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:
2231093R-RF-US-P06V02

FCC TEST REPORT

Product Name	Barcode Scanner
Trademark	Honeywell
Model and /or type reference	8690i
FCC ID	HD5-8690B
Applicant´s name / address	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions 9680 OLD BAILES RD FORT MILL SC 29707-7539,USA
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	2022-06-07
Report Version	V1.0
Report template No	Template_FCC 15.247-RF-V1.0

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page

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)	May. 13, 2022
Date (start test)	May. 14, 2022
Date (finish test)	May. 25, 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
2231093R-RF-US-P06V02	V1.0	Initial issue of report.	2022-06-07

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.
8. The EUT supports the simultaneous operation of RFID and BT, so we evaluated the test of Emissions in restricted frequency bands emitted by RFID and BT simultaneously.

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	2021.07.11	2022.07.10
Two-Line V-Network	R&S	ENV216	15/Jan/77	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	SFL402	F02-150410-044	2021.06.10	2022.06.09
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
Bilog Antenna	Teseq GmbH	CBL6112D	27613	2021.08.23	2022.08.22
Coaxial Cable	Huber+Suhner	RG 214	AC3-C	2021.06.10	2022.06.09
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
Pre-Amplifier	Quietek	AP-025C	CHM-0511006	2021.11.26	2022.11.25
Pre-Amplifier	SKET	LNPA_0118G-45	SK2021090101	2021.12.13	2022.12.12
DRG Horn Antenna	AP-025C	AP-025C	CHM-0511006	2021.11.26	2022.11.25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2021.04.14	2023.04.13
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2021.06.10	2022.06.09
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 ..... :	Barcode Scanner
Model No. ..... :	8690i
FCC ID ..... :	HD5-8690B
Manufacturter ..... :	HONEYWELL INTERNATIONAL INC Honeywell Safety and Productivity Solutions
Manufacturer Address ..... :	9680 OLD BAILES RD FORT MILL SC 29707-7539,USA
Factory ..... :	Metro(Suzhou)Technologies Co.,Ltd
Address ..... :	No.221 Xinghai street China-Singapore Suzhou Industrial Park.

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
	☐	48 Volt via POE
	☒	Battery: 3.7 V
Mounting position ..... :	☐	Table top equipment
	☐	Wall/Ceiling mounted equipment
	☐	Floor standing equipment
	☒	Hand-held equipment
	☒	Other: Wearable equipment

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
			☐	FPC
			☐	Others……..
Antenna Gain ..... :	0.5dBi			

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.

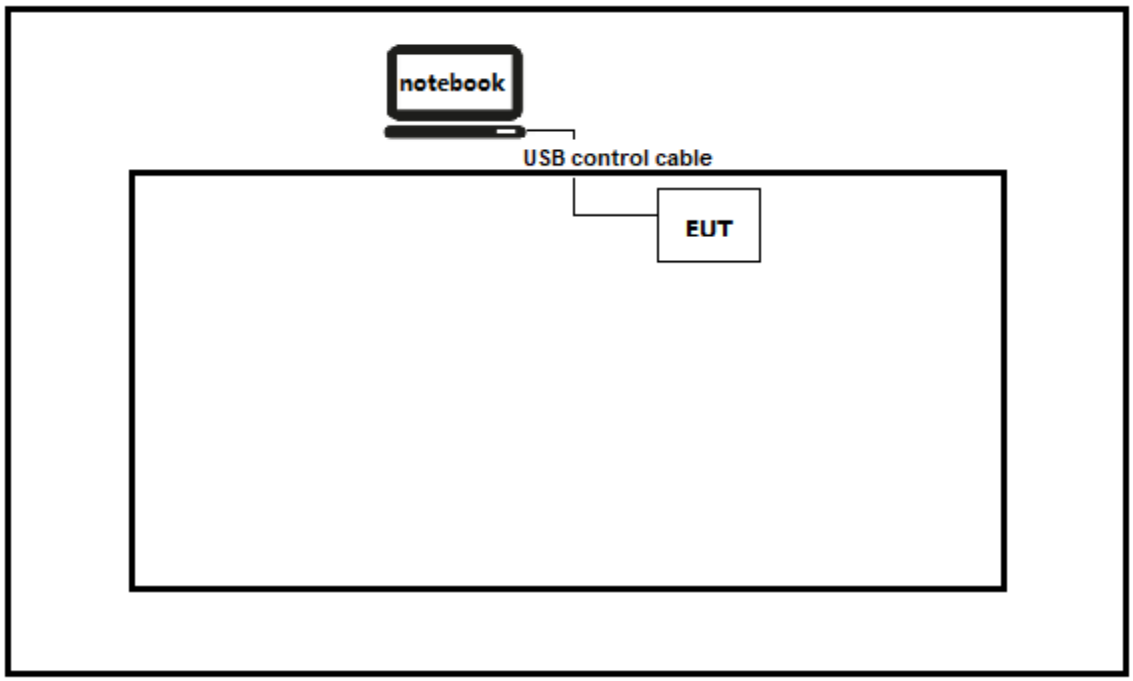
Test Mode For Bluetooth	Mode1: Transmit by LE_1Mbps
	Mode2: Transmit by LE_2Mbps

2.2 Auxiliary equipment / Test software for the EUT

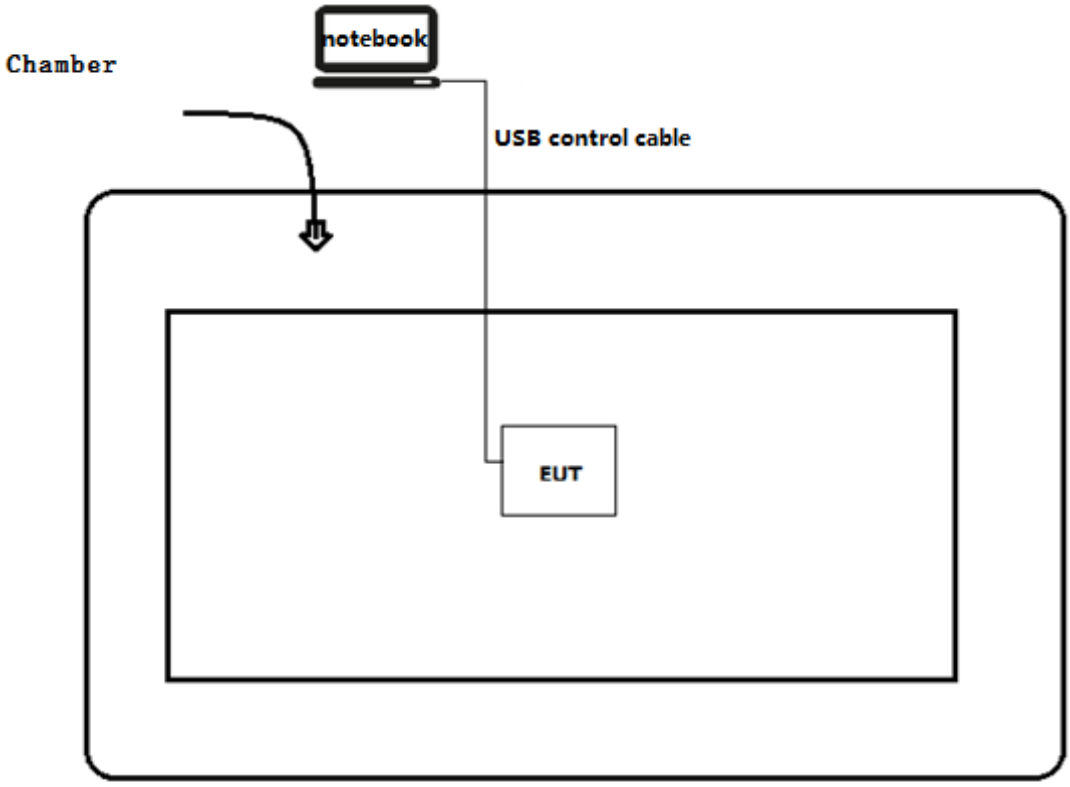
Auxiliary equipment	Type / Version	Manufacturer	Supplied by
Notebook	2526	Think Pad	N/A
Software	Type / Version	Manufacturer	Supplied by
Putty	N/A	N/A	N/A

2.3 Test Configuration / Block diagram used for tests

Test setup Diagram- AC Line Conducted Emission Test



Test setup Diagram- Radiated Emission



2.4 Testing process

1	Setup the EUT as shown in Section 2.4.
2	Run the software “putty” 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

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

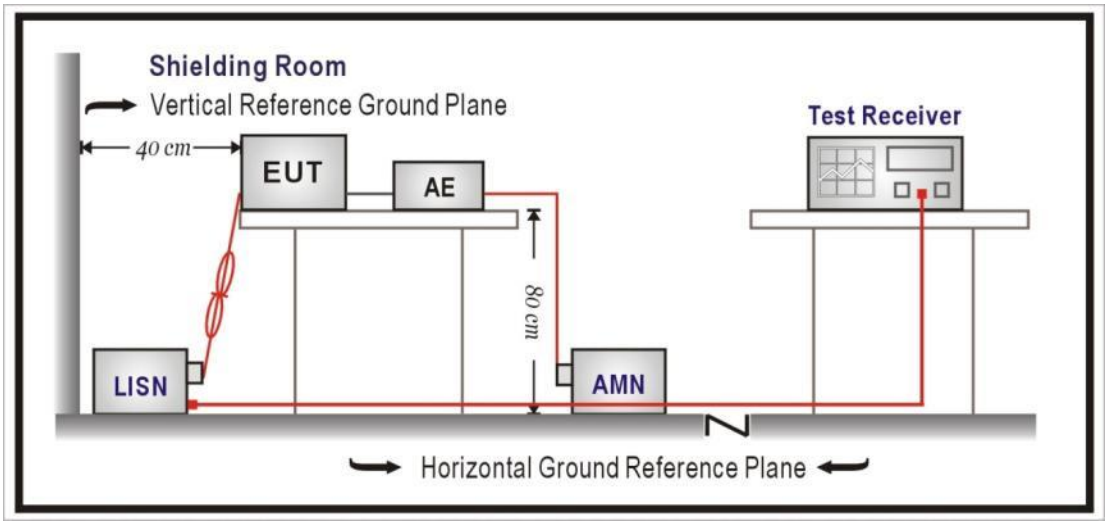
4.1 AC Power Line Conducted Emission	VERDICT: PASS

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

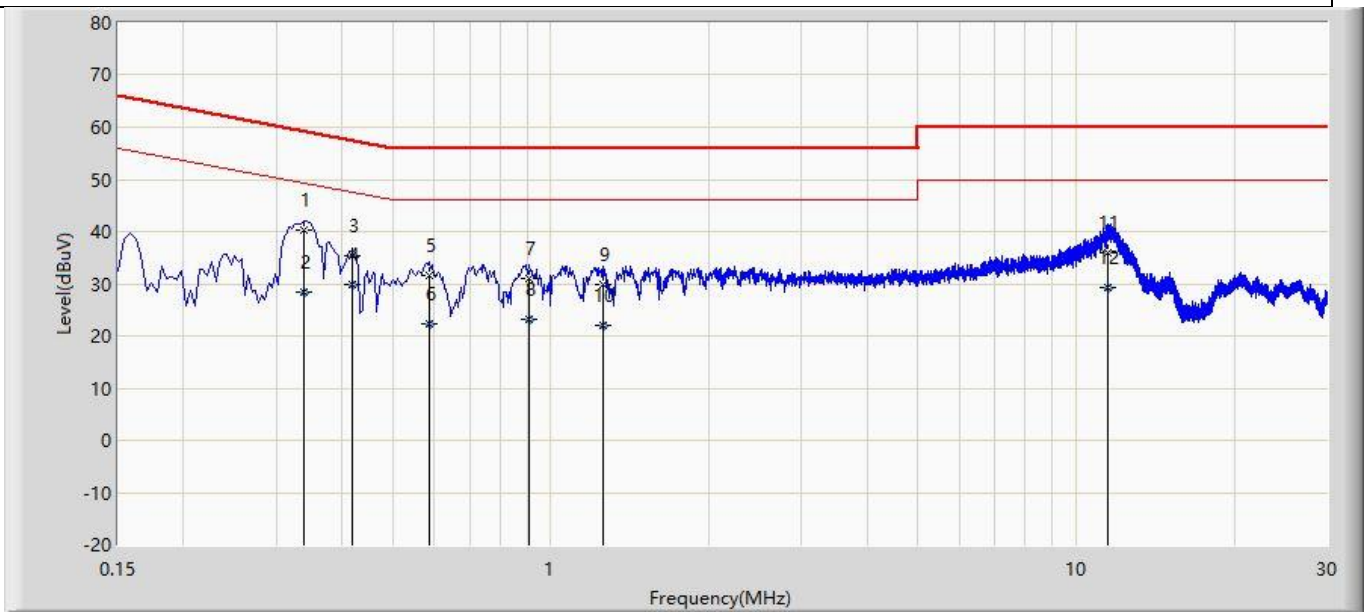


4.1.3 Test Procedure

	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

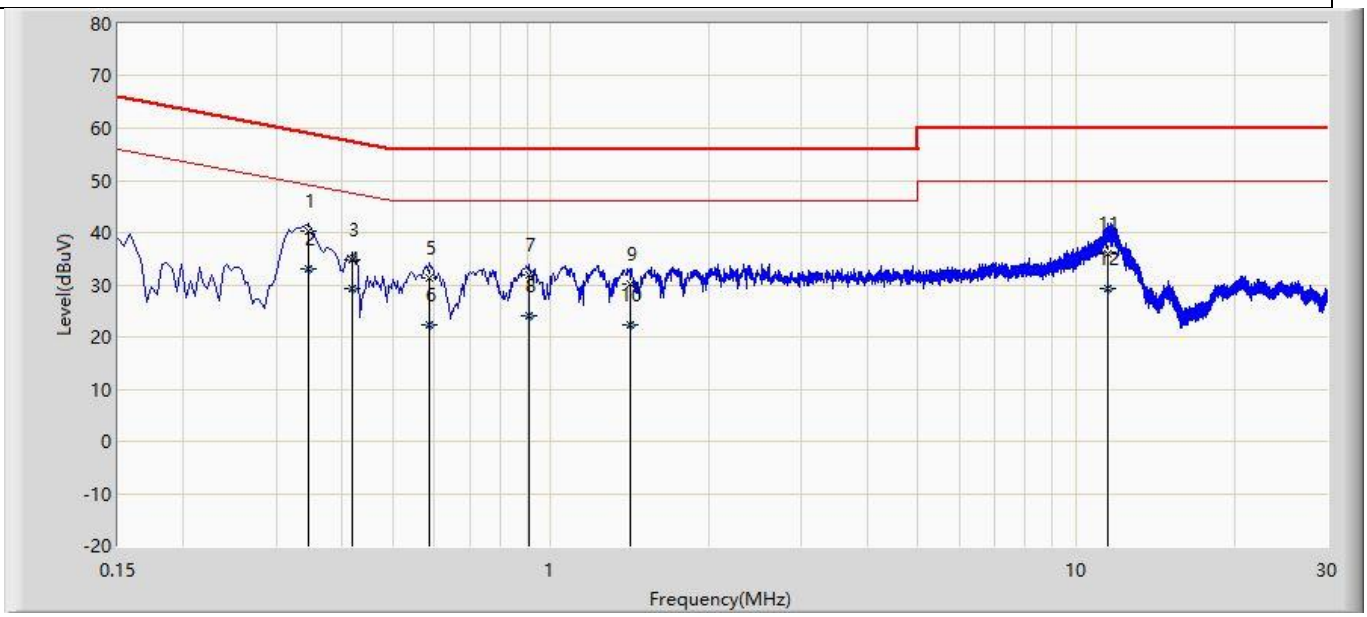
Profile: 2231093R	Page No.: 3
Engineer: Tony	
Site: TR1	Time: 2022/05/17 - 11:04
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Line
EUT: Barcode Scanner	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.338	40.232	30.631	-19.020	59.252	9.569	0.033	0.000	QP
2		0.338	28.267	18.665	-20.985	49.252	9.569	0.033	0.000	AV
3		0.418	35.263	25.642	-22.224	57.488	9.574	0.047	0.000	QP
4	*	0.418	29.731	20.109	-17.757	47.488	9.574	0.047	0.000	AV
5		0.586	31.689	22.053	-24.311	56.000	9.584	0.051	0.000	QP
6		0.586	22.451	12.816	-23.549	46.000	9.584	0.051	0.000	AV
7		0.910	31.058	21.419	-24.942	56.000	9.590	0.049	0.000	QP
8		0.910	23.102	13.463	-22.898	46.000	9.590	0.049	0.000	AV
9		1.258	29.946	20.296	-26.054	56.000	9.590	0.060	0.000	QP
10		1.258	22.128	12.478	-23.872	46.000	9.590	0.060	0.000	AV
11		11.470	36.050	26.003	-23.950	60.000	9.831	0.216	0.000	QP
12		11.470	29.346	19.299	-20.654	50.000	9.831	0.216	0.000	AV

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: 2231093R	Page No.: 4
Engineer: Tony	
Site: TR1	Time: 2022/05/17 - 11:09
Limit: FCC_Part15.207_CE_AC Power_ClassB	Margin: 0
Probe: ENV216_101190(0.009-30MHz)	Polarity: Neutral
EUT: Barcode Scanner	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1		0.346	40.210	30.615	-18.848	59.058	9.565	0.030	0.000	QP
2	*	0.346	32.993	23.399	-16.065	49.058	9.565	0.030	0.000	AV
3		0.418	34.889	25.270	-22.599	57.488	9.572	0.047	0.000	QP
4		0.418	29.298	19.679	-18.189	47.488	9.572	0.047	0.000	AV
5		0.586	31.444	21.812	-24.556	56.000	9.580	0.051	0.000	QP
6		0.586	22.311	12.680	-23.689	46.000	9.580	0.051	0.000	AV
7		0.906	31.808	22.174	-24.192	56.000	9.587	0.047	0.000	QP
8		0.906	24.034	14.400	-21.966	46.000	9.587	0.047	0.000	AV
9		1.414	30.100	20.442	-25.900	56.000	9.590	0.068	0.000	QP
10		1.414	22.453	12.795	-23.547	46.000	9.590	0.068	0.000	AV
11		11.514	36.014	25.961	-23.986	60.000	9.837	0.216	0.000	QP
12		11.514	29.181	19.127	-20.819	50.000	9.837	0.216	0.000	AV

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).

