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Test report No:
22B0838R-RF-US-P06V04

FCC & ISED TEST REPORT

Product Name	LED lamp
Trademark	PHILIPS
Model and /or type reference	9290023351B
FCC ID	2AGBW9290023351BX
IC	20812-23351BX
Applicant´s name / address	Signify (China) Investment Co., Ltd. Building No.9, Lane 888, Tianlin Road, Minhang district, 200233, Shanghai, China
Test method requested, standard	CFR 47, FCC Part 15 C ANSI C63.10: 2013 RSS-Gen RSS-247
Verdict Summary	IN COMPLIANCE
Tested by (name / position & signature)	Jun Xu/ Project Engineer
Approved by (name / position & signature)	Jack Zhang/ Manager
Date of issue	2023-03-30
Report Version	V1.0
Report template No	Template_FCC 15.247-RF-V1.0

INDEX

page

General conditions 4
Environmental conditions 4
Possible test case verdicts 5
Abbreviations 5
Document History 6
Remarks and Comments 6
Used Equipment 7
Uncertainty 9
1 General Information 10
1.1 General Description of the Item(s) 10
1.2 Antenna Information 11
1.3 Channel List 12
2 Description of Test Setup 13
2.1 Operating mode(s) used for tests 13
2.2 Auxiliary equipment / Test software for the EUT 13
2.3 Test Configuration / Block diagram used for tests 14
2.4 Testing process 15
3 Verdict summary section 16
3.1 Standards 16
3.2 Deviation(s) from the Standard(s) / Test Specification(s) 16
3.3 Overview of results 17
3.4 Test Facility 18
4 Test Results 19
4.1 AC Power Line Conducted Emission 19
4.1.1 Limit 19
4.1.2 Test Setup 19
4.1.3 Test Procedure 19
4.1.4 Test Data 20
4.2 Emissions in restricted frequency bands 22
4.2.1 Limit 22
4.2.2 Test Setup 24
4.2.3 Test Procedure 25
4.2.4 Test Data 26
4.3 Emissions in non-restricted frequency band 34

4.3.1 Limit 34
4.3.2 Test Setup 34
4.3.3 Test Procedure 34
4.3.4 Test Data 35
4.4 Duty cycle 40
4.4.1 Limit 40
4.4.2 Test Setup 40
4.4.3 Test Procedure 40
4.4.4 Test Data 41
4.5 Band Edge 42
4.5.1 Limit 42
4.5.2 Test Setup 42
4.5.3 Test Procedure 42
4.5.4 Test Data 43
4.6 DTS Bandwidth 51
4.6.1 Limit 51
4.6.2 Test Setup 51
4.6.3 Test Procedure 51
4.6.4 Test Data 52
4.7 Fundamental emission output power 53
4.7.1 Limit 53
4.7.2 Test Setup 53
4.7.3 Test Procedure 54
4.7.4 Test Data 55
4.8 Power Density 56
4.8.1 Limit: 56
4.8.2 Test Setup 56
4.8.3 Test Procedure 56
4.8.4 Test Data 57
4.9 Antenna Requirement 58
4.9.1 Limit: 58
4.9.2 Antenna Connector Construction: 58
5 Test setup photo and EUT Photo 59

COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.
In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Nov. 23, 2022
Date (start test)	Nov. 24, 2022
Date (finish test)	Dec. 09, 2022

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT : Equipment Under Test
QP : Quasi-Peak
CAV : CISPR Average
AV : Average
CDN : Coupling Decoupling Network
SAC : Semi-Anechoic Chamber
OATS : Open Area Test Site
BW : Bandwidth
AM : Amplitude Modulation
PM : Pulse Modulation
HCP : Horizontal Coupling Plane
VCP : Vertical Coupling Plane
U_N : Nominal voltage
*T*x : Transmitter
*R*x : Receiver
N/A : Not Applicable
N/M : Not Measured

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
22B0838R-RF-US-P06V04	V1.0	Initial issue of report.	2023-03-30

REMARKS AND COMMENTS

1. The equipment under test (EUT) does meet the essential requirements of the stated standard(s)/test(s).
2. These test results on a sample of the device are for the purpose of demonstrating Compliance with Part 15 Subpart C Paragraph 15.247, RSS-Gen Issue 5, RSS-247 Issue 2.
3. The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result.
4. The test results presented in this report relate only to the object tested.
5. The test report shall not be reproduced without the written approval of DEKRA Testing and Certification (Suzhou) Co., Ltd.
6. This report will not be used for social proof function in China market.
7. DEKRA declines any responsibility with the following test data provided by customer that may affect the validity of result:
   - Chapter 1.1 General Description of the Item(s);
   - Chapter 1.2 Antenna Information;
   - Chapter 1.3 Channel List.

USED EQUIPMENT

AC Power Line Conducted Emission / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100726	2022.09.17	2023.09.16
Two-Line V-Network	R&S	ENV216	101044	2022.03.12	2023.03.11
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
Temperature/Humidity Meter	RTS	RTS-8S	TR1-TH	2022.07.07	2023.07.06
Dekra test software	Dekra	-	-	-	-

Emissions in non-restricted frequency bands/ Occupied Bandwidth/ Fundamental emission output power/ Power Spectral Density/Band Edge/ TR8

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2022.12.08	2023.12.07
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2022.12.08	2023.12.07
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2022.07.14	2023.07.13
4TX MIMO Power Sensor	Keysight	X8750A	MY59400102	2022.03.16	2023.03.15
Coaxial Cable	Woken	N/A	N/A	2022.01.18	2023.01.17
Temperature/Humidity Meter	RTS	RTS-8S	RF08	2022.08.23	2023.08.22

Radiated Emission(30MHz-1GHz) / AC3

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100176	2022.07.10	2023.07.09
Loop Antenna	R&S	HFH2-Z2	833799/003	2022.04.15	2023.04.14
Bilog Antenna	Teseq GmbH	CBL6112D	27613	2022.08.28	2023.08.27
Coaxial Cable	Huber+Suhner	RG 214	AC3-C	2022.03.30	2023.03.29
Temperature/Humidity Meter	RTS	RTS-8S	AC3-TH	2022.07.07	2023.07.06
Dekra test software	Dekra	-	-	-	-

Radiated Emission(1GHz-40GHz) / AC5

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2022.12.08	2023.12.07
Amplifier	SKET	LNPA_0118G-45	SK2021041201	2022.04.15	2023.04.14
Preamplifier	EMCI	EMC184045SE	980263	2022.07.19	2023.07.18
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2022.08.29	2023.08.28
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2022.05.19	2023.05.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2022.03.30	2023.03.29
Coaxial Cable	ROSENBERGER	LA1-C011-2000/3000	AC5-40G	2022.03.21	2023.03.20
High-Pass Filter	Wainwright	WHKX3.0/18G-12SS	AC5&AC6	2022.06.07	2023.06.06
Temperature/Humidity Meter	RTS	RTS-8S	AC5-TH	2022.07.07	2023.07.06
Dekra test software	Dekra	-	-	-	-

UNCERTAINTY

Uncertainties have been calculated according to the DEKRA internal document.The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%. The Uncertainties is complice with standard required as below.

Test item	Uncertainty
AC Power Line Conducted Emission	9kHz~150kHz: 2.80dB 150kHz~30MHz: 2.40dB
Peak Power Output	± 1.27 dB
Radiated Emission(30MHz~1GHz)	Horizontal: 30MHz~200MHz: 3.50 dB 300MHz~1GHz: 3.60 dB Vertical: 30MHz~200MHz: 3.60 dB 300MHz~1GHz: 3.50 dB
Radiated Emission(1GHz~26.5GHz)	Horizontal: 1GHz~18GHz: 5.00 dB Vertical: 1GHz~18GHz: 4.80 dB
RF antenna conducted test	± 1.27dB
Radiated Emission Band Edge	± 3.9 dB
DTS Bandwidth	±150Hz
Occupied Bandwidth	±1kHz
Power Density	±1.27dB

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Product Name ..... :	LED lamp
Model No. ..... :	9290023351B
FCC ID ..... :	2AGBW9290023351BX
IC ..... :	20812-23351BX
Manufacturter ..... :	Signify (China) Investment Co., Ltd.
Manufacturer Address ..... :	Building No.9, Lane 888, Tianlin Road, Minhang district, 200233, Shanghai, China

Wireless specification..... :	Zigbee
Operating frequency range(s) ..... :	2400~2483.5MHz
Type of Modulation..... :	DSSS-OQPSK
Data Rate ..... :	250 kbps
Number of channel..... :	16

Rated power supply ..... :	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☒	110-130 Vac, 50/60 Hz;
	☐	HMD: 9V,2.23A or 5V,3A
	☐	Battery:3.85V
Mounting position ..... :	☒	Table top equipment
	☒	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☐	Head-mounted equipment
	☐	Other: Watch

1.2 Antenna Information

Antenna model / type number ..... :	N/A			
Antenna serial number ..... :	N/A			
Antenna Delivery ..... :	☒	1TX + 1RX		
	☐	2TX + 2RX		
	☐	Others:……		
Antenna technology ..... :	☒	SISO		
	☐	MIMO	☐	CDD
			☐	Beam-forming
Antenna Type ..... :	☐	External	☐	Dipole
			☐	Sectorized
	☒	Internal	☐	PIFA
			☒	PCB
			☐	Dipole
			☐	Others……..
Antenna Gain ..... :	-2.5 dBi			

1.3 Channel List

ZigBee Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
11	2405 MHz	12	2410 MHz	13	2415 MHz	14	2420 MHz
15	2425 MHz	16	2430 MHz	17	2435 MHz	18	2440 MHz
19	2445 MHz	20	2450 MHz	21	2455 MHz	22	2460 MHz
23	2465 MHz	24	2470 MHz	25	2475 MHz	26	2480 MHz

Note: The general description of the Item(s), antenna information and channel list in clause 1 are provided and confirmed by the client.

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

During the tests the following operating mode(s) has(have) been used.

Test Mode For Bluetooth	Mode1: Transmit by Zigbee

2.2 Accessories Information

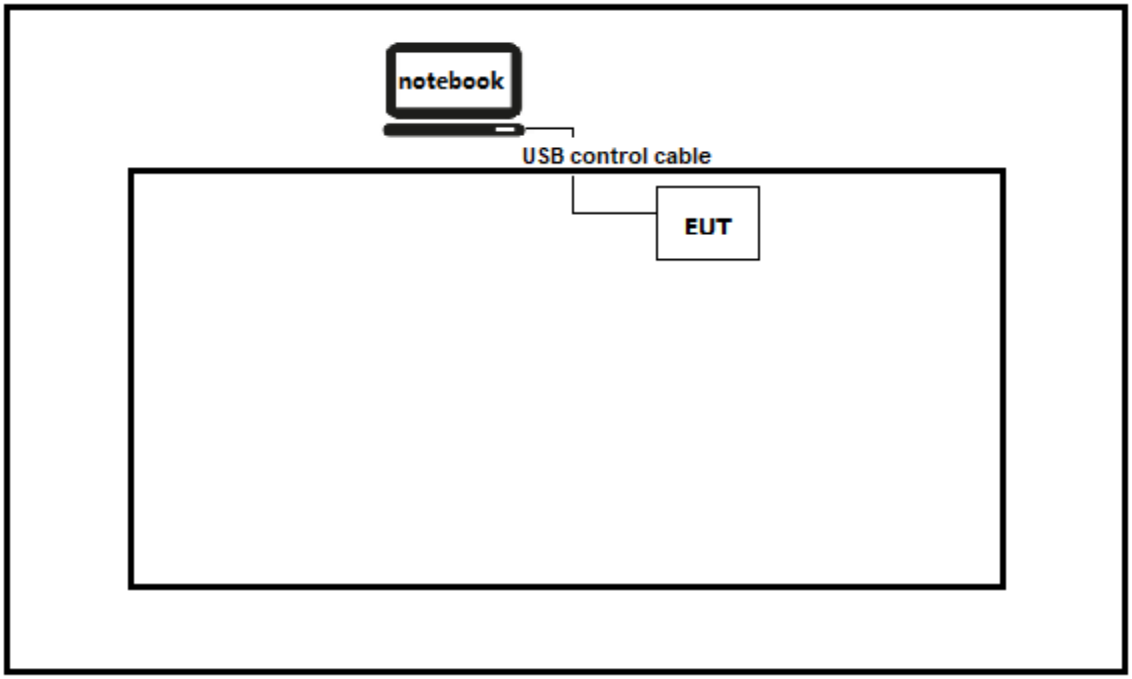
Accessories Information	Brand/model name	Cable		
		Length used during test [m]	Attached during test	Shielded
USB Cable	N/A	10	☒	☒
USB Cable	N/A	0.5	☒	☒

2.3 Auxiliary equipment / Test software for the EUT

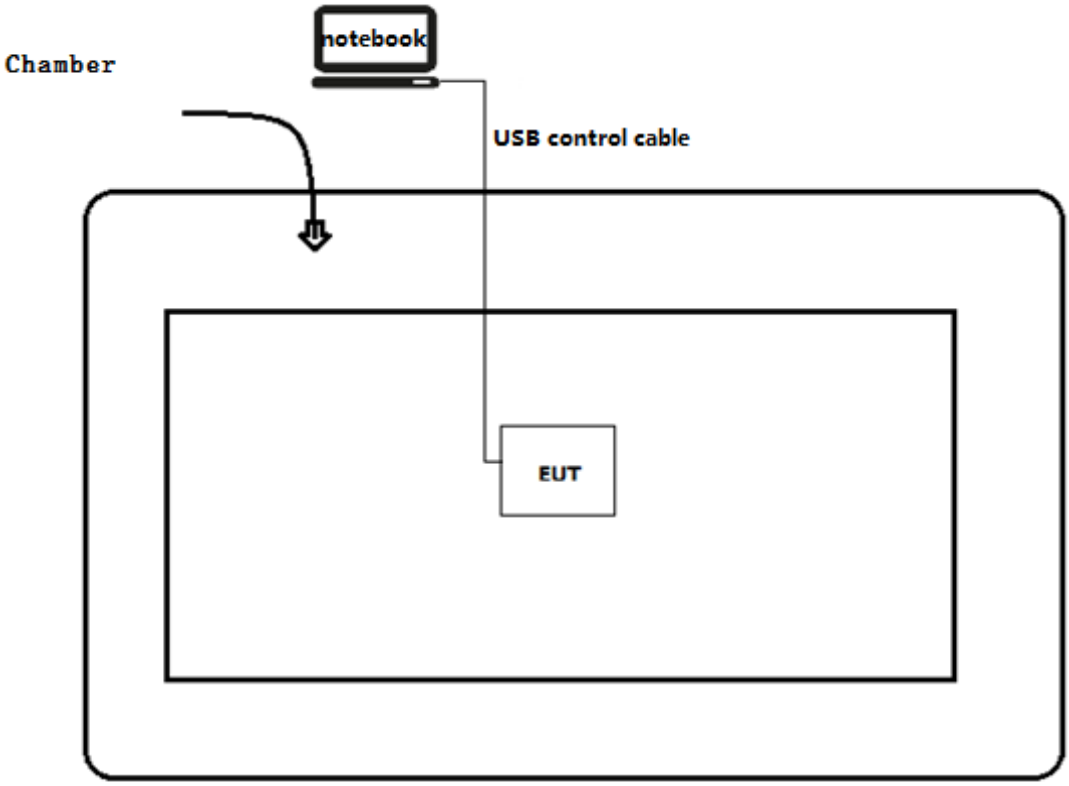
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	2526	Think Pad	N/A
Software	Type / Version	Manufacturer	Supplied by
HueApprobationTool	N/A	N/A	N/A

2.4 Test Configuration / Block diagram used for tests

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



2.5 Testing process

1	Setup the EUT as shown in Section 2.4.
2	Run the software “HueApprobationTool” on the notebook computer.
3	Open the serial port and enter the corresponding commands to configure the test mode, test channel, test power and data rate.
4	Verify that the EUT works properly.

