



中国认可
国际互认
检测
TESTING
CNAS L6478



TEST REPORT

Reference No. : WTF19F03014006E
Applicant : Mid Ocean Brands B.V.
Address : 7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon,
Hong Kong
Manufacturer : 106613
Product Name : Yoyo with light
Model No. : IT3854
Standards : EN 55014-1:2017
EN 55014-2:2015
Date of Receipt sample : 2019-03-15
Date of Test : 2019-03-19 to 2019-03-20
Date of Issue : 2019-03-21
Test Report Form No..... : WEH-55014A-03B
Test Result : **Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

Waltek Services (Foshan) Co., Ltd.

Address: No.13-19, 2/F., 2nd Building, Sunlink International Machinery City,
Chencun, Shunde District, Foshan, Guangdong, China

Tel:+86-757-23811398 Fax:+86-757-23811381 E-mail:info@waltek.com.cn

Compiled by:

Roy Hong / Project Engineer



Approved by:

Oren Yang / Manager

1 Test Summary

EMISSION				
Test Item	Test Standard	Class / Severity	Result	
Mains Terminal Disturbance Voltage, 148.5kHz to 30MHz	EN 55014-1:2017	Clause 4.3.3	N/A	
Disturbance Power, 30MHz to 300MHz	EN 55014-1:2017	Clause 4.3.4	N/A	
Discontinuous Disturbance (Click)	EN 55014-1:2017	Clause 4.4	N/A	
Radiated Emission, 30MHz to 1000MHz	EN 55014-1:2017	Clause 4.3.4	Pass	
IMMUNITY (EN 55014-2:2015)				
Test Item	Test Method	Class / Severity	Performance Criteria	Result
Electrostatic Discharge(ESD)	IEC 61000-4-2:2008	±4 kV Contact ±8 kV Air	B	Pass
Radio-frequency electromagnetic fields (80MHz to 1GHz)	IEC 61000-4-3:2010	3V/m, 80%, 1kHz, Amp. Mod.	A	Pass
Electrical Fast Transients (EFT)	IEC 61000-4-4:2012	AC ±1.0kV DC ±0.5kV	B	N/A
Surge	IEC 61000-4-5:2005	±1kV D.M.† ±2kV C.M.‡	B	N/A
Injected Currents, 0.15MHz to 230MHz	IEC 61000-4-6:2013	3Vr.m.s.(emf), 80%, 1kHz Amp. Mod.	A	N/A
Voltage Dips and Interruptions	IEC 61000-4-11:2004	0 % UT* for 0.5per	C	N/A
		40 % UT* for 10per		N/A
		70 % UT* for 25per		N/A

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object
A.M	Amplitude Modulation
†	Differential Mode
‡	Common Mode
*	U _T is the nominal supply voltage

2 Contents

	Page
COVER PAGE	1
1 TEST SUMMARY	2
2 CONTENTS	3
3 GENERAL INFORMATION.....	4
3.1 GENERAL DESCRIPTION OF E.U.T.	4
3.2 DETAILS OF E.U.T.	4
3.3 DESCRIPTION OF SUPPORT UNITS	4
3.4 STANDARDS APPLICABLE FOR TESTING	4
3.5 TEST FACILITY	5
3.6 SUBCONTRACTED.....	5
3.7 ABNORMALITIES FROM STANDARD CONDITIONS.....	5
4 EQUIPMENT USED DURING TEST	6
4.1 MEASUREMENT UNCERTAINTY	6
5 EMISSION TEST RESULTS	7
5.1 RADIATED EMISSION, 30MHZ TO 1GHZ	7
5.1.1 <i>E.U.T. Operation</i>	7
5.1.2 <i>Block Diagram of Test Setup</i>	7
5.1.3 <i>Measurement Data</i>	8
5.1.4 <i>Radiated Emission Test Data</i>	8
6 IMMUNITY TEST RESULTS.....	10
6.1 PERFORMANCE CRITERIA	10
6.2 ELECTROSTATIC DISCHARGE (ESD)	10
6.2.1 <i>E.U.T. Operation</i>	11
6.2.2 <i>Block Diagram of Setup</i>	11
6.2.3 <i>Direct Discharge Test Results</i>	12
6.2.4 <i>Indirect Discharge Test Results</i>	12
6.3 RADIO-FREQUENCY ELECTROMAGNETIC FIELDS, 80MHZ TO 1GHZ	12
6.3.1 <i>E.U.T. Operation</i>	13
6.3.2 <i>Block Diagram of Setup</i>	13
6.3.3 <i>Test Results</i>	14
7 PHOTOGRAPHS – TEST SETUP	15
7.1 PHOTOGRAPH – RADIATED EMISSION TEST SETUP.....	15
7.2 PHOTOGRAPH – ESD IMMUNITY TEST SETUP	15
7.3 PHOTOGRAPH – RADIO-FREQUENCY ELECTROMAGNETIC FIELDS IMMUNITY TEST SETUP.....	16
8 PHOTOGRAPHS – CONSTRUCTIONAL DETAILS	17
8.1 EUT – FRONT VIEW	17
8.2 EUT – BACK VIEW	17
8.3 EUT – INTERNAL VIEW	18

