



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 : XKS2023R09040008
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:
: **J55014-1(H27)**

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..

Compiled by:

Wei Yang

Reviewed by:

Quan Wu Yang

Approved by:

Quan Li



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.:	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)

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

14-1: Electromagnetic compatibility-Requirements for household appliances, electric tools and similar apparatus-Part 1: Emission

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

1.3 Test Summary

Table 1:

Standard	Test Items	Test Result
J55014-1(H27)	Conducted Emission (150kHz to 30MHz)	<input type="checkbox"/>
J55014-1(H27)	Disturbance Power (30MHz To 300MHz)	<input type="checkbox"/>
J55014-1(H27)	Radiated Disturbances (30MHz to 1000MHz)	<input checked="" type="checkbox"/>

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

1.4 Test Methodology

All measurements contained in this report were conducted with CISPR 16-1-1: 2019, Radio disturbance and immunity measuring apparatus – Measuring apparatus, and CISPR 16-2-3: 2010, Method of measurement of disturbances and immunity.

1.5 Test Facility

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.

1.6 Test Equipment List and Details

CONDUCTED EMISSION

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	LISN	R&S	ENV216	101334	Apr. 2,2023	Apr. 1,2024	1 year
2	LISN	SCHWARZBECK	NNLK 8129	8129267	Apr. 2,2023	Apr. 1,2024	1 year
3	Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	Apr. 2,2023	Apr. 1,2024	1 year
4	50Ω SWITCH	ANRITSU CORP	MP59B	6200983704	Apr. 2,2023	Apr. 1,2024	1 year



5	TEST CABLE	N/A	C01	N/A	Apr. 2,2023	Apr. 1,2024	1 year
6	TEST CABLE	N/A	C02	N/A	Apr. 2,2023	Apr. 1,2024	1 year
7	TEST CABLE	N/A	C03	N/A	Apr. 2,2023	Apr. 1,2024	1 year
8	EMI Test Receiver	R&S	ESCI	101318	Apr. 2,2023	Apr. 1,2024	1 year
9	Passive Voltage Probe	ESH2-Z3	R&S	100173	Apr. 2,2023	Apr. 1,2024	1 year
10	Triple-Loop Antenna	EVERFINE	LIA-2	11020016	Apr. 2,2023	Apr. 1,2024	1 year
11	Absorbing Clamp	R&S	MDS-21	100423	Apr. 2,2023	Apr. 1,2024	1 year

RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Bilog Antenna	TESEQ	CBL6111D	31437	Apr. 2,2023	Apr. 1,2024	1 year
2	Test Cable	N/A	R-01	N/A	Apr. 2,2023	Apr. 1,2024	1 year
3	Test Cable	N/A	R-02	N/A	Apr. 2,2023	Apr. 1,2024	1 year
4	EMI Test Receiver	Rohde&Schwarz	ESVD	847312/008	Apr. 2,2023	Apr. 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	Apr. 2,2023	Apr. 1,2024	1 year
8	SPECTRUM ANALYZER	Aglient	E4407B	160400005	Apr. 2,2023	Apr. 1,2024	1 year
9	HORN ANTENNA	EM	EM-AH-10180	2011071402	Apr. 2,2023	Apr. 1,2024	1 year
10	AMPLIFIER	EM	EM-30180	060536	Apr. 2,2023	Apr. 1,2024	1 year



1.7 DESCRIPTION OF TEST MODES

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

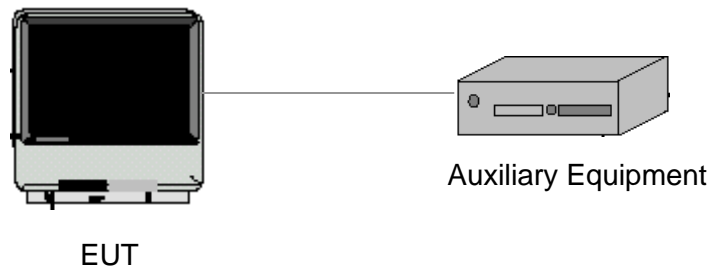
2.1 Justification

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



2.4 Test Setup Diagram



2.5 General Description of Test Auxiliary

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

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

3 - DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

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 3.4 dB.

