



SGS-CSTC Standards Technical Services Co., Ltd.

198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technological
Development District, Guangzhou, China 510663
Telephone: +86 (0) 20 82155555
Fax: +86 (0) 20 82075059
Email: ee.guangzhou@sgs.com

Report No.: GZEM141100602601

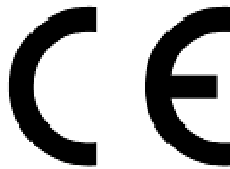
Page: 1 of 20

TEST REPORT

Application No.:	GZEM1411006026TX
Applicant:	Shengbang electronics technology co., ltd fujian
Product Name:	movement
Product Description:	clock alarm
Model No.:	HD-1688
Standards:	EN 55014-1:2006+A1:2009+A2:2011, EN55014-2:1997+A1:2001+A2:2008.
Date of Receipt:	2014-11-17
Date of Test:	2014-11-19 to 2014-11-20
Date of Issue:	2014-11-25
Test Result:	Pass*

* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.



The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

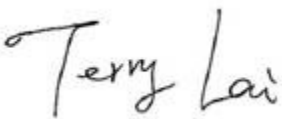
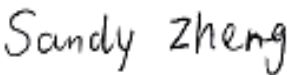
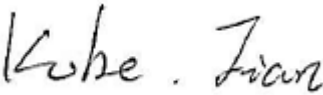
The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		2014-11-25		Original

Authorized for issue by:			
Tested By	 (Terry Lai) / Project Engineer		2014-11-19 to 2014-11-20 Date
Prepared By	 (Sandy Zheng) / Clerk		2014-11-24 Date
Checked By	 (Kobe Jian) / Reviewer		2014-11-25 Date



3 Test Summary

Electromagnetic Interference (EMI)				
Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	EN 55014-1:2006 +A1:2009+A2:2011	CISPR 16-2-3:2006	Table 3	PASS
Electromagnetic Susceptibility(EMS) ¹⁾				
Test	Test Requirement	Test Method	Class / Severity	Result
ESD (Electrostatic Discharge)	EN 55014-2:1997 +A1:2001+A2:2008	EN 61000-4-2:2009	Contact ±4 kV Air ±8 kV	PASS
Radiated Immunity (80 MHz to 1 GHz)	EN 55014-2:1997 +A1:2001+A2:2008	N/A	N/A	N/A
Remark :				
¹⁾ : The EUT belongs to Category III apparatus of EN 55014-2:1997+A1:2001+A2:2008.				
EUT In this whole report EUT means Equipment Under Test.				
N/A: please refer to Section 8.3 of this report for details.				



4 Contents

1	Cover Page	1
2	Version	2
3	Test Summary	3
4	Contents	4
5	General Information	5
5.1	Client Information	5
5.2	General Description of E.U.T.	5
5.3	Details of E.U.T.	5
5.4	Description of Support Units	5
5.5	Deviation from Standards	5
5.6	General Test Climate During Testing	5
5.7	Abnormalities from Standard Conditions	5
5.8	Monitoring of EUT for All Immunity Test	5
5.9	Test Location	5
5.10	Test Facility	6
6	Equipment Used during Test	7
7	Electromagnetic Interference Test Results	9
7.1	Radiated Emissions, 30MHz to 1GHz	9
8	Electromagnetic Susceptibility Test Results	13
8.1	Performance Criteria Description in Clause 6 of EN 55014-2	13
8.2	ESD	14
8.3	Radiated Immunity 80 MHz to 1000 MHz	16
9	Photographs	17
9.1	Radiated Emission Test Setup	17
9.2	ESD Test Setup	17
9.3	EUT Constructional Details	18



5 General Information

5.1 Client Information

Applicant: Shengbang electronics technology co., ltd fujian
Address of Applicant: shihu industrial park, hanjiang town, shishi city, Fujian, china

5.2 General Description of E.U.T.

Product Name: movement
Product Description: clock alarm
Model No.: HD-1688

5.3 Details of E.U.T.

Rated Supply Voltage: DC 1.5V (1x1.5V size of "AA") by battery
Power Cable: N/A

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Deviation from Standards

None.

