SGS-CSTC Standards Technical Services Co., Ltd.
Guangzhou Branch

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TEST REPORT

Application No.:	GZEM1505002367LM
Applicant:	Fuzhou Yuxin Electronic Co., Ltd
Manufacturer:	The same as applicant
Product Description:	Stud Center Finder, Metal and AC Live Wire Detector
Model No:	TH210
Standards:	EN 61326-1:2013
Date of Receipt:	2015-05-25
Date of Test:	2015-05-26 to 2015-05-27
Date of Issue:	2015-06-01
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.

Kobe Jian
Manager

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00		2015-06-01		Original

Authorized for issue by:				
Tested By		Michael Huang **(Michael Huang) /Project Engineer**		2015-05-26 to 2015-05-27 **Date**
Prepared By		Icy Chen **(Icy Chen) / Clerk**		2015-05-29 **Date**
Checked By		Kobe. Jian **(Kobe Jian) / Reviewer**		2015-06-01 **Date**

3 Test Summary

Electromagnetic Interference (EMI)				
Test	**Test Requirement**	**Test Method**	**Class / Severity**	**Result**
Radiated Emission (30MHz to 1GHz)	EN 61326-1:2013	CISPR 11:2009 +A1:2010	Group1, Class B	PASS
Electromagnetic Susceptibility(EMS) [1)]				
Test	**Test Requirement**	**Test Method**	**Class / Severity**	**Result**
ESD (Electrostatic Discharge)	EN 61326-1:2013	IEC 61000-4-2:2008	± 4 kV Contact ± 2,4,8 kV Air	PASS
Radiated Immunity (80 MHz to 2.7 GHz)	EN 61326-1:2013	IEC 61000-4-3:2006+ A1:2007+A2:2010	(80MHz to 1GHz) 3V/m, 80%, 1kHz Amp. Mod. (1.4GHz to 2GHz) 3V/m, 80%, 1kHz Amp. Mod. (2GHz to 2.7GHz) 1V/m, 80%, 1kHz Amp. Mod.	PASS
Power Frequency Magnetic Field	EN 61326-1:2013	IEC 61000-4-8:2009	50/60 Hz 3 A/m	N/A
Remark :				
[1)] **:** the EUT is declared to be **portable test and measurement equipment powered by battery.**				
N/A:Not applicable, please refer to clause 8.4 for detail.				

4 Contents

5 General Information

5.1 Client Information

Applicant:	Fuzhou Yuxin Electronic Co., Ltd
Address of Applicant:	4F NO.53 Juyuanzhou Industrial Estate, Jinshan Development District Fuzhou, Fujian, China
Manufacturer:	The same as applicant
Address of Manufacturer:	The same as applicant

5.2 General Description of E.U.T.

Product Description:	Stud Center Finder, Metal and AC Live Wire Detector
Model No:	TH210

5.3 Details of E.U.T.

Rated Supply Voltage:	DC 9V = 1 x 9V Size '6F22' 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: LCD display of the EUT.

5.9 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech 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, IECEE 01:2006-10 and Rules of procedure IECEE 02:2006-10, and the relevant IECEE CB-Scheme Operational documents.

6 Equipment List

RE in Chamber						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YYYY-MM-DD)	Cal.Due date (YYYY-MM-DD)
EMC0525	Compact Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	N/A	2014-12-5	2015-12-5
EMC0522	EMI Test Receiver	Rohde & Schwarz	ESIB26	100283	2015-03-02	2016-03-02
EMC0056	EMI Test Receiver	Rohde & Schwarz	ESCI	100236	2015-04-07	2016-04-07
EMC0528	RI High frequency Cable	SGS	20 m	N/A	2014-04-19	2016-04-19
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	2015-03-02	2016-03-02
EMC2065	Amplifier	HP	8447F	N/A	2014-08-25	2015-08-25
EMC0075	310N Amplifier	Sonama	310N	272683	2015-03-02	2016-03-02
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-ELEKTRONI	BBHA 9170	9170-375	2014-05-26	2017-05-26
EMC2079	High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	009	2015-03-02	2016-03-02
EMC2069	2.4GHz filter	Micro-Tronics	BRM 50702	149	2015-03-02	2016-03-02
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 (YYYY-MM-DD)	Cal.Due date (YYYY-MM-DD)
EMC2071	ESD Simulator	TESEQ AG	NSG 435	6739	2015-3-2	2016-3-2
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	2014-9-16	2015-9-16

