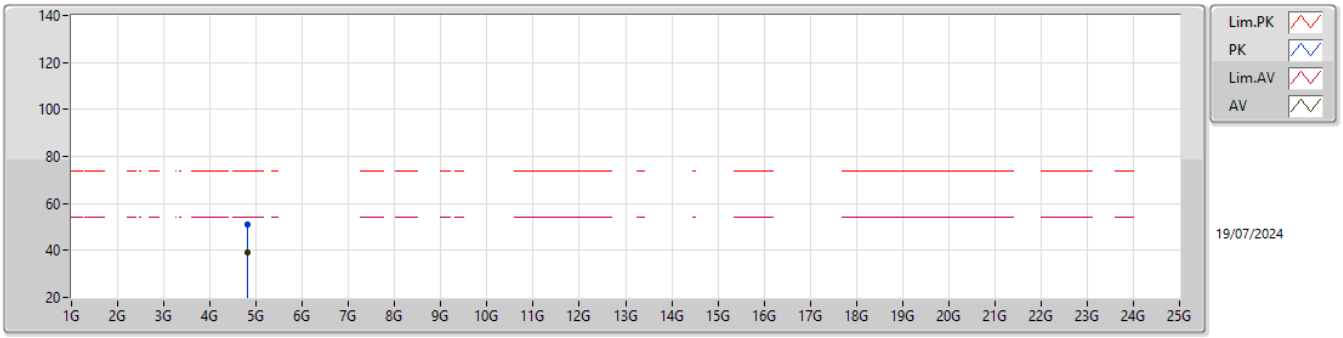


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.3886G	57.47	74.00	-16.53	24.92	3	Horizontal	136	1.22	-	28.49	4.06	-
AV	2.3622G	45.90	54.00	-8.10	13.46	3	Horizontal	136	1.22	-	28.40	4.04	-
PK	2.4018G	95.18	Inf	-Inf	62.63	3	Horizontal	136	1.22	-	28.48	4.07	-
AV	2.402G	93.84	Inf	-Inf	61.29	3	Horizontal	136	1.22	-	28.48	4.07	-

2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX

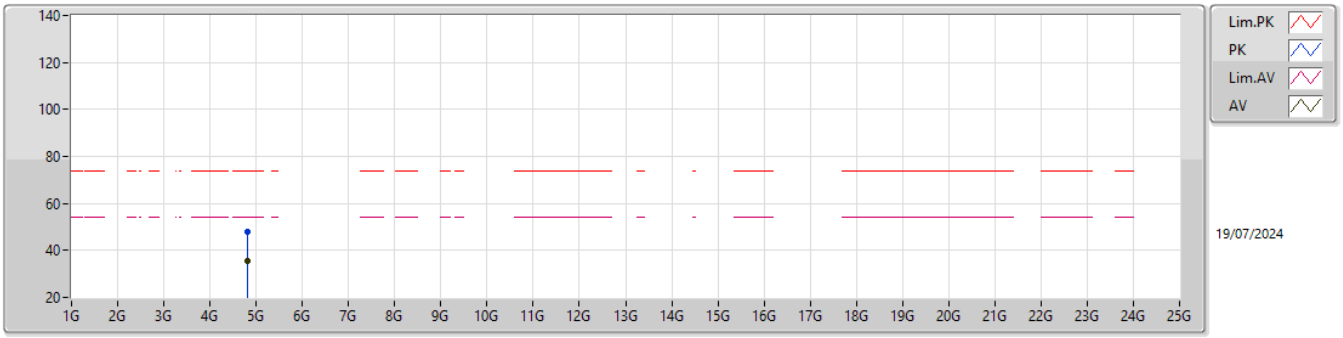


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.80644G	51.25	74.00	-22.75	42.37	3	Vertical	268	2.47	-	33.11	6.77	31.00
AV	4.81008G	39.26	54.00	-14.74	30.36	3	Vertical	268	2.47	-	33.12	6.78	31.00

2.4-2.4835GHz_BT-LE(1Mbps)

2402MHz_TX

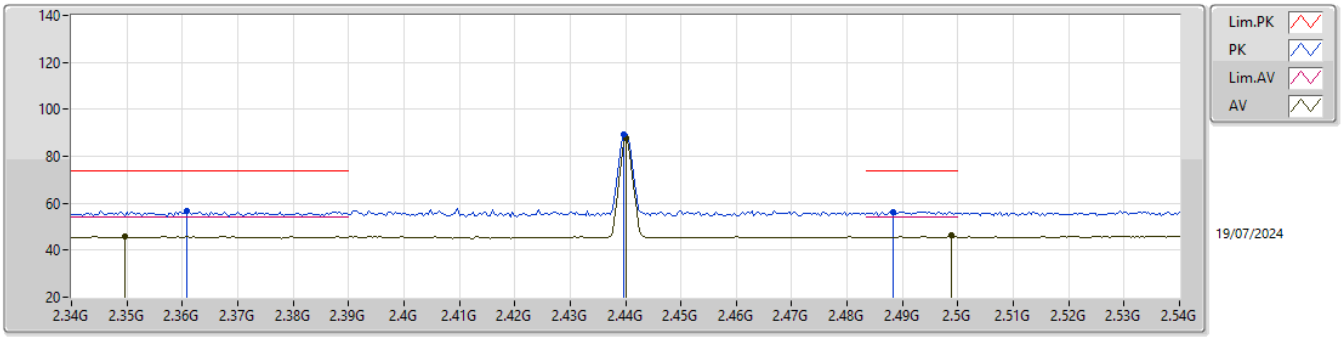


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.80444G	47.76	74.00	-26.24	38.88	3	Horizontal	337	2.92	-	33.11	6.77	31.00
AV	4.80072G	35.53	54.00	-18.47	26.66	3	Horizontal	337	2.92	-	33.10	6.77	31.00

