

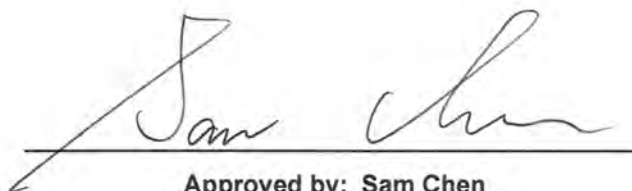


RADIO TEST REPORT

FCC ID : QXO-AP3020X
Equipment : Access Point
Brand Name : Extreme Networks
Model Name : AP3020X
Applicant : Extreme Networks, Inc.
2121 RDU Center Drive Morrisville North Carolina
United States 27560
Manufacturer : Extreme Networks, Inc.
2121 RDU Center Drive Morrisville North Carolina
United States 27560
Standard : 47 CFR FCC Part 15.247

The product was received on Mar. 16, 2026, and testing was started from Jun. 23, 2026 and completed on Aug. 26, 2026. 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 C63.10-2020 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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TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_9 Ver1.3



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/manufacture 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: Sandy Chuang**



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]

Band	Mode	BWch (MHz)	Nant
2.4G	802.15.4	3	1

Note:

- ♦ 802.15.4 uses a O-QPSK (250kbps) modulation.
- ♦ BWch is the nominal channel bandwidth.


1.1.2 Antenna Information

Ant.	RF Port				Brand Name	Model Name	Ant. Type	Connector	Modes of Operation	Remark	Gain (dBi)		
	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz	Bluetooth and IEEE 802.15.4									
1	1	1	-	-	WNC	ML-2452-APA2-02	Dipole Omni	Reverse SMA	WLAN 2.4GHz (Radio 1), WLAN 5GHz UNII 2C~3 or UNII 1~3 (Radio 2)	External Ant.	Note 1		
	2	2	-	-									
2	1 (V)	1 (V)	-	-	Extreme Networks	AIO-DD75060-RPSMA	Panel	Reverse SMA					
	2 (H)	2 (H)	-	-									
3	1 (V)	1 (V)	-	-	Extreme Networks	AIO-DD05120-RPSMA	Dual-Polarized Panel	Reverse SMA					
	2 (H)	2 (H)	-	-									
4	1 (V)	1 (V)	-	-	Extreme Networks	AIO-DD15020-RPSMA	MIMO-Directional Panel	Reverse SMA					
	2 (H)	2 (H)	-	-									
5	-	1	1	-	WNC	95XPAM15.G98	Dipole	I-Pex				WLAN 5GHz UNII 1~2A 、 WLAN 6GHz UNII 5~8 (Radio 1)	External Ant. (Non-detachable)
6	-	2	2	-	WNC	95XPAM15.G99	Dipole	I-Pex					
7	-	-	-	1	WNC	95XPAM15.G97	PIFA	I-Pex	Bluetooth 、 IEEE 802.15.4 (Radio 3)	Internal Ant.			
8	-	-	-	1	WNC	95XPAM15.G95	Dipole	I-Pex					
9	-	-	-	1	WNC	95XPAM15.G96	PIFA	I-Pex					



Note 1:

Ant.	RF Port				Antenna Gain (dBi)											
	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz	Bluetooth and IEEE 802.15.4	WLAN 2.4GHz (Radio 1)	WLAN 5GHz UNII 1~3 (Radio 2)				WLAN 5GHz UNII 1~2A (Radio 1)		WLAN 6GHz UNII 5~8 (Radio 1)				Bluetooth and IEEE 802.15.4 (Radio 3)
						UNII 1	UNII 2A	UNII 2C	UNII 3	UNII 1	UNII 2A	UNII 5	UNII 6	UNII 7	UNII 8	
1	1	1	-	-	3.04	4.3	4.07	4.96	4.96	-	-	-	-	-	-	-
	2	2	-	-	3.04	4.3	4.07	4.96	4.96							
2	1 (V)	1 (V)	-	-	7.5	7.5	7.5	7.5	7.5	-	-	-	-	-	-	-
	2 (H)	2 (H)	-	-	7.5	7.5	7.5	7.5	7.5							
3	1 (V)	1 (V)	-	-	5.5	5	5	5	5	-	-	-	-	-	-	-
	2 (H)	2 (H)	-	-	5.5	5	5	5	5							
4	1 (V)	1 (V)	-	-	12	15	15	15	15	-	-	-	-	-	-	-
	2 (H)	2 (H)	-	-	12	15	15	15	15							
5	-	1	1	-	-	-	-	-	-	4.47	4.47	5.3	5.3	5.3	5.3	-
6	-	2	2	-	-	-	-	-	-	4.51	4.51	5.9	5.9	5.9	5.9	-
7	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3.21
8	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	5.81
9	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3.28

Ant.	RF Port		Antenna Cable Loss (dB)				
	WLAN 2.4GHz	WLAN 5GHz	WLAN 2.4GHz (Radio 1)	WLAN 5GHz UNII 1~3 (Radio 2)			
				UNII 1	UNII 2A	UNII 2C	UNII 3
1	1	1	0.79	1.2	1.2	1.2	1.2
	2	2	0.33	0.5	0.5	0.5	0.5
2	1 (V)	1 (V)	0.79	1.2	1.2	1.2	1.2
	2 (H)	2 (H)	0.33	0.5	0.5	0.5	0.5
3	1 (V)	1 (V)	0.79	1.2	1.2	1.2	1.2
	2 (H)	2 (H)	0.33	0.5	0.5	0.5	0.5
4	1 (V)	1 (V)	0.79	1.2	1.2	1.2	1.2
	2 (H)	2 (H)	0.33	0.5	0.5	0.5	0.5



Ant.	RF Port		Antenna True Gain (dBi)				
	WLAN 2.4GHz	WLAN 5GHz	WLAN 2.4GHz (Radio 1)	WLAN 5GHz UNII 1~3 (Radio 2)			
				UNII 1	UNII 2A	UNII 2C	UNII 3
1	1	1	2.25	3.1	2.87	3.76	3.76
	2	2	2.71	3.8	3.57	4.46	4.46
2	1 (V)	1 (V)	6.71	6.3	6.3	6.3	6.3
	2 (H)	2 (H)	7.17	7	7	7	7
3	1 (V)	1 (V)	4.71	3.8	3.8	3.8	3.8
	2 (H)	2 (H)	5.17	4.5	4.5	4.5	4.5
4	1 (V)	1 (V)	11.21	13.8	13.8	13.8	13.8
	2 (H)	2 (H)	11.67	14.5	14.5	14.5	14.5

Note 2: The above information was declared by manufacturer.

Note 3: For WLAN 2.4GHz (Radio 1) and WLAN 5GHz (Radio 2): Only the highest gain antenna “Ant.1, Ant. 2 and Ant. 4” was selected to perform the test and recorded in this report.

Note 4: For WLAN 5GHz and 6GHz (Radio 1): Ant.5+Ant.6 were selected to perform the test and recorded in this report.

Note 5: States antenna 5GHz and 6GHz transmission will be restricted per country’s regulation.

Note 6: 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 $N_{ANT} \leq 4$	$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$
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 :

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

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

$$g_{j,k} = (NSS1(g1,1) + NSS1(g1,2))^2$$

$$DG = 10 \log[(NSS1(g1,1) + NSS1(g1,2))^2 / N_{ANT}] \Rightarrow 10 \log[(10^{G1/20} + 10^{G2/20})^2 / N_{ANT}]$$

Where ;

**<Radio 1>**

2.4G

Ant. 1

2.4G G1= 2.25 dBi ; G2= 2.71 dBi ;

2T1S DG= 5.49dBi ; 2T2S DG= 2.49dBi

Ant. 2 (Cross-Polarized Antenna)

2.4G G1= 6.71 dBi ; G2= 7.17 dBi ;

2T1S DG= 7.17dBi ; 2T2S DG= 6.95dBi

Ant. 4 (Cross-Polarized Antenna)

2.4G G1= 11.21 dBi ; G2= 11.67 dBi ;

2T1S DG= 11.67dBi ; 2T2S DG= 11.45dBi

5G

5G UNII-1 G1= 4.47 dBi ; G2= 4.51 dBi ;

2T1S DG= 7.5dBi ; 2T2S DG= 4.49dBi

5G UNII-2A G1= 4.47 dBi ; G2= 4.51 dBi ;

2T1S DG= 7.5dBi ; 2T2S DG= 4.49dBi

6G

6G UNII-5 G1= 5.3 dBi ; G2= 5.9 dBi ;

2T1S DG= 8.62dBi ; 2T2S DG= 5.61dBi

6G UNII-6 G1= 5.3 dBi ; G2= 5.9 dBi ;

2T1S DG= 8.62dBi ; 2T2S DG= 5.61dBi

6G UNII-8 G1= 5.3 dBi ; G2= 5.9 dBi ;

2T1S DG= 8.62dBi ; 2T2S DG= 5.61dBi

<Radio 2>

5G

Ant. 1

5G UNII-1 G1= 3.1 dBi ; G2= 3.8 dBi ;

2T1S DG= 6.47dBi ; 2T2S DG= 3.46dBi

5G UNII-2A G1= 2.87 dBi ; G2= 3.57 dBi ;

2T1S DG= 6.24dBi ; 2T2S DG= 3.23dBi

5G UNII-2C G1= 3.76 dBi ; G2= 4.46 dBi ;

2T1S DG= 7.13dBi ; 2T2S DG= 4.12dBi

5G UNII-3 G1= 3.76 dBi ; G2= 4.46 dBi ;

2T1S DG= 7.13dBi ; 2T2S DG= 4.12dBi

Ant. 2 (Cross-Polarized Antenna)

5G UNII-1 G1= 6.3 dBi ; G2= 7 dBi ;

2T1S DG= 7 dBi ; 2T2S DG= 6.66dBi

5G UNII-2A G1= 6.3 dBi ; G2= 7 dBi ;

2T1S DG= 7 dBi ; 2T2S DG= 6.66dBi

5G UNII-2C G1= 6.3 dBi ; G2= 7 dBi ;

2T1S DG= 7 dBi ; 2T2S DG= 6.66dBi

5G UNII-3 G1= 6.3 dBi ; G2= 7 dBi ;

2T1S DG= 7 dBi ; 2T2S DG= 6.66dBi

Ant. 4 (Cross-Polarized Antenna)

5G UNII-1 G1= 13.8 dBi ; G2= 14.5 dBi ;

DG= 17.17dBi ; 2T2S DG= 14.16dBi

5G UNII-2A G1= 13.8 dBi ; G2= 14.5 dBi ;

DG= 17.17dBi ; 2T2S DG= 14.16dBi

5G UNII-2C G1= 13.8 dBi ; G2= 14.5 dBi ;

DG= 17.17dBi ; 2T2S DG= 14.16dBi

5G UNII-3 G1= 13.8 dBi ; G2= 14.5 dBi ;

DG= 17.17dBi ; 2T2S DG= 14.16dBi

**For Radio 1:****2.4GHz IEEE 802.11b/g/n/VHT/ax/be mode (1, 2TX/2RX)**

The EUT can support both 1TX and 2TX functions.

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX/2RX

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

Port 1 and Port 2 could transmit/receive simultaneously.

5GHz IEEE 802.11a/n/ac/ax/be mode (1, 2TX/2RX)

The EUT can support both 1TX and 2TX functions.

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX/2RX

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

Port 1 and Port 2 could transmit/receive simultaneously.

6GHz IEEE 802.11ax/be mode (1, 2TX/2RX)

The EUT can support both 1TX and 2TX functions.

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX/2RX

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

Port 1 and Port 2 could transmit/receive simultaneously.

For Radio 2:**5GHz IEEE 802.11a/n/ac/ax/be mode (1, 2TX/2RX)**

The EUT can support both 1TX and 2TX functions.

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX/2RX

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

Port 1 and Port 2 could transmit/receive simultaneously.

For Radio 3:**Bluetooth, IEEE 802.15.4 mode (1TX/1RX)**

The EUT supports all antennas with TX/RX diversity functions.

At once time there is only one antenna port can transmitting/receiving RF signal

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF (dB)	T (s)	VBW (Hz) 1/T
802.15.4_Nss 1	0.933	0.3	4.243m	300

Note:

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

1.1.4 EUT Operational Condition

EUT Power Type	From PoE			
Function	☒	Point-to-multipoint	☐	Point-to-point
Test Software Version	DOS[ver 10.0.19045.6466]			
Firmware Number	6.2.0			
Serial Number				

Note: The above information was declared by manufacturer.

1.1.5 Table for Radio Function

Function Radio (R)	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz	Bluetooth	IEEE 802.15.4
1	V	V (UNII 1~2A)	V	-	-
2	-	V (UNII 1~3 or UNII 2C~3)	-	-	-
3	-	-	-	V	V

Note 1: For WLAN 5GHz: The Radio1 and Radio 2 can't operate at the same frequency simultaneously.