4.2 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)

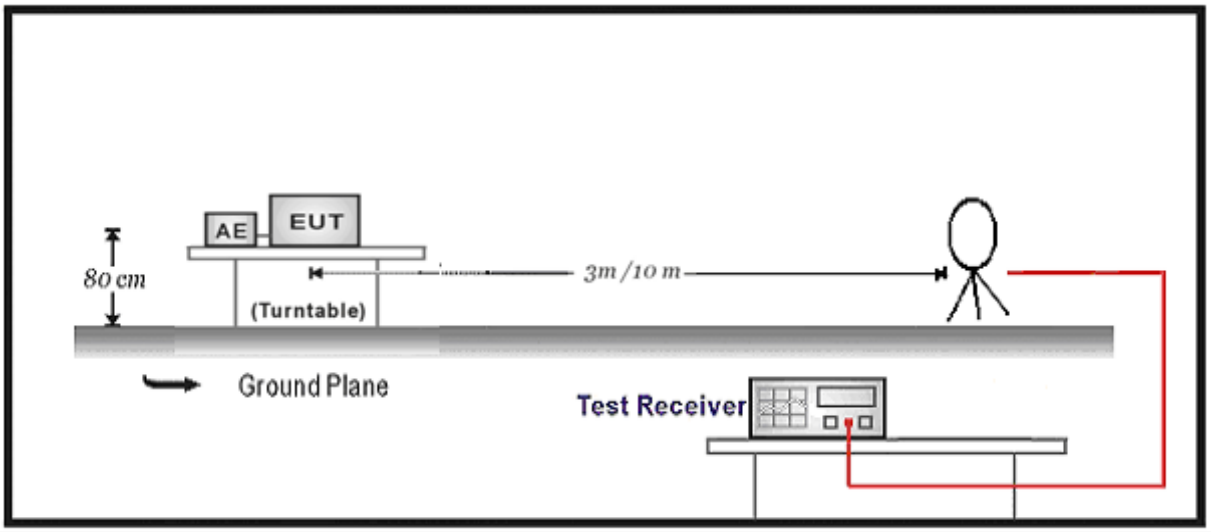
Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed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

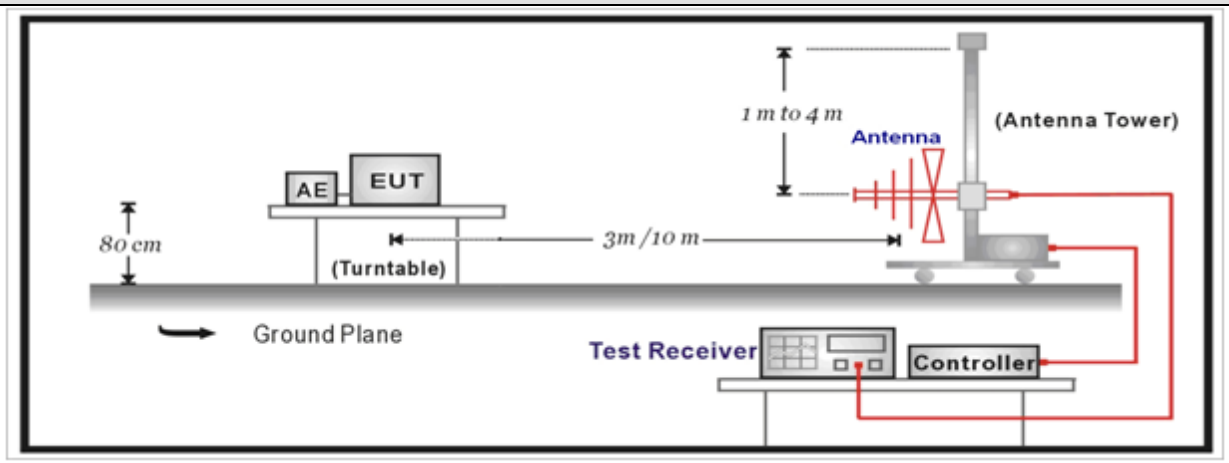
dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

4.2.2 Test Setup

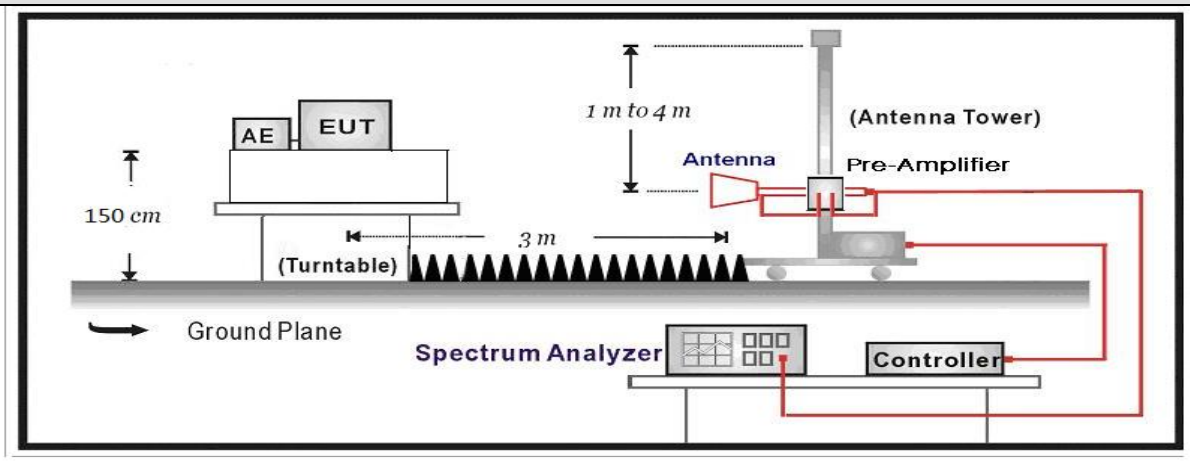
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:

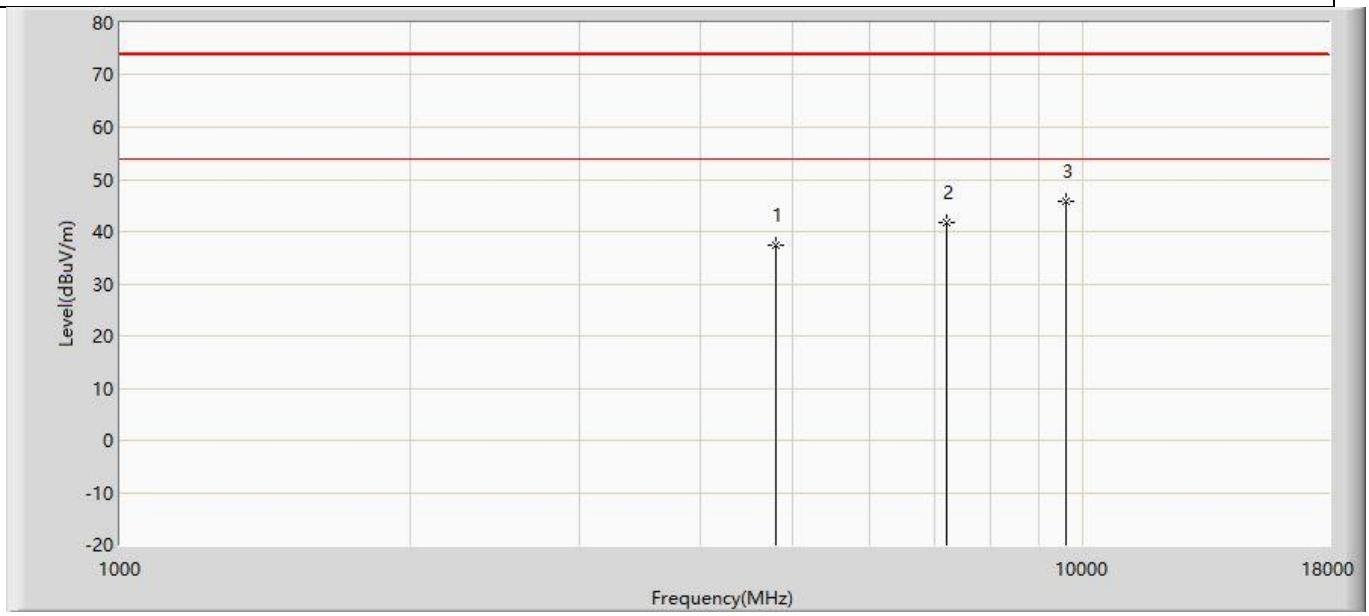


4.2.3 Test Procedure

	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

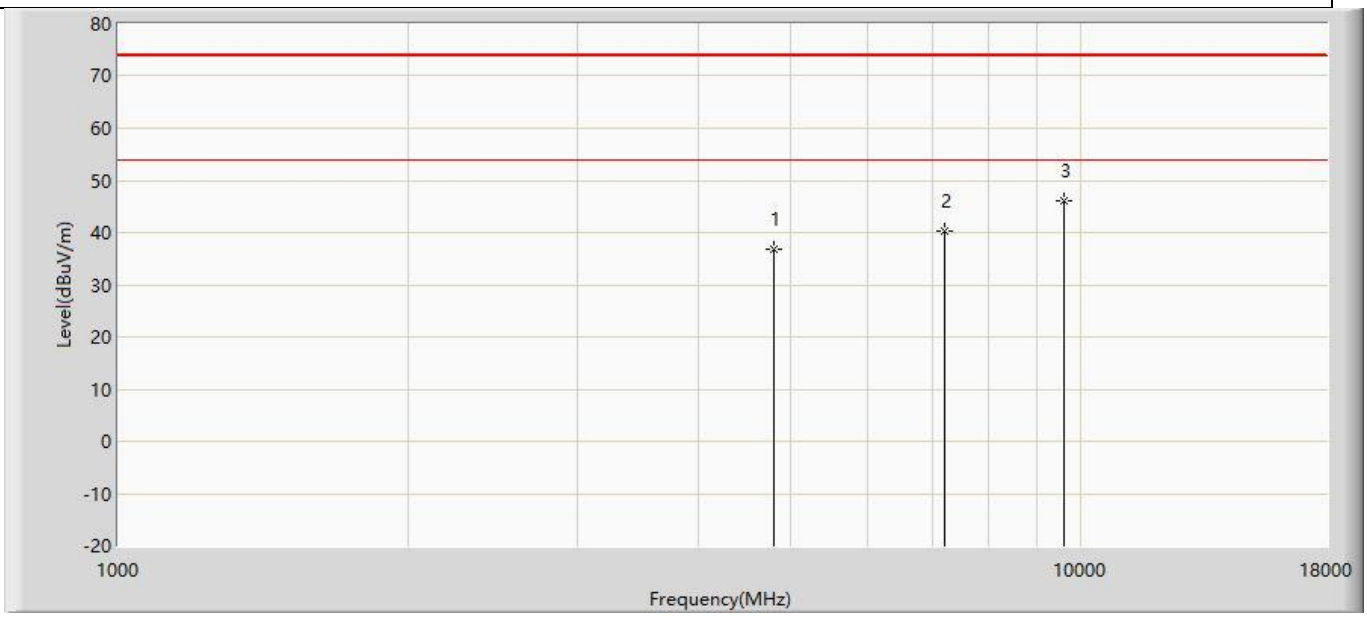
4.2.4 Test Data

Profile: 2231093R	Page No.: 13
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:44
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: Barcode Scanner	Power: DC3.7V
Note: Mode 1:Transmit at 2402MHz by BLE_1M	



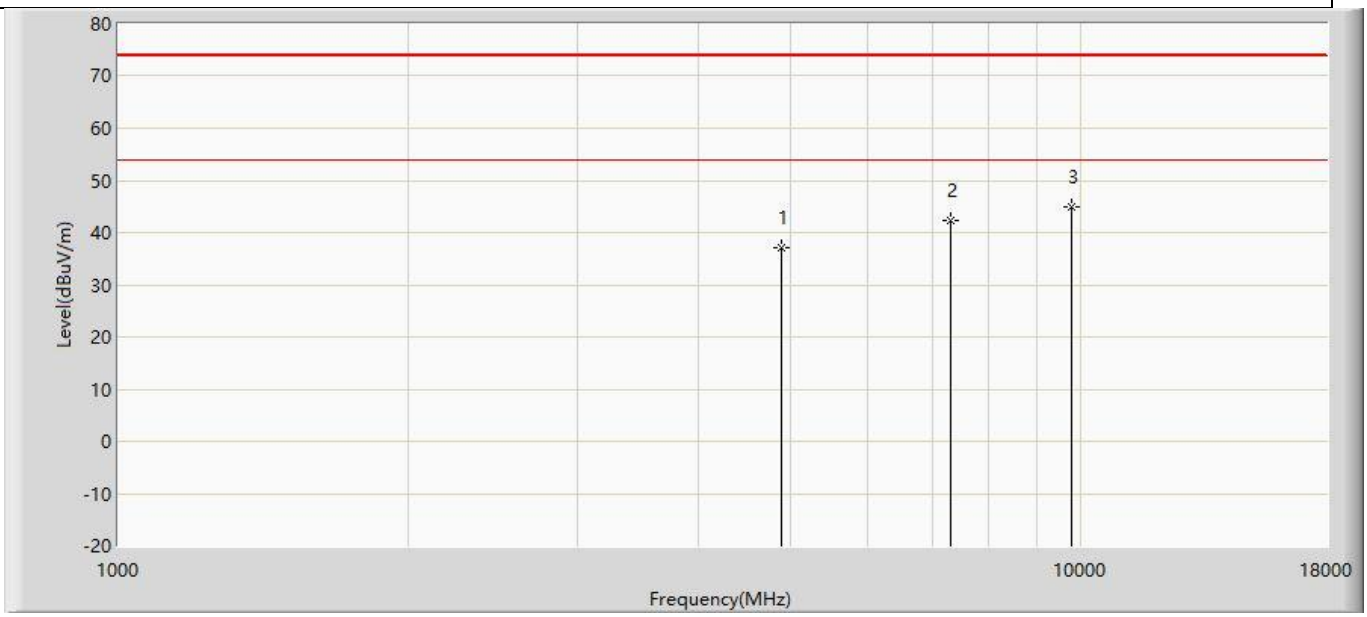
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	37.347	52.005	-36.653	74.000	-14.657	PK
2		7206.000	41.769	50.500	-32.231	74.000	-8.731	PK
3	*	9608.000	45.737	50.559	-28.263	74.000	-4.822	PK

Profile: 2231093R	Page No.: 14
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:44
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2402MHz by BLE_1M	



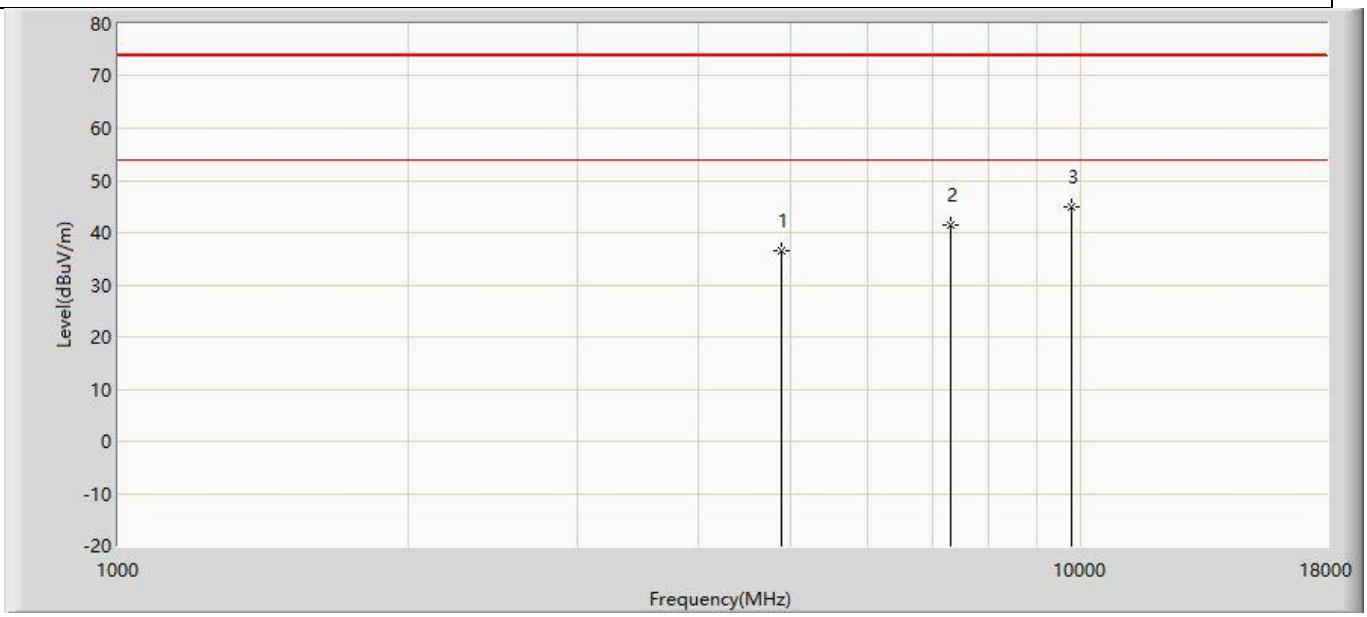
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.939	51.597	-37.061	74.000	-14.657	PK
2		7206.000	40.183	48.914	-33.817	74.000	-8.731	PK
3	*	9608.000	46.133	50.955	-27.867	74.000	-4.822	PK

Profile: 2231093R	Page No.: 15
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2440MHz by BLE_1M	



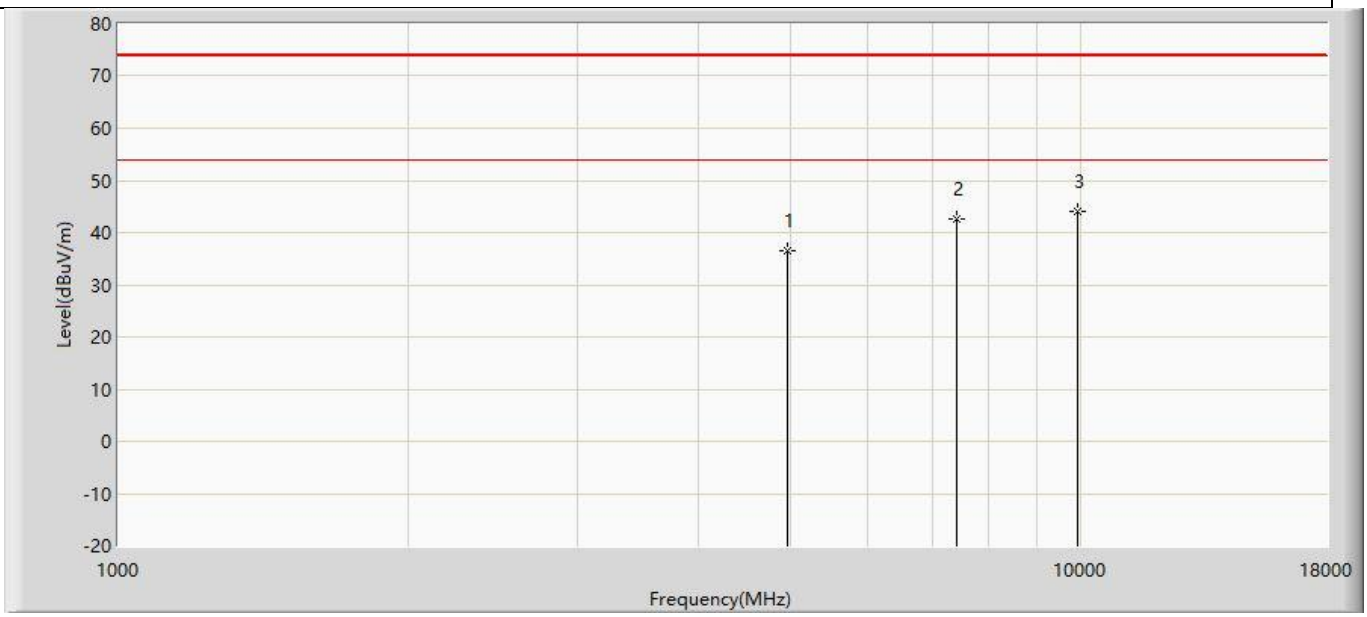
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	37.028	51.416	-36.972	74.000	-14.388	PK
2		7320.000	42.206	50.526	-31.794	74.000	-8.320	PK
3	*	9760.000	44.868	49.542	-29.132	74.000	-4.673	PK

Profile: 2231093R	Page No.: 16
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2440MHz by BLE_1M	



