

EMC TEST REPORT

Applicant : Shenzhen Shangpinyi Digital Technology Co., Ltd
Address : No. 5, Fourth Lane, Fengweikeng Old Village, Buji Street, Longgang District, Shenzhen
Manufacturer : Shenzhen Shangpinyi Digital Technology Co., Ltd
Address : No. 5, Fourth Lane, Fengweikeng Old Village, Buji Street, Longgang District, Shenzhen
EUT : Penguin Warm Hand Treasure
Model No : N03
Brand Name: : N/A
Report Number : XKS2023R09040007
Test Date : September 15~19, 2023
Date of Issue : September 20, 2023
Test Result: : The equipment under test was found to be compliance with the requirements of the standards applied.
Test Procedure Used:
: FCC PART15 Subpart B: 2023,
: ANSI C63.4 - 2014.

Prepared By:
Shenzhen Xunke Standards Technical Services Co., LTD

(Add.): 2 Floor, Building E2, Qiangrong East Industrial Zone, Jiuwei Community,
Xixiang Street, Baoan District, Shenzhen City, China..

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Reviewed by:

Quan Wu Yang

Approved by:



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen Xunke Standards Technical Services Co., LTD

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1- GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

Client Information

Applicant:	Shenzhen Shangpinyi Digital Technology Co., Ltd
Address of applicant:	No. 5, Fourth Lane, Fengweikeng Old Village, Buji Street, Longgang District, Shenzhen
Manufacturer:	Shenzhen Shangpinyi Digital Technology Co., Ltd
Address of Manufacturer:	No. 5, Fourth Lane, Fengweikeng Old Village, Buji Street, Longgang District, Shenzhen

General Description of E.U.T

EUT Name:	Penguin Warm Hand Treasure
Trade Mark:	N/A
Model No.:	N/A
Test Model No.:	N03
Operating Mode.:	Mode 1: Power on
Power Supply:	Penguin Warm Hand Treasure Input: DC5V,1A from adapter or 3.7V 2×400mAh 18650 Battery (adapter Input: 100~240Vac, 0.5A 50/60Hz Output: DC5V, 1A)
Product Class:	<input type="checkbox"/> Class A, apply to Class A limits <input checked="" type="checkbox"/> Class B, apply to Class B limits

Remark:

* The test data gathered are from the production sample provided by the manufacturer.

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with
FCC PART15 Subpart B

This test report based on the Electromagnetic Interference (EMI) tests performed on the EUT. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 - 2014.

The tests were performed in order to determine compliance with FCC Part 15, Subpart B, section 15.107 and section 15.109 rules.

The objective of the manufacturer is to demonstrate compliance with the described standards above.

1.3 Test Summary

Table 1:

Standard	Test Items	Status
Section 15.107	Conducted Emission (150KHz to 30MHz)	<input type="checkbox"/>
Section 15.109	Radiation Emission (30MHz to 1000MHz)	<input checked="" type="checkbox"/>
	Radiation Emission (1GHz to 6GHz)	<input type="checkbox"/>

Note: Indicates that the test is applicable, Indicates that the test is not applicable

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in 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. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.5 Test Facility

The measurement Radiated Susceptibility was performed at Shenzhen Xunke Standards Technical Services Co., LTD 2 Floor, Building E2, Qiangrong East Industrial Zone, Jiuwei Community, Xixiang Street, Baoan District, Shenzhen City, China.