Radiated Immunity						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YYYY-MM-DD)	Cal.Due date (YYYY-MM-DD)
EMC0525	Compact 3m Semi-Anechoic Chamber	Changzhou zhongyu	N/A	N/A	2014-12-05	2015-12-05
EMC0516	Signal Generator	Rohde & Schwarz	SMR20	100416	2015-03-02	2016-03-02
EMC0519	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	2014-05-04	2017-05-04
EMC0915	Amplifier	EMPOWER	BBS2E4ALP	1007	2015-03-02	2016-03-02
EMC0914	Amplifier	EMPOWER	BBS3Q5KIN	1006	2015-03-02	2016-03-02
EMC0904	Power Meter	Rohde & Schwarz	NRVS	825770/074	2015-03-02	2016-03-02
EMC0071	URV5-Z2 Insert. Unit	R&S	URV5-Z2	100309	2015-03-02	2016-03-02
EMC0917	Dual Directional Coupler	EMCA	715-10-1.400	70031	2014-08-30	2015-08-30
EMC0907	Electric Field Probe	Wandel & Goltermann	EMC-20	M-0063	2015-04-10	2016-04-10
EMC2055	Oscilloscope	Tektronix	TDS3052C	C011815	2015-03-02	2016-03-02
EMC0909	Monitor System	Mitsubish Corp.	M-0552AB	91510185	N/A	N/A

General used equipment						
No.	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. date (YYYY-MM-DD)	Cal.Due date (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 61326-1

Test Method: CISPR 11

Test Date: 2015-05-27

Frequency Range: 30 MHz to 1GHz

Measurement Distance: 10m

Class: Group 1, Class B

Detector: Peak for pre-scan
Quasi-Peak for final measurement

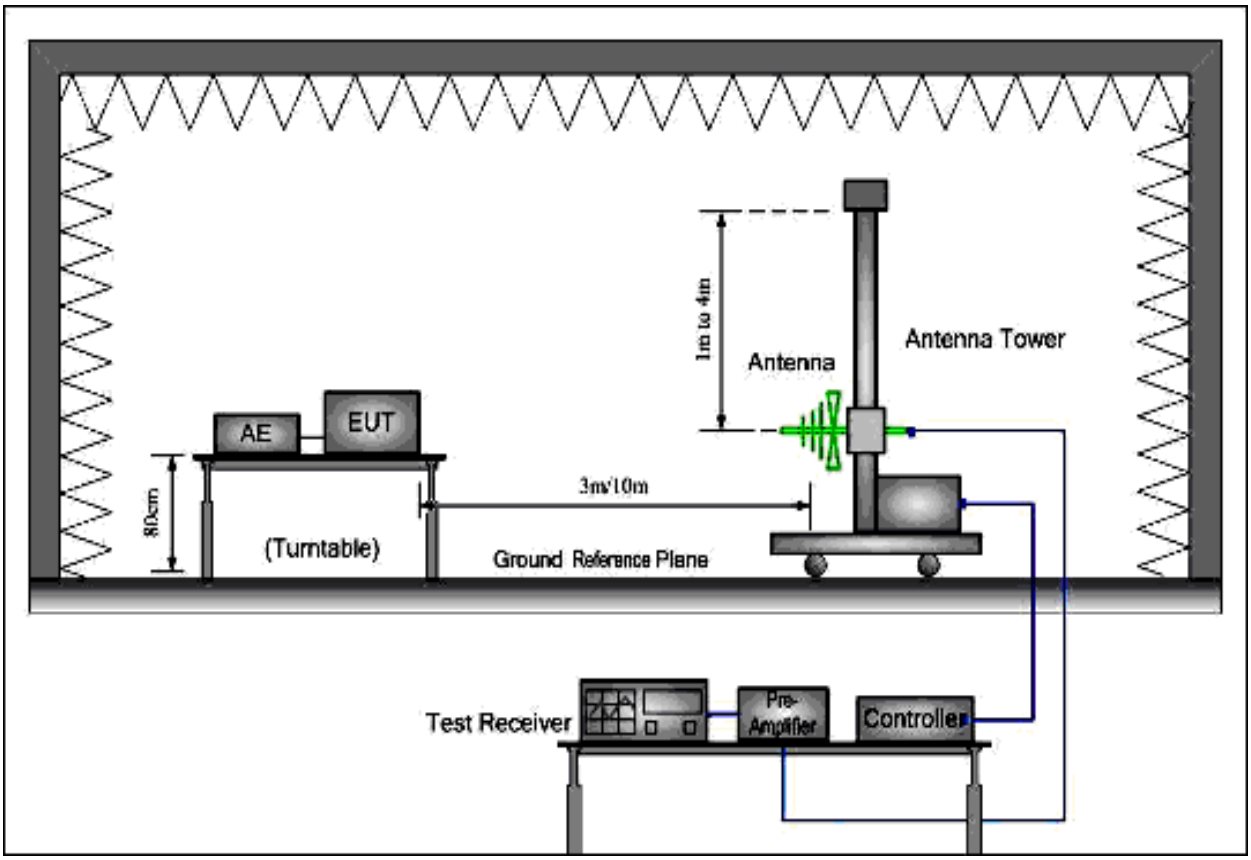
Limit:

Frequency range	Quasi-peak limits
MHz	dB (μV/m)
30 to 230	30
230 to 1000	37
At transitional frequencies the lower limit applies.	

