



RADIO TEST REPORT

FCC ID : Z8H89FT0086
Equipment : X7-55X Wi-Fi 7 Indoor Access Point
Brand Name : Cambium Networks
Model Name : X7-55X
Applicant : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Manufacturer : Cambium Networks Inc.
3800 Golf Road, Suite 360 Rolling Meadows, IL 60008, USA
Standard : 47 CFR FCC Part 15.247

The product was received on Jun. 25, 2024, and testing was started from Jul. 03, 2024 and completed on Feb. 06, 2025. 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.

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Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_9 Ver1.3

Page Number : 3 of 31
Issued Date : Apr. 21, 2025
Report Version : 01



Summary of Test Result

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

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: Muse Chan**



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
2.4-2.4835GHz	Zigbee	3	1TX

Note:

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

**1.1.2 Antenna Information**

Ant.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	Modes of Operation
1	1	ACCTON	RFMTA202028IMLB901-1	Dipole	I-PEX	Note 1	WLAN 2.4GHz (Radio 1)
2	2	ACCTON	RFMTA202028IMLB901-2	Dipole	I-PEX		WLAN 2.4GHz (Radio 1)
3	1	ACCTON	RFMTA202028IMLB901-3	Dipole	I-PEX		WLAN 5GHz UNII 1-3 or UNII 1-2A (Radio 2)
4	2	ACCTON	RFMTA202028IMLB901-4	Dipole	I-PEX		WLAN 5GHz UNII 1-3 or UNII 1-2A (Radio 2)
5	3	ACCTON	RFMTA202028IMLB901-5	Dipole	I-PEX		WLAN 5GHz UNII 1-3 or UNII 1-2A (Radio 2)
6	4	ACCTON	RFMTA202028IMLB901-6	Dipole	I-PEX		WLAN 5GHz UNII 1-3 or UNII 1-2A (Radio 2)
7	1	ACCTON	RFMTA202028IMLB901-7	PIFA	I-PEX		WLAN 5GHz UNII 2C-4 or WLAN 6GHz (Radio 4)
8	2	ACCTON	RFMTA202028IMLB901-8	PIFA	I-PEX		WLAN 5GHz UNII 2C-4 or WLAN 6GHz (Radio 4)
9	3	ACCTON	RFMTA202028IMLB901-9	PIFA	I-PEX		WLAN 5GHz UNII 2C-4 or WLAN 6GHz (Radio 4)
10	4	ACCTON	RFMTA202028IMLB901-10	PIFA	I-PEX		WLAN 5GHz UNII 2C-4 or WLAN 6GHz (Radio 4)
11	1	ACCTON	GT128V007S-001-1	On board chip	N/A		Bluetooth or Zigbee (Radio 3)



Note 1:

Ant.	Antenna Gain (dBi)						
	WLAN 2.4GHz (Radio 1)						
	2.4GHz		2.45GHz		2.4835GHz		
1	5.18		5.54		4.85		
2	4.30		4.91		4.16		
Ant.	WLAN 5GHz UNII 1-3 or UNII 1-2A (Radio 2)						
	5.2GHz	5.3GHz		5.6GHz		5.785GHz	
3	4.53	4.73		5.43		5.95	
4	4.42	4.45		5.71		4.41	
5	4.41	4.77		3.91		3.44	
6	4.30	4.6		3.73		4.00	
Ant.	WLAN 5GHz UNII 2C-4 or WLAN 6GHz (Radio 4)						
	5.6GHz	5.785GHz	5.885GHz	6.175GHz	6.475GHz	6.695GHz	6.995GHz
7	7.62	7.57	7.21	6.61	6.48	5.84	4.61
8	4.54	4.69	4.98	5.24	4.56	4.54	4.66
9	5.08	6.56	5.89	7.48	6.00	5.31	4.96
10	6.95	6.90	5.49	6.12	4.54	4.71	4.98
Bluetooth or Zigbee (Radio 3)							
11	4.3						

Item	Directional Gain (dBi)						
	WLAN 2.4GHz (Radio 1)						
	2.4GHz		2.45GHz		2.4835GHz		
2T1S	6.91		6.86		6.04		
2T2S	5.18		5.54		4.85		
Item	WLAN 5GHz UNII 1-3 or UNII 1-2A (Radio 2)						
	5.2GHz		5.3GHz		5.6GHz		5.785GHz
4T1S	8.62		9.31		9.18		8.43
4T2S	5.62		6.31		6.18		5.95
4T4S	4.53		4.77		5.71		5.95
Item	WLAN 5GHz UNII 2C-4 or WLAN 6GHz (Radio 4)						
	5.6GHz	5.785GHz	5.885GHz	6.175GHz	6.475GHz	6.695GHz	6.995GHz
4T1S	8.64	9.25	8.37	8.52	7.67	8.34	6.87
4T2S	7.62	7.57	7.21	7.48	6.48	5.84	4.98
4T4S	7.62	7.57	7.21	7.48	6.48	5.84	4.98

Note 2: The above information (excepting Ant. 1-10 antenna gain and directional gain) was declared by manufacturer.



Note 3: Radio 1, 2, 4: Maximum Directional Gain following KDB662911 D03.

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

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

Port 1 and Port 2 could transmit/receive simultaneously.

For Radio 2:**For 5GHz (UNII 1-3 or UNII 1-2A) IEEE 802.11a/n/ac/ax/be mode (4TX/4RX)**

Port 1, Port 2, Port 3 and Port 4 can be used as transmitting/receiving antenna.

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

For Radio 3:**For Bluetooth or Zigbee mode (1TX/1RX)**

Only Port 1 can be used as transmitting/receiving antenna.

For Radio 4:**For 5GHz (UNII 2C-4) IEEE 802.11a/n/ac/ax/be mode (4TX/4RX)****For 6GHz IEEE 802.11ax/be mode (4TX/4RX)**

Port 1, Port 2, Port 3 and Port 4 can be used as transmitting/receiving antenna.

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

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
Zigbee_Nss 1	0.445	3.52	913.125u	3k

Note:

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

1.1.4 EUT Operational Condition

EUT Power Type	Power from PoE		
Function	☒ Point-to-multipoint	☐ Point-to-point	
Test Software Version	Terminal v1.93b		

Note: The above information was declared by manufacturer.

1.1.5 Table for Radio function

Radio \ Function	WLAN 2.4GHz	WLAN 5GHz	WLAN 6GHz	Bluetooth	Zigbee
1	V	-	-	-	-
2	-	V (UNII 1-3 or UNII 1-2A)	-	-	-
3	-	-	-	V	V
4	-	V (UNII 2C-4)	V	-	-

Note 1: For WLAN 5GHz: The Radio 2 and 4 can't operate at the same frequency simultaneously.

Note 2: The above information was declared by manufacturer.

1.1.6 Table for EUT Operation Function

Mode	Operation Function
1	R1: 2.4GHz + R2: 5GHz Full Band + R3: Bluetooth + R4: 6GHz
2	R1: 2.4GHz + R2: 5GHz Full Band + R3: Zigbee + R4: 6GHz
3	R1: 2.4GHz + R2: 5GHz Low Band+ R3: Bluetooth + R4: 5GHz High band
4	R1: 2.4GHz + R2: 5GHz Low Band+ R3: Zigbee + R4: 5GHz High band

Note 1: The R means Radio.

Full Band means UNII 1-3.

Low Band means UNII 1-2A.

High Band means UNII 2C-4.

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 C63.10-2013

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

- ♦ FCC KDB 558074 D01 v05r02
- ♦ FCC KDB 662911 D03 v01
- ♦ FCC KDB 414788 D01 v01r01

1.3 Testing Location Information

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

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH02-CB	KJ Chang	22.8~24.8 / 61~63	Jul. 03, 2024~ Dec. 30, 2024
Radiated (Below 1GHz)	03CH06-CB	Gordon Hung	21.9-22.4 / 55-58	Feb. 06, 2025
Radiated (Above 1GHz)	03CH03-CB	Gordon Hung	21.4-22.3 / 55-58	Dec. 07, 2024~ Jan. 06, 2025
AC Conduction	CO01-CB	Joe Chu	21~22 / 52~53	Dec. 25, 2024

1.4 Measurement Uncertainty

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

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.8 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	4.1 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.0 dB	Confidence levels of 95%
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	2.1 %	Confidence levels of 95%

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode
Zigbee
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_R1: 2.4GHz + R2: 5GHz Full Band + R3: Bluetooth + R4: 6GHz + PoE
2	EUT_R1: 2.4GHz + R2: 5GHz Full Band + R3: Zigbee(TX) + R4: 6GHz + PoE
3	EUT_R1: 2.4GHz + R2: 5GHz Full Band + R3: Zigbee(RX) + R4: 6GHz + PoE
4	EUT_R1: 2.4GHz + R2: 5GHz Low Band+ R3: Bluetooth + R4: 5GHz High band + PoE
5	EUT_R1: 2.4GHz + R2: 5GHz Low Band+ R3: Zigbee(TX) + R4: 5GHz High band + PoE
6	EUT_R1: 2.4GHz + R2: 5GHz Low Band+ R3: Zigbee(RX) + R4: 5GHz High band + PoE
For operating mode 6 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 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
	After evaluating, EUT in Z axis was the worst case for Bluetooth and Y axis for others from radiated emission above 1GHz, so the measurement will follow this same test configuration.
1	EUT in Y axis + R1: 2.4GHz + PoE
2	EUT in Y axis + R2: 5GHz + PoE
3	EUT in Y axis + R4: 5GHz + PoE
4	EUT in Y axis + R4: 6GHz + PoE
5	EUT in Z axis + R3: Bluetooth + PoE
6	EUT in Y axis + R3: Zigbee + PoE
For operating mode 1 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
	After evaluating, the worst case was found at Y axis, so it was selected to perform test and its test result was written in the report.
1	EUT in Y axis

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	R1: 2.4GHz + R2: 5GHz Full Band + R3: Bluetooth + R4: 6GHz
2	R1: 2.4GHz + R2: 5GHz Full Band + R3: Zigbee + R4: 6GHz
3	R1: 2.4GHz + R2: 5GHz Low Band+ R3: Bluetooth + R4: 5GHz High band
4	R1: 2.4GHz + R2: 5GHz Low Band+ R3: Zigbee+ R4: 5GHz High band
Refer to Sporton Test Report No.: FA462417 for Co-location RF Exposure Evaluation.	

Note 1: The PoE is for measurement only, would not be marketed. PoE information as below:

Power	Brand	Model
PoE	Cambium	NET-P30-56IN

Note 2: The USB port cannot be used by the end user, as declared by the manufacturer.



2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link Mode:

During the test, the EUT operation to normal function.

