



588 West Jindu Road, Songjiang District, Shanghai, China
Telephone: +86 (0) 21 6191 5666
Fax: +86 (0) 21 6191 5678
ee.shanghai@sgs.com

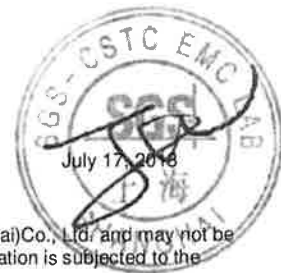
VERIFICATION OF EMC COMPLIANCE

Verification No.: SHEM130700125901TXC
Applicant: HORIZON TOOL INC
Address of Applicant: 4300 WATERLEAF CT GREENSBORO NC.27410
Product Description: tester
Model No: #74
Sufficient samples of the product have been tested and found to be in conformity with
Test Standard: EN 61326-1:2006, EN 61326-2-2:2006
as shown in the
Test Report Number(s): SHEM130700125901

This verification of EMC Compliance has been granted to the applicant based on the results of the tests, performed by laboratory of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. on the sample of the above-mentioned product in accordance with the provisions of the relevant specific standards and Directive 2004/108/EC. The affixing of the CE marking presumes in addition that the conditions in annexes III and V of the Directive are fulfilled.



Tony Wu
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.



Copyright of this verification is owned by SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. and may not be reproduced other than in full and with the prior approval of the General Manager. This verification is subjected to the governance of the General Conditions of Services, printed overleaf.

Member of SGS Group (Société Générale de Surveillance)

Note: You may contact us to validate this document by email address: ee.shanghai@sgs.com



**SGS-CSTC Standards
Technical Services
(Shanghai) Co., Ltd.**

588 West Jindu Road, Songjiang District, Shanghai, China
Telephone: +86 (0) 21 6191 5666
Fax: +86 (0) 21 6191 5678
ee.shanghai@sgs.com

Report No.: SHEM130700125901
Page: 1 of 25

1 Cover Page

TEST REPORT

Application No.:	SHEM1307001259TX
Applicant:	HORIZON TOOL INC
Manufacturer:	INB INTERNATIONAL INC.
Factory:	Shanghai Youda Electrical Appliance Co., Ltd.
Product Name:	tester
Model No.(EUT):	#74
Standards:	EN 61326-1:2006 EN 61326-2-2:2006
Date of Receipt:	July 09, 2013
Date of Test:	July 10, 2013
Date of Issue:	July 17, 2013
Test Result:	Pass*

* In the configuration tested, the EUT (Equipment under test) 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		July 15, 2013		Original

Authorized for issue by:			
Engineer	Zoe Cang		Date: (July 10, 2013)
	Print Name		
Clerk	Susie Liu		Date: (July 15, 2013)
	Print Name		
Reviewer	Kenx Xu		Date: (July 17, 2013)
	Print Name		



3 Test Summary

ELECTROMAGNETIC INTERFERENCE (EMI)				
Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1000MHz)	EN 61326-1:2006	CISPR 11: 2009+A1:2010	Table 5-Group 1 Class B	PASS
Electromagnetic Susceptibility(EMS)				
Test	Test Requirement	Test Method	Class / Severity	Result
ESD	EN 61326-2-2:2006	EN 61000-4-2: 2009	Contact: $\pm 2, 4$ kV Air: $\pm 2, 4, 8$ kV	PASS
Radiated Immunity	EN 61326-1:2006	EN 61000-4-3: 2006+A1:2008+ A2:2010	3V/m(80M to 1GHz) 3V/m(1.4G to 2GHz) 1V/m(2.0G to2.7GHz)	PASS



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	Abnormalities from Standard Conditions	5
5.7	Modification/Retest Record	5
5.8	Monitoring of EUT for All Immunity Test.....	5
5.9	Test Location.....	6
5.10	Test Facility.....	6
5.11	Measurement Uncertainty.....	7
6	EQUIPMENT USED DURING TEST	8
7	ELECTROMAGNETIC INTERFERENCE TEST RESULTS	10
7.1	Radiated Emissions, 30MHz to 1GHz	10
8	ELECTROMAGNETIC SUSCEPTIBILITY TEST RESULTS	14
8.1	Performance Criteria Description in EN 61326-1.....	14
8.2	ESD.....	15
8.3	Radiated Immunity.....	17
9	PHOTOGRAPHS (TEST SETUP FOR THE EUT)	20
9.1	Radiated Emission Test Setup	20
9.2	ESD Test Setup	20
9.3	Radiated Immunity Test Setup	21
10	EUT CONSTRUCTIONAL DETAILS	22
10.1	Exterior of EUT	22
10.2	Interior of EUT	24-25

