



Test report No:
2140067R-RF-US-P06V01

FCC TEST REPORT & ISED TEST REPORT

Product Name	LED Device
Trademark	PHILIPS
Model and /or type reference	9290029949, 9290029950
FCC ID	2AGBW9290029949X
IC	20812-29949X
Applicant's name / address	Signify (China) Investment Co., Ltd. Building No.9, Lane 888, Tianlin Road, Minhang district, 200233 Shanghai, China
Test method requested, standard	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)	Adma Lu/Project Engineer <i>Adma Lu</i>
Approved by (name / position & signature)	Jack Zhang/ Supervisor <i>Jack Zhang</i>
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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.

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GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Apr. 02, 2021
Date (start test)	Apr. 03, 2021
Date (finish test)	Jun. 04, 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
2140067R-RF-US-P06V01	V1.0	Initial issue of report.	2021-05-14
2140067R-RF-US-P06V01	V1.1	1) Page 53-54, added Mid channel test data. 2) Page 91, updated the test data.	2021-06-04

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	2021.01.27	2022.01.26
Two-Line V-Network	R&S	ENV216	101190	2021.01.27	2022.01.26
Two-Line V-Network	R&S	ENV216	101044	2021.03.20	2022.03.19
Current Probe	R&S	EZ-17	100678	2021.01.27	2022.01.26
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	2021.03.20	2022.03.19
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	2020.12.06	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	2021.03.31	2022.03.30
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	2021.03.31	2022.03.30
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2021.03.31	2022.03.30
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2021.03.31	2022.03.30
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 Device
Model No. :	9290029949, 9290029950
Trademark :	PHILIPS
FCC ID :	2AGBW9290029949X
IC :	20812-29949X
Manufacturer..... :	Signify (China) Investment Co., Ltd
Manufacturer address :	Building No.9, Lane 888, Tianlin Road, Minhang district, 200233 Shanghai, China
Model Differences :	Model 9290029949 is LED device and model 9290029950 is accessory that can be attached to LED device.

Wireless specification..... :	BLE 5.0			
Operating frequency range(s)	2402~2480MHz			
Type of Modulation..... :	GFSK			
PHYs :	<input checked="" type="checkbox"/> LE 1M	<input checked="" type="checkbox"/> LE 2M	<input checked="" type="checkbox"/> LE Coded S=2/8	
Data Rate :	<input checked="" type="checkbox"/> 1Mbit/s	<input checked="" type="checkbox"/> 2Mbit/s	<input checked="" type="checkbox"/> 500/125 Kbit/s	
Number of channel..... :	40			

Rated power supply(9290029949) :	Voltage and Frequency			
	<input type="checkbox"/>	AC: 220 – 240 V, 50/60 Hz, 20W		
	<input checked="" type="checkbox"/>	AC: 100 – 240 V, 50/60 Hz, 20W		
	<input type="checkbox"/>	DC:		
	<input type="checkbox"/>	Battery:		
Rated power supply(9290029950) :	<input type="checkbox"/>	AC: 220 – 240 V, 50/60 Hz		
	<input type="checkbox"/>	AC: 110 – 130 V, 50/60 Hz		
	<input checked="" type="checkbox"/>	DC: ...24Vdc,12.3W...		
	<input type="checkbox"/>	Battery:		
Mounting position.....:	<input type="checkbox"/>	Table top equipment		
	<input checked="" type="checkbox"/>	Wall/Ceiling mounted equipment		
	<input type="checkbox"/>	Floor standing equipment		
	<input type="checkbox"/>	Hand-held equipment		
	<input type="checkbox"/>	Other:		

1.2 Antenna Information

Antenna model / type number.....:	N/A		
Antenna serial number	N/A		
Antenna Delivery	<input checked="" type="checkbox"/>	1TX + 1RX	
	<input type="checkbox"/>	2TX + 2RX	
	<input type="checkbox"/>	Others:.....	
Antenna technology.....:	<input checked="" type="checkbox"/>	SISO	
	<input type="checkbox"/>	MIMO	<input type="checkbox"/> CDD
			<input type="checkbox"/> Beam-forming
Antenna Type.....:	<input type="checkbox"/>	External	<input type="checkbox"/> Dipole
			<input type="checkbox"/> Sectorized
			<input type="checkbox"/> Ceramic Chip
	<input checked="" type="checkbox"/>	Internal	<input type="checkbox"/> PIFA
			<input checked="" type="checkbox"/> PCB
			<input type="checkbox"/> Others.....
Antenna Gain.....:	0.66 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.

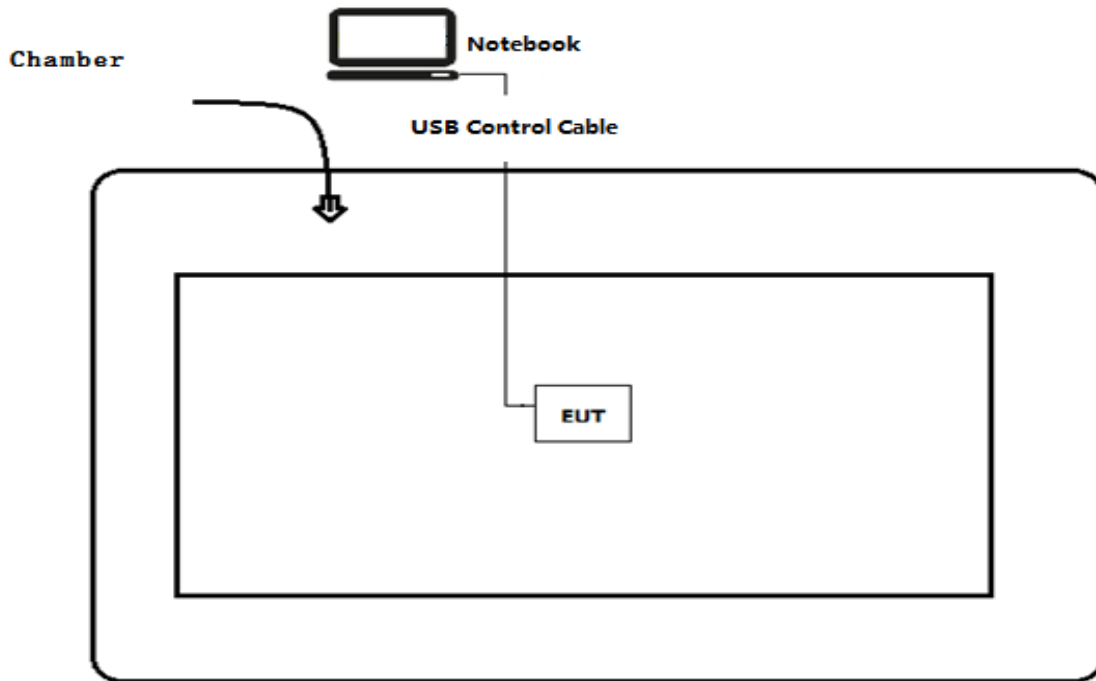
Test Mode For Bluetooth	Mode 1: Transmit by LE_1Mbps(GFSK_LE)
	Mode 2: Transmit by LE_2Mbps(GFSK_LE)
	Mode 3: Transmit by LE_Coded S=2
	Mode 4: Transmit by LE_Coded S=8

2.2 Auxiliary equipment / Test software for the EUT

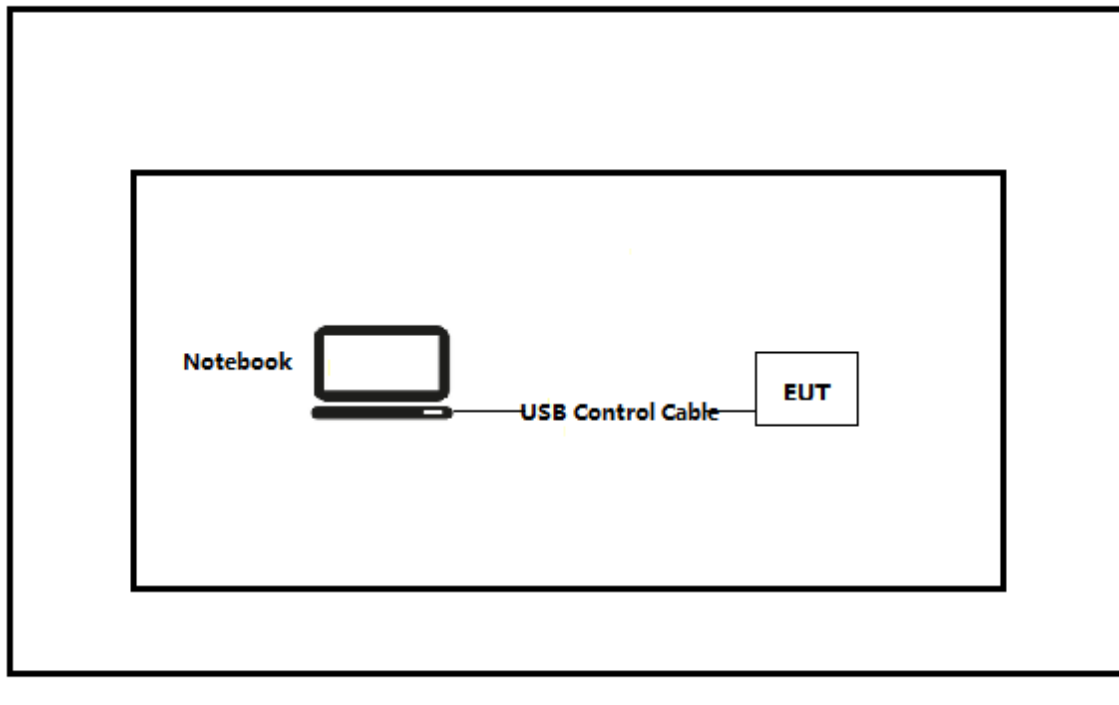
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	Think pad x220	Lenovo	Adapter
software	Type / Version	Manufacturer	Supplied by
ApprobationTool	V1.1.5.0	N/A	N/A

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 [ApprobationTool] 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

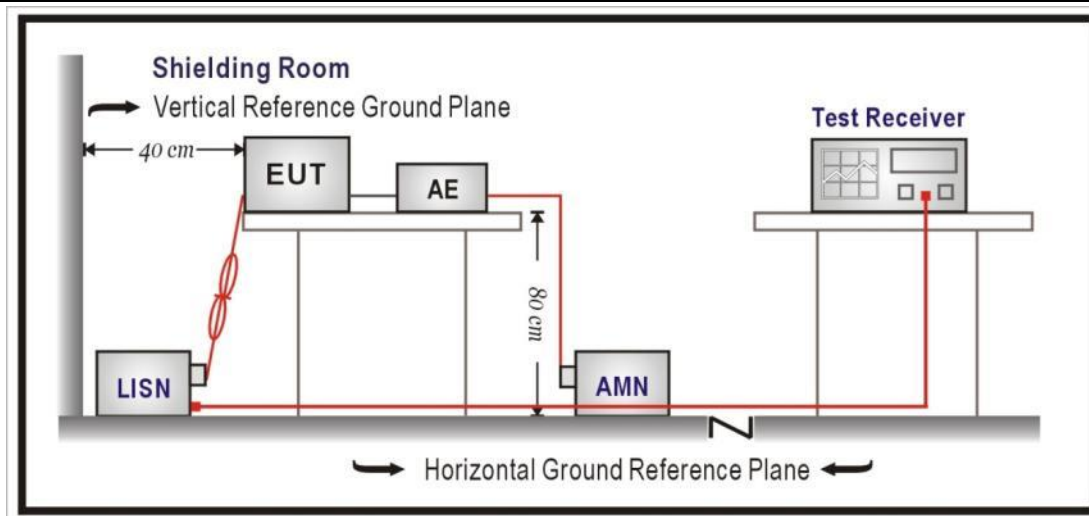
¹⁾ At the transition frequency, the lower limit applies.

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

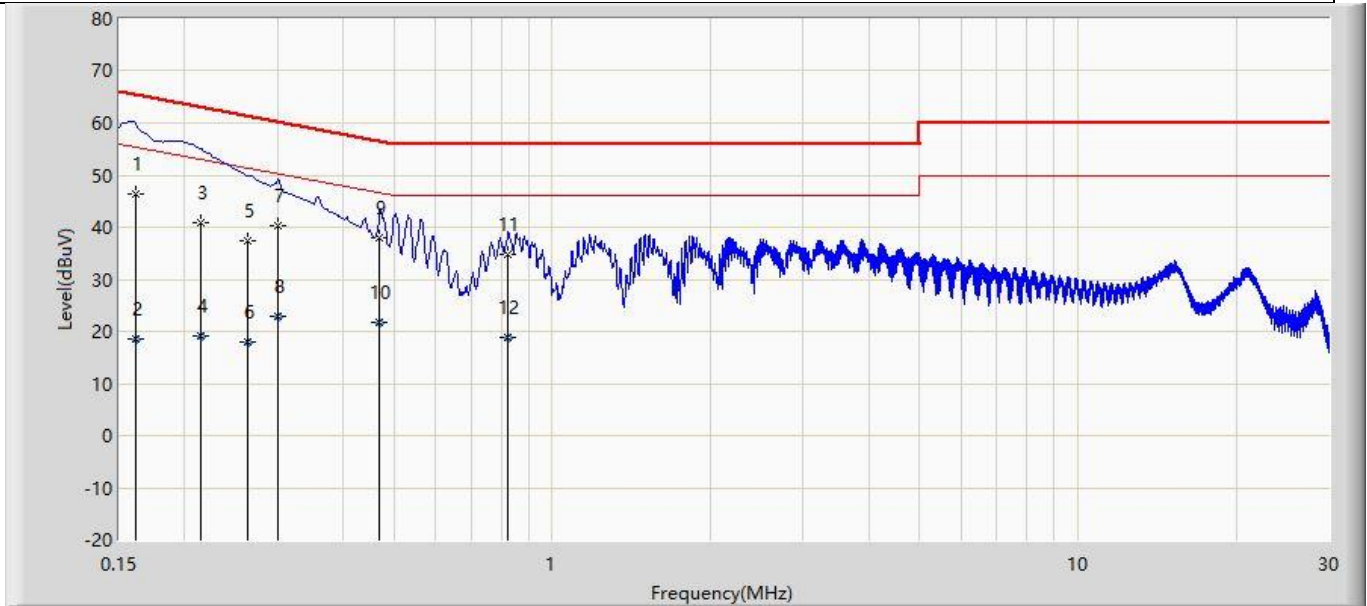


4.1.3 Test Procedure

References Rule	Chapter	Item
<input checked="" type="checkbox"/> ANSI C63.10-2013	6.2	Standard test method for ac power-line conducted emissions from unlicensed wireless devices

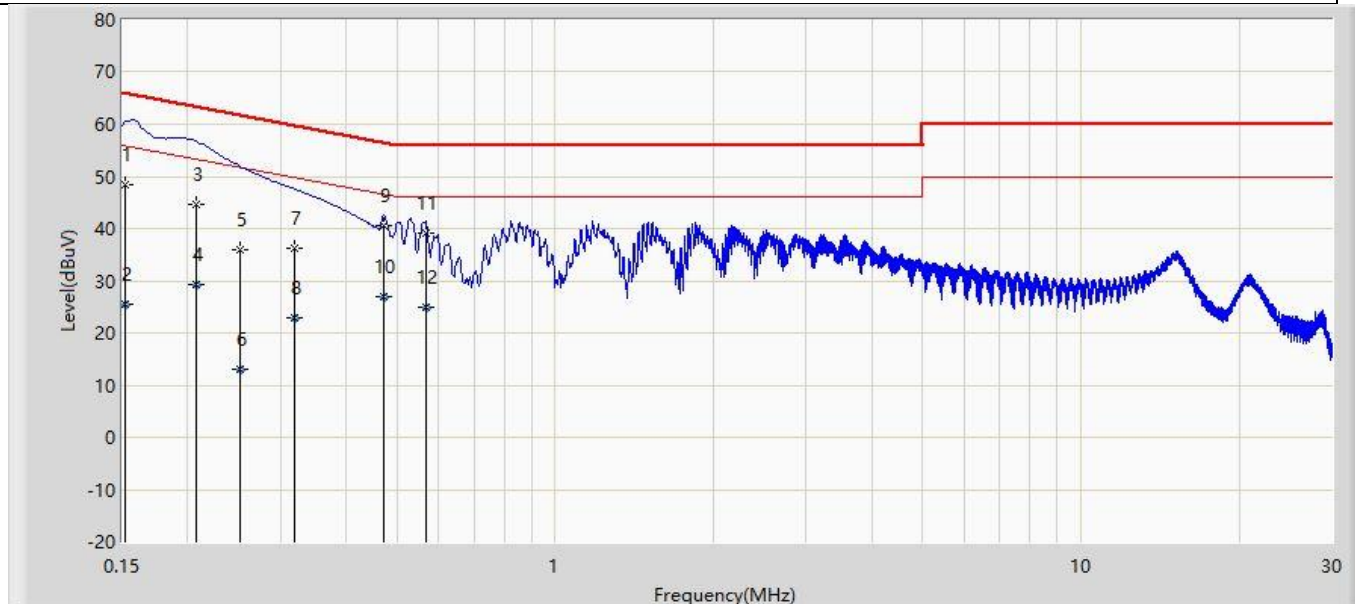
4.1.4 Test Data

Profile: 2140067R	Page No.: 1
Engineer: Juliuszhou	
Site: TR1	Time: 2020/07/28 - 18:34
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2402MHz by LE_1Mbps	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.161	46.253	36.591	-19.146	65.399	9.661	QP
2		0.161	18.557	8.896	-36.842	55.399	9.661	AV
3		0.215	40.815	31.120	-22.185	63.000	9.696	QP
4		0.215	19.063	9.367	-33.937	53.000	9.696	AV
5		0.263	37.487	27.768	-23.865	61.352	9.719	QP
6		0.263	17.888	8.169	-33.464	51.352	9.719	AV
7		0.301	40.159	30.421	-20.063	60.222	9.737	QP
8		0.301	22.950	13.213	-27.272	50.222	9.737	AV
9	*	0.469	38.060	28.245	-18.462	56.523	9.816	QP
10		0.469	21.691	11.876	-24.831	46.523	9.816	AV
11		0.825	34.924	24.990	-21.076	56.000	9.934	QP
12		0.825	18.748	8.814	-27.252	46.000	9.934	AV

Profile: 2140067R	Page No.: 2
Engineer: Juliuszhou	
Site: TR1	Time: 2021/04/19 - 18:47
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2402MHz by LE_1Mbps	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.152	48.287	38.629	-17.590	65.876	9.657	QP
2		0.152	25.426	15.768	-30.451	55.876	9.657	AV
3		0.208	44.774	35.082	-18.491	63.265	9.692	QP
4		0.208	29.165	19.473	-24.099	53.265	9.692	AV
5		0.251	35.887	26.174	-25.829	61.716	9.712	QP
6		0.251	13.018	3.306	-38.698	51.716	9.712	AV
7		0.319	36.333	26.587	-23.406	59.739	9.746	QP
8		0.319	22.799	13.053	-26.941	49.739	9.746	AV
9	*	0.472	40.537	30.721	-15.946	56.483	9.817	QP
10		0.472	27.095	17.278	-19.388	46.483	9.817	AV
11		0.566	39.004	29.149	-16.996	56.000	9.855	QP
12		0.566	24.830	14.975	-21.170	46.000	9.855	AV

Note:

1. " * ", means this data is the worst emission level.
2. Measurement Level = Reading Level + Factor(Probe+Cable-Amp). Test Photograph.
3. We evaluated Low/Mid/High channels , 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)

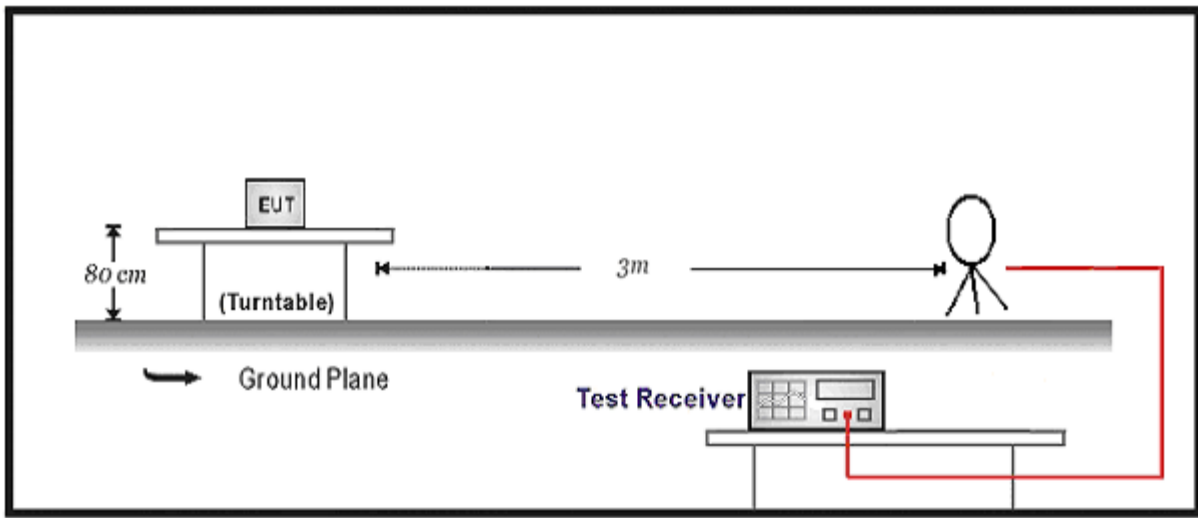
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed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

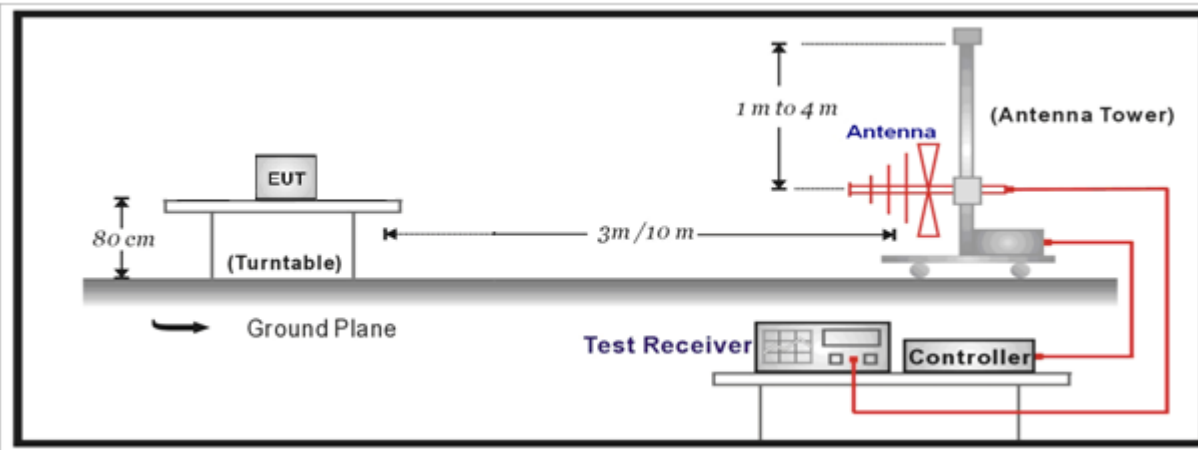
Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified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

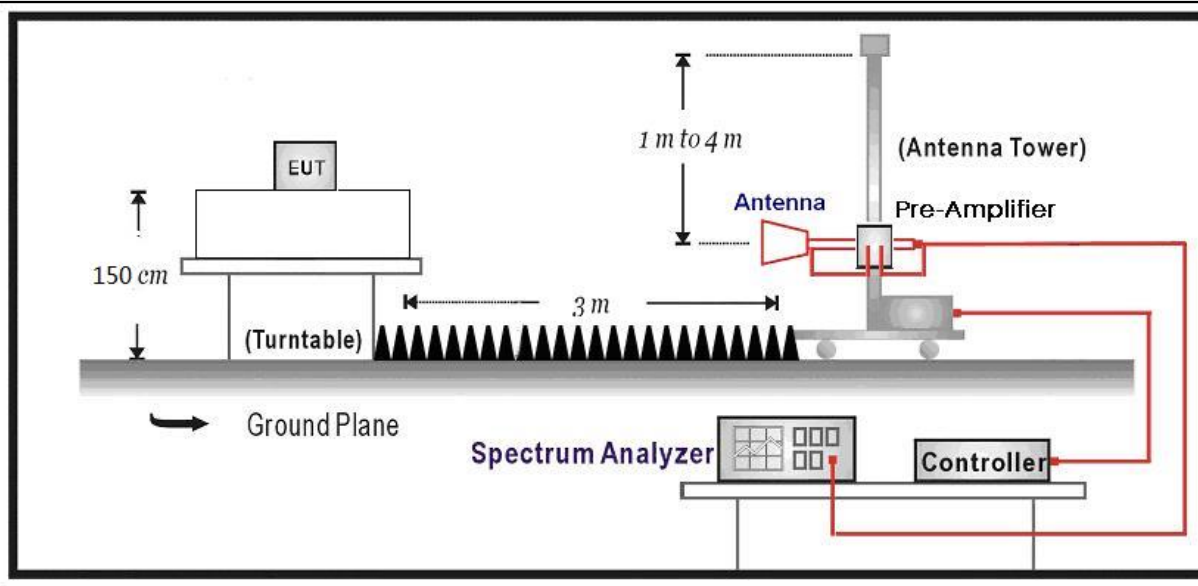
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



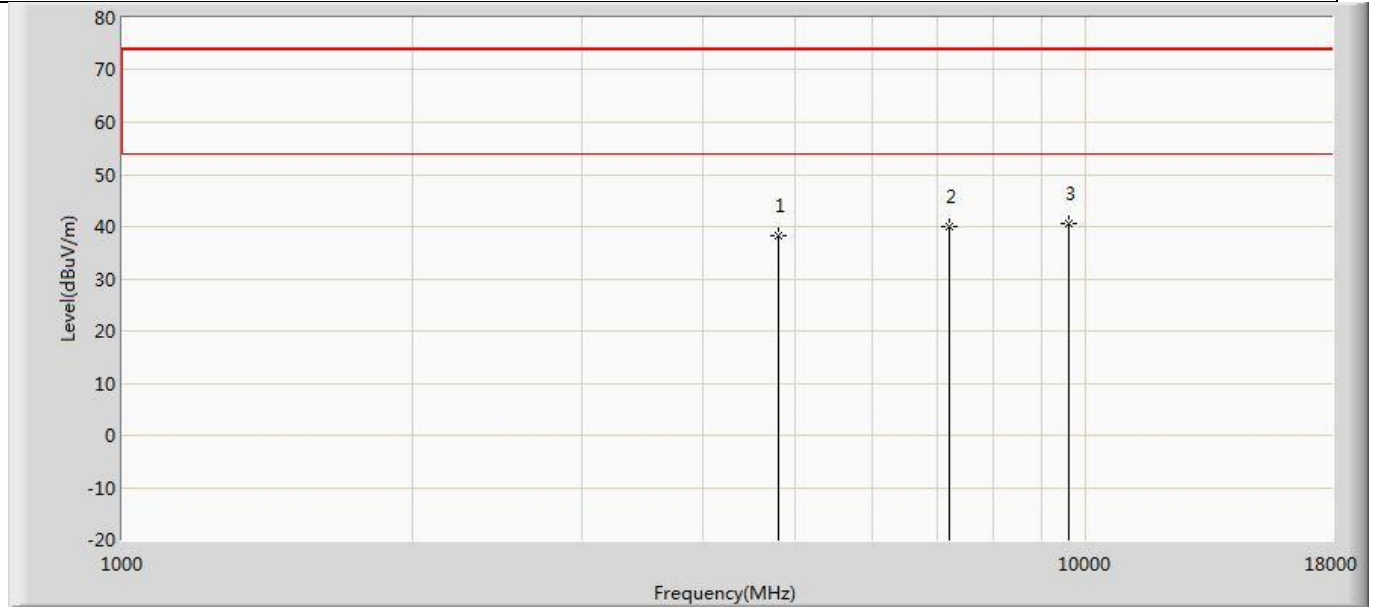
Above 1GHz Test Setup:



4.2.3 Test Procedure			
	References Rule	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	6.4	Radiated emissions from unlicensed wireless devices below 30 MHz
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	6.5	Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> ANSI C63.10	6.6	Radiated emissions from unlicensed wireless devices above 1 GHz