7.1.1 E.U.T. Operation

Test the EUT in measuring mode.

7.1.2 Test Setup and Procedure



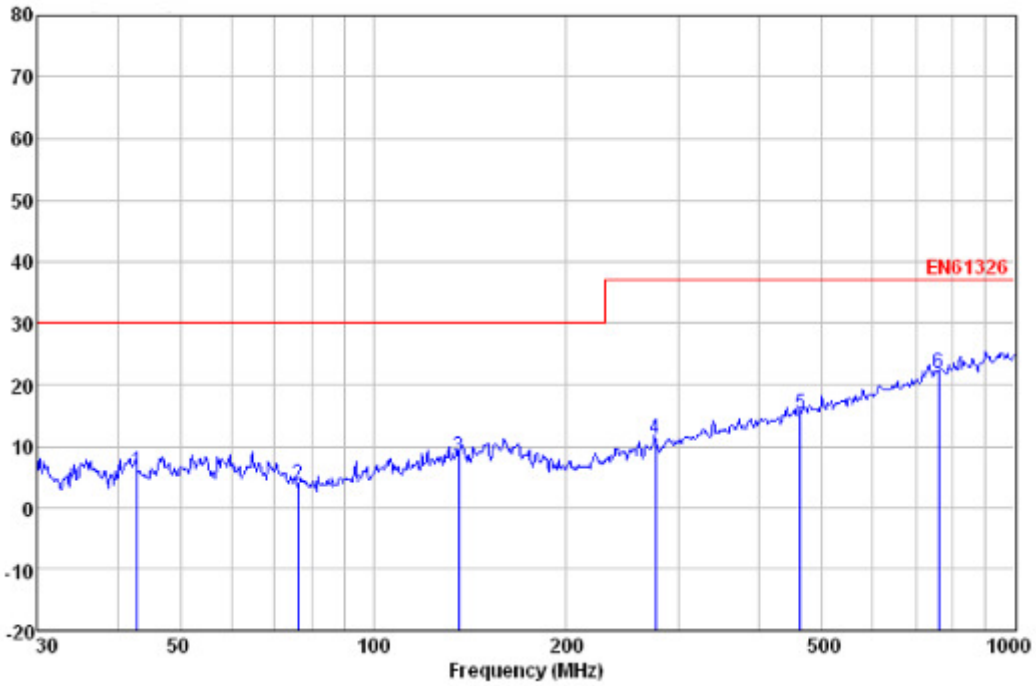
1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. The mains cables shall drape to the ground reference plane.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal 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

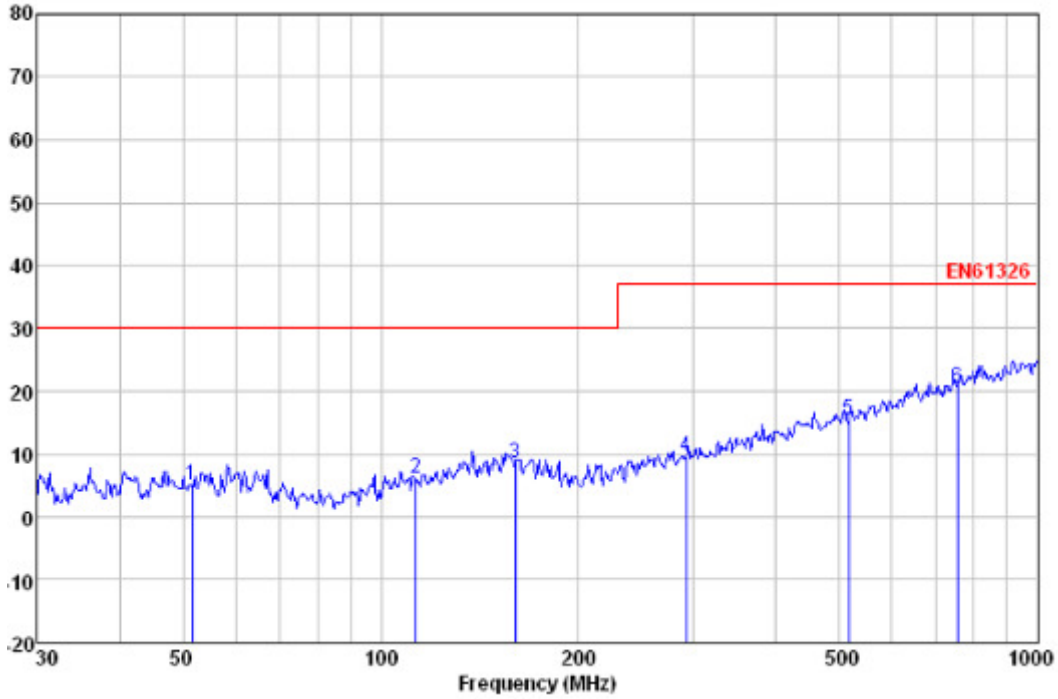
Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
42.900	23.77	12.01	1.02	31.00	5.80	30.00	-24.20	QP
76.512	24.47	8.86	1.27	31.00	3.60	30.00	-26.40	QP
135.982	25.46	12.37	1.52	31.04	8.31	30.00	-21.69	QP
275.157	27.38	12.49	2.33	31.01	11.19	37.00	-25.81	QP
462.346	26.44	16.77	3.02	30.97	15.26	37.00	-21.74	QP
760.704	27.23	21.88	3.71	30.90	21.92	37.00	-15.08	QP