5 General Information

5.1 Client Information

Applicant: HORIZON TOOL INC
Address of Applicant: 4300 WATERLEAF CT GREENSBORO NC.27410
Manufacturer: INB INTERNATIONAL INC.
Address of Manufacturer: room 1710, A building, lv zhou square no.137, bailan road putou district, shanghai, china
Factory: Shanghai Youda Electrical Appliance Co., Ltd.
Address of Factory: jiasongzhong RD, huaxin town, qingpu district, shanghai

5.2 General Description of E.U.T.

Product Name: tester
Model No.(EUT): #74

5.3 Details of E.U.T.

Power Supply: 3*1.5V "AA" Battery Size DC 4.5V
Cable Type: N/A
Functions/Modes: Testing mode
Testing mode: Keep EUT testing the current.

5.4 Description of Support Units

The EUT has been tested independently.

5.5 Deviation from Standards

All Immunity tests to EN 61326-1 were performed in accordance with the latest version of EN 61000-4-x and not IEC 61000-4-x. (x=2,3).

5.6 Abnormalities from Standard Conditions

None.

5.7 Modification/Retest Record

None.

5.8 Monitoring of EUT for All Immunity Test

Audio: None.
Visual: Working status of the EUT.

5.9 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612.

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.

5.10 Test Facility

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2014-07-26.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2015-02-22.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2014-09-20.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively. Date of Registration: 2012-05-29. Date of Expiry: 2015-05-28.

5.11 Measurement Uncertainty

According to CISPR 16-4-2.

Test Item	Frequency Range	Measurement Uncertainty	U _{CISPR}
Conducted Emission at mains port using AMN	9kHz-150kHz	3.2dB	3.8dB
Conducted Emission at mains port using AMN	150kHz-30MHz	2.6dB	3.4dB
Conducted Emission at mains port using VP	9kHz-30MHz	3.9dB	2.9dB
Conducted Emission at telecommunication port using AAN	150kHz-30MHz	4.5dB	5.0dB
Radiated Emission	30MHz-1000MHz	4.3dB	6.3dB
Radiated Emission	1GHz-18GHz	4.5dB	5.2dB(1GHz-6GHz)
			5.5dB(6GHz-18GHz)
Disturbance Power	30MHz-300MHz	2.6dB	4.5dB
Remark: AMN – Artificial Mains Network VP – Voltage Probe ANN – Asymmetric Artificial Network			

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

6 Equipment list

Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2013-02-23	2014-02-22
2	Antenna	SCHWARZBE CK	VULB916 8	9168-313	2013-03-07	2014-03-06
3	CONTROLLER	INNCO	CO200	474	/	/
4	Antenna	SCHWARZBE CK	BBHA912 0D	9120D-67 9	2013-03-07	2014-03-06
5	Antenna	SCHWARZBE CK	BBHA917 0	9170-373	2013-03-07	2014-03-06
6	Low noise amplifier	LNA6900	TESEQ	71033	2013-02-23	2014-02-22

Electrostatic Discharge Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	Electrostatic Discharge Simulator	TESEQ	NSG 437	468	2012-08-13	2013-08-12

Radiated Immunity

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Single Generator	Rohde & Schwarz	SMR40	100555	2013-02-23	2014-02-22
2	Calibrated Stacked Lagarithmic-Periodic Test-Antenna	SCHWARIBF CK	STLP 9128D	9128 D 055	2012-11-13	2013-11-12
3	Stacked DoubleLog-Per. Antenna	SCHWARIBF CK	STLP 9149	9149-187	2012-11-13	2013-11-12
4	Power Amplifiers	MILMEGA	80RF1000-250	1053058	2012-11-29	2013-11-28
5	Power Amplifiers	MILMEGA	AS0840-55-55	1053059	2012-11-23	2013-11-22
6	Power Meter	Rohde & Schwarz	NRP	101641	2013-02-23	2014-02-22
7	Electromagnetic Field Probe	ETS-Lindgren	HI-6105	D445 050 S	2012-10-17	2013-10-16

General Equipment

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Digital pressure meter	YONGZHI	DYM3-01	101012	2012-01-16	2014-01-15
2	Digital Multimeter	FLUKE	17B	10560713	2013-01-07	2014-01-06
3	Temperature & humidity recorder	ShangHai weather meter work	ZJ 1-2B	0804081 0802150 0805177	2012-08-27	2013-08-26

7 Electromagnetic Interference Test Results

7.1 Radiated Emissions, 30MHz to 1GHz

Test Requirement: EN 61326-1
 Test Method: CISPR 11
 Test Date: July 10, 2013
 Test Voltage: DC 4.5V
 Frequency Range: 30 MHz to 1 GHz
 Measurement Distance: 3m
 Class: Table 5-Group 1 Class B
 Detector: Peak for pre-scan (120 kHz resolution bandwidth)
 Limit:
 For 3m

Frequency range	Quasi-peak limits(Class B)
MHz	dB(μ V/m)
30 to 230	40
230 to 1000	47
At the transitional frequencies, the more stringent limit shall apply.	

