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Test report No:
2250808R-RF-US-P06V02

FCC & ISED TEST REPORT

Product Name	VR Motion Controller
Trademark	PICO
Model and /or type reference	C1810
FCC ID	2A5NV-C1810
IC	28409-C1810
Applicant´s name / address	Qingdao Chuangjian Weilai Technology Co., Ltd Room 401, 4th Floor, Building 3, Qingdao Research Institute, 393 Songling Road, Laoshan District, Qingdao City, Shandong Province, P.R.China
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10: 2013 KDB558074 D01 15.247 Meas Guidance v05r02 RSS-Gen Issue 5 RSS-247 Issue 2
Verdict Summary	IN COMPLIANCE
Tested by (name / position & signature)	Tim Cao/Project Engineer Tim.Cao
Approved by (name / position & signature)	Jack Zhang/Manager Jack zhang
Date of issue	2022-07-18
Report Version	V1.1
Report template No	Template_FCC 15.247-RF-V1.0

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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)	May. 27, 2022
Date (start test)	Jun. 03, 2022
Date (finish test)	Jun. 24, 2022

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

ENVIRONMENTAL CONDITIONS

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

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

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

POSSIBLE TEST CASE VERDICTS

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

ABBREVIATIONS

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

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

DOCUMENT HISTORY

Report No.	Version	Description	Issued Date
2250808R-RF-US-P06V02	V1.0	Initial issue of report.	2022-07-15
2250808R-RF-US-P06V02	V1.1	Page10 adds EUT information, and Page13 adds Note,Page 70 adds power setting.	2022-07-18

REMARKS AND COMMENTS

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

USED EQUIPMENT

AC Power Line Conducted Emission / TR1

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100726	2021.10.30	2022.10.29
Two-Line V-Network	R&S	ENV216	101044	2022.03.12	2023.03.11
50ohm Termination	SHX	TF2	7081403	2021.09.04	2022.09.03
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	N/A	N/A
Temperature/Humidity Meter	RTS	RTS-8S	TR1-TH	2021.07.09	2022.07.08
Dekra test software	Dekra	-	-	-	-

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

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2021.07.11	2022.07.10
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2021.08.12	2022.08.11
MXA Signal Anlyzer	Keysight	N9020A	MY56060147	2021.07.11	2022.07.10
4TX MIMO Power Sensor	Keysight	X8750A	MY59400102	2022.03.16	2023.03.15
Coaxial Cable	Woken	N/A	N/A	2022.01.18	2023.01.17
Temperature/Humidity Meter	RTS	RTS-8S	RF08	2021.07.09	2022.07.08

Radiated Emission(30MHz-1GHz) / AC3

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EMI Test Receiver	R&S	ESCI	100176	2021.08.15	2022.08.14
Loop Antenna	R&S	HFH2-Z2	833799/003	2022.04.15	2023.04.14
Bilog Antenna	Teseq GmbH	CBL6112D	27613	2021.08.23	2022.08.22
Coaxial Cable	Huber+Suhner	RG 214	AC3-C	2022.03.30	2023.03.29
Temperature/Humidity Meter	RTS	RTS-8S	AC3-TH	2021.07.09	2022.07.08
Dekra test software	Dekra	-	-	-	-

Radiated Emission(1GHz-40GHz) / AC5

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
EXA Spectrum Analyzer	Keysight	N9010A	MY55370495	2021.08.12	2022.08.11
Amplifier	SKET	LNPA_0118G-45	SK2021041201	2022.04.15	2023.04.14
Preamplifier	EMCI	EMC184045SE	980263	2022.05.21	2023.05.20
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2021.08.23	2022.08.22
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2022.05.19	2023.05.18
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2022.05.22	2023.05.21
Coaxial Cable	ROSENBERGER	LA1-C011-2000/3000	AC5-40G	2022.03.21	2023.03.20
High-Pass Filter	Wainwright	WHKX3.0/18G-12SS	AC5&AC6	2022.06.07	2023.06.06
Temperature/Humidity Meter	RTS	RTS-8S	AC5-TH	2021.07.09	2022.07.08
Dekra test software	Dekra	-	-	-	-

UNCERTAINTY

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

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

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Product Name ..... :	VR Motion Controller
Model No. ..... :	C1810
FCC ID ..... :	2A5NV-C1810
IC ..... :	28409-C1810
Hardware Version ..... :	R4
Software Version ..... :	sv1.17_PR_tv01_20220715_b117
Firmware Version ..... :	sv1.17_PR_tv01_20220715_b117
Manufacturter ..... :	Qingdao Chuangjian Weilai Technology Co., Ltd
Manufacturer Address ..... :	Room 401, 4th Floor, Building 3, Qingdao Research Institute, 393 Songling Road, Laoshan District, Qingdao City, Shandong Province, P.R.China
Factory ..... :	Goertek Inc.
Address ..... :	No.8877 Yingqian Street,High-Tech Industrial DevelopmentDistrict,Weifang,Shandong,261031, P.R.China.

Wireless specification..... :	BLE					
Operating frequency range(s) ..... :	2400~2483.5MHz					
Type of Modulation..... :	GFSK					
PHYs ..... :	☐	LE 1M	☒	LE 2M	☐	LE Coded S=2/8
Data Rate ..... :	☐	1Mbit/s	☒	2Mbit/s	☐	500/125 Kbit/s
Number of channel..... :	40					

Note：BLE is a customer defined protocol.

Rated power supply ..... :	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☐	AC: 110 – 130 Vac, 50/60 Hz
	☒	Battery:3.0V
	☐	Adapter: Input: 100-240V,50/60H, 0.3A Output:5V,2A ,10W
Mounting position ..... :	☐	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☒	Hand-held equipment
	☐	Other: Watch

1.2 Antenna Information

Antenna model / type number ..... :	N/A			
Antenna serial number ..... :	N/A			
Antenna Delivery ..... :	☒	1TX + 1RX		
	☐	2TX + 2RX		
	☐	Others:……		
Antenna technology ..... :	☒	SISO		
	☐	MIMO	☐	CDD
			☐	Beam-forming
Antenna Type ..... :	☐	External	☐	Dipole
			☐	Sectorized
	☒	Internal	☐	PIFA
			☒	FPC
			☐	Dipole
			☐	Others……..
Antenna Gain ..... :	1.59 dBi for left Controller 1.89 dBi for right Controller			

1.3 Channel List

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

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

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

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

Test Mode For Bluetooth	Mode1: Transmit by LE_2Mbps

Note 1: Regards to the frequency band operation: the lowest, middle and highest frequency channel were selected to perform the test, then shown on this report.

Note 2: For portable device, radiated tests was verified over X, Y, Z axis, and shown the worst case on this report.

2.2 Accessories Information

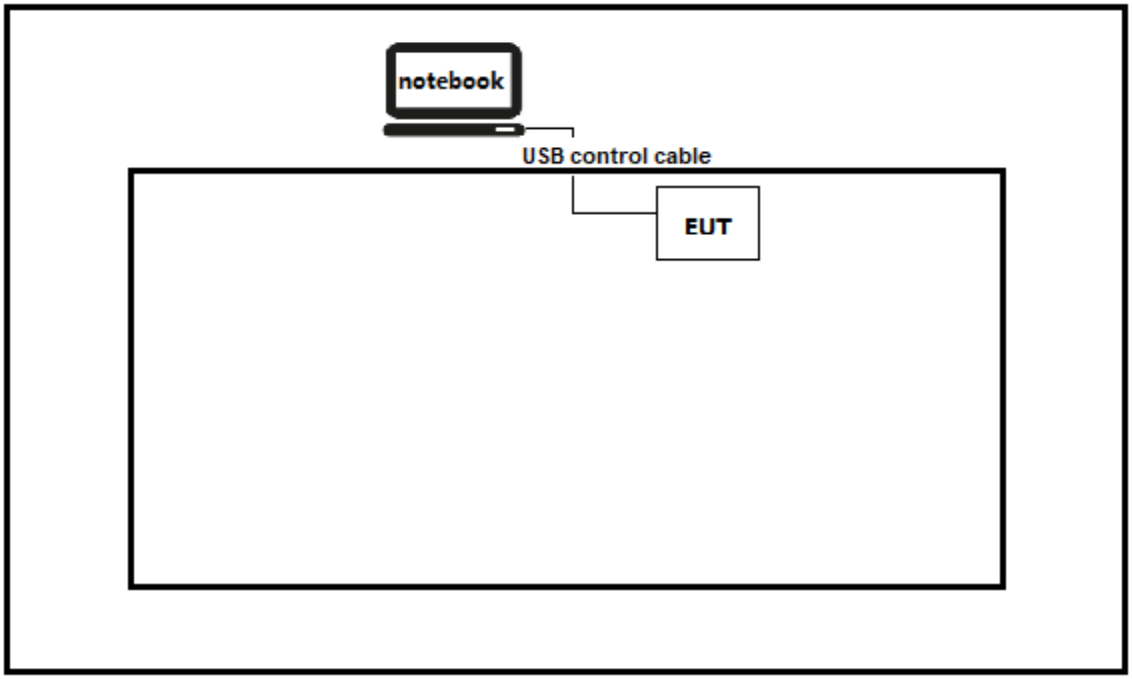
Accessories Information	Brand/model name	Cable		
		Length used during test [m]	Attached during test	Shielded
USB Cable	N/A	10	☒	☒
USB Cable	N/A	0.5	☒	☒

2.3 Auxiliary equipment / Test software for the EUT

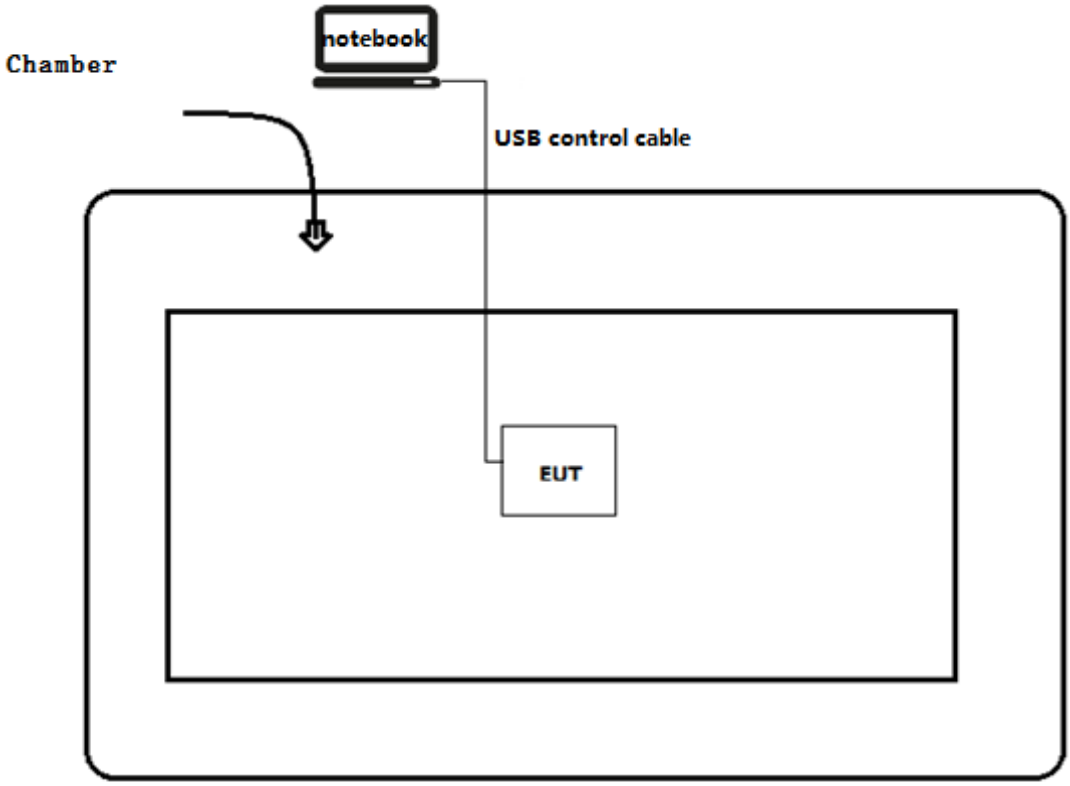
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	2526	Think Pad	N/A
Software	Type / Version	Manufacturer	Supplied by
sscom5	N/A	N/A	N/A

2.4 Test Configuration / Block diagram used for tests

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



2.5 Testing process

1	Setup the EUT as shown in Section 2.4.
2	Run the software “sscom5” on the notebook computer.
3	Open the serial port and enter the corresponding commands to configure the test mode, test channel, test power and data rate.
4	Verify that the EUT works properly.

3 VERDICT SUMMARY SECTION

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

3.1 Standards

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

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

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

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

3.3 Overview of results

For FCC

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

For ISED

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

3.4 Test Facility

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

4 TEST RESULTS

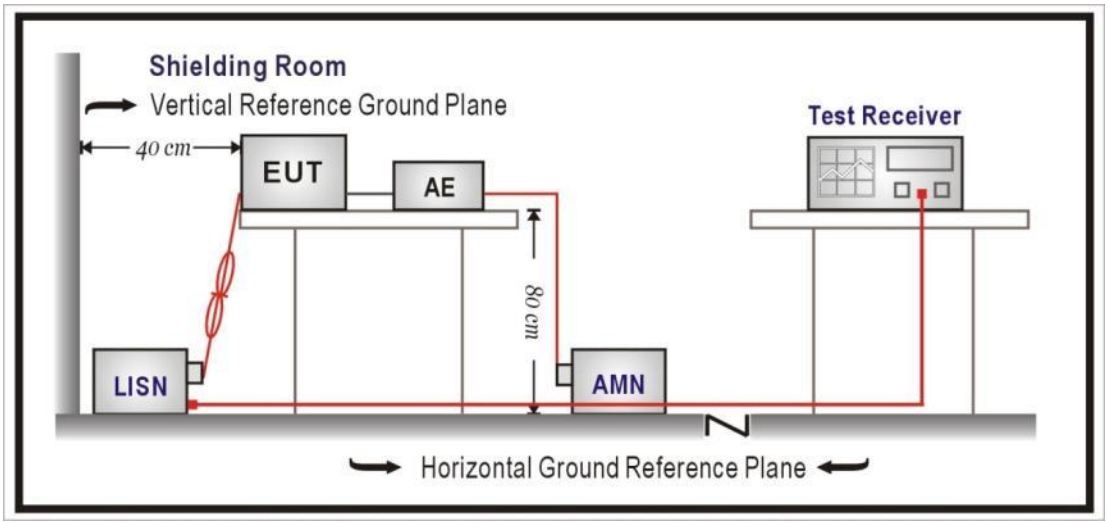
4.1 AC Power Line Conducted Emission	VERDICT: N/A

4.1.1 Limit

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

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

4.1.2 Test Setup



4.1.3 Test Procedure

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

4.1.4 Test Data

Note：EUT is battery powered.

4.2 Emissions in restricted frequency bands — VERDICT: PASS

4.2.1 Limit

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

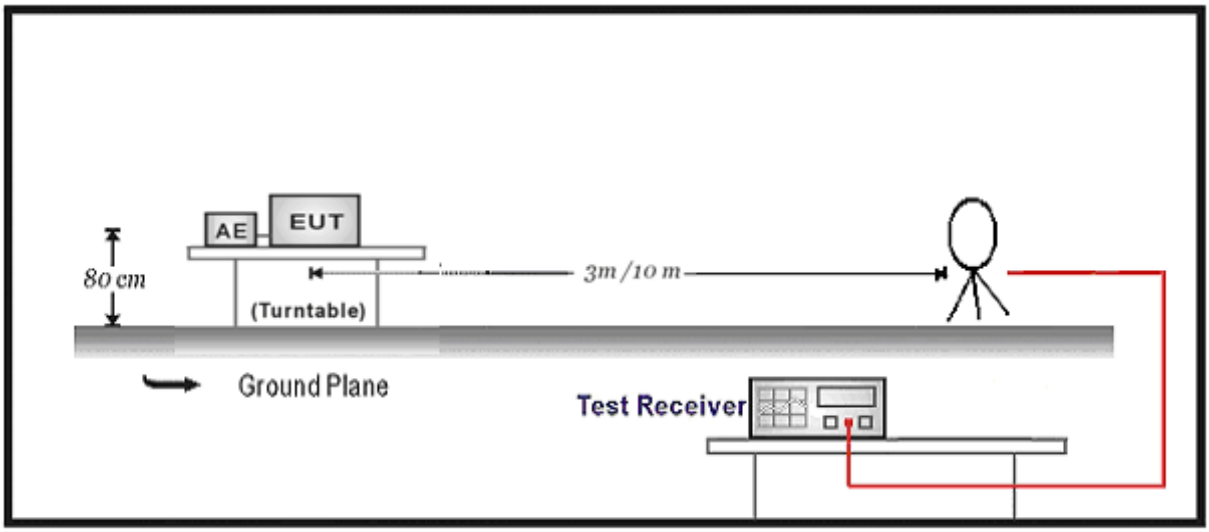
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30(Note 1)
1.705 - 30	30	29.5	30(Note 1)
30 -88	100	40	3(Note 2)
88-216	150	43.5	3(Note 2)
216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

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

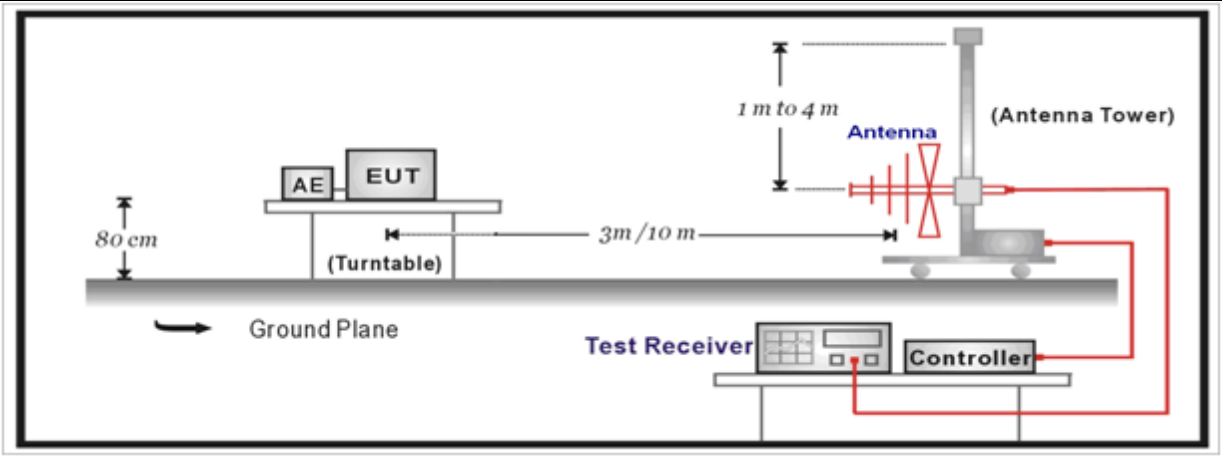
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated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

