RF Test Report

For

Hunan Vathin Medical Instrument Co., Ltd.

Test Standards:	Part 15C Subpart C §15.247 RSS 247 Issue 3
Product Name:	Digital Video Monitor
Tested Model:	DVM-D1
Additional Model No. :	DVM-D2
HVIN:	DVM-D1, DVM-D2
FCC ID:	2AY4E-DVMD
IC:	27001-DVMD
Classification	(DTS) Digital Transmission System
Report No.:	EC2401052RF01
Tested Date:	2024-03-18 to 2024-08-17
Issued Date:	2024-08-17
Prepared By:	Luo Xiang / Engineer
Approved By:	Tiny Yang / RF Manager

Hunan Ecloud Testing Technology Co., Ltd.

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	2024.08.17	Valid	Based on the original report EC2207002RF02, a new series model DVM-D2 was added and the battery model was updated.

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Summary Of Test Result

FCC Rule	IC Rule	Description	Limit	Result	Remark
15.247(a)(2)	RSS-247 5.2(a)	6dB Bandwidth	⩾ 0.5MHz	Pass	Test Engineer: Luo Xiang
-	RSS-Gen 6.7	99% Bandwidth	-	Pass	Test Engineer: Luo Xiang
15.247(b)(3)	RSS-247 A5.4(d)	Output Power	⩽ 30dBm	Pass	Test Engineer: Luo Xiang
15.247(d)	RSS-247 5.5 RSS-GEN 8.9	Radiated Band Edges and Spurious Emission	15.209(a) & 15.247(d) RSS-GEN 8.9	Pass	Under limit 1.96 dB at 296.750 MHz
-	RSS-Gen 7.3	Receiver Radiated Emissions	Below 1G:2nW Above 1G:5nW	Pass	Test Engineer: Luo Xiang
15.207	RSS-GEN 8.8	AC Conducted Emission	15.207(a)	Pass	Under limit 4.42 dB at 0.190 MHz

Note :

1. The Radiated Band Edges and Spurious Emission, Receiver Radiated Emissions and AC Conducted Emission have been tested based on the current changes.
2. Please check the original report No.: EC2207002RF01 for 6dB Bandwidth, 99% Bandwidth and Output Power details.
3. Both two models have been tested, but only the worst models data(DVM-D1) is recorded in this report.

1 Test Laboratory

1.1 Test facility

CNAS (accreditation number: L11138)

Hunan Ecloud Testing Technology Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1244 , Test Firm Registration Number: 793308)

Hunan Ecloud Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

ISED(CAB identifier: CN0012, ISED# :24347)

Hunan Ecloud Testing Technology Co., Ltd. has been listed on the Wireless Device Testing Laboratories list of innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements.

A2LA (Certificate Code : 4895.01)

Hunan Ecloud Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

2 General Description

2.1 Applicant

Hunan Vathin Medical Instrument Co., Ltd.
1/F, Building 12, Innovation and Entrepreneurship Service Center, No 9 Chuanqi west road, Jiuhua Economic Development Zone, 411100 Xiangtan, Hunan, China

2.2 Manufacturer

Hunan Vathin Medical Instrument Co., Ltd.
1/F, Building 12, Innovation and Entrepreneurship Service Center, No 9 Chuanqi west road, Jiuhua Economic Development Zone, 411100 Xiangtan, Hunan, China

2.3 General Description Of EUT

Product	Digital Video Monitor
Model No.	DVM-D1
Additional No.	DVM-D2
Difference Description	These models are identical in PCB layout and basic software functionality; The only difference is that the video endoscope interface of the product is not the same. DVM-D1 model video endoscope interface: I (using a 26 pin connector) II (using a 14 pin connector) III (using a 14 pin connector) DVM-D2 model video endoscope interface: I (using a 26 pin connector) II (using a 16 pin connector) III (using a 16 pin connector)
FCC ID	2AY4E-DVMD
IC	27001-DVMD
Power Supply	15Vdc from Adapter(Input 100-240Vac) 10.8Vdc from Battery
Modulation Technology	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Type	802.11b : DSSS 802.11g/n : OFDM
Operating Frequency	2412-2462MHz
Number Of Channel	11
Antenna Type	FPC Antenna with 2 dBi gain
HW Version	V1

SW Version	DVM-D1:V1
Sample no.	2401052R-1/2~2/2
Sample Received Date	2024/03/18
I/O Ports	Refer to user's manual

NOTE:

1. The above EUT information is declared by manufacturer. Our laboratory is not responsible for the information provided by the manufacturer.For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report. EUT can support charging mode and battery operation mode, only the worst charging mode data is listed in the report.

3. The EUT was powered by the following adapters:

Adapter	
Brand:	SINPRO
Model:	HPU63A-106
Input:	AC 100-240V~47-63Hz,1.62-0.72A
Output:	DC 15V, 4.2A max

4. The EUT matched the following cable:

SDI Cable	
Brand:	N/A
Model:	N/A
Signal Line:	2.7 Meter/shielded

D-SUB9 Cable	
Brand:	N/A
Model:	N/A
Signal Line:	1.89 Meter/shielded

HDMI Cable	
Brand:	N/A
Model:	N/A
Signal Line:	2.7 Meter/shielded

2.4 Modification of EUT

No modifications are made to the EUT during all test items.

2.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- ANSI C63.10-2013
- KDB 558074 D01 15.247 Meas Guidance v05r02
- IC RSS-247 Issue 3
- IC RSS-Gen Issue 5

Remark:

1. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, ICES-003 recorded in a separate test report.

3 Test Configuration of Equipment Under Test

3.1 Descriptions of Test Mode

11 channels are provided for 802.11b, 802.11g and 802.11n(HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

The transmitter has a maximum peak conducted output power as follows:

Refer to the test report No. : EC2207002RF01

a. Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

3.2 Test Mode

3.2.1 Antenna Port Conducted Measurement

Summary table of Test Cases			
Test Item	**Modulation**		
	802.11 b	**802.11 g**	**802.11n HT20**
Conducted Test Cases	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11

3.2.2 Radiated Emission Test (Below 1GHz)

Radiated Test Cases	**802.11 b**
	Mode 1: CH01

Note :

1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type. Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.
2. Following channel(s) was (were) selected for the final test as listed above.

3. All the above test modes were tested, only reported the worst case mode in bold as above.

3.2.3 Radiated Emission Test (Above 1GHz)

Test Item	Modulation		
	802.11 b	802.11 g	802.11n HT20
Radiated Test Cases	**Mode 1: CH01** Mode 2: CH06 Mode 3: CH11	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11	Mode 1: CH01 Mode 2: CH06 Mode 3: CH11

Note : 1. The fundamental of the EUT was investigated in three orthogonal orientations X, Y and Z it was determined that Y orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in Y orientation.

2. Following channel(s) was (were) selected for the final test as listed above

3. For frequency above 18GHz, the measured value is much lower than the limit, therefore, it is not reflected in the report.

4. All the above test modes were tested, only reported the worst case mode in bold as above.

3.2.4 Power Line Conducted Emission Test:

AC Conducted Emission	Mode 1 : WLAN(2.4G) Link + SDI + RJ-45 + HDMI + USB Disk + H-Steriscope + D-SUBS9 + REMOTE +Adapter

3.2.5 Radiated receiver emissions Test:

Radiated Test Cases	Mode 1 : 802.11 b CH01

3.2.6 Support Equipment

Manufacturer	Description	Model	Serial Number	FCC ID
Lenovo	Notebook Computer	ThinkPad E580	PF-12XLH6	FCC SDoC
NETGARE	WLAN AP	R7800	4H487A590021A	PY315100319
Lenovo	Notebook Computer	ThinkPad E470C	PF-OP4YX1	FCC SDoC
Vathin	H-Steriscope	Normal 4.9/2.2	T211023 321	FCC SDoC
Vathin	H-Steriscope	Normal 4.9/2.2	T211023 322	FCC SDoC
Vathin	H-Steriscope	BCV1-C2-L	T220428 012	FCC SDoC
Vathin	H-Steriscope	BCV1-C2-L	T220428 011	FCC SDoC

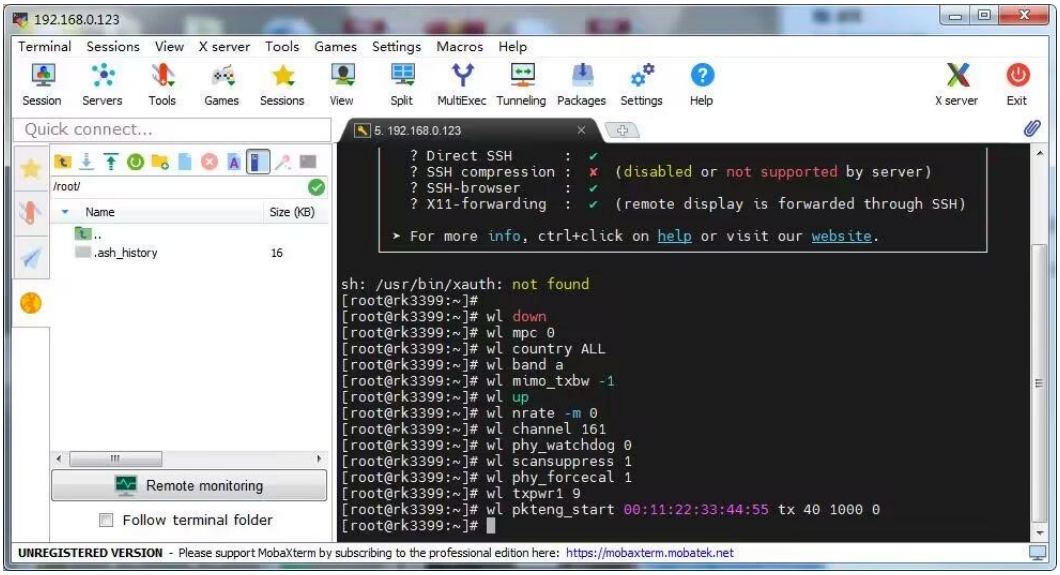
Vathin	H-Steriscope	BC-S1E00-L	T2306009	FCC SDoC
MEGMEET	AC/DC Adapter	MANGO150S-24AW-JS	60602222000022	FCC SDoC
JUSHA	LCD Monitor	E320A	DE320A10CDC24008	FCC SDoC
N/A	3.5mm Audio Cable(Remote Port)	N/A	N/A	FCC SDoC
UGREEN	D-SUB9 To USB Converter	N/A	N/A	FCC SDoC
QUECTEL	USB Storage	N/A	N/A	FCC SDoC

3.3 Test Setup

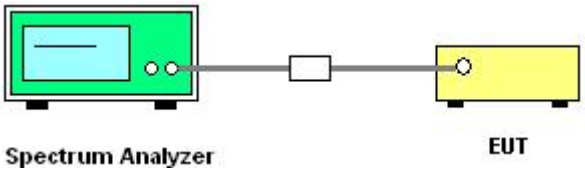
The EUT is continuously communicating to the WIFI tester during the tests.

