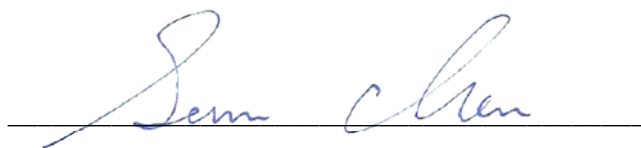


RADIO TEST REPORT

FCC ID : RAXWN8711
Equipment : Wireless LAN Network Module
Brand Name : Arcadyan
Model Name : WN8711BTAAC-YA
Applicant : Arcadyan Technology Corporation
No.8, Sec.2, Guangfu Rd.,Hsinchu, 30071 Taiwan
Manufacturer : Arcadyan Technology Corporation
No.8, Sec.2, Guangfu Rd.,Hsinchu, 30071 Taiwan
Standard : 47 CFR FCC Part 15.247

The product was received on Apr. 19, 2022, and testing was started from Apr. 22, 2022 and completed on Jun. 15, 2022. 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.)



Table of Contents

History of this test report.....	3
Summary of Test Result.....	4
1 General Description	5
1.1 Information.....	5
1.2 Applicable Standards	8
1.3 Testing Location Information	8
1.4 Measurement Uncertainty	9
2 Test Configuration of EUT	10
2.1 Test Channel Mode	10
2.2 The Worst Case Measurement Configuration.....	10
2.3 EUT Operation during Test	12
2.4 Accessories	12
2.5 Support Equipment.....	12
2.6 Test Setup Diagram	14
3 Transmitter Test Result	17
3.1 AC Power-line Conducted Emissions	17
3.2 DTS Bandwidth	19
3.3 Maximum Conducted Output Power	20
3.4 Power Spectral Density	23
3.5 Emissions in Non-restricted Frequency Bands	25
3.6 Emissions in Restricted Frequency Bands.....	26
4 Test Equipment and Calibration Data	30
Appendix A. Test Results of AC Power-line Conducted Emissions	
Appendix B. Test Results of DTS Bandwidth	
Appendix C. Test Results of Maximum Conducted Output Power	
Appendix D. Test Results of Power Spectral Density	
Appendix E. Test Results of Emissions in Non-restricted Frequency Bands	
Appendix F. Test Results of Emissions in Restricted Frequency Bands	
Appendix G. Test Results of Radiated Emission Co-location	
Appendix H. Test Photos	
Appendix I. Photographs of EUT	



History of this test report

TEL : 886-3-656-9065
FAX : 886-3-656-9085
Report Template No.: CB-A10_6 Ver1.3

Page Number : 3 of 32
Issued Date : Jun. 23, 2022
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	-

Declaration of Conformity:

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen**Report Producer: Viola Huang**



1 General Description

1.1 Information

1.1.1 RF General Information

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

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	BT-LE(1Mbps)	1	1

Note:

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

**1.1.2 Antenna Information**

Ant.	Brand	Model Name	Type	Connector	Gain (dBi)		Cable Length (mm)
					2.4GHz	5GHz	
1	ACON	AEMEE-10000	Dipole	Reversed-SMA	3.24	4.54	Note 1

Note 1:

Dipole Cable	Brand	Model Name	Cable Length (mm)	Cable Loss (dB)		True Gain (dBi)	
				2.4GHz / BT	5GHz	2.4GHz / BT	5GHz
1	ACON	AEC8P-1000001 (Black)	30	0.08	0.12	3.16	4.42
2	ACON	AEC8P-1000003 (Black)	50	0.13	0.19	3.11	4.35
3	ACON	AEC8P-1000005 (Black)	70	0.19	0.27	3.05	4.27
4	ACON	AEC8P-1000007 (Black)	90	0.24	0.35	3.00	4.19
5	ACON	AEC8P-1000009 (Black)	120	0.32	0.46	2.92	4.08
6	ACON	AEC8P-1000011 (Black)	160	0.43	0.62	2.81	3.92
7	ACON	AEC8P-1000013 (Black)	200	0.54	0.77	2.70	3.77
8	ACON	AEC8P-1000015 (Black)	240	0.64	0.93	2.60	3.61
9	ACON	AEC8P-1000017 (Black)	280	0.75	1.08	2.49	3.46
10	ACON	AEC8P-1000019 (Black)	320	0.86	1.24	2.38	3.30
11	ACON	AEC8P-1000021 (Black)	360	0.96	1.39	2.28	3.15
12	ACON	AEC8P-1000023 (Black)	400	1.07	1.54	2.17	3.00
13	ACON	AEC8P-1000025 (Black)	450	1.21	1.74	2.03	2.80
14	ACON	AEC8P-1000027 (Black)	500	1.34	1.93	1.90	2.61

Note 2: Dipole Antenna collocate with 14 set cables selling, only the highest gain antenna "cable 1" was tested and recorded in the report.

Note 3: The above information was declared by manufacturer.

Note 4: The EUT has one antenna.

For WLAN 2.4GHz Function**IEEE 802.11b/g/n (1TX/1RX):**

Port 1 can be used as transmitting/receiving antenna.

Port 1 could transmit/receive simultaneously.

For WLAN 5GHz Function**IEEE 802.11a/n/ac (1TX/1RX):**

Port 1 can be used as transmitting/receiving antenna.

Port 1 could transmit/receive simultaneously.

For Bluetooth function (1TX/1RX):

Port 1 can be used as transmitting/receiving antenna.

Port 1 could transmit/receive simultaneously.

**1.1.3 Mode Test Duty Cycle**

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
BT-LE(1Mbps)	0.628	2.02	392.5u	3k

Note:

DC is Duty Cycle.

DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From host system		
Function	<input checked="" type="checkbox"/> Point-to-multipoint	<input type="checkbox"/> Point-to-point	
Test Software Version	DOS [ver 6.1.7601]		
Operating frequency of CPU	1GHz		
Rating	3.7V, 4.21W		
Support Mode	<input checked="" type="checkbox"/> LE 1M PHY: 1 Mb/s		
	<input type="checkbox"/> LE Coded PHY (S=2): 500 Kb/s		
	<input type="checkbox"/> LE Coded PHY (S=8): 125 Kb/s		
	<input type="checkbox"/> LE 2M PHY: 2 Mb/s		

Note: The above information was declared by manufacturer.

1.1.5 Table for EUT supports function

Function	Supports type
AP	Master
Slave	Slave without radar detection

Note 1: AP Mode and Slave Mode were tested and their data were recorded in this report.

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 414788 D01 v01r01

1.3 Testing Location Information

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

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH03-CB	Owen Hsu	18.7~19.1 / 65~68	Apr. 27, 2022~May 30, 2022
Radiated Below 1GHz	03CH05-CB	Kevin Huang	24.5~25.6 / 56~59	Apr. 22, 2022~Apr. 23, 2022
Radiated above 1GHz (For others test)	03CH02-CB	Chris Lee	23.8~24.9 / 55~58	Apr. 23, 2022~May 24, 2022
Radiated above 1GHz (For co-location test)	03CH01-CB	Chris Lee	23.2~24.3 / 56~59	Jun. 07, 2022~Jun. 15, 2022
AC Conduction	CO01-CB	Joe Chu	20~22 / 60~62	Apr. 26, 2022

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 others test

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.5 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.7 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	2.5 dB	Confidence levels of 95%
Output Power Measurement	1.3 dB	Confidence levels of 95%
Power Density Measurement	2.5 dB	Confidence levels of 95%
Bandwidth Measurement	0.9%	Confidence levels of 95%

For co-location test

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%

2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
BT-LE(1Mbps)	-
2402MHz	Default
2440MHz	Default
2480MHz	Default

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	AP Mode_EUT (2.4GHz+Bluetooth Master) with Dipole antenna + cable 1
2	AP Mode_EUT (5GHz+Bluetooth Master) with Dipole antenna + cable 1
Mode 2 has been evaluated to be the worst case between Mode 1~2, thus measurement for Mode 3 will follow this same test mode.	
3	Slave Mode_EUT (5GHz+Bluetooth Master) with Dipole antenna + cable 1
Mode 2 has been evaluated to be the worst case between Mode 1~3, thus measurement for Mode 4 will follow this same test mode.	
4	Slave Mode_EUT (5GHz+Bluetooth Slave) with Dipole antenna + cable 1
For operating mode 4 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	AP Mode_EUT in X axis (2.4GHz+Bluetooth Master) with Dipole antenna + cable 1
2	AP Mode_EUT in Y axis (2.4GHz+Bluetooth Master) with Dipole antenna + cable 1
3	AP Mode_EUT in Z axis (2.4GHz+Bluetooth Master) with Dipole antenna + cable 1
Mode 1 has been evaluated to be the worst case among Mode 1~3 thus measurement for Mode 4 will follow this same test mode.	
4	AP Mode_EUT in X axis (5GHz+Bluetooth Master) with Dipole antenna + cable 1
Mode 4 has been evaluated to be the worst case among Mode 1~4 thus measurement for Mode 5~6 will follow this same test mode.	
5	Slave Mode_EUT in X axis (5GHz+Bluetooth Master) with Dipole antenna + cable 1
6	Slave Mode_EUT in X axis (5GHz+Bluetooth Slave) with Dipole antenna + cable 1
For operating mode 4 is the worst case and it was record in this test report.	
Operating Mode > 1GHz	CTX The EUT was performed at X axis, Y axis and Z axis position, and the worst case was found at Y axis. So the measurement will follow this same test configuration.
1	EUT in Y axis

The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Radiated Emission Co-location
Test Condition	Radiated measurement
Operating Mode	Normal Link The EUT was performed at X axis, Y axis and Z axis position for Emissions in Restricted Frequency Bands above 1GHz, and the worst case was found at Y axis. So the measurement will follow this same test configuration.
1	EUT in Y axis_WLAN 2.4GHz + Bluetooth
2	EUT in Y axis_WLAN 5GHz + Bluetooth
For operating mode 1 is the worst case and it was record in this test report.	
Refer to Appendix G for Radiated Emission Co-location.	



The Worst Case Mode for Following Conformance Tests	
Tests Item	Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation
Operating Mode	
1	WLAN 2.4GHz + Bluetooth
2	WLAN 5GHz + Bluetooth
Refer to Sporton Test Report No.: FA770523-13 for Co-location RF Exposure Evaluation.	

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	Fixture 2	Arcadyan	WN9711BTAAC-YA Test Jig	N/A
B	LAN NB	DELL	E6430	N/A
C	AP Router	ASUS	DSL-AC68U	MSQ-RPN53
D	Smart Phone	Samsung	Galaxy J2	N/A
E	Earphone	e-Power	S90W	N/A

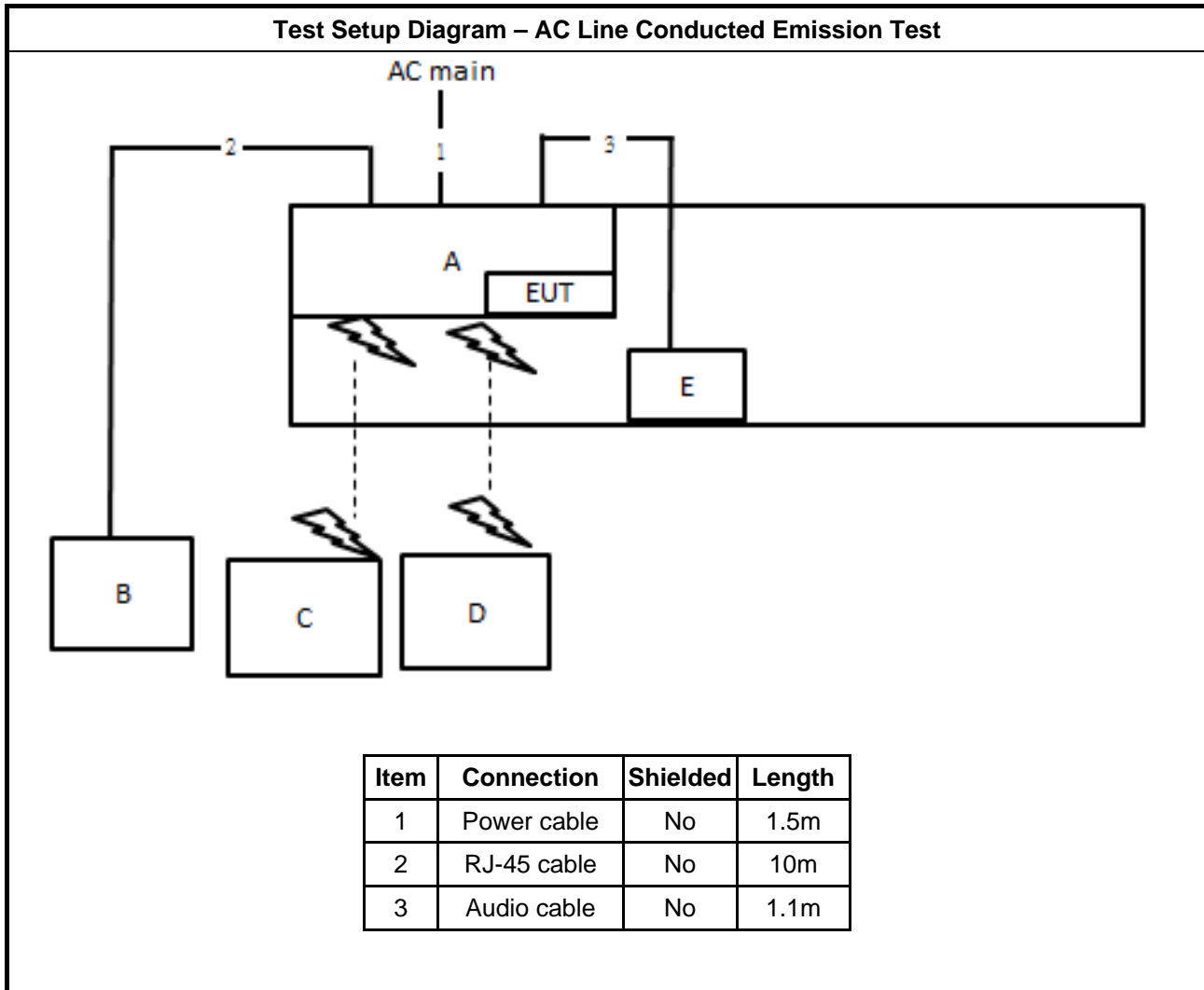
For Radiated (below 1GHz):