2.4 Accessories

Accessories
Wall-mounted rack 1*1
Wall-mounted rack 2*1

2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	PoE	Cambium	NET-P30-56IN	N/A
B	Zigbee device	Cambium	X7-55X	Z8H89FT0086
C	LAN PC	ASUS	S300TA	TX2-RTL8821C
D	2.4G NB	DELL	E6430	N/A
E	5GL NB	DELL	E6430	N/A
F	5GH NB	DELL	E6430	N/A
G	Zigbee device PC	ASUS	S300TA	TX2-RTL8821C
H	Flash disk3.0	Transcend	JetFlash-703	N/A

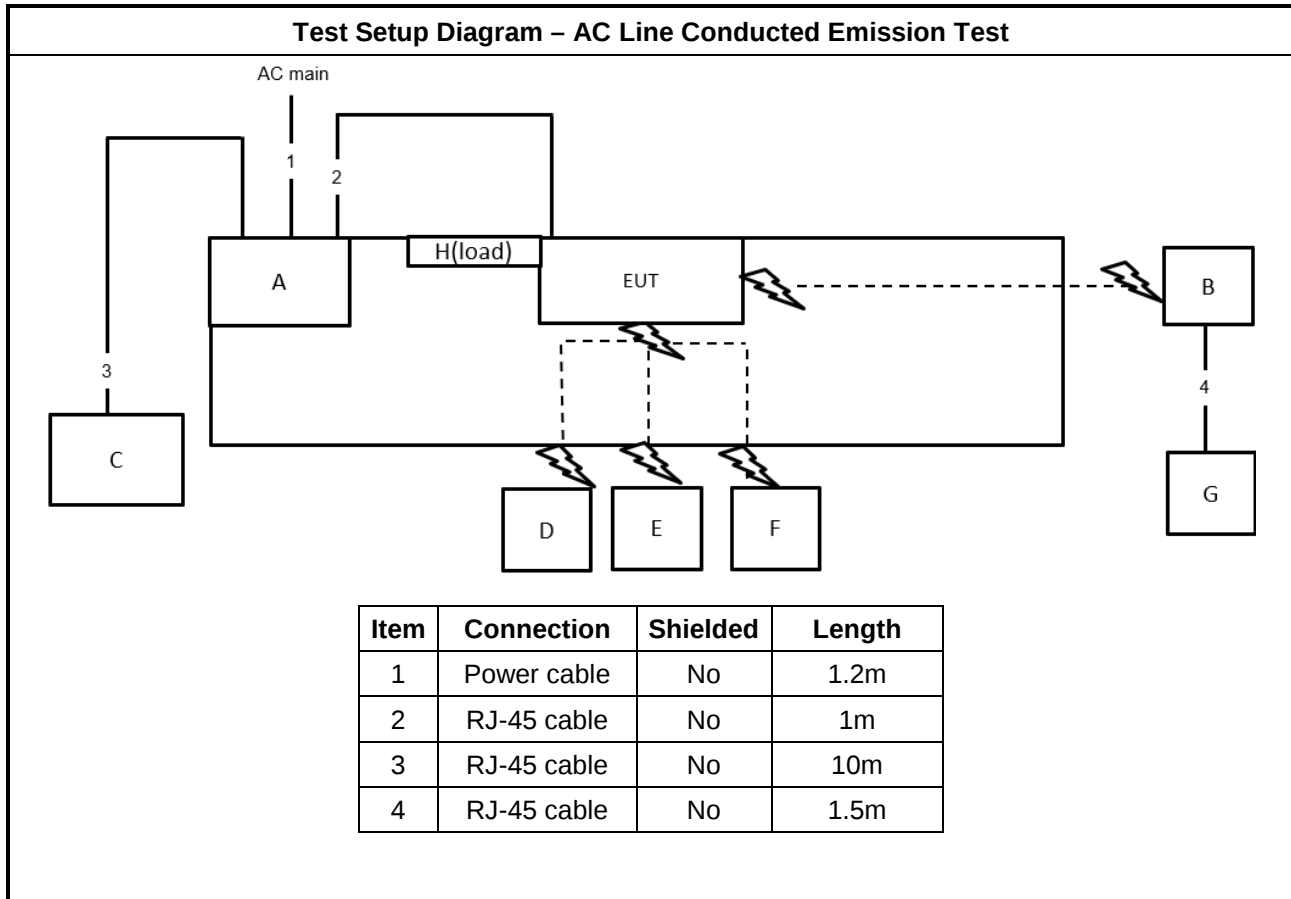
For Radiated (below 1GHz):

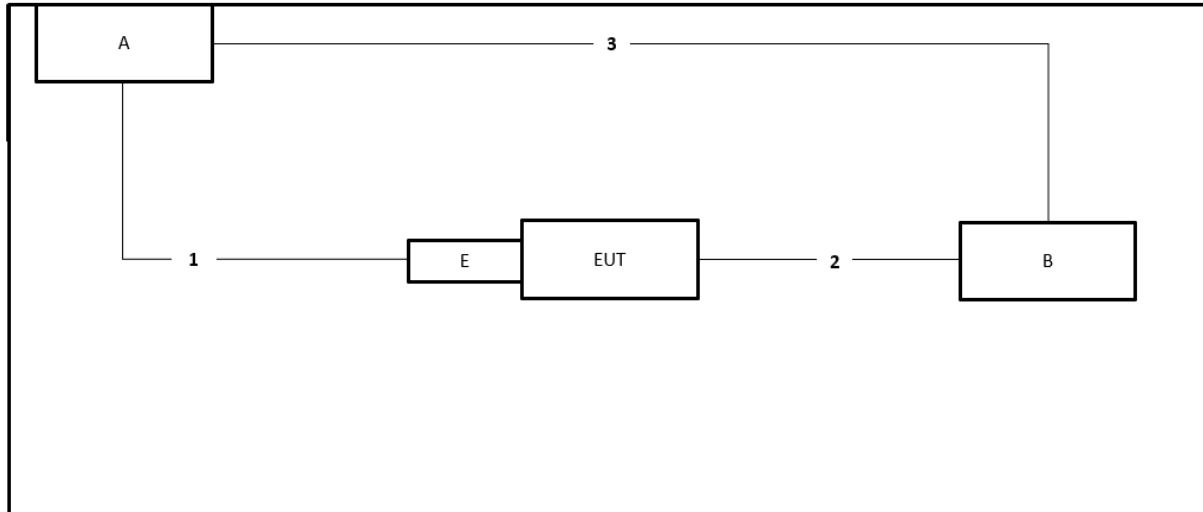
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A
B	PoE	Cambium	NET-P30-56IN	N/A
E	Fixture	SILICON LABS	PCB1015A	N/A

For Radiated (above 1GHz) and RF Conducted:

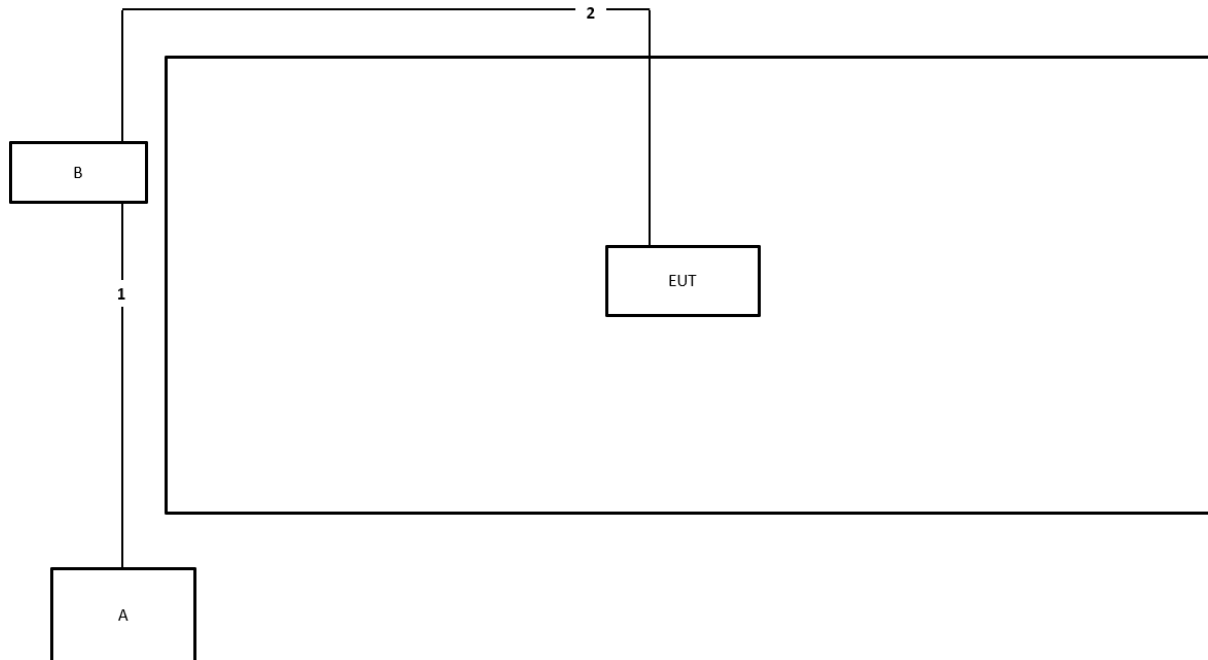
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	NB	DELL	E4300	N/A
B	PoE	Cambium	NET-P30-56IN	N/A

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


Item	Connection	Shielded	Length
1	USB to TypeC cable	Yes	1m
2	RJ-45 cable	No	1m
3	RJ-45 cable	No	1m

Test Setup Diagram - Radiated Test > 1GHz


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



3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit		
Frequency Emission (MHz)	Quasi-Peak	Average
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

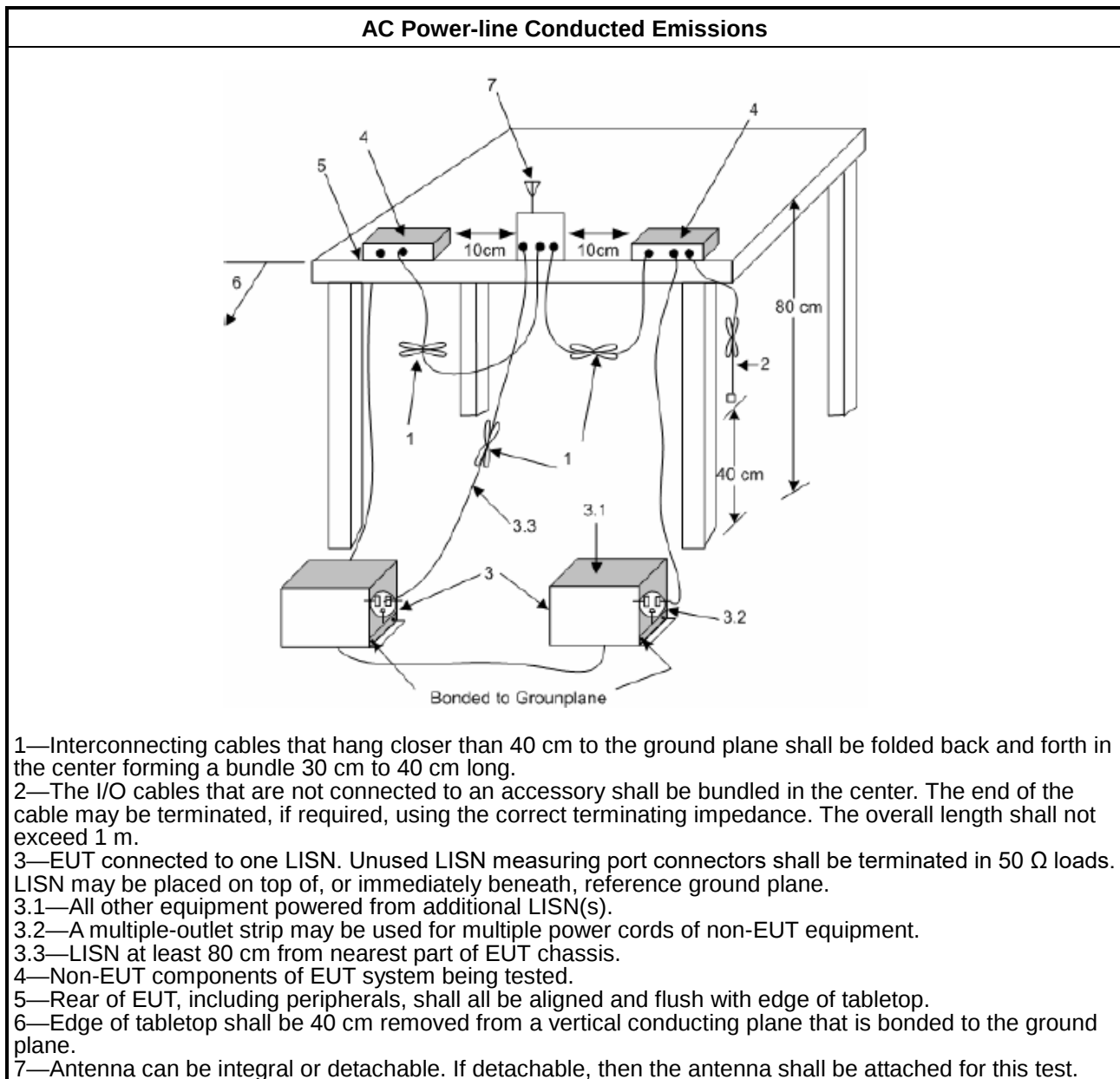
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
☒ Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- 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.