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

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
51.481	23.16	11.79	1.10	31.00	5.05	30.00	-24.95	QP
112.920	25.05	10.59	1.43	31.01	6.06	30.00	-23.94	QP
160.346	24.82	13.15	1.75	31.08	8.64	30.00	-21.36	QP
292.058	25.32	12.92	2.38	31.00	9.62	37.00	-27.38	QP
515.437	25.63	17.60	3.11	30.98	15.36	37.00	-21.64	QP
755.387	25.84	21.87	3.69	30.90	20.50	37.00	-16.50	QP

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

8 Electromagnetic Susceptibility Test Results

8.1 Performance Criteria Description in Clause 6.4 of EN 61326-1

Criterion A:	The equipment shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
Criterion B:	The equipment shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. 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, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment 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.

8.2 ESD

Test Requirement:	EN 61326-1	
Test Method:	IEC 61000-4-2	
Criterion Required:	B	
Test Date:	2015-05-26	
Discharge Impedance:	330 Ω / 150 pF	
Discharge Voltage:	Air Discharge:	2,4,8 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	

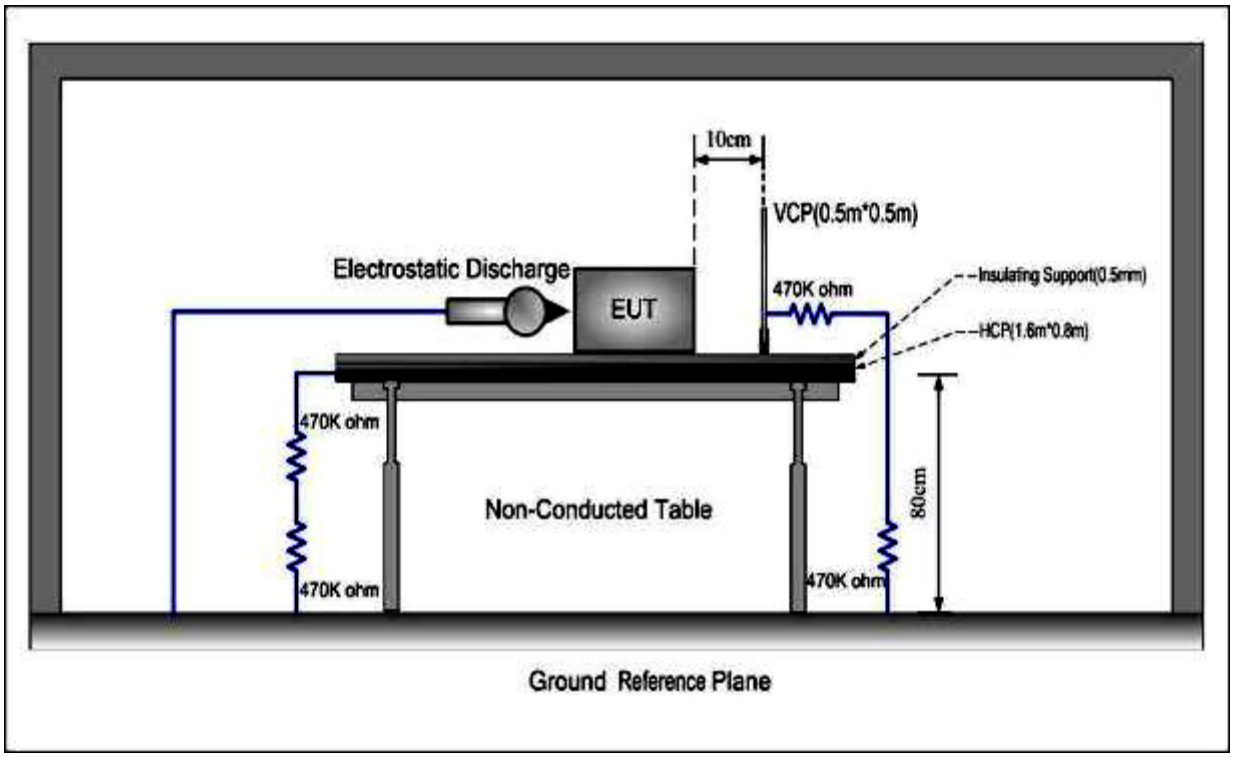
8.2.1 E.U.T. Operation

Operating Environment:

Temperature: 20 °C Humidity: 55 % RH Atmospheric Pressure: 1015 mbar

EUT Operation: Test the EUT in measuring 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 Enclosure & Seams.
2. Screws of the EUT.

Direct Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Contact Discharge**	**Air Discharge**
2,4,8	+/-	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 (Not required in the standard or floor mounted the EUT).