4.2.2 Test Setup

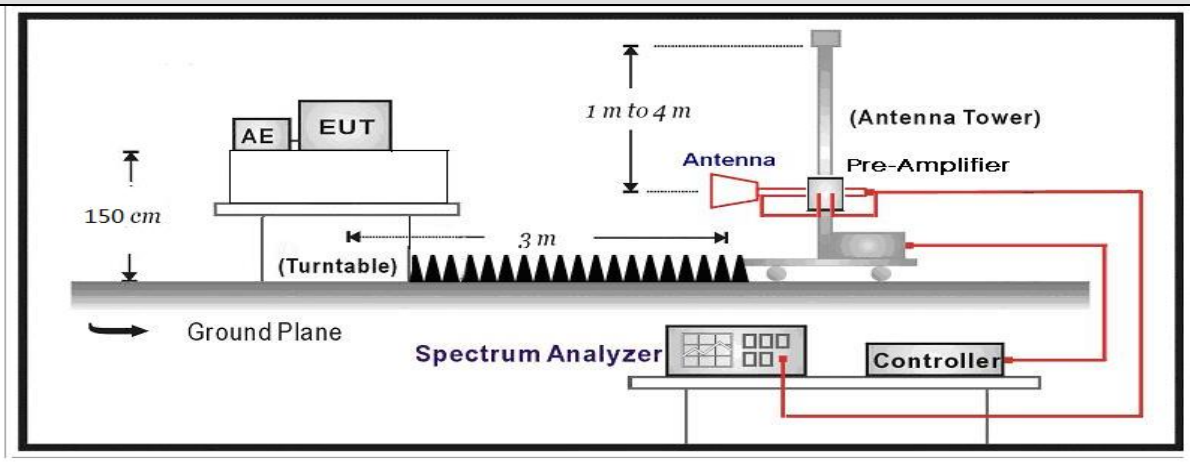
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



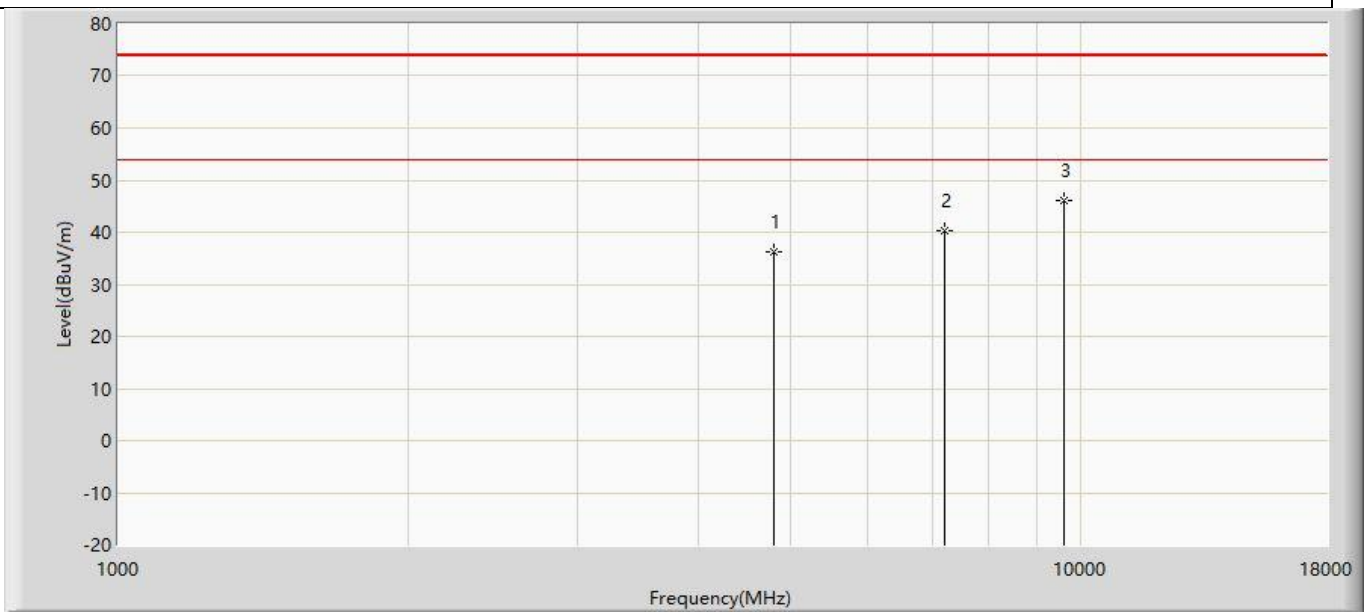
4.2.3 Test Procedure

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

4.2.4 Test Data

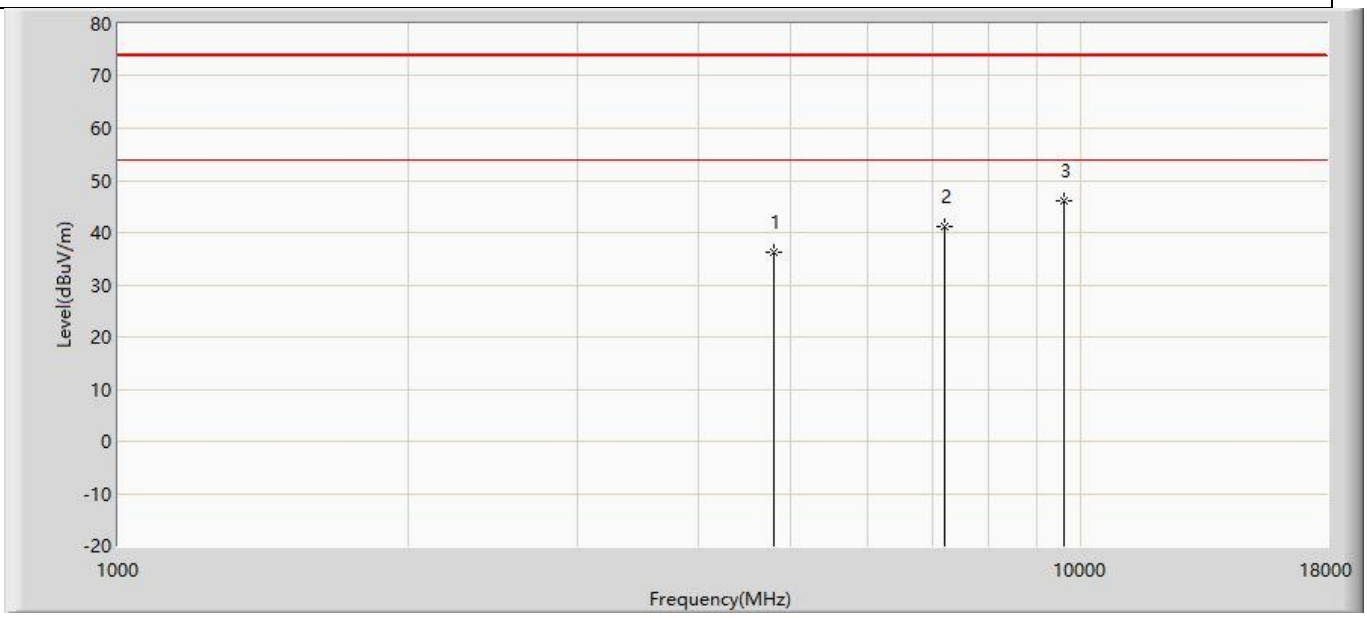
Left controller:

Profile: 2250808R	Page No.: 13
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz by BLE	



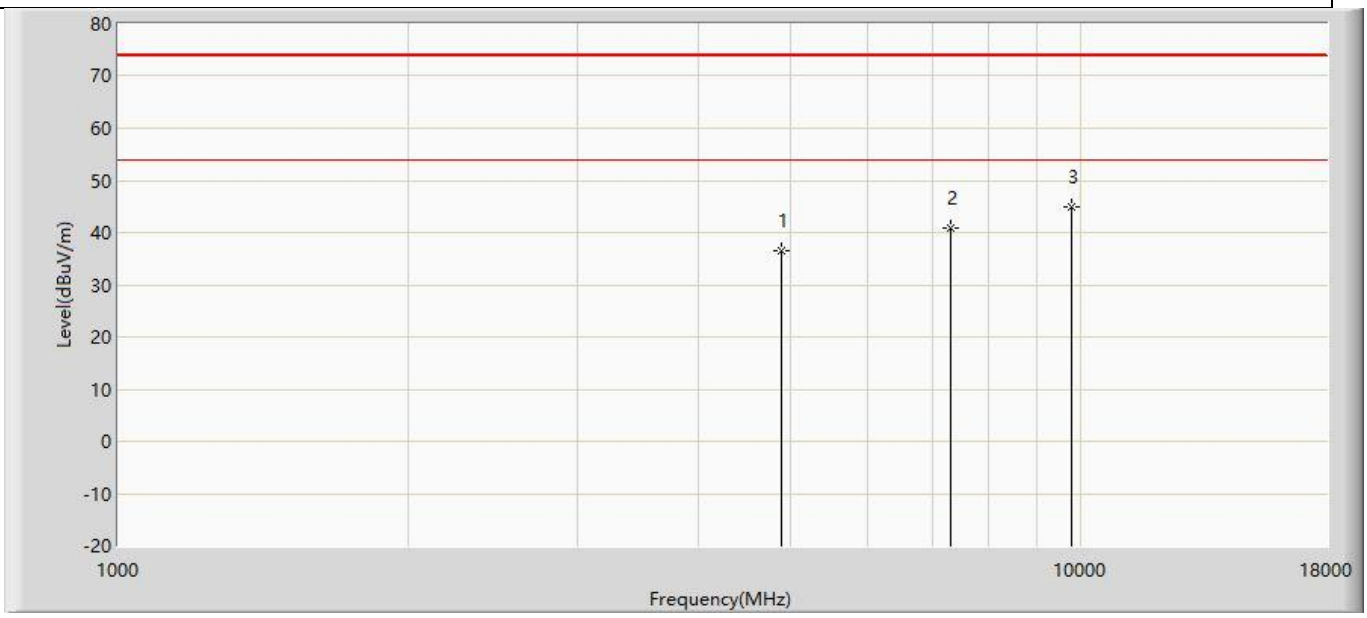
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.103	50.761	-37.897	74.000	-14.657	PK
2		7206.000	40.262	48.993	-33.738	74.000	-8.731	PK
3	*	9608.000	46.088	50.910	-27.912	74.000	-4.822	PK

Profile: 2250808R	Page No.: 14
Engineer: YuLiu	
Site: AC5AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz by BLE	



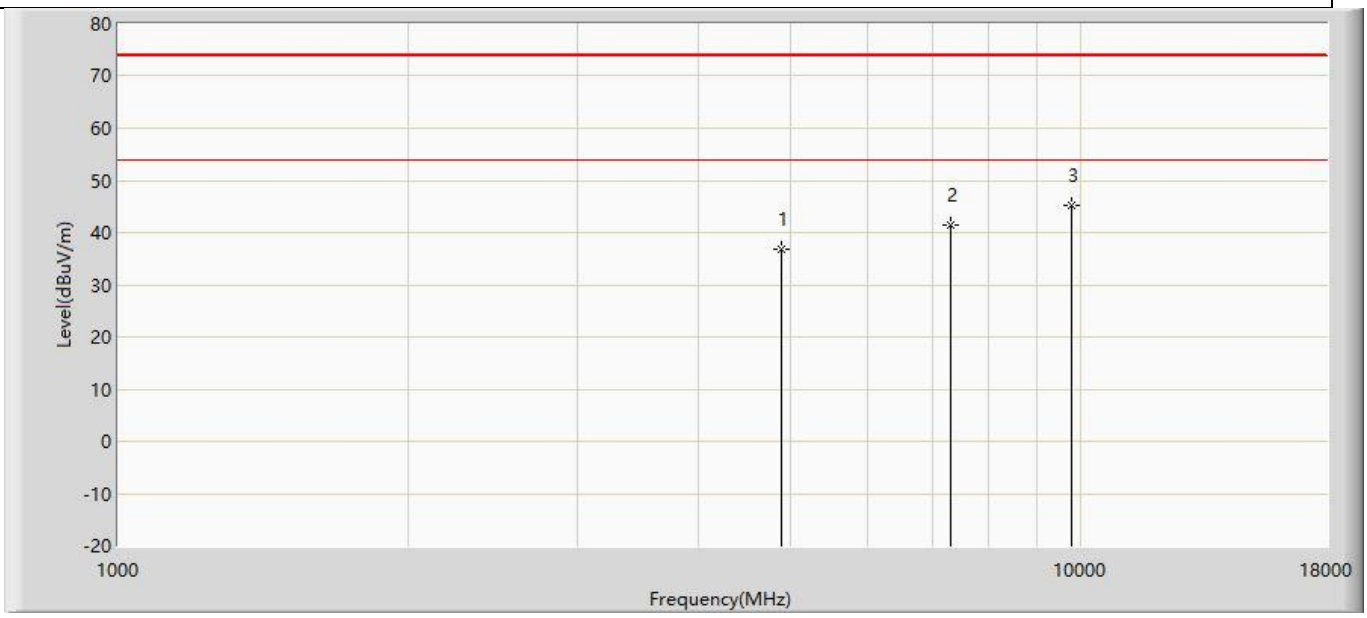
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.335	50.993	-37.665	74.000	-14.657	PK
2		7206.000	41.191	49.922	-32.809	74.000	-8.731	PK
3	*	9608.000	46.039	50.861	-27.961	74.000	-4.822	PK

Profile: 2250808R	Page No.: 15
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2440MHz by BLE	



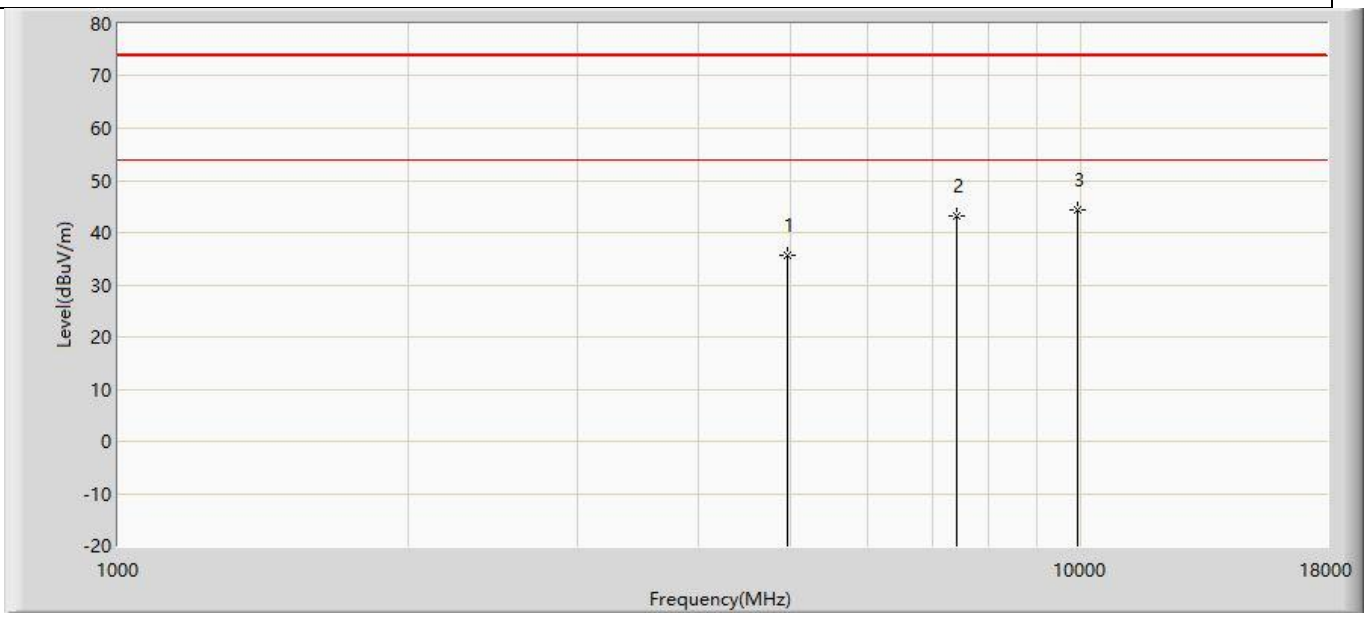
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.583	50.971	-37.417	74.000	-14.388	PK
2		7320.000	40.885	49.205	-33.115	74.000	-8.320	PK
3	*	9760.000	44.883	49.557	-29.117	74.000	-4.673	PK

Profile: 2250808R	Page No.: 16
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2440MHz by BLE	



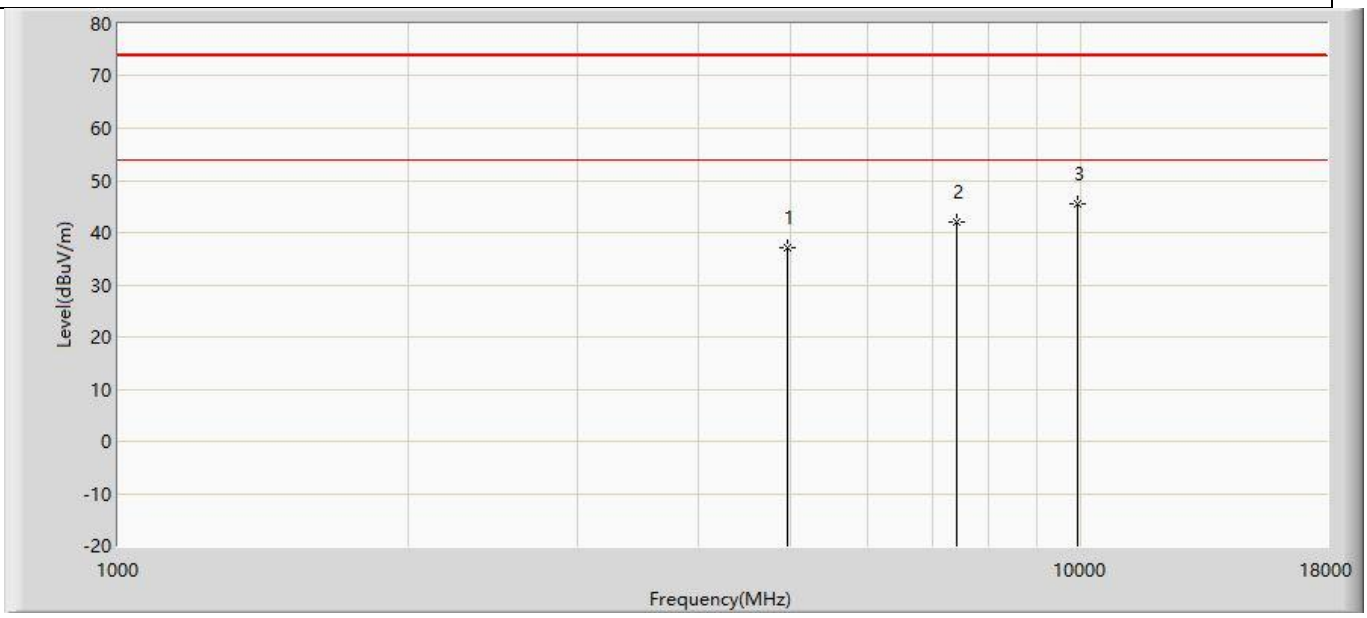
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.712	51.100	-37.288	74.000	-14.388	PK
2		7320.000	41.346	49.666	-32.654	74.000	-8.320	PK
3	*	9760.000	45.339	50.013	-28.661	74.000	-4.673	PK

Profile: 2250808R	Page No.: 17
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz by BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	35.776	49.896	-38.224	74.000	-14.120	PK
2		7440.000	43.082	50.917	-30.918	74.000	-7.834	PK
3	*	9920.000	44.378	48.449	-29.622	74.000	-4.071	PK