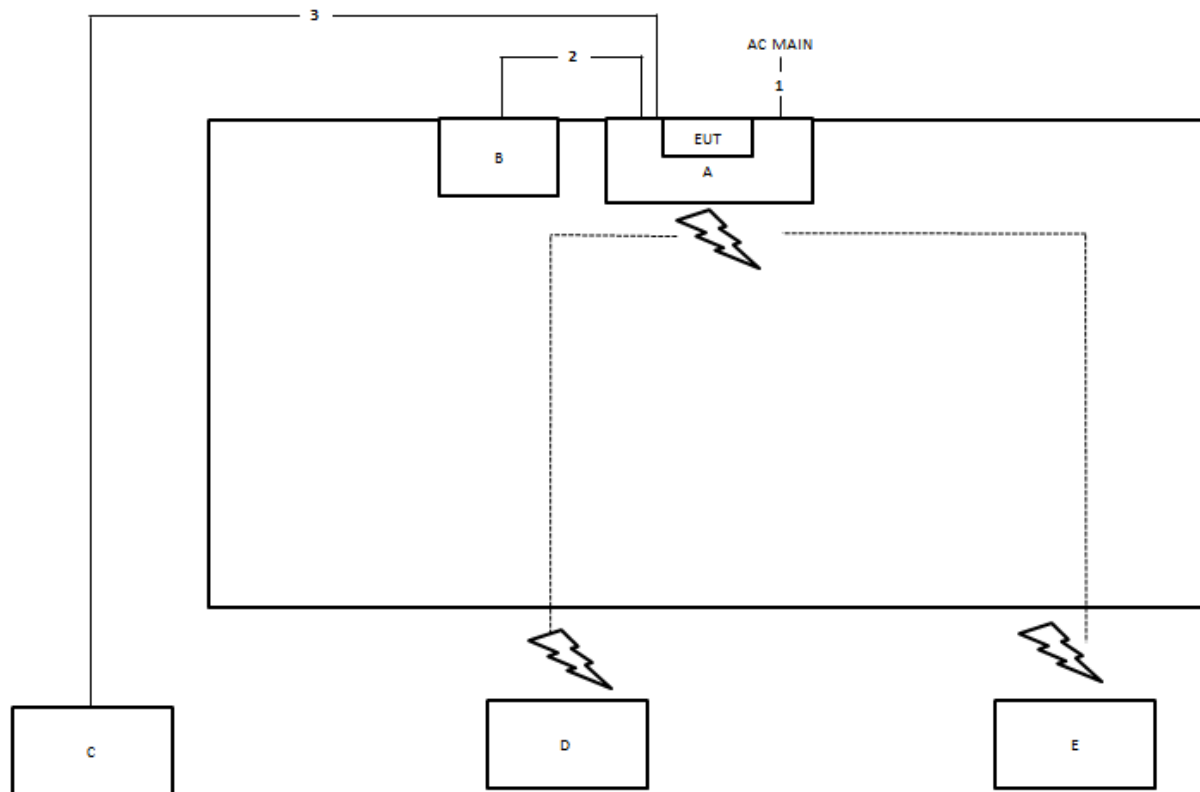
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Fixture 2	Arcadyan	WN9711BTAAC-YA Test Jig	N/A
B	Bluetooth Speaker	MI	XMYX02YM	2AJ7PXYMYX02YM
C	Notebook	DELL	E4300	N/A
D	Phone	SAMSUNG	SM-J200Y	A3LSMJ200Y
E	WLAN AP	ASUS	RT-AX88U	MSQ-RTAXHP00

**For Radiated (above 1GHz) and RF Conducted:**

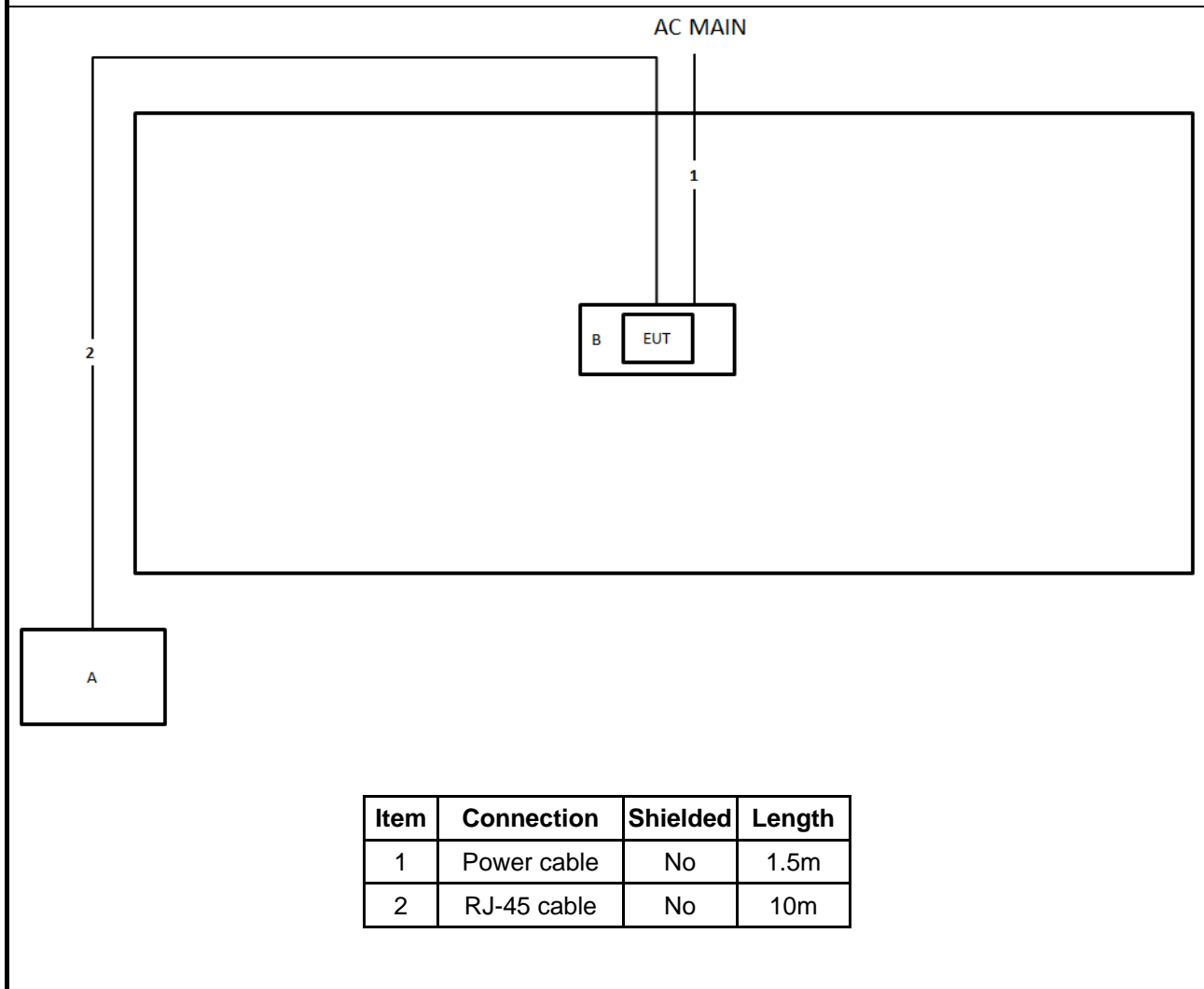
Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Notebook	DELL	E4300	N/A
B	Fixture 1	Arcadyan	WN9711BTAAC-YA Test Jig	N/A

2.6 Test Setup Diagram



Test Setup Diagram - Radiated Test < 1GHz


Item	Connection	Shielded	Length
1	Power cable	No	1.5m
2	Audio cable	No	0.5m
3	RJ-45 cable	No	10m

Test Setup Diagram - Radiated Test > 1GHz




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.

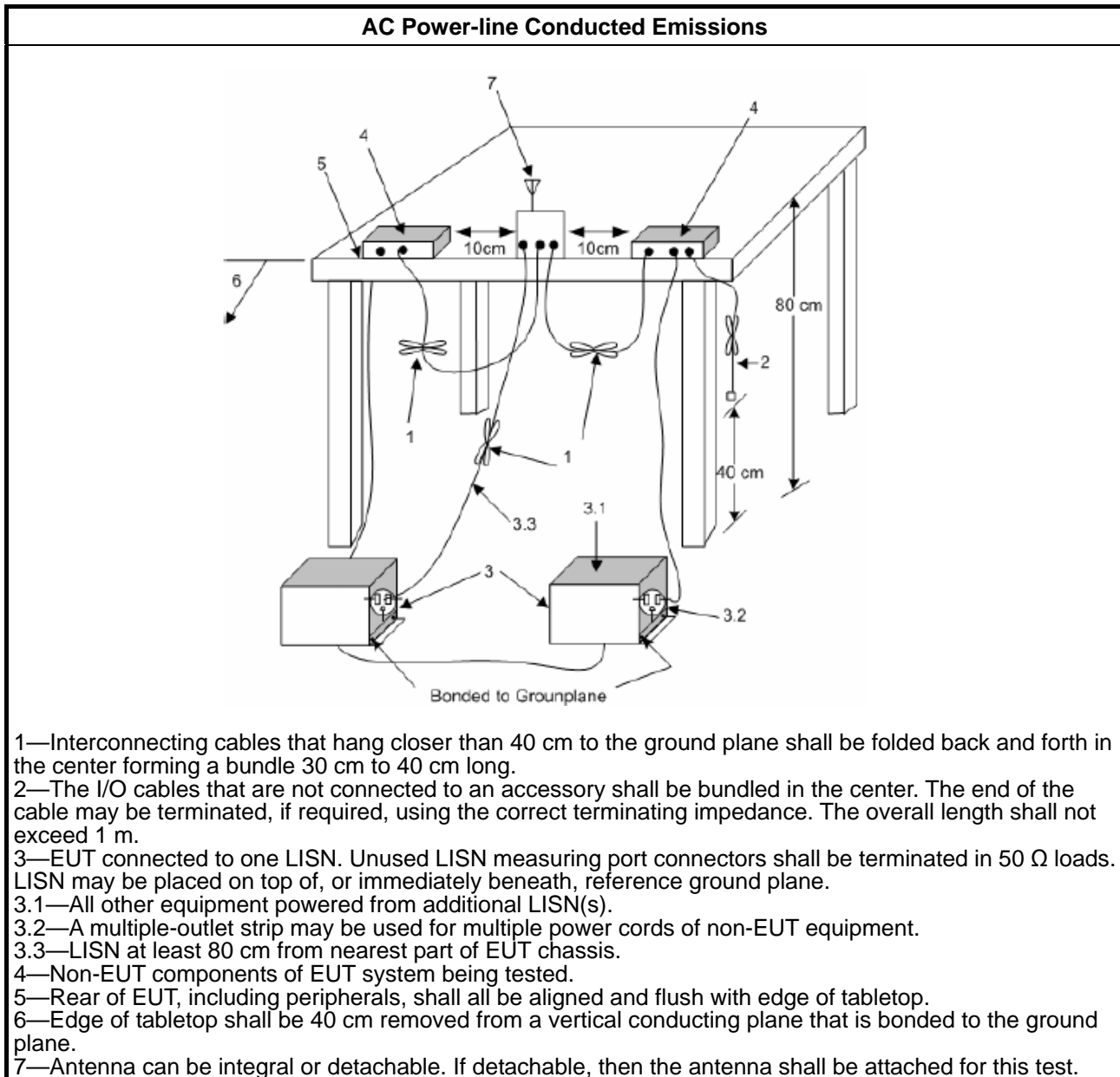
3.1.2 Measuring Instruments

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



1.1.1. Measurement Results Calculation

The measured Level is calculated using:

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

3.1.5 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A

3.2 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.