3.2 Limit of Disturbance Voltage at The Mains Terminals

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150~0.500	66~56	59~46
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

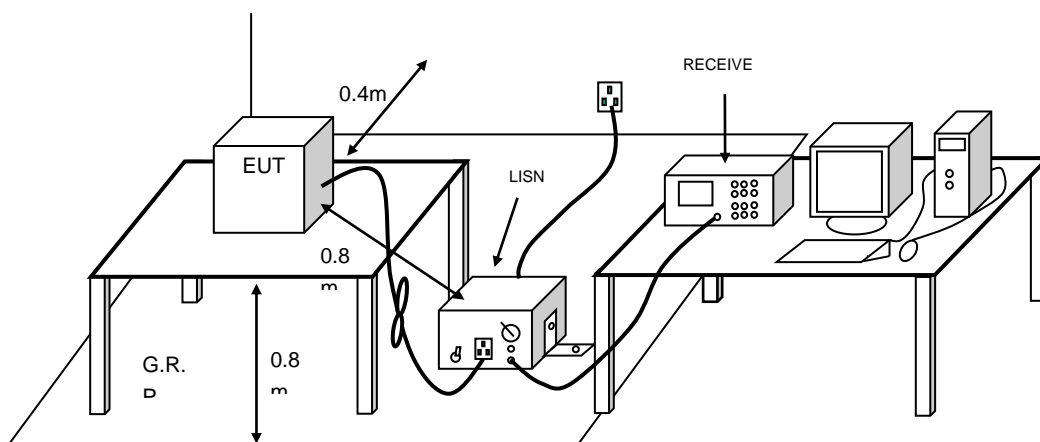
The setup of EUT is according with CISPR 16-1 CISPR16-2 measurement procedure. See following test setup figure. The specification used was the J55014-1 limits.

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 Instruments 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

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

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 Summary of Test Results

According to the data in section 3.6, the EUT complied with the J55014 Conducted margin.



3.7 Test Detail

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 adapter

Conducted Emission Test Detail

Passed Not Applicable

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

4 - DISTURBANCE POWER

4.1 Limit of Disturbance Power

Frequency Range (MHz)	Limit (dBpW)	
	Quasi-Peak	Average
30~300	45~55	35~45

Note: (1) The limit line is a linear line.