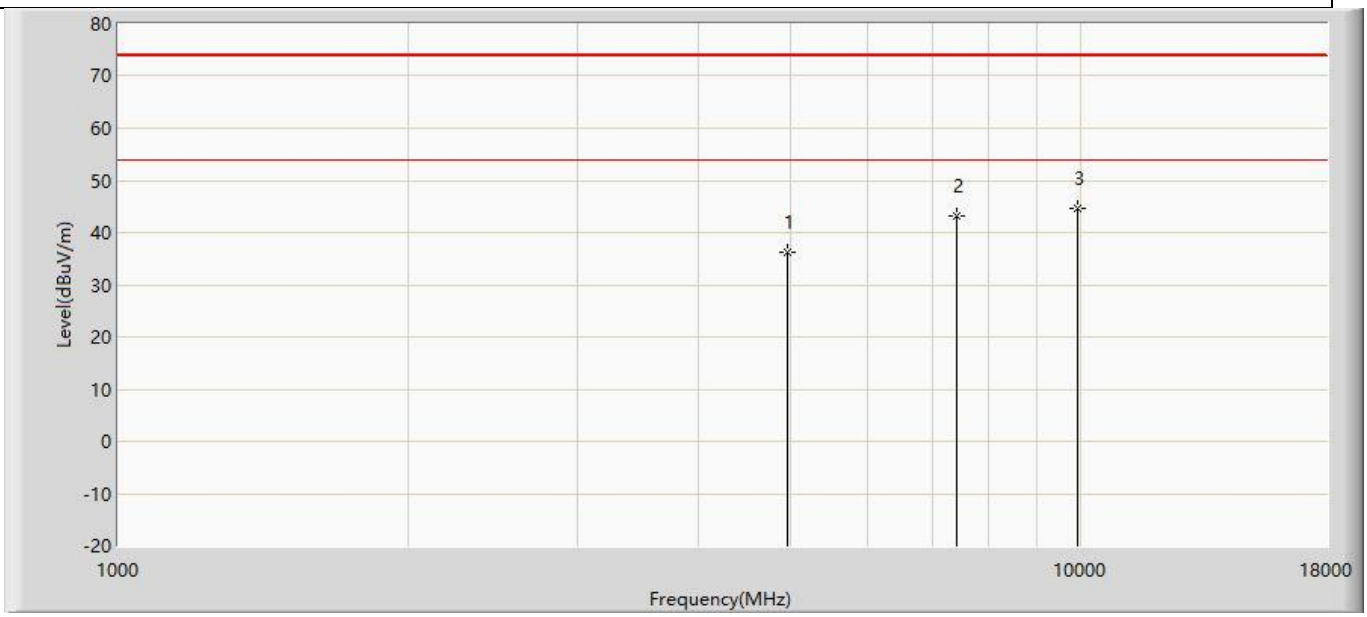
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.550	50.938	-37.450	74.000	-14.388	PK
2		7320.000	41.405	49.725	-32.595	74.000	-8.320	PK
3	*	9760.000	45.013	49.687	-28.987	74.000	-4.673	PK

Profile: 2231093R	Page No.: 17
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2480MHz by BLE_1M	



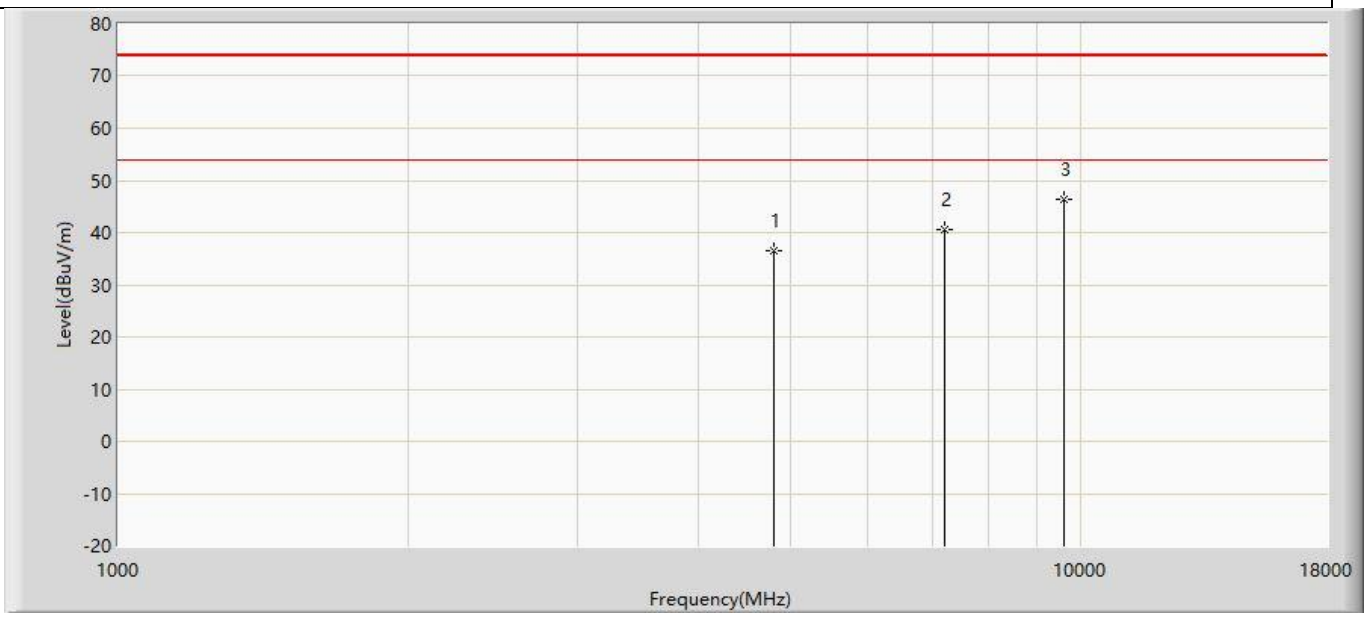
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	36.567	50.687	-37.433	74.000	-14.120	PK
2		7440.000	42.616	50.451	-31.384	74.000	-7.834	PK
3	*	9920.000	44.078	48.149	-29.922	74.000	-4.071	PK

Profile: 2231093R	Page No.: 18
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2480MHz by BLE_1M	



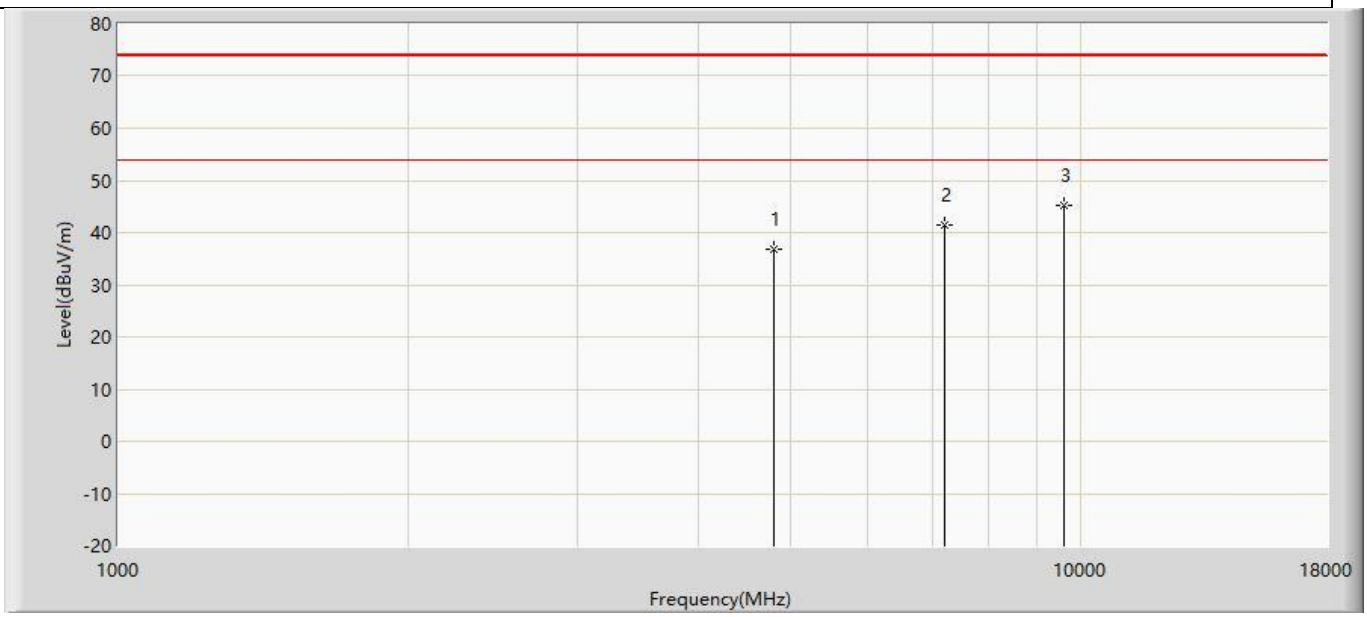
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	36.158	50.278	-37.842	74.000	-14.120	PK
2		7440.000	43.184	51.019	-30.816	74.000	-7.834	PK
3	*	9920.000	44.628	48.699	-29.372	74.000	-4.071	PK

Profile: 2231093R	Page No.: 19
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2402MHz by BLE_2M	



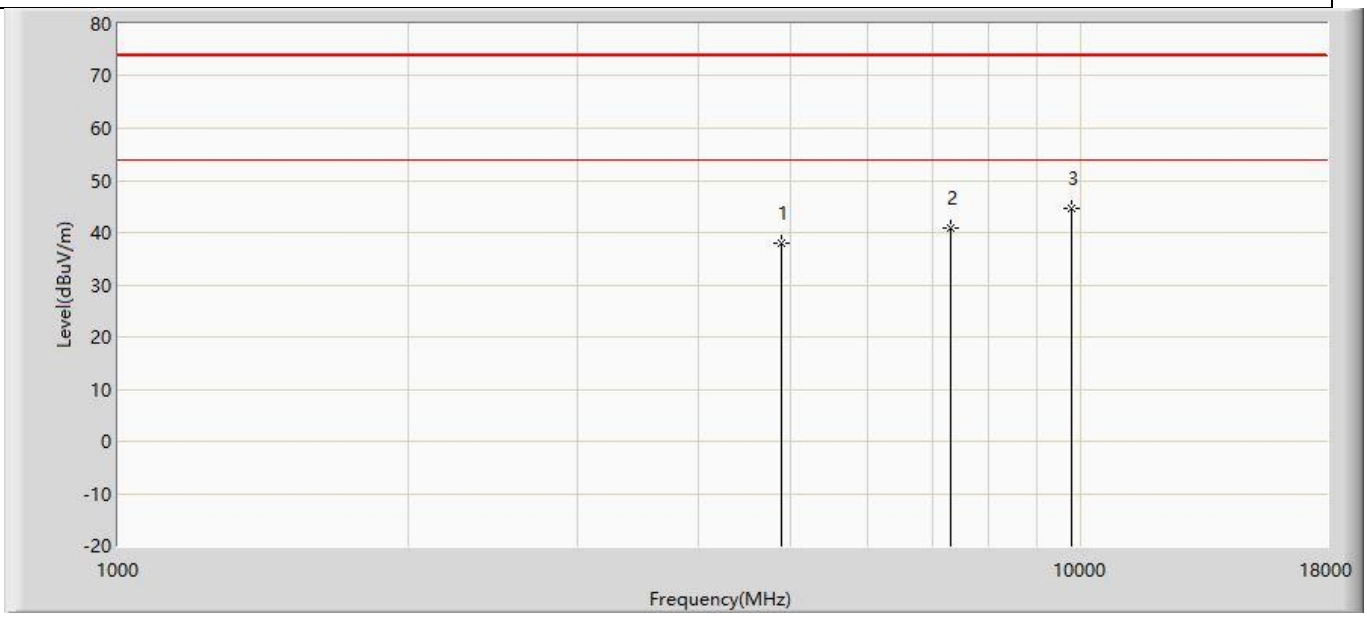
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.438	51.096	-37.562	74.000	-14.657	PK
2		7206.000	40.665	49.396	-33.335	74.000	-8.731	PK
3	*	9608.000	46.408	51.230	-27.592	74.000	-4.822	PK

Profile: 2231093R	Page No.: 20
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2402MHz by BLE_2M	



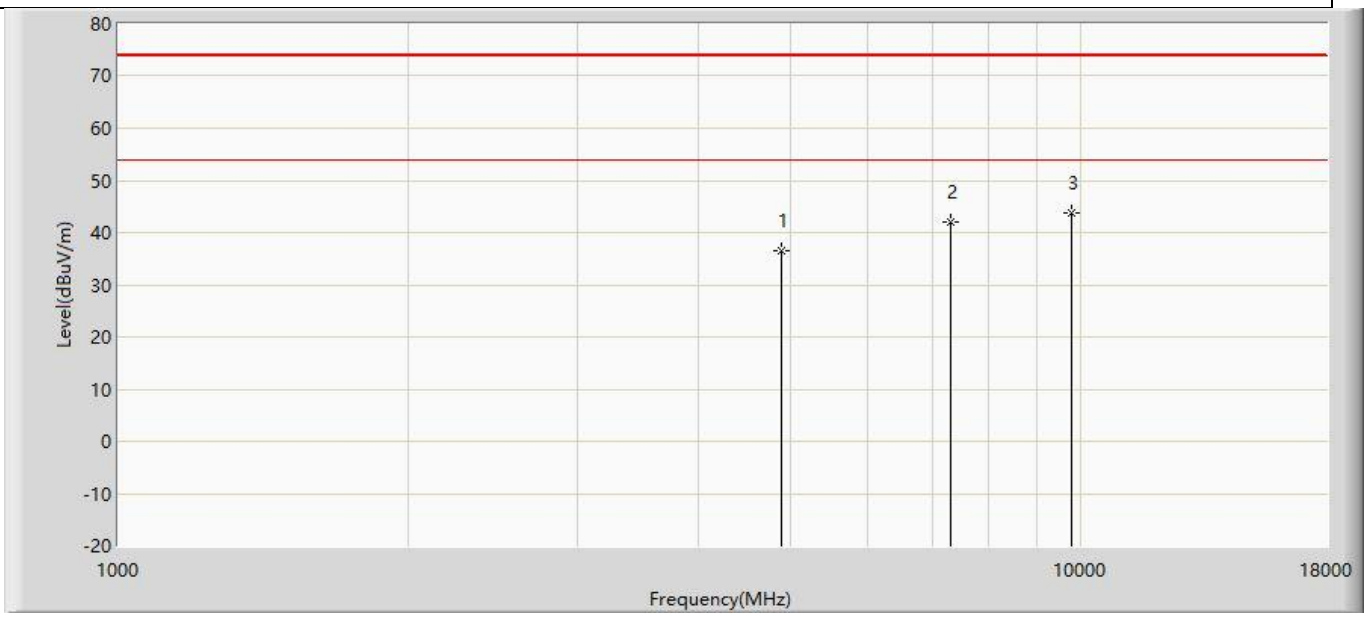
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4804.000	36.726	51.384	-37.274	74.000	-14.657	PK
2		7206.000	41.338	50.069	-32.662	74.000	-8.731	PK
3	*	9608.000	45.354	50.176	-28.646	74.000	-4.822	PK

Profile: 2231093R	Page No.: 21
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2440MHz by BLE_2M	



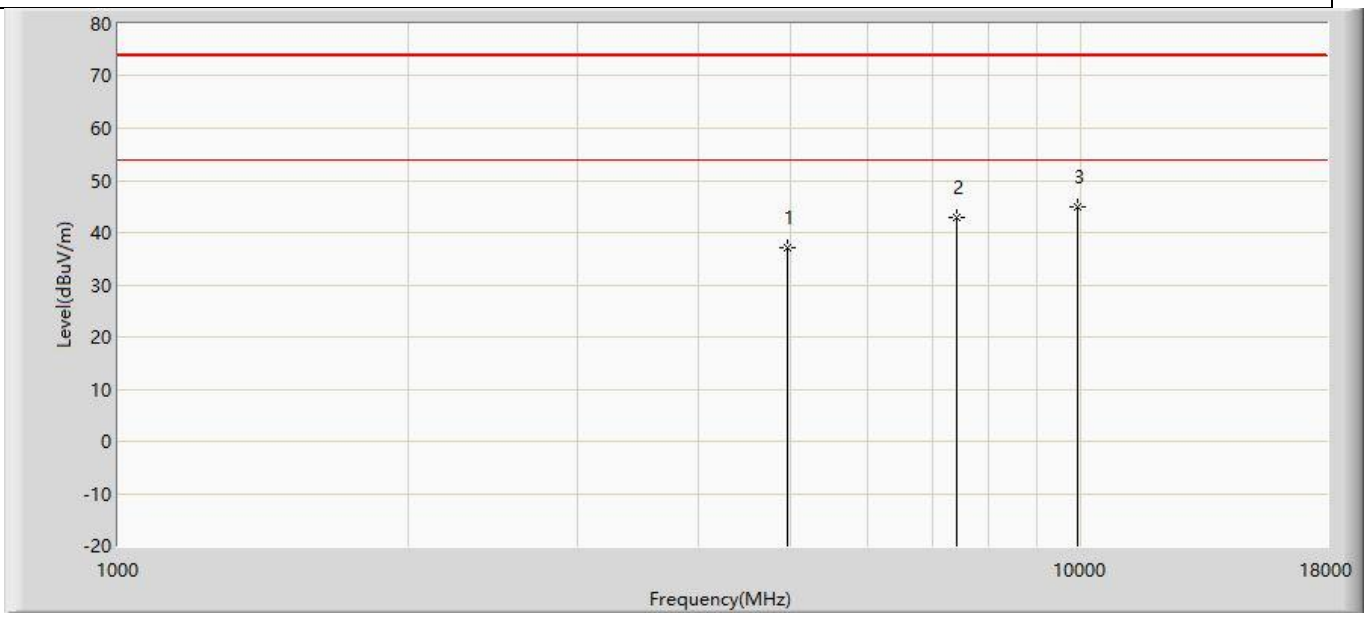
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	37.845	52.233	-36.155	74.000	-14.388	PK
2		7320.000	40.948	49.268	-33.052	74.000	-8.320	PK
3	*	9760.000	44.611	49.285	-29.389	74.000	-4.673	PK

Profile: 2231093R	Page No.: 22
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2440MHz by BLE_2M	



