



**Shenzhen CTA Testing Technology Co., Ltd.**

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

## FCC PART 15 SUBPART C TEST REPORT

### FCC PART 15 C(15.249)

**Report Reference No.**.....: **CTA24061300201**

**FCC ID**.....: **2BHCA-ATX10**

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Date of issue .....: Jun.25, 2024

**Representative Laboratory Name.:** **Shenzhen CTA Testing Technology Co., Ltd.**

Address .....: Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

**Applicant's name**.....: **Shenzhen E-mylive Technology Co. , Ltd.**

Address .....: 2nd Floor, 17 Rifu Road, Ri, Baishixia East District, Fuyong Street, Baoan District, Shenzhen, China, China

**Test specification** .....

Standard .....: **FCC CFR 47 PART 15 C(15.249)**  
**ANSI C63.10-2020**

TRF Originator.....: Shenzhen Global Test Service Co.,Ltd.

Master TRF .....: Dated 2014-12

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**Test item description** .....: **Wireless microphone**

Trade Mark .....: N/A

Manufacturer .....: Shenzhen E-mylive Technology Co. , Ltd.

Model/Type reference .....: ATX10

Listed Models .....: N/A

Modulation Type.....: GFSK

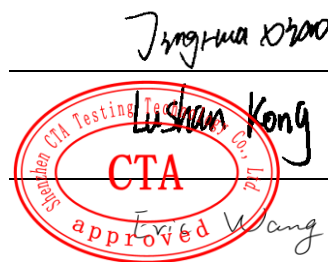
Operation Frequency.....: From 918MHz

Hardware Version .....: N/A

Software Version .....: N/A

Rating .....: DC 3.7V by battery  
Recharged by DC 5.0V

Result .....: **PASS**



**TEST REPORT**

<b>Test Report No. :</b> CTA24061300201	Jun.25, 2024 Date of issue
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Equipment under Test : Wireless microphone

Model /Type : ATX10

Listed model : N/A

**Applicant** : **Shenzhen E-mylive Technology Co. , Ltd.**

Address : 2nd Floor, 17 Rifu Road, Ri, Baishixia East District, Fuyong Street,  
Baoan District, Shenzhen, China

**Manufacturer** : **Shenzhen E-mylive Technology Co. , Ltd.**

Address : 2nd Floor, 17 Rifu Road, Ri, Baishixia East District, Fuyong Street,  
Baoan District, Shenzhen, China

<b>Test Result:</b>	<b>PASS</b>
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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## 1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Rules Part 15.249](#): Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

[ANSI C63.10-2023](#): American National Standard for Testing Unlicensed Wireless Devices

## 2. SUMMARY

### 2.1. General Remarks

Date of receipt of test sample	:	Jun.12, 2024
	:	
Testing commenced on	:	Jun.12, 2024
	:	
Testing concluded on	:	Jun.25, 2024

### 2.2. Product Description

Product Name	Wireless microphone
Trade Mark	N/A
Model/Type reference	ATX10
List Models	N/A
Model Declaration	N/A
Power supply:	DC 3.7V by battery Recharged by DC 5.0V
Sample ID	CTA240613002-1-1# & CTA240613002#
SRD	
Frequency Range	918MHz
Channel Number	1Channel
Modulation Type	GFSK
Antenna Description	PCB Antenna, 2.0dBi(Max.)

### 2.3. Equipment Under Test

#### Power supply system utilised

Power supply voltage	:	<input type="radio"/>	230V / 50 Hz	<input type="radio"/>	120V / 60Hz
		<input type="radio"/>	12 V DC	<input type="radio"/>	24 V DC
		<input checked="" type="radio"/>	Other (specified in blank below)		

DC 3.7V

### 2.4. Short description of the Equipment under Test (EUT)

This is a Wireless microphone .

For more details, refer to the user's manual of the EUT.

### 2.5. EUT operation mode

Mode of Operations	Frequency Range (MHz)	Data Rate (Mbps)
SRD	918	1
For Conducted Emission		
Test Mode	TX Mode	
For Radiated Emission		
Test Mode	TX Mode	

Channel	Frequency(MHz)
1	918

The EUT has been tested under operating condition.

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/50Hz modes, recorded worst case(AC 120V/60Hz).

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was the mode and channel with the highest output power, which was determined to be SRD mode.

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be SRD mode.

## 2.6. Block Diagram of Test Setup



## 2.7. EUT Exercise Software

The product continues to transmit signals after power on.

## 2.8. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
SHENZHEN XIONGZHENGFA (TECH) CO.,LTD	Adapter	XY48-501000D	--	SDOC

Note: The Adapter is only used for auxiliary testing.

## 2.9. External I/O Cable

I/O Port Description	Quantity	Cable
DC IN Port	1	1.0M, Unscreened Cable

## 2.10. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2BHCA-ATX10** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

## 2.11. Modifications

No modifications were implemented to meet testing criteria.

### 3. TEST ENVIRONMENT

#### 3.1. Address of the test laboratory

**Shenzhen CTA Testing Technology Co., Ltd.**

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

#### 3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

**FCC-Registration No.: 517856 Designation Number: CN1318**

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

**A2LA-Lab Cert. No.: 6534.01**

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

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

#### 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

#### 3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen CTA Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device. Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd. :

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

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



### 3.5. Test Description

Applied Standard: FCC Part 15 Subpart C				
FCC Rules	Description of Test	Test Sample	Result	Remark
§15.207(a)	Conduction Emissions	CTA240613002 -1-1#	Compliant	Note 1
§15.205(a) §15.209(a) §15.249(a) §15.249(c)	Radiated Emissions Measurement	CTA240613002 -1-1#	Compliant	Note 1
§15.249	Band Edges Measurement	CTA240613002 #	Compliant	Note 1
§15.249, §15.215	20 dB Bandwidth	CTA240613002 #	Compliant	Note 1
§15.203	Antenna Requirements	/	Compliant	Note 1

**Remark:**

1. The measurement uncertainty is not included in the test result.
2. NA = Not Applicable; NP = Not Performed
3. Note 1 – Test results inside test report;
4. Note 2 – Test results in other test report (MPE Report).
5. We tested all test mode and recorded worst case in report