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.1 °C Humidity: 52.0% RH Atmospheric Pressure: 102.3 kPa

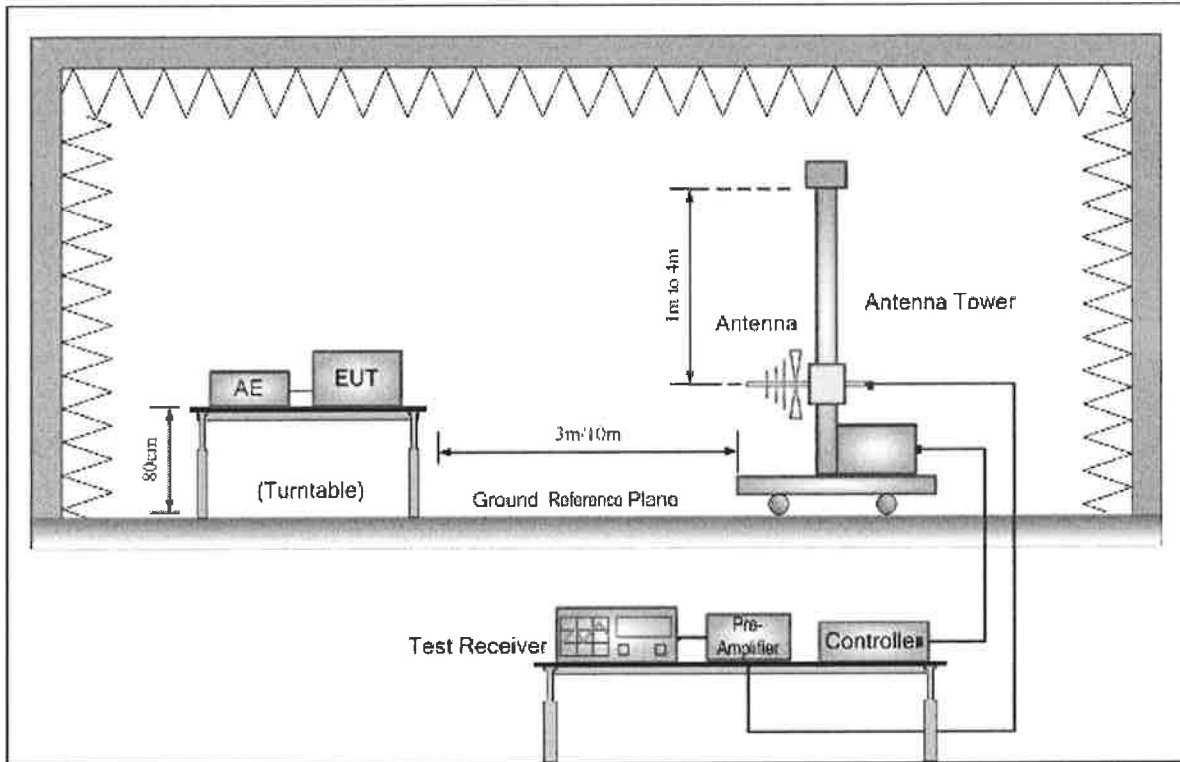
Test mode: Testing mode

Pre-scan was performed with peak detected on all ports, Quasi-peak measurements were performed at the frequencies at which maximum peak emission level were detected.

Please see the attached Quasi-peak test results.