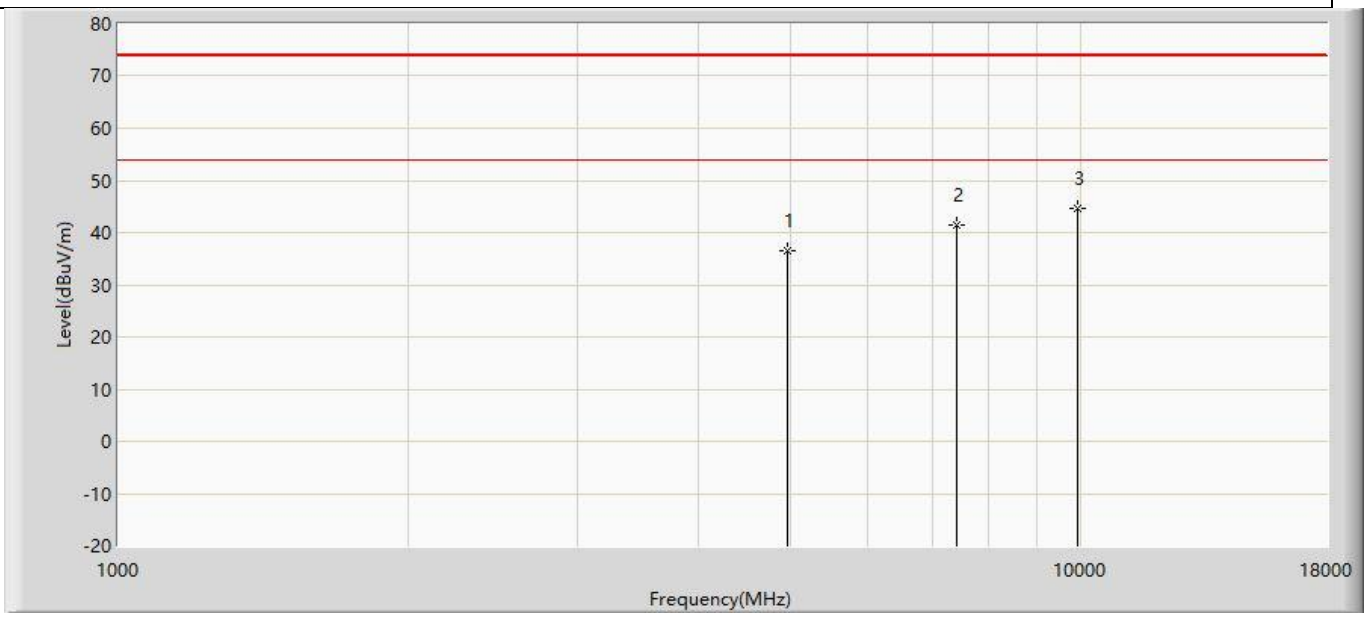
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4880.000	36.614	51.002	-37.386	74.000	-14.388	PK
2		7320.000	41.980	50.300	-32.020	74.000	-8.320	PK
3	*	9760.000	43.807	48.481	-30.193	74.000	-4.673	PK

Profile: 2231093R	Page No.: 23
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
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	37.164	51.284	-36.836	74.000	-14.120	PK
2		7440.000	42.855	50.690	-31.145	74.000	-7.834	PK
3	*	9920.000	45.005	49.076	-28.995	74.000	-4.071	PK

Profile: 2231093R	Page No.: 24
Engineer: Pengchengyang	
Site: AC5	Time: 2022/05/26 - 01:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2480MHz by BLE_2M	

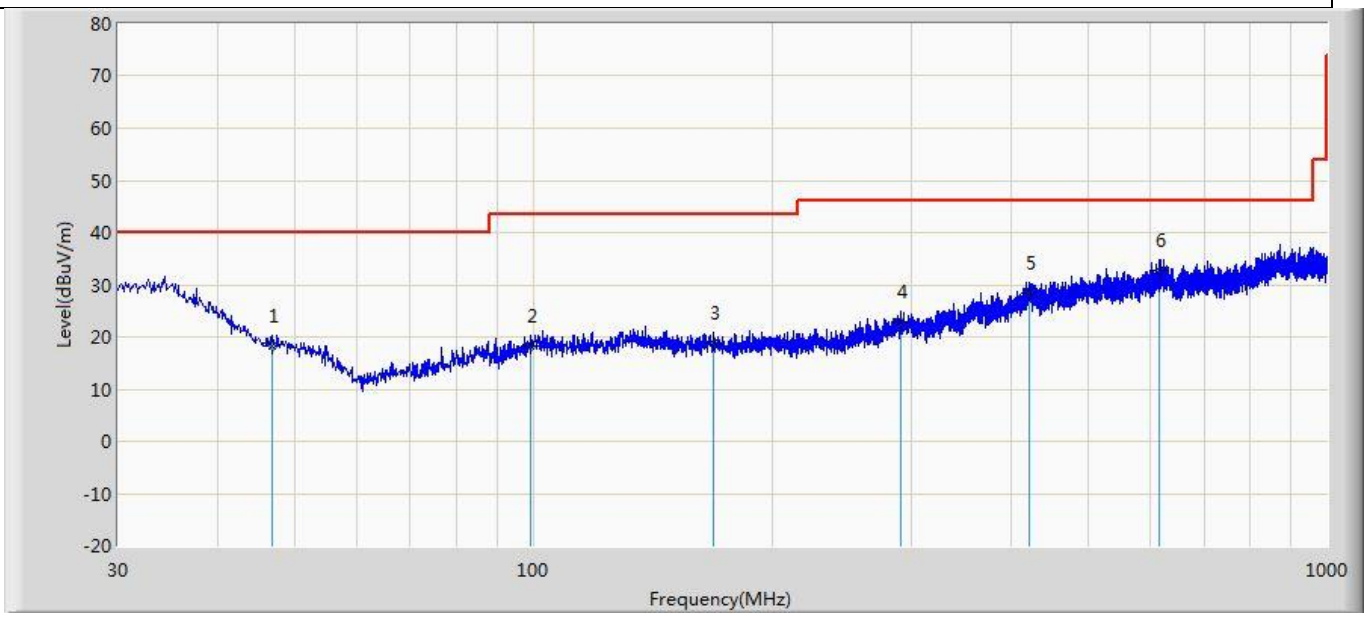


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		4960.000	36.476	50.596	-37.524	74.000	-14.120	PK
2		7440.000	41.464	49.299	-32.536	74.000	-7.834	PK
3	*	9920.000	44.536	48.607	-29.464	74.000	-4.071	PK

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:

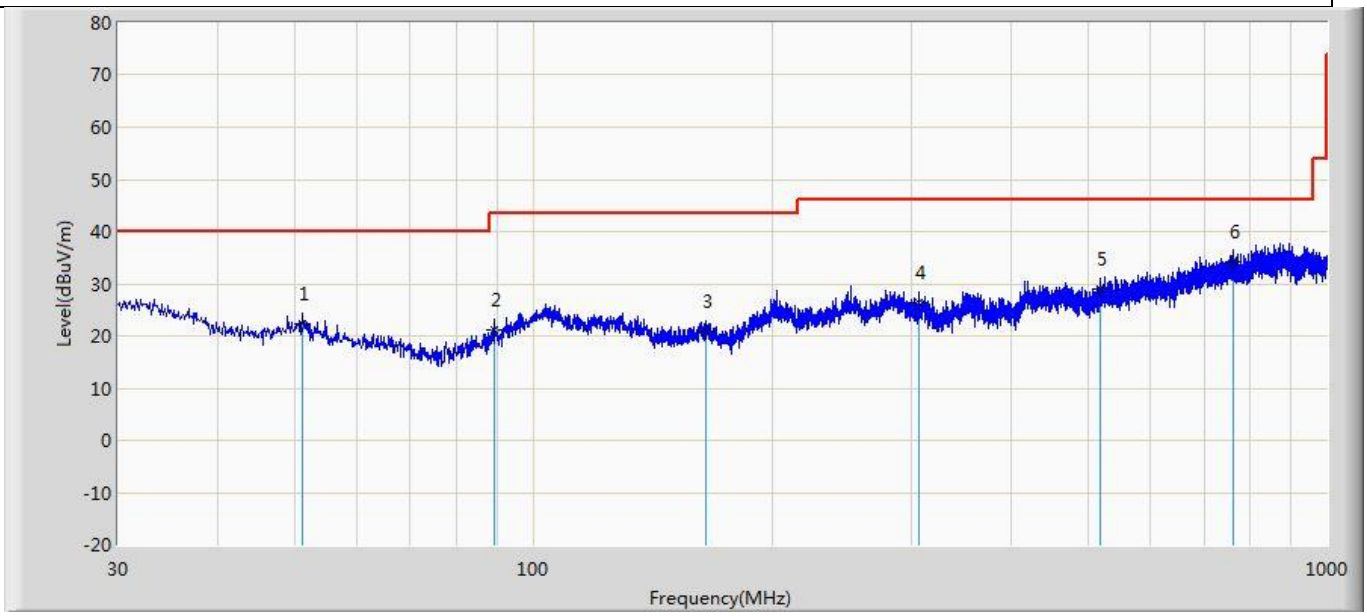
Profile: 2231093R	Page No.: 17
Engineer: JunXu	
Site: AC2	Time: 2022/05/26 - 21:52
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Horizontal
EUT: Barcode Scanner	Power: 120V/60Hz
Note: Mode1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		46.975	18.325	1.863	-21.675	40.000	16.462	QP
2		99.476	18.233	1.275	-25.267	43.500	16.957	QP
3		168.710	18.891	1.619	-24.609	43.500	17.272	QP
4		290.809	22.993	2.357	-23.007	46.000	20.637	QP
5		421.638	28.506	1.315	-17.494	46.000	27.191	QP
6	*	616.001	32.795	2.735	-13.205	46.000	30.060	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: 2231093R	Page No.: 18
Engineer: JunXu	
Site: AC2	Time: 2022/05/26 - 21:54
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_3M(30-1000M)	Polarity: Vertical
EUT: Barcode Scanner	Power: 120V/60Hz
Note: Mode1	

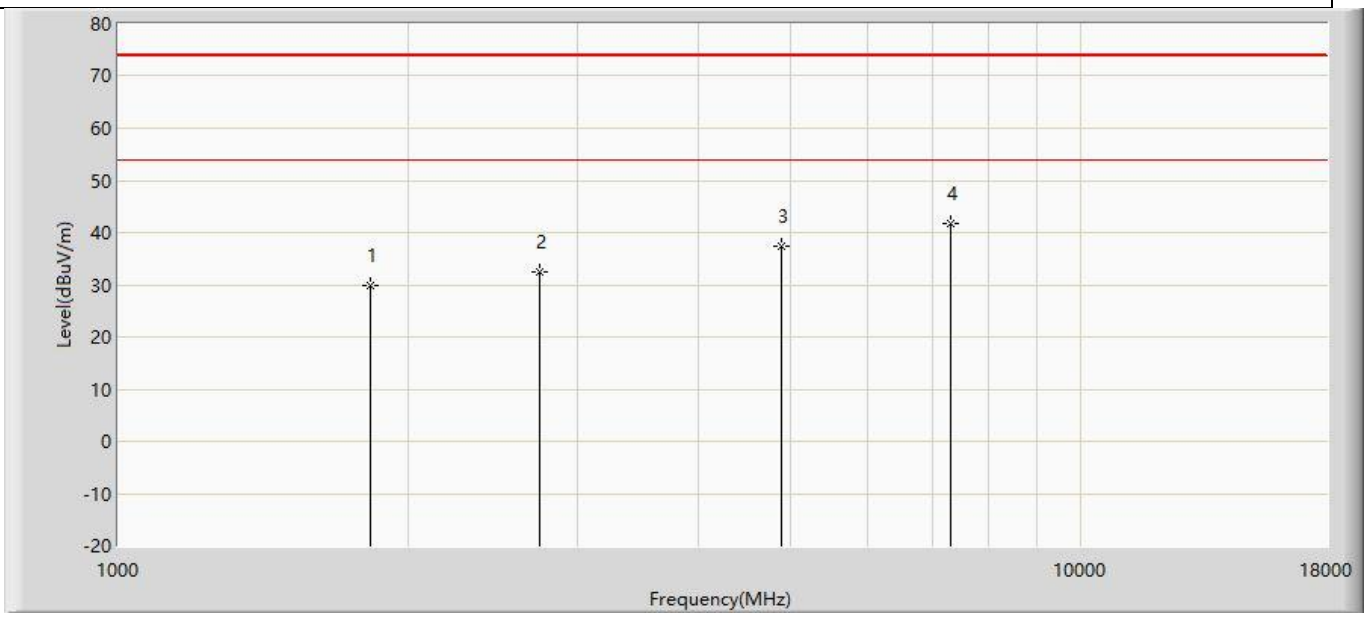


No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		51.219	22.365	3.282	-17.635	40.000	19.083	QP
2		89.412	21.230	4.404	-22.270	43.500	16.826	QP
3		165.194	20.860	1.376	-22.640	43.500	19.484	QP
4		306.450	26.357	2.182	-19.643	46.000	24.175	QP
5		517.304	28.996	2.655	-17.004	46.000	26.341	QP
6	*	760.653	34.210	2.948	-11.790	46.000	31.261	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)

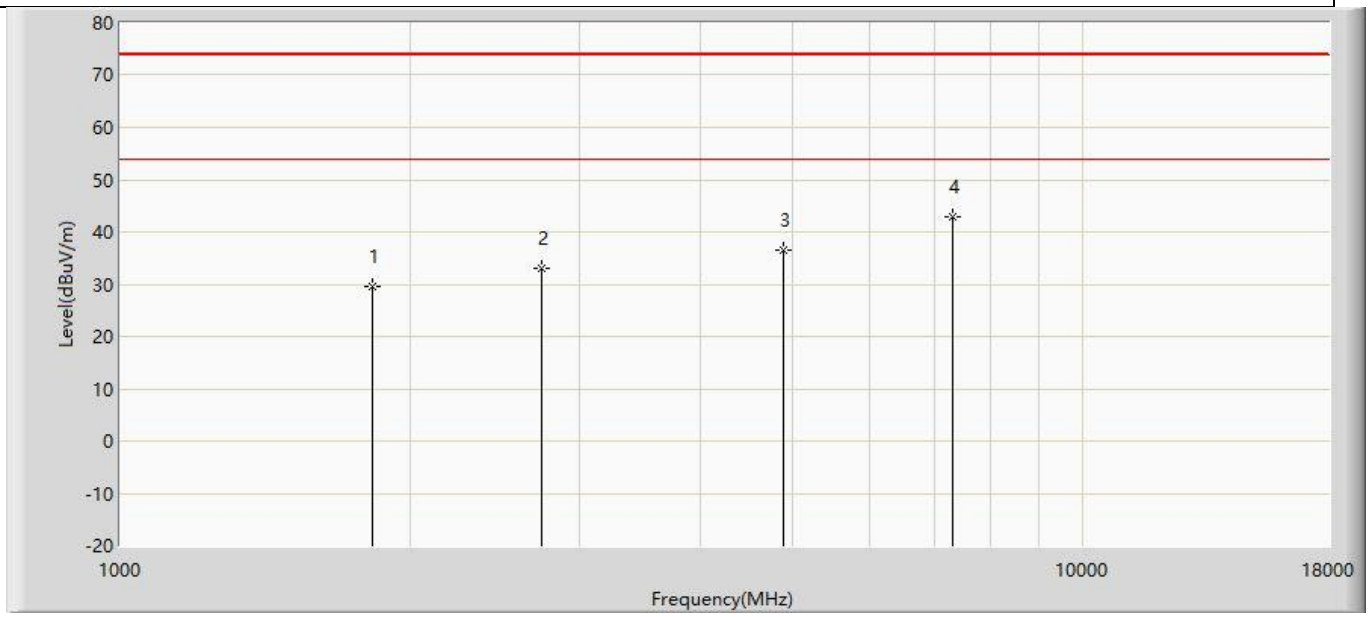
The worst case of Simultaneous Radiated Emission:

Profile: 2231093R	Page No.: 7
Engineer: Juliuszhou	
Site: AC5	Time: 2022/05/30 - 14:40
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: Barcode Scanner	Power: DC3.7V
Note: Mode 1:Transmit BT 2440MHz by & RFID 914.25	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		1828.500	29.924	52.497	-44.076	74.000	-22.573	PK
2		2742.750	32.427	52.273	-41.573	74.000	-19.846	PK
3		4880.000	37.495	51.883	-36.505	74.000	-14.388	PK
4	*	7320.000	41.772	50.092	-32.228	74.000	-8.320	PK

Profile: 2231093R	Page No.: 8
Engineer: Juliuszhou	
Site: AC5	Time: 2022/05/30 - 14:40
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: Barcode Scanner	Power: DC3.7V
Note: Mode1:Transmit BT 2440MHz by & RFID 914.25	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		1828.500	29.509	52.082	-44.491	74.000	-22.573	PK
2		2742.750	33.143	52.989	-40.857	74.000	-19.846	PK
3		4880.000	36.597	50.985	-37.403	74.000	-14.388	PK
4	*	7320.000	43.030	51.350	-30.970	74.000	-8.320	PK

4.3 Emissions in non-restricted frequency band	VERDICT: PASS

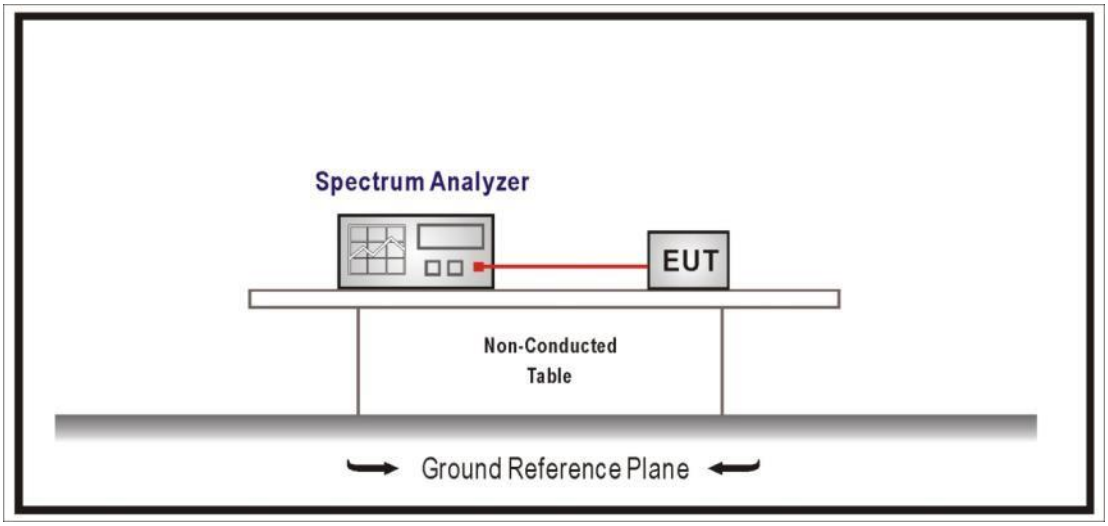
4.3.1 Limit

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

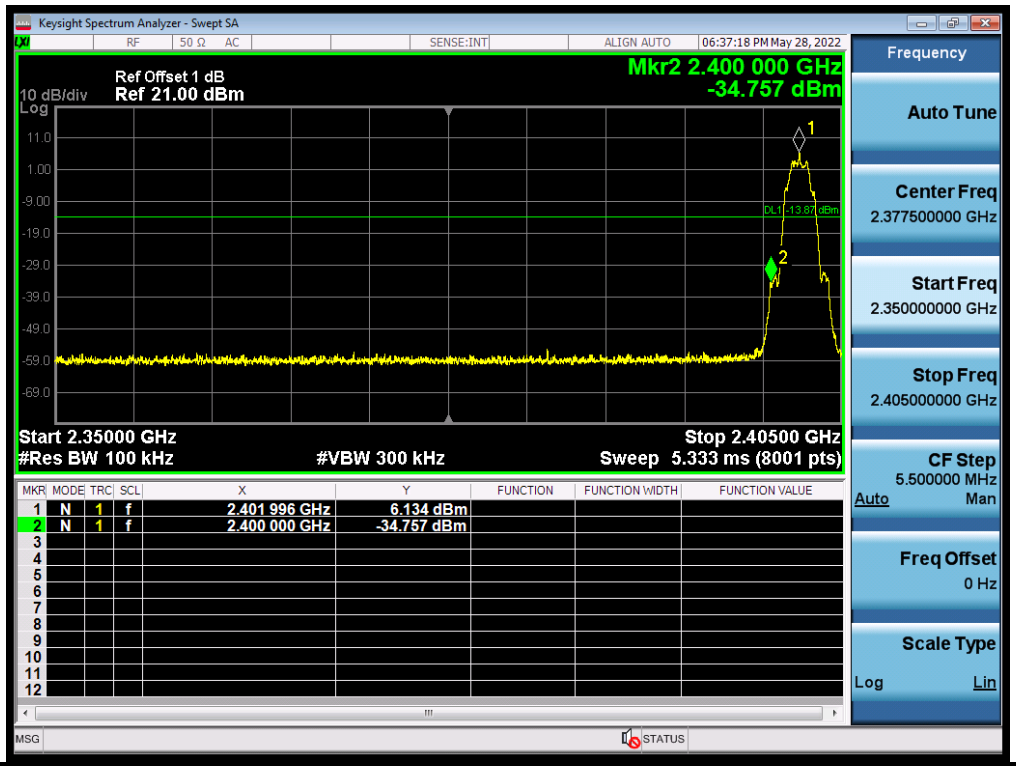
References Rule			Chapter	Description
☒	ANSI C63.10		11.11	Emissions in non-restricted frequency bands
	☒	ANSI C63.10	11.11.1	General
	☒	ANSI C63.10	11.11.2	Reference level measurement
	☒	ANSI C63.10	11.11.3	Emission level measurement