Note 2: The above information was declared by manufacturer.

1.1.6 Table for EUT Support Function

Type of Function	WLAN 2.4GHz	WLAN 5GHz		WLAN 6GHz
		Radio 1	Radio 2	
AP	V	V (UNII 1~2A)	V (UNII 1~3)	V
Bridge	V	V (UNII 1)	V (UNII 1/UNII3)	V
Mesh	V	V (UNII 1)	V (UNII 1/UNII3)	V

Note 1: For above table list, only AP mode was tested and recorded in this test.

Note 2: The above information was declared by manufacturer.



1.2 Applicable Standards

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

- ♦ 47 CFR FCC Part 15.247
- ♦ ANSI C63.10-2020

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 (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) TEL: 886-3-656-9065 FAX: 886-3-656-9085 Test site Designation No. TW3787 with FCC. Conformity Assessment Body Identifier (CABID) TW3787 with ISCED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Serway Lee	21.7~22.3 / 61~62	Jul. 06, 2026~ Aug. 20, 2026
Radiated below 1GHz	03CH01-CB	Sean Ku	24.3~24.5 / 67~69	Jun. 23, 2026~ Aug. 26, 2026
	03CH05-CB	Lex Lee	24.2~24.9 / 62~67	
Radiated above 1GHz	03CH05-CB	Lex Lee	23.5~24.9 / 59~68	
AC Conduction	CO01-CB	Joe Chu	22~23 / 55~56	Aug. 13, 2026

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)	3.7 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.7 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.3 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	2.5 dB	Confidence levels of 95%
Output Power Measurement	1.3 dB	Confidence levels of 95%
Power Density Measurement	2.0 dB	Confidence levels of 95%
Bandwidth Measurement	1.0 %	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Mode
802.15.4
2405MHz
2440MHz
2475MHz
2480MHz

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	EUT (Ant. 4 in Y axis)+R1 (2.4GHz)+R2 (5GHz full)+R3 (BT_Ant. 7)+PoE
2	EUT (Ant. 4 in Y axis)+R1 (2.4GHz)+R2 (5GHz full)+R3 (BT_Ant. 8)+PoE
3	EUT (Ant. 4 in Y axis)+R1 (2.4GHz)+R2 (5GHz full)+R3 (BT_Ant. 9)+PoE
Mode 1 has been evaluated to be the worst case between Mode 1~3, thus measurement for Mode 4~5 will follow this same test mode.	
4	EUT (Ant. 4 in Y axis)+R1 (6GHz full)+R2 (5GHz full)+R3 (BT_Ant. 7)+PoE
5	EUT (Ant. 4 in Y axis)+R1 (5GHz UNII 1~2A)+R2 (5GHz UNII 2C~3)+R3 (BT_Ant. 7)+PoE
Mode 1 has been evaluated to be the worst case between Mode 1~5, thus measurement for Mode 6 will follow this same test mode.	
6	EUT (Ant. 4 in Y axis)+R1 (2.4GHz)+R2 (5GHz full)+R3 (IEEE 802.15.4_Ant. 7)+PoE
For operating mode 1 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands
Test Condition	Conducted measurement at transmit chains The EUT supports all antennas with TX/RX diversity functions. At once time there is only one antenna port can transmitting/receiving RF signal. The Ant. 8 generated the worst case, so it was selected for testing.
1	EUT_R3+Ant. 8

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	CTX
	1. After evaluating, and the worst case axis was found as below for radiated above 1GHz test. So the measurement will follow this same test configuration. 2. For Radio 3: The EUT supports all antennas with TX/RX diversity functions. At once time there is only one antenna port can transmitting/receiving RF signal. The Ant. 8 generated the worst case for radiated above 1GHz test, so it was selected for testing.
1	EUT in Z axis_R1 (2.4GHz)+Ant. 1 in Y axis+PoE
2	EUT in Y axis_R1 (2.4GHz)+Ant. 2 in Y axis +PoE
3	EUT in Y axis_R1 (2.4GHz)+Ant. 4 in Y axis +PoE
4	EUT in Z axis_R1 (5GHz)+Ant. 5 、 6 in Y axis+PoE
5	EUT in Z axis_R1 (6GHz)+Ant. 5 、 6 in Y axis+PoE
6	EUT in Y axis_R2 (5GHz)+Ant. 1 in Y axis +PoE
7	EUT in Y axis_R2 (5GHz)+Ant. 2 in Y axis +PoE
8	EUT in Z axis_R2 (5GHz)+Ant. 4 in Y axis +PoE
9	EUT in Y axis_R3 (BT_Ant. 8)+PoE
10	EUT in Y axis_R3 (IEEE 802.15.4_Ant. 8)+PoE
For operating mode 3 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
	1. After evaluating, the worst case axis was found at Y axis, so it was selected to perform test and its test result was written in the report. 2. The EUT supports all antennas with TX/RX diversity functions. At once time there is only one antenna port can transmitting/receiving RF signal. The Ant. 8 generated the worst case, so it was selected for testing.
1	EUT in Y axis_R3+Ant. 8



The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	EUT_R1 (2.4GHz) + R2 (5GHz full) + R3 (BT)
2	EUT_R1 (2.4GHz) + R2 (5GHz full) + R3 (IEEE 802.15.4)
3	EUT_R1 (6GHz full) + R2 (5GHz full) + R3 (BT)
4	EUT_R1 (6GHz full) + R2 (5GHz full) + R3 (IEEE 802.15.4)
5	EUT_R1 (5GHz UNII 1~2A) + R2 (5GHz UNII 2C~3) + R3 (BT)
6	EUT_R1 (5GHz UNII 1~2A) + R2 (5GHz UNII 2C~3) + R3 (IEEE 802.15.4)
Refer to Sporton Test Report No.: FA631826 for Co-location RF Exposure Evaluation.	

Note1: R means Radio ; BT means Bluetooth.

Note2: The PoE is used for testing purpose; it will not be sold with the EUT

Power	Brand Name	Model Name
PoE 1	PHIHONG	POE60U-BTA
PoE 2	Microsemi	PD-9001GR/AT/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
Bracket*1
Cap*1
Wall-mounted rack 1*1 (for Ant. 1 use only)
Wall-mounted rack 2*1 (for Ant. 4 use only)



2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	PoE 1	PHIHONG	POE60U-BTA	N/A
B	PC	ASUS	S300TA	TX2-RTL8821CE
C	R1(2.4G) NB	Lenovo	X260	N/A
D	R2(5G full) NB	Lenovo	X260	N/A
E	Smart phone	Apple	A2403	BCG-E3544A
F	Flash disk2.0	Tcell	Push	N/A

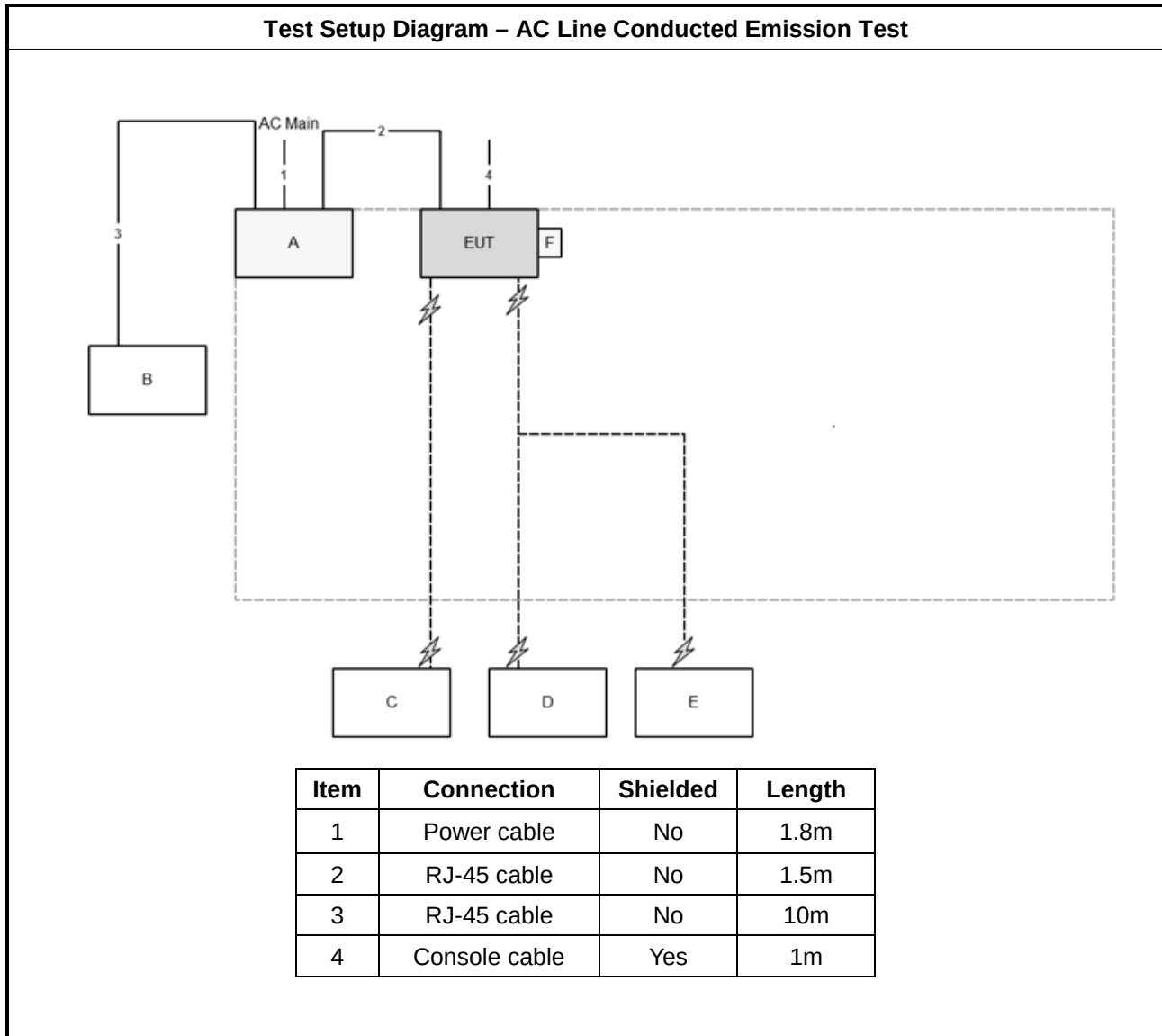
For Radiated:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A
B	PoE 1	PHIHONG	POE60U-BTA	N/A

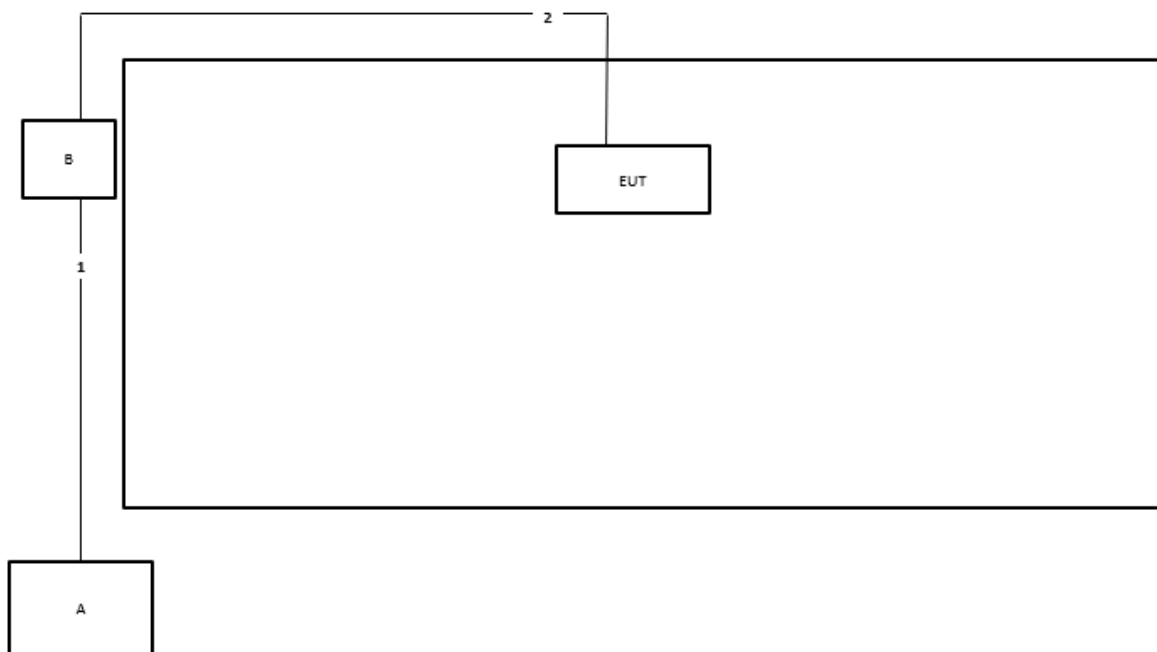
For RF Conducted:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E6230	N/A
B	PoE 2	Microsemi	PD-9001GR/AT/AC	N/A

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test



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.		