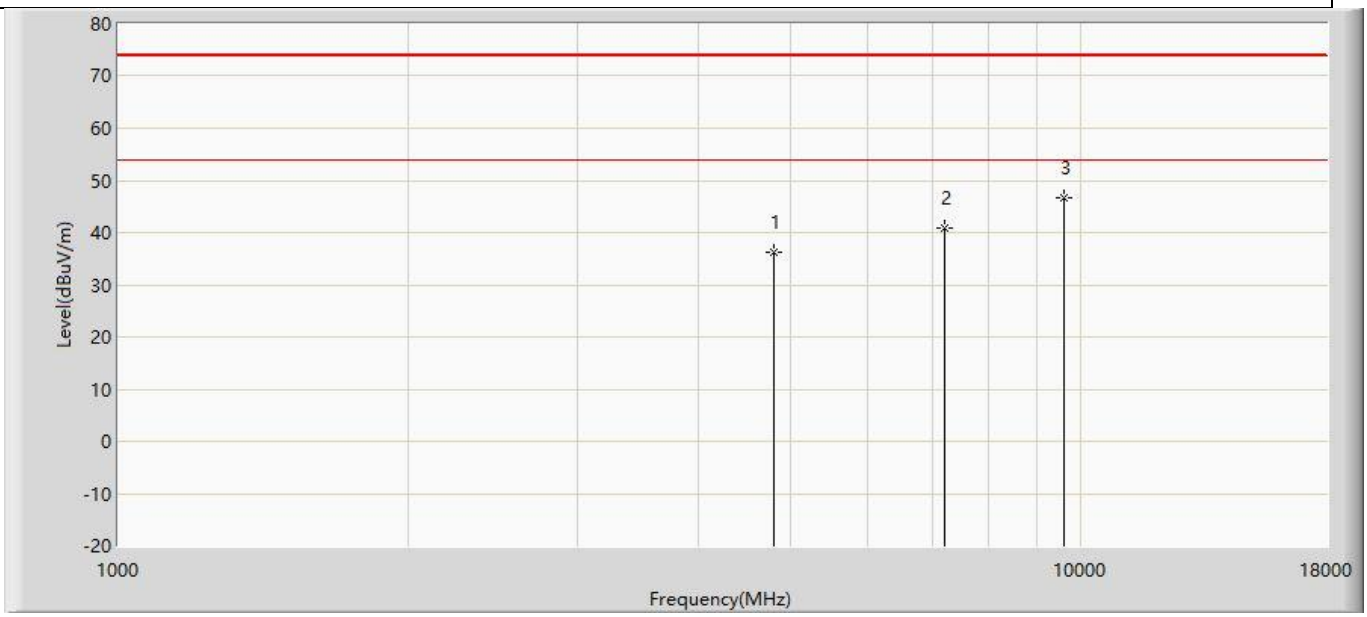
Profile: 2250808R	Page No.: 18
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz by BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	36.978	51.098	-37.022	74.000	-14.120	PK
2		7440.000	41.888	49.723	-32.112	74.000	-7.834	PK
3	*	9920.000	45.485	49.556	-28.515	74.000	-4.071	PK

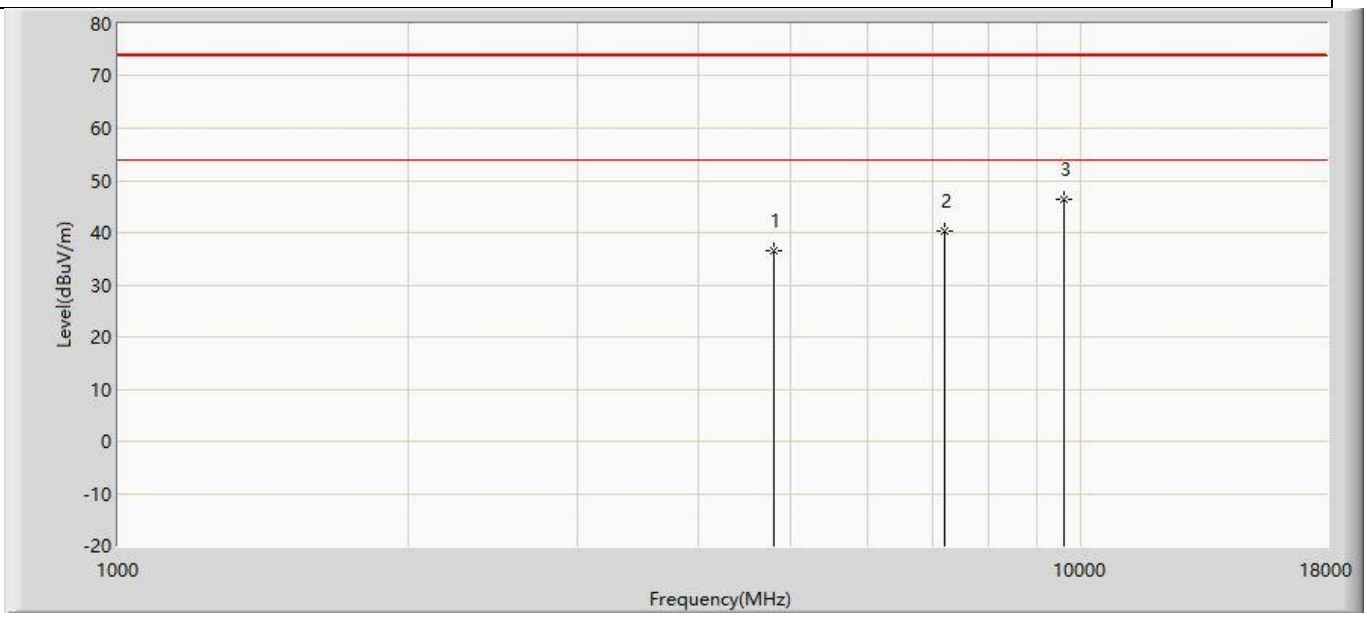
Right controller:

Profile: 2250808R	Page No.: 19
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz by BLE	



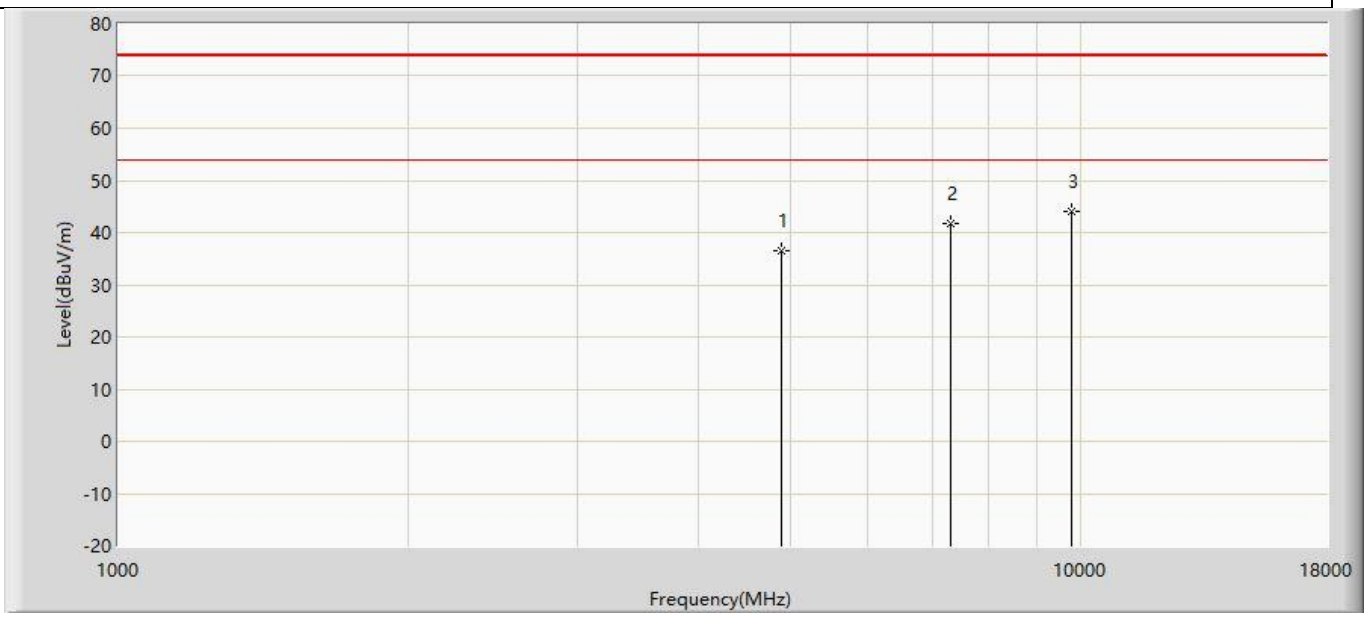
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.093	50.751	-37.907	74.000	-14.657	PK
2		7206.000	40.921	49.652	-33.079	74.000	-8.731	PK
3	*	9608.000	46.793	51.615	-27.207	74.000	-4.822	PK

Profile: 2250808R	Page No.: 20
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz by BLE	



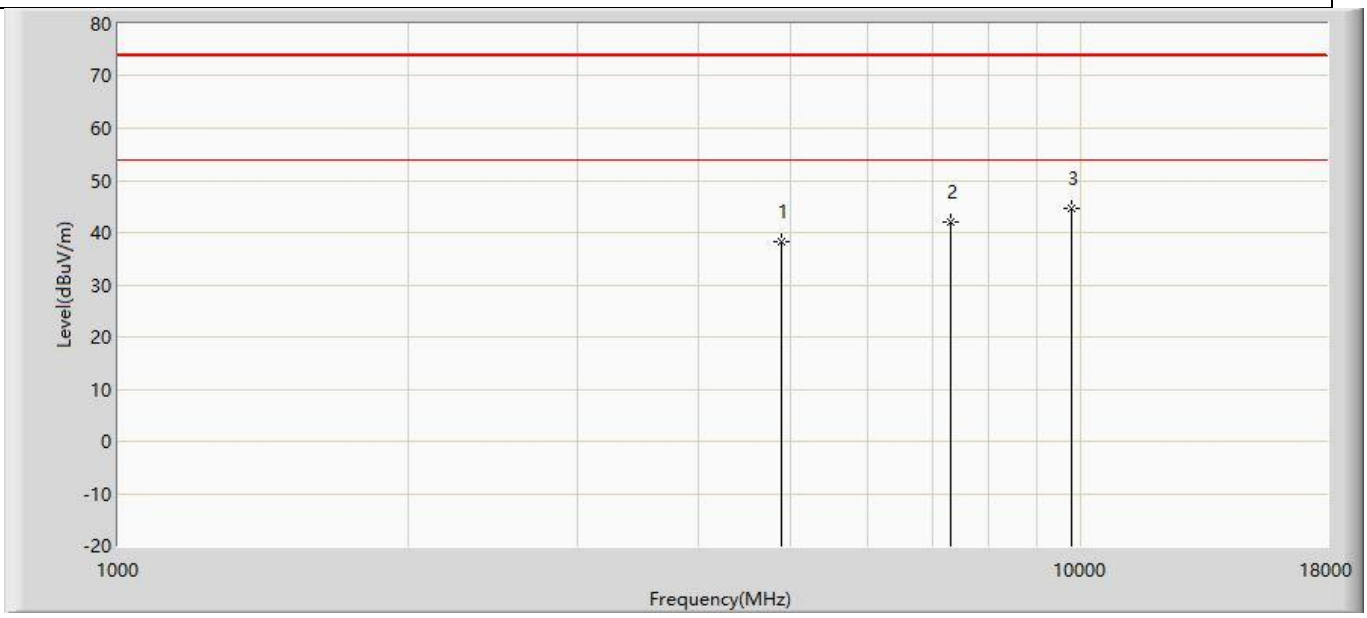
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.503	51.161	-37.497	74.000	-14.657	PK
2		7206.000	40.235	48.966	-33.765	74.000	-8.731	PK
3	*	9608.000	46.361	51.183	-27.639	74.000	-4.822	PK

Profile: 2250808R	Page No.: 21
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2440MHz by BLE	



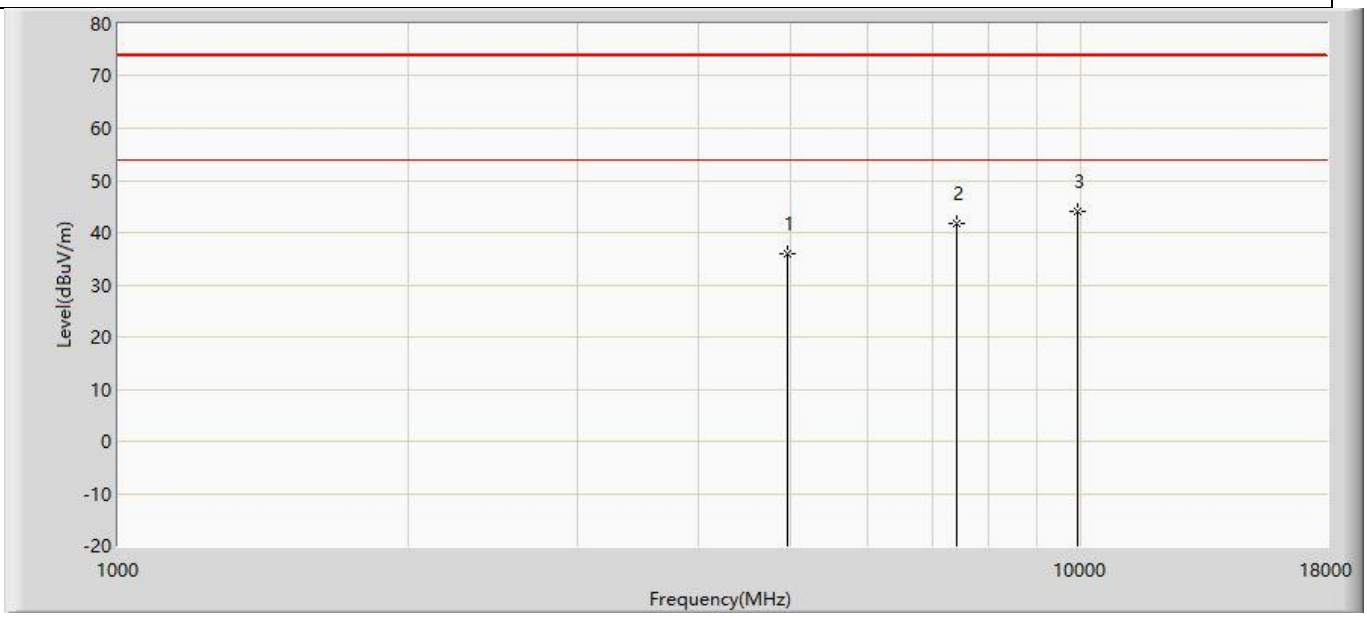
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.379	50.767	-37.621	74.000	-14.388	PK
2		7320.000	41.746	50.066	-32.254	74.000	-8.320	PK
3	*	9760.000	44.084	48.758	-29.916	74.000	-4.673	PK

Profile: 2250808R	Page No.: 22
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2440MHz by BLE	



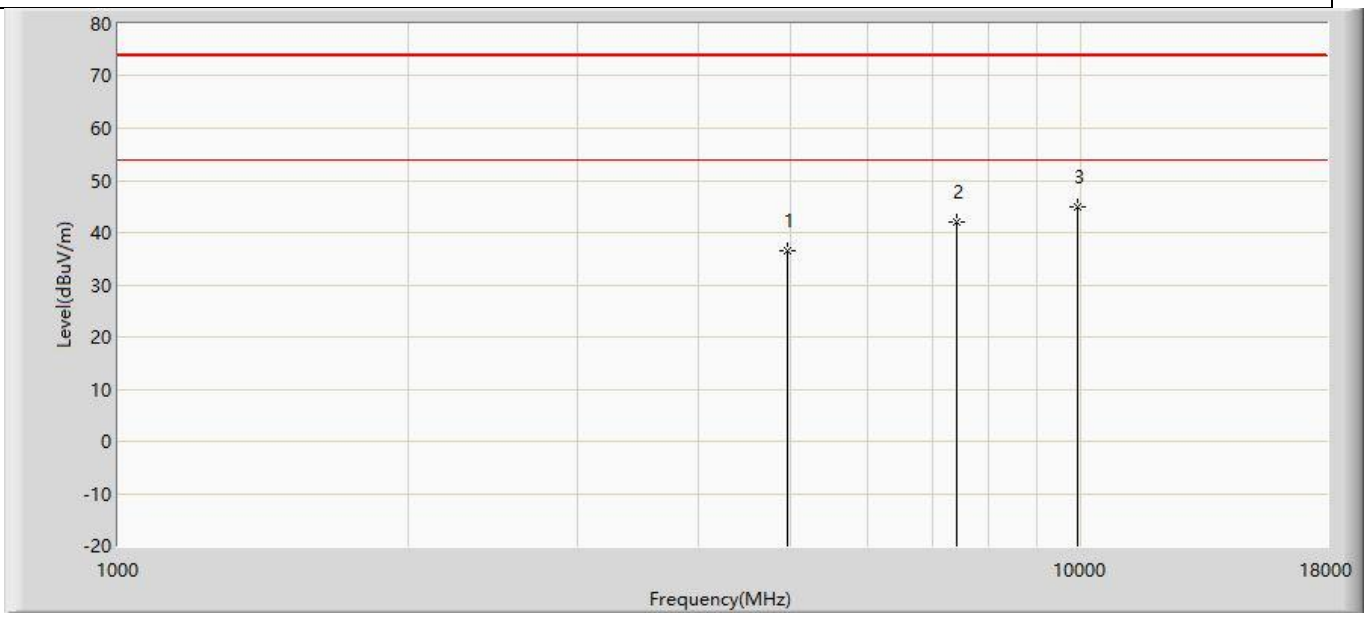
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	38.358	52.746	-35.642	74.000	-14.388	PK
2		7320.000	41.912	50.232	-32.088	74.000	-8.320	PK
3	*	9760.000	44.666	49.340	-29.334	74.000	-4.673	PK

Profile: 2250808R	Page No.: 23
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz by BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	36.061	50.181	-37.939	74.000	-14.120	PK
2		7440.000	41.778	49.613	-32.222	74.000	-7.834	PK
3	*	9920.000	44.093	48.164	-29.907	74.000	-4.071	PK

Profile: 2250808R	Page No.: 24
Engineer: YuLiu	
Site: AC5	Time: 2022/06/22 - 04:46
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz by BLE	



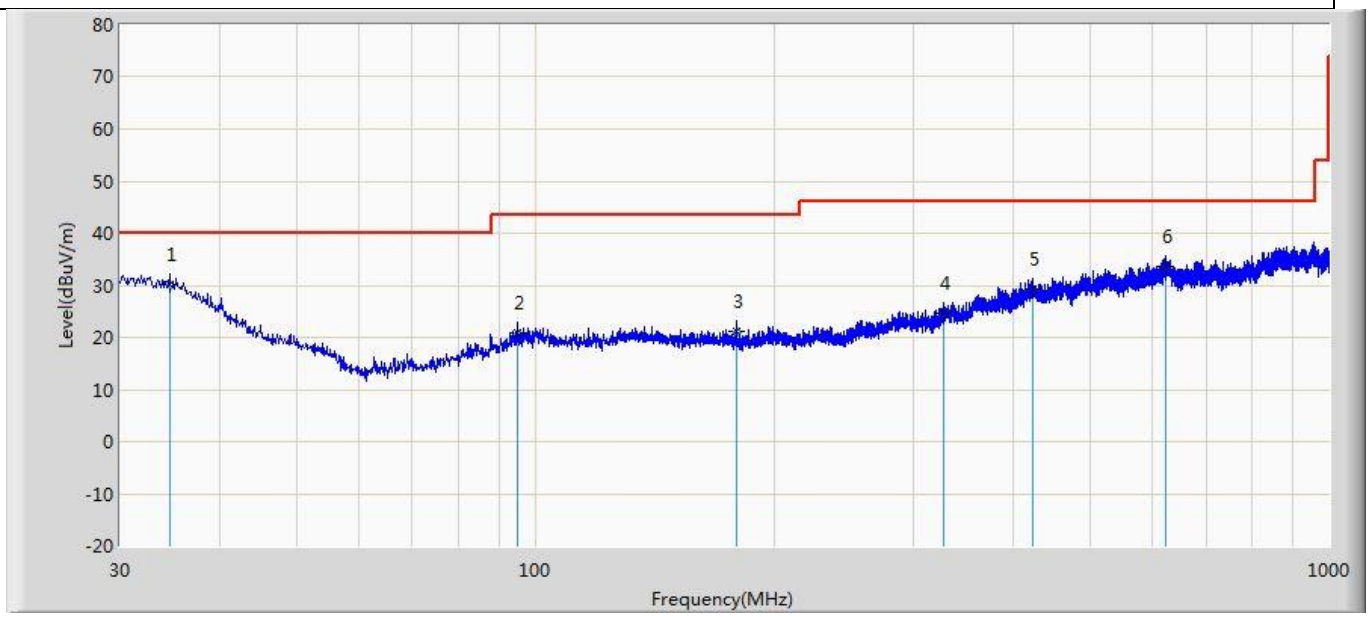
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	36.555	50.675	-37.445	74.000	-14.120	PK
2		7440.000	42.149	49.984	-31.851	74.000	-7.834	PK
3	*	9920.000	44.903	48.974	-29.097	74.000	-4.071	PK

