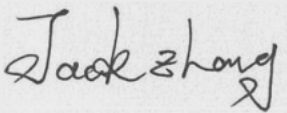


Test report No:
2170694R-RF-US-P06V01

FCC TEST REPORT

Product Name	Control device
Trademark	PHILIPS
Model and /or type reference	4422954726
FCC ID	2AGBW4422954726X
IC	20812-54726X
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)	Tim Cao/Project Engineer 
Approved by (name / position & signature)	Jack Zhang/ Supervisor 
Date of issue	2021-08-13
Report Version	V1.0
Report template No	Template_FCC Part 15C-RF-V1.0

INDEX

	page
General conditions	4
Environmental conditions	4
Possible test case verdicts	5
Abbreviations	5
Document History	6
Remarks and Comments.....	6
Used Equipment	7
Uncertainty	9
1 General Information.....	10
1.1 General Description of the Item(s)	10
1.2 Antenna Information	11
1.3 Channel List	12
2 Description of Test Setup	13
2.1 Operating mode(s) used for tests.....	13
2.2 Auxiliary equipment / Test software for the EUT.....	13
2.3 Test Configuration / Block diagram used for tests	14
2.4 Testing process	15
3 Verdict summary section	16
3.1 Standards.....	16
3.2 Deviation(s) from the Standard(s) / Test Specification(s).....	16
3.3 Overview of results.....	17
3.4 Test Facility.....	17
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	56
4.4.1	Limit	56
4.4.2	Test Setup.....	56
4.4.3	Test Procedure.....	56
4.4.4	Test Data	57
4.5	Radiated Emission Band Edge	58
4.5.1	Limit	58
4.5.2	Test Setup.....	58
4.5.3	Test Procedure.....	58
4.5.4	Test Data	59
4.6	DTS Bandwidth	91
4.6.1	Limit	91
4.6.2	Test Setup.....	91
4.6.3	Test Procedure.....	91
4.6.4	Test Data	92
4.7	Fundamental emission output power	94
4.7.1	Limit	94
4.7.2	Test Setup.....	94
4.7.3	Test Procedure.....	95
4.7.4	Test Data	96
4.8	Power Density	97
4.8.1	Limit:	97
4.8.2	Test Setup.....	97
4.8.3	Test Procedure.....	97
4.8.4	Test Data	98
4.9	Antenna Requirement.....	99
4.9.1	Limit:	99
4.9.2	Antenna Connector Construction:	99
5	Test setup photo and EUT Photo.....	100

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)	Jul. 16, 2021
Date (start test)	Jul. 21, 2021
Date (finish test)	Aug. 06, 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
2170694R-RF-US-P06V01	V1.0	Initial issue of report.	2021-08-13

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
EMI Receiver	Agilent	N9038A	MY51210196	2021.03.20	2022.03.19
Preamplifier	SKET	LNPA	SK20190225	2020.09.25	2021.09.24
Preamplifier	SKET	LNPA_0118G-45	SK2021041201	2021.04.16	2022.04.15
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	Control device
Model No.	4422954726
Trademark	PHILIPS
FCC ID	2AGBW4422954726X
IC.....	20812-54726X
Manufacturer.....	Signify (China) investment Co., Ltd
Manufacturer address	Building No.9, Lane 888, Tianlin Road, Minhang district, 200233 Shanghai, China

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

Rated power supply	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☐	AC: 110 – 130 V, 50/60 Hz
	☒	DC: 24 Vdc
	☐	Battery:

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.....:	2.08 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.

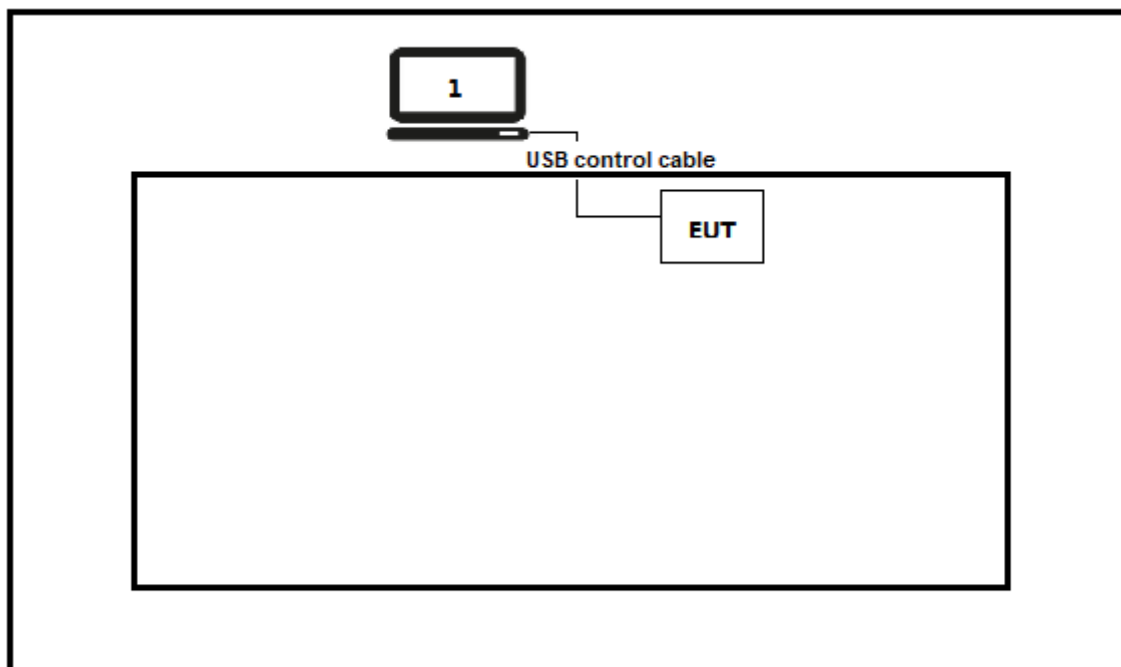
Test Mode For Bluetooth	Mode 1: Transmit by LE_1Mbps
	Mode 2: Transmit by LE_2Mbps
	Mode 3: Transmit by LE_Coded S=8
	Mode 4: Transmit by LE_Coded S=2

2.2 Auxiliary equipment / Test software for the EUT

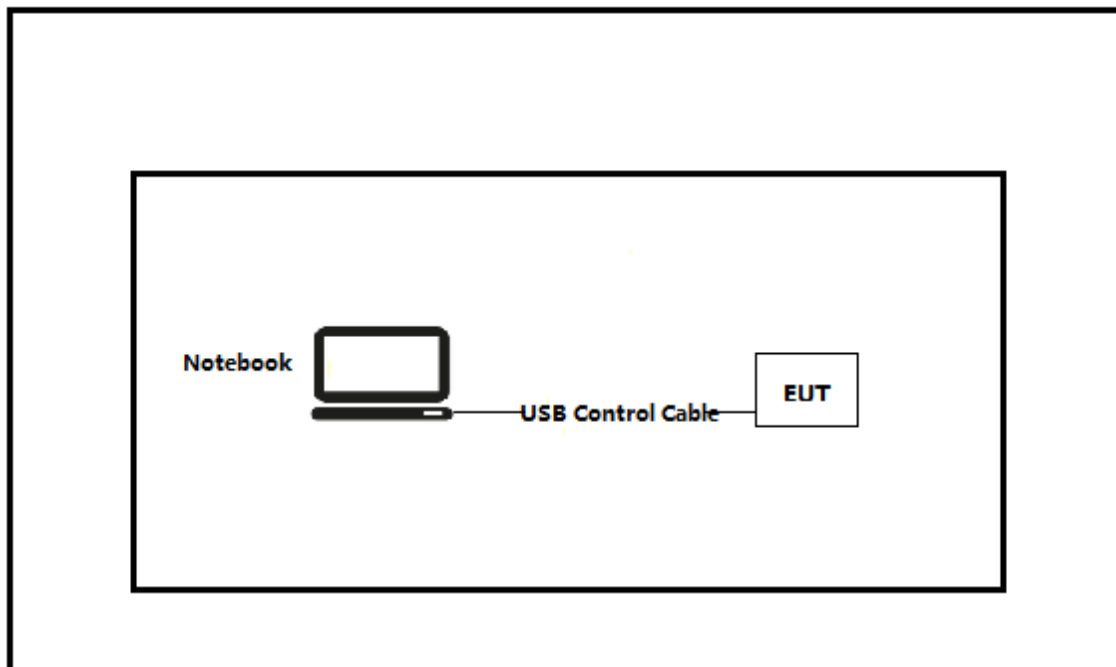
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	Think pad x220	Lenovo	Adapter
software	Type / Version	Manufacturer	Supplied by
Approbation Tool	V1.1.5.0	N/A	N/A

2.3 Test Configuration / Block diagram used for tests

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Conducted test



2.4 Testing process

1	Setup the EUT as shown in Section 2.3.
2	Execute the [Approbation Tool] on the notebook.
3	Configure the test mode, the test channel, and the data rate.
4	Verify that the EUT works properly.

3 VERDICT SUMMARY SECTION

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

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.247	2019	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 v05r02	2019	Guidance for performing compliance measurements on Digital Transmission System (DTS) operating under section 15.247
RSS-Gen Issue 5 Amendment 1	2019	General Requirements for Compliance of Radio Apparatus
RSS-247 Issue 2	2017	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

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

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

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

3.3 Overview of results

For FCC

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

For ISED

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

3.4 Test Facility

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

4 TEST RESULTS

4.1 AC Power Line Conducted Emission

VERDICT: PASS

4.1.1 Limit

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

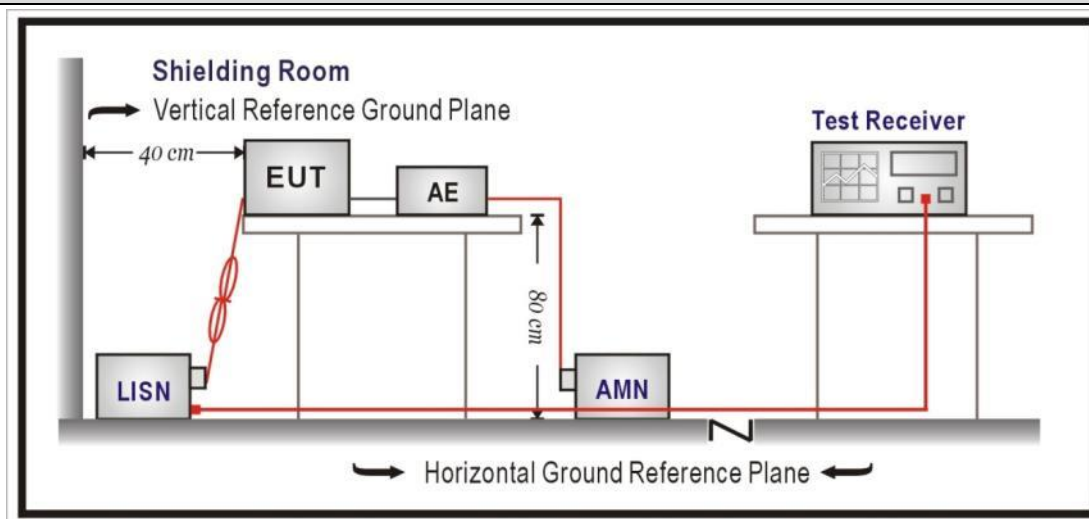
¹⁾ At the transition frequency, the lower limit applies.

²⁾ The limit decreases linearly with the logarithm of the frequency.

NOTE 1: The exclusion band for transmitters shall be considered for transmitters operating at frequencies below 30 MHz.

NOTE 2: Where the AC output port is directly connected (or via a circuit breaker) to the AC power input port of the EUT the AC power output port need not to be tested.

4.1.2 Test Setup

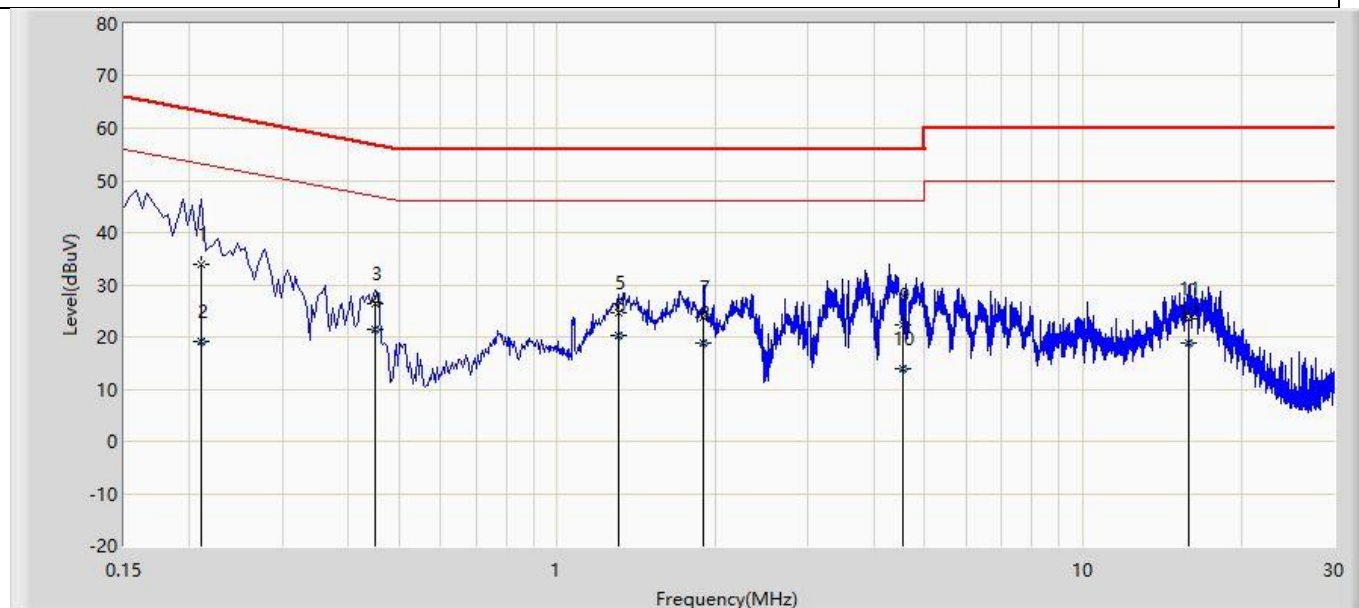


4.1.3 Test Procedure

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

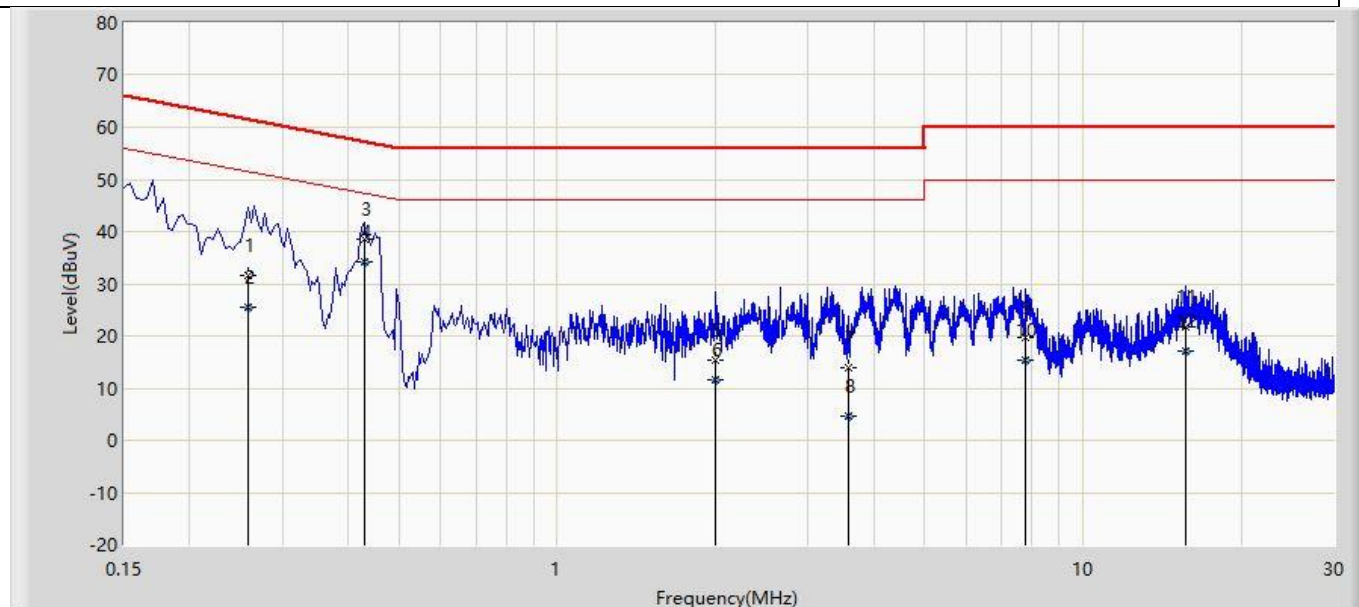
4.1.4 Test Data

Profile:2170694R	Page No.: 1
Engineer: Tim.Cao	
Site: TR1	Time: 2021/08/06 - 6:34
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: Control device	Power: AC 120V/60Hz
Note: Mode: L-line	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.210	33.846	24.153	-29.359	63.205	9.694	QP
2		0.210	19.144	9.451	-34.061	53.205	9.694	AV
3		0.450	26.473	16.665	-30.402	56.875	9.808	QP
4	*	0.450	21.487	11.679	-25.388	46.875	9.808	AV
5		1.306	24.777	14.788	-31.223	56.000	9.989	QP
6		1.306	20.378	10.389	-25.622	46.000	9.989	AV
7		1.894	23.643	13.616	-32.357	56.000	10.028	QP
8		1.894	18.818	8.791	-27.182	46.000	10.028	AV
9		4.530	22.211	12.083	-33.789	56.000	10.128	QP
10		4.530	13.964	3.835	-32.036	46.000	10.128	AV
11		15.910	23.420	12.914	-36.580	60.000	10.506	QP
12		15.910	18.935	8.429	-31.065	50.000	10.506	AV

Profile: 2170694R	Page No.: 2
Engineer: Tim.Cao	
Site: TR1	Time: 2021/0806 - 06:51
Limit: FCC_Part15.207_CE_AC Power	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: Control device	Power: AC 120V/60Hz
Note: Mode: N-line	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.258	31.493	21.710	-30.003	61.496	9.783	QP
2		0.258	25.433	15.650	-26.063	51.496	9.783	AV
3		0.430	38.571	28.746	-18.682	57.253	9.825	QP
4	*	0.430	34.116	24.291	-13.137	47.253	9.825	AV
5		2.002	15.402	5.457	-40.598	56.000	9.945	QP
6		2.002	11.584	1.639	-34.416	46.000	9.945	AV
7		3.591	14.010	4.002	-41.990	56.000	10.007	QP
8		3.591	4.761	-5.247	-41.239	46.000	10.007	AV
9		7.786	19.756	9.590	-40.244	60.000	10.166	QP
10		7.786	15.496	5.330	-34.504	50.000	10.166	AV
11		15.722	21.818	11.357	-38.182	60.000	10.461	QP
12		15.722	16.963	6.502	-33.037	50.000	10.461	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 both tow crystal oscillator, and shown in report is the worst data.

4.2 Emissions in restricted frequency bands**VERDICT: PASS****4.2.1 Limit**

Standard		FCC Part 15 Subpart C Paragraph 15.207	
Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 –16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	2690 – 2900	22.01 – 23.12
8.81425 – 8.81475	162.0125 – 167.17	3260 – 3267	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3332 – 3339	31.2 – 31.8
12.51975–12.52025	240 – 285	3345.8 – 3358	36.43 – 36.5
12.57675–12.57725	322 – 335.4	3600 – 4400	
13.36 – 13.41			
Restricted Bands of operation for IC			
0.090 - 0.110	13.36 - 13.41	960 - 1427	9.0 - 9.2
0.495 - 0.505	16.42 - 16.423	1435 - 1626.5	9.3 - 9.5
2.1735 - 2.1905	16.69475 - 16.69525	1645.5 - 1646.5	10.6 - 12.7
3.020 - 3.026	16.80425 - 16.80475	1660 - 1710	13.25 - 13.4
4.125 - 4.128	25.5 - 25.67	1718.8 - 1722.2	14.47 - 14.5
4.17725 - 4.17775	37.5 - 38.25	2200 - 2300	15.35 - 16.2
4.20725 - 4.20775	73 - 74.6	2310 - 2390	17.7 - 21.4
5.677 - 5.683	74.8 - 75.2	2483.5 - 2500	22.01 - 23.12
6.215 - 6.218	108 - 138	2655 - 2900	23.6 - 24.0
6.26775 - 6.26825	149.9 - 150.05	3260 - 3267	31.2 - 31.8
6.31175 - 6.31225	156.52475 - 156.52525	3332 - 3339	36.43 - 36.5
8.291 - 8.294	156.7 - 156.9	3345.8 - 3358	Above 38.6
8.362 - 8.366	162.0125 - 167.17	3500 - 4400	
8.37625 - 8.38675	167.72 - 173.2	4500 - 5150	
8.41425 - 8.41475	240 - 285	5350 - 5460	
12.29 - 12.293	322 - 335.4	7250 - 7750	
12.51975 - 12.52025	399.9 - 410	8025 - 8500	
12.57675 - 12.57725	608 - 614	--	

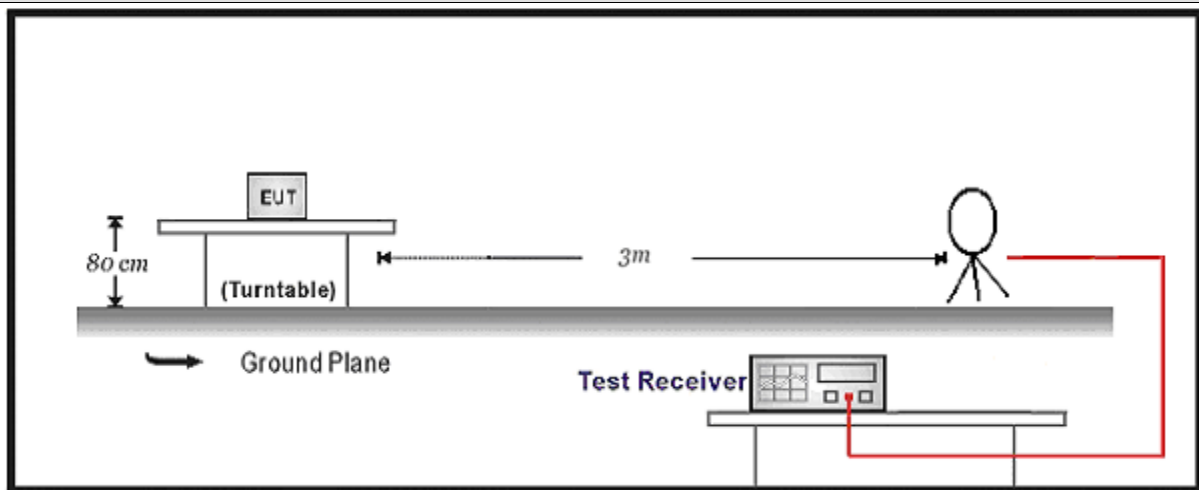
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3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

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

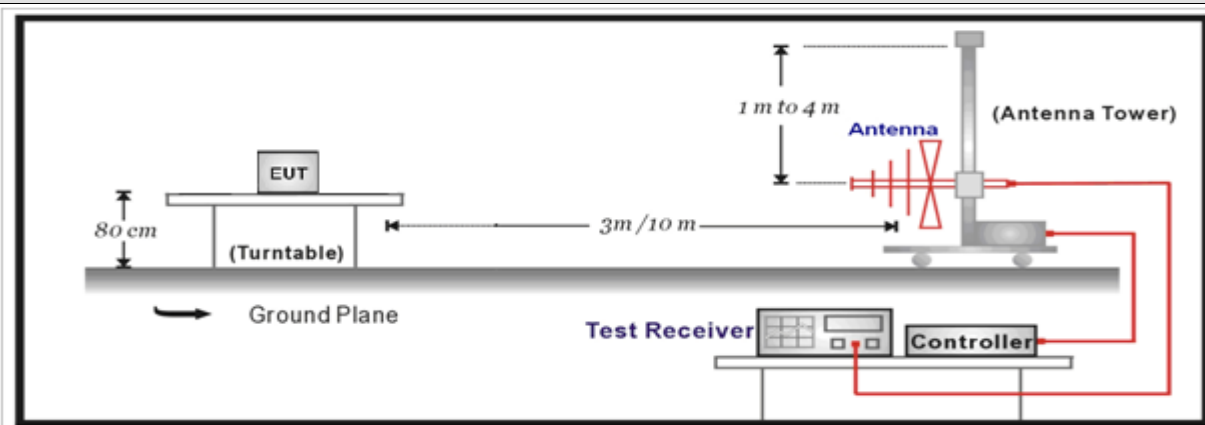
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.2.2 Test Setup

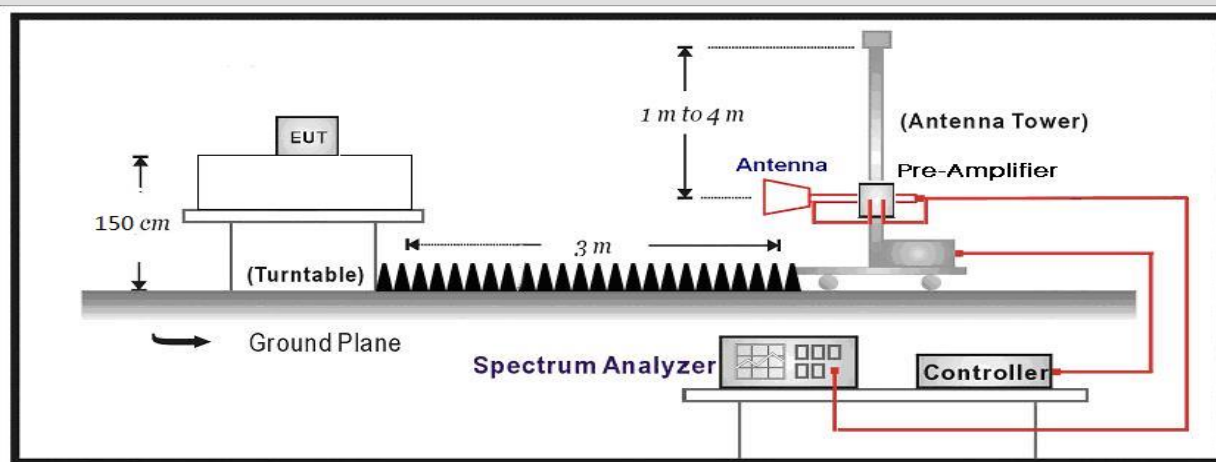
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:

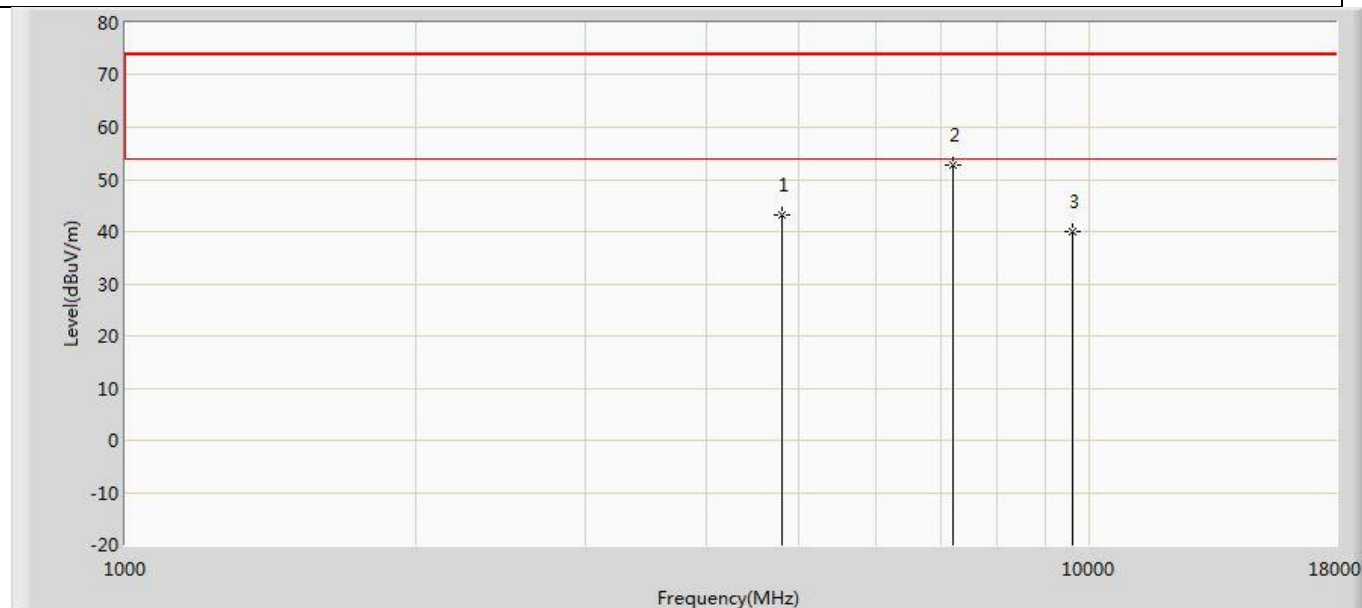


4.2.3 Test Procedure

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

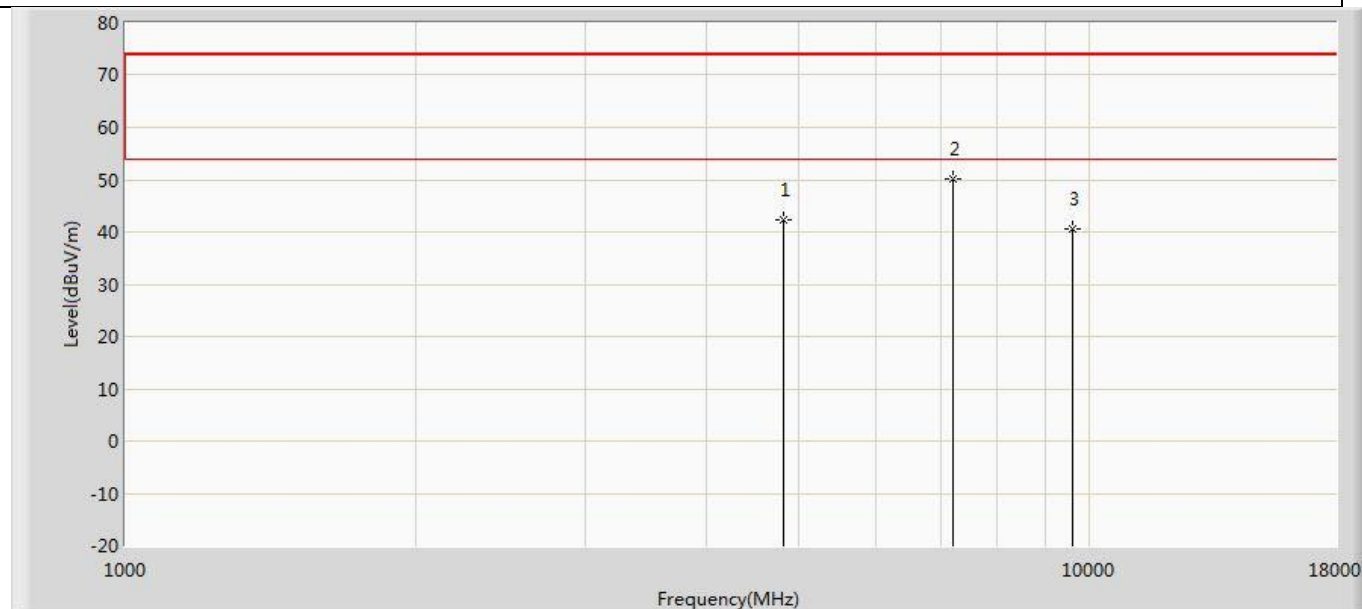
4.2.4 Test Data

Profile: 2170694R	Page No.: 37
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



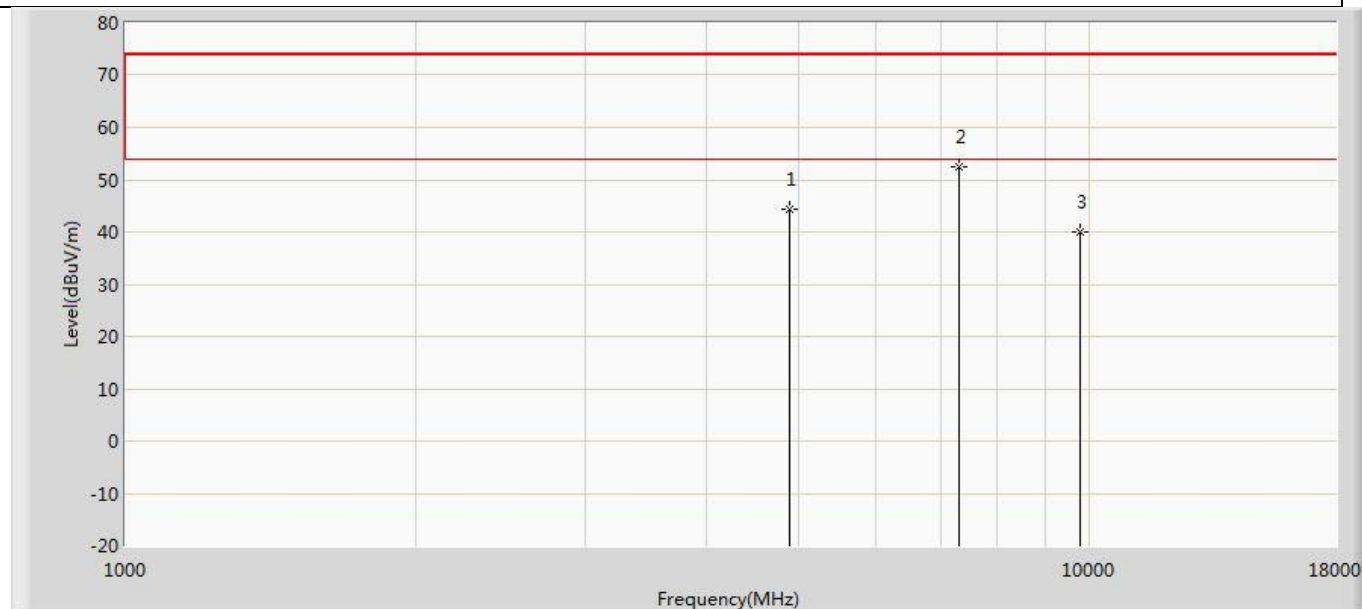
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4799.500	43.089	48.178	-30.911	74.000	-5.089	PK
2	*	7205.000	52.653	53.689	-21.347	74.000	-1.036	PK
3		9608.000	39.993	37.163	-34.007	74.000	2.830	PK

Profile: 2170694R	Page No.: 38
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



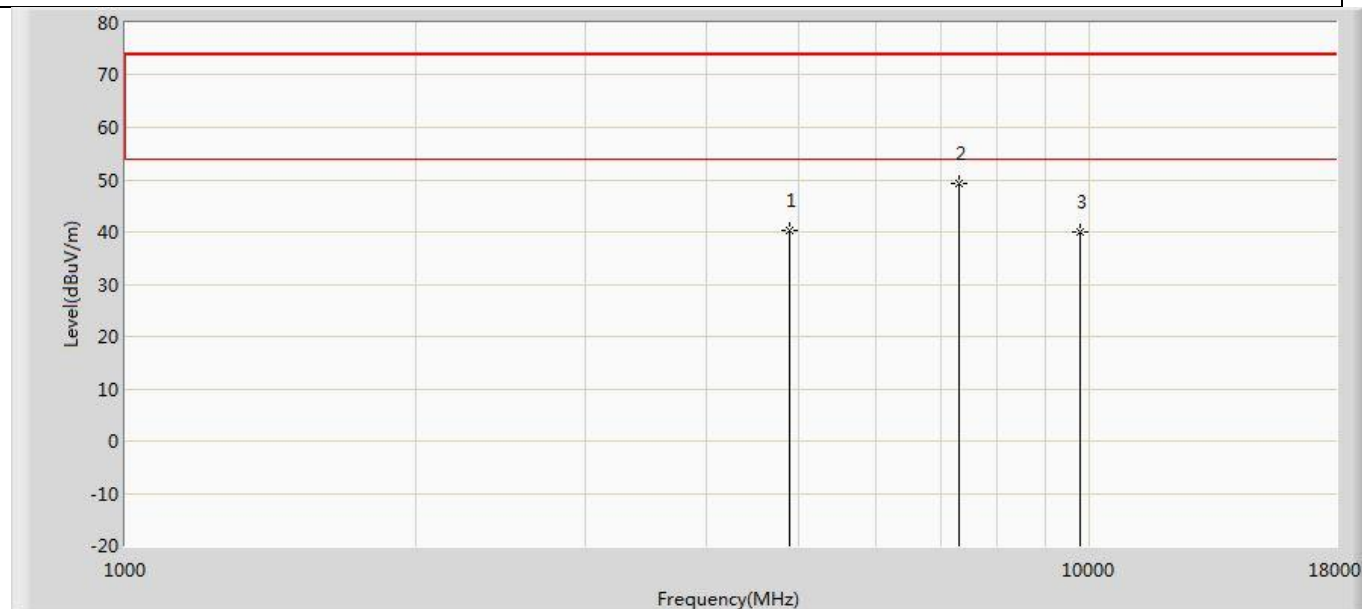
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	42.275	47.277	-31.725	74.000	-5.002	PK
2	*	7205.000	50.234	51.270	-23.766	74.000	-1.036	PK
3		9608.000	40.676	37.846	-33.324	74.000	2.830	PK

Profile: 2170694R	Page No.: 39
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2440MHz by LE_1Mbps	



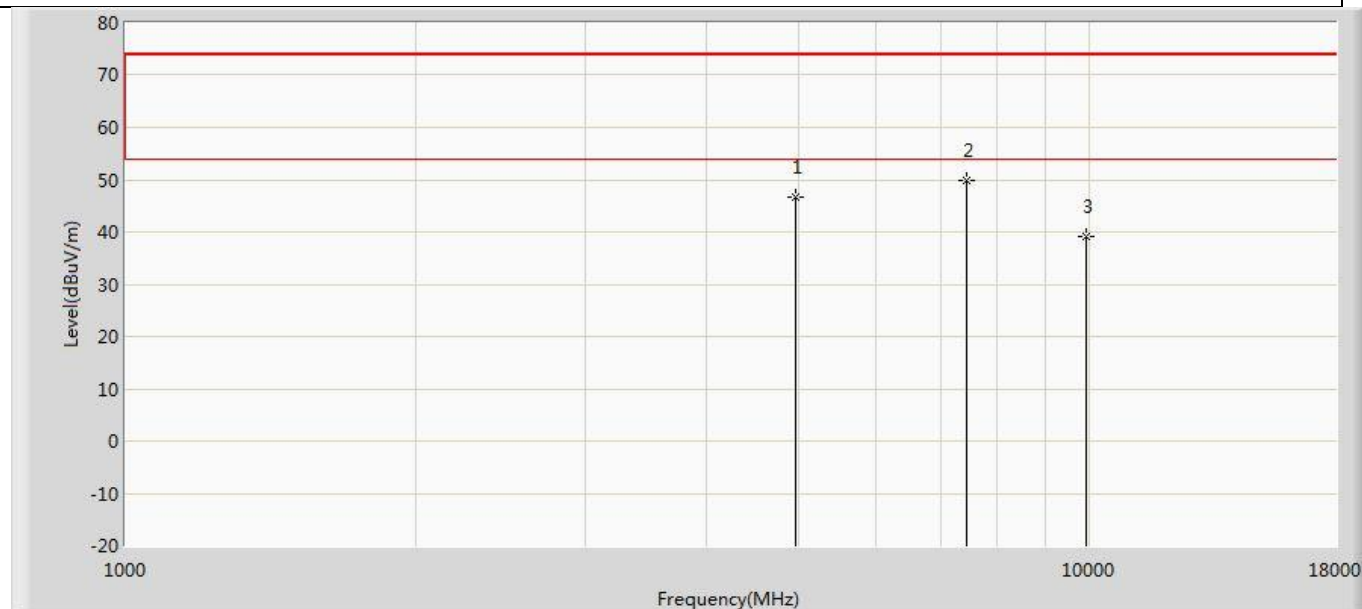
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4876.000	44.283	49.044	-29.717	74.000	-4.761	PK
2	*	7315.500	52.578	53.505	-21.422	74.000	-0.927	PK
3		9760.000	39.983	36.985	-34.017	74.000	2.998	PK

Profile: 2170694R	Page No.: 40
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2440MHz by LE_1Mbps	



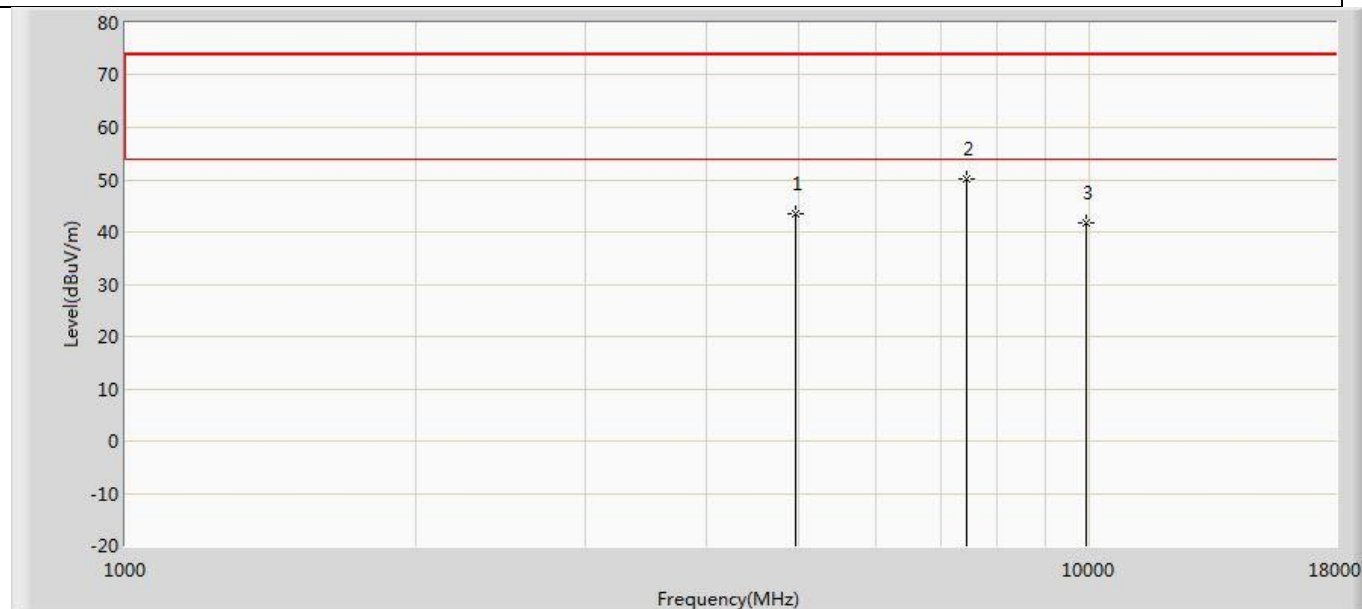
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	40.278	45.179	-33.722	74.000	-4.901	PK
2	*	7315.500	49.212	50.139	-24.788	74.000	-0.927	PK
3		9760.000	40.027	37.029	-33.973	74.000	2.998	PK

Profile: 2170694R	Page No.: 41
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



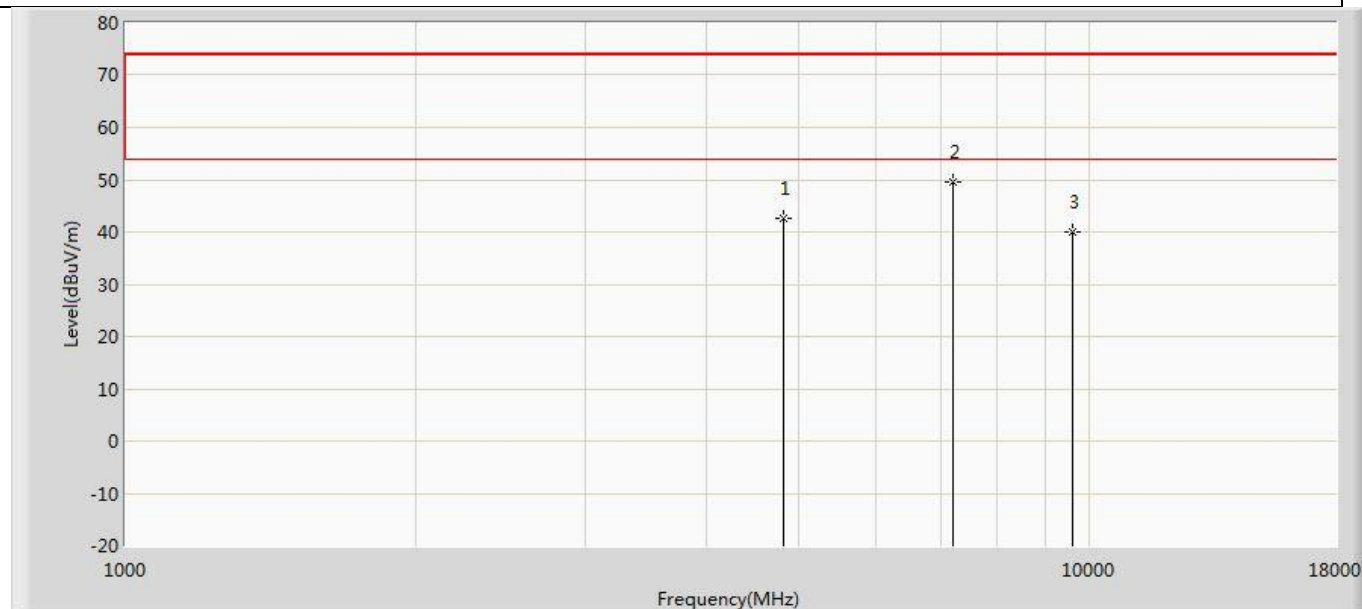
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	46.548	51.191	-27.452	74.000	-4.643	PK
2	*	7443.000	49.979	51.015	-24.021	74.000	-1.036	PK
3		9920.000	39.150	36.103	-34.850	74.000	3.047	PK

Profile: 2170694R	Page No.: 42
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



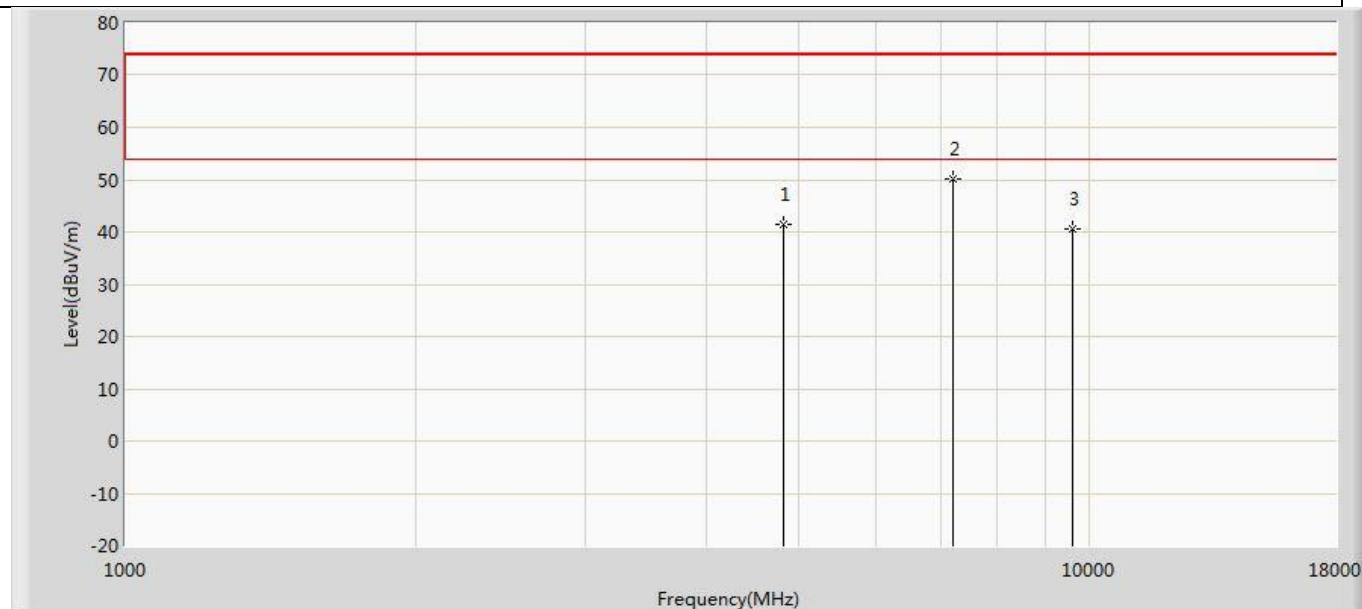
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	43.405	48.048	-30.595	74.000	-4.643	PK
2	*	7443.000	50.281	51.317	-23.719	74.000	-1.036	PK
3		9920.000	41.763	38.716	-32.237	74.000	3.047	PK

Profile: 2170694R	Page No.: 43
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



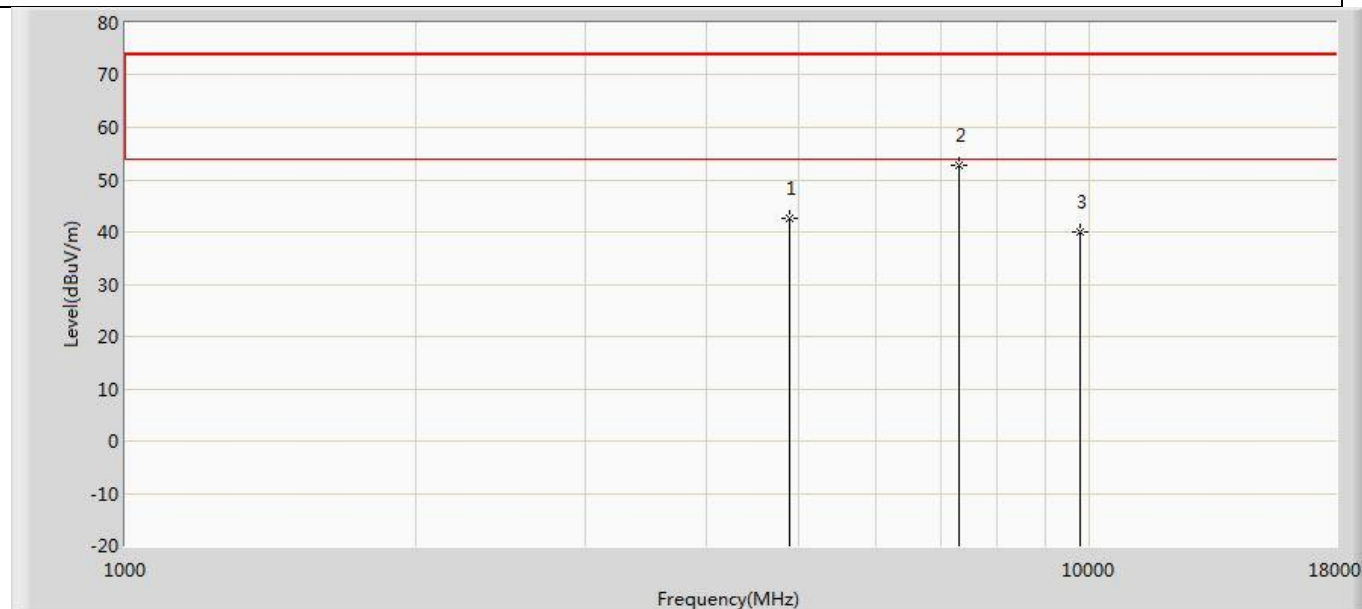
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	42.705	47.707	-31.295	74.000	-5.002	PK
2	*	7205.000	49.552	50.588	-24.448	74.000	-1.036	PK
3		9608.000	40.009	37.179	-33.991	74.000	2.830	PK

Profile: 2170694R	Page No.: 44
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



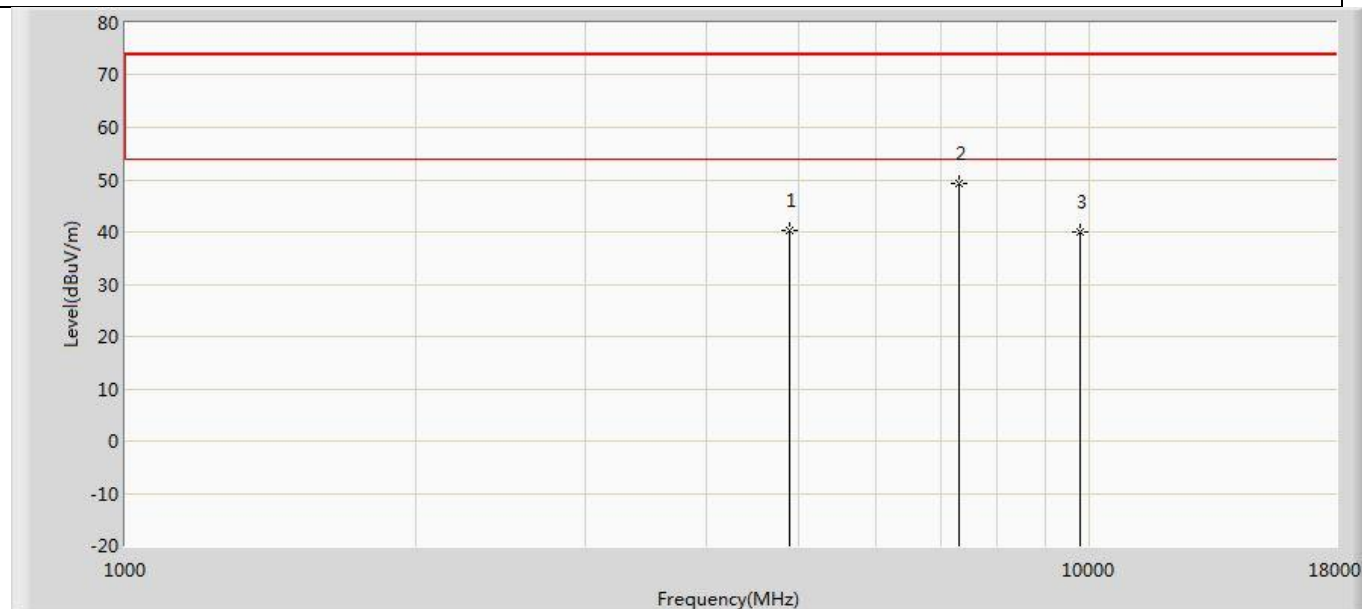
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	41.425	46.427	-32.575	74.000	-5.002	PK
2	*	7205.000	50.060	51.096	-23.940	74.000	-1.036	PK
3		9608.000	40.482	37.652	-33.518	74.000	2.830	PK

Profile: 2170694R	Page No.: 45
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2440MHz by LE_2Mbps	



