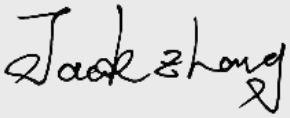
DEKRA Testing and Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098

Test report No:
2220606R-RF-US-P06V02

FCC TEST REPORT

Product Name	UWB SiP Module
Trademark	Goermicro
Model and /or type reference	GSUB-0002
FCC ID	2A5EY-GSUB-0002
Applicant´s name / address	GOERTEK MICROELECTRONICS INC. F Building, Phase II, Qingdao International Innovation Park, No.1, Keyuanwei 1st Road, Laoshan District, Qingdao Shandong
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
Verdict Summary	IN COMPLIANCE
Tested by (name / position & signature)	Tim Cao/Project Engineer 
Approved by (name / position & signature)	Jack Zhang/Supervisor 
Date of issue	2022-05-25
Report Version	V1.0
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.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA.

GENERAL CONDITIONS

Test Location	No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China
Date(receive sample)	Feb. 23, 2022
Date (start test)	Feb. 27, 2022
Date (finish test)	May. 10, 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
2220606R-RF-US-P06V02	V1.0	Initial issue of report.	2022-05-25

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.
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.

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	2021.10.30	2022.10.29
Two-Line V-Network	R&S	ENV216	101044	2021.07.11	2022.07.10
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	2022.02.09	2023.02.08
Coaxial Cable	Woken	SFL402	F02-150410-044	2021.12.30	2022.12.29
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	2022.03.02	2023.03.01
Bilog Antenna	Teseq GmbH	CBL6112D	27613	2021.08.23	2022.08.22
Coaxial Cable	Huber+Suhner	RG 214	AC3-C	2022.03.12	2023.03.11
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
Preamplifier	EMCI	EMC184045SE	980263	2021.06.08	2022.06.07
DRG Horn Antenna	ETS-Lindgren	3117	00167055	2021.08.23	2022.08.22
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2021.04.14	2023.04.13
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2022.03.29	2023.03.28
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	2021.06.08	2022.06.07
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 ..... :	UWB SiP Module
Model No. ..... :	GSUB-0002
FCC ID ..... :	2A5EY-GSUB-0002
Manufacturer ..... :	GOERTEK MICROELECTRONICS INC.
Manufacturer Address ..... :	F Building, Phase II, Qingdao International Innovation Park, No.1, Keyuanwei 1st Road, Laoshan District, Qingdao Shandong
Factory ..... :	GOERTEK MICROELECTRONICS INC.
Factory Address ..... :	F Building, Phase II, Qingdao International Innovation Park, No.1, Keyuanwei 1st Road, Laoshan District, Qingdao Shandong

Wireless specification..... :	Bluetooth 5.0					
Operating frequency range(s) ..... :	2400~2483.5MHz					
Type of Modulation..... :	GFSK					
PHYs ..... :	☒	LE 1M	☒	LE 2M	☒	LE Coded S=2/8
Data Rate ..... :	☒	1Mbit/s	☒	2Mbit/s	☒	500/125 Kbit/s
Number of channel..... :	40					

Rated power supply ..... :	Voltage and Frequency	
	☐	AC: 220 – 240 V, 50/60 Hz
	☐	AC: 110 – 130 Vac, 50/60 Hz
	☒	VDD1、VDD2、VDDMCU: 3V
	☒	VUSB:5V
Mounting position ..... :	☐	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☐	Head-mounted equipment
	☒	Other: RF Module

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
			☒	PCB
			☐	Dipole
			☐	Others……..
Antenna Gain ..... :	2.0dBi			

1.3 Channel List

Bluetooth 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_1Mbps
	Mode2: Transmit by LE_2Mbps
	Mode3: Transmit by LE_ Coded S=2
	Mode4: Transmit by LE_ Coded S=8

2.2 Accessories Information

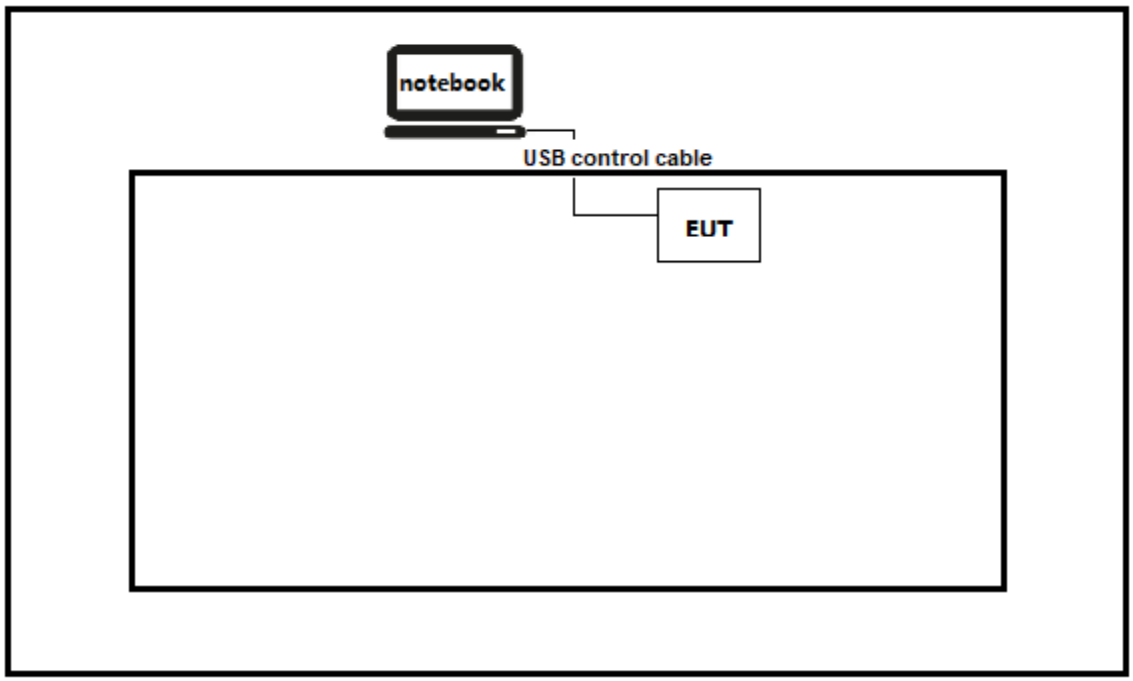
Accessories Information	Brand/model name	Cable		
		Length used during test [m]	Attached during test	Shielded
LAN Cable	N/A	10	☒	☒
LAN Cable	N/A	0.5	☒	☒

2.3 Auxiliary equipment / Test software for the EUT

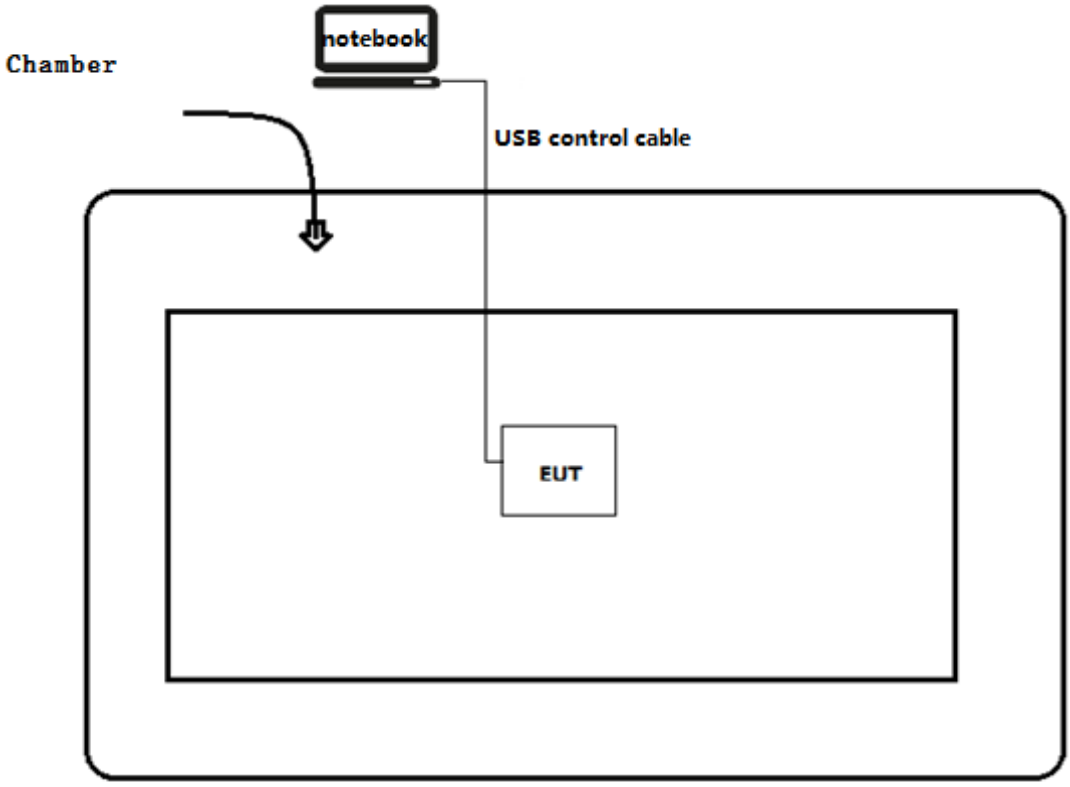
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	2526	Think Pad	N/A
Software	Type / Version	Manufacturer	Supplied by
nRF Connect	N/A	N/A	N/A

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 “nRF Connect” 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	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	---
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	---

3.4 Test Facility

USA	**:**	**FCC Designation Number: CN1199**

4 TEST RESULTS

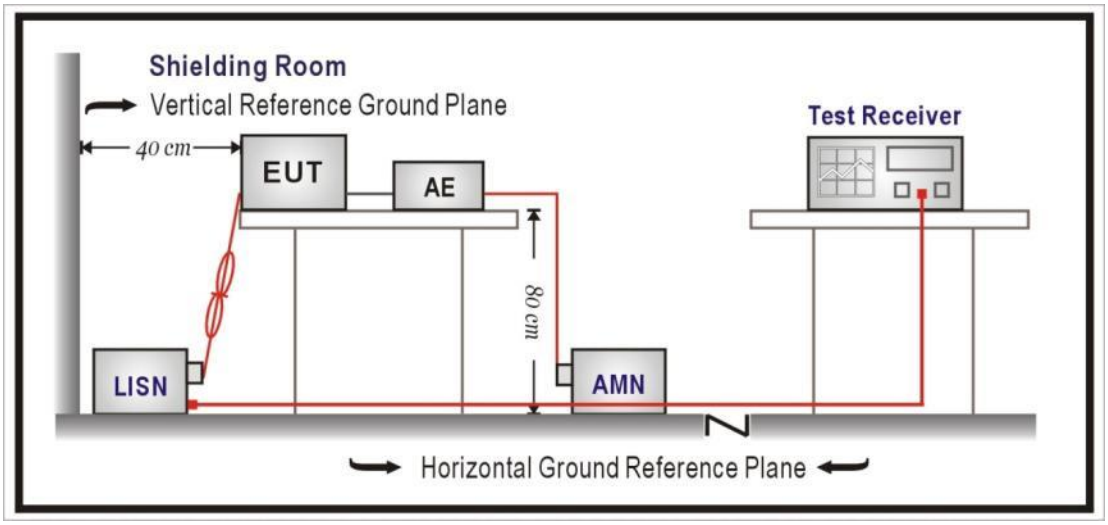
4.1 AC Power Line Conducted Emission	VERDICT: PASS

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

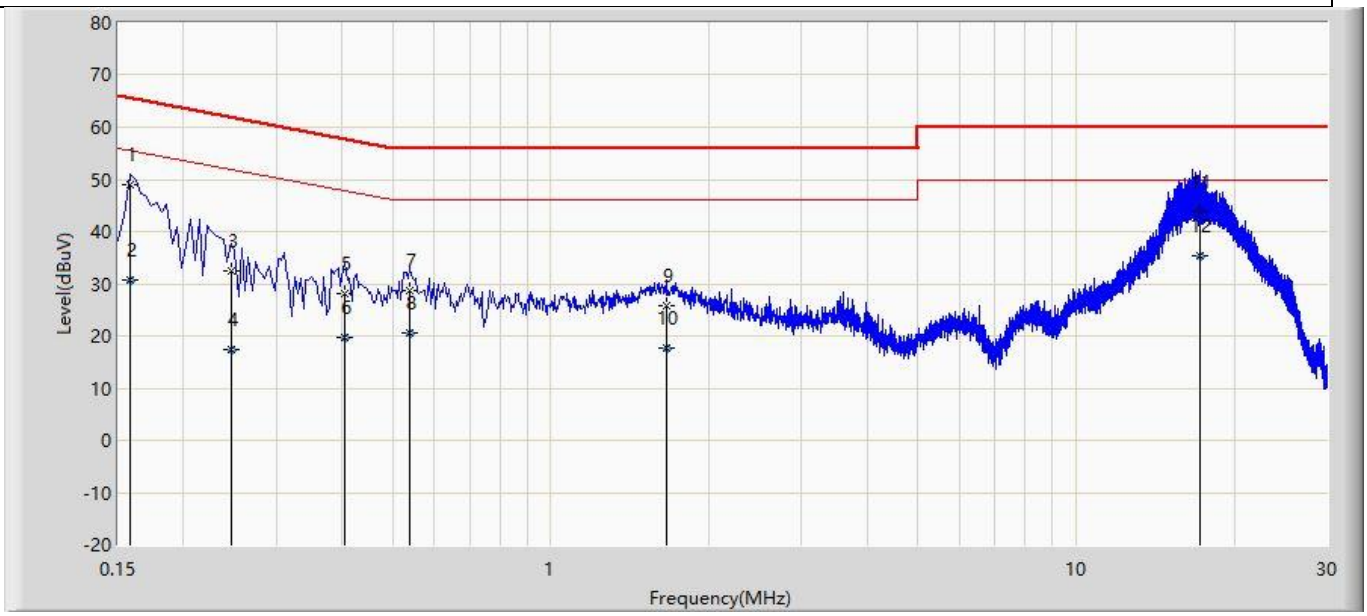


4.1.3 Test Procedure

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

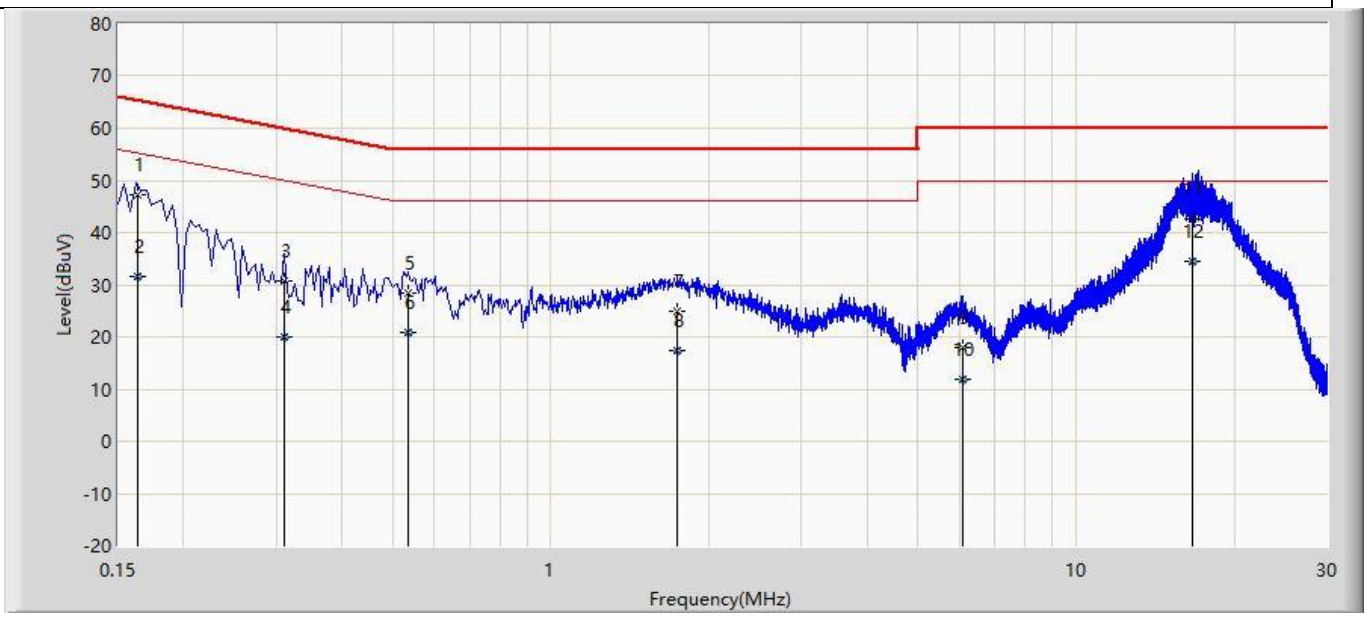
4.1.4 Test Data

Profile: 2220606R	Page No.: 1
Engineer: Pengchengyang	
Site: TR1	Time: 2022/05/10 - 22:19
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: UWB SiP Module	Power: DC5V
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.158	48.925	39.355	-16.644	65.568	9.570	QP
2		0.158	30.606	21.036	-24.962	55.568	9.570	AV
3		0.247	32.570	22.984	-29.298	61.868	9.586	QP
4		0.247	17.521	7.935	-34.347	51.868	9.586	AV
5		0.406	28.042	18.427	-29.688	57.730	9.615	QP
6		0.406	19.622	10.007	-28.108	47.730	9.615	AV
7		0.538	28.639	19.017	-27.361	56.000	9.622	QP
8		0.538	20.594	10.972	-25.406	46.000	9.622	AV
9		1.658	25.689	16.024	-30.311	56.000	9.666	QP
10		1.658	17.730	8.064	-28.270	46.000	9.666	AV
11		17.194	43.739	33.535	-16.261	60.000	10.204	QP
12	*	17.194	35.321	25.118	-14.679	50.000	10.204	AV

Profile: 2220606R	Page No.: 2
Engineer: Pengchengyang	
Site: TR1	Time: 2022/05/10 - 22:29
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: UWB SiP Module	Power: DC5V
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		0.163	47.286	37.705	-18.025	65.311	9.582	QP
2		0.163	31.545	21.964	-23.766	55.311	9.582	AV
3		0.310	30.807	21.204	-29.163	59.970	9.603	QP
4		0.310	20.083	10.479	-29.887	49.970	9.603	AV
5		0.534	28.536	18.912	-27.464	56.000	9.625	QP
6		0.534	20.961	11.337	-25.039	46.000	9.625	AV
7		1.738	24.904	15.233	-31.096	56.000	9.672	QP
8		1.738	17.472	7.800	-28.528	46.000	9.672	AV
9		6.082	17.901	8.036	-42.099	60.000	9.865	QP
10		6.082	11.840	1.975	-38.160	50.000	9.865	AV
11		16.606	42.706	32.541	-17.294	60.000	10.164	QP
12	*	16.606	34.513	24.349	-15.487	50.000	10.164	AV

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			

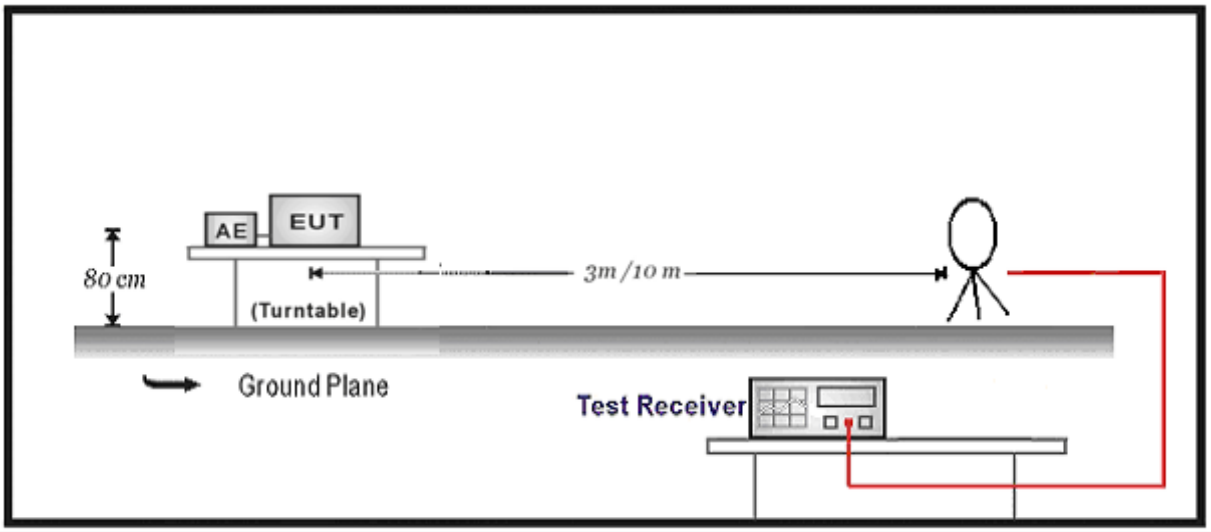
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 – 13.8	300(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30(Note 1)
1.705 - 30	30	29.5	30(Note 1)
30 -88	100	40	3(Note 2)
88-216	150	43.5	3(Note 2)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

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

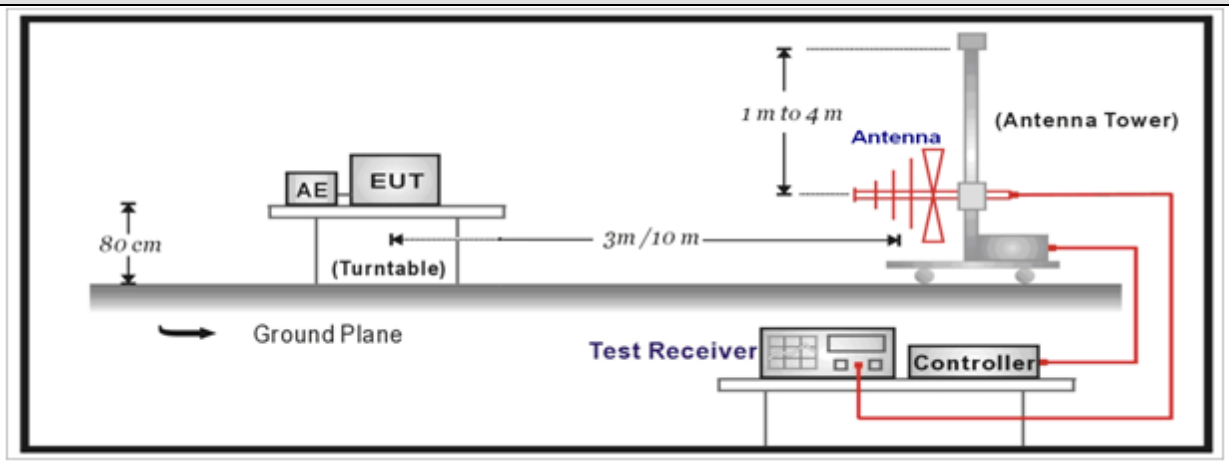
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated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

4.2.2 Test Setup

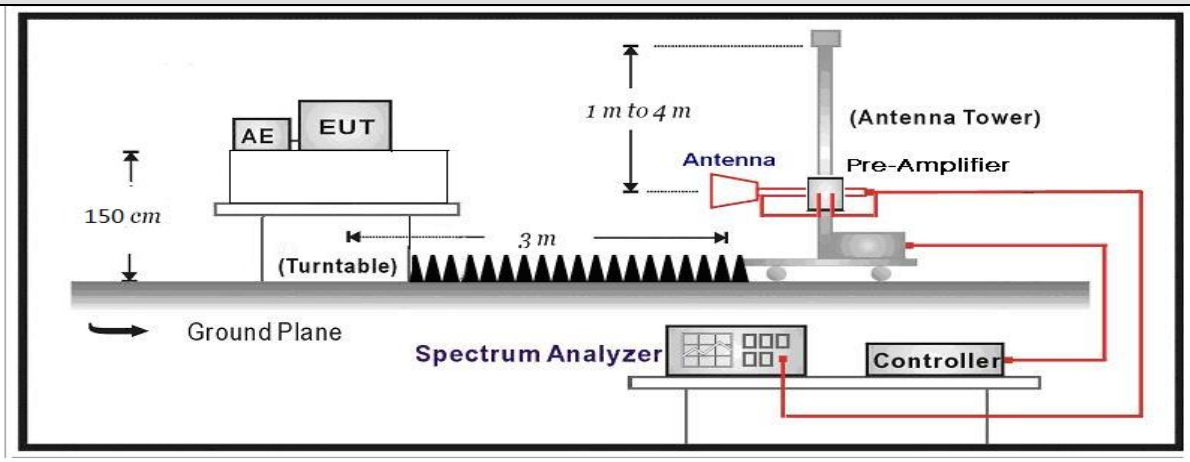
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:

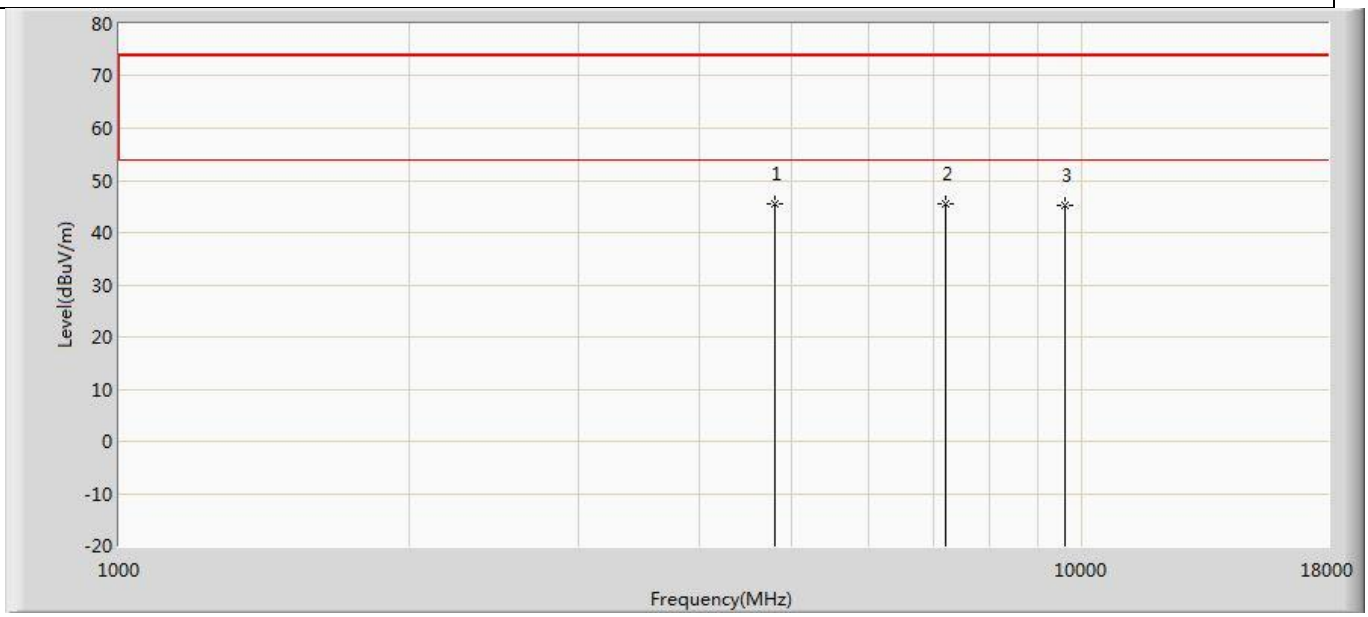


4.2.3 Test Procedure

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

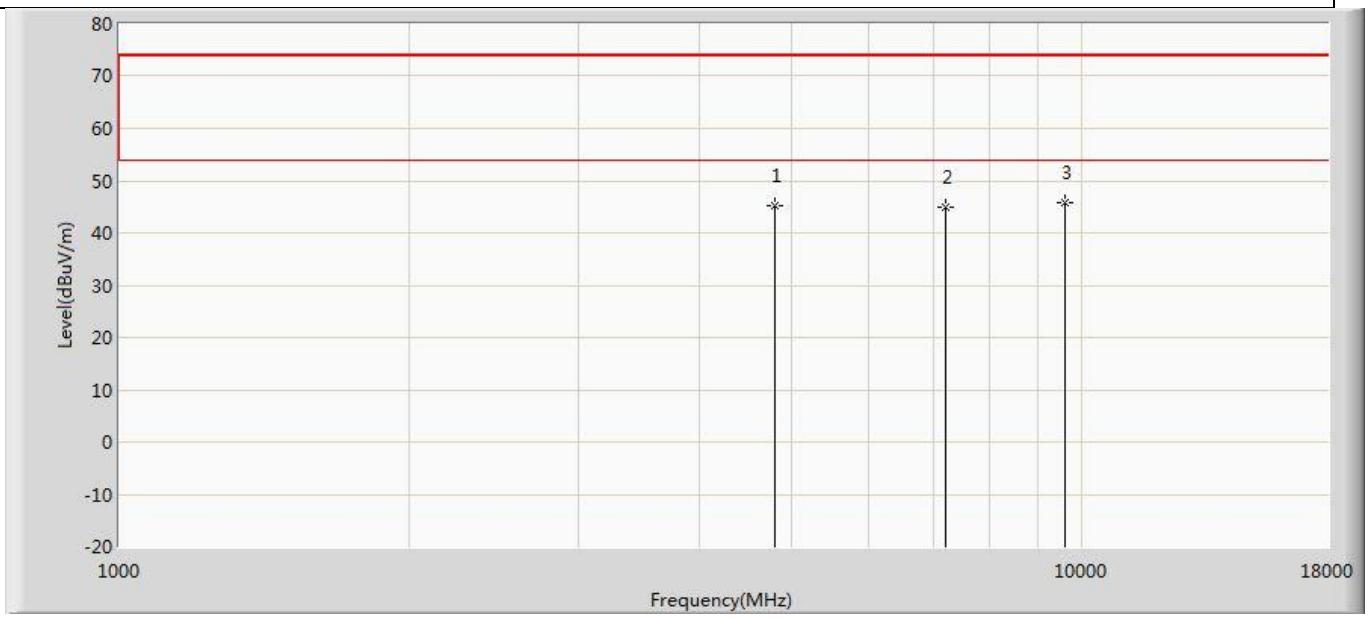
4.2.4 Test Data

Profile: 2220606R	Page No.: 25
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2402MHz by ble 1M	



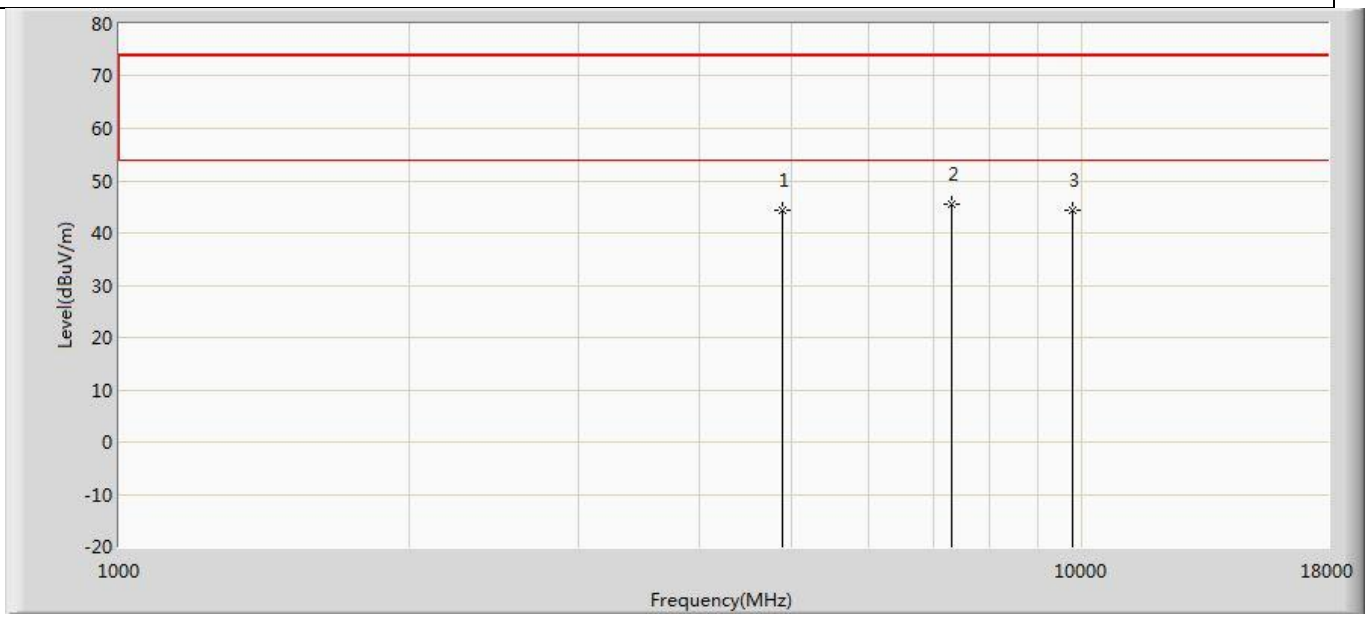
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4804.000	45.471	36.348	-28.529	74.000	9.122	PK
2		7206.000	45.414	33.734	-28.586	74.000	11.680	PK
3		9608.000	45.335	28.895	-28.665	74.000	16.440	PK

Profile: 2220606R	Page No.: 26
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2402MHz by ble 1M	



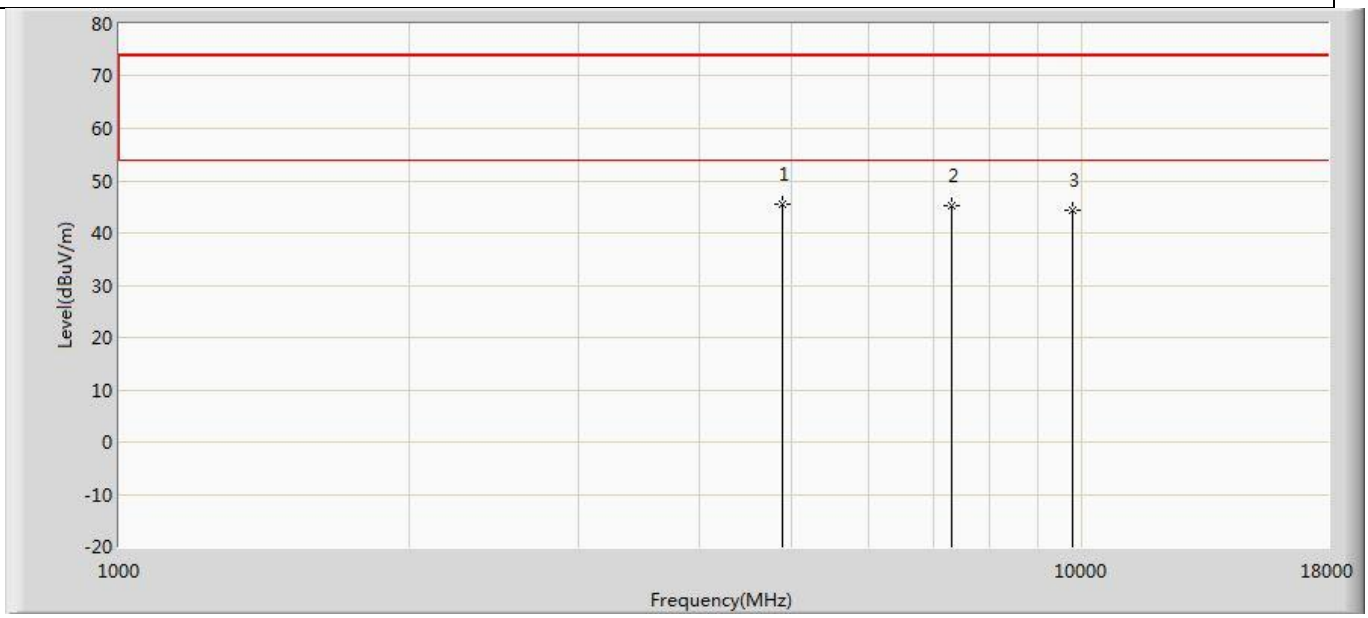
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	45.181	36.058	-28.819	74.000	9.122	PK
2		7206.000	44.912	33.232	-29.088	74.000	11.680	PK
3	*	9608.000	45.756	29.316	-28.244	74.000	16.440	PK

Profile: 2220606R	Page No.: 27
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2440MHz by ble 1M	



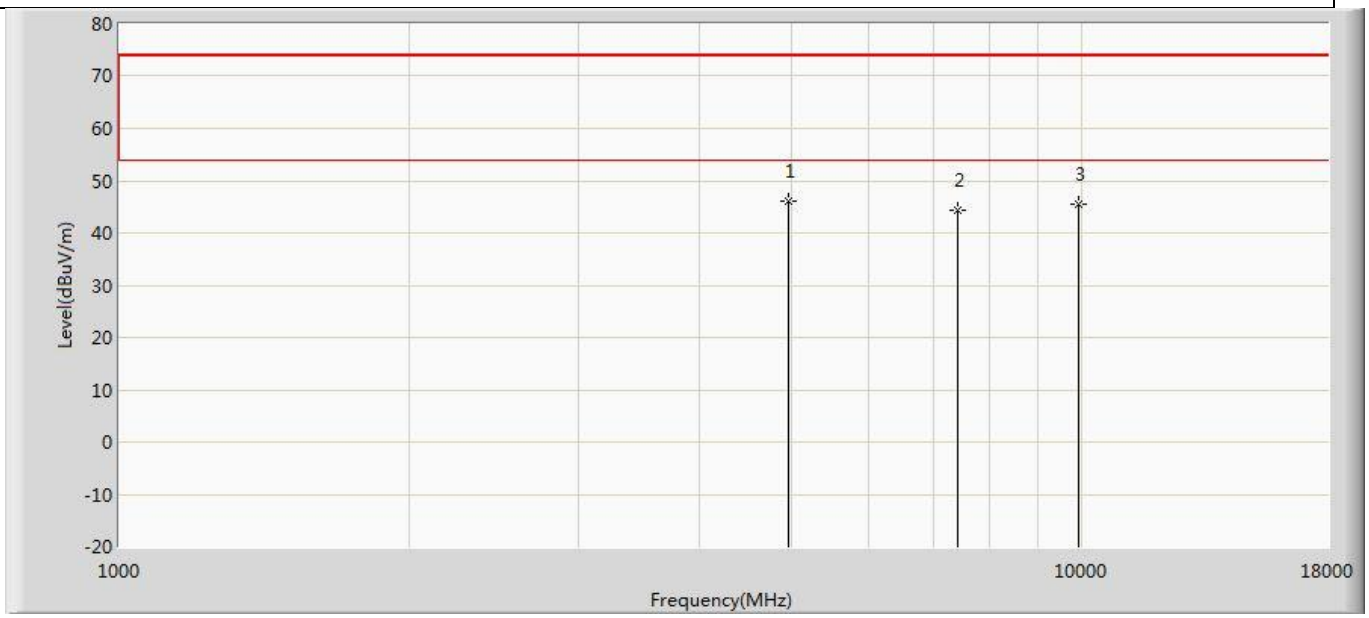
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	44.405	34.884	-29.595	74.000	9.520	PK
2	*	7320.000	45.632	33.354	-28.368	74.000	12.278	PK
3		9760.000	44.354	29.034	-29.646	74.000	15.320	PK

Profile: 2220606R	Page No.: 28
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2440MHz by ble 1M	



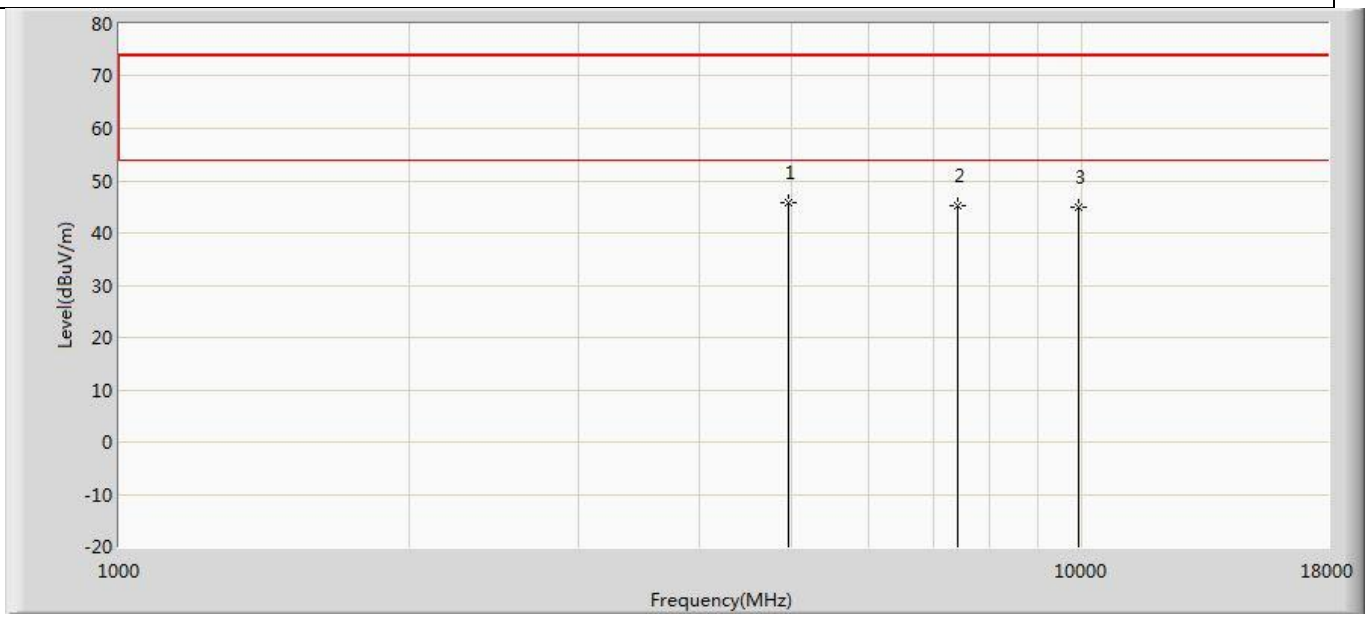
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4880.000	45.554	36.033	-28.446	74.000	9.520	PK
2		7320.000	45.153	32.875	-28.847	74.000	12.278	PK
3		9760.000	44.261	28.941	-29.739	74.000	15.320	PK

Profile: 2220606R	Page No.: 29
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2480MHz by ble 1M	



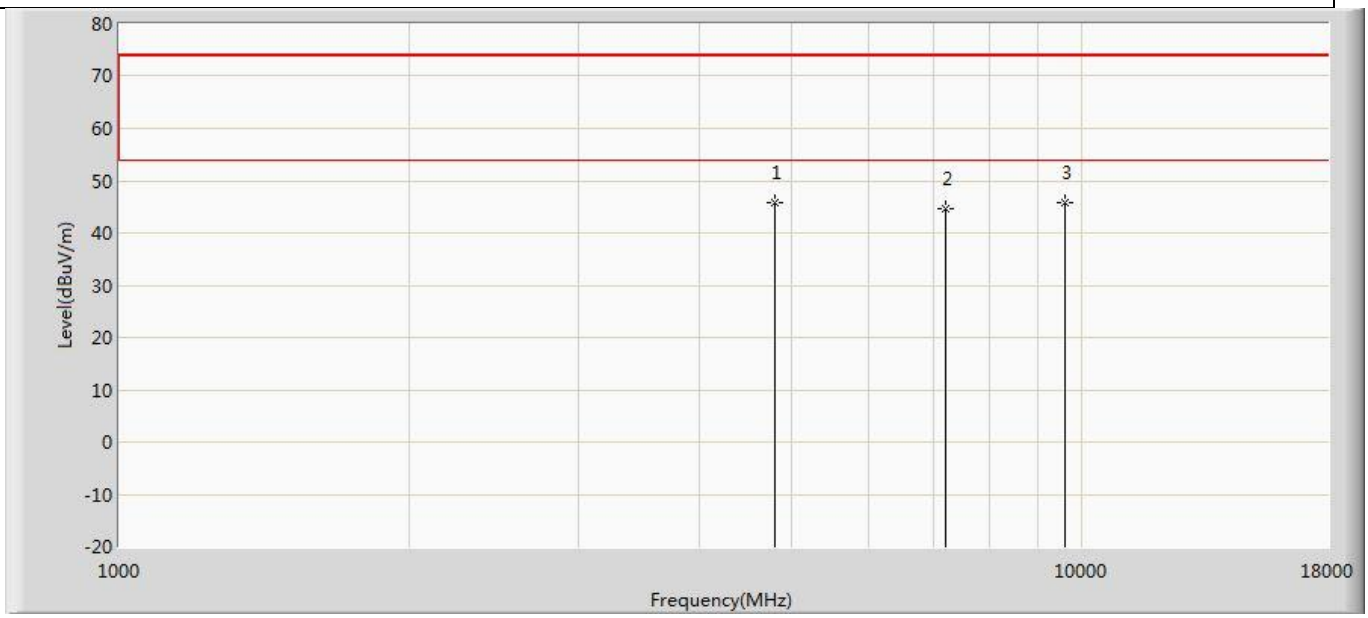
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4960.000	45.952	36.184	-28.048	74.000	9.769	PK
2		7440.000	44.257	32.386	-29.743	74.000	11.871	PK
3		9920.000	45.485	30.189	-28.515	74.000	15.296	PK

Profile: 2220606R	Page No.: 30
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2480MHz by ble 1M	



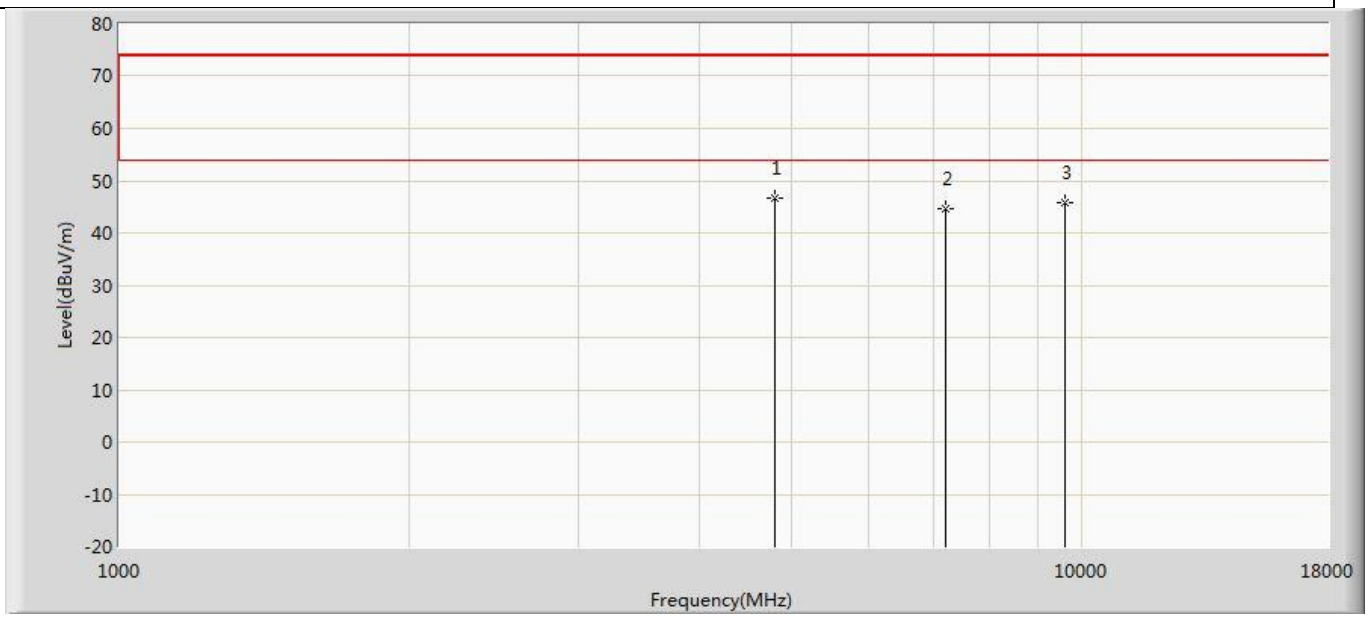
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4960.000	45.809	36.041	-28.191	74.000	9.769	PK
2		7440.000	45.125	33.254	-28.875	74.000	11.871	PK
3		9920.000	44.950	29.654	-29.050	74.000	15.296	PK

Profile: 2220606R	Page No.: 31
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:36
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2402MHz by ble 2M	



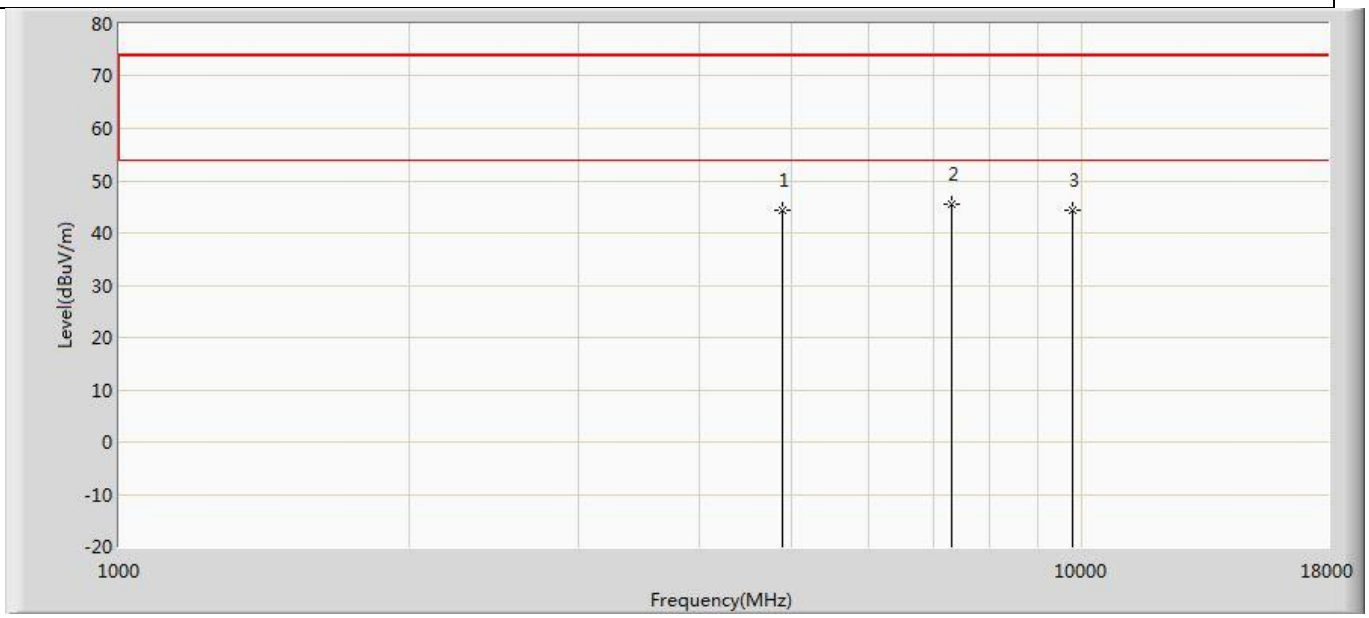
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	45.681	36.558	-28.319	74.000	9.122	PK
2		7206.000	44.608	32.928	-29.392	74.000	11.680	PK
3	*	9608.000	45.832	29.392	-28.168	74.000	16.440	PK

Profile: 2220606R	Page No.: 32
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2402MHz by ble 2M	



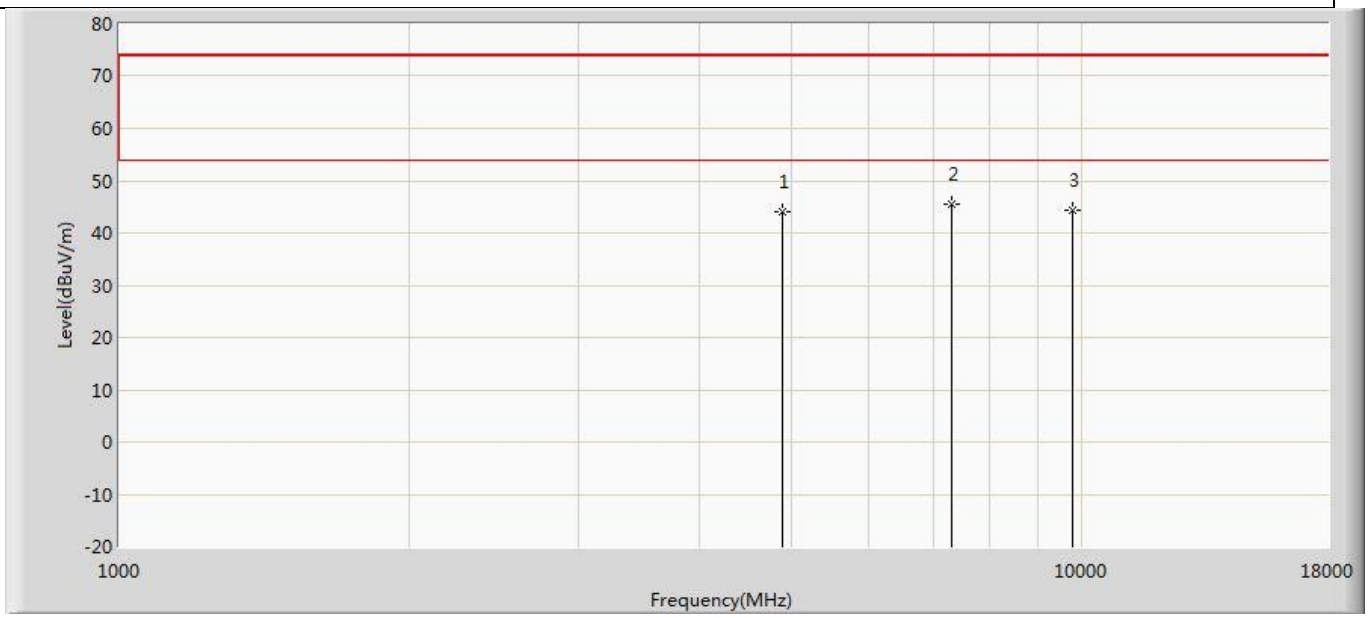
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4804.000	46.523	37.400	-27.477	74.000	9.122	PK
2		7206.000	44.705	33.025	-29.295	74.000	11.680	PK
3		9608.000	45.697	29.257	-28.303	74.000	16.440	PK