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

The worst case of Radiated Emission below 1GHz:

Left controller:

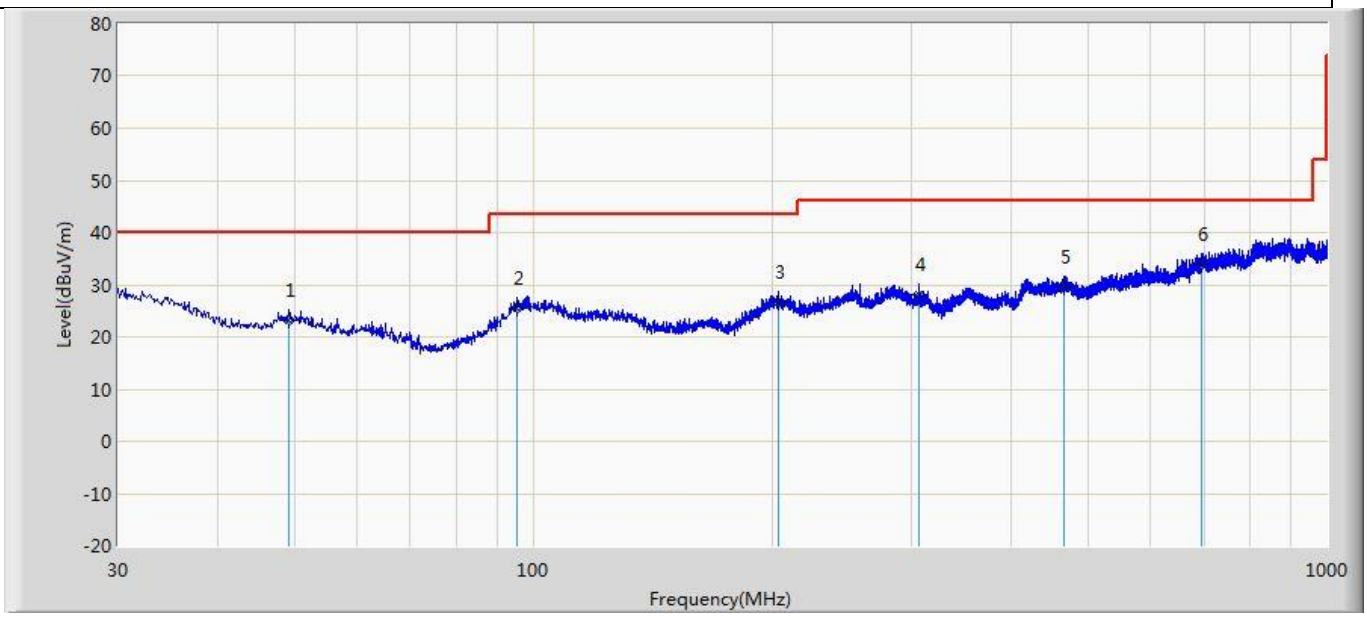
Profile: 2250808R	Page No.: 21
Engineer: YuLiu	
Site: AC3	Time: 2022/06/20 - 06:15
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	34.607	30.126	3.076	-9.874	40.000	27.050	QP
2		94.990	20.808	5.823	-22.692	43.500	14.985	QP
3		179.137	21.287	4.657	-22.213	43.500	16.630	QP
4		327.426	24.596	2.292	-21.404	46.000	22.304	QP
5		422.729	29.342	2.107	-16.658	46.000	27.235	QP
6		624.004	33.729	3.044	-12.271	46.000	30.685	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: 2250808R	Page No.: 22
Engineer: YuLiu	
Site: AC3	Time: 2022/06/20 - 06:17
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode1	

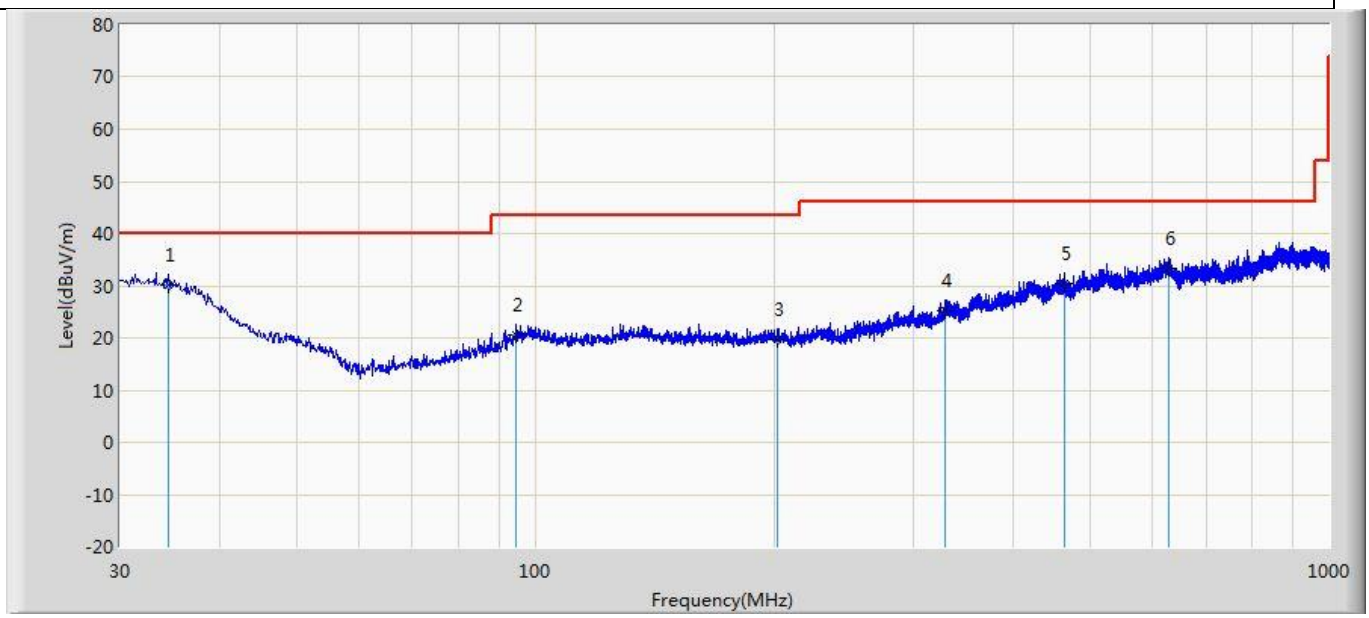


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		49.279	23.164	3.796	-16.836	40.000	19.367	QP
2		95.596	25.568	5.495	-17.932	43.500	20.072	QP
3		203.872	26.767	3.286	-16.733	43.500	23.480	QP
4		306.207	28.173	4.008	-17.827	46.000	24.165	QP
5		465.772	29.465	2.620	-16.535	46.000	26.845	QP
6	*	695.299	33.828	3.150	-12.172	46.000	30.677	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)

Right controller:

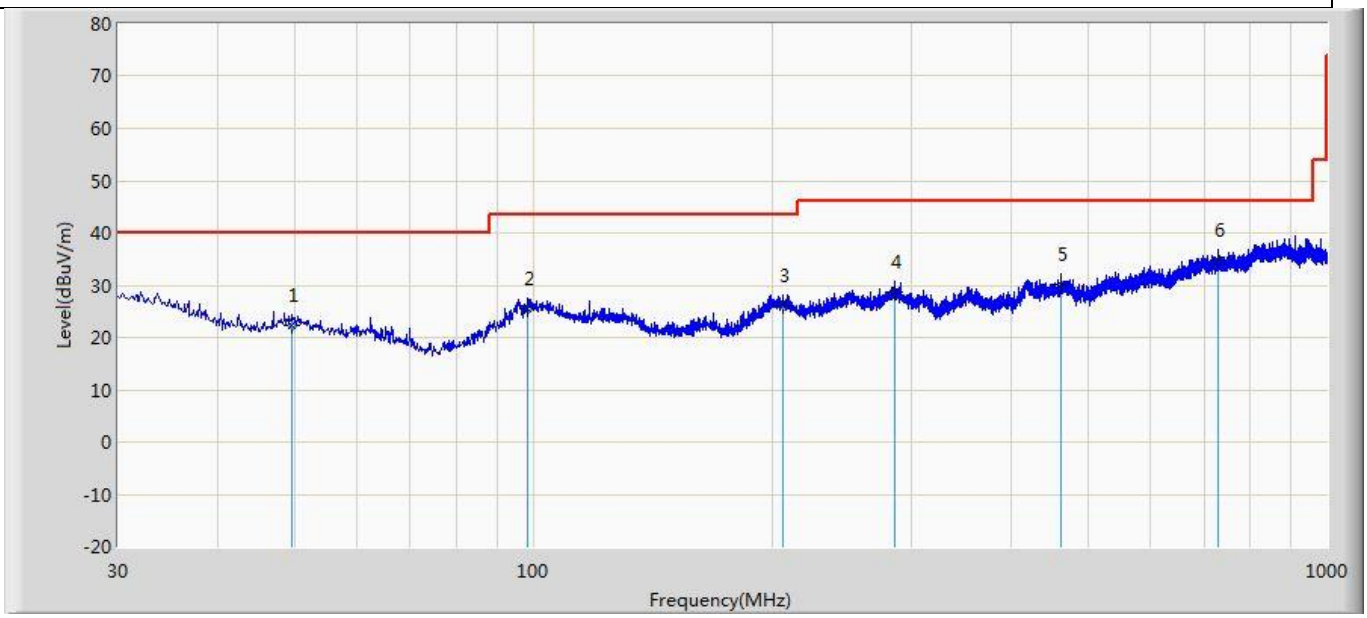
Profile: 2250808R	Page No.: 35
Engineer: YuLiu	
Site: AC3	Time: 2022/06/20 - 20:35
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	34.486	30.120	3.068	-9.880	40.000	27.052	QP
2		94.626	20.631	5.724	-22.869	43.500	14.907	QP
3		202.175	19.601	1.904	-23.899	43.500	17.696	QP
4		328.760	25.201	2.590	-20.799	46.000	22.611	QP
5		464.075	30.507	3.298	-15.493	46.000	27.209	QP
6		629.339	33.226	2.887	-12.774	46.000	30.339	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: 2250808R	Page No.: 36
Engineer: YuLiu	
Site: AC3	Time: 2022/06/20 - 20:36
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		49.764	22.325	2.895	-17.675	40.000	19.430	QP
2		98.385	25.493	4.267	-18.007	43.500	21.226	QP
3		206.783	26.211	2.807	-17.289	43.500	23.404	QP
4		285.716	28.663	3.529	-17.337	46.000	25.134	QP
5		461.650	30.186	3.717	-15.814	46.000	26.469	QP
6	*	729.370	34.855	4.062	-11.145	46.000	30.793	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

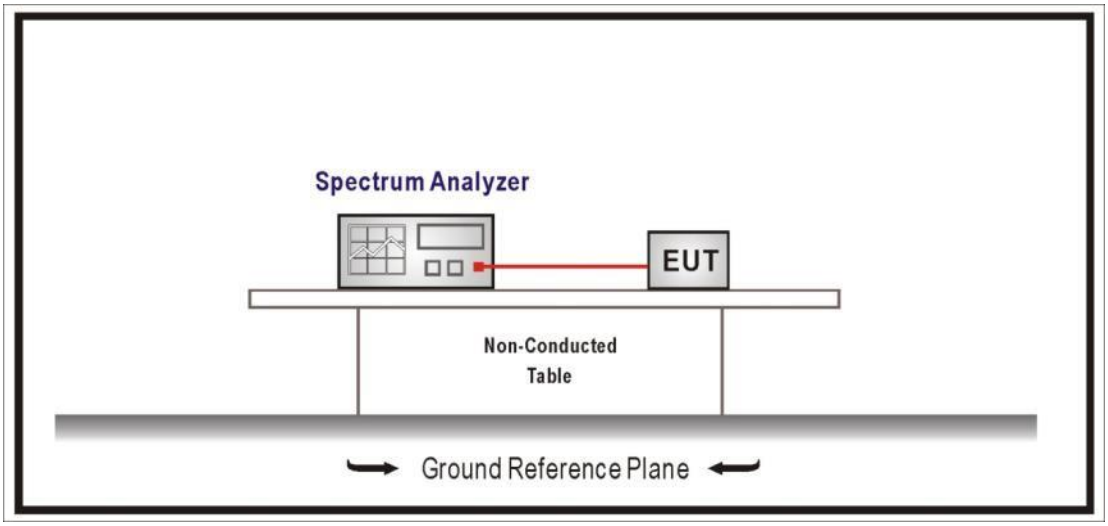
4.3.1 Limit

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

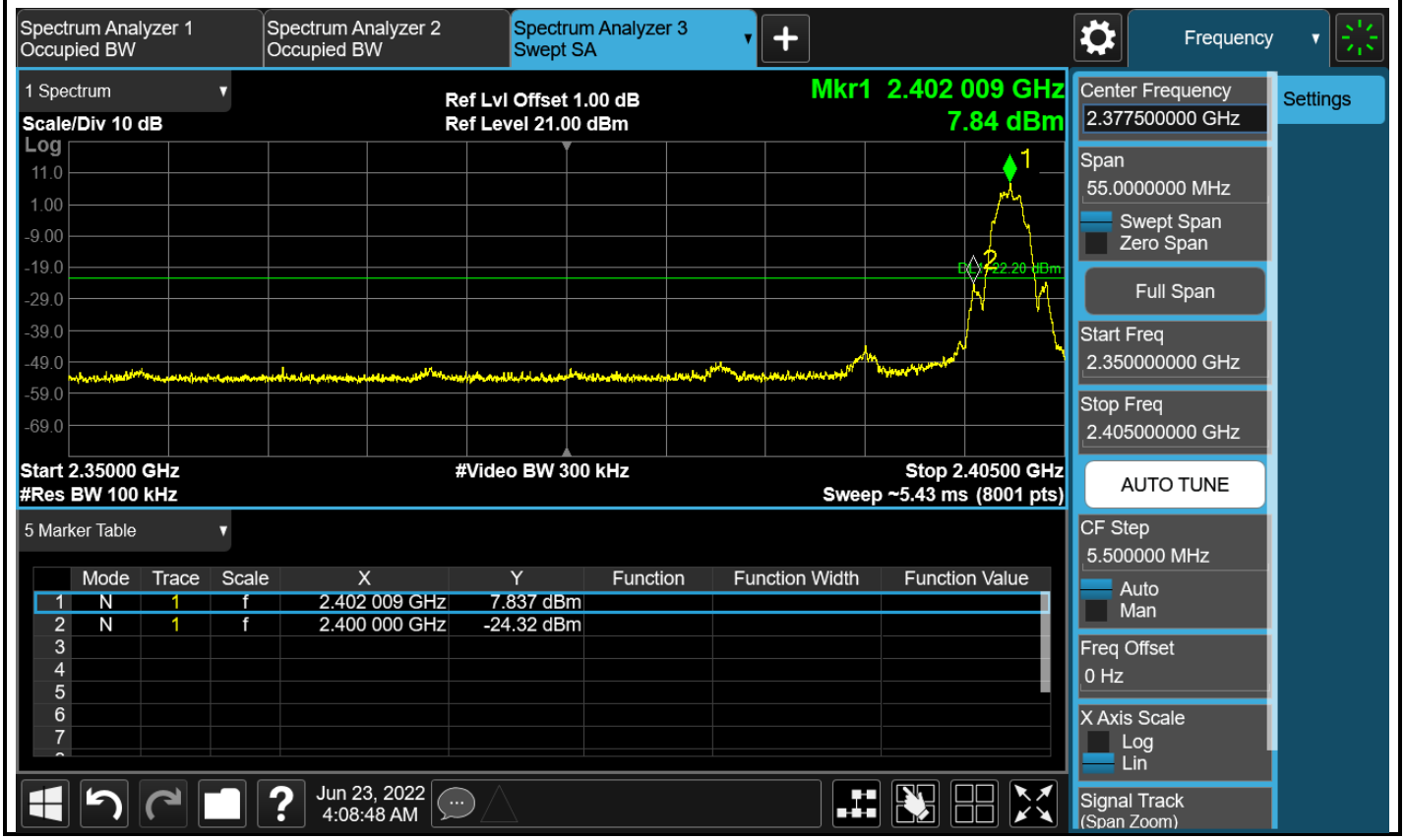
4.3.4 Test Data

Left controller:

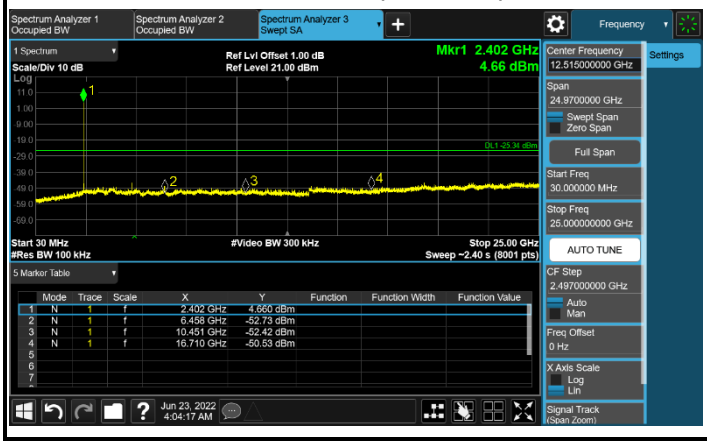
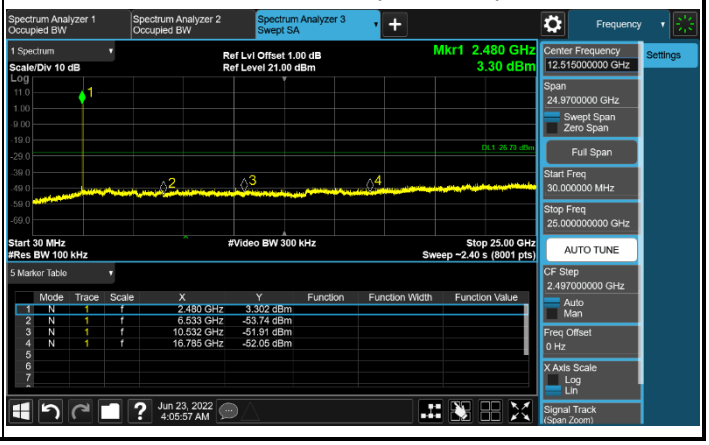
Mode	Channel	Test Frequency (MHz)	Maximum In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	00	2402	7.837	2400	-24.32	32.157	≥30	Pass
	39	2480	7.993	2500	-52.57	60.563	≥30	Pass