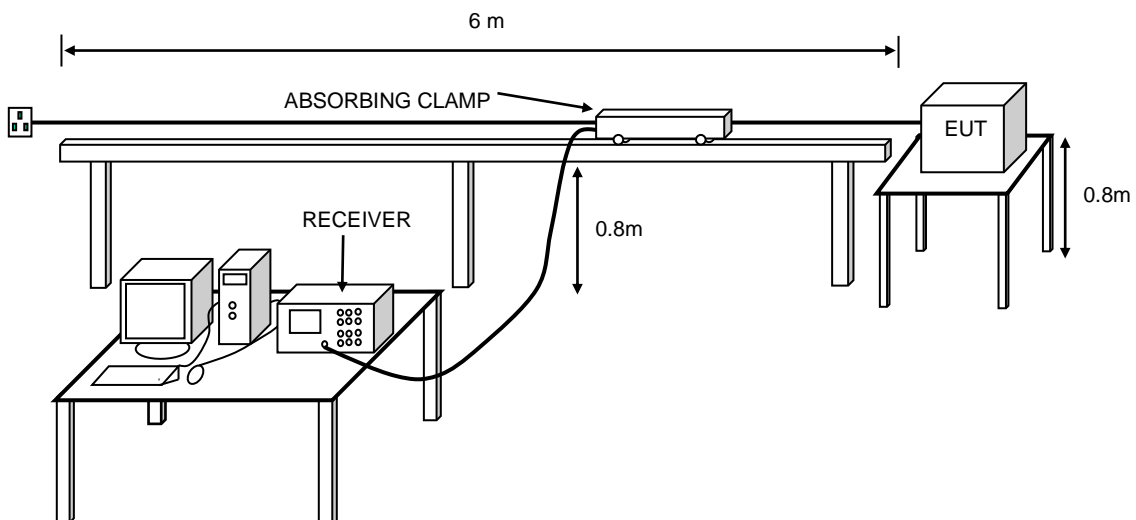
4.2 EUT Setup

The setup of EUT is according with CISPR 16-1: 2019, CISPR16-2 measurement procedure. See following test setup figure. The specification used was the J 55014-1 limits.

The EUT was placed at the edge of the test table so as to make the end of the lead close to the EUT as short as possible between the power clamp and the EUT.

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.



4.3 Instruments Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range.....30 MHz to 300 MHz
 Detector.....Peak & Quasi-Peak & Average
 Sweep Speed.....Auto
 IF Band Width.....9 KHz

4.4 Test Procedure

The associated equipment under test is placed on a non-metallic table of 0.8 m of height above the floor and at least 0.4 m from other objects and from any person. The lead to be measured shall be stretched in a straight horizontal line for a length sufficient to accommodate the absorbing clamp and to permit the necessary adjustment of its position for tuning. The absorbing clamp is placed around the lead to be measured, with its current transformer towards the equipment under test, so as to measure a quantity proportional to the disturbance power on the lead.

Any other lead less than that to be measured shall either be disconnected, if mechanically and functionally possible, or fitted with ferrite rings to attenuate RF currents which may affect the measurement results. Such a lead shall be stretched away from the connected unit in a direction perpendicular to the direction of the lead to be measured.

All connectors not used shall be left un-terminated. All connectors having a connected lead shall be terminated in a manner representative of use. If the leads are screened and normally terminated in a screened unit, then the termination shall be screened.

4.5 Disturbance Power Test Data

Temperature:	24 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101 (kPa)
Operating Mode:	Mode1
Test Result:	Pass, If the RE of the EUT is qualified, it can be considered that the EUT meets the requirements of power radiation without testing.

5- RADIATED DISTURBANCES

5.1 Measurement Uncertainty

Test Site: 3m SAC

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 as below table.

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisprr
Radiated Emissions, 3m	30-200MHz HP	3.6 dB	6.3 dB
Radiated Emissions, 3m	30-200MHz VP	4.5 dB	6.3 dB
Radiated Emissions, 3m	200-1000MHz HP	3.7 dB	6.3 dB
Radiated Emissions, 3m	200-1000MHz VP	3.7 dB	6.3 dB
Radiated Emissions, 3m	1-26 GHz	5.4 dB	5.5 dB

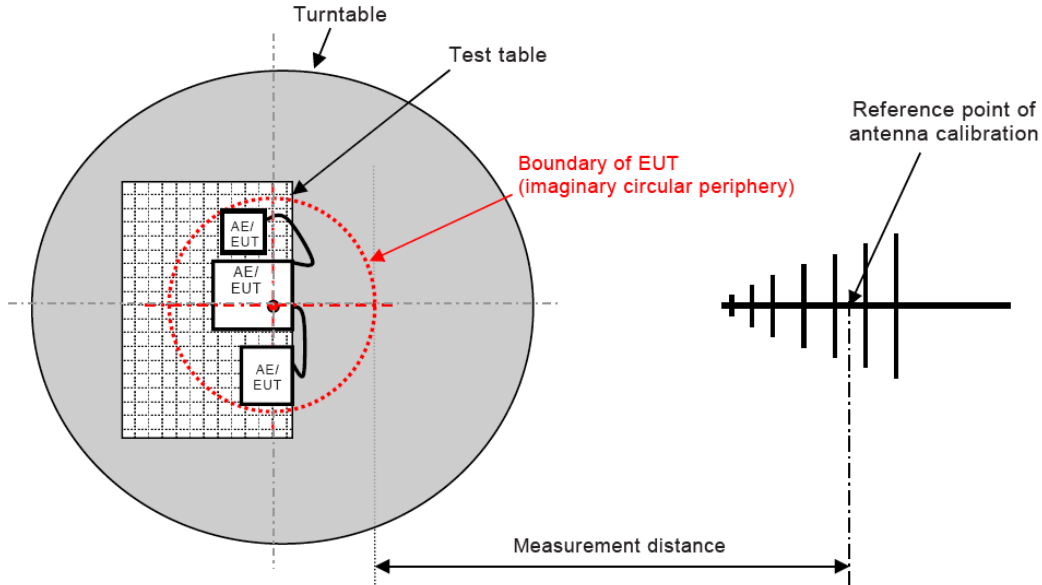
As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

