



RADIO TEST REPORT

FCC ID : TLZ-XM549
Equipment : IEEE 802.11 1X1 a/b/g/n/ac/ax Wireless LAN +
Bluetooth 5.3 + 802.15.4 Tri-radio 12 x 12 LGA Module
Brand Name : AzureWave
Model Name : AW-XM549 , AW-XM549-I , AW-XM553 , AW-XM553-I
Applicant : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei
City , Taiwan 231
Manufacturer : AzureWave Technologies, Inc.
8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei
City , Taiwan 231
Standard : 47 CFR FCC Part 15.247

The product was received on Dec. 16, 2023, and testing was started from Apr. 24, 2023 and completed on Sep. 13, 2023. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

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

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

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



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Photographs of EUT v01



History of this test report

Report No.	Version	Description	Issued Date
FR200715AE	01	Initial issue of report	Oct. 12, 2023



Summary of Test Result

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

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/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: Viola Huang**



1 General Description

1.1 Information

1.1.1 RF General Information

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

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	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.	Port	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	1	MAG. LAYERS	MSA-4008-25GC1-A2	PIFA Antenna	I-PEX	Note1
2	1	CEL	0032-02-07-00-001	PIFA Antenna	I-PEX	

Note1:

Ant.	Gain (dBi)	
	WLAN 2.4GHz/Bluetooth/Thread	WLAN 5GHz
1	2.98	5.16
2	1.30	4.30

Note 2: The above information was declared by manufacturer.

Note 3: The EUT has two antennas. Only the highest gain antenna was selected to test and record in this report.

Thus, Antenna 1 was selected to perform the test.

<For WLAN 2.4GHz function>

For IEEE 802.11b/g/n/VHT/ax (1TX/1RX):

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

<For WLAN 5GHz function>

For IEEE 802.11a/n/ac/ax (1TX/1RX):

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

<For Bluetooth function> (1TX/1RX):

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

<For Thread function> (1TX/1RX):

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

1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.15.4	1	0	n/a (DC>=0.98)	n/a (DC>=0.98)

Note:

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

1.1.4 EUT Operational Condition

EUT Power Type	From host system		
Beamforming Function	<input type="checkbox"/> With beamforming	<input checked="" type="checkbox"/> Without beamforming	
Function	<input checked="" type="checkbox"/> Point-to-multipoint	<input type="checkbox"/> Point-to-point	
Test Software Version	DutApiMimoApApp(1.0.0.32)		

Note: The above information was declared by manufacturer.



1.1.5 Table for Multiple Listing

The model names in the following table are all refer to the identical product.

Model Name	Description
AW-XM549	All the models are identical, the difference model served as marketing strategy.
AW-XM549-I	
AW-XM553	
AW-XM553-I	

Note 1: From the above models, model: AW-XM549 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.

1.1.6 Table for EUT Combination

EUT	Hardware Version	Description
1	01H	The difference between 01H and 02H is the layout of DC-DC power. All RF layouts are the same.
2	02H	

Note: The above information was declared by manufacturer.



1.2 Applicable Standards

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

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

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

- ◆ FCC KDB 558074 D01 v05r02
- ◆ FCC KDB 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	TH01-CB	Sean Ku	22.4~22.6 / 52~59	Apr. 25, 2023
Radiated below 1GHz	03CH01-CB	Black Lu	22.7~24 / 57~61	Jun. 16, 2023 ~ Aug. 16, 2023
Radiated above 1GHz	03CH03-CB	Roy Mai	22.7~24 / 57~61	Apr. 24, 2023~Apr. 25, 2023
AC Conduction	CO01-CB	Ryan Huang	22~23 / 50~51	Sep. 01, 2023~Sep. 13, 2023

1.4 Measurement Uncertainty

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

For test date before Jun. 01, 2023

Test Items	Uncertainty	Remark
Radiated Emission (1GHz ~ 18GHz)	5.2 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.7 dB	Confidence levels of 95%
Conducted Emission	3.2 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.2 dB	Confidence levels of 95%
Bandwidth Measurement	2.0 %	Confidence levels of 95%



For test date after May 31, 2023

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.1 dB	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
802.15.4_5MHz_Nss1_1TX	-
2405MHz	6
2440MHz	6
2480MHz	6

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 2 + WLAN 2.4GHz + Bluetooth
2	EUT 2 + WLAN 5GHz + Bluetooth
3	EUT 2 + Thread
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT 1 + Thread
For operating mode 3 is the worst case and it was record in this test report.	

The Worst Case Mode for Following Conformance Tests	
Tests Item	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	Normal Link
1	EUT 2 in X axis + WLAN 2.4GHz + Bluetooth
2	EUT 2 in Y axis + WLAN 2.4GHz + Bluetooth
3	EUT 2 in Z axis + WLAN 2.4GHz + Bluetooth
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	EUT 2 in Z axis + WLAN 5GHz + Bluetooth
Mode 4 has been evaluated to be the worst case among Mode 1~4, thus measurement for Mode 5 will follow this same test mode.	
5	EUT 1 in Z axis + WLAN 5GHz + Bluetooth
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 6~7 will follow this same test mode.	
6	EUT 2 in Z axis + Thread
7	EUT 1 in Z axis + Thread
For operating mode 7 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX
	The EUT was performed at X axis, Y axis and Z axis position. The worst-case was listed below, thus the measurement will follow this same test configuration.
1	EUT 2 in Z axis

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

N/A



2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	EUT NB	ACER	N16Q1	N/A
B	Earphone	SHYARO CHI	MIC-04	N/A
C	Mouse	Logitech	M-U0026	N/A
D	Test Fixture	Azurewave	2460-I4	N/A
E	Client NB	DELL	E6430	N/A
F	Client	Azurewave	AW-XM549	N/A
G	Test Fixture	Azurewave	2460-I4	N/A

For Radiated (below 1GHz):

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Test Fixture	Azurewave	2460-I4	N/A
B	Notebook	DELL	E6230	N/A
C	Client	Azurewave	AW-XM549	N/A
D	Test Fixture	Azurewave	2460-I4	N/A
E	Notebook	DELL	E6230	N/A
F	Earphone	e-Power	S90W	N/A
G	Mouse	Logitech	M-U0026	N/A

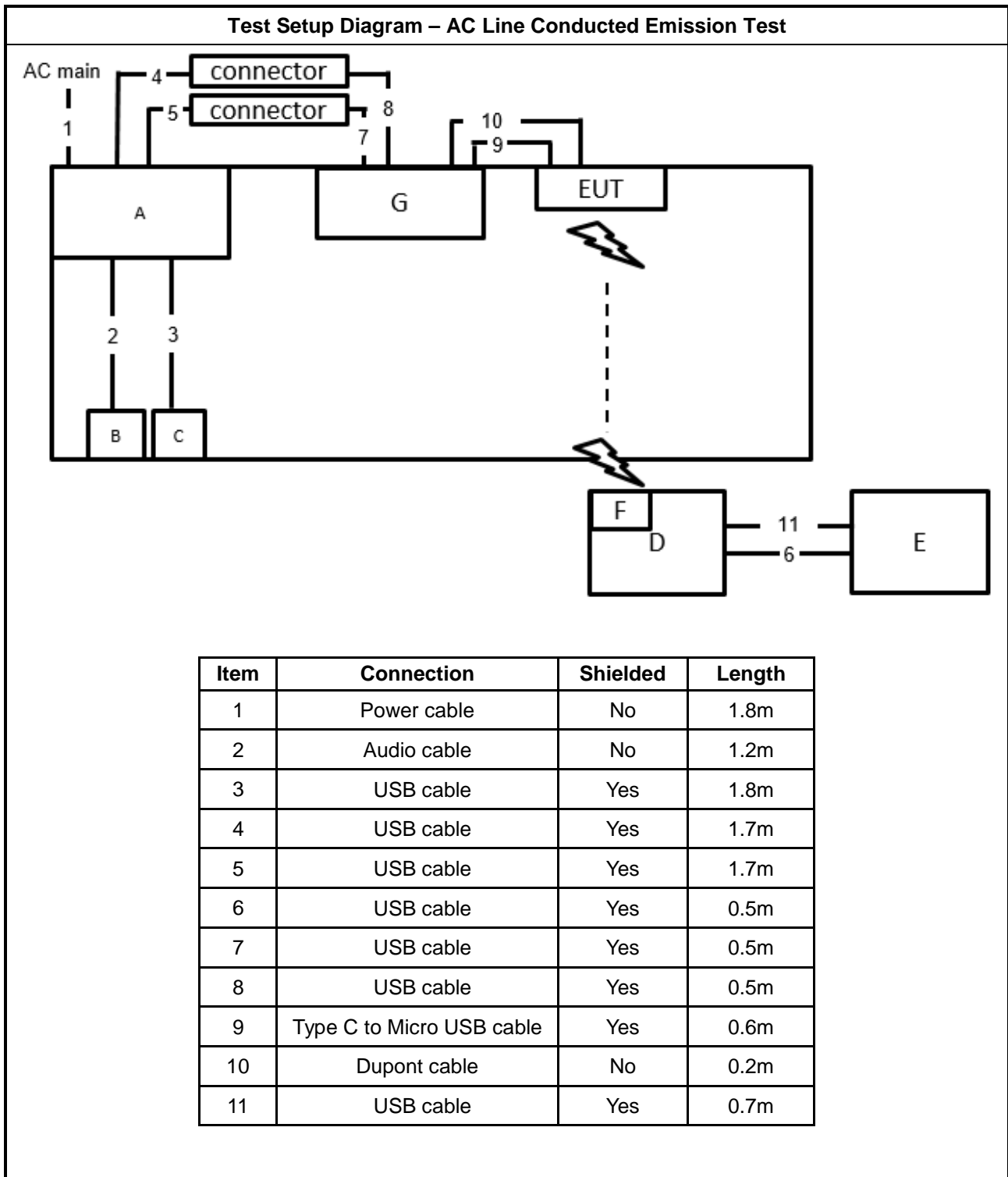
For Radiated (above 1GHz):

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Test Fixture	Azurewave	2460-I4	N/A
B	Notebook	DELL	E4300	N/A
C	Notebook	DELL	E4300	N/A

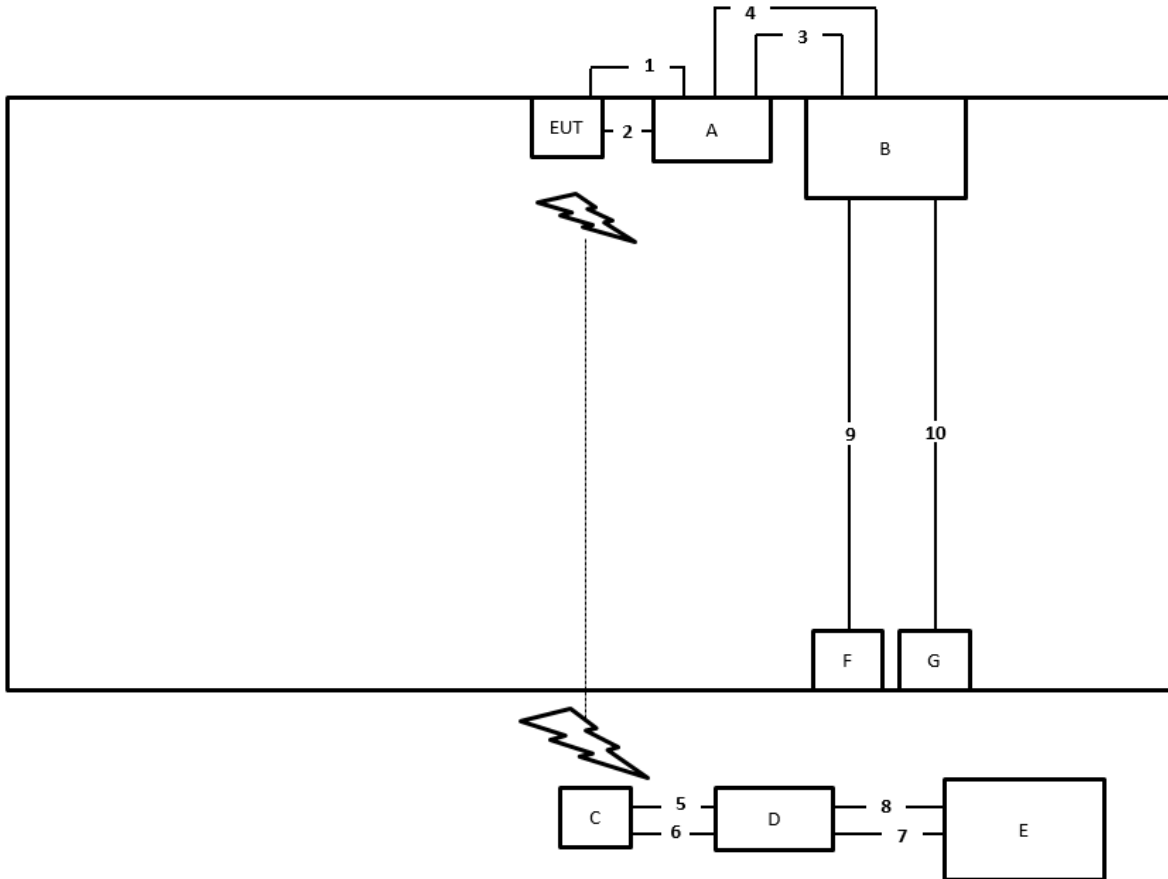
For RF Conducted:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	ACER	E4730	N/A
B	Notebook	DELL	E4300	N/A
C	Test Fixture	Azurewave	2460-I4	N/A