EUT was set in the Hidden menu mode to enable WIFI communications.

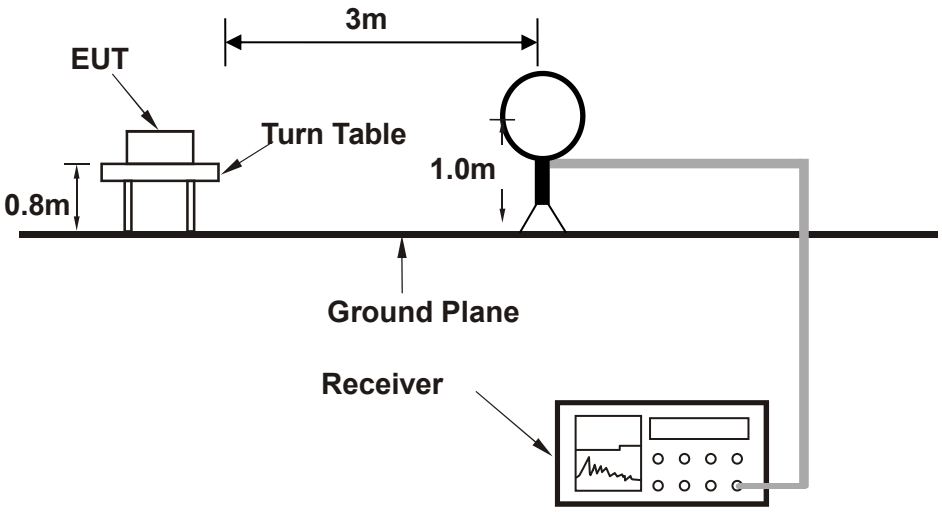
The following picture is a screenshot of the test software



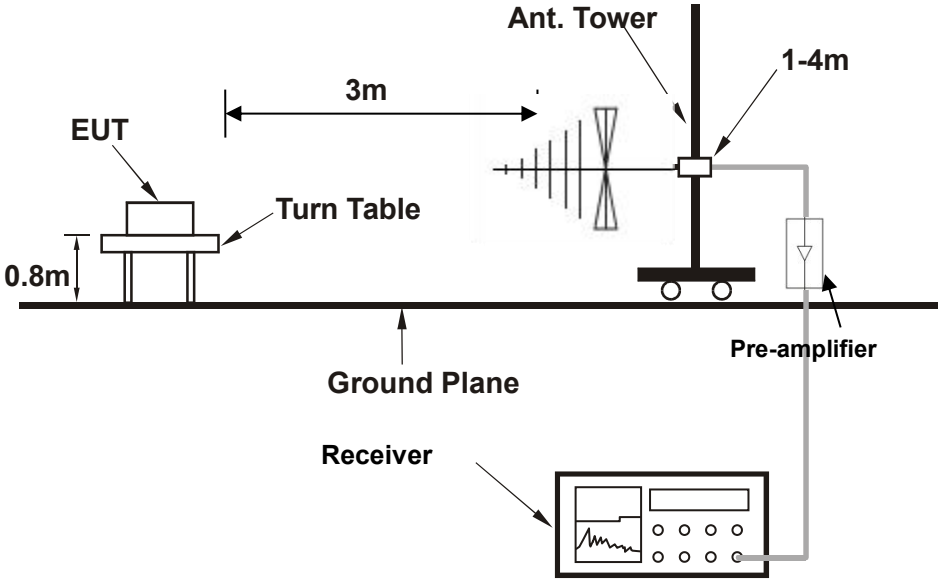
Setup diagram for Conducted Test



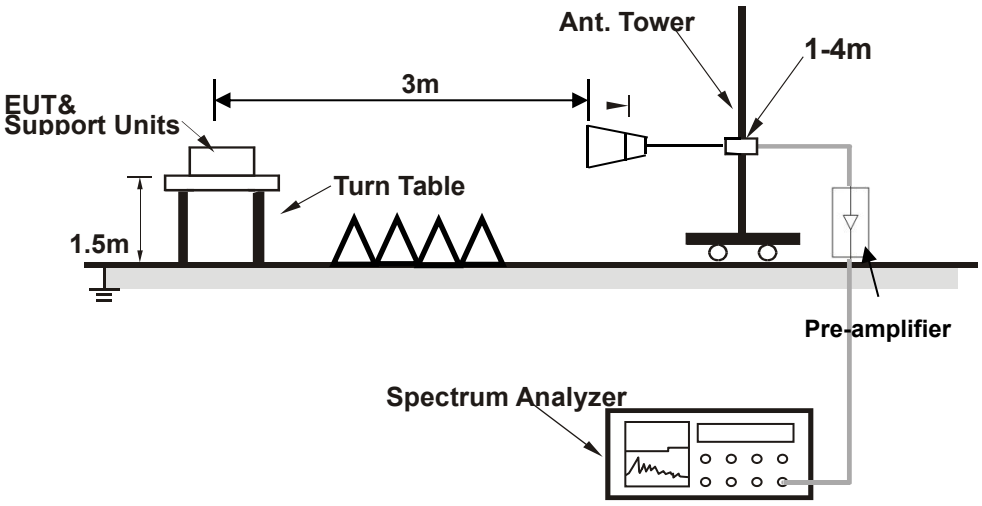
Setup diagram for Radiation(9KHz~30MHz) Test



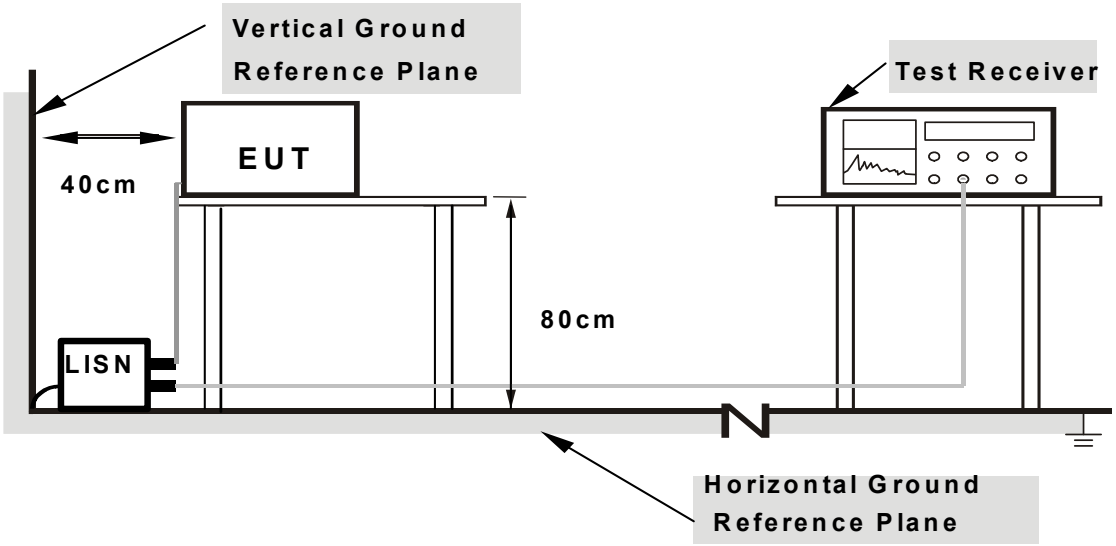
Setup diagram for Radiation(Below 1G) Test



Setup diagram for Radiation(Above1G) Test



Setup diagram for AC Conducted Emission Test



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 5 + 10 = 15 (dB)

For all radiated test items:

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Over Limit (dB μ V/m) = Level(dB μ V/m) - Limit Level (dB μ V/m)

4 Test Result

4.1 Radiated Band Edges and Spurious Emission Measurement

4.1.1 Limit of Radiated Band Edges and Spurious Emission

FCC §15.247 (d)

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 30 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

RSS-GEN 8.9

Frequency (MHz)	Magnetic field strength (H-Field) (μA/m)	Measurement Distance (meters)
0.009 – 0.490	6.37/F (F in kHz)	300
0.490 – 1.705	6.37/F (F in kHz)	30
1.705 – 30.0	0.08	30

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

4.1.2 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.