3 General Information

3.1 General Description of E.U.T.

Product Name : Yoyo with light

Model No. : IT3854

Remark : ---

3.2 Details of E.U.T.

Technical Data..... : Battery 3V

3.3 Description of Support Units

The EUT has been tested as an independent unit. IT3854 is the test sample. The all tests were performed In the condition of battery 3V input.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

EN 55014-1:2017	Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1:Emission
EN 55014-2:2015	Electromagnetic compatibility Requirements for household appliances, Part 2: Immunity Product family.

3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Services (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science and Economic Development Canada (ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number: 21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Services (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

Yes No

If Yes, list the related test items and lab information:

Test items: ---

Lab information: ---

3.7 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

Radiated Emission					
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Status
1.	EMI Test Receiver	R&S	ESR7	101566	Valid
2.	Active Loop Antenna	SCHWARZBECK	FMZB1519B	00004	Valid
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB 9162	9162-117	Valid
ESD					
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Status
1.	ESD Simulator	TESEQ	NSG437	521	Valid
Radio-frequency electromagnetic fields					
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Status
1.	RF Power Amplifier	OPHIR	5225F	1051/1712	Valid
2.	RF Power Amplifier	OPHIR	5293F	1051/171.	Valid
3.	Stacked double logarithmic periodic antenna	SCHWARZBECK	STLP9128E-SPECIAL	STLP9128E	Valid
4.	Stacked double logarithmic periodic antenna	SCHWARZBECK	STLP 9149	STLP 9149 #476	Valid
5.	RF signal generator	Agilent	N5181A	MY48080720	Valid

4.1 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conducted Emission	150kHz~30MHz	±2.66dB	(1)
Disturbance Power	30MHz~300MHz	±3.21dB	(1)
Radiated Emission	30MHz~1GHz	±4.56dB	(1)

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

5 Emission Test Results

5.1 Radiated Emission, 30MHz to 1GHz

Test Requirement.....	:	EN 55014-1
Test Method.....	:	EN 55014-1
Test Result.....	:	Pass
Frequency Range.....	:	30MHz to 1GHz
Class/Severity.....	:	Table 9 of EN55014-1

5.1.1 E.U.T. Operation

Operating Environment:

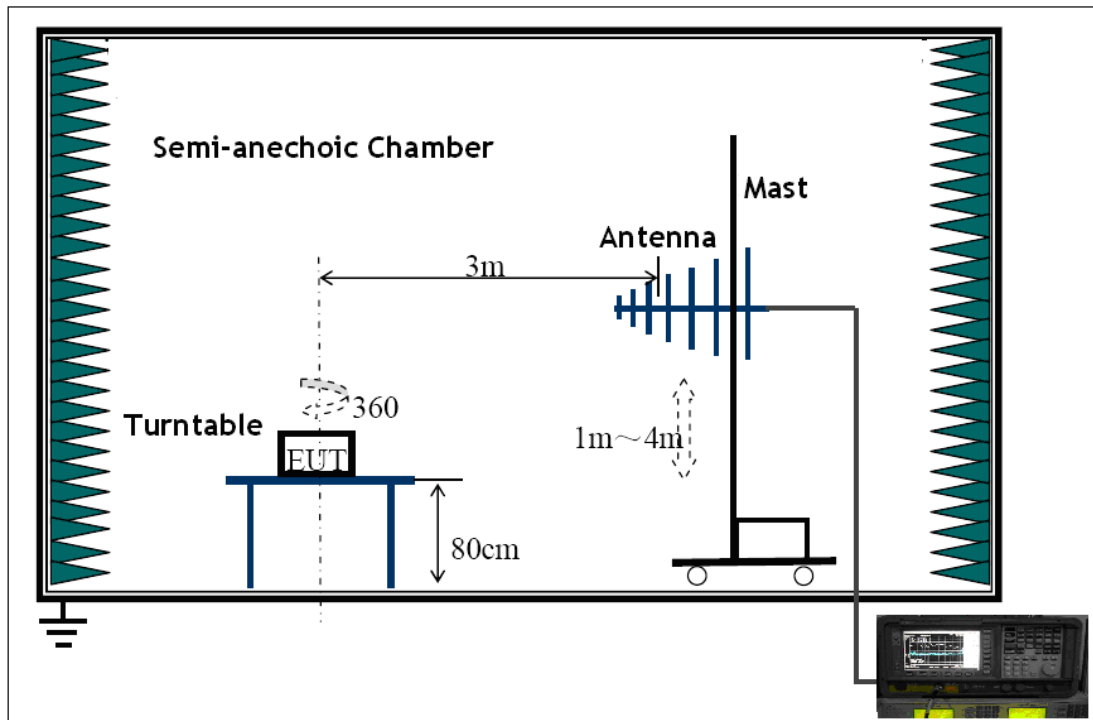
Temperature	:	23.2°C
Humidity.....	:	48.2%RH
Atmospheric Pressure.....	:	101.2kPa