2.6 Test Setup Diagram

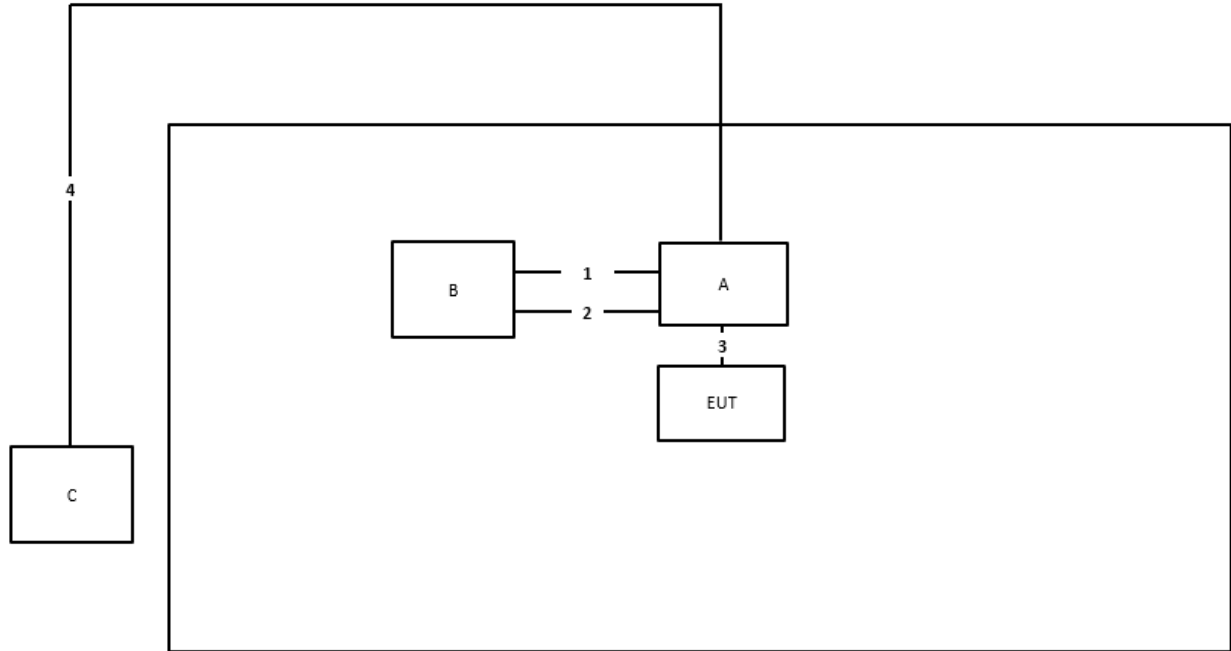


Test Setup Diagram - Radiated Test < 1GHz



Item	Connection	Shielded	Length
1	USB to Type C cable	Yes	1m
2	Console cable*7	No	0.13m
3	USB to Type C cable	Yes	1m
4	Micro USB to Micro cable	Yes	0.12m
5	USB to Type C cable	Yes	1m
6	Console cable*7	No	0.13m
7	USB to Type C cable	Yes	1m
8	Micro USB to Micro cable	Yes	0.12m
9	Earphone	No	1m
10	Mouse	Yes	1m

Test Setup Diagram - Radiated Test > 1GHz



Item	Connection	Shielded	Length
1	USB cable	No	1m
2	Console cable	No	0.52m
3	USB cable	No	0.52m
4	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.

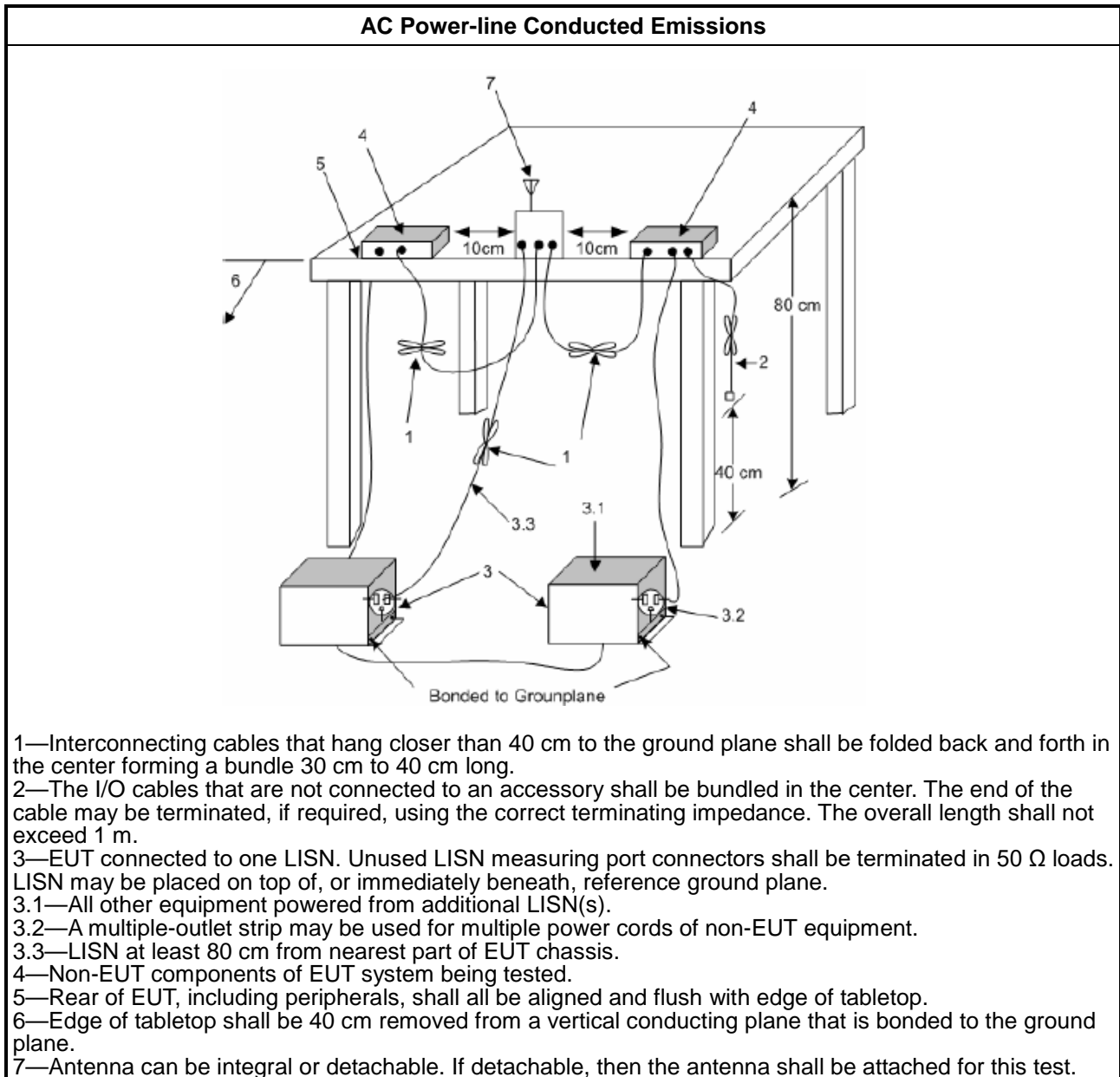
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

Test Method
<input checked="" type="checkbox"/> Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.

3.1.4 Test Setup



3.1.5 Measurement Results Calculation

The measured Level is calculated using:

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

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 DTS Bandwidth

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit
Systems using digital modulation techniques:
<ul style="list-style-type: none"> ▪ 6 dB bandwidth \geq 500 kHz.

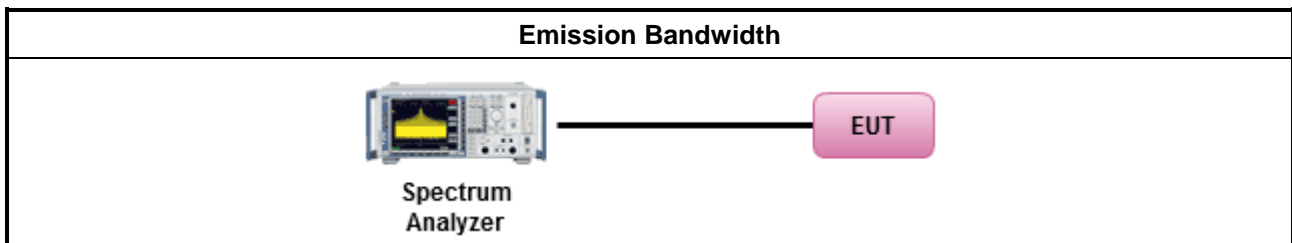
3.2.2 Measuring Instruments

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

3.2.3 Test Procedures

Test Method
<ul style="list-style-type: none"> ▪ For the emission bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.
<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.
<input type="checkbox"/> 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	
	<ul style="list-style-type: none"> ▪ If $G_{TX} \leq 6$ dBi, then $P_{Out} \leq 30$ dBm (1 W)
	<ul style="list-style-type: none"> ▪ Point-to-multipoint systems (P2M): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)$ dBm
	<ul style="list-style-type: none"> ▪ Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> ▪ Smart antenna system (SAS):
	<ul style="list-style-type: none"> - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Overlap beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3$ dBm
	<ul style="list-style-type: none"> - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 - (G_{TX} - 6)/3 + 8$ dB dBm
<p>P_{Out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.</p>	

3.3.2 Measuring Instruments

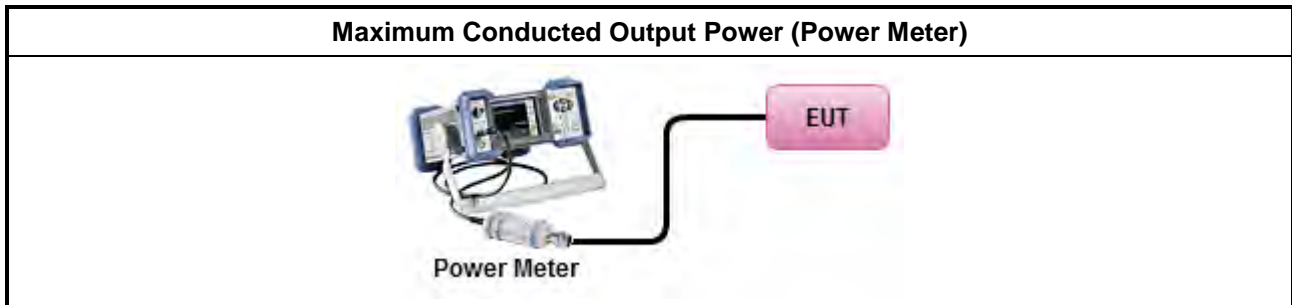
Refer a test equipment and calibration data table in this test report.



3.3.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ Maximum Peak Conducted Output Power 	
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).
<ul style="list-style-type: none"> ▪ Maximum Conducted Output Power 	
[duty cycle ≥ 98% or external video / power trigger]	
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.
<input type="checkbox"/>	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	
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)
<input type="checkbox"/>	Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3
<input type="checkbox"/>	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)	
<input type="checkbox"/>	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).
<input checked="" type="checkbox"/>	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).
<ul style="list-style-type: none"> ▪ For conducted measurement. 	
<ul style="list-style-type: none"> ▪ 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. 	
<ul style="list-style-type: none"> ▪ 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
<ul style="list-style-type: none"> Power Spectral Density (PSD) \leq 8 dBm/3kHz

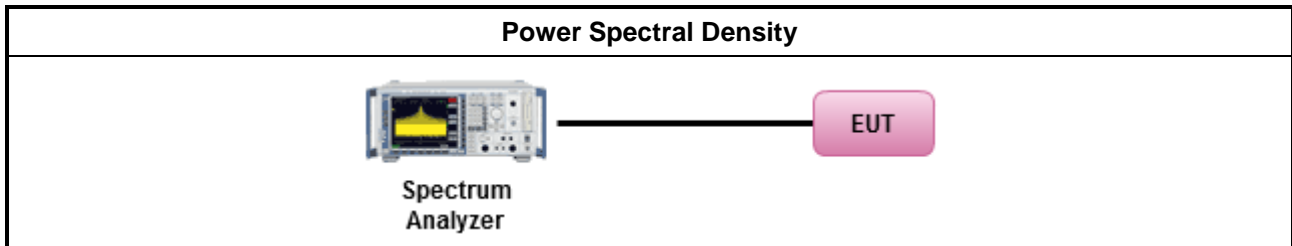
3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

Test Method			
<ul style="list-style-type: none"> 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). 			
<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.			
<ul style="list-style-type: none"> For conducted measurement. <ul style="list-style-type: none"> If The EUT supports multiple transmit chains using options given below: <table border="1"> <tbody> <tr> <td> <input type="checkbox"/> 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. </td> </tr> <tr> <td> <input type="checkbox"/> 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, </td> </tr> <tr> <td> <input type="checkbox"/> 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. </td> </tr> </tbody> </table> 	<input type="checkbox"/> 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.	<input type="checkbox"/> 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,	<input type="checkbox"/> 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.
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<input type="checkbox"/> 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.