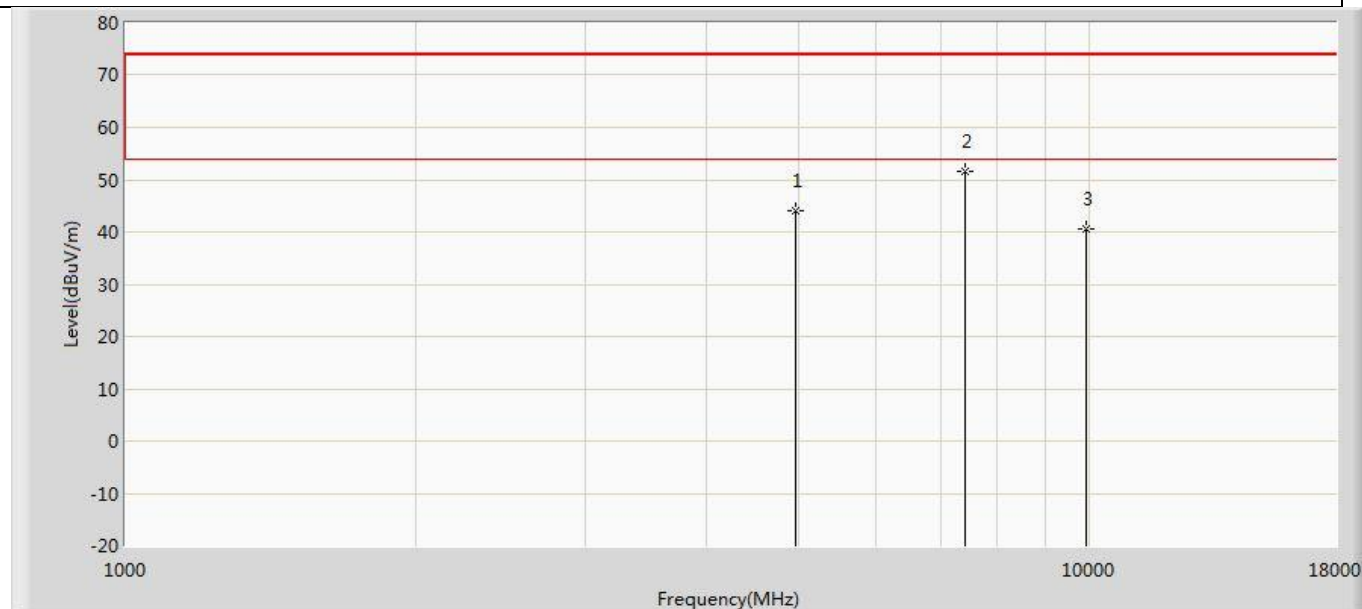
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	42.534	47.435	-31.466	74.000	-4.901	PK
2	*	7315.500	52.724	53.651	-21.276	74.000	-0.927	PK
3		9760.000	40.019	37.021	-33.981	74.000	2.998	PK

Profile: 2170694R	Page No.: 46
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2440MHz by LE_2Mbps	



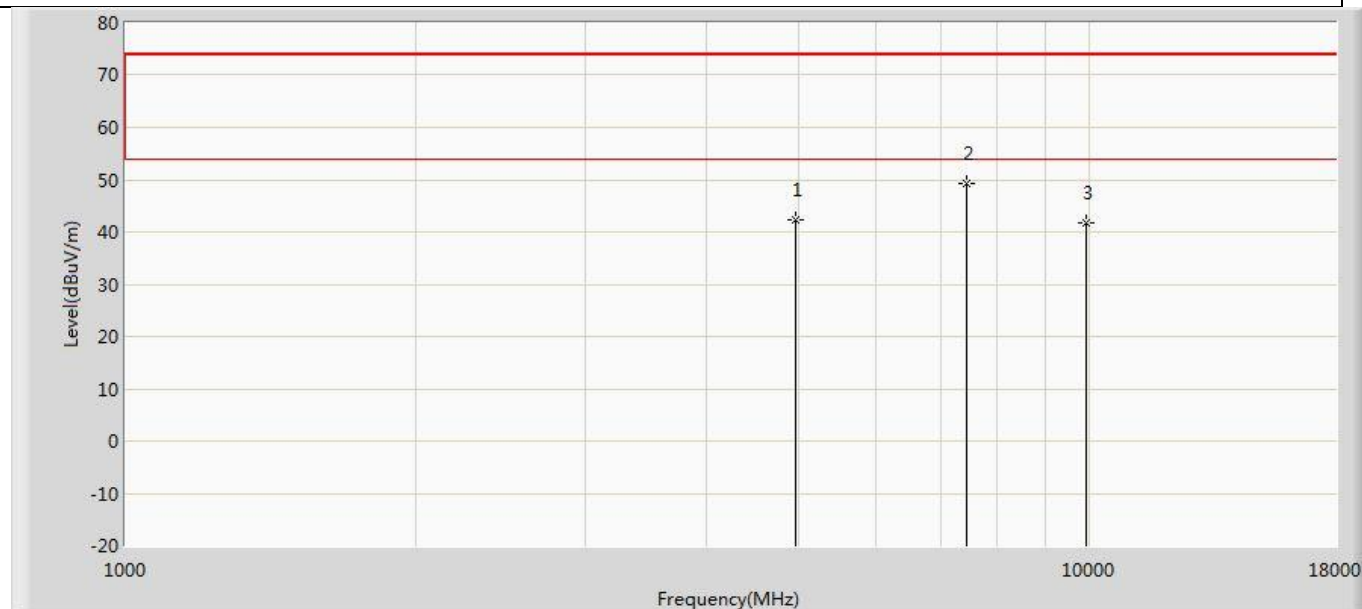
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	40.409	45.310	-33.591	74.000	-4.901	PK
2	*	7324.000	49.163	50.027	-24.837	74.000	-0.864	PK
3		9760.000	39.917	36.919	-34.083	74.000	2.998	PK

Profile: 2170694R	Page No.: 47
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



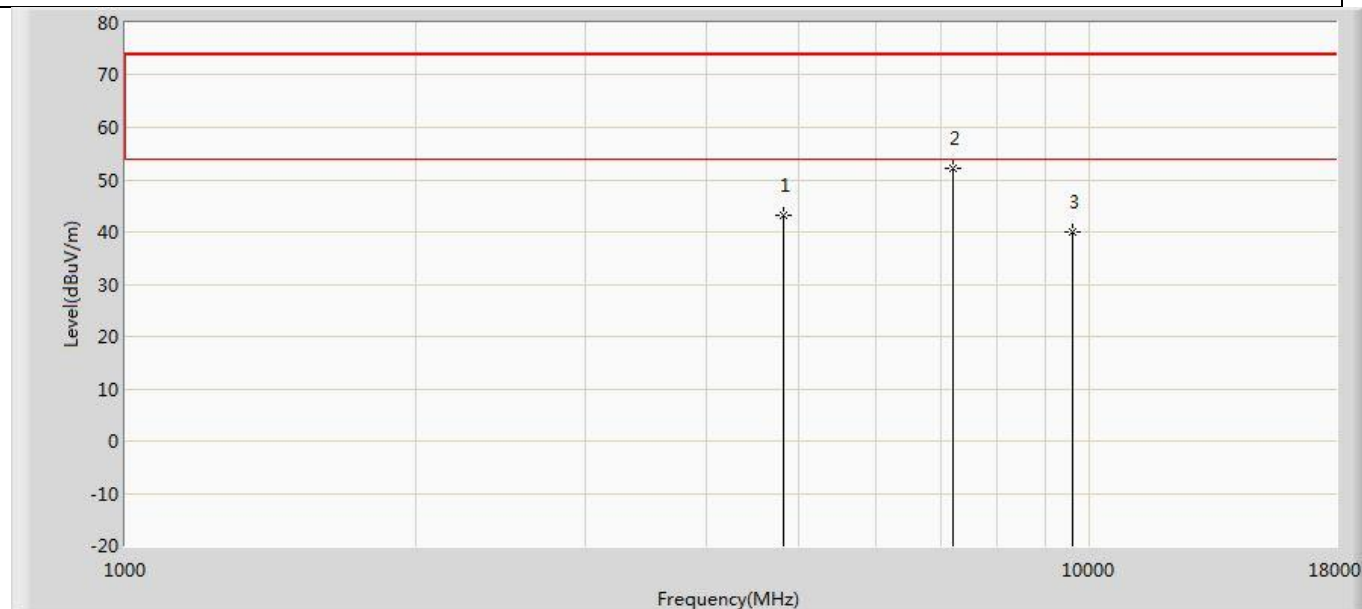
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	44.166	48.809	-29.834	74.000	-4.643	PK
2	*	7434.500	51.730	52.785	-22.270	74.000	-1.056	PK
3		9920.000	40.696	37.649	-33.304	74.000	3.047	PK

Profile: 2170694R	Page No.: 48
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



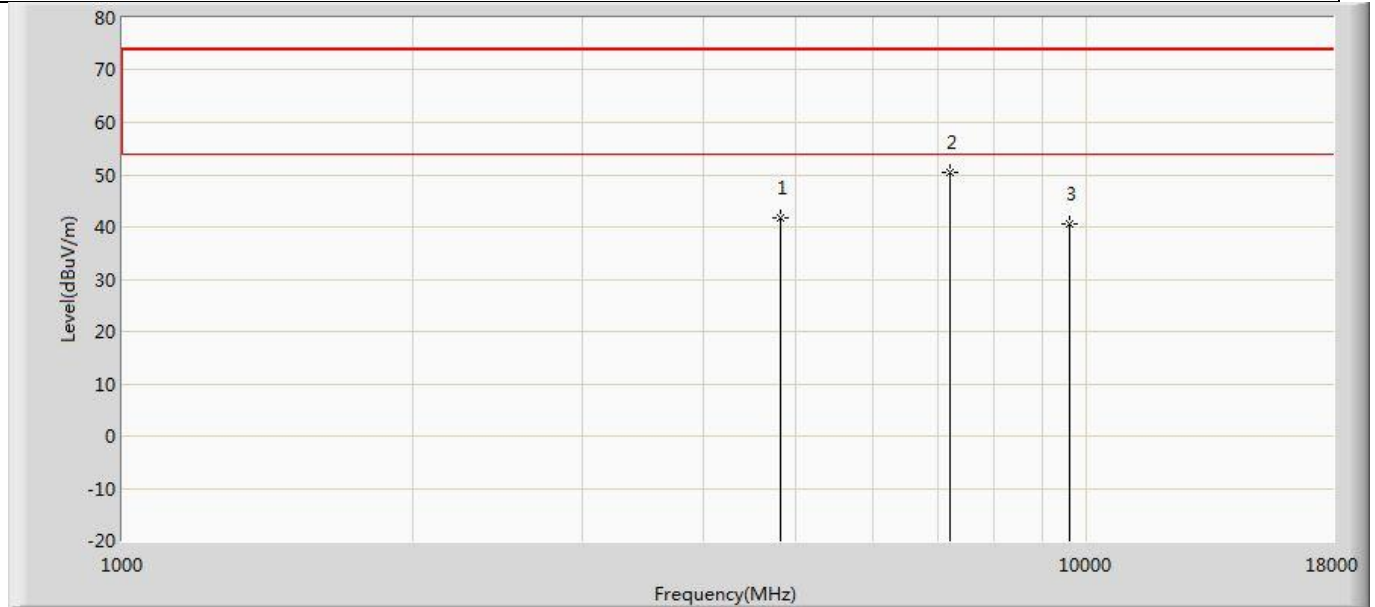
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	42.255	46.898	-31.745	74.000	-4.643	PK
2	*	7443.000	49.400	50.436	-24.600	74.000	-1.036	PK
3		9920.000	41.815	38.768	-32.185	74.000	3.047	PK

Profile: 2170694R	Page No.: 49
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=8	



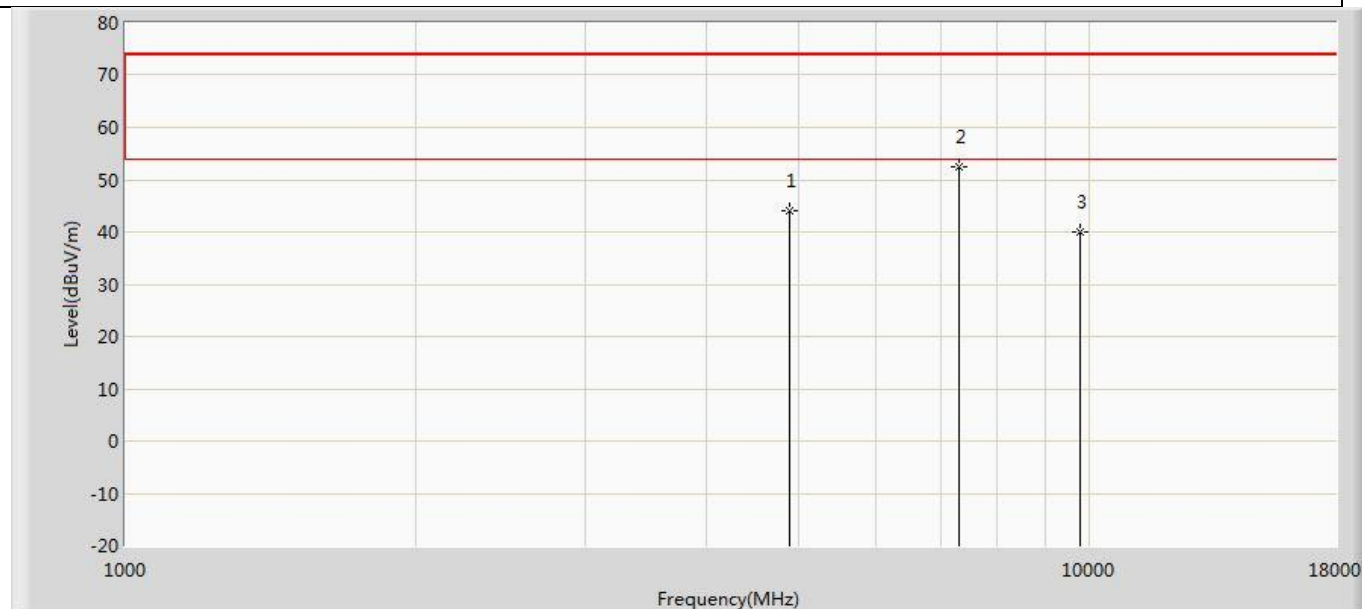
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	43.273	48.275	-30.727	74.000	-5.002	PK
2	*	7205.000	52.160	53.196	-21.840	74.000	-1.036	PK
3		9608.000	39.956	37.126	-34.044	74.000	2.830	PK

Profile: 2170694R	Page No.: 50
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=8	



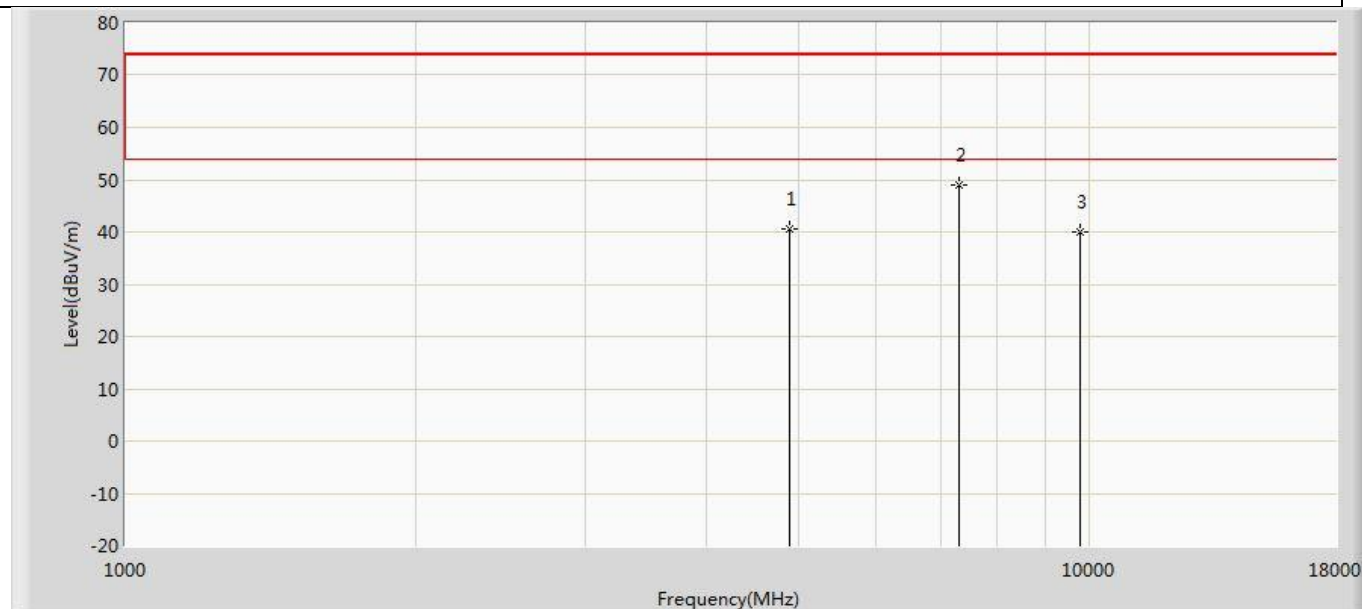
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	41.833	46.835	-32.167	74.000	-5.002	PK
2	*	7205.000	50.373	51.409	-23.627	74.000	-1.036	PK
3		9608.000	40.685	37.855	-33.315	74.000	2.830	PK

Profile: 2170694R	Page No.: 51
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2440MHz by Coded S=8	



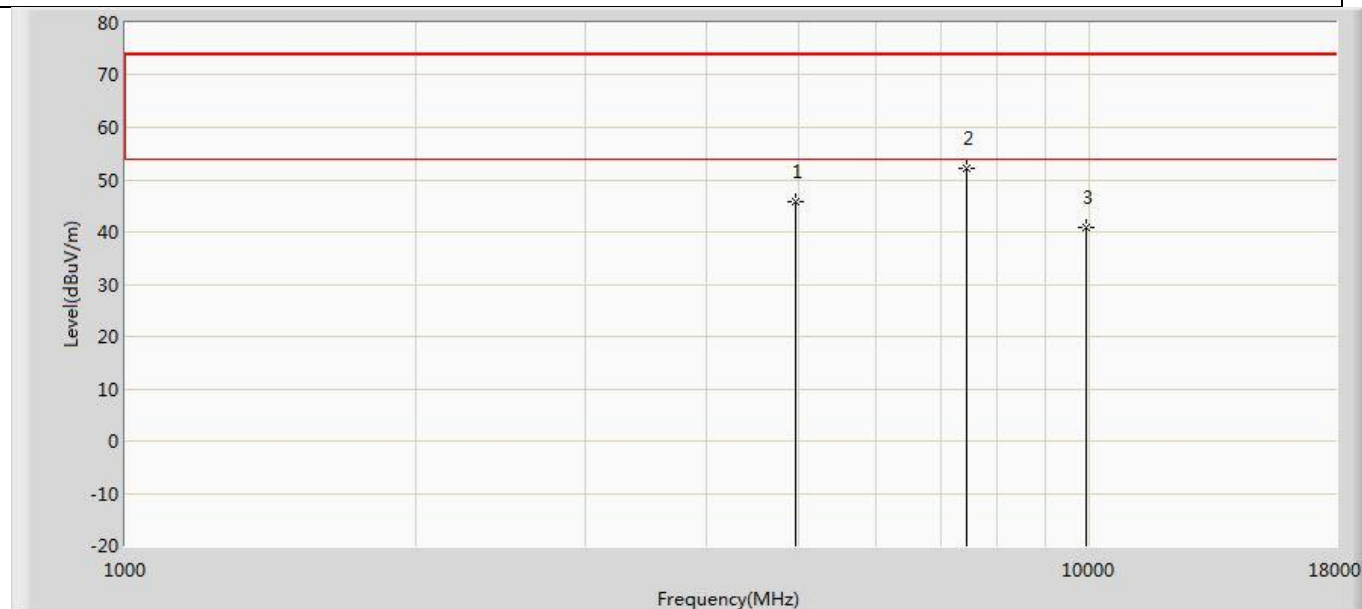
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4876.000	44.120	48.881	-29.880	74.000	-4.761	PK
2	*	7315.500	52.517	53.444	-21.483	74.000	-0.927	PK
3		9760.000	40.026	37.028	-33.974	74.000	2.998	PK

Profile: 2170694R	Page No.: 52
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2440MHz by Coded S=8	



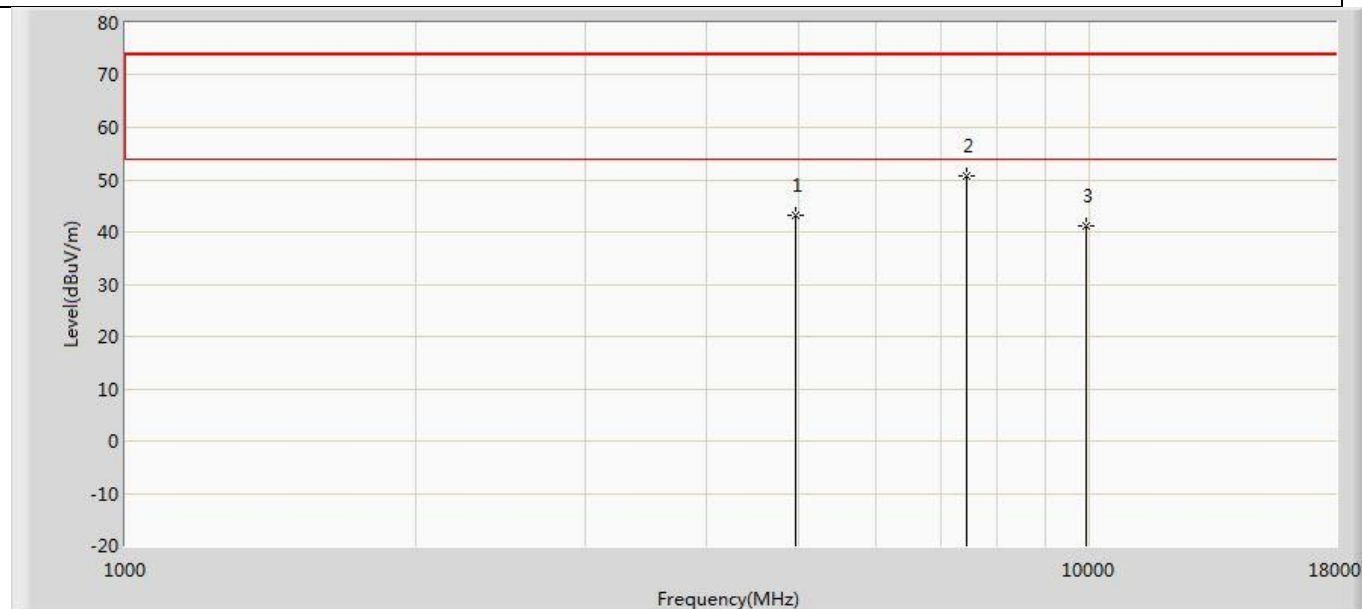
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4876.000	40.510	45.271	-33.490	74.000	-4.761	PK
2	*	7315.500	48.983	49.910	-25.017	74.000	-0.927	PK
3		9760.000	40.078	37.080	-33.922	74.000	2.998	PK

Profile: 2170694R	Page No.: 53
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=8	



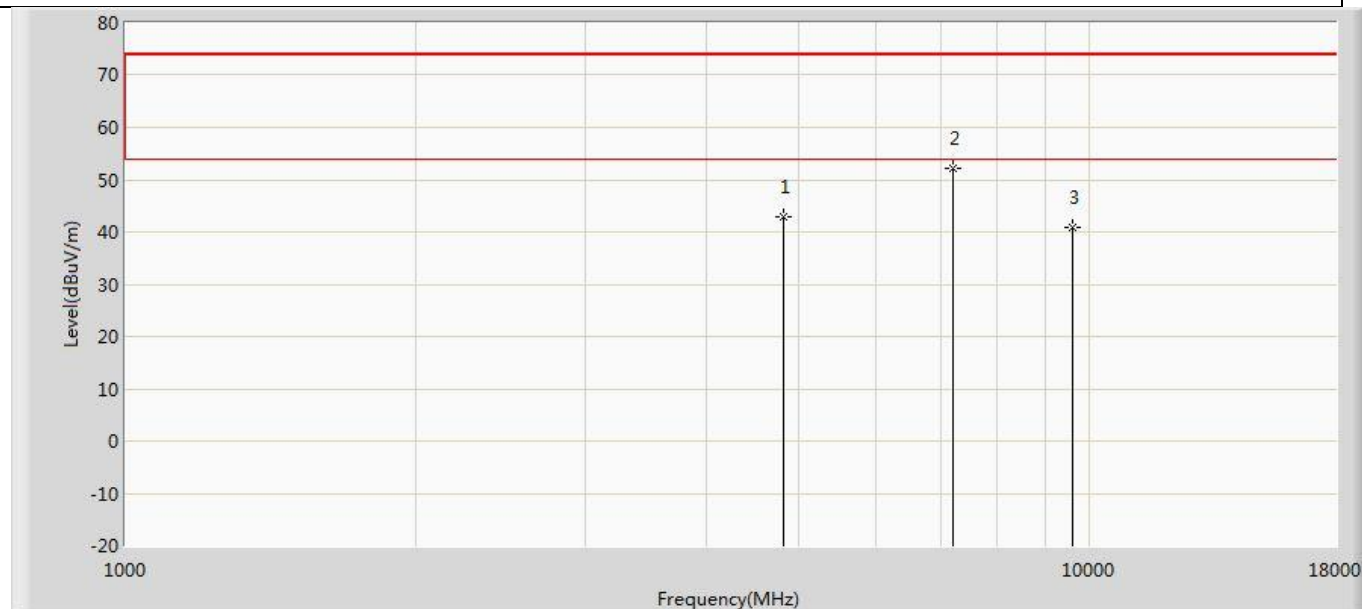
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	45.837	50.480	-28.163	74.000	-4.643	PK
2	*	7443.000	52.267	53.303	-21.733	74.000	-1.036	PK
3		9920.000	40.859	37.812	-33.141	74.000	3.047	PK

Profile: 2170694R	Page No.: 54
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=8	



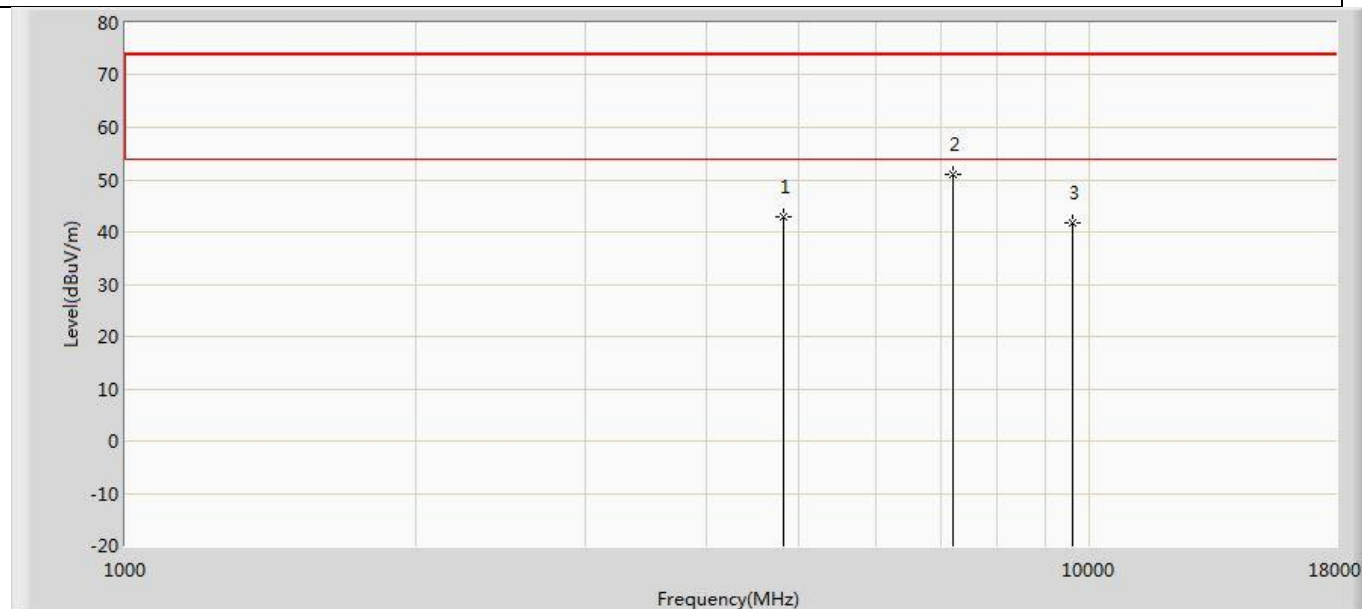
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	43.217	47.860	-30.783	74.000	-4.643	PK
2	*	7443.000	50.585	51.621	-23.415	74.000	-1.036	PK
3		9920.000	41.242	38.195	-32.758	74.000	3.047	PK