5.6 General Test Climate During Testing

Temperature: 15-30 °C Humidity: 30-70 %RH Atmospheric Pressure: 860-1060 mbar

5.7 Abnormalities from Standard Conditions

None.

5.8 Monitoring of EUT for All Immunity Test

Audio: N/A
Visual: Movement of EUT

5.9 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory,
198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663
Tel: +86 20 82155555 Fax: +86 20 82075059
No tests were sub-contracted.

5.10 Test Facility

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

- **NVLAP (Lab Code: 200611-0)**

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The 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.

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **CNAS (Lab Code: L0167)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- **FCC (Registration No.: 282399)**

SGS-CSTC Standards Technical Services 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 282399, May 31, 2002.

- **Industry Canada (Registration No.: 4620B-1)**

The 3m/10m Alternate Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Certification and Engineering of Industry Canada for radio equipment testing with Registration No. 4620B-1.

- **VCCI (Registration No.: R-2460, C-2584, G-449 and T-1179)**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co. Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2460, C-2584, G-449 and T-1179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IEC 61010-1:2006-10 and Rules of procedure IEC 61010-2:2006-10, and the relevant IEC CB-Scheme Operational documents.



6 Equipment Used during Test

RE in Chamber						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal.Due date
					(YYYY-MM-DD)	(YYYY-MM-DD)
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2013-12-5	2014-12-5
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2014-04-19	2015-04-19
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	100236	2014-03-03	2015-03-03
EMC0528	RI High frequency Cable	SGS	20 m	N/A	2014-05-09	2015-05-09
EMC2025	Trilog Broadband Antenna 30-1000MHz	SCHWARZBECK MESS-ELEKTRONIK	VULB 9160	9160-3372	2014-07-14	2017-07-14
EMC0524	Bi-log Type Antenna	Schaffner -Chase	CBL6112B	2966	2013-08-31	2016-08-31
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2014-05-04	2017-05-04
EMC2026	Horn Antenna 1-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	9120D-841	2013-08-31	2016-08-31
EMC0518	Horn Antenna	Rohde & Schwarz	HF906	100096	2012-07-01	2015-07-01
EMC0521	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	2014-03-03	2015-03-03
EMC2065	Amplifier	HP	8447F	N/A	2014-08-25	2015-08-25
EMC0075	310N Amplifier	Sonama	310N	272683	2014-03-03	2015-03-03
EMC0523	Active Loop Antenna	EMCO	6502	42963	2014-03-03	2016-03-03
EMC2041	Broad-Band Horn Antenna (14)15-26.5(40)GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9170	9170-375	2014-05-26	2017-05-26
EMC2069	2.4GHz filter	Micro-Tronics	BRM 50702	149	2014-04-19	2015-04-19
EMC0530	10m Semi-Anechoic Chamber	ETS	N/A	N/A	2014-05-03	2016-05-03

Electrostatic Discharge						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal.Due date
					(YYYY-MM-DD)	(YYYY-MM-DD)
EMC2071	ESD Simulator	TESEQ AG	NSG 435	6739	2014-05-05	2015-05-05
EMC0804	ESD Ground Plane	SGS	3m x 3m	N/A	N/A	N/A
EMC0078	Temperature, & Humidity	Shanghai Meteorological Instrument factory Co., Ltd.	ZJ1-2B	709131	2014-09-16	2015-09-16



General used equipment						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date	Cal. Due date
					(YYYY-MM-DD)	(YYYY-MM-DD)
EMC0006	DMM	Fluke	73	70681569	2014-09-15	2015-09-15
EMC0007	DMM	Fluke	73	70671122	2014-09-15	2015-09-15



7 Electromagnetic Interference Test Results

7.1 Radiated Emissions, 30MHz to 1GHz

Test Requirement: EN 55014-1
Test Method: CISPR 16-2-3, semi-anechoic chamber
Test Date: 2014-11-19
Test Voltage: DC 1.5V
Frequency Range: 30 MHz to 1GHz
Measurement Distance: 3m
Detector: Peak for pre-scan
Quasi-Peak for final test (120 kHz resolution bandwidth)