1.6 Test Equipment List and Details

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	101334	Mar. 1,2023	Mar. 1,2024	1 year
2	LISN	SCHWARZBECK	NNLK 8129	8129267	Mar. 1,2023	Mar. 1,2024	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	Mar. 1,2023	Mar. 1,2024	1 year
4	50Ω SWITCH	ANRITSU CORP	MP59B	6200983704	Mar. 1,2023	Mar. 1,2024	1 year
5	TEST CABLE	N/A	C01	N/A	Mar. 1,2023	Mar. 1,2024	1 year
6	TEST CABLE	N/A	C02	N/A	Mar. 1,2023	Mar. 1,2024	1 year
7	TEST CABLE	N/A	C03	N/A	Mar. 1,2023	Mar. 1,2024	1 year
8	EMI Test Receiver	R&S	ESCI	101318	Mar. 1,2023	Mar. 1,2024	1 year
9	Passive Voltage Probe	ESK108-Z3	R&S	100173	Mar. 1,2023	Mar. 1,2024	1 year
10	Triple-Loop Antenna	EVERFINE	LIA-2	11020016	Mar. 1,2023	Mar. 1,2024	1 year
11	Absorbing Clamp	R&S	MDS-21	100423	Mar. 1,2023	Mar. 1,2024	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Bilog Antenna	TESEQ	CBL6111D	31437	Mar. 1,2023	Mar. 1,2024	1 year
2	Test Cable	N/A	R-01	N/A	Mar. 1,2023	Mar. 1,2024	1 year
3	Test Cable	N/A	R-02	N/A	Mar. 1,2023	Mar. 1,2024	1 year
4	EMI Test Receiver	Rohde&Schwarz	ESVD	847312/008	Mar. 1,2023	Mar. 1,2024	1 year
5	Antenna Mast	EM	SC100_1	N/A	N/A	N/A	N/A
6	Turn Table	EM	SC100	060533	N/A	N/A	N/A
7	50Ω Switch	Anritsu Corp	MP59B	6200983705	Mar. 1,2023	Mar. 1,2024	1 year
8	SPECTRUM ANALYZER	Aglient	E4407B	160400005	Mar. 1,2023	Mar. 1,2024	1 year
9	HORN ANTENNA	EM	EM-AH-10180	2011071402	Mar. 1,2023	Mar. 1,2024	1 year

10	AMPLIFIER	EM	EM-30180	060536	Mar. 1,2023	Mar. 1,2024	1 year
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1.7 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Power on

For Conducted Test	
Final Test Mode	Description
Mode 1	Power on

For Radiated Test	
Final Test Mode	Description
Mode 1	Power on

2- SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

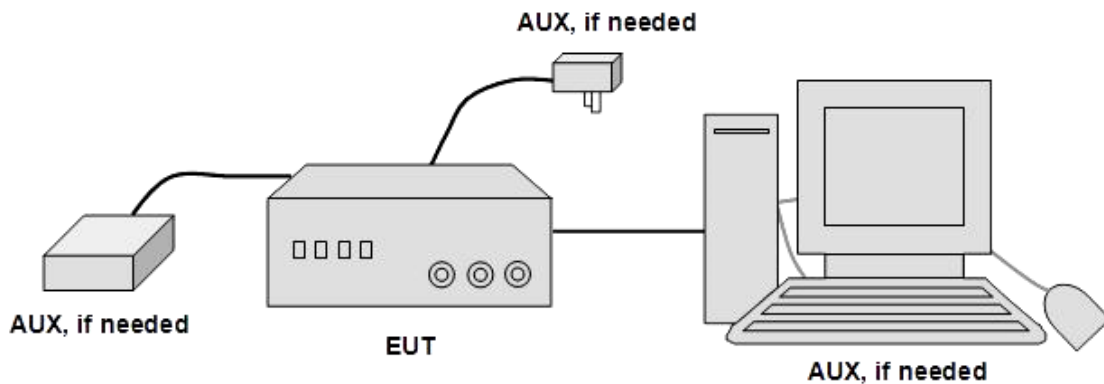
2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

2.3 Basic Configuration of Test System and General Test Procedures

Conducted Emissions: The EUT is placed on the table, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2014. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions: The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2014.