2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX

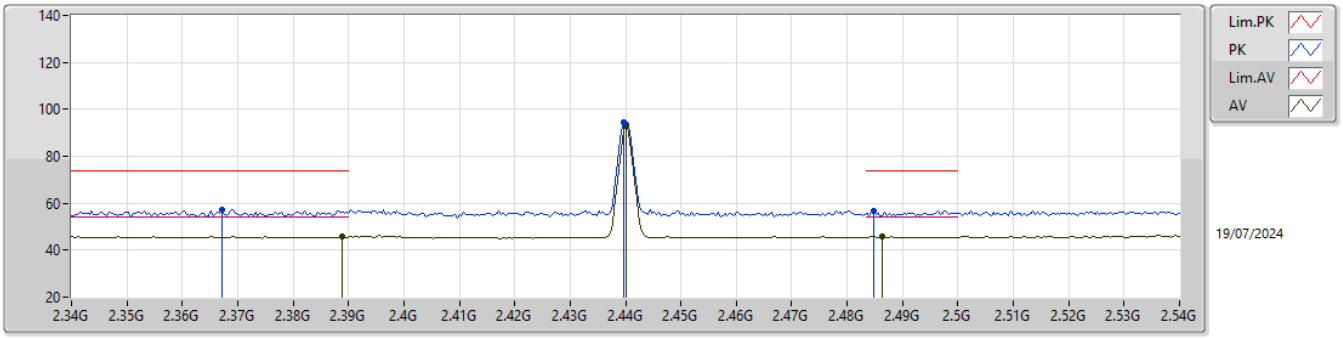


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.3608G	56.77	74.00	-17.23	24.33	3	Vertical	18	1.10	-	28.40	4.04	-
AV	2.3496G	45.77	54.00	-8.23	13.44	3	Vertical	18	1.10	-	28.30	4.03	-
PK	2.4396G	89.24	Inf	-Inf	56.64	3	Vertical	18	1.10	-	28.50	4.10	-
AV	2.44G	87.81	Inf	-Inf	55.21	3	Vertical	18	1.10	-	28.50	4.10	-
PK	2.4884G	56.35	74.00	-17.65	23.61	3	Vertical	18	1.10	-	28.60	4.14	-
AV	2.4988G	46.22	54.00	-7.78	13.48	3	Vertical	18	1.10	-	28.60	4.14	-

2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX

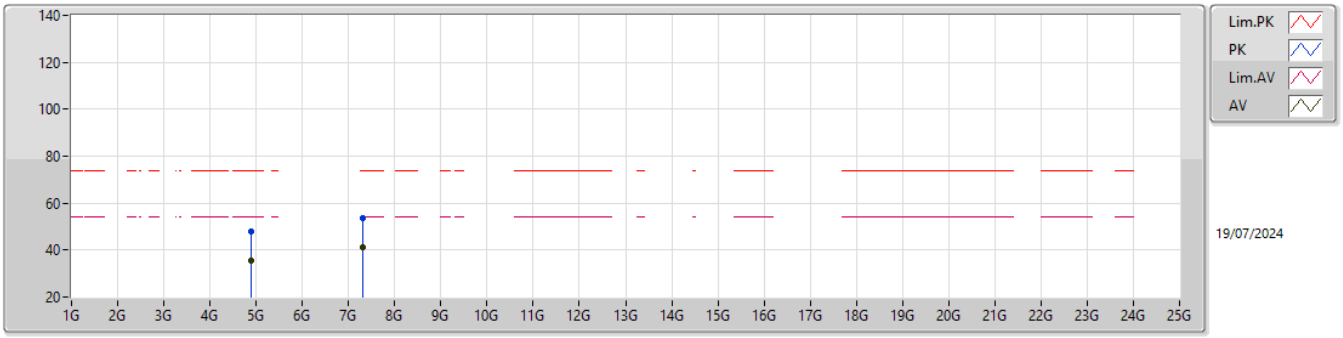


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.3672G	57.19	74.00	-16.81	24.74	3	Horizontal	156	2.47	-	28.40	4.05	-
AV	2.3888G	45.98	54.00	-8.02	13.43	3	Horizontal	156	2.47	-	28.49	4.06	-
PK	2.4396G	94.62	Inf	-Inf	62.02	3	Horizontal	156	2.47	-	28.50	4.10	-
AV	2.44G	93.21	Inf	-Inf	60.61	3	Horizontal	156	2.47	-	28.50	4.10	-
PK	2.4848G	56.94	74.00	-17.06	24.21	3	Horizontal	156	2.47	-	28.60	4.13	-
AV	2.4864G	45.80	54.00	-8.20	13.07	3	Horizontal	156	2.47	-	28.60	4.13	-

2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX

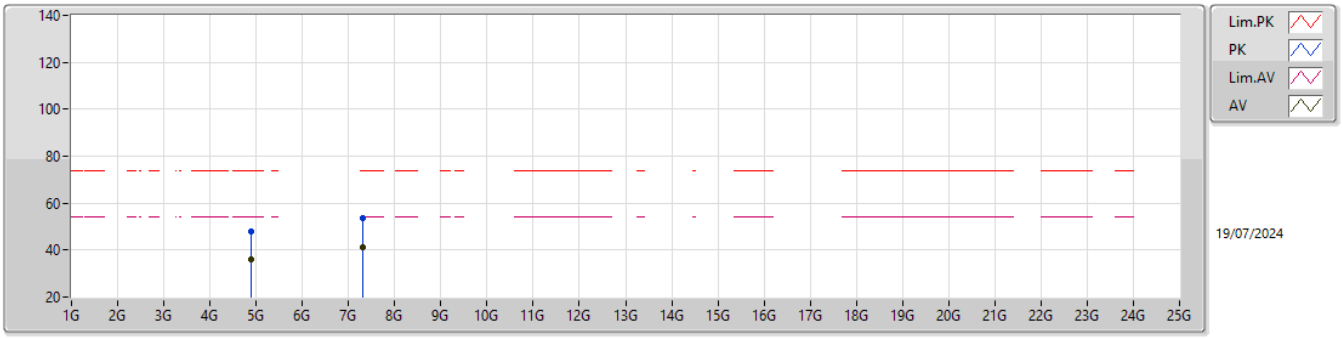


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.8794G	48.13	74.00	-25.87	39.06	3	Vertical	278	1.28	-	33.26	6.81	31.00
AV	4.87964G	35.59	54.00	-18.41	26.52	3	Vertical	278	1.28	-	33.26	6.81	31.00
PK	7.31896G	53.55	74.00	-20.45	39.13	3	Vertical	184	2.40	-	36.48	9.37	31.43
AV	7.3142G	41.13	54.00	-12.87	26.73	3	Vertical	184	2.40	-	36.46	9.37	31.43