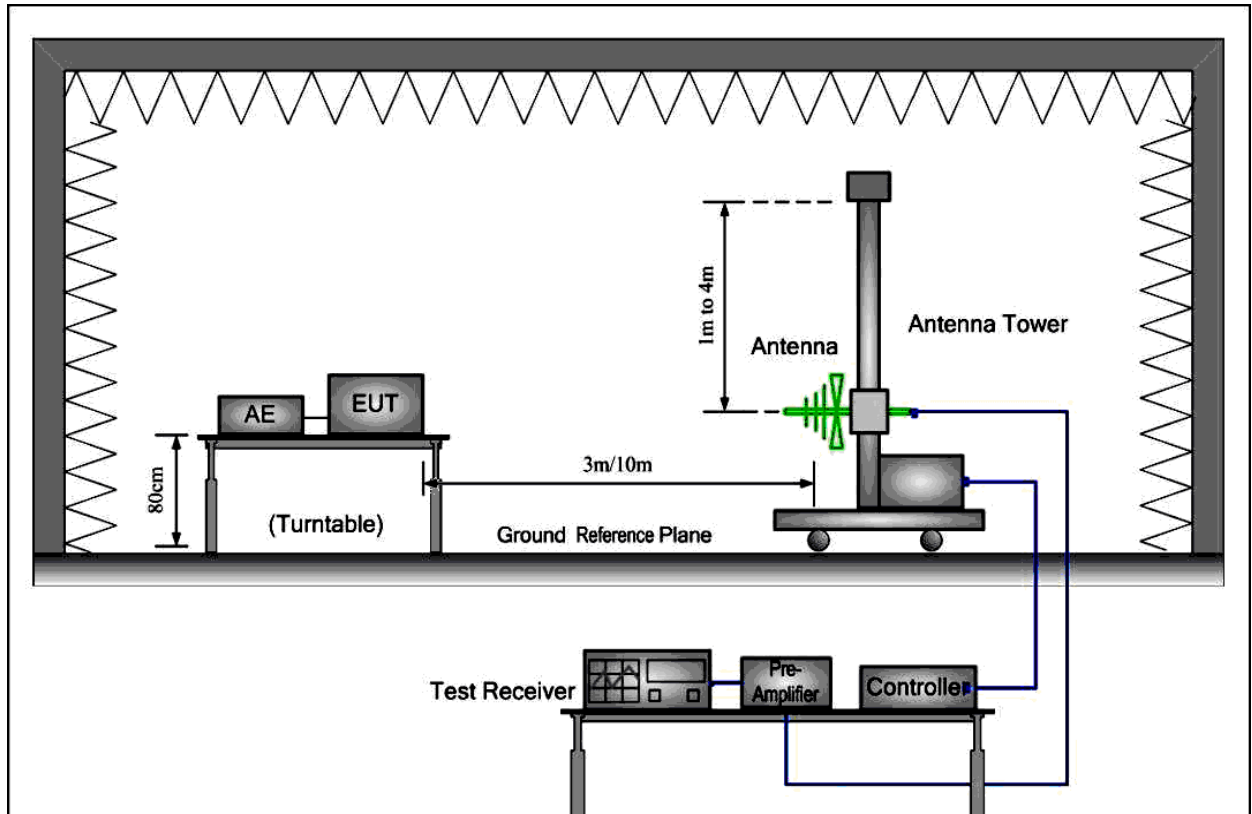
Limit:

Frequency range	Quasi-peak limits
MHz	dB (μ V/m)
30 to 230	40
230 to 1000	47
At transitional frequencies the lower limit applies.	

7.1.1 E.U.T. Operation

Test the EUT in movement mode.