EUT Operation:

Input Voltage	:	Battery 3V
Operating Mode.....	:	Lighting mode

5.1.2 Block Diagram of Test Setup

The Radiated Emission test was performed in the 3m Semi- Anechoic Chamber test site and accordance with CISPR16-2-3.

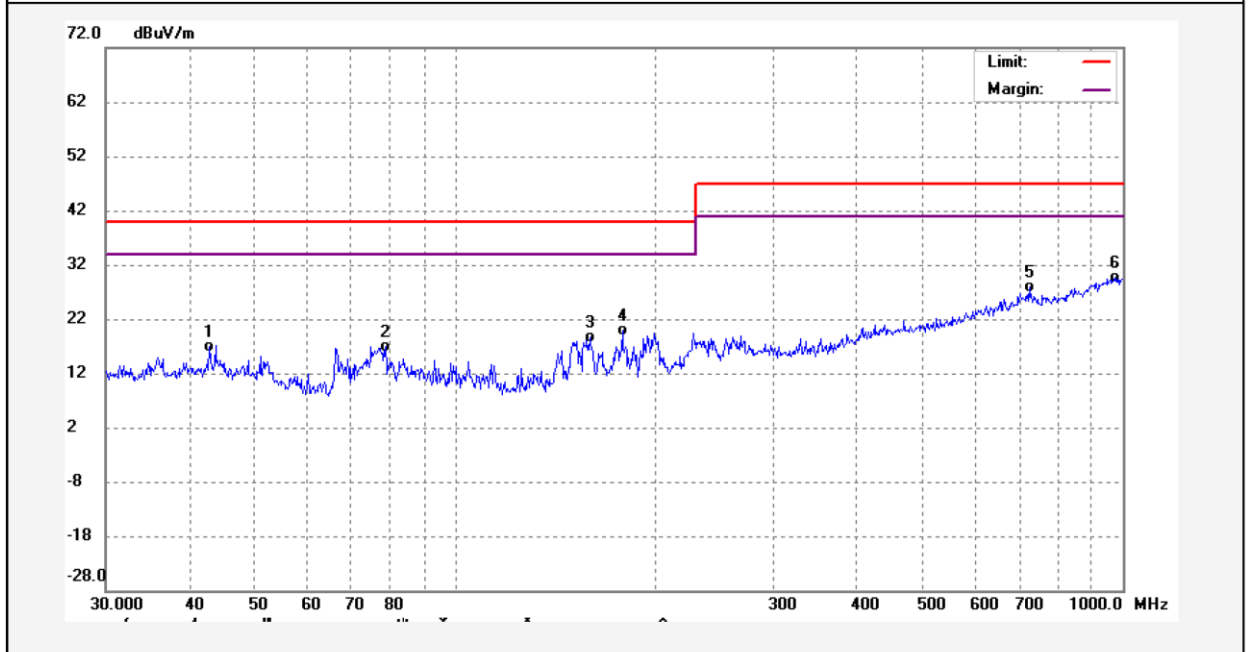


5.1.3 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for Horizontal & Vertical polarisation. Quasi-peak measurements were performed if peak emissions were within 6dB of the limit line.

