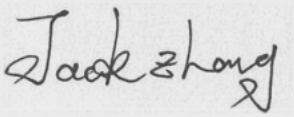
DEKRA Testing and Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098

Test report No:
2120499R-RF-US-P06V01

FCC TEST REPORT & ISED TEST REPORT

Product Name	LED Lamp
Trademark	Philips
Model and /or type reference	9290022266A
FCC ID	2AGBW9290022266AX
IC	20812-22266AX
Applicant´s name / address	Signify (China) investment Co., Ltd Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10: 2013 KD558074 D01 15.247 Meas Guidance v05r02 RSS-Gen Issue 5 / RSS-247 Issue 2
Verdict Summary	IN COMPLIANCE
Documented by (name / position & signature)	Tim Cao/Project Engineer
Approved by (name / position & signature)	Jack Zhang/ Supervisor 
Date of issue	2021-04-29
Report Version	V1.0
Report template No	Template_FCC Part 15C-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 52

4.3.1 Limit 52
4.3.2 Test Setup 52
4.3.3 Test Procedure 52
4.3.4 Test Data 53
4.4 Duty cycle 55
4.4.1 Limit 55
4.4.2 Test Setup 55
4.4.3 Test Procedure 55
4.4.4 Test Data 56
4.5 Radiated Emission Band Edge 57
4.5.1 Limit 57
4.5.2 Test Setup 57
4.5.3 Test Procedure 57
4.5.4 Test Data 58
4.6 DTS Bandwidth 90
4.6.1 Limit 90
4.6.2 Test Setup 90
4.6.3 Test Procedure 90
4.6.4 Test Data 91
4.7 Fundamental emission output power 93
4.7.1 Limit 93
4.7.2 Test Setup 93
4.7.3 Test Procedure 94
4.7.4 Test Data 95
4.8 Power Density 96
4.8.1 Limit: 96
4.8.2 Test Setup 96
4.8.3 Test Procedure 96
4.8.4 Test Data 97
4.9 Antenna Requirement 98
4.9.1 Limit: 98
4.9.2 Antenna Connector Construction: 98
5 Test setup photo and EUT Photo 99

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)	Feb. 23, 2021
Date (start test)	Feb. 25, 2021
Date (finish test)	Mar. 09, 2021

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
2120499R-RF-US-P06V01	V1.0	Initial issue of report.	2021-04-29

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 Informaion;
    - 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	100906	2020.04.20	2021.04.19
Two-Line V-Network	R&S	ENV216	101190	2020.04.18	2021.04.17
Two-Line V-Network	R&S	ENV216	101044	2020.04.18	2021.04.17
Current Probe	R&S	EZ-17	100678	2020.03.12	2021.04.11
50ohm Termination	SHX	TF2	07081402	2020.09.23	2021.09.22
50ohm Termination	SHX	TF2	07081403	2020.09.23	2021.09.22
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
Temperature/Humidity Meter	RTS	RTS-8S	TR1-TH	2020.08.13	2021.08.12
Coaxial Cable	Suhner	RG 223	TR1-C1	2020.08.13	2021.08.12
Coaxial Cable	Suhner	RG 223	TR1-C2	2020.08.13	2021.08.12
Dekra test software	Dekra	-	-	-	-

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

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2020.08.15	2021.08.14
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2020.04.17	2021.04.16
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2020.08.15	2021.08.14
Temperature/Humidity Meter	RTS	RTS-8S	RF08	2020.08.13	2021.08.12
Dekra test software	Dekra	-	-	-	-

Radiated Emission(30MHz-1GHz) / AC3

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100573	2020.12.06	2021.12.05
Bilog Antenna	Teseq GmbH	CBL6112D	27611	2020.08.19	2021.08.18
Temperature/Humidity Meter	RTS	RTS-8S	AC2-TH	2020.08.13	2021.08.12
Coaxial Cable	Huber+Suhner	RG 214	AC2-C	2020.04.05	2021.04.04
Dekra test software	Dekra	-	-	-	-

Radiated Emission / AC5(1GHz-40GHz)(Chamber details)

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2020.05.08	2021.05.07
Preamplifier	Miteq	NSP1800-25	1364185	2020.05.06	2021.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2020.05.06	2021.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2020.09.21	2021.09.20
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2020.08.13	2021.08.12
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2020.04.05	2021.04.04
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2020.04.05	2021.04.04
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2020.04.05	2021.04.04
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% .

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. ..... :	9290022266A
Trademark ..... :	Philips
FCC ID ..... :	2AGBW9290022266AX
IC ..... :	20812-22266AX
Manufacturer..... :	Signify (China) investment Co., Ltd
Manufacturer address ..... :	Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai

Wireless specifiction..... :	BLE 5.0					
Operating frequency range(s)	2402~2480MHz					
Type of Modulation..... :	GFSK					
PHYs ..... :	☒	LE 1M	☒	LE 2M	☒	LE Coded S=2/8
Data Rate ..... :	☒	1Mbit/s	☒	2Mbit/s	☒	500/125 Kbit/s
Number of channel..... :	40					

Rated power supply .....:	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☒	AC: 110 – 130 V, 50/60 Hz
	☐	DC: ……
	☐	Battery: ……
Mounting position.....:	☒	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☐	Hand-held equipment
	☐	Other: ……..

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	☐	Ceramic Chip
			☐	PIFA
			☒	PCB
			☐	Others……..
Antenna Gain..... :	-0.7 dBi			

1.3 Channel List

Bluetooth Working Frequency of Each Channel: (For v5.0)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
37	2402 MHz	00	2404 MHz	01	2406 MHz	02	2408 MHz
03	2410 MHz	04	2412 MHz	05	2414 MHz	06	2416 MHz
07	2418 MHz	08	2420 MHz	09	2422 MHz	10	2424 MHz
38	2426 MHz	11	2428 MHz	12	2430 MHz	13	2432 MHz
14	2434 MHz	15	2436 MHz	16	2438 MHz	17	2440 MHz
18	2442 MHz	19	2444 MHz	20	2446 MHz	21	2448 MHz
22	2450 MHz	23	2452 MHz	24	2454 MHz	25	2456 MHz
26	2458 MHz	27	2460 MHz	28	2462 MHz	29	2464 MHz
30	2466 MHz	31	2468 MHz	32	2470 MHz	33	2472 MHz
34	2474 MHz	35	2476 MHz	36	2478 MHz	39	2480 MHz

Note: The General Description of the Item , antenna information and Channel List for the EUT 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.

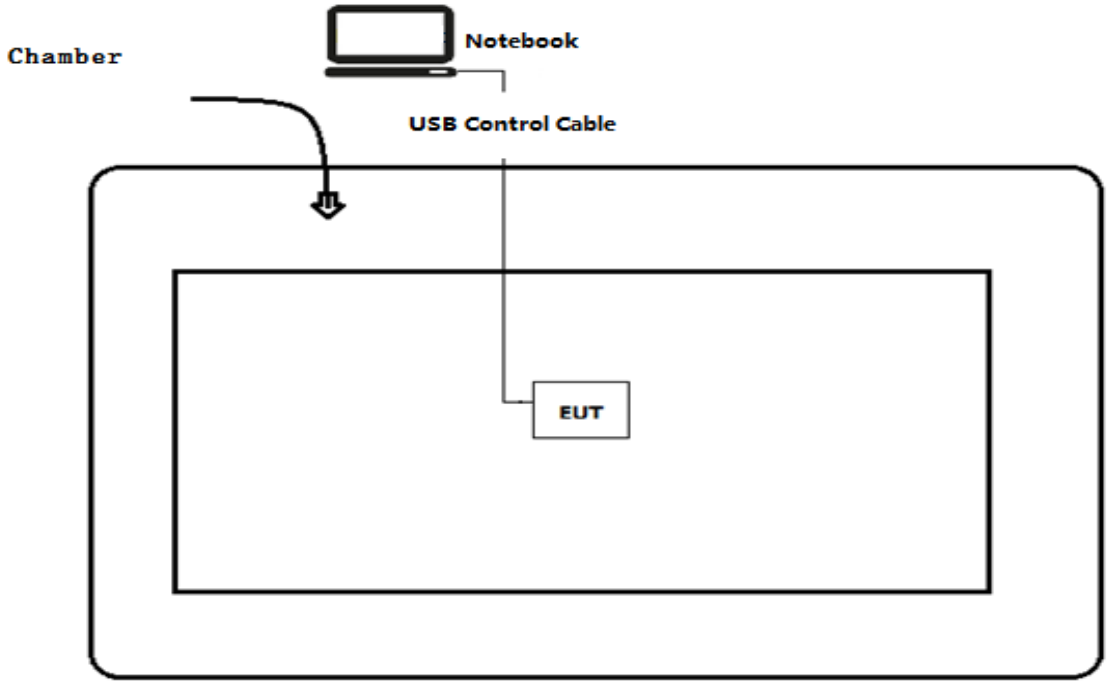
Test Mode For Bluetooth	Mode 1: Transmit by LE_1Mbps(GFSK_LE)
	Mode 2: Transmit by LE_2Mbps(GFSK_LE)
	Mode 3: Transmit by LE_Coded S=2
	Mode 4: Transmit by LE_Coded S=8

2.2 Auxiliary equipment / Test software for the EUT

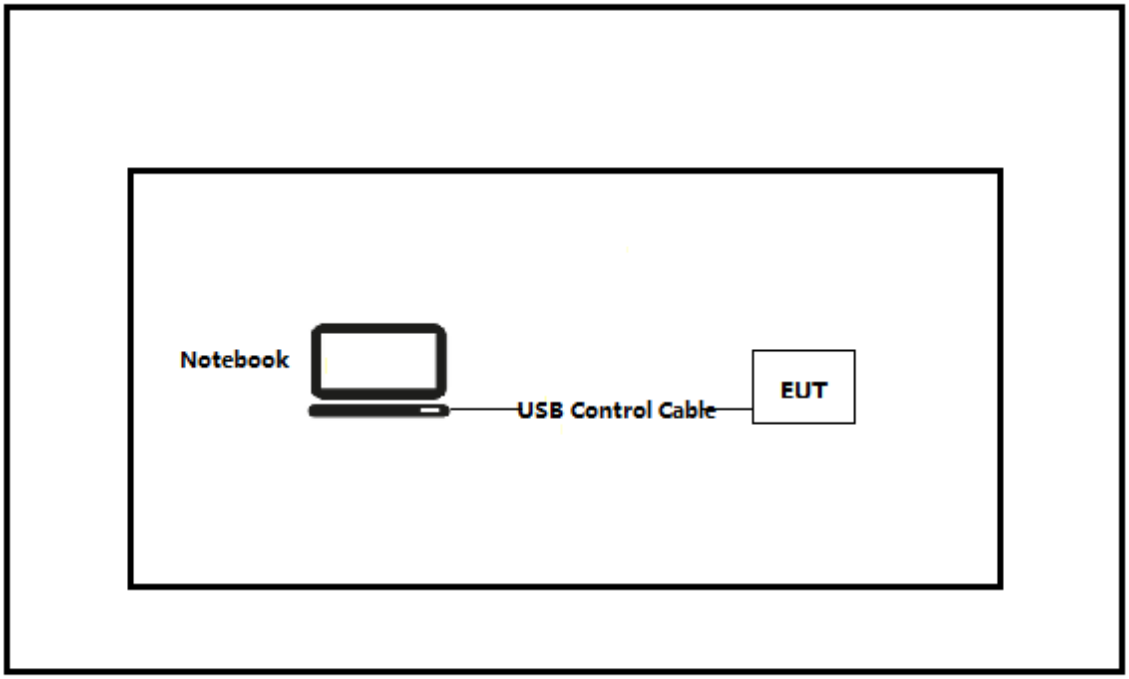
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	Think pad x220	Lenovo	Adapter
software	Type / Version	Manufacturer	Supplied by
Approbation Tool	V1.1.5.0	N/A	N/A

2.3 Test Configuration / Block diagram used for tests

Test setup Diagram- Radiated Test



Test setup Diagram- Conducted test



2.4 Testing process

1	Setup the EUT as shown in Section 2.3.
2	Execute the [HueApprobation Tool] on the notebook.
3	Configure the test mode, the test channel, and the 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	2019	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 v05r02	2019	Guidance for performing compliance measurements on Digital Transmission System (DTS) operating under section 15.247
RSS-Gen Issue 5 Amendment 1	2019	General Requirements for Compliance 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	---
Radiated Emission 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 5 Section 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	---
Radiated Emission 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

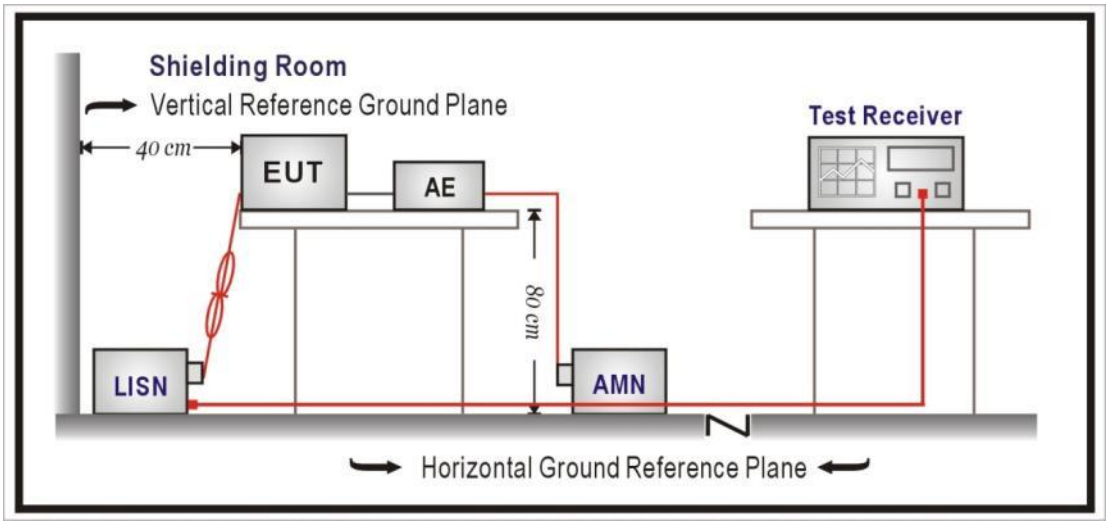
4.1 AC Power Line Conducted Emission	VERDICT: PASS

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

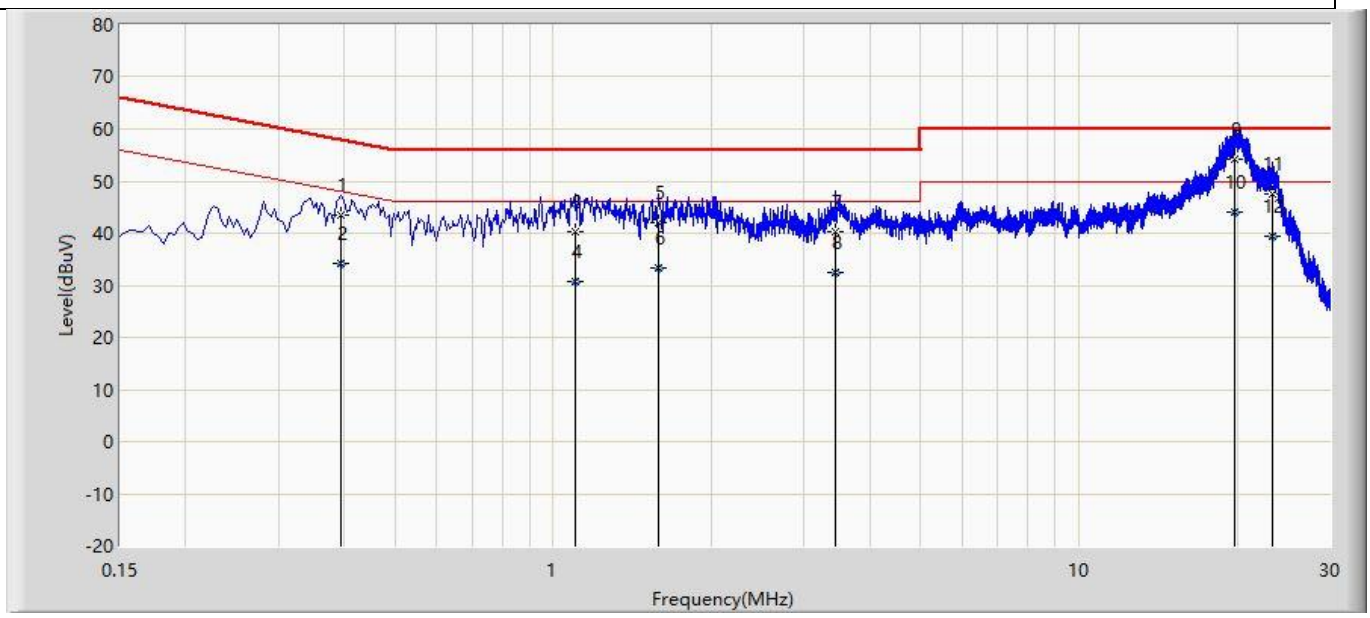


4.1.3 Test Procedure

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

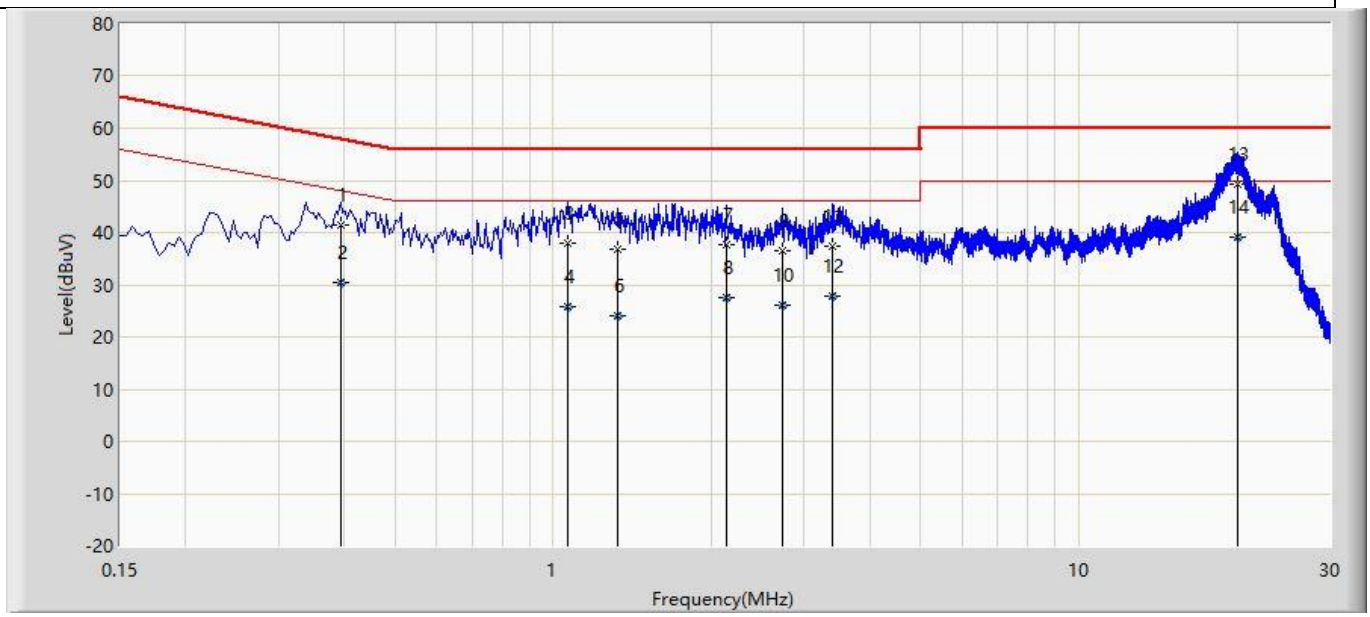
4.1.4 Test Data

Profile: 2120499R	Page No.: 4
Engineer: Jun Xu	
Site: TR1	Time: 2021/03/04 - 11:59
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.394	43.367	33.585	-14.612	57.979	9.744	0.039	0.000	QP
2		0.394	34.322	24.540	-13.657	47.979	9.744	0.039	0.000	AV
3		1.098	40.259	30.284	-15.741	56.000	9.914	0.060	0.000	QP
4		1.098	30.670	20.696	-15.330	46.000	9.914	0.060	0.000	AV
5		1.586	41.892	31.884	-14.108	56.000	9.934	0.074	0.000	QP
6		1.586	33.281	23.273	-12.719	46.000	9.934	0.074	0.000	AV
7		3.438	40.327	30.234	-15.673	56.000	9.974	0.119	0.000	QP
8		3.438	32.527	22.434	-13.473	46.000	9.974	0.119	0.000	AV
9	*	19.750	54.151	43.569	-5.849	60.000	10.297	0.285	0.000	QP
10		19.750	44.136	33.554	-5.864	50.000	10.297	0.285	0.000	AV
11		23.334	47.435	36.784	-12.565	60.000	10.340	0.311	0.000	QP
12		23.334	39.364	28.713	-10.636	50.000	10.340	0.311	0.000	AV

Profile: 2120499R	Page No.: 5
Engineer: Jun Xu	
Site: TR1	Time: 2021/03/04 - 12:04
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.394	41.525	31.707	-16.454	57.979	9.779	0.039	0.000	QP
2		0.394	30.446	20.628	-17.533	47.979	9.779	0.039	0.000	AV
3		1.066	38.115	28.167	-17.885	56.000	9.888	0.060	0.000	QP
4		1.066	25.799	15.852	-20.201	46.000	9.888	0.060	0.000	AV
5		1.326	36.743	26.796	-19.257	56.000	9.880	0.067	0.000	QP
6		1.326	24.092	14.144	-21.908	46.000	9.880	0.067	0.000	AV
7		2.130	37.774	27.822	-18.226	56.000	9.862	0.090	0.000	QP
8		2.130	27.445	17.494	-18.555	46.000	9.862	0.090	0.000	AV
9		2.726	36.433	26.457	-19.567	56.000	9.872	0.104	0.000	QP
10		2.726	26.160	16.184	-19.840	46.000	9.872	0.104	0.000	AV
11		3.386	37.405	27.405	-18.595	56.000	9.883	0.117	0.000	QP
12		3.386	27.726	17.726	-18.274	46.000	9.883	0.117	0.000	AV
13	*	19.974	49.250	38.653	-10.750	60.000	10.310	0.287	0.000	QP
14		19.974	39.180	28.584	-10.820	50.000	10.310	0.287	0.000	AV

Note:
1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp). Test Photograph.
3. We evalued both tow crystal oscillator, and shown in report is the worst data.

4.2 Emissions in restricted frequency bands — VERDICT: PASS

4.2.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.207		
Restricted Bands of operation			
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 operation for 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	--	

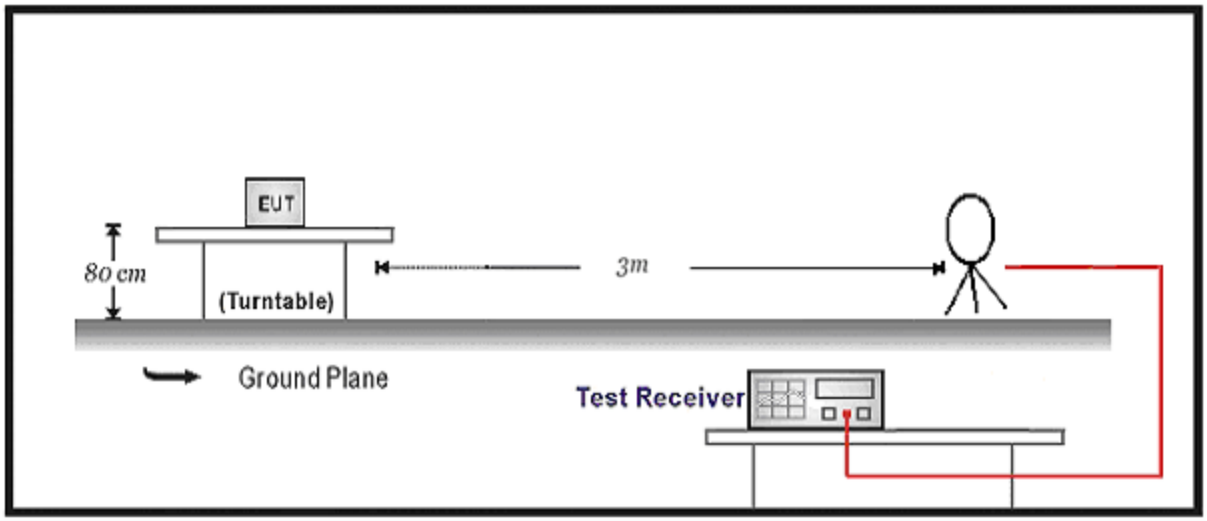
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30(Note 1)
1.705 - 30	30	29.5	30(Note 1)
30 - 88	100	40	3(Note 2)
88 - 216	150	43.5	3(Note 2)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

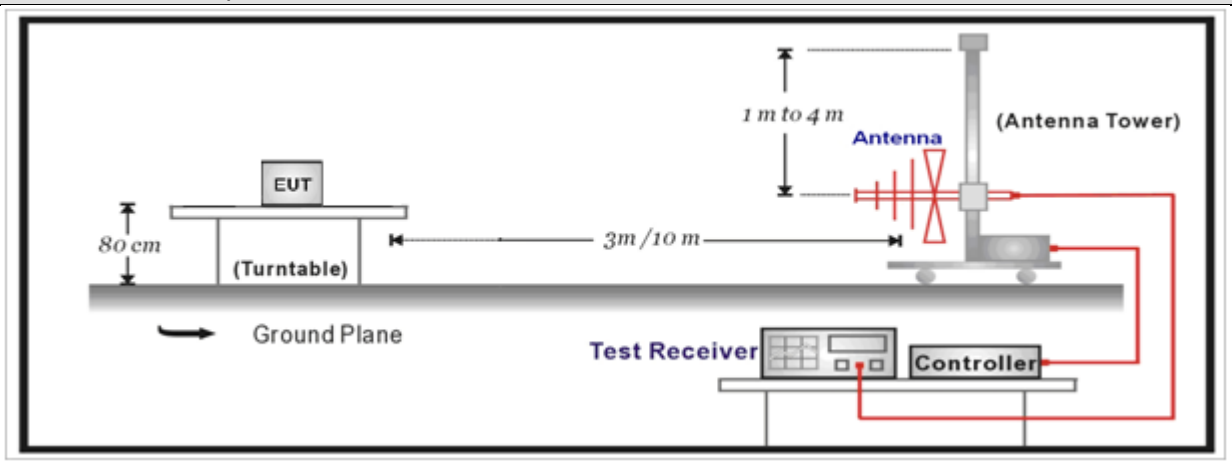
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated 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

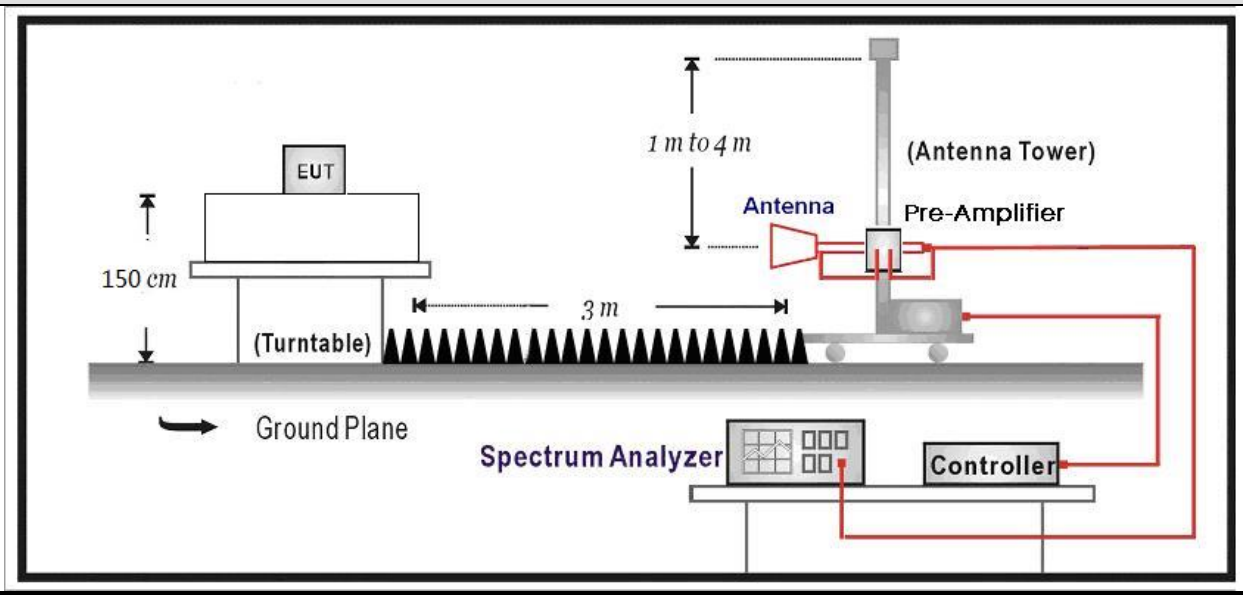
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:

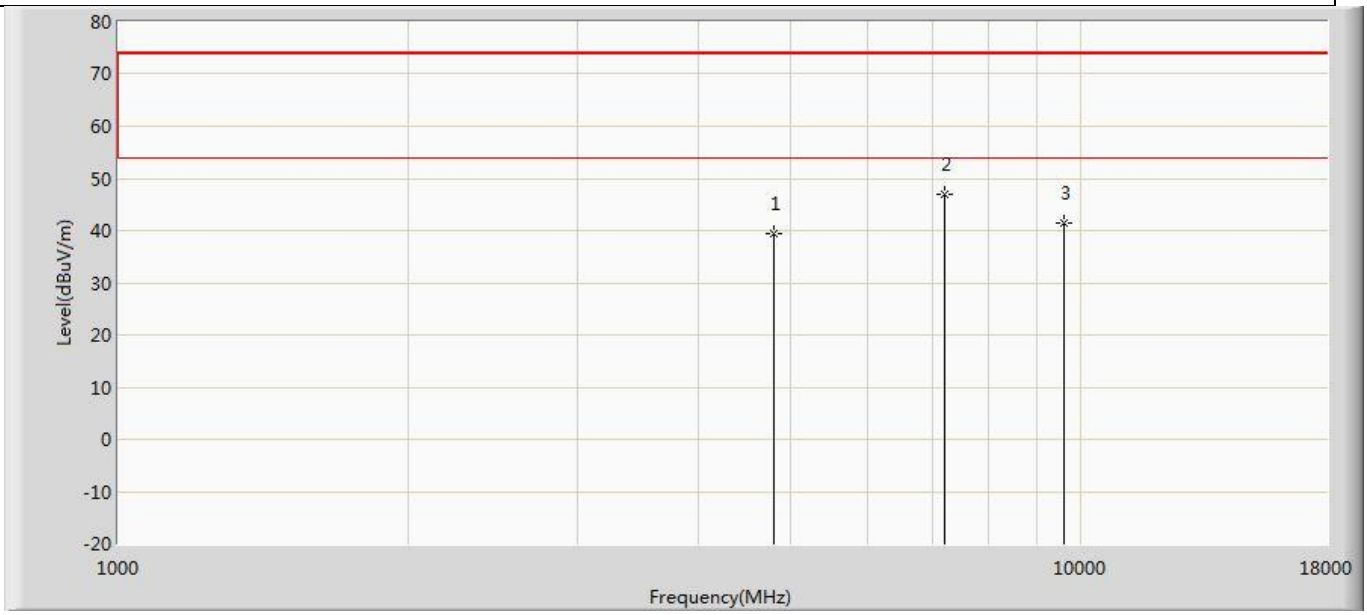


4.2.3 Test Procedure

	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

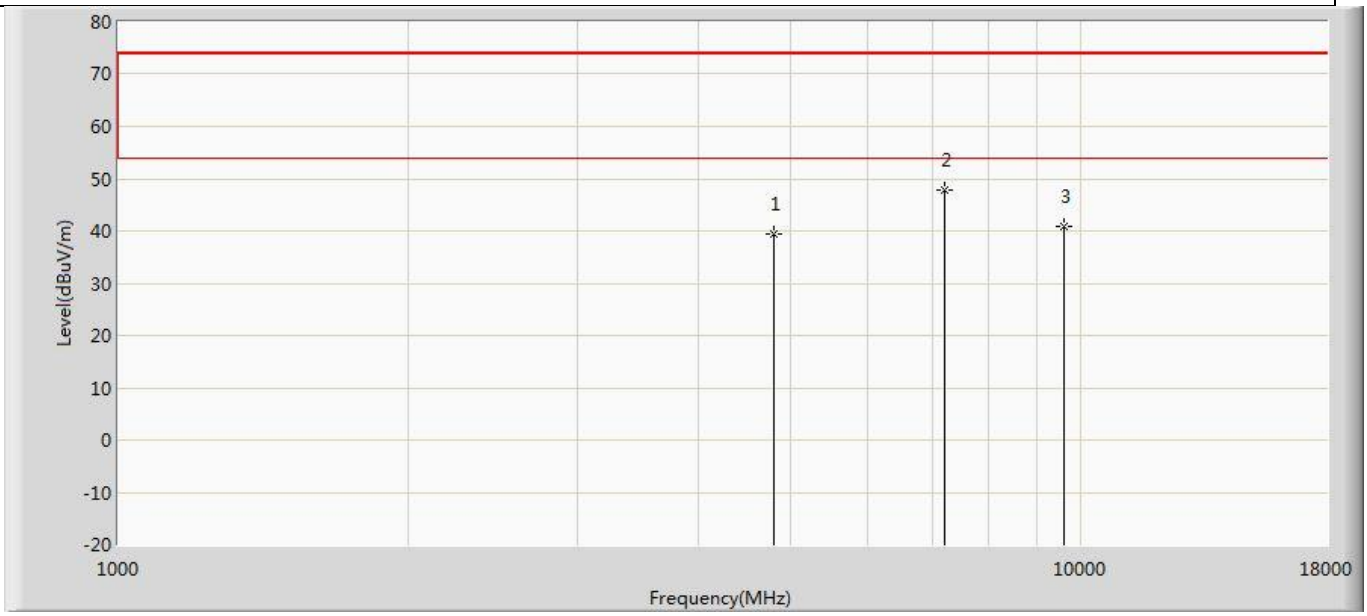
4.2.4 Test Data

Profile: 2120499R	Page No.: 37
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



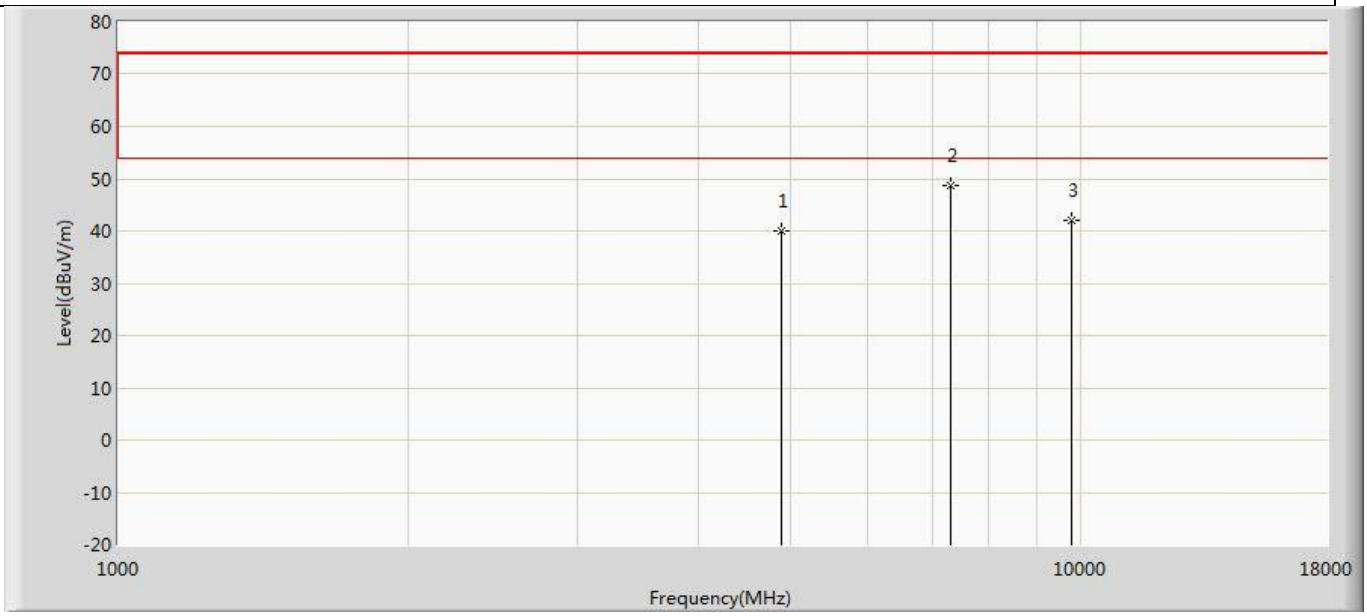
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.522	45.603	-34.478	74.000	-6.081	PK
2	*	7206.000	46.968	49.839	-27.032	74.000	-2.871	PK
3		9608.000	41.385	42.813	-32.615	74.000	-1.427	PK

Profile: 2120499R	Page No.: 38
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



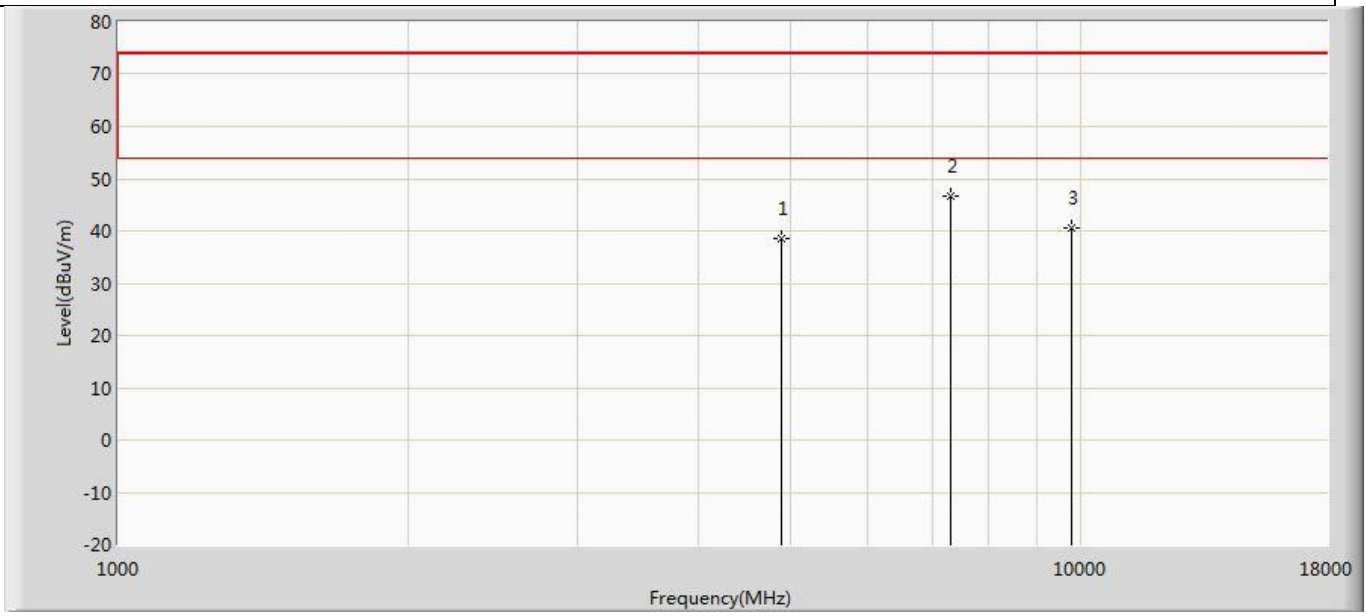
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.307	45.388	-34.693	74.000	-6.081	PK
2	*	7206.000	47.782	50.653	-26.218	74.000	-2.871	PK
3		9608.000	40.727	42.155	-33.273	74.000	-1.427	PK

Profile: 2120499R	Page No.: 45
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2440MHz LE_1Mbps	



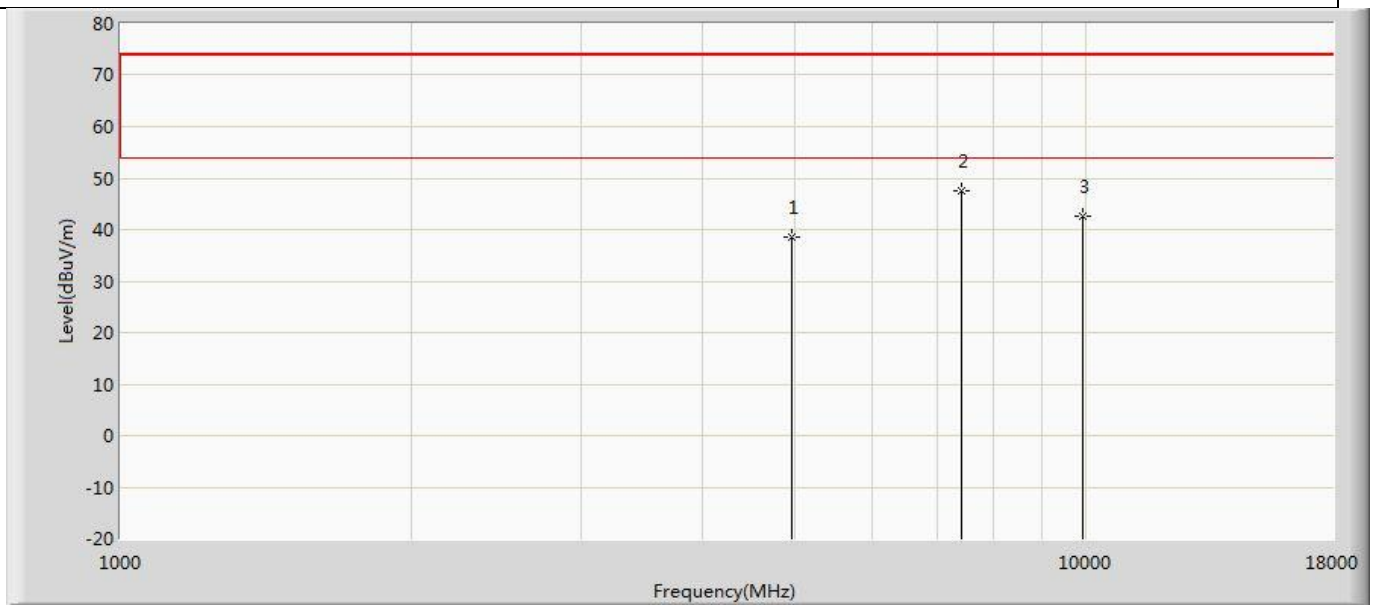
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	39.905	45.778	-34.095	74.000	-5.873	PK
2	*	7320.000	48.772	51.836	-25.228	74.000	-3.064	PK
3		9760.000	42.098	43.146	-31.902	74.000	-1.048	PK

Profile: 2120499R	Page No.: 46
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2440MHz LE_1Mbps	



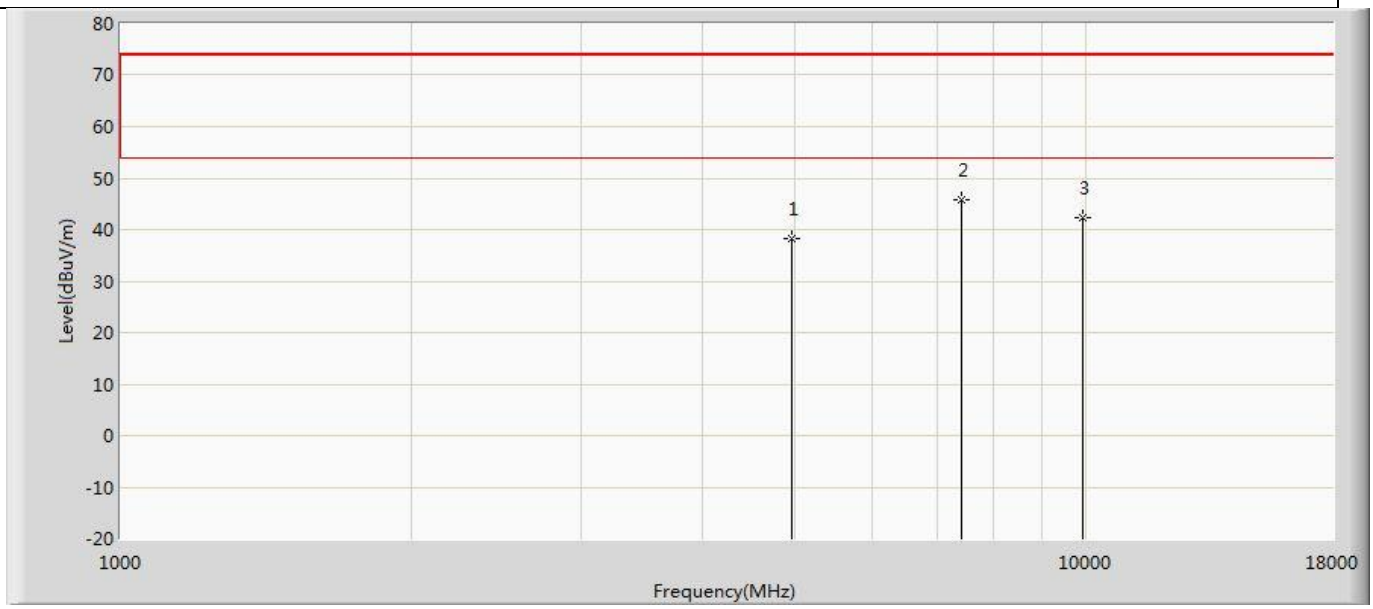
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.498	44.371	-35.502	74.000	-5.873	PK
2	*	7320.000	46.676	49.740	-27.324	74.000	-3.064	PK
3		9760.000	40.532	41.580	-33.468	74.000	-1.048	PK

Profile: 2120499R	Page No.: 53
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz LE_1Mbps	



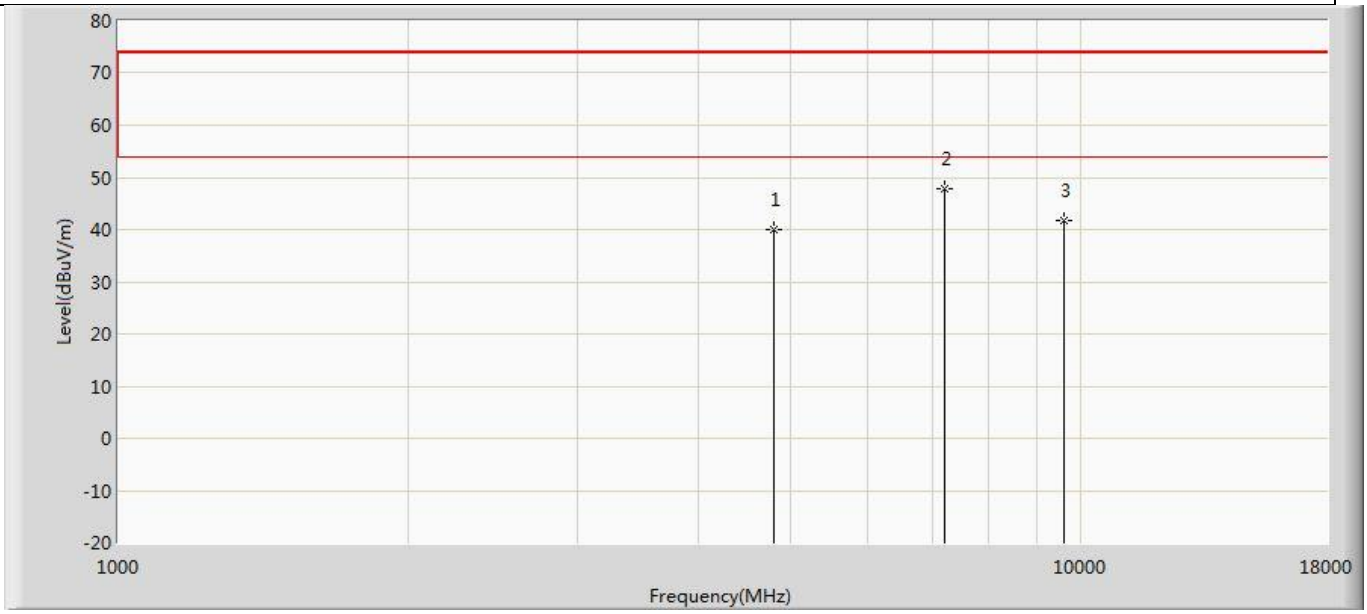
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	38.634	44.370	-35.366	74.000	-5.737	PK
2	*	7440.000	47.578	50.551	-26.422	74.000	-2.973	PK
3		9920.000	42.734	43.151	-31.266	74.000	-0.418	PK

Profile: 2120499R	Page No.: 54
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz LE_1Mbps	



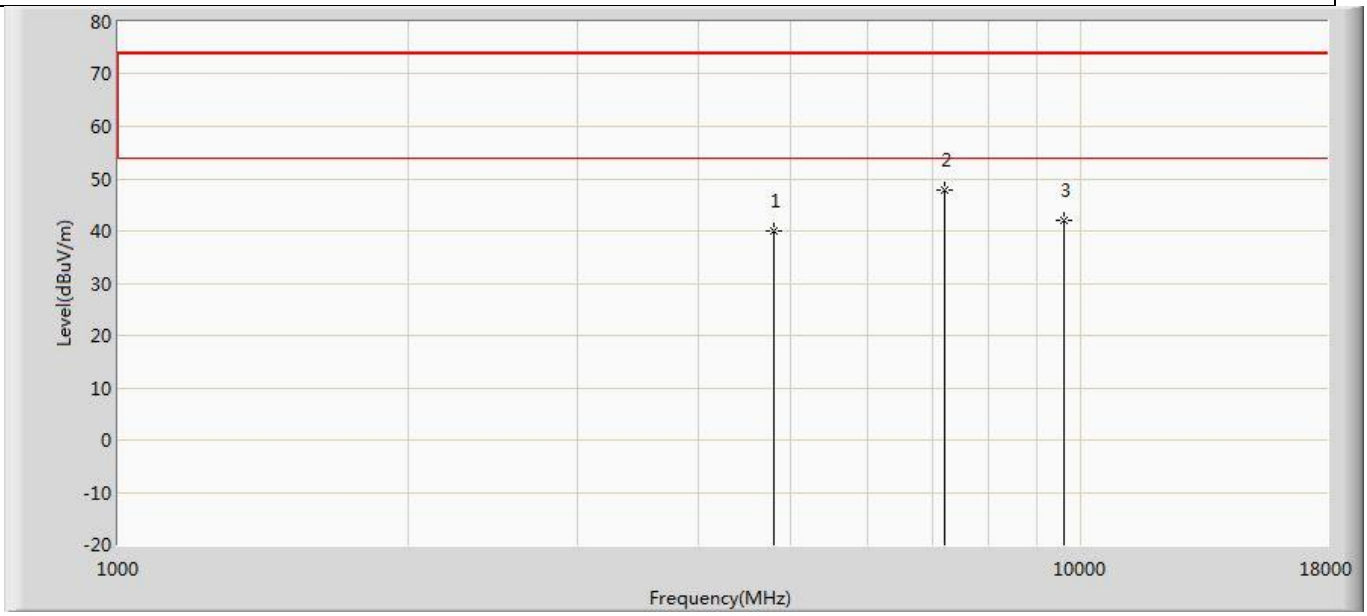
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	38.215	43.951	-35.785	74.000	-5.737	PK
2	*	7440.000	45.825	48.798	-28.175	74.000	-2.973	PK
3		9920.000	42.363	42.780	-31.637	74.000	-0.418	PK

Profile: 2120499R	Page No.: 39
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



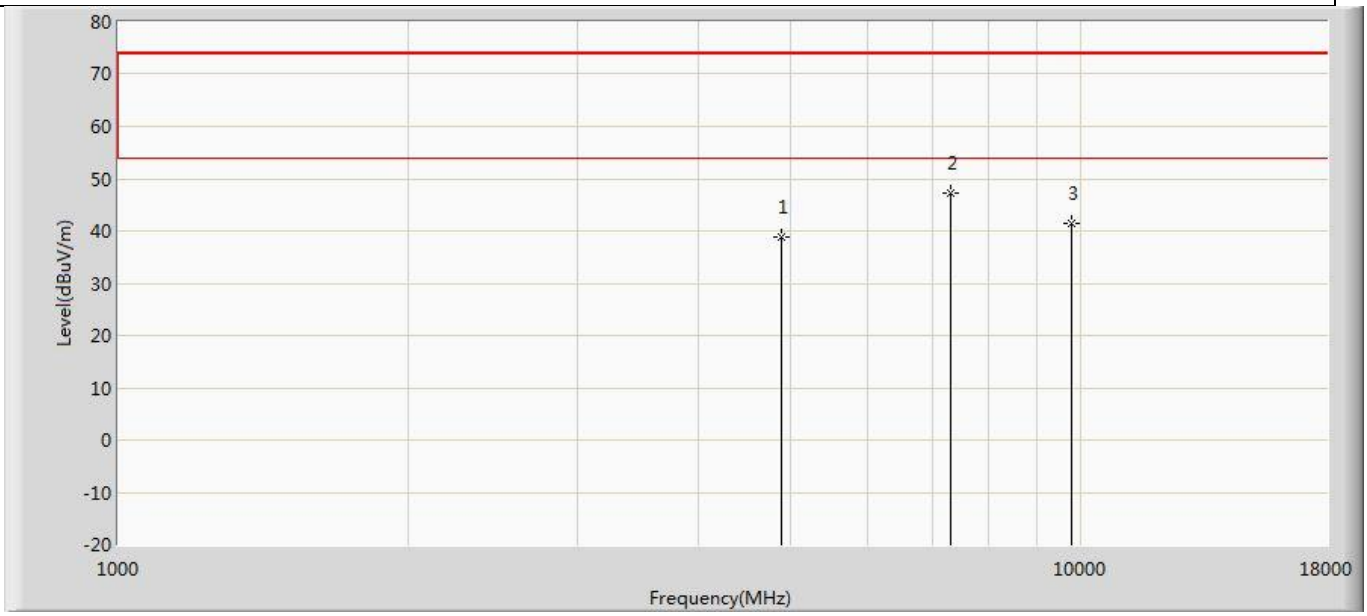
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.882	45.963	-34.118	74.000	-6.081	PK
2	*	7206.000	47.768	50.639	-26.232	74.000	-2.871	PK
3		9608.000	41.724	43.152	-32.276	74.000	-1.427	PK

Profile: 2120499R	Page No.: 40
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



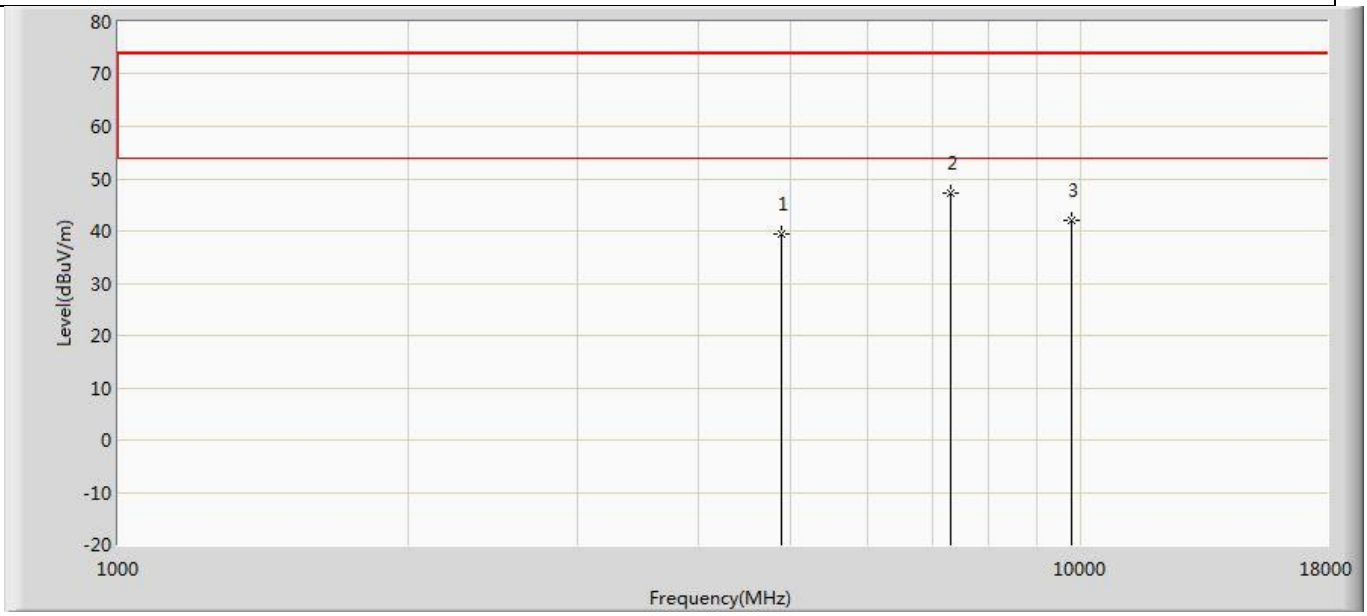
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.882	45.963	-34.118	74.000	-6.081	PK
2	*	7206.000	47.768	50.639	-26.232	74.000	-2.871	PK
3		9608.000	41.989	43.417	-32.011	74.000	-1.427	PK

Profile: 2120499R	Page No.: 47
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2440MHz by LE_2Mbps	



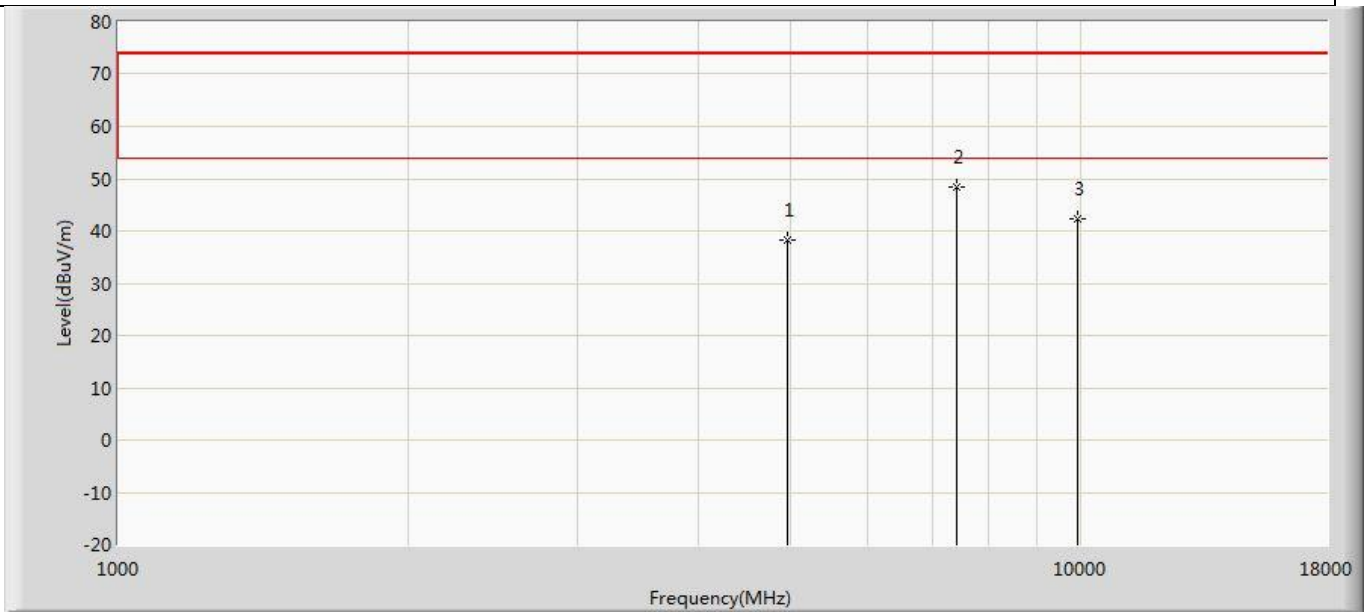
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.743	44.616	-35.257	74.000	-5.873	PK
2	*	7320.000	47.173	50.237	-26.827	74.000	-3.064	PK
3		9760.000	41.593	42.641	-32.407	74.000	-1.048	PK