7.1.2 Test Setup and Procedure



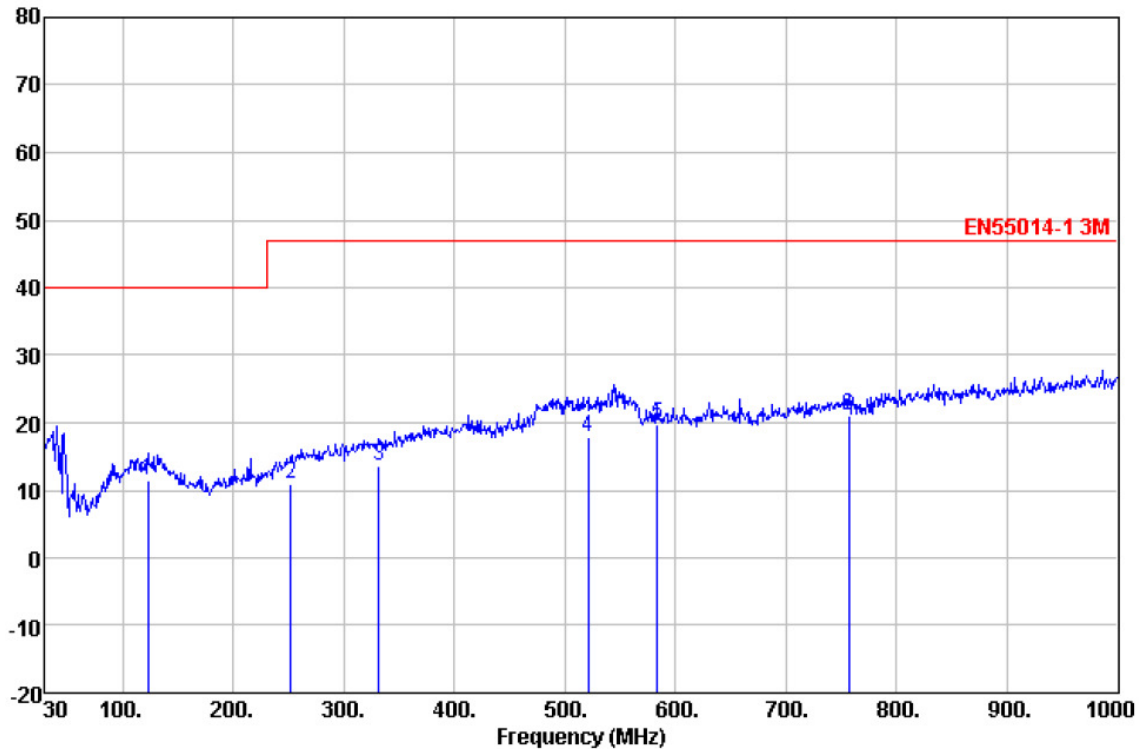
1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. The mains cables shall drape to the ground reference plane.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum signature data plots of the EUT.
5. The frequencies of maximum emission were determined in the final radiated emissions measurement, The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