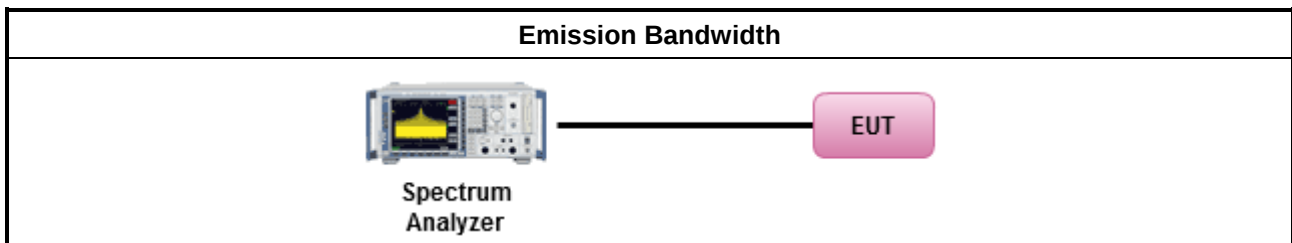
3.2.2 Measuring Instruments

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

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

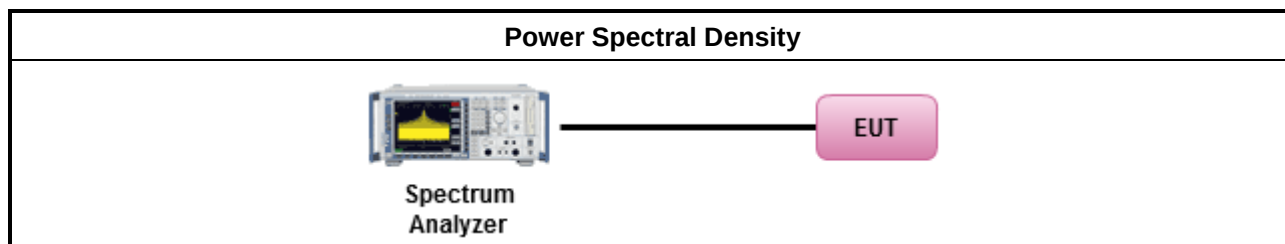
3.4.2 Measuring Instruments

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



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.	

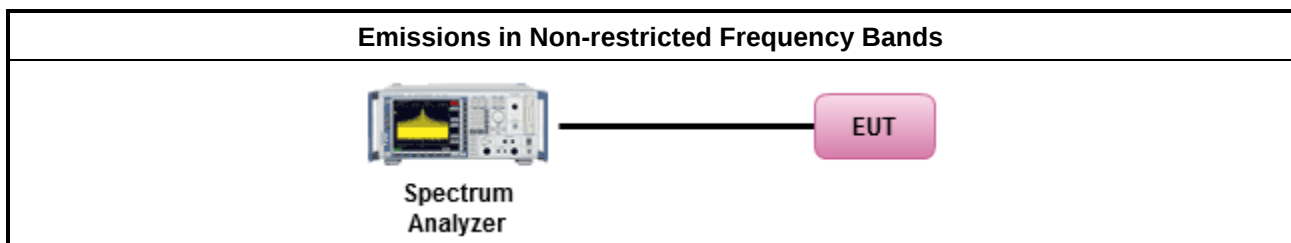
3.5.2 Measuring Instruments

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.

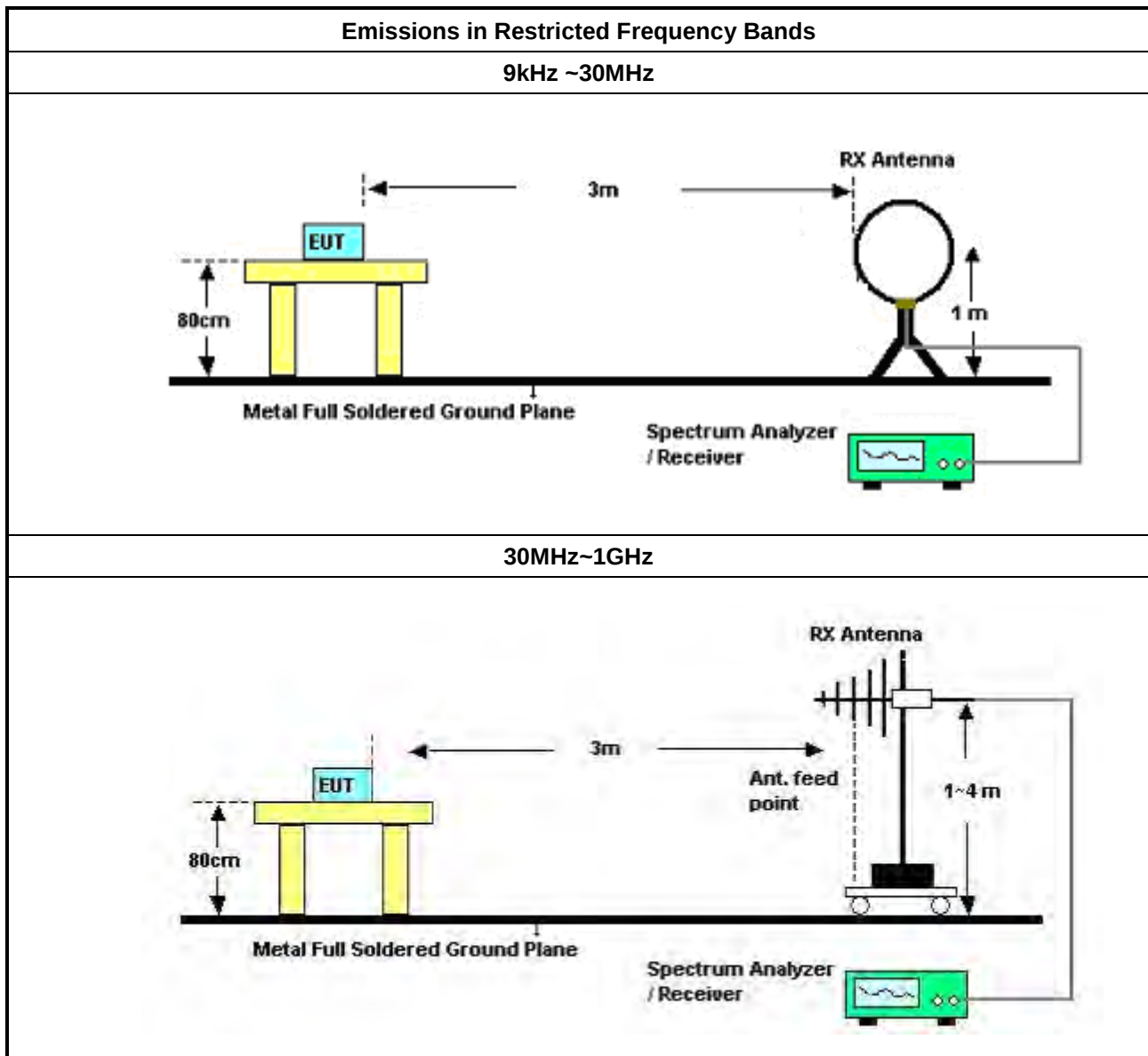
3.6.2 Measuring Instruments

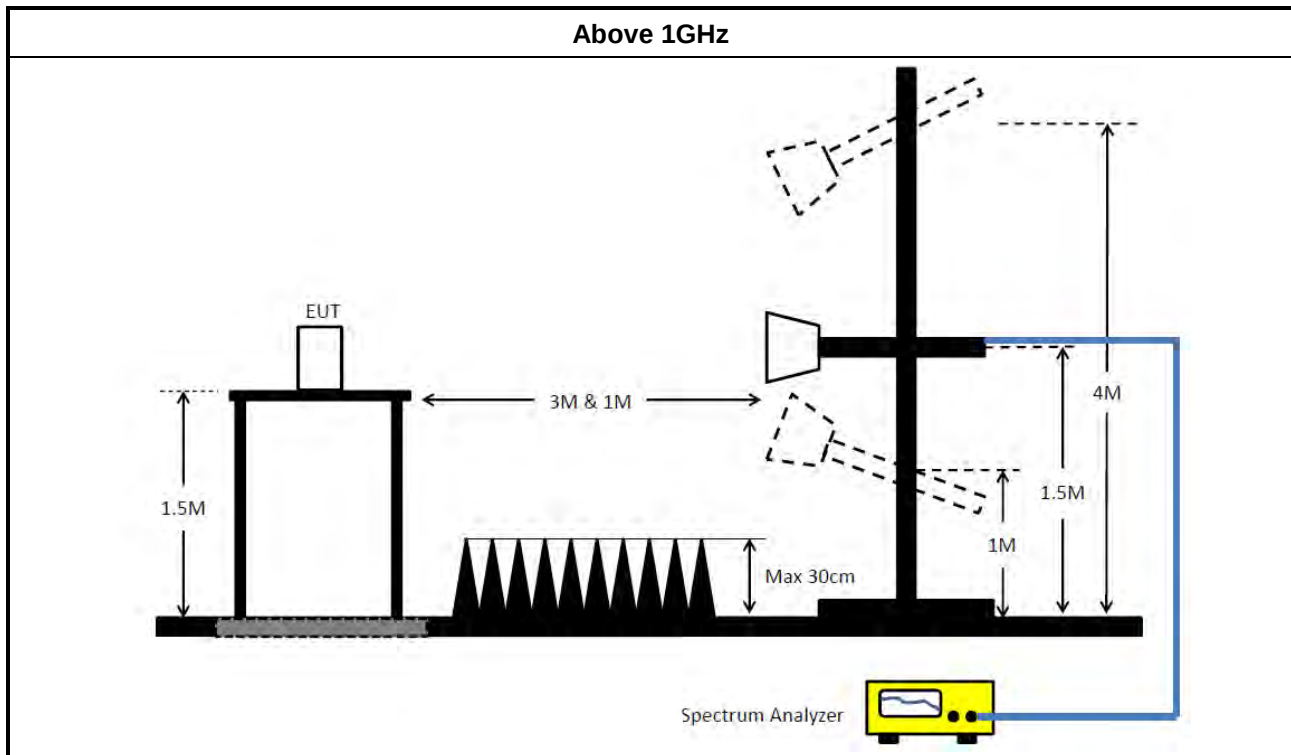
Refer a test equipment and calibration data table in this test report.

**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. 01, 2024	Feb. 28, 2025	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 19, 2024	Feb. 18, 2025	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 24, 2024	Apr. 23, 2025	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Oct. 16, 2024	Oct. 15, 2025	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 16, 2024	Oct. 15, 2025	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. 16, 2024	Oct. 15, 2025	Radiation (03CH06-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH06-CB	30 MHz ~ 1 GHz	Aug. 02, 2024	Aug. 01, 2025	Radiation (03CH06-CB)
Bilog Antenna with 6 dB attenuator	TESEQ & EMC1	CBL6112D & N-6-06	37878 & AT-N0606	20MHz ~ 2GHz	Jul. 29, 2024	Jul. 28, 2025	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	310N	187290	0.1MHz ~ 1GHz	Nov. 02, 2024	Nov. 01, 2025	Radiation (03CH06-CB)
Signal analyzer	R&S	FSV3044	101667	9kHz~44GHz	Aug. 20, 2024	Aug. 19, 2025	Radiation (03CH06-CB)
EMI Test Receiver	R&S	ESR7	102172	9kHz ~ 7GHz	Oct. 21, 2024	Oct. 20, 2025	Radiation (03CH06-CB)
RF Cable-low	Woken	RG402	Low Cable-05+68	30MHz~1GHz	Oct. 24, 2024	Oct. 23, 2025	Radiation (03CH06-CB)
Test Software	SPORTON	SENSE-EMI	V5.11.8	30MHz-40GHz	N.C.R.	N.C.R.	Radiation (03CH06-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH03-CB	1GHz ~18GHz 3m	May 03, 2024	May 02, 2025	Radiation (03CH03-CB)
Horn Antenna	ETS-Lindgren	3115	6821	750MHz~18GHz	Jan. 24, 2024	Jan. 23, 2025	Radiation (03CH03-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Sep. 23, 2024	Sep. 22, 2025	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8449B	3008A02097	1GHz ~ 26.5GHz	Jun. 29, 2024	Jun. 28, 2025	Radiation (03CH03-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 25, 2024	Nov. 24, 2025	Radiation (03CH03-CB)
Spectrum Analyzer	R&S	FSP40	100019	9kHz ~ 40GHz	Jun. 11, 2024	Jun. 10, 2025	Radiation (03CH03-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-20+29	1GHz ~ 18GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-29	1GHz ~ 18GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Oct. 01, 2024	Sep. 30, 2025	Radiation (03CH03-CB)
Test Software	SPORTON	SENSE-1524 7_DTS	V5.11.23	2.4GHz-2.4835GHz	N.C.R.	N.C.R.	Radiation (03CH03-CB)
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	Apr. 26, 2024	Apr. 25, 2025	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Oct. 19, 2023	Oct. 18, 2024	Conducted (TH02-CB)
Power Sensor	Anritsu	MA2411B	1126203	300MHz~40GHz	Oct. 18, 2024	Oct. 17, 2025	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Oct. 19, 2023	Oct. 18, 2024	Conducted (TH02-CB)
Power Meter	Anritsu	ML2495A	1210004	300MHz~40GHz	Oct. 18, 2024	Oct. 17, 2025	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-01	1 GHz – 18 GHz	Oct. 01, 2024	Sep. 30, 2025	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-02	1 GHz – 18 GHz	Oct. 01, 2024	Sep. 30, 2025	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-03	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-03	1 GHz – 18 GHz	Oct. 01, 2024	Sep. 30, 2025	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-04	1 GHz – 18 GHz	Oct. 01, 2024	Sep. 30, 2025	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 18 GHz	Oct. 02, 2023	Oct. 01, 2024	Conducted (TH02-CB)
RF Cable-high	Woken	RG402	High Cable-05	1 GHz – 18 GHz	Oct. 01, 2024	Sep. 30, 2025	Conducted (TH02-CB)
Switch	SPTCB	SP-SWI	SWI-02	1 –26.5 GHz	Oct. 03, 2023	Oct. 02, 2024	Conducted (TH02-CB)
Switch	SPTCB	SP-SWI	SWI-02	1–18 GHz	Oct. 02, 2024	Oct. 01, 2025	Conducted (TH02-CB)
Test Software	SPORTON	SENSE-1524 7_DTS	V5.11.23	2.4GHz-2.4835GHz	N.C.R.	N.C.R.	Conducted (TH02-CB)