2.4-2.4835GHz_BT-LE(1Mbps)

2440MHz_TX

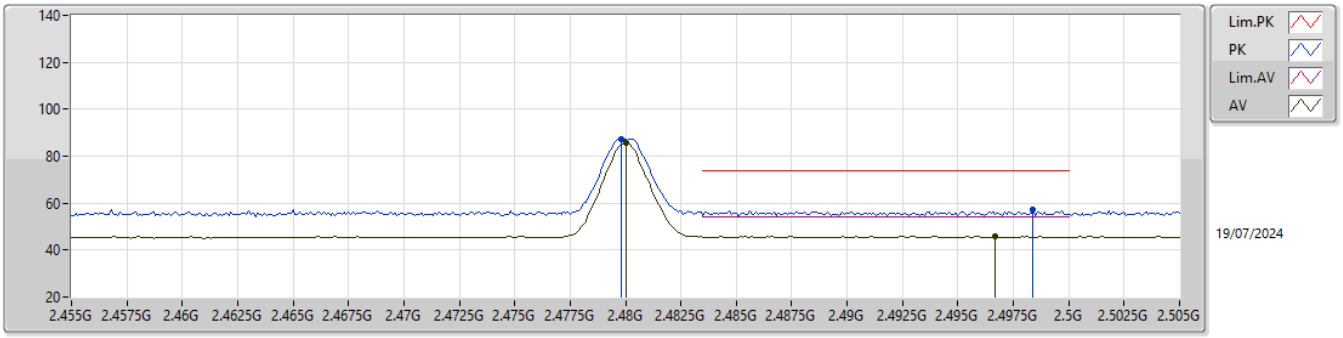


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.88188G	47.70	74.00	-26.30	38.62	3	Horizontal	138	2.85	-	33.26	6.82	31.00
AV	4.87984G	36.06	54.00	-17.94	26.99	3	Horizontal	138	2.85	-	33.26	6.81	31.00
PK	7.31772G	53.49	74.00	-20.51	39.08	3	Horizontal	72	2.90	-	36.47	9.37	31.43
AV	7.32192G	41.21	54.00	-12.79	26.78	3	Horizontal	72	2.90	-	36.49	9.37	31.43

2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX

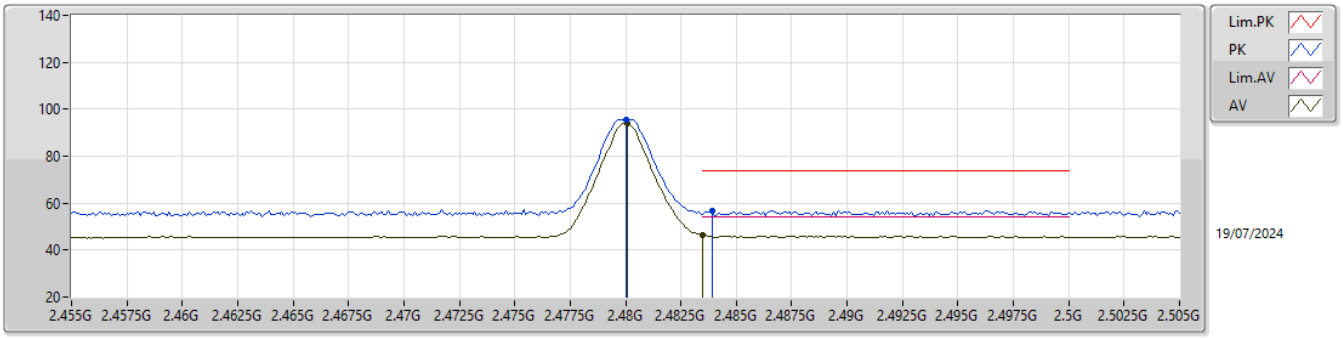


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.4798G	87.06	Inf	-Inf	54.33	3	Vertical	110	2.76	-	28.60	4.13	-
AV	2.48G	85.62	Inf	-Inf	52.89	3	Vertical	110	2.76	-	28.60	4.13	-
PK	2.4984G	57.19	74.00	-16.81	24.45	3	Vertical	110	2.76	-	28.60	4.14	-
AV	2.4967G	45.78	54.00	-8.22	13.04	3	Vertical	110	2.76	-	28.60	4.14	-