Profile: 2170694R	Page No.: 55
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=2	



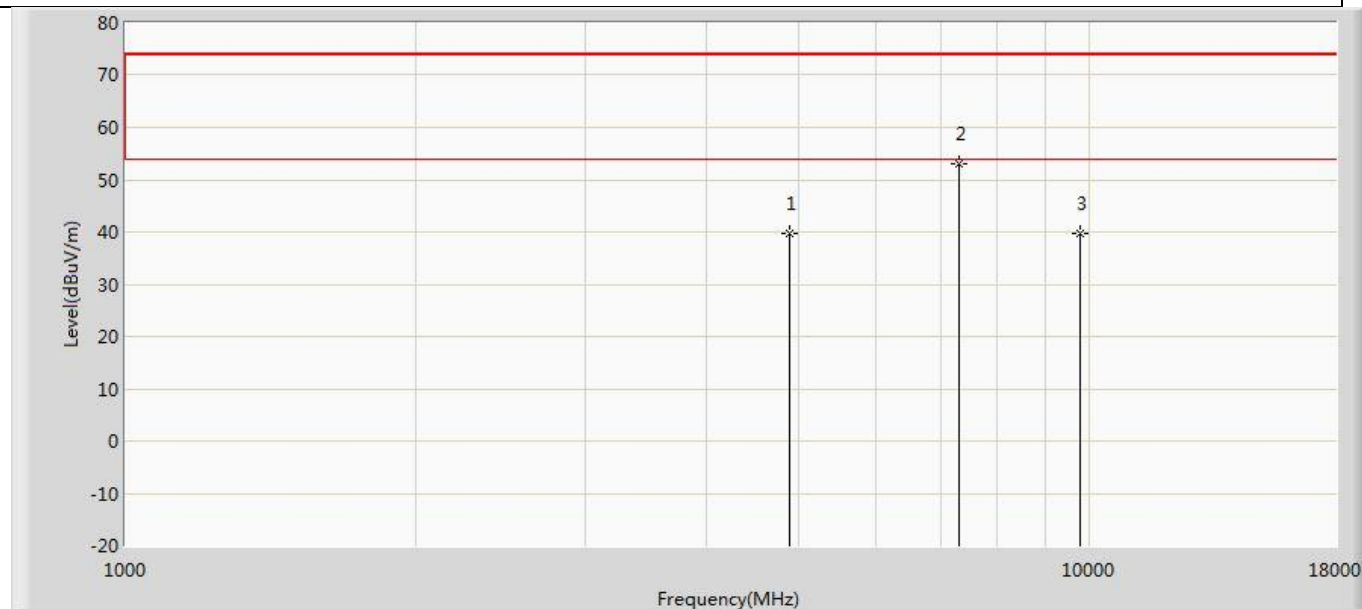
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	42.895	47.897	-31.105	74.000	-5.002	PK
2	*	7205.000	52.236	53.272	-21.764	74.000	-1.036	PK
3		9608.000	40.790	37.960	-33.210	74.000	2.830	PK

Profile: 2170694R	Page No.: 56
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=2	



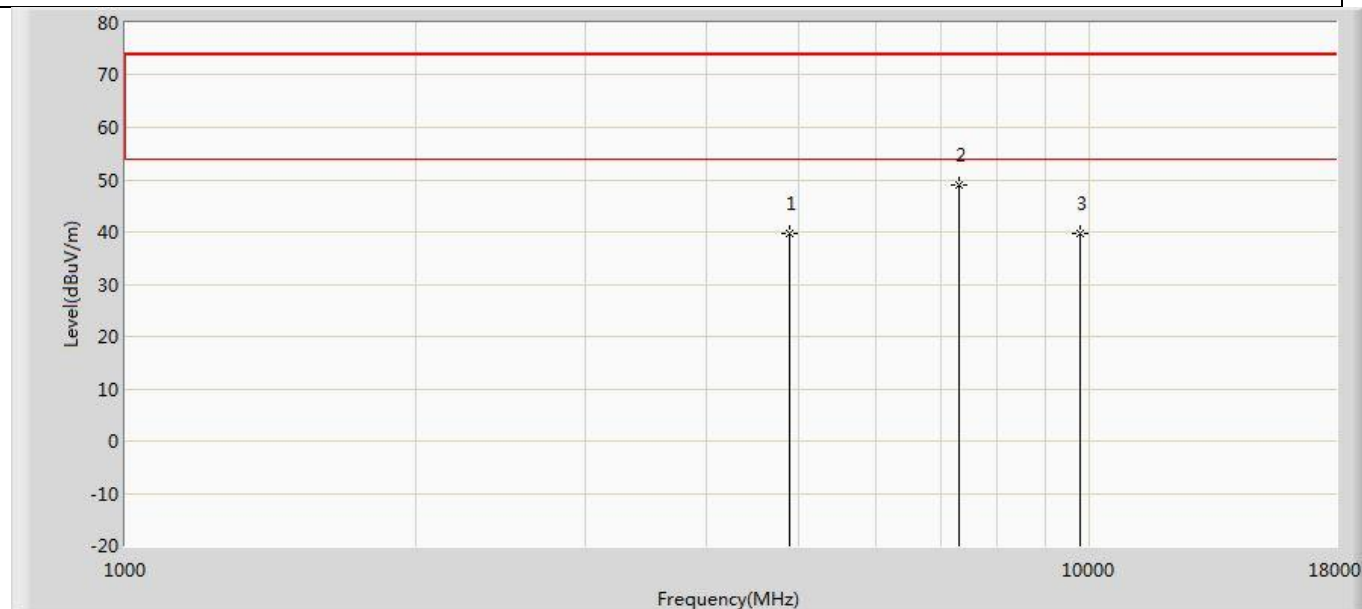
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4808.000	42.909	47.911	-31.091	74.000	-5.002	PK
2	*	7205.000	50.899	51.935	-23.101	74.000	-1.036	PK
3		9608.000	41.665	38.835	-32.335	74.000	2.830	PK

Profile: 2170694R	Page No.: 57
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2440MHz by Coded S=2	



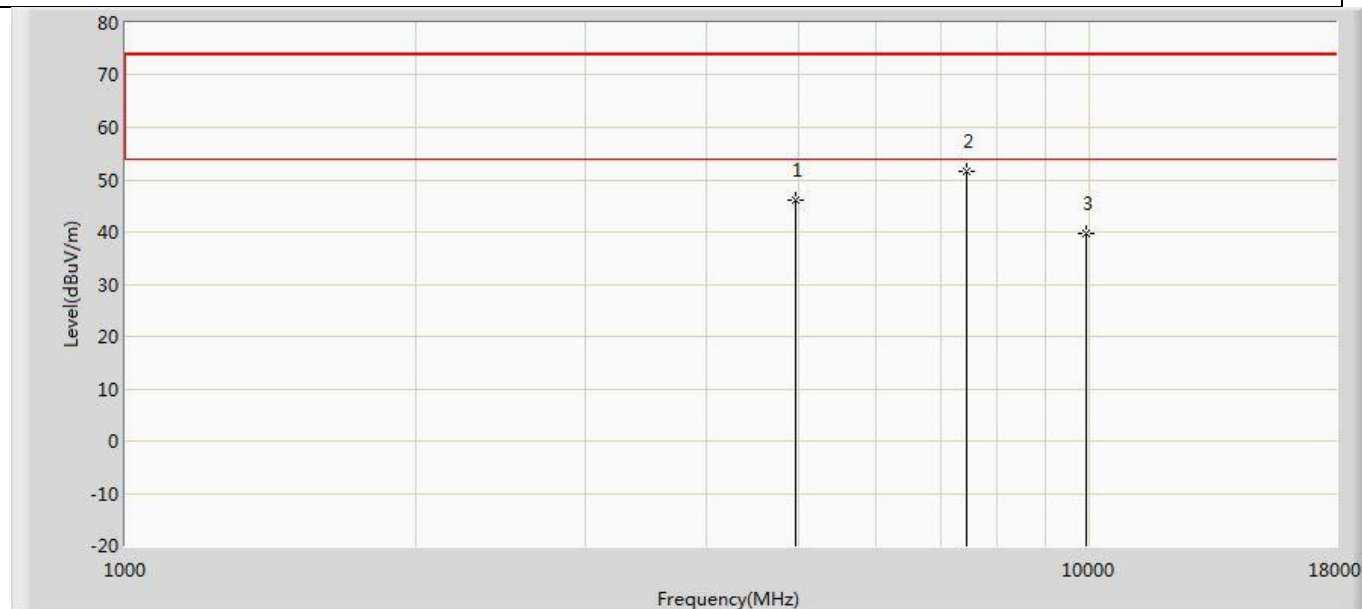
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	39.739	44.566	-34.261	74.000	-4.827	PK
2	*	7315.500	52.935	53.862	-21.065	74.000	-0.927	PK
3		9760.000	39.845	36.847	-34.155	74.000	2.998	PK

Profile: 2170694R	Page No.: 58
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2440MHz by Coded S=2	



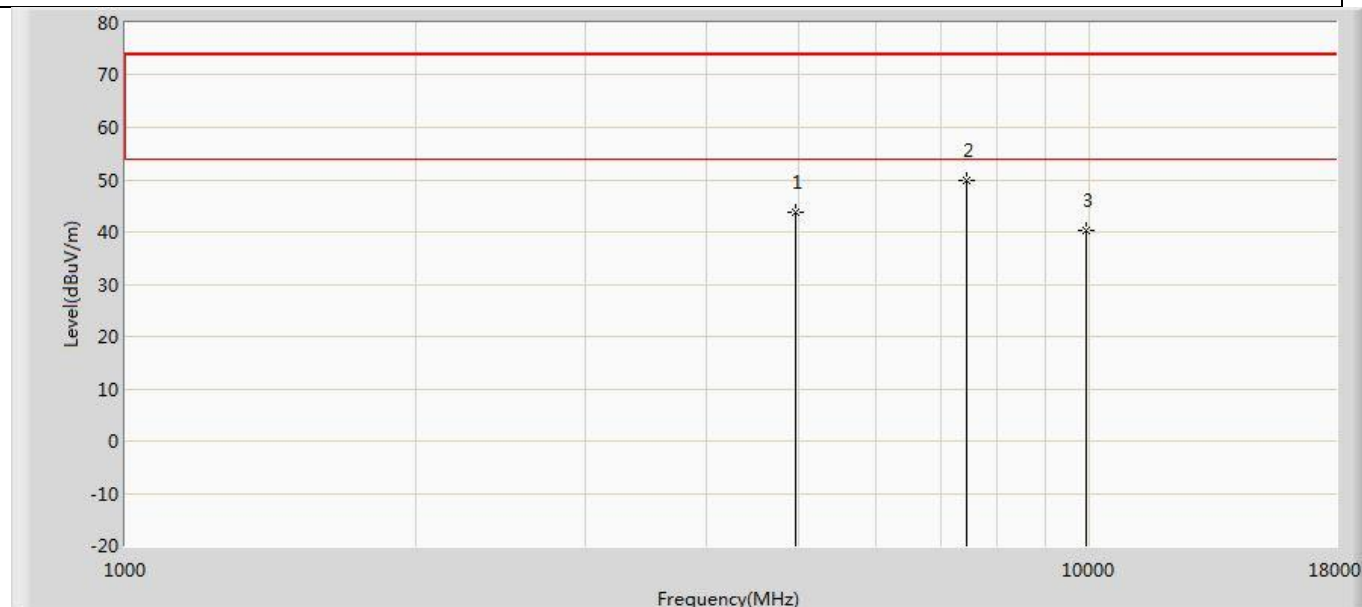
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4884.500	39.589	44.490	-34.411	74.000	-4.901	PK
2	*	7315.500	48.915	49.842	-25.085	74.000	-0.927	PK
3		9760.000	39.798	36.800	-34.202	74.000	2.998	PK

Profile: 2170694R	Page No.: 59
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4: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		4961.000	46.052	50.695	-27.948	74.000	-4.643	PK
2	*	7443.000	51.680	52.716	-22.320	74.000	-1.036	PK
3		9920.000	39.701	36.654	-34.299	74.000	3.047	PK

Profile: 2170694R	Page No.: 60
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded S=2	



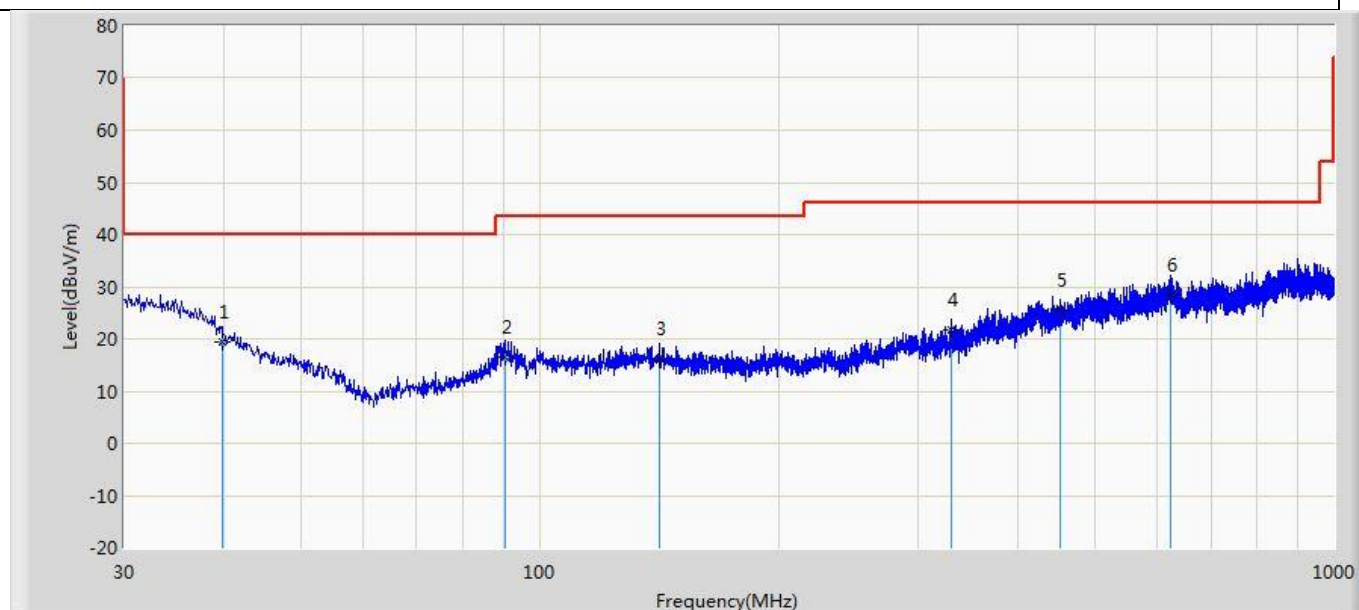
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4961.000	43.851	48.494	-30.149	74.000	-4.643	PK
2	*	7443.000	49.777	50.813	-24.223	74.000	-1.036	PK
3		9920.000	40.427	37.380	-33.573	74.000	3.047	PK

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.

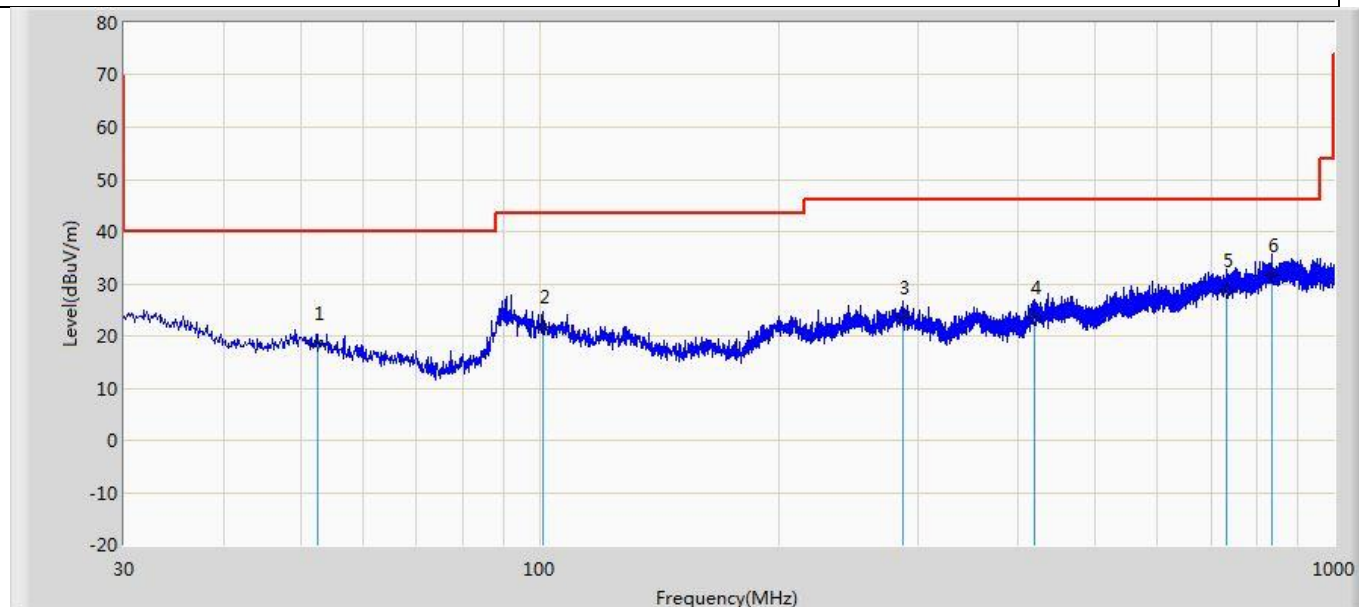
The worst case of Radiated Emission below 1GHz:

Profile: 2170694R	Page No.: 3
Engineer: Yingfei.Wang	
Site: AC2	Time: 2021/08/05 - 22:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		39.821	19.468	-2.877	-20.532	40.000	22.345	QP
2		90.382	16.465	2.875	-27.035	43.500	13.589	QP
3		141.429	16.346	-0.861	-27.154	43.500	17.207	QP
4		329.487	21.648	-1.071	-24.352	46.000	22.719	QP
5		452.556	25.648	-1.448	-20.352	46.000	27.096	QP
6	*	622.185	28.469	-2.201	-17.531	46.000	30.670	QP

Profile: 2170694R	Page No.: 4
Engineer: Yingfei.Wang	
Site: AC2	Time: 2021/08/05 - 22:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		52.553	18.649	0.185	-21.351	40.000	18.464	QP
2		100.810	21.648	-0.320	-21.852	43.500	21.968	QP
3		286.929	23.465	-1.505	-22.535	46.000	24.969	QP
4		420.425	23.564	-3.104	-22.436	46.000	26.669	QP
5		733.371	28.649	-2.066	-17.351	46.000	30.715	QP
6	*	834.494	31.648	-1.239	-14.352	46.000	32.887	QP

Note:

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

4.3 Emissions in non-restricted frequency band

VERDICT: PASS

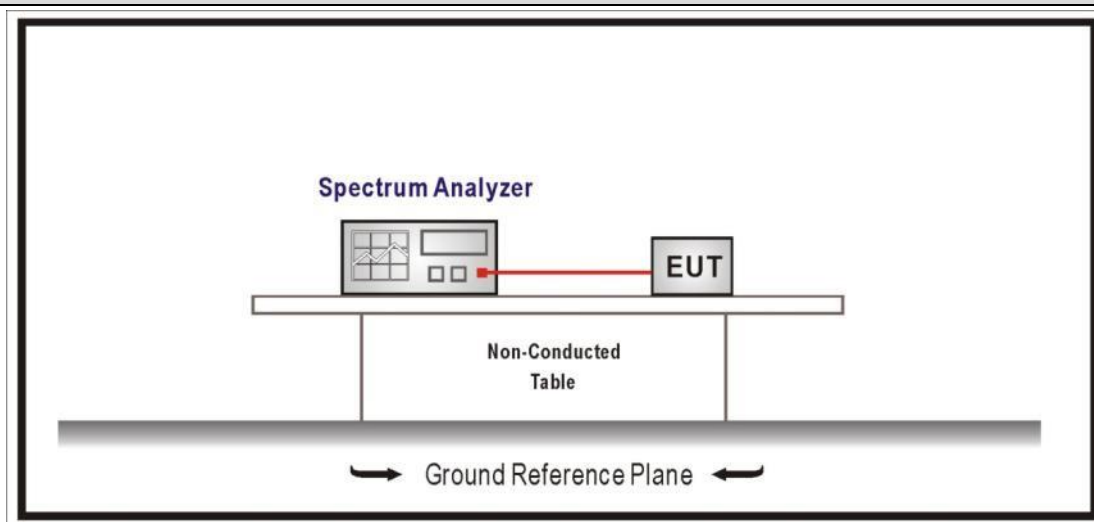
4.3.1 Limit

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

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

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

4.3.2 Test Setup



4.3.3 Test Procedure

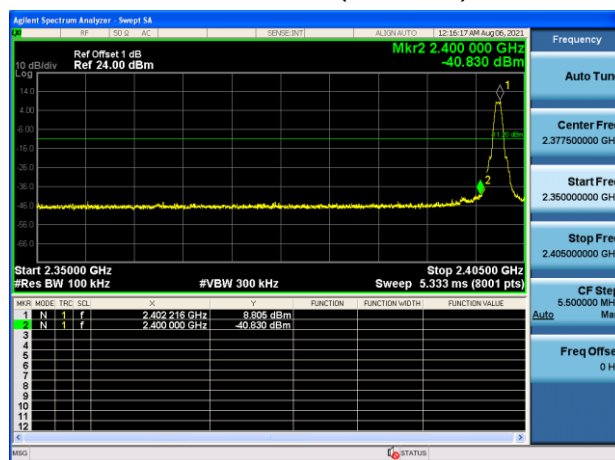
References Rule	Chapter	Description
☒ ANSI C63.10	11.11	Emissions in non-restricted frequency bands
☒ ANSI C63.10	11.11.1	General
☒ ANSI C63.10	11.11.2	Reference level measurement
☒ ANSI C63.10	11.11.3	Emission level measurement

4.3.4 Test Data

Mode 1 CH37 (2402MHz)



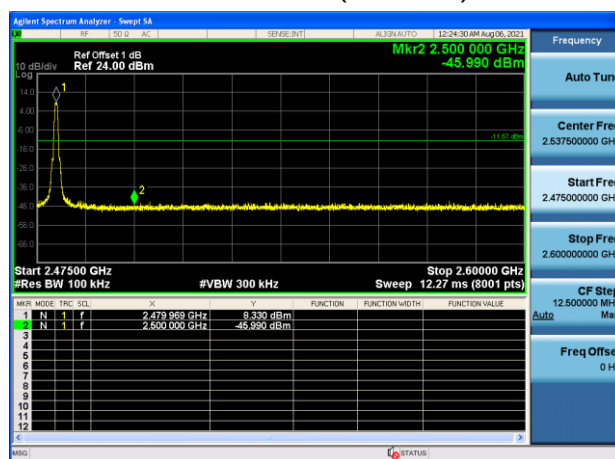
Mode 1 CH37 (2402MHz)



Mode 1 CH39 (2480MHz)



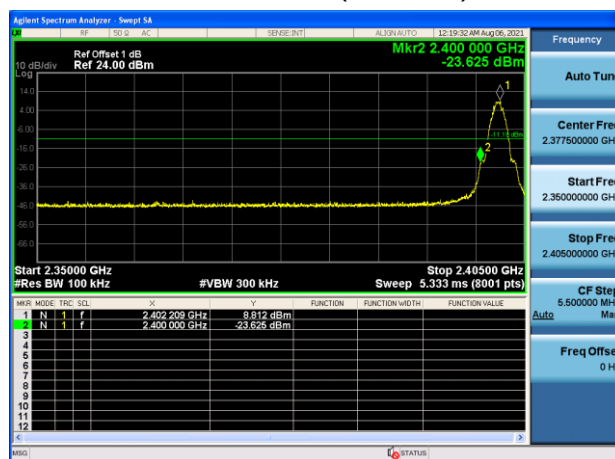
Mode 1 CH39 (2480MHz)



Mode 2 CH37 (2402MHz)



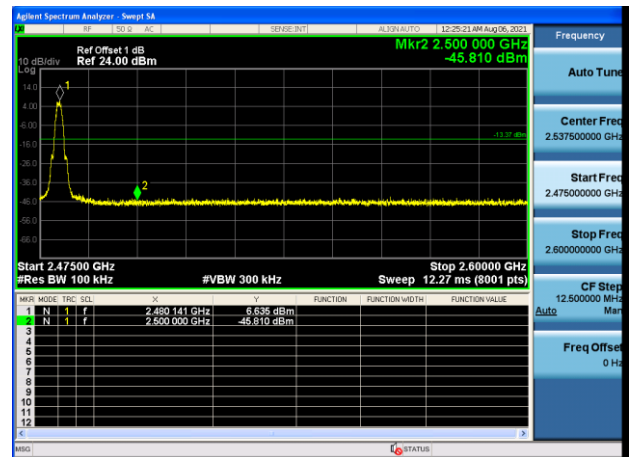
Mode 2 CH37 (2402MHz)



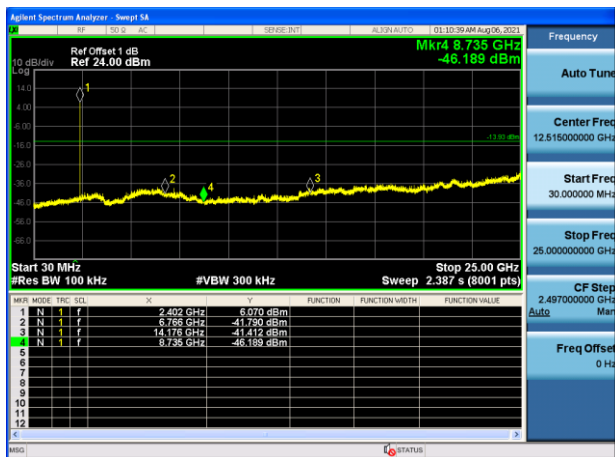
Mode 2 CH39 (2480MHz)



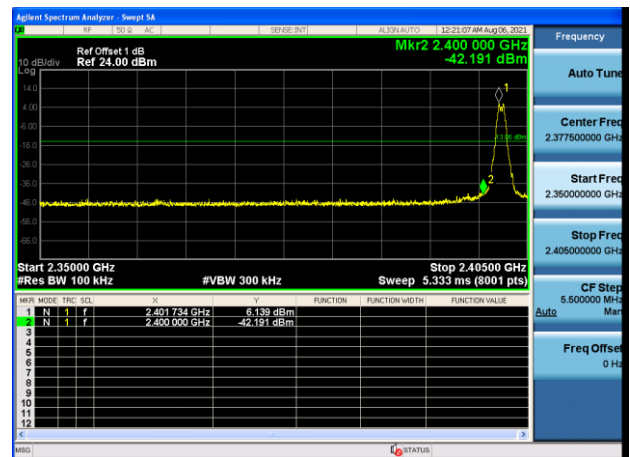
Mode 2 CH39 (2480MHz)



Mode 3 CH37 (2402MHz)