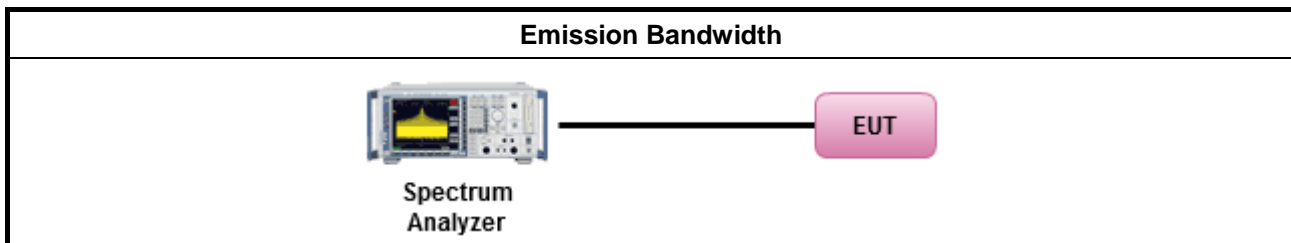
3.2.2 Measuring Instruments

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	
	▪ 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.	

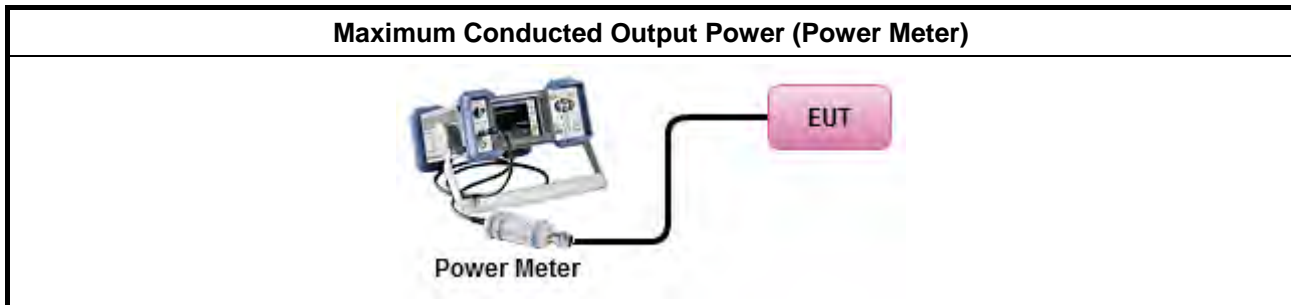
3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

Test Method	
<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
▪ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

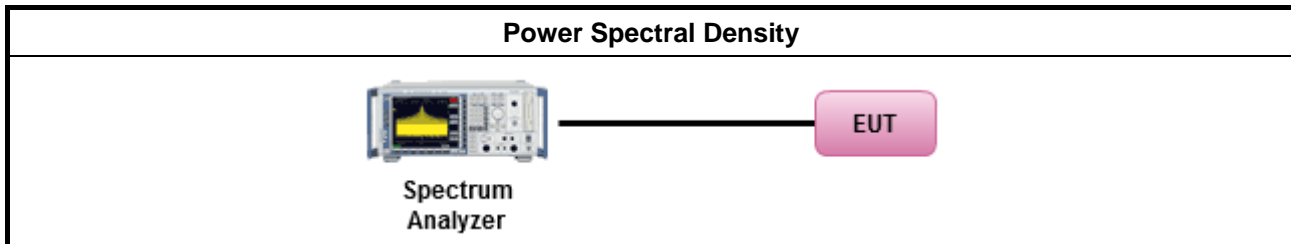
3.4.2 Measuring Instruments

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).	
<input checked="" type="checkbox"/>	Refer as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD. [duty cycle $\geq 98\%$ or external video / power trigger]
▪ For conducted measurement.	
▪ If The EUT supports multiple transmit chains using options given below:	
<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.

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
<p>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.</p> <p>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.</p>	

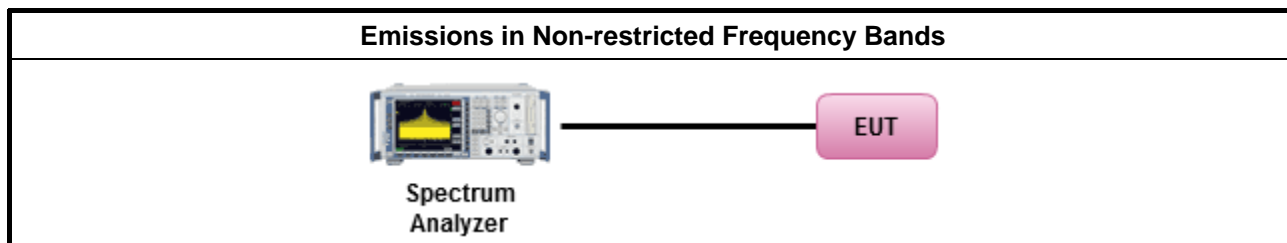
3.5.2 Measuring Instruments

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

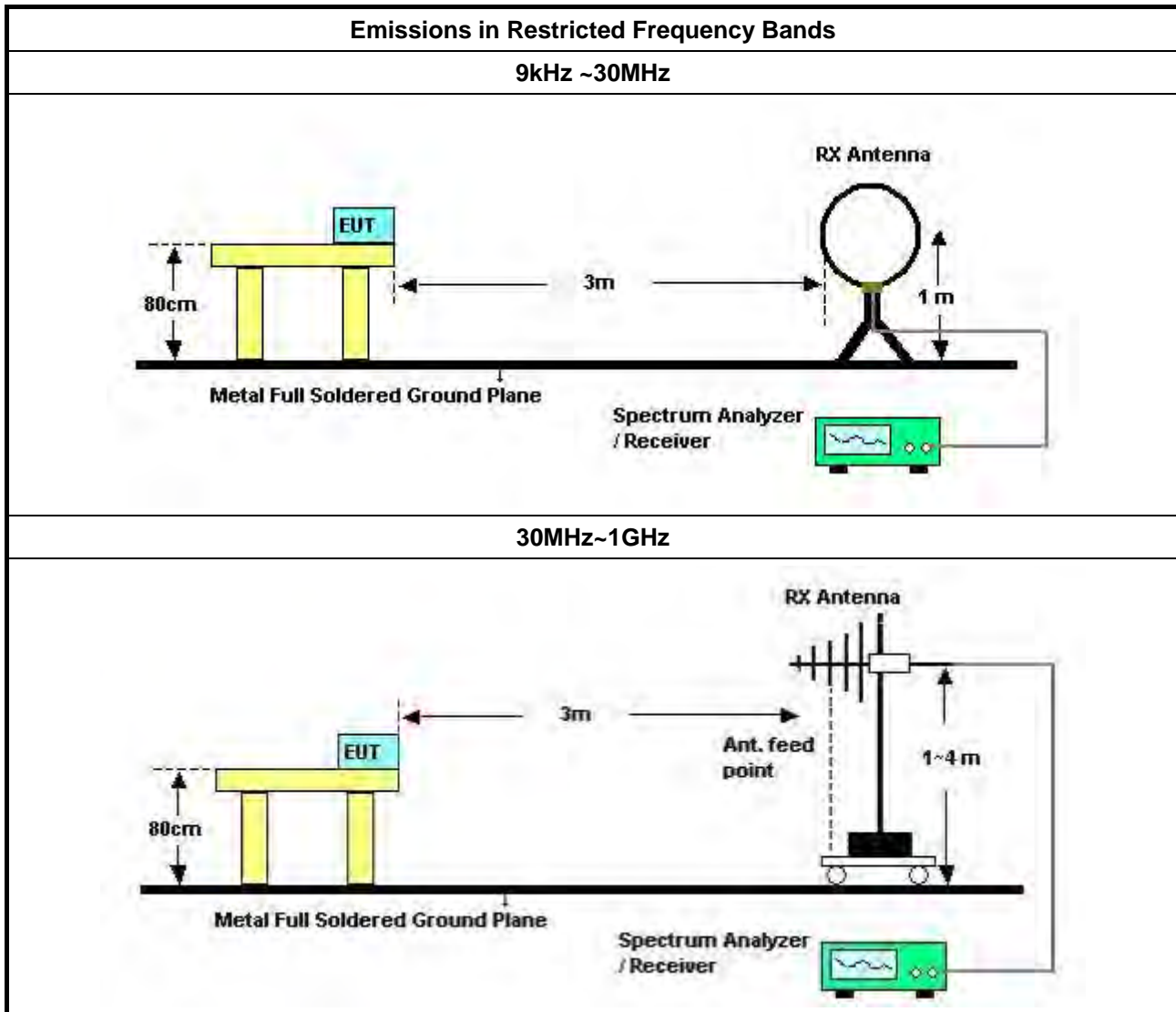
Refer a test equipment and calibration data table in this test report.