Note: The worst case of emissions in non-restricted frequency bands as below:

Mode 1 CH00(2402MHz)



The data of entire corresponding spectrum:

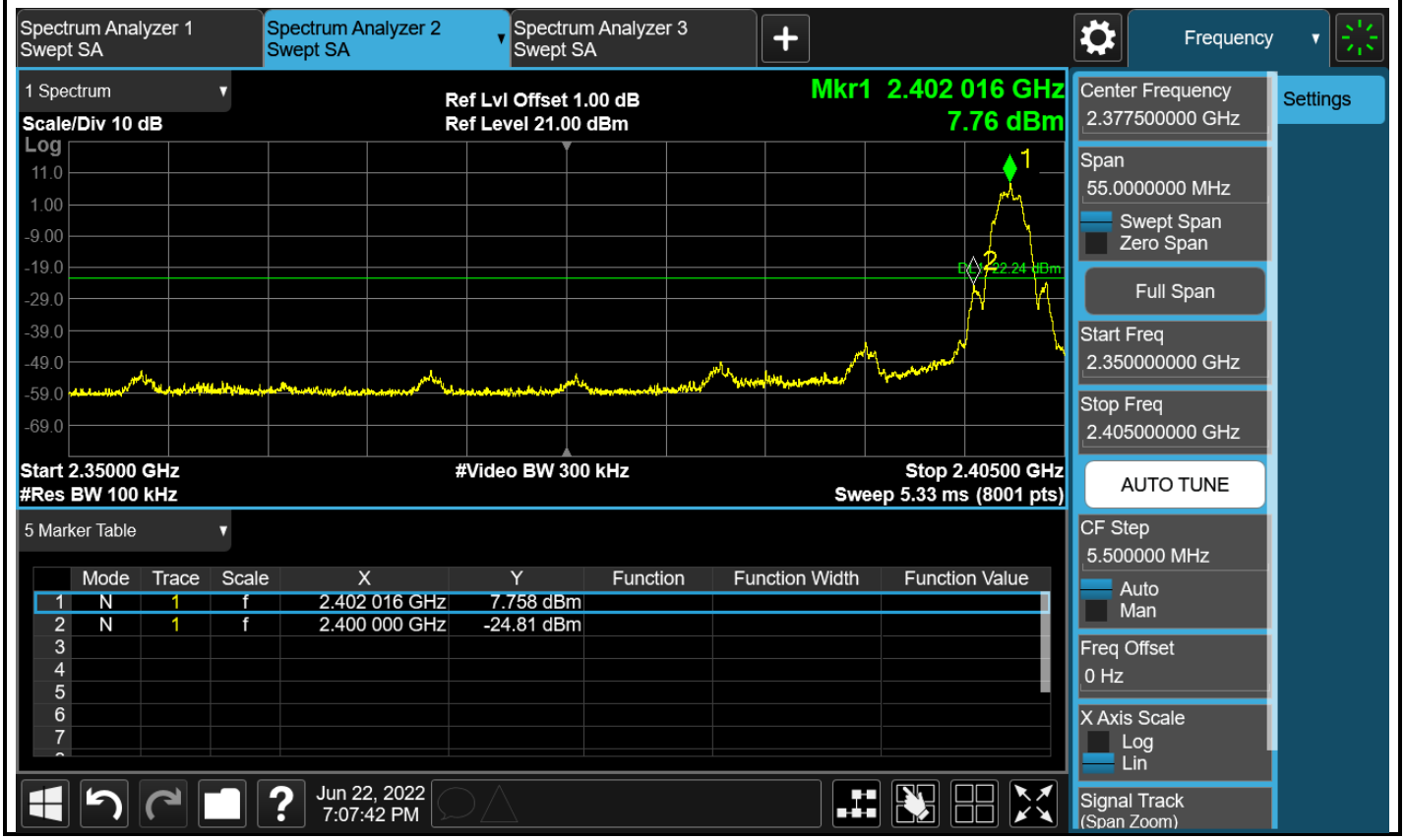
Mode 1 CH00 (2402MHz)	Mode 1 CH39 (2480MHz)
	

Right controller:

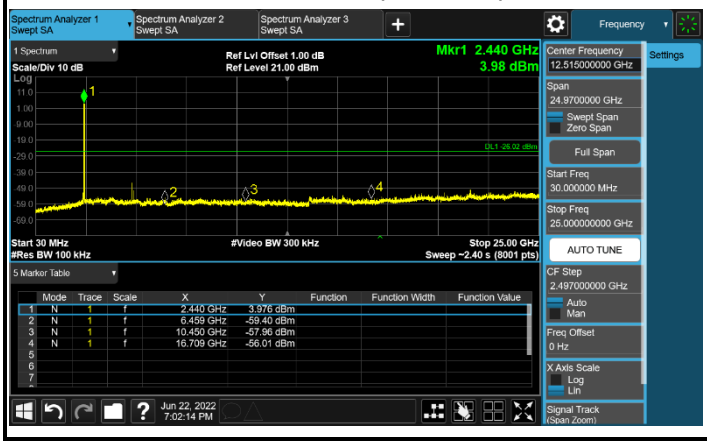
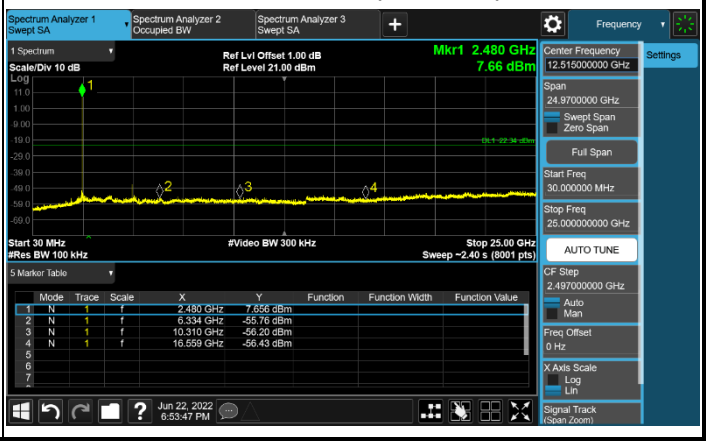
Mode	Channel	Test Frequency (MHz)	Maximum In-Band PSD[a] (dBm/100kHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100kHz)	[a]-[b] (dB)	Limit (dB)	Result
1	00	2402	7.758	2400	-24.81	32.568	≥30	Pass
	39	2480	7.844	2528.047	-52.36	60.204	≥30	Pass

Note: The worst case of emissions in non-restricted frequency bands as below:

Mode 1 CH00(2402MHz)



The data of entire corresponding spectrum:

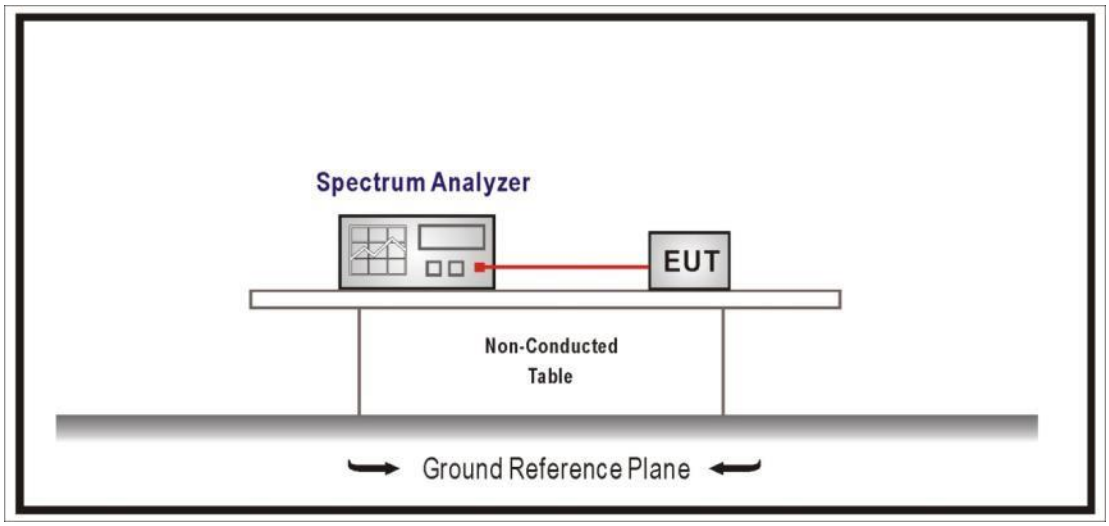
Mode 1 CH00 (2402MHz)	Mode 1 CH39 (2480MHz)
	

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

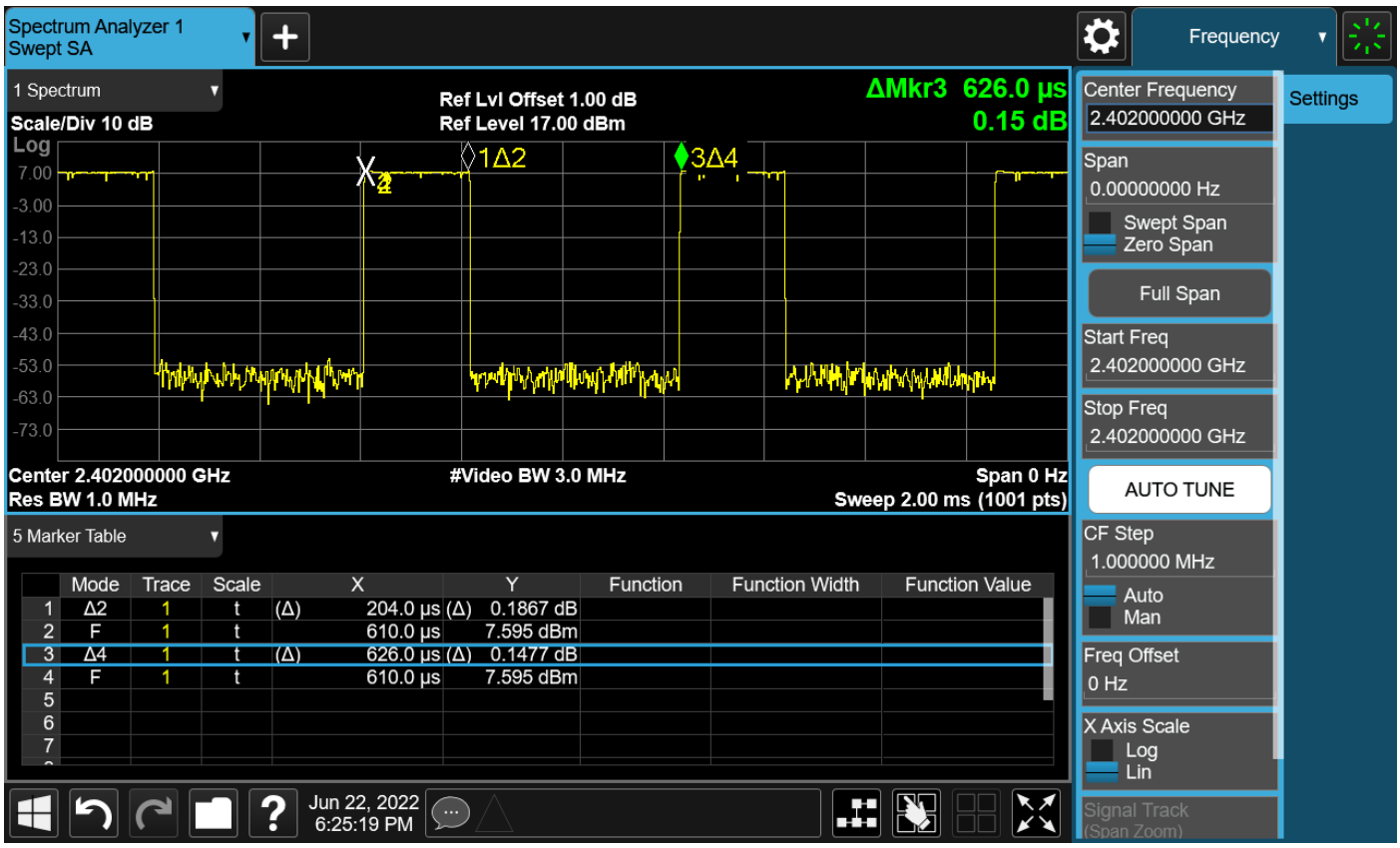
4.4.4 Test Data

Test Mode	Tx On (us)	Tx Off (us)	VBW (kHz)	Tx On + Tx Off (us)	Duty Cycle (%)
Mode 1	204	422	5	626	32.59

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 CH00 2402MHz

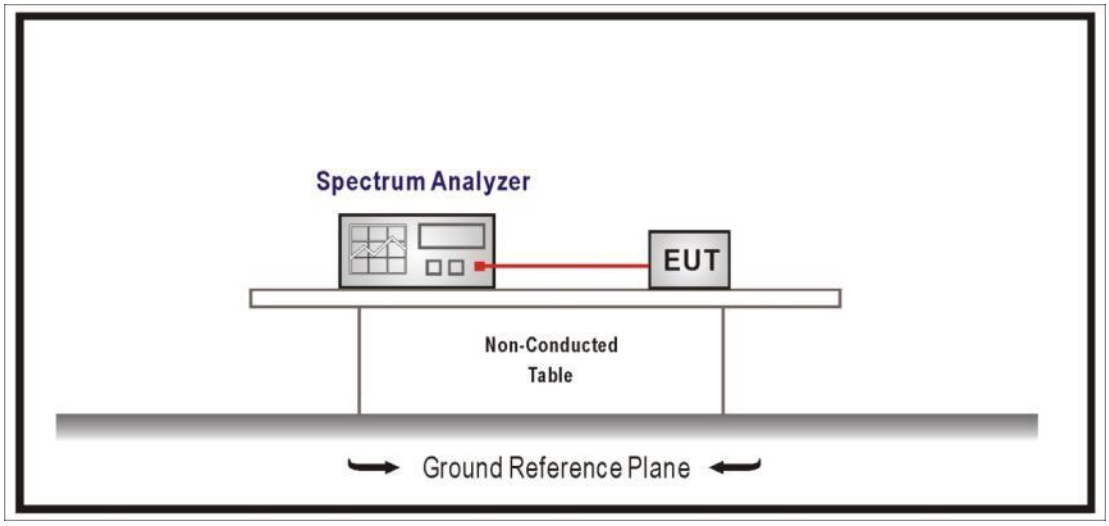


4.5 Band Edge — VERDICT: PASS

4.5.1 Limit

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

4.5.2 Test Setup



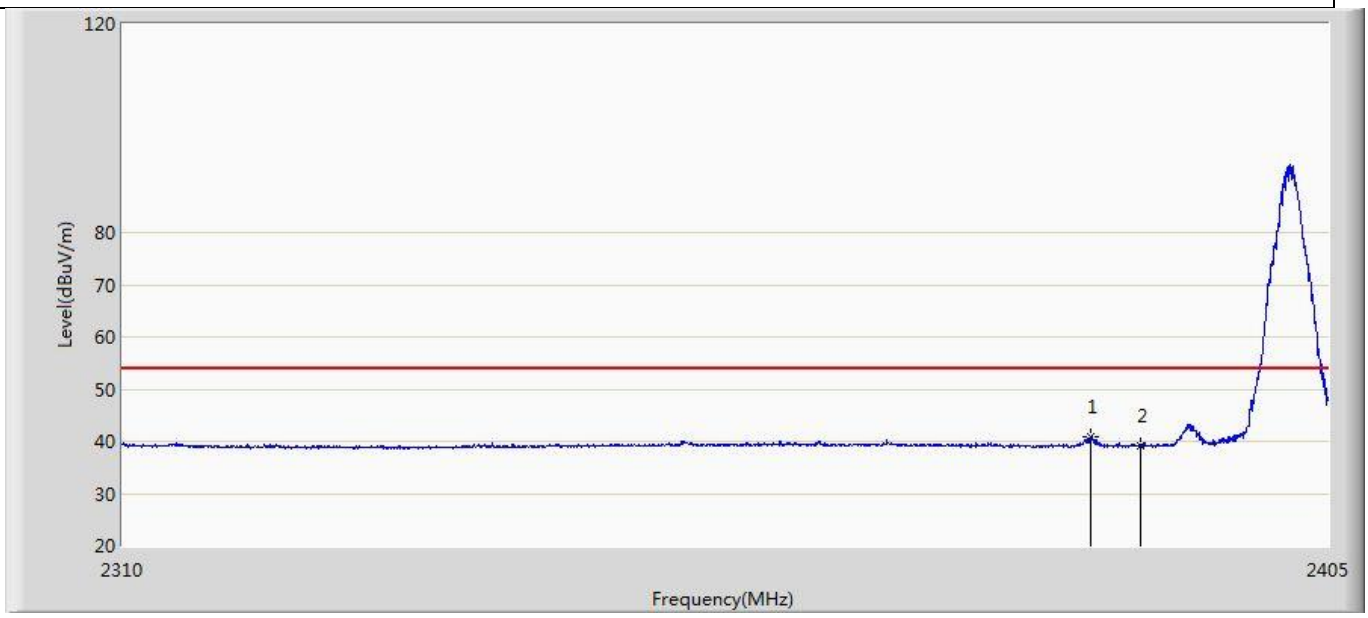
4.5.3 Test Procedure

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

4.5.4 Test Data

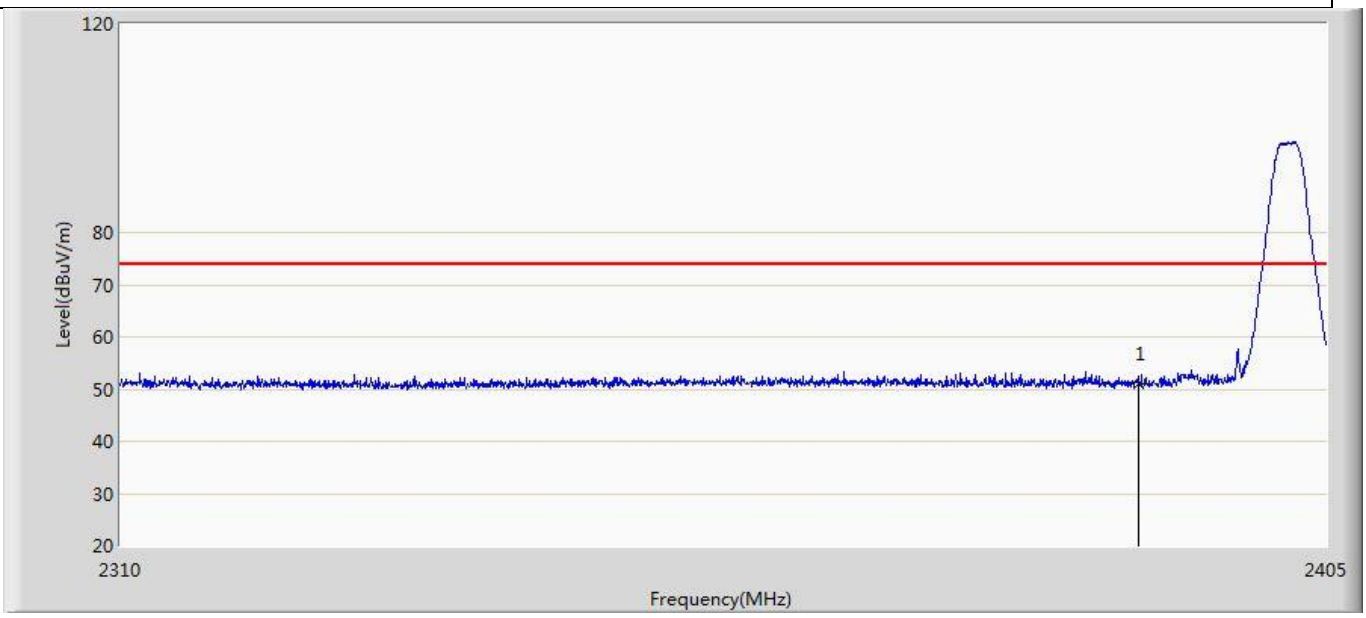
Left controller:

Profile: 2250808R	Page No.: 1
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 22:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE	



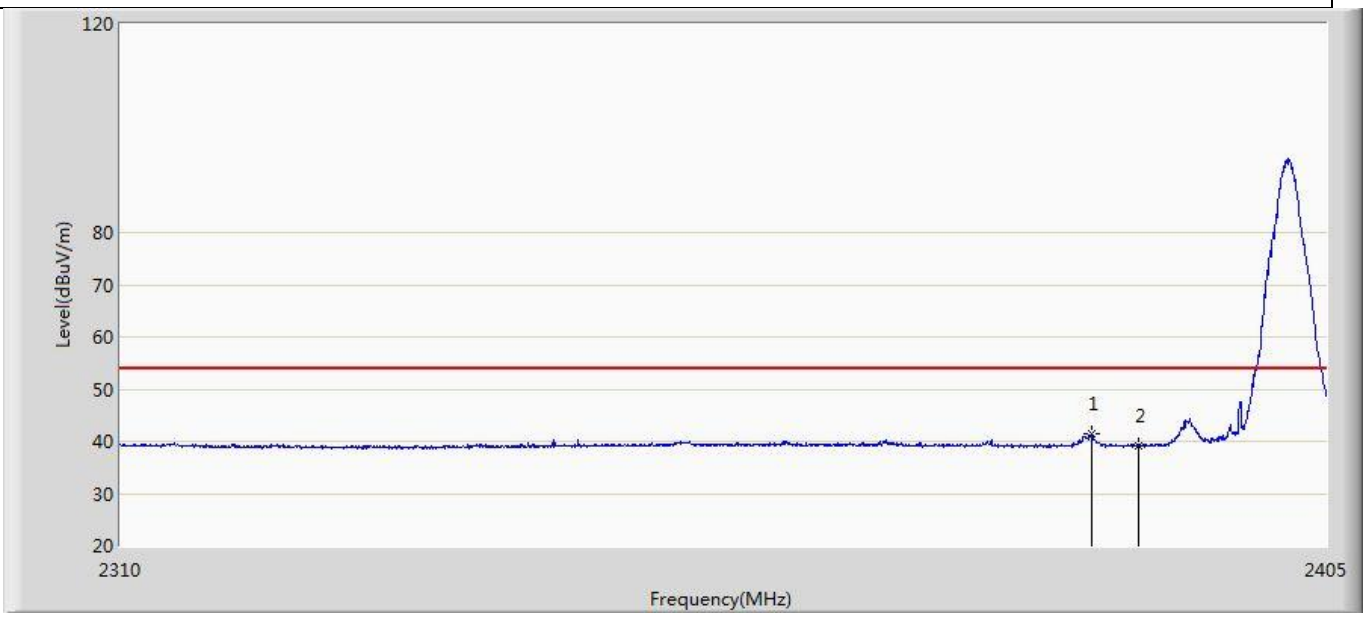
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2385.952	40.922	4.860	-13.078	54.000	36.062	AV
2		2390.000	39.272	3.174	-14.728	54.000	36.098	AV

Profile: 2250808R	Page No.: 2
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 23:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE	



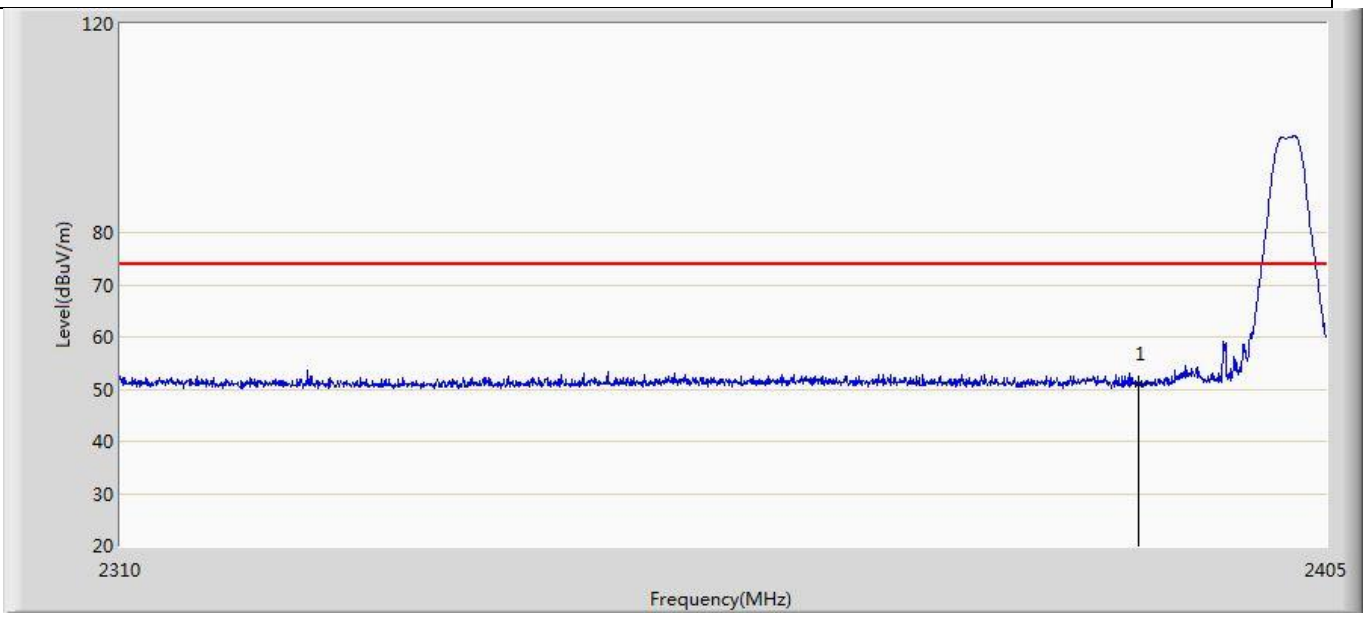
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	50.994	14.896	-23.006	74.000	36.098	PK

Profile: 2250808R	Page No.: 3
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 23:03
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE	



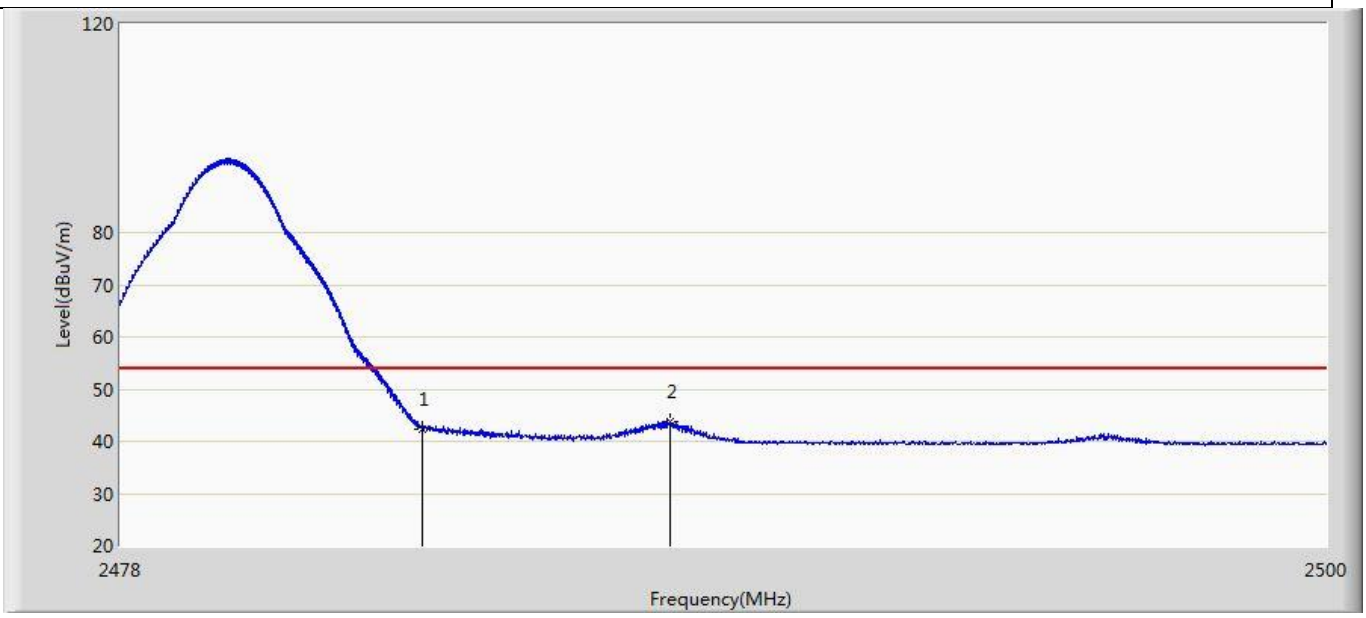
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2386.190	41.438	5.373	-12.562	54.000	36.064	AV
2		2390.000	39.157	3.059	-14.843	54.000	36.098	AV

Profile: 2250808R	Page No.: 4
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 23:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE	



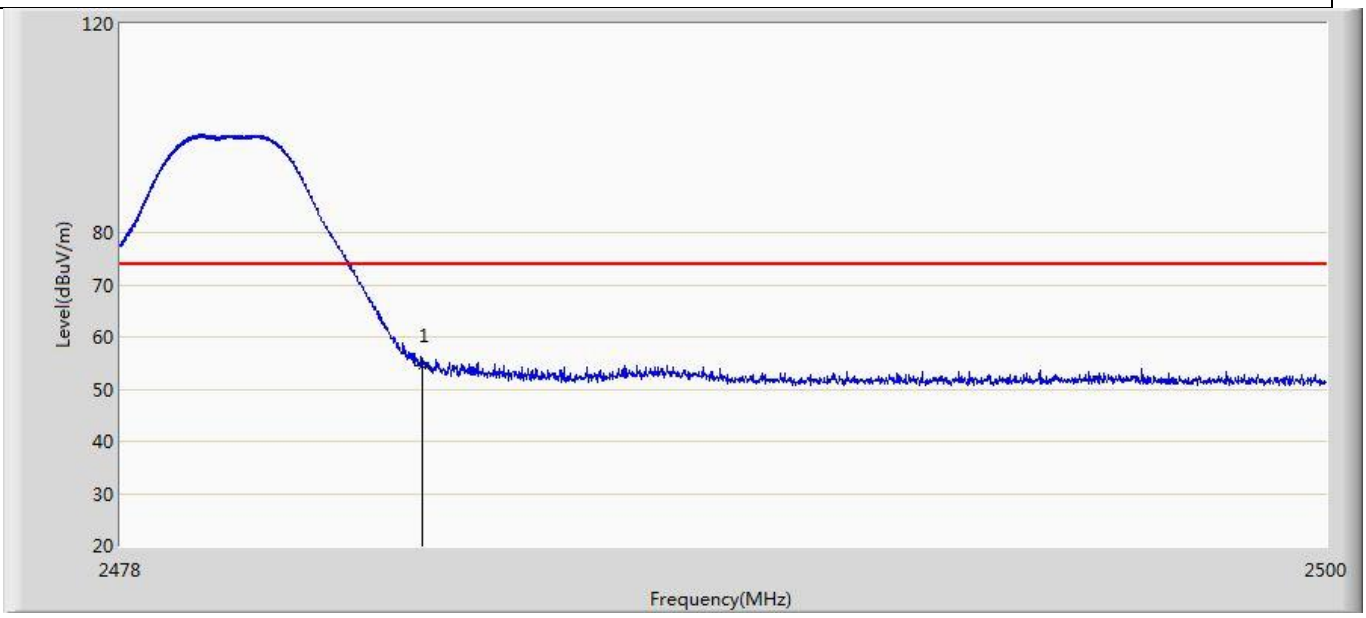
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	51.131	15.033	-22.869	74.000	36.098	PK

Profile: 2250808R	Page No.: 5
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	



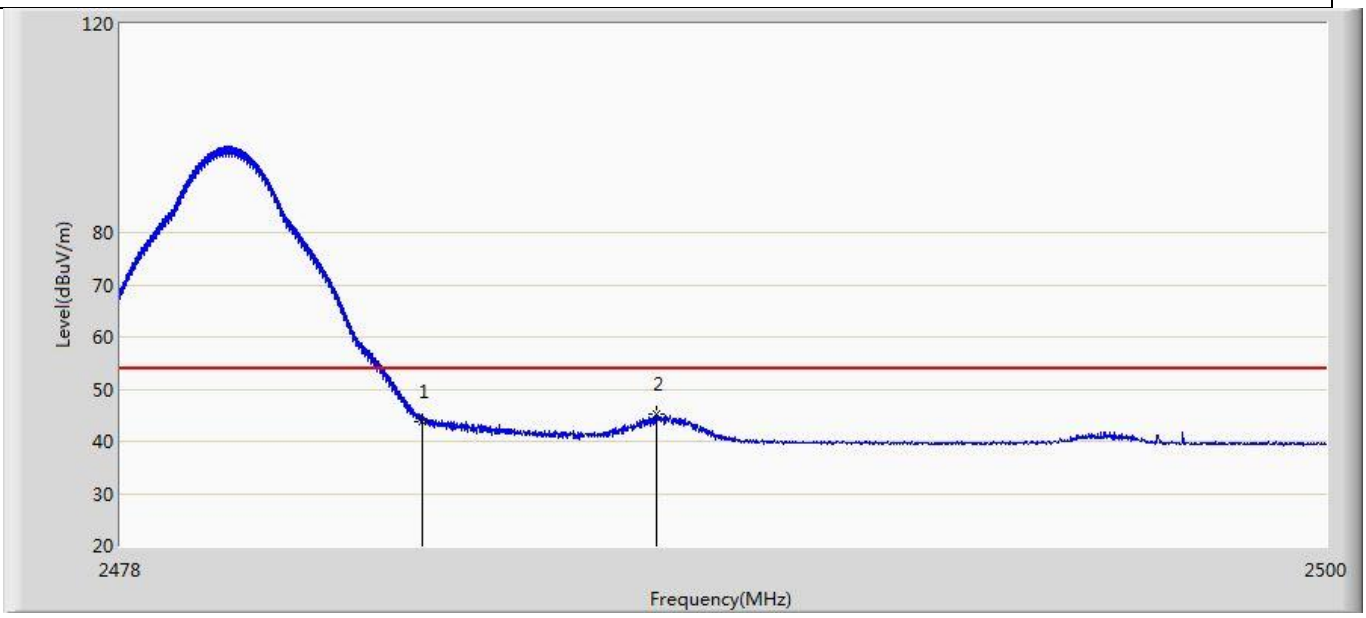
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	42.448	6.227	-11.552	54.000	36.220	AV
2	*	2487.999	43.772	7.533	-10.228	54.000	36.239	AV

Profile: 2250808R	Page No.: 6
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 21:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	



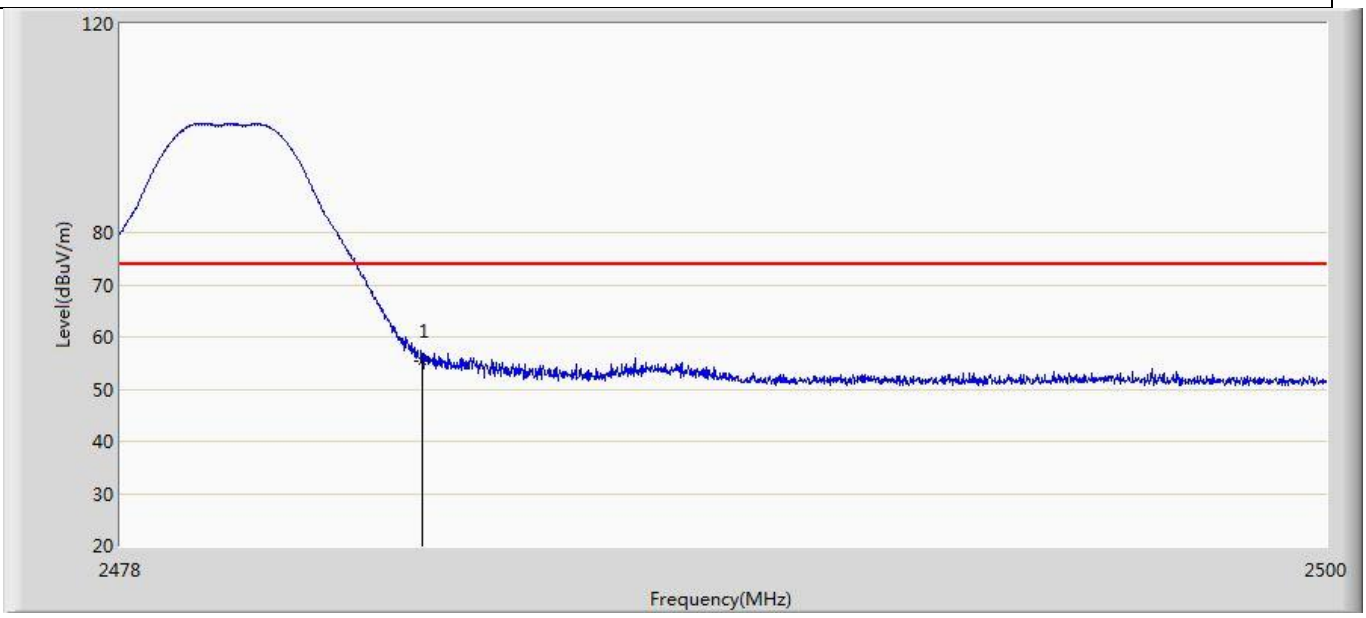
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	54.474	18.253	-19.526	74.000	36.220	PK

Profile: 2250808R	Page No.: 7
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 21:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	43.647	7.426	-10.353	54.000	36.220	AV
2	*	2487.768	45.126	8.888	-8.874	54.000	36.238	AV