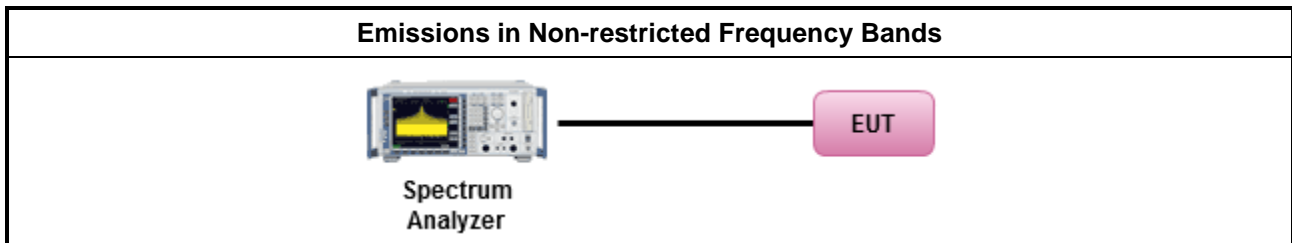
3.5.2 Measuring Instruments

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

3.5.3 Test Procedures

Test Method
<ul style="list-style-type: none"> 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

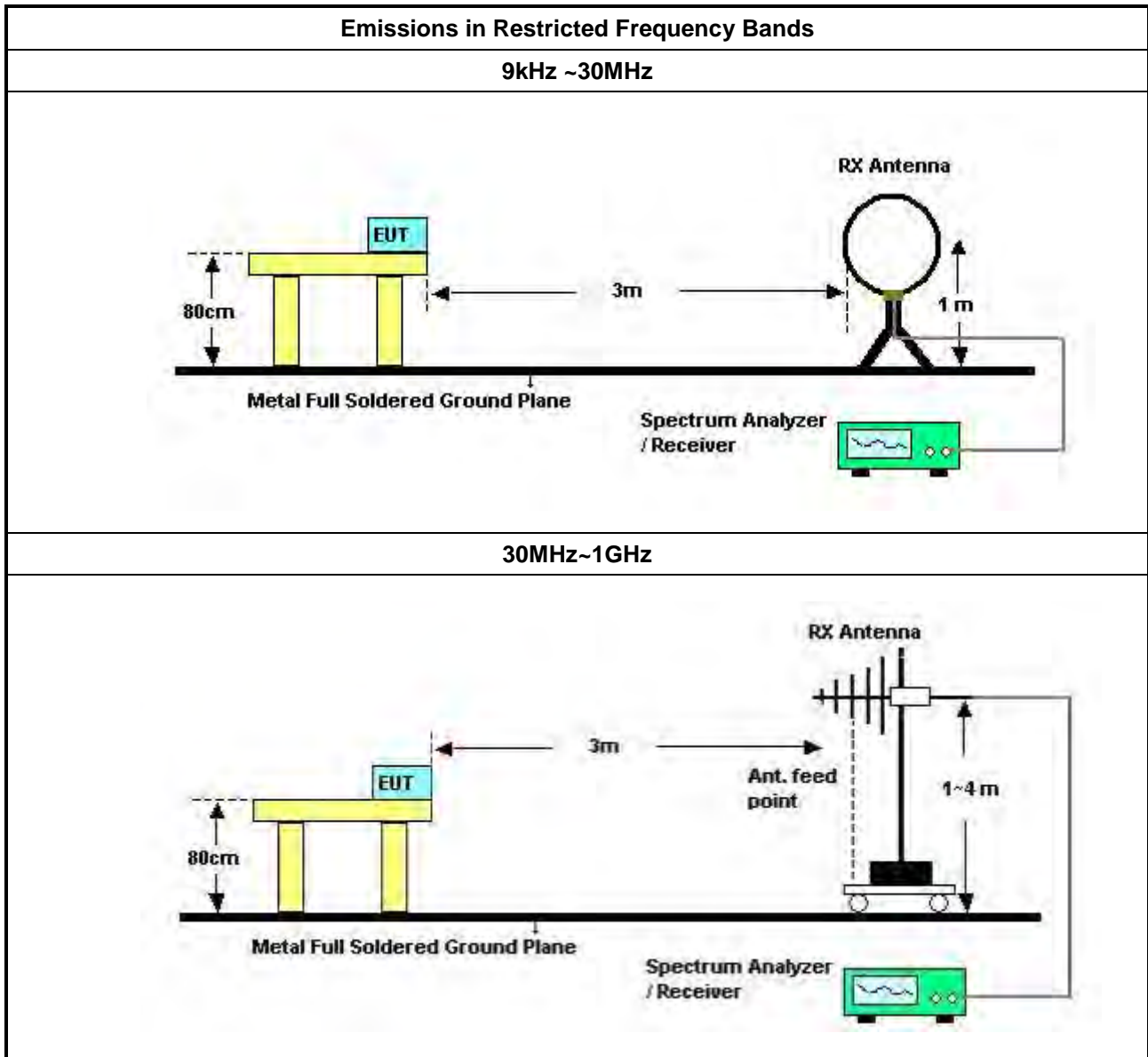
Refer a test equipment and calibration data table in this test report.

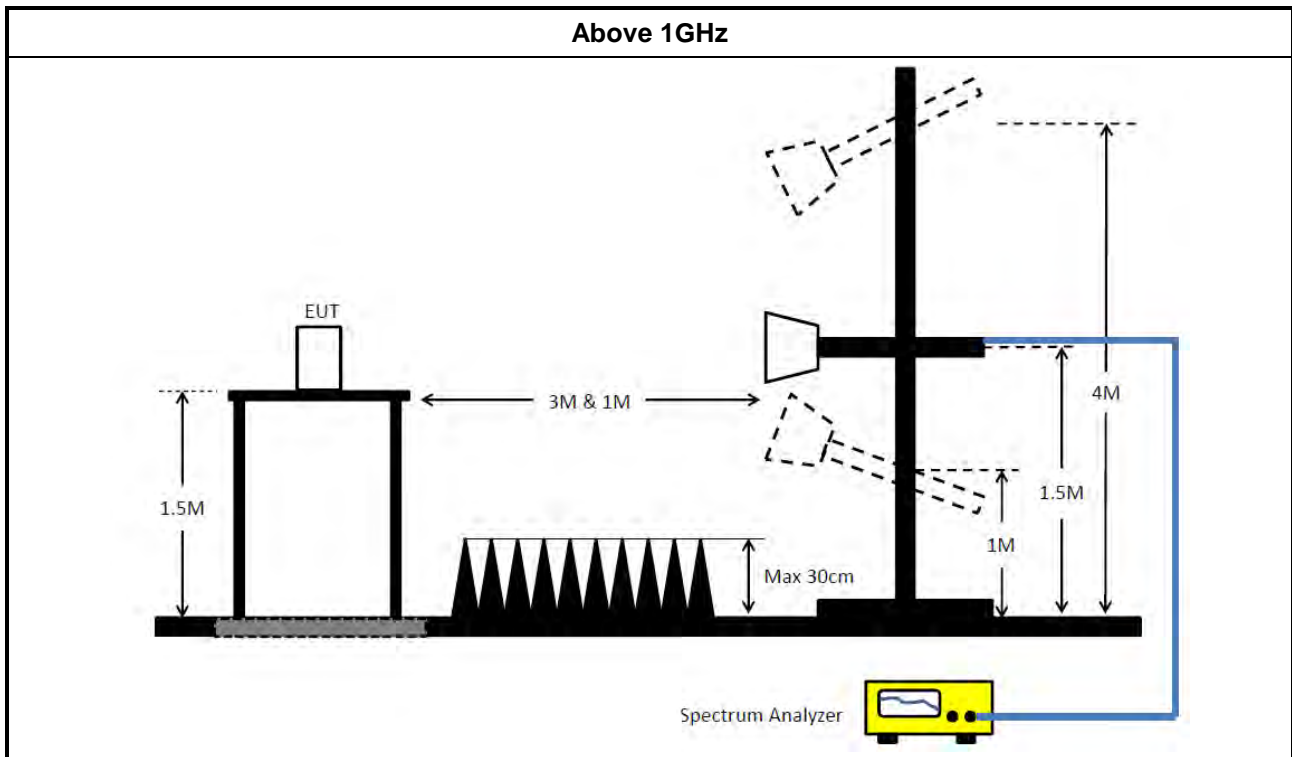


3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> ▪ The average emission levels shall be measured in [duty cycle \geq 98 or duty factor]. 	
<ul style="list-style-type: none"> ▪ 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. 	
<ul style="list-style-type: none"> ▪ For the transmitter unwanted emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> ▪ Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands.
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle \geq 98%).
	<input type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).
	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW \geq 1/T).
	<input type="checkbox"/> Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW \geq 1/T, where T is pulse time.
	<input type="checkbox"/> Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.
	<input checked="" type="checkbox"/> Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.
<ul style="list-style-type: none"> ▪ For the transmitter band-edge emissions shall be measured using following options below: 	
	<ul style="list-style-type: none"> ▪ 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.
	<ul style="list-style-type: none"> ▪ Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements.
	<ul style="list-style-type: none"> ▪ 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).
	<ul style="list-style-type: none"> ▪ 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
	<ul style="list-style-type: none"> ▪ 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	Feb. 20, 2023	Feb. 19, 2024	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 16, 2023	Feb. 15, 2024	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 27, 2023	Apr. 26, 2024	Conduction (CO01-CB)
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 09, 2023	Feb. 08, 2024	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 18, 2022	Oct. 17, 2023	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 23, 2023	Mar. 22, 2024	Radiation (03CH01-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH01-CB	30 MHz ~ 1 GHz	Jan. 16, 2023	Jan. 15, 2024	Radiation (03CH01-CB)
BILOG ANTENNA with 6dB Attenuator	TESEQ & EMCI	CBL6112D N-6-06	37880 & AT-N0609	20MHz ~ 2GHz	Feb. 19, 2023	Feb. 18, 2024	Radiation (03CH01-CB)
Pre-Amplifier	SGH	SGH0301	20230109-2	10M~1GHz	Jan. 13, 2023	Jan. 12, 2024	Radiation (03CH01-CB)
Signal Analyzer	R&S	FSV3044	101437	10kHz ~ 44GHz	Nov. 29, 2022	Nov. 29, 2023	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 17, 2022	Jun. 16, 2023	Radiation (03CH01-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 13, 2023	Jun. 12, 2024	Radiation (03CH01-CB)
RF Cable-low	Woken	RG402	Low Cable-16+17	30 MHz ~ 1 GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH01-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH03-CB	1GHz ~18GHz 3m	May 05, 2022	May 04, 2023	Radiation (03CH03-CB)
Horn Antenna	ETS-Lindgren	3115	6821	750MHz~18GHz	Jan. 21, 2022	Jan. 20, 2023	Radiation (03CH03-CB)
Horn Antenna	ETS-LINDGREN	3115	00075790	750MHz ~ 18GHz	Nov. 04, 2022	Nov. 03, 2023	Radiation (03CH03-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2022	Aug. 21, 2023	Radiation (03CH03-CB)
Pre-Amplifier	Agilent	8449B	3008A02097	1GHz ~ 26.5GHz	Jul. 01, 2022	Jun. 30, 2023	Radiation (03CH03-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 16, 2022	Nov. 15, 2023	Radiation (03CH03-CB)
Spectrum Analyzer	R&S	FSP40	100019	9kHz ~ 40GHz	Jun. 10, 2022	Jun. 09, 2023	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-20+29	1GHz ~ 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH03-CB)
RF Cable-high	Woken	RG402	High Cable-29	1GHz ~ 18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH03-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH03-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH03-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 27, 2022	May 26, 2023	Conducted (TH01-CB)
Switch	SPTCB	SP-SWI	SWI-01	1 GHz –26.5 GHz	Oct. 04, 2022	Oct. 03, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-08	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 21, 2022	Feb. 20, 2023	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 21, 2022	Feb. 20, 2023	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

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

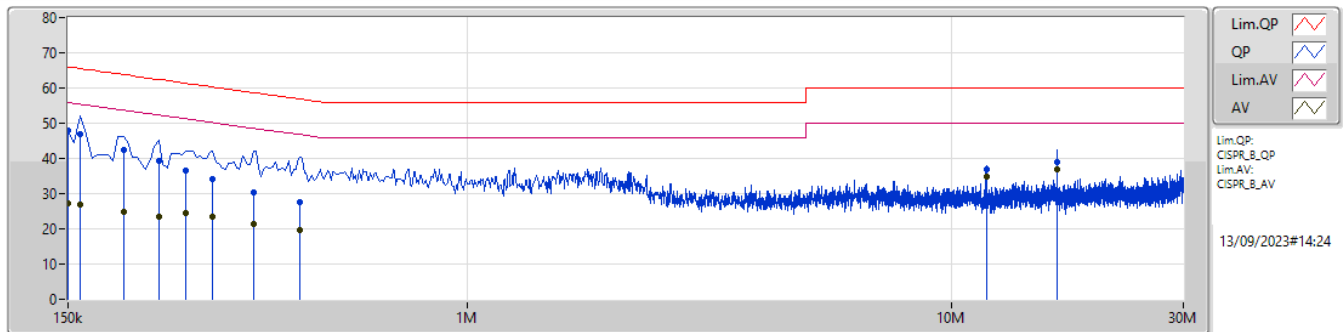
N.C.R. means Non-Calibration required.