7.1.3 Measurement Data

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

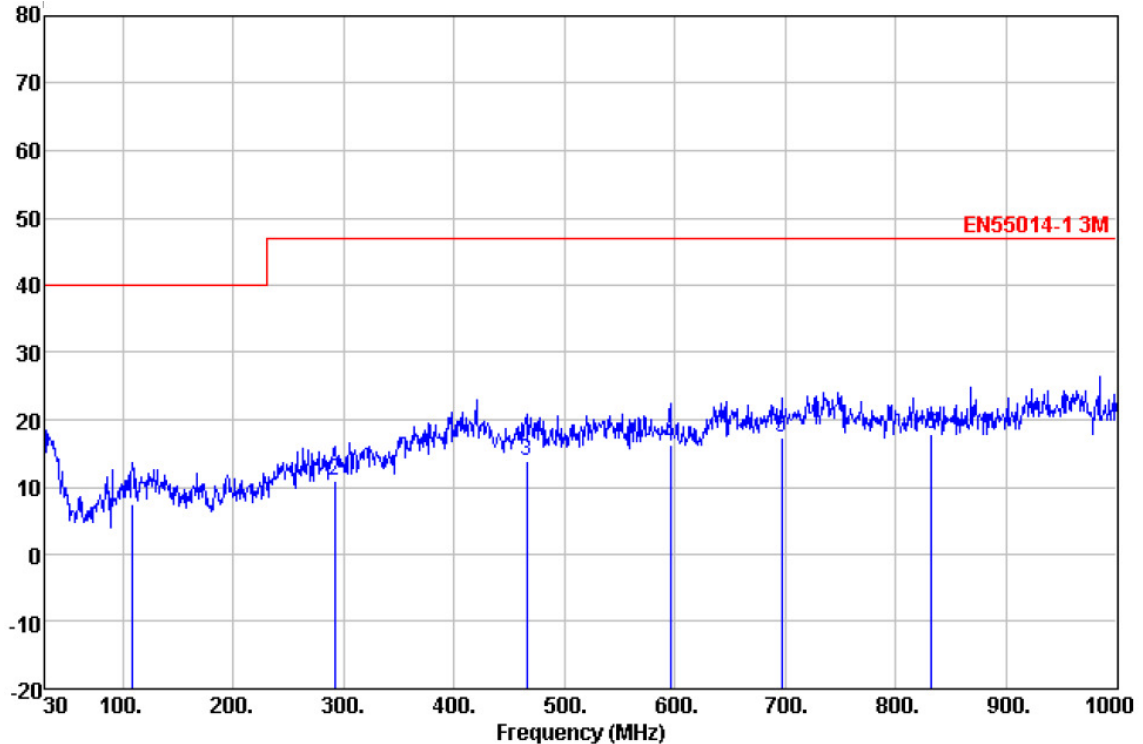
Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over Limit	Remark
MHz	dBμV	dB/m	dB	dB	dBμV/m	dBμV/m	dB	
123.120	25.80	11.87	0.32	26.50	11.49	40.00	-28.51	QP
252.130	24.42	11.72	0.78	26.00	10.92	47.00	-36.08	QP
331.670	24.69	13.72	1.13	25.99	13.55	47.00	-33.45	QP
520.820	25.88	17.50	1.54	27.08	17.84	47.00	-29.16	QP
583.870	26.79	18.54	1.51	27.23	19.61	47.00	-27.39	QP
756.530	26.15	20.20	1.84	27.09	21.10	47.00	-25.90	QP

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read	Antenna	Cable	Preamp	Limit	Over	
MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
	dBμV	dB/m	dB	dB	dBμV/m	dBμV/m	dB
108.570	22.06	11.81	0.24	26.56	7.55	40.00	-32.45 QP
291.900	23.11	12.66	0.97	25.84	10.90	47.00	-36.10 QP
465.530	22.56	16.80	1.38	26.92	13.82	47.00	-33.18 QP
595.510	23.32	18.70	1.53	27.23	16.32	47.00	-30.68 QP
696.390	23.58	18.85	1.87	27.08	17.22	47.00	-29.78 QP
832.190	22.45	20.53	1.95	26.94	17.99	47.00	-29.01 QP

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.



8 Electromagnetic Susceptibility Test Results

8.1 Performance Criteria Description in Clause 6 of EN 55014-2

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.
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.
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.

8.2 ESD

Test Requirement:	EN 55014-2
Test Method:	EN 61000-4-2
Criterion Required:	B
Test Date:	2014-11-20
Test Voltage:	DC 1.5V
Discharge Impedance:	330 Ω / 150 pF
Discharge Voltage:	Air Discharge: 8 kV
	Contact Discharge: 4 kV
	VCP/HCP: 4 kV
Polarity:	Positive & Negative
Number of Discharge:	Minimum 10 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

