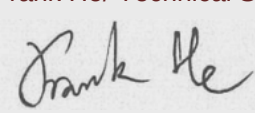
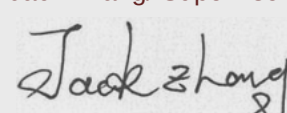




Test report No:
20A0599R-RF-US-P06V01

FCC TEST REPORT & ISED TEST REPORT

Product Name	LED LAMP
Trademark	GE
Model and /or type reference	CLEDA199LD1@
FCC ID	PUU-A19-DMSWII
IC	10798A-DMSWA19II
Applicant's name / address	Savant Technologies LLC, dba GE Lighting, a Savant Company 1975 Noble Road Cleveland, OH 44112 United States Of America
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)	Kitty Li/Project Assistant 
Reviewed by (name / position & signature)	Frank He/ Technical Supervisor 
Approved by (name / position & signature)	Jack Zhang/ Supervisor 
Date of issue	2020-12-01
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	42

4.3.1	Limit	42
4.3.2	Test Setup	42
4.3.3	Test Procedure	42
4.3.4	Test Data	43
4.4	Duty cycle	44
4.4.1	Limit	44
4.4.2	Test Setup	44
4.4.3	Test Procedure	44
4.4.4	Test Data	45
4.5	Radiated Emission Band Edge	46
4.5.1	Limit	46
4.5.2	Test Setup	46
4.5.3	Test Procedure	46
4.5.4	Test Data	47
4.6	DTS Bandwidth	63
4.6.1	Limit	63
4.6.2	Test Setup	63
4.6.3	Test Procedure	63
4.6.4	Test Data	64
4.7	Fundamental emission output power	66
4.7.1	Limit	66
4.7.2	Test Setup	66
4.7.3	Test Procedure	67
4.7.4	Test Data	68
4.8	Power Density	69
4.8.1	Limit:	69
4.8.2	Test Setup	69
4.8.3	Test Procedure	69
4.8.4	Test Data	70
4.9	Antenna Requirement	71
4.9.1	Limit:	71
4.9.2	Antenna Connector Construction:	71
5	Test setup photo and EUT Photo	72

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)	Oct. 22, 2020
Date (start test)	Oct. 28, 2020
Date (finish test)	Nov. 05, 2020

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
20A0599R-RF-US-P06V01	V1.0	Initial issue of report.	2020-11-05
20A0599R-RF-US-P06V02	V1.1	Chapter 4.2.4: Add data of simultaneous transmit.	2020-12-01

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	2019.12.28	2020.12.27
Two-Line V-Network	R&S	ENV216	101044	2019.12.28	2020.12.27
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 Analyzer	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	2020.03.03	2021.03.02
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	2020.01.22	2021.01.21
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	± 1.27 dB
Radiated Emission Band Edge	± 3.9 dB
DTS Bandwidth	± 150 Hz
Occupied Bandwidth	± 1 kHz
Power Density	± 1.27 dB

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Product Name	LED LAMP
Model No.	CLEDA199LD1@
Trademark	GE
FCC ID	PUU-A19-DMSWII
IC	10798A-DMSWA19II
Manufacturer	Xiamen Topstar lighting Co.,Ltd.
Manufacturer address	676 Meixi Avenue, Tong'an District, Xiamen, China

Wireless specification	BLE					
Operating frequency range(s)	2400~2483.5MHz					
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: 100 – 240 V, 50/60 Hz				
	☐	DC: 5 V				
	☐	Battery: 3.7 V				
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 dBi		

1.3 Channel List

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

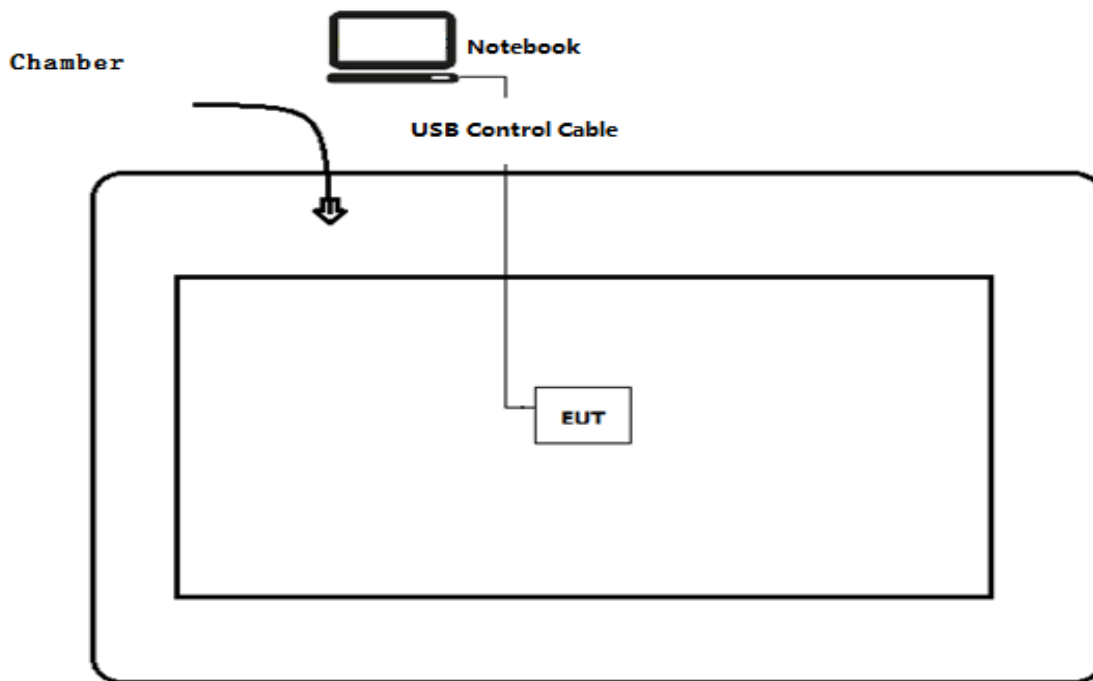
Test Mode For Bluetooth	Mode 1: Transmit by LE_1Mbps(GFSK_LE)
	Mode 2: Transmit by LE_2Mbps(GFSK_LE)
	Mode 3: Simultaneous transmit

2.2 Auxiliary equipment / Test software for the EUT

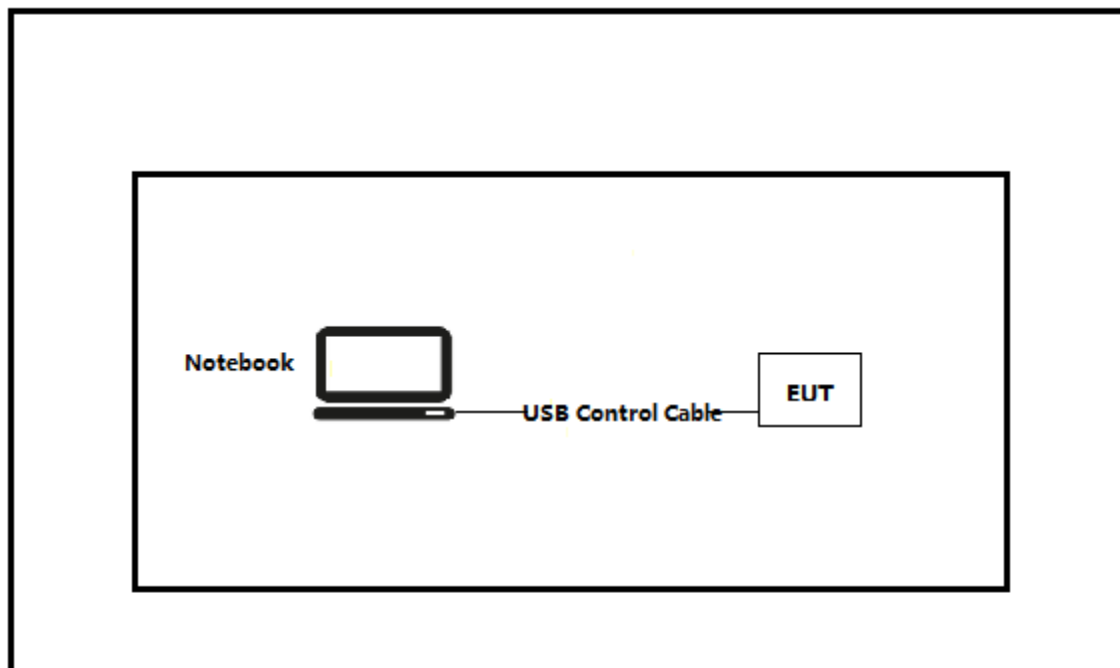
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	Think pad x220	Lenovo	Adapter
software	Type / Version	Manufacturer	Supplied by
EMI_Test_Tool	1.0.0.0	N/A	N/A

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 EMI_Test_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

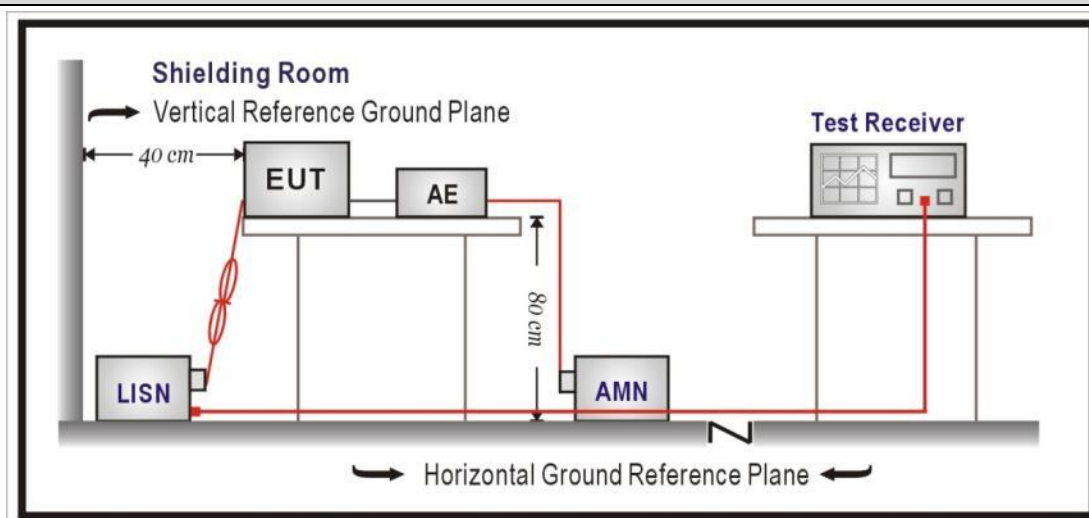
¹⁾ At the transition frequency, the lower limit applies.

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

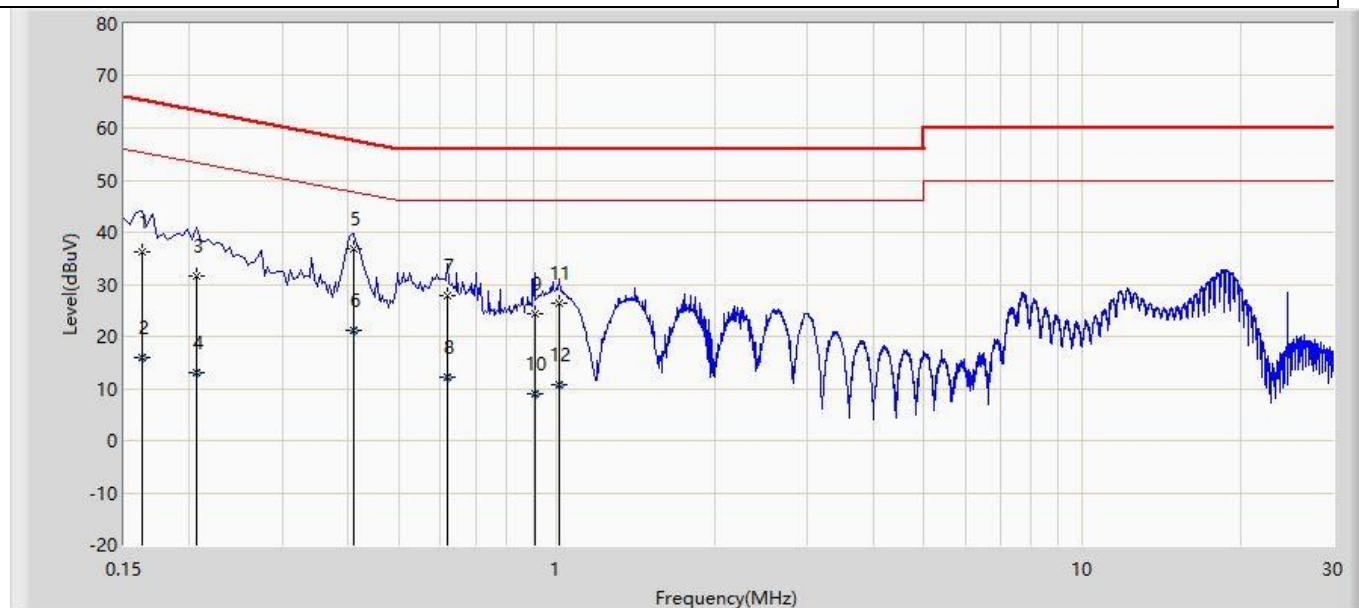


4.1.3 Test Procedure

	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

Engineer: Pawn	
Site: TR1	Time: 2020/11/03
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT:LED LAMP	Power: 120V/60Hz
Note: Mode 1	

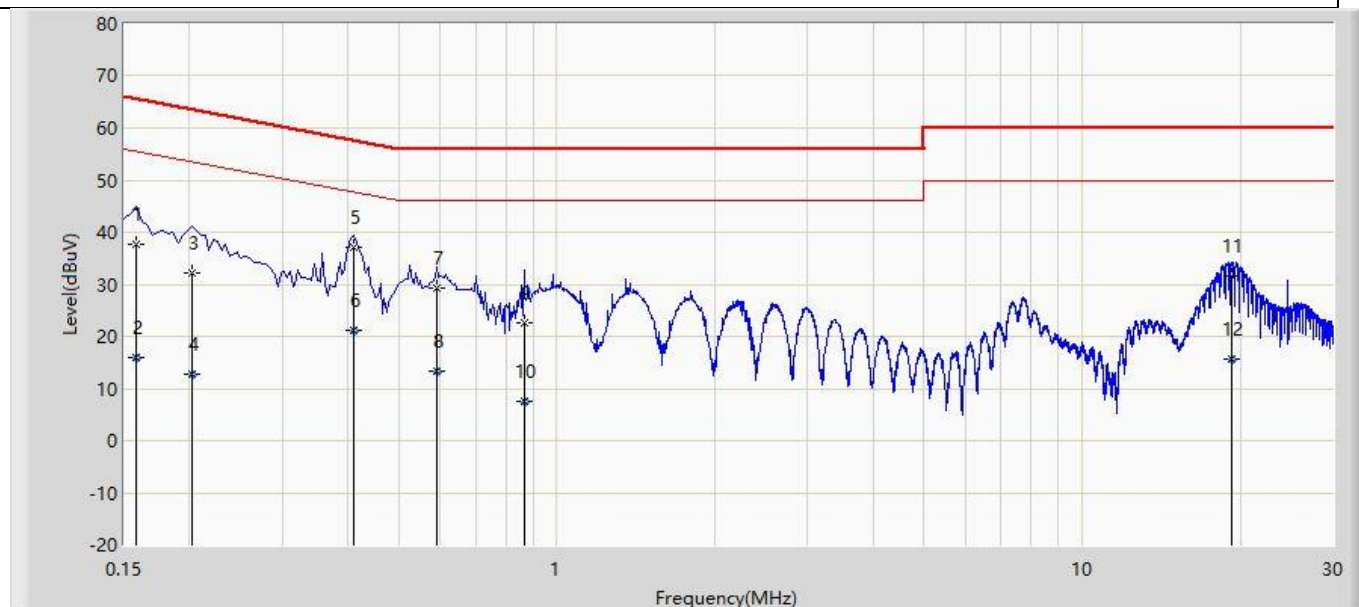


N o	Mar k	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.162	36.154	26.518	-29.206	65.361	9.607	0.029	0.000	QP
2		0.162	16.001	6.365	-39.360	55.361	9.607	0.029	0.000	AV
3		0.206	31.520	21.891	-31.845	63.365	9.601	0.029	0.000	QP
4		0.206	13.046	3.417	-40.319	53.365	9.601	0.029	0.000	AV
5	*	0.410	36.823	27.184	-20.825	57.648	9.600	0.039	0.000	QP
6		0.410	21.084	11.445	-26.564	47.648	9.600	0.039	0.000	AV
7		0.618	27.897	18.250	-28.103	56.000	9.600	0.047	0.000	QP
8		0.618	12.259	2.611	-33.741	46.000	9.600	0.047	0.000	AV
9		0.906	24.251	14.588	-31.749	56.000	9.607	0.057	0.000	QP
10		0.906	9.046	-0.617	-36.954	46.000	9.607	0.057	0.000	AV
11		1.010	26.346	16.674	-29.654	56.000	9.610	0.062	0.000	QP
12		1.010	10.711	1.039	-35.289	46.000	9.610	0.062	0.000	AV

Note:

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

Engineer: Pawn	
Site: TR1	Time: 2020/11/03
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT:LED LAMP	Power: 120V/60Hz
Note: Mode 1	



N o	Mar k	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.158	37.753	28.132	-27.816	65.568	9.592	0.029	0.000	QP
2		0.158	15.965	6.344	-39.604	55.568	9.592	0.029	0.000	AV
3		0.202	32.196	22.569	-31.332	63.528	9.598	0.029	0.000	QP
4		0.202	12.840	3.213	-40.688	53.528	9.598	0.029	0.000	AV
5	*	0.410	36.995	27.363	-20.654	57.648	9.593	0.039	0.000	QP
6		0.410	21.249	11.618	-26.399	47.648	9.593	0.039	0.000	AV
7		0.590	29.201	19.565	-26.799	56.000	9.590	0.046	0.000	QP
8		0.590	13.409	3.773	-32.591	46.000	9.590	0.046	0.000	AV
9		0.866	22.580	12.936	-33.420	56.000	9.590	0.054	0.000	QP
10		0.866	7.588	-2.056	-38.412	46.000	9.590	0.054	0.000	AV
11		19.270	31.668	21.236	-28.332	60.000	10.148	0.283	0.000	QP
12		19.270	15.564	5.133	-34.436	50.000	10.148	0.283	0.000	AV