Profile: 2120499R	Page No.: 48
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2440MHz by LE_2Mbps	



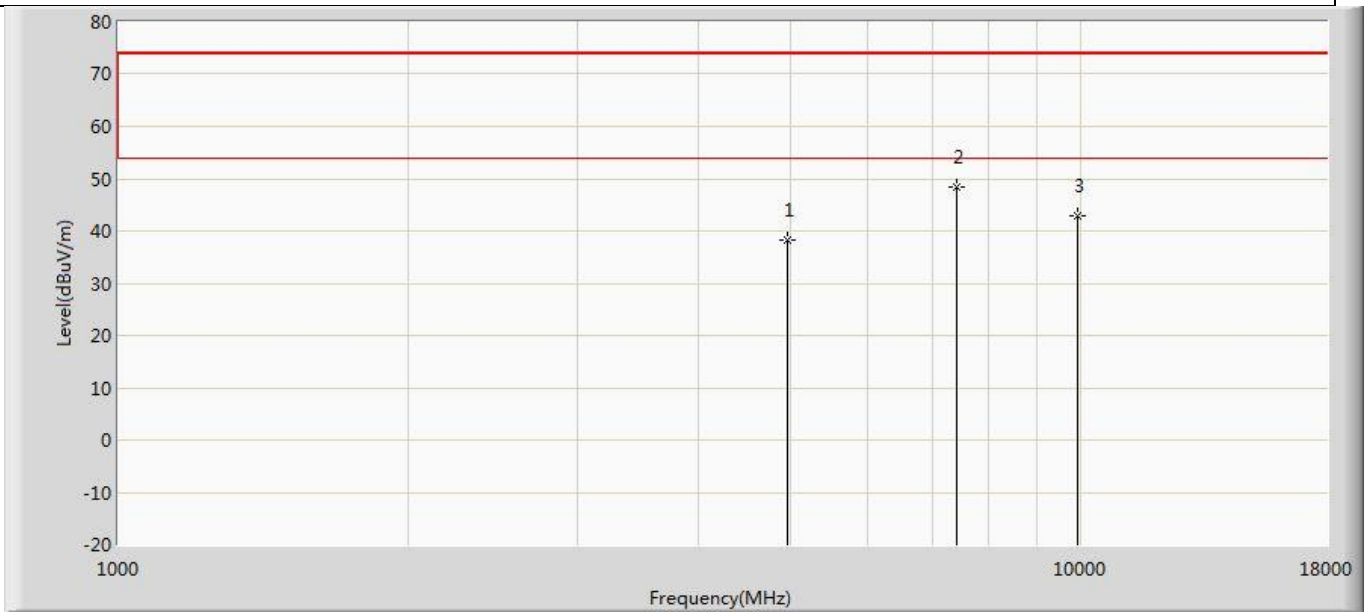
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	39.484	45.357	-34.516	74.000	-5.873	PK
2	*	7320.000	47.223	50.287	-26.777	74.000	-3.064	PK
3		9760.000	41.948	42.996	-32.052	74.000	-1.048	PK

Profile: 2120499R	Page No.: 55
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



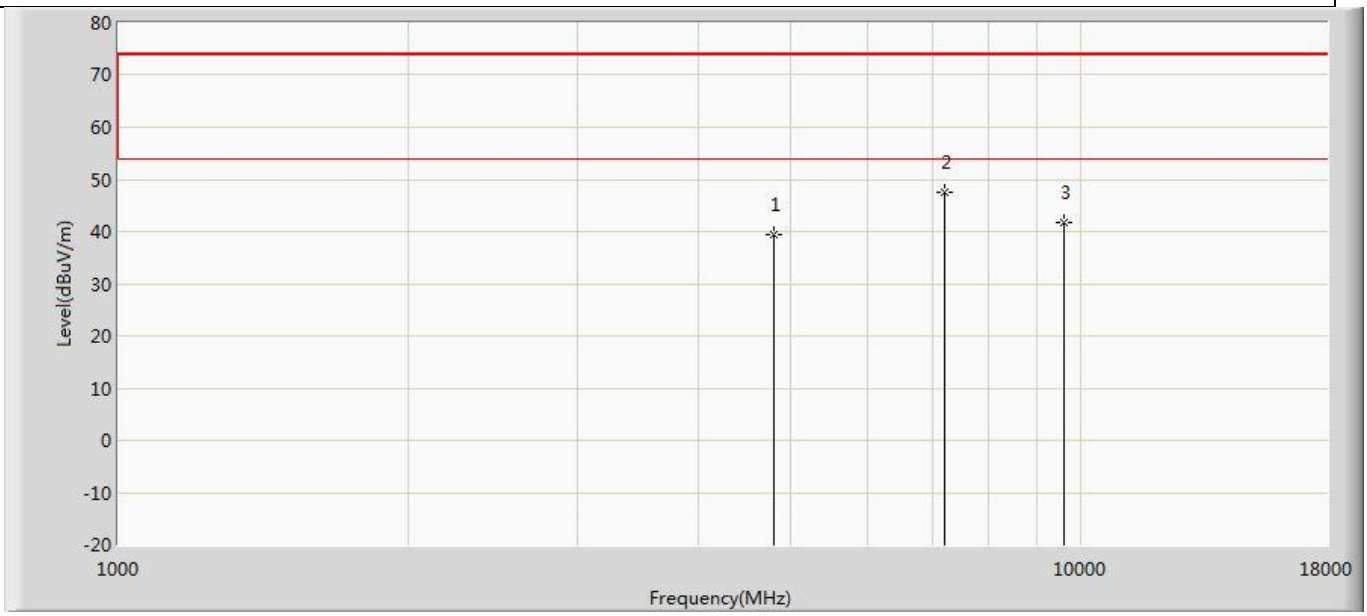
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	38.121	43.857	-35.879	74.000	-5.737	PK
2	*	7440.000	48.532	51.505	-25.468	74.000	-2.973	PK
3		9920.000	42.283	42.700	-31.717	74.000	-0.418	PK

Profile: 2120499R	Page No.: 56
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



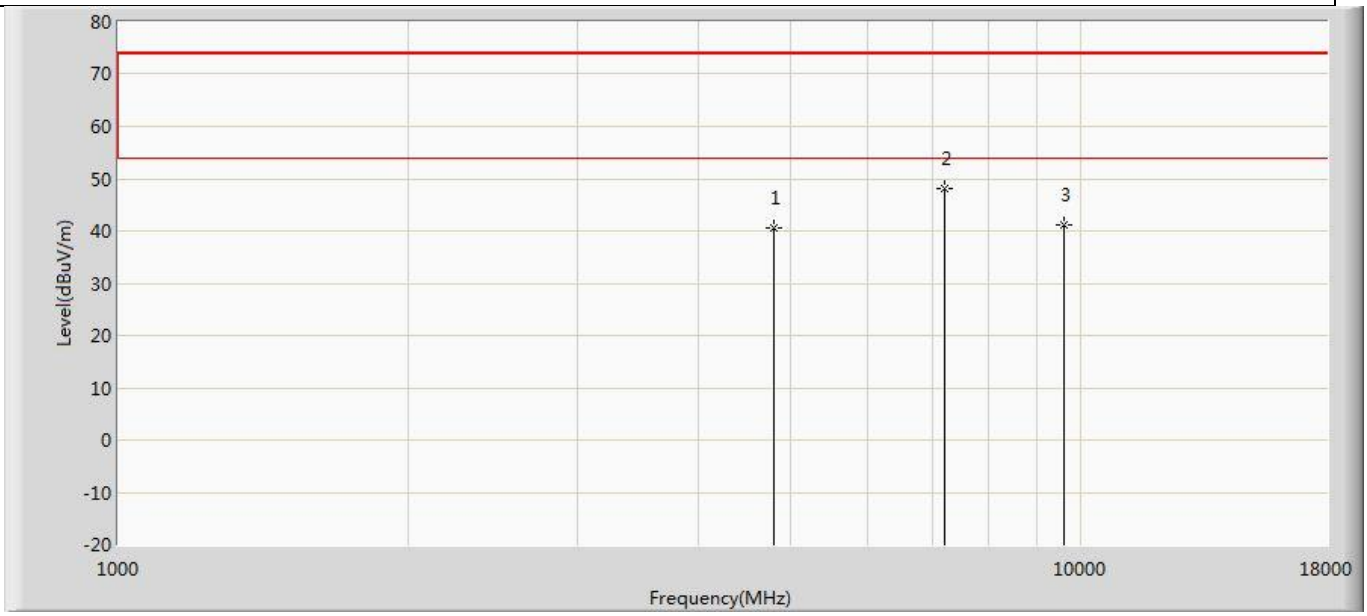
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	38.317	44.053	-35.683	74.000	-5.737	PK
2	*	7440.000	48.532	51.505	-25.468	74.000	-2.973	PK
3		9920.000	42.865	43.282	-31.135	74.000	-0.418	PK

Profile: 2120499R	Page No.: 43
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by LE_Coded S=2	



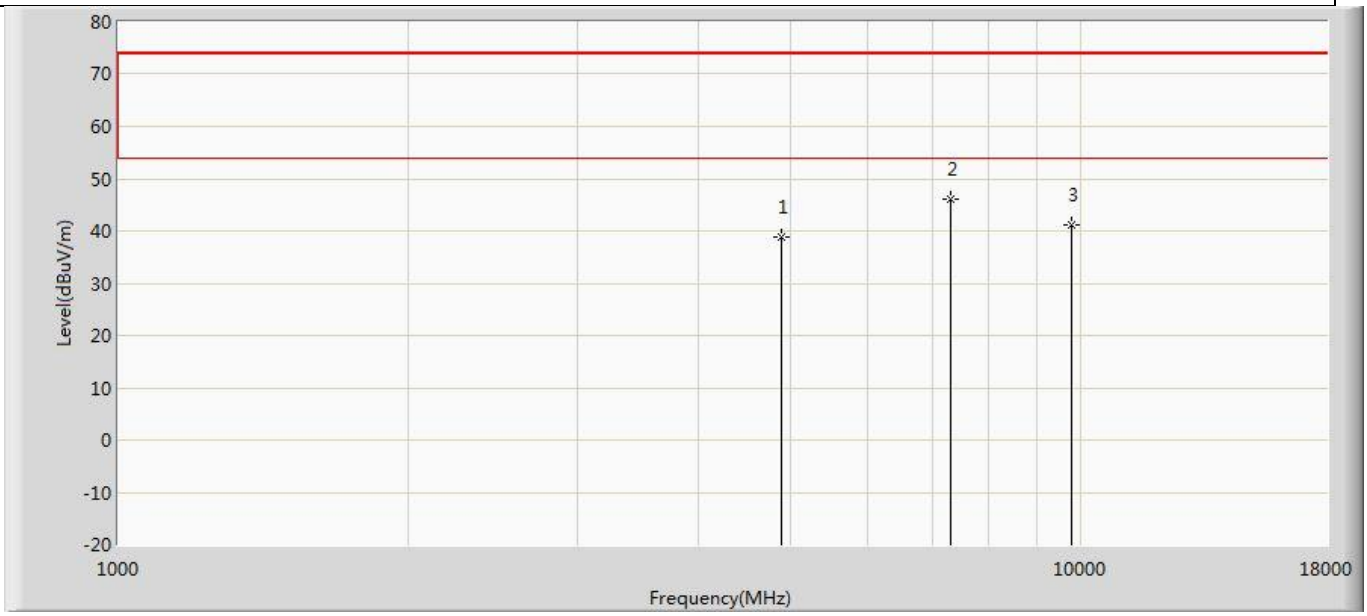
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.380	45.461	-34.620	74.000	-6.081	PK
2	*	7206.000	47.563	50.434	-26.437	74.000	-2.871	PK
3		9608.000	41.611	43.039	-32.389	74.000	-1.427	PK

Profile: 2120499R	Page No.: 44
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by LE_Coded S=2	



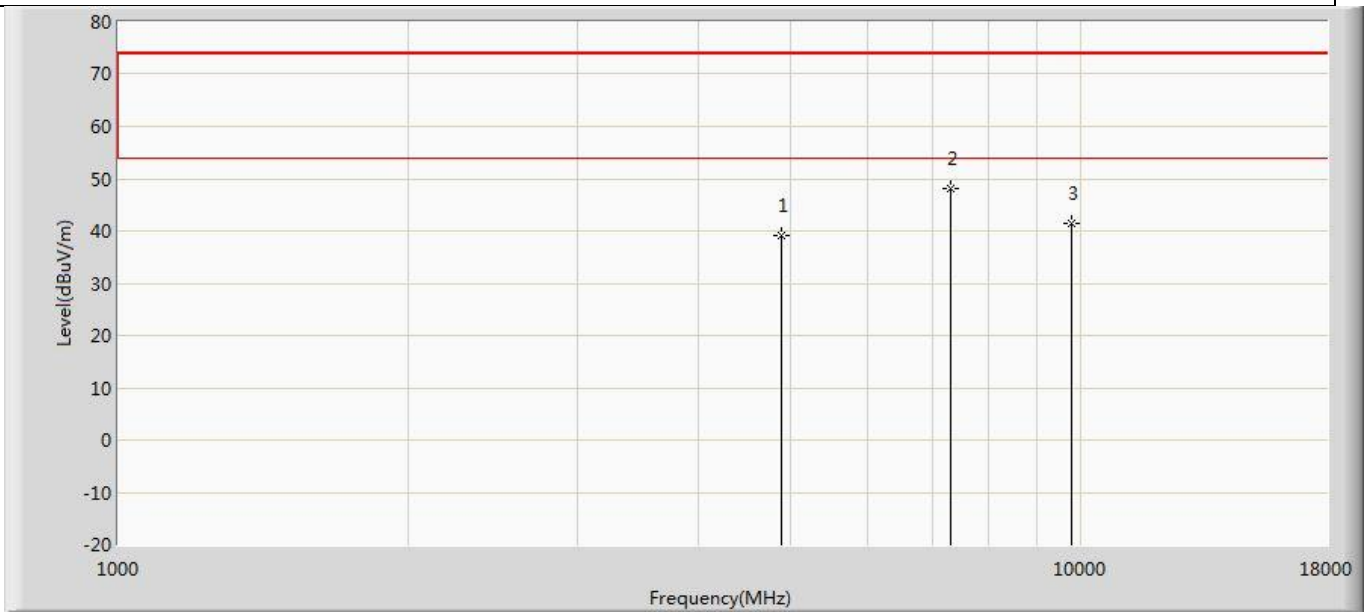
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	40.673	46.754	-33.327	74.000	-6.081	PK
2	*	7206.000	48.151	51.022	-25.849	74.000	-2.871	PK
3		9608.000	41.208	42.636	-32.792	74.000	-1.427	PK

Profile: 2120499R	Page No.: 51
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2440MHz by LE_Coded S=2	



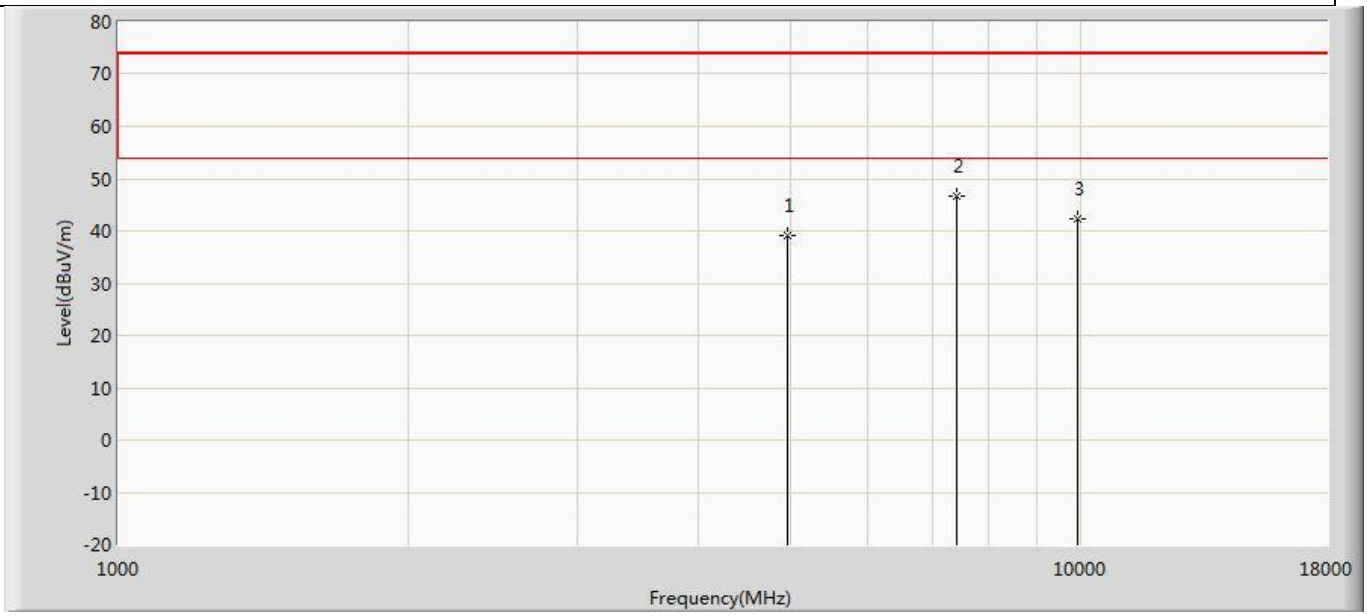
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.858	44.731	-35.142	74.000	-5.873	PK
2	*	7320.000	46.210	49.274	-27.790	74.000	-3.064	PK
3		9760.000	41.067	42.115	-32.933	74.000	-1.048	PK

Profile: 2120499R	Page No.: 52
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2440MHz by LE_Coded S=2	



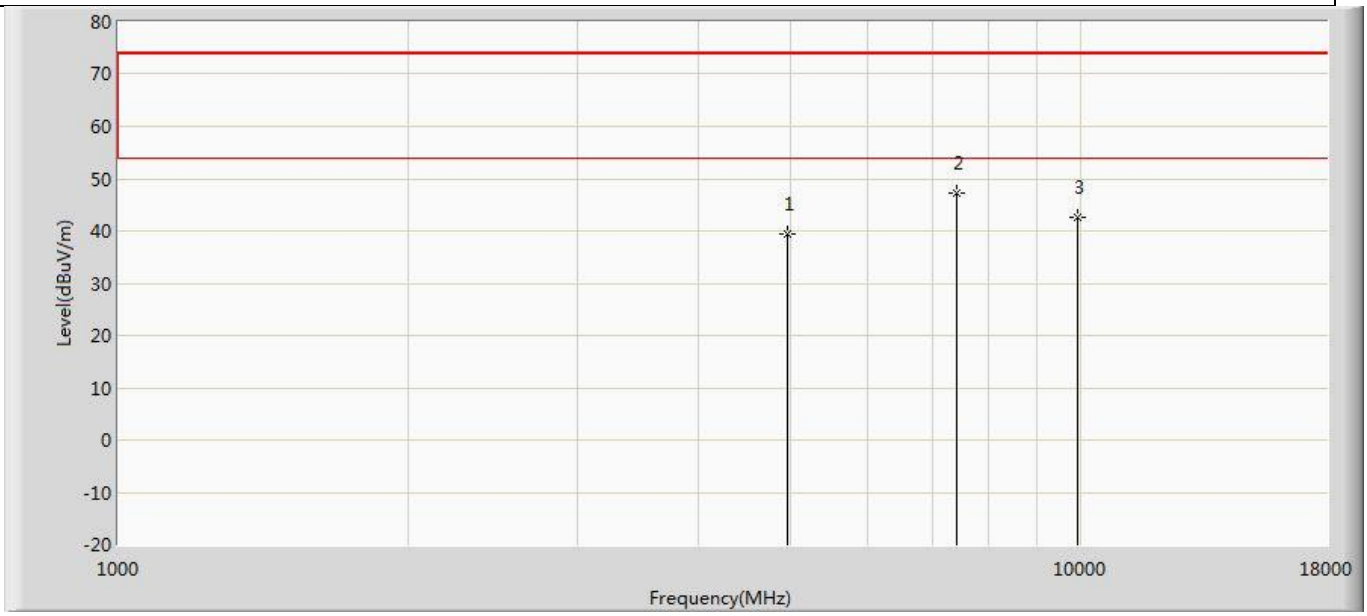
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	39.245	45.118	-34.755	74.000	-5.873	PK
2	*	7320.000	48.224	51.288	-25.776	74.000	-3.064	PK
3		9760.000	41.354	42.402	-32.646	74.000	-1.048	PK

Profile: 2120499R	Page No.: 59
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by LE_Coded S=2	



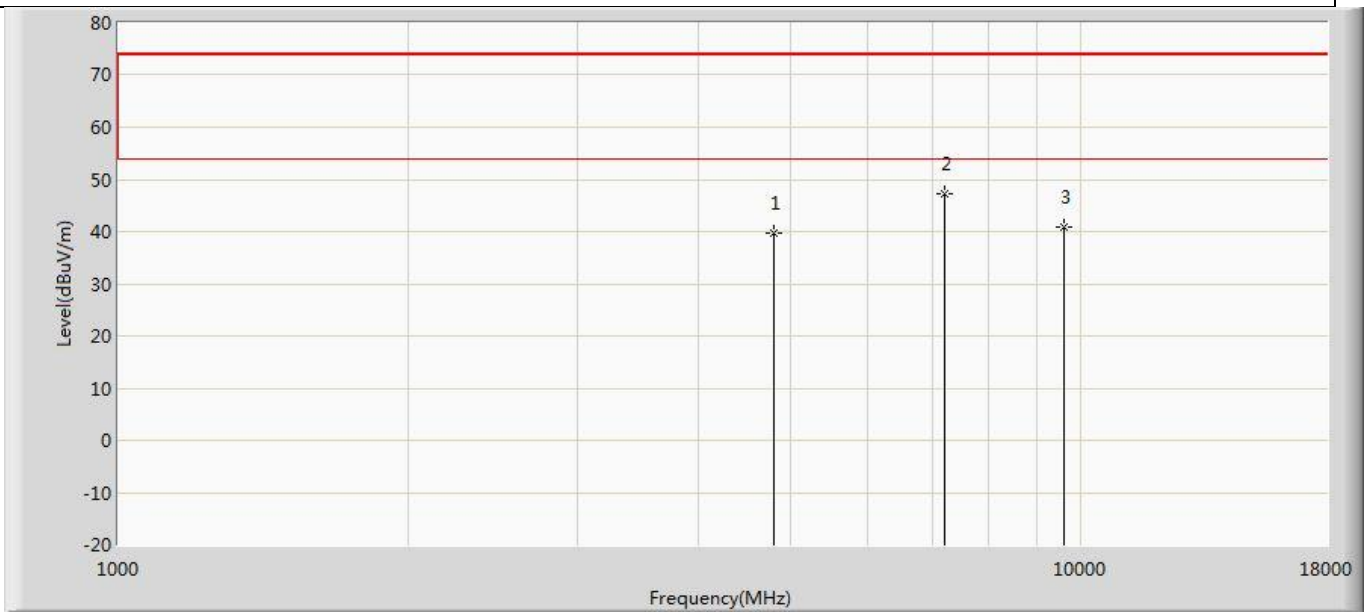
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	39.116	44.852	-34.884	74.000	-5.737	PK
2	*	7440.000	46.647	49.620	-27.353	74.000	-2.973	PK
3		9920.000	42.187	42.604	-31.813	74.000	-0.418	PK

Profile: 2120499R	Page No.: 60
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by LE_Coded S=2	



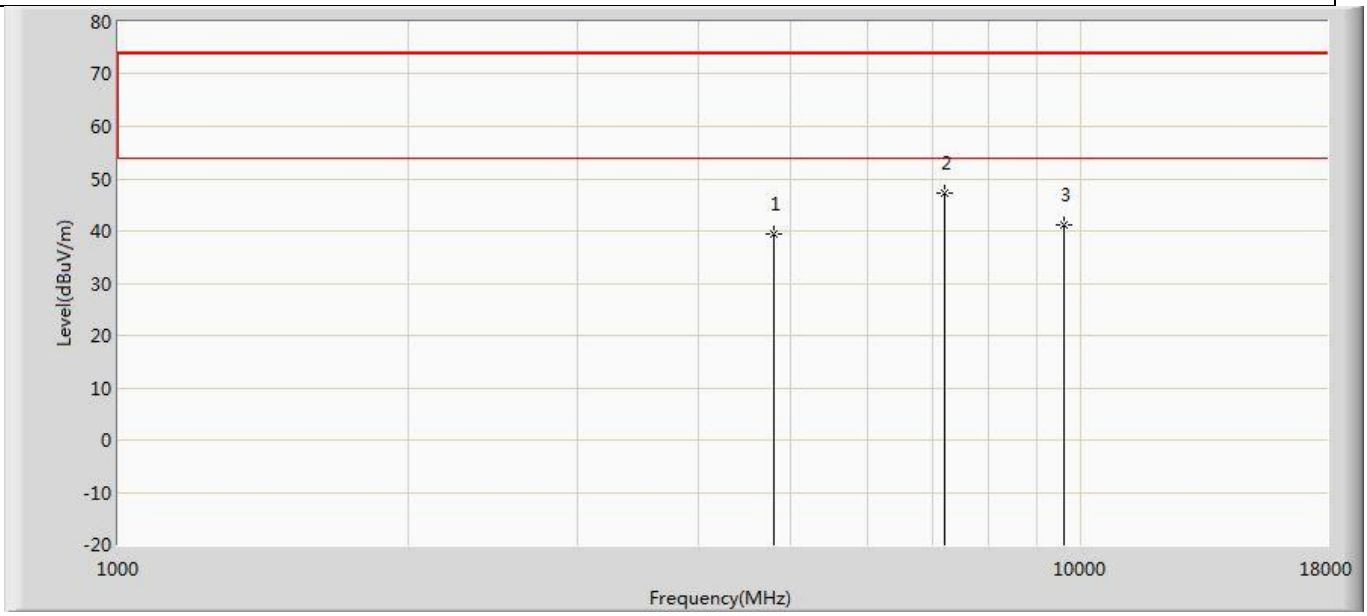
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	39.352	45.088	-34.648	74.000	-5.737	PK
2	*	7440.000	47.273	50.246	-26.727	74.000	-2.973	PK
3		9920.000	42.627	43.044	-31.373	74.000	-0.418	PK

Profile: 2120499R	Page No.: 41
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHzby LE_Coded S=8	



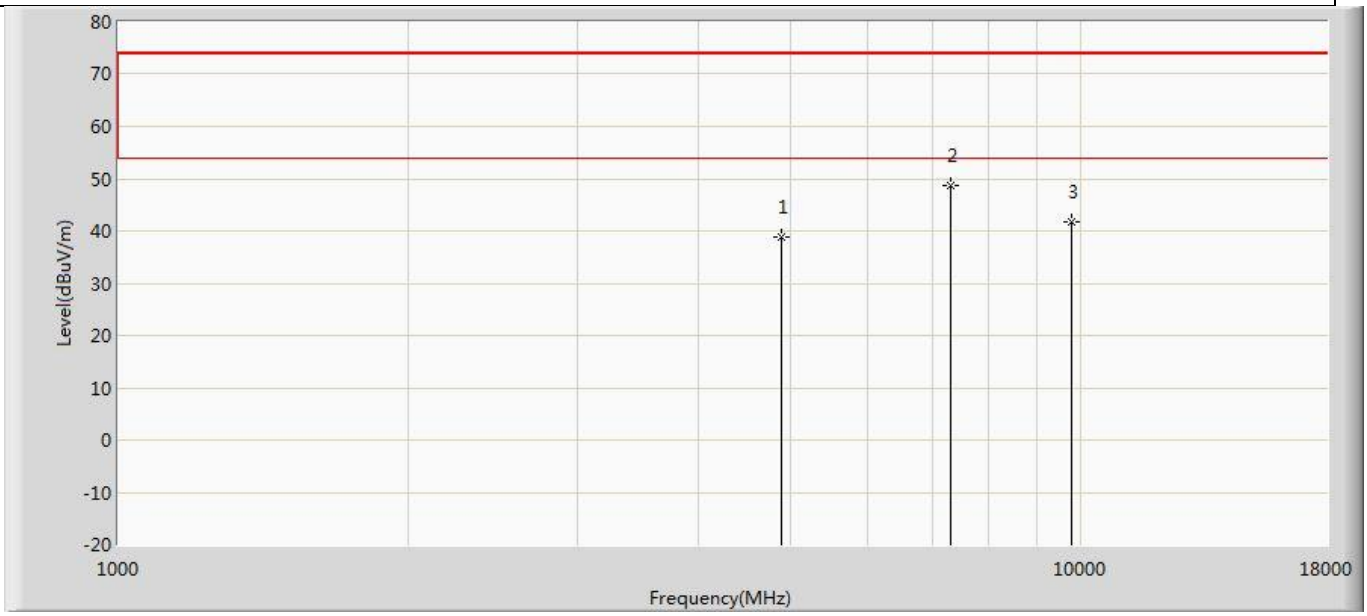
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.768	45.849	-34.232	74.000	-6.081	PK
2	*	7206.000	47.191	50.062	-26.809	74.000	-2.871	PK
3		9608.000	40.965	42.393	-33.035	74.000	-1.427	PK