Profile: 2220606R	Page No.: 33
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2440MHz by ble 2M	



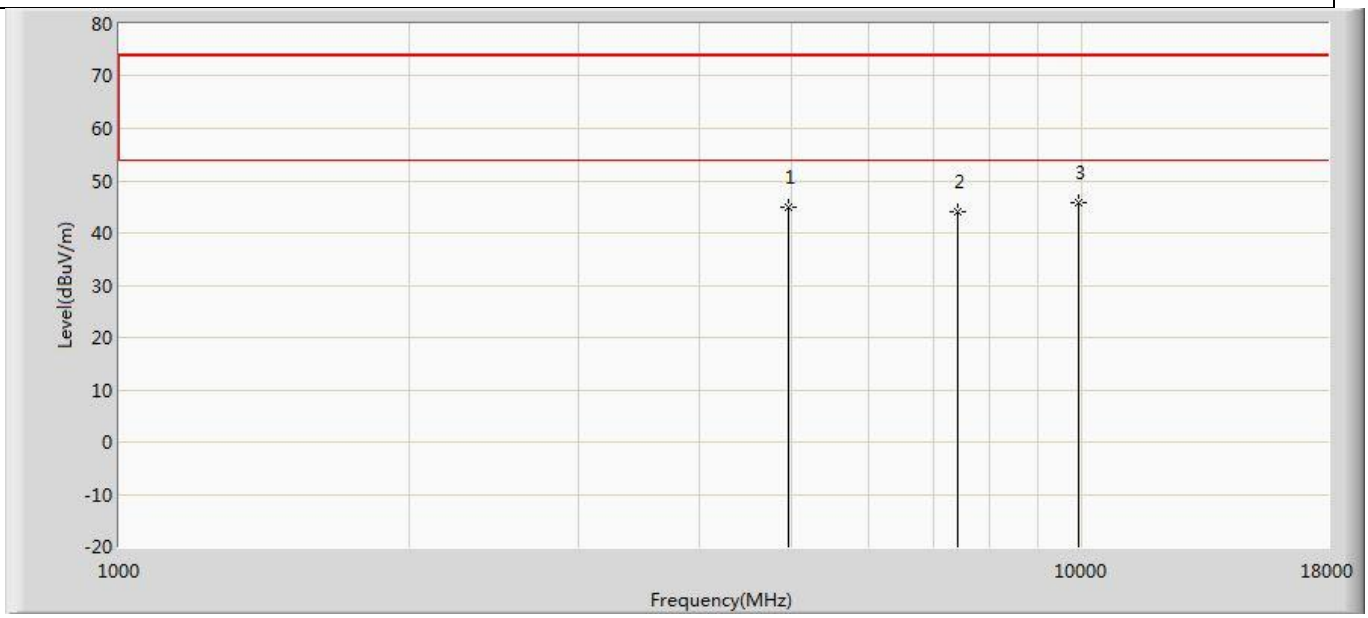
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	44.287	34.766	-29.713	74.000	9.520	PK
2	*	7320.000	45.580	33.302	-28.420	74.000	12.278	PK
3		9760.000	44.263	28.943	-29.737	74.000	15.320	PK

Profile: 2220606R	Page No.: 34
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2440MHz by ble 2M	



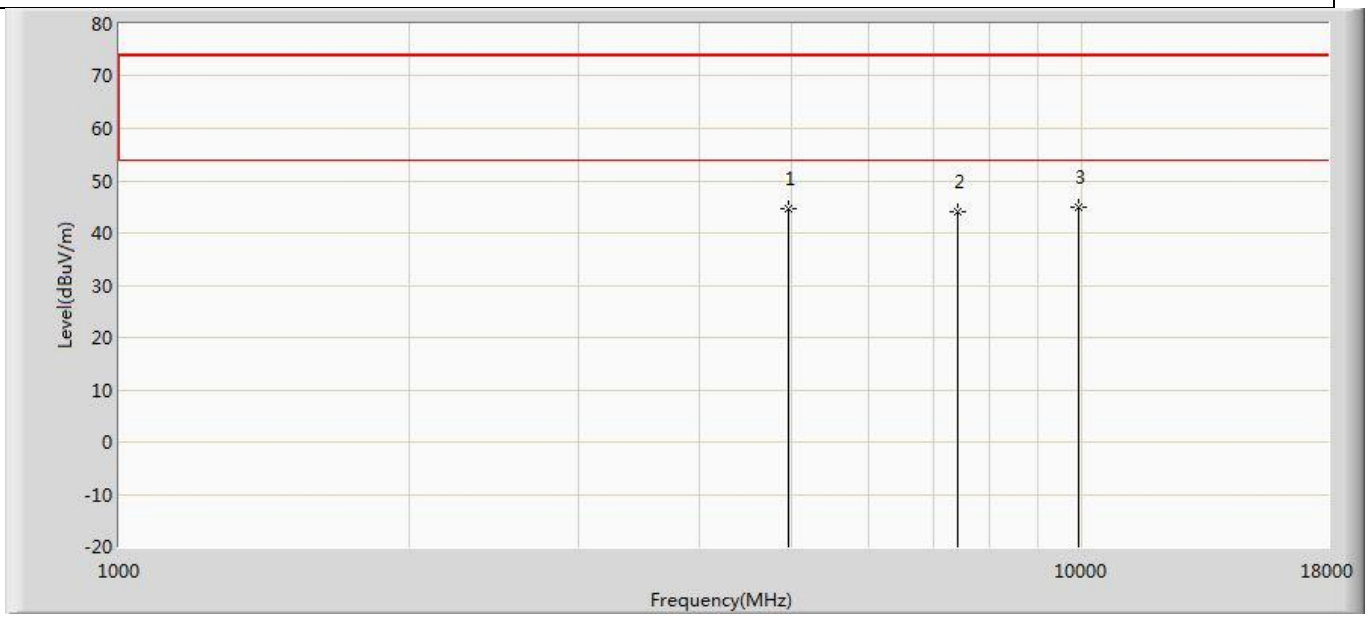
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	44.001	34.480	-29.999	74.000	9.520	PK
2	*	7320.000	45.609	33.331	-28.391	74.000	12.278	PK
3		9760.000	44.250	28.930	-29.750	74.000	15.320	PK

Profile: 2220606R	Page No.: 35
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2480MHz by ble 2M	



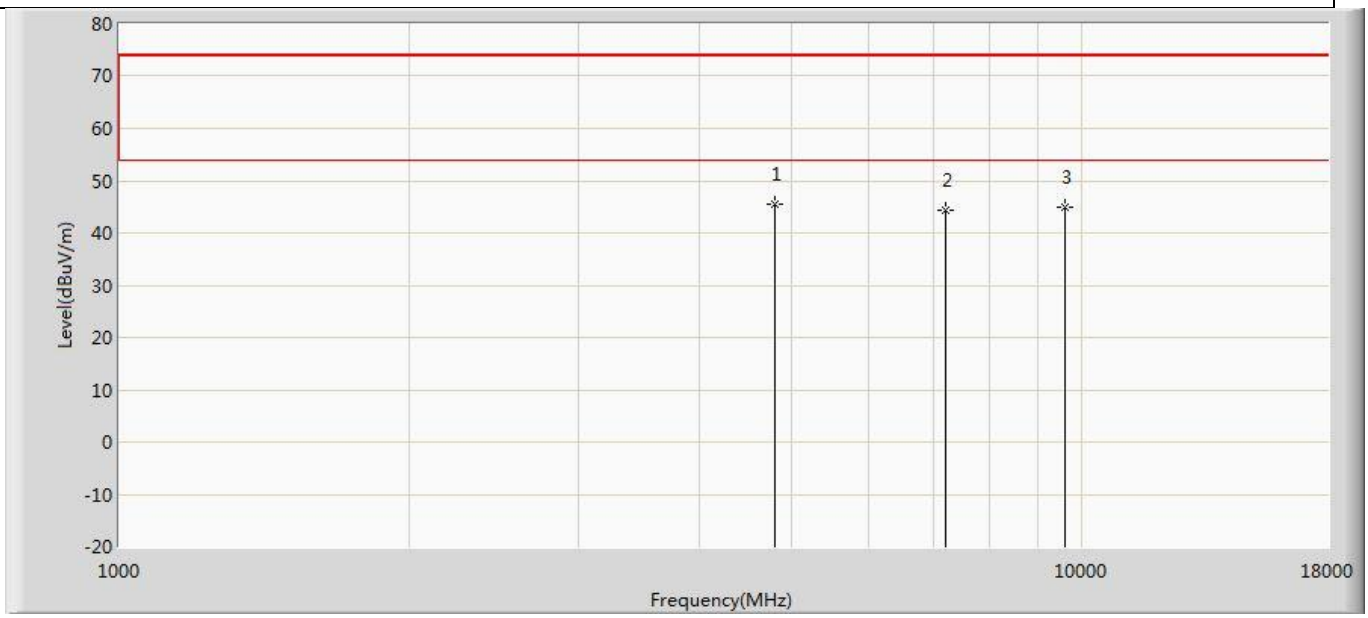
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	44.934	35.166	-29.066	74.000	9.769	PK
2		7440.000	44.161	32.290	-29.839	74.000	11.871	PK
3	*	9920.000	45.782	30.486	-28.218	74.000	15.296	PK

Profile: 2220606R	Page No.: 36
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2480MHz by ble 2M	



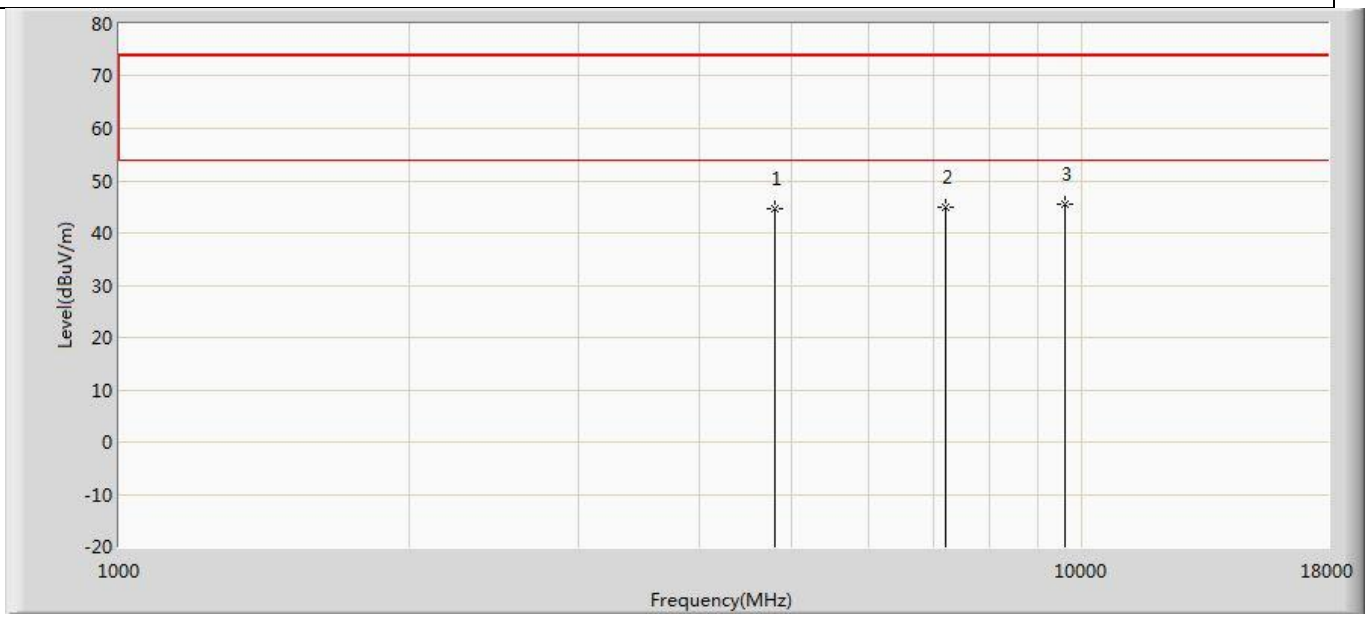
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	44.757	34.989	-29.243	74.000	9.769	PK
2		7440.000	44.011	32.140	-29.989	74.000	11.871	PK
3	*	9920.000	44.963	29.667	-29.037	74.000	15.296	PK

Profile: 2220606R	Page No.: 37
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2402MHz by ble coded 2	



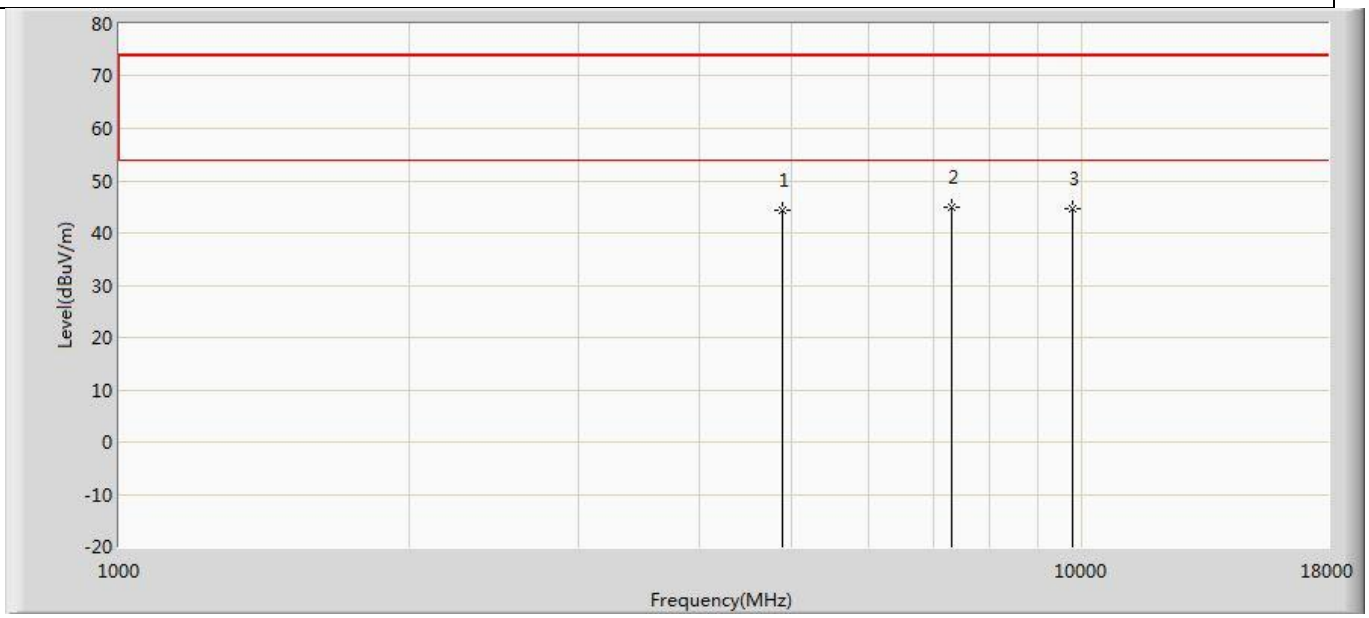
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4804.000	45.543	36.420	-28.457	74.000	9.122	PK
2		7206.000	44.319	32.639	-29.681	74.000	11.680	PK
3		9608.000	44.878	28.438	-29.122	74.000	16.440	PK

Profile: 2220606R	Page No.: 38
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2402MHz by ble coded 2	



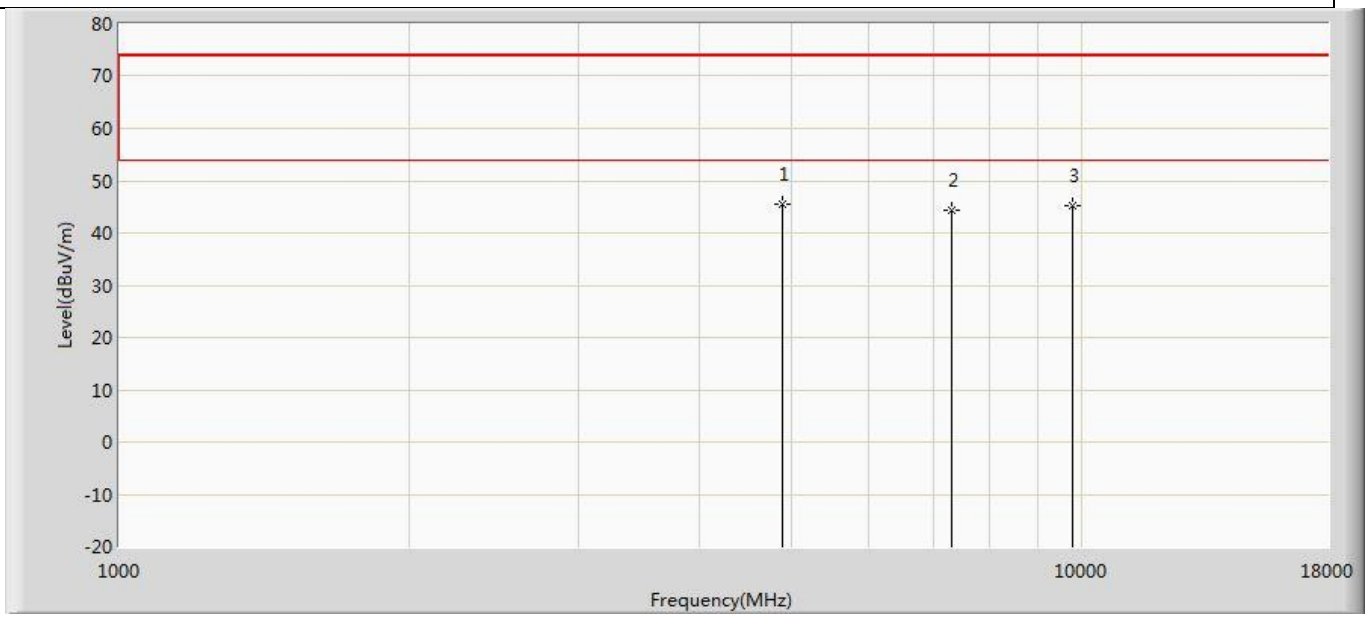
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	44.777	35.654	-29.223	74.000	9.122	PK
2		7206.000	44.931	33.251	-29.069	74.000	11.680	PK
3	*	9608.000	45.636	29.196	-28.364	74.000	16.440	PK

Profile: 2220606R	Page No.: 39
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2440MHz by ble coded 2	



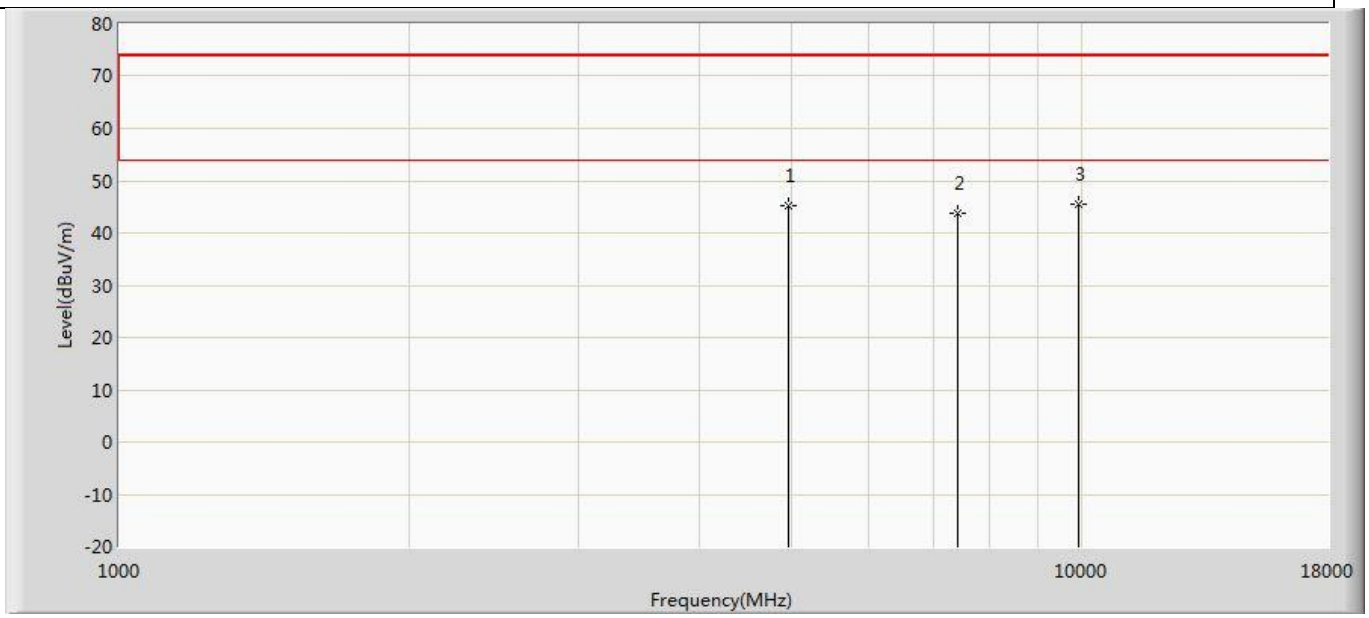
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	44.321	34.800	-29.679	74.000	9.520	PK
2	*	7320.000	45.041	32.763	-28.959	74.000	12.278	PK
3		9760.000	44.578	29.258	-29.422	74.000	15.320	PK

Profile: 2220606R	Page No.: 40
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2440MHz by ble coded 2	



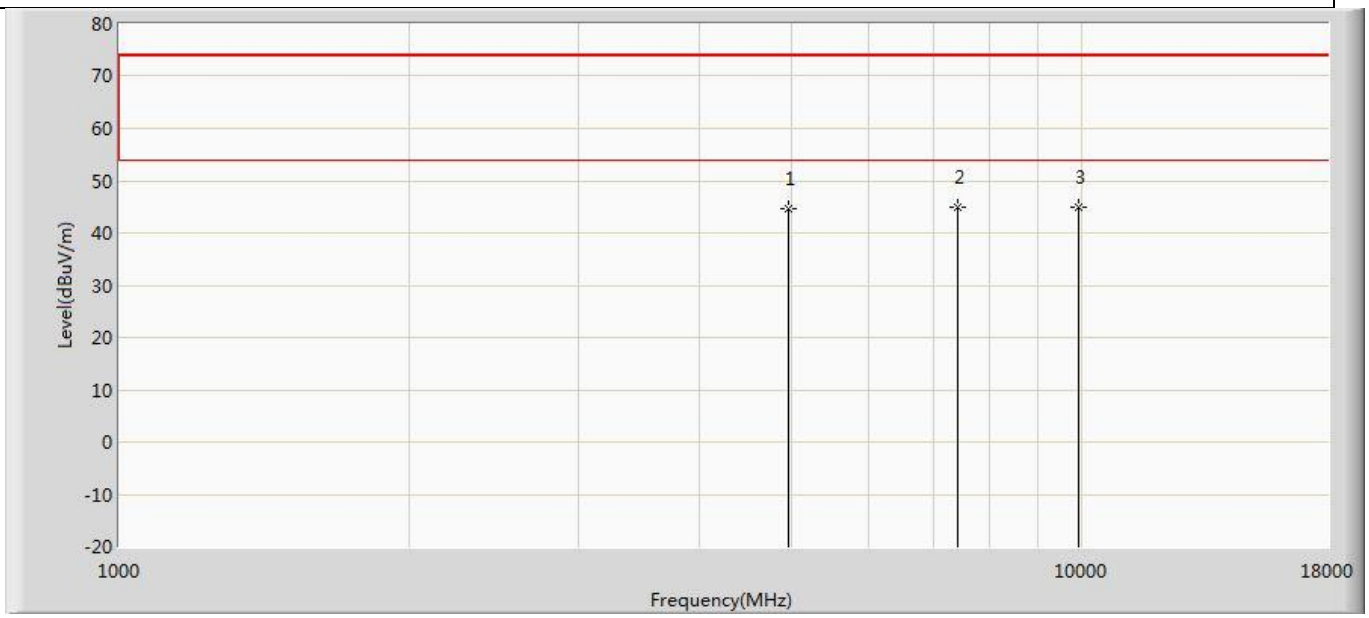
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4880.000	45.375	35.854	-28.625	74.000	9.520	PK
2		7320.000	44.487	32.209	-29.513	74.000	12.278	PK
3		9760.000	45.254	29.934	-28.746	74.000	15.320	PK

Profile: 2220606R	Page No.: 41
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2480MHz by ble coded 2	