2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX

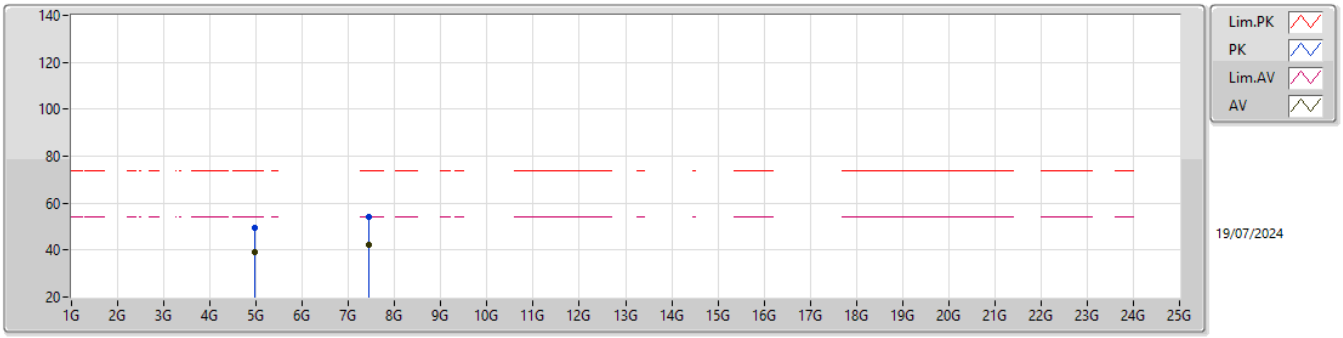


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.48G	95.31	Inf	-Inf	62.58	3	Horizontal	141	1.17	-	28.60	4.13	-
AV	2.4801G	93.93	Inf	-Inf	61.20	3	Horizontal	141	1.17	-	28.60	4.13	-
PK	2.4839G	56.78	74.00	-17.22	24.05	3	Horizontal	141	1.17	-	28.60	4.13	-
AV	2.4835G	46.26	54.00	-7.74	13.53	3	Horizontal	141	1.17	-	28.60	4.13	-

2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX

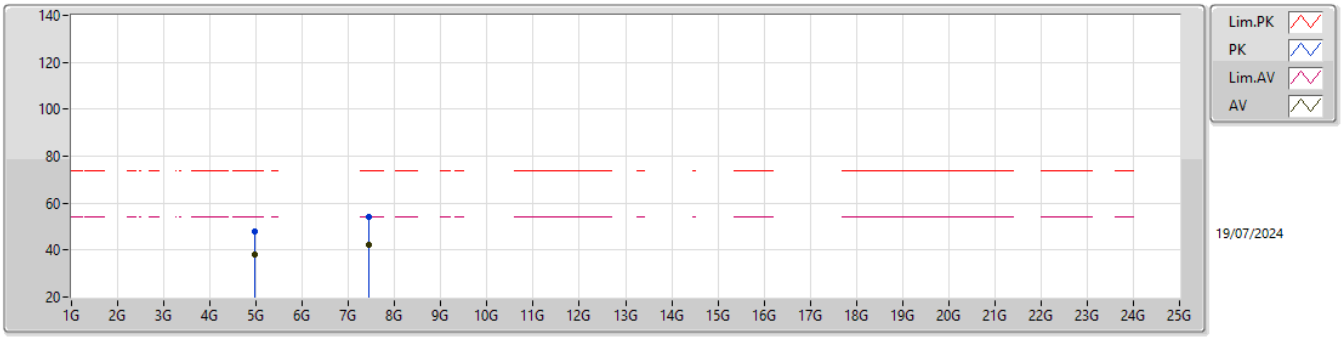


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.95952G	49.23	74.00	-24.77	39.98	3	Vertical	271	2.20	-	33.40	6.86	31.01
AV	4.96012G	39.28	54.00	-14.72	30.03	3	Vertical	271	2.20	-	33.40	6.86	31.01
PK	7.45332G	54.23	74.00	-19.77	39.72	3	Vertical	25	1.95	-	36.59	9.35	31.43
AV	7.4391G	42.13	54.00	-11.87	27.60	3	Vertical	25	1.95	-	36.60	9.36	31.43

2.4-2.4835GHz_BT-LE(1Mbps)

2480MHz_TX

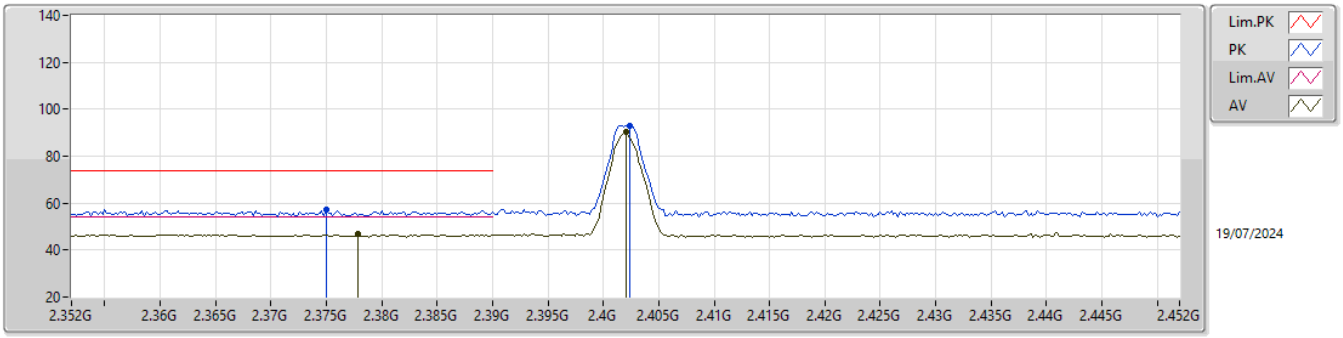


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.9604G	48.05	74.00	-25.95	38.80	3	Horizontal	154	2.39	-	33.40	6.86	31.01
AV	4.9597G	38.12	54.00	-15.88	28.87	3	Horizontal	154	2.39	-	33.40	6.86	31.01
PK	7.43886G	54.39	74.00	-19.61	39.86	3	Horizontal	320	2.05	-	36.60	9.36	31.43
AV	7.44306G	42.01	54.00	-11.99	27.49	3	Horizontal	320	2.05	-	36.60	9.35	31.43

2.4-2.4835GHz_BT-LE(2Mbps)