Note:

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

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 ($\mu\text{V/m}$)	Field strength ($\text{dB}\mu\text{V/m}$)	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)

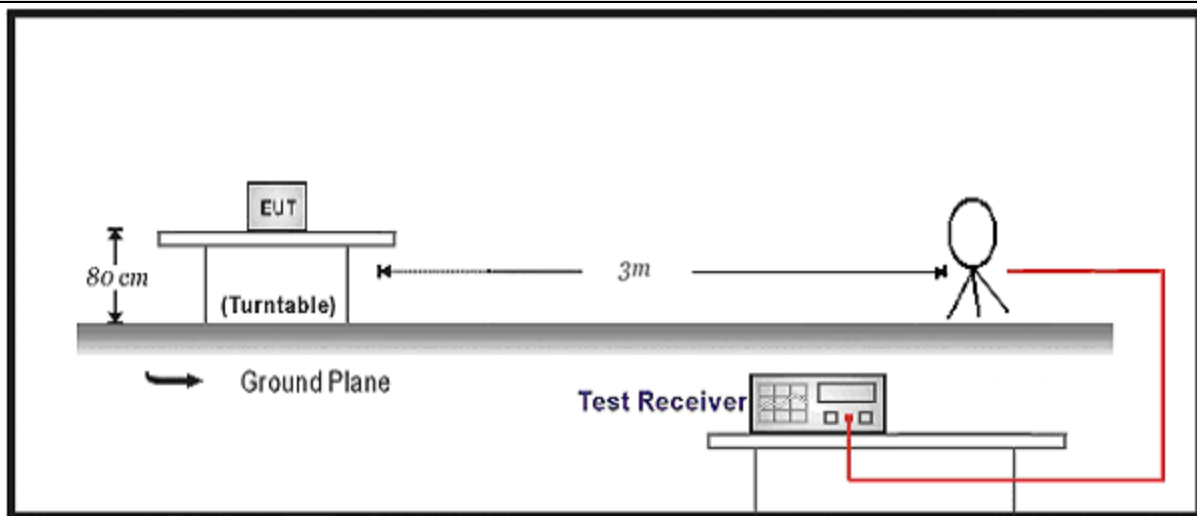
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed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

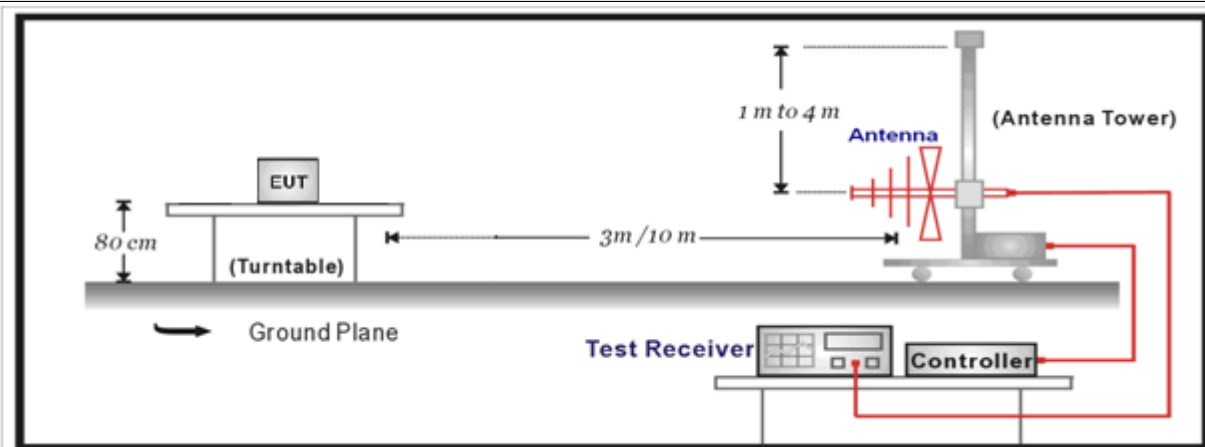
Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified 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

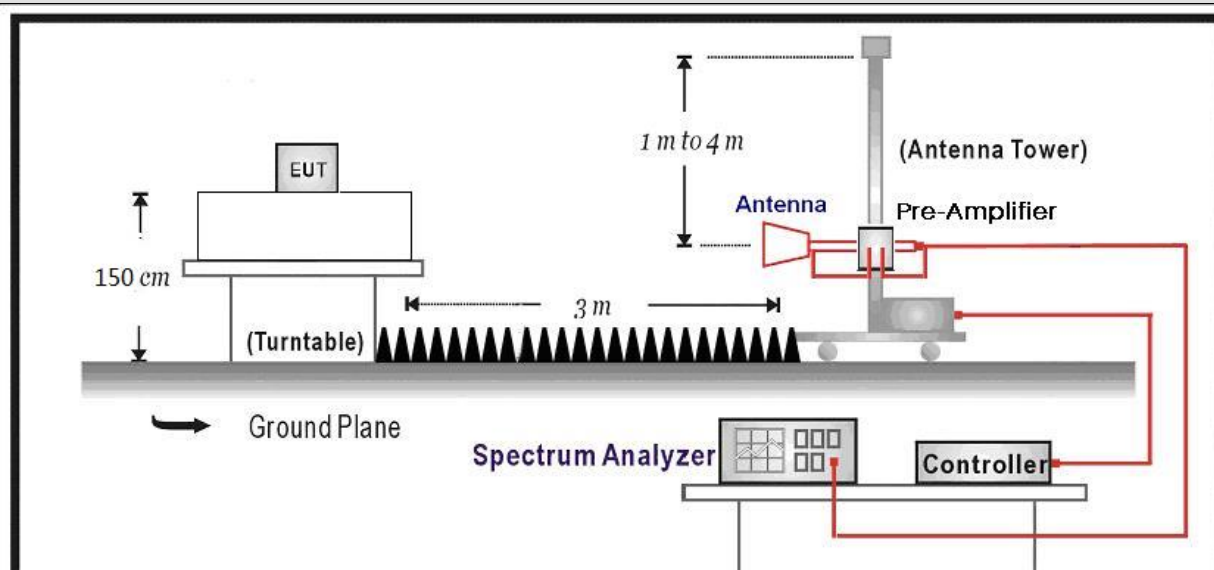
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:

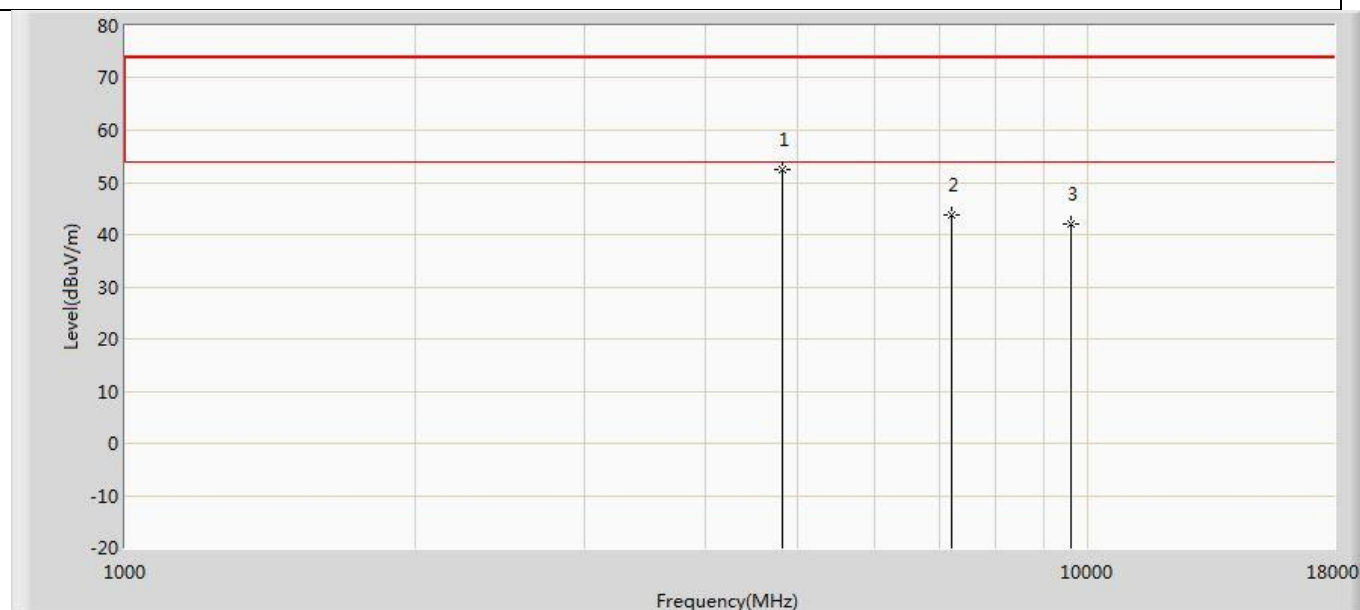


4.2.3 Test Procedure

	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

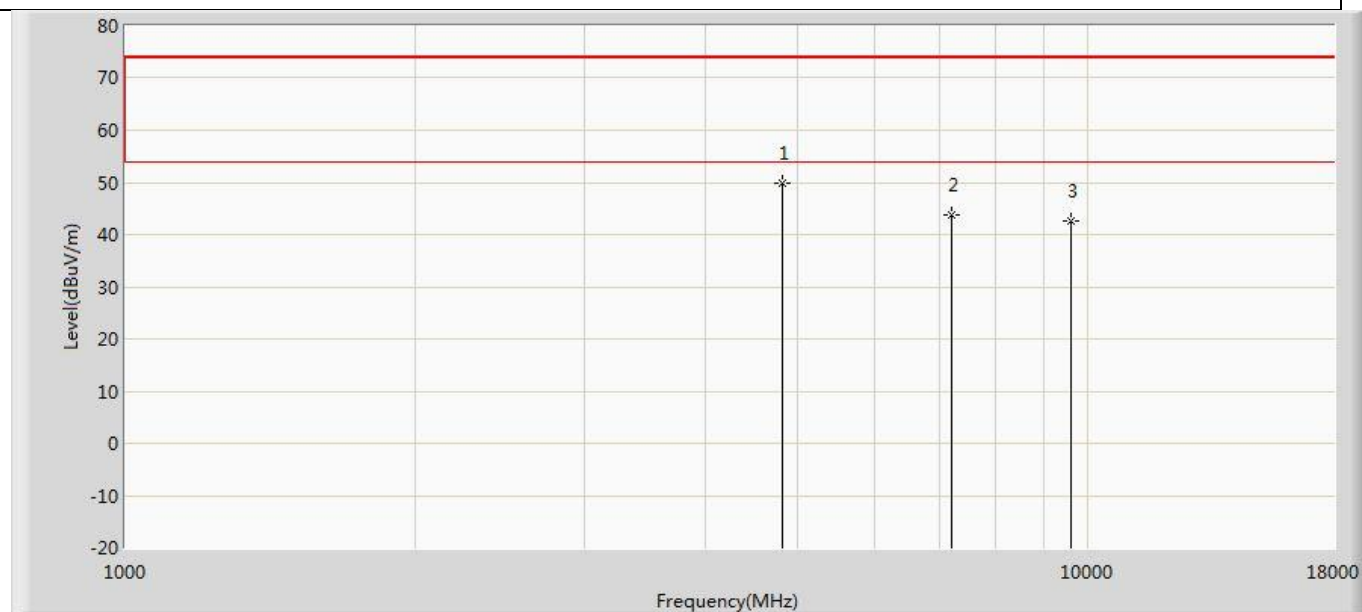
4.2.4 Test Data

Profile: 20A0599R	Page No.: 57
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



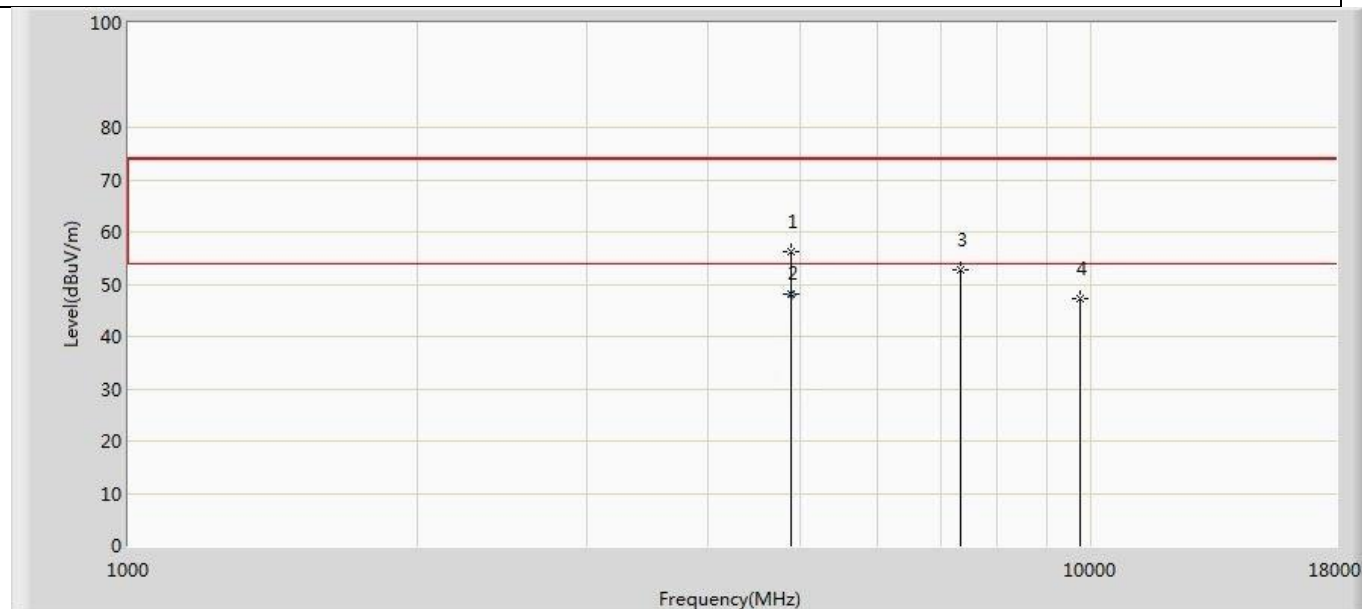
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4808.000	52.510	57.146	-21.490	74.000	-4.636	PK
2		7206.000	43.653	45.801	-30.347	74.000	-2.148	PK
3		9608.000	42.167	43.291	-31.833	74.000	-1.124	PK

Profile: 20A0599R	Page No.: 58
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



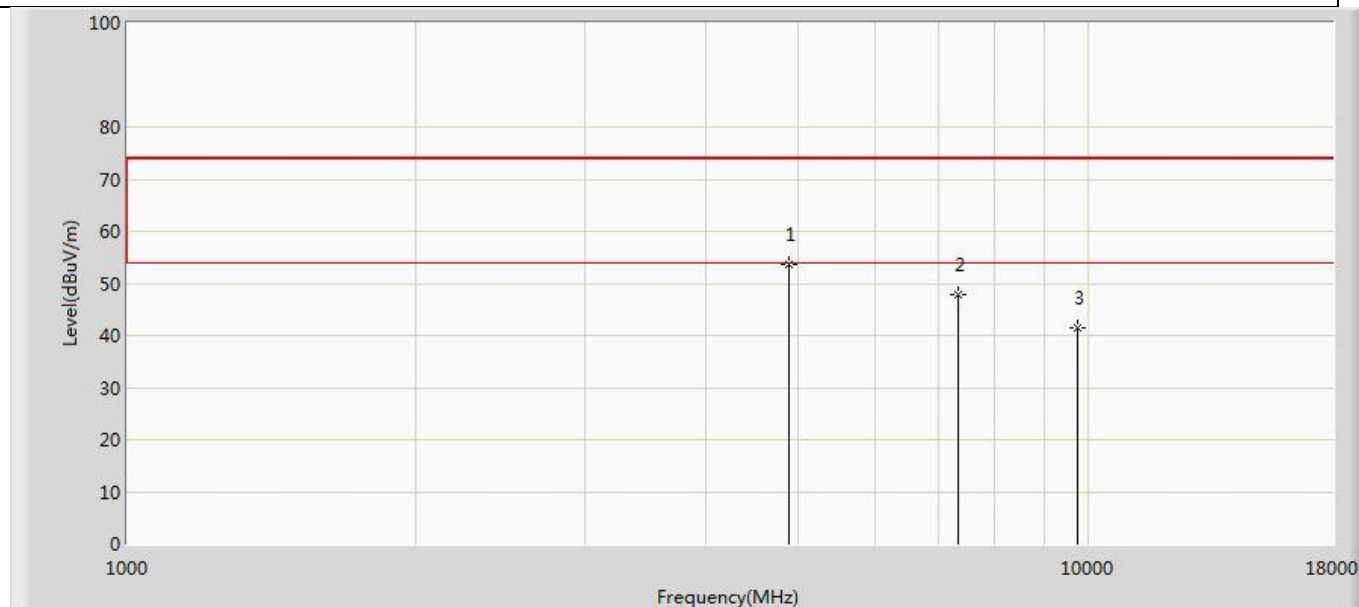
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4808.000	49.873	54.509	-24.127	74.000	-4.636	PK
2		7206.000	43.775	45.923	-30.225	74.000	-2.148	PK
3		9608.000	42.469	43.593	-31.531	74.000	-1.124	PK