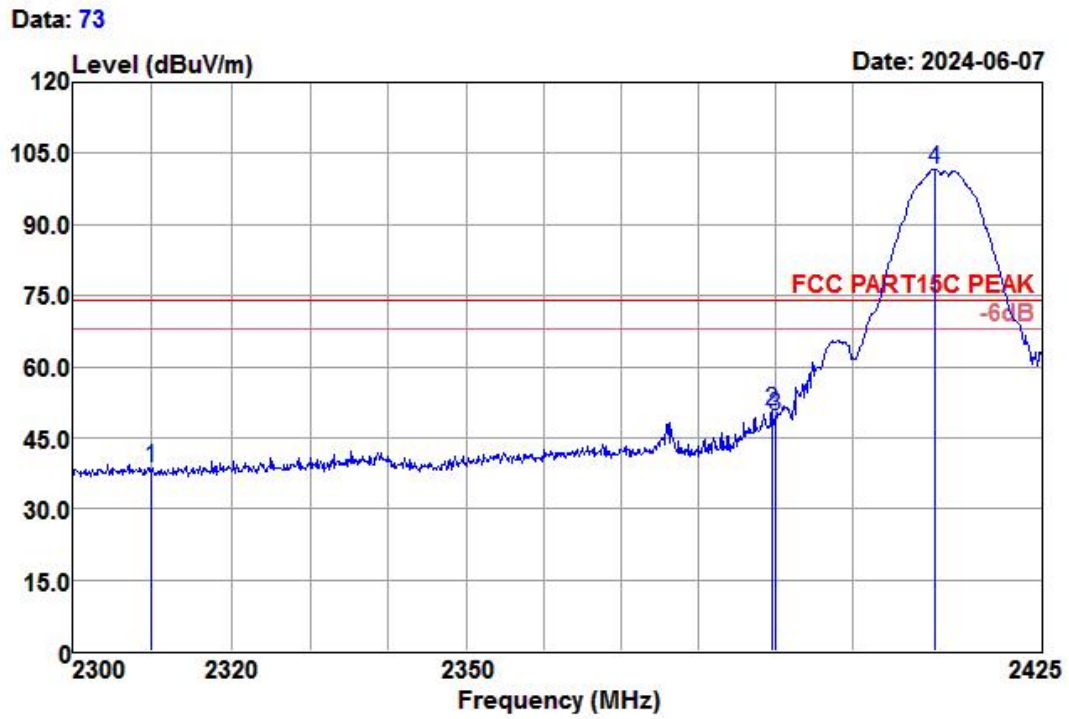
2. The measurement distance is 3 meter.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW≥3×RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement:
   VBW = 10 Hz, when duty cycle is no less than 98 percent.
   VBW ≥ 1/T, when duty cycle is less than 98 percent where T is 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.
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

4.1.3 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

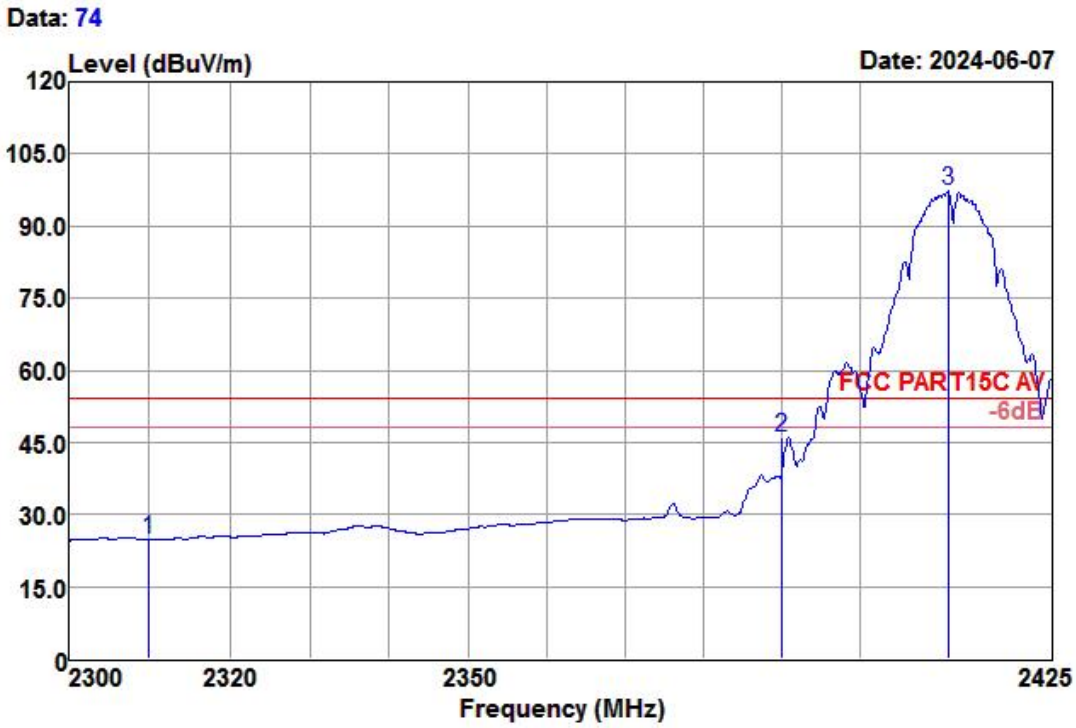
4.1.4 Test Result of Radiated Spurious at Band Edges

Test Mode :	802.11b CH01 (2412 MHz)	**Temperature :**	21~23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	61~64%
Frequencey Range	2.3GHz~2.425GHz	**Polarization :**	Horizontal



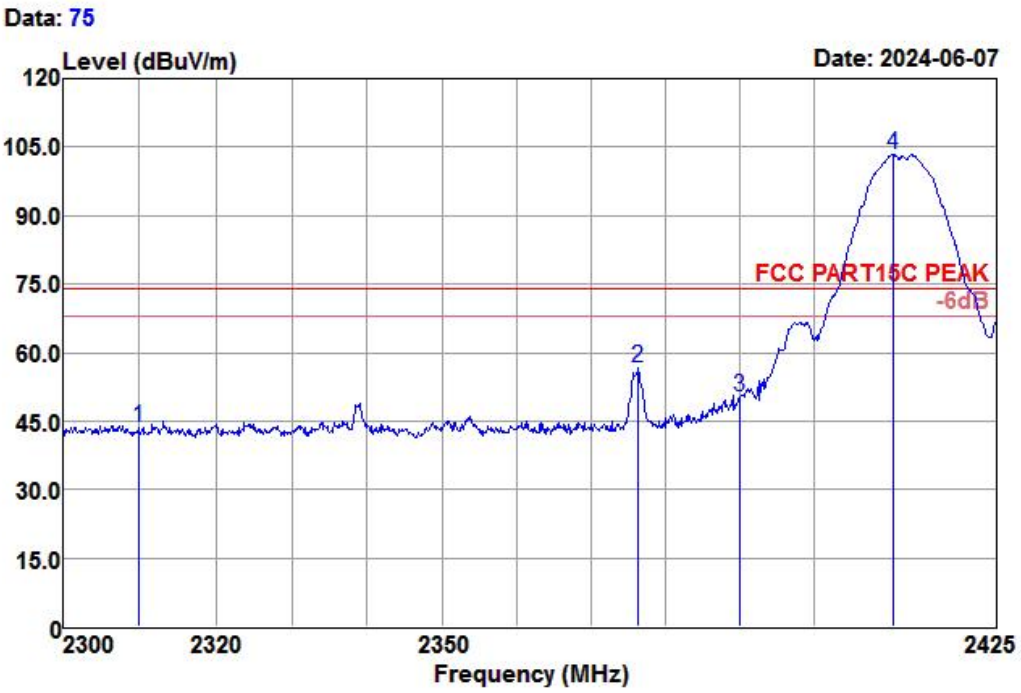
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	43.50	27.46	3.51	35.94	38.53	74.00	-35.47	Peak
2389.500	55.67	27.53	3.57	36.15	50.62	74.00	-23.38	Peak
2390.000	54.52	27.54	3.57	36.15	49.48	74.00	-24.52	Peak
2410.875	106.56	27.70	3.58	36.21	101.63	74.00	27.63	Peak

Test Mode :	802.11b CH01 (2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	2.3GHz~2.425GHz	Polarization :	Horizontal



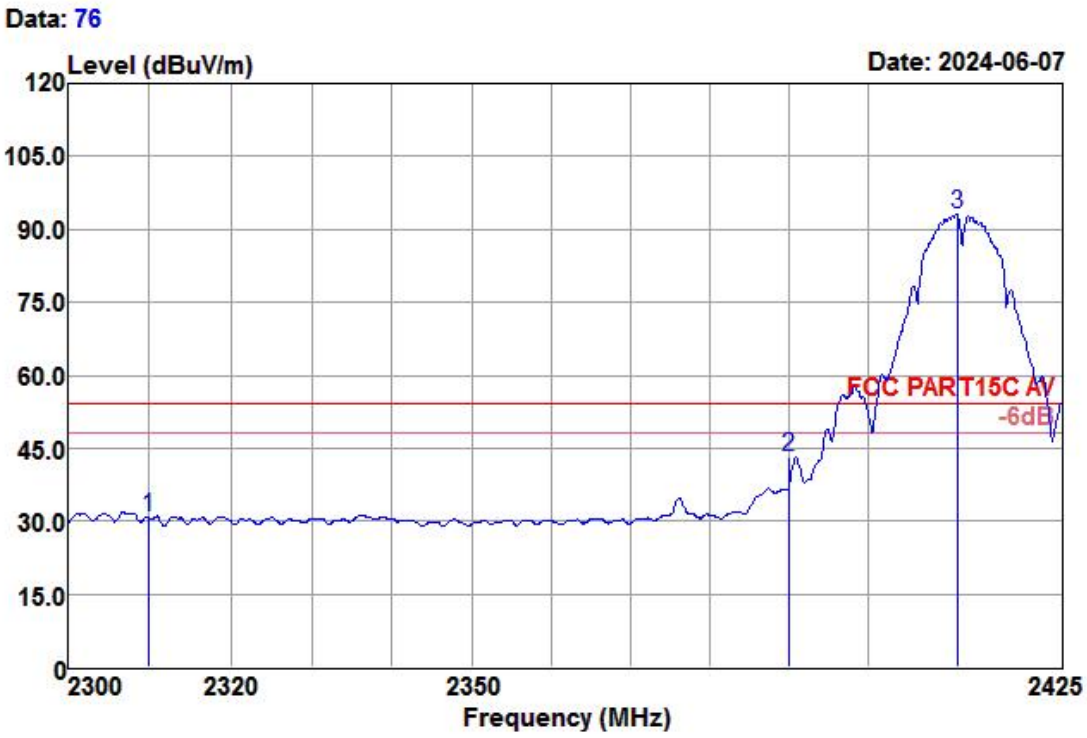
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
2310.000	29.93	27.46	3.51	35.94	24.96	54.00	-29.04	Average
2390.000	50.92	27.54	3.57	36.15	45.88	54.00	-8.12	Average
2411.375	102.17	27.70	3.58	36.21	97.24	54.00	43.24	Average

