

**Guangdong Meijiixin Innovative Technology Co., Ltd.**

# EMC TEST REPORT

**Report Type:**

FCC Part 15B EMC report

**Model:**

B7

**REPORT NUMBER:**

200602834SHA-004

**ISSUE DATE:**

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**DOCUMENT CONTROL NUMBER:**

TTRF15b\_V1 © 2018 Intertek



**Applicant:** Guangdong Meijiixin Innovative Technology Co., Ltd.  
Xingye South Road, Laimei Industrial Park, Chenghai, Shantou,  
Guangdong, China

**Manufacturer:** Guangdong Meijiixin Innovative Technology Co., Ltd.  
Xingye South Road, Laimei Industrial Park, Chenghai, Shantou,  
Guangdong, China

**FCC ID:** 2AHV3KK21

**SUMMARY:**

The equipment complies with the requirements according to the following standard(s) or Specification:

**47CFR Part 15 (2019):** Radio Frequency Devices (Subpart B)

**ANSI C63.4 (2014):** American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

**PREPARED BY:**

Project Engineer  
Wade Zhang

**REVIEWED BY:**

Reviewer  
Daniel Zhao

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## TEST REPORT

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## Revision History

Report No.	Version	Description	Issued Date
200602834SHA-004	Rev. 01	Initial issue of report	August 31, 2020

## Measurement result summary

TEST ITEM	FCC REFERENCE	RESULT
Power line conducted emission	15.107	Pass
Radiated emission	15.109	Pass

Notes: 1: NA =Not Applicable

## 1 GENERAL INFORMATION

### 1.1 Description of Equipment Under Test (EUT)

Product name:	Quadcopter
Type/Model:	B7
Add Model:	V1,V2,V3,V4,V5,V6,V7,V8,V9,V10 , X103W,X104G,X105W,X106,X107,X108,X109,MEW4-1,MEW4-2,MEW4-3,MEW4-4 B2,B3,B3mini,B4W,B5W,B9,B10,B11,B12EIS,B16,B16Pro,B18,B18EIS. B19, B19EIS, B20EIS. B22pro, BX Pro,B21
Description of EUT:	There is an aircraft with general 2.4G and 5G Wi-Fi (11a/11n) technology and a 2.4G remote control with general 2.4G technology.
Rating:	The aircraft is powered by DC 7.6V battery and the 2.4G Remote Control Device is powered by DC 3.0V (2*1.5V batteries)
Category of EUT:	Class B
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Highest operating frequency	5180 MHz
Sample received date:	May 14, 2020
Date of test:	May 15, 2020 ~ June 20, 2020

## 1.2 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN1175
	IC Registration Lab Registration code No.: 2042B-1
	VCCI Registration Lab Registration No.: R-4243, G-845, C-4723, T-2252
	NVLAP Accreditation Lab NVLAP LAB CODE: 200849-0
	A2LA Accreditation Lab Certificate Number: 3309.02

Tests were sub-contracted.

Name:	Shenzhen UnionTrust Quality and Technology Co., Ltd.
Address:	16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China
Telephone:	+86 (0) 755 2823 0888
Telefax:	+86 (0) 755 2823 0886

The test facility is recognized, certified, or accredited by these organizations:	A2LA-Lab Certificate No.:4312.01
	Registration No. CNAS L9069

## 2 TEST SPECIFICATIONS

### 2.1 Standards or specification

47CFR Part 15 (2019)

ANSI C63.4 (2014)

### 2.2 Mode of operation during the test

Within this test report, EUT was tested under all available operation modes and tested under its rating voltage and frequency. Other voltage and frequency is specified if used.

Test Items	Test Mode
Conducted emission	<b>Test Mode 1: Battery Charging with USB charger</b>
Radiated emission	<b>Test Mode 1: Power ON + GPS ON</b> Test Mode 2: Battery Charging with USB charger Test Mode 3: Video Test Mode 4: Normal work
Remark : The above test modes in boldface were the worst cases, only the test data of these modes were reported.	

### 2.3 Test software list

Test Items	Software	Manufacturer	Version
Conducted emission	e3	Audix	9.160323
Radiated emission	e3	Audix	9.160323

### 2.4 Test peripherals list

Item No.	Name	Band and Model	Description
1	Aadaptor	Lenovo/C-P45	100-240V~50/60Hz
2	USB Cable 1	NA	Unshielded without ferrite
3	USB Cable 2	NA	Unshielded without ferrite



## 2.5 Test environment condition:

Test items	Temperature	Humidity
Power line conducted emission	22.1°C	53% RH
Radiated Emissions	25.2°C	46% RH