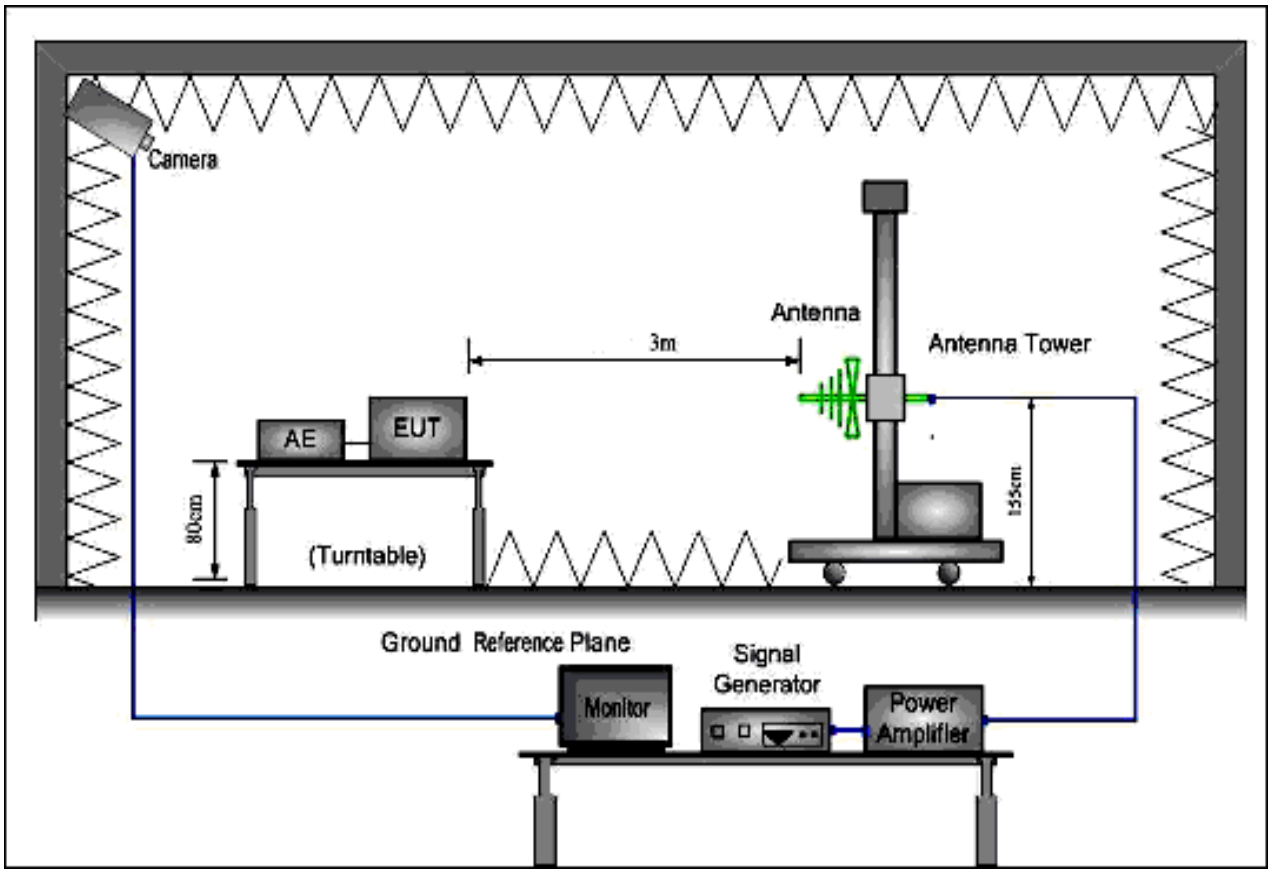
8.3 Radiated Immunity 80 MHz to 2.7 GHz

Test Requirement:	EN 61326-1
Test Method:	IEC 61000-4-3
Criterion Required:	A
Test Date:	2015-05-26
Frequency Range:	80 MHz to 2.7 GHz
Test level:	3 V/m (80 MHz to 1 GHz) 3 V/m (1.4 GHz to 2.0 GHz) 1 V/m (2.0 GHz to 2.7GHz)
Modulation:	80%, 1 kHz Amplitude Modulation
Antenna Polarization:	Horizontal & Vertical

8.3.1 E.U.T. Operation

Test the EUT in measuring mode with LCD display and idle mode.

8.3.2 Test Setup and Procedure



1. For table-top equipment, the EUT was placed in the chamber on a non-conductive table 0.8m high. For arrangement of floor-standing equipment, the EUT was mounted on a non-conductive support 0.1m above the supporting plane. For human body-mounted equipment, the EUT may be tested in the same manner as table top items.
2. If possible, a minimum of 1 m of cable is exposed to the electromagnetic field. Excess length of cables interconnecting units of the EUT shall be bundled low-inductively in the approximate center of the cable to form a bundle 30 cm to 40 cm in length.
3. The EUT was initially placed with one face coincident with the calibration plane. The EUT face being illuminated was contained within the UFA (Uniform Field Area).
4. The frequency ranges to be considered were swept with the signal modulated and pausing to adjust the RF signal level or to switch oscillators and antennas as necessary. Where the frequency range was swept incrementally, the step size did not exceed 1% of the preceding frequency value.
5. The dwell time of the amplitude modulated carrier at each frequency was not be less than the time necessary for the EUT to be exercised and to respond, and was not less than 0.5 s.
6. The test normally was performed with the generating antenna facing each side of the EUT.
7. The polarization of the field generated by each antenna necessitates testing each selected side twice, once with the antenna positioned vertically and again with the antenna positioned horizontally.
8. The EUT was performed in a configuration to actual installation conditions, a video camera and/or a audio monitor were used to monitor the performance of the EUT.

8.3.3 Test Results

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Result / Observations
80 MHz-1 GHz & 1.4GHz- 2.0GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment	V	Front	A
			H		A
			V	Rear	A
			H		A
			V	Left	A
			H		A
			V	Right	A
			H		A
			V	Top	A
			H		A
			V	Bottom	A
			H		A
2.0GHz–2.7GHz	1V/m	1 kHz, 80 % Amp. Mod, 1 % increment	V	Front	A
			H		A
			V	Rear	A
			H		A
			V	Left	A
			H		A
			V	Right	A
			H		A
			V	Top	A
			H		A
			H	Bottom	A
			V		A

Remarks:

Front: the front of the EUT faces to transmitting antenna (refer to Radiated Immunity test setup photo)

A: No degradation in the performance of the E.U.T. was observed.

The EUT does meet the Radiated Immunity requirements of Standard.