Test Mode :	802.11b CH01 (2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	2.3GHz~2.425GHz	Polarization :	Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	48.63	27.46	3.51	35.94	43.66	74.00	-30.34	Peak
2376.250	61.99	27.32	3.56	36.12	56.75	74.00	-17.25	Peak
2390.000	55.26	27.54	3.57	36.15	50.22	74.00	-23.78	Peak
2410.750	108.28	27.70	3.58	36.21	103.35	74.00	29.35	Peak

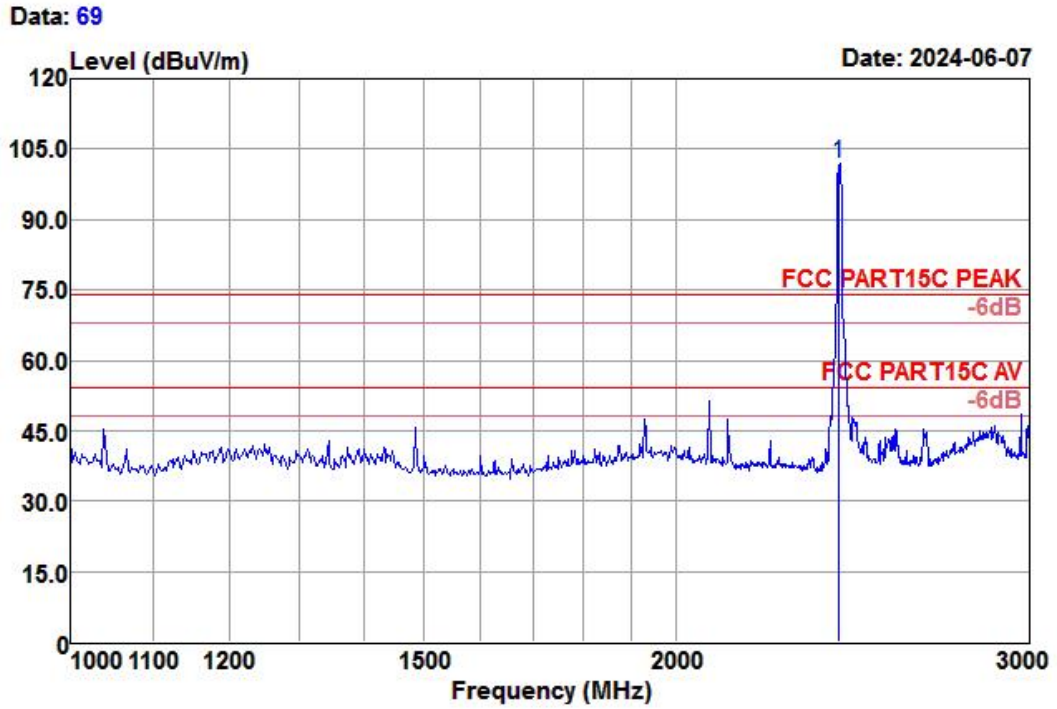
Test Mode :	802.11b CH01 (2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	2.3GHz~2.425GHz	Polarization :	Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	35.66	27.46	3.51	35.94	30.69	54.00	-23.31	Average
2390.000	48.18	27.54	3.57	36.15	43.14	54.00	-10.86	Average
2411.375	98.01	27.70	3.58	36.21	93.08	54.00	39.08	Average

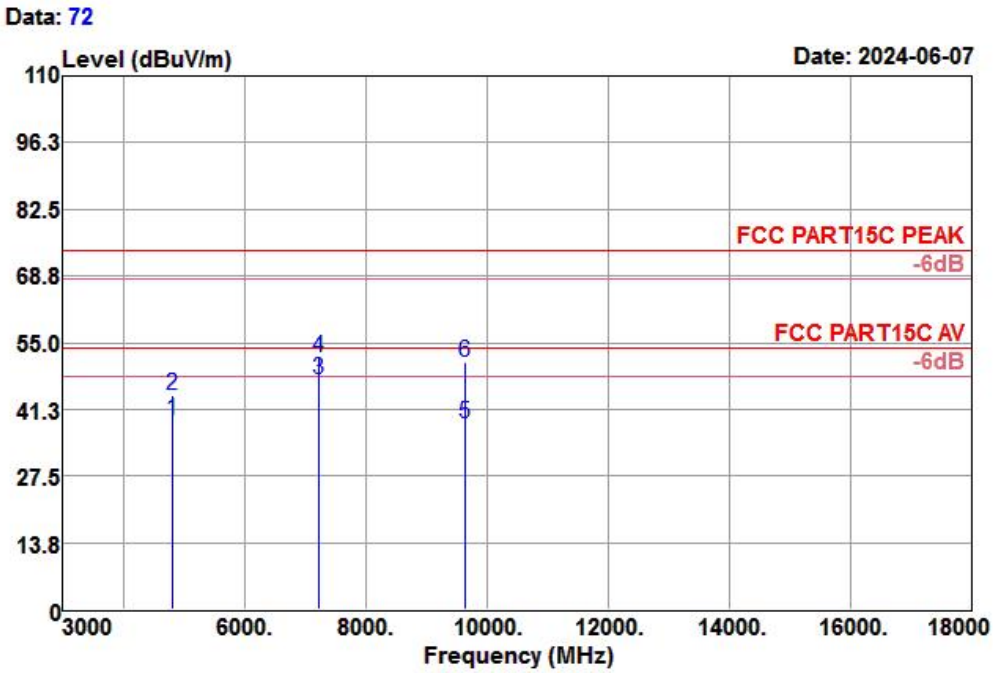
4.3.5 Test Result of Radiated Spurious Emission (1GHz ~ 10th Harmonic)

Test Mode :	802.11b CH01 (2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	1GHz~3GHz	Polarization :	Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2412.000	106.76	27.70	3.58	36.21	101.83	74.00	27.83	Peak

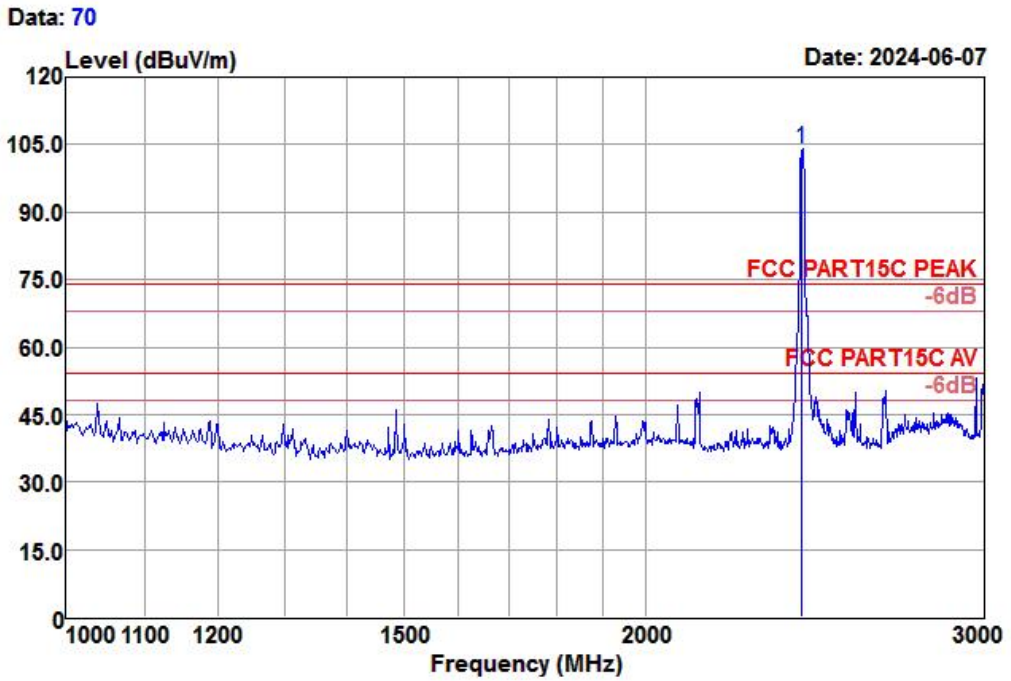
Test Mode :	802.11b CH01 (2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	3GHz~18GHz	Polarization :	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4824.000	37.02	32.54	5.37	36.12	38.81	54.00	-15.19	Average
4824.000	42.28	32.54	5.37	36.12	44.07	74.00	-29.93	Peak
7236.000	38.72	36.46	6.49	34.37	47.30	54.00	-6.70	Average
7236.000	43.48	36.46	6.49	34.37	52.06	74.00	-21.94	Peak
9648.000	26.61	38.42	7.35	34.24	38.14	54.00	-15.86	Average
9648.000	39.28	38.42	7.35	34.24	50.81	74.00	-23.19	Peak