## 2.6 Instrument list

Conducted Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	Receiver	R&S	ESR7	UTTL-E005	Nov. 23, 2020
<input checked="" type="checkbox"/>	Pulse Limiter	R&S	ESH3-Z2	UTTL-E007	Nov. 23, 2020
<input checked="" type="checkbox"/>	LISN	R&S	ESH2-Z5	UTTL-E003	Nov. 23, 2020
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323	
Radiated Emission					
Used	Equipment	Manufacturer	Type	Internal no.	Due date
<input checked="" type="checkbox"/>	3M Chamber & Accessory Equipment	ETS-LINDGREN	3m	UTTL-E010	Dec. 03, 2021
<input checked="" type="checkbox"/>	Receiver	R&S	ESIB26	UTTL-E026	Nov. 23, 2020
<input checked="" type="checkbox"/>	Broadband Antenna	ETS-LINDGREN	3142E	UTTL-E014	Nov. 15, 2020
<input checked="" type="checkbox"/>	6dB Attenuator	Talent	RA6A5-N-18	UTTL-E057	Nov. 15, 2020
<input checked="" type="checkbox"/>	Preamplifier	HP	8447F	UTTL-E043	Nov. 23, 2020
<input checked="" type="checkbox"/>	Horn Antenna	ETS-LINDGREN	3117	UTTL-E016	May 17, 2021
<input checked="" type="checkbox"/>	Pre-amplifier	ETS-LINDGREN	118385	UTTL-E017	Jan. 10, 2021
<input checked="" type="checkbox"/>	Double-Ridged Waveguide Horn Antenna	ETS-LINDGREN	3116C-PA	UTTL-E019	Nov. 15, 2020
<input checked="" type="checkbox"/>	Pre-amplifier	ETS-LINDGREN	00118384		
<input checked="" type="checkbox"/>	Multi device Controller	ETS-LINDGREN	7006-001	UTTL-E019	N/A
<input checked="" type="checkbox"/>	Test Software	Audix	e3	Software Version: 9.160323	

## 2.7 Measurement uncertainty

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

Test item	Measurement uncertainty
Conducted emission 150KHz-30MHz	$\pm 2.7$ dB
Radiated emission 30MHz-1GHz	$\pm 4.7$ dB
Radiated emission 1GHz-18GHz	$\pm 5.1$ dB
Radiated emission 18GHz-26GHz	$\pm 5.2$ dB
Radiated emission 26GHz-40GHz	$\pm 5.2$ dB

### 3 Radiated Emissions

Test result: Pass

#### 3.1 Limit

##### 3.1.1 Limits for radiated disturbance of class A device

Frequency (MHz)	Permitted limit in dB $\mu$ V/m (Quasi-peak) of Measurement Distance 10m
30 – 88	39
88 – 216	43.5
216 – 960	46.4
Above 960	49.5

Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.

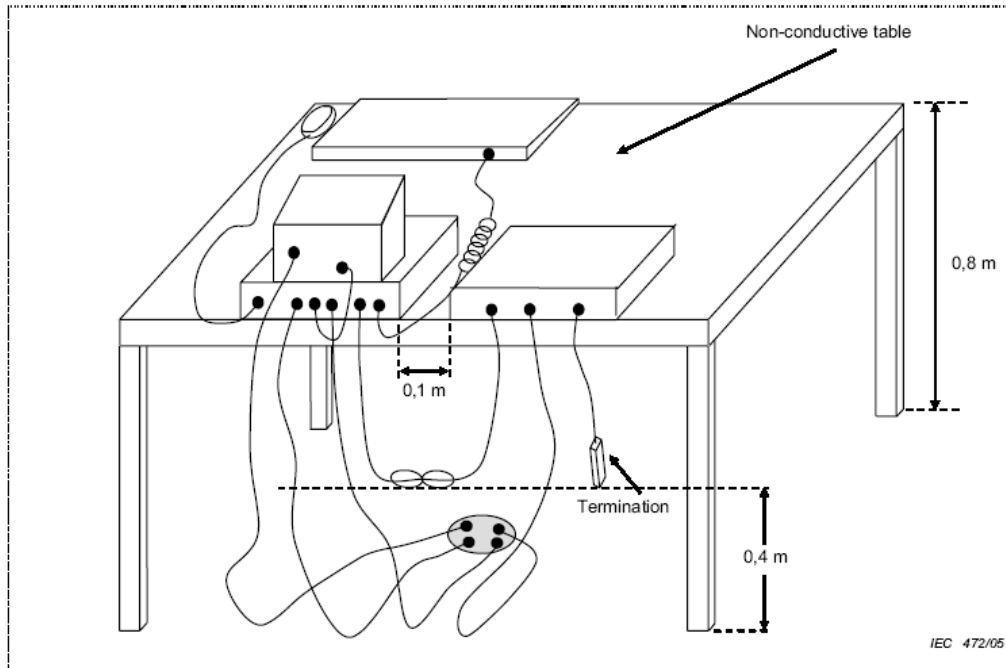
##### 3.1.2 Limits for radiated disturbance of class B device

Frequency (MHz)	Permitted limit in dB $\mu$ V/m (Quasi-peak) of Measurement Distance 3m
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
Above 960	54.0

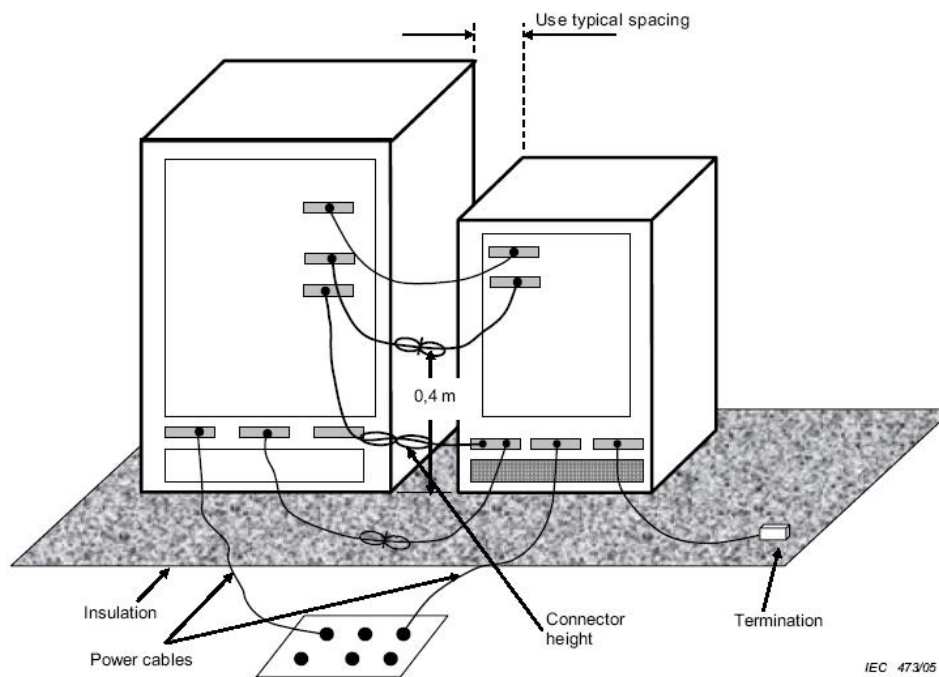
Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.