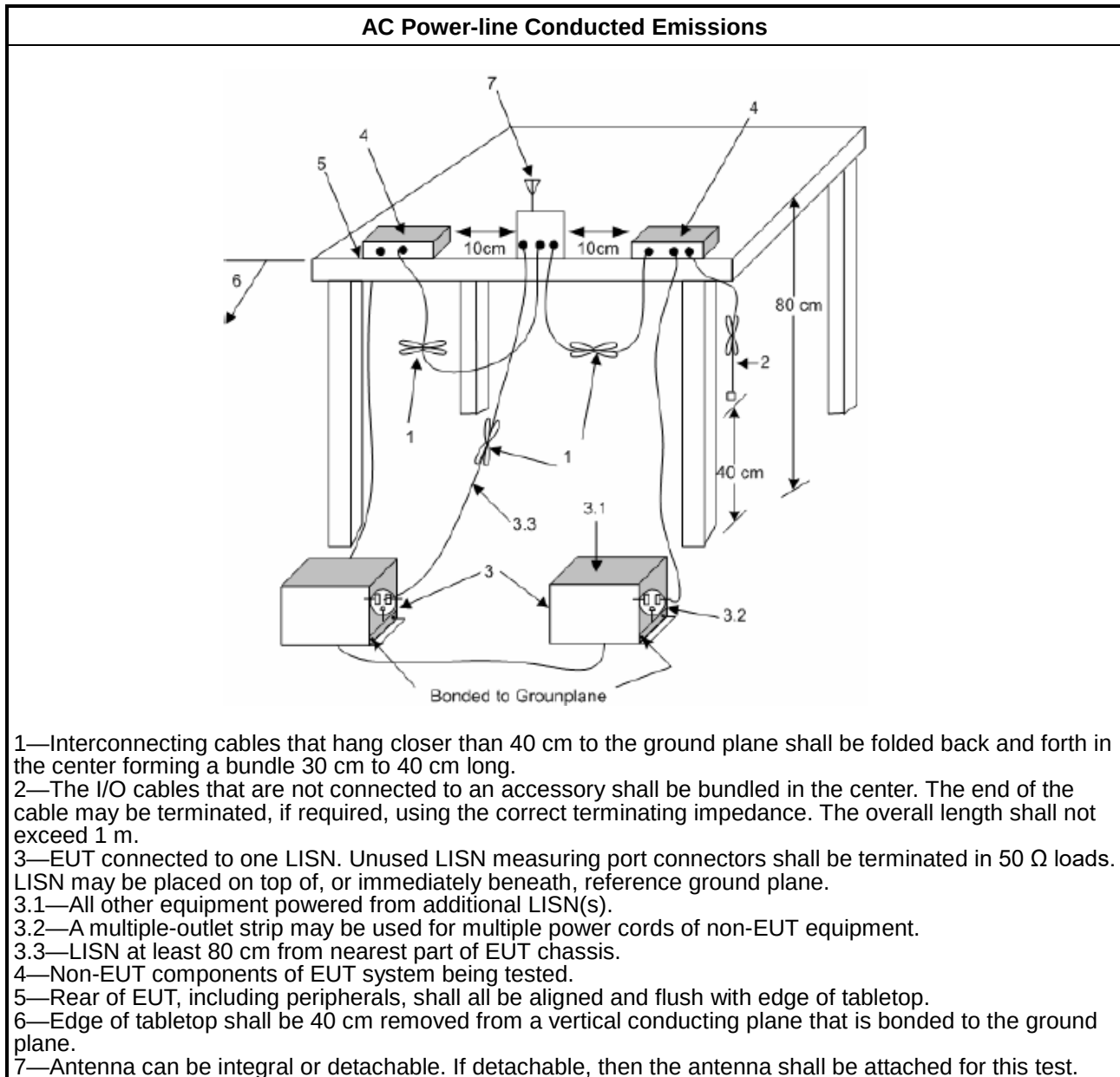
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2020, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- 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 $\geq$ 500 kHz.

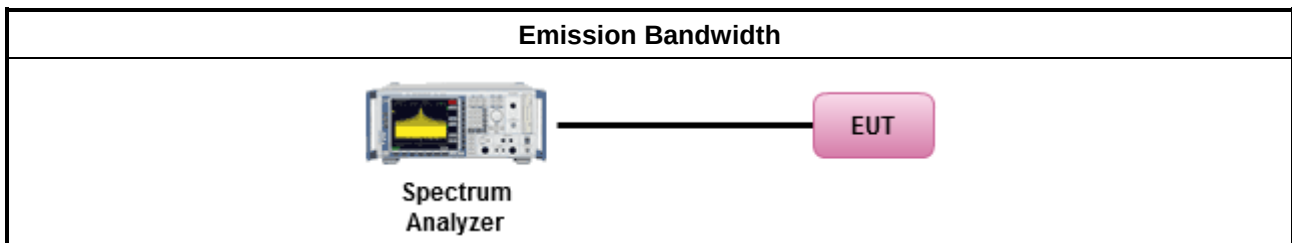
3.2.2 Measuring Instruments

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



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.	

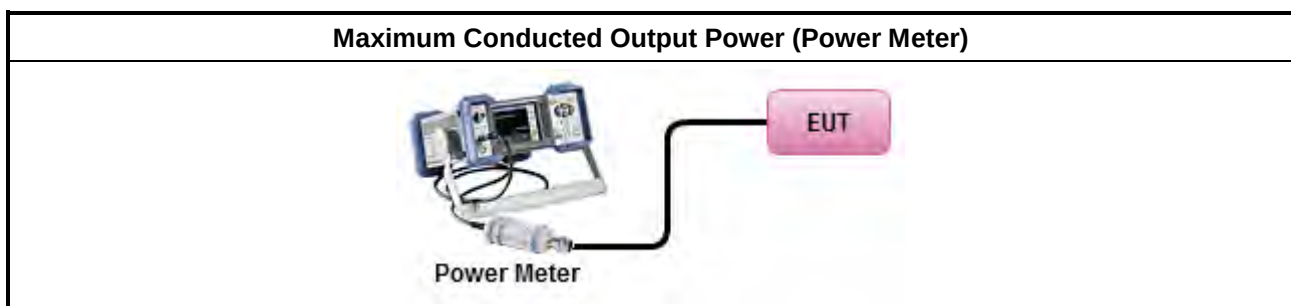
3.3.2 Measuring Instruments

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: $P_{total} = P_1 + P_2 + \dots + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) $EIRP_{total} = P_{total} + DG$	

3.3.4 Test Setup





3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

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

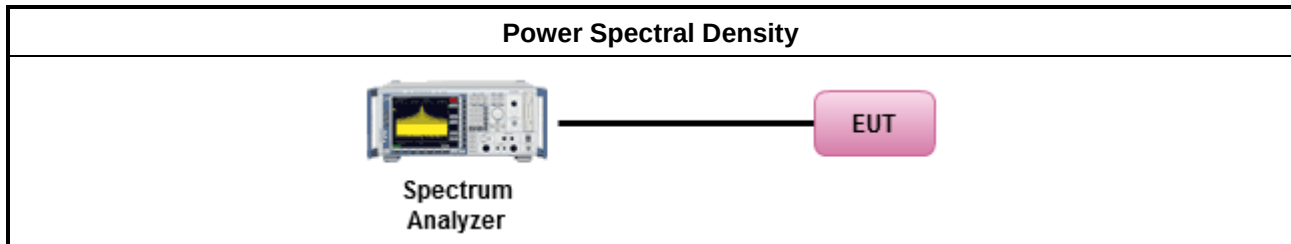
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method
▪ 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



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.	

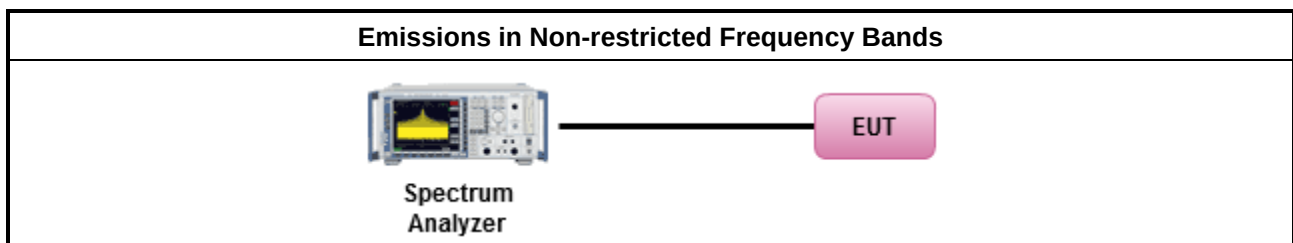
3.5.2 Measuring Instruments

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



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.