2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/
/	/	/	/

3- CONDUCTED EMISSION

3.1 Measurement Uncertainty

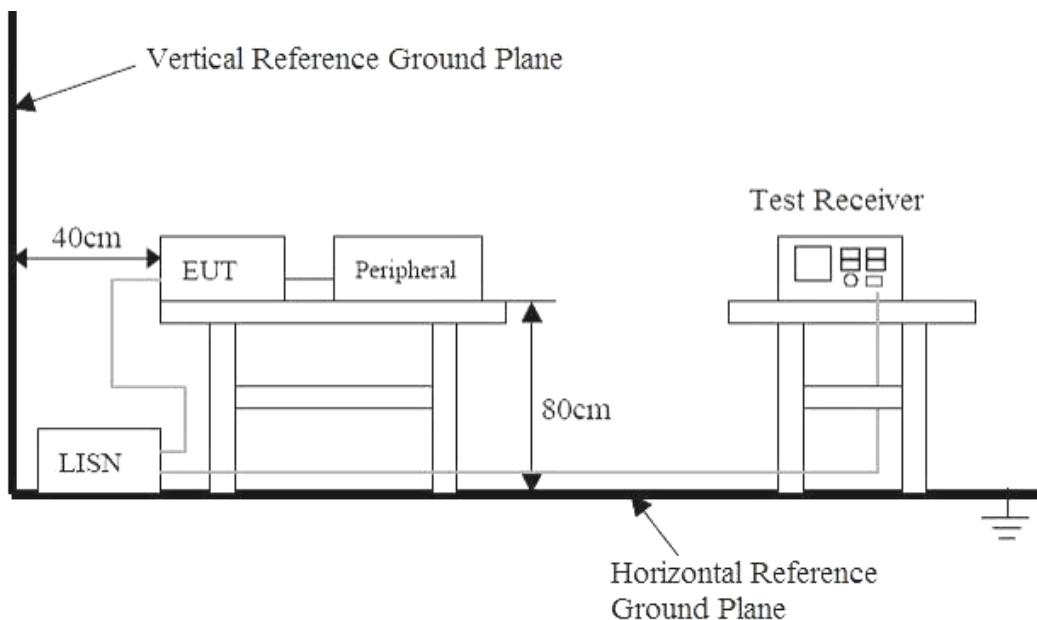
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN. The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.7 dB.

3.2 Limit of Conducted Emission

Frequency Range (MHz)	Class B Equipment Limits	
	Quasi-Peak (dBuV)	Average (dBuV)
0.150~0.500	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

NOTE 1: The tighter limit shall apply at the edge between two frequency bands.

3.3 EUT Setup



The setup of EUT is according with ANSI C63.4-2014 measurement procedure. The specification used was the FCC Rules and Regulations Part 15 Subpart B Section 15.107 Class B limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....150 KHz to 30 MHz
Detector.....Peak & Quasi-Peak & Average
Sweep Speed.....Auto
IF Band Width.....9 KHz

3.5 Test Procedure

1. During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.
2. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.
3. All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dB μ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

3.6 Test Detail

Conducted Emission Test

EUT:	Penguin Warm Hand Treasure	Model Name:	N03
Temperature	24 °C	Relative Humidity:	55%
Pressure:	1025hPa	Test Line:	N
Test Mode	Mode1	Test Voltage:	DC3.7V from battery

Passed Not Applicable

Note: The EUT is DC supply, so this test item is not applicable.

4- RADIATED EMISSION

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 4.5 dB.