**3.6. Equipments Used during the Test**

Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	CTA-308	2023/08/02	2024/08/01
LISN	R&S	ENV216	CTA-314	2023/08/02	2024/08/01
EMI Test Receiver	R&S	ESPI	CTA-307	2023/08/02	2024/08/01
EMI Test Receiver	R&S	ESCI	CTA-306	2023/08/02	2024/08/01
Spectrum Analyzer	Agilent	N9020A	CTA-301	2023/08/02	2024/08/01
Spectrum Analyzer	R&S	FSP	CTA-337	2023/08/02	2024/08/01
Vector Signal generator	Agilent	N5182A	CTA-305	2023/08/02	2024/08/01
Analog Signal Generator	R&S	SML03	CTA-304	2023/08/02	2024/08/01
Universal Radio Communication	CMW500	R&S	CTA-302	2023/08/02	2024/08/01
Temperature and humidity meter	Chigo	ZG-7020	CTA-326	2023/08/02	2024/08/01
Ultra-Broadband Antenna	Schwarzbeck	VULB9163	CTA-310	2023/10/17	2024/10/16
Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2023/10/13	2024/10/12
Loop Antenna	Zhinan	ZN30900C	CTA-311	2023/10/17	2024/10/16
Horn Antenna	Beijing Hangwei Dayang	OBH100400	CTA-336	2021/08/07	2024/08/06
Antenna Tower	Suzhou Keletuo electronic Technology Co., LTD	BK-*AT-BS	N/A	N/A	N/A
Amplifier	Schwarzbeck	BBV 9745	CTA-312	2023/08/02	2024/08/01
Amplifier	Taiwan chengyi	EMC051845B	CTA-313	2023/08/02	2024/08/01
Directional coupler	NARDA	4226-10	CTA-303	2023/08/02	2024/08/01
High-Pass Filter	XingBo	XBLBQ-GTA18	CTA-402	2023/08/02	2024/08/01
High-Pass Filter	XingBo	XBLBQ-GTA27	CTA-403	2023/08/02	2024/08/01
Automated filter bank	Tonscend	JS0806-F	CTA-404	2023/08/02	2024/08/01
Power Sensor	Agilent	U2021XA	CTA-405	2023/08/02	2024/08/01
Amplifier	Schwarzbeck	BBV9719	CTA-406	2023/08/02	2024/08/01

Note: 1. The Cal.Interval was one year.

## 4. TEST CONDITIONS AND RESULTS

### 4.1. AC Power Conducted Emission

#### TEST CONFIGURATION



#### TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2013
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
- 4 All support equipments received AC power from a second LISN, if any.
- 5 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 6 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 7 During the above scans, the emissions were maximized by cable manipulation.

#### AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

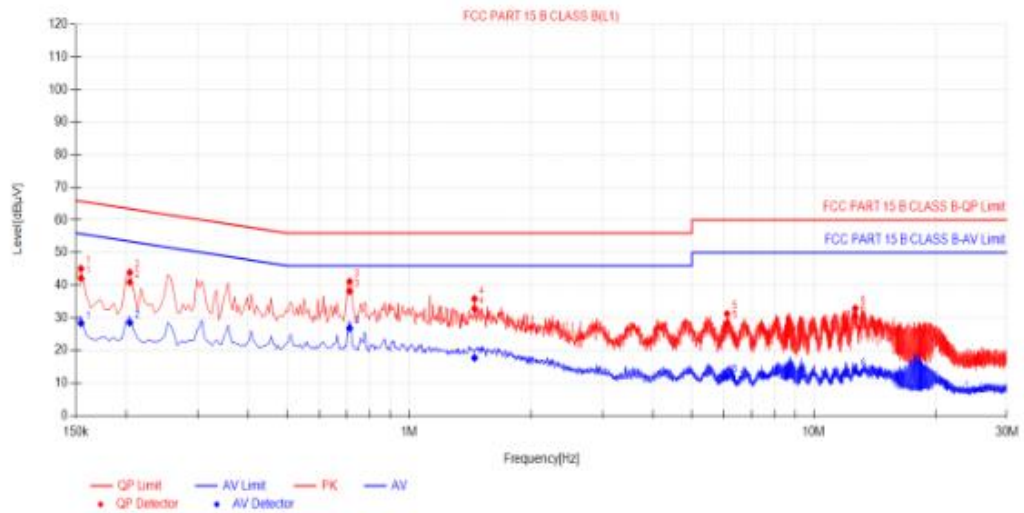
\* Decreases with the logarithm of the frequency.

#### TEST RESULTS

Remark: We measured Conducted Emission at 918MHz mode from 150 KHz to 30MHz in AC120V and the worst case was recorded.

Temperature	25°C	Humidity	60%
Test Engineer	Lushan Kong	Configurations	SRD
Power supply:	AC 120V/60Hz	Polarization	L

## Test Graph



## Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB μV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1545	9.89	32.25	42.14	65.75	23.61	18.47	28.36	55.75	27.39	PASS
2	0.204	10.09	30.85	40.94	63.45	22.51	18.41	28.50	53.45	24.95	PASS
3	0.7125	9.92	28.25	38.17	56.00	17.83	16.93	26.85	46.00	19.15	PASS
4	1.4505	9.90	22.96	32.86	56.00	23.14	7.81	17.71	46.00	28.29	PASS
5	6.1035	10.16	18.22	28.38	60.00	31.62	1.70	11.86	50.00	38.14	PASS
6	12.669	10.28	20.26	30.54	60.00	29.46	3.33	13.61	50.00	36.39	PASS

Note:1).QP Value (dBμV)= QP Reading (dBμV)+ Factor (dB)

2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)

3). QPMargin(dB) = QP Limit (dBμV) - QP Value (dBμV)

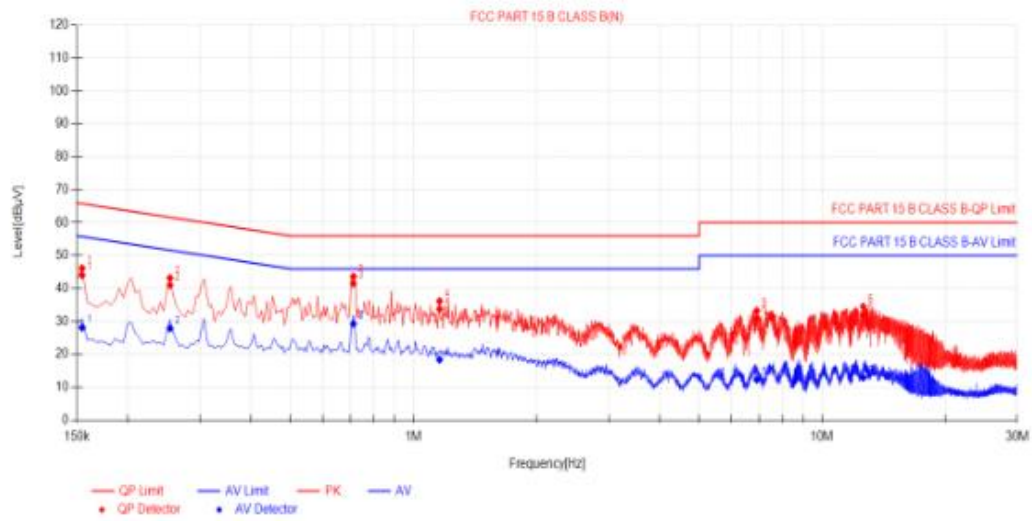
4). AVMargin(dB) = AV Limit (dBμV) - AV Value (dBμV)