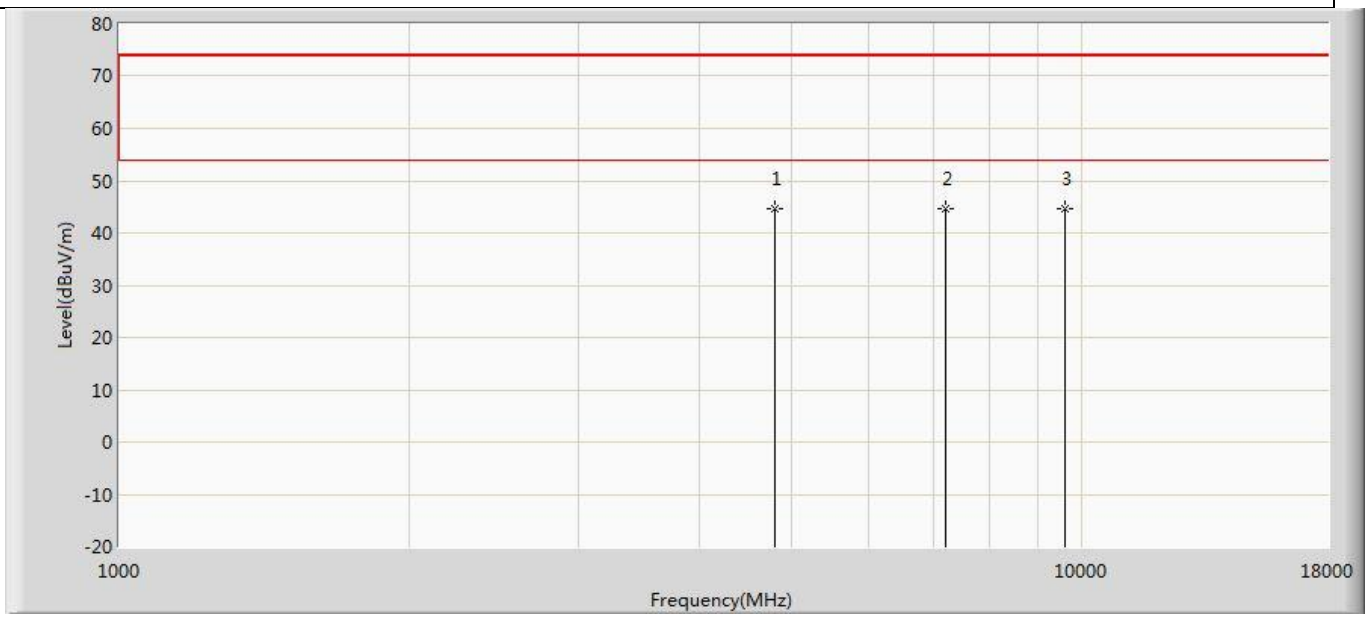
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	45.213	35.445	-28.787	74.000	9.769	PK
2		7440.000	43.692	31.821	-30.308	74.000	11.871	PK
3	*	9920.000	45.455	30.159	-28.545	74.000	15.296	PK

Profile: 2220606R	Page No.: 42
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2480MHz by ble coded 2	



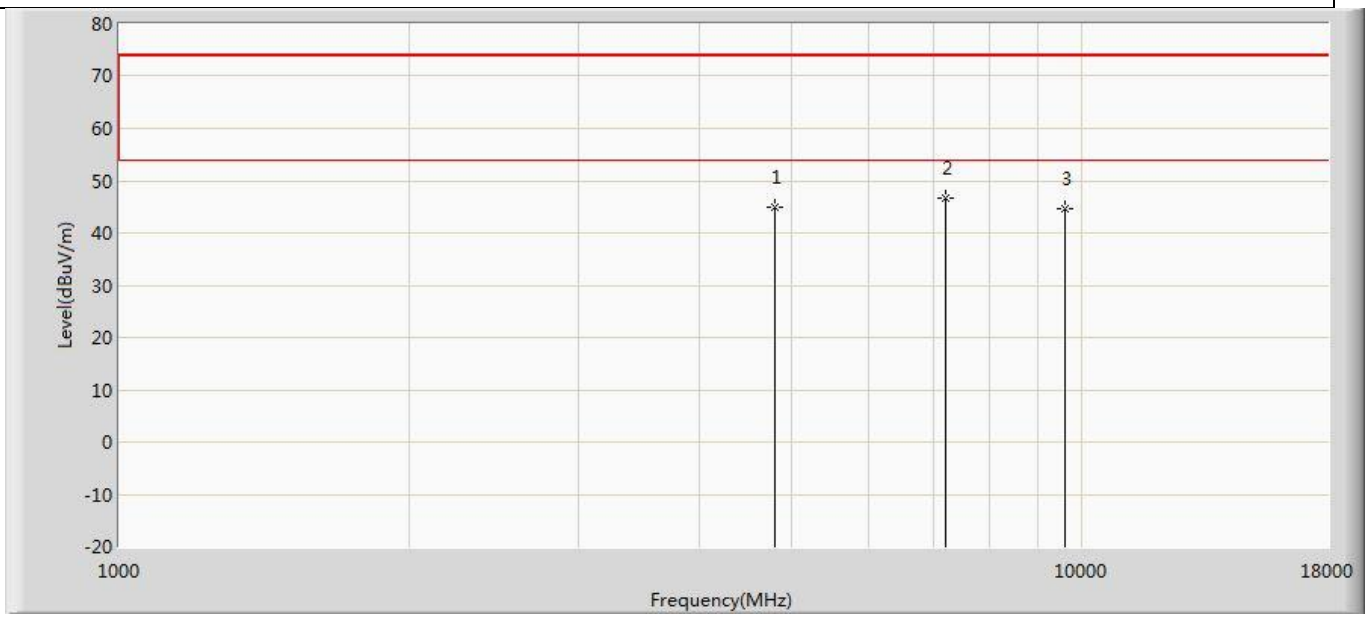
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	44.567	34.799	-29.433	74.000	9.769	PK
2	*	7440.000	45.018	33.147	-28.982	74.000	11.871	PK
3		9920.000	44.996	29.700	-29.004	74.000	15.296	PK

Profile: 2220606R	Page No.: 43
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:37
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2402MHz by ble coded 8	



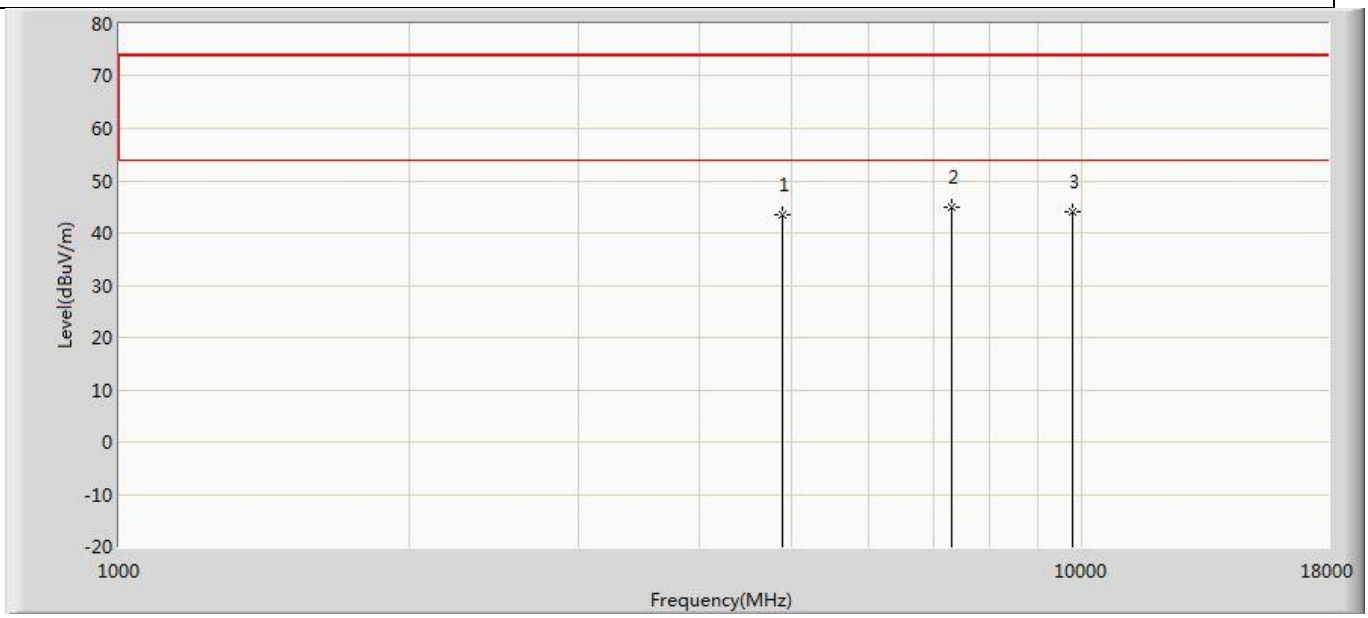
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	44.651	35.528	-29.349	74.000	9.122	PK
2		7206.000	44.624	32.944	-29.376	74.000	11.680	PK
3	*	9608.000	44.715	28.275	-29.285	74.000	16.440	PK

Profile: 2220606R	Page No.: 44
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2402MHz by ble coded 8	



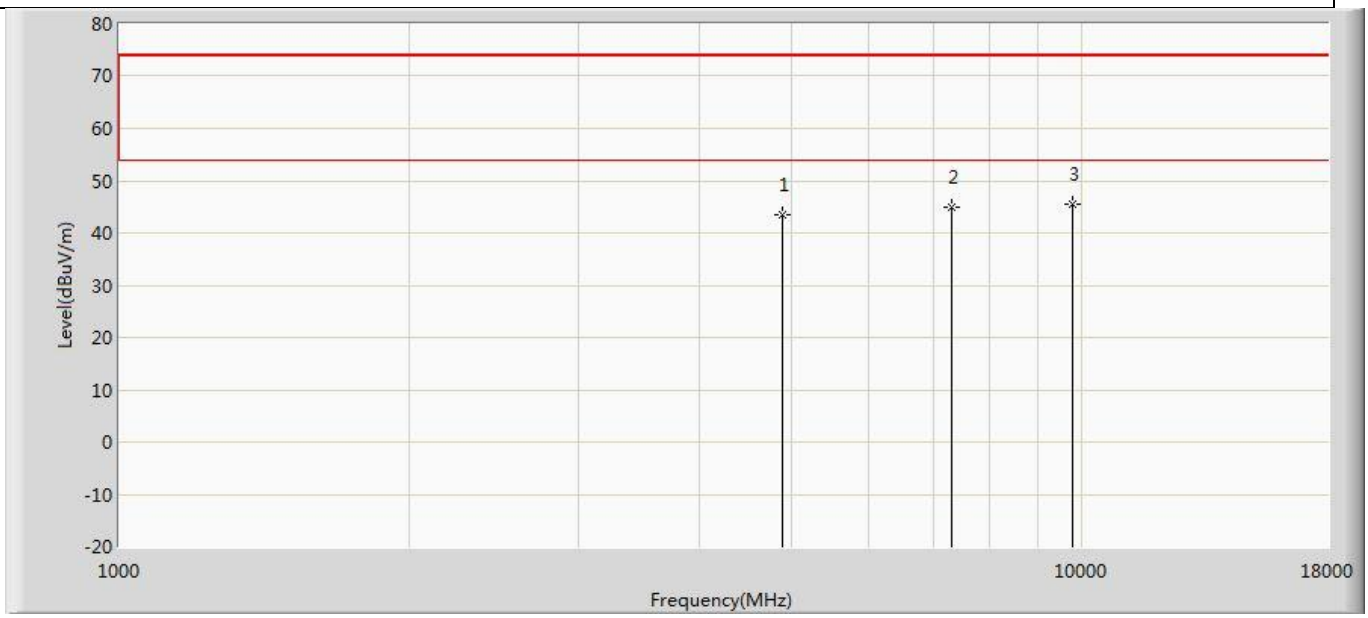
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	44.880	35.757	-29.120	74.000	9.122	PK
2	*	7206.000	46.741	35.061	-27.259	74.000	11.680	PK
3		9608.000	44.647	28.207	-29.353	74.000	16.440	PK

Profile: 2220606R	Page No.: 45
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2440MHz by ble coded 8	



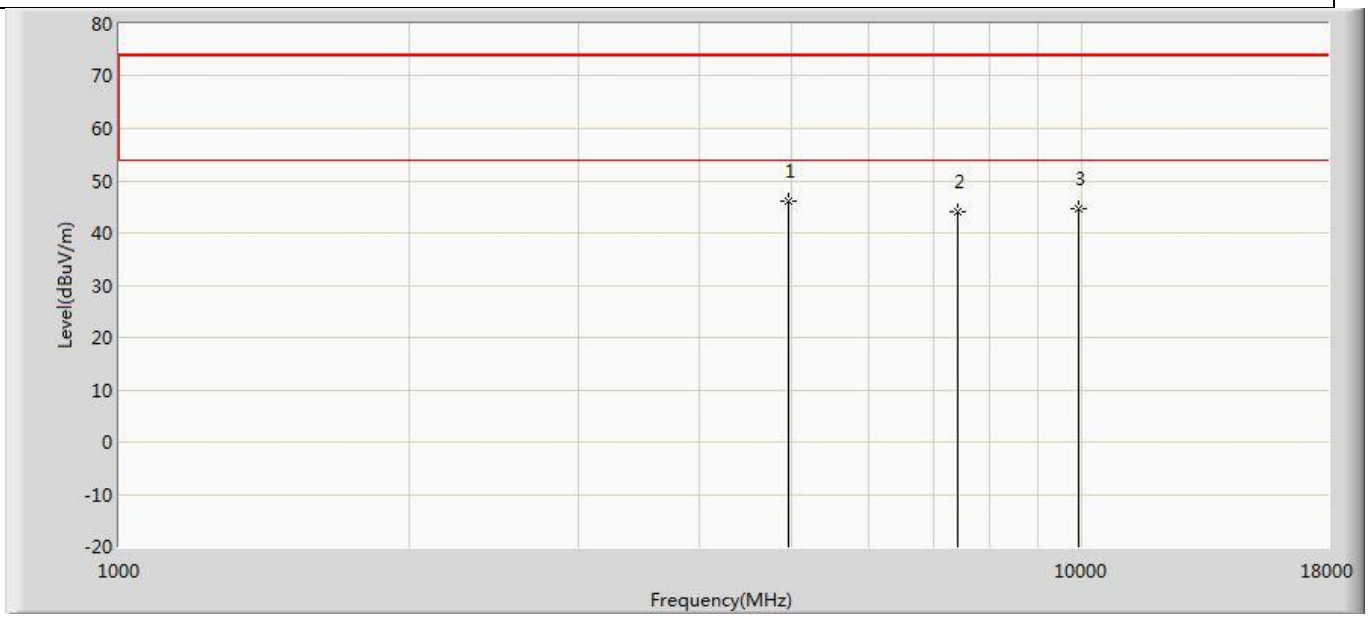
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	43.379	33.858	-30.621	74.000	9.520	PK
2	*	7320.000	44.859	32.581	-29.141	74.000	12.278	PK
3		9760.000	44.002	28.682	-29.998	74.000	15.320	PK

Profile: 2220606R	Page No.: 46
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2440MHz by ble coded 8	



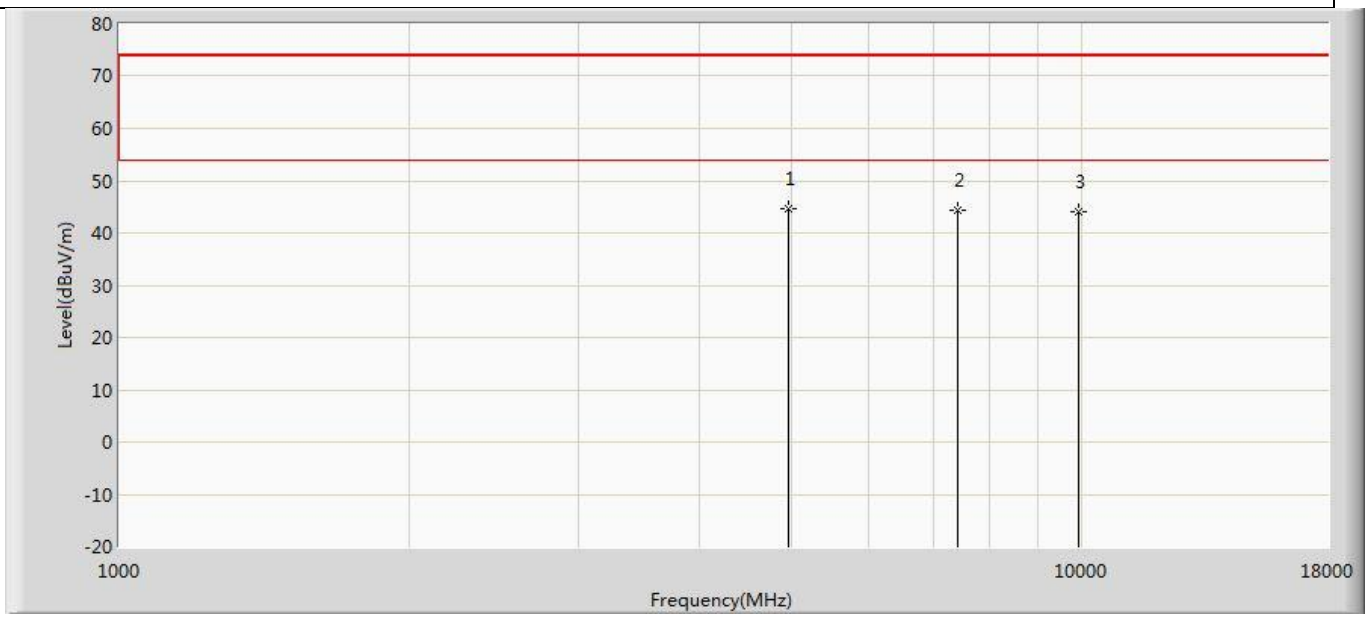
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	43.366	33.845	-30.634	74.000	9.520	PK
2		7320.000	45.029	32.751	-28.971	74.000	12.278	PK
3	*	9760.000	45.394	30.074	-28.606	74.000	15.320	PK

Profile: 2220606R	Page No.: 47
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2480MHz by ble coded 8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4960.000	45.955	36.187	-28.045	74.000	9.769	PK
2		7440.000	43.949	32.078	-30.051	74.000	11.871	PK
3		9920.000	44.631	29.335	-29.369	74.000	15.296	PK

Profile: 2220606R	Page No.: 48
Engineer: Carlos shen	
Site: AC5	Time: 2022/03/22 - 22:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2480MHz by ble coded 8	

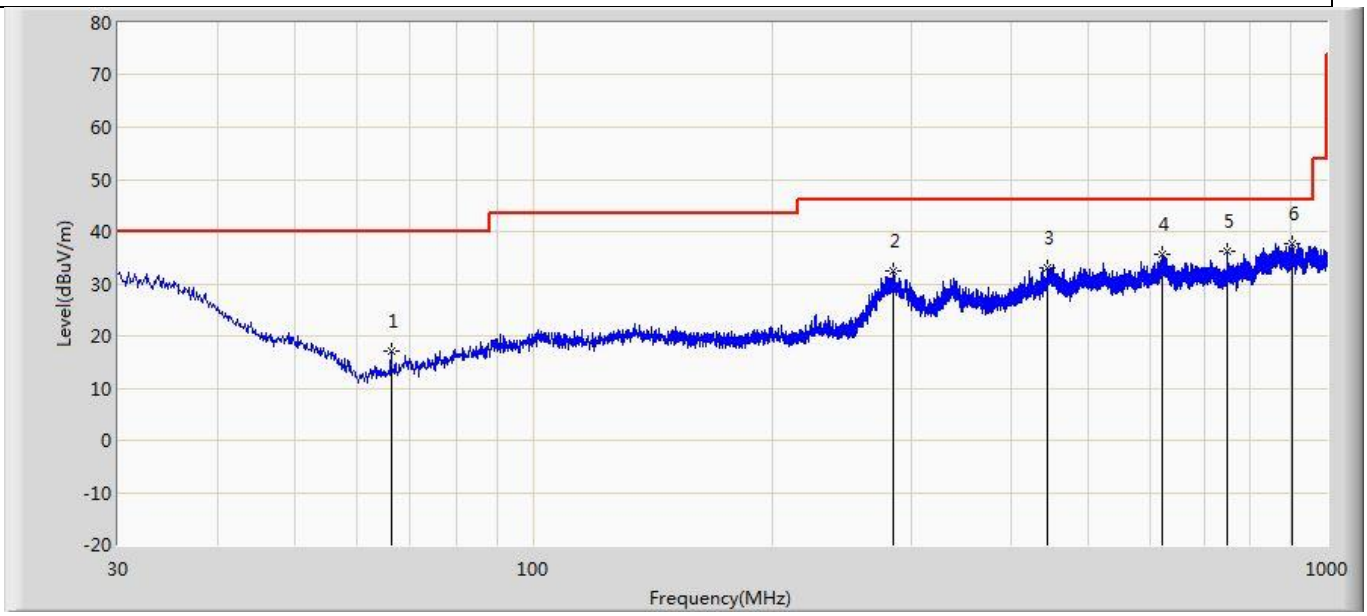


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	4960.000	44.698	34.930	-29.302	74.000	9.769	PK
2		7440.000	44.401	32.530	-29.599	74.000	11.871	PK
3		9920.000	44.193	28.897	-29.807	74.000	15.296	PK

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.

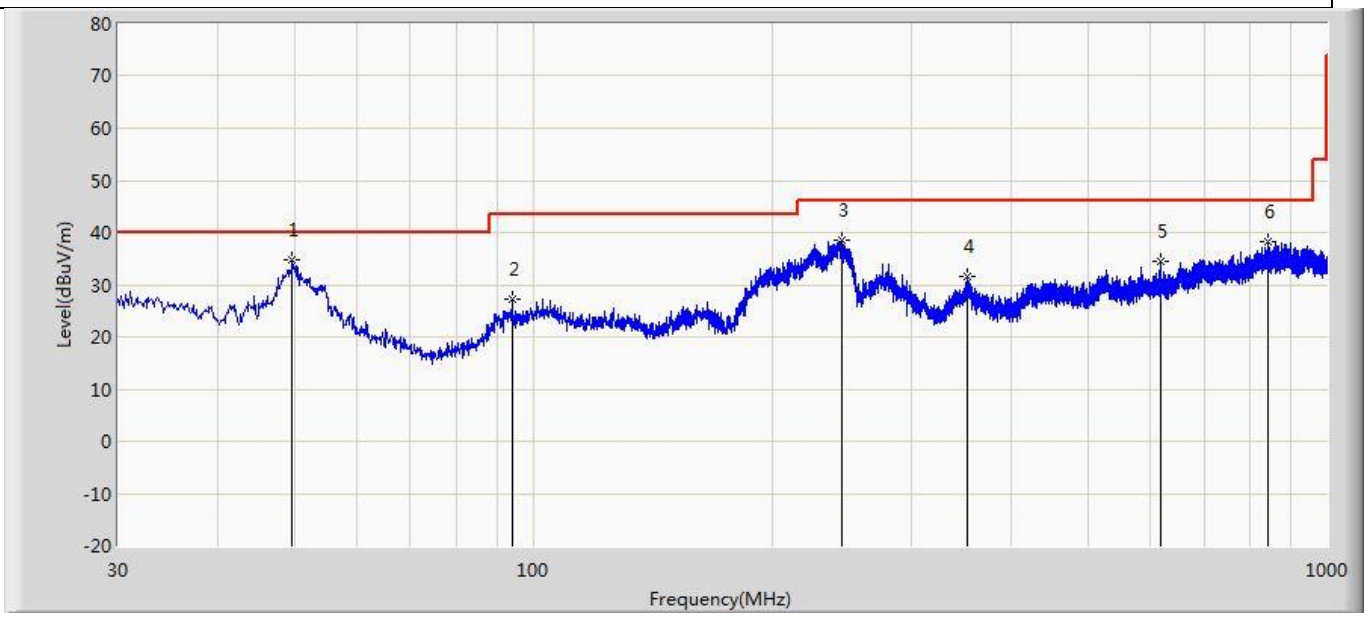
The worst case of Radiated Emission below 1GHz:

Profile: 2220606R	Page No.: 1
Engineer: Neil	
Site: AC2	Time: 2022/04/21 - 09:11
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		66.254	17.139	6.721	-22.861	40.000	10.418	QP
2		284.261	32.411	12.048	-13.589	46.000	20.363	QP
3		443.826	32.971	6.615	-13.029	46.000	26.356	QP
4		619.396	35.554	4.854	-10.446	46.000	30.700	QP
5		748.042	36.356	6.972	-9.644	46.000	29.384	QP
6	*	903.849	37.720	4.533	-8.280	46.000	33.187	QP

Profile: 2220606R	Page No.: 2
Engineer: Neil	
Site: AC2	Time: 2022/04/21 - 19:04
Limit: FCC_Part15.109_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
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	34.739	15.309	-5.261	40.000	19.430	QP
2		94.020	27.364	8.023	-16.136	43.500	19.341	QP
3		244.491	38.562	14.853	-7.438	46.000	23.709	QP
4		353.010	31.607	6.508	-14.393	46.000	25.099	QP
5		617.820	34.441	6.424	-11.559	46.000	28.017	QP
6		842.860	38.264	5.783	-7.736	46.000	32.481	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

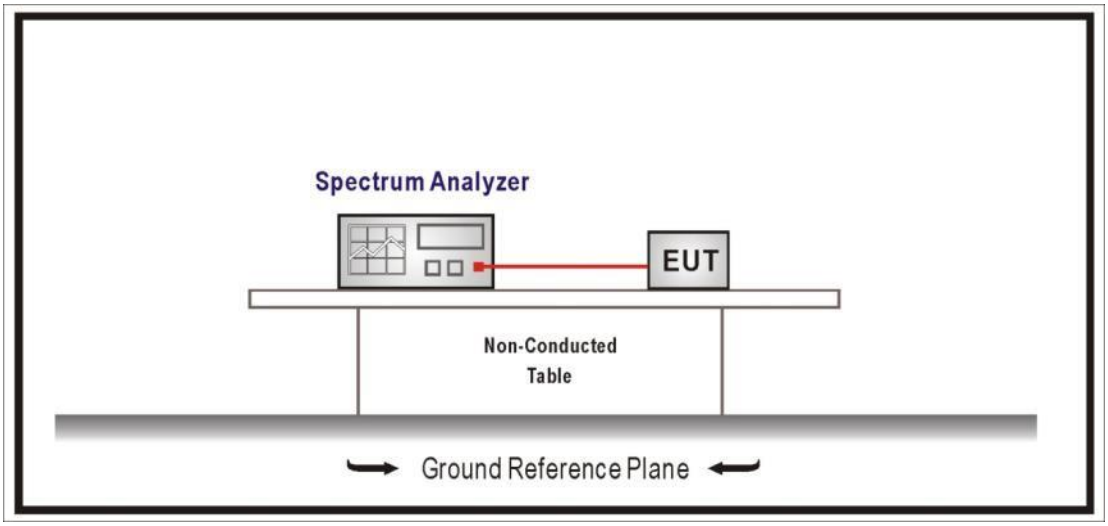
4.3.1 Limit

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



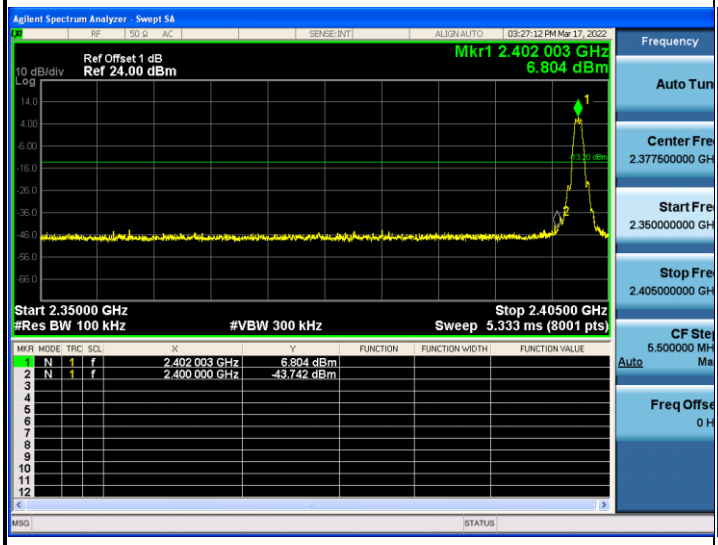
4.3.3 Test Procedure

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

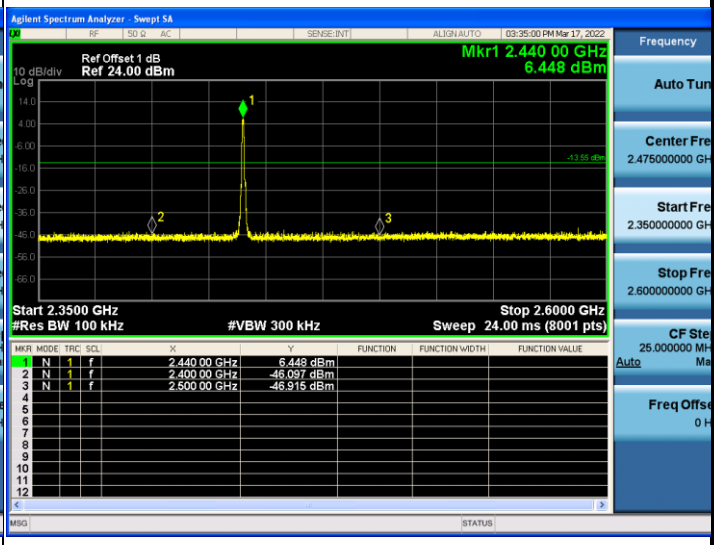
4.3.4 Test Data

Mode	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	6.804	2400	-43.742	50.546	≥20	Pass
	19	2440	6.448	2400/2500	-46.097/46.915	52.545/53.363	≥20	Pass
	39	2480	6.447	2500	-46.814	53.261	≥20	Pass
2	00	2402	6.763	2400	-25.915	32.678	≥20	Pass
	19	2440	6.462	2400/2500	-46.099/-46.059	52.561/52.521	≥20	Pass
	39	2480	6.459	2500	-46.643	53.102	≥20	Pass
3	00	2402	6.735	2400	-43.277	50.012	≥20	Pass
	19	2440	6.180	2400/2500	-47.948/-46.434	54.128/52.614	≥20	Pass
	39	2480	6.405	2500	-46.972	53.377	≥20	Pass
4	00	2402	6.560	2400	-43.337	49.897	≥20	Pass
	19	2440	6.267	2400/2500	-47.025/-46.377	53.292/52.644	≥20	Pass
	39	2480	5.882	2500	-45.707	51.589	≥20	Pass