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

NCR means Non-Calibration required.



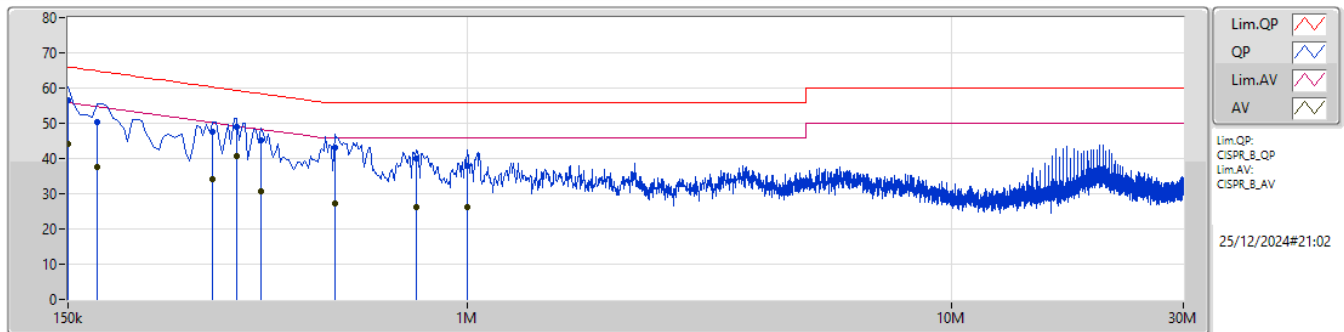
Conducted Emissions at Powerline

Appendix A

Summary

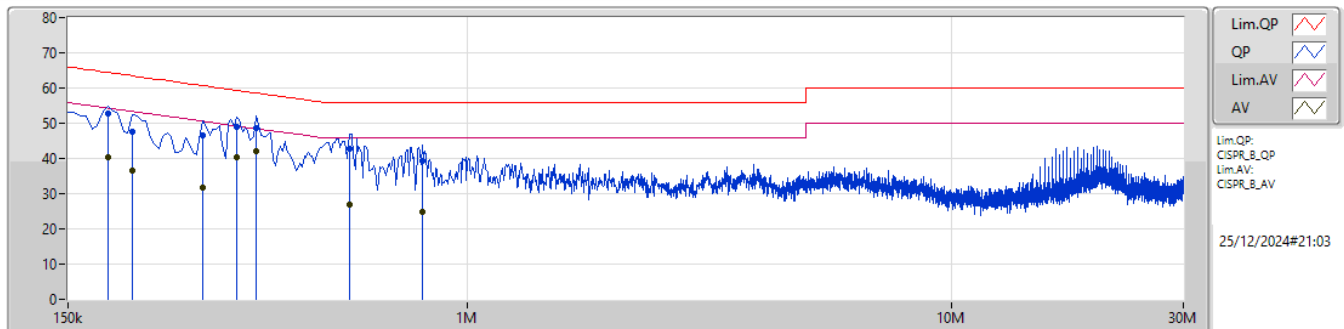
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 6	Pass	AV	366k	42.00	48.60	-6.60	Neutral

Mode 6



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	150k	56.68	66.00	-9.32	10.03	Line	-	46.65	0.04	0.08	9.91						
AV	150k	44.07	56.00	-11.93	10.03	Line	-	34.04	0.04	0.08	9.91						
QP	172.5k	50.34	64.83	-14.49	10.04	Line	-	40.30	0.04	0.07	9.93						
AV	172.5k	37.48	54.83	-17.35	10.04	Line	-	27.44	0.04	0.07	9.93						
QP	298.5k	47.54	60.28	-12.74	10.15	Line	-	37.39	0.05	0.09	10.01						
AV	298.5k	34.05	50.28	-16.23	10.15	Line	-	23.90	0.05	0.09	10.01						
QP	334.5k	48.85	59.35	-10.50	10.17	Line	-	38.68	0.05	0.09	10.03						
AV	334.5k	40.52	49.35	-8.83	10.17	Line	"Worst"	30.35	0.05	0.09	10.03						
QP	375k	45.34	58.39	-13.05	10.20	Line	-	35.14	0.05	0.10	10.05						
AV	375k	30.66	48.39	-17.73	10.20	Line	-	20.46	0.05	0.10	10.05						
QP	532.5k	42.95	56.00	-13.05	10.25	Line	-	32.70	0.06	0.10	10.09						
AV	532.5k	27.39	46.00	-18.61	10.25	Line	-	17.14	0.06	0.10	10.09						
QP	784.5k	40.13	56.00	-15.87	10.28	Line	-	29.85	0.06	0.09	10.13						
AV	784.5k	26.25	46.00	-19.75	10.28	Line	-	15.97	0.06	0.09	10.13						
QP	1.001M	37.77	56.00	-18.23	10.32	Line	-	27.45	0.07	0.09	10.16						
AV	1.001M	26.32	46.00	-19.68	10.32	Line	-	16.00	0.07	0.09	10.16						

Mode 6



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)						
QP	181.5k	52.89	64.41	-11.52	10.07	Neutral	-	42.82	0.06	0.07	9.94						
AV	181.5k	40.39	54.41	-14.02	10.07	Neutral	-	30.32	0.06	0.07	9.94						
QP	204k	47.59	63.44	-15.85	10.08	Neutral	-	37.51	0.06	0.07	9.95						
AV	204k	36.65	53.44	-16.79	10.08	Neutral	-	26.57	0.06	0.07	9.95						
QP	285k	46.57	60.67	-14.10	10.16	Neutral	-	36.41	0.06	0.09	10.01						
AV	285k	31.60	50.67	-19.07	10.16	Neutral	-	21.44	0.06	0.09	10.01						
QP	334.5k	48.83	59.35	-10.52	10.18	Neutral	-	38.65	0.06	0.09	10.03						
AV	334.5k	40.46	49.35	-8.89	10.18	Neutral	-	30.28	0.06	0.09	10.03						
QP	366k	48.76	58.60	-9.84	10.21	Neutral	-	38.55	0.06	0.10	10.05						
AV	366k	42.00	48.60	-6.60	10.21	Neutral	"Worst"	31.79	0.06	0.10	10.05						
QP	573k	42.91	56.00	-13.09	10.27	Neutral	-	32.64	0.07	0.10	10.10						
AV	573k	26.77	46.00	-19.23	10.27	Neutral	-	16.50	0.07	0.10	10.10						
QP	807k	39.44	56.00	-16.56	10.31	Neutral	-	29.13	0.08	0.09	10.14						
AV	807k	24.96	46.00	-21.04	10.31	Neutral	-	14.65	0.08	0.09	10.14						

Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
Zigbee	1.74M	2.223M	2M22G1D	855k	2.151M

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

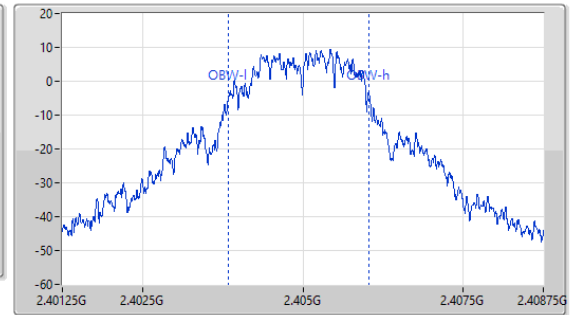
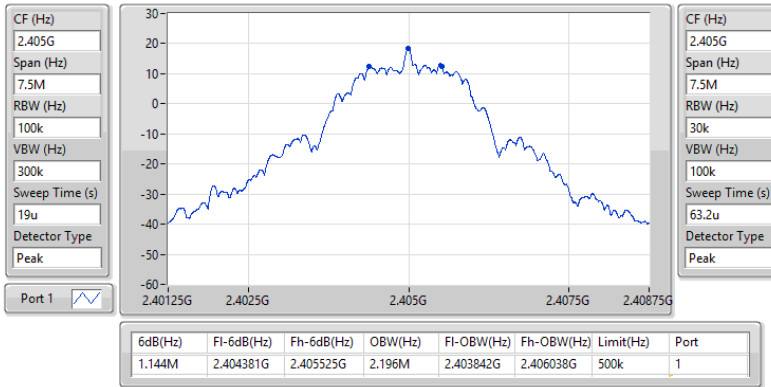
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
Zigbee	-	-	-	-
2405MHz	Pass	500k	1.144M	2.196M
2440MHz	Pass	500k	1.74M	2.151M
2480MHz	Pass	500k	855k	2.223M

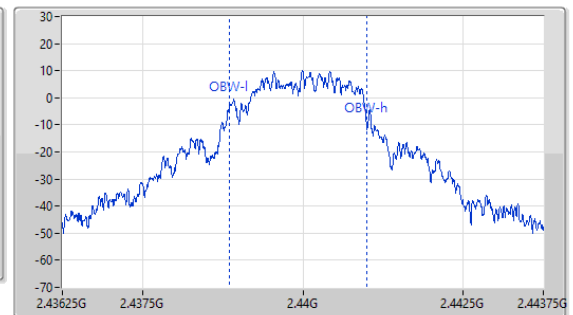
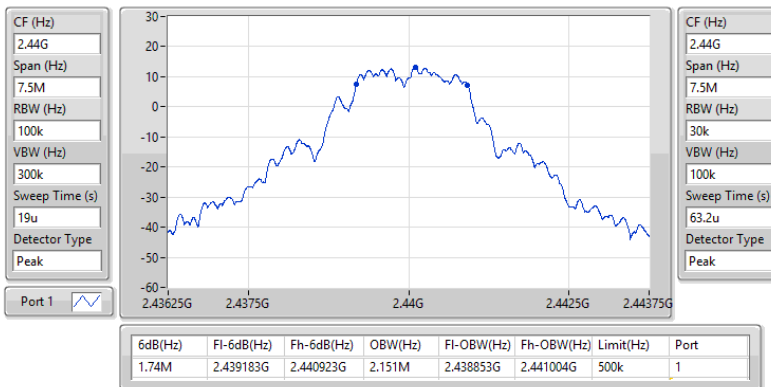
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_Zigbee
EBW
2405MHz

