Testing Laboratory 3787

RADIO TEST REPORT

FCC ID	:	RSL-TQ7403
Equipment	:	IEEE802.11ax tri-radio 2.4G/5G/6GHz 2x2+2x2+2x2+ Bluetooth® Low Energy and ZigBee wireless AP
Brand Name	:	Allied Telesis
Model Name	:	AT-TQ7403
Applicant	:	Allied Telesis K.K. 2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku Tokyo 141-0031 Japan
Manufacturer	:	Allied Telesis K.K. 2nd. TOC Bldg.7-21-11 Nishi-Gotanda, Shinagawa-ku Tokyo 141-0031 Japan
Standard	:	47 CFR FCC Part 15.247

The product was received on May 31, 2023, and testing was started from Jul. 25, 2023 and completed on Sep. 04, 2023. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory
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Table of Contents

History of this test report

Report No.	Version	Description	Issued Date
FR372105AE	01	Initial issue of report	Oct. 12, 2023

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Conformity Assessment Condition:

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

Disclaimer:

1. 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.
2. The test configuration, test mode and test software were written in this test report are declared by the manufacturer.

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.	Ch. Frequency (MHz)	Channel Number
2400-2483.5	802.15.4	2405-2480	11-26 [16]

For Radio 4

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	Zigbee	3	1

Note:
- Zigbee uses a O-QPSK (250kbps) modulation.
- BWch is the nominal channel bandwidth.

1.1.2 Antenna Information

Set	Ant.	2.4GHz Port	5GHz Port	Brand	Model Name	Antenna Type	Connector	Remark	Gain (dBi)
1	1	2	2	WNC	08.22430.001	Dipole	RP-SMA PLUG	External	Note 1
	2	1	1	WNC	08.22430.001	Dipole	RP-SMA PLUG	External	
2	1	2	2	Angeei	EXD24140D01	Patch	N-Type	External	
	2	1	1	Angeei	EXD24140D01	Patch	N-Type	External	

Ant.	6GHz Port	Bluetooth / Zigbee	Brand	Model Name	Antenna Type	Connector	Remark	Gain (dBi)
3	2	1	WNC	95XEAK15.GAU	PIFA	I-PEX	Internal	Note 1
4	1	-	WNC	95XEAK15.GAT	PIFA	I-PEX	Internal	

Note1:

Antenna set 1:

Set	Ant.	2.4GHz Port	5GHz Port	Radio 1 (2.4GHz) and Radio 2 (5GHz)				
				Antenna Gain (dBi)				
				WLAN 2.4GHz	WLAN 5GHz			
					UNII 1	UNII 2A	UNII 2C	UNII 3
1	1	2	2	2.83	2.20	3.16	2.80	3.72
	2	1	1	2.51	2.88	3.85	3.56	3.85

Antenna set 2 with 2M antenna cable:

Set	Ant.	2.4GHz Port	Radio 1 (2.4GHz)				
			Antenna Gain (dBi)	Cable Loss of 2M N-type (dB)	Loss of SMA Connector (dB)	Cable loss of Internal EUT (dB)	Net Gain (dBi)
2	1	2	13	0.75	0.07	0.95	11.23
	2	1	13	0.75	0.07	0.68	11.50

Set	Ant.	5GHz Port	Radio 2 (5GHz)									
			Antenna Gain (dBi)	Cable Loss of 2M N-type (dB)	Loss of SMA Connector (dB)	Cable loss of Internal EUT (dB)				Net Gain (dBi)		
						UNII 1	UNII 2A	UNII 2C	UNII 3	UNII 1	UNII 2A	UNII 2C	UNII 3
2	1	2	16	1.23	0.12	1.48	1.49	1.56	1.58	13.17	13.16	13.09	13.07
	2	1	16	1.23	0.12	1.10	1.17	1.34	1.23	13.55	13.48	13.31	13.42

Antenna set 2 with 2M and 10M antenna cable:

Set	Ant.	2.4GHz Port	Radio 1 (2.4GHz)					
			Antenna Gain (dBi)	Cable Loss of 2M N-type (dB)	Cable Loss of 10M N-type (dB)	Loss of SMA Connector (dB)	Cable loss of Internal EUT (dB)	Net Gain (dBi)
2	1	2	13	0.75	3.77	0.07	0.95	7.46
	2	1	13	0.75	3.77	0.07	0.68	7.73

Set	Ant.	5GHz Port	Radio 2 (5GHz)											
			Antenna Gain (dBi)	Cable Loss of 2M N-type (dB)	Cable Loss of 10M N-type (dB)	Loss of SMA Connector (dB)	Cable loss of Internal EUT (dB)				Net Gain (dBi)			
							UNII 1	UNII 2A	UNII 2C	UNII 3	UNII 1	UNII 2A	UNII 2C	UNII 3
2	1	2	16	1.23	6.16	0.12	1.48	1.49	1.56	1.58	7.01	7.00	6.93	6.91
	2	1	16	1.23	6.16	0.12	1.10	1.17	1.34	1.23	7.39	7.32	7.15	7.26

Antenna 3 and 4:

Ant.	6GHz Port	Bluetooth / Zigbee	Radio 3 (6GHz) and Radio 4 (Bluetooth / Zigbee)				
			Antenna Gain (dBi)				
			UNII 5	UNII 6	UNII 7	UNII 8	Bluetooth / Zigbee
3	2	1	5.93	5.98	5.98	5.58	2.62
4	1	-	5.93	5.99	5.99	5.98	-

Note2: The above information was declared by manufacturer.
Note3: For antenna set 2: The gain of antenna set 2 with 2M antenna cable was higher than antenna set 2 with 2M and 10M antenna cable, thus antenna set 2 with 2M antenna cable was selected to test.
Note4: The EUT has two antenna sets for radio 1 and radio 2.
Note5: The DFS band isn't enabled at this time.

Note6: Directional gain information

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

Ex.

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

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 Antenna set 1

2.4G G1= 2.83 dBi ; G2= 2.51 dBi ;DG= 5.68dBi

5G UNII-1 G1= 2.2 dBi ; G2= 2.88 dBi ;DG= 5.56dBi

5G UNII-2A G1= 3.16 dBi ; G2= 3.85 dBi ;DG= 6.52dBi

5G UNII-2C G1= 2.8 dBi ; G2= 3.56 dBi ;DG= 6.2dBi

5G UNII-3 G1= 3.72 dBi ; G2= 3.85 dBi ;DG= 6.8dBi

For Antenna set 2 (Cross-Polarized Antenna)

2.4G G1= 11.23 dBi ; G2= 11.5 dBi ;DG= 11.5dBi

5G UNII-1 G1= 13.17 dBi ; G2= 13.55 dBi ;DG= 13.55dBi

5G UNII-2A G1= 13.16 dBi ; G2= 13.48 dBi ;DG= 13.48dBi

5G UNII-2C G1= 13.09 dBi ; G2= 13.31 dBi ;DG= 13.31dBi

5G UNII-3 G1= 13.07 dBi ; G2= 13.42 dBi ;DG= 13.42dBi

For Antenna 3 and Antenna 4

6G UNII-4 G1= 5.93 dBi ; G2= 5.93 dBi ;DG= 8.94dBi

6G UNII-5 G1= 5.98 dBi ; G2= 5.99 dBi ;DG= 9dBi

6G UNII-6 G1= 5.98 dBi ; G2= 5.99 dBi ;DG= 9dBi

6G UNII-7 G1= 5.58 dBi ; G2= 5.98 dBi ;DG= 8.79dBi

<For Radio 1 (2.4GHz Functions) and Radio 2 (5GHz Functions)>
For 2TX/2RX:
Port 1 and Port 2 can be use as transmitting/receiving antenna
Port 1 and Port 2 could receive simultaneously.
<For Radio 3 / 6GHz Functions>
For 2TX/2RX:
Port 1 and Port 2 can be use as transmitting/receiving antenna
Port 1 and Port 2 could receive simultaneously.
<For Radio 4 / Bluetooth / Zigbee Functions>
For 1TX/1RX:
Only Port 1 can be use as transmitting/receiving antenna.

1.1.3 Table for Antennae Set 2 Configuration

Set	Configuration	Ant. of EUT	Radio 1 (2.4GHz) and Radio 2 (5GHz)			
			Antenna port of antenna set 2			
2	1	1	1	-	-	-
		2	2	-	-	-
	2	1	-	4	-	-
		2	-	3	-	-
	3	1	-	-	3	-
		2	-	-	4	-
	4	1	-	-	-	2
		2	-	-	-	1

1.1.4 Mode Test Duty Cycle

For Radio 4

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
Zigbee	1	0	n/a (DC>=0.98)	n/a (DC>=0.98)

Note:
- DC is Duty Cycle.
- DCF is Duty Cycle Factor.

1.1.5 EUT Operational Condition

EUT Power Type	From Power Adapter or PoE			
Beamforming Function	☒	With beamforming	☐	Without beamforming
	The product has beamforming function for 11n/VHT/11ax in 2.4GHz, 11n/11ac/11ax in 5GHz and 11ax in 6GHz.			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	DOS [ver 6.1.7601]			

Note: The above information was declared by manufacturer.

1.1.6 Table for Radio Function

Radio	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz	Bluetooth / Zigbee
1	V	-	-	-
2	-	V	-	-
3	-	-	V	-
4	-	-	-	V

Note: The above information was declared by manufacturer.

1.2 Applicable Standards

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

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

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

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

1.3 Testing Location Information

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 ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	KJ Chang	23.6~24.7 / 62~69	Jul. 31, 2023~Aug. 23, 2023
Radiated below 1GHz	03CH05-CB	RJ Huang	21~22 / 55~58	Jul. 28, 2023~Aug. 04, 2023
Radiated above 1GHz	03CH02-CB	Alex Kuo	22~23.9 / 57~63	Jul. 25, 2023~Jul. 31, 2023
Radiated above 1GHz (For co-location test)	03CH04-CB	Alex Kuo	22.3~24 / 57~62	Sep. 04, 2023
AC Conduction	CO02-CB	Summer Li	24~25 / 49~50	Aug. 21, 2023

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.1 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.1 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	3.1 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.1 dB	Confidence levels of 95%
Bandwidth Measurement	2.2%	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

For Radio 4

Mode	Power Setting
Zigbee_Nss1_1TX	-
2405MHz	20
2440MHz	20
2475MHz	20
2480MHz	13

2.2 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	AC power-line conducted emissions
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz
Operating Mode	Normal Link
	1. For antenna set 2: configuration 2 (Port 4 + Port 3) has been evaluated to be the worst case for radiated emissions test. Consequently, measurement for conducted emissions test will follow this same test mode. 2. For powered by PoE: There are two PoE ports on the EUT. Because of the same function and rate, powered from PoE port 2 is selected for testing.
1	EUT + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + adapter
2	EUT + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / TX) + adapter
3	EUT + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / RX) + adapter
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / RX) + PoE
5	EUT + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + adapter
6	EUT + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / TX) + adapter
7	EUT + antenna set 2 (2.4GHz+5GHz) configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / RX) + adapter
Mode 6 has been evaluated to be the worst case among Mode 5~7, thus measurement for Mode 8 will follow this same test mode.	
8	EUT + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / TX) + PoE
Mode 8 has been evaluated to be the worst case among Mode 5~8, thus measurement for Mode 9 will follow this same test mode.	
9	EUT + antenna set 2 (2.4GHz+5GHz) configuration 2 (Port 4 + Port 3) with 2M and 10M antenna cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / TX) + PoE
For operating mode 9 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains
1	Radio 4

The Worst Case Mode for Following Conformance Tests	
Tests Item	Emissions in Restricted Frequency Bands
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.
Operating Mode < 1GHz	Normal Link
	1. For antenna set 1: The EUT performed the test at the X axis, Y axis and Z axis. The Y axis has been evaluated to be the worst case, this measurement will follow this same test mode. 2. For antenna set 2: The EUT performed the test at the X axis, Y axis and Z axis. The Z axis has been evaluated to be the worst case, this measurement will follow this same test mode. 3. For powered by PoE: There are two PoE ports on the EUT. Because of the same function and rate, powered from PoE port 2 is selected for testing.
1	EUT in Y axis + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + adapter
2	EUT in Y axis + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / TX) + adapter
3	EUT in Y axis + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / RX) + adapter
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT in Y axis + antenna set 1 (2.4GHz+5GHz) + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / RX) + PoE
5	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + adapter
6	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + adapter
7	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 3 (Port 3 + Port 4) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + adapter
8	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 4 (Port 2 + Port 1) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + adapter
Mode 6 has been evaluated to be the worst case among Mode 5~8, thus measurement for Mode 9~10 will follow this same test mode.	
9	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / TX) + adapter
10	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Zigbee / RX) + adapter
Mode 6 has been evaluated to be the worst case among Mode 5~10, thus measurement for Mode 11~12 will follow this same test mode.	
11	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 2M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + PoE
12	EUT in Z axis + antenna set 2 (2.4GHz+5GHz) + configuration 2 (Port 4 + Port 3) with 12M N-type cable + ant. 3~ant. 4 (6GHz) + ant. 3 (Bluetooth) + PoE
For operating mode 4 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, and the worst case was found at X axis. Thus, the measurement will follow this same test configuration.
1	EUT in X axis