Mode 1 CH00 (2402MHz)

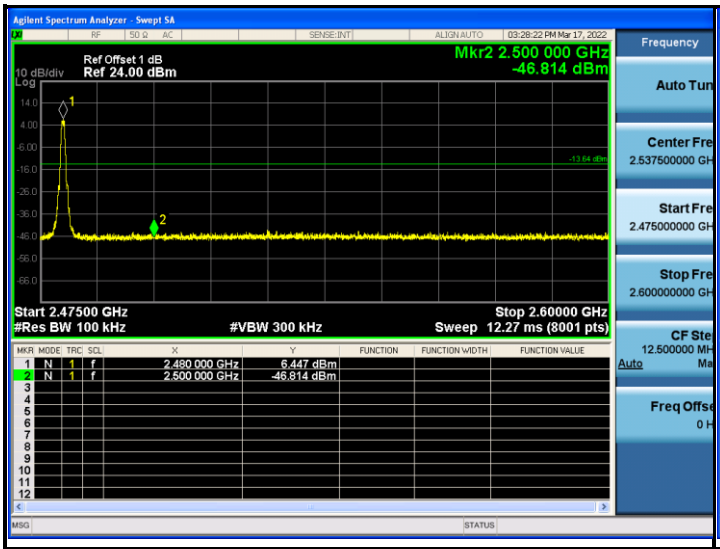


Mode 1 CH19 (2440MHz)

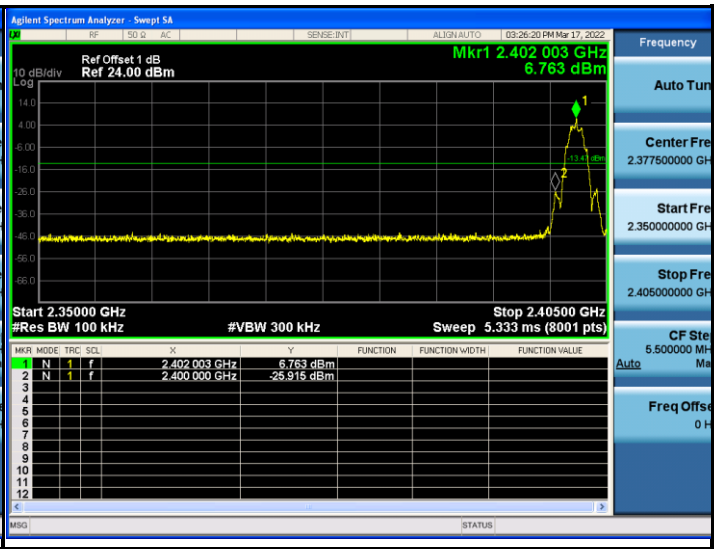


Mode 1 CH39 (2480MHz)

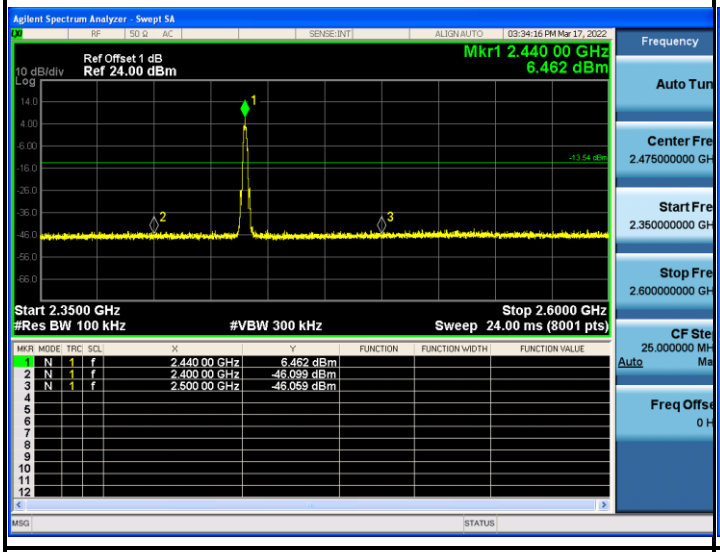
Mode 2 CH00 (2402MHz)



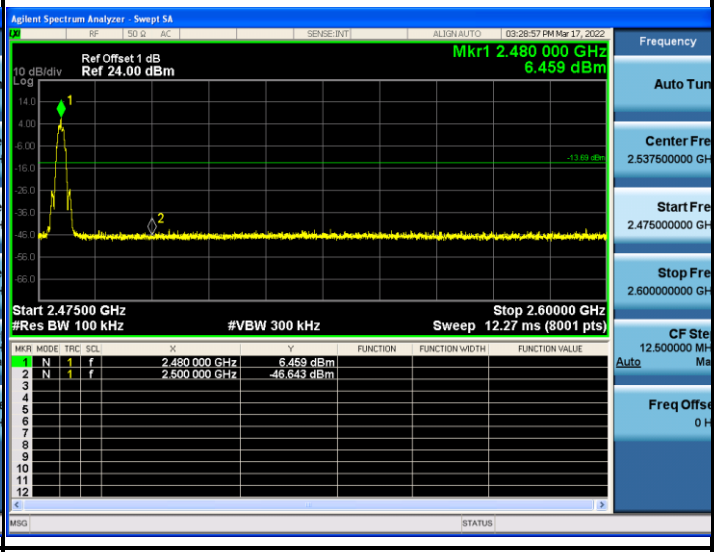
Mode 2 CH19 (2440MHz)



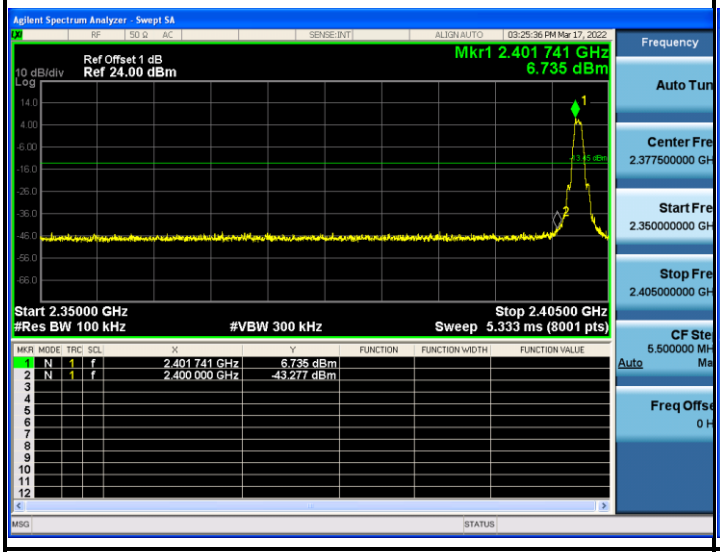
Mode 2 CH39 (2480MHz)



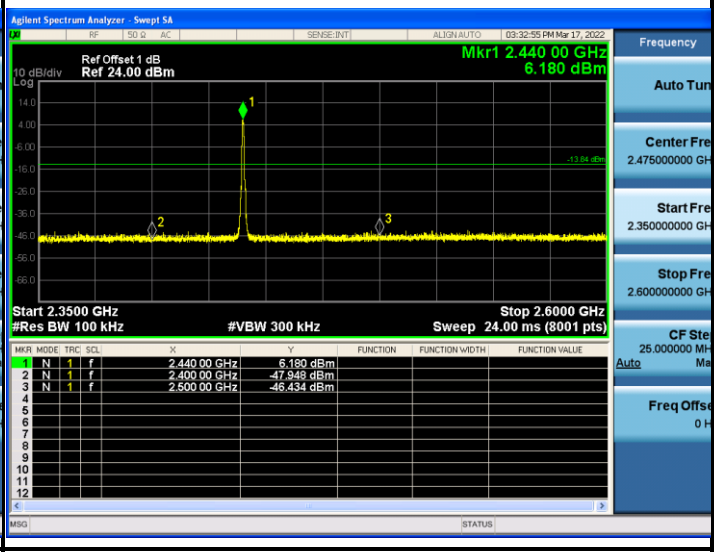
Mode 3 CH00 (2402MHz)



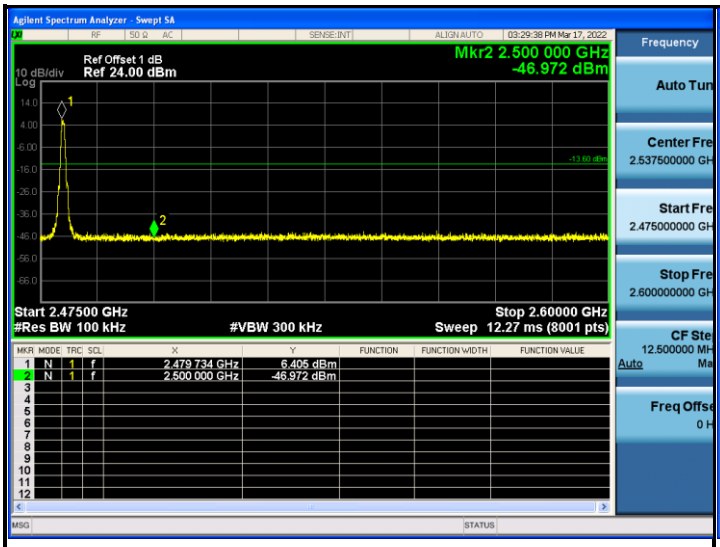
Mode 3 CH19 (2440MHz)

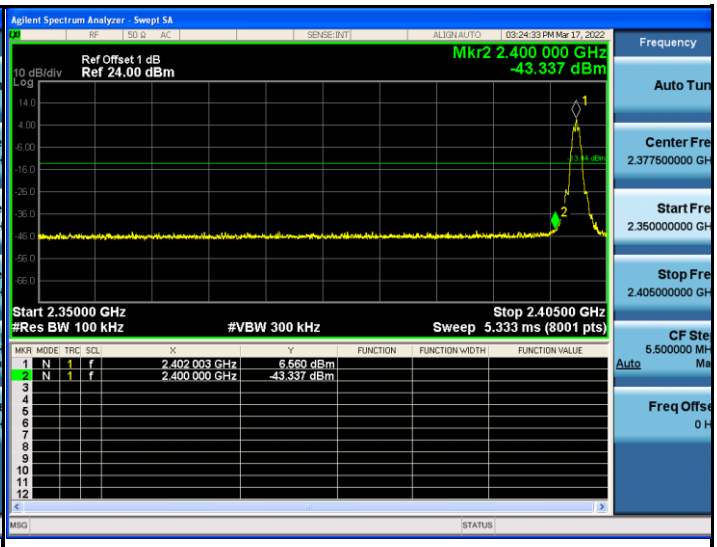


Mode 3 CH39 (2480MHz)

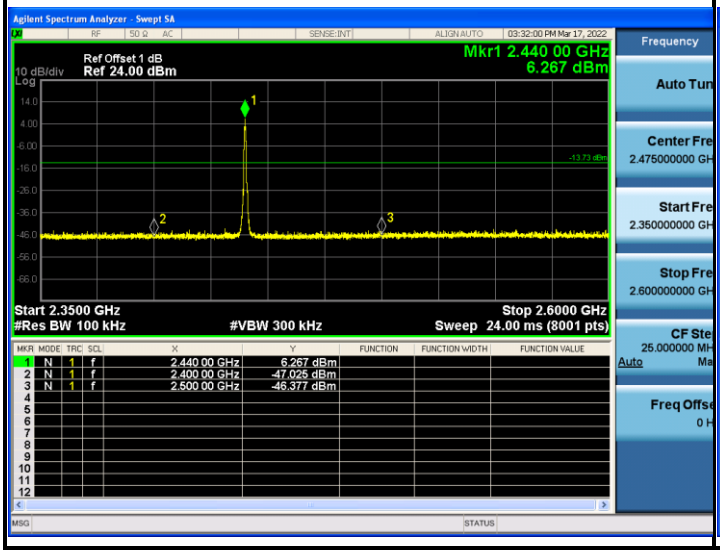


Mode 4 CH00 (2402MHz)

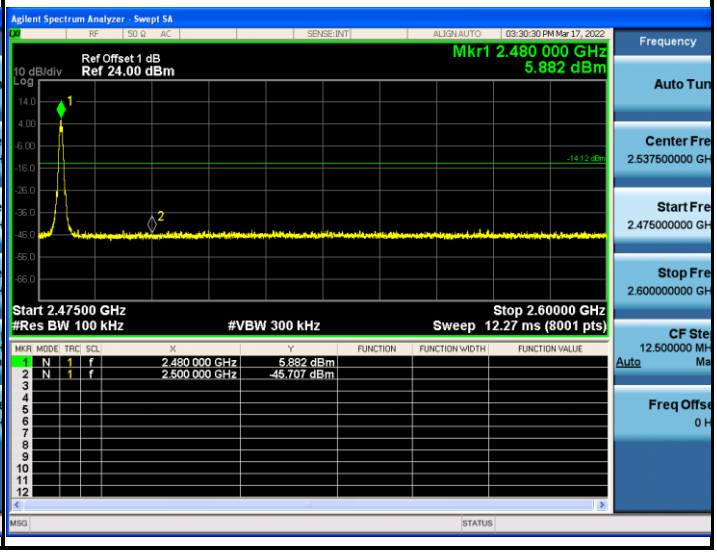




Mode 4 CH19 (2440MHz)

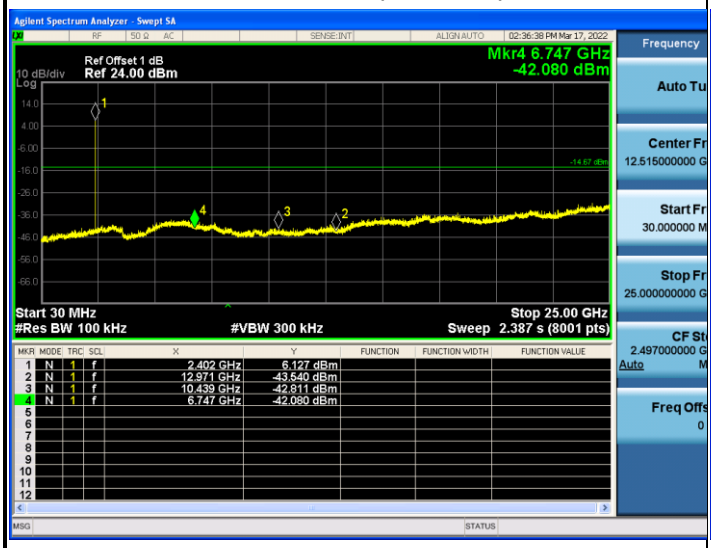


Mode 4 CH39 (2480MHz)

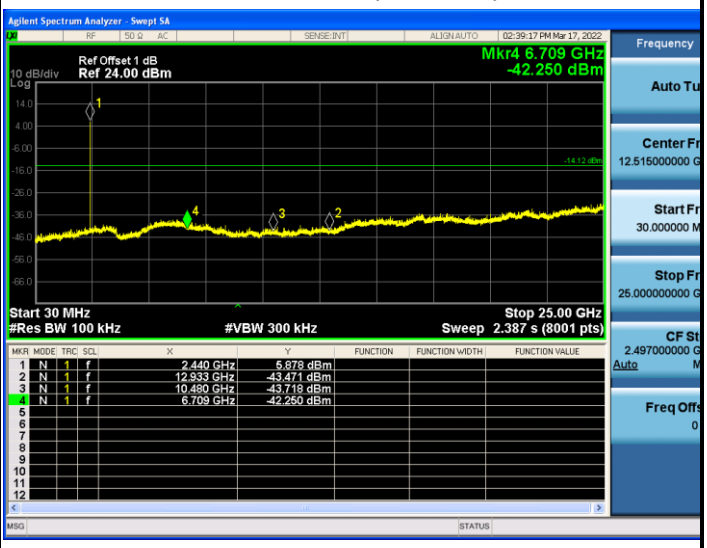


The data of entire corresponding spectrum:

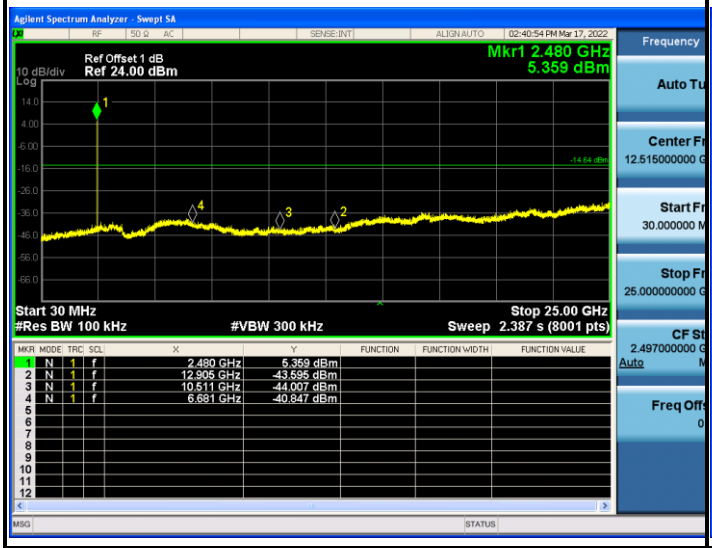
Mode 1 CH00 (2402MHz)



Mode 1 CH19 (2440MHz)



Mode 1 CH39 (2480MHz)



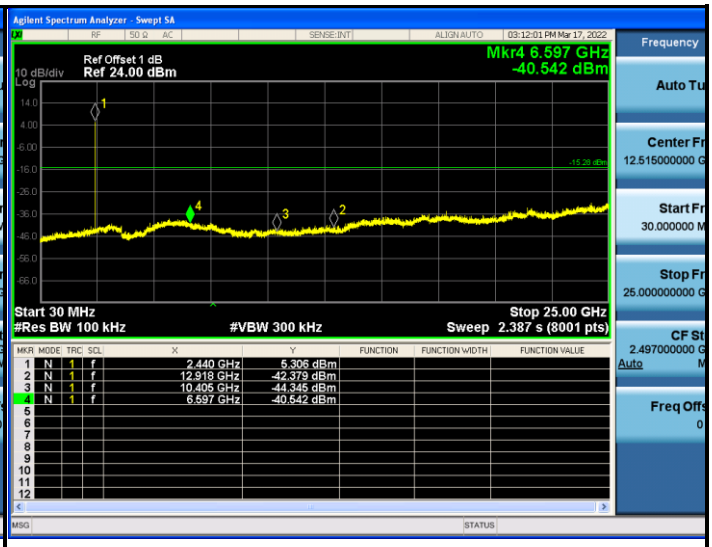
Mode 2 CH00 (2402MHz)

Mode 2 CH19 (2440MHz)

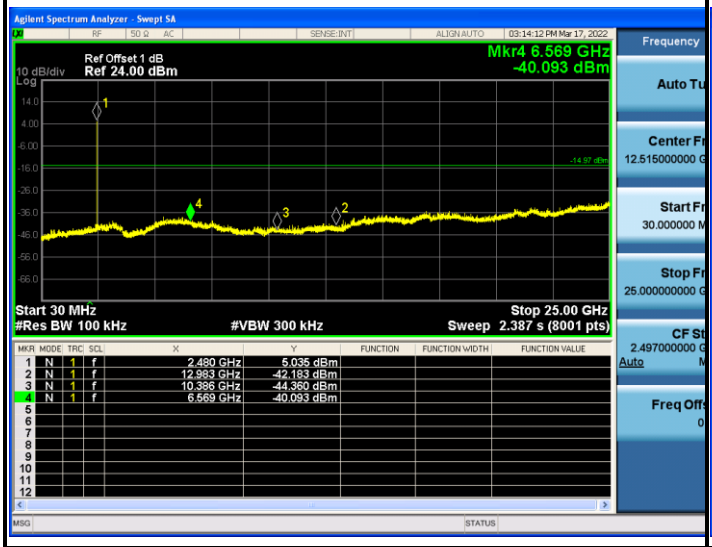
Mode 2 CH39 (2480MHz)

Mode 3 CH00 (2402MHz)

Mode 3 CH19 (2440MHz)



Mode 3 CH39 (2480MHz)



Mode 4 CH00 (2402MHz)

Mode 4 CH19 (2440MHz)

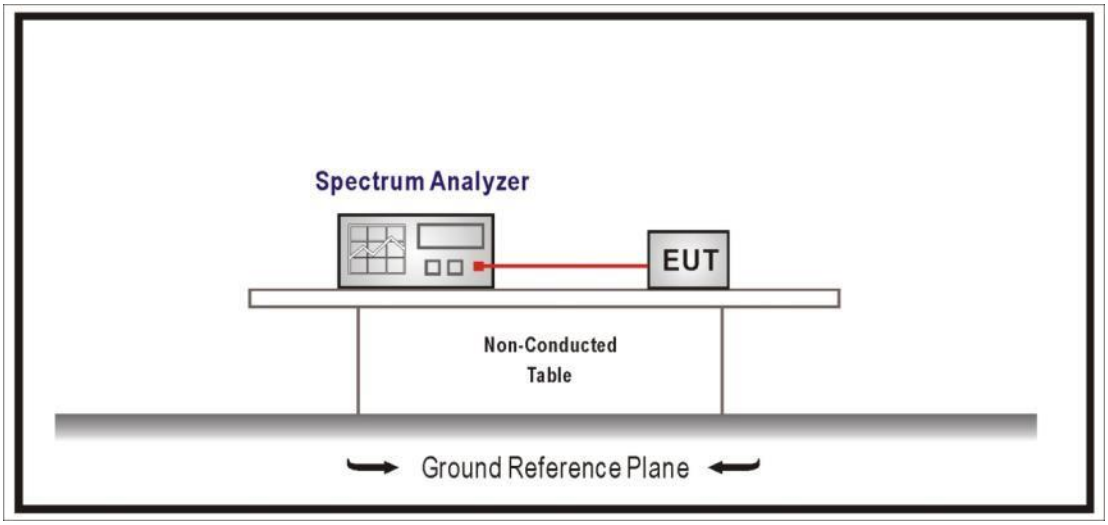
Mode 4 CH39 (2480MHz)

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

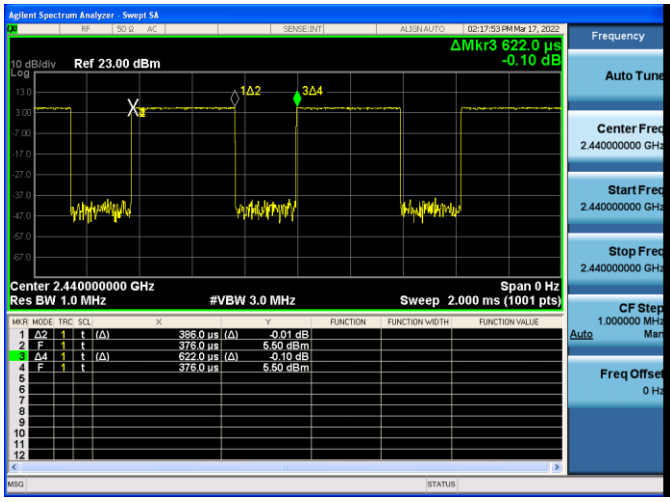
4.4.4 Test Data

Test Mode	Tx On (us)	Tx Off (us)	VBW (kHz)	Tx On + Tx Off (us)	Duty Cycle (%)
Mode 1	0.386	0.236	3	0.622	62.06
Mode 2	0.202	0.424	5	0.626	32.27
Mode 3	1.070	0.815	1	1.885	56.76
Mode 4	3.096	0.656	0.5	3.752	82.52

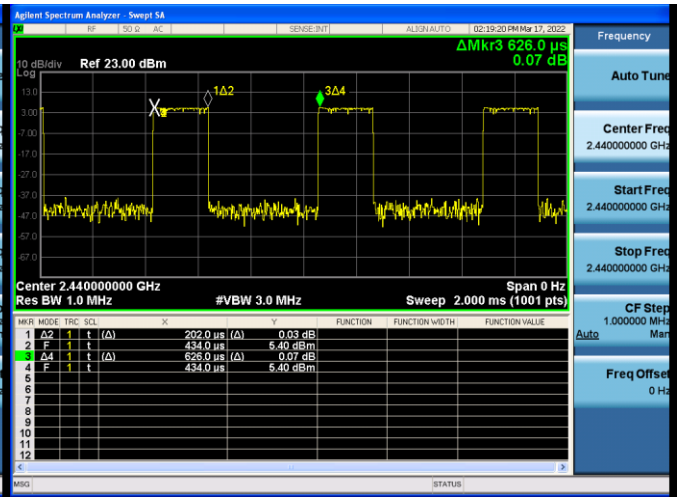
Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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.