For radiated emission: Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

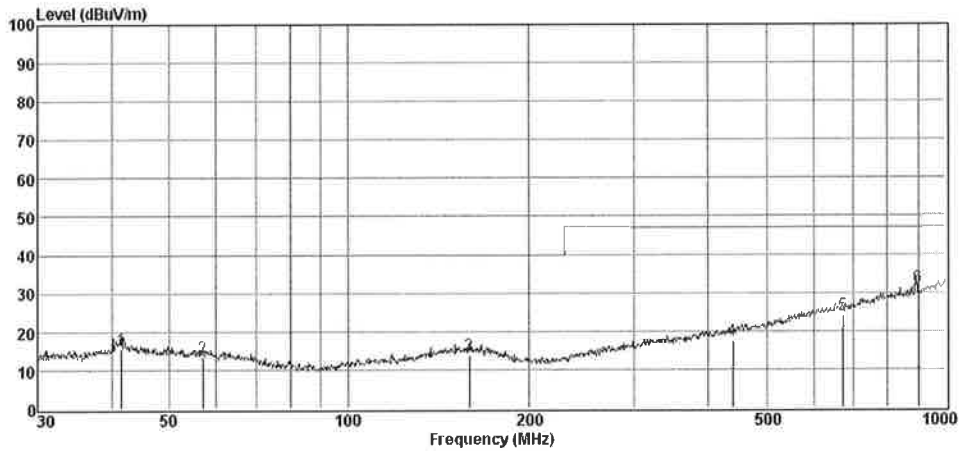
7.1.2 Test Setup and Procedure



1. The radiated emissions test was conducted in a semi-anechoic chamber.
2. The EUT was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; 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.

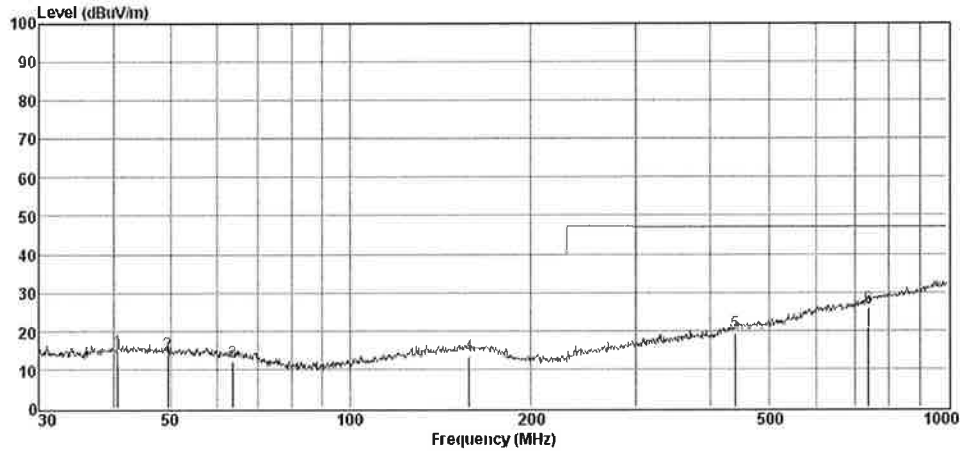
7.1.3 Measurement Data

Vertical:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dB μ V)	(dB/m)	(dB)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
1	41.51	26.49	13.24	24.70	0.57	15.60	40.00	-24.40	QP
2	56.99	24.93	12.38	24.70	0.71	13.32	40.00	-26.68	QP
3	159.23	24.50	12.61	24.70	1.32	13.73	40.00	-26.27	QP
4	438.66	23.79	15.84	24.40	2.41	17.64	47.00	-29.36	QP
5	671.55	25.07	20.07	24.11	3.05	24.08	47.00	-22.92	QP
6	900.51	28.58	22.91	23.80	3.65	31.34	47.00	-15.66	QP

Horizontal:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
1	40.69	25.67	13.27	24.70	0.57	14.81	40.00	-25.19	QP
2	49.34	25.39	12.84	24.70	0.64	14.17	40.00	-25.83	QP
3	63.76	24.28	11.67	24.70	0.76	12.01	40.00	-27.99	QP
4	158.11	24.06	12.62	24.70	1.31	13.29	40.00	-26.71	QP
5	438.66	25.57	15.84	24.40	2.41	19.42	47.00	-27.58	QP
6	737.30	25.41	21.30	24.05	3.28	25.94	47.00	-21.06	QP



8 Electromagnetic Susceptibility Test Results

8.1 Performance Criteria Description in EN 61326-1

Criterion A:	During testing, normal performance within the specification limits.
Criterion B:	During testing, temporary degradation, or loss of function or performance which is self-recovering.
Criterion C:	During testing, temporary degradation, or loss of function or performance which requires operator intervention or system reset occurs.