3 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.247	2021	Operation within the bands902–928 MHz, 2400–2483.5 MHz, and5725–5850 MHz.
ANSI C63.10	2013	American National Standard ofProcedures for Compliance Testing ofUnlicensed Wireless Devices
KDB558074 D01 v05r02	2019	Guidance for performing compliance measurements on Digital Transmission System (DTS) operating under section 15.247
RSS-Gen Issue 5 Amendment 2	2021	General Requirements forCompliance of Radio Apparatus
RSS-247 Issue 2	2017	Digital Transmission Systems (DTSs),Frequency Hopping Systems (FHSs)and Licence-Exempt Local Area Network(LE-LAN) Devices

3.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards: N/A.

(Please define the deviations from the standard(s) if applicable)

3.3 Overview of results

For FCC

Requirement – Test case	Basic standard(s)	Verdict	Remark
AC Power Line Conducted Emission	FCC 15.207	PASS	---
Emissions in restricted frequency bands	FCC 15.247(b)(3)	PASS	---
Duty cycle	ANSI C63.10:2013	PASS	---
Emissions in non-restricted frequency bands	FCC 15.247(d), FCC 15.209	PASS	---
Band Edge	FCC 15.247(d)	PASS	---
Fundamental emission output power	FCC 15.247(d), FCC 15.209	PASS	---
DTS Bandwidth	FCC 15.247(a)(2)	PASS	---
Power Spectral Density	FCC 15.247(e)	PASS	---
Antenna Requirement	FCC 15.203	PASS	---

For ISED

Requirement – Test case	Basic standard(s)	Verdict	Remark
AC Power Line Conducted Emission	RSS-Gen Issue 5Section 8.8	PASS	---
Emissions in restricted frequency bands	RSS-Gen Issue 5 Section 8.9	PASS	---
Duty cycle	ANSI C63.10:2013	PASS	---
Emissions in non-restricted frequency bands	RSS-247 Issue 2 Section 5.5	PASS	---
Band Edge	RSS-Gen Issue 5 Section 8.10	PASS	---
Fundamental emission output power	RSS-247 Issue 2 Section 5.4(d)	PASS	---
DTS Bandwidth	RSS-Gen Issue 5 Section 6.7	PASS	---
Power Spectral Density	RSS-247 Issue 2 Section 5.2(b)	PASS	---
Antenna Requirement	RSS-Gen Issue 5 Section 6.8	PASS	---

3.4 Test Facility

USA	**:**	**FCC Designation Number: CN1199**
CA	**:**	**ISED CAB identifier: CN0040**

4 TEST RESULTS

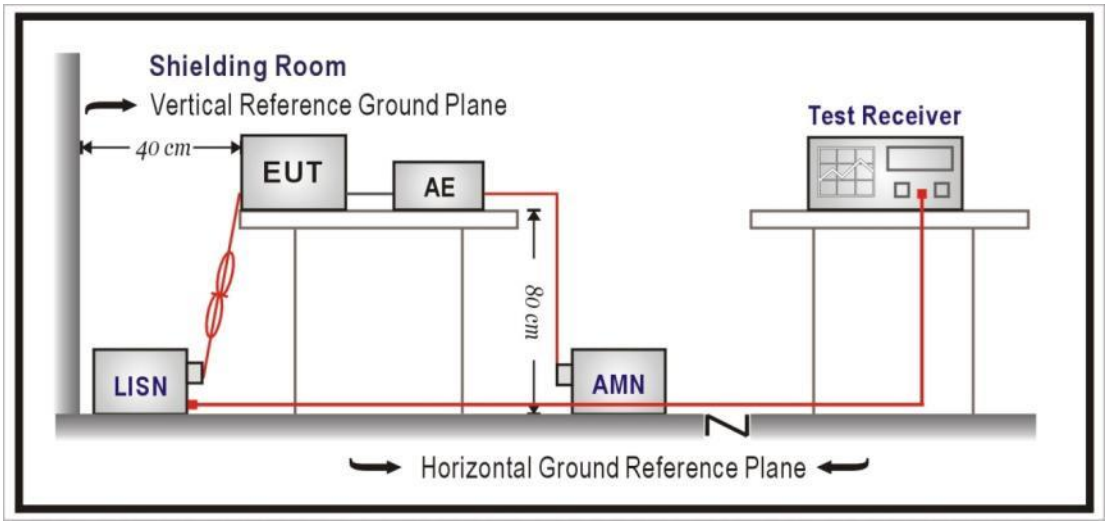
4.1 AC Power Line Conducted Emission	VERDICT: PASS

4.1.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.207	
Frequency range [MHz]	Limit: QP [dB(μV)[1)]]	Limit: AV [dB(μV) [1)]]
0,15 - 0,50	66 – 56 [2)]	56 - 46 [2)]
0,50 - 5,0	56	46
5,0 - 30	60	50

[1)] At the transition frequency, the lower limit applies.
[2)] The limit decreases linearly with the logarithm of the frequency.
NOTE 1: The exclusion band for transmitters shall be considered for transmitters operating at frequencies below 30 MHz.
NOTE 2: Where the AC output port is directly connected (or via a circuit breaker) to the AC power input port of the EUT the AC power output port need not to be tested.

4.1.2 Test Setup

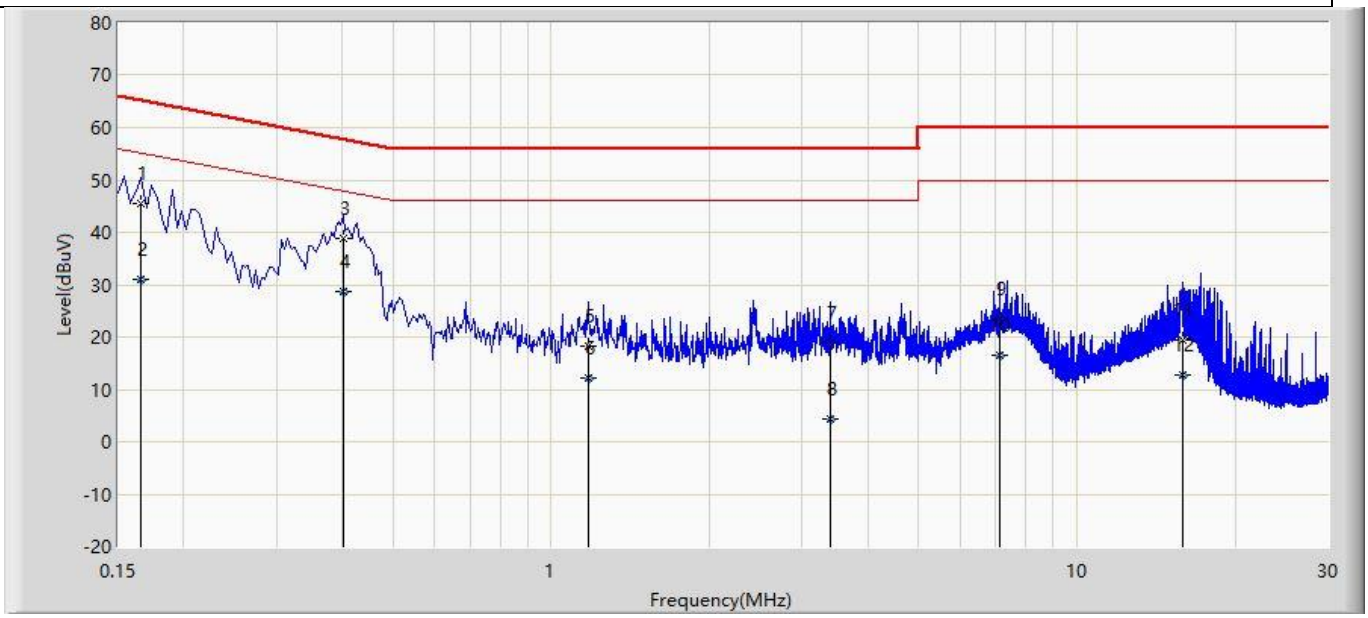


4.1.3 Test Procedure

	References Rule	Chapter	Item
☒	ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensedwireless devices

4.1.4 Test Data

Profile: 22B0838R	Page No.: 93
Engineer: YuLiu	
Site: TR1	Time: 2022/12/05 - 01:21
Limit: FCC_Part15.207	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode1: Transmit by Zigbee 2405MHz	

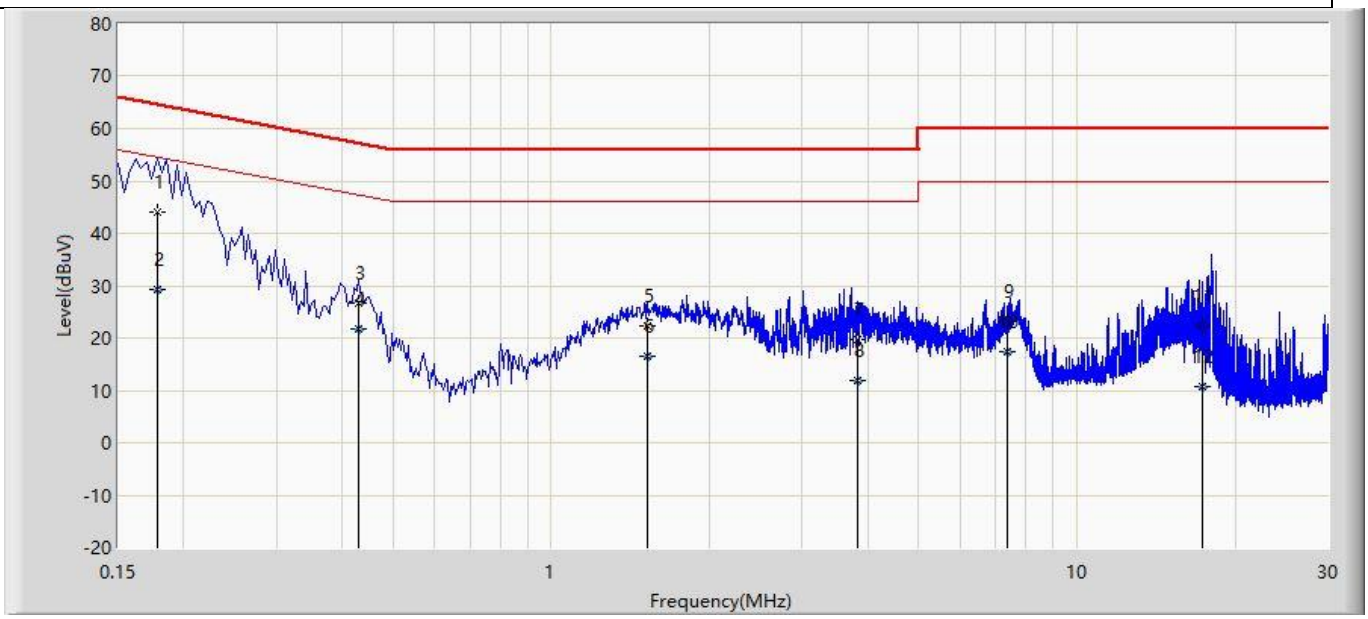


No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.166	45.442	35.870	-19.716	65.158	9.572	QP
2		0.166	30.989	21.417	-24.169	55.158	9.572	AV
3	*	0.402	38.765	29.152	-19.047	57.812	9.613	QP
4		0.402	28.555	18.942	-19.257	47.812	9.613	AV
5		1.174	18.346	8.688	-37.654	56.000	9.658	QP
6		1.174	12.151	2.493	-33.849	46.000	9.658	AV
7		3.390	18.940	9.201	-37.060	56.000	9.739	QP
8		3.390	4.292	-5.446	-41.708	46.000	9.739	AV
9		7.126	23.508	13.600	-36.492	60.000	9.908	QP
10		7.126	16.487	6.579	-33.513	50.000	9.908	AV
11		15.834	19.561	9.391	-40.439	60.000	10.170	QP
12		15.834	12.715	2.546	-37.285	50.000	10.170	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Profile: 22B0838R	Page No.: 94
Engineer: YuLiu	
Site: TR1	Time: 2022/12/05 - 01:33
Limit: FCC_Part15.207	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode1: Transmit by Zigbee 2405MHz	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1	*	0.178	43.942	34.356	-20.637	64.578	9.586	QP
2		0.178	29.161	19.575	-25.418	54.578	9.586	AV
3		0.430	26.714	17.095	-30.538	57.253	9.619	QP
4		0.430	21.782	12.164	-25.470	47.253	9.619	AV
5		1.522	22.376	12.720	-33.624	56.000	9.656	QP
6		1.522	16.550	6.894	-29.450	46.000	9.656	AV
7		3.818	19.773	10.014	-36.227	56.000	9.759	QP
8		3.818	11.840	2.081	-34.160	46.000	9.759	AV
9		7.370	23.256	13.329	-36.744	60.000	9.927	QP
10		7.370	17.293	7.366	-32.707	50.000	9.927	AV
11		17.330	22.363	12.182	-37.637	60.000	10.181	QP
12		17.330	10.635	0.455	-39.365	50.000	10.181	AV

Note:
1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

4.2 Emissions in restricted frequency bands — VERDICT: PASS

4.2.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.209		
Restricted Bands of operationfor FCC			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 –16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975–12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675–12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			
Restricted Bands of operationfor IC			
0.090 - 0.110	13.36 - 13.41	960 - 1427	9.0 - 9.2
0.495 - 0.505	16.42 - 16.423	1435 - 1626.5	9.3 - 9.5
2.1735 - 2.1905	16.69475 - 16.69525	1645.5 - 1646.5	10.6 - 12.7
3.020 - 3.026	16.80425 - 16.80475	1660 - 1710	13.25 - 13.4
4.125 - 4.128	25.5 - 25.67	1718.8 - 1722.2	14.47 - 14.5
4.17725 - 4.17775	37.5 - 38.25	2200 - 2300	15.35 - 16.2
4.20725 - 4.20775	73 - 74.6	2310 - 2390	17.7 - 21.4
5.677 - 5.683	74.8 - 75.2	2483.5 - 2500	22.01 - 23.12
6.215 - 6.218	108 - 138	2655 - 2900	23.6 - 24.0
6.26775 - 6.26825	149.9 - 150.05	3260 - 3267	31.2 - 31.8
6.31175 - 6.31225	156.52475 - 156.52525	3332 - 3339	36.43 - 36.5
8.291 - 8.294	156.7 - 156.9	3345.8 - 3358	Above 38.6
8.362 - 8.366	162.0125 - 167.17	3500 - 4400	
8.37625 - 8.38675	167.72 - 173.2	4500 - 5150	
8.41425 - 8.41475	240 - 285	5350 - 5460	
12.29 - 12.293	322 - 335.4	7250 - 7750	
12.51975 - 12.52025	399.9 - 410	8025 - 8500	
12.57675 - 12.57725	608 - 614	--	

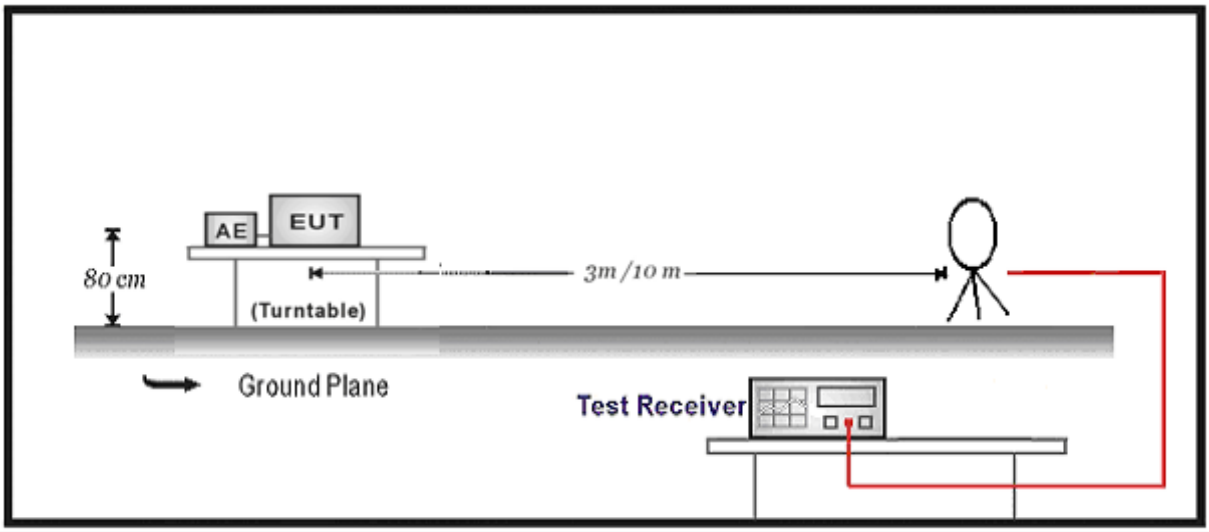
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30(Note 1)
1.705 - 30	30	29.5	30(Note 1)
30 -88	100	40	3(Note 2)
88-216	150	43.5	3(Note 2)
216 - 960	200	46	3(Note 2)
Above 960	500	54	3(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two 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).