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Radiated Emission Co-location
Test Condition	Radiated measurement
Operating Mode	Normal Link
	1. For test mode 1: The EUT was performed testing at X, Y, and Z axis positions, and the worst case was found at Y axis in Unwanted Emissions above 1GHz. Thus, the measurement will follow this same test configuration. 2. For test mode 2: The EUT was performed testing at X, Y, and Z axis positions, and the worst case was found at Z axis in Unwanted Emissions above 1GHz. Thus, the measurement will follow this same test configuration. 3. For test mode 3: The EUT was performed testing at X, Y, and Z axis positions, and the worst case was found at Y axis in Unwanted Emissions above 1GHz. Thus, the measurement will follow this same test configuration. 4. For test mode 4: The EUT was performed testing at X, Y, and Z axis positions, and the worst case was found at X axis in Unwanted Emissions above 1GHz. Thus, the measurement will follow this same test configuration.
1	EUT in Y axis_Radio 1 (2.4GHz) + Radio 2 (5GHz) with antenna set 1
2	EUT in Z axis_Radio 1 (2.4GHz) + Radio 2 (5GHz) with antenna set 2 with 2M antenna cable + configuration 3 (Port 3 + Port 4)
3	EUT in Y axis_Radio 3 (6GHz) + Radio 4 (Bluetooth)
4	EUT in X axis_Radio 3 (6GHz) + Radio 4 (Zigbee)
For operating mode 3 is the worst case and it was record in this test report.	
Refer to Appendix G for Radiated Emission Co-location.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	Radio 1 (2.4GHz) + Radio 2 (5GHz) with antenna set 1 + Radio 3 (6GHz) + Radio 4 (Bluetooth)
2	Radio 1 (2.4GHz) + Radio 2 (5GHz) with antenna set 1 + Radio 3 (6GHz) + Radio 4 (Zigbee)
3	Radio 1 (2.4GHz) + Radio 2 (5GHz) with antenna set 2 with 2M antenna cable + Radio 3 (6GHz) + Radio 4 (Bluetooth)
4	Radio 1 (2.4GHz) + Radio 2 (5GHz) with antenna set 2 with 2M antenna cable + Radio 3 (6GHz) + Radio 4 (Zigbee)
Refer to Sporton Test Report No.: FA372105 for Co-location RF Exposure Evaluation.	

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

Power	Brand	Model
Adapter	APD	DA-48Z12
PoE 1	DELTA	ADP-60HR B
PoE 2	Microsemi	PD-9001GR/AC

2.3 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.

2.4 Accessories

Accessories
Mounting Bracket*1
SMA Connector*2 (Used for Patch Ant.)

2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	LAN1 NB	DELL	E6430	N/A
B	LAN2 NB	DELL	E6430	N/A
C	2.4G NB	DELL	E6431	N/A
D	5G NB	DELL	E6432	N/A
E	6G NB	DELL	E6433	N/A
F	Zigbee Device	Allied Telesis	TQ6403	N/A
G	PoE 1	DELTA	ADP-60HR B	N/A
H	6G Client	INTEL	AX210NGW	PD9AX210NG/NA
J	Device NB	DELL	E6433	N/A

For Radiated (below 1GHz):

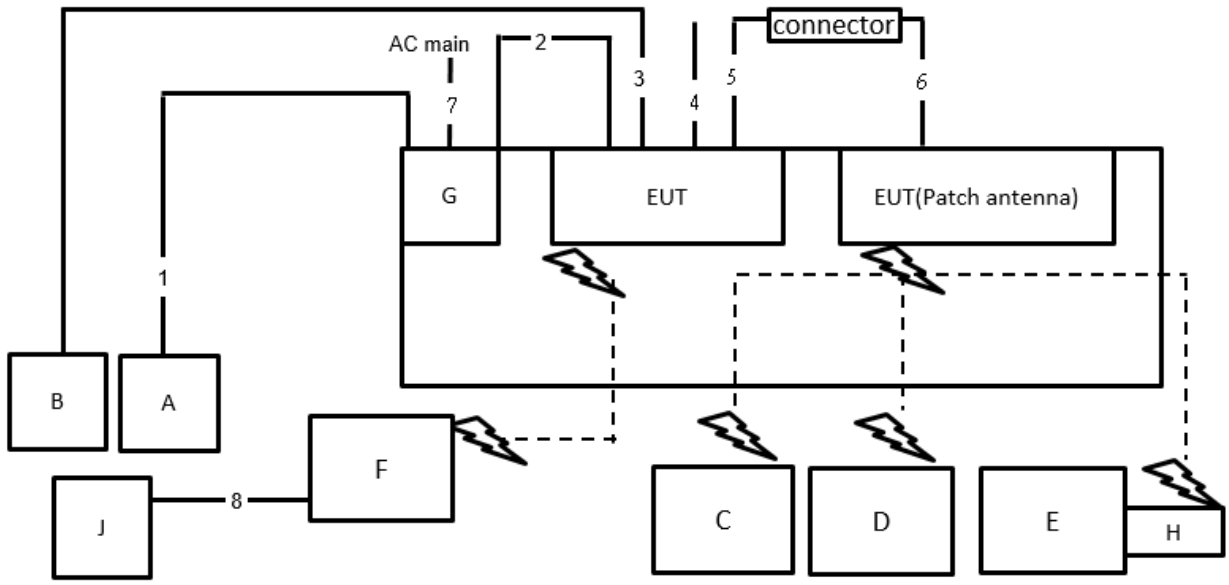
Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	2.5G Notebook	DELL	E4300	N/A
B	PoE 2	Microsemi	PD-9001GR/AC	N/A
C	2.5G Notebook	DELL	E4300	N/A
D	Zigbee Client	Allied Telesis	TQ6403	N/A
E	Client Notebook	DELL	E4300	N/A
F	2.4G WIFI Notebook	DELL	E4300	N/A
G	5G WIFI Notebook	DELL	E4300	N/A
H	6G WIFI Notebook	DELL	E4300	N/A
I	WLAN module	INTEL	AX210NGW	PD9AX210NG

For Radiated (above 1GHz) and RF Conducted:

Support Equipment				
No.	**Equipment**	**Brand Name**	**Model Name**	**FCC ID**
A	Notebook	DELL	E4300	N/A
B	PoE 1	DELTA	ADP-60HR B	N/A

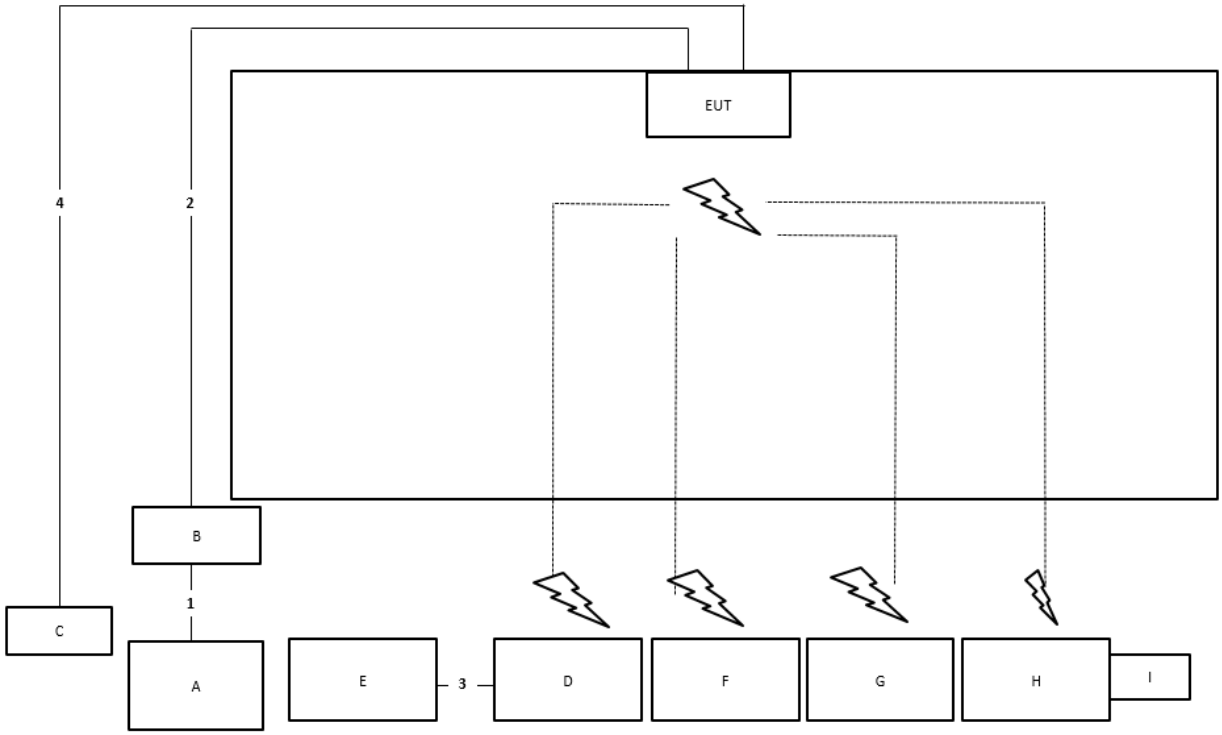
2.6 Test Setup Diagram

Test Setup Diagram – AC Line Conducted Emission Test



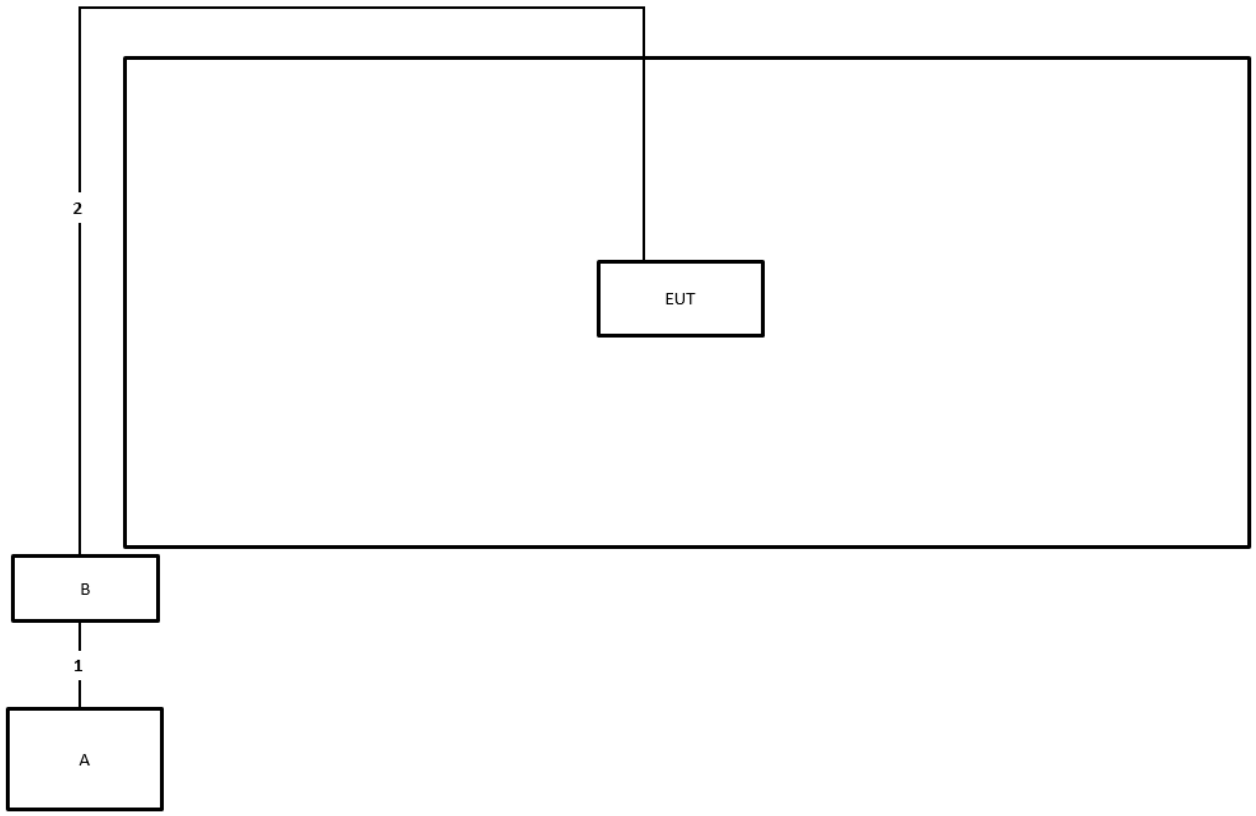
Item	Connection	Shielded	Length
1	RJ-45 cable	No	3m
2	RJ-45 cable	No	10m
3	RJ-45 cable	No	10m
4	Console cable	No	1.8m
5	Antenna N-type cable*2	Yes	2m
6	Antenna N-type cable*2	Yes	10m
7	Power cable	No	2m
8	RJ-45 cable	No	3m

Test Setup Diagram - Radiated Test < 1GHz



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

Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	RJ-45 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

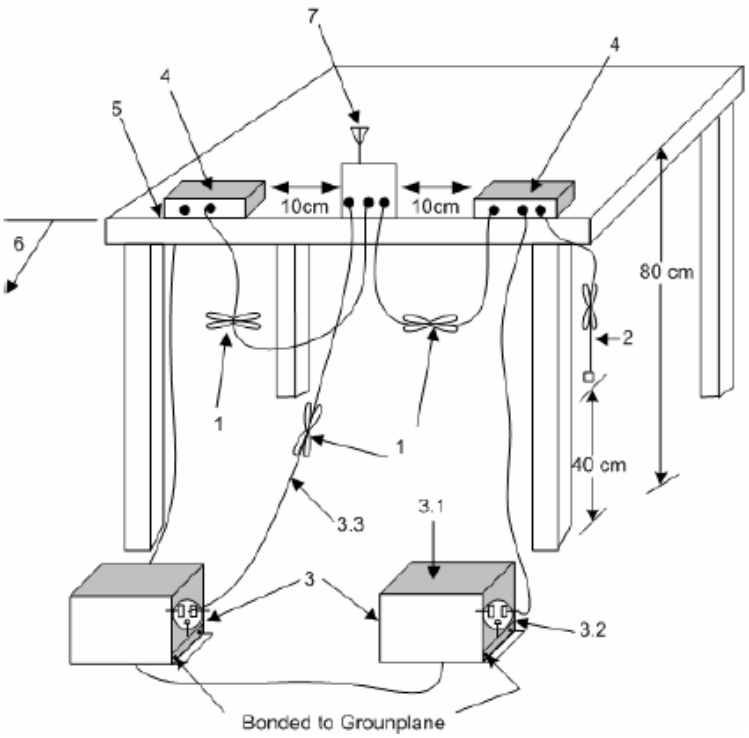
Refer a test equipment and calibration data table in this test report.