8.4 Power Frequency Magnetic Field Immunity

Test Requirement: EN 61326

Criterion Required: A

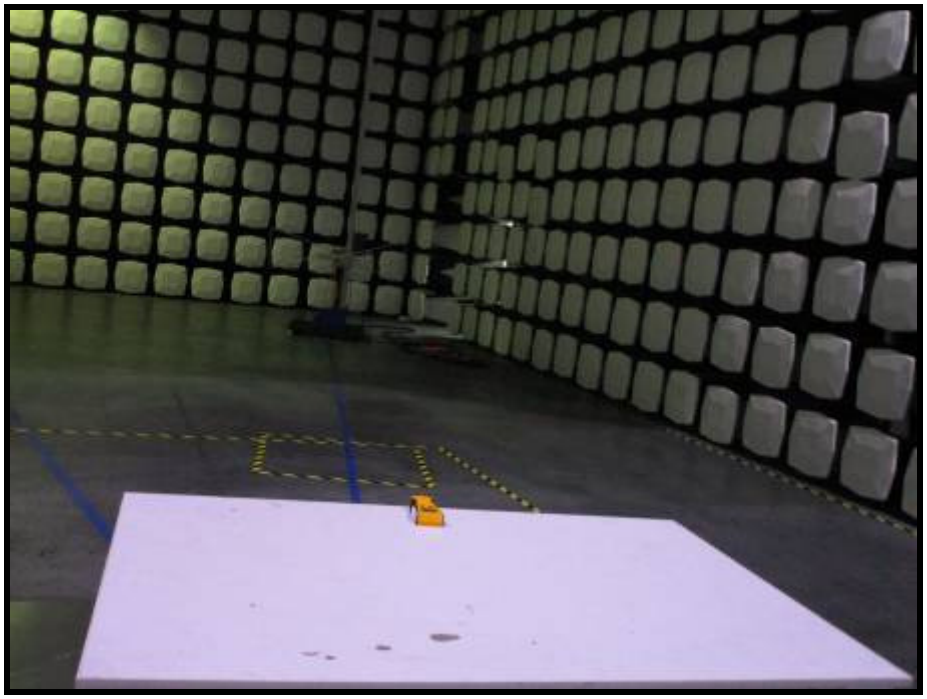
Test Date: **N/A: See Remark Below**

Remark:

There is no need for Power Frequency Magnetic Field Immunity test to be performed on this product in accordance with EN 61326-1:2013 because this product does not contain any magnetically sensitive equipment.