Summary

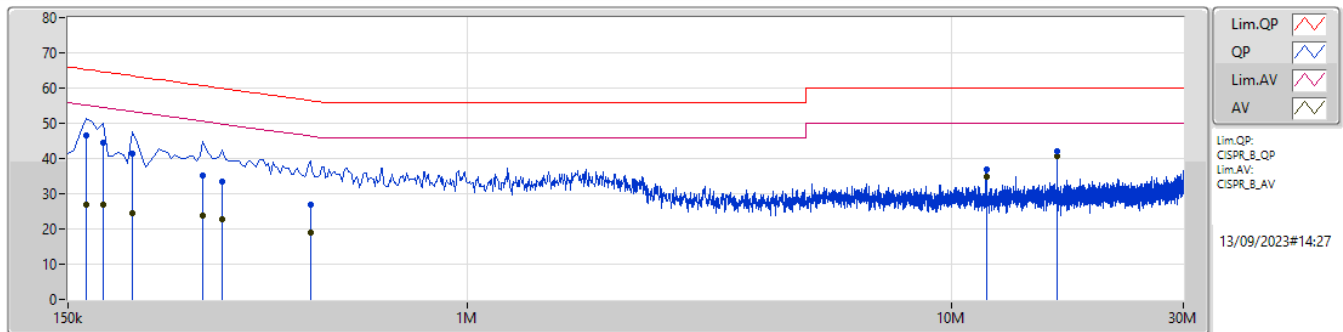
Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Condition
Mode 3	Pass	AV	16.463M	40.53	50.00	-9.47	Neutral

Mode 3



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	150k	48.00	66.00	-18.00	10.00	Line	-	38.00	0.09	0.04	9.87
AV	150k	27.10	56.00	-28.90	10.00	Line	-	17.10	0.09	0.04	9.87
QP	159k	46.84	65.52	-18.68	10.00	Line	-	36.84	0.09	0.04	9.87
AV	159k	26.89	55.52	-28.63	10.00	Line	-	16.89	0.09	0.04	9.87
QP	195k	42.35	63.82	-21.47	9.98	Line	-	32.37	0.08	0.04	9.86
AV	195k	24.92	53.82	-28.90	9.98	Line	-	14.94	0.08	0.04	9.86
QP	231k	39.17	62.41	-23.24	9.99	Line	-	29.18	0.08	0.04	9.87
AV	231k	23.45	52.41	-28.96	9.99	Line	-	13.46	0.08	0.04	9.87
QP	262.5k	36.53	61.35	-24.82	10.01	Line	-	26.52	0.08	0.05	9.88
AV	262.5k	24.59	51.35	-26.76	10.01	Line	-	14.58	0.08	0.05	9.88
QP	298.5k	34.18	60.28	-26.10	10.02	Line	-	24.16	0.09	0.05	9.88
AV	298.5k	23.28	50.28	-27.00	10.02	Line	-	13.26	0.09	0.05	9.88
QP	361.5k	30.49	58.70	-28.21	10.04	Line	-	20.45	0.09	0.06	9.89
AV	361.5k	21.26	48.70	-27.44	10.04	Line	-	11.22	0.09	0.06	9.89
QP	451.5k	27.55	56.84	-29.29	10.05	Line	-	17.50	0.09	0.06	9.90
AV	451.5k	19.58	46.84	-27.26	10.05	Line	-	9.53	0.09	0.06	9.90
QP	11.76M	36.79	60.00	-23.21	10.38	Line	-	26.41	0.26	0.16	9.96
AV	11.76M	34.94	50.00	-15.06	10.38	Line	-	24.56	0.26	0.16	9.96
QP	16.467M	38.83	60.00	-21.17	10.47	Line	-	28.36	0.29	0.19	9.99
AV	16.467M	36.92	50.00	-13.08	10.47	Line	"Worst"	26.45	0.29	0.19	9.99

Mode 3



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)
QP	163.5k	46.38	65.27	-18.89	9.98	Neutral	-	36.40	0.07	0.04	9.87
AV	163.5k	26.91	55.27	-28.36	9.98	Neutral	-	16.93	0.07	0.04	9.87
QP	177k	44.42	64.62	-20.20	9.98	Neutral	-	34.44	0.07	0.04	9.87
AV	177k	26.81	54.62	-27.81	9.98	Neutral	-	16.83	0.07	0.04	9.87
QP	204k	41.51	63.44	-21.93	9.97	Neutral	-	31.54	0.07	0.04	9.86
AV	204k	24.44	53.44	-29.00	9.97	Neutral	-	14.47	0.07	0.04	9.86
QP	285k	35.16	60.67	-25.51	10.00	Neutral	-	25.16	0.07	0.05	9.88
AV	285k	23.86	50.67	-26.81	10.00	Neutral	-	13.86	0.07	0.05	9.88
QP	312k	33.57	59.92	-26.35	10.01	Neutral	-	23.56	0.07	0.05	9.89
AV	312k	22.75	49.92	-27.17	10.01	Neutral	-	12.74	0.07	0.05	9.89
QP	474k	26.77	56.44	-29.67	10.03	Neutral	-	16.74	0.07	0.06	9.90
AV	474k	19.11	46.44	-27.33	10.03	Neutral	-	9.08	0.07	0.06	9.90
QP	11.76M	36.79	60.00	-23.21	10.36	Neutral	-	26.43	0.24	0.16	9.96
AV	11.76M	34.93	50.00	-15.07	10.36	Neutral	-	24.57	0.24	0.16	9.96
QP	16.463M	42.12	60.00	-17.88	10.45	Neutral	-	31.67	0.27	0.19	9.99
AV	16.463M	40.53	50.00	-9.47	10.45	Neutral	"Worst"	30.08	0.27	0.19	9.99



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_5MHz_Nss1_1TX	1.619M	2.398M	2M40G1D	1.588M	2.239M

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_5MHz_Nss1_1TX	-	-	-	-
2405MHz	Pass	500k	1.619M	2.394M
2440MHz	Pass	500k	1.613M	2.398M
2480MHz	Pass	500k	1.588M	2.239M

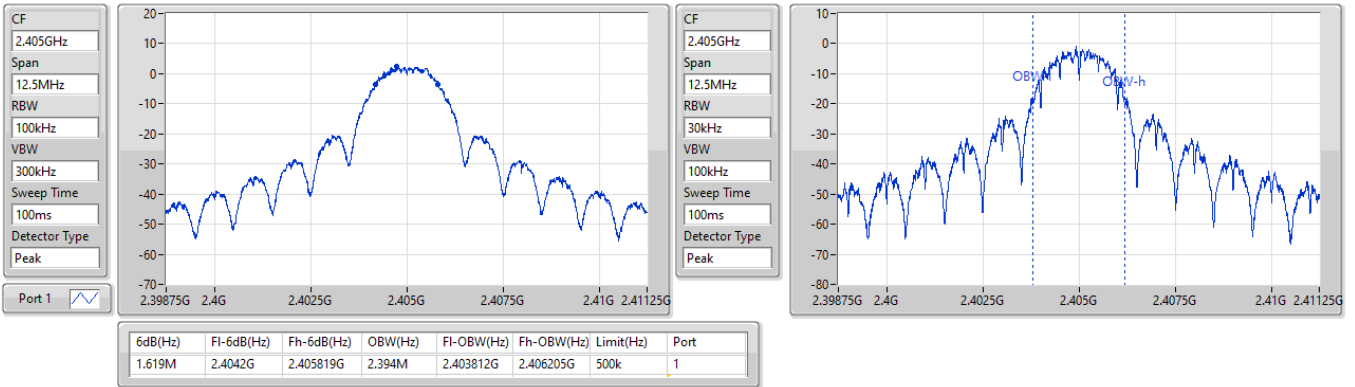
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

EBW

2405MHz

25/04/2023

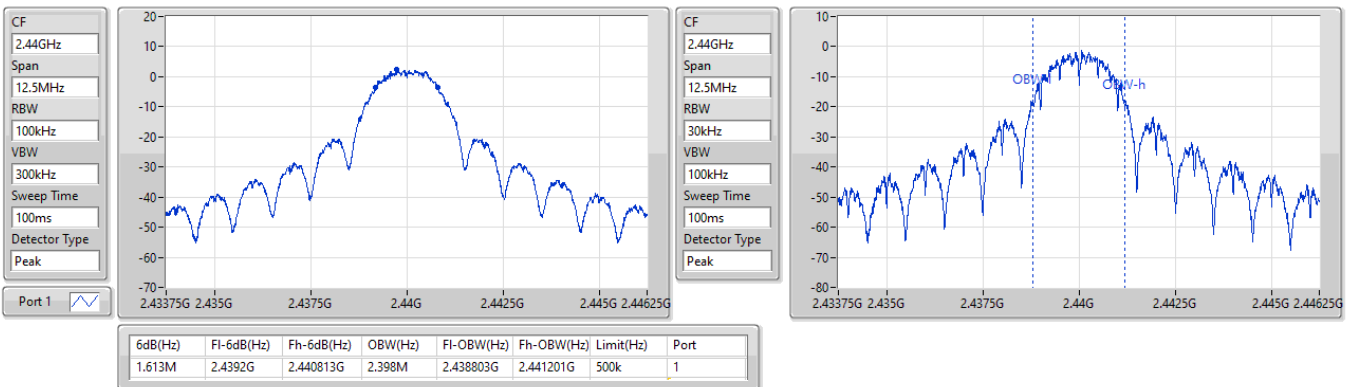


2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

EBW

2440MHz

25/04/2023

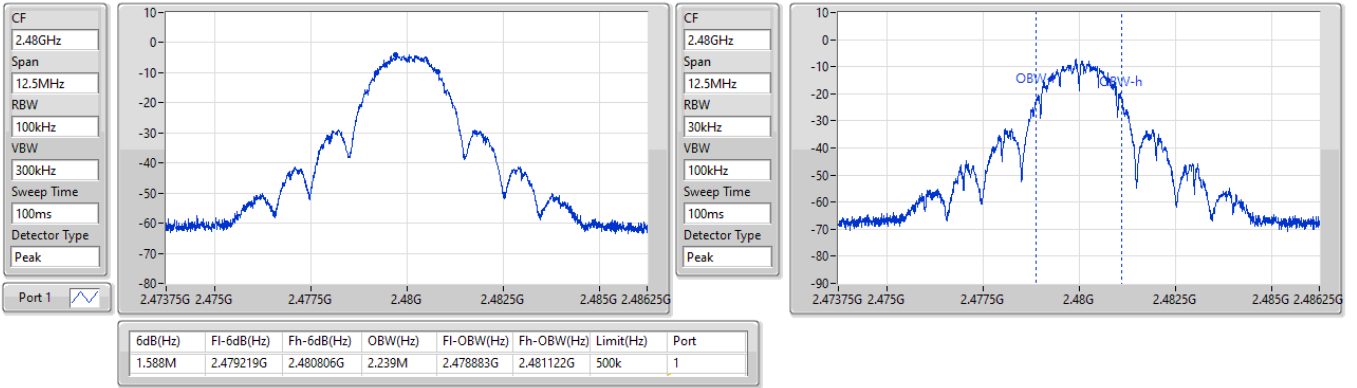


2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

EBW

2480MHz

25/04/2023





Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.15.4_5MHz_Nss1_1TX	6.53	0.00450



Result

Mode	Result	DG (dBi)	Port 1 (dBm)	Total Power (dBm)	Power Limit (dBm)
802.15.4_5MHz_Nss1_1TX	-	-	-	-	-
2405MHz	Pass	2.98	6.53	6.53	30.00
2440MHz	Pass	2.98	6.36	6.36	30.00
2480MHz	Pass	2.98	-0.08	-0.08	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
802.15.4_5MHz_Nss1_1TX	-9.47