Power supply:

AC 120V/60Hz

Polarization

N

**Test Graph****Final Data List**

NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB μV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1545	10.00	34.05	44.05	65.75	21.70	18.13	28.13	55.75	27.62	PASS
2	0.2535	10.01	31.04	41.05	61.64	20.59	17.87	27.88	51.64	23.76	PASS
3	0.7125	10.07	31.44	41.51	56.00	14.49	19.20	29.27	46.00	16.73	PASS
4	1.158	10.17	23.58	33.75	56.00	22.25	8.23	18.40	46.00	27.60	PASS
5	6.918	10.41	20.69	31.10	60.00	28.90	1.90	12.31	50.00	37.69	PASS
6	12.6015	10.41	21.49	31.90	60.00	28.10	2.51	12.92	50.00	37.08	PASS

Note:1).QP Value (dBμV)= QP Reading (dBμV)+ Factor (dB)

2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)

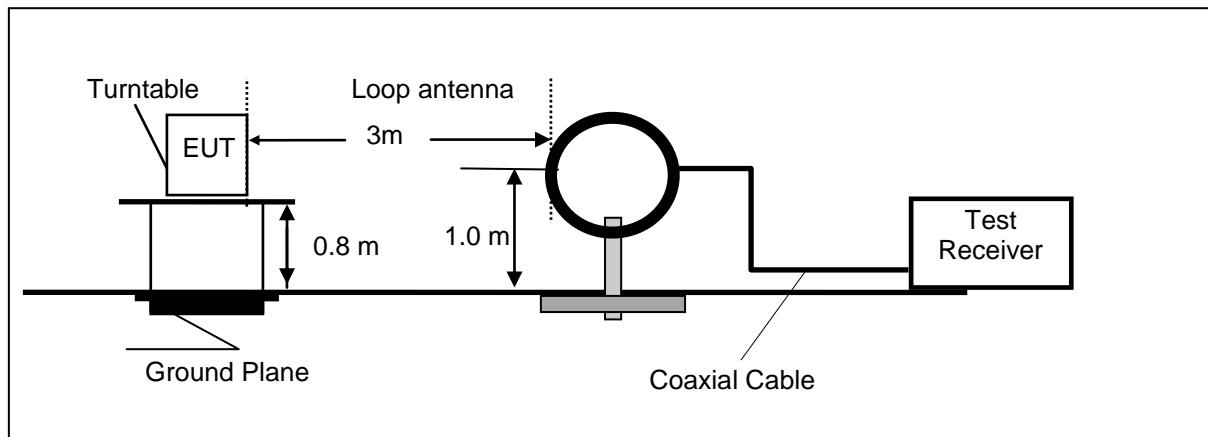
3). QPMargin(dB) = QP Limit (dBμV) - QP Value (dBμV)

4). AVMargin(dB) = AV Limit (dBμV) - AV Value (dBμV)

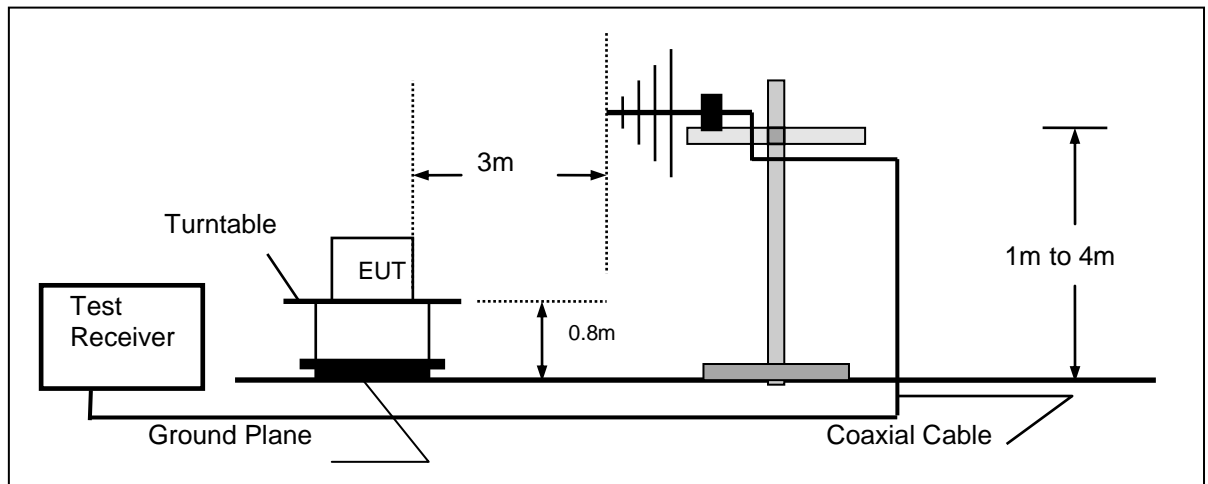
## 4.2. Radiated Emission

### TEST CONFIGURATION

Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



**TEST PROCEDURE**

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz –1GHz;the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 30MHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Antenna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz, Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz, Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz, Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

**Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

$$\text{Transd}=AF +CL-AG$$

**RADIATION LIMIT**

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

1. The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	$2400/F(\text{KHz})$
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	$24000/F(\text{KHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

2. According to §15.249 (a) & RSS-210§B.10(a): Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental		Field strength of harmonics	
	millivolts/meter	dBuV/m	microvolts/meter	dBuV/m
902-928 MHz	50	94	500	54
2400-2483.5 MHz	50	94	500	54
5725-5875 MHz	50	94	500	54
24.0-24.25 GHz	250	108	2500	68

As shown in §15.35(b), for frequencies above 1000 MHz, the field strength limits in paragraphs (a) and (b) of this section 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. For point-to-point operation under paragraph (b) of this section, the peak field strength shall not exceed 2500 millivolts/meter at 3 meters along the antenna azimuth

The field strength limits shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector.

### TEST RESULTS

Remark: We measured Radiated Emission at SRD mode from 30 MHz to 10GHz in AC120V and the worst case was recorded.