Profile: 2120499R	Page No.: 42
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by LE_Coded S=8	



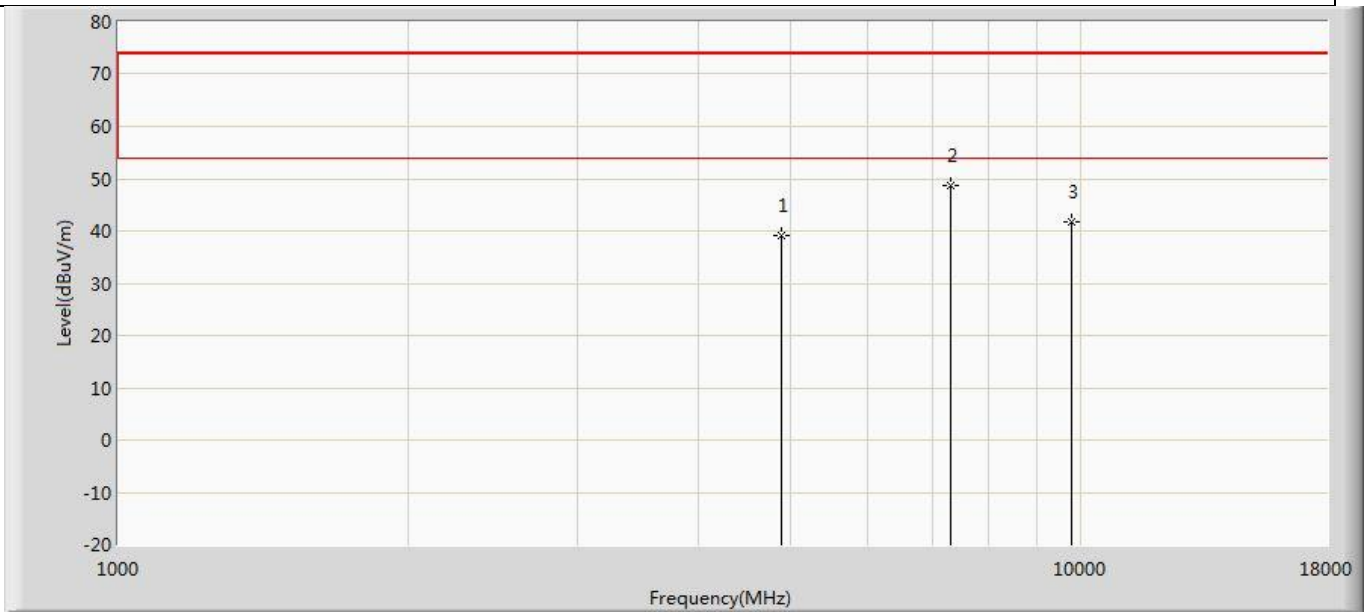
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.317	45.398	-34.683	74.000	-6.081	PK
2	*	7206.000	47.321	50.192	-26.679	74.000	-2.871	PK
3		9608.000	41.172	42.600	-32.828	74.000	-1.427	PK

Profile: 2120499R	Page No.: 49
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2440MHz by LE_Code S=8	



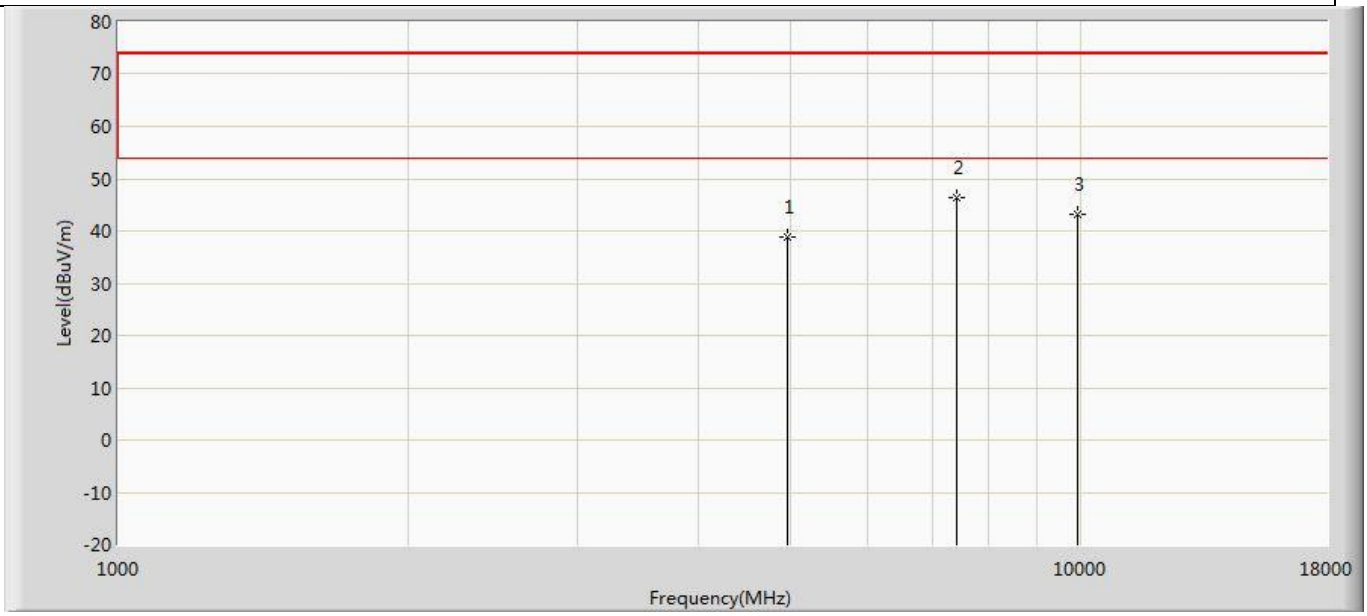
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.889	44.762	-35.111	74.000	-5.873	PK
2	*	7320.000	48.673	51.737	-25.327	74.000	-3.064	PK
3		9760.000	41.727	42.775	-32.273	74.000	-1.048	PK

Profile: 2120499R	Page No.: 50
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2440MHz by LE_Code S=8	



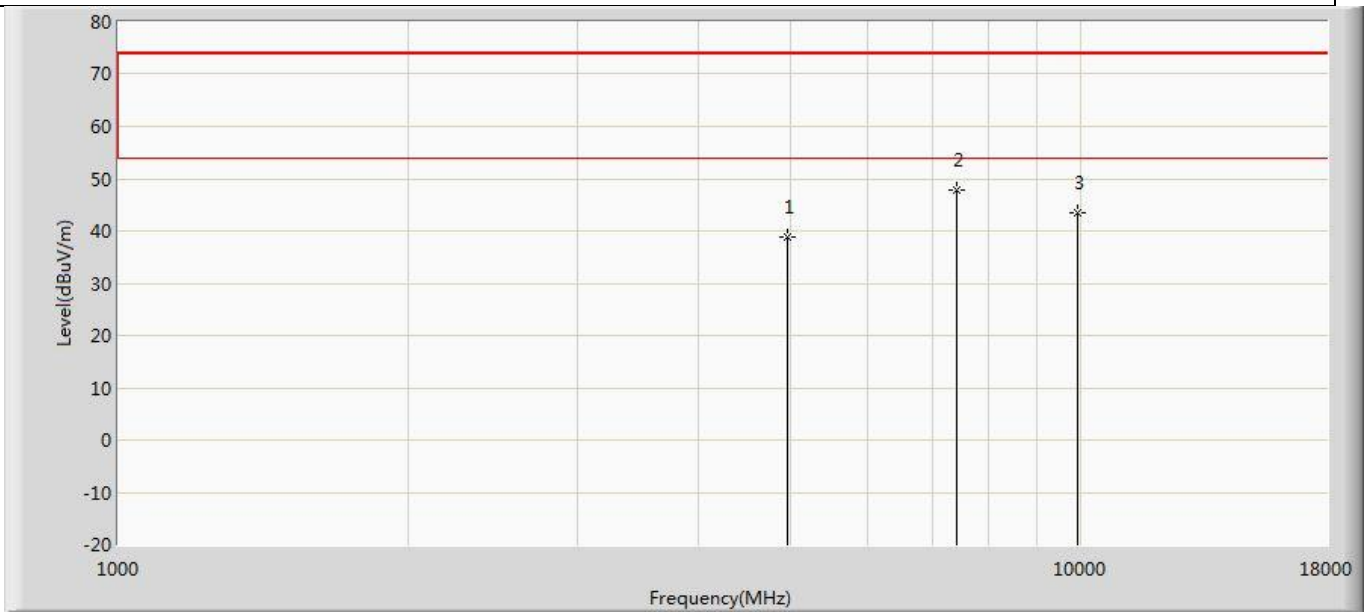
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	39.254	45.127	-34.746	74.000	-5.873	PK
2	*	7320.000	48.673	51.737	-25.327	74.000	-3.064	PK
3		9760.000	41.727	42.775	-32.273	74.000	-1.048	PK

Profile: 2120499R	Page No.: 57
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by LE_Code S=8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	38.822	44.558	-35.178	74.000	-5.737	PK
2	*	7440.000	46.263	49.236	-27.737	74.000	-2.973	PK
3		9920.000	43.256	43.673	-30.744	74.000	-0.418	PK

Profile: 2120499R	Page No.: 58
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/06 - 20:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by by LE _Code S=8	

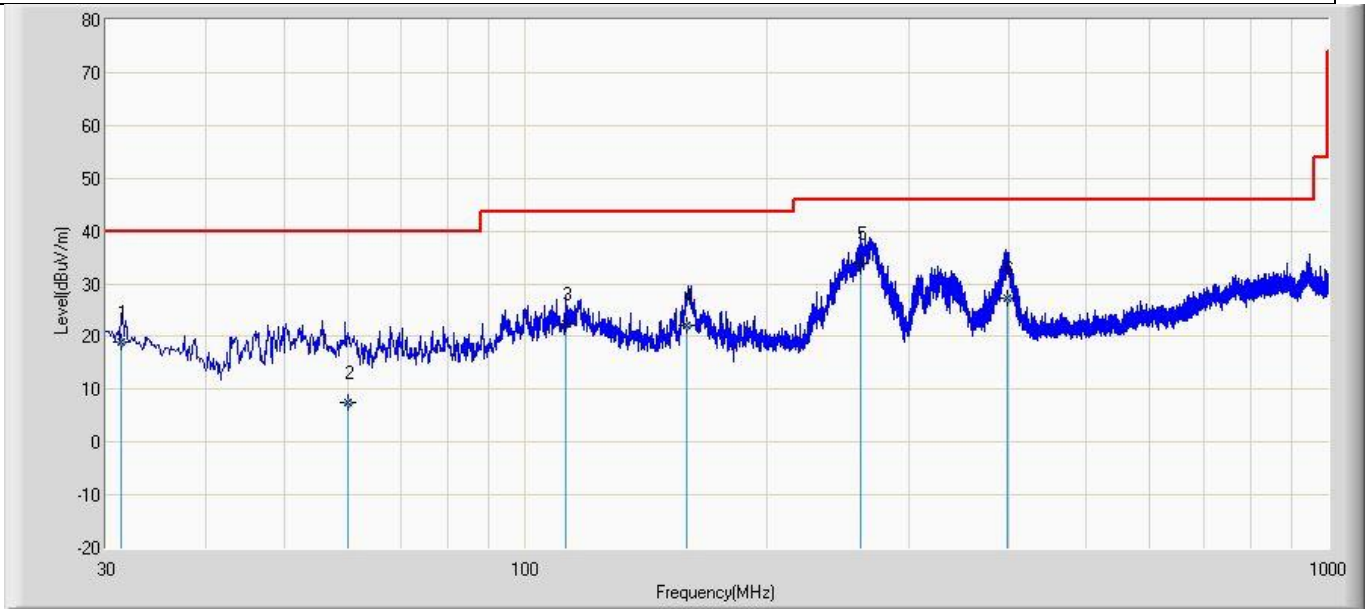


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	38.822	44.558	-35.178	74.000	-5.737	PK
2	*	7440.000	47.795	50.768	-26.205	74.000	-2.973	PK
3		9920.000	43.599	44.016	-30.401	74.000	-0.418	PK

Note:
1. " * ", means this data is the worst emission by LEvel.
2. Measurement By LEvel = Reading Level + Factor(Probe+Cabby LE-Amp).
3. The test frequency range, 9kHz~30MHz and Above 18GHz worst case are at by LEast 6dB below the limits, 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: 2120499R	Page No.: 1
Engineer: Jun Xu	
Site: AC3	Time: 2021/02/07 - 09:24
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Vertical
EUT: LED Lamp	Power: AC 110V/60Hz
Note: Mode 1	

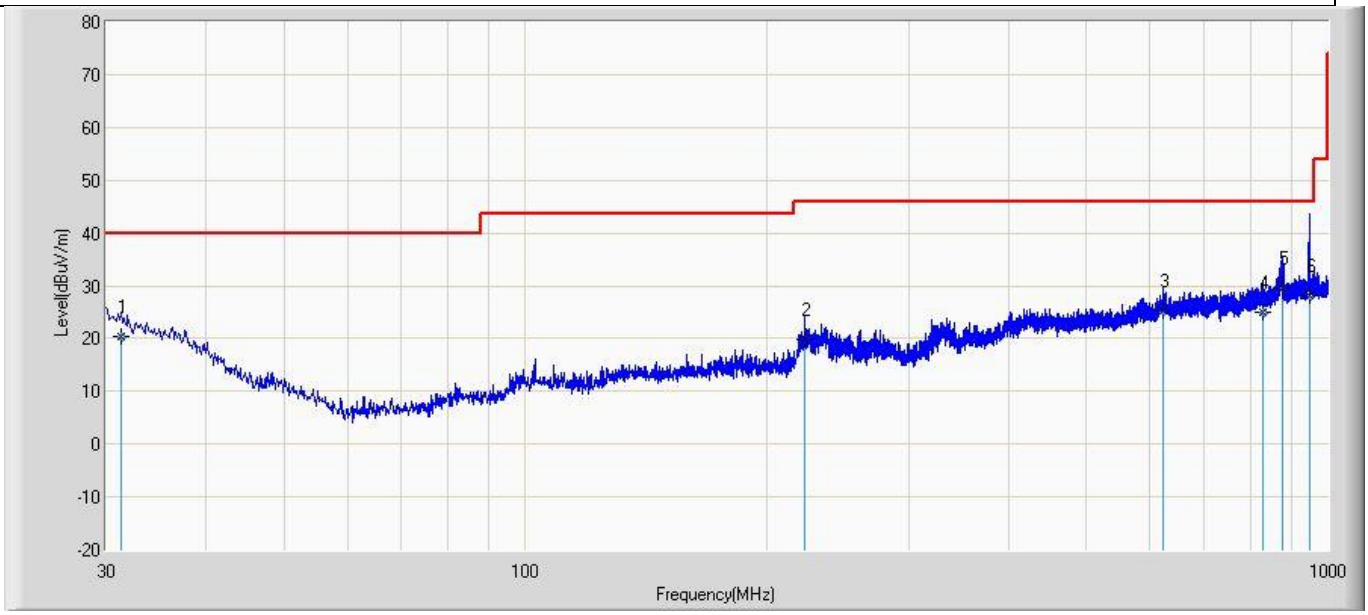


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		31.334	19.052	-4.500	-20.948	40.000	23.552	124	220	QP
2		60.152	7.420	-8.422	-32.580	40.000	15.842	111	222	QP
3		112.422	22.507	1.520	-20.993	43.500	20.986	145	10	QP
4		158.520	22.147	3.635	-21.353	43.500	18.512	150	30	QP
5	*	261.426	33.988	11.420	-12.012	46.000	22.568	150	70	QP
6		398.995	27.223	3.520	-18.777	46.000	23.703	150	287	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: 2120499R	Page No.: 2
Engineer: Jun Xu	
Site: AC3	Time: 2021/03/08 - 20:14
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Horizontal
EUT: LED Lamp	Power: AC 110V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		31.335	20.540	-6.520	-19.460	40.000	27.060	124	10	QP
2		223.151	19.862	1.520	-26.138	46.000	18.341	150	220	QP
3		623.005	25.163	-4.520	-20.837	46.000	29.683	150	30	QP
4		830.777	25.071	-5.520	-20.929	46.000	30.591	150	322	QP
5	*	879.555	29.623	-1.520	-16.377	46.000	31.143	150	175	QP
6		948.420	28.078	-4.520	-17.922	46.000	32.598	150	47	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

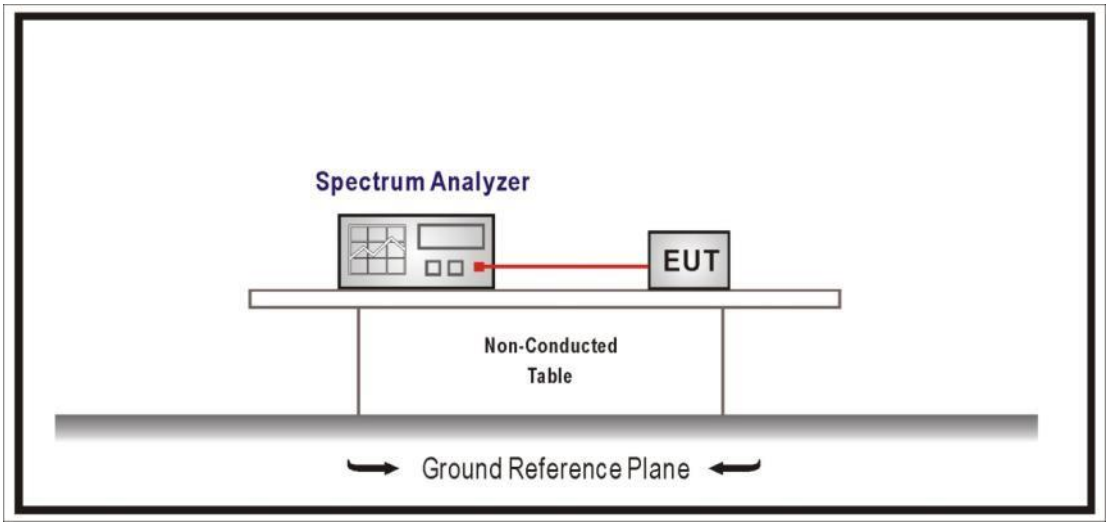
4.3.1 Limit

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 by LEast 30 dB relative to the maximum in-band peak PSD by 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 by LEast 20 dB relative to the maximum in-band peak PSD by LEvel in 100 kHz (i.e., 20 dBc).

4.3.2 Test Setup

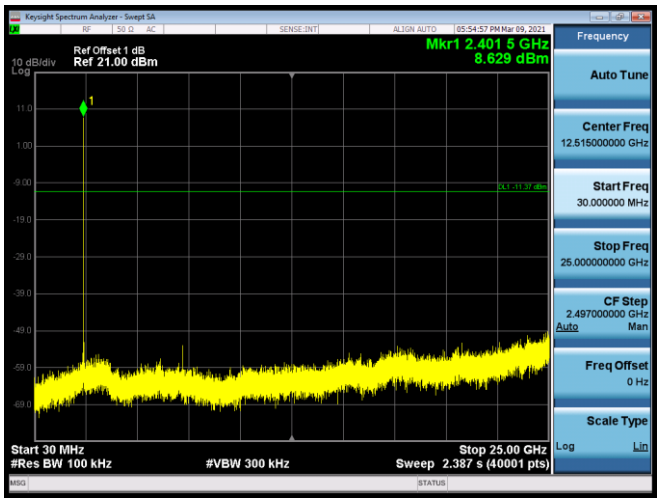


4.3.3 Test Procedure

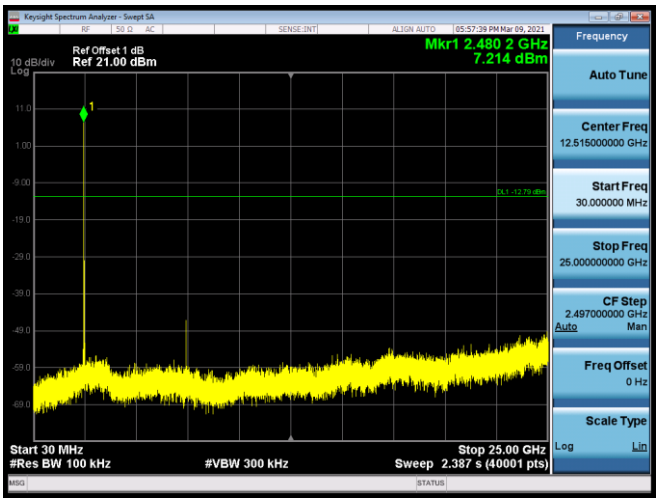
References Ruby LE			Chapter	Description
☒	ANSI C63.10		11.11	Emissions in non-restricted frequency bands
	☒	ANSI C63.10	11.11.1	General
	☒	ANSI C63.10	11.11.2	Reference by LEvel measurement
	☒	ANSI C63.10	11.11.3	Emission by LEvel measurement

4.3.4 Test Data

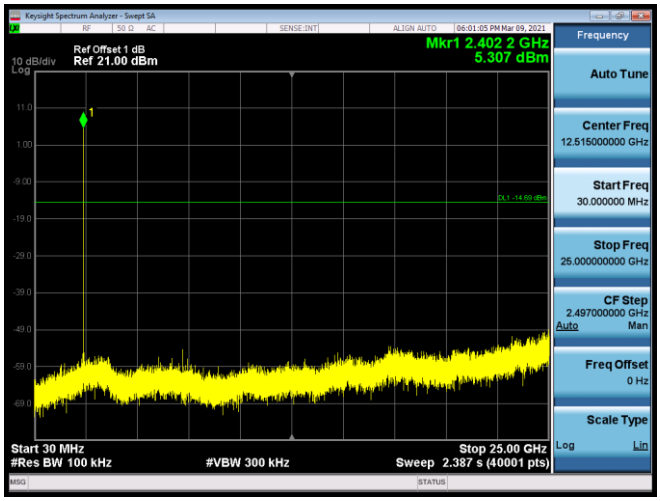
Mode 1 CH37 (2402MHz)



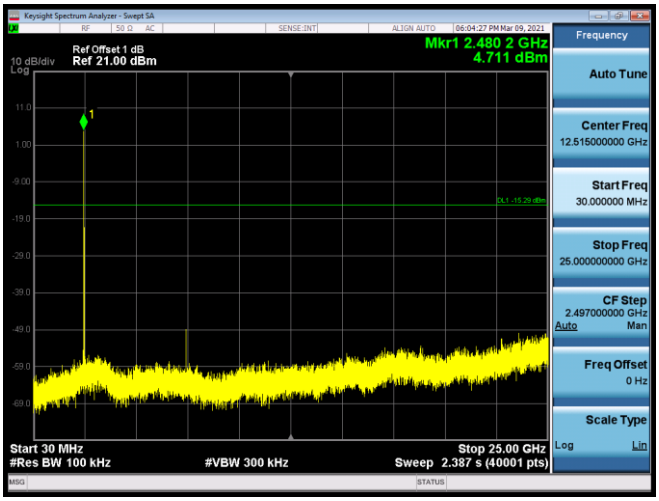
Mode 1 CH39 (2480MHz)



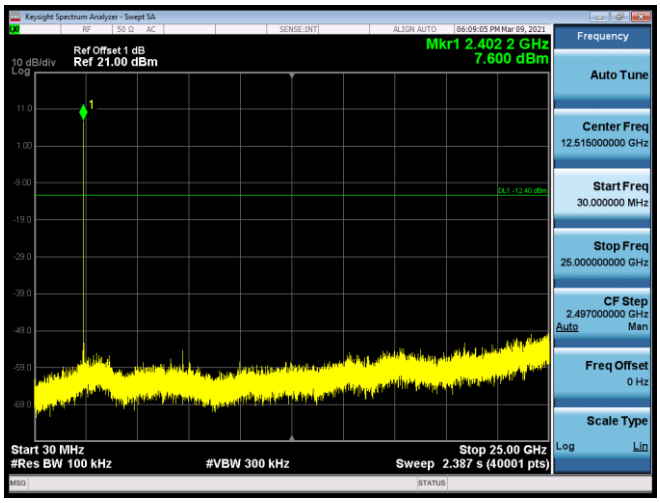
Mode 2 CH37 (2402MHz)



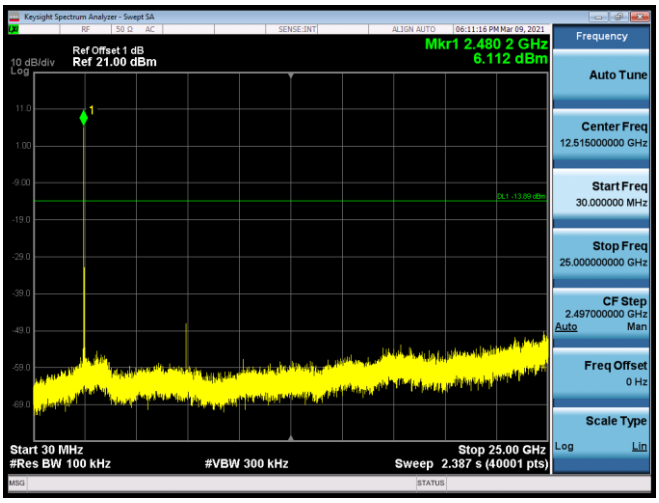
Mode 2 CH39 (2480MHz)



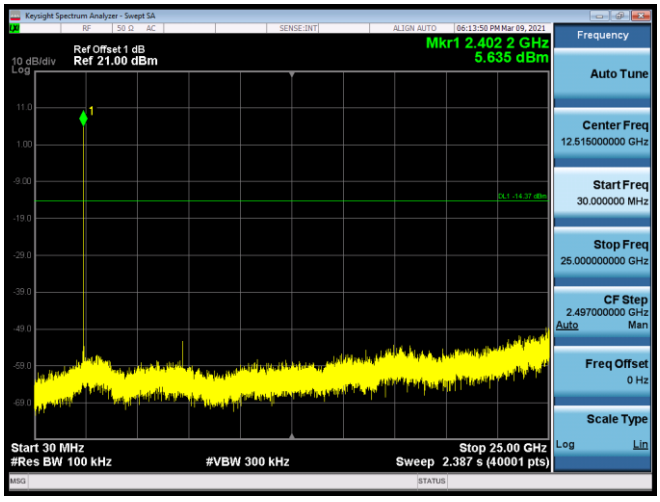
Mode 3 CH37 (2402MHz)



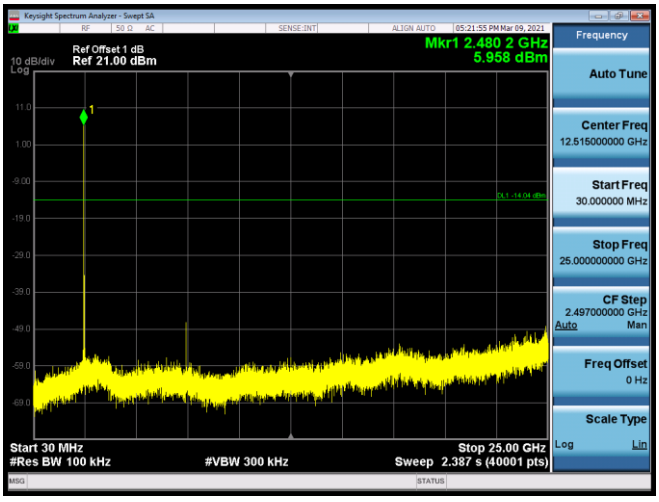
Mode 3 CH39 (2480MHz)



Mode 4 CH37 (2402MHz)



Mode 4 CH39 (2480MHz)

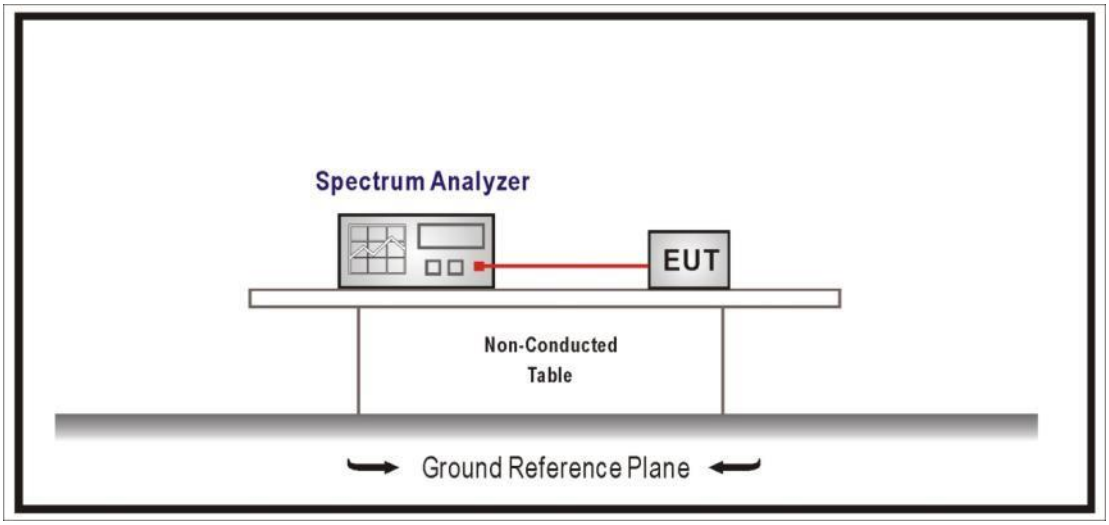


4.4 Duty cycle	VERDICT: PASS

4.4.1 Limit

N/A

4.4.2 Test Setup



4.4.3 Test Procedure

References Ruby LE		Chapter	Description
☒	ANSI C63.10	11.6	Duty cycle (D), transmission duration (T), and maximum power control by LEvel

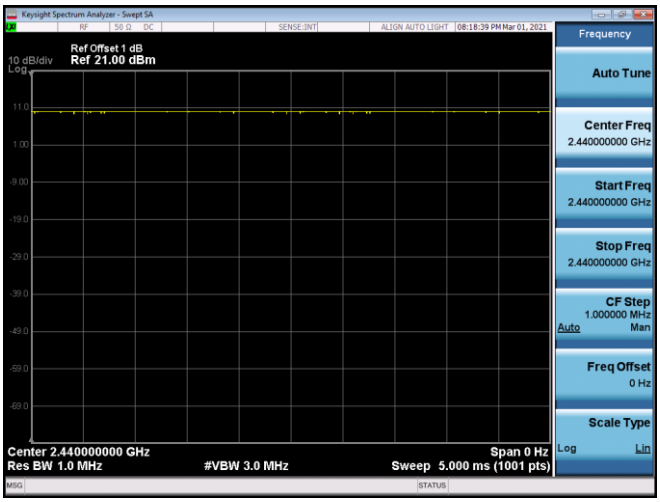
4.4.4 Test Data

Test Mode	Tx On (ms)	VBW (kHz)	Tx On + Tx Off (ms)	Duty Cycby LE
Mode 1	--	0.01	--	100%
Mode 2	--	0.01	--	100%
Mode 3	--	0.01	--	100%
Mode 4	--	0.01	--	100%

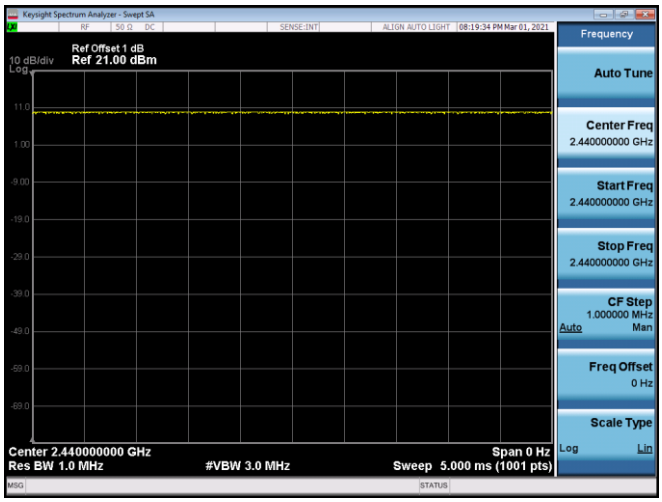
Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

Note 2: According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW ≥ 1/T will be used.