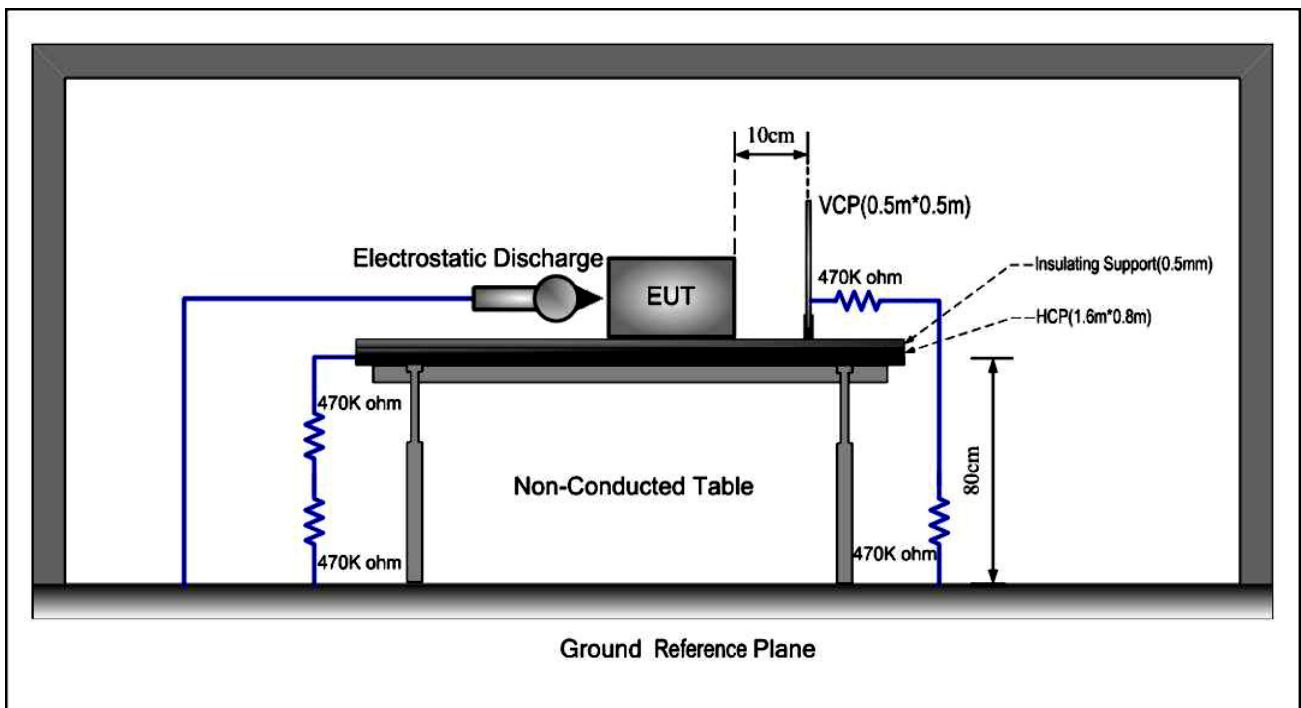
8.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1009 mbar

EUT Operation: Test the EUT in movement mode and idle mode.

8.2.2 Test Setup and Procedure



1. Contact discharge was applied only to conductive surfaces of the EUT. Air discharge was applied only to non-conducted surfaces of the EUT.
2. The EUT was put on a 0.8m high wooden table for table-top equipment or 0.1m high for floor standing equipment standing on the ground reference plane (GRP).
3. A horizontal coupling plane(HCP) 1.6m by 0.8m in size was placed on the table, and the EUT with its cables were isolated from the HCP by an insulating support thick than 0.5mm. The VCP 0.5m by 0.5m in size while HCP were constructed from the same material type and thickness as that of the GRP, and connected to the GRP via a 470kΩ resistor at each end. The distance between EUT and any of the other metallic surfaces except the GRP, HCP and VCP was greater than 1m.
4. During the contact discharges, the tip of the discharge electrode touched the EUT before the discharge switch is operated. During the air discharges, the round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT.
5. After each discharge, the ESD generator was removed from the EUT, the generator is then retriggered for a new single discharge. For ungrounded product, a discharge cable with two resistances was used after each discharge to remove remnant electrostatic voltage. 10 times of each polarity single discharge were applied to HCP and VCP.

8.2.3 Test Results

Direct Application Test Results

Observations:

Test Point:

1. All insulated enclosure & seams.
2. All accessible metal parts of the enclosure.

Direct Application		Test Results		
Discharge Level (kV)	Polarity (+/-)	Test Point	Contact Discharge	Air Discharge
8	+/-	1	N/A	A
4	+/-	2	A	N/A

Indirect Application Test Results

Observations:

Test Point:

1. All sides.

Indirect Application		Test Results		
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
4	+/-	1	A	A

Results:

A: No degradation in the performance of the EUT was observed.