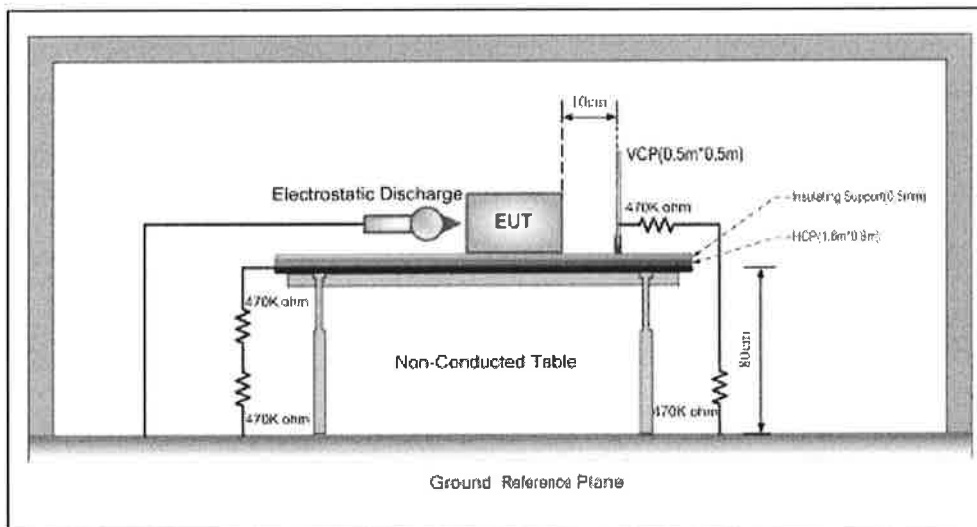
8.2 ESD

Test Requirement:	EN 61326-2-2	
Test Method:	EN 61000-4-2	
Test Date:	July 10, 2013	
Power Supply:	DC 4.5V	
Discharge Impedance:	330 Ω / 150 pF	
Discharge Voltage:	Air Discharge:	8.0 kV
	Contact Discharge:	4.0 kV
	HCP/VCP:	4.0 kV
Polarity:	Positive & Negative	
Number of Discharge:	Minimum 10 times at each test point for Air Discharge;	
	Minimum 10 times at each test point for Contact or VCP & HCP Discharge.	
Discharge Mode:	Single Discharge	
Discharge Period:	1 second minimum	

8.2.1 E.U.T. Operation

Operating Environment:			
Temperature:	25.6 °C	Humidity:	53.0% RH
		Atmospheric Pressure:	100.7 kPa
Test mode:	Testing mode		

8.2.2 Test Setup and Procedure



- Contact discharge was applied only to conductive surfaces of the EUT. Air discharge was applied only to non-conducted surfaces of the EUT.
- 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).
- 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 surface excepted the GRP, HCP and VCP was greater than 0.8m.
- During the contact discharges, the tip of the discharge electrode was touch 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.
- After each discharge, the ESD generator was removed from the EUT, the generator is then retrigged for a new single discharge. For ungrounded product, a discharge cable with two resistances were used after each discharge to remove remnant electrostatic voltage. A minimum 10 times discharges at each point of each polarity single discharge were applied to HCP and VCP.

8.2.3 Test Results

Direct Application Test Results

- Observations: Test Point:
- All insulated enclosure & seams.
 - All accessible metal parts of the enclosure.

Direct Application			Test Results		
Discharge Level (kV)	Polarity (+/-)	Test Point	Test Mode	Contact Discharge	Air Discharge
2.0, 4.0, 8.0	+/-	1	Testing mode	N/A	A
2.0, 4.0	+/-	2		A	N/A

Indirect Application Test Results

- Observations: Test Point:
- All sides.

Indirect Application			Test Results		
Discharge Level (kV)	Polarity (+/-)	Test Point	Test Mode	Horizontal Coupling	Vertical Coupling
2.0, 4.0	+/-	1	Testing mode	A	A

Results:

A: During test, no degradation in the performance of the EUT was observed; After test, no degradation in the performance of the EUT was observed.