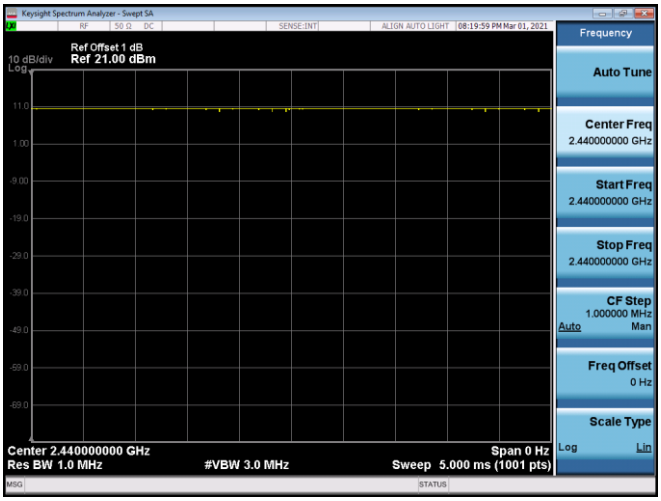
Mode 1 CH18 2440MHz



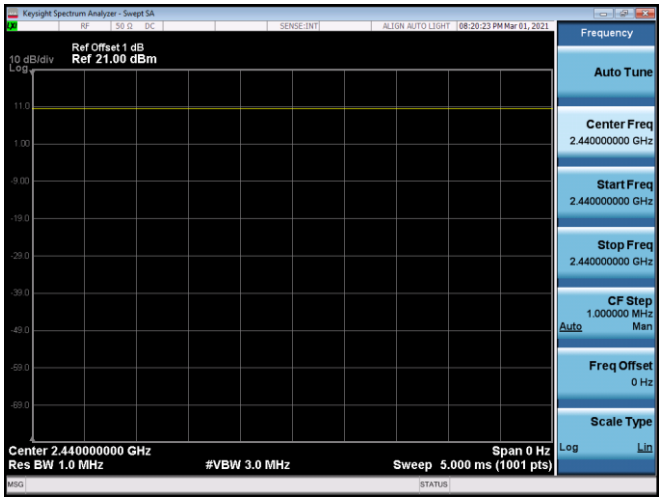
Mode 2 CH18 2440MHz



Mode 3 CH18 2440MHz



Mode 4 CH18 2440MHz



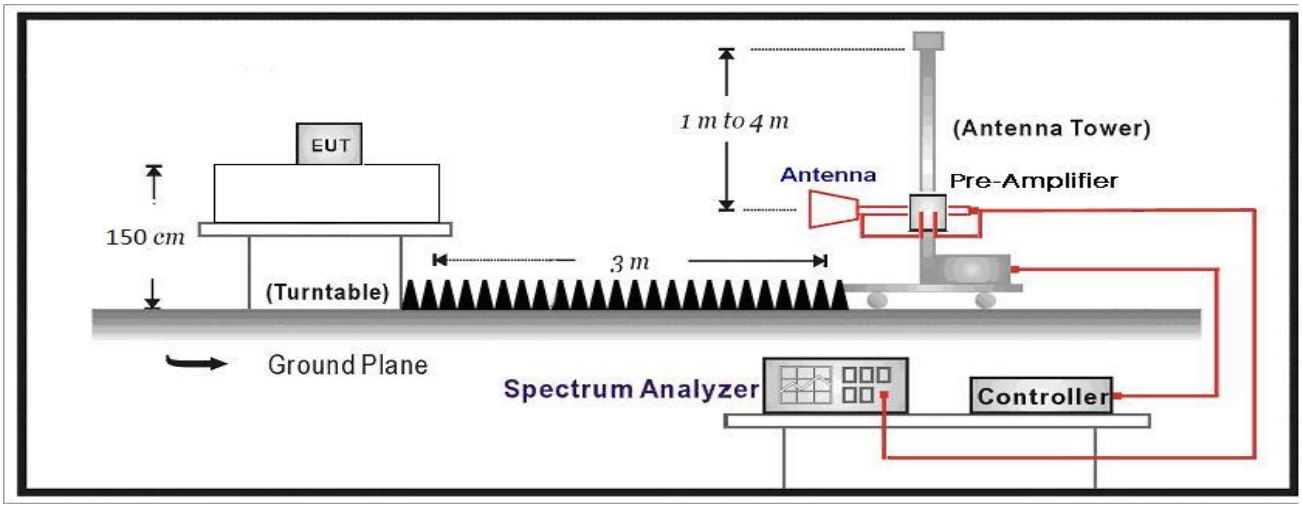
4.5 Radiated Emission Band Edge — VERDICT: PASS

4.5.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247(d) , 15.209			
Frequency bands (MHz)	Detector	Limit (dBμV/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

Above 1GHz Test Setup:

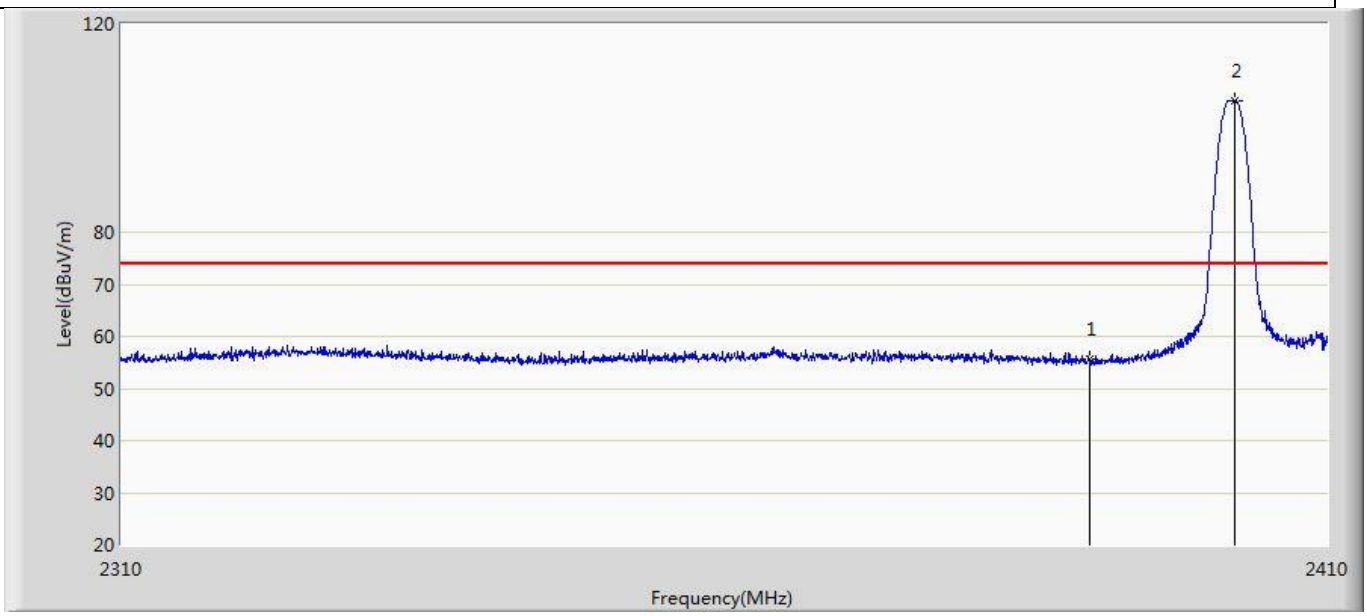


4.5.3 Test Procedure

	References Ruby LE	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	11.12.1	Radiated emission measurements
	☒ ANSI C63.10	11.12.2.7	Radiated spurious emission test
☐	ANSI C63.10	6.4	Radiated emissions from unlicensed wireby LEss devices below 30 MHz
☐	ANSI C63.10	6.5	Radiated emissions from unlicensed wireby LEss devices in the frequency range of 30 MHz to 1000 MHz
☒	ANSI C63.10	6.6	Radiated emissions from unlicensed wireby LEss devices above 1 GHz

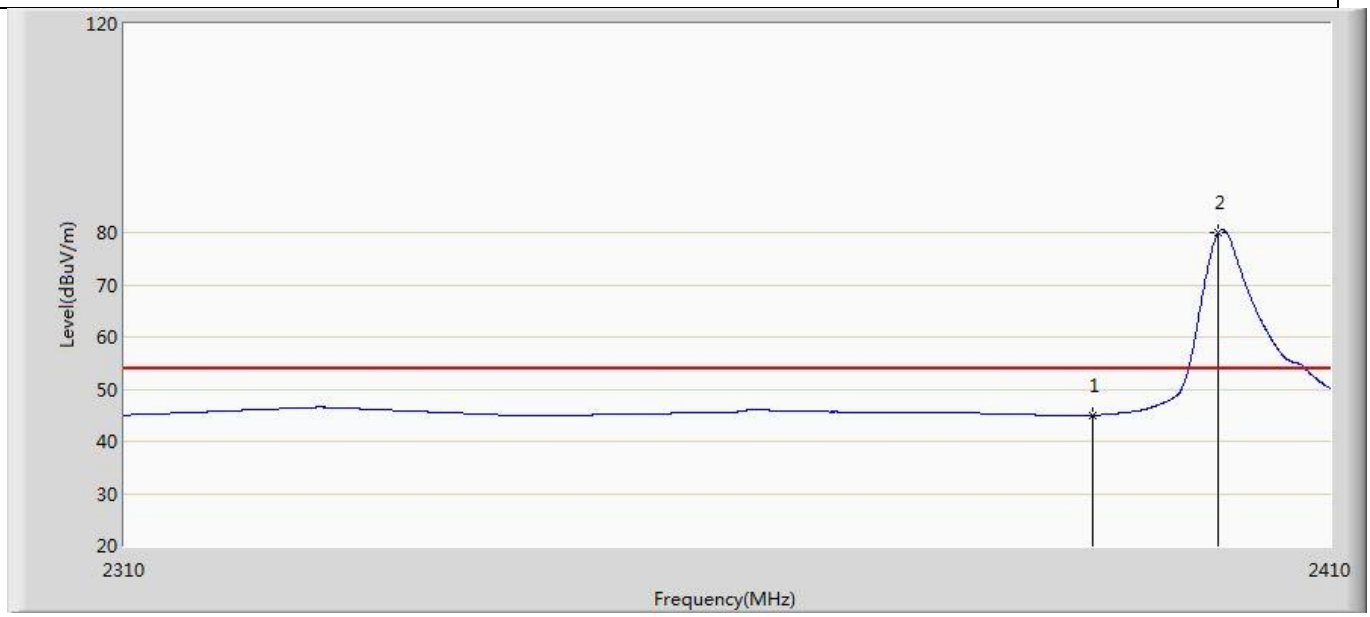
4.5.4 Test Data

Profile: 2120499R	Page No.: 37
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:11
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



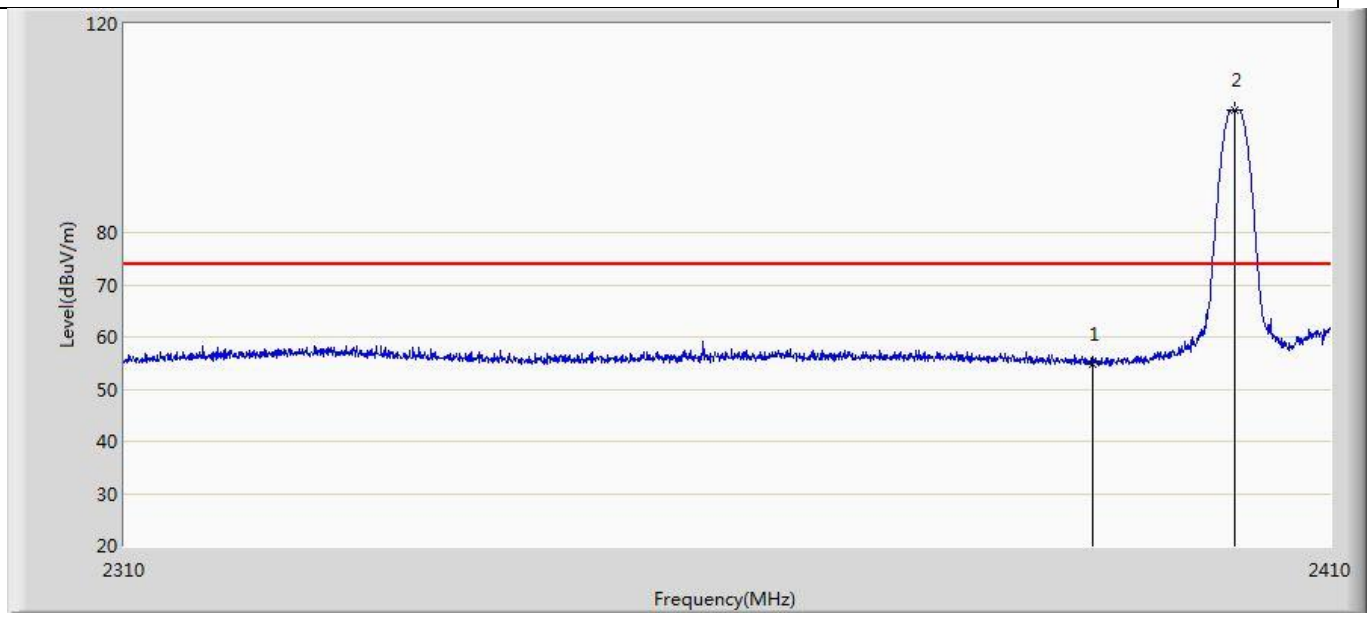
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	55.728	19.984	-18.272	74.000	35.745	PK
2	*	2402.200	105.249	69.167	N/A	N/A	36.082	PK

Profile: 2120499R	Page No.: 38
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



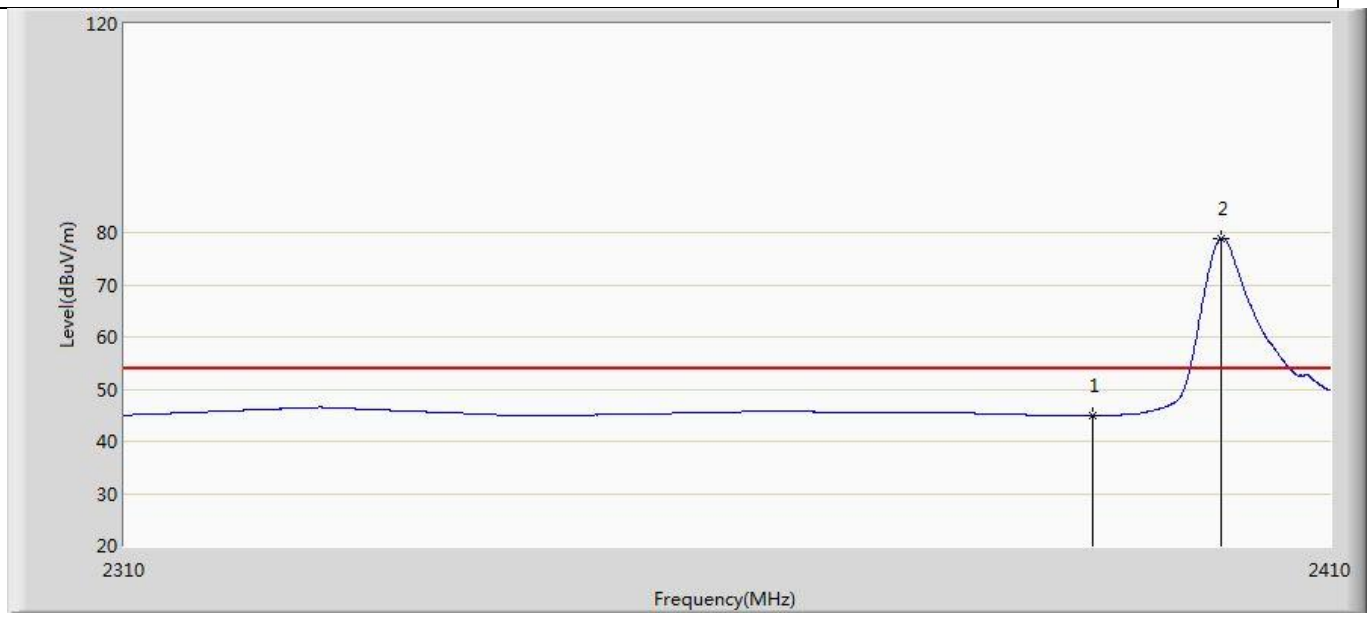
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	45.007	9.263	-8.993	54.000	35.745	AV
2	*	2400.550	79.918	43.958	N/A	N/A	35.961	AV

Profile: 2120499R	Page No.: 39
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:14
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



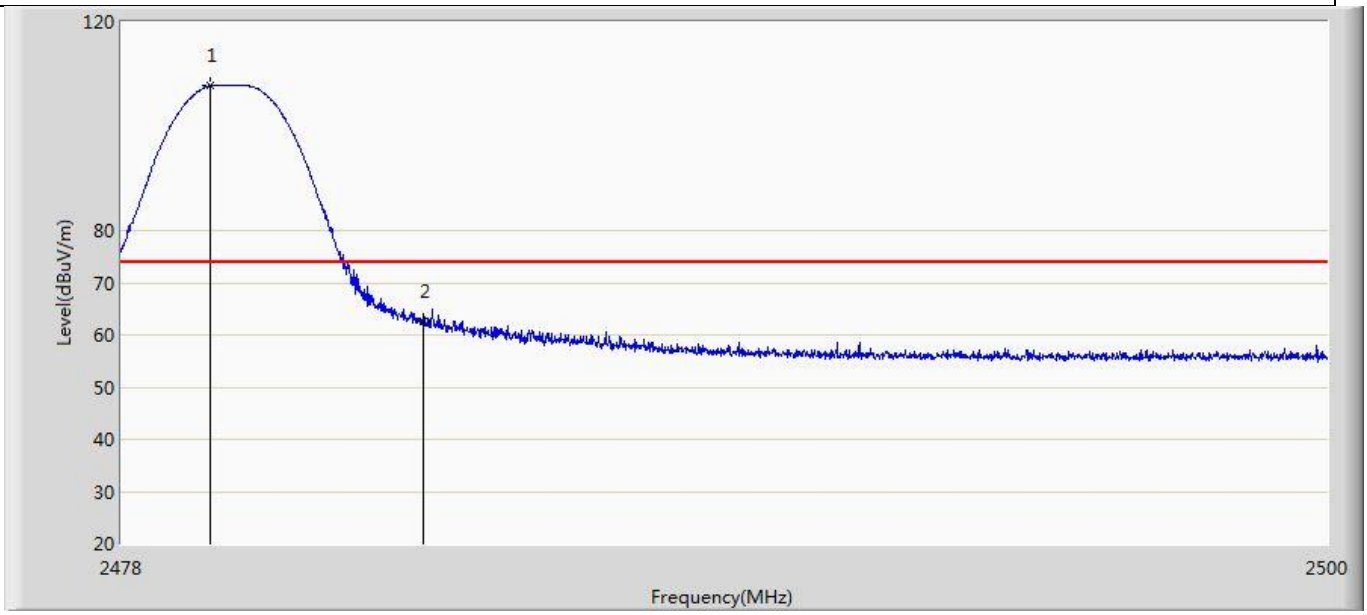
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	54.658	18.914	-19.342	74.000	35.745	PK
2	*	2401.950	103.410	67.346	N/A	N/A	36.064	PK

Profile: 2120499R	Page No.: 40
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



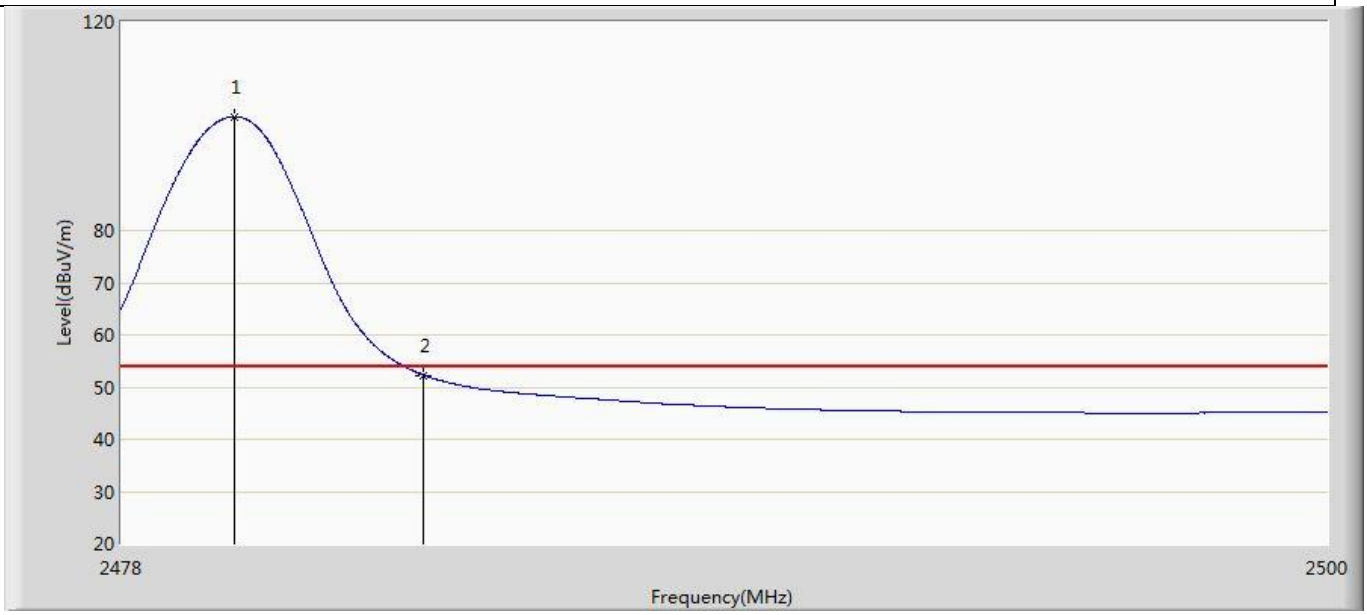
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	44.838	9.094	-9.162	54.000	35.745	AV
2	*	2400.850	78.875	42.892	N/A	N/A	35.983	AV

Profile: 2120499R	Page No.: 21
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



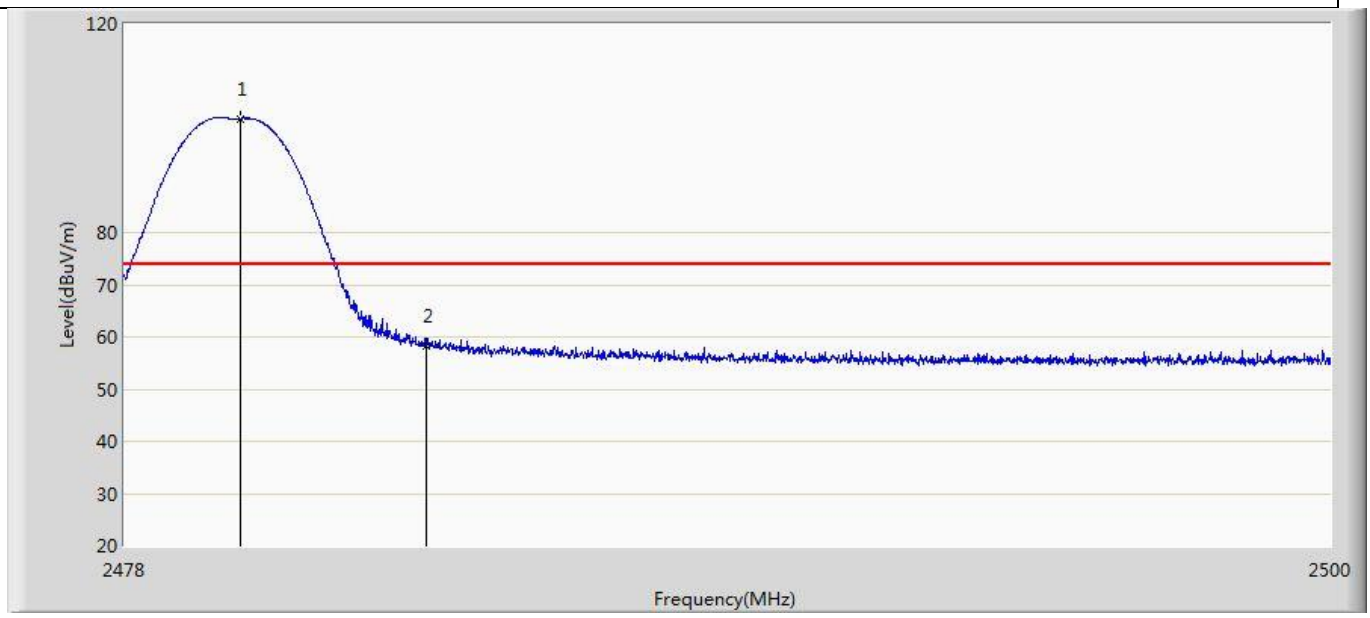
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.628	107.745	70.901	N/A	N/A	36.844	PK
2		2483.500	62.744	26.045	-11.256	74.000	36.699	PK

Profile: 2120499R	Page No.: 22
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



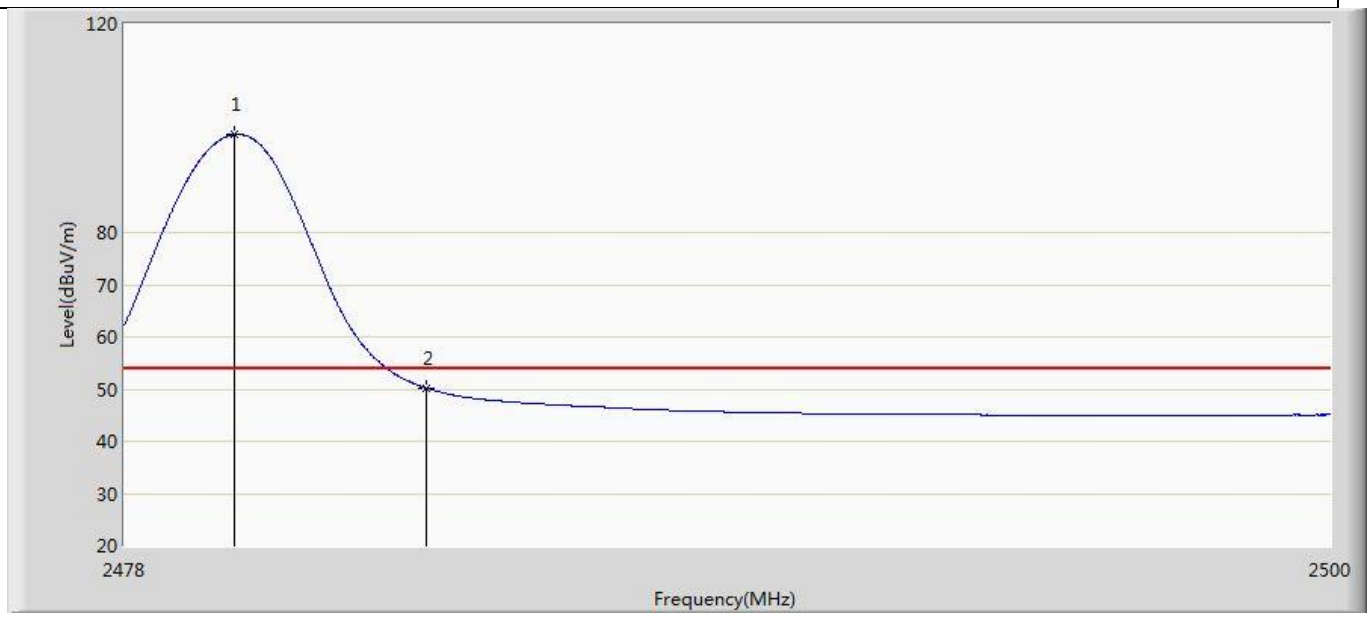
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.046	101.839	65.011	N/A	N/A	36.828	AV
2		2483.500	52.293	15.594	-1.707	54.000	36.699	AV