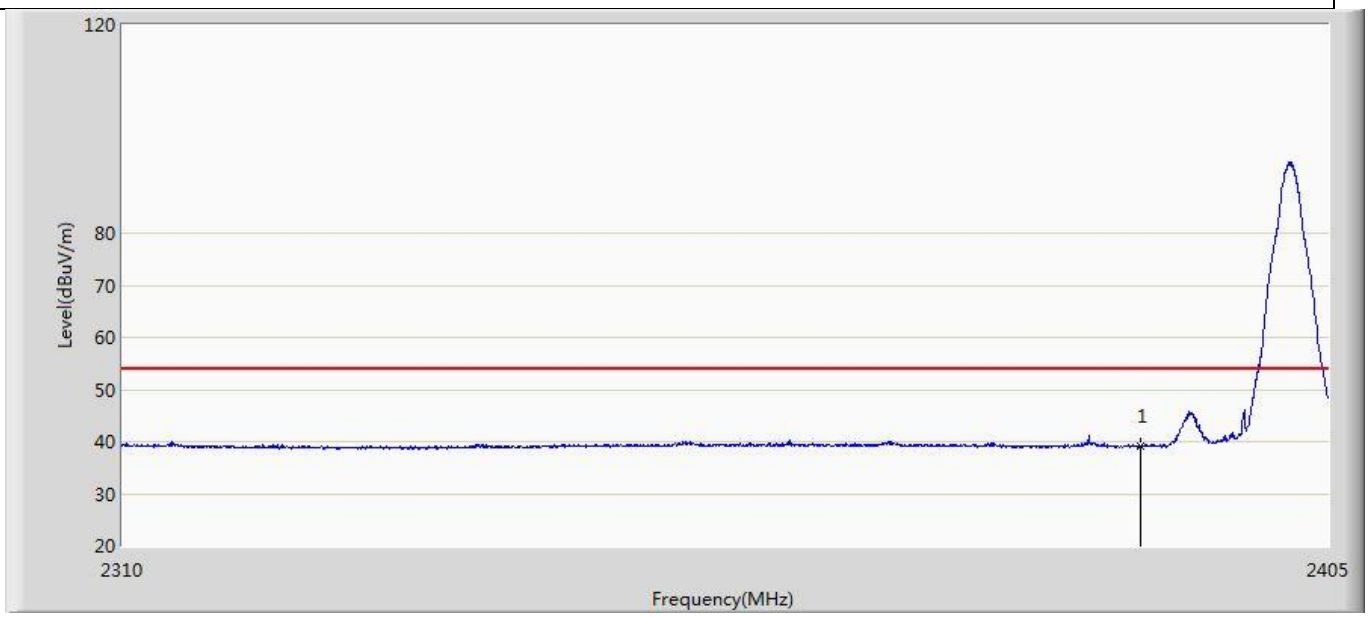
Profile: 2250808R	Page No.: 8
Engineer: YuLiu	
Site: AC5	Time: 2022/06/20 - 21:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	55.386	19.165	-18.614	74.000	36.220	PK

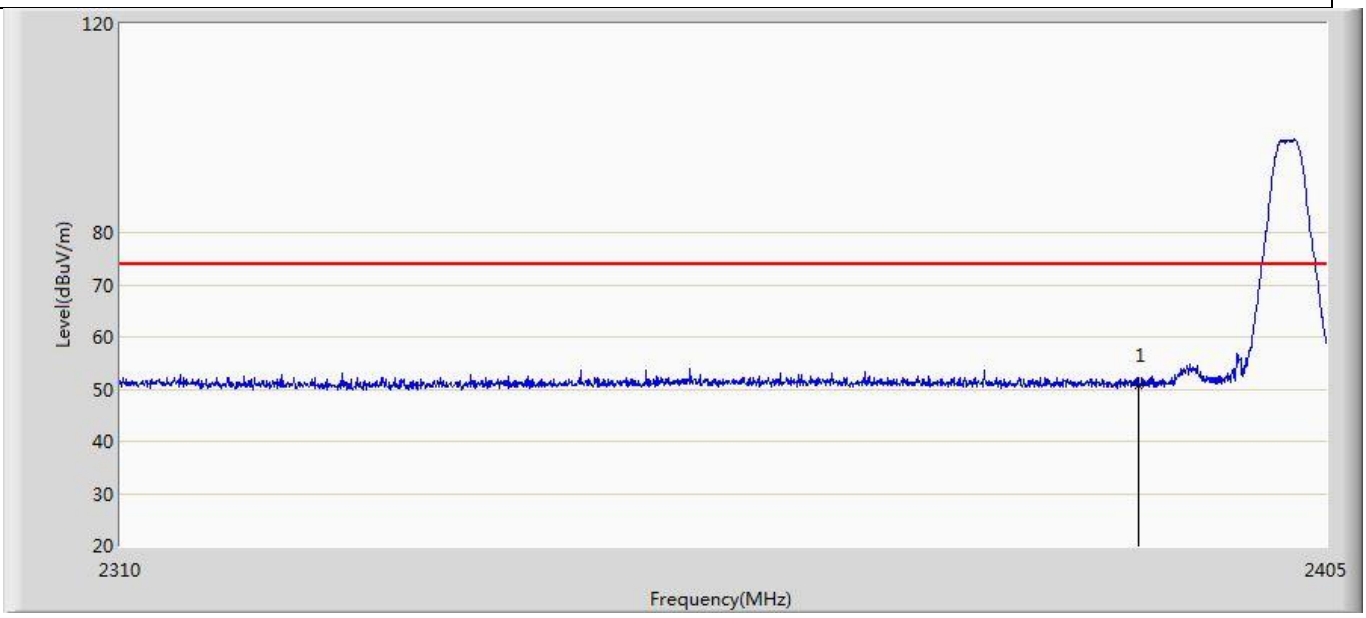
Right controller:

Profile: 2250808R	Page No.: 1
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 22:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE	



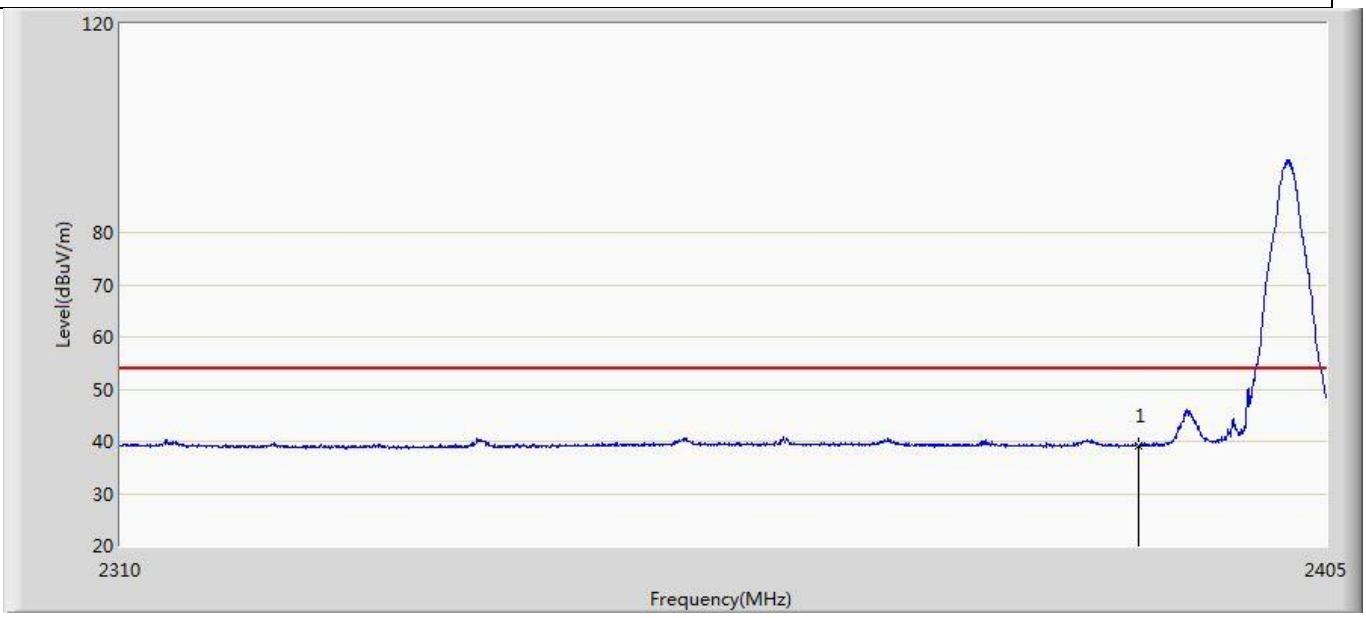
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	38.995	2.897	-15.005	54.000	36.098	AV

Profile: 2250808R	Page No.: 2
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 23:02
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE_2M	



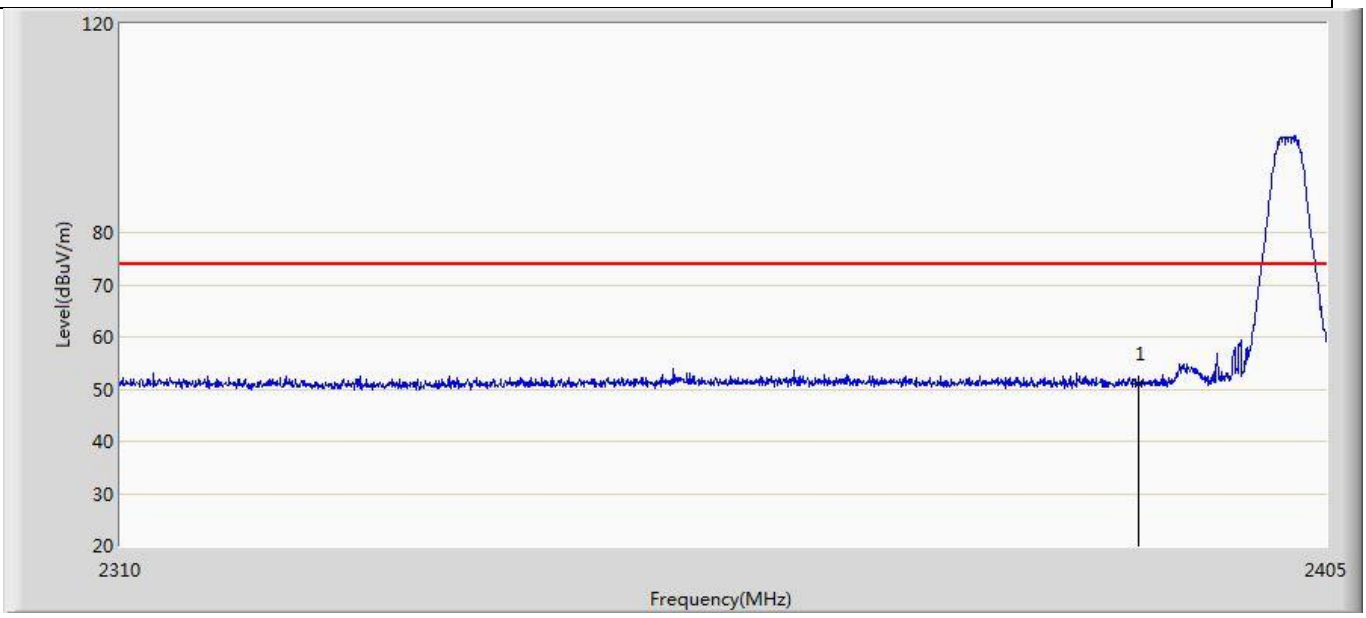
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	50.775	14.677	-23.225	74.000	36.098	PK

Profile: 2250808R	Page No.: 3
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 23:03
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE_2M	



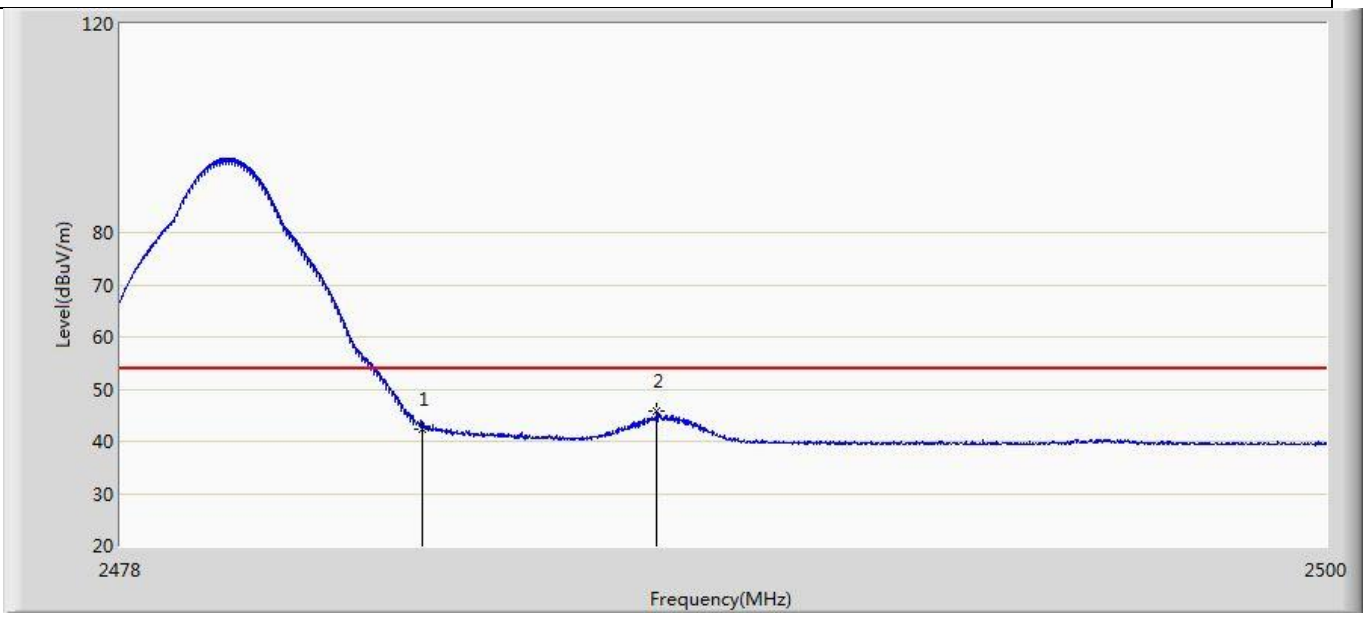
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	39.078	2.980	-14.922	54.000	36.098	AV

Profile: 2250808R	Page No.: 4
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 23:04
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2402MHz BLE_2M	



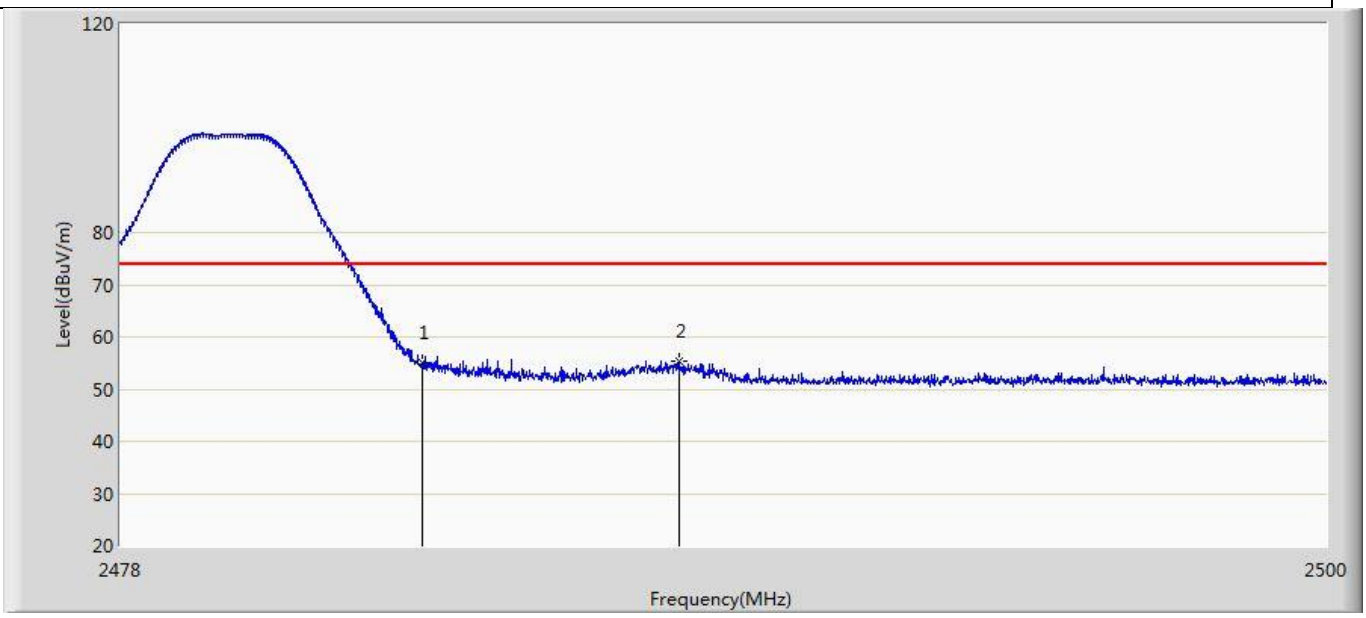
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	51.107	15.009	-22.893	74.000	36.098	PK

Profile: 2250808R	Page No.: 5
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 04:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	



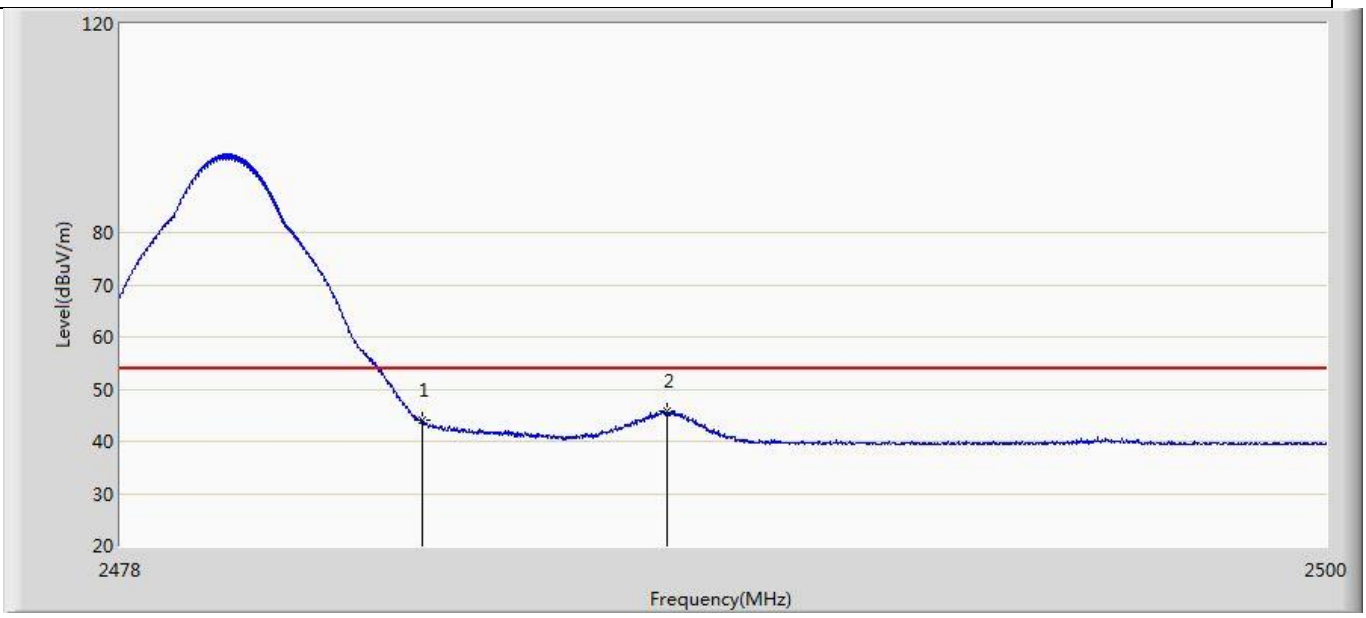
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	42.237	6.016	-11.763	54.000	36.220	AV
2	*	2487.768	45.883	9.645	-8.117	54.000	36.238	AV

Profile: 2250808R	Page No.: 6
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 21:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Horizontal
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	