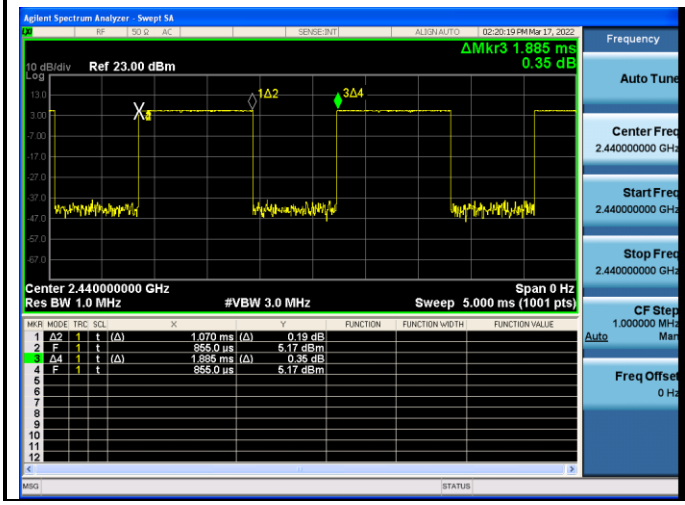
Mode 1 CH19 2440MHz



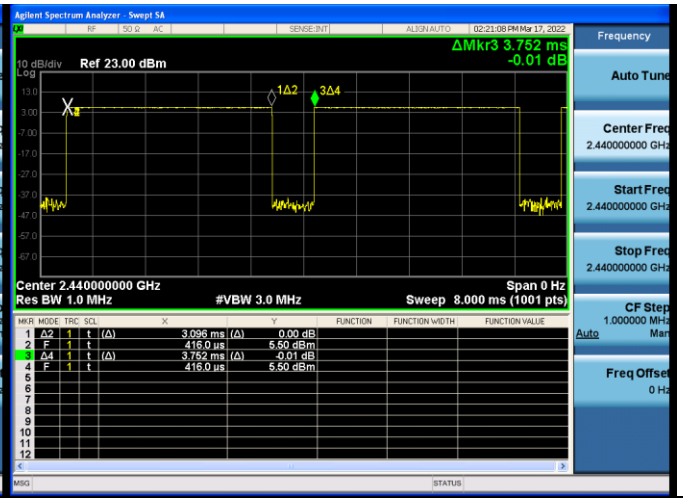
Mode 2 CH19 2440MHz



Mode 3 CH19 2440MHz



Mode 4 CH19 2440MHz

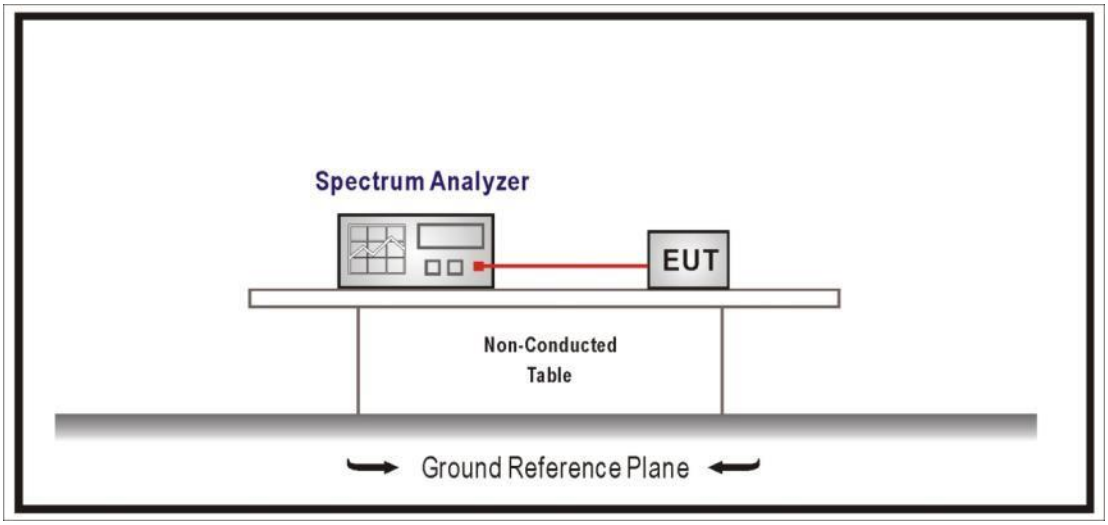


4.5 Band Edge — VERDICT: PASS

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

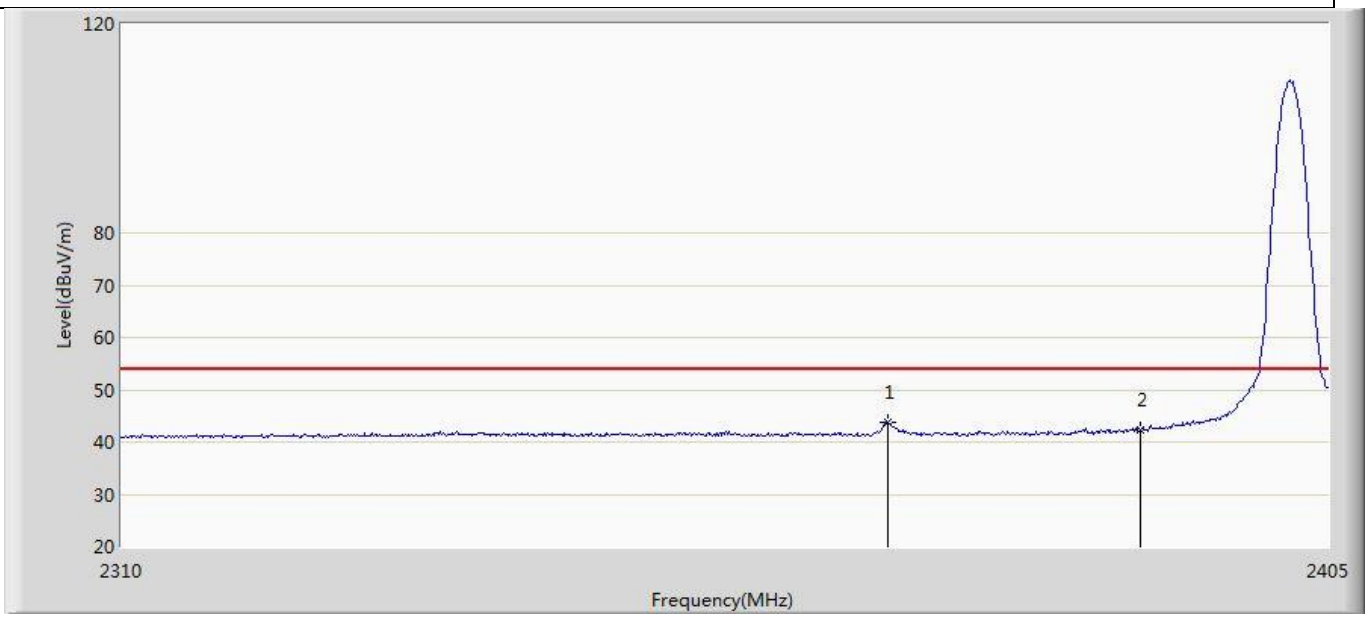


4.5.3 Test Procedure

	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

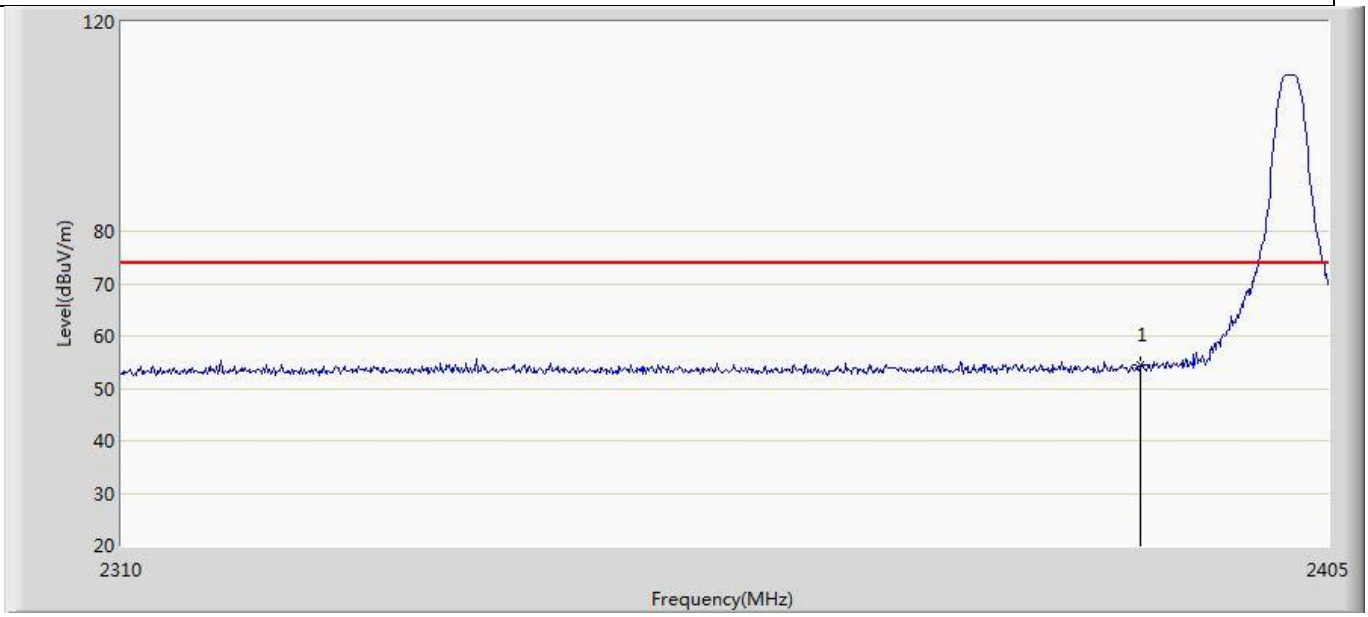
4.5.4 Test Data

Profile: 2220606R	Page No.: 1
Engineer: Carlosshen	
Site: AC5	Time: 2020/03/12 - 00:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2402MHz by ble 1M	



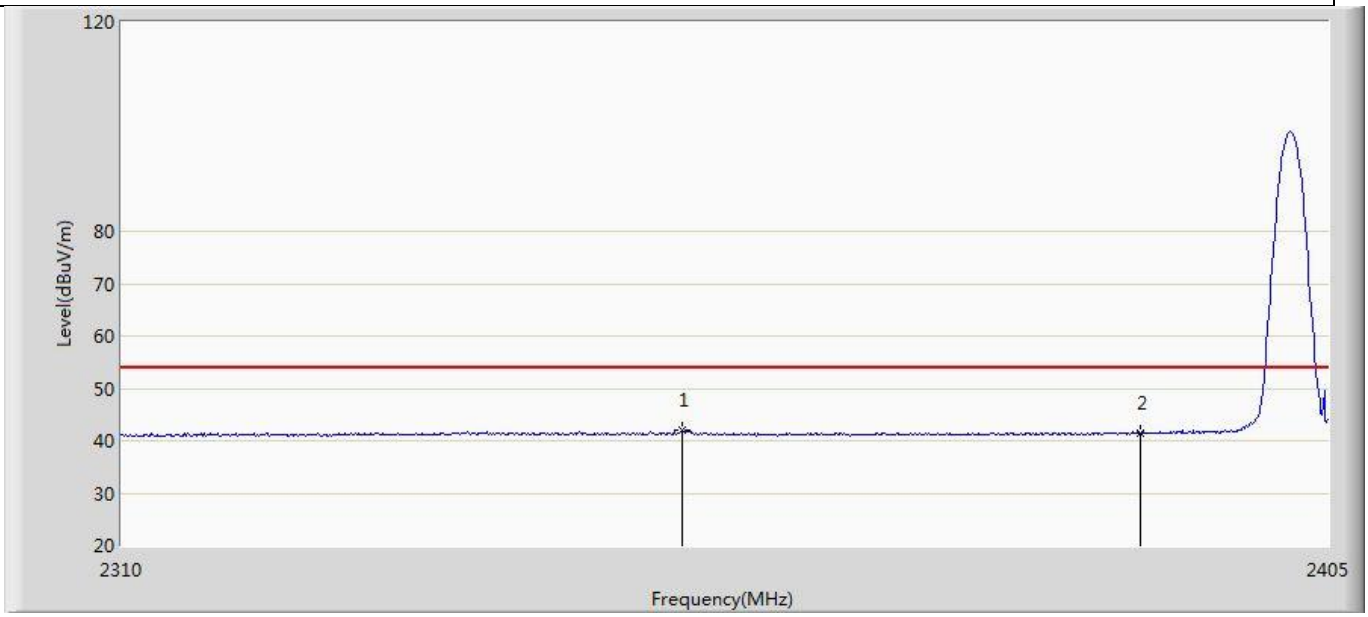
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2369.945	43.908	5.775	-10.092	54.000	38.133	AV
2		2390.000	42.283	3.978	-11.717	54.000	38.305	AV

Profile: 2220606R	Page No.: 2
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/09 - 21:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2402MHz by ble 1M	



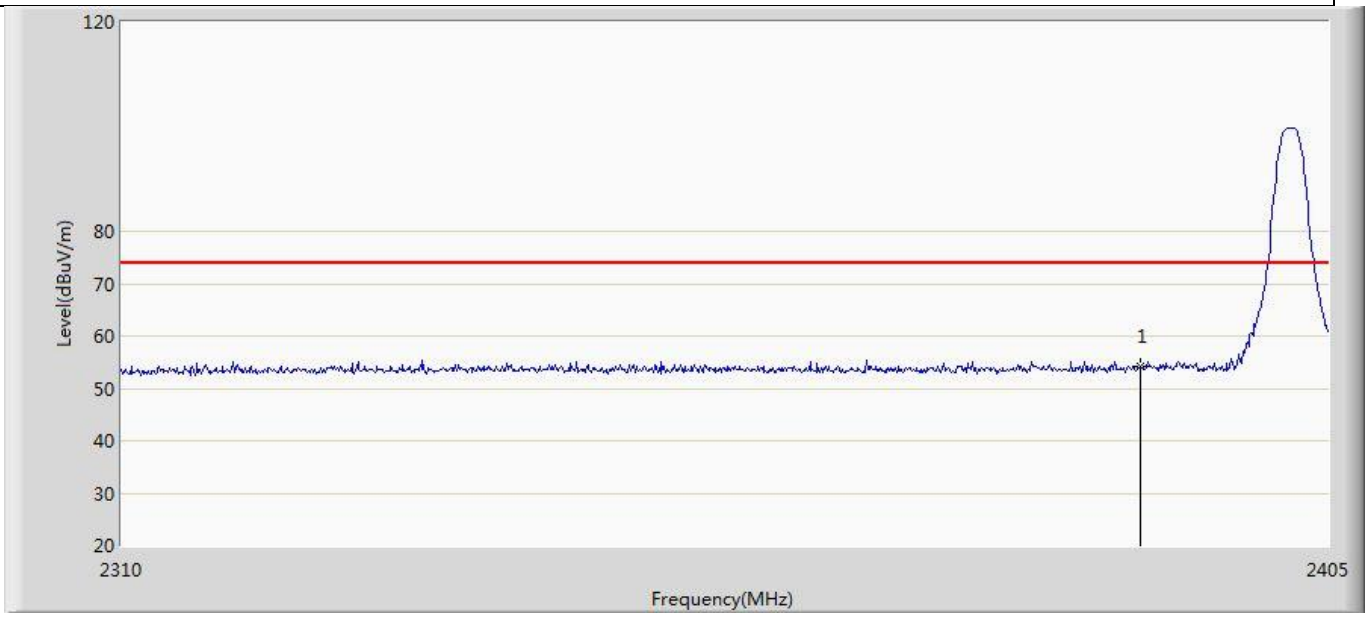
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	54.355	16.050	-19.645	74.000	38.305	PK

Profile: 2220606R	Page No.: 3
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/09 - 21:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2402MHz by ble 1M	



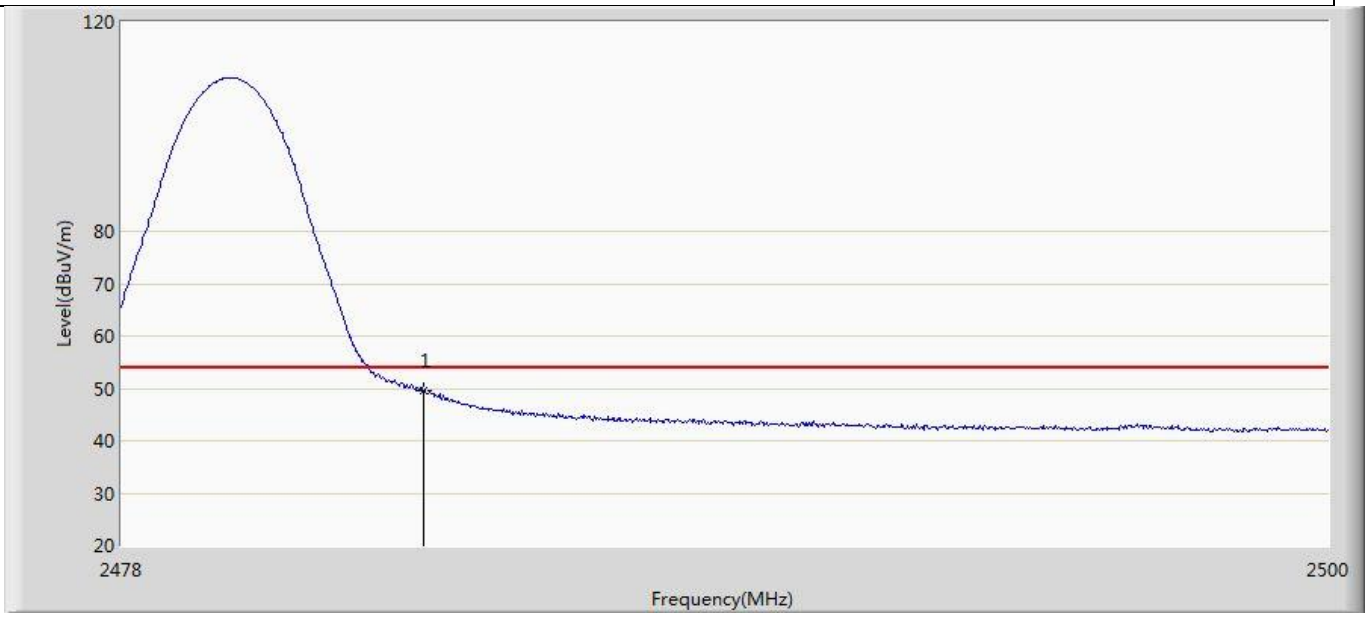
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2353.700	42.064	3.857	-11.936	54.000	38.207	AV
2		2390.000	41.463	3.158	-12.537	54.000	38.305	AV

Profile: 2220606R	Page No.: 4
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/09 - 21:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2402MHz by ble 1M	



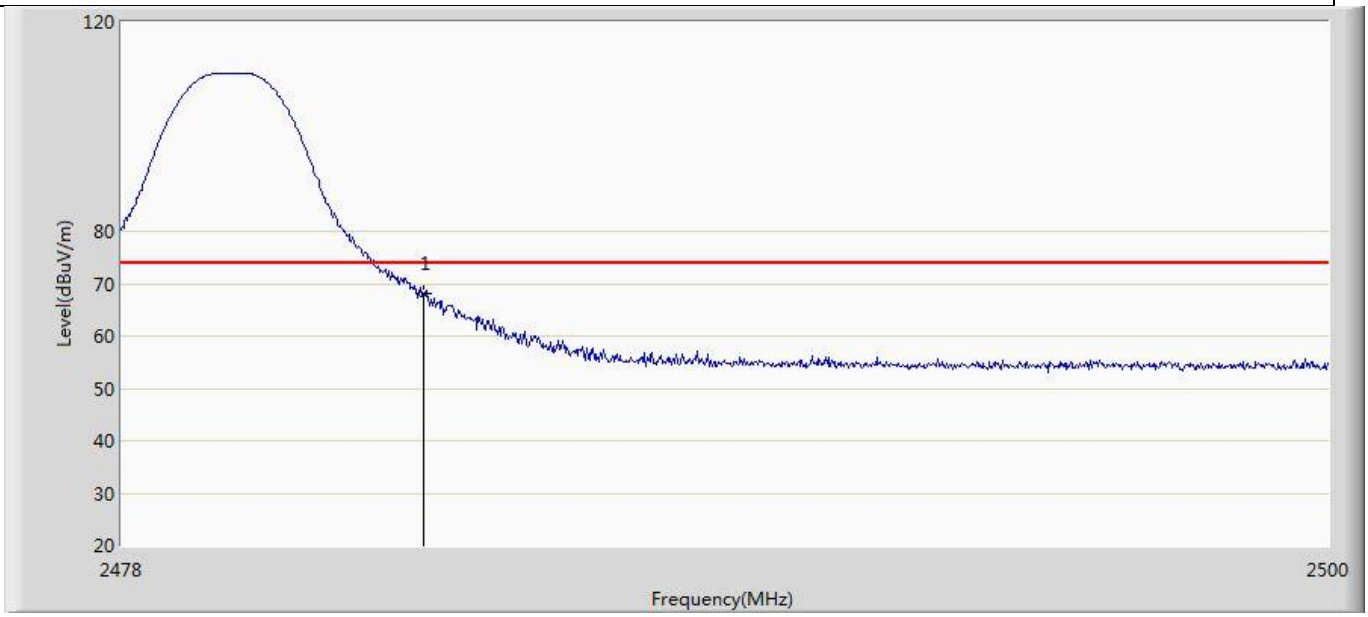
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	54.104	15.799	-19.896	74.000	38.305	PK

Profile: 2220606R	Page No.: 5
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/09 - 21:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2480MHz by ble 1M	



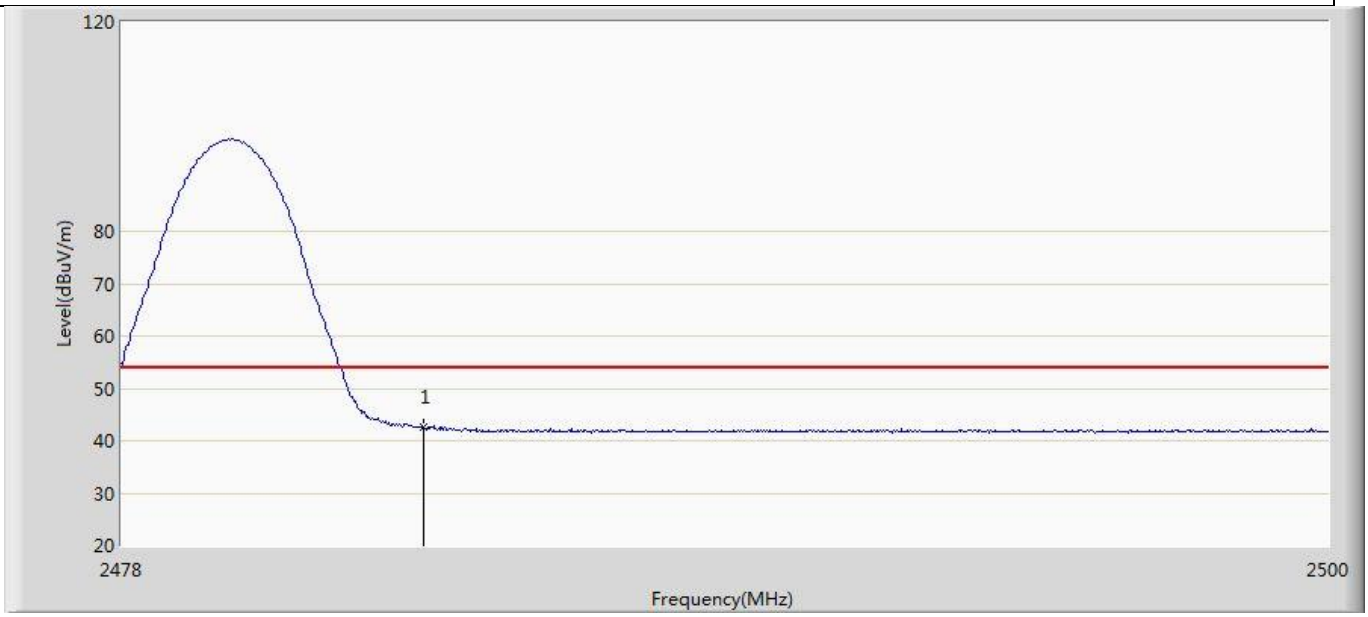
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	49.438	10.984	-4.562	54.000	38.453	AV

Profile: 2220606R	Page No.: 6
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/09 - 21:57
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2480MHz by ble 1M	



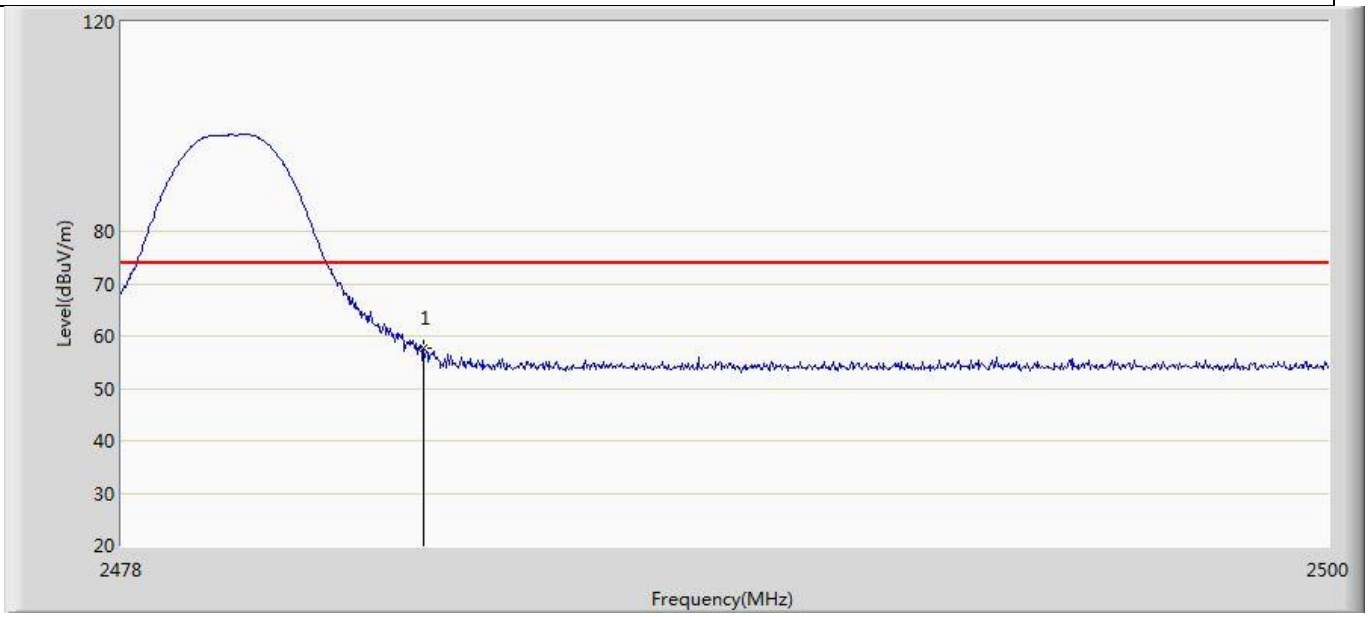
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	68.013	29.559	-5.987	74.000	38.453	PK