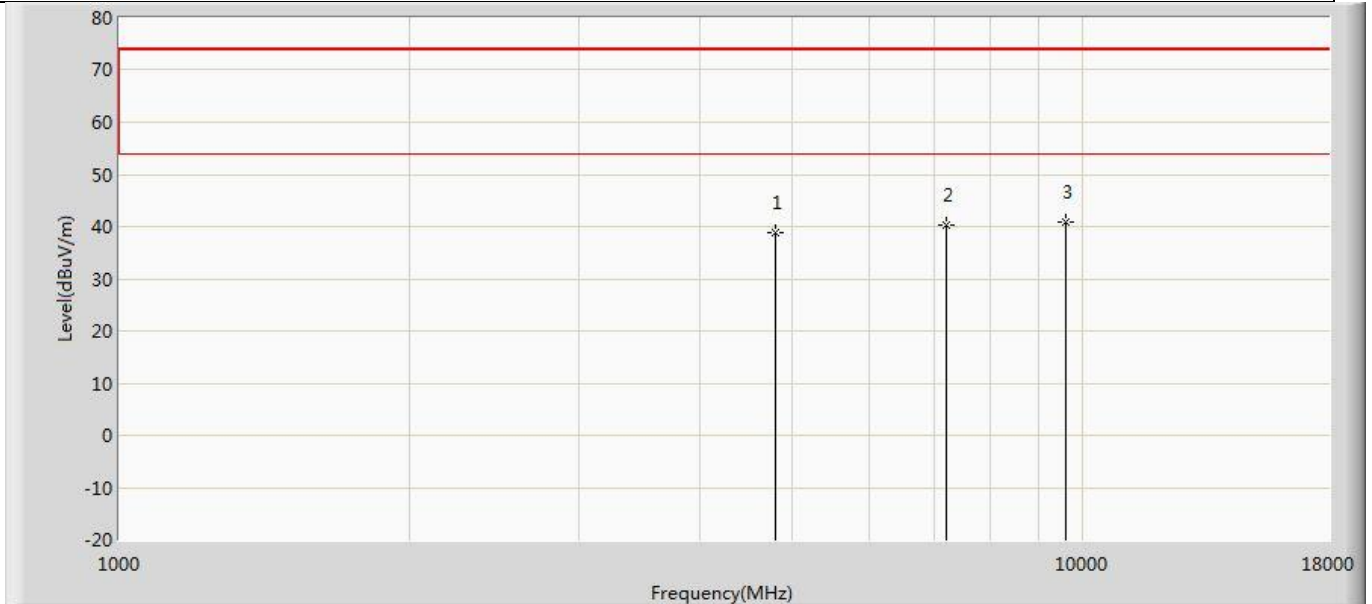
4.2.4 Test Data

Profile: 2140067R	Page No.: 37
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



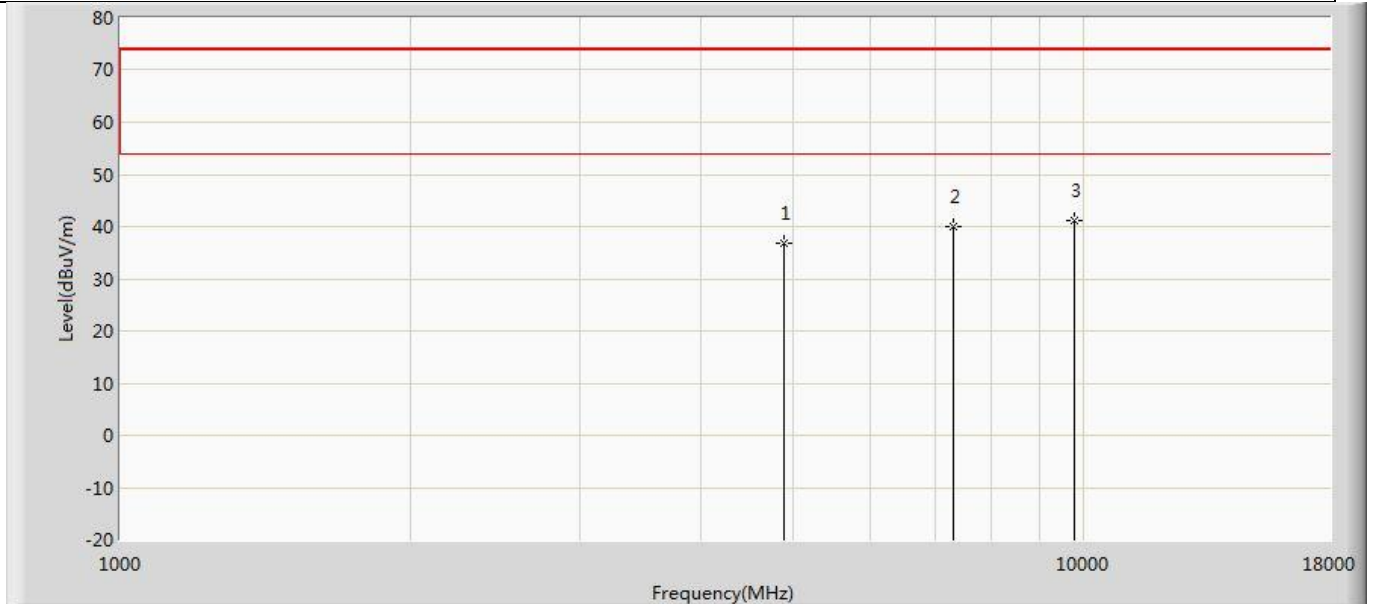
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	38.234	43.277	-35.766	74.000	-5.044	PK
2		7206.000	39.861	40.907	-34.139	74.000	-1.046	PK
3	*	9608.000	40.592	37.762	-33.408	74.000	2.830	PK

Profile: 2140067R	Page No.: 38
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



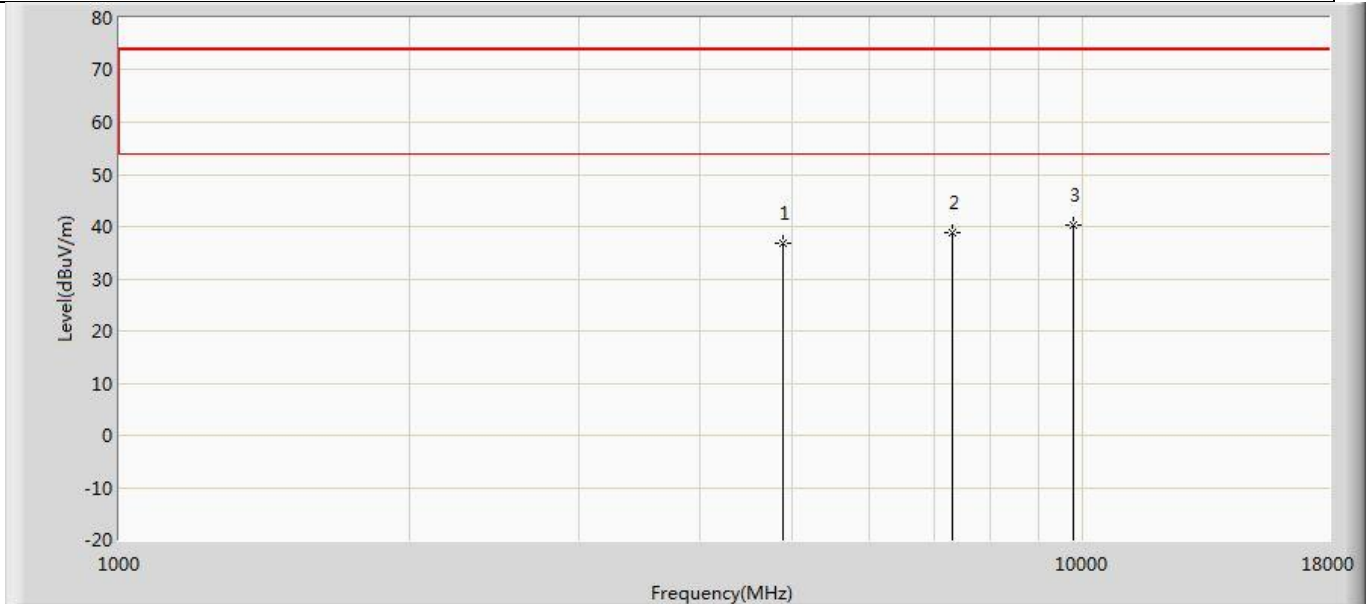
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	38.742	43.785	-35.258	74.000	-5.044	PK
2		7206.000	40.208	41.254	-33.792	74.000	-1.046	PK
3	*	9608.000	40.848	38.018	-33.152	74.000	2.830	PK

Profile: 2140067R	Page No.: 39
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2440MHz by LE_1Mbps	



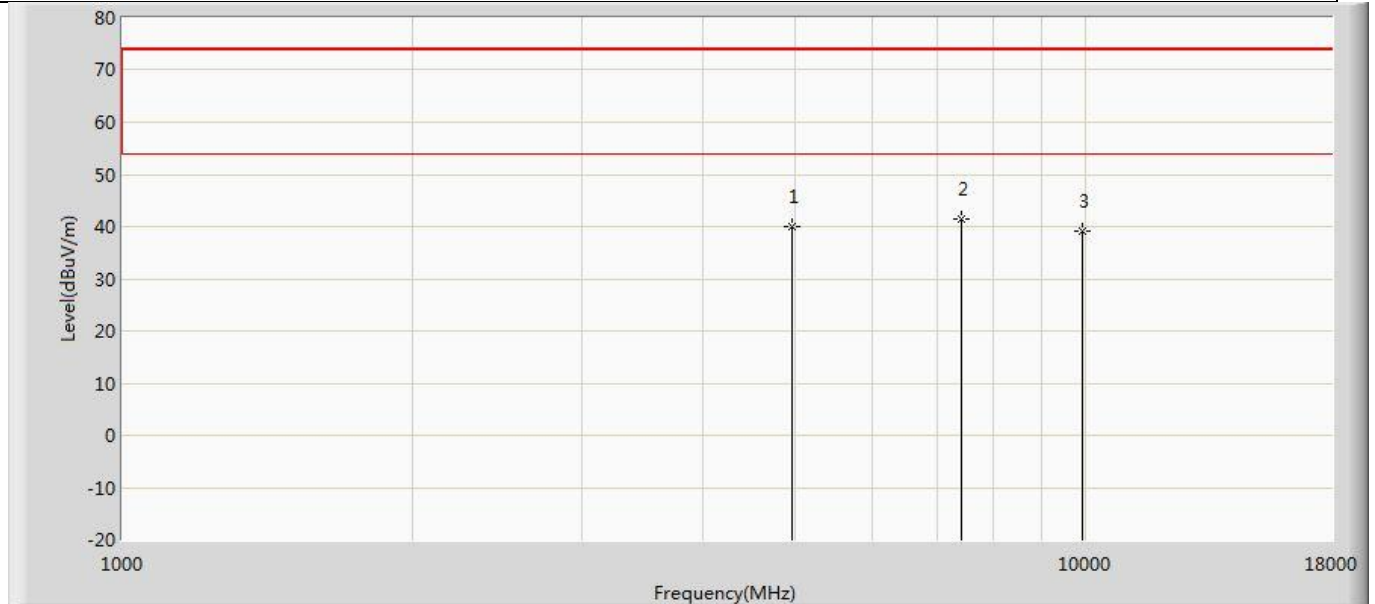
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.887	41.714	-37.113	74.000	-4.827	PK
2		7320.000	40.073	40.966	-33.927	74.000	-0.893	PK
3	*	9760.000	41.236	38.238	-32.764	74.000	2.998	PK

Profile: 2140067R	Page No.: 40
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2440MHz by LE_1Mbps	



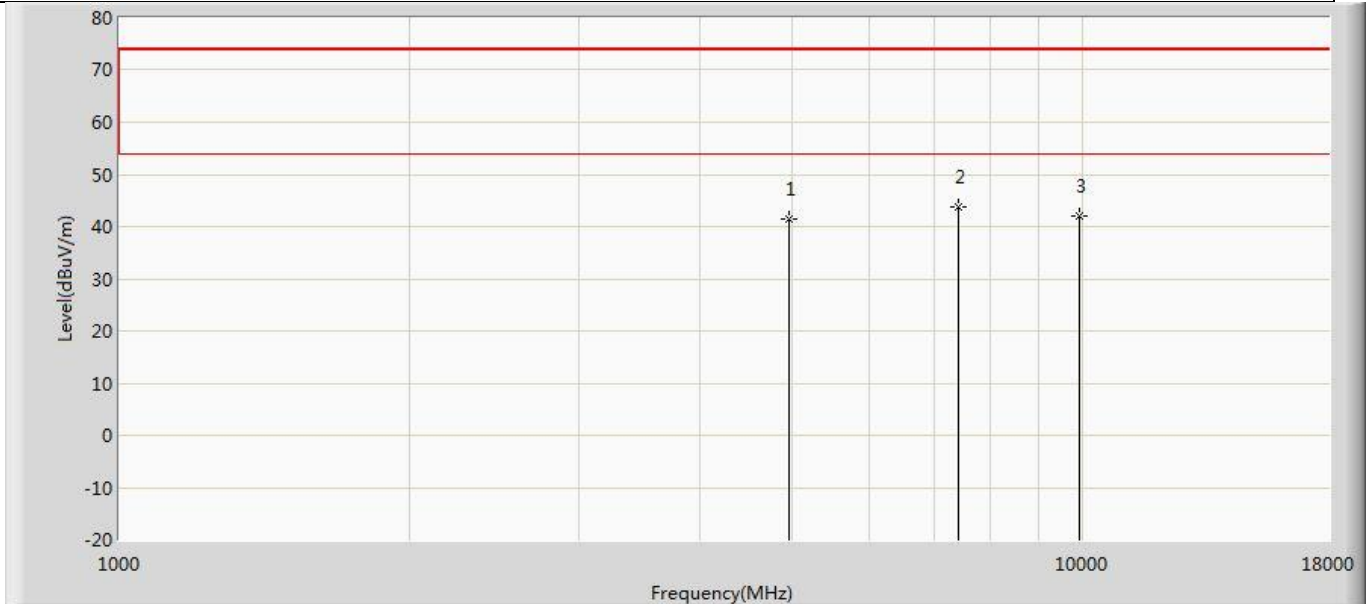
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.714	41.541	-37.286	74.000	-4.827	PK
2		7320.000	38.975	39.868	-35.025	74.000	-0.893	PK
3	*	9760.000	40.354	37.356	-33.646	74.000	2.998	PK

Profile: 2140067R	Page No.: 41
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



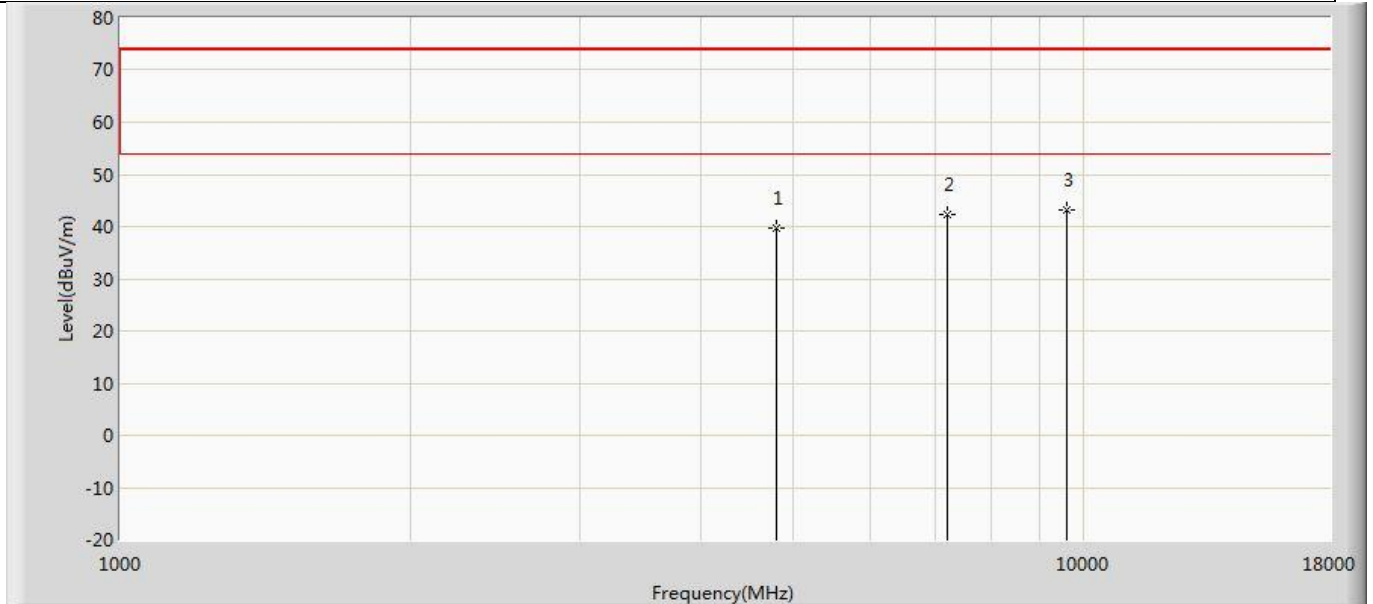
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	40.043	44.705	-33.957	74.000	-4.662	PK
2	*	7440.000	41.455	42.498	-32.545	74.000	-1.043	PK
3		9920.000	39.211	36.164	-34.789	74.000	3.047	PK

Profile: 2140067R	Page No.: 42
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



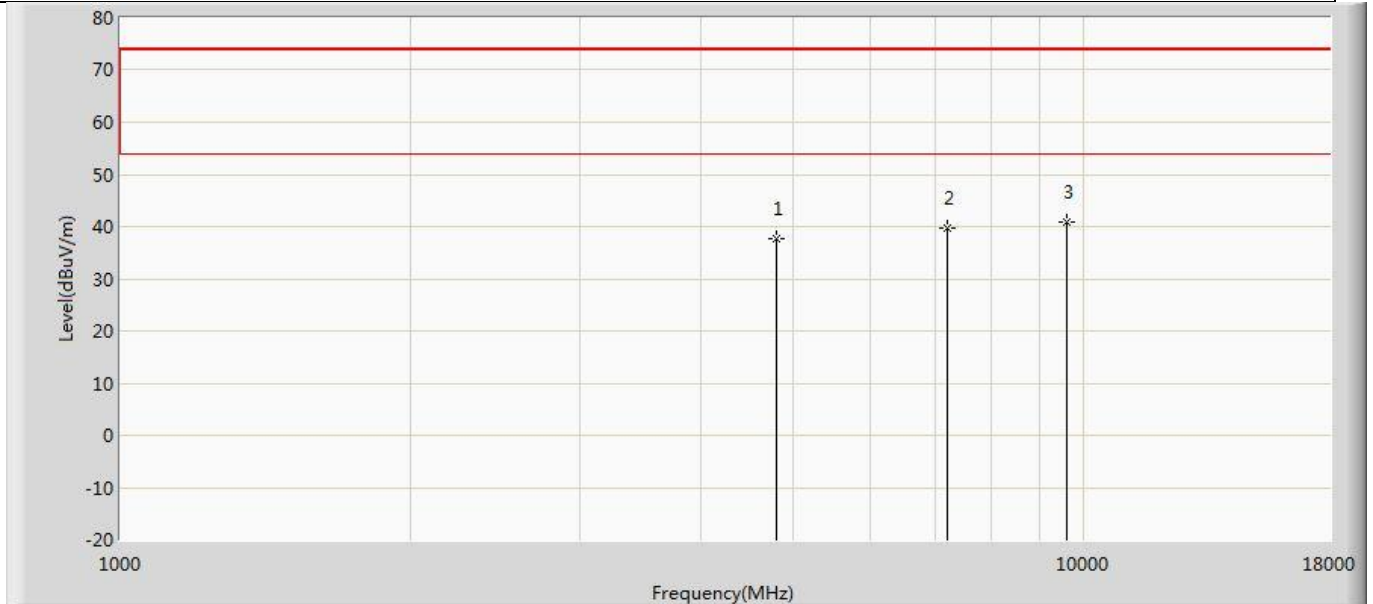
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	41.331	45.993	-32.669	74.000	-4.662	PK
2	*	7440.000	43.702	44.745	-30.298	74.000	-1.043	PK
3		9920.000	42.009	38.962	-31.991	74.000	3.047	PK

Profile: 2140067R	Page No.: 43
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



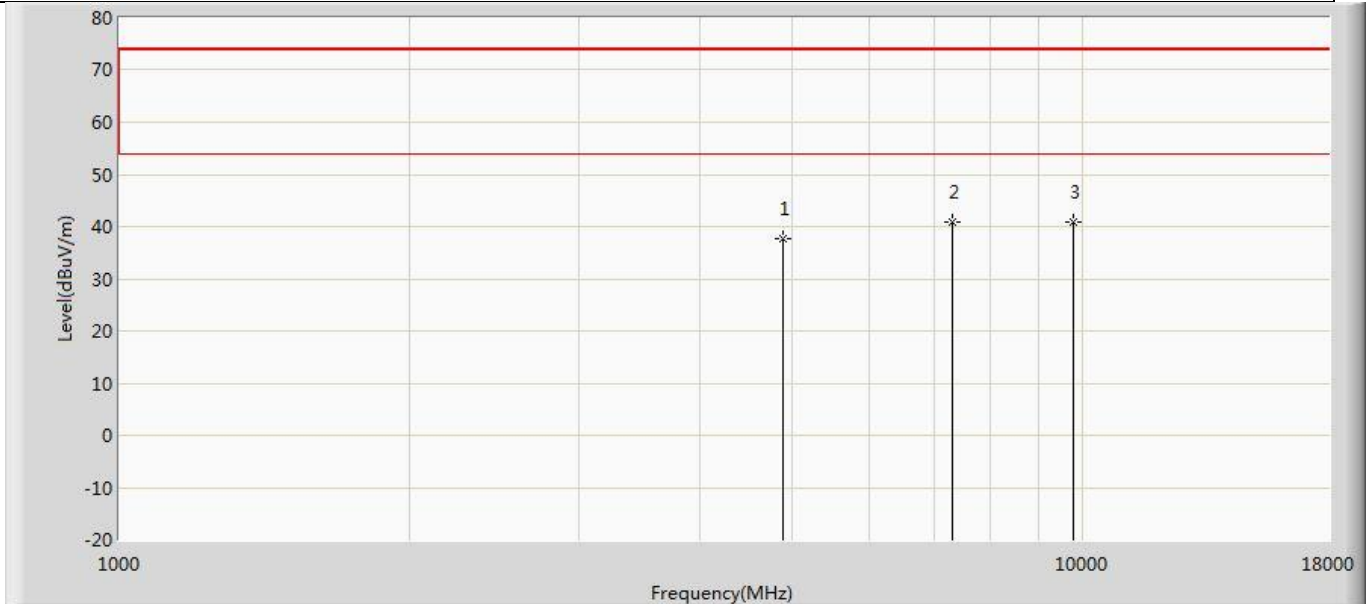
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	39.727	44.770	-34.273	74.000	-5.044	PK
2		7206.000	42.390	43.436	-31.610	74.000	-1.046	PK
3	*	9608.000	43.257	40.427	-30.743	74.000	2.830	PK

Profile: 2140067R	Page No.: 44
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



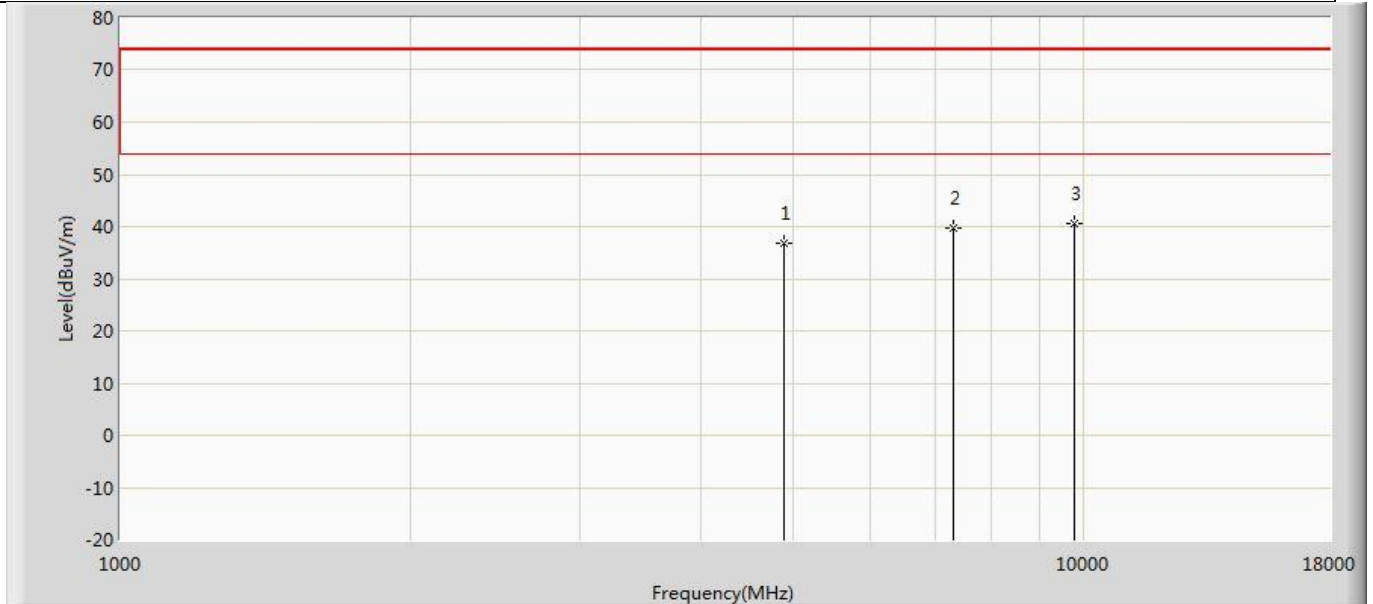
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	37.540	42.583	-36.460	74.000	-5.044	PK
2		7206.000	39.651	40.697	-34.349	74.000	-1.046	PK
3	*	9608.000	41.009	38.179	-32.991	74.000	2.830	PK

Profile: 2140067R	Page No.: 45
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2440MHz by LE_2Mbps	



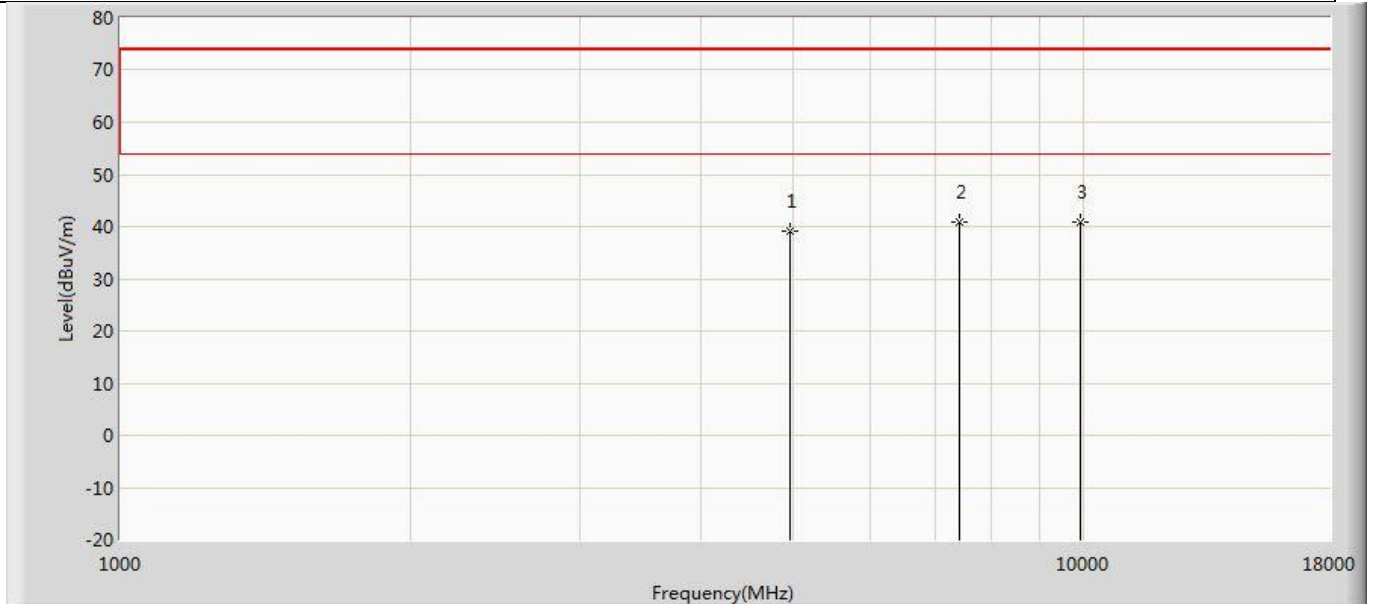
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	37.563	42.390	-36.437	74.000	-4.827	PK
2		7320.000	40.882	41.775	-33.118	74.000	-0.893	PK
3	*	9760.000	41.010	38.012	-32.990	74.000	2.998	PK