2402MHz_TX

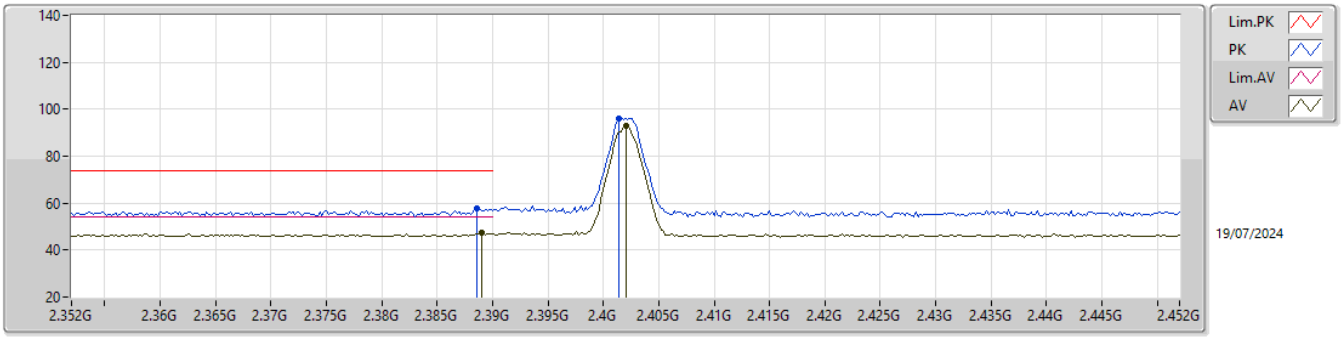


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.375G	57.25	74.00	-16.75	24.80	3	Vertical	166	3.00	-	28.40	4.05	-
AV	2.3778G	46.64	54.00	-7.36	14.19	3	Vertical	166	3.00	-	28.40	4.05	-
PK	2.4024G	92.92	Inf	-Inf	60.37	3	Vertical	166	3.00	-	28.48	4.07	-
AV	2.402G	90.09	Inf	-Inf	57.54	3	Vertical	166	3.00	-	28.48	4.07	-

2.4-2.4835GHz_BT-LE(2Mbps)

2402MHz_TX

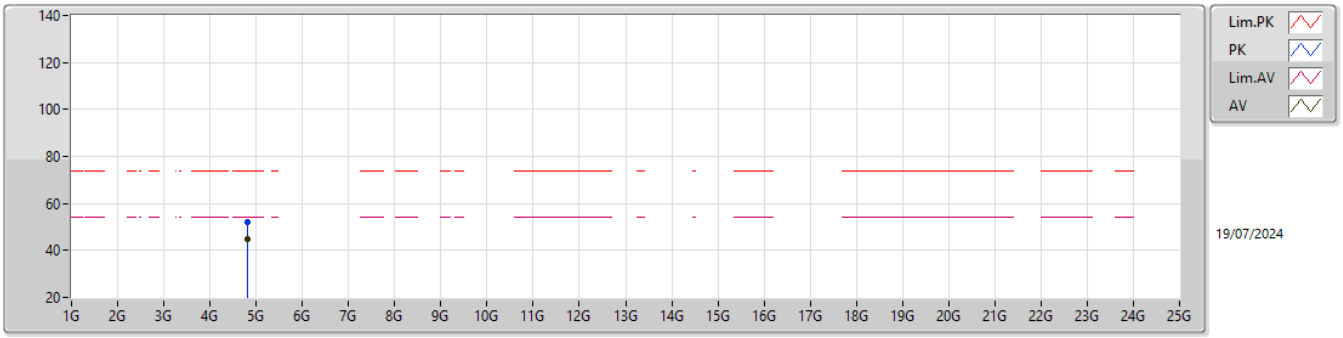


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.3886G	57.72	74.00	-16.28	25.17	3	Horizontal	142	2.78	-	28.49	4.06	-
AV	2.389G	47.24	54.00	-6.76	14.69	3	Horizontal	142	2.78	-	28.49	4.06	-
PK	2.4014G	95.96	Inf	-Inf	63.40	3	Horizontal	142	2.78	-	28.49	4.07	-
AV	2.402G	93.09	Inf	-Inf	60.54	3	Horizontal	142	2.78	-	28.48	4.07	-

2.4-2.4835GHz_BT-LE(2Mbps)

2402MHz_TX

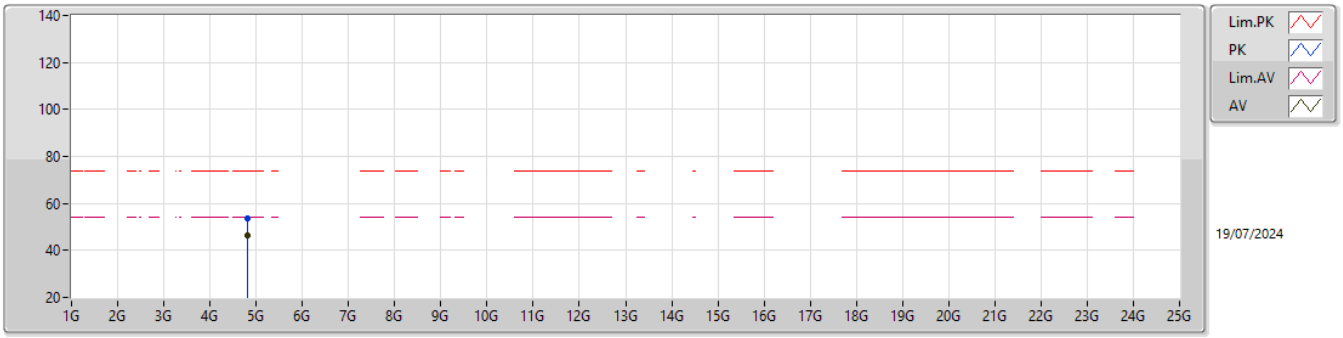


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.80482G	51.98	74.00	-22.02	43.10	3	Vertical	215	2.44	-	33.11	6.77	31.00
AV	4.80304G	44.60	54.00	-9.40	35.72	3	Vertical	215	2.44	-	33.11	6.77	31.00

2.4-2.4835GHz_BT-LE(2Mbps)