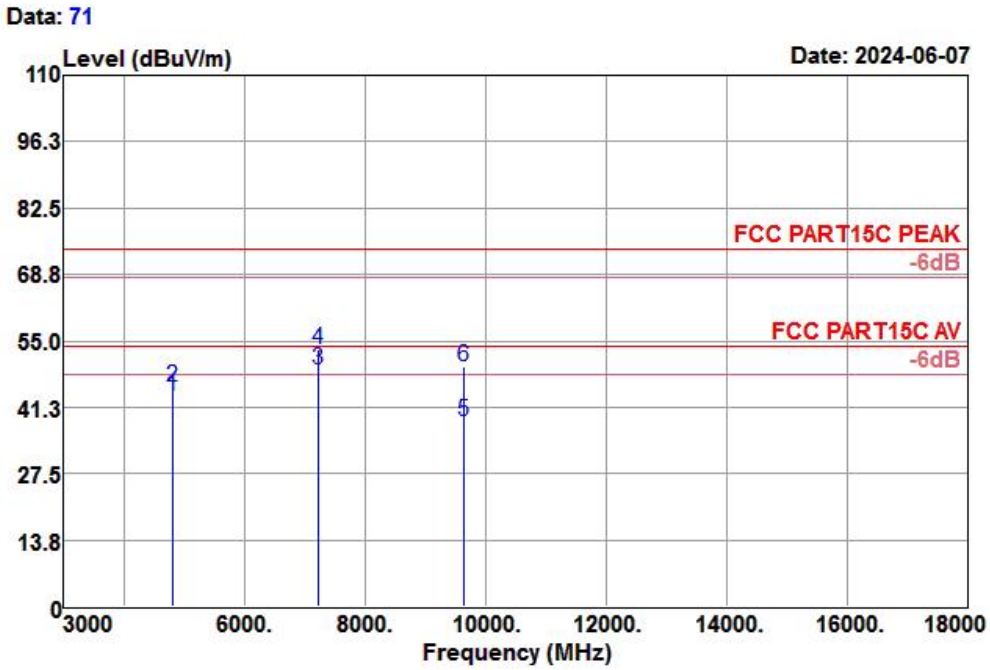
Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

Test Mode :	802.11b CH01 (2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	1GHz~3GHz	Polarization :	Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2412.000	109.10	27.70	3.58	36.21	104.17	74.00	30.17	Peak

Test Mode :	802.11b CH01 (2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	3GHz~18GHz	Polarization :	Vertical

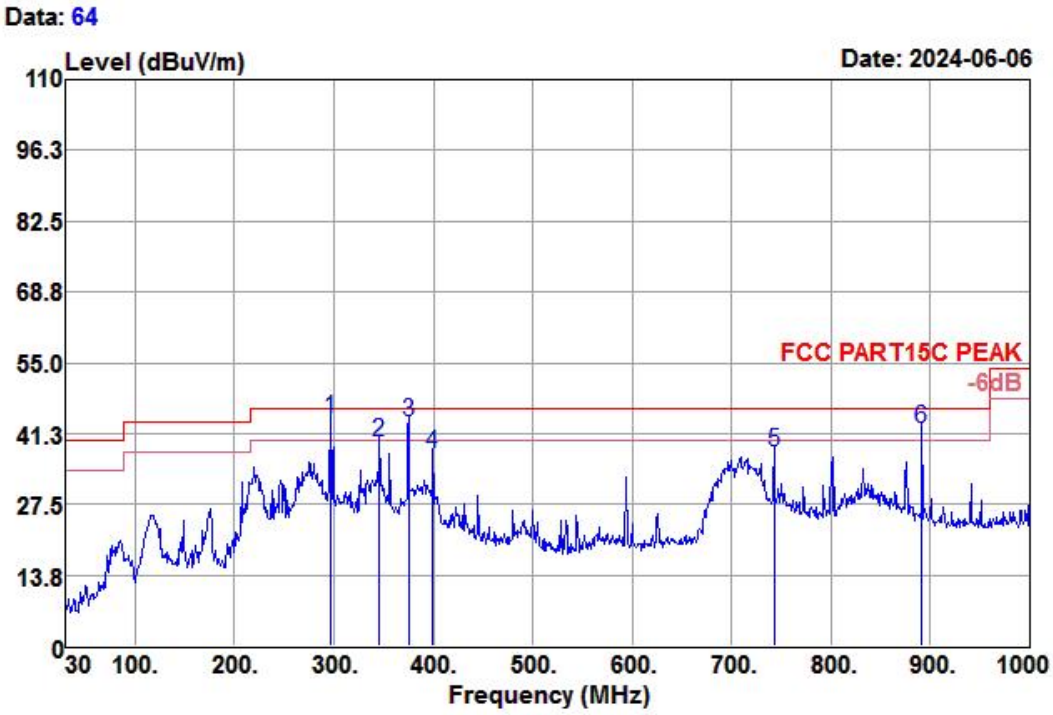


Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4824.000	41.79	32.54	5.37	36.12	43.58	54.00	-10.42	Average
4824.000	43.54	32.54	5.37	36.12	45.33	74.00	-28.67	Peak
7236.000	40.56	36.46	6.49	34.37	49.14	54.00	-4.86	Average
7236.000	44.59	36.46	6.49	34.37	53.17	74.00	-20.83	Peak
9648.000	26.63	38.42	7.35	34.24	38.16	54.00	-15.84	Average
9648.000	38.06	38.42	7.35	34.24	49.59	74.00	-24.41	Peak

Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

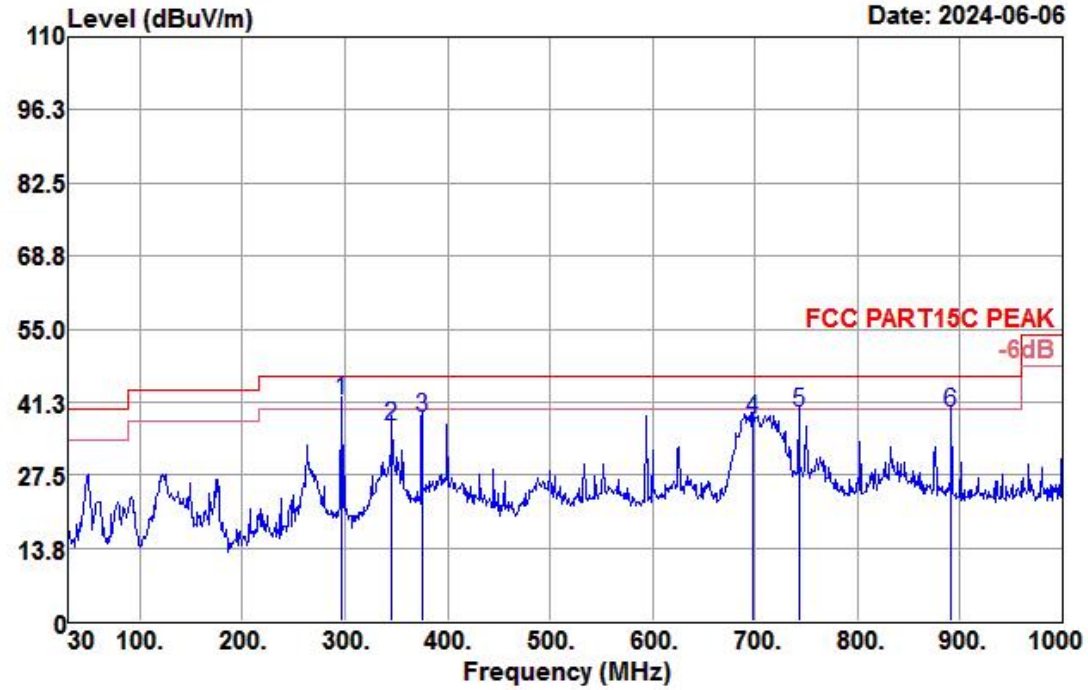
4.3.6 Test Result of Radiated Spurious Emission (30MHz ~ 1GHz)

Test Mode :	802.11b CH01(2412 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	30MHz~1GHz	Polarization :	Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
296.750	59.90	13.31	3.33	32.50	44.04	46.00	-1.96	QP
346.220	54.21	14.34	3.60	32.55	39.60	46.00	-6.40	QP
375.320	57.11	15.06	3.76	32.58	43.35	46.00	-2.65	QP
399.570	50.40	15.50	3.90	32.60	37.20	46.00	-8.80	QP
742.950	42.90	21.79	5.51	32.70	37.50	46.00	-8.50	QP
891.360	46.70	22.93	5.86	33.20	42.29	46.00	-3.71	QP

Test Mode :	802.11b CH11(2462 MHz)	Temperature :	21~23℃
Test Engineer :	Jack Liu	Relative Humidity :	61~64%
Frequencey Range	30MHz~1GHz	Polarization :	Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
296.750	57.41	13.31	3.33	32.50	41.55	46.00	-4.45	QP
346.220	51.21	14.34	3.60	32.55	36.60	46.00	-9.40	QP
375.320	52.11	15.06	3.76	32.58	38.35	46.00	-7.65	QP
697.360	44.60	20.81	5.32	32.70	38.03	46.00	-7.97	QP
742.950	44.80	21.79	5.51	32.70	39.40	46.00	-6.60	QP
891.360	43.80	22.93	5.86	33.20	39.39	46.00	-6.61	QP

4.2 Radiated receiver emissions Measurement

4.2.1 Limit of receiver conducted emissions

IC RSS-GEN 7.3

Radiated emission measurements shall be performed with the receiver antenna connected to the receiver antenna ports. The search for spurious emissions shall be from the lowest frequency internally generated or used in the receiver (e.g. local oscillator, intermediate or carrier frequency), or 30 MHz, whichever is higher, to at least five times the highest tunable or local oscillator frequency, whichever is higher, without exceeding 40 GHz.