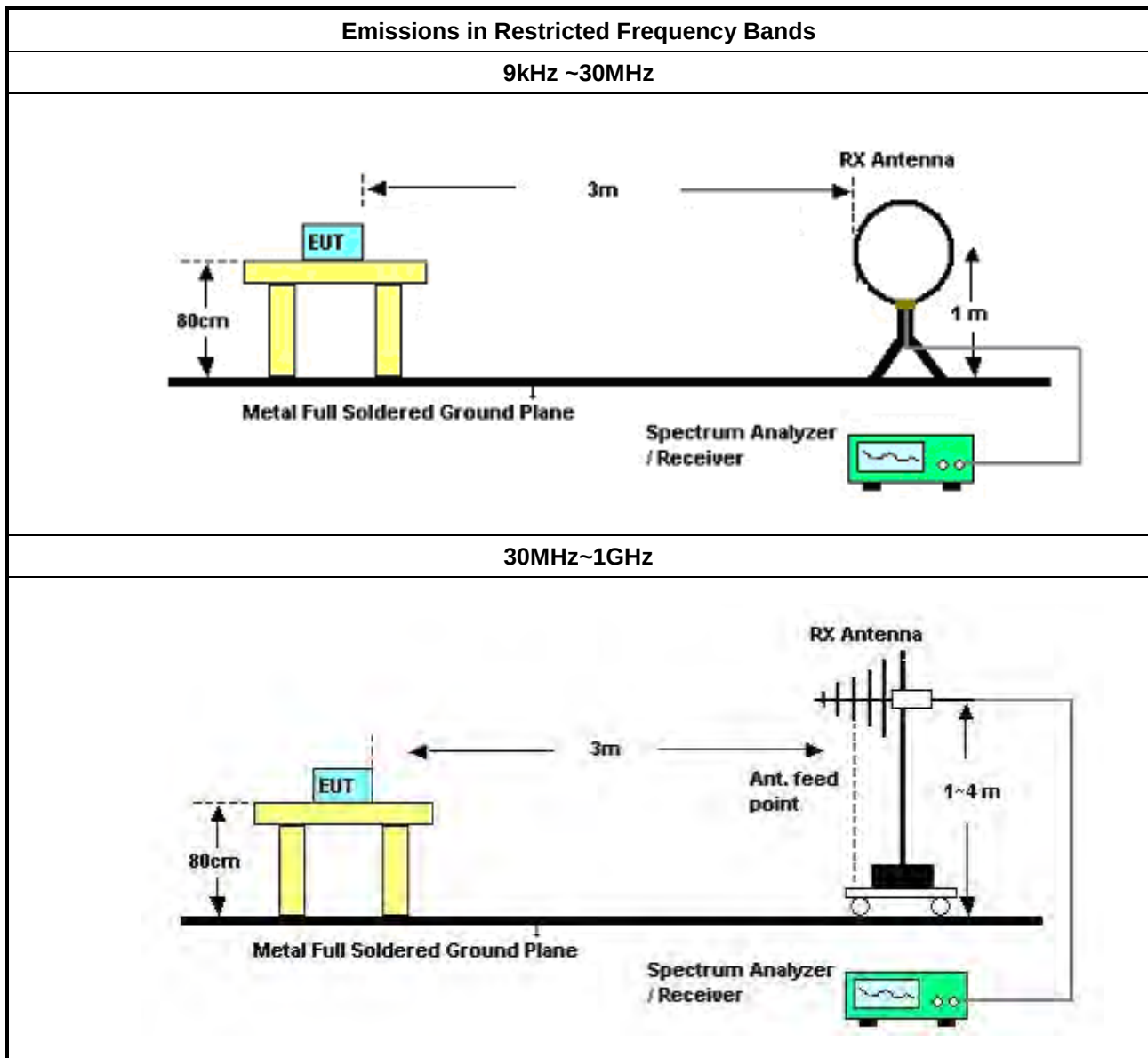
3.6.2 Measuring Instruments

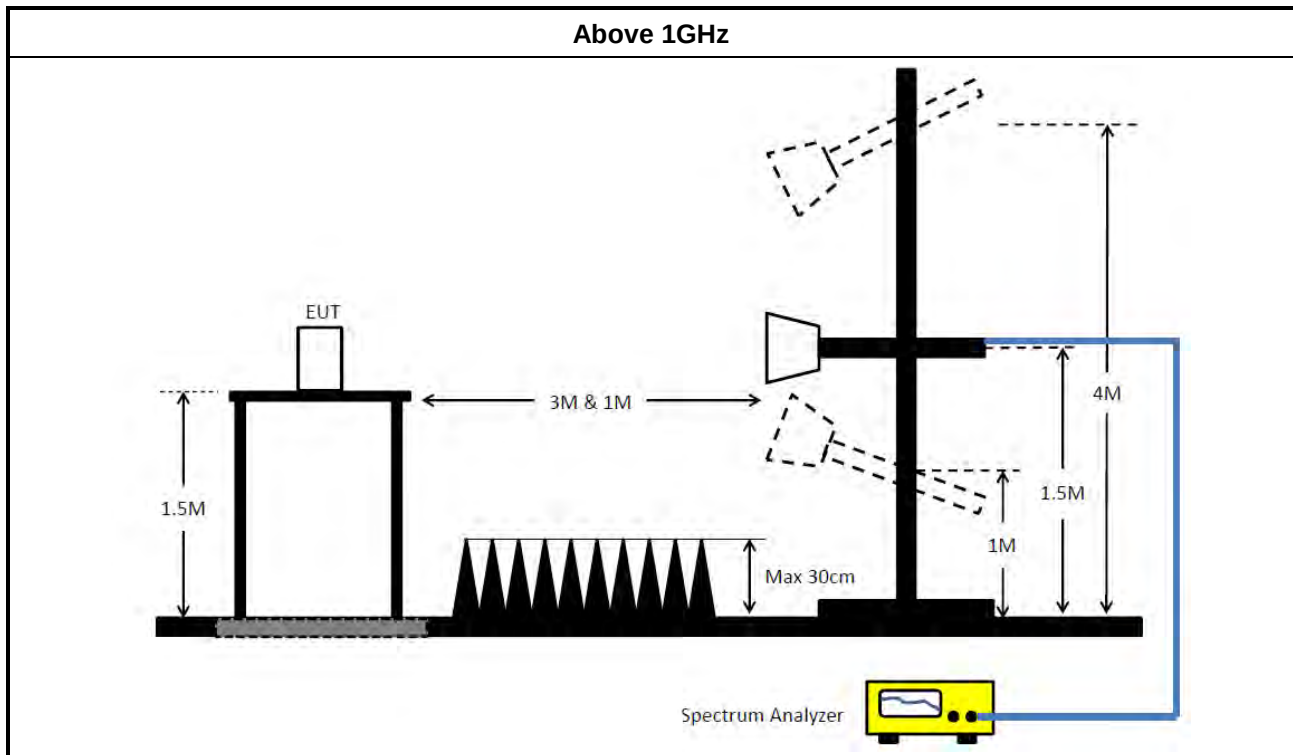
Refer a test equipment and calibration data table in this test report.

**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 $\geq 98\%$).
	☐ 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 $\geq 1/T$).
	☐ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW $\geq 1/T$, where T is pulse time.
	☐ Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	☒ Refer as FCC KDB 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





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
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Mar. 12, 2026	Mar. 11, 2027	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 04, 2026	Feb. 03, 2027	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 10, 2026	Apr. 09, 2027	Conduction (CO01-CB)
Pulse Limiter	Rohde& Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Sep. 14, 2025	Sep. 13, 2026	Conduction (CO01-CB)
COND Cable	Woken	Cable	CO01	9kHz ~ 30MHz	Sep. 14, 2025	Sep. 13, 2026	Conduction (CO01-CB)
Test Software	SPORTON	SENSE-EMI	V5.11	150kHz-30MHz	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6121	65417	9kHz - 30MHz	Oct. 20, 2025	Oct. 19, 2026	Radiation (03CH01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH01-CB	30 MHz ~ 1 GHz	Jan. 15, 2026	Jan. 14, 2027	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Feb. 13, 2026	Feb. 12, 2027	Radiation (03CH01-CB)
Pre-Amplifier	SGH	SGH0301	20230109-2	10M~1GHz	Jun. 20, 2026	Jun. 19, 2027	Radiation (03CH01-CB)
Signal Analyzer	R&S	FSV3044	101437	10kHz ~ 44GHz	Dec. 12, 2025	Dec. 11, 2026	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 29, 2025	Oct. 28, 2026	Radiation (03CH01-CB)
RF Cable-low	Woken	RG402	Low Cable-31+32	30 MHz ~ 1 GHz	Sep. 25, 2025	Sep. 24, 2026	Radiation (03CH01-CB)
Test Software	SPORTON	SENSE-EMI	V5.11.10	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6121	65417	9kHz - 30MHz	Oct. 20, 2025	Oct. 19, 2026	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Jul. 31, 2025	Jul. 30, 2026	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Jul. 30, 2026	Jul. 29, 2027	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 21, 2026	Mar. 20, 2027	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 30, 2026	Apr. 29, 2027	Radiation (03CH05-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Signal Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	May 08, 2026	May 07, 2027	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 29, 2025	Oct. 28, 2026	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Sep. 25, 2025	Sep. 24, 2026	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Sep. 27, 2025	Sep. 26, 2026	Radiation (03CH05-CB)
Horn Antenna	ETS-Lindgren	3115	00143147	750MHz~18GHz	Nov. 05, 2025	Nov. 04, 2026	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Oct. 07, 2025	Oct. 06, 2026	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Jun. 28, 2025	Jun. 27, 2026	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Jun. 27, 2026	Jun. 26, 2027	Radiation (03CH05-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 21, 2025	Nov. 20, 2026	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Sep. 25, 2025	Sep. 24, 2026	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Sep. 25, 2025	Sep. 24, 2026	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Feb. 11, 2026	Feb. 10, 2027	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE-EMI	V5.11.10	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE-15247_DTS	V5.11.27	2.4GHz-2.4835GHz	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Signal Analyzer	R&S	FSV40	101903	9kHz ~ 40GHz	Jun. 30, 2026	Jun. 29, 2027	Conducted (TH01-CB)
Switch	SPTCB	SP-SWI	SWI-01	1~18 GHz	Sep. 20, 2025	Sep. 19, 2026	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 18 GHz	Sep. 30, 2025	Sep. 29, 2026	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz – 18 GHz	Sep. 30, 2025	Sep. 29, 2026	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz – 18 GHz	Sep. 30, 2025	Sep. 29, 2026	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz – 18 GHz	Sep. 30, 2025	Sep. 29, 2026	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 18 GHz	Sep. 30, 2025	Sep. 29, 2026	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	1339408	300MHz~40GHz	Sep. 30, 2025	Sep. 29, 2026	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1517009	300MHz~40GHz	Sep. 30, 2025	Sep. 29, 2026	Conducted (TH01-CB)



RADIO TEST REPORT

Report No. : FR631826-03AE

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Test Software	SPORTON	SENSE-15247 _DTS	V5.11.27	2.4GHz- 2.4835GHz	N.C.R.	N.C.R.	Conducted (TH01-CB)

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

NCR means Non-Calibration required.



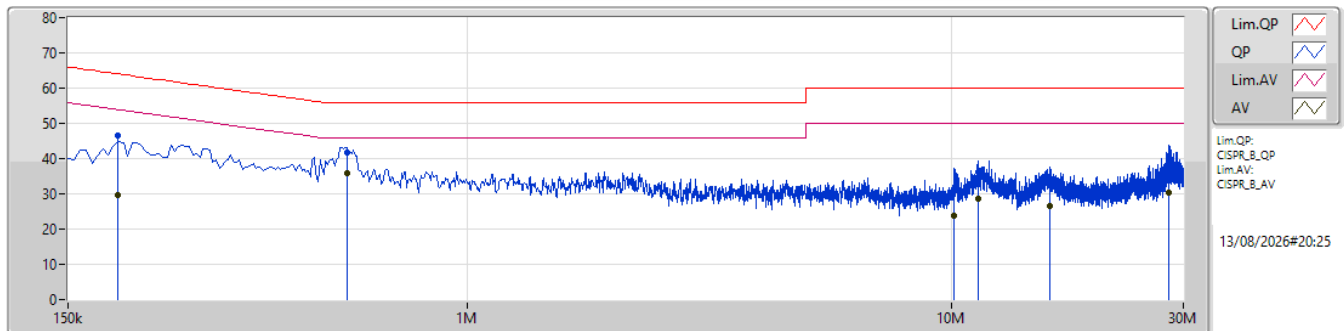
Conducted Emissions at Powerline

Appendix A

Summary

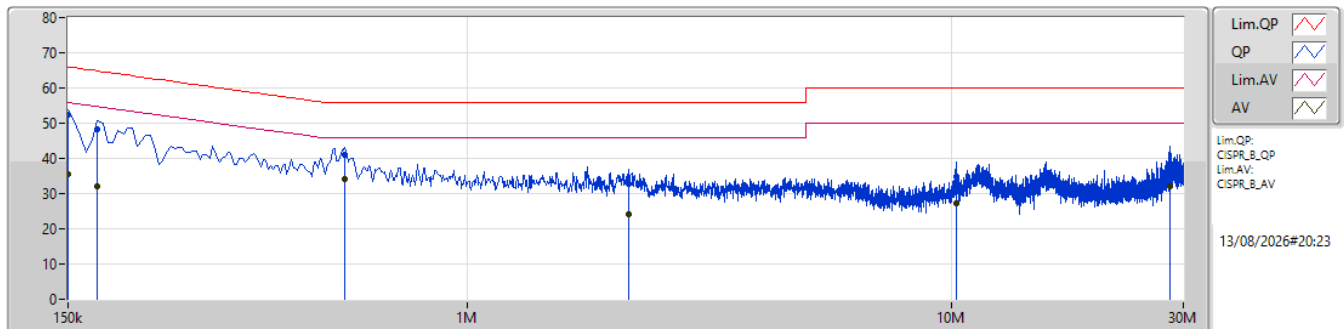
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 1	Pass	AV	564k	35.78	46.00	-10.22	Line

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	190.5k	46.54	64.01	-17.47	9.93	Line	-	36.61	0.08	0.07	9.78						
AV	190.5k	29.72	54.01	-24.29	9.93	Line	-	19.79	0.08	0.07	9.78						
QP	564k	41.79	56.00	-14.21	10.12	Line	-	31.67	0.09	0.13	9.90						
AV	564k	35.78	46.00	-10.22	10.12	Line	"Worst"	25.66	0.09	0.13	9.90						
QP	10.109M	31.28	60.00	-28.72	10.63	Line	-	20.65	0.24	0.27	10.12						
AV	10.109M	23.75	50.00	-26.25	10.63	Line	-	13.12	0.24	0.27	10.12						
QP	11.351M	36.23	60.00	-23.77	10.73	Line	-	25.50	0.25	0.30	10.18						
AV	11.351M	28.67	50.00	-21.33	10.73	Line	-	17.94	0.25	0.30	10.18						
QP	15.932M	33.62	60.00	-26.38	10.98	Line	-	22.64	0.27	0.36	10.35						
AV	15.932M	26.62	50.00	-23.38	10.98	Line	-	15.64	0.27	0.36	10.35						
QP	28.019M	39.60	60.00	-20.40	11.05	Line	-	28.55	0.33	0.40	10.32						
AV	28.019M	30.46	50.00	-19.54	11.05	Line	-	19.41	0.33	0.40	10.32						

Mode 1



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	150k	52.29	66.00	-13.71	10.04	Neutral	-	42.25	0.06	0.10	9.88						
AV	150k	35.47	56.00	-20.53	10.04	Neutral	-	25.43	0.06	0.10	9.88						
QP	172.5k	48.40	64.83	-16.43	9.96	Neutral	-	38.44	0.06	0.08	9.82						
AV	172.5k	32.14	54.83	-22.69	9.96	Neutral	-	22.18	0.06	0.08	9.82						
QP	559.5k	41.05	56.00	-14.95	10.09	Neutral	-	30.96	0.06	0.13	9.90						
AV	559.5k	33.99	46.00	-12.01	10.09	Neutral	"Worst"	23.90	0.06	0.13	9.90						
QP	2.153M	32.92	56.00	-23.08	9.96	Neutral	-	22.96	0.08	0.14	9.74						
AV	2.153M	24.06	46.00	-21.94	9.96	Neutral	-	14.10	0.08	0.14	9.74						
QP	10.221M	34.81	60.00	-25.19	10.60	Neutral	-	24.21	0.21	0.27	10.12						
AV	10.221M	27.40	50.00	-22.60	10.60	Neutral	-	16.80	0.21	0.27	10.12						
QP	28.131M	38.55	60.00	-21.45	11.07	Neutral	-	27.48	0.35	0.40	10.32						
AV	28.131M	32.07	50.00	-17.93	11.07	Neutral	-	21.00	0.35	0.40	10.32						