2402MHz_TX

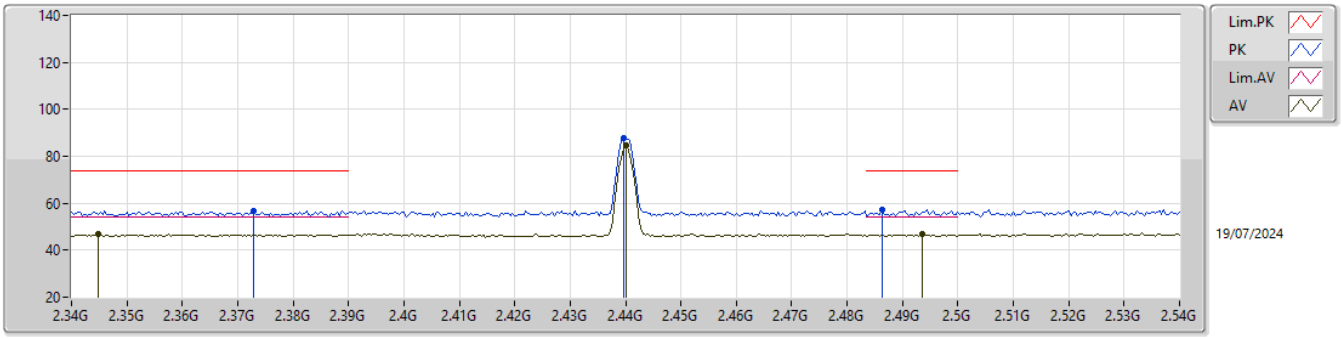


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.80296G	53.40	74.00	-20.60	44.52	3	Horizontal	138	1.01	-	33.11	6.77	31.00
AV	4.80304G	46.45	54.00	-7.55	37.57	3	Horizontal	138	1.01	-	33.11	6.77	31.00

2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX

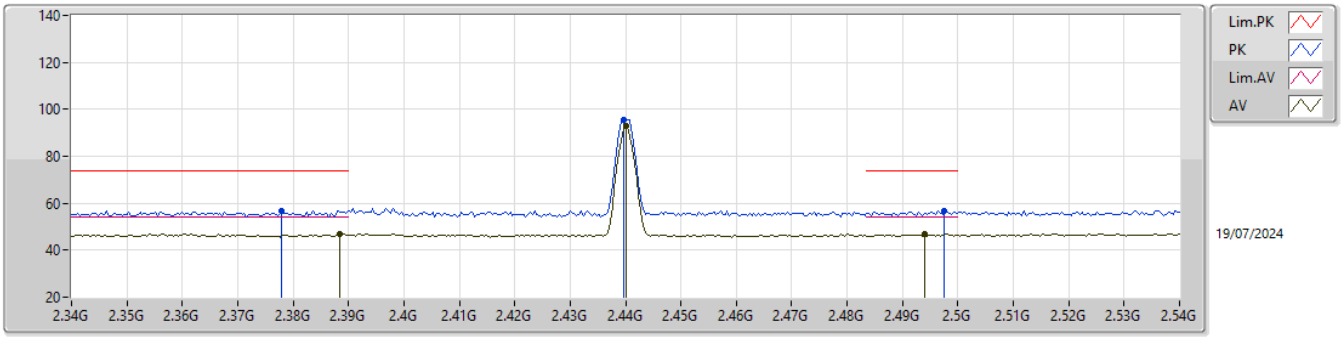


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.3728G	56.96	74.00	-17.04	24.51	3	Vertical	6	1.11	-	28.40	4.05	-
AV	2.3448G	46.77	54.00	-7.23	14.44	3	Vertical	6	1.11	-	28.30	4.03	-
PK	2.4396G	87.61	Inf	-Inf	55.01	3	Vertical	6	1.11	-	28.50	4.10	-
AV	2.44G	84.58	Inf	-Inf	51.98	3	Vertical	6	1.11	-	28.50	4.10	-
PK	2.4864G	57.05	74.00	-16.95	24.32	3	Vertical	6	1.11	-	28.60	4.13	-
AV	2.4936G	46.74	54.00	-7.26	14.00	3	Vertical	6	1.11	-	28.60	4.14	-

2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX

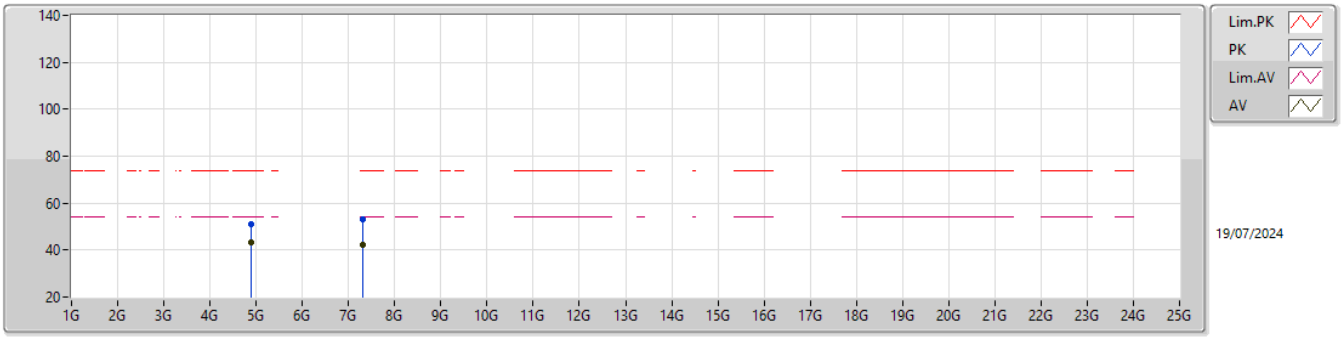


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.378G	56.96	74.00	-17.04	24.51	3	Horizontal	80	1.14	-	28.40	4.05	-
AV	2.3884G	46.93	54.00	-7.07	14.39	3	Horizontal	80	1.14	-	28.48	4.06	-
PK	2.4396G	95.72	Inf	-Inf	63.12	3	Horizontal	80	1.14	-	28.50	4.10	-
AV	2.44G	92.89	Inf	-Inf	60.29	3	Horizontal	80	1.14	-	28.50	4.10	-
PK	2.4976G	56.84	74.00	-17.16	24.10	3	Horizontal	80	1.14	-	28.60	4.14	-
AV	2.494G	46.79	54.00	-7.21	14.05	3	Horizontal	80	1.14	-	28.60	4.14	-