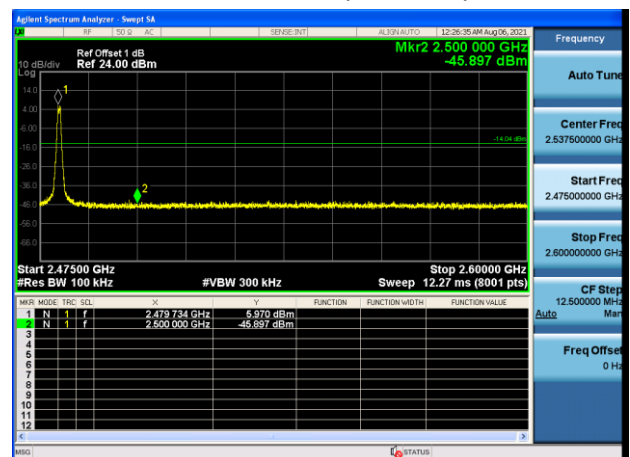
Mode 3 CH37 (2402MHz)



Mode 3 CH39 (2480MHz)



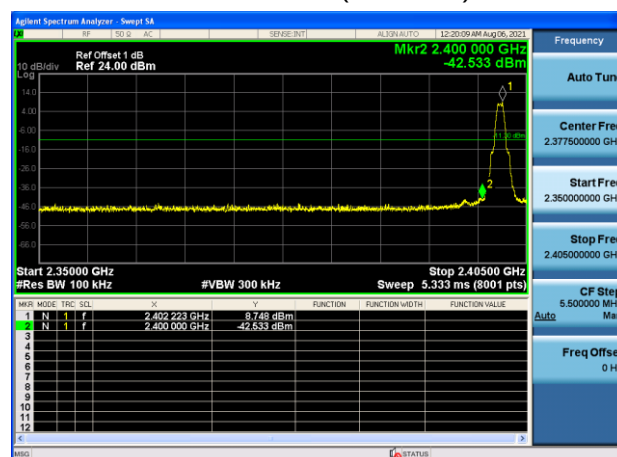
Mode 3 CH39 (2480MHz)



Mode 4 CH37 (2402MHz)



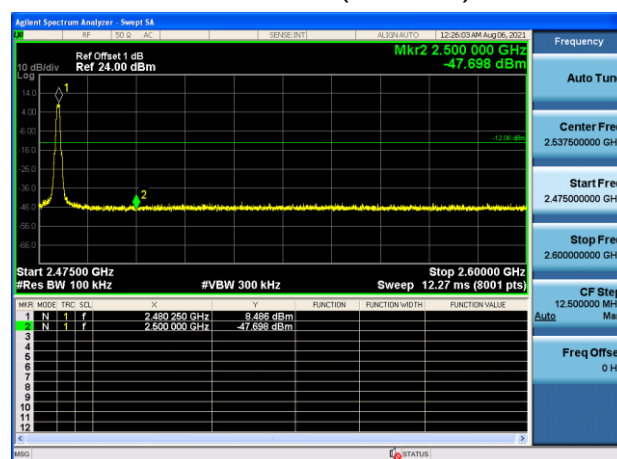
Mode 4 CH37 (2402MHz)



Mode 4 CH39 (2480MHz)

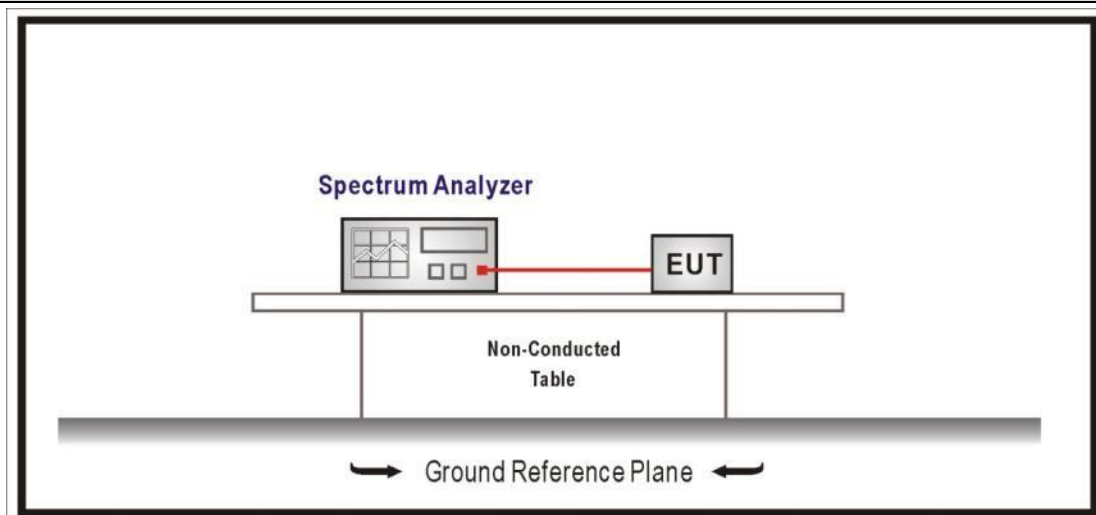


Mode 4 CH39 (2480MHz)



4.4 Duty cycle**VERDICT: PASS****4.4.1 Limit**

N/A

4.4.2 Test Setup**4.4.3 Test Procedure**

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

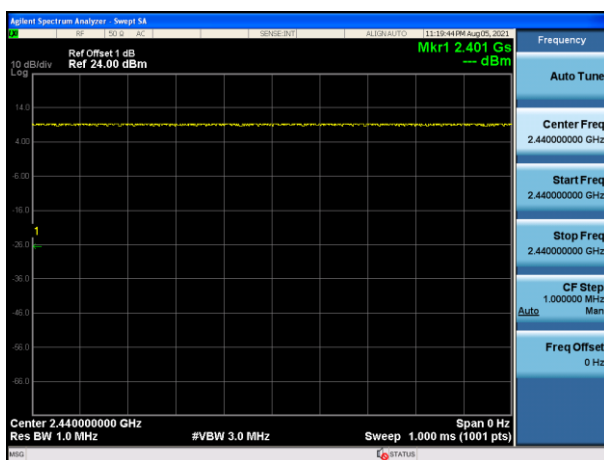
4.4.4 Test Data

Test Mode	Tx On (ms)	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%

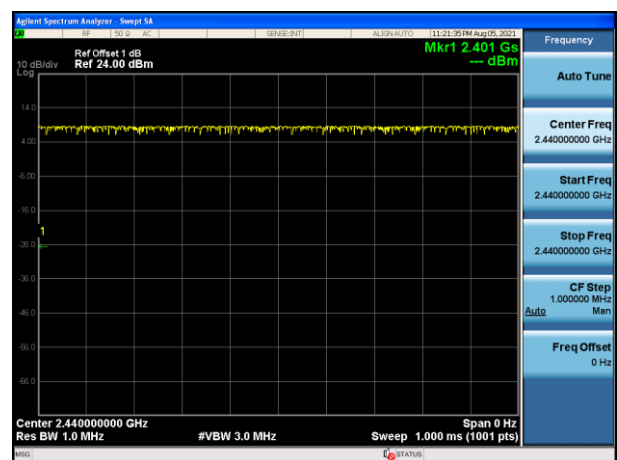
Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control Level for the tested mode of operation.

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

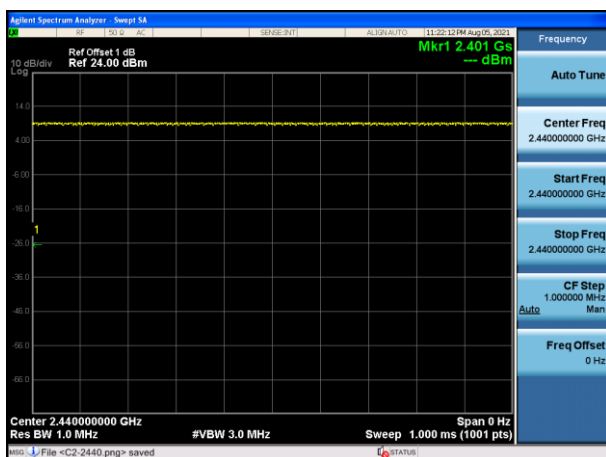
Mode 1 CH18 2440MHz



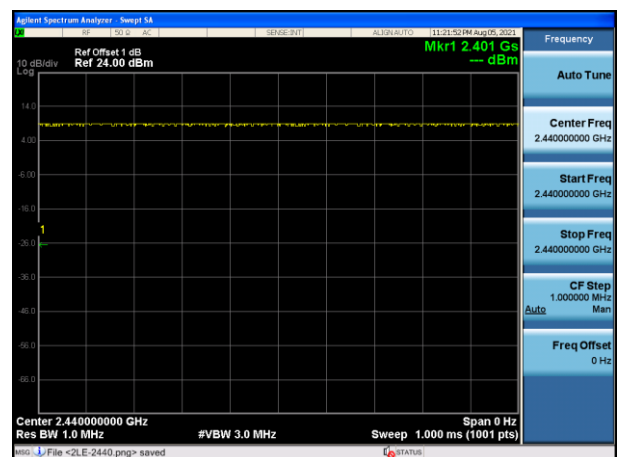
Mode 2 CH18 2440MHz



Mode 3 CH18 2440MHz



Mode 4 CH18 2440MHz



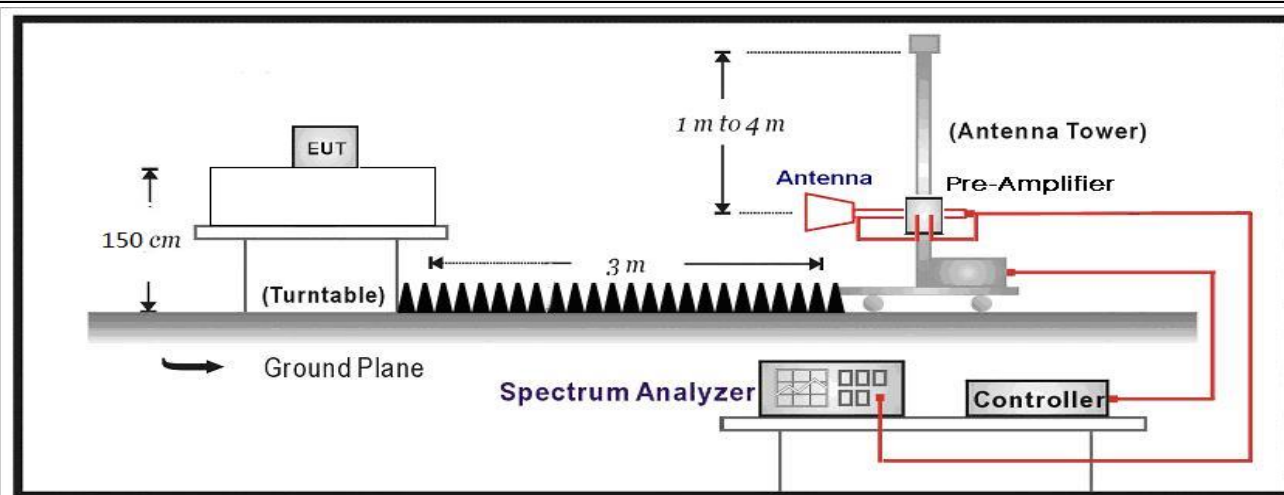
4.5 Radiated Emission Band Edge**VERDICT: PASS****4.5.1 Limit**

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

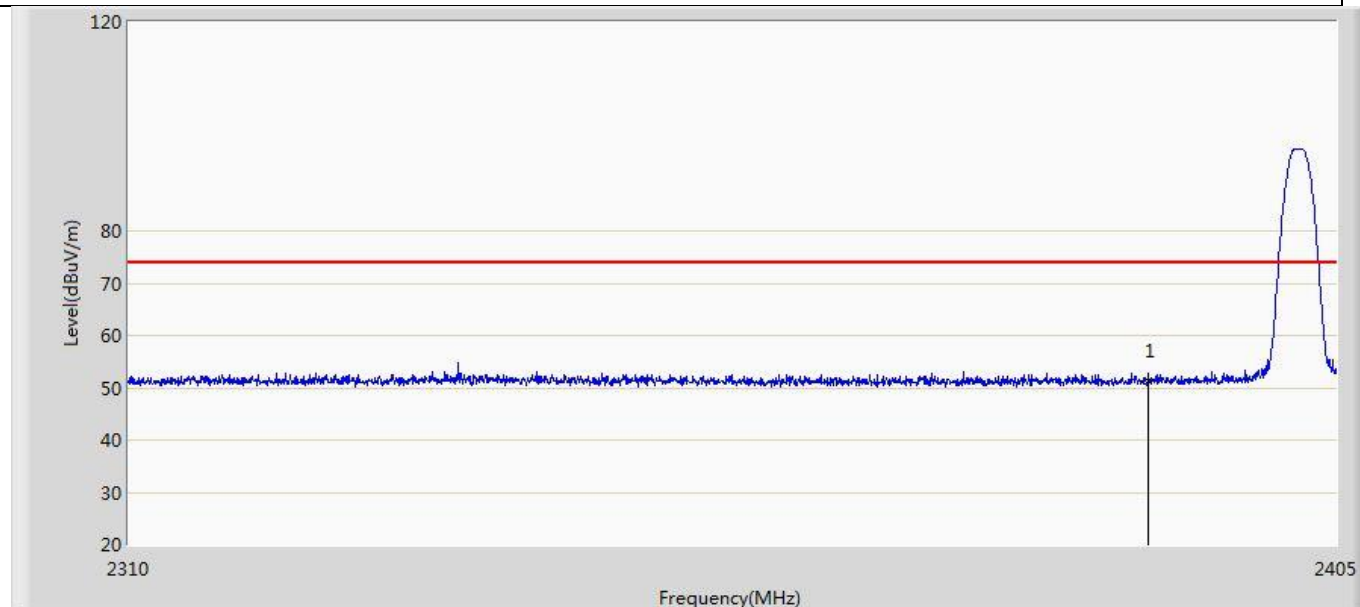
Above 1GHz Test Setup:

**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

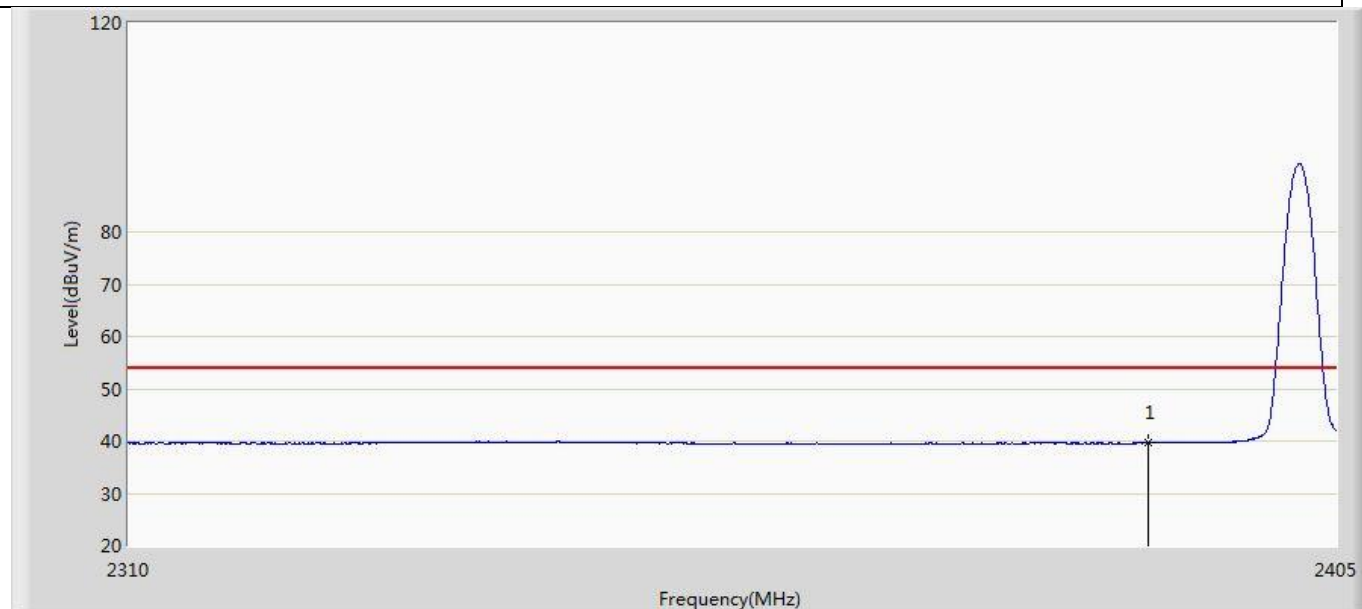
4.5.4 Test Data

Profile: 2170694R	Page No.: 1
Engineer: Yingfei.Wang	
Site: AC5	Time: 2020/08/04 - 00:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



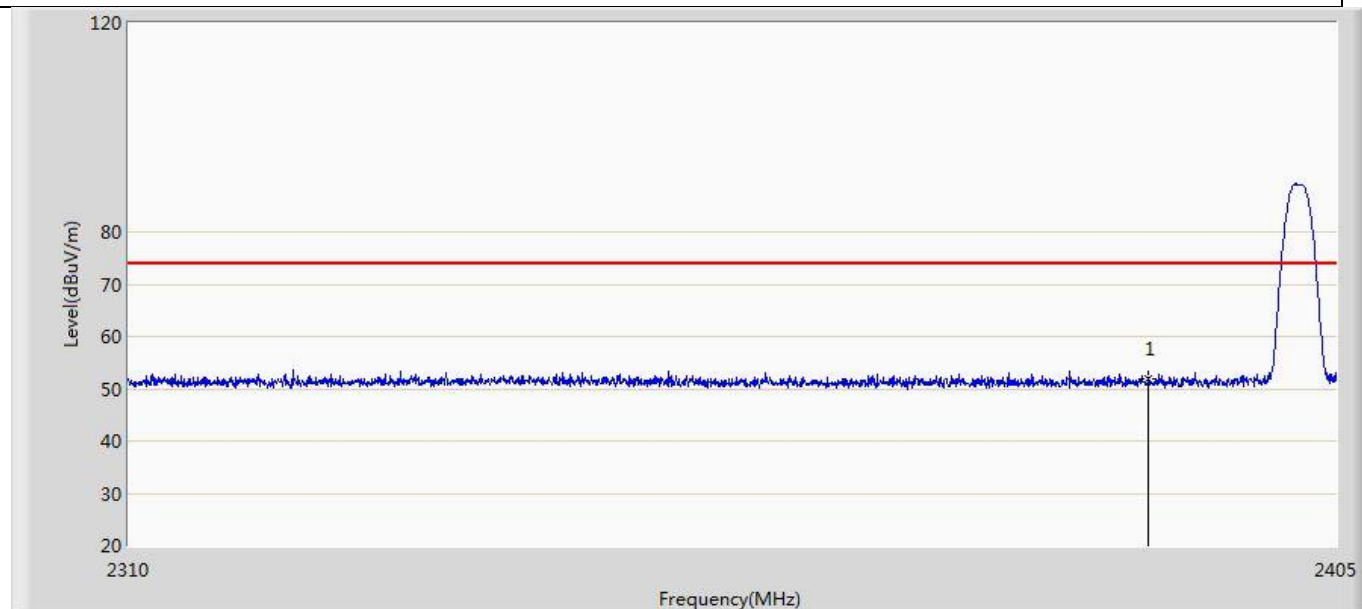
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	51.351	14.995	-22.649	74.000	36.357	PK

Profile: 2170694R	Page No.: 2
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:12
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



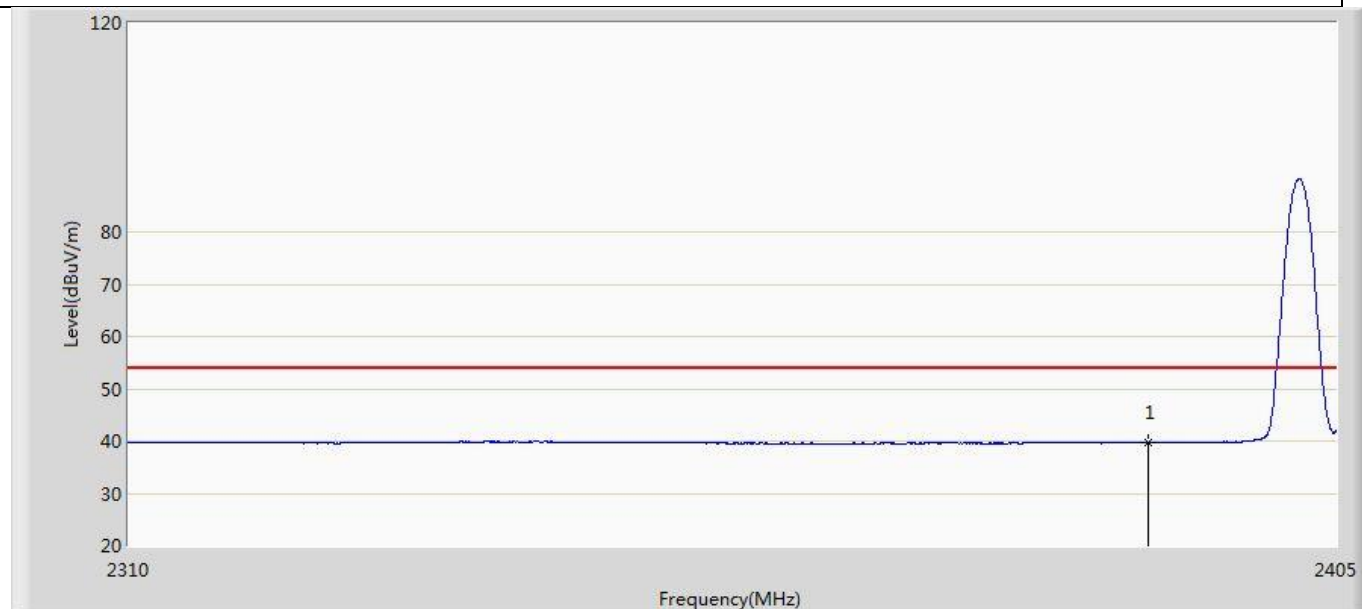
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.572	3.216	-14.428	54.000	36.357	AV

Profile: 2170694R	Page No.: 3
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



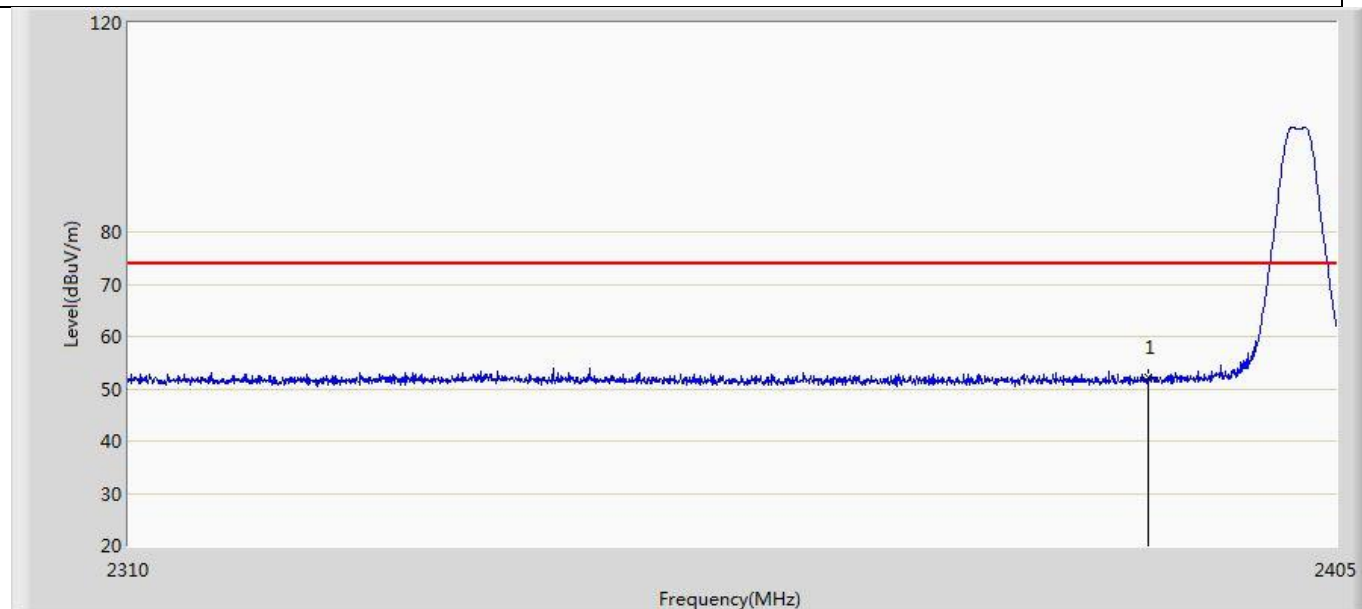
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	51.915	15.559	-22.085	74.000	36.357	PK

Profile: 2170694R	Page No.: 4
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2402MHz by LE_1Mbps	



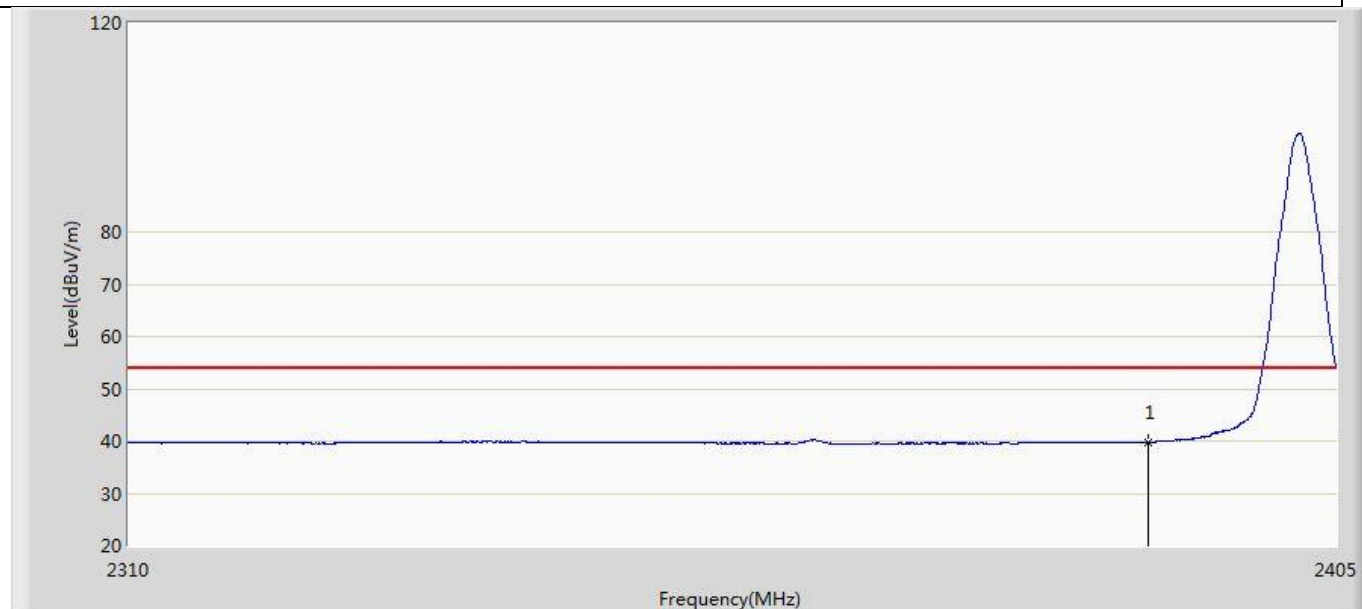
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.721	3.365	-14.279	54.000	36.357	AV

Profile: 2170694R	Page No.: 5
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