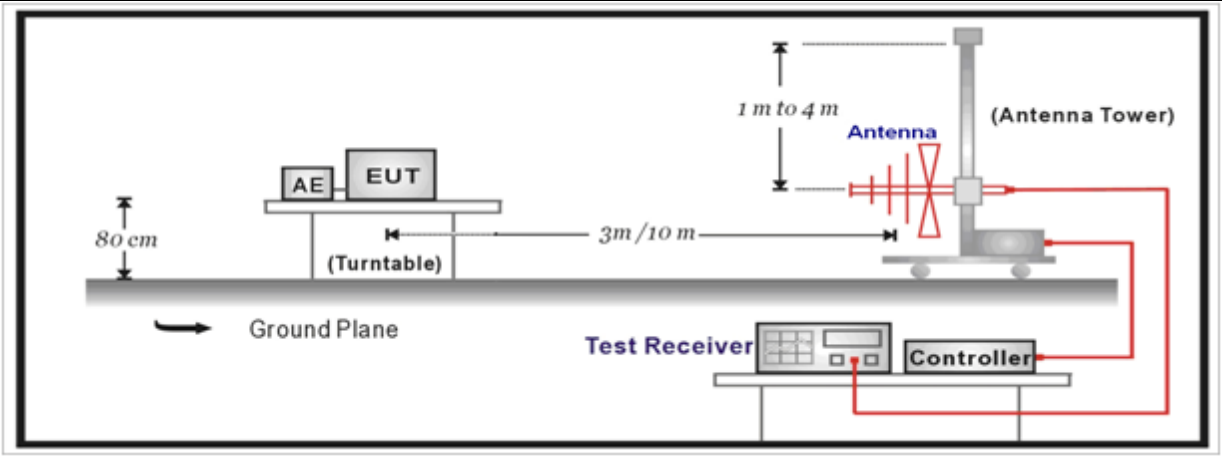
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. 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 linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.2.2 Test Setup

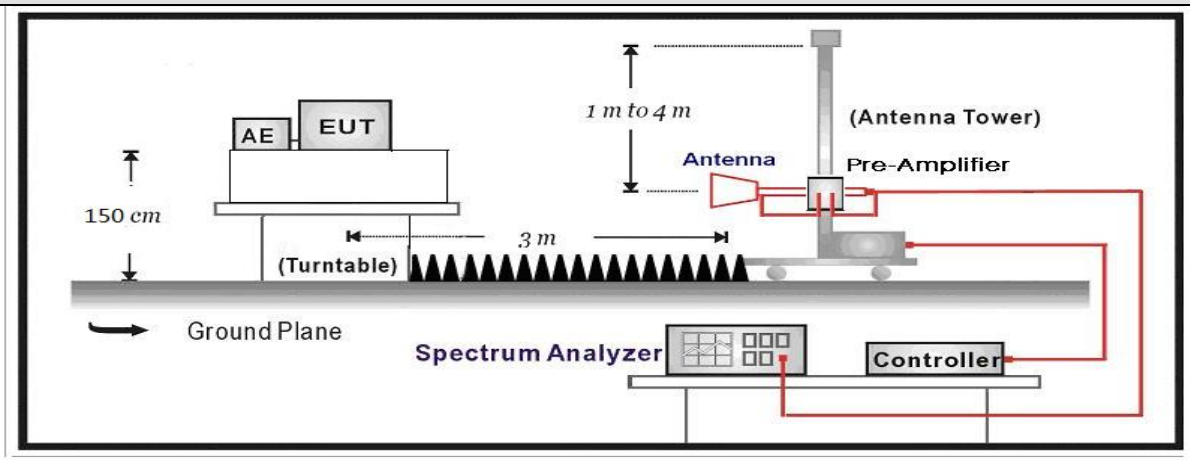
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:

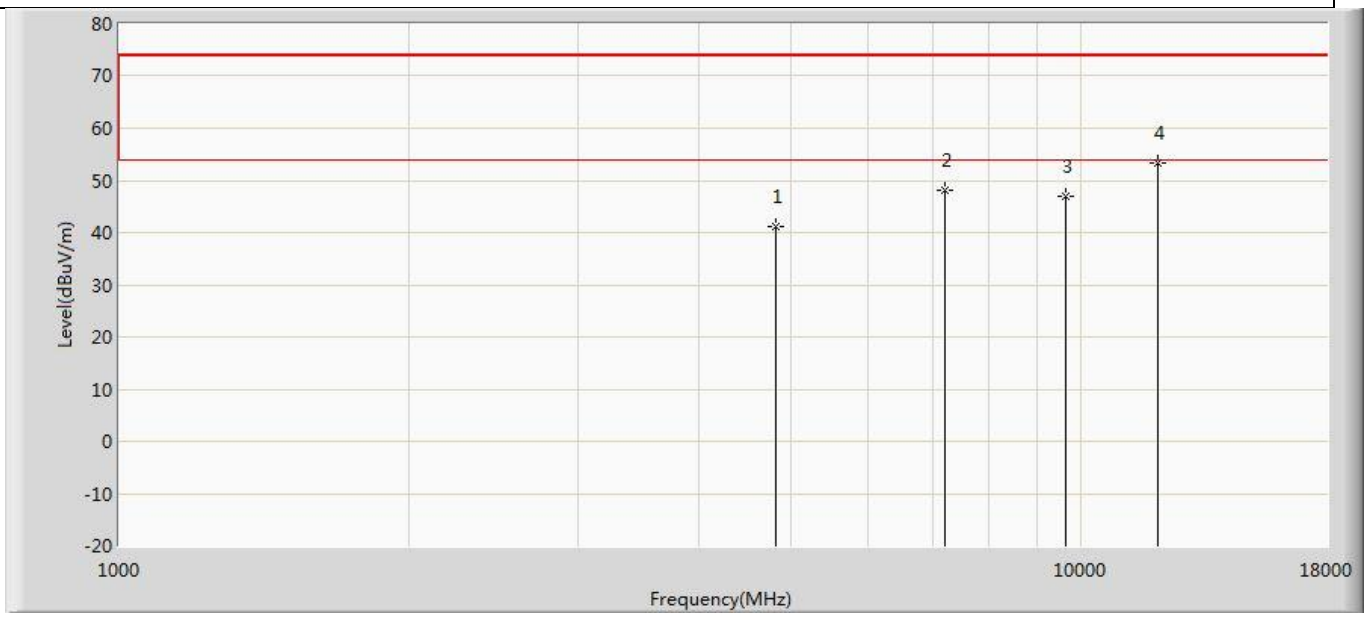


4.2.3 Test Procedure

	References Rule			Chapter	Description
☒	ANSI C63.10			11.12	Emissions in restricted frequency bands
	☒	ANSI C63.10		11.12.1	Radiated emission measurements
	☒	ANSI C63.10		11.12.2.7	Radiated spurious emission test
		☒	ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
		☒	ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
		☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

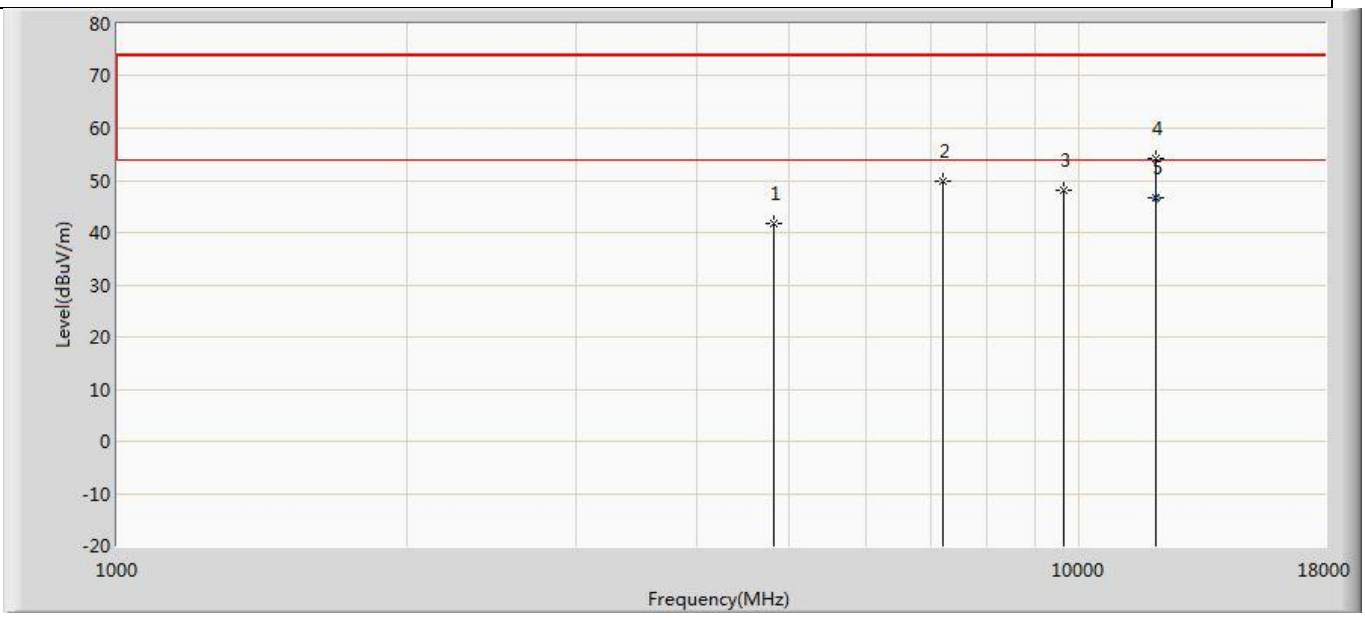
4.2.4 Test Data

Profile: 22B0838R	Page No.: 31
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Horizontal
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode1:Transmit at 2405MHz by Zigbee	



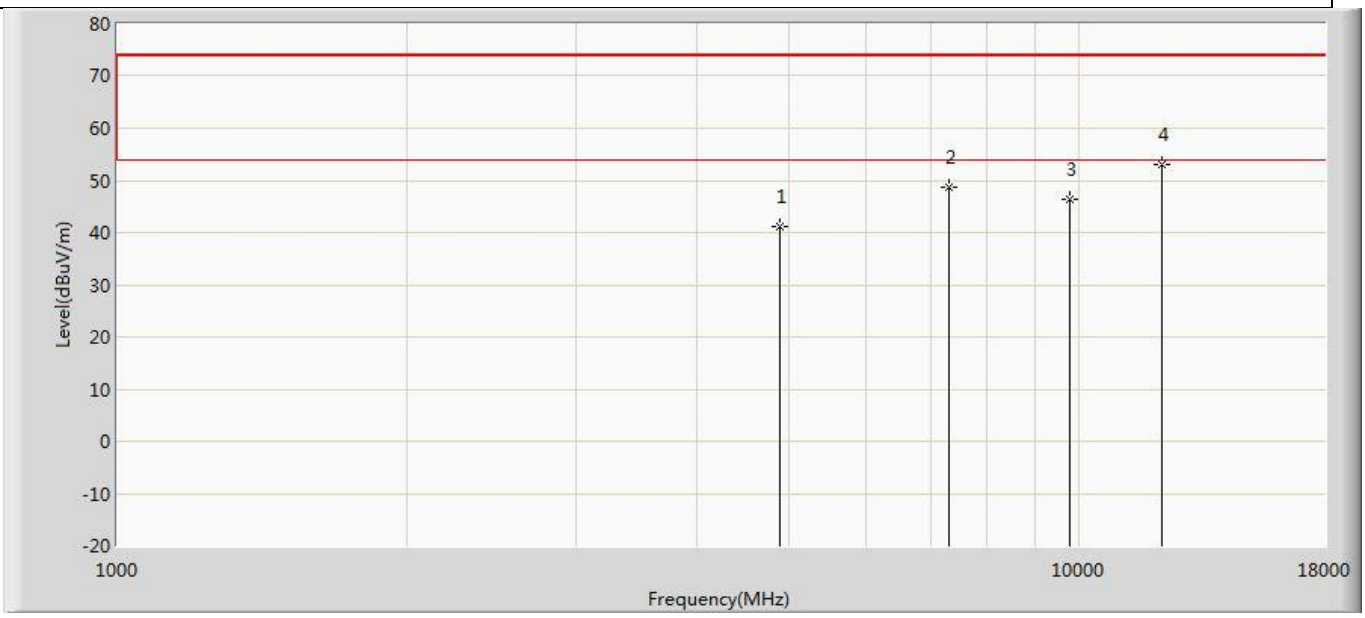
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4810.000	41.073	56.048	-32.927	74.000	-14.975	PK
2		7205.000	48.170	58.982	-25.830	74.000	-10.813	PK
3		9620.000	47.095	55.184	-26.905	74.000	-8.089	PK
4	*	12016.000	53.269	57.908	-20.731	74.000	-4.639	PK

Profile: 22B0838R	Page No.: 32
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode1:Transmit at 2405MHz by Zigbee	