2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX

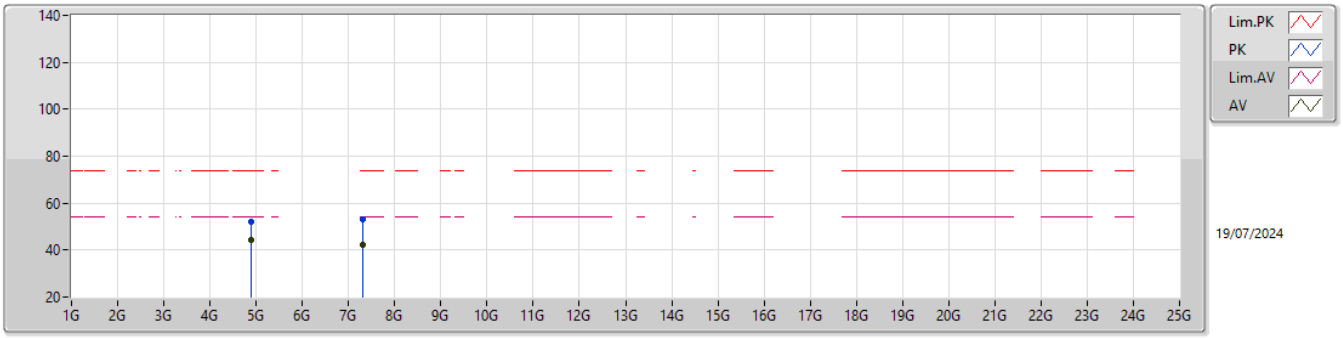


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.87914G	51.22	74.00	-22.78	42.15	3	Vertical	262	2.89	-	33.26	6.81	31.00
AV	4.87894G	43.40	54.00	-10.60	34.33	3	Vertical	262	2.89	-	33.26	6.81	31.00
PK	7.31856G	52.99	74.00	-21.01	38.58	3	Vertical	283	2.56	-	36.47	9.37	31.43
AV	7.31638G	42.35	54.00	-11.65	27.94	3	Vertical	283	2.56	-	36.47	9.37	31.43

2.4-2.4835GHz_BT-LE(2Mbps)

2440MHz_TX

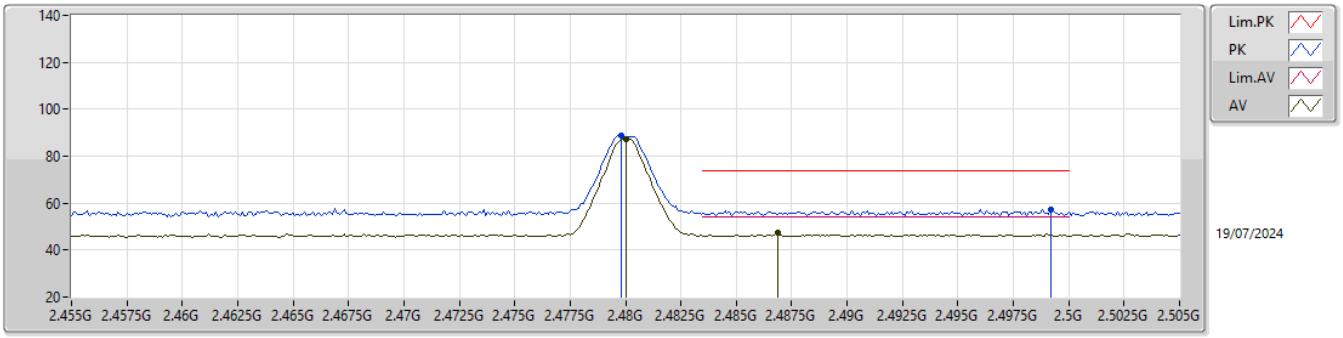


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.87884G	51.97	74.00	-22.03	42.90	3	Horizontal	137	1.07	-	33.26	6.81	31.00
AV	4.87894G	44.12	54.00	-9.88	35.05	3	Horizontal	137	1.07	-	33.26	6.81	31.00
PK	7.31538G	53.02	74.00	-20.98	38.62	3	Horizontal	360	2.92	-	36.46	9.37	31.43
AV	7.32066G	42.36	54.00	-11.64	27.94	3	Horizontal	360	2.92	-	36.48	9.37	31.43