### 3.2 Block diagram and test set up

For table top equipment



For floor standing equipment



### 3.3 Measurement Procedure

The measurement was performed in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, the pre-amplifier (and high pass filter if necessary) is equipped just at the output terminal of the antenna.

The distance from EUT to receiving antenna is **3** meters.

Measurement was performed according to clause 4 and clause 5 of ANSI 63.4.

Test procedure was according to clause 8.3 of ANSI 63.4.

EUT arrangement and operate condition were according to clause 6 and clause 8 of ANSI 63.4.

The radiated emission was measured using the test receiver with the resolutions bandwidth set as:

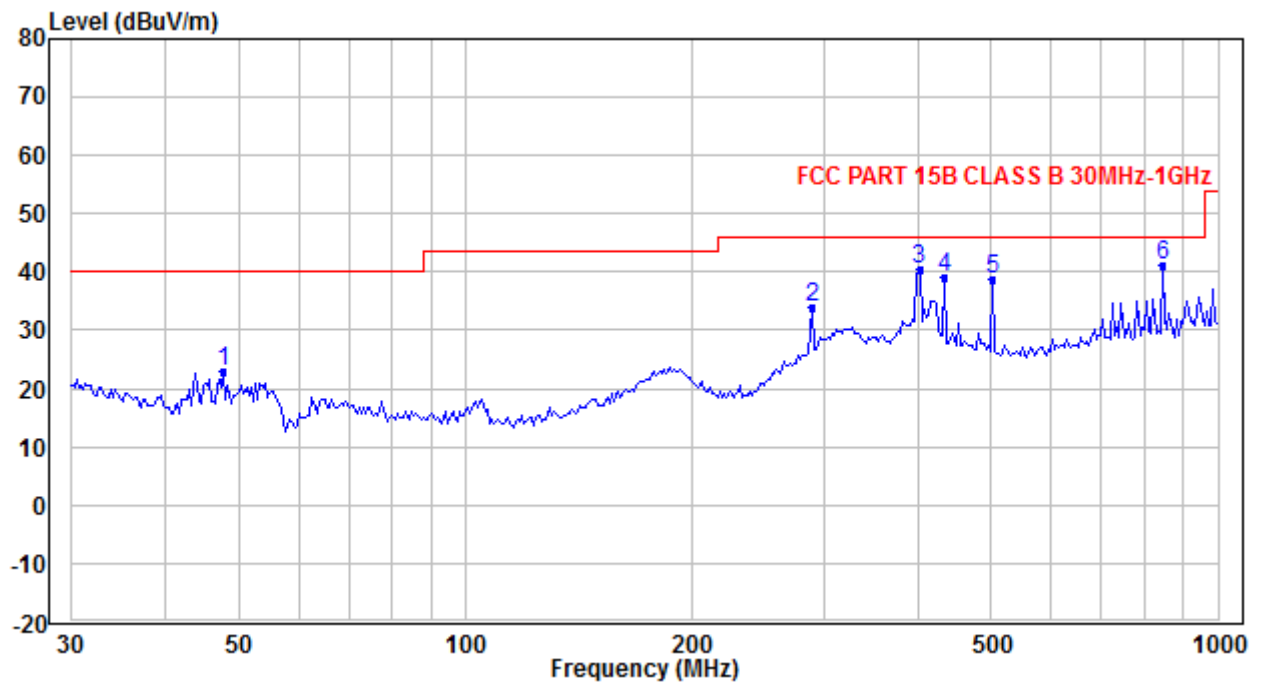
RBW = 100kHz, VBW = 300kHz (30MHz~1GHz)

RBW = 1MHz, VBW = 3MHz (>1GHz for PK)