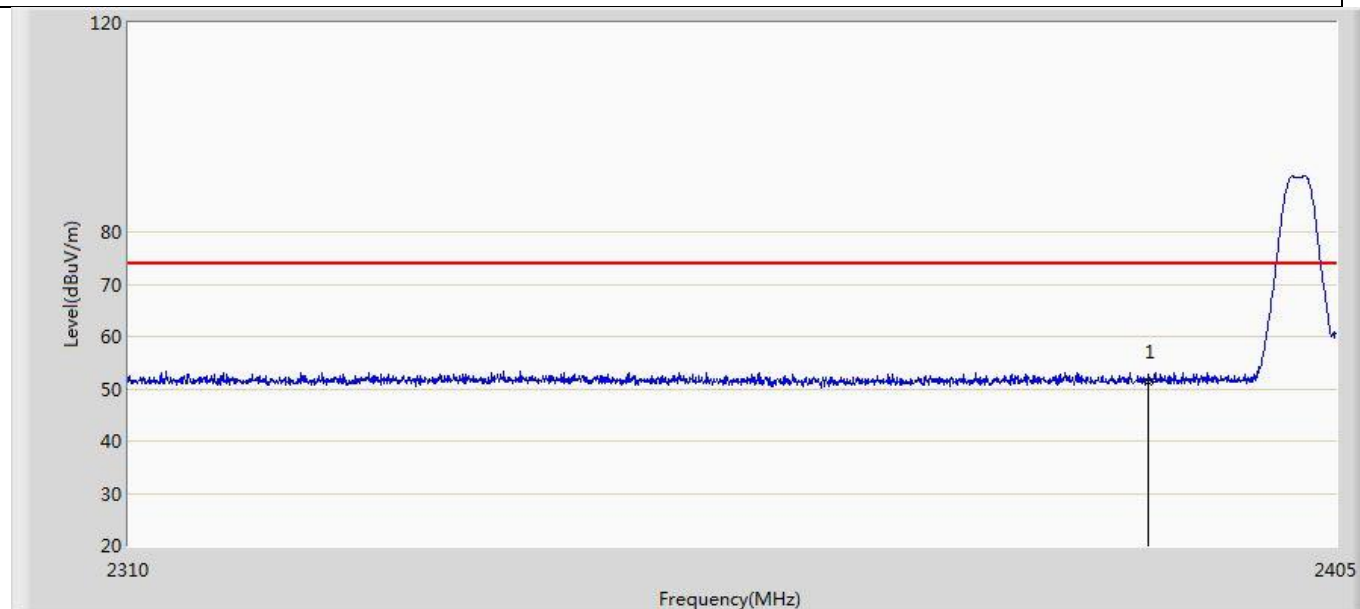
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	52.138	15.782	-21.862	74.000	36.357	PK

Profile: 2170694R	Page No.: 6
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



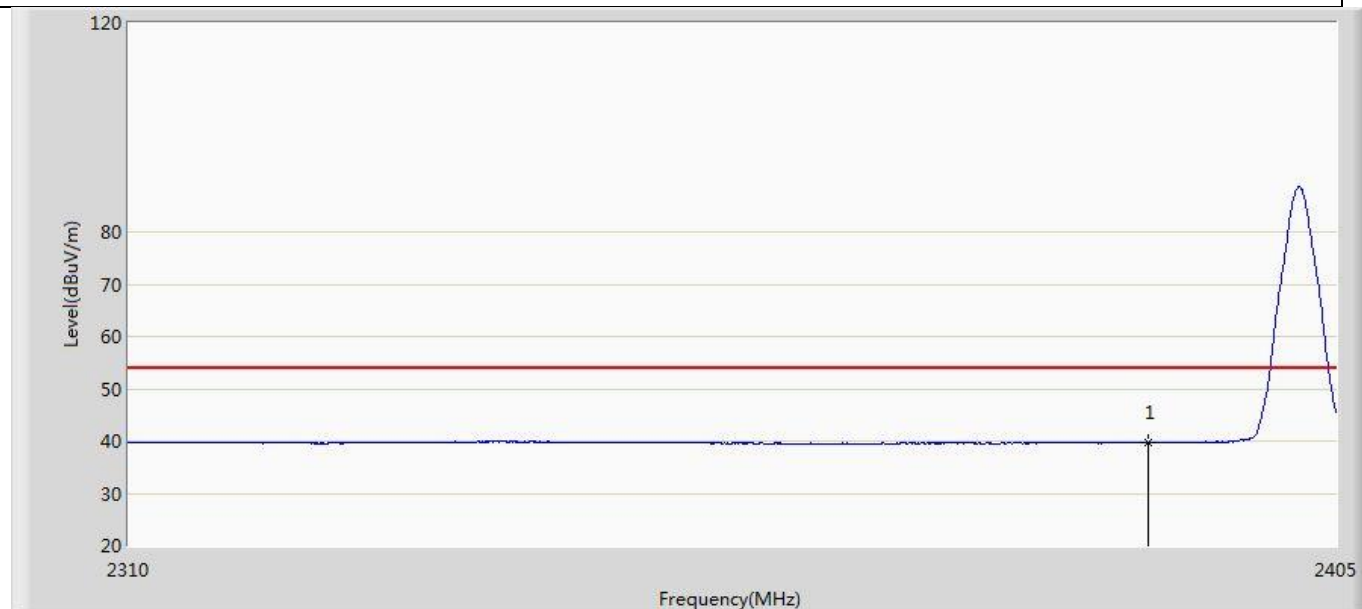
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.771	3.415	-14.229	54.000	36.357	AV

Profile: 2170694R	Page No.: 7
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:21
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



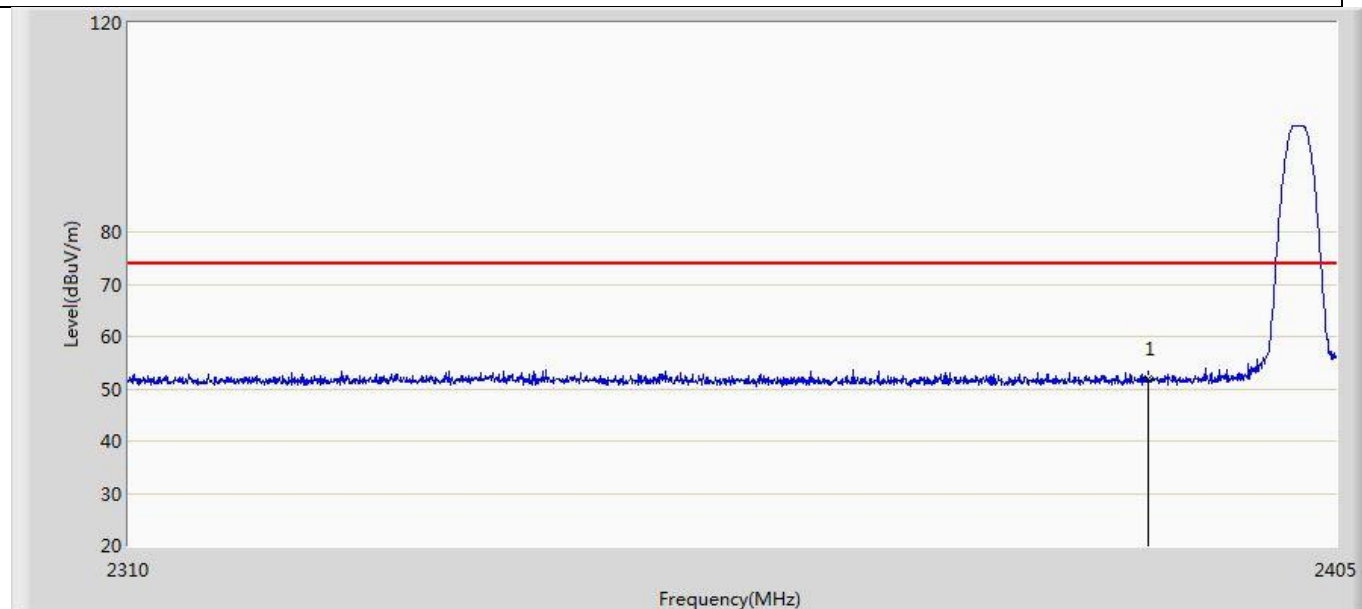
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	51.368	15.012	-22.632	74.000	36.357	PK

Profile: 2170694R	Page No.: 8
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:22
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2402MHz by LE_2Mbps	



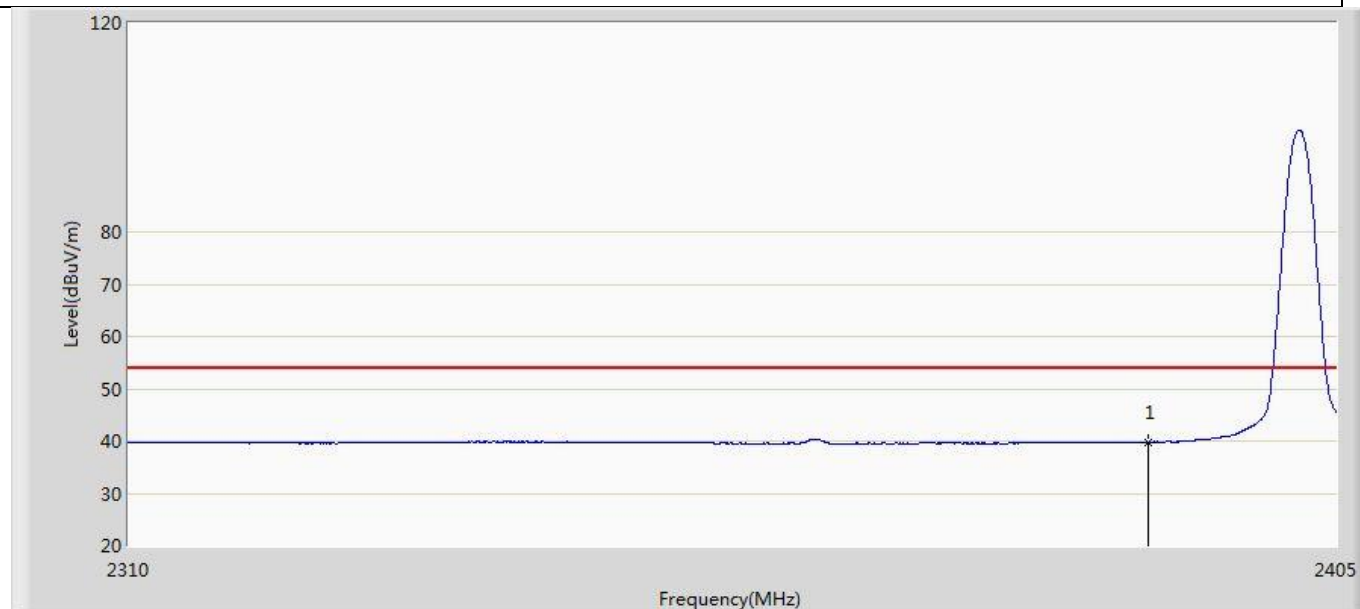
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.674	3.318	-14.326	54.000	36.357	AV

Profile: 2170694R	Page No.: 9
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:23
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=8	



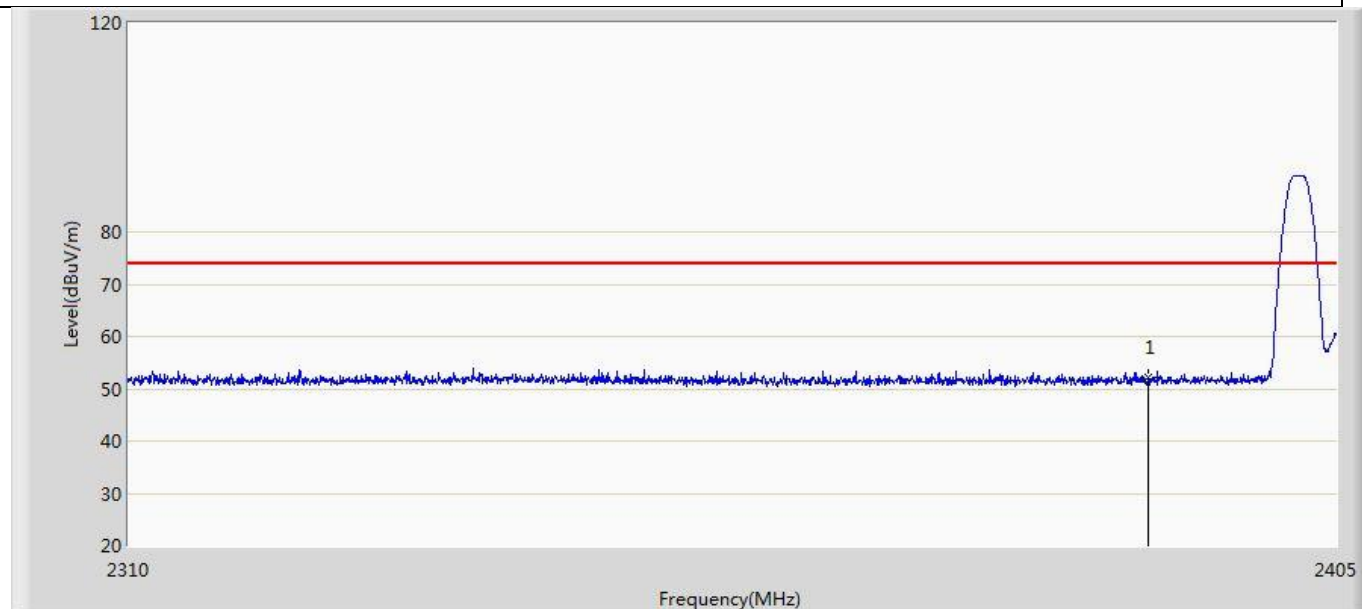
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	51.857	15.501	-22.143	74.000	36.357	PK

Profile: 2170694R	Page No.: 10
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:25
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=8	



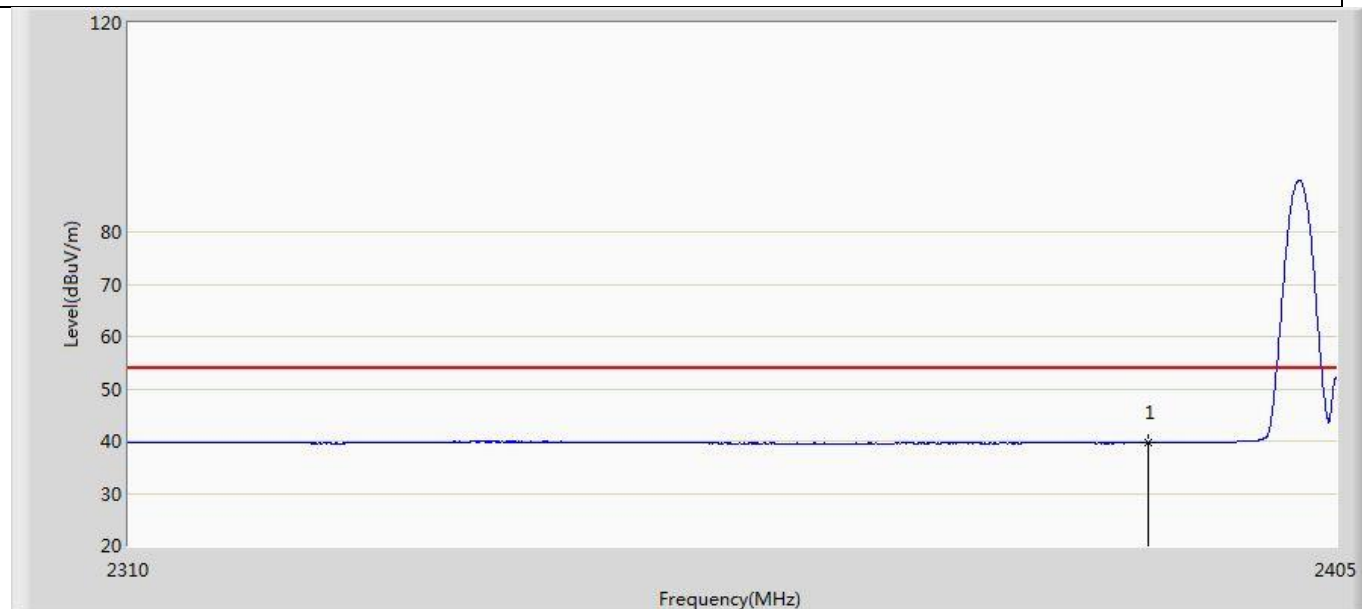
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.714	3.358	-14.286	54.000	36.357	AV

Profile: 2170694R	Page No.: 11
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:27
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=8	



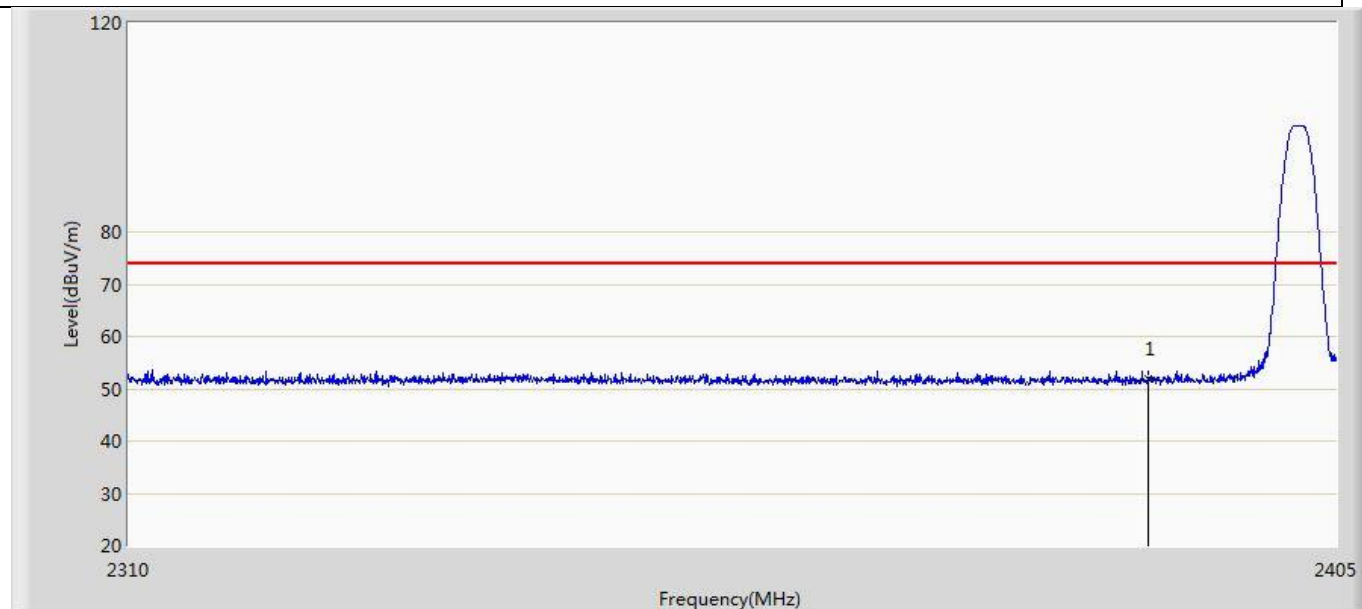
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	52.263	15.907	-21.737	74.000	36.357	PK

Profile: 2170694R	Page No.: 12
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:28
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2402MHz by Coded S=8	



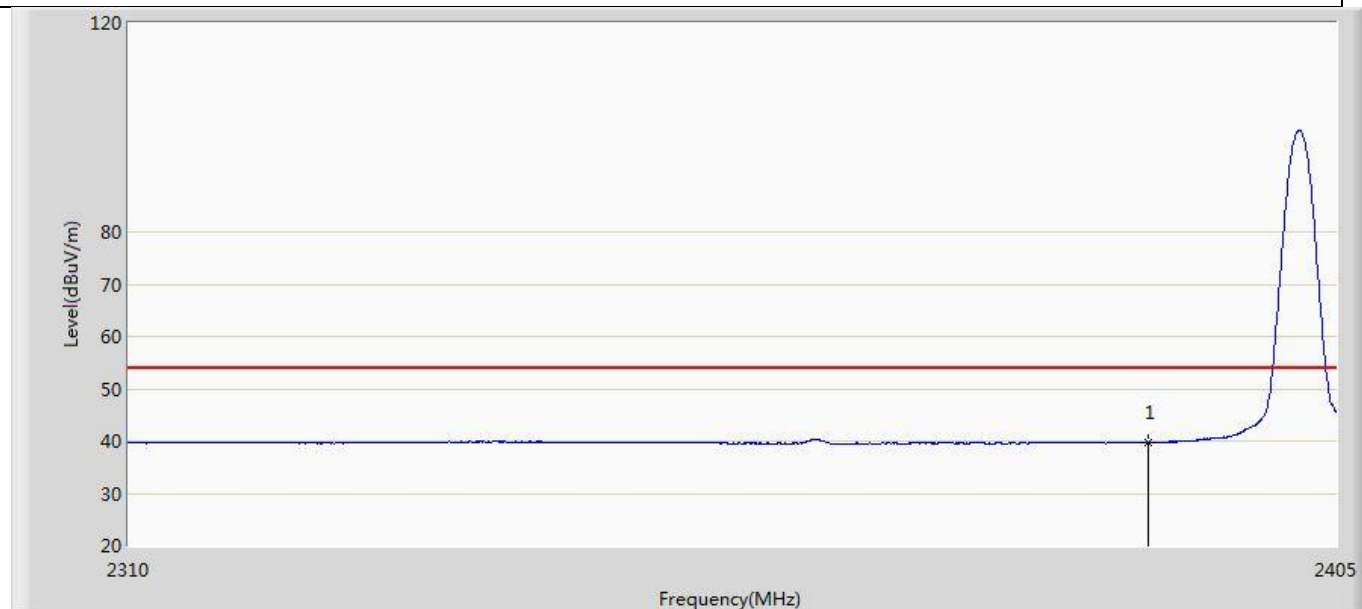
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.682	3.326	-14.318	54.000	36.357	AV

Profile: 2170694R	Page No.: 13
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=2	



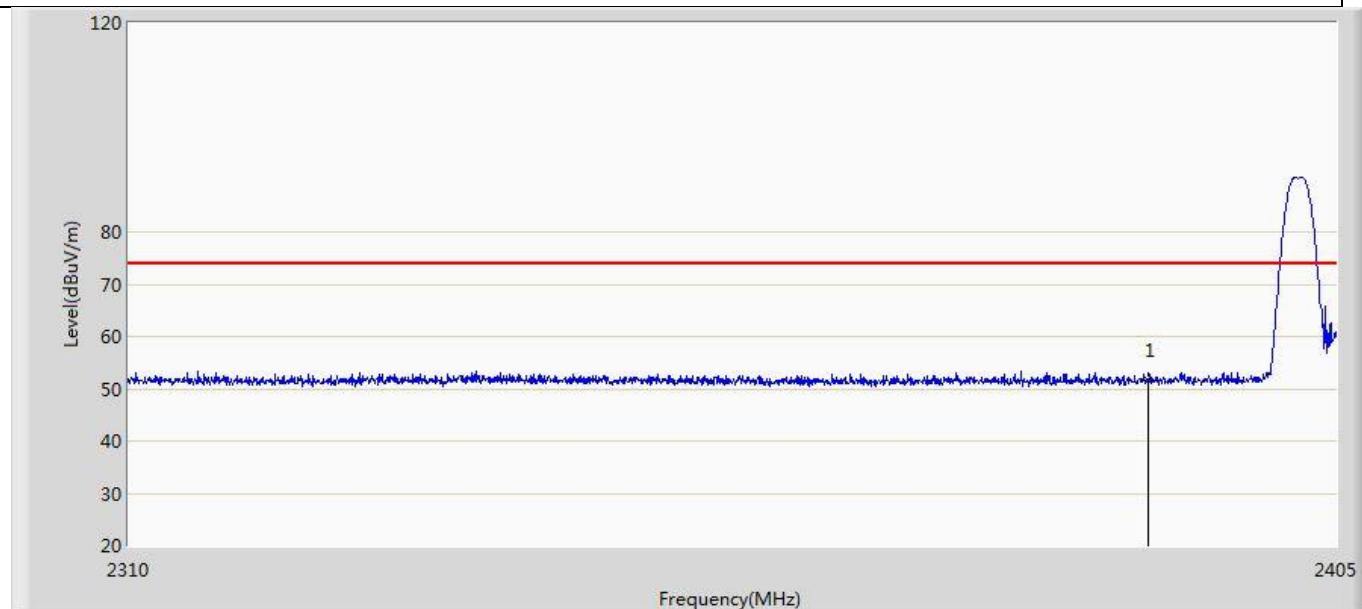
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	52.003	15.647	-21.997	74.000	36.357	PK

Profile: 2170694R	Page No.: 14
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=2	



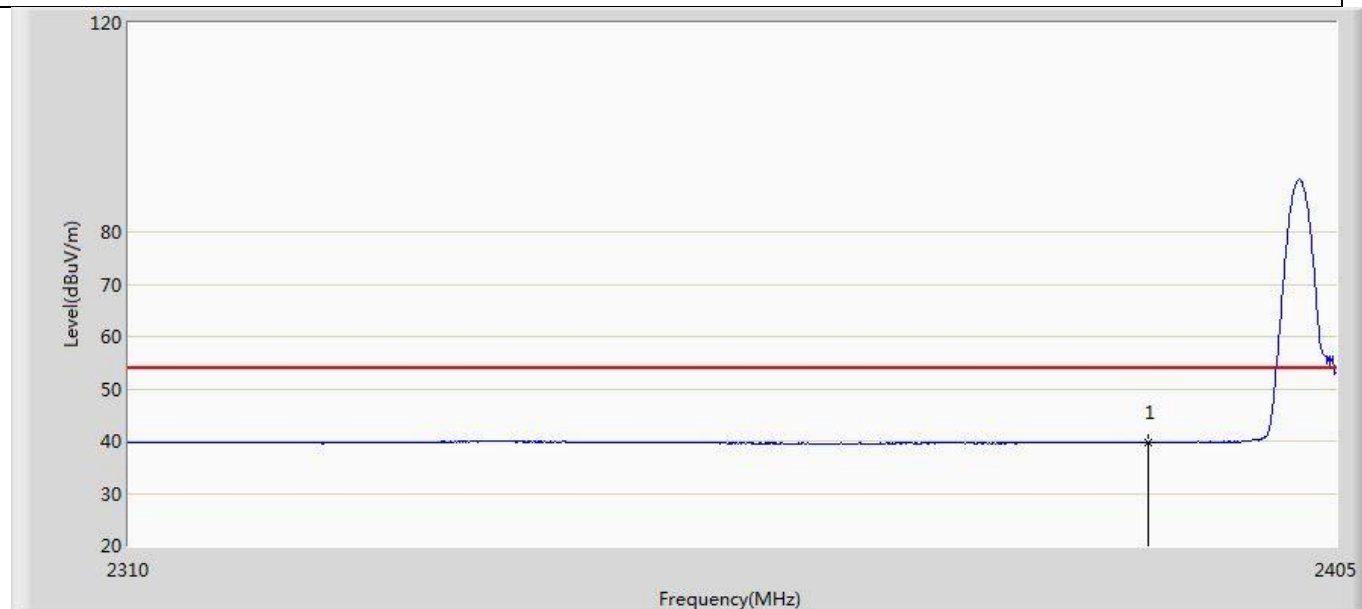
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.773	3.417	-14.227	54.000	36.357	AV

Profile: 2170694R	Page No.: 15
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=2	