10/12/2024


2.4-2.4835GHz_Zigbee
EBW
2440MHz

10/12/2024

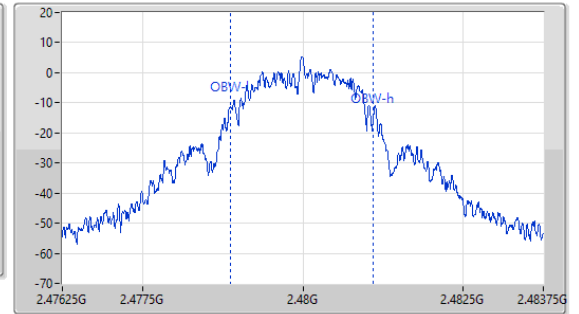
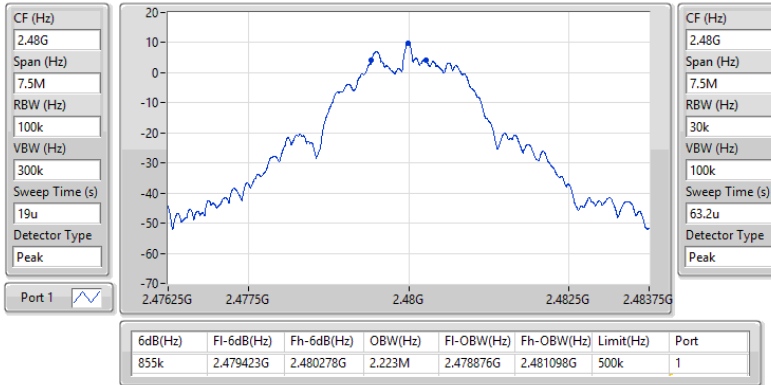


2.4-2.4835GHz_Zigbee

EBW

2480MHz

10/12/2024





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
Zigbee	19.01	0.07962



Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
Zigbee	-	-	-	-	-
2405MHz	Pass	4.30	19.01	19.01	30.00
2440MHz	Pass	4.30	18.94	18.94	30.00
2475MHz	Pass	4.30	18.81	18.81	30.00
2480MHz	Pass	4.30	10.54	10.54	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	-
Zigbee	4.57

RBW = 3kHz;

Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
Zigbee	-	-	-	-	-
2405MHz	Pass	4.30	4.52	4.52	8.00
2440MHz	Pass	4.30	4.57	4.57	8.00
2480MHz	Pass	4.30	-3.92	-3.92	8.00

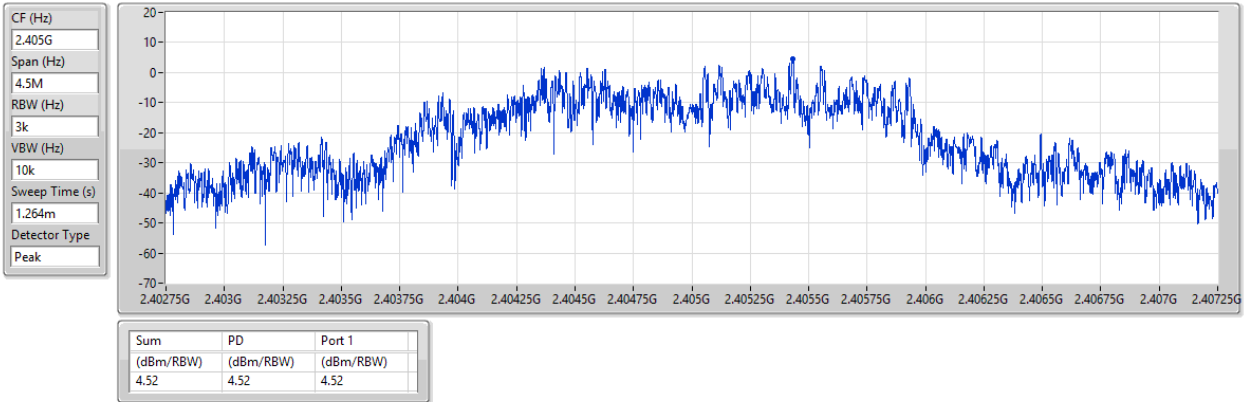
DG = Directional Gain; RBW = 3kHz;
PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;
Inf = There's no restriction for the limit.

2.4-2.4835GHz_Zigbee

PSD

2405MHz

10/12/2024

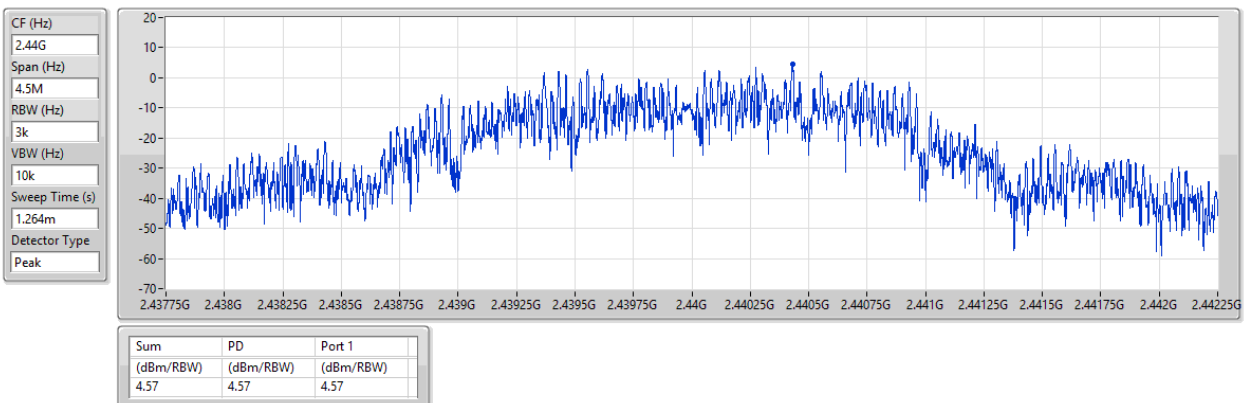


2.4-2.4835GHz_Zigbee

PSD

2440MHz

10/12/2024

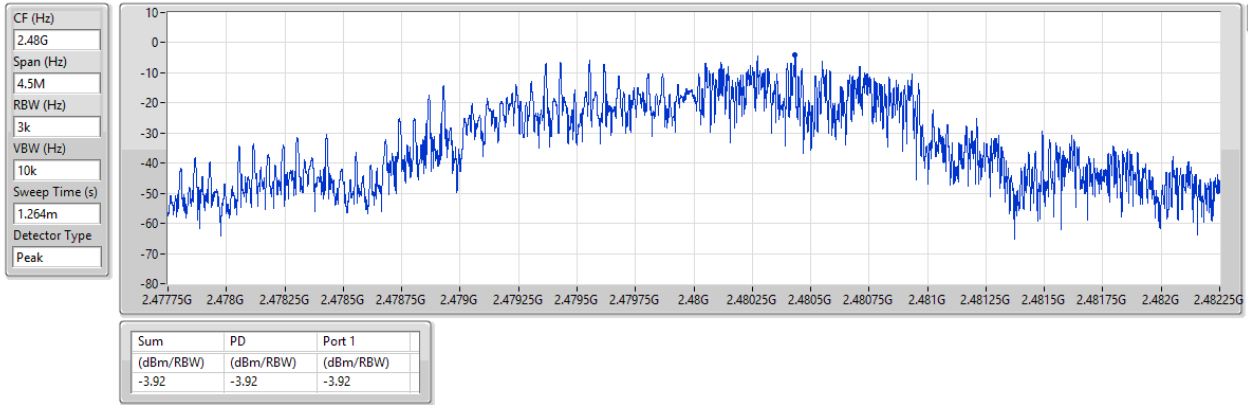


2.4-2.4835GHz_Zigbee

PSD

2480MHz

10/12/2024





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	Pass	2.40501G	18.54	-11.46	2.12332G	-52.16	2.39983G	-39.75	2.4G	-37.83	15.19386G	-44.85	1

Result

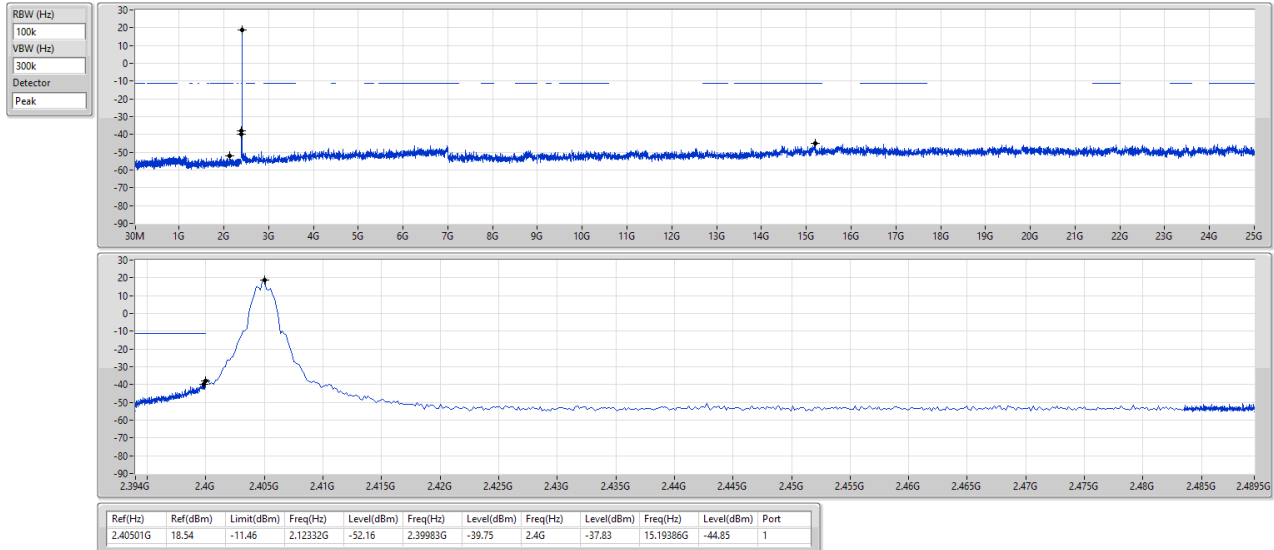
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
Zigbee	-	-	-	-	-	-	-	-	-	-	-	-	-
2405MHz	Pass	2.40501G	18.54	-11.46	2.12332G	-52.16	2.39983G	-39.75	2.4G	-37.83	15.19386G	-44.85	1
2440MHz	Pass	2.40501G	18.54	-11.46	346.78M	-52.12	2.39952G	-51.13	2.4G	-54.73	24.09677G	-45.39	1
2480MHz	Pass	2.40501G	18.54	-11.46	897.59M	-52.15	2.39452G	-51.33	2.4G	-54.52	15.19386G	-45.28	1