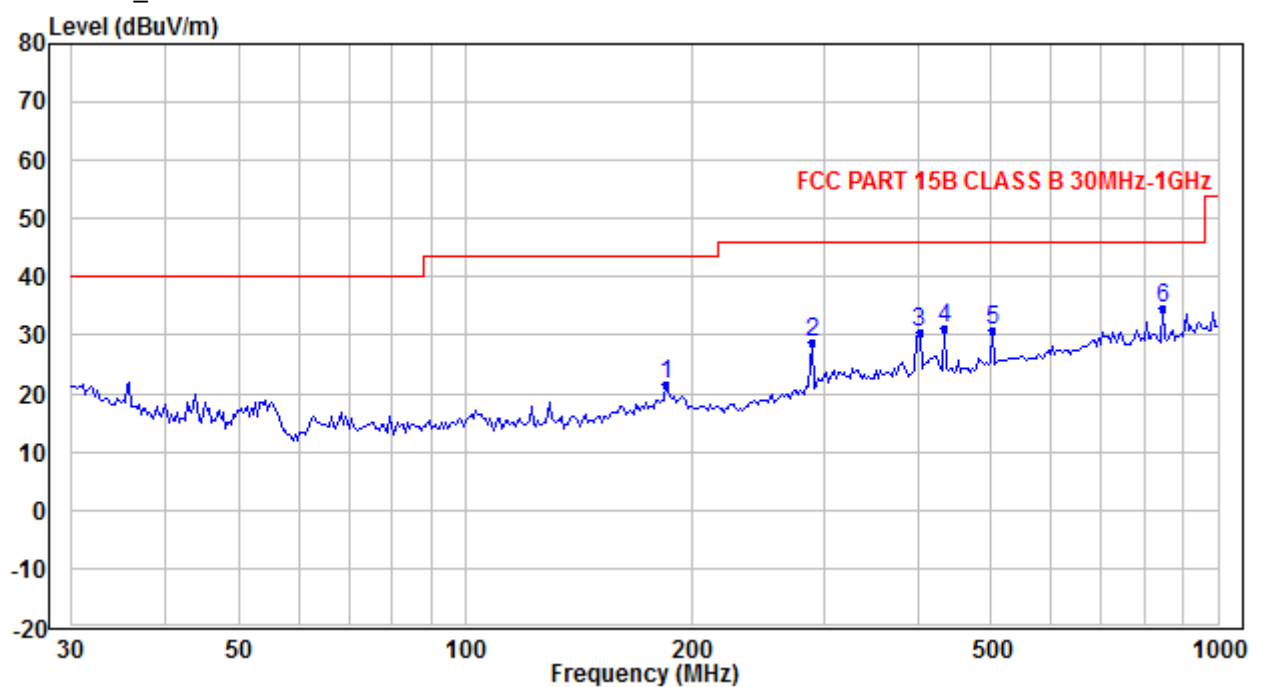
### 3.4 Test Results of Radiated Emissions

The worst case is as follow:

Test Mode 1 \_Horizontal



Test Mode 1 \_Vertical



# TEST REPORT

## Test data 30MHz~1GHz:

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Factor (dB/m)	Limits (dBμV/m)	Margin (dB)	Detector
H	47.703	22.97	-14.62	40.00	17.03	QP
	288.284	33.86	-6.12	46.00	12.14	QP
	401.105	40.55	-3.21	46.00	5.45	QP
	433.340	39.13	-3.12	46.00	6.87	QP
	502.247	38.8	-1.28	46.00	7.20	QP
	844.803	41.17	3.39	46.00	4.83	QP
V	185.163	21.45	-10.55	43.50	22.05	QP
	288.284	28.68	-6.30	46.00	17.32	QP
	401.105	30.4	-3.11	46.00	15.60	QP
	433.340	31.16	-3.19	46.00	14.84	QP
	502.247	30.98	-1.50	46.00	15.02	QP
	844.803	34.74	3.21	46.00	11.26	QP

# TEST REPORT

## Test data Above 1GHz: Test Mode 1

Polarization	Frequency (MHz)	Measured level (dBμV/m)	Factor (dB/m)	Limits (dBμV/m)	Margin (dB)	Detector
H	2468.481	26.44	-0.9	54	27.56	AV
	2468.481	41.44	-0.9	74	32.56	PK
	2820.253	47.56	-0.2	54	6.44	AV
	2820.253	71.56	-0.2	74	2.44	PK
	7334.292	37.64	6.36	54	16.36	AV
	7334.292	53.64	6.36	74	20.36	PK
	12496.58	40.21	10.79	54	13.79	AV
	12496.58	52.21	10.79	74	21.79	PK
	14696.95	38.95	12.73	54	15.05	AV
	14696.95	52.95	12.73	74	21.05	PK
	16312.02	54.26	12.23	74	19.74	PK
	16312.02	41.26	12.23	54	12.74	AV
V	2454.225	28.77	-1.31	54	25.23	AV
	2454.225	44.77	-1.31	74	29.23	PK
	2820.253	36.15	-0.86	54	17.85	AV
	2820.253	57.15	-0.86	74	16.85	PK
	7334.292	34.85	6.46	54	19.15	AV
	7334.292	48.85	6.46	74	25.15	PK
	10442.59	38.55	8.8	54	15.45	AV
	10442.59	50.55	8.8	74	23.45	PK
	11523.2	40.67	8.62	54	13.33	AV
	11523.2	62.67	8.62	74	11.33	PK
	16312.02	54.78	12.45	74	19.22	PK
	16312.02	41.78	12.45	54	12.22	AV

### Remark:

- Factor= Antenna Factor + Cable Loss (-Amplifier, is employed)
- Measured level= Original Receiver Reading + Factor
- Margin = Limit – Measured level
- As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.



## 4 Power line conducted emission

Test result: Pass

### 4.1 Limit

#### 4.1.1 Limits for conducted disturbance voltage at the mains ports of class A device

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60
Note: If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.		