Spurious emissions from receivers shall not exceed the radiated emissions limits shown in table below.

Frequency (MHz)	Field strength (μV/m at 3 metres)[Note 1]
30 – 88	100
88 – 216	150
216 – 960	200
Above 960	500

Note 1: Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with section 6.6.

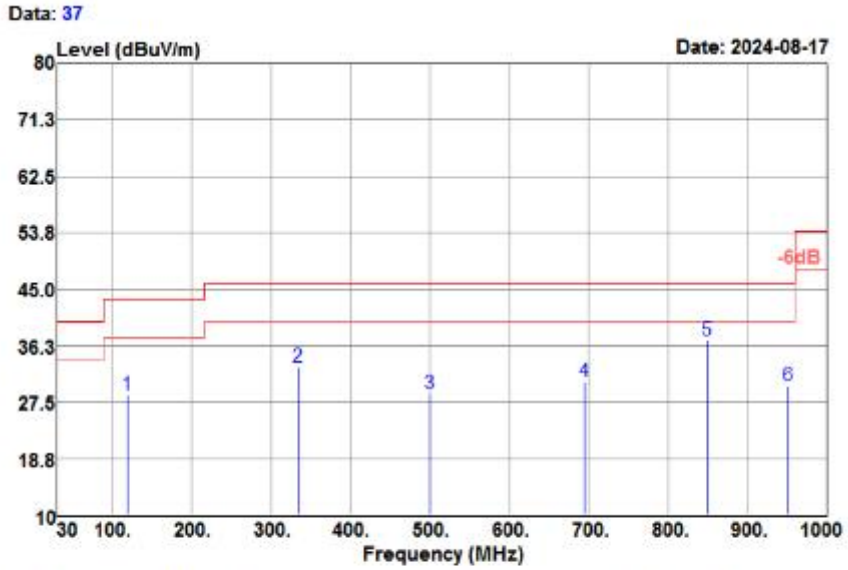
4.2.2 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The measurement distance is 3 meter.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW=3* RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement:
   VBW = 10 Hz, when duty cycle is no less than 98 percent.
   VBW ≥ 1/T, when duty cycle is less than 98 percent where T is 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.

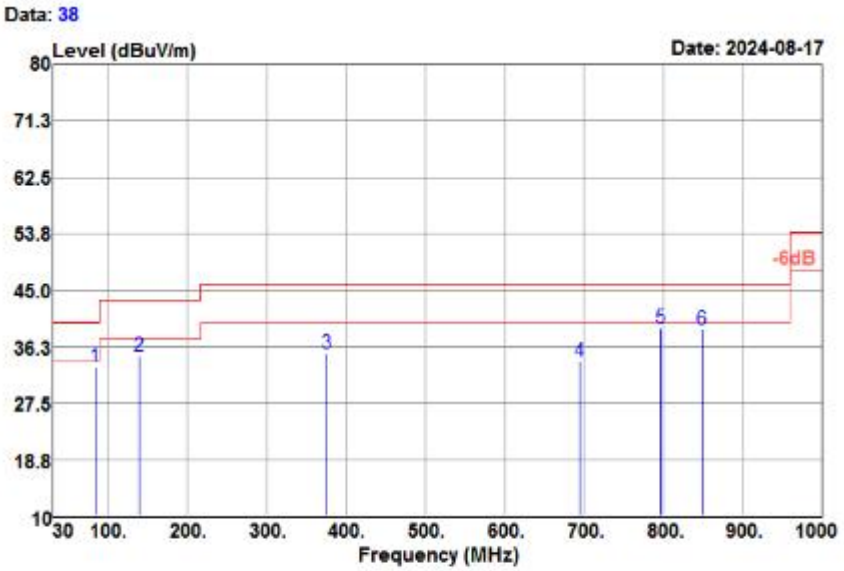
4.2.3 Test Result of Radiated receiver emissions

Test Mode :	Mode 1	**Temperature :**	23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	61%
Test Voltage :	120Vac / 60Hz	**Phase :**	Horizontal
Function Type :	RX Mode		



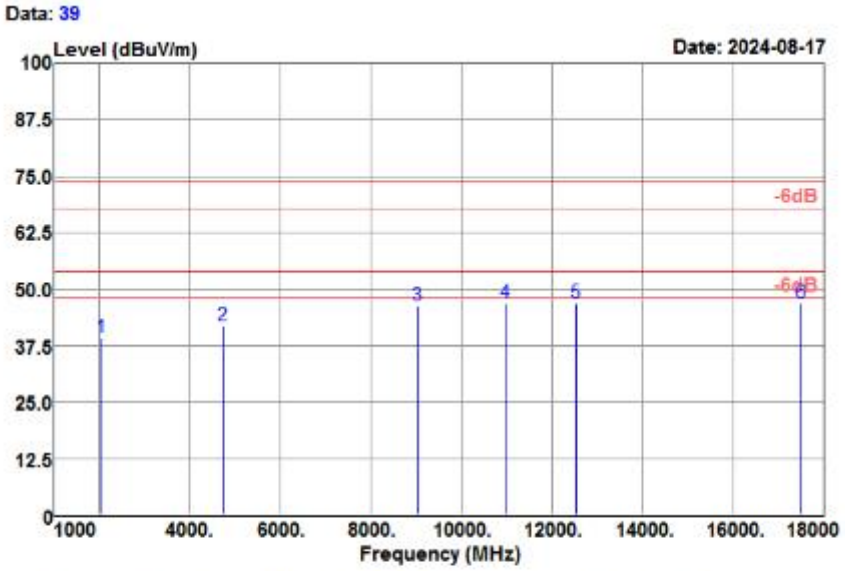
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
119.240	47.99	11.12	2.01	32.50	28.62	43.50	-14.88	Peak
333.610	47.77	14.19	3.55	32.50	33.01	46.00	-12.99	Peak
500.450	38.88	17.80	4.47	32.30	28.85	46.00	-17.15	Peak
694.450	36.90	20.75	5.28	32.32	30.61	46.00	-15.39	Peak
848.680	41.22	22.49	6.01	32.75	36.97	46.00	-9.03	Peak
951.500	33.60	23.72	6.32	33.57	30.07	46.00	-15.93	Peak

Test Mode :	Mode 1	Temperature :	23℃
Test Engineer :	Jack Liu	Relative Humidity :	61%
Test Voltage :	120Vac / 60Hz	Phase :	Vertical
Function Type :	RX Mode		



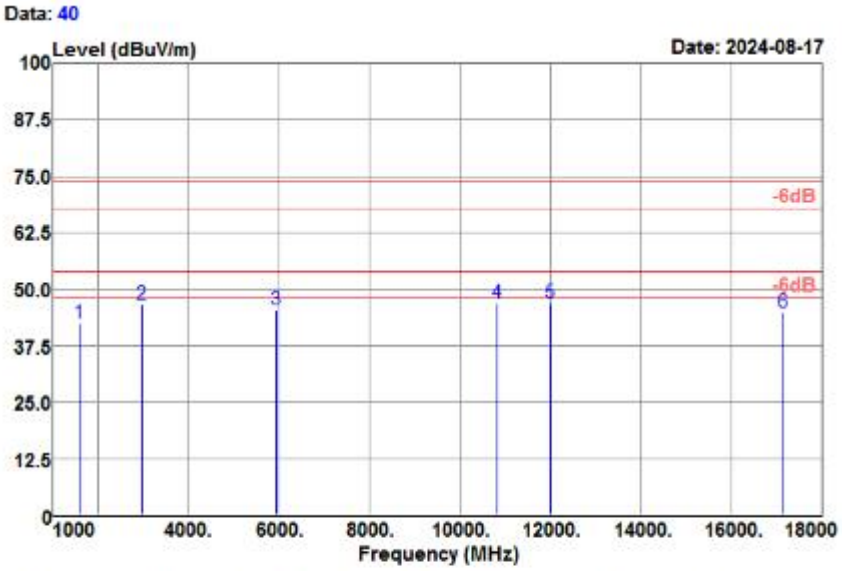
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
83.350	55.84	8.14	1.71	32.47	33.22	40.00	-6.78	Peak
139.610	52.19	12.80	2.23	32.50	34.72	43.50	-8.78	Peak
375.320	49.00	15.06	3.75	32.63	35.18	46.00	-10.82	Peak
694.450	40.29	20.75	5.28	32.32	34.00	46.00	-12.00	Peak
797.270	43.69	22.33	5.78	32.69	39.11	46.00	-6.89	Peak
848.680	43.21	22.49	6.01	32.75	38.96	46.00	-7.04	Peak

Test Mode :	Mode 1	Temperature :	23℃
Test Engineer :	Jack Liu	Relative Humidity :	61%
Test Voltage :	120Vac / 60Hz	Phase :	Horizontal
Function Type :	RX Mode		