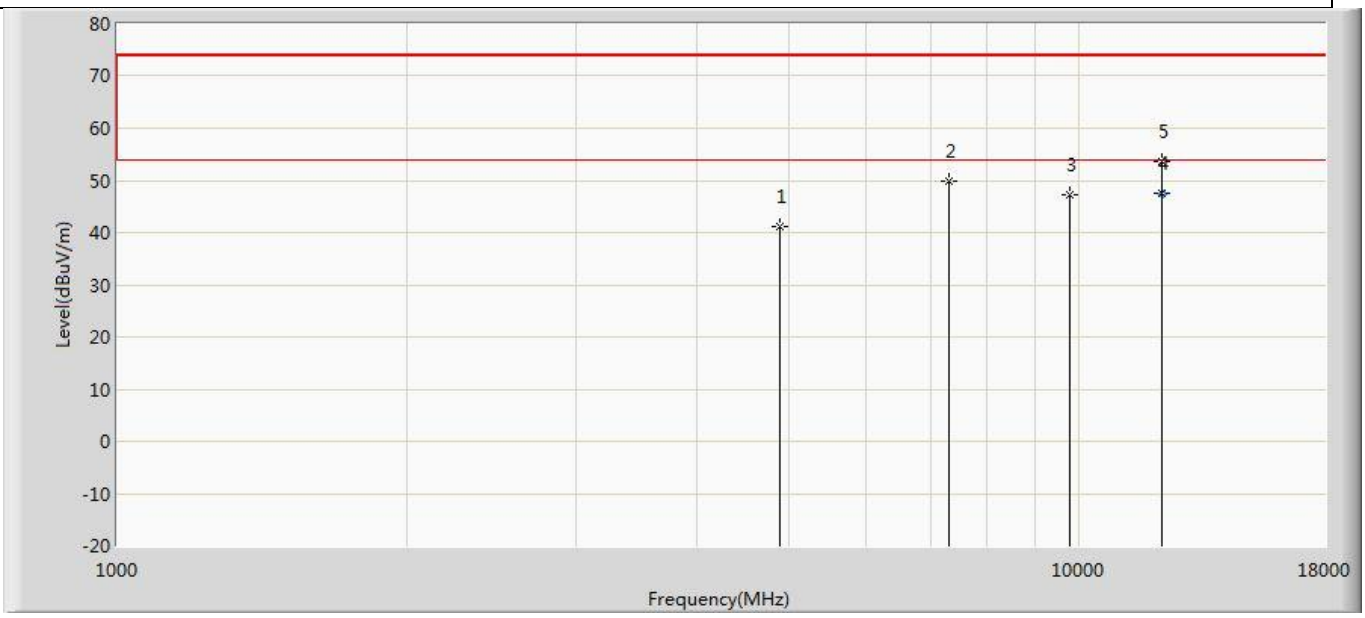
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4810.000	41.857	56.832	-32.143	74.000	-14.975	PK
2		7205.000	49.894	60.706	-24.106	74.000	-10.813	PK
3		9620.000	48.134	56.223	-25.866	74.000	-8.089	PK
4		12016.000	54.150	58.789	-19.850	74.000	-4.639	PK
5	*	12027.450	46.611	51.356	-7.389	54.000	-4.746	AV

Profile: 22B0838R	Page No.: 33
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Horizontal
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode2:Transmit at 2440MHz by Zigbee	



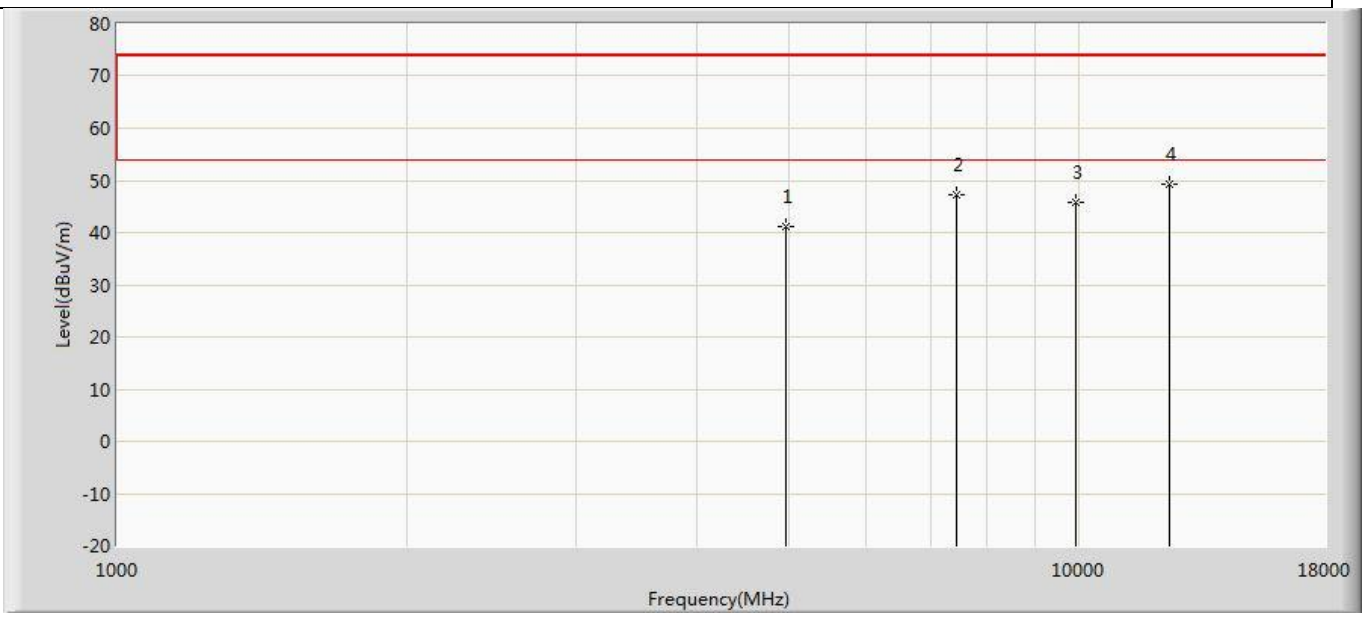
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	41.256	55.856	-32.744	74.000	-14.600	PK
2		7324.000	48.682	59.561	-25.318	74.000	-10.879	PK
3		9760.000	46.334	54.131	-27.666	74.000	-7.797	PK
4	*	12203.000	53.142	58.042	-20.858	74.000	-4.900	PK

Profile: 22B0838R	Page No.: 34
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode2:Transmit at 2440MHz by Zigbee	



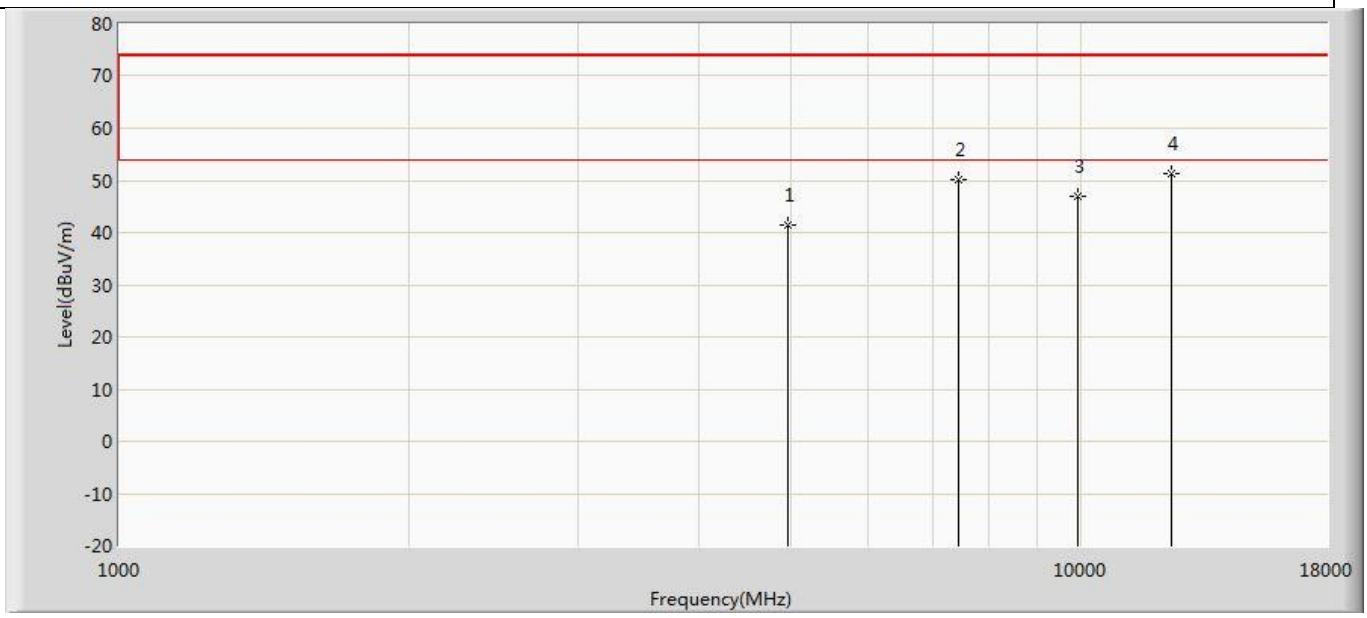
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	41.117	55.717	-32.883	74.000	-14.600	PK
2		7324.000	49.966	60.845	-24.034	74.000	-10.879	PK
3		9760.000	47.110	54.907	-26.890	74.000	-7.797	PK
4	*	12197.130	47.618	52.467	-6.382	54.000	-4.849	AV
5		12203.000	53.725	58.625	-20.275	74.000	-4.900	PK

Profile: 22B0838R	Page No.: 35
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Horizontal
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode3:Transmit at 2480MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.227	55.791	-32.773	74.000	-14.565	PK
2		7443.000	47.112	57.886	-26.888	74.000	-10.774	PK
3		9920.000	45.739	53.316	-28.261	74.000	-7.578	PK
4	*	12400.000	49.309	53.936	-24.691	74.000	-4.628	PK

Profile: 22B0838R	Page No.: 36
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode3:Transmit at 2480MHz by Zigbee	

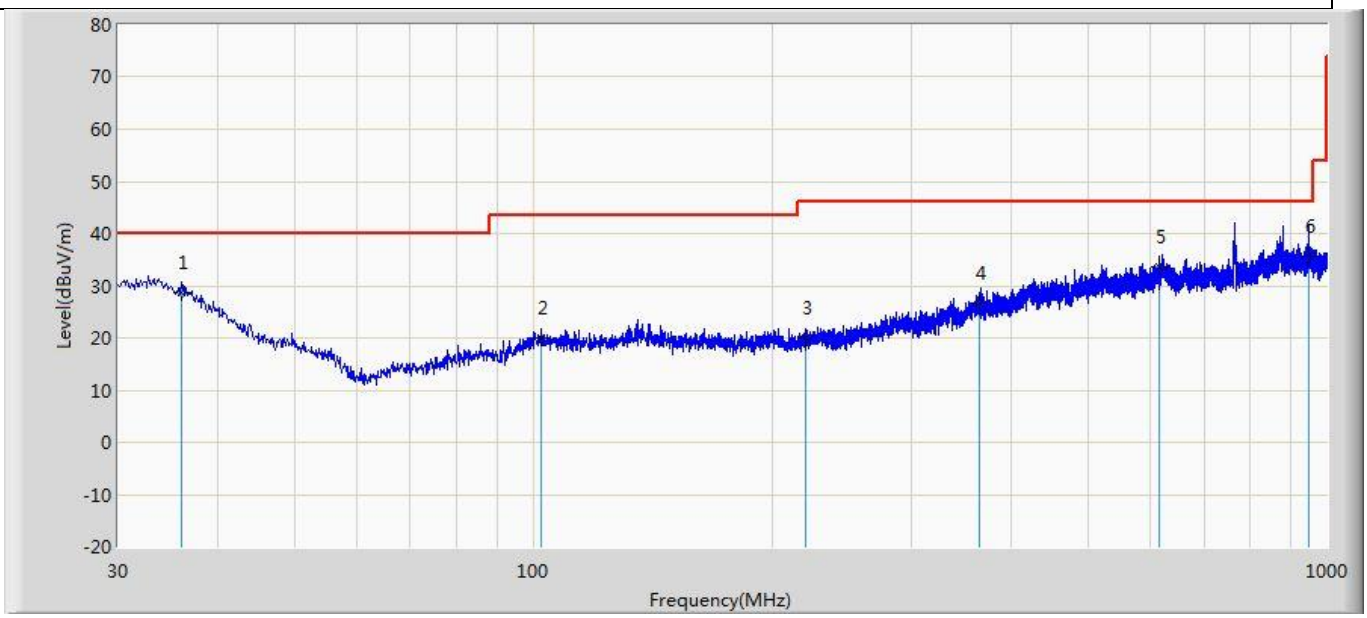


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.516	56.080	-32.484	74.000	-14.565	PK
2		7443.000	50.287	61.061	-23.713	74.000	-10.774	PK
3		9920.000	46.898	54.475	-27.102	74.000	-7.578	PK
4	*	12390.000	51.365	55.756	-22.635	74.000	-4.392	PK

Note:
1. Measured Level = Reading Level + Factor.
2. The test frequency range, 9kHz~30MHz, worst case are at least 20dB below the limits, therefore no data appear in the report.
3. The test frequency range, 18GHz~26GHz test result on peak is lower than average limit, all is the noise base, therefore no data appear in the report.
4. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

The worst case of Radiated Emission below 1GHz:

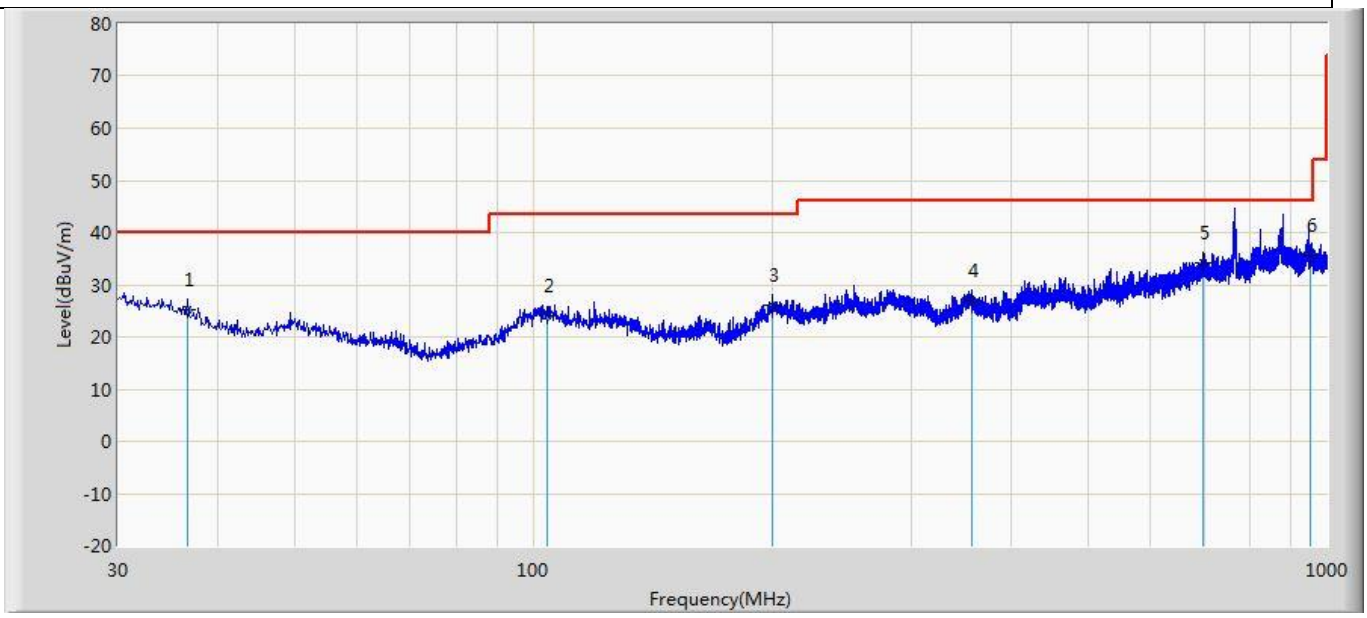
Profile: 22B0838R	Page No.: 62
Engineer:YuLiu	
Site: AC3	Time: 2022/12/05 - 20:32
Limit: FCC_Part15.209	Margin: 0
Probe: AC3_3M(30-1000M)	Polarity: Horizontal
EUT:LED LAMP	Power: 120V/60Hz
Note: Mode 1: Transmit at 2440MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		36.062	28.639	2.613	-11.361	40.000	26.026	QP
2		102.386	19.859	2.863	-23.641	43.500	16.996	QP
3		220.241	19.857	2.364	-26.143	46.000	17.492	QP
4		365.620	26.661	2.320	-19.339	46.000	24.341	QP
5		615.031	33.662	3.779	-12.338	46.000	29.883	QP
6	*	947.620	35.549	2.591	-10.451	46.000	32.958	QP

Note:
1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).