Profile: 2140067R	Page No.: 46
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2440MHz by LE_2Mbps	



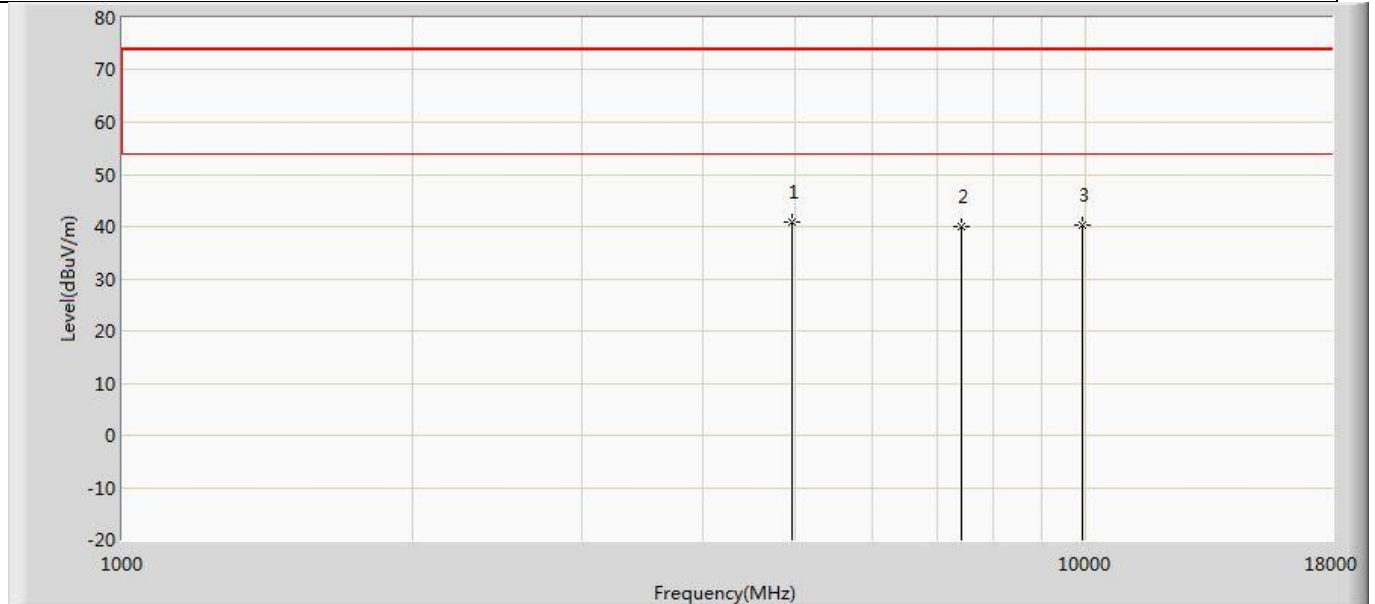
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.720	41.547	-37.280	74.000	-4.827	PK
2		7320.000	39.753	40.646	-34.247	74.000	-0.893	PK
3	*	9760.000	40.611	37.613	-33.389	74.000	2.998	PK

Profile: 2140067R	Page No.: 47
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



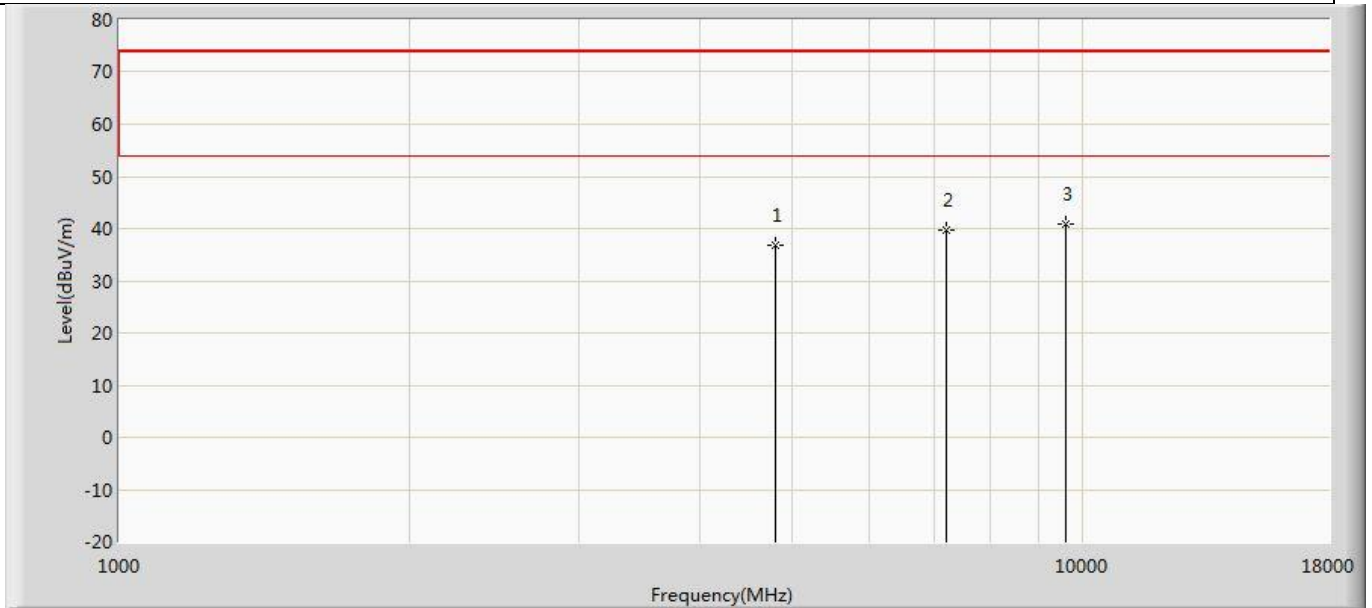
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	39.041	43.703	-34.959	74.000	-4.662	PK
2	*	7440.000	40.871	41.914	-33.129	74.000	-1.043	PK
3		9920.000	40.814	37.767	-33.186	74.000	3.047	PK

Profile: 2140067R	Page No.: 48
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



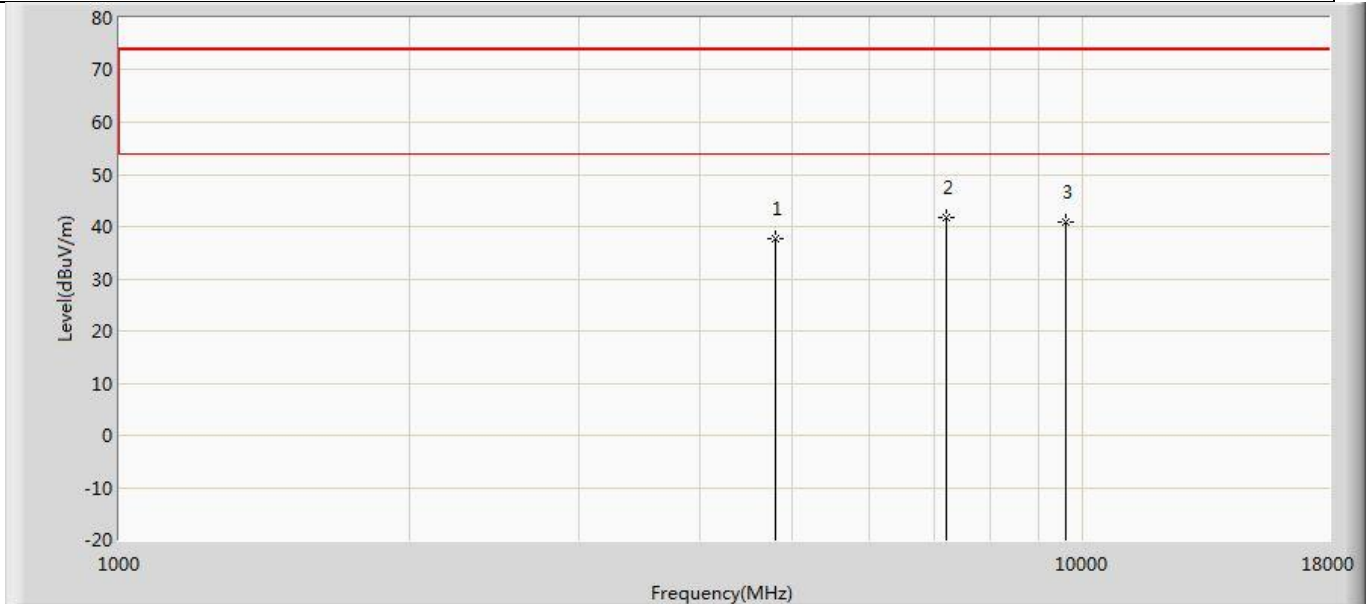
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4960.000	40.888	45.550	-33.112	74.000	-4.662	PK
2		7440.000	40.020	41.063	-33.980	74.000	-1.043	PK
3		9920.000	40.157	37.110	-33.843	74.000	3.047	PK

Profile: 2140067R	Page No.: 55
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=2	



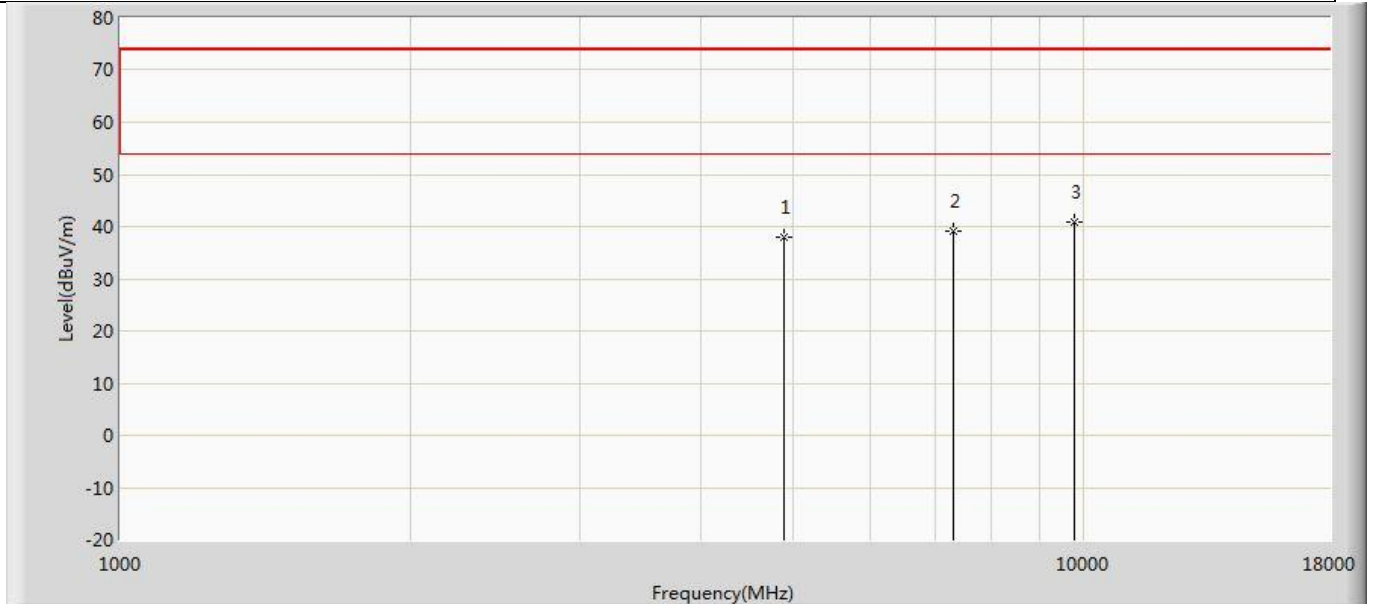
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.925	41.968	-37.075	74.000	-5.044	PK
2		7206.000	39.684	40.730	-34.316	74.000	-1.046	PK
3	*	9608.000	40.874	38.044	-33.126	74.000	2.830	PK

Profile: 2140067R	Page No.: 56
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=2	



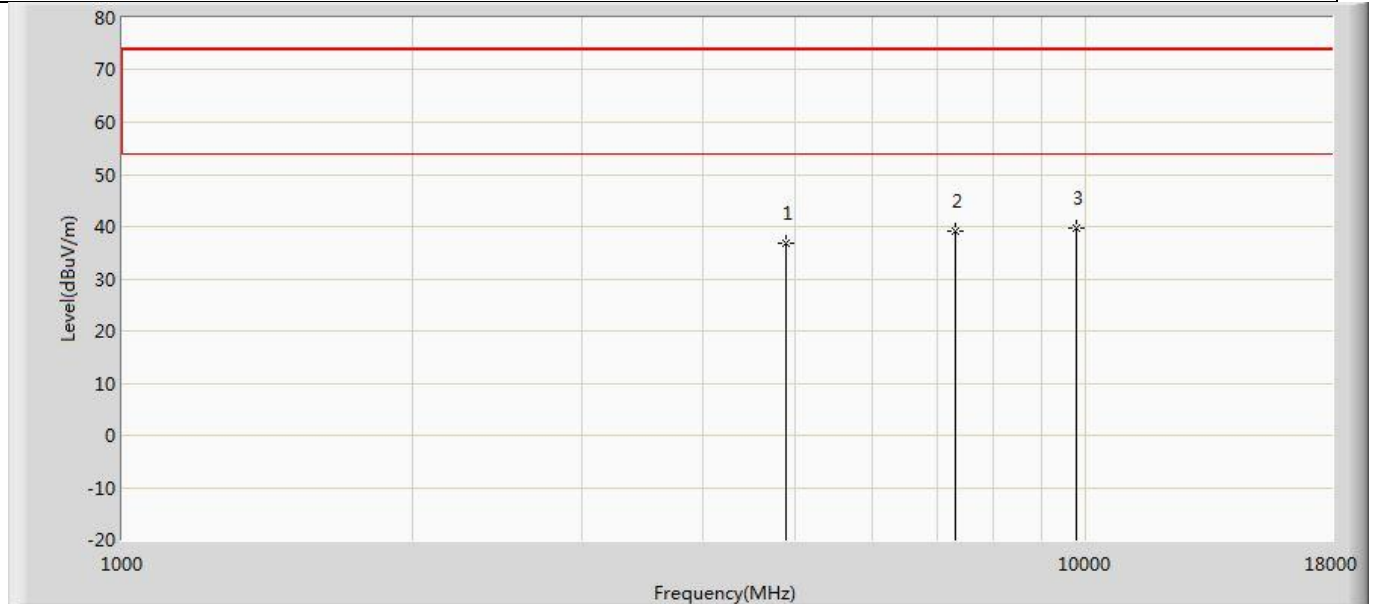
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	37.585	42.628	-36.415	74.000	-5.044	PK
2	*	7206.000	41.716	42.762	-32.284	74.000	-1.046	PK
3		9608.000	40.770	37.940	-33.230	74.000	2.830	PK

Profile: 2140067R	Page No.: 57
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2440MHz by Coded S=2	



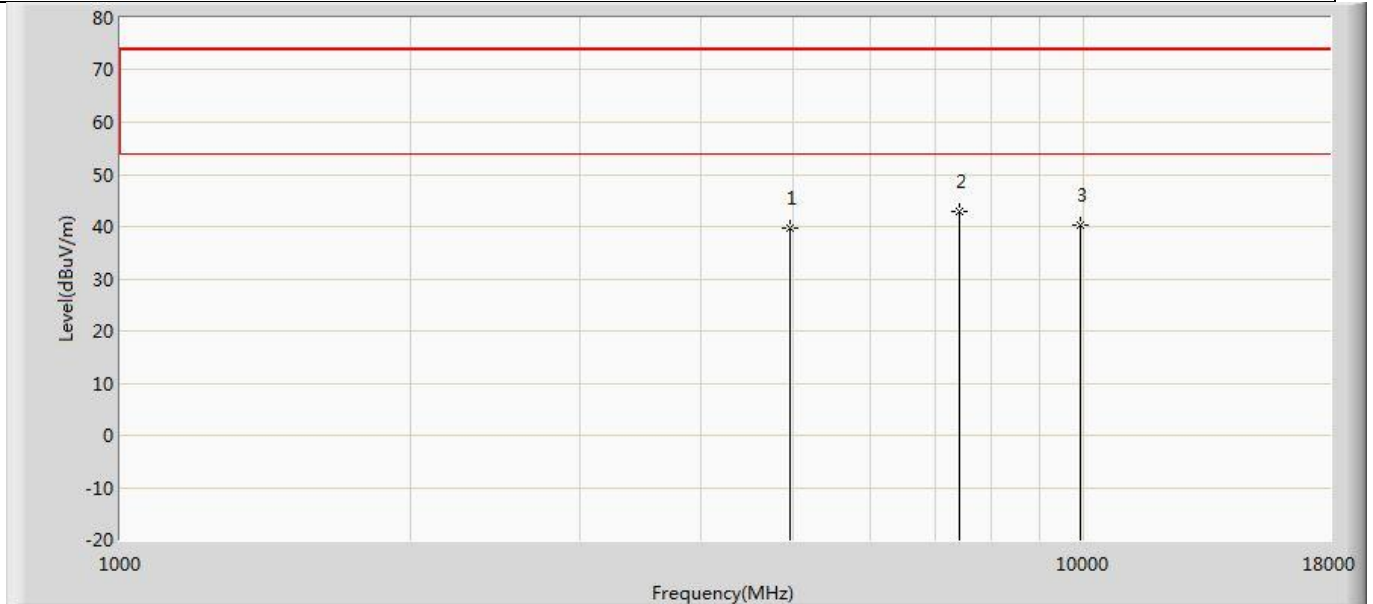
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.084	42.911	-35.916	74.000	-4.827	PK
2		7320.000	39.011	39.904	-34.989	74.000	-0.893	PK
3	*	9760.000	40.978	37.980	-33.022	74.000	2.998	PK

Profile: 2140067R	Page No.: 58
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2440MHz by Coded S=2	



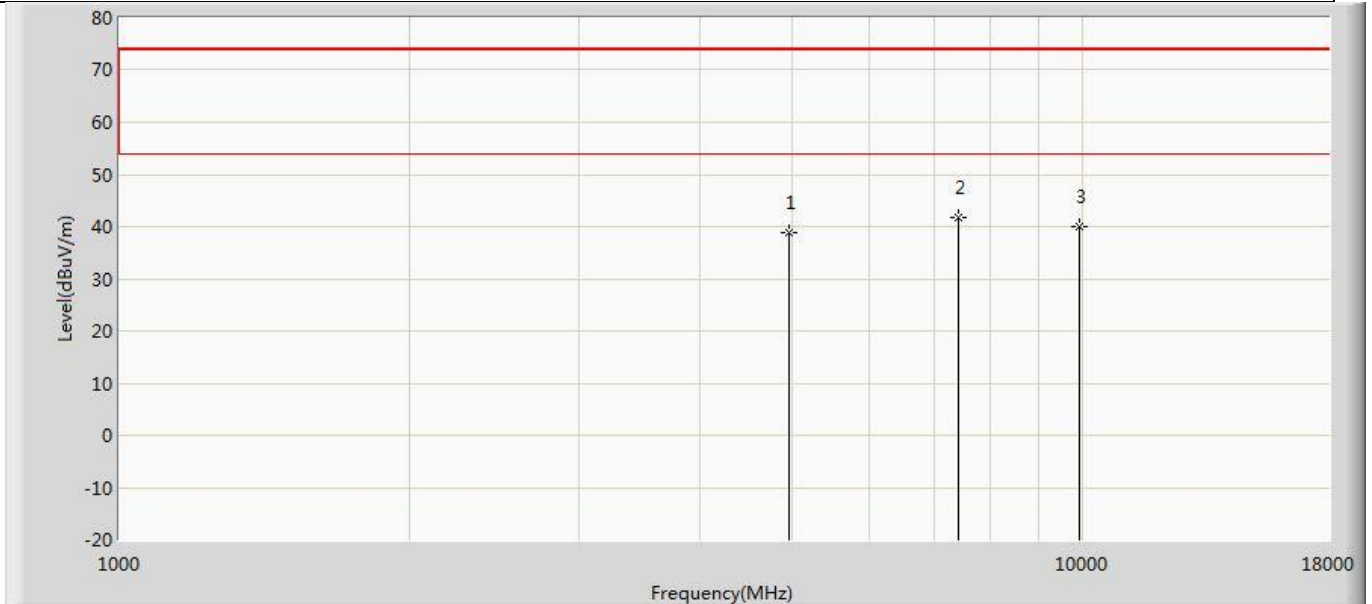
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.725	41.552	-37.275	74.000	-4.827	PK
2		7320.000	39.075	39.968	-34.925	74.000	-0.893	PK
3	*	9760.000	39.681	36.683	-34.319	74.000	2.998	PK

Profile: 2140067R	Page No.: 59
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=2	



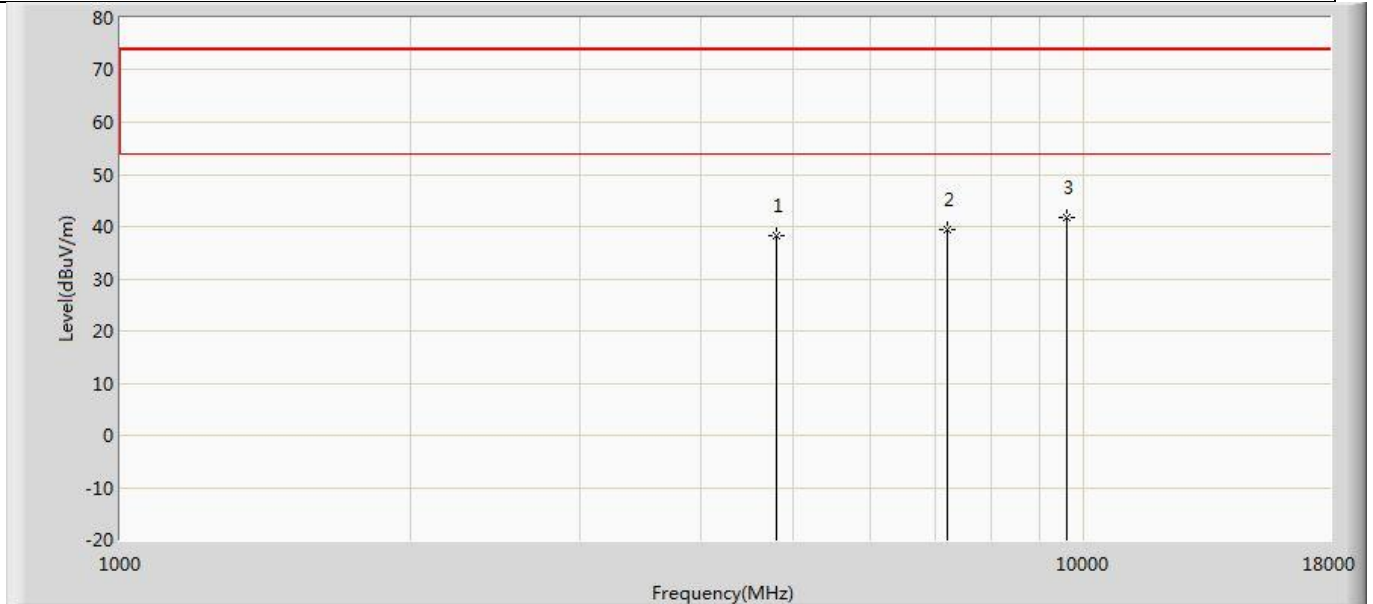
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	39.566	44.228	-34.434	74.000	-4.662	PK
2	*	7440.000	42.841	43.884	-31.159	74.000	-1.043	PK
3		9920.000	40.403	37.356	-33.597	74.000	3.047	PK

Profile: 2140067R	Page No.: 60
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=2	



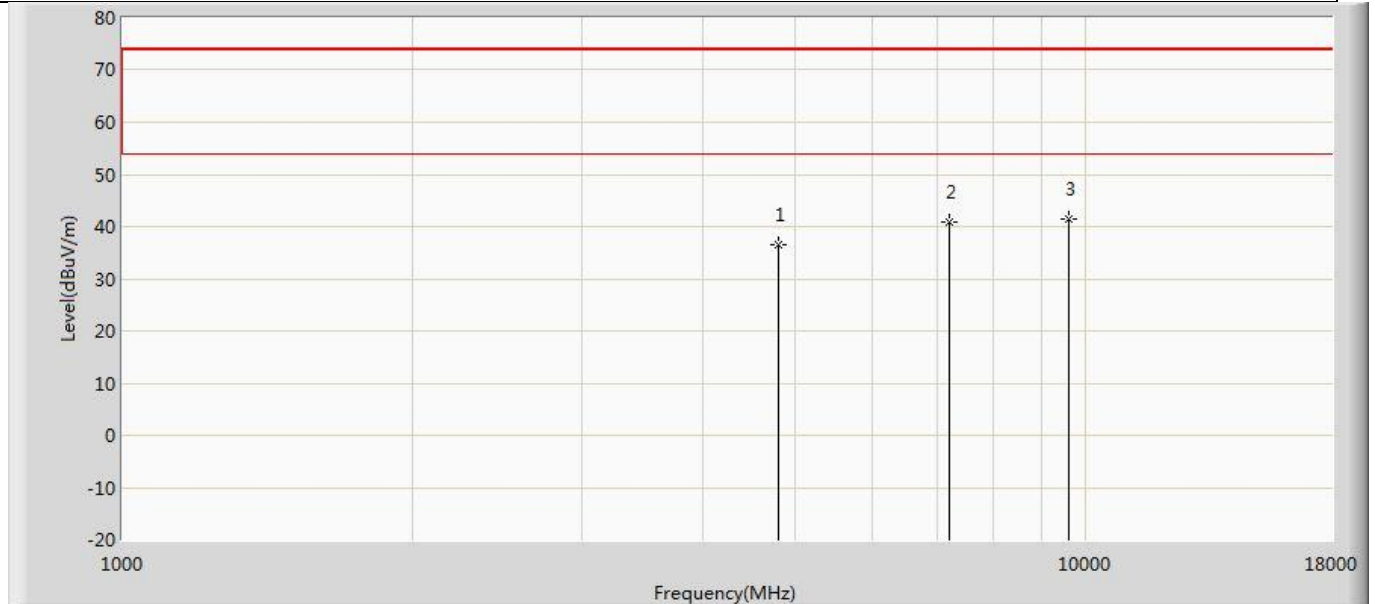
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	38.956	43.618	-35.044	74.000	-4.662	PK
2	*	7440.000	41.643	42.686	-32.357	74.000	-1.043	PK
3		9920.000	40.115	37.068	-33.885	74.000	3.047	PK

Profile: 2140067R	Page No.: 49
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:16
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=8	



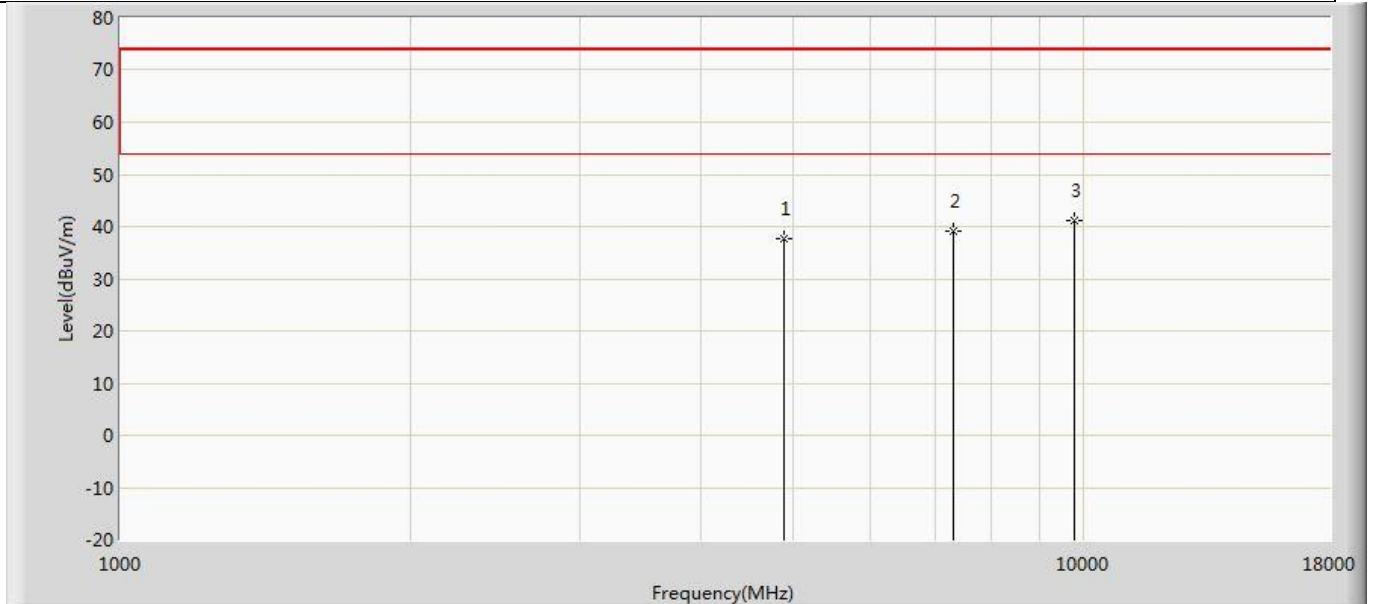
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	38.260	43.303	-35.740	74.000	-5.044	PK
2		7206.000	39.454	40.500	-34.546	74.000	-1.046	PK
3	*	9608.000	41.758	38.928	-32.242	74.000	2.830	PK