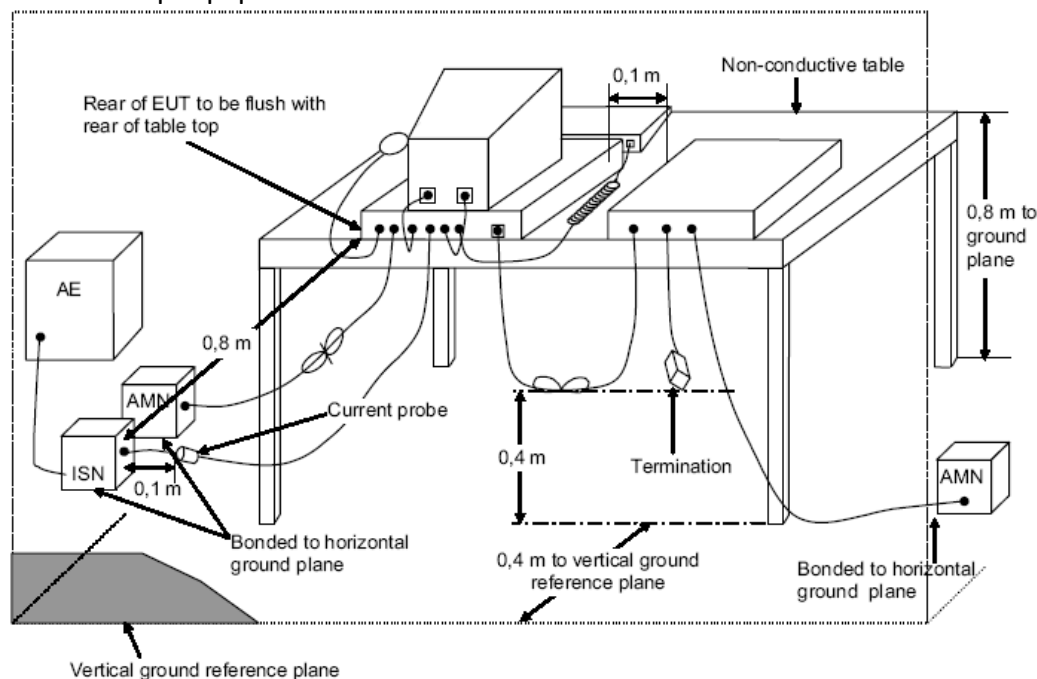
#### 4.1.2 Limits for conducted disturbance voltage at the mains ports of class B device

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 ~ 56 *	56 ~ 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50
Note: 1. * Means the limit decreasing linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz 2. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.		

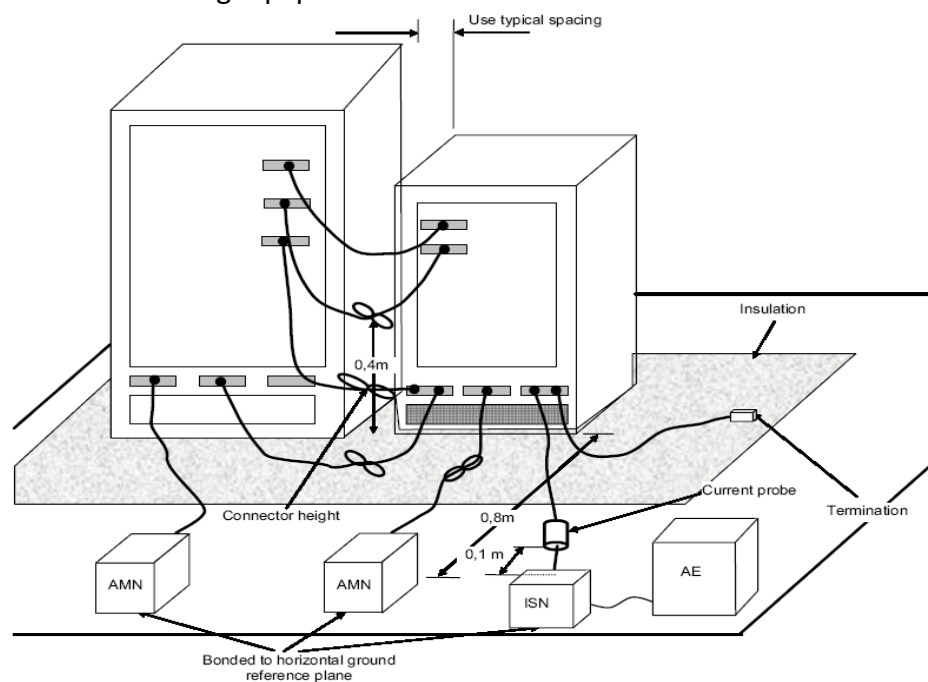
## TEST REPORT

## 4.2 Block diagram and test set up

For table top equipment



For floor standing equipment



### 4.3 Measurement Procedure

Measured levels of ac power-line conducted emission shall be the emission voltages from the voltage probe, where permitted, or across the 50  $\Omega$  LISN port (to which the EUT is connected), where permitted, terminated into a 50  $\Omega$  measuring instrument. All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer. For those measurements using a LISN, the 50  $\Omega$  measuring port is terminated by a measuring instrument having 50  $\Omega$  input impedance. All other ports are terminated in 50  $\Omega$  loads.