Temperature	24.1℃	Humidity	53.8%
Test Engineer	Lushan Kong	Configurations	SRD

### For 9 KHz~30MHz

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Over Limit (dBuV)	Remark
-	-	-	-	See Note

Note:

The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance} / \text{test distance})$  (dB);

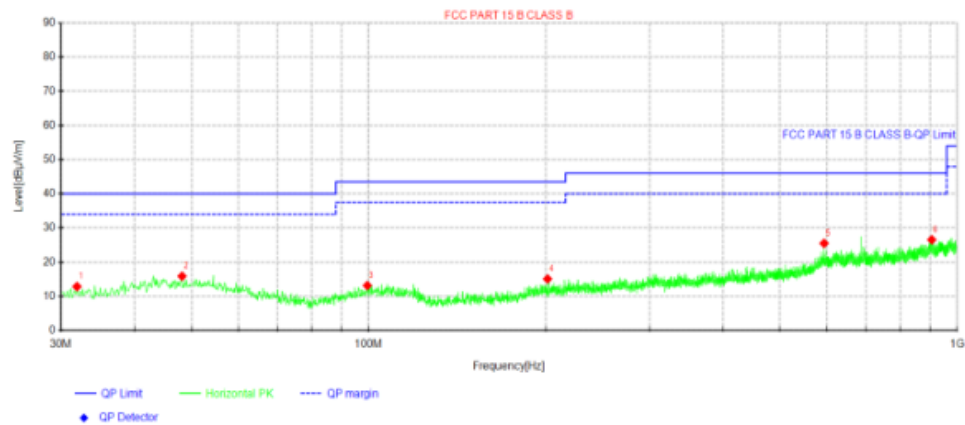
Limit line = specific limits (dBuV) + distance extrapolation factor.



## For 30MHz-1GHz

## Horizontal

## Test Graph



## Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	31.94	27.17	12.85	-14.32	40.00	27.15	100	49	Horizontal
2	48.1875	27.44	15.89	-11.55	40.00	24.11	100	0	Horizontal
3	99.4762	26.61	13.15	-13.46	43.50	30.35	100	222	Horizontal
4	201.326	28.33	15.09	-13.24	43.50	28.41	100	140	Horizontal
5	594.055	31.19	25.51	-5.68	46.00	20.49	100	1	Horizontal
6	905.182	28.80	26.55	-2.25	46.00	19.45	100	0	Horizontal

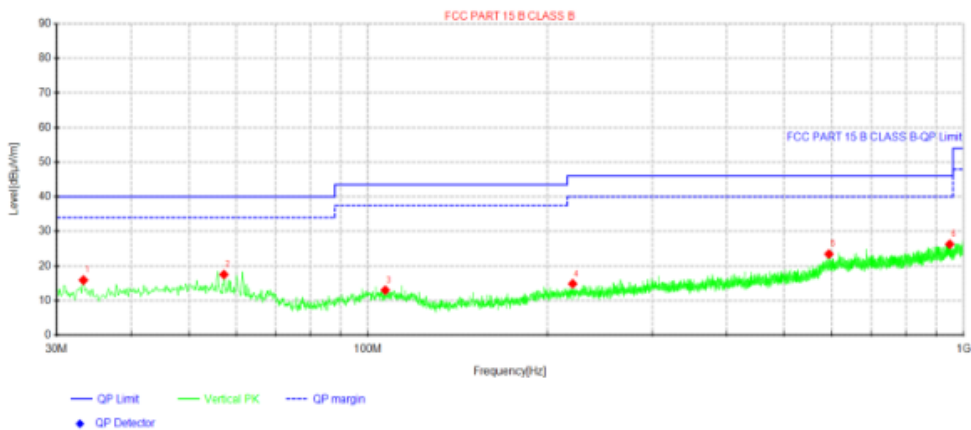
Note:1).Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

## Vertical

## Test Graph



## Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Level [dBμV/m]	Factor [dB/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	33.2738	30.11	15.92	-14.19	40.00	24.08	100	280	Vertical
2	57.2812	30.07	17.55	-12.52	40.00	22.45	100	186	Vertical
3	106.872	26.53	13.01	-13.52	43.50	30.49	100	114	Vertical
4	220.605	27.94	14.87	-13.07	46.00	31.13	100	198	Vertical
5	594.055	29.14	23.46	-5.68	46.00	22.54	100	91	Vertical
6	947.62	28.20	26.28	-1.92	46.00	19.72	100	162	Vertical

Note:1).Level (dBμV/m)= Reading (dBμV)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBμV/m) - Level (dBμV/m)

**Field strength of fundamental:**

Frequency (MHz)	Pol.	Measure Result(PK, dBuV/m)	Measure Result(AV, dBuV/m)	Limit PK (dBuV/m)	Limit AV (dBuV/m)	Margin PK dB	Margin AV dB	Result
918	H	84.41	79.52	114	94	-29.59	-14.48	Pass
918	V	84.58	79.46	114	94	-29.42	-14.54	Pass

**For 1GHz to 10 GHz**

Channel 1 / 918 MHz

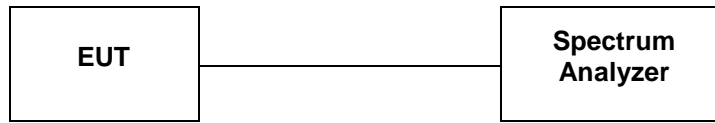
Freq. MHz	Reading dBuV	Ant. Fac. dB/m	Pre. Fac. dB	Cab. Loss dB	Measured dBuV/m	Limit dBuV/m	Margin dB	Remark	Pol.
1836.00	49.85	33.01	35	3.86	51.72	74.00	-22.28	Peak	Horizontal
1836.00	36.34	33.01	35	3.86	38.21	54.00	-15.79	Average	Horizontal
1836.00	53.55	33.03	35.02	3.91	55.47	74.00	-18.53	Peak	Vertical
1836.00	35.82	33.03	35.02	3.91	37.74	54.00	-16.26	Average	Vertical

**Notes:**

- 1). Measuring frequencies from 9 KHz~10<sup>th</sup> harmonic or 10GHz (which is less), No emission found between lowest internal used/generated frequency to 30MHz.
- 2). Radiated emissions measured in frequency range from 9 KHz~10<sup>th</sup> harmonic or 10GHz (which is less) were made with an instrument using Peak detector mode.
- 3). Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4). Measured= Reading- Pre. Fac.+ Ant. Fac.+ Cab. Loss
- 5). Margin = Measured- Limit

### 4.3. 20dB Bandwidth

#### TEST CONFIGURATION



#### TEST PROCEDURE

Use the following spectrum analyzer settings:

Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel

RBW = 1% to 5% of the 20 dB bandwidth

VBW = 3 RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s).