Profile: 2140067R	Page No.: 50
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=8	



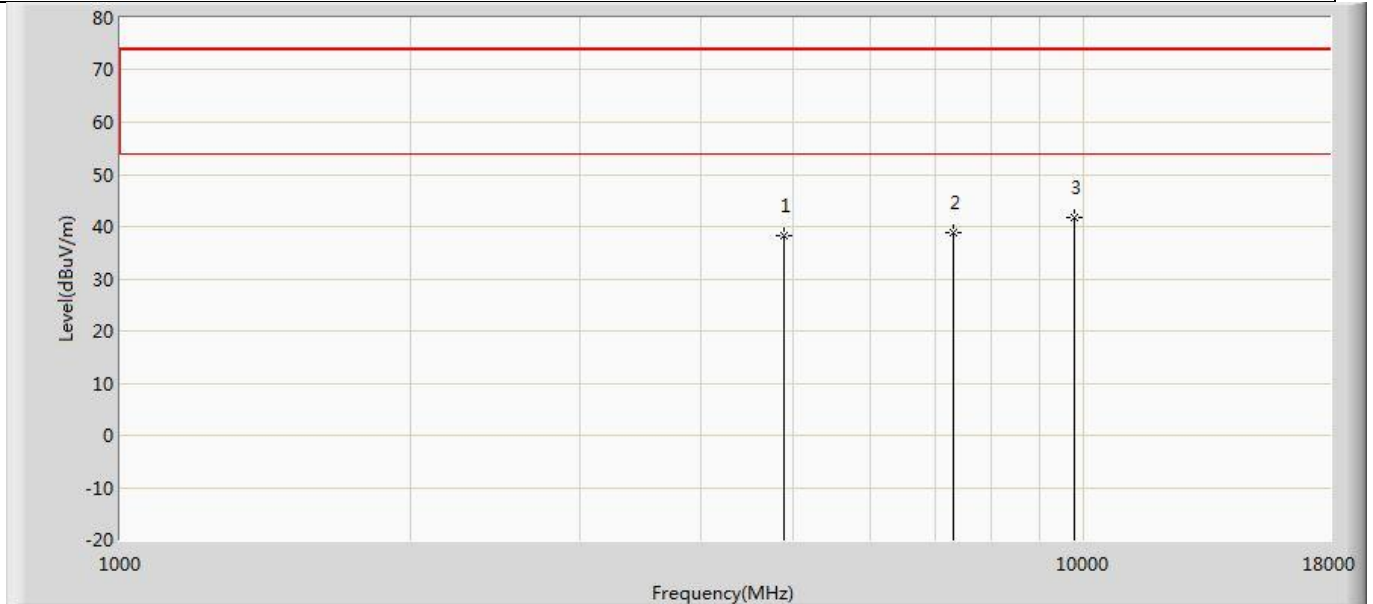
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.422	41.465	-37.578	74.000	-5.044	PK
2		7206.000	40.845	41.891	-33.155	74.000	-1.046	PK
3	*	9608.000	41.306	38.476	-32.694	74.000	2.830	PK

Profile: 2140067R	Page No.: 51
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2440MHz by Coded S=8	



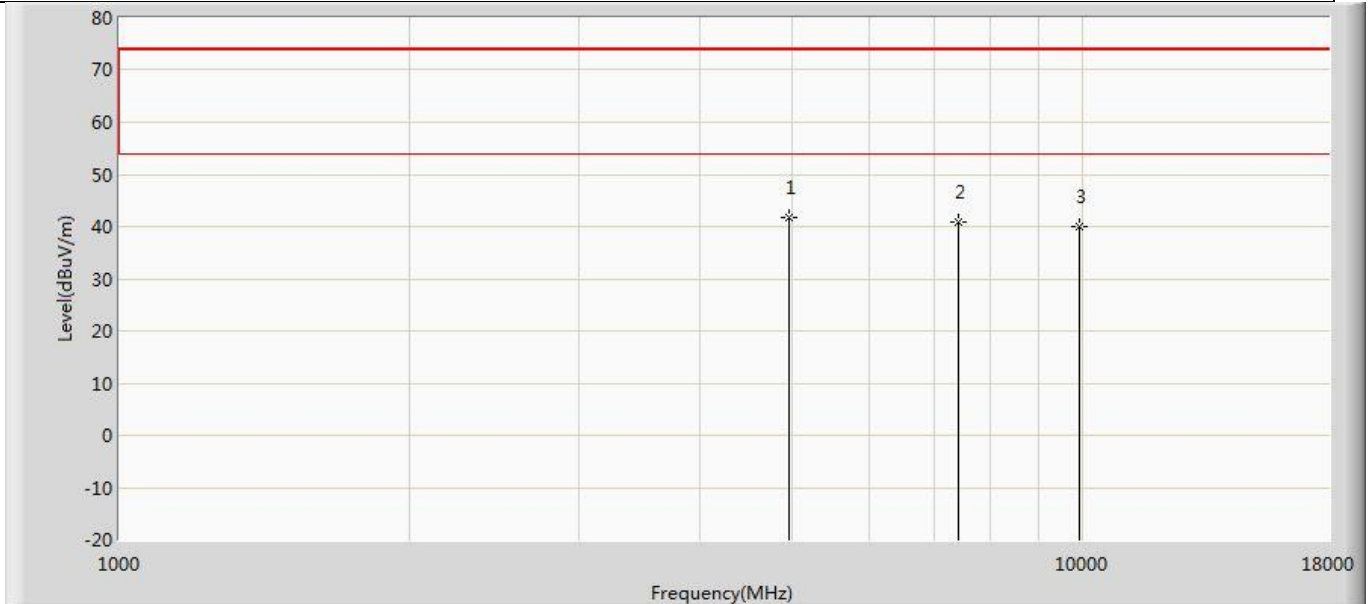
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	37.743	42.570	-36.257	74.000	-4.827	PK
2		7320.000	39.037	39.930	-34.963	74.000	-0.893	PK
3	*	9760.000	41.020	38.022	-32.980	74.000	2.998	PK

Profile: 2140067R	Page No.: 52
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2440MHz by Coded S=8	



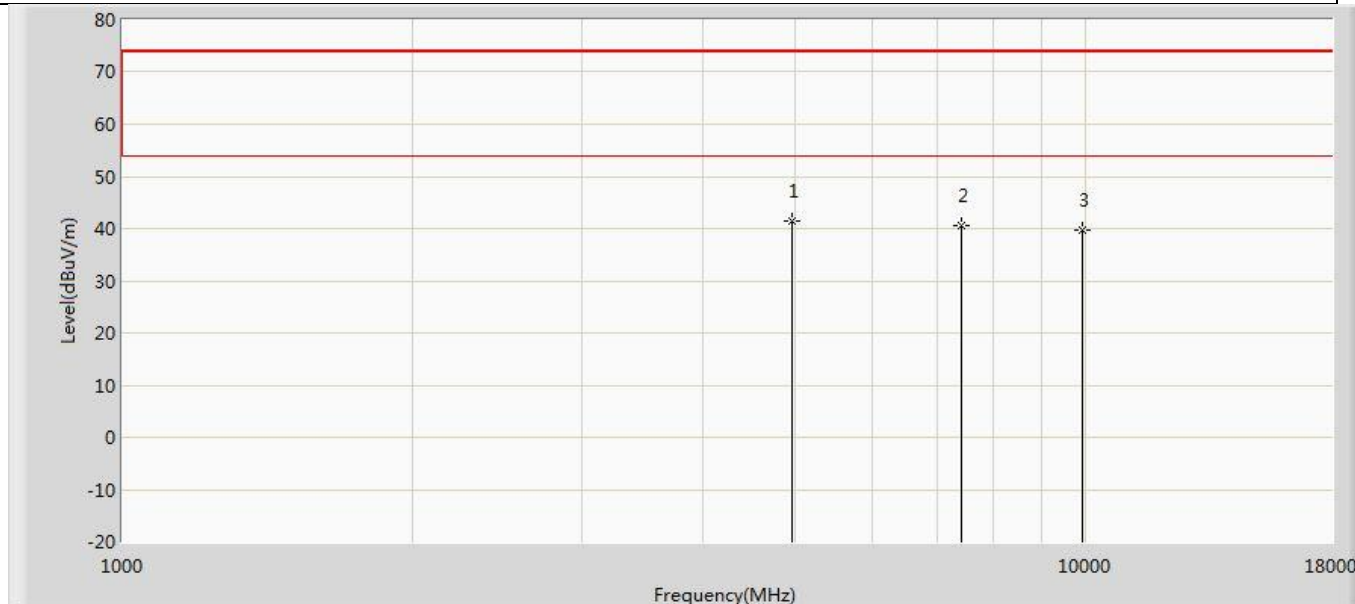
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.177	43.004	-35.823	74.000	-4.827	PK
2		7320.000	38.978	39.871	-35.022	74.000	-0.893	PK
3	*	9760.000	41.745	38.747	-32.255	74.000	2.998	PK

Profile: 2140067R	Page No.: 53
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded 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	41.678	46.340	-32.322	74.000	-4.662	PK
2		7440.000	40.971	42.014	-33.029	74.000	-1.043	PK
3		9920.000	40.114	37.067	-33.886	74.000	3.047	PK

Profile: 2140067R	Page No.: 54
Engineer: Neil Liu	
Site: AC5	Time: 2021/04/16 - 22:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded S=8	



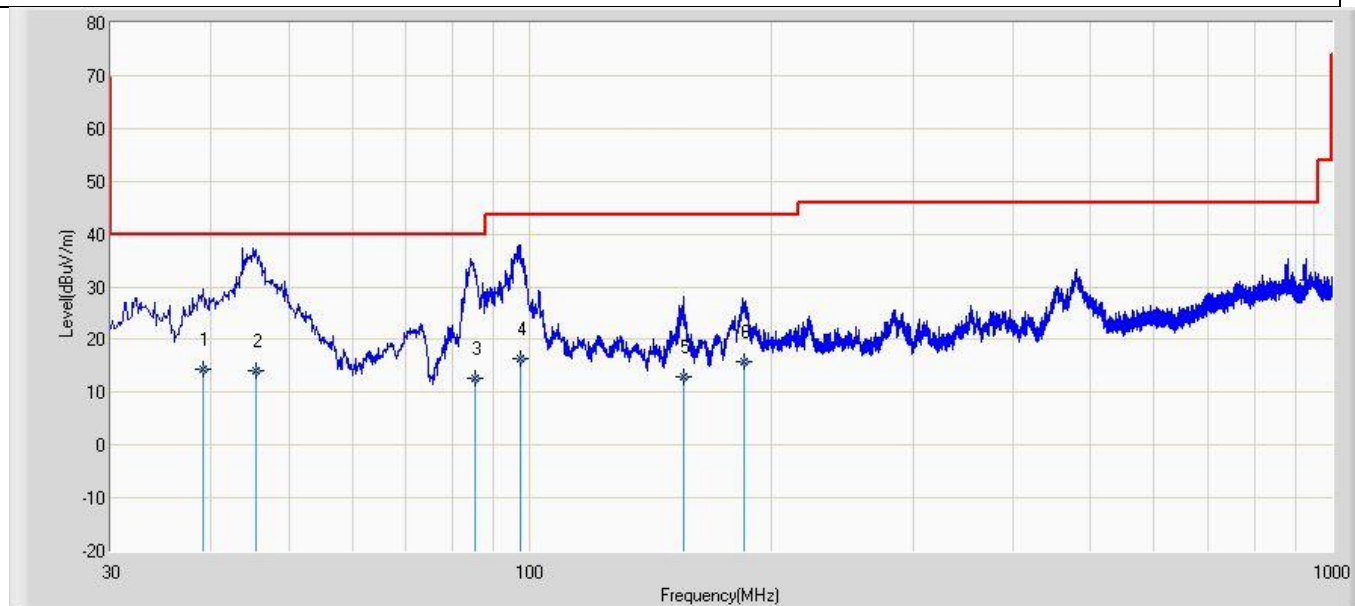
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4960.000	41.518	46.180	-32.482	74.000	-4.662	PK
2		7440.000	40.674	41.717	-33.326	74.000	-1.043	PK
3		9920.000	39.751	36.704	-34.249	74.000	3.047	PK

Note:

1. " * ", means this data is the worst emission by Level.
2. Measurement By LLevel = Reading Level + Factor(Probe+Cabby LE-Amp).
3. The test frequency range, 9kHz~30MHz and above 18GHz worst case are noise floor(no emissions or emissions energy too low was covered up by noise floor), 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: 2140067R	Page No.: 1
Engineer: Julius zhou	
Site: AC3	Time: 2021/03/27 - 13:19
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1: Transmit at 2402MHz by LE_1Mbps	

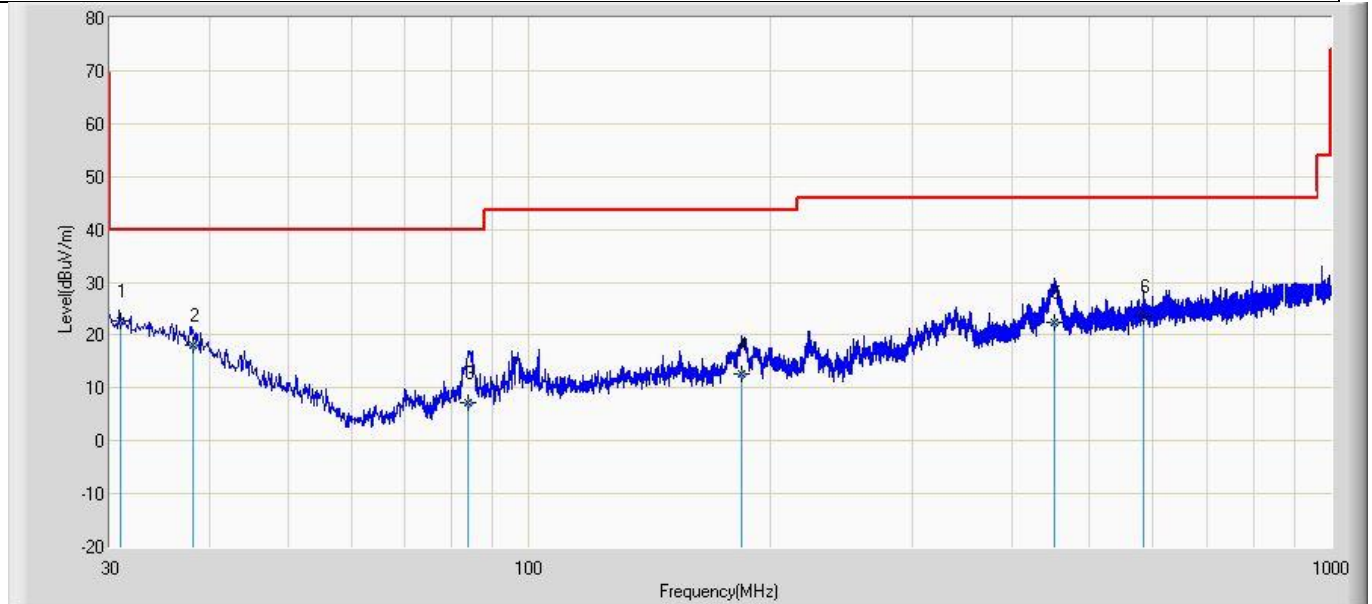


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	39.100	14.339	-5.633	-25.661	40.000	19.971	100	18	QP
2		45.541	14.080	-3.520	-25.920	40.000	17.600	100	41	QP
3		85.522	12.768	-3.520	-27.232	40.000	16.287	100	41	QP
4		97.310	16.410	-4.520	-27.090	43.500	20.930	100	82	QP
5		155.388	13.055	-5.520	-30.445	43.500	18.576	100	46	QP
6		184.520	15.755	-4.520	-27.745	43.500	20.275	100	152	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: 2140067R	Page No.: 2
Engineer: Julius zhou	
Site: AC3	Time: 2021/03/27 - 16:08
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC3_3m (30-1000MHz)	Polarity: Horizontal
EUT: LED Device	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)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	30.888	22.798	-4.520	-17.202	40.000	27.318	100	41	QP
2		38.110	18.053	-5.630	-21.947	40.000	23.683	100	43	QP
3		83.999	7.080	-6.520	-32.920	40.000	13.599	100	123	QP
4		183.999	12.589	-4.600	-30.911	43.500	17.188	100	165	QP
5		451.980	22.451	-4.520	-23.549	46.000	26.971	100	142	QP
6		584.500	23.630	-4.520	-22.370	46.000	28.149	100	321	QP

Note:

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

4.3 Emissions in non-restricted frequency band	VERDICT: PASS
---	----------------------

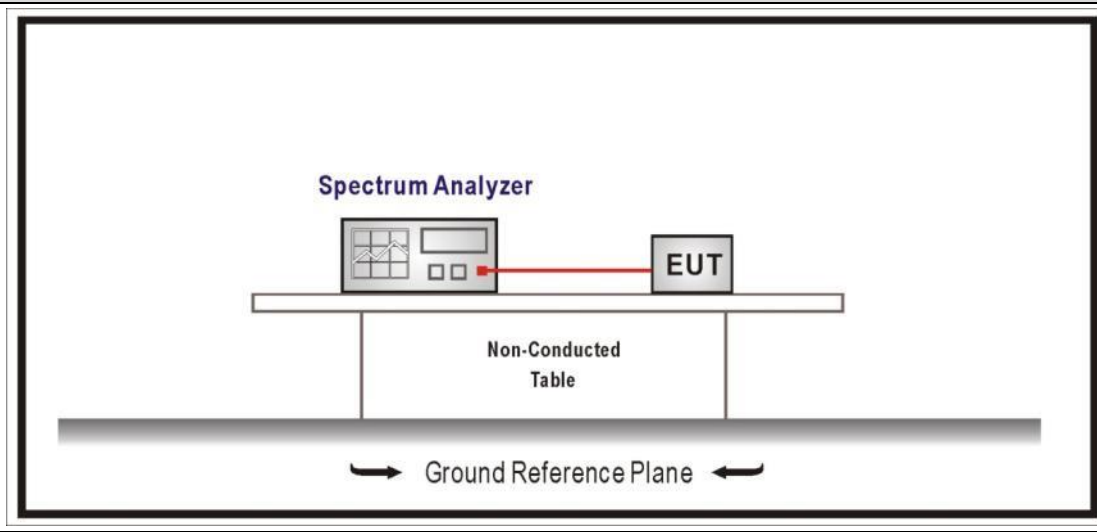
4.3.1 Limit

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

Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD by L_Evel 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 by L_Evel in 100 kHz (i.e., 20 dBc).

4.3.2 Test Setup

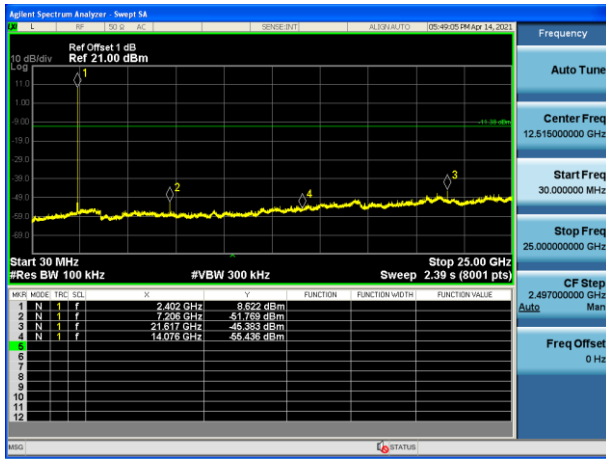


4.3.3 Test Procedure

References	Ruby LE	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.11	Emissions in non-restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.1	General
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.2	Reference by L _E vel measurement
	<input checked="" type="checkbox"/> ANSI C63.10	11.11.3	Emission by L _E vel measurement

4.3.4 Test Data

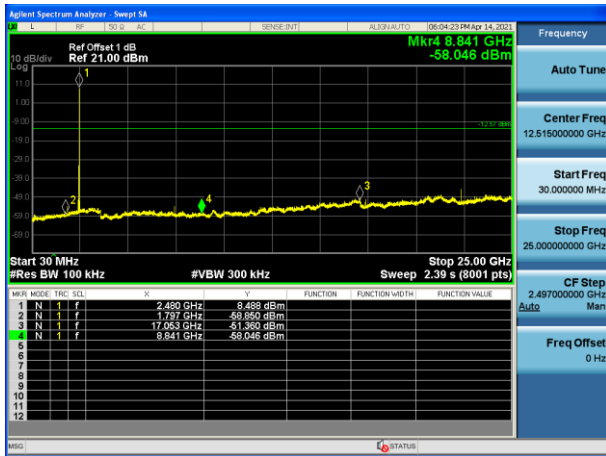
Mode 1 CH37 (2402MHz)



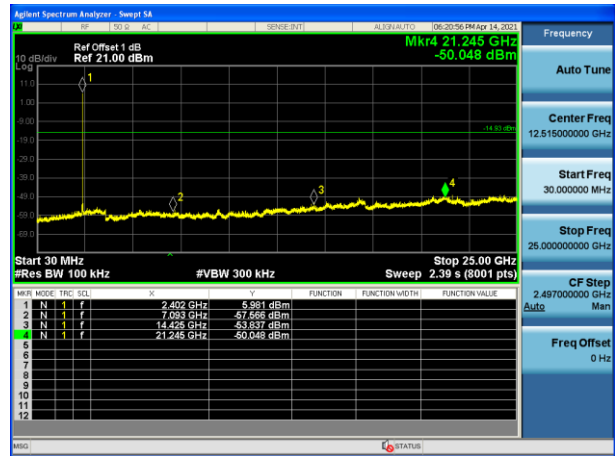
Mode 1 CH17 (2440MHz)



Mode 1 CH39 (2480MHz)



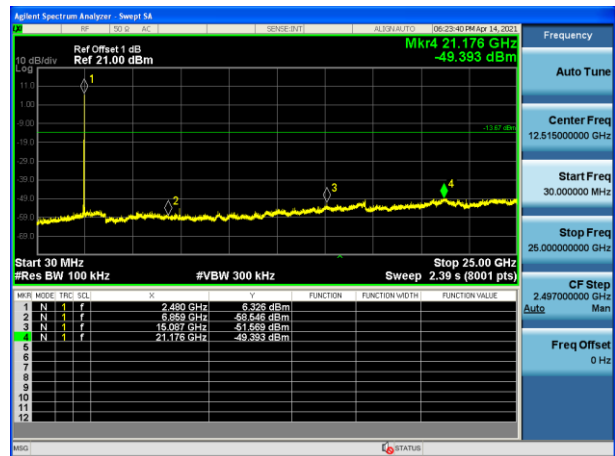
Mode 2 CH37 (2402MHz)



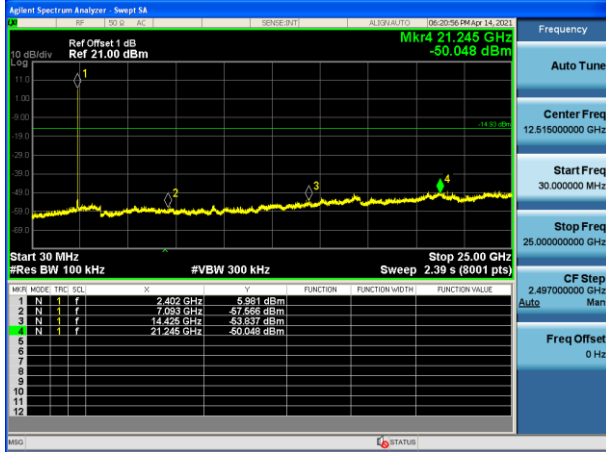
Mode 2 CH17 (2440MHz)



Mode 2 CH39 (2480MHz)



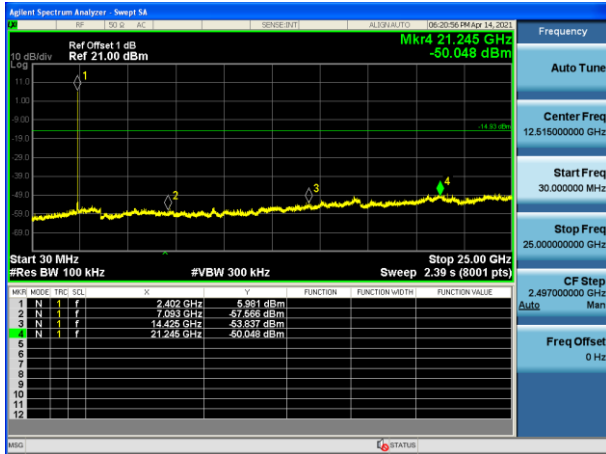
Mode 3 CH37 (2402MHz)



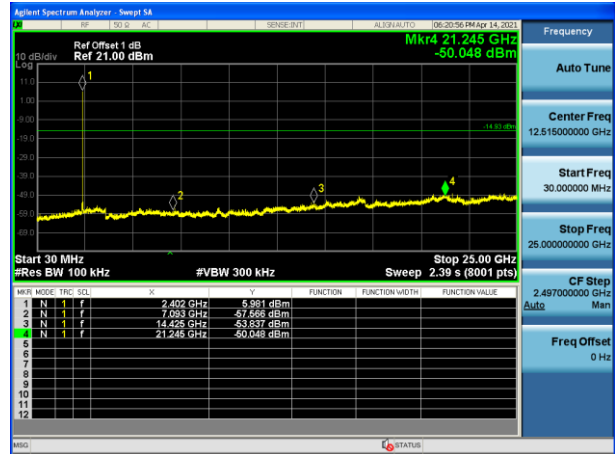
Mode 3 CH17 (2440MHz)



Mode 3 CH39 (2480MHz)



Mode 4 CH37 (2402MHz)



Mode 4 CH17 (2440MHz)



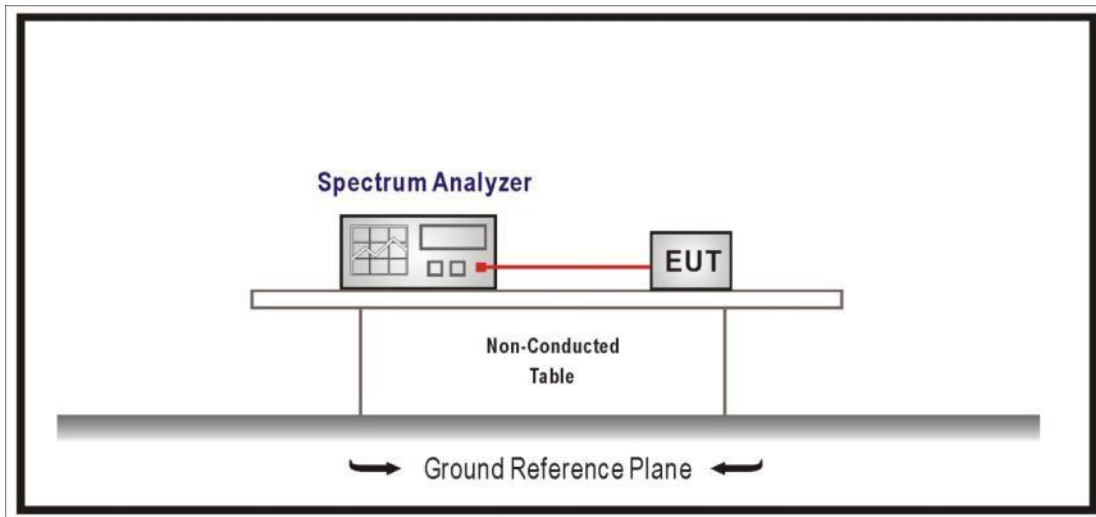
Mode 4 CH39 (2480MHz)



4.4 Duty cycle	VERDICT: PASS
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4.4.1 Limit
N/A

4.4.2 Test Setup



4.4.3 Test Procedure

References	Ruby LE	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.6	Duty cycle (D), transmission duration (T), and maximum power control by LLevel

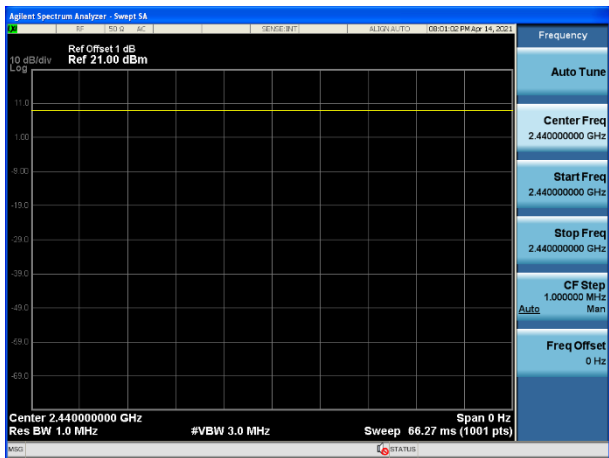
4.4.4 Test Data

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

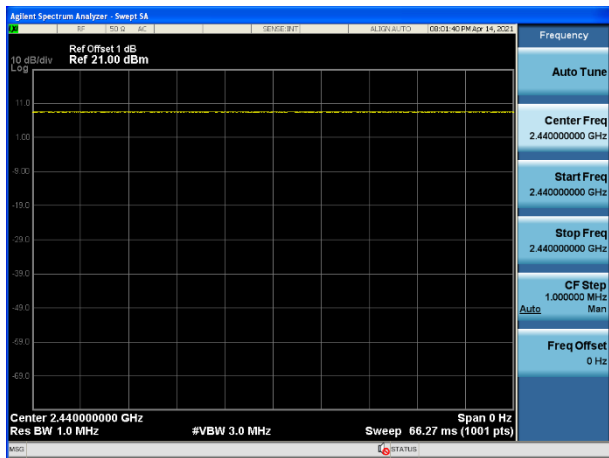
Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control Level for the tested mode of operation.