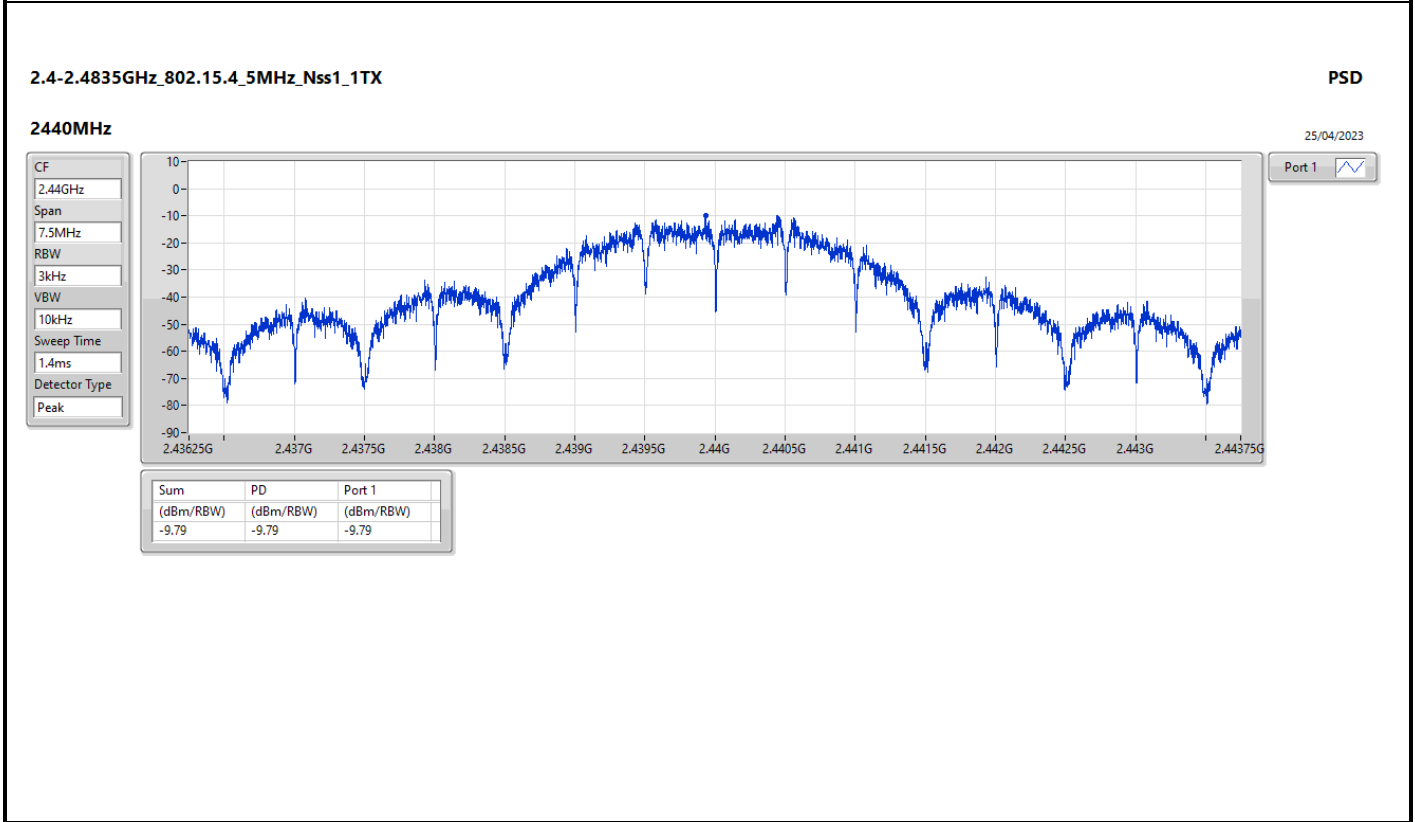
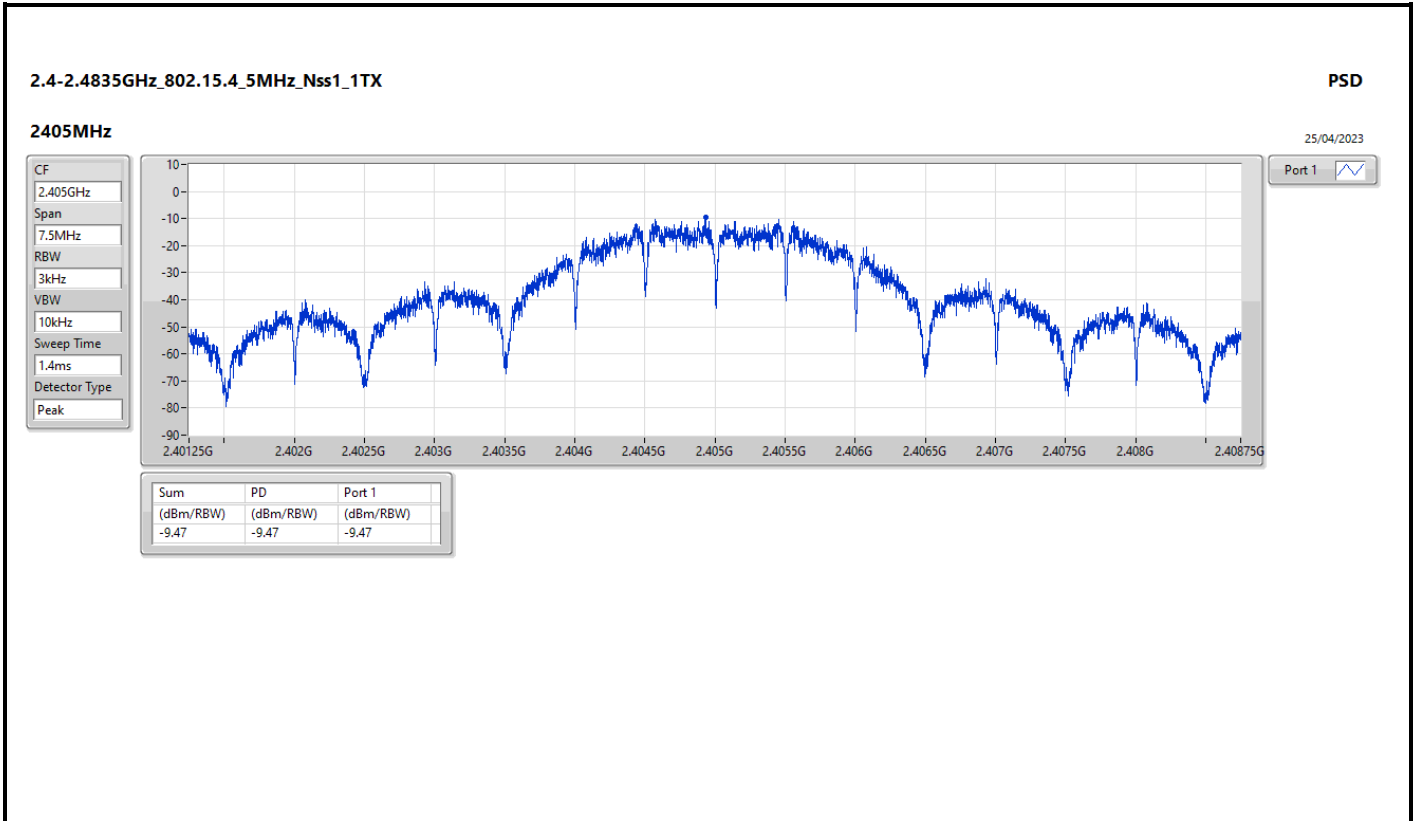
RBW = 3kHz;

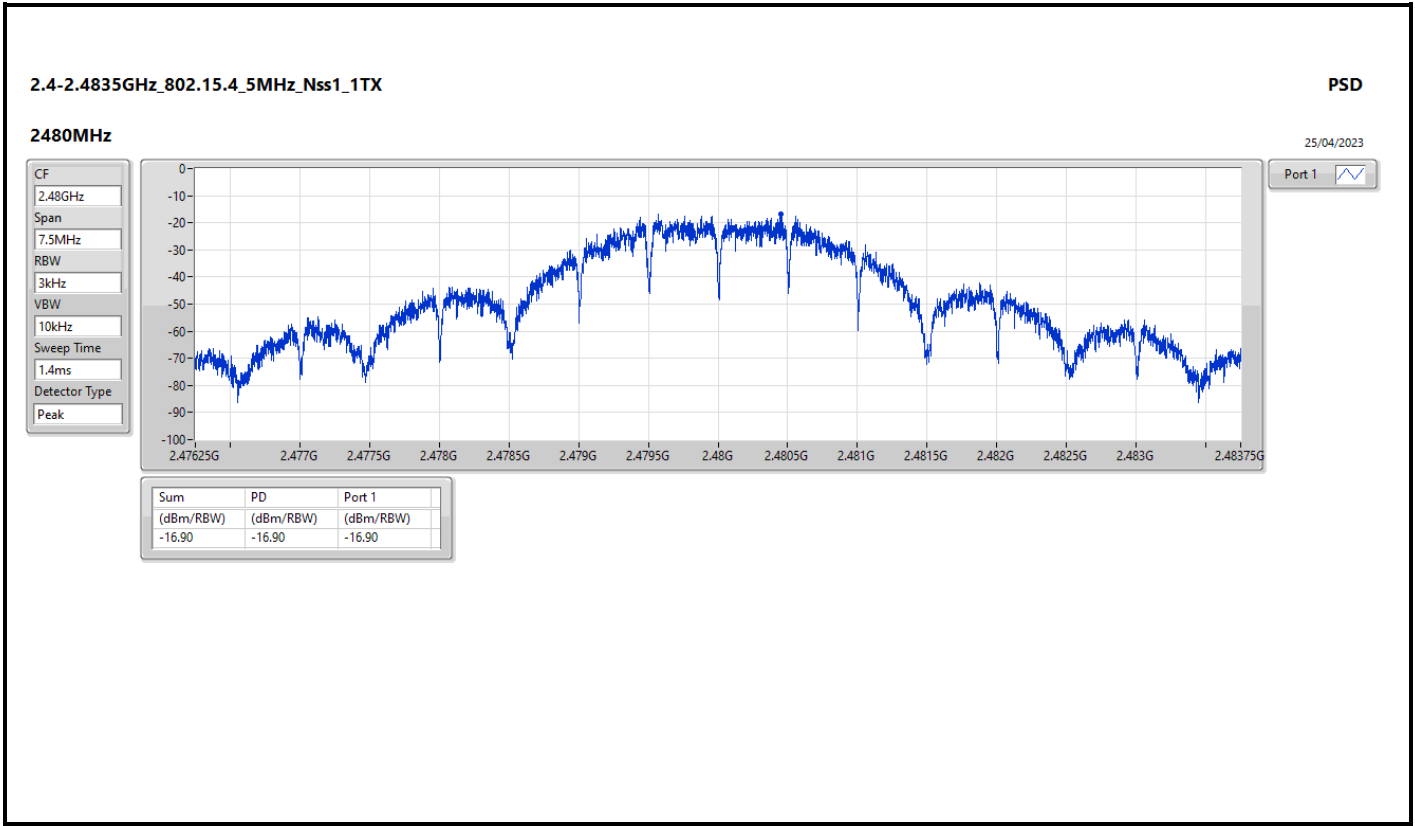


Result

Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.15.4_5MHz_Nss1_1TX	-	-	-	-	-
2405MHz	Pass	2.98	-9.47	-9.47	8.00
2440MHz	Pass	2.98	-9.79	-9.79	8.00
2480MHz	Pass	2.98	-16.90	-16.90	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;