Profile: 22B0838R	Page No.: 63
Engineer: YuLiu	
Site: AC3	Time: 2022/12/05 - 20:34
Limit: FCC_Part15.209	Margin: 0
Probe: AC3_3M(30-1000M)	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode 1: Transmit at 2440MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		36.669	25.162	3.748	-14.838	40.000	21.414	QP
2		104.084	23.924	1.673	-19.576	43.500	22.251	QP
3		200.114	26.051	2.600	-17.449	43.500	23.451	QP
4		356.248	26.978	1.942	-19.022	46.000	25.036	QP
5		698.694	34.328	3.511	-11.672	46.000	30.816	QP
6	*	951.621	35.643	2.364	-10.357	46.000	33.279	QP

Note:
1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. " * ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Factor(Probe+Cable-Amp)

4.3 Emissions in non-restricted frequency band	VERDICT: PASS

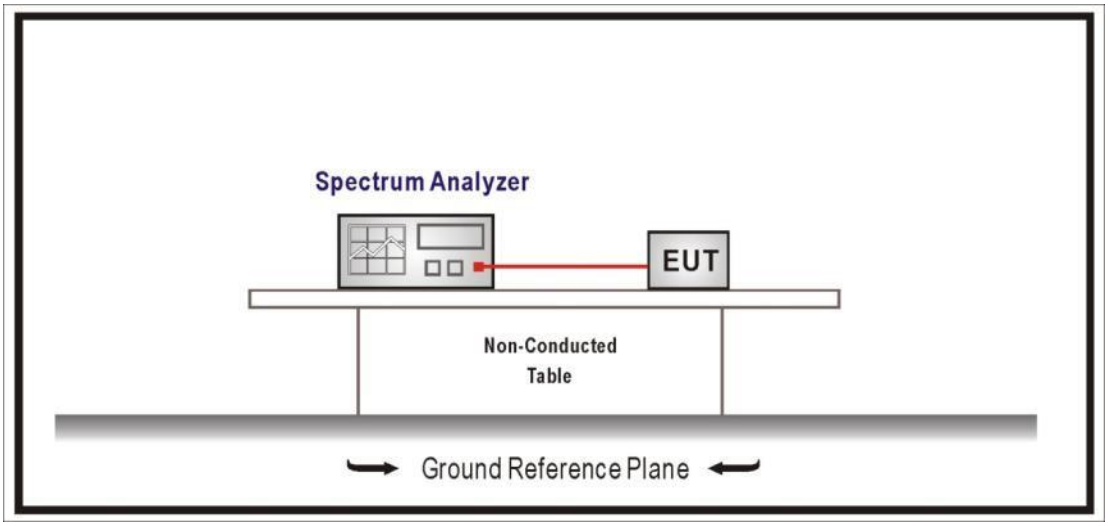
4.3.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247(d)
RF Output power (Detection methods)	Limit(dB)
RF Output power(Average detector)	30dBc(Note1)
RF Output power(PK detector)	20dBc(Note2)

Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc).

Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 20 dBc).

4.3.2 Test Setup

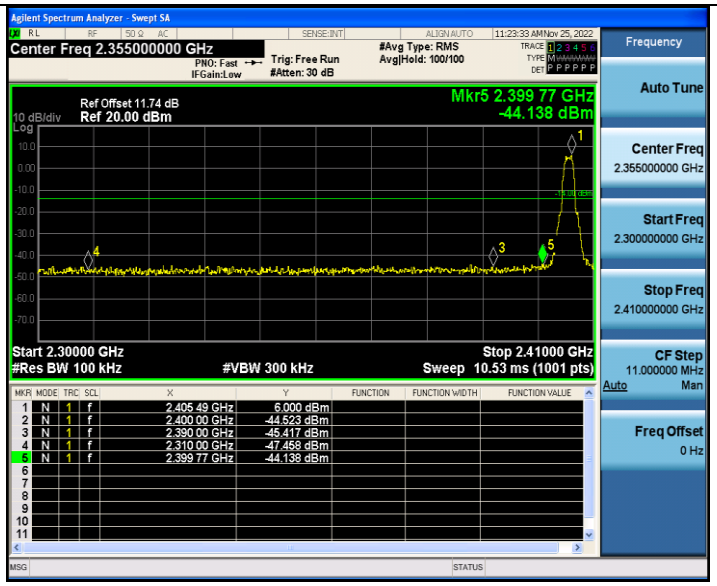


4.3.3 Test Procedure

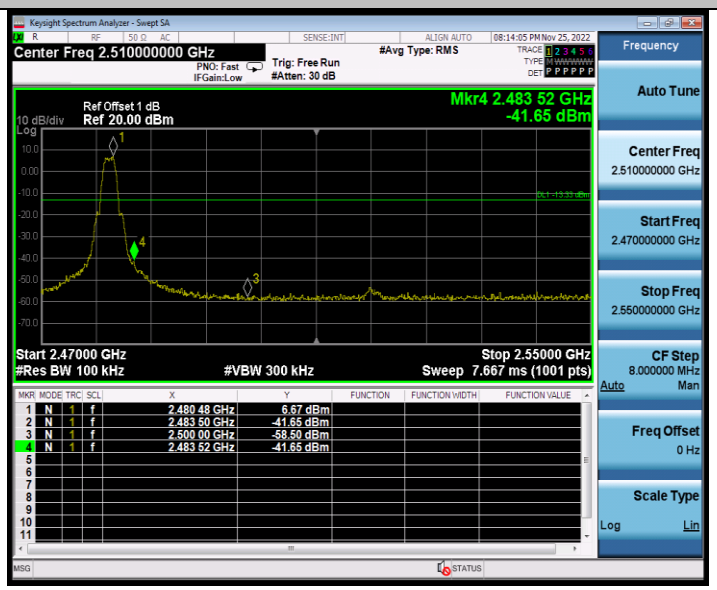
References Rule			Chapter	Description
☒	ANSI C63.10		11.11	Emissions in non-restricted frequency bands
	☒	ANSI C63.10	11.11.1	General
	☒	ANSI C63.10	11.11.2	Reference level measurement
	☒	ANSI C63.10	11.11.3	Emission level measurement

4.3.4 Test Data

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
ZIGB	Ant1	Low	2405	6.00	-44.14	≤-14.00	PASS
		High	2480	6.67	-41.65	≤-13.33	PASS



ZIGB_Ant1_Low_2405

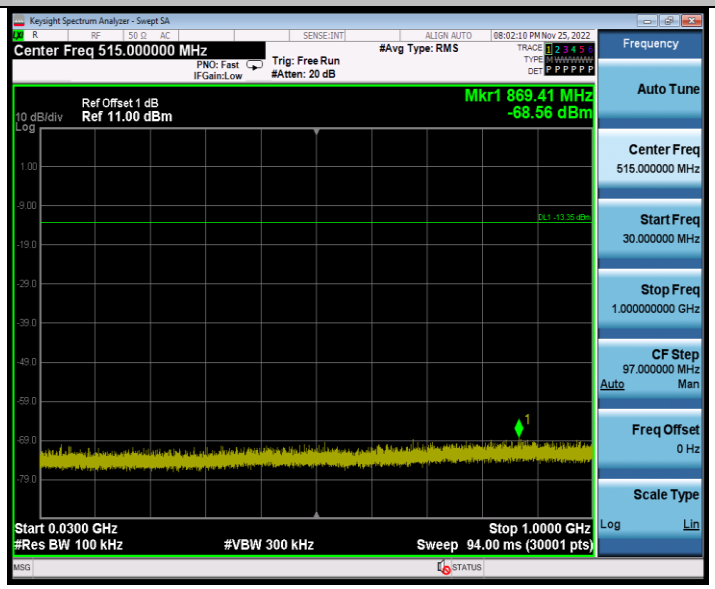


ZIGB_Ant1_High_2480

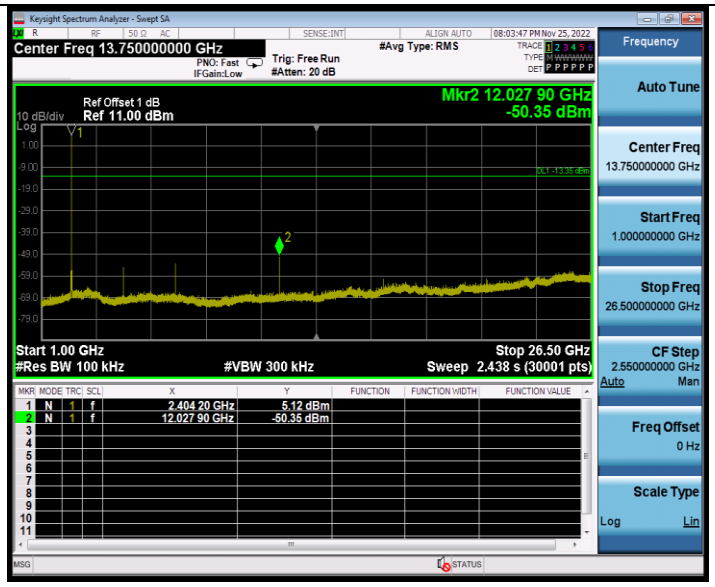
The data of entire corresponding spectrum:

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	RefLevel [dBm]	Result[dBm]	Limit[dBm]	Verdict
ZIGB	Ant1	2405	Reference	6.65	6.65	---	PASS
			30~1000	6.65	-68.56	≤-13.35	PASS
			1000~26500	6.65	-50.35	≤-13.35	PASS
		2440	Reference	6.57	6.57	---	PASS
			30~1000	6.57	-68.63	≤-13.43	PASS
			1000~26500	6.57	-48.24	≤-13.43	PASS
		2480	Reference	6.41	6.41	---	PASS
			30~1000	6.41	-63.28	≤-13.59	PASS
			1000~26500	6.41	-51.55	≤-13.59	PASS