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	6.669	2400	-56.152	62.821	≥30	Pass
	39	2480	6.628	2500	-56.874	63.502	≥30	Pass
2	00	2402	6.134	2400	-34.757	40.891	≥30	Pass
	39	2480	6.074	2500	-59.559	65.633	≥30	Pass

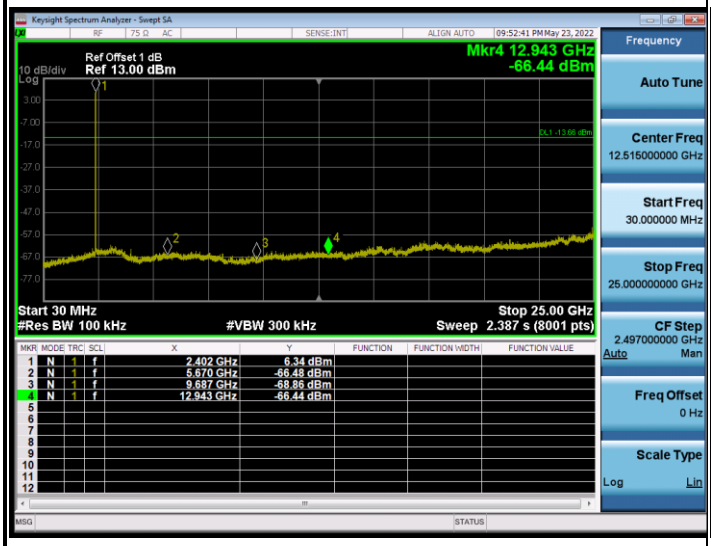
Note: The worst case of emissions in non-restricted frequency bands as below:

Mode 2 CH00(2402MHz)

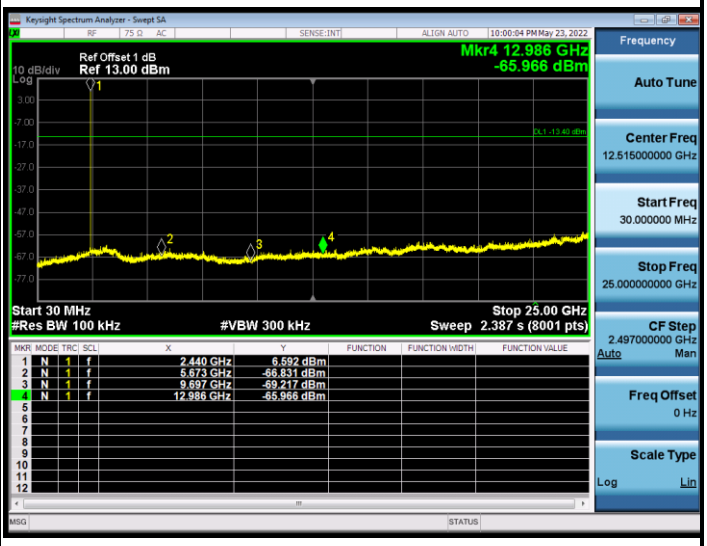


The data of entire corresponding spectrum:

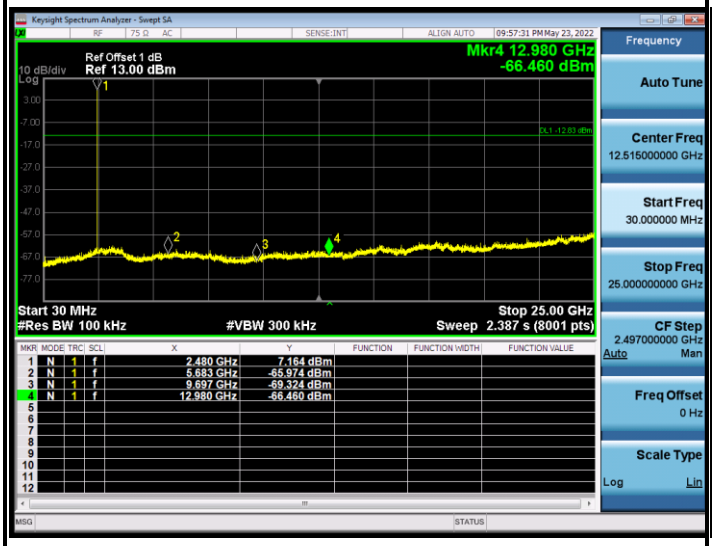
Mode 1 CH00 (2402MHz)



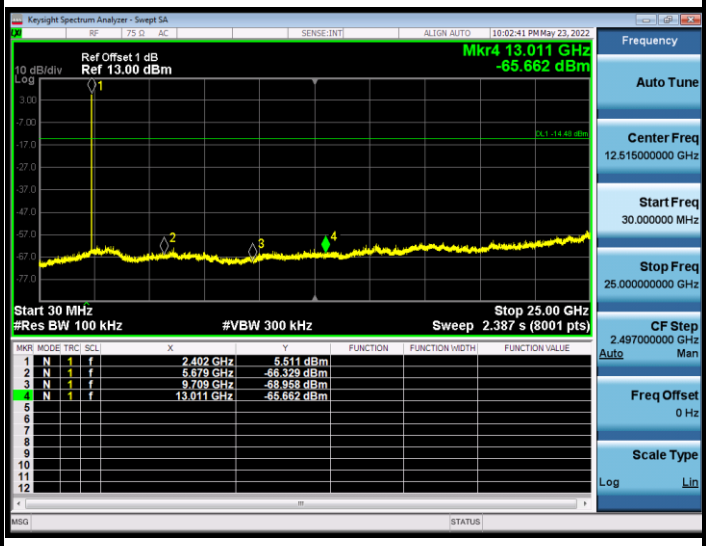
Mode 1 CH19 (2440MHz)



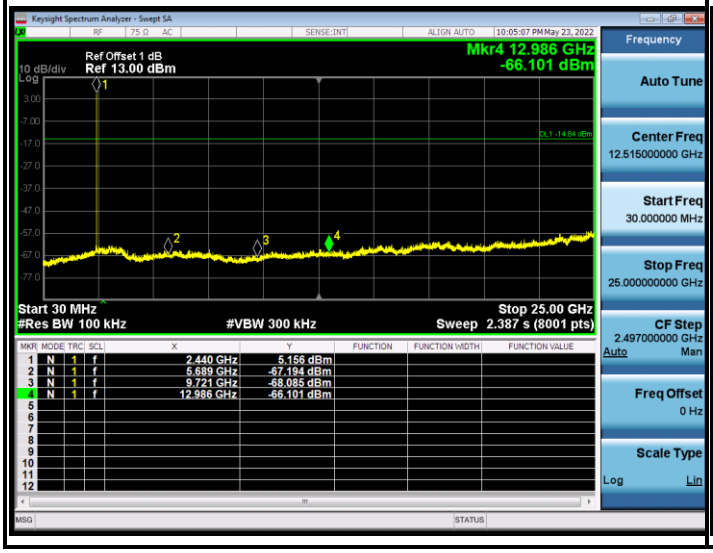
Mode 1 CH00 (2480MHz)



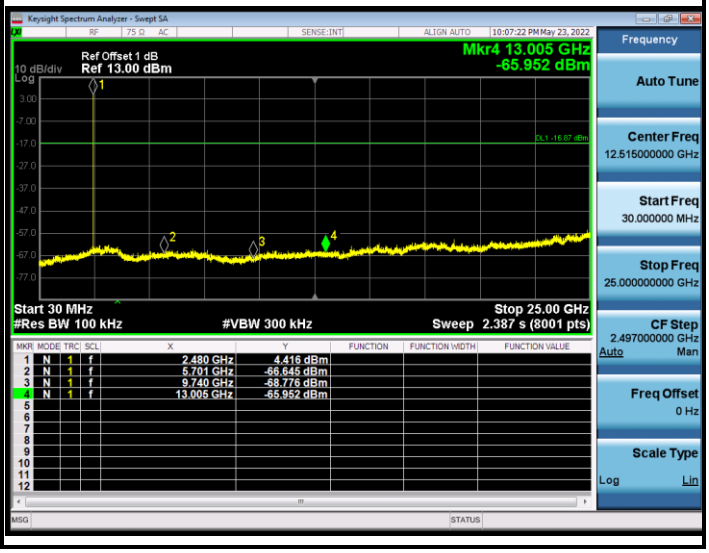
Mode 2 CH00(2402MHz)



Mode 2 CH19 (2440MHz)



Mode 2 CH39 (2480MHz)

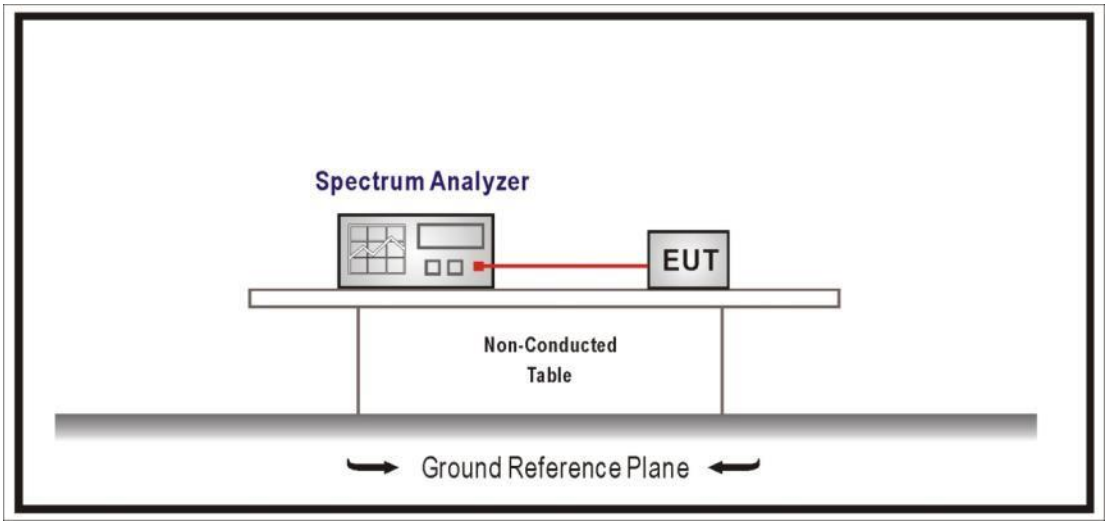


4.4 Duty cycle	VERDICT: PASS

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

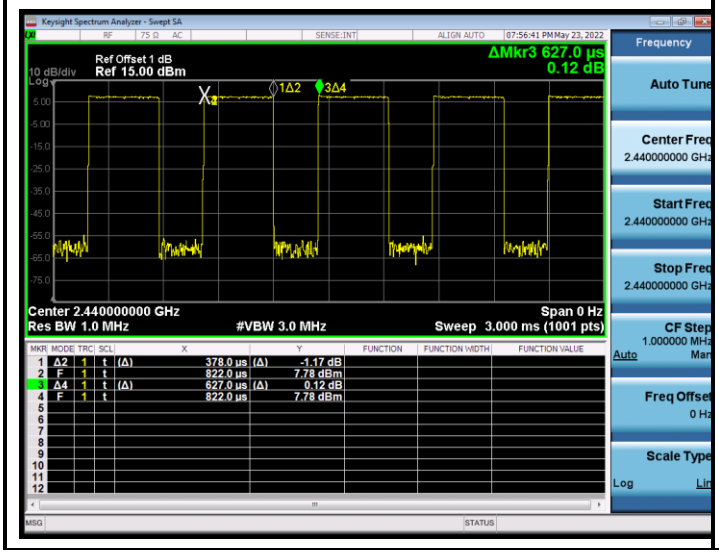
4.4.4 Test Data

Test Mode	Tx On (us)	Tx Off (us)	VBW (kHz)	Tx On + Tx Off (us)	Duty Cycle (%)
Mode 1	0.378	0.249	3	0.627	60.29
Mode 2	0.192	0.432	5.2	0.624	30.77

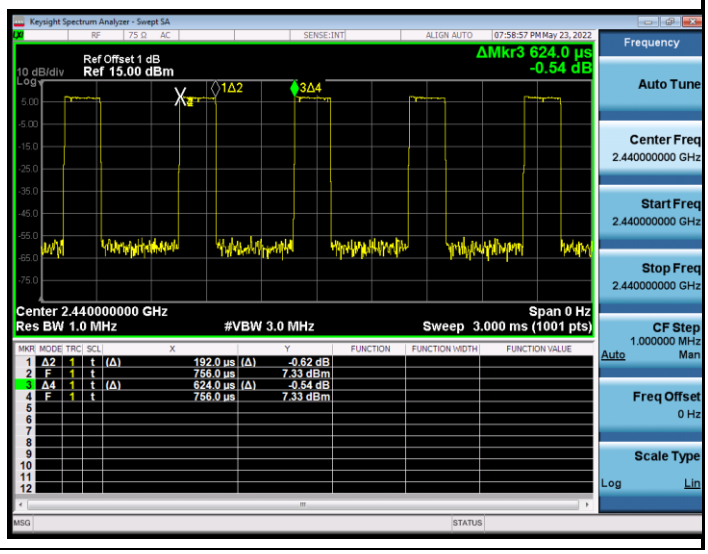
Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

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

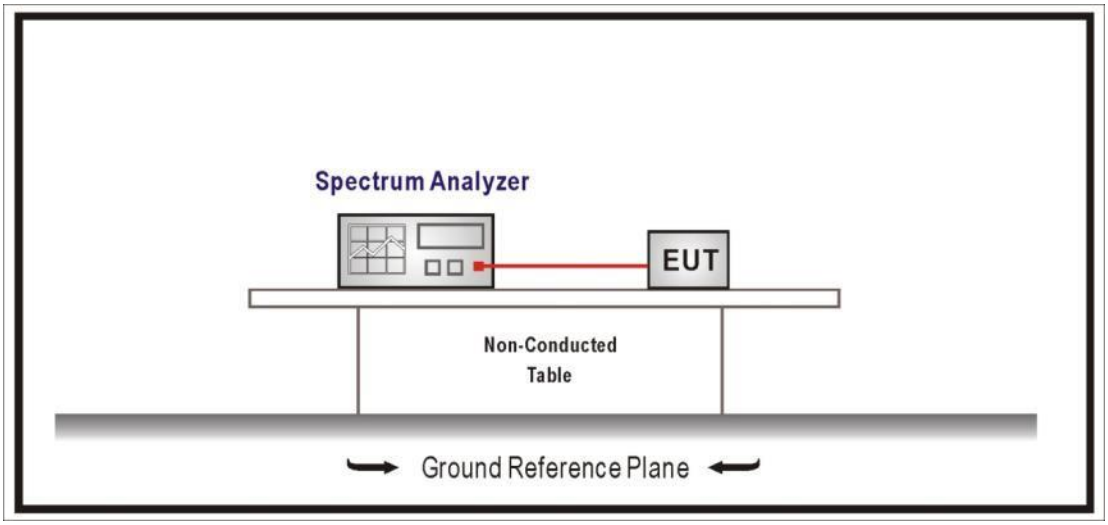


4.5 Band Edge — VERDICT: PASS

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

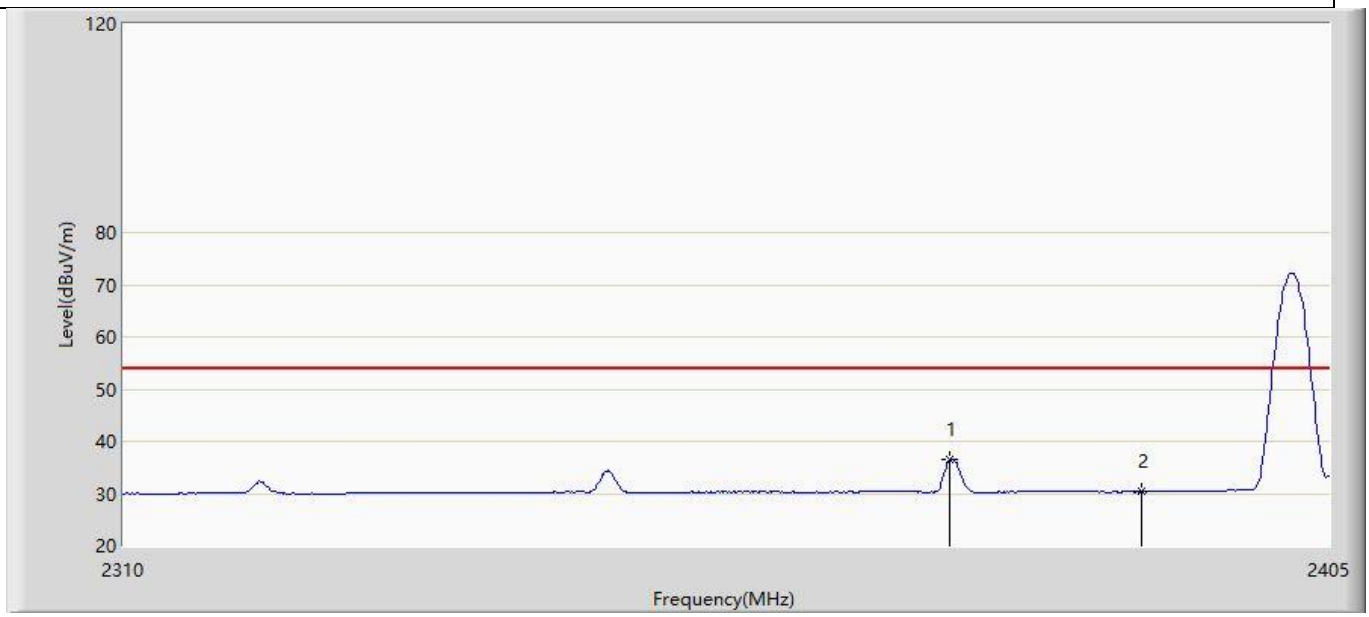


4.5.3 Test Procedure

	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

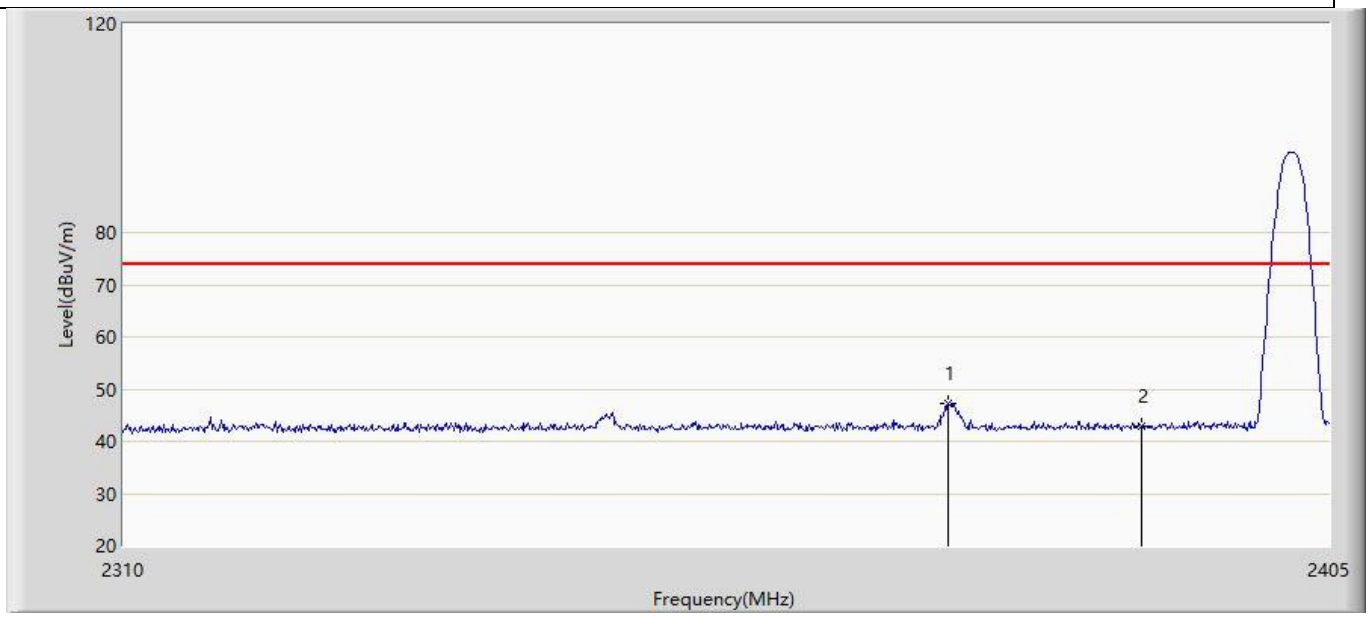
4.5.4 Test Data

Profile: 2231093R	Page No.: 1
Engineer: Pengchengyang	
Site: AC5	Time: 2020/03/12 - 00:39
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2402MHz by BLE_1M	