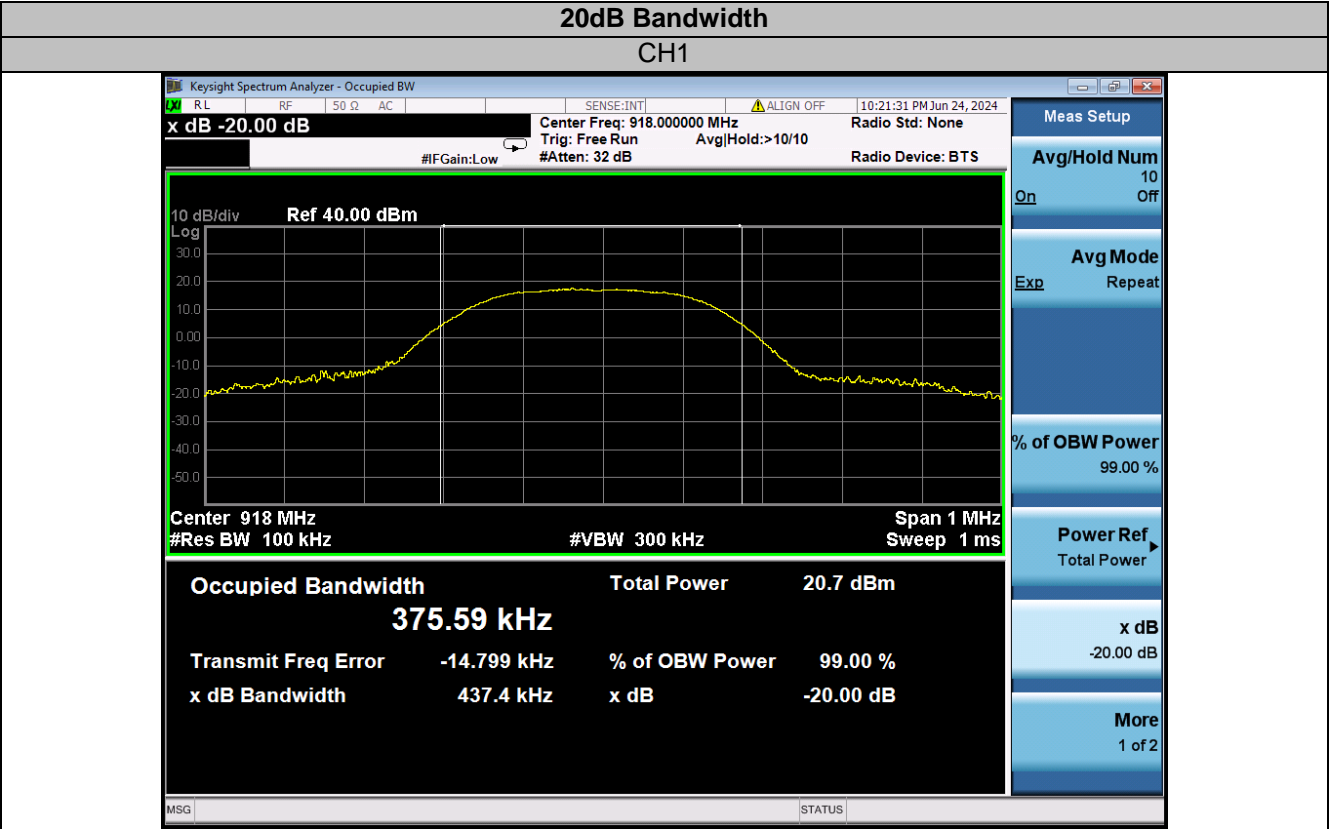
#### LIMIT

Non-Specified

#### TEST RESULTS

Temperature	24.2°C	Humidity	54.9%
Test Engineer	Lushan Kong	Configurations	SRD

Modulation	Channel	20dB Bandwidth (KHz)	Limit (KHz)	Result
GFSK	1	437.4	Non-Specified	Pass

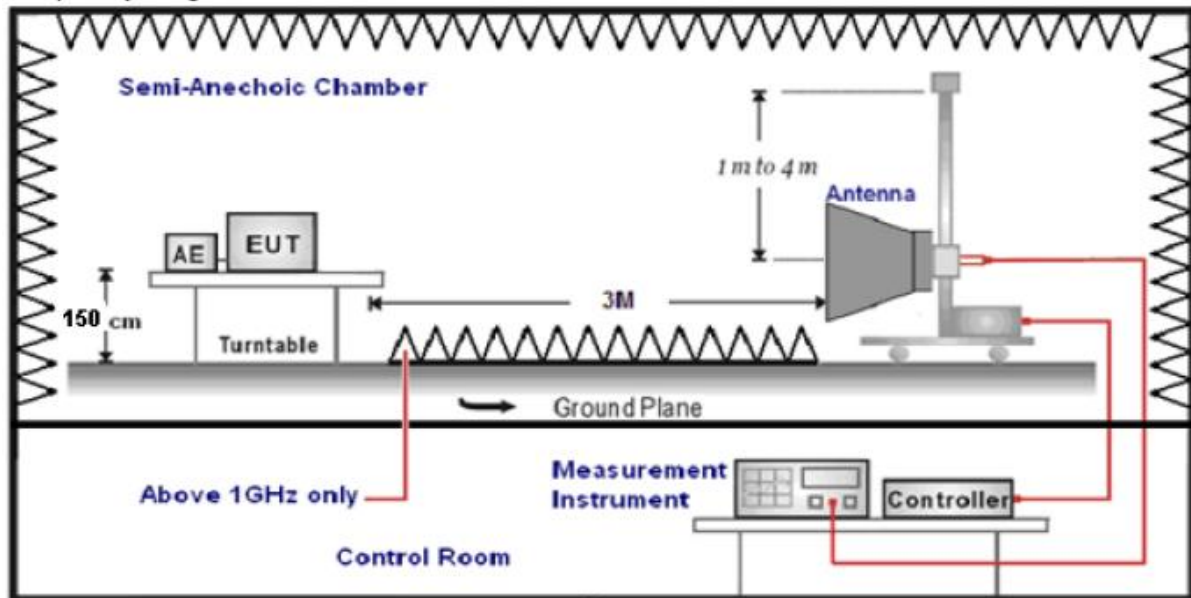


#### 4.4. Band Edge Compliance of RF Emission

##### TEST REQUIREMENT

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

##### TEST CONFIGURATION



##### TEST PROCEDURE

The EUT is placed on a turntable, which is 0.8m above the ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

Peak: RBW=120MHz, RBW=300MHz / Sweep=AUTO

Repeat the procedures until the peak versus polarization are measured.