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
802.15.4	1.609M	2.36M	2M36G1D	1.427M	2.352M

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)
802.15.4	-	-	-	-
2405MHz	Pass	500k	1.427M	2.36M
2440MHz	Pass	500k	1.551M	2.352M
2480MHz	Pass	500k	1.609M	2.355M

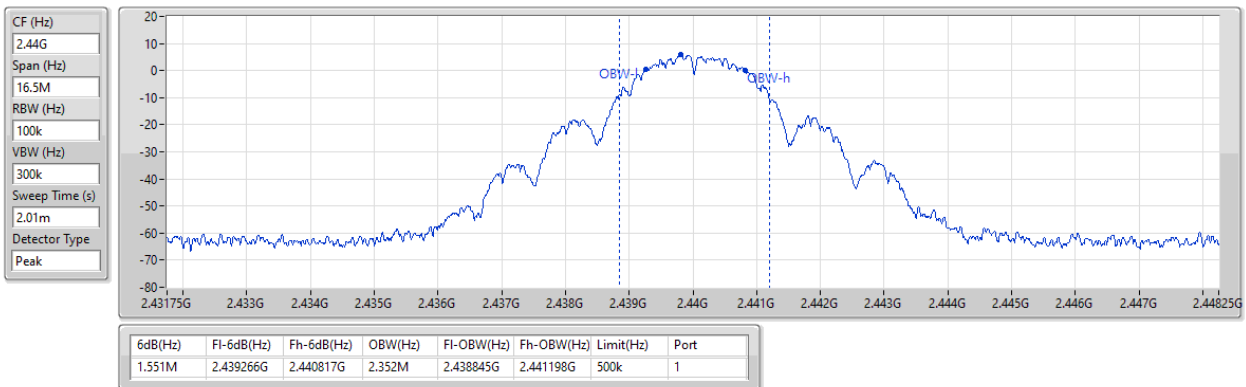
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_802.15.4
EBW
2405MHz

24/06/2026


2.4-2.4835GHz_802.15.4
EBW
2440MHz

24/06/2026

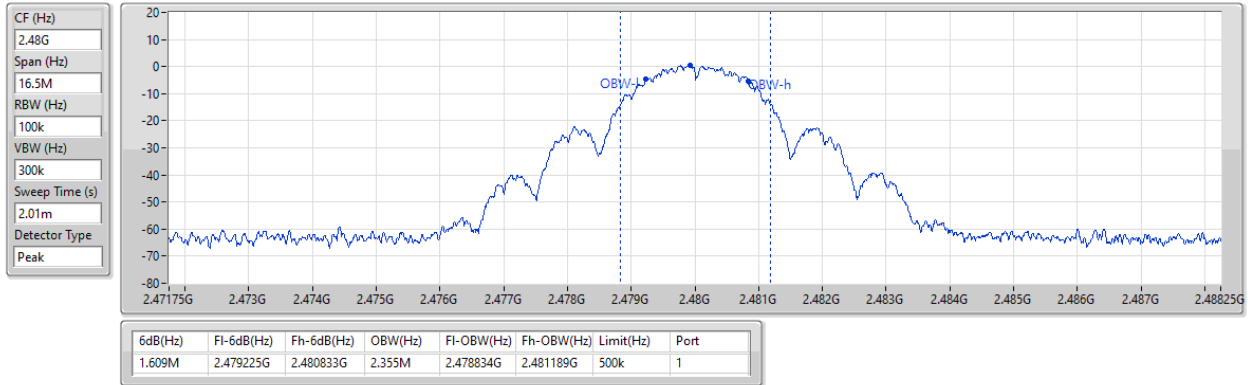


2.4-2.4835GHz_802.15.4

EBW

2480MHz

24/06/2026





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.15.4	10.61	0.01151



Average Power

Appendix C

Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
802.15.4	-	-	-	-	-
2405MHz	Pass	5.81	10.61	10.61	30.00
2440MHz	Pass	5.81	10.24	10.24	30.00
2475MHz	Pass	5.81	9.90	9.90	30.00
2480MHz	Pass	5.81	5.16	5.16	30.00

DG = Directional Gain; Port X = Port X output power;
Inf = There's no restriction for the limit.

Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.15.4	-7.09

RBW = 3kHz;

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.15.4	-	-	-	-	-
2405MHz	Pass	5.81	-7.10	-7.10	8.00
2440MHz	Pass	5.81	-7.09	-7.09	8.00
2480MHz	Pass	5.81	-11.59	-11.59	8.00

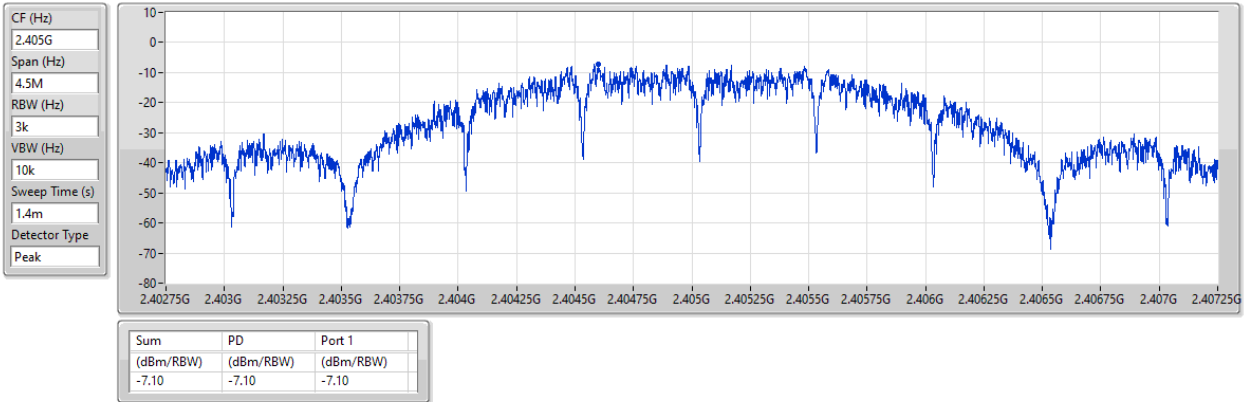
DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;
Inf = There's no restriction for the limit.

2.4-2.4835GHz_802.15.4

PSD

2405MHz

24/06/2026

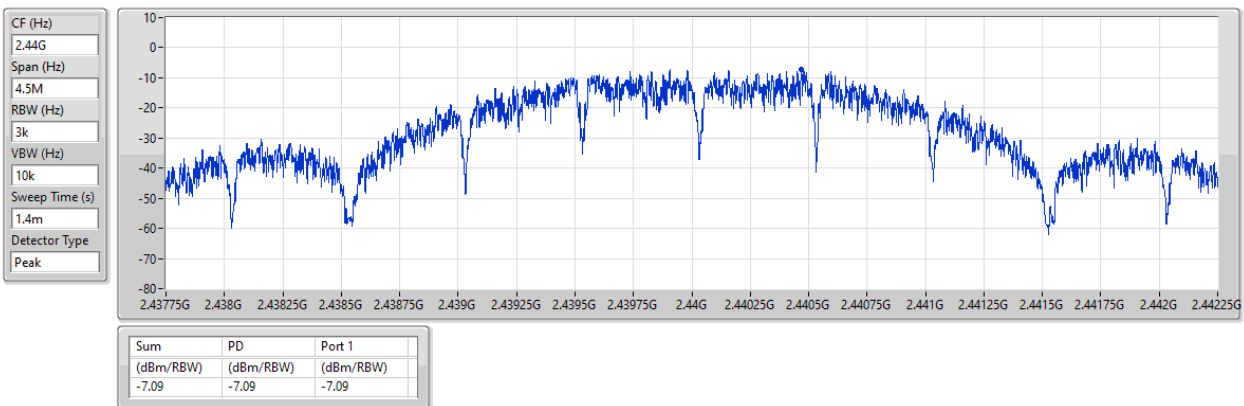


2.4-2.4835GHz_802.15.4

PSD

2440MHz

24/06/2026

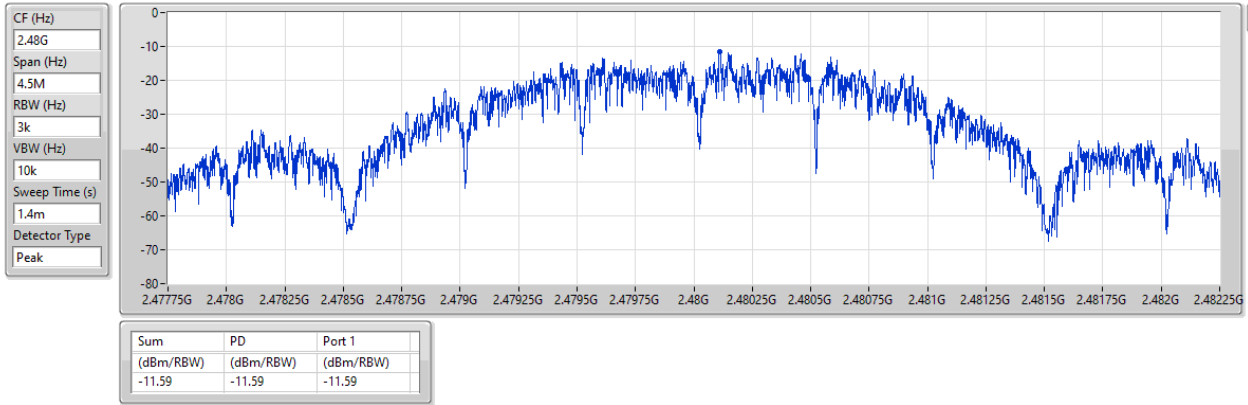


2.4-2.4835GHz_802.15.4

PSD

2480MHz

24/06/2026





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	-	-	-	-	-	-	-	-	-	-	-	-	-
802.15.4	Pass	2.40518G	6.91	-23.09	47.73M	-53.25	2.39784G	-53.36	2.4G	-55.29	21.96952G	-46.70	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
802.15.4	-	-	-	-	-	-	-	-	-	-	-	-	-
2405MHz	Pass	2.40518G	6.91	-23.09	2.10559G	-54.11	2.39898G	-53.00	2.4G	-55.49	21.9245G	-46.90	1
2440MHz	Pass	2.40518G	6.91	-23.09	2.10205G	-53.30	2.39665G	-53.56	2.4G	-56.02	21.58122G	-47.27	1
2480MHz	Pass	2.40518G	6.91	-23.09	47.73M	-53.25	2.39784G	-53.36	2.4G	-55.29	21.96952G	-46.70	1

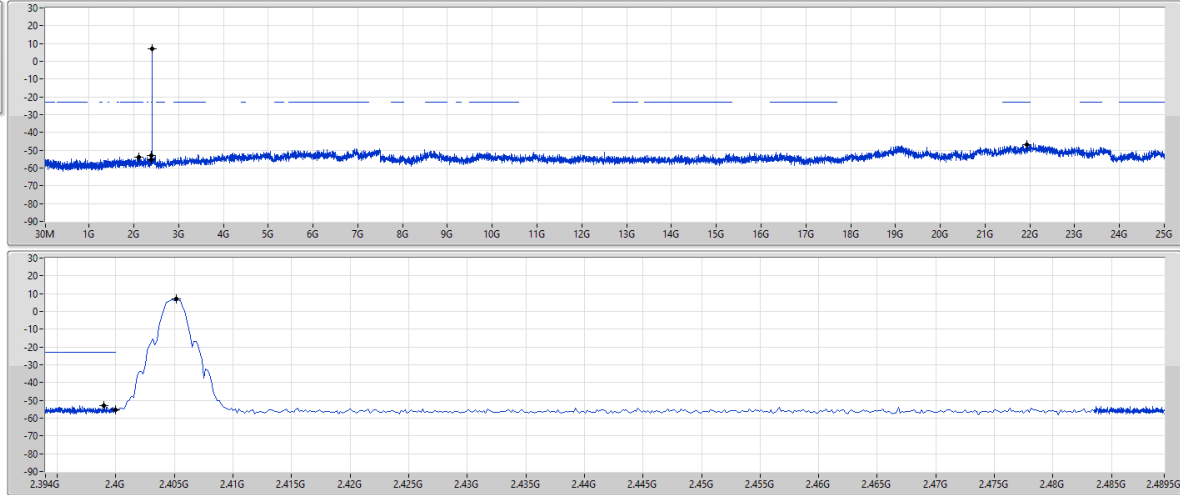
2.4-2.4835GHz_802.15.4

CSEndB

2405MHz

25/06/2026

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40518G	6.91	-23.09	2.10559G	-54.11	2.39899G	-53.00	2.4G	-55.49	2.19245G	-46.90	1