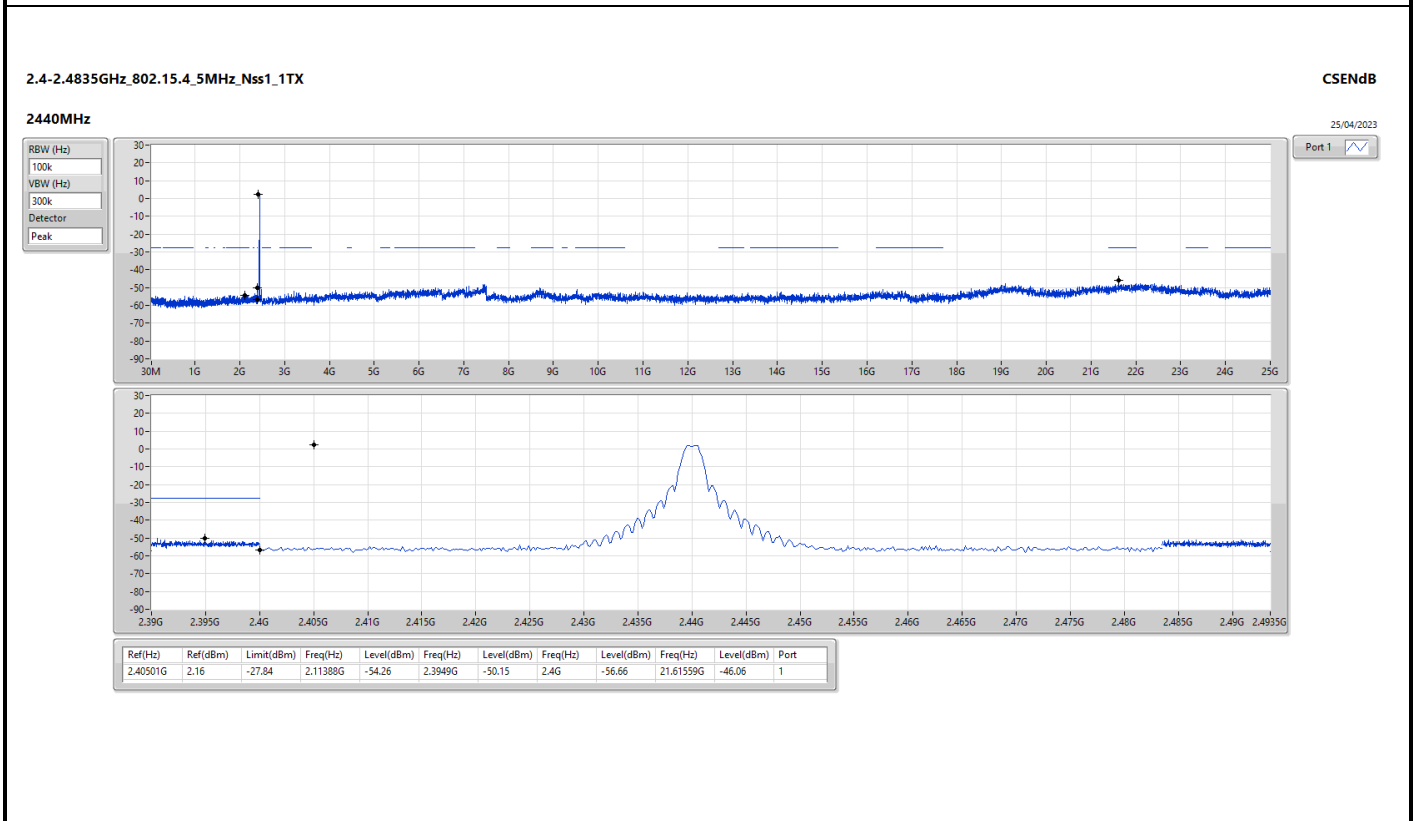
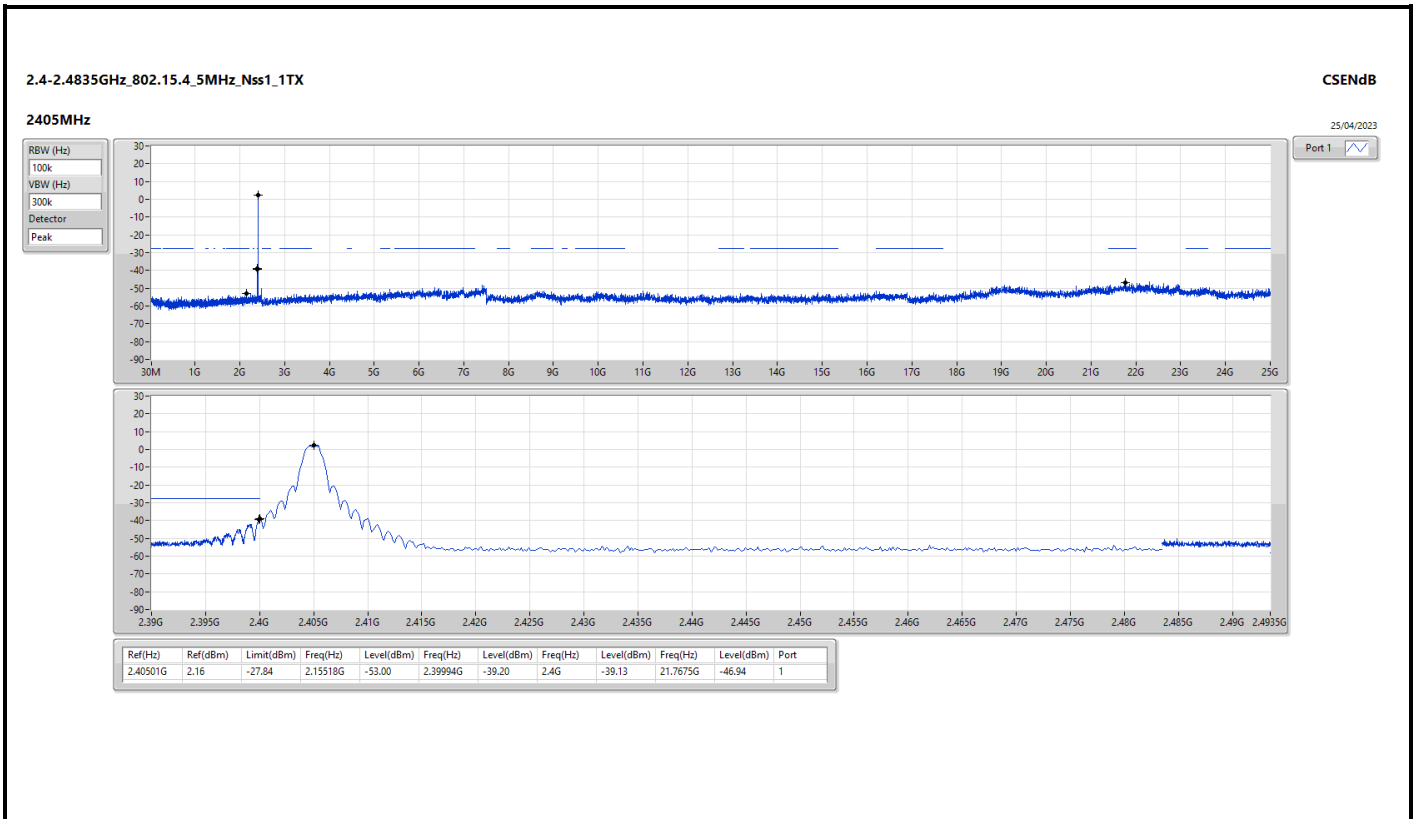
Summary

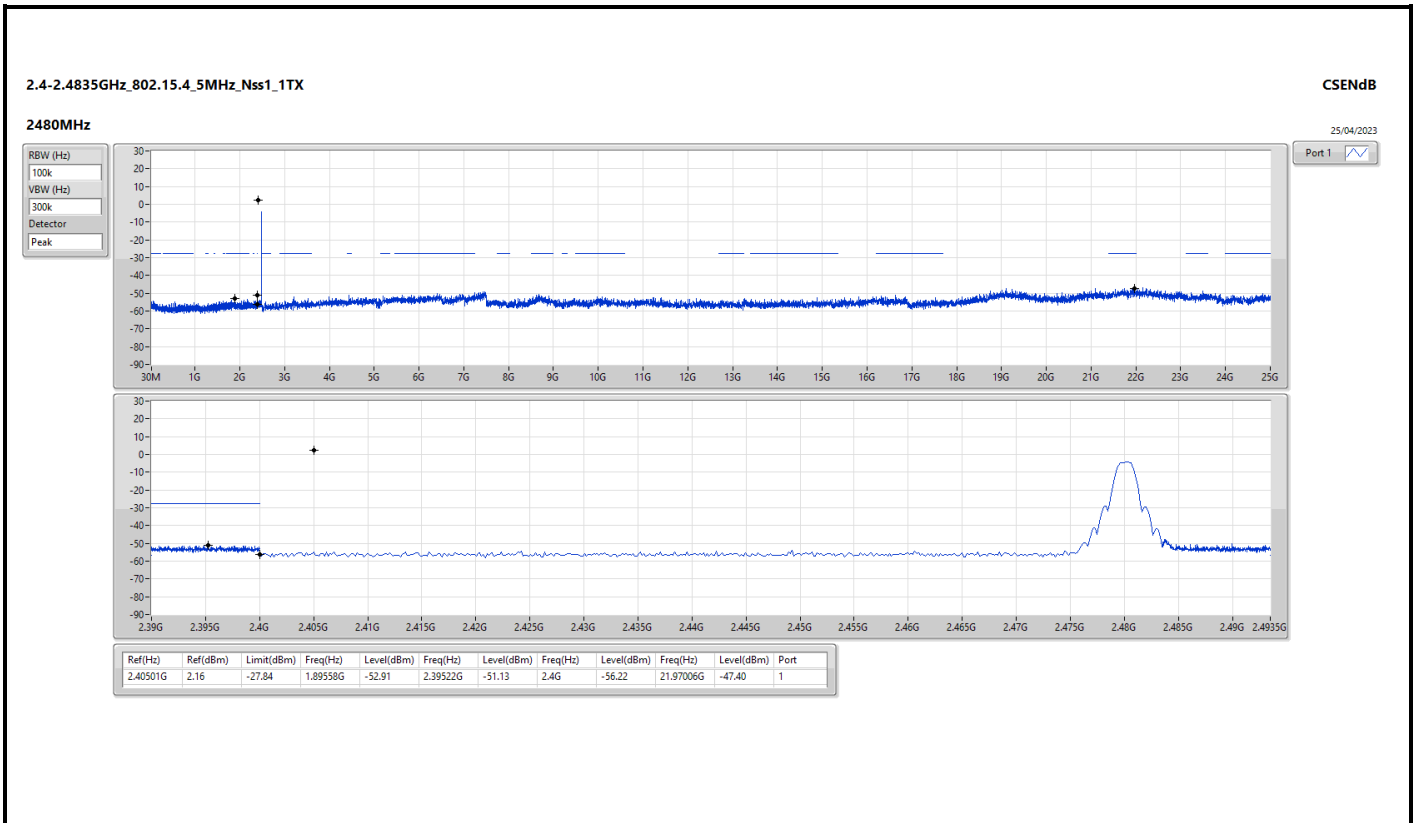
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-
802.15.4_5MHz_Nss1_1TX	Pass	2.40501G	2.16	-27.84	2.15518G	-53.00	2.39994G	-39.20	2.4G	-39.13	21.7675G	-46.94	1



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_5MHz_Nss1_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-
2405MHz	Pass	2.40501G	2.16	-27.84	2.15518G	-53.00	2.39994G	-39.20	2.4G	-39.13	21.7675G	-46.94	1
2440MHz	Pass	2.40501G	2.16	-27.84	2.11388G	-54.26	2.3949G	-50.15	2.4G	-56.66	21.61559G	-46.06	1
2480MHz	Pass	2.40501G	2.16	-27.84	1.89558G	-52.91	2.39522G	-51.13	2.4G	-56.22	21.97006G	-47.40	1



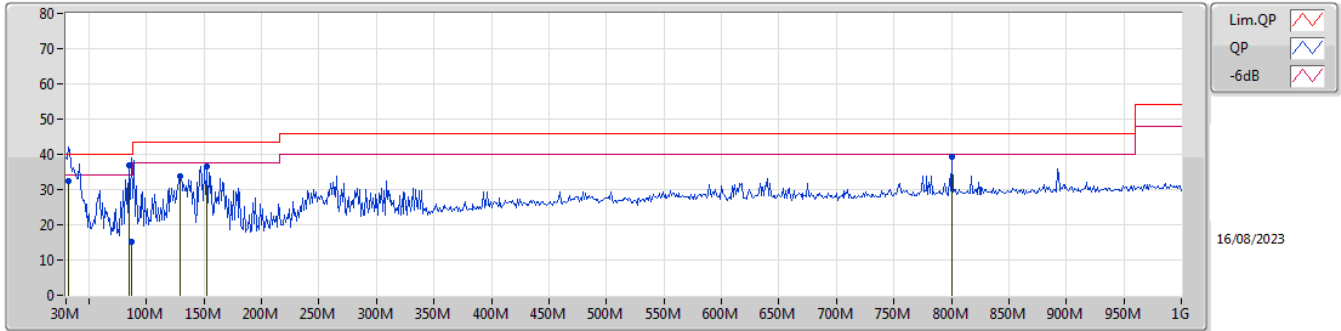




Summary

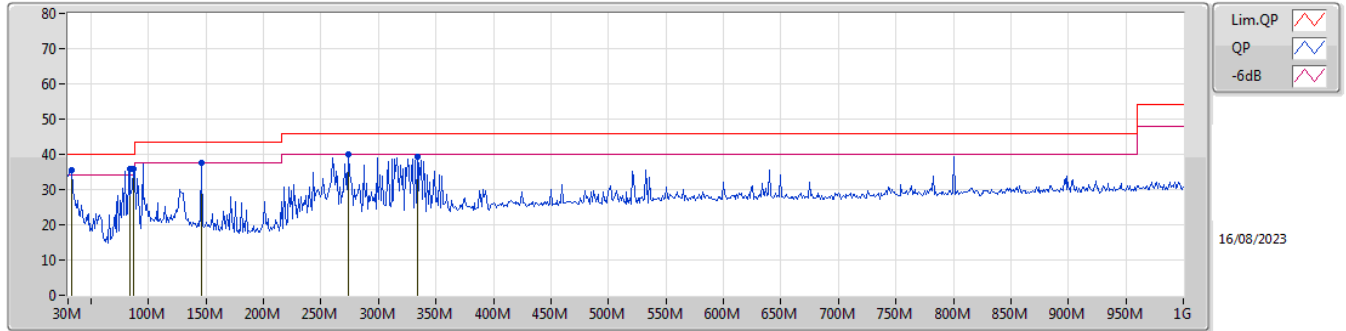
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 7	Pass	PK	85.29M	36.85	40.00	-3.15	Vertical