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

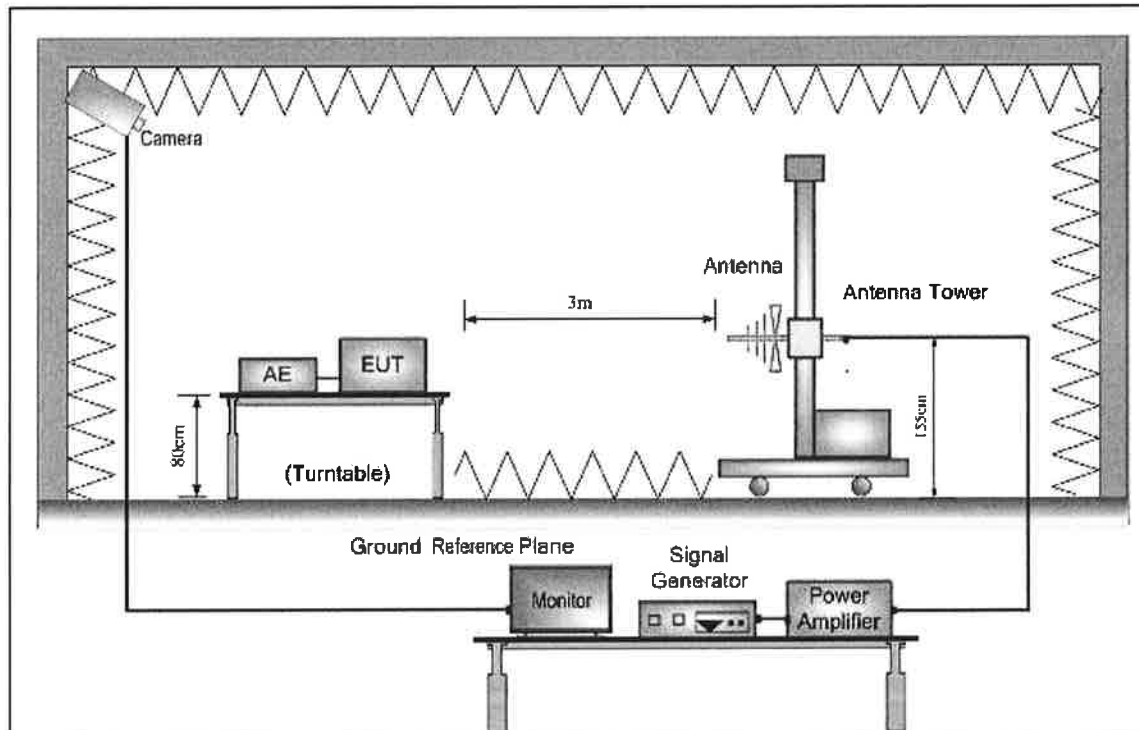
8.3 Radiated Immunity

Test Requirement:	EN 61326-1
Test Method:	EN 61000-4-3
Test Date:	July 10, 2013
Power Supply:	DC 4.5V
Frequency Range:	80 MHz to 1 GHz 1.4 GHz to 2 GHz 2 GHz to 2.7 GHz
Antenna Polarization:	Horizontal & Vertical
Test level:	3.0 V/m on enclosure for 80 MHz to 1 GHz 3.0 V/m on enclosure for 1.4 GHz to 2 GHz 1.0 V/m on enclosure for 2 GHz to 2.7 GHz
Modulation:	80%, 1 kHz Amplitude Modulation

8.3.1 E.U.T. Operation

Operating Environment:					
Temperature:	22.1 °C	Humidity:	52.0 %RH	Atmospheric Pressure:	102.3 kPa
Test mode:	Testing 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 July 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. Here the frequency range was swept incrementally, the step size was 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	Test Mode	Antenna Polarization	EUT Face	Result / Observations
80 MHz-1 GHz	3.0 V/m	1 kHz, 80% Amp. Mod, 1 % increment	Testing mode	V	Front	A
				H		A
				V	Rear	A
				H		A
1.4GHz to 2 GHz	3.0 V/m			V	Left	A
				H		A
				V	Right	A
				H		A
2 GHz to 2.7 GHz	1.0 V/m			V	Top	A
				H		A
				V	Bottom	A
				H		A

Remarks:

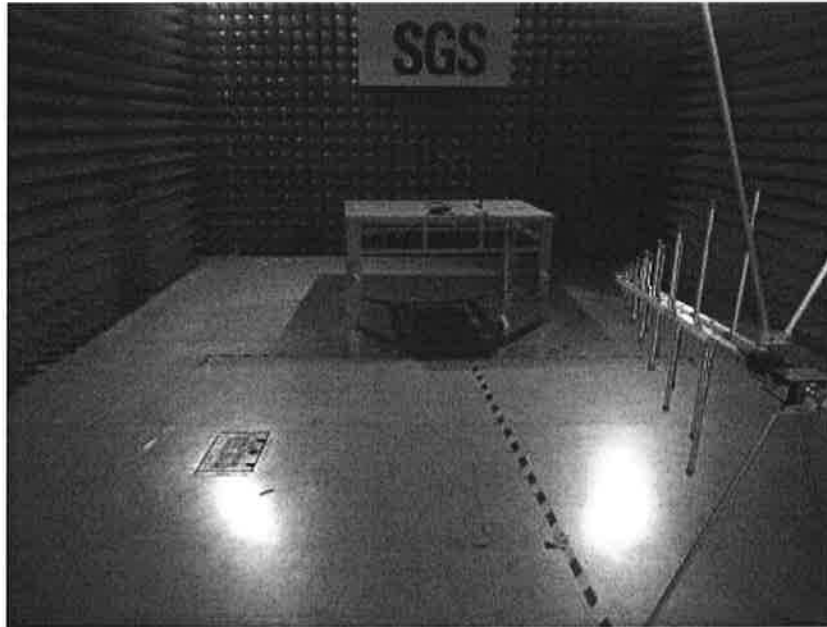
Front: the front of the EUT faces to transmitting antenna (refer to Radiated Immunity test setup photo)

A: During test, no degradation in the performance of the EUT was observed; After test, no degradation in the performance of the EUT was observed.