##### LIMIT

Below -20dB of the highest emission level in operating band.

Radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a)

**TEST RESULTS****4.4.1 For Radiated Bandedge Measurement**

Temperature	23.8°C	Humidity	53.7%
Test Engineer	Lushan Kong	Configurations	SRD

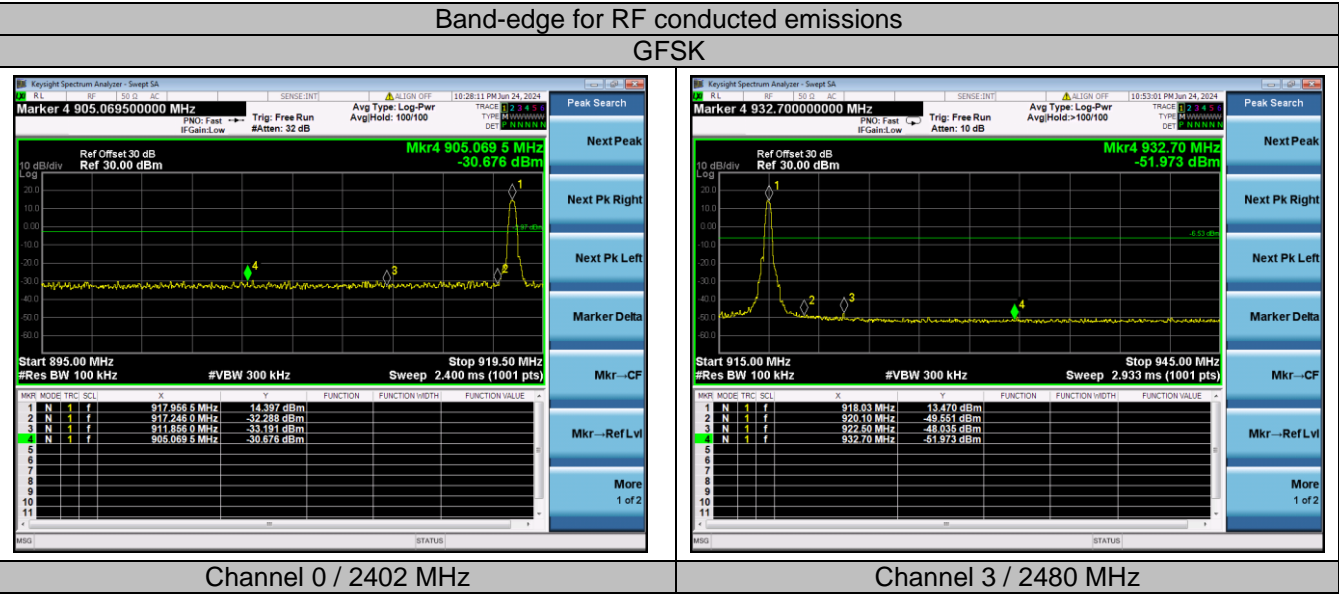
Frequency(MHz):			918			Polarity:			HORIZONTAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
917.00	45.60	PK	74.00	-28.40	1.50	88	50.91	27.49	3.32	36.12	-5.31
917.00	34.50	AV	54.00	-19.50	1.50	88	39.81	27.49	3.32	36.12	-5.31
Frequency(MHz):			918			Polarity:			VERTICAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
920.00	49.11	PK	74.00	-24.89	1.50	274	54.42	27.49	3.32	36.12	-5.31
920.00	30.73	AV	54.00	-23.27	1.50	274	36.04	27.49	3.32	36.12	-5.31

**REMARKS:**

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.

4.4.2 For Conducted Bandedge Measurement

Temperature	22.9℃	Humidity	53.2%
Test Engineer	Lushan Kong	Configurations	BT



## 4.5. Antenna Requirement

### Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### Test Result

The antenna used for this product is PCB Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 2.0dBi.

Reference to the **Internal photos**.