Mode 7



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
QP	31.94M	32.32	40.00	-7.68	-20.88	3	Vertical	42	2.00	-	53.20	22.92	0.52	44.32
PK	85.29M	36.85	40.00	-3.15	-30.76	3	Vertical	137	1.00	"Worst"	67.61	13.04	0.80	44.60
QP	87.23M	15.27	40.00	-24.73	-30.41	3	Vertical	137	1.00	-	45.68	13.38	0.81	44.60
PK	128.94M	33.73	43.50	-9.77	-26.62	3	Vertical	97	1.00	-	60.35	17.02	0.98	44.62
PK	152.22M	36.65	43.50	-6.85	-28.12	3	Vertical	139	1.00	-	64.77	15.38	1.06	44.56
PK	800.18M	39.34	46.00	-6.66	-16.18	3	Vertical	31	1.00	-	55.52	24.98	2.33	43.49

Mode 7



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	32.91M	35.63	40.00	-4.37	-21.55	3	Horizontal	187	1.00	-	57.18	22.25	0.52	44.32
PK	83.35M	35.87	40.00	-4.13	-31.12	3	Horizontal	305	1.00	-	66.99	12.69	0.79	44.60
PK	87.23M	35.99	40.00	-4.01	-30.41	3	Horizontal	305	1.00	"Worst"	66.40	13.38	0.81	44.60
PK	146.4M	37.56	43.50	-5.94	-27.72	3	Horizontal	83	1.50	-	65.28	15.82	1.04	44.58
PK	273.47M	40.16	46.00	-5.84	-24.87	3	Horizontal	81	1.50	-	65.03	18.04	1.41	44.32
PK	333.61M	39.43	46.00	-6.57	-23.83	3	Horizontal	26	1.00	-	63.26	18.84	1.55	44.22

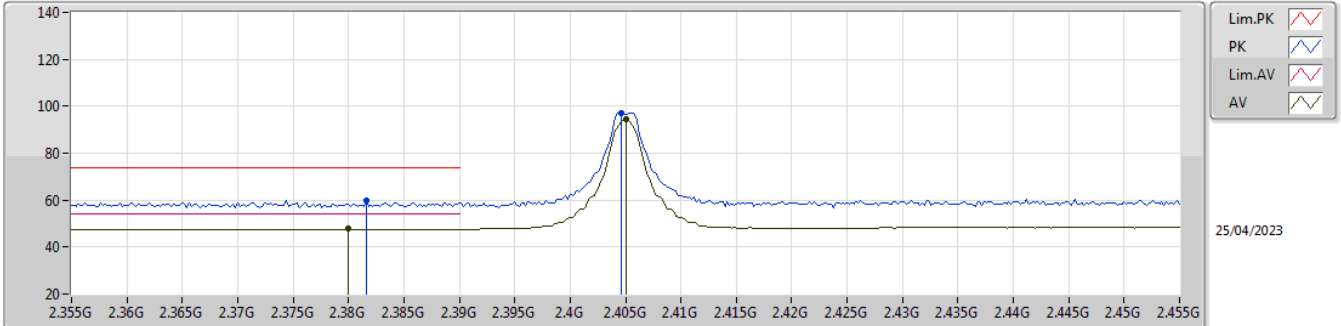


Summary

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_5MHz_Nss1_1TX	Pass	AV	2.4835G	52.46	54.00	-1.54	3	Horizontal	85	1.16	-

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2405MHz_TX

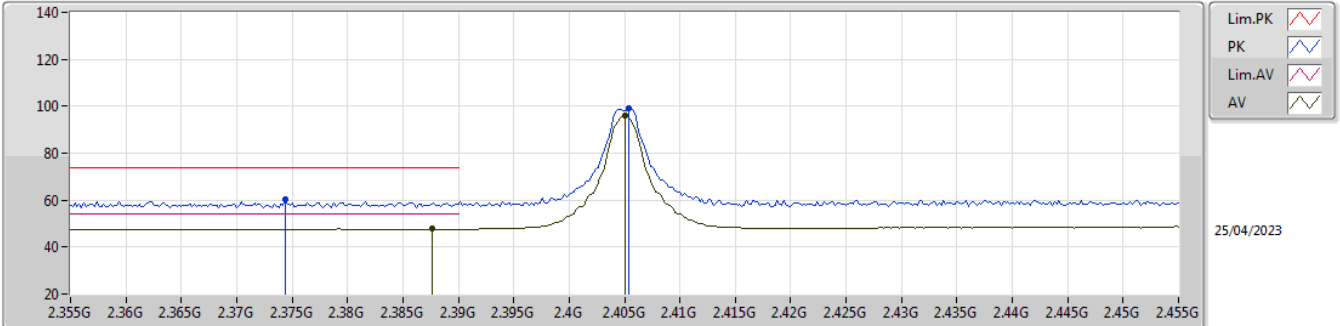


EUT_Z_1TX
Setting 6
03-J-G-5

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	2.3816G	59.80	74.00	-14.20	27.62	3	Vertical	196	2.14	-	28.20	3.98	-
AV	2.38G	47.82	54.00	-6.18	15.64	3	Vertical	196	2.14	-	28.20	3.98	-
PK	2.4046G	97.32	Inf	-Inf	65.12	3	Vertical	196	2.14	-	28.20	4.00	-
AV	2.405G	94.36	Inf	-Inf	62.16	3	Vertical	196	2.14	-	28.20	4.00	-

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2405MHz_TX

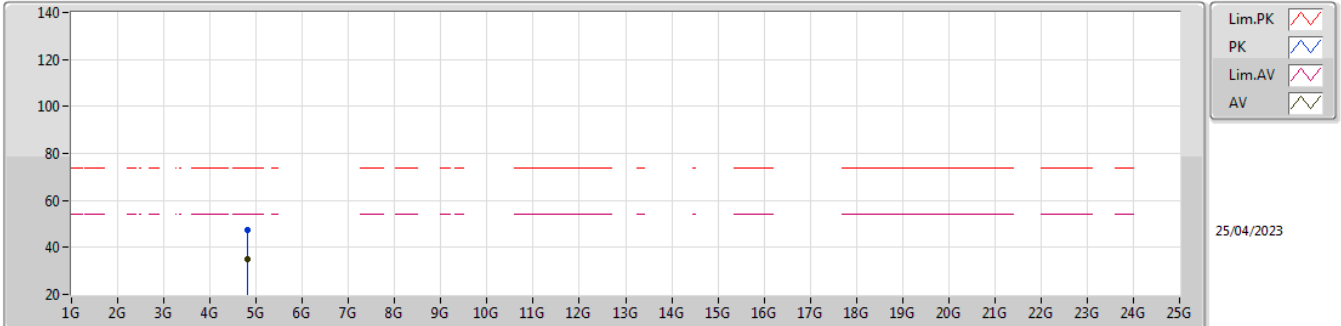


EUT_Z_1TX
Setting 6
03-J-G-5

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	2.3744G	60.12	74.00	-13.88	27.95	3	Horizontal	84	1.00	-	28.20	3.97	-
AV	2.3876G	47.87	54.00	-6.13	15.68	3	Horizontal	84	1.00	-	28.20	3.99	-
PK	2.4054G	98.88	Inf	-Inf	66.67	3	Horizontal	84	1.00	-	28.20	4.01	-
AV	2.405G	95.92	Inf	-Inf	63.72	3	Horizontal	84	1.00	-	28.20	4.00	-

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2405MHz_TX

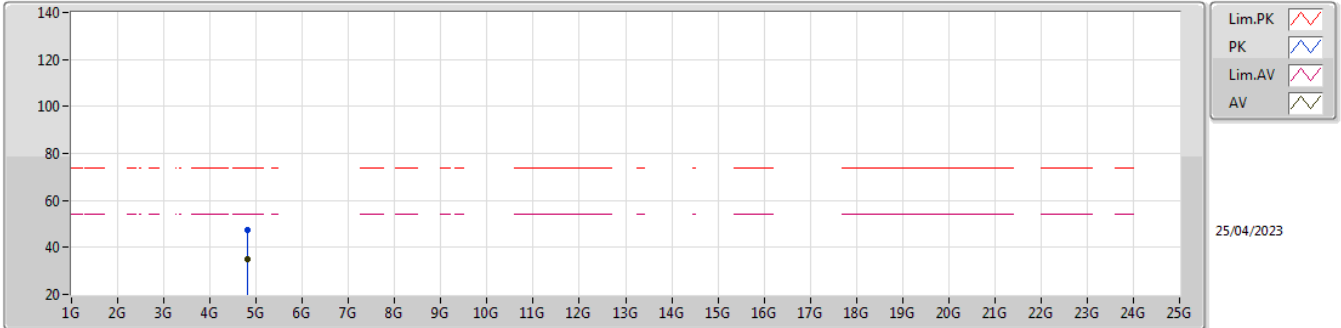


EUT_Z_1TX
Setting 6
03-J-G-5

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	4.82164G	47.38	74.00	-26.62	42.37	3	Vertical	310	1.80	-	33.40	6.51	34.90
AV	4.82026G	35.09	54.00	-18.91	30.08	3	Vertical	310	1.80	-	33.40	6.51	34.90

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2405MHz_TX

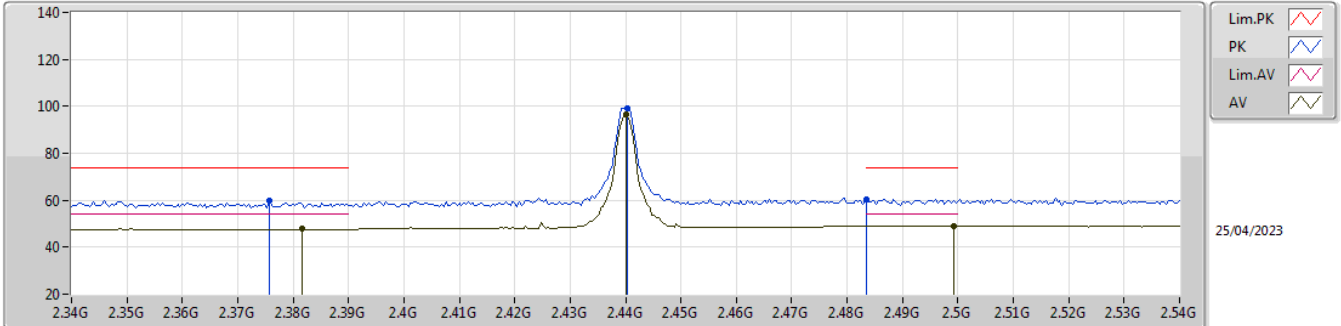


EUT_Z_1TX
Setting 6
03-J-G-5

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	4.81864G	47.27	74.00	-26.73	42.26	3	Horizontal	9	1.80	-	33.40	6.51	34.90
AV	4.81942G	35.09	54.00	-18.91	30.08	3	Horizontal	9	1.80	-	33.40	6.51	34.90

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2440MHz_TX

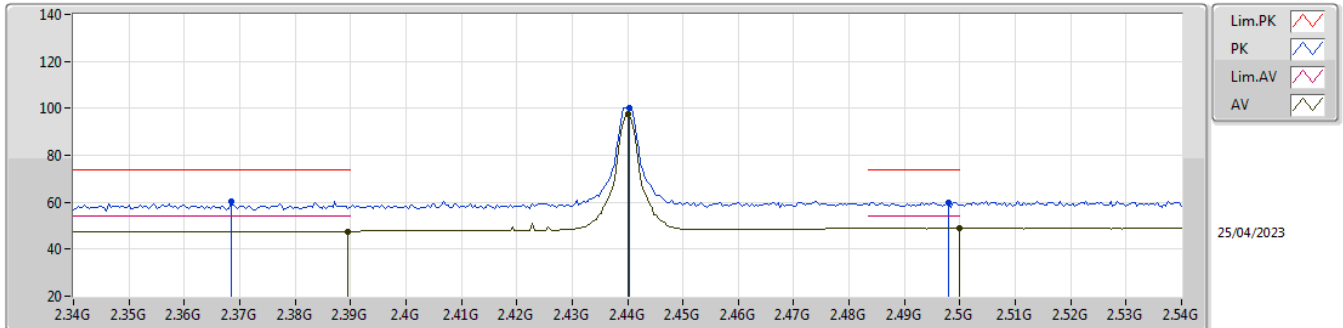


EUT_Z_1TX
Setting 6
03-J-G-5

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	2.3756G	59.84	74.00	-14.16	27.66	3	Vertical	277	1.49	-	28.20	3.98	-
AV	2.3816G	47.82	54.00	-6.18	15.64	3	Vertical	277	1.49	-	28.20	3.98	-
PK	2.4404G	99.28	Inf	-Inf	67.04	3	Vertical	277	1.49	-	28.20	4.04	-
AV	2.44G	96.35	Inf	-Inf	64.11	3	Vertical	277	1.49	-	28.20	4.04	-
PK	2.4835G	60.38	74.00	-13.62	27.90	3	Vertical	277	1.49	-	28.40	4.08	-
AV	2.4992G	48.88	54.00	-5.12	16.28	3	Vertical	277	1.49	-	28.50	4.10	-