N/A: Not applicable.

9 Photographs (Test Setup For the EUT)

9.1 Radiated Emission Test Setup



9.2 ESD Test Setup

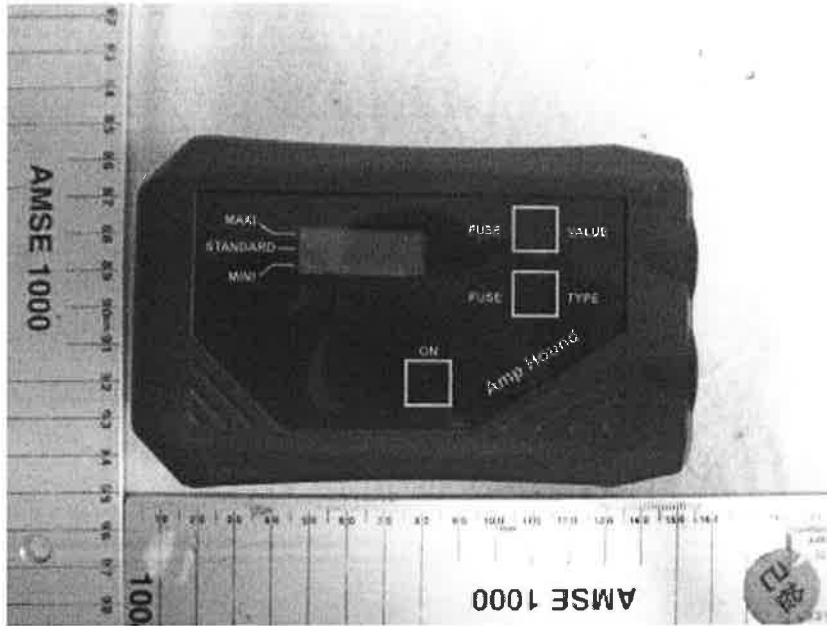
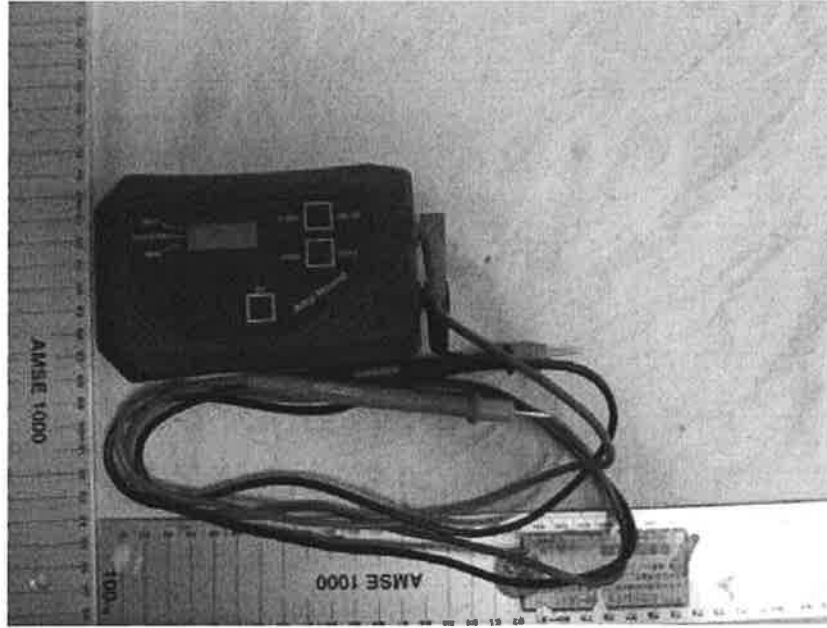