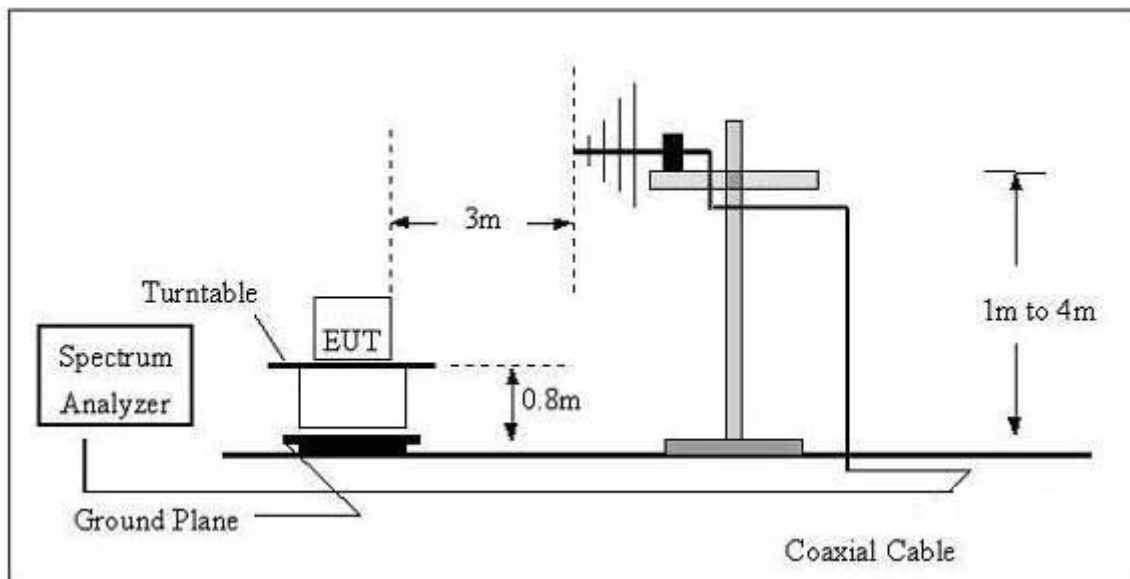
4.2 Limit of Radiated Emission

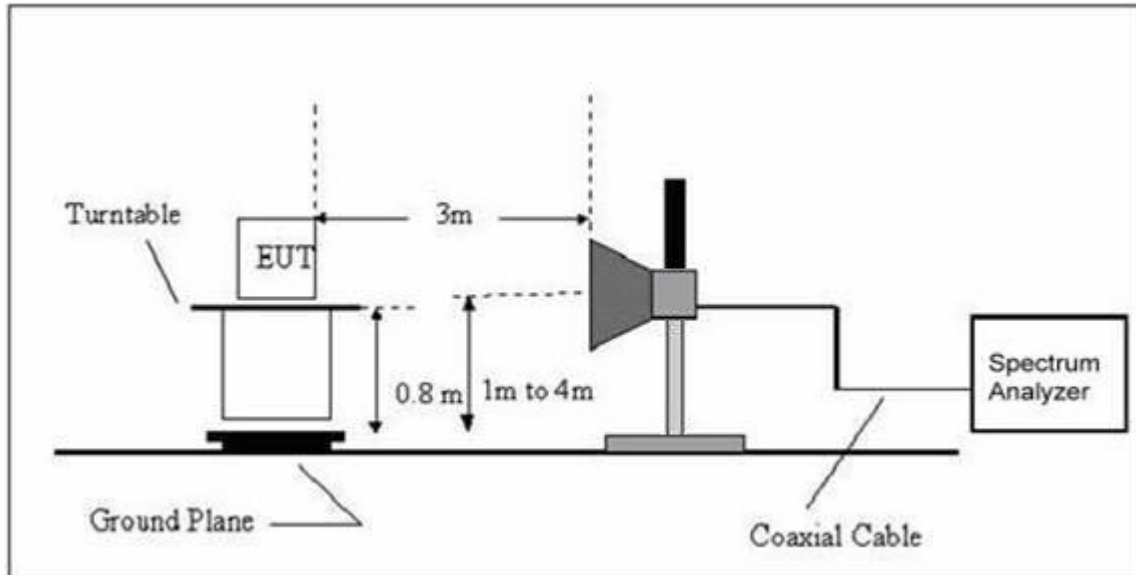
FREQUENCY (MHz)	Class A (at 10m)	Class B (at 3m)
	dBuV/m	dBuV/m
30 ~ 88	39.0	40.0
88 ~ 216	43.5	43.5
216 ~ 960	46.5	46.0
Above 960	49.5	54.0

Above 1GHz Class B Equipment Limits			
Frequency (GHz)	Distance (Meters)	Average (dB μ V/m)	Peak (dB μ V/m)
1 ~ 6	3	54	74

NOTE 1 The lower limit shall apply at the transition frequency.

4.3 EUT Setup





The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the AANSI C63.4-2014. The specification used was the FCC Part 15 Subpart B Section 15.109 limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

4.4 Test Receiver Setup

The test receiver was set with the following configurations:

Test Receiver Setting below 1000MHz:

Detector.....Peak & Quasi-Peak
IF Band Width.....120KHz
Frequency Range.....30MHz to 1000MHz
Turntable Rotated.....0 to 360 degrees

Test Receiver Setting above 1000MHz:

Detector.....Peak & Average
IF Band Width.....1MHz
Frequency Range.....1000MHz to 6000MHz
Turntable Rotated.....0 to 360 degrees
Antenna Position:

Height.....1m to 4m
Polarity.....Horizontal and Vertical

4.5 Test Procedure

1. Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.
2. All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within $-10\text{ dB}\mu\text{V}$ of specification limits), and are distinguished with a "QP" in the data table.