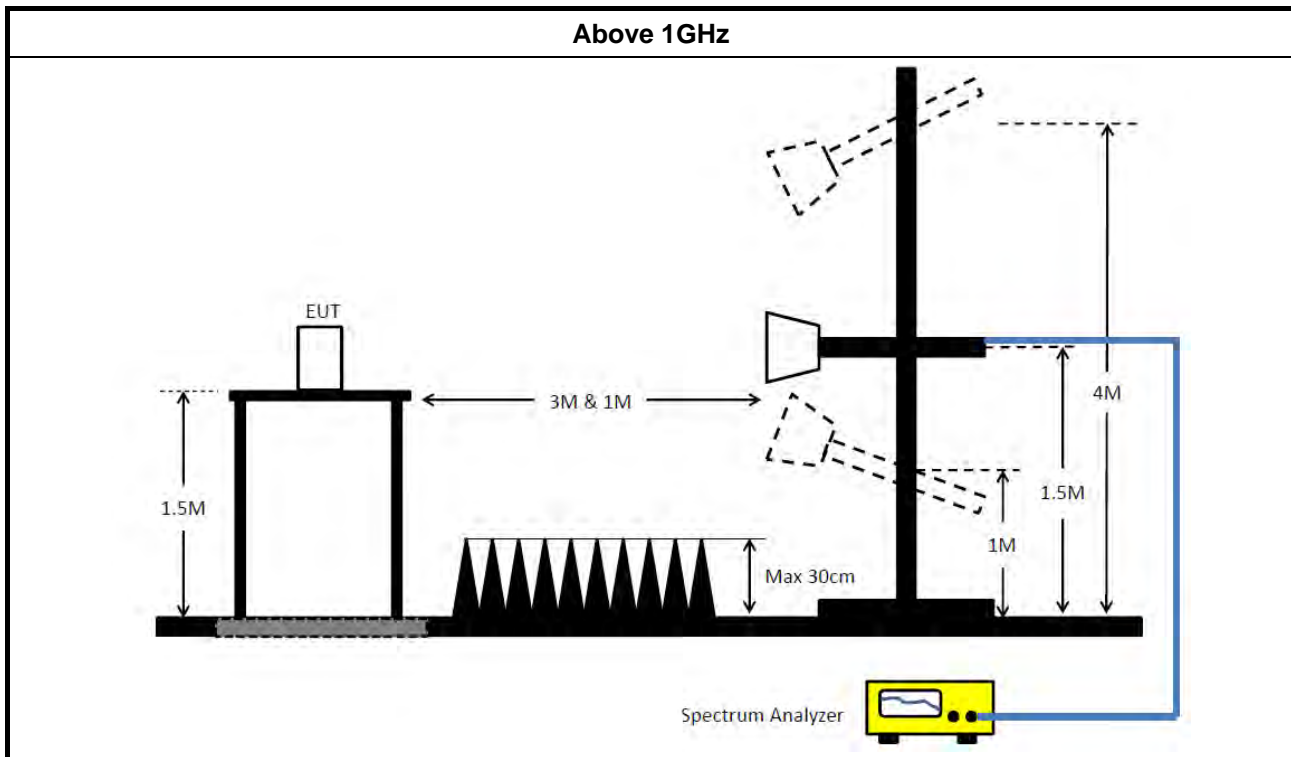


3.6.3 Test Procedures

Test Method	
<ul style="list-style-type: none"> The average emission levels shall be measured in [duty cycle ≥ 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. 22, 2022	Feb. 21, 2023	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50-16-2	04083	150kHz ~ 100MHz	Feb. 09, 2022	Feb. 08, 2023	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 12, 2022	Apr. 11, 2023	Conduction (CO01-CB)
Pulse Limiter	Rohde&Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 10, 2022	Feb. 09, 2023	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	May 19, 2021	May 18, 2022	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. 18, 2022	Mar. 17, 2023	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 09, 2021	Aug. 08, 2022	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Nov. 07, 2021	Nov. 06, 2022	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 25, 2022	Mar. 24, 2023	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 27, 2021	Apr. 26, 2022	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Mar. 14, 2022	Mar. 13, 2023	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 21, 2021	Jun. 20, 2022	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 13, 2021	Oct. 12, 2022	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH01-CB	1GHz ~18GHz 3m	May 06, 2022	May 05, 2023	Radiation (03CH01-CB)
Horn Antenna	ETS-LINDGREN	3115	00075790	750MHz ~ 18GHz	Nov. 06, 2021	Nov. 05, 2022	Radiation (03CH01-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 05, 2021	Aug. 04, 2022	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02121	1GHz ~ 26.5GHz	May 19, 2022	May 18, 2023	Radiation (03CH01-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 13, 2021	Jul. 12, 2022	Radiation (03CH01-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100056	9kHz ~ 40GHz	May 06, 2022	May 05, 2023	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16	1 GHz ~ 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH01-CB)
RF Cable-high	Woken	RG402	High Cable-16+17	1 GHz ~ 18 GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH01-CB)
High Cable	Woken	WCA0929M	40G#5+7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH01-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 08, 2021	Dec. 07, 2022	Radiation (03CH01-CB)
High Cable	Woken	WCA0929M	40G#7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH01-CB)
3m Semi Anechoic Chamber VSWR	RIKEN	SAC-3M	03CH02-CB	1GHz ~18GHz	Mar. 26, 2022	Mar. 25, 2023	Radiation (03CH02-CB)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1370	1GHz~18GHz	Sep. 14, 2021	Sep. 13, 2022	Radiation (03CH02-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 05, 2021	Aug. 04, 2022	Radiation (03CH02-CB)
Pre-Amplifier	Agilent	83017A	MY39501305	1GHz ~ 26.5GHz	Jul. 12, 2021	Jul. 11, 2022	Radiation (03CH02-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 13, 2021	Jul. 12, 2022	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSU	100015	9kHz~26GHz	Oct. 25, 2021	Oct. 24, 2022	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18	1GHz ~ 18GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH02-CB)
RF Cable-high	Woken	RG402	High Cable-18+19	1GHz ~ 18GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5+7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 08, 2021	Dec. 07, 2022	Radiation (03CH02-CB)
High Cable	Woken	WCA0929M	40G#7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH02-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH02-CB)
Spectrum analyzer	R&S	FSV40	101028	9kHz~40GHz	Jan. 07, 2022	Jan. 06, 2023	Conducted (TH03-CB)
Power Sensor	Anritsu	MA2411B	1726195	300MHz~40GHz	Aug. 22, 2021	Aug. 21, 2022	Conducted (TH03-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Aug. 22, 2021	Aug. 21, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-11	1 GHz ~18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-12	1 GHz ~18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH03-CB)

**RADIO TEST REPORT****Report No. : FR770523-13AD**

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-13	1 GHz –18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-14	1 GHz –18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-15	1 GHz –18 GHz	Oct. 04, 2021	Oct. 03, 2022	Conducted (TH03-CB)
Switch	SPTCB	SP-SWI	SWI-03	1 GHz –26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	SWI-03-P1	1 GHz –26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	SWI-03-P2	1 GHz –26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	SWI-03-P3	1 GHz –26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	SWI-03-P4	1 GHz –26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	SWI-03-P5	1 GHz –26.5 GHz	Dec. 13, 2021	Dec. 12, 2022	Conducted (TH03-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH03-CB)

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

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



Conducted Emissions at Powerline

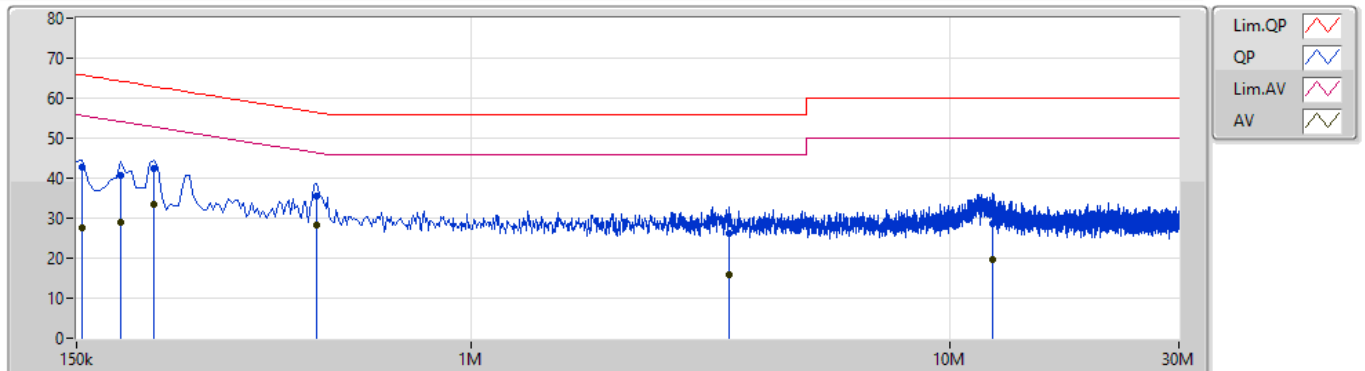
Appendix A

Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin	Condition
						(dB)	
Mode 4	Pass	AV	474k	28.25	46.44	-18.19	Line

Mode 4

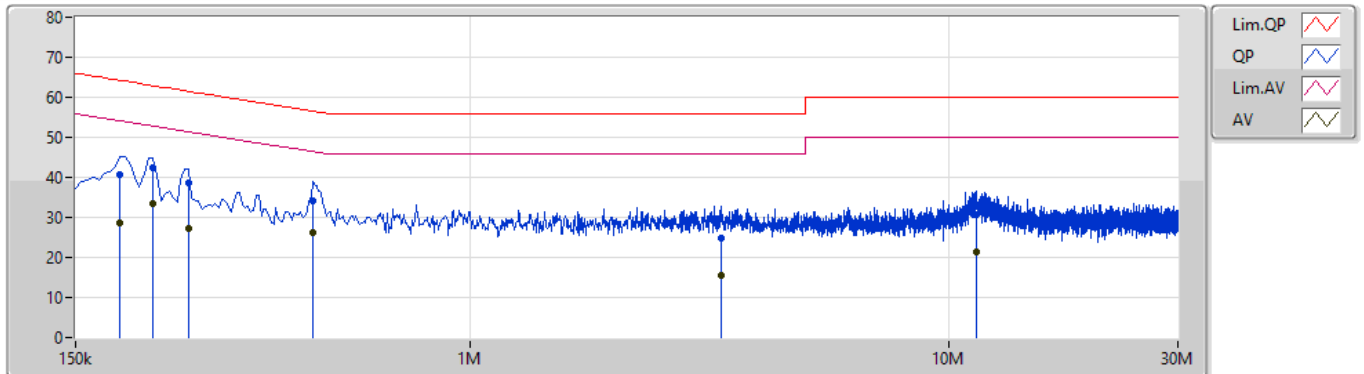
26/04/2022



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	154.5k	42.68	65.75	-23.07	9.97	Line	-	32.71	0.06	0.02	9.89			
AV	154.5k	27.58	55.75	-28.17	9.97	Line	-	17.61	0.06	0.02	9.89			
QP	186k	40.85	64.20	-23.35	9.97	Line	-	30.88	0.06	0.02	9.89			
AV	186k	28.95	54.20	-25.25	9.97	Line	-	18.98	0.06	0.02	9.89			
QP	217.5k	42.37	62.92	-20.55	9.97	Line	-	32.40	0.06	0.02	9.89			
AV	217.5k	33.47	52.92	-19.45	9.97	Line	-	23.50	0.06	0.02	9.89			
QP	474k	35.47	56.44	-20.97	9.97	Line	-	25.50	0.06	0.02	9.89			
AV	474k	28.25	46.44	-18.19	9.97	Line	"Worst"	18.28	0.06	0.02	9.89			
QP	3.444M	26.15	56.00	-29.85	10.07	Line	-	16.08	0.11	0.07	9.89			
AV	3.444M	15.72	46.00	-30.28	10.07	Line	-	5.65	0.11	0.07	9.89			
QP	12.242M	28.76	60.00	-31.24	10.25	Line	-	18.51	0.24	0.09	9.92			
AV	12.242M	19.50	50.00	-30.50	10.25	Line	-	9.25	0.24	0.09	9.92			

Mode 4

26/04/2022



Type	Freq (Hz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Factor (dB)	Condition	Comment	Raw (dBuV)	LISN (dB)	CL (dB)	AT (dB)			
QP	186k	40.58	64.20	-23.62	9.98	Neutral	-	30.60	0.07	0.02	9.89			
AV	186k	28.79	54.20	-25.41	9.98	Neutral	-	18.81	0.07	0.02	9.89			
QP	217.5k	42.47	62.92	-20.45	9.98	Neutral	-	32.49	0.07	0.02	9.89			
AV	217.5k	33.53	52.92	-19.39	9.98	Neutral	"Worst"	23.55	0.07	0.02	9.89			
QP	258k	38.75	61.49	-22.74	9.98	Neutral	-	28.77	0.07	0.02	9.89			
AV	258k	27.16	51.49	-24.33	9.98	Neutral	-	17.18	0.07	0.02	9.89			
QP	469.5k	34.10	56.52	-22.42	9.98	Neutral	-	24.12	0.07	0.02	9.89			
AV	469.5k	26.29	46.52	-20.23	9.98	Neutral	-	16.31	0.07	0.02	9.89			
QP	3.332M	24.76	56.00	-31.24	10.07	Neutral	-	14.69	0.12	0.06	9.89			
AV	3.332M	15.53	46.00	-30.47	10.07	Neutral	-	5.46	0.12	0.06	9.89			
QP	11.414M	30.77	60.00	-29.23	10.25	Neutral	-	20.52	0.25	0.08	9.92			
AV	11.414M	21.44	50.00	-28.56	10.25	Neutral	-	11.19	0.25	0.08	9.92			



Summary

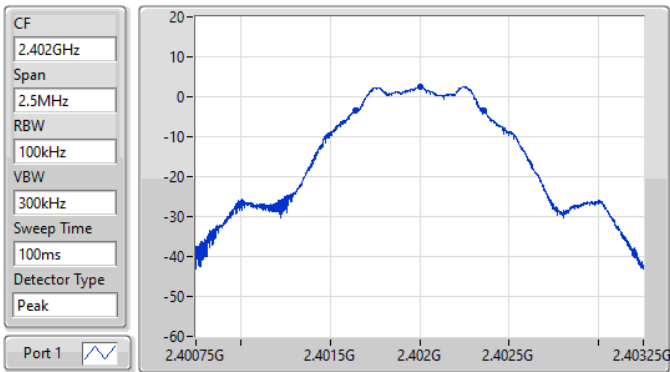
Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-LE(1Mbps)	721.25k	1.058M	1M06F1D	715k	1.054M

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)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	500k	717.5k	1.054M
2440MHz	Pass	500k	721.25k	1.055M
2480MHz	Pass	500k	715k	1.058M