9.3 Radiated Immunity Test Setup



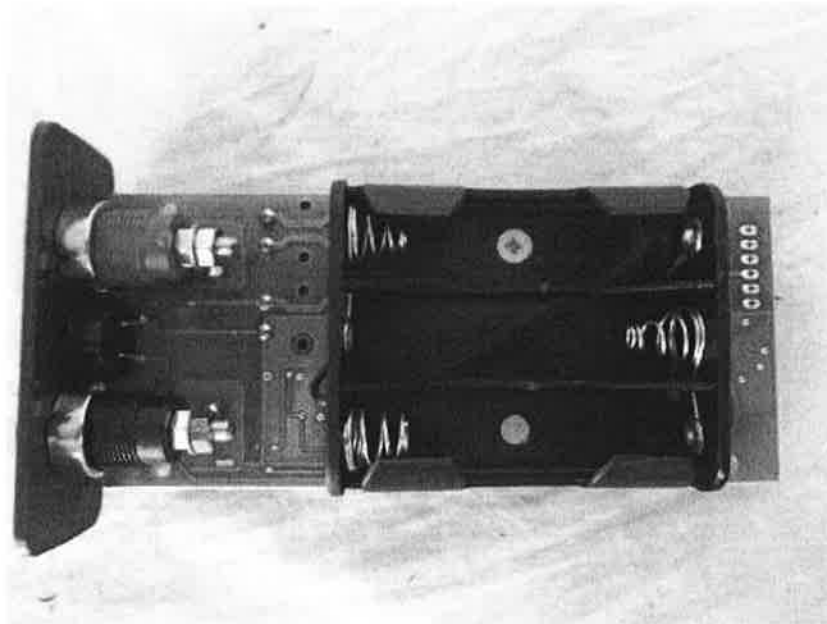
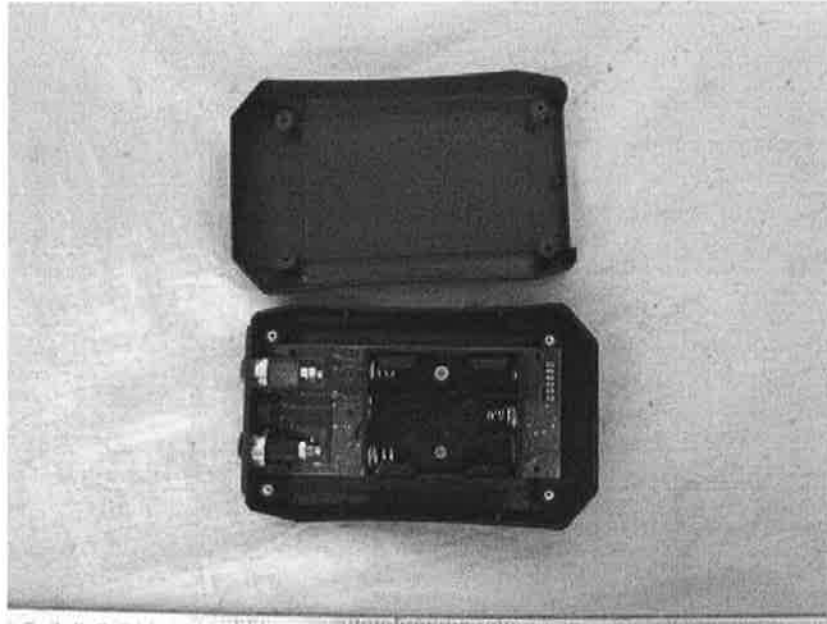
10 EUT Constructional Details

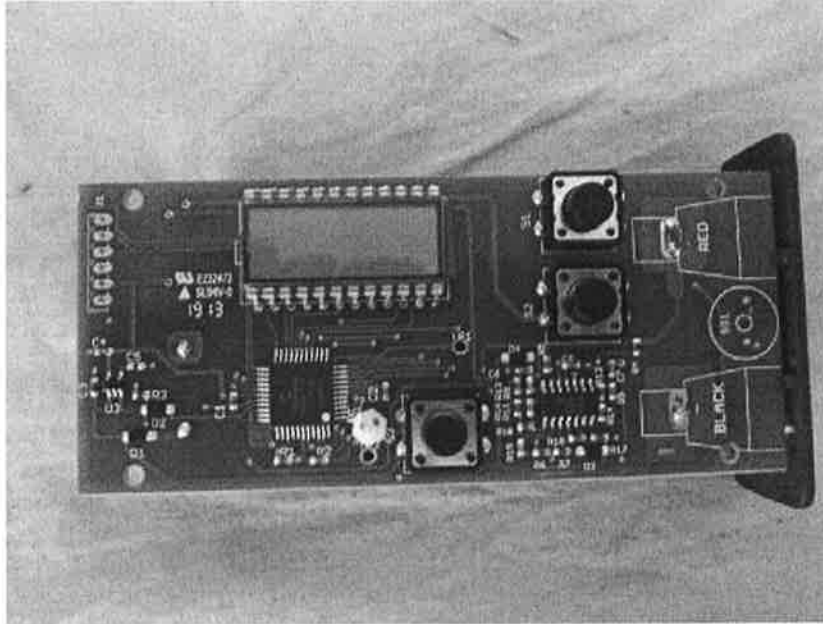
10.1 Exterior of EUT





10.2 Interior of EUT





--End of the Report--