Profile: 20A0599R	Page No.: 1
Engineer: Yingfei.wang	
Site: AC5AC5	Time: 2020/11/09 - 16:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED LAMP	Power: Battery
Note: Mode 1 : Transmit at 2440 MHz by LE_1Mbps	



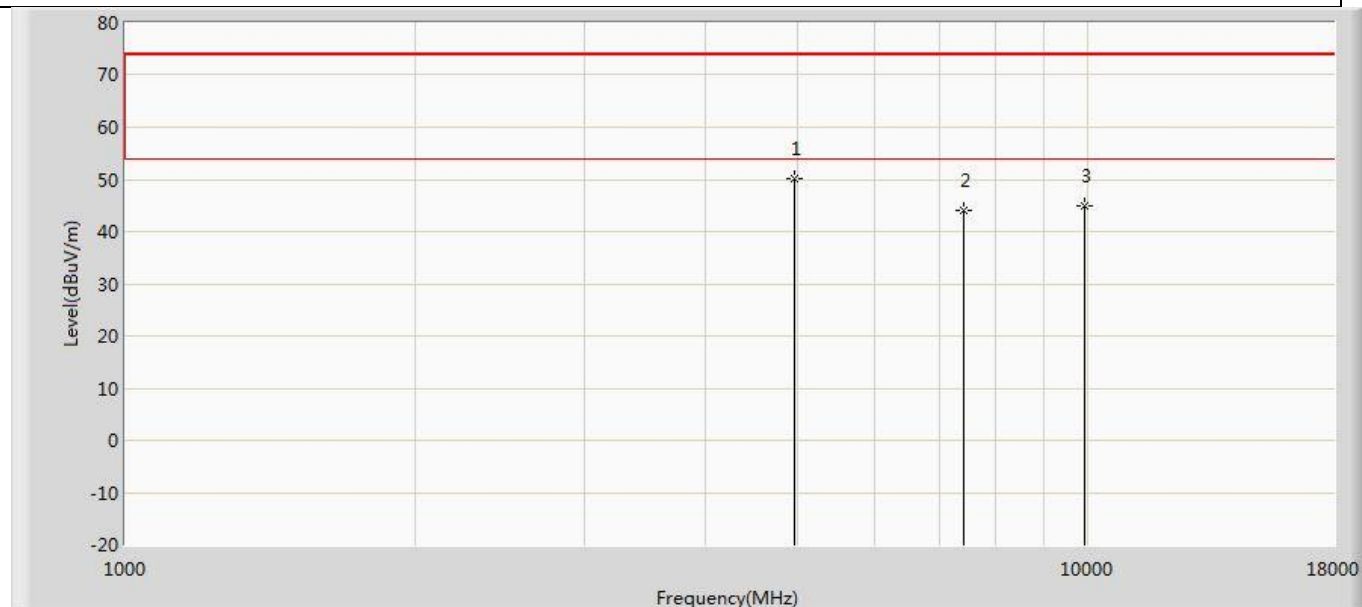
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4880.000	56.241	51.528	-17.759	74.000	4.713	PK
2		4880.000	47.461	42.748	-6.539	54.000	4.713	AV
3		7320.000	52.765	44.730	-21.235	74.000	8.036	PK
4		9760.000	47.233	36.641	-26.767	74.000	10.592	PK

Profile: 20A0599R	Page No.: 2
Engineer: Yingfei.wang	
Site: AC5	Time: 2020/11/05 - 18:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED LAMP	Power: Battery
Note: Mode 1 : Transmit at 2440 MHz by LE_1Mbps	



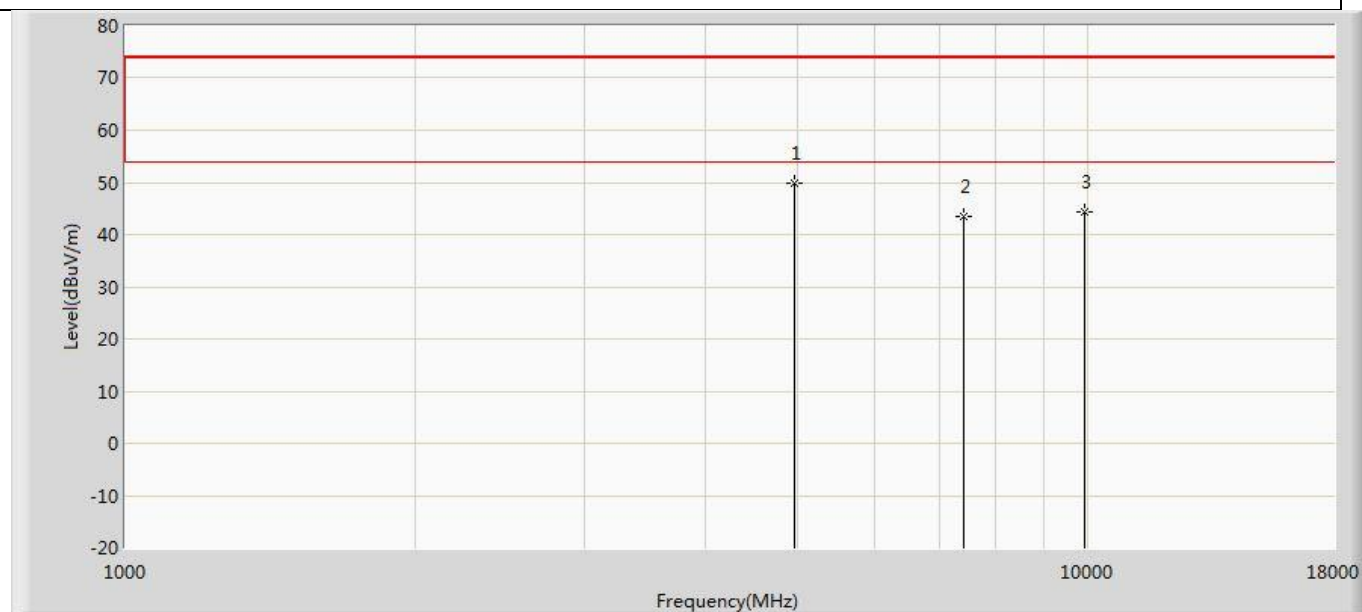
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4880.000	53.741	49.159	-20.259	74.000	4.582	PK
2		7320.000	47.894	39.912	-26.106	74.000	7.983	PK
3		9760.000	41.442	30.907	-32.558	74.000	10.535	PK

Profile: 20A0599R	Page No.: 59
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



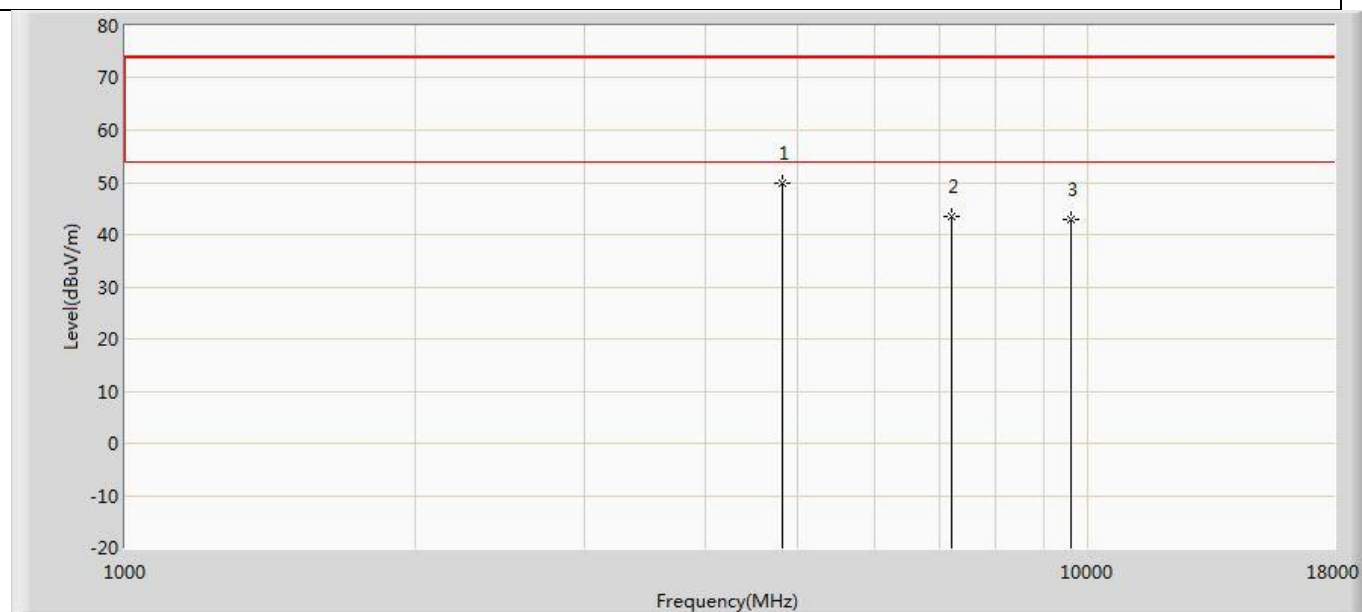
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4961.000	50.037	55.023	-23.963	74.000	-4.986	PK
2		7440.000	43.934	45.911	-30.066	74.000	-1.978	PK
3		9920.000	45.047	44.880	-28.953	74.000	0.167	PK

Profile: 20A0599R	Page No.: 60
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



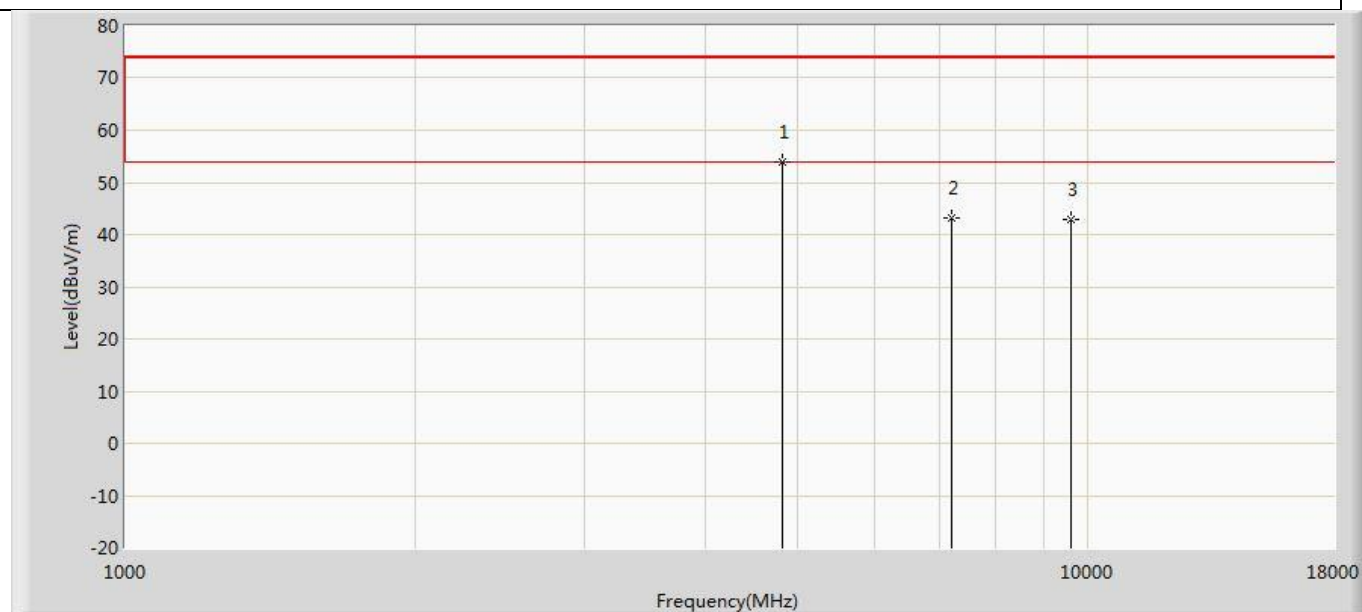
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4961.000	49.792	54.778	-24.208	74.000	-4.986	PK
2		7440.000	43.394	45.371	-30.606	74.000	-1.978	PK
3		9920.000	44.418	44.251	-29.582	74.000	0.167	PK

Profile: 20A0599R	Page No.: 61
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



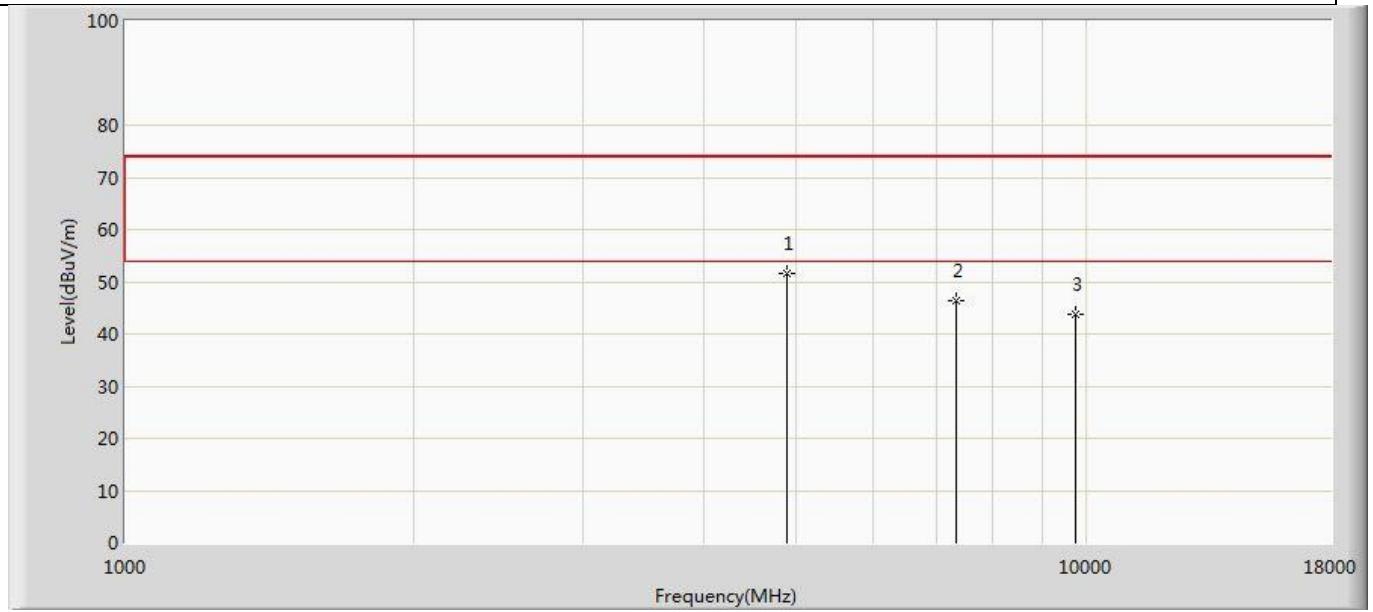
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4804.000	49.835	54.471	-24.165	74.000	-4.636	PK
2		7206.000	43.598	45.746	-30.402	74.000	-2.148	PK
3		9608.000	42.900	44.024	-31.100	74.000	-1.124	PK

Profile: 20A0599R	Page No.: 62
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



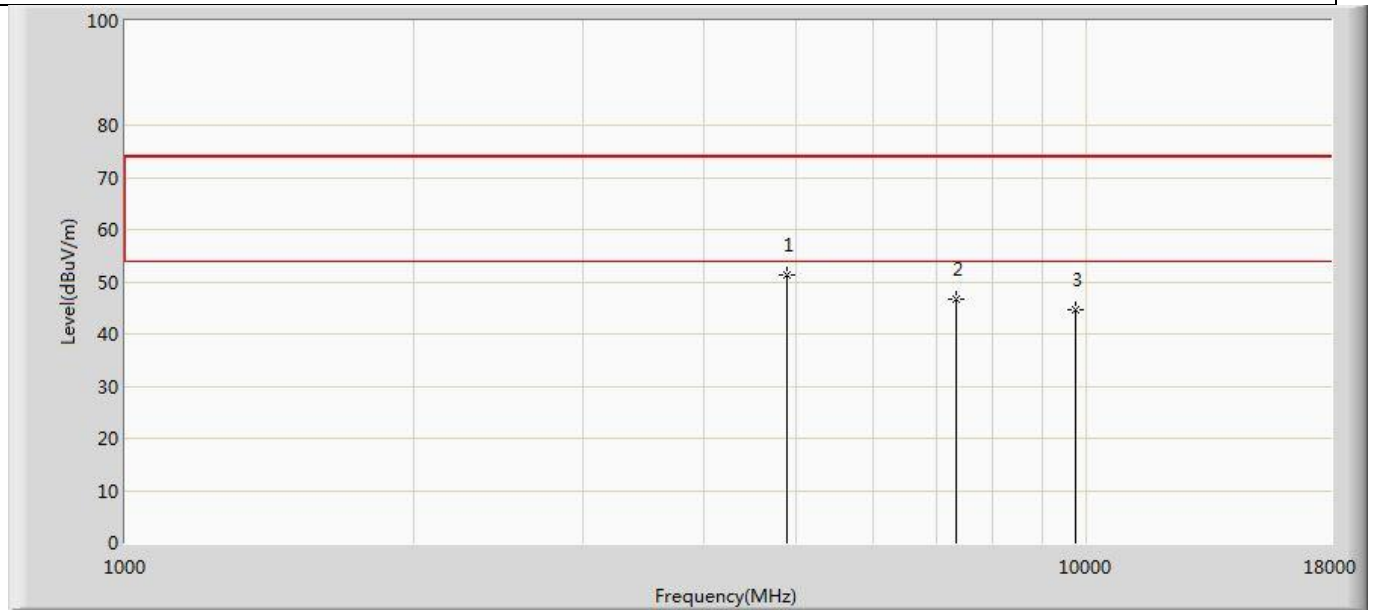
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4804.000	53.797	58.433	-20.203	74.000	-4.636	PK
2		7206.000	43.177	45.325	-30.823	74.000	-2.148	PK
3		9608.000	42.900	44.024	-31.100	74.000	-1.124	PK