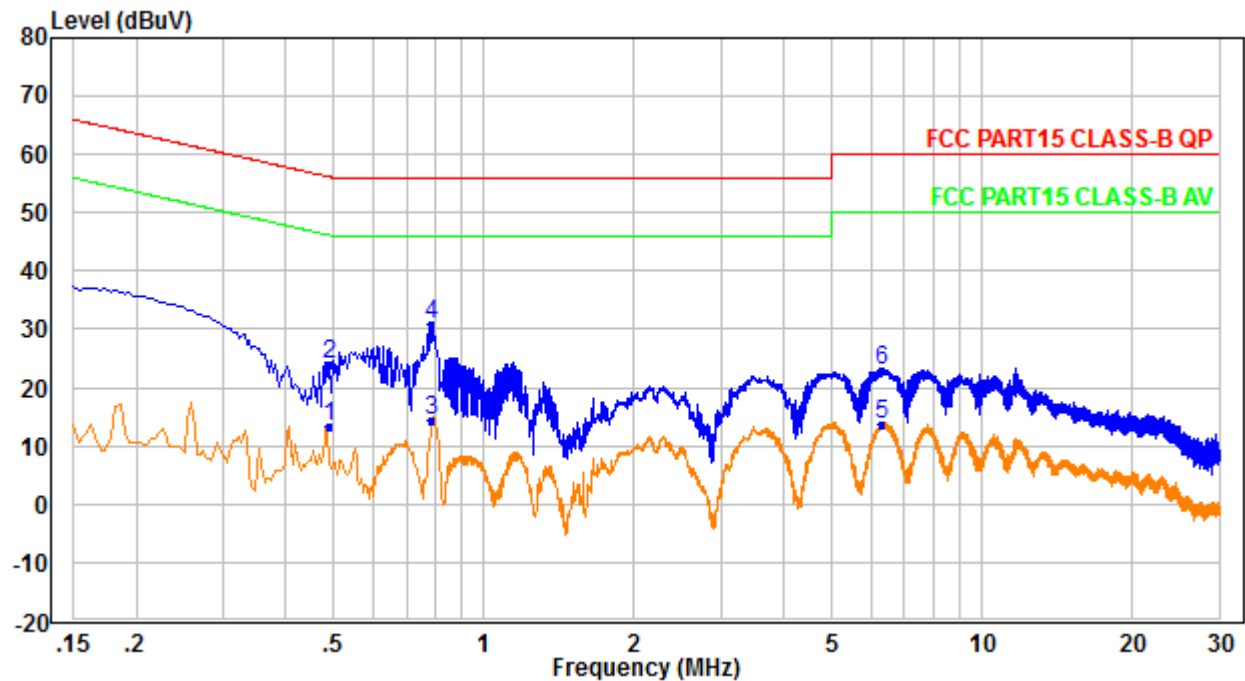
Tabletop devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

#### 4.4 Test Results of Power line conducted emission

##### Test Curve:

Test Mode 1 \_L Line

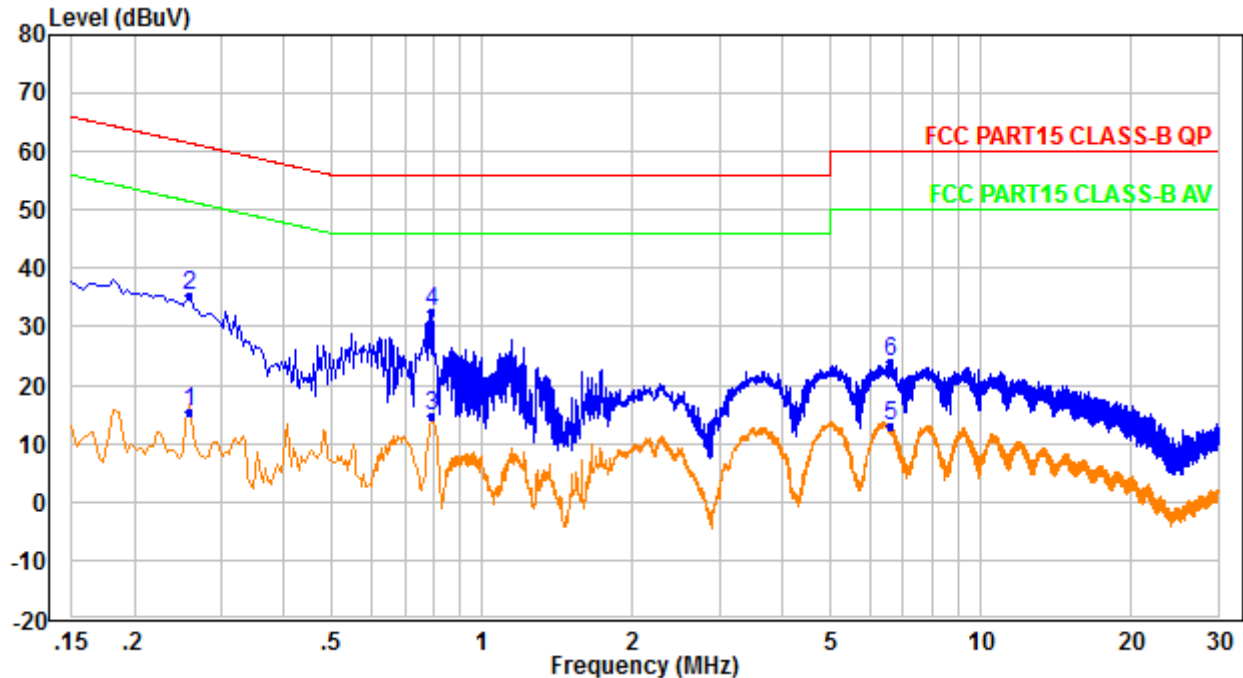


##### Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.490	23.97	56.17	32.20	13.48	46.17	32.69
0.786	30.92	56.00	25.08	14.51	46.00	31.49
6.306	23.09	60.00	36.91	13.76	50.00	36.24

### Test Curve:

Test Mode 1 \_N Line



### Test Data:

Frequency (MHz)	Quasi-peak			Average		
	level dB(μV)	Limit dB(μV)	Margin (dB)	level dB(μV)	limit dB(μV)	Margin (dB)
0.258	35.20	61.50	26.30	15.46	51.50	36.04
0.790	32.47	56.00	23.53	14.75	46.00	31.25
6.622	23.93	60.00	36.07	12.87	50.00	37.13

Remark: 1. Correct Factor = LISN Factor + Cable Loss, the value was added to Original Receiver Reading by the software automatically.