ZIGB_Ant1_2405_0~Reference

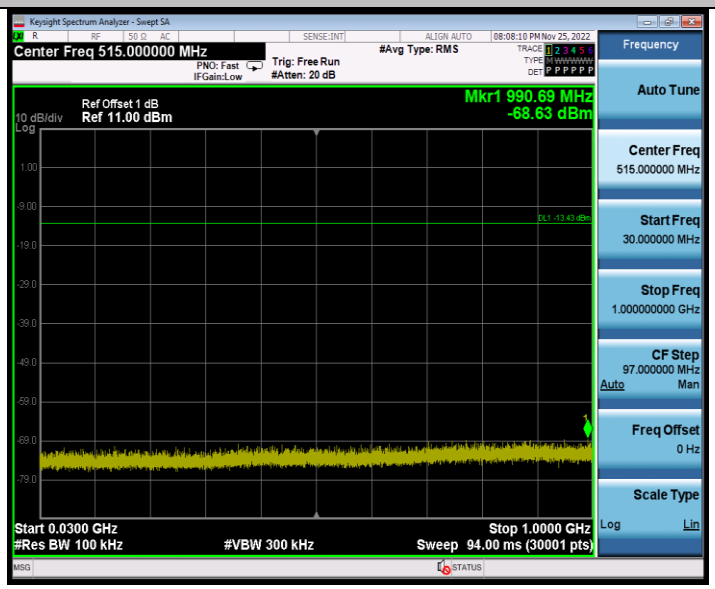


ZIGB_Ant1_2405_30~1000

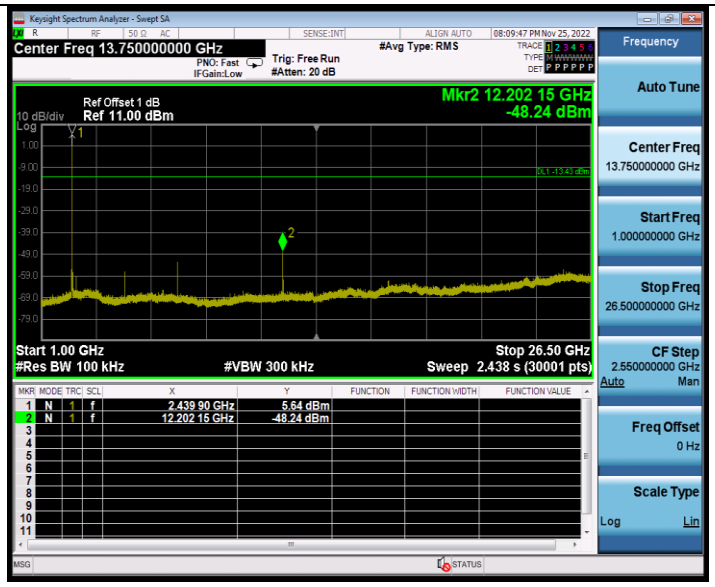


ZIGB_Ant1_2405_1000~26500

ZIGB_Ant1_2440_0~Reference

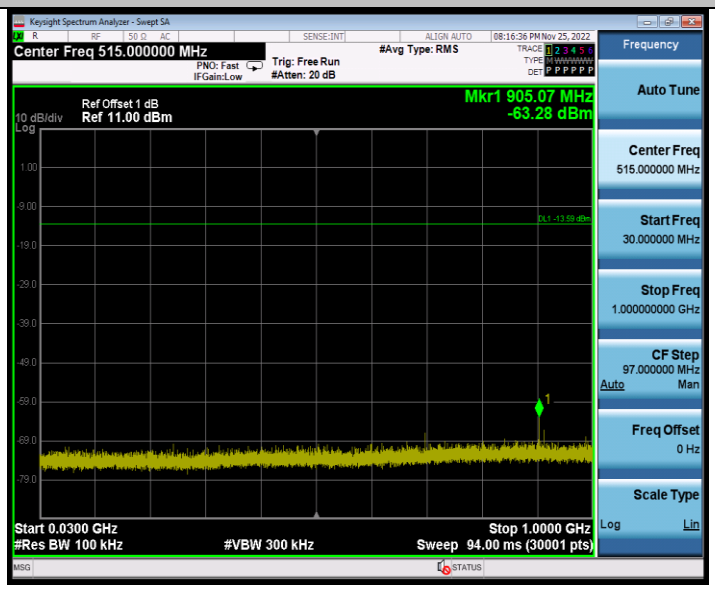


ZIGB_Ant1_2440_30~1000

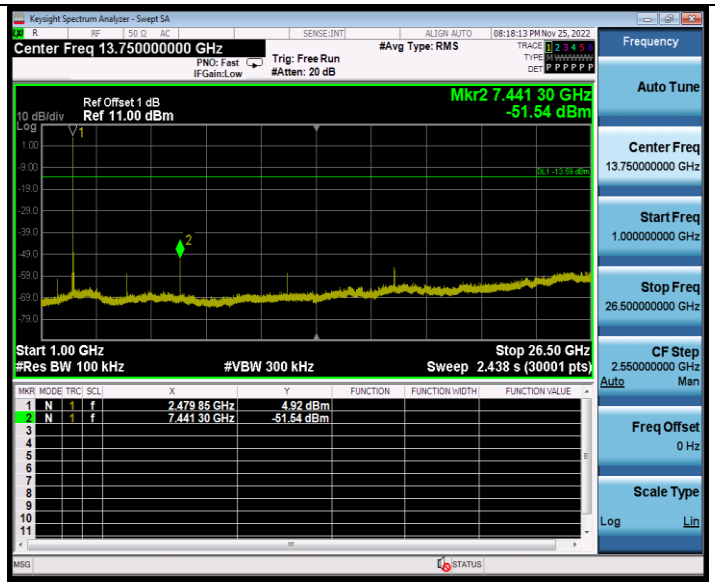


ZIGB_Ant1_2440_1000~26500

ZIGB_Ant1_2480_0~Reference



ZIGB_Ant1_2480_30~1000

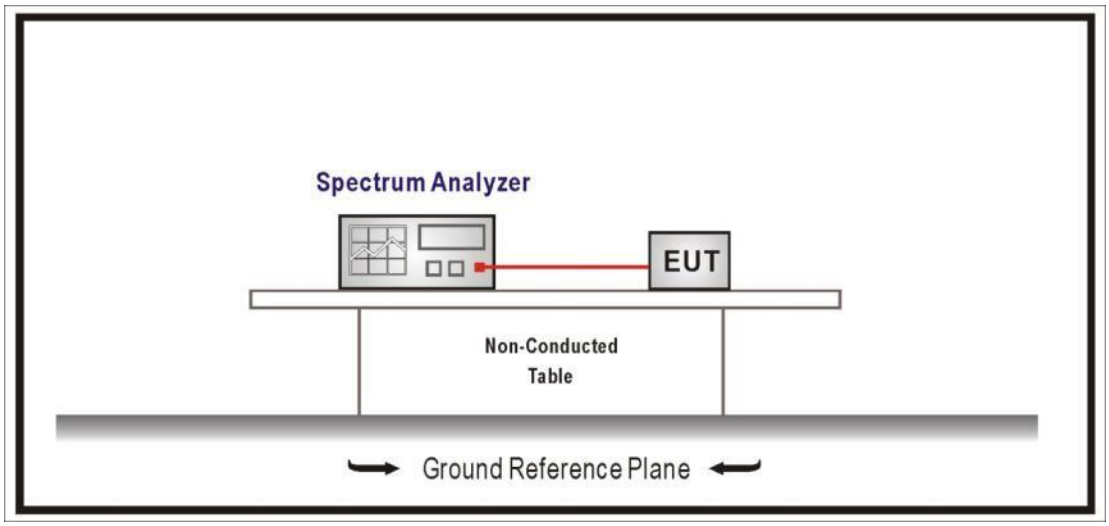

Keysight Spectrum Analyzer - Swept SA
Center Freq 13.750000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 20 dB
#Avg Type: RMS
08:18:13 PM Nov 25, 2022
Ref Offset 1 dB
10 dB/div
Ref 11.00 dBm
Log
Mkr2 7.441 30 GHz
-51.54 dBm
Start 1.00 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.438 s (30001 pts)
1 N 1 f 2.479 85 GHz 4.92 dBm
2 N 1 f 7.441 30 GHz -51.54 dBm
Frequency
Auto Tune
Center Freq
13.750000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
26.500000000 GHz
CF Step
2.550000000 GHz
Auto
Man
Freq Offset
0 Hz
Scale Type
Log
Lin

4.4 Duty cycle	VERDICT: PASS

4.4.1 Limit

N/A

4.4.2 Test Setup



4.4.3 Test Procedure

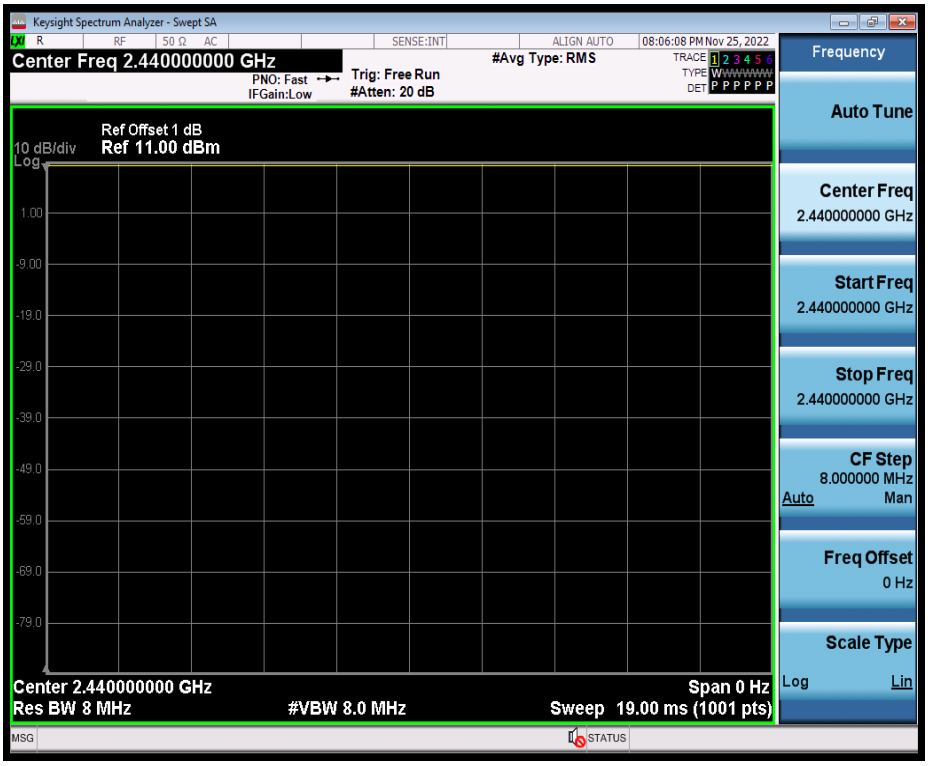
References Rule		Chapter	Description
☒	ANSI C63.10	11.6	Duty cycle (D), transmission duration (T), and maximum power control level

4.4.4 Test Data

Test Mode	Tx On (us)	Tx Off (us)	VBW (Hz)	Tx On + Tx Off (us)	Duty Cycle (%)
Mode 1	N/A	N/A	10	N/A	100

Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Mode 1 CH19 2440MHz

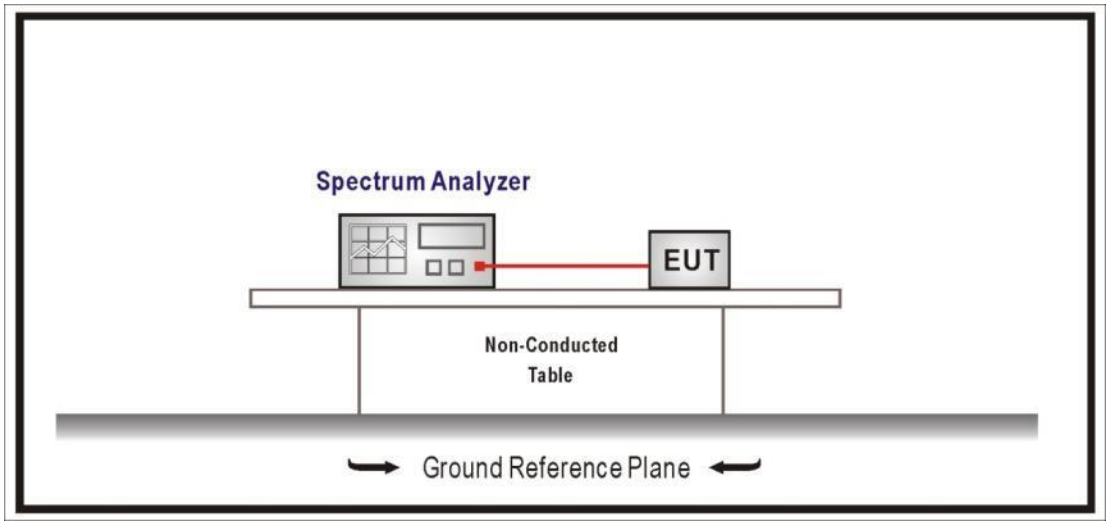


4.5 Band Edge — VERDICT: PASS

4.5.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247(d) ,15.209			
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390 2483.5-2500	PK	74	1	3
	AV	54	1	3
Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.				

4.5.2 Test Setup

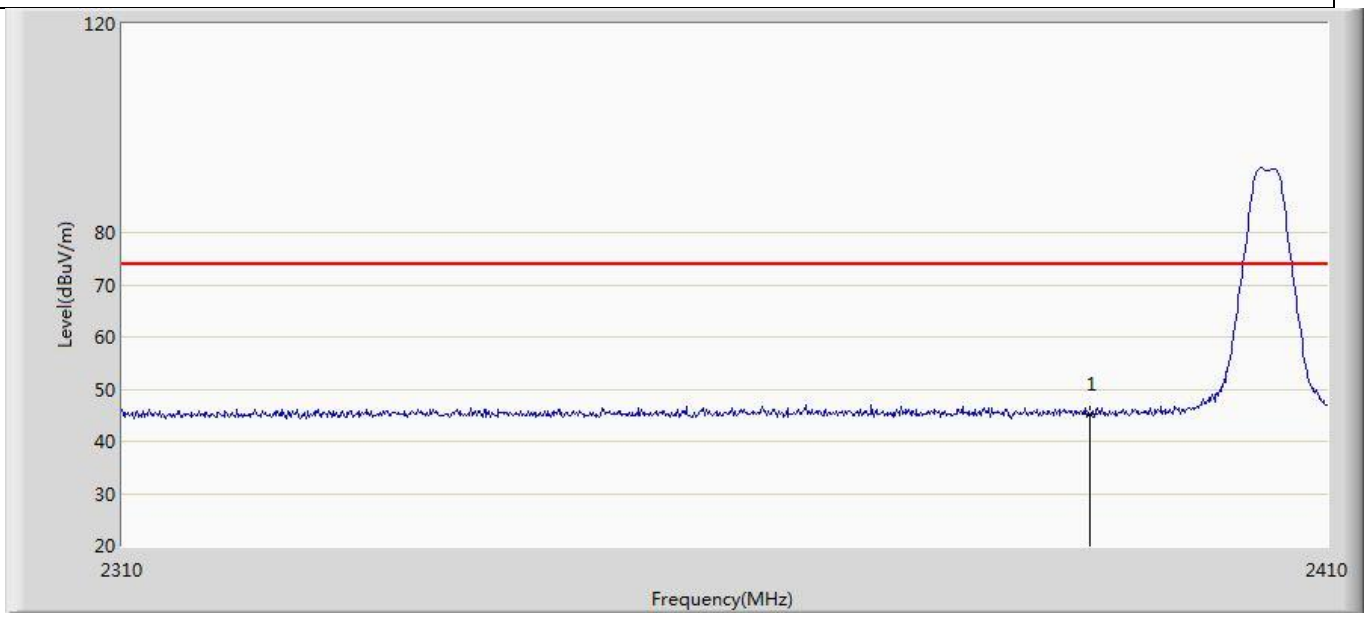


4.5.3 Test Procedure

	References Rule			Chapter	Description
☒	ANSI C63.10			6.10	Band-edge testing
	☒	ANSI C63.10		6.10.5	Restricted-band band-edge measurements
	☐	ANSI C63.10		6.10.6	Marker-delta method
☒	ANSI C63.10			11.12	Emissions in restricted frequency bands
	☒	ANSI C63.10		11.12.2	Antenna-port conducted measurements
		☐	ANSI C63.10	11.12.2.3	Quasi-peak measurement procedure
		☒	ANSI C63.10	11.12.2.4	Peak power measurement procedure
		☒	ANSI C63.10	11.12.2.5	Average power measurement procedures

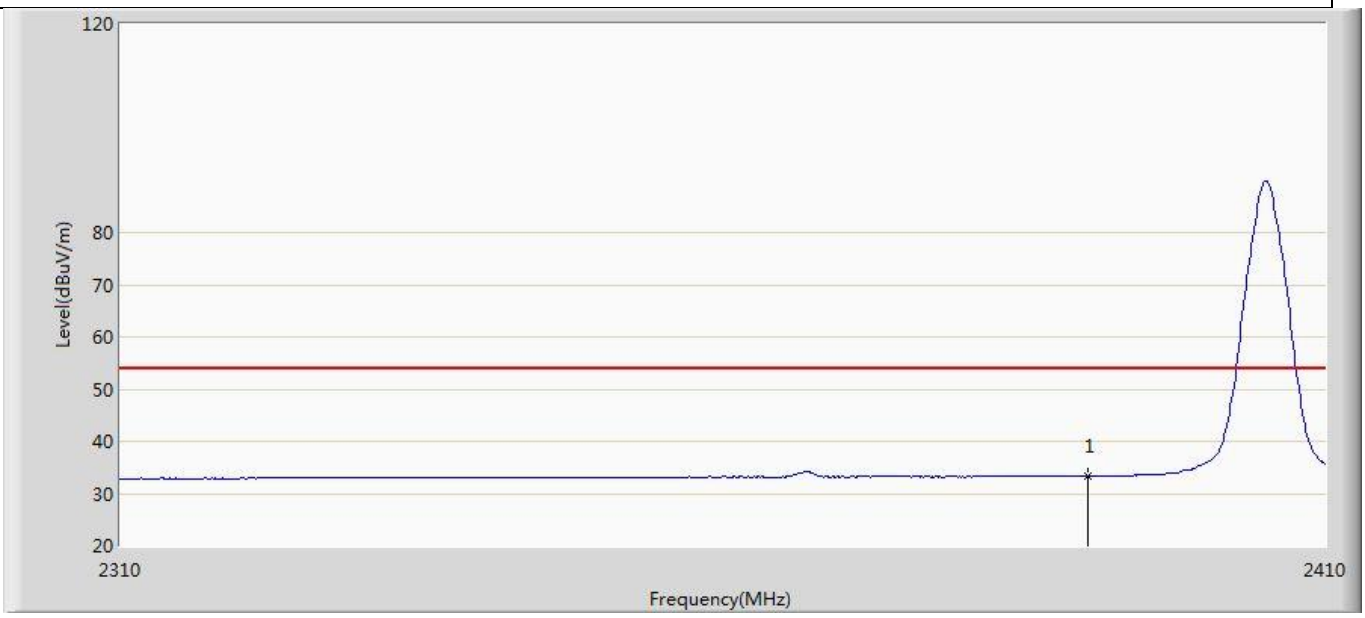
4.5.4 Test Data

Profile: 22B0838R	Page No.: 61
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:35
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Horizontal
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode1:Transmit at 2405MHz by Zigbee	