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

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.

3.1.5 Measurement Results Calculation

The measured Level is calculated using:

a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level

b. Margin = -Limit + Level

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
▪ 6 dB bandwidth ≥ 500 kHz.

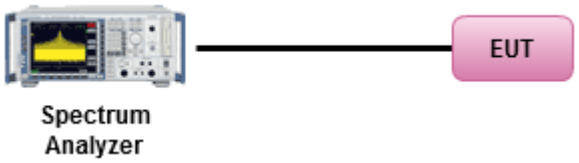
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

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

3.2.4 Test Setup

Emission Bandwidth


3.2.5 Test Result of Emission Bandwidth

Refer as Appendix B

3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit		
	▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)	
	▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)$ dBm	
	▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm	
	▪ Smart antenna system (SAS):	
		- Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3$ dBm
		- Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 – (G_{TX} – 6)/3 + 8$dB dBm
P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, **G_{TX}** = the maximum transmitting antenna directional gain in dBi.		

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
▪ Maximum Peak Conducted Output Power	
	☐ Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
	☐ Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
▪ Maximum Conducted Output Power	
	[duty cycle ≥ 98% or external video / power trigger]
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)
	duty cycle < 98% and average over on/off periods with duty factor
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
	☐ Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)
	Measurement using a power meter (PM)
	☐ Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).
	☒ Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).
▪ For conducted measurement.	
	▪ If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them.
	▪ If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + \ldots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$

3.3.4 Test Setup

Maximum Conducted Output Power (Power Meter)


3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C

3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

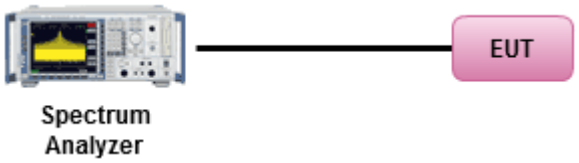
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method			
▪ Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option).			
	☒ Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.		
▪ For conducted measurement.			
	▪ If The EUT supports multiple transmit chains using options given below:		
		☐ Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.	
		☐ Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,	
		☐ Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.	

3.4.4 Test Setup

Power Spectral Density


3.4.5 Test Result of Power Spectral Density

Refer as Appendix D

3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit	
RF output power procedure	**Limit (dBc)**
Peak output power procedure	20
Average output power procedure	30

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

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

3.5.2 Measuring Instruments

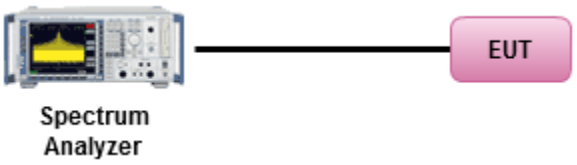
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

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

3.5.4 Test Setup

Emissions in Non-restricted Frequency Bands



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E

3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

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

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

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

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

3.6.2 Measuring Instruments

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

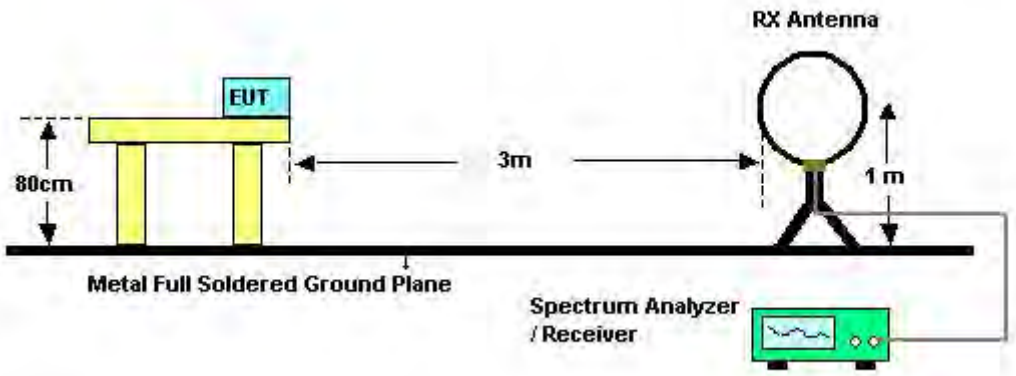
3.6.3 Test Procedures

Test Method			
▪ 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.		

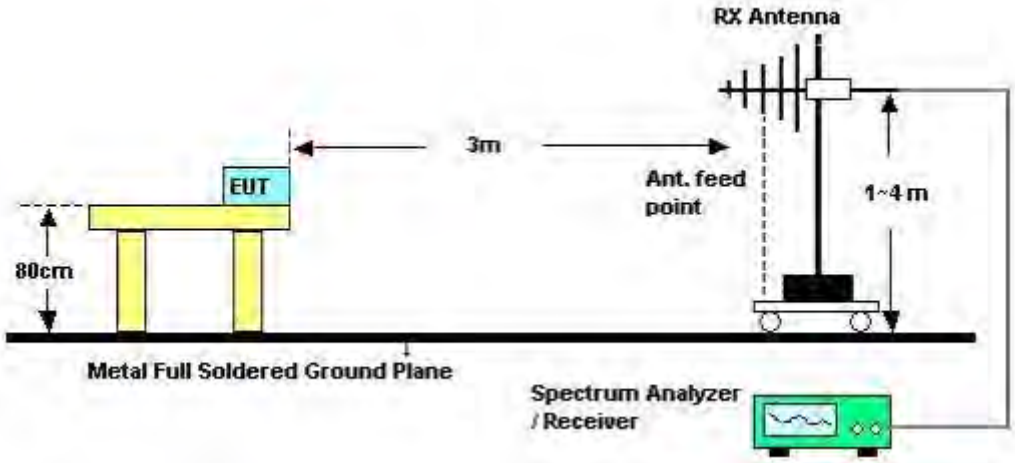
3.6.4 Test Setup

Emissions in Restricted Frequency Bands

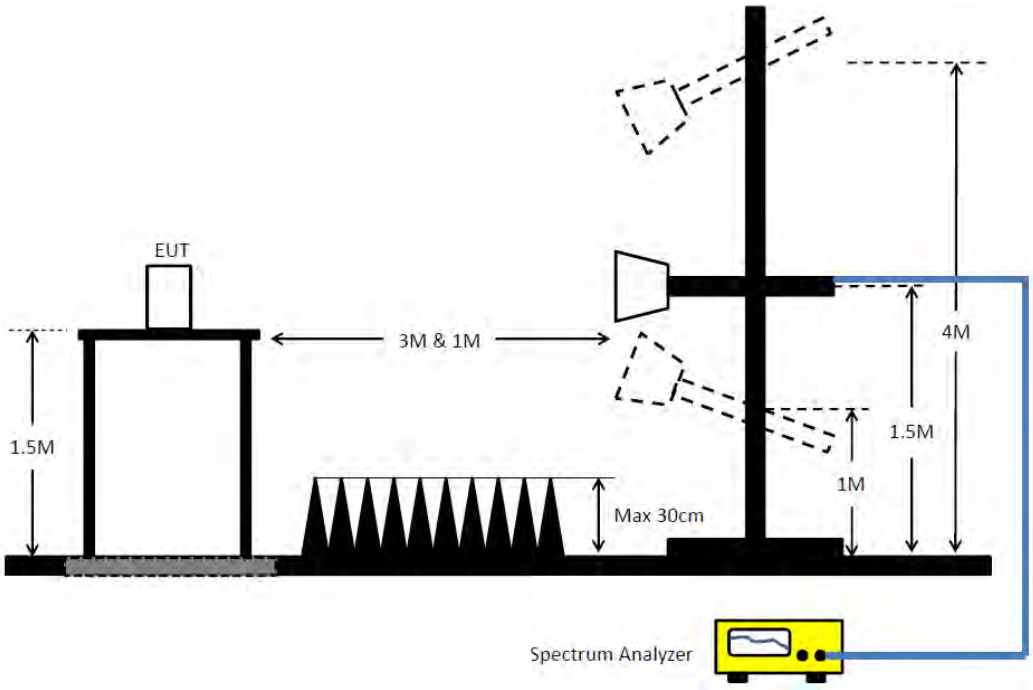
9kHz ~30MHz



30MHz~1GHz



Above 1GHz



3.6.5 Measurement Results Calculation

The measured Level is calculated using:
Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.
All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F

4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
LISN	Schwarzbeck	NSLK 8127	8127650	9kHz ~ 30MHz	Apr. 06, 2023	Apr. 05, 2024	Conduction (CO02-CB)
LISN	Schwarzbeck	NSLK 8127	8127478	9kHz ~ 30MHz	Dec. 20, 2022	Dec. 19, 2023	Conduction (CO02-CB)
EMI Receiver	Agilent	N9038A	MY52260140	9kHz ~ 8.4GHz	May 18, 2023	May 17, 2024	Conduction (CO02-CB)
COND Cable	Woken	Cable	2	0.15MHz ~ 30MHz	Oct. 18, 2022	Oct. 17, 2023	Conduction (CO02-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO02-CB)
Pulse Limiter	Schwarzbeck	VTSD 9561F-N	00378	9kHz ~ 30MHz	Oct. 18, 2022	Oct. 17, 2023	Conduction (CO02-CB)
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 23, 2023	Mar. 22, 2024	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 03, 2022	Aug. 02, 2023	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 02, 2023	Aug. 01, 2024	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 24, 2023	Mar. 23, 2024	Radiation (03CH05-CB)
Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 03, 2023	May 02, 2024	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Apr. 18, 2023	Apr. 17, 2024	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 13, 2023	Jun. 12, 2024	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 03, 2022	Oct. 02, 2023	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. 25, 2023	Mar. 24, 2024	Radiation (03CH02-CB)
Horn Antenna	EMCO	3115	9610-4976	1GHz ~ 18GHz	Apr. 18, 2023	Apr. 17, 2024	Radiation (03CH02-CB)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 28, 2023	Jun. 27, 2024	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH02-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 16, 2022	Nov. 15, 2023	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSU	100015	9kHz~26GHz	Dec. 05, 2022	Dec. 04, 2023	Radiation (03CH02-CB)

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH02-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH04-CB	1GHz ~18GHz 3m	Feb. 23, 2023	Feb. 22, 2024	Radiation (03CH04-CB)
Horn Antenna	ETS·Lindgren	3115	00143147	750MHz~18GHz	Oct. 12, 2022	Oct. 11, 2023	Radiation (03CH04-CB)
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170507	15GHz ~ 40GHz	Jun. 28, 2023	Jun. 27, 2024	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz~26.5GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH04-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 16, 2022	Nov. 15, 2023	Radiation (03CH04-CB)
Spectrum Analyzer	R&S	FSP40	100142	9kHz~40GHz	Mar. 21, 2023	Mar. 20, 2024	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21	1GHz - 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21+67	1GHz - 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 29, 2023	May 28, 2024	Conducted (TH01-CB)
Switch	SPTCB	SP-SWI	SWI-01	1 GHz –26.5 GHz	Oct. 04, 2022	Oct. 03, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

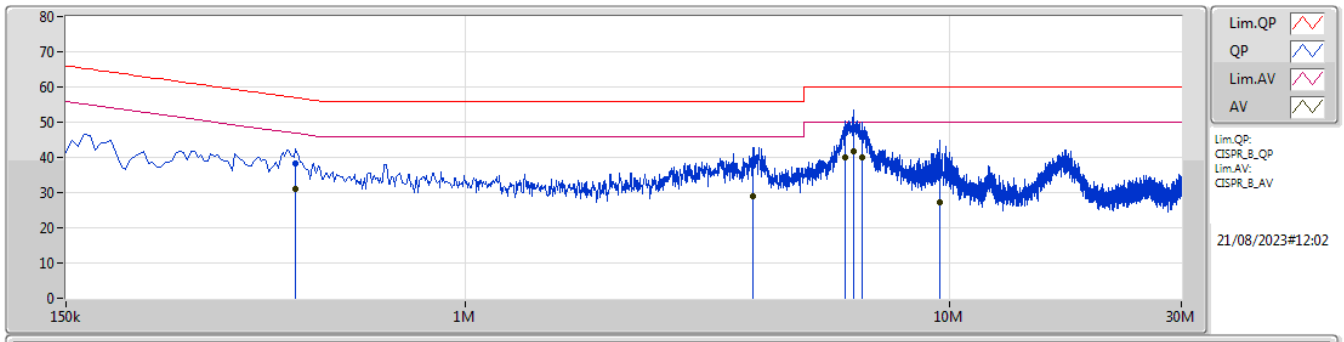
Note: Calibration Interval of instruments listed above is one year.