Profile: 20A0599R	Page No.: 3
Engineer: Yingfei.wang	
Site: AC5	Time: 2020/11/05 - 15:50
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 2440 MHz by LE_2Mbps	



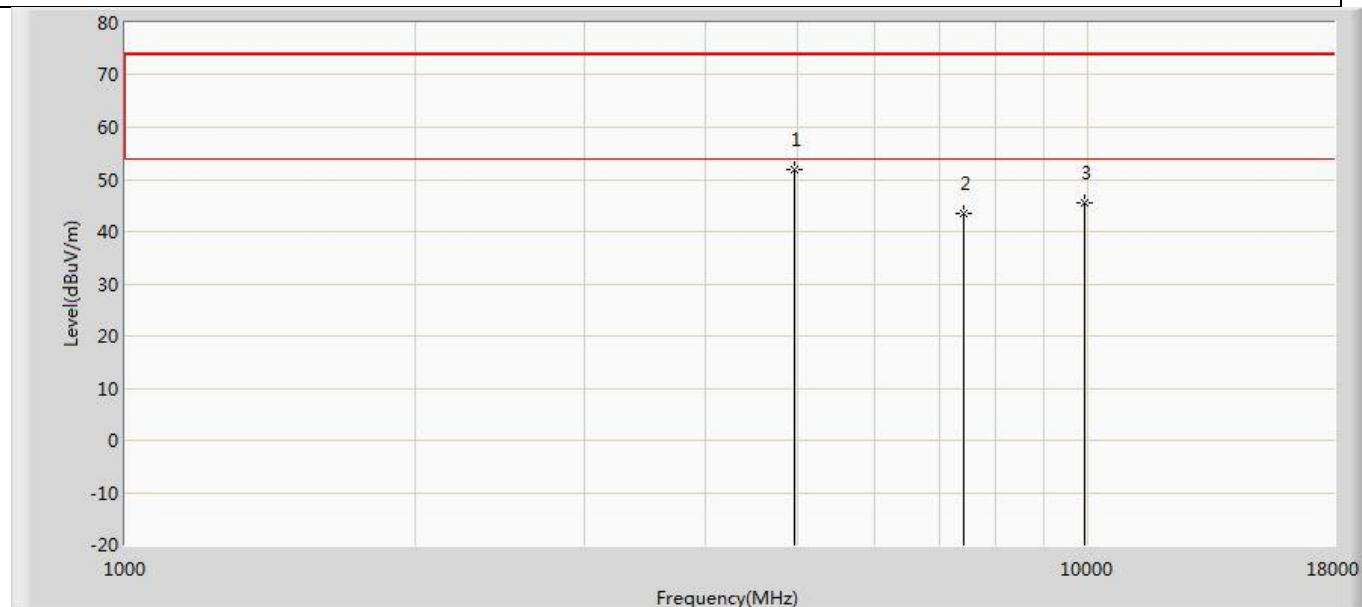
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4880.000	51.572	46.946	-22.428	74.000	4.625	PK
2		7320.000	46.251	38.234	-27.749	74.000	8.017	PK
3		9760.000	43.683	33.550	-30.317	74.000	10.133	PK

Profile: 20A0599R	Page No.: 4
Engineer: Yingfei.wang	
Site: AC5	Time: 2020/11/05 - 15:51
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 2440 MHz by LE_2Mbps	



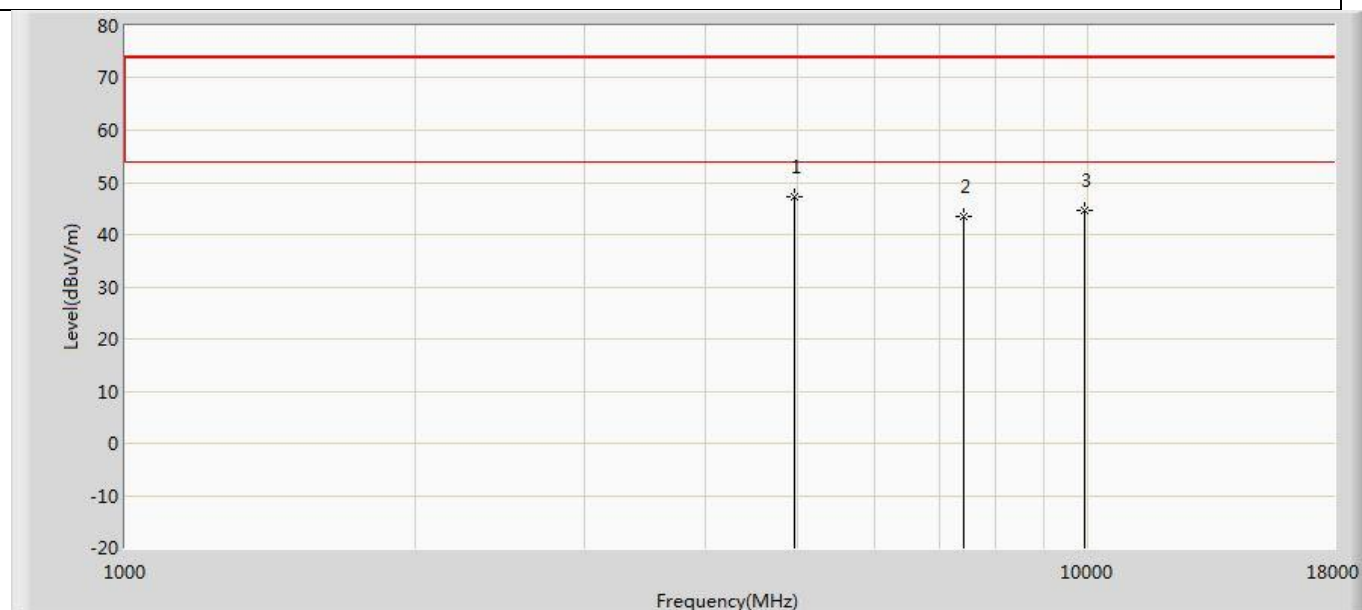
N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4880.000	51.398	46.772	-22.602	74.000	4.625	PK
2		7320.000	46.557	38.540	-27.443	74.000	8.017	PK
3		9760.000	44.632	34.499	-29.368	74.000	10.133	PK

Profile: 20A0599R	Page No.: 63
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4961.000	51.853	56.839	-22.147	74.000	-4.986	PK
2		7440.000	43.550	45.527	-30.450	74.000	-1.978	PK
3		9920.000	45.502	45.335	-28.498	74.000	0.167	PK

Profile: 20A0599R	Page No.: 64
Engineer: Neil	
Site: AC5	Time: 2020/11/05 - 10:05
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	



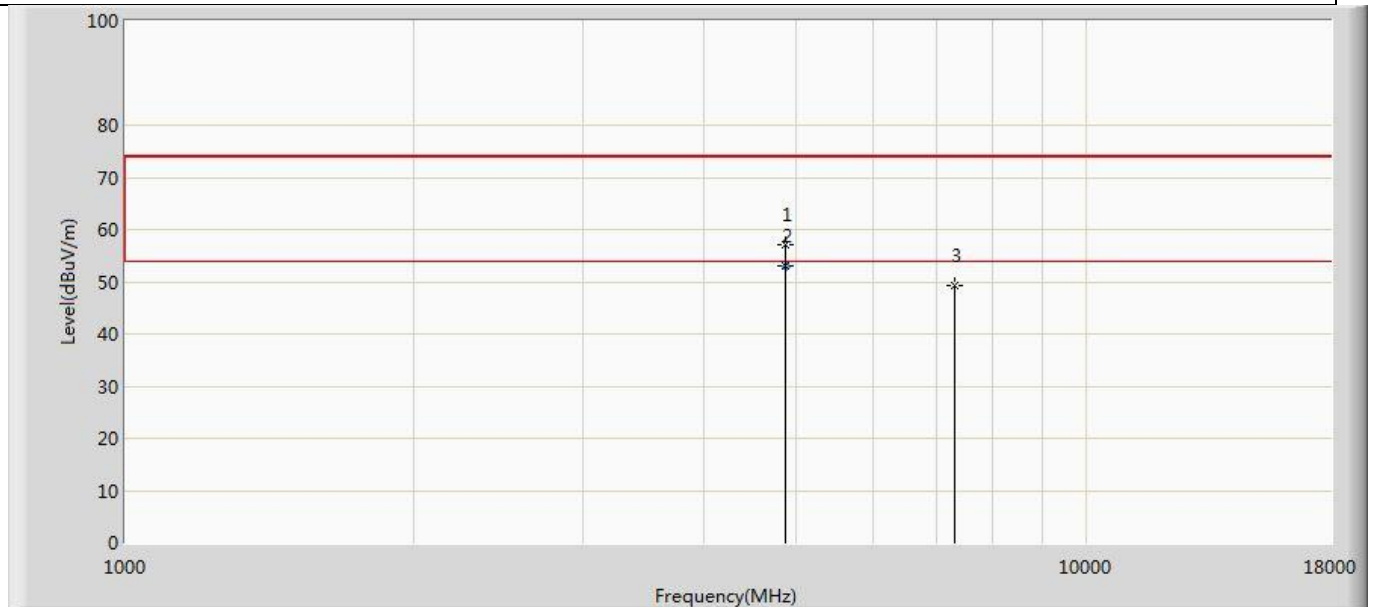
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4961.000	47.196	52.182	-26.804	74.000	-4.986	PK
2		7440.000	43.487	45.464	-30.513	74.000	-1.978	PK
3		9920.000	44.688	44.521	-29.312	74.000	0.167	PK

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp).
3. The test frequency range, 9kHz~30MHz and Above 18GHz worst case are at 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.

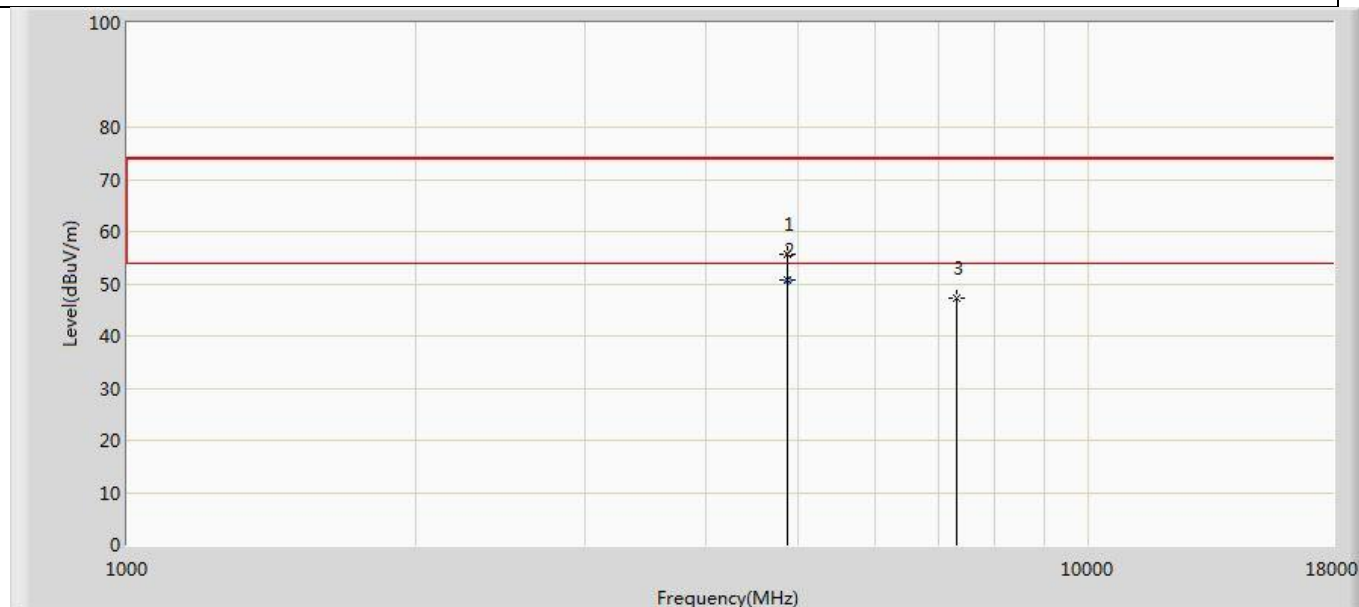
The worst case of simultaneous transmit:

Profile: 20A0599R	Page No.: 7
Engineer: Pawn	
Site: AC5	Time: 2020/11/06 - 14:25
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: Simultaneous transmit at 2432MHz by 802.11b and 2432MHz by LE_1Mbps	



N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4864.000	57.233	62.820	-16.767	74.000	-5.587	PK
2	*	4864.000	53.002	58.589	-0.998	54.000	-5.587	AV
3		7296.000	49.391	51.258	-24.609	74.000	-1.867	PK

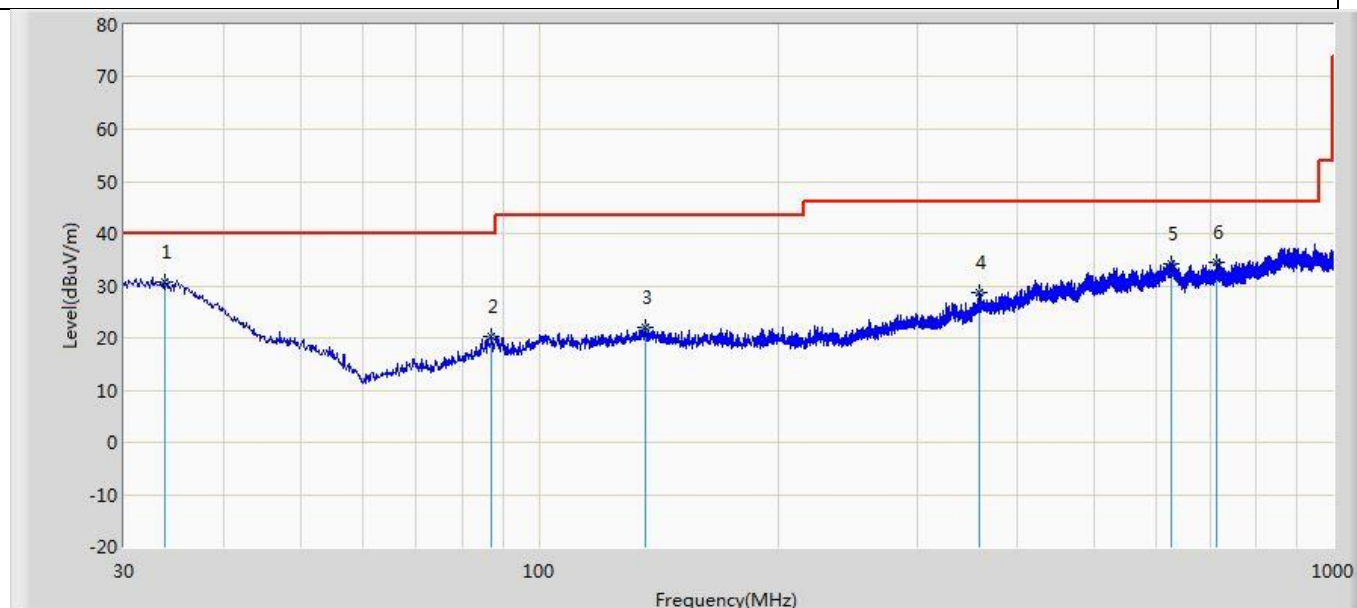
Profile: 20A0599R	Page No.: 8
Engineer: Pawn	
Site: AC5	Time: 2020/11/06 - 14:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED LAMP	Power: AC 120V/60Hz
Note: Mode 3: Simultaneous transmit at 2432MHz by 802.11b and 2432MHz by LE_1Mbps	



N o	Mar k	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4864.000	55.765	61.352	-18.235	74.000	-5.587	PK
2	*	4864.000	50.622	56.209	-3.378	54.000	-5.587	AV
3		7296.000	47.228	49.095	-26.772	74.000	-1.867	PK

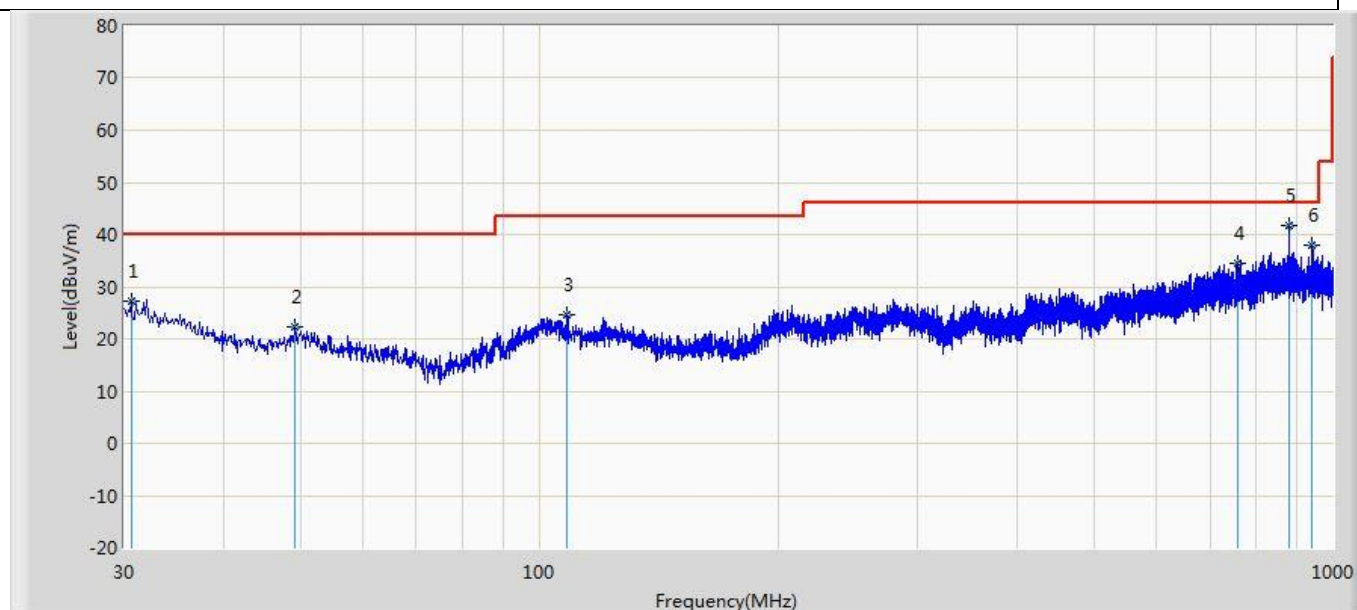
The worst case of Radiated Emission below 1GHz:

Profile: 20A0599R	Page No.: 1
Engineer: Pawn	
Site: AC2	Time: 2020/11/02 - 19:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT:LED LAMP	Power: AC 120V/60Hz
Note: Mode1	



N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	33.759	30.608	3.576	-9.392	40.000	27.032	QP
2		87.109	20.145	6.093	-19.855	40.000	14.052	QP
3		136.336	22.150	4.489	-21.350	43.500	17.661	QP
4		359.194	28.656	4.458	-17.344	46.000	24.198	QP
5		624.731	34.292	3.730	-11.708	46.000	30.562	QP
6		712.880	34.618	4.947	-11.382	46.000	29.671	QP

Profile: 20A0599R	Page No.: 2
Engineer: Pawn	
Site: AC2	Time: 2020/11/02 - 19:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT:LED LAMP	Power: AC 120V/60Hz
Note: Mode1	



N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		30.606	27.314	3.476	-12.686	40.000	23.838	QP
2		49.279	22.273	2.940	-17.727	40.000	19.333	QP
3		108.570	24.579	3.268	-18.921	43.500	21.311	QP
4		758.713	34.563	3.406	-11.437	46.000	31.157	QP
5	*	879.963	41.805	8.515	-4.195	46.000	33.290	QP
6		941.800	38.031	4.617	-7.969	46.000	33.414	QP

Note:

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

4.3 Emissions in non-restricted frequency band

VERDICT: PASS

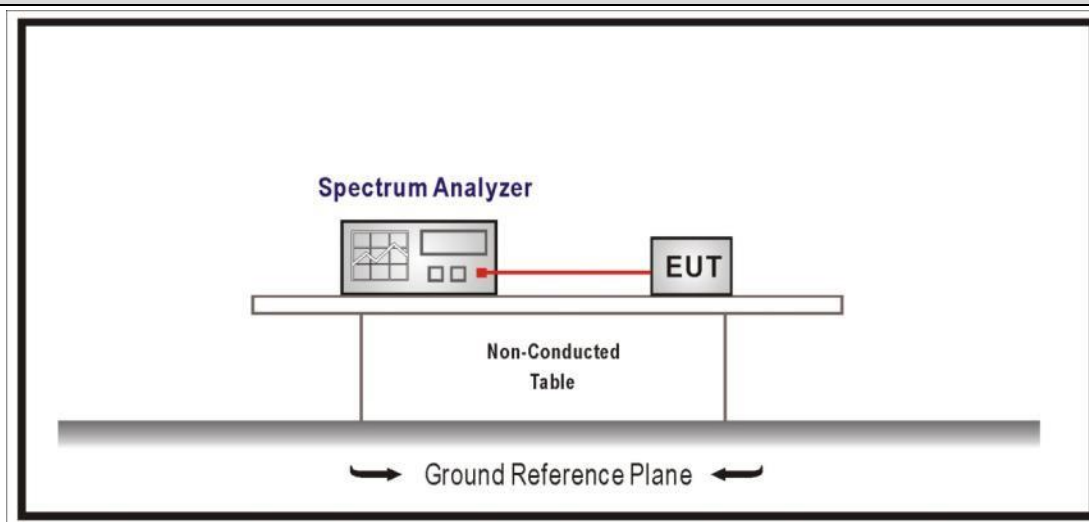
4.3.1 Limit

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

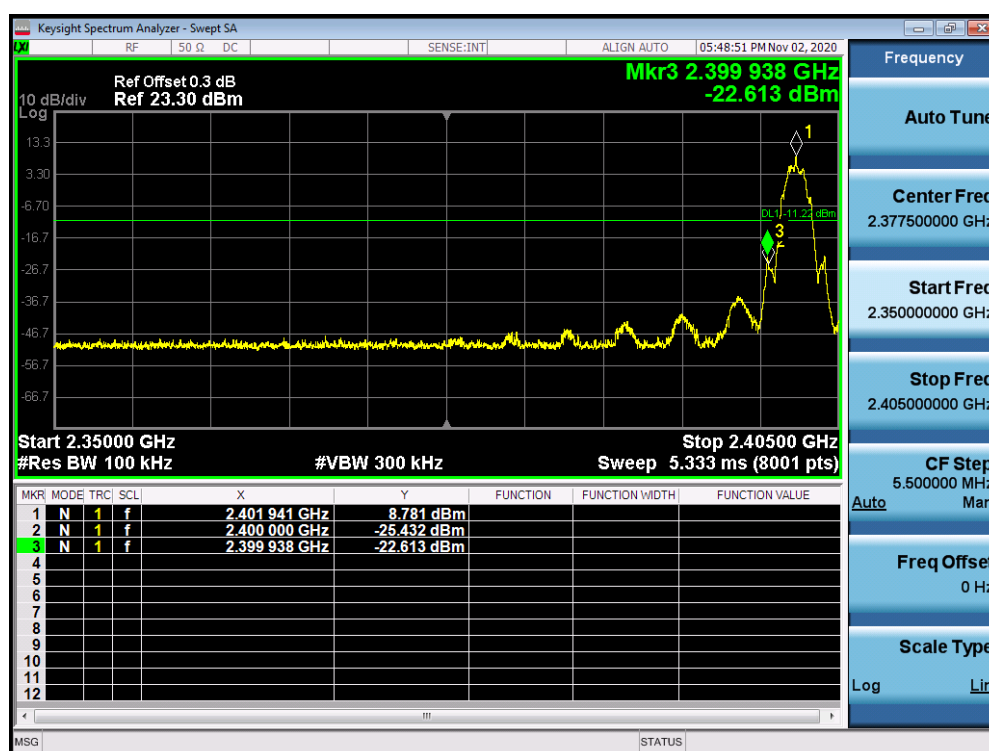
References Rule	Chapter	Description
☒ ANSI C63.10	11.11	Emissions in non-restricted frequency bands
☒ ANSI C63.10	11.11.1	General
☒ ANSI C63.10	11.11.2	Reference level measurement
☒ ANSI C63.10	11.11.3	Emission level measurement

4.3.4 Test Data

Mode	Channel	Test Frequency (MHz)	Maximum In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	00	2402	8.824	2399.945	-22.723	31.547	>20	Pass
	39	2480	9.029	2500.000	-46.784	55.813	>20	Pass
2	00	2402	8.781	2399.938	-22.613	31.394	>20	Pass
	39	2480	9.184	2500.000	-45.775	54.959	>20	Pass

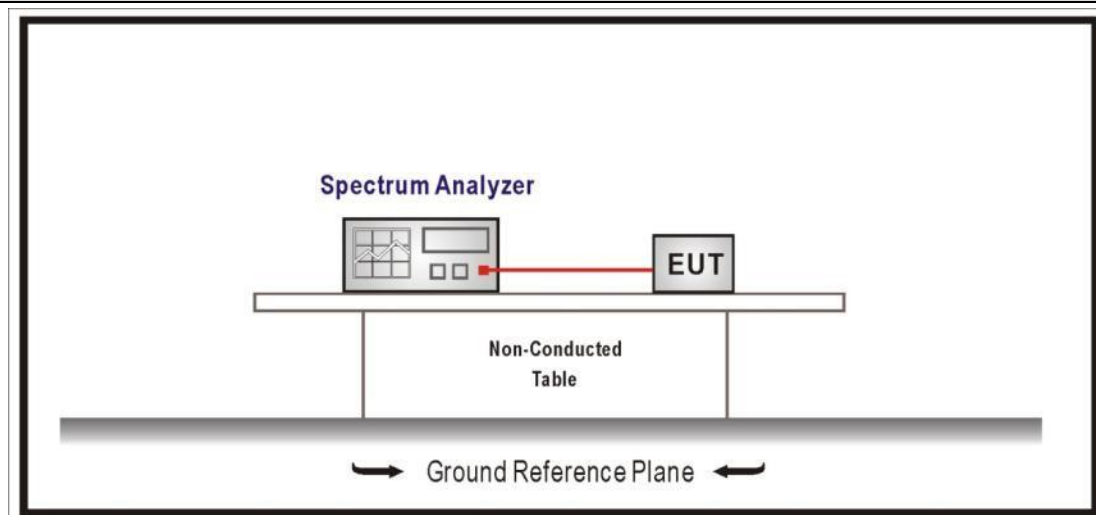
Note : The worst case of Emissions in non-restricted frequency band as below:

Mode 2 / CH00(2402MHz)



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

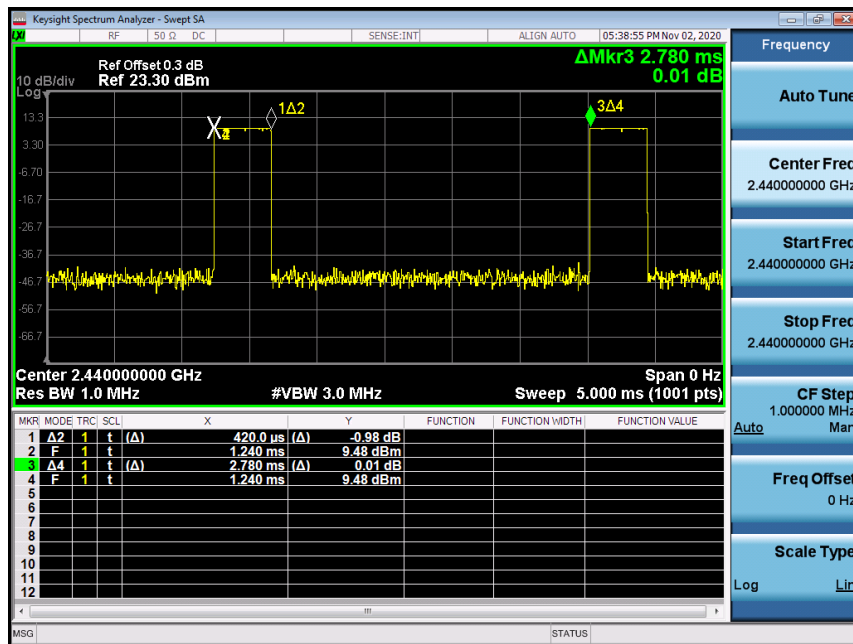
4.4.4 Test Data

Test Mode	Tx On (ms)	Tx Off (ms)	VBW (kHz)	Tx On + Tx Off (ms)	Duty Cycle
Mode 1	0.420	2.360	2.40	2.780	15.11%
Mode 2	0.205	2.265	4.90	2.570	7.98%

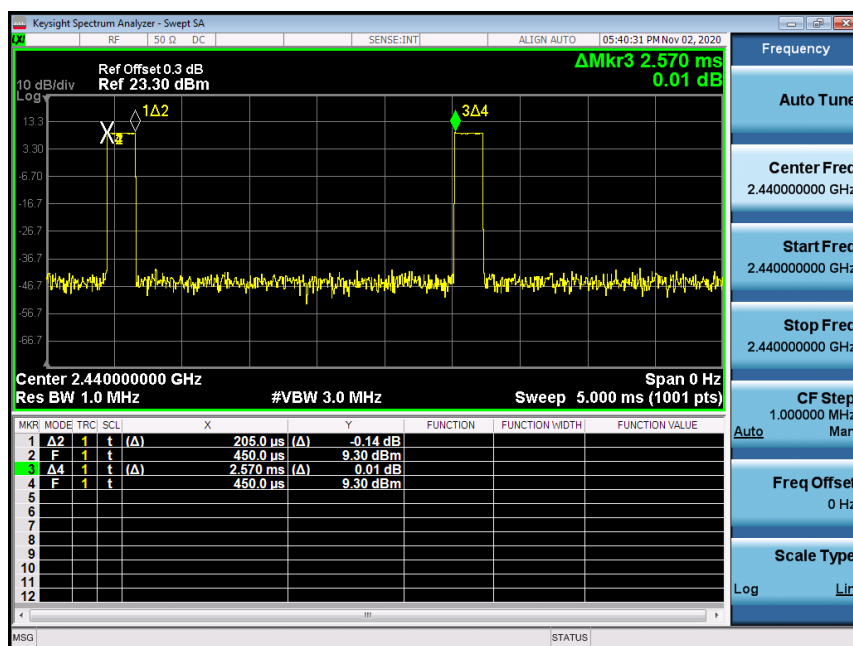
Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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

Mode 1 CH19 2440MHz



Mode 2 CH19 2440MHz



4.5 Radiated Emission Band Edge

VERDICT: PASS

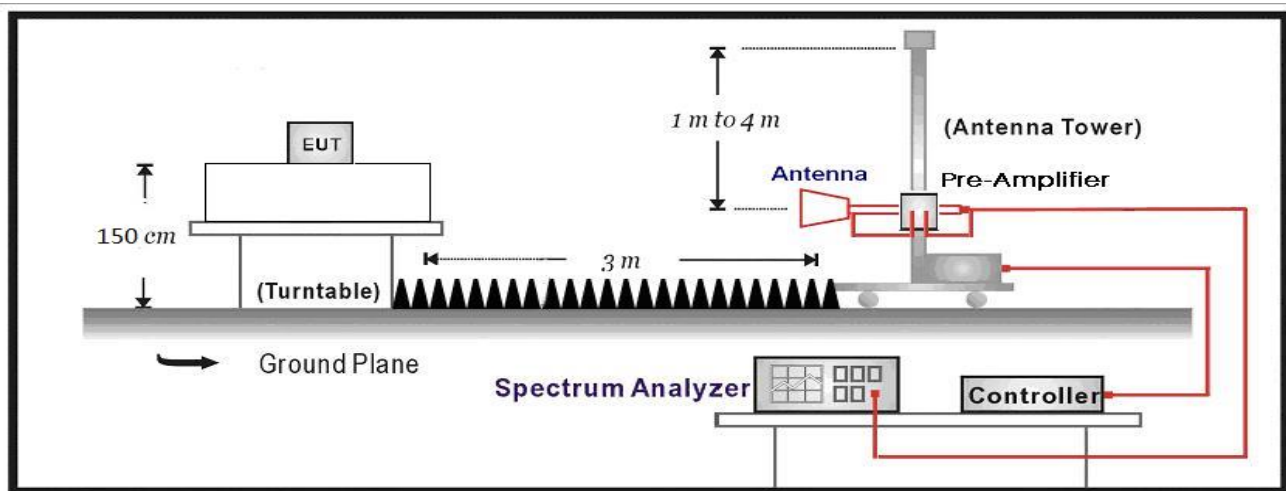
4.5.1 Limit

Standard		FCC Part 15 Subpart C Paragraph 15.247(d) , 15.209		
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
2483.5-2500	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:

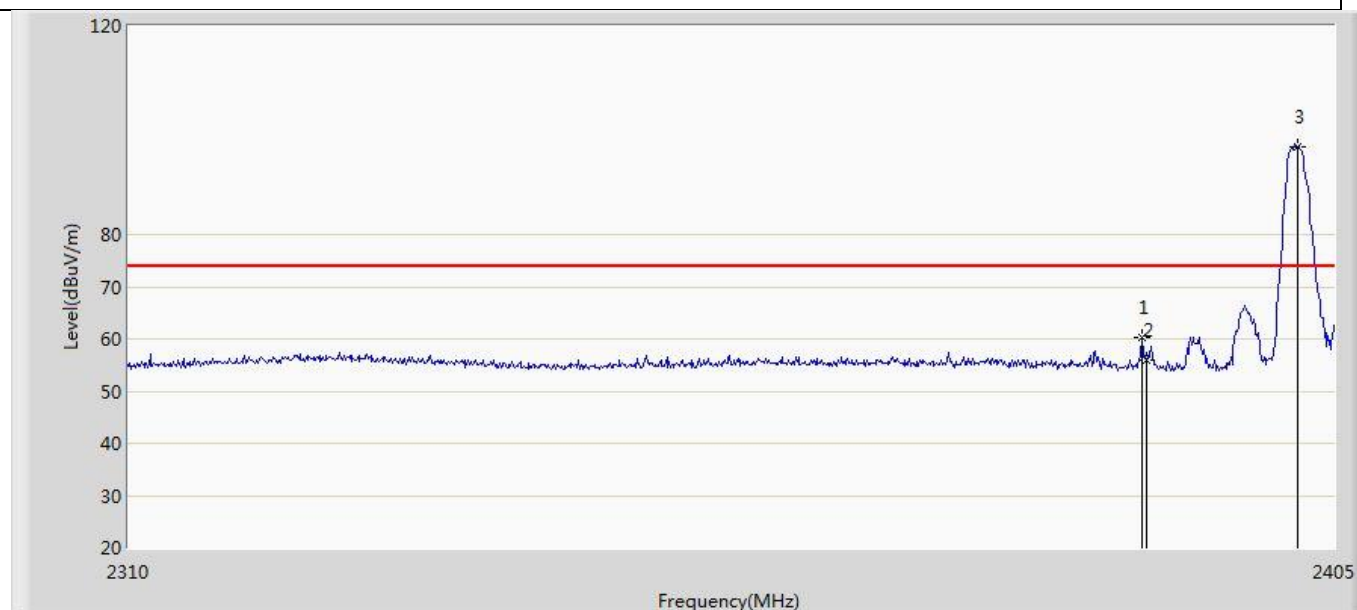


4.5.3 Test Procedure

	References 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	11.12.1	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

4.5.4 Test Data

Profile: 20A0599R	Page No.: 37
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:47
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	