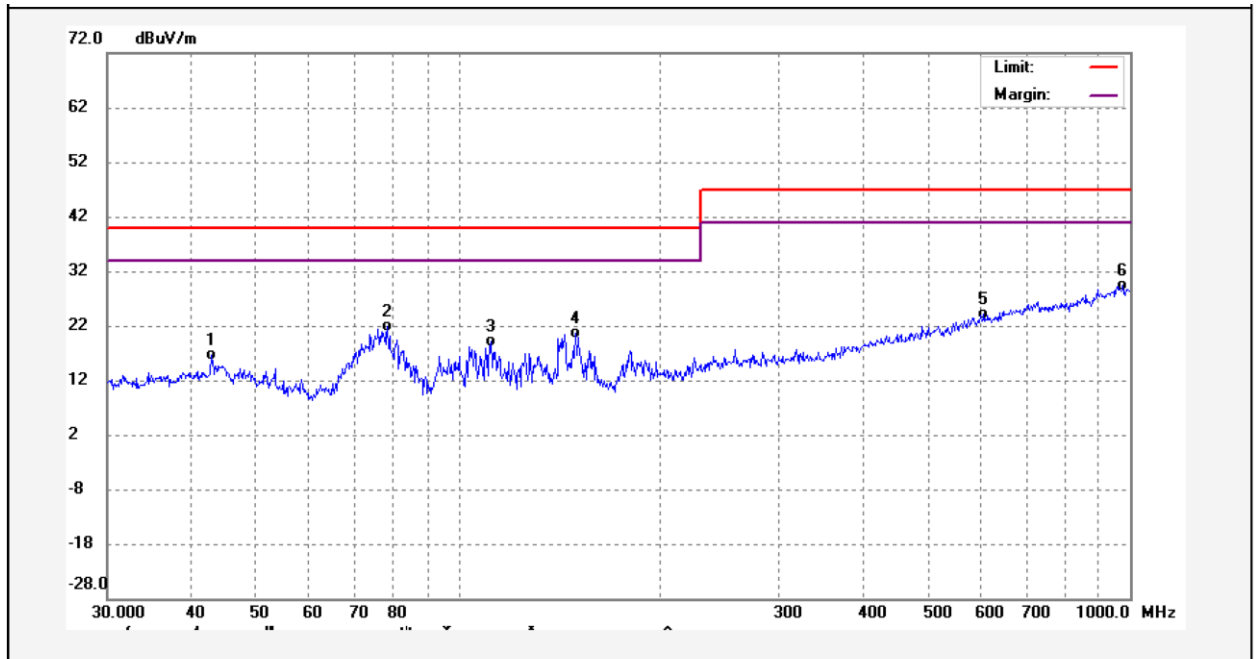
5.1.4 Radiated Emission Test Data

Vertical Polarization:



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	42.8998	2.40	14.50	16.90	40.00	-23.10	QP	
2	78.6888	7.19	9.73	16.92	40.00	-23.08	QP	
3	159.2251	7.61	10.94	18.55	40.00	-21.45	QP	
4	178.1327	8.18	11.80	19.98	40.00	-20.02	QP	
5	724.2611	2.89	24.87	27.76	47.00	-19.24	QP	
6	972.3374	1.66	28.08	29.74	47.00	-17.26	QP	

Horizontal Polarization :



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	42.8998	1.77	14.93	16.70	40.00	-23.30	QP	
2	78.4133	12.60	9.37	21.97	40.00	-18.03	QP	
3	111.7380	7.91	11.13	19.04	40.00	-20.96	QP	
4	149.4857	10.15	10.39	20.54	40.00	-19.46	QP	
5	605.6592	1.46	22.77	24.23	47.00	-22.77	QP	
6	975.7529	1.90	27.56	29.46	47.00	-17.54	QP	

6 Immunity Test Results

6.1 Performance Criteria

Performance criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however, no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

For further details, please refer to EN 55014-2.

6.2 Electrostatic Discharge (ESD)

Test Requirement	:	EN 55014-2
Test Method	:	IEC 61000-4-2
Test Result	:	Pass
Discharge Impedance	:	330Ω / 150pF
Discharge Voltage	:	Air Discharge: ±8kV Contact Discharge: ±4kV HCP & VCP: ±4kV
Polarity	:	Positive & Negative
Number of Discharge	:	Minimum 10 times at each test point
Discharge Mode	:	Single Discharge
Discharge Period	:	1 second minimum

6.2.1 E.U.T. Operation

Operating Environment:

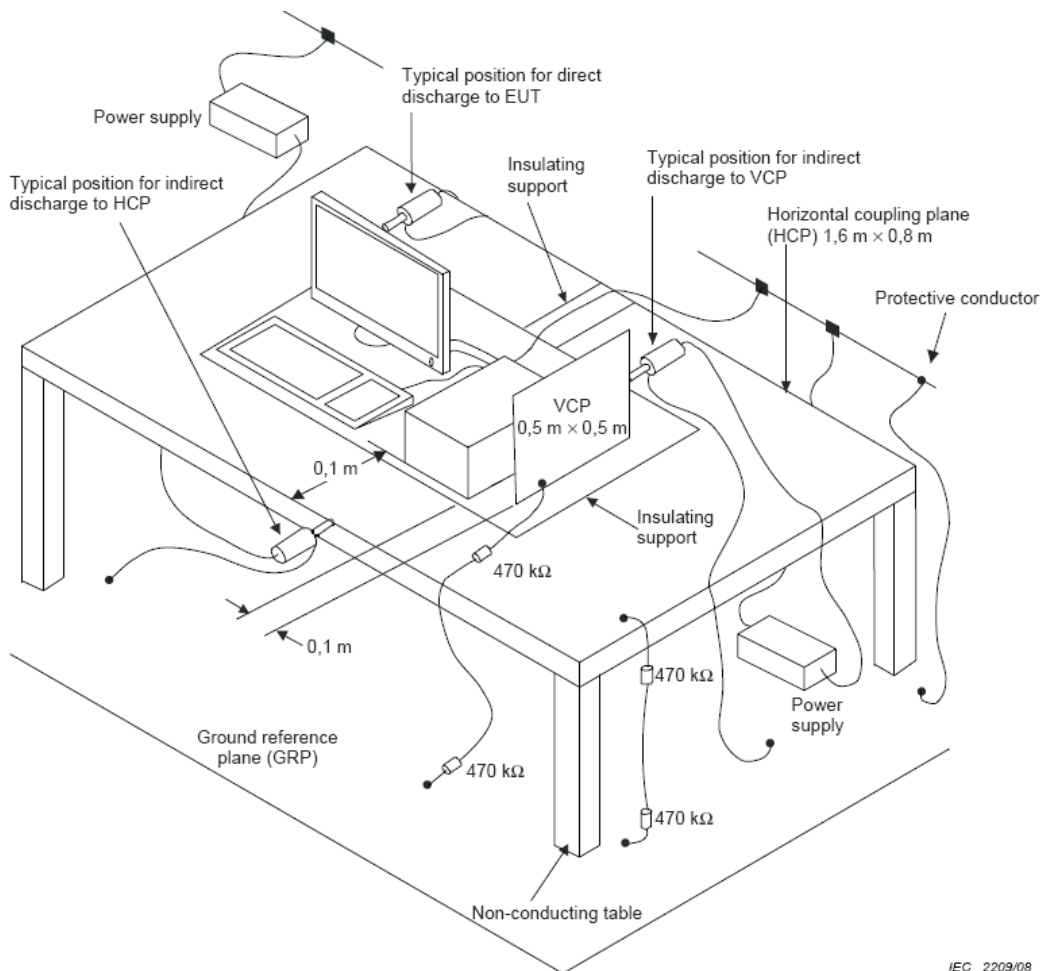
Temperature : 24.7°C
Humidity : 65.3%RH
Barometric Pressure : 100.1kPa

EUT Operation:

Input Voltage : Battery 3V
Operating Mode : On mode

6.2.2 Block Diagram of Setup

The ESD test was performed in accordance with the IEC 61000-4-2.



IEC 2209/08

6.2.3 Direct Discharge Test Results

Observations: Test points: 1. All Exposed Surface & Seams;
2. All metallic part

Direct Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Contact Discharge	Air Discharge
±8	B	1	N/A	Pass*
±4	B	2	Pass*	N/A

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.2.4 Indirect Discharge Test Results

Observations: Test points: 1. All sides.

Indirect Discharge			Test Results	
Applied Voltage (kV)	Performance Criterion	Test Point	Horizontal Coupling	Vertical Coupling
±4	B	1	Pass*	Pass*

Remark:

* During the test no deviation was detected to the selected operation mode(s)

6.3 Radio-frequency electromagnetic fields, 80MHz to 1GHz

Test Requirement..... : EN 55014-2
 Test Method..... : IEC 61000-4-3
 Test Result..... : Pass
 Frequency Range..... : 80MHz to 1GHz
 Test level..... : 3V/m
 Modulation..... : 80%, 1kHz Amplitude Modulation.
 Face of EUT : Front, Back, Left, Right
 Antenna polarisation : Horizontal& Vertical

6.3.1 E.U.T. Operation

Operating Environment:

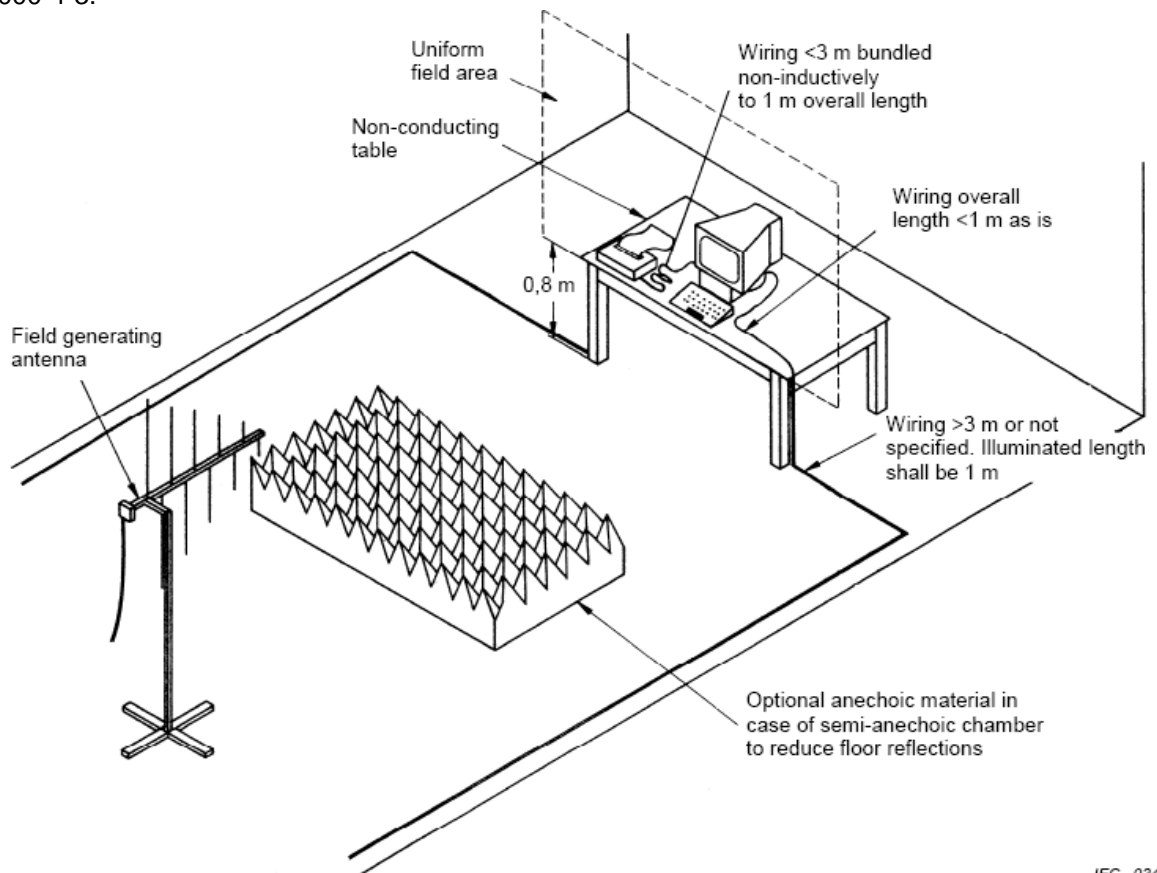
Temperature	:	24.7°C
Humidity	:	65.3%RH
Barometric Pressure	:	100.1kPa

EUT Operation:

Input Voltage	:	Battery 3V
Operating Mode	:	On mode

6.3.2 Block Diagram of Setup

The Radio-frequency electromagnetic fields Immunity test was performed in accordance with the IEC 61000-4-3.



6.3.3 Test Results

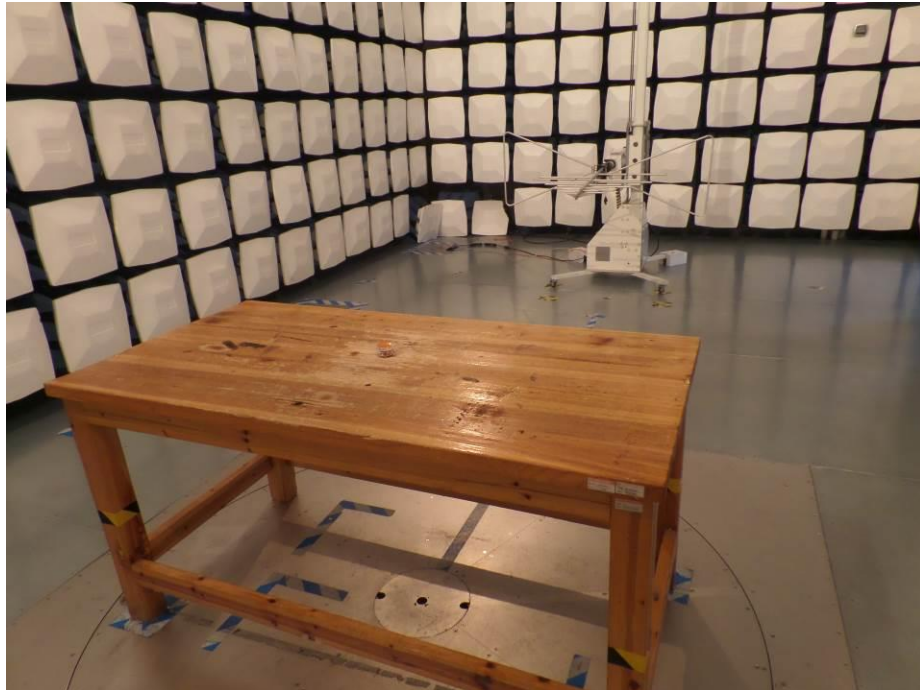
Frequency	Face of EUT	Antenna polarisation	Test Level	Step Size	Dwell Time	Performance Criterion	Result
80 to 1000MHz	Front, Back, Left, Right	Horizontal	3V/m	1%	1s	A	Pass*
80 to 1000MHz	Front, Back, Left, Right	Vertical	3V/m	1%	1s	A	Pass*