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

Summary

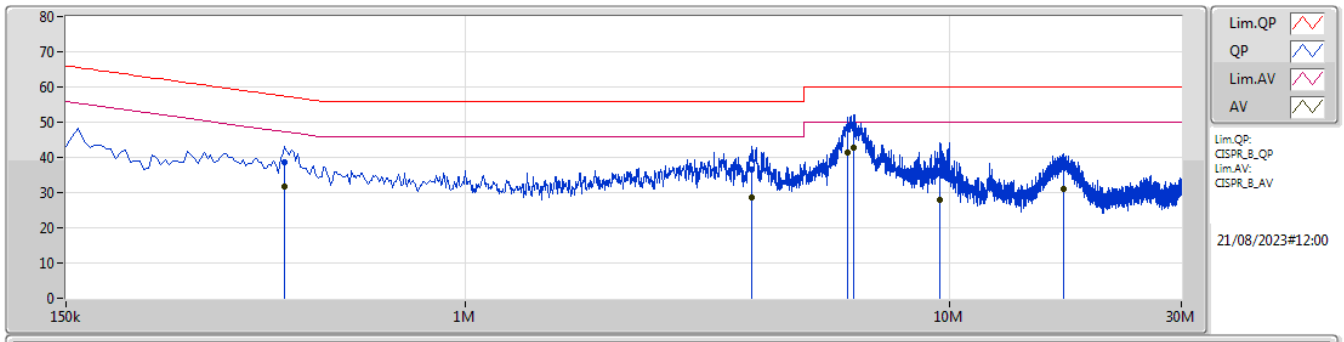
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 9	Pass	AV	6.315M	42.87	50.00	-7.13	Neutral

Mode 9



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	447k	38.39	56.94	-18.55	10.19	Line	-	28.20	0.04	0.15	10.00
AV	447k	31.00	46.94	-15.94	10.19	Line	-	20.81	0.04	0.15	10.00
QP	3.926M	37.57	56.00	-18.43	10.14	Line	-	27.43	0.10	0.20	9.84
AV	3.926M	28.90	46.00	-17.10	10.14	Line	-	18.76	0.10	0.20	9.84
QP	6.068M	46.90	60.00	-13.10	10.23	Line	-	36.67	0.15	0.20	9.88
AV	6.068M	40.10	50.00	-9.90	10.23	Line	-	29.87	0.15	0.20	9.88
QP	6.315M	48.22	60.00	-11.78	10.23	Line	-	37.99	0.15	0.20	9.88
AV	6.315M	41.60	50.00	-8.40	10.23	Line	"Worst"	31.37	0.15	0.20	9.88
QP	6.576M	46.88	60.00	-13.12	10.24	Line	-	36.64	0.15	0.21	9.88
AV	6.576M	39.87	50.00	-10.13	10.24	Line	-	29.63	0.15	0.21	9.88
QP	9.524M	38.12	60.00	-21.88	10.32	Line	-	27.80	0.19	0.21	9.92
AV	9.524M	27.41	50.00	-22.59	10.32	Line	-	17.09	0.19	0.21	9.92

Mode 9



Type	Freq	Level	Limit	Margin	Factor	Condition	Comment	Raw	LISN	CL	AT
	(Hz)	(dBuV)	(dBuV)	(dB)	(dB)			(dBuV)	(dB)	(dB)	(dB)
QP	6.135M	48.42	60.00	-11.58	10.22	Neutral	-	38.20	0.14	0.20	9.88
AV	6.135M	41.21	50.00	-8.79	10.22	Neutral	-	30.99	0.14	0.20	9.88
QP	6.315M	49.13	60.00	-10.87	10.22	Neutral	-	38.91	0.14	0.20	9.88
AV	6.315M	42.87	50.00	-7.13	10.22	Neutral	"Worst"	32.65	0.14	0.20	9.88
QP	9.551M	38.87	60.00	-21.13	10.31	Neutral	-	28.56	0.18	0.21	9.92
AV	9.551M	27.95	50.00	-22.05	10.31	Neutral	-	17.64	0.18	0.21	9.92
QP	17.115M	37.81	60.00	-22.19	10.47	Neutral	-	27.34	0.22	0.25	10.00
AV	17.115M	31.05	50.00	-18.95	10.47	Neutral	-	20.58	0.22	0.25	10.00
QP	3.908M	36.62	56.00	-19.38	10.14	Neutral	-	26.48	0.10	0.20	9.84
AV	3.908M	28.78	46.00	-17.22	10.14	Neutral	-	18.64	0.10	0.20	9.84
QP	424.5k	38.60	57.36	-18.76	10.20	Neutral	-	28.40	0.05	0.15	10.00
AV	424.5k	31.84	47.36	-15.52	10.20	Neutral	-	21.64	0.05	0.15	10.00

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
Zigbee_Nss1_1TX	1.635M	2.243M	2M24G1D	1.62M	2.229M

Max-N dB = Maximum 6dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 6dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

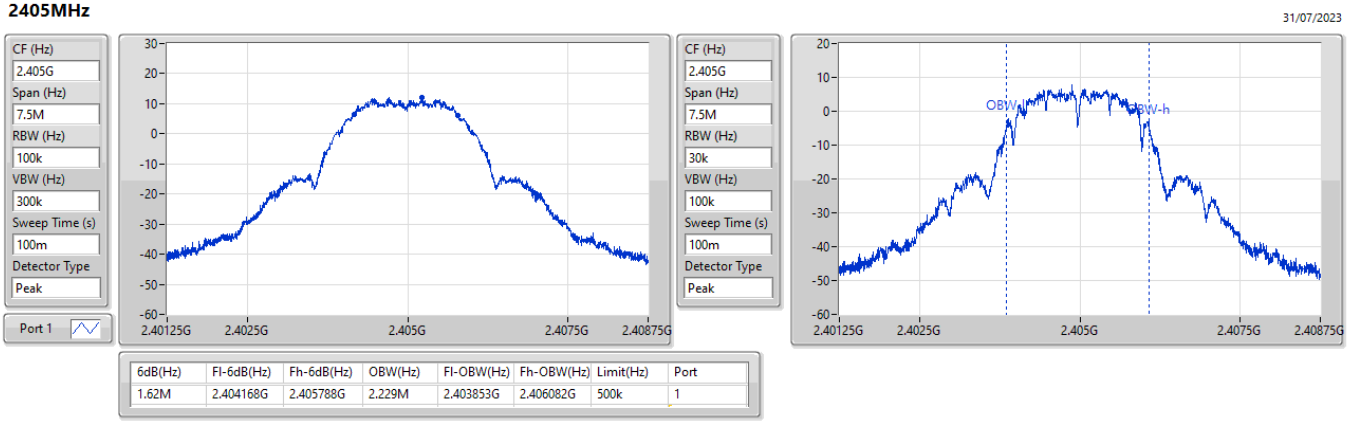
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
Zigbee_Nss1_1TX	-	-	-	-
2405MHz	Pass	500k	1.62M	2.229M
2440MHz	Pass	500k	1.631M	2.231M
2480MHz	Pass	500k	1.635M	2.243M

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

2.4-2.4835GHz_Zigbee_Nss1_1TX **EBW**

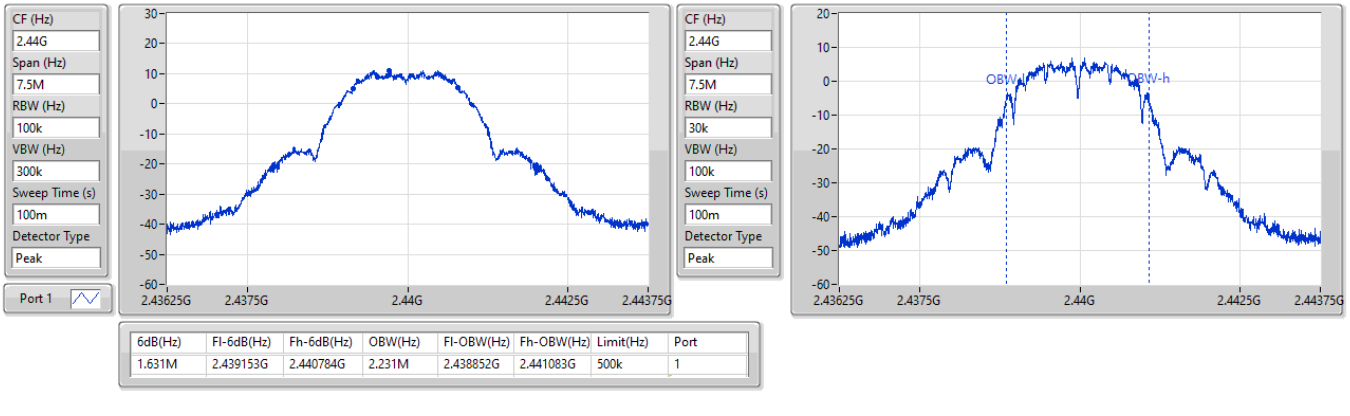
2405MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.62M	2.404168G	2.405788G	2.229M	2.403853G	2.406082G	500k	1

2.4-2.4835GHz_Zigbee_Nss1_1TX **EBW**

2440MHz

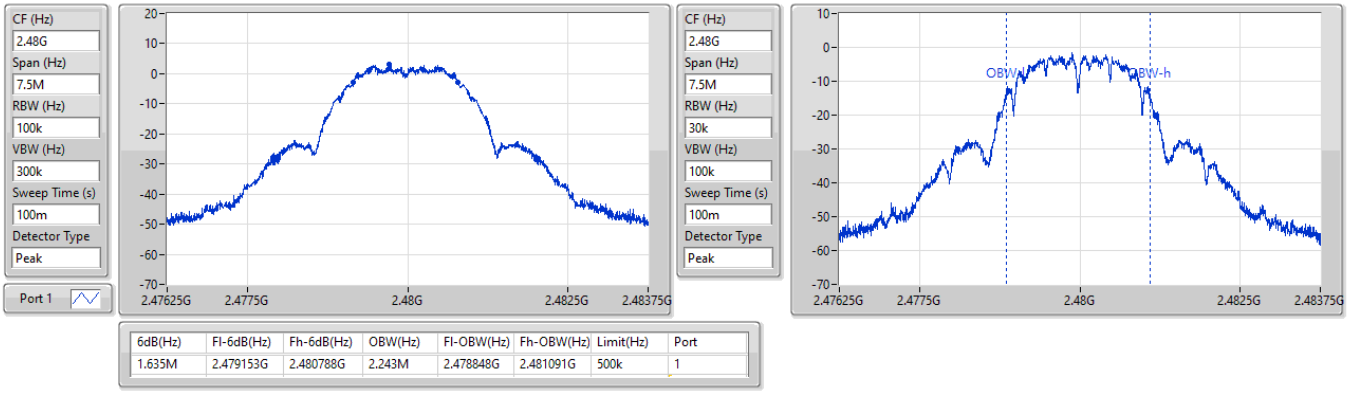


6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.631M	2.439153G	2.440784G	2.231M	2.438852G	2.441083G	500k	1

2.4-2.4835GHz_Zigbee_Nss1_1TX **EBW**

2480MHz

31/07/2023



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
1.635M	2.479153G	2.480788G	2.243M	2.478848G	2.481091G	500k	1

Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
Zigbee_Nss1_1TX	15.46	0.03516

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
Zigbee_Nss1_1TX	-	-	-	-	-
2405MHz	Pass	2.62	15.46	15.46	30.00
2440MHz	Pass	2.62	14.63	14.63	30.00
2475MHz	Pass	2.62	14.33	14.33	30.00
2480MHz	Pass	2.62	6.56	6.56	30.00

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

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
Zigbee_Nss1_1TX	-0.27

RBW = 3kHz;

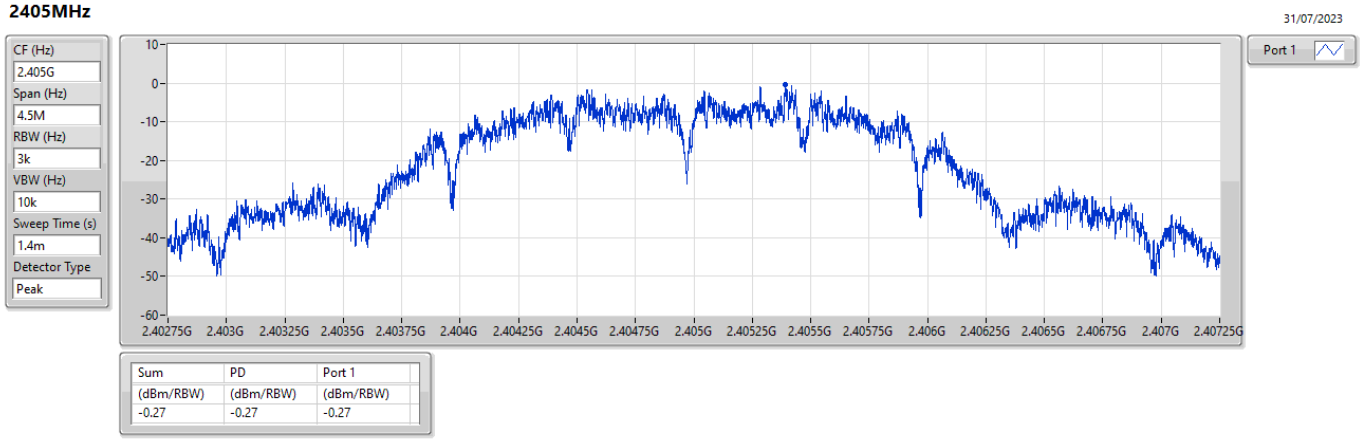
Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
Zigbee_Nss1_1TX	-	-	-	-	-
2405MHz	Pass	2.62	-0.27	-0.27	8.00
2440MHz	Pass	2.62	-1.40	-1.40	8.00
2480MHz	Pass	2.62	-9.75	-9.75	8.00