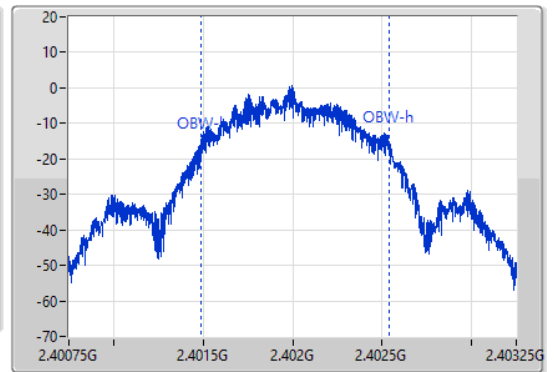
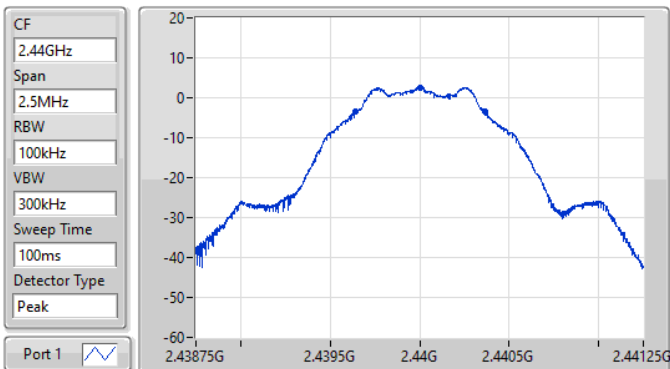
Port X-N dB = Port X 6dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

BT-LE(1Mbps)
2402MHz


6dB(Hz)	FI-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	FI-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
717.5k	2.401641G	2.402359G	1.054M	2.401485G	2.402539G	500k	1

EBW-DTS

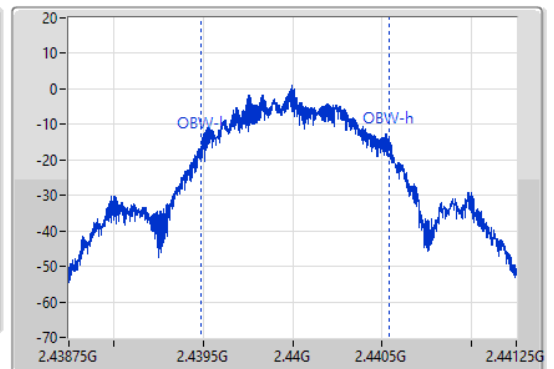
27/04/2022


BT-LE(1Mbps)
2440MHz


6dB(Hz)	FI-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	FI-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
721.25k	2.439641G	2.440363G	1.055M	2.439488G	2.440543G	500k	1

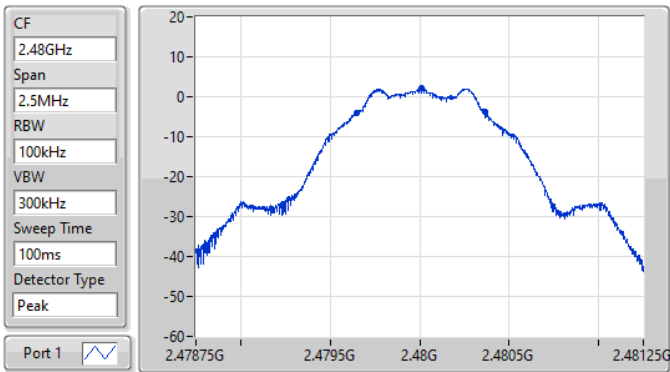
EBW-DTS

27/04/2022



BT-LE(1Mbps)

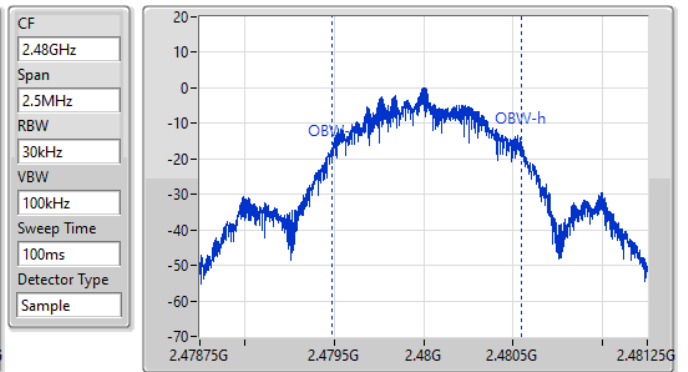
2480MHz



6dB(Hz)	Fl-6dB(Hz)	Fh-6dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
715k	2.47965G	2.480365G	1.058M	2.47949G	2.480548G	500k	1

EBW-DTS

27/04/2022





Summary

Mode	Power (dBm)	Power (W)
2.4-2.4835GHz	-	-
BT-LE(1Mbps)	2.80	0.00191



Average Power-DTS

Appendix C

Result

Mode	Result	Gain (dBi)	Power (dBm)	Power Limit (dBm)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.16	2.73	30.00
2440MHz	Pass	3.16	2.80	30.00
2480MHz	Pass	3.16	2.24	30.00

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



Summary

Mode	PD (dBm/RBW)
2.4-2.4835GHz	-
BT-LE(1Mbps)	-11.84

RBW = 3kHz;

Result

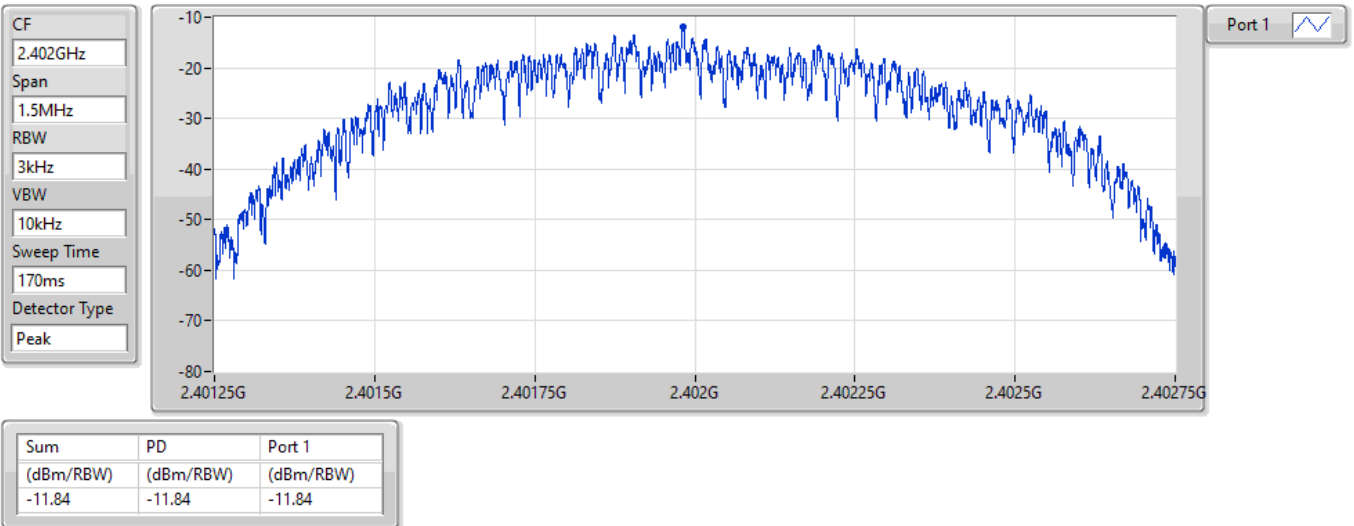
Mode	Result	Gain (dBi)	PD (dBm/RBW)	PD Limit (dBm/RBW)
BT-LE(1Mbps)	-	-	-	-
2402MHz	Pass	3.16	-11.84	8.00
2440MHz	Pass	3.16	-11.95	8.00
2480MHz	Pass	3.16	-12.91	8.00

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;

BT-LE(1Mbps)

2402MHz

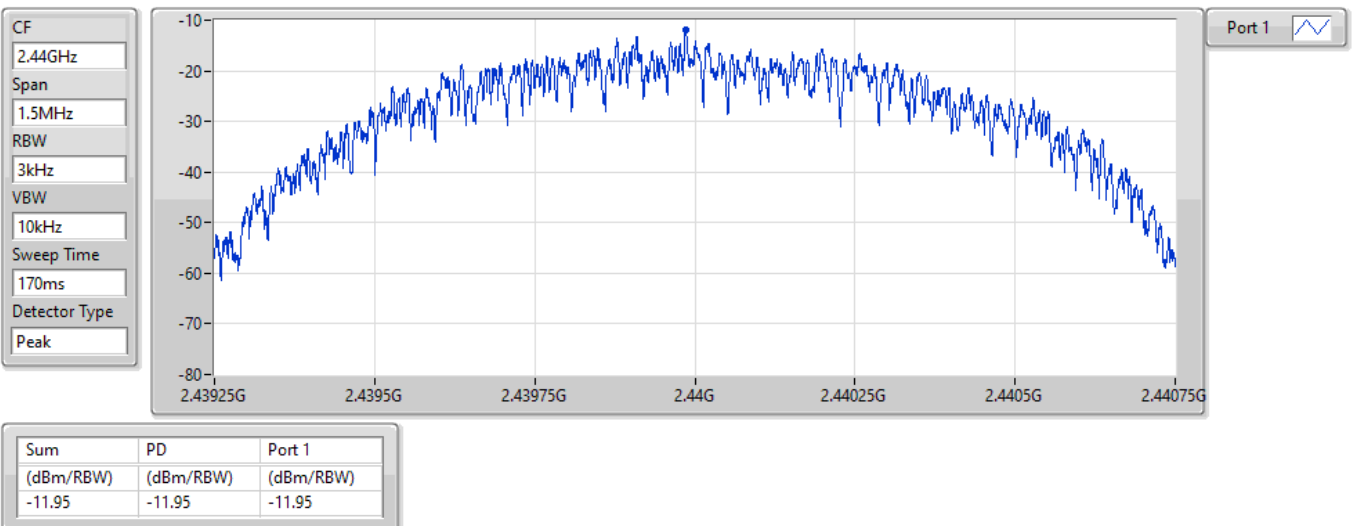
27/04/2022



BT-LE(1Mbps)

2440MHz

27/04/2022

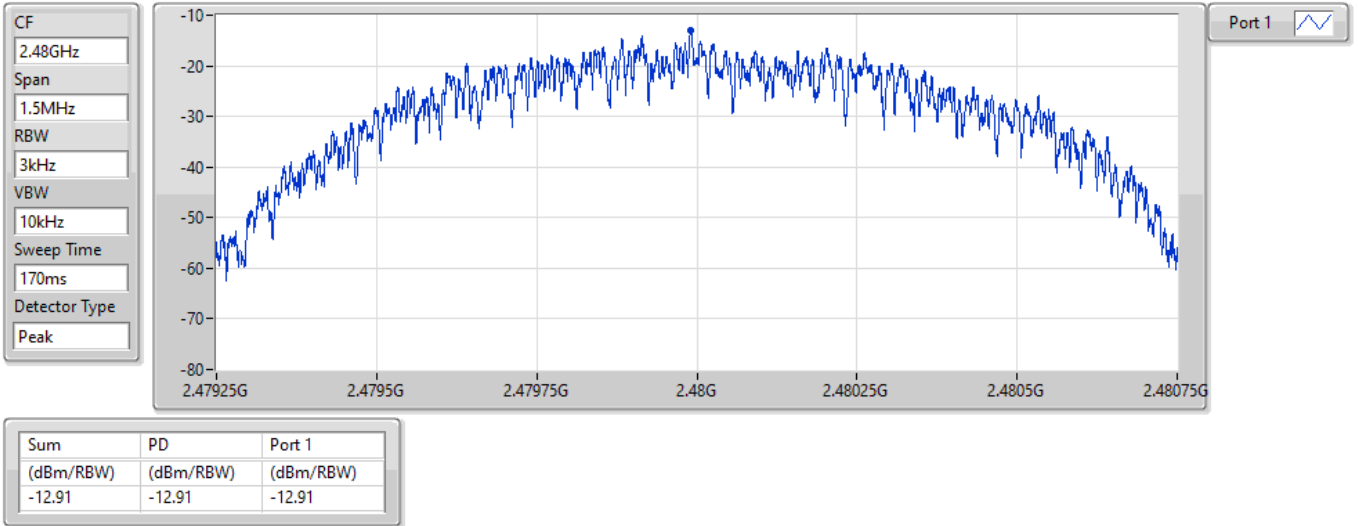


BT-LE(1Mbps)

2480MHz

PSD

27/04/2022





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)	Freq (Hz)	Level (dBm)	Port
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	2.44025G	2.46	-27.54	2.19053G	-41.39	2.39088G	-42.01	2.4835G	-44.72	2.49472G	-42.10	21.8533G	-35.93	1