2.4-2.4835GHz Zigbee

CSEndB

2405MHz

10/12/2024

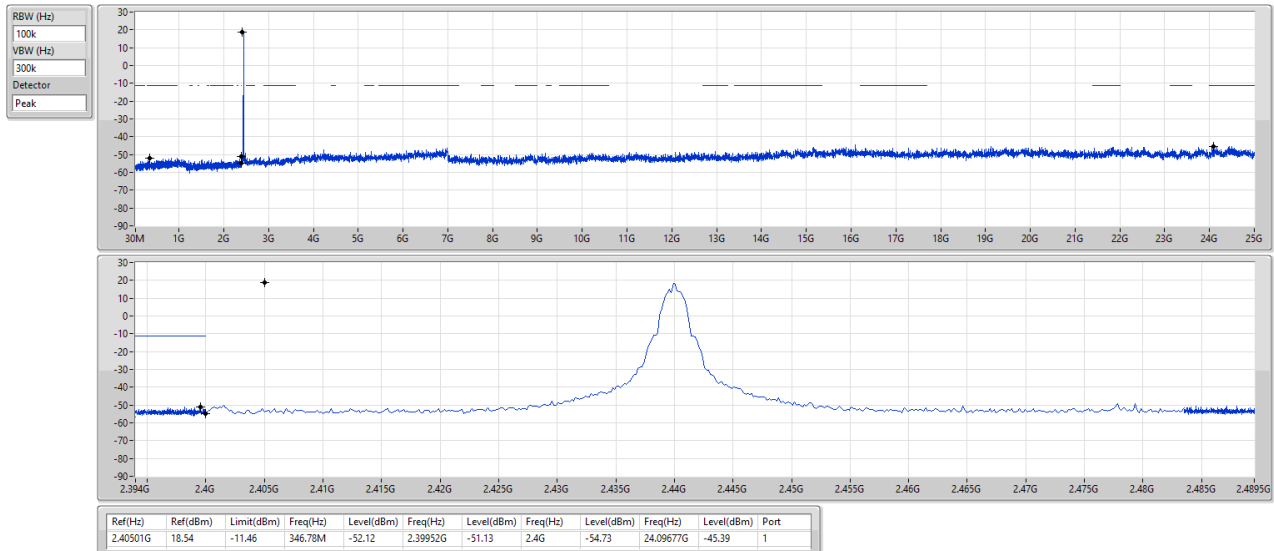


2.4-2.4835GHz Zigbee

CSEndB

2440MHz

10/12/2024



2.4-2.4835GHz_Zigbee

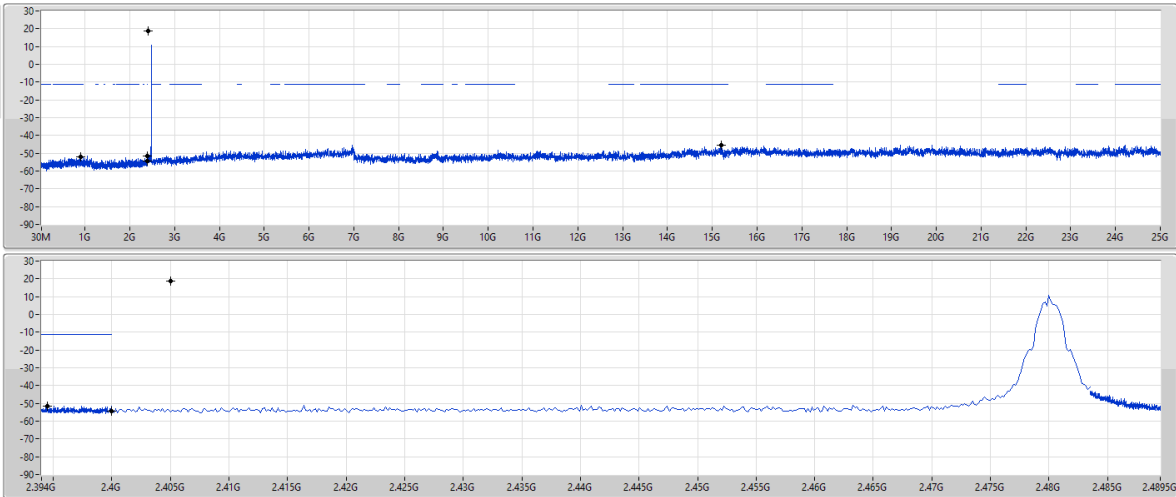
CSEndB

2480MHz

10/12/2024

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

Port 1



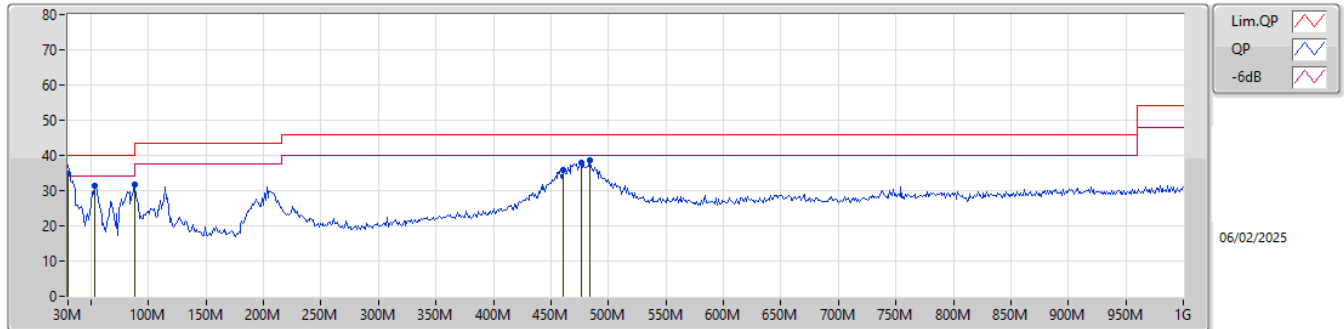
Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
2.40501G	18.54	-11.46	897.59M	-52.15	2.39452G	-51.33	2.4G	-54.52	15.19386G	-45.28	1



Summary

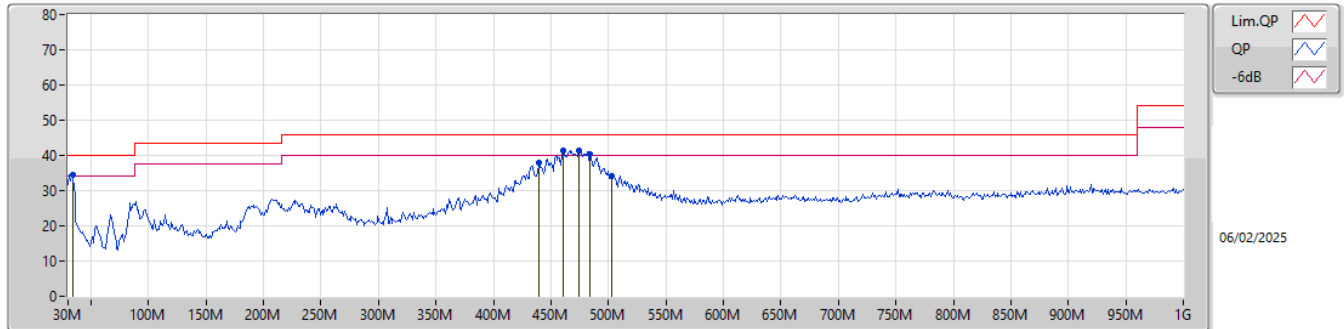
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	PK	474.26M	41.54	46.00	-4.46	Horizontal

Mode 1



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)		
QP	30M	34.70	40.00	-5.30	-7.45	3	Vertical	220	1.00	"Worst"	42.15	24.33	0.54	32.32		
PK	53.28M	31.27	40.00	-8.73	-18.66	3	Vertical	233	1.50	-	49.93	12.94	0.68	32.28		
PK	88M	31.75	43.50	-11.75	-16.97	3	Vertical	233	1.50	-	48.72	14.35	0.97	32.29		
PK	460.68M	35.83	46.00	-10.17	-7.13	3	Vertical	0	1.25	-	42.96	22.72	2.11	31.96		
PK	476.2M	37.90	46.00	-8.10	-6.66	3	Vertical	0	1.25	-	44.56	23.08	2.15	31.89		
PK	483.96M	38.51	46.00	-7.49	-6.51	3	Vertical	360	1.25	-	45.02	23.17	2.18	31.86		

Mode 1



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	33.88M	34.65	40.00	-5.35	-9.52	3	Horizontal	120	1.50	-	44.17	22.22	0.56	32.30		
PK	439.34M	38.05	46.00	-7.95	-7.50	3	Horizontal	12	2.00	-	45.55	22.44	2.06	32.00		
PK	460.68M	41.33	46.00	-4.67	-7.13	3	Horizontal	2	2.00	-	48.46	22.72	2.11	31.96		
PK	474.26M	41.54	46.00	-4.46	-6.69	3	Horizontal	360	3.00	"Worst"	48.23	23.06	2.15	31.90		
PK	483.96M	40.20	46.00	-5.80	-6.51	3	Horizontal	0	2.00	-	46.71	23.17	2.18	31.86		
PK	502.39M	34.23	46.00	-11.77	-6.28	3	Horizontal	0	2.00	-	40.51	23.30	2.22	31.80		

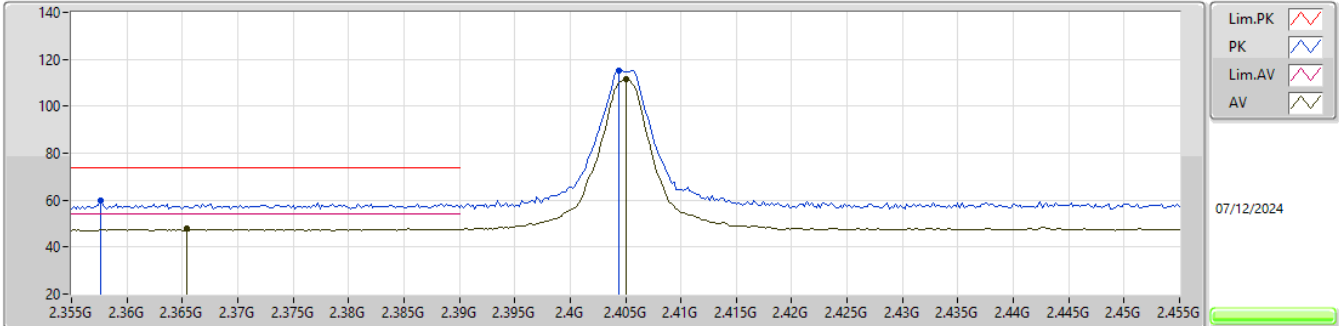


Summary

Mode	Result	Type	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
Zigbee	Pass	AV	2.4835G	53.79	54.00	-0.21	3	Horizontal	338	2.07	-

2.4-2.4835GHz_Zigbee

2405MHz_TX

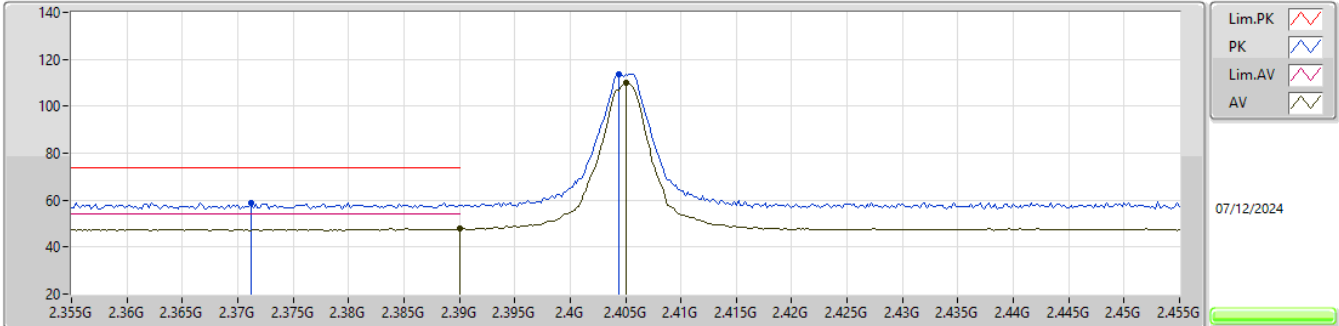


EUT_Y_1TX
Setting 20
03-V-K-5

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	2.3576G	59.90	74.00	-14.10	26.96	3	Vertical	340	2.08	-	28.18	4.76	-				
AV	2.3654G	47.78	54.00	-6.22	14.81	3	Vertical	340	2.08	-	28.20	4.77	-				
PK	2.4044G	114.95	Inf	-Inf	81.83	3	Vertical	340	2.08	-	28.30	4.82	-				
AV	2.405G	111.68	Inf	-Inf	78.55	3	Vertical	340	2.08	-	28.30	4.83	-				