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

2.4-2.4835GHz_Zigbee_Nss1_1TX **PSD**

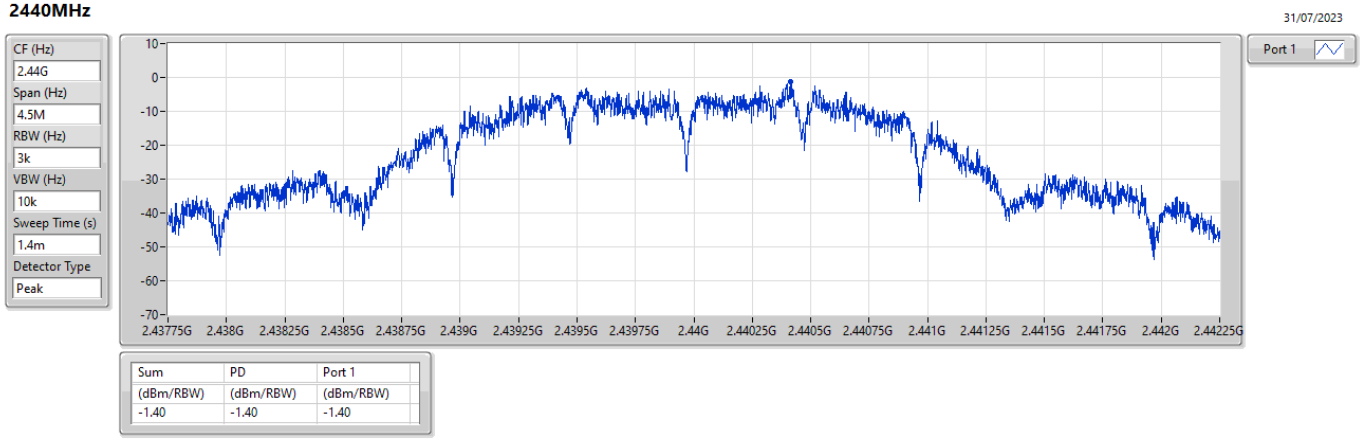
2405MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-0.27	-0.27	-0.27

2.4-2.4835GHz_Zigbee_Nss1_1TX **PSD**

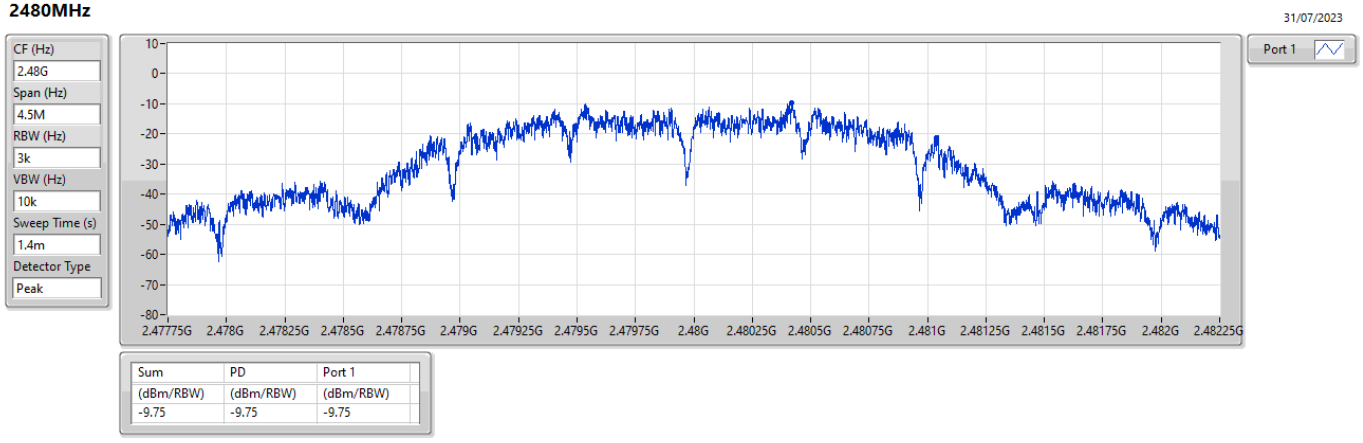
2440MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-1.40	-1.40	-1.40

2.4-2.4835GHz_Zigbee_Nss1_1TX **PSD**

2480MHz



Sum	PD	Port 1
(dBm/RBW)	(dBm/RBW)	(dBm/RBW)
-9.75	-9.75	-9.75

Summary

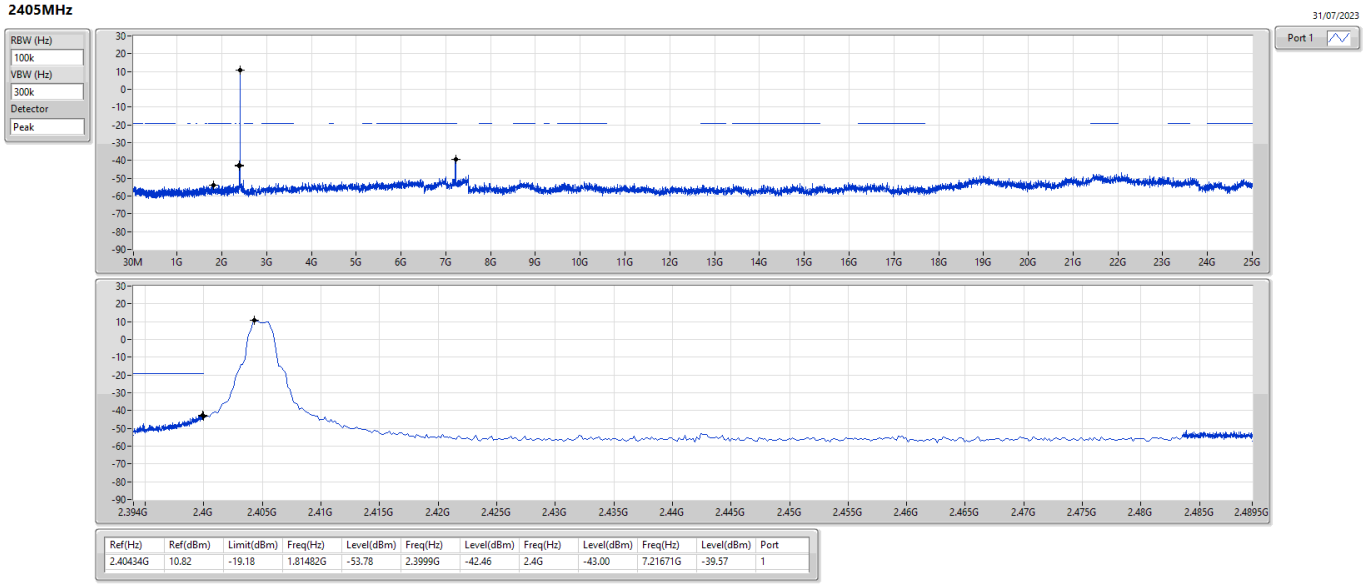
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
Zigbee_Nss1_1TX	Pass	2.40434G	10.82	-19.18	1.81482G	-53.78	2.3999G	-42.46	2.4G	-43.00	7.21671G	-39.57	1

Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
Zigbee_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2405MHz	Pass	2.40434G	10.82	-19.18	1.81482G	-53.78	2.3999G	-42.46	2.4G	-43.00	7.21671G	-39.57	1
2440MHz	Pass	2.40434G	10.82	-19.18	1.74981G	-54.22	2.39894G	-51.32	2.4G	-56.24	21.46304G	-46.59	1
2480MHz	Pass	2.40434G	10.82	-19.18	2.14696G	-53.88	2.39695G	-51.51	2.4G	-54.75	21.49399G	-46.68	1

2.4-2.4835GHz_Zigbee_Nss1_1TX CSENdB

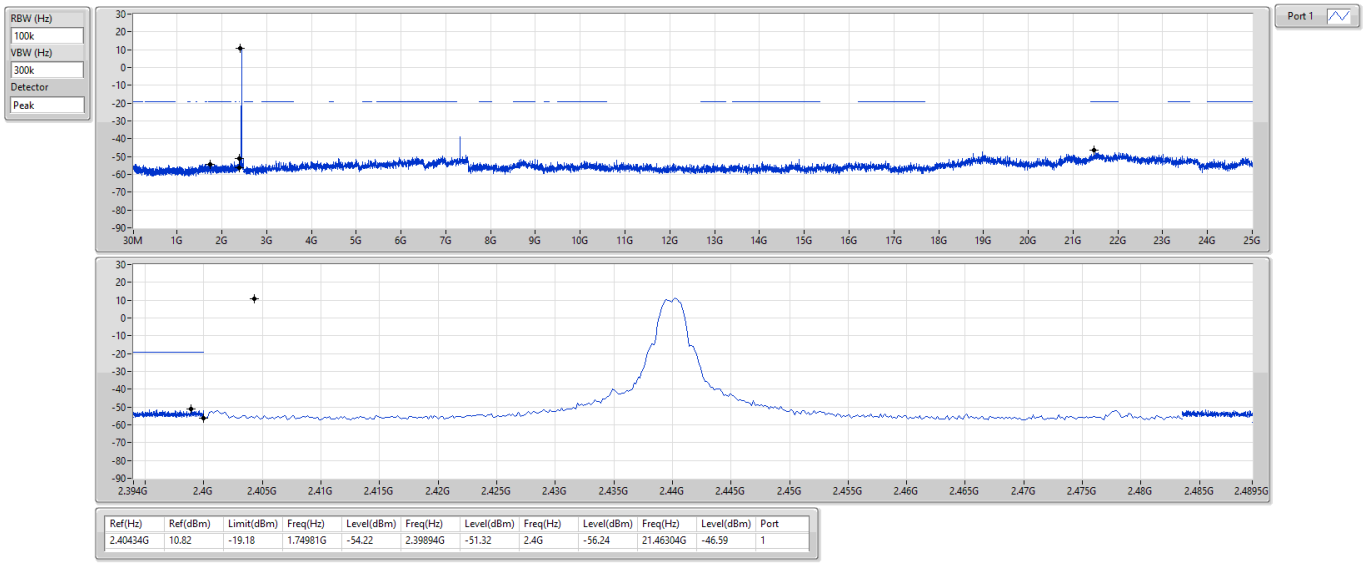
2405MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40434G	10.82	-19.18	1.81482G	-53.78	2.3999G	-42.46	2.4G	-43.00	7.21671G	-39.57	1

2.4-2.4835GHz_Zigbee_Nss1_1TX CSENdB

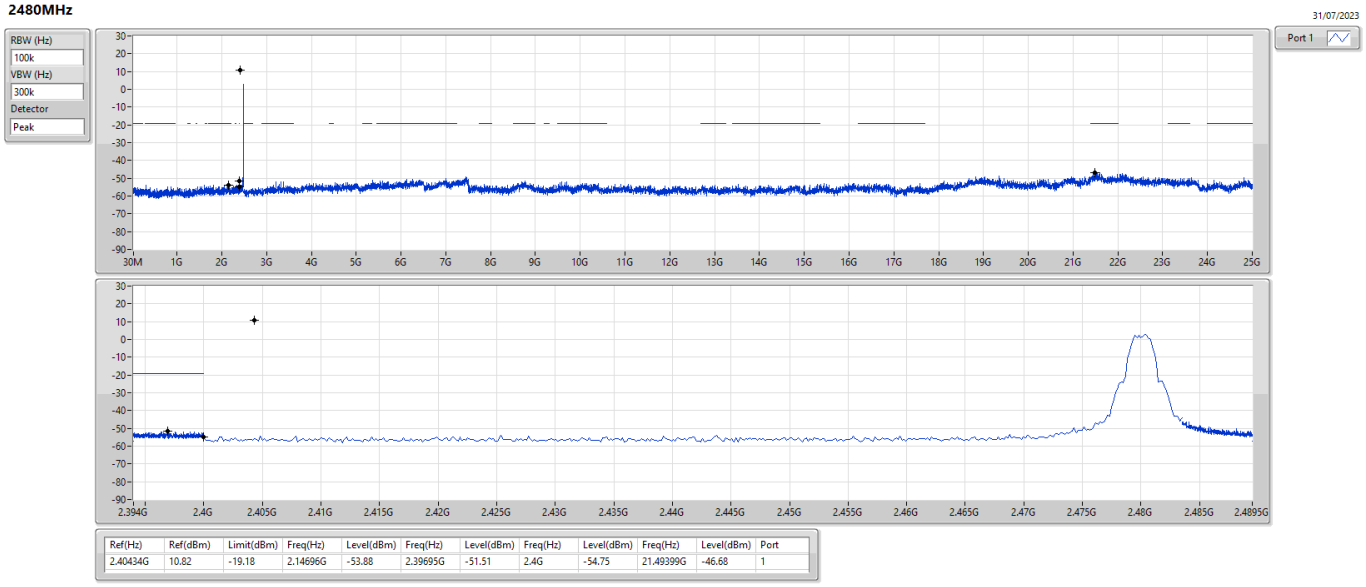
2440MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40434G	10.82	-19.18	1.74981G	-54.22	2.39894G	-51.32	2.4G	-56.24	21.46304G	-46.59	1