Remark:

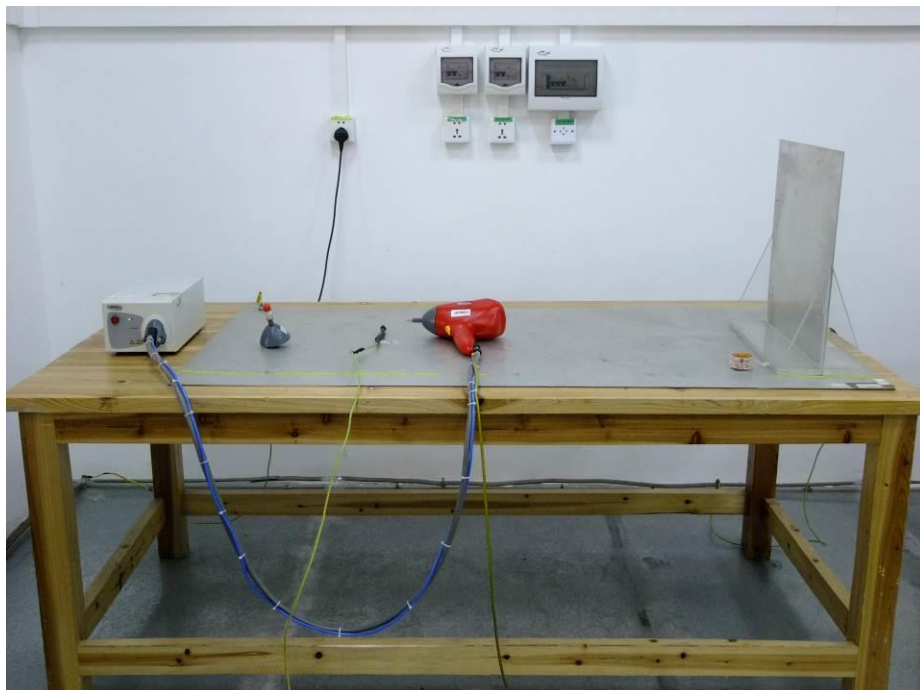
- * During the test no deviation was detected to the selected operation mode(s)

7 Photographs – Test Setup

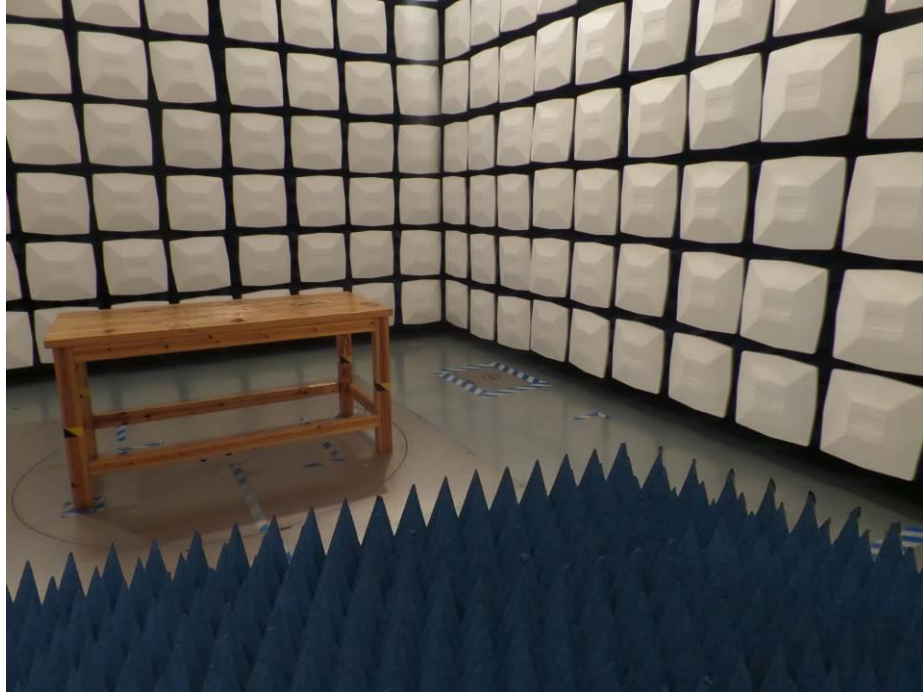
7.1 Photograph – Radiated Emission Test Setup