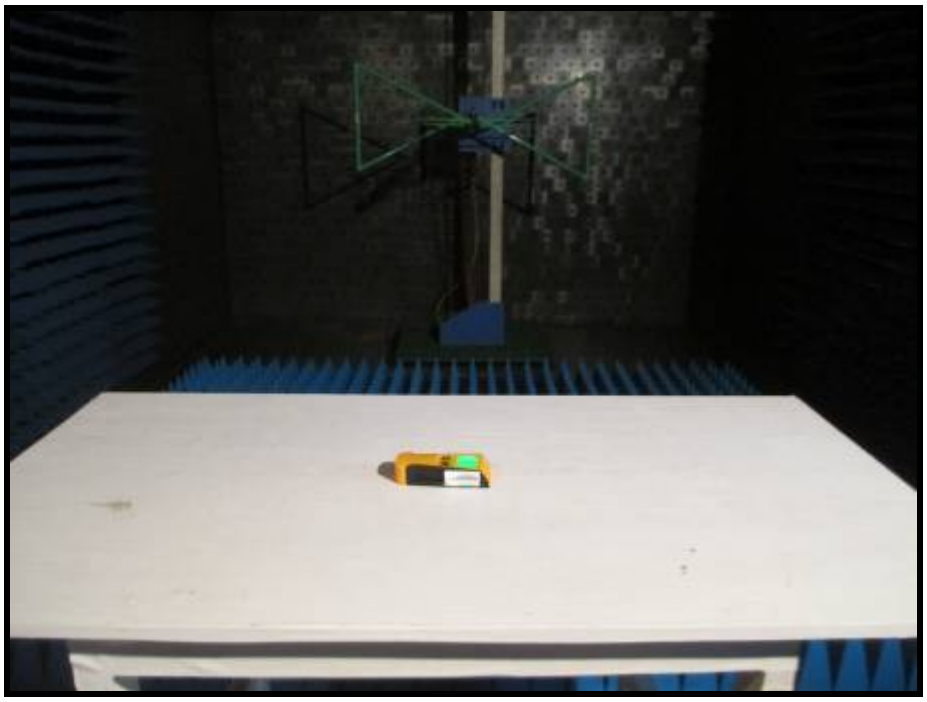
9 Photographs

9.1 Radiated Emission Test Setup

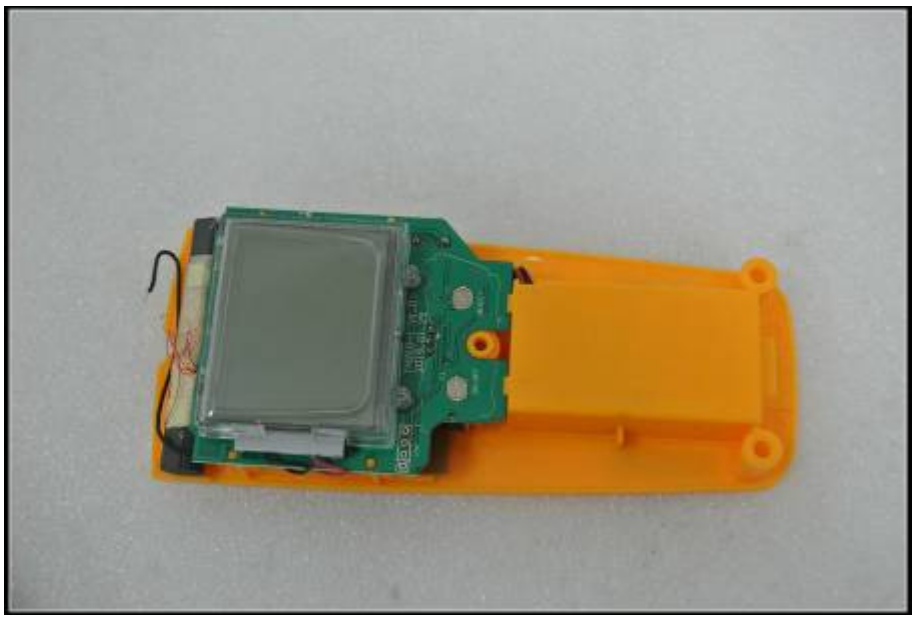


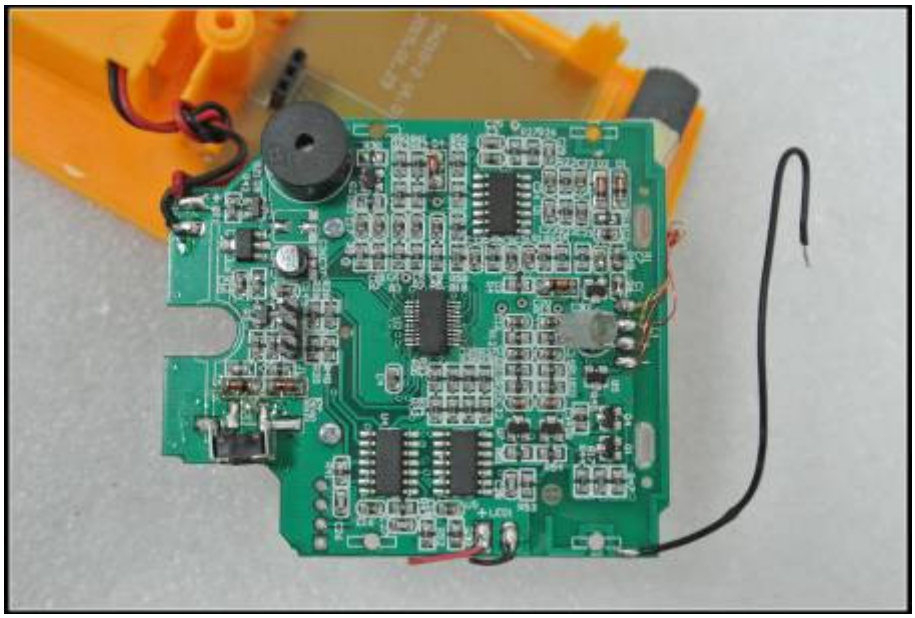