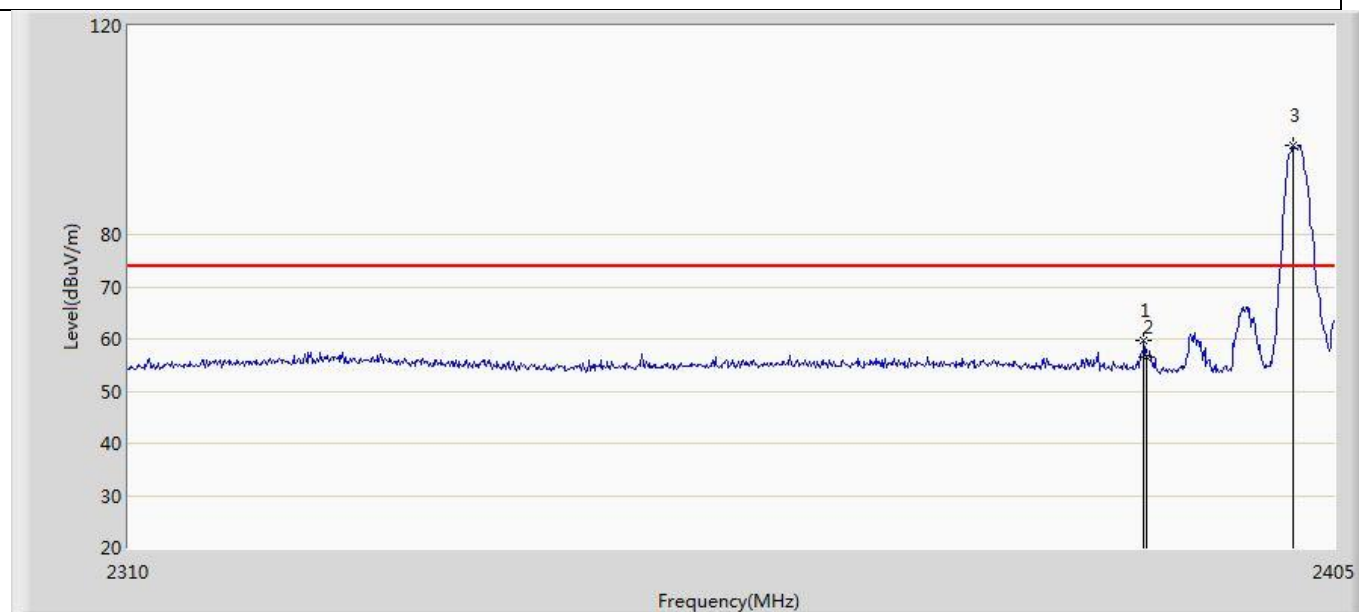
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2389.610	60.184	24.414	-13.816	74.000	35.771	PK
2		2390.000	56.032	20.288	-17.968	74.000	35.745	PK
3	*	2402.055	96.908	60.836	22.908	74.000	36.071	PK

Profile: 20A0599R	Page No.: 38
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:51
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	



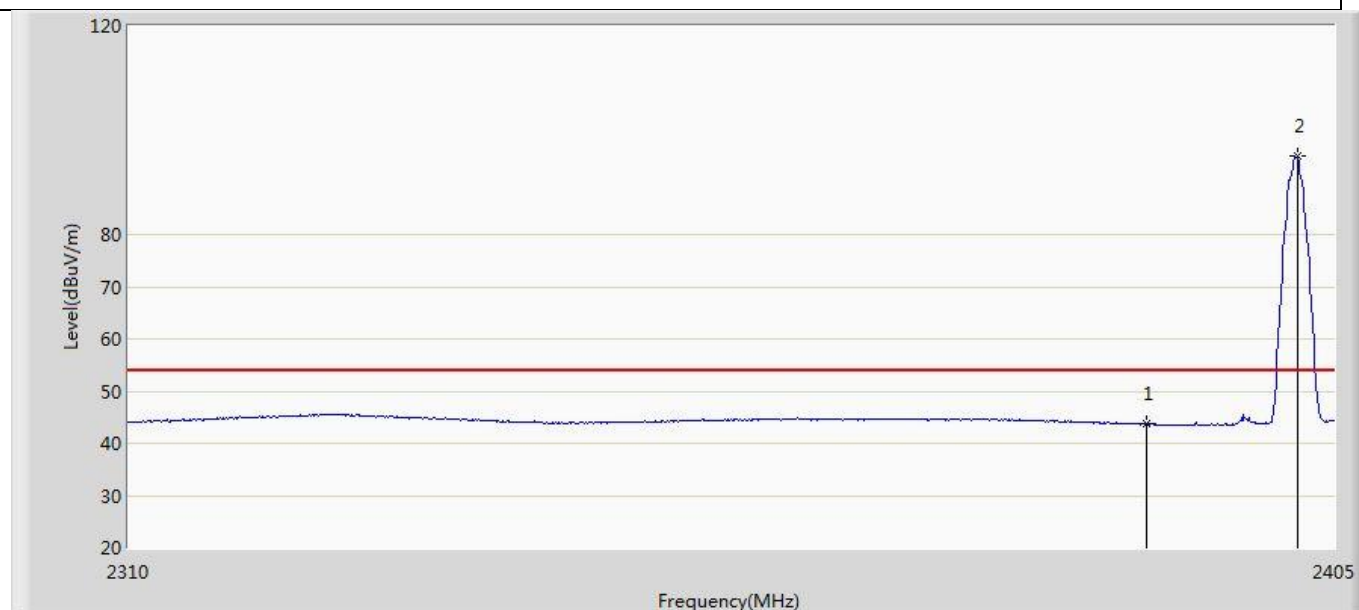
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	43.621	7.877	-10.379	54.000	35.745	AV
2	*	2401.865	94.674	58.616	40.674	54.000	36.057	AV

Profile: 20A0599R	Page No.: 39
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:53
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	



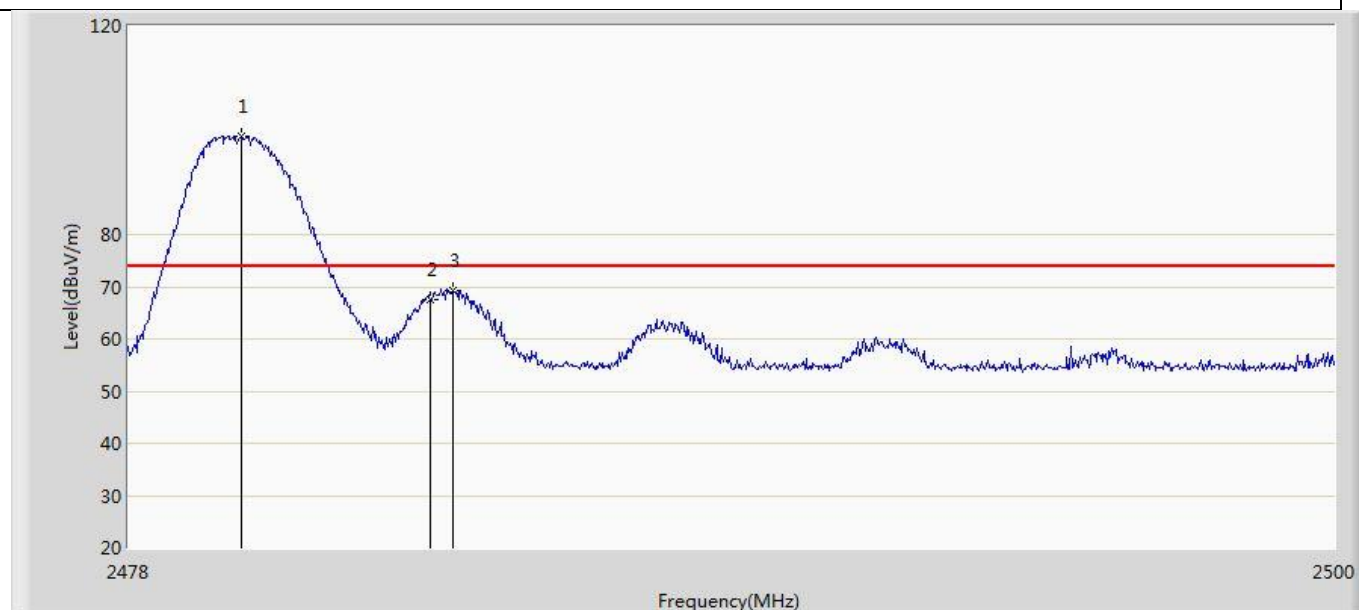
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2389.800	59.804	24.046	-14.196	74.000	35.758	PK
2		2390.000	56.565	20.821	-17.435	74.000	35.745	PK
3	*	2401.675	97.178	61.134	23.178	74.000	36.043	PK

Profile: 20A0599R	Page No.: 40
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:55
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 1:Transmit at 2402MHz by LE_1Mbps	



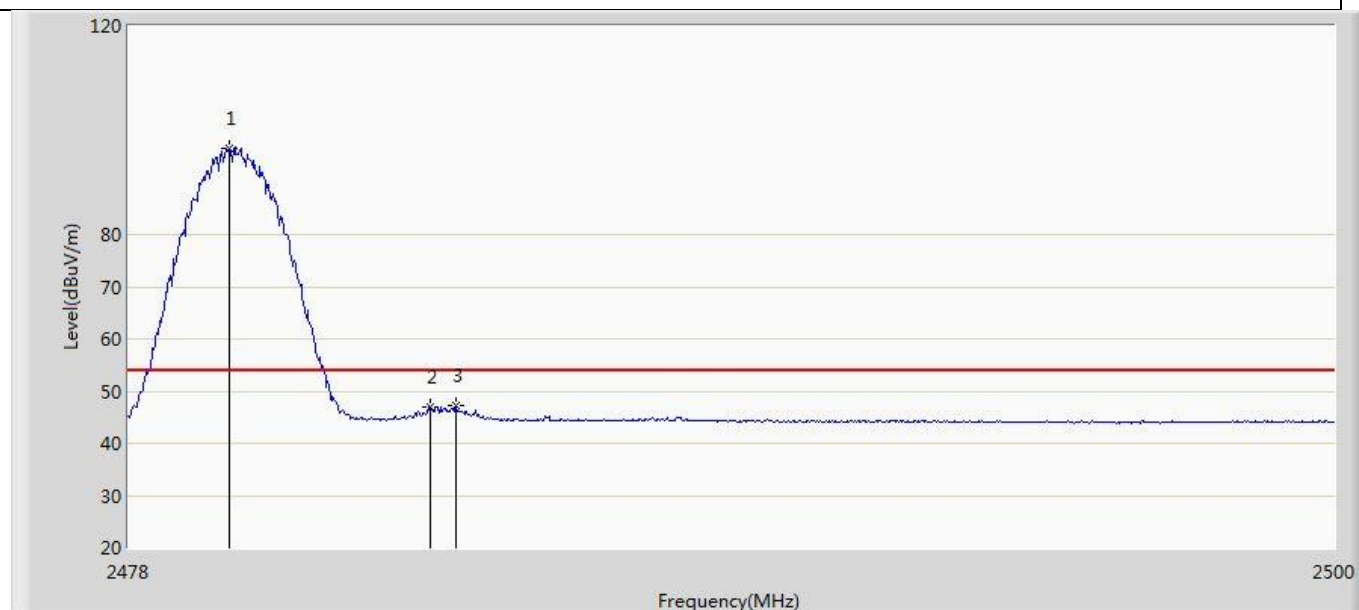
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	43.743	7.999	-10.257	54.000	35.745	AV
2	*	2402.055	95.090	59.018	41.090	54.000	36.071	AV

Profile: 20A0599R	Page No.: 33
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:31
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 2480MHz by LE_1Mbps	



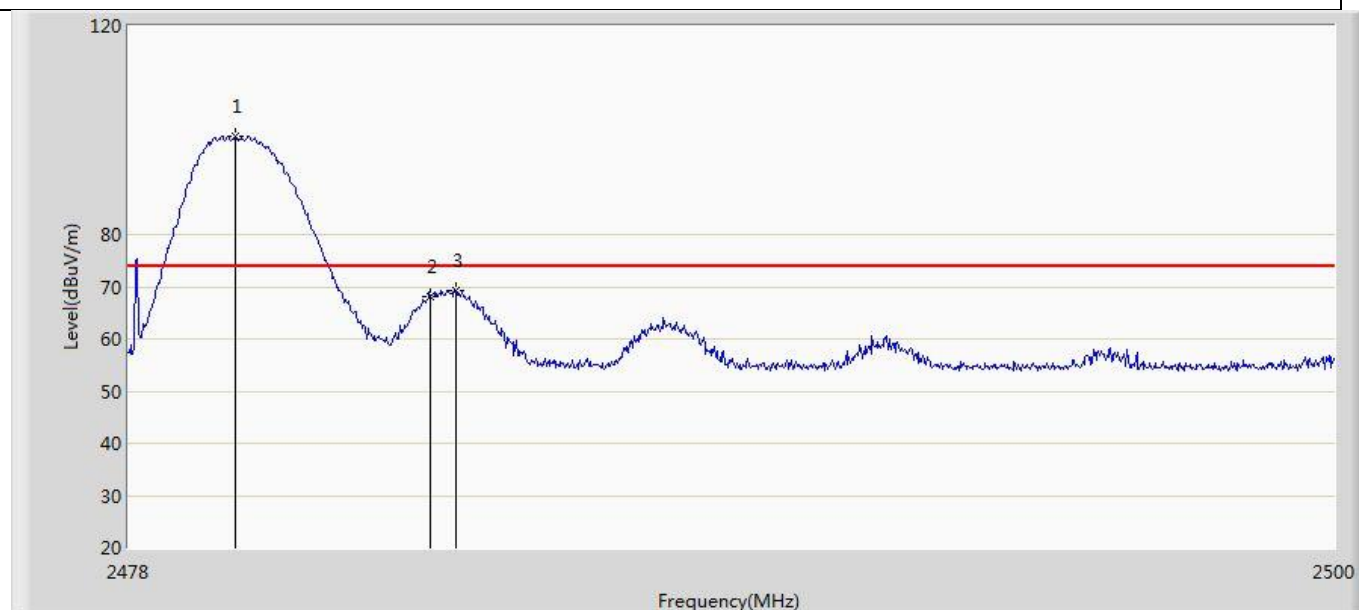
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.068	98.748	61.921	24.748	74.000	36.828	PK
2		2483.500	67.640	30.941	-6.360	74.000	36.699	PK
3		2483.896	69.314	32.629	-4.686	74.000	36.684	PK

Profile: 20A0599R	Page No.: 34
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:39
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 BLE	



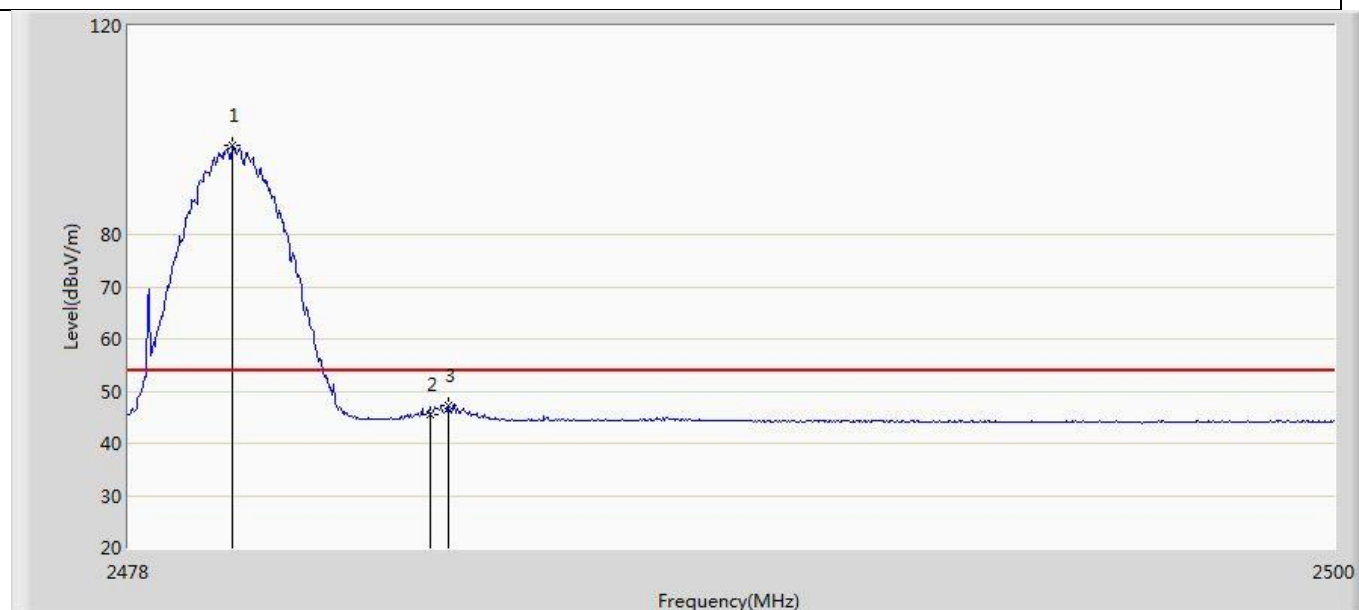
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.826	96.624	59.788	42.624	54.000	36.837	AV
2		2483.500	46.852	10.153	-7.148	54.000	36.699	AV
3		2483.962	47.230	10.548	-6.770	54.000	36.682	AV

Profile: 20A0599R	Page No.: 35
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:41
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	