5.2 Limit of Radiated Disturbances

Below 1GHz Equipment Limits		
Frequency (MHz)	Distance (Meters)	Quasi-Peak (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

NOTE 1: The lower limit shall apply at the transition frequency.
 NOTE 2 : Additional provisions may be required for cases where interference occurs.

5.3 EUT Setup



The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1-1: 2019, CISPR 16-2-3: 2010. The specification used was EN 55014:2017 Class B 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.

5.4 Test Receiver Setup

According to EN 55014:2017 rules, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

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

Antenna Position:

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

5.5 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 dB μ V of specification limits), and are distinguished with a "QP" in the data table.

5.6 Corrected Amplitude & Margin Calculation

Sample Calculation:

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

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

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added.

The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in V/m.

RA = 52.0
dB μ V AF = 7.4
dB/m
CF = 1.6 dB
AG = 29.0 dB
FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was

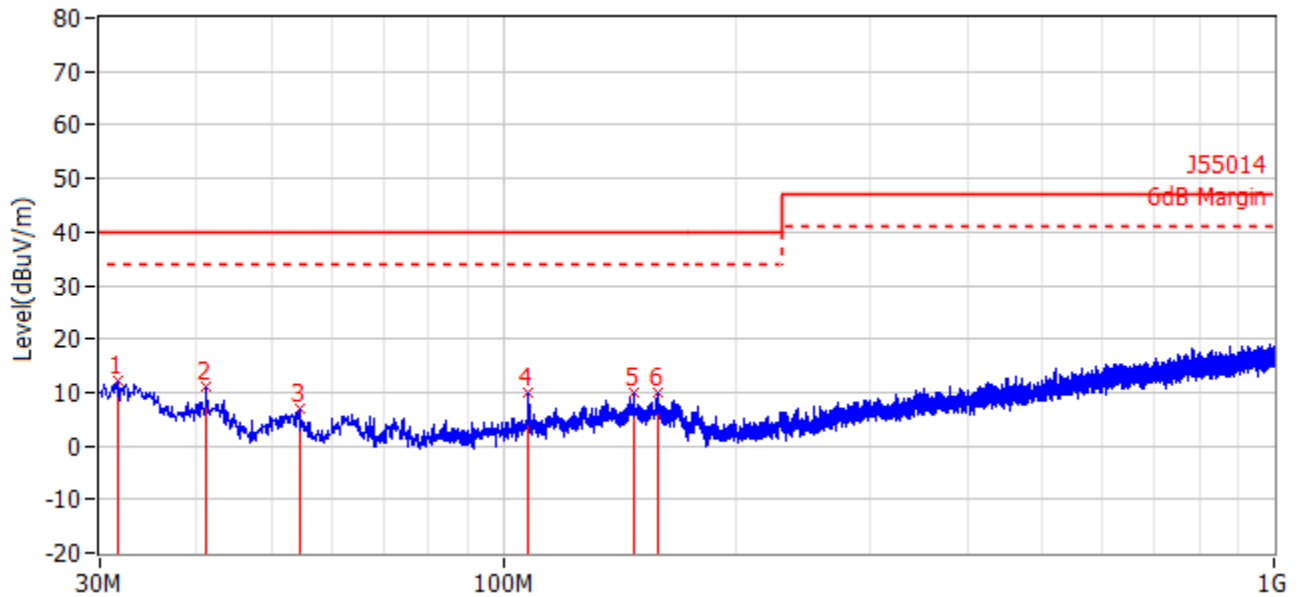
used: $UF = 10^{(NF / 20)}$

where UF = Net Reading in μ V
NF = Net Reading in dB μ V

5.7 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 adapter

Radiated Emission Test Detail of Below 1GHz

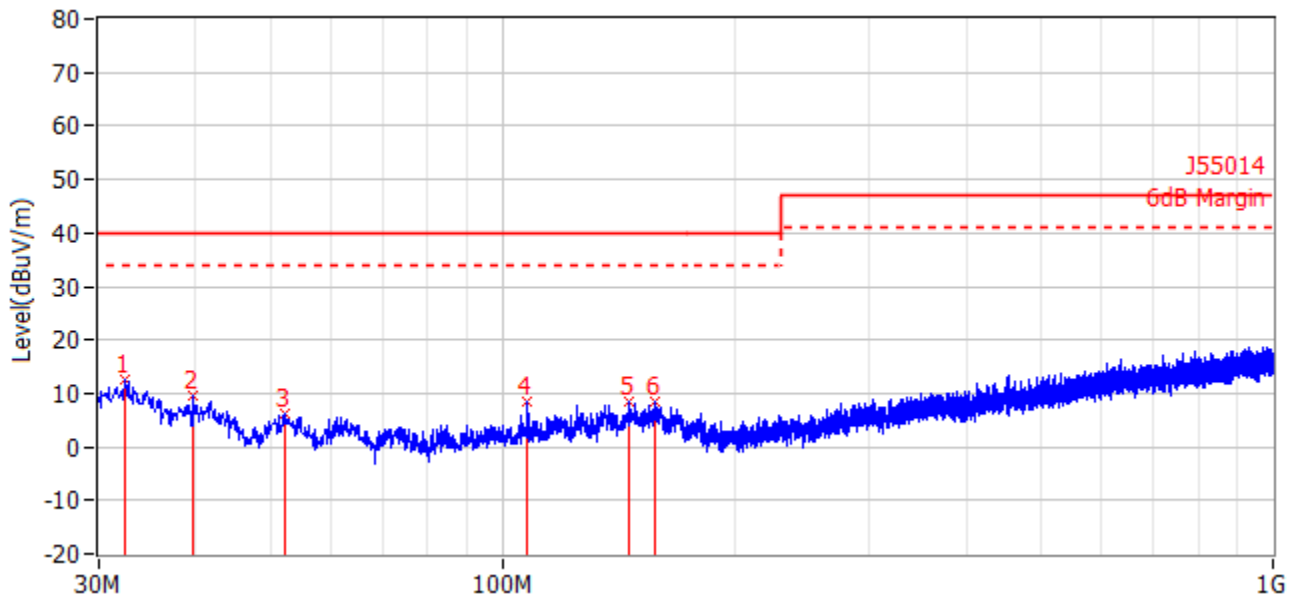


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	31.576MHz	40.0	12.1	-27.9	25.5	-13.4	QP	Hor	100.0	0.0
2*	41.276MHz	40.0	11.0	-29.0	27.8	-16.8	QP	Hor	100.0	0.0
3*	54.493MHz	40.0	7.0	-33.0	26.1	-19.1	QP	Hor	100.0	0.0
4*	107.964MHz	40.0	9.9	-30.1	31.0	-21.1	QP	Hor	100.0	0.0
5*	147.976MHz	40.0	9.8	-30.2	27.4	-17.6	QP	Hor	100.0	0.0
6*	159.253MHz	40.0	10.1	-29.9	27.6	-17.5	QP	Hor	100.0	0.0