9.2 ESD Test Setup

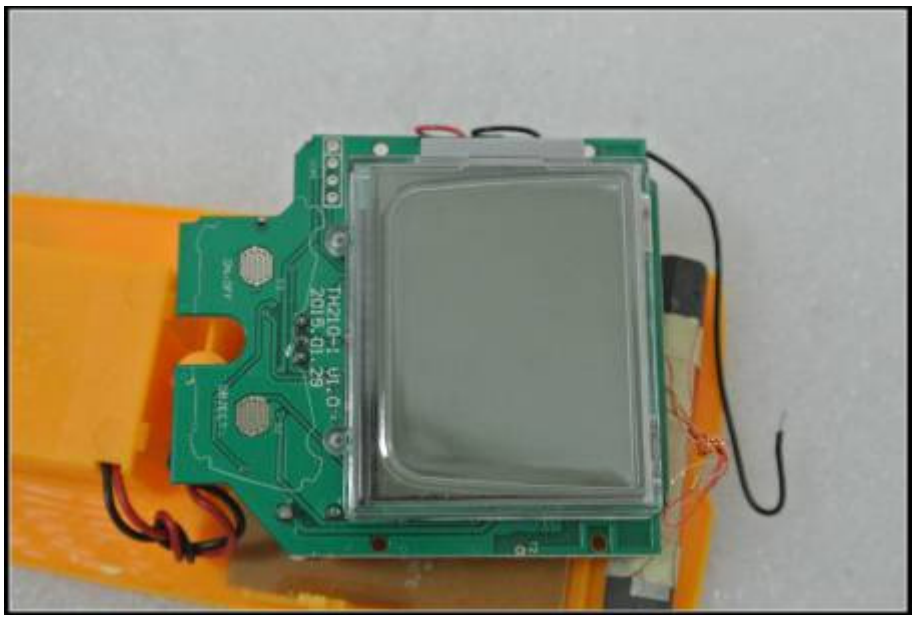
9.3 Radiated Immunity Test Setup



9.4 EUT Constructional Details







--End of Report--