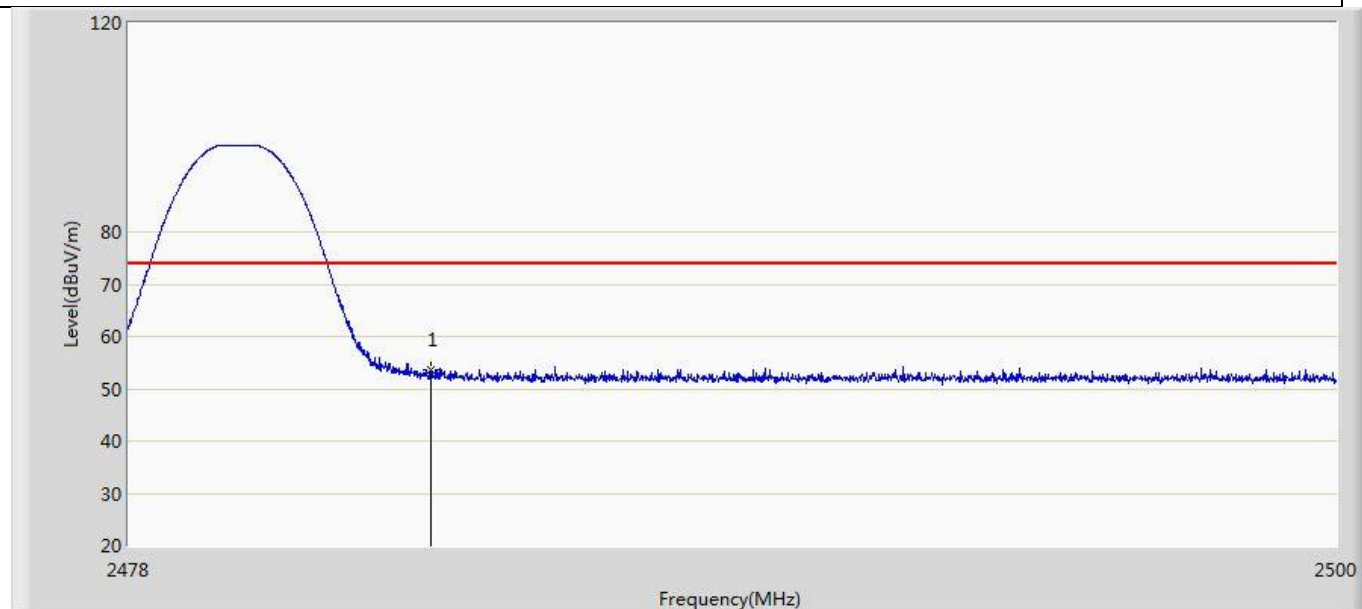
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	51.722	15.366	-22.278	74.000	36.357	PK

Profile: 2170694R	Page No.: 16
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2402MHz by Coded S=2	



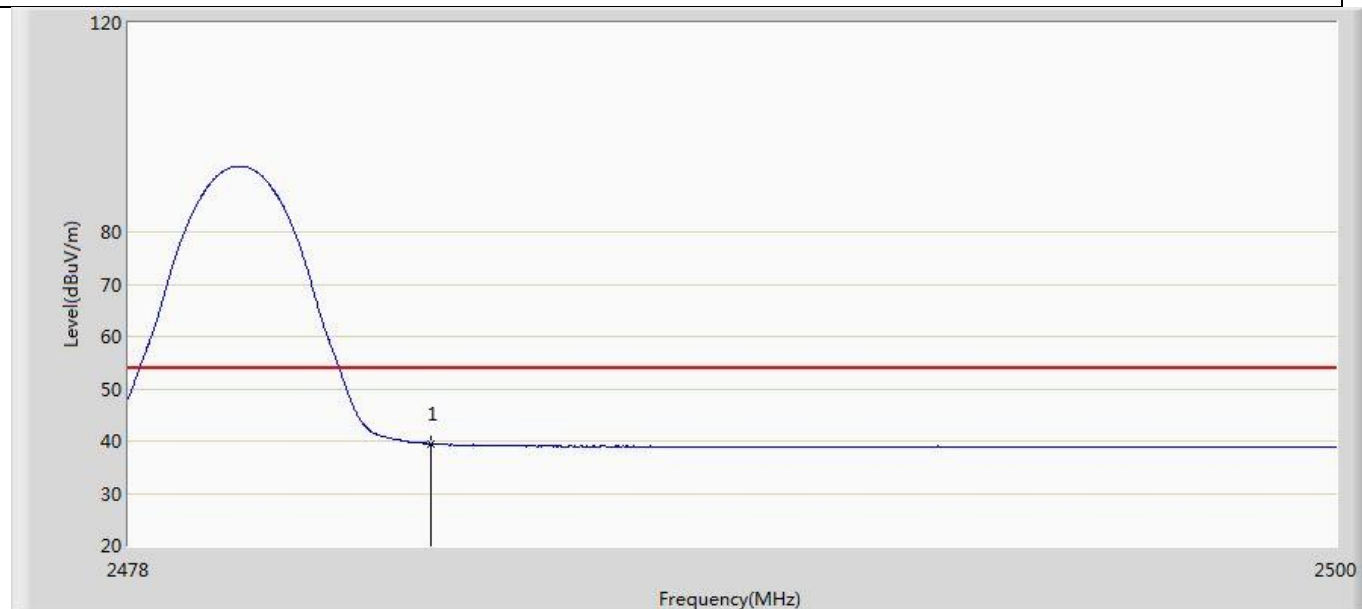
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.698	3.342	-14.302	54.000	36.357	AV

Profile: 2170694R	Page No.: 17
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



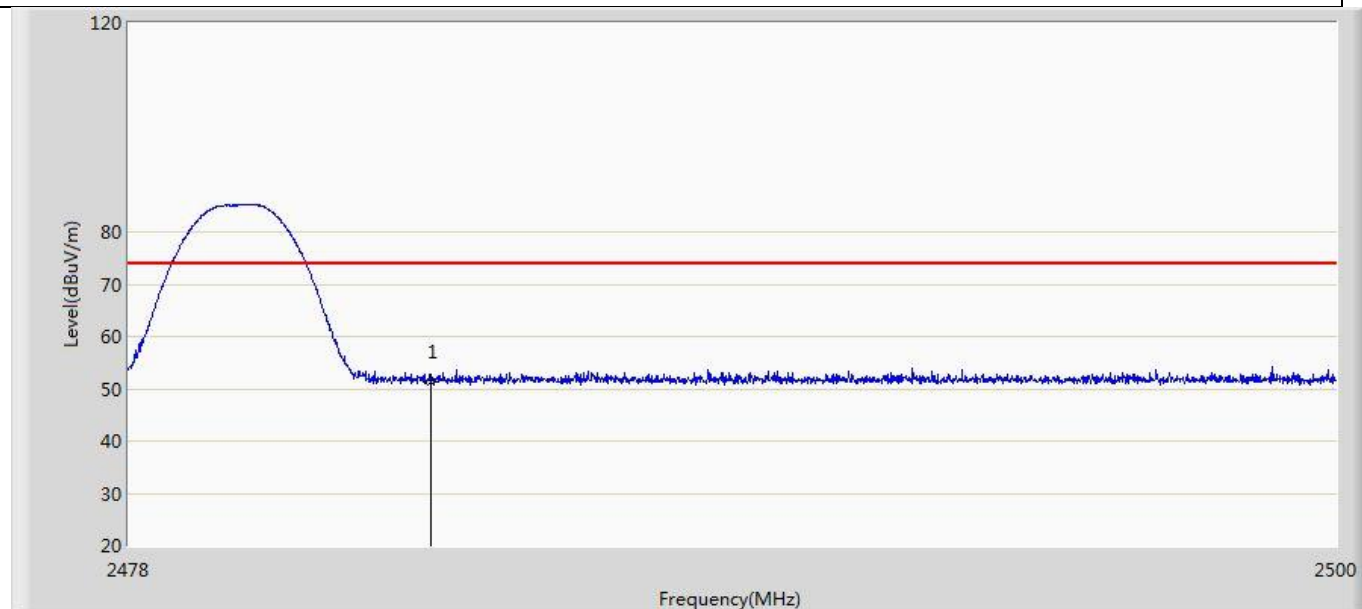
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	53.573	17.169	-20.427	74.000	36.404	PK

Profile: 2170694R	Page No.: 18
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



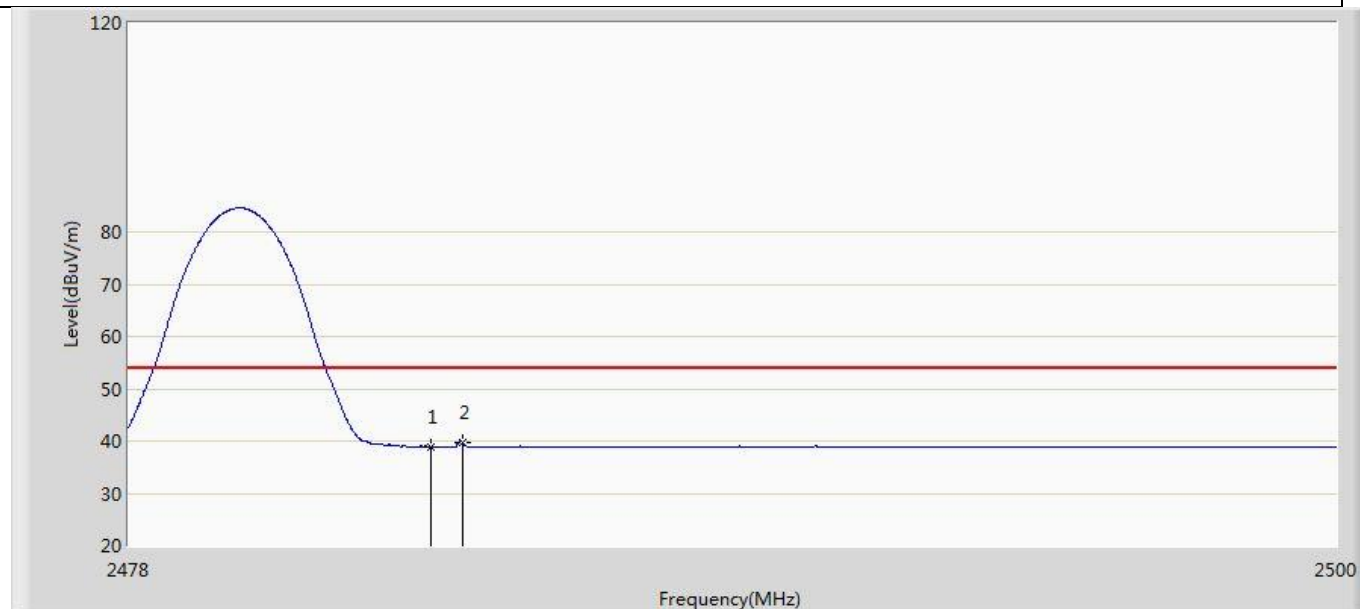
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	39.543	3.139	-14.457	54.000	36.404	AV

Profile: 2170694R	Page No.: 19
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:54
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



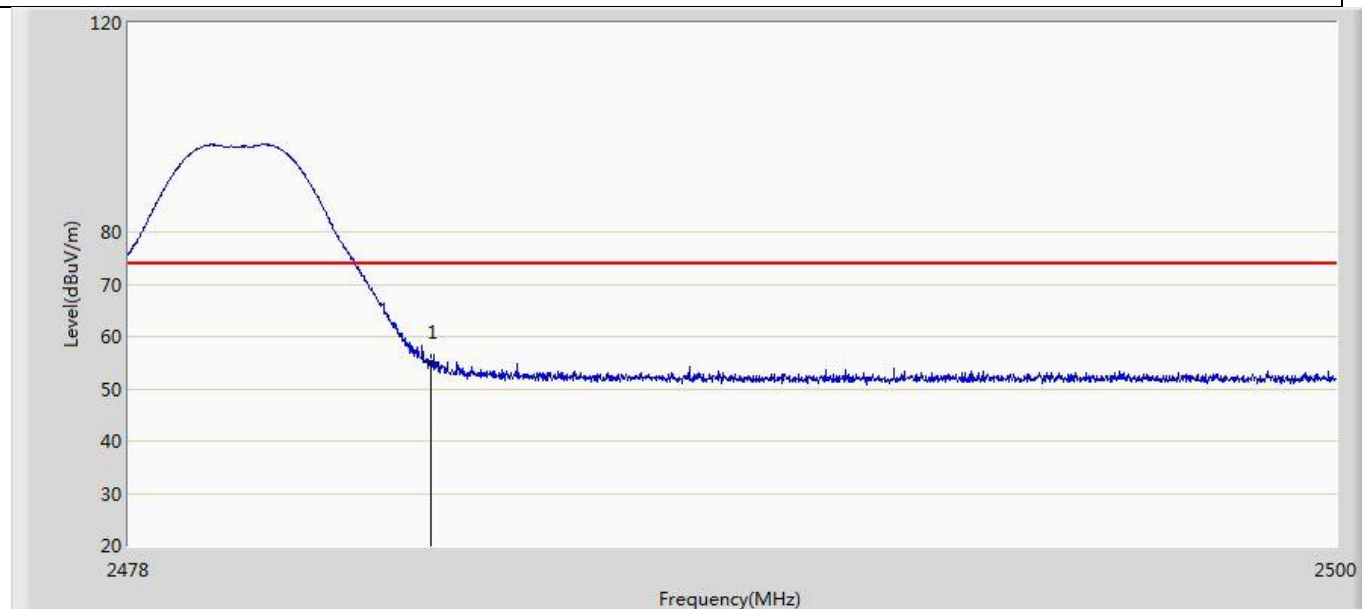
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	51.177	14.773	-22.823	74.000	36.404	PK

Profile: 2170694R	Page No.: 20
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 19:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 1:Transmit at 2480MHz by LE_1Mbps	



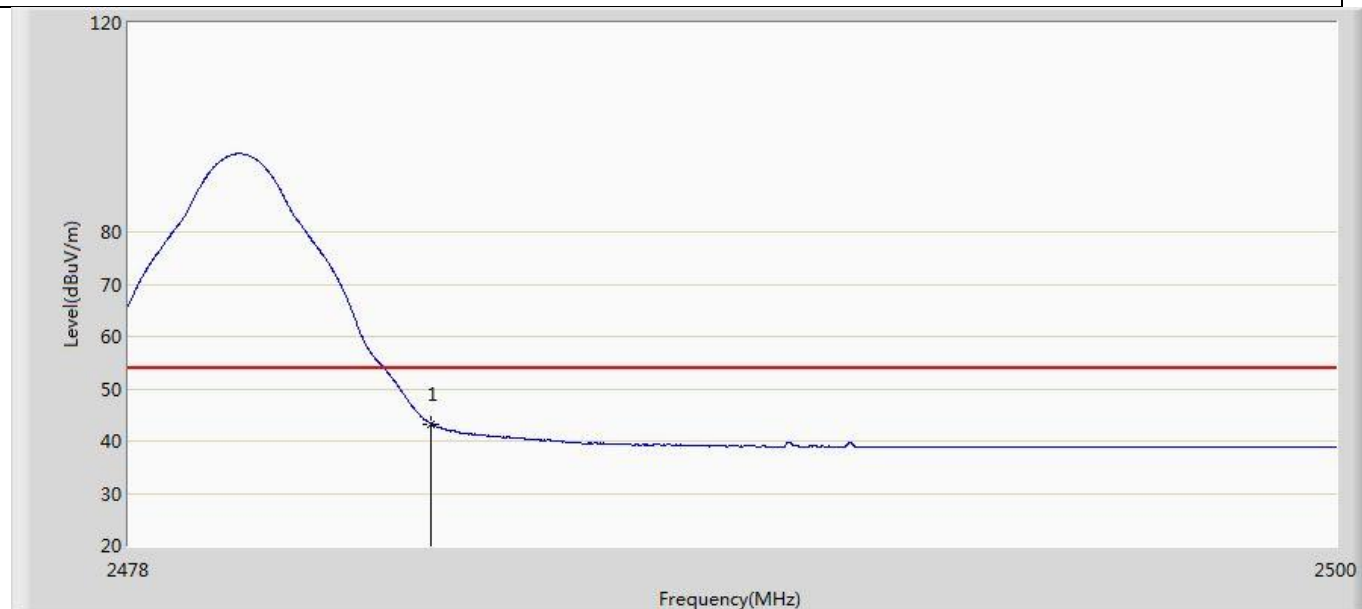
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	38.958	2.554	-15.042	54.000	36.404	AV
2	*	2484.061	39.751	3.346	-14.249	54.000	36.404	AV

Profile: 2170694R	Page No.: 21
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



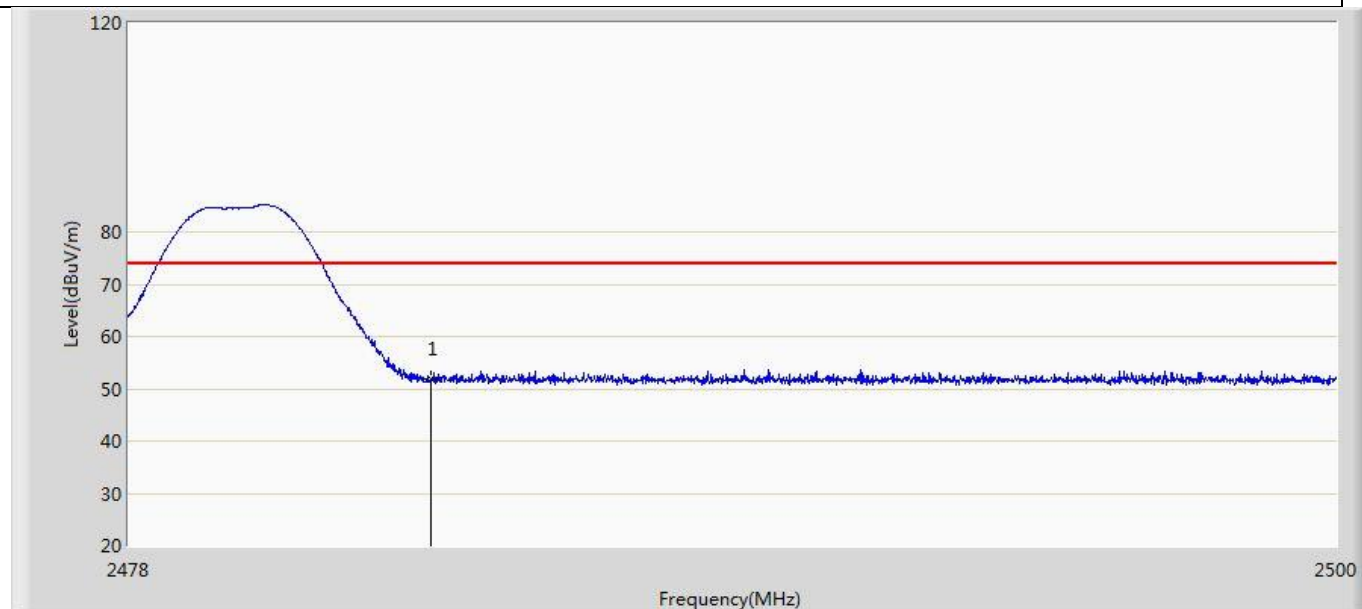
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	55.036	18.632	-18.964	74.000	36.404	PK

Profile: 2170694R	Page No.: 22
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



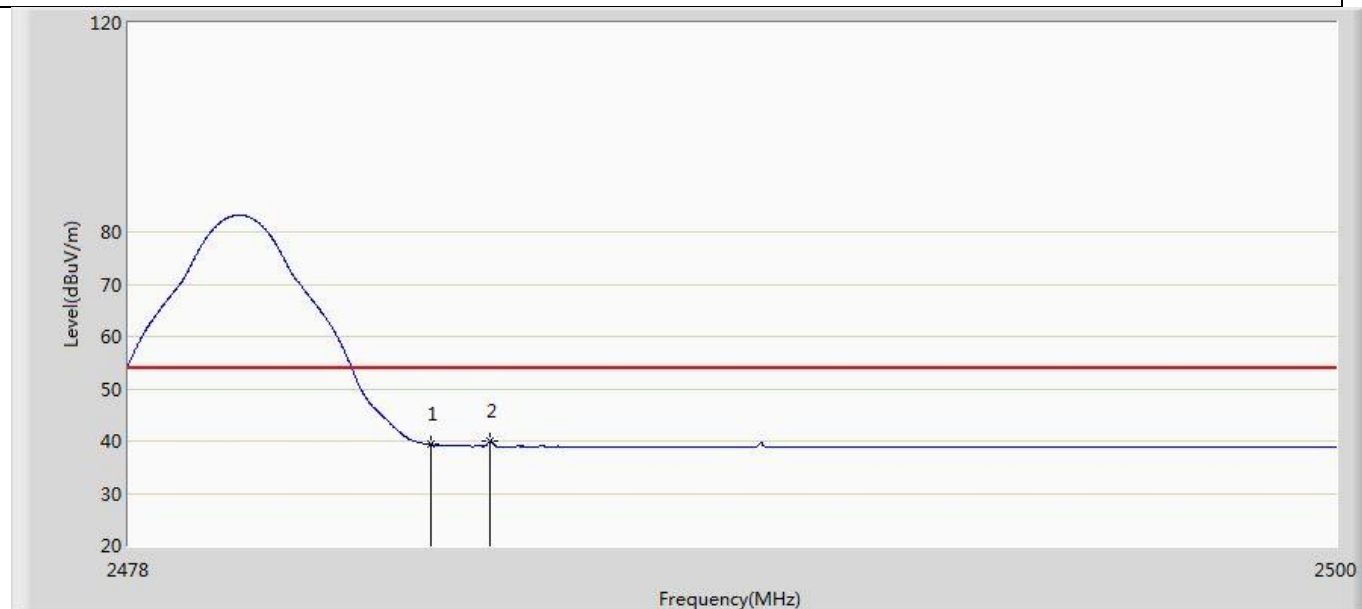
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	43.286	6.882	-10.714	54.000	36.404	AV

Profile: 2170694R	Page No.: 23
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



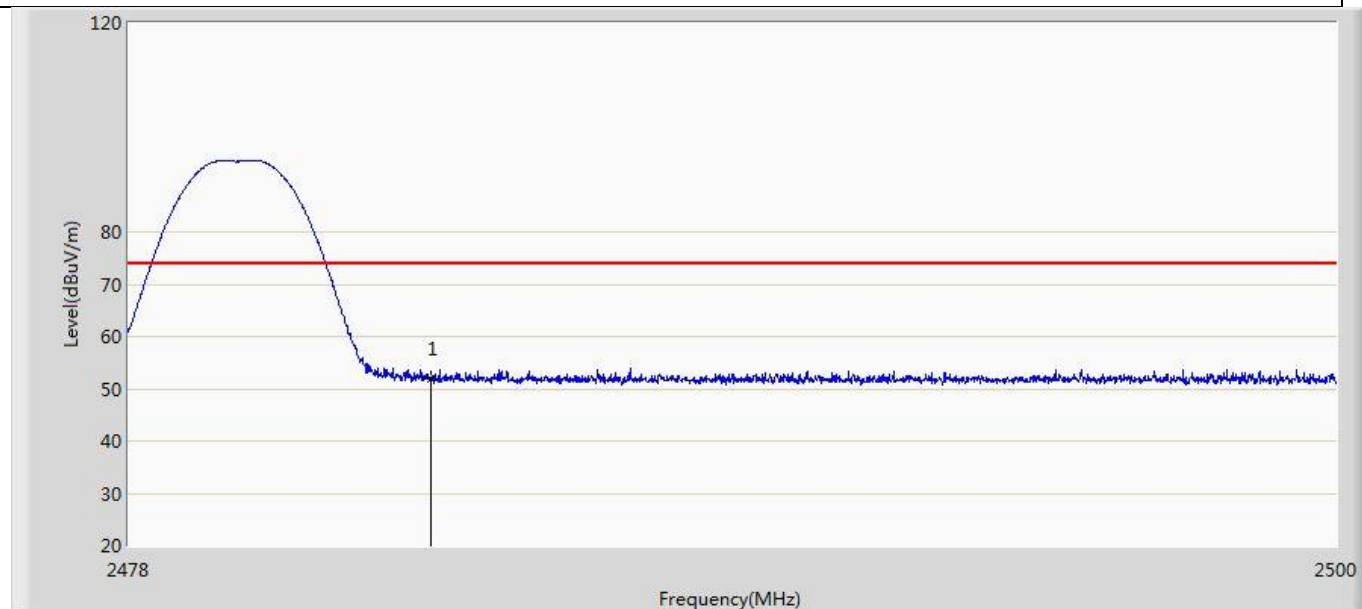
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	52.005	15.601	-21.995	74.000	36.404	PK

Profile: 2170694R	Page No.: 24
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:41
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 2:Transmit at 2480MHz by LE_2Mbps	



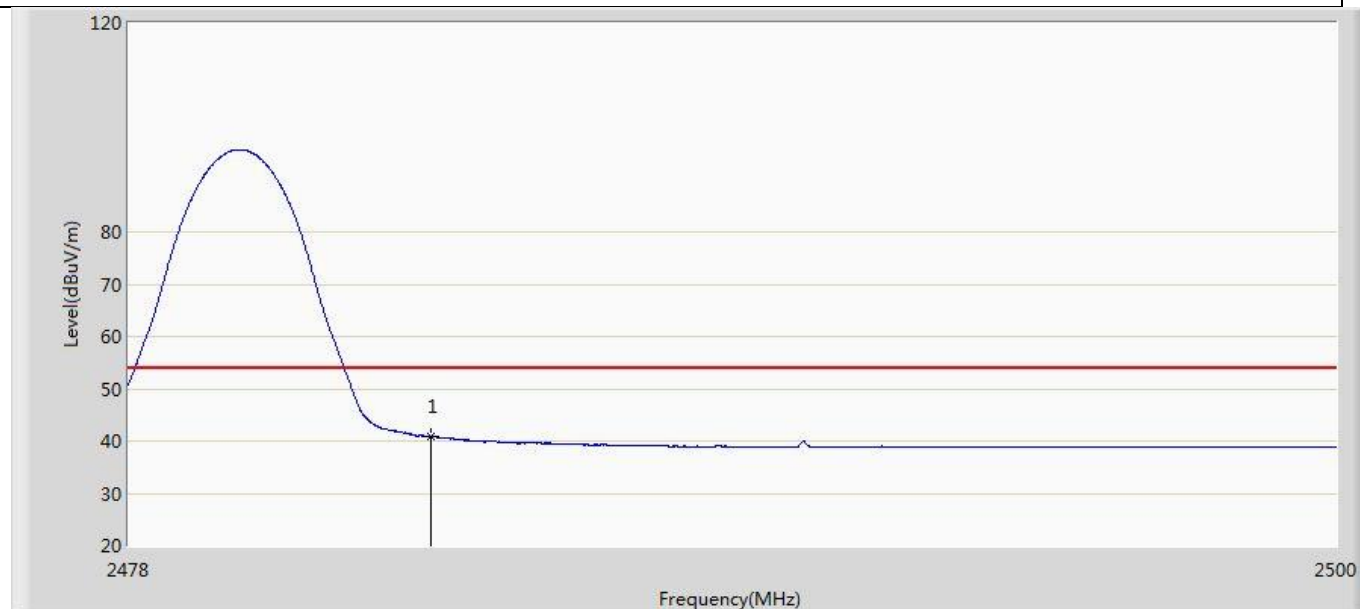
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	39.321	2.917	-14.679	54.000	36.404	AV
2	*	2484.578	40.042	3.637	-13.958	54.000	36.405	AV

Profile: 2170694R	Page No.: 25
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:43
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=8	



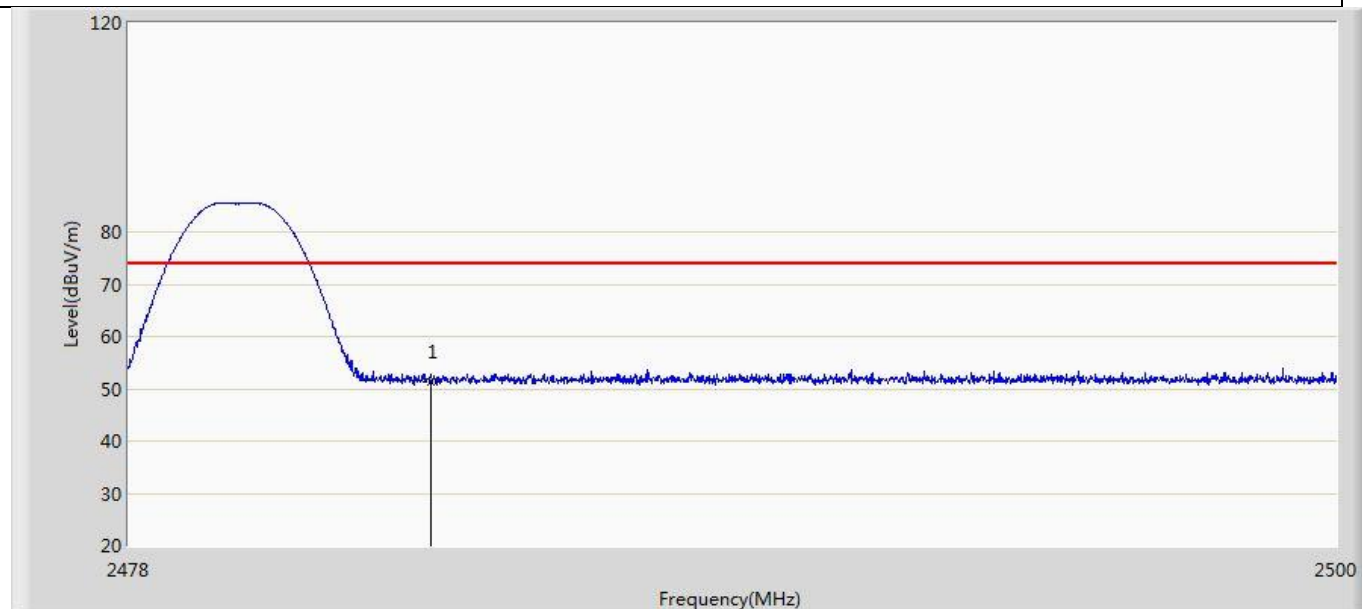
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	51.967	15.563	-22.033	74.000	36.404	PK