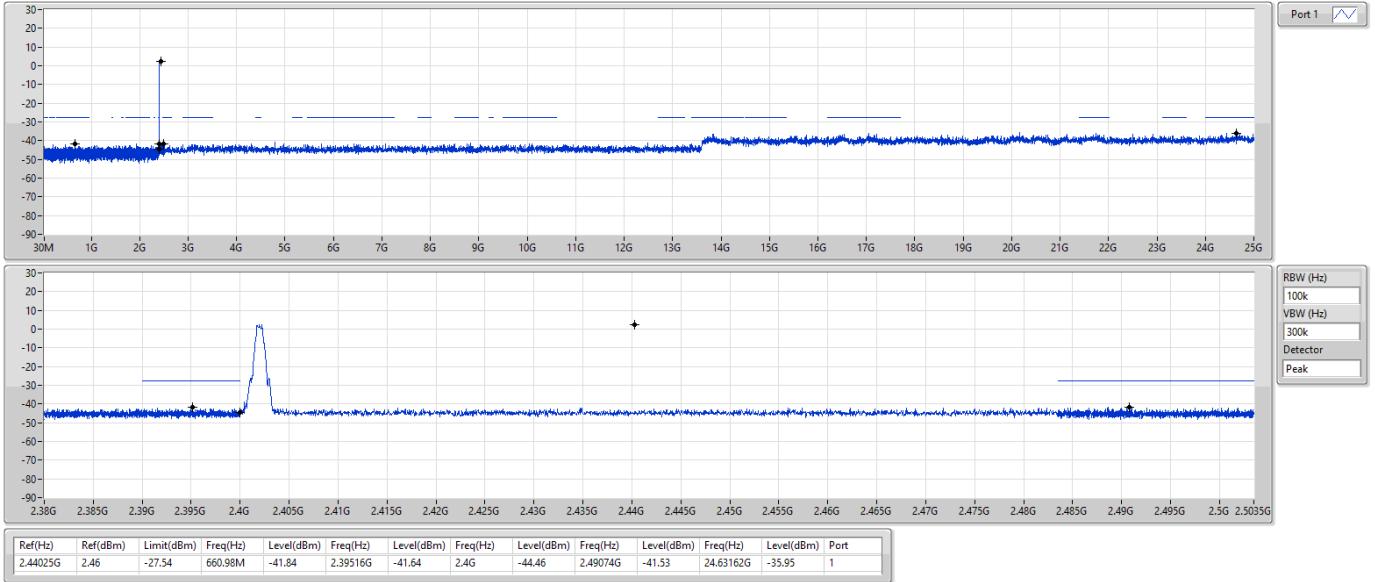
Result

Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Freq (Hz)	Level (dBm)	Port
BT-LE(1Mbps)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2402MHz	Pass	2.44025G	2.46	-27.54	660.98M	-41.84	2.39516G	-41.64	2.4G	-44.46	2.49074G	-41.53	24.63162G	-35.95	1
2440MHz	Pass	2.44025G	2.46	-27.54	1.43295G	-41.93	2.3973G	-42.45	2.4G	-44.50	2.49168G	-41.62	21.60303G	-35.80	1
2480MHz	Pass	2.44025G	2.46	-27.54	2.19053G	-41.39	2.39088G	-42.01	2.4835G	-44.72	2.49472G	-42.10	21.8533G	-35.93	1

BT-LE(1Mbps)

CSEndB-DTS

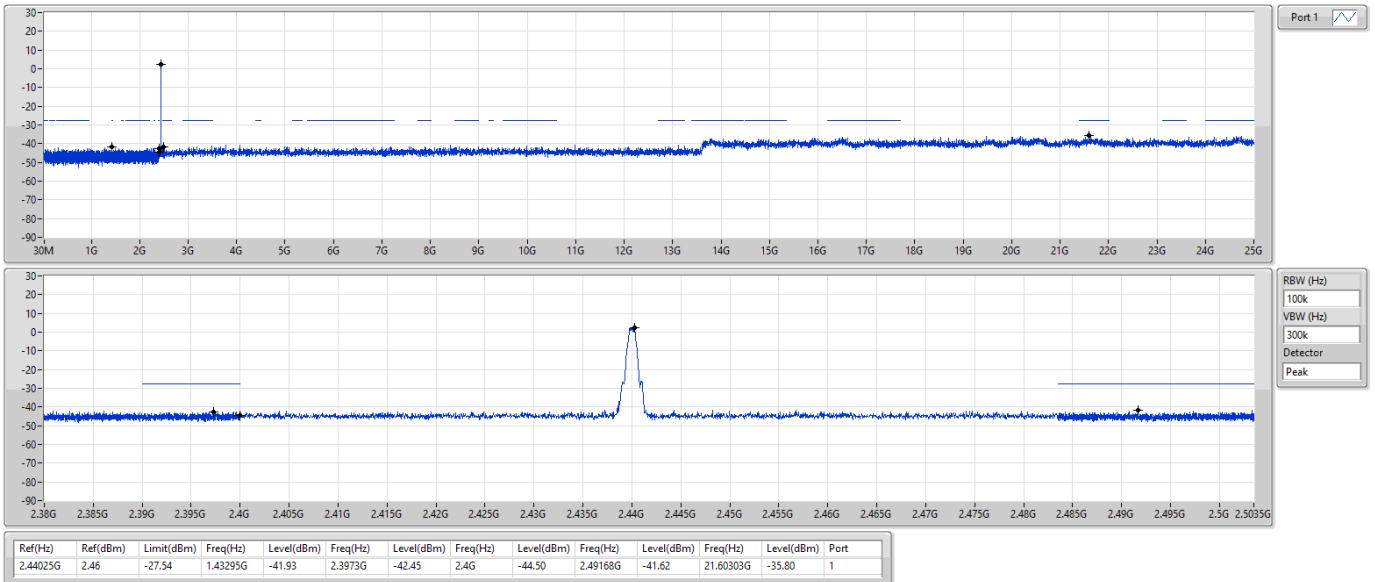
2402MHz



BT-LE(1Mbps)

CSEndB-DTS

2440MHz

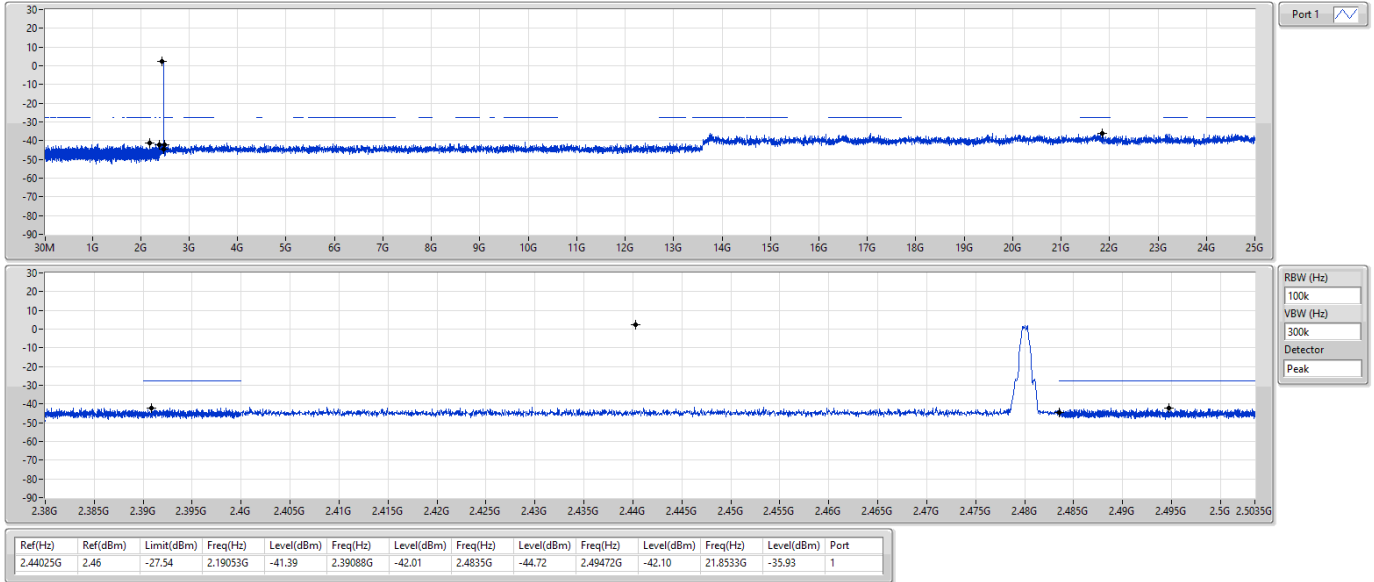


BT-LE(1Mbps)

CSEndB-DTS

2480MHz

27/04/2022





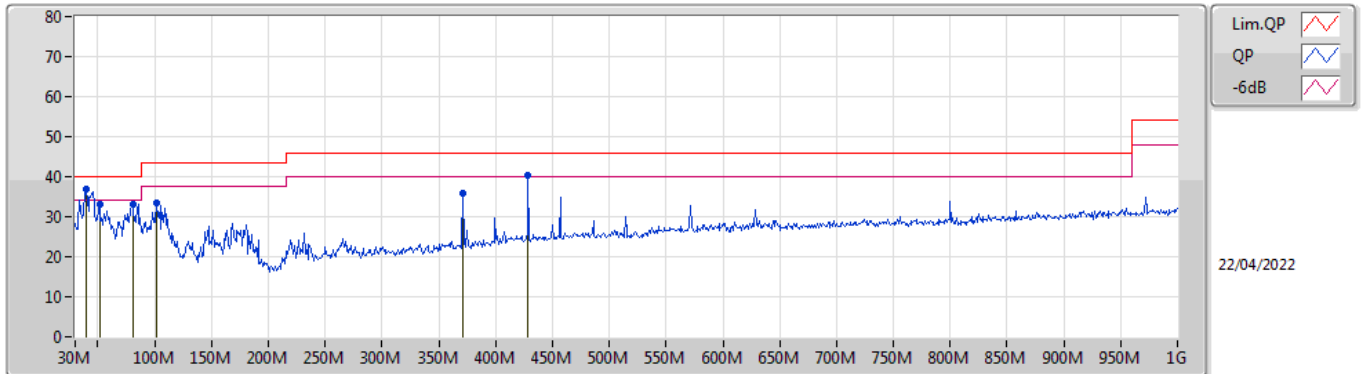
Radiated Emissions below 1GHz

Appendix F.1

Summary

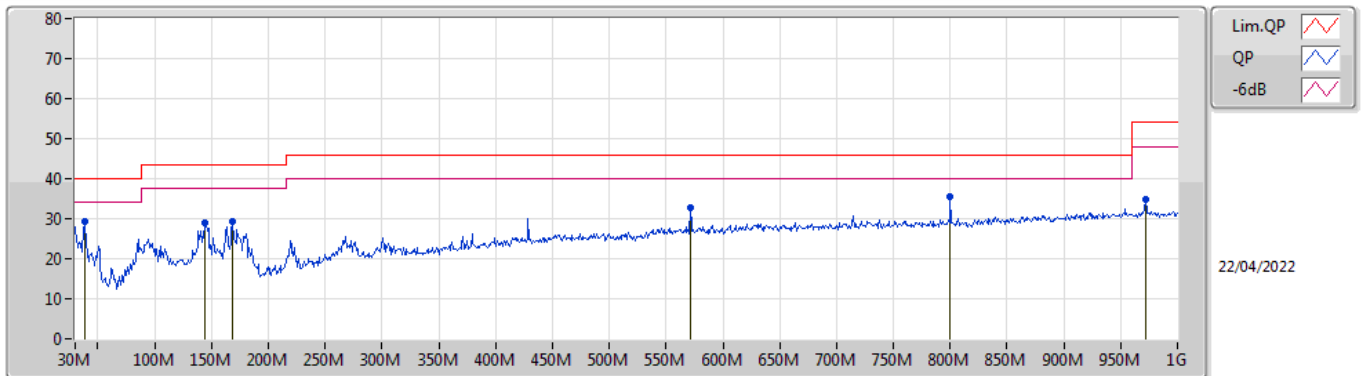
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 4	Pass	QP	39.7M	36.92	40.00	-3.08	Vertical

Mode 4



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	39.7M	36.92	40.00	-3.08	-11.98	3	Vertical	202	1.00	"Worst"	48.90	18.78	0.90	31.66
PK	51.34M	33.09	40.00	-6.91	-17.17	3	Vertical	289	1.00	-	50.26	13.50	1.10	31.77
PK	80.44M	33.00	40.00	-7.00	-17.72	3	Vertical	254	1.50	-	50.72	12.80	1.40	31.92
PK	101.78M	33.50	43.50	-10.00	-13.47	3	Vertical	356	1.00	-	46.97	16.90	1.51	31.88
PK	371.44M	35.89	46.00	-10.11	-8.28	3	Vertical	259	2.00	-	44.17	20.77	3.09	32.14
PK	428.67M	40.25	46.00	-5.75	-6.61	3	Vertical	231	1.50	-	46.86	22.26	3.37	32.24