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2440MHz_TX

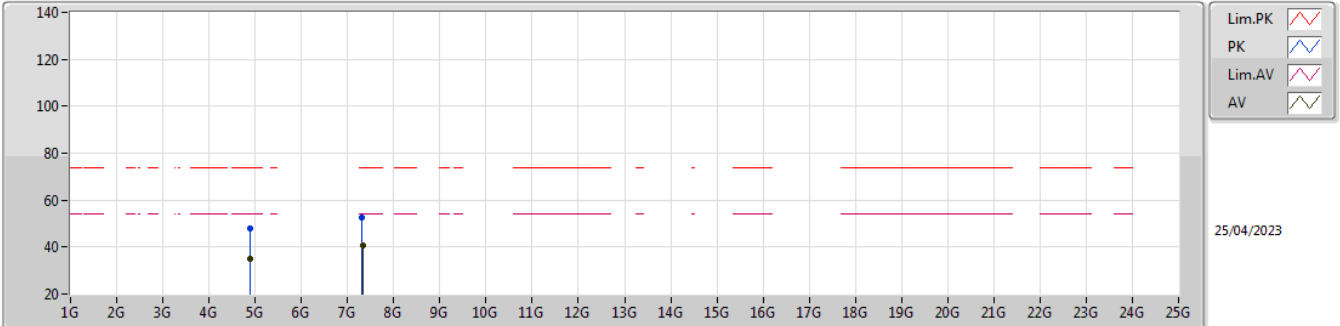


EUT_Z_1TX
Setting 6
03-J-G-5

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	2.3684G	60.38	74.00	-13.62	28.21	3	Horizontal	84	1.17	-	28.20	3.97	-
AV	2.3896G	47.65	54.00	-6.35	15.46	3	Horizontal	84	1.17	-	28.20	3.99	-
PK	2.4404G	100.37	Inf	-Inf	68.13	3	Horizontal	84	1.17	-	28.20	4.04	-
AV	2.44G	97.47	Inf	-Inf	65.23	3	Horizontal	84	1.17	-	28.20	4.04	-
PK	2.498G	59.96	74.00	-14.04	27.37	3	Horizontal	84	1.17	-	28.49	4.10	-
AV	2.5G	49.13	54.00	-4.87	16.53	3	Horizontal	84	1.17	-	28.50	4.10	-

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2440MHz_TX

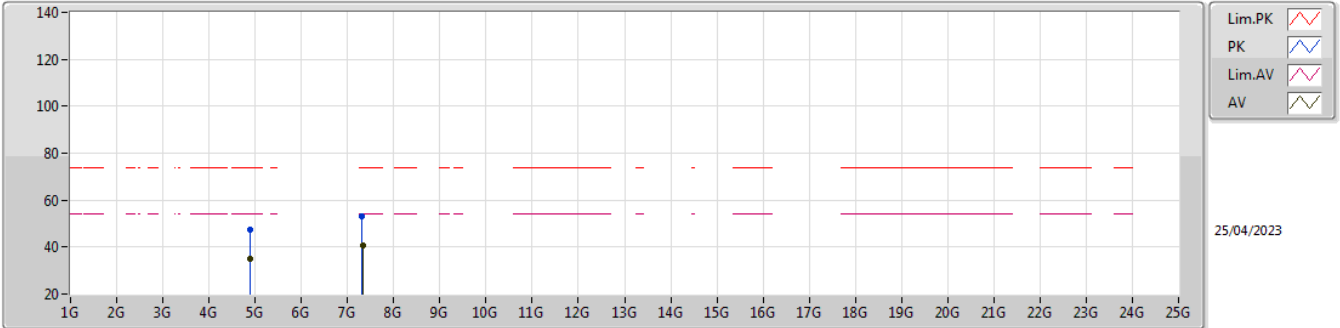


EUT_Z_1TX
Setting 6
03-J-G-5

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	4.89092G	47.87	74.00	-26.13	42.56	3	Vertical	360	1.22	-	33.65	6.55	34.89
AV	4.89074G	35.14	54.00	-18.86	29.84	3	Vertical	360	1.22	-	33.64	6.55	34.89
PK	7.30932G	52.54	74.00	-21.46	42.16	3	Vertical	342	1.00	-	36.82	8.70	35.14
AV	7.32336G	40.46	54.00	-13.54	30.06	3	Vertical	342	1.00	-	36.85	8.70	35.15

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2440MHz_TX

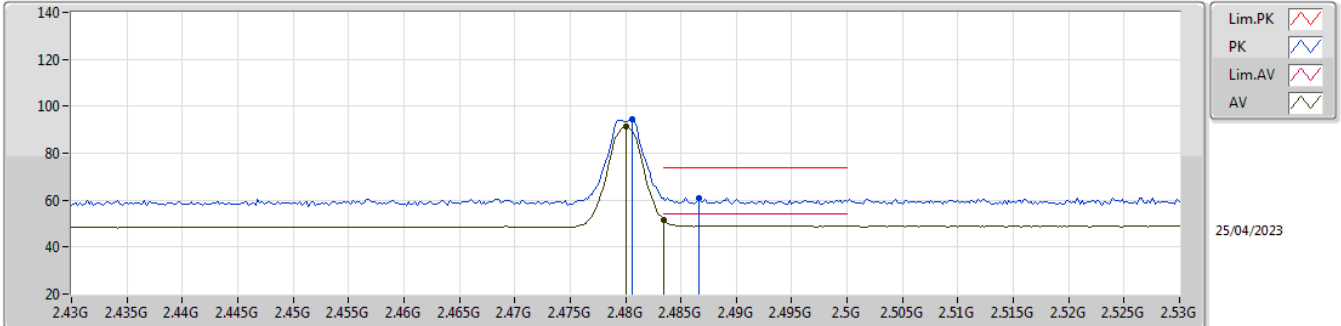


EUT_Z_1TX
Setting 6
03-J-G-5

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	4.89434G	47.34	74.00	-26.66	42.01	3	Horizontal	352	1.80	-	33.67	6.55	34.89
AV	4.8887G	35.18	54.00	-18.82	29.90	3	Horizontal	352	1.80	-	33.63	6.54	34.89
PK	7.30962G	52.99	74.00	-21.01	42.61	3	Horizontal	242	1.80	-	36.82	8.70	35.14
AV	7.33218G	40.60	54.00	-13.40	30.19	3	Horizontal	242	1.80	-	36.86	8.70	35.15

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2480MHz_TX

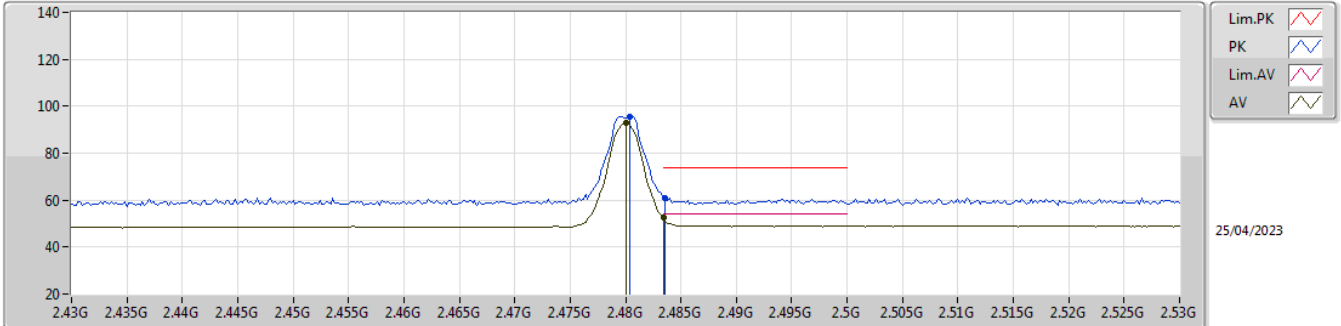


EUT_Z_1TX
Setting 6
03-J-G-5

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	2.4806G	94.38	Inf	-Inf	61.92	3	Vertical	275	1.48	-	28.38	4.08	-
AV	2.48G	91.44	Inf	-Inf	58.98	3	Vertical	275	1.48	-	28.38	4.08	-
PK	2.4866G	60.97	74.00	-13.03	28.46	3	Vertical	275	1.48	-	28.42	4.09	-
AV	2.4835G	51.76	54.00	-2.24	19.28	3	Vertical	275	1.48	-	28.40	4.08	-

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2480MHz_TX

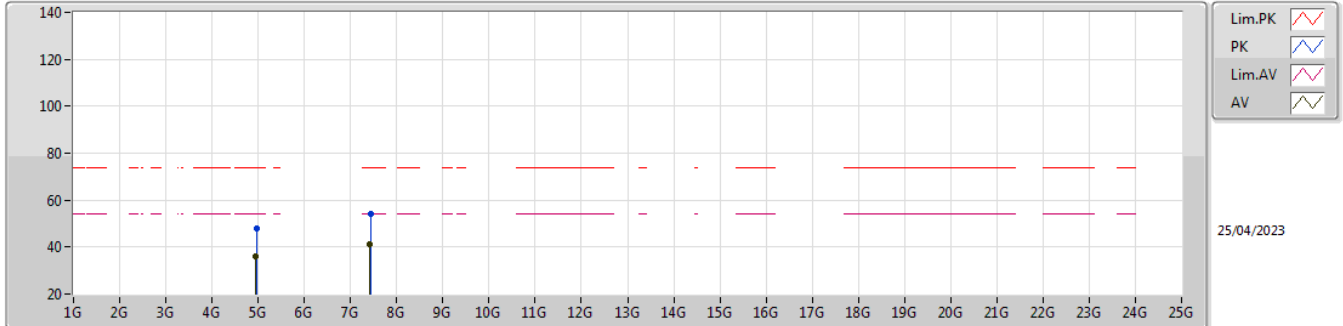


EUT_Z_1TX
Setting 6
03-J-G-5

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	2.4804G	95.59	Inf	-Inf	63.13	3	Horizontal	85	1.16	-	28.38	4.08	-
AV	2.48G	92.69	Inf	-Inf	60.23	3	Horizontal	85	1.16	-	28.38	4.08	-
PK	2.4836G	61.12	74.00	-12.88	28.64	3	Horizontal	85	1.16	-	28.40	4.08	-
AV	2.4835G	52.46	54.00	-1.54	19.98	3	Horizontal	85	1.16	-	28.40	4.08	-

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2480MHz_TX

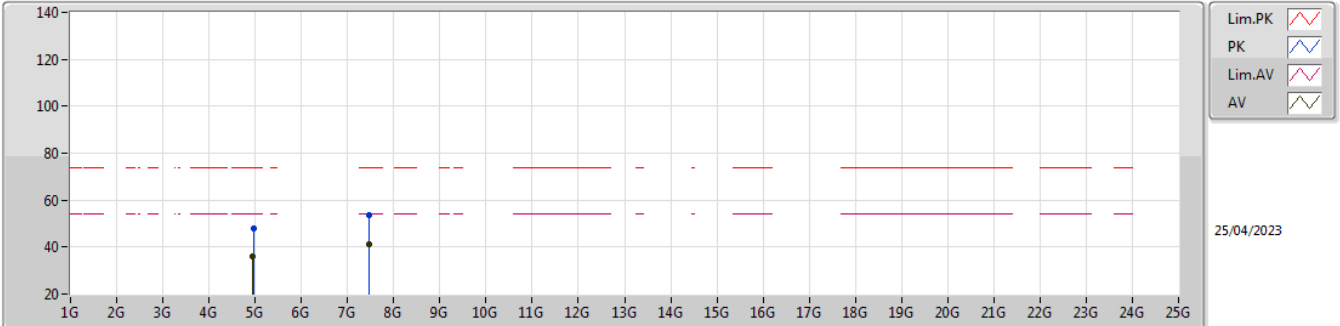


EUT_Z_1TX
Setting 6
03-J-G-5

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	4.95712G	47.80	74.00	-26.20	42.50	3	Vertical	120	2.72	-	33.61	6.58	34.89
AV	4.9558G	35.83	54.00	-18.17	30.53	3	Vertical	120	2.72	-	33.61	6.58	34.89
PK	7.4322G	53.99	74.00	-20.01	43.43	3	Vertical	5	1.41	-	36.96	8.80	35.20
AV	7.42626G	41.31	54.00	-12.69	30.78	3	Vertical	5	1.41	-	36.95	8.78	35.20

2.4-2.4835GHz_802.15.4_5MHz_Nss1_1TX

2480MHz_TX



EUT_Z_1TX
Setting 6
03-J-G-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	4.96468G	48.07	74.00	-25.93	42.75	3	Horizontal	276	1.83	-	33.63	6.58	34.89
AV	4.95616G	35.90	54.00	-18.10	30.60	3	Horizontal	276	1.83	-	33.61	6.58	34.89
PK	7.465G	53.61	74.00	-20.39	42.95	3	Horizontal	52	1.00	-	36.97	8.90	35.21
AV	7.476G	41.29	54.00	-12.71	30.63	3	Horizontal	52	1.00	-	36.95	8.93	35.22