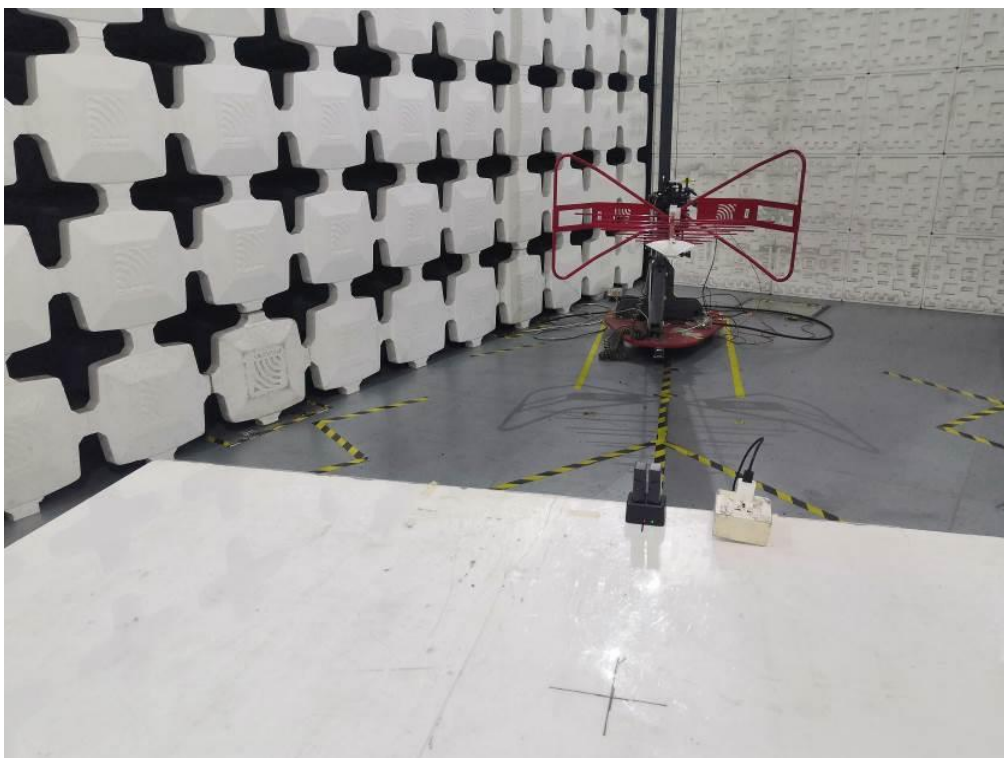
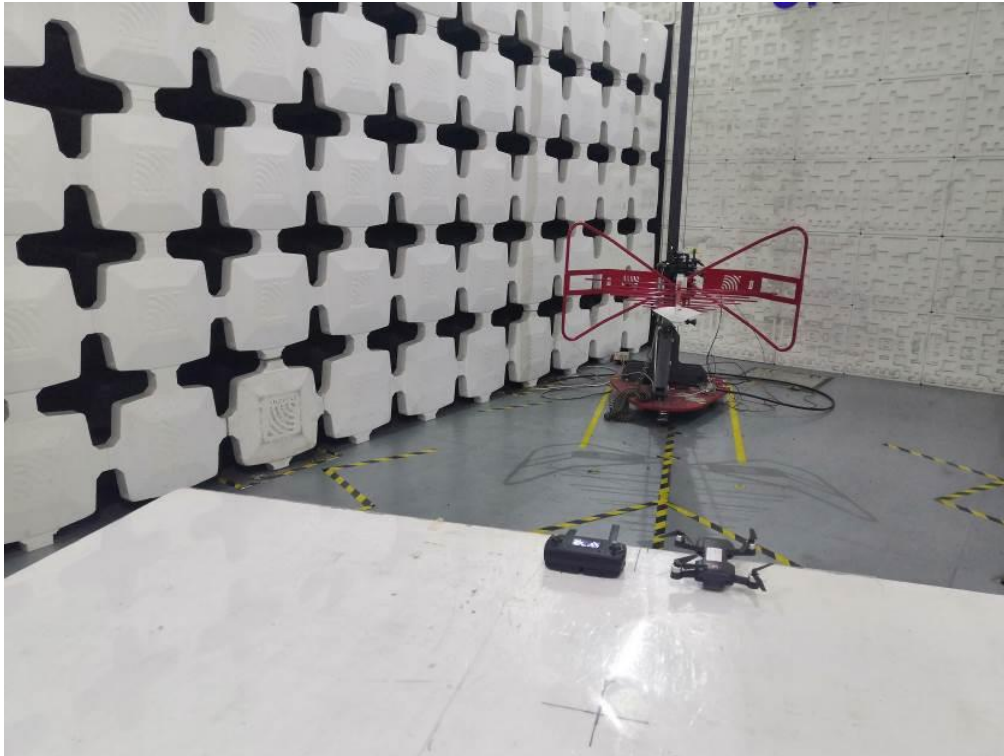
2. Corrected Reading = Original Receiver Reading + Correct Factor