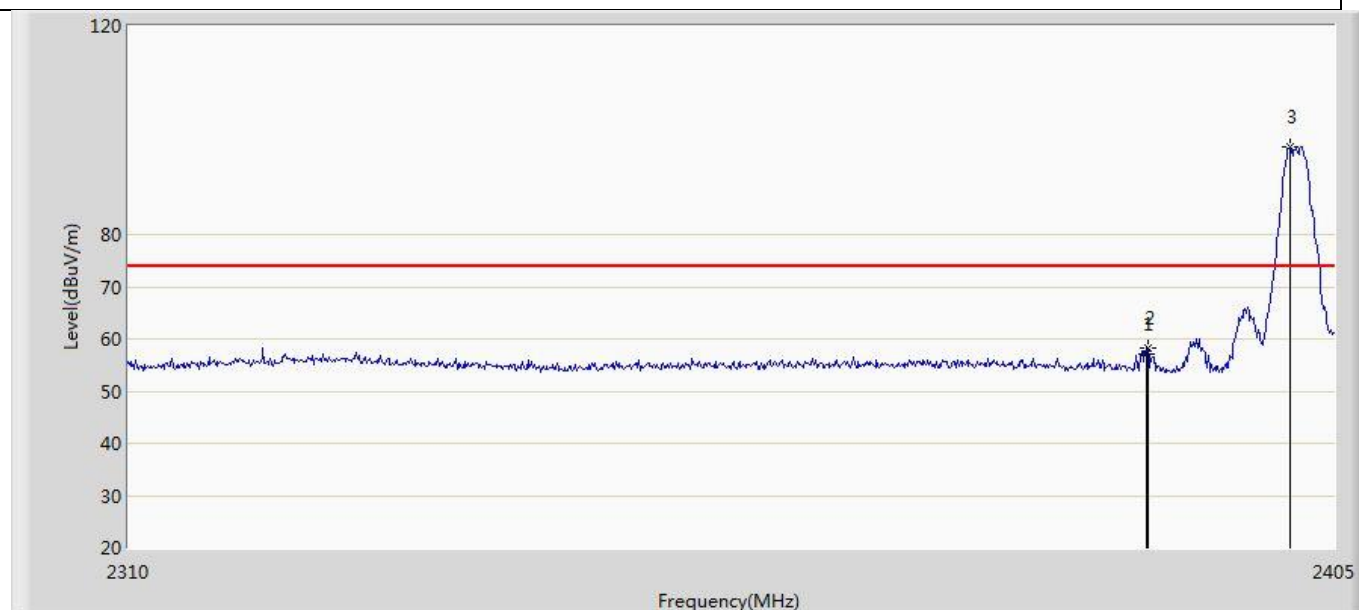
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.936	98.756	61.924	24.756	74.000	36.833	PK
2		2483.500	68.147	31.448	-5.853	74.000	36.699	PK
3		2483.962	69.287	32.605	-4.713	74.000	36.682	PK

Profile: 20A0599R	Page No.: 36
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:43
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	



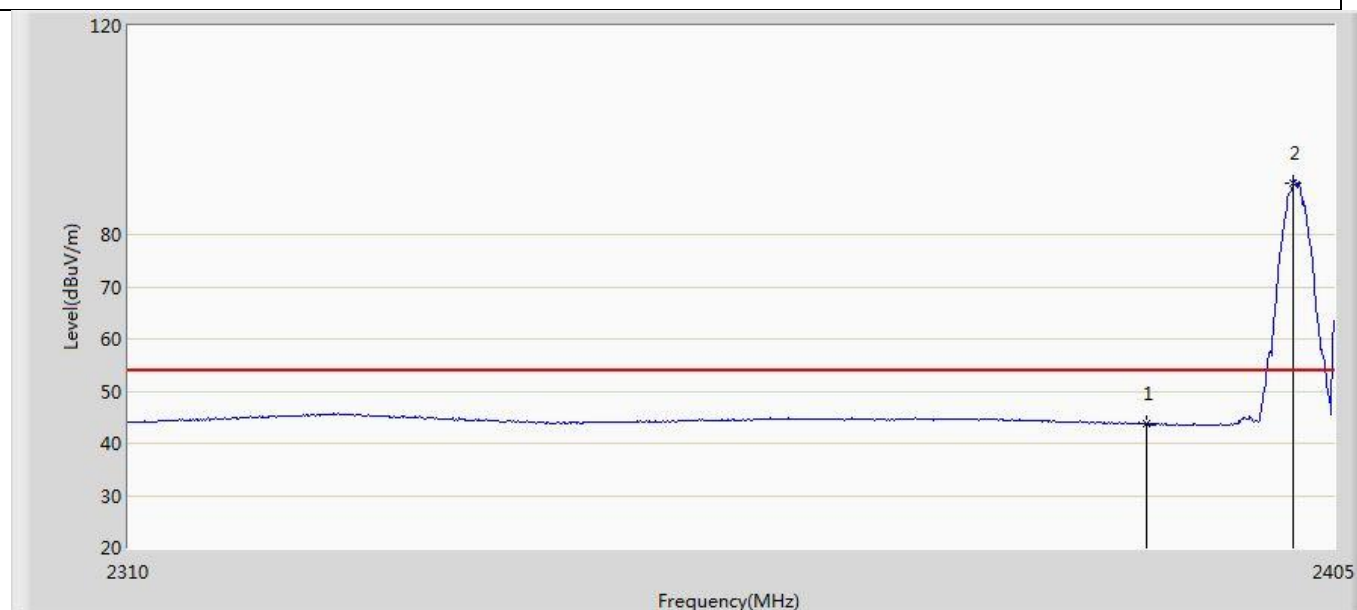
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.892	96.973	60.139	42.973	54.000	36.834	AV
2		2483.500	45.591	8.892	-8.409	54.000	36.699	AV
3		2483.830	47.328	10.641	-6.672	54.000	36.687	AV

Profile: 20A0599R	Page No.: 45
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 20:08
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	



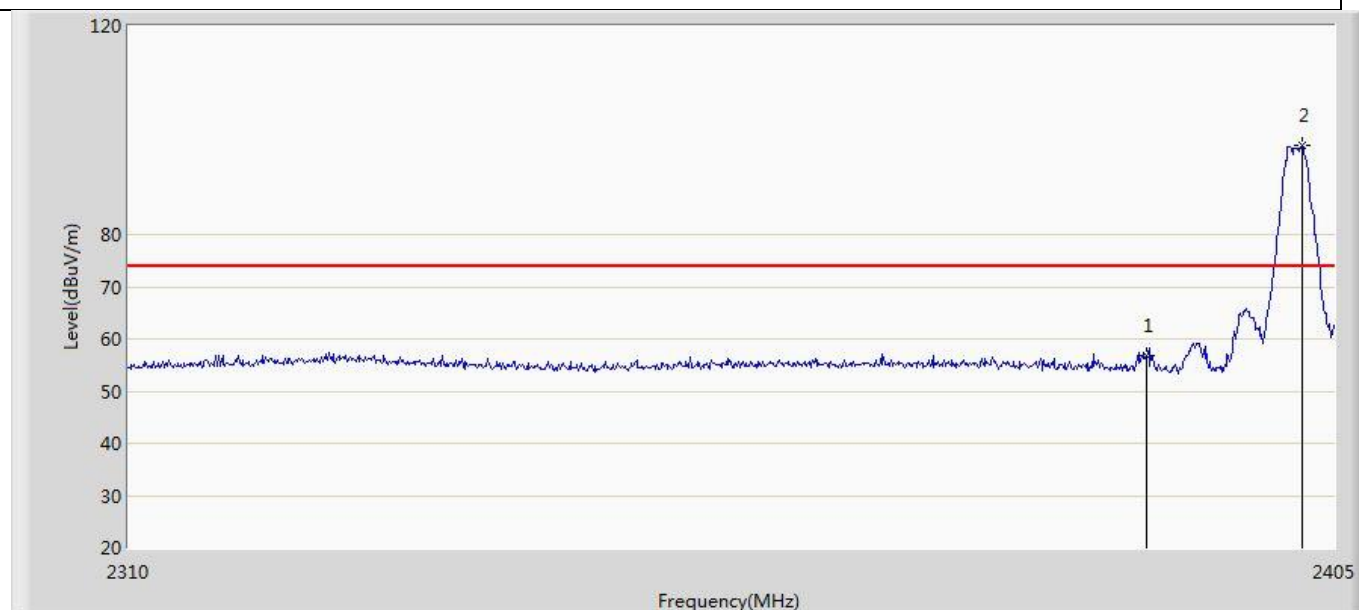
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	57.139	21.395	-16.861	74.000	35.745	PK
2		2390.085	58.166	22.427	-15.834	74.000	35.739	PK
3	*	2401.485	96.789	60.759	22.789	74.000	36.029	PK

Profile: 20A0599R	Page No.: 46
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 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	



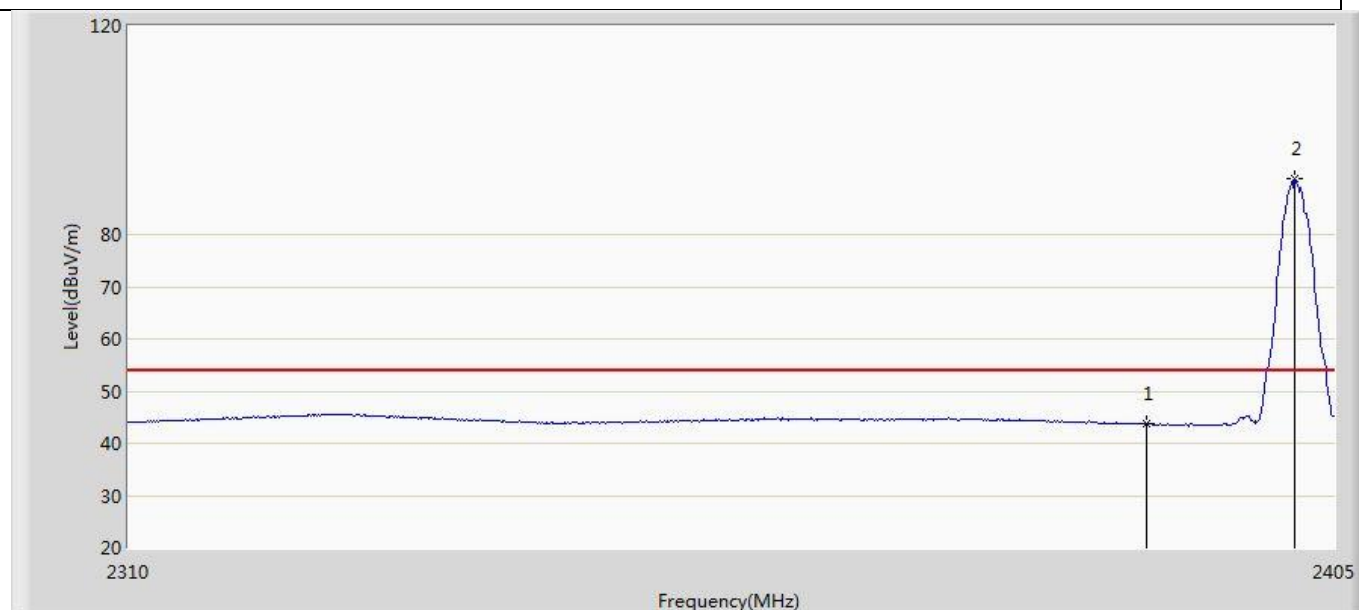
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	43.853	8.109	-10.147	54.000	35.745	AV
2	*	2401.675	89.717	53.673	35.717	54.000	36.043	AV

Profile: 20A0599R	Page No.: 47
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 20:12
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 2:Transmit at 2402MHz by LE_2Mbps	



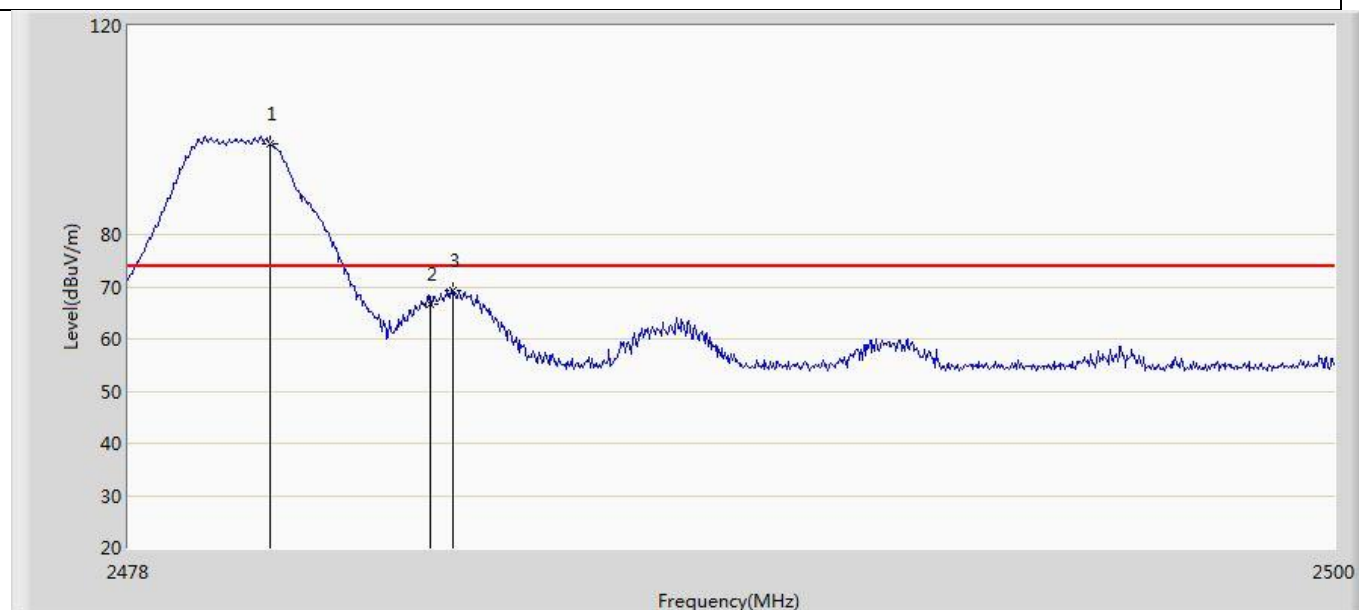
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	56.713	20.969	-17.287	74.000	35.745	PK
2	*	2402.435	97.047	60.947	23.047	74.000	36.100	PK

Profile: 20A0599R	Page No.: 48
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 20:14
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	



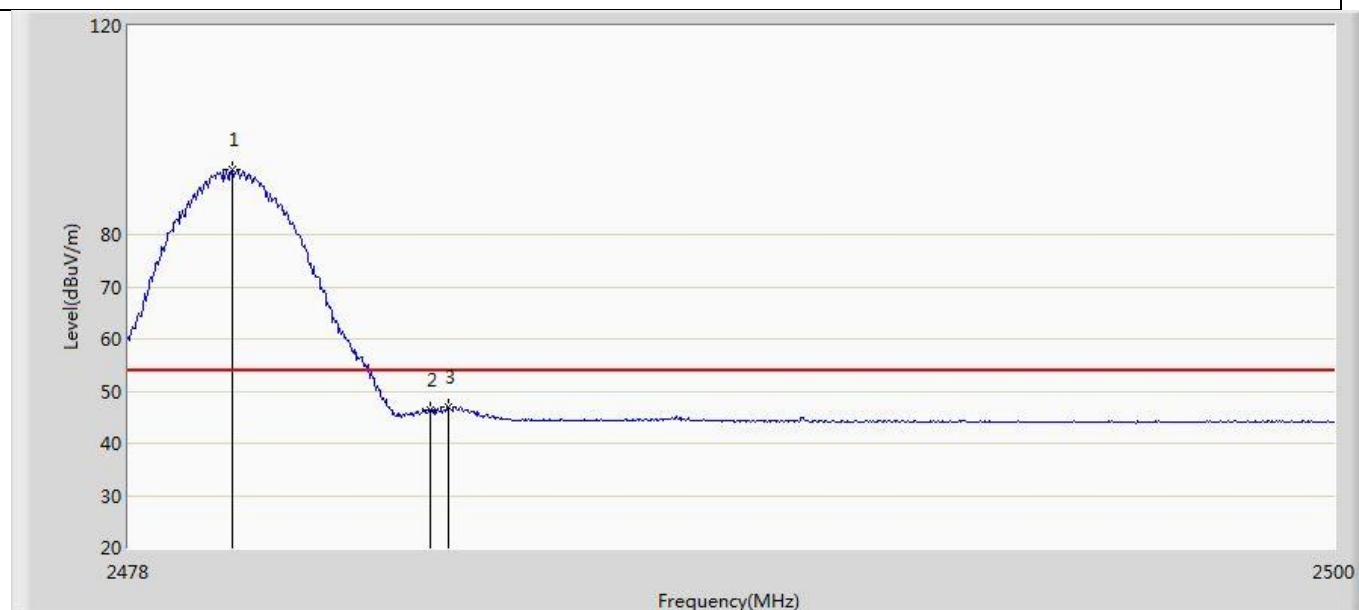
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2390.000	43.709	7.965	-10.291	54.000	35.745	AV
2	*	2401.865	90.822	54.764	36.822	54.000	36.057	AV

Profile: 20A0599R	Page No.: 41
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 19:57
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	