N/A: Not applicable (floor mounted EUT or not requested by Standard).



8.3 Radiated Immunity 80 MHz to 1000 MHz

Test Requirement: EN 55014-2

Criterion Required: A

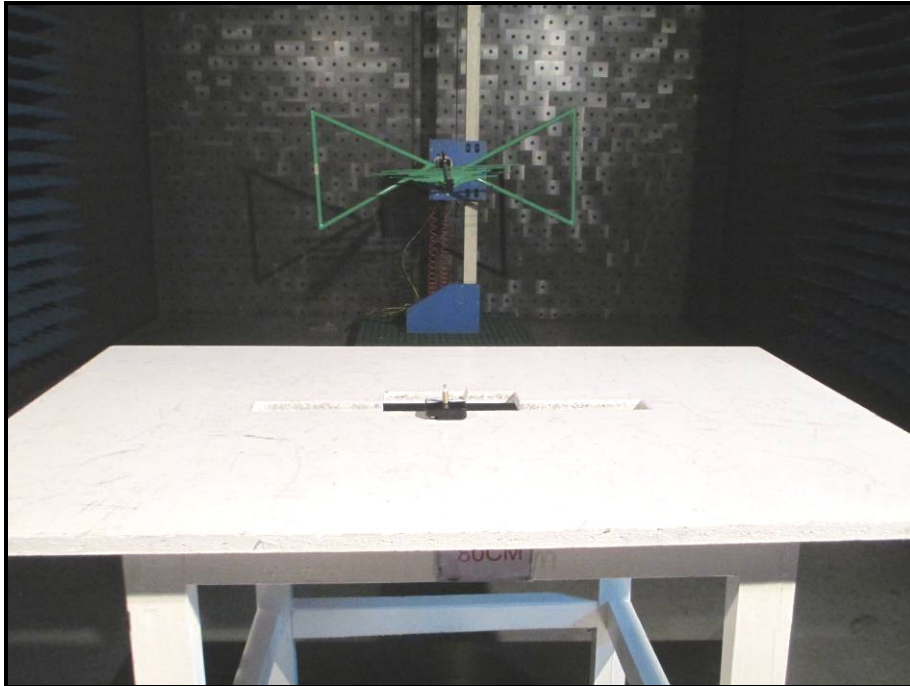
Test Date: N/A: See Remark Below

Remark:

There is no need for Radiated Immunity 80 MHz to 1000 MHz test to be performed on this product in accordance with EN 55014-2 because the test is only applicable to the ride on toys operating with electronic devices for Category III products.