2.4-2.4835GHz_Zigbee_Nss1_1TX CSENdB

2480MHz

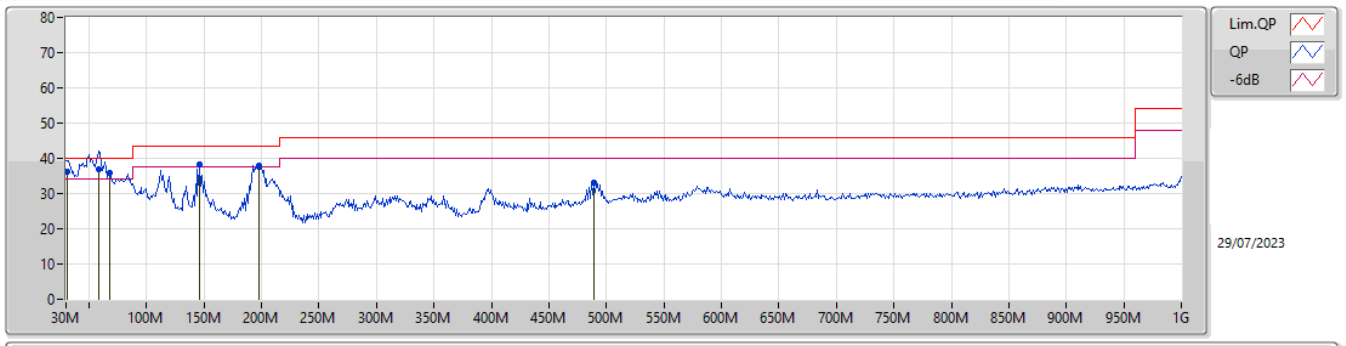


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40434G	10.82	-19.18	2.14696G	-53.88	2.39695G	-51.51	2.4G	-54.75	21.49399G	-46.68	1

Summary

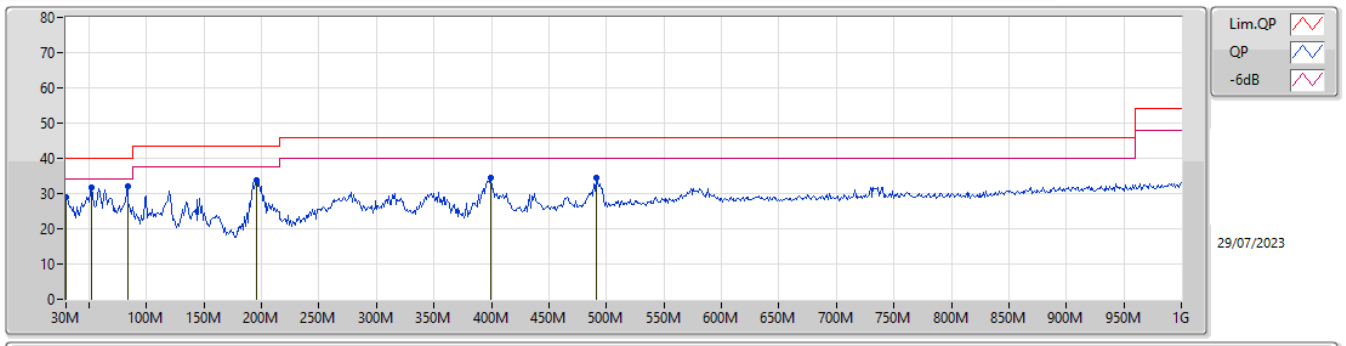
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 4	Pass	QP	58.13M	36.98	40.00	-3.02	Vertical

Mode 4



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/m)	(dB/m)	(dB)	(dB)
QP	30.97M	36.11	40.00	-3.89	-6.92	3	Vertical	197	1.00	-	43.03	23.62	1.03	31.57
QP	58.13M	36.98	40.00	-3.02	-18.11	3	Vertical	360	1.25	"Worst"	55.09	12.45	1.34	31.90
PK	67.83M	35.71	40.00	-4.29	-18.15	3	Vertical	356	1.50	-	53.86	12.33	1.43	31.91
PK	146.4M	38.39	43.50	-5.11	-13.24	3	Vertical	170	1.00	-	51.63	16.71	2.05	32.00
PK	197.81M	38.02	43.50	-5.48	-14.38	3	Vertical	194	1.00	-	52.40	15.22	2.41	32.01
PK	488.81M	33.01	46.00	-12.99	-5.16	3	Vertical	360	1.50	-	38.17	23.18	3.94	32.28

Mode 4



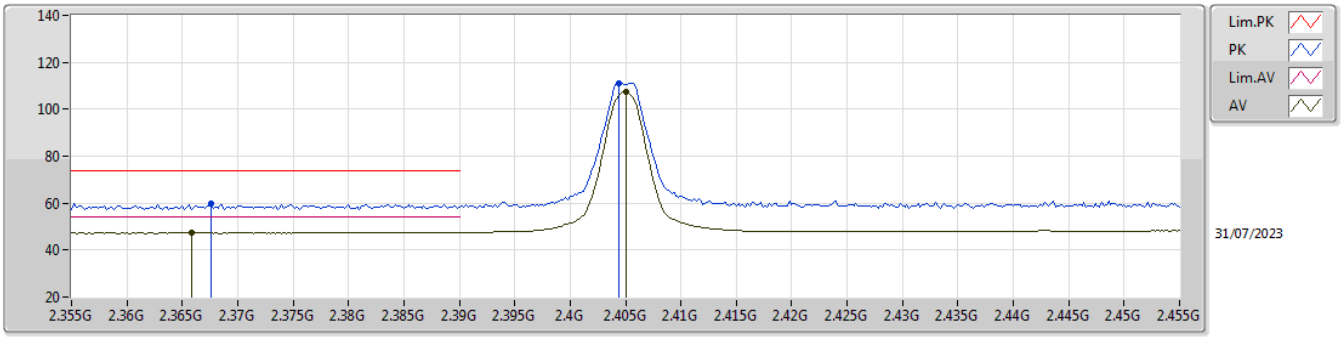
Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	30M	29.04	40.00	-10.96	-6.41	3	Horizontal	83	1.25	-	35.45	24.11	1.02	31.54
PK	52.31M	31.68	40.00	-8.32	-17.24	3	Horizontal	173	1.00	-	48.92	13.36	1.28	31.88
PK	83.35M	31.92	40.00	-8.08	-16.80	3	Horizontal	231	2.00	"Worst"	48.72	13.54	1.57	31.91
PK	195.87M	33.93	43.50	-9.57	-14.44	3	Horizontal	253	1.50	-	48.37	15.18	2.39	32.01
PK	399.57M	34.50	46.00	-11.50	-7.03	3	Horizontal	116	1.00	-	41.53	21.59	3.55	32.17
PK	490.75M	34.64	46.00	-11.36	-5.13	3	Horizontal	151	1.00	-	39.77	23.20	3.95	32.28

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	-	-	-	-	-	-	-	-	-	-	-
Zigbee_Nss1_1TX	Pass	AV	2.4835G	53.64	54.00	-0.36	3	Horizontal	56	1.00	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2405MHz_TX

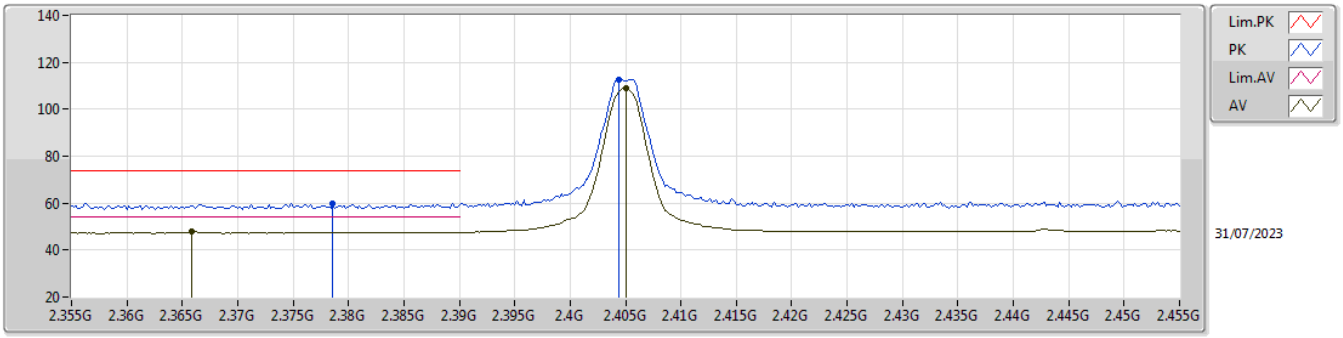


EUT X_1TX
Setting 20
02-L-W-4

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	2.3676G	59.77	74.00	-14.23	28.31	3	Vertical	346	1.14	-	28.28	3.18	-
AV	2.3658G	47.61	54.00	-6.39	16.17	3	Vertical	346	1.14	-	28.26	3.18	-
PK	2.4044G	110.96	Inf	-Inf	79.36	3	Vertical	346	1.14	-	28.40	3.20	-
AV	2.405G	107.25	Inf	-Inf	75.65	3	Vertical	346	1.14	-	28.40	3.20	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2405MHz_TX

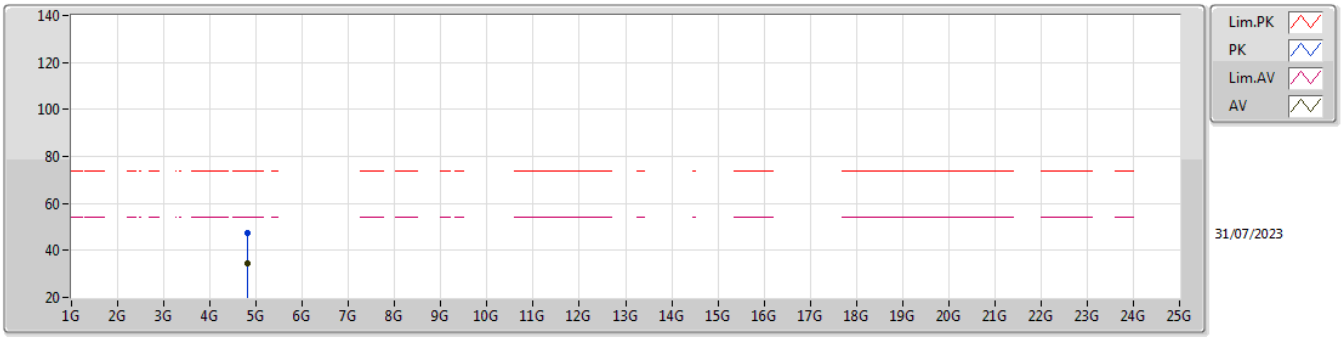


EUT X_1TX
Setting 20
02-L-W-4

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	2.3786G	60.02	74.00	-13.98	28.44	3	Horizontal	63	1.00	-	28.39	3.19	-
AV	2.3658G	47.87	54.00	-6.13	16.43	3	Horizontal	63	1.00	-	28.26	3.18	-
PK	2.4044G	112.65	Inf	-Inf	81.05	3	Horizontal	63	1.00	-	28.40	3.20	-
AV	2.405G	108.86	Inf	-Inf	77.26	3	Horizontal	63	1.00	-	28.40	3.20	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2405MHz_TX

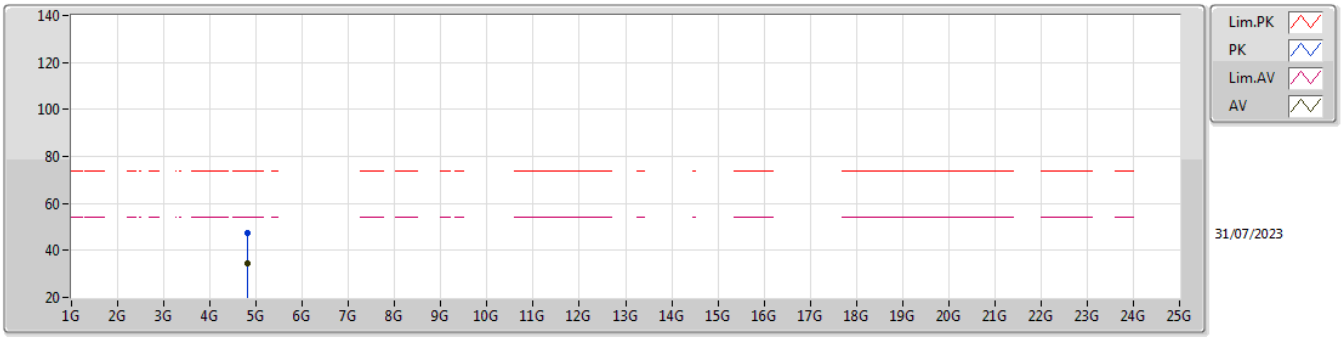


EUT X_1TX
Setting 20
02-L-W-4

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	4.81472G	47.23	74.00	-26.77	39.41	3	Vertical	289	1.80	-	32.89	5.61	30.68
AV	4.8148G	34.45	54.00	-19.55	26.63	3	Vertical	289	1.80	-	32.89	5.61	30.68