Profile: 2170694R	Page No.: 26
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=8	



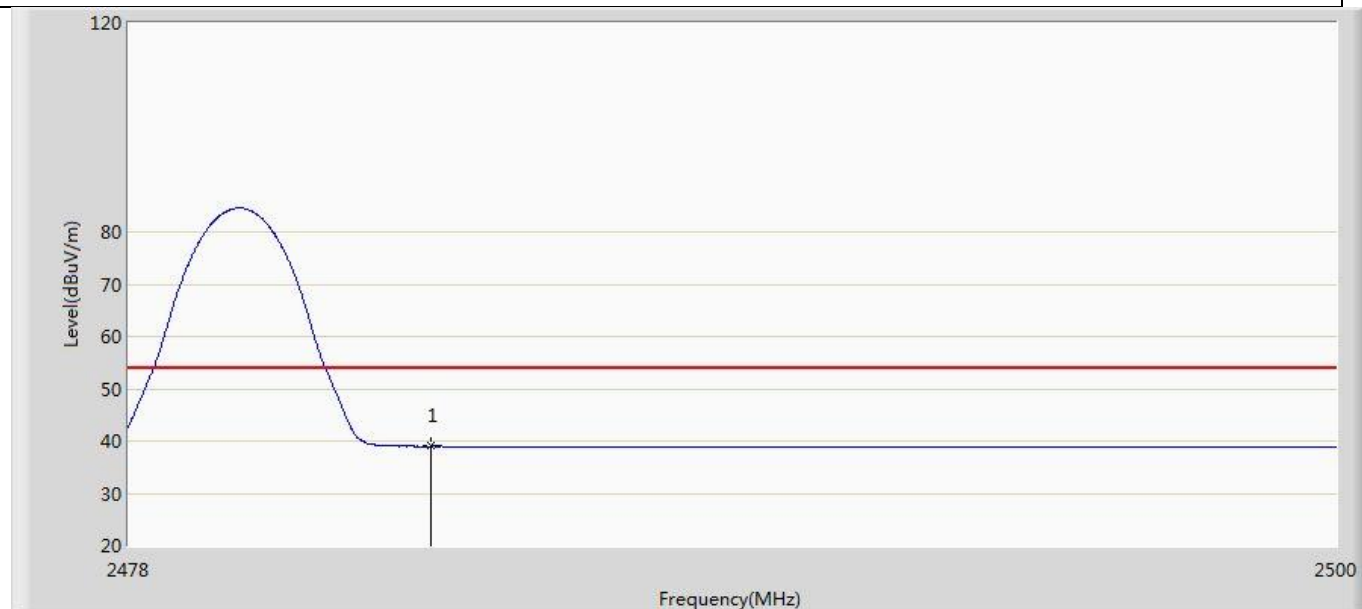
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	40.810	4.406	-13.190	54.000	36.404	AV

Profile: 2170694R	Page No.: 27
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=8	



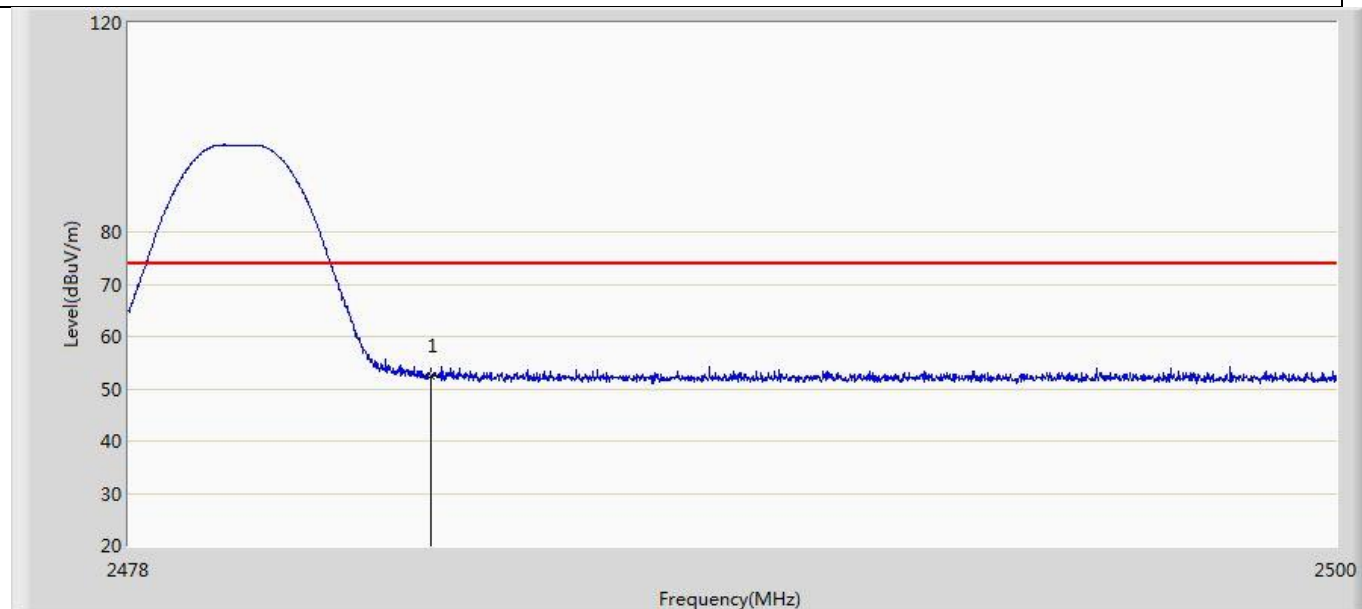
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	51.385	14.981	-22.615	74.000	36.404	PK

Profile: 2170694R	Page No.: 28
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 3:Transmit at 2480MHz by Coded S=8	



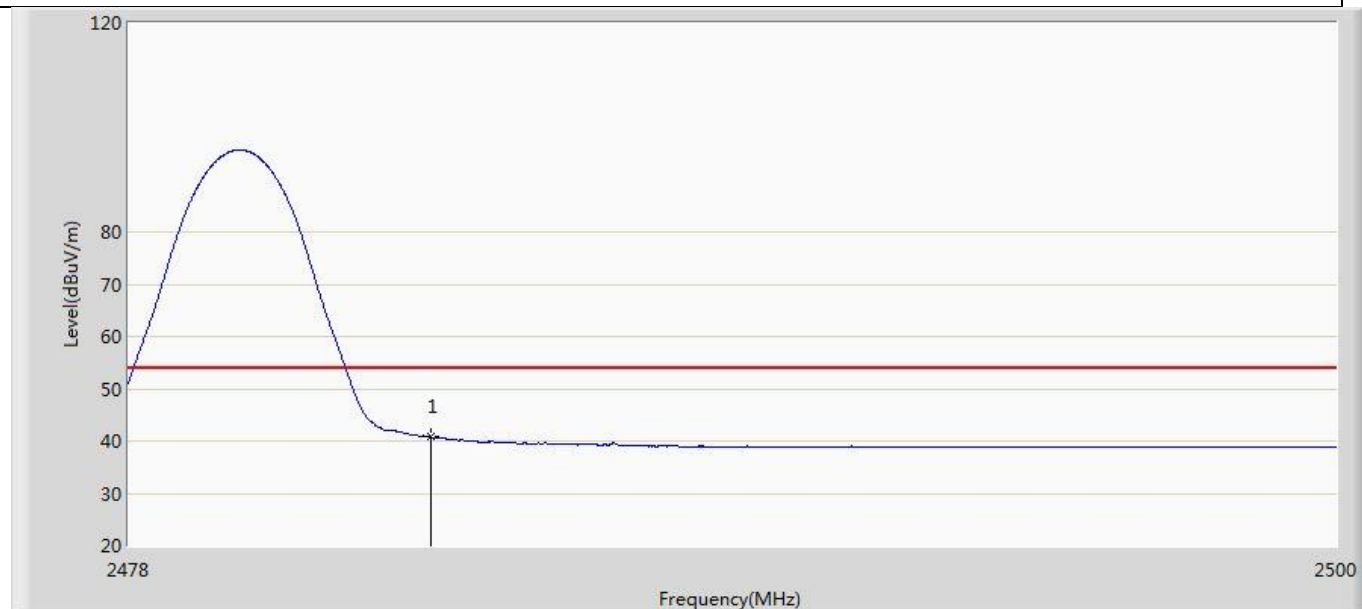
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	39.025	2.621	-14.975	54.000	36.404	AV

Profile: 2170694R	Page No.: 29
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:58
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4:Transmit at 2480MHz by Coded S=2	



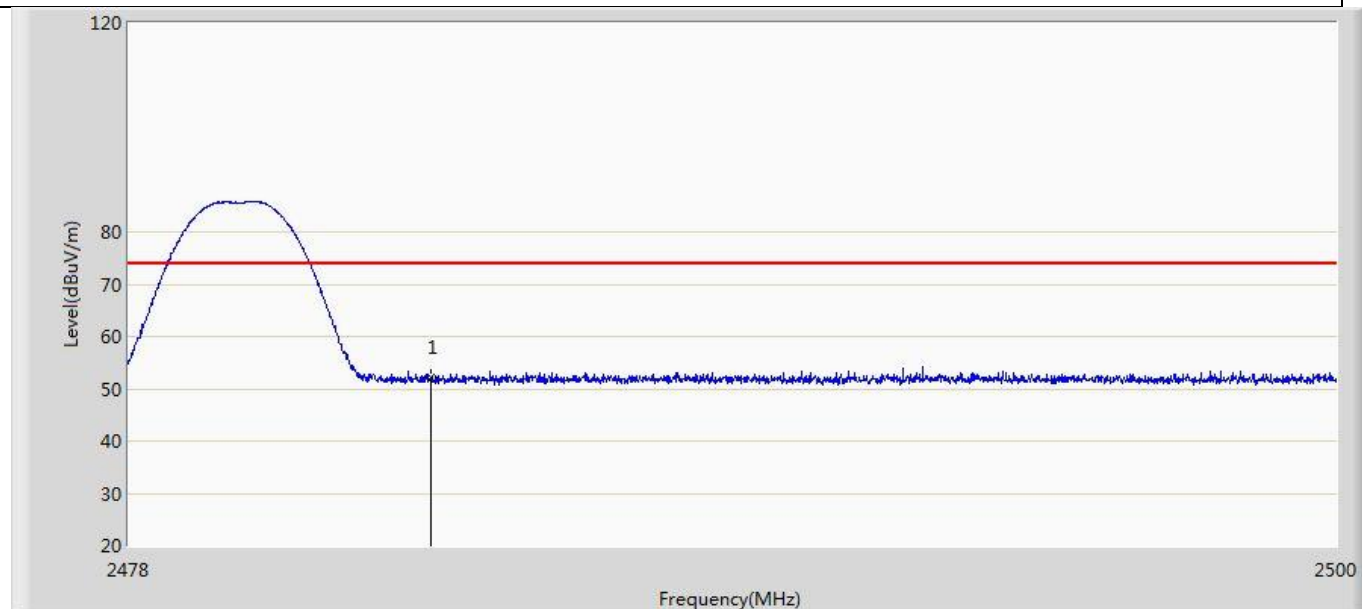
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	52.472	16.068	-21.528	74.000	36.404	PK

Profile: 2170694R	Page No.: 30
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 20:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4: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	40.730	4.326	-13.270	54.000	36.404	AV

Profile: 2170694R	Page No.: 31
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4: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	52.110	15.706	-21.890	74.000	36.404	PK

Profile: 2170694R	Page No.: 32
Engineer: Yingfei.Wang	
Site: AC5	Time: 2021/08/04 - 21:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: Control device	Power: AC 120V/60Hz
Note: Mode 4: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	38.944	2.540	-15.056	54.000	36.404	AV
2	*	2483.720	39.930	3.526	-14.070	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

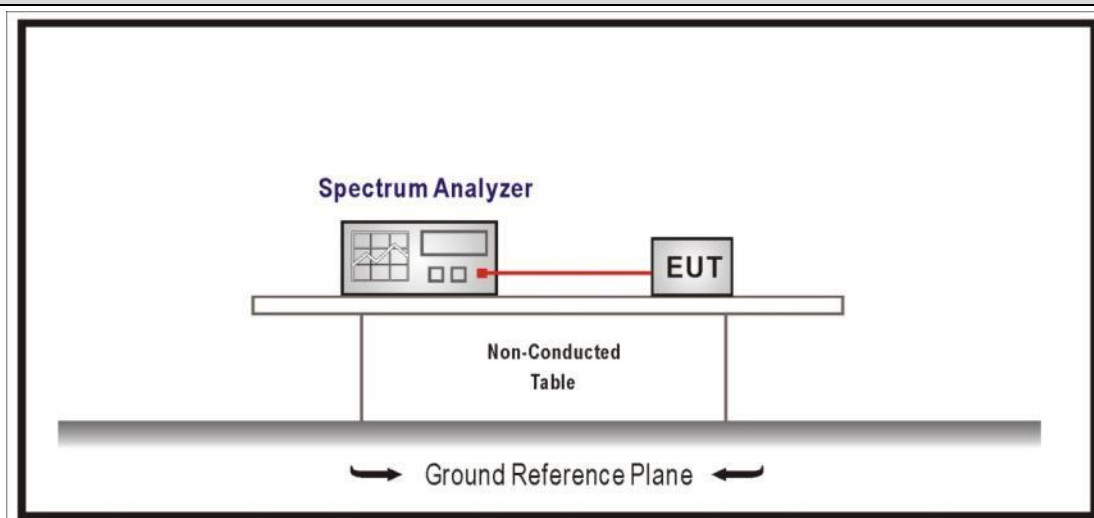
4.6.1 Limit

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

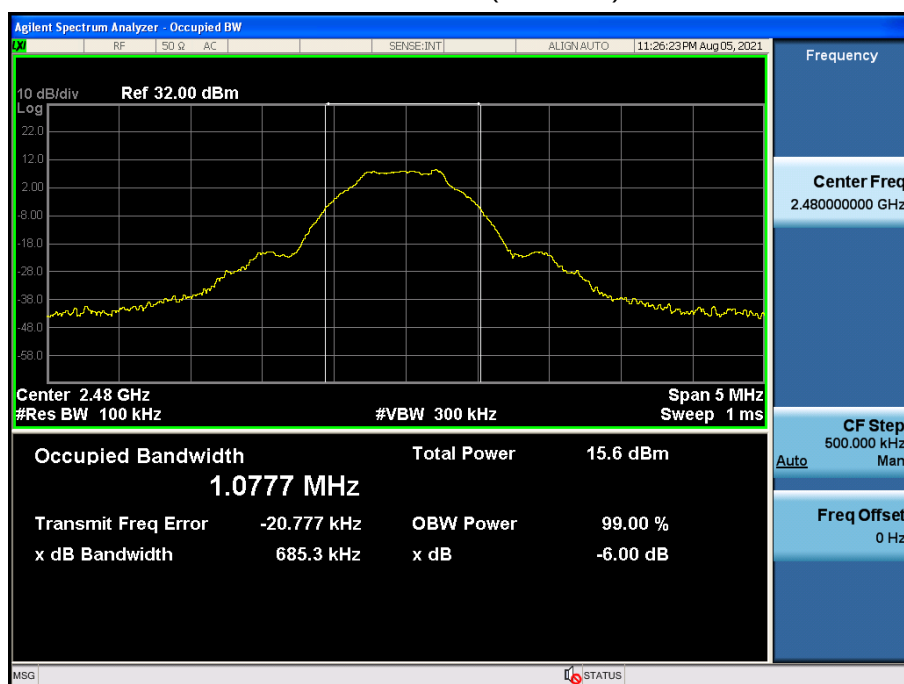
	Reference Rule	Chapter	Description
☒	ANSI C63.10	11.8	DTS bandwidth
☐	ANSI C63.10	11.8.1	Option 1
☒	ANSI C63.10	11.8.2	Option 2

4.6.4 Test Data

Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	37	2402	702.7	>500	Pass
	17	2440	690.1	>500	Pass
	39	2480	685.3	>500	Pass
2	37	2402	1388.0	>500	Pass
	17	2440	1382.0	>500	Pass
	39	2480	1382.0	>500	Pass
3	37	2402	734.7	>500	Pass
	17	2440	735.9	>500	Pass
	39	2480	737.2	>500	Pass
4	37	2402	794.6	>500	Pass
	17	2440	789.1	>500	Pass
	39	2480	783.9	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

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

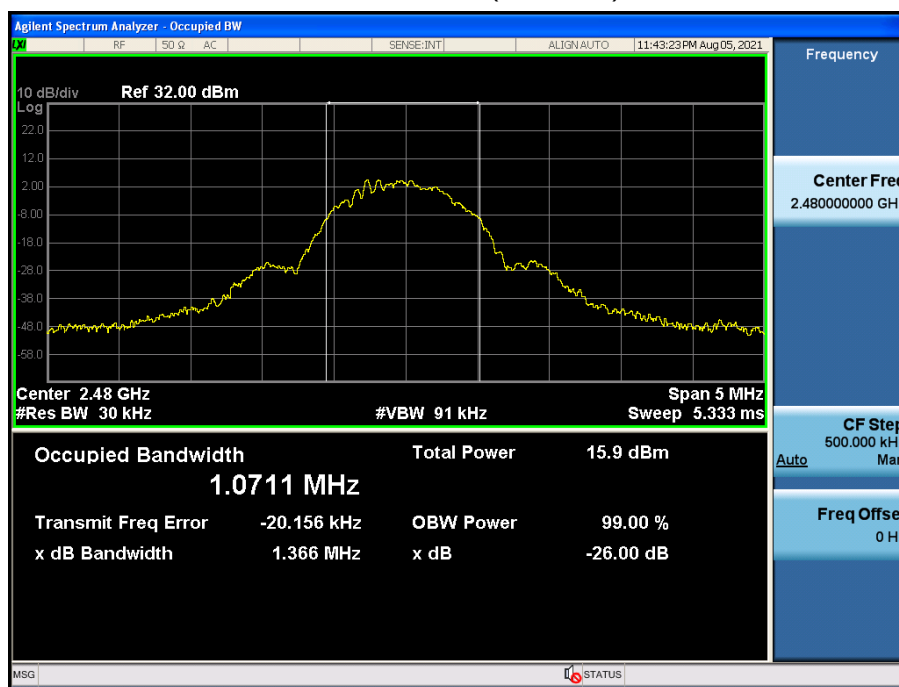


Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (kHz)	Limit	Result
1	37	2402	1075.3	Within frequency range	Pass
	17	2440	1074.5	Within frequency range	Pass
	39	2480	1074.0	Within frequency range	Pass
2	37	2402	2107.7	Within frequency range	Pass
	17	2440	2172.5	Within frequency range	Pass
	39	2480	2173.8	Within frequency range	Pass
3	37	2402	1153.5	Within frequency range	Pass
	17	2440	1149.9	Within frequency range	Pass
	39	2480	1147.1	Within frequency range	Pass
4	37	2402	1075.1	Within frequency range	Pass
	17	2440	1072.3	Within frequency range	Pass
	39	2480	1071.1	Within frequency range	Pass

Note : The worst case of Occupied Bandwidth as below:

99% Occupied Bandwidth

Mode 4 / CH39 (2480MHz)



4.7 Fundamental emission output power

VERDICT: PASS

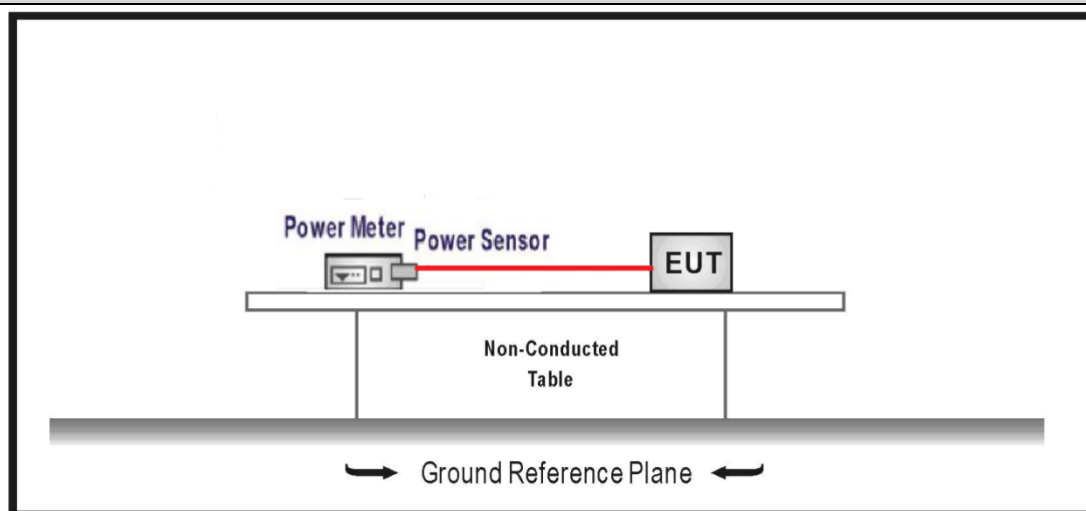
4.7.1 Limit

Standard		FCC Part 15 Subpart C Paragraph 15.247 (b)(3)
☒	GTX < 6dBi	Pout ≤ 30 dBm
☐	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 + 8 dB

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	37	2402	9.72	≤30	Pass
	17	2440	9.78	≤30	Pass
	39	2480	9.83	≤30	Pass
Mode 2	37	2402	9.76	≤30	Pass
	17	2440	9.74	≤30	Pass
	39	2480	9.78	≤30	Pass
Mode 3	37	2402	9.70	≤30	Pass
	17	2440	9.74	≤30	Pass
	39	2480	9.72	≤30	Pass
Mode 4	37	2402	9.74	≤30	Pass
	17	2440	9.74	≤30	Pass
	39	2480	9.80	≤30	Pass

4.8 Power Density

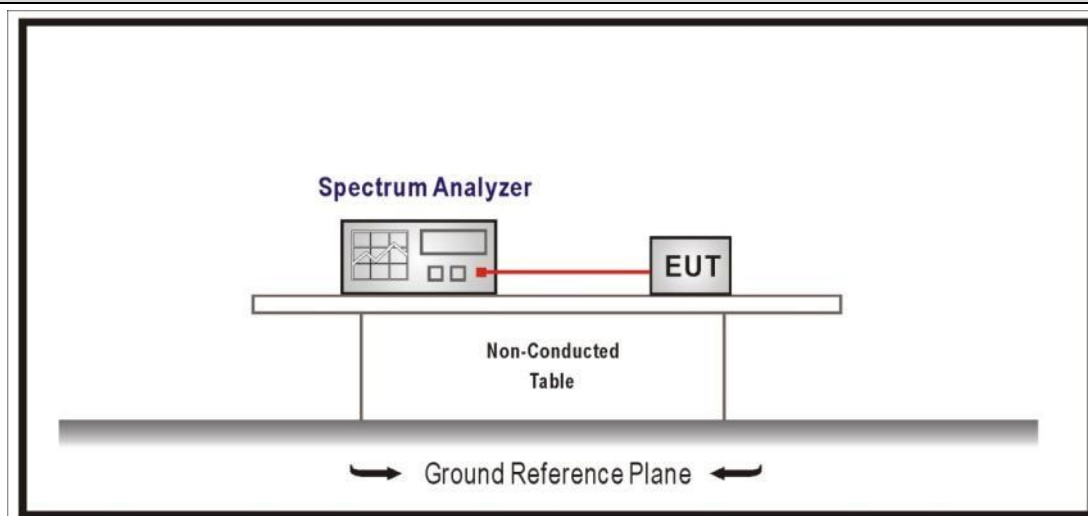
VERDICT: PASS

4.8.1 Limit:

Standard	FCC Part 15 Subpart C Paragraph 15.247 (b)(3)
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Power Spectral Density $\leq 8 \text{ dBm}/3 \text{ kHz}$

4.8.2 Test Setup



4.8.3 Test Procedure

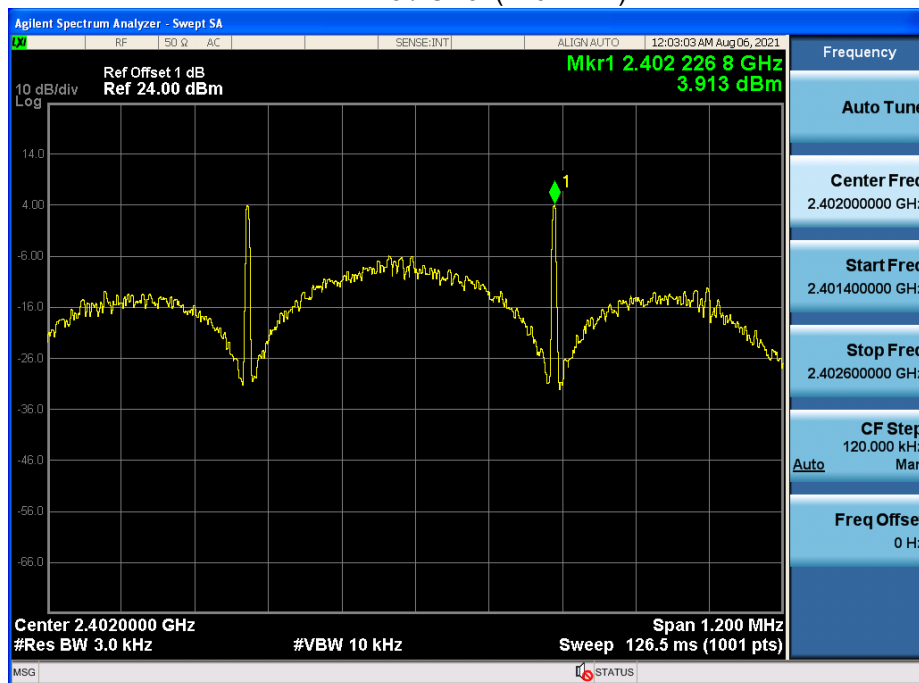
	References Rule		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density level in the fundamental emission
	☒	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle $\geq 98\%$)
	☐	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle $\geq 98\%$)
	☐	ANSI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

4.8.4 Test Data

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Mode 1	37	2402	-5.845	≤8	Pass
	17	2440	-5.816	≤8	Pass
	39	2480	-5.891	≤8	Pass
Mode 2	37	2402	-8.578	≤8	Pass
	17	2440	-8.613	≤8	Pass
	39	2480	-8.688	≤8	Pass
Mode 3	37	2402	3.913	≤8	Pass
	17	2440	3.904	≤8	Pass
	39	2480	3.744	≤8	Pass
Mode 4	37	2402	-8.232	≤8	Pass
	17	2440	-8.229	≤8	Pass
	39	2480	-8.298	≤8	Pass

Note : The worst case of PSD as below:

Mode 3 / CH37(2402MHz)



4.9 Antenna Requirement**VERDICT: PASS****4.9.1 Limit:****Standard**

FCC Part 15 Subpart C Paragraph 15.203

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the 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 _____

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