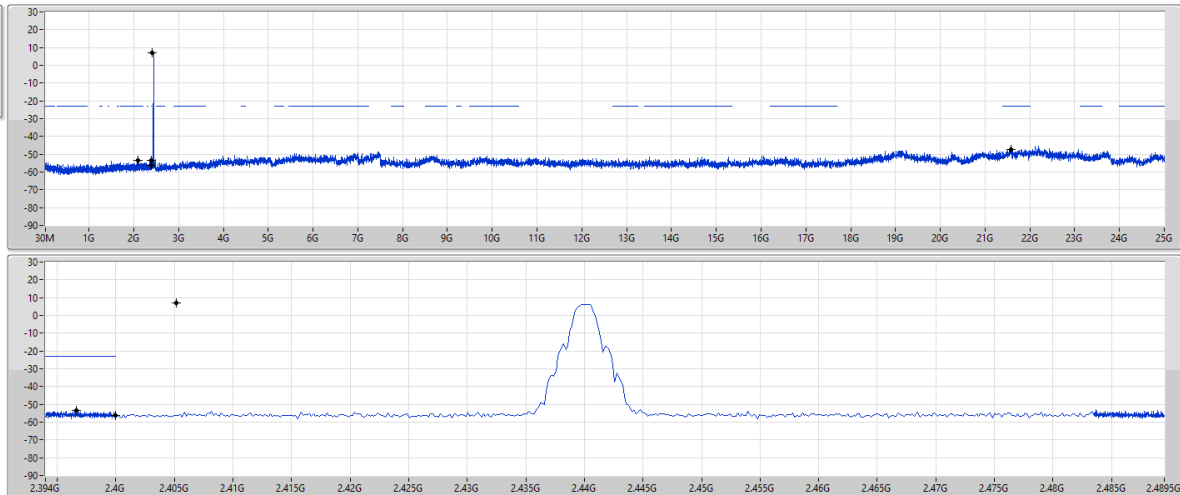
2.4-2.4835GHz_802.15.4

CSEndB

2440MHz

25/06/2026

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40518G	6.91	-23.09	2.10205G	-53.30	2.39665G	-53.36	2.4G	-56.02	2.158122G	-47.27	1

2.4-2.4835GHz_802.15.4

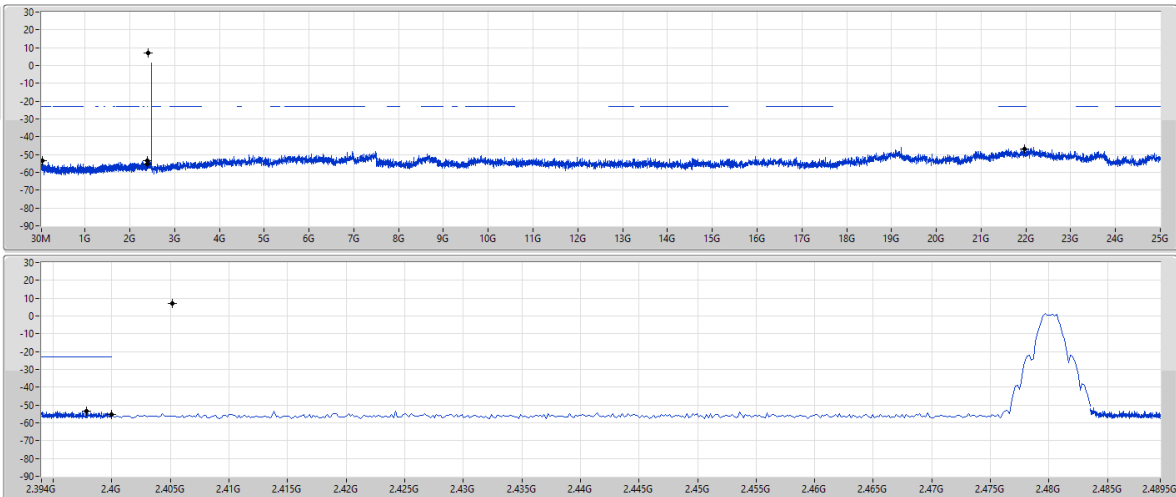
CSEndB

2480MHz

25/06/2026

RBW (Hz)
100k
VBW (Hz)
300k
Detector
Peak

Port 1



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40518G	6.91	-23.09	47.73M	-53.25	2.39784G	-53.36	2.4G	-55.29	2.48352G	-46.70	1



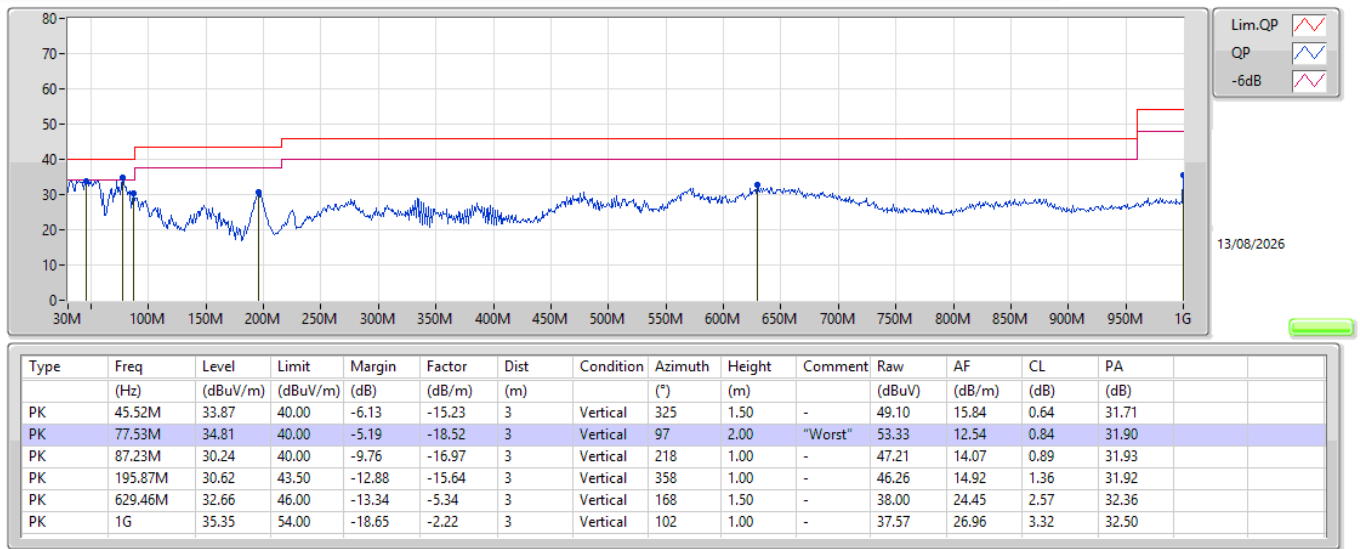
Radiated Emissions below 1GHz

Appendix F.1

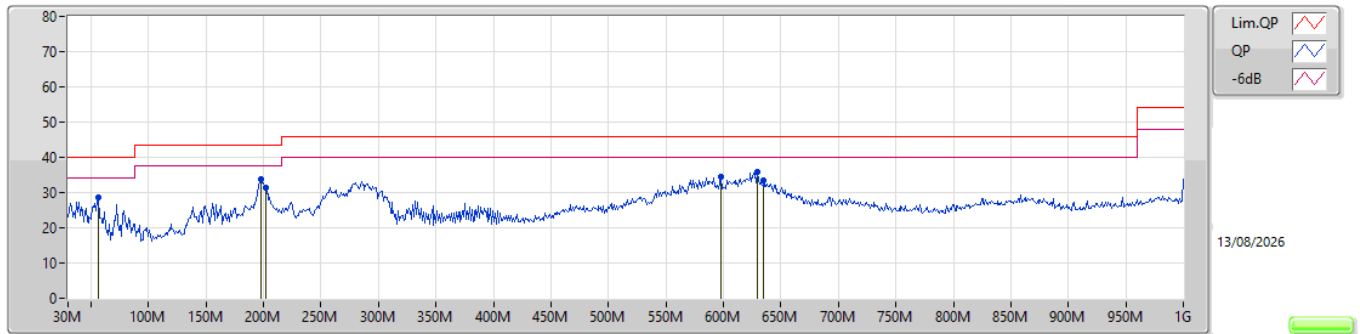
Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 3	Pass	PK	77.53M	34.81	40.00	-5.19	Vertical

Mode 3



Mode 3



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV)	AF (dB/m)	CL (dB)	PA (dB)		
PK	56.19M	28.75	40.00	-11.25	-18.43	3	Horizontal	118	2.00	-	47.18	12.58	0.71	31.72		
PK	197.81M	33.66	43.50	-9.84	-15.58	3	Horizontal	281	1.00	"Worst"	49.24	14.97	1.37	31.92		
PK	201.69M	31.31	43.50	-12.19	-15.44	3	Horizontal	69	1.50	-	46.75	15.10	1.39	31.93		
PK	597.45M	34.52	46.00	-11.48	-5.67	3	Horizontal	211	1.25	-	40.19	24.23	2.48	32.38		
PK	629.46M	35.73	46.00	-10.27	-5.34	3	Horizontal	197	1.00	-	41.07	24.45	2.57	32.36		
PK	635.28M	33.54	46.00	-12.46	-5.22	3	Horizontal	212	1.00	-	38.76	24.56	2.58	32.36		

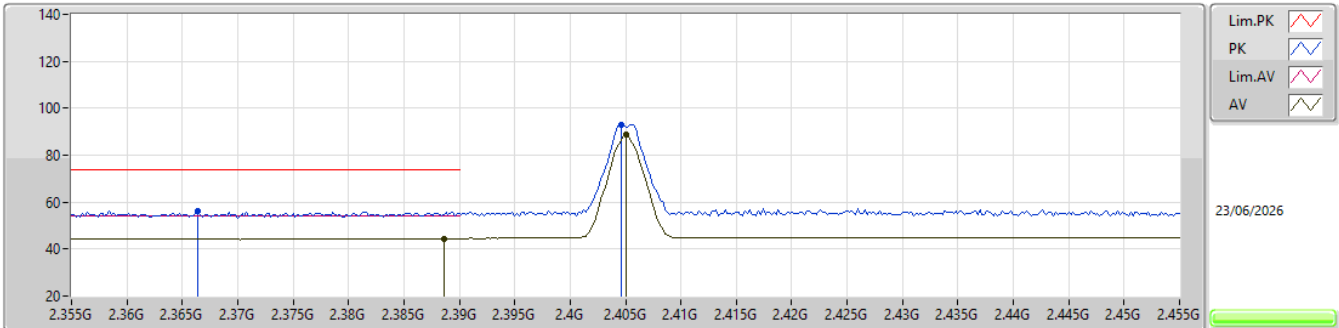


Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
802.15.4	Pass	AV	2.4835G	51.92	54.00	-2.08	3	Horizontal	4	2.77	-

2.4-2.4835GHz_802.15.4

2405MHz_TX

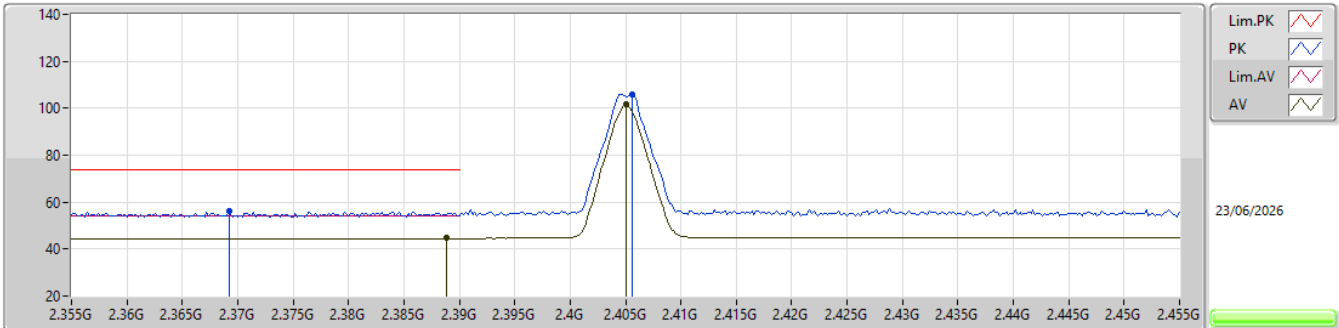


EUT_Y_1TX
Setting 12
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)				
PK	2.3664G	56.34	74.00	-17.66	23.79	3	Vertical	0	2.65	-	27.57	4.98	-				
AV	2.3886G	44.52	54.00	-9.48	11.93	3	Vertical	0	2.65	-	27.59	5.00	-				
PK	2.4046G	93.16	Inf	-Inf	60.44	3	Vertical	0	2.65	-	27.70	5.02	-				
AV	2.405G	88.79	Inf	-Inf	56.07	3	Vertical	0	2.65	-	27.70	5.02	-				