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.

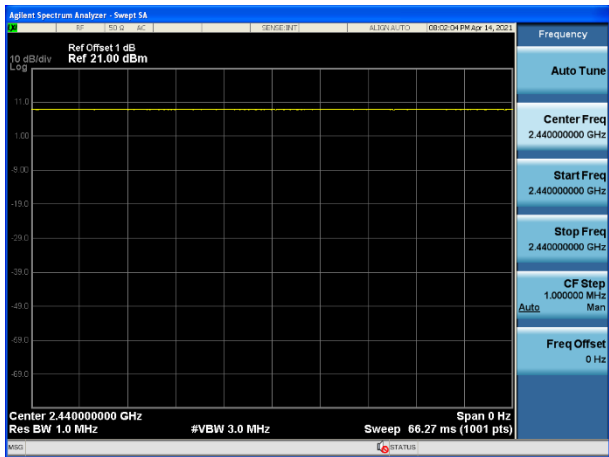
Mode 1 CH18 2440MHz



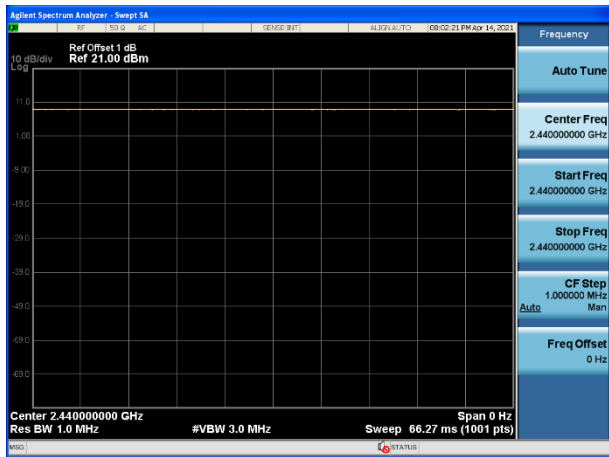
Mode 2 CH18 2440MHz



Mode 3 CH18 2440MHz



Mode 4 CH18 2440MHz



4.5 Radiated Emission Band Edge

VERDICT: PASS

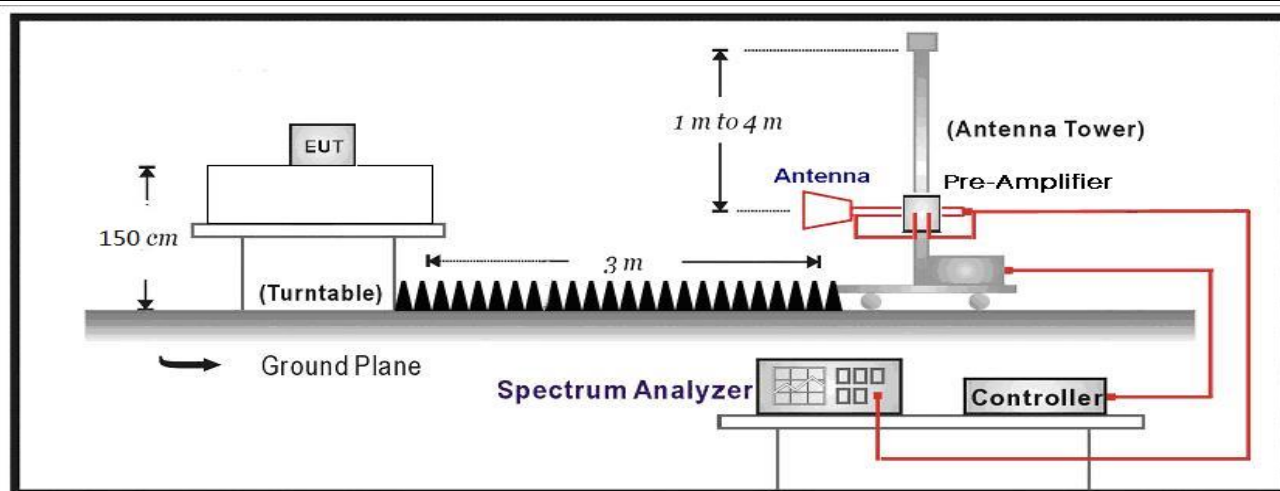
4.5.1 Limit

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	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:

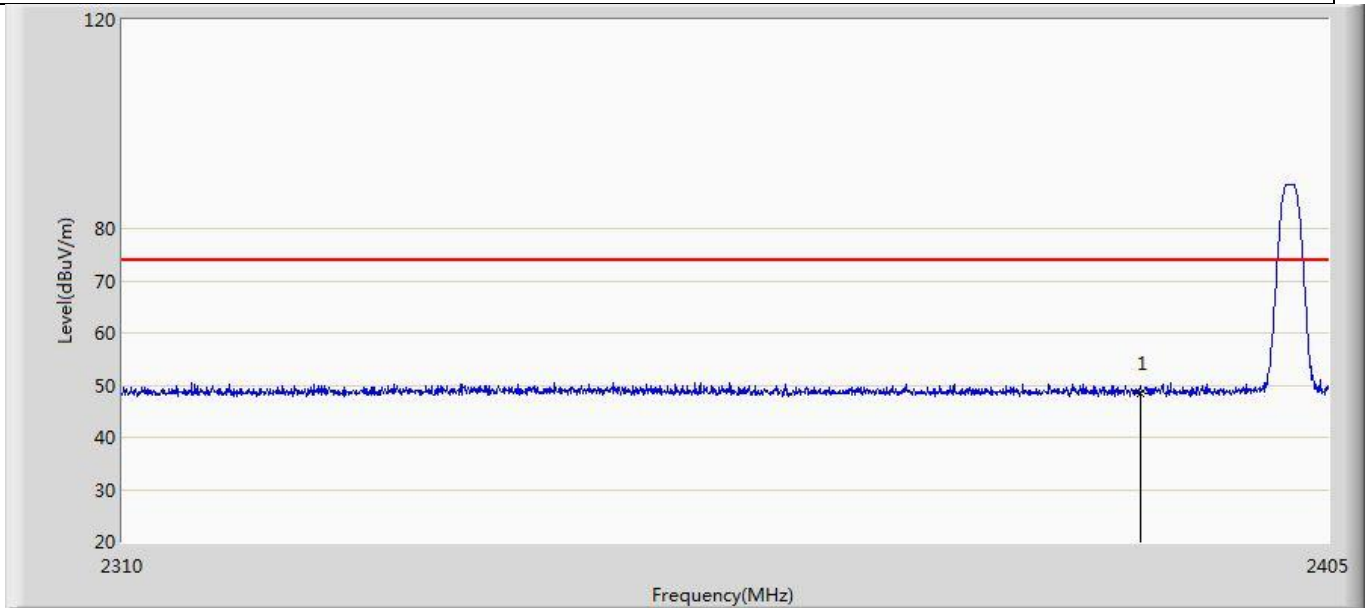


4.5.3 Test Procedure

	References Ruby LE	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	6.10	Band-edge testing
	<input checked="" type="checkbox"/> ANSI C63.10	6.10.5	Restricted-band band-edge measurements
	<input type="checkbox"/> ANSI C63.10	6.10.6	Marker-delta method
<input checked="" type="checkbox"/>	ANSI C63.10	11.12	Emissions in restricted frequency bands
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.1	Radiated emission measurements
	<input checked="" type="checkbox"/> ANSI C63.10	11.12.2.7	Radiated spurious emission test
<input type="checkbox"/>	ANSI C63.10	6.4	Radiated emissions from unlicensed wireby LEss devices below 30 MHz
<input type="checkbox"/>	ANSI C63.10	6.5	Radiated emissions from unlicensed wireby LEss devices in the frequency range of 30 MHz to 1000 MHz
<input checked="" type="checkbox"/>	ANSI C63.10	6.6	Radiated emissions from unlicensed wireby LEss devices above 1 GHz

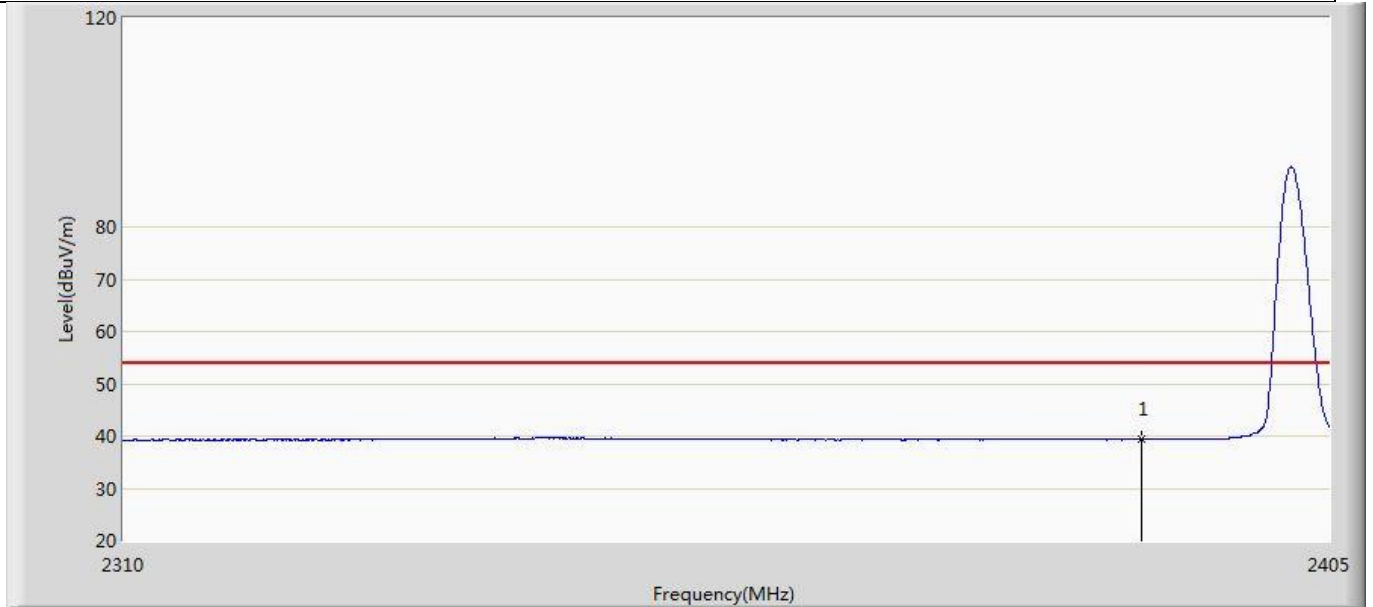
4.5.4 Test Data

Profile: 2140067R	Page No.: 1
Engineer: Juliuszhou	
Site: AC5	Time: 2020/03/12 - 00:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



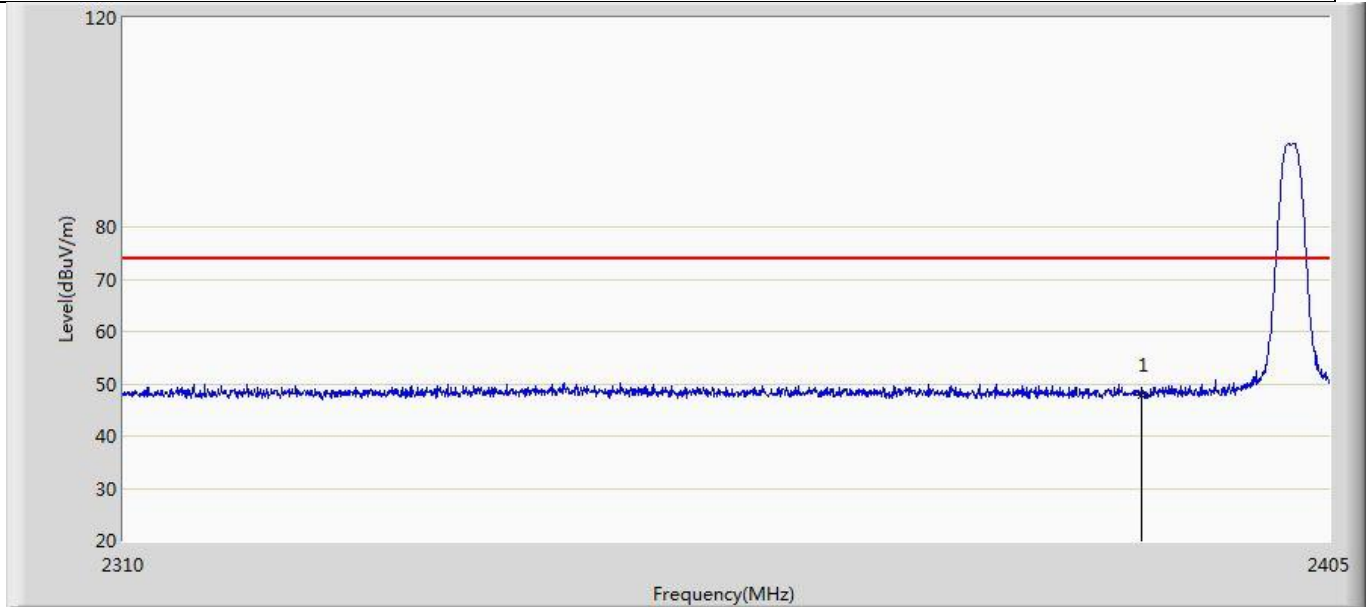
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	48.320	11.964	-25.680	74.000	36.357	PK

Profile: 2140067R	Page No.: 2
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



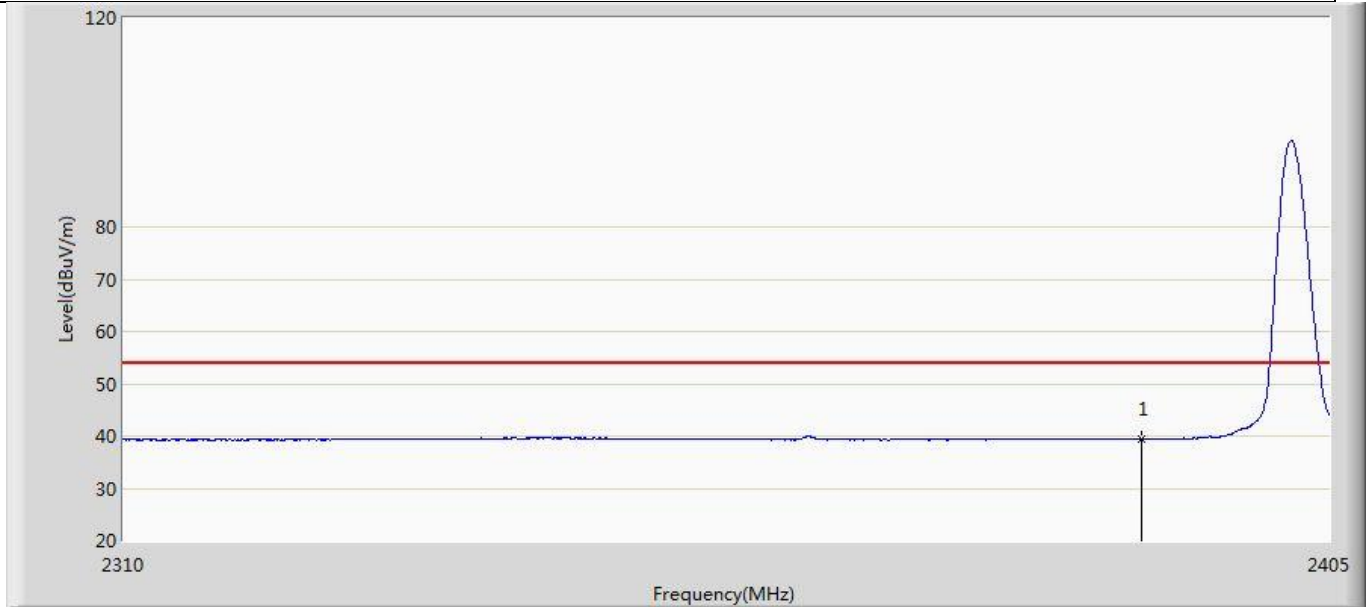
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.351	2.995	-14.649	54.000	36.357	AV

Profile: 2140067R	Page No.: 3
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



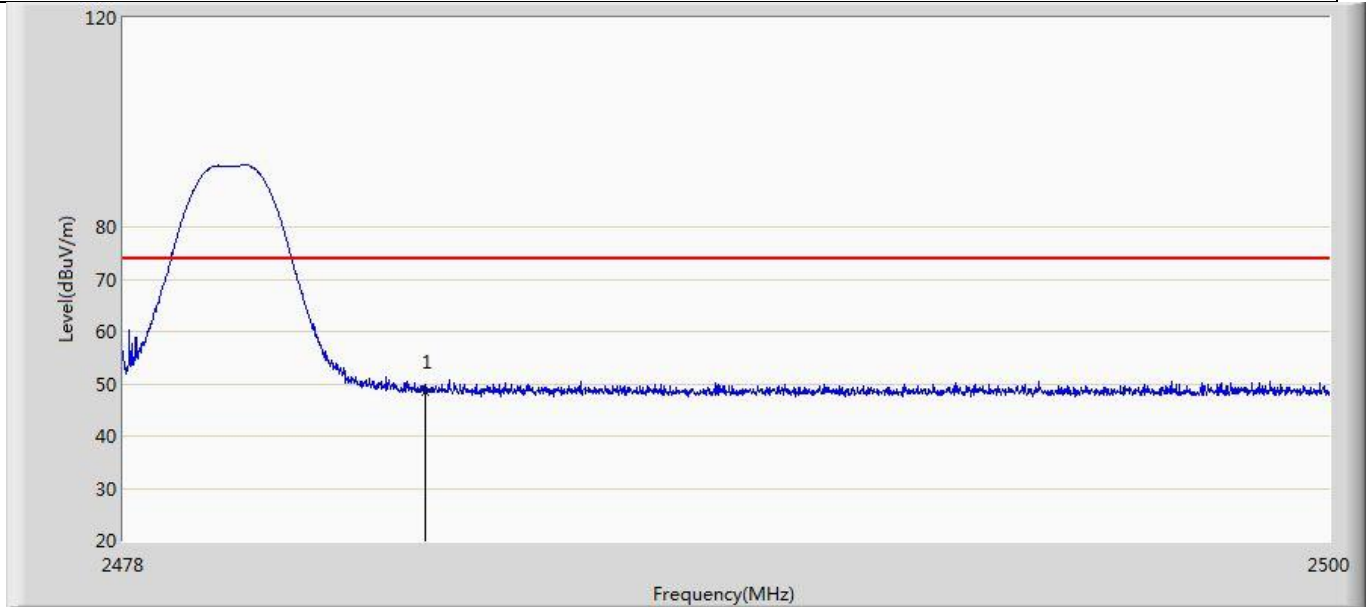
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	47.827	11.471	-26.173	74.000	36.357	PK

Profile: 2140067R	Page No.: 4
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



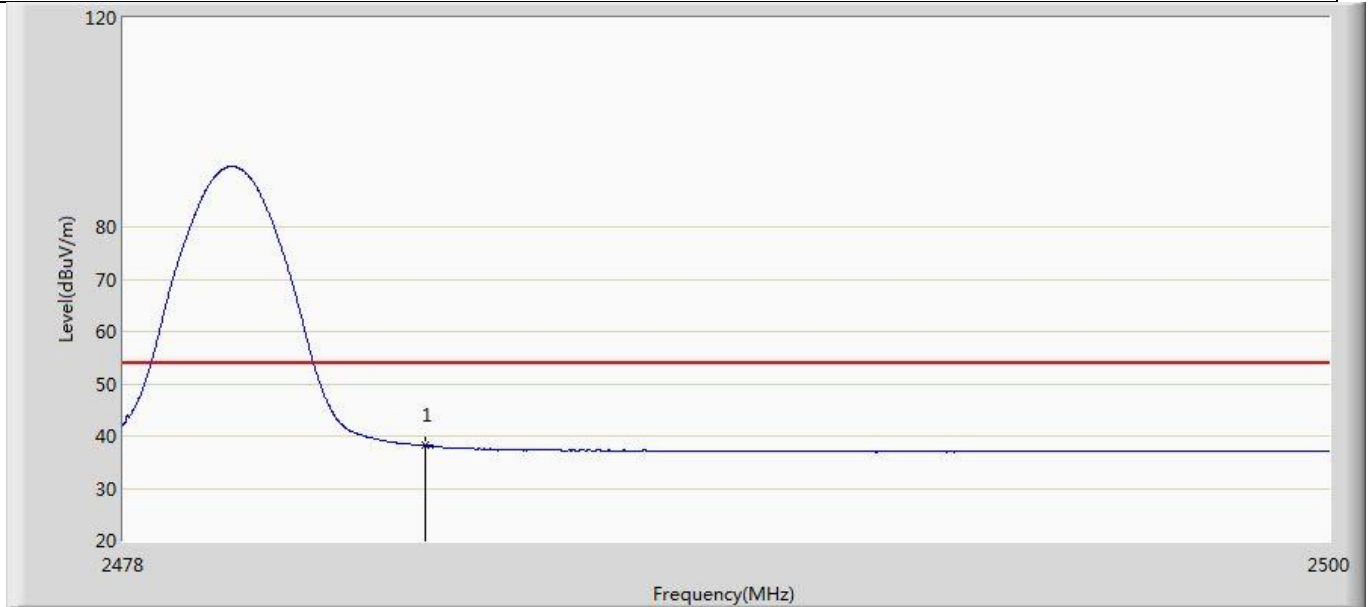
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.439	3.083	-14.561	54.000	36.357	AV

Profile: 2140067R	Page No.: 17
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



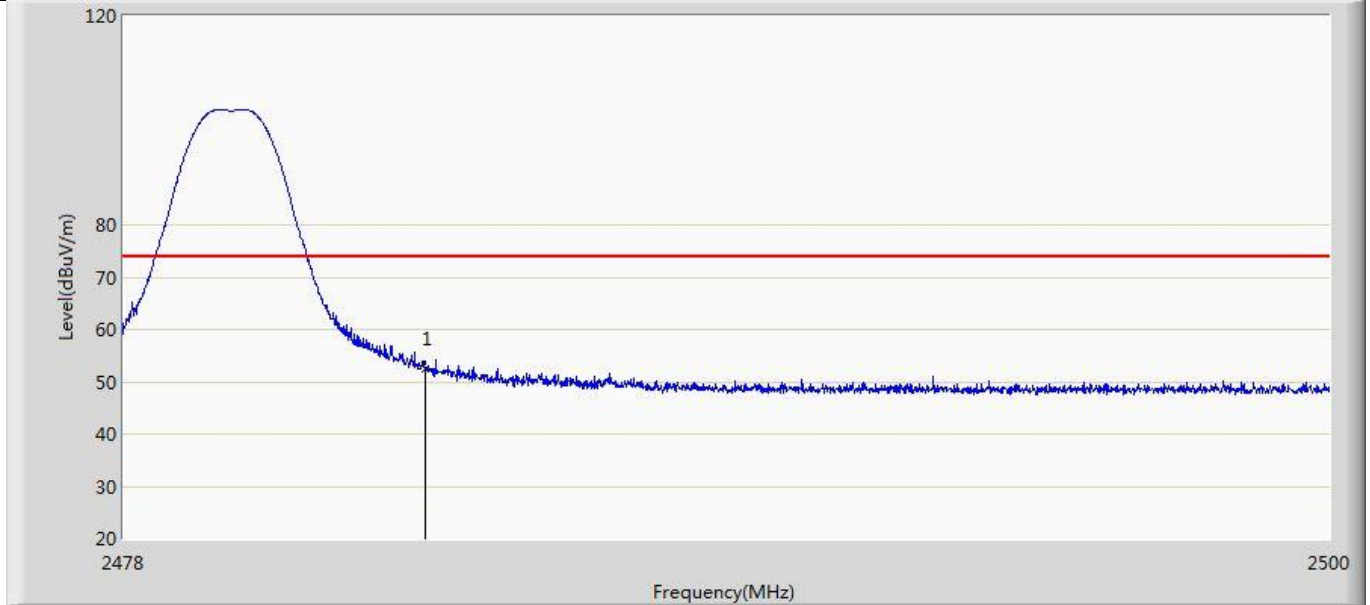
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	48.372	11.968	-25.628	74.000	36.404	PK

Profile: 2140067R	Page No.: 18
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



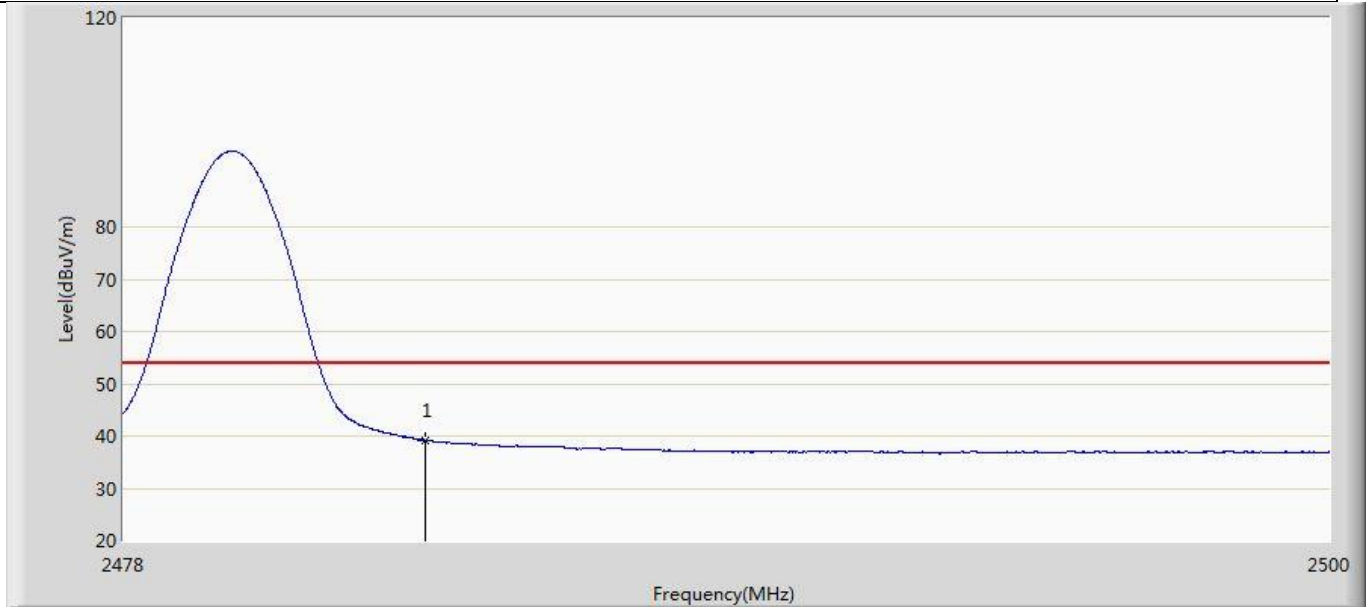
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	38.127	1.723	-15.873	54.000	36.404	AV