Mode 4



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	38.73M	29.36	40.00	-10.64	-11.39	3	Horizontal	280	1.25	"Worst"	40.75	19.35	0.90	31.64
PK	144.46M	29.05	43.50	-14.45	-13.59	3	Horizontal	46	2.00	-	42.64	16.53	1.84	31.96
PK	168.71M	29.27	43.50	-14.23	-14.40	3	Horizontal	173	1.50	-	43.67	15.52	2.04	31.96
PK	571.26M	32.81	46.00	-13.19	-4.30	3	Horizontal	181	1.25	-	37.11	24.29	3.89	32.48
PK	800.18M	35.36	46.00	-10.64	-2.18	3	Horizontal	35	1.25	-	37.54	25.61	4.90	32.69
PK	971.87M	34.72	54.00	-19.28	-0.17	3	Horizontal	10	1.00	-	34.89	26.80	5.60	32.57

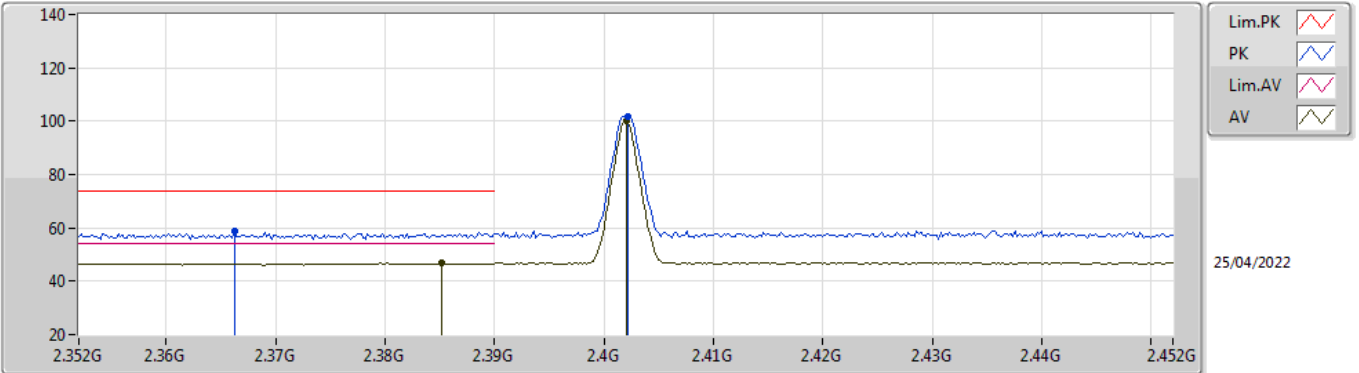


Summary

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comments
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-LE(1Mbps)	Pass	AV	2.4835G	47.08	54.00	-6.92	3	Vertical	317	1.71	-

BT-LE(1Mbps)

2402MHz_TX

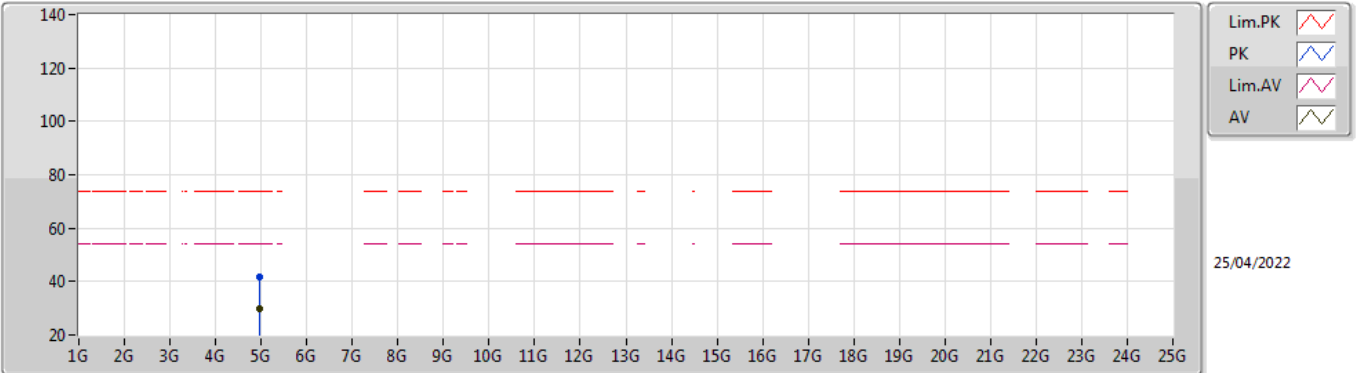


EUT V_1TX
Setting Default
02-B-B-2

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	2.3662G	58.63	74.00	-15.37	28.18	3	Vertical	322	1.80	-	27.67	2.78	-	
AV	2.3852G	46.87	54.00	-7.13	16.45	3	Vertical	322	1.80	-	27.63	2.79	-	
PK	2.4022G	101.56	Inf	-Inf	71.16	3	Vertical	322	1.80	-	27.60	2.80	-	
AV	2.402G	100.07	Inf	-Inf	69.67	3	Vertical	322	1.80	-	27.60	2.80	-	

BT-LE(1Mbps)

2402MHz_TX

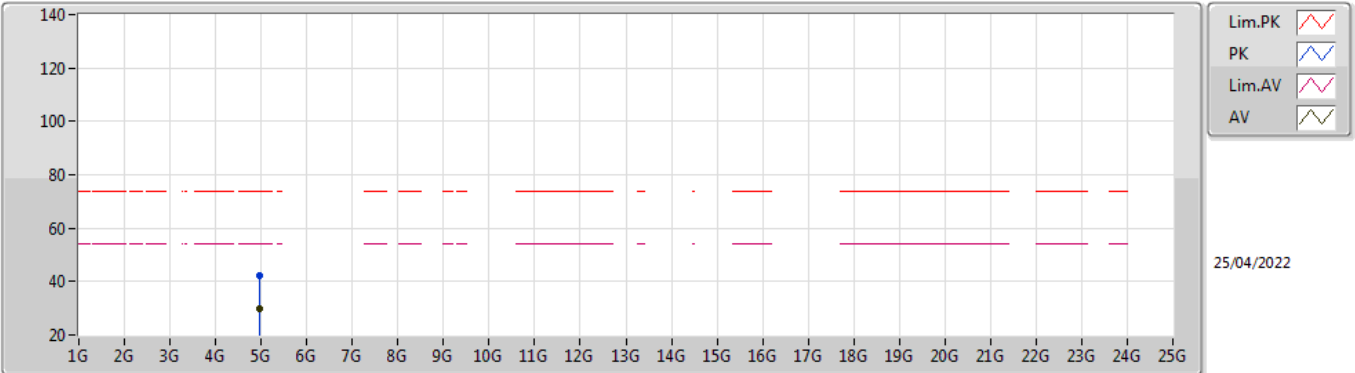


EUT V_1TX
Setting Default
02-B-B-2

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	4.95968G	41.57	74.00	-32.43	37.10	3	Vertical	43	1.06	-	31.54	5.10	32.17
AV	4.96131G	30.00	54.00	-24.00	25.52	3	Vertical	43	1.06	-	31.55	5.10	32.17

BT-LE(1Mbps)

2402MHz_TX

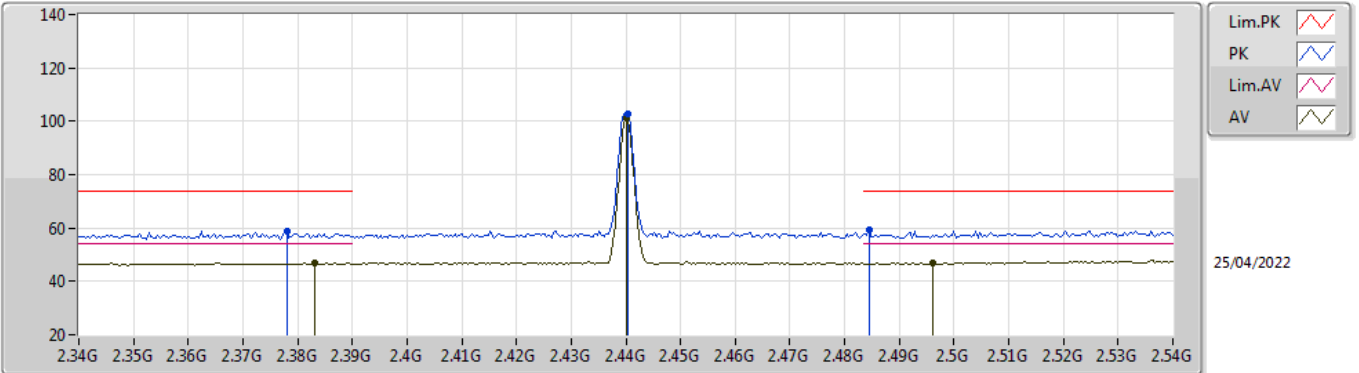


EUT V_1TX
Setting Default
02-B-B-2

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	4.96068G	42.08	74.00	-31.92	37.61	3	Horizontal	220	1.53	-	31.54	5.10	32.17
AV	4.96044G	30.06	54.00	-23.94	25.59	3	Horizontal	220	1.53	-	31.54	5.10	32.17

BT-LE(1Mbps)

2440MHz_TX

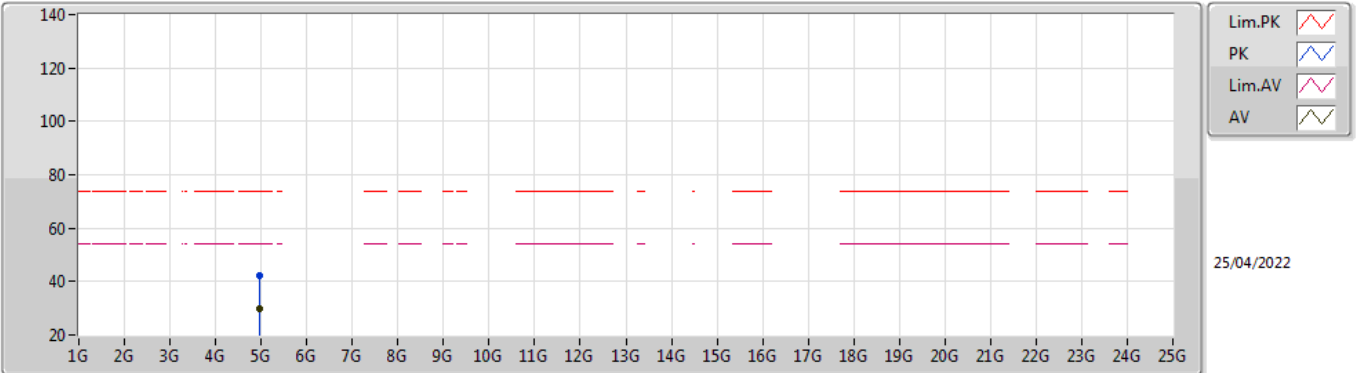


EUT V_1TX
Setting Default
02-B-B-2

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	2.378G	58.92	74.00	-15.08	28.49	3	Vertical	123	2.75	-	27.64	2.79	-
AV	2.3832G	46.94	54.00	-7.06	16.52	3	Vertical	123	2.75	-	27.63	2.79	-
PK	2.4404G	102.60	Inf	-Inf	72.24	3	Vertical	123	2.75	-	27.52	2.84	-
AV	2.44G	101.17	Inf	-Inf	70.81	3	Vertical	123	2.75	-	27.52	2.84	-
PK	2.4844G	59.18	74.00	-14.82	28.80	3	Vertical	123	2.75	-	27.50	2.88	-
AV	2.496G	46.91	54.00	-7.09	16.51	3	Vertical	123	2.75	-	27.50	2.90	-

BT-LE(1Mbps)