2.4-2.4835GHz_802.15.4

2405MHz_TX

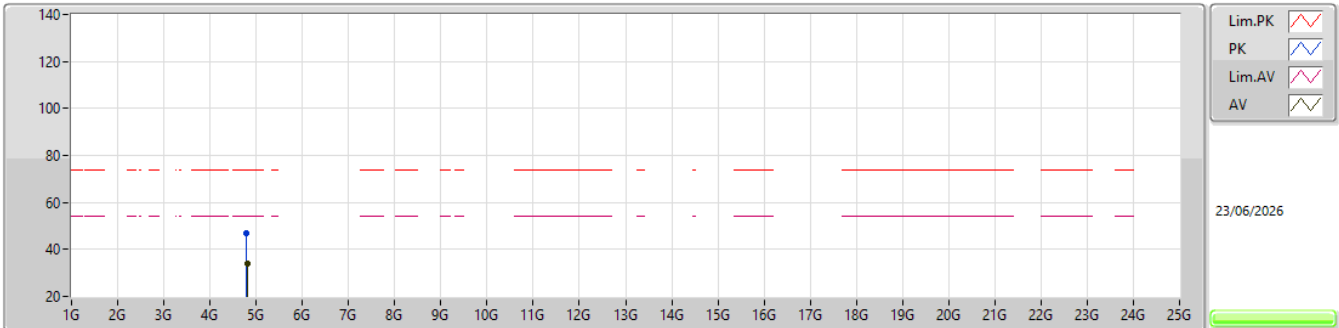


EUT_Y_1TX
Setting 12
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)				
PK	2.3692G	56.40	74.00	-17.60	23.90	3	Horizontal	12	2.65	-	27.52	4.98	-				
AV	2.3888G	44.63	54.00	-9.37	12.04	3	Horizontal	12	2.65	-	27.59	5.00	-				
PK	2.4056G	105.99	Inf	-Inf	73.27	3	Horizontal	12	2.65	-	27.70	5.02	-				
AV	2.405G	101.63	Inf	-Inf	68.91	3	Horizontal	12	2.65	-	27.70	5.02	-				

2.4-2.4835GHz_802.15.4

2405MHz_TX

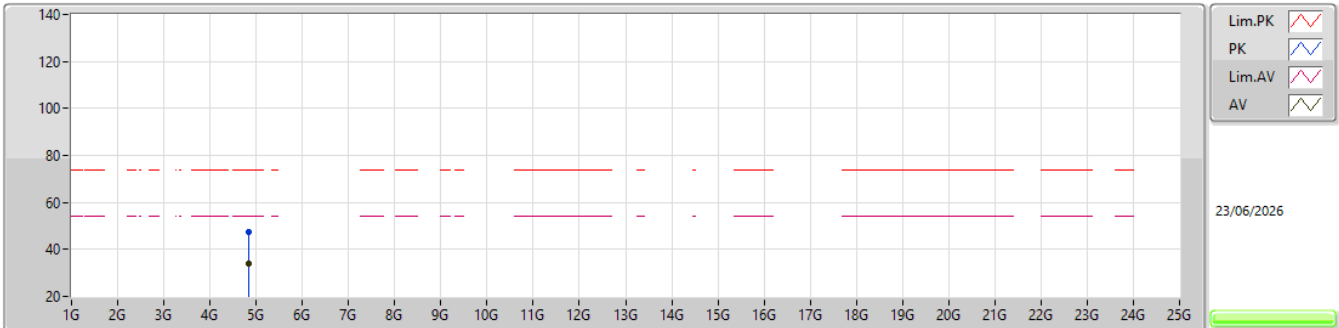


EUT_V_1TX
Setting 12
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)			
PK	4.7862G	46.65	74.00	-27.35	41.12	3	Vertical	88	2.37	-	32.54	8.17	35.18			
AV	4.8225G	34.01	54.00	-19.99	28.36	3	Vertical	88	2.37	-	32.65	8.18	35.18			

2.4-2.4835GHz_802.15.4

2405MHz_TX

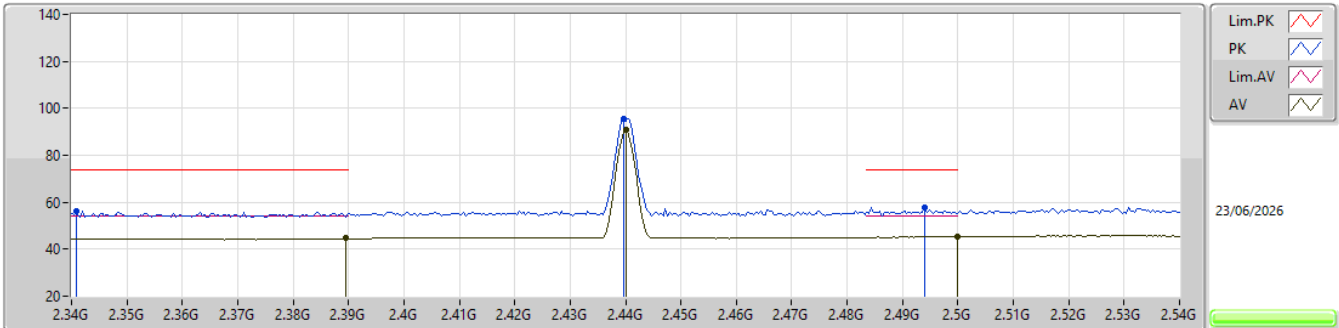


EUT_V_1TX
Setting 12
05-E-B-5

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	4.8265G	47.48	74.00	-26.52	41.83	3	Horizontal	89	1.17	-	32.65	8.18	35.18			
AV	4.8308G	34.02	54.00	-19.98	28.36	3	Horizontal	89	1.17	-	32.66	8.18	35.18			

2.4-2.4835GHz_802.15.4

2440MHz_TX

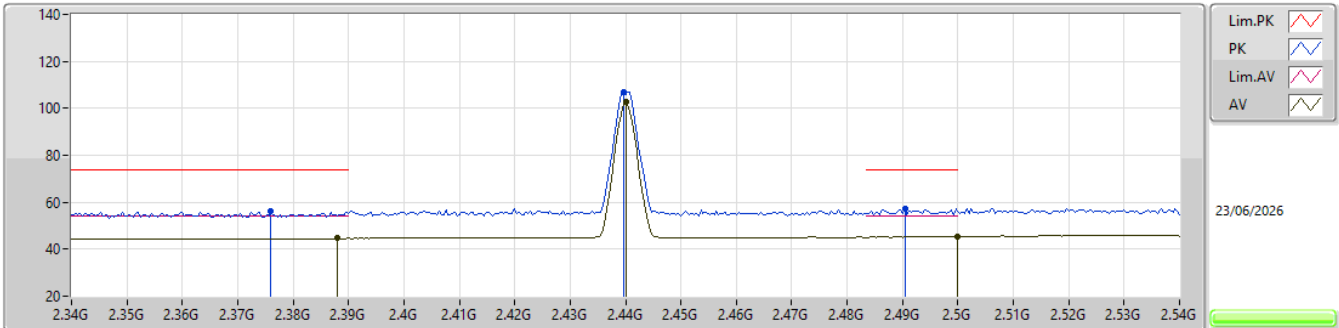


EUT_Y_1TX
Setting 12
05-E-B-5

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	2.3408G	56.36	74.00	-17.64	23.80	3	Vertical	332	2.77	-	27.61	4.95	-					
AV	2.3896G	44.57	54.00	-9.43	11.97	3	Vertical	332	2.77	-	27.60	5.00	-					
PK	2.4396G	95.41	Inf	-Inf	62.64	3	Vertical	332	2.77	-	27.70	5.07	-					
AV	2.44G	91.09	Inf	-Inf	58.32	3	Vertical	332	2.77	-	27.70	5.07	-					
PK	2.494G	57.94	74.00	-16.06	24.76	3	Vertical	332	2.77	-	28.04	5.14	-					
AV	2.5G	45.43	54.00	-8.57	12.18	3	Vertical	332	2.77	-	28.10	5.15	-					

2.4-2.4835GHz_802.15.4

2440MHz_TX

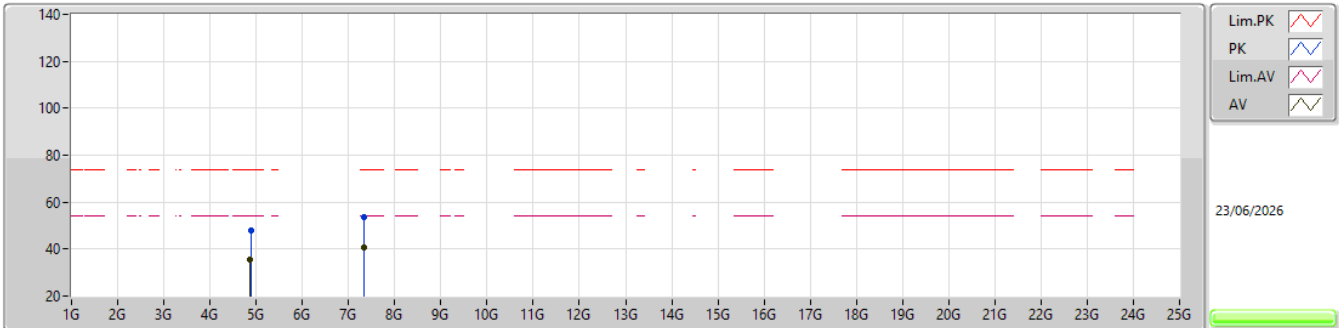


EUT_Y_1TX
Setting 12
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)			
PK	2.376G	55.96	74.00	-18.04	23.47	3	Horizontal	5	2.84	-	27.50	4.99	-			
AV	2.388G	44.57	54.00	-9.43	11.99	3	Horizontal	5	2.84	-	27.58	5.00	-			
PK	2.4396G	107.08	Inf	-Inf	74.31	3	Horizontal	5	2.84	-	27.70	5.07	-			
AV	2.44G	102.65	Inf	-Inf	69.88	3	Horizontal	5	2.84	-	27.70	5.07	-			
PK	2.4904G	57.13	74.00	-16.87	23.99	3	Horizontal	5	2.84	-	28.00	5.14	-			
AV	2.5G	45.45	54.00	-8.55	12.20	3	Horizontal	5	2.84	-	28.10	5.15	-			

2.4-2.4835GHz_802.15.4

2440MHz_TX

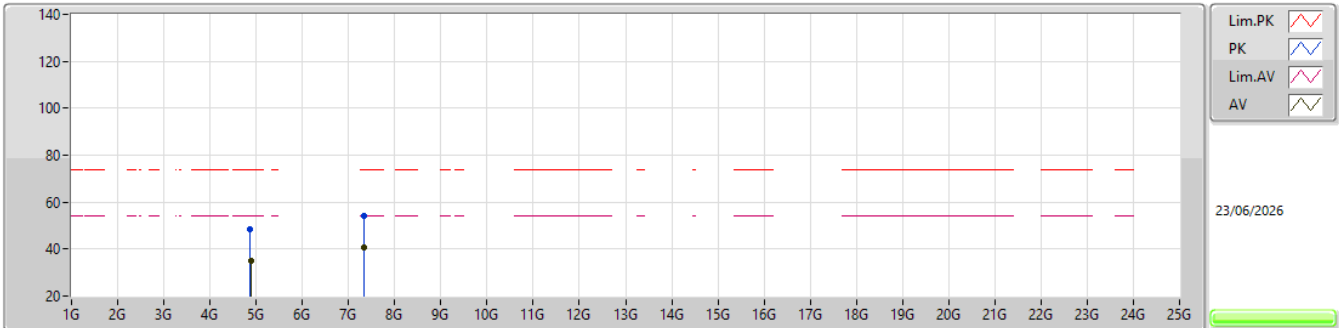


EUT_Y_1TX
Setting 12
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)				
PK	4.8792G	48.16	74.00	-25.84	42.33	3	Vertical	342	2.35	-	32.82	8.18	35.17				
AV	4.8703G	35.35	54.00	-18.65	29.56	3	Vertical	342	2.35	-	32.78	8.18	35.17				
PK	7.345G	53.37	74.00	-20.63	40.10	3	Vertical	357	2.50	-	37.60	9.72	34.05				
AV	7.337G	40.63	54.00	-13.37	27.38	3	Vertical	357	2.50	-	37.60	9.71	34.06				