2.4-2.4835GHz_Zigbee_Nss1_1TX

2405MHz_TX

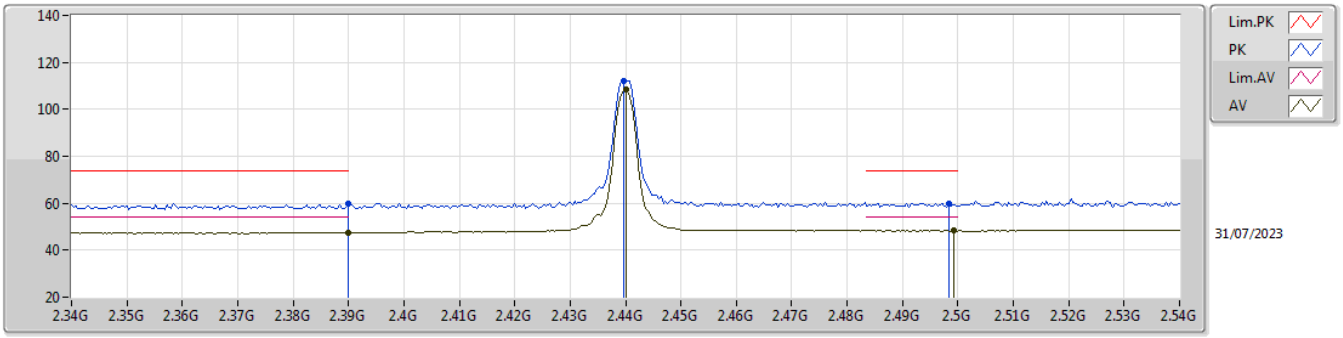


EUT X_1TX
Setting 20
02-L-W-4

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	4.81544G	47.21	74.00	-26.79	39.39	3	Horizontal	34	1.80	-	32.89	5.61	30.68
AV	4.8142G	34.39	54.00	-19.61	26.57	3	Horizontal	34	1.80	-	32.89	5.61	30.68

2.4-2.4835GHz_Zigbee_Nss1_1TX

2440MHz_TX

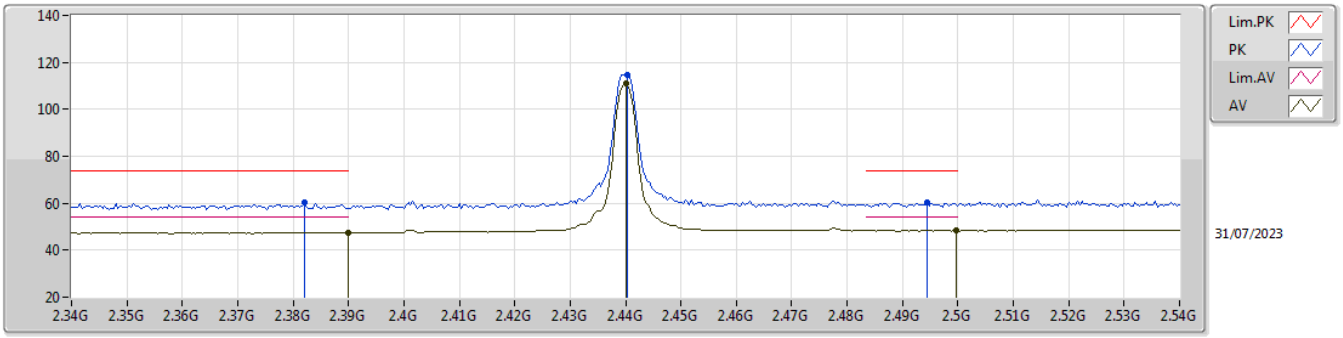


EUT X_1TX
Setting 20
02-L-W-4

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	2.39G	59.96	74.00	-14.04	28.36	3	Vertical	34	1.00	-	28.40	3.20	-
AV	2.39G	47.55	54.00	-6.45	15.95	3	Vertical	34	1.00	-	28.40	3.20	-
PK	2.4396G	112.10	Inf	-Inf	80.48	3	Vertical	34	1.00	-	28.40	3.22	-
AV	2.44G	108.36	Inf	-Inf	76.74	3	Vertical	34	1.00	-	28.40	3.22	-
PK	2.4984G	60.01	74.00	-13.99	28.18	3	Vertical	34	1.00	-	28.58	3.25	-
AV	2.4992G	48.45	54.00	-5.55	16.61	3	Vertical	34	1.00	-	28.59	3.25	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2440MHz_TX

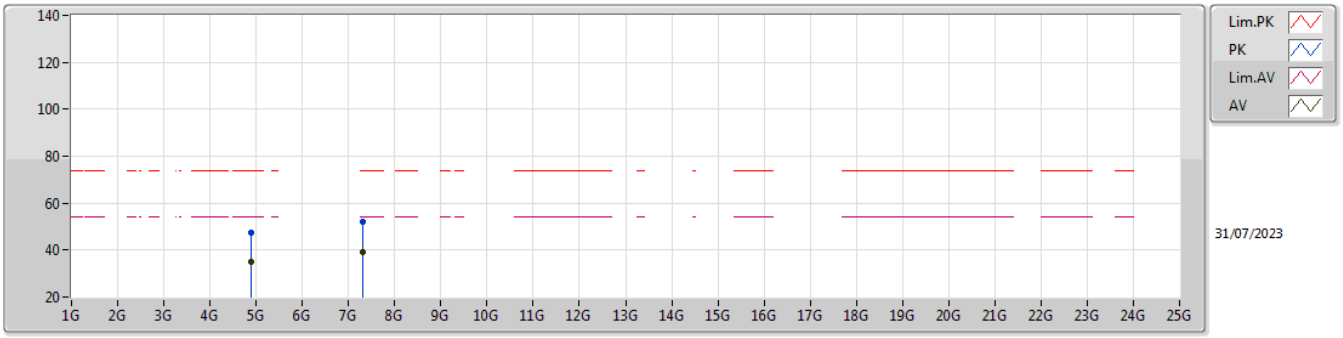


EUT X_1TX
Setting 20
02-L-W-4

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	2.382G	60.10	74.00	-13.90	28.51	3	Horizontal	61	1.00	-	28.40	3.19	-
AV	2.39G	47.55	54.00	-6.45	15.95	3	Horizontal	61	1.00	-	28.40	3.20	-
PK	2.4404G	114.50	Inf	-Inf	82.88	3	Horizontal	61	1.00	-	28.40	3.22	-
AV	2.44G	110.79	Inf	-Inf	79.17	3	Horizontal	61	1.00	-	28.40	3.22	-
PK	2.4944G	60.33	74.00	-13.67	28.54	3	Horizontal	61	1.00	-	28.54	3.25	-
AV	2.4996G	48.46	54.00	-5.54	16.61	3	Horizontal	61	1.00	-	28.60	3.25	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2440MHz_TX

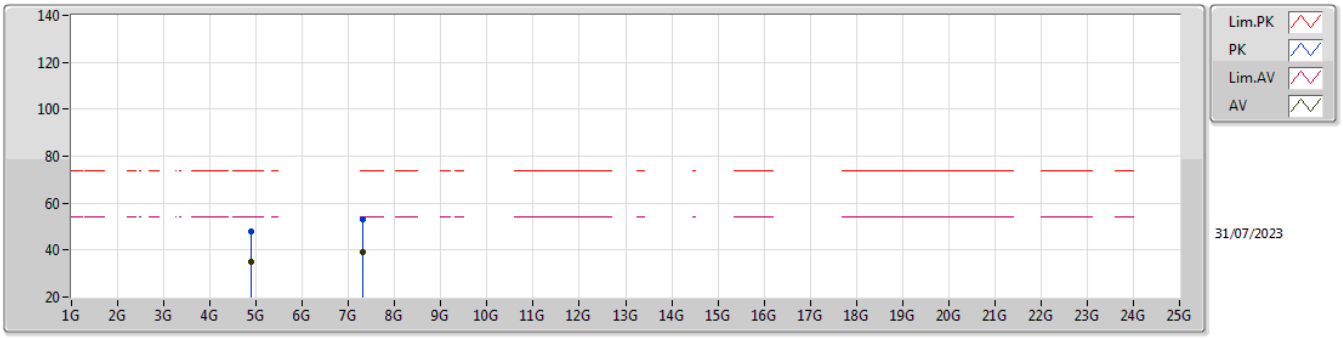


EUT X_1TX
Setting 20
02-L-W-4

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	4.88912G	47.43	74.00	-26.57	39.24	3	Vertical	4	1.01	-	33.18	5.64	30.63
AV	4.88676G	34.78	54.00	-19.22	26.60	3	Vertical	4	1.01	-	33.17	5.64	30.63
PK	7.32124G	52.10	74.00	-21.90	40.74	3	Vertical	-0	2.65	-	36.64	6.84	32.12
AV	7.32144G	39.19	54.00	-14.81	27.83	3	Vertical	-0	2.65	-	36.64	6.84	32.12

2.4-2.4835GHz_Zigbee_Nss1_1TX

2440MHz_TX

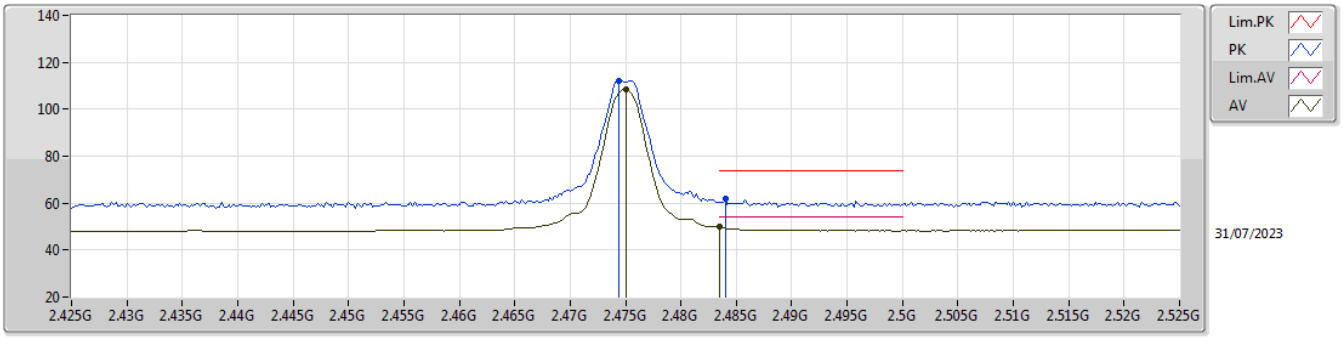


EUT X_1TX
Setting 20
02-L-W-4

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	4.88432G	47.95	74.00	-26.05	39.78	3	Horizontal	-0	1.80	-	33.17	5.64	30.64
AV	4.8866G	34.90	54.00	-19.10	26.72	3	Horizontal	-0	1.80	-	33.17	5.64	30.63
PK	7.31692G	53.32	74.00	-20.68	41.97	3	Horizontal	15	1.80	-	36.63	6.84	32.12
AV	7.3182G	39.31	54.00	-14.69	27.95	3	Horizontal	15	1.80	-	36.64	6.84	32.12

2.4-2.4835GHz_Zigbee_Nss1_1TX

2475MHz_TX

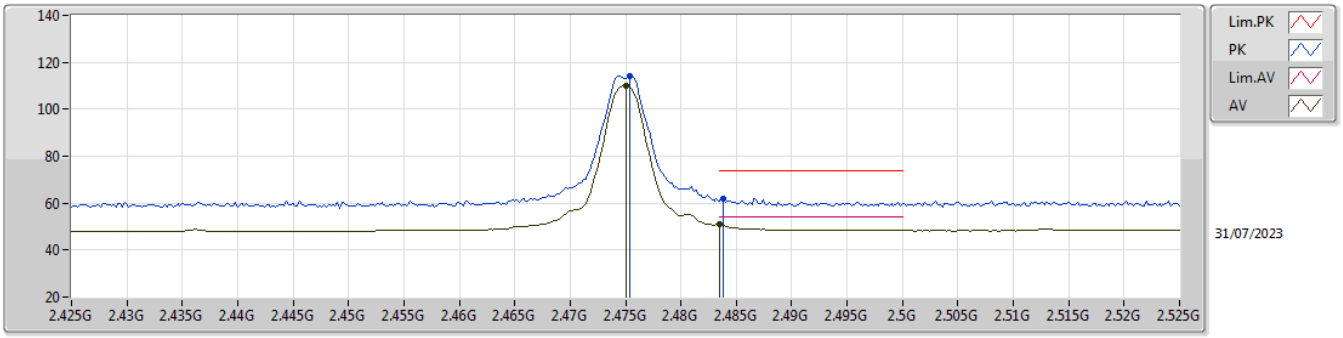


EUT X_1TX
Setting 20
02-L-W-4

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	2.4744G	112.06	Inf	-Inf	80.32	3	Vertical	16	1.26	-	28.50	3.24	-
AV	2.475G	108.28	Inf	-Inf	76.54	3	Vertical	16	1.26	-	28.50	3.24	-
PK	2.484G	61.71	74.00	-12.29	29.97	3	Vertical	16	1.26	-	28.50	3.24	-
AV	2.4835G	49.88	54.00	-4.12	18.14	3	Vertical	16	1.26	-	28.50	3.24	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2475MHz_TX