4.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

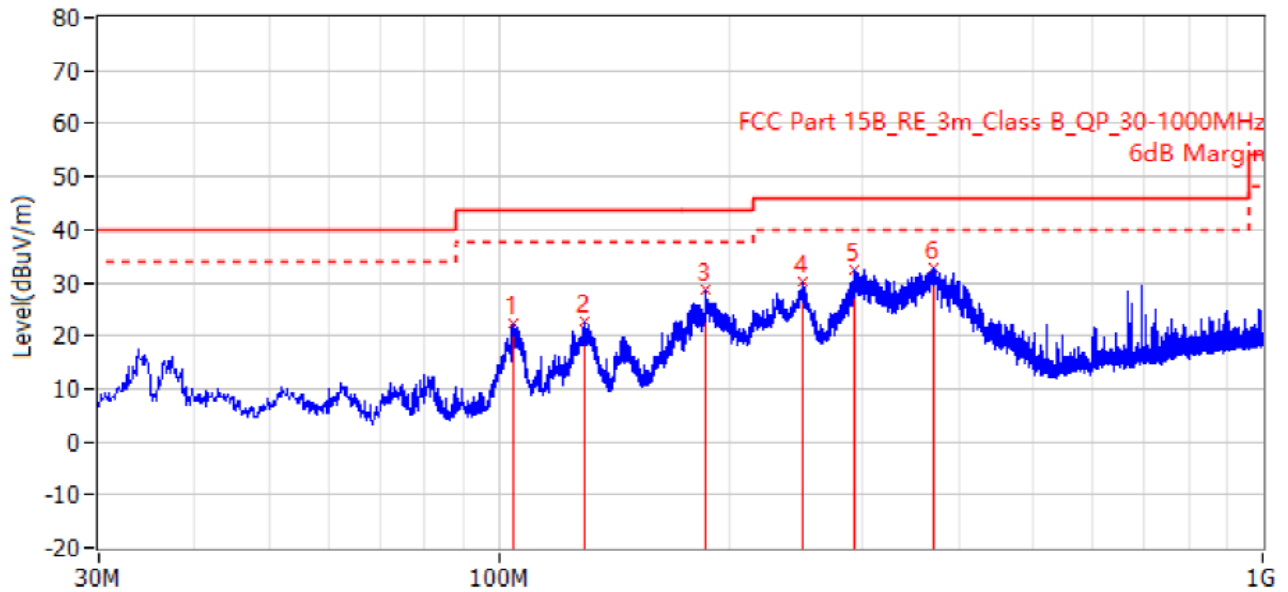
The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of $7\text{ dB}\mu\text{V}$ means the emission is $7\text{ dB}\mu\text{V}$ below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Limit – Corr. Ampl.

4.7 Test Detail

EUT:	Penguin Warm Hand Treasure	Model Name:	N03
Temperature	24 °C	Relative Humidity:	55%
Pressure:	1025hPa	Test Polarity:	Horizontal
Test Mode	Mode1	Test Voltage:	DC3.7V from battery

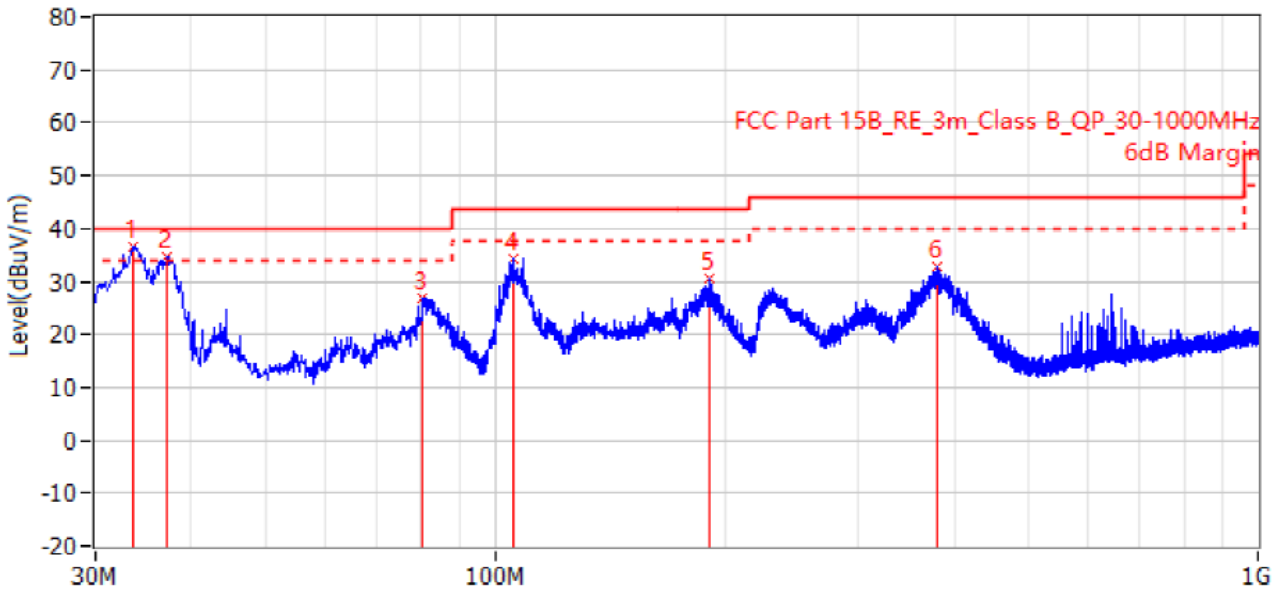
Radiated Emission Test Detail of Below 1GHz