2.4-2.4835GHz_802.15.4

2440MHz_TX

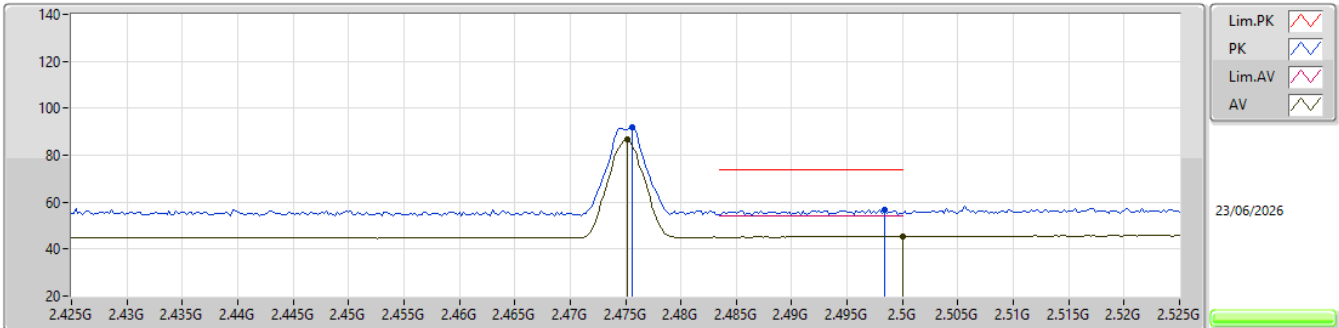


EUT_Y_1TX
Setting 12
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)				
PK	4.8768G	48.34	74.00	-25.66	42.52	3	Horizontal	130	1.17	-	32.81	8.18	35.17				
AV	4.882G	35.15	54.00	-18.85	29.31	3	Horizontal	130	1.17	-	32.83	8.18	35.17				
PK	7.341G	54.36	74.00	-19.64	41.09	3	Horizontal	319	1.64	-	37.60	9.72	34.05				
AV	7.3448G	40.82	54.00	-13.18	27.55	3	Horizontal	319	1.64	-	37.60	9.72	34.05				

2.4-2.4835GHz_802.15.4

2475MHz_TX

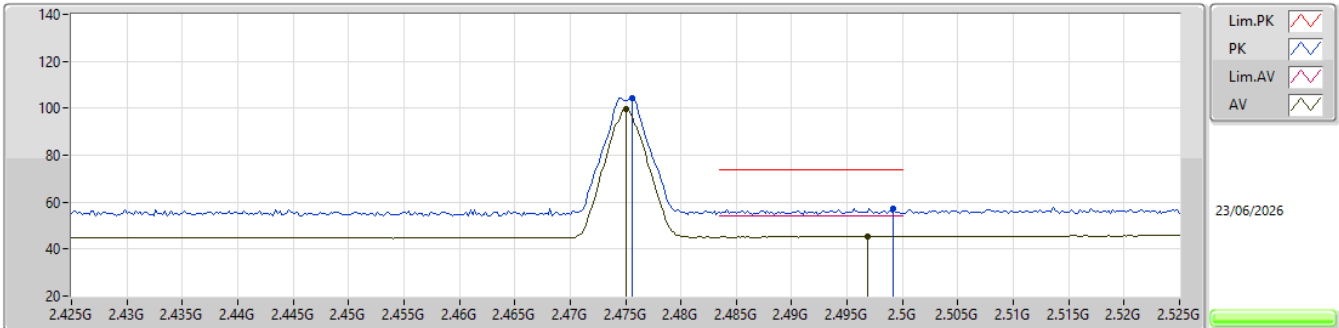


EUT_Y_1TX
Setting 12
05-E-B-5

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	2.4756G	91.87	Inf	-Inf	58.89	3	Vertical	329	3.00	-	27.86	5.12	-					
AV	2.4752G	86.73	Inf	-Inf	53.76	3	Vertical	329	3.00	-	27.85	5.12	-					
PK	2.4984G	56.80	74.00	-17.20	23.57	3	Vertical	329	3.00	-	28.08	5.15	-					
AV	2.5G	45.47	54.00	-8.53	12.22	3	Vertical	329	3.00	-	28.10	5.15	-					

2.4-2.4835GHz_802.15.4

2475MHz_TX

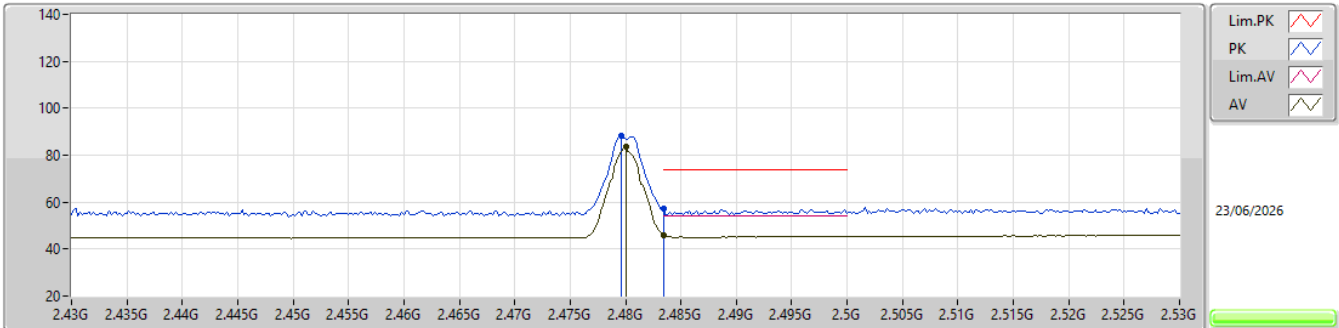


EUT_Y_1TX
Setting 12
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)				
PK	2.4756G	104.39	Inf	-Inf	71.41	3	Horizontal	6	2.48	-	27.86	5.12	-				
AV	2.475G	99.91	Inf	-Inf	66.94	3	Horizontal	6	2.48	-	27.85	5.12	-				
PK	2.4992G	57.30	74.00	-16.70	24.06	3	Horizontal	6	2.48	-	28.09	5.15	-				
AV	2.4968G	45.46	54.00	-8.54	12.24	3	Horizontal	6	2.48	-	28.07	5.15	-				

2.4-2.4835GHz_802.15.4

2480MHz_TX

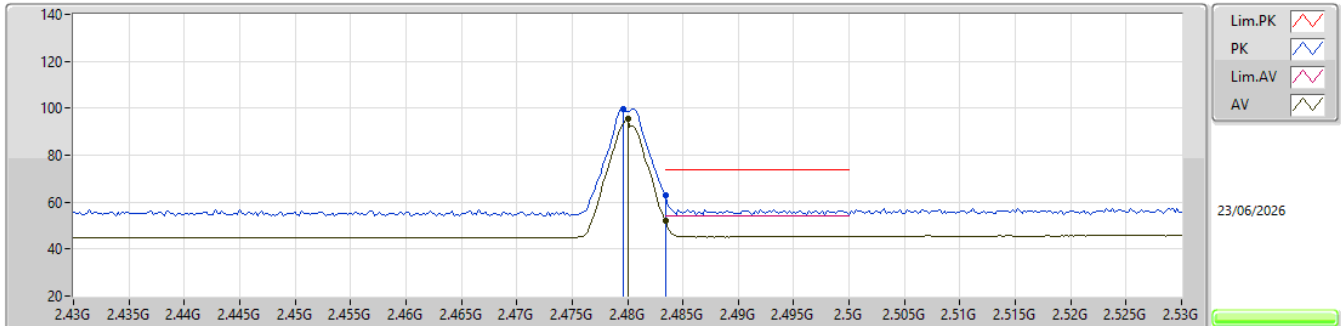


EUT Y_1TX
Setting 8
05-E-B-5

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	2.4796G	88.02	Inf	-Inf	55.00	3	Vertical	340	3.00	-	27.90	5.12	-				
AV	2.48G	83.38	Inf	-Inf	50.36	3	Vertical	340	3.00	-	27.90	5.12	-				
PK	2.4835G	57.42	74.00	-16.58	24.35	3	Vertical	340	3.00	-	27.94	5.13	-				
AV	2.4835G	45.96	54.00	-8.04	12.89	3	Vertical	340	3.00	-	27.94	5.13	-				

2.4-2.4835GHz_802.15.4

2480MHz_TX

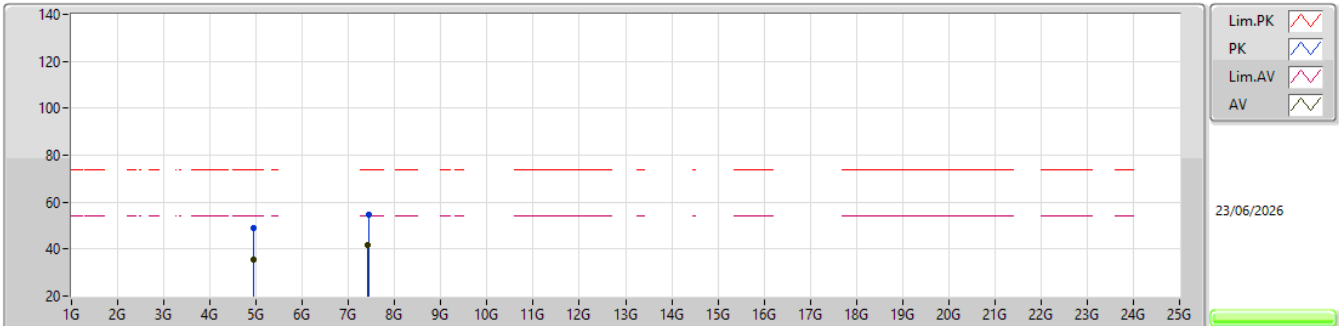


EUT_Y_1TX
Setting 8
05-E-B-5

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)				
PK	2.4796G	99.60	Inf	-Inf	66.58	3	Horizontal	4	2.77	-	27.90	5.12	-				
AV	2.48G	95.52	Inf	-Inf	62.50	3	Horizontal	4	2.77	-	27.90	5.12	-				
PK	2.4835G	63.05	74.00	-10.95	29.98	3	Horizontal	4	2.77	-	27.94	5.13	-				
AV	2.4835G	51.92	54.00	-2.08	18.85	3	Horizontal	4	2.77	-	27.94	5.13	-				

2.4-2.4835GHz_802.15.4

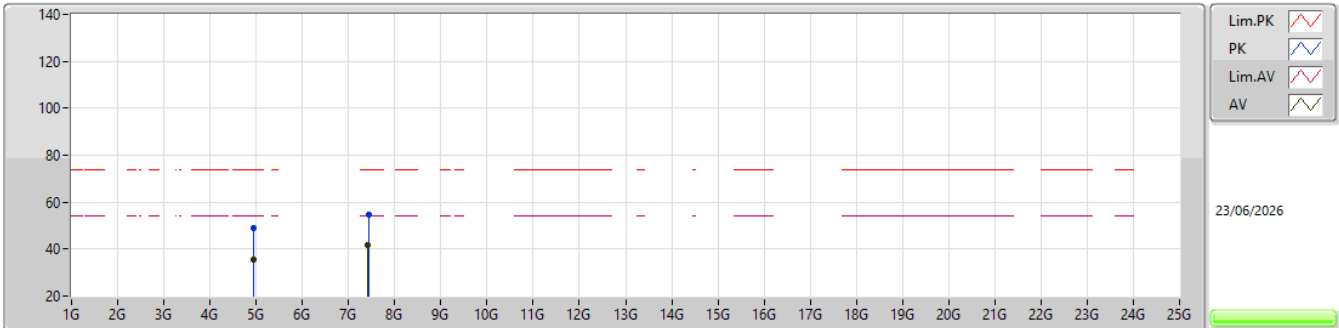
2480MHz_TX

EUT Y_1TX
Setting 8
05-E-I-1

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)				
PK	4.94818G	49.01	74.00	-24.99	43.01	3	Vertical	196	2.84	-	33.00	8.17	35.17				
AV	4.95478G	35.50	54.00	-18.50	29.49	3	Vertical	196	2.84	-	33.00	8.17	35.16				
PK	7.44594G	54.79	74.00	-19.21	41.32	3	Vertical	131	1.63	-	37.60	9.80	33.93				
AV	7.42542G	41.95	54.00	-12.05	28.53	3	Vertical	131	1.63	-	37.60	9.78	33.96				

2.4-2.4835GHz_802.15.4

2480MHz_TX



EUT Y_1TX
Setting 8
05-E-I-1

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)			
PK	4.94578G	49.09	74.00	-24.91	43.10	3	Horizontal	313	1.94	-	32.99	8.17	35.17			
AV	4.95346G	35.47	54.00	-18.53	29.46	3	Horizontal	313	1.94	-	33.00	8.17	35.16			
PK	7.44228G	54.71	74.00	-19.29	41.26	3	Horizontal	285	2.68	-	37.60	9.79	33.94			
AV	7.42632G	41.80	54.00	-12.20	28.38	3	Horizontal	285	2.68	-	37.60	9.78	33.96			