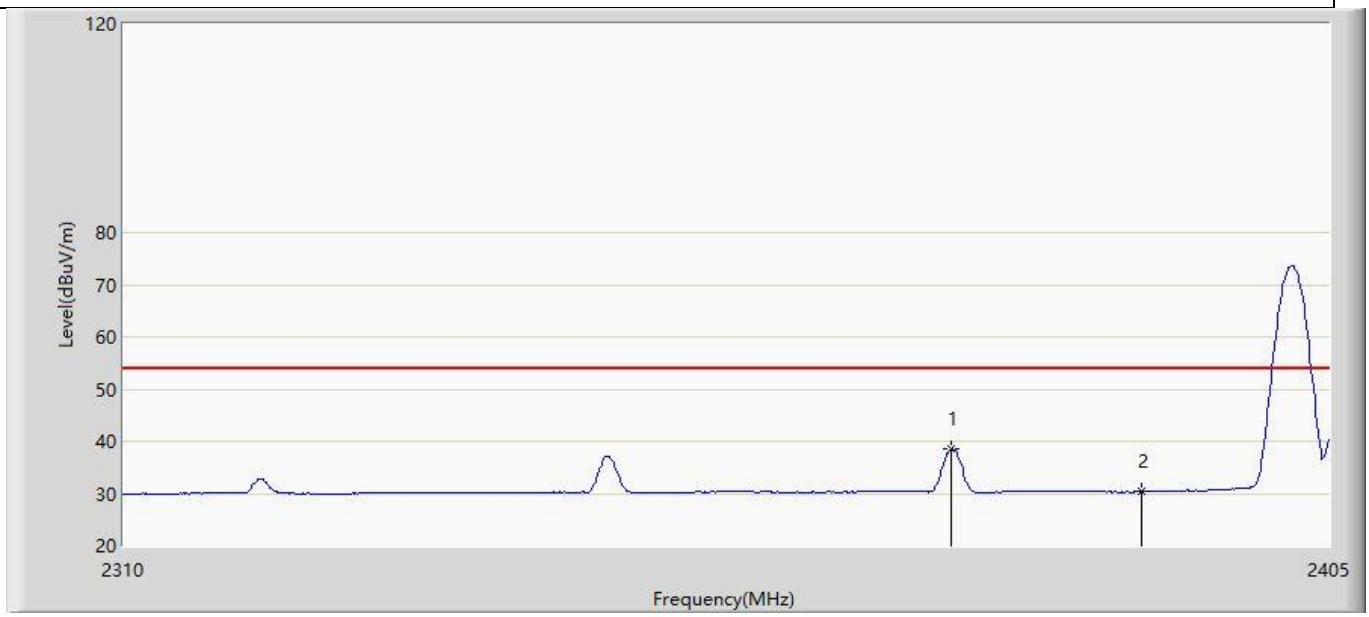
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2374.695	36.459	5.375	-17.541	54.000	31.085	AV
2		2390.000	30.318	-0.824	-23.682	54.000	31.141	AV

Profile: 2231093R	Page No.: 2
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:38
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2402MHz by BLE_1M	



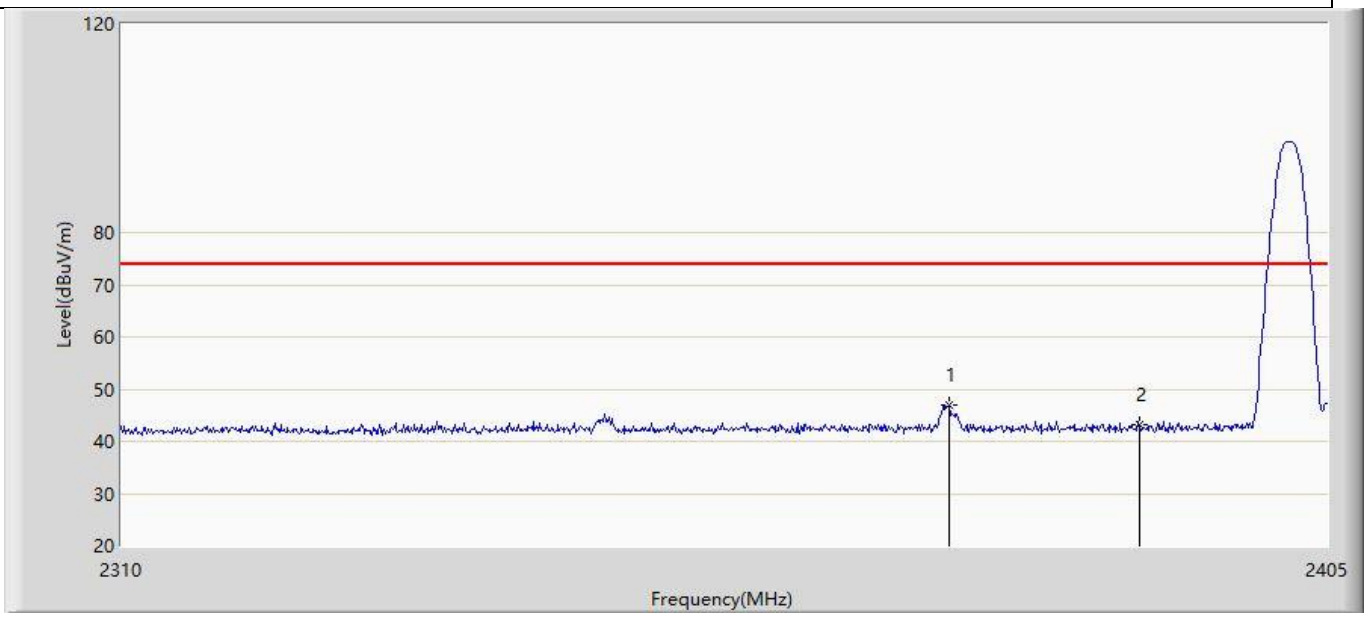
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2374.600	47.363	16.279	-26.637	74.000	31.083	PK
2		2390.000	42.782	11.640	-31.218	74.000	31.141	PK

Profile: 2231093R	Page No.: 3
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:39
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2402MHz by BLE_1M	



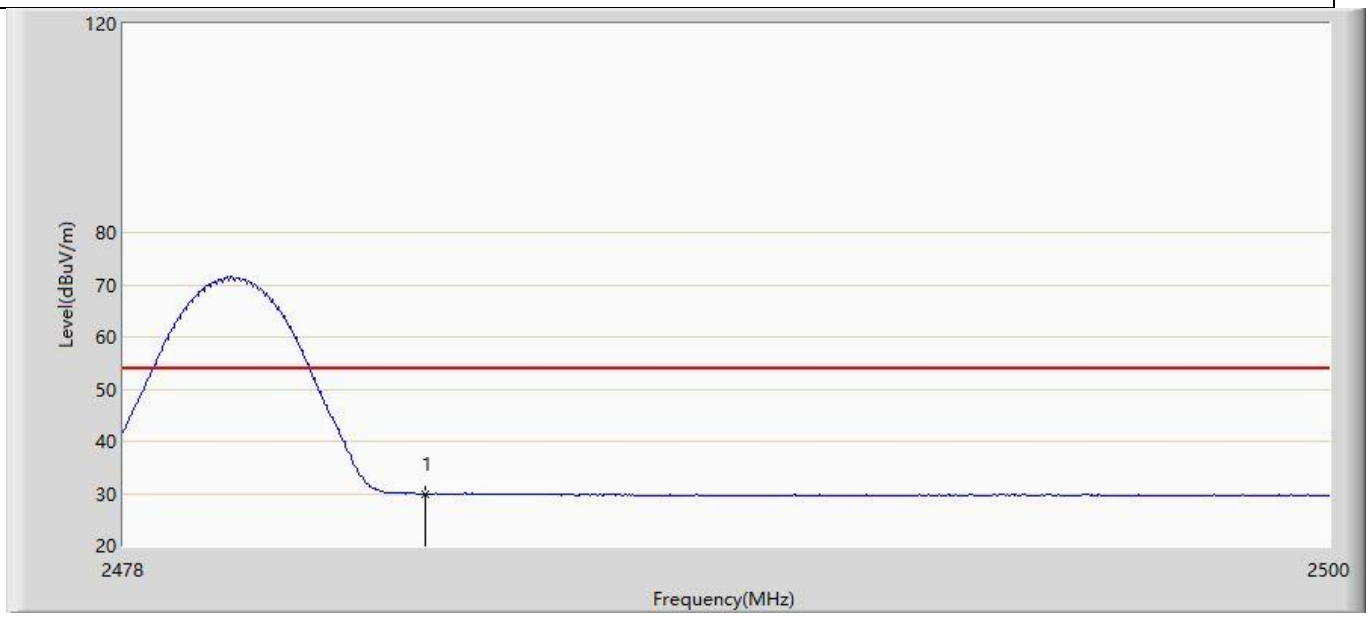
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2374.885	38.496	7.411	-15.504	54.000	31.085	AV
2		2390.000	30.321	-0.821	-23.679	54.000	31.141	AV

Profile: 2231093R	Page No.: 4
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:43
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2402MHz by BLE_1M	



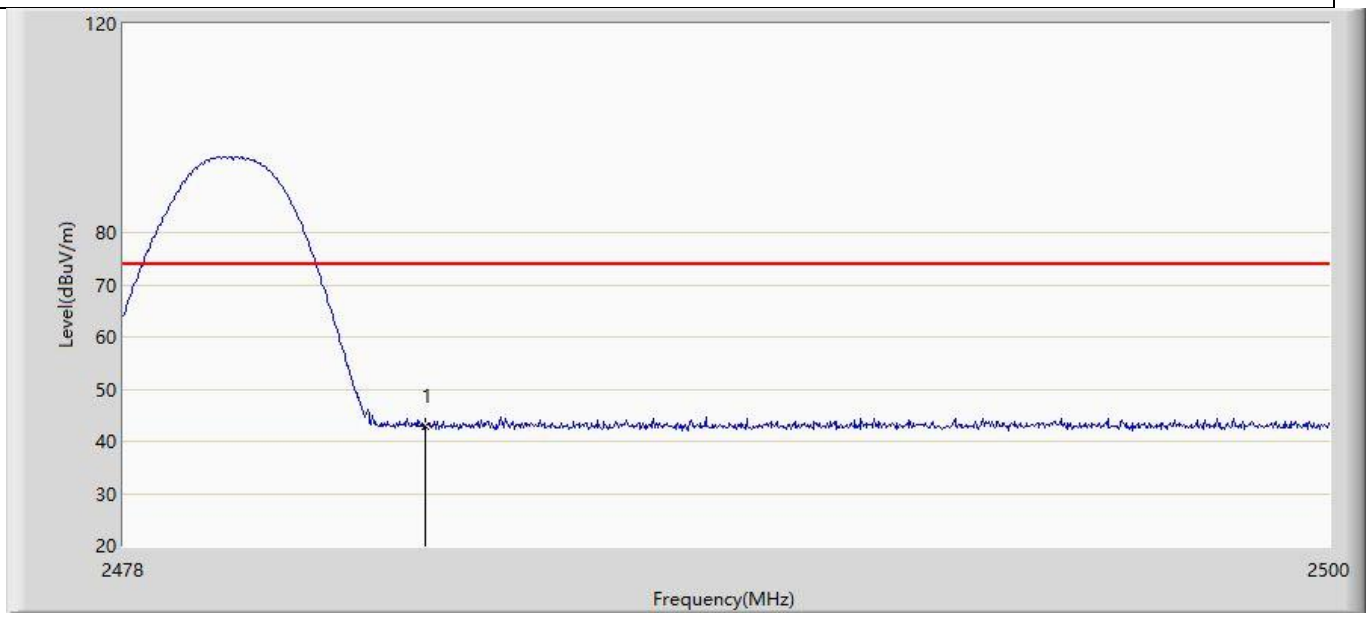
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2374.885	47.005	15.920	-26.995	74.000	31.085	PK
2		2390.000	43.123	11.981	-30.877	74.000	31.141	PK

Profile: 2231093R	Page No.: 5
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:45
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2480MHz by BLE_1M	



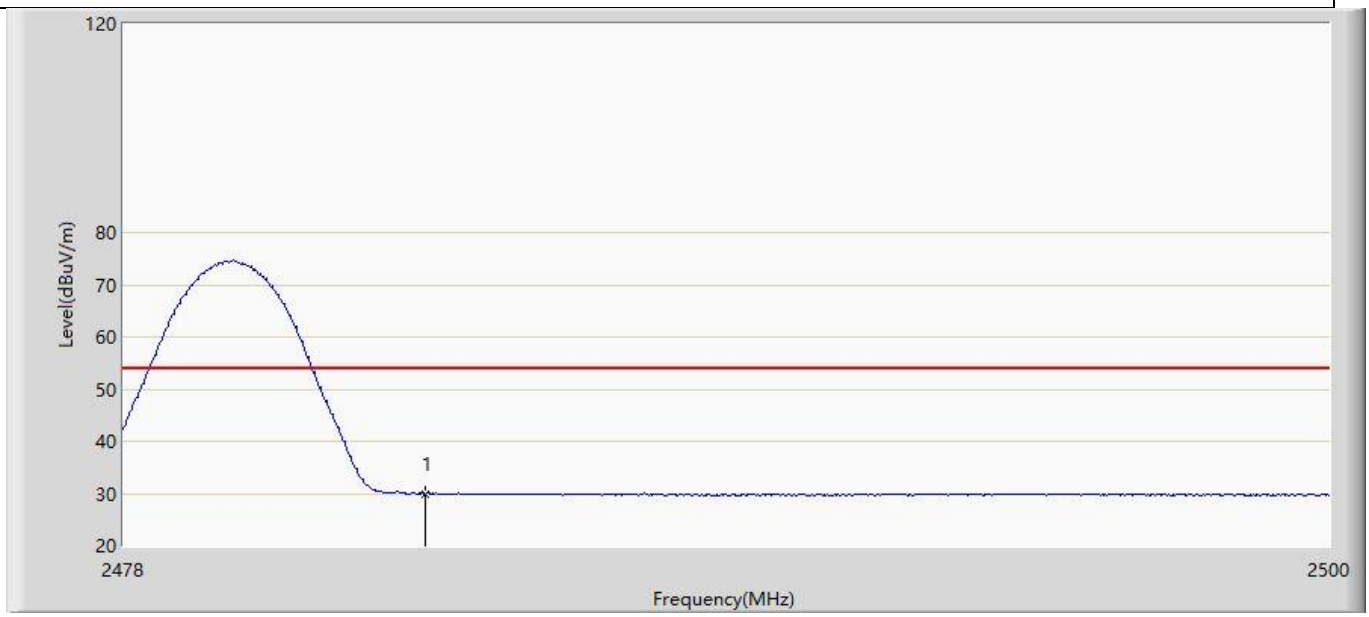
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	29.975	-1.451	-24.025	54.000	31.426	AV

Profile: 2231093R	Page No.: 6
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:48
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2480MHz by BLE_1M	



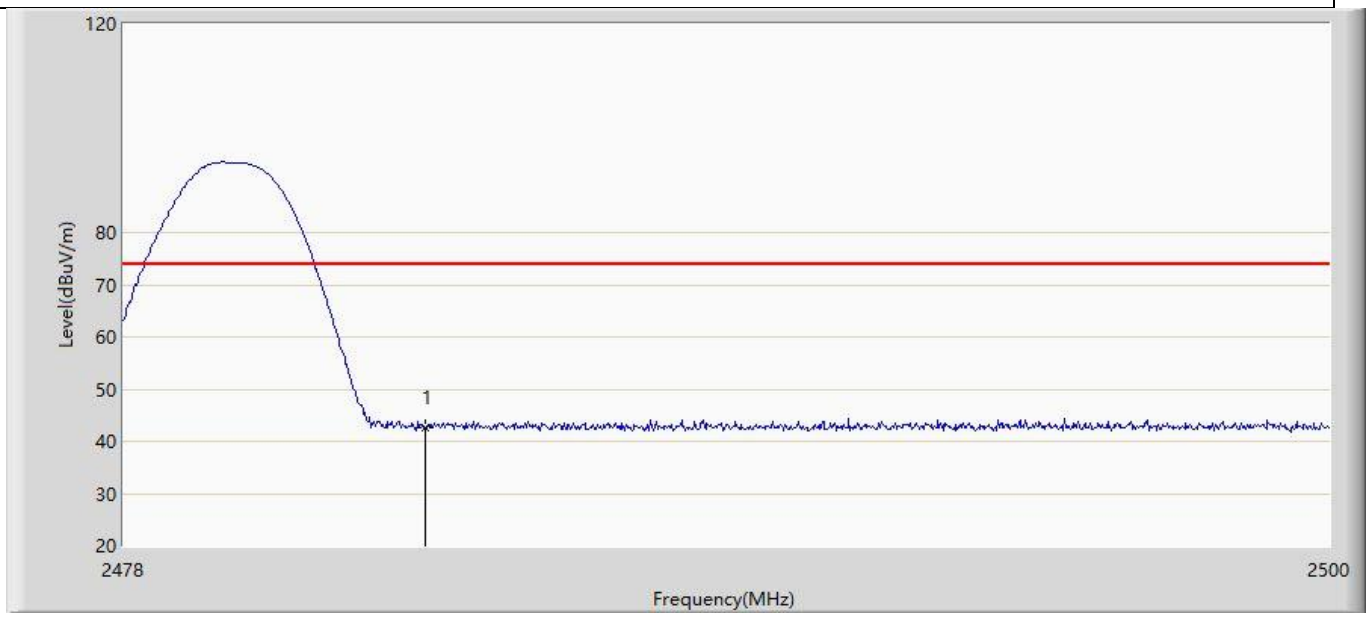
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	42.829	11.403	-31.171	74.000	31.426	PK