3. Margin = Limit - Corrected Reading

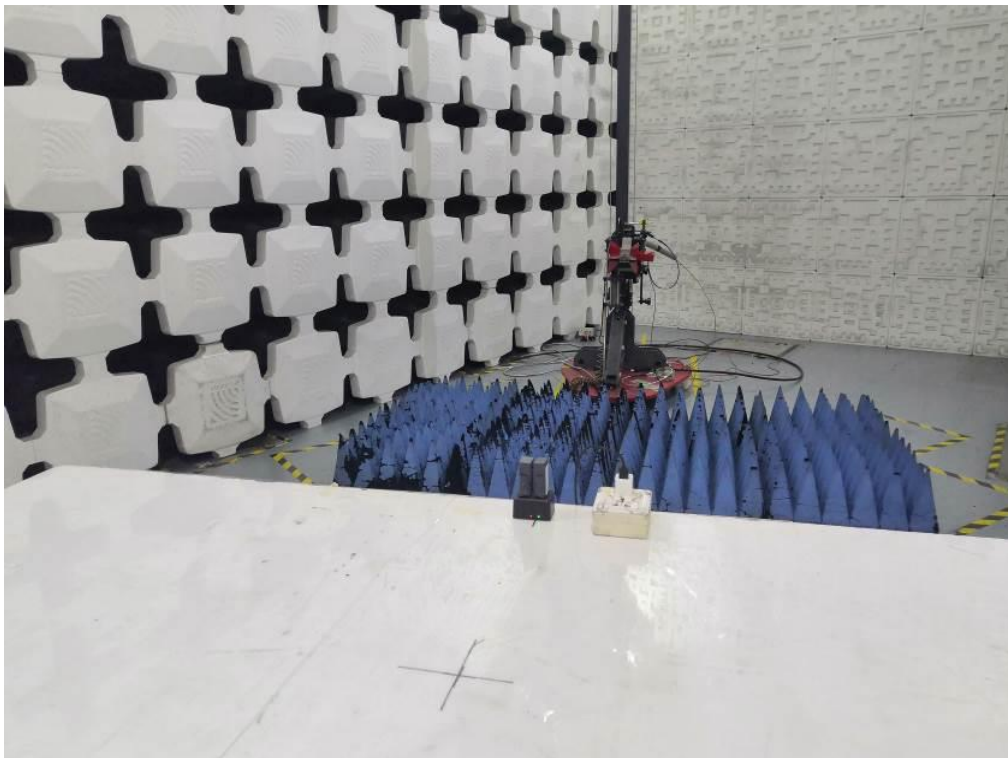
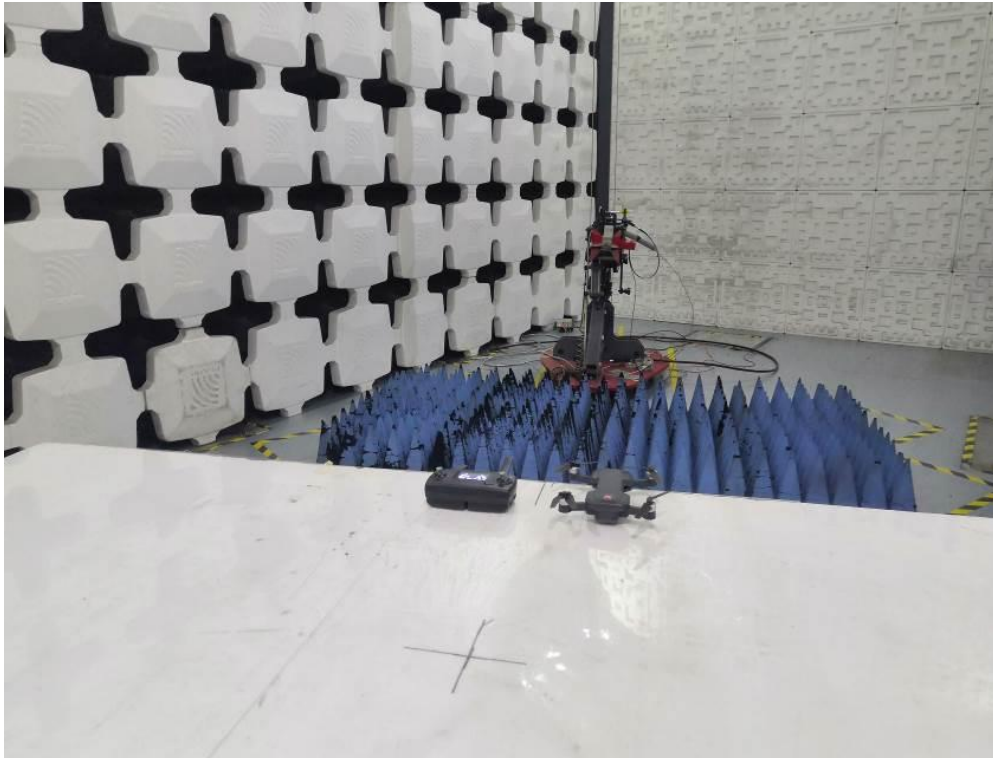
4. If the PK Corrected Reading is lower than AV limit, the AV test can be elided.

## Appendix I: Photograph of test setup

Radiated Emissions (below 1GHz)



Radiated Emissions (above 1GHz)





Power line conducted emission





## Appendix I: Photograph of equipment under test

Refer to Appendix for EUT external and internal photographs.

\*\*\*\*\* END \*\*\*\*\*