Profile: 2120499R	Page No.: 23
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



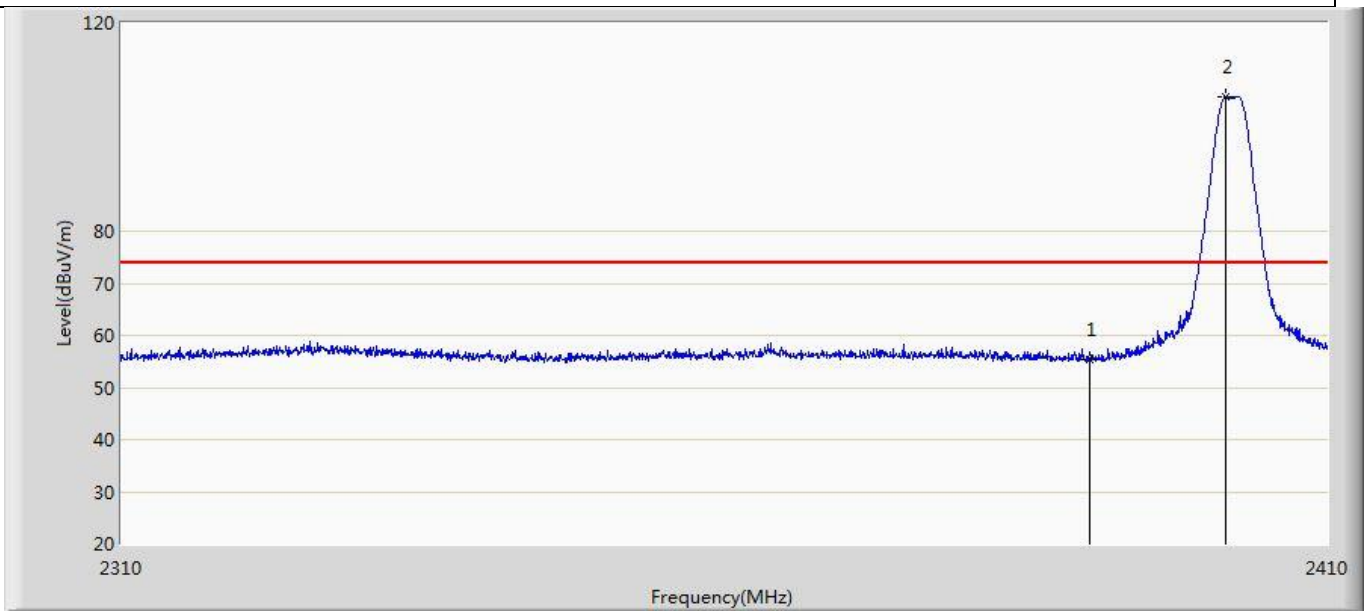
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.112	101.863	65.037	N/A	N/A	36.826	PK
2		2483.500	58.387	21.688	-15.613	74.000	36.699	PK

Profile: 2120499R	Page No.: 24
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



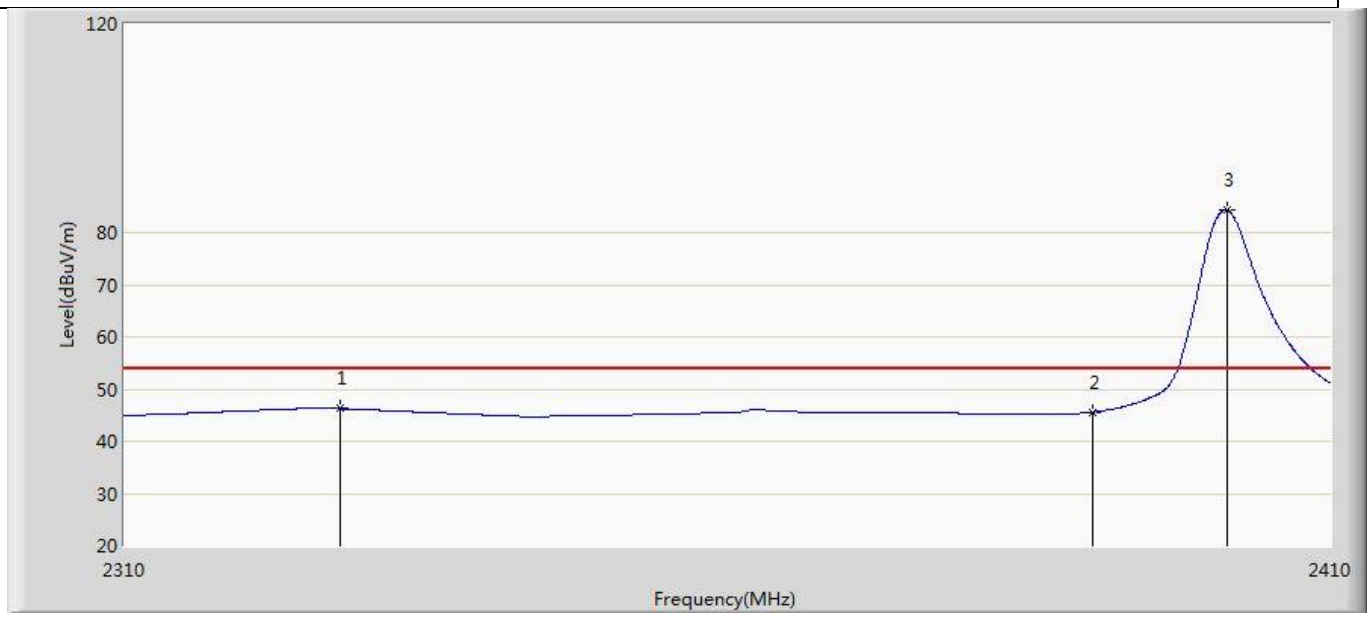
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	98.807	61.978	N/A	N/A	36.830	AV
2		2483.500	50.184	13.485	-3.816	54.000	36.699	AV

Profile: 2120499R	Page No.: 9
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:03
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



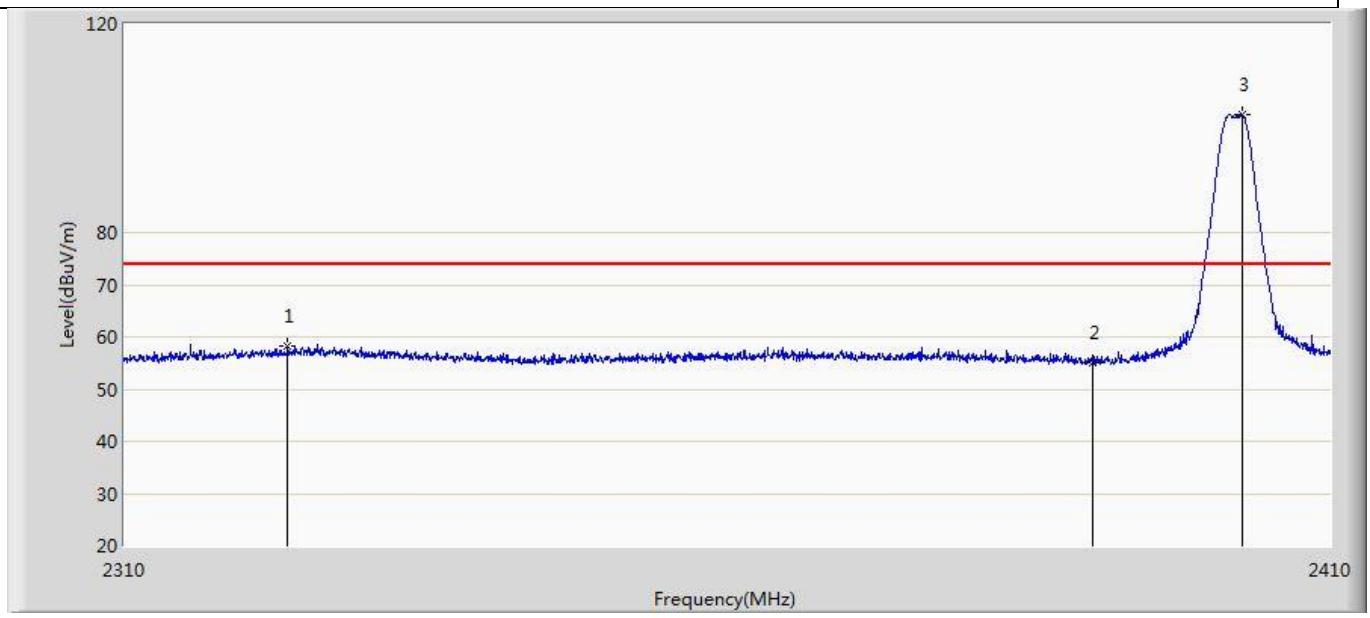
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	55.488	19.744	-18.512	74.000	35.745	PK
2	*	2401.400	105.877	69.854	N/A	N/A	36.023	PK

Profile: 2120499R	Page No.: 10
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:07
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



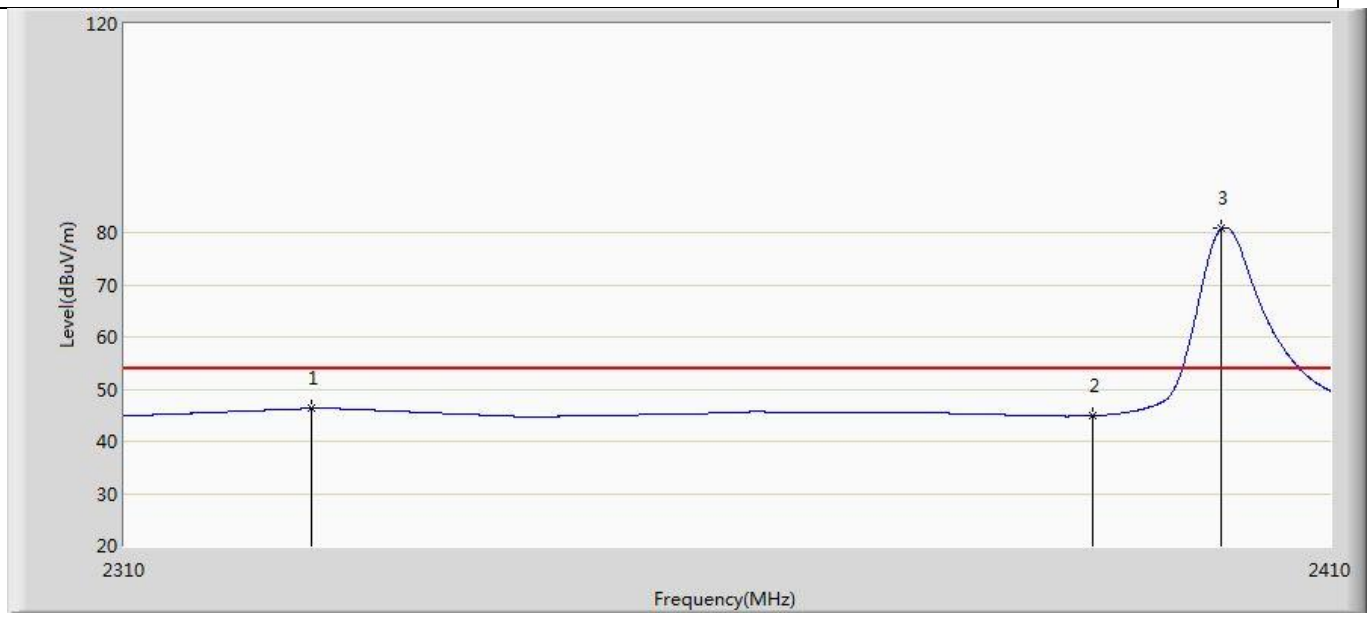
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2327.650	46.250	8.741	-7.750	54.000	37.509	AV
2		2390.000	45.597	9.853	-8.403	54.000	35.745	AV
3	*	2401.350	84.293	48.273	N/A	N/A	36.019	AV

Profile: 2120499R	Page No.: 11
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:09
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



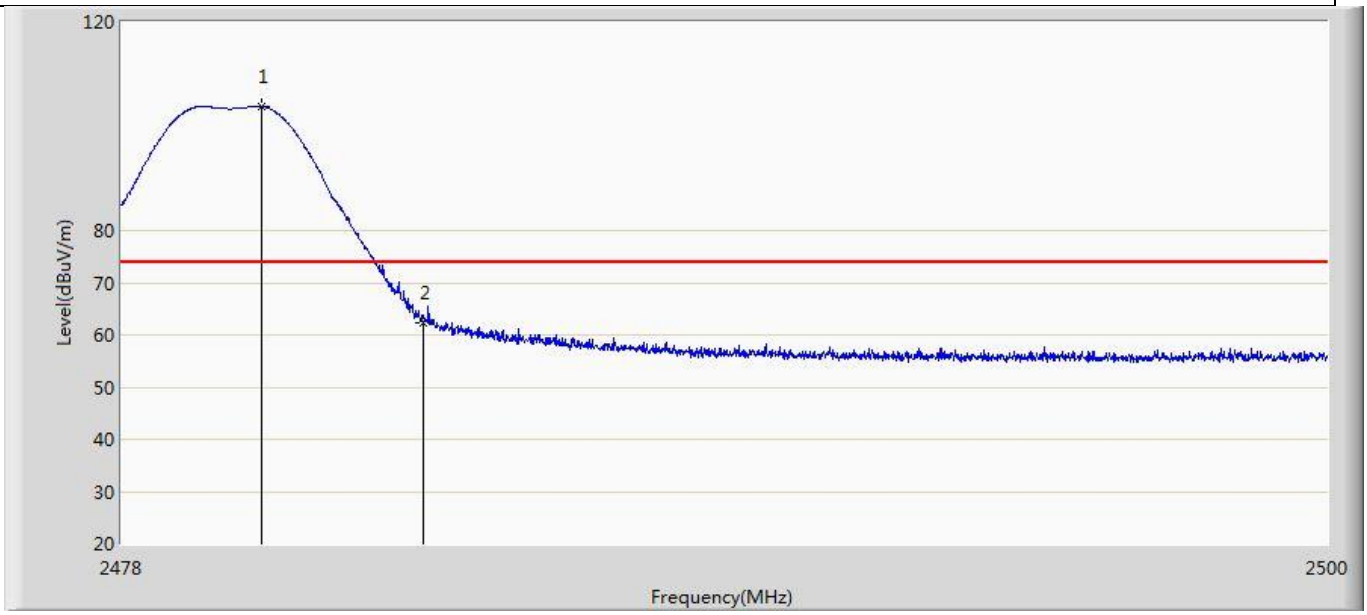
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2323.300	58.240	20.810	-15.760	74.000	37.431	PK
2		2390.000	55.201	19.457	-18.799	74.000	35.745	PK
3	*	2402.600	102.475	66.363	N/A	N/A	36.112	PK

Profile: 2120499R	Page No.: 12
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:10
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



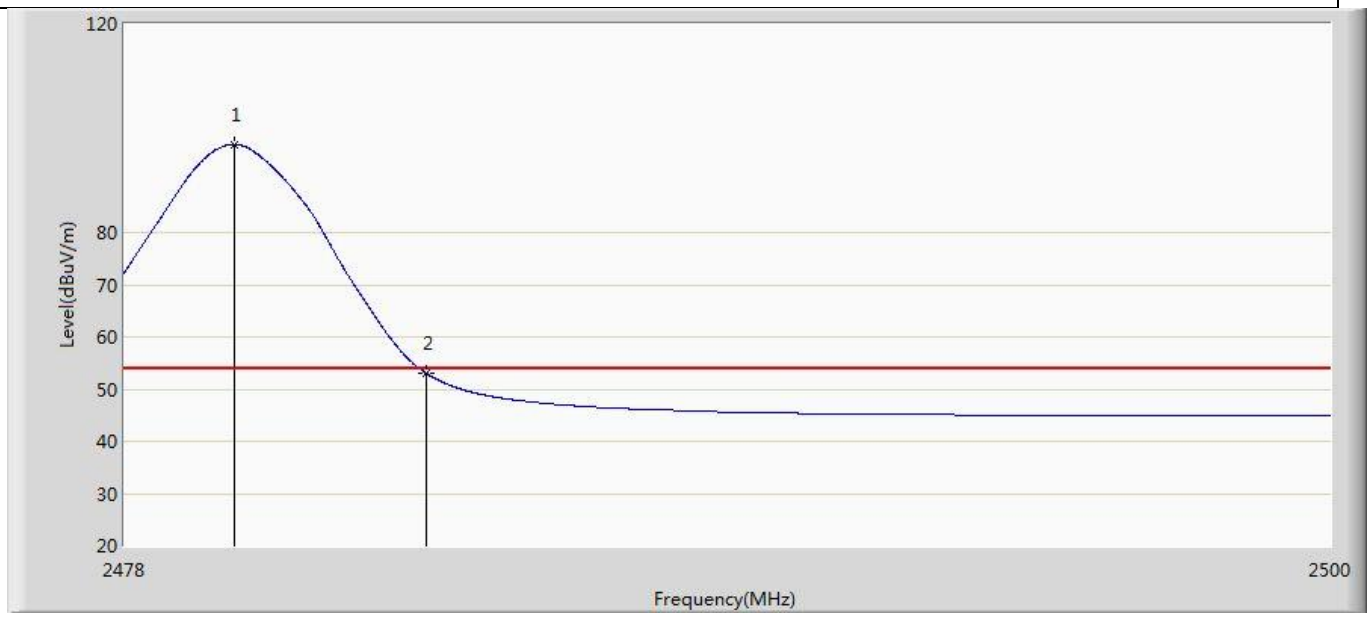
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2325.300	46.332	8.720	-7.668	54.000	37.611	AV
2		2390.000	44.926	9.182	-9.074	54.000	35.745	AV
3	*	2400.850	80.741	44.758	N/A	N/A	35.983	AV

Profile: 2120499R	Page No.: 25
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



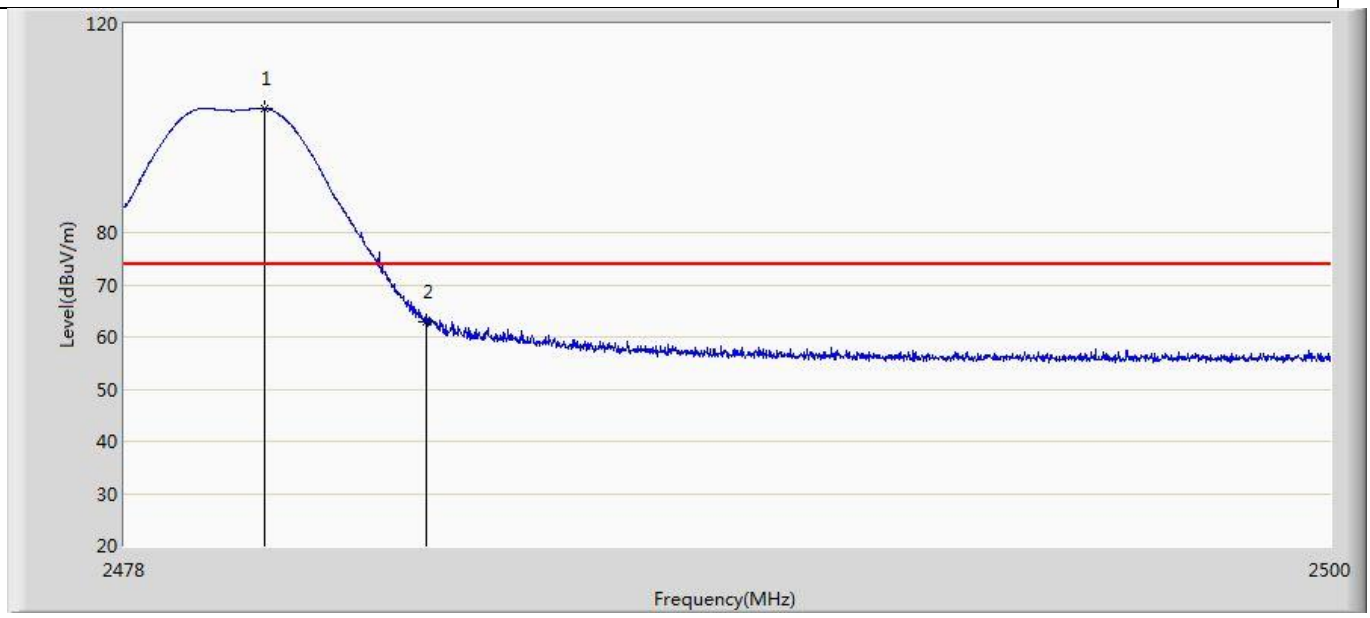
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.563	103.713	66.904	N/A	N/A	36.808	PK
2		2483.500	62.275	25.576	-11.725	74.000	36.699	PK

Profile: 2120499R	Page No.: 26
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:44
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



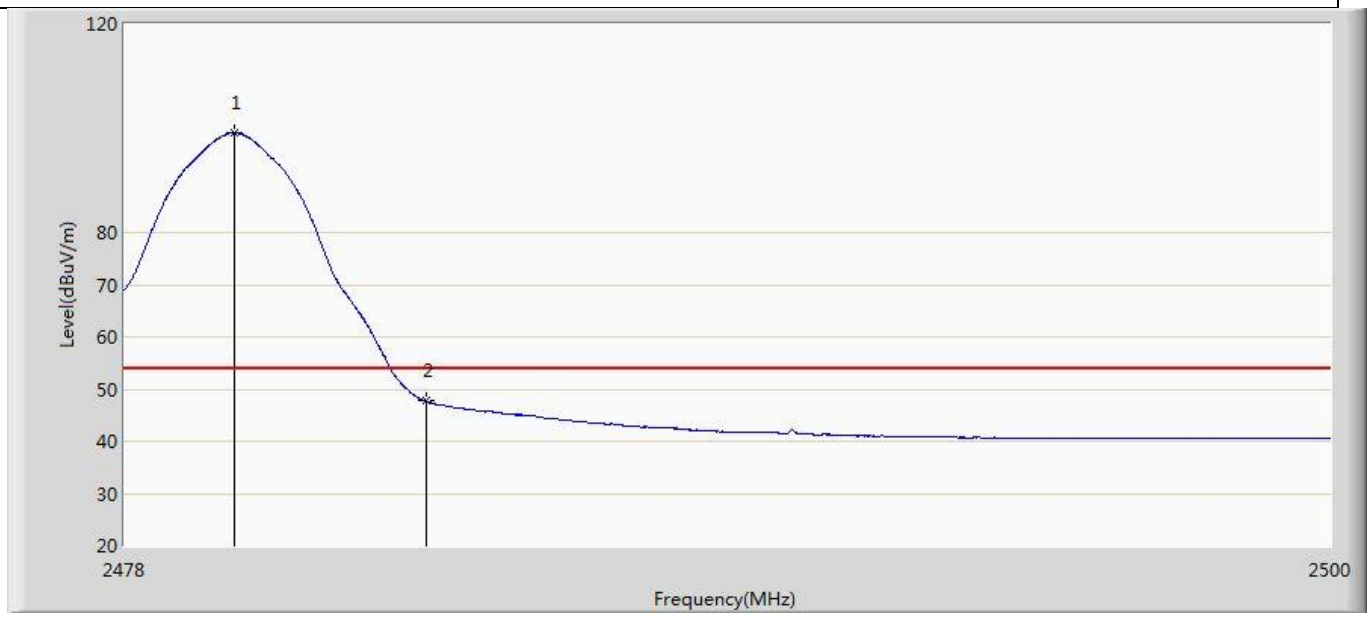
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	96.883	60.054	N/A	N/A	36.830	AV
2		2483.500	52.986	16.287	-1.014	54.000	36.699	AV

Profile: 2120499R	Page No.: 27
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



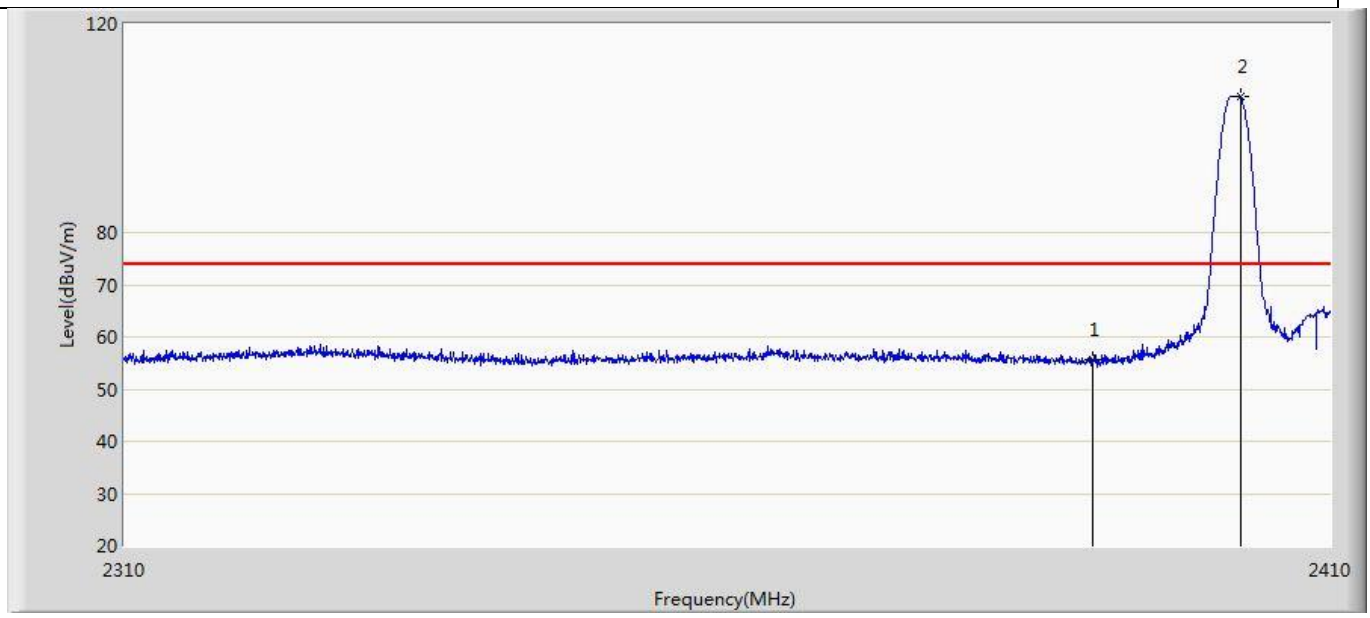
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.563	103.713	66.904	N/A	N/A	36.808	PK
2		2483.500	63.028	26.329	-10.972	74.000	36.699	PK

Profile: 2120499R	Page No.: 28
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



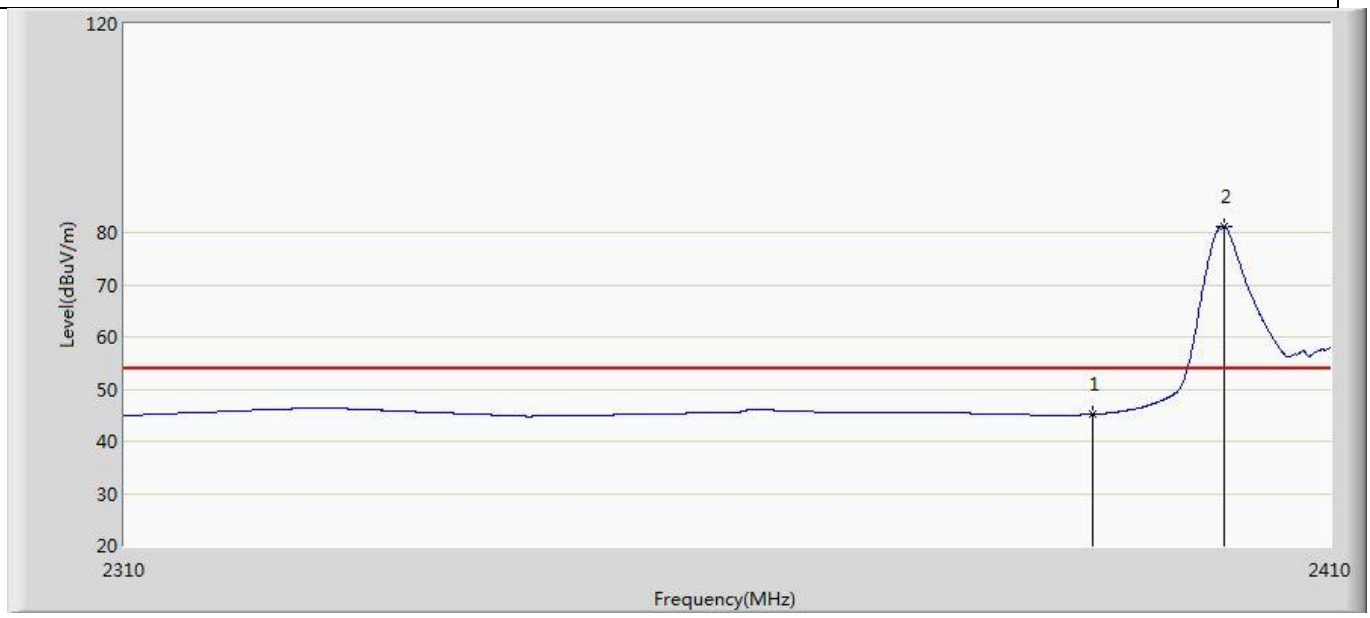
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.013	99.098	62.269	N/A	N/A	36.830	AV
2		2483.500	47.730	11.031	-6.270	54.000	36.699	AV