Profile: 2140067R	Page No.: 19
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:54
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



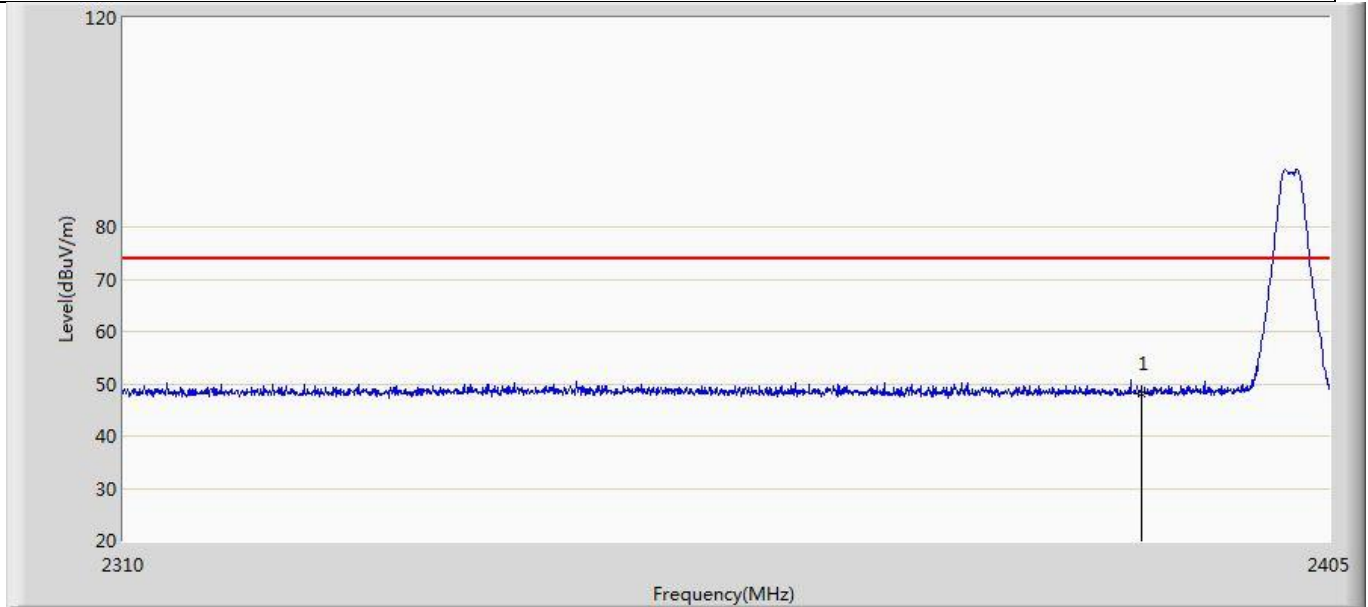
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	52.514	16.110	-21.486	74.000	36.404	PK

Profile: 2140067R	Page No.: 20
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



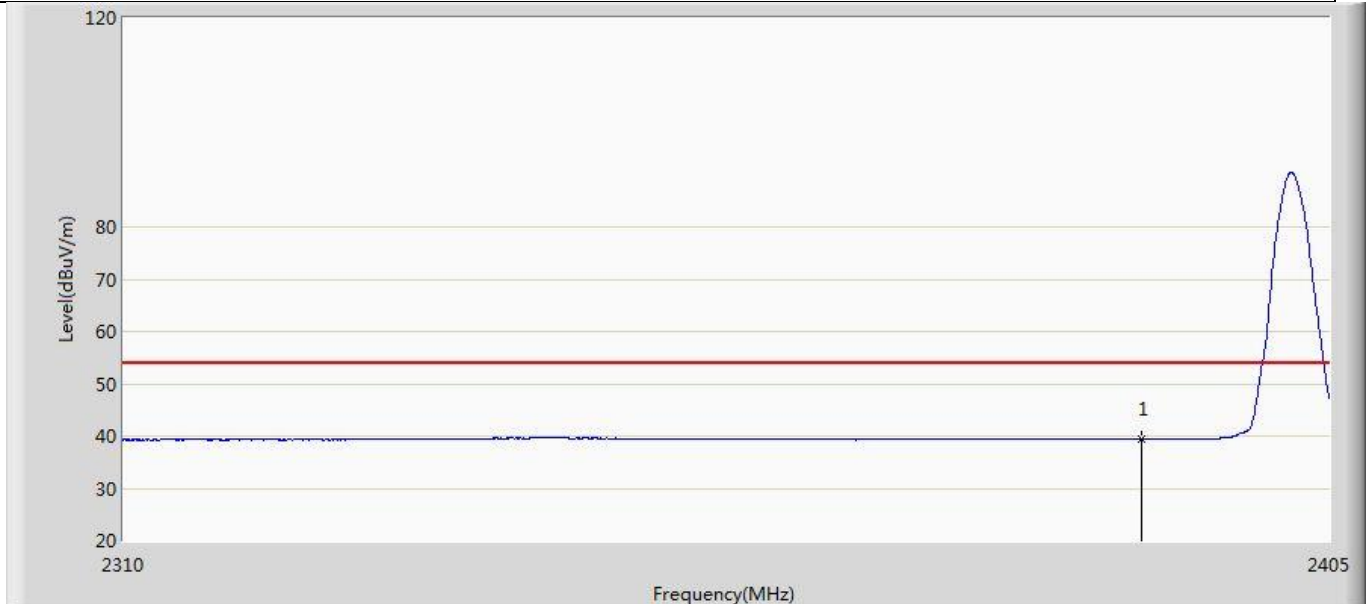
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	39.160	2.756	-14.840	54.000	36.404	AV

Profile: 2140067R	Page No.: 5
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



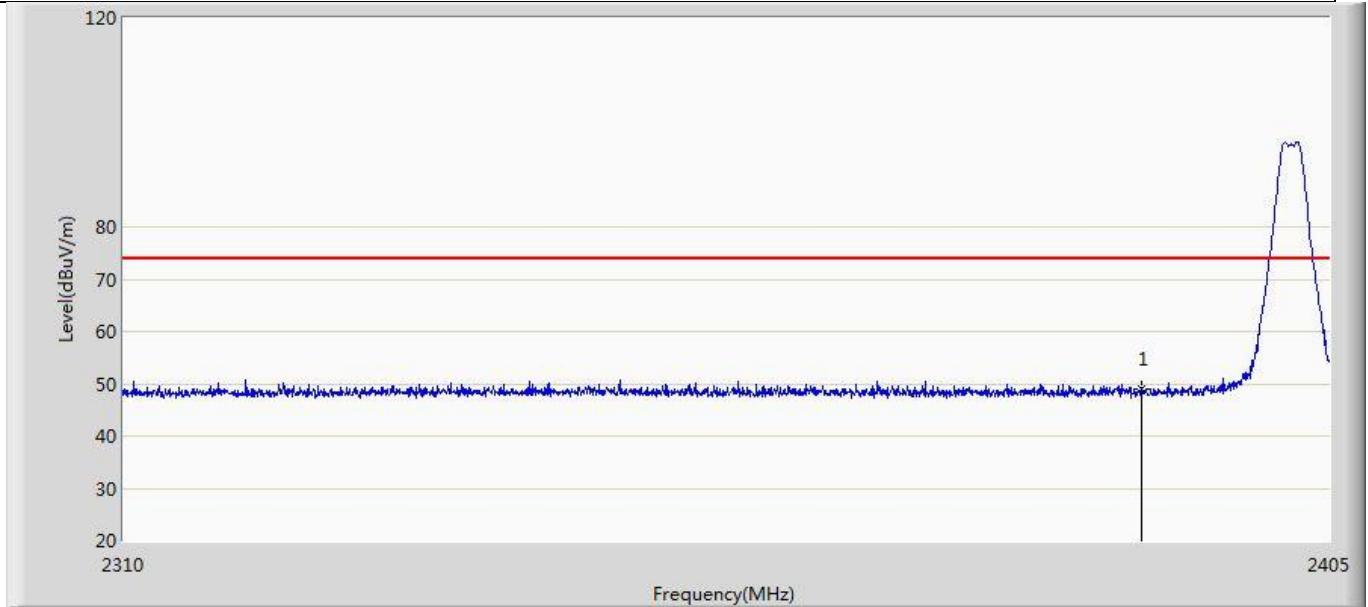
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	48.221	11.865	-25.779	74.000	36.357	PK

Profile: 2140067R	Page No.: 6
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



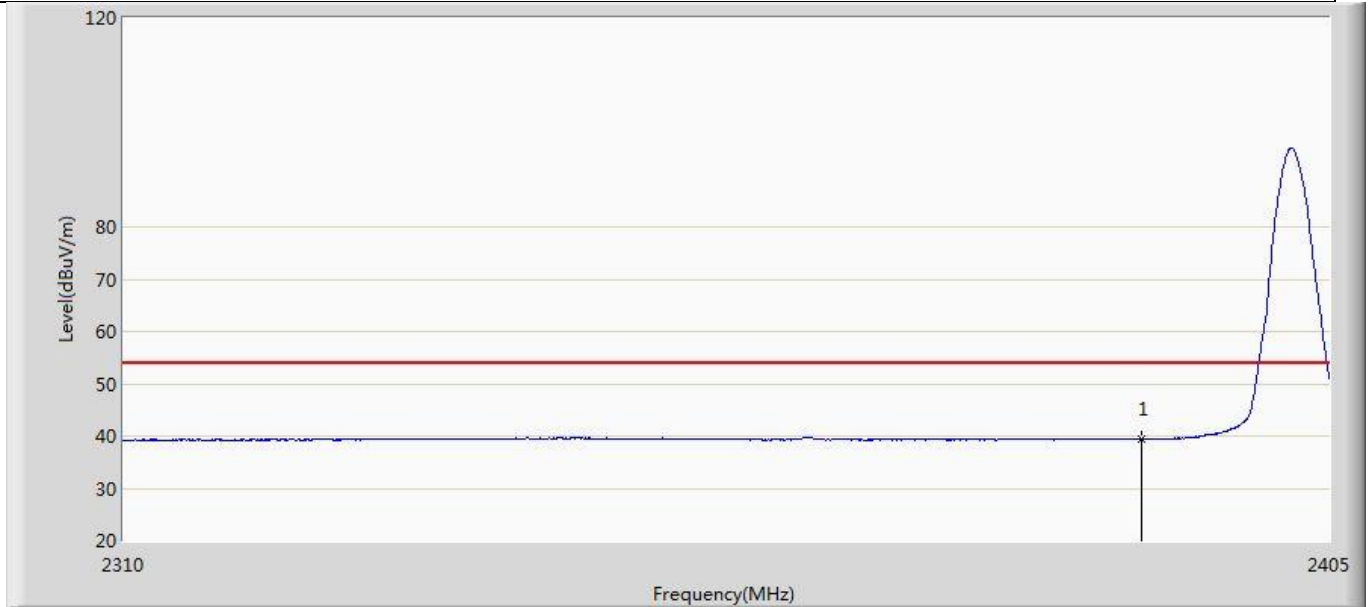
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.374	3.018	-14.626	54.000	36.357	AV

Profile: 2140067R	Page No.: 7
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



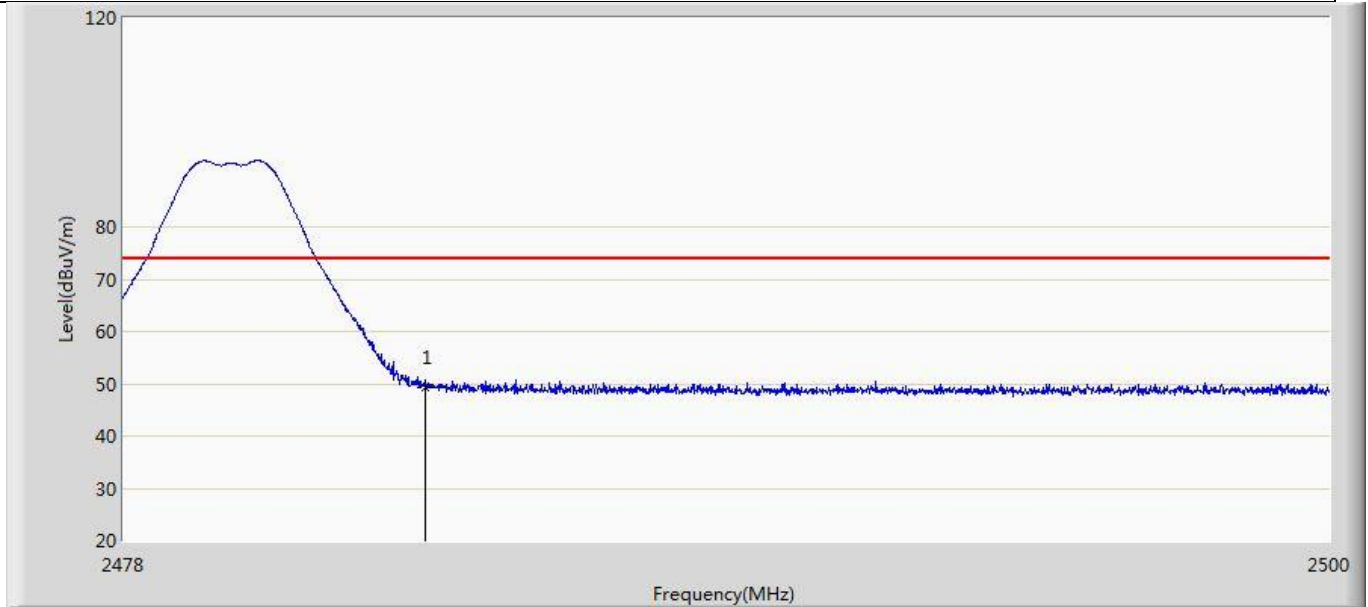
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	48.979	12.623	-25.021	74.000	36.357	PK

Profile: 2140067R	Page No.: 8
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



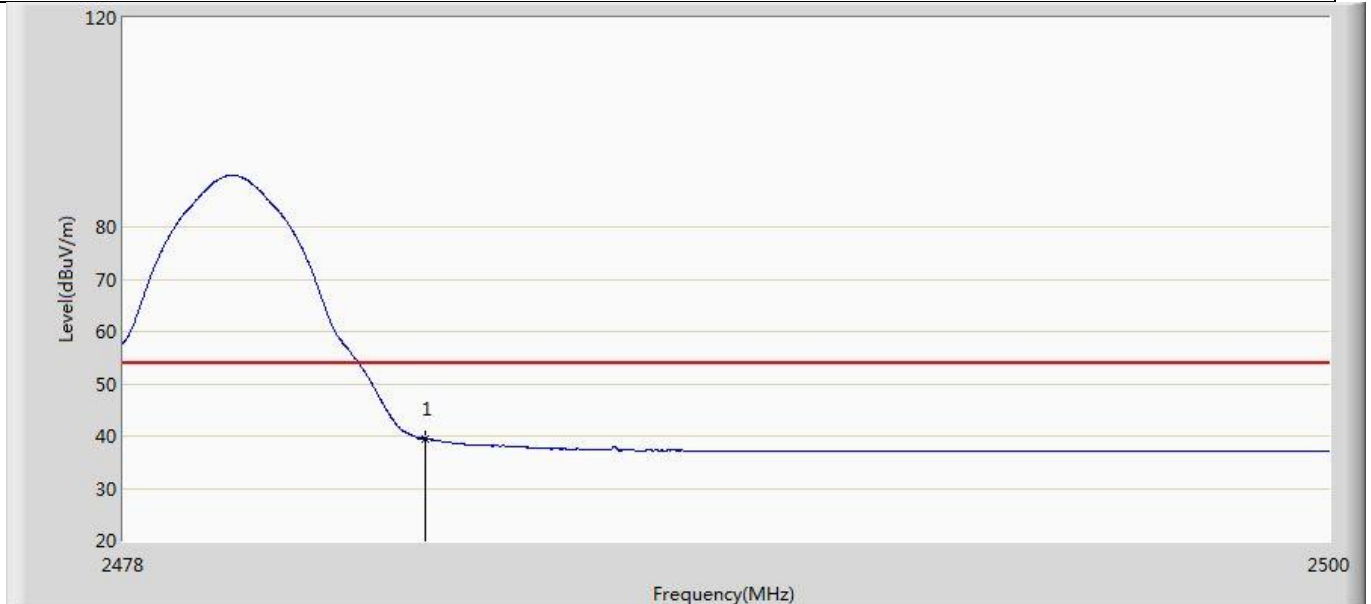
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.425	3.069	-14.575	54.000	36.357	AV

Profile: 2140067R	Page No.: 21
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



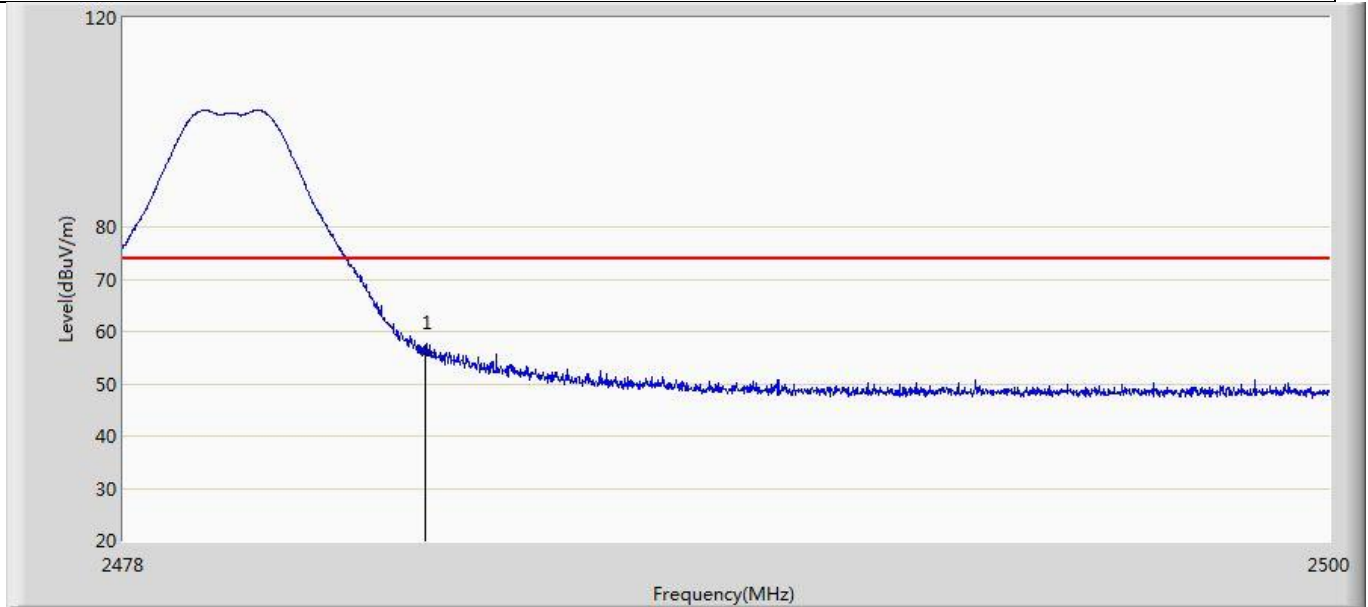
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	49.259	12.855	-24.741	74.000	36.404	PK

Profile: 2140067R	Page No.: 22
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



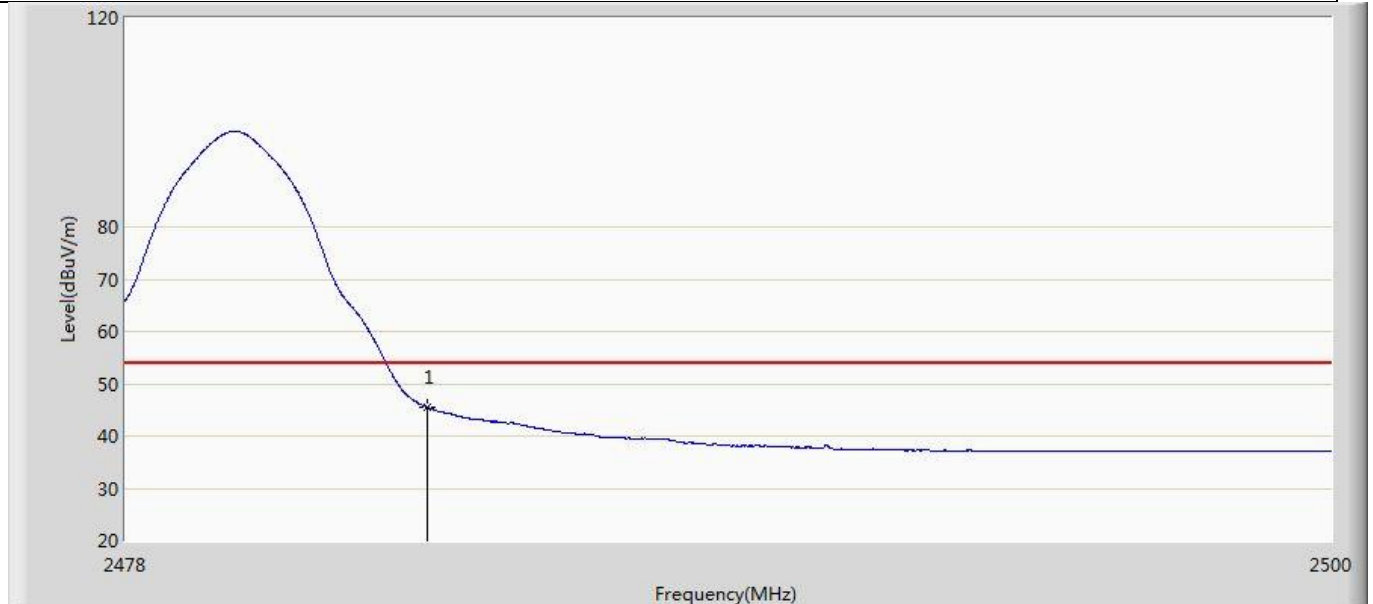
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	39.532	3.128	-14.468	54.000	36.404	AV

Profile: 2140067R	Page No.: 23
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



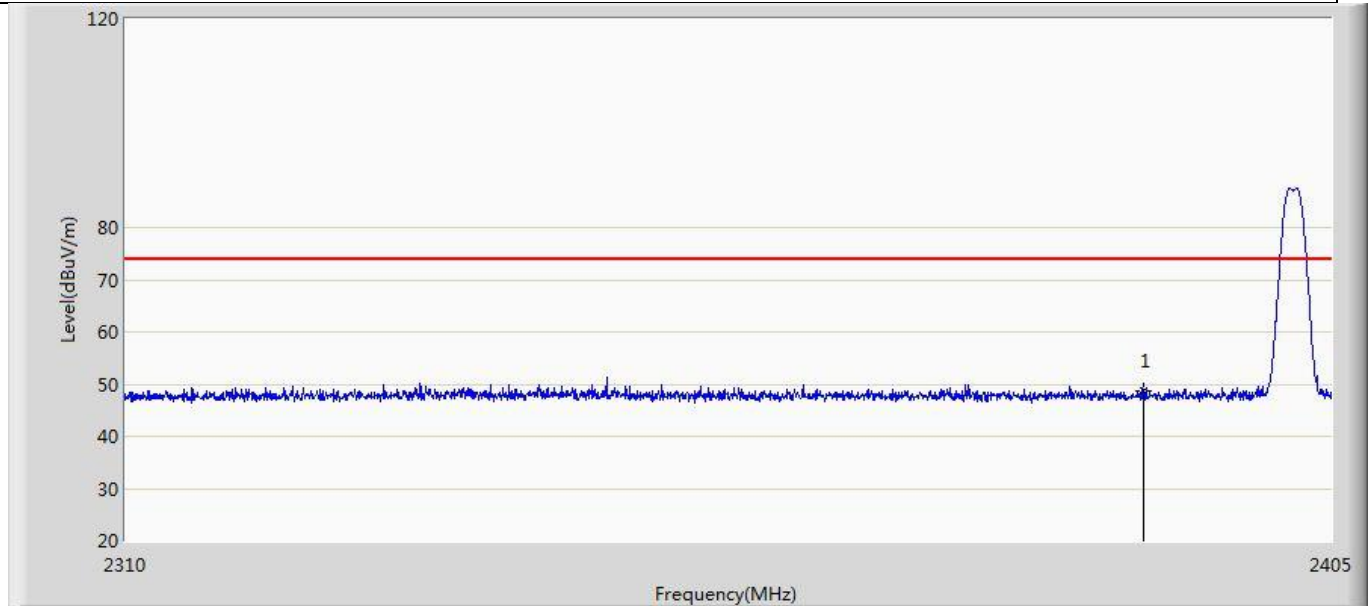
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	55.803	19.399	-18.197	74.000	36.404	PK

Profile: 2140067R	Page No.: 24
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



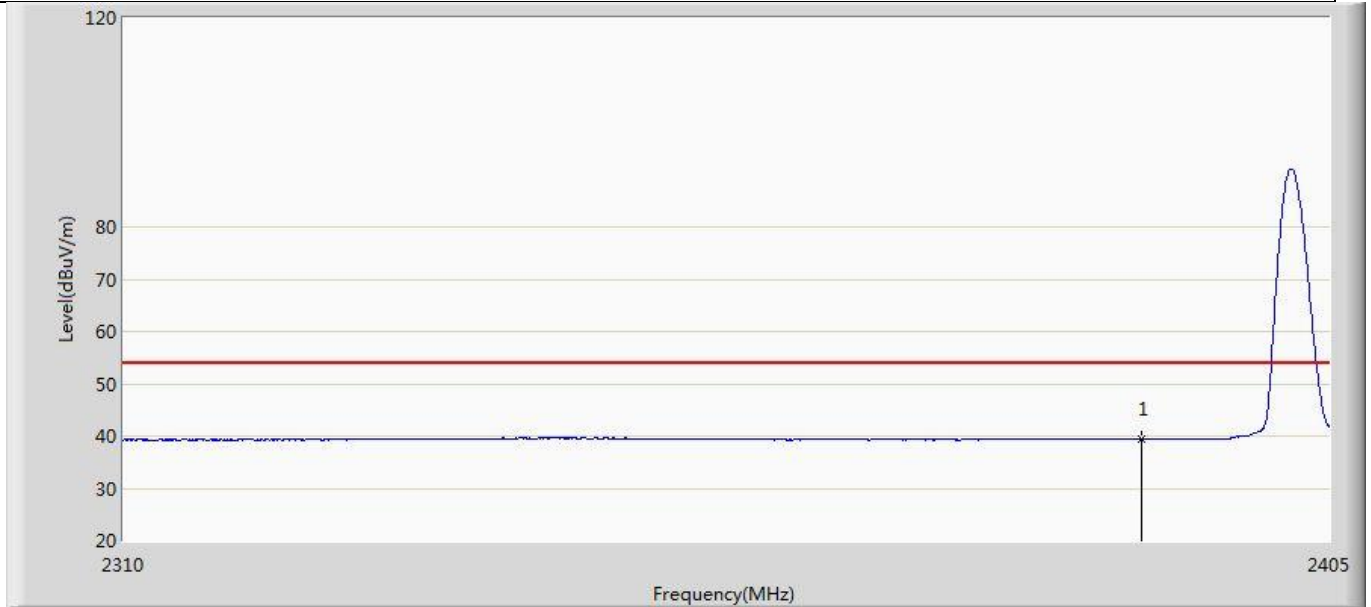
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	45.394	8.990	-8.606	54.000	36.404	AV

Profile: 2140067R	Page No.: 13
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=2	