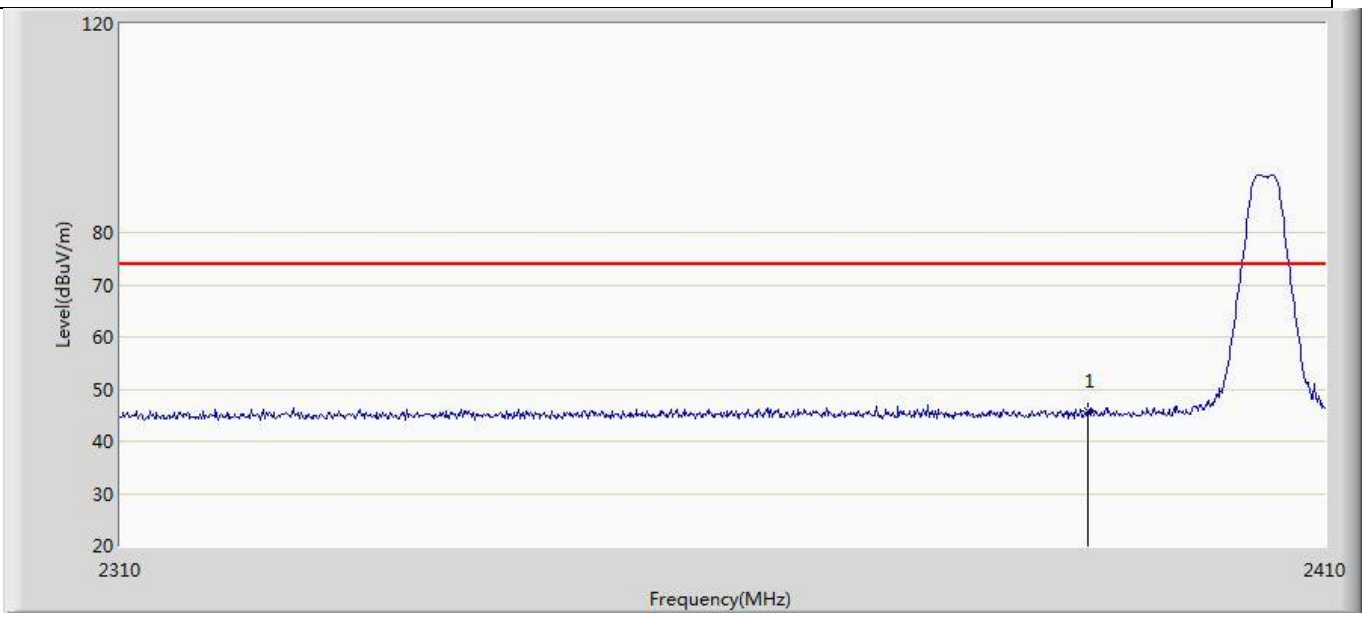
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	45.282	11.198	-28.718	74.000	34.084	PK

Profile: 22B0838R	Page No.: 62
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Horizontal
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode1:Transmit at 2405MHz by Zigbee	



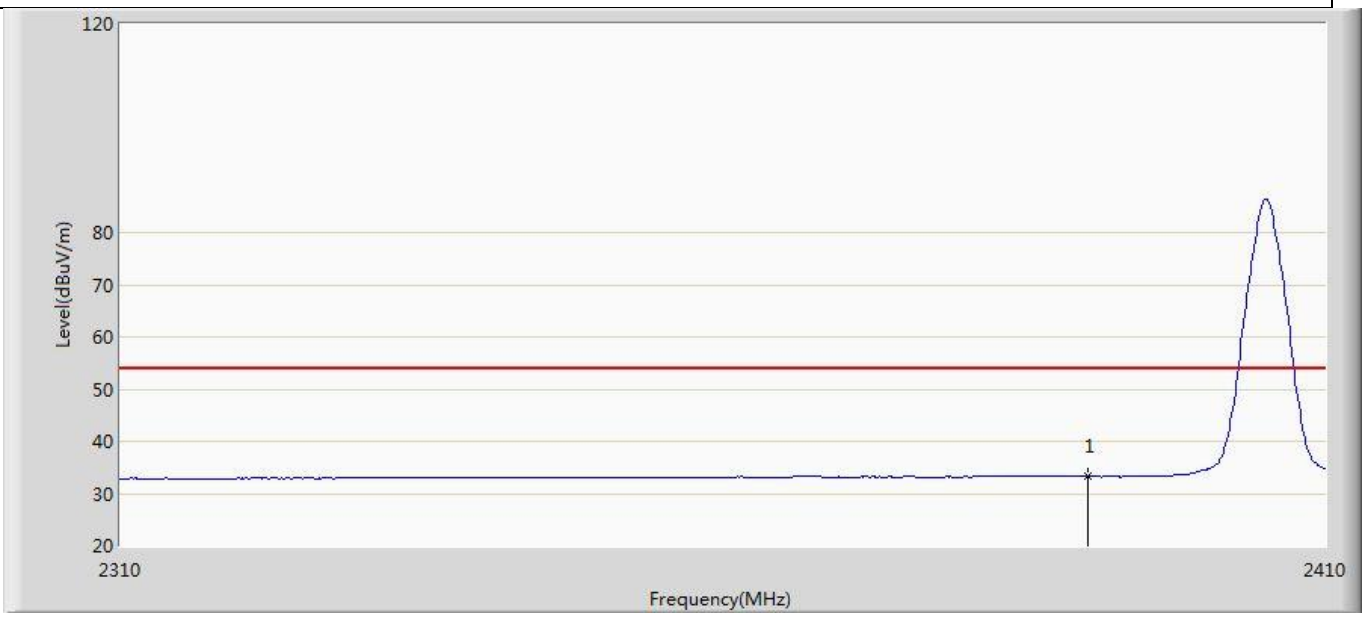
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	33.331	-0.753	-20.669	54.000	34.084	AV

Profile: 22B0838R	Page No.: 63
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode1:Transmit at 2405MHz by Zigbee	



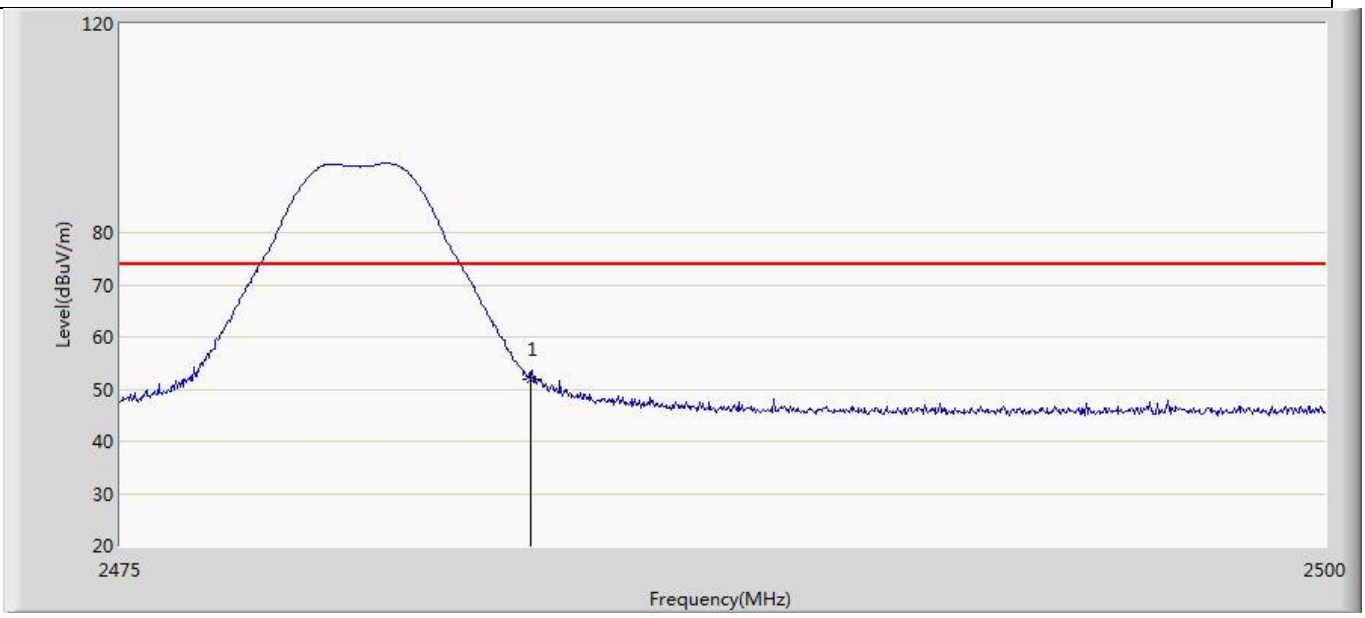
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	45.775	11.691	-28.225	74.000	34.084	PK

Profile: 22B0838R	Page No.: 64
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode1:Transmit at 2405MHz by Zigbee	



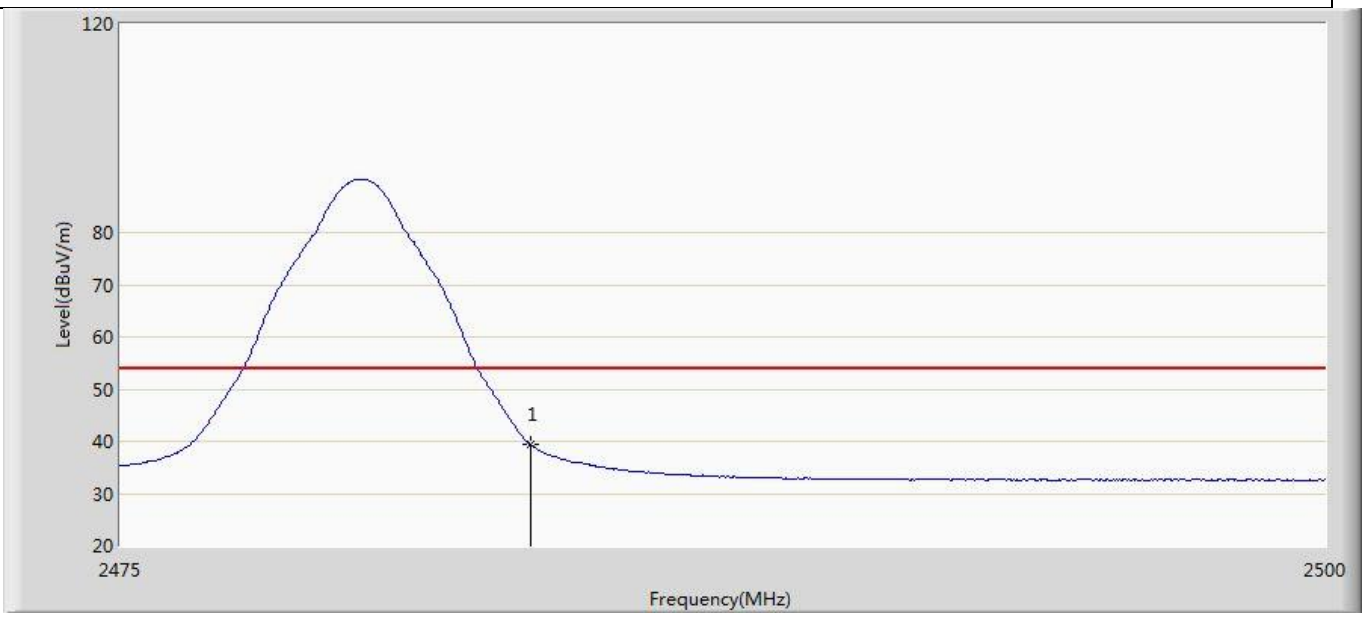
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	33.250	-0.834	-20.750	54.000	34.084	AV

Profile: 22B0838R	Page No.: 65
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Horizontal
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode2:Transmit at 2480MHz by Zigbee	



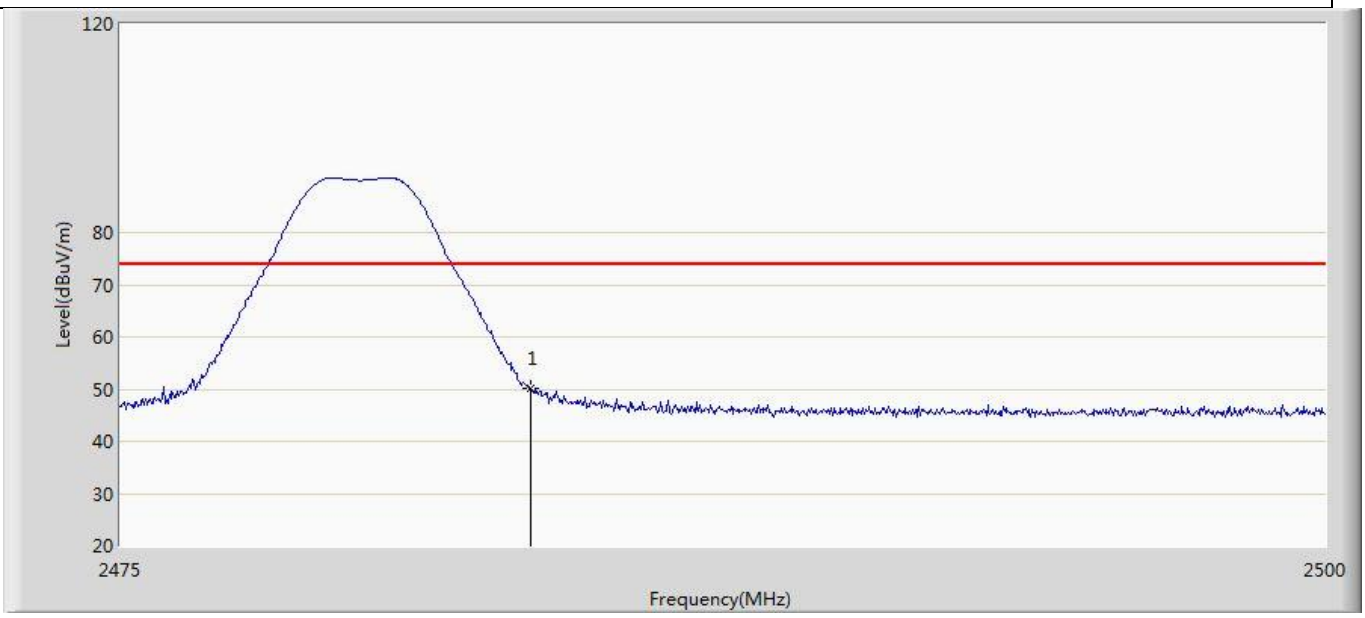
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	51.992	17.501	-22.008	74.000	34.491	PK

Profile: 22B0838R	Page No.: 66
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:44
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Horizontal
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode2:Transmit at 2480MHz by Zigbee	



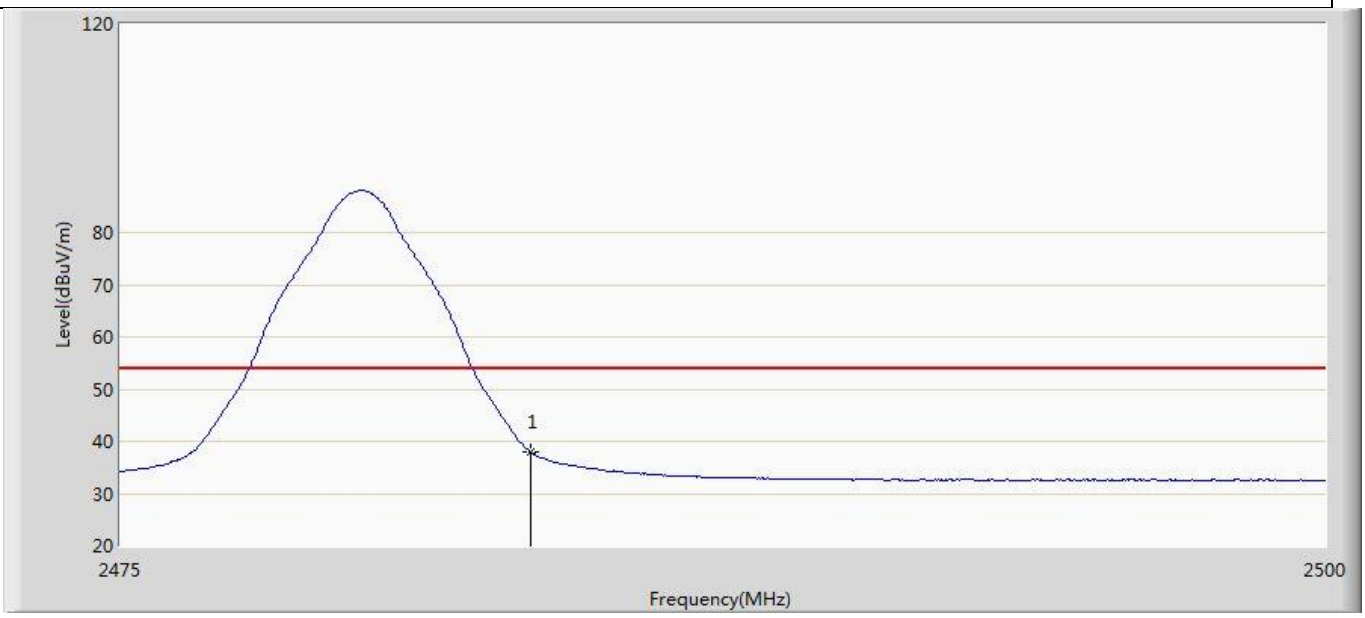
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	39.301	4.810	-14.699	54.000	34.491	AV