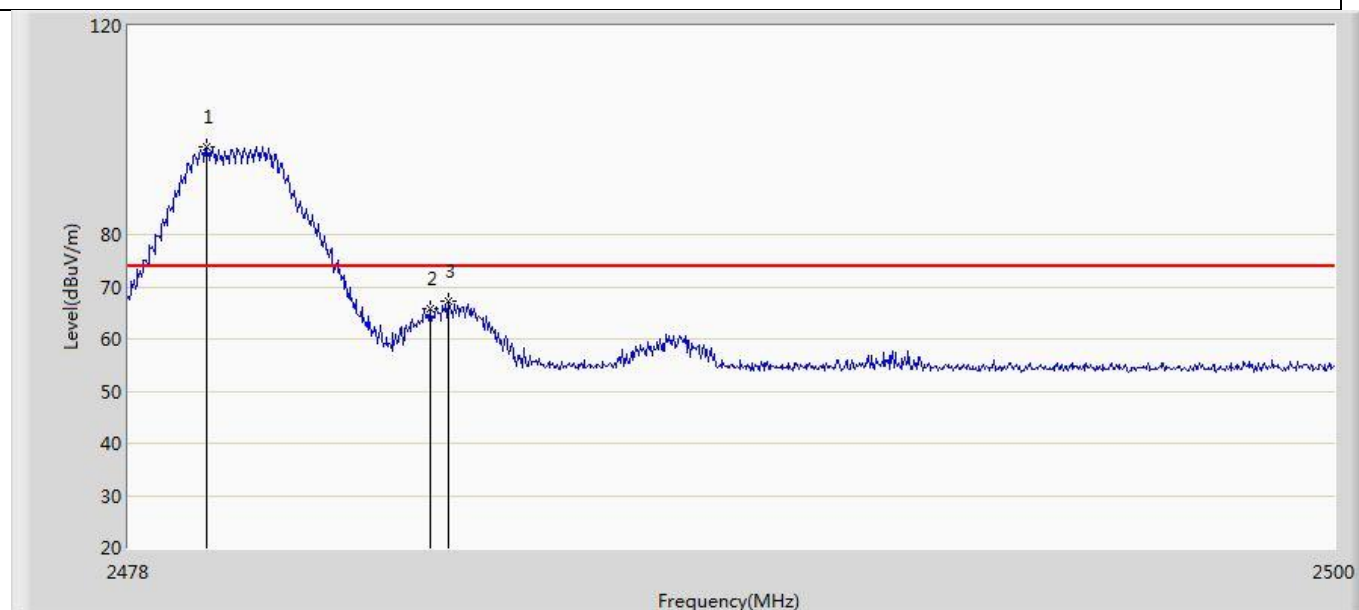
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2480.574	97.534	60.726	23.534	74.000	36.808	PK
2		2483.500	66.792	30.093	-7.208	74.000	36.699	PK
3		2483.896	69.371	32.686	-4.629	74.000	36.684	PK

Profile: 20A0599R	Page No.: 42
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 20:00
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	



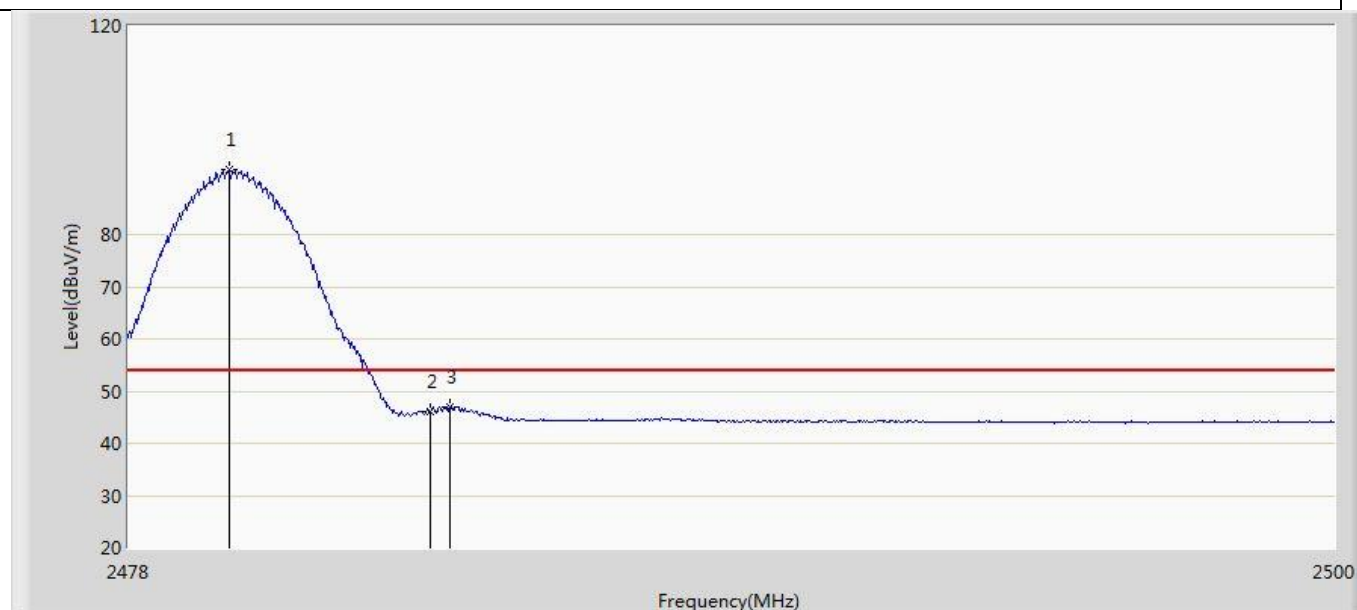
N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.892	92.331	55.497	38.331	54.000	36.834	AV
2		2483.500	46.464	9.765	-7.536	54.000	36.699	AV
3		2483.830	47.032	10.345	-6.968	54.000	36.687	AV

Profile: 20A0599R	Page No.: 43
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 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 2480MHz by LE_2Mbps	



N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.430	96.763	59.912	22.763	74.000	36.851	PK
2		2483.500	65.830	29.131	-8.170	74.000	36.699	PK
3		2483.830	67.145	30.458	-6.855	74.000	36.687	PK

Profile: 20A0599R	Page No.: 44
Engineer: Tongben	
Site: AC5	Time: 2020/10/31 - 20:04
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 2:Transmit at 2480MHz by LE_2Mbps	



N o	Ma rk	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2479.848	92.429	55.594	38.429	54.000	36.836	AV
2		2483.500	46.040	9.341	-7.960	54.000	36.699	AV
3		2483.852	47.033	10.347	-6.967	54.000	36.686	AV

Note:

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

4.6 DTS Bandwidth

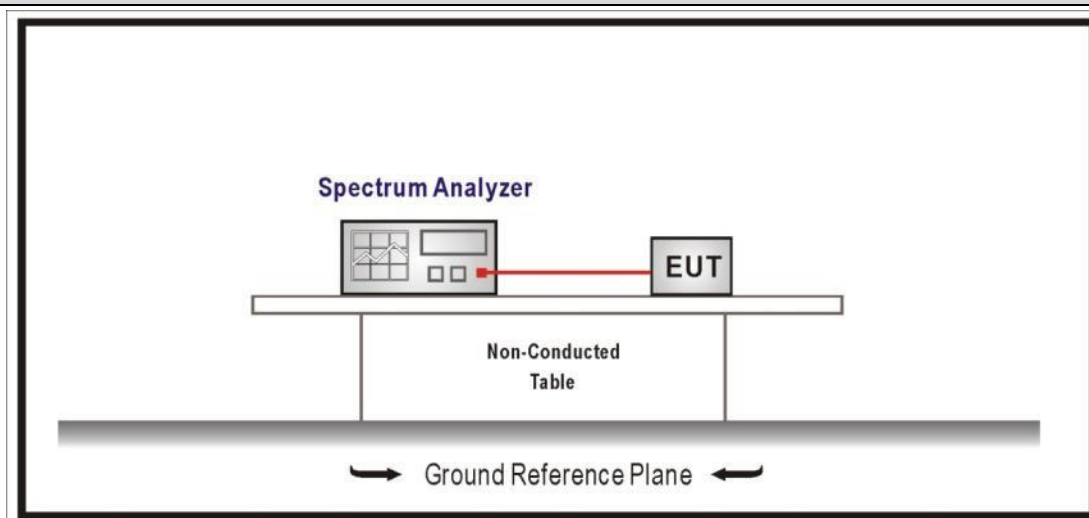
VERDICT: PASS

4.6.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247 (a)(2)
-----------------	---

Systems using digital modulation techniques operate in the 2400-2483.5 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)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	00	2402	667.3	>500	Pass
	19	2440	657.9	>500	Pass
	39	2480	662.6	>500	Pass
2	00	2402	1130.0	>500	Pass
	19	2440	1125.0	>500	Pass
	39	2480	1135.0	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

6dB Occupied Bandwidth

Mode 1 / CH19 (2440MHz)

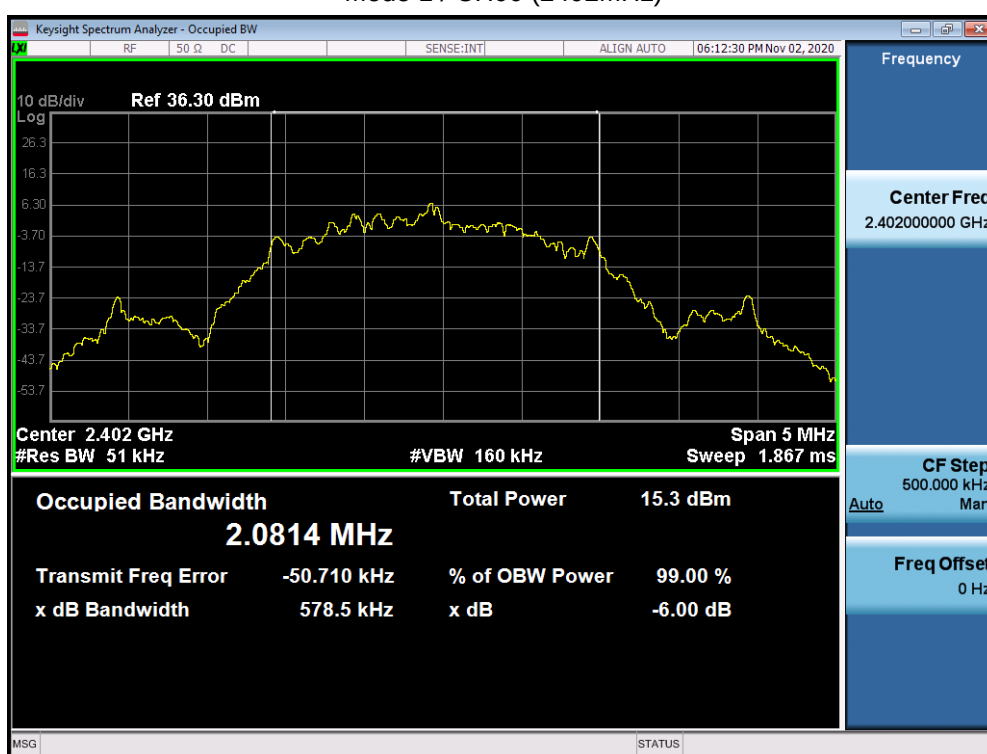


Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	Limit	Result
1	00	2402	1047.5	Within frequency range	Pass
	19	2440	1054.1	Within frequency range	Pass
	39	2480	1058.5	Within frequency range	Pass
2	00	2402	2081.4	Within frequency range	Pass
	19	2440	2066.9	Within frequency range	Pass
	39	2480	2075.4	Within frequency range	Pass

Note : The worst case of Occupied Bandwidth as below:

99% Occupied Bandwidth

Mode 1 / CH00 (2402MHz)



4.7 Fundamental emission output power

VERDICT: PASS

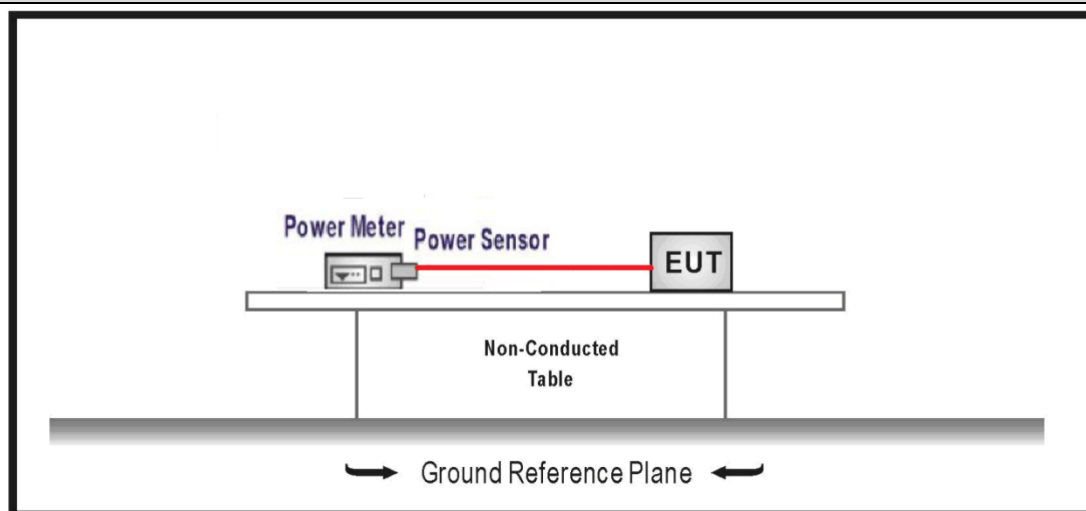
4.7.1 Limit

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
☐	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

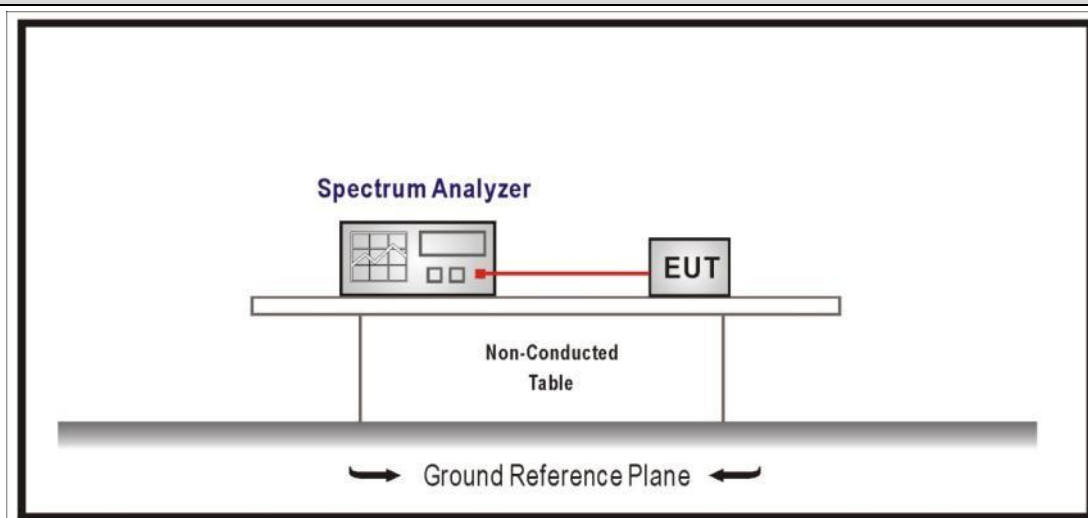
	References Rule			Chapter	Description		
☒	ANSI C63.10			11.9	Fundamental emission output power		
	☒	ANSI C63.10			11.9.1	Maximum peak conducted output power	
		☐	ANSI C63.10	11.9.1.1	RBW ≥ DTS bandwidth		
		☐	ANSI C63.10	11.9.1.2	Integrated band power method		
		☐	ANSI C63.10	11.9.1.3	PKPM1 Peak power 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)	Power Output (dBm)	Limit (dBm)	Result
Mode 1	00	2402	9.16	≤30	Pass
	19	2440	9.50	≤30	Pass
	39	2480	9.49	≤30	Pass
Mode 2	00	2402	9.10	≤30	Pass
	19	2440	9.43	≤30	Pass
	39	2480	9.43	≤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 $\leq 8 \text{ dBm/3kHz}$ **4.8.2 Test Setup****4.8.3 Test Procedure**

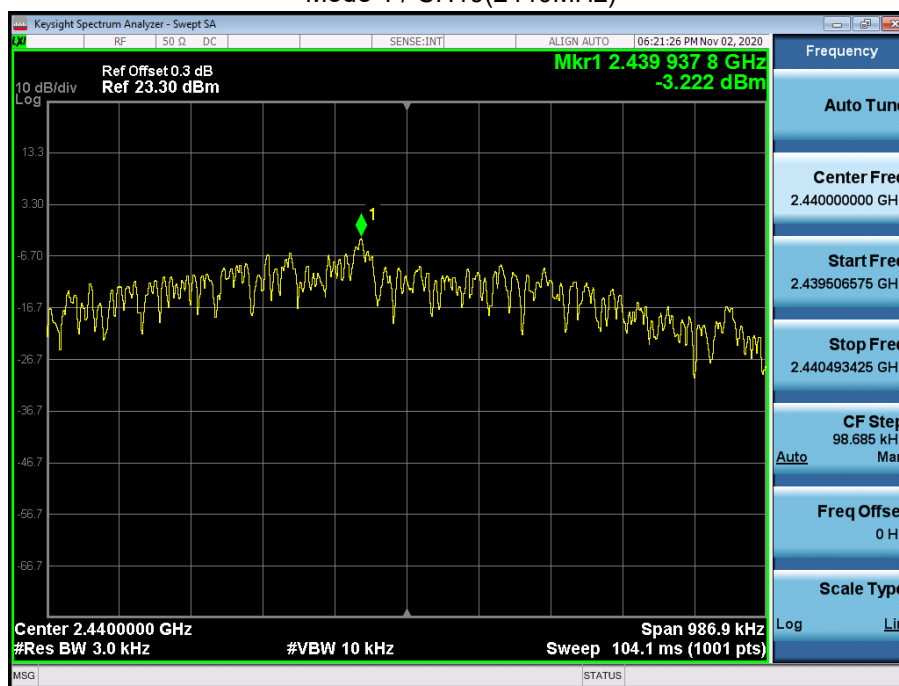
	References Rule		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density level in the fundamental emission
	☒	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐	ANSI C63.10	11.10.3	Method AVGPDS-1(Duty cycle $\geq 98\%$)
	☐	ANSI C63.10	11.10.4	Method AVGPDS-1A(Duty cycle $\geq 98\%$)
	☐	ANSI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

4.8.4 Test Data

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Mode 1	00	2402	-7.835	≤8	Pass
	19	2440	-3.222	≤8	Pass
	39	2480	-3.778	≤8	Pass
Mode 2	00	2402	-8.051	≤8	Pass
	19	2440	-7.526	≤8	Pass
	39	2480	-7.688	≤8	Pass

Note : The worst case of PSD as below:

Mode 1 / CH19(2440MHz)



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 _____