No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	104.326MHz	43.5	22.3	-21.2	41.6	-19.3	PK	Hor	100.0	266.0
2*	129.304MHz	43.5	22.8	-20.7	40.3	-17.5	PK	Hor	100.0	282.0
3*	187.140MHz	43.5	28.6	-14.9	47.4	-18.8	PK	Hor	100.0	96.0
4*	250.069MHz	46.0	30.2	-15.8	47.6	-17.4	PK	Hor	100.0	91.0
5*	292.991MHz	46.0	32.6	-13.4	48.9	-16.3	PK	Hor	100.0	84.0
6*	370.228MHz	46.0	32.9	-13.1	47.0	-14.1	PK	Hor	100.0	295.0

Radiated Emission Test Detail of Below 1GHz

EUT:	Penguin Warm Hand Treasure	Model Name:	N03
Temperature	24 °C	Relative Humidity:	55%
Pressure:	1025hPa	Test Polarity :	Vertical
Test Mode	Mode1	Test Voltage:	DC3.7V from battery



No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	33.516MHz	40.0	36.4	-3.6	53.2	-16.8	PK	Ver	100.0	12.0
2*	37.275MHz	40.0	34.8	-5.2	51.4	-16.6	PK	Ver	100.0	347.0
3*	80.561MHz	40.0	27.0	-13.0	47.9	-20.9	PK	Ver	100.0	0.0
4*	105.903MHz	43.5	34.4	-9.1	53.5	-19.1	PK	Ver	100.0	110.0
5*	191.626MHz	43.5	30.6	-12.9	49.8	-19.2	PK	Ver	100.0	240.0
6*	380.170MHz	46.0	32.7	-13.3	46.5	-13.8	PK	Ver	100.0	0.0

Radiated Emission Test Detail of Above 1GHz

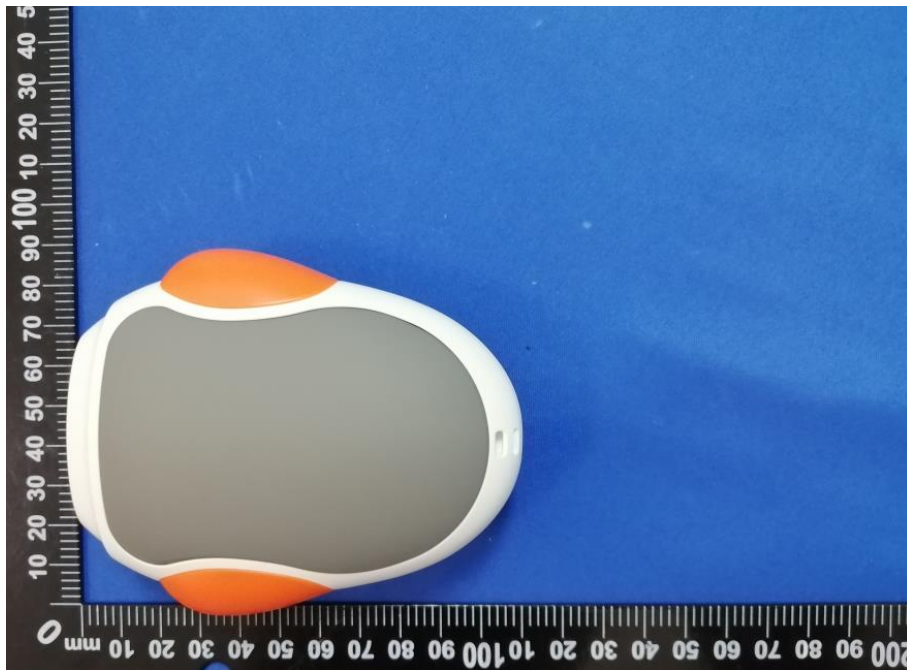
EUT:	Penguin Warm Hand Treasure	Model Name:	N03
Temperature	24 °C	Relative Humidity:	55%
Pressure:	1025hPa	Test Polarity:	Horizontal
Test Mode	Mode1	Test Voltage:	DC3.7V from battery

The EUT operating frequency is lower than 108MHz, Not Applicable.