Profile: 2120499R	Page No.: 17
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by LE_Coded S=2	



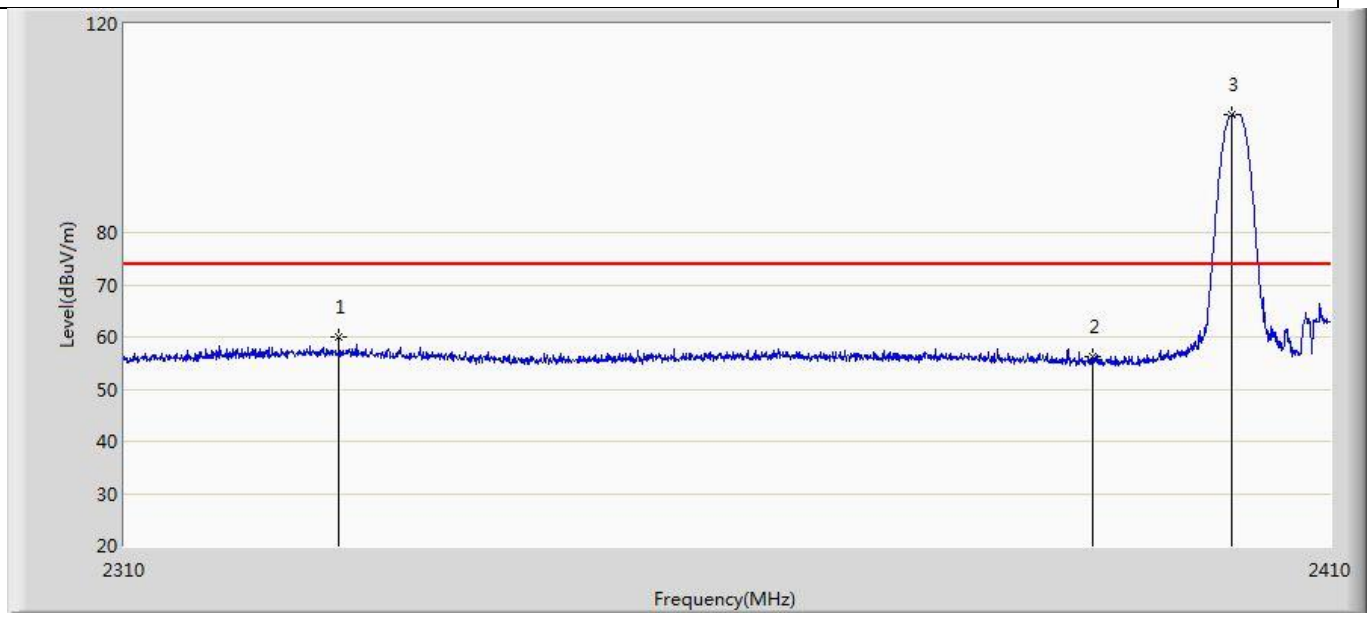
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	55.708	19.964	-18.292	74.000	35.745	PK
2	*	2402.450	105.962	69.861	N/A	N/A	36.101	PK

Profile: 2120499R	Page No.: 18
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by LE_Coded S=2	



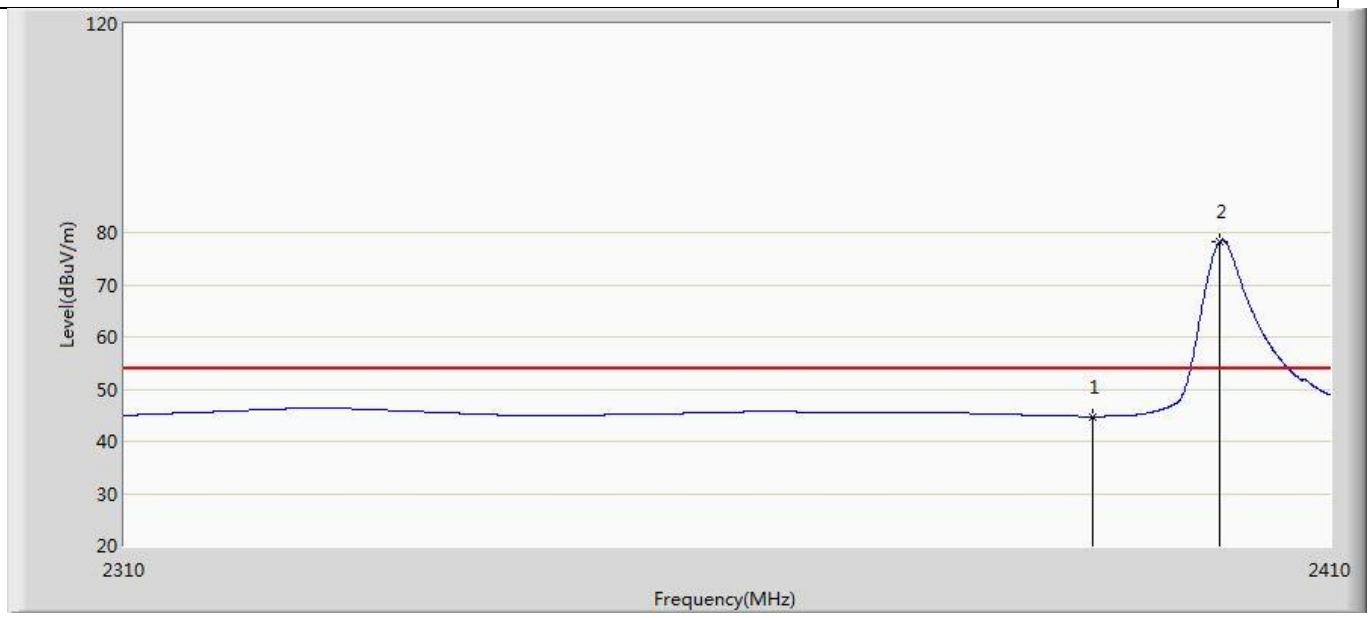
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	45.177	9.433	-8.823	54.000	35.745	AV
2	*	2401.000	81.248	45.254	N/A	N/A	35.994	AV

Profile: 2120499R	Page No.: 19
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by LE_Coded S=2	



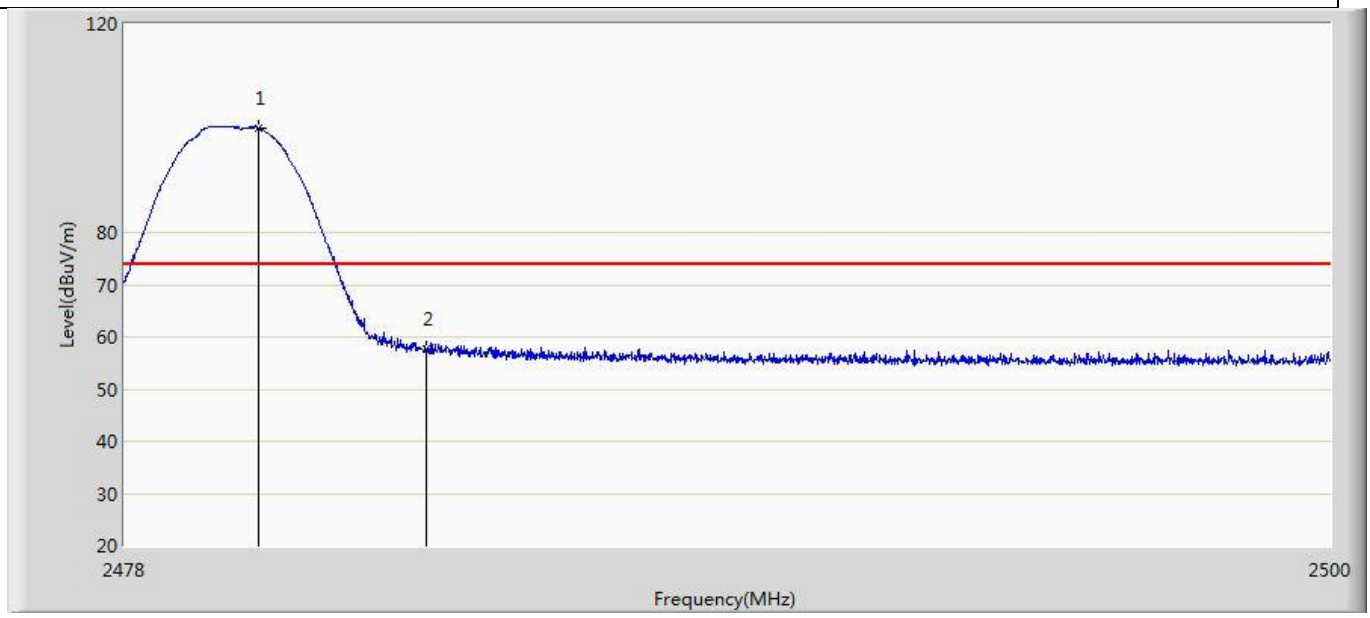
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2327.500	59.938	22.414	-14.062	74.000	37.524	PK
2		2390.000	56.193	20.449	-17.807	74.000	35.745	PK
3	*	2401.650	102.493	66.451	N/A	N/A	36.041	PK

Profile: 2120499R	Page No.: 20
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by LE_Coded S=2	



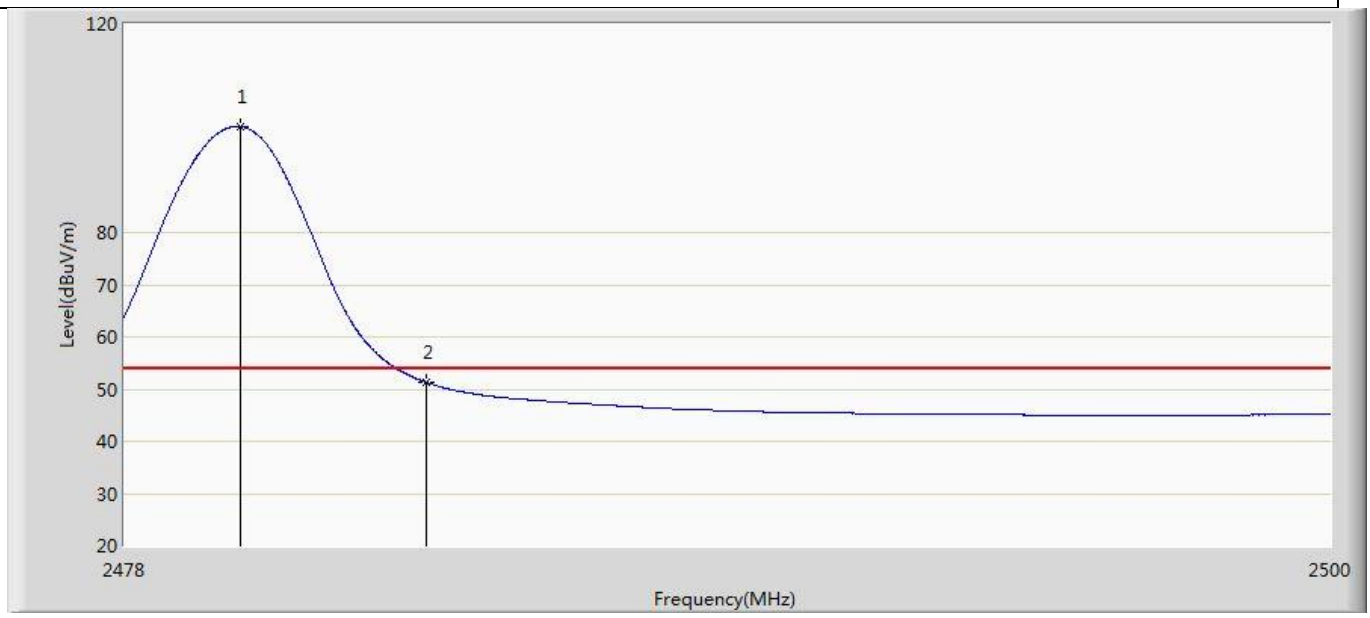
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	44.757	9.013	-9.243	54.000	35.745	AV
2	*	2400.700	78.244	42.272	N/A	N/A	35.972	AV

Profile: 2120499R	Page No.: 33
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by LE_Coded S=2	



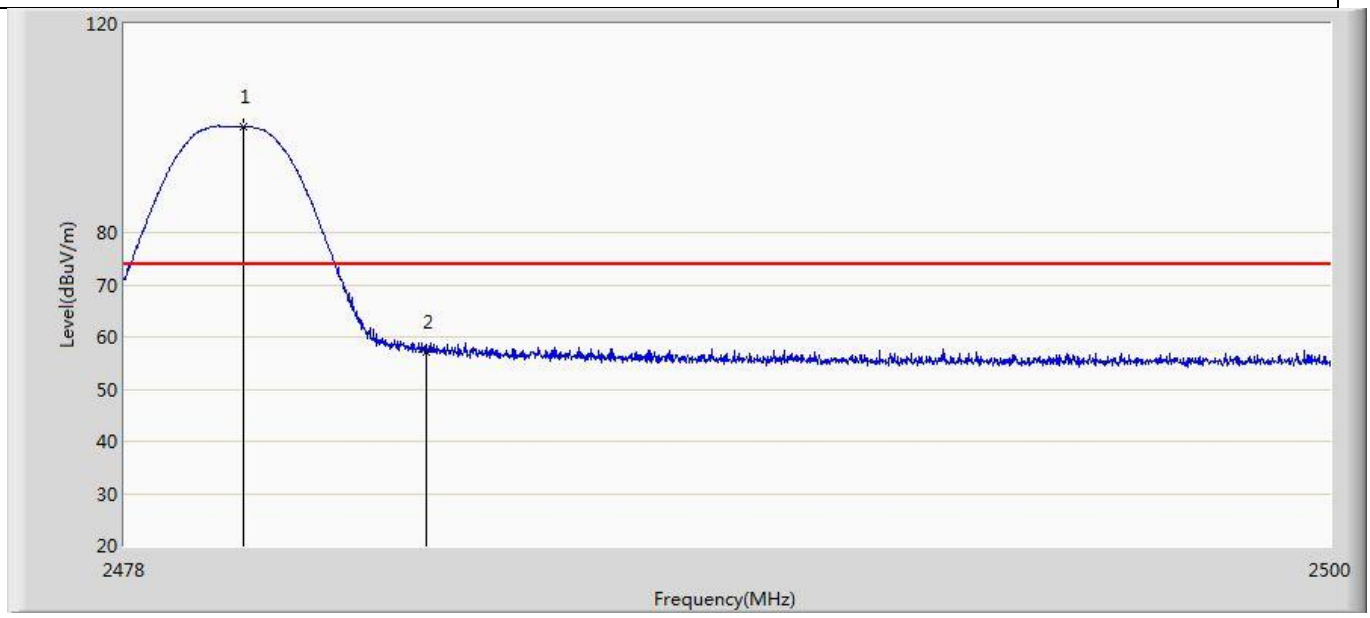
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.453	100.047	63.234	N/A	N/A	36.812	PK
2		2483.500	57.544	20.845	-16.456	74.000	36.699	PK

Profile: 2120499R	Page No.: 34
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by LE_Coded S=2	



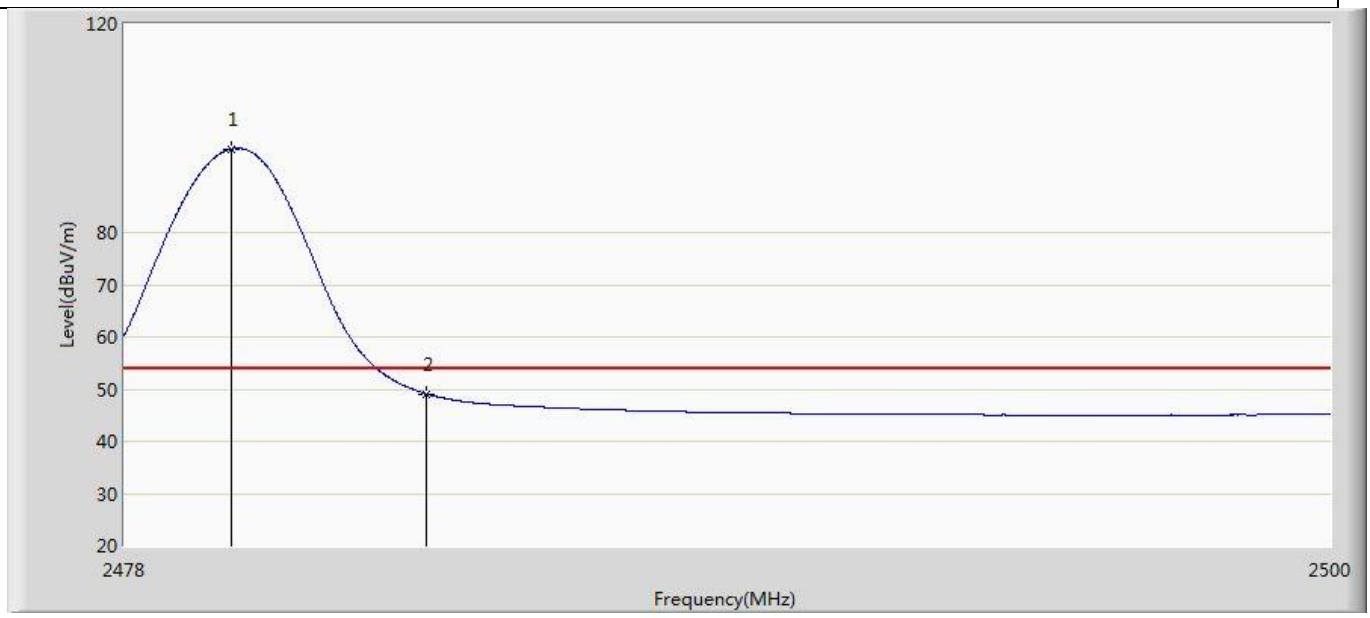
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.112	100.276	63.450	N/A	N/A	36.826	AV
2		2483.500	51.257	14.558	-2.743	54.000	36.699	AV

Profile: 2120499R	Page No.: 35
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by LE_Coded S=2	



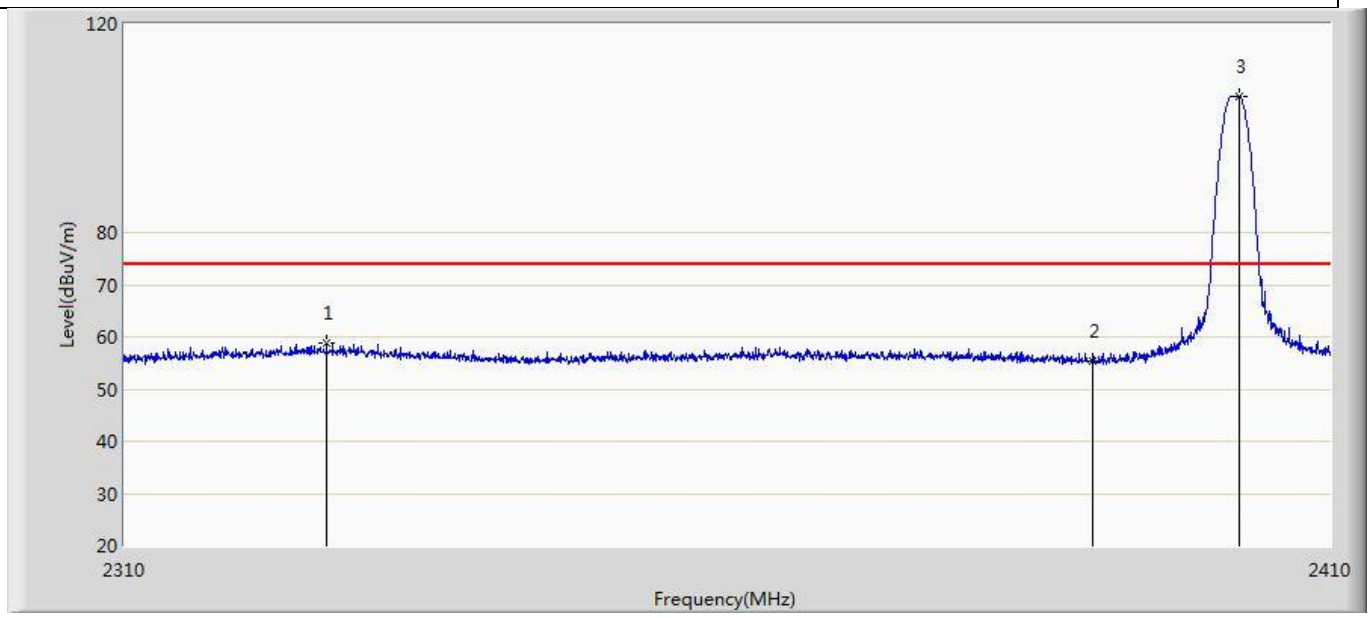
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.178	100.351	63.528	N/A	N/A	36.824	PK
2		2483.500	56.972	20.273	-17.028	74.000	36.699	PK

Profile: 2120499R	Page No.: 36
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:06
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by LE_Coded S=2	



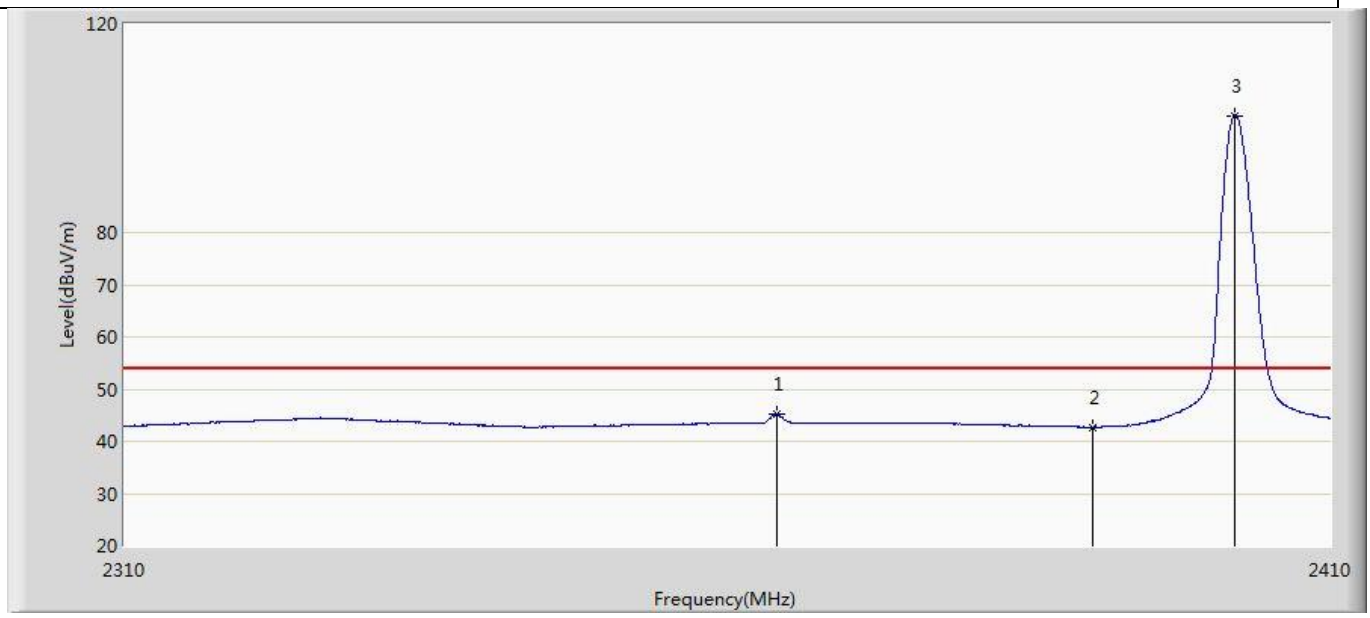
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.947	96.034	59.202	N/A	N/A	36.832	AV
2		2483.500	49.062	12.363	-4.938	54.000	36.699	AV

Profile: 2120499R	Page No.: 13
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by LE_Coded S=8	



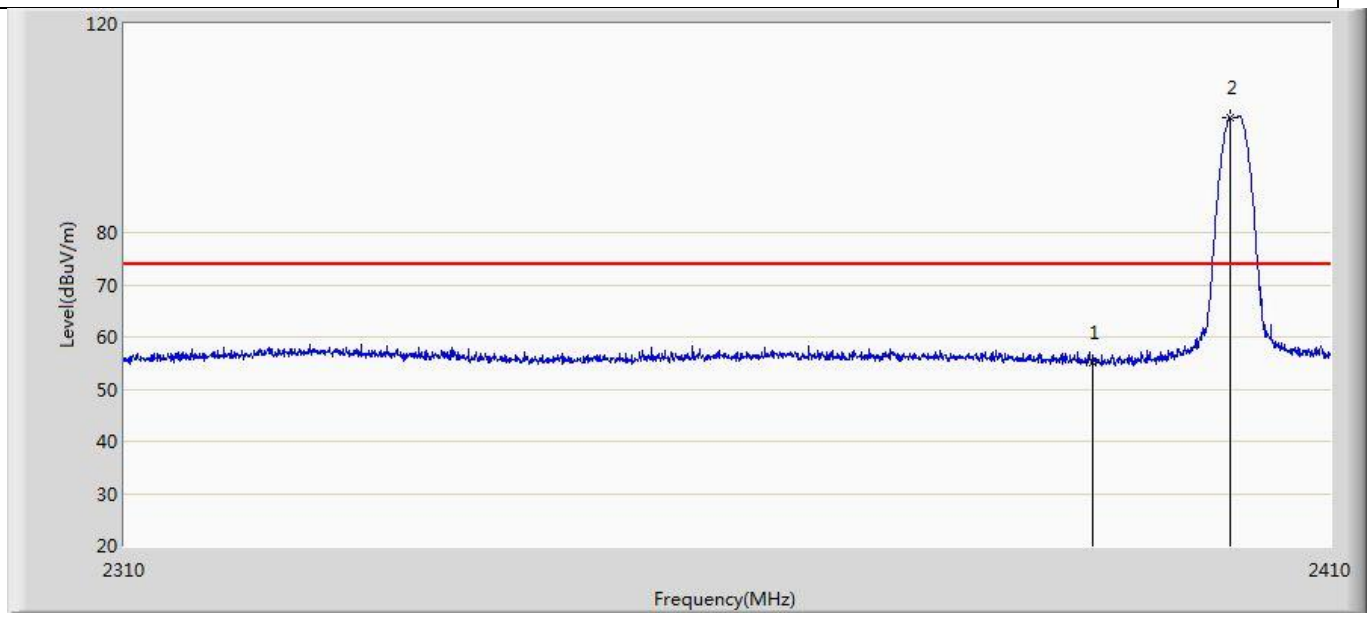
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2326.500	58.743	21.118	-15.257	74.000	37.625	PK
2		2390.000	55.470	19.726	-18.530	74.000	35.745	PK
3	*	2402.300	106.092	70.002	N/A	N/A	36.090	PK

Profile: 2120499R	Page No.: 14
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by LE_Coded S=8	



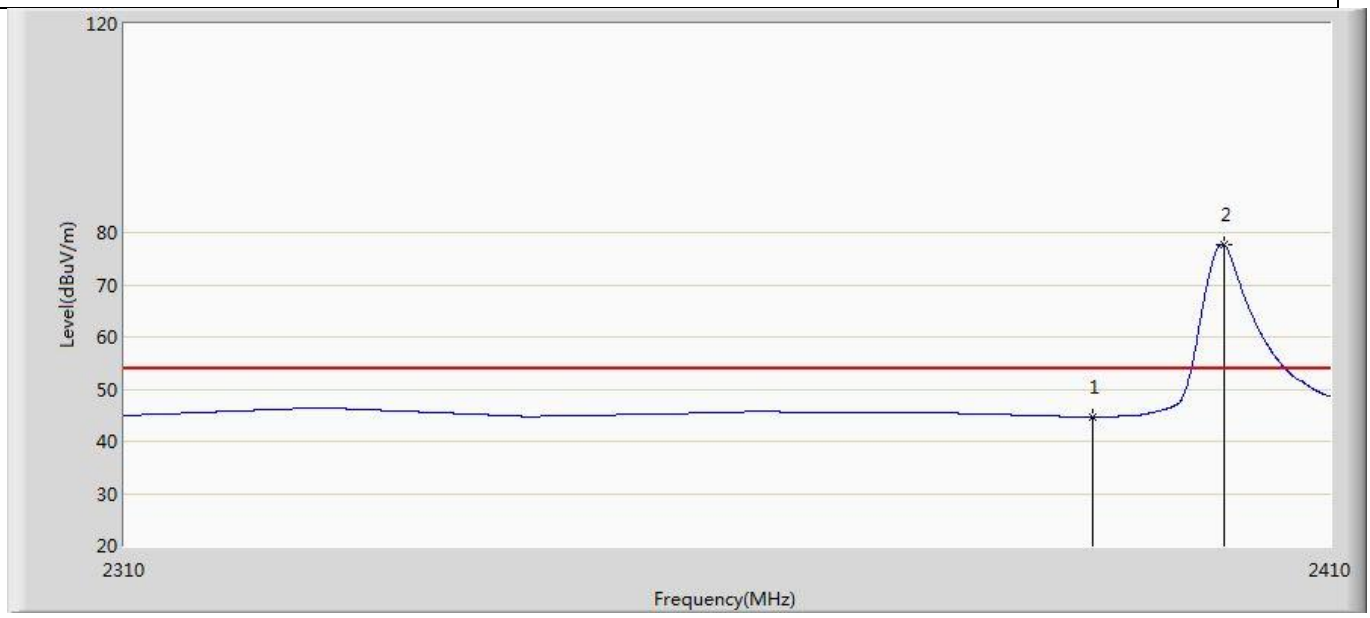
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2363.550	45.335	8.680	-8.665	54.000	36.655	AV
2		2390.000	42.723	6.979	-11.277	54.000	35.745	AV
3	*	2401.950	102.457	66.393	N/A	N/A	36.064	AV