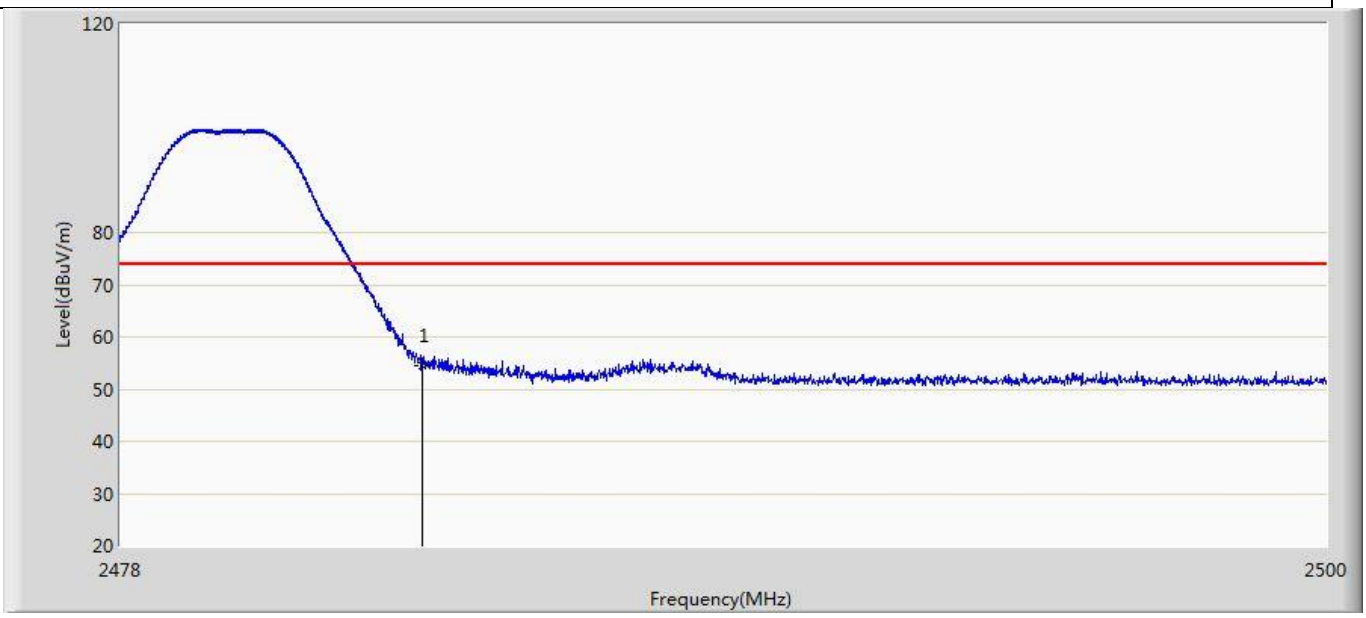
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	55.164	18.943	-18.836	74.000	36.220	PK
2	*	2488.164	55.271	19.031	-18.729	74.000	36.240	PK

Profile: 2250808R	Page No.: 7
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 21:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	44.054	7.833	-9.946	54.000	36.220	AV
2	*	2487.944	45.685	9.446	-8.315	54.000	36.239	AV

Profile: 2250808R	Page No.: 8
Engineer: YuLiu	
Site: AC5	Time: 2022/06/21 - 21:30
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00167055(1-18GHz)	Polarity: Vertical
EUT: VR MOTION CONTROLLER	Power: DC3V
Note: Mode 1:Transmit at 2480MHz BLE	

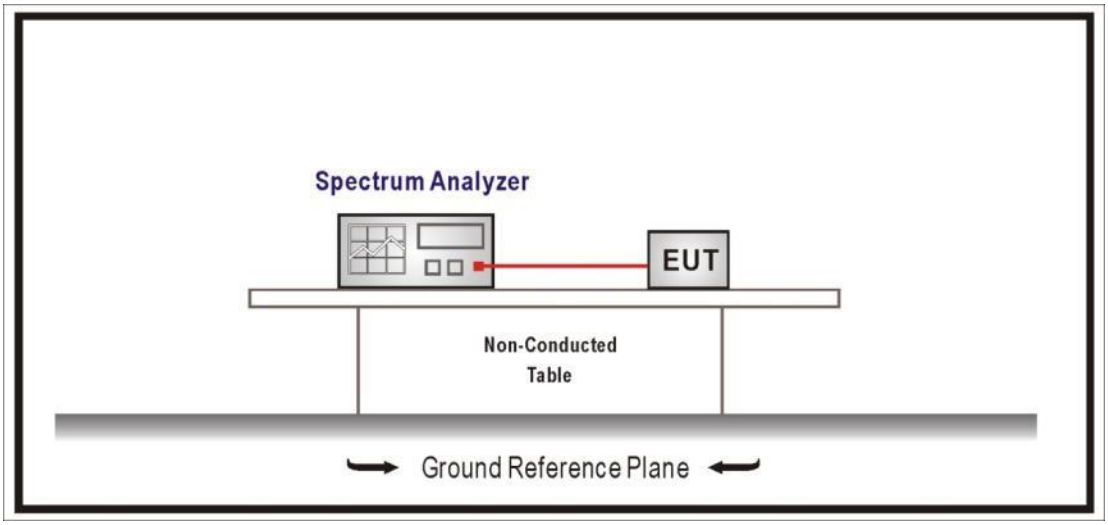


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	54.423	18.202	-19.577	74.000	36.220	PK

4.6 DTS Bandwidth	VERDICT: PASS

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

4.6.2 Test Setup



4.6.3 Test Procedure

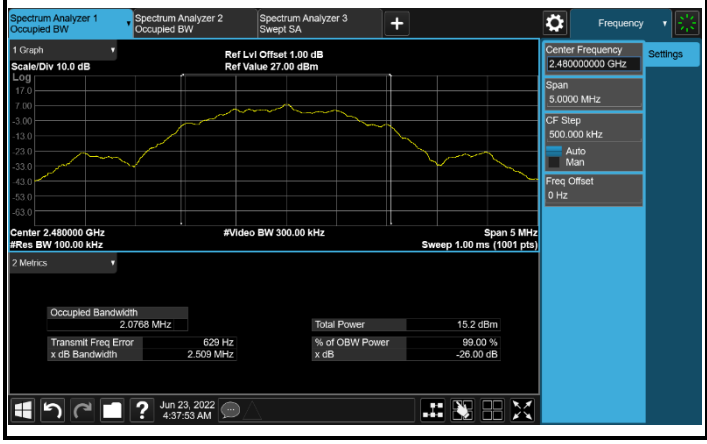
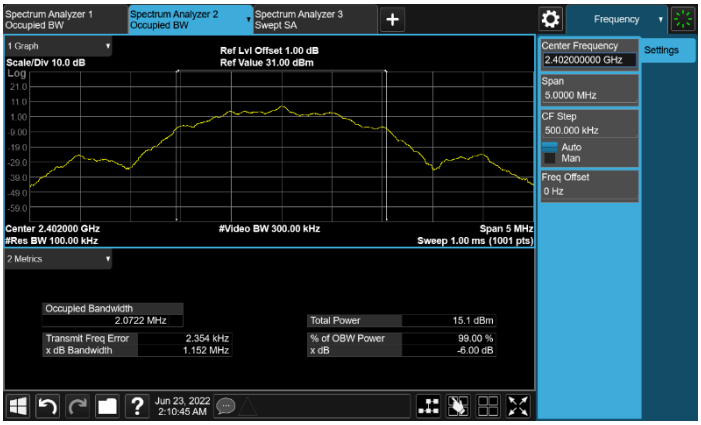
	Reference Rule		Chapter	Description
☒	ANSI C63.10		11.8	DTS bandwidth
	☐	ANSI C63.10	11.8.1	Option 1
	☒	ANSI C63.10	11.8.2	Option 2

4.6.4 Test Data

Left controller:

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	6dB Occupied Bandwidth (KHz)	Limit (kHz)	Result
1	00	2402	2.0704	1152	>500	Pass
	19	2440	2.0766	1158	>500	Pass
	39	2480	2.0768	1166	>500	Pass

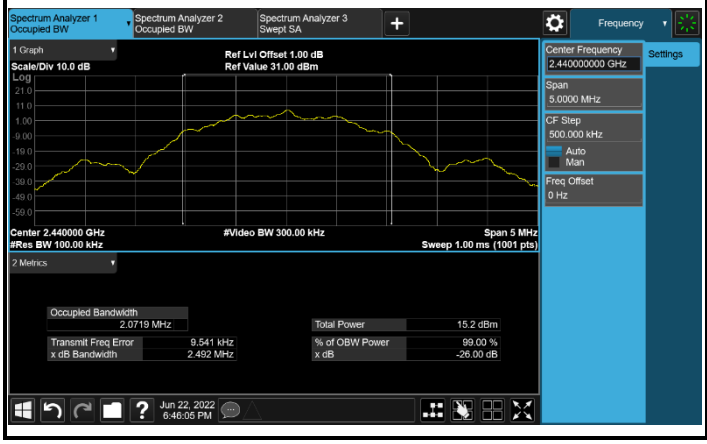
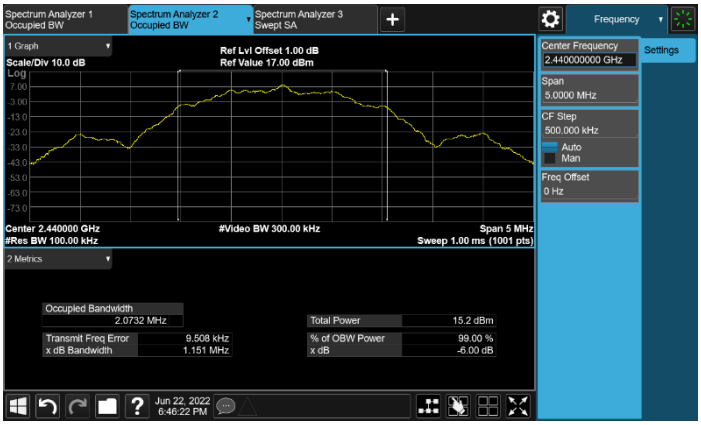
Note : The worst case of Occupied Bandwidth as below:

99% Occupied Bandwidth	6dB Occupied Bandwidth
Mode 1 CH39 (2480MHz)	Mode 1 CH00(2402MHz)
	

Right controller:

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	00	2402	2.0684	1160	>500	Pass
	19	2440	2.0719	1151	>500	Pass
	39	2480	2.0714	1152	>500	Pass

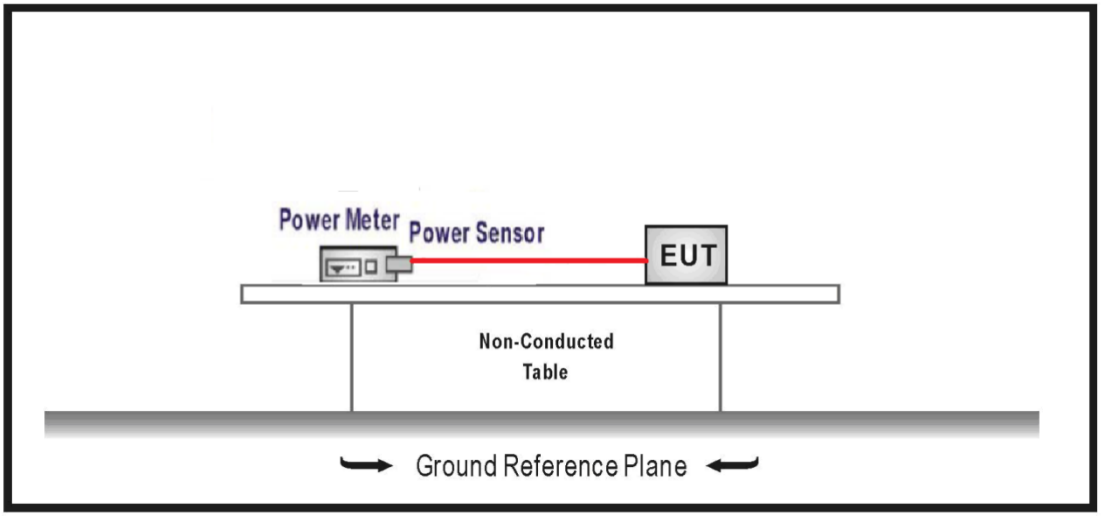
Note : The worst case of Occupied Bandwidth as below:

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

4.7 Fundamental emission output power	VERDICT: PASS

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

4.7.2 Test Setup



4.7.3 Test Procedure

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

4.7.4 Test Data

Left controller:

Mode	Channel	Test Frequency (MHz)	Conducted Power (dBm)	EIRP (dBm)	Conducted Power Limit (dBm)	EIRP Limit (dBm)	Result
Mode 1	00	2402	7.39	8.98	≤30	≤36	Pass
	19	2440	7.49	9.08	≤30	≤36	Pass
	39	2480	7.46	9.05	≤30	≤36	Pass

Right controller:

Mode	Channel	Test Frequency (MHz)	Conducted Power (dBm)	EIRP (dBm)	Conducted Power Limit (dBm)	EIRP Limit (dBm)	Result
Mode 1	00	2402	7.43	9.32	≤30	≤36	Pass
	19	2440	7.51	9.40	≤30	≤36	Pass
	39	2480	7.46	9.35	≤30	≤36	Pass

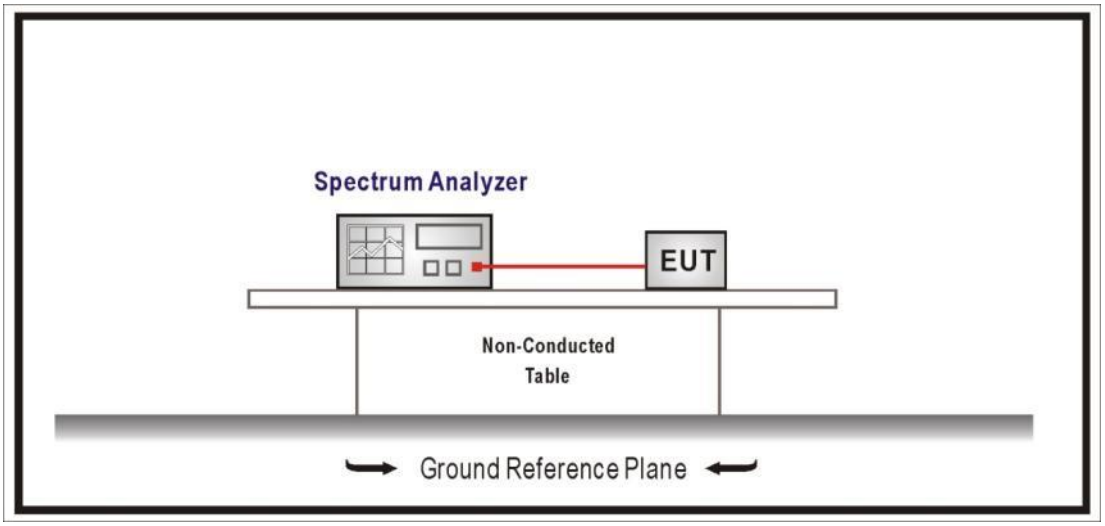
Power Setting:

Mode	Channel	Test Frequency (MHz)	Left controller	Right controller
Mode 1	00	2402	8	8
	19	2440	8	8
	39	2480	8	8

4.8 Power Density	VERDICT: PASS

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

4.8.2 Test Setup



4.8.3 Test Procedure

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

4.8.4 Test Data

Left controller:

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Mode 1	00	2402	-9.57	≤8	Pass
	19	2440	-9.71	≤8	Pass
	39	2480	-9.85	≤8	Pass

Note : The worst case of PSD as below:

Mode 1 CH00(2402MHz)

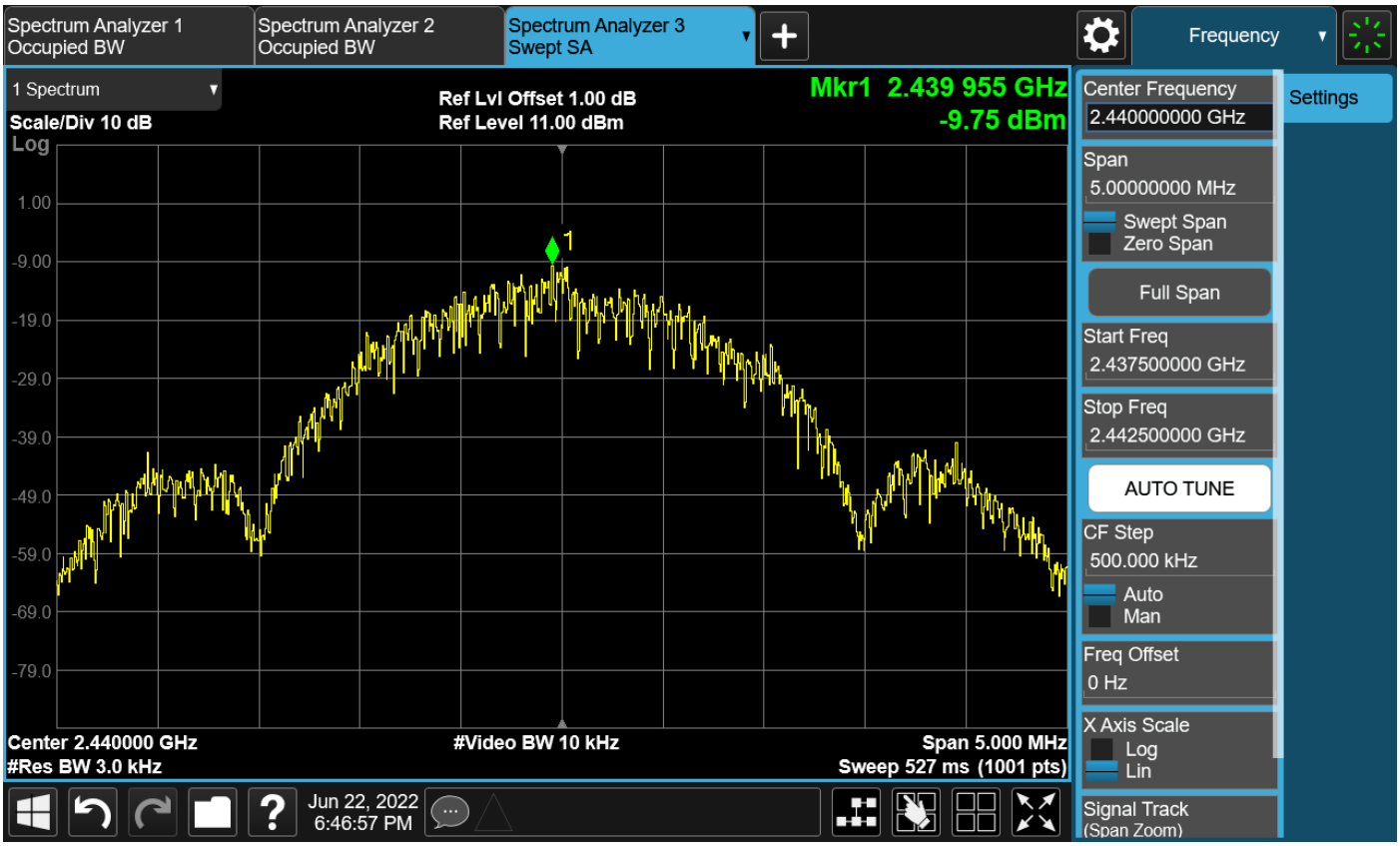
Note：We used the peak detector test result below the limit of 17db, so did not use the RMS detector.

Right controller:

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Mode 1	00	2402	-9.82	≤8	Pass
	19	2440	-9.75	≤8	Pass
	39	2480	-9.94	≤8	Pass

Note : The worst case of PSD as below:

Mode 1 CH00(2440MHz)



Note：We used the peak detector test result below the limit of 17db, so did not use the RMS detector.

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