2.4-2.4835GHz_Zigbee

2405MHz_TX

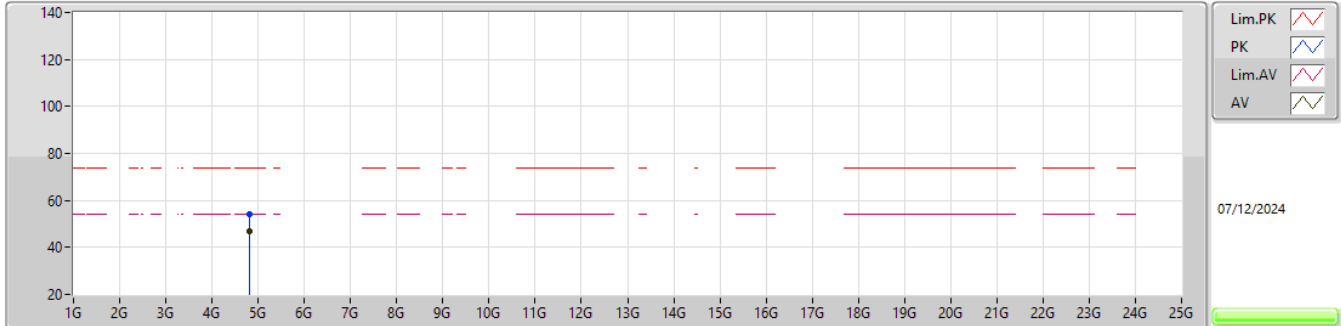


EUT_Y_1TX
Setting 20
03-V-K-5

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	2.3712G	59.04	74.00	-14.96	26.06	3	Horizontal	239	1.80	-	28.20	4.78	-				
AV	2.39G	47.83	54.00	-6.17	14.72	3	Horizontal	239	1.80	-	28.30	4.81	-				
PK	2.4044G	113.48	Inf	-Inf	80.36	3	Horizontal	239	1.80	-	28.30	4.82	-				
AV	2.405G	110.20	Inf	-Inf	77.07	3	Horizontal	239	1.80	-	28.30	4.83	-				

2.4-2.4835GHz_Zigbee

2405MHz_TX

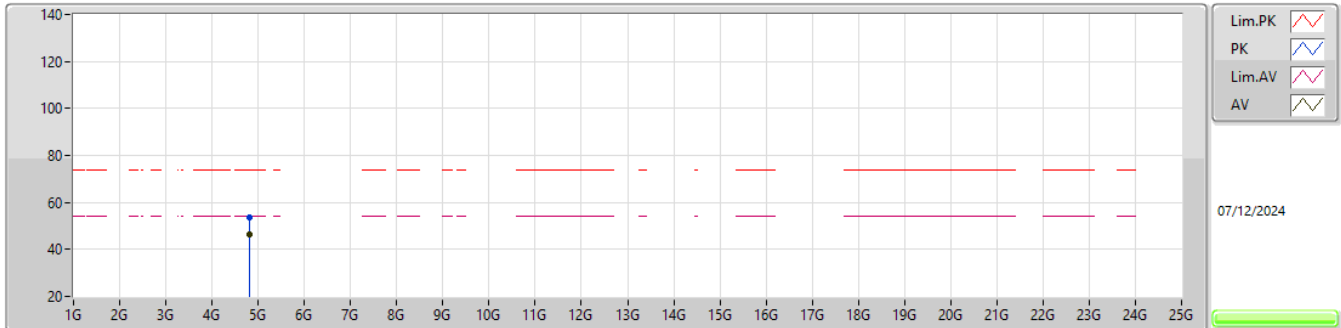


EUT_V_1TX
Setting 20
03-V-K-5

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	4.80876G	54.10	74.00	-19.90	49.00	3	Vertical	20	2.34	-	33.22	7.21	35.33			
AV	4.80892G	46.66	54.00	-7.34	41.56	3	Vertical	20	2.34	-	33.22	7.21	35.33			

2.4-2.4835GHz_Zigbee

2405MHz_TX

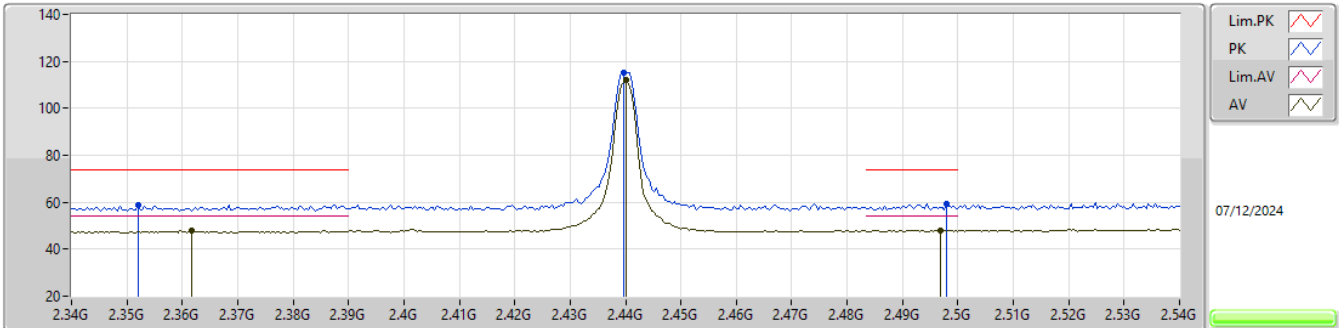


EUT_V_1TX
Setting 20
03-V-K-5

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	4.80892G	53.84	74.00	-20.16	48.74	3	Horizontal	33	2.96	-	33.22	7.21	35.33			
AV	4.80892G	46.22	54.00	-7.78	41.12	3	Horizontal	33	2.96	-	33.22	7.21	35.33			

2.4-2.4835GHz_Zigbee

2440MHz_TX

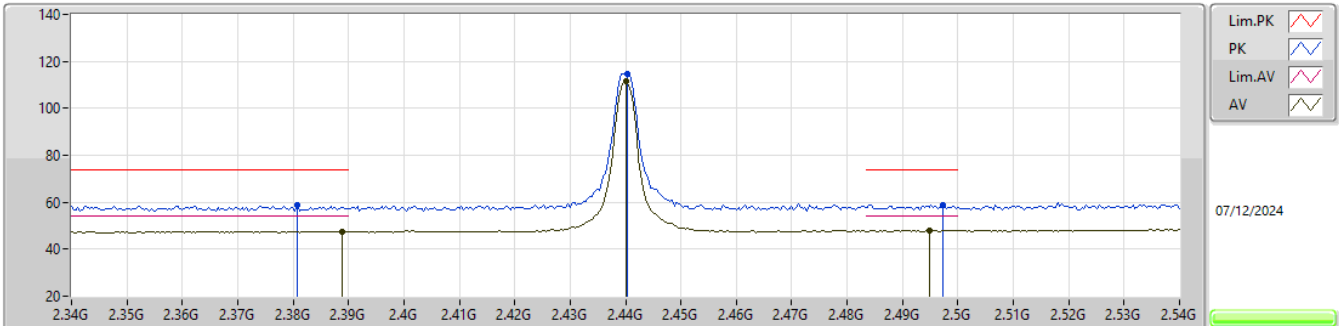


EUT_Y_1TX
Setting 20
03-V-K-5

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	2.352G	58.88	74.00	-15.12	26.00	3	Vertical	346	2.32	-	28.12	4.76	-				
AV	2.3616G	47.78	54.00	-6.22	14.81	3	Vertical	346	2.32	-	28.20	4.77	-				
PK	2.4396G	115.35	Inf	-Inf	82.19	3	Vertical	346	2.32	-	28.30	4.86	-				
AV	2.44G	112.04	Inf	-Inf	78.88	3	Vertical	346	2.32	-	28.30	4.86	-				
PK	2.498G	59.40	74.00	-14.60	26.07	3	Vertical	346	2.32	-	28.40	4.93	-				
AV	2.4968G	47.96	54.00	-6.04	14.63	3	Vertical	346	2.32	-	28.40	4.93	-				

2.4-2.4835GHz_Zigbee

2440MHz_TX

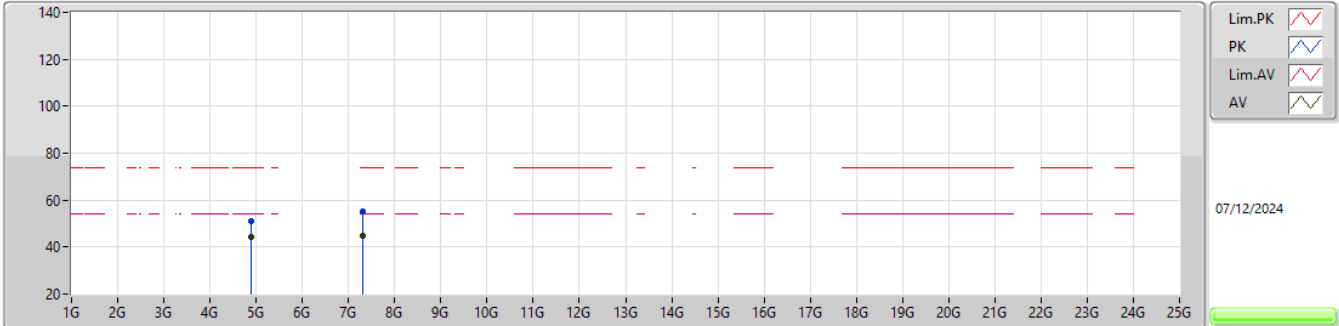


EUT_Y_1TX
Setting 20
03-V-K-5

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	2.3808G	58.54	74.00	-15.46	25.54	3	Horizontal	307	1.69	-	28.21	4.79	-				
AV	2.3888G	47.60	54.00	-6.40	14.51	3	Horizontal	307	1.69	-	28.29	4.80	-				
PK	2.4404G	114.64	Inf	-Inf	81.48	3	Horizontal	307	1.69	-	28.30	4.86	-				
AV	2.44G	111.35	Inf	-Inf	78.19	3	Horizontal	307	1.69	-	28.30	4.86	-				
PK	2.4972G	58.92	74.00	-15.08	25.59	3	Horizontal	307	1.69	-	28.40	4.93	-				
AV	2.4948G	47.99	54.00	-6.01	14.67	3	Horizontal	307	1.69	-	28.40	4.92	-				

2.4-2.4835GHz_Zigbee

2440MHz_TX

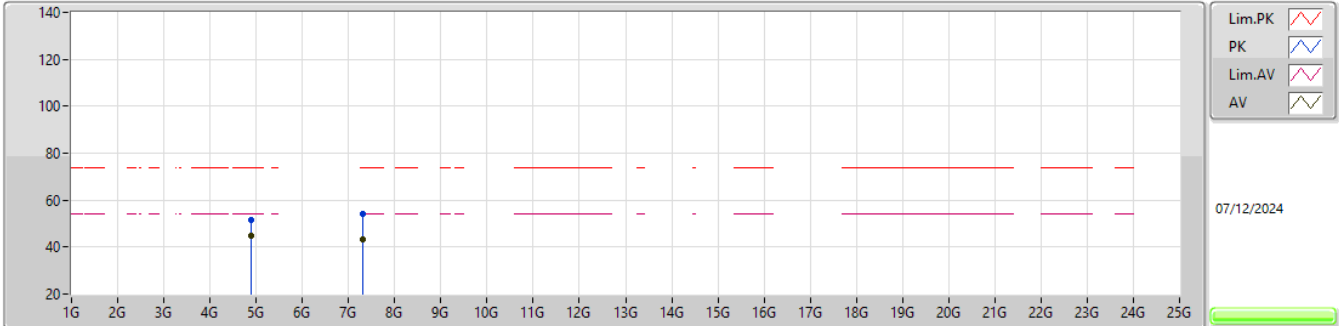


EUT_Y_1TX
Setting 20
03-V-K-5

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	4.8828G	51.16	74.00	-22.84	45.94	3	Vertical	320	2.42	-	33.37	7.18	35.33				
AV	4.88276G	44.30	54.00	-9.70	39.08	3	Vertical	320	2.42	-	33.37	7.18	35.33				
PK	7.32132G	54.94	74.00	-19.06	44.69	3	Vertical	360	1.15	-	36.79	8.62	35.16				
AV	7.31848G	44.71	54.00	-9.29	34.48	3	Vertical	360	1.15	-	36.77	8.62	35.16				