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 adapter

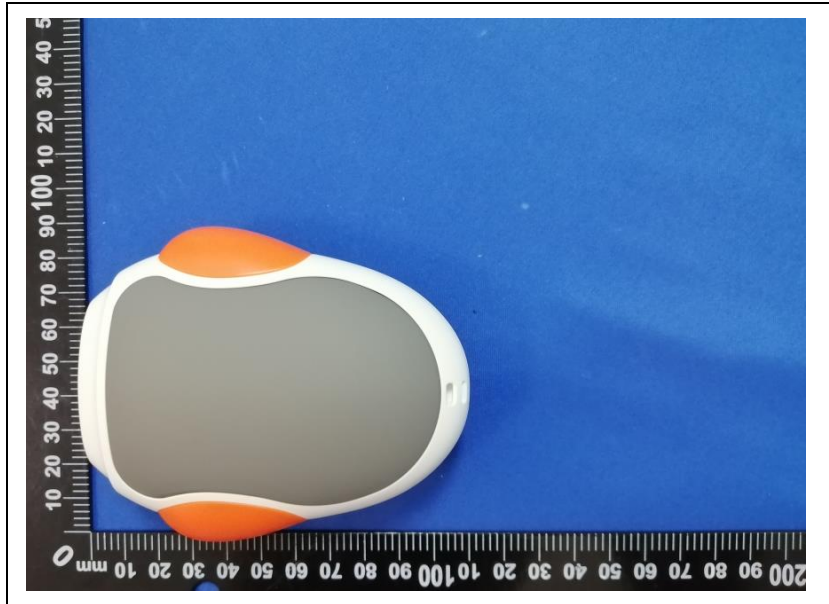


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	32.425MHz	40.0	12.4	-27.6	25.9	-13.5	QP	Ver	100.0	0.0
2*	39.700MHz	40.0	9.6	-30.4	25.7	-16.1	QP	Ver	100.0	0.0
3*	52.310MHz	40.0	6.2	-33.8	25.1	-18.9	QP	Ver	100.0	0.0
4*	107.964MHz	40.0	8.4	-31.6	29.5	-21.1	QP	Ver	100.0	0.0
5*	146.521MHz	40.0	8.6	-31.4	26.3	-17.7	QP	Ver	100.0	0.0
6*	157.798MHz	40.0	8.5	-31.5	26.0	-17.5	QP	Ver	100.0	0.0