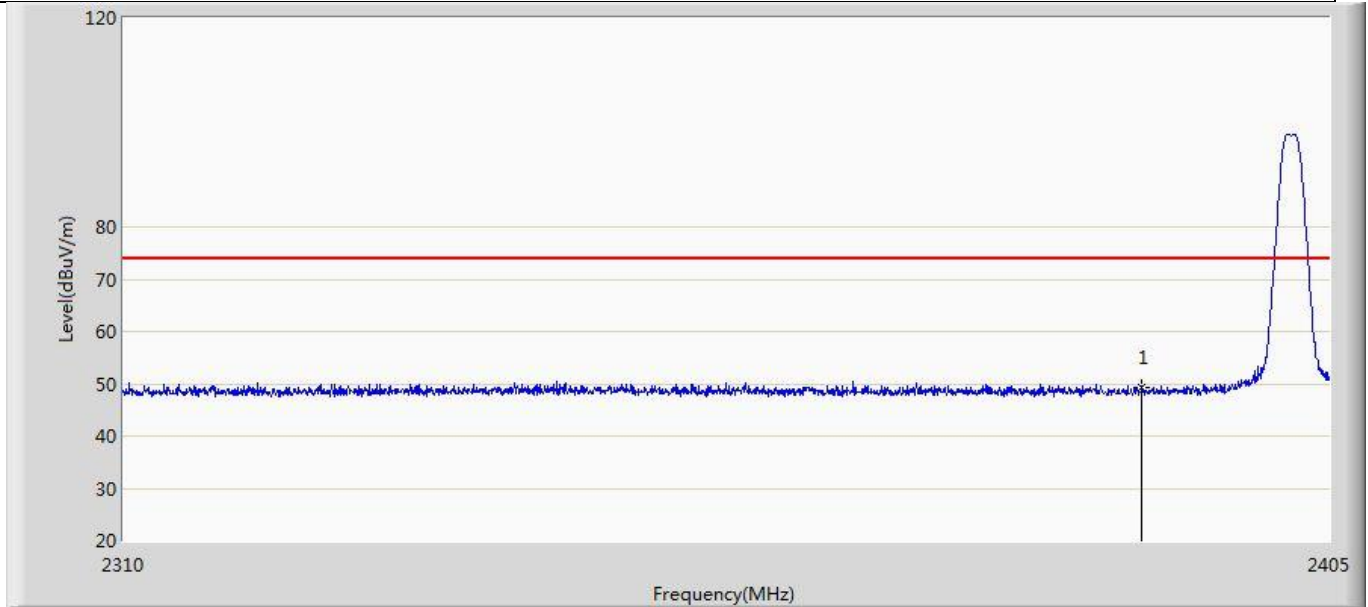
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	48.666	12.310	-25.334	74.000	36.357	PK

Profile: 2140067R	Page No.: 14
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=2	



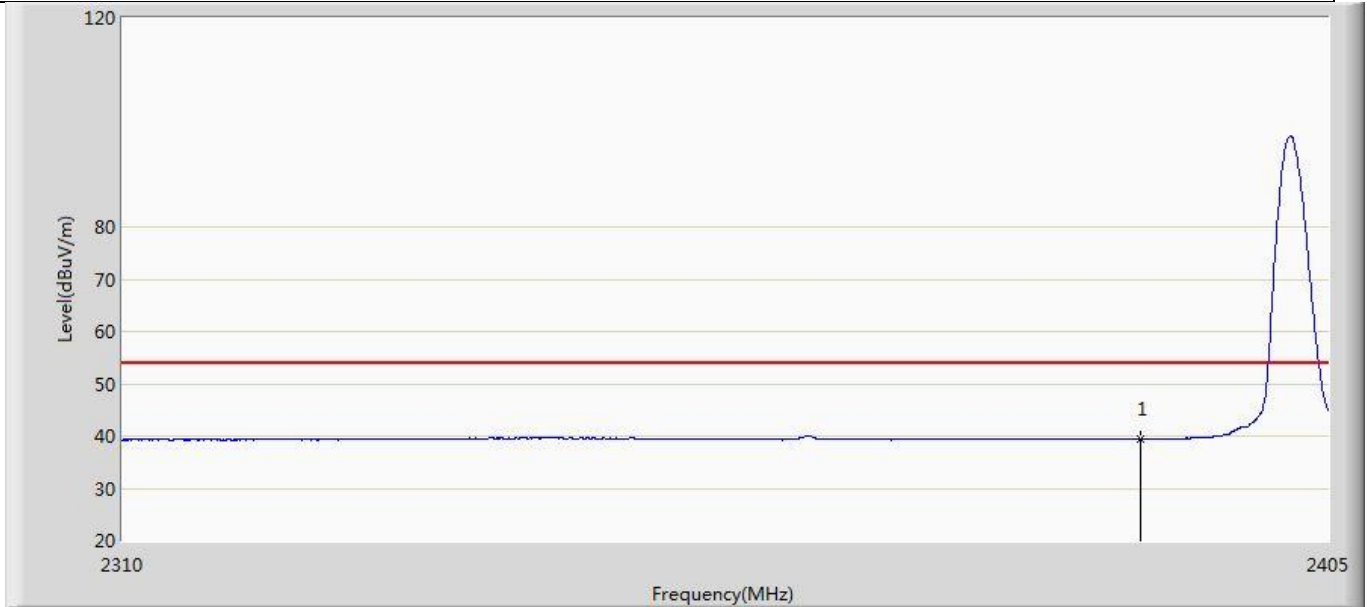
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.379	3.023	-14.621	54.000	36.357	AV

Profile: 2140067R	Page No.: 15
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=2	



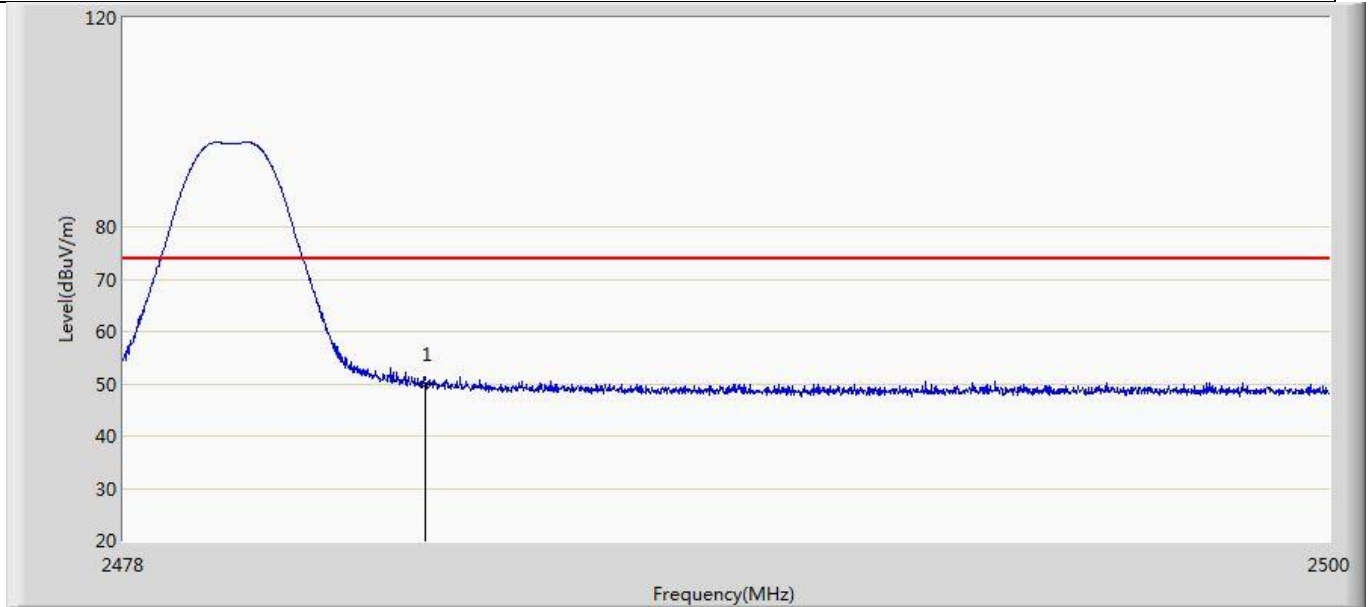
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	49.329	12.973	-24.671	74.000	36.357	PK

Profile: 2140067R	Page No.: 16
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=2	



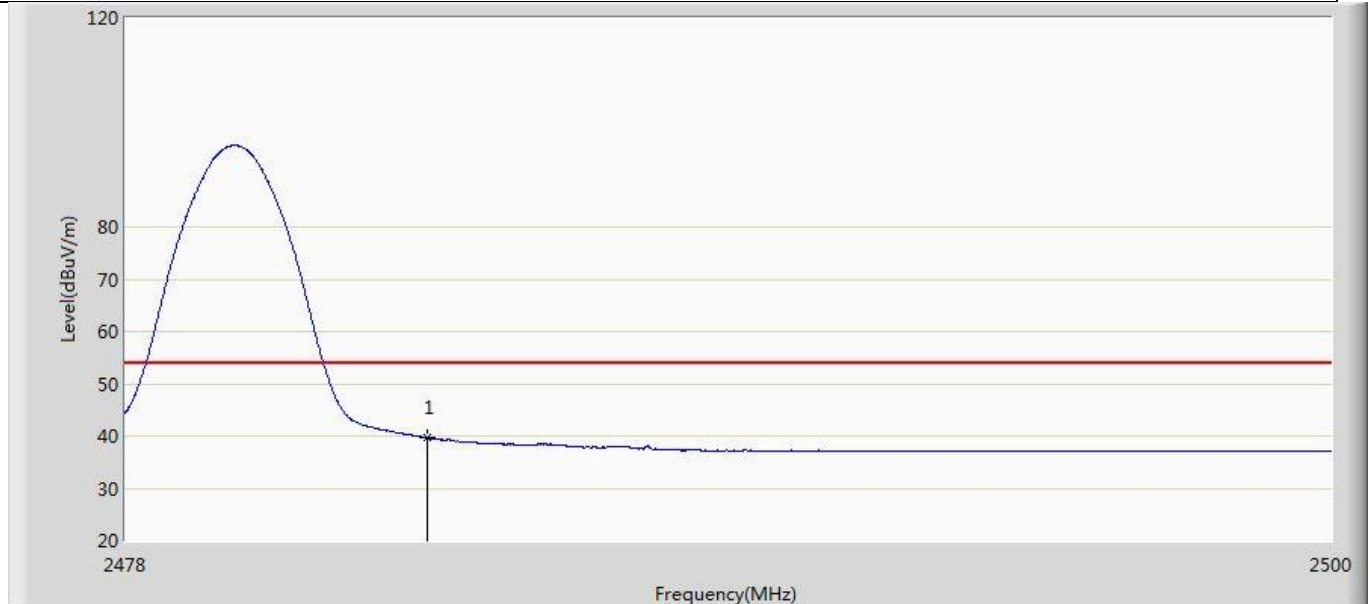
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.471	3.115	-14.529	54.000	36.357	AV

Profile: 2140067R	Page No.: 29
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=2	



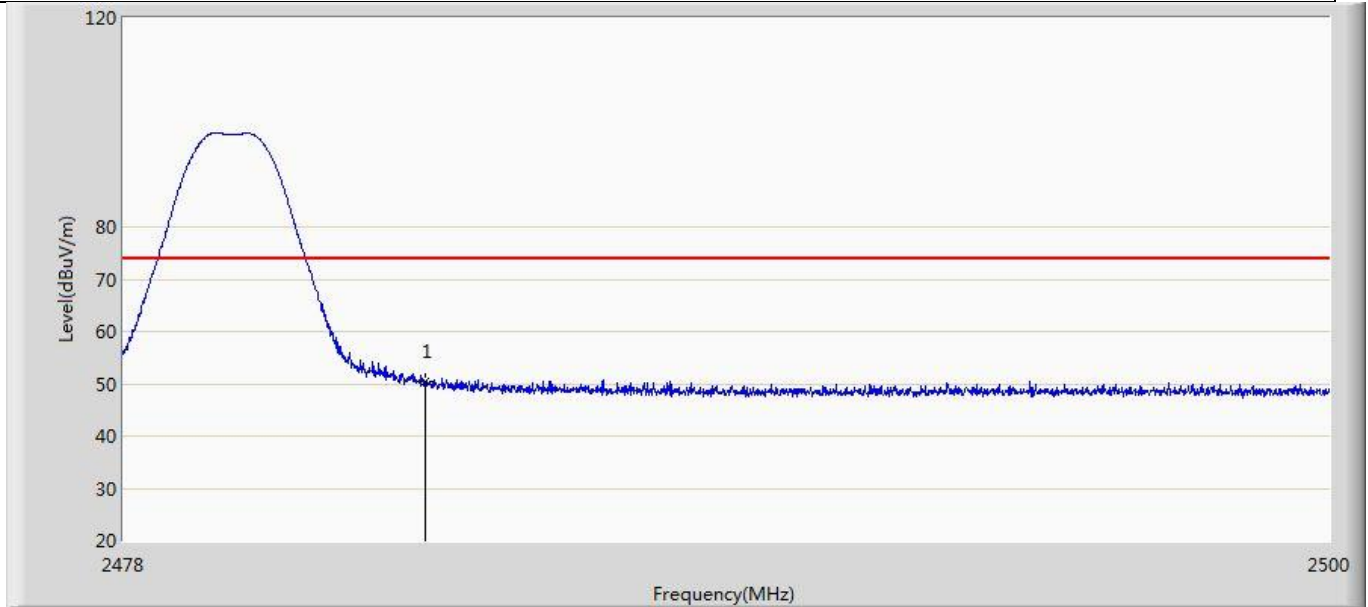
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	49.929	13.525	-24.071	74.000	36.404	PK

Profile: 2140067R	Page No.: 30
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=2	



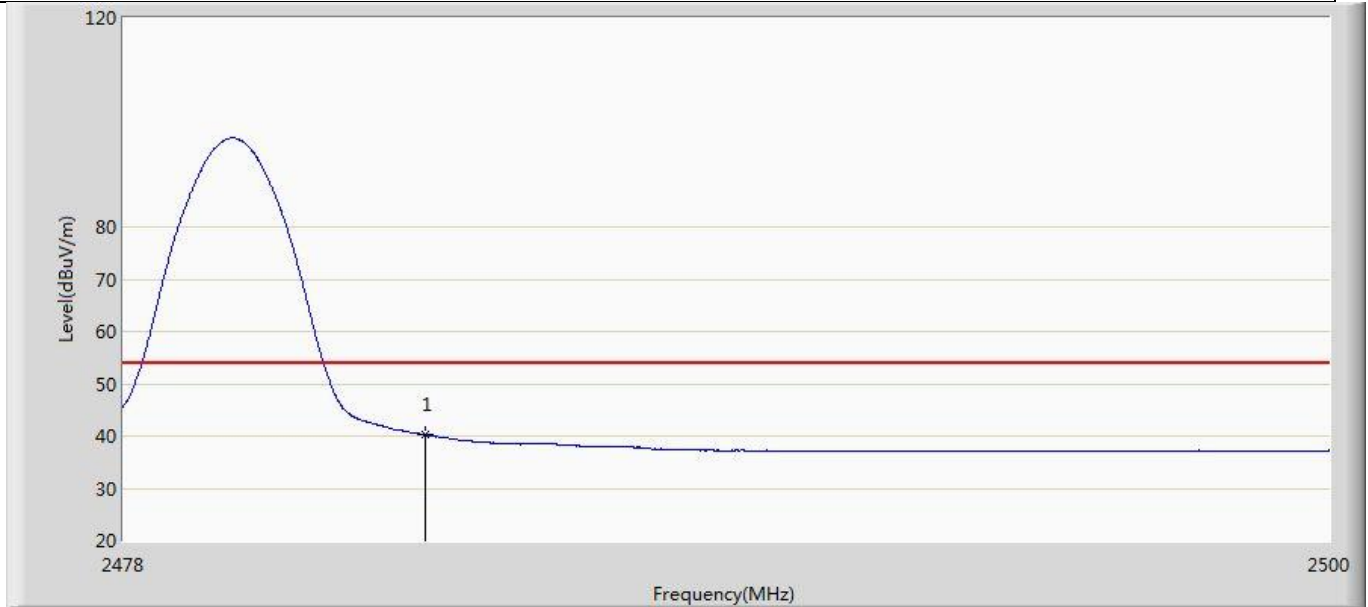
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	39.711	3.307	-14.289	54.000	36.404	AV

Profile: 2140067R	Page No.: 31
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 21:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=2	



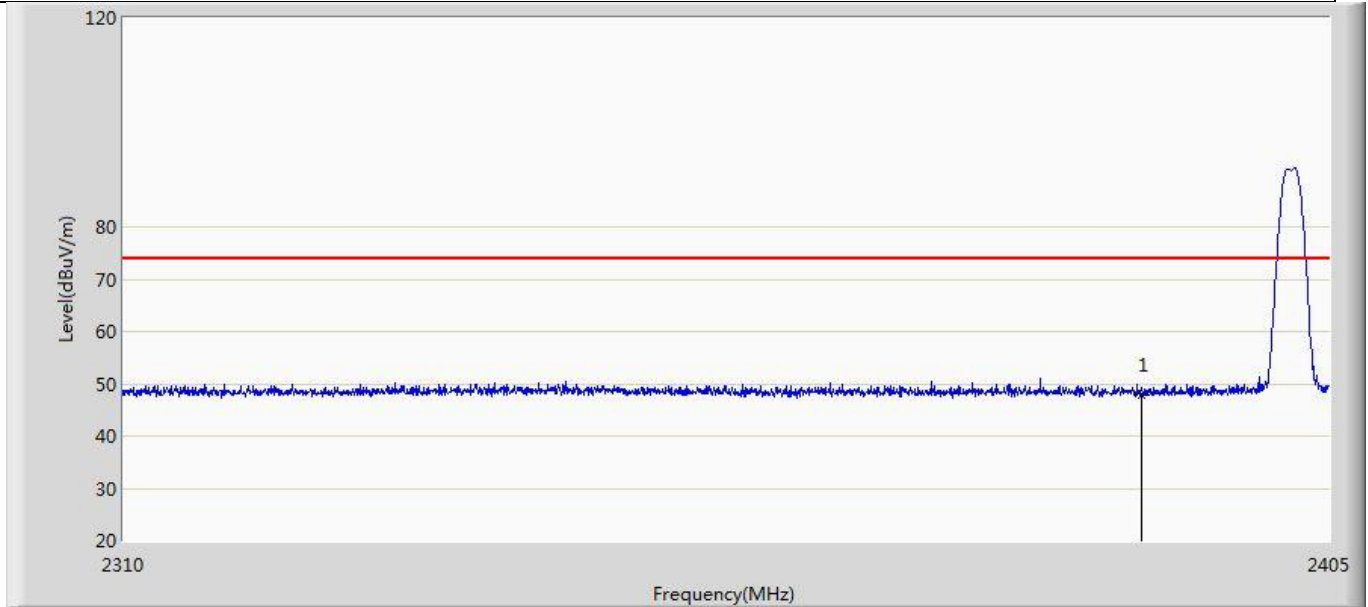
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	50.504	14.100	-23.496	74.000	36.404	PK

Profile: 2140067R	Page No.: 32
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 21:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=2	



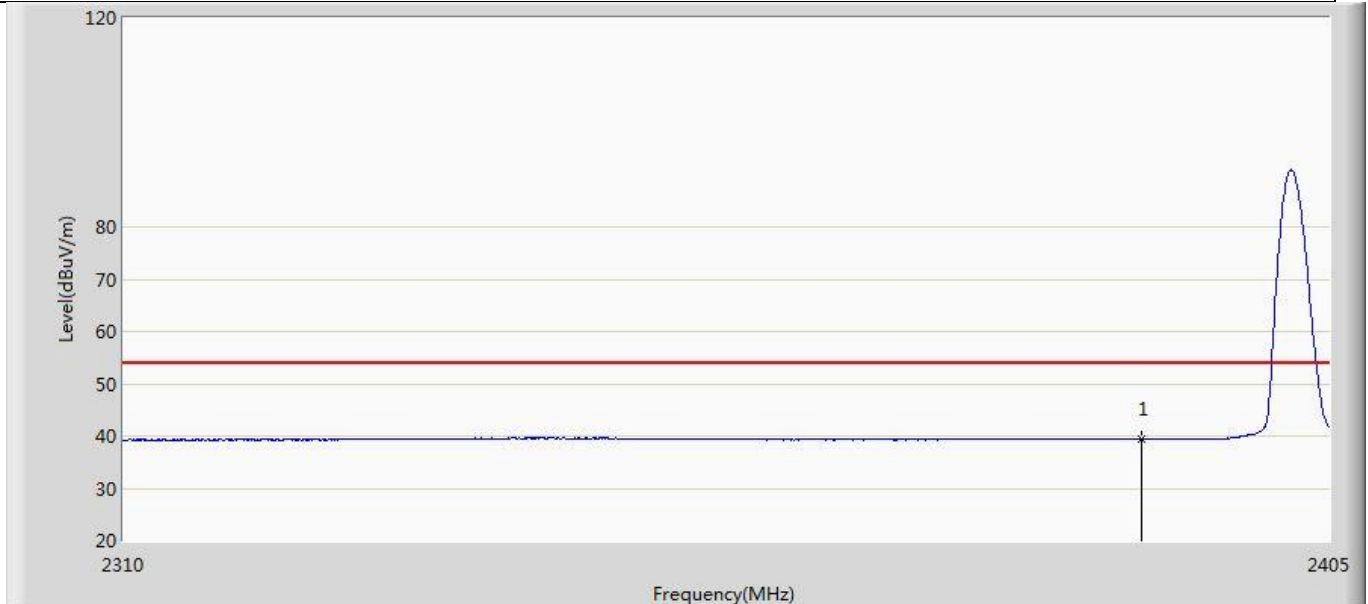
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	40.196	3.792	-13.804	54.000	36.404	AV

Profile: 2140067R	Page No.: 9
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=8	



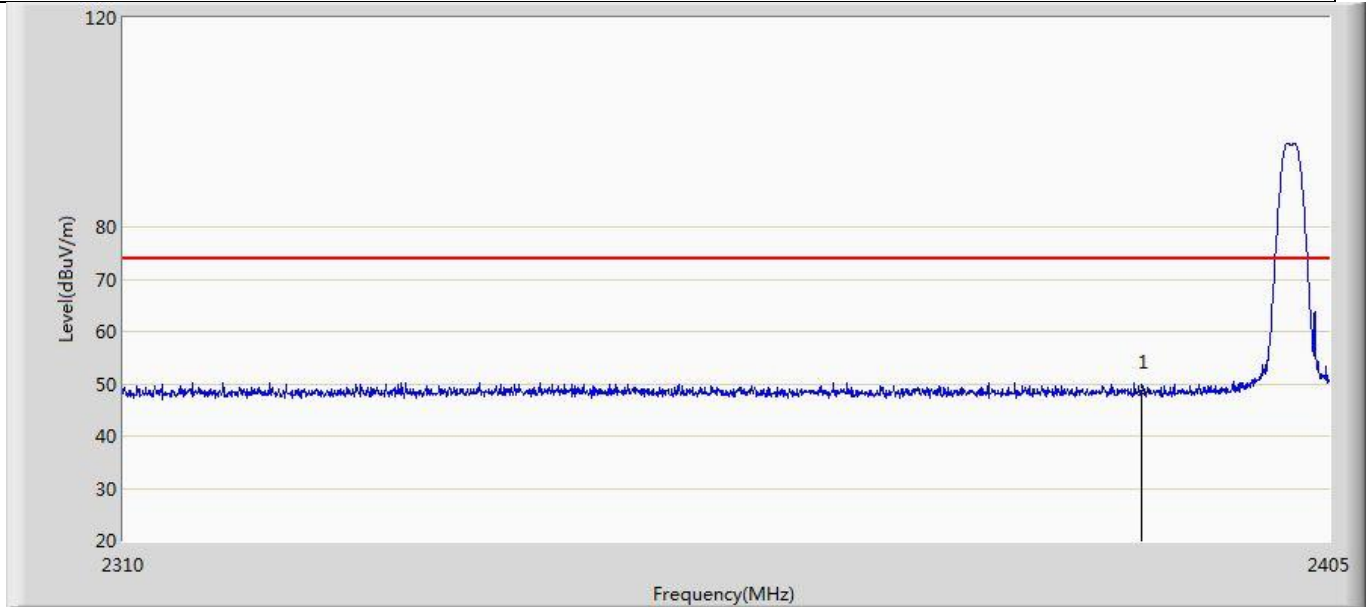
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	47.926	11.570	-26.074	74.000	36.357	PK

Profile: 2140067R	Page No.: 10
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=8	



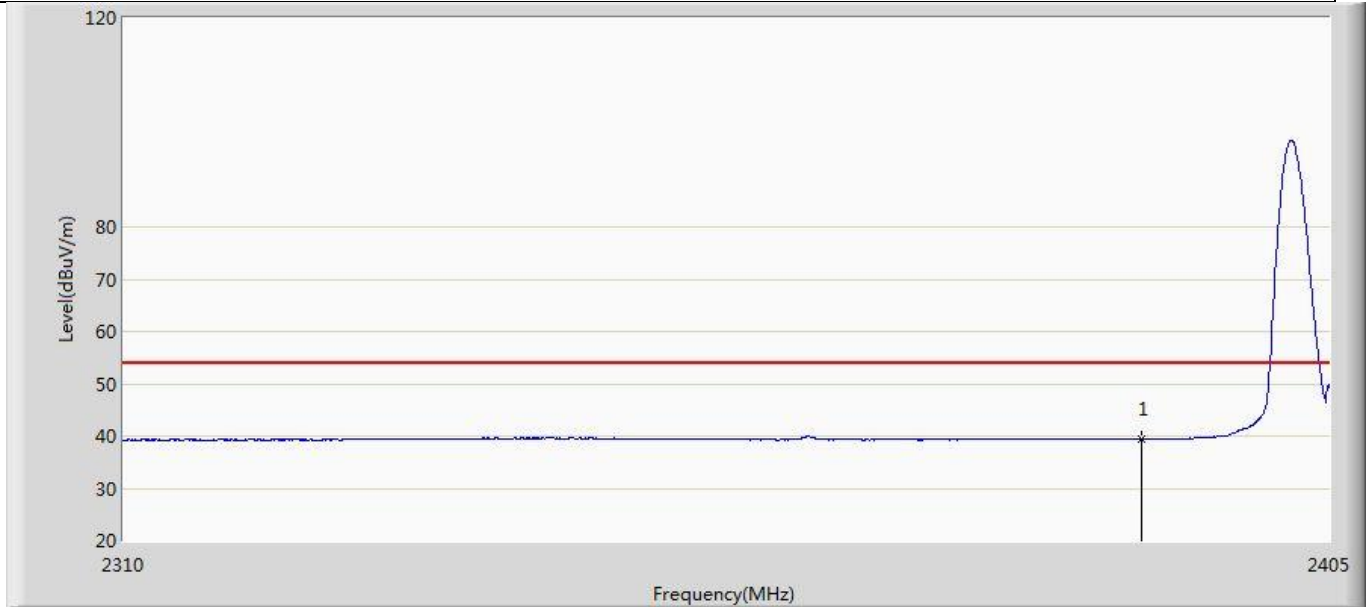
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.370	3.014	-14.630	54.000	36.357	AV

Profile: 2140067R	Page No.: 11
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=8	



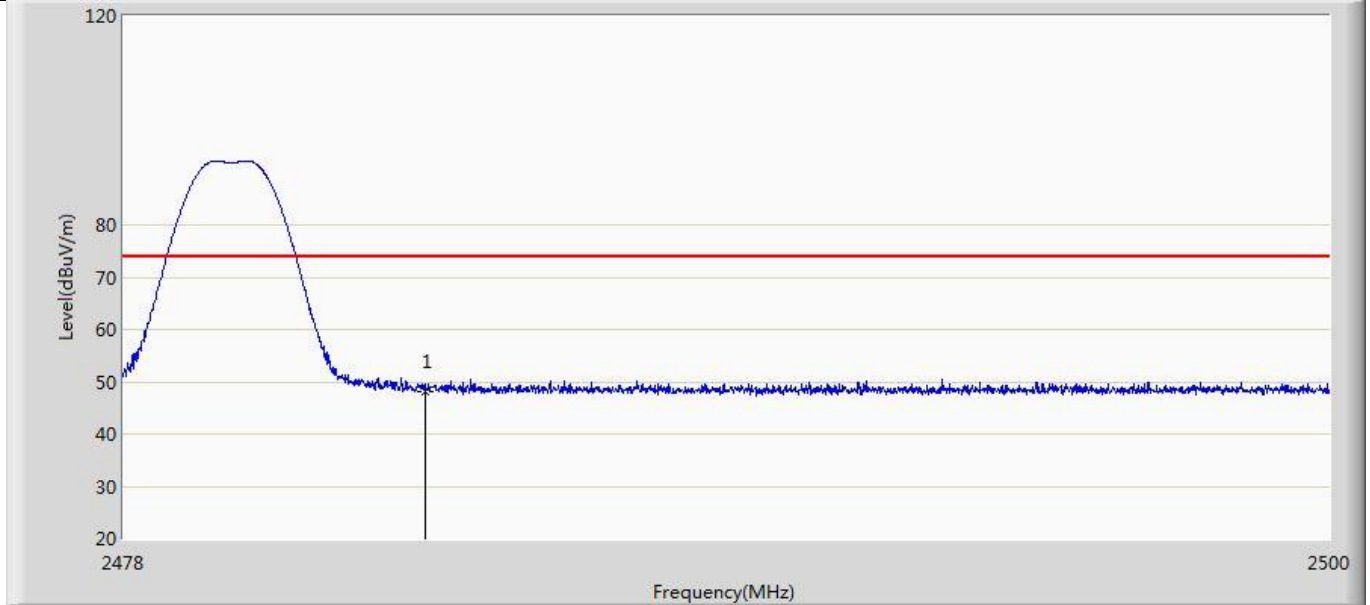
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	48.514	12.158	-25.486	74.000	36.357	PK