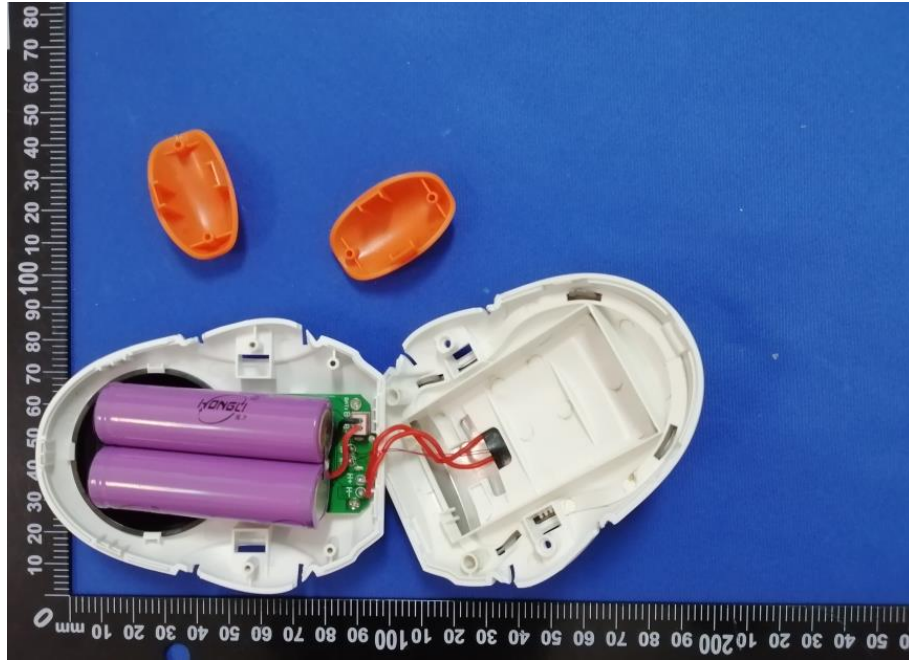
APPENDIX B – EUT PHOTOGRAPHS



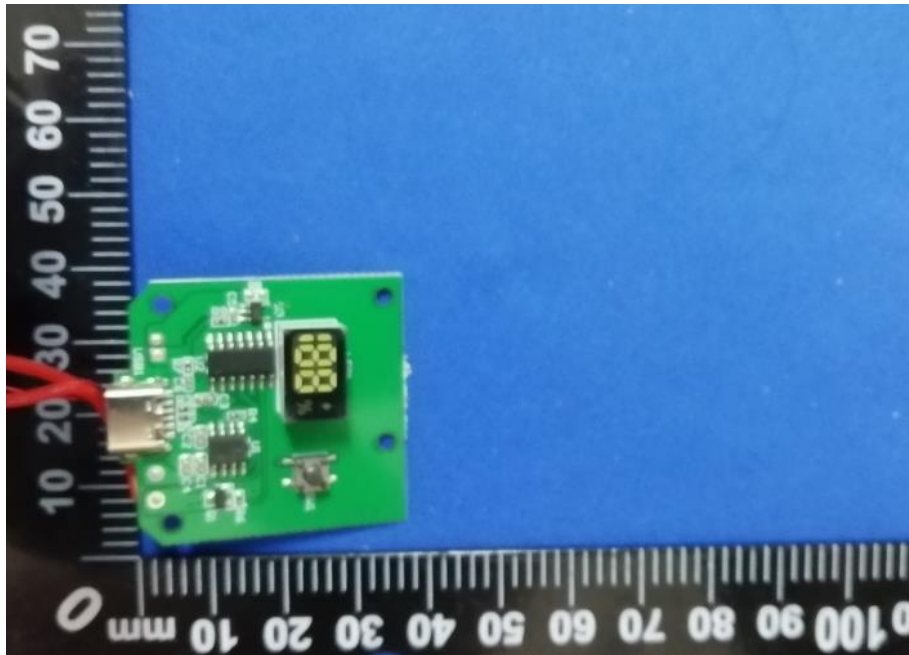
EUT 1



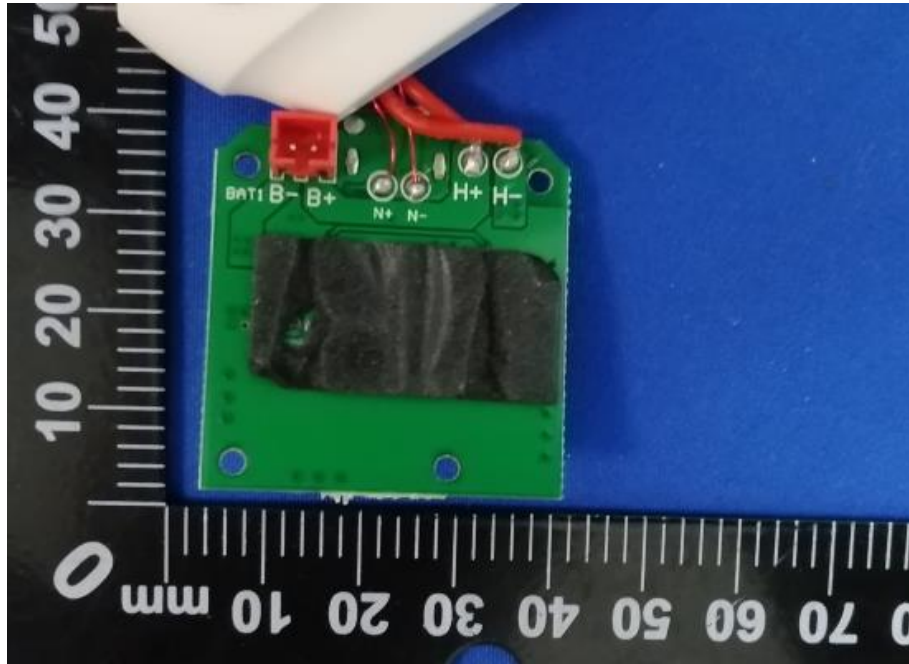
EUT 2



EUT 3



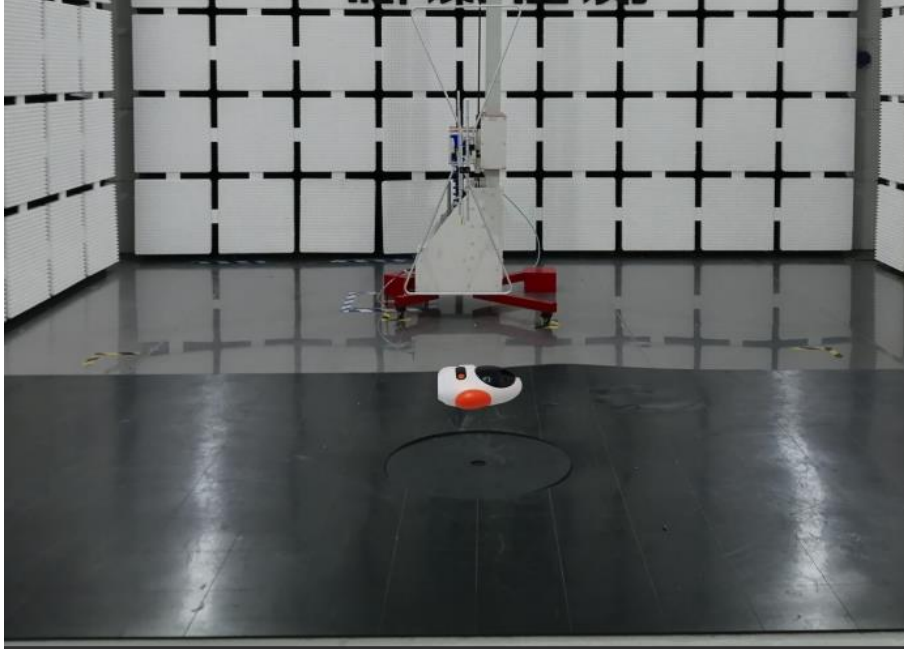
EUT 4



EUT 5

EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

Radiation Emission



FCC Warning Statement

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- - Reorient or relocate the receiving antenna.
- - Increase the separation between the equipment and receiver.
- - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- - Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Statement

- 1.This report is considered invalid without approved signature and special;
- 2.The Applicant name and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which Xunke's hasn't verified;
- 3.The result(s) shown in this report refer(s) only to the sample(s) tested;
- 4.Without written approval of Xunke's, this report can't be reproduced except in full.

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