2440MHz_TX

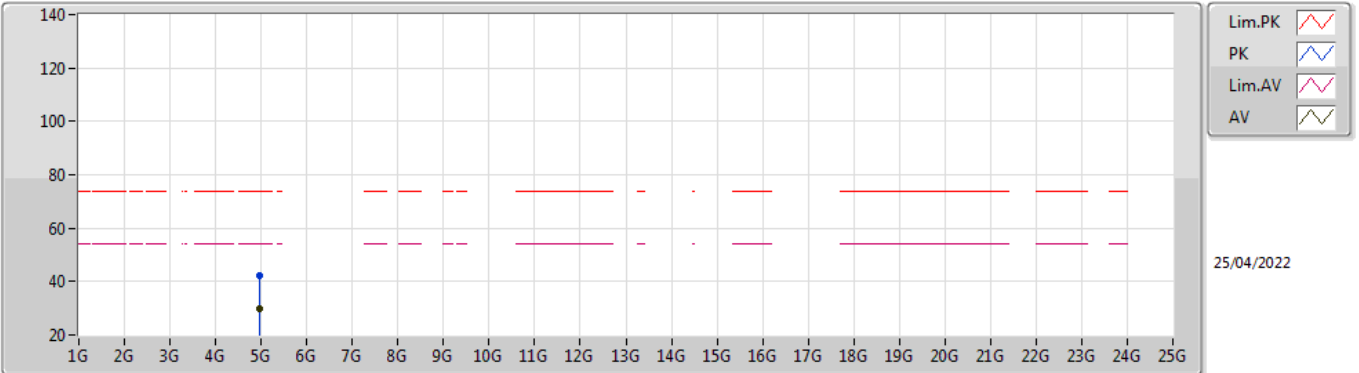


EUT V_1TX
Setting Default
02-B-B-2

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	4.96139G	42.07	74.00	-31.93	37.59	3	Vertical	85	1.80	-	31.55	5.10	32.17	
AV	4.96074G	29.89	54.00	-24.11	25.42	3	Vertical	85	1.80	-	31.54	5.10	32.17	

BT-LE(1Mbps)

2440MHz_TX

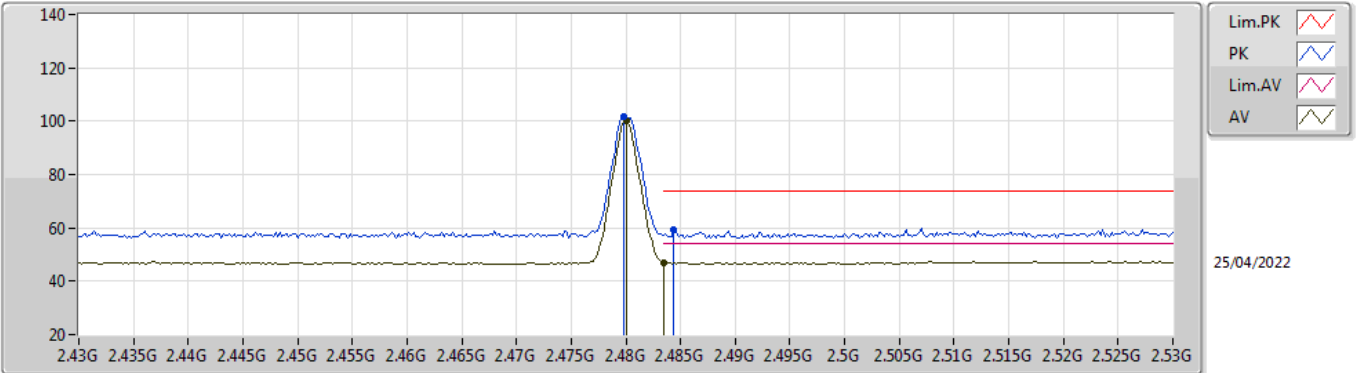


EUT V_1TX
Setting Default
02-B-B-2

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	4.95888G	42.10	74.00	-31.90	37.63	3	Horizontal	152	1.14	-	31.54	5.10	32.17
AV	4.96044G	29.84	54.00	-24.16	25.37	3	Horizontal	152	1.14	-	31.54	5.10	32.17

BT-LE(1Mbps)

2480MHz_TX

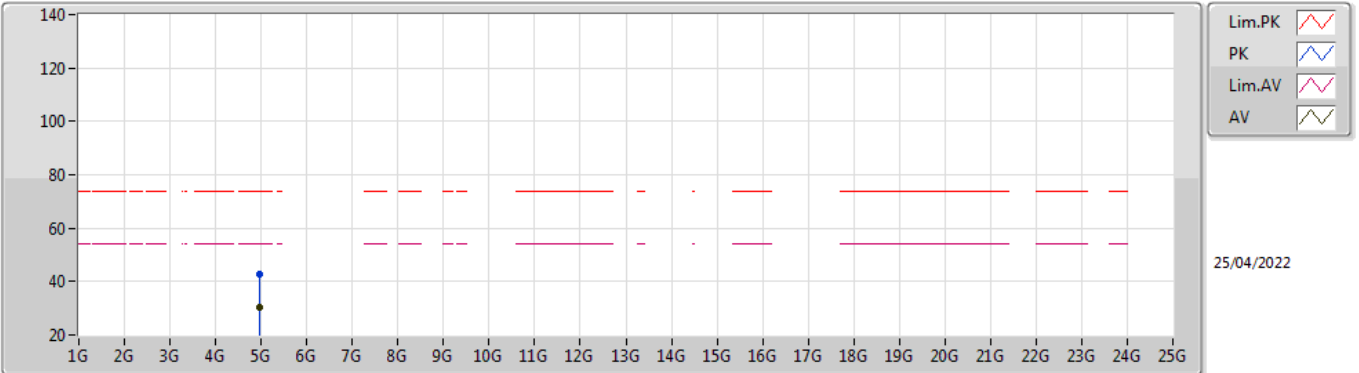


EUT V_1TX
Setting Default
02-B-B-2

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	2.4798G	101.49	Inf	-Inf	71.11	3	Vertical	317	1.71	-	27.50	2.88	-
AV	2.48G	99.98	Inf	-Inf	69.60	3	Vertical	317	1.71	-	27.50	2.88	-
PK	2.4844G	59.38	74.00	-14.62	29.00	3	Vertical	317	1.71	-	27.50	2.88	-
AV	2.4835G	47.08	54.00	-6.92	16.70	3	Vertical	317	1.71	-	27.50	2.88	-

BT-LE(1Mbps)

2480MHz_TX

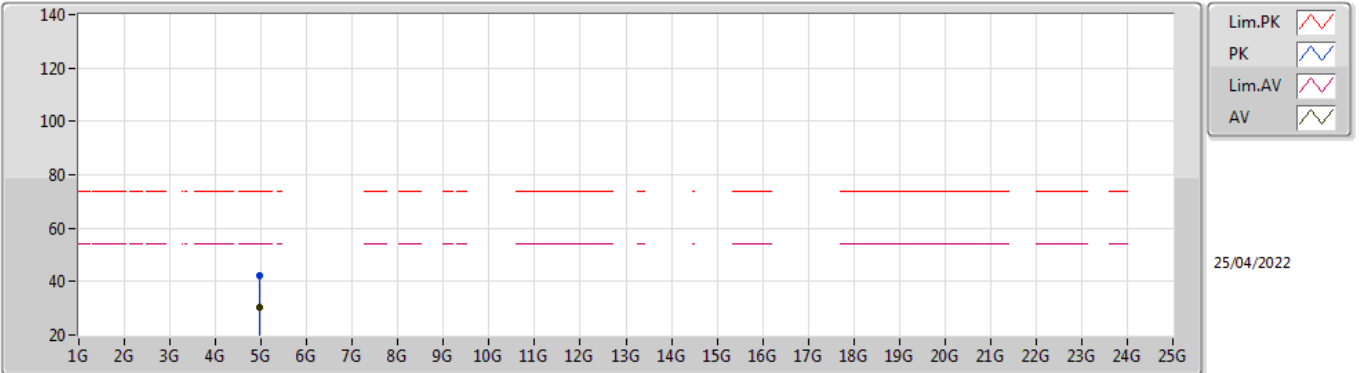


EUT V_1TX
Setting Default
02-B-B-2

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	4.95892G	42.60	74.00	-31.40	38.13	3	Vertical	202	1.61	-	31.54	5.10	32.17	
AV	4.95966G	30.16	54.00	-23.84	25.69	3	Vertical	202	1.61	-	31.54	5.10	32.17	

BT-LE(1Mbps)

2480MHz_TX



EUT V_1TX
Setting Default
02-B-B-2

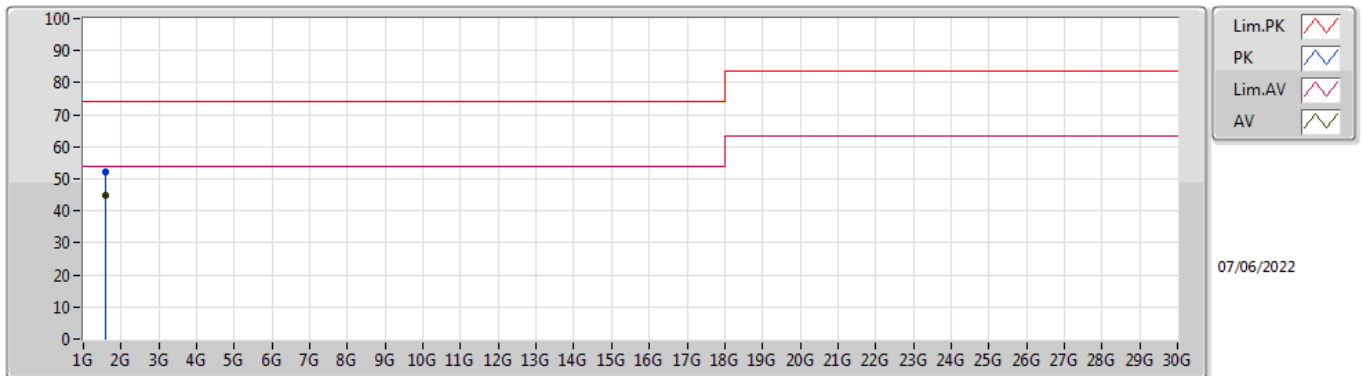
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw (dBuV)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	AF (dB)	CL (dB)	PA (dB)	
PK	4.9609G	42.40	74.00	-31.60	37.93	3	Horizontal	326	3.00	-	31.54	5.10	32.17	
AV	4.96037G	30.16	54.00	-23.84	25.69	3	Horizontal	326	3.00	-	31.54	5.10	32.17	



Summary

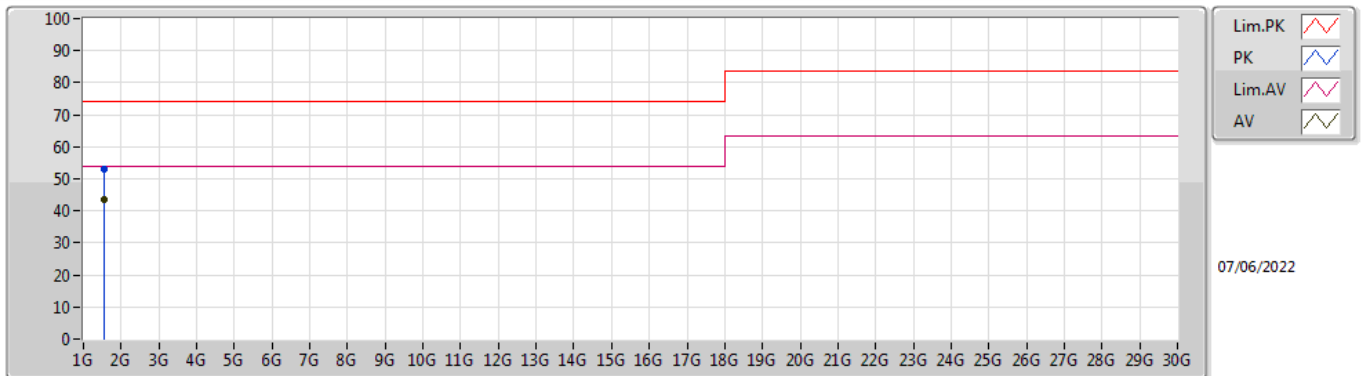
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	AV	1.5847G	44.82	54.00	-9.18	Vertical

Mode 1



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	1.5679G	52.16	74.00	-21.84	-4.13	-	Vertical	167	1.34	-	56.29	25.50	3.68	33.31
AV	1.5847G	44.82	54.00	-9.18	-4.11	-	Vertical	167	1.34	"Worst"	48.93	25.50	3.69	33.30

Mode 1



Type	Freq	Level	Limit	Margin	Factor	Dist	Condition	Azimuth	Height	Comment	Raw	AF	CL	PA
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dB/m)	(m)		(°)	(m)		(dBuV/m)	(dB/m)	(dB)	(dB)
PK	1.5597G	53.18	74.00	-20.82	-4.13	-	Vertical	254	1.12	-	57.31	25.50	3.68	33.31
AV	1.5621G	43.62	54.00	-10.38	-4.13	-	Vertical	254	1.12	"Worst"	47.75	25.50	3.68	33.31