## 5. TEST SETUP PHOTOS OF THE EUT

Photo of Radiated Emissions Measurement



Fig. 1



Fig. 2

Photo of Conducted Emission Measurement



Fig. 3

## 6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

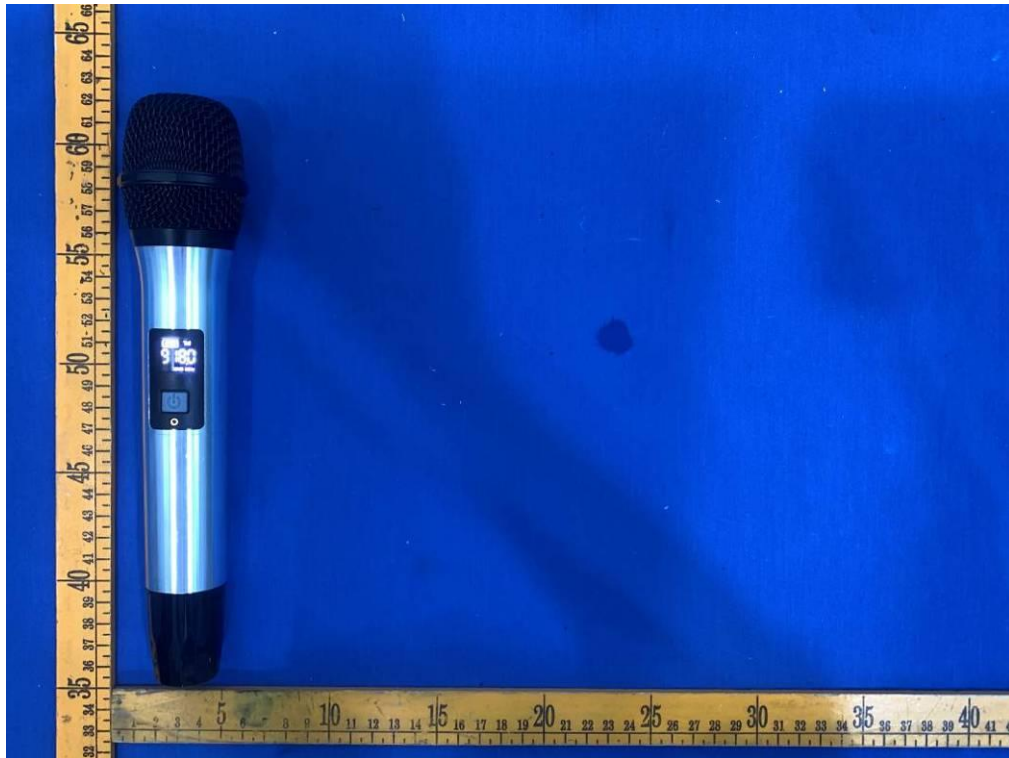


Fig. 1

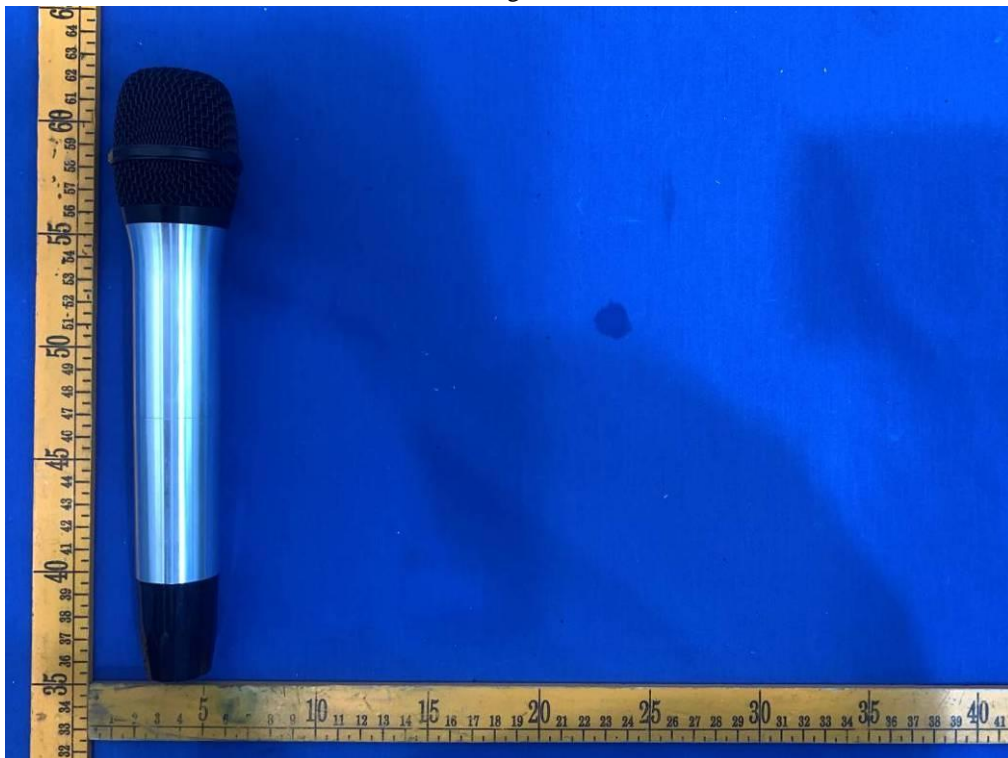