2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX

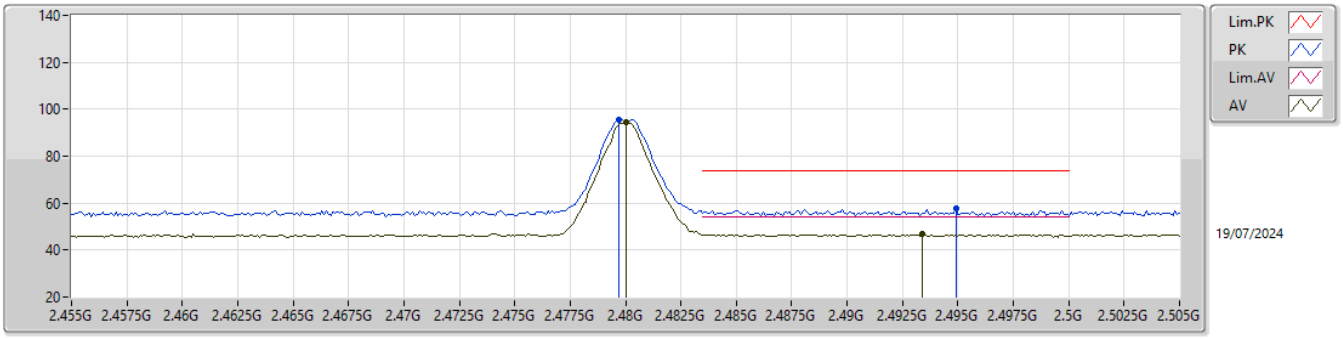


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.4798G	88.55	Inf	-Inf	55.82	3	Vertical	18	1.02	-	28.60	4.13	-
AV	2.48G	87.46	Inf	-Inf	54.73	3	Vertical	18	1.02	-	28.60	4.13	-
PK	2.4992G	57.47	74.00	-16.53	24.73	3	Vertical	18	1.02	-	28.60	4.14	-
AV	2.4869G	47.23	54.00	-6.77	14.49	3	Vertical	18	1.02	-	28.60	4.14	-

2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX

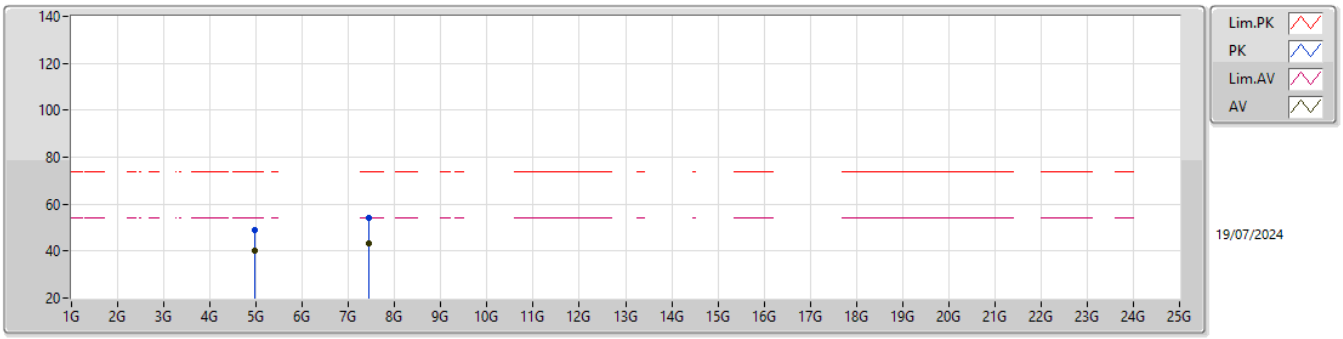


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	2.4797G	95.33	Inf	-Inf	62.60	3	Horizontal	135	2.92	-	28.60	4.13	-
AV	2.48G	94.30	Inf	-Inf	61.57	3	Horizontal	135	2.92	-	28.60	4.13	-
PK	2.4949G	57.76	74.00	-16.24	25.02	3	Horizontal	135	2.92	-	28.60	4.14	-
AV	2.4934G	46.77	54.00	-7.23	14.03	3	Horizontal	135	2.92	-	28.60	4.14	-

2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX

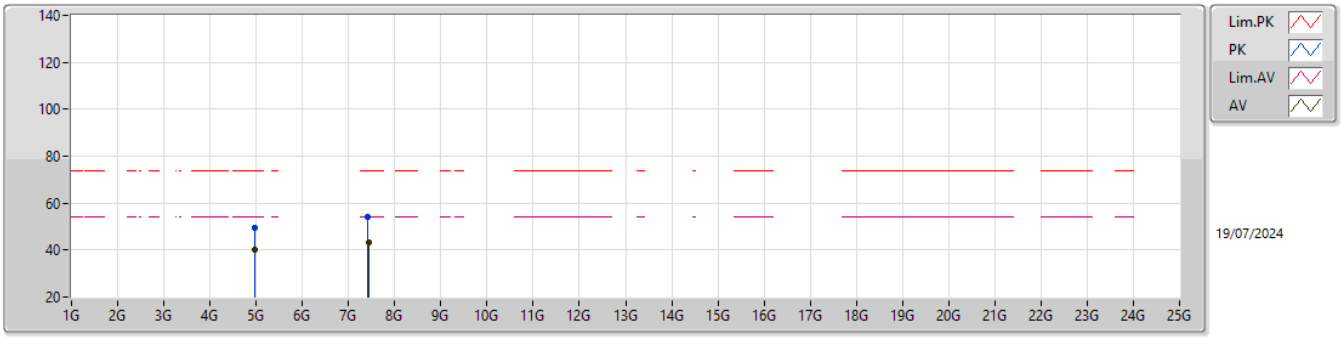


EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.96004G	49.01	74.00	-24.99	39.76	3	Vertical	266	2.97	-	33.40	6.86	31.01
AV	4.95944G	40.38	54.00	-13.62	31.13	3	Vertical	266	2.97	-	33.40	6.86	31.01
PK	7.4391G	53.96	74.00	-20.04	39.43	3	Vertical	25	2.75	-	36.60	9.36	31.43
AV	7.4477G	43.22	54.00	-10.78	28.70	3	Vertical	25	2.75	-	36.60	9.35	31.43

2.4-2.4835GHz_BT-LE(2Mbps)

2480MHz_TX



EUT Z_1TX
Setting 4
02-D-J-8

Type	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	4.9594G	49.24	74.00	-24.76	39.99	3	Horizontal	8	2.57	-	33.40	6.86	31.01
AV	4.95976G	39.95	54.00	-14.05	30.70	3	Horizontal	8	2.57	-	33.40	6.86	31.01
PK	7.421G	54.02	74.00	-19.98	39.49	3	Horizontal	261	1.74	-	36.60	9.36	31.43
AV	7.4344G	43.42	54.00	-10.58	28.89	3	Horizontal	261	1.74	-	36.60	9.36	31.43