Profile: 2231093R	Page No.: 7
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:49
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2480MHz by BLE_1M	



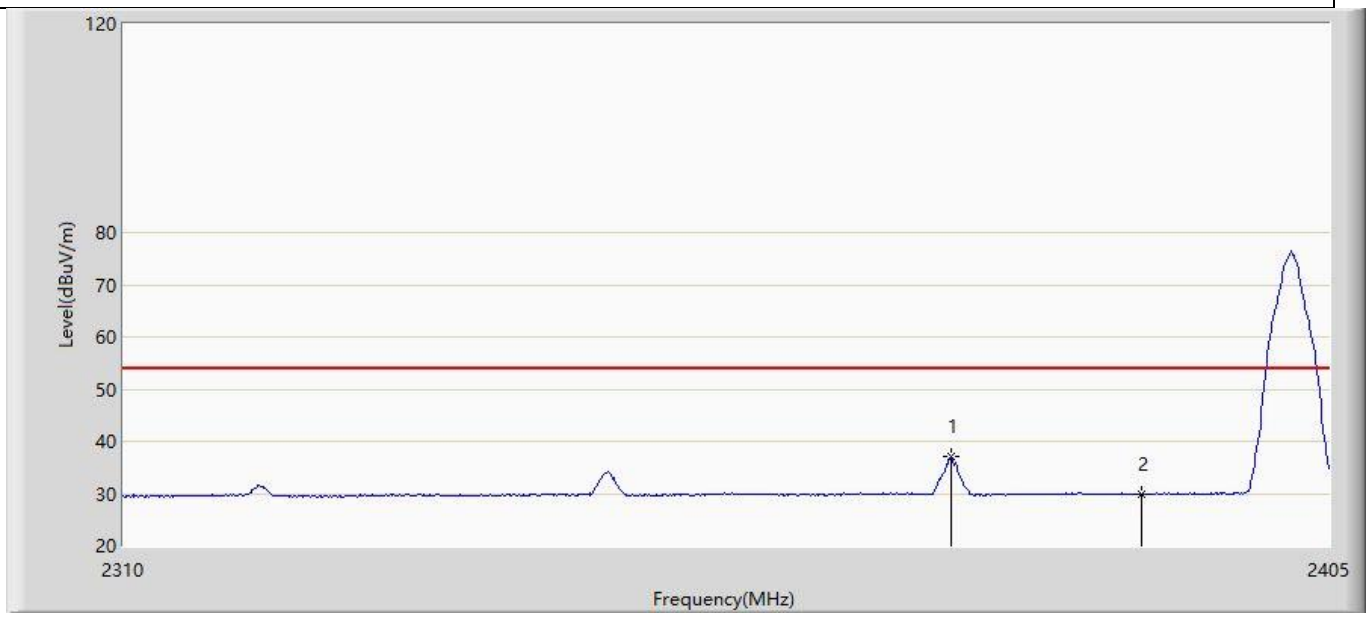
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	29.917	-1.509	-24.083	54.000	31.426	AV

Profile: 2231093R	Page No.: 8
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:52
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 1:Transmit at 2480MHz by BLE_1M	



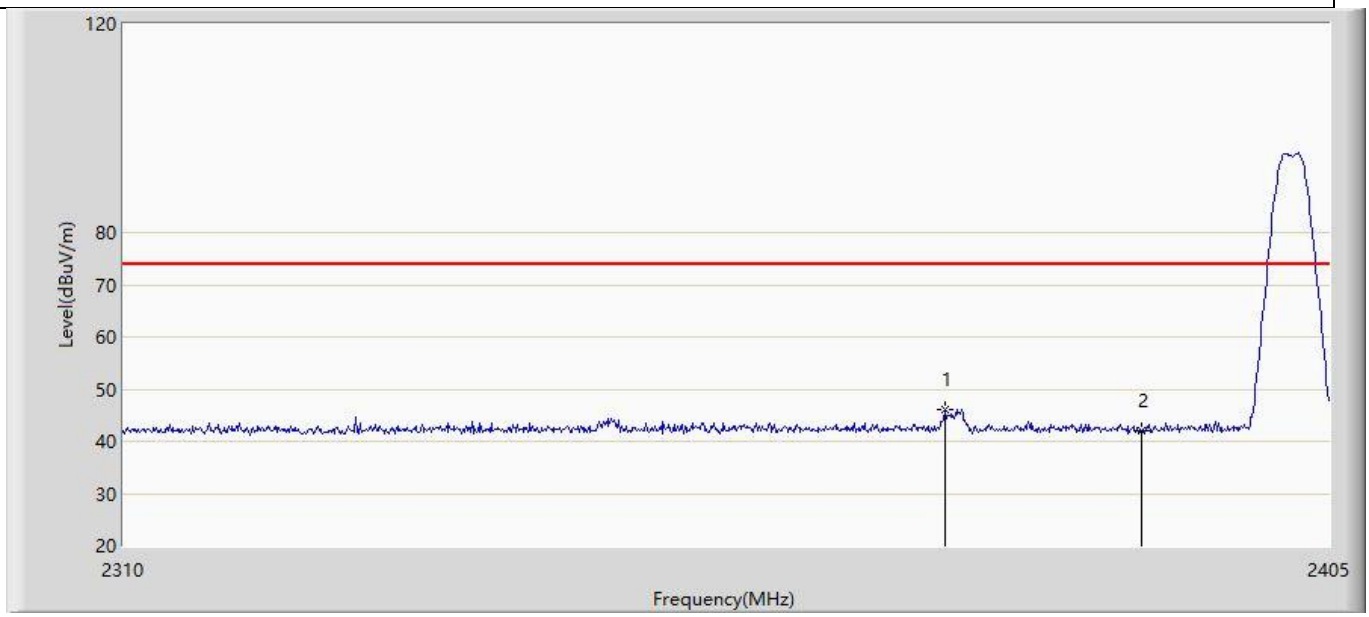
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	42.730	11.304	-31.270	74.000	31.426	PK

Profile: 2231093R	Page No.: 9
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:54
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2402MHz by BLE_2M	



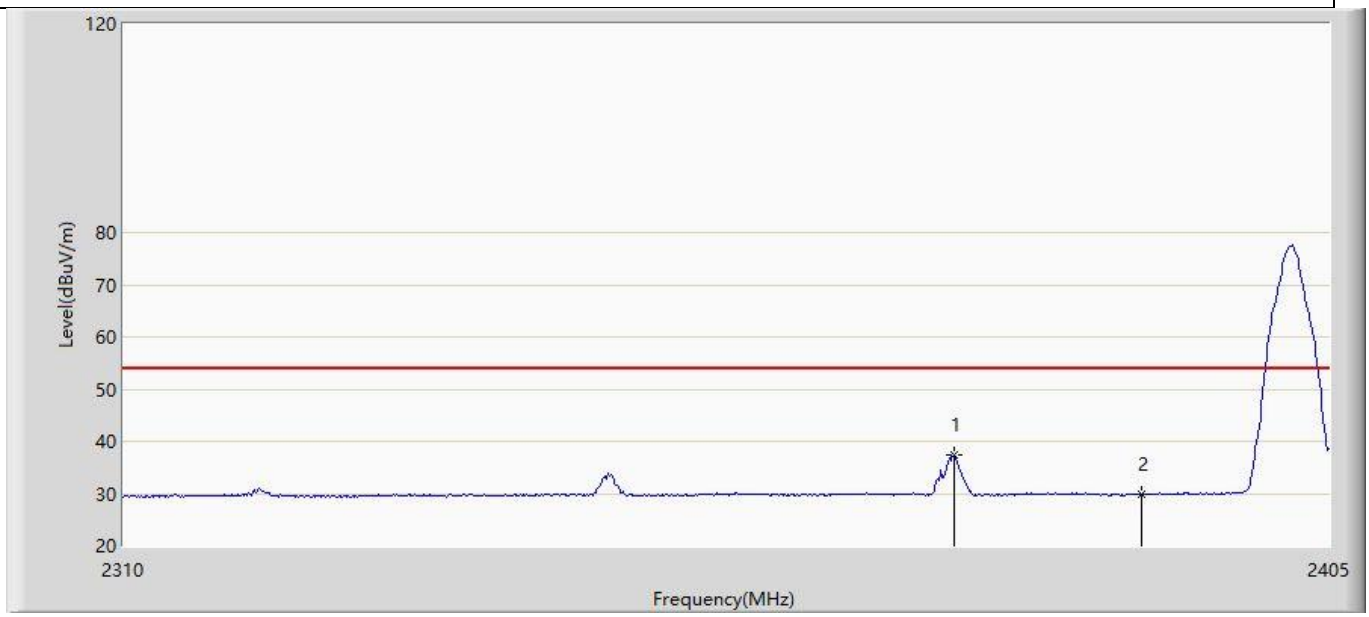
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2374.790	37.152	6.068	-16.848	54.000	31.085	AV
2		2390.000	29.734	-1.408	-24.266	54.000	31.141	AV

Profile: 2231093R	Page No.: 10
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 19:57
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2402MHz by BLE_2M	



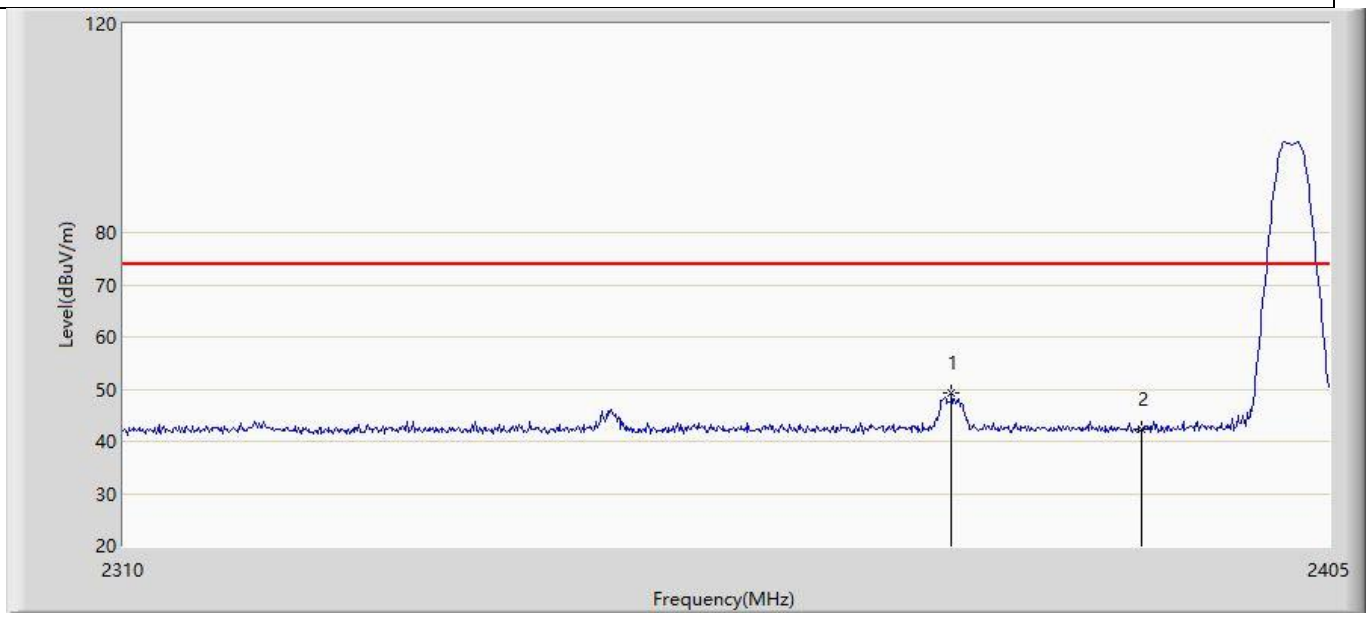
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2374.315	46.094	15.011	-27.906	74.000	31.083	PK
2		2390.000	41.982	10.840	-32.018	74.000	31.141	PK

Profile: 2231093R	Page No.: 11
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 22:11
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2402MHz by BLE_2M	



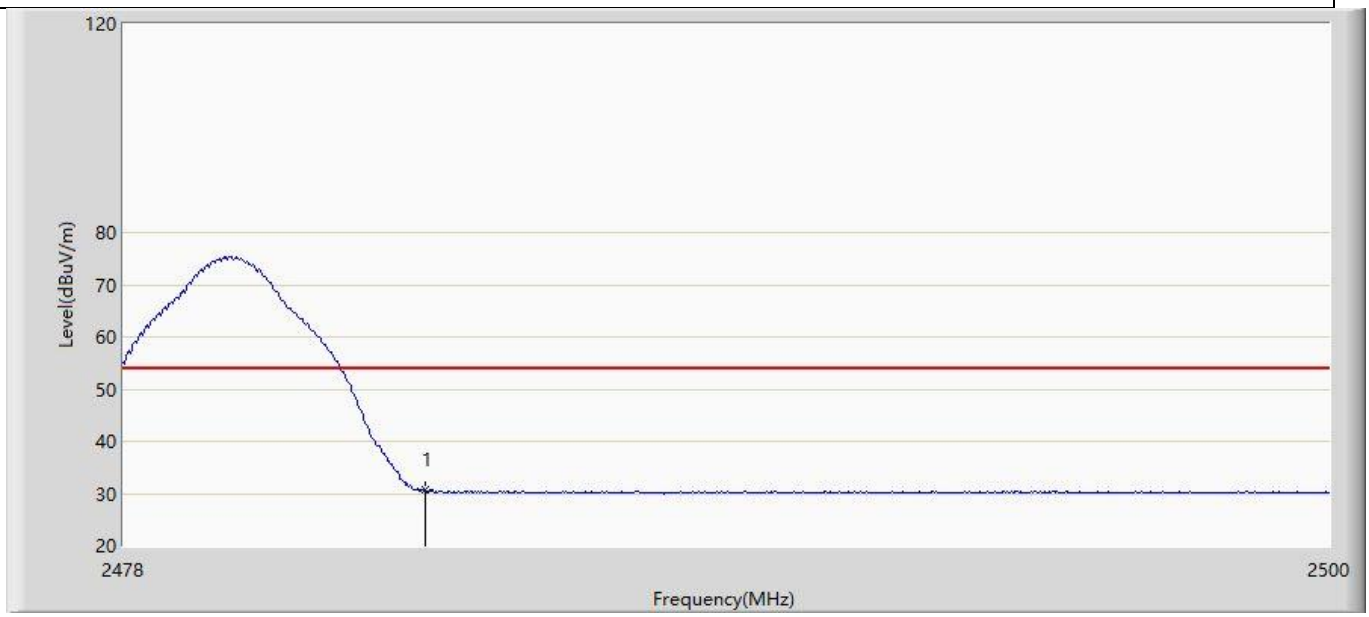
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2375.075	37.255	6.170	-16.745	54.000	31.085	AV
2		2390.000	29.713	-1.429	-24.287	54.000	31.141	AV

Profile: 2231093R	Page No.: 12
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 22:12
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2402MHz by BLE_2M	



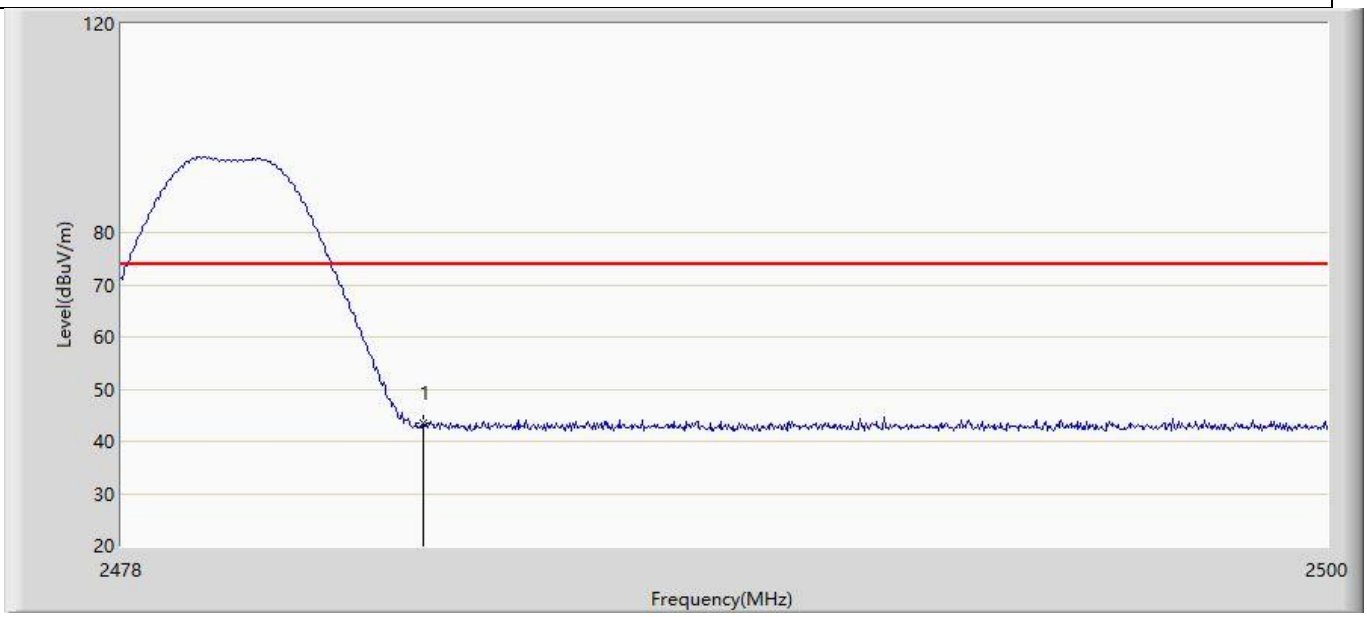
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2374.885	49.245	18.160	-24.755	74.000	31.085	PK
2		2390.000	42.224	11.082	-31.776	74.000	31.141	PK

Profile: 2231093R	Page No.: 13
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 22:14
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2480MHz by BLE_2M	