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2054.000	44.15	26.86	3.34	34.96	39.39	74.00	-34.61	Peak
4740.000	38.98	32.34	6.12	35.53	41.91	74.00	-32.09	Peak
9041.000	29.75	38.34	10.90	32.67	46.32	74.00	-27.68	Peak
10979.000	23.16	39.44	15.41	31.17	46.84	74.00	-27.16	Peak
12526.000	22.72	38.90	16.06	30.63	47.05	74.00	-26.95	Peak
17490.000	22.77	38.90	15.45	30.10	47.02	74.00	-26.98	Peak

Test Mode :	Mode 1	Temperature :	23℃
Test Engineer :	Jack Liu	Relative Humidity :	61%
Test Voltage :	120Vac / 60Hz	Phase :	Vertical
Function Type :	RX Mode		



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1578.000	48.52	25.50	3.39	35.05	42.36	74.00	-31.64	Peak
2972.000	50.05	29.50	4.80	37.62	46.73	74.00	-27.27	Peak
5930.000	36.34	34.20	7.74	32.90	45.38	74.00	-28.62	Peak
10826.000	24.66	39.13	14.77	31.66	46.90	74.00	-27.10	Peak
11999.000	23.30	39.00	15.72	31.10	46.92	74.00	-27.08	Peak
17150.000	18.97	38.80	16.99	30.03	44.73	74.00	-29.27	Peak

4.3 AC Conducted Emission Measurement

4.3.1 Limit of AC Conducted Emission

FCC §15.207

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency Range	Quasi Peak(dBμV)	Average(dBμV)
0.15-0.5	66 to 56*	56-46
0.5-5	56	46
5-30	60	50

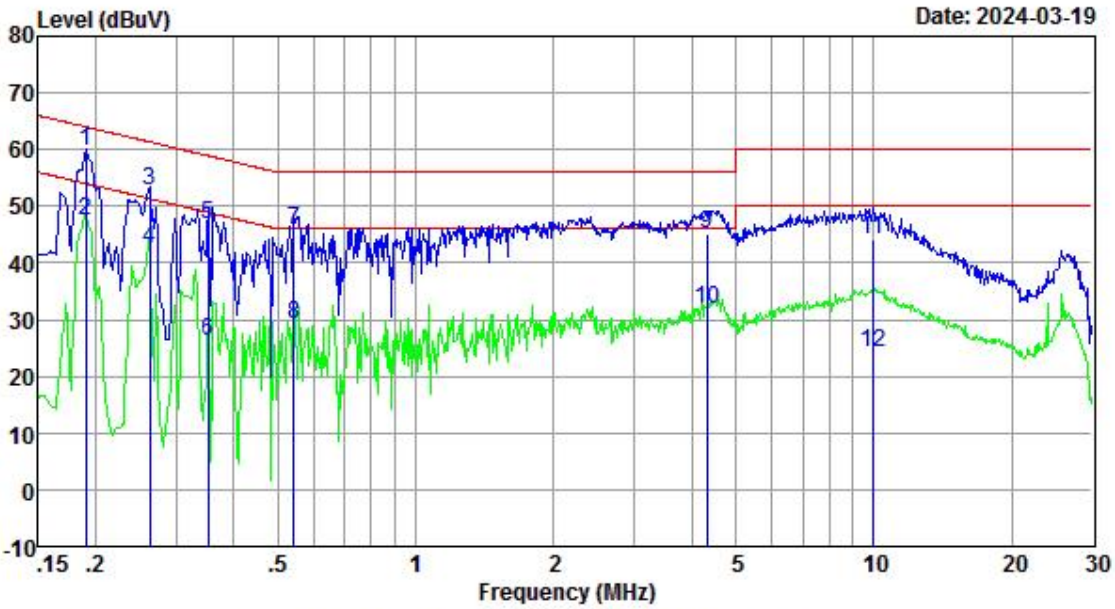
*Decreases with the logarithm of the frequency.

4.3.2 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

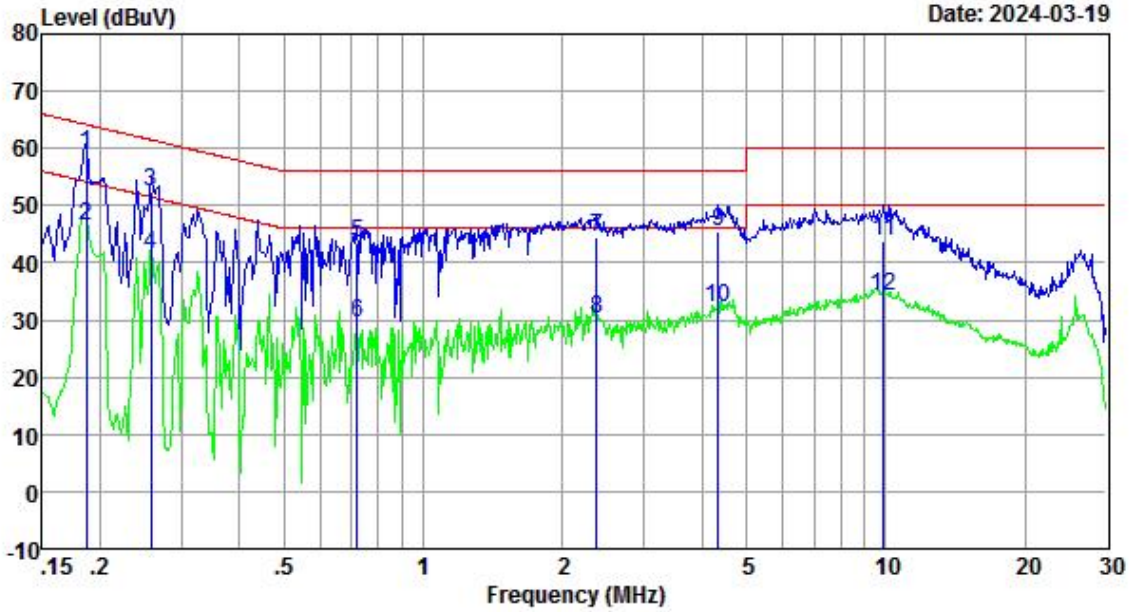
4.3.3 Test Result of AC Conducted Emission

Test Mode :	Mode 1	**Temperature :**	23℃
Test Engineer :	Jack Liu	**Relative Humidity :**	51%
Test Voltage :	120Vac / 60Hz	**Phase :**	Line
Function Type :	WLAN(2.4G) Link + SDI + RJ-45 + HDMI + USB Disk + H-Steriscope + D-SUBS9 + REMOTE +Adapter		



Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Result level dBuV	Limit level dBuV	Over limit dB	Remark
0.190	49.90	9.69	0.01	59.60	64.02	-4.42	QP
0.190	37.60	9.69	0.01	47.30	54.02	-6.72	Average
0.263	42.90	9.71	0.02	52.63	61.34	-8.71	QP
0.263	32.60	9.71	0.02	42.33	51.34	-9.01	Average
0.352	37.10	9.72	0.02	46.84	58.91	-12.07	QP
0.352	16.30	9.72	0.02	26.04	48.91	-22.87	Average
0.541	36.00	9.75	0.02	45.77	56.00	-10.23	QP
0.541	19.30	9.75	0.02	29.07	46.00	-16.93	Average
4.315	35.40	9.76	0.05	45.21	56.00	-10.79	QP
4.315	22.00	9.76	0.05	31.81	46.00	-14.19	Average
9.966	34.10	9.94	0.08	44.12	60.00	-15.88	QP
9.966	14.18	9.94	0.08	24.20	50.00	-25.80	Average

Test Mode :	Mode 1	Temperature :	23℃
Test Engineer :	Jack Liu	Relative Humidity :	51%
Test Voltage :	120Vac / 60Hz	Phase :	NEUTRAL
Function Type :	WLAN(2.4G) Link + SDI + RJ-45 + HDMI + USB Disk + H-Steriscope + D-SUBS9 + REMOTE +Adapter		



Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Result level dBuV	Limit level dBuV	Over limit dB	Remark
0.186	49.60	9.59	0.01	59.20	64.20	-5.00	QP
0.186	36.80	9.59	0.01	46.40	54.20	-7.80	Average
0.258	42.80	9.59	0.02	52.41	61.51	-9.10	QP
0.258	31.80	9.59	0.02	41.41	51.51	-10.10	Average
0.720	34.00	9.60	0.02	43.62	56.00	-12.38	QP
0.720	19.80	9.60	0.02	29.42	46.00	-16.58	Average
2.371	34.70	9.62	0.04	44.36	56.00	-11.64	QP
2.371	20.40	9.62	0.04	30.06	46.00	-15.94	Average
4.338	35.61	9.67	0.05	45.33	56.00	-10.67	QP
4.338	22.41	9.67	0.05	32.13	46.00	-13.87	Average
9.913	33.90	9.85	0.08	43.83	60.00	-16.17	QP
9.913	24.10	9.85	0.08	34.03	50.00	-15.97	Average

5 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
Spectrum Analyzer	Keysight	N9010A	MY56070788	2023-12-19	2024-12-18	Conducted
Thermal Chamber	Howkin	UHL-34	19111801	2023-12-18	2024-12-17	Conducted
Power Divider	Camille	ZPD8-2M0-40G-1942	04223129	2024-07-05	2025-07-04	Conducted
10dB Attenuator	MCLI	FAS-8-10	1693	2024-07-05	2025-07-04	Conducted