2.4-2.4835GHz_Zigbee

2440MHz_TX

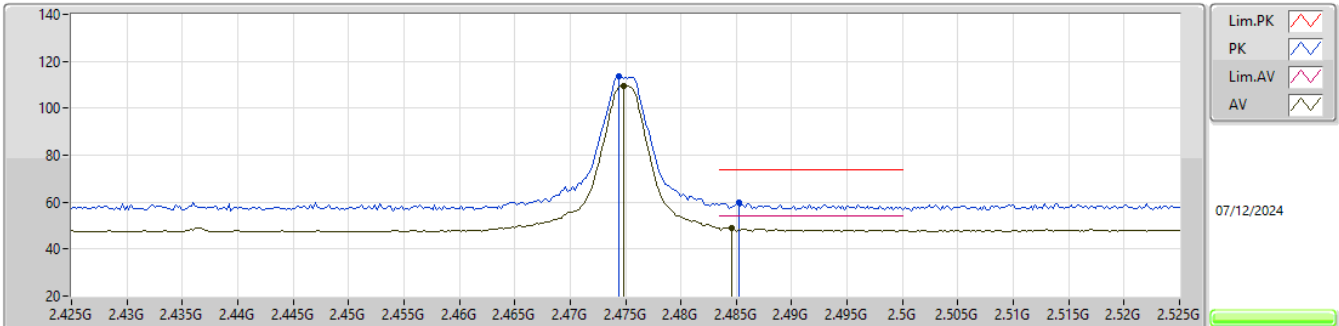


EUT_Y_1TX
Setting 20
03-V-K-5

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	4.87972G	51.44	74.00	-22.56	46.23	3	Horizontal	321	2.74	-	33.36	7.18	35.33				
AV	4.88268G	44.94	54.00	-9.06	39.72	3	Horizontal	321	2.74	-	33.37	7.18	35.33				
PK	7.31844G	54.21	74.00	-19.79	43.98	3	Horizontal	119	1.76	-	36.77	8.62	35.16				
AV	7.32168G	43.43	54.00	-10.57	33.18	3	Horizontal	119	1.76	-	36.79	8.62	35.16				

2.4-2.4835GHz_Zigbee

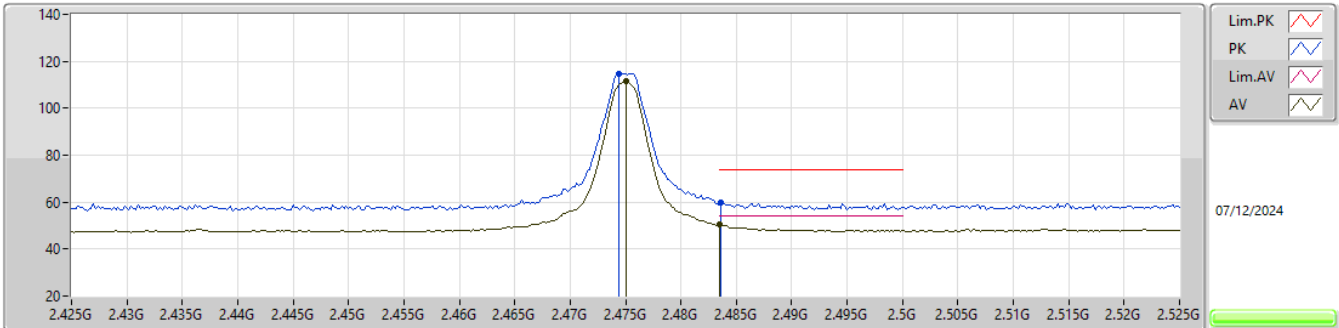
2475MHz_TX


EUT_Y_1TX
Setting 20
03-V-K-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	2.4744G	113.45	Inf	-Inf	80.25	3	Vertical	337	2.52	-	28.30	4.90	-				
AV	2.4748G	109.65	Inf	-Inf	76.45	3	Vertical	337	2.52	-	28.30	4.90	-				
PK	2.4852G	59.86	74.00	-14.14	26.60	3	Vertical	337	2.52	-	28.35	4.91	-				
AV	2.4846G	49.05	54.00	-4.95	15.79	3	Vertical	337	2.52	-	28.35	4.91	-				

2.4-2.4835GHz_Zigbee

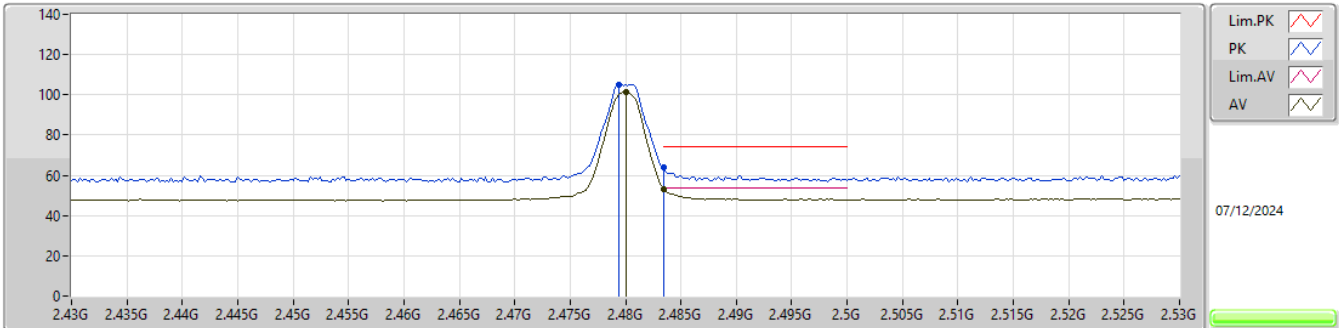
2475MHz_TX


EUT_Y_1TX
Setting 20
03-V-K-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	2.4744G	114.76	Inf	-Inf	81.56	3	Horizontal	340	2.06	-	28.30	4.90	-				
AV	2.475G	111.50	Inf	-Inf	78.30	3	Horizontal	340	2.06	-	28.30	4.90	-				
PK	2.4836G	59.77	74.00	-14.23	26.52	3	Horizontal	340	2.06	-	28.34	4.91	-				
AV	2.4835G	50.65	54.00	-3.35	17.40	3	Horizontal	340	2.06	-	28.34	4.91	-				

2.4-2.4835GHz_Zigbee

2480MHz_TX

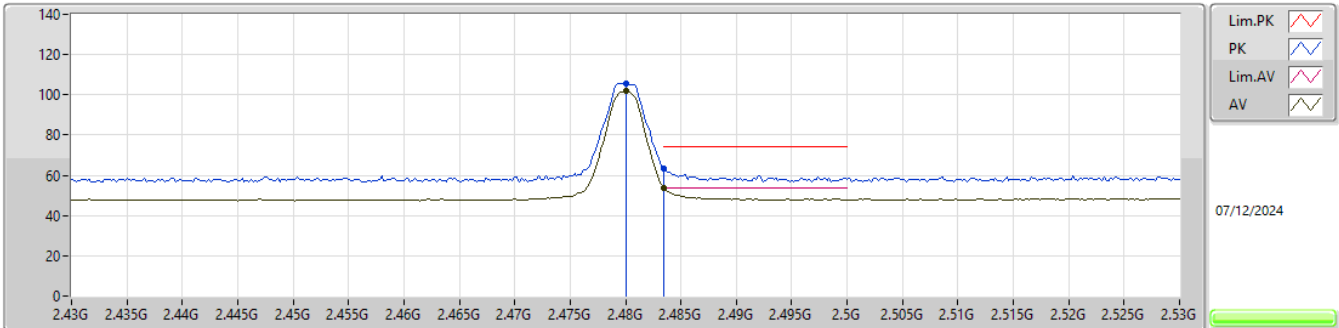


EUT_Y_1TX
Setting 12.5
03-V-K-5

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	2.4794G	104.81	Inf	-Inf	71.60	3	Vertical	337	2.28	-	28.30	4.91	-				
AV	2.48G	101.48	Inf	-Inf	68.27	3	Vertical	337	2.28	-	28.30	4.91	-				
PK	2.4835G	63.76	74.00	-10.24	30.51	3	Vertical	337	2.28	-	28.34	4.91	-				
AV	2.4835G	53.15	54.00	-0.85	19.90	3	Vertical	337	2.28	-	28.34	4.91	-				

2.4-2.4835GHz_Zigbee

2480MHz_TX

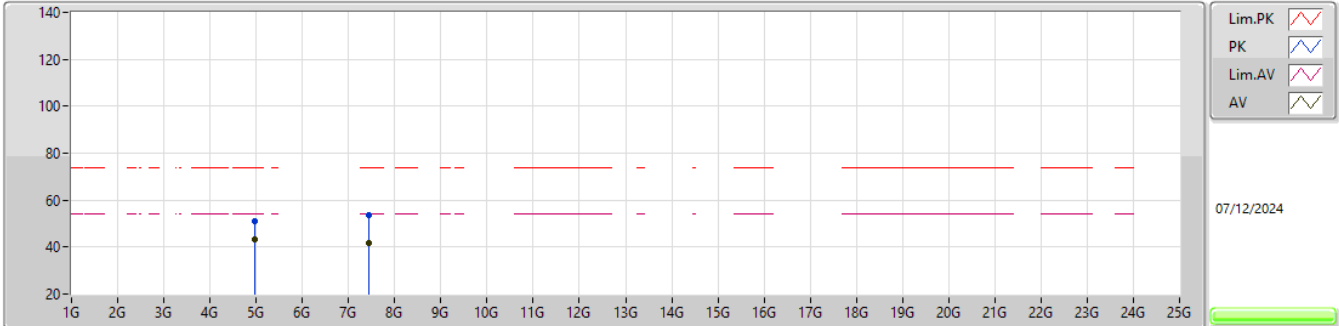


EUT_Y_1TX
Setting 12.5
03-V-K-5

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	2.48G	105.33	Inf	-Inf	72.12	3	Horizontal	338	2.07	-	28.30	4.91	-				
AV	2.48G	102.04	Inf	-Inf	68.83	3	Horizontal	338	2.07	-	28.30	4.91	-				
PK	2.4835G	63.43	74.00	-10.57	30.18	3	Horizontal	338	2.07	-	28.34	4.91	-				
AV	2.4835G	53.79	54.00	-0.21	20.54	3	Horizontal	338	2.07	-	28.34	4.91	-				

2.4-2.4835GHz_Zigbee

2480MHz_TX

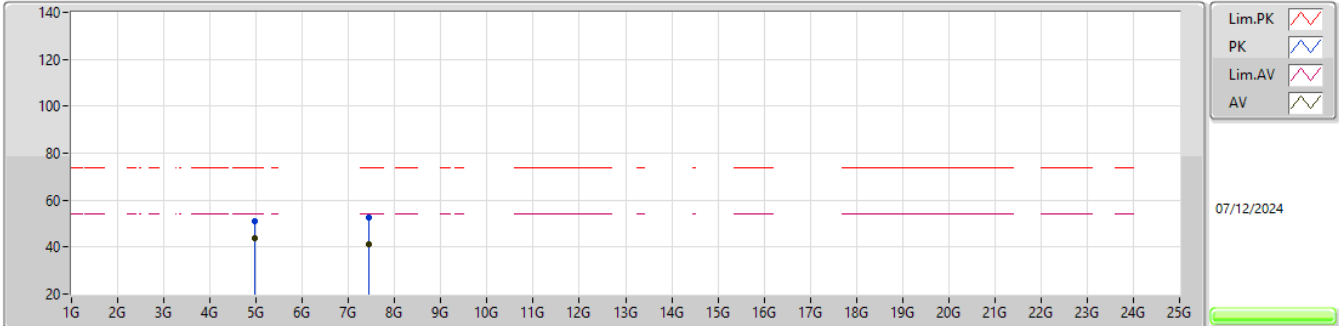


EUT_Y_1TX
Setting 12.5
03-V-K-5

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	4.96096G	51.17	74.00	-22.83	45.75	3	Vertical	322	2.24	-	33.60	7.15	35.33				
AV	4.96276G	43.37	54.00	-10.63	37.95	3	Vertical	322	2.24	-	33.60	7.15	35.33				
PK	7.44832G	53.57	74.00	-20.43	43.21	3	Vertical	88	2.90	-	36.80	8.73	35.17				
AV	7.44244G	41.58	54.00	-12.42	31.20	3	Vertical	88	2.90	-	36.82	8.73	35.17				

2.4-2.4835GHz_Zigbee

2480MHz_TX



EUT_Y_1TX
Setting 12.5
03-V-K-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	4.9588G	50.93	74.00	-23.07	45.51	3	Horizontal	315	2.65	-	33.60	7.15	35.33				
AV	4.96276G	43.66	54.00	-10.34	38.24	3	Horizontal	315	2.65	-	33.60	7.15	35.33				
PK	7.43008G	52.56	74.00	-21.44	42.17	3	Horizontal	336	1.95	-	36.84	8.71	35.16				
AV	7.43184G	41.39	54.00	-12.61	31.00	3	Horizontal	336	1.95	-	36.84	8.71	35.16				