Profile: 2140067R	Page No.: 12
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 19:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=8	



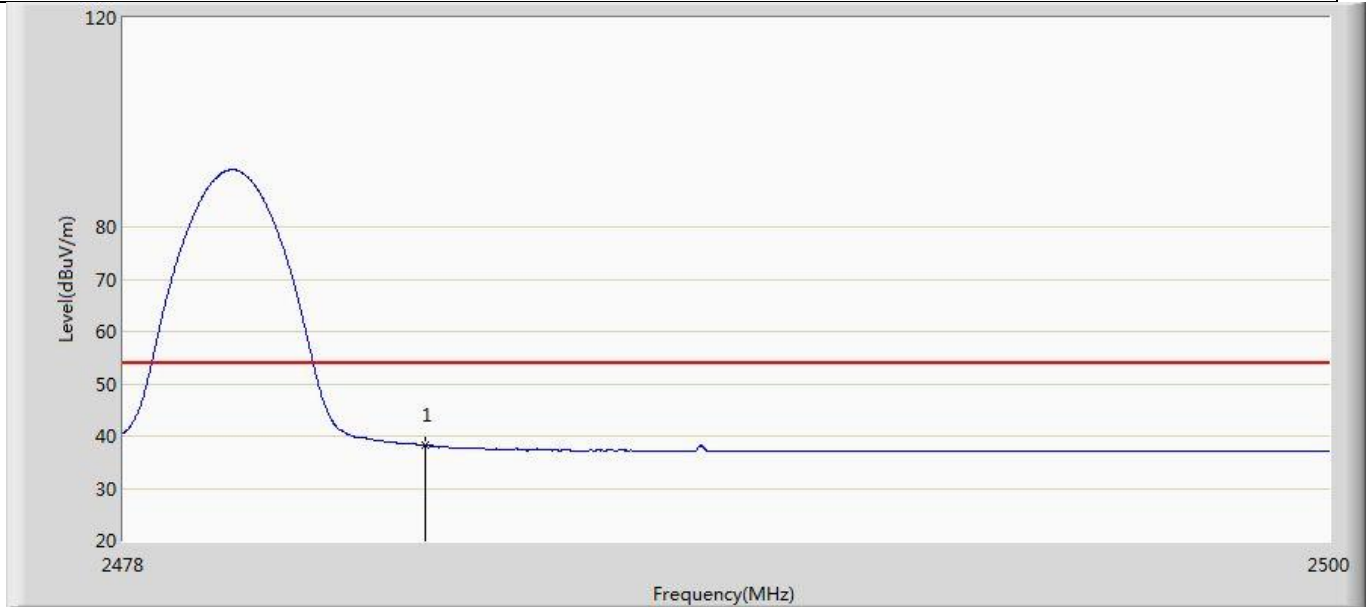
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.342	2.986	-14.658	54.000	36.357	AV

Profile: 2140067R	Page No.: 25
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded S=8	



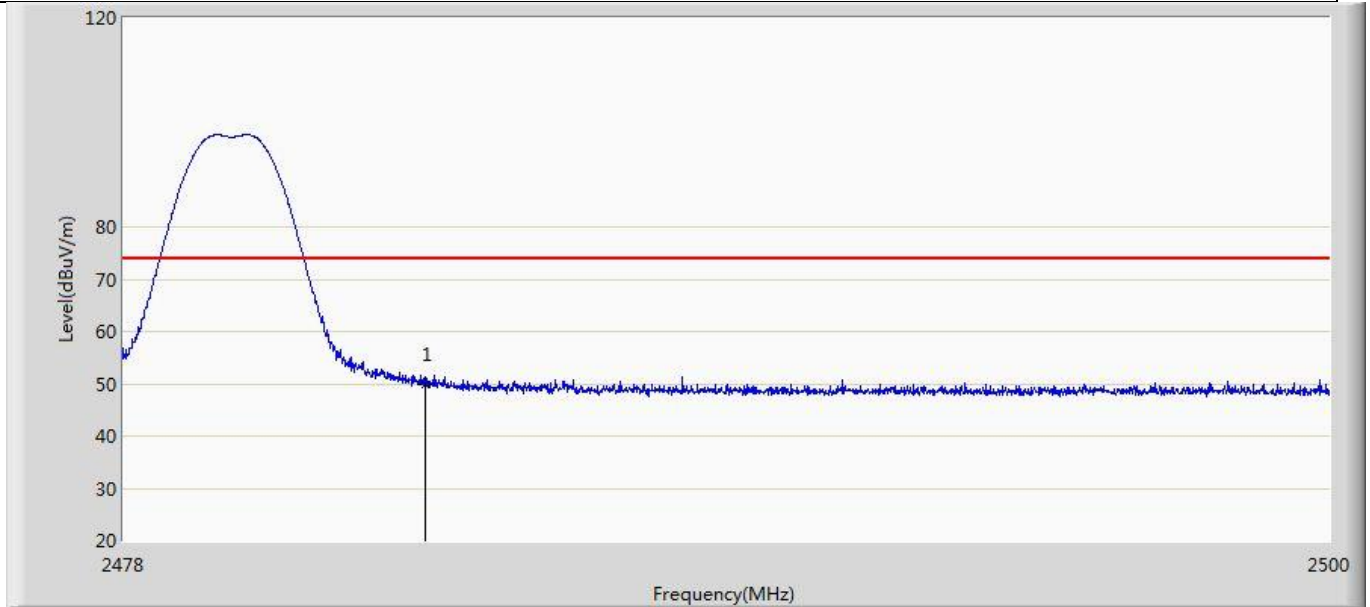
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	48.216	11.812	-25.784	74.000	36.404	PK

Profile: 2140067R	Page No.: 26
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded S=8	



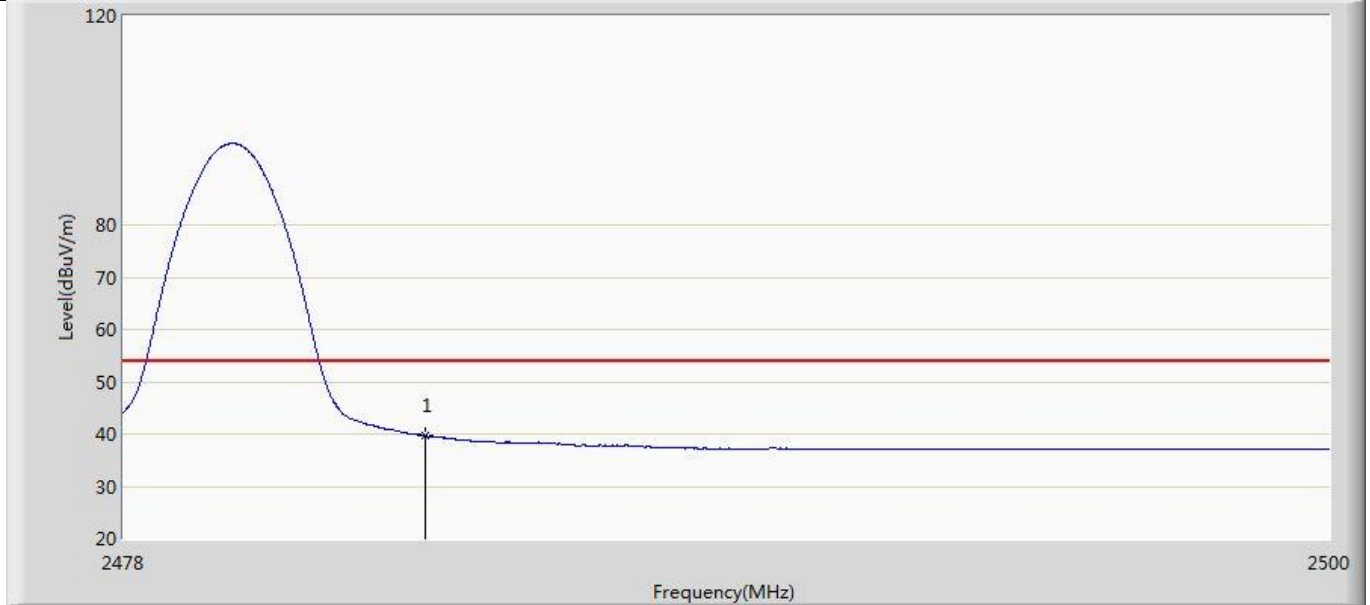
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	38.237	1.833	-15.763	54.000	36.404	AV

Profile: 2140067R	Page No.: 27
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded S=8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	49.980	13.576	-24.020	74.000	36.404	PK

Profile: 2140067R	Page No.: 28
Engineer: Juliuszhou	
Site: AC5	Time: 2021/04/16 - 20:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: LED Device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded S=8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	39.717	3.313	-14.283	54.000	36.404	AV

Note:

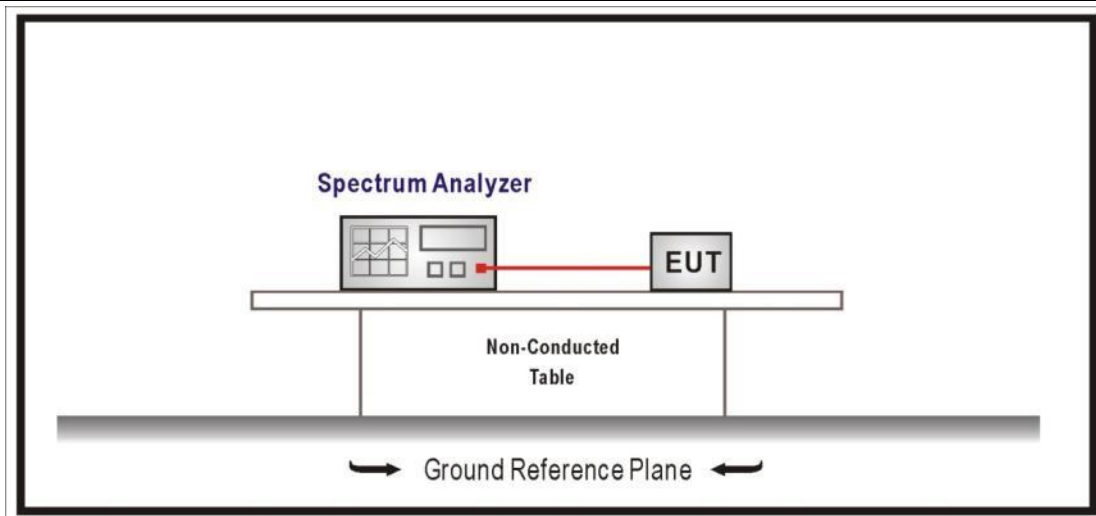
1. Measured Level = Reading Level + Factor.
2. As the radiated emission was performed, so conducted emission was not tested.

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 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

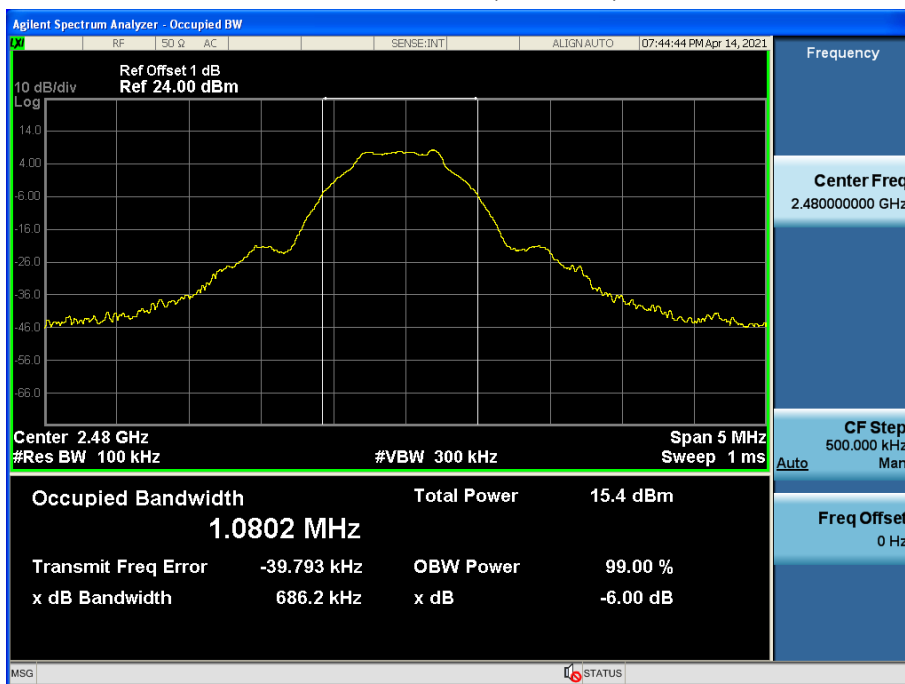
	Reference Ruby LE	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.8	DTS bandwidth
<input type="checkbox"/>	ANSI C63.10	11.8.1	Option 1
<input checked="" type="checkbox"/>	ANSI C63.10	11.8.2	Option 2

4.6.4 Test Data

Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	37	2402	691.3	>500	Pass
	19	2440	689.7	>500	Pass
	39	2480	686.2	>500	Pass
2	37	2402	1383.0	>500	Pass
	18	2440	1381.0	>500	Pass
	39	2480	1381.0	>500	Pass
3	37	2402	785.8	>500	Pass
	18	2440	779.0	>500	Pass
	39	2480	780.1	>500	Pass
4	37	2402	733.1	>500	Pass
	18	2440	732.2	>500	Pass
	39	2480	731.3	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

6dB Occupied Bandwidth
Mode 1 / CH39 (2480MHz)

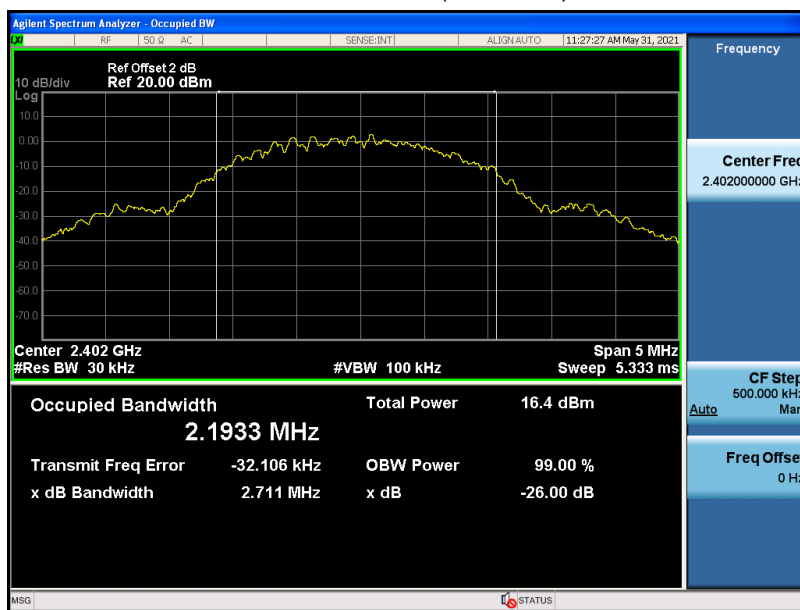


Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	Limit	Result
1	37	2402	1077.4	Within frequency range	Pass
	17	2440	1073.6	Within frequency range	Pass
	39	2480	1073.8	Within frequency range	Pass
2	37	2402	2193.3	Within frequency range	Pass
	17	2440	2187.1	Within frequency range	Pass
	39	2480	2187.7	Within frequency range	Pass
3	37	2402	1137.2	Within frequency range	Pass
	17	2440	1131.0	Within frequency range	Pass
	39	2480	1128.8	Within frequency range	Pass
4	37	2402	1147.2	Within frequency range	Pass
	17	2440	1141.6	Within frequency range	Pass
	39	2480	1136.1	Within frequency range	Pass

Note : The worst case of Occupied Bandwidth as below:

99% Occupied Bandwidth

Mode 2 / CH37 (2402MHz)



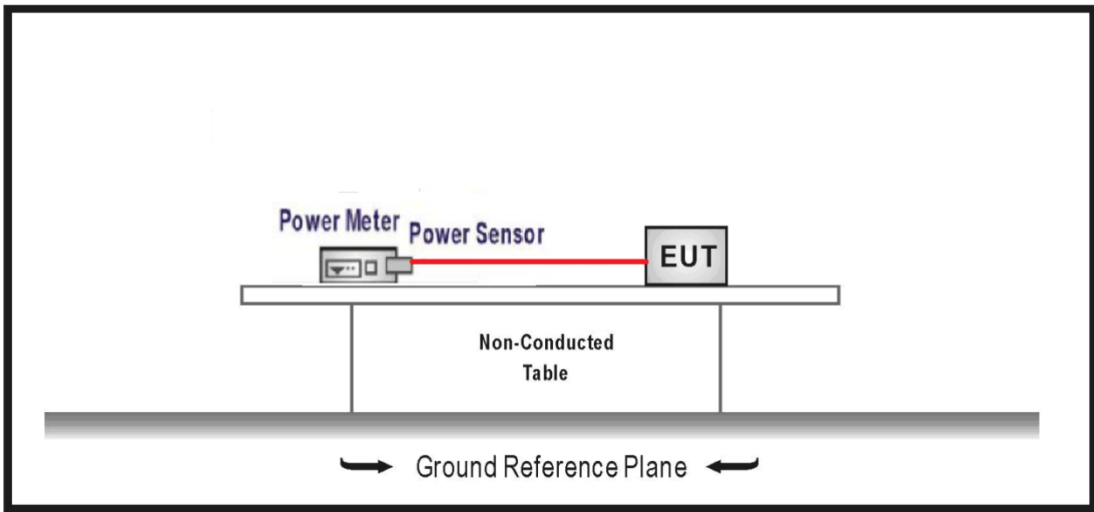
4.7 Fundamental emission output power	VERDICT: PASS
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4.7.1 Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247 (b)(3)	
<input checked="" type="checkbox"/> GTX < 6dBi	Pout ≤ 30dBm	
<input type="checkbox"/> GTX > 6dBi		
<input type="checkbox"/> Non-Fix point-point	Pout ≤ 30 - (GTX - 6)	
<input type="checkbox"/> Fix point-point	Pout ≤ 30 - [(GTX - 6)]/3	
<input type="checkbox"/> Point-to-multipoint	Pout ≤ 30 - (GTX - 6)	
<input type="checkbox"/> Overlap Beams	Pout ≤ 30 - [(GTX - 6)]/3	
<input type="checkbox"/> Aggregate power transmitted simultaneously on all beams	Pout ≤ 30 - [(GTX - 6)]/3	
<input type="checkbox"/> 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	
<input checked="" type="checkbox"/>	ANSI C63.10		11.9	Fundamental emission output power	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ANSI C63.10	11.9.1	Maximum peak conducted output power	
	<input type="checkbox"/>	ANSI C63.10	11.9.1.1	RBW \geq DTS bandwidth	
	<input type="checkbox"/>	ANSI C63.10	11.9.1.2	Integrated band power method	
	<input type="checkbox"/>	ANSI C63.10	11.9.1.3	PKPM1 Peak power meter method	
	<input type="checkbox"/>	ANSI C63.10	11.9.2	Maximum conducted (average) output power	
	<input type="checkbox"/>	ANSI C63.10	11.9.2.2	Measurement using a spectrum analyzer (SA)	
		<input type="checkbox"/>	ANSI C63.10	11.9.2.2.2	Method AVGSA-1(Duty cycle \geq 98%)
		<input type="checkbox"/>	ANSI C63.10	11.9.2.2.3	Method AVGSA-1A(Duty cycle \geq 98%)
		<input type="checkbox"/>	ANSI C63.10	11.9.2.2.4	Method AVGSA-2(Duty cycle \leq 98%)
		<input type="checkbox"/>	ANSI C63.10	11.9.2.2.5	Method AVGSA-2A(Duty cycle \leq 98%)
		<input type="checkbox"/>	ANSI C63.10	11.9.2.2.4	Method AVGSA-3
		<input type="checkbox"/>	ANSI C63.10	11.9.2.2.5	Method AVGSA-3A
	<input checked="" type="checkbox"/>	ANSI C63.10	11.9.2.3	Measurement using a power meter (PM)	
		<input checked="" type="checkbox"/>	ANSI C63.10	11.9.2.3.1	Method AVGPM
		<input type="checkbox"/>	ANSI C63.10	11.9.2.3.2	Method AVGPM-G

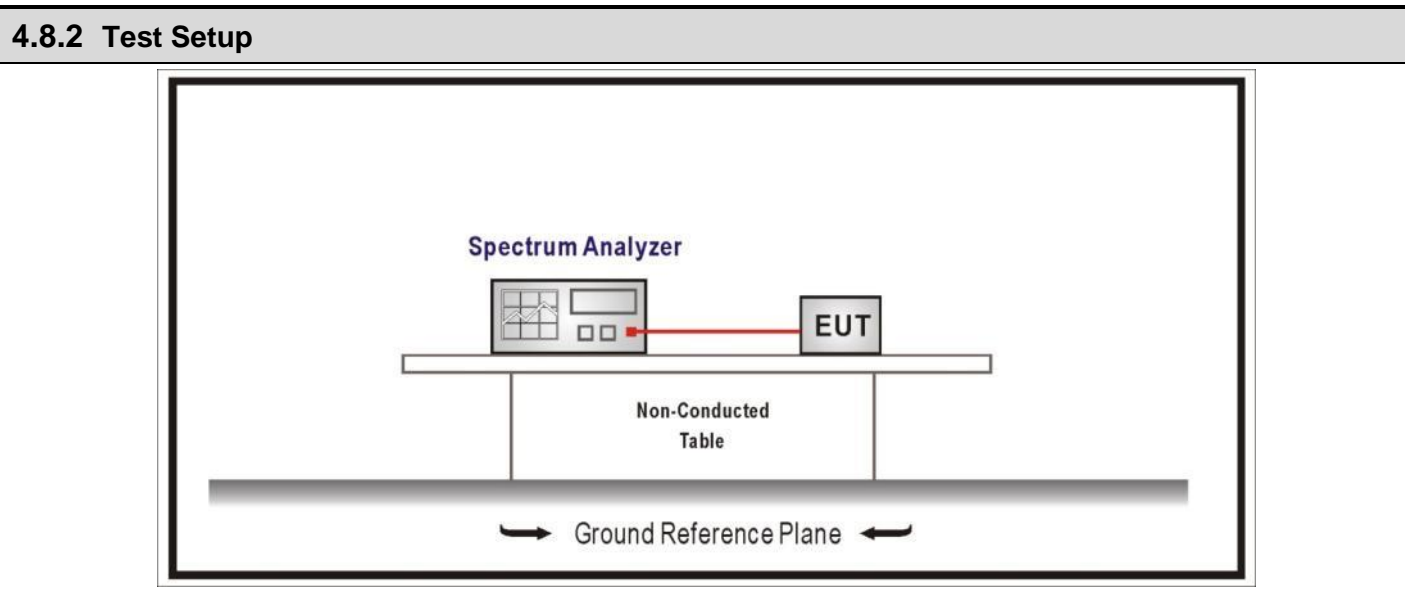
4.7.4 Test Data

Mode	Channel	Test Frequency (MHz)	Conducted Power Output (dBm)	E.I.R.P (dBm)	Conducted Limit (dBm)	E.I.R.P Limit (dBm)	Result
Mode 1	37	2402	9.14	9.80	≤30	≤36	Pass
	17	2440	8.89	9.55	≤30	≤36	Pass
	39	2480	8.94	9.60	≤30	≤36	Pass
Mode 2	37	2402	9.10	9.76	≤30	≤36	Pass
	17	2440	8.91	9.57	≤30	≤36	Pass
	39	2480	8.89	9.55	≤30	≤36	Pass
Mode 3	37	2402	9.13	9.79	≤30	≤36	Pass
	17	2440	9.88	10.54	≤30	≤36	Pass
	39	2480	8.93	9.59	≤30	≤36	Pass
Mode 4	37	2402	9.12	9.78	≤30	≤36	Pass
	17	2440	8.89	9.55	≤30	≤36	Pass
	39	2480	8.92	9.58	≤30	≤36	Pass

Note: EIRP=Conducted power + Antenna Gain

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



4.8.3 Test Procedure

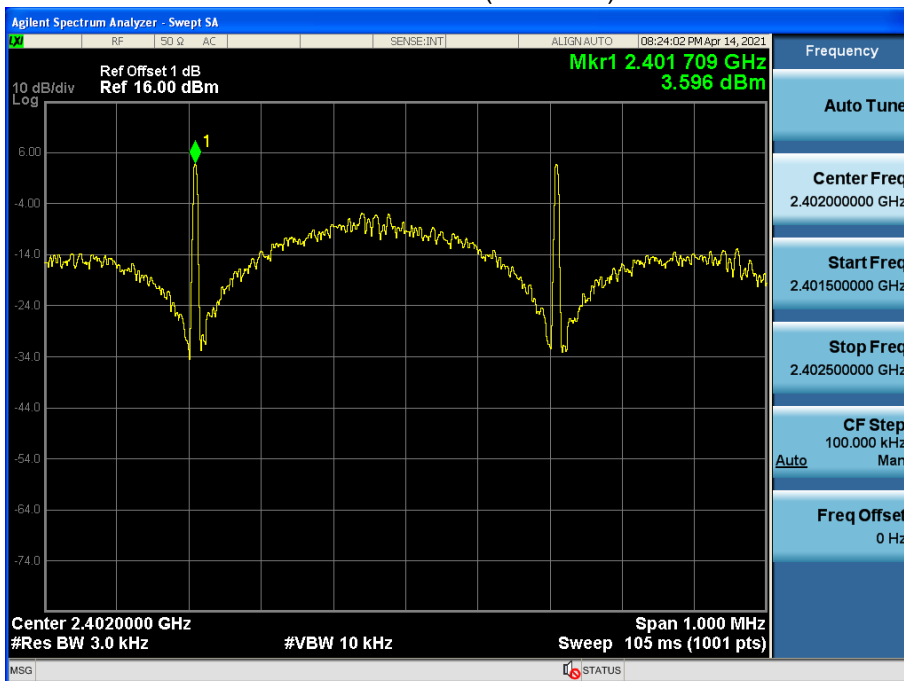
	References Ruby LE	Chapter	Description
<input checked="" type="checkbox"/>	ANSI C63.10	11.10	Maximum power spectral density by LLevel in the fundamental emission
	<input checked="" type="checkbox"/> ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	<input type="checkbox"/> ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle ≥ 98%)
	<input type="checkbox"/> ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle ≥ 98%)
	<input type="checkbox"/> ANSI C63.10	11.10.5	Method AVGPSD-2(Duty cycle < 98%)
	<input type="checkbox"/> ANSI C63.10	11.10.6	Method AVGPSD-2A(Duty cycle < 98%)
	<input type="checkbox"/> ANSI C63.10	11.10.7	Method AVGPSD-3
	<input type="checkbox"/> 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	-6.000	≤8	Pass
	17	2440	-6.222	≤8	Pass
	39	2480	-6.177	≤8	Pass
Mode 2	37	2402	-8.874	≤8	Pass
	17	2440	-9.092	≤8	Pass
	39	2480	-9.030	≤8	Pass
Mode 3	37	2402	-8.443	≤8	Pass
	17	2440	-8.648	≤8	Pass
	39	2480	-8.563	≤8	Pass
Mode 4	37	2402	3.596	≤8	Pass
	17	2440	3.358	≤8	Pass
	39	2480	3.348	≤8	Pass

Note : The worst case of PSD as below:

Mode 4 / CH37(2402MHz)



4.9 Antenna Requirement	VERDICT: PASS
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4.9.1 Limit:	
Standard	FCC Part 15 Subpart C Paragraph 15.203
<p>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible 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 any 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 by LE, 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 LE for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.</p>	

4.9.2 Antenna Connector Construction:	
<input checked="" type="checkbox"/>	The use of a permanently attached antenna
<input type="checkbox"/>	The antenna use of a unique coupling to the intentional radiator
<input type="checkbox"/>	The use of a nonstandard antenna jack or any 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 pby LEase see appendix.

_____ The End _____