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV 30	103728	2023-12-19	2024-12-18	Radiation
EMI Test Receiver	R&S	ESR3	102144	2023-12-20	2024-12-19	Radiation
Amplifier	Sonoma	310	363917	2023-12-19	2024-12-18	Radiation
Amplifier	Schwarzbeck	BBV 9718	327	2023-12-19	2024-12-18	Radiation
Amplifier	Narda	TTA1840-35-HG	2034380	2024-01-03	2025-01-02	Radiation
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-051	2023-02-12	2026-02-11	Radiation
Broadband Antenna	Schwarzbeck	VULB 9168	9168-757	2023-09-17	2026-09-16	Radiation
Horn Antenna	Schwarzbeck	BBHA 9120 D	1677	2024-01-30	2027-01-29	Radiation
Horn Antenna	COM-POWER	AH-1840	101117	2024-01-31	2027-01-30	Radiation
Test Software	Auidx	E3	6.111221a	N/A	N/A	Radiation
Filter	Micro-Tronics	BRM 50702	G266	N/A	N/A	Radiation

Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Due Date	Remark
LISN	R&S	ENV216	102125	2023-12-18	2024-12-17	Conducted
LISN	R&S	ENV432	101327	2023-12-18	2024-12-17	Conducted
EMI Test Receiver	R&S	ESR3	102143	2023-12-20	2024-12-19	Conducted
EMI Test Software	Audix	E3	N/A	N/A	N/A	Conducted
Base Station	R&S	CMW 270	101231	2023-12-19	2024-12-18	Conducted

N/A: No Calibration Required

6 Uncertainty of Evaluation

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9kHz~30MHz	2.00 dB
Radiated emissions	30MHz ~ 1GHz	5.28 dB
	1GHz ~ 18GHz	5.12 dB
	18GHz ~ 40GHz	5.27 dB

MEASUREMENT	UNCERTAINTY
Occupied Channel Bandwidth	±71.333 Hz
RF output power, conducted	±0.78 dB
Power density, conducted	±2.02dB
Emissions, conducted	±2.00dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Appendix H: Setup Photographs

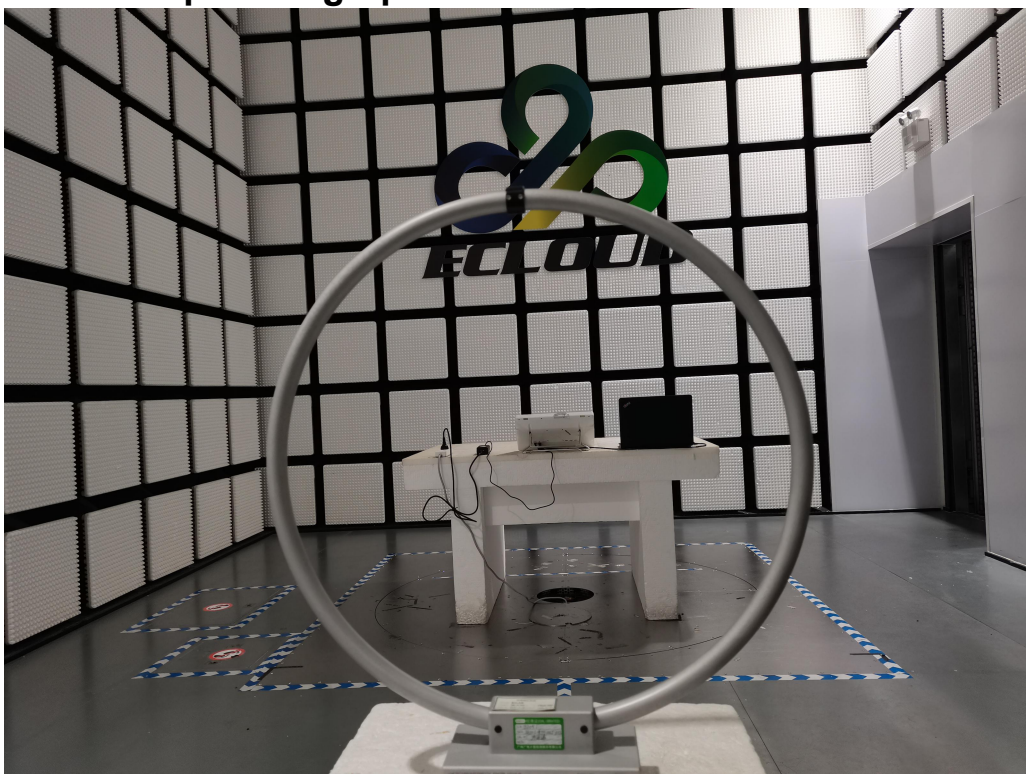


Fig. 1 Radiated emission setup photo(Below 30MHz)

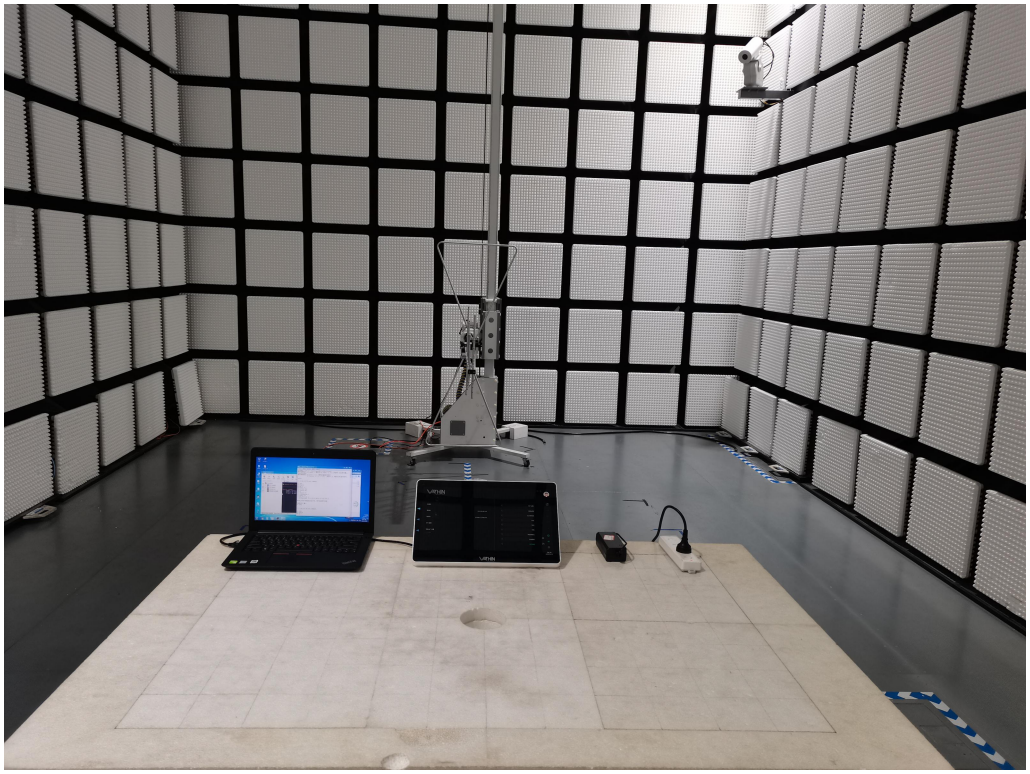


Fig. 2 Radiated emission setup photo(30MHz-1GHz)

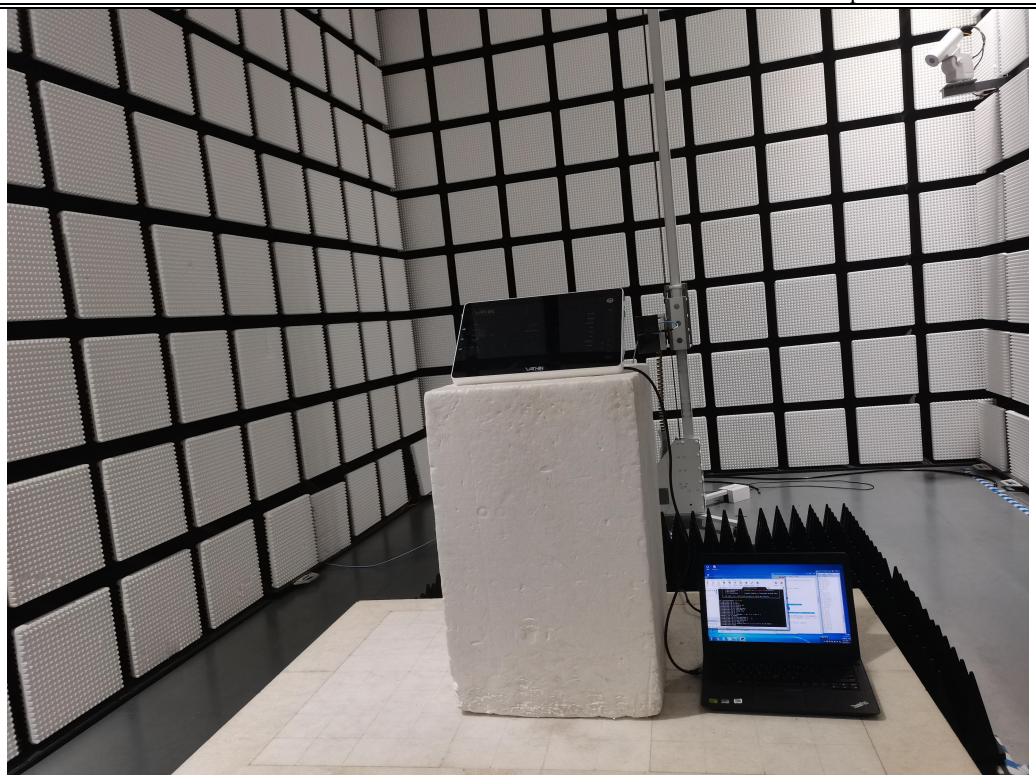


Fig. 3 Radiated emission setup photo(Above 1GHz)

Fig. 4 Power line conducted emission setup photo

----------End of the report----------