APPENDIX A - EUT PHOTOGRAPHS



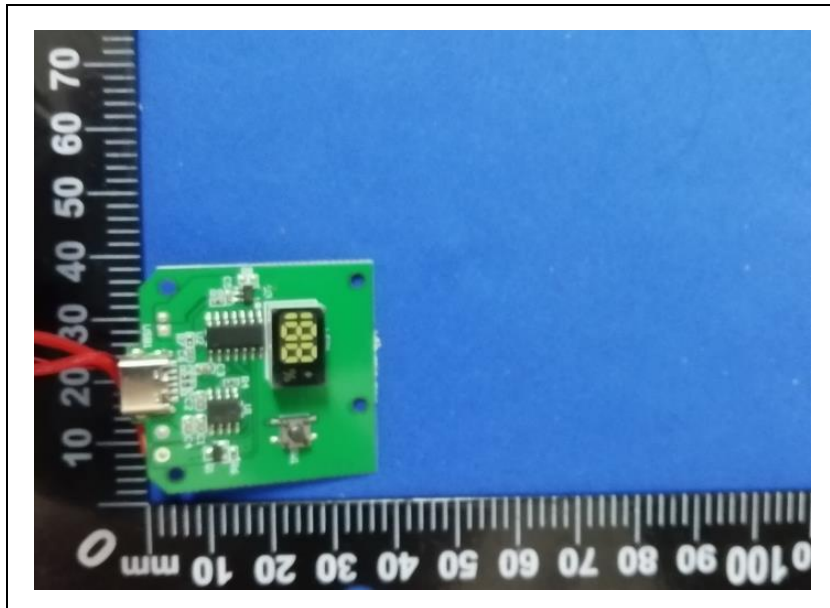
EUT1



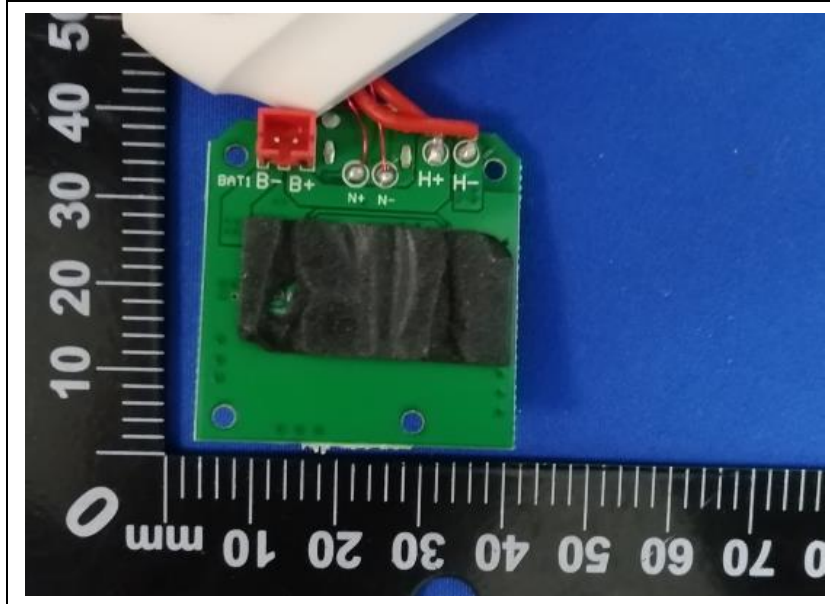
EUT2



EUT3



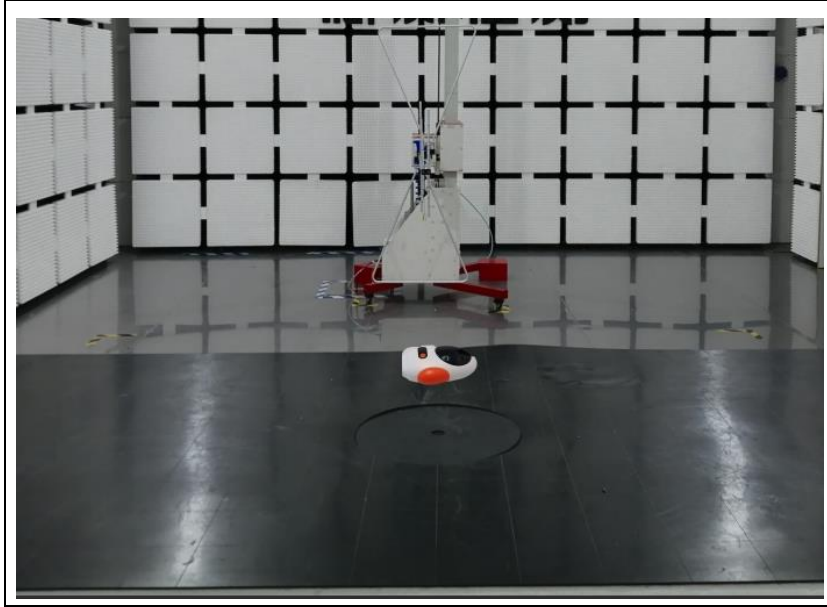
EUT4



EUT5

APPENDIX B - TEST SETUP PHOTOGRAPHS

Radiated Disturbance



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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