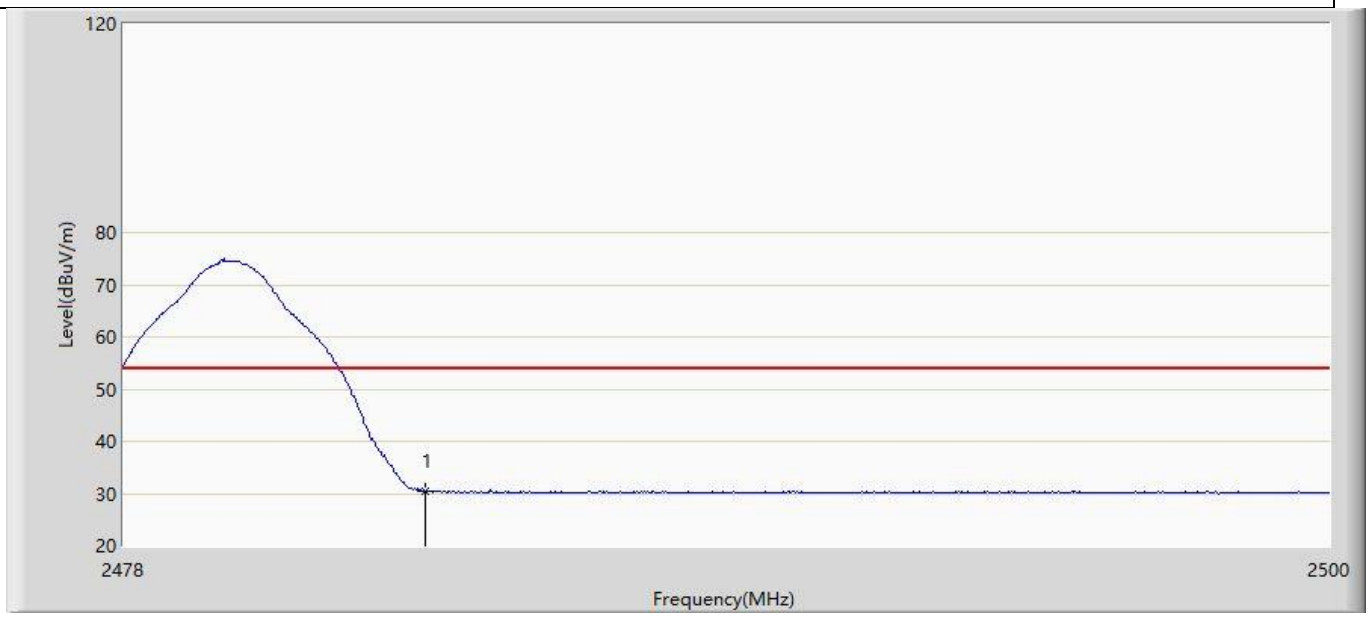
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	30.584	-0.842	-23.416	54.000	31.426	AV

Profile: 2231093R	Page No.: 14
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 22:16
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Horizontal
EUT: BARCODE SCANNER	Power: DC3.7V
Note: Mode 2:Transmit at 2480MHz by BLE_2M	



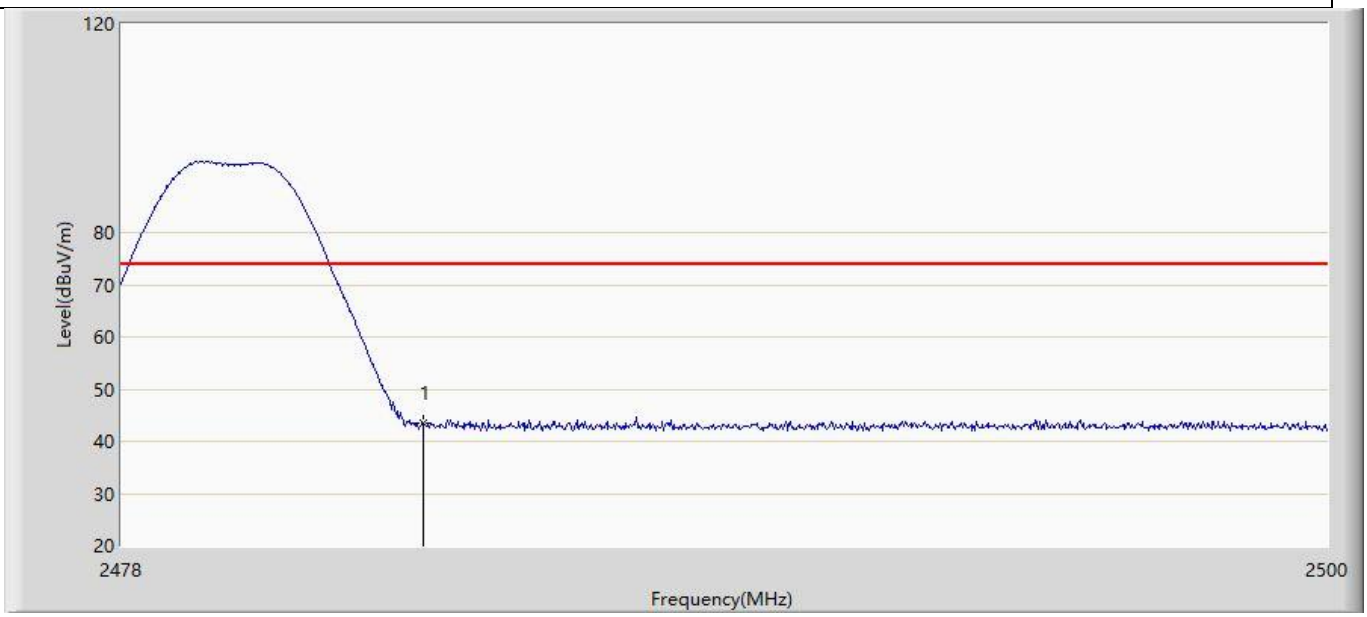
No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1	*	2483.500	43.568	12.142	-30.432	74.000	31.426	PK

Profile: 2231093R	Page No.: 15
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 22:17
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
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	30.468	-0.958	-23.532	54.000	31.426	AV

Profile: 2231093R	Page No.: 16
Engineer: Pengchengyang	
Site: AC5	Time: 2021/12/14 - 22:18
Limit: FCC-15.209	Margin: 0
Probe: FCC_ANT-1-18G	Polarity: Vertical
EUT: BARCODE SCANNER	Power: DC3.7V
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	43.519	12.093	-30.481	74.000	31.426	PK

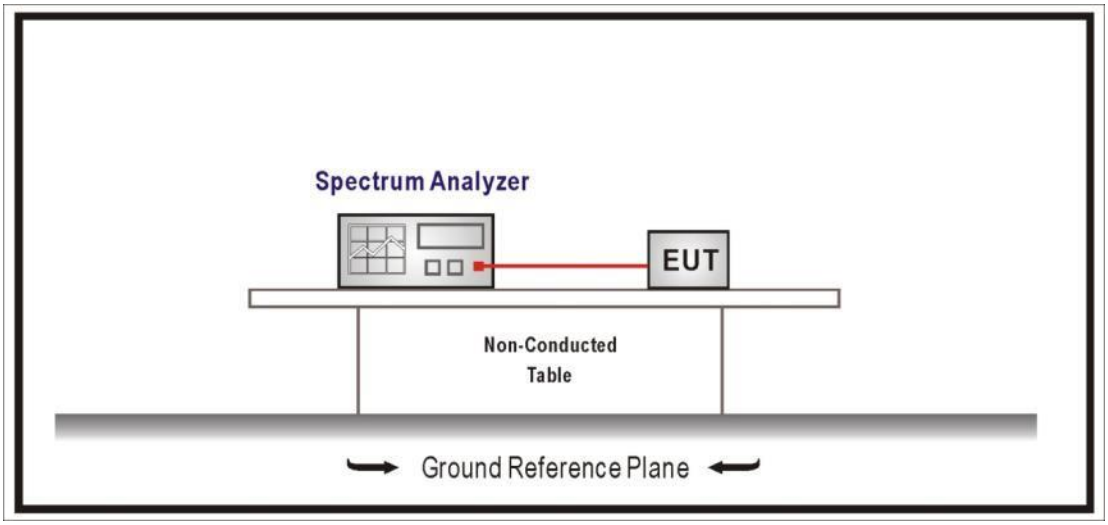
4.6 DTS Bandwidth	VERDICT: PASS

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



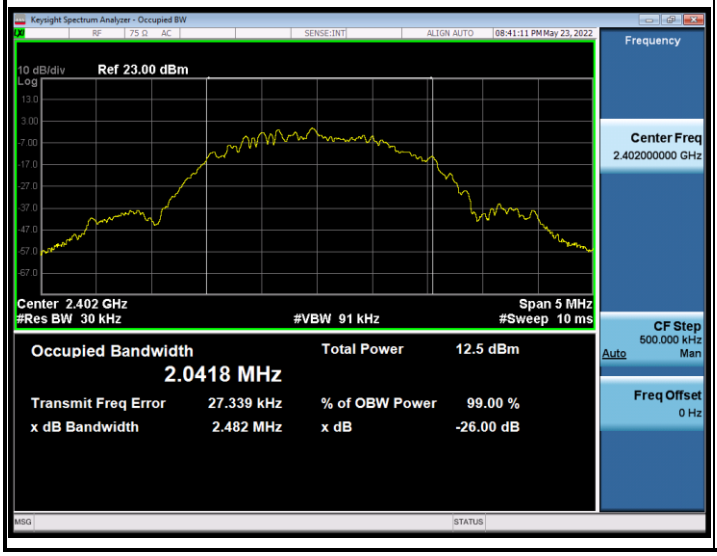
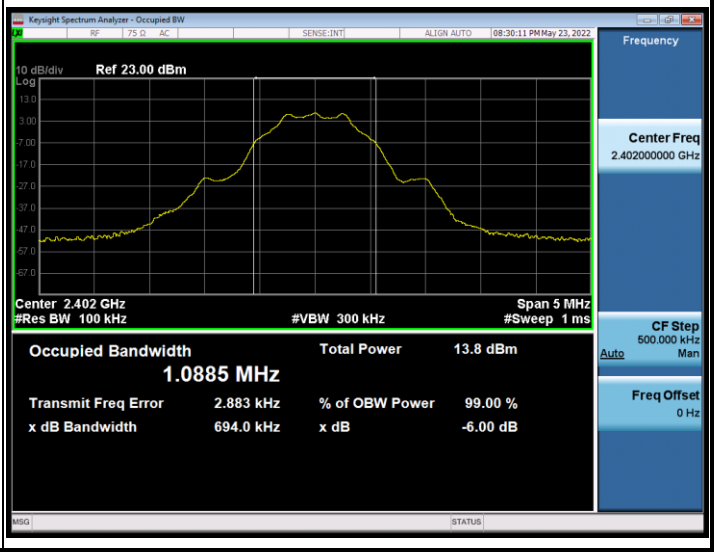
4.6.3 Test Procedure

	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

Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	00	2402	1.0498	694.0	>500	Pass
	19	2440	1.0519	695.7	>500	Pass
	39	2480	1.0497	694.7	>500	Pass
1	00	2402	2.0418	1254	>500	Pass
	19	2440	2.0418	1262	>500	Pass
	39	2480	2.0414	1259	>500	Pass

Note : The worst case of Occupied Bandwidth as below:

99% Occupied Bandwidth	6dB Occupied Bandwidth
Mode 2 CH00 (2402MHz)	Mode 1 CH00(2402MHz)
	

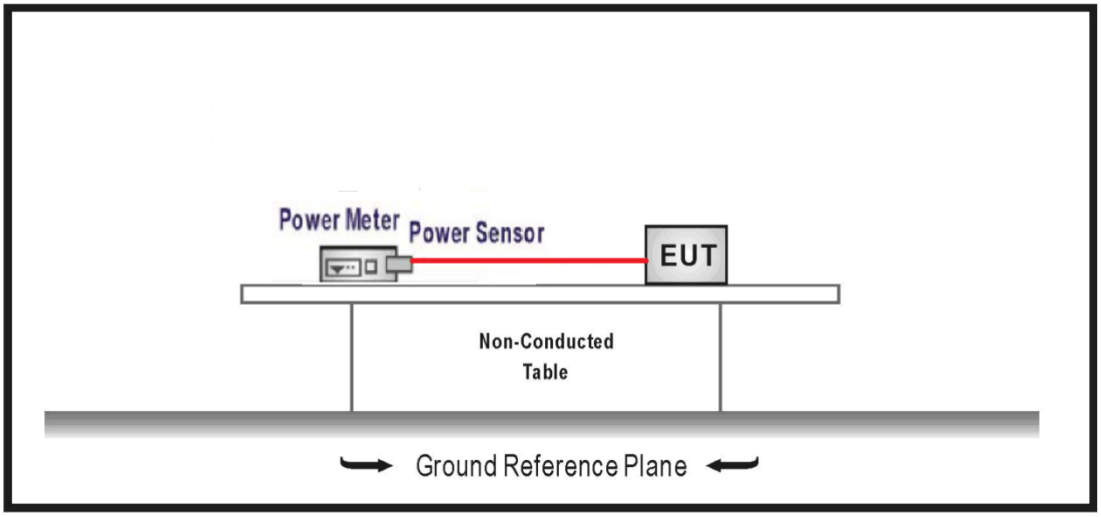
4.7 Fundamental emission output power	VERDICT: PASS

4.7.1 Limit

Standard			FCC Part 15 Subpart C Paragraph 15.247 (b)(3)
☒	GTX＜6dBi		Pout≤30dBm
☐	GTX ＞6dBi		
	☐	Non-Fix point-point	Pout≤30-(GTX -6)
	☐	Fix point-point	Pout≤30-[(GTX-6)]/3
	☐	Point-to-multipoint	Pout≤30-(GTX-6)
	☐	Overlap Beams	Pout≤30-[(GTX-6)]/3
	☐	Aggregate power transmitted simultaneously on all beams	Pout≤30-[(GTX-6)]/3
	☐	single directional beam	Pout≤30-[(GTX-6)]/3+8dB

Note 1 : GTX directional gain of transmitting antennas.
Note 2 : Pout is maximum peak conducted output power .

4.7.2 Test Setup



4.7.3 Test Procedure

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

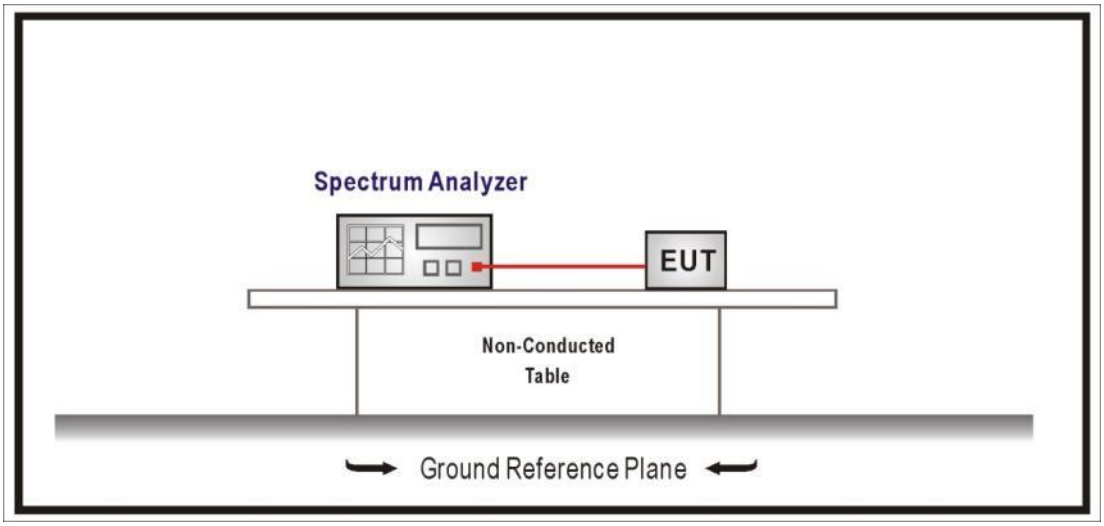
4.7.4 Test Data

Mode	Channel	Test Frequency (MHz)	Conducted Power (dBm)	EIRP (dBm)	Conducted Power Limit (dBm)	EIRP Limit (dBm)	Result
Mode 1	00	2402	8.19	8.69	⩽30	⩽36	Pass
	19	2440	8.05	8.55	⩽30	⩽36	Pass
	39	2480	8.03	8.53	⩽30	⩽36	Pass
Mode 2	00	2402	8.05	8.55	⩽30	⩽36	Pass
	19	2440	8.32	8.82	⩽30	⩽36	Pass
	39	2480	8.31	8.81	⩽30	⩽36	Pass

4.8 Power Density	VERDICT: PASS

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

4.8.2 Test Setup



4.8.3 Test Procedure

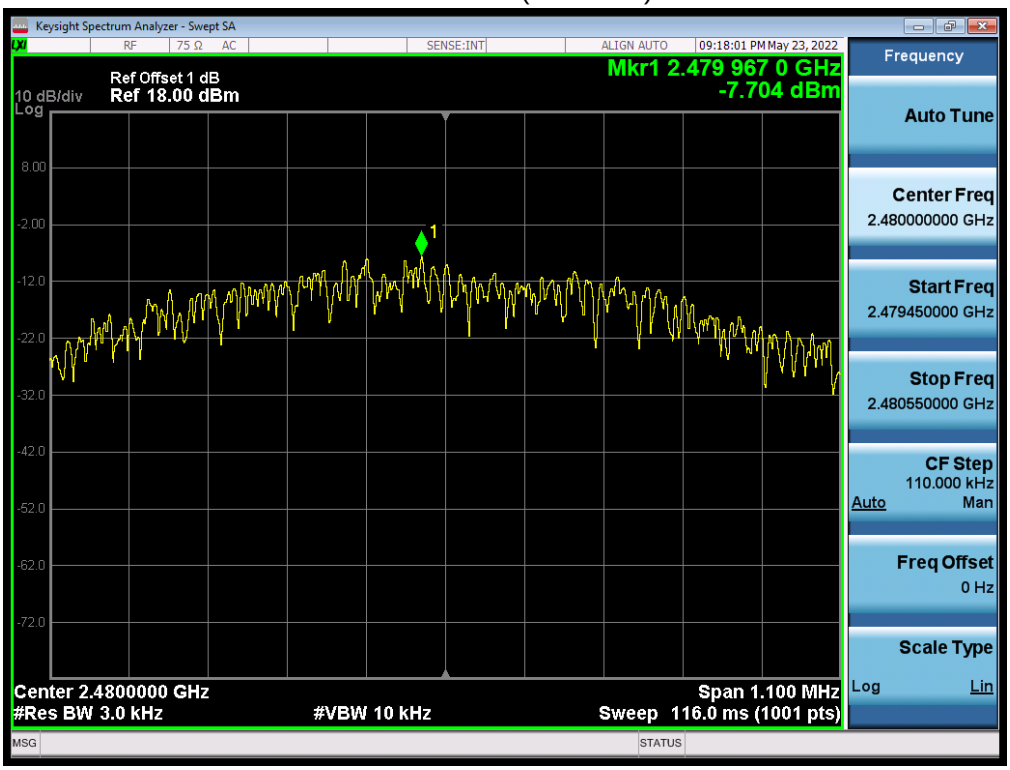
	References Rule		Chapter	Description
☒	ANSI C63.10		11.10	Maximum power spectral density level in the fundamental emission
	☐	ANSI C63.10	11.10.2	Method PKPSD (peak PSD)
	☐	ANSI C63.10	11.10.3	Method AVGPSD-1(Duty cycle≥98%)
	☐	ANSI C63.10	11.10.4	Method AVGPSD-1A(Duty cycle≥98%)
	☒	ANSI C63.10	11.10.5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

Mode	Channel	Test Frequency (MHz)	Measurement PSD (dBm/3kHz)	Limit (dBm/3kHz)	Result
Mode 1	00	2402	-8.190	≤8	Pass
	19	2440	-7.788	≤8	Pass
	39	2480	-7.704	≤8	Pass
Mode 2	00	2402	-10.436	≤8	Pass
	19	2440	-9.986	≤8	Pass
	39	2480	-9.931	≤8	Pass

Note : The worst case of PSD as below:

Mode 1 CH39(2480MHz)



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