Fig. 2





Fig. 3



Fig. 4

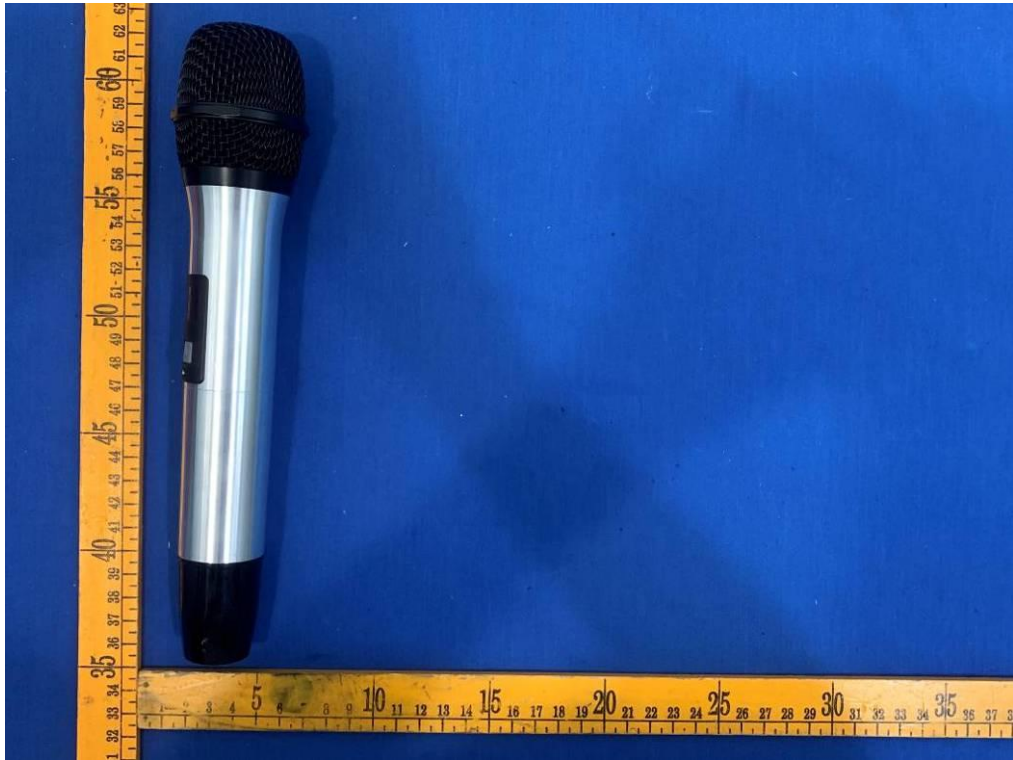


Fig. 5

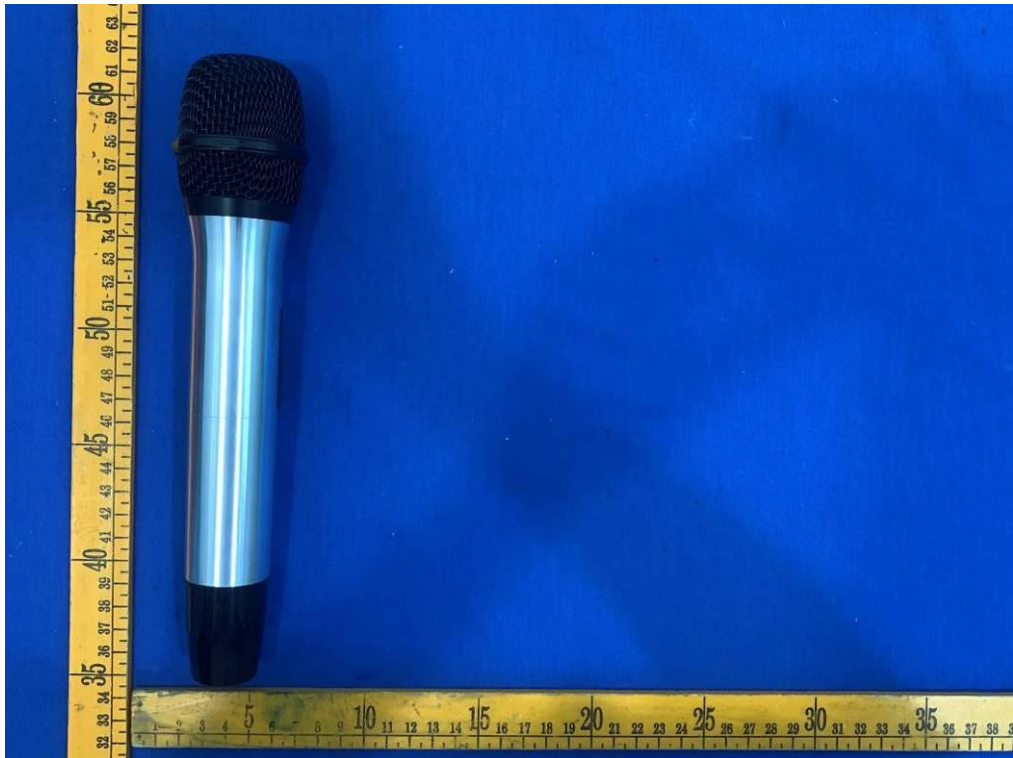


Fig. 6

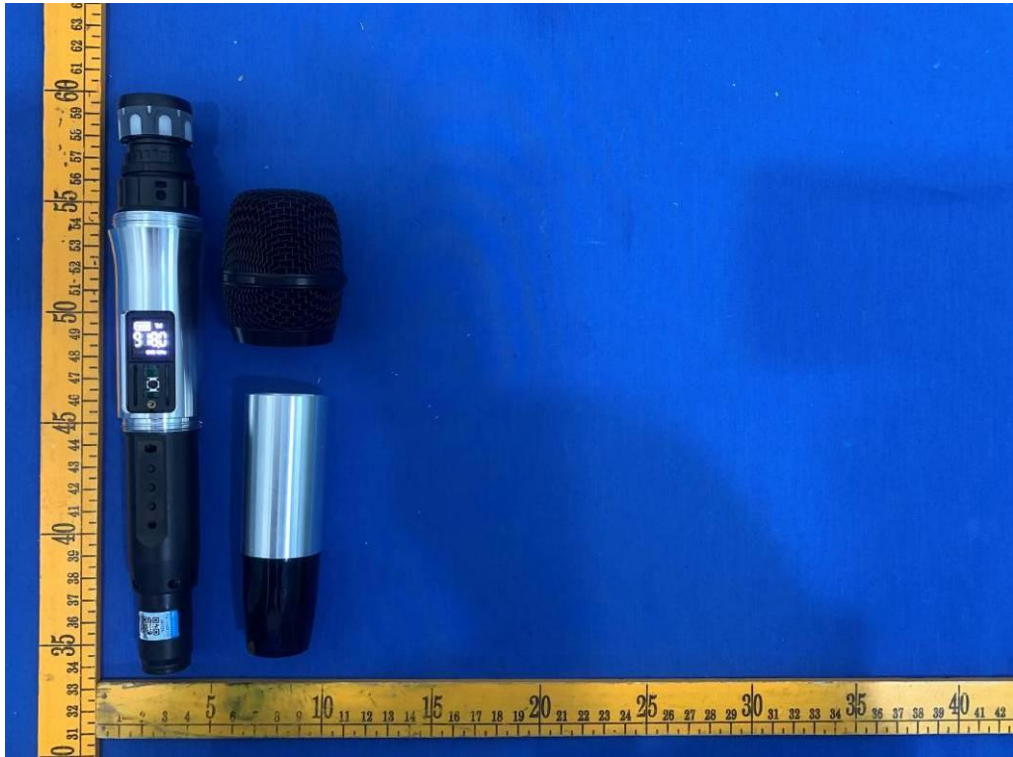


Fig. 7



Fig. 8



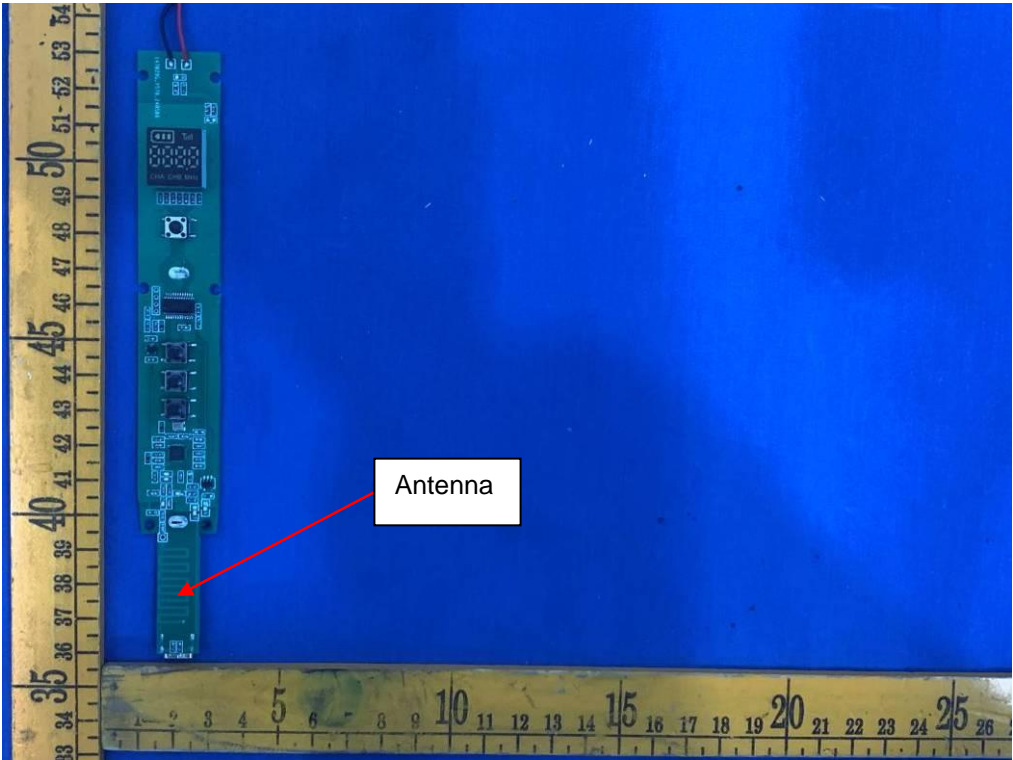


Fig. 9



Fig. 10



Fig. 11



Fig. 12

.....End of Report.....