9 Photographs

9.1 Radiated Emission Test Setup

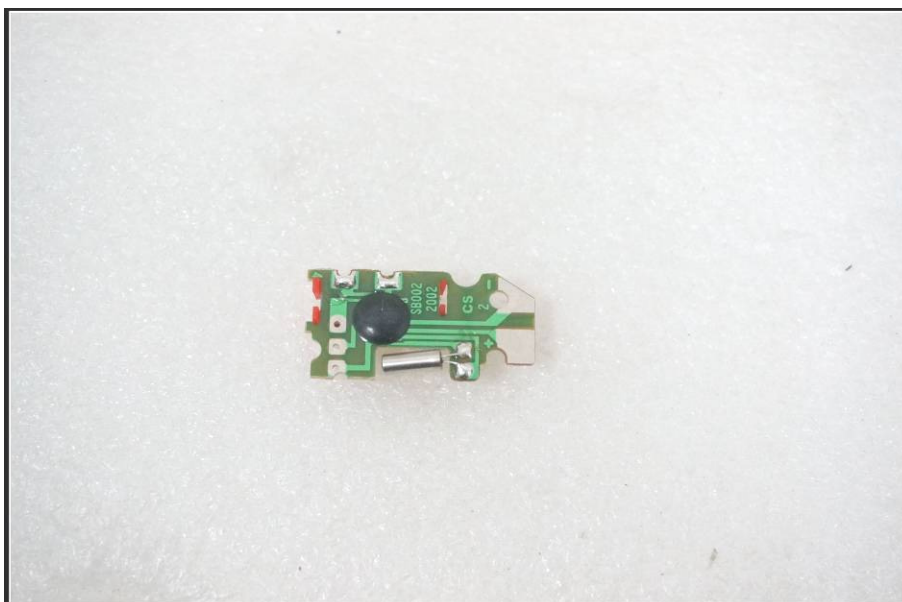
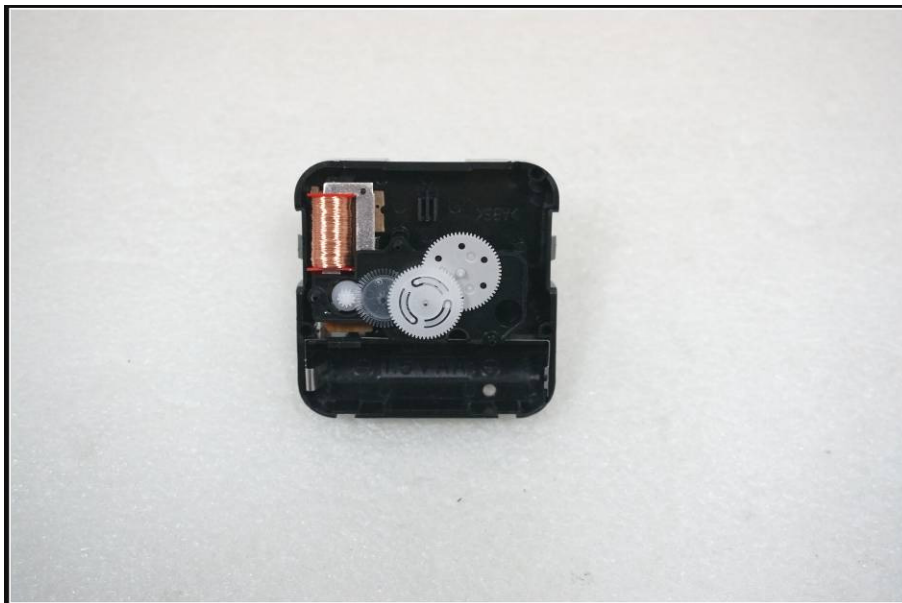


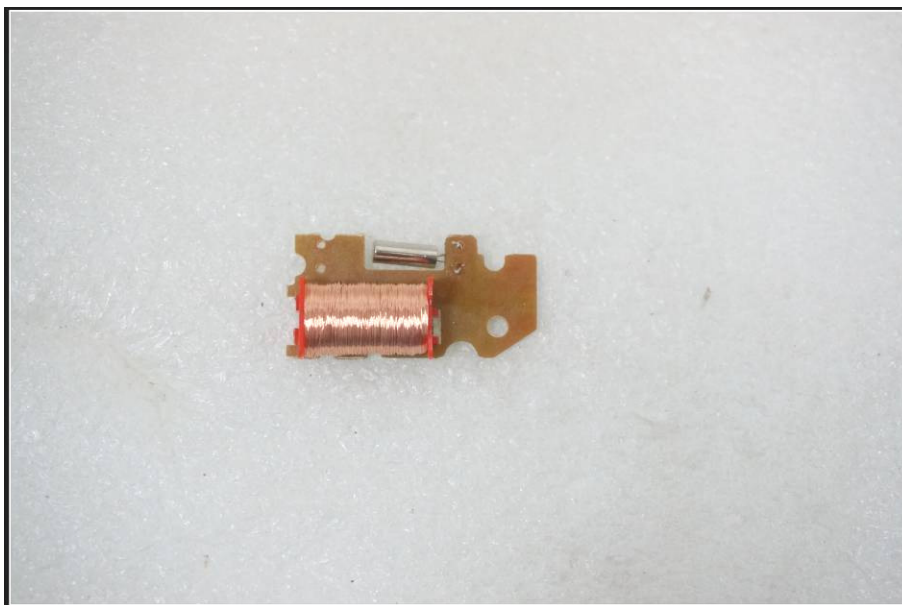
9.2 ESD Test Setup



9.3 EUT Constructional Details







--End of Report--