Profile: 2120499R	Page No.: 15
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by LE_Coded S=8	



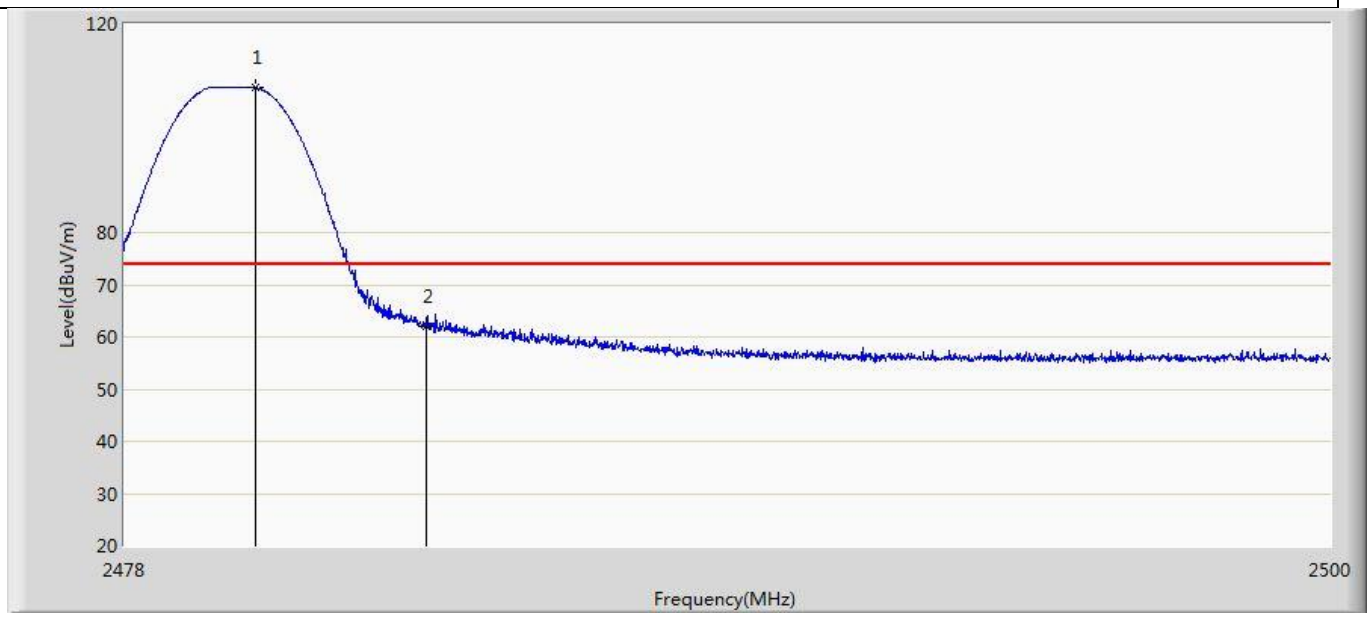
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	54.977	19.233	-19.023	74.000	35.745	PK
2	*	2401.600	102.151	66.113	N/A	N/A	36.038	PK

Profile: 2120499R	Page No.: 16
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by LE_Coded S=8	



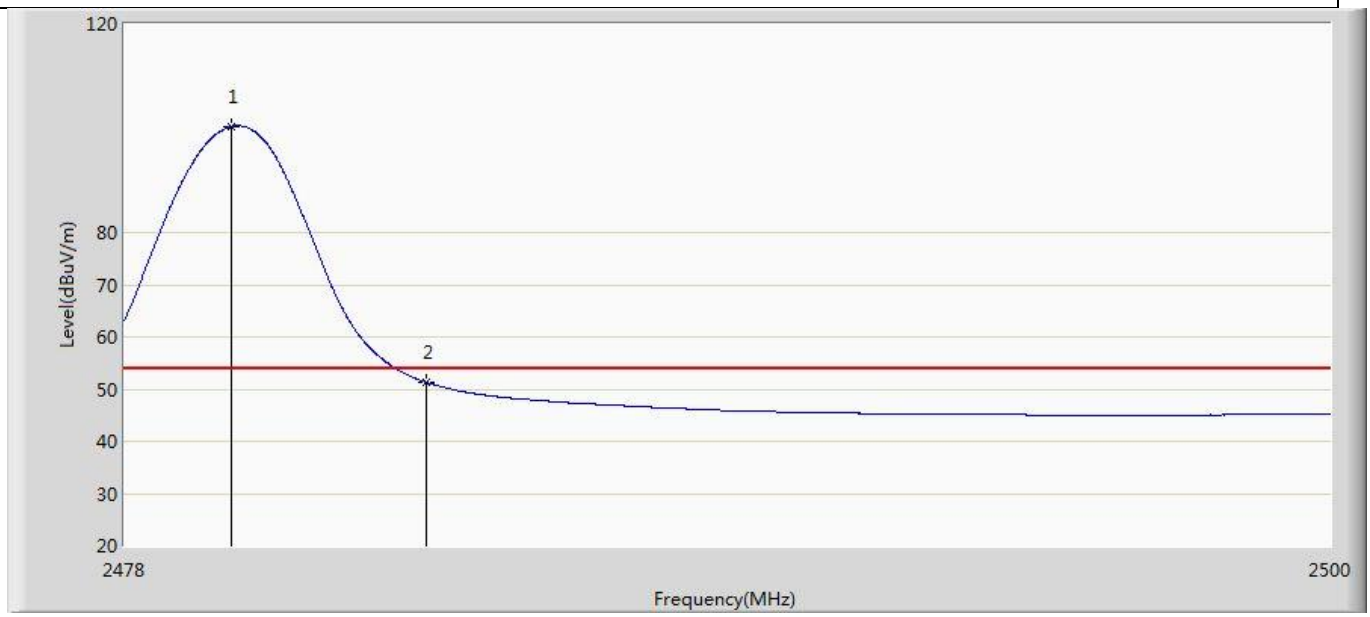
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	44.681	8.937	-9.319	54.000	35.745	AV
2	*	2401.000	77.719	41.725	N/A	N/A	35.994	AV

Profile: 2120499R	Page No.: 29
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by LE_Coded S=8	



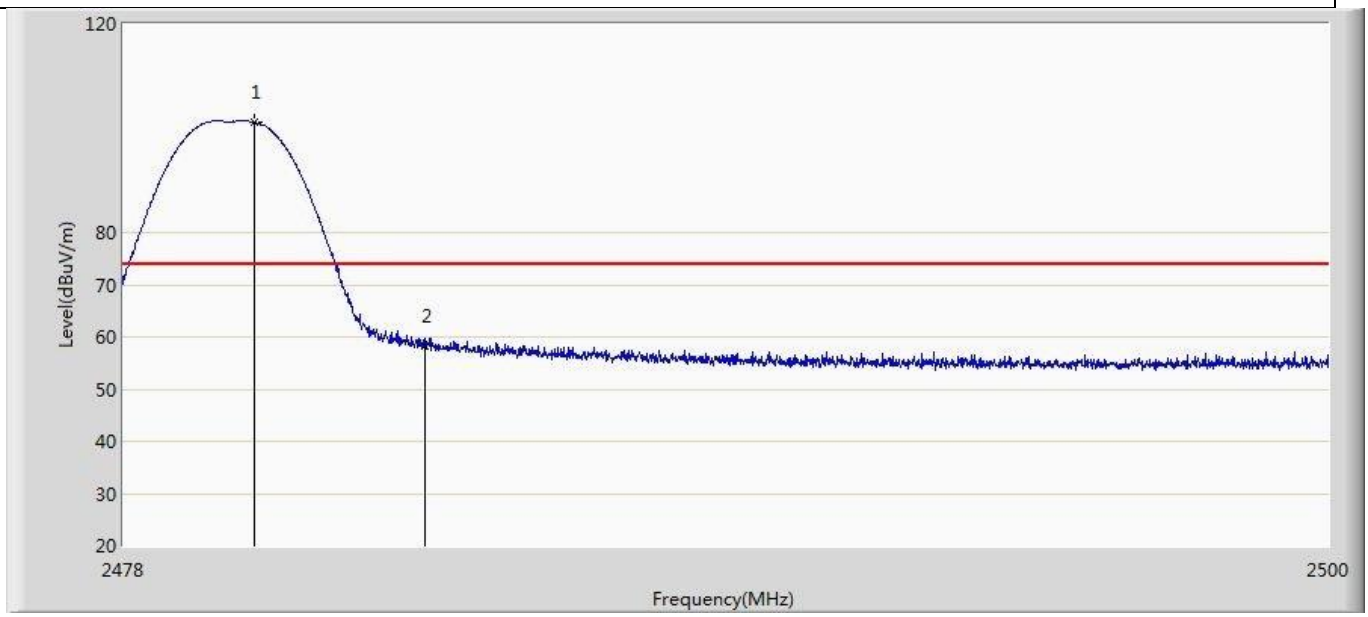
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.387	107.791	70.976	N/A	N/A	36.816	PK
2		2483.500	61.968	25.269	-12.032	74.000	36.699	PK

Profile: 2120499R	Page No.: 30
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 20:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by LE_Coded S=8	



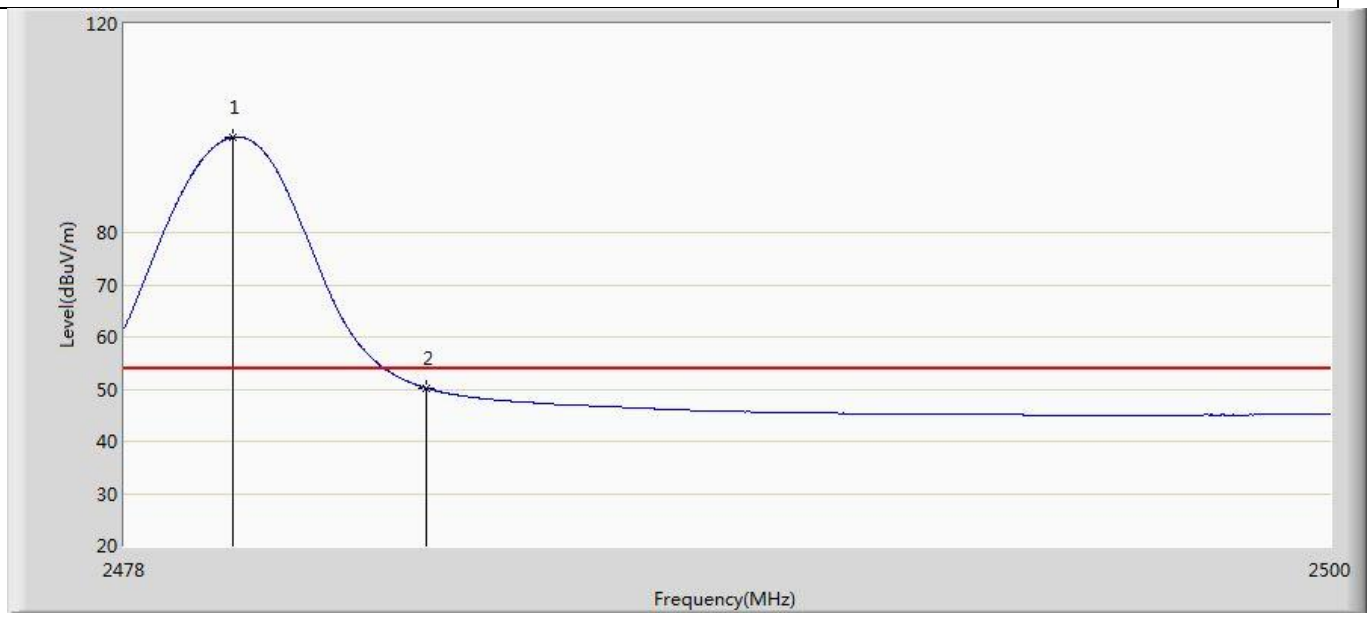
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.936	100.311	63.479	N/A	N/A	36.833	AV
2		2483.500	51.271	14.572	-2.729	54.000	36.699	AV

Profile: 2120499R	Page No.: 31
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by LE_Coded S=8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.387	101.791	64.976	N/A	N/A	36.816	PK
2		2483.500	58.320	21.621	-15.680	74.000	36.699	PK

Profile: 2120499R	Page No.: 32
Engineer: Jun Xu	
Site: AC5	Time: 2021/03/05 - 21:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED lamp	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by LE_Coded S=8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.980	98.257	61.426	N/A	N/A	36.831	AV
2		2483.500	50.181	13.482	-3.819	54.000	36.699	AV

Note:
1. Measured Level = Reading Level + Factor.
2. As the radiated emission was performed, so conducted emission was not tested.

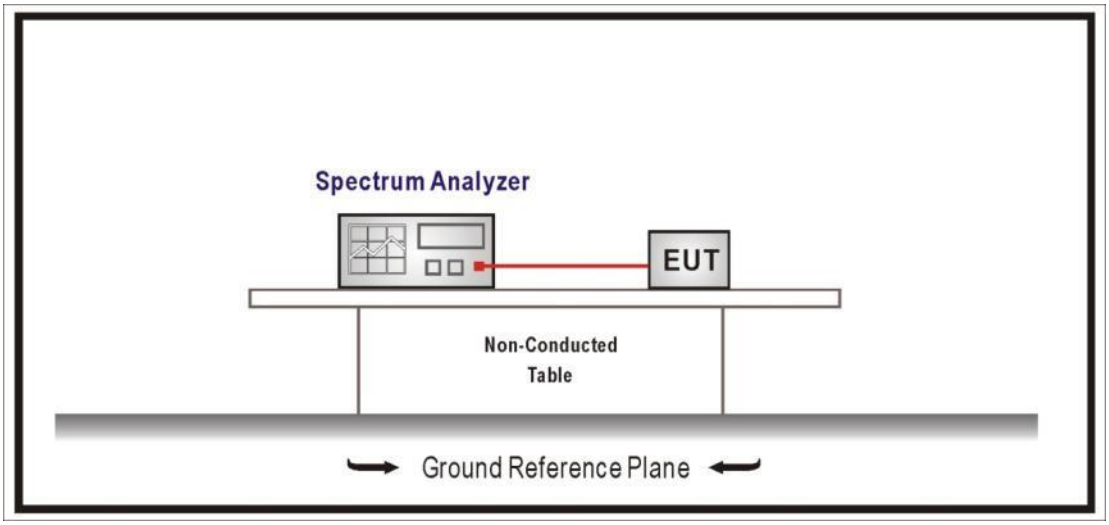
4.6 DTS Bandwidth	VERDICT: PASS

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 by LEast 500 kHz

4.6.2 Test Setup



4.6.3 Test Procedure

	Reference Ruby LE		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

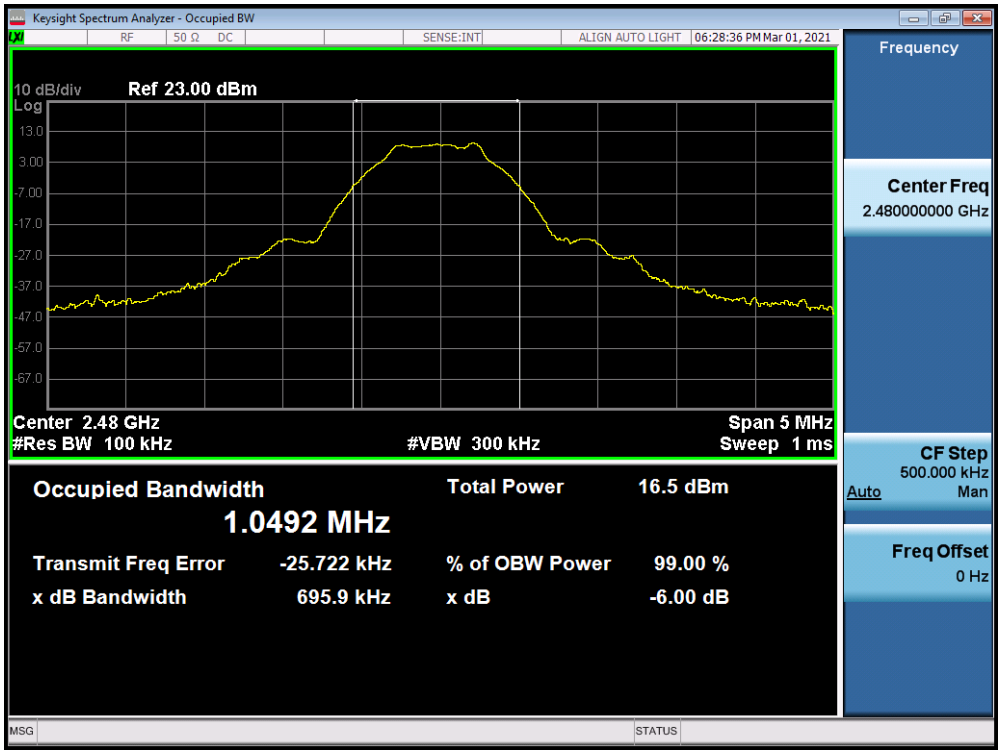
4.6.4 Test Data

Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	00	2402	700.8	>500	Pass
	19	2440	699.7	>500	Pass
	39	2480	695.9	>500	Pass
2	37	2402	1354.0	>500	Pass
	18	2440	1357.0	>500	Pass
	39	2480	1352.0	>500	Pass
3	37	2402	783.7	>500	Pass
	18	2440	781.8	>500	Pass
	39	2480	782.7	>500	Pass
4	37	2402	751.1	>500	Pass
	18	2440	748.4	>500	Pass
	39	2480	748.8	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

6dB Occupied Bandwidth

Mode 1 / CH39 (2480MHz)

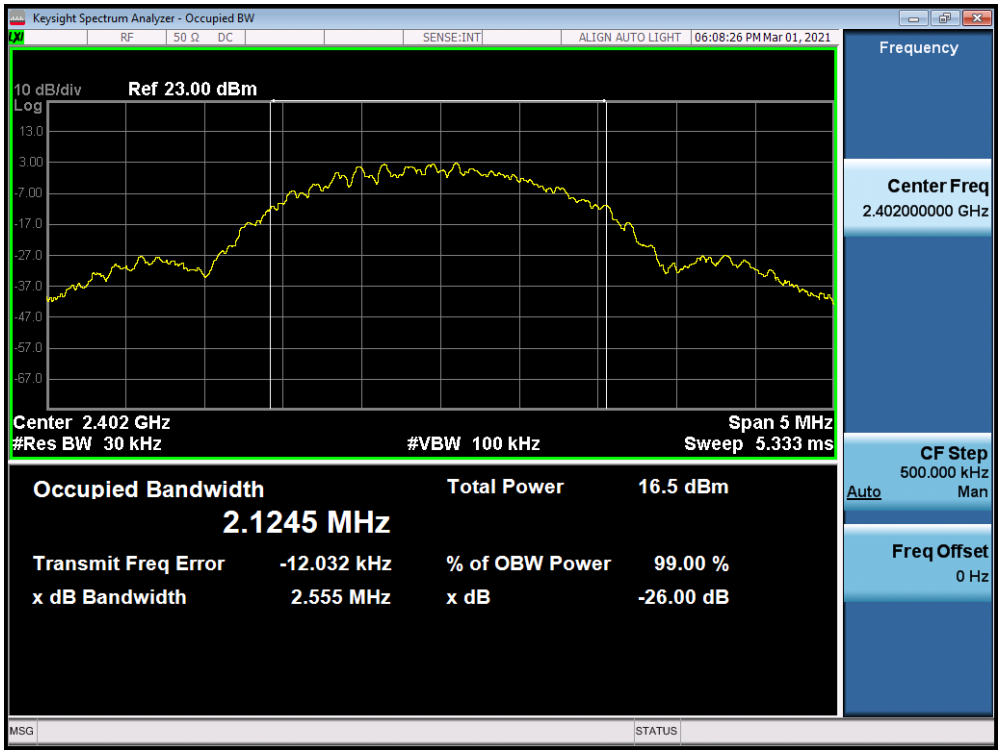


Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	Limit	Result
1	37	2402	1046.6	Within frequency range	Pass
	17	2440	1045.8	Within frequency range	Pass
	39	2480	1046.2	Within frequency range	Pass
2	37	2402	2124.5	Within frequency range	Pass
	17	2440	2131.1	Within frequency range	Pass
	39	2480	2136.4	Within frequency range	Pass
3	37	2402	1094.8	Within frequency range	Pass
	17	2440	1093.6	Within frequency range	Pass
	39	2480	1093.5	Within frequency range	Pass
4	37	2402	1128.5	Within frequency range	Pass
	17	2440	1127.0	Within frequency range	Pass
	39	2480	1125.0	Within frequency range	Pass

Note : The worst case of Occupied Bandwidth as below:

99% Occupied Bandwidth

Mode 2 / CH37 (2402MHz)



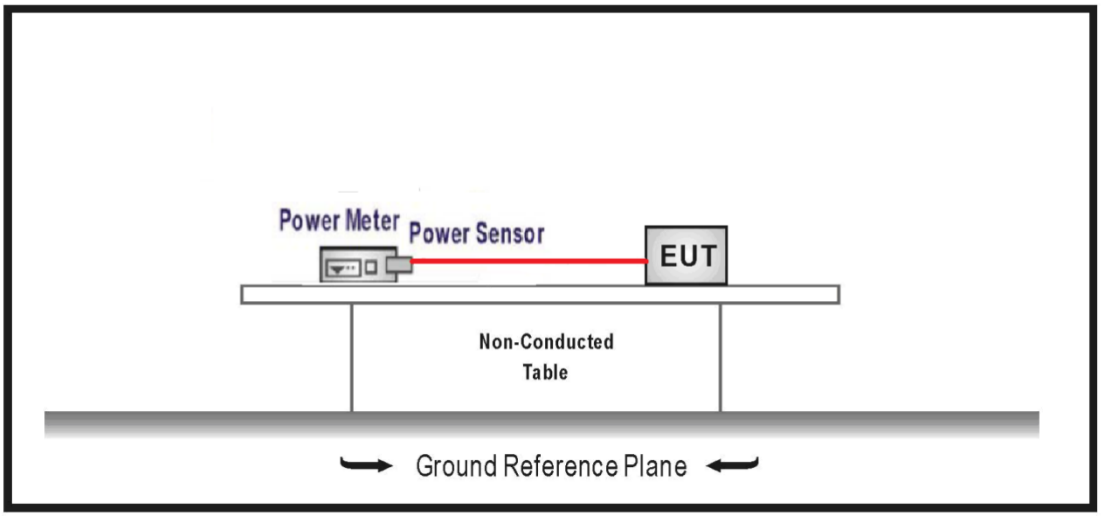
4.7 Fundamental emission output power	VERDICT: PASS

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
	☐	singby LE 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 Ruby LE			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

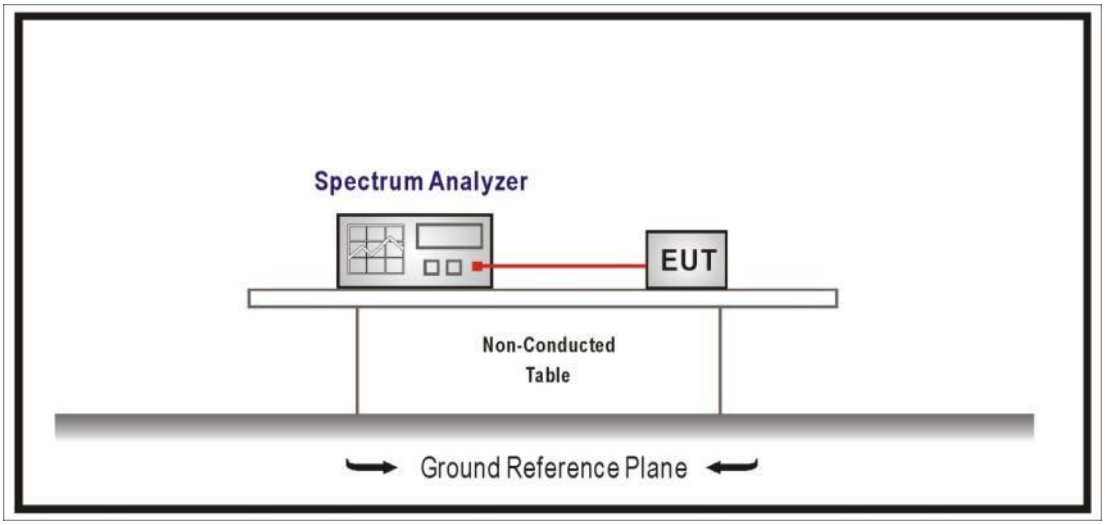
4.7.4 Test Data

Mode	Channel	Test Frequency (MHz)	Power Output (dBm)	Limit (dBm)	Result
Mode 1	37	2402	10.31	≤30	Pass
	17	2440	10.21	≤30	Pass
	39	2480	10.09	≤30	Pass
Mode 2	37	2402	10.46	≤30	Pass
	17	2440	10.38	≤30	Pass
	39	2480	10.23	≤30	Pass
Mode 3	37	2402	10.62	≤30	Pass
	17	2440	10.54	≤30	Pass
	39	2480	10.39	≤30	Pass
Mode 4	37	2402	10.62	≤30	Pass
	17	2440	10.54	≤30	Pass
	39	2480	10.39	≤30	Pass

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

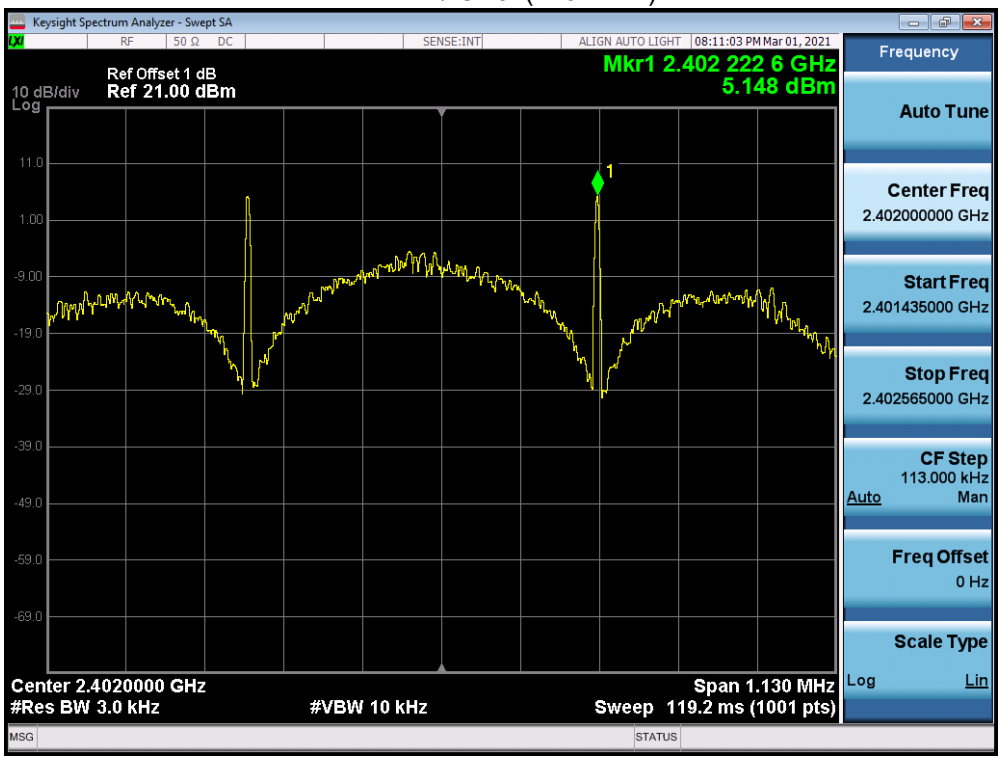
	References Ruby LE		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density by LEvel in the fundamental emission
	☒	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle≥98%)
	☐	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle≥98%)
	☐	ANSI C63.10	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

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Mode 1	37	2402	-5.099	≤8	Pass
	17	2440	-5.085	≤8	Pass
	39	2480	-5.170	≤8	Pass
Mode 2	37	2402	-7.404	≤8	Pass
	17	2440	-7.468	≤8	Pass
	39	2480	-7.615	≤8	Pass
Mode 3	37	2402	-6.759	≤8	Pass
	17	2440	-6.870	≤8	Pass
	39	2480	-7.026	≤8	Pass
Mode 4	37	2402	5.148	≤8	Pass
	17	2440	4.964	≤8	Pass
	39	2480	4.881	≤8	Pass

Note : The worst case of PSD as below:

Mode 4 / CH37(2402MHz)



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 responsibby LE 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 eby LEctrical 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 instalby LEd, 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 instalby LEr shall be responsibby LE 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 eby LEctrical connector

Pby LEase 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 pby LEase see appendix.

The End