Profile: 2220606R	Page No.: 7
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/09 - 21:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2480MHz by ble 1M	



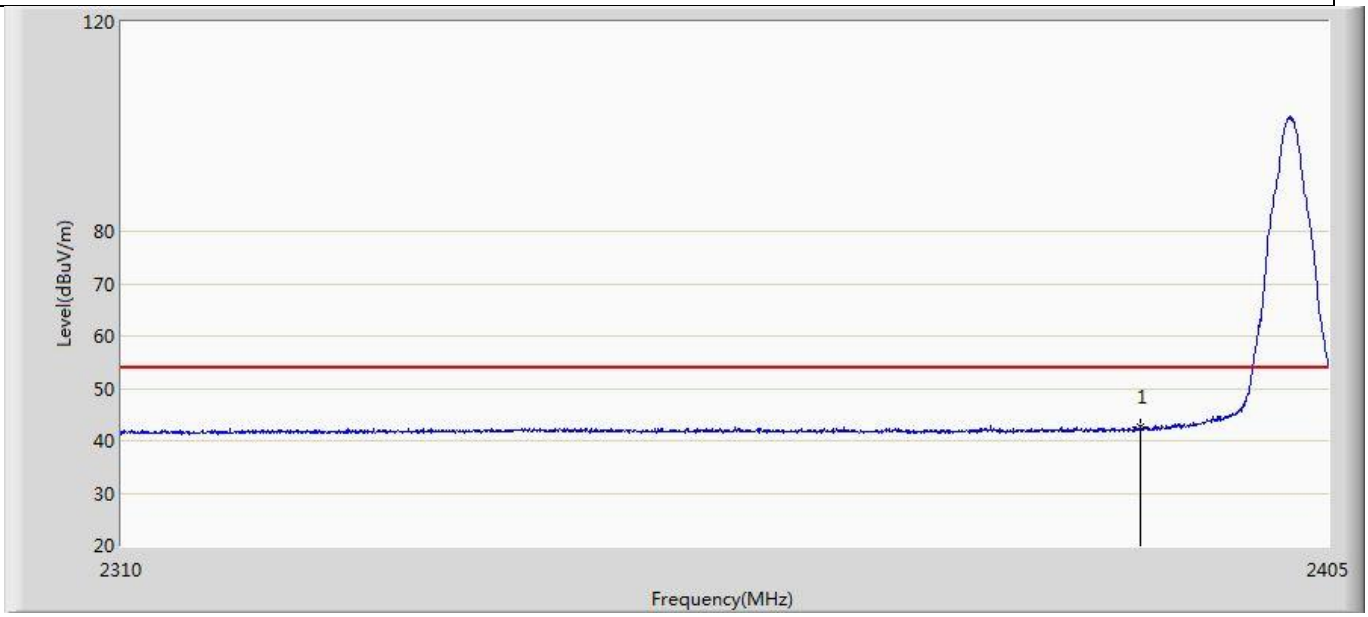
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	42.583	4.129	-11.417	54.000	38.453	AV

Profile: 2220606R	Page No.: 8
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/09 - 22:01
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 1:Transmit at 2480MHz by ble 1M	



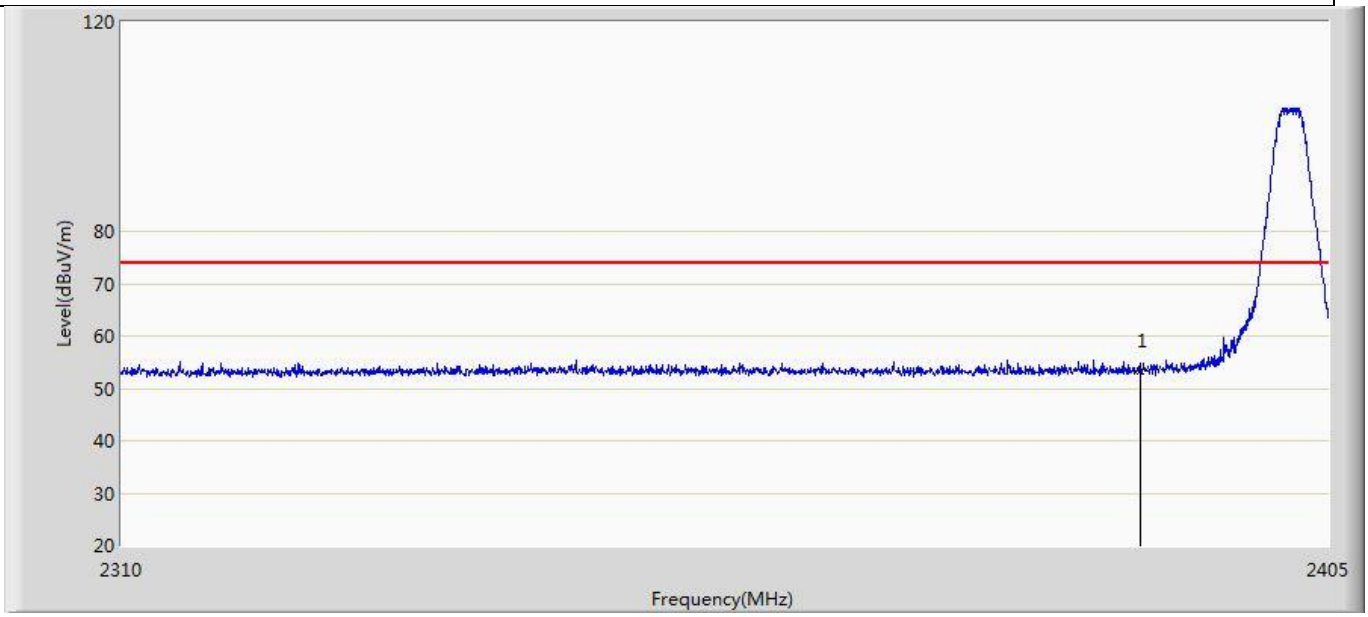
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	57.722	19.268	-16.278	74.000	38.453	PK

Profile: 2220606R	Page No.: 9
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:24
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2402MHz by ble 2M	



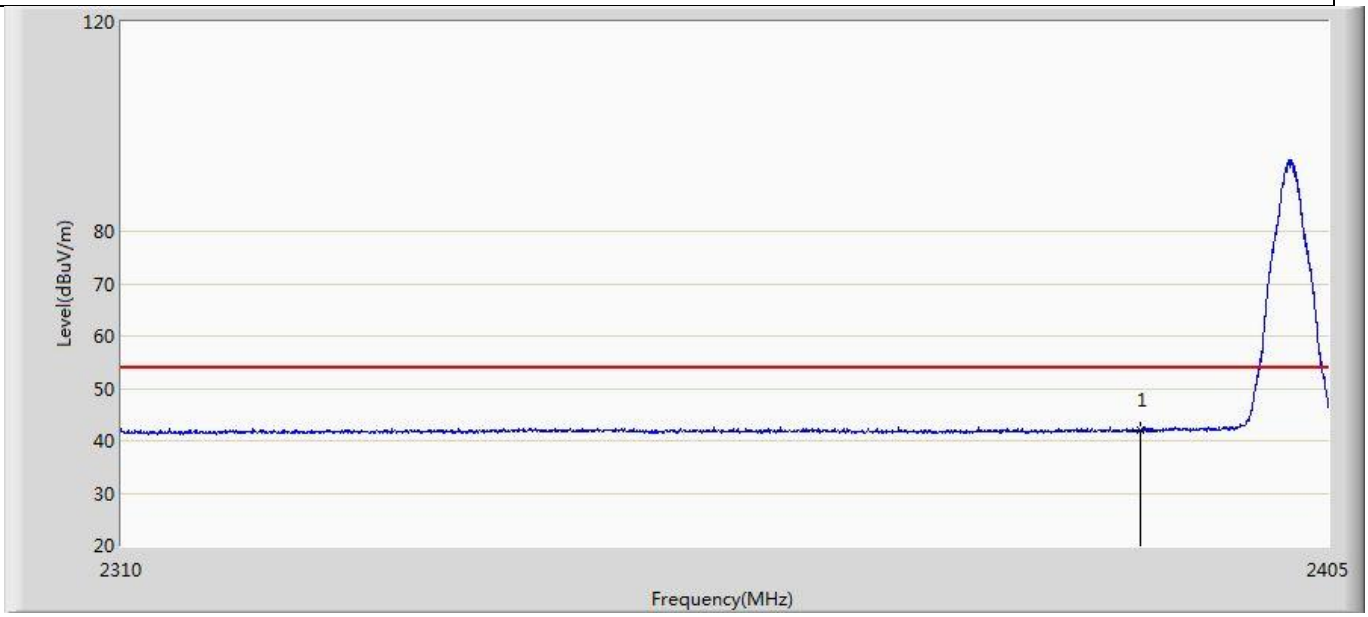
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	42.561	4.256	-11.439	54.000	38.305	AV

Profile: 2220606R	Page No.: 10
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:29
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2402MHz by ble 2M	



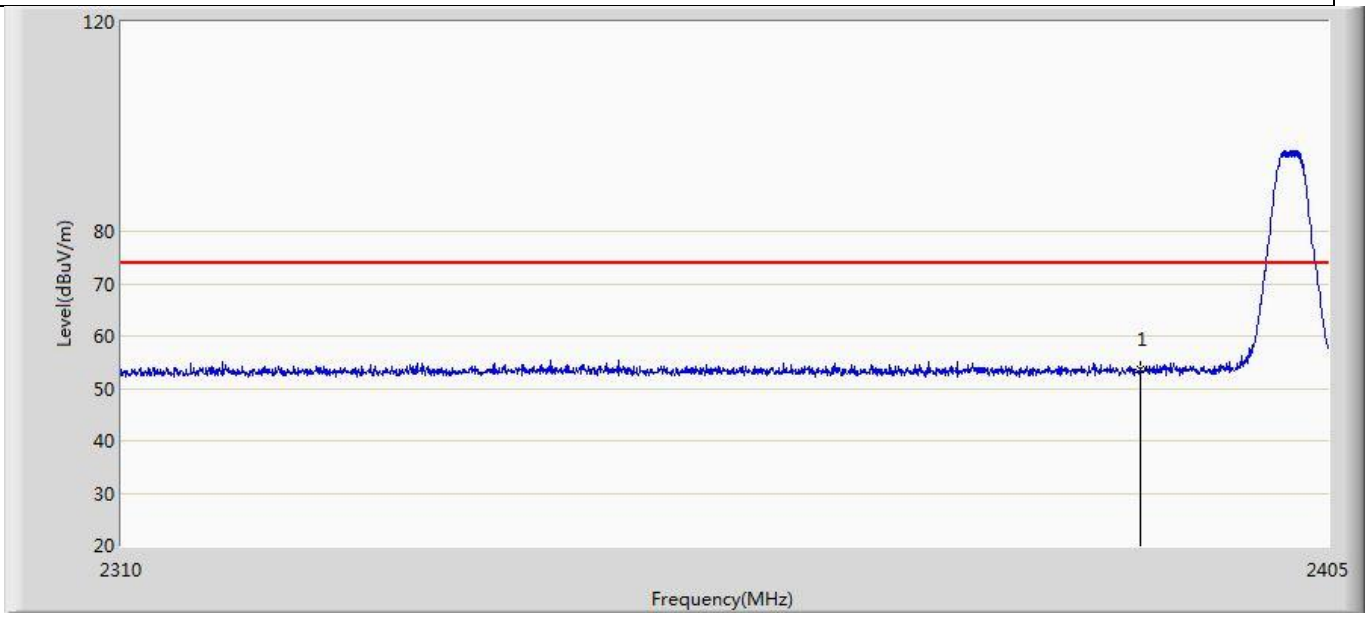
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	53.332	15.027	-20.668	74.000	38.305	PK

Profile: 2220606R	Page No.: 11
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2402MHz by ble 2M	



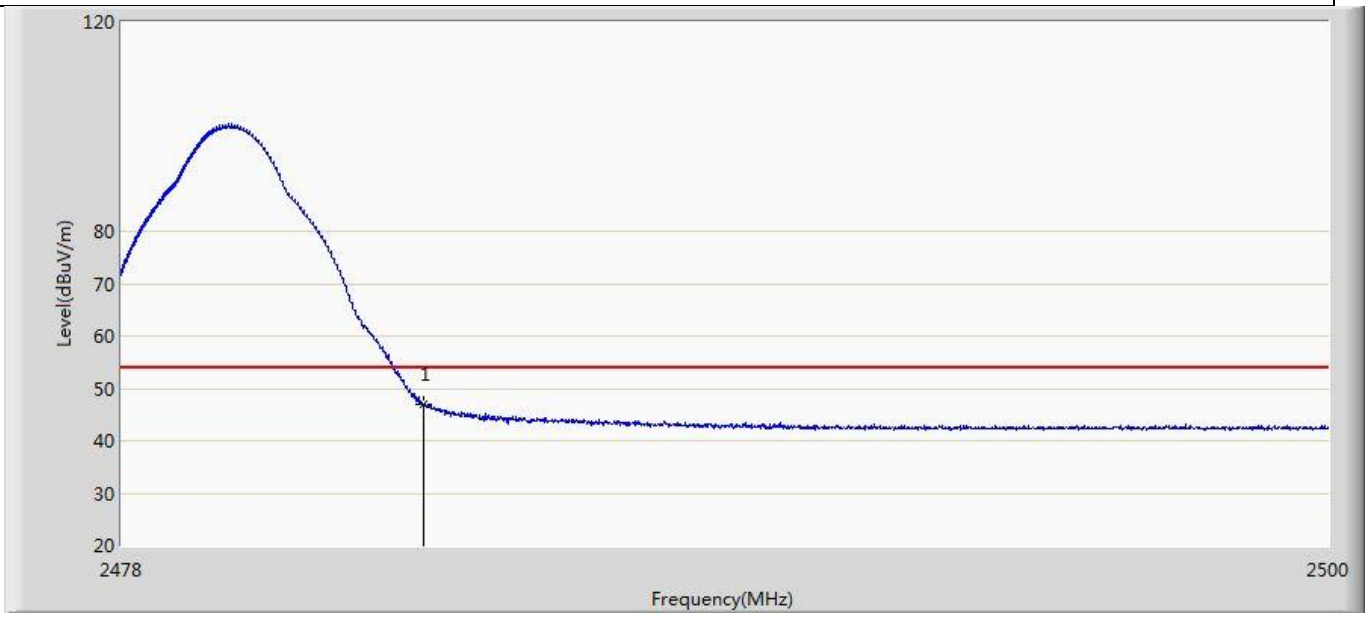
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	41.934	3.629	-12.066	54.000	38.305	AV

Profile: 2220606R	Page No.: 12
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:32
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2402MHz by ble 2M	



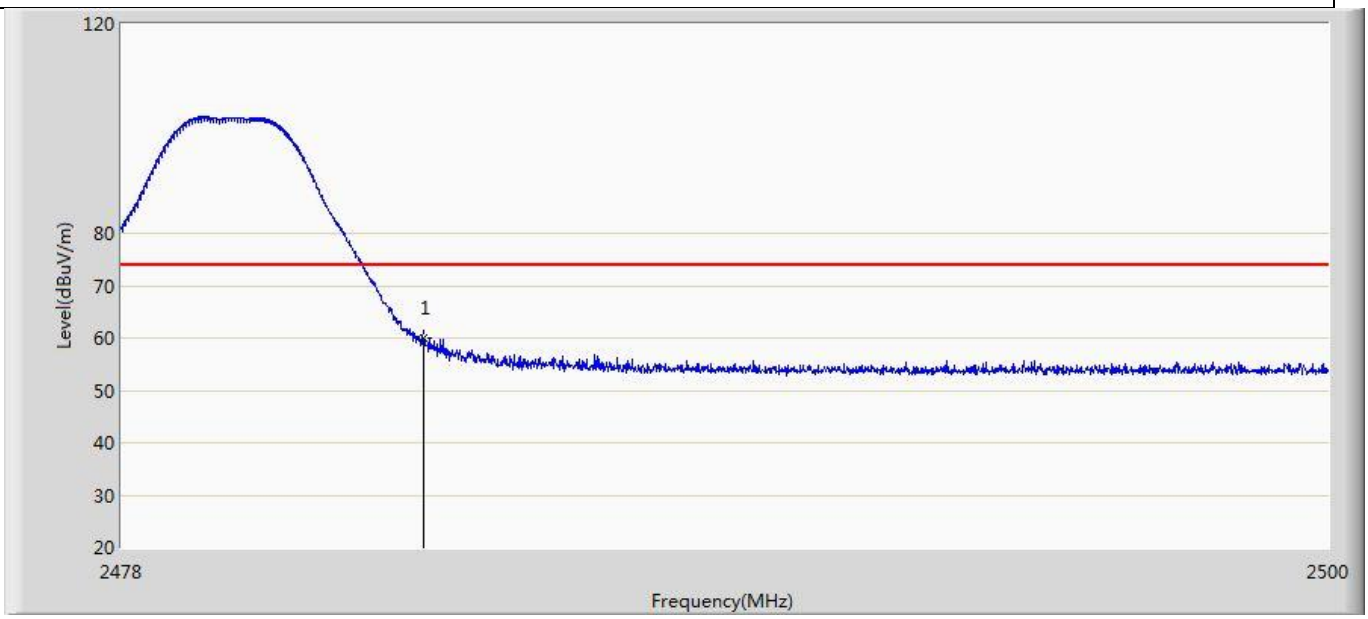
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	53.522	15.217	-20.478	74.000	38.305	PK

Profile: 2220606R	Page No.: 13
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2480MHz by ble 2M	



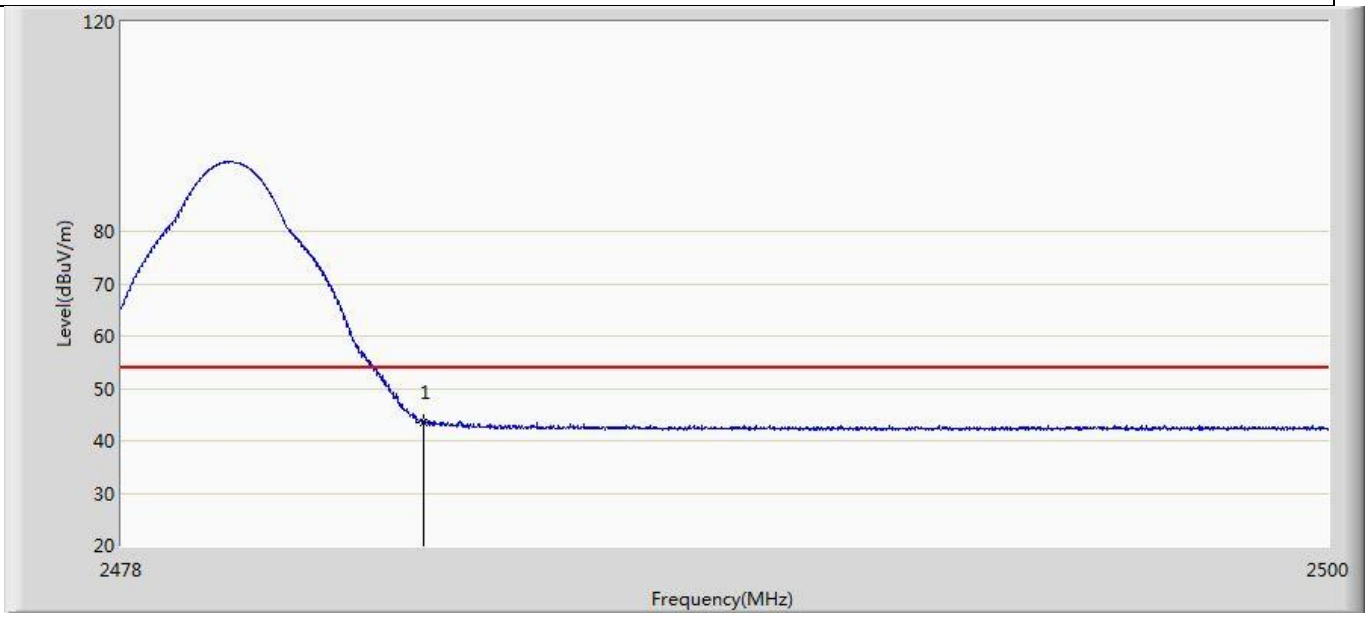
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	46.900	8.446	-7.100	54.000	38.453	AV

Profile: 2220606R	Page No.: 14
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2480MHz by ble 2M	



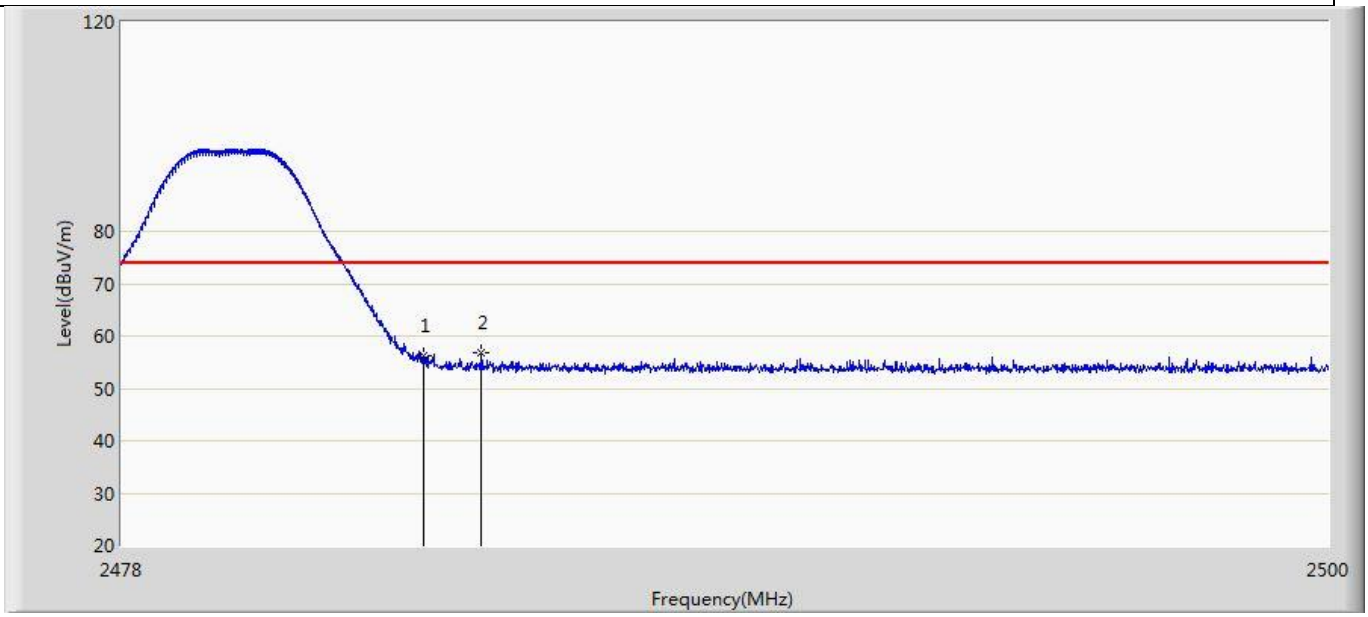
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	59.908	21.454	-14.092	74.000	38.453	PK

Profile: 2220606R	Page No.: 15
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:39
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2480MHz by ble 2M	



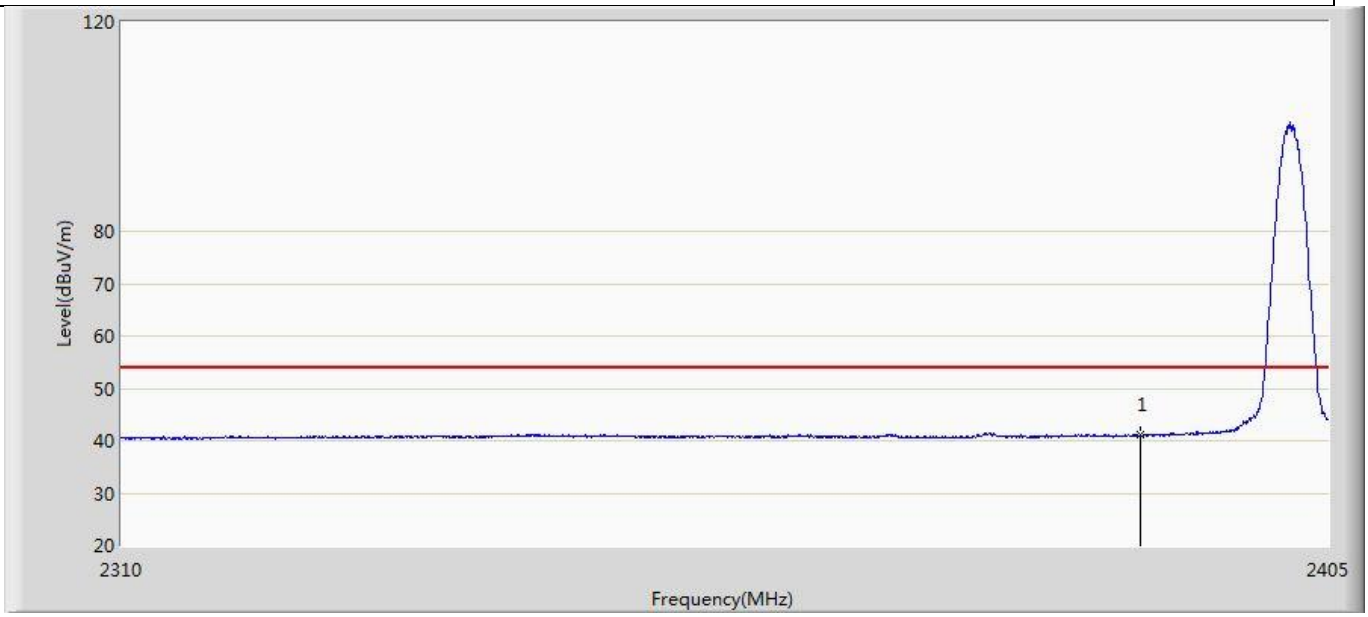
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	43.438	4.984	-10.562	54.000	38.453	AV