7.2 Photograph – ESD Immunity Test Setup

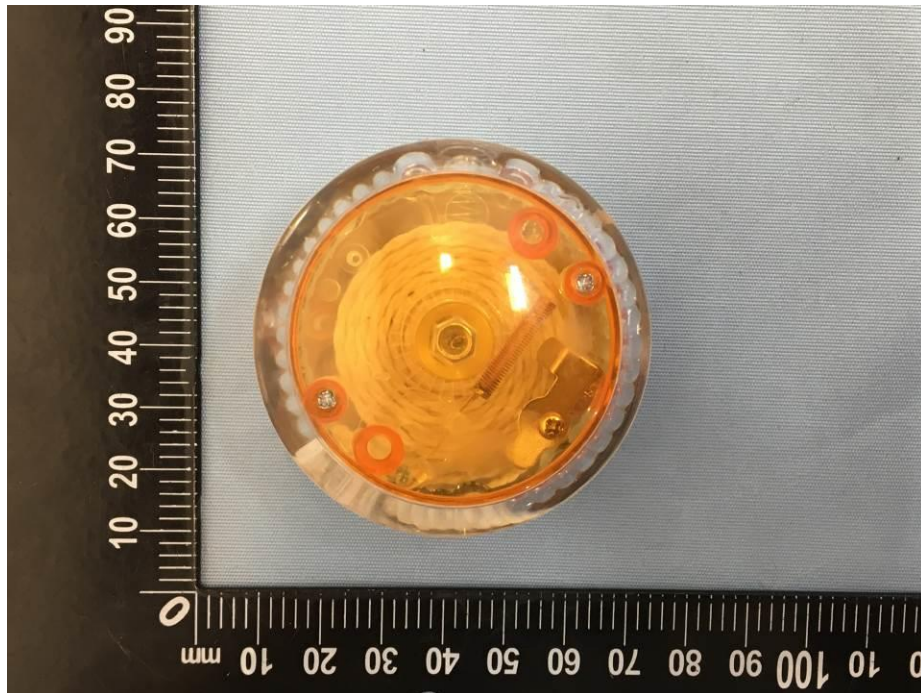


7.3 Photograph – Radio-frequency electromagnetic fields Immunity Test Setup



8 Photographs – Constructional Details

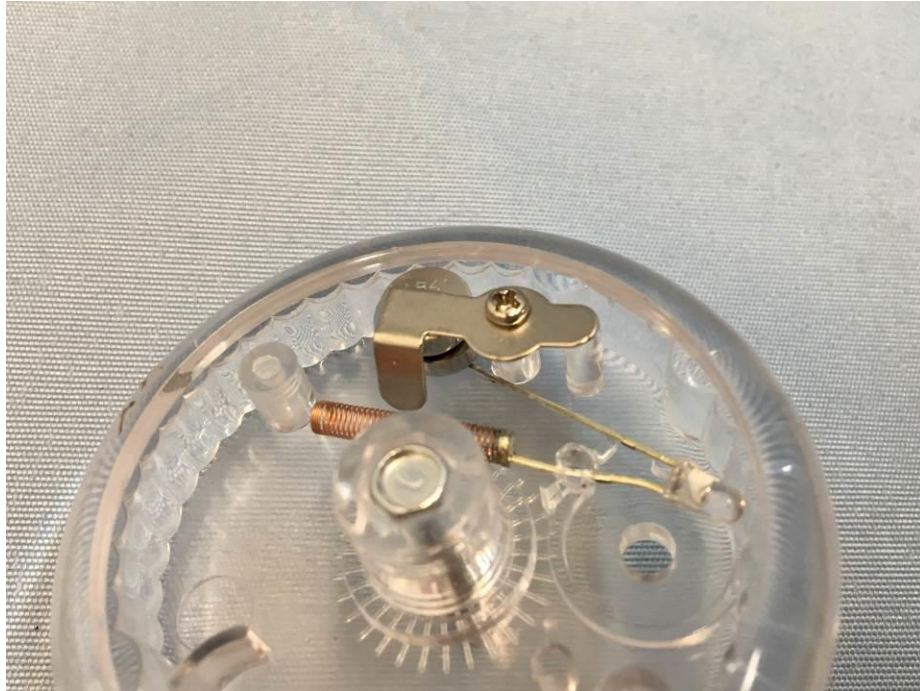
8.1 EUT – Front View



8.2 EUT – Back View



8.3 EUT – Internal View



===== End of Report =====