Profile: 22B0838R	Page No.: 67
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode2:Transmit at 2480MHz by Zigbee	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	50.152	15.661	-23.848	74.000	34.491	PK

Profile: 22B0838R	Page No.: 68
Engineer: YuLiu	
Site: AC5	Time: 2022/12/04 - 23:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)2022	Polarity: Vertical
EUT: LED LAMP	Power: 120V/60Hz
Note: Mode2:Transmit at 2480MHz by Zigbee	

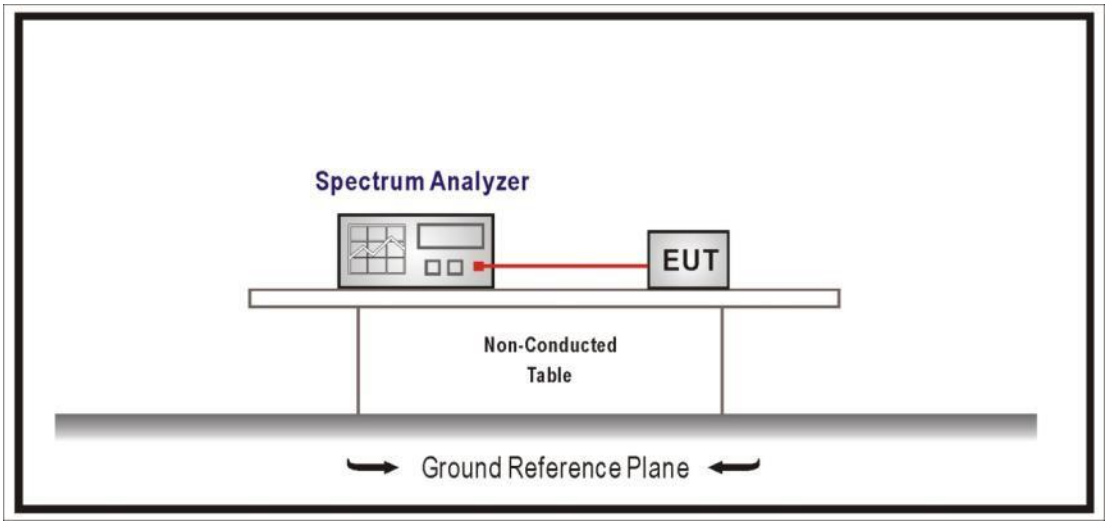


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	37.937	3.446	-16.063	54.000	34.491	AV

4.6 DTS Bandwidth	VERDICT: PASS

4.6.1 Limit	
Standard	FCC Part 15 Subpart C Paragraph 15.247 (a)(2)
Systems using digital modulation techniques operate in the2400-2483.5 MHz .The minimum 6 dB bandwidth shall be at least 500 kHz	

4.6.2 Test Setup



4.6.3 Test Procedure

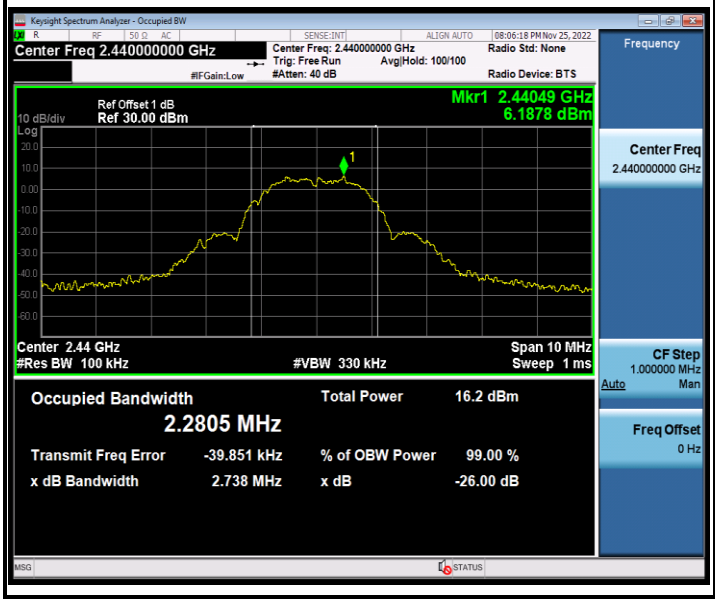
	Reference Rule		Chapter	Description
☒	ANSI C63.10		11.8	DTS bandwidth
	☐	ANSI C63.10	11.8.1	Option 1
	☒	ANSI C63.10	11.8.2	Option 2

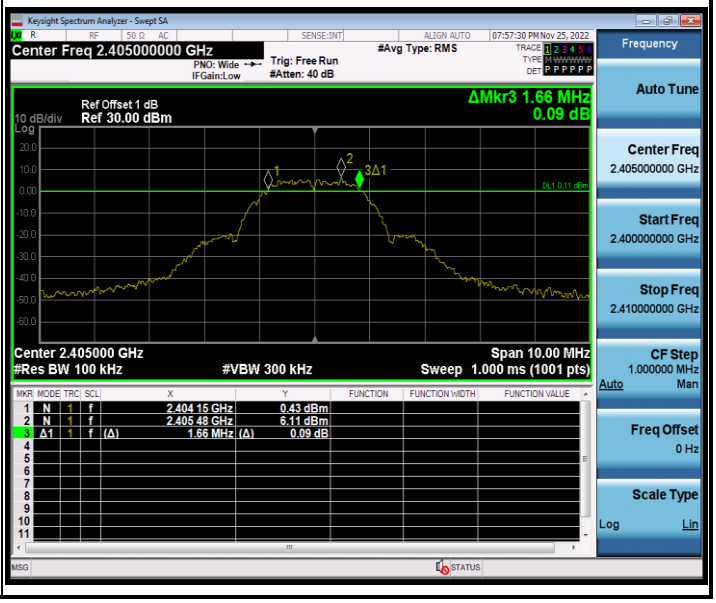
4.6.4 Test Data

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	6dB Occupied Bandwidth (MHz)	Limit (kHz)	Result
1	00	2402	2.2764	1.660	>500	Pass
	19	2440	2.2805	1.740	>500	Pass
	39	2480	2.2682	1.730	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

99% Occupied Bandwidth	6dB Occupied Bandwidth
Mode 1 CH19 (2440MHz)	Mode 1 CH11(2405MHz)

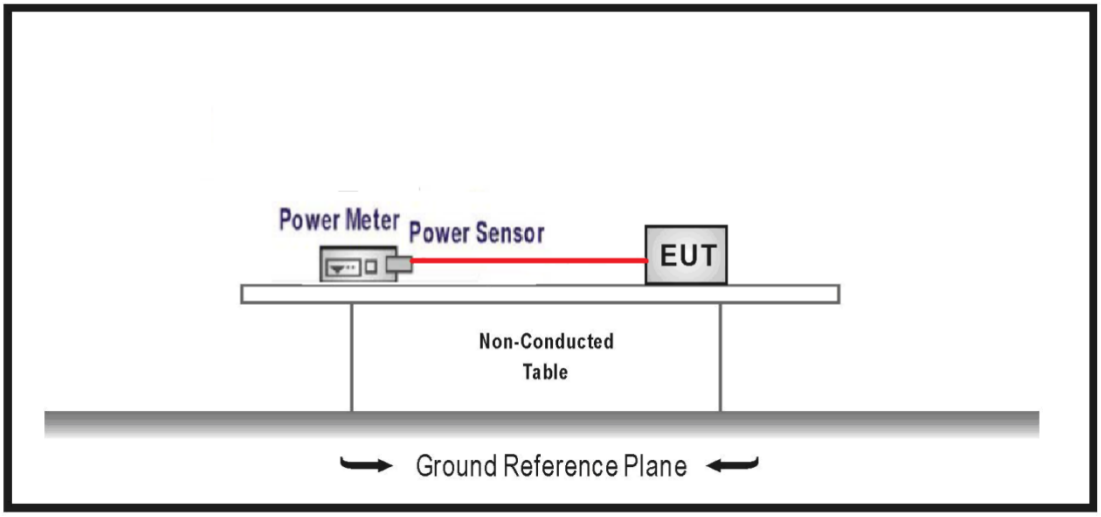




4.7 Fundamental emission output power	VERDICT: PASS

4.7.1 Limit			
Standard		FCC Part 15 Subpart C Paragraph 15.247 (b)(3)	
☒	GTX＜6dBi		Pout≤30dBm
☐	GTX ＞6dBi		
	☐	Non-Fix point-point	Pout≤30-(GTX -6)
	☐	Fix point-point	Pout≤30-[(GTX-6)]/3
	☐	Point-to-multipoint	Pout≤30-(GTX-6)
	☐	Overlap Beams	Pout≤30-[(GTX-6)]/3
	☐	Aggregate power transmitted simultaneously on all beams	Pout≤30-[(GTX-6)]/3
	☐	single directional beam	Pout≤30-[(GTX-6)]/3+8dB
Note 1 : GTX directional gain of transmitting antennas. Note 2 : Pout is maximum peak conducted output power .			

4.7.2 Test Setup



4.7.3 Test Procedure

	References Rule			Chapter	Description
☒	ANSI C63.10			11.9	Fundamental emission output power
	☐	ANSI C63.10		11.9.1	Maximum peak conducted output power
		☐	ANSI C63.10	11.9.1.1	RBW ≥ DTS bandwidth
		☐	ANSI C63.10	11.9.1.2	Integrated band power method
		☒	ANSI C63.10	11.9.1.3	PKPM1 Peak power meter method
	☒	ANSI C63.10		11.9.2	Maximum conducted (average) output power
		☐	ANSI C63.10	11.9.2.2	Measurement using a spectrum analyzer (SA)
			☐ ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle⩾98%)
			☐ ANSI C63.10	11.9.2.2.3	Method AVGSA-1A(Duty cycle⩾98%)
			☐ ANSI C63.10	11.9.2.2.4	Method AVGSA-2(Duty cycle⩽98%)
			☐ ANSI C63.10	11.9.2.2.5	Method AVGSA-2A(Duty cycle⩽98%)
			☐ ANSI C63.10	11.9.2.2.4	Method AVGSA-3
			☐ ANSI C63.10	11.9.2.2.5	Method AVGSA-3A
		☒	ANSI C63.10	11.9.2.3	Measurement using a power meter (PM)
			☐ ANSI C63.10	11.9.2.3.1	Method AVGPM
			☐ ANSI C63.10	11.9.2.3.2	Method AVGPM-G

4.7.4 Test Data

Mode	Channel	Test Frequency (MHz)	Conducted Power (dBm)	EIRP (dBm)	Conducted Power Limit (dBm)	EIRP Limit (dBm)	Result
Mode 1	11	2405	10.12	7.62	≤30	≤36	Pass
	19	2440	10.25	7.75	≤30	≤36	Pass
	26	2480	9.97	7.47	≤30	≤36	Pass

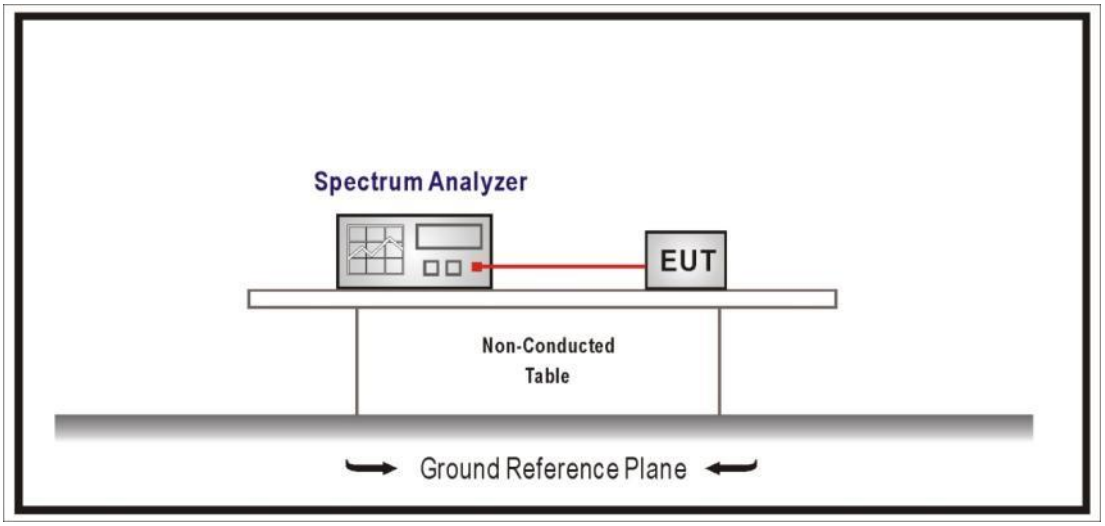
Power Setting：

Mode	Channel	Test Frequency (MHz)	Power Setting
Mode 1	11	2405	10
	19	2440	10
	26	2480	10

4.8 Power Density	VERDICT: PASS

4.8.1 Limit:	
Standard	FCC Part 15 Subpart C Paragraph 15.247 (b)(3)
Power Spectral Density≤8dBm/3kHz	

4.8.2 Test Setup



4.8.3 Test Procedure

	References Rule		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density level in the fundamental emission
	☒	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle≥98%)
	☐	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle≥98%)
	☐	ANSI C63.10	11.10.5	Method AVGPSD-2(Duty cycle<98%)
	☐	ANSI C63.10	11.10.6	Method AVGPSD-2A(Duty cycle<98%)
	☐	ANSI C63.10	11.10.7	Method AVGPSD-3
	☐	ANSI C63.10	11.10.8	Method AVGPSD-3A

4.8.4 Test Data

Left Antenna:

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Mode 1	11	2405	-4.80	≤8	Pass
	19	2440	-4.68	≤8	Pass
	26	2480	-5.51	≤8	Pass

Mode 1 CH11(2405MHz)

Mode 1 CH19(2440MHz)

Mode 1 CH26(2480MHz)

4.9 Antenna Requirement	VERDICT: PASS

4.9.1 Limit:	
Standard	FCC Part 15 Subpart C Paragraph 15.203
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.	

4.9.2 Antenna Connector Construction:	
☒	The use of a permanently attached antenna
☐	The antenna use of a unique coupling to the intentional radiator
☐	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document “Internal Photograph” to show the antenna connector.	

5 TEST SETUP PHOTO AND EUT PHOTO

Remark: The test setup photo and EUT Photo please see appendix.

The End