Profile: 2220606R	Page No.: 16
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 2:Transmit at 2480MHz by ble 2M	



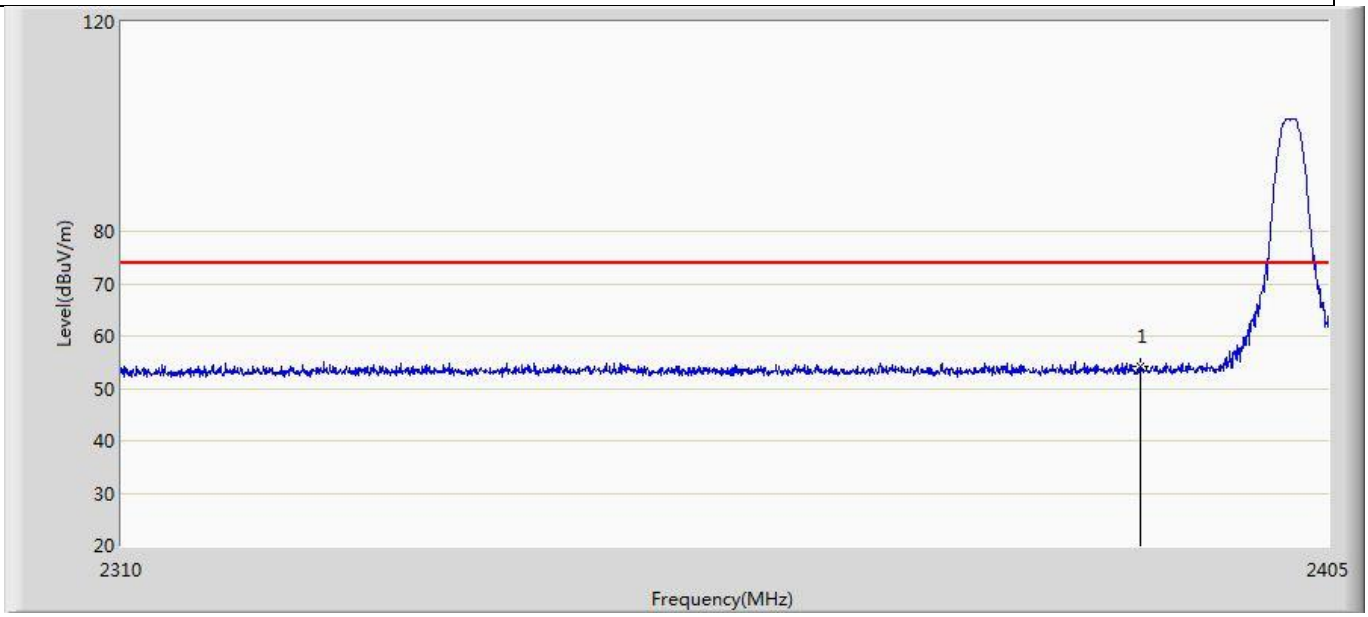
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		2483.500	56.170	17.716	-17.830	74.000	38.453	PK
2	*	2484.545	56.888	18.431	-17.112	74.000	38.457	PK

Profile: 2220606R	Page No.: 17
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2402MHz by coded 2	



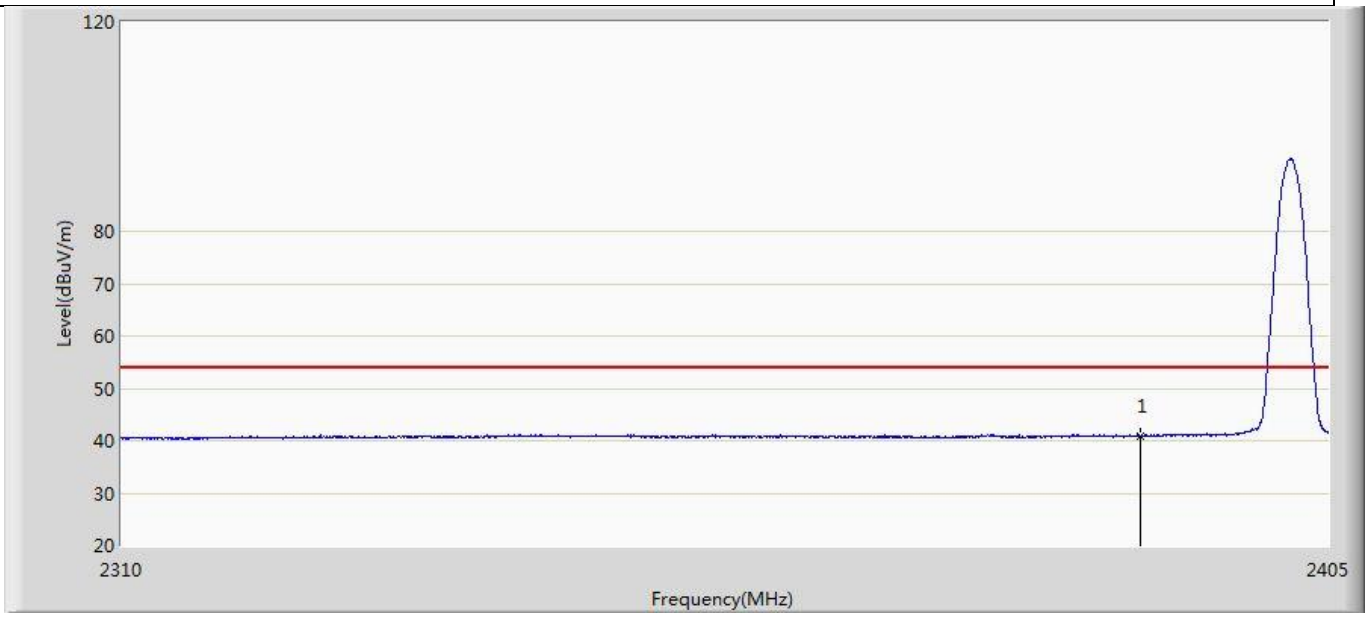
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	41.082	2.777	-12.918	54.000	38.305	AV

Profile: 2220606R	Page No.: 18
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:45
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2402MHz by coded 2	



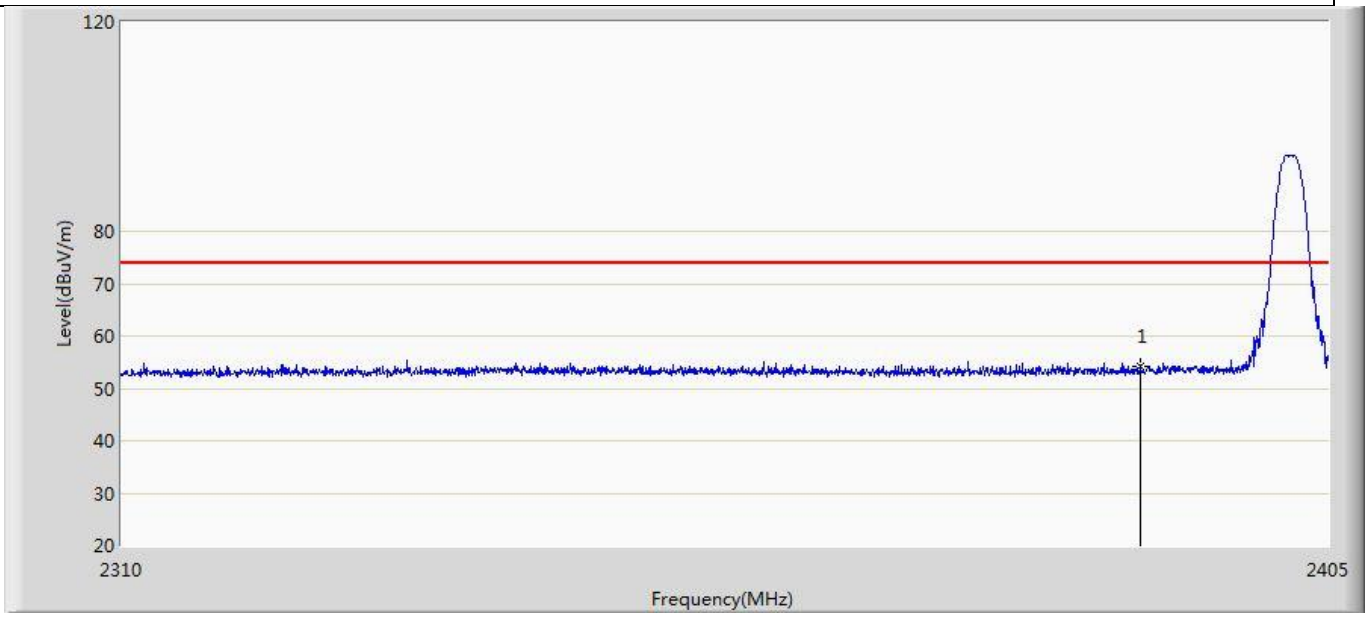
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	54.189	15.884	-19.811	74.000	38.305	PK

Profile: 2220606R	Page No.: 19
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:47
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2402MHz by coded 2	



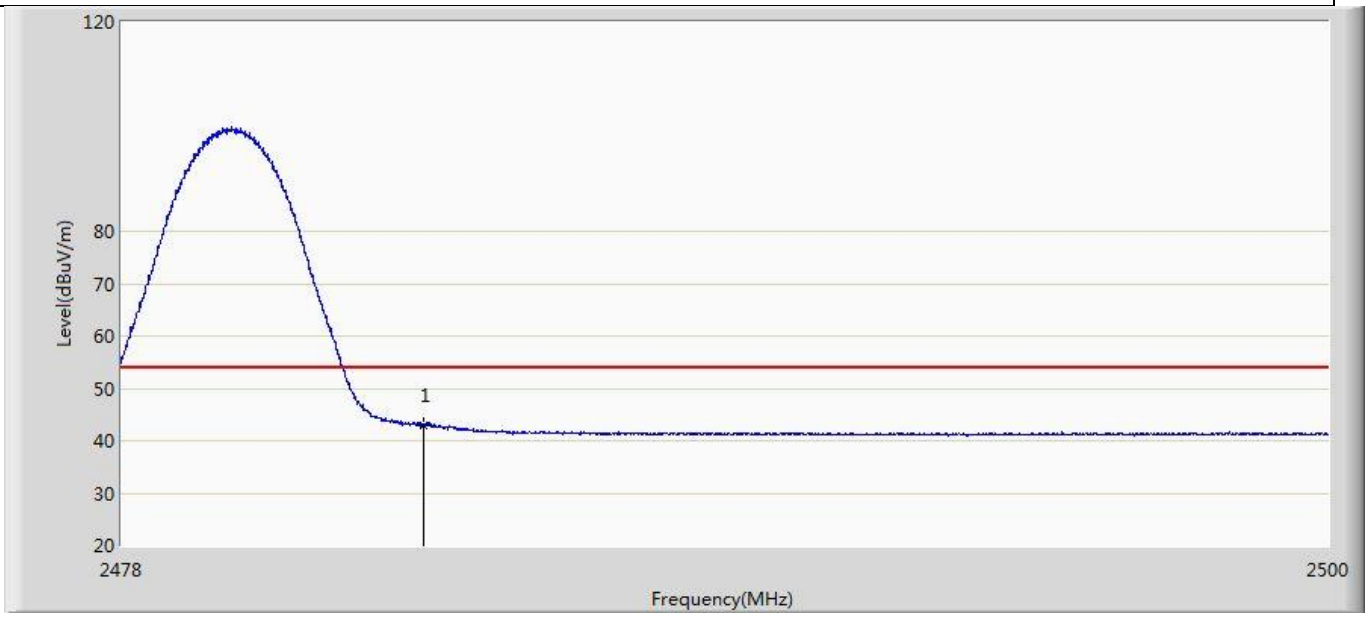
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	40.978	2.673	-13.022	54.000	38.305	AV

Profile: 2220606R	Page No.: 20
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:48
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2402MHz by coded 2	



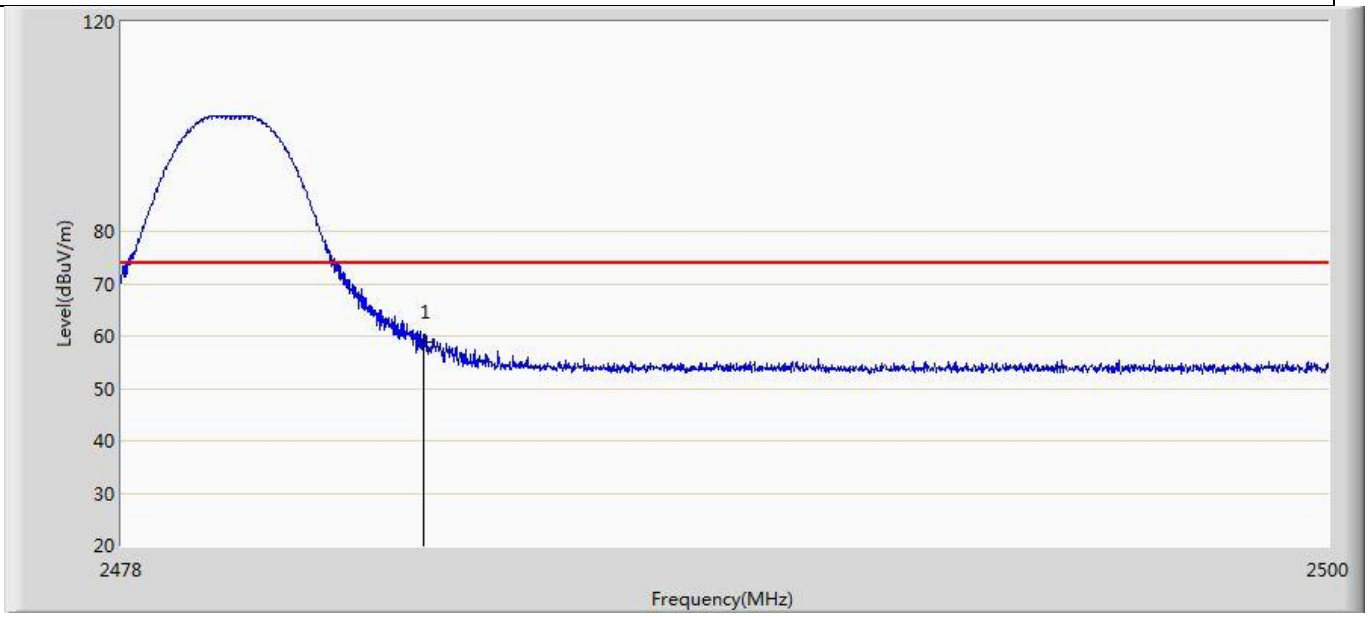
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	54.291	15.986	-19.709	74.000	38.305	PK

Profile: 2220606R	Page No.: 21
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:50
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2480MHz by coded 2	



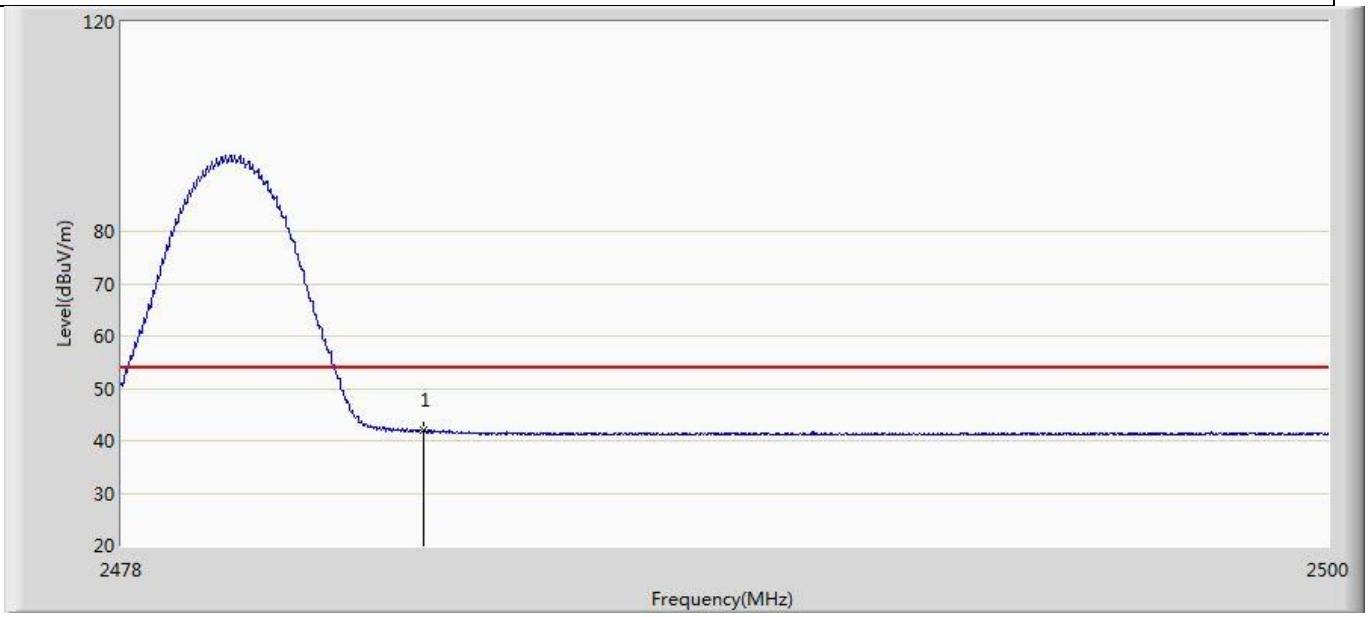
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	43.021	4.567	-10.979	54.000	38.453	AV

Profile: 2220606R	Page No.: 22
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:53
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2480MHz by coded 2	



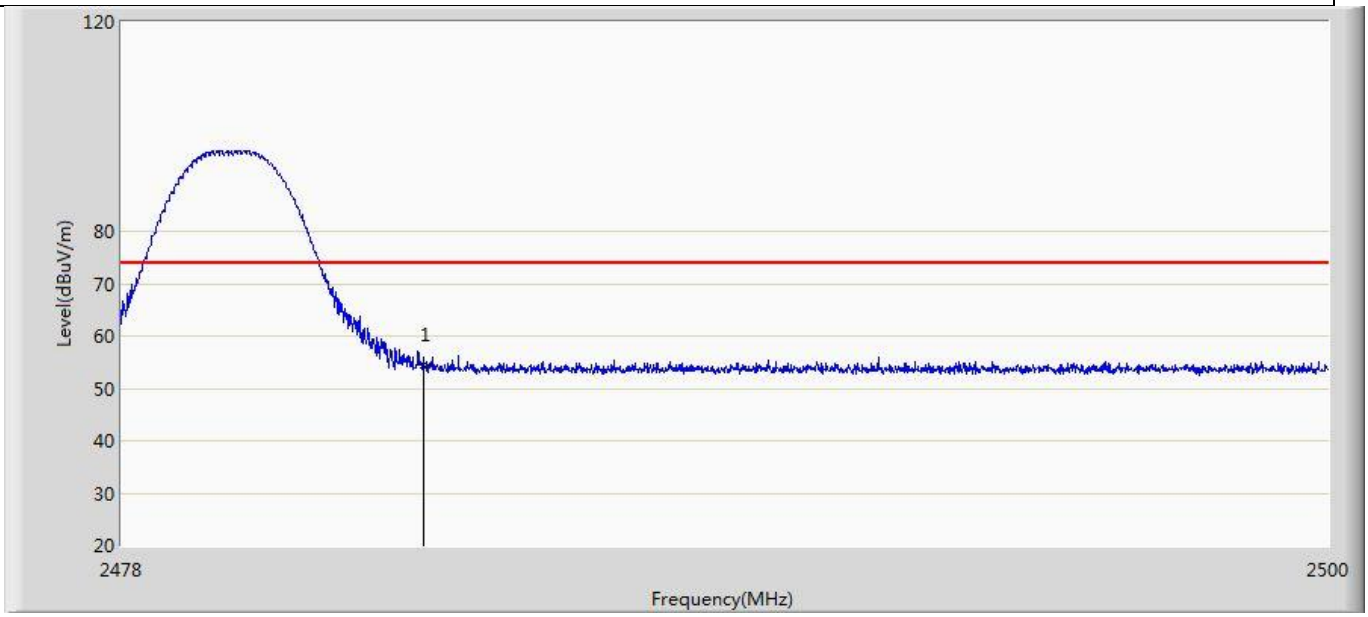
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	58.830	20.376	-15.170	74.000	38.453	PK

Profile: 2220606R	Page No.: 23
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:54
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2480MHz by coded 2	



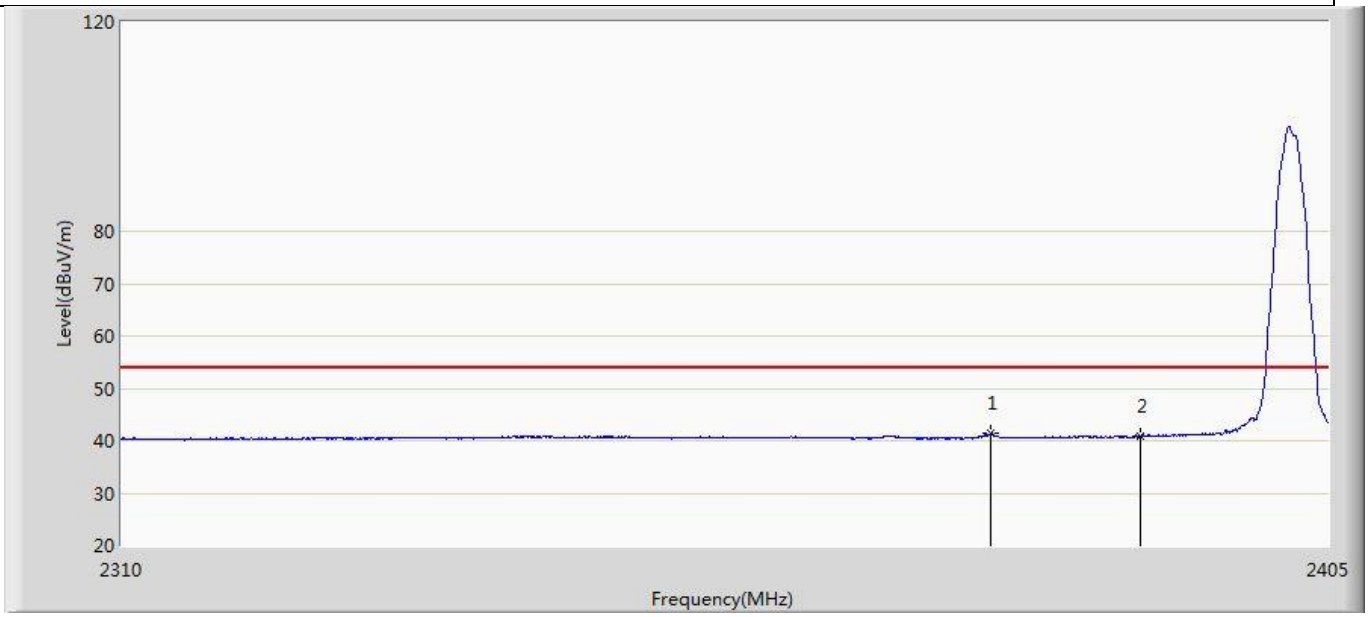
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	42.085	3.631	-11.915	54.000	38.453	AV

Profile: 2220606R	Page No.: 24
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:55
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Vertical
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 3:Transmit at 2480MHz by coded 2	



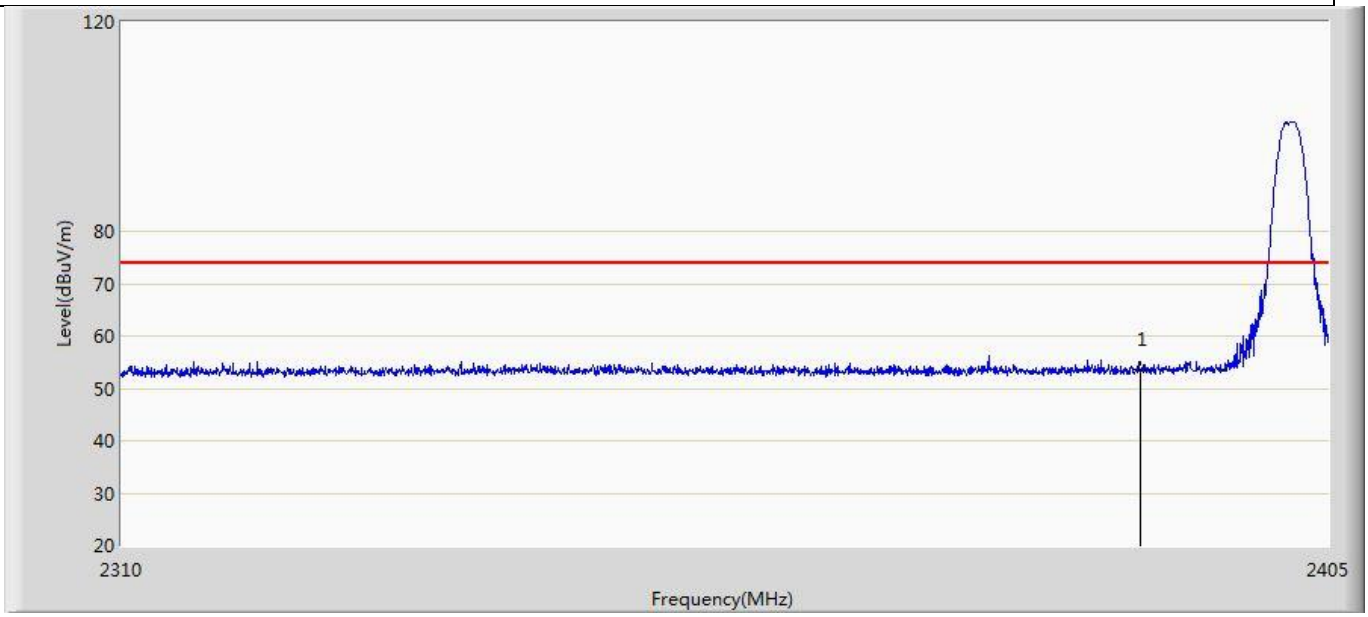
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	54.371	15.917	-19.629	74.000	38.453	PK

Profile: 2220606R	Page No.: 25
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:56
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2402MHz by coded 8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2378.115	41.312	3.190	-12.688	54.000	38.123	AV
2		2390.000	40.839	2.534	-13.161	54.000	38.305	AV

Profile: 2220606R	Page No.: 26
Engineer: Carlosshen	
Site: AC5	Time: 2022/03/28 - 21:59
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: Horn_3117_00123988_(1-18GHz)	Polarity: Horizontal
EUT: UWB SIP MODULE	Power: DC5V
Note: Mode 4:Transmit at 2402MHz by coded 8	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2390.000	53.549	15.244	-20.451	74.000	38.305	PK