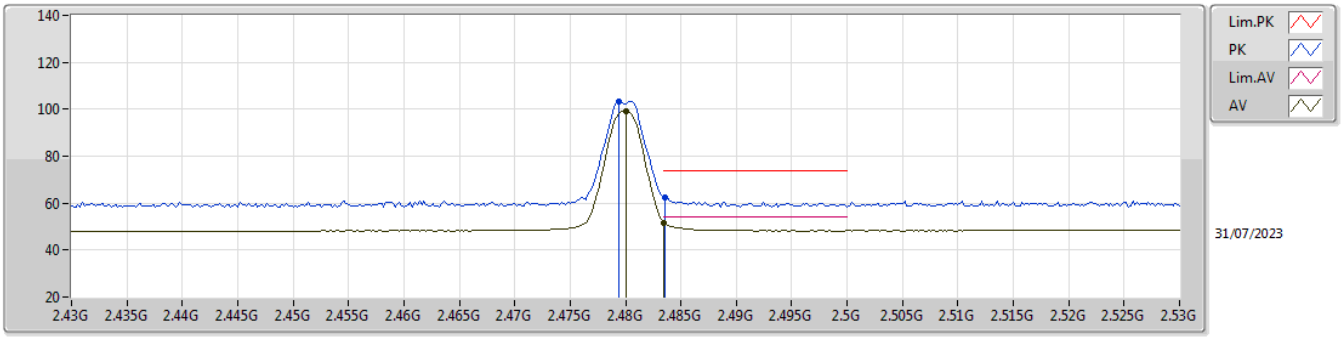


EUT X_1TX
Setting 20
02-L-W-4

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	2.4754G	113.96	Inf	-Inf	82.22	3	Horizontal	56	1.00	-	28.50	3.24	-
AV	2.475G	110.24	Inf	-Inf	78.50	3	Horizontal	56	1.00	-	28.50	3.24	-
PK	2.4838G	62.01	74.00	-11.99	30.27	3	Horizontal	56	1.00	-	28.50	3.24	-
AV	2.4835G	50.78	54.00	-3.22	19.04	3	Horizontal	56	1.00	-	28.50	3.24	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2480MHz_TX

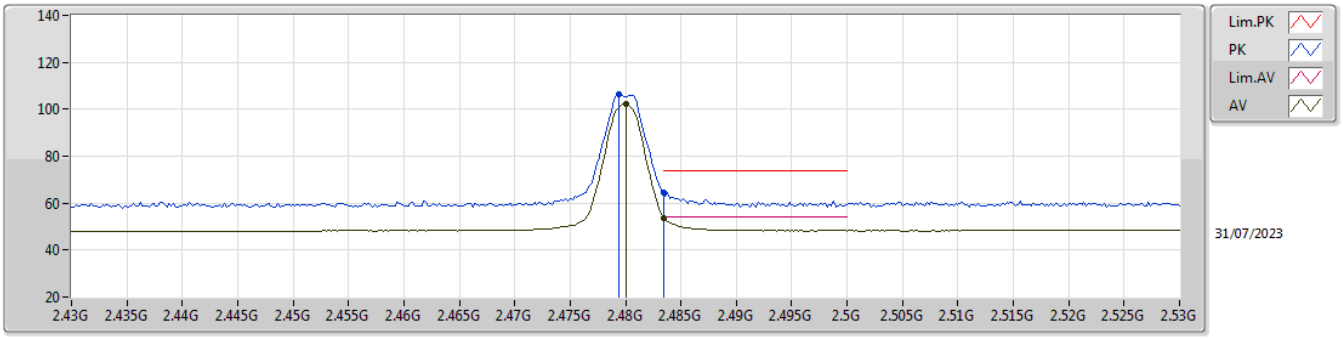


EUT X_1TX
Setting 13
02-L-W-4

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	2.4794G	103.12	Inf	-Inf	71.38	3	Vertical	13	1.00	-	28.50	3.24	-
AV	2.48G	99.37	Inf	-Inf	67.63	3	Vertical	13	1.00	-	28.50	3.24	-
PK	2.4836G	62.62	74.00	-11.38	30.88	3	Vertical	13	1.00	-	28.50	3.24	-
AV	2.4835G	51.77	54.00	-2.23	20.03	3	Vertical	13	1.00	-	28.50	3.24	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2480MHz_TX

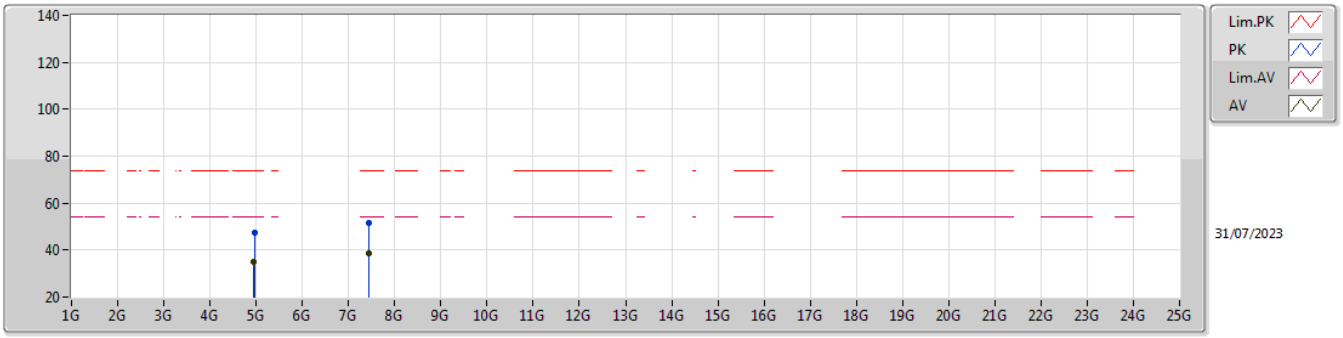


EUT X_1TX
Setting 13
02-L-W-4

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	2.4794G	106.14	Inf	-Inf	74.40	3	Horizontal	56	1.00	-	28.50	3.24	-
AV	2.48G	102.39	Inf	-Inf	70.65	3	Horizontal	56	1.00	-	28.50	3.24	-
PK	2.4835G	64.42	74.00	-9.58	32.68	3	Horizontal	56	1.00	-	28.50	3.24	-
AV	2.4835G	53.64	54.00	-0.36	21.90	3	Horizontal	56	1.00	-	28.50	3.24	-

2.4-2.4835GHz_Zigbee_Nss1_1TX

2480MHz_TX

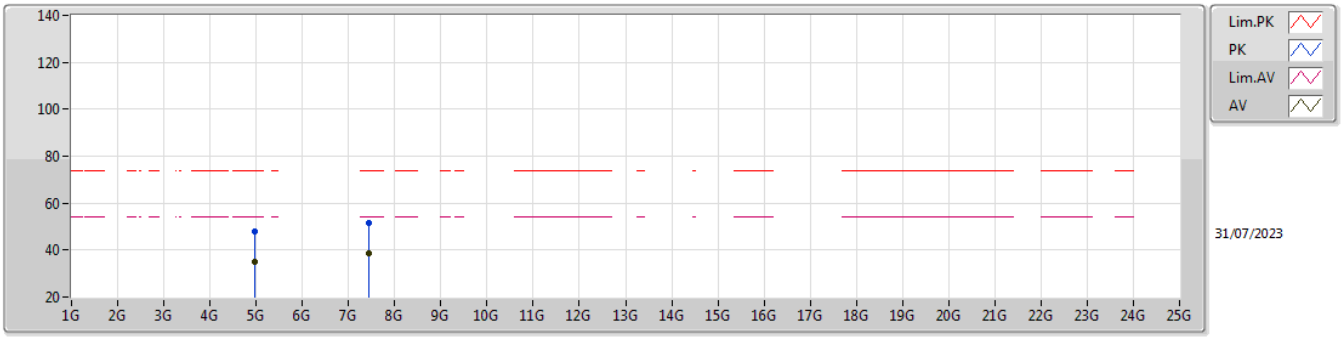


EUT X_1TX
Setting 13
02-L-W-4

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	4.95944G	47.58	74.00	-26.42	39.17	3	Vertical	12	2.69	-	33.32	5.68	30.59
AV	4.95576G	34.92	54.00	-19.08	26.52	3	Vertical	12	2.69	-	33.31	5.68	30.59
PK	7.43896G	51.40	74.00	-22.60	40.05	3	Vertical	240	2.65	-	36.70	6.84	32.19
AV	7.4382G	38.44	54.00	-15.56	27.09	3	Vertical	240	2.65	-	36.70	6.84	32.19

2.4-2.4835GHz_Zigbee_Nss1_1TX

2480MHz_TX



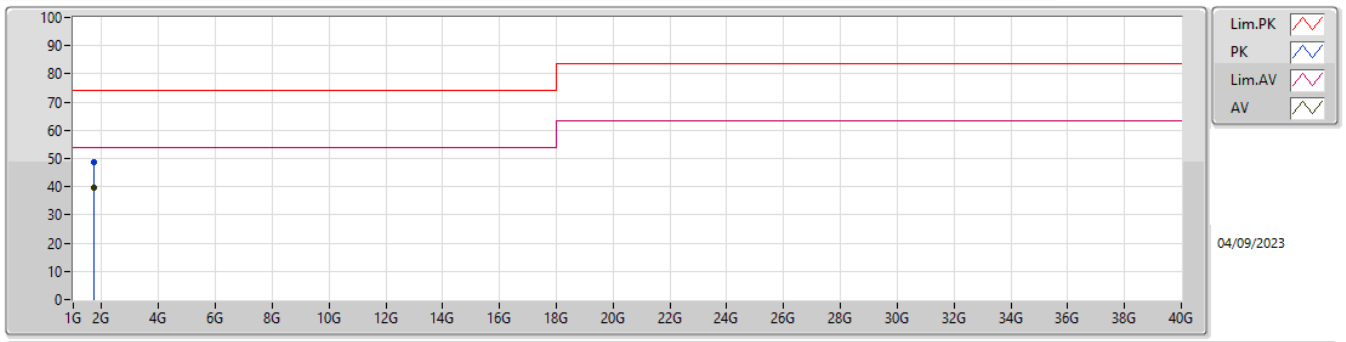
EUT X_1TX
Setting 13
02-L-W-4

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	4.96944G	47.70	74.00	-26.30	39.26	3	Horizontal	360	1.80	-	33.34	5.68	30.58
AV	4.95656G	34.91	54.00	-19.09	26.51	3	Horizontal	360	1.80	-	33.31	5.68	30.59
PK	7.44084G	51.72	74.00	-22.28	40.37	3	Horizontal	-0	1.80	-	36.70	6.84	32.19
AV	7.44508G	38.43	54.00	-15.57	27.07	3	Horizontal	-0	1.80	-	36.70	6.85	32.19

Summary

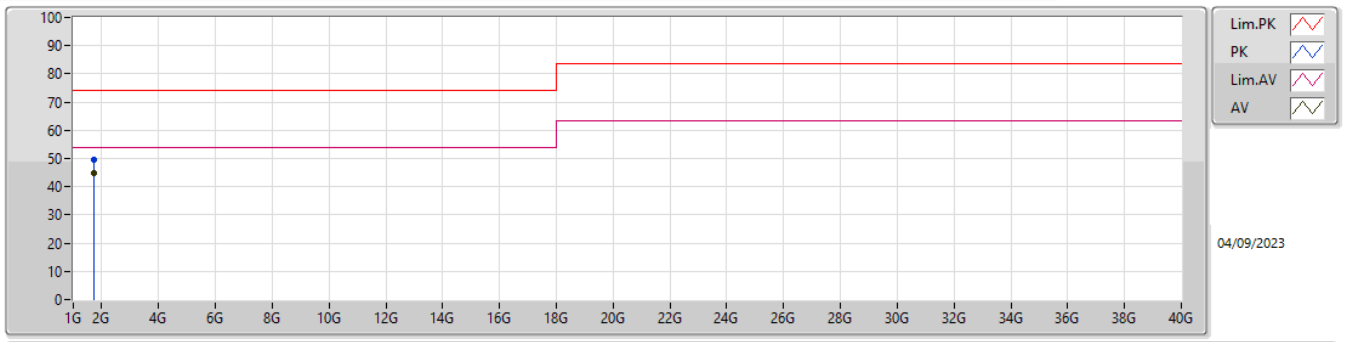
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 3	Pass	AV	1.71088G	44.88	54.00	-9.12	Horizontal

Mode 3



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/m)	(dB/m)	(dB)	(dB)
PK	1.71148G	48.83	74.00	-25.17	-7.25	3	Vertical	223	1.80	-	56.08	25.35	3.21	35.81
AV	1.72332G	39.81	54.00	-14.19	-7.18	3	Vertical	223	1.80	"Worst"	46.99	25.39	3.22	35.79

Mode 3



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/m)	(dB/m)	(dB)	(dB)
PK	1.7112G	49.49	74.00	-24.51	-7.26	3	Horizontal	308	1.80	-	56.75	25.34	3.21	35.81
AV	1.71088G	44.88	54.00	-9.12	-7.26	3	Horizontal	308	1.80